**3GPP TSG- Meeting #**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **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:*** |  | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | RAN WG4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | In RAN4#95e it was agreed to introduce the testcases for CHO:   |  |  |  | | --- | --- | --- | | 7 | Conditional intrafrequency handover test in SA for FR1 | | | 8 | Conditional interfrequency handover test in SA for FR1 | | | 11 | | Conditional intrafrequency handover test in SA for FR2 | | | 12 | | Conditional interfrequency handover test in SA for FR2 | | | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the agreed tests. The tests are based on existing unconditional handover tests, with removal of the UE event reportig and modification of the test requirement to follow the core requirement for conditional handover. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | CHO test coverage is missing. | | | | | | | | |
|  | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.6.3.3 and subsections A.6.3.3.1, A.6.3.3.1.1, A.6.3.3.1.2, A.6.3.3.1.3  A.6.3.3.2, A.6.3.3.2.1, A.6.3.3.2.2, A.6.3.3.2.3  A.7.3.3 and subsections A.7.3.3.1, A.7.3.3.1.1, A.7.3.3.1.2, A.7.3.3.1.3  A.7.3.3.2, A.7.3.3.2.1, A.7.3.3.2.2, A.7.3.3.2.3 (all new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

|  |  |
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| ***This CR's revision history:*** |  |

Change 1

#### A.6.3.3 Conditional handover

#### A.6.3.3.1 Intra-frequency conditional handover from FR1 to FR1

##### A.6.3.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR1-NR FR1 intra frequency conditional handover requirements specified in clause 6.1.4.2.

##### A.6.3.3.1.2 Test Parameters

Supported test configurations are shown in table A.6.3.3.1.2-1. Both conditional handover delay and interruption length are tested by using the parameters in table A.6.3.3.1.2-2, and A.6.3.3.1.2-3.

The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

NR shall configure a condition implying handover to cell 2 during T1, at a time earlier than TRRC before the beginning of T2.

**Table A.6.3.3.1.2-1: Intra-frequency conditional handover from FR1 to FR1 test configurations**

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

**Table A.6.3.3.1.2-2: General test parameters Intra-frequency conditional handover from FR1 to FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | **Comment** |
| Initial conditions | Active cell |  | Cell 1 |  |
| Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| A3-Offset in condition | | dB | 0 |  |
| 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. |
| PRACH configuration index | |  | FR1 PRACH configuration 1 | As specified in table Table 6.3.3.2-3 in TS 38.211 [6] |
| Time offset between cells | |  | 3 μs | Synchronous cells |
| T1 | | s | 5 |  |
| T2 | | s | ≤2 |  |

**Table A.6.3.3.1.2-3: Cell specific test parameters for NR FR1-FR1 Intra frequency conditional handover test case**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **Cell 1** | | | | **Cell 2** | | |
| **T1** | | **T2** | | **T1** | | **T2** |
| NR RF Channel Number | | |  | 1 | | | | 1 | | |
| 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 | | | | | | |
| 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 | | | | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | | | | | | |
| Config 2 |  | TRS.1.1 TDD | | | | | | |
| Config 3 |  | TRS.1.2 TDD | | | | | | |
| OCNG Patterns | | |  | OCNG pattern 1 | | | | | | |
| SMTC Configuration | | |  | SMTC pattern 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 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 | | | | | | |
| 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 | | | | | | |
| Config 3 | | -95 | | | | | | |
|  | | | dB | 8 | -3.3 | | -Infinity | | 2.36 | |
|  | | | dB | 8 | 8 | | -Infinity | | 11 | |
| SSB\_RP | Config 1,2 | | dBm/SCS | -90 | -90 | | -Infinity | | -87 | |
| Config 3 | | dBm/SCS | -87 | -87 | | -Infinity | | -84 | |
| IoNote3 | Config 1,2 | | dBm/  9.36MHz | -61.41 | -57.06 | | -61.41 | | -57.06 | |
| Config 3 | | dBm/  38.16MHz | -55.31 | -50.96 | | -55.31 | | -50.96 | |
| 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. | | | | | | | | | | |

##### A.6.3.3.1.3 Test Requirements

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 2 less than Tmeasure + Tinterrupt + TCHO\_execution = 800 +62 +10=872ms from the start of T2 and the interruption during T2 shall not exceeed Tinterrupt=Tprocessing + TIU + T∆ + Tmargin =40+20+2 = 62ms

Change 2

#### A.6.3.3.2 Inter-frequency conditional handover from FR1 to FR1

##### A.6.3.3.2.1 Test Purpose and Environment

This test is to verify the requirement for the NR conditional FR1-NR FR1 inter frequency conditional handover requirements specified in clause 6.1.4.2.

##### A.6.3.3.2.2 Test Parameters

Supported test configurations are shown in table A.6.3.3.2.2-1. Both conditional handover delay and interruption length are tested by using the parameters in table A.6.3.3.2.2-2, and A.6.3.3.2.2-3.

The test scenario comprises of two carriers and one cell on each carrier Gap pattern ID gp0 is configured in the test case. 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 condition implying handover to cell 2 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.6.3.3.2.2-1: Inter-frequency handover from FR1 to FR1 test configurations**

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

**Table A.6.3.3.2.2-2: General test parameters Inter-frequency handover from FR1 to FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | **Comment** |
| Initial conditions | Active cell |  | Cell 1 |  |
| Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| A3-Offset in handover condition | | dB | -4 |  |
| 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. |
| T1 | | s | 5 |  |
| T2 | | s | ≤2 |  |

**Table A.6.3.3.2.2-3: Cell specific test parameters for NR FR1-FR1 Inter frequency handover test case**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **Cell 1** | | | | **Cell 2** | | |
| **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 | | | | | | |
| Gap pattern ID | | |  | gp0 | | | | | | |
| 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 | | |  | OCNG pattern 1 | | | | | | |
| SMTC Configuration | | |  | SMTC pattern 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. | | | | | | | | | | |

##### A.6.3.3.2.3 Test Requirements

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 2 less than Tmeasure + Tinterrupt + TCHO\_execution =920 +62 +10=992 ms from the start of T2 and the interruption during T2 shall not exceeed Tinterrupt=Tprocessing + TIU + T∆ + Tmargin =40+20+2 = 62ms excluding any transmissions which do not occur due to measurement gaps.

Inter-frequency CHO FR1-FR1 920 (Tmeasure)+62 (Tinterrupt)+10 (TCHO\_execution) = 992 62 m

Change 3

#### A.7.3.3 Conditional Handover

#### A.7.3.3.1 Intra-frequency conditional handover from FR2 to FR2

##### A.7.3.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR2-NR FR2 intra frequency conditional handover requirements specified in clause 6.1.4.4.

##### A.7.3.3.1.2 Test Parameters

Supported test configurations are shown in table A.7.3.3.2.2-1. Both handover delay and interruption length are tested by using the parameters in table A.7.3.3.2.2-2, and A.7.3.3.2.2-3.

The test scenario comprises of two cells. No gap patterns are configured in the test case. 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 condition implying handover to cell 2 during T1, at a time earlier than TRRC before the beginning of T2. Starting T2, cell 2 becomes detectable.

Table A.7.3.3.1.2-1: Intra-frequency conditional handover from FR2 to FR2 test configurations

|  |  |
| --- | --- |
| Config | Description |
| 1 | Source cell: NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode  Target cell: NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.3.3.1.2-2: General test parameters for conditional Intra-frequency handover from FR2 to FR2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 1 |  |
| Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| A3-Offset for condition | | dBm | -1 | Trigger HO to cell which may be measured as -1dB relative to cell 1. Actual SS-RSRP is 5dB stronger. |
| 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 | ≤2 |  |

Table A.7.3.3.1.2-3: Cell specific test parameters for NR FR2-FR2 conditional Intra frequency handover test case

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 1 | | | | Cell 2 | | |
| T1 | | T2 | | T1 | | T2 |
| 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 | | | | | | |
| DRx Cycle | | | ms | Not Applicable | | | | | | |
| PDSCH Reference measurement channel | | |  | SR3.1 TDD | | | | | | |
| CORESET Reference Channel | | |  | CR3.1 TDD | | | | | | |
| OCNG Patterns | | |  | OCNG pattern 1 | | | | | | |
| SMTC Configuration | | |  | SMTC pattern 1 | | | | | | |
| SSB Configuration | | |  | SSB.1 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 | | | | | | |
| TCI configuration | | |  | CSI-RS.Config.0 | | | | | | |
| 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 | | | -104.7 | | | |
| Note2 | Config 1 | | dBm/SCS | -98.7 | | | -98.7 | | | |
|  | | | dB | 6 | -5.33 | | -Infinity | | 4.02 | |
|  | | | dB | 6 | 6 | | -Infinity | | 11 | |
| IoNote3 | Config 1 | | dBm/  BW | -62.7 | -57.2 | | -62.7 | | -57.2 | |
| 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.  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 | | | | | | | | | | |

##### A.7.3.3.1.2.3 Test Requirements

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 2 less than Tmeasure + Tinterrupt + TCHO\_execution =1600+62+10=1672 ms (power class 1) or 1080+62+10 =1152 (PC2/3/4) 62 ms=1152 ms (power classes 2,3 and 4) from the start of T2 and the interruption during T2 shall not exceeed Tinterrupt=Tprocessing + TIU + T∆ + Tmargin =40+20+2 = 62ms excluding any transmissions which do not occur due to scheduling restrictions.

Change 4

#### A.7.3.3.2 Inter-frequency handover from FR2 to FR2; unknown target cell

##### A.7.3.3.2.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR2-NR FR2 inter frequency conditional handover requirements specified in clause 6.1.4.4.

##### A.7.3.3.2.2 Test Parameters

Supported test configurations are shown in table A.7.3.3.3.2-1. Both conditional handover delay and interruption length are tested by using the parameters in table A.7.3.3.3.2-2, and A.7.3.3.3.2-3.

The test scenario comprises of two carriers and one cell on each carrier. Gap pattern ID gp0 is configured in the test case. 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 condition implying handover to cell 2 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.7.3.3.2.2-1: Inter-frequency conditional handover from FR2 to FR2 test configurations

|  |  |
| --- | --- |
| Config | Description |
| 1 | Source cell: NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode  Target cell: NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.3.3.2.2-2: General test parameters Inter-frequency conditional handover from FR2 to FR2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 1 |  |
| Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| A4-Offset for handover condition | | dB | -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 | ≤7 |  |

Table A.7.3.3.2.2-3: Cell specific test parameters for NR FR2-FR2 Inter frequency conditional handover test case

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 1 | | | | Cell 2 | | |
| T1 | | T2 | | T1 | | T2 |
| NR RF Channel Number | | |  | 1 | | | | 2 | | |
| Duplex mode | | |  | TDD | | | | | | |
| TDD configuration | | |  | TDDConf.3.1 | | | | | | |
| BWchannel | | | MHz | 100: NRB,c = 66 | | | | | | |
| BWP BW | | | MHz | 100: NRB,c = 66 | | | | | | |
| DRx Cycle | | | ms | Not Applicable | | | | | | |
| Gap pattern ID | | |  | gp0 | | | | | | |
| PDSCH Reference measurement channel | | |  | SR3.1 TDD | | | | | | |
| CORESET Reference Channel | | |  | CR3.1 TDD | | | | | | |
| OCNG Patterns | | |  | OCNG pattern 1 | | | | | | |
| SMTC Configuration | | |  | SMTC pattern 1 | | | | | | |
| SSB Configuration | | |  | SSB.1 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 | | | | | | |
| TCI configuration | | |  | CSI-RS.Config.0 | | | | | | |
| 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 | | | -104.7 | | | |
| Note2 | Config 1,2 | | dBm/SCS | -95.7 | | | -95.7 | | | |
| Config 3 | | -95.7 | | | -95.7 | | | |
|  | | | dB | 5 | 5 | | -Infinity | | 5 | |
|  | | | dB | 5 | 5 | | -Infinity | | 5 | |
| IoNote3 | Config 1,2 | | dBm/  BW | -60.5 | -60.5 | | -66.7 | | -60.5 | |
| Config 3 | | dBm/  BW | -60.5 | -60.5 | | -66.7 | | -60.5 | |
| 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.  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 | | | | | | | | | | |

##### A.7.3.3.2.3 Test Requirements

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 2 less than Tmeasure + Tinterrupt + TCHO\_execution = 6720+62+10ms=6792 ms (power class 1) or 4160+62+10ms =4232ms (power classes 2,3 and 4) from the start of T2 and the interruption during T2 shall not exceeed Tinterrupt=Tprocessing + TIU + T∆ + Tmargin =40+20+2 = 62ms excluding any transmissions which do not occur due to scheduling restrictions. excluding any transmissions which do not occur due to scheduling restrictions.