**3GPP TSG-RAN4 Meeting #98bis-e *R4-2105720***

**Electronic Meeting, April 12-20 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **DraftCR** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | RRC connetion release with re-direction test for NR-U in 38.133 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_unlic-Perf | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***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:*** | | To specify test cases for verifying the core requirements on RRC redirection to a cell subject to CCA. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The following test case for verifying the core requirements on RRC redirection from NR cell without CCA to NR cell with CCA is specified.   * Redirection from NR FR1 carrier without CCA to NR FR1 carrier under CCA | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The core requirements on RRC redirection from NR cell without CCA to NR cell with CCA cannot be verified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.11.2.2.3.2, A.11.2.2.3.2.1, A.11.2.2.3.2.2, A.11.2.2.3.2.3. | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

**----------------------START OF CHANGES----------------------------**

A.11.2.2.3.2 Redirection from NR FR1 carrier without CCA to NR FR1 carrier with CCA

A.11.2.2.3.2.1 Test Purpose and Environment

This test is to verify RRC connection release with redirection from NR FR1 carrier without CCA to NR FR1 carrier with CCA specified in clause 6.2.3.2.3.

A.11.2.2.3.2.2 Test Parameters

Supported test configurations are shown in table A.11.2.2.3.2.2-1. The time delay is tested by using the parameters in table A.11.2.2.3.2.2-2, and A.11.2.2.3.2.2-3.

The test consists of two successive time periods, with time duration of T1, and T2 respectively. The *RRCRelease* message shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of Cell 2. Cell 2 is powered up at the beginning of the T2.

**Table A.11.2.2.3.2.2-1: Redirection from NR to NR test configurations**

|  |  |  |
| --- | --- | --- |
| **Configuration** | **Source cell without CCA** | **Target cell with CCA** |
| 1 | 15 kHz SSB SCS, 10 MHz bandwidth, FDD | 30 kHz SSB SCS, 40 MHz bandwidth, TDD |
| 2 | 15 kHz SSB SCS, 10 MHz bandwidth, TDD | 30 kHz SSB SCS, 40 MHz bandwidth, TDD |
| 3 | 30 kHz SSB SCS, 40 MHz bandwidth, TDD | 30 kHz SSB SCS, 40 MHz bandwidth, TDD |
| Note: The UE is only required to be tested in one of the supported test configurations | | |

**Table A.11.2.2.3.2.2-2: General test parameters for** **Redirection from NR to NR test case**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | **Comment** |
| Initial conditions | Active cell |  | Cell 1 | On the carrier without CCA |
|  | Neighbouring cell |  | Cell 2 | On the carrier under CCA |
| Final condition | Active cell |  | Cell 2 | On the carrier under CCA |
| Filter coefficient | |  | 0 | L3 filtering is not used |
| Access Barring Information | | - | Not Sent | No additional delays in random access procedure. |
| Time offset between cells | |  | 3 μs | Synchronous cells |
| DL CCA model | |  | As specified in clause A.3.20.2.1 |  |
| UL CCA model | |  | As specified in clause A.3.20.2.2 |  |

**Table A.11.2.2.3.2.2-3: Cell specific test parameters for Redirection from NR to NR test case**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **Cell 1** | | **Cell 2** | | |
|  | | |  | **T1** | **T2** | **T1** | | **T2** |
| NR RF Channel Number | | |  | 1 | | 2 | | |
| DL CCA probability (PCCA\_DL) | | |  | N/A | | TBD | TBD | |
| UL CCA probability (PCCA\_UL) | | |  | N/A | | TBD | TBD | |
| Duplex mode | | Config 1 |  | FDD | | TDD | | |
|  | | Config 2,3 |  | TDD | | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | TDDConf.1.1 CCA | | |
|  | | Config 2 |  | TDDConf.1.1 | | TDDConf.1.1 CCA | | |
|  | | Config 3 |  | TDDConf.2.1 | | TDDConf.1.1 CCA | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | 40: NRB,c = 106 | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | 40: NRB,c = 106 | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | |
| BWP BW | | Config 1 | MHz | 10: NRB,c = 52 | | 40: NRB,c = 106 | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | 40: NRB,c = 106 | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | |
| DRX Cycle | | | ms | Not Applicable | | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | | SR.1.1 CCA | | |
| Config 2 |  | SR.1.1 TDD | | SR.1.1 CCA | | |
| Config 3 |  | SR2.1 TDD | | SR.1.1 CCA | | |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | | CR.1.1 CCA | | |
| Config 2 |  | CR.1.1 TDD | | CR.1.1 CCA | | |
| Config 3 |  | CR2.1 TDD | | CR.1.1 CCA | | |
| OCNG Patterns | | |  | OCNG pattern 1 | | | | |
| SSB Configuration | Semi-static channel acces | Config 1,2 |  | SSB.1 FR1 | | SSB.1 CCA | | |
| Dymamic channel acces | Config 3 |  | SSB.2 FR1 | | SSB.2 CCA | | |
| Semi-static channel acces | Config 1,2 |  | SSB.1 FR1 | | SSB.1 CCA | | |
| Dymamic channel acces | Config 3 |  | SSB.2 FR1 | | SSB.2 CCA | | |
| SMTC configuration | | Config 1,2 |  | SMTC.1 FR1 | | SMTC.2 FR1 | | |
|  | | Config 3 |  | SMTC.2 FR1 | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | 30 kHz | | |
| Config 3 |  | 30 kHz | | | | |
| PUCCH/PUSCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | 30 kHz | | |
| Config 3 |  | 30 kHz | | | | |
| PRACH configuration | | |  | FR1 PRACH configuration 1 | | | | |
| BWP configuration | | Initial DL BWP |  | DLBWP.0.1 | | | | |
|  | | Dedicated DL BWP |  | DLBWP.1.1 | | | | |
|  | | Initial UL BWP |  | ULBWP.0.1 | | | | |
|  | | Dedicated UL BWP |  | ULBWP.1.1 | | | | |
| EPRE ratio of PSS to SSS | | | dB | 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 | | | | |
| Note2 | | Config 1,2 | dBm/SCS | -98 | | -95 | | |
| Config 3 |  | -95 | | | | |
|  | | | dB | 4 | 4 | -infinity | | 4 |
|  | | | dB | 4 | 4 | -infinity | | 4 |
| IoNote3 | | Config 1,2 | dBm/9.36MHz | -64.59 | -64.59 | N/A | | N/A |
| Config 3 | dBm/38.16MHz | -58.49 | -58.49 | -63.94 | | -58.49 |
| 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: 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: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | | | |

A.11.2.2.3.2.3 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than Tconnection\_release\_redirect\_NR\_CCA ms from the beginning of time period T2, where Tconnection\_release\_redirect\_NR\_CCA is defined in clause 6.2.3.2.3.

The rate of correct RRC connection release redirection to NR observed during repeated tests shall be at least 90%.

NOTE: The redirection delay can be expressed as:

Tconnection\_release\_redirect\_NR\_CCA = TRRC\_procedure\_delay + Tidentify-NR\_CCA + TSI-NR\_CCA + TRACH\_CCA,

where:

TRRC\_procedure\_delay = 110 ms in the test.

Tidentify-NR = MAX (680 ms, (L1+11) × 20 ms) in the test.

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

TRACH is the delay uncertainty in acquiring the first available PRACH occasion in the target NR cell.

L1 is the number of SMTC occasions not available at the UE due to DL CCA failures, and L2 is the consecutive number of SSB to PRACH occasion association periods during which no PRACH occasion is available for PRACH transmission due to UL CCA failures. L2 = 0 for Type 2C UL channel access procedure as defined in TS 37.213 [33].

**----------------------END OF CHANGES----------------------------**