**3GPP TSG-RAN WG4 Meeting #116R4-2509467**

**Bengaluru, India, 25th -29th September, 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | 38.133 | **CR** | 5746 | **rev** |  | **Current version:** | 19.1.0 |  |
|  | | | | | | | | |
| *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:*** | (NR\_Mob\_Ph4-Core) draft CR on CSI-RS based L1 measurement requirement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Mob\_Ph4-Core | | | | |  | ***Date:*** | | | 2025-08-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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:*** | | CSI-RS based L1-RSRP measurement requirements need to be introduced. | | | | | | | | |
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| ***Summary of change:*** | | CSI-RS based L1-RSRP measurement requirements is defined in 9.14a.5. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The requirement for CSI-RS based L1-RSRP measurement requirements will be missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | New section 9.14a.5. | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

# <Start of Change 1>

## 9.14a CSI-RS based Intra-frequency L1-RSRP measurements for neighbor cell

### 9.14a.1 Introduction

### 9.14a.2 Requirements Applicability

### 9.14a.3 Measurement Reporting Requirements

### 9.14a.4 Number of CSI-RS resources, number of cells and number of SSBs

### 9.14a.5 CSI-RS based L1-RSRP measurement requirements without measurement gaps

The requirements specified in this clause are only applicable when

- maximum RTD between cells are within CP.

*- highSpeedMeasFlag-r16* is not configured, and

- *highSpeedMeasFlagFR2-r17* is not configured, and

- *highSpeedMeasCA-Scell-r17* is not configured.

- At least 48 RBs of the CSI-RS configured for measurement is confined within the active BWP of the UE.

If a neighbor cell is known according to 9.14a.2, the UE shall be capable of performing L1-RSRP measurements based on the configured CSI-RS resource for L1-RSRP computation, and the UE physical layer shall be capable of reporting L1-RSRP measured over the measurement period of TL1-RSRP\_Measurement\_Period\_CSI-RS\_intra.

The value of TL1-RSRP\_Measurement\_Period\_CSI-RS\_intra is defined in table 9.14a.5-1 for FR1 and in table 9.14a.5-2 for FR2, where

- For periodic and semi-persistent CSI-RS resources in a resource set configured with higher layer parameter *repetition* set to OFF or repetition RRC object is not configured,

- N=8 if UE is capable of *[skippingSSBbasedL1mesurement-R19] and* the CSI-RS resources shall be Type-D QCL’ed with the associated SSB for L3 measurement and the CSI-RS resource is configured with [TBD]; Otherwise,

- N=1 if *qcl-InfoPeriodicCSI-RS* is configured for all the resources in the resource set and for each resource one RS has QCL-TypeD with SSB for L1-RSRP measurement.

- P value for CSI-RS resource to be measured is defined as

- Ntotal / Noutside\_MG in FR1

- Psharing factor \* Ntotal / Noutside\_MG in FR2 with Navailable = 0

- Ntotal / Navailable in FR2 with Navailable > 0

For a window W of duration max (TL1, MGRP\_max), where MGRP max is the maximum MGRP across all configured per-UE measurement gaps and per-FR measurement gaps within the same FR as serving cell, and starting at the beginning of any CSI-RS resource occasion:

- Ntotal is the total number of CSI-RS resource occasions within the window, including those overlapped with measurement gap occasions or SMTC occasions within the window, and

- Noutside\_MG is the number of CSI-RS resource occasions that are not overlapped with any measurement gap occasion within the window W

- Navailable is the number of CSI-RS resource occasions that are not overlapped with any measurement gap occasion nor any SMTC occasion within the window W

- TL1 is periodicity of the target CSI-RS resource.

- Psharing factor = 1, if the CSI-RS configured for L1-RSRP measurement outside measurement gap is

- not overlapped with the SSB symbols indicated by *SSB-ToMeasure* and 1 data symbol before each consecutive SSB symbols indicated by *SSB-ToMeasure* and 1 data symbol after each consecutive SSB symbols indicated by *SSB-ToMeasure*, given that *SSB-ToMeasure* is configured, where the *SSB-ToMeasure* is the union set of *SSB-ToMeasure* from all the configured measurement objects merged on the same serving carrier, and,

- not overlapped with the RSSI symbols indicated by *ss-RSSI-Measurement* and 1data symbol before each RSSI symbol indicated by *ss-RSSI-Measurement* and 1 data symbol after each RSSI symbol indicated by *ss-RSSI-Measurement*, given that *ss-RSSI-Measurement* is configured,

- Psharing factor = 3, otherwise.

If the high layer in TS 38.331 [2] signaling of *smtc2* is configured, TSMTCperiod corresponds to the value of higher layer parameter *smtc2*; Otherwise TSMTCperiod corresponds to the value of higher layer parameter *smtc1*. TSMTCperiod is the shortest SMTC period among all CCs in the same FR2 band, provided the SMTC offset of all CCs in FR2 have the same offset.

Longer measurement period would be expected if the combination of CSI-RS, SMTC occasion and measurement gap configurations does not meet previous conditions.

For either an FR1 or FR2 cell, longer measurement period would be expected during the period Tidentify\_CGI when the UE is requested to decode an NR CGI.

For either an FR1 or FR2 cell, longer L1 RSRP measurement period would be expected during the period Tidentify\_CGI,E-UTRAN when the UE is requested to decode an LTE CGI.

Table 9.14a.5-1: Intra-frequency L1-RSRP measurement period TL1-RSRP\_Measurement\_Period\_CSI-RS\_intra in FR1

|  |  |
| --- | --- |
| Configuration | TL1-RSRP\_Measurement\_Period\_CSI-RS (ms) |
| non-DRX | max(TReport, ceil(P)\*TCSI-RS\_NBC) |
| DRX cycle ≤ 320 ms | max(TReport, ceil(K\*P)\*max(TDRX,TCSI-RS\_NBC)) |
| DRX cycle > 320 ms | ceil(P)\*TDRX |
| NOTE 1: TCSI-RS\_NBC is the periodicity of neighbor cell CSI-RS configured for L1-RSRP measurement. TDRX is the DRX cycle length. TReport is configured periodicity for reporting.  NOTE 2: the requirements are applicable provided that the CSI-RS resource configured for L1-RSRP measurement is transmitted with Density = 3.  NOTE 3: K = 1.5. | |

Table 9.14a.5-2: Intra-frequency L1-RSRP measurement period TL1-RSRP\_Measurement\_Period\_CSI-RS\_intra in FR2

|  |  |
| --- | --- |
| Configuration | TL1-RSRP\_Measurement\_Period\_CSI-RS (ms) |
| non-DRX | max(TReport, ceil(P\*[PL1\_sharing]\*N)\*TCSI-RS\_NBC) |
| DRX cycle ≤ 320 ms | max(TReport, ceil(1.5\*P\*[PL1\_sharing]\*N)\*max(TDRX,TCSI-RS\_NBC)) |
| DRX cycle > 320 ms | ceil(M\*P\*[PL1\_sharing]\*N)\*TDRX |
| NOTE 1: TCSI-RS\_NBC is the periodicity of neighbor cell CSI-RS configured for L1-RSRP measurement. TDRX is the DRX cycle length. TReport is configured periodicity for reporting.  NOTE 2: The requirements are applicable provided that the CSI-RS resource configured for L1-RSRP measurement is transmitted with Density = 3. | |

### 9.14a.6 Measurement restriction for L1-RSRP measurement

### 9.14a.7 Scheduling availability of UE during L1-RSRP measurement

# <End of Change 1>