**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **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 |  | Radio Access Network | **X** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | [NR\_FR1\_lessthan\_5MHz\_BW-Perf] BigCR on Demodulation requirements for less than 5MHz for TS 38.104 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Inclusion of Less Than 5MHz Spectrum Performance Requirements to TS 38.104 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | From R4-2404124:  Changes to PUCCH section 8.3.4 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Less Than 5MHz Rel 18 will not be included in 38.104 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.3.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.141-1, TS 38.141-2 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of R4-2407131 | | | | | | | | |

***<Start of change 1>***

#### 8.3.4.2 UCI BLER performance requirements

##### 8.3.4.2.1 General

The UCI block error probability (BLER) is defined as the probability of incorrectly decoding the UCI information when the UCI information is sent. The UCI information does not contain CSI part 2.

The transient period as specified in TS 38.101-1 [17] clause 6.3.3.1 is not taken into account for performance requirement testing, where the RB hopping is symmetric to the CC centre, i.e. intra-slot frequency hopping is enabled.

The UCI block error probability performance requirement only applies to the PUCCH format 2 with 22 UCI bits.

Table 8.3.4.2.1-1: Test Parameters

|  |  |
| --- | --- |
| Parameter | Value |
| Modulation order | QSPK |
| First PRB prior to frequency hopping | 0 |
| Intra-slot frequency hopping | enabled |
| Frist PRB after frequency hopping | The largest PRB index – (Number of PRBs – 1) (Note 1) |
| Number of PRBs | 9 |
| Number of symbols | 2 |
| The number of UCI information bits | 22 |
| First symbol | 12 |
| DM-RS sequence generation | *NID*0=0 |
| Note 1 : For 3MHz, the first PRB after frequency hopping is 3. | |

##### 8.3.4.2.2 Minimum requirements

The UCI block error probability shall not exceed 1% at the SNR given in table 8.3.4.2.2-1 and table 8.3.4.2.2-2 for 22 UCI bits.

Table 8.3.4.2.2-1: Minimum requirements for PUCCH format 2 with 15 kHz SCS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of | Number of | Cyclic Prefix | Propagation | Channel bandwidth / SNR (dB) | | | |
| TX antennas | RX antennas |  | conditions and correlation matrix (Annex G) | 3 MHz | 5 MHz | 10 MHz | 20 MHz |
|  | 2 | Normal | TDLC300-100 Low | [1.5] | 0.2 | 0.8 | 1.2 |
| 1 | 4 | Normal | TDLC300-100 Low | [-3.2] | -3.6 | -3.2 | -3.2 |
|  | 8 | Normal | TDLC300-100 Low | [-6.8] | -6.8 | -6.7 | -6.8 |

Table 8.3.4.2.2-2: Minimum requirements for PUCCH format 2 with 30 kHz SCS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of | Number of | Cyclic Prefix | Propagation | Channel bandwidth / SNR (dB) | | | |
| TX antennas | RX antennas |  | conditions and correlation matrix (Annex G) | 10 MHz | 20 MHz | 40 MHz | 100 MHz |
|  | 2 | Normal | TDLC300-100 Low | 0.5 | 1.1 | 0.4 | 0.3 |
| 1 | 4 | Normal | TDLC300-100 Low | -3.3 | -2.9 | -3.3 | -3.4 |
|  | 8 | Normal | TDLC300-100 Low | -5.8 | -5.8 | -6.7 | -5.9 |

***<End of change 1>***