**3GPP TSG-RAN WG4 Meeting #112 R4-2413518**

**Maastricht, Netherlands, 19th – 23rd August, 2024**

**Title:** Way Forward for [112][313] NR\_IoT\_NTN\_less\_than\_5MHz\_BSRF

**Agenda Item:** 8.8.5

**Source:** Nokia

**Document for:** Approval

**Agreements:**

|  |  |
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| **NR BS RF conductive Tx/Rx requirement** | **Proposal for 3MHz channel bandwidth in FR1-NTN bands** |
| 6.2 Satellite Access Node output power  | No specification impact. |
| 6.3.2 RE power control dynamic range | No specification impact. |
| 6.3.3 Total power dynamic range | Minimum requirement calculated according to transmission bandwidth configuration in Table 6.3.3.2-1. |
| 6.4 Transmit ON/OFF power | No specification impact. |
| 6.5 Transmitted signal quality | No specification impact. |
| 6.6.2 Occupied bandwidth | No specification impact. |
| 6.6.3 Adjacent Channel Leakage Power Ratio | Requirement limits as other channel bandwidth, but assume different adjacent channel carriers in Table 6.6.3.2-1 and Table 6.6.3.2-2. |
| 6.6.4 Out-of-band emissions | No specification impact. |
| 6.6.5 Transmitter spurious emissions | No specification impact |
| 6.7 Transmitter intermodulation | No specification impact. |
| 7.2 Reference sensitivity level  | Add minimum requirements for 3 MHz in Table 7.2.2-1 and Table 7.2.2-2. Scaling from 5 MHz can be used. Use FRC G-FR1-A1-7, same as in TN. |
| 7.3 Dynamic range | Add minimum requirements for 3 MHz in Table 7.3.2-1. Scaling from 5 MHz can be used. Reuse TN FRC G-FR1-A2-15 (to be introduced to A.2). |
| 7.4.1 Adjacent Channel Selectivity (ACS) | Define ACS requirement similar to TN for 3MHz in Table 7.4.1.2-1, and assume same interferer frequency offset values as TN 3 MHz in Table 7.4.1.2-2. |
| 7.4.2 In-band blocking | No specification impact. |
| 7.5 Out-of-band blocking  | No specification impact. |
| 7.6 Receiver spurious emissions | No specification impact. |
| 7.7 Receiver intermodulation | No specification impact. |
| 7.8 In-channel selectivity | Add minimum requirements for 3 MHz in Table 7.8.2-1 and Table 7.8.2-2. ~~Requirement limits depend on ICS FRC to be defined for 3MHz.~~Reuse TN FRC G-FR1-A1-20 (to be introduced to A.1). |
| A.1 Fixed Reference Channels for RF Rx requirements (QPSK, R=1/3) | FRC for 3MHz in-channel selectivity needs to be added in Table A.1-1. Reuse TN FRC G-FR1-A1-20. Rename the FRC to indicate “NTN” can be discussed as Rel-18 maintenance. |
| A.2 Fixed Reference Channels for dynamic range (16QAM, R=2/3) | FRC for 3MHz needs to be added in Table A.2-1. Reuse TN FRC G-FR1-A2-15. Rename the FRC to indicate “NTN” can be discussed as Rel-18 maintenance. |

FFS on the impact for radiated requirements for SAN type 1-H and 1-O:

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| **NR BS RF radiated Tx/Rx requirement** | **Proposal for 3MHz channel bandwidth in FR1-NTN bands** |
| 9.2 Radiated transmit power | No specification impact. |
| 9.3 OTA SAN Output power dynamics | No specification impact. |
| 9.4 OAT output power dynamic range | 1-O follow same requirement as 1-H, no update on specification  |
| 9.5 OTA transmit ON/OFF Power | No specification impact. |
| 9.6 OTA transmitted signal quality  | No specification impact. |
| 9.7 OTA unwanted emissions | 1-O follow same requirement as 1-H, no update on specification |
| 9.8 OTA Transmitter intermodulation | No specification impact. |
| 10.2 OTA sensitivity | No specification impact. |
| 10.3 OTA reference sensitivity level | Similar update as conductive requirements to add 3MHz CHBW  |
| 10.4 OTA dynamic range | Similar update as conductive requirements to add 3MHz CHBW |
| 10.5 OTA In-band selectivity and blocking | Similar update as conductive requirements to add 3MHz CHBW |
| 10.6 OTA Out-of-band blocking | No specification impact. |
| 10.7 OTA receiver spurious emissions  | No specification impact. |
| 10.8 OTA receiver intermodulation | No specification impact. |
| 10.9 OTA In-channel selectivity | Similar update as conductive requirements to add 3MHz CHBW |