**3GPP TSG-RAN4 Meeting #99-e *8754***

 **Online, 19th May – 27th May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-4** | **CR** | **0177** | **rev** | **1** | **Current version:** | **15.9.0** |  |
|  |
| *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 the definition of explicitly HARQ feedback timing in DCI format 1\_0 for PDCCH demodulation tests |
|  |  |
| ***Source to WG:*** | Anritsu corporation |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Perf |  | ***Date:*** | 2021-05-25 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-15 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | PDCCH Demodulation testcase requirements does not define a particular K1 value for HARQ feedback timing for PDSCH. |
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| ***Summary of change:*** | Added “The number of slots between PDSCH and corresponding HARQ-ACK information” as common test parameter. |
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| ***Consequences if not approved:*** | Test implementations for each test environment would not be standardization. |
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| ***Clauses affected:*** | 5.3, 7.3**Isolated impact analysis:**No change to UE requirements, changes test parameters only. |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.521-4  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Revised from R4-2108846.  |

<<Unchaged sections skipped>>

<<Start of change>>

## 5.3 PDCCH demodulation requirements

The receiver characteristics of the PDCCH are determined by the probability of miss-detection of the Downlink Scheduling Grant (Pm-dsg).

The parameters specified in Table 5.3-1 are valid for all PDCCH tests unless otherwise stated.

Table 5.3-1: Common test Parameters

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Carrier configuration | Offset between Point A and the lowest usable subcarrier on this carrier (Note 1) |  | 0 |
| DL BWP configuration #1 | Cyclic prefix |  | Normal |
| RB offset | RBs | 0 |
| Common serving cell parameters | Physical Cell ID |  | 0 |
| SSB position in burst |  | 1 |
| SSB periodicity | ms | 20 |
| PDCCH configuration | Slots for PDCCH monitoring |  | Each slot |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| CSI-RS for tracking | First subcarrier index in the PRB used for CSI-RS (*k0*) |  | 0 |
| First OFDM symbol in the PRB used for CSI-RS (*l0*) |  | CSI-RS resource 1: 4CSI-RS resource 2: 8CSI-RS resource 3: 4CSI-RS resource 4: 8 |
| Number of CSI-RS ports (*X*) |  | 1 |
| CDM Type |  | No CDM |
| Density (*ρ*) |  | 3 |
| CSI-RS periodicity | Slots | 15 kHz SCS: 2030 kHz SCS: 40 |
| CSI-RS offset | Slots | 15 kHz SCS:10 for CSI-RS resource 1 and 211 for CSI-RS resource 3 and 430 kHz SCS:20 for CSI-RS resource 1 and 221 for CSI-RS resource 3 and 4 |
| Frequency Occupation |  | Start PRB 0Number of PRB = BWP size |
| QCL info |  | TCI state #0 |
| TCI state #0 | Type 1 QCL information  | SSB index |  | SSB #0 |
| QCL Type |  | Type C |
| Type 2 QCL information | SSB index |  | SSB #0 |
| QCL Type |  | Type D |
| TCI state #1 | Type 1 QCL information  | CSI-RS resource |  | CSI-RS resource 1 from 'CSI-RS for tracking' configuration |
| QCL Type |  | Type A |
| Type 2 QCL information | CSI-RS resource |  | CSI-RS resource 1 from 'CSI-RS for tracking' configuration |
| QCL Type |  | Type D |
| PDCCH Precoding configuration |  | Single Panel Type I, Random precoder selection updated per slot, with equal probability of each applicable i1, i2 combination with REG bundling granularity for number of Tx larger than 1 |
| Symbols for all unused REs |  | OP.1 FDD as defined in Annex A.5.1.1OP.1 TDD as defined in Annex A.5.2.1 |
| Physical signals, channels mapping and precoding |  | As specified in Annex B.4.1 |
| The number of slots between PDSCH and corresponding HARQ-ACK information |  | 2 for FDD.For TDD, specific to each TDD UL-DL pattern and as defined in Annex A.1.2. |
| Note 1: Point A coincides with minimum guard band as specified in Table 5.3.3-1 from TS 38.101-1 [6] for tested channel bandwidth and subcarrier spacing. |

<<End of change>>

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<<Start of change>>

## 7.3 PDCCH demodulation requirements

The receiver characteristics of the PDCCH are determined by the probability of miss-detection of the Downlink Scheduling Grant (Pm-dsg).

The parameters specified in Table 7.3-1 are valid for all PDCCH tests unless otherwise stated.

Table 7.3-1: Common test Parameters

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Value** |
| Carrier configuration | Offset between Point A and the lowest usable subcarrier on this carrier (Note 1) |  | 0 |
| DL BWP configuration #1 | Cyclic prefix |  | Normal |
| Common serving cell parameters | Physical Cell ID |  | 0 |
| SSB position in burst |  | 1 |
| SSB periodicity | ms | 20 |
| PDCCH configuration | Slots for PDCCH monitoring |  | Each slot |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| CSI-RS for tracking | First subcarrier index in the PRB used for CSI-RS (k0) |  | 0 |
| First OFDM symbol in the PRB used for CSI-RS (l0) |  | CSI-RS resource 1: 4CSI-RS resource 2: 8CSI-RS resource 3: 4CSI-RS resource 4: 8 |
| Number of CSI-RS ports (X) |  | 1 |
| CDM Type |  | No CDM |
| Density (ρ) |  | 3 |
| CSI-RS periodicity | Slots | 160 |
| CSI-RS offset | Slots | 80 for CSI-RS resource 1 and 281 for CSI-RS resource 3 and 4 |
| Frequency Occupation |  | Start PRB 0Number of PRB = BWP size |
| QCL info |  | TCI state #0 |
| NZP CSI-RS for beam management | First subcarrier index in the PRB used for CSI-RS (k0) |  | 0 |
| First OFDM symbol in the PRB used for CSI-RS (l0) |  | CSI-RS resource 1: 8CSI-RS resource 2: 9 |
| Number of CSI-RS ports (X) |  | 1 |
| CDM Type |  | No CDM |
| Density (ρ) |  | 3 |
| CSI-RS periodicity | Slots | 120 kHz SCS: 160 for CSI-RS resource 1,2 |
| CSI-RS offset | Slots | 0 for CSI-RS resource 1,2 |
| Repetition |  | ON |
| QCL info |  | TCI state #1 |
| PDCCH & PDCCH DMRS Precoding configuration |  | Single Panel Type I, Random per slot with equal probability of each applicable i1, i2 combination, and with REG bundling granularity for number of Tx larger than 1 |
| TCI state #0 | Type 1 QCL information | SSB index |  | SSB #0 |
| QCL Type |  | Type C |
| Type 2 QCL information | SSB index |  | SSB #0 |
| QCL Type |  | Type D |
| TCI state #1 | Type 1 QCL information | CSI-RS resource |  | CSI-RS resource 1 from 'CSI-RS for tracking' configuration |
| QCL Type |  | Type A |
| Type 2 QCL information | CSI-RS resource |  | CSI-RS resource 1 from 'CSI-RS for tracking' configuration |
| QCL Type |  | Type D |
| Physical signals, channels mapping and precoding |  | As specified in Annex B.4.1 |
| Symbols for all unused REs |  | OP.1 FDD as defined in Annex A.5.1.1OP.1 TDD as defined in Annex A.5.2.1 |
| The number of slots between PDSCH and corresponding HARQ-ACK information |  | Specific to each TDD UL-DL pattern and as defined in Annex A.1.3. |
| Note 1: Point A coincides with minimum guard band as specified in Table 5.3.3-1 from TS 38.101-1 [6] for tested channel bandwidth and subcarrier spacing. |

<<End of change>>