**3GPP TSG-RAN WG4 Meeting #112 R4-2413151**

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | 4912 | **rev** |  | **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:*** | CR for missing test case of enhanced CHO | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Apple | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Mob\_enh2-Perf | | | | |  | ***Date:*** | | | 2024-07-01 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The following test cases were agreed in RAN4#111 and captured in the big CR R4-2410400. However, somehow they are missing in the latest specification.  A.7.3.3.X NR conditional handover including target MCG and target SCG from FR1-FR2 NR-DC to FR1-FR2 NR-DC  A.7.3.3.Y NR conditional Handover including target MCG and candidate SCG from FR1-FR2 NR-DC to FR1-FR2 NR-DC | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce the missing test cases. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Corresponding test cases would still be missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | (new) A.7.3.3.X, (new) A.7.3.3.Y | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 CHANGES >>**

#### A.7.3.3.X NR conditional handover including target MCG and target SCG from FR1-FR2 NR-DC to FR1-FR2 NR-DC

##### A.7.3.3.X.1 Test Purpose and Environment

This test is to verify the requirement for the requirements of CHO including target MCG and target SCG in NR-DC requirements specified in clause 6.1.6.2. inter-frequency conditional handover from NR FR1 to NR FR1 and intra-frequency PSCell change from NR-FR2 to NR FR2 are tested independently in the same test, with different end points.

The supported test configurations are given in Table A.7.3.3.X.1-1. The test scenario comprises four NR cells, source PCell(Cell 1) and source PSCell(Cell 2), target PCell(Cell 3), target PSCell(Cell 4).

Cell 1 and Cell 3 are on radio channel 1 in FR1.Cell 2 and Cell 4 are on radio channel 2 in FR2. Test parameters are given in Tables A.7.3.3.X.1-2, A.7.3.3.X.1-3, A.7.3.3.X.1-4 and A.7.3.3.X.1-5 below. The test consists of two successive time periods, with time durations of T1, T2 respectively. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. NR shall configure a message implying conditional handover including target MCG in FR1 and target SCG in FR2 to Cell 3 during T1, at a time earlier than TRRC before the beginning of T2. At the start of T2, cell 2 becomes detectable and meets the handover condition.

Table A.7.3.3.X.1-1: Supported test configurations for CHO with PSCell change from NR-DC to NR-DC

|  |  |
| --- | --- |
| Config | Description |
| 1 | Source PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Target PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 2 | Source PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Target PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 3 | Source PCell: FR1 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Target PCell: FR1 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations | |

Table A.7.3.3.X.1-2: General test parameters for PCell FR1-FR1 Inter frequency conditional handover

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 1 |  |
|  | Neighbouring cell |  | Cell 3 |  |
| Final condition | Active cell |  | Cell 3 |  |
| Access Barring Information | | - | Not Sent | No additional delays in random access procedure. |
| T1 | | s | 5 |  |
| T2 | | s | ≤5 |  |

Table A.7.3.3.X.1-3: Cell specific test parameters for PCell FR1-FR1 Inter frequency conditional handover

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 1 | | Cell 3 | |
|  | | |  | T1 | T2 | T1 | T2 |
| NR RF Channel Number | | |  | 1 | | 2 | |
| Duplex mode | | Config 1 |  | FDD | | | |
|  | | Config 2,3 |  | TDD | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | |
|  | | Config 3 |  | TDDConf.2.1 | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | |
| BWP BW | | Config 1 | MHz | 10: NRB,c = 52 | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | | | |
|  | | Config 2 |  | TRS.1.1 TDD | | | |
|  | | Config 3 |  | TRS.1.2 TDD | | | |
| DRx Cycle | | | ms | Not Applicable | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | | | |
|  | | Config 2 |  | SR.1.1 TDD | | | |
|  | | Config 3 |  | SR2.1 TDD | | | |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | | | |
|  | | Config 2 |  | CR.1.1 TDD | | | |
|  | | Config 3 |  | CR2.1 TDD | | | |
| OCNG Patterns | | |  | OP.1 | | | |
| SMTC Configuration | | |  | SMTC.1 | | | |
| SSB Configuration | | Config 1,2 |  | SSB.1 FR1 | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | |
|  | | Config 3 |  | 30 kHz | | | |
| PUCCH/PUSCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | |
|  | | Config 3 |  | 30 kHz | | | |
| PRACH configuration | | |  | FR1 PRACH configuration 1 | | | |
| BWP | | 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 | | -98 | |
| Note2 | Config 1,2 | | dBm/SCS | -98 | | -98 | |
|  | Config 3 | |  | -95 | | -95 | |
|  | | | dB | 4 | 4 | -Infinity | 5 |
|  | | | dB | 4 | 4 | -Infinity | 5 |
| SSB\_RP | Config 1,2 | | dBm/SCS | -94 | -94 | -Infinity | -93 |
|  | Config 3 | | dBm/SCS | -91 | -91 | -Infinity | -90 |
| IoNote3 | Config 1,2 | | dBm/  9.36MHz | -64.59 | -64.59 | -70.05 | -63.85 |
|  | Config 3 | | dBm/  38.16MHz | -58.49 | -58.49 | -63.94 | -57.75 |
| Propagation condition | | | - | AWGN | | 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. | | | | | | | |

Table A.7.3.3.X.1-4: General test parameters Intra-frequency FR2-FR2 PSCell change

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 2 |  |
|  | Neighbouring cell |  | Cell 4 |  |
| Final condition | Active cell |  | Cell 4 |  |
| A4-Offset | | dBm | -120 |  |
| Hysteresis | | dB | 0 |  |
| Time To Trigger | | s | 0 |  |
| 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 |
| T1 | | s | 5 |  |
| T2 | | s | ≤10 |  |

Table A.7.3.3.X.1-5: Cell specific test parameters for Intra-frequency FR2-FR2 PSCell change

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 2 | | Cell 4 | |
|  | | |  | T1 | T2 | T1 | T2 |
| Assumption for UE beamsNote 6 | | |  | Rough | | Rough | |
| AoA setup | | |  | Setup 1 as defined in A.3.15 | | | |
| NR RF Channel Number | | |  | **1** | | **1** | |
| Duplex mode | | |  | TDD | | | |
| TDD configuration | | |  | TDDConf.3.1 | | | |
| BWchannel | | | MHz | 100: NRB,c = 66 | | | |
| BWP BW | | | MHz | 100: NRB,c = 66 | | | |
| Data RBs allocated | | |  | 66 | | | |
| DRx Cycle | | | ms | Not Applicable | | | |
| PDSCH Reference measurement channel | | |  | SR3.1 TDD | | | |
| RMSI CORESET Reference Channel | | |  | CR3.1 TDD | | | |
| Control Channel RMC | | |  | CCR.3.1 TDD | | | |
| OCNG Patterns | | |  | O P. 1 | | | |
| SMTC Configuration | | |  | SMTC pattern 1 | | | |
| SSB Configuration | | |  | SSB. 3 FR2 | | | |
| PDSCH/PDCCH subcarrier spacing | | | kHz | 120 kHz | | | |
| PUCCH/PUSCH subcarrier spacing | | | kHz | 120 kHz | | | |
| PRACH configuration | | |  | FR2 PRACH configuration 1 | | | |
| TRS configuration | | |  | TRS.2.1 TDD | | | |
| PDSCH/PDCCH TCI state | | |  | TCI.State.2 | | | |
| BWP configuraiton | | 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 | | 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 | -104.7 | | | |
| Note2 |  | | dBm/SCS | -95.7 | | | |
|  | | | dB | 6 | -1.8 | -Infinity | 0 |
|  | | | dB | 6 | 6 | -Infinity | 7 |
| IoNote3 |  | | dBm/  BW | -59.7 | -56.7 | -59.7 | -56.7 |
| Propagation condition | | | - | AWGN | | 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.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | |

##### A.7.3.3.X.2 Test Requirements

###### A.7.3.3.X.2.1 Test Requirements for NR conditional handover

TRRC + TEvent\_DU occurs during T1 as the handover condition becomes satisfied at the start of T2. The test shall verify that there are no interruptions during T1.

The UE shall start to transmit the PRACH to Cell 3 less than Tmeasure + Tinterrupt + TCHO\_execution = 6720+47+10ms=6777 ms (power class 1) or 4160+47+10ms =4217ms (power classes 2,3 and 4) from the start of T2 and the interruption during T2 shall not exceeed Tinterrupt=Tprocessing + TIU + T∆ + Tmargin =25+20+2 = 47ms excluding any transmissions which do not occur due to scheduling restrictions. excluding any transmissions which do not occur due to scheduling restrictions.

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

###### A.7.3.3.X.2.1 Test Requirements for NR PSCell change

The UE shall start to transmit the PRACH to Cell 4 less than Tmeasure + TCHO\_execution + Tprocessing + Tsearch\_PCell\_Conditional + Tsearch\_PSCell + T∆\_PSCell + TPSCell\_ DU + 2 =6720+10+25+20+10ms+2=6792 ms (power class 1) or 4160+25+20+10+2ms =4232ms (power classes 2,3 and 4) from the start of T2.

**<< UNCHANGED SECTIONS OMITTED >>**

#### A.7.3.3.Y NR conditional Handover including target MCG and candidate SCG from FR1-FR2 NR-DC to FR1-FR2 NR-DC

##### A.7.3.3.Y.1 Test Purpose and Environment

This test is to verify the requirements for conditional handover including target MCG and candidate SCG in NR-DC: from FR1-FR2 NR-DC to FR1-FR2 NR-DC specified in clause 6.1.7.2. This test verifies the requirements for inter-frequency FR1-FR1 conditional handover and intra-frequency FR2-FR2 conditional PSCell change.

##### A.7.3.3.Y.2 Test Parameters

The supported test configurations are given in Table A.7.3.3.Y.1-1. The test scenario comprises four NR cells, source PCell (Cell 1) and source PSCell (Cell 2), target PCell (Cell 3), and target PSCell (Cell 4).

Cell 1 is on radio channel 1 in FR1. Cell 3 is on radio channel 2 in FR1, Cell 2 and Cell 4 are on radio channel 3 in FR2. The event-triggered reporting with Event A3 is used for handover condition. Test parameters are given in Tables A.7.3.3.Y.1-2, A.7.3.3.Y.1-3, and A.7.3.3.Y.1-4 below. The test consists of three successive time periods, with time durations of T1, T2 and T3, respectively.

At the start of T1, the UE shall be connected to Cell 1 on radio channel 1 and Cell 2 on radio channel 3. UE is not aware of Cell 3 and Cell 4. TE shall configure a condition implying conditional handover to Cell 3 with a condition implying conditional PSCell change to cell 4 during T1, at a time earlier than TRRC before the beginning of T2.

At the start of T2, cell 3 becomes detectable. At the start of T3, cell 4 becomes detectable. The condition for conditional handover and the condition for conditional PSCell change is met during T3.

Table A.7.3.3.Y.1-1: Supported test configurations for Conditional Handover including target MCG and candidate SCG from NR-DC to NR-DC

|  |  |
| --- | --- |
| Config | Description |
| 1 | Source PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Target PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 2 | Source PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Target PCell: FR1 NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| 3 | Source PCell: FR1 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Target PCell: FR1 NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode  Source PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode  Target PSCell: FR2 NR 120kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations | |

Table A.7.3.3.Y.1-2: General test parameters for FR1-FR1 inter frequency conditional handover with target MCG and FR2-FR2 intra-frequency conditional PSCell change with candidate SCG

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 1, 2 |  |
|  | Target cell |  | Cell 3, 4 |  |
| Final condition | Active cell |  | Cell 3, 4 |  |
| A3-Offset for handover condition | | dBm | -4 | Applied for both CHO and CPC. |
| Hysteresis | | dB | 0 |  |
| Time To Trigger | | s | 0 |  |
| 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 |
| T1 | | s | 1 |  |
| T2 | | s | 2 | It is the time gap between target Pcell and target PScell become detectable |
| T3 | | s | ≤2 |  |

Table A.7.3.3.Y.1-3: Cell specific test parameters for PCell FR1-FR1 Inter frequency handover with target MCG

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 1 | | | Cell 3 | | | |
|  | | |  | T1 | T2 | T3 | T1 | | T2 | T3 |
| NR RF Channel Number | | |  | 1 | | | | 2 | | |
| Duplex mode | | Config 1 |  | FDD | | | | | | |
|  | | Config 2,3 |  | TDD | | | | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | | | | |
|  | | Config 3 |  | TDDConf.2.1 | | | | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | |
| BWP BW | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | | | | | | |
|  | | Config 2 |  | TRS.1.1 TDD | | | | | | |
|  | | Config 3 |  | TRS.1.2 TDD | | | | | | |
| DRx Cycle | | | ms | Not Applicable | | | | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | | | | | | |
|  | | Config 2 |  | SR.1.1 TDD | | | | | | |
|  | | Config 3 |  | SR2.1 TDD | | | | | | |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | | | | | | |
|  | | Config 2 |  | CR.1.1 TDD | | | | | | |
|  | | Config 3 |  | CR2.1 TDD | | | | | | |
| OCNG Patterns | | |  | OP.1 | | | | | | |
| SMTC Configuration | | |  | SMTC.1 | | | | | | |
| SSB Configuration | | Config 1,2 |  | SSB.1 FR1 | | | | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | |
| PUCCH/PUSCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | |
| PRACH configuration | | |  | FR1 PRACH configuration 1 | | | | | | |
| BWP | | 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 | | | -98 | | | |
| Note2 | Config 1,2 | | dBm/SCS | -98 | | | -98 | | | |
|  | Config 3 | |  | -95 | | | -95 | | | |
|  | | | dB | 4 | 4 | 4 | -Infinity | | 5 | 5 |
|  | | | dB | 4 | 4 | 4 | -Infinity | | 5 | 5 |
| SSB\_RP | Config 1,2 | | dBm/SCS | -94 | -94 | -94 | -Infinity | | -93 | -93 |
|  | Config 3 | | dBm/SCS | -91 | -91 | -91 | -Infinity | | -90 | -90 |
| IoNote3 | Config 1,2 | | dBm/  9.36MHz | -64.59 | -64.59 | -64.59 | -70.05 | | -63.85 | -63.85 |
|  | Config 3 | | dBm/  38.16MHz | -58.49 | -58.49 | -58.49 | -63.94 | | -57.75 | -57.75 |
| Propagation condition | | | - | AWGN | | | | 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. | | | | | | | | | | |

Table A.7.3.3.Y.1-4: Cell specific test parameters for conditionaly intra-frequency FR2-FR2 PSCell change with candidate SCG

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 2 | | | | Cell 4 | | |
|  | | |  | T1 | T2 | T3 | T1 | | T2 | T3 |
| Assumption for UE beamsNote 6 | | |  | Rough | | | | Rough | | |
| AoA setup | | |  | Setup 1 as defined in A.3.15 | | | | | | |
| NR RF Channel Number | | |  | 3 | | | | 3 | | |
| Duplex mode | | |  | TDD | | | | | | |
| TDD configuration | | |  | TDDConf.3.1 | | | | | | |
| BWchannel | | | MHz | 100: NRB,c = 66 | | | | | | |
| BWP BW | | | MHz | 100: NRB,c = 66 | | | | | | |
| Data RBs allocated | | |  | 66 | | | | | | |
| DRx Cycle | | | ms | Not Applicable | | | | | | |
| PDSCH Reference measurement channel | | |  | SR3.1 TDD | | | | | | |
| RMSI CORESET Reference Channel | | |  | CR3.1 TDD | | | | | | |
| Control Channel RMC | | |  | CCR.3.1 TDD | | | | | | |
| OCNG Patterns | | |  | O P. 1 | | | | | | |
| SMTC Configuration | | |  | SMTC.1 | | | | | | |
| SSB Configuration | | |  | SSB. 3 FR2 | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | | kHz | 120 kHz | | | | | | |
| PUCCH/PUSCH subcarrier spacing | | | kHz | 120 kHz | | | | | | |
| PRACH configuration | | |  | FR2 PRACH configuration 1 | | | | | | |
| TRS configuration | | |  | TRS.2.1 TDD | | | | | | |
| PDSCH/PDCCH TCI state | | |  | TCI.State.2 | | | | | | |
| BWP configuraiton | | 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 | | | | 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 | -104.7 | | | | | | |
| Note2 |  | | dBm/SCS | -95.7 | | | | | | |
|  | | | dB | 5.03 | 5.03 | -5.41 | -Infinity | | -Infinity | 3.81 |
|  | | | dB | 6 | 6 | 6 | -Infinity | | -Infinity | 11 |
| IoNote3 |  | | dBm/  BW | -59.7 | -59.7 | -54.2 | -59.7 | | -59.7 | -54.2 |
| Propagation condition | | | - | AWGN | | | | 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.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | | | | |

##### A.7.3.3.Y.3 Test Requirements

TRRC + TEvent\_DU occurs during T1 and T2, as the conditional handover condition for cell 3 becomes satisfied from the start of T2, and the conditional PSCell change condition for cell 4 becomes satisfied from the start of T3. The test shall verify that there are no interruptions during T1 and T2. The UE shall not start the transmission of the new uplink PRACH channel of the target PCell before T3.

In this test, the UE shall start to transmit the PRACH to Cell 3 less than 1677 ms (power class 1) or 1157 ms (power classes 2,3 and 4)Note1 from the beginning of time period T3.

The UE shall transmit the PRACH to Cell 4 at latest 1677 ms (power class 1) or 1157 ms (power classes 2,3 and 4)Note2 from the beginning of time period T3.

The rate of correct observed delay in conditional handover including target MCG and candidate SCG during repeated tests shall be at least 90%.

Note 1: The PCell conditional handover delay can be expressed as specified in clause 6.1.7.2.1:

DCHOwithCPC\_PCell = TRRC\_delay + TEvent\_DU + max (Tmeasure\_PCell, Tmeasure\_PSCell) + TUE\_preparation + Tprocessing + TΔ\_PCell + TPCell\_DU + 2 ms,

Where:

max (Tmeasure\_PCell, Tmeasure\_PSCell) = 1600 ms (power class 1) or 1080 ms (power classes 2, 3 and 4)

TUE\_preparation = 10ms

Tprocessing = 25ms

TΔ\_PSCell = 20ms

TPCell\_ DU = 20ms

Note 2: The PSCell conditional change delay can be expressed as follows as specified in clause 6.1.7.2.2:

DCHOwithCPC\_PSCell = TRRC\_delay + TEvent\_DU + max (Tmeasure\_PCell, Tmeasure\_PSCell) + TUE\_preparation + Tprocessing + TΔ\_PSCell + TPSCell\_DU + 2 ms

Where:

max (Tmeasure\_PCell, Tmeasure\_PSCell) = 1600 ms (power class 1) or 1080 ms (power classes 2, 3 and 4)

TUE\_preparation = 10ms

Tprocessing = 25ms

TΔ\_PSCell = 20msTPSCell\_ DU = 20ms

**<< END OF CHANGES >>**