**3GPP TSG-RAN WG4 Meeting #98-e *R4-2103842***

**Electronic Meeting, Jan. 25th – Feb. 5th, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-4** | **CR** | **0149** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  |
| *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 for 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32 |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_perf\_enh-Perf |  | ***Date:*** | 2021-1-15 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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:*** | There is no applicability for Type II codebook of NR PMI reporting test with larger Tx ports. Besides, the applicability for Type I codebook of NR PMI reporting test with larger Tx ports is in the wrong chapter |
|  |  |
| ***Summary of change:*** | 1. Introduces the applicability rule for Type II codebook of NR PMI requirements with Tx ports larger than 8 and up to 32
2. Move applicability of Type I codebook of NR PMI requirements with Tx ports larger than 8 and up to 32 to proper chapter
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|  |  |
| ***Consequences if not approved:*** | Applicability for PMI reporting test with larger Tx ports is not completed  |
|  |  |
| ***Clauses affected:*** | 6.1.1.3, 6.1.1.4 |
|  |  |
|  | **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:*** | Resubmission of technically endorsed CR R4-2015659 |
|  |  |
| ***This CR's revision history:*** | Revised from R4-2101322 |

**<Start of First change>**

# 6 CSI reporting requirements (Conducted requirements)

## 6.1 General

This clause includes conducted requirements for the reporting of channel state information (CSI).

### 6.1.1 Applicability of requirements

#### 6.1.1.1 General

The minimum performance requirements are applicable to all FR1 operating bands defined in TS 38.101-1 [6].

The minimum performance requirements in Clause 6 are mandatary for UE supporting NR operation, except test cases listed in Clause 6.1.1.3, 6.1.1.4.

#### 6.1.1.2 Applicability of requirements for different number of RX antenna ports

The number of RX antenna ports for different RF operating bands is up to UE declaration.

The UE shall support 2 or 4 RX antenna ports for different RF operating bands. The operating bands, where 4 RX antenna ports shall be the baseline, are defined in clause 7.2 of TS 38.101-1 [6]. The UE requirements applicability for UEs with different number of RX antenna ports is defined in Table 6.1.1.2-1.

Table 6.1.1.2-1: Requirements applicability

|  |  |  |
| --- | --- | --- |
| Supported RX antenna ports | Test type | Test list |
| UE supports only 2RX  | CQI | All tests in Clause 6.2.2 |
| PMI | All tests in Clause 6.3.2 |
| RI | All tests in Clause 6.4.2 |
| UE supports only 4RX or both 2RX and 4RX | CQI | All tests in Clause 6.2.3 |
| PMI | All tests in Clause 6.3.3 |
| RI | All tests in Clause 6.4.3 |

#### 6.1.1.3 Applicability of requirements for optional UE features

The performance requirements in Table 6.1.1.3-1 shall apply for UEs which support optional UE features only.

Table 6.1.1.3-1: Requirements applicability for optional UE features

|  |  |  |  |
| --- | --- | --- | --- |
| UE feature/capability [14] | Test type | Test list | Applicability notes |
| Supported maximum number of ports across all configured NZP-CSI-RS resources per CC (*maxConfigNumberPortsAcrossNZP-CSI-RS-PerCC*)A list of supported combinations, each combination is {Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} across all CCs simultaneously(*supportedCSI-RS-ResourceList*)Supported Codebook Mode(s)(*modes*)Max # of CSI-RS resource in a resource set(*maxNumberCSI-RS-PerResourceSet*) | FR1 FDD | PMI | Clause 6.3.2.1.3Clause 6.3.2.1.4Clause 6.3.3.1.3Clause 6.3.3.1.4 | The requirements apply only in case that UE supports Type I single panel with Tx ports larger than 8 |
| FR1 TDD | PMI | Clause 6.3.2.2.3Clause 6.3.2.2.4Clause 6.3.3.2.3Clause 6.3.3.2.4 |
| A list of supported combinations, each combination is {Max # of Tx ports in one resource, Max # of resources and total # of Tx ports} across all CCs simultaneously.(*supportedCSI-RS-ResourceList*)Parameter "Lx" (number of beams) in codebook generation, where x is index of Tx ports, corresponding to 4,8,12,16,24 and 32 ports. (*parameterLx*)Support amplitude scaling type(*amplitudeScalingType*)Support amplitude subset restriction level(*amplitudeSubsetRestriction*) | FR1 FDD | PMI | Clause 6.3.2.1.5Clause 6.3.3.1.5 | The requirements apply only in case that UE supports Type II codebook |
| FR1 TDD | PMI | Cluase 6.3.2.2.5Cluase 6.3.3.2.5 |

#### 6.1.1.4 Applicability of requirements for mandatory UE features with capability signalling

The performance requirements in Table 6.1.1.4-1 shall apply for UEs which support mandatory UE features with capability signalling only.

Table 6.1.1.4-1: Requirements applicability for mandatory features with UE capability signalling

|  |  |  |  |
| --- | --- | --- | --- |
| UE feature/capability [14] | Test type | Test list | Applicability notes |
| Supported maximum number of PDSCH MIMO layers (*maxNumberMIMO-LayersPDSCH*) | FR1 FDD | CQI | Clause 6.2.3.1.1.1 | The requirements apply only in case the PDSCH MIMO rank in the test case does not exceed UE PDSCH MIMO layers capability |
| PMI | Clause 6.3.3.1.2 |
| RI | Clause 6.4.2.1Clause 6.4.3.1 |
| FR1 TDD | CQI | Clause 6.2.3.2.1.1 |
| PMI | Clause 6.3.3.2.2 |
| RI | Clause 6.4.2.2Clause 6.4.3.2 |
| Supported maximum number of ports across all configured NZP-CSI-RS resources per CC (*maxConfigNumberPortsAcrossNZP-CSI-RS-PerCC*) | FR1 FDD | PMI | Clause 6.3.2.1.1Clause 6.3.2.1.2Clause 6.3.3.1.1Clause 6.3.3.1.2  | The requirements apply only in case the number of NZP-CSI-RS ports in the test case satisfies UE capability on maximum number of NZP-CSI-RS ports |
| RI | Clause 6.4.3.1 (Test 4) |
| FR1 TDD | PMI | Clause 6.3.2.2.1Clause 6.3.2.2.2Clause 6.3.3.2.1Clause 6.3.3.2.2 |
| RI | Clause 6.4.3.2 (Test 4) |

**<end of First change>**