**3GPP TSG-RAN4 Meeting #95-e *R4-2006229***

**Electronic meeting, 25th May – 5th June, 2020**

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| *CR-Form-v11.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **0639** | **rev** | **-** | **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 on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams) |
|  |  |
| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_CSIRS\_L3meas-Core |  | ***Date:*** | 2020-5-5 |
|  |  |  |  |  |
| ***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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | CSI-RS L3 measurement was introduced in Rel-16, hence the CSI-RS based intra-frequency measurement requirements shall be introduced. |
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| ***Summary of change:*** | Introduce section introduction, requirement applicability and number of cell and beams for CSI-RS based intra-frequency measurement. |
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| ***Consequences if not approved:*** | CSI-RS based intra-frequency measurement requirements are missing. |
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| ***Clauses affected:*** | New section 9.9.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.521-3 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |

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<< Start of Change #1>>

## 9.9.2 CSI-RS based intra-frequency measurements

### 9.9.2.1 Introduction

A measurement is defined as a CSI-RS based intra-frequency measurement provided that:

* + - the SCS of CSI-RS on the serving cell and neighbor cell is the same, and
		- the CP type of CSI-RS on serving cell and target cell is the same, and
			* + It is applied for SCS = 60KHz
		- the center frequency of CSI-RS on the serving cell and neighbor cell is the same

The UE shall be able to identify new intra-frequency cells and perform CSI-RSRP, CSI-RSRQ and CSI-SINR measurements of identified intra-frequency cells if carrier frequency information is provided by PCell or the PSCell, even if no explicit neighbour list with physical layer cell identities is provided.

The UE can perform intra-frequency CSI-RS based measurements without measurement gaps if

- the CSI-RS resources are completely contained in the active BWP of the UE, or

- the active downlink BWP is initial BWP[3].

For intra-frequency CSI-RS based measurements without measurement gaps, UE may cause scheduling restriction as specified in clause 9.9.2.5.

For CSI-RS based measurement, the CSI-RS resources for mobility measurement purpose are expected to be configured within a window of up to 5ms where the measurements are to be performed,

### 9.9.2.2 Requirements applicability

The requirements in clause 9.2 apply, provided:

- All CSI-RS resources in the same MO are configured with the same csi-rs-MeasurementBW.

- The associated SSB of the cell being identified or measured is detectable.

An intra-frequency cell shall be considered detectable when for each relevant CSI-RS:

- CSI-RSRP related side conditions given in clauses 10.1.x and 10.1.y for FR1 and FR2, respectively, for a corresponding Band,

- CSI-RSRQ related side conditions given in clauses 10.1.xx and 10.1.yy for FR1 and FR2, respectively, for a corresponding Band,

- CSI-SINR related side conditions given in clauses 10.1.xxx and 10.1.yyy for FR1 and FR2, respectively, for a corresponding Band,

- CSI\_RP and CSI Ês/Iot according to Annex B.2.2 for a corresponding Band.

### 9.2.3 Number of cells and number of CSI-RS

#### 9.2.3.1 Requirements for FR1

For each intra-frequency layer, during each layer 1 measurement period, the UE shall be capable of performing CSI-RSRP, CSI-RSRQ and CSI-SINR measurements for at least:

- 8 identified CSI-RS cells if configured, and

- 32 CSI-RS resources if configured on the intra-frequency layer,

#### 9.2.3.2 Requirements for FR2

For each intra-frequency layer, during each layer 1 measurement period, the UE shall be capable of performing CSI-RSRP, CSI-RSRQ and CSI-SINR measurements for at least:

- 6 identified CSI-RS cells if configured, and

- 32 CSI-RS resources if configured

where the single serving carrier shall be:

- PCC when UE is configured with SA NR operation mode with PCC in the band; or

- PSCC when UE is configured with EN-DC with PSCC in the band; or

- One of the SCCs on which UE is configured to report CSI-RS based measurements when neither PCC nor PSCC is in the same band, so that the selected SCC shall be an SCC where the UE is configured with CSI-RSRP measurement reporting if such SCC exists, otherwise the selected SCC is determined by UE implementation.

The UE shall also be capable of performing CSI-RSRP, CSI-RSRQ and CSI-SINR measurements for at least 2 CSI-RS resources if configured on serving cell for each of the other serving carrier(s) in the same band.

<< End of Change #1>>