**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 | **X** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PDCCH requirements to unify table numbering format | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | RAN4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **D** |  | | | | | ***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:*** | | Tables containing PDCCH test cases do not follow the test numbering used for PDSCH and PBCH, where a prefix is added following the number of tables in the subclause. This is, for example, “Table 5.3.2.1.2-1, Test 1” vs “Table 5.3.2.1.2-1, Test 2-1” | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding prefix to PDCCH test case number in the tables where they are defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Format would remain inconsistent with the rest of the specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.2.1.1, 5.3.2.1.2, 5.3.2.1.3, 5.3.2.2.1, 5.3.2.2.2, 5.3.2.2.3, 5.3.3.1.1, 5.3.3.1.2, 5.3.3.1.3, 5.3.3.2.1, 5.3.3.2.2, 5.3.3.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-4 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of R4-2418598 | | | | | | | | |

----------------------------------------------------- Beginning 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 | |  | First SSB in Slot #0 |
| 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: 4 CSI-RS resource 2: 8 CSI-RS resource 3: 4 CSI-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: 20  30 kHz SCS: 40 |
| CSI-RS offset | | Slots | 15 kHz SCS:  10 for CSI-RS resource 1 and 2  11 for CSI-RS resource 3 and 4  30 kHz SCS:  20 for CSI-RS resource 1 and 2  21 for CSI-RS resource 3 and 4 |
| Frequency Occupation | |  | Start PRB 0  Number of PRB = ceil(BWP size /4)\*4 |
| 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 & PDCCH DMRS Precoding configuration | | |  | For number of TX = 1: No precoding;  For number of TX > 1: Single Panel Type I, Randomized precoder selection for every REG bundle and updated per slot with equal probability of each applicable i1/i2 combination or codebook  index, chosen from section 5.2.2.2.1 of TS 38.214 [12]. |
| 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.5.1.1  OP.1 TDD as defined in Annex A.5.2.1 |
| 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.  Note 2: The high layer parameter *precoderGranularity* equals to *sameAsREG-bundle* as defined in clause 7.4.1.3 of TS 38.211 [9]. | | | | |

### 5.3.1 1RX requirements

(Void)

### 5.3.2 2RX requirements

#### 5.3.2.1 FDD

The parameters specified in Table 5.3.2.1-1 are valid for all FDD tests unless otherwise stated.

Table 5.3.2.1-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | 1 Tx Antenna | 2 Tx Antenna |
| CCE to REG mapping type |  | nonInterleaved | |
| REG bundle size |  | 6 | |
| Shift index |  | 0 | |

##### 5.3.2.1.1 Minimum requirements with 1TX antenna

For the parameters specified in Table 5.3.2.1-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.2.1.1-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.1.1-1: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 10 | 24 | 2 | 2 | R.PDCCH. 1-2.1 FDD | TDLA30-10 | 1x2 Low | 1 | 8.1 |
| 1-2 | 10 | 24 | 2 | 2 | R.PDCCH. 1-2.3 FDD | TDLC300-100 | 1x2 Low | 1 | 8.2 |
| 1-3 | 10 | 48 | 2 | 4 | R.PDCCH. 1-2.4 FDD | TDLA30-10 | 1x2 Low | 1 | 5.5 |
| 1-4 | 10 | 48 | 1 | 4 | R.PDCCH.1-1.1 FDD | TDLA30-10 | 1x2 Low | 1 | 4.4 |
| 1-5 | 10 | 48 | 2 | 16 | R.PDCCH. 1-2.6 FDD | TDLA30-10 | 1x2 Low | 1 | -2.1 |

##### 5.3.2.1.2 Minimum requirements with 2TX antenna

For the parameters specified in Table 5.3.2.1-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.2.1.2-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.1.2-1: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 10 | 24 | 2 | 4 | R.PDCCH. 1-2.2 FDD | TDLC300-100 | 2x2 Low | 1 | 2.0 |
| 1-2 | 10 | 48 | 2 | 8 | R.PDCCH. 1-2.5 FDD | TDLC300-100 | 2x2 Low | 1 | -1.3 |
| 1-3 | 10 | 48 | 1 | 8 | R.PDCCH.1-1.3 FDD | TDLA30-10 | 2x2 Low | 1 | -0.2 |

##### 5.3.2.1.3 Minimum requirements for power saving

During the test the UE shall monitor the *DCI format 2\_6* PDCCH in DRX off state and decide whether to receive the following PDCCH in DRX on period.

The parameters specified in Table 5.3.2.1.3-1 are valid for FDD test unless otherwise stated.

Table 5.3.2.1.3-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | 1 Tx Antenna |
| CCE to REG mapping type | |  | nonInterleaved |
| REG bundle size | |  | 6 |
| Shift Index | |  | 0 |
| DRX cycle | | ms | 10 |
| ps-WakeUp-r16 | |  | absent |
| Wake-up indication bit in DCI format 2\_6 | |  | 1 |
| PDCCH DCI format 2\_6 configuration | PS-offset |  |  |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| PDCCH configuration | Slots for PDCCH monitoring |  | Each slot during DRX-on period |
|  | |  |  |
| Note: TminimumTimeGap­ is signaled as a part of *drx-Adaptation-r16*UE capability. | | | |

For the parameters specified in Table 5.3.2.1.3-1, the average probability of a missed downlink scheduling grant (Pm-dsg) observed on PDCCH during DRX on shall be below the specified value in Table 5.3.2.1.3-2. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.1.3-2: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 10 | 48 | 2 | 4 | R.PDCCH. 1-2.4 FDD | TDLA30-10 | 1x2 Low | 1 | 5.5 |
| 2 | 8 | R.PDCCH. 1-2.7 FDD |

#### 5.3.2.2 TDD

The parameters specified in Table 5.3.2.2-1 are valid for all TDD tests unless otherwise stated.

Table 5.3.2.2-1: Test Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **1 Tx Antenna** | | | **2 Tx Antenna** |
| TDD UL-DL pattern |  | FR1.30-1 | | | |
| CCE to REG mapping type |  | Test 3: non-interleaved  Other tests: interleaved | | interleaved | |
| Interleaver size |  | 3 | | | |
| REG bundle size |  | Test 3: 6  Other tests: 2 | 6 | | |
| Shift Index |  | 0 | | | |

##### 5.3.2.2.1 Minimum requirements with 1TX antenna

For the parameters specified in Table 5.3.2.2-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.2.2.1-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.2.1-1: Minimum performance for PDCCH with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 40 | 102 | 1 | 2 | R.PDCCH. 2-1.1 TDD | TDLA30-10 | 1x2 Low | 1 | 7.0 |
| 1-2 | 40 | 102 | 1 | 4 | R.PDCCH. 2-1.2 TDD | TDLC300- 100 | 1x2 Low | 1 | 3.0 |
| 1-3 | 40 | 48 | 2 | 16 | R.PDCCH. 2-2.1 TDD | TDLC300- 100 | 1x2 Low | 1 | -3.8 |

##### 5.3.2.2.2 Minimum requirements with 2TX antenna

For the parameters specified in Table 5.3.2.2-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.2.2.2-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.2.2-1: Minimum performance for PDCCH with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 40 | 90 | 1 | 8 | R.PDCCH. 2-1.3 TDD | TDLC300-100 | 2x2 Low | 1 | -1.2 |

##### 5.3.2.2.3 Minimum requirements for power saving

During the test the UE shall monitor the *DCI format 2\_6* PDCCH in DRX off state and decide whether to receive the following PDCCH in DRX on period.

The parameters specified in Table 5.3.2.2.3-1 are valid for all TDD tests for power saving unless otherwise stated.

Table 5.3.2.2.3-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | 1 Tx Antenna |
| TDD UL-DL pattern | |  | FR1.30-1 |
| CCE to REG mapping type | |  | interleaved |
| Interleaver size | |  | 3 |
| REG bundle size | |  | 2 |
| Shift Index | |  | 0 |
| DRX cycle | | ms | 10 |
| ps-WakeUp-r16 | |  | absent |
| Wake-up indication bit in DCI format 2\_6 | |  | 1 |
| PDCCH DCI format 2\_6 configuration | PS-offset |  | (TminimumTimeGap+1)//0.125 |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| PDCCH configuration | Slots for PDCCH monitoring |  | Each slot during DRX-on period |
|  | |  |  |
| |  | | --- | | Note: TminimumTimeGap­ is signaled as a part of *drx-Adaptation-r16*UE capability. | | | | |

For the parameters specified in Table 5.3.2.2.3-1, the average probability of a missed downlink scheduling grant (Pm-dsg) observed on PDCCH during DRX on shall be below the specified value in Table 5.3.2.2.3-2. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.2.2.3-2: Minimum performance with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 40 | 102 | 1 | 4 | R.PDCCH. 2-1.2 TDD | TDLC300- 100 | 1x2 Low | 1 | 3.0 |
| 8 | R.PDCCH. 2-1.4 TDD |

### 5.3.3 4RX requirements

#### 5.3.3.1 FDD

The parameters specified in Table 5.3.3.1-1 are valid for all FDD tests unless otherwise stated.

Table 5.3.3.1-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Unit** | **1 Tx Antenna** | **2 Tx Antenna** |
| CCE to REG mapping type |  | nonInterleaved | |
| REG bundle size |  | 6 | |
| Shift index |  | 0 | |

##### 5.3.3.1.1 Minimum requirements with 1TX antenna

For the parameters specified in Table 5.3.3.1-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.3.1.1-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.1.1-1: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 10 | 24 | 2 | 2 | R.PDCCH. 1-2.1 FDD | TDLA30-10 | 1x4 Low | 1 | 2.2 |
| 1-2 | 10 | 24 | 2 | 2 | R.PDCCH. 1-2.3 FDD | TDLC300- 100 | 1x4 Low | 1 | 2.7 |
| 1-3 | 10 | 48 | 2 | 4 | R.PDCCH. 1-2.4 FDD | TDLA30-10 | 1x4 Low | 1 | 0.2 |
| 1-4 | 10 | 48 | 1 | 4 | R.PDCCH.1-1.1 FDD | TDLA30-10 | 1x4 Low | 1 | -0.4 |
| 1-5 | 10 | 48 | 2 | 16 | R.PDCCH. 1-2.6 FDD | TDLA30-10 | 1x4 Medium A | 1 | -3.2 |

##### 5.3.3.1.2 Minimum requirements with 2TX antenna

For the parameters specified in Table 5.3.3.1-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.3.1.2-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.1.2-1: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 10 | 24 | 2 | 4 | R.PDCCH. 1-2.2 FDD | TDLC300-100 | 2x4 Low | 1 | -1.9 |
| 1-2 | 10 | 48 | 2 | 8 | R.PDCCH. 1-2.5 FDD | TDLC300-100 | 2x4 Low | 1 | -4.5 |
| 1-3 | 10 | 48 | 1 | 4 | R.PDCCH.1-1.2 FDD | TDLA30-10 | 2x4 Low | 1 | -1.0 |

##### 5.3.3.1.3 Minimum requirements for power saving

During the test the UE shall monitor the *DCI format 2\_6* PDCCH in DRX off state and decide whether to receive the following PDCCH in DRX on period.

The parameters specified in Table 5.3.3.1.3-1 are valid for FDD test unless otherwise stated.

Table 5.3.3.1.3-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | 1 Tx Antenna |
| CCE to REG mapping type | |  | nonInterleaved |
| REG bundle size | |  | 6 |
| Shift Index | |  | 0 |
| DRX cycle | | ms | 10 |
| ps-WakeUp-r16 | |  | absent |
| Wake-up indication bit in DCI format 2\_6 | |  | 1 |
| PDCCH DCI format 2\_6 configuration | PS-offset |  |  |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| Slots for PDCCH monitoring | |  | Each slot during DRX-on period |
| Note: TminimumTimeGap­ is signaled as a part of *drx-Adaptation-r16*UE capability. | | | |

For the parameters specified in Table 5.3.3.1.3-1, the average probability of a missed downlink scheduling grant (Pm-dsg) observed on PDCCH during DRX on shall be below the specified value in Table 5.3.3.1.3-2. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.1.3-2: Minimum performance for PDCCH with 15 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 10 | 48 | 2 | 4 | R.PDCCH. 1-2.4 FDD | TDLA30-10 | 1x4 Low | 1 | 0.2 |
| 2 | 8 | R.PDCCH. 1-2.7 FDD |

#### 5.3.3.2 TDD

The parameters specified in Table 5.3.3.2-1 are valid for all TDD tests unless otherwise stated.

Table 5.3.3.2-1: Common Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **1 Tx Antenna** | | **2 Tx Antenna** |
| TDD UL-DL pattern |  | FR1.30-1 | | |
| CCE to REG mapping type |  | Test 3: Non-interleaved  Other tests: interleaved | interleaved | |
| Interleaver size |  | 3 | | |
| REG bundle size |  | Test 3: 6  Other tests: 2 | 6 | |
| Shift Index |  | 0 | | |

##### 5.3.3.2.1 Minimum requirements with 1TX antenna

For the parameters specified in Table 5.3.3.2-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.3.2.1-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.2.1-1: Minimum performance for PDCCH with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 40 | 102 | 1 | 2 | R.PDCCH. 2-1.1 TDD | TDLA30-10 | 1x4 Low | 1 | 2.1 |
| 1-2 | 40 | 102 | 1 | 4 | R.PDCCH. 2-1.2 TDD | TDLC300-100 | 1x4 Low | 1 | -0.9 |
| 1-3 | 40 | 48 | 2 | 16 | R.PDCCH. 2-2.1 TDD | TDLA30-10 | 1x4 Medium A | 1 | -3.6 |

##### 5.3.3.2.2 Minimum requirements with 2TX antenna

For the parameters specified in Table 5.3.3.2-1, the average probability of a missed downlink scheduling grant (Pm-dsg) shall be below the specified value in Table 5.3.3.2.2-1. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.2.2-1: Minimum performance for PDCCH with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test number** | **Bandwidth (MHz)** | **CORESET RB** | **CORESET duration** | **Aggregation level** | **Reference Channel** | **Propagation Condition** | **Antenna configuration and correlation Matrix** | **Reference value** | |
| **Pm-dsg (%)** | **SNR (dB)** |
| 1-1 | 40 | 90 | 1 | 8 | R.PDCCH. 2-1.3 TDD | TDLC300-100 | 2x4 Low | 1 | -4.3 |

##### 5.3.3.2.3 Minimum requirements for power saving

During the test the UE shall monitor the *DCI format 2\_6* PDCCH in DRX off state and decide whether to receive the following PDCCH in DRX on period.

For the parameters specified in Table 5.3.3.2.3-1, the average probability of a missed downlink scheduling grant (Pm-dsg) observed on PDCCH during DRX on shall be below the specified value in Table 5.3.3.2.3-2. The downlink physical setup is in accordance with Annex C.3.1.

Table 5.3.3.2.3-1: Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | 1 Tx Antenna |
| TDD UL-DL pattern | |  | FR1.30-1 |
| CCE to REG mapping type | |  | interleaved |
| Interleaver size | |  | 3 |
| REG bundle size | |  | 2 |
| Shift Index | |  | 0 |
| DRX cycle | | ms | 10 |
| ps-WakeUp-r16 | |  | absent |
| Wake-up indication bit in DCI format 2\_6 | |  | 1 |
| PDCCH DCI format 2\_6 configuration | PS-offset |  | (TminimumTimeGap+1)//0.125 |
| Number of PDCCH candidates |  | 1 |
| Frequency domain resource allocation for CORESET |  | Start from RB = 0 with contiguous RB allocation |
| TCI state |  | TCI state #1 |
| Slots for PDCCH monitoring | |  | Each slot during DRX-on period |
| Note: TminimumTimeGap­ is signaled as a part of *drx-Adaptation-r16*UE capability. | | | |

Table 5.3.3.2.3-2: Minimum performance with 30 kHz SCS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test number | Bandwidth (MHz) | CORESET RB | CORESET duration | Aggregation level | Reference Channel | Propagation Condition | Antenna configuration and correlation Matrix | Reference value | |
| Pm-dsg (%) | SNR (dB) |
| 1-1 | 40 | 102 | 1 | 4 | R.PDCCH. 2-1.2 TDD | TDLC300- 100 | 1x4 Low | 1 | -0.9 |
| 8 | R.PDCCH. 2-1.4 TDD |

------------------------------------------------------------- End of change ------------------------------------------------------------