**3GPP TSG RAN Meeting #104 RP-24**

**Shanghai, China, June 17-20, 2024**

**Source: Novamint, Sequans, Semtech, Telit, Ubiik**

**Title: New WID: Introduction of LTE FDD band in 1800 – 1830 MHz for Canada**

**Document for: Approval**

**Agenda Item: 10.1.5**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Introduction of LTE FDD band in 1800–1830 MHz for Canada

Acronym: LTE\_FDD\_1800\_1830MHz\_BAND

Unique identifier:

{A number to be provided by MCC at the plenary}

NOTE: For new WIs/SIs leave the Unique identifier empty and make a proposal for an Acronym.

 For a revised WI/SI: Take Unique identifier and acronym as shown in 3GPP workplan.

 If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI.

 Please tick (X) the applicable box(es) in the table below:

 Either:

|  |  |
| --- | --- |
| **This WID includes a Core part** | **x** |
| **This WID includes a Performance part** | **x** |

 or:

|  |  |
| --- | --- |
| **This WID includes a Testing part** |  |
| **and it addresses the following 3GPP work area:** | **Radio Access** |  |
| **Core Network** |  |
| **Services** |  |

Potential target Release: Rel-19

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | x | x |  |  |
| **No** | x |  |  | x |  |
| **Don't know** |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

This work item is a

|  |  |
| --- | --- |
|  | Feature |
| X | Building Block |
|  | *Work Task* |
|  | Study Item |

NOTE: Normally, Core/Perf./Testing parts in RAN WIDs are Building Blocks. Only if they are under an SA or CT umbrella, they are defined as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A | N/A |

NOTE: RAN agreed some time ago, that it describes the feature WI + Core/Perf. part WI or Testing part WI in one WID. Therefore the table above should include the feature WI data (In case the feature covers Core and Perf. part, please list under Working Group the leading WG of the Core part).

### 2.3 Other related Work Items and dependencies

*{List here other Work Items which relate to the proposed one, such as a Work Item in an earlier Release if further enhancing the feature from the previous Release)}*

|  |
| --- |
| Other related Work/Study Items (if any) |
| **Acronym** | Unique ID | Title | Nature of relationship |
|  |  |  |  |
|  |  |  |  |

NOTE: Also related or dependent WIs/SIs in other TSGs shall be indicated here.

**Dependency on non-3GPP (draft) specification**:

# 3 Justification

This WID proposes the creation of a new band to be developed for LTE that makes use of the 1800-1830 MHz spectrum exclusively designated at a national level for the use of electricity utilities in Canada.

This band is currently used for applications based on WiMax technology under regulation defined by Innovation, Science and Economic Development Canada ( ISED ). The regulation is available at the following link: <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/devices-and-equipment/standard-radio-system-plans-srsp/srsp-3017-technical-requirements-fixed-radio-systems-operating-bands-1700-1710-mhz-and-1780-1850-mhz>.

ISED also clarified that no specific technology or duplex mode is mandated in this band and therefore LTE and FDD technologies can be deployed already now if fulfilling the regulation (see RP-241519).

Electricity utilities in Canada are eager to transition to LTE technology within the 1800-1830 MHz spectrum. ISED is already engaged in making the regulatory changes (like channel spacing) to make deploying LTE more optimal (moving from 125kHz to 100kHz channelization) on this band (see RP-241519).

Pilots are ongoing or are planned to be conducted both in the lab and in the field later this year by several Electricity utilities.

This Work Item is proposing the definition of a new FDD band in a Release independent manner to transition from WiMax to LTE technology and allow new use cases, such LPWA (NB-IoT and eMTC) CPE-like devices.

The following assumptions are to be considered:

* Fixed communications only are allowed (point to point and point to multipoint)
* The band is specified to support FDD operation assuming their form factor is CPE-like and PC3 power class and therefore removing constraints on size and some implementation aspects
* NB-IoT and eMTC devices are expected to operate in Half Duplex mode.
* No new requirements on existing bands

Based on the above assumptions the following channel arrangement is proposed: UL 1800 – 1810 MHz and DL 1820 – 1830 MHz

Moreover, UE cat.M1 & NB1 were introduced in REL-13 WIs LTE\_MTCe2\_L1 & NB\_IOT for certain bands. UE cat.M2 & NB2 were introduced in REL-14 WIs LTE\_feMTC & NB\_IOTenh for certain bands. Support of further bands for cat. M1, M2, NB1 and NB2 was introduced in subsequent Releases (15, 16, 17 and 18).

This Work Item proposes to complete the specification of the new band by allowing its use for cat. M1, M2, NB1 and NB2 UEs in a Release independent way.

# 4 Objective

### 4.1 Objective of SI or Core part WI or Testing part WI

The objectives of core part of this work item include:

* Specify a new LTE FDD operating band operating in the range 1800-1830 MHz
	+ Specify in a Release independent from Release 13 the characteristics of the new band:
		- UL: 1800 – 1810 MHz and DL: 1820 – 1830 MHz
		- Band numbering and RF characteristics
		- Support the following channelization: 10, 5, 3 and 1.4 MHz
	+ Define PC3 UE power class
	+ Update the related 3GPP E-UTRA technical specifications to include support for the new band

Note: Not impose new UE requirements with this new band as the protected band from the existing adjacent 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).

* Specify and modify UE RF core requirements (e.g. UE power class, Additional Maximum Power Reduction (A-MPR), Reference sensitivity, blocking performance) and specifications for the new LTE band to support UE categories M1&M2 and/or UE NB1&NB2 in a Release-independent way from Rel 13.

### 4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

Update the related 3GPP technical specifications to include support for the new band, if necessary.

* Specifically, update network node conformance specifications to take account of the new band

### 4.3 RAN time budget request (not applicable to RAN5 WIs/SIs)

NOTE: For all new RAN related WIs/SIs which are not led by RAN WG5 the WI/SI rapporteur has to fill out the attached Excel table to request time budgets for corresponding RAN WG meetings.
The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI.
One time unit (TU) corresponds to ~ 2 hours in the meeting.
If no TU is needed, then leave the field empty otherwise enter a number >0 in the field.

 For revisions of already approved WI/SI descriptions: Please remove the Excel table from the WID/SID's zip file. The time budgets are already recorded. If you want to modify them, then this has to be done via the status report and not via a revised WID/SID.

 If this WID is covering Core and Performance part, then please fill out one line for each part in the attached Excel table.

**additional comments to the time budget request in the attached Excel table:**

# 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Remarks |
|  |  |  |  |  |  |

*{Note 1: Only TSs may contain normative provisions. Study Items shall create or impact only TRs.
"Internal TR" is intended for 3GPP internal use only whereas "External TR" may be transposed by OPs.}*

NOTE: If this is a RAN WI including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
By default a new specs can only be new for one of both parts.

|  |
| --- |
| Affected existing specifications [None in the case of Study Items] |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| 36.101 | Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception | RAN#107 | Core UE part |
| 36.133 | Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management | Same as above | Core part |
| 36.104 | Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception | Same as above | Core BS part |
| 36.141 | Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing | Same as above | Perf. BS part |
| 37.104 | E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception | Same as above | Core BS part |
| 37.141 | E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing | Same as above | Perf. BS part |
| 36.307 | Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) supporting a release-independent frequency band | Same as above | Core UE part |
|  |  |  |  |
| 37.105 | Active Antenna System (AAS) Base Station (BS) transmission and reception | Same as above | Core BS part |
| 37.145-1 | Active Antenna System (AAS) Base Station (BS) conformance testing; Part 1: conducted conformance testing | Same as above | Perf. BS part |
| 37.145-2 | Active Antenna System (AAS) Base Station (BS) conformance testing; Part 2: radiated conformance testing | Same as above | Perf. BS part |
| 38.106 | NR repeater radio transmission and reception | Same as above | Core part |
| 38.174 | NR; Integrated Access and Backhaul (IAB) radio transmission and reception | Same as above | Core part |
| 38.115-1 | NR; Repeater conformance testing - Part 1: Conducted conformance testing | Same as above | Perf part |
| 38.176-1 | NR; Integrated Access and Backhaul (IAB) conformance testing; Part 1: Conducted conformance testing | Same as above | Perf part |
| 38.176-2 | NR; Integrated Access and Backhaul (IAB) conformance testing; Part 2: Radiated conformance testing | Same as above | Perf part |
| 38.307 | NR; Requirements on User Equipments (UEs) supporting a release-independent frequency band. | Same as above | Perf part |

NOTE: If this is a RAN WI including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
By default a new specs can only be new for one of both parts.

# 6 Work item Rapporteur(s)

ROMANO, Giovanni, Novamint, gromano@novamint.com

NOTE: The first listed Rapporteur has the overall responsibility for this WI (incl all secondary tasks).

# 7 Work item leadership

RAN WG4.

# 8 Aspects that involve other WGs

NOTE: For RAN WIs: Section 8 applies only toWGs outside of TSG RAN because all RAN WG aspects have to be covered in section 4.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Novamint |
| Sequans |
| Semtech |
| Telit |
| Ubiik |
| EDF |
| EUTC |
| Sony |