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

June 17th ‒ 20th, 2024

Shanghai, CN

**Agenda item:** 9.1.5

**Source:** Moderator (RAN4 vice chair, Qualcomm Incorporated)

**Title:** Moderator's summary for other spectrum topics – Part 1

**Document for:** Information

# Introduction

This document provides a summary of discussion for other spectrum topics including

* 700 MHz Band n28
* NTN S-band (NR and NB IoT)
* NTN L band + extended L band

# Topics

## 700 MHz Band n28

Check the status of RP-241629

Qualcomm: We support keeping the existing requirements, but we don’t want to restrict future bandwidths

VDF: We are concerned that new NS might be added in this work if we only restrict NS\_17 and NS\_18

The following is the outcome of the offline discussion

The objectives of this WI are to introduce requirements for UE Power Class 2 and 40MHz Channel Bandwidth for NR band n28 as optional features, including the following aspects:

* Introduce requirements for PC2 and those associated with following bullets
	+ Both 1Tx and 2Tx PC2 are supported
	+ UL-MIMO is supported.
	+ Specify A-MPR requirements for PC2
* Introduce 40MHz Channel bandwidth located in UL: 703 - 743MHz and DL: 758 - 798MHz for band n28 supporting PC3 and PC2.
	+ Allow flexible channel allocations within the frequency range (UL: 703 - 743MHz and DL: 758 - 798MHz) for BW<40MHz.
* Release independence of UE 40MHz Channel bandwidth to Rel-15 is anticipated
* No changes to the existing requirements (38.101-1 v18.5.0) (including A-MPR values and RB allocation regions) for power class 3 with existing channel bandwidths up to and including 30 MHz to avoid impacts on existing power class 3 networks. In the event of new regulatory requirements, this assumption can be revisited.

## NTN S-band

The following is the outcome of the offline discussion. Some details still need further checking by companies and possible further revision. The NB-IoT NTN WID was not discussed in the offline.

The objective of the core part is to:

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- Specify a new NR-NTN FDD band with a UE transmitting at 2000 – 2020 MHz and SAN transmitting at 2180-2200 MHz;

 Perform necessary co-existence analysis, for example UE-UE coexistence, for adjacent band per RAN4 scope;

 Consider whether assumptions for coexistence should be re-evaluated for the NTN scenario

- Support channel bandwidths and SCS as presented in Table 4.1-1 below;

- Mandatory upport channel raster points at step of 10 kHz as agreed in RAN WG4 channel raster enhancements work;

- Support UE Power class 3 (+23dBm);

- Introduce the corresponding SAN and UE RF core requirements;

- Introduce the corresponding RRM requirements.

**Table 4.1-1: Channel bandwidth and SCS system parameters.**

| **SCS (kHz)** | **Channel bandwidth** **(MHz)** |
| --- | --- |
| 15 | 5 | 10 | 15 | 20 |
| 30 |  | 10 | 15 | 20 |
| 60 |  | 10 | 15 | 20 |

The specification work of this WI shall leverage the studies and requirements for NR NTN n256, n255, n254, where applicable.

All requirements specified as part of this WI shall be Release-independent from Rel-17 for the UE.

## NR NTN L band + extended L band

The following objectives were discussed during the offline session. The need for wider channel bandwidths 25, 30, 35, 40 MHz was discussed as was the split uplink. Further checking and possible further revision may be needed.

The objective of the core part is as follows:

* Specify a new NR NTN FDD band with a UE transmitting at 1668 – 1675 MHz and SAN transmitting at 1518 – 1525 MHz;
	+ Support channel bandwidths and SCS as presented in Table 4.1-1 below as a starting point;

Table 4.1-1: Channel bandwidth and SCS system parameters.

| SCS (kHz) | Channel bandwidth (MHz) |
| --- | --- |
| 15 |  | 5 |  |  |  |
|  |

* Specify a new NR NTN FDD band with SAN transmitting at 1518 – 1559 MHz and UE transmitting at 1626.5 – 1660.5 MHz or 1668 – 1675 MHz;
	+ Support channel bandwidths and SCS as presented in Table 4.1-2 below:

Table 4.1-2: Channel bandwidth and SCS system parameters.

| NTN satellite band | SCSkHz | DL Channel bandwidth (MHz) |
| --- | --- | --- |
|  | 5 | 10 | 15 | 20 | [25] | [30] | [35] | [40] |
|  | 15 |  | 5 | 10 | 15 | 20 | [25] | [30] | [35] | [40] |
| [n25x] | 30 |  |  | 10 | 15 | 20 | [25] | [30] | [35] | [40] |
|  | 60 |  |  | 10 | 15 | 20 | [25] | [30] | [35] | [40] |
|  |

* + Support Asymmetric UE TX-RX Channel BW configurations in order to allow leveraging the 41 MHz contiguous DL allocation with a smaller UL allocation. The subset of supported UE TX channel BW can be limited to a maximum of [20] MHz channel BW for the time being, in order to limit the WI scope.
* Support Flexible TX-RX Separation for the supported TX-RX Channel BW configurations
* Support default channel raster points at step of 100kHz;
* Mandatory support for Enhanced Channel Raster with raster points at step of 10kHz
* Support UE Power class 3 (+23 dBm) as a starting point
	+ Further support for HPUE can be considered as soon as the Rel-19 baseline framework for HPUE for NTN in band n255 has been defined
* Introduce the corresponding SAN and UE RF core requirements;
* Introduce the corresponding RRM requirements.
* The specification work of this WI shall leverage the studies and requirements for NR NTN n255, and the corresponding IoT NTN Work Item (IoT\_NTN\_extLband) for Band 253, where applicable.
* Any relevant additional Regional requirements and restrictions will also be captured.
	+ NOTE1: The introduction of ETSI-specific requirements is expected to be addressed at a later stage, due to ongoing discussions within ETSI in respect to NTN
	+ NOTE2: The 1668-1675 MHz range is presently not available for MSS in the continental United States.

All UE requirements specified as part of this WI shall be Release-independent for the UE starting from Release-17.

# Reference