

# SISVEL 5G MULTIMODE PROGRAM - PATENT BROCHURE

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## Patent Owner Abbreviation

3G Licensing: 3G Licensing S.A.

Alfred Consulting: Alfred Consulting LLC

Ariscale: Technology in Ariscale, LLC

Intellectual Discovery: Intellectual Discovery Co., Ltd.

JVC KENWOOD: JVC KENWOOD Corporation

KDDI: KDDI Corporation

KPN: Koninklijke KPN N.V.

MELCO: Mitsubishi Electric Corporation

NTT: Nippon Telegraph and Telephone Corporation

Siemens: Siemens Aktiengesellschaft

Sisvel International: Sisvel International S.A.

Sisvel SPA: Sisvel S.p.A.

SK Telecom: SK Telecom Co., Ltd.

Telefónica: Telefónica, S.A.

TIM: TIM S.p.A.

UNISOC: UNISOC (Shanghai) Technologies Co., Ltd.

Wilius: Wilius Inc.

Wireless Innovations: Wireless Innovations, LLC

| Family code | Patent Owner      | Exemplary patent                                              | Anticipated expiration | Illustrative claim(s) and relevant section(s) of the 3G Standard | Illustrative claim(s) and relevant section(s) of the 4G Standard                                                                                                                                                                                                                                                                                                                                                                                                  | Illustrative claim(s) and relevant section(s) of the 5G Standard                                                                                                                                                                                                         |
|-------------|-------------------|---------------------------------------------------------------|------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALF001      | Alfred Consulting | EP3424238<br>(AT, DE, DK, ES, FI, FR, GB, IE, IT, NL, PL, SE) | 22 Dec 2036            |                                                                  | 13<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 1.6, 4.1.1.2, 4.1.1.2.1, 4.1.1.5, 6.1.3.1, 9.4.1, 10.5.5.12, 10.5.5.37<br>3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4, 4.3.7.4.1, 5.5.1.2.2<br>3GPP TS 36.300 V14.8.0: Sections 8.7.6, 8.7.7, 19.2.1.9, 19.2.1.12<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7                                                                                           | 13<br>3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2 |
|             |                   | US10129807                                                    | 22 Dec 2035            |                                                                  | 18<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 1.6, 4.1.1.2, 4.1.1.2.1, 4.1.1.5, 6.1.3.1, 9.4.1, 10.5.5.12, 10.5.5.37<br>3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4, 4.3.7.4.1, 5.5.1.2.2<br>3GPP TS 36.300 V14.8.0: Sections 8.7.6, 8.7.7, 19.2.1.9, 19.2.1.12<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7                                                                                           | 18<br>3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2 |
|             |                   | US10609616                                                    | 22 Dec 2035            |                                                                  | 15<br>3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4.1, 4.3.17.4, 5.5.1.2.2<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 1.8, 4.1.1.2.1, 4.1.1.2.2, 4.1.1.5, 6.1.3.1, 9.4.2, 10.5.5.12n, 10.5.5.37<br>3GPP TS 36.300 V14.8.0: Sections 19.2.1.9, 19.2.1.12<br>3GPP TS 36.413 V16.1.0: Sections 8.7.6.1, 8.7.6.2, 8.7.7.1, 8.7.7.2; Figure 8.7.6.2-1, 8.7.7.2-1<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7 | 15<br>3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2 |
|             |                   | US10834656                                                    | 22 Dec 2035            |                                                                  | 16<br>3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4.1, 4.3.17.4, 5.5.1.2.2<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 1.8, 4.1.1.2.1, 4.1.1.2.2, 4.1.1.5, 6.1.3.1, 9.4.2, 10.5.5.12n, 10.5.5.37<br>3GPP TS 36.300 V14.8.0: Sections 19.2.1.9, 19.2.1.12<br>3GPP TS 36.413 V16.1.0: Sections 8.7.6.1, 8.7.6.2, 8.7.7.1, 8.7.7.2; Figure 8.7.6.2-1, 8.7.7.2-1<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7 | 16<br>3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2 |
|             |                   | US10841856                                                    | 22 Dec 2035            |                                                                  | 17<br>3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4.1, 4.3.17.4, 5.5.1.2.2<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 1.8, 4.1.1.2.1, 4.1.1.2.2, 4.1.1.5, 6.1.3.1, 9.4.2, 10.5.5.12n, 10.5.5.37<br>3GPP TS 36.300 V14.8.0: Sections 19.2.1.9, 19.2.1.12<br>3GPP TS 36.413 V16.1.0: Sections 8.7.6.1, 8.7.6.2, 8.7.7.1, 8.7.7.2; Figure 8.7.6.2-1, 8.7.7.2-1<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7 | 17<br>3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2 |

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|--------|-------------------|--------------------|-------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALF001 | Alfred Consulting | US11330498         | 22 Dec 2035 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 17     | 3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4.1, 4.3.17.4, 4.5.5.1.2.2<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 18, 4.1.1.2.1, 4.1.1.2.2, 4.1.1.5, 6.1.3.1.1, 9.4.2, 10.5.5.12n, 10.5.5.37<br>3GPP TS 36.300 V14.8.0: Sections 19.2.1.9, 19.2.1.12<br>3GPP TS 36.413 V16.1.0: Sections 8.7.6.1, 8.7.6.2, 8.7.7.1, 8.7.7.2; Figure 8.7.6.2-1, 8.7.7.2-1<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7 | 17 | 3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2                                                                                                                                                          |
|        |                   | US11765638         | 22 Dec 2035 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 23.009 V14.0.0: Sections 4.3.1, 5, 6, 6.1<br>3GPP TS 23.401 V14.10.0: Sections 3.1, 4.3.7.4.1, 4.3.17.4, 4.5.5.1.2.2<br>3GPP TS 24.008 V14.8.0: Sections 1, 1.5, 18, 4.1.1.2.1, 4.1.1.2.2, 4.1.1.5, 6.1.3.1.1, 9.4.2, 10.5.5.12n, 10.5.5.37<br>3GPP TS 36.300 V14.8.0: Sections 19.2.1.9, 19.2.1.12<br>3GPP TS 36.413 V16.1.0: Sections 8.7.6.1, 8.7.6.2, 8.7.7.1, 8.7.7.2; Figure 8.7.6.2-1, 8.7.7.2-1<br>3GPP TS 45.002 V14.5.0: Sections 6.3.1.2, 7 | 1  | 3GPP TS 24.501 V17.8.0: Sections 1, 4.5.6, 4.6.2, 4.6.2.1, 6.1.1, 6.1.2; Table 4.5.6.1<br>3GPP TS 24.008 V16.1.0: Sections 4.1.1.5, 4.3.2, 10.1.3, 10.1.3.0, 13.0, 13.2<br>3GPP TS 23.009 V15.0.0: Sections 5, 6, 6.1<br>3GPP TS 23.401 V16.3.0: Section 5.5.1.2.2                                                                                                                                                          |
| ARI001 | Ariscale          | KR10-1458790       | 05 Jul 2028 | 1 | 3GPP TS 25.214 V11.12.0: Sections 6A.4.1, 9, 12.1                                                                                                                                                                                                                                                                                                                                   | 1      | 3GPP TS 36.211 V11.7.0: Sections 6.3.4.2.1, 6.3.4.2.3; Table 6.3.4.2.3-1<br>3GPP TS 36.213 V11.13.0: Sections 7.1.4, 7.1.5, 7.2, 7.2.3, 7.2.4; Table 7.2.3-0                                                                                                                                                                                                                                                                                                   |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ARI002 | Ariscale          | CNZL201680021262.3 | 08 Apr 2036 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 8, 10  | 3GPP TS 36.213 V14.9.0: Section 7.2<br>3GPP TS 36.211 V14.9.0: Sections 6.10.5, 6.10.5.1, 6.10.5.2; Tables 6.10.5.1-6.10.5.2-1<br>3GPP TS 36.331 V14.9.0: Section 6.3.2                                                                                                                                                                                                                                                                                        |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | CNZL201910119478.9 | 08 Apr 2036 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 12     | 3GPP TS 36.211 V14.9.0: Sections 6.10.5, 6.10.5.1, 6.10.5.2; Figure 6.10.5.1-1, Tables 6.10.5.1-6.10.5.2-2<br>3GPP TS 36.213 V14.9.0: Sections 7.2, 7.2.5<br>3GPP TS 36.331 V14.9.0: Sections 6.3.2                                                                                                                                                                                                                                                            |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | KR10-1955940       | 16 Mar 2036 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 13     | 3GPP TS 36.211 V14.9.0: Sections 6.10.5, 6.10.5.1, 6.10.5.2; Tables 6.10.5.1-6.10.5.2-1; Figure 6.10.5.2-1<br>3GPP TS 36.213 V14.9.0: Sections 7.2, 7.2.5<br>3GPP TS 36.331 V14.9.0: Sections 6.3.2, 6.10.5                                                                                                                                                                                                                                                    |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | US10256963         | 08 Apr 2036 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 14     | 3GPP TS 36.211 V14.9.0: Sections 6.10.5, 6.10.5.1, 6.10.5.2; Tables 6.10.5.1-6.10.5.2-1; Figure 6.10.5.2-1<br>3GPP TS 36.213 V14.9.0: Sections 7.2, 7.2.5<br>3GPP TS 36.331 V14.9.0: Sections 6.3.2, 6.10.5                                                                                                                                                                                                                                                    |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ARI003 | Ariscale          | AU2019342135       | 19 Sep 2039 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.211 V14.13.1: Section 6.10.5; Table 6.10.5-1<br>3GPP TS 36.213 V14.13.0: Section 7.2<br>3GPP TS 36.331 V14.13.0: Section 6.3.2                                                                                                                                                                                                                                                                                                                      |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | CNZL201980061783.5 | 19 Sep 2039 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.211 V14.13.1: Section 6.10.5; Table 6.10.5-1<br>3GPP TS 36.213 V14.13.0: Section 7.2<br>3GPP TS 36.331 V14.13.0: Section 6.3.2                                                                                                                                                                                                                                                                                                                      |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | KR10-2239148       | 19 Sep 2039 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.211 V14.13.1: Section 6.10.5; Table 6.10.5-1<br>3GPP TS 36.213 V14.13.0: Section 7.2<br>3GPP TS 36.331 V14.13.0: Section 6.3.2                                                                                                                                                                                                                                                                                                                      |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | US10707938         | 19 Sep 2039 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 10, 11 | 3GPP TS 36.211 V14.13.1: Section 6.10.5; Table 6.10.5-1<br>3GPP TS 36.213 V14.13.0: Section 7.2<br>3GPP TS 36.331 V14.13.0: Section 6.3.2                                                                                                                                                                                                                                                                                                                      |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| BBY001 | 3G Licensing      | CA2680720          | 20 Aug 2024 |   |                                                                                                                                                                                                                                                                                                                                                                                     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1  | 3GPP TS 22.011 V16.5.0: Sections 3.2.1, 3.2.2.1, 3.2.2.2<br>3GPP TS 23.003 V16.4.0: Section 12.1.3GPP TS 23.122 V16.7.0: Sections 1, 1.2, 3.1, 4.4.2, 4.4.3, 4.4.3.1.1, Annex A<br>3GPP TS 31.102 V16.5.0: Sections 1, 3.3, 4, 4.2.5, 4.2.53, 4.2.84<br>3GPP TS 38.304 V16.2.0: Sections 3.1, 3.2, 5.1, 5.1.1.1, 5.1.1.2<br>3GPP TS 38.331 V16.2.0: Sections 3.2, 5.2.1, 5.2.2.1, 5.2.2.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
|        |                   | US8275374          | 08 Sep 2024 |   |                                                                                                                                                                                                                                                                                                                                                                                     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1  | 3GPP TS 22.011 V16.5.0: Sections 3.2.1, 3.2.2.1, 3.2.2.2<br>3GPP TS 23.003 V16.4.0: Section 12.1.3GPP TS 23.122 V16.7.0: Sections 1, 1.2, 3.1, 4.4.2, 4.4.3, 4.4.3.1.1, Annex A<br>3GPP TS 31.102 V16.5.0: Sections 1, 3.3, 4, 4.2.5, 4.2.53, 4.2.84<br>3GPP TS 38.304 V16.2.0: Sections 3.1, 3.2, 5.1, 5.1.1.1, 5.1.1.2<br>3GPP TS 38.331 V16.2.0: Sections 3.2, 5.2.1, 5.2.2.1, 5.2.2.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
|        |                   | US8472955          | 02 Sep 2024 | 1 | 3GPP TS 23.122 V8.12.0: Sections 1.2, 4.2, 4.4.3.1.1; Annex A<br>3GPP TS 22.011 V8.11.0: Sections 1.2, 3.2.2.1<br>3GPP TS 31.102 V8.11.0: Sections 1, 4.2.84, 4.2.53, 5.1.1.2<br>3GPP TS 24.331 V8.21.0: Sections 6.1, 6.3.4<br>3GPP TS 24.301 V8.10.0: Sections 8.2.1.1, 9.9.3.32, 9.9.3.33; Table 8.2.1.1; Figures 9.9.3.32.1, 9.9.3.33.1<br>3GPP TS 22.101 V8.15.0: Sections A.3 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1  | 3GPP TS 22.011 V16.5.0: Sections 3.2.1, 3.2.2.1, 3.2.2.2<br>3GPP TS 23.003 V16.4.0: Section 12.1.3GPP TS 23.122 V16.7.0: Sections 1, 1.2, 3.1, 4.4.2, 4.4.3, 4.4.3.1.1, Annex A<br>3GPP TS 31.102 V16.5.0: Sections 1, 3.3, 4, 4.2.5, 4.2.53, 4.2.84<br>3GPP TS 38.304 V16.2.0: Sections 3.1, 3.2, 5.1, 5.1.1.1, 5.1.1.2<br>3GPP TS 38.331 V16.2.0: Sections 3.2, 5.2.1, 5.2.2.1, 5.2.2.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
| BBY002 | 3G Licensing      | US8879503          | 03 Jun 2030 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 24.301 V11.10.0: Sections 1, 4.3.1, 4.3.2.4, 5.5.1.2.4, 5.5.3.2.4, 8.2.1.1, 8.2.2.6.1, 9.9.3.12A.1<br>3GPP TS 24.229 V11.9.0: Section 5.1.1.2.1, Annex L.3.1.2                                                                                                                                                                                                                                                                                         |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| BBY003 | 3G Licensing      | US7463887          | 03 Apr 2026 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.304 V8.10.0: Sections 1.5.2.1, 5.2.4.4                                                                                                                                                                                                                                                                                                                                                                                                              |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | US8290491          | 25 Aug 2024 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.304 V8.10.0: Sections 1.5.2.1, 5.2.4.4                                                                                                                                                                                                                                                                                                                                                                                                              | 1  | 3GPP TS 36.304 V8.10.0: Sections 1, 5.2.1, 5.2.4.4                                                                                                                                                                                                                                                                                                                                                                          |
|        |                   | US8351940          | 25 Aug 2024 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 36.304 V8.10.0: Sections 1.5.2.1, 5.2.4.4                                                                                                                                                                                                                                                                                                                                                                                                              | 1  | 3GPP TS 36.304 V8.10.0: Sections 1, 5.2.1, 5.2.4.4                                                                                                                                                                                                                                                                                                                                                                          |
| BBY004 | 3G Licensing      | AU2007221785       | 02 Oct 2027 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 24.237 V15.3.0: Sections 1, 4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.1                                                                                                                                                                                                                                                                                 |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|        |                   | CA2605098          | 02 Oct 2027 |   |                                                                                                                                                                                                                                                                                                                                                                                     | 1      | 3GPP TS 24.237 V15.3.0: Sections 1, 4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.1                                                                                                                                                                                                                                                                                 |    |                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|--------|------------------------|------------------------------------|-------------|--|--|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------|
| BBY004 | 3G Licensing           | EP1909451 (DE, FR, GB)             | 03 Oct 2026 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | HK1114980                          | 03 Oct 2026 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | IN256206                           | 25 Sep 2027 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | JP4772021                          | 02 Oct 2027 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | KR10-0940548                       | 02 Oct 2027 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | SG161228                           | 26 Sep 2027 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | TWI355828                          | 27 Sep 2027 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
|        |                        | US7995565                          | 03 Oct 2026 |  |  | 1 | 3GPP TS 24.237 V15.3.0: Sections 1.4.1, 5.2, 5.3, 9.2.1AA, 9.3.2<br>3GPP TS 24.292 V15.1.0: Sections 7.2.2, 7.2.6, 7.4.1, 7.4.2.1.<br>3GPP TS 24.229 V15.1.0: Section 5.1.2A.11                                                      |   |                                                                                                                              |
| BBY005 | 3G Licensing           | AU2006235810                       | 02 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | AU2010257363                       | 02 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | BRPI0622295-1                      | 01 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | CA2567115                          | 03 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | CNZL201010576392.8                 | 03 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | EP1924037 (DE, FR, GB, IT)         | 04 Nov 2025 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | EP2184946 (DE, FR, GB, IT, NL, SE) | 04 Nov 2025 |  |  |   |                                                                                                                                                                                                                                      | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | HK1143266                          | 04 Nov 2025 |  |  |   |                                                                                                                                                                                                                                      | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | IN314545                           | 31 Oct 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | JP4909707                          | 01 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | KR10-1116459                       | 03 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | KR10-1116524                       | 03 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | TWI338527                          | 03 Nov 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   | 1 | 3GPP TS 23.501 V16.6.0: Sections 3.1, 3.2, 4.4.5, 5.6.1<br>3GPP TS 24.501 V16.6.0: Sections 6.2.3, 6.4.1.1, 6.4.1.2, 6.4.1.5 |
|        |                        | US8189611                          | 04 Sep 2026 |  |  | 1 | 3GPP TS 24.301 V11.7.0: Sections 6.5.1.1, 6.5.1.4A                                                                                                                                                                                   |   |                                                                                                                              |
| IND001 | Intellectual Discovery | KR10-2024626                       | 10 Dec 2034 |  |  | 1 | 3GPP TS 36.211 V13.13.0: Sections 6.4.1, 6.8B, 6.8B.1, 6.8B.5<br>3GPP TS 36.212 V13.10.0: Sections 5.3.3.1.12, 5.3.3.1.13, 7.1<br>3GPP TS 36.213 V13.16.0: Sections 7.1, 7.1.11<br>3GPP TS 36.331 V13.15.0: Sections 3.1, 6.2.2      |   |                                                                                                                              |
|        |                        | US10028207                         | 23 Jan 2035 |  |  | 1 | 3GPP TS 36.211 V13.13.0: Sections 6.4.1, 6.8B, 6.8B.1, 6.8B.5<br>3GPP TS 36.212 V13.10.0: Sections 5.3.3.1.12, 5.3.3.1.13, 7.1<br>3GPP TS 36.213 V13.16.0: Sections 7.1, 7.1.11<br>3GPP TS 36.331 V13.15.0: Sections 3.1, 6.2.2      |   |                                                                                                                              |
|        |                        | US10805868                         | 14 Jan 2035 |  |  | 1 | 3GPP TS 36.211 V13.13.0: Sections 6.4.1, 6.8B, 6.8B.1, 6.8B.5<br>3GPP TS 36.212 V13.10.0: Sections 5.3.3.1.12, 5.3.3.1.13, 7.1<br>3GPP TS 36.213 V13.16.0: Sections 7.1, 7.1.11<br>3GPP TS 36.331 V13.15.0: Sections 3.1, 6.2.2      |   |                                                                                                                              |
| IND002 | Intellectual Discovery | CNZL201580021748.2                 | 05 Feb 2035 |  |  | 1 | 3GPP TS 36.211 V12.9.0: Section 6.11A<br>3GPP TS 36.331 V12.18.0: Sections 5.3.5.1, 5.5.2.5, 5.5.3.1, 6.3.5, 6.4                                                                                                                     |   |                                                                                                                              |
|        |                        | KR10-2306320                       | 30 Jul 2034 |  |  | 1 | 3GPP TS 36.211 V12.9.0: Section 6.11A<br>3GPP TS 36.331 V12.18.0: Sections 5.3.5.1, 5.5.2.5, 5.5.3.1, 6.3.5, 6.4                                                                                                                     |   |                                                                                                                              |
| IND003 | Intellectual Discovery | KR10-0880885                       | 11 May 2027 |  |  |   |                                                                                                                                                                                                                                      | 1 | 3GPP TS 38.213 V16.9.0: Section 9.2.6                                                                                        |
| JKC001 | JVCKENWOOD             | CA2857481                          | 25 Jul 2033 |  |  | 1 | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1 |   |                                                                                                                              |
|        |                        | CA2871263                          | 25 Jul 2033 |  |  | 1 | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1 |   |                                                                                                                              |

|               |                                           |             |             |  |  |    |                                                                                                                                                                                                                                                                               |   |                                                                                                                                                                                      |
|---------------|-------------------------------------------|-------------|-------------|--|--|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>JKC001</b> | JVCKENWOOD                                | CA2987989   | 25 Jul 2033 |  |  | 1  | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1                                          |   |                                                                                                                                                                                      |
|               | EP2809025<br>(DE, ES, FR, GB, IT, NL, TR) | 25 Jul 2033 |             |  |  | 14 | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1                                          |   |                                                                                                                                                                                      |
|               | IN358033                                  | 25 Jul 2033 |             |  |  | 1  | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1                                          |   |                                                                                                                                                                                      |
|               | JP5846513                                 | 25 Jul 2033 |             |  |  | 14 | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Section 7.1.9; Table 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5, 5.3.5.1.6.2.2, 6.3.2; Figure 5.3.5.1-1                                                  |   |                                                                                                                                                                                      |
|               | JP5846521                                 | 25 Jul 2033 |             |  |  | 16 | 3GPP TS 36.300 V16.6.0: Section 5.1.9<br>3GPP TS 36.213 V16.7.0: Sections 7.2.1, 7.2.6; Table 7.2.1-1B<br>3GPP TS 36.331 V16.6.0: Section 6.3.2<br>3GPP TS 36.305 V16.4.0: Section 3.1                                                                                        |   |                                                                                                                                                                                      |
|               | JP6512275                                 | 25 Jul 2033 |             |  |  | 1  | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Section 7.1.9; Table 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5, 5.3.5.1.6.2.2, 6.3.2; Figure 5.3.5.1-1                                                  |   |                                                                                                                                                                                      |
|               | KR10-1516666                              | 25 Jul 2033 |             |  |  | 16 | 3GPP TS 36.300 V16.6.0: Section 5.1.9<br>3GPP TS 36.213 V16.7.0: Sections 7.2, 7.2.1, 7.2.6<br>3GPP TS 36.331 V16.6.0: Sections 6.2.2, 6.3.2<br>3GPP TS 36.305 V16.4.0: Section 3.1                                                                                           |   |                                                                                                                                                                                      |
|               | KR10-1516667                              | 25 Jul 2033 |             |  |  | 23 | 3GPP TS 36.213 V11.12.0: Sections 7.1.9, 7.1.10, 7.2.5; Table 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Sections 4.5.1.9<br>3GPP TS 36.331 V11.17.0: Sections 6.2.2, 6.3.2; Figure 5.3.5.1-1<br>3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.211 V11.7.0: Section 6.2.1 |   |                                                                                                                                                                                      |
|               | US9094145                                 | 14 Aug 2033 |             |  |  | 14 | 3GPP TS 36.212 V11.7.0: Section 5.3.3.1.5D<br>3GPP TS 36.213 V11.12.0: Sections 7.1, 7.1.9; Tables 7.1-5, 7.1.9-1<br>3GPP TS 36.300 V11.14.0: Section 4<br>3GPP TS 36.331 V11.17.0: Sections 5.3.5.1, 6.2.2, 6.3.2; Figure 5.3.5.1-1                                          |   |                                                                                                                                                                                      |
| <b>JKC002</b> | JVCKENWOOD                                | JP5223409   | 26 Mar 2028 |  |  | 1  | 3GPP TS 36.211 V16.7.0: Sections 4.1, 6.11.1.2, 6.11.2.2; Figure 4.1-1<br>3GPP TS 36.212 V16.6.0: Section 5.3.3.1.3<br>3GPP TS 36.213 V16.7.1: Sections 4.1, 7.1                                                                                                              | 1 | 3GPP TS 38.213 V17.0.0: Section 4<br>3GPP TS 38.211 V17.0.0: Sections 4.3.1, 4.3.2<br>3GPP TS 38.214 V17.0.0: Sections 5.1, 5.1.2.1, 5.1.3<br>3GPP TS 38.331 V16.7.0: Sections 6.3.2 |
| <b>KDD001</b> | KDDI                                      | JP4831605   | 24 Jan 2026 |  |  | 7  | 3GPP TS 36.331 V11.17.0: Sections 4.2.1, 5.2.1, 5.2.1.1, 5.2.2, 5.2.2.1, 5.3.3.10, 6.3.1<br>3GPP TS 24.173 V11.5.0: Sections J.2.1.1<br>3GPP TS 22.011 V11.5.0: Sections 4.2                                                                                                  |   |                                                                                                                                                                                      |
| <b>KDD002</b> | KDDI                                      | JP4499177   | 31 Oct 2027 |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                                              |   |                                                                                                                                                                                      |
|               | JP4585038                                 | 31 Oct 2027 |             |  |  | 2  | 3GPP TS 36.211 V9.1.0: Sections 5.4.1, 5.4.2, 7.2                                                                                                                                                                                                                             |   |                                                                                                                                                                                      |
|               | US8761145                                 | 23 Dec 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9025431                                 | 11 Nov 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9143258                                 | 31 Oct 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9148245                                 | 31 Oct 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9160476                                 | 31 Oct 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9219564                                 | 31 Oct 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
|               | US9270402                                 | 31 Oct 2027 |             |  |  | 1  | 3GPP TS 36.211 V9.1.0: Sections 5.4, 5.4.1, 5.4.2; Tables 5.4.1-2, 5.4.1-3<br>3GPP TS 36.213 V9.3.0: Sections 7.2.2, 10.1                                                                                                                                                     |   |                                                                                                                                                                                      |
| <b>KDD003</b> | KDDI                                      | JP4527136   | 20 Jun 2027 |  |  | 1  | 3GPP TS 36.211 V14.1.0: Sections 5.4, 5.4.3, 5.5, 5.5.1, 5.5.1.1, 5.5.1.3, 5.5.2, 5.5.2.2                                                                                                                                                                                     |   |                                                                                                                                                                                      |

|         |      |                                                                       |             |            |                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                                                                                |   |                                                                                                                                           |
|---------|------|-----------------------------------------------------------------------|-------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------|
| KDD004  | KDDI | US57974203                                                            | 16 Nov 2028 |            |                                                                                                                                                                                                                                                                                              | 5          | 3GPP TS 23.401 V16.9.0: Section 4.7.2.1<br>3GPP TS 36.321 V16.3.0: Section 5.4.3.1<br>3GPP TS 36.331 V16.3.0: Sections 5.3.10.3, 6.3.2                                                                                                                                                                                         |   |                                                                                                                                           |
| KDD006  | KDDI | JP6588135                                                             | 07 May 2034 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 5.2.3, 10.1.2.8, 10.1.2.8.1; Figure 10.1.2.8.1-1<br>3GPP TS 36.423 V15.3.0: Sections 9.1.3, 9.1.3.1, 9.1.3.2<br>3GPP TS 36.331 V15.0.0: Sections 5.5.5, 5.5.5.1, 6.2.2, 6.3.5, 10.2.2;<br>Figure 5.5.5.1-1<br>3GPP TS 36.221 V14.5.0: Section 6.11                                            |   |                                                                                                                                           |
|         |      | JP6799653                                                             | 07 May 2034 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 5.2.3, 10.1.2.8, 10.1.2.8.1; Figure 10.1.2.8.1-1<br>3GPP TS 36.423 V15.3.0: Sections 9.1.3, 9.1.3.1, 9.1.3.2<br>3GPP TS 36.331 V15.0.0: Sections 5.5.5, 5.5.5.1, 6.2.2, 6.3.5, 10.2.2;<br>Figure 5.5.5.1-1                                                                                    |   |                                                                                                                                           |
| KDD007  | KDDI | CNZL201680026887.9                                                    | 10 May 2036 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 10.1.5.1, 23.7b; Figure 10.1.5.1-1<br>3GPP TS 36.321 V15.3.0: Sections 5.1.1, 5.1.2                                                                                                                                                                                                           |   |                                                                                                                                           |
|         |      | JP6502171                                                             | 14 May 2035 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 10.1.5.1, 23.7b; Figure 10.1.5.1-1<br>3GPP TS 36.321 V15.3.0: Sections 5.1.1, 5.1.2                                                                                                                                                                                                           |   |                                                                                                                                           |
|         |      | JP6656445                                                             | 14 May 2035 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 10.1.5.1, 23.7b; Figure 10.1.5.1-1<br>3GPP TS 36.321 V15.3.0: Sections 5.1.1, 5.1.2                                                                                                                                                                                                           |   |                                                                                                                                           |
|         |      | JP6761502                                                             | 14 May 2035 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.300 V15.3.0: Sections 10.1.5.1, 23.7b; Figure 10.1.5.1-1<br>3GPP TS 36.321 V15.3.0: Sections 5.1.1, 5.1.2                                                                                                                                                                                                           |   |                                                                                                                                           |
| KDD008  | KDDI | CNZL201680054288.8                                                    | 14 Oct 2036 |            |                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                                                                                | 9 | 3GPP TS 38.212 V15.8.0: Sections 7.3.1.2.1, 7.3.1.2.2<br>3GPP TS 38.213 V15.8.0: Section 9.2.3<br>3GPP TS 38.300 V15.8.0: Section 5.2.5.4 |
|         |      | JP6633889                                                             | 29 Oct 2035 |            |                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                                                                                | 9 | 3GPP TS 38.212 V15.8.0: Sections 7.3.1.2.1, 7.3.1.2.2<br>3GPP TS 38.213 V15.8.0: Section 9.2.3<br>3GPP TS 38.300 V15.8.0: Section 5.2.5.4 |
| KDD011  | KDDI | JP7247154                                                             | 28 Apr 2037 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.331 V16.6.0: Sections 1.5.5.4.1, 6.3.5                                                                                                                                                                                                                                                                              |   |                                                                                                                                           |
|         |      | US11272418                                                            | 07 Mar 2038 |            |                                                                                                                                                                                                                                                                                              | 1          | 3GPP TS 36.331 V16.6.0: Sections 1.5.5.4.1, 6.3.5                                                                                                                                                                                                                                                                              |   |                                                                                                                                           |
| KPN003* | KPN  | EP0716796<br>(CH, DE, FR, GB, NL, SE)                                 | 31 Aug 2014 |            |                                                                                                                                                                                                                                                                                              | 1, 3       | 3GPP TS 23.261 V10.2.0: Sections 4, 4.1, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3, 5.3.1, 5.3.2, 5.3.3<br>3GPP TS 23.401 V10.4.0: Sections 1, 5.1, 5.1.1, 5.1.1.1, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3, 5.3.1, 5.3.2, 5.3.3<br>3GPP TS 23.234 V11.1.0: Sections 6, 6.1<br>3GPP TS 23.003 V10.3.0: Sections 2, 2.1<br>IETF RFC 4306: Section 1.2 |   |                                                                                                                                           |
|         |      | US5960365                                                             | 23 Jan 2016 |            |                                                                                                                                                                                                                                                                                              | 1, 3       | 3GPP TS 23.261 V10.2.0: Sections 4, 4.1, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3, 5.3.1, 5.3.2, 5.3.3<br>3GPP TS 23.401 V10.4.0: Sections 1, 5.1, 5.1.1, 5.1.1.1, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3, 5.3.1, 5.3.2, 5.3.3<br>3GPP TS 23.234 V11.1.0: Sections 6, 6.1<br>3GPP TS 23.003 V10.3.0: Sections 2, 2.1<br>IETF RFC 4306: Section 1.2 |   |                                                                                                                                           |
| KPN004* | KPN  | US6212662                                                             | 26 Jun 2016 |            |                                                                                                                                                                                                                                                                                              | 1, 2, 3    | 3GPP TS 36.212 V9.3.0: Section 5, 5.1, 5.1.1, 5.1.2, 5.1.3, Table 5.1.3-1, 5.1.3-3, 5.1.3.2, 5.1.3.2.3, Figure 5.1.3-2, 5.1.3.2.3                                                                                                                                                                                              |   |                                                                                                                                           |
| KPN005* | KPN  | EP0785692<br>(AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, NL, PT, SE) | 29 Oct 2016 | 1          | 3GPP TS 23.060 V10.14.0: Sections 6.5.0, 6.5.3<br>3GPP TS 23.261 V10.2.0: Sections 5.3.1, 5.4.1, 5.4.2; Figure 5.4.2-1<br>3GPP TS 25.211 V10.0.0: Sections 4.1.2.3, 4.2, 5.3.3.10<br>3GPP TS 43.013 V4.0.0: Sections 1, 4                                                                    | 1          | 3GPP TS 23.060 V10.14.0: Sections 6.5.0, 6.5.3<br>3GPP TS 23.261 V10.2.0: Sections 5.3.1, 5.4.1, 5.4.2; Figure 5.4.2-1<br>3GPP TS 25.211 V10.0.0: Sections 4.1.2.3, 4.2, 5.3.3.10<br>3GPP TS 43.013 V4.0.0: Sections 1, 4                                                                                                      |   |                                                                                                                                           |
| KPN006  | KPN  | CNZL201310055256.8                                                    | 19 Feb 2029 | 15, 30, 32 | 3GPP TS 22.368 V10.5.0: Annex A<br>3GPP TS 23.003 V10.10.0: Section 2.1<br>3GPP TS 23.060 V10.14.0: Sections 5.3.0, 5.3.1, 5.3.6.4, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.2.5, 6.5.0, 14.1, 14.2<br>3GPP TS 24.008 V10.15.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 13.2.1, 13.2.3   | 15, 30, 32 | 3GPP TS 22.368 V10.5.0: Annex A<br>3GPP TS 23.003 V10.10.0: Section 2.1<br>3GPP TS 23.060 V10.14.0: Sections 5.3.0, 5.3.1, 5.3.6.4, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.2.5, 6.5.0, 14.1, 14.2<br>3GPP TS 24.008 V10.15.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 13.2.1, 13.2.3                                     |   |                                                                                                                                           |
|         |      | EP2250835<br>(AT, BE, DE, DK, ES, FI, FR, GB, IE, IS, IT, NL, PL, SE) | 19 Feb 2029 | 38         | 3GPP TS 23.060 V10.5.0: Sections 5.3.6.2.3, 5.3.6.2.4<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 9.4.4, 9.4.4.2; Table 9.4.4                                                                                                                                                    | 38         | 3GPP TS 23.060 V10.5.0: Sections 5.3.6.2.3, 5.3.6.2.4<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 9.4.4, 9.4.4.2; Table 9.4.4                                                                                                                                                                                      |   |                                                                                                                                           |
|         |      | EP2337403<br>(DE, FI, FR, GB, NL, SE)                                 | 19 Feb 2029 | 35         | 3GPP TS 23.060 V10.5.0: sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.6.3, 6.5.0, 14.1, 14.2<br>3GPP TS 23.003 V10.3.0: Section 2.1<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 9.4.4.2<br>3GPP TS 22.368 V11.3.0: Annex A                          | 35         | 3GPP TS 23.060 V10.5.0: sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.6.3, 6.5.0, 14.1, 14.2<br>3GPP TS 23.003 V10.3.0: Section 2.1<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 9.4.4.2<br>3GPP TS 22.368 V11.3.0: Annex A                                                            |   |                                                                                                                                           |
|         |      | JP5308459                                                             | 19 Feb 2029 | 35         | 3GPP TS 23.060 V10.5.0: Sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.4, 6.5.0, 14.1 and 14.2<br>3GPP TS 23.003 V10.3.0: Section 2.1<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 9.4.4.2, 9.4.2.2, 9.4.2.2.1<br>3GPP TS 22.368 V11.3.0: Annex A | 35         | 3GPP TS 23.060 V10.5.0: Sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.4, 6.5.0, 14.1 and 14.2<br>3GPP TS 23.003 V10.3.0: Section 2.1<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 9.4.4.2, 9.4.2.2, 9.4.2.2.1<br>3GPP TS 22.368 V11.3.0: Annex A                                   |   |                                                                                                                                           |

|         |     |                                                            |             |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|-----|------------------------------------------------------------|-------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KPN006  | KPN | KR10-1231986                                               | 19 Feb 2029 | 37               | 3GPP TS 22.368 V11.3.0: Annex A; Figures A-1, A-2, A-3, A-4<br>3GPP TS 23.003 V10.3.0: Section 2.1<br>3GPP TS 23.060 V10.5.0: Sections 5.3.0, 5.3.6.2.1, 5.3.6.2.3, 5.3.6.2.4, 5.6.3, 6.5.0, 14.1, 14.2<br>3GPP TS 24.008 V10.4.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 9.4.4, 9.4.4.2; Table 9.4.4                                                                                                                                                                                                                                                                                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | US10187904                                                 | 19 Feb 2029 | 3, 7             | 3GPP TS 22.368 V10.5.0: Sections 3.1, 3.2, 4, 7, Annex A<br>3GPP TS 23.003 V10.10.0: Sections 2.1, 2.2, 2.4<br>3GPP TS 23.060 V10.14.0: Sections 5.3.0, 5.3.1, 5.3.6.2, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.4, 5.3.13.2, 5.6.3, 6.5.0, 6.5.2, 9.2, 9.2.2, 14.1, 14.2<br>3GPP TS 24.008 V10.15.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 6.1.3.13, 9.4.4, 9.4.4.2, 9.5.3                                                                                                                                                                                                                        | 3, 7             | 3GPP TS 22.368 V10.5.0: Sections 3.1, 3.2, 4, 7, Annex A<br>3GPP TS 23.003 V10.10.0: Sections 2.1, 2.2, 2.4<br>3GPP TS 23.060 V10.14.0: Sections 5.3.0, 5.3.1, 5.3.6.2, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.4, 5.3.13.2, 5.6.3, 6.5.0, 6.5.2, 9.2, 9.2.2, 14.1, 14.2<br>3GPP TS 24.008 V10.15.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11, 6.1.3.13, 9.4.4, 9.4.4.2, 9.5.3                                                                                                                                                                                                                        | 3, 7             | 3GPP TS 22.368 V15.0.0: Sections 1, 3.1, 3.2, 4, 5.1.2, 5.1.3, 7.1.1, Annex A; Figures 5-1, 5-2, 5-3<br>3GPP TS 23.003 V15.8.0: Sections 1, 1.2, 2.1, 2.2, 2.2A, 2.10.1; Figure 1<br>3GPP TS 23.501 V15.9.0: Sections 4.2.2, 4.2.3, 4.2.4, 5.1, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.3.1, 5.3.2.1, 5.3.2.2, 5.3.3.2, 5.3.3.3, 5.3.3.2, 5.6.1, 5.6.2, 5.9.1, 5.9.2, 5.9.3, 5.9.4, 5.19.1, 5.19.7.1, 5.19.7.2, 5.19.7.3, 5.19.7.4, 6.1, 6.2.1, 6.2.2; Figures 4.2.3-1, 4.2.4-1<br>3GPP TS 24.501 V15.6.0: Sections 3.2, 4.1, 4.2, 5.1.1, 5.1.3.1, 5.1.3.2.1.1, 5.1.3.2.1.2, 5.1.3.2.1.2.4, 5.3.2, 5.3.3, 5.3.10, 5.3.11, 6.1.1, 6.2.3, 6.2.7, 6.2.8, 6.3.3.1, 6.3.3.2, 6.3.3.3, 8.3.3.1, 8.3.3.2, 8.3.14.1, 8.3.14.2; Figure 5.1.3.2.1.1; Tables 8.3.3.1.1, 8.3.14.1.1 |
|         |     | US9014667                                                  | 23 Oct 2029 | 35               | 3GPP TS 22.368 V10.5.0: Sections 3.1, 3.2, 4, 7.11, Annex A<br>3GPP TS 23.003 V10.10.0: Sections 2.1<br>3GPP TS 23.060 V10.14.0: Sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.2, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.3, 5.3.6.4, 5.3.13.2, 5.6.3, 6.5.0, 6.8.2.2, 13.1, 13.2.1, 13.2.3, 13.4, 14.1, 14.2<br>3GPP TS 24.008 V10.15.0: Sections 4.1.1.7, 4.7.3.1.4, 6.1.3.11                                                                                                                                                                                                                        | 35               | 3GPP TS 22.368 V10.5.0: sections 3.1, 3.2, 4, 7.1.1 and Annex: A: Informative<br>3GPP TS 22.003 V10.10.0: section 2.1<br>3GPP TS 23.060 V10.14.0: sections 5.3.0, 5.3.1, 5.3.6.2.1, 5.3.6.2.2, 5.3.6.2.3, 5.3.6.2.4, 5.3.6.3, 5.3.6.4, 5.3.13.2, 5.6.3, 6.5.0, 6.8.2.2, 13.1, 13.2.1, 13.2.3, 13.4, 14.1 and 14.2<br>3GPP TS 24.008 V10.15.0: sections 4.1.1.7, 4.7.3.1.4 and 6.1.3.11                                                                                                                                                                                                 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KPN007  | KPN | CNZL20080121914.6                                          | 22 Dec 2028 | 1                | 3GPP TS 26.237 V10.8.0, Sections 4.3, 8.1, 8.2.3, 8.2.3.1, 8.2.3.2, 13, 13.2, 21, 21.1 and 21.1.1, Figures 3, 4, 7, 30 and 46<br>3GPP TS 26.114 V10.8.0, sections 4.1, 6.1, 6.2 and 6.2.1 and Figure 4.1                                                                                                                                                                                                                                                                                                                                                                               | 1                | 3GPP TS 26.237 V10.8.0, Sections 4.3, 8.1, 8.2.3, 8.2.3.1, 8.2.3.2, 13, 13.2, 21, 21.1 and 21.1.1, Figures 3, 4, 7, 30 and 46<br>3GPP TS 26.114 V10.8.0, sections 4.1, 6.1, 6.2 and 6.2.1 and Figure 4.1                                                                                                                                                                                                                                                                                                                                                                               |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | JP4987126                                                  | 22 Dec 2028 | 1                | 3GPP TS 26.237 V10.8.0: Section 4.3, 7, 7.1, 8, 8.1, 8.2.3, 8.2.3.1, 8.2.3.2, 13, 13.1, 13.1, 13.2; Figures 3, 4, 7, 30<br>3GPP TS 26.114 V10.8.0: Section 4.1, 6, 6.1; Figure 4.1<br>3GPP TS 26.346 V9.15.0: Section 5.2, 5.2.1, 5.2.3, 5.2.3.1, 5.2.4, 5.2.5, 5.2.5.1, 5.2.5.2, 5.2.5.3                                                                                                                                                                                                                                                                                              | 1                | 3GPP TS 26.237 V10.8.0: Section 4.3, 7, 7.1, 8, 8.1, 8.2.3, 8.2.3.1, 8.2.3.2, 13, 13.1, 13.2; Figures 3, 4, 7, 30<br>3GPP TS 26.114 V10.8.0: Section 4.1, 6, 6.1; Figure 4.1<br>3GPP TS 26.346 V9.15.0: Section 5.2, 5.2.1, 5.2.3, 5.2.3.1, 5.2.4, 5.2.5, 5.2.5.1, 5.2.5.2, 5.2.5.3                                                                                                                                                                                                                                                                                                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | US8549151                                                  | 04 Jul 2029 | 1                | 3GPP TS 26.234 V10.5.0 Sections 5.6.1, 5.6.2<br>3GPP TS 26.237 V10.8.0 Sections 4.3, 8.1, 8.2.3.1, 8.2.3.2, 8.2.4.1, 8.2.4.2, 8.2.4.3, 13, 13.1, 13.2, 21, 21.1.1, 21.1.4; Figure 3, 4, 7, 8, 30, 46<br>3GPP TS 26.114 V10.8.0 Sections 4.1, 6.1, 6.2.1, 6.5; Figure 4.1                                                                                                                                                                                                                                                                                                               | 1                | 3GPP TS 26.234 V10.5.0 Sections 5.6.1, 5.6.2<br>3GPP TS 26.237 V10.8.0 Sections 4.3, 8.1, 8.2.3.1, 8.2.3.2, 8.2.4.1, 8.2.4.2, 8.2.4.3, 13, 13.1, 13.2, 21, 21.1.1, 21.1.4; Figure 3, 4, 7, 8, 30, 46<br>3GPP TS 26.114 V10.8.0 Sections 4.1, 6.1, 6.2.1, 6.5; Figure 4.1                                                                                                                                                                                                                                                                                                               |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KPN008  | KPN | EP2517495 (DE, ES, FI, FR, GB, NL, PL, SE)                 | 16 Dec 2030 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                | 3GPP TS 32.521 V10.2.0: Section 4.1<br>3GPP TS 32.522 V10.6.0: Section 4.5.3.1<br>3GPP TS 36.331 V10.12.0: Sections 5.6.5.1, 5.6.5.2, 5.6.5.3, 5.6.6.1, 5.6.6.2<br>3GPP TS 37.320 V10.4.0: Sections 4.1, 5.1.1.1, 5.1.1.3.2, 5.1.1.3.3, 5.1.3, 5.1.4.7, Annex                                                                                                                                                                                                                                                                                                                          |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | USRE48089                                                  | 08 Jan 2031 | 6                | 3GPP TS 37.320 V10.4.0: Sections 1, 3.1, 4.1, 5.1.1, 5.1.1.1, 5.1.1.2, 5.1.1.3.3, 5.1.1.3.2, 5.1.1.3.3, Annex A<br>3GPP TS 32.422 V10.13.0: Section 6<br>3GPP TS 36.331 V10.12.0: Sections 5.6.6, 5.6.6.1, 5.6.6.2, 6.2.2                                                                                                                                                                                                                                                                                                                                                              | 6                | 3GPP TS 37.320 V10.4.0: Sections 1, 3.1, 4.1, 5.1.1, 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.3.2, 5.1.1.3.3, Annex A<br>3GPP TS 32.422 V10.13.0: Section 6<br>3GPP TS 36.331 V10.12.0: Sections 5.6.6, 5.6.6.1, 5.6.6.2, 6.2.2                                                                                                                                                                                                                                                                                                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KPN009  | KPN | CNZL201080013541.8                                         | 19 Jan 2030 | 1, 5, 12, 13, 14 | 3GPP TS 23.228 V12.10.0: Sections U.1.0, U.1.2, U.1.3.1 and U.2.2, Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2 and 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1, 5, 12, 13, 14 | 3GPP TS 23.228 V12.10.0: Sections U.1.0, U.1.2, U.1.3.1 and U.2.2, Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2 and 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1, 5, 12, 13, 14 | 3GPP TS 23.228 V12.10.0: Sections U.1.0, U.1.2, U.1.3.1 and U.2.2, Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2 and 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|         |     | JP5436577                                                  | 19 Jan 2030 | 17               | 3GPP TS 23.228 V12.4.0: Annex U.1.0, U.1.2, U.2.2; Fig. U.1.2-1<br>3GPP TS 24.371 V12.9.0: Sections 1, 2, 4.1, 5D.1, 5D.2, 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17               | 3GPP TS 23.228 V12.4.0: Annex U.1.0, U.1.2, U.2.2; Fig. U.1.2-1<br>3GPP TS 24.371 V12.9.0: Sections 1, 2, 4.1, 5D.1, 5D.2, 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | US9667669                                                  | 13 Oct 2030 | 1, 15, 16        | 3GPP TS 23.228 V12.10.0: Sections 4.6.1, U.1.0, U.1.2, U.1.3.1, U.2.2; Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2, 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1, 15, 16        | 3GPP TS 23.228 V12.10.0: Sections 4.6.1, U.1.0, U.1.2, U.1.3.1, U.2.2; Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2, 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1, 15, 16        | 3GPP TS 23.228 V12.10.0: Sections 4.6.1, U.1.0, U.1.2, U.1.3.1, U.2.2; Figure U.1.2-1<br>3GPP TS 23.371 V12.4.0: Sections 1, 2, 4.1, 5D.1, 5D.2, 7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| KPN010  | KPN | US8660560                                                  | 05 Oct 2030 | 1, 9             | 3GPP TS 37.320 V10.4.0: Sections 3.1, 4.1, 5.1.1, 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.3.3; Figure 5.1.1.1-1<br>3GPP TS 25.484 V10.2.0: Section 4.1; Figure 4.1-1<br>3GPP TS 32.422 V10.13.0: Sections 4.1.1.2a, 4.1.5, 6; Figure 6.2<br>3GPP TS 25.331 V10.15.0: Sections 8.5.6.3, 8.5.6.3.1, 8.5.6.3.2, 8.5.6.4.1, 8.5.6.4.2, 8.5.6.4.3, 10.2, 10.2.16d, 10.2.48, 10.2.48.8, 10.2.48.8.6, 10.2.48.8.7, 10.2.48.8.14, 10.2.48.8.15, 10.3.7, 10.3.7.13, 10.3.7.23, 10.3.7.33, 11.3; Figure 8.5.6.4.1-1<br>3GPP TS 25.304 V10.7.0: Section 5.7<br>3GPP TS 25.304 V10.10.0: Section 4.7.4.15 | 1, 9             | 3GPP TS 37.320 V10.4.0: Sections 3.1, 4.1, 5.1.1, 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.3.3; Figure 5.1.1.1-1<br>3GPP TS 25.484 V10.2.0: Section 4.1; Figure 4.1-1<br>3GPP TS 32.422 V10.13.0: Sections 4.1.1.2a, 4.1.5, 6; Figure 6.2<br>3GPP TS 25.331 V10.15.0: Sections 8.5.6.3, 8.5.6.3.1, 8.5.6.3.2, 8.5.6.4.1, 8.5.6.4.2, 8.5.6.4.3, 10.2, 10.2.16d, 10.2.48, 10.2.48.8, 10.2.48.8.6, 10.2.48.8.7, 10.2.48.8.14, 10.2.48.8.15, 10.3.7, 10.3.7.13, 10.3.7.23, 10.3.7.33, 11.3; Figure 8.5.6.4.1-1<br>3GPP TS 25.304 V10.7.0: Section 5.7<br>3GPP TS 25.304 V10.10.0: Section 4.7.4.15 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KPN011* | KPN | EP0831613 (BE, CH, DE, ES, FI, FR, GB, IE, IT, LU, NL, SE) | 21 Nov 2016 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                | 3GPP TS 36.212 V8.8.0: Sections 5, 5.1.1, 5.1.2, 5.3.2, 5.3.2.1; Figure 5.3.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KPN012  | KPN | EP2299649 (DE, ES, FI, FR, GB, HU, IT, NL, PL, SE)         | 16 Sep 2030 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1, 15            | 3GPP TS 23.228 V10.4.0: Sections 3.1, 4.1.4, 3GPP TS 24.229 V10.3.0: Sections 1, 3.2, 5.3, 5.3.2, 5.3.2.1, 5.3.2.1A, 5.4, 5.4.3.1, 5.4.3.2, 5.7, 5.7.1.3A, 5.7.1.7, 5.7.1.7.25.10, 5.10.1, 5.10.3, ETSI TS 124.229 V10.3.0                                                                                                                                                                                                                                                                                                                                                             |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|         |     | JP5237340                                                  | 17 Sep 2030 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1, 15            | 3GPP TS 23.228 V10.4.0: Sections 3.1, 4.1.4, 3GPP TS 24.229 V10.3.0: Sections 1, 3.2, 5.3, 5.3.2, 5.3.2.1, 5.3.2.1A, 5.4, 5.4.3.1, 5.4.3.2, 5.7, 5.7.1.3A, 5.7.1.7, 5.7.1.7.25.10, 5.10.1, 5.10.3, ETSI TS 124.229 V10.3.0                                                                                                                                                                                                                                                                                                                                                             |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|         |              |                                                                              |             |      |                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------|--------------|------------------------------------------------------------------------------|-------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KPN012  | KPN          | US8601141                                                                    | 31 Jan 2031 |      |                                                                                                                                                        | 1, 15            | 3GPP TS 23.228 V10.4.0: Sections 3.1, 4.14,<br>3GPP TS 24.229 V10.3.0: Sections 1.3.2, 5.3, 5.3.2, 5.3.2.1, 5.3.2.1A, 5.4,<br>5.4.3.1, 5.4.3.2, 5.7, 5.7.1.3A, 5.7.1.7, 5.7.1.7.25.10, 5.10.1, 5.10.3,<br>5.10.3.2, 7.2A, 7.2A.6, 7.2A.6.1, 7.2A.6.3<br>ETSI TS 124.229 V10.3.0                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN014  | KPN          | EP2567564<br>(DE, FI, FR, GB, NL, SE)                                        | 04 May 2031 |      |                                                                                                                                                        | 1                | 3GPP TS 32.551 V11.3.1: Sections 3.1, 4.1.1<br>3GPP TS 36.300 V11.9.0: Sections 20.2.2.15, 22.4.4.2<br>3GPP TS 36.413 V11.6.0: Sections B.1.14                                                                                                                                                                                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN015* | KPN          | AU684543                                                                     | 31 Aug 2014 |      |                                                                                                                                                        | 1                | 3GPP TS 22.278 V10.2.0: 2010-09; section 7.2<br>3GPP TS 23.402 V10.0.0: 2010-06: section 4.5.1, 4.8.2.1                                                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | EP0716797<br>(AT, BE, CH, DE, DK, ES, FR, GB,<br>GR, IE, IT, LU, NL, PT, SE) | 31 Aug 2014 |      |                                                                                                                                                        | 1                | 3GPP TS 22.278 V10.2.0: Section 7.2<br>3GPP TS 23.402 V10.0.0: Section 4.5.1, 4.8.2.1                                                                                                                                                                                                                                                                                                                                               |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | JP3525258                                                                    | 10 May 2019 |      |                                                                                                                                                        | 1                | 3GPP TS 22.278 V10.2.0: 2010-09; section 7.2<br>3GPP TS 23.402 V10.0.0: 2010-06: section 4.5.1, 4.8.2.1                                                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN017  | KPN          | EP2566263<br>(DE, FI, FR, GB, IT, NL, PL, SE)                                | 05 Oct 2030 |      |                                                                                                                                                        | 1, 2, 9          | 3GPP TS 23.003 V13.10.0 (included by reference in TS 23.682 V13.9.0<br>and in TS 36.331 V13.6.1); Section 15.3<br>3GPP TS 23.246 V13.3.0 (included by reference in TS 23.682 V13.9.0<br>and in TS 36.331 V13.6.1); Sections 3.1, 4.4.3, 4.4.3.3, 4.4.3.4; Figure 4<br>3GPP TS 23.682 V13.9.0: Sections 1, 4.2, 4.5.5, 5.5.1; Figure 5.5.1-1<br>3GPP TS 36.331 V13.6.1: Sections 5.8.1.1, 5.8.2.1, 6.2.2, 6.3.7; Figure<br>5.8.2.1-1 |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN018  | KPN          | US9699820                                                                    | 29 Aug 2033 |      |                                                                                                                                                        | 16               | 3GPP TS 23.303 V12.8.0: Sections 5.6.2; Annex A.2                                                                                                                                                                                                                                                                                                                                                                                   |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN019  | KPN          | CNZL200980152983.8                                                           | 28 Oct 2029 |      |                                                                                                                                                        | 19               | 3GPP TS 23.401 V13.6.0: Sections 4.1.1, 5.3.2.1, 5.3.4B, 5.3.4B.1,<br>5.3.4B.2; Figure 5.3.2.1-1, 5.3.4B.2-1<br>3GPP TS 23.682 V13.5.0: Section 5.13.4; Figure 5.13.4-1                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | US9372098                                                                    | 13 Dec 2030 |      |                                                                                                                                                        | 1, 15, 17,<br>21 | 3GPP TS 23.401 V13.8.0: Sections 4.1.1, 5.3.4 B, 5.3.4 B.1; Figure 5.3.4. B-<br>1<br>3GPP TS 23.682 V13.6.0: Sections 5.13.4; Figure 5.13.4-1                                                                                                                                                                                                                                                                                       | 1, 21     | 3GPP TS 23.401 V16.4.0 (included by reference into TS 23.501); Sections<br>4.10<br>3GPP TS 23.501 V16.2.0: Sections 5.31.1, 5.31.4.1<br>3GPP TS 23.502 V16.2.0: Sections 4.24.1, 4.25.4; Figures 4.24.1-1,<br>4.25.4-1<br>3GPP TS 24.501 V16.4.1: Sections 4.1, 5.3.21, 5.6.1.1, 5.6.1.2.2, 5.6.1.4.2                                                                                                                         |
| KPN020  | KPN          | US9820134                                                                    | 23 Jan 2034 |      |                                                                                                                                                        | 1, 10, 11,<br>12 | 3GPP TS 23.303 V13.6.0: Sections 3.1, 3.2, 4.6.4.2a, 5.3.1.2, 5.3.2A,<br>5.3.3A.2, 5.3.3A.4; Figures 5.3.2A-1, 5.3.3A.2A-1, 5.3.3A.4A-1                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN021  | KPN          | EP2656648<br>(DE, FI, FR, GB, IT, NL, SE)                                    | 06 Dec 2031 |      |                                                                                                                                                        | 1, 9             | 3GPP TS 33.163 V15.3.0: Sections 3.1, 4.5, 4.6.2.2, 5.1.0, 5.1.3; Figures<br>4.6.2.2-1; Table 5.1.3-1                                                                                                                                                                                                                                                                                                                               |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| KPN022  | KPN          | US9907101                                                                    | 15 Jul 2034 |      |                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1, 12, 19 | 3GPP TS 23.501 V15.4.0: Sections 1, 3.1, 3.2, 4.2.1, 4.2.2, 5.1, 5.2.1, 5.3.1,<br>5.3.2.1, 5.3.2.2.1, 5.3.2.2.2, 5.6.1, 5.6.2, 8.2.2.1, 8.2.2.2; Figure 8.2.2.2-1<br>3GPP TS 23.502 V15.4.0: Sections 4.2.2.1, 4.2.2.2, 4.3.2.1, 4.3.2.2.1,<br>5.2.2.2.1, 5.2.2.2.2, 5.2.3.3.1, 5.2.3.3.2; Figures 4.2.2.2.2-1, 4.3.2.2.1-1;<br>Tables 5.2.2.2.2-1, 5.2.3.3.1-1<br>3GPP TS 38.202 V15.3.0: Sections 5, 5.1.1; Figure 5.11.1-1 |
| KPN023  | KPN          | EP2377337<br>(DE, FR, GB, IT, NL)                                            | 15 Dec 2029 |      |                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1, 12     | 3GPP TS 33.501 V15.0.0: Section 3.2, 6.1.1.1, 6.1.1.4.1, 6.1.1.4.2, 6.1.2,<br>6.1.3.2.0, Annex A.4                                                                                                                                                                                                                                                                                                                            |
|         |              | US8881235                                                                    | 09 Jul 2030 |      |                                                                                                                                                        |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1, 10     | 3GPP TS 33.501 V15.0.0: Section 4.1, 6.1.1.1, 6.1.1.4.1, 6.1.1.4.2, 6.1.2,<br>6.1.3.2; Annex A4; Figure 6.1.2-1                                                                                                                                                                                                                                                                                                               |
| LGE001* | 3G Licensing | CNZL200410049109.0                                                           | 15 Mar 2020 | 1, 3 | 3GPP TS 25.211 V6.10.0: Sections 5.2, 5.2.1, 5.2.1.1; Figure 1; Table 3                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | EP1850511<br>(DE, ES, FI, FR, GB, IT, NL, SE)                                | 15 Mar 2020 | 1    | 3GPP TS 25.211 V6.10.0: Sections 5.2, 5.2.1, 5.2.1.1; Figure 1; Table 3                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | EP2081306<br>(DE, ES, FI, FR, GB, IT, NL, SE)                                | 15 Mar 2020 | 1    | 3GPP TS 25.211 V6.10.0: Sections 5.2, 5.2.1, 5.2.1.1; Figure 1; Table 3                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | JP4318963                                                                    | 15 Mar 2020 | 1    | 3GPP TS 25.211 V6.10.0: Sections 5.2, 5.2.1, 5.2.1.1; Figure 1; Table 3                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | US7496132                                                                    | 30 Jan 2021 | 1    | 3GPP TS 25.211 V6.10.0: Sections 5.2, 5.2.1, 5.2.1.1; Figure 1; Table 3                                                                                |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| LGE002  | 3G Licensing | EP1483850<br>(DE, FR, GB, IT, NL, SE)                                        | 11 Feb 2023 | 1    | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | GB2412553                                                                    | 14 Feb 2023 | 1    | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | HK1084252                                                                    | 14 Feb 2023 | 1    | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | IN201131                                                                     | 11 Feb 2023 | 1    | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | JP4383887                                                                    | 11 Feb 2023 | 1    | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | US7319718                                                                    | 03 Feb 2026 | 15   | 3GPP TS 25.212 V6.10.0: Section 4.7.1.2; Table 14                                                                                                      |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| LGE004  | 3G Licensing | AU2005249137                                                                 | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | CNZL200580017591.2                                                           | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | IN253908                                                                     | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | KR10-1141326                                                                 | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | MX261740                                                                     | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | RU2346392                                                                    | 11 May 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | US7580388                                                                    | 16 Mar 2027 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|         |              | US7715344                                                                    | 25 Feb 2025 | 1    | 3GPP TS 25.331 V6.26.0: Sections 8.1.1.6.5, 10.3.5.2a, 10.3.6.55                                                                                       |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| LGE006  | 3G Licensing | AU2005227794                                                                 | 30 Mar 2025 | 10   | 3GPP TS 25.211 V6.7.0: Sections 4.1.1.2, 5.3.3.14; Figure 26C<br>3GPP TS 25.309 V6.5.0: Section 9.1<br>3GPP TS 25.321 V6.8.0: Sections 8.1.2, 11.8.1.4 |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                               |

|         |              |                                           |             |       |                                                                                                                                                        |   |                                                                                           |   |                                                                                                                                                                                                   |
|---------|--------------|-------------------------------------------|-------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LGE006  | 3G Licensing | MX269368                                  | 30 Mar 2025 | 16    | 3GPP TS 25.211 V6.7.0: Sections 4.1.1.2, 5.3.3.14; Figure 26C<br>3GPP TS 25.309 V6.5.0: Section 9.1<br>3GPP TS 25.321 V6.8.0: Sections 8.1.2, 11.8.1.4 |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | RU2381633                                 | 30 Mar 2025 | 16    | 3GPP TS 25.211 V6.7.0: Sections 4.1.1.2, 5.3.3.14; Figure 26C<br>3GPP TS 25.309 V6.5.0: Section 9.1<br>3GPP TS 25.321 V6.8.0: Sections 8.1.2, 11.8.1.4 |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE009  | 3G Licensing | AU2005287986                              | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | BRP0516317-0                              | 29 Sep 2029 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | CNZL200580033248.7                        | 29 Sep 2025 | 1, 21 | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | EP1794987<br>(DE, ES, FI, FR, IT, NL, SE) | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | EP2252037<br>(DE, FR, GB, NL)             | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | IN283724                                  | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | JP4965723                                 | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | KR10-1141650                              | 15 Jun 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7649907                                 | 07 Jul 2027 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7830913                                 | 29 Sep 2025 | 1     | 3GPP TS 25.301 V6.6.0: Sections 5.3.1.1.2.1; Figure 4<br>3GPP TS 25.321 V6.18.0: Sections 9.1.5; Figures 9.1.5.1, 9.1.5.2                              |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE011  | 3G Licensing | US8923237                                 | 25 Nov 2026 | 1     | 3GPP TS 25.322 V7.10.0: Sections 1, 3.2, 4.2, 4.2.1, 4.2.1.2, 4.2.1.2.2, 8, 8.1, 8.2, 9.2.2.3, 9.5, 9.6, 9.7.10; Figure 4.3a; Table 8.1                |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US9078254                                 | 31 Jul 2026 | 1     | 3GPP TS 25.322 V7.10.0: Sections 1, 3.2, 4.2, 4.2.1, 4.2.1.2, 4.2.1.2.2, 8, 8.1, 8.2, 9.2.2.3, 9.5, 9.6, 9.7.10; Figure 4.3a; Table 8.1                |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US9179460                                 | 31 Jul 2026 | 1     | 3GPP TS 25.322 V7.10.0: Sections 1, 3.2, 4.2, 4.2.1, 4.2.1.2, 4.2.1.2.2, 8, 8.1, 8.2, 9.2.2.3, 9.5, 9.6, 9.7.10; Figure 4.3a; Table 8.1                |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US9504030                                 | 31 Jul 2026 | 1     | 3GPP TS 25.322 V7.10.0: Sections 1, 3.2, 4.2, 4.2.1, 4.2.1.2, 4.2.1.2.2, 8, 8.1, 8.2, 9.2.2.3, 9.5, 9.6, 9.7.10; Figure 4.3a; Table 8.1                |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE015  | 3G Licensing | US9319198                                 | 03 May 2025 | 3     | 3GPP TS 25.214 V6.11.0: Sections 3.2, 4.2.4.4, 6B, 6B.1<br>3GPP TS 25.321 V6.18.0: Sections 9.2.5, 9.2.5.1<br>3GPP TS 25.433 V6.17.0: Sections 9.1.17  |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US9923697                                 | 06 Jul 2025 | 4     | 3GPP TS 25.214 V6.11.0: Sections 3.2, 4.2.4.4, 6B, 6B.1<br>3GPP TS 25.321 V6.18.0: Sections 9.2.5, 9.2.5.1<br>3GPP TS 25.433 V6.17.0: Sections 9.1.17  |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE019  | 3G Licensing | EP1315356<br>(DE, FI, FR, GB, IT, NL, SE) | 22 Nov 2022 | 13    | 3GPP TS 25.323 V6.11.0: Section 5.1.2.3<br>3GPP TS 25.322 V6.12.0: Sections 8.1, 8.2; Table 8.1                                                        |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | IN206735                                  | 23 Nov 2022 | 14    | 3GPP TS 25.323 V6.11.0: Section 5.1.2.3<br>3GPP TS 25.322 V6.12.0: Sections 8.1, 8.2; Table 8.1                                                        |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | KR10-0765122                              | 24 Nov 2021 | 30    | 3GPP TS 25.323 V6.11.0: Section 5.1.2.3<br>3GPP TS 25.322 V6.12.0: Sections 8.1, 8.2; Table 8.1                                                        |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7486699                                 | 08 Oct 2025 | 13    | 3GPP TS 25.323 V6.11.0: Section 5.1.2.3<br>3GPP TS 25.322 V6.12.0: Sections 8.1, 8.2; Table 8.1                                                        |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE023  | 3G Licensing | AU2004307900                              | 03 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | BRP0414892-4                              | 03 Nov 2028 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | EP1683282<br>(DE, FI, FR, GB, IT, NL)     | 03 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | IN257749                                  | 03 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | JP4599361                                 | 03 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | KR10-1158912                              | 10 Nov 2023 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | RU2360363                                 | 03 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7593407                                 | 13 Nov 2026 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7809000                                 | 09 Nov 2024 | 1     | 3GPP TS 25.321 V6.18.0: Section 11.6.2.3.2                                                                                                             |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE027* | 3G Licensing | US7656803                                 | 27 Aug 2020 | 1     | 3GPP TS 25.301 V8.7.0: Sections 5.1; Figure 2<br>3GPP TS 25.321 V8.17.0: Section 11.1<br>3GPP TS 25.331 V8.6.0: Section 14.4.2                         |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE032* | 3G Licensing | CNZL01131011.1                            | 31 Aug 2021 | 37    | 3GPP TS 25.322 V7.10.0: Sections 4.2.1.3, 9.2.2.1, 9.7.8; Figure 4.4, 9.19, 9.20                                                                       |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | KR10-0365356                              | 07 Oct 2020 | 2     | 3GPP TS 25.322 V7.10.0: Sections 4.2.1.3, 9.2.2.1, 9.7.8; Figure 4.4, 9.19, 9.20                                                                       |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7154873                                 | 04 Feb 2024 | 12    | 3GPP TS 25.322 V7.10.0: Sections 4.2.1.3, 9.2.2.1, 9.7.8; Figure 4.4, 9.19, 9.20                                                                       |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US8325692                                 | 12 Jul 2022 | 4     | 3GPP TS 25.322 V7.10.0: Sections 4.2.1.3, 9.2.2.1, 9.7.8; Figure 4.4, 9.19, 9.20                                                                       |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE034* | 3G Licensing | CNZL02103099.5                            | 19 Feb 2022 | 41    | 3GPP TS 25.321 V6.18.0: Sections 9.2.5.2.1, 9.2.5.3.1, 11.8.1.3<br>3GPP TS 25.212 V6.10.0: Sections 4.1.2; Table 17                                    |   |                                                                                           |   |                                                                                                                                                                                                   |
|         |              | US7215653                                 | 30 Sep 2024 | 37    | 3GPP TS 25.321 V6.18.0: Sections 9.2.5.2.1, 9.2.5.3.1, 11.8.1.3<br>3GPP TS 25.212 V6.10.0: Sections 4.1.2; Table 17                                    |   |                                                                                           |   |                                                                                                                                                                                                   |
| LGE036  | 3G Licensing | US9635142                                 | 25 Aug 2023 |       |                                                                                                                                                        | 9 | 3GPP TS 36.331 V8.21.0: Sections 5.3.10.3, 6.3.2<br>3GPP TS 36.323 V8.6.0: Sections 5.5.1 | 9 | 3GPP TS 38.323 V15.6.0: Sections 4.4., 5.7.1, 5.7.2, 5.7.3, 5.7.5; Table 5.7.1-1<br>3GPP TS 38.331 V15.6.0: Title; Sections 1, 3.2, 5.3.5.1, 5.3.5.6.1, 5.3.5.6.5, 6.2.2, 6.3.2; Figure 5.3.5.1-1 |
| LGE037* | 3G Licensing | US8451818                                 | 26 Jun 2020 | 1     | 3GPP TS 25.322 V8.9.0: Sections 4.2, 4.2.1.1, 4.2.1.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.3, 9.2.1.3; Figures 4.2.4, 4.4, 9.2                                 |   |                                                                                           |   |                                                                                                                                                                                                   |

|         |                      |                                           |             |  |  |             |                                                                                                                                                                                                                                                                                                                                                                                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------|----------------------|-------------------------------------------|-------------|--|--|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LGE038* | 3G Licensing         | US7782833                                 | 03 Jul 2020 |  |  | 1           | 3GPP TS 36.321 V8.12.0: Sections 1, 3.2, 4.2.1, 4.3.1, 4.3.2, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.3.1, 4.5.3.2, 6.1.1, 6.1.2, 6.2.1; Figures 4.2.1.1, 4.5.3.1-1, 4.5.3.2-1, 6.1.2-1, 6.1.2-2, 6.1.2-3; Tables 4.4-1, 4.5.1-1, 4.5.2-1, 4.5.3.1-1, 4.5.3.2-1<br>3GPP TS 36.322 V8.8.0: Sections 3.2, 4.2.1, 4.3.2; Figure 4.2.1-1                                                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| LGE041  | 3G Licensing         | JP5685564                                 | 18 Jun 2027 |  |  | 1           | 3GPP TS 36.321 V8.12.0: Sections 5.3.2.1, 5.3.2.2<br>3GPP TS 36.212 V8.8.0: Section 5.2.3.1<br>3GPP TS 36.213 V8.8.0: Section 10.1                                                                                                                                                                                                                                              | 1    | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 38.213 V15.12.0: Sections 9.1, 9.1.2, 9.1.2.1<br>3GPP TS 38.321 V15.12.0: Sections 3.1, 3.2, 5.3.1, 5.3.2.1, 5.3.2.2<br>3GPP TS 38.213 V15.12.0: Sections 9.2, 9.2.6                                                                                                                                                                                                                                                                                                                                                                                 |
|         |                      | US8130819                                 | 15 Jun 2027 |  |  | 1           | 3GPP TS 36.321 V8.12.0: Sections 5.3.2.1, 5.3.2.2<br>3GPP TS 36.212 V8.8.0: Section 5.2.3.1<br>3GPP TS 36.213 V8.8.0: Section 10.1                                                                                                                                                                                                                                              | 1,2  | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 38.213 V15.12.0: Sections 9.1, 9.1.2, 9.1.2.1<br>3GPP TS 38.321 V15.12.0: Sections 3.1, 3.2, 5.3.1, 5.3.2.1, 5.3.2.2<br>3GPP TS 38.213 V15.12.0: Sections 9.2, 9.2.6                                                                                                                                                                                                                                                                                                                                                                                 |
| LNG001  | Sisvel International | CNZL201410090475.4                        | 12 Mar 2034 |  |  | 1           | 3GPP TS 36.212 V12.3.0: Sections 5.3.3, 5.3.3.1.1, 5.3.3.1.8<br>3GPP TS 36.213 V12.4.0: Sections 7.1, 8.0; Table 8-2<br>3GPP TS 36.306 V12.3.0: Sections 4.3.4, 4.3.4.28                                                                                                                                                                                                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | EP3537814<br>(DE, ES, FR, GB, IT, NL)     | 05 Aug 2034 |  |  | 1           | 3GPP TS 36.212 V12.3.0: Sections 5.3.3, 5.3.3.1.1, 5.3.3.1.8<br>3GPP TS 36.213 V12.4.0: Sections 7.1, 8.0; Table 8-2<br>3GPP TS 36.306 V12.3.0: Sections 4.3.4, 4.3.4.28                                                                                                                                                                                                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | KR10-2251839                              | 05 Aug 2034 |  |  | 1           | 3GPP TS 36.212 V12.3.0: Sections 5.3.3, 5.3.3.1.1, 5.3.3.1.8<br>3GPP TS 36.213 V12.4.0: Sections 7.1, 8.0; Table 8-2<br>3GPP TS 36.306 V12.3.0: Sections 4.3.4, 4.3.4.28                                                                                                                                                                                                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | US10498520                                | 05 Aug 2034 |  |  | 1, 11       | 3GPP TS 36.212 V12.4.0: Sections 7.1, 8.0; Table 8-2<br>3GPP TS 36.212 V12.3.0: Sections 5.3.3, 5.3.3.1.1, 5.3.3.1.8<br>3GPP TS 36.306 V12.3.0: Sections 4.3.4, 4.3.4.28                                                                                                                                                                                                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | US9973324                                 | 21 Jan 2035 |  |  | 1, 11       | 3GPP TS 36.212 V12.3.0: Sections 5.3.3, 5.3.3.1.1, 5.3.3.1.8<br>3GPP TS 36.213 V12.4.0: Sections 7.1, 8.0; Table 8-2<br>3GPP TS 36.306 V12.3.0: Section 4.3.4                                                                                                                                                                                                                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| LNG002  | Sisvel International | CNZL201410852934.8                        | 26 Dec 2034 |  |  | 1, 5, 9, 13 | 3GPP TS 36.212 V13.0.0: Sections 1, 5.3.3, 5.3.3.1, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3, 5.3.3.1.3A, 5.3.3.1.4A, 5.3.3.1.5, 5.3.3.1.5A, 5.3.3.1.5B, 5.3.3.1.5C, 5.3.3.1.5D, 5.3.3.1.8<br>3GPP TS 36.331 V13.1.0: Sections 1, 4.1, 5.3.5.1-6, 6.2.2, 6.3.2, 6.3.4, 6.4; Figures 5.3.5.1-1, 5.3.5.1-2<br>3GPP TS 36.213 V13.1.0: Sections 7.1, 8.0                                    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | EP3240345<br>(DE, ES, FR, GB, IT, NL)     | 28 Dec 2035 |  |  | 1           | 3GPP TS 36.212 V13.0.0: Sections 1, 5.3.3, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3, 5.3.3.1.3A, 5.3.3.1.4A, 5.3.3.1.5, 5.3.3.1.5A, 5.3.3.1.5B, 5.3.3.1.5C, 5.3.3.1.5D, 5.3.3.1.8<br>3GPP TS 36.331 V13.1.0: Sections 1, 4.1, 5.3.5.1-6, 6.2.2, 6.3.2, 6.3.4, 6.4, 8.0; Figures 5.3.5.1-1, 5.3.5.1-2<br>3GPP TS 36.213 V13.1.0: Sections 7.1, 8.0<br>3GPP TS 23.003 V8.17.0: Section 7.1 | 1    | 3GPP TS 38.212 V15.8.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1.2, 7.3.1.2.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.9.0: Section 10.1<br>3GPP TS 38.300 V15.9.0: Sections 5.4.1, 7.1, 7.7<br>3GPP TS 38.331 V15.9.0: Sections 3.1, 3.2, 5.1.2, 5.1.3, 5.3.3.1, 5.3.5.1, 5.3.5.1.1, 5.3.5.5.9, 6.2, 6.3.2, 6.4; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.5.1-2                                                                                                                                                                                                                                            |
|         |                      | KR10-2483737                              | 28 Dec 2035 |  |  | 1           | 3GPP TS 36.212 V13.0.0: Sections 1, 5.3.3, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3, 5.3.3.1.3A, 5.3.3.1.4A, 5.3.3.1.5, 5.3.3.1.5A, 5.3.3.1.5B, 5.3.3.1.5C, 5.3.3.1.5D, 5.3.3.1.8<br>3GPP TS 36.331 V13.1.0: Sections 1, 4.1, 5.3.5.1-6, 6.2.2, 6.3.2, 6.3.4, 6.4, 8.0; Figures 5.3.5.1-1, 5.3.5.1-2<br>3GPP TS 36.213 V13.1.0: Sections 7.1, 8.0<br>3GPP TS 23.003 V8.17.0: Section 7.1 | 1    | 3GPP TS 38.212 V15.8.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1.2, 7.3.1.2.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.9.0: Section 10.1<br>3GPP TS 38.300 V15.9.0: Sections 5.4.1, 7.1, 7.7<br>3GPP TS 38.331 V15.9.0: Sections 3.1, 3.2, 5.1.2, 5.1.3, 5.3.3.1, 5.3.5.1, 5.3.5.1.1, 5.3.5.5.9, 6.2, 6.3.2, 6.4; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.5.1-2                                                                                                                                                                                                                                            |
|         |                      | US10412748                                | 14 Apr 2036 |  |  | 1           | 3GPP TS 36.212 V13.0.0: Sections: 5.3.3, 5.3.3.1, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3<br>3GPP TS 36.331 V13.1.0: Sections 6.2, 6.2.2, 6.3.2, 6.3.4, 6.4, 8.0<br>3GPP TS 23.003 V8.17.0: Section 7.1                                                                                                                                                                                 | 1, 9 | 3GPP TS 38.212 V15.8.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1.2, 7.3.1.2.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.9.0: Section 10.1<br>3GPP TS 38.300 V15.9.0: Sections 5.4.1, 7.1, 7.7<br>3GPP TS 38.331 V15.9.0: Sections 3.1, 3.2, 5.1.2, 5.1.3, 5.3.3.1, 5.3.5.1, 5.3.5.5.1, 5.3.5.5.9, 6.2, 6.3.2, 6.4; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.5.1-2                                                                                                                                                                                                                                            |
| LNG003  | Sisvel International | US9749969                                 | 12 Feb 2035 |  |  | 1, 9        | 3GPP TS 36.331 V13.1.0: Sections 3.1, 3.2, 4.2.2, 5.2.1.1, 5.2.2.1, 5.3.3.1, 6.2.2, 6.3.1, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1<br>3GPP TS 36.213 V12.5.0: Sections 5.1.2, 5.1.2.1, 5.1.4, 5.1.4.1, 5.1.4.2<br>3GPP TS 36.101 V12.5.0: Sections 6.2.2                                                                                                                            |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| LNG004  | Sisvel International | CNZL201510040667.9                        | 27 Jan 2035 |  |  | 1, 8        | 3GPP TS 36.321 V14.3.0: Sections 5.4.4<br>3GPP TS 36.331 V14.3.0: Sections 3.1, 6.3.2<br>3GPP TS 36.213 V14.7.0: Sections 10, 10.1, 10.1.5                                                                                                                                                                                                                                      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|         |                      | EP3253144<br>(DE, ES, FR, GB, IT, NL, PL) | 28 Dec 2035 |  |  | 1, 8        | 3GPP TS 36.321 V14.3.0: Sections 3.1, 3.2, 5.4, 5.4.4<br>3GPP TS 36.331 V14.3.0: Sections 3.1, 6.3, 6.3.2<br>3GPP TS 36.213 V14.7.0: Sections 10, 10.1, 10.1.5                                                                                                                                                                                                                  | 1, 8 | 3GPP TS 38.101-1 V16.9.0: Section 6.1<br>3GPP TS 38.202 V16.2.0: Sections 6, 6.1; Tables 6.1-1, 6.1-2<br>3GPP TS 38.211 V16.7.0: Sections 4.1, 4.3.1, 4.3.2, 4.4.2, 4.4.3, 4.4.4.1, 4.4.5, 4.5, 6.1.1, 6.2, 6.3.2.1; Table 6.3.2.1-1<br>3GPP TS 38.213 V16.7.0: Sections 3.3, 7.2, 9, 9.2, 9.2.1, 9.2.2, 9.2.4, 9.2.5, 9.2.5.1, 9.2.5.2; Table 9.2.5.1-1, 9.2.5.2-2, 9.2.5.2-1<br>3GPP TS 38.321 V16.6.0: Section 5.4.4<br>3GPP TS 38.331 V16.6.0: Sections 3.1, 3.2, 4.2.1, 5.1.2, 5.3.3.1, 5.3.5.1, 5.3.5.5.1, 5.3.5.5.9, 6.2, 6.3.2; Figures 4.2.1-1, 4.2.1-2, 5.3.3.1-1, 5.3.5.1-1, 5.3.5.1-2 |

|        |                      |                            |             |  |  |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--------|----------------------|----------------------------|-------------|--|--|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| LNG004 | Sisvel International | US10362566                 | 29 Feb 2036 |  |  | 1               | 3GPP TS 36.321 V14.3.0: Sections 3.1, 3.2, 5.4, 5.4.4<br>3GPP TS 36.331 V14.3.0: Sections 3.1, 6.3, 6.3.2<br>3GPP TS 36.213 V14.7.0: Sections 10, 10.1, 10.1.5                                                                                                                                                                                                                                                                                                                                                                                                         | 1, 7 | 3GPP TS 38.101-1 V16.9.0: Section 6.1<br>3GPP TS 38.202 V16.2.0: Sections 6, 6.1; Tables 6.1-1, 6.1-2<br>3GPP TS 38.211 V16.7.0: Sections 4.1, 4.3.1, 4.3.2, 4.4.2, 4.4.3, 4.4.4.1, 4.4.5, 4.5, 6.1.1, 6.2, 6.3.2.1; Table 6.3.2.1-1<br>3GPP TS 38.213 V16.7.0: Sections 3.3, 7.2, 9, 9.2, 9.2.1, 9.2.2, 9.2.4, 9.2.5, 9.2.5.1, 9.2.5.2; Tables 9.2.5-1, 9.2.5-2, 9.2.5.2-1<br>3GPP TS 38.321 V16.6.0: Section 5.4.4<br>3GPP TS 38.331 V16.6.0: Sections 3.1, 3.2, 4.2.1, 5.1.2, 5.3.3.1, 5.3.5.1, 5.3.5.5.1, 5.3.13.1, 6.2, 6.3.2; Figures 4.2.1-1, 4.2.1-2, 5.3.3.1-1, 5.3.5.1-1, 5.3.5.1-2, 5.3.13.1-1 |  |
| LNG005 | Sisvel International | US10064176                 | 09 Jun 2034 |  |  | 1, 6, 9         | 3GPP TS 36.331 V12.5.0: Sections 5.1.1, 5.10.1, 5.10.1a, 5.10.2.1, 5.10.2.2, 5.10.7.1, 5.10.7.4, 6.3.1, 6.3.2, 6.5.1, 6.5.2; Figures 5.10.2-1, 5.10.7.1-1, 5.10.7.1-2; 5.10.7.1-3<br>3GPP TS 36.221 V12.5.0: Sections 4, 4.2; Table 4.2-2<br>3GPP TS 23.303 V12.4.0: Sections 1, 4.4.1.1, 4.4.2, 4.5.1.1.2.3.1, 4.5.6                                                                                                                                                                                                                                                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG006 | Sisvel International | CNZL201510698366.5         | 23 Oct 2035 |  |  | 1, 17           | 3GPP TS 36.211 V14.3.0: Sections 4.1, 4.2, 5.2.3, 6.2.3, 10.1.2.1, 10.1.2.3, 10.2.2.1, 10.2.5.1, 10.2.7, 10.2.7.1, 10.2.7.1.1, 10.2.7.1.2, 10.2.7.2, 10.2.7.2.1, 10.2.7.2.2; Tables 5.2.3-1, 6.2.3-1, 10.1.2.1-1, 10.2.5.1-1, 10.2.7.1.1-1<br>3GPP TS 36.213 V14.3.0: Sections 16.4, 16.4.1, 16.4.1.3, 16.5.1, 16.5.1.1, 16.6; Table 16.4.1.3-1, 16.4.1.3-2, 16.5.1.1-2, 16.5.1.1-3, 16.6-1<br>3GPP TS 36.331 V14.3.0: Sections 3.1, 5.2.1.1, 5.2.1.2a, 6.7.2, 6.7.3.2; Figure 5.2.2.1-1<br>3GPP TS 36.212 V14.3.0: Sections 6.1, 6.4.3, 6.4.3.1, 6.4.3.2; Table 6.1-3 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|        |                      | US10826665                 | 06 Oct 2036 |  |  | 1               | 3GPP TS 36.211 V14.3.0: Sections 4.1, 4.2, 5.2.3, 6.2.3, 10.1.2.1, 10.1.2.3, 10.2.2.1, 10.2.5.1, 10.2.7, 10.2.7.1, 10.2.7.1.1, 10.2.7.1.2, 10.2.7.2, 10.2.7.2.1, 10.2.7.2.2; Tables 5.2.3-1, 6.2.3-1, 10.1.2.1-1, 10.2.5.1-1, 10.2.7.1.1-1<br>3GPP TS 36.213 V14.3.0: Sections 16.4, 16.4.1, 16.4.1.3, 16.5.1, 16.5.1.1, 16.6; Table 16.4.1.3-1, 16.4.1.3-2, 16.5.1.1-2, 16.5.1.1-3, 16.6-1<br>3GPP TS 36.331 V14.3.0: Sections 3.1, 5.2.1.1, 5.2.1.2a, 6.7.2, 6.7.3.2; Figure 5.2.2.1-1<br>3GPP TS 36.212 V14.3.0: Sections 6.1, 6.4.3, 6.4.3.1, 6.4.3.2; Table 6.1-3 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG007 | Sisvel International | CNZL201610121604.0         | 03 Mar 2036 |  |  | 1, 17           | 3GPP TS 36.213 V15.3.0: Sections 7.1, 7.3, 7.3.1, 10.1, 10.1.1, 10.1.2.1, 10.1.2.2, 10.1.2.2.3; Table 10.1-1<br>3GPP TS 36.211 V15.1.0: Sections 4.1; Figure 4.1-1; Table 4.1-1<br>3GPP TS 36.212 V15.2.1: Sections 5.3.3.1.3, 5.3.3.1.17, 5.3.3.1.18, 5.3.3.1.19, 5.3.3.1.20, 5.3.3.1.21, 5.3.3.1.22, 5.3.3.1.23; Table 5.3.3.1.17-1<br>3GPP TS 36.331 V15.3.0: Section 6.3.2                                                                                                                                                                                         |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|        |                      | US10484143                 | 01 Mar 2037 |  |  | 1               | 3GPP TS 36.213 V15.3.0: Sections 7.1, 7.3, 7.3.1, 10.1, 10.1.2.1, 10.1.2.2, 10.1.2.2.3; Table 10.1-1<br>3GPP TS 36.211 V15.1.0: Sections 4.1; Figure 4.1-1; Table 4.1-1<br>3GPP TS 36.212 V15.2.1: Sections 5.3.3.1.3, 5.3.3.1.17, 5.3.3.1.18, 5.3.3.1.19, 5.3.3.1.20, 5.3.3.1.21, 5.3.3.1.22, 5.3.3.1.23; Table 5.3.3.1.17-1<br>3GPP TS 36.331 V15.3.0: Section 6.3.2                                                                                                                                                                                                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG008 | Sisvel International | US9980306                  | 21 Sep 2034 |  |  | 1, 13           | 3GPP TS 36.331 V12.5.0: Sections 1, 4, 4.1, 4.2, 5.10.1, 5.10.7.1, 5.10.7.2, 5.10.7.3, 5.10.7.4, 5.10.7.5, 5.10.9.1, 6.3.8, 6.5.2; Figures 4.1-1, 4.2-1, 5.10.7.1-1, 5.10.7.1-2, 5.10.7.1-3                                                                                                                                                                                                                                                                                                                                                                            |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG015 | Sisvel International | CNZL201410697509.6         | 26 Nov 2034 |  |  | 1, 4, 6, 10, 12 | 3GPP TS 36.211 V12.5.0: Section 3.1, 5.3.1, 7.2, 9, 9.1, 9.1.1, 9.2, 9.2.4, 9.3, 9.3.1, 9.4, 9.4.1, 9.8<br>3GPP TS 36.212 V12.4.0: Sections 5, 5.2.2.6, 5.4, 5.4.3, 5.4.3.1, 5.4.3.1.1                                                                                                                                                                                                                                                                                                                                                                                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|        |                      | KR10-2302025               | 26 Nov 2034 |  |  | 1               | 3GPP TS 36.211 V12.5.0: Sections 3.1, 5.3.1, 7.2, 9, 9.1, 9.1.1, 9.2, 9.2.4, 9.3, 9.3.1, 9.4, 9.4.1, 9.8<br>3GPP TS 36.212 V12.4.0: Sections 5, 5.2.2.6, 5.4, 5.4.3, 5.4.3.1, 5.4.3.1.1                                                                                                                                                                                                                                                                                                                                                                                |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG016 | Sisvel International | CNZL201711079561.5         | 06 Nov 2037 |  |  | 1               | 3GPP TS 36.211 V15.3.0: Sections 5.2.3A, 5.3.2, 5.6A, 5.6A.2; Table 5.2.3A-1<br>3GPP TS 36.212 V15.3.0: Section 5.3.3.1.10<br>3GPP TS 36.213 V15.3.0: Sections 8.1.6                                                                                                                                                                                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|        |                      | EP3709591 (DE, FR, GB, NL) | 15 Oct 2038 |  |  | 1               | 3GPP TS 36.211 V15.3.0: Sections 5.2.3A, 5.3.2, 5.6A, 5.6A.2; Table 5.2.3A-1<br>3GPP TS 36.212 V15.3.0: Section 5.3.3.1.10<br>3GPP TS 36.213 V15.3.0: Sections 8.1.6                                                                                                                                                                                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|        |                      | US11153140                 | 15 Oct 2038 |  |  | 1               | 3GPP TS 36.211 V15.3.0: Sections 5.2.3A, 5.3.2, 5.6A, 5.6A.2; Table 5.2.3A-1<br>3GPP TS 36.212 V15.3.0: Section 5.3.3.1.10<br>3GPP TS 36.213 V15.3.0: Sections 8.1.6                                                                                                                                                                                                                                                                                                                                                                                                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG020 | Sisvel International | CNZL201410255478.9         | 10 Jun 2034 |  |  | 9, 18           | 3GPP TS 36.212 V13.2.0: Sections 1, 3.3, 5.3, 5.3.3.1, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3, 5.3.3.1.4, 5.3.3.1.4A<br>3GPP TS 36.213 V13.2.0: Sections 1, 3.2, 3A, 4.1, 7.1, 13A, 15.1.1                                                                                                                                                                                                                                                                                                                                                                                    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| LNG021 | Sisvel International | CNZL201410318536.8         | 04 Jul 2034 |  |  | 6, 16           | 3GPP TS 36.212 V14.3.0: Sections 1, 3.3, 4.2, 5.3.3.1.1A<br>3GPP TS 36.201 V14.1.0: Sections 1, 3.3, 4.2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |

|        |                      |                    |             |  |  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |                                                                                                                                                                                                                                                                              |
|--------|----------------------|--------------------|-------------|--|--|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LNG023 | Sisvel International | US10506624         | 16 Jan 2037 |  |  | 1    | 3GPP TS 36.211 V14.4.0: Sections 6.2.3, 10.2.2, 10.2.2.1, 10.2.3, 10.2.3.4; Table 6.2.3-1<br>3GPP TS 36.212 V14.4.0: Sections 6.1, 6.4.3.2<br>3GPP TS 36.213 V14.4.0: Sections 16.4, 16.4.1                                                                                                                                                                                                                                                                                    |   |                                                                                                                                                                                                                                                                              |
| MEL011 | MELCO                | CNZL201510125007.0 | 27 Dec 2026 |  |  | 3    | 3GPP TS 36.321 V9.1.0: Sections 4.2.1, 4.3.1, 4.3.2, 4.4, 5.4.4                                                                                                                                                                                                                                                                                                                                                                                                                |   |                                                                                                                                                                                                                                                                              |
|        |                      | JP5160667          | 27 Dec 2026 |  |  | 3    | 3GPP TS 36.213 V9.0.1: Sections 7.2, 7.2.2                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |                                                                                                                                                                                                                                                                              |
|        |                      | US9635656          | 27 Dec 2026 |  |  | 3    | 3GPP TS 36.213 V9.0.1: Sections 7.2, 7.2.2<br>3GPP TS 36.201 V9.0.0: Section 5.5<br>3GPP TS 36.321 V9.1.0: Section 5.4.4                                                                                                                                                                                                                                                                                                                                                       | 3 | 3GPP TS 38.212 V15.7.0: Sections 3.3, 6.3.1.1<br>3GPP TS 38.213 V15.7.0: Section 9.2.5<br>3GPP TS 38.214 V15.7.0: Sections 3.3, 5.2.1<br>3GPP TS 38.300 V15.7.0: Section 10.4<br>3GPP TS 38.321 V15.7.0: Sections 3.2, 4.2.2, 5.4.4<br>3GPP TS 38.331 V15.7.0: Section 6.3.2 |
| MEL013 | MELCO                | CNZL201510577683.1 | 27 Apr 2027 |  |  | 4    | 3GPP TS 36.213 V8.2.0: Sections 7.2, 7.2.2<br>3GPP TS 36.300 V8.5.0: Sections 4.3, 4.3.2, 5.1, 5.1.3, 11.5, 12<br>3GPP TS 36.321 V8.4.0: Section 3.1, 4.3, 4.3.2, 5.7<br>3GPP TS 36.331 V8.5.0: Sections 6.3, 6.3.2                                                                                                                                                                                                                                                            |   |                                                                                                                                                                                                                                                                              |
|        |                      | IN262788           | 27 Apr 2027 |  |  | 2    | 3GPP TS 36.213 V9.0.1: Sections 7.2, 10.1                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 | 3GPP TS 38.213 V15.7.0: Sections 9, 9.2.5, 9.2.6<br>3GPP TS 38.214 V15.7.0: Sections 3.3, 5.2.1, 5.2.1.1, 5.2.1.4<br>3GPP TS 38.215 V15.5.0: Sections 5.1, 5.1.2, 5.1.4, 5.1.6<br>3GPP TS 38.331 V15.7.0: Section 6.3.2                                                      |
|        |                      | JP4841630          | 27 Apr 2027 |  |  | 2    | 3GPP TS 36.213 V9.0.1: Sections 7.2, 10.1                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 | 3GPP TS 38.215 V15.5.0: Sections 5.1, 5.1.2, 5.1.4, 5.1.6<br>3GPP TS 38.213 V15.7.0: Sections 9, 9.2.5<br>3GPP TS 38.331 V15.7.0: Sections 5.5.1, 6.3.2                                                                                                                      |
|        |                      | JP5822996          | 27 Apr 2027 |  |  | 4    | 3GPP TS 36.213 V8.2.0: Sections 7.2, 7.2.2<br>3GPP TS 36.300 V8.5.0: Sections 4.3, 4.3.2, 5.1, 5.1.3, 11.5, 12<br>3GPP TS 36.321 V8.4.0: Section 3.1, 4.3, 4.3.2, 5.7<br>3GPP TS 36.331 V8.5.0: Sections 6.3, 6.3.2                                                                                                                                                                                                                                                            |   |                                                                                                                                                                                                                                                                              |
|        |                      | KR10-1213062       | 27 Apr 2027 |  |  | 2    | 3GPP TS 36.213 V9.0.1: Sections 7.2, 10.1                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 | 3GPP TS 38.213 V15.7.0: Sections 9, 9.2.5, 9.2.6<br>3GPP TS 38.214 V15.7.0: Sections 3.3, 5.2.1, 5.2.1.1, 5.2.1.4<br>3GPP TS 38.215 V15.5.0: Sections 5.1, 5.1.2, 5.1.4, 5.1.6<br>3GPP TS 38.331 V15.7.0: Section 6.3.2                                                      |
|        |                      | US10701639         | 27 Apr 2027 |  |  | 4    | 3GPP TS 36.213 V8.2.0: Sections 7.2, 7.2.2<br>3GPP TS 36.300 V8.5.0: Sections 4.3, 4.3.2, 5.1, 5.1.3, 11.5, 12<br>3GPP TS 36.321 V8.4.0: Section 3.1, 4.3, 4.3.2, 5.7<br>3GPP TS 36.331 V8.5.0: Sections 6.3, 6.3.2                                                                                                                                                                                                                                                            |   |                                                                                                                                                                                                                                                                              |
|        |                      | US10728857         | 27 Apr 2027 |  |  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 | 3GPP TS 38.213 V15.7.0: Sections 9, 9.2.5, 9.2.6<br>3GPP TS 38.214 V15.7.0: Sections 3.3, 5.2.1, 5.2.1.1, 5.2.1.4<br>3GPP TS 38.215 V15.5.0: Sections 5.1, 5.1.2, 5.1.4, 5.1.6<br>3GPP TS 38.331 V15.7.0: Section 6.3.2                                                      |
| MEL014 | MELCO                | US10404436         | 08 Sep 2024 |  |  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 | 3GPP TS 38.322 V17.2.0: sections 3.1, 4.2.1<br>3GPP TS 38.321 V17.3.0: sections 4.5, 4.5.1, 4.5.4.1, 5.4, 5.4.5, 5.4.3.2, 6.1.2, 6.1.3, 6.1.3.1, 6.2.1                                                                                                                       |
|        |                      | US11012217         | 08 Sep 2024 |  |  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 | 3GPP TS 38.322 V17.2.0: sections 3.2, 4.2.1<br>3GPP TS 38.321 V17.3.0: sections 4.5, 4.5.1, 4.5.3, 4.5.4, 5.4, 5.4.5, 5.4.3.2, 6.1.2                                                                                                                                         |
| MEL016 | MELCO                | US9113445          | 06 Aug 2024 |  |  | 1    | 3GPP TS 36.300 V10.6.0: Sections 6, 6.1, 6.1.2, 11.3; Figure 6-2<br>3GPP TS 36.306 V10.4.0: Sections 4, 4.1, 4.2.5; Table 4.1-3<br>3GPP TS 36.321 V10.4.0: Sections 5.4.3.1, 5.4.3.2, 5.4.5, 6.1.2, 6.1.3.1; Figure 6.1.2-3; Tables 6.1.3.1-1, 6.1.3.1-2<br>3GPP TS 36.322 V10.0.0: Sections 4.2.1, 4.2.1.1.1, 4.2.1.2.1, 4.2.1.3.1, 4.5; Figures 4.2.1-1, 4.2.1.1.1-1, 4.2.1.2.1-1, 4.2.1.3.1-1<br>3GPP TS 36.331 V10.6.0: Sections 5.6.3.1, 5.6.3.3, 6.3.6; Figure 5.6.3.1-1 |   |                                                                                                                                                                                                                                                                              |
| MEL017 | MELCO                | AU2014204428       | 01 Feb 2028 |  |  | 5    | 3GPP TS 36.300 V8.7.1: Sections 11.1.1, 11.1.2<br>3GPP TS 36.321 V8.4.0: Sections 5.10.1, 5.10.2<br>3GPP TS 36.213 V8.6.0: Section 9.2                                                                                                                                                                                                                                                                                                                                         |   |                                                                                                                                                                                                                                                                              |
|        |                      | BRPI0807033-4      | 01 Feb 2030 |  |  | 8    | 3GPP TS 36.300 V8.7.1: Sections 11.1.1, 11.1.2<br>3GPP TS 36.321 V8.4.0: Sections 5.10.1, 5.10.2<br>3GPP TS 36.213 V8.6.0: Section 9.2                                                                                                                                                                                                                                                                                                                                         |   |                                                                                                                                                                                                                                                                              |
|        |                      | IN385950           | 01 Feb 2028 |  |  | 7    | 3GPP TS 36.300 V8.7.1: Sections 11.1.1, 11.1.2<br>3GPP TS 36.321 V8.4.0: Sections 5.10, 5.10.1, 5.10.2<br>3GPP TS 36.213 V8.6.0: Section 9.2                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                                                                                                                                                                              |
|        |                      | JP5550697          | 01 Feb 2028 |  |  | 5    | 3GPP TS 36.300 V8.7.1: Sections 11.1.1, 11.1.2<br>3GPP TS 36.321 V8.4.0: Sections 5.10, 5.10.1, 5.10.2<br>3GPP TS 36.213 V8.6.0: Section 9.2                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                                                                                                                                                                              |
|        |                      | KR10-1898932       | 01 Feb 2028 |  |  | 1, 6 | 3GPP TS 36.300 V8.7.1: Sections 11.1.1, 11.1.2<br>3GPP TS 36.321 V8.4.0: Sections 5.10, 5.10.1, 5.10.2<br>3GPP TS 36.213 V8.6.0: Section 9.2                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                                                                                                                                                                              |
| MEL018 | MELCO                | AU2014201266       | 26 Oct 2029 |  |  | 3    | 3GPP TS 24.301 V11.0.0: Sections 3.1, 3.2, 5.1.1, 5.1.3.2.2.4, 5.3.5, 5.5.3.1, 5.5.3.2.1, 5.5.3.2.2<br>3GPP TS 23.401 V11.0.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.3.5.2, 4.3.5.3, 5.3.3, 5.3.3.0, 5.3.3.2, 5.3.3.2.4; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3, 5.3.3.2-1<br>3GPP TS 36.300 V11.0.0: Sections 4.4.1; Figure 4-1                                                                                                                                  |   |                                                                                                                                                                                                                                                                              |
|        |                      | CNZL201410189671.7 | 26 Oct 2029 |  |  | 3    | 3GPP TS 23.401 V11.0.0: Sections 3.2, 4.3.13, 5.3.3.0, 5.3.3.2, 5.3.8.3                                                                                                                                                                                                                                                                                                                                                                                                        |   |                                                                                                                                                                                                                                                                              |
|        |                      | IDP000048649       | 26 Oct 2029 |  |  | 3    | 3GPP TS 24.301 V11.0.0: Sections 3.1, 3.2, 5.1.1, 5.1.3.2.2.4, 5.3.5, 5.5.3.1, 5.5.3.2.1, 5.5.3.2.2<br>3GPP TS 23.401 V11.0.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.3.5.2, 4.3.5.3, 5.3.3, 5.3.3.0, 5.3.3.2, 5.3.3.2.4; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3, 5.3.3.2-1<br>3GPP TS 36.300 V11.0.0: Sections 4.4.1; Figure 4-1                                                                                                                                  |   |                                                                                                                                                                                                                                                                              |
|        |                      | JP5538802          | 02 Oct 2029 |  |  | 3    | 3GPP TS 23.401 V11.0.0: Sections 4.3.13, 5.3.3.5, 5.7.2                                                                                                                                                                                                                                                                                                                                                                                                                        |   |                                                                                                                                                                                                                                                                              |

|        |       |                                                    |             |  |  |            |                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------|-------|----------------------------------------------------|-------------|--|--|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEL018 | MELCO | RU2554533                                          | 26 Oct 2029 |  |  | 3          | 3GPP TS 24.301 V11.0.0: Sections 3.1, 3.2, 5.1.1, 5.1.3.2.2, 4, 5.3.5, 5.5.3.1, 5.5.3.2.1, 5.5.3.2.2<br>3GPP TS 23.401 V11.0.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.3.5.2, 4.3.5.3, 5.3.3, 5.3.3.0, 5.3.3.2, 5.3.3.2.4; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3, 5.3.3.2-1<br>3GPP TS 36.300 V11.0.0: Sections 4, 4.1; Figure 4-1                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | US9713068                                          | 26 Oct 2029 |  |  | 3          | 3GPP TS 24.301 V11.0.0: Sections 3.1, 3.2, 5.1.1, 5.1.3.2.2, 4, 5.3.5, 5.5.3.1, 5.5.3.2.1, 5.5.3.2.2<br>3GPP TS 23.401 V11.0.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.3.5.2, 4.3.5.3, 5.3.3, 5.3.3.0, 5.3.3.2, 5.3.3.2.4; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3, 5.3.3.2-1<br>3GPP TS 36.300 V11.0.0: Sections 4, 4.1; Figure 4-1                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MEL019 | MELCO | IN478712                                           | 15 Sep 2030 |  |  |            |                                                                                                                                                                                                                                                                                                                                                                              | 3GPP TS 38.300 V15.0.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 9.2.2.1; Figure 4.1-1<br>3GPP TS 23.501 V15.0.0: Sections 3.1, 5.2.3.1, 5.2.3.2.3, 5.3.2.1, 5.3.2.2.1, 5.3.2.2.3, 5.3.2.2.4, 5.3.2.3, 5.3.3.2.1, 5.4.1.1, 6.2.1<br>3GPP TS 24.501 V15.0.0: Sections 3.2, 5.3.4, 5.3.7, 5.5.1.1, 5.5.1.3.1, 5.5.1.3.2, 5.5.1.3.4, 8.2.6.1, 8.2.7.1, 8.2.7.15, 9.10.2.5, 9.10.3.8; Tables 8.2.6.1.1, 8.2.7.1.1, 9.10.3.8.1; Figure 9.10.3.8.1<br>3GPP TS 24.008 V15.0.0: Sections 10, 10.1, 10.5.7.4a; Table 10.5.163a; Figure 10.1.10.5.147a |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | US10165482                                         | 15 Sep 2030 |  |  | 3          | 3GPP TS 36.300 V10.3.0: Sections 1, 3.2, 4, 4.1, 4.2.1, 4.2.2; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3<br>3GPP TS 24.301 V10.2.0: Sections 1, 5.5.3.1, 5.5.3.2.1, 5.5.3.2.2, 5.5.3.2.4, 8.1, 8.2.2.6.1, 8.2.2.6.2, 8.2.2.6.15; Table 8.2.2.6.1                                                                                                                   | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3GPP TS 38.300 V15.0.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 9.2.2.1; Figure 4.1-1<br>3GPP TS 23.501 V15.0.0: Sections 3.1, 5.2.3.1, 5.2.3.2.3, 5.3.2.1, 5.3.2.2.1, 5.3.2.2.3, 5.3.2.2.4, 5.3.2.3, 5.3.3.2.1, 5.4.1.1, 6.2.1<br>3GPP TS 24.501 V15.0.0: Sections 3.2, 5.3.4, 5.3.7, 5.5.1.1, 5.5.1.3.1, 5.5.1.3.2, 5.5.1.3.4, 8.2.6.1, 8.2.7.1, 8.2.7.15, 9.10.2.5, 9.10.3.8; Tables 8.2.6.1.1, 8.2.7.1.1, 9.10.3.8.1; Figure 9.10.3.8.1<br>3GPP TS 24.008 V15.0.0: Sections 10, 10.1, 10.5.7.4a; Table 10.5.163a; Figure 10.1.10.5.147a |
| MEL022 | MELCO | US10887731                                         | 28 Jan 2030 |  |  | 5          | 3GPP TS 36.300 V17.3.0: Sections 3.2, 4.0, 4.6, 4.6.1, 10.5.1, 40.5.1.2<br>3GPP TS 36.331 V17.3.0: Sections 6.2.2, 6.3.4, 6.3.5                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MEL025 | MELCO | EP2134006 (DE, FR, GB)                             | 13 Jan 2026 |  |  | 1          | 3GPP TS 36.211 V8.6.0: Sections 3.1, 4.2, 5.2.3, 5.6, 6.2.3, 6.12, 8.1; Figures 4.2-1, 8.1-1; Tables 4.2-1, 4.2-2, 5.2.3-1, 5.6-1, 6.2.3-1, 6.12-1<br>3GPP TS 36.213 V8.6.0: Section 4.2.3<br>3GPP TS 36.321 V8.5.0: Section 6.2.3<br>3GPP TS 36.300 V8.8.0: Section 5.2.7.3                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | JP4852615                                          | 28 Sep 2026 |  |  | 1          | 3GPP TS 36.211 V8.6.0: Sections 3.1, 4.4, 5.2, 6.2, 8.1<br>3GPP TS 36.213 V8.6.0: Section 4.2.3<br>3GPP TS 36.321 V8.5.0: Section 6.2.3<br>3GPP TS 36.300 V8.8.0: Section 5.2.7                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | US8068444                                          | 14 Dec 2026 |  |  | 1          | 3GPP TS 21.905 V8.8.0: Section 3<br>3GPP TS 21.211 V8.6.0: Sections 3.1, 4, 4.2, 5.2.1, 5.2.2, 5.2.3, 6.2.1, 6.2.2, 6.2.3, 8.1; Figures 4.2-1, 5.2.1-1, 6.2.2-1; Tables 4.2-1, 5.2.3-1, 6.2.3-1<br>3GPP TS 36.213 V8.6.0: Section 4.2.3<br>3GPP TS 36.321 V8.5.0: Sections 5.1.4, 5.2, 6.2.3<br>3GPP TS 36.300 V8.8.0: Sections 3.2, 5, 5.2.7.3; Figures 5-1, 5-2; Table 5-1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MEL027 | MELCO | CNZL201410767521X                                  | 13 Apr 2027 |  |  | 1, 2, 7, 8 | 3GPP TS 36.201 V8.3.0: Sections 4.1, 4.1.1, 4.2, 4.2.1<br>3GPP TS 36.213 V8.8.0: Sections 7.2, 7.2.2                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | EP1845678 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 14 Apr 2026 |  |  | 1, 3       | 3GPP TS 36.201 V8.3.0: Sections 4.1, 4.2.1<br>3GPP TS 36.212 V8.6.0: Sections 5.2.2.6, 5.2.2.6.4<br>3GPP TS 36.213 V8.6.0: Sections 7.2, 7.2.1                                                                                                                                                                                                                               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3GPP TS 38.300 V15.13.0: Section 4.1<br>3GPP TS 38.201 V15.0.0: Section 4.1.1<br>3GPP TS 38.214 V15.15.0: Sections 5.2.1, 5.2.1.1, 5.2.1.4, 5.2.2.1, 5.2.3<br>3GPP TS 38.331 V15.16.0: Section 6.3.2<br>3GPP TS 38.212 V15.13.0: Section 6.3.2.1.2                                                                                                                                                                                                                                                                                  |
|        |       | EP2086146 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 14 Apr 2026 |  |  | 1, 2       | 3GPP TS 36.201 V8.3.0: Sections 4.1.1, 4.2.1<br>3GPP TS 36.212 V8.7.0: Sections 5.2.2.6, 5.2.2.6.4<br>3GPP TS 36.213 V8.8.0: Sections 7.2, 7.2.1                                                                                                                                                                                                                             | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3GPP TS 38.300 V15.13.0: Section 4.1<br>3GPP TS 38.201 V15.0.0: Section 4.1.1<br>3GPP TS 38.214 V15.15.0: Sections 5.2.1, 5.2.1.1, 5.2.1.4, 5.2.2.1, 5.2.3<br>3GPP TS 38.331 V15.16.0: Section 6.3.2<br>3GPP TS 38.212 V15.13.0: Section 6.3.2.1.2                                                                                                                                                                                                                                                                                  |
|        |       | EP2256976 (DE, FR, GB)                             | 14 Apr 2026 |  |  | 1, 2       | 3GPP TS 36.201 V8.3.0: Sections 1, 3, 4, 4.1, 4.1.1, 4.2, 4.2.1<br>3GPP TS 36.213 V8.8.0: Sections 3.3.2, 7.2, 7.2.2                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|        |       | JP5506861                                          | 16 Apr 2027 |  |  | 1, 8       | 3GPP TS 36.201 V8.3.0: Sections 4.1.1, 4.2.1<br>3GPP TS 36.213 V8.8.0: Sections 7.2                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MEL028 | MELCO | EP2254259 (DE, FR, GB)                             | 22 Sep 2026 |  |  | 1, 4       | 3GPP TS 36.211 V8.8.0: Sections 4.1.1, 4.2.1, 5.4.1, 5.5.2.2.1, 5.2.2.2.2<br>3GPP TS 36.213 V8.8.0: Sections 7.3, 10.1<br>3GPP TS 36.321 V8.7.0: Sections 5.4.1, 5.4.4, 5.4.5, 7.2.1<br>3GPP TS 36.331 V8.7.0: Sections 6.3.2                                                                                                                                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3GPP TS 38.300: Sections 4.1, 5.5, 10.3, 10.4<br>3GPP TS 38.321: Sections 4.5.4.2, 5.4.1, 5.4.4, 5.4.5<br>3GPP TS 38.213: Sections 9.2, 9.2.4<br>3GPP TS 38.211: Sections 5.2.2, 6.4.1.3.1, 6.4.1.3.2                                                                                                                                                                                                                                                                                                                               |
|        |       | US8825067                                          | 14 Sep 2027 |  |  | 1, 4       | 3GPP TS 36.321 V8.7.0: Sections 5.4.1, 5.4.4, 5.4.5<br>3GPP TS 36.213 V8.8.0: Sections 7.3, 10.1; Table 10.1-5<br>3GPP TS 36.331 V8.7.0: Sections 6.3.2<br>3GPP TS 36.211 V8.8.0: Sections 5.4.1, 5.5, 5.5.2.2.1, 5.5.2.2.2; Table 5.5.2.2.2-1                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|        |       |                            |             |  |  |  |   |                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|--------|-------|----------------------------|-------------|--|--|--|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEL038 | MELCO | CNZL201510061928.5         | 24 Jul 2029 |  |  |  |   | 1                                                                                                                                                                                                                                              | 3GPP TS 38.211 V16.3.0: Sections 3.2, 4.4.2, 4.4.3, 5.3.1, 6.1.1, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.1.4, 6.3.1.5, 6.3.1.6, 6.3.1.7<br>3GPP TS 38.212 V16.3.0: Sections 4.1, 5, 6.2.1; Table 4.1-1<br>3GPP TS 38.214 V16.3.0: Sections 6.1.2.2, 6.1.2.2<br>3GPP TS 38.321 V16.2.1: Sections 4.2.2, 4.4; Figure 4.2.2-1<br>3GPP TS 38.300 V16.3.0: Sections 5.1, 5.4.1, 5.5, 6.2.1, 6.6 L2, 6.7; Figures 5.1-1, 6.6-1, 6.7-2 |                                                                                                                                                                                                                                                        |
|        |       | KR10-1643434               | 24 Jul 2029 |  |  |  |   | 1                                                                                                                                                                                                                                              | 3GPP TS 38.211 V16.3.0: Sections 3.2, 4.4.2, 4.4.3, 5.3.1, 6.1.1, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.1.4, 6.3.1.5, 6.3.1.6, 6.3.1.7<br>3GPP TS 38.212 V16.3.0: Sections 4.1, 5, 6.2.1; Table 4.1-1<br>3GPP TS 38.214 V16.3.0: Sections 6.1.2.2, 6.1.2.2<br>3GPP TS 38.321 V16.2.1: Sections 4.2.2, 4.4; Figure 4.2.2-1<br>3GPP TS 38.300 V16.3.0: Sections 5.1, 5.4.1, 5.5, 6.2.1, 6.6 L2, 6.7; Figures 5.1-1, 6.6-1, 6.7-2 |                                                                                                                                                                                                                                                        |
| MEL040 | MELCO | CNZL201710464231.1         | 09 Feb 2031 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
|        |       | IDP000047999               | 09 Feb 2031 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
|        |       | JP6076427                  | 09 Feb 2031 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
|        |       | KR10-1771415               | 09 Feb 2031 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
|        |       | RU2704118                  | 09 Feb 2031 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3                                                                                                                                                                  |                                                                                                                                                                                                                                                        |
|        |       | US11405897                 | 09 Feb 2031 |  |  |  | 3 | 3GPP TS 36.300 V17.3.0: Sections 3.1, 4.9, 4.9.1, 20.2, 20.2.0<br>3GPP TS 36.331 V17.3.0: Sections 3.2, 6.2.2<br>3GPP TS 36.101 V18.0.0: Section 6.2.5<br>3GPP TS 36.213 V17.4.0: Section 6.1<br>3GPP TS 36.321 V17.3.0: Sections 5.1.1, 5.1.3 | 3                                                                                                                                                                                                                                                                                                                                                                                                                       | 3GPP TS 37.340 V17.3.0: sections 3.1, 4.2.1, 4.3.1.1<br>3GPP TS 38.331 V17.3.0: sections 3.2, 6.2.2<br>3GPP TS 38.101-1 V18.0.0: sections 3.2, 6.2.4, 6.2B.4.1<br>3GPP TS 38.213 V17.3.0: section 7.4<br>3GPP TS 38.321 V17.3.0: sections 5.1.1, 5.1.3 |
| MEL041 | MELCO | BR122020018183-4           | 25 Apr 2031 |  |  |  | 9 | 3GPP TS 36.300 V10.2.0: Sections 3.2, 5.1.16, 16.1.5.1<br>3GPP TS 36.331 V10.2.0: Sections 6.2.2, 6.3.5                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | CNZL201610021267.8         | 25 Apr 2031 |  |  |  | 4 | 3GPP TS 36.300 V11.4.0: Sections 3.2, 4, 16.1.5<br>3GPP TS 36.423 V10.1.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | EP3962181 (DE, FR, GB, NL) | 25 Apr 2031 |  |  |  | 5 | 3GPP TS 36.300 V17.3.0: Sections 16.1.5, 16.1.5.0, 20.2.0<br>3GPP TS 36.423 V17.3.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | IDP000082932               | 25 Apr 2031 |  |  |  | 9 | 3GPP TS 36.300 V10.2.0: Sections 3.2, 5.1.16, 16.1.5.1<br>3GPP TS 36.331 V10.2.0: Sections 6.2.2, 6.3.5                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | JP6072859                  | 25 Apr 2031 |  |  |  | 9 | 3GPP TS 36.300 V10.2.0: Sections 3.2, 5.1.16, 16.1.5.1<br>3GPP TS 36.331 V10.2.0: Sections 6.2.2, 6.3.5                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | JP6351699                  | 25 Apr 2031 |  |  |  | 4 | 3GPP TS 36.300 V11.4.0: Sections 3.2, 4, 16.1.5<br>3GPP TS 36.423 V10.1.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | KR10-1790569               | 25 Apr 2031 |  |  |  | 9 | 3GPP TS 36.300 V10.2.0: Sections 3.2, 5.1.16, 16.1.5.1<br>3GPP TS 36.331 V10.2.0: Sections 6.2.2, 6.3.5                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | KR10-1902174               | 25 Apr 2031 |  |  |  | 2 | 3GPP TS 36.300 V11.4.0: Sections 3.2, 4, 16.1.5<br>3GPP TS 36.423 V10.1.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | RU2651808                  | 01 Oct 2024 |  |  |  | 5 | 3GPP TS 36.300 V11.4.0: Sections 3.2, 4, 16.1.5<br>3GPP TS 36.423 V10.1.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | RU2677689                  | 25 Apr 2031 |  |  |  | 9 | 3GPP TS 36.300 V10.2.0: Sections 3.2, 5.1.16, 16.1.5.1<br>3GPP TS 36.331 V10.2.0: Sections 6.2.2, 6.3.5                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
|        |       | US11496263                 | 25 Apr 2031 |  |  |  | 4 | 3GPP TS 36.300 V17.3.0: Sections 16.1.5, 16.1.5.0, 20.2.0<br>3GPP TS 36.423 V17.3.0: Sections 8.3.1.2, 9.1.2.1, 9.2.55                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                        |
| MEL042 | MELCO | CNZL201611067214.6         | 23 Mar 2030 |  |  |  |   | 3                                                                                                                                                                                                                                              | 3GPP TS 38.300 V16.8.0: Sections 3.1, 3.2, 4.1, 4.2, 4.3.2.2, 6.1.2<br>3GPP TS 38.306 V16.7.0: Sections 1, 4.2.1, 4.2.7.2, 4.2.7.6<br>3GPP TS 38.331 V16.7.0: Sections 4.2.1, 5.6.1.1, 5.6.1.2, 5.6.1.4, 6.2.2, 6.3.3; Figures 4.2.1-1, 5.6.1.1-1                                                                                                                                                                       |                                                                                                                                                                                                                                                        |
|        |       | EP3661071 (DE, FR, GB, NL) | 23 Mar 2030 |  |  |  |   | 3                                                                                                                                                                                                                                              | 3GPP TS 38.300 V16.8.0: Sections 3.1, 3.2, 4.1, 4.2, 4.3.2.2, 6.1.2<br>3GPP TS 38.306 V16.7.0: Sections 1, 4.2.1, 4.2.7.2, 4.2.7.6<br>3GPP TS 38.331 V16.7.0: Sections 4.2.1, 5.6.1.1, 5.6.1.2, 5.6.1.4, 6.2.2, 6.3.3; Figures 4.2.1-1, 5.6.1.1-1                                                                                                                                                                       |                                                                                                                                                                                                                                                        |
|        |       | IN475735                   | 23 Mar 2030 |  |  |  |   | 4                                                                                                                                                                                                                                              | 3GPP TS 38.300 V16.8.0: Sections 3.1, 3.2, 4.1, 4.2, 4.3.2.2, 6.1.2<br>3GPP TS 38.306 V16.7.0: Sections 1, 4.2.1, 4.2.7.2, 4.2.7.6<br>3GPP TS 38.331 V16.7.0: Sections 4.2.1, 5.6.1.1, 5.6.1.2, 5.6.1.4, 6.2.2, 6.3.3; Figures 4.2.1-1, 5.6.1.1-1                                                                                                                                                                       |                                                                                                                                                                                                                                                        |
|        |       | JP6400131                  | 23 Mar 2030 |  |  |  |   | 3                                                                                                                                                                                                                                              | 3GPP TS 38.300 V16.8.0: Sections 3.1, 3.2, 4.1, 4.2, 4.3.2.2, 6.1.2<br>3GPP TS 38.306 V16.7.0: Sections 1, 4.2.1, 4.2.7.2, 4.2.7.6<br>3GPP TS 38.331 V16.7.0: Sections 4.2.1, 5.6.1.1, 5.6.1.2, 5.6.1.4, 6.2.2, 6.3.3; Figures 4.2.1-1, 5.6.1.1-1                                                                                                                                                                       |                                                                                                                                                                                                                                                        |

|        |       |                            |             |  |  |   |                                                                                                                                                                                                                                                                                                                                 |   |                                                                                                                                                                                                                                                                                                                                               |
|--------|-------|----------------------------|-------------|--|--|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEL042 | MELCO | US9705648                  | 23 Mar 2030 |  |  | 1 | 3GPP TS 23.401 V12.0.0: Sections 4, 4.6, 4.6.3, 4.6.3.1, 4.6.3.2, 4.6.4<br>3GPP TS 36.300 V12.5.0: Sections 3.1, 3.2, 4, 4.3, 4.3.2, 4.9, 4.9.1, 4.9.3,<br>4.9.3.1, 10, 10.1, 10.1.2, 10.2.8, 10.1.2.8.1, 20, 20.2, 20.2.1                                                                                                      | 3 | 3GPP TS 38.300 V16.8.0: Sections 3.1, 3.2, 4.1, 4.2, 4.3.2.2, 6.12<br>3GPP TS 38.306 V16.7.0: Sections 1, 4.2.1, 4.2.7.2, 4.2.7.6<br>3GPP TS 38.331 V16.7.0: Sections 4.2.1, 5.6.1.1, 5.6.1.2, 5.6.1.4, 6.2.2,<br>6.3; Figures 4.2.1-1, 5.6.1.1-1                                                                                             |
| MEL043 | MELCO | EP3595390 (DE, FR, GB)     | 20 Dec 2031 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 3 | 3GPP TS 38.300 V17.6.0: Sections 5.4.1, 7.7<br>3GPP TS 38.101-1 V17.11.0: Sections 5.2, 5.2A, 5.2A.2, 5.2A.2.1<br>3GPP TS 38.133 V17.11.0: Section 3.6.2.1<br>3GPP TS 38.331 V17.6.0: Sections 6.2.2, 6.3.2                                                                                                                                   |
|        |       | JP6767539                  | 20 Dec 2031 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 3 | 3GPP TS 38.300 V17.6.0: Sections 5.4.1, 7.7<br>3GPP TS 38.101-1 V17.11.0: Sections 5.2, 5.2A, 5.2A.2, 5.2A.2.1<br>3GPP TS 38.133 V17.11.0: Section 3.6.2.1<br>3GPP TS 38.331 V17.6.0: Sections 6.2.2, 6.3.2                                                                                                                                   |
|        |       | US10200976                 | 20 Dec 2031 |  |  | 2 | 3GPP TS 36.101 V11.3.0: Sections 2, 3.3, 5.5; Table 5.5-1<br>3GPP TS 36.300 V11.2.0: Sections 4, 7.5<br>3GPP TS 36.311 V11.2.0: Sections 3.2, 4.2.1, 5.1.2, 5.2.1.1, 5.2.2.1, 6.2.1,<br>6.3.1, 6.3.4; Figure 5.2.2-1                                                                                                            |   |                                                                                                                                                                                                                                                                                                                                               |
|        |       | US10412712                 | 20 Dec 2031 |  |  | 3 | 3GPP TS 36.101 V11.6.0: Sections 5.5, 5.5A; Tables 5.5-1, 5.5A-2                                                                                                                                                                                                                                                                | 3 | 3GPP TS 38.300 V15.3.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.4.1, 7.7<br>3GPP TS 38.101-1 V15.3.0: Sections 3.1, 3.3, 5.1, 5.2, 5.2A.2, 5.5A.3;<br>Tables 5.1-1, 5.2-1, 5.2A.2-1, 5.5A.3-1<br>3GPP TS 38.133 V15.3.0: Sections 3.1, 3.3, 3.6, 3.6.2.1                                                                                            |
|        |       | US11337181                 | 06 Mar 2032 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 3 | 3GPP TS 38.300 V17.6.0: Sections 5.4.1, 7.7<br>3GPP TS 38.101-1 V17.11.0: Sections 5.2, 5.2A, 5.2A.2, 5.2A.2.1<br>3GPP TS 38.133 V17.11.0: Section 3.6.2.1<br>3GPP TS 38.331 V17.6.0: Sections 6.2.2, 6.3.2                                                                                                                                   |
| MEL044 | MELCO | CNZL201810939948.1         | 26 Mar 2032 |  |  | 1 | 3GPP TS 36.300 V15.6.0: Sections 3.1, 3.2, 5.5.0, 7.5, 10.1.2.7, 10.1.5.0,<br>10.1.5.2; Figure 10.1.5.2-1<br>3GPP TS 36.321 V15.6.0: Sections 5.1.4, 6.1.3.5; Figure 6.1.3.5-1<br>3GPP TS 36.213 V15.6.0: Section 4.2.3<br>3GPP TS 36.104 V15.7.0: Sections 6.5.3, 6.5.3.1<br>3GPP TS 36.211 V15.6.0: Section 8.1; Figure 8.1-1 | 1 | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 36.300 V15.6.0: Section 3.2<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 4.2, 5.1; Figure 5.1-2<br>3GPP TS 38.300 V15.6.0: Sections 3.1, 3.2, 4.1, 5.4.1, 7.1, 7.7, 9.2.6,<br>9.2.9; Figure 9.2-6.1<br>3GPP TS 38.321 V15.6.0: Sections 5.1.4, 5.2, 6.1.3.4                                          |
|        |       | EP3451730 (DE, FR, GB, NL) | 26 Mar 2032 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 1 | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 36.300 V15.6.0: Section 3.2<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 4.2, 5.1; Figure 5.1-2<br>3GPP TS 38.300 V15.6.0: Sections 3.1, 3.2, 4.1, 5.4.1, 7.1, 7.7, 9.2.6,<br>9.2.9; Figure 9.2-6.1<br>3GPP TS 38.321 V15.6.0: Sections 5.1.4, 5.2, 6.1.3.4                                          |
|        |       | JP7003201                  | 26 Mar 2032 |  |  | 1 | 3GPP TS 36.300 V15.6.0: Sections 3.1, 3.2, 5.5.0, 7.5, 10.1.2.7, 10.1.5.0,<br>10.1.5.2; Figure 10.1.5.2-1<br>3GPP TS 36.321 V15.6.0: Sections 5.1.4, 6.1.3.5; Figure 6.1.3.5-1<br>3GPP TS 36.213 V15.6.0: Section 4.2.3<br>3GPP TS 36.104 V15.7.0: Sections 6.5.3, 6.5.3.1<br>3GPP TS 36.211 V15.6.0: Section 8.1; Figure 8.1-1 | 1 | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 36.300 V15.6.0: Section 3.2<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 4.2, 5.1; Figure 5.1-2<br>3GPP TS 38.300 V15.6.0: Sections 3.1, 3.2, 4.1, 5.4.1, 7.1, 7.7, 9.2.6,<br>9.2.9; Figure 9.2-6.1<br>3GPP TS 38.321 V15.6.0: Sections 5.1.4, 5.2, 6.1.3.4                                          |
|        |       | US10728889                 | 26 Mar 2032 |  |  | 1 | 3GPP TS 36.300 V15.6.0: Sections 3.1, 3.2, 5.5.0, 7.5, 10.1.2.7, 10.1.5.0,<br>10.1.5.2; Figure 10.1.5.2-1<br>3GPP TS 36.321 V15.6.0: Sections 5.1.4, 6.1.3.5; Figure 6.1.3.5-1<br>3GPP TS 36.213 V15.6.0: Section 4.2.3<br>3GPP TS 36.104 V15.7.0: Sections 6.5.3, 6.5.3.1<br>3GPP TS 36.211 V15.6.0: Section 8.1; Figure 8.1-1 | 1 | 3GPP TR 21.905 V15.1.0: Section 4<br>3GPP TS 36.300 V15.6.0: Section 3.2<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 4.2, 5.1; Figure 5.1-2<br>3GPP TS 38.300 V15.6.0: Sections 3.1, 3.2, 4.1, 5.4.1, 7.1, 7.7, 9.2.6,<br>9.2.9; Figure 9.2-6.1<br>3GPP TS 38.321 V15.6.0: Sections 5.1.4, 5.2, 6.1.3.4                                          |
|        |       | US11528700                 | 08 Jun 2032 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 1 | 3GPP TS 38.133 V18.5.0: sections 3.3, 7.1, 7.1.1, 7.1.2<br>3GPP TS 38.211 V18.2.0: sections 5.2, 4.2, 4.3.1<br>3GPP TS 38.213 V18.2.0: sections 4.2, 5.2<br>3GPP TS 38.300 V18.1.0: sections 4.1, 4.4.1, 4.4.2, 5.4, 5.4.1, 7.7, 9.2.9<br>3GPP TS 38.321 V18.1.0: sections 5.2, 6.1.3, 6.1.3.4<br>3GPP TS 38.331 V18.1.0: sections 3.1, 6.3.2 |
| MEL045 | MELCO | CNZL201510225622.9         | 09 Aug 2026 |  |  | 4 | 3GPP TS 36.211 V10.5.0: Sections 1, 3.2, 6.1, 6.5, 6.11.1.2, 6.11.2.2<br>3GPP TS 36.331 V10.5.0: Sections 5.3.2.1, 5.3.2.2, 5.8.1.1, 6.3.7<br>3GPP TS 36.211 V10.5.0: Sections 7.1, 7.2                                                                                                                                         |   |                                                                                                                                                                                                                                                                                                                                               |
|        |       | JP5602255                  | 09 Aug 2026 |  |  | 4 | 3GPP TS 36.211 V10.5.0: Sections 6.1, 6.5, 6.11.1, 6.11.2<br>3GPP TS 36.304 V10.5.0: Sections 7.1, 7.2<br>3GPP TS 36.331 V10.5.0: Sections 5.3.2, 6.3.7                                                                                                                                                                         |   |                                                                                                                                                                                                                                                                                                                                               |
| MEL046 | MELCO | JP6612940                  | 09 Feb 2031 |  |  | 4 | 3GPP TS 36.300 V12.5.0: Sections 4, 4.9.1 and 10.1.2.8.1<br>3GPP TS 35.423 V12.5.0: Sections 1 and 9.1.3.2<br>3GPP TS 36.331 V12.5.0: Sections 6.2.2 and 6.3.2                                                                                                                                                                  | 4 | 3GPP TS 38.300 V15.0.0: Sections 1, 4.5<br>3GPP TS 37.340 V15.0.0: Sections 1, 3.1, 3.2, 4.1.2, 4.2.1, 10.2.1<br>3GPP TS 36.423 V15.2.0: Sections 1, 7, 8.7.4.2, 9.14.2<br>3GPP TS 38.331 V15.1.0: Sections 6.2.2, 6.3.2, 11.2<br>3GPP TS 36.331 V15.1.0: Sections 5.3.5, 6.2.2                                                               |
| MEL048 | MELCO | CNZL201710562025.4         | 21 Apr 2030 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 4 | 3GPP TS 38.300 V17.3.0: sections 4.1, 5.4, 5.4.1<br>3GPP TS 38.331 V17.3.0: sections 5.6.1, 5.6.1.1, 5.6.1.3, 5.6.1.4, 6.3.3<br>3GPP TS 38.101-1 V17.8.0: section 3.1                                                                                                                                                                         |
|        |       | EP3661240 (DE, FR, GB, NL) | 21 Apr 2030 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 5 | 3GPP TS 38.300 V17.3.0: sections 4.1, 5.4, 5.4.1<br>3GPP TS 38.331 V17.3.0: sections 5.6.1, 5.6.1.1, 5.6.1.3, 5.6.1.4, 6.3.3<br>3GPP TS 38.101-1 V17.8.0: section 3.1                                                                                                                                                                         |
|        |       | JP6815286                  | 21 Apr 2030 |  |  |   |                                                                                                                                                                                                                                                                                                                                 | 4 | 3GPP TS 38.300 V17.3.0: sections 4.1, 5.4, 5.4.1<br>3GPP TS 38.331 V17.3.0: sections 5.6.1, 5.6.1.1, 5.6.1.3, 5.6.1.4, 6.3.3<br>3GPP TS 38.101-1 V17.8.0: section 3.1                                                                                                                                                                         |

|        |       |                    |             |  |  |   |                                                                                                                                                                       |   |                                                                                                                                                                                                                                                                          |
|--------|-------|--------------------|-------------|--|--|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEL048 | MELCO | US10356635         | 07 Jul 2030 |  |  | 5 | 3GPP TS 36.300 V17.3.0: Sections 4.0, 5.5, 5.5.0, 7.5<br>3GPP TS 36.331 V17.3.0: Sections 5.6.3, 5.6.3.1, 5.6.3.3, 6.2, 6.2.2<br>3GPP TS 36.1.1 V17.8.0: Sections 3.1 | 5 | 3GPP TS 38.300 V17.3.0: sections 4.1, 5.4, 5.4.1<br>3GPP TS 38.331 V17.3.0: sections 5.6.1, 5.6.1.1, 5.6.1.3, 5.6.1.4, 6.3.3<br>3GPP TS 38.101.1 V17.8.0: section 3.1                                                                                                    |
| MEL049 | MELCO | JP6457578          | 15 Jun 2030 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.101.1 V18.4.0: section 5.2<br>3GPP TS 38.211 V18.1.0: section 6.4.1.4.2<br>3GPP TS 38.212 V18.1.0: section 7.3.1.3.4<br>3GPP TS 38.213 V18.1.0: Section 11.4<br>3GPP TS 38.300 V18.0.0: sections 5.3.6, 5.4.1<br>3GPP TS 38.331 V18.0.0: section 6.2.2, 6.3.2 |
|        |       | US12003325         | 15 Jun 2030 |  |  |   |                                                                                                                                                                       | 2 | 3GPP TS 38.101.1 V18.4.0: section 5.2<br>3GPP TS 38.211 V18.1.0: section 6.4.1.4.2<br>3GPP TS 38.212 V18.1.0: section 7.3.1.3.4<br>3GPP TS 38.213 V18.1.0: Section 11.4<br>3GPP TS 38.300 V18.0.0: sections 5.3.6, 5.4.1<br>3GPP TS 38.331 V18.0.0: section 6.2.2, 6.3.2 |
| MEL050 | MELCO | CNZL201710073972.7 | 07 Feb 2032 |  |  | 2 | 3GPP TS 36.300 V17.3.0: Sections 3.1, 3.2, 4.0, 4.9, 4.9.1, 4.9.3.3, 6.3,<br>6.3.5, 7.6, 10.1.2.8.9<br>3GPP TS 36.331 V17.3.0: Sections 5.5.5, 5.5.5.1, 6.2           |   |                                                                                                                                                                                                                                                                          |
|        |       | JP6366763          | 07 Feb 2032 |  |  | 2 | 3GPP TS 36.300 V17.3.0: Sections 3.1, 3.2, 4.0, 4.9, 4.9.1, 4.9.3.3, 6.3,<br>6.3.5, 7.6, 10.1.2.8.9<br>3GPP TS 36.331 V17.3.0: Sections 5.5.5, 5.5.5.1, 6.2           |   |                                                                                                                                                                                                                                                                          |
|        |       | US10575191         | 07 Feb 2032 |  |  | 6 | 3GPP TS 36.300 V17.3.0: Sections 3.1, 3.2, 4.0, 4.9, 4.9.1, 4.9.3.3, 6.3,<br>6.3.5, 7.6, 10.1.2.8.9<br>3GPP TS 36.331 V17.3.0: Sections 5.5.5, 5.5.5.1, 6.2           |   |                                                                                                                                                                                                                                                                          |
|        |       | US10893421         | 07 Feb 2032 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.300 V17.3.0: sections 3.1, 3.2, 4.1, 5.4, 5.4.1, 7.7, 16.7, 16.7.1<br>3GPP TS 38.331 V17.3.0: sections 5.3.3.1, 5.3.3.4, 6.2, 6.2.2, 6.3.2                                                                                                                    |
| MEL054 | MELCO | CNZL201911334776.6 | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.6.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.6.0: Sections 4.1, 4.4.1<br>3GPP TS 38.425 V17.3.0: Sections 3.1, 5.4.3.1, 5.5.2.3, 5.5.3.39, 5.5.3.40,<br>5.5.3.44                                                                                    |
|        |       | CNZL201911335452.4 | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.0.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.0.0: Sections 4.1, 4.4.1<br>3GPP TS 38.473 V17.0.0: Sections 8.2.7.1, 8.2.7.2, 9.2.1.15                                                                                                                |
|        |       | CNZL201911336053.X | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.0.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.0.0: Sections 4.4.1<br>3GPP TS 38.473 V17.0.0: Sections 8.3.7.2                                                                                                                                        |
|        |       | JP6851438          | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.0.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.0.0: Sections 4.4.1<br>3GPP TS 38.473 V17.0.0: Sections 8.3.7.2                                                                                                                                        |
|        |       | JP7072696          | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.0.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.0.0: Sections 4.4.1<br>3GPP TS 38.473 V17.0.0: Sections 8.2.7.1, 8.2.7.2, 9.2.1.15                                                                                                                     |
|        |       | JP7254233          | 05 Jun 2034 |  |  |   |                                                                                                                                                                       | 3 | 3GPP TS 38.401 V17.6.0: Sections 3.1, 6.1.1<br>3GPP TS 38.300 V17.6.0: Sections 4.1, 4.4.1<br>3GPP TS 38.425 V17.3.0: Sections 3.1, 5.4.3.1, 5.5.2.3, 5.5.3.39, 5.5.3.40,<br>5.5.3.44                                                                                    |
| MEL055 | MELCO | JP7463447          | 08 Aug 2034 |  |  |   |                                                                                                                                                                       | 8 | 3GPP TS 38.300 V18.1.0: Sections 4.4.1, 4.4.2<br>3GPP TS 38.331 V18.1.0: Sections 5.2.1, 5.2.2.1, 5.2.2.2.1, 6.2.2, 6.3.2                                                                                                                                                |
| MEL056 | MELCO | CNZL201910467299.4 | 07 Aug 2035 |  |  |   |                                                                                                                                                                       | 1 | 3GPP TS 38.211 V16.1.0: Sections 3.2, 6.3.1.4, 6.3.1.5, 6.3.1.6,<br>6.4.1.1.2, 6.4.1.1.3; Tables 6.4.1.1.3-1, 6.4.1.1.3-5<br>3GPP TS 38.300 V16.1.0: Sections 4.4.1, 4.4.2, 5.1, 5.2.3, 5.3.2, 10.1;<br>Figures 4.4.1-1, 4.4.2-1, 5.1-1                                  |
|        |       | JP6239194          | 07 Aug 2035 |  |  |   |                                                                                                                                                                       | 1 | 3GPP TS 38.201 V16.0.0: Sections 3.3<br>3GPP TS 38.211 V15.6.0: Sections 3.2, 5.1, 5.2.2, 6.2, 6.3.1.6,<br>6.4.1.1.6, 6.4.1.1.2, 6.4.1.1.3<br>3GPP TS 38.300 V15.6.0: Sections 5.1, 5.3.2                                                                                |
| MEL057 | MELCO | JP6300992          | 10 Mar 2034 |  |  |   |                                                                                                                                                                       | 1 | 3GPP TS 38.201 V16.0.0: Sections 3.3<br>3GPP TS 38.211 V15.6.0: Sections 3.2, 5.2.1, 6.2, 6.3.1.2, 6.3.1.3, 6.3.1.4,<br>6.4.1.2.1, 6.4.1.2.2<br>3GPP TS 38.300 V15.6.0: Sections 5.1                                                                                     |
|        |       | US11290312         | 10 Mar 2034 |  |  |   |                                                                                                                                                                       | 2 | 3GPP TS 38.211 V15.6.0: Sections 3.2, 3.3, 5.1, 5.1.1, 5.1.2, 5.1.3, 5.1.4,<br>5.1.5, 5.1.6, 6.3.1.2, 6.3.1.3, 6.3.1.4, 6.4.1.2.2; Tables 6.3.1.2-1,<br>6.4.1.2.2-1<br>3GPP TS 38.300 V15.6.0: Sections 3.1, 3.2, 4.1, 5.1, 5.3.2; Figure 5.1-1                          |
| MEL058 | MELCO | JP6852203          | 27 Sep 2036 |  |  |   |                                                                                                                                                                       | 1 | 3GPP TS 38.211 V15.8.0: Section 3.3<br>3GPP TS 38.213 V15.8.0: Sections 4.1, 10.1, 13; Tables 13-7, 13-8<br>3GPP TS 38.300 V15.8.0: Sections 4.1, 5.2.4, 5.5<br>3GPP TS 38.331 V15.8.0: Sections 4.4, 5.2.1, 5.2.2.3.2, 6.3.2                                            |
| MEL069 | MELCO | US11569968         | 24 Apr 2032 |  |  |   |                                                                                                                                                                       | 2 | 3GPP TS 38.300 V17.3.0: sections 3.1, 4.1, 4.2, 4.5<br>3GPP TS 38.331 V17.3.0: sections 5.5, 5.5.1, 5.5.5, 6.3.2, 11.2.2<br>3GPP TS 38.423 V17.3.0: sections 8.3, 8.3.3, 9.1.2.5, 9.2.2.27                                                                               |
| MEL070 | MELCO | US11324001         | 02 Aug 2033 |  |  |   |                                                                                                                                                                       | 9 | 3GPP TS 38.300 V17.3.0: sections 4.1, 9.2.4<br>3GPP TS 38.331 V17.3.0: sections 6.2.2, 6.3.2, 11.2.2<br>3GPP TS 37.340 V17.3.0: section 10.2.2                                                                                                                           |

|         |                      |                                                    |             |   |                                                                                                                                                                                                                                                                                                                                                                               |  |    |                                                                                                                                                                                                              |                                                                                                                                                                                                                           |  |
|---------|----------------------|----------------------------------------------------|-------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| MEL071  | MELCO                | US11050595                                         | 27 Dec 2037 |   |                                                                                                                                                                                                                                                                                                                                                                               |  |    | 14                                                                                                                                                                                                           | 3GPP TS 38.211 V15.8.0: Sections 3.2, 3.3, 6.3.1.4, 6.4.1.2.2; Table 6.4.1.2.2.1<br>3GPP TS 38.214 V15.8.0: Sections 6.2.3.2; Table 6.2.3.2.1<br>3GPP TS 38.300 V15.8.0: Sections 3.1, 3.2, 4.1, 5.1, 5.3.2; Figure 5.1.1 |  |
| MEL072  | MELCO                | US11363560                                         | 27 Sep 2031 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 9  | 3GPP TS 36.300 V17.3.0: Sections 23.7, 23.7a, 23.7b<br>3GPP TS 36.212 V17.1.0: Sections 3.1, 3.3, 5.3.3.1.10, 5.3.3.1.11, 5.3.3.1.12, 5.3.3.1.13, 5.3.3.1.14<br>3GPP TS 36.231 V17.4.0: Sections 7.1.11, 8.0 |                                                                                                                                                                                                                           |  |
| MEL073  | MELCO                | CNZL202110260766.3                                 | 03 Aug 2035 |   |                                                                                                                                                                                                                                                                                                                                                                               |  |    | 3                                                                                                                                                                                                            | 3GPP TS 38.300 V18.0.0: Section 4.1<br>3GPP TS 38.211 V18.1.0: Sections 6.1.2, 6.4.1.4.2<br>3GPP TS 38.331 V18.0.0: Sections 3.2, 6.2.2, 6.3.2                                                                            |  |
| MEL074  | MELCO                | JP7433369                                          | 16 Dec 2034 |   |                                                                                                                                                                                                                                                                                                                                                                               |  |    | 5                                                                                                                                                                                                            | 3GPP TS 38.331 V18.0.0: Section 6.2.2<br>3GPP TS 37.340 V18.0.0: Sections 3.1, 3.2.4.1.1, 4.1.2, 7.1, 7.13                                                                                                                |  |
| MEL075  | MELCO                | US11997557                                         | 16 Mar 2035 |   |                                                                                                                                                                                                                                                                                                                                                                               |  |    | 4                                                                                                                                                                                                            | 3GPP TS 37.340 V18.0.0: sections 3.1, 3.2, 4.1.1, 10.8.1                                                                                                                                                                  |  |
| NKO002* | Sisvel International | CA2318480                                          | 31 Aug 2018 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 27 | 3GPP TS 24.301 V8.10.0: Sections 4.2, 6.1.1, 6.4.1.1, 6.4.3.1, 6.4.3.2, 6.4.3.3, 6.4.3.4, 6.5.3.1, 8.3.18.1, 9.3.2, 9.9.4.3; Figure 6.4.3.2.1; Tables 8.3.18.1                                               |                                                                                                                                                                                                                           |  |
|         |                      | EP1051870 (DE, ES, FR, GB, IT, NL)                 | 31 Aug 2018 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 18 | 3GPP TS 24.301 V8.10.0: Sections 6.4.3.1, 6.4.3.2, 6.4.3.4, 8.3.17.1, 8.3.18.1, 8.3.18.2, 9.3.2, 9.9.4.3; Figure 6.4.3.2.1; Tables 8.3.17.1, 8.3.18.1                                                        |                                                                                                                                                                                                                           |  |
|         |                      | JP4002731                                          | 31 Aug 2018 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 1  | 3GPP TS 23.401 V8.18.0: Sections 4.2.1<br>3GPP TS 24.301 V8.10.0: Sections 6.4.2.2, 6.4.2.3, 6.4.3.2, 6.4.3.3, 8.3.18.1, 9.3.2, 9.9.4.3                                                                      |                                                                                                                                                                                                                           |  |
|         |                      | US6826406                                          | 31 Aug 2018 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 1  | 3GPP TS 24.301 V8.10.0: Sections 4.2, 6.1.1, 6.4.1.1, 6.4.3.1, 6.4.3.2, 6.4.3.3, 6.4.3.4, 6.5.3.1, 8.3.18.1, 9.3.2, 9.9.4.3; Figure 6.4.3.2.1; Tables 8.3.18.1                                               |                                                                                                                                                                                                                           |  |
|         |                      | US7599384                                          | 09 Sep 2022 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 17 | 3GPP TS 24.301 V8.10.0: Sections 4.2, 6.1.1, 6.4.1.1, 6.4.3.1, 6.4.3.2, 6.4.3.3, 6.4.3.4, 6.5.3.1, 8.3.18.1, 9.3.2, 9.9.4.3; Figure 6.4.3.2.1; Tables 8.3.18.1                                               |                                                                                                                                                                                                                           |  |
| NKO003* | Sisvel International | EPO852885 (AT, BE, DE, ES, FR, GB, GR, IE, IT, NL) | 25 Sep 2016 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 12 | 3GPP TS 23.401 V8.18.0: Sections 4.7, 4.7.1, 4.7.2, 4.7.2.1, 5.4, 5.4.1, 5.7, 5.7.1; Tables 5.4.1-1, 5.7.1-1                                                                                                 |                                                                                                                                                                                                                           |  |
| NKO005* | Sisvel International | CNZL99811826.5                                     | 05 Oct 2019 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 14 | 3GPP TS 23.003 V8.17.0: Sections 2.1, 2.8, 2.8.1<br>3GPP TS 23.401 V8.18.0: Section 5.3.7; Figure 5.3.7-1                                                                                                    |                                                                                                                                                                                                                           |  |
|         |                      | EP1119997 (AT, BE, DE, ES, FR, GB, IT, NL, PT, SE) | 05 Oct 2019 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 15 | 3GPP TS 23.003 V8.17.0: Sections 2.1, 2.8, 2.8.1<br>3GPP TS 23.401 V8.18.0: Section 5.3.7; Figure 5.3.7-1                                                                                                    |                                                                                                                                                                                                                           |  |
|         |                      | JP4226786                                          | 05 Oct 2019 |   |                                                                                                                                                                                                                                                                                                                                                                               |  | 1  | 3GPP TS 23.003 V8.17.0: Sections 2.1, 2.8.1<br>3GPP TS 23.401 V8.18.0: Sections 4.2.1, 5.2.2, 5.3.2.1                                                                                                        |                                                                                                                                                                                                                           |  |
| NKO009  | Sisvel International | BRPI9915081-6                                      | 05 Nov 2024 | 1 | 3GPP TS 25.301 V3.10.0: Sections 5.3.1, 5.3.1.1.1, 5.6.2, 7; Figure 13<br>3GPP TS 25.211 V3.12.0: Sections 3.2, 4.5, 7.6.1, 7.6.2, 7.6.3, 8.2, 8.2.1<br>3GPP TS 25.402 V3.10.0: Sections 7.7.1, 5, 9.3 A, 9.3.1, 9.3.1 A<br>3GPP TS 33.102 V3.10.0: Sections 6.6.4, 6.6.4.1, 6.4.8; Figure 16c<br>3GPP TS 25.331 V3.10.0: Sections 8.2.2.3, 8.5.8, 8.5.9, 10.3.7.6, 10.3.3.38 |  |    |                                                                                                                                                                                                              |                                                                                                                                                                                                                           |  |
|         |                      | CNZL200510106324.4                                 | 05 Nov 2019 | 1 | 3GPP TS 25.301 V3.10.0: Sections 5.3.1, 5.3.1.1.1, 5.6.2, 7; Figure 13<br>3GPP TS 25.211 V3.12.0: Sections 3.2, 4.5, 7.6.1, 7.6.2, 7.6.3, 8.2, 8.2.1<br>3GPP TS 25.402 V3.10.0: Sections 7.7.1, 5, 9.3 A, 9.3.1, 9.3.1 A<br>3GPP TS 33.102 V3.10.0: Sections 6.6.4, 6.6.4.1, 6.4.8; Figure 16c<br>3GPP TS 25.331 V3.10.0: Sections 8.2.2.3, 8.5.8, 8.5.9, 10.3.7.6, 10.3.3.38 |  |    |                                                                                                                                                                                                              |                                                                                                                                                                                                                           |  |
|         |                      | CNZL99813850.9                                     | 05 Nov 2019 | 1 | 3GPP TS 25.301 V3.10.0: Sections 5.3.1, 5.3.1.1.1, 5.6.2, 7; Figure 13<br>3GPP TS 25.211 V3.12.0: Sections 3.2, 4.5, 7.6.1, 7.6.2, 7.6.3, 8.2, 8.2.1<br>3GPP TS 25.402 V3.10.0: Sections 7.7.1, 5, 9.3 A, 9.3.1, 9.3.1 A<br>3GPP TS 33.102 V3.10.0: Sections 6.6.4, 6.6.4.1, 6.4.8; Figure 16c<br>3GPP TS 25.331 V3.10.0: Sections 8.2.2.3, 8.5.8, 8.5.9, 10.3.7.6, 10.3.3.38 |  |    |                                                                                                                                                                                                              |                                                                                                                                                                                                                           |  |
|         |                      | JP3519688                                          | 05 Nov 2019 | 1 | 3GPP TS 25.301 V3.10.0: Sections 5.3.1, 5.3.1.1.1, 5.6.2, 7; Figure 13<br>3GPP TS 25.211 V3.12.0: Sections 3.2, 4.5, 7.6.1, 7.6.2, 7.6.3, 8.2, 8.2.1<br>3GPP TS 25.402 V3.10.0: Sections 7.7.1, 5, 9.3 A, 9.3.1, 9.3.1 A<br>3GPP TS 33.102 V3.10.0: Sections 6.6.4, 6.6.4.1, 6.4.8; Figure 16c<br>3GPP TS 25.331 V3.10.0: Sections 8.2.2.3, 8.5.8, 8.5.9, 10.3.7.6, 10.3.3.38 |  |    |                                                                                                                                                                                                              |                                                                                                                                                                                                                           |  |

|         |                      |                                                                                 |             |    |                                                                                                                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
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| NKO009  | Sisvel International | US7085294                                                                       | 23 Aug 2022 | 21 | 3GPP TS 25.301 V3.10.0: Sections 5.3.1, 5.3.1.1, 5.6.2, 7; Figure 13<br>3GPP TS 25.211 V3.12.0: Sections 3.2, 4.5, 7.6.1, 7.6.2, 7.6.3, 8.2, 8.2.1<br>3GPP TS 25.402 V3.10.0: Sections 7.7.1, 5.9.3A, 9.3.1, 9.3.1A<br>3GPP TS 33.102 V3.10.0: Sections 6.6.4, 6.6.4.1, 6.4.6; Figure 16c<br>3GPP TS 25.331 V3.10.0: Sections 8.2.2.3, 8.5.8, 8.5.9, 10.3.7.6, 10.3.3.38 |   |                                                                                                                                                             |  |  |
| NKO011* | Sisvel International | EP2139272 (AT, BE, CH, DE, EK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE)      | 13 Oct 2020 |    |                                                                                                                                                                                                                                                                                                                                                                          | 1 | 3GPP TS 23.401 V8.18.0: Sections 5.3.2, 5.3.2.1; Table 5.3.2.1-1                                                                                            |  |  |
|         |                      | HK1132411                                                                       | 13 Oct 2020 |    |                                                                                                                                                                                                                                                                                                                                                                          | 1 | 3GPP TS 23.401 V8.18.0: Sections 5.3.2, 5.3.2.1; Table 5.3.2.1-1                                                                                            |  |  |
|         |                      | US7580714                                                                       | 13 Oct 2020 |    |                                                                                                                                                                                                                                                                                                                                                                          | 1 | 3GPP TS 23.401 V8.18.0: Sections 5.3.2, 5.3.2.1, 5.3.5.1; Figures 5.3.2.1-1, 5.3.5.1-1                                                                      |  |  |
|         |                      | US7979070                                                                       | 05 Nov 2020 |    |                                                                                                                                                                                                                                                                                                                                                                          | 1 | 3GPP TS 23.401 V8.18.0: Sections 5.3.2, 5.3.2.1, 5.3.5.1; Figures 5.3.2.1-1, 5.3.5.1-1                                                                      |  |  |
|         |                      | US9008615                                                                       | 30 Apr 2022 |    |                                                                                                                                                                                                                                                                                                                                                                          | 1 | 3GPP TS 24.301 V8.10.0: Sections 5.5.1.2.2, 5.5.1.2.4, 6.4.1.1, 8.2.4.1<br>3GPP TS 23.401 V8.18.0: Section 5.3.2.1<br>3GPP TS 36.331 V8.21.0: Section 5.3.5 |  |  |
| NKO012  | Sisvel International | BRPIO107654-0                                                                   | 08 Sep 2025 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | CA2395586                                                                       | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | CNZL01803214.1                                                                  | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | CNZL200510072602.9                                                              | 17 Jan 2021 | 23 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | EP1249151 (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE, TRI) | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | HK1087293                                                                       | 17 Jan 2021 | 23 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | IN221857                                                                        | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | KR10-0554710                                                                    | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
|         |                      | RU2233047                                                                       | 17 Jan 2021 | 11 | 3GPP TS 25.331 V3.21.0: Sections 8.1.3, 8.1.3.9, 10.2.36, 10.3.3.29, 10.3.6.36; Figures 8.1.3-2                                                                                                                                                                                                                                                                          |   |                                                                                                                                                             |  |  |
| NKO013  | Sisvel International | EP1470684 (DE, FR, GB, IT)                                                      | 21 Jan 2022 | 37 | 3GPP TS 24.229 V5.10.0: Sections 4.1, 5.1.1, 5.1.1.3, 5.1.1.7<br>3GPP TS 23.228 V5.10.0: Sections 5.3, 5.3.2, 5.3.2.2.1, 5.3.3; Figure 5.5 IETF RFC 3680: Section 4.7                                                                                                                                                                                                    |   |                                                                                                                                                             |  |  |
|         |                      | JP4586056                                                                       | 21 Jan 2022 | 6  | 3GPP TS 24.229 V5.10.0: Sections 4.1, 5.1.1, 5.1.1.3, 5.1.1.7<br>3GPP TS 23.228 V5.10.0: Sections 5.3, 5.3.2, 5.3.2.2.1, 5.3.3; Figure 5.5 IETF RFC 3680: Section 4.7                                                                                                                                                                                                    |   |                                                                                                                                                             |  |  |
|         |                      | KR10-0704036                                                                    | 21 Jan 2022 | 37 | 3GPP TS 24.229 V5.10.0: Sections 4.1, 5.1.1, 5.1.1.3, 5.1.1.7<br>3GPP TS 23.228 V5.10.0: Sections 5.3, 5.3.2, 5.3.2.2.1, 5.3.3; Figure 5.5 IETF RFC 3680: Section 4.7                                                                                                                                                                                                    |   |                                                                                                                                                             |  |  |
|         |                      | US8571548                                                                       | 22 Apr 2027 | 26 | 3GPP TS 24.229 V5.10.0: Sections 4.1, 5.1.1, 5.1.1.3, 5.1.1.7<br>3GPP TS 23.228 V5.10.0: Sections 5.3, 5.3.2, 5.3.2.2.1, 5.3.3; Figure 5.5 IETF RFC 3680: Section 4.7                                                                                                                                                                                                    |   |                                                                                                                                                             |  |  |
| NKO019* | Sisvel International | USRE40825                                                                       | 19 Feb 2023 | 46 | 3GPP TS 25.214 V3.12.0: Sections 7, 7.1, 7.3; Figure 3<br>3GPP TS 25.331 V5.13.0: Sections 8.6, 8.6.6, 8.6.6.24, 10.3.6, 10.3.6.21, 10.3.6.86<br>3GPP TS 25.211 V5.3.0: Sections 5.2.1; Figure 2                                                                                                                                                                         |   |                                                                                                                                                             |  |  |
| NKO026  | Sisvel International | USRE42692                                                                       | 21 Jul 2025 | 28 | 3GPP TS 25.211 V5.8.0: Sections 5.3.3.12, 5.3.3.13<br>3GPP TS 25.212 V5.8.0: Section 4.6.2.3<br>3GPP TS 25.213 V5.8.0: Section 5.2.1                                                                                                                                                                                                                                     |   |                                                                                                                                                             |  |  |
| NKO028* | Sisvel International | CA2395756                                                                       | 09 Jan 2021 | 18 | 3GPP TS 25.215 V3.6.0: Sections 6.1.1.1, 6.1.1.2; Figure 1<br>3GPP TS 25.212 V3.6.0: Sections 4.2, 4.4, 4.4.1; Figures 1, 11, 12<br>3GPP TS 25.331 V3.6.0: Sections 10.3.6.33, 14.2, 14.3                                                                                                                                                                                |   |                                                                                                                                                             |  |  |
|         |                      | CNZL01803595.7                                                                  | 09 Jan 2021 | 17 | 3GPP TS 25.215 V3.6.0: Sections 6.1.1.1, 6.1.1.2; Figure 1<br>3GPP TS 25.212 V3.6.0: Sections 4.2, 4.4, 4.4.1; Figures 1, 11, 12<br>3GPP TS 25.331 V3.6.0: Sections 10.3.6.33, 14.2, 14.3                                                                                                                                                                                |   |                                                                                                                                                             |  |  |
|         |                      | US7020108                                                                       | 09 Aug 2023 | 16 | 3GPP TS 25.215 V3.6.0: Sections 6.1.1.1, 6.1.1.2; Figure 1<br>3GPP TS 25.212 V3.6.0: Sections 4.2, 4.4, 4.4.1; Figures 1, 11, 12<br>3GPP TS 25.331 V3.6.0: Sections 10.3.6.33, 14.2, 14.3                                                                                                                                                                                |   |                                                                                                                                                             |  |  |
| NKO030  | Sisvel International | BRPIO108480-1                                                                   | 23 Feb 2028 | 16 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                                                                                                                                                               |   |                                                                                                                                                             |  |  |
|         |                      | CA2401037                                                                       | 23 Feb 2021 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                                                                                                                                                               |   |                                                                                                                                                             |  |  |
|         |                      | CNZL01805488.9                                                                  | 23 Feb 2021 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                                                                                                                                                               |   |                                                                                                                                                             |  |  |

|         |                      |                                                                                                           |             |    |                                                                                                                                                                                                                                 |   |                                                                                                                                                                                                |  |  |
|---------|----------------------|-----------------------------------------------------------------------------------------------------------|-------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| NKO030  | Sisvel International | EP1264504<br>(DE, ES, FR, GB, IT, NL)                                                                     | 23 Feb 2021 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                      |   |                                                                                                                                                                                                |  |  |
|         |                      | JP3961774                                                                                                 | 23 Feb 2021 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                      |   |                                                                                                                                                                                                |  |  |
|         |                      | KR10-0501836                                                                                              | 23 Feb 2021 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                      |   |                                                                                                                                                                                                |  |  |
|         |                      | US7751803                                                                                                 | 01 Feb 2026 | 17 | 3GPP TS 25.331 V7.2.0: Sections 7.1, 8.3.1.2, 8.3.1.13, 8.3.1.14, 8.2.2.1, 10.3.3.43, 13.1                                                                                                                                      |   |                                                                                                                                                                                                |  |  |
| NKO034* | Sisvel International | EP1540864<br>(DE, FR, GB)                                                                                 | 19 Sep 2023 | 15 | 3GPP TS 25.211 V6.4.0: Sections 3.2, 5.2.1.2; Figure 2A<br>3GPP TS 25.214 V6.4.0: Sections 1, 3.2, 6A.1.1.<br>3GPP TS 25.212 V6.3.0: Sections 4.7.1, 4.7.1.1; Table 13A                                                         |   |                                                                                                                                                                                                |  |  |
|         |                      | US7116651                                                                                                 | 27 Sep 2023 | 27 | 3GPP TS 25.211 V6.4.0: Sections 3.2, 5.2.1.2; Figure 2A<br>3GPP TS 25.214 V6.4.0: Sections 1, 3.2, 6A.1.1.<br>3GPP TS 25.212 V6.3.0: Sections 4.7.1, 4.7.1.1; Table 13A                                                         |   |                                                                                                                                                                                                |  |  |
| NKO035  | Sisvel International | EP1807956<br>(AT, BE, CH, CZ, DE, DK, ES, FI, FR, GB, GR, HU, IE, IT, LI, LU, NL, PL, PT, RO, SE, SK, TR) | 13 Oct 2025 |    |                                                                                                                                                                                                                                 | 1 | 3GPP TS 36.201 V8.3.0: Sections 4.2.1<br>3GPP TS 36.212 V8.8.0: 5.2, 5.2.1, 5.2.2, 5.2.6<br>3GPP TS 36.213 V8.8.0: 7.2, 7.2.1, 7.2.2, 7.2.3, 7.2.4; Tables 7.2.1-1, 7.2.2-1, 7.2.3-0, 7.2.3-1  |  |  |
|         |                      | US7283499                                                                                                 | 12 Apr 2026 |    |                                                                                                                                                                                                                                 | 1 | 3GPP TS 36.201 V8.3.0: Sections 4.1.2, 4.2.1<br>3GPP TS 36.212 V8.8.0: Sections 4.2, 5, 5.3.2; Figure 5.3.2-1<br>3GPP TS 36.213 V8.8.0: Sections 7.2, 7.2.1, 7.2.2, 7.2.3, 7.2.4; Table: 7.2.3 |  |  |
| NKO036  | Sisvel International | AU2005283836                                                                                              | 12 Sep 2025 | 6  | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | CNZL201610989568.X                                                                                        | 12 Sep 2025 | 10 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | EP1794950<br>(DE, FR, GB, IT, RO)                                                                         | 12 Sep 2025 | 11 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | IN264926                                                                                                  | 12 Sep 2025 | 11 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | JP4514795                                                                                                 | 12 Sep 2025 | 11 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | KR10-0915853                                                                                              | 12 Sep 2025 | 33 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | US8787158                                                                                                 | 16 Sep 2025 | 1  | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
|         |                      | US9019829                                                                                                 | 13 Dec 2029 | 13 | 3GPP TS 25.211 V6.6.0: Sections 5.2.1, 5.2.1.3; Figure 2B<br>3GPP TS 25.321 V6.7.0: Sections 9.2.5.3, 9.2.5.3.1, 11.8.1.3, 11.8.1.3.1, 11.8.1.5,<br>3GPP TS 25.212 V6.7.0: Sections 4.9.1, 4.9.2.3, 4.9.5; Figure 23; Table 16A |   |                                                                                                                                                                                                |  |  |
| NKO039  | Sisvel International | AU2004315850                                                                                              | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2                                                                       |   |                                                                                                                                                                                                |  |  |
|         |                      | BRPI0418494-7                                                                                             | 17 Dec 2028 | 14 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2                                                                       |   |                                                                                                                                                                                                |  |  |
|         |                      | CA2554079                                                                                                 | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2                                                                       |   |                                                                                                                                                                                                |  |  |
|         |                      | CNZL200480040893.7                                                                                        | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2                                                                       |   |                                                                                                                                                                                                |  |  |
|         |                      | IN263794                                                                                                  | 17 Dec 2024 | 1  | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2                                                                       |   |                                                                                                                                                                                                |  |  |

|        |                      |                                                                                   |             |    |                                                                                                                                                           |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
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| NKO039 | Sisvel International | JP4468960                                                                         | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2 |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | KR10-0787532                                                                      | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2 |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | RU2337490                                                                         | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2 |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | RU2407238                                                                         | 17 Dec 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2 |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | US7133690                                                                         | 15 May 2024 | 16 | 3GPP TS 25.321 V6.15.0: Sections 3.1.2, 9.2.5.2.1, 11.8.1.3, 11.8.1.3.1<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.4<br>3GPP TS 25.214 V6.11.0: Section 6B.2 |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
| NKO041 | Sisvel International | BRPIO512333-0                                                                     | 20 Jun 2028 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | CA2571423                                                                         | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | CNZL200580026115.7                                                                | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | EP1759555<br>(DE, ES, FR, GB, IT, NL)                                             | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | IN308766                                                                          | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | JP4827839                                                                         | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | KR10-1013227                                                                      | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>2GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | KR10-1077598                                                                      | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | RU2408170                                                                         | 20 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | TWI352551                                                                         | 21 Jun 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | US8155060                                                                         | 03 Oct 2026 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
|        |                      | US8249012                                                                         | 17 Aug 2025 | 1  | 3GPP TS 25.214 V6.5.0: Section 4.3.1.2<br>3GPP TS 25.331 V6.6.0: Sections 8.3.1.2, 8.5.6, B.3.1.2<br>3GPP TS 25.211 V6.5.0: Section 5.3.2.6               |    |                                                                                                                                                                                                                                                               |    |                                                                                                                      |
| NKO044 | Sisvel International | CNZL200680038765.8                                                                | 22 Aug 2026 |    |                                                                                                                                                           | 16 | 3GPP TS 36.322 V10.0.0: Sections 4.1, 4.2.1, 6.2, 6.2.1.1, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.2.1, 6.2.2.2, 6.2.2.5, 6.2.2.6; Figures 4.2.1-1, 6.2.1.3-3, 6.2.1.3-4, 6.2.1.3-5, 6.2.1.3-6, 6.2.1.4-2, 6.2.1.4-3, 6.2.1.5-1, 6.2.1.5-2, 6.2.1.5-3; Table 6.2.2.6-1 | 16 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
|        |                      | EP1925142<br>(AT, BE, CH, CZ, DE, ES, FR, GB, IE, IT, LU, NL, PL, PT, RO, SE, TR) | 22 Aug 2026 |    |                                                                                                                                                           | 14 | 3GPP TS 36.322 V10.0.0: Sections 4.1, 4.2.1, 6.2, 6.2.1.1, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.2.1, 6.2.2.2, 6.2.2.5, 6.2.2.6; Figures 4.2.1-1, 6.2.1.3-3, 6.2.1.3-4, 6.2.1.3-5, 6.2.1.3-6, 6.2.1.4-2, 6.2.1.4-3, 6.2.1.5-1, 6.2.1.5-2, 6.2.1.5-3; Table 6.2.2.6-1 | 14 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
|        |                      | IN318570                                                                          | 22 Aug 2026 |    |                                                                                                                                                           | 14 | 3GPP TS 36.322 V10.0.0: Sections 4.1, 4.2.1, 6.2, 6.2.1.1, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.2.1, 6.2.2.2, 6.2.2.5, 6.2.2.6; Figures 4.2.1-1, 6.2.1.3-3, 6.2.1.3-4, 6.2.1.3-5, 6.2.1.3-6, 6.2.1.4-2, 6.2.1.4-3, 6.2.1.5-1, 6.2.1.5-2, 6.2.1.5-3; Table 6.2.2.6-1 | 14 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
|        |                      | JP4875084                                                                         | 22 Aug 2026 |    |                                                                                                                                                           |    |                                                                                                                                                                                                                                                               | 14 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
|        |                      | KR10-0950843                                                                      | 22 Aug 2026 |    |                                                                                                                                                           | 16 | 3GPP TS 36.322 V10.0.0: Sections 4.1, 4.2.1, 6.2, 6.2.1.1, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.2.1, 6.2.2.2, 6.2.2.5, 6.2.2.6; Figures 4.2.1-1, 6.2.1.3-3, 6.2.1.3-4, 6.2.1.3-5, 6.2.1.3-6, 6.2.1.4-2, 6.2.1.4-3, 6.2.1.5-1, 6.2.1.5-2, 6.2.1.5-3; Table 6.2.2.6-1 | 16 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
|        |                      | US7894443                                                                         | 26 Dec 2028 |    |                                                                                                                                                           | 16 | 3GPP TS 36.322 V10.0.0: Sections 4.1, 4.2.1, 6.2, 6.2.1.1, 6.2.1.3, 6.2.1.4, 6.2.1.5, 6.2.2.1, 6.2.2.2, 6.2.2.5, 6.2.2.6; Figures 4.2.1-1, 6.2.1.3-3, 6.2.1.3-4, 6.2.1.3-5, 6.2.1.3-6, 6.2.1.4-2, 6.2.1.4-3, 6.2.1.5-1, 6.2.1.5-2, 6.2.1.5-3; Table 6.2.2.6-1 | 16 | 3GPP TS 38.322 V15.5.0: Sections 1, 4.2, 4.2.1, 4.2.1.2.2, 4.2.1.3.2, 6.2.2, 6.2.2.1, 6.2.2.3, 6.2.2.4, 6.2.3.4      |
| NTT001 | NTT                  | JP6758472                                                                         | 14 Jul 2037 |    |                                                                                                                                                           |    |                                                                                                                                                                                                                                                               | 4  | 3GPP TS 23.228 V15.0.0: Sections 4.14, 5.4.13<br>3GPP TS 24.229 V15.0.0: Sections 3.1, 3.2, 4.1, 5.10.7, 6.7.1.3, T2 |

|               |              |                                        |             |    |                                                                                                                                                                                                                                                                                                  |    |                                                                                                            |  |  |  |
|---------------|--------------|----------------------------------------|-------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------|--|--|--|
| <b>ORA002</b> | 3G Licensing | BRPIO116844-4                          | 19 Nov 2025 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                        |    |                                                                                                            |  |  |  |
|               |              | CA2436318                              | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>3GPP ETSI ES 202 050 V1.1.5 sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                    |    |                                                                                                            |  |  |  |
|               |              | CNZL01822358.3                         | 19 Nov 2021 | 8  | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>ETSI ES 202 050 V1.1.5: Section 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                                                                                            |    |                                                                                                            |  |  |  |
|               |              | EP1356461 (DE, ES, FR, GB, IT, NL, TR) | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                        |    |                                                                                                            |  |  |  |
|               |              | HK1057639                              | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                   |    |                                                                                                            |  |  |  |
|               |              | JP4210521                              | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                   |    |                                                                                                            |  |  |  |
|               |              | KR10-0549133                           | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                   |    |                                                                                                            |  |  |  |
|               |              | MX243041                               | 19 Nov 2021 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                   |    |                                                                                                            |  |  |  |
|               |              | US7313518                              | 27 Apr 2024 | 10 | 3GPP TS 22.243 V8.0.0: Sections 1, 2.2, 3.1, 4, 5, 7; Figure 1<br>3GPP TS 26.243 V8.0.0: Section 2<br>3GPP TS 26.177 V8.0.0: Section 2<br>ETSI ES 202 050 V1.1.5: Sections 4, 5.1.1, 5.1.3, 5.1.4, 5.1.5; Figures 4.1, 5.1.5.2                                                                   |    |                                                                                                            |  |  |  |
| <b>ORA007</b> | 3G Licensing | EP1690361 (DE, FR, GB)                 | 02 Dec 2024 |    |                                                                                                                                                                                                                                                                                                  | 12 | 3GPP TS 36.211 V10.7.0: Sections 6.3, 6.3.3, 6.3.4.3                                                       |  |  |  |
|               |              | JP4845738                              | 02 Dec 2024 |    |                                                                                                                                                                                                                                                                                                  | 12 | 3GPP TS 36.211 V10.7.0: Sections 6.3, 6.3.3, 6.3.4.3                                                       |  |  |  |
|               |              | KR10-1092537                           | 02 Dec 2024 |    |                                                                                                                                                                                                                                                                                                  | 12 | 3GPP TS 36.211 V10.7.0: Sections 6.3, 6.3.3, 6.3.4.3                                                       |  |  |  |
|               |              | US7933564                              | 23 Oct 2026 |    |                                                                                                                                                                                                                                                                                                  | 1  | 3GPP TS 36.211 V10.7.0: Sections 6.3, 6.3.2, 6.3.3, 6.3.3.3, 6.3.4, 6.3.4.3; Figure 6.3-1: Table 6.3.3.3-1 |  |  |  |
| <b>ORA008</b> | 3G Licensing | US7860069                              | 07 Aug 2026 | 14 | 3GPP TS 23.401 V8.15.0: Sections 1, 4.2.1, 4.7.1, 5.1.2.1; Figures 5.1.2.1-1, 5.3.1.1, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 23.228 V8.12.0: Section 4.3.1<br>3GPP TS 23.221 V8.9.0: Section 5.6                                                                                                  |    |                                                                                                            |  |  |  |
| <b>ORA030</b> | 3G Licensing | US8781469                              | 13 Dec 2028 | 23 | 3GPP TS 23.401 V8.15.0: Sections 4.3.2.2, 4.7.5, 5.3.2.1, 5.4.1; Figures 5.3.2.1-1, 5.4.1-1<br>3GPP TS 23.203 V8.14.0: Sections 3.1, 4.1, 5.2.2<br>3GPP TS 29.212 V8.15.0: Section 4.5.1                                                                                                         |    |                                                                                                            |  |  |  |
| <b>ORA032</b> | 3G Licensing | EP2266351 (DE, ES, FR, GB, IT)         | 17 Mar 2029 | 1  | 3GPP TS 23.327 V8.4.0: Sections 1, 2, 3.2, 4.1, 5.2, 5.2.2, 5.3.3, 5.4, 6.1, 6.3.2.1; Figures 5.2.2-1, 6.1, 6.3.2.1-1<br>3GPP TS 23.060 V8.15.0: Sections 5.4.1.1, 5.4.1.2, 9.2.1<br>3GPP TS 23.234 V8.0.0: Sections 5.10.1<br>IETF RFC 3775: Sections 10.3.2<br>IETF REC 5555: Sections 4.4.2.1 |    |                                                                                                            |  |  |  |
|               |              | US8532076                              | 15 Jan 2030 | 1  | 3GPP TS 23.327 V8.4.0: Sections 1, 2, 3.2, 4.1, 5.2, 5.2.2, 5.3.3, 5.4, 6.1, 6.3.2.1; Figures 5.2.2-1, 6.1, 6.3.2.1-1<br>3GPP TS 23.060 V8.15.0: Sections 5.4.1.1, 5.4.1.2, 9.2.1<br>3GPP TS 23.234 V8.0.0: Sections 5.10.1<br>IETF RFC 3775: Sections 10.3.2<br>IETF REC 5555: Sections 4.4.2.1 |    |                                                                                                            |  |  |  |
|               |              | US8964714                              | 17 Mar 2029 | 1  | 3GPP TS 23.327 V8.4.0: Sections 1, 2, 3.2, 4.1, 5.2, 5.2.2, 5.3.3, 5.4, 6.1, 6.3.2.1; Figures 5.2.2-1, 6.1, 6.3.2.1-1<br>3GPP TS 23.060 V8.15.0: Sections 5.4.1.1, 5.4.1.2, 9.2.1<br>3GPP TS 23.234 V8.0.0: Sections 5.10.1<br>IETF RFC 3775: Sections 10.3.2<br>IETF REC 5555: Sections 4.4.2.1 |    |                                                                                                            |  |  |  |

|        |              |                                               |             |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
|--------|--------------|-----------------------------------------------|-------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| ORA039 | 3G Licensing | CN00680017858.2                               | 22 Mar 2026 | 1 | 3GPP TS 23.060 V8.9.0: Section 1, 3.1, 4, 5.1, 5.2.1, 5.3.2, 5.3.2.1, 5.3.2.2, 5.4.1.1, 5.4.1.2, 9.2.1A, 9.6; Figure 1<br>3GPP TS 23.401 V8.10: Sections 3.2, 4.2.1, 4.2.2, 4.3.2.1, 4.3.2.2, 4.4.3.1, 4.4.3.2, 4.4.7.1, 4.4.7.2, 4.4.7.3, 4.7.1, 4.7.2.1, 4.7.2.2; Figure 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.7.2.2-1<br>3GPP TS 23.402 V8.6.0: Sections 1, 4.2.1, 4.2.2, 4.2.3, 4.3.1.1, 4.3.1.2, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.8.1, 4.8.2.1, 4.10.3, 8.5.1; Figure 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.1.1-1, 8.5.1-1<br>3GPP TS 23.203 V8.11.0: Sections 1, 3.1, 6.1.0, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.4, 6.2.1.0, A.1.0, A.1.1.2, A.1.1.3, A.4.0, A.4.1.1, A.4.1.2, A.5.0, A.5.1.0, A.5.1.1, D.1.1, D.2, H.1, H.2; Figures A.1, A.4, D.1.1, D.2.1                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
|        |              | EP1869840<br>(DE, ES, FR, GB, IT, NL, PL, TR) | 22 Mar 2026 | 1 | 3GPP TS 23.060 V8.9.0: Sections 1, 3.1, 4, 5.1, 5.2.1, 5.3.2, 5.3.2.1, 5.3.2.2, 5.4.1.1, 5.4.1.2, 9.2.1A, 9.6; Figure 1<br>3GPP TS 23.401 V8.10: Sections 3.2, 4.2.1, 4.2.2, 4.3.2.1, 4.3.2.2, 4.4.3.1, 4.4.3.2, 4.4.7.1, 4.4.7.2, 4.4.7.3, 4.7.1, 4.7.2.1, 4.7.2.2; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.7.2.2-1<br>3GPP TS 23.402 V8.6.0: Sections 1, 4.2.1, 4.2.2, 4.2.3, 4.3.1.1, 4.3.1.2, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.8.1, 4.8.2.1, 4.10.3 and 8.5.1; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.1.1-1, 8.5.1-1<br>3GPP TS 23.203 V8.11.0: Sections 1, 3.1, 6.1.0, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.4, 6.2.1.0, A.1.0, A.1.1.2, A.1.1.3, A.4.0, A.4.1.1, A.4.1.2, A.5.0, A.5.1.0, A.5.1.1, D.1.1, D.2, H.1, H.2; Figures A.1, A.4, D.1.1, D.2.1                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
|        |              | IN319027                                      | 22 Mar 2026 | 1 | 3GPP TS 23.060 V8.9.0: Sections 1, 3.1, 4, 5.1, 5.2.1, 5.3.2, 5.3.2.1, 5.3.2.2, 5.4.1.1, 5.4.1.2, 9.2.1A, 9.6; Figure 1<br>3GPP TS 23.401 V8.10: Sections 3.2, 4.2.1, 4.2.2, 4.3.2.1, 4.3.2.2, 4.4.3.1, 4.4.3.2, 4.4.7.1, 4.4.7.2, 4.4.7.3, 4.7.1, 4.7.2.1, 4.7.2.2; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.7.2.2-1<br>3GPP TS 23.402 V8.6.0: Sections 1, 4.2.1, 4.2.2, 4.2.3, 4.3.1.1, 4.3.1.2, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.8.1, 4.8.2.1, 4.10.3, 8.5.1; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.1.1-1, 8.5.1-1<br>3GPP TS 23.203 V8.11.0: Sections 1, 3.1, 6.1.0, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.4, 6.2.1.0, A.1.0, A.1.1.2, A.1.1.3, A.4.0, A.4.1.1, A.4.1.2, A.5.0, A.5.1.0, A.5.1.1, D.1.1, D.2, H.1, H.2; Figures A.1, A.4, D.1.1, D.2.1                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |
|        |              | JP4933528                                     | 22 Mar 2026 | 1 | 3GPP TS 23.060 V8.9.0: Sections 1, 3.1, 4, 4.7, 4.7.1, 4.7.2, 4.7.2.1, 5.1, 5.2.1, 5.3.2, 5.3.2.1, 5.4.0, 5.4.1.1, 5.4.1.2, 9.2.1A, 9.6; Figure 1, 2, 2a<br>3GPP TS 23.203 V8.11.0: Sections 1, 3.1, 6, 6.1, 6.1.0, 6.1.1, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.4, 6.2.1, 6.2.1.0, Annex A (normative), A.1, A.1.0, A.1.1, A.1.1.1, A.1.1.2, A.1.1.3, A.4, A.4.0, A.4.1, A.4.1.1, A.4.1.2, A.5, A.5.0, A.5.1, A.5.1.0, A.5.1.1, A.5.2, A.5.2.1, Annex D (informative), D.1, D.1.1, D.2, Annex H (normative), H.1, H.2; Figures A.1, D.1.1, D.2, Annex H (normative), H.1, H.2; Figures A.1, D.1.1, D.2, 2.1<br>3GPP TS 23.401 V8.10: Sections 3.2, 4.2, 4.2.1, 4.2.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.4.3, 4.4.3.1, 4.4.3.2, 4.4.7, 4.4.7.1, 4.4.7.2, 4.4.7.3, 4.7.4.7.1, 4.7.2, 4.7.2.1, 4.7.2.2; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.7.2.2-1<br>3GPP TS 23.402 V8.6.0: Sections 1, 4.2, 4.2.1, 4.2.2, 4.2.3, 4.3, 4.3.1, 4.3.1.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.8.1, 4.8.2.1, 4.10.3, 8.5.1; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.2.1, 4.10.3, 8.5.1; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.2.1, 4.10.3-1, 8.5.1-1 |  |  |  |  |
|        |              | US8570936                                     | 10 May 2029 | 1 | 3GPP TS 23.060 V8.9.0: Sections 1, 3.1, 4, 5.1, 5.2.1, 5.3.2, 5.3.2.1, 5.3.2.2, 5.4.1.1, 5.4.1.2, 9.2.1A, 9.6; Figure 1<br>3GPP TS 23.401 V8.10: Sections 3.2, 4.2.1, 4.2.2, 4.3.2.1, 4.3.2.2, 4.4.3.1, 4.4.3.2, 4.4.7.1, 4.4.7.2, 4.4.7.3, 4.7.2.1, 4.7.2.2; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.7.2.2-1<br>3GPP TS 23.402 V8.6.0: Sections 1, 4.2.1, 4.2.2, 4.2.3, 4.3.1.1, 4.3.1.2, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.8.1, 4.8.2.1, 4.10.3, 8.5.1; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.3-1, 4.2.3-2, 4.10.3-1, 4.8.1.1-1, 8.5.1-1<br>3GPP TS 23.203 V8.11.0: Sections 1, 3.1, 6.1.0, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.1.4, 6.2.1.0, A.1.0, A.1.1.2, A.1.1.3, A.4.0, A.4.1.1, A.4.1.2, A.5.0, A.5.1.0, A.5.1.1, D.1.1, D.2, H.1, H.2; Figures A.1, A.4, D.1.1, D.2.1                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| ORA040 | 3G Licensing | CN00780009678.4                               | 15 Jan 2027 | 1 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
|        |              | EP1974576<br>(DE, ES, FR, GB, IT)             | 15 Jan 2027 | 1 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
|        |              | EP2958292<br>(DE, ES, FR, GB, IT, NL)         | 15 Jan 2027 | 2 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |

|        |              |                        |             |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |
|--------|--------------|------------------------|-------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| ORA040 | 3G Licensing | HK1219367              | 15 Jan 2027 | 2 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |
|        |              | IN322709               | 15 Jan 2027 | 1 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |
|        |              | US8194608              | 18 May 2029 | 1 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |
|        |              | US8565159              | 03 Nov 2028 | 2 | 3GPP TS 23.060 V8.15.0: Sections 1, 4<br>3GPP TS 23.327 V8.4.0: Sections 1, 4, 4.1, 5.2.1, 5.3.1, 5.3.2, 6.1, 6.3.1, 6.3.2; Figures 5.2.1-1, 6.3.1-1, 6.3.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 4, 5.7.1, 6.1.2, 6.2.6; Figure 6.2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |
| ORA041 | 3G Licensing | CNZL200680016492.7     | 23 Mar 2026 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.2.1, 5.10.2; Figures 4.2.1-1, 4.2.1-2, 4.7.2.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
|        |              | CNZL20110148681.2      | 23 Mar 2026 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figures 4.2.1-2, 4.7.2.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
|        |              | JP5384934              | 23 Mar 2026 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 3.2, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1, 5.10.2; Figures 4.2.1-1, 4.2.1-2, 4.7.2.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |
|        |              | US8072923              | 29 Dec 2027 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figures 4.2.1-2, 4.7.2.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
|        |              | US8971246              | 20 Jun 2027 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figures 4.2.1-2, 4.7.2.2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
| ORA042 | 3G Licensing | CNZL200680017166.8     | 23 Mar 2026 | 1 | 3GPP TS 23.060 V8.9.0: Sections 4, 9.2.1A, 9.2.2.1; Figures 63, 64<br>3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.2.1; Figures 4.2.1-2, 4.7.2.2-1<br>3GPP TS 24.008 V8.10.0: Sections 10.5.6.4; Figure 10.5.137; Table 10.5.155                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
|        |              | IN318550               | 23 Mar 2026 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figure 4.2.1-2, 4.7.2.2-1<br>3GPP TS 23.060 V8.9.0: Section 9.2.2.1; Figures 63, 64<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |
|        |              | JP4970422              | 23 Mar 2026 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3, 3.1, 4.1, 4.1, 4.2, 4.2.1, 4.4.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2, 4.7.2.2-1<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1; Figures 63, 64<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |
|        |              | US8064384              | 25 Jul 2027 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figure 4.2.1-2, 4.7.2.2-1<br>3GPP TS 23.060 V8.9.0: Section 9.2.2.1; Figures 63, 64<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |
|        |              | US9001732              | 17 Aug 2030 | 1 | 3GPP TS 23.401 V8.15.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.3, 4.4.3.1, 4.4.3.2, 4.4.3.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.3.1.1, 5.3.2.1; Figure 4.2.1-2, 4.7.2.2-1<br>3GPP TS 23.060 V8.9.0: Section 9.2.2.1; Figures 63, 64<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |
| ORA043 | 3G Licensing | EP1869841 (DE, FR, GB) | 22 Mar 2026 | 1 | 3GPP TS 23.060 V8.7.0: Sections 9.2.1A, 9.2.1.1, 9.2.2.1, 9.2.2.1.1, 15.3.0, 15.3.1; Figures 63, 64<br>3GPP TS 23.207 V8.0.0: Sections 4.2, 4.7, 5.1, 5.2, 5.2.1, 5.2.2, 6.1, 6.1.1, 6.1.2, 6.4; Figures A.7, Annex A, A.2, A.2.5, Annex C; Figure A.7<br>3GPP TS 23.228 V8.12.0: Sections 4.0, 4.2.4, 4.2.4.4, 4.6.0, 4.6.1, 4.6.3, 5.4.0, 5.4.2a; Figures 4.0, 5.5b; Annex E, E.0, E.5<br>3GPP TS 23.401 V8.8.0: Sections 1, 4.2.1, 4.2.2, 4.4.4; Figures 4.2.1-1, 4.2.1-2, 4.2.2-1, 4.2.2-2, 4.2.2-3<br>3GPP TS 24.008 V9.3.0: Sections 9.5.4, 9.5.4.1, 10.5.6.12; Tables 9.5.4, 10.5.162<br>3GPP TS 24.229 V8.11.0: Annex B, B.1, B.2.1, B.2.2.1, B.2.2.5.1, B.2.2.5.1A, B.2.2.5.1B<br>3GPP TS 29.060 V9.3.0: Section 7.7.36 |  |  |  |  |  |

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| ORA046 | 3G Licensing                       | CN00580025881.1 | 11 Jul 2025 | 1 | 3GPP TS 29.060 V8.3.0: Section 3.1<br>3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1.3, 11.2.1.3.2, 11.2.1.4, 11.2.1.3.1, 11.3; Figures 11c, 11d, 11e, 11ba<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A, 14.5; Figures 63, 64                                                                                                                                                                                                                                                                                              |  |  |  |
|        | EP1772030 (DE, ES, FR, GB)         |                 | 11 Jul 2025 | 1 | 3GPP TS 23.401 V8.10.0 Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 63, 64<br>3GPP TS 29.061 V8.6.0: Section 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.3; Figures 11ba, 11bb                                                                                                                                                                                                                                                                   |  |  |  |
|        | IN271359                           |                 | 11 Jul 2025 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.2.1.4, 11.3; Figures 11ba, 11bb                                                                                                                                                                                                                                                       |  |  |  |
|        | US10200511                         |                 | 11 Jul 2025 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.2.1.4, 11.3; Figures 11ba, 11bb                                                                                                                                                                                                                                                       |  |  |  |
|        | US8179888                          |                 | 19 Nov 2027 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.2.1.4, 11.3; Figures 11ba, 11bb                                                                                                                                                                                                                                                       |  |  |  |
|        | US9237058                          |                 | 11 Jul 2025 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.2.1.4, 11.3; Figures 11ba, 11bb                                                                                                                                                                                                                                                       |  |  |  |
| ORA047 | 3G Licensing                       | CN00580024907.0 | 10 Jun 2025 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.2.1.1, 9.2.2, 9.2.2.1, 9.2.2.1A; Figures 62, 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1, 11.2.1.3, 11.2.1.3.2, 11.2.1.4; Figure 11bh                                                                                                                                                                                                                                                                 |  |  |  |
|        | EP1771978 (CH, DE, ES, FR, GB, IT) |                 | 10 Jun 2025 | 1 | 3GPP TS 23.401 V8.10.0: Sections 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.3.1, 5.3.1.1, 5.3.1.2, 5.3.1.2.1, 5.3.1.2.2, 14.5; Figures 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 29.060 V8.3.0: Sections 3.1, 7.3, 7.3.1, 7.3.2, 7.7.13; Table 6; Figure 21<br>3GPP TS 23.060 V8.10.0: Sections 9.9, 9.10, 9.2.1.1, 9.2.2, 9.2.2.1, 9.2.2.1A, 9.2.2.1B, 9.2.3, 9.2.3.0, 9.2.3.3, 15.3, 15.3.0, 45.3.1; Figures 62, 63, 64<br>3GPP TS 29.061 V8.6.0: Sections 11.2.1, 11.2.1.3, 11.2.1.3.1, 11.2.1.3.2, 11.2.1.4, 11.3; Figure 11ba<br>3GPP TS 24.008 V8.10.0: Sections 9.5.10, 9.5.10.3, 10.5.6.12; Tables 9.5.10, 10.2.162, 10.5.144, 10.5.144a, 10.5.144b, 10.5.144c<br>IETF RFC 4291: Section 2.5.1 |  |  |  |
|        | IN272738                           |                 | 10 Jun 2025 | 1 | 3GPP TS 23.060 v8.17.0: Sections 5.6.2.2, 9.2.1, 9.2.1.1, 9.2.2.1, 9.3; Figures 6a, 63<br>3GPP TS 24.008 v8.19.0: Sections 9.5.1, 10.5.6.4<br>3GPP TS 29.061 v8.12.0: Sections 11.2.1.3, 11.2.1.3.2, 11.2.1.4; Figures 11bb<br>IETF RFC 4291: Section 2.5.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |

|        |              |                                |             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
|--------|--------------|--------------------------------|-------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| ORA047 | 3G Licensing | US7860073                      | 10 May 2026 | 1     | 3GPP TS 23.060 v8.17.0: Sections 5.6.2.2, 9.2.1, 9.2.1.1, 9.2.2.1, 9.3; Figures 6a, 63<br>3GPP TS 24.008 v8.19.0: Sections 9.5.1, 10.5.6.4<br>3GPP TS 29.061 v8.12.0: Sections 11.2.1.3, 11.2.1.3.2, 11.2.1.4; Figures 11bb<br>IETF RFC 4291: Section 2.5.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| ORA048 | 3G Licensing | CNZL200580020466.7             | 19 Apr 2025 | 1     | 3GPP TS 29.060 V8.11.0: Sections 3.1, 4.1; Figure 1<br>3GPP TS 23.401 V8.10.0: Sections 5, 5.1, 5.1.1, 5.1.1.1, 5.1.1.4, 5.1.1.5, 5.1.1.6, 5.1.1.7, 5.1.1.8, 5.1.2, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5; Figures 5.1.1.4-1, 5.1.1.5-1, 5.1.1.6-1, 5.1.1.7-1, 5.1.1.8-1, 5.1.2.1-1, 5.1.2.2-1, 5.1.2.3-1, 5.1.2.4-1, 5.1.2.5-1<br>3GPP TS 23.402 V8.8.0: Sections 4.3.3, 4.3.3.2, 4.3.3.3, 4.3.4, 5, 5.1, 5.1.1, 5.1.2, 5.1.3, 5.1.3.1, 5.1.4, 5.1.4.1, 5.1.4.2, 5.1.4.3, 5.1.4.4, Annex A, A.1, A.2; Figures 5.1.4.4-1, 5.1.3.1-1, 5.1.4.1-1, 5.1.4.2-1, 5.1.4.3-1, A.1-1, A.1-2, A.2-1, A.2-2<br>3GPP TS 23.228 V8.12.0: Sections 5.4.2a, Annex E, E.0, E.5; Figure 5.5b<br>3GPP TS 23.060 V8.7.0: Sections 4, 5.3.2.4, 5.3.2.5, 5.5, 5.6.2, 5.6.2.1, 5.6.2.2, 5.6.3, 5.6.3.1, 5.6.3.2, 9.2.1, 9.2.2.1; Figures 6a, 6b, 6c, 6d, 7, 8, 63, 64; Table 1 |  |  |  |  |
|        |              | EP1741264 (DE, ES, FR, GB, IT) | 19 Apr 2025 | 1     | 3GPP TS 29.060 V8.11.0: Sections 3.1, 4.1; Figure 1<br>3GPP TS 23.401 V8.8.0: Sections 5, 5.1, 5.1.1, 5.1.1.4; Figures 5.1.1.4-1, 5.1.1.5, 5.1.1.5-1, 5.1.1.6, 5.1.1.6-1, 5.1.1.7, 5.1.1.7-1, 5.1.1.8, 5.1.1.8-1, 5.1.2.1, 5.1.2.1-1, 5.1.2.2, 5.1.2.2-1, 5.1.2.3, 5.1.2.3-1, 5.1.2.4, 5.1.2.4-1, 5.1.2.5, 5.1.2.5-1<br>3GPP TS 23.402 V8.8.0: Sections 1, 4.2.2; Figures 4.2.2-2, 4.3.3.2, 4.3.3.3, 4.3.4, 5.1.2, 5.1.4.1, 5.1.4.1-1, 5.1.4.2, 5.1.4.2-1, 5.1.4.3, 5.1.4.3-1, 5.1.4.4, 5.1.4.4-1, 5.1.3.1, 5.1.3.1-1, 6.1.2, 6.1.2-1; Annex A, A.1; Figures A.1-1, A.1-2, A.1-3, A.2, A.2-1<br>3GPP TS 23.228 V8.9.0: Sections 4.6.0, 4.6.1, 5.4.2a; Figure 5.5b, E0, E5<br>3GPP TS 23.060 V8.7.0: Sections 4, 5.3.2.4, 5.3.2.5, 5.5; Table 1, 5.6.2.1, 5.6.2.2; Figures 6a, 6b, 6c, 6d, 5.6.3, 5.6.3.1, 5.6.3.2, 7, 8, 9.2.1, 9.2.2.1, 63, 64                |  |  |  |  |
|        |              | IN255363                       | 19 Apr 2025 | 1     | 3GPP TS 23.060 V8.7.0: Sections 4, 5.1, 5.3.2.4, 5.3.2.5, 5.6.2, 5.6.2.1, 5.6.2.2, 5.6.2.4, 5.6.2.5, 9.2.1, 9.2.2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
|        |              | JP4660539                      | 19 Apr 2025 | 1     | 3GPP TS 29.060 V8.11.0: Sections 3.1, 4.1; Figure 1<br>3GPP TS 23.401 V8.8.0: Sections 5, 5.1, 5.1.1, 5.1.1.4; Figures 5.1.1.4-1, 5.1.1.5, 5.1.1.5-1, 5.1.1.6, 5.1.1.6-1, 5.1.1.7, 5.1.1.7-1, 5.1.1.8, 5.1.1.8-1, 5.1.2.1, 5.1.2.1-1, 5.1.2.2, 5.1.2.2-1, 5.1.2.3, 5.1.2.3-1, 5.1.2.4, 5.1.2.4-1, 5.1.2.5, 5.1.2.5-1<br>3GPP TS 23.402 V8.8.0: Sections 1, 4.2.2; Figures 4.2.2-2, 4.3.3.2, 4.3.3.3, 4.3.4, 5.1.2, 5.1.4.1, 5.1.4.1-1, 5.1.4.2, 5.1.4.2-1, 5.1.4.3, 5.1.4.3-1, 5.1.4.4, 5.1.4.4-1, 5.1.3.1, 5.1.3.1-1, 6.1.2, 6.1.2-1; Annex A, A.1; Figures A.1-1, A.1-2, A.1-3, A.2, A.2-1<br>3GPP TS 23.228 V8.9.0: Sections 4.6.0, 4.6.1, 5.4.2a; Figure 5.5b, E0, E5<br>3GPP TS 23.060 V8.7.0: Sections 4, 5.3.2.4, 5.3.2.5, 5.5; Table 1, 5.6.2.1, 5.6.2.2; Figures 6a, 6b, 6c, 6d, 5.6.3, 5.6.3.1, 5.6.3.2, 7, 8, 9.2.1, 9.2.2.1, 63, 64                |  |  |  |  |
|        |              | US7907618                      | 11 Jun 2027 | 1     | 3GPP TS 29.060 V8.11.0: Sections 3.1, 4.1; Figure 1<br>3GPP TS 23.401 V8.8.0: Sections 5, 5.1, 5.1.1, 5.1.1.4; Figures 5.1.1.4-1, 5.1.1.5, 5.1.1.5-1, 5.1.1.6, 5.1.1.6-1, 5.1.1.7, 5.1.1.7-1, 5.1.1.8, 5.1.1.8-1, 5.1.2.1, 5.1.2.1-1, 5.1.2.2, 5.1.2.2-1, 5.1.2.3, 5.1.2.3-1, 5.1.2.4, 5.1.2.4-1, 5.1.2.5, 5.1.2.5-1<br>3GPP TS 23.402 V8.8.0: Sections 1, 4.2.2; Figures 4.2.2-2, 4.3.3.2, 4.3.3.3, 4.3.4, 5.1.2, 5.1.4.1, 5.1.4.1-1, 5.1.4.2, 5.1.4.2-1, 5.1.4.3, 5.1.4.3-1, 5.1.4.4, 5.1.4.4-1, 5.1.3.1, 5.1.3.1-1, 6.1.2, 6.1.2-1; Annex A, A.1; Figures A.1-1, A.1-2, A.1-3, A.2, A.2-1<br>3GPP TS 23.228 V8.9.0: Sections 4.6.0, 4.6.1, 5.4.2a; Figure 5.5b, E0, E5<br>3GPP TS 23.060 V8.7.0: Sections 4, 5.3.2.4, 5.3.2.5, 5.5; Table 1, 5.6.2.1, 5.6.2.2; Figures 6a, 6b, 6c, 6d, 5.6.3, 5.6.3.1, 5.6.3.2, 7, 8, 9.2.1, 9.2.2.1, 63, 64                |  |  |  |  |
| ORA049 | 3G Licensing | US7995523                      | 03 Jul 2027 | 1, 12 | 3GPP TS 23.401 V8.17.0: Sections 1, 4.2.1, 4.2.3, 4.7.1, 4.7.2.1, 4.7.2.2, 5.4.5; Figures 4.2.1-1, 5.4.5-1<br>3GPP TS 24.303 V8.9.0: Sections 1, 4.1, 5.1.1, 5.1.2.3, 5.1.2.4<br>IETF RFC 6275 (included by reference in TS 24.303 V8.9.0): Abstract, Sections 10.4.1, 10.4.2, 11.7.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
| ORA052 | 3G Licensing | CNZL200480006637.6             | 10 Mar 2024 | 1     | 3GPP TS 23.401 V8.10.0: Section 4.2.2; Figure 4.2.2-3<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1; Figures 63, 64<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155<br>3GPP TS 29.061 V8.7.0: Section 11.2.1.4; Figures 11c, 11d, 11e<br>3GPP TS 23.228 V8.12.0: Sections 3.1, Annex I.1, I.2, I.3, I.3.1, and I.3.1.2; Figures I.1, I.3<br>IETF RFC 3344: Sections 1.5, 1.7, 3                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |

|         |              |                                               |             |      |                                                                                                                                                                                                                                                                                                                                                                                                                                |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|---------|--------------|-----------------------------------------------|-------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| ORA052  | 3G Licensing | EP1602215<br>(DE, FR, GB)                     | 10 Mar 2024 | 1    | 3GPP TS 23.401 V8.10.0: Section 4.2.2; Figure 4.2.2-3<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1, 9.2.3.2; Figures 63, 64, 71a, 71b<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155<br>3GPP TS 29.061 V8.7.0: Section 11.2.1.4; Figures 11, 11c, 11d<br>3GPP TS 23.228 V8.12.0: Sections 3.1, I.1, I.2, I.3, I.3.1, I.3.1.2; Figures I.1, I.3<br>IETF RFC 3344: Sections 1.5, 1.7, 3       |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | IN227148                                      | 10 Mar 2024 | 1    | 3GPP TS 29.061 V8.7.0: Section 11.2.1.4; Figure 11e<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2.1, 9.2.3.2                                                                                                                                                                                                                                                                                                                        |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | JP5248586                                     | 10 Mar 2024 | 1    | 3GPP TS 23.401 V8.10.0: Section 4.2.2; Figure 4.2.2-3<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1, 9.2.3.2; Figures 63, 64, 71a, 71b<br>3GPP TS 24.008 V8.10.0: Sections 10.5.6.4; Figure 10.5.137; Table 10.5.155<br>3GPP TS 29.061 V8.7.0: Sections 11.2.1.4; Figures 11c, 11d, 11e<br>IETF RFC 3344: Sections 1.5, 1.7, 3                                                                                             |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | KR10-1007005                                  | 10 Mar 2024 | 1    | 3GPP TS 23.060 V8.9.0: Section 9.2.3.2<br>3GPP TS 23.401 V8.10.0: Section 4.2.2<br>3GPP TS 29.061 V8.7.0: Section 11.2.1.4                                                                                                                                                                                                                                                                                                     |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | US7640017                                     | 23 Jan 2026 | 1    | 3GPP TS 23.401 V8.10.0: Section 4.2.2; Figure 4.2.2-3<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1, 9.2.3.2; Figures 63, 64, 71a, 71b<br>3GPP TS 24.008 V8.10.0: Section 10.5.6.4; Figure 10.5.137; Table 10.5.155<br>3GPP TS 29.061 V8.7.0: Section 11.2.1.4; Figures 11, 11c, 11d<br>3GPP TS 23.228 V8.12.0: Sections 3.1, I.1, I.2, I.3, I.3.1, I.3.1.2; Figures I.1, I.3                                              |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | US8023946                                     | 10 Mar 2024 | 1    | 3GPP TS 23.401 V8.10.0: Section 4.2.2; Figure 4.2.2-3<br>3GPP TS 23.060 V8.9.0: Sections 9.2.2, 9.2.2.1, 9.2.3.2; Figures 63, 64, 71a, 71b<br>3GPP TS 24.008 V8.10.0: Sections 10.5.6.4; Figure 10.5.137; Table 10.5.155<br>3GPP TS 29.061 V8.7.0: Sections 11.2.1.4; Figures 11c, 11d, 11e<br>IETF RFC 3344: Sections 1.5, 1.7, 3                                                                                             |    |                                                                                                                                                                                                                                                                                                                          |  |  |
| ORA058  | 3G Licensing | CN200780010663X                               | 16 Feb 2027 | 20   | 3GPP TS 23.327 V8.4.0: Sections 5, 5.2, 5.2.1, 5.3, 5.3.1, 5.3.2, 5.4, 6.1, 6.3, 6.3.1, 6.3.2, 6.3.2.2; Figures 5.2.1-1, 6.1, 6.3.1-1, 6.3.2.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 2, 5, 5.13, 5.13.1, 5.13.2, 5.7, 5.7.1, 6, 6.1, 6.1.1, 6.2, 6.2.1, 6.2.5, 6.2.6; Figure 6.1<br>3GPP TS 23.107 V8.2.0: Section 6.3                                                                                                       |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | EP1838044<br>(DE, ES, FR, GB, IT)             | 24 Mar 2026 | 20   | 3GPP TS 23.234 V8.0.0: Sections 1, 5.13.3,<br>3GPP TS 23.327 V8.4.0: Sections 5.3.1, 6.3.1; Figures 6.3.1-1<br>IETF RFC 2474: Section 3                                                                                                                                                                                                                                                                                        | 20 | 3GPP TS 23.327 V8.4.0: Sections 5, 5.2, 5.2.1, 5.3, 5.3.1, 5.3.2, 5.4, 6.1, 6.3, 6.3.1, 6.3.2, 6.3.2.2; Figures 5.2.1-1, 6.1, 6.3.1-1, 6.3.2.2-1<br>3GPP TS 23.234 V8.0.0: Sections 1, 2, 5, 5.13, 5.13.1, 5.13.2, 5.7, 5.7.1, 6, 6.1, 6.1.1, 6.2, 6.2.1, 6.2.5, 6.2.6; Figure 6.1<br>3GPP TS 23.107 V8.2.0: Section 6.3 |  |  |
|         |              | IN300291                                      | 16 Feb 2027 | 11   | 3GPP TS 23.234 V8.0.0: Sections 1, 5.13.3,<br>3GPP TS 23.327 V8.4.0: Sections 5.3.1, 6.3.1; Figures 6.3.1-1<br>IETF RFC 2474: Section 3                                                                                                                                                                                                                                                                                        |    |                                                                                                                                                                                                                                                                                                                          |  |  |
| ORA059  | 3G Licensing | CN200780010562.2                              | 19 Mar 2027 | 1    | 3GPP TS 23.060 V8.15.0: Sections 4, 5.1, 5.2, 5.2.1, 5.3.0, 5.3.1, 5.3.1.1, 5.3.2, 5.3.3.1, 5.6.2.2, 9.2.2.1; Figures 6a, 63, 64<br>3GPP TS 23.107 V8.2.0: Sections 6.4.3.1, 6.4.3.2<br>3GPP TS 24.008 V8.16.0: Section 9.5.1, 10.5.6.5; Figure 10.5.138; Table 9.5.1, 10.5.156                                                                                                                                                |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | IN282457                                      | 19 Mar 2027 | 18   | 3GPP TS 23.060 V8.15.0: Sections 4, 5.1, 5.2, 5.2.1, 5.3.0, 5.3.1, 5.3.1.1, 5.3.2, 5.3.3.1, 5.6.2.2, 9.2.2.1; Figures 6a, 63, 64<br>3GPP TS 23.107 V8.2.0: Sections 6.4.3.1, 6.4.3.2<br>3GPP TS 24.008 V8.16.0: Section 9.5.1, 10.5.6.5; Tables 9.5.1, 10.5.156; Figure 10.5.138                                                                                                                                               |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | JP5740672                                     | 19 Mar 2027 | 18   | 3GPP TS 23.060 V8.15.0: Sections 4, 5.1, 5.2, 5.2.1, 5.3.0, 5.3.1, 5.3.1.1, 5.3.2, 5.3.3.1, 5.6.2.2, 9.2.2.1; Figures 6a, 63, 64<br>3GPP TS 23.107 V8.2.0: Sections 6.4.3.1, 6.4.3.2<br>3GPP TS 24.008 V8.16.0: Section 9.5.1, 10.5.6.5; Tables 9.5.1, 10.5.156; Figure 10.5.138                                                                                                                                               |    |                                                                                                                                                                                                                                                                                                                          |  |  |
|         |              | US8184646                                     | 06 Oct 2028 | 18   | 3GPP TS 23.060 V8.15.0: Sections 4, 5.1, 5.2, 5.2.1, 5.3.0, 5.3.1, 5.3.1.1, 5.3.2, 5.3.3.1, 5.6.2.2, 9.2.2.1; Figures 6a, 63, 64<br>3GPP TS 23.107 V8.2.0: Sections 6.4.3.1, 6.4.3.2<br>3GPP TS 24.008 V8.16.0: Section 9.5.1, 10.5.6.5; Tables 9.5.1, 10.5.156; Figure 10.5.138                                                                                                                                               |    |                                                                                                                                                                                                                                                                                                                          |  |  |
| ORA063* | 3G Licensing | EP0562890<br>(AT, BE, ES, GB, IE, IT, LU, NL) | 29 Mar 2013 | 1, 5 | 3GPP TS 100.922 V8.0.0: Sections 1, 6.2<br>3GPP TS 101.622 V6.0.1: Sections 4.3, 5, 5.2<br>3GPP TS 122.038 V3.4.0: Sections 9.1<br>3GPP TS 100.977 V8.13.0: Annex E, Annex I<br>3GPP TS 101.267 V8.17.0: Sections 3.2, 7, 7.1, 7.1.1, 7.1.2<br>3GPP TS 122.003 V6.0.0: Annex A.1.3.4, A.1.3.4.2<br>3GPP TS 123.040 V3.9.0: Sections 3.1, 3.2.3, 9.2.3.3, 9.2.3.9, 9.2.3.22, 9.2.3.24, 9.2.3.24.10.1, 9.2.3.24.10.1.1; Figure 1 |    |                                                                                                                                                                                                                                                                                                                          |  |  |

|                |              |                                                |             |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
|----------------|--------------|------------------------------------------------|-------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| <b>ORA063*</b> | 3G Licensing | HK1005009                                      | 29 Mar 2013 | 1, 5 | 3GPP TS 22.038 V 3.4.0:Section 9.1<br>3GPP TS 11.14 V 8.17.0: Sections 3.2, 7.1.1, 7.1.2<br>3GPP TS 22.003 V 6.0.0: Sections A.1.3.4<br>3GPP TS 23.040 V 3.9.0: Sections 3.1, 3.2.3, 9.2.3, 9.2.3.22, 9.2.3.24, 9.2.3.24.10.1, 9.2.3.24.10.1.1, 9.2.3.9.<br>3GPP TS 11.11 V 8.13.0: Sections Annex E, Annex I                                                                                                                                                                              |  |  |  |  |
| <b>ORA064*</b> | 3G Licensing | AU729163                                       | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>3GPP TS 31.101 V7.0.1: Section 8.1<br>ETSI TS 102.221 V7.4.0: Sections 8.2.2.2, 8.4.1, 8.4.3, 11.1.1.1, 11.1.3.1, 11.1.5.1, 11.1.5.2, Annex K and K.2; Figure 8.2, 8.4, K.1; Table 8.1, 11.11                                                                                                                                                     |  |  |  |  |
|                |              | CA2280150                                      | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>3GPP TS 31.101 V7.0.1: Section 8.1<br>3GPP TS 102.221 V7.4.0: Sections 8.2.2.2, 8.4.1, 8.4.3, 11.1.1.1, 11.1.3.1, 11.1.5.1, 11.1.5.2, Annex K, K.2; Figure 8.2, 8.4, K.1; Table 8.1, 11.11                                                                                                                                                        |  |  |  |  |
|                |              | CNZL98802464.0                                 | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>3GPP TS 31.101 V7.0.1: Section 8.1<br>ETSI TS 102.221 V7.4.0: Sections 8.2.2.2, 8.4.1, 8.4.3, 11.1.1.1, 11.1.3.1, 11.1.5.1, 11.1.5.2, Annex K, K.2; Figure 8.2, 8.4, K.1; Table 8.1, 11.11                                                                                                                                                        |  |  |  |  |
|                |              | EPO960542 (DE, ES, FR, GB, IT)                 | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>3GPP TS 31.101 V7.0.1: Section 8.1                                                                                                                                                                                                                                                                                                                |  |  |  |  |
|                |              | IN208486                                       | 09 Feb 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 4, 10.2.2, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1; Figures 4.1, 4.2<br>ETSI TS 102.221 V7.4.0: Sections 7.3.1.1, 8.2.2.1, 8.2.2.2, 8.2.2.3, 8.2.2.4, 11.1.5.1; Figures 8.2, 8.3                                                                                                                                                                                                                                                      |  |  |  |  |
|                |              | JP4357596                                      | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.101 V7.0.1: Section 8.1<br>3GPP TS 31.102 V7.13.0: Sections 3.3, 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>ETSI TS 102.221 V7.4.0: Sections 8.2.2.2, 8.4.1, 8.4.3, 11.1.1.1, 11.1.3.1, 11.1.5.1, 11.1.6.1, Annex K, K.1, K.2; Figures 8.2, 8.4, K.1; Table 8.1                                                                                                                                                    |  |  |  |  |
|                |              | US6856818                                      | 19 Jan 2018 | 18   | 3GPP TS 21.111 V7.1.0: Sections 1, 4, 5.1, 5.2, 6.1, 11.2<br>3GPP TS 31.102 V7.13.0: Sections 4.4.2, 4.7, 5.1.1.1, 5.3.29; Figure 4.2<br>3GPP TS 31.101 V7.0.1: Section 8.1<br>ETSI TS 102.221 V7.4.0: Sections 3.1, 8.2.2.2, 8.4.1, 8.4.3, 11.1.1.1, 11.1.3.1, 11.1.5.1, Annex K, K.2; Figure 8.2, 8.4, K.1; Table 8.1                                                                                                                                                                    |  |  |  |  |
| <b>ORA065</b>  | 3G Licensing | CNZL01818343.3                                 | 16 Oct 2021 | 8    | 3GPP TS 22.279 V7.1.0: Sections 1, 2, 3.1, 6.8<br>3GPP TS 23.279 V7.7.0: Sections 8.1, 8.3.1, 8.3.2; Figures 8-1, 8.3-1, 8.3-2<br>3GPP TS 23.228 V7.16.0: Sections 4.13.2, 4.13.3; Figure 4.13-1<br>3GPP TS 24.173 V9.1.0: Sections 4.2, 5.1, 5.2<br>3GPP TS 24.229 V7.28.0: Sections 5.1, 5.1.2.A.1, 6.1.2, 6.1.3, 7.9.2, 7.2.A.8.1, 7.2.A.8.2, 7.2.A.9.1, 7.2.A.9.2, 7.9.2, 7.9.3<br>3GPP TS 24.279 V7.7.0: Sections 6.3.1.8, 6.3.1.9, 7.3.1.3, 7.3.1.4, A.1, A.2, A.3, 7.3.1.8, 7.3.1.9 |  |  |  |  |
|                |              | CNZL200510097414.1                             | 16 Oct 2021 | 1    | 3GPP TS 23.060 V8.9.0: Sections 5.1, 5.3.8, 5.4.6, 9.2.3.3; Figures 1, 72b<br>3GPP TS 23.228 V8.12.0: Sections 4.0, 4.16.1, 4.16.2, 5.4.4, 5.10.3.0, Annex E, E.0, E.2.1a.2, E.2.4.0, E.2.4.1; Figure E.2<br>3GPP TS 23.401 V8.17.0: Sections 4.7.1, 4.7.2.2; Figure 4.7.2.2-1                                                                                                                                                                                                             |  |  |  |  |
|                |              | EP1921855 (DE, ES, FR, GB, IE, IT, LU, NL, TR) | 16 Oct 2021 | 1    | 3GPP TS 23.060 V8.9.0: Sections 5.1, 5.3.8, 5.4.6, 9.2.3.3; Figures 1, 72b<br>3GPP TS 23.228 V8.12.0: Sections 4.0, 4.16.1, 4.16.2, 5.4.4, 5.10.3.1, Annex E, E.0, E.2.1a.1, E.2.1a.2, E.2.4.0, E.2.4.1; Figure E.2<br>3GPP TS 23.401 V8.17.0: Sections 4.7.1, 4.7.2.2; Figure 4.7.2.2-1                                                                                                                                                                                                   |  |  |  |  |
|                |              | US7102663                                      | 13 Nov 2023 | 26   | 3GPP TS 24.173 V9.1.0: Sections 4.2, 5.2<br>3GPP TS 22.279 V7.1.0: Sections 1, 2, 3.1, 6.8<br>3GPP TS 23.279 V7.7.0: Sections 8.1, 8.3.1, 8.3.2; Figures 8-1, 8.3-1, 8.3-2<br>3GPP TS 23.228 V7.16.0: Sections 4.13.2, 4.13.3<br>3GPP TS 24.229 V7.28.0: Sections 5.1, 5.1.2.A.1, 6.1.2, 6.1.3, 7.9.2, 7.2.A.8.1, 7.2.A.8.2, 7.2.A.9.1, 7.2.A.9.2, 7.9.3<br>3GPP TS 24.279 V7.7.0: Sections 6.3.1.8, 6.3.1.9, 7.3.1.3, 7.3.1.4, A.1, A.2, A.3, 7.3.1.8, 7.3.1.9                            |  |  |  |  |

|               |              |                                                |             |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|---------------|--------------|------------------------------------------------|-------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>ORA065</b> | 3G Licensing | US7995091                                      | 09 Jul 2027 | 1    | 3GPP TS 23.060 V8.9.0: Sections 5.1, 5.3.8, 5.4.6, 9.2.33; Figures 1, 72b<br>3GPP TS 23.228 V8.12.0: Sections 4.0, 4.16.1, 4.16.2, 5.4.4.5, 5.10.3.1, Annex E, E.0, E.2.1a.1, E.2.1a.2, E.2.4.0, E.2.4.1; Figure E.2<br>3GPP TS 23.401 V8.17.0: Sections 4.7.1, 4.7.2.2; Figure 4.7.2.2-1 |   |                                                                                                                                     |   |                                                                                                                                      |
| <b>SIE001</b> | Siemens      | AU2004214376                                   | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | BRP10407702-4                                  | 18 Feb 2027 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | CNXL200480004608.6                             | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | EP1595420 (DE, ES, FI, FR, GB, IT, NL, SE, TR) | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | IDP000025685                                   | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | IN225756                                       | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | JP4284324                                      | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | KR10-1050335                                   | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | MX266549                                       | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | RU2335866                                      | 18 Feb 2024 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | US7676041                                      | 18 Jun 2027 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
|               |              | ZA200505960                                    | 25 Jul 2025 | 1    | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4                                                                                                                                                       | 1 | 3GPP TS 33.220 V8.5.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 | 1 | 3GPP TS 33.220 V15.4.0: Sections 1, 3.1, 4.1, 4.2.1, 4.2.2, 4.2.4, 4.4.11, 4.5.2, 4.5.3, Annex B.2, Annex B.3; Figures 4.1, 4.3, 4.4 |
| <b>SIE002</b> | Siemens      | EA013147                                       | 09 Aug 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EP2052517 (DE, ES, FI, FR, GB, IE, IT, NL, PL) | 09 Aug 2027 | 1    | 3GPP TS 33.401 V13.2.0: Sections 6, 6.1, 6.1.1, 6.2, 7, 7.2, 7.2.8, 7.2.8.1, 7.2.8.1.1, 9, 9.2, Annex A.2<br>3GPP TS 21.905 V13.0.0: Section 3                                                                                                                                            | 1 | 3GPP TS 33.401 V13.2.0: Sections 6, 6.1, 6.1.1, 6.2, 7, 7.2, 7.2.8, 7.2.8.1, 7.2.8.1.1, 9, 9.2, Annex A.2                           | 1 | 3GPP TS 33.401 V15.4.0: Sections 6, 6.1, 6.1.1, 6.2, 7, 7.2, 7.2.8, 7.2.8.1, 7.2.8.1.1, 9, 9.2, Annex A.2                            |
|               |              | JP5054772                                      | 09 Aug 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | KR10-1401605                                   | 09 Aug 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | US9197615                                      | 03 Nov 2032 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
| <b>SIE003</b> | Siemens      | CNXL200780037127.9                             | 03 Oct 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EP2070269 (DE, FR, GB, SE)                     | 03 Oct 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | JP4981139                                      | 03 Oct 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | KR10-1432792                                   | 03 Oct 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | US8374084                                      | 26 Apr 2028 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
| <b>SIE004</b> | Siemens      | CNXL200780005003.2                             | 26 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EP1982494 (BG, CY, DE, FR, GB, RO)             | 26 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | JP4856723                                      | 26 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EA012923                                       | 25 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
| <b>SIE005</b> | Siemens      | CNXL200780005265.9                             | 25 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EP1985052 (DE, ES, FR, GB, IT, PL, SE)         | 25 Jan 2027 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | US8223702                                      | 05 Mar 2029 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
| <b>SIE006</b> | Siemens      | EP2055087 (DE, ES, FR, GB, IT, SE)             | 24 Aug 2027 | 1    | 3GPP TS 23.003 V15.0.0: Sections 14, 14.8<br>3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                                                                                                                                | 1 | 3GPP TS 36.321 V8.5.0: Sections 5.4.3, 5.4.3.1<br>3GPP TS 36.321 V8.5.0: Sections 5.4.3, 5.4.3.1                                    | 1 | 3GPP TS 36.321 V15.2.0: Sections 5.4.3, 5.4.3.1<br>3GPP TS 36.321 V15.2.0: Sections 5.4.3, 5.4.3.1                                   |
|               |              | IN283348                                       | 24 Aug 2027 | 1    | 3GPP TS 23.003 V15.0.0: Sections 14, 14.8<br>3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                                                                                                                                | 1 | 3GPP TS 23.402 V15.0.0: Sections 14.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                 | 1 | 3GPP TS 23.402 V15.3.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                 |
|               |              | JP4791445                                      | 25 Feb 2025 | 1    | 3GPP TS 23.003 V15.0.0: Sections 14, 14.8<br>3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                                                                                                                                | 1 | 3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                | 1 | 3GPP TS 23.402 V15.3.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                 |
|               |              | KR10-1398950                                   | 24 Aug 2027 | 1    | 3GPP TS 23.003 V15.0.0: Sections 14, 14.8<br>3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                                                                                                                                | 1 | 3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                | 1 | 3GPP TS 23.402 V15.3.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                 |
|               |              | US8208890                                      | 25 Oct 2028 | 1, 9 | 3GPP TS 23.003 V15.0.0: Sections 14, 14.8<br>3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                                                                                                                                | 1 | 3GPP TS 23.402 V15.0.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                | 1 | 3GPP TS 23.402 V15.3.0: Sections 4.2.2, 4.5.7.2, 4.5.7.2.1, 4.5.7.2.4, 4.6.1, 7.2.1, 7.2.5; Figures 4.2.2-1, 7.2.5-1                 |
| <b>SIE007</b> | Siemens      | CNXL201310178459.6                             | 24 Nov 2026 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |
|               |              | EA011841                                       | 24 Nov 2026 |      |                                                                                                                                                                                                                                                                                           |   |                                                                                                                                     |   |                                                                                                                                      |



|         |            |                                                |             |           |                                                                                                                                                                                                                                                                                                                                              |       |                                                                                                                                                                                                                                                                                                                          |       |                                                                                                                                                                                                                                                                                                                          |
|---------|------------|------------------------------------------------|-------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SIE013  | Siemens    | EP1771993 (DE, FR, GB)                         | 22 Jun 2025 | 1         | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                                                  | 1     | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              | 1     | 3GPP TS 23.228 V15.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V15.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              |
|         |            | KR10-0912972                                   | 22 Jun 2025 | 1         | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                                                  | 1     | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              | 1     | 3GPP TS 23.228 V15.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V15.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              |
|         |            | US8305902                                      | 30 Jul 2025 | 1         | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                                                  | 1     | 3GPP TS 23.228 V14.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V14.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              | 1     | 3GPP TS 23.228 V15.4.0: Sections 4.0, 5.1.4, 5.2.2.3, 5.6.1; Figures 4.0, 5.1<br>3GPP TS 23.218 V15.0.0: Sections 3.1, 5.1A, 5.1B, 5.2.1, 6.3, 6.4.2, 6.9.1                                                                                                                                                              |
| SIE014  | Siemens    | CNZL200480039818.9                             | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 6.3.1, 6.3.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.5.4, Annexes D1, D.3; Figures 4.1, 4.2b, 6.4b, 6.5, 6.7                                                                                                                                                                          | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 6.3.1, 6.3.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.5.4, Annexes D1, D.3; Figures 4.1, 4.2b, 6.4b, 6.5, 6.7                                                                                                                                                      | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 6.3.1, 6.3.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.5.4, Annexes D1, D.3; Figures 4.1, 4.2b, 6.4b, 6.5, 6.7                                                                                                                                                     |
|         |            | CNZL201010260863.4                             | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4; Figures 4.1, 4.2b, 6.5; Annex D                                                                                                                                                                                           | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                        | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                       |
|         |            | EP1680906 (AT, CH, DE, ES, FR, GB, IT, NL, SE) | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4; Figures 4.1, 4.2b, 6.5; Annex D                                                                                                                                                                                           | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                        | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                       |
|         |            | IDP000021408                                   | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4; Figures 4.1, 4.2b, 6.5; Annex D                                                                                                                                                                                           | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                        | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                       |
|         |            | MX263723                                       | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4; Figures 4.1, 4.2b, 6.5; Annex D                                                                                                                                                                                           | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                        | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                       |
|         |            | RU2358406                                      | 29 Oct 2024 | 1         | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4; Figures 4.1, 4.2b, 6.5; Annex D                                                                                                                                                                                           | 1     | 3GPP TS 33.246 V9.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                        | 1     | 3GPP TS 33.246 V15.0.0: Sections 3.1, 3.2, 4.1.1, 4.1.3, 5.6.3.1, 6.3.3.2.1, 6.4.1, 6.4.4, 6.4.5.1, 6.4.5.3, 6.5.4, D1, D3; Figures 4.1, 4.2b, 6.5                                                                                                                                                                       |
| SIE015  | Siemens    | BRPIO407837-3                                  | 12 Jan 2027 | 1         | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                                       | 1     | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   | 1     | 3GPP TS 26.233 V15.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   |
|         |            | CNZL201310065093.1                             | 12 Jan 2024 | 9         | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                                       | 9     | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   | 9     | 3GPP TS 26.233 V15.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   |
|         |            | FP1597894 (DE, ES, FR, GB, IT, NL, SE)         | 12 Jan 2024 | 1         | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                                       | 1     | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   | 1     | 3GPP TS 26.233 V15.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   |
|         |            | IN328562                                       | 12 Jan 2024 | 1         | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                                       | 1     | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   | 1     | 3GPP TS 26.233 V15.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   |
|         |            | US7970710                                      | 17 May 2027 | 15        | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                                       | 15    | 3GPP TS 26.233 V10.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   | 15    | 3GPP TS 26.233 V15.0.0: Sections 2, 10                                                                                                                                                                                                                                                                                   |
| SIE016  | Siemens    | US8699394                                      | 01 May 2028 | 1, 14, 16 | 3GPP TS 23.002 V6.10.0: Sections 1.3, 3.2, 4.4.1, 4.2, 4.2.2., 4.2.2.1, 4.2.2.2, 4.3<br>3GPP TS 23.246 V6.12.0: Sections 4.1, 5.2, 5.3<br>3GPP TS 25.331 V6.14.0: Sections 1.8.6.9, 8.6.9.6, 8.7.1.1, 8.7.2, 8.7.2.1, 8.7.2.3, 8.7.2.4, 8.7.4.1, 8.7.4.2, 10.2.16; Figures 8.7.2.1, 8.7.4.1<br>3GPP TS 25.346 V6.11.0: Sections 5.1.5, 5.2.5 | 16    | 3GPP TS 36.300 V12.0.0: Sections 3.1, 3.2, 4.4.6.1, 15, 15.1.1, 15.1.3, 15.3.5; Figures 15.1, 15.1.1-1, 15.1.3-1<br>3GPP TS 36.331 V12.0.0: Sections 1.5, 8.2.1, 5.8.2.2, 5.8.4.1, 5.8.4.2, 5.8.4.3, 6.2.1, 6.2.2; Figures 5.8.2.1-1, 5.8.4.1-1                                                                          | 16    | 3GPP TS 36.300 V15.2.0: Sections 3.1, 3.2, 4.4.6.1, 15, 15.1.1, 15.1.3, 15.3.5; Figures 15.1, 15.1.1-1, 15.1.3-1<br>3GPP TS 36.331 V15.3.0: Sections 1.5, 8.2.1, 5.8.2.2, 5.8.4.1, 5.8.4.2, 5.8.4.3, 6.2.1, 6.2.2; Figures 5.8.2.1-1, 5.8.4.1-1                                                                          |
| SIE017  | Siemens    | US8073973                                      | 26 Nov 2027 |           |                                                                                                                                                                                                                                                                                                                                              | 1     | 3GPP TS 36.233 V14.0.0: Sections 4, 4.1, 4.2.2, 5.5, 5.5.1, 5.5.4; Table 5.5.1.1; Figure 4.2.2.1                                                                                                                                                                                                                         | 1     | 3GPP TS 36.233 V15.0.0: Sections 4, 4.1, 4.2.2, 5.5, 5.5.1, 5.5.4; Table 5.5.1.1; Figure 4.2.2.1                                                                                                                                                                                                                         |
| SIE018  | Siemens    | US8619667                                      | 09 Jun 2027 |           |                                                                                                                                                                                                                                                                                                                                              | 1     | 3GPP TS 36.300 V11.0.0: Section 5.2.4<br>3GPP TS 36.211 V9.0.0: Sections 5.2.3, 5.3.4, 5.5.2.1.2; Table 5.2.3-1<br>3GPP TS 36.213 V9.1.0: Section 8.1                                                                                                                                                                    | 1     | 3GPP TS 36.300 V15.3.0: Section 5.2.4<br>3GPP TS 36.211 V15.2.0: Sections 5.2.3, 5.3.4, 5.5.2.1.2; Table 5.2.3-1<br>3GPP TS 36.213 V15.3.0: Section 8.1                                                                                                                                                                  |
| SIE019  | Siemens    | US7746841                                      | 04 Mar 2025 | 1         | 3GPP TS 25.321 V5.5.0: Sections 4.2.3.2, 4.2.3.3, 2.2.4.3, 9.1.2, 9.1.3, 9.1.4, 9.2.1, 11.6.1, 11.6.13, 11.6.2, 11.6.2.2; Figures 4.2.3.3.1, 9.1.2.1; Table 9.2.1.5a                                                                                                                                                                         | 1, 17 | 3GPP TS 36.300 V9.36.0: Sections 1, 6.9, 9.1; Figure 6-2<br>3GPP TS 36.321 V9.30.0: Sections 1, 3.2, 5.4.2.1, 5.4.2.2, 6.1.2, 6.2.1; Figure 6.1.2.1, 6.1.2.3                                                                                                                                                             | 1, 17 | 3GPP TS 36.300 V15.6.0: Sections 1, 6.9, 9.1; Figure 6-2<br>3GPP TS 36.321 V15.6.0: Sections 1, 3.2, 5.4.2.1, 5.4.2.2, 6.1.2, 6.2.1; Figure 6.1.2.1, 6.1.2.3                                                                                                                                                             |
| SIE020  | Siemens    | US7729349                                      | 07 Jan 2026 |           |                                                                                                                                                                                                                                                                                                                                              | 10    | 3GPP TS 36.300 V12.0.0: Sections 4, 4.3, 4.3.1, 5.3, 6, 6.1, 6.1.1, 6.1.2, 6.1.2.1, 6.1.2.2, 6.1.3.2; Figure 4.3.1-1<br>3GPP TS 36.321 V12.0.0: Sections 4.2, 4.2.1, 5.1.1, 5.1.2, 6.1.2, 6.2.2, 6.2.1; Figure 6.1.2.1, 6.1.2.3<br>3GPP TS 36.331 V12.0.0: Section 5.8.4.4, 5.8.4.1, 6.3.7; Figures 5.8.4.1-1, 6.1.3.2-1 | 10    | 3GPP TS 36.300 V15.6.0: Sections 4, 4.3, 4.3.1, 5.3, 6, 6.1, 6.1.1, 6.1.2, 6.1.2.1, 6.1.2.2, 6.1.3.2; Figure 4.3.1-1<br>3GPP TS 36.321 V15.6.0: Sections 4.2, 4.2.1, 5.1.1, 5.1.2, 6.1.2, 6.2.2, 6.2.1; Figure 6.1.2.1, 6.1.2.3<br>3GPP TS 36.331 V15.6.0: Section 5.8.4.4, 5.8.4.1, 6.3.7; Figures 5.8.4.1-1, 6.1.3.2-1 |
| SIE021* | Siemens    | US7894802                                      | 04 Aug 2024 |           |                                                                                                                                                                                                                                                                                                                                              | 16    | 3GPP TS 36.306 V9.0.0: Section 4.1; Tables 4.1-1, 4.1-2<br>3GPP TS 36.331 V9.0.0: Sections 1, 3.2, 4.4, 5.6.3.1, 6.2.2, 6.3.6; Figure 5.6.3.1-1                                                                                                                                                                          | 16    | 3GPP TS 36.306 V15.5.0: Section 4.1; Tables 4.1-1, 4.1-2<br>3GPP TS 36.331 V15.6.0: Sections 1, 3.2, 4.4, 5.6.3.1, 6.2.2, 6.3.6; Figure 5.6.3.1-1                                                                                                                                                                        |
| SIE022* | Siemens    | US7286554                                      | 02 Jul 2024 |           |                                                                                                                                                                                                                                                                                                                                              | 10    | 3GPP TS 36.300 V10.3.0: Sections 3.2, 4, 15.1.1; Figure 15.1.1-1<br>3GPP TS 36.331 V10.1.0: Sections 1, 6.2.2                                                                                                                                                                                                            | 10    | 3GPP TS 36.300 V15.6.0: Sections 3.2, 4, 15.1.1; Figure 15.1.1-1<br>3GPP TS 36.331 V15.6.0: Sections 1, 6.2.2                                                                                                                                                                                                            |
| SIE023* | Siemens    | US7499414                                      | 18 Sep 2024 |           |                                                                                                                                                                                                                                                                                                                                              | 1     | 3GPP TS 26.346 V10.0.0: Sections 4.4.1, 4.4.3, 5.2.1, 5.3.1, 5.3.2, 5.3.5.1; Figures 4, 6.7                                                                                                                                                                                                                              | 1     | 3GPP TS 26.346 V15.1.0: Sections 4.4.1, 4.4.3, 5.2.1, 5.3.1, 5.3.2, 5.3.5.1; Figures 4, 6.7                                                                                                                                                                                                                              |
| SIE024  | Siemens    | US7689662                                      | 26 Oct 2024 |           |                                                                                                                                                                                                                                                                                                                                              | 1     | 3GPP TS 33.220 V14.0.0: Sections 1, 4.1, 4.2.1, 4.5.2, 4.5.3; Figures 4.1, 4.3, 4.4                                                                                                                                                                                                                                      | 1     | 3GPP TS 33.220 V15.4.0: Sections 1, 4.1, 4.2.1, 4.5.2, 4.5.3; Figures 4.1, 4.3, 4.4                                                                                                                                                                                                                                      |
| SIE025* | Siemens    | US7315537                                      | 29 Jun 2024 |           |                                                                                                                                                                                                                                                                                                                                              | 1     | 3GPP TS 23.379 V14.0.0: Sections 4, 5.1, 7.4.2.3.2, 7.4.2.3.3, 7.4.2.3.4, 10.2, 10.9.1.2.1, 10.9.1.2.2; Figure 10.2-1; Table 10.9.1.2.2-1                                                                                                                                                                                | 1     | 3GPP TS 23.379 V15.6.0: Sections 4, 5.1, 7.4.2.3.2, 7.4.2.3.3, 7.4.2.3.4, 10.2, 10.9.1.2.1, 10.9.1.2.2; Figure 10.2-1; Table 10.9.1.2.2-1                                                                                                                                                                                |
| SKT002* | SK Telecom | KR10-0501031                                   | 29 Aug 2022 | 1.8       | 3GPP TS 36.113 V8.14.0: Sections 6.2.2.1.1<br>3GPP TS 36.213 V8.8.0: Sections 5.1.1, 6.1<br>3GPP TS 36.321 V8.9.0: Sections 5.1.1, 5.1.2, 5.1.3, 5.1.4<br>3GPP TS 36.331 V8.14.0: Sections 5.2.1, 6.3.1, 6.3.2                                                                                                                               |       |                                                                                                                                                                                                                                                                                                                          |       |                                                                                                                                                                                                                                                                                                                          |
| SKT003  | SK Telecom | BRPIO706360-1                                  | 25 May 2029 | 1         | 3GPP TS 36.211 V10.1.0: Sections 3.1, 6.11, 6.11.2.1, 6.11.2.2 and 6.12; Tables 6.1.1.2.1-1<br>3GPP TS 36.213 V10.1.0: Section 4.1<br>3GPP TS 36.101 V10.3.0: Sections 7.1; Annex C: Table C.2-1                                                                                                                                             | 1     |                                                                                                                                                                                                                                                                                                                          |       |                                                                                                                                                                                                                                                                                                                          |
|         |            | CNZL200780006495.7                             | 25 May 2027 | 11        | 3GPP TS 36.211 V10.1.0: Sections 3.1, 6.11, 6.11.2.1, 6.11.2.2 and 6.12; Tables 6.1.1.2.1-1<br>3GPP TS 36.213 V10.1.0: Section 4.1<br>3GPP TS 36.101 V10.3.0: Sections 7.1; Annex C: Table C.2-1                                                                                                                                             | 11    |                                                                                                                                                                                                                                                                                                                          |       |                                                                                                                                                                                                                                                                                                                          |

|        |            |                                           |             |  |  |      |                                                                                                                                                                                                                                                                            |      |                                                                                                                                                                                                             |
|--------|------------|-------------------------------------------|-------------|--|--|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SKT003 | SK Telecom | EP2057811<br>(DE, ES, FR, GB, NL, SE, TR) | 25 May 2027 |  |  | 13   | 3GPP TS 36.211 V10.1.0: Sections 3.1, 6.11, 6.11.2.1, 6.11.2.2 and 6.12; Tables 6.11.2.1-1<br>3GPP TS 36.213 V10.1.0: Section 4.1<br>3GPP TS 36.101 V10.3.0: Sections 7.1; Annex C: Table C.2-1                                                                            |      |                                                                                                                                                                                                             |
|        |            | IN263473                                  | 25 May 2027 |  |  | 8    | 3GPP TS 36.101 V10.3.0: Sections: 7.1, C.1, C.2; Table C.2-1<br>3GPP TS 36.211 V10.1.0: Section 3.1, 6.2.3, 6.11, 6.11.2.1, 6.11.2.2<br>3GPP TS 36.213 V10.1.0: Section 4.1                                                                                                |      |                                                                                                                                                                                                             |
|        |            | KR10-0874485                              | 23 May 2027 |  |  | 1    | 3GPP TS 36.211 V10.1.0: Sections 3.1, 6.11, 6.11.2.1, 6.11.2.2 and 6.12; Tables 6.11.2.1-1<br>3GPP TS 36.213 V10.1.0: Section 4.1<br>3GPP TS 36.101 V10.3.0: Sections 7.1; Annex C: Table C.2-1                                                                            |      |                                                                                                                                                                                                             |
|        |            | US8125976                                 | 22 Jul 2027 |  |  | 13   | 3GPP TS 36.211 V10.1.0: Sections 3.1, 6.11, 6.11.2.1, 6.11.2.2 and 6.12; Tables 6.11.2.1-1<br>3GPP TS 36.213 V10.1.0: Section 4.1<br>3GPP TS 36.101 V10.3.0: Sections 7.1; Annex C: Table C.2-1                                                                            |      |                                                                                                                                                                                                             |
| SKT004 | SK Telecom | CNZL201480052265.4                        | 25 Sep 2034 |  |  | 1    | 3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6, and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1<br>3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3                                                                                         | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | CNZL201910925953.1                        | 25 Sep 2034 |  |  | 1    | 3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3<br>3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1                                                                                          | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | KR10-2101517                              | 18 Mar 2034 |  |  | 1    | 3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3<br>3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1                                                                                          | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | KR10-2101577                              | 18 Mar 2034 |  |  | 1    | 3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3<br>3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1                                                                                          | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | KR10-2101578                              | 18 Mar 2034 |  |  | 1    | 3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3<br>3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1                                                                                          | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | US10028328                                | 26 Sep 2034 |  |  | 1, 9 | 3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3<br>3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1                                                                                          | 1, 9 | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | US10397975                                | 09 Nov 2034 |  |  | 1    | 3GPP TS 36.300 V12.4.0 Sections 6.5, 7.6, 11.2; Fig. 6.5-1<br>3GPP TS 36.321 V12.4.0 Sections 6.1.3.8, Fig. 6.1.3.8-1<br>3GPP TS 36.133 V12.4.0 Sections 7.7.2 and 7.7.3                                                                                                   | 1    | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
|        |            | US9439233                                 | 07 Dec 2034 |  |  | 1, 9 | 3GPP TS 36.300 V12.4.0: Sections 6.5, 7.6 and 11.2; Figure 6.5-1<br>3GPP TS 36.321 V12.4.0: Section 6.1.3.8; Figure 6.1.3.8-1<br>3GPP TS 36.133 V12.4.0: Sections 7.7.2 and 7.7.3                                                                                          | 1, 9 | 3GPP TS 36.300 V16.7.0: Section 6.5; Figure 6.5-1<br>3GPP TS 37.340 V16.8.0: Sections 4.1.1, 6.1<br>3GPP TS 38.213 V16.8.0: Section 4.3<br>3GPP TS 38.321 V16.7.0: Section 5.9, 6.1.3.10; Figure 6.1.3.10-1 |
| SKT005 | SK Telecom | KR10-2023671                              | 01 Nov 2033 |  |  | 1    | 3GPP TS 36.211 V12.9.0 Section 4,<br>3GPP TS 36.213 V12.8.0 Sections 7.1, 7.2, 7.2.2, Table 7.2.2-1A, Table 7.2.2-1C,<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b,<br>5.3.10.6 and 6.3.2 |      |                                                                                                                                                                                                             |
|        |            | KR10-2058816                              | 01 Nov 2033 |  |  | 1    | 3GPP TS 36.211 V12.9.0 Section 4,<br>3GPP TS 36.213 V12.8.0 Sections 7.1, 7.2, 7.2.2, Table 7.2.2-1A, Table 7.2.2-1C,<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b,<br>5.3.10.6 and 6.3.2 |      |                                                                                                                                                                                                             |
|        |            | KR10-2058817                              | 01 Nov 2033 |  |  | 1    | 3GPP TS 36.211 V12.9.0 Section 4,<br>3GPP TS 36.213 V12.8.0 Sections 7.1, 7.2, 7.2.2, Table 7.2.2-1A, Table 7.2.2-1C,<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b,<br>5.3.10.6 and 6.3.2 |      |                                                                                                                                                                                                             |
|        |            | US10348385                                | 30 Oct 2034 |  |  | 1    | 3GPP TS 36.211 V12.9.0 Section 4,<br>3GPP TS 36.213 V12.8.0 Sections 7.1, 7.2, 7.2.2, Table 7.2.2-1A, Table 7.2.2-1C,<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b,<br>5.3.10.6 and 6.3.2 |      |                                                                                                                                                                                                             |

|               |            |                    |             |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|---------------|------------|--------------------|-------------|--|--|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>SKT005</b> | SK Telecom | US9510332          | 12 Mar 2035 |  |  | 1, 8 | 3GPP TS 36.211 V12.9.0 Section 4,<br>3GPP TS 36.213 V12.8.0 Sections 7.1, 7.2, 7.2.2, Table 7.2.2-1A, Table 7.2.2-1C,<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b,<br>5.3.10.6 and 6.3.2 |  |  |
|               |            | US9800313          | 30 Oct 2034 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
| <b>SKT006</b> | SK Telecom | KR10-2120497       | 29 Jan 2034 |  |  | 1    | 3GPP TS 36.213 V12.7.0 Sections 7.1, 7.3, 7.3.2.1, 7.3.2.2, 7.3.4, 10.1.1,<br>10.1.3A, Table 10.1.3A-1<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5<br>3GPP TS 36.331 V12.7.0 Sections 3.1, 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10 and 5.3.10.3b                        |  |  |
|               |            | KR10-2173193       | 29 Jan 2034 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|               |            | US10122514         | 28 Jan 2035 |  |  | 19   | 3GPP TS 36.213 V12.7.0 Sections 7.1, 7.3, 7.3.2.1, 7.3.2.2, 7.3.4, 10.1.1,<br>10.1.3A, Table 10.1.3A-1<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5<br>3GPP TS 36.331 V12.7.0 Sections 3.1, 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10 and 5.3.10.3b                        |  |  |
|               |            | US10355845         | 28 Jan 2035 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|               |            | US9853795          | 18 Jun 2035 |  |  | 19   | 3GPP TS 36.213 V12.7.0 Sections 7.1, 7.3, 7.3.2.1, 7.3.2.2, 7.3.4, 10.1.1,<br>10.1.3A, Table 10.1.3A-1<br>3GPP TS 36.300 V12.7.0 Sections 5.3.1.1, 5.5, 7.5<br>3GPP TS 36.331 V12.7.0 Sections 3.1, 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10 and 5.3.10.3b                        |  |  |
|               |            | CNZL201480054683.7 | 02 Oct 2034 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
| <b>SKT007</b> | SK Telecom | CNZL201910940520.3 | 02 Oct 2034 |  |  | 1    | 3GPP TS 36.213 V12.7.0: Sections 8.0, 8.3, and 9.1.2<br>3GPP TS 36.300 V12.7.0: Section 5.5<br>3GPP TS 36.321 V12.7.0: Section 5.4.1<br>3GPP TS 36.331 V12.7.0: Sections 5.3.5.3, 5.3.5.4, 5.3.10.3b, and 6.3.2                                                            |  |  |
|               |            | KR10-2118750       | 04 Oct 2033 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|               |            | KR10-2251123       | 04 Oct 2033 |  |  | 1    | 3GPP TS 36.213 V12.7.0: Sections 8.0, 8.3, 9.1.2<br>3GPP TS 36.300 V12.7.0: Sections 5.5<br>3GPP TS 36.321 V12.7.0: Sections 5.4.5, 5.4.1<br>3GPP TS 36.331 V12.7.0: Sections 5.3.5, 5.3.5.3, 5.3.5.4, 5.3.10, 5.3.10.3b, 6.3.2                                            |  |  |
|               |            | KR10-2314101       | 04 Oct 2033 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|               |            | US10389492         | 27 Nov 2034 |  |  | 1    | 3GPP TS 36.213 V12.7.0: Sections 8.0, 8.3, 9.1.2<br>3GPP TS 36.300 V12.7.0: Sections 5.5<br>3GPP TS 36.321 V12.7.0: Sections 5.4.5, 5.4.1<br>3GPP TS 36.331 V12.7.0: Sections 5.3.5, 5.3.5.3, 5.3.5.4, 5.3.10, 5.3.10.3b, 6.3.2                                            |  |  |
|               |            | US10615926         | 03 Oct 2034 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |
|               |            | US9768918          | 03 Oct 2034 |  |  | 1    | 3GPP TS 36.213 V12.7.0 Sections 8.0, 8.3, 9.1.2<br>3GPP TS 36.300 V12.7.0 Section 5.5<br>3GPP TS 36.321 V12.7.0 Section 5.4.1,<br>3GPP TS 36.331 V12.7.0 Sections 5.3.5.3, 5.3.5.4, 5.3.10.3b and 6.3.2.                                                                   |  |  |
|               |            | CNZL201580070137.7 | 14 Oct 2035 |  |  |      |                                                                                                                                                                                                                                                                            |  |  |

|               |            |                                       |             |  |  |   |                                                                                                                                                                                                                                                           |   |                                                                                                                                                              |
|---------------|------------|---------------------------------------|-------------|--|--|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SKT008</b> | SK Telecom | EP3216139<br>(DE, ES, FR, GB, IT)     | 14 Oct 2035 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.2, 9.2.4, 9.3.6, 9.8, Table 9.8-1,<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3                                                                                                                               |   |                                                                                                                                                              |
|               |            | EP3614785<br>(DE, ES, FR, GB, IT, NL) | 14 Oct 2035 |  |  |   | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | EP3793321<br>(DE, ES, FR, GB, IT, NL) | 14 Oct 2035 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | KR10-2078424                          | 18 Nov 2034 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | KR10-2238523                          | 18 Nov 2034 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | KR10-2255690                          | 18 Nov 2034 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | US10334644                            | 30 Apr 2035 |  |  | 1 | 3GPP TS 36.211 V12.8.0 Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.7,<br>9.7.1, 9.7.2, 9.8, Table 9.8-1<br>3GPP TS 36.213 V12.8.0 Sections 14.1.1, 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0 Sections 5.10.7.1 and Figure 5.10.7.1-2    |   |                                                                                                                                                              |
|               |            | US10652941                            | 30 Apr 2035 |  |  | 1 | 3GPP TS 36.211 V12.8.0: Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.5,<br>9.7, 9.7.1, 9.7.2 and 9.8; Table 9.8-1<br>3GPP TS 36.213 V12.8.0: Sections 14.1.3, 14.3.1, 14.3.2, 14.4<br>3GPP TS 36.331 V12.7.0: Sections 5.10.7.1 and Figure 5.10.7.1-2 |   |                                                                                                                                                              |
|               |            | US10986681                            | 30 Apr 2035 |  |  | 1 | 3GPP TS 36.211 V12.8.0: Sections 9.1, 9.1.2, 9.2, 9.2.4, 9.3.1, 9.3.6, 9.5,<br>9.7, 9.7.1, 9.7.2, 9.8<br>3GPP TS 36.213 V12.8.0: Sections 14, 14.1, 14.1.3, 14.3, 14.3.1<br>3GPP TS 36.331 V12.7.0: Sections 5.10.7.1 and Figure 5.10.7.1-2               |   |                                                                                                                                                              |
| <b>SKT009</b> | SK Telecom | US10128986                            | 24 Dec 2034 |  |  | 1 | 3GPP TS 36.213 V12.7.0: Sections 7.7, 7.1, 7.1.8, 7.3.4, 10.2; Table 7-2<br>3GPP TS 36.300 V12.7.0: Section 7.5<br>3GPP TS 36.331 V12.7.0: Sections 5.3.1.1, 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b                                                         |   |                                                                                                                                                              |
|               |            | US10637614                            | 08 Apr 2035 |  |  | 1 | 3GPP TS 36.213 V12.7.0: Sections 7, 7.1, 7.3, 10.2; Table 7-2<br>3GPP TS 36.300 V12.7.0: Section 7.5<br>3GPP TS 36.331 V12.7.0: Sections 5.3.1.1, 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b                                                                    |   |                                                                                                                                                              |
|               |            | US11038627                            | 06 May 2035 |  |  | 1 | 3GPP TS 36.213 V12.7.0: Sections 7, 7.1, 7.1.8, 7.3.4, 10.2; Table 7-2<br>3GPP TS 36.300 V12.7.0: Sections 5.3.1.1, 5.5, 7.5<br>3GPP TS 36.331 V12.7.0: Sections 5.3.5.1, 5.3.5.3, 5.3.5.4, 5.3.10.3b                                                     |   |                                                                                                                                                              |
| <b>SKT011</b> | SK Telecom | CNZL201680079838.1                    | 18 Nov 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | EP3410774<br>(DE, ES, FR, GB, IT, NL) | 18 Nov 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | JP6638091                             | 18 Nov 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | JP6876116                             | 18 Nov 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | KR10-1893917                          | 25 Jan 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | KR10-1932574                          | 25 Jan 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |
|               |            | US10659397                            | 18 Nov 2036 |  |  | 1 | 3GPP TS 23.214 V14.2.0: Sections 4.2, 4.2.1, 5.9, 5.9.1, 5.9.3, 5.9.3.1, 5.9.3.2 6.2.3, 6.3, 6.3.1, 6.3.1.5; Figures 4.2.1-1, 6.2.3-1                                                                                                                     | 1 | 3GPP TS 23.501 V17.2.0: Sections 4.1, 4.2.1, 4.2.6, 5.3.3.2.4, 5.8.2.11.15, 5.8.3.1, 5.8.3.2; Table 5.8.2.11.15-1<br>3GPP TS 23.502 V17.2.1: Section 4.2.3.3 |

|               |            |                                               |             |  |  |   |                                                                                                                                                                                                |   |                                                                                                       |
|---------------|------------|-----------------------------------------------|-------------|--|--|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------|
| <b>SKT012</b> | SK Telecom | CN2L201680066884.8                            | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | CN2L201680067157.3                            | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | EP3364695<br>(DE, ES, FI, FR, GB, IT, NL, TR) | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | EP3379867<br>(DE, ES, FR, GB, IT, NL, TR)     | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | IN418542                                      | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | JP7128234                                     | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | KR10-1795786                                  | 19 Nov 2035 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | KR10-1795787                                  | 19 Nov 2035 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | US10609636                                    | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | US11178600                                    | 08 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
|               |            | US11265809                                    | 24 Nov 2036 |  |  | 1 | 3GPP TS 23.401 V14.3.0: Sections 4.3.25.1a, 5.3.2.1; Figure 5.3.2.1-1<br>3GPP TS 24.301 V14.3.0: Sections 5.3.1.1, 5.5.1.2.4                                                                   |   |                                                                                                       |
| <b>SKT013</b> | SK Telecom | CN2L201780049384.8                            | 09 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | EP3498023<br>(ES, FR, GB, IT, NL)             | 09 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | RU2711952                                     | 09 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | RU2722424                                     | 09 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | RU2735387                                     | 09 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | US10645527                                    | 07 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | US10721588                                    | 07 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | US11044576                                    | 07 Aug 2037 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | ZA201901397                                   | 06 Mar 2039 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | ZA202203814                                   | 04 Apr 2042 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
|               |            | ZA202203815                                   | 04 Apr 2042 |  |  | 1 | 3GPP TS 36.212 V14.7.0: Section 5.3.3.1.9A<br>3GPP TS 36.213 V14.3.0: Sections 14.1.5, 14.2, 14.2.1<br>3GPP TS 36.321 V14.8.0: Sections 3.1, 5.14.1.1<br>3GPP TS 36.331 V14.8.0: Section 6.3.2 |   |                                                                                                       |
| <b>SKT015</b> | SK Telecom | CN2L201780077099.7                            | 26 Dec 2037 |  |  |   |                                                                                                                                                                                                | 1 | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2 |
|               |            | JP6898994                                     | 26 Dec 2037 |  |  |   |                                                                                                                                                                                                | 1 | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2 |
|               |            | JP7261834                                     | 26 Dec 2037 |  |  |   |                                                                                                                                                                                                | 1 | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2 |

|               |            |                                        |             |  |  |  |   |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                      |
|---------------|------------|----------------------------------------|-------------|--|--|--|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SKT015</b> | SK Telecom | KR10-1859564                           | 01 Aug 2037 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2                                                                                                    |                                                                                                                                                                                                                                                                                                      |
|               |            | US10912006                             | 26 Dec 2037 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2                                                                                                    |                                                                                                                                                                                                                                                                                                      |
|               |            | US11419032                             | 29 Mar 2038 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 38.300 V15.5.0: Sections 9.2.1.2, 9.2.2.1, 9.2.2.2<br>3GPP TS 38.304 V15.5.0: Section 5.2.4.2                                                                                                    |                                                                                                                                                                                                                                                                                                      |
| <b>SKT016</b> | SK Telecom | CNZL201780028882.4                     | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | EP3445013 (DE, ES, GR, GB IT, NL, TR)  | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | IN459692                               | 30 Jun 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | IN472589                               | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | JP7128874                              | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | KR10-2076816                           | 12 May 2036 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | US10499445                             | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | US10873988                             | 28 Apr 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
|               |            | US11412564                             | 17 May 2037 |  |  |  | 1 | 3GPP 23.401 V15.4.0: Sections 3.2, 4.1, 4.3.2a, 4.7.3, 5.3.2.1; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 24.301 V15.4.0: Sections 3.2, 5.5.1.2.2, 5.5.1.2.4<br>3GPP TS 38.300 V15.4.0: Sections 3.1, 3.2, 4, 4.9.1, 4.9.2, 4.9.3.1; Figures 4-1, 4.9.2-1, 4.9.3.1-1 | 1                                                                                                                                                                                                        | 3GPP 23.401 V17.8.0: Sections 3.1, 3.2, 4.2.1, 4.7.3; Figures 4.2.1-1, 4.2.1-2<br>3GPP TS 23.501 V17.6.0: Sections 3.1, 4.2.8.0, 5.1, 5.11.1, 5.7.2.6<br>3GPP TS 23.502 V17.9.0: Sections 4.2.2.1, 4.2.2.2.1, 4.2.2.2.2, 4.3.2a<br>3GPP TS 38.300 V17.5.0: Sections 3.1, 3.2, 4.1, 4.5; Figure 4.1-1 |
| <b>SKT017</b> | SK Telecom | CNZL201780030831.5                     | 06 Mar 2037 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2.2; Figure 4.3.2.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1 |                                                                                                                                                                                                                                                                                                      |
|               |            | EP3445082 (DE, ES, FR, GB, IT, NL, TR) | 06 Mar 2037 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2.2; Figure 4.3.2.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1 |                                                                                                                                                                                                                                                                                                      |
|               |            | JP6674051                              | 06 Mar 2037 |  |  |  |   | 1                                                                                                                                                                                                                                                              | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2.2; Figure 4.3.2.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1 |                                                                                                                                                                                                                                                                                                      |

|                |                      |                                                                                    |             |  |  |  |   |                                                                                                                                                       |                                                                                                                                                                                                                                                                              |
|----------------|----------------------|------------------------------------------------------------------------------------|-------------|--|--|--|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SKT017</b>  | SK Telecom           | JP6952816                                                                          | 06 Mar 2037 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2; Figure 4.3.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1                                                                         |
|                |                      | KR10-2115213                                                                       | 19 Sep 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2; Figure 4.3.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1                                                                         |
|                |                      | KR10-2115218                                                                       | 19 Sep 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2; Figure 4.3.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1                                                                         |
|                |                      | US10945159                                                                         | 19 Aug 2037 |  |  |  |   | 8                                                                                                                                                     | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2; Figure 4.3.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1                                                                         |
|                |                      | US11627494                                                                         | 29 May 2037 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 23.501 V15.3.0: Sections 5.1.5.1, 5.7.1.1, 5.7.5.1, 5.7.5.2, 5.7.5.3<br>3GPP TS 23.502 V15.9.0: Sections 4.3.2.2; Figure 4.3.2.2-1, 4.3.3.1, 4.3.3.3<br>3GPP TS 38.300 V15.5.0: Section 12.1                                                                         |
| <b>SKT018</b>  | SK Telecom           | US11653248                                                                         | 30 Jun 2037 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.331 V16.12.0: Sections 3.2, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.1, 6.2.2, 6.3.2; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1, 5.3.13.1-2<br>3GPP TS 23.501 V16.16.0: Sections 3.2, 5.7.1.1, 5.7.1.5; Figure 5.7.1.5-1<br>3GPP TS 38.330 V16.12.0: Sections 3.1, 3.2, 4.1 |
| <b>SKT019</b>  | SK Telecom           | CNZL201680085944.0                                                                 | 28 Dec 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | EP3444958 (GB, FR, DE, IT, ES)                                                     | 28 Dec 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | IDP000065766                                                                       | 28 Dec 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | IN434700                                                                           | 28 Dec 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | JP6873161                                                                          | 28 Dec 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | KR10-2021086                                                                       | 24 Jun 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | KR10-2021089                                                                       | 24 Jun 2036 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
|                |                      | US11019664                                                                         | 14 Jan 2037 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.321 V15.13.0: Sections 5.1.2, 5.1.3                                                                                                                                                                                                                               |
| <b>SKT047</b>  | SK Telecom           | US11272401                                                                         | 25 Mar 2038 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.214 V17.6.0: Sections 5.2.1, 5.2.3<br>3GPP TS 38.300 V17.0.0: Sections 3.1, 3.2, 4.1, 7.2, 18.0, 18.2; Figure 18.2-1<br>3GPP TS 38.331 V17.1.0: Section 4.2.1                                                                                                     |
| <b>SNY001*</b> | Sisvel International | US7171230                                                                          | 11 Nov 2022 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.213 V8.7.0: Sections 5.5.1, 5.1.1, 5.1.1.1, 6.1<br>3GPP TS 36.331 V8.5.0: Sections 5.5.3.2, 6.3.2                                                                                                                                                                 |
| <b>SNY002</b>  | Sisvel International | KR10-1392025                                                                       | 01 Feb 2026 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.300 V12.4.0: Sections 5.1, 5.1.1, 5.1.4, 5.1.5, 5.1.8<br>3GPP TS 36.211 V8.5.0: Sections 3.1, 6.10, 6.10.1, 6.10.1.1, 6.10.12, 7.2; Figure 6.10.1.2-1                                                                                                             |
|                |                      | US8811466                                                                          | 17 Feb 2025 |  |  |  |   | 7                                                                                                                                                     | 3GPP TS 36.300 V12.4.0: Sections 5.1, 5.1.1, 5.1.4, 5.1.5, 5.1.8<br>3GPP TS 36.211 V8.5.0: Sections 3.1, 6.10, 6.10.1, 6.10.1.1, 6.10.12, 7.2; Figure 6.10.1.2-1                                                                                                             |
|                |                      | US9432103                                                                          | 16 Mar 2025 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.300 V12.4.0: Sections 5.1, 5.1.1, 5.1.4, 5.1.5, 5.1.8<br>3GPP TS 36.211 V8.5.0: Sections 3.1, 6.10, 6.10.1, 6.10.1.1, 6.10.12, 7.2; Figure 6.10.1.2-1                                                                                                             |
| <b>TCH001</b>  | Sisvel SPA           | EP2315383 (AT, CH, CZ, DE, DK, ES, FI, FR, GB, HU, IE, IT, NL, PL, PT, RO, SE, TR) | 03 Jan 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | JP4968858                                                                          | 03 Jan 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | KR10-0912784                                                                       | 22 Dec 2026 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | MX287630                                                                           | 03 Jan 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | RU2392752                                                                          | 03 Jan 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | US7869396                                                                          | 16 May 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | US8165596                                                                          | 03 Jan 2027 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 36.321 V16.1.0: Sections 1, 3.1 and 3.2<br>3GPP TS 38.322 V16.1.0: Sections 1, 3.2, 5.2.3.2.1, 5.2.3.2.3., 5.3.1, 5.3.3.3, 5.3.4, 6.1.3, 6.2.2.5, 6.1.3.10, 6.2.3.12, 7.1 and 7.3                                                                                    |
|                |                      | US8369865                                                                          | 03 Jan 2027 |  |  |  | 1 | 3GPP TS 36.322 V8.5.0: Sections 4.2.1, 4.2.1.3.1, 4.2.1.3.3, 5.1.3.1.1, 5.1.3.2.3, 5.2.1, 5.2.3, 6.1.2, 6.2.1.6, 6.2.2.14, 7.1, 7.3; Figure 6.2.1.6-1 |                                                                                                                                                                                                                                                                              |
| <b>TCH002</b>  | Sisvel SPA           | CNZL201310036114.7                                                                 | 10 Sep 2029 |  |  |  |   | 1                                                                                                                                                     | 3GPP TS 38.213 V16.2.0: Sections 1, 3, 10.2; Table 10.2-2<br>3GPP TS 38.321 V16.1.0: Sections 3.1, 3.2, 5.3.1, 5.8.1                                                                                                                                                         |

|        |            |                                                                                    |             |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------|------------|------------------------------------------------------------------------------------|-------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TCH002 | Sisvel SPA | JP5238067                                                                          | 10 Sep 2029 |       |                                                                                                                                             | 1            | 3GPP TS 36.321 V8.5.0: Sections 5.4.1, 5.10.2; Table 7.1-2<br>3GPP TS 36.213 V8.6.0: Sections 8, 9.1.1, 9.2; Table 8-5, 9.2-1A<br>3GPP TS 36.212 V8.8.0: Sections 5.3.3, 5.3.3.1.1<br>3GPP TS 36.331 V8.4.0: Sections 6.2, 6.3.2       | 1            | 3GPP TS 36.321 V8.5.0: Sections 5.4.1, 5.10.2; Table 7.1-2<br>3GPP TS 36.213 V8.6.0: Sections 8, 9.1.1, 9.2; Table 8-5, 9.2-1A<br>3GPP TS 36.212 V8.8.0: Sections 5.3.3, 5.3.3.1.1<br>3GPP TS 36.331 V8.4.0: Sections 6.2, 6.3.2                                                                                                                                                                                                                                                                                  |
|        |            | JP5426001                                                                          | 10 Sep 2029 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 1            | 3GPP TS 38.213 V16.2.0: Sections 1, 3, 10.2; Table 10.2-2<br>3GPP TS 38.321 V16.1.0: Sections 3.1, 3.2, 5.3.1, 5.8.1                                                                                                                                                                                                                                                                                                                                                                                              |
|        |            | JP6002118                                                                          | 10 Sep 2029 |       |                                                                                                                                             | 1            | 3GPP TS 36.321 V8.5.0: Sections 5.4.1, 5.10.2; Table 7.1-2<br>3GPP TS 36.213 V8.6.0: Sections 8, 9.1.1, 9.2; Table 8-5, 9.2-1A<br>3GPP TS 36.212 V8.8.0: Sections 5.3.3, 5.3.3.1.1<br>3GPP TS 36.331 V8.4.0: Sections 6.2, 6.3.2       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | US8411633                                                                          | 28 Dec 2029 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 1            | 3GPP TS 38.213 V16.2.0: Sections 1, 3, 10.2; Table 10.2-2<br>3GPP TS 38.321 V16.1.0: Sections 3.1, 3.2, 5.3.1, 5.8.1                                                                                                                                                                                                                                                                                                                                                                                              |
|        |            | US8971279                                                                          | 03 Apr 2030 |       |                                                                                                                                             | 1            | 3GPP TS 36.321 V8.5.0: Sections 5.4.1, 5.10.2; Table 7.1-2<br>3GPP TS 36.213 V8.6.0: Sections 8, 9.1.1, 9.2; Table 8-5, 9.2-1A<br>3GPP TS 36.212 V8.8.0: Sections 5.3.3, 5.3.3.1.1<br>3GPP TS 36.331 V8.4.0: Sections 6.2, 6.3.2       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | US9369254                                                                          | 19 Oct 2029 |       |                                                                                                                                             | 1            | 3GPP TS 36.321 V8.5.0: Sections 5.4.1, 5.10.2; Table 7.1-2<br>3GPP TS 36.213 V8.6.0: Sections 8, 9.1.1, 9.2; Table 8-5, 9.2-1A<br>3GPP TS 36.212 V8.8.0: Sections 5.3.3, 5.3.3.1.1<br>3GPP TS 36.331 V8.4.0: Sections 6.2, 6.3.2       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| TCH003 | Sisvel SPA | EP2073588 (DE, GB, IT)                                                             | 07 Apr 2023 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 1            | 3GPP TS 38.300 V16.7.0: Sections 4, 4.4 and 4.4.1<br>3GPP TS 38.323 V16.5.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.4<br>3GPP TS 38.322 V16.2.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5, 4.2.1.6, 4.2.1.7, 4.2.1.8, 4.2.1.9, 4.2.1.10, 4.2.1.11, 4.2.1.12, 4.2.1.13, 4.2.1.14, 4.2.1.15, 4.2.1.16, 4.2.1.17, 4.2.1.18, 4.2.1.19, 4.2.1.20, 4.2.1.21, 4.2.1.22, 4.2.1.23, 4.2.1.24, 4.2.1.25, 4.2.1.26, 4.2.1.27, 4.2.1.28, 4.2.1.29, 4.2.1.30, 4.2.1.31, 4.2.1.32, 4.2.1.33, 4.4 |
|        |            | US8260287                                                                          | 13 Mar 2025 | 1     | 3GPP TS 25.323 V8.5.0: Sections 4.2; Figure 1<br>3GPP TS 25.322 V8.9.0: Sections 4.2.1, 6                                                   |              |                                                                                                                                                                                                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | US9072006                                                                          | 21 Feb 2027 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 13           | 3GPP TS 38.300 V16.7.0: Sections 4, 4.4 and 4.4.1<br>3GPP TS 38.323 V16.5.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.2, 4.4<br>3GPP TS 38.322 V16.2.0: Sections 4, 4.1, 4.2, 4.2.1, 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5, 4.2.1.6, 4.2.1.7, 4.2.1.8, 4.2.1.9, 4.2.1.10, 4.2.1.11, 4.2.1.12, 4.2.1.13, 4.2.1.14, 4.2.1.15, 4.2.1.16, 4.2.1.17, 4.2.1.18, 4.2.1.19, 4.2.1.20, 4.2.1.21, 4.2.1.22, 4.2.1.23, 4.2.1.24, 4.2.1.25, 4.2.1.26, 4.2.1.27, 4.2.1.28, 4.2.1.29, 4.2.1.30, 4.2.1.31, 4.2.1.32, 4.2.1.33, 4.4 |
| TEF001 | Telefónica | EP2716111 (DE, ES, GB)                                                             | 22 May 2032 |       |                                                                                                                                             | 1            | 3GPP TS 36.214 V12.3.0: Section 5.1.1<br>3GPP TS 36.300 V12.7.0: Section 16.1.10<br>3GPP TS 36.304 V12.6.0: Sections 4.2, 5.2.3.2, 5.2.4.6; Table 4.2-1                                                                                | 1            | 3GPP TS 36.214 V12.3.0: Section 5.1.1<br>3GPP TS 36.300 V12.7.0: Section 16.1.10<br>3GPP TS 36.304 V12.6.0: Sections 4.2, 5.2.3.2, 5.2.4.6; Table 4.2-1                                                                                                                                                                                                                                                                                                                                                           |
|        |            | US9439115                                                                          | 17 Sep 2033 |       |                                                                                                                                             | 1            | 3GPP TS 36.214 V12.3.0: Section 5.1.1<br>3GPP TS 36.300 V12.7.0: Section 16.1.10<br>3GPP TS 36.304 V12.6.0: Sections 4.2, 5.2.3.2, 5.2.4.6; Table 4.2-1                                                                                | 1            | 3GPP TS 36.214 V12.3.0: Section 5.1.1<br>3GPP TS 36.300 V12.7.0: Section 16.1.10<br>3GPP TS 36.304 V12.6.0: Sections 4.2, 5.2.3.2, 5.2.4.6; Table 4.2-1                                                                                                                                                                                                                                                                                                                                                           |
| TEF002 | Telefónica | EP2861033 (DE, ES, GB)                                                             | 08 Oct 2033 |       |                                                                                                                                             | 1            | 3GPP TS 24.301 V14.9.0: Sections 5.3.12, 9.9.3.46<br>3GPP TS 24.008 V14.7.0: Sections 2.1.2, 4.7.3.1.1, 4.7.3.1.3, 9.4.1, 9.4.2, 10.5.5.32; Figure 10.5.5.32; Tables 9.4.1, 9.4.2<br>3GPP TS 36.321 V11.6.0: Section 3.1; Figure 3.1-1 | 1            | 3GPP TS 24.301 V14.9.0: Sections 5.3.12, 9.9.3.46<br>3GPP TS 24.008 V14.7.0: Sections 2.1.2, 4.7.3.1.1, 4.7.3.1.3, 9.4.1, 9.4.2, 10.5.5.32; Figure 10.5.5.32; Tables 9.4.1, 9.4.2<br>3GPP TS 36.321 V11.6.0: Section 3.1; Figure 3.1-1                                                                                                                                                                                                                                                                            |
|        |            | US9313736                                                                          | 11 Nov 2034 |       |                                                                                                                                             | 1            | 3GPP TS 24.301 V14.9.0: Sections 5.3.12, 9.9.3.46<br>3GPP TS 24.008 V14.7.0: Sections 2.1.2, 4.7.3.1.1, 4.7.3.1.3, 9.4.1, 9.4.2, 10.5.5.32; Figure 10.5.5.32; Tables 9.4.1, 9.4.2<br>3GPP TS 36.321 V11.6.0: Section 3.1; Figure 3.1-1 | 1            | 3GPP TS 24.301 V14.9.0: Sections 5.3.12, 9.9.3.46<br>3GPP TS 24.008 V14.7.0: Sections 2.1.2, 4.7.3.1.1, 4.7.3.1.3, 9.4.1, 9.4.2, 10.5.5.32; Figure 10.5.5.32; Tables 9.4.1, 9.4.2<br>3GPP TS 36.321 V11.6.0: Section 3.1; Figure 3.1-1                                                                                                                                                                                                                                                                            |
| TIM001 | TIM        | CNZL20110028222.0                                                                  | 30 Sep 2024 | 1, 10 | 3GPP TS 23.402 V9.3.0: Sections 1; 4.1.0; 4.3.3.3; 4.5.2; 6.3; 6.10; 12.3; Figure 6.10-1                                                    | 1, 10        | 3GPP TS 23.402 V9.3.0: Sections 1; 4.1.0; 4.3.3.3; 4.5.2; 6.3; 6.10; 12.3; Figure 6.10-1                                                                                                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | EP2341723 (AT, BE, CH, CZ, DE, DK, ES, FR, GB, HU, IE, IT, NL, PL, PT, RO, SE, TR) | 30 Sep 2024 |       |                                                                                                                                             | 1, 3         | 3GPP TS 23.402 V9.3.0: Sections 1, 4.1.0, 4.3.3.3, 4.4.1, 6.3, 6.10, 12.3; Figure 6.10-1                                                                                                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | US8593963                                                                          | 13 Apr 2025 |       |                                                                                                                                             | 8            | 3GPP TS 23.402 V9.3.0: Sections 1, 4.1.3.2, 4.3.3.1, 4.3.3.3, 4.4.1, 4.5.2, 6.10, 12.3; Figure 6.10-1                                                                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | US9357374                                                                          | 19 Oct 2024 | 1, 9  | 3GPP TS 23.402 V9.3.0: Sections 1, 3.2, 4.1.0, 4.3.3.3, 4.4.1, 6.3, 6.10; Figures 6.10-1, 12.3<br>3GPP TS 33.402 V15.1.0: Section 9.2.2.2.1 | 1, 9         | 3GPP TS 23.402 V9.3.0: Sections 1, 3.2, 4.1.0, 4.3.3.3, 4.4.1, 6.3, 6.10; Figures 6.10-1, 12.3<br>3GPP TS 33.402 V15.1.0: Section 9.2.2.2.1                                                                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| TIM002 | TIM        | US7995988                                                                          | 27 Dec 2025 |       |                                                                                                                                             | 1, 8, 14, 15 | 3GPP TS 36.305 V15.4.0: Sections 1, 4.1, 4.3, 5, 5.3.3, 5.3.4, 6.1.3, 6.1.4, 6.1.5, 6.2.1, 7.1.1, 7.1.2.1, 8.1.3.3, 8.6.3.1, 8.7.3.1, 8.8.3.1.1, 8.9.3.1.1; Figures 5-1.8.9.3.1.1-Table 4.3-1                                          | 1, 8, 14, 15 | 3GPP TS 38.305 V15.5.0: Sections 1, 4.1, 4.3.1, 5.1, 5.4.4, 6.1.4, 6.1.5, 6.2.1, 7.1.1, 7.1.2.1, 8.1.3.3.1, 8.4.3.3.1, 8.5.3.3.1, 8.6.3.3.1, 8.7.3.3.1, 8.8.3.2; Figures 5.1-1.8.1.3.3.1-1-Table 4.3-1-1                                                                                                                                                                                                                                                                                                          |
| TIM003 | TIM        | US10567913                                                                         | 25 Oct 2036 |       |                                                                                                                                             | 1            | 3GPP TS 23.303: Sections 1, 4.2, 5.3.3.2, 7A.1; Annex C.1, C.2; Table C.2-1; Figure 4.2-1, C.2-1<br>3GPP TS 22.278: Section 4.1                                                                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| UNI001 | UNISOC     | CNZL201710290717.8                                                                 | 27 Apr 2037 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 10, 14, 16   | 3GPP TS 36.331 V15.6.0: Sections 3.1, 3.2, 5.6.3.1, 5.6.3.2, 5.6.3.3, 6.2.2<br>3GPP TS 38.331 V15.2.1: Sections 5.6.1.4, 6.3.3<br>3GPP TS 37.340 V15.6.0: Sections 3.2, 4.2.1, 10.2.1                                                                                                                                                                                                                                                                                                                             |
| UNI002 | UNISOC     | CNZL201611140968.X                                                                 | 12 Dec 2036 |       |                                                                                                                                             | 1            | 3GPP TS 36.213 V15.3.0: Sections 6.1, 6.1.1<br>3GPP TS 36.331 V15.3.0: Section 6.2, 6.2.1, 6.3, 6.3.1                                                                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|        |            | CNZL201911280547.0                                                                 | 12 Dec 2036 |       |                                                                                                                                             | 1            | 3GPP TS 36.213 V15.3.0: Sections 6.1, 6.1.1<br>3GPP TS 36.331 V15.3.0: Section 6.2, 6.2.1, 6.3, 6.3.1                                                                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| UNI003 | UNISOC     | CNZL201510859850.1                                                                 | 30 Nov 2035 |       |                                                                                                                                             | 1            | 3GPP TS 36.213 V15.8.0: Sections 7.2, 7.2.3<br>3GPP TS 36.331 V15.8.0: Section 6.3, 6.3.2<br>3GPP TS 36.300 V15.8.0: Section 5.2.3                                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| UNI004 | UNISOC     | CNZL201510868781.0                                                                 | 01 Dec 2035 |       |                                                                                                                                             |              |                                                                                                                                                                                                                                        | 1            | 3GPP TS 38.214 V15.5.0: Sections 3.3, 5.1.2.1, 6.1.2.1<br>3GPP TS 38.213 V15.5.0: Section 10.1<br>3GPP TS 38.212 V15.4.0: Sections 7.3, 7.3.1.1, 7.3.1.2, 7.3.1.2.1<br>3GPP TS 38.331 V15.5.0: Section 6.3.2                                                                                                                                                                                                                                                                                                      |

|        |        |                  |             |  |  |  |   |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                            |
|--------|--------|------------------|-------------|--|--|--|---|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNI004 | UNISOC | CN201910722587.X | 01 Dec 2035 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.214 V15.5.0: Sections 3.3, 5.1.2.1, 6.1.2.1<br>3GPP TS 38.213 V15.5.0: Section 10.1<br>3GPP TS 38.212 V15.4.0: Sections 7.3, 7.3.1.1, 7.3.1.1.1, 7.3.1.2, 7.3.1.2.1<br>3GPP TS 38.331 V15.5.0: Section 6.3.2                                                                                                                                    |
| UNI005 | UNISOC | CN201510573735.8 | 10 Sep 2035 |  |  |  |   | 1                                                                                                               | 3GPP TS 37.355 V16.0.0: Sections 3.1, 3.2, 4.1.1, 5.1.1, 5.3.1, 6.3, 6.5.3.4, 6.5.9.4                                                                                                                                                                                                                                                                      |
| UNI006 | UNISOC | CN201910367603.8 | 05 May 2039 |  |  |  | 1 | 3GPP TS 36.300 V17.2.0: Sections 23, 23.20, 23.20.2<br>3GPP TS 23.401 V17.4.0: Sections 4.4.3, 4.3.33, 4.3.33.5 |                                                                                                                                                                                                                                                                                                                                                            |
| UNI007 | UNISOC | CN201710184384.0 | 24 Mar 2037 |  |  |  |   | 15                                                                                                              | 3GPP TS 38.211 V15.2.0: Sections 3.2, 4.3.1, 4.3.2; Tables 4.3.2-1, 4.3.2-2<br>3GPP TS 38.213 V15.2.0: Sections 1, 4.1<br>3GPP TS 38.215 V15.2.0: Section 5.1.1                                                                                                                                                                                            |
|        |        | CN202110875829.6 | 24 Mar 2037 |  |  |  |   | 14                                                                                                              | 3GPP TS 38.211 V15.2.0: Sections 3.2, 4.3.1, 4.3.2; Tables 4.3.2-1, 4.3.2-2<br>3GPP TS 38.213 V15.2.0: Sections 1, 4.1<br>3GPP TS 38.215 V15.2.0: Section 5.1.1                                                                                                                                                                                            |
|        |        | US11246108       | 07 Mar 2038 |  |  |  |   | 11                                                                                                              | 3GPP TS 38.211 V15.2.0: Sections 3.2, 4.3.1, 4.3.2; Tables 4.3.2-1, 4.3.2-2<br>3GPP TS 38.213 V15.2.0: Sections 1, 4.1<br>3GPP TS 38.215 V15.2.0: Section 5.1.1                                                                                                                                                                                            |
| UNI008 | UNISOC | CN201710181786.5 | 24 Mar 2037 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.133 V16.7.0: Section 8.5.1<br>3GPP TS 38.213 V16.6.0: Sections 3.3, 6<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 9.2.8<br>3GPP TS 38.321 V16.4.0: Sections 5.17, 6.1.3.23; Figures 6.1.3.23-1, 6.1.3.23-2                                                                                                                                         |
|        |        | CN202110694184.6 | 24 Mar 2037 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.133 V16.7.0: Section 8.5.1<br>3GPP TS 38.213 V16.6.0: Sections 3.3, 6<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 9.2.8<br>3GPP TS 38.321 V16.4.0: Sections 5.17, 6.1.3.23; Figures 6.1.3.23-1, 6.1.3.23-2                                                                                                                                         |
|        |        | US10582514       | 27 Dec 2037 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.133 V16.7.0: Section 8.5.1<br>3GPP TS 38.213 V16.6.0: Sections 3.3, 6<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 9.2.8<br>3GPP TS 38.321 V16.4.0: Sections 5.17, 6.1.3.23; Figures 6.1.3.23-1, 6.1.3.23-2                                                                                                                                         |
|        |        | US11019635       | 27 Dec 2037 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.133 V16.7.0: Section 8.5.1<br>3GPP TS 38.213 V16.6.0: Sections 3.3, 6<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 9.2.8<br>3GPP TS 38.321 V16.4.0: Sections 5.17, 6.1.3.23; Figures 6.1.3.23-1, 6.1.3.23-2                                                                                                                                         |
| UNI009 | UNISOC | CN201810290152.8 | 03 Apr 2038 |  |  |  |   | 9                                                                                                               | 3GPP TS 37.213 V16.2.0: Sections 1, 3.3, 4.0, 4.1, 4.1.1, 4.2.1.0, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.3<br>3GPP TS 38.212 V16.4.0: Sections 3.3, 7.3.1; Table 7.3.1-1<br>3GPP TS 38.213 V16.4.0: Sections 10.4, 11.1.1; Table 11.1.1-1<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 3.2, 4.1<br>3GPP TS 38.331 V16.2.0: Section 6.3.2                                 |
|        |        | US11477822       | 04 Apr 2039 |  |  |  |   | 9                                                                                                               | 3GPP TS 37.213 V16.2.0: Sections 1, 3.3, 4.0, 4.1, 4.1.1, 4.2.1.0, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.3<br>3GPP TS 38.212 V16.4.0: Sections 3.3, 7.3.1; Table 7.3.1-1<br>3GPP TS 38.213 V16.4.0: Sections 10.4, 11.1.1; Table 11.1.1-1<br>3GPP TS 38.300 V16.4.0: Sections 3.1, 3.2, 4.1<br>3GPP TS 38.331 V16.2.0: Section 6.3.2                                 |
| UNI010 | UNISOC | CN201710685505.X | 11 Aug 2037 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.211 V15.4.0: Sections 4.4.1, 4.4.2, 4.4.3, 4.4.4<br>3GPP TS 38.212 V15.4.0: Sections 7.3.1, 7.3.1.0, 7.3.1.2.1; Table 7.3.1-1<br>3GPP TS 38.213 V15.4.0: Sections 3.3, 13; Tables 13-1, 13-2, 13-3<br>3GPP TS 38.214 V15.4.0: Sections 3.3, 5.1.2.2, 5.1.2.2.2, 5.1.4<br>3GPP TS 38.331 V15.3.0: Sections 5.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
|        |        | US10652891       | 09 Aug 2038 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.211 V15.4.0: Sections 4.4.1, 4.4.2, 4.4.3, 4.4.4<br>3GPP TS 38.212 V15.4.0: Sections 7.3.1, 7.3.1.0, 7.3.1.2.1; Table 7.3.1-1<br>3GPP TS 38.213 V15.4.0: Sections 3.3, 13; Tables 13-1, 13-2, 13-3<br>3GPP TS 38.214 V15.4.0: Sections 3.3, 5.1.2.2, 5.1.2.2.2, 5.1.4<br>3GPP TS 38.331 V15.3.0: Sections 5.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
|        |        | US11317408       | 21 Oct 2038 |  |  |  |   | 1                                                                                                               | 3GPP TS 38.211 V15.4.0: Sections 4.4.1, 4.4.2, 4.4.3, 4.4.4<br>3GPP TS 38.212 V15.4.0: Sections 7.3.1, 7.3.1.0, 7.3.1.2.1; Table 7.3.1-1<br>3GPP TS 38.213 V15.4.0: Sections 3.3, 13; Tables 13-1, 13-2, 13-3<br>3GPP TS 38.214 V15.4.0: Sections 3.3, 5.1.2.2, 5.1.2.2.2, 5.1.4<br>3GPP TS 38.331 V15.3.0: Sections 5.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |

|        |        |                                                    |             |  |  |  |  |    |                                                                                                                                                                                                                                                                                                                                                                    |
|--------|--------|----------------------------------------------------|-------------|--|--|--|--|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNI010 | UNISOC | US11659537                                         | 09 Aug 2038 |  |  |  |  | 1  | 3GPP TS 38.211 V15.4.0: Sections 4.4.4.1, 4.4.4.2, 4.4.4.3, 4.4.4.4<br>3GPP TS 38.212 V15.4.0: Sections 7.3.1, 7.3.1.0, 7.3.1.2.1; Table 7.3.1-1<br>3GPP TS 38.213 V15.4.0: Sections 3.3, 13; Tables 13-1, 13-2, 13-3<br>3GPP TS 38.214 V15.4.0: Sections 3.3, 5.1.2.2, 5.1.2.2.2, 5.1.4<br>3GPP TS 38.331 V15.3.0: Sections 5.2.1, 6.2.2, 6.3.2; Figure 5.2.2.1-1 |
| UNI011 | UNISOC | CNXL201610302106.6                                 | 09 May 2036 |  |  |  |  | 12 | 3GPP TS 38.212 V15.5.0: Sections 7.3.1, 7.3.1.2.1; Tables 7.3.1-1, 7.3.1.2.1-1<br>3GPP TS 39.213 V15.5.0: Sections 3.3, 10.1, 12<br>3GPP TS 38.300 V15.5.0: Sections 3.1, 6.2, 4.2<br>3GPP TS 38.331 V15.8.0: Sections 5.2.1, 5.2.2.1, 5.2.2.4.2, 5.3.3.1, 5.3.3.4, 5.3.5.1, 5.3.5.2, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1                        |
|        |        | US10367613                                         | 06 May 2037 |  |  |  |  | 15 | 3GPP TS 38.212 V15.5.0: Sections 7.3.1, 7.3.1.2.1; Tables 7.3.1-1, 7.3.1.2.1-1<br>3GPP TS 39.213 V15.5.0: Sections 3.3, 10.1, 12<br>3GPP TS 38.300 V15.5.0: Sections 3.1, 6.2, 4.2<br>3GPP TS 38.331 V15.8.0: Sections 5.2.1, 5.2.2.1, 5.2.2.4.2, 5.3.3.1, 5.3.3.4, 5.3.5.1, 5.3.5.2, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1                        |
| UNI012 | UNISOC | CNXL202010193035.7                                 | 18 Mar 2040 |  |  |  |  | 1  | 3GPP TS 38.213 V17.4.0: Sections 10, 10.1, 10.1.1<br>3GPP TS 38.331 V17.4.0: Section 6.3.2                                                                                                                                                                                                                                                                         |
| UNI013 | UNISOC | CNXL201810026977.9                                 | 11 Jan 2038 |  |  |  |  | 1  | 3GPP TS 38.213 V15.4.0: Sections 3.3, 10, 10.2<br>3GPP TS 38.300 V15.4.0: Sections 4.1, 5.2.3<br>3GPP TS 38.212 V15.4.0: Sections 7.3.1.1, 7.3.1.2.1, 7.3.1.2.2                                                                                                                                                                                                    |
| UNI014 | UNISOC | CNXL201711146316.1                                 | 17 Nov 2037 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 9, 9.2, 9.2.8<br>3GPP TS 38.213 V15.6.0: Sections 3, 3.3, 6, 10, 10.1<br>3GPP TS 38.331 V15.6.0: Sections 6.3, 6.3, 6.3.2                                                                                                                                                                                                         |
| UNI015 | UNISOC | CNXL202010274796.5                                 | 09 Apr 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V18.0.0: Section 6.1<br>3GPP TS 38.331 V18.0.0: Section 6.3.2                                                                                                                                                                                                                                                                                       |
| UNI016 | UNISOC | CNXL201910028667.5                                 | 11 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.214 V16.3.0: Sections 5, 5.1<br>3GPP TS 38.211 V16.3.0: Sections 7, 7.3, 7.3.1, 7.3.1.1<br>3GPP TS 38.306 V16.3.0: Sections 4, 4.2, 4.2.7, 4.2.7.6<br>3GPP TS 38.305 V16.3.0: Sections 3, 3.1                                                                                                                                                           |
| UNI017 | UNISOC | US11323226                                         | 14 Oct 2038 |  |  |  |  | 10 | 3GPP TS 38.211 V15.5.0: Section 4.2; Table 4.2-1<br>3GPP TS 38.213 V15.5.0: Sections 3.3, 13; Tables 13-1 to 13-15<br>3GPP TS 38.331 V15.6.0: Sections 3.6.2.1, 6.2.2                                                                                                                                                                                              |
| UNI018 | UNISOC | CNXL202110519801.9                                 | 11 May 2037 |  |  |  |  | 5  | 3GPP TS 37.340 V15.6.0: Sections 3.1, 3.2, 7.2, 7.4, 7.5<br>3GPP TS 36.331 V15.6.0: Section 6.2.2, 6.3.5<br>3GPP TS 38.133 V15.6.0: Section 9.1.2<br>3GPP TS 38.331 V15.6.0: Sections 6.2.2, 6.3.2                                                                                                                                                                 |
| WIL004 | Wilus  | IN420846                                           | 20 Jan 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.15.0: Sections 3.3, 5.2.2, 5.2.2.6, 5.3.3, 5.3.3.1, 5.3.3.1.1A; Table 5.3.3.1.1A-1<br>3GPP TS 36.211 V14.15.0: Sections 4.3, 5.2.1, 5.2.3; Table 5.2.3-1                                                                                                                                                                                        |
|        |        | KR10-2353817                                       | 20 Jan 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.15.0: Sections 3.3, 5.2.2, 5.2.2.6, 5.3.3, 5.3.3.1, 5.3.3.1.1A; Table 5.3.3.1.1A-1<br>3GPP TS 36.211 V14.15.0: Sections 4.3, 5.2.1, 5.2.3; Table 5.2.3-1                                                                                                                                                                                        |
|        |        | US11064364                                         | 20 Jan 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.15.0: Sections 3.3, 5.2.2, 5.2.2.6, 5.3.3, 5.3.3.1, 5.3.3.1.1A; Table 5.3.3.1.1A-1<br>3GPP TS 36.211 V14.15.0: Sections 4.3, 5.2.1, 5.2.3; Table 5.2.3-1                                                                                                                                                                                        |
|        |        | US11646922                                         | 20 Jan 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.15.0: Sections 3.3, 5.2.2, 5.2.2.6, 5.3.3, 5.3.3.1, 5.3.3.1.1A; Table 5.3.3.1.1A-1<br>3GPP TS 36.211 V14.15.0: Sections 4.3, 5.2.1, 5.2.3; Table 5.2.3-1                                                                                                                                                                                        |
|        |        | US11770279                                         | 20 Jan 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.15.0: Sections 3.3, 5.2.2, 5.2.2.6, 5.3.3, 5.3.3.1, 5.3.3.1.1A; Table 5.3.3.1.1A-1<br>3GPP TS 36.211 V14.15.0: Sections 4.3, 5.2.1, 5.2.3; Table 5.2.3-1                                                                                                                                                                                        |
| WIL005 | Wilus  | CNXL201780018454.3                                 | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |
|        |        | EP3435725 (DE, GB, FR, ES, IT, NL, PL, FI, SE, TR) | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |
|        |        | HK1261574                                          | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |
|        |        | IN436532                                           | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |
|        |        | KR10-2285189                                       | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |
|        |        | KR10-2413222                                       | 22 Mar 2037 |  |  |  |  | 1  | 3GPP TS 36.212 V14.10.0: Sections 3.3, 5.3.5.3.3.3.1.4<br>3GPP TS 36.213 V14.11.0: Sections 1, 3.2, 13A, 15.1, 15.2, 15.2.1, 15.2.1.1, 15.2.1.2; Tables 13A-2                                                                                                                                                                                                      |







|        |       |                                                       |             |  |  |  |  |   |                                                                                                                                                                                                                                                                             |
|--------|-------|-------------------------------------------------------|-------------|--|--|--|--|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WIL011 | Wilus | US12047317                                            | 05 Feb 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.12.0: Section 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V15.8.0: Section 4.4.1, 7.1.1, 7.1.2, 7.4.1.1.2; Tables 7.4.1.1.2-3, 7.4.1.1.2-4<br>3GPP Ts 38.331 V15.13.0: Section 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | US12088518                                            | 17 Jul 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.12.0: Section 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V15.8.0: Section 4.4.1, 7.1.1, 7.1.2, 7.4.1.1.2; Tables 7.4.1.1.2-3, 7.4.1.1.2-4<br>3GPP Ts 38.331 V15.13.0: Section 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
| WIL012 | Wilus | CNZL201880029109.4                                    | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | CNZL202111492481.9                                    | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | CNZL202111494259.2                                    | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | CNZL202111495007.1                                    | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | EP3605885<br>(DE, GB, FR, ES, IT, NL, PL, FI, SE, TR) | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | EP4120589<br>(DE, GB, FR, ES, IT, NL, PL, FI, SE, TR) | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | EP4120590<br>(DE, GB, FR, ES, IT, NL, PL, FI, SE, TR) | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | IN533202                                              | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | JP7395352                                             | 26 Mar 2038 |  |  |  |  | 8 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | JP7447222                                             | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | KR10-2241122                                          | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |
|        |       | KR10-2592399                                          | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                |

|        |       |                                                          |             |  |  |  |  |   |                                                                                                                                                                                                                                                                                                                                                                 |
|--------|-------|----------------------------------------------------------|-------------|--|--|--|--|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WIL012 | Wilus | US11729748                                               | 26 Mar 2038 |  |  |  |  | 1 | 3GPP TS 38.211 V15.8.0: Section 7.4.1.5.3<br>3GPP TS 38.212 V15.8.0: Sections 7.3, 7.3.1, 7.3.1.2, 7.3.1.3, 7.3.1.3.1<br>3GPP TS 38.213 V15.8.0: Sections 10.1, 11, 11.1<br>3GPP TS 38.300 V15.9.0: Section 4.4.2<br>3GPP TS 38.331 V15.9.0: Section 6.3.2                                                                                                      |
| WIL013 | Wilus | CN2L201880040071.0                                       | 18 Jun 2038 |  |  |  |  | 7 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | CN2L202210628563.X                                       | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | CN2L202210629129.3                                       | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | CN2L202210629149.0                                       | 18 Jun 2038 |  |  |  |  | 6 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | EP3641197<br>(DE, ES, FI, FR, GB, IT, NL, PL,<br>SE, TR) | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | IN526596                                                 | 18 Jun 2038 |  |  |  |  | 2 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | JP6995392                                                | 18 Jun 2038 |  |  |  |  | 7 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | JP7313724                                                | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | KR10-2469365                                             | 18 Jun 2038 |  |  |  |  | 9 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | KR10-2671486                                             | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|        |       | KR10-2674803                                             | 18 Jun 2038 |  |  |  |  | 6 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |

|               |       |                    |             |  |  |  |  |   |                                                                                                                                                                                                                                                                                                                                                                 |
|---------------|-------|--------------------|-------------|--|--|--|--|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL013</b> | Wilus | US11381369         | 19 Jul 2038 |  |  |  |  | 7 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | US11811705         | 18 Jun 2038 |  |  |  |  | 7 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | US11936594         | 18 Jun 2038 |  |  |  |  | 4 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1, 14<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.3.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V15.14.0: Sections 3.3, 10, 10.1, 11.1, 11.2<br>3GPP TS 38.331 V15.14.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
| <b>WIL014</b> | Wilus | CNZL201880057581.9 | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | IN466091           | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | JP7242074          | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | JP7442853          | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | JP7508129          | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | KR10-2374139       | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | KR10-2443893       | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | KR10-2554096       | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | KR10-2651563       | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
|               |       | US11533131         | 06 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.213 V15.15.0: Sections 9.1, 9.1.3, 9.1.3.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.2<br>3GPP TS 38.214 V15.16.0: Section 5.1                                                                                                                                                                                          |
| <b>WIL015</b> | Wilus | CNZL201880052102.4 | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17                                 |
|               |       | IN449154           | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17                                 |
|               |       | KR10-2356054       | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17                                 |

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|---------------|-------|-------------------------------------------------------|-------------|--|--|--|--|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL015</b> | Wilus | KR10-2537798                                          | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17    |
|               |       | KR10-2662410                                          | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17    |
|               |       | US11240081                                            | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17    |
|               |       | US11689403                                            | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17    |
|               |       | US12074747                                            | 13 Aug 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V16.7.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.211 V16.7.0: Sections 6.3.2.2, 6.3.2.2.2, 6.3.2.3.1, 6.3.2.5.3, 6.4.1.3.2.2<br>3GPP TS 38.213 V16.7.0: Section 3.3, 6, 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5.1; Tables 9.2.3-3, 9.2.3-4, 9.2.5-1, 9.2.5-2<br>3GPP TS 38.321 V16.6.0: Sections 3.2, 5.4.4, 5.17    |
|               |       | CNZL201880064924.4                                    | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | EP3681079<br>(DE, GB, FR, ES, IT, NL, PL, FI, SE, TR) | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | IN467345                                              | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | JP7142960                                             | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | JP7421237                                             | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | JP7421238                                             | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | KR10-2481201                                          | 10 Sep 2038 |  |  |  |  | 1 | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |

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|---------------|-------|----------------------------------------------------|-------------|--|--|--|--|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL016</b> | Wilus | KR10-2568599                                       | 10 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | KR10-2650205                                       | 10 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | US11304181                                         | 02 Oct 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | US11832255                                         | 10 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
|               |       | US12004161                                         | 14 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.13.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.214 V15.13.0: Section 5.1.4.1<br>3GPP TS 38.331 V15.16.0: Sections 5.2.1, 5.2.2.1, 5.3.3.1, 5.3.5.1, 5.3.13.1, 6.2.2, 6.3.2, B.2; Figures 5.2.2.1-1, 5.3.3.1-1, 5.3.5.1-1, 5.3.13.1-1 |
| <b>WIL017</b> | Wilus | CNZL201880069046.5                                 | 11 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
|               |       | IN503254                                           | 11 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
|               |       | JP6980317                                          | 11 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
|               |       | JP7313721                                          | 11 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
|               |       | US11412507                                         | 18 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
|               |       | US12047922                                         | 11 Sep 2038 |  |  |  |  | 1  | 3GPP TS 38.300 V15.6.0: Sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.213 V15.6.0: Sections 3.3, 8, 8.1, 11.1; Tables 8.1-1, 8.1-2                                                                                                                                                                                                       |
| <b>WIL018</b> | Wilus | CNZL201980008079.3                                 | 14 Jan 2039 |  |  |  |  | 11 | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |
|               |       | EP3740002 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 14 Jan 2039 |  |  |  |  | 11 | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |
|               |       | EP4050954 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |
|               |       | EP4050955 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |
|               |       | JP7235340                                          | 14 Jan 2039 |  |  |  |  | 11 | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |
|               |       | JP7427279                                          | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                                                           |

|               |       |                                                          |             |  |  |  |  |    |                                                                                                                                                                                                                                                                                          |
|---------------|-------|----------------------------------------------------------|-------------|--|--|--|--|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL018</b> | Wilus | JP7446641                                                | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
|               |       | JP7515921                                                | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
|               |       | KR10-2411788                                             | 14 Jan 2039 |  |  |  |  | 11 | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
|               |       | US11497033                                               | 30 Apr 2039 |  |  |  |  | 11 | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
|               |       | US11632768                                               | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
|               |       | US11737078                                               | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.211 V15.16.0: Section 4.4.5<br>3GPP TS 38.212 V15.13.0: Sections 4.2, 7.3.1, 7.3.1.1.1, 7.3.1.2.1<br>3GPP TS 38.214 V15.16.0: Sections 5.1.2.2, 5.1.2.2.2, 6.1.2.2, 6.1.2.2.2                                                                                                 |
| <b>WIL019</b> | Wilus | CNZL201980007966.9                                       | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | EP3739795<br>(DE, ES, FI, FR, GB, IT, NL, PL,<br>SE, TR) | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | EP4080812<br>(DE, ES, FI, FR, GB, IT, NL, PL,<br>SE, TR) | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | EP4113891<br>(DE, ES, FI, FR, GB, IT, NL, PL,<br>SE, TR) | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | IN500030                                                 | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | JP7345196                                                | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | KR10-2484273                                             | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | US11523414                                               | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
|               |       | US11950226                                               | 14 Jan 2039 |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |

|               |       |                    |             |  |  |  |  |  |    |                                                                                                                                                                                                                                                                                          |
|---------------|-------|--------------------|-------------|--|--|--|--|--|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL019</b> | Wilus | US11956774         | 14 Jan 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.10.0: sections 1, 3.1, 3.2, 4.1<br>3GPP TS 38.212 V16.10.0: sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.11.0: sections 3.3, 10.3, 11, 11.2A<br>3GPP TS 38.331 V16.10.0: sections 5.3.5.1, 5.3.5.5.1, 6.2.2, 6.3.2, B.2;<br>Figure 5.3.5.1-1 |
| <b>WIL021</b> | Wilus | CNZL201980031500.2 | 13 May 2039 |  |  |  |  |  | 1  | 3GPP TS 38.213 V15.11.0: Sections 9, 9.1.3.2<br>3GPP TS 38.214 V15.11.0: Sections 6.1.2, 6.1.2.1                                                                                                                                                                                         |
|               |       | IN541731           | 13 May 2039 |  |  |  |  |  | 1  | 3GPP TS 38.213 V15.11.0: Sections 9, 9.1.3.2<br>3GPP TS 38.214 V15.11.0: Sections 6.1.2, 6.1.2.1                                                                                                                                                                                         |
|               |       | JP7338880          | 13 May 2039 |  |  |  |  |  | 1  | 3GPP TS 38.213 V15.11.0: Sections 9, 9.1.3.2<br>3GPP TS 38.214 V15.11.0: Sections 6.1.2, 6.1.2.1                                                                                                                                                                                         |
|               |       | US11102806         | 13 May 2039 |  |  |  |  |  | 1  | 3GPP TS 38.213 V15.11.0: Sections 9, 9.1.3.2<br>3GPP TS 38.214 V15.11.0: Sections 6.1.2, 6.1.2.1                                                                                                                                                                                         |
|               |       | US11729788         | 13 May 2039 |  |  |  |  |  | 1  | 3GPP TS 38.213 V15.11.0: Sections 9, 9.1.3.2<br>3GPP TS 38.214 V15.11.0: Sections 6.1.2, 6.1.2.1                                                                                                                                                                                         |
| <b>WIL026</b> | Wilus | CNZL201980082979.2 | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | IN535680           | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | JP7138379          | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | JP7450285          | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | JP7523816          | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | KR10-2484270       | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | US11290218         | 11 Nov 2039 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | US11888626         | 23 Feb 2040 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
|               |       | US11894932         | 17 Jan 2040 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.10.0: Sections 4.2, 7.3, 7.3.1; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.8.0: Section 9.1.3.1                                                                                                            |
| <b>WIL027</b> | Wilus | CNZL202080013306.4 | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | IN480615           | 09 Jan 2040 |  |  |  |  |  | 7  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | JP485410           | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | JP7214272          | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | JP7483280          | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | KR10-2577881       | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | US11405903         | 09 Jan 2040 |  |  |  |  |  | 11 | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | US11997682         | 02 Mar 2040 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
|               |       | US12082198         | 18 Mar 2040 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 1, 3.1, 3.2, 4.1, 4.2, 5.2.3<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1                                                                                                                        |
| <b>WIL032</b> | Wilus | CNZL202080042075.X | 04 May 2040 |  |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.2, 7.3.1.2.3;<br>Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2                                                                |

|               |       |                                                    |             |  |  |  |  |    |                                                                                                                                                                                                                      |
|---------------|-------|----------------------------------------------------|-------------|--|--|--|--|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL032</b> | Wilus | JP7271015                                          | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2        |
|               |       | JP7519720                                          | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2 |
|               |       | JP7520413                                          | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2 |
|               |       | KR10-2492932                                       | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2        |
|               |       | US11490406                                         | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2 |
|               |       | US11653353                                         | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2 |
|               |       | US11737091                                         | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.300 V16.9.0: Sections 3.1, 3.2, 4.1, 4.2<br>3GPP TS 38.212 V16.9.0: Sections 4.2, 7.3, 7.3.1, 7.3.1.1, 7.3.1.2; Tables 4.2-2, 7.3.1-1<br>3GPP TS 38.213 V16.9.0: Sections 9.1.3.1, 9.1.3.2; Table 9.1.3-2 |
| <b>WIL033</b> | Wilus | CNZL202080041087.0                                 | 04 May 2040 |  |  |  |  | 8  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | IN548021                                           | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | JP7195671                                          | 04 May 2040 |  |  |  |  | 17 | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | KR10-2549167                                       | 04 May 2040 |  |  |  |  | 13 | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | KR10-2693296                                       | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | US11464035                                         | 04 May 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | US11825471                                         | 04 May 2040 |  |  |  |  | 9  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
|               |       | US12047946                                         | 11 Jun 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V16.8.0: Sections 5.1.2.1, 5.1.2.1.1, 6.1.2.1<br>3GPP TS 38.300 V16.7.0: Section 5.2.3<br>3GPP TS 38.331 V16.7.0: Section 6.3.2                                                                       |
| <b>WIL034</b> | Wilus | DE202020005739.8                                   | 03 Aug 2040 |  |  |  |  | 1  | 3GPP TS 38.214 V16.14.0: Section 6.1.2.1<br>3GPP TS 38.213 V16.14.0: Section 10.1<br>3GPP TS 38.211 V16.10.0: Section 7.3.2.2<br>3GPP TS 38.331 V16.14.0: Section 6.3.2                                              |
|               |       | JP7384488                                          | 03 Aug 2040 |  |  |  |  | 11 | 3GPP TS 38.214 V16.14.0: Section 6.1.2.1<br>3GPP TS 38.213 V16.14.0: Section 10.1<br>3GPP TS 38.211 V16.10.0: Section 7.3.2.2<br>3GPP TS 38.331 V16.14.0: Section 6.3.2                                              |
|               |       | KR10-2583258                                       | 03 Aug 2040 |  |  |  |  | 11 | 3GPP TS 38.214 V16.14.0: Section 6.1.2.1<br>3GPP TS 38.213 V16.14.0: Section 10.1<br>3GPP TS 38.211 V16.10.0: Section 7.3.2.2<br>3GPP TS 38.331 V16.14.0: Section 6.3.2                                              |
|               |       | TWI845731                                          | 03 Aug 2040 |  |  |  |  | 11 | 3GPP TS 38.214 V16.14.0: Section 6.1.2.1<br>3GPP TS 38.213 V16.14.0: Section 10.1<br>3GPP TS 38.211 V16.10.0: Section 7.3.2.2<br>3GPP TS 38.331 V16.14.0: Section 6.3.2                                              |
|               |       | US11570803                                         | 03 Aug 2040 |  |  |  |  | 12 | 3GPP TS 38.214 V16.14.0: Section 6.1.2.1<br>3GPP TS 38.213 V16.14.0: Section 10.1<br>3GPP TS 38.211 V16.10.0: Section 7.3.2.2<br>3GPP TS 38.331 V16.14.0: Section 6.3.2                                              |
| <b>WIL035</b> | Wilus | EP3996459 (DE, ES, FI, FR, GB, IT, NL, PL, SE, TR) | 06 Aug 2040 |  |  |  |  | 1  | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2                                                                            |
|               |       | JP7204275                                          | 06 Aug 2040 |  |  |  |  | 1  | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2                                                                            |
|               |       | JP7388773                                          | 06 Aug 2040 |  |  |  |  | 1  | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2                                                                            |
|               |       | JP7388774                                          | 06 Aug 2040 |  |  |  |  | 1  | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2                                                                            |

|               |                      |                                                |             |  |  |  |              |                                                                                                                                                                                                                                     |                                                                                                                                             |
|---------------|----------------------|------------------------------------------------|-------------|--|--|--|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIL035</b> | Wilus                | KR10-2476055                                   | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | KR10-2577889                                   | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | KR10-2647709                                   | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | TWI799729                                      | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | US11503653                                     | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | US11792863                                     | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
|               |                      | US11838955                                     | 06 Aug 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 37.213 V16.12.0: Sections 1, 4.2.1, 4.2.1.0.1, 4.2.1.1, 4.2.1.2, 4.2.1.2.1, 4.2.1.2.2<br>3GPP TS 38.212 V16.11.0: Section 7.3.1.1.2 |
| <b>WIL037</b> | Wilus                | IN547187                                       | 07 Oct 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 38.213 V16.11.0: Section 11.2A<br>3GPP TS 38.331 V16.11.0: Section 6.3.2                                                            |
|               |                      | JP7376187                                      | 07 Oct 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 38.213 V16.11.0: Section 11.2A<br>3GPP TS 38.331 V16.11.0: Section 6.3.2                                                            |
|               |                      | US11601966                                     | 07 Oct 2040 |  |  |  |              | 1                                                                                                                                                                                                                                   | 3GPP TS 38.213 V16.11.0: Section 11.2A<br>3GPP TS 38.331 V16.11.0: Section 6.3.2                                                            |
| <b>WIR002</b> | Wireless Innovations | CNZL200480040372.1                             | 27 Feb 2024 |  |  |  | 7            | 3GPP TS 23.122 V10.0.0: Sections 1, 2, 3, 1, 4.4.3.1.1, 4.4.3.3.1                                                                                                                                                                   |                                                                                                                                             |
|               |                      | EP1695584 (BE, DE, ES, FI, GR, GB, IT, SE)     | 27 Feb 2024 |  |  |  | 6            | 3GPP TS 23.122 V10.0.0: Section 1, 2, 3, 1, 4.4.3.1.1, 4.4.3.3.1; Annex A                                                                                                                                                           |                                                                                                                                             |
|               |                      | JP4990341                                      | 27 Feb 2024 |  |  |  | 6            | 3GPP TS 23.122 V14.5.0: Sections 1, 2, 4, 4.1, 4.4.3.1.1, 4.4.3.1.1, 4.4.3.3.1<br>3GPP TS 24.002 V14.0.0: Sections 3.0; Figure 2<br>3GPP TS 31.102 V14.8.0: Section 4.2.2<br>3GPP TS 36.304 V14.7.0: Sections 5.1, 5.1.2.1, 5.1.2.2 |                                                                                                                                             |
|               |                      | US7366510                                      | 07 Nov 2024 |  |  |  | 1, 6, 11, 16 | 3GPP TS 23.122 V10.0.0: Sections 1, 2, 3, 1, 4.3.3.1.1, 4.4.3.1.1, 4.4.3.3.1                                                                                                                                                        |                                                                                                                                             |
| <b>WIR003</b> | Wireless Innovations | EP1683380 (BE, DE, ES, FI, FR, GB, IT, SE)     | 27 Feb 2024 |  |  |  | 7            | 3GPP TS 23.122 V8.12.0: Sections 1, 2, 3, 1, 4.4.1, 4.4.2, 4.4.3, 4.4.3.1, 4.4.3.1.1, 4.4.3.3.1                                                                                                                                     |                                                                                                                                             |
|               |                      | HK1093275                                      | 27 Feb 2024 |  |  |  | 7            | 3GPP TS 23.122 V8.12.0: Sections 1, 2, 3, 1, 4.4.1, 4.4.2, 4.4.3, 4.4.3.1, 4.4.3.1.1, 4.4.3.3.1                                                                                                                                     |                                                                                                                                             |
|               |                      | KR10-0763867                                   | 27 Feb 2024 |  |  |  | 7            | 3GPP TS 23.122 V8.12.0: Sections 3, 1, 4, 4.4.1, 4.4.2, 4.4.3, 4.4.3.1 and 4.4.3.1.1                                                                                                                                                |                                                                                                                                             |
| <b>WIR007</b> | Wireless Innovations | CNZL200800119450.5                             | 05 Dec 2028 |  |  |  | 9            | 3GPP TS 36.331 V9.18.0: Sections 5.8.1.1, 5.8.1.2 and 6.3.7<br>3GPP TS 36.321 V9.6.0: Sections 4.5.2 and 5.12; Table 4.5.2-1                                                                                                        |                                                                                                                                             |
|               |                      | EP2068492 (DE, ES, FI, FR, GB, IE, IT, NL, SE) | 02 Jan 2028 |  |  |  | 15           | 3GPP TS 36.331 V9.18.0: Sections 5.8.1.1, 6.3.7<br>3GPP TS 36.321 V9.6.0: Sections 4.5.2, 5.12; Table 4.5.2-1                                                                                                                       |                                                                                                                                             |
|               |                      | JP5140160                                      | 05 Dec 2028 |  |  |  | 15           | 3GPP TS 36.331 V9.18.0: Sections 5.8.1.1, 6.3.7<br>3GPP TS 36.321 V9.6.0: Sections 4.5.2, 5.12; Table 4.5.2-1                                                                                                                       |                                                                                                                                             |
|               |                      | KR10-1420909                                   | 05 Dec 2028 |  |  |  | 6            | 3GPP TS 36.331 V9.18.0: Sections 5.8.1.1, 6.3.7<br>3GPP TS 36.321 V9.6.0: Sections 5.12, 6.1.3.7<br>3GPP TS 36.300 V9.10.0: Section 5.1.6                                                                                           |                                                                                                                                             |
|               |                      | US8755400                                      | 20 Dec 2028 |  |  |  | 4            | 3GPP TS 36.211 V11.7.0: Section 6.5<br>3GPP TS 36.212 V11.7.0: Section 4.2; Table 4.2-1<br>3GPP TS 36.300 V11.14.0: Section 15.3.3<br>3GPP TS 36.321 V11.6.0: Sections 4.2.1, 5.12, 6.1.2, 6.1.3.7; Figure 6.1.3.7-1                |                                                                                                                                             |
|               |                      | US9001725                                      | 07 Dec 2027 |  |  |  | 4            | 3GPP TS 36.211 V11.7.0: Section 6.5<br>3GPP TS 36.212 V11.7.0: Section 4.2; Table 4.2-1<br>3GPP TS 36.300 V11.14.0: Section 15.3.3<br>3GPP TS 36.321 V11.6.0: Sections 5.12, 6.1.2 and 6.1.3.7; Figure 6.1.3.7-1                    |                                                                                                                                             |
| <b>WIR008</b> | Wireless Innovations | KR10-1658686                                   | 12 Mar 2030 |  |  |  | 5            | 3GPP TS 36.321 V10.10.0: Sections 5.3.2.1, 5.3.2.2, 5.7, 5.13<br>3GPP TS 36.213 V10.13.0: Sections 7.1, 7.1.6.3, 9.1.1<br>3GPP TS 36.212 V10.9.0: Sections 5.3.3, 5.3.3.1.3<br>3GPP TS 36.300 V10.12.0: Section 7.5                 |                                                                                                                                             |
|               |                      | KR10-1761824                                   | 12 Mar 2030 |  |  |  | 9            | 3GPP TS 36.212 V10.9.0: section 5.3.3.1.3<br>3GPP TS 36.213 V10.13.0: sections 4.3, 7.1, 9.1.1<br>3GPP TS 36.321 V10.10.0: sections 5.3.1, 5.13, 6.1.3.8; Figure 6.1.3.8-1                                                          |                                                                                                                                             |
|               |                      | KR10-1863520                                   | 12 Mar 2030 |  |  |  | 9            | 3GPP TS 36.321 V10.10.0: Sections 5.3.1, 5.3.2.1, 5.13<br>3GPP TS 36.300 V10.12.0: Section 11.1<br>3GPP TS 36.213 V10.13.0: Sections 7.1, 9.1.1<br>3GPP TS 36.212 V10.9.0: Section 5.3.3.1.3                                        |                                                                                                                                             |
|               |                      | US10412724                                     | 12 Mar 2030 |  |  |  | 11           | 3GPP TS 36.321 V10.10.0: Sections 5.3.1, 5.13<br>3GPP TS 36.331 V10.22.0: Sections 5.3.1.1, 5.3.3.1, 5.3.3.4, 5.3.5.1, 5.3.5.3, 5.13; Figures 5.3.3.1-1, 5.3.5.1-1                                                                  |                                                                                                                                             |