3GPP TSG-RAN WG4 Meeting # 100-e R4-211xxxx

Electronic Meeting, August 16-27, 2021

Title: LS on the progress of the study item on extended 600MHz NR band

Response to: -

Release: Rel-17

Work Item: FS\_NR\_600MHz\_ext

Source: 3GPP RAN WG4

To: Asia-Pacific Telecommunity Wireless Group (AWG)

Cc: 3GPP TSG RAN

**Contact Person:**

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**Send any reply LS to: 3GPP Liaisons Coordinator,** [**mailto:3GPPLiaison@etsi.org**](mailto:3GPPLiaison@etsi.org)

## 1. Overall Description:

In response to a request from APT Wireless Group on 3GPP RAN WG4 feedback on technical feasibilities of various frequency arrangements in 612 - 703 MHz frequency range, 3GPP RAN WG4 would like to inform on AWG, that the 3GPP Rel-17 Study Item (SI) on the on extended 600MHz NR band for APT region has been completed during the RAN WG4 meeting #100-e (August 2021).

During that SI, a Technical Report (TR) was created in TR 38.860. The TR 38.860 can be also found at: <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=3893>

The TR 38.860 provides feasibility analyses for band arrangement options B1 and B2, as requested by AWG. Additionally, band arrangement B2a has been defined by RAN WG4 and related feasibility analyses of all arrangements were also captured in the TR 38.860.

[This report will be submitted to the RAN meeting 13- 17 September for approval].

## 2. Operating band and channel bandwidth

The band plan for the extended 600 MHz NR band are shown below in Tables 1 to 7. Options B1 and B2 have [single or ] split duplexers, partially overlapping ( in the later case) , but part of the same band. Option B2a has two duplexers, but one is band n71 and the other is a new band.

The Tx-Rx is "reverse-duplex"; in other words, the downlink frequency band is below the duplex gap while the uplink frequency band is above the duplex gap. This arrangement is opposite to conventional notation; however, for this band, it provides the benefit of aligning the uplink band adjacent to 3GPP band 28 thereby minimizing interference conditions at the 703 MHz boundary.

Table 1: NR operating band (option B1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| TBD | 663 MHz | – | 703 MHz | 612 MHz | – | 652 MHz | FDD |

The above could be implemented as a single or overlapping duplexers. In case of overlapping duplexers, the following option is studied:

Table 6.1-2: Duplexer arrangements (option B1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Duplexer type | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| Full | 663 MHz | – | 703 MHz | 612 MHz | – | 652 MHz | FDD |
| 35 + 35 | 663 - 698 MHz  668 - 703 MHz | | | 612 - 647 MHz  617 - 652 MHz | | | FDD |
| FDD |
| N 71 + 25  Dual 35+25 | 663 - 698 MHz  678 - 703 MHz | | | 617 - 652 MHz  612 - 637 MHz | | | |  | | --- | | FDD | | FDD | |
|  | | | | | | | |

Table 6.1-3.: NR operating band (option B2)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| TBD | 663 MHz | – | 703 MHz | 612 MHz | – | 652 MHz | FDD |
|  | | | | | | | |

The above could be implemented as a single or overlapping duplexers. In case of overlapping/split duplexers, three sub options are studied.

Table 6.1-4: Duplexer arrangements (option B2 35 + 35)

|  |  |  |  |
| --- | --- | --- | --- |
| Duplexer type | Uplink (UL) operating band BS receive UE transmit | Downlink (DL) operating band BS transmit  UE receive | Duplex Mode |
| FUL\_low – FUL\_high | FDL\_low – FDL\_high |
| Duplex 1  Duplex 2 | 663 MHz – 698 MHz  668 MHz – 703 MHz | 617MHz – 652 MHz  622MHz – 657 MHz | FDD |
| FDD |
| NOTE: Both duplexers will be part of the same band | | | |

Table 6.1-5: Duplexer arrangements (option B2 35+30)

|  |  |  |  |
| --- | --- | --- | --- |
| Duplexer type | Uplink (UL) operating band BS receive UE transmit | Downlink (DL) operating band BS transmit  UE receive | Duplex Mode |
| FUL\_low – FUL\_high | FDL\_low – FDL\_high |
| Duplex1  Duplex 2 | 663 MHz – 698 MHz  673 MHz – 703 MHz | 617MHz – 652 MHz  627MHz – 657 MHz | FDD |
| FDD |
| NOTE: Both duplexers will be part of the same band | | | |

Table 6.1-6: Duplexer arrangements (option B2 35+25)

|  |  |  |  |
| --- | --- | --- | --- |
| Duplexer type | Uplink (UL) operating band BS receive UE transmit | Downlink (DL) operating band BS transmit  UE receive | Duplex Mode |
| FUL\_low – FUL\_high | FDL\_low – FDL\_high |
| Duplex 1  Duplex 2 | 663 MHz – 698 MHz  678 MHz – 703 MHz | 617MHz – 652 MHz  632MHz – 657 MHz | FDD |
| FDD |
| NOTE: Both duplexers will be part of the same band | | | |

Table 6.1-7: NR operating bands (option B2a)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Bands | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| n71 | 663 MHz | – | 698 MHz | 617 MHz | – | 652 MHz | FDD |
| nX | 673 MHz | – | 703 MHz | 627 MHz | – | 657 MHz | FDD |
| NOTE : These are two bands, band n71 plus band nX. A UE that complies with NR requirements in this specification shall also comply with NR Band 71 minimum requirements | | | | | | | |

3. Summary of findings

[Editor : Do we need this section ? , if so this can only be be added once the summary/conclusions are agreed]

[4.0 Further work]

[Editor ]

[ This section could identify further work flow in 3GPP]

6. Actions:

None

**6. Date of Next RAN WG4 Meetings:**

RAN WG4 Meeting #101-e 1st – 12th November 2021 Online meeting

RAN WG4 Meeting #102 21st – 25th February 2021 Athens, Greece