3GPP TSG-RAN WG4 Meeting #112 R4-2412999

**Maastricht, NL, 19 Aug. 2024– 23 Aug. 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.133** | **CR** | **4878** | **rev** | **1** | **Current version:** | **18.6.0** |  |
|  | | | | | | | | |
| *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 TS 38.133 on core requirement maintenance for NR FR2 multi-Rx | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_FR2\_multiRX\_DL-Core | | | | |  | ***Date:*** | | | 2024-08-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | Measurment restrictions are FFS in last meeting | | | | | | | | |
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| ***Summary of change:*** | | Measurement restrictions are removed and editor notes are removed | | | | | | | | |
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| ***Consequences if not approved:*** | | The multi-rx feature is not complete. | | | | | | | | |
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| ***Clauses affected:*** | | 8.1.3.3, 8.5.3.3, 8.18.3.3, 9.5.5.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **Y** |  | Test specifications | | | | TS 38.533 | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

Start of Change 1

#### 9.5.5.2 Measurement restriction for CSI-RS based L1-RSRP

The SSB mentioned in this clause can be associated with either the serving cell PCI or a PCI different from serving cell PCI or intra-frequency neighbor cell(s) configured with L1-RSRP measurement.

For both FR1 and FR2, when the CSI-RS for L1-RSRP measurement is in the same OFDM symbol as SSB for RLM, BFD, CBD or L1-RSRP measurement, UE is not required to receive CSI-RS for L1-RSRP measurement in the PRBs that overlap with an SSB.

For FR1, when the SSB for RLM, BFD, CBD or L1-RSRP measurement is within the active BWP and has same SCS than CSI-RS for L1-RSRP measurement, the UE shall be able to perform CSI-RS measurement without restrictions.

For FR1, when the SSB for RLM, BFD, CBD or L1-RSRP measurement is within the active BWP and has different SCS than CSI-RS for L1-RSRP measurement, the UE shall be able to perform CSI-RS measurement with restrictions according to its capabilities:

- If the UE supports *simultaneousRxDataSSB-DiffNumerology* the UE shall be able to perform CSI-RS measurement without restrictions.

- If the UE does not support *simultaneousRxDataSSB-DiffNumerology*, UE is required to measure one of but not both CSI-RS for L1-RSRP measurement and SSB. Longer measurement period for CSI-RS based L1-RSRP measurement is expected, and no requirements are defined.

For FR1, when the CSI-RS for L1-RSRP measurement is in the same OFDM symbol as another CSI-RS for RLM, BFD, CBD or L1-RSRP measurement, UE shall be able to measure the CSI-RS for L1-RSRP measurement without any restriction.

For FR2, when the CSI-RS for L1-RSRP measurement on one CC is in the same OFDM symbol as SSB for RLM, BFD or L1-RSRP measurement on the same CC or different CCs in the same band, or in the same symbol as SSB for CBD measurement on the same CC or different CCs in the same band when beam failure is detected, UE is required to measure one of but not both CSI-RS for L1-RSRP measurement and SSB. Longer measurement period for CSI-RS based L1-RSRP measurement is expected, and no requirements are defined.

For FR2, when the CSI-RS for L1-RSRP measurement on one CC is in the same OFDM symbol as another CSI-RS for RLM, BFD, CBD or L1-RSRP measurement on the same CC or different CCs in the same band,

- In the following cases, UE is required to measure one of but not both CSI-RS for L1-RSRP measurement and the other CSI-RS. Longer measurement period for CSI-RS based L1-RSRP measurement is expected, and no requirements are defined.

- The CSI-RS for L1-RSRP measurement or the other CSI-RS in a resource set configured with repetition ON, or

- The other CSI-RS is configured in q1 and beam failure is detected, or

- The two CSI-RS-es are not QCL-ed w.r.t. QCL-TypeD, or the QCL information is not known to UE,

- Otherwise, UE shall be able to measure the CSI-RS for L1-RSRP measurement without any restriction.

For UE incapable of [capability of measurement with RTD>CP] and for UE capable of [capability of measurement with RTD>CP],

- For both FR1 and FR2, when the CSI-RS for L1-RSRP measurement fully or partially overlaps with the OFDM symbol as SSB from candidate LTM neighbor cell for intra-frequency L1-RSRP measurement or inter-frequency L1-RSRP measurement without gap, UE is not required to receive CSI-RS for L1-RSRP measurement in the PRBs that overlap with an SSB.

- For FR1, when the CSI-RS for L1-RSRP measurement fully or partially overlaps with the OFDM symbol as SSB from candidate LTM neighbor cell for intra-frequency L1-RSRP measurement or inter-frequency L1-RSRP measurement without gap, if CSI-RS and SSB have different SCS and UE does not support simultaneousRxDataSSB-DiffNumerology, UE is required to measure one of but not both CSI-RS for L1-RSRP measurement and SSB. Longer measurement period for CSI-RS based L1-RSRP is expected, and no requirements are defined.

- For FR2, when the CSI-RS for L1-RSRP measurement on one CC fully or partially overlaps with the OFDM symbol as SSB from candidate LTM neighbor cell for intra-frequency L1-RSRP measurement or inter-frequency L1-RSRP measurement without gap in the same band, UE is required to measure one of but not both CSI-RS for L1-RSRP measurement and SSB. Longer measurement period for CSI-RS based L1-RSRP is expected, and no requirements are defined.

For FR2-1, when the CSI-RS for L1-RSRP measurement on the one CC is in the same OFDM symbol as another CSI-RS for RLM, BFD, CBD or L1-RSRP measurement on the same CC, UE supporting *schedulingMeasurementRelaxation-r18* according to the conditions described in clause 3.6.19 shall be able to measure the CSI-RS for L1-RSRP measurement without restriction when the following conditions are met:

-     Both CSI-RSs are not in any CSI-RS resource set with repetition ON, and

-     One CSI-RS has same QCL source as either

* the active TCI state of a PDSCH scheduled in the same OFDM symbol or
* the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     the other CSI-RS has same QCL source as either

* the active TCI state of a PDSCH scheduled in the same OFDM symbol or
* the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     Resources of the active TCI states of the two PDSCHs, or QCL sources of the default QCL assumption, or the active TCI state of PDSCH and QCL source of the default QCL assumption have been reported as a resource group in Rel-17 group-based RSRP report.

Editor’s note 2: FFS how to capture UE is activated with multi-Rx operation.

End of change 4