3GPP TSG-RAN WG4 #112 R4-2414271

August 19th ‒ 23rd, 2024

Maastricht, NL

**Agenda item:** 7.14.1

**Source:** Novamint

**Title:** Way Forward to Introduction of LTE FDD new band in 1800–1830 MHz for Canada

**Document for:** Discussion

# Background

The band is allocated to electric utilities in Canada and the regulation allows the use of fixed wireless access without support of mobility. A good level of coordination can be expected when deploying UEs in a certain geographical area.

The more likely use case would be industrial LTE routers.

The existing deployments are Point-to-Point or Point-to-Multipoint narrowband radios. These radios typically operate in 12.5kHz channels and do require stringent filtering, such that you have to assume a ceramic or even cavity duplexer in such radio. These radios typically require stringent filtering, such that you have to assume a ceramic or even cavity duplexer in such radio.

The assumptions of the WID are already that traditional RFFE for mobile would not be sufficient, while larger-size duplexers are expected.

# Discussion

This Section provides the different proposals and proposed way forward.

One of the key aspects is how to capture in the UE specifications that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors.

Skyworks: for the UE specification our preference would be that a note is added for the band definition and the general text for NB and Cat M sections about the large/small form factor applicability. The note should mention that:

* Only large form factor UE are targeted for FDD LTE operation and FD-FDD Cat NB and Cat M operation.
* Smaller form factor UEs may target HD-FDD cat NB and Cat M operation but may be restricted to channel bandwidths that do not create own band protection issue.

Companies are encouraged to provide their feedback and proposals in the column “proposed way forward”

Based on the received feedbacks, the way forward will be finalized in the come back session

Table 1: UE RF specification impact (TS36.101)

|  |  |  |
| --- | --- | --- |
| **NR UE Tx/Rx requirement** | **Proposal for NR 900 MHz LTE Band in the US** | **Proposed way forward** |
| 6.2.2 UE maximum output power | 23 ±2 | agree |
| 6.2.3 MPR | No specific requirement needed | No specific requirement needed |
| 6.2.4 A-MPR | The UL for the new band (1800-1810 MHz) is far from band 2 and 25 (40 MHz UL, 120 MHz DL). Therefore,it is assumed that no A-MPR requirement is needed.  The UL for the new band (1800-1810 MHz) is far from band 4 (45 MHz UL, 300 MHz DL) and 66 (20 MHz UL, 300 MHz DL). Therefore,it is assumed that no A-MPR requirement is needed. | No specific requirement needed  Some level of coordination may be needed |
| 6.2.5 Configured transmitted power | No specification impact | No specification impact |
| 6.3.2 Minimum output power | No specification impact | No specification impact |
| 6.3.3 Transmit OFF power | No specification impact | No specification impact |
| 6.3.4 Transmit ON/OFF time mask | No specification impact | No specification impact |
| 6.3.5 Power control | No specification impact | No specification impact |
| 6.5.1 Frequency error | No specification impact | No specification impact |
| 6.5.2.1 EVM | No specification impact | No specification impact |
| 6.5.2.2 Carrier leakage | No specification impact | No specification impact |
| 6.5.2.3 In-band emissions | No specification impact | No specification impact |
| 6.5.2.4 EVM equalizer spectrum flatness | No specification impact | No specification impact |
| 6.6.1 Occupied bandwidth | No specification impact | No specification impact |
| 6.6.2.1 Spectrum emission mask | Canadian regulation:  In the 1 MHz bands immediately adjacent to the upper and lower limits of the authorized bandwidth, the mean power of emission in any band equal to 1% of the authorized bandwidth shall be attenuated by 43 + 10 log10 (mean output power in watts) dB.  Beyond the first 1 MHz bands immediately adjacent to the upper and lower limits of the authorized bandwidth, the mean power of emission in a bandwidth that is equal to 1 MHz shall be attenuated by 43 + 10 log10 (mean output power in watts) dB.  The 3GPP general specifications are more stringent than the Canadian regulation, therefore the general SEM defined in Table 6.6.2.1.1-1 are adopted | The 3GPP general specifications are more stringent than the Canadian regulation, therefore the general SEM defined in Table 6.6.2.1.1-1 are adopted  The approach is to go for the more stringent regulation and then the devices will be automatically compliant with the Canadian regulation |
| 6.6.2.2 Additional Spectrum emission mask | No additional SEM required  The 3GPP general specifications are more stringent than the Canadian regulation, therefore the general SEM defined in Table 6.6.2.1.1-1 are adopted | No additional SEM required |
| 6.6.2.3.1 E-UTRA ACLR | No specification impact | No specification impact |
| 6.6.2.3.2 UTRA ACLR | No specification impact | No specification impact |
| 6.6.3.1 General spurious emissions | No specification impact | No specification impact |
| 6.6.3.2 Spurious UEtoUE co-ex | Since the agreement in [1] is not to impose new UE requirements with this new band as the protected band from the existing 3GPP bands (i.e., Table 6.6.3.2-1 in TS 36.101, and Table 6.5.3.2-1 in TS 38.101-1), the introduction of the new band implies the addition of the following row: | Agree on the proposed modification to the table with bands in square brackets  Companies are encouraged to verify if bands needs to be added or can be removed  Skyworks: we think that n105, 28, 74, 50, 51, 42, 109, 43 may not be relevant. Also band 7 and 38 are used in canada and not metioned. For now we think this needs further checks.  Qualcomm: Whether own band DL is protected is TBD |
| 6.6.3.3 Additional spurious emissions | Canadian regulation:  In the 1 MHz bands immediately adjacent to the upper and lower limits of the authorized bandwidth, the mean power of emission in any band equal to 1% of the authorized bandwidth shall be attenuated by 43 + 10 log10 (mean output power in watts) dB.  Beyond the first 1 MHz bands immediately adjacent to the upper and lower limits of the authorized bandwidth, the mean power of emission in a bandwidth that is equal to 1 MHz shall be attenuated by 43 + 10 log10 (mean output power in watts) dB.  No new requirement is expected to be specified.  The 3GPP general specifications are more stringent than the Canadian regulation, therefore the general values defined inTable 6.6.3.1-2 are adopted | No new requirement  The approach is to go for the more stringent regulation and then the devices will be automatically compliant with the Canadian regulation |
| 6.6.4 Transmit intermodulation | No specification impact | No specification impact |
| 7.3.1 Reference sensitivity | The regulation is relevant to fixed point-to-point and point-to-multipoint digital radio systems [2]. Since the regulation allows fixed services, in case of non Half-Duplex devices the design is based on large devices (CPEs), possibly with external antennas and more complex components to allow Full-Duplex operation. Moreover, the regulation requires robust techniques tolerant to interference and requires margins to take into account impairments.  For categories NB1, NB2 and M1 Half-Duplex operation is assumed, which avoids the use of duplexers in the UE.  It is proposed to adopt the values specified for band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  General proposal: add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  This note should be added to table 5.5-1  Companies are encouraged to provide suggestion on the exact wording to be used  Qualcomm: Need analysis for next meeting, in any case B3 is not a good reference because it has much larger TX-RX than B111. |
| 7.4 Max input level | No specification impact | No specification impact |
| 7.5 Adjacent channel selectivity | No specification impact | No specification impact |
| 7.6.1 In-band blocking | New band needs to added into Table 7.6.1.1-2 | New band needs to added into Table 7.6.1.1-2 |
| 7.6.2 Out of band blocking | New band needs to added into Table 7.6.2.1-2 | New band needs to added into Table 7.6.2.1-2 |
| 7.6.3 Narrow band blocking | No specification impact | No specification impact |
| 7.7 Spurious response | No specification impact | No specification impact |
| 7.8 Intermodulation characteristics | No specification impact | No specification impact |

Table 2: TS36.101 parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TS** | **Section** | **Table** | **Title table** | **Proposed value** | **Proposed way forward** |
| 36.101 | 5.5 Operating bands | 5.5-1 | operating bands | add a new row with band 111 | Principle agreement R4-2411220  Band 111  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used |
| 36.101 | 5.5E Operating bands for UE category 0, UE category M1 and M2 and UE category 1bis |  |  | add band 111 for cat 0, M1, M2 and 1bis  UE category 0 is designed to operate in the E-UTRA operating bands 2, 3, 4, 5, 8, 13, 20, 25, 26 and 28 and 111 in both half duplex FDD mode and full-duplex FDD mode and in bands 39, 40 and 41 in TDD mode. The E-UTRA bands are defined in Table 5.5-1.  UE category M1 and M2 is designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 18, 19, 20, 21, 24, 25, 26, 27, 28, 31, 54, 66, 71, 72, 73, 74, 85, 87, 88, 106 and 111 in both half duplex FDD mode and full-duplex FDD mode, and in bands 39, 40, 41, 42, 43 and 48 in TDD mode. The E-UTRA bands are defined in Table 5.5-1.  UE category 1bis is designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 20, 26, 28, 31, 66, 72 and 111 in full duplex FDD mode and in bands 34, 39, 40 and 41 in TDD mode. The E-UTRA bands are defined in Table 5.5-1 | Add band 111  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used |
| 36.101 | 5.5F Operating bands for category NB1 and NB2 |  |  | add band 111 for cat NB1 and NB2  Category NB1 and NB2 are designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 26, 28, 31, 41, 42, 43, 48, 54, 65, 66, 70, 71, 72, 73, 74, 85, 87, 88, 103, 106 and 111 which are defined in Table 5.5-1. Category NB1 and NB2 are designed to operate in the NR operating bands n1, n2, n3, n5, n7, n8, n12, n14, n18, n20, n24, n25, n26, n28, n31, n41, n54, n65, n66, n70, n71, n72, n74, n90. | Add band 111 |
| 36.101 | 5.6.1 Channel bandwidths per operating band | 5.6.1-1 | E-UTRA channel bandwidth | add band 111 with channel bandwidth 1.4; 3; 5; 10 | Principle agreement R4-2411220  Band 111 |
| 36.101 | 5.7.3 Carrier frequency and EARFCN | 5.7.3-1 | E-UTRA channel numbers | add band 111 with NOffs-DL = 73386; Range of NDL = (73386 - 73485) and NOffs-UL = 134342; Range of NUL = (134342 - 134441) | Principle agreement R4-2411220  Band 111 |
| 36.101 | 5.7.4 TX–RX frequency separation | 5.7.4-1 | Default UE TX-RX frequency separation | add band 111 with 10 MHz TX-RX frequency separation | Add band 111 with the correct value (20 MHz) |
| 36.101 | 6.2.2 UE maximum output power | 6.2.2-1 | UE Power Class | add band 111 with power class 23 dBm +-2 | Add band 111 |
| 36.101 | 6.2.2E UE maximum output power for Category M1 and M2 UE | 6.2.2E-1 | UE Power Class | add band 111 with power class 23 dBm +-2 | Add band 111 |
| 36.101 | 6.2.2F UE maximum output power for category NB1 and NB2 | 6.2.2F-1 | UE Power Class | add band 111 with power class 23 dBm +-2 | Add band 111 |
| 36.101 | 6.6.3.2 Spurious emission band UE co-existence | 6.6.3.2-1 | Requirements | add a new row with band 111 to add the protected bands (for Region 2) - according to [1] band 111 does not require protection from other bands | Agree on the proposed modification to the table with bands in square brackets  Companies are encouraged to verify if bands needs to be added or can be removed  Skyworks: we think that n105, 28, 74, 50, 51, 42, 109, 43 may not be relevant. Also band 7 and 38 are used in canada and not metioned. For now we think this needs further checks.  Qualcomm: Whether own band DL is protected is TBD |
| 36.101 | 7.3.1 Minimum requirements (QPSK) | 7.3.1-1 | Reference sensitivity QPSK PREFSENS | The regulation is relevant to fixed point-to-point and point-to-multipoint digital radio systems [2]. Since the regulation allows fixed services, in case of non Half-Duplex devices the design is based on large devices (CPEs), possibly with external antennas and more complex components to allow Full-Duplex operation. Moreover, the regulation requires robust techniques tolerant to interference and requires margins to take into account impairments.  For categories NB1, NB2 and M1 Half-Duplex operation is assumed, which avoids the use of duplexers in the UE.  It is proposed to adopt the values specified for band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-1A | Reference sensitivity for FDD and TDD UE category 0 QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-1B | Reference sensitivity for FDD and TDD UE category 0 QPSK P**REFSENS** | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-2 | FDD and TDD UE category 0 Uplink configuration for reference sensitivity | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-3 | Reference sensitivity for FDD and TDD UE category M1 QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-4 | Reference sensitivity for HD-FDD UE category M1 QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-5 | FDD and TDD UE category M1 Uplink configuration for reference sensitivity | add band 111 with the same values of band 3 | Add band 111 |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-6 | Reference sensitivity for FDD and TDD UE category 1bis QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-7 | FDD and TDD UE category 1bis Uplink configuration for reference sensitivity | add band 111 with the same values of band 3 | Add band 111  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-8 | Reference sensitivity for FDD /TDD UE category M2 QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-9 | Reference sensitivity for HD-FDD category M2 QPSK PREFSENS | add band 111 with the same values of band 3 | Option 1: Agree on the proposed modification to the table  Option 2: adopt the values specified for band 31  add a note that small factors UE can operate only in HD-FDD mode, while FDD is supported only with “large” form factors  Companies are encouraged to provide suggestion on the exact wording to be used  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 or B31 are possible |
| 36.101 | 7.3.1E Minimum requirements (QPSK) for UE category 0, M1, M2 and 1bis | 7.3.1E-10 | FDD/HD-FDD and TDD UE category M2 Uplink configuration for reference sensitivity | add band 111 with the same values of band 3 | Add band 111  Qualcomm: Analysis on the numbers needed in next meeting, also other values than B3 are possible |
| 36.101 | 7.6.1.1 In-band blocking Minimum requirements | 7.6.1.1-2 | In-band blocking | add band 111 | Add band 111 |
| 36.101 | 7.6.2.1 Out-of-band blocking Minimum requirements | 7.6.2.1-2 | Out of band blocking | add band 111 | Add band 111 |

Table 3: TS36.307 parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TS** | **Section** | **Table** | **Title table** | **Proposed value** | **Proposed way forward** |
| 36.307 | A Frequency arrangement for overlapping operating bands | A-1 | Overlapping bands (multi-band environments) for each E-UTRA band | add band 111 overlapping with band 3 | Add band 111 |

Table 4: BS RF parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TS** | **Section** | **Table** | **Title table** | **Proposed value** | **Proposed way forward** |
| 36.104 | 5.5 Operating bands |  |  | add band 111  NB-IoT is designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 26, 28, 31, 41 (in certain regions), 42, 43, 48, 54, 65, 66, 70, 71, 72, 73, 74, 85, 87, 88, 103, 106, 111 which are defined in Table 5.5-1. | Add band 111 |
| 36.104 | 5.5 Operating bands | 5.5-1 | E-UTRA frequency bands | add a new row with band 111 | Principle agreement R4-2411220  Band 111 |
| 36.104 | 5.7.3 Carrier frequency and EARFCN | 5.7.3-1 | E-UTRA channel numbers | add band 111 with NOffs-DL = 73386; Range of NDL = (73386 - 73485) and NOffs-UL = 134342; Range of NUL = (134342 - 134441) | Principle agreement R4-2411220  Band 111 |
| 36.104 | 6.6.3.1 Minimum requirements for Wide Area BS (Category A) |  |  | add band 111 to the list of bands above 1 GHz  For E-UTRA BS operating in Bands 1, 2, 3, 4, 7, 9, 10, 11, 21, 22, 23, 24, 25, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 48, 50, 52, 54, 65, 66, 69, 70, 74, 75, 111 emissions shall not exceed the maximum levels specified in Tables 6.6.3.1-4 to 6.6.3.1-6: | Add band 111 |
| 36.104 | 6.6.3.2.1 Category B requirements (Option 1) |  |  | add band 111 to the list of bands above 1 GHz  For E-UTRA BS operating in Bands 1, 2, 3, 4, 7, 10, 22, 25, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 48, 50, 52, 65, 66, 69, 70, 75, 111 emissions shall not exceed the maximum levels specified in Tables 6.6.3.2.1-4 to 6.6.3.2.1-6: | Since the band is for Canada, do not add this requirement |
| 36.104 | 6.6.4.3.1 Additional spurious emissions requirements | 6.6.4.3.1-1 | BS Spurious emissions limits for E-UTRA BS for co-existence with systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Agree on the proposed modification to the table |
| 36.104 | 6.6.4.4.1 Co-location with other base stations | 6.6.4.4.1-1 | BS Spurious emissions limits for Wide Area BS co-located with another BS | add a row for band 111 | Add band 111 |
| 36.104 | 6.6.4.4.1 Co-location with other base stations | 6.6.4.4.1-2 | BS Spurious emissions limits for Local Area BS co-located with another BS | add a row for band 111 | Add band 111 |
| 36.104 | 6.6.4.4.1 Co-location with other base stations | 6.6.4.4.1-3 | BS Spurious emissions limits for Medium range BS co-located with another BS | add a row for band 111 | Add band 111 |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-1 | Blocking performance requirement for Wide Area BS for E-UTRA | add band 111 without changing the values | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-1a | Blocking performance requirement for Local Area BS for E-UTRA | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-1c | Blocking performance requirement for Medium Range BS for E-UTRA | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-3 | Blocking performance requirement for Wide Area BS for NB-IoT standalone operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-3a | Blocking performance requirement for Local Area BS for NB-IoT standalone operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-3c | Blocking performance requirement for Medium Range BS for NB-IoT standalone operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-5 | Blocking performance requirement for Wide Area BS for E-UTRA with NB-IoT in-band/guard band operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-5a | Blocking performance requirement for Local Area BS for E-UTRA with NB-IoT in-band/guard band operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.1.1 General blocking requirement | 7.6.1.1-5c | Blocking performance requirement for Medium Range BS for E-UTRA with NB-IoT in-band/guard band operation | add band 111 | Add band 111 as follows |
| 36.104 | 7.6.2.1 Co-location with other base stations | 7.6.2.1-1 | Blocking performance requirement for E-UTRA and NB-IoT Wide Area BS when co-located with BS in other frequency bands | add band 111 | Add band 111 |
| 36.104 | 7.6.2.1 Co-location with other base stations | 7.6.2.1-2 | Blocking performance requirement for E-UTRA and NB-IoT Local Area BS when co-located with BS in other frequency bands | add band 111 | Add band 111 |
| 36.104 | 7.6.2.1 Co-location with other base stations | 7.6.2.1-3 | Blocking performance requirement for E-UTRA and NB-IoT Medium Range BS when co-located with BS in other frequency bands | add band 111 | Add band 111 |
|  |  |  |  |  |  |
| 37.104 | 4.5 Operating bands and Band Categories | 4.5-1 | Paired bands in NR, E-UTRA, UTRA and GSM/EDGE | add band 111 with support of E-UTRA and NB-IoT | Add band 111 |
| 37.104 | 6.6.1.3.1 Additional spurious emissions requirements | 6.6.1.3.1-1 | BS Spurious emissions limits for co-existence with systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Come back after agreement on BS RF parameters |
| 37.104 | 6.6.1.4.1 Co-location with other base stations | 6.6.1.4.1-1 | BS Spurious emissions limits for BS co-located with another BS | add band 111 | Come back after agreement on BS RF parameters |
| 37.104 | 7.5.2 Out-of-band blocking | 7.5.2-1 | Blocking requirement for co-location with BS in other frequency bands | add band 111 | Come back after agreement on BS RF parameters |
|  |  |  |  |  |  |
| 37.105 | 7.5.2.2 Co-location minimum requirement | 7.5.2.2-1 | Blocking requirement for co-location with BS in other frequency bands | add band 111 | Come back after agreement on BS RF parameters |
| 37.105 | 9.7.6.3.3 Additional spurious emissions requirements | 9.7.6.3.3-1 | OTA AAS BS Spurious emissions limits for UTRA FDD BS in geographic coverage area of systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Come back after agreement on BS RF parameters |
| 37.105 | 9.7.6.3.4.2 Co-location with other base stations | 9.7.6.3.4.2-1 | UTRA AAS BS OTA Spurious emissions limits for AAS BS co-located with another BS | add band 111 | Come back after agreement on BS RF parameters |
| 37.105 | 9.7.6.4.3.2 Additional spurious emissions requirements | 9.7.6.4.3.2-1 | AAS BS OTA Spurious emissions limits for co-existence with systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Come back after agreement on BS RF parameters |
| 37.105 | 9.7.6.4.4.2 Co-location with other base stations | 9.7.6.4.4.2-1 | AAS BS OTA Spurious emissions limits for AAS BS co-located with another BS | add band 111 | Come back after agreement on BS RF parameters |
| 37.105 | 10.6.2.2 Minimum requirement for MSR operation Co-location minimum requirement | 10.6.2.2-1 | OTA Blocking requirement for co-location with BS in other frequency bands | add band 111 | Come back after agreement on BS RF parameters |
| 37.105 | 10.6.3.2 Minimum requirement for single RAT UTRA operation Co-location minimum requirement | 10.6.3.2-1 | UTRA additional OTA blocking requirement for co-location with BS in other frequency bands | add band 111 | Come back after agreement on BS RF parameters |
| 37.105 | 10.6.4.2 Minimum requirement for single RAT E-UTRA operation Co-location minimum requirement | 10.6.4.2-1 | E-UTRA additional OTA blocking requirement for co-location with BS in other frequency bands | add band 111 | Come back after agreement on BS RF parameters |
|  |  |  |  |  |  |
| 38.106 | 6.5.4.2.2 Additional spurious emissions *basic limits* | 6.5.4.2.2-1 | Repeater type 1-C spurious emissions basic limits for co-existence with systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Come back after agreement on BS RF parameters |
| 38.106 | 6.5.4.2.3 Transmitter spurious emissions Co-location with base stations and repeater Nodes | 6.5.4.2.3-1 | Spurious emissions minimum requirements for co-location with BS, IAB-Node or repeater-Node | add band 111 | Come back after agreement on BS RF parameters |
|  |  |  |  |  |  |
| 38.174 | 6.6.5.2.2 Transmitter spurious emissions Additional spurious emissions requirements | 6.6.5.2.2-1 | IAB-DU and IAB-MT spurious emissions basic limits for co-existence with systems operating in other frequency bands | According to [1] band 111 does not require protection from other bands  The introduction of the new band can be done according to a number of options: 1. do not add band 111 to the table since it does not require further protection from other bands 2. add band 111 with a note that it does not require protection 3. add band 111 with a note that this requirement does not apply to band 2, 4, 25, 66 and n2, n4, n25, n66  Option 3. is proposed | Come back after agreement on BS RF parameters |
| 38.174 | 6.6.5.2.3 Transmitter spurious emissions Co-location with base stations and IAB-Nodes | 6.6.5.2.3-1 | IAB-DU and IAB-MT spurious emissions basic limits for co-location with BS or IAB-Node | add band 111 | Come back after agreement on BS RF parameters |

Table 5: RRM parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TS** | **Section** | **Table** | **Title table** | **Proposed value** | **Proposed way forward** |
| 36.133 | 3.5.1 Groups of bands | 3.5.1-1 | E-UTRA band groups | add band 111 in group G | Come back after agreement on UE RF parameters |
| 36.133 | 3.5.1 Groups of bands | 3.5.1-2 | Band groups for NB-IoT | add band 111 in group G | Come back after agreement on UE RF parameters |
| 36.133 | 3.5.1 Groups of bands | 3.5.1-3 | Band groups for Category 0 | add band 111 in group G | Come back after agreement on UE RF parameters |
| 36.133 | 3.5.1 Groups of bands | 3.5.1-4 | Band groups for Category M1 | add band 111 in group G | Come back after agreement on UE RF parameters |

Table 6: CR responsibility

|  |  |
| --- | --- |
| **Specification** | **Proposed company for formal CR** |
| 36.101 | Novamint |
| 36.133 | Novamint |
| 38.106 | Novamint |
| 38.115-1 | Novamint |
| 38.174 | Novamint |
| 38.176-1 | Novamint |
| 38.176-2 | Novamint |
| 36.104 | Novamint |
| 36.141 | Novamint |
| 37.104 | Novamint |
| 37.141 | Novamint |
| 38.104 | Novamint |
| 38.141-1 | Novamint |
| 38.141-2 | Novamint |
| 37.105 | Novamint |
| 37.145-1 | Novamint |
| 37.145-2 | Novamint |
| 36.307 | Novamint |

# Conclusion

# Reference

1. RP-241649, “New WID: Introduction of LTE FDD band in 1800 – 1830 MHz for Canada,” Novamint, Sequans, Semtech, Telit, Ubiik
2. R4-2411032, “Regulation for LTE FDD new band in 1800–1830 MHz for Canada,” Novamint, Ubiik