**3GPP TSG-RAN4 Meeting #100-e *R4-2115150***

**Online Meeting, Aug 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-2** | **CR** | 0425 | **rev** | - | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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:*** | CR to 38.101-2: PC5 requirements in n259 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2021-09-01 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Feature CR to introduce UE RF requirements for PC5 in n259.  Content indentical to that of endorsed draft CR R4-2111905 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce UE RF requirements per agreements captured in endorsed draft CR R4-2111905 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | PC5 is not specified for n259 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1.5, 6.2D.1.5, 6.2.3, 6.2A.3, 6.3.1.3, 6.3A.1.3, 6.3D, 6.6.6.3,7.3.2.5, 7.3.4.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\*\*\* Begin Change \*\*\*

#### 6.2.1.5 UE maximum output power for power class 5

The following requirements define the maximum output power radiated by the UE for any transmission bandwidth within the channel bandwidth for non-CA configuration, unless otherwise stated. The period of measurement shall be at least one sub frame (1ms). The minimum output power values for EIRP are found in Table 6.2.1.5-1. The requirement is verified with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.2.1.5-1: UE minimum peak EIRP for power class 5

|  |  |
| --- | --- |
| Operating band | Min peak EIRP (dBm) |
| n257 | 30 |
| n258 | 30.4 |
| n259 | 27.7 |
| NOTE 1: Minimum peak EIRP is defined as the lower limit without tolerance | |

The maximum output power values for TRP and EIRP are found in Table 6.2.1.5-2 below. The maximum allowed EIRP is derived from regulatory requirements. The requirements are verified with the test metrics of TRP (Link=TX beam peak direction, Meas=TRP grid) in beam locked mode and EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.2.1.5-2: UE maximum output power limits for power class 5

|  |  |  |
| --- | --- | --- |
| Operating band | Max TRP (dBm) | Max EIRP (dBm) |
| n257 | 23 | 43 |
| n258 | 23 | 43 |
| n259 | 23 | 43 |

The minimum EIRP at the 85th percentile of the distribution of radiated power measured over the full sphere around the UE is defined as the spherical coverage requirement and is found in Table 6.2.1.5-3 below. The requirement is verified with the test metric of EIRP (Link=Spherical coverage grid, Meas=Link angle).

Table 6.2.1.4-3: UE spherical coverage for power class 5

|  |  |
| --- | --- |
| Operating band | Min EIRP at 85 %-tile CDF (dBm) |
| n257 | 22 |
| n258 | 22.4 |
| n259 | 19.7 |
| NOTE 1: Minimum EIRP at 85 %-tile CDF is defined as the lower limit without tolerance  NOTE 2: The requirements in this table are verified only under normal temperature conditions as defined in Annex E.2.1. | |

For the UEs that support multiple FR2 bands, minimum requirement for peak EIRP and EIRP spherical coverage in Tables 6.2.1.5-1 and 6.2.1.5-3 shall be decreased per band, respectively, by the peak EIRP relaxation parameter MBP,n and EIRP spherical coverage relaxation parameter MBS,n, as defined in Table 6.2.1.5-4..

Table 6.2.1.5-4: UE multi-band relaxation factors for power class 5

|  |  |  |
| --- | --- | --- |
| **Band** | **MBP,n (dB)** | **MBS,n (dB)** |
| n257 | 0.7 | 0.7 |
| n258 | 0.7 | 0.7 |
| n259 | 0.5 | 0,5 |

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

#### 6.2D.1.5 UE maximum output power for UL MIMO for power class 5

The following requirements define the maximum output power radiated by the PC4 UE. Requirements apply to UEs configured for 2-layer transmission as well as UEs configured for single layer uplink full power transmission (ULFPTx), with configuration per clause 6.2D.1.0.

The minimum peak EIRP requirements are found in Table 6.2D.1.5-1 below. The period of measurement shall be at least one sub frame (1ms). The requirement is verified with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle). Power class 5 UE is used for fixed wireless access (FWA).

Table 6.2D.1.5-1: UE minimum peak EIRP for UL MIMO for power class 5

|  |  |
| --- | --- |
| Operating band | Min peak EIRP (dBm) |
| n257 | 30 |
| n258 | 30.4 |
| n259 | 27.7 |
| NOTE 1: Minimum peak EIRP is defined as the lower limit without tolerance | |

The maximum output power values for TRP and EIRP are found in Table 6.2D.1.5-3 below for UE with UL MIMO. The maximum allowed EIRP is derived from regulatory requirements. The requirements are verified with the test metrics of TRP (Link=TX beam peak direction, Meas=TRP grid) in beam locked mode and EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.2D.1.5-2: UE maximum output power limits for UL MIMO for power class 5

|  |  |  |
| --- | --- | --- |
| Operating band | Max TRP (dBm) | Max EIRP (dBm) |
| n257 | 23 | 43 |
| n258 | 23 | 43 |
| n259 | 23 | 43 |

The minimum EIRP at the 85th percentile of the distribution of radiated power measured over the full sphere around the UE with UL MIMO is defined as the spherical coverage requirement and is found in Table 6.2D.1.5-3 below. The requirement is verified with the test metric of EIRP (Link=Spherical coverage grid, Meas=Link angle).

Table 6.2D.1.5-3: UE spherical coverage for UL MIMO for power class 5

|  |  |
| --- | --- |
| Operating band | Min EIRP at 85 %-tile CDF (dBm) |
| n257 | 22 |
| n258 | 22.4 |
| n259 | 19.7 |
| NOTE 1: Minimum EIRP at 85 %-tile CDF is defined as the lower limit without tolerance | |

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

### 6.2.3 UE maximum output power with additional requirements

#### 6.2.3.1 General

Additional emission requirements can be signalled by the network. Each additional emission requirement is associated with a unique network signalling (NS) value indicated in RRC signalling by an NR frequency band number of the applicable operating band and an associated value in the field additionalSpectrumEmission. Throughout this specification, the notion of indication or signalling of an NS value refers to the corresponding indication of an NR frequency band number of the applicable operating band (the IE field freqBandIndicatorNR) and an associated value of additionalSpectrumEmission in the relevant RRC information elements

To meet these additional requirements, additional maximum power reduction (A-MPR) is allowed for the maximum output power as specified in clause 6.2.1. Unless stated otherwise, an A-MPR of 0 dB shall be used.

Table 6.2.3.1-1 specifies the additional requirements with their associated network signalling values and the allowed A-MPR and applicable operating band(s) for each NS value. The mapping of NR frequency band numbers and values of and the *additionalSpectrumEmission* to network signalling labels is specified in Table 6.2.3.1-2. Unless otherwise stated, the allowed total back off is maximum of A-MPR and MPR specified in clause 6.2.2.

Table 6.2.3.1-1: Additional maximum power reduction (A-MPR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Network Signalling label | Requirements (clause) | NR Band | Channel bandwidth (MHz) | Resources Blocks (*N*RB) | A-MPR (dB) |
| NS\_200 |  |  |  |  | N/A |
| NS\_201 | 6.5.3.2.2 | n258 |  |  | 6.2.3.2 |
| NS\_202 | 6.5.3.2.3 | n257, n258 |  |  | 6.2.3.3 |
| NS\_203 | 6.5.3.2.4 | n258 |  |  | 6.2.3.4 |
| NOTE: NS\_201 is obsolete, the associated additional spurious emission requirements are not applicable. | | | | | |

Table 6.2.3.1-2: Mapping of Network Signaling label

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band | Value of additionalSpectrumEmission | | | | | | | |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| n257 | NS\_200 | NS\_202 |  |  |  |  |  |  |
| n258 | NS\_200 | NS\_201 | NS\_202 | NS\_203 |  |  |  |  |
| n259 | NS\_200 |  |  |  |  |  |  |  |
| n260 | NS\_200 |  |  |  |  |  |  |  |
| n261 | NS\_200 |  |  |  |  |  |  |  |
| NOTE 1: additionalSpectrumEmission corresponds to an information element of the same name defined in sub-clause 6.3.2 of TS 38.331 [13].  NOTE 2: NS\_201 is obsolete, the associated additional spurious emission requirements are not applicable. | | | | | | | | |

#### 6.2.3.2 Void

##### 6.2.3.2.1 Void

Table 6.2.3.2.1-1: (Void)

##### 6.2.3.2.2 Void

Table 6.2.3.2.2-1: (Void)

##### 6.2.3.2.3 Void

Table 6.2.3.2.3-1: (Void)

##### 6.2.3.2.4 Void

##### 6.2.3.2.5 Void

#### 6.2.3.3 A-MPR for NS\_202

##### 6.2.3.3.1 A-MPR for NS\_202 for power class 1

For power class 1, A-MPR for NS\_202 shall be 11.0 dB.

##### 6.2.3.3.2 A-MPR for NS\_202 for power class 2

For power class 2, A-MPR for NS\_202 specified in clause 6.2.3.3.3 applies.

##### 6.2.3.3.3 A-MPR for NS\_202 for power class 3

For power class 3, A-MPR for NS\_202 shall be 1.0 dB.

##### 6.2.3.3.4 A-MPR for NS\_202 for power class 4

For power class 4, A-MPR for NS\_202 specified in clause 6.2.3.3.3 applies.

##### 6.2.3.3.5 A-MPR for NS\_202 for power class 5

For power class 5, A-MPR for NS\_202 specified in clause 6.2.3.3.3 applies.

#### 6.2.3.4 A-MPR for NS\_203

##### 6.2.3.4.1 A-MPR for NS\_203 for power class 1

For power class 1, A-MPR for NS\_203 shall be 3.0 dB if Offset frequency < BWchannel, 0.0 dB otherwise.   
The Offset frequency is defined as the frequency from 24.25 GHz to the lower edge of the channel bandwidth.

##### 6.2.3.4.2 A-MPR for NS\_203 for power class 2

For power class 2, AMPR for NS\_203 specified in subclause 6.2.3.4.3 applies.

##### 6.2.3.4.3 A-MPR for NS\_203 for power class 3

For power class 3, AMPR for NS\_203 shall be 0 dB.

##### 6.2.3.4.4 A-MPR for NS\_203 for power class 4

For power class 4, AMPR for NS\_203 specified in subclause 6.2.3.4.3 applies.

##### 6.2.3.4.5 A-MPR for NS\_203 for power class 5

For power class 5, AMPR for NS\_203 specified in subclause 6.2.3.4.3 applies.

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

### 6.2A.3 UE maximum output power with additional requirements for CA

#### 6.2A.3.1 General

Additional emission requirements can be signalled by the network with network signalling value indicated by the field *additionalSpectrumEmission.* To meet these additional requirements, additional maximum power reduction (A-MPR) is allowed for the maximum output power as specified in clause 6.2A.1. Unless stated otherwise, an A-MPR of 0 dB shall be used. Unless otherwise stated, the allowed total back off is maximum of A-MPR and MPR specified in clause 6.2A.2.

For intra-band contiguous aggregation with the UE configured for transmissions on two serving cells, the maximum output power reduction specified in Table 6.2A.3.1-1 is allowed for all serving cells of the applicable uplink contiguous CA configurations according to the CA network signalling value indicated by the field *additionalSpectrumEmissionSCell*.

Table 6.2A.3.1-1 specifies the additional requirements and allowed A-MPR with corresponding network signalling label and operating band. The mapping between network signalling labels and the *additionalSpectrumEmission* IE defined in TS 38.331 [13] is specified in Table 6.2A.3.1-2. Unless otherwise stated, the allowed total back off is maximum of A-MPR and MPR specified in clause 6.2A.2.

Table 6.2A.3.1-1: Additional maximum power reduction (A-MPR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Network Signalling value | Requirements (clause) | NR Band | Channel bandwidth (MHz) | Resources Blocks (*N*RB) | A-MPR (dB) |
| CA\_NS\_200 |  |  |  |  | N/A |
| CA\_NS\_201 | 6.5.3.2.2 | n258 |  |  | 6.2A.3.2 |
| CA\_NS\_202 | 6.5.3.2.3 | n257, n258 |  |  | 6.2A.3.3 |
| CA\_NS\_203 | 6.5.3.2.4 | n258 |  |  | 6.2A.3.4 |
| NOTE: CA\_NS\_201 is obsolete, the associated additional spurious emission requirements are not applicable. | | | | | |

Table 6.2A.3.1-2: Value of additionalSpectrumEmission

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band | Value of additionalSpectrumEmission / NS number | | | | | | | |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| n257 | CA\_NS\_200 | CA\_NS\_202 |  |  |  |  |  |  |
| n258 | CA\_NS\_200 | CA\_NS\_201 | CA\_NS\_202 | CA\_NS\_203 |  |  |  |  |
| n259 | CA\_NS\_200 |  |  |  |  |  |  |  |
| n260 | CA\_NS\_200 |  |  |  |  |  |  |  |
| n261 | CA\_NS\_200 |  |  |  |  |  |  |  |
| NOTE 1: additionalSpectrumEmission corresponds to an information element of the same name defined in clause 6.3.2 of TS 38.331 [13].  NOTE 2: CA\_NS\_201 is obsolete, the associated additional spurious emission requirements are not applicable. | | | | | | | | |

#### 6.2A.3.2 Void

##### 6.2A.3.2.1 Void

Table 6.2A.3.2.1-1: (Void)

##### 6.2A.3.2.2 Void

Table 6.2A.3.2.2-1: (Void)

##### 6.2A.3.2.3 Void

Table 6.2A.3.2.3-1: Void

##### 6.2A.3.2.4 Void

6.2A.3.2.5 Void

#### 6.2A.3.3 A-MPR for CA\_NS\_202

##### 6.2A.3.3.1 A-MPR for CA\_NS\_202 for power class 1

For intra-band contiguous CA, A-MPR for CA\_NS\_202 shall be 11.0 dB.

##### 6.2A.3.3.2 A-MPR for CA\_NS\_202 for power class 2

For intra-band contiguous CA, A-MPR for CA\_NS\_202 specified in sub-clause 6.2A.3.3.3 applies.

##### 6.2A.3.3.3 A-MPR for CA\_NS\_202 for power class 3

For intra-band contiguous CA, A-MPR for CA\_NS\_202 shall be 2.0 dB.

##### 6.2A.3.3.4 A-MPR for CA\_NS\_202 for power class 4

For intra-band contiguous CA, A-MPR for CA\_NS\_202 specified in sub-clause 6.2A.3.3.3 applies.

##### 6.2A.3.3.5 A-MPR for CA\_NS\_202 for power class 5

For intra-band contiguous CA, A-MPR for CA\_NS\_202 specified in sub-clause 6.2A.3.3.3 applies.

#### 6.2A.3.4 A-MPR for CA\_NS\_203

##### 6.2A.3.4.1 A-MPR for CA\_NS\_203 for power class 1

For intra-band contiguous CA, A-MPR for CA\_NS\_203 shall be 6.5 dB, if Offset frequency < BWChannel\_CA of the UL CA configuration, 0.0 dB, otherwise  
The Offset frequency is defined as the frequency from 24.25 GHz to the lower edge of the lowest CC among the configured UL CA.

##### 6.2A.3.4.2 A-MPR for CA\_NS\_203 for power class 2

For intra-band contiguous CA, AMPR specified in sub-clause 6.2A.3.4.3 applies.

##### 6.2A.3.4.3 A-MPR for CA\_NS\_203 for power class 3

For intra-band contiguous CA, A-MPR for CA\_NS\_203 shall be 2.5 dB, if Offset frequency < BWChannel\_CA of the UL CA configuration, 0.0 dB otherwise.   
The Offset frequency is defined as the frequency from 24.25 GHz to to the lower edge of the lowest CC among the configured UL CA.

##### 6.2A.3.4.4 A-MPR for CA\_NS\_203 for power class 4

For intra-band contiguous CA, AMPR specified in sub-clause 6.2A.3.4.3 applies.

##### 6.2A.3.4.5 A-MPR for CA\_NS\_203 for power class 5

For intra-band contiguous CA, AMPR specified in sub-clause 6.2A.3.4.3 applies.

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

#### 6.3.1.3 Minimum output power for power class 5

The minimum output power shall not exceed the values specified in Table 6.3.1.3-1 for each operating band supported. The minimum power is verified in beam locked mode with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.3.1.3-1: Minimum output power for power class 5

|  |  |  |  |
| --- | --- | --- | --- |
| Operating band | Channel bandwidth  (MHz) | Minimum output power  (dBm) | Measurement bandwidth  (MHz) |
| n257, n258, n259 | 50 | -6 | 47.52 |
| 100 | -6 | 95.04 |
| 200 | -6 | 190.08 |
| 400 | -6 | 380.16 |

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

#### 6.3A.1.3 Minimum output power for power class 5

The minimum output power shall not exceed the values specified in Table 6.3A.1.3-1 for each operating band supported. The minimum power is verified in beam locked mode with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

Table 6.3A.1.2-1: Minimum output power for CA for power class 5

|  |  |  |  |
| --- | --- | --- | --- |
| Operating band | Channel bandwidth  (MHz) | Minimum output power  (dBm) | Measurement bandwidth  (MHz) |
| n257, n258, n259 | 50 | -6 | 47.52 |
| 100 | -6 | 95.04 |
| 200 | -6 | 190.08 |
| 400 | -6 | 380.16 |

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

## 6.3D Output power dynamics for UL MIMO

### 6.3D.1 Minimum output power for UL MIMO

6.3D.1.0 General

The minimum output power is defined as the mean power in at least one sub frame (1ms).

#### 6.3D.1.1 Minimum output power for UL MIMO for power class 1

For UE supporting UL MIMO, the minimum controlled output power is defined as the EIRP, i.e. the sum of the power in the channel bandwidth for all transmit bandwidth configurations (resource blocks), when the UE power is set to a minimum value. The minimum output power shall not exceed the values specified in Table 6.3.1.1-1. The minimum power is verified in beam locked mode with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

#### 6.3D.1.2 Minimum output power for UL MIMO for power class 2, 3 and 4

For UE supporting UL MIMO, the minimum controlled output power is defined as the EIRP, i.e. the sum of the power in the channel bandwidth for all transmit bandwidth configurations (resource blocks), when the UE power is set to a minimum value. The minimum output power shall not exceed the values specified in Table 6.3.1.2-1. The minimum power is verified in beam locked mode with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

#### 6.3D.1.3 Minimum output power for UL MIMO for power class 5

For UE supporting UL MIMO, the minimum controlled output power is defined as the EIRP, i.e. the sum of the power in the channel bandwidth for all transmit bandwidth configurations (resource blocks), when the UE power is set to a minimum value. The minimum output power shall not exceed the values specified in Table 6.3.1.3-1. The minimum power is verified in beam locked mode with the test metric of EIRP (Link=TX beam peak direction, Meas=Link angle).

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

#### 6.6.6.3 Side Conditions

##### 6.6.6.3.1 Side Condition for beam correspondence based on SSB and CSI-RS

The beam correspondence requirements are only applied under the following side conditions:

- The downlink reference signals including both SSB and CSI-RS are provided and Type D QCL shall be maintained between SSB and CSI-RS.

- The reference measurement channel for beam correspondence are fulfilled according to the CSI-RS configuration in Annex A.3.

- For beam correspondence, conditions for L1-RSRP measurements are fulfilled according to Table 6.6.6.3.1-1 and Table 6.6.6.3.1-2.

Table 6.6.6.3.1-1: Conditions for SSB based L1-RSRP measurements for beam correspondence

|  |  |  |  |
| --- | --- | --- | --- |
| Angle of arrival | NR operating bands | Minimum SSB\_RP Note 2 | SSB Ês/Iot |
|  |  | dBm / SCSSSB | dB |
|  |  | SCSSSB = 120 kHz |  |
| All angles **Note 1** | n257 | -103.6 | ≥6 |
|  | n258 | -103.6 |
|  | n259 | -100.5 |  |
| NOTE 1: For UEs that support multiple FR2 bands, the Minimum SSB\_RP values for all angles are increased by ΔMBS, the UE multi-band relaxation factor in dB specified in clause 6.2.1.5  NOTE 2: Values specified at the radiated requirements reference point to give minimum SSB Ês/Iot, with no applied noise. | | | |

Table 6.6.6.3.1-2: Conditions for CSI-RS based L1-RSRP measurements for beam correspondence

|  |  |  |  |
| --- | --- | --- | --- |
| Angle of arrival | NR operating bands | Minimum CSI-RS\_RP Note 2 | CSI-RS Ês/Iot |
|  |  | dBm / SCSCSI-RS | dB |
|  |  | SCSCSI-RS = 120 kHz |  |
| All angles **Note 1** | n257 | -103.6 | ≥6 |
|  | n258 | -103.6 |  |
|  | n259 | -100.5 |  |
| NOTE 1: For UEs that support multiple FR2 bands, the Minimum CSI-RS\_RP values are increased by ΔMBS, the UE multi-band relaxation factor in dB specified in clause 6.2.1.5  NOTE 2: Values specified at the radiated requirements reference point to give minimum CSI-RS Ês/Iot, with no applied noise. | | | |

##### 6.6.6.3.2 Side Condition for SSB based enhanced Beam Correspondence requirements

The beam correspondence requirements for beam correspondence based on SSB are only applied under the following side conditions:

- The downlink reference signal SSB is provided and CSI-RS is not provided.

- For beam correspondence, conditions for L1-RSRP measurements are fulfilled according to Table 6.6.6.3.1-1.

##### 6.6.6.3.3 Side Condition for CSI-RS based enhanced Beam Correspondence requirements

The beam correspondence requirements for beam correspondence based on CSI-RS are only applied under the following side conditions:

- The downlink reference signals including both SSB and CSI-RS are provided.

- The reference measurement channel for beam correspondence are fulfilled according to the CSI-RS configuration in Annex A.3.

- For beam correspondence, conditions for L1-RSRP measurements are fulfilled according to Table 6.6.4.3.1-2 and SSB signal is provided according to Table 6.6.6.3.3-1.

Table 6.6.6.3.3-1: SSB signal conditions for CSI-RS based beam correspondence requirements

|  |  |  |  |
| --- | --- | --- | --- |
| Angle of arrival | NR operating bands | Minimum SSB\_RP Note 2 | SSB Ês/Iot |
|  |  | dBm / SCSSSB | dB |
|  |  | SCSSSB = 120 kHz |  |
| All angles **Note 1** | n257 | -108.6 | ≥1 |
|  | n258 | -108.6 |  |
|  | n259 | -105.5 |  |
| NOTE 1: For UEs that support multiple FR2 bands, the Minimum SSB\_RP values for all angles are increased by ΔMBS, the UE multi-band relaxation factor in dB specified in clause 6.2.1.5  NOTE 2: Values specified at the radiated requirements reference point to give minimum SSB Ês/Iot, with no applied noise. | | | |

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

#### 7.3.2.5 Reference sensitivity power level for power class 5

The throughput shall be ≥ 95% of the maximum throughput of the reference measurement channels as specified in Annexes A.2.3.2 and A.3.3.2 (with one sided dynamic OCNG Pattern OP.1 TDD for the DL-signal as described in Annex A.5.2.1) with peak reference sensitivity specified in Table 7.3.2.5-1. The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link Angle).

Table 7.3.2.5-1: Reference sensitivity for power class 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating band | REFSENS (dBm) / Channel bandwidth | | | |
| 50 MHz | 100 MHz | 200 MHz | 400 MHz |
| n257 | -92.6 | -89.6 | -86.6 | -83.6 |
| n258 | -92.8 | -89.8 | -86.8 | -83.8 |
| n259 | -89.7 | -86.7 | -83.7 | -80.7 |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4 | | | | |

The REFSENS requirement shall be met for an uplink transmission using QPSK DFT-s-OFDM waveforms and for uplink transmission bandwidth less than or equal to that specified in Table 7.3.2.1-2.

Unless given by Table 7.3.2.1-3, the minimum requirements for reference sensitivity shall be verified with the network signalling value NS\_200 (Table 6.2.3-1) configured.

\*\*\* End Change \*\*\*

\*\*\* Begin Change \*\*\*

7.3.4.5 EIS spherical coverage for power class 5

The reference measurement channels and throughput criterion shall be as specified in clause 7.3.2.4

The maximum EIS at the 85th percentile of the CCDF of EIS measured over the full sphere around the UE is defined as the spherical coverage requirement and is found in Table 7.3.4.5-1 below. The requirement is verified with the test metric of EIS (Link=Spherical coverage grid, Meas=Link angle).

Table 7.3.4.5-1: EIS spherical coverage for power class 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Operating band** | **EIS at 85th %-tile CCDF (dBm) / Channel bandwidth** | | | |
| **50 MHz** | **100 MHz** | **200 MHz** | **400 MHz** |
| n257 | -84.6 | -81.6 | -78.6 | -75.6 |
| n258 | -84.8 | -81.8 | -78.8 | -75.8 |
| n259 | -81.7 | -78.7 | -75.7 | -72.7 |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: The EIS spherical coverage requirements are verified only under normal thermal conditions as defined in Annex E.2.1. | | | | |

The requirement shall be met for an uplink transmission using QPSK DFT-s-OFDM waveforms and for uplink transmission bandwidth less than or equal to that specified in Table 7.3.2.1-2.

Unless given by Table 7.3.2.1-3, the minimum requirements for reference sensitivity shall be verified with the network signalling value NS\_200 (Table 6.2.3-1) configured.

\*\*\* End Change \*\*\*