**3GPP TSG-RAN WG4 Meeting #97-e *R4-2017140***

**Electronic Meeting, Nov 2 – 13, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **-** | **rev** | **1** | **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:*** | Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_UE\_pow\_sav-Perf | | | | |  | ***Date:*** | | | 2020-11-10 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Specify the test case for Cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement criterion | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Test case for cell reselection to FR2 intra-frequency NR case for UE configured with relaxed measurement criterion is specified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The specification is incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | New A.7.1.1.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

----------------------------------------------------- Beginning of Change 1 ------------------------------------------------------------

#### A.7.1.1.3 Cell reselection to FR2 intra-frequency NR case for UE fulfilling low mobility criterion

##### A.7.1.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the intra frequency NR cell reselection requirements for UE configured with relaxed measurement criterion specified in clause 4.2.2.9.2 and 4.2.2.9.3.

##### A.7.1.1.3.2 Test Parameters

The test scenario comprises of 1 NR carrier and 2 cells as given in tables A.7.1.1.3.2-1, A.7.1.1.3.2-2 and A.7.1.1.3.2-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. During T1, only criteria *lowMobilityEvalutation* is configured andfulfilled, where (SrxlevRef – Srxlev) < SSearchDeltaP.UE has not registered with network for tracking area containing cell2.

Table A.7.1.1.3.2-1: Supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.7.1.1.3.2-2: General test parameters for Cell reselection to FR2 intra-frequency NR case for UE fulfilling low mobility criterion

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell2 |  |
| Neighbour cells |  | 1, 2 | Cell1 |  |
| T1 end condition | Active cell |  | 1, 2 | Cell1 |  |
| Neighbour cells |  | 1, 2 | Cell2 |
| Final condition | Active cell |  | 1, 2 | Cell2 |  |
| RF Channel Number | |  | 1, 2 | 1 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SMTC configuration | |  | 1, 2 | SMTC pattern 1 |  |
| DRX cycle length | | s | 1, 2 | 0.64 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| SSearchDeltaP | | dB | 1,2 | 6 | Threshold for *lowMobilityEvalutation* criterion. |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | 35 |  |
| T2 | | s | 1, 2 | 35 |  |

Table A.7.1.1.3.2-3: Cell specific test parameters for Cell reselection to FR2 intra-frequency NR case for UE fulfilling low mobility criterion

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | Cell 2 | | |
|  |  | T1 | T2 | T1 | | T2 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | TDDConf.3.1 | | |
| PDSCH RMC |  | 1 | SR.3.1 TDD | | SR.3.1 TDD | | |
| configuration |  | 2 | SR.3.1 TDD | | SR.3.1 TDD | | |
| RMSI CORESET |  | 1 | CR.3.1 TDD | | CR.3.1 TDD | | |
| RMC configuration |  | 2 | CR.3.1 TDD | | CR.3.1 TDD | | |
| Dedicated CORESET |  | 1 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| RMC configuration |  | 2 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| SSB configuration |  | 1 | SSB.3 FR2 | | SSB.7 FR2 | | |
|  |  | 2 | SSB.4 FR2 | | SSB.8 FR2 | | |
| OCNG Pattern |  | 1, 2 | OP.4 | | OP.4 | | |
| Initial DL BWP configuration |  | 1, 2 | DLBWP.0.1 | | DLBWP.0.1 | | |
| Initial UL BWP configuration |  | 1, 2 | ULBWP.0.1 | | ULBWP.0.1 | | |
| RLM-RS |  | 1, 2 | SSB | | SSB | | |
| Qrxlevmin | dBm/SCS | 1 | -140 | | -140 | | |
|  |  | 2 | -137 | | -137 | | |
| Pcompensation | dB | 1, 2 | 0 | | 0 | | |
| Qhysts | dB | 1, 2 | 0 | | 0 | | |
| Qoffsets, n | dB | 1, 2 | 0 | | 0 | | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | SS-RSRP | | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | Setup 1 defined in A.3.15.1 | | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | Rough | | |
|  | dB | 1 | 8 | 8 | -3 | 8 | |
|  |  | 2 |
| Note2 | dBm/SCS | 1 | -93 | | | | |
|  |  | 2 | -90 | | | | |
| Note2 | dBm/15 kHz | 1 | -102 | | | | |
|  |  | 2 |  | | | | |
|  | dB | 1 | 8 | 8 | -3 | 8 | |
|  |  | 2 |
| SS-RSRP Note3 | dBm/SCS | 1 | -85 | -85 | -96 | -85 | |
|  |  | 2 | -82 | -82 | -93 | -82 | |
| Io on SSB symbols of each cell | dBm/95.04 MHz | 1 | -55.37 | -55.37 | -62.25 | -55.37 | |
| 2 | -52.37 | -52.37 | -59.25 | -52.37 | |
| Treselection | s | 1, 2 | 0 | 0 | 0 | 0 | |
| SintrasearchP | dB | 1, 2 | 50 | | 50 | | |
| Propagation Condition |  | 1, 2 | 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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | |

##### A.7.1.1.3.3 Test Requirements

The cell reselection delay to a detectable cell is defined as the time from the beginning of time period T1, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to a newly detectable cell shall be less than 79 s.

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

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: Tevaluate, NR\_Intra + TSI-NR,

Where:

Tevaluate, NR\_Intra See Table 4.2.2.9.1-1 in clause 4.2.2.9,

TSI-NR 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 78.08 s, allow 79s for the cell re-selection delay to a newly detectable cell.

#### A.7.1.1.4 Cell reselection to FR2 intra-frequency NR case for UE fulfilling not-at-cell edge criterion

##### A.7.1.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the intra frequency NR cell reselection requirements for UE configured with relaxed measurement criterion specified in clause 4.2.2.9.2 and 4.2.2.9.3.

##### A.7.1.1.4.2 Test Parameters

The test scenario comprises of 1 NR carrier and 2 cells as given in tables A.7.1.1.4.2-1, A.7.1.1.4.2-2 and A.7.1.1.4.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. During T1, only criteria *cellEdgeEvaluation* is configured andfulfilled, where Srxlev ≤ SnonIntraSearchP.UE has not registered with network for tracking area containing cell2.

Table A.7.1.1.4.2-1: Supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.7.1.1.4.2-2: General test parameters for Cell reselection to FR2 intra-frequency NR case for UE fulfilling not-at-cell edge criterion

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell2 |  |
| Neighbour cells |  | 1, 2 | Cell1 |  |
| T1 end condition | Active cell |  | 1, 2 | Cell1 |  |
| Neighbour cells |  | 1, 2 | Cell2 |
| Final condition | Active cell |  | 1, 2 | Cell2 |  |
| RF Channel Number | |  | 1, 2 | 1 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SMTC configuration | |  | 1, 2 | SMTC pattern 1 |  |
| DRX cycle length | | s | 1, 2 | 0.64 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| SSearchThresholdP | | dB | 1,2 | 20 | Threshold for cellEdgeEvaluation |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | 100 |  |
| T2 | | s | 1, 2 | 100 |  |

Table A.7.1.1.4.2-3: Cell specific test parameters for Cell reselection to FR2 intra-frequency NR case for UE fulfilling not-at-cell edge criterion

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | Cell 2 | | |
|  |  | T1 | T2 | T1 | | T2 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | TDDConf.3.1 | | |
| PDSCH RMC |  | 1 | SR.3.1 TDD | | SR.3.1 TDD | | |
| configuration |  | 2 | SR.3.1 TDD | | SR.3.1 TDD | | |
| RMSI CORESET |  | 1 | CR.3.1 TDD | | CR.3.1 TDD | | |
| RMC configuration |  | 2 | CR.3.1 TDD | | CR.3.1 TDD | | |
| Dedicated CORESET |  | 1 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| RMC configuration |  | 2 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| SSB configuration |  | 1 | SSB.3 FR2 | | SSB.7 FR2 | | |
|  |  | 2 | SSB.4 FR2 | | SSB.8 FR2 | | |
| OCNG Pattern |  | 1, 2 | OP.4 | | OP.4 | | |
| Initial DL BWP configuration |  | 1, 2 | DLBWP.0.1 | | DLBWP.0.1 | | |
| Initial UL BWP configuration |  | 1, 2 | ULBWP.0.1 | | ULBWP.0.1 | | |
| RLM-RS |  | 1, 2 | SSB | | SSB | | |
| Qrxlevmin | dBm/SCS | 1 | -140 | | -140 | | |
|  |  | 2 | -137 | | -137 | | |
| Pcompensation | dB | 1, 2 | 0 | | 0 | | |
| Qhysts | dB | 1, 2 | 0 | | 0 | | |
| Qoffsets, n | dB | 1, 2 | 0 | | 0 | | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | SS-RSRP | | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | Setup 1 defined in A.3.15.1 | | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | Rough | | |
|  | dB | 1 | 8 | 8 | -3 | 8 | |
|  |  | 2 |
| Note2 | dBm/SCS | 1 | -93 | | | | |
|  |  | 2 | -90 | | | | |
| Note2 | dBm/15 kHz | 1 | -102 | | | | |
|  |  | 2 |  | | | | |
|  | dB | 1 | 8 | 8 | -3 | 8 | |
|  |  | 2 |
| SS-RSRP Note3 | dBm/SCS | 1 | -85 | -85 | -96 | -85 | |
|  |  | 2 | -82 | -82 | -93 | -82 | |
| Io on SSB symbols of each cell | dBm/95.04 MHz | 1 | -55.37 | -55.37 | -62.25 | -55.37 | |
| 2 | -52.37 | -52.37 | -59.25 | -52.37 | |
| Treselection | s | 1, 2 | 0 | 0 | 0 | 0 | |
| SintrasearchP | dB | 1, 2 | [50] | | [50] | | |
| Propagation Condition |  | 1, 2 | 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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | |

##### A.7.1.1.4.3 Test Requirements

The cell reselection delay to a detectable cell is defined as the time from the beginning of time period T1, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to a newly detectable cell shall be less than 79 s.

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

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: Tevaluate, NR\_Intra + TSI-NR,

Where:

Tevaluate, NR\_Intra See Table 4.2.2.9.3-1 in clause 4.2.2.9,

TSI-NR 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 78.08 s, allow 79s for the cell re-selection delay to a newly detectable cell.

------------------------------------------------------------- End of change 1 ------------------------------------------------------------