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

**Hefei, China, 14 – 18 October, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **-** | **rev** | 1 | **Current version:** | **18.7.0** |  |
|  | | | | | | | | |
| *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:*** | draftCR on performance requirements for LPHAP | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_pos\_enh2-Perf | | | | |  | ***Date:*** | | | 2024-10-05 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | 1. In RAN4#112 it is agreed to define reporting periodicity for LPHAP delay TCs. This is added in Phase II TCs but missed in Phase I TCs which are introduced in RAN4#111. 2. Some references in RRC\_IDLE TCs are missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add reporting periodicity for Phase I LPHAP delay TCs. 2. Add missing reference section numbers in RRC\_IDLE TCs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | LPHAP related TCs are incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.17.8.3.3, A.6.10.2.2, A.7.10.2.2, A.17.10.2.2, A.17.11.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | The draftCR is based on revised R4-2413983 shared on RAN4 reflector before RAN4#112-bis. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of Change 1>

##### A.17.8.3.3.1 Test Purpose and Environment

<Texts without change are omitted>

**Table A.17.8.3.3.1-2: General test parameters for PRS RSRP measurement reporting delay**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| NR RF Channel Number |  | Config 1 | 1: Cell 1 and Cell 2 | One TDD carrier frequency is used for the NR cells. |
| Active cell |  | Config 1 | NR cell 1 (Pcell) | Cell 1 is the PCell and the DL-AoD reference cell in the positioning assistance data. |
| Neighbour cell |  | Config 1 | NR cell 2 | Cell 2 is a neighbour cell in the positioning assistance data. |
| SMTC parameters |  | Config 1 | SMTC.1 | As specified in clause A.3.11 |
| SSB parameters |  | Config 1 | SSB.3 FR2 | As specified in clause A.3.10.2 |
| CP length |  | Config 1 | Normal |  |
| DRX |  | Config 1 | 0.64 s |  |
| CN and RAN eDRX configuration |  | Config 1 | eDRX cycle = 40.96 s  PTW length = 1.28 s |  |
| reportingInterval | s | 1, 2, 3 | 20 | PRS measurement reporting periodicity |
| Time offset between serving and neighbour cells |  | Config 1 | 3 μs | Synchronous cells. |
| Expected RSTD | μs | Config 1 | 3 |  |
| Expected RSTD uncertainty | μs | Config 1 | 5 |  |
| T1 | s | Config 1 | 5 |  |
| T2 | s | Config 1 | 41 |  |

<Texts without change are omitted>

##### A.17.8.3.3.2 Test Requirements

The PRS RSRP measurement time fulfils the requirements specified in Clause 5.6A.5.5. The UE shall perform and report the PRS RSRP measurements for Cell 2 with respect to the reference cell in the DL-AoD assistance data, Cell 1, within the time duration specified in section 5.6A.5.5 with Tavailable\_PRS = 0.64 s 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 the correct events for the neighbour cell observed during repeated tests shall be at least 90%, where the reported PRS RSRP measurement for each correct event shall be within the PRS RSRP reporting range specified in Clause 10.1A.17.3, i.e., between PRS RSRP\_0 and PRS RSRP\_126.

<End of Change 1>

<Start of Change 2>

A.6.10.2.2 PRS-RSRP reporting delay test case in RRC\_IDLE state in FR1 when eDRX cycle > 10.24s

A.6.10.2.2.1 Test purpose and Environment

The purpose of the test is to verify that the PRS-RSRP measurement in RRC\_IDLE with eDRX meets the delay requirements specified in clause 4.5.3.5 in an environment with AWGN propagation conditions.

The supported test configurations in Table A.6.8.2.3.1-1 apply for this test.

The test procedure in clause A.6.8.2.3.1 apply for this test, except that during T2, UE is in RRC\_IDLE state.

The general test parameters as specified in Table A.6.8.2.3.1-2 apply for this test, except those specified in Table A.6.10.2.2.1-1.

The cell specific test parameters as specified in Table A.6.8.2.3.1-3 apply for this test.

**Table A.6.10.2.2.1-1: General test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| eDRX cycle length (for CN eDRX) | s | 1, 2, 3 | 40.96 |  |

A.6.10.2.2.2 Test Requirements

The test requirements in clause A.6.8.2.3.2 apply for this test, except that the time limits are specified in clause 4.5.3.5.

<End of Change 2>

<Start of Change 3>

A.7.10.2.2 PRS-RSRP reporting delay test case in RRC\_IDLE state in FR2 when eDRX cycle > 10.24s

A.7.10.2.2.1 Test Purpose and Environment

The purpose of the test is to verify the PRS RSRP measurement requirements specified in Clause 4.5.3.5 for single positioning frequency layer under AWGN propagation conditions in RRC\_IDLE when configured with eDRX.

The supported test configurations in Table A.7.8.2.3.1-1 apply for this test.

The test procedure in clause A.7.8.2.3.1 apply for this test, except that during T2, UE is in RRC\_IDLE state.

The general test parameters as specified in Table A.7.8.2.3.1-2 apply for this test, except those specified in Table A.7.10.2.2.1-1.

The cell specific test parameters as specified in Table A.7.8.2.3.1-3 apply for this test.

**Table A.7.10.2.2.1-1: General test parameters for PRS RSRP measurement reporting delay**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| CN eDRX configuration |  | Config 1 | eDRX cycle = 40.96s  PTW length = 1.28s |  |

A.7.10.2.2.2 Test Requirements

The test requirements in clause A.7.8.2.3.2 apply for this test, except that the time limits are specified in clause 4.5.3.5.

<End of Change 3>

<Start of Change 4>

A.17.10.2.2 PRS-RSRP reporting delay test case in RRC\_IDLE state in FR2 for case 2 when eDRX cycle > 10.24s

A.17.10.2.2.1 Test Purpose and Environment

The purpose of the test is to verify the PRS RSRP measurement requirements specified in Clause 4.6.3.5 for single positioning frequency layer under AWGN propagation conditions in RRC\_IDLE when configured with eDRX.

The supported test configurations in Table A.17.8.3.3.1-1 apply for this test.

The test procedure in clause A.17.8.3.3.1apply for this test, except that during T2, UE is in RRC\_IDLE state.

The general test parameters as specified in Table A.17.8.3.3.1-2 apply for this test, except those specified in Table A.17.10.2.2.1-1.

The cell specific test parameters as specified in Table A.17.8.3.3.1-3 apply for this test.

**Table A.17.10.2.2.1-1: General test parameters for PRS RSRP measurement reporting delay**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| CN eDRX configuration |  | Config 1 | eDRX cycle = 40.96s  PTW length = 1.28s |  |

A.17.10.2.2.2 Test Requirements

The test requirements in clause A.17.8.3.3.2 apply for this test, except that the time limits are specified in clause 4.6.3.5.

<End of Change 4>

<Start of Change 5>

A.17.11.2.2 PRS-RSRP measurement accuracy test case in RRC\_IDLE state in FR2 for case 2 when eDRX cycle > 10.24s

A.17.11.2.2.1 Test purpose and Environment

The purpose of the test is to verify that the PRS-RSRP measurement in RRC\_IDLE with eDRX meets the accuracy requirements specified in clause 10.1A.17.2.1 and 10.1A.17.2.2 in an environment with AWGN propagation conditions.

A.17.11.2.2.1 Test parameters

The supported test configurations in Table A.17.9.3.1.2-1 apply for this test.

The test procedure in clause A.17.9.3.1.2 apply for this test, except that UE is in RRC\_IDLE state.

The general test parameters as specified in Table A.17.9.3.1.2-2 apply for this test, except those additionally specified in Table A.17.11.2.2.1-1.

The OTA related test parameters in Table A.17.9.3.1.2-3 apply for this test.

**Table A.17.11.2.2.1-1: PRS-RSRP test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| eDRX cycle length (for CN eDRX) | s | 1, 2, 3 | 40.96 |  |
| PTW window length | s | 1, 2, 3 | 1.28 |  |

A.17.11.2.2.2 Test Requirements

The test requirements in clause A.17.9.3.1.3 apply for this test.

<End of Change 5>