**3GPP TSG-RAN WG4 Meeting # 112R4-241xxxx**

**Maastricht, Netherlands, 19th – 23th Aug, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **4717** | **rev** | **1** | **Current version:** | **17.14.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **x** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | (NR\_MG\_enh-Perf) Maintenance CR for MGE perf part | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MediaTek inc | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh-Perf | | | | |  | ***Date:*** | | | 2024-08-09` |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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:*** | | * As Event A3 is used in this case, the A3-Offset and Hysteresis need to be defined in Table A.6.6.18.4.1-2. * In Table A.6.6.18.4.1-3, some values of SS-RSRP for configuration 3 are missing. * The Io values should be updated with the intra-frequency neighbour cell considered * Some editorial errors | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Introduce A3-Offset and Hysteresis in Table A.6.6.18.4.1-2. * Add the missing values of of SS-RSRP for configuration 3 are missing in Table A.6.6.18.4.1-3 * Io and missing SS-RSRP were added in Table A.6.6.18.4.1-3. * Correct editorial errors | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test case is not correct | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.6.6.18.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of the change>

#### A.6.6.18.4 SA event triggered reporting tests for PRS and SSB measurement in FR1 without SSB time index detection when DRX is not used

##### A.6.6.18.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the SA NR measurements with concurrent gaps requirements in clause 9.2.6(when one of concurrent gaps in same frequency layer of serving cells), 9.3.6(when one of concurrent gaps in the different frequency layer of serving cells) and 9.9.2(when one of concurrent gaps used for PRS measurement).

In this test, there are three cells: NR cell 1 as PCell in FR1 on NR RF channel 1, NR cell 2 as neighbour cell in FR1 on NR RF channel 2 and NR cell 3 as neighbor cell in FR1 on NR RF channel 1. The test parameters are given in Tables A.6.6.18.4.1-1, A.6.6.18.4.1-2 and A.6.6.18.4.1-3.

Two measurement gap patterns (MeasGapId #1 and MeasGapId #2) are configured with the gap pattern ID #0 and #24 as defined in Table A.6.6.18.4.1-2. MeasGapId #2 is configured with a higher priority than MeasGapId #1. MeasGapId #1 and MeasGapId #2 are associated with the MOs for RF channel numbers #1 and #2, respectively.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3. Cell 1 and cell 3 transmit PRS during T2.

The *NR-DL-AoD-RequestLocationInformation* message and *NR-DL-AoD-ProvideAssistanceData* message as defined in TS 37.355 shall be provided to the UE during T1. The last slot containing the two messages for the assistance data and location information request is denoted as #n.

The beginning of the time interval T2 shall be aligned with the beginning of the first MG instance of MeasGapId #2 containing the PRS resources that is ΔT after slot #n, where ΔT = 50 ms is the maximum processing time of the assistance data and location information request.

Table A.6.6.18.4.1-1: SA event triggered reporting tests without SSB index reading for FR1-FR1

|  |  |
| --- | --- |
| Config | Description |
| 1 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | NR 30kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| Note 1: The UE is only required to be tested in one of the supported test configurations  Note 2: target NR cell has the same SCS, BW and duplex mode as NR serving cell | |

Table A.6.6.18.4.1-2: General test parameters for SA inter-frequency event triggered reporting for concurrent gaps with partially partial overlapping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| NR RF Channel Number |  | 1,2,3 | 1: Cell 1 and Cell 3  2: Cell 2 | Two FR1 carrier frequencies are used for the NR cells. |
| Active cell |  | 1,2,3 | NR cell 1 (Pcell) | Cell 1 is the PCell and the DL-AoD reference cell in the positioning assistance data. |
| Neighbour cell |  | 1,2,3 | NR cell 2, NR cell 3 | Cell 2 is an inter-frequency cell neighbor cell  Cell 3 is an intra-frequency neighbour cell in the positioning assistance data. |
| Gap Pattern Id |  | 1,2,3 | 0 for MeasGapId #1  24 for MeasGapId #2 |  |
| Measurement gap offset | ms | 1,2,3 | 7 for MeasGapId #1  11 for MeasGapId #2 |  |
| A3-Offset | dB | 1, 2, 3 | -9 |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| DRX |  | 1, 2, 3 | NA | OFF |
| Time offset between serving and neighbour cells | μs | 1, 2, 3 | 3 | Synchronous cells |
| Expected RSTD | μs | 1, 2, 3 | 3 |  |
| Expected RSTD uncertainty | μs | 1, 2, 3 | 5 |  |
| T1 | s | 1, 2, 3 | 2 |  |
| T2 | s | 1, 2, 3 | 5 |  |
| NOTE 1: GP#24 is configured if UE supports MG#24, otherwise GP#0 is configured. | | | | |

Table A.6.6.18.4.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gap with partially-partial overalpping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | | | **Cell 3** | |
|  | |  |  | **T1** | **T2** | **T1** | **T2** | | **T1** | **T2** |
| TDD configuration | |  | 1 | N/A | | N/A | | | N/A | |
|  | 2 | TDDConf.1.1 | | TDDConf.1.1 | | | TDDConf.1.1 | |
|  | 3 | TDDConf.2.1 | | TDDConf.2.1 | | | TDDConf.2.1 | |
| BWchannel | | MHz | Config 1,2 | 10: NRB,c = 52 | | 10: NRB,c = 52 | | | 10: NRB,c = 52 | |
|  | |  | 3 | 40: NRB,c = 106 | | 40: NRB,c = 106 | | | 40: NRB,c = 106 | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | 10: NRB,c = 52 | | | 10: NRB,c = 52 | |
|  | |  | 3 | 40: NRB,c = 106 | | 40: NRB,c = 106 | | | 40: NRB,c = 106 | |
| BWP configuration | Initial DL BWP |  | Config 1,2,3 | DLBWP.0.1 | | N/A | | | N/A | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | | | N/A | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | | | N/A | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | | | N/A | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | | | OP.1 | |
| PDSCH RMC configuration | |  | 1 | SR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | SR.1.1 TDD | |
|  | 3 | SR.2.1 TDD | |
| RMSI CORESET RMC configuration | |  | 1 | CR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | CR.1.1 TDD | | N/A | | | N/A | |
|  | 3 | CR.2.1 TDD | | N/A | | | N/A | |
| Dedicated CORESET RMC configuration | |  | 1 | CCR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | CCR.1.1 TDD | | N/A | | | N/A | |
|  | 3 | CCR.2.1 TDD | | N/A | | | N/A | |
| SSB parameters | |  | 1 | SSB.1 FR1 | | SSB.1 FR1 | | | SSB.1 FR1 | |
|  | |  | 2 | SSB.1 FR1 | | SSB.1 FR1 | | | SSB.1 FR1 | |
|  | |  | 3 | SSB.2 FR1 | | SSB.2 FR1 | | | SSB.2 FR1 | |
| SMTC configuration defined in A.3.11 | |  | 1 | SMTC.2 | | SMTC.2 | | | SMTC.2 | |
|  | |  | 2 | SMTC.1 | | SMTC.1 | | | SMTC.1 | |
|  | |  | 3 | SMTC.1 | | SMTC.1 | | | SMTC.1 | |
| TRS Configuration | |  | 1 | TRS.1.1 FDD | | N/A | | | N/A | |
|  | 2 | TRS.1.1 TDD | | N/A | | | N/A | |
|  | 3 | TRS.1.2 TDD | | N/A | | | N/A | |
| PRS configuration | |  | 1 | PRS.1.4 FR1 | | N/A | | | PRS.1.4 FR1 | |
|  | 2 | PRS.1.4 FR1 | | N/A | | | PRS.1.4 FR1 | |
|  | 3 | PRS.2.4 FR1 | | N/A | | | PRS.2.4 FR1 | |
| PRS muting configuation | |  | 1, 2, 3 | ‘10’ | | ‘01’ | | | ‘01’ | |
| PDSCH/PDCCH | | KHz | 1, 2 | 15 | | | | | | |
| subcarrier spacing | |  | 3 | 30 | | | | | | |
| Note2 | | dBm/15kHz Note5 | 1 | -98 | | -98 | | | -98 | |
|  | 2 | -98 | | -98 | | | -98 | |
|  | 3 | -98 | | -98 | | | -98 | |
| Note2 | | dBm/SCS Note4 | 1 | -98 | | -98 | | | -98 | |
|  | 2 | -98 | | -98 | | | -98 | |
|  | 3 | -95 | | -95 | | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS Note5 | 1 | -94 | -94 | -Infinity | | -94 | N/A | N/A |
|  | 2 | -94 | -94 | -Infinity | | -94 | N/A | N/A |
|  | 3 | -91 | -91 | -Infinity | | -94 | N/A | N/A |
| PRS-RSRP Note 3 | | dBm/SCS Note5 | 1 | -Infinity | -101 | N/A | | N/A | -Infinity | -108 |
|  | 2 | -Infinity | -101 | N/A | | N/A | -Infinity | -108 |
|  | 3 | -Infinity | -98 | N/A | | N/A | -Infinity | -105 |
| PRS | | dB | 1,2,3 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| PRS | | dB | 1,2,3 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| IoNote3 | | dBm/9.36 MHz | 1 | -64.59 | | -70.05 | | -64.59 | -64.59 | |
|  | | dBm/9.36 MHz | 2 | -64.59 | | -70.05 | | -64.59 | -64.59 | |
|  | | dBm/38.16 MHz | 3 | -58.49 | | -63.94 | | -58.49 | -58.49 | |
| Propagation Condition | |  | 1,2,3 | AWGN | | | | | | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.  Note 3: SS-RSRP/PRS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. The Io values are derived without considering PRS-RSRP.  Note 4: PRS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: Void  Note 6: Void  Note 7: Void | | | | | | | | | | |

##### A.6.6.18.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 1840ms from the beginning of time period T2.

The PRS RSRP measurement time fulfils the requirements specified in Clause 9.9.3.5. The UE shall perform and report the PRS RSRP measurements for Cell 3 with respect to the reference cell in the DL-AoD assistance data, Cell 1, within the time duration specified in section 9.9.3.5 starting from the beginning of time interval T2.

The rate of the correct events for the neighbour cell observed during repeated tests shall be at least 90%, where the reported PRS RSRP measurement for each correct event shall be within the PRS RSRP reporting range specified in Clause 10.1.24.3, i.e., between PRS RSRP\_0 and PRS RSRP\_126.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

IUE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the change>