**3GPP TSG-RAN WG4 Meeting #97-eR4-2017136**

**Electronic Meeting, 2-13 Nov., 2020**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **draft** | **rev** |  | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *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:*** | CR on TS38.133 for cell reselection to FR1 inter-RAT E-UTRA test case with low mobility criterion | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MediaTek Inc. | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_UE\_pow\_sav-Perf | | | | |  | ***Date:*** | | | 2020-10-23 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The low mobility criterion are introduced in Rel-16 so that UE can measure neighboring cell with relaxed measurement time. On the other hands, in last meeting, it has been agreed that the test case for cell reselection to lower priority E-UTRAN shall be defined in RRM performance part. Thus, the proposed test cases are provided in this CR. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | To introduce new test cases of cell reselection to lower priority E-UTRAN as follows:   1. Cell reselection to lower priority E-UTRAN with low mobility relaxed measurement | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Test case of Cell reselection to lower priority E-UTRAN with low mobility or not-at-cell edge relaxed measurement would be undefined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | R4-2014371 | | | | | | | | |

### >>>>>Start of Change 1<<<<<

### A.6.1.2.3 Cell reselection to lower priority E-UTRAN for UE fulfilling low mobility relaxed measurement criterion

A.6.1.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the NR to E-UTRAN inter-RAT cell reselection when UE fulfils the low mobility criterion specified in clause 4.2.2.11.2 and the E-UTRAN cell is of lower priority.

A.6.1.2.3.2 Test Parameters

The test scenario comprises of one NR cell and one E-UTRAN cell as given in tables A.6.1.2.3.2-1, A.6.1.2.3.2-2, A.6.1.2.3.2-3 and A.6.1.2.3.2-4. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both NR cell 1 and E-UTRAN cell 2 are already identified by the UE prior to the start of the test. E-UTRAN cell 2 is of lower priority than cell 1.

As specified in the Test Purpose, the UE is configured with the relaxed measurement criterion for UE with low mobility defined in clause 5.2.4.9.1 in [1]. So, Cell 1 configures the UE as follows:

- lowMobilityEvalutation [2] criterion is configured according to the parameters listed in Table A.6.1.1.5.2-3;

- cellEdgeEvaluation [2] criterion is not configured;

- combineRelaxedMeasCondition [2] is not configured or configured but set to FALSE

**Table A.6.1.2.3.2-1: Supported test configurations**

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

**Table A.6.1.2.3.2-2: General test parameters for NR to E-UTRAN cell re-selection test case**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Test configuration** | **Value** | **Comment** |
| Initial condition | Active cell |  | 1, 2, 3, 4, 5, 6 | Cell1 | The UE camps on cell 1 in the initial phase, it fulfills Low Mobility relaxation measurements criterion, and during T1 period the UE reselects to cell 2 |
| T1 end condition | Active cell |  | 1, 2, 3, 4, 5, 6 | Cell2 | The UE shall perform reselection to cell 2 during T1 |
| Neighbour cells |  | 1, 2, 3, 4, 5, 6 | Cell1 |
| T2 end condition | Active cell |  | 1, 2, 3, 4, 5, 6 | Cell1 | The UE shall perform reselection to cell 1 with higher priority during T2 |
| Neighbour cells |  | 1, 2, 3, 4, 5, 6 | Cell2 |
| Access Barring Information | | - | 1, 2, 3, 4, 5, 6 | Not Sent | No additional delays in random access procedure. |
| DRX cycle length | | s | 1, 2, 3, 4, 5, 6 | 0.64 | The value shall be used for all cells in the test. |
| NR PRACH configuration index | |  | 1, 2, 3, 4, 5, 6 | 102 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| E-UTRAN PRACH | |  | 1, 2, 3 | 534 | As specified in table 5.7.1-2 in TS 36.211 [23] |
| configuration index | |  | 4, 5, 6 |  |
| T1 | | s | 1, 2, 3, 4, 5, 6 | 24 | T1 needs to be defined so that cell re-selection reaction time is taken into account. |
| T2 | | s | 1, 2, 3, 4, 5, 6 | 24 | T2 needs to be defined so that cell re-selection reaction time is taken into account. |

**Table A.6.1.2.3.2-3: Cell specific test parameters for NR cell 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | |
| **T1** | **T2** |
| TDD configuration |  | 1, 4 | N/A | |
|  |  | 2, 5 | TDDConf.1.1 | |
|  |  | 3, 6 | TDDConf.2.1 | |
| PDSCH RMC configuration |  | 1, 4 | SR.1.1 FDD | |
|  |  | 2, 5 | SR.1.1 TDD | |
|  |  | 3, 6 | SR.2.1 TDD | |
| RMSI CORESET RMC |  | 1, 4 | CR.1.1 FDD | |
| configuration |  | 2, 5 | CR.1.1 TDD | |
|  |  | 3, 6 | CR.2.1 TDD | |
| Dedicated CORESET RMC |  | 1, 4 | CCR.1.1 FDD | |
| configuration |  | 2, 5 | CCR.1.1 TDD | |
|  |  | 3, 6 | CCR.2.1 TDD | |
| SSB configuration |  | 1, 4 | SSB.1 FR1 | |
|  |  | 2, 5 | SSB.1 FR1 | |
|  |  | 3, 6 | SSB.2 FR1 | |
| SMTC configuration |  | 1, 4 | SMTC pattern 2 | |
|  |  | 2, 5 | SMTC pattern 1 | |
|  |  | 3, 6 | SMTC pattern 1 | |
| OCNG Pattern |  | 1, 2, 3, 4, 5, 6 | OP.1 defined in A.3.2.1 | |
| Initial DL BWP configuration |  | 1, 2, 3, 4, 5, 6 | DLBWP.0 | |
| Initial UL BWP configuration |  | 1, 2, 3, 4, 5, 6 | ULBWP.0 | |
| RLM-RS |  | 1, 2, 3, 4, 5, 6 | SSB | |
| Qrxlevmin | dBm/SCS | 1, 2, 4, 5 | -140 | |
|  |  | 3, 6 | -137 | |
|  | dBm/SCS | 1, 4 | -98 | |
|  |  | 2, 5 | -98 | |
|  |  | 3, 6 | -95 | |
|  | dBm/15 kHz | 1, 2, 3, 4, 5, 6 | -98 | |
| SS-RSRP | dBm/SCS | 1, 4 | -102 | -86 |
|  |  | 2, 5 | -102 | -86 |
|  |  | 3, 6 | -99 | -83 |
|  | dB | 1, 4 | -4 | 12 |
|  |  | 2, 5 |  |  |
|  |  | 3, 6 |  |  |
|  | dB | 1, 4 | -4 | 12 |
|  |  | 2, 5 |  |  |
|  |  | 3, 6 |  |  |
| Io | dBm/9.36 MHz | 1, 4 | -68.60 | -57.78 |
|  | dBm/9.36 MHz | 2, 5 | -68.60 | -57.78 |
|  | dBm/38.16 MHz | 3, 6 | -62.50 | -51.69 |
| Treselection | S | 1, 2, 3, 4, 5, 6 | 0 | |
| Snonintrasearch | dB | 1, 2, 3, 4, 5, 6 | 50 | |
| Threshx, high (Note 2) | dB | 1, 2, 3, 4, 5, 6 | 48 | |
| Threshserving, low | dB | 1, 2, 3, 4, 5, 6 | 44 | |
| Threshx, low | dB | 1, 2, 3, 4, 5, 6 | 50 | |
| SSearchDeltaP | dB | 1, 2, 3, 4, 5, 6 | 3 | |
| TSearchDeltaP | s | 1, 2, 3, 4, 5, 6 | 5 | |
| Propagation Condition |  | 1, 2, 3, 4, 5, 6 | 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: This refers to the value of Thresh**x, high** which is included in NR system information, and is a threshold for the E-UTRA target cell | | | | |

**Table A.6.1.2.3.2-4: Cell specific test parameters for E-UTRA cell 2**

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Cell 2 | |
| T1 | T2  T3 |
| E-UTRA RF Channel number |  | 1 | |
| BWchannel | MHz | 10 | |
| OCNG Patterns defined in TS 36.133 [15] clause A.3.2 |  | OP.2 TDD for test configuration 1, 2, 3;  OP.2 FDD for test configuration 4, 5, 6 | |
| PBCH\_RA | dB | 0 | |
| PBCH\_RB | dB |
| PSS\_RA | dB |
| SSS\_RA | dB |
| PCFICH\_RB | dB |
| PHICH\_RA | dB |
| PHICH\_RB | dB |
| PDCCH\_RA | dB |
| PDCCH\_RB | dB |
| PDSCH\_RA | dB |
| PDSCH\_RB | dB |
| OCNG\_RANote 1 | dB |
| OCNG\_RBNote 1 | dB |
| Qrxlevmin | dBm | -140 | |
|  | dBm/15 kHz | -98 | |
| RSRP | dBm/15 KHz | -84 | -84 |
|  | dB | 14 | 14 |
|  | dB | 14 | 14 |
| TreselectionEUTRAN | S | 0 | |
| Snonintrasearch | dB | Not sent | |
| Threshx, high (Note 2) | dB | 48 | |
| Threshserving, low | dB | 44 | |
| Threshx, low | dB | 50 | |
| Propagation Condition |  | 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: This refers to the value of Thresh**x, high** which is included in E-UTRA system information, and is a threshold for the NR target cell | | | |

A.6.1.2.3.3 Test Requirements

The cell reselection delay to a lower priority E-UTRAN cell with UE fulfilling low mobility criterion is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a registration procedure for mobility and periodic registration update on cell 2.

The cell re-selection delay to a lower priority cell shall be less than 17 s.

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

NOTE: The cell re-selection delay to a lower priority cell can be expressed as: Tevaluate, E-UTRAN + TSI-E-UTRA,

Where:

Tevaluate, E-UTRAN See Table 4.2.2.11.2-1 in clause 4.2.2.11.2

TSI-E-UTRA Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 15.36 (Tevaluate, E-UTRAN) + 1.28 (TSI-E-UTRA) = 16.64 s, allow 17 s for the cell re-selection delay to a lower priority E-UTRAN cell with UE fulfilling low mobility criterion.

### >>>>>End of Change 1<<<<<