**3GPP TSG-RAN WG4 Meeting #111 R4-2407516**

**Fukuoka City, Fukuoka, Japan, 20th – 24th May, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **TS 38.133** | **CR** | **DraftCR** | **rev** | **-** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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:*** | (IR1) DraftCR on inter-RAT EUTRAN measurements wihtout gap case b-1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh2-Perf | | | | |  | ***Date:*** | | | 2024-05-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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:*** | | The requirements for inter-RAT EUTRAN measurements wihtout gap case b-1 are defined and the corresponding test case should be introduced. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce test case for inter-RAT EUTRAN measurements wihtout gap case b-1 without interruption. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test case for inter-RAT EUTRAN measurements wihtout gap case b-1 is missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | New A.6.6.3.x | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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>

#### A.6.6.3.x SA NR - E-UTRAN event-triggered reporting in non-DRX in FR1

##### A.6.6.3.x.1 Test Purpose and Environment

The purpose of this set of tests is to verify that if UE reports “*nogap-noncsg*” via *NeedForGapNCSG-InfoEUTRA-r17*, the UE makes correct event-triggered reporting of inter-RAT E-UTRAN measurements when operating in standalone (SA) operation with PCell in FR1. This test shall partly verify the cell search and measurement requirements in clause 9.4.8.

In each test there are two cells: Cell 1 and Cell 2. Cell 1 is the NR PCell and Cell 2 is an inter-RAT E-UTRAN neighbour cell. In the measurement control information from the PCell it is indictated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) is to be used. Each test consists of two consecutive time periods, with durations T1 and T2, respectively. Prior to the start of time duration T1, the UE shall be fully synchronized to Cell 1. During T1, the UE shall not have any information on Cell 2.

Supported test configurations are shown in table A.6.6.3.x.1-1. General test parameters are provided in Table A.6.6.3.x.1-2 below. Test parameters for Cell 1 and Cell 2, valid for both time duration T1 and T2, are provided in Tables A.6.6.3.x.1-3 and A.6.6.3.x.1-4, respectively.

Table A.6.6.3.x.1-1: Supported test configurations in SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode, LTE FDD |
| 2 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode, LTE FDD |
| 3 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode, LTE FDD |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode, LTE TDD |
| 5 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode, LTE TDD |
| 6 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode, LTE TDD |
| Note: The UE is only required to be tested in one of the supported test configurations | |

Table A.6.6.3.x.1-2: General test parameters for SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| NR RF Channel Number |  | 1 | 1 NR carrier frequency is used in the test |
| LTE RF Channel Number |  | 1 | 1 LTE carrier frequency is used in the test |
| Channel Bandwidth | MHz | As specified in Tables A.6.6.3.x.1-2 and A.6.6.3.x.1-3. |  |
| Active cell |  | Cell 1 | Cell 1 is on RF channel number 1 |
| Neighbour cell |  | Cell 2 | Cell 2 is on RF channel number 2 |
|  |  |  |  |
| Effective Measurement Window (EMW) Id |  | 0 | As specified in Table 9.4.8.2-1 |
| NR measurement quantity |  | SS-RSRP | Measurement quantity for Cell 1 |
| Inter-RAT E-UTRAN measurement quantity |  | RSRP | Measurement quantity for Cell 2 |
| b2-Threshold1 | dBm | Note 1 | SS-RSRP threshold for SS-RSRP measurement on cell1 for event B2 |
| b2-Threshold2EUTRA | dBm | -95 | E-UTRAN RSRP threshold for SS-RSRP measurement on cell1 for event B2 |
| Hysteresis | dB | 0 |  |
| TimeToTrigger | s | 0 |  |
| Filter coefficient |  | 0 | L3 filtering is not used |
| DRX |  | OFF | OFF |
| T1 | s | 5 |  |
| T2 | s | 5 |  |
| Note 1: Values are defined in Table A.6.6.3.x.1-3 | | | |

Table A.6.6.3.x.1-3: PCell specific test parameters for SA inter-RAT E-UTRA event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Configuration | Cell 1 | |
|  | | |  |  | T1 | T2 |
| RF channel number | | |  | 1, 2, 3, 4, 5, 6 | 1 | |
| Duplex mode | | |  | 1, 2, 3 | FDD | |
|  | | |  | 4, 5, 6 | TDD | |
| TDD Configuration | | SCS=15 KHz |  | 2, 5 | TDDConf.1.1 | |
|  | | SCS=30 KHz |  | 3, 6 | TDDConf.2.1 | |
| BWchannel | | | MHz | 1, 4 | 10: NRB,c = 52 (FDD) | |
|  | | |  | 2, 5 | 10: NRB,c = 52 (TDD) | |
|  | | |  | 3, 6 | 40: NRB,c = 106 (TDD) | |
| PDSCH reference measurement channel | | |  | 1, 4 | SR.1.1 FDD | |
|  | | |  | 2, 5 | SR.1.1 TDD | |
|  | | |  | 3, 6 | SR.2.1 TDD | |
| RMSI CORSET reference channel | | |  | 1, 4 | CR.1.1 FDD | |
|  | | |  | 2, 5 | CR.1.1 TDD | |
|  | | |  | 3, 6 | CR.2.1 TDD | |
| Dedicated CORSET reference channel | | |  | 1, 4 | CCR.1.1 FDD | |
|  | | |  | 2, 5 | CCR.1.1 TDD | |
|  | | |  | 3, 6 | CCR.2.1 TDD | |
| BWP configurations | Initial DL BWP | |  | 1, 2, 3, 4, 5, 6 | DLBWP.0.1 | |
|  | Dedicated DL BWP | |  | 1, 2, 3, 4, 5, 6 | DLBWP.1.1 | |
|  | Initial UL BWP | |  | 1, 2, 3, 4, 5, 6 | ULBWP.0.1 | |
|  | Dedicated UL BWP | |  | 1, 2, 3, 4, 5, 6 | ULBWP.1.1 | |
| OCNG patternNote1 | | |  | 1, 2, 3, 4, 5, 6 | OP.1 | |
| SMTC configuration | | |  | 1, 2, 3, 4, 5, 6 | SMTC.1 | |
| SSB configuration | | |  | 1, 2, 4, 5 | SSB.1 FR1 | |
|  | | |  | 3, 6 | SSB.2 FR1 | |
| CSI-RS for tracking | | |  | 1, 4 | TRS.1.1 FDD | |
|  | 2, 5 | TRS.1.1 TDD | |
|  | 3, 6 | TRS.1.2 TDD | |
| b2-Threshold1 | | | dBm | 1, 2, 4, 5 | --96 | |
|  | | |  | 3, 6 | --93 | |
| EPRE ratio of PSS to SSS | | | dB | 1, 2, 3, 4, 5, 6 | 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\_DMRS | | |  |  |  | |
| EPRE ratio of OCNG DMRS to SSS | | |  |  |  | |
| EPRE ratio of OCNG to OCNG DMRS | | |  |  |  | |
| *Noc*Note2 | | | dBm/15 KHz | 1, 2, 3, 4, 5, 6 | -104 | |
| *Noc*Note2 | | | dBm/SCS | 1, 2, 4, 5 | -104 | |
|  | | |  | 3, 6 | -101 | |
| Ês/Noc | | | dB | 1, 2, 3, 4, 5, 6 | 16 | 0 |
| Ês/IotNote3 | | | dB | 1, 2, 3, 4, 5, 6 | 16 | 0 |
| SS-RSRPNote3 | | | dBm/SCS | 1, 2, 4, 5 | -88 | -104 |
|  | | |  | 3, 6 | -85 | -101 |
| SSB\_RPNote3 | | | dBm/SCS | 1, 2, 4, 5 | -88 | -104 |
|  | | |  | 3, 6 | -85 | -101 |
| IoNote3 | | | dBm/9.36 MHz | 1, 2, 4, 5 | -59.94 | -73.04 |
|  | | | dBm/38.16 MHz | 3, 6 | -53.84 | -66.93 |
| Propagation condition | | |  | 1, 2, 3, 4, 5, 6 | AWGN | |
| Antenna Configuration and Correlation Matrix | | |  | 1, 2, 3, 4, 5, 6 | 1x2 | |
| 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: Ês/Iot, SS-RSRP, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | |

Table A.6.6.3.x.1-4: E-UTRAN neighbour cell specific test parameters for SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 2 | |
|  |  |  | **T1** | **T2** |
| RF channel number |  | 1, 2, 3, 4, 5, 6 | 1 | |
| Duplex mode |  | 1, 2, 3 | FDD | |
|  |  | 4, 5, 6 | TDD | |
| TDD special subframe configurationNote1 |  | 4, 5, 6 | 6 | |
| TDD uplink-downlink configurationNote1 |  | 4, 5, 6 | 1 | |
| BWchannel | MHz | 1, 2, 3, 4, 5, 6 | 5 MHz: NRB,c = 25  10 MHz: NRB,c = 50  20 MHz: NRB,c = 100 | |
| PDSCH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.7 FDD  10 MHz: R.3 FDD  20 MHz: R.6 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.4 TDD  10 MHz: R.0 TDD  20 MHz: R.3 TDD | |
| PCFICH/PDCCH/PHICH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.11 FDD  10 MHz: R.6 FDD  20 MHz: R.10 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.11 TDD  10 MHz: R.6 TDD  20 MHz: R.10 TDD | |
| OCNG PatternsNote2 |  | 1, 2, 3 | 5 MHz: OP.20 FDD  10 MHz: OP.10 FDD  20 MHz: OP.17 FDD | |
|  |  | 4, 5, 6 | 5 MHz: OP.9 TDD  10 MHz: OP.1 TDD  20 MHz: OP.7 TDD | |
| PBCH\_RA | dB | 1, 2, 3, 4, 5, 6 | 0 | |
| PBCH\_RB |  |  |  | |
| PSS\_RA |  |  |  | |
| SSS\_RA |  |  |  | |
| PCFICH\_RB |  |  |  | |
| PHICH\_RA |  |  |  | |
| PHICH\_RB |  |  |  | |
| PDCCH\_RA |  |  |  | |
| PDCCH\_RB |  |  |  | |
| PDSCH\_RA |  |  |  | |
| PDSCH\_RB |  |  |  | |
| OCNG\_RANote3 |  |  |  | |
| OCNG\_RBNote3 |  |  |  | |
| NocNote4 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -104 | |
| Ês/Noc | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| Ês/IotNote5 | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| IoNote5 | dBm/9MHz | 1, 2, 3, 4, 5, 6 | -73.21+10log (NRB,c /50) | -56.12+10log (NRB,c /50) |
| Propagation Condition |  | 1, 2, 3, 4, 5, 6 | AWGN | |
| Antenna Configuration and Correlation Matrix |  | 1, 2, 3, 4, 5, 6 | 1x2 | |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].  Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.  Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 4: 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 Noc to be fulfilled.  Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | |

##### A.6.6.3.x.2 Test Requirements

The UE shall send one Event B2 triggered measurement report for Cell 2 to the PCell, with a measurement reporting delay less than 3.84s from the start of period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event-triggered measurement reports as long as the reporting criteria are not fulfilled.

During the T1 and T2, UE shall be able to report ACK/NACK for all slots with PDCCH/PDSCH on PCell excluding those symbles as defined in 9.4.8.3.5 or 9.4.8.4.5.

The rate of correct events observed during repeated tests shall be at least 90%.

# <End of Change 1>