**3GPP TSG RAN WG1 #118R1-2407452**

**Maastricht, Netherlands, August 19th – 23rd, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.214** | **CR** | **0612** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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| *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 | **X** | Core Network |  |

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| ***Title:***  | Correction on CSI processing criteria and CSI computation time for LTM CSI report. |
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| ***Source to WG:*** | Moderator (Fujitsu), Samsung, ASUSTeK, Ericsson, Nokia, ZTE, Huawei, Lenovo, Apple |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_mob\_enh2-Core |  | ***Date:*** | 2024-08-20 |
|  |  |  |  |  |
| ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | In Rel-18, L1-RSRP measurement report has been introduced for LTM. Periodic/semi-persistent report on PUCCH and semi-persistent/aperiodic report on PUSCH have been supported for LTM CSI report. And, the number of CPUs was set to $O\_{CPU}=1$ for a CSI report with *LTM-CSI-ReportConfig* to inherit processing of legacy CSI report. However, the number of symbols for occupied CPU was not clear for LTM CSI report. Therefore, it is necessary to clarify how a UE shall determine the number of symbols for CPU if CSI report is configured with *LTM-CSI-ReportConfig*.Additionally, CSI computation time for CSI report configured with *LTM-CSI-ReportConfig* can be defined same as legacy CSI report for L1 measurement. |
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| ***Summary of change:*** | The number of symbols for CPU and the CSI computation time can be defined clearly for L1-RSRP measurement report for LTM |
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| ***Consequences if not approved:*** | The UE behavior is not defined when CSI report is configured with *LTM-CSI-ReportConfig*. |
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| ***Clauses affected:*** | 5.2.1.6, 5.4 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** | **Isolated Impact Analysis:**This CR has no isolated impact on network and UE behavior. |
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| ***This CR's revision history:*** | This is the first version of this CR  |

<Unchanged part omitted>

5.2.1.6 CSI processing criteria

<Unchanged part omitted>

For a CSI report with *CSI-ReportConfig* with higher layer parameter *reportQuantity* not set to 'none', or a CSI report with *LTM-CSI-ReportConfig*, the CPU(s) are occupied for a number of OFDM symbols as follows:

- A periodic or semi-persistent CSI report (excluding an initial semi-persistent CSI report on PUSCH after the PDCCH triggering the report and a semi-persistent CSI report on PUSCH configured with the higher layer parameter *codebookType* set to 'typeII-Doppler-r18' or 'typeII-Doppler-PortSelection-r18') occupies CPU(s) from the first symbol of the earliest one of each CSI-RS/CSI-IM/SSB resource, or each CSI-RS/CSI-IM resource associated with all configured sub-configurations for periodic CSI report corresponding to a *CSI-ReportConfig* that contains a list of sub-configurations provided by *csi-ReportSubConfigToAddModList*, or each CSI-RS/CSI-IM resource associated with all activated/triggered sub-configurations for semi-persistent CSI report corresponding to a *CSI-ReportConfig* that contains a list of sub-configurations provided by *csi-ReportSubConfigToAddModList*, for channel or interference measurement, respective latest CSI-RS/CSI-IM/SSB occasion no later than the corresponding CSI reference resource, until the last symbol of the configured PUSCH/PUCCH carrying the report.

<Unchanged part omitted>

5.4 UE CSI computation time

<Unchanged part omitted>

$Z=\max\_{m=0,…,M-1}(Z(m))⁡$ and $Z'=\max\_{m=0,…,M-1}(Z'(m))$, where *M* is the number of updated CSI report(s) according to Clause 5.2.1.6, $(Z(m),Z'(m))$ corresponds to the *m*-th updated CSI report and is defined as

- $(Z\_{1},Z\_{1}^{'})$ of the table 5.4-1 if max{ *µPDCCH*, *µCSI-RS, µUL*} ≤ 3 and if the CSI is triggered without a PUSCH with either transport block or HARQ-ACK or both when *L* = 0 CPUs are occupied (according to Clause 5.2.1.6) and the CSI to be transmitted is a single CSI and corresponds to wideband frequency-granularity where the CSI corresponds to at most 4 CSI-RS ports in a single resource without CRI report and where *CodebookType* is set to 'typeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI', or

- $(Z\_{1},Z\_{1}^{'})$ of the table 5.4-2 if the CSI to be transmitted corresponds to wideband frequency-granularity where the CSI corresponds to at most 4 CSI-RS ports in a single resource without CRI report and where *CodebookType* is set to 'typeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI', or

- $(Z\_{1},Z\_{1}^{'})$ of the table 5.4-2 if the CSI to be transmitted corresponds to wideband frequency-granularity where the *reportQuantity* is set to 'ssb-Index-SINR', 'cri-SINR', 'ssb-Index-SINR- Index ', or 'cri-SINR- Index ', or

- $(Z\_{3},Z\_{3}^{'})$ of the table 5.4-2 if *reportQuantity* is set to 'cri-RSRP', 'ssb-Index-RSRP', 'cri-RSRP- Index' or 'ssb-Index-RSRP- Index ', $ where Xµ $is according to UE reported capability *beamReportTiming* and *KBl* is according to UE reported capability *beamSwitchTiming* as defined in [13, TS 38.306], or if the CSI report is configured with *LTM-CSI-ReportConfig* for L1-RSRP measurement, or

- $(Z\_{2},Z\_{2}^{'})$ or $(Z\_{2}+Z\_{2}^{'},2Z\_{2}^{'})$, according to UE reported capability, with $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2, if *codebookType* is set to 'typeII-CJT-r18' or 'typeII-CJT-PortSelection-r18' and the corresponding *NZP-CSI-RS-ResourceSet* for channel measurement is configured with $1<N\_{TRP}\leq 4$ resources, or

- $(Z\_{2}+14\left(K-1\right)m,Z\_{2}^{'})$, with $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2, if the CSI report is configured with $N\_{4}=1$, *codebookType* is set to 'typeII-Doppler-r18' or 'typeII-Doppler-PortSelection-r18' and the corresponding *NZP-CSI-RS-ResourceSet* for channel measurement is aperiodic with $K$ CSI-RS resources, or

- $(Z\_{2}+w,Z\_{2}^{'})$, with $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2, where $w$=56.(*KP* –1) or 56.*KP* symbols, according to the reported UE capability, where the value of 𝐾𝑃 ∈{1,2,4} is indicated by UE capability, if the CSI report is configured with $N\_{4}=1$, *codebookType* is set to 'typeII-Doppler-r18' or 'typeII-Doppler-PortSelection-r18' and the corresponding *NZP-CSI-RS-ResourceSet* for channel measurement is periodic or semi-persistent with a single CSI-RS resource, or

- $(Z\_{2}+14\left(K-1\right)m,Z\_{2}^{'})$ or $(Z\_{2}+14\left(K-1\right)m+Z\_{2}^{'},2Z\_{2}^{'})$, according to UE reported capability, with $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2, if the CSI report is configured with $N\_{4}>1$, *codebookType* is set to 'typeII-Doppler-r18' and the corresponding *NZP-CSI-RS-ResourceSet* for channel measurement is aperiodic with $K$ CSI-RS resources, or

- $(Z\_{2}+w,Z\_{2}^{'})$ or $(Z\_{2}+w+Z\_{2}^{'},2Z\_{2}^{'})$, according to UE reported capability, with $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2, if the CSI report is configured with $N\_{4}>1$, *codebookType* is set to 'typeII-Doppler-r18' and the corresponding *NZP-CSI-RS-ResourceSet* for channel measurement is periodic or semi-persistent with a single CSI-RS resource, or

- $(Z\_{2},Z\_{2}^{'})$ of table 5.4-2 otherwise.

*- µ* of table 5.4-1 and table 5.4-2 corresponds to the min (*µPDCCH*, *µCSI-RS, µUL*) where the *µPDCCH* corresponds to the subcarrier spacing of the PDCCH with which the DCI was transmitted and *µUL* corresponds to the subcarrier spacing of the PUSCH with which the CSI report is to be transmitted and *µCSI-RS* corresponds to the minimum subcarrier spacing of the aperiodic CSI-RS triggered by the DCI

<Unchanged part omitted>