**3GPP TSG-RAN WG4 Meeting # 111 R4-2410257**

Fukuoka City, Fukuoka , Japan, 20th – 24th May, 2024

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.133** | **CR** | **Draft** | **rev** | **-** | **Current version:** | **18.5.0** |  |
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| *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:*** | Draft CR on TC maintenance for R18 eFeRRM SCell activation | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RRM\_enh3-Perf | | | | |  | ***Date:*** | | | 2024-05-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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)* | |
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| ***Reason for change:*** | | The DraftCR is based on the endorsed BigCR R4-2406508 with change mark “Huawei-RAN4#111”  In R4-2403466, it is agreed that UE is only required to pass one test between unknown SCell activation with L3 report and PUCCH SCell activation with L3 report. It is proposed to test CSSF=2 in PUCCH SCell activation TC. Consequently, the challenging case PUCCH SCell with CSSF = 2 may never be tested. | | | | | | | | |
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| ***Summary of change:*** | | Add applicability rule that if UE can fulfill the requirement in test case for PUCCH SCell activation with L3 report, UE can skip the test case for unknown SCell activation with L3 report. | | | | | | | | |
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| ***Consequences if not approved:*** | | The requirements can only be partially verified. | | | | | | | | |
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| ***Clauses affected:*** | | A.5.5.3.X1, A.7.5.3.X1 and A.7.5.3.X2 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

### <Start of Change 1>

A.5.5.3.X1 PUCCH SCell activation and deactivation with FR1 PSCell based on L3 reporting after SCell activation command

A.5.5.3.X1.1 Test Purpose and Environment

The purpose of this test is to verify that the PUCCH SCell activation and deactivation times are within the requirements stated in clause 8.3.12 for UE capable of *l3-MeasUnknownSCellActivation-r18*.

The supported test configurations are shown in table A.5.5.3.X1.1-1 below. The test parameters are given in Tables A.5.5.3.X1.1-2 and cell-specific parameters in A.5.5.3.X1.1-3 and A.5.5.3.X1.1-4 below. The test consists of Three successive time periods, with duration of T1, T2 and T3 respectively. There are two NR carriers and one E-UTRA carrier, each with one cell. The E-UTRAN PCell setting refers to Table A.3.7.2.1-1. Before the test starts the UE is connected to Cell 1 and Cell 2 but is not aware of Cell3, and UE is configured with *MeasObjectNR* on carriers of Cell2 and Cell3. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the PUCCH SCell (Cell 3) becomes configured on radio channel 3, and one measID is associated with *reportOnActivation*. The UE now starts monitoring the Cell3. The test equipment sends a MAC message for activation of the PUCCH SCell.

The point in time at which the MAC message is received at the UE antenna connector, in slot # denoted n, defines the start of time period T2. The UE shall be able to report valid CSI for the activated PUCCH SCell at latest in slot*n*+ , as defined in clause 8.3.12.

There are two sub-tests in the test. In sub-test 1, TE shall transmit DCI 0-1 to PSCell at slot , and the UE shall be able to send L3 measurements report of the SCell at slot , where k2 =1. In sub-test 2, TE shall transmit DCI 0-1 to PSCell at slot , where k2=1 and M is defined in 8.3.12. The UE shall be able to send L3 measurements report of the SCell at slot .

Any PSCell interruption due to activation of PUCCH SCell shall occur in the slot to , as defined in clause 8.3, where is the interruption length given in clause 8.2

Time period T3 starts when a MAC message for deactivation of PUCCH SCell, sent from the test equipment to the UE in a slot # denoted m, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell in a slot , as defined in clause 8.3.14 and the starting point of any PCell interruption due to the deactivation shall occur in the slot to , as defined in clause 8.3.14.

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PSCell during activation and deactivation of PUCCH SCell, respectively.

The test equipment verifies the activation time by counting the slots from the time when the SCell activation command is sent until a CSI report is received.

The test equipment verifies the deactivation time by counting the slots from the time when the SCell deactivation command is sent until CQI reporting for SCell is discontinued.

**Table A.5.5.3.X1.1-1: Supported test configurations for FR2 SCell activation case**

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | LTE FDD PCell, Cell 2 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | LTE FDD PCell, Cell 2 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 3 | LTE FDD PCell, Cell 2 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 4 | LTE TDD PCell, Cell 2 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 5 | LTE TDD PCell, Cell 2 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 6 | LTE TDD PCell, Cell 2 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Cell 3 NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note1: The UE is only required to be tested in one of the supported test configurations  Note 2: A UE which passes test case A.5.5.3.X1 can skip the test cases in TBD | |

### <End of Change 1>

### <Start of Change 2>

A.7.5.3.X1 PUCCH SCell activation and deactivation with FR1 PCell based on L3 reporting after SCell activation command

A.7.5.3.X1.1 Test Purpose and Environment

The purpose of this test is to verify that the PUCCH SCell activation and deactivation times are within the requirements stated in clause 8.3.12 for UE capable of *l3-MeasUnknownSCellActivation-r18*.

The supported test configurations are shown in table A.7.5.3.X1.1-1 below. The test parameters are given in Tables A.7.5.3.X1.1-2 and cell-specific parameters in A.7.5.3.X1.1-3 and A.7.5.3.X1.1-4 below. The test consists of Three successive time periods, with duration of T1, T2 and T3 respectively. There are three NR carriers, each with one cell. Before the test starts the UE is connected to Cell 1 and Cell 2 but is not aware of Cell3, and UE is configured with *MeasObjectNR* on carriers of Cell1 and Cell2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the PUCCH SCell (Cell 3) becomes configured on radio channel 3, and one measID is associated with *reportOnActivation*. The UE now starts monitoring the Cell3. The test equipment sends a MAC message for activation of the PUCCH SCell.

The point in time at which the MAC message is received at the UE antenna connector, in slot # denoted n, defines the start of time period T2. The UE shall be able to report valid CSI for the activated PUCCH SCell at latest in slot*n*+ , as defined in clause 8.3.12.

There are two sub-tests in the test. In sub-test 1, TE shall transmit DCI 0-1 to PSCell at slot , and the UE shall be able to send L3 measurements report of the SCell at slot , where k2 =1. In sub-test 2, TE shall transmit DCI 0-1 to PSCell at slot , where k2=1 and M is defined in 8.3.12. The UE shall be able to send L3 measurements report of the SCell at slot .

Any PCell interruption due to activation of PUCCH SCell shall occur in the slot to , as defined in clause 8.3, where is the interruption length given in clause 8.2

Time period T3 starts when a MAC message for deactivation of PUCCH SCell, sent from the test equipment to the UE in a slot # denoted m, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell in a slot , as defined in clause 8.3.14and the starting point of any PCell interruption due to the deactivation shall occur in the slot to , as defined in clause 8.3.14.

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of PUCCH SCell, respectively.

The test equipment verifies the activation time by counting the slots from the time when the SCell activation command is sent until a CSI report is received.

The test equipment verifies the deactivation time by counting the slots from the time when the SCell deactivation command is sent until CQI reporting for SCell is discontinued.

**Table A.7.5.3.X1.1-1: Supported test configurations for FR2 SCell activation case**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | PCell: 15 kHz SSB SCS, 10MHz bandwidth, FDD duplex mode  FR1 SCell: 15 kHz SSB SCS, 10MHz bandwidth, FDD duplex mode  FR2 Target SCell: 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 2 | PCell: 15 kHz SSB SCS, 10MHz bandwidth, TDD duplex mode  FR1 SCell: 15 kHz SSB SCS, 10MHz bandwidth, TDD duplex mode  FR2 Target SCell: 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 3 | PCell: 30kHz SSB SCS, 40MHz bandwidth, TDD duplex mode  FR1 SCell: 30kHz SSB SCS, 40MHz bandwidth, TDD duplex mode  FR2 Target SCell: 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| Note 1: The UE is only required to pass in one of the supported test configurations  Note 2: A UE which passes the requirements in test case 7.5.3.X1 can skip the test cases in 7.5.3.16 | |

### <End of Change 2>

### <Start of Change 3>

A.7.5.3.X2 PUCCH SCell activation and deactivation with FR2 PCell based on L3 reporting after SCell activation command

A.7.5.3.X2.1 Test Purpose and Environment

The purpose of this test is to verify that the PUCCH SCell activation and deactivation times are within the requirements stated in clause 8.3.12 for UE capable of *l3-MeasUnknownSCellActivation-r18*.

The supported test configurations are shown in table A.7.5.3.X2.1-1 below. The test parameters are given in Tables A.7.5.3.X2.1-2 and cell-specific parameters in A.7.5.3.X2.1-3 below. The test consists of Three successive time periods, with duration of T1, T2 and T2 respectively. There are two NR carriers, each with one cell. Before the test starts the UE is connected to Cell 1 but is not aware of Cell2, and UE is configured with *MeasObjectNR* on carrier of Cell1 and Cell2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the PUCCH SCell (Cell 2) becomes configured on radio channel 2, and one measID is associated with *reportOnActivation*. The UE now starts monitoring the Cell2. The test equipment sends a MAC message for activation of the PUCCH SCell.

The point in time at which the MAC message is received at the UE antenna connector, in slot # denoted n, defines the start of time period T2. The UE shall be able to report valid CSI for the activated PUCCH SCell at latest in slot*n*+ , as defined in clause 8.3.12.

There are two sub-tests in the test. In sub-test 1, TE shall transmit DCI 0-1 to PSCell at slot , and the UE shall be able to send L3 measurements report of the SCell at slot , where k2 =1. In sub-test 2, TE shall transmit DCI 0-1 to PSCell at slot , where k2=1 and M is defined in 8.3.12. The UE shall be able to send L3 measurements report of the SCell at slot .

Any PCell interruption due to activation of PUCCH SCell shall occur in the slot to , as defined in clause 8.3, where is the interruption length given in clause 8.2

Time period T3 starts when a MAC message for deactivation of PUCCH SCell, sent from the test equipment to the UE in a slot # denoted m, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell in a slot , as defined in clause 8.3.14and the starting point of any PCell interruption due to the deactivation shall occur in the slot to , as defined in clause 8.3.14.

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of PUCCH SCell, respectively.

The test equipment verifies the activation time by counting the slots from the time when the SCell activation command is sent until a CSI report is received.

The test equipment verifies the deactivation time by counting the slots from the time when the SCell deactivation command is sent until CQI reporting for SCell is discontinued.

**Table A.7.5.3.X2.1-1: Supported test configurations for FR2 SCell activation case**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | PCell: 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target SCell: 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| Note: A UE which passes the requirements in test case 7.5.3.X2 can skip the test cases in TBD. | |

### <End of Change 3>