**3GPP TSG-RAN4 Meeting #98bis-e *R4-2105858***

**Electronic Meeting, April 12-20, 2021**

|  |  |  |  |  |  |  |  |  |
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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **DraftCR** | **rev** | **-** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Draft Big CR: RRM requirements for band n262 in 38.133 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_47GHz\_Band-Core, NR\_47GHz\_Band-Perf | | | | |  | ***Date:*** | | | 2021-04-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | To introduce RRM core and performance requirements for UE power classes supported for band n262 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | **RAN4#98bis-e Agreements:**   * Endorsed CR on core part:   + R4-2107148: RRM core requirements for band n262     - Band n262 (47 GHz) is introduced in a separate band group for UE power class 3 (PC3). * Endorsed CR on performance part:   + R4-2107150:RRM performance requirements for band n262     - Minimum SSB\_RP/CSI-RS\_RP levels for UE power class 3 (PC3) and place holders for remaining UE power classes (PC1, PC2 and PC4) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UE supporting band n262 may not fulfil RRM requirements for supported UE power classes | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.5.3, B.1.2, B.2.2, B.2.3, B.2.4.1, B.2.4.2, B.2.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**----------------------START OF CHANGE-1----------------------------**

3.5.3 NR operating bands in FR2

NR frequency bands grouping for FR2 is specified in Table 3.5.3-1.

**Table 3.5.3-1: NR frequency band groups for FR2**

|  |  |  |
| --- | --- | --- |
| **Group** | **Band group notation** | **Operating bands** |
| A | NR\_TDD\_FR2\_A | n2571, n2581, n2611 |
| B | NR\_TDD\_FR2\_B | n2574, n2584, n2614 |
| C | NR\_TDD\_FR2\_C |  |
| D | NR\_TDD\_FR2\_D |  |
| E | NR\_TDD\_FR2\_E |  |
| F | NR\_TDD\_FR2\_F | n2604 |
| G | NR\_TDD\_FR2\_G | n2601 |
| H | NR\_TDD\_FR2\_H |  |
| I | NR\_TDD\_FR2\_I |  |
| J | NR\_TDD\_FR2\_J |  |
| K | NR\_TDD\_FR2\_K | n2575, n2585 |
| L | NR\_TDD\_FR2\_L | n2572, n2582, n2612 |
| M | NR\_TDD\_FR2\_M |  |
| N | NR\_TDD\_FR2\_N |  |
| O | NR\_TDD\_FR2\_O |  |
| P | NR\_TDD\_FR2\_P |  |
| Q | NR\_TDD\_FR2\_Q |  |
| R | NR\_TDD\_FR2\_R |  |
| S | NR\_TDD\_FR2\_S |  |
| T | NR\_TDD\_FR2\_T | n2573, n2583, n2613 |
| U | NR\_TDD\_FR2\_U |  |
| V | NR\_TDD\_FR2\_V |  |
| W | NR\_TDD\_FR2\_W |  |
| X | NR\_TDD\_FR2\_X |  |
| Y | NR\_TDD\_FR2\_Y | n2603 |
| Z | NR\_TDD\_FR2\_Z |  |
| AA | NR\_TDD\_FR2\_AA | n2593 |
| AB | NR\_TDD\_FR2\_AB |  |
| AC | NR\_TDD\_FR2\_AC |  |
| AD | NR\_TDD\_FR2\_AD |  |
| AE | NR\_TDD\_FR2\_AE | n2623 |
| NOTE 1: UE power class 1.  NOTE 2: UE power class 2.  NOTE 3: UE power class 3.  NOTE 4: UE power class 4.  NOTE 5: UE power class 5. | | |

**----------------------END OF CHANGE-1----------------------------**

**----------------------START OF CHANGE-2----------------------------**

B.1.2 Conditions for measurements on NR intra-frequency cells for cell re-selection

This clause defines the following conditions for NR intra-frequency measurements performed based on SSBs for cell re-selection: SSB\_RP and SSB Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.1.2-1 for FR1 NR cells.

The conditions are defined in Table B.1.2-2 for FR2 NR cells.

**Table B.1.2-1: Conditions for intra-frequency cell re-selection in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum SSB\_RP** | | **SSB Ês/Iot** |
| **dBm / SCSSSB** | | **dB** |
| **SCSSSB = 15 kHz** | **SCSSSB = 30 kHz** |
| **Conditions** | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A | -124 | -121 | ≥ -4 |
| NR\_FDD\_FR1\_B | -123.5 | -120.5 |
| NR\_TDD\_FR1\_C | -123 | -120 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -119.5 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -119 |
| NR\_FDD\_FR1\_F | -121.5 | -118.5 |
| NR\_FDD\_FR1\_G | -121 | -118 |
| NR\_FDD\_FR1\_H | -120.5 | -117.5 |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | |

**Table B.1.2-2: Conditions for intra-frequency cell re-selection in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum SSB\_RP Note 2, Note 3** | | | | | | **SSB Ês/Iot** |
|  |  |  | **dBm / SCSSSB** | | | | | | **dB** |
|  |  |  | **SCSSSB = 120 kHz** | | | | | **SCSSSB = 240 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 | -120.4+Y5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  |  | n258 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 | -120.6+Y5 |  |  |
|  |  | n260 | -122.3+Y1 |  | -106.5 | -122.8+Y4 |  |  |  |
|  |  | n261 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 |  |  |  |
| n262 | TBD | TBD | -103.6 | TBD |  |
| Spherical coverage Note 1 | n257 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 | -112.4+Z5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  |  | n258 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 | -112.6+Z5 |  |  |
|  |  | n260 | -114.3+Z1 |  | -93.9 | -110.8+Z4 |  |  |  |
|  |  | n261 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 |  |  |  |
| n262 | TBD | TBD | -90.5 | TBD |  |
| NOTE 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  NOTE 2: Values specified at the Reference point to give minimum SSB Ês/Iot, with no applied noise.  NOTE 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.1.2-2:*

*- The value of Y for Power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for Power classes 1, 4 and 5 respectively*

*- The value of Z for Power classes 1, 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for Power classes 1, 4 and 5 respectively*

**----------------------END CHANGE-2----------------------------**

**----------------------START OF CHANGE-3----------------------------**

B.2.2 Conditions for NR intra-frequency measurements

This clause defines the following conditions for NR intra-frequency measurements and corresponding procedures performed based on SSBs: SSB\_RP and SSB Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.2.2-1 for FR1 NR cells.

The conditions are defined in Table B.2.2-2 for FR2 NR cells.

**Table B.2.2-1: Conditions for intra-frequency measurements in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum SSB\_RP** | | **SSB Ês/Iot** |
| **dBm / SCSSSB** | | **dB** |
| **SCSSSB = 15 kHz** | **SCSSSB = 30 kHz** |
| **Conditions** | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -127 | -124 | ≥ -6 |
| NR\_FDD\_FR1\_B | -126.5 | -123.5 |
| NR\_TDD\_FR1\_C | -126 | -123 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -122.5 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -122 |
| NR\_FDD\_FR1\_F | -124.5 | -121.5 |
| NR\_FDD\_FR1\_G | -124 | -121 |
| NR\_FDD\_FR1\_H | -123.5 | -120.5 |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | |

**Table B.2.2-2: Conditions for intra-frequency measurements in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum SSB\_RP Note 2, Note 3** | | | | | | **SSB Ês/Iot** |
|  |  |  | **dBm / SCSSSB** | | | | | | **dB** |
|  |  |  | **SCSSSB = 120 kHz** | | | | | **SCSSSB = 240 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 | -123.4+Y5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-6 |
|  |  | n258 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 | -123.6+Y5 |  |  |
|  | n260 | -125.3+Y1 |  | -109.5 | -125.8+Y4 |  |  |  |
| n261 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 |  |  |  |
| n262 | TBD | TBD | -106.6 | TBD |  |
| Spherical coverage Note 1 | n257 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 | -115.4+Z5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-6 |
|  | n258 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 | -115.6+Z5 |  |  |
|  | n260 | -117.3+Z1 |  | -96.9 | -113.8+Z4 |  |  |  |
|  | n261 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 |  |  |  |
| n262 | TBD | TBD | -93.5 | TBD |  |
| Note 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  Note 2: Values specified at the Reference point to give minimum SSB Ês/Iot, with no applied noise.  Note 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.2.2-2:*

*- The value of Y for power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for power classes 1, 4 and 5 respectively*

*- The value of Z for power classes 1, 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for power classes 1, 4 and 5 respectively*

B.2.3 Conditions for NR inter-frequency measurements

This clause defines the following conditions for NR inter-frequency measurements and corresponding procedures performed based on SSBs: SSB\_RP and SSB Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.2.3-1 for FR1 NR cells.

The conditions are defined in Table B.2.3-2 for FR2 NR cells.

**T****able B.2.3-1: Conditions for inter-frequency measurements in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum SSB\_RP** | | **SSB Ês/Iot** |
|  |  | **dBm / SCSSSB** | | **dB** |
|  |  | **SCSSSB = 15 kHz** | **SCSSSB = 30 kHz** |  |
| Conditions | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -125 | -122 | ≥ -4 |
|  | NR\_FDD\_FR1\_B | -124.5 | -121.5 |  |
|  | NR\_TDD\_FR1\_C | -124 | -121 |  |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -124.5 | -120.5 |  |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -123 | -120 |  |
|  | NR\_FDD\_FR1\_F | -122.5 | -119.5 |  |
|  | NR\_FDD\_FR1\_G | -122 | -119 |  |
|  | NR\_FDD\_FR1\_H | -121.5 | -118.5 |  |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | |

**Table B.2.3-2: Conditions for inter-frequency measurements in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum SSB\_RP Note 2, Note 3** | | | | | | **SSB Ês/Iot** |
|  |  |  | **dBm / SCSSSB** | | | | | | **dB** |
|  |  |  | **SCSSSB = 120 kHz** | | | | | **SCSSSB = 240 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 | -121.4+Y5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  |  | n258 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 | -121.6+Y5 |  |  |
|  |  | n260 | -123.3+Y1 |  | -107.5 | -123.8+Y4 |  |  |  |
|  |  | n261 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 |  |  |  |
| n262 | TBD | TBD | -104.6 | TBD |  |
|  | Spherical coverage Note 1 | n257 | -118.3+Z1 | -100.8 | -99.2 | -116.8+Z4 | -113.4+Z5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  |  | n258 | -118.3+Z1 | -100.8 | -99.2 | -116.8+Z4 | -113.6+Z5 |  |  |
|  |  | n260 | -115.3+Z1 |  | -94.9 | -111.8+Z4 |  |  |  |
|  |  | n261 | -118.3+Z1 | -100.8 | -99.2 | -116.8+Z4 |  |  |  |
| n262 | TBD | TBD | -91.5 | TBD |  |
| NOTE 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  NOTE 2: Values specified at the Reference point to give minimum SSB Ês/Iot, with no applied noise.  NOTE 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.2.3-2:*

*- The value of Y for power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for power classes 1, 4 and 5 respectively*

*- The value of Z for power classes 1, 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for power classes 1, 4 and 5 respectively*

B.2.4 Conditions for NR L1-RSRP reporting

B.2.4.1 Conditions for SSB based L1-RSRP reporting

This clause defines the following conditions for NR L1-RSRP measurement reporting and corresponding procedures performed based on SSBs: SSB\_RP and SSB Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.2.4.1-1 for FR1 NR cells.

The conditions are defined in Table B.2.4.1-2 for FR2 NR cells.

**Table B.2.4.1-1: Conditions for SSB based L1-RSRP measurements in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum SSB\_RP** | | **SSB Ês/Iot** |
|  |  | **dBm / SCSSSB** | | **dB** |
|  |  | **SCSSSB = 15 kHz** | **SCSSSB = 30 kHz** |  |
| Conditions | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -124 | -121 | ≥ -3 |
|  | NR\_FDD\_FR1\_B | -123.5 | -120.5 |  |
|  | NR\_TDD\_FR1\_C | -123 | -120 |  |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -119.5 |  |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -119 |  |
|  | NR\_FDD\_FR1\_F | -121.5 | -118.5 |  |
|  | NR\_FDD\_FR1\_G | -121 | -118 |  |
|  | NR\_FDD\_FR1\_H | -120.5 | -117.5 |  |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | |

**Table B.2.4.1-2: Conditions for SSB based L1-RSRP measurements in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum SSB\_RP Note 2, Note 3** | | | | | | **SSB Ês/Iot** |
|  |  |  | **dBm / SCSSSB** | | | | | | **dB** |
|  |  |  | **SCSSSB = 120 kHz** | | | | | **SCSSSB = 240 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 | -120.4+Y5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-3 |
|  |  | n258 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 | -120.6+Y5 |  |  |
|  |  | n260 | -122.3+Y1 |  | -106.5 | -122.8+Y4 |  |  |  |
|  |  | n261 | -125.3+Y1 | -110.8 | -109.1 | -124.8+Y4 |  |  |  |
| n262 | TBD | TBD | -103.6 | TBD |  |
|  | Spherical coverage Note 1 | n257 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 | -112.4+Z5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-3 |
|  | n258 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 | -112.6+Z5 |  |  |
|  | n260 | -114.3+Z1 |  | -93.9 | -110.8+Z4 |  |  |  |
|  |  | n261 | -117.3+Z1 | -99.8 | -98.2 | -115.8+Z4 |  |  |  |
| n262 | TBD | TBD | -90.5 | TBD |  |
| NOTE 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  NOTE 2: Values specified at the Reference point to give minimum SSB Ês/Iot, with no applied noise.  NOTE 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.2.4.1-2:*

*- The value of Y for power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for power classes 1, 4 and 5 respectively*

*- The value of Z for power classes 1, and 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for power classes 1, 4 and 5 respectively*

B.2.4.2 Conditions for CSI-RS based L1-RSRP reporting

This clause defines the following conditions for NR L1-RSRP measurement reporting and corresponding procedures performed based on CSI-RS: CSI-RS\_RP and CSI-RS Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.2.4.2-1 for FR1 NR cells.

The conditions are defined in Table B.2.4.2-2 for FR2 NR cells.

**Table B.2.4.2-1: Conditions for CSI-RS based L1-RSRP measurements in FR1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum CSI-RS\_RP** | | | **CSI-RS Ês/Iot** |
|  |  | **dBm / SCSCSI-RS** | | | **dB** |
|  |  | **SCSCSI-RS = 15 kHz** | **SCSCSI-RS = 30 kHz** | **SCSCSI-RS = 60 kHz** |  |
| Conditions | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -124 | -121 | -118 | ≥ -3 |
|  | NR\_FDD\_FR1\_B | -123.5 | -120.5 | -117.5 |  |
|  | NR\_TDD\_FR1\_C | -123 | -120 | -117 |  |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -119.5 | -116.5 |  |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -119 | -116 |  |
|  | NR\_FDD\_FR1\_F | -121.5 | -118.5 | -115.5 |  |
|  | NR\_FDD\_FR1\_G | -121 | -118 | -115 |  |
|  | NR\_FDD\_FR1\_H | -120.5 | -117.5 | -114.5 |  |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | | |

**Table B.2.4.2-2: Conditions for CSI-RS based L1-RSRP measurements in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum CSI-RS\_RP Note 2, Note 3** | | | | | | **CSI-RS Ês/Iot** |
|  |  |  | **dBm / SCSCSI-RS** | | | | | | **dB** |
|  |  |  | **SCSCSI-RS = 60 kHz** | | | | | **SCSCSI-RS = 120 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 | -123.4+Y5 | (Value for SCSCSI-RS = 60 kHz) +3dB | ≥-3 |
|  |  | n258 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 | -123.6+Y5 |  |  |
|  |  | n260 | -125.3+Y1 |  | -109.5 | -125.8+Y4 |  |  |  |
|  |  | n261 | -128.3+Y1 | -113.8 | -112.1 | -127.8+Y4 |  |  |  |
| n262 | TBD | TBD | -106.6 | TBD |  |
|  | Spherical coverage Note 1 | n257 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 | -115.4+Z5 | (Value for SCSCSI-RS = 60 kHz) +3dB | ≥-3 |
|  | n258 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 | -115.6+Z5 |  |  |
|  |  | n260 | -117.3+Z1 |  | -96.9 | -113.8+Z4 |  |  |  |
|  |  | n261 | -120.3+Z1 | -102.8 | -101.2 | -118.8+Z4 |  |  |  |
| n262 | TBD | TBD | -93.5 | TBD |  |
| NOTE 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  NOTE 2: Values specified at the Reference point to give minimum CSI-RS Ês/Iot, with no applied noise.  NOTE 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.2.4.2-2:*

*- The value of Y for power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for power classes 1, 4 and 5 respectively*

*- The value of Z for power classes 1, 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for power classes 1, 4 and 5 respectively*

B.2.5 Conditions for RRC connection release with redirection to NR

This clause defines the following conditions for RRC connection release with redirection to NR: SSB\_RP and SSB Ês/Iot, applicable for a corresponding operating band.

The conditions are defined in Table B.2.5-1 for FR1 NR cells.

The conditions are defined in Table B.2.5-2 for FR2 NR cells.

**Table B.2.5-1: Conditions for for RRC connection release with redirection to NR in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **NR operating band groups Note1** | **Minimum SSB\_RP** | | **SSB Ês/Iot** |
|  |  | **dBm / SCSSSB** | | **dB** |
|  |  | **SCSSSB = 15 kHz** | **SCSSSB = 30 kHz** |  |
| Conditions | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A | -125 | -122 | ≥ -4 |
|  | NR\_FDD\_FR1\_B | -124.5 | -121.5 |  |
|  | NR\_TDD\_FR1\_C | -124 | -121 |  |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -124.5 | -120.5 |  |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -123 | -120 |  |
|  | NR\_FDD\_FR1\_F | -122.5 | -119.5 |  |
|  | NR\_FDD\_FR1\_G | -122 | -119 |  |
|  | NR\_FDD\_FR1\_H | -121.5 | -118.5 |  |
| NOTE 1: NR operating band groups are defined in clause 3.5.2. | | | | |

**Table B.2.5-2: Conditions for RRC connection release with redirection to NR in FR2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Angle of arrival** | **NR operating bands** | **Minimum SSB\_RP Note 2, Note 3** | | | | | | **SSB Ês/Iot** |
|  |  |  | **dBm / SCSSSB** | | | | | | **dB** |
|  |  |  | **SCSSSB = 120 kHz** | | | | | **SCSSSB = 240 kHz** |  |
|  |  |  | **UE Power class** | | | | | **UE Power class** |  |
|  |  |  | **1** | **2** | **3** | **4** | **5** | **1, 2, 3, 4, 5** |  |
| Conditions | Rx Beam Peak | n257 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 | -121.4+Y5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  |  | n258 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 | -121.6+Y5 |  |  |
|  |  | n260 | -123.3+Y1 |  | -107.5 | -123.8+Y4 |  |  |  |
|  |  | n261 | -126.3+Y1 | -111.8 | -110.1 | -125.8+Y4 |  |  |  |
| n262 | TBD | TBD | -104.6 | TBD |  |
|  | Spherical coverage Note 1 | n257 | -118.3+Z1 | -100.8 | -99.2 | -116.8+Z4 | -113.4+Z5 | (Value for SCSSSB = 120 kHz) +3dB | ≥-4 |
|  | n258 | -118.3+Z1 | -100.8 | -99.2 | -116.8+Z4 | -113.6+Z5 |  |  |
|  |  | n260 | -115.3+Z1 |  | -94.9 | -111.8+Z4 |  |  |  |
|  |  | n261 | -114.3+Z1 | -100.8 | -99.2 | -116.8+Z4 |  |  |  |
| n262 | TBD | TBD | -91.5 | TBD |  |
| NOTE 1: Values based on EIS spherical coverage as defined in clause 7.3.4 of TS 38.101-2 [19]. Side condition applies for directions in which EIS spherical coverage requirement is met.  NOTE 2: Values specified at the Reference point to give minimum SSB Ês/Iot, with no applied noise.  NOTE 3: For UEs that support multiple FR2 bands, Rx Beam Peak values are increased by ∆MBP,n and Spherical coverage values are increased by ∆MBS,n, the UE multi-band relaxation factor in dB specified in clause 6.2.1 of TS 38.101-2 [19]. | | | | | | | | | |

*Editor’s notes for Table B.2.5.2-2:*

*- The value of Y for power classes 1, 4 and 5 is FFS, where Y1, Y4 and Y5 are the rough/fine beam gain differences in Rx beam peak direction for power classes 1, 4 and 5 respectively*

*- The value of Z for power classes 1, 4 and 5 is FFS, where Z1, Z4 and Z5 are the rough/fine beam gain differences in spherical coverage directions for power classes 1, 4 and 5 respectively*

**----------------------END OF CHANGE-3----------------------------**