**3GPP TSG-RAN4 Meeting #103-eR4-2214332**

**Electronic Meeting, Aug 15 – Aug 26, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | Test case for Con-MGs TC1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh-Perf | | | | |  | ***Date:*** | | | 2022-08-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to the agreed WF R4-2210585, a test case for concurrent gap with fully non-overalpping scenario for SSB-based measurement in both inter-frequency layers in NR FR1 SA shold be added. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce a test case for concurrent gap with fully non-overalpping scenario for SSB-based measurement in both inter-frequency layers in NR FR1 SA. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test case will be missing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | (new) A.6.6.X2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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.X2.1 SA event triggered reporting tests for FR1 concurrent gaps with non-overalpping scenario for SSB-based measurements in both inter-frequency layers

##### A.6.6.X2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the concurrent gaps capable UE makes correct reporting of events. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4.

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 neighbour cell in FR1 on NR RF channel 3. The test parameters are given in Tables A.6.6.X2.2.1-1, A.6.6.X2.2.1-2 and A.6.6.X2.2.1-3.

Two measurement gap patterns (MeasGapId #0 and MeasGapId #1) are configured with the gap pattern ID #0 and #1 as defined in Table A.6.6.X2.1.1-2. MeasGapId #1 is configured with a higher priority than MeasGapId #0. MeasGapId #0 and MeasGapId #1 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 for both frequency layers. 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.

Table A.6.6.X2.1.1-1: SA event triggered reporting tests 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 30 kHz 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 cells have the same SCS, BW and duplex mode as NR serving cells | |

Table A.6.6.X2.1.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gaps with fully non-overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
|  |  |  |  |
| NR RF Channel Number |  | Config 1,2,3 | 1, 2, 3 | | Three FR1 NR carrier frequencies are used. |
| Active cell |  | Config 1,2,3 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3 | NR cells 2 and 3 | | NR cell 2 is on NR RF channel number 2. NR cell 3 is on NR RF channel number 3. |
| Gap Pattern Id |  | Config 1,2,3 | 0 for MeasGapId #0  1 for MeasGapId #1 | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3 | 39 for MeasGapId #0  19 for MeasGapId #1 | |  |
| A3-Offset | dB | Config 1,2,3 | -6 | |  |
| Hysteresis | dB | Config 1,2,3 | 0 | |  |
| CP length |  | Config 1,2,3 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3 | 0 | |  |
| Filter coefficient |  | Config 1,2,3 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3 | OFF | | DRX is not used |
| Time offset between serving and neighbour cell 1 |  | Config 1, 2, 3 | 3μs | | Synchronous. |
| Time offset between serving and neighbour cell 2 |  | Config 1, 2, 3 | [5ms] | | [Asynchronous.  The timing of Cell 3 is 5ms later than the timing of Cell 1.] |
| T1 | s | Config 1,2,3 | 5 | |  |
| T2 | s | Config 1,2,3 | 1.5 | 1.5 |  |

Table A.6.6.X2.1.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gaps with fully non-overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | Cell 3 | |
|  | |  |  | T1 | T2 | T1 | T2 | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3 | 1 | | 2 | | 3 | |
| Duplex mode | |  | Config 1 | FDD | | | | | |
|  | |  | Config 2,3 | TDD | | | | | |
| TDD configuration | |  | Config 1 | Not Applicable | | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | | |
| BWchannel | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3 | DLBWP.0.1 | | NA | | NA | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | NA | | NA | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | NA | | NA | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | NA | | NA | |
| TRS configuration | |  | Config 1 | TRS.1.1 FDD | | NA | | NA | |
|  | |  | Config 2 | TRS.1.1 TDD | | NA | | NA | |
|  | |  | Config 3 | TRS.1.2 TDD | | NA | | NA | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | SR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | SR.2.1 TDD | |  | |  | |
| RMSI CORESET Reference Channel | |  | Config 1 | CR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | CR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | CR.2.1 TDD | |  | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1 | CCR.1.1 FDD | |  | |  | |
|  | Config 2 | CCR.1.1 TDD | |  | |  | |
|  | Config 3 | CCR.2.1 TDD | |  | |  | |
| SSB parameters | |  | Config 1,2,3 | SSB.1 FR1 | | SSB.1 FR1 | | SSB.1 FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,2,3 | SMTC.2 | | SMTC.2 | | SMTC.2 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2 | 15 | | | | | |
|  | |  | Config 3 | 30 | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3 | 0 | | 0 | | 0 | |
| EPRE ratio of PBCH DMRS to SSS | |  |  |  | |  | |  | |
| EPRE ratio of PBCH to PBCH DMRS | |  |  |  | |  | |  | |
| EPRE ratio of PDCCH DMRS to SSS | |  |  |  | |  | |  | |
| EPRE ratio of PDCCH to PDCCH DMRS | |  |  |  | |  | |  | |
| EPRE ratio of PDSCH DMRS to SSS | |  |  |  | |  | |  | |
| EPRE ratio of PDSCH to PDSCH | |  |  |  | |  | |  | |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | |  |  |  | |  | |  | |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | |  |  |  | |  | |  | |
| Note2 | | dBm/15kHz |  | -98 | | -98 | | -98 | |
| Note2 | | dBm/SCS | Config 1,2 | -98 | | -98 | | -98 | |
|  | |  | Config 3 | -95 | | -95 | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2 | -94 | -94 | -Infinity | -91 | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | -Infinity | -88 | -Infinity | -88 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2 | -64.59 | -64.59 | -70.05 | -62.26 | -70.05 | -62.26 |
|  | | dBm/38.16MHz | Config 3 | -58.49 | -58.49 | -63.94 | -56.15 | -63.94 | -56.15 |
| Propagation Condition | |  | Config 1,2,3 | AWGN | | AWGN | | 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 and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. | | | | | | | | | |

##### A.6.6.X2.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for each neighboring cell, with a measurement reporting delay less than 920 ms for cell 2 and 1280ms for cell 3 from the beginning of time period T2. 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%.

UE 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>