**3GPP TSG- Meeting #**

**Fukuoka, Japan, 20 – 24 May 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  |
| *For* [***HELP***](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:***  | draftCR to TS 38.174 addition of FRCs for mIAB-MT demod requirements |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_mobile\_IAB-Core |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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 canbe 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:*** | Add applicability requirements and FRCs in the core spec for mIAB-MT demod requirements based on the agreed test cases in R4-2406058. Endorsed CR R4-2406053 from RAN4#110-bis is included.  |
|  |  |
| ***Summary of change:*** | Addition applicability requirements and FRCs for the new test cases introduced for mIAB-MT demod requirements.  |
|  |  |
| ***Consequences if not approved:*** | Core specification will have incomplete mIAB-MT demod requirements. |
|  |  |
| ***Clauses affected:*** | 4.6, 4.12, 6.3.3, 9.4.3New clauses: 4.6B, A.3B |
|  |  |
|  | **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 >**

## 4.6 Applicability of requirements

In table 4.6-1, the requirement applicability for each *requirement set* of IAB-DUs and mIAB-DUs is defined. In table 4.6-2, the requirement applicability for each *requirement set* of IAB-MTs and mIAB-MTs is defined. For each requirement, the applicable requirement clause in the specification is identified. Requirements not included in a *requirement set* is marked not applicable (NA).

Table 4.6-1: *Requirement set* applicability for IAB-DUs

|  |  |  |  |
| --- | --- | --- | --- |
| Requirement | *IAB-DU type 1-H* | *IAB-DU type 1-O* | *IAB-DU type 2-O* |
| Output power | 6.2 | NA | NA |
| Output power dynamics  | 6.3 |  |  |
| Transmit ON/OFF power  | 6.4 |  |  |
| Transmitted signal quality | 6.5 |  |  |
| Occupied bandwidth | 6.6.2 |  |  |
| ACLR | 6.6.3 |  |  |
| Operating band unwantedemissions | 6.6.4 |  |  |
| Transmitter spurious emissions | 6.6.5 |  |  |
| Transmitter intermodulation  | 6.7 |  |  |
| Reference sensitivity level | 7.2 |  |  |
| Dynamic range  | 7.3 |  |  |
| In-band selectivity and blocking  | 7.4 |  |  |
| Out-of-band blocking  | 7.5 |  |  |
| Receiver spurious emissions  | 7.6 |  |  |
| Receiver intermodulation | 7.7 |  |  |
| In-channel selectivity  | 7.8 |  |  |
| Performance requirements | 8 |  |  |
| Radiated transmit power | 9.2 | 9.2 | 9.2 |
| OTA Output power | NA | 9.3 | 9.3 |
| OTA output power dynamics |  | 9.4 | 9.4 |
| OTA transmit ON/OFF power |  | 9.5 | 9.5 |
| OTA transmitted signal quality |  | 9.6 | 9.6 |
| OTA occupied bandwidth |  | 9.7.2 | 9.7.2 |
| OTA ACLR |  | 9.7.3 | 9.7.3 |
| OTA out-of-band emission |  | 9.7.4 | 9.7.4 |
| OTA transmitter spurious emission  |  | 9.7.5 | 9.7.5 |
| OTA transmitter intermodulation  |  | 9.8 | NA |
| OTA sensitivity | 10.2 | 10.2 | NA |
| OTA reference sensitivity level | NA | 10.3 | 10.3 |
| OTA dynamic range |  | 10.4 | NA |
| OTA in-band selectivity and blocking |  | 10.5 | 10.5 |
| OTA out-of-band blocking |  | 10.6 | 10.6 |
| OTA receiver spurious emission  |  | 10.7 | 10.7 |
| OTA receiver intermodulation |  | 10.8 | 10.8 |
| OTA in-channel selectivity |  | 10.9 | 10.9 |
| Radiated performance requirements |  | 11 | 11 |

Table 4.6-2: *Requirement set* applicability for IAB-MTs

|  |  |  |  |
| --- | --- | --- | --- |
| Requirement | *IAB-MT type 1-H* | *IAB-MT type 1-O* | *IAB-MT type 2-O* |
| Output power | 6.2 | NA | NA |
| Output power dynamics  | 6.3 |  |  |
| Transmit ON/OFF power  | 6.4 |  |  |
| Transmitted signal quality | 6.5 |  |  |
| Occupied bandwidth | 6.6.2 |  |  |
| ACLR | 6.6.3 |  |  |
| Operating band unwantedemissions | 6.6.4 |  |  |
| Transmitter spurious emissions | 6.6.5 |  |  |
| Transmitter intermodulation  | 6.7 |  |  |
| Reference sensitivity level | 7.2 |  |  |
| Dynamic range  | NA |  |  |
| In-band selectivity and blocking  | 7.4 |  |  |
| Out-of-band blocking  | 7.5 |  |  |
| Receiver spurious emissions  | 7.6 |  |  |
| Receiver intermodulation | 7.7 |  |  |
| In-channel selectivity  | NA |  |  |
| Performance requirements | 8 |  |  |
| Radiated transmit power | 9.2 | 9.2 | 9.2 |
| OTA Output power | NA | 9.3 | 9.3 |
| OTA output power dynamics |  | 9.4 | 9.4 |
| OTA transmit ON/OFF power |  | 9.5 | 9.5 |
| OTA transmitted signal quality |  | 9.6 | 9.6 |
| OTA occupied bandwidth |  | 9.7.2 | 9.7.2 |
| OTA ACLR |  | 9.7.3 | 9.7.3 |
| OTA out-of-band emission |  | 9.7.4 | 9.7.4 |
| OTA transmitter spurious emission  |  | 9.7.5 | 9.7.5 |
| OTA transmitter intermodulation  |  | 9.8 | NA |
| OTA sensitivity | 10.2 | 10.2 | NA |
| OTA reference sensitivity level | NA | 10.3 | 10.3 |
| OTA dynamic range |  | NA | NA |
| OTA in-band selectivity and blocking |  | 10.5 | 10.5 |
| OTA out-of-band blocking |  | 10.6 | 10.6 |
| OTA receiver spurious emission  |  | 10.7 | 10.7 |
| OTA receiver intermodulation |  | 10.8 | NA |
| OTA in-channel selectivity |  | NA | NA |
| Radiated performance requirements |  | 11 | 11 |

## 4.6B Applicability of performance requirements for mIAB-MT and mIAB-DU

The performance requirements in clauses 8 and 11 for IAB-DU shall apply to mIAB-DU.

The performance requirements in Suffix B in clauses 8 and 11 shall apply to mIAB-MT.

**< Next change >**

## 4.12 Specification suffix information

Unless stated otherwise, the suffix shown in Table 4.12-1 is used for indicating the clause for mobile-IAB node.

Table 4.12-1: Definition of suffixes

|  |  |
| --- | --- |
| Clause suffix | Variant |
| B | Mobile IAB-node |

An IAB-node which supports the mobile feature needs to meet both the general requirements of local area IAB-MT and the additional requirement applicable to the additional clause (suffixes B) in clauses 5, 6, 7, 9, 10, and 12. Where there is a difference in requirement between the general requirements and the additional clause requirements (suffixes B) in clauses 5, 6, 7, 9,10 and 12, the tighter requirements are applicable unless stated otherwise in the additional clause. Requirements given in additional clause (Suffix B) in clauses 8 and 11 are only applicable to mIAB-MTs.

**< Next change >**

## A.3.B mIAB-MT Fixed Reference Channels

### A.3B.1 Fixed Reference Channels for PDSCH performance requirements (QPSK)

The parameters for the reference measurement channels are specified in table A.3B.1-1 for FR1 mIAB-MT PDSCH performance requirements.

Table A.3B.1-1: FRC parameters for mIAB-MT FR1 PDSCH performance requirements, QPSK

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR1-A.3B.1.1 |
| Channel bandwidth | MHz | 40 |
| Subcarrier spacing | kHz | 30 |
| Allocated resource blocks | PRBs | 106 |
| MCS table |  | 64QAM |
| MCS index |  | 4 |
| Modulation |  | QPSK |
| Target Coding Rate |  | 0.30 |
| Number of MIMO layers |  | 1 |
| Number of DMRS REs |  | [18] |
| Overhead for TBS determination |  | 0 |
| Information Bit Payload per Slot  |  | [2664] |
| Transport block CRC per Slot |  | [24] |
| Number of Code Blocks per Slot |  | [1] |
| Binary Channel Bits Per Slot |  | [25440] |
| Max. Throughput averaged over 2 frames | Mbps | [11.419] |

### A.3B.2 Fixed Reference Channels for PDSCH performance requirements (16QAM)

The parameters for the reference measurement channels are specified in table A.3B.2-1 for FR1 mIAB-MT PDSCH performance requirements.

The parameters for the reference measurement channels are specified in table A.3B.2-2 for FR2-1 mIAB-MT PDSCH performance requirements.

Table A.3B.2-1: : FRC parameters for mIAB-MT FR1 PDSCH performance requirements, 16-QAM

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR1-A.3B.2.1 |
| Channel bandwidth | MHz | 40 |
| Subcarrier spacing | kHz | 30 |
| Allocated resource blocks | PRBs | 106 |
| Number of consecutive PDSCH symbols |  | [4] |
| Allocated slots per 2 frames |  | 31 |
| MCS table |  | 64QAM |
| MCS index |  | 13 |
| Modulation |  | 16QAM |
| Target Coding Rate |  | 0.48 |
| Number of MIMO layers |  | 1 |
| Number of DMRS Res |  | [6] |
| Overhead for TBS determination |  | 0 |
| Information Bit Payload per Slot  |  | [8456] |
| Transport block CRC per Slot |  | [24] |
| Number of Code Blocks per Slot |  | [2] |
| Binary Channel Bits Per Slot |  | [53424] |
| Max. Throughput averaged over 2 frames | Mbps | 37.644 |

Table A.3B.2-2: FRC parameters for mIAB-MT FR2-1 PDSCH performance requirements, 16-QAM

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR2-A.3B.2.2 |
| Channel bandwidth | MHz | 100 |
| Subcarrier spacing | kHz | 120 |
| Allocated resource blocks | PRBs | 66 |
| Number of consecutive PDSCH symbols |  | [9] |
| Allocated slots per 2 frames |  | 127 |
| MCS table |  | 64QAM |
| MCS index |  | 13 |
| Modulation |  | 16QAM |
| Target Coding Rate |  | 0.48 |
| Number of MIMO layers |  | 2 |
| Number of DMRS REs |  | [12] |
| Overhead for TBS determination |  | 6 |
| Information Bit Payload per Slot  |  | [22536] |
| Transport block CRC per Slot |  | [24] |
| Number of Code Blocks per Slot |  | [3] |
| Binary Channel Bits Per Slot |  | [69960] |
| Max. Throughput averaged over 2 frames | Mbps | 201.434 |

### A.3B.3 Fixed Reference Channels for PDSCH performance requirements (64QAM)

The parameters for the reference measurement channels are specified in table A.3B.3-1 for FR2-1 mIAB-MT PDSCH performance requirements.

Table A.3B.3-1: FRC parameters for mIAB-MT FR2-1 PDSCH performance requirements, 64-QAM

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR2-A.3B.3.1 |
| Channel bandwidth | MHz | 100 |
| Subcarrier spacing | kHz | 120 |
| Allocated resource blocks | PRBs | 66 |
| Number of consecutive PDSCH symbols |  | [13] |
| For Slots 0 and Slot i, if mod(i, 5) = 4 for i from {0,…,159} |  | N/A |
|  For Slots i = 80, 81 |  | 13 |
|  For Slot i, if mod(i, 5) = 3 for i from {0,…, 159} |  | 9 |
|  For Slot i, if mod(i, 5) = {0,1,2} for i from {1,…,159} |  | 13 |
| Allocated slots per 2 frames |  | 127 |
| MCS table |  | 64QAM |
| MCS index |  | 18 |
| Modulation |  | 64QAM |
| Target Coding Rate |  | 0.46 |
| Number of MIMO layers |  | 1 |
| Number of DMRS REs |  | [12] |
| Overhead for TBS determination |  | 6 |
| Information Bit Payload per Slot  |  | [251904] |
| Transport block CRC per Slot |  | [24] |
| Number of Code Blocks per Slot |  | [3] |
| Binary Channel Bits Per Slot |  | [52470] |
| Max. Throughput averaged over 2 frames | Mbps | 145.062 |

### A.3B.4 Fixed Reference Channels for PDCCH performance requirements

The parameters for the reference measurement channels are specified in table A.3B.4-1 for FR1 mIAB-MT PDCCH performance requirements.

The parameters for the reference measurement channels are specified in table A.3B.4-2 for FR2-1 mIAB-MT PDCCH performance requirements.

Table A.3B.4-1: FR1 PDCCH Reference Channels (Time domain allocation 1 symbol)

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR1-A.3B.4.1-1 | M-FR1-A.3B.4.1-2 |
| Subcarrier spacing | kHz | 30 | 30 |
| CORESET frequency domain allocation |  | 102 | 90 |
| CORESET time domain allocation |  | 1 | 1 |
| Aggregation level |  | 4 | 8 |
| DCI Format |  | 1\_1 | 1\_1 |
| Payload (without CRC) | Bits | 53 | 53 |

Table A.3B.4-2: FR2-1 PDCCH Reference Channels (Time domain allocation 1 symbol)

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | M-FR2-A.3B.4.2 |
| Subcarrier spacing | kHz | 120 |
| CORESET frequency domain allocation |  | 60 |
| CORESET time domain allocation |  | 1 |
| Aggregation level |  | 4 |
| DCI Format |  | 1\_1 |
| Payload (without CRC) | Bits | 56 |

### A.3B.4 Reference measurement channels for PBCH demodulation requirements

#### A.3B.4.1 Reference measurement channels for FR1

Table A.3B.4.1-1: PBCH Reference Channel

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channel |  | R.PBCH.2 |
| SS/PBCH block subcarrier spacing | kHz | 30 |
| Modulation |  | QPSK |
| Target coding rate |  | 56/864 |
| Payload (without CRC and timing related PBCH payload bits) | bits | 24 |

#### A.3B.4.2 Reference measurement channels for FR2

Table A.3B.4.2-1: PBCH Reference Channel

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Reference channels |  | R.PBCH.5 |
| SS/PBCH block subcarrier spacing | kHz | 120 |
| Modulation |  | QPSK |
| Target coding rate |  | 56/864 |
| Payload (without CRC and timing related PBCH payload bits) | bits | 24 |

**< End of change >**