**3GPP TSG-RAN WG4 Meeting #112bis *R4-2415214***

**Hefei, China, 14th – 18th October 2024**

**Agenda item:** 5.1

**Source:** Moderator (Nokia)

**Title:** Topic summary for [112bis][110] NR\_LTE\_NR\_Bands

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

Summary of contributions under agenda item 5.13 (NR\_FDD\_1400MHz), 5.14 (LTE\_FDD\_1800\_1830MHz\_CAN), 5.15 (NR\_bands\_n87\_n88) and 5.16 (NR\_band\_n68).

# Topic #1: Introduction of the 1.4 GHz Band

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2414941**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414941.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2414942**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414942.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2414943**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414943.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2415115**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415115.zip) | CATT | CR, should be draftCR |
| [**R4-2415279**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415279.zip) | Nokia | draftCR |
| [**R4-2415951**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415951.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415952**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415952.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2416155**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416155.zip) | Ericsson | draftCR |
| [**R4-2416156**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416156.zip) | Ericsson | draftCR |
| [**R4-2416303**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416303.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2416304**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416304.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2416305**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416305.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2416306**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416306.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2416307**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416307.zip) | Nokia, MidWave Wireless | draftCR |
| [**R4-2416388**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416388.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2416406**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416406.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416407**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416407.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416408**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416408.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416409**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416409.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416410**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416410.zip) | Huawei, HiSilicon | **Proposal 1**: Clarify whether or not, NB-IoT requirements shall be applied for band n110. |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1

*Sub-topic description: NB-IoT requirements*

*Open issues and candidate options before meeting:*

**Issue 1-1: Shall NB-IoT requirements be applied for n110?**

* Proposals
  + Option 1: no
  + Option 2: yes
* Recommended WF
  + Option 1

Agreement:

* **No NB-IoT requirements be applied for n110**

# Topic #2: Introduction of LTE FDD band in 1800-1830 MHz for Canada

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2415286**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415286.zip) | NOVAMINT | draftCR |
| [**R4-2415287**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415287.zip) | NOVAMINT | draftCR |
| [**R4-2415289**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415289.zip) | NOVAMINT | draftCR |
| [**R4-2415291**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415291.zip) | NOVAMINT | draftCR |
| [**R4-2415292**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415292.zip) | NOVAMINT | draftCR |
| [**R4-2415293**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415293.zip) | NOVAMINT | draftCR |
| [**R4-2415294**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415294.zip) | NOVAMINT | draftCR |
| [**R4-2415288**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415288.zip) | NOVAMINT | draftCR |
| [**R4-2415295**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415295.zip) | NOVAMINT | draftCR |
| [**R4-2415566**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415566.zip) | Nokia | **Observation 1:** -31.5 dBm at 1 MHz MBW was emitted from UL to DL without RF filtering |
| [**R4-2416261**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416261.zip) | Qualcomm France | **Proposal 1**: Do not include B111 among protected bands. All other relevant bands are protected with -50dBm/1MHz with usual exceptions for harmonic cases  **Proposal 2**: Use the following UL configurations and REFSENS numbers |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1

*Sub-topic description: Protection limits*

*Open issues and candidate options before meeting:*

**Issue 2-1: Protection limits**

* Proposals
  + Option 1: Do not include B111 among protected bands. All other relevant bands are protected with -50dBm/1MHz with usual exceptions for harmonic cases. Own DL protection level is -50dBm/1MHz.
  + Option 2: TBD
* Recommended WF
  + Option 1

Qualcomm: OK. The last part is not correct. That is the error for power level.

NOVAMINT: No problem to meet the level. The agreement in RAN is that band should be protected from other bands.

Agreement:

* Do not include B111 among protected bands. All other relevant bands are protected with -50dBm/1MHz with usual exceptions for harmonic cases.

### Sub-topic 2-2

*Sub-topic description: REFSENS*

*Open issues and candidate options before meeting:*

**Issue 2-2: REFSENS**

* Proposals
  + Option 1: According to R4-2416261
  + Option 2: TBD
* Recommended WF
  + Option 1

NOVAMINT: we have the CR to capture the agreements.

# Topic #3: Introduction of NR bands n87 and n88

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2414933**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414933.zip) | Nokia | draftCR |
| [**R4-2414934**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414934.zip) | Nokia | draftCR |
| [**R4-2414935**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414935.zip) | Nokia | draftCR |
| [**R4-2414936**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414936.zip) | Nokia | draftCR |
| [**R4-2415113**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415113.zip) | CATT | **Proposal 1:** For±0-1 MHz frequency offset from channel edge for 5MHz channel width, the 0.2 dB strict value of TS 38-101-1 is small and can be ignored for spectrum emission masks.  **Proposal 2:** Spectrum emission masks of 3MHz and 5MHz channel widths in TS 38.101-1 are aligned with UE maximum unwanted emission levels in ECC/Dec/(16)02 and ECC/Dec/(19)02. |
| [**R4-2415114**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415114.zip) | CATT | draftCR |
| [**R4-2415941**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415941.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415942**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415942.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415943**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415943.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415944**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415944.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415945**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415945.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2416150**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416150.zip) | Ericsson | **Observation:** The Technical Conditions specified in ECC Decision(16) and ECC Decision(19)02 have been taken into account when LTE bands 87 and 88 were specified. No additional requirement is expected for bands n87 and n88. |
| [**R4-2416151**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416151.zip) | Ericsson | draftCR |
| [**R4-2416152**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416152.zip) | Ericsson | draftCR |
| [**R4-2416153**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416153.zip) | Ericsson | draftCR |
| [**R4-2416154**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416154.zip) | Ericsson | draftCR |
| [**R4-2416401**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416401.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416402**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416402.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416403**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416403.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416404**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416404.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416405**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416405.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416518**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416518.zip) | Huawei, HiSilicon | **Proposal 1**: Introduce NB-IoT support for bands n87 and n88, following ECC/Dec/(19)02. |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 3-1

*Sub-topic description: Regulatory aspects*

*Open issues and candidate options before meeting:*

**Issue 3-1: Regulatory aspects**

* Proposals
  + Option 1: Regulatory aspects are satisfied, no additional requirements are needed
  + Option 2: TBD
* Recommended WF
  + Option 1

Huawei: It is quite generic statement. When looking at the regulation, there are more details. We should be specific on the Option 1.

Agreement:

* Regulatory aspects for NR implementation are satisfied, no additional requirements are needed

# Topic #4: Introduction of NR band n68

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2414937**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414937.zip) | Nokia | draftCR |
| [**R4-2414938**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414938.zip) | Nokia | draftCR |
| [**R4-2414939**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414939.zip) | Nokia | draftCR |
| [**R4-2414940**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2414940.zip) | Nokia | draftCR |
| [**R4-2415116**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415116.zip) | CATT | CR, should be draftCR |
| [**R4-2415569**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415569.zip) | Nokia | **Observation 1:** For NS\_26 A-MPR is needed at some center frequencies but not all of them.  **Observation 2:** For NS\_36 and CBWs of 5 MHz and 10 MHz A-MPR is needed at some center frequencies but not all of them.  **Observation 3:** For NS\_36 and 15 MHz CBW A-MPR is needed for all center frequencies in the operating band. |
| [**R4-2415946**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415946.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415947**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415947.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415948**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415948.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415949**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415949.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415950**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415950.zip) | ZTE Corporation, Sanechips | draftCR |
| [**R4-2415975**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2415975.zip) | Nokia | draftCR |
| [**R4-2416146**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416146.zip) | Ericsson | draftCR |
| [**R4-2416147**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416147.zip) | Ericsson | draftCR |
| [**R4-2416148**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416148.zip) | Ericsson | draftCR |
| [**R4-2416149**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416149.zip) | Ericsson | draftCR |
| [**R4-2416397**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416397.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416398**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416398.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416399**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416399.zip) | Huawei, HiSilicon | draftCR |
| [**R4-2416400**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112bis/Docs/R4-2416400.zip) | Huawei, HiSilicon | draftCR |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 4-1

*Sub-topic description: A-MPR*

*Open issues and candidate options before meeting:*

**Issue 4-1: A-MPR**

* Proposals
  + Option 1: According to R4-2415569
  + Option 2: TBD
* Recommended WF
  + Option 1