**3GPP TSG-RAN WG4 Meeting #114 R4-2500689**

**Athens, GR, 17th – 21st February, 2025**

**Agenda item:** 8.4

**Source:** Moderator (Apple)

**Title:** Topic summary for [114][137] NR\_reply\_LS\_UE\_RF

**Document for:** Information

# Introduction

This email thread is focused on the following RF topics under AI 8.

1. Reply to LS on UE Capabilities for FR2-NTN (R2-2411195)

# Topic #1: Reply to LS on UE Capabilities for FR2-NTN (R2-2411195)

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2500739 | vivo | **Proposal 1: For FR2-NTN, 200MHz is mandatory from current specification TS 38.101-5.**  **Proposal 2: For FR2-NTN, 2 UL/DL MIMO layers is not supported from current specification TS 38.101-5.** |
| R4-2500740 | vivo | **1. Overall Description:**  RAN4 would like to thank RAN2 for LS on UE Capabilities for FR2-NTN. RAN4 has discussed UE capabilities for 200MHz channel bandwidth and 2 MIMO layers for FR2-NTN and confirmed that:   * Channel bandwidth 200MHz is mandatory for FR2-NTN * 2 UL/DL MIMO layer is not supported for FR2-NTN   **2. Actions:**  **To RAN2:**  **ACTION:** RAN4 respectfully asks RAN2 to take the above information into account. |
| R4-2501907 | Ericsson | ***Observation 1: 200MHz channel bandwidth is mandatory to be supported without capability for FR2-NTN bands***  ***Observation 2: There are no demodulation requirements regarding 2 MIMO layers***  Attached LS  **1. Overall Description:**  RAN4 would like to thank RAN2 for their LS R2-2411195.  RAN4 would like to reply RAN2 that from RAN4 perspective 200MHz channel bandwidth is mandatory to be supported without capability for FR2-NTN bands, whereas support for 2 MIMO layers is not.  **2. Actions:**  **To RAN2 group:**  RAN4 respectfully asks RAN2 to take above into account. |
| R4-2500486 | Qualcomm | **Proposal 1: For FR2-NTN, define only 100 MHz as mandatory channel BW.**  **Proposal 2: Make UL MIMO support optional for FR2-NTN.**  **Proposal 3: Agree text for the LS in Appendix.**  Attached LS: 1 Overall description Ran4 respectfully thanks RAN2 for the questions in LS .  Ran4 has discussed the issue of 200 MHz channel BW and made the agreement that only 100 MHz channel BW should be mandatory for FR2-NTN UEs.  In addition, RAN4 also agreed that UL MIMO is not mandatory feature for the FR2-NTN terminals. 2 Actions **To: RAN2**  **ACTION:** RAN4 asks RAN2 to take the above information in to account in their work |
| R4-2501448 | Huawei, HiSilicon | **Observation 1: For TN FR2-1 bands, it’s mandatory for UE to support the DL two MIMO layers in FR2 and UL/DL 200MHz in FR2 according to the following perCCperFS capabilities specified in TS 38.306.**  **Proposal 1: UE capabilities for 200Mhz channel bandwidth are mandatory for FR2-NTN bands.**  **Proposal 2: UE capabilities for 2 MIMO layers are not mandatory for FR2-NTN bands.** |
| R4-2501826 | Nokia | **200 MHz channel bandwidth (or any other) and 2 MIMO layers can be optional for UE.**  ***Attached LS:***  **1. Overall Description:**  At RAN4#114, RAN4 has discussed LS on UE Capabilities for FR2-NTN (R2-2411195/R4-2500014). RAN4 would like to inform that UE capabilities for 200 MHz (and any other) channel bandwidth and 2 MIMO layers are optional for FR2-NTN bands.  **2. Actions:**  **To RAN2 group:**  RAN4 respectfully asks for RAN2 to take the above conclusion into account. |

*The moderator can suggest a limited number of papers which could be presented.*

## 1.2 Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions..*

### 1.2.1 Sub-topic 1-1

*Sub-topic description:*

*Open issues and candidate options before f2f meeting:*

**Issue 1-1-1: Whether 200MHz CBW is mandatory for FR2-NTN?**

* Proposals
  + Option 1: 200MHz is mandatory (vivo, Ericsson, Huawei)
  + Option 2: Only 100 MHz as mandatory (Qualcomm)
  + Option 3: Any CBW is optional (Nokia)
* Recommended WF
  + There are valid arguments to be considered before picking a solution:
  + Whether TN is a good reference/benchmark for NTN?
  + Whether there is a need from deployment perspective, e.g., network deployment of 200MHz CBW or the need of roaming?

CHTTL: Several meetings ago, mandatory or optional is not clear for FR2.

Moderator: that is the reason for whether TN is a good reference for NTN. I also share the understanding.

CHTTL: all the channel bandwidths are going to be discussed for mandatory or optional.

Nokia: RAN2 asked the question. Reuse TN principle for NTN.

Qualcomm: We can discuss and decide. That is the question from RAN2.

Agreement:

* For FR2-NTN
  + 200MHz and 400MHz channel bandwidths are optional
  + 50MHz and 100MHz are mandatory

**Issue 1-1-2: Whether 2 MIMO layers (DL/UL) are mandatory for FR2-NTN?**

* Proposals
  + Option 1: 2 MIMO layers (DL/UL) is optional (vivo, Ericsson, Qualcomm, Huawei, Nokia)
* Recommended WF
  + Option 1 is agreeable as all companies support it.

Vivo: since there is no requirement, we can say it is not supported.

Qualcomm: RAN2 copies the MIMO description from TN to NTN.

Agreement:

* 2 MIMO layers (DL/UL) is optional