**3GPP TSG-RAN4 Meeting #104-bis-e *R4-2215418***

 **Electronic Meeting, October 10th - October 19th, 2022**

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **Draft** | **rev** | **-** | **Current version:** | **17.7.0** |  |
|  |
| *For* [***HELP***](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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Draft CR on test cases for SA RRC Re-establishment for extending NR operation to 71GHz  |
|  |  |
| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_ext\_to\_71GHz-Perf |  | ***Date:*** | 2022-09-26 |
|  |  |  |  |  |
| ***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 canbe 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:*** | Current specification has not inlcuded test cases on SA RRC Re-establishment for 71GHz  |
|  |  |
| ***Summary of change:*** | Add test cases on test cases on SA RRC Re-establishment for 71GHz |
|  |  |
| ***Consequences if not approved:*** | No test cases on SA RRC Re-establishment for 71GHz |
|  |  |
| ***Clauses affected:*** |  A.7.3.2.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:*** |  |

<Start of Changes>

A.7.3.2 RRC Connection Mobility Control

A.7.3.2.X1 SA: RRC Re-establishment for FR2-2

A.7.3.2.X1.1 Intra-frequency RRC Re-establishment in FR2-2

A.7.3.2.X1.1.1 Test Purpose and Environment

The purpose is to verify that the NR intra-frequency RRC re-establishment delay in FR2-2 without known target cell is within the specified limits. These tests will verify the requirements in clause 6.2.1.

The test parameters are given in table A.7.3.2.X1.1.1-1, table A.7.3.2.X1.1.1-2 and table A.7.3.2.X1.1.1-3 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, becomes inactive. The time period T3 starts after the occurrence of the radio link failure.

**Table A.7.3.2.X1.1.1-1: Supported test configurations**

|  |  |
| --- | --- |
| **Config** | **Description** |
| 1 | NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | NR 480 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| 3 | NR 960 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations |

**Table A.7.3.2.X1.1.1-2: General test parameters for NR intra-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Initial condition | Active cell |  | 1,2,3 | Cell1 |  |
|  | Neighbour cells |  | 1,2,3 | Cell2  |  |
| Final condition | Active cell |  | 1,2,3 | Cell2 |  |
| RF Channel Number |  | 1,2,3 | 1 |  |
| Time offset between cells |  | 1,2,3 | 3 μs | Synchronous cells |
| N310 | - | 1,2,3 | 1 | Maximum consecutive out-of-sync indications from lower layers |
| N311 | - | 1,2,3 | 1 | Minimum consecutive in-sync indications from lower layers |
| T310 | ms | 1,2,3 | 0 | Radio link failure timer; T310 is disabled |
| T311 | ms | 1,2,3 | 5000 | RRC re-establishment timer |
| Access Barring Information | - | 1,2,3 | Not Sent | No additional delays in random access procedure. |
| SSB configuration |  | 1,2,3 | SSB.1 FR2 |  |
| SMTC configuration |  | 1,2,3 | SMTC pattern 1 |  |
| DRX cycle length | s | 1,2,3 | OFF |  |
| PRACH configuration |  | 1,2,3 | FR2 PRACH configuration 1 | Table A.3.8.3.1-1 |
| T1 | s | 1,2,3 | 5 |  |
| T2 | s | 1,2,3 | 4.84 | Time for the UE to detect RLF(Summation of TEvaluate\_out\_SSB defined in clause 8.1 in TS 38.133, T310 and the period for UE turns off transmitter defined in clause 8.1.5 in TS 38.133 ) |
| T3 | s | 1,2,3 | 5 |  |

**Table A.7.3.2.X1.1.1-3: Cell specific test parameters for NR intra-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | **Cell 2** |
|  |  |  | **T1** | **T2** | **T3** | **T1** | **T2** | **T3** |
| Assumption for UE beamsNote 4 |  | 1,2,3 | Rough | Rough |
| TDD configuration |  | 1,2,3 | TDDConf.3.1 | TDDConf.3.1 |
| BWchannel | MHz | 1 | 100: NRB,c = 66 | 100: NRB,c = 66 |
| Data RBs allocated |  | 1 | 24 | 24 |
| PDSCH RMC configuration |  | 1,2,3 | SR.3.1 TDD | N/A |
| RMSI CORESET RMC configuration |  | 1,2,3 | CR.3.1 TDD | CR.3.1 TDD |
| Dedicated CORESET RMC configuration |  | 1,2,3 | CCR.3.1 TDD | CCR.3.1 TDD |
| TRS configuration |  | 1,2,3 | TRS.2.1 TDD | N/A |
| PDSCH/PDCCH TCI state |  | 1,2,3 | TCI.State.2 | N/A |
| OCNG Pattern |  | 1,2,3 | OP.1 defined in A.3.2.1 | OP.1 defined in A.3.2.1 |
| Initial DL BWP configuration |  | 1,2,3 | DLBWP.0.1 | DLBWP.0.1 |
| Initial UL BWP configuration |  | 1,2,3 | ULBWP.0.1 | ULBWP.0.1 |
| RLM-RS |  | 1,2,3 | SSB | SSB |
| AoA setup |  | 1,2,3 | Setup 1 defined in A.3.15.1 | Setup 1 defined in A.3.15.1 |
|  | dB | 1,2,3 | -0.12 | -infinity | -infinity | -3.46 | 2 | 2 |
|  Note2 | dBm/15 kHz | 1,2,3 | -104.7 |
|  Note2 | dBm/SCS | 1 | -95.7 |
| 2 | -95.7 |
| 3 | -92.7 |
|  | dB | 1,2,3 | 4 | -infinity | -infinity | 2 | 2 | 2 |
| SS-RSRP Note3 | dBm/SCS | 1 | -91.7 | -infinity | -infinity | -93.7 | -93.7 | -93.7 |
| 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| Io | dBm/95.04 MHz | 1 | -59.64 | -62.59 | -62.59 | -59.94 | -62.59 | -62.59 |
| dBm/380.16 MHz | 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| dBm/380.16 MHz | 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| 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 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.7.3.2.X1.1.2 Test Requirements

he RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown NR intra frequency cell shall be less than 5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 Tre-establish\_delay= TUL\_grant + TUE\_re-establish\_delay.

Where:

 TUL\_grant = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence TUL\_grant is not used.

 $T\_{UE\\_re-establish\\_delay}=50 ms+T\_{identify\\_intra\\_NR}+\sum\_{i=1}^{Nfreq-1}T\_{identify\\_inter\\_NR,i}+T\_{SI-NR}+T\_{PRACH}$

 Nfreq = 1

 Tidentify\_intra\_NR = 3520 ms

 TSI = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 38.331 for the target intra-frequency NR cell.

 TPRACH = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 4865 ms, allow 5 s in the test case.

A.7.3.2.X1.2 Inter-frequency RRC Re-establishment in FR2-2

A.7.3.2.X1.2.1 Test Purpose and Environment

The purpose is to verify that the NR inter-frequency RRC re-establishment delay in FR2-2 without known target cell is within the specified limits. These tests will verify the requirements in clause 6.2.1.

The test parameters are given in table A.7.3.2.X1.2.1-1, table A.7.3.2.X1.2.1-2 and table A.7.3.2.X1.2.1-3 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, becomes inactive. The time period T3 starts after the occurrence of the radio link failure. During T1, the UE shall be configured with the carrier frequency of cell 2 (with RF Channel Number #2) to ensure that the UE has the context of the carrier frequency of cell 2 by the end of T1.

**Table A.7.3.2.X1.2.1-1: Supported test configurations**

|  |  |
| --- | --- |
| **Config** | **Description** |
| 1 | NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | NR 480 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| 3 | NR 960 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations |

**Table A.7.3.2.X1.2.1-2: General test parameters for NR inter-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Initial condition | Active cell |  | 1,2,3 | Cell1 |  |
|  | Neighbour cells |  | 1,2,3 | Cell2  |  |
| Final condition | Active cell |  | 1,2,3 | Cell2 |  |
| RF Channel Number |  | 1,2,3 | 1, 2 |  |
| Time offset between cells |  | 1,2,3 | 3 μs | Synchronous cells |
| N310 | - | 1,2,3 | 1 | Maximum consecutive out-of-sync indications from lower layers |
| N311 | - | 1,2,3 | 1 | Minimum consecutive in-sync indications from lower layers |
| T310 | ms | 1,2,3 | 0 | Radio link failure timer; T310 is disabled |
| T311 | ms | 1,2,3 | 5000 | RRC re-establishment timer |
| Access Barring Information | - | 1,2,3 | Not Sent | No additional delays in random access procedure. |
| SSB configuration |  | 1,2,3 | SSB.1 FR2 |  |
| SMTC configuration |  | 1,2,3 | SMTC pattern 1 |  |
| DRX cycle length | s | 1,2,3 | OFF |  |
| PRACH configuration |  | 1,2,3 | FR2 PRACH configuration 1 | Table A.3.8.3.1-1 |
| T1 | s | 1,2,3 | 5 |  |
| T2 | s | 1,2,3 | 4.84 | Time for the UE to detect RLF(Summation of TEvaluate\_out\_SSB defined in clause 8.1 in TS 38.133, T310 and the period for UE turns off transmitter defined in clause 8.1.5 in TS 38.133 ) |
| T3 | s | 1,2,3 | 6 |  |

**Table A.7.3.2.X1.2.1-3: Cell specific test parameters for NR inter-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | **Cell 2** |
|  |  |  | **T1** | **T2** | **T3** | **T1** | **T2** | **T3** |
| Assumption for UE beamsNote 4 |  |  | Rough | Rough |
| AoA setup |  | 1,2,3 | Setup 3 as specified in clause A.3.15 |
|  |  |  | AoA1 | AoA2 |
| TDD configuration |  | 1,2,3 | TDDConf.3.1 | TDDConf.3.1 |
| BWchannel | MHz | 1 | 100: NRB,c = 66 | 100: NRB,c = 66 |
| Data RBs allocated |  | 1 | 24 | 24 |
| PDSCH RMC configuration |  | 1,2,3 | SR.3.1 TDD | N/A |
| RMSI CORESET RMC configuration |  | 1,2,3 | CR.3.1 TDD | CR.3.1 TDD |
| Dedicated CORESET RMC configuration |  | 1,2,3 | CCR.3.1 TDD | CCR.3.1 TDD |
| TRS configuration |  | 1,2,3 | TRS.2.1 TDD | N/A |
| PDSCH/PDCCH TCI state |  | 1,2,3 | TCI.State.2 | N/A |
| OCNG Pattern |  | 1,2,3 | OP.1 defined in A.3.2.1 | OP.1 defined in A.3.2.1 |
| Initial DL BWP configuration |  | 1,2,3 | DLBWP.0.1 | DLBWP.0.1 |
| Initial UL BWP configuration |  | 1,2,3 | ULBWP.0.1 | ULBWP.0.1 |
| RLM-RS |  | 1,2,3 | SSB | SSB |
|  Note2 | dBm/15 kHz | 1,2,3 | -92.1 | -92.1 |
|  Note2 | dBm/SCS | 1 | -83.1 | -83.1 |
| 2 | TBD | TBD |
| 3 | TBD | TBD |
|  | dB | 1,2,3 | 0 | -infinity | -infinity | -infinity | -infinity | 0 |
| BB Note 5  | dB | 1,2,3 | -1.01 | -infinity | -infinity | -infinity | -infinity | -1.01 |
| SSB\_RP Note3 | dBm/SCS | 1 | -83.1 | -infinity | -infinity | -infinity | -infinity | -83.1 |
| 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| Io | dBm/95.04 MHz | 1 | -55.46 | -58.51 | -58.51 | -58.51 | -58.51 | -55.46 |
| dBm/380.16 MHz | 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| dBm/380.16 MHz | 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| Propagation Condition  |  | 1,2,3 | AWGN | AWGN |
| Note 1: OCNG shall be used such that a constant total transmitted power 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: Es/Iot, SSB\_RP and Io 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 implementationNote 5: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBS from TS 38.101-2 [19] Table 6.2.1.3-4. |

A.7.3.2.X1.2.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown NR inter frequency cell shall be less than 6 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 Tre-establish\_delay= TUL\_grant + TUE\_re-establish\_delay.

Where:

 TUL\_grant = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence TUL\_grant is not used.

 $T\_{UE\\_re-establish\\_delay}=50 ms+T\_{identify\\_intra\\_NR}+\sum\_{i=1}^{Nfreq-1}T\_{identify\\_inter\\_NR,i}+T\_{SI-NR}+T\_{PRACH}$

 Nfreq = 2

 Tidentify\_intra\_NR = 1600 ms

 Tidentify\_inter\_NR = 2080 ms

 TSI = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 38.331 for the target inter-frequency NR cell.

 TPRACH = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 5025 ms, allow 6 s in the test case.

A.7.3.2.X1.3 Intra-frequency RRC Re-establishment in FR2-2 without serving cell timing

A.7.3.2.X1.3.1 Test Purpose and Environment

The purpose is to verify that the NR intra-frequency RRC re-establishment delay in FR2-2 without serving cell timing is within the specified limits. These tests will verify the requirements in clause 6.2.1.

The test parameters are given in table A.7.3.2.X1.3.1-1, table A.7.3.2.X1.3.1-2 and table A.7.3.2.X1.3.1-3 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

**Table A.7.3.2.X1.3.1-1: Supported test configurations**

|  |  |
| --- | --- |
| **Config** | **Description** |
| 1 | NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | NR 480 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| 3 | NR 960 kHz SSB SCS, 400MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations |

**Table A.7.3.2.X1.3.1-2: General test parameters for NR intra-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Initial condition | Active cell |  | 1,2,3 | Cell1 |  |
|  | Neighbour cells |  | 1,2,3 | Cell2  |  |
| Final condition | Active cell |  | 1,2,3 | Cell2 |  |
| RF Channel Number |  | 1,2,3 | 1 |  |
| Time offset between cells |  | 1,2,3 | 3 μs | Synchronous cells |
| N310 | - | 1,2,3 | 1 | Maximum consecutive out-of-sync indications from lower layers |
| N311 | - | 1,2,3 | 1 | Minimum consecutive in-sync indications from lower layers |
| T310 | ms | 1,2,3 | 6000 | Radio link failure timer configured by *RLF-TimersAndConstants* |
| T311 | ms | 1,2,3 | 5000 | RRC re-establishment timer |
| Access Barring Information | - | 1,2,3 | Not Sent | No additional delays in random access procedure. |
| SSB configuration |  | 1,2,3 | SSB.1 FR2 |  |
| SMTC configuration |  | 1,2,3 | SMTC pattern 1 |  |
| DRX cycle length | s | 1,2,3 | OFF |  |
| PRACH configuration |  | 1,2,3 | FR2 PRACH configuration 1 | Table A.3.8.3.1-1 |
| T1 | s | 1,2,3 | 5 |  |
| T2 | s | 1,2,3 | 10.84 | Time for the UE to detect RLF(Summation of TEvaluate\_out\_SSB defined in clause 8.1 in TS 38.133, T310 and the period for UE turns off transmitter defined in clause 8.1.5 in TS 38.133 ) |
| T3 | s | 1,2,3 | 5 |  |

**Table A.7.3.2.X1.3.1-3: Cell specific test parameters for NR intra-frequency RRC Re-establishment test case in FR2-2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | **Cell 2** |
|  |  |  | **T1** | **T2** | **T3** | **T1** | **T2** | **T3** |
| Assumption for UE beamsNote 4 |  |  | Rough | Rough |
| TDD configuration |  | 1,2,3 | TDDConf.3.1 | TDDConf.3.1 |
| PDSCH RMC configuration |  | 1,2,3 | SR.3.1 TDD | N/A |
| RMSI CORESET RMC configuration |  | 1,2,3 | CR.3.1 FDD | CR.3.1 FDD |
| Dedicated CORESET RMC configuration |  | 1,2,3 | CCR.3.1 FDD | CCR.3.1 FDD |
| TRS configuration |  | 1,2,3 | TRS.2.1 TDD | N/A |
| PDSCH/PDCCH TCI state |  | 1,2,3 | TCI.State.2 | N/A |
| OCNG Pattern |  | 1,2,3 | OP.1 defined in A.3.2.1 | OP.1 defined in A.3.2.1 |
| Initial DL BWP configuration |  | 1,2,3 | DLBWP.0.1 | DLBWP.0.1 |
| Initial UL BWP configuration |  | 1,2,3 | ULBWP.0.1 | ULBWP.0.1 |
| RLM-RS |  | 1,2,3 | SSB | SSB |
| AoA setup |  | 1,2,3 | Setup 1 defined in A.3.15.1 | Setup 1 defined in A.3.15.1 |
|  | dB | 1,2,3 | 5 | -infinity | -infinity | -infinity | -infinity | 5 |
|  Note2 | dBm/15 kHz | 1,2,3 | -104.7 |
|  Note2 | dBm/SCS | 1 | -95.7 |
| 2 | -95.7 |
| 3 | -92.7 |
|  | dB | 1,2,3 | 5 | -infinity | -infinity | -infinity | -infinity | 5 |
| SS-RSRP Note3 | dBm/SCS | 1 | -90.7 | -infinity | -infinity | -infinity | -infinity | -90.7 |
| 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| Io | dBm/95.04 MHz | 1 | -60.52 | -66.71 | -60.52 | -60.52 | -66.71 | -60.52 |
| dBm/380.16 MHz | 2 | TBD | TBD | TBD | TBD | TBD | TBD |
| dBm/380.16 MHz | 3 | TBD | TBD | TBD | TBD | TBD | TBD |
| 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 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.7.3.2.X1.3.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown NR intra frequency cell without serving cell timing shall be less than 5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 Tre-establish\_delay= TUL\_grant + TUE\_re-establish\_delay.

Where:

 TUL\_grant = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence TUL\_grant is not used.

 $T\_{UE\\_re-establish\\_delay}=50 ms+T\_{identify\\_intra\\_NR}+\sum\_{i=1}^{Nfreq-1}T\_{identify\\_inter\\_NR,i}+T\_{SI-NR}+T\_{PRACH}$

 Nfreq = 1

 Tidentify\_intra\_NR = 3520 ms

 TSI = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 38.331 [2] for the target intra-frequency NR cell.

 TPRACH = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 4865 ms, allow 5 s in the test case.

<End of Changes>