**3GPP TSG-RAN4 Meeting #112 *R4-241xxxx***

**Maastricht, The Netherlands, 19 – 23 August, 2024**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **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:*** | draftCR on performance requirements for LPHAP | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_pos\_enh2-Perf | | | | |  | ***Date:*** | | | 2024-08-05 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Phase II TCs need to be defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Based on work split in R4-2410191, define TCs for Phase II, including sets 9-7, 9-8, 9-18, 9-20. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Performance requirements for LPHAP are incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.6.8.4.3 (new), A.16.8.4.3 (new), A.17.2.2.1 (new), A.16.2.2.1 (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | The draftCR is based on Big draftCR R4-2410160 from RAN4#111. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of Change 1: Set 9-7>

A.6.8.4.3 PRS-RSRPP reporting delay in RRC\_INACTIVE with eDRX

A.6.8.4.3.1 Test purpose and Environment

The purpose of the test is to verify that the PRS-RSRPP measurement meets the delay requirements specified in clause 5.6.5.5 in an environment with a 2-tap channel propagation conditions in RRC\_INACTIVE when configured with eDRX. The supported test configurations are specified in Table A.6.8.4.3.1-1.

**Table A.6.8.4.3.1-1: Supported test configurations**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | 15 kHz SSB SCS, 20 MHz bandwidth, FDD duplex mode |
| 2 | 15 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 3 | 30 kHz SSB SCS, 50 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

There are two cells in the test, PCell (Cell 1) and a FR2 neighbour cell (Cell 2) on the same frequency as the PCell.

The test consists of two consecutive time intervals, with duration of T1 and T2. During time duration T1, the UE shall be in RRC\_CONNECTED state and shall not have any timing information of Cell 2. During T2 UE shall be in RRC\_INACTIVE state and all both cells transmit PRS resources within initial DL BWP of the UE and with the same numerology as the initial DL BWP.

The *NR-DL-AoD-RequestLocationInformation* message and *NR-DL-AoD-ProvideAssistanceData* message as defined in TS 37.355 shall be provided to the UE during T1. The last slot containing the two messages for the assistance data and location information request is denoted as #n.

The beginning of the time interval T2 shall be aligned with the beginning of the first DRX cycle containing the PRS resources that is ΔT after slot #n, where ΔT = 50 ms is the maximum processing time of the assistance data and location information request.

The general test parameters are listed in Table A.6.8.4.3.1-2, and cell specific test parameters are listed in Table A.6.8.4.3.1-3.

**Table A.6.8.4.3.1-2: General test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Reference cell |  | 1, 2, 3 | Cell 1 | Cell 1 is the PCell and the DL-AoD reference cell in the positioning assistance data. |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | Cell 2 is a neighbour cell in the positioning assistance data. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 |  |
| BWchannel | MHz | 1 | 20: NRB,c = 106 |  |
| 2 | 20: NRB,c = 106 |  |
| 3 | 50: NRB,c = 133 |  |
| SSB configuration |  | 1 | SSB.1 FR1 |  |
|  |  | 2 | SSB.1 FR1 |  |
|  |  | 3 | SSB.2 FR1 |  |
| SMTC configuration |  | 1 | SMTC.2 |  |
|  |  | 2 | SMTC.1 |  |
|  |  | 3 | SMTC.1 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| DRX | s | 1, 2, 3 | 1.28 | ON |
| CN and RAN eDRX configuration |  | 1, 2, 3 | eDRX cycle = 40.96s  PTW length = 1.28s |  |
| reportingInterval | s | 1, 2, 3 | 20 | PRS measurement reporting periodicity |
| Time offset between serving and neighbour cells | μs | 1, 2, 3 | 3 | Synchronous cells |
| Expected RSTD | μs | 1, 2, 3 | 3 |  |
| Expected RSTD uncertainty | μs | 1, 2, 3 | 5 |  |
| T1 | s | 1, 2, 3 | 2 |  |
| T2 | s | 1, 2, 3 | 5 |  |

**Table A.6.8.4.3.1-3: Cell specific test parameters**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | |
| **T1** | **T2** | **T1** | **T2** |
| TDD configuration |  | 1 | N/A | | N/A | |
|  |  | 2 | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3 | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC configuration |  | 1 | SR.1.1 FDD | | N/A | |
|  | 2 | SR.1.1 TDD | |  | |
|  | 3 | SR.2.1 TDD | |  | |
| RMSI CORESET RMC configuration |  | 1 | CR.1.1 FDD | | N/A | |
|  | 2 | CR.1.1 TDD | |
|  | 3 | CR.2.1 TDD | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.1 FDD | | N/A | |
|  | 2 | CCR.1.1 TDD | |
|  | 3 | CCR.2.1 TDD | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | OP.1 | |
| TRS Configuration |  | 1 | TRS.1.1 FDD | | N/A | |
|  | 2 | TRS.1.1 TDD | |
|  | 3 | TRS.1.2 TDD | |
| Initial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | N/A | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.1 | | N/A | |
| PRS configuration |  | 1 | PRS.1.4 FR1 | | PRS.1.4 FR1 | |
|  | 2 | PRS.1.4 FR1 | | PRS.1.4 FR1 | |
|  | 3 | PRS.2.4 FR1 | | PRS.2.4 FR1 | |
| PRS muting info |  | 1, 2, 3 | ‘10’ | | ‘01’ | |
| Note 2 | dBm/SCS | 1 | -98 | | | |
|  | 2 | -98 | | | |
|  | 3 | -95 | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | |
|  | 2 |  | | | |
|  | 3 |  | | | |
| PRS | dB | 1 | -Infinity | -3 | -Infinity | -10 |
|  | 2 |  |  |  |  |
|  | 3 |  |  |  |  |
| PRS | dB | 1 | -Infinity | -2 | -Infinity | -10 |
|  | 2 |  |  |  |  |
|  | 3 |  |  |  |  |
| PRS-RSRP Note 3 | dBm/SCS kHz | 1 | -Infinity | -100 | -Infinity | -108 |
|  |  | 2 | -Infinity | -100 | -Infinity | -108 |
|  |  | 3 | -Infinity | -97 | -Infinity | -105 |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -88 | -88 | -Infinity | -88 |
| 2 | -88 | -88 | -Infinity | -88 |
| 3 | -85 | -85 | -Infinity | -85 |
| Io | dBm/19.08 MHz | 1 | N/A | -64.57 | N/A | -64.57 |
|  | dBm/19.08 MHz | 2 | -64.57 | -64.57 |
|  | dBm/47.88 MHz | 3 | -60.59 | -60.59 |
| Propagation Condition |  | 1, 2, 3 | Two-tap channel defined in 38.101-4 Annex B.2.4,  *a* = 1, µs and Hz | | | |
| Note 1: The resources for uplink transmission are assigned after the end of time period T2 to UEs that do not support SDT for measurement reporting.  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/PRS-RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | |

A.6.8.4.3.2 Test Requirements

The UE shall perform and report the PRS-RSRPP measurements for Cell 1 and Cell 2, within the time limit specified in clause 5.6.5.5 with Tavailable\_PRS = 1.28s, starting from the beginning of time interval T2.

NOTE: The actual overall delays measured in the test may be higher than the time duration above because of the uncertainty in acquiring the first available PRACH occasion to transition to RRC\_CONNECTED state to report the measurements.

NOTE: The test is considered complete after the UE reports the first set of positioning measurements based on the configured reportingInterval.

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

<End of Change 1: Set 9-7>

<Start of Change 2: Set 9-8>

A.16.8.4.3 PRS-RSRPP reporting delay in RRC\_INACTIVE with eDRX

A.16.8.4.3.1 Test purpose and Environment

The purpose of the test is to verify that the PRS-RSRPP measurement by a RedCap UE meets the delay requirements specified in clause 5.6A.7.5 in an environment with a 2-tap channel propagation condition in RRC\_INACTIVE, when configured with eDRX and without FH.

The supported test configurations are specified in Table A.16.8.4.3.1-1.

**Table A.16.8.4.3.1-1: Supported test configurations**

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

The test consists of two consecutive time intervals, with duration of T1 and T2. During time duration T1, the UE shall be in RRC\_CONNECTED state and shall not have any timing information of Cell 2. During T2 UE shall be in RRC\_INACTIVE state and all both cells transmit PRS resources within initial DL BWP of the UE and with the same numerology as the initial DL BWP.

The *NR-DL-AoD-RequestLocationInformation* message and *NR-DL-AoD-ProvideAssistanceData* message as defined in TS 37.355 shall be provided to the UE during T1. The last slot containing the two messages for the assistance data and location information request is denoted as #n.

The beginning of the time interval T2 shall be aligned with the beginning of the first DRX cycle containing the PRS resources that is ΔT after slot #n, where ΔT = 50 ms is the maximum processing time of the assistance data and location information request.

The general test parameters are listed in Table A.16.8.4.3.1-2, and cell specific test parameters are listed in Table A.16.8.4.3.1-3.

**Table A.16.8.4.3.1-2: General test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Reference cell |  | 1, 2, 3, 4 | Cell 1 | Cell 1 is the PCell and the DL-AoD reference cell in the positioning assistance data. |
| Neighbour cell |  | 1, 2, 3, 4 | Cell 2 | Cell 2 is a neighbour cell in the positioning assistance data. |
| RF Channel Number |  | 1, 2, 3, 4 | 1: Cell 1 and Cell 2 |  |
| BWchannel | MHz | 1, 2, 4 | 10: NRB,c = 52 |  |
| 3 | 20: NRB,c = 51 |  |
| SSB configuration |  | 1, 2, 4 | SSB.1 FR1 |  |
|  |  | 3 | SSB.1 RedCap FR1 |  |
| SMTC configuration |  | 1, 2, 3, 4 | SMTC.1 RedCap |  |
| CP length |  | 1, 2, 3, 4 | Normal |  |
| DRX | s | 1, 2, 3, 4 | 1.28 | ON |
| CN and RAN eDRX configuration |  | 1, 2, 3, 4 | eDRX cycle = 40.96s  PTW length = 1.28s |  |
| reportingInterval | s | 1, 2, 3 | 20 | PRS measurement reporting periodicity |
| Time offset between serving and neighbour cells | μs | 1, 2, 3, 4 | 3 | Synchronous cells |
| Expected RSTD | μs | 1, 2, 3, 4 | 3 |  |
| Expected RSTD uncertainty | μs | 1, 2, 3, 4 | 5 |  |
| PRS RX hopping request |  | 1, 2, 3, 4 | NOT present |  |
| T1 | s | 1, 2, 3, 4 | 2 |  |
| T2 | s | 1, 2, 3, 4 | 5 |  |

**Table A.16.8.4.3.1-3: Cell specific test parameters**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | |
| **T1** | **T2** | **T1** | **T2** |
| TDD configuration |  | 1, 4 | N/A | | N/A | |
|  |  | 2 | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3 | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC configuration |  | 1, 4 | SR.1.1 FDD | | N/A | |
|  | 2 | SR.1.1 TDD | |  | |
|  | 3 | SR.2.1 TDD | |  | |
| RMSI CORESET RMC configuration |  | 1, 4 | CR.1.1 FDD | | N/A | |
|  | 2 | CR.1.1 TDD | |
|  | 3 | CR.2.1 TDD | |
| Dedicated CORESET RMC configuration |  | 1, 4 | CCR.1.1 FDD | | N/A | |
|  | 2 | CCR.1.1 TDD | |
|  | 3 | CCR.2.1 TDD | |
| OCNG Patterns |  | 1, 2, 3, 4 | OP.1 | | OP.1 | |
| TRS Configuration |  | 1, 4 | TRS.1.1 FDD | | N/A | |
|  | 2 | TRS.1.1 TDD | |
|  | 3 | TRS.1.2 TDD | |
| Initial BWP configuration |  | 1, 2, 3, 4 | DLBWP.0.1 ULBWP.0.1 | | N/A | |
| PRS configuration |  | 1, 4 | PRS.1.3 FR1 | | PRS.1.3 FR1 | |
|  | 2 | PRS.1.3 FR1 | | PRS.1.3 FR1 | |
|  | 3 | PRS.2.3 FR1 | | PRS.2.3 FR1 | |
| PRS muting info |  | 1, 2, 3, 4 | ‘10’ | | ‘01’ | |
| Note 2 | dBm/SCS | 1, 4 | -98 | | | |
|  | 2 | -98 | | | |
|  | 3 | -95 | | | |
| Note 2 | dBm/15 kHz | 1, 4 | -98 | | | |
|  | 2 |  | | | |
|  | 3 |  | | | |
| PRS | dB | 1, 4 | -Infinity | -3 | -Infinity | -10 |
|  | 2 |  |  |  |  |
|  | 3 |  |  |  |  |
| PRS | dB | 1, 4 | -Infinity | -2 | -Infinity | -10 |
|  | 2 |  |  |  |  |
|  | 3 |  |  |  |  |
| PRS-RSRP Note 3 | dBm/SCS kHz | 1, 4 | -Infinity | -100 | -Infinity | -108 |
|  |  | 2 | -Infinity | -100 | -Infinity | -108 |
|  |  | 3 | -Infinity | -97 | -Infinity | -105 |
| SS-RSRP Note 3 | dBm/SCS kHz | 1, 4 | -88 | -88 | -Infinity | -88 |
| 2 | -88 | -88 | -Infinity | -88 |
| 3 | -85 | -85 | -Infinity | -85 |
| Io | dBm/9.36 MHz | 1, 4 | -70.05 | -67.67 | -70.05 | -67.67 |
|  | dBm/9.36 MHz | 2 | -70.05 | -67.67 | -70.05 | -67.67 |
|  | dBm/18.36 MHz | 3 | -67.13 | -64.75 | -67.13 | -64.75 |
| Propagation Condition |  | 1, 2, 3, 4 | Two-tap channel defined in 38.101-4 Annex B.2.4,  *a* = 1, µs and Hz | | | |
| Note 1: The resources for uplink transmission are assigned after the end of time period T2 to UEs that do not support SDT for measurement reporting.  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/PRS-RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: OCNG shall be used such that active cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS. | | | | | | |

A.16.8.4.3.2 Test Requirements

The UE shall perform and report the PRS-RSRPP measurements for Cell 1 and Cell 2, within the time limit specified in clause 5.6A.7.5 with Tavailable\_PRS = 1.28s, starting from the beginning of time interval T2.

NOTE: The actual overall delays measured in the test may be higher than the time duration above because of the uncertainty in acquiring the first available PRACH occasion to transition to RRC\_CONNECTED state to report the measurements.

NOTE: The test is considered complete after the UE reports the first set of positioning measurements based on the configured reportingInterval.

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

<End of Change 2: Set 9-8>

<Start of Change 3: Set 9-18>

#### A.17.2.2.1 Cell reselection to FR2 intra-frequency NR case with RRC\_INACTIVE eDRX and positioning SRS

##### A.17.2.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the intra-frequency NR cell reselection requirements specified in clause 5.6A.2.2, when a RedCap UE is in RRC\_INACTIVE and configured with eDRX and to transmit SRS for positioning.

##### A.17.2.2.1.2 Test Parameters

The test procedure, supported test configurations and test parameters in clause A.7.2.2.1.2 apply for this test.

##### A.17.2.2.1.3 Test Requirements

The test requirements in A.7.2.2.1.3 apply for this test.

<End of Change 3: Set 9-18>

<Start of Change 4: Set 9-20>

A.16.2.2.1 Cell reselection to FR1 intra-frequency NR case with RRC\_INACTIVE eDRX and positioning SRS

A.16.2.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the intra-frequency NR cell reselection requirements specified in clause 5.6A.2.2, when a RedCap UE is in RRC\_INACTIVE and configured with eDRX and to transmit SRS for positioning.

A.16.2.2.1.2 Test Parameters

The test scenario comprises of 1 NR carrier and 2 cells as given in tables A.16.2.2.1.2-1, A.16.2.2.1.2-2 and A.16.2.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Only cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2. UE is configured with transmit SRS for positioning in cell 1.

**Table A.16.2.2.1.2-1: Supported test configurations**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

**Table A.16.2.2.1.2-2: General test parameters for intra frequency NR cell re-selection test case**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Test configuration** | **Value** | **Comment** |
|  | |  |
| Initial condition | Active cell |  | 1, 2, 3, 4 | Cell1 |  |
| T2 end condition | Active cell |  | 1, 2, 3, 4 | Cell2 |  |
| Neighbour cells |  | 1, 2, 3, 4 | Cell1 |  |
| RF Channel Number | |  | 1, 2, 3, 4 | 1 |  |
| Time offset between cells | |  | 1, 4 | 3 ms | Asynchronous cells |
|  | |  | 2 | 3 μs | Synchronous cells |
|  | |  | 3 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2, 3, 4 | Not Sent | No additional delays in random access procedure. |
| SSB configuration | |  | 1, 4 | SSB.1 FR1 |  |
|  | |  | 2 | SSB.1 FR1 |  |
|  | |  | 3 | SSB.2 FR1 |  |
| SMTC configuration | |  | 1, 4 | SMTC.2 | Configured in SIB2 of Cell 1 |
| 2 | SMTC.1 |  |
| 3 | SMTC.1 |  |
| DRX cycle length | | s | 1, 2, 3, 4 | 1.28 | The value shall be used for all cells in the test. |
| CN and RAN eDRX configuration | |  | 1, 2, 3, 4 | eDRX cycle = 40.96s  PTW length = 1.28s |  |
| PRACH configuration index | |  | 1, 2, 3, 4 | 102 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| rangeToBestCell | |  | 1, 2, 3, 4 | Not configured |  |
| T1 | | s | 1, 2, 3, 4 | >7 | During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2 |
| T2 | | s | 1, 2, 3, 4 | 120 | T2 needs to be defined so that cell re-selection reaction time is taken into account. |

**Table A.16.2.2.1.2-3: Cell specific test parameters for intra frequency NR cell re-selection test case in AWGN**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | |
|  |  |  | **T1** | **T2** | **T1** | **T2** |
| TDD configuration |  | 1, 4 | N/A | | N/A | |
|  |  | 2 | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3 | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC |  | 1, 4 | SR.1.1 FDD | | SR.1.1 FDD | |
| configuration |  | 2 | SR.1.1 TDD | | SR.1.1 TDD | |
|  |  | 3 | SR.2.1 TDD | | SR.2.1 TDD | |
| RMSI CORESET |  | 1, 4 | CR.1.1 FDD | | CR.1.1 FDD | |
| RMC configuration |  | 2 | CR.1.1 TDD | | CR.1.1 TDD | |
|  |  | 3 | CR.2.1 TDD | | CR.2.1 TDD | |
| Dedicated CORESET |  | 1, 4 | CCR.1.1 FDD | | CCR.1.1 FDD | |
| RMC configuration |  | 2 | CCR.1.1 TDD | | CCR.1.1 TDD | |
|  |  | 3 | CCR.2.1 TDD | | CCR.2.1 TDD | |
| OCNG Pattern |  | 1, 2, 3, 4 | OP.1 defined in A.3.2.1 | | OP.1 defined in A.3.2.1 | |
| Initial DL BWP configuration |  | 1, 2, 3, 4 | DLBWP.0.1 | | DLBWP.0.1 | |
| Initial UL BWP configuration |  | 1, 2, 3, 4 | ULBWP.0.1 | | ULBWP.0.1 | |
| Periodicity of SRS for positioning | s | 1, 2, 3, 4 | 5.12 | | N/A | |
| Qrxlevmin | dBm/SCS | 1, 2, 4 | -130 | | -130 | |
|  |  | 3 | -127 | | -127 | |
| Pcompensation | dB | 1, 2, 3, 4 | 0 | | 0 | |
| Qhysts | dB | 1, 2, 3, 4 | 0 | | 0 | |
| Qoffsets, n | dB | 1, 2, 3, 4 | 0 | | 0 | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2, 3, 4 | SS-RSRP | | SS-RSRP | |
|  | dB | 1, 4 | 16 | -3.11 | -infinity | 2.79 |
|  |  | 2 |  |  |
|  |  | 3 |  |  |
| Note2 | dBm/SCS | 1, 4 | -98 | | | |
|  |  | 2 | -98 | | | |
|  |  | 3 | -95 | | | |
| Note2 | dBm/15 kHz | 1, 4 | -98 | | | |
|  |  | 2 |  | | | |
|  |  | 3 |  | | | |
|  | dB | 1, 4 | 16 | 13 | -infinity | 16 |
|  |  | 2 |  |  |
|  |  | 3 |  |  |
| SS-RSRP Note3 | dBm/SCS | 1, 4 | -82 | -85 | -infinity | -82 |
|  |  | 2 | -82 | -85 | -infinity | -82 |
|  |  | 3 | -79 | -82 | -infinity | -79 |
| Io | dBm/9.36 MHz | 1, 4 | -53.94 | -52.21 | Same as parameters specified in Cell 1 columns- | |
|  | dBm/9.36 MHz | 2 | -53.94 | -52.21 |  | |
|  | dBm/18.36 MHz | 3 | -51.02 | -53.92 |  | |
| Treselection | s | 1, 2, 3, 4 | 0 | 0 | 0 | 0 |
| SintrasearchP | dB | 1, 2, 3, 4 | 60 | | 60 | |
| Propagation Condition |  | 1, 2, 3, 4 | 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. | | | | | | |

A.16.2.2.1.3 Test Requirements

The cell reselection delay to a newly detectable cell 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 newly detectable cell shall be less than 119 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: Tdetect, NR\_Intra + TSI-NR,

Where:

Tdetect, NR\_Intra See Table 5.6.1A.2-1 in clause 5.6.1A.2

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

This gives a total of 119.04 s, allow 120 s for the cell re-selection delay to a newly detectable cell.

<End of Change 4: Set 9-20>