**3GPP TSG-RAN4 Meeting #104-eR4-221XXXX**

**Electronic Meeting, Aug 15 – Aug 26, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **TBD** | **rev** |  | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | Big CR for NR MG enh (Rel-17) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC, MediaTek inc. | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh-Perf | | | | |  | ***Date:*** | | | 2022-08-30 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This CR merges the following edorced draft CRs in the RAN4#104e meeting. The section numbers for the endorced draft CRs are not well-aligned. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The changes in this CR includes the following endorsed draft CRs and re-arranged the test cases into correct section number   * For agenda item 9.9.2.1 Pre-configured MG pattern(s)  |  |  |  |  |  | | --- | --- | --- | --- | --- | | No. | Tdoc # | Source | Old Clause | New Clause | | 1 | R4-2214684 | Intel | A.6.6.1.x | A.6.6.X1.1 | | 2 | R4-2214674 | Apple | A7.6.X1 | A.7.6.X1.1 | | 3 | R4-2214723 | HW | A.6.6.X1.2 | A.6.6.X1.2 | | 4 | R4-2214680 | MTK | A7.6.X1.2 | A.7.6.X1.2 | | 5 | R4-2214678 | OPPO | A.6.6.X1.3 | A.6.6.X1.3 |  * For agenda item 9.9.2.2 Multiple concurrent and independent MG patterns  |  |  |  |  |  | | --- | --- | --- | --- | --- | | No. | Tdoc # | Source | Old Clause | New Clause | | 1 | R4-2214332 | E/// | A.6.6.X2.1 | A.6.6.X2.1 | | 2 | R4-2214681 | MTK | A.6.6.X2.2 | A.6.6.X2.2 | | 3 | R4-2214699 | Nokia | A.x.x.x.1 | A.6.6.X2.3 | | 4 | R4-2214685 | Intel | A.6.6.x2.4 | A.6.6.X2.4 | | 5 | R4-2214724 | HW | A.7.6.X2.1 | A.7.6.X2.1 | | 6 | R4-2214729 | ZTE | A.7.6.2.x | A.7.6.X2.2 | | 7 | R4-2214675 | Apple | A.7.6.X2.3 | A.7.6.X2.3 |  * For agenda item 9.9.2.3 Network Controlled Small Gap  |  |  |  |  |  | | --- | --- | --- | --- | --- | | No. | Tdoc # | Source | Old Clause | New Clause | | 1 | R4-2214057 | E/// | A.6.6.1.X | A.6.6.X3.4 | | 2 | R4-2212084 | MTK | A.7.6.X3.3 | A.7.6.X3.3 | | 3 | R4-2214725 | HW | A.6.6.X3.2 | A.6.6.X3.2 | | 4 | R4-2214667 | CATT | A.7.6.X3.2.1 | A.7.6.X3.2 | | 5 | R4-2214686 | Intel | A.6.6.X3.3 | A.6.6.X3.3 | | 6 | R4-2214679 | OPPO | A.6.6.X3.1 | A.6.6.X3.1 | | 7 | R4-2214730 | ZTE | A.7.6.1.x | A.7.6.X3.1 | | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * The test cases for this WI are missing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.3.9.2.2, A.3.9.3.2, (new) A.3.11.Y, (new) A.6.6.X1, (new) A.6.6.X2, (new) A.6.6.X3, (new) A.7.6.X1, (new) A.7.6.X2, (new) A.7.6.X3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of the 1st change>

#### A.3.9.2.2 Dedicated BWP

Table A.3.9.2.2-1: Downlink BWP patterns for dedicated BWP configuration

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BWP Parameters | Unit | Values | | | | | | | | |
| Reference BWP |  | DLBWP.1.1 | DLBWP.1.2 | | DLBWP.1.3 | DLBWP.1.4 | | DLBWP.1.5 | | DLBWP.1.6 |
| Starting PRB index |  | 0 | RBb Note 1 | | RBa Note 2 | 0 | | RBb Note 1 | | RBa Note 2 |
| Bandwidth | RB | Same as RF channel defined in each test | 25 for SSB SCS = 15KHz,  51 for SSB SCS = 30KHz,  32 for SSB SCS = 120KHz  48 for SSB SCS = 240KHz | | 25 for SSB SCS = 15KHz,  51 for SSB SCS = 30KHz,  32 for SSB SCS = 120KHz  48 for SSB SCS = 240KHz | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz | | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz | | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz |
| Note 1: RBb is the lowest PRB index to guarantee the BWP not fully overlapped with SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10.  Note 2: RBa is the lowest PRB index to guarantee the BWP including SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10. | | | | | | | | | | |

<End of the 1st change>

<Start of the 2nd change>

#### A.3.9.3.2 Dedicated BWP

Table A.3.9.3.2-1: Uplink BWP patterns for dedicated BWP configuration

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BWP Parameters | Unit | Values | | | | | | | | |
| Reference BWP |  | ULBWP.1.1 | ULBWP.1.2 | | ULBWP.1.3 | | ULBWP.1.4 | ULBWP.1.5 | | ULBWP.1.6 |
| Starting PRB index |  | 0 | RBb Note 1 | | RBa Note 2 | | 0 | RBb Note 1 | | RBa Note 2 |
| Bandwidth | RB | Same as RF channel defined in each test | 25 for SSB SCS = 15KHz,  51 for SSB SCS = 30KHz,  32 for SSB SCS = 120KHz  48 for SSB SCS = 240KHz | | 25 for SSB SCS = 15KHz,  51 for SSB SCS = 30KHz,  32 for SSB SCS = 120KHz  48 for SSB SCS = 240KHz | | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz | | 24 for SSB SCS = 120KHz  24 for SSB SCS = 240KHz |
| Note 1: RBb is same as RBb for DLBWP.1.2 as defined in Table A.3.9.2.2-1.  Note 2: RBa is same as RBa for DLBWP.1.3 as defined in Table A.3.9.2.2-1. | | | | | | | | | | |

<End of the 2nd change>

<Start of the 3rd change>

### A.3.11.Y SMTC pattern Y: SMTC period = 20 ms with SMTC duration = 5 ms

Table A.3.11.6-1: SMTC.Y: SMTC Pattern Y for SMTC period = 20 ms and duration = 5 ms

|  |  |
| --- | --- |
| SMTC Parameters | Values |
| SMTC periodicity | 20 ms |
| SMTC offset | 5 ms |
| SMTC duration | 5 ms |

<End of the 3rd change>

<Start of the 4th change>

### A.6.6.X1 SA event triggered reporting tests with Pre-MG

#### A.6.6.X1.1 SA event triggered reporting tests with autonomous activation/deactivation Pre-MG

##### A.6.6.X1.1.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the intra-frequency cell search requirements in clause 9.2.6.2 and 9.2.6.3. And this test will also jointly verify Pre-configured measurement gap activation/deactivation delay in clause 8.19.2.

##### A.6.6.X1.1.2 Test parameters

Two cells are deployed in the test, which are FR1 PCell (Cell 1) and a FR1 neighbour cell (Cell 2) on the same frequency as the PCell. The test parameters for PCell are given in Table A.6.6.X1.1.2-1 and A.6.6.X1.1.2-2 below. In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used~~.~~

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

* During the duration of T1,
  + UE is configured with 2 different UE-specific bandwidth parts for Cell 1 (PCell), BWP-1 and BWP-2, before starting the test.
    - BWP-1 includes bandwidth of the initial DL BWP and SSB with the Pre-MG status set to ‘deactivated’.
    - BWP-2 does not include bandwidth of the initial DL BWP and SSB with the Pre-MG status set to ‘activated’.

UE is indicated in *firstActiveDownlinkBWP-Id* that the active DL BWPis BWP-1 in PCell.

* At the start of time duration T2, the serving gNB can trigger Pre-MG activation starts when a DCI format 1\_1 command for PCell DL BWP switch, sent from the test equipment to the UE, is received at the UE side in PCell’s slot # denoted i. The UE shall switch its bandwidth part from BWP-1 to BWP-2. And UE is expected to complete the Pre-MG activation within T2.
* At the start of time duration T3, the UE may not have any timing information of neighbor cell to be measured (e.g. cell 2). And UE was expected to complete the measurements of SSBs with the activated Pre-MG within T3.

There are two BWPs configured in Cell 1, BWP-1 which contains the cell defining SSB, and BWP-2 which does not contain any SSB of Cell 1.

Table A.6.6.X1.1.2-1: 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, 40 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.6.6.X1.1.2-2: General test parameters for SA intra-frequency event triggered reporting with per-UE gaps for PCell in FR1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| Active cell |  | 1, 2, 3 | Cell 1 |  |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 |  |
| Measurement gap type |  | 1, 2, 3 | Per-UE gaps |  |
| Measurement gap epetition periodicity | ms | 1, 2, 3 | 40 |  |
| Measurement gap length | ms | 1, 2, 3 | 6 |  |
| Measurement gap offset | ms | 1, 2, 3 | 39 |  |
| 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 |  |
| CSI-RS parameters |  | 1 | CSI-RS.1.2 FDD resource #0 |  |
|  |  | 2 | CSI-RS.1.2 TDD resource #0 |  |
|  |  | 3 | CSI-RS.2.2 TDD resource #0 |  |
| A3-Offset | dB | 1, 2, 3 | -4.5 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| Time To Trigger | s | 1, 2, 3 | 0 |  |
| Filter coefficient |  | 1, 2, 3 | 0 | L3 filtering is not used |
| DRX | ms | 1, 2, 3 |  | OFF |
| Time offset between serving and neighbour cells |  | 1 | 3 ms | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | 2 | 3 μs | Synchronous cells |
|  |  | 3 | 3 μs | Synchronous cells |
| T1 | s | 1, 2, 3 | 0.1 |  |
| T2 | s | 1, 2, 3 | 0.2 |  |
| T3 | s | 1,2, 3 | 5 |  |
| *bwp-InactivityTimer* | ms |  | 500 |  |

Table A.6.6.X1.1.2-3: NR Cell specific test parameters for SA intra-frequency event triggered reporting with per-UE gaps for PCell in FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | | Cell 2 | | |
|  |  |  | T1 | T2 | T3 | T1 | T2 | T3 |
| TDD configuration |  | 1 | N/A | | | N/A | | |
|  |  | 2 | TDDConf.1.1 | | | TDDConf.1.1 | | |
|  |  | 3 | TDDConf.2.1 | | | TDDConf.2.1 | | |
| Intial BWP configuration |  | 1,2,3 | DLBWP.0.1  ULBWP.0.1 | | | DLBWP.0.1  ULBWP.0.1 | | |
| BWP-1 Configuration |  | 1,2,3 | DLBWP.1.6  ULBWP.1.6 | | | N/A | | |
| BWP-2 Configuration |  | 1,2,3 | DLBWP.1.5  ULBWP.1.5 | | | N/A | | |
| 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 | | | CR.1.1 FDD | | |
|  |  | 2 | CR.1.1 TDD | | | CR.1.1 TDD | | |
|  |  | 3 | CR.2.1 TDD | | | CR.2.1 TDD | | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.2 FDD | | | CCR.1.1 FDD | | |
|  |  | 2 | CCR.1.2 TDD | | | CCR.1.1 TDD | | |
|  |  | 3 | CCR.2.1 TDD | | | 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 | | | N/A | | |
|  |  | 3 | TRS.1.2 TDD | | | N/A | | |
| IInitial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | | DLBWP.0.1 ULBWP.0.1 | | |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.2 | | | DLBWP.1.1 | | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.2 | | | ULBWP.1.1 | | |
| RLM-RS |  | 1, 2, 3 | CSI-RS | | | SSB | | |
| Note 2 | dBm/SCS | 1 | -98 | | | | | |
|  |  | 2 | -98 | | | | | |
|  |  | 3 | -95 | | | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | | | |
|  |  | 2 |  | | | | | |
|  |  | 3 |  | | | | | |
|  | dB | 1 | 4 | -1.46 | | -Infinity | | -1.46 |
|  |  | 2 |  |  | |  | |  |
|  |  | 3 |  |  | |  | |  |
|  | dB | 1 | 4 | 4 | | -Infinity | | 4 |
|  |  | 2 |  |  | |  | |  |
|  |  | 3 |  |  | |  | |  |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -94 | -94 | | -Infinity | | -94 |
|  |  | 2 | -94 | -94 | | -Infinity | | -94 |
|  |  | 3 | -91 | -91 | | -Infinity | | -91 |
| Io | dBm/9.36 MHz | 1 | -64.60 | -62.25 | | -64.60 | | -62.25 |
|  | dBm/9.36 MHz | 2 | -64.60 | -62.25 | | -64.60 | | -62.25 |
|  | dBm/38.16 MHz | 3 | -58.50 | -56.16 | | -58.50 | | -56.16 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  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.6.6.X1.1.3 Test Requirements

During T1 and T2 the UE shall report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, starting from the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*i+TBWPswitchDelay*) + 5ms as defined in clause 8.19.2.

During T3, the UE shall NOT be able to receive PDSCH and report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions.

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800ms from the beginning of time period T3.

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X1.2 SA event triggered reporting tests with pre-configured measurement gaps and network-controlled activation/deactivation

##### A.6.6.X1.2.1 Test purpose and Environment

The purpose of this test is to verify that the UE correctly activates and deactivates the pre-MG and makes correct measurement and reporting of an event with activated and deactivated pre-MG. This test will partly verify the pre-MG activation and deactivation delay requirements in clause 8.19.2 and the intra-frequency cell search requirements in clause 9.2.6.2 and 9.3.4.

##### A.6.6.X1.2.2 Test parameters

Two cells are deployed in the test, which are FR1 PCell (Cell 1) and a FR1 neighbour cell (Cell 2) on the same frequency as the PCell. The supported test configurations are listed in Table A.6.6.X1.2.2-1, general test parameters are listed in Table A.6.6.X1.2.2-2, and cell specific test parameters are listed in Table A.6.6.X1.2.2-3.

In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used. A pre-MG is configured before the test.

The UE is configured with 2 dedicated BWPs, BWP-1 and BWP-2. BWP-1 includes bandwidth of the SSB, and *preConfGapStatus* for BWP-1 is set to ‘0’; BWP-2 does not include bandwidth of the SSB, and *preConfGapStatus* for BWP-2 is set to ‘1’.

The test consists of 3 successive time periods, with time duration of T1, T2, and T3 respectively. Before the test starts, UE is switched to BWP-1.

The time period T2 starts when a DCI format 1\_1 command for PCell DL BWP switch, sent from the test equipment to the UE, is received at the UE side in PCell’s slot # denoted *i*. The UE shall switch its bandwidth part from BWP-1 to BWP-2 and complete pre-MG activation during T2.

Time period T3 starts at the beginning of the first complete MG occasion after slot # *i+k*, where *k* is number of slots corresponding to the length of DCI based BWP switch delay plus 5ms. During T3, UE shall perform intra-frequency measurement with pre-MG activated.

During time duration T1 and T2, the UE shall not have any timing information of Cell 2.

Table A.6.6.X1.2.2-1: 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, 40 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.6.6.X1.2.2-2: General test parameters for SA intra-frequency event triggered reporting with with pre-configured measurement gaps and network-controlled activation/deactivation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| Active cell |  | 1, 2, 3 | Cell 1 |  |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 |  |
| Measurement gap type |  | 1, 2, 3 | Per-UE gaps |  |
| Measurement gap repitition periodicity | ms | 1, 2, 3 | 40 |  |
| Measurement gap length | ms | 1, 2, 3 | 6 |  |
| Measurement gap offset | ms | 1, 2, 3 | 39 |  |
| 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 |  |
| CSI-RS parameters |  | 1 | CSI-RS.1.2 FDD resource #0 |  |
|  |  | 2 | CSI-RS.1.2 TDD resource #0 |  |
|  |  | 3 | CSI-RS.2.2 TDD resource #0 |  |
| A3-Offset | dB | 1, 2, 3 | -4.5 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| Time To Trigger | s | 1, 2, 3 | 0 |  |
| Filter coefficient |  | 1, 2, 3 | 0 | L3 filtering is not used |
| DRX | ms | 1, 2, 3 |  | OFF |
| Time offset between serving and neighbour cells |  | 1 | 3 ms | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | 2 | 3 μs | Synchronous cells |
|  |  | 3 | 3 μs | Synchronous cells |
| T1 | s | 1, 2, 3 | 0.1 |  |
| T2 | s | 1, 2, 3 | 0.1 |  |
| T3 | s | 1, 2, 3 | 5 |  |

Table A.6.6.X1.2.2-3: NR Cell specific test parameters for SA intra-frequency event triggered reporting with with pre-configured measurement gaps and network-controlled activation/deactivation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | | | Cell 2 | | |
|  |  |  | T1 | T2 | T3 | | T1 | T2 | T3 |
| 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 | | | | N/A | | |
|  |  | 3 | CR.2.1 TDD | | | | N/A | | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.2 FDD | | | | N/A | | |
|  |  | 2 | CCR.1.2 TDD | | | | N/A | | |
|  |  | 3 | CCR.2.1 TDD | | | | N/A | | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | | | OP.1 | | |
| TRS configuration |  | 1 | TRS.1.1 FDD | | | | N/A | | |
|  |  | 2 | TRS.1.1 TDD | | | | N/A | | |
|  |  | 3 | TRS.1.2 TDD | | | | N/A | | |
| Initial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | | | N/A | | |
| Active DL BWP configuration for BWP-1 |  | 1, 2, 3 | DLBWP.1.3 | | | | N/A | | |
| Active UL BWP configuration for BWP-1 |  | 1, 2, 3 | ULBWP.1.3 | | | | N/A | | |
| Active DL BWP configuration for BWP-2 |  | 1, 2, 3 | DLBWP.1.2 | | | | N/A | | |
| Active UL BWP configuration for BWP-2 |  | 1, 2, 3 | ULBWP.1.2 | | | | N/A | | |
| RLM-RS |  | 1, 2, 3 | CSI-RS | | | | N/A | | |
| Note 2 | dBm/SCS | 1 | -98 | | | | | | |
|  |  | 2 | -98 | | | | | | |
|  |  | 3 | -95 | | | | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | | | | |
|  |  | 2 |  | | | | | | |
|  |  | 3 |  | | | | | | |
|  | dB | 1,2,3 | -1.46 | 4 | | -1.46 | -1.46 | -Infinity | -1.46 |
|  | dB | 1,2,3 | 4 | 4 | | 4 | 4 | -Infinity | 4 |
| SS-RSRP Note 3 | dBm/SCS kHz | 1,2 | -94 | -94 | | -94 | -94 | -Infinity | -94 |
|  |  | 3 | -91 | -91 | | -91 | -91 | -Infinity | -91 |
| Io | dBm/9.36 MHz | 1,2 | -64.60 | -64.60 | | -62.25 | -62.25 | -64.60 | -62.25 |
|  | dBm/38.16 MHz | 3 | -58.50 | -58.50 | | -56.16 | -56.16 | -58.50 | -56.16 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2 and T4.  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.6.6.X1.2.3 Test Requirements

During T1, UE shall report corresponding HARQ-ACK for those PDSCHs scheduled in the slots overlapped with the pre-MG occasions.

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T3. During T3, UE is not required to report corresponding HARQ-ACK for those PDSCHs scheduled in the slots overlapped with the pre-MG occasions.

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X1.3 Intra-frequency measurement with SA event triggered reporting tests under non-DRX: with autonomous activation/deactivation of Pre-MG in FR1 triggered by MO addition/release

##### A.6.6.X1.3.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event with autonomous activation/deactivation of Pre-MG triggered by MO addition/release. This test will partly verify the intra-frequency cell search requirements in clause 9.2.5.1 and 9.2.5.2.

##### A.6.6.X1.3.2 Test parameters

Three cells are deployed in the test, which are FR1 PCell (Cell 1) on NR RF channel 1, a FR1 neighbour cell (Cell 2) on the same frequency as the PCell (NR RF channel 1), and a FR1 neighbour cell (cell 3) on NR RF channel 2. The test parameters for PCell are given in Table A.6.6.X1.3.2-1 and A.6.6.X1.3.2-1 below.

The test consists of 3 successive time periods, with durations of T1, T2 and T3, respectively.

* During the time period of T1,
* UE is connected to Cell 1 (PCell) on radio channel 1 (PCC), and
* UE is configured with BWP1, which contains the cell defining SSB, and
* UE is configured with MO1 containing SSB from neighbour Cell 2, which completely contained in the active BWP and could be measured without gap. It is indicated to the UE that event-triggered reporting with Event A3 is used for MO1.UE shall not have any timing information of neighbor Cell 2 at the start of time period of T1.
* At the start of time period T2, the measurement control information via RRC message, sent from the TE to the UE, is received at the UE side in PCell’s slot # denoted i. In the measurement control information, UE is configured with MO2 containing SSB from neighbour Cell 3, which is on a different frequency of the PCell and requires gap. And UE is expected to complete the Pre-MG activation within T2
* At the start of time period T3, the UE may not have any timing information of neighbor Cell 3. And UE was expected to complete the measurements of SSBs with the activated Pre-MG within T3.

UE is indicated in *firstActiveDownlinkBWP-Id* that the active DL BWPis BWP-1 in PCell, and no BWP switching is expected during the whole test.

The TE schedules continuous DL data on PCell throughout the test.

Table A.6.6.X1.3.2-1: 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, 40 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.6.6.X1.3.2-2: General test parameters for SA intra-frequency event triggered reporting with autonomous activation/deactivation of pre-MG in FR1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| Active cell |  | 1, 2, 3 | Cell 1 |  |
| Neighbour cell |  | 1, 2, 3 | Cell 2 and Cell 3 | Cell 2 is to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 |  |
| 2: Cell 3 |  |
| Measurement gap type |  | 1, 2, 3 | Per-UE |  |
| Gap pattern ID |  | 1, 2, 3 | 0 |  |
| Measurement gap repetition periodicity | ms | 1, 2, 3 | 40 |  |
| Measurement gap length | ms | 1, 2, 3 | 6 |  |
| Measurement gap offset | ms | 1, 2, 3 | 39 |  |
| CSI-RS parameters |  | 1 | CSI-RS.1.2 FDD resource #0 |  |
|  |  | 2 | CSI-RS.1.2 TDD resource #0 |  |
|  |  | 3 | CSI-RS.2.2 TDD resource #0 |  |
| A3-Offset | dB | 1, 2, 3 | -4.5 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| Time To Trigger | s | 1, 2, 3 | 0 |  |
| Filter coefficient |  | 1, 2, 3 | 0 | L3 filtering is not used |
| DRX | ms | 1, 2, 3 |  | OFF |
| Time offset between serving and neighbour cells |  | 1 | 3 ms | Asynchronous cells.  The timing of Cell 2 and Cell 3 is 3ms later than the timing of Cell 1. |
|  |  | 2 | 3 μs | Synchronous cells |
|  |  | 3 | 3 μs | Synchronous cells |
| T1 | s | 1, 2, 3 | 5 |  |
| T2 | s | 1, 2, 3 | 0.2 |  |
| T3 | s | 1, 2, 3 | 5 |  |

Table A.6.6.X1.3.2-3: NR Cell specific test parameters for SA intra-frequency event triggered reporting with autonomous activation/deactivation of pre-MG in FR1

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | | Cell 2 | | | Cell 3 | | |
|  |  |  | T1 | T2 | T3 | T1 | T2 | T3 | T1 | T2 | T3 |
| TDD configuration |  | 1 | N/A | | | N/A | | | N/A | | |
|  |  | 2 | TDDConf.1.1 | | | TDDConf.1.1 | | | TDDConf.1.1 | | |
|  |  | 3 | TDDConf.2.1 | | | TDDConf.2.1 | | | TDDConf.2.1 | | |
| PDSCH RMC configuration |  | 1 | SR.1.1 FDD | | | N/A | | | N/A | | |
|  |  | 2 | SR.1.1 TDD | | | N/A | | | N/A | | |
|  |  | 3 | SR.2.1 TDD | | | N/A | | | N/A | | |
| RMSI CORESET RMC configuration |  | 1 | CR.1.1 FDD | | | N/A | | | N/A | | |
|  |  | 2 | CR.1.1 TDD | | | N/A | | | N/A | | |
|  |  | 3 | CR.2.1 TDD | | | N/A | | | N/A | | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.2 FDD | | | N/A | | | N/A | | |
|  |  | 2 | CCR.1.2 TDD | | | N/A | | | N/A | | |
|  |  | 3 | CCR.2.1 TDD | | | N/A | | | N/A | | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | | OP.1 | | | OP.1 | | |
| TRS configuration |  | 1 | TRS.1.1 FDD | | | N/A | | | N/A | | |
|  |  | 2 | TRS.1.1 TDD | | | N/A | | | N/A | | |
|  |  | 3 | TRS.1.2 TDD | | | N/A | | | N/A | | |
| Initial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | | N/A | | | N/A | | |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.1 | | | N/A | | | N/A | | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.1 | | | N/A | | | N/A | | |
| RLM-RS |  | 1, 2, 3 | SSB | | | SSB | | | SSB | | |
| SSB parameters |  | 1 | SSB.1 FR1 | | | SSB.1 FR1 | | | SSB.1 FR1 | | |
|  | 2 | SSB.1 FR1 | | | SSB.1 FR1 | | | SSB.1 FR1 | | |
|  | 3 | SSB.2 FR1 | | | SSB.2 FR1 | | | SSB.2 FR1 | | |
| SMTC configuration defined in A.3.11 |  | 1 | SMTC.2 | | | SMTC.2 | | | SMTC.2 | | |
|  | 2 | SMTC.1 | | | SMTC.1 | | | SMTC.1 | | |
|  | 3 | SMTC.1 | | | SMTC.1 | | | SMTC.1 | | |
| Note 2 | dBm/SCS | 1 | -98 | | | | | | | | |
|  |  | 2 | -98 | | | | | | | | |
|  |  | 3 | -95 | | | | | | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | | | | | | |
|  |  | 2 |  | | | | | | | | |
|  |  | 3 |  | | | | | | | | |
|  | dB | 1 | -1.46 | 4 | -1.46 | -1.46 | -Infinity | | -Infinity | | 7 |
|  |  | 2 |
|  |  | 3 |
|  | dB | 1 | 4 | 4 | 4 | 4 | -Infinity | | -Infinity | | 7 |
| 2 |
| 3 |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -94 | -94 | -94 | -94 | -Infinity | | -Infinity | | -91 |
| 2 | -94 | -94 | -94 | -94 | -Infinity | | -Infinity | | -91 |
| 3 | -91 | -91 | -91 | -92 | - Infinity | | -Infinity | | -88 |
| Io | dBm/9.36 MHz | 1 | -64.6 | -64.6 | -62.3 | -62.25 | -64.6 | | -70.5 | | -62.2 |
| dBm/9.36 MHz | 2 | -64.60 | -64.60 | -62.25 | -62.25 | -64.60 | | -70.5 | | -62.2 |
| dBm/38.16 MHz | 3 | -58.50 | -58.50 | -56.16 | -56.16 | -58.50 | | -63.94 | | -56.15 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  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.6.6.X1.3.3 Test Requirements

During T1 and T2, the UE shall be able to report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, before the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*i+ TRRCProccesingDelay*) + [5]ms as defined in clause 8.19.4.

During T3, the UE shall not receive PDSCH and report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, starting from the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*i+ TRRCProccesingDelay*) + [5]ms as defined in clause 8.19.4.

The UE shall send one Event A3 triggered measurement report containing the measurement results for neighbour Cell 2, with a measurement reporting delay less than 800 ms from the beginning of time period T1.

The UE shall send one Event A3 triggered measurement report containing the measurement results for neighbour Cell 3, with a measurement reporting delay less than 800 ms from the beginning of time period T3.

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 4th change>

<Start of the 5th change>

### A.6.6.X2 SA event triggered reporting tests with concurrent gaps

#### A.6.6.X2.1 SA event triggered reporting tests for FR1 concurrent gaps with non-overalpping scenario for SSB-based measurements in both inter-frequency layers

##### A.6.6.X2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the concurrent gaps capable UE makes correct reporting of events. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4.

In this test, there are three cells: NR cell 1 as PCell in FR1 on NR RF channel 1, NR cell 2 as neighbour cell in FR1 on NR RF channel 2, and NR cell 3 as neighbour cell in FR1 on NR RF channel 3. The test parameters are given in Tables A.6.6.X2.1.1-1, A.6.6.X2.1.1-2 and A.6.6.X2.1.1-3.

Two measurement gap patterns (MeasGapId #0 and MeasGapId #1) are configured with the gap pattern ID #0 and #1 as defined in Table A.6.6.X2.1.1-2. MeasGapId #1 is configured with a higher priority than MeasGapId #0. MeasGapId #0 and MeasGapId #1 are associated with the MOs for RF channel numbers #1 and #2, respectively.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used for both frequency layers. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3.

Table A.6.6.X2.1.1-1: SA event triggered reporting tests for FR1-FR1

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

Table A.6.6.X2.1.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gaps with fully non-overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
|  |  |  |  |
| NR RF Channel Number |  | Config 1,2,3 | 1, 2, 3 | | Three FR1 NR carrier frequencies are used. |
| Active cell |  | Config 1,2,3 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3 | NR cells 2 and 3 | | NR cell 2 is on NR RF channel number 2. NR cell 3 is on NR RF channel number 3. |
| Gap Pattern Id |  | Config 1,2,3 | 0 for MeasGapId #0  1 for MeasGapId #1 | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3 | 39 for MeasGapId #0  19 for MeasGapId #1 | |  |
| A3-Offset | dB | Config 1,2,3 | -6 | |  |
| Hysteresis | dB | Config 1,2,3 | 0 | |  |
| CP length |  | Config 1,2,3 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3 | 0 | |  |
| Filter coefficient |  | Config 1,2,3 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3 | OFF | | DRX is not used |
| Time offset between serving and neighbour cell 1 |  | Config 1, 2, 3 | 3μs | | Synchronous. |
| Time offset between serving and neighbour cell 2 |  | Config 1, 2, 3 | [5ms] | | [Asynchronous.  The timing of Cell 3 is 5ms later than the timing of Cell 1.] |
| T1 | s | Config 1,2,3 | 5 | |  |
| T2 | s | Config 1,2,3 | 1.5 | 1.5 |  |

Table A.6.6.X2.1.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gaps with fully non-overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | Cell 3 | |
|  | |  |  | T1 | T2 | T1 | T2 | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3 | 1 | | 2 | | 3 | |
| 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 | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3 | DLBWP.0.1 | | NA | | NA | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | NA | | NA | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | NA | | NA | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | NA | | NA | |
| TRS configuration | |  | Config 1 | TRS.1.1 FDD | | NA | | NA | |
|  | |  | Config 2 | TRS.1.1 TDD | | NA | | NA | |
|  | |  | Config 3 | TRS.1.2 TDD | | NA | | NA | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | SR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | SR.2.1 TDD | |  | |  | |
| RMSI CORESET Reference Channel | |  | Config 1 | CR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | CR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | CR.2.1 TDD | |  | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1 | CCR.1.1 FDD | |  | |  | |
|  | Config 2 | CCR.1.1 TDD | |  | |  | |
|  | Config 3 | CCR.2.1 TDD | |  | |  | |
| SSB parameters | |  | Config 1,2,3 | SSB.1 FR1 | | SSB.1 FR1 | | SSB.1 FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,2,3 | SMTC.2 | | SMTC.2 | | SMTC.2 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2 | 15 | | | | | |
|  | |  | Config 3 | 30 | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3 | 0 | | 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 |  | -98 | | -98 | | -98 | |
| Note2 | | dBm/SCS | Config 1,2 | -98 | | -98 | | -98 | |
|  | |  | Config 3 | -95 | | -95 | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2 | -94 | -94 | -Infinity | -91 | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | -Infinity | -88 | -Infinity | -88 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2 | -64.59 | -64.59 | -70.05 | -62.26 | -70.05 | -62.26 |
|  | | dBm/38.16MHz | Config 3 | -58.49 | -58.49 | -63.94 | -56.15 | -63.94 | -56.15 |
| Propagation Condition | |  | Config 1,2,3 | AWGN | | 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: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. | | | | | | | | | |

##### A.6.6.X2.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for each neighboring cell, with a measurement reporting delay less than 920 ms for cell 2 and 1280ms for cell 3 from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

UE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X2.2 SA event triggered reporting tests for FR1 concurrent gap with partially partial overalpping scenario for SSB-based measurements in both inter-frequency layers

##### A.6.6.X2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the concurrent gap capable UE makes correct reporting of events. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4.

In this test, there are three cells: NR cell 1 as PCell in FR1 on NR RF channel 1, NR cell 2 as neighbour cell in FR1 on NR RF channel 2, and NR cell 3 as neighbour cell in FR1 on NR RF channel 3. The test parameters are given in Tables A.6.6.X2.2.1-1, A.6.6.X2.2.1-2 and A.6.6.X2.2.1-3. The TE schedules continuous DL data on PCell throughout the test.

Two measurement gap patterns (MeasGapId #1 and MeasGapId #2) are configured with the gap pattern ID #0 and #1 as defined in Table A.6.6.X2.2.1-2. MeasGapId #2 is configured with a higher priority than MeasGapId #1. MeasGapId #1 and MeasGapId #2 are associated with the MOs for RF channel numbers #2 and #3, respectively.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used for both frequency layers. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3.

Table A.6.6.X2.2.1-1: SA event triggered reporting tests for FR1-FR1

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

Table A.6.6.X2.2.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gap with partially partial overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
|  |  |  |  |
| NR RF Channel Number |  | Config 1,2,3 | 1, 2, 3 | | Three FR1 NR carrier frequencies are used. |
| Active cell |  | Config 1,2,3 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3 | NR cells 2 and 3 | | NR cell 2 is on NR RF channel number 2. NR cell 3 is on NR RF channel number 3. |
| Gap Pattern Id |  | Config 1,2,3 | 0 for MeasGapId #1  1 for MeasGapId #2 | | As specified in clause 9.1.2-1. |
| Measurement gap offset | ms | Config 1,2,3 | 39 for MeasGapId #1  4 for MeasGapId #2 | |  |
| A3-Offset | dB | Config 1,2,3 | -6 | |  |
| Hysteresis | dB | Config 1,2,3 | 0 | |  |
| CP length |  | Config 1,2,3 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3 | 0 | |  |
| Filter coefficient |  | Config 1,2,3 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3 | OFF | | DRX is not used |
| Time offset between serving and neighbour cell 1 |  | Config 1, 2, 3 | 3μs | | Synchronous. |
| Time offset between serving and neighbour cell 2 |  | Config 1, 2, 3 | 5ms | | Asynchronous.  The timing of Cell 3 is 5ms later than the timing of Cell 1. |
| T1 | s | Config 1,2,3 | 5 | |  |
| T2 | s | Config 1,2,3 | 1.5 | 1.5 |  |

Table A.6.6.X2.2.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gap with partially-partial overalpping scenario for SSB-based measurements in both inter-frequency layers

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | Cell 3 | |
|  | |  |  | T1 | T2 | T1 | T2 | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3 | 1 | | 2 | | 3 | |
| 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 | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3 | DLBWP.0.1 | | NA | | NA | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | NA | | NA | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | NA | | NA | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | NA | | NA | |
| TRS configuration | |  | Config 1 | TRS.1.1 FDD | | NA | | NA | |
|  | |  | Config 2 | TRS.1.1 TDD | | NA | | NA | |
|  | |  | Config 3 | TRS.1.2 TDD | | NA | | NA | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | SR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | SR.2.1 TDD | |  | |  | |
| RMSI CORESET Reference Channel | |  | Config 1 | CR.1.1 FDD | |  | |  | |
|  | |  | Config 2 | CR.1.1 TDD | |  | |  | |
|  | |  | Config 3 | CR.2.1 TDD | |  | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1 | CCR.1.1 FDD | |  | |  | |
|  | Config 2 | CCR.1.1 TDD | |  | |  | |
|  | Config 3 | CCR.2.1 TDD | |  | |  | |
| SSB parameters | |  | Config 1,2,3 | SSB.1 FR1 | | SSB.1 FR1 | | SSB.1 FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,2,3 | SMTC.2 | | SMTC.2 | | SMTC.Y | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2 | 15 | | | | | |
|  | |  | Config 3 | 30 | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3 | 0 | | 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 |  | -98 | | -98 | | -98 | |
| Note2 | | dBm/SCS | Config 1,2 | -98 | | -98 | | -98 | |
|  | |  | Config 3 | -95 | | -95 | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2 | -94 | -94 | -Infinity | -91 | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | -Infinity | -88 | -Infinity | -88 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
|  | | dB | Config 1,2,3 | 4 | 4 | -Infinity | 7 | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2 | -64.59 | -64.59 | -70.05 | -62.26 | -70.05 | -62.26 |
|  | | dBm/38.16MHz | Config 3 | -58.49 | -58.49 | -63.94 | -56.15 | -63.94 | -56.15 |
| Propagation Condition | |  | Config 1,2,3 | AWGN | | 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: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. | | | | | | | | | |

##### A.6.6.X2.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for each neighboring cell, with a measurement reporting delay less than 1280 ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

UE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.6.6.X2.3 SA NR - E-UTRAN and NR FR1 concurrent event-triggered reporting in non-DRX in FR1

A.6.6.X2.3.1 Test Purpose and Environment

The purpose of this set of tests is to verify that the UE makes correct event-triggered reporting of concurrent inter-RAT E-UTRAN and NR FR1 measurements when operating in standalone (SA) operation with PCell in FR1. This test shall partly verify the cell search and measurement requirements in Clauses 9.4.2, 9.4.3, 9.3.4 and 9.3.5.

In each test there are three cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the NR PCell, Cell 2 is an Inter-frequency NR FR1 neighbour cell on NR RF channel 2 and Cell 3 is an inter-RAT E-UTRAN neighbour cell.

In the measurement control information from the PCell it is indictated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) is to be used for the E-UTRAN cell (cell 3). In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A4 is used for the NR FR1 cell (cell 2).

Each test consists of two consecutive time periods, with durations T1 and T2, respectively. Prior to the start of time duration T1, the UE shall be fully synchronized to Cell 1. During T1, the UE shall not have any information on Cell 2 and Cell 3.

In the test two concurrent per-UE measurement gap pattern configurations # 0 as defined in Table A.6.6.X2.3.1-2 are provided for a UE. Two measurement gap patterns (MeasGapId #0 and MeasGapId #1) are configured with the gap pattern ID #0 as defined in Table A.6.6.X2.3.1-2. MeasGapId #1 is configured with a higher priority than MeasGapId #0. MeasGapId #0 and MeasGapId #1 are associated with the MOs for RF channel numbers #1 and #2, respectively.

Supported test configurations are shown in table A.6.6.X2.3.1-1. General test parameters are provided in Table A.6.6.X2.3.1-2 below. Test parameters for Cell 1, Cell 2 and Cell 3, valid for both time duration T1 and T2, are provided in Tables A.6.6.X2.3.1-3 and A.6.6.X2.3.1-4, respectively.

The test parameters and configurations are given in Tables A.6.6.X2.3.1-1, A.6.6.X2.3.1-2, and A.6.6.X2.3.1-3.

**Table A.6.6.X2.3.1-1: Supported test configurations in SA concurrent inter-RAT E-UTRAN and NR FR2 inter-frequency event triggered reporting in non-DRX with PCell in FR1**

|  |  |  |
| --- | --- | --- |
| **Configuration** | **Description** | **Description of target cell** |
| 1 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode | LTE: FDD.  NR: 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 2 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode | LTE: FDD.  NR: 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode | LTE: FDD.  NR: 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode | LTE: TDD.  NR: 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 5 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode | LTE: TDD.  NR: 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 6 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode | LTE: TDD.  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.6.6.X2.3.1-2: General test parameters for SA concurrent inter-RAT E-UTRAN and NR FR2 inter-frequency event triggered reporting in non-DRX with PCell in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| NR RF Channel Number |  | 1 - 6 | 1, 2 | 2 NR carrier frequency is used in the test. 1 FR1 and FR2 carrier frequency. |
| LTE RF Channel Number |  |  |  | 1 LTE carrier frequency is used in the test |
| Channel Bandwidth | MHz | 1 - 6 | As specified in Tables A.6.6.3.1.1-2 and A.6.6.3.1.1-3. |  |
| Active cell |  | 1 - 6 | NR Cell 1 (PCell in FR1) | Cell 1 is on RF channel number 1 |
| Neighbour cell 1 |  | 1 - 6 | Cell 2 (NR FR2) | Cell 2 is on RF channel number 2 |
| Neighbour cell 2 |  | 1 - 6 | Cell 3 (LTE) | Cell 3 is on RF channel number 3 |
| Gap Pattern Id #1 |  | 1 - 6 | 0 | As specified in Clause Table 9.1.2-1. Per-UE gap pattern. |
| Gap Pattern Id #2 |  | 1 - 6 | 0 | Gap Pattern Id #2 is offsetted 20ms compared to Gap Pattern Id #1 |
| Measurement gap offset |  | 1 – 6 | 19 for Gap pattern Id #1 |  |
| NR measurement quantity |  |  | SS-RSRP | Measurement quantity for Cell 1 |
| NR measurement quantity |  |  | SS-RSRP | Measurement quantity for Cell 2 |
| Inter-RAT E-UTRAN measurement quantity |  |  | RSRP | Measurement quantity for Cell 3 |
| CSI-RS for tracking parameters on NR RF Channel 1 |  | 1, 4 | TRS.1.1 FDD |  |
| 2, 5 | TRS.1.1 TDD |
| 3, 6 | TRS.1.2 TDD |
| SMTC-SSB parameters on NR RF Channel 1 |  | 1, 4 | SSB.1 FR1 | As specified in clause A.3.10.1 |
| 2, 5 | SSB.1 FR1 | As specified in clause A.3.10.1 |
| 3, 6 | SSB.2 FR1 | As specified in clause A.3.10.1 |
| SMTC-SSB parameters on NR RF Channel 2 |  | 1 - 6 | SSB.3 FR2 | As specified in clause A.3.10.2 |
| b2-Threshold1 | dBm |  | Note 1 | SS-RSRP threshold for SS-RSRP measurement on Cell 3 for event B2 |
| b2-Threshold2EUTRA | dBm |  | -95 | E-UTRAN RSRP threshold for SS-RSRP measurement on Cell 3 for event B2 |
| Hysteresis | dB | 1 – 6 | 0 |  |
| TimeToTrigger | s | 1 – 6 | 0 |  |
| Filter coefficient |  | 1 – 6 | 0 | L3 filtering is not used |
| *offsetMO* | dB | 1 - 6 | 6 | NR Cell 2 |
| *a4-Threshold* | dBm | 1 – 6 | -105 | NR Cell 2 |
| DRX |  |  | OFF | OFF |
| Time offset between serving and neighbour cells |  | 1, 4 | 3ms | Asynchronous cells NR cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
| 2, 3, 5, 6 | 3μs | Synchronous NR cells. |
| T1 | s | 1 – 6 | 5 | for LTE Cell 3 and NR FR2 Cell 2 |
| T2 | s | 1 - 6 | 5 | for LTE Cell 3 |
| 5.2 for PC1; 3.5 for other PC | for NR FR2 Cell 2 |

Table A.6.6.X2.3.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR2 without SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | |
|  | |  |  | **T1** | **T2** | **T1** | **T2** |
| AoA setup | |  | Config 1,2,3 | N/A | | Setup 1 as specified in clause A.3.15 | |
| Beam AssumptionNote 7 | |  | Config 1,2,3 | N/A | | Rough | |
| NR RF Channel Number | |  | Config 1,2,3 | 1 | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | TDD | |
|  | |  | Config 2,3 | TDD | | TDD | |
| TDD configuration | |  | Config 1 | Not Applicable | | TDDConf.3.1 | |
|  | |  | Config 2 | TDDConf.1.1 | | TDDConf.3.1 | |
|  | |  | Config 3 | TDDConf.2.1 | | TDDConf.3.1 | |
| BWchannel | | MHz | Config 1 | 10: NRB,c = 52 | | 100: NRB,c = 66 | |
|  | |  | Config 2 | 10: NRB,c = 52 | | 100: NRB,c = 66 | |
|  | |  | Config 3 | 40: NRB,c = 106 | | 100: NRB,c = 66 | |
| Data RBs allocated | |  | Config 1 | 52 | | 66 | |
| Config 2 | 52 | | 66 | |
| Config 3 | 106 | | 66 | |
| BWP BW | | MHz | Config 1 | 10: NRB,c = 52 | | 100: NRB,c = 66 | |
|  | |  | Config 2 | 10: NRB,c = 52 | | 100: NRB,c = 66 | |
|  | |  | Config 3 | 40: NRB,c = 106 | | 100: NRB,c = 66 | |
| BWP configuration | Initial DL BWP |  | Config 1,2,3 | DLBWP.0.1 | | N/A | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | |
| PDSCH Reference | |  | Config 1 | SR.1.1 FDD | | - | |
| measurement channel | |  | Config 2 | SR.1.1 TDD | |  | |
|  | |  | Config 3 | SR.2.1 TDD | |  | |
| RMSI CORESET Reference | |  | Config 1 | CR.1.1 FDD | | - | |
| Channel | |  | Config 2 | CR.1.1 TDD | |  | |
|  | |  | Config 3 | CR.2.1 TDD | |  | |
| Dedicated CORESET RMC configuration | |  | Config 1 | CCR.1.1 FDD | | - | |
|  | Config 2 | CCR.1.1 TDD | |  | |
|  | Config 3 | CCR.2.1 TDD | |  | |
| SMTC configuration defined | |  | Config 1 | SMTC.2 | | SMTC.2 | |
| in A.3.11.1 and A.3.11.2 | |  | Config 2,3 | SMTC.1 | | SMTC.1 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2 | 15 | | 120 | |
|  | |  | Config 3 | 30 | | 120 | |
| EPRE ratio of PSS to SSS | |  |  |  | |  | |
| 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 | |  | Config 1,2,3 | 0 | | 0 | |
| 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) | |  |  |  | |  | |
| Ês | | dBm/SCS | Config 1,2,3 |  | | -Infinity | -87 |
| SSB\_RP Note 3 | | dBm/SCS | Config 1,2 |  | | -Infinity | -87 |
|  | | Note5 | Config 3 |  | | -Infinity | -87 |
| BB Note 8 | | dB | Config 1,2,3 | NA  Link only, see clause | | -Infinity | 14.69 |
|  | | dBm/95.04 MHz Note5 | Config 1,2,3 | A.3.7A | | -Infinity | -58.01 |
| Propagation Condition | |  | Config 1,2,3 | 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: Void  Note 3: SS B\_RP, Es/Iot and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Void  Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 6: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 8: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBS from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | |

**Table A.6.6.X2.3.1-4: E-UTRAN neighbour cell specific test parameters for SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Configuration** | **Cell 3** | |
|  |  |  | **T1** | **T2** |
| RF channel number |  | 1, 2, 3, 4, 5, 6 | 1 | |
| Duplex mode |  | 1, 2, 3 | FDD | |
|  |  | 4, 5, 6 | TDD | |
| TDD special subframe configurationNote1 |  | 4, 5, 6 | 6 | |
| TDD uplink-downlink configurationNote1 |  | 4, 5, 6 | 1 | |
| BWchannel | MHz | 1, 2, 3, 4, 5, 6 | 5 MHz: NRB,c = 25  10 MHz: NRB,c = 50  20 MHz: NRB,c = 100 | |
| PDSCH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.7 FDD  10 MHz: R.3 FDD  20 MHz: R.6 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.4 TDD  10 MHz: R.0 TDD  20 MHz: R.3 TDD | |
| PCFICH/PDCCH/PHICH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.11 FDD  10 MHz: R.6 FDD  20 MHz: R.10 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.11 TDD  10 MHz: R.6 TDD  20 MHz: R.10 TDD | |
| OCNG PatternsNote2 |  | 1, 2, 3 | 5 MHz: OP.20 FDD  10 MHz: OP.10 FDD  20 MHz: OP.17 FDD | |
|  |  | 4, 5, 6 | 5 MHz: OP.9 TDD  10 MHz: OP.1 TDD  20 MHz: OP.7 TDD | |
| PBCH\_RA | dB | 1, 2, 3, 4, 5, 6 | 0 | |
| PBCH\_RB |  |  |  | |
| PSS\_RA |  |  |  | |
| SSS\_RA |  |  |  | |
| PCFICH\_RB |  |  |  | |
| PHICH\_RA |  |  |  | |
| PHICH\_RB |  |  |  | |
| PDCCH\_RA |  |  |  | |
| PDCCH\_RB |  |  |  | |
| PDSCH\_RA |  |  |  | |
| PDSCH\_RB |  |  |  | |
| OCNG\_RANote3 |  |  |  | |
| OCNG\_RBNote3 |  |  |  | |
| NocNote4 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -104 | |
| Ês/Noc | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| Ês/IotNote5 | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| IoNote5 | dBm/9MHz | 1, 2, 3, 4, 5, 6 | -76.22+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition |  | 1, 2, 3, 4, 5, 6 | AWGN | |
| Antenna Configuration and Correlation Matrix |  | 1, 2, 3, 4, 5, 6 | 1x2 Low | |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].  Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.  Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 4: 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 Noc to be fulfilled.  Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | |

A.6.6.X2.3.2 Test Requirements

In this test with per-UE gap, the UE shall send one Event A4 triggered measurement report for Cell 2, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

5120 for UE supporting power class 1, or

3200 for UE supporting other power class.

The UE shall send one Event B2 triggered measurement report for Cell 3 to the PCell, with a measurement reporting delay less than 3.84s from the start of period T2.

The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event-triggered measurement reports as long as the reporting criteria is not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X2.4 SA event triggered reporting tests for PRS and SSB measurement in FR1 without SSB time index detection when DRX is not used

##### A.6.6.X2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the SA NR measurements with concurrent gaps requirements in clause 9.2.6(when one of concurrent gaps in same frequency layer of serving cells), 9.3.6(when one of concurrent gaps in the different frequency layer of serving cells) and 9.9.2(when one of concurrent gaps used for PRS measurement).

In this test, there are three cells: NR cell 1 as PCell in FR1 on NR RF channel 1 , NR cell 2 as neighbour cell in FR1 on NR RF channel 2 and NR cell 3 as neighbor cell in FR1 on NR RF channel 1, and NR cell 3 as neighbour cell in FR1 on NR RF channel 1. The test parameters are given in Tables A.6.6.X2.4.1-1, A.6.6.X2.4.1-2 and A.6.6.X2.4.1-3.

Two measurement gap patterns (MeasGapId #0 and MeasGapId #1) are configured with the gap pattern ID #0 and #1 as defined in Table A.6.6.X2.4.1-2. MeasGapId #1 is configured with a higher priority than MeasGapId #0. MeasGapId #0 and MeasGapId #1 are associated with the MOs for RF channel numbers #1 and #2, respectively.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3. Cell 1 and cell 3 transmit PRS during T2.

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 MG instance of MeasGapId #1 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.

Table A.6.6.X2.4.1-1: SA event triggered reporting tests without SSB index reading for FR1-FR1

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

Table A.6.6.X2.4.1-2: General test parameters for SA inter-frequency event triggered reporting for concurrent gaps with partially partial overalpping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | 1,2,3 | 1: Cell 1 and Cell 3  2: Cell 2 | Two TDD carrier frequencies are used for the NR cells. |
| Active cell |  | 1,2,3 | NR cell 1 (Pcell) | Cell 1 is the PCell and the DL-AoD reference cell in the positioning assistance data. |
| Neighbour cell |  | 1,2,3 | NR cell 2, NR cell 3 | Cell 2 is an inter-frequency cell neighbor cell  Cell 3 is a neighbour cell in the positioning assistance data. |
| BWchannel | MHz | 1 | 10: NRB,c = 52 |  |
| 2 | 10: NRB,c = 52 |  |
| 3 | 40: NRB,c = 106 |  |
| 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 |  |
| Gap Pattern Id |  | Config 1,2,3 | 0 for MeasGapId #0  24 for MeasGapId #1 |  |
| Measurement gap offset | ms | Config 1,2,3 | 7 for MeasGapId #0  11 for MeasGapId #1 |  |
| DRX |  | 1, 2, 3 | NA | OFF |
| 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 |  |
| NOTE 1: GP#24 is configured if UE supports MG#24, otherwise GP#0 is configured. | | | | |

Table A.6.6.X2.4.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gap with partially-partial overalpping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | | Cell 3 | |
|  | |  | T1 | T2 | T1 | T2 | | T1 | T2 |
| TDD configuration | |  | 1 | N/A | | N/A | | | N/A | |
|  | 2 | TDDConf.1.1 | | TDDConf.1.1 | | | TDDConf.1.1 | |
|  | 3 | TDDConf.2.1 | | TDDConf.2.1 | | | TDDConf.2.1 | |
| BWchannel | | MHz | Config 1,2,3 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | 100: NRB,c = 66 | |
| BWP BW | | MHz | Config 1,2,3 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | 100: NRB,c = 66 | |
| BWP configuration | Initial DL BWP |  | Config 1,2,3 | DLBWP.0.1 | | N/A | | | N/A | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | | | N/A | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | | | N/A | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | | | N/A | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | OP.1 | | | OP.1 | |
| PDSCH RMC configuration | |  | 1 | SR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | SR.1.1 TDD | |
|  | 3 | SR.2.1 TDD | |
| RMSI CORESET RMC configuration | |  | 1 | CR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | CR.1.1 TDD | | N/A | | | N/A | |
|  | 3 | CR.2.1 TDD | | N/A | | | N/A | |
| Dedicated CORESET RMC configuration | |  | 1 | CCR.1.1 FDD | | N/A | | | N/A | |
|  | 2 | CCR.1.1 TDD | | N/A | | | N/A | |
|  | 3 | CCR.2.1 TDD | | N/A | | | N/A | |
| SSB parameters | |  | Config 1 | SSB.1 FR2 | | SSB.1 FR2 | | | SSB.1 FR2 | |
| SMTC configuration defined in A.3.11 | |  | Config 1 | SMTC.4 | | SMTC.4 | | | SMTC.4 | |
| TRS Configuration | |  | 1 | TRS.1.1 FDD | | N/A | | | N/A | |
|  | 2 | TRS.1.1 TDD | | N/A | | | N/A | |
|  | 3 | TRS.1.2 TDD | | N/A | | | N/A | |
| PRS configuration | |  | 1 | PRS.1.4 FR1 | | N/A | | | PRS.1.4 FR1 | |
|  | 2 | PRS.1.4 FR1 | | N/A | | | PRS.1.4 FR1 | |
|  | 3 | PRS.2.4 FR1 | | N/A | | | PRS.2.4 FR1 | |
| PRS muting configuation | |  | 1, 2, 3 | ‘10’ | | ‘01’ | | | ‘01’ | |
| Note2 | | dBm/15kHz Note5 | 1 | -98 | | -98 | | | -98 | |
|  | 2 | -98 | | -98 | | | -98 | |
|  | 3 | -98 | | -98 | | | -98 | |
| Note2 | | dBm/SCS Note4 | 1 | -98 | | -98 | | | -98 | |
|  | 2 | -98 | | -98 | | | -98 | |
|  | 3 | -95 | | -95 | | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS Note5 | 1 | -94 | -94 | -Infinity | | -94 | N/A | N/A |
|  | 2 | -94 | -94 | -Infinity | | --94 | N/A | N/A |
|  | 3 | -91 |  |  | |  |  |  |
| PRS-RSRP Note 3 | | dBm/SCS Note5 | 1 | -Infinity | --101 | N/A | | N/A | -Infinity | -108 |
|  | 2 | -Infinity | --101 | N/A | | N/A | -Infinity | -108 |
|  | 3 | -Infinity | --98 | N/A | | N/A | -Infinity | -105 |
| PRS | | dB | 1,2,3 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| PRS | | dB | 1,2,3 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| IoNote3 | | dBm/95.04 MHz Note5 | 1 | -62.25 | | --64.60 | | -62.25 | -62.25 | |
|  | |  | 2 | -62.25 | | --64.60 | | -62.25 | -62.25 | |
|  | |  | 3 | -56.16 | | --58.50 | | -56.16 | -56.16 | |
| Propagation Condition | |  | 1,2,3 | 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/PRS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: PRS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 6: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | | | | |

##### A.6.6.X2.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 1840ms from the beginning of time period T2.

The PRS RSRP measurement time fulfils the requirements specified in Clause 9.9.3.5. The UE shall perform and report the PRS RSRP measurements for Cell 3 with respect to the reference cell in the DL-AoD assistance data, Cell 1, within the time duration specified in section 9.9.3.5 starting from the beginning of time interval T2.

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 10.1.24.3, i.e., between PRS RSRP\_0 and PRS RSRP\_126.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

IUE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 5h hange>

<Start of the 6th change>

### A.6.6.X3 SA event triggered reporting tests with NCSG

#### A.6.6.X3.1 SA event triggered reporting tests with NCSG under non-DRX in FR1

##### A.6.6.X3.1.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the intra-frequency cell search requirements in clause 9.2.7.1 and 9.2.7.2, and also verify the scheduling availability during intra-frequency measurement with NCSG in clause 9.2.7.3.

##### A.6.6.X3.1.2 Test parameters

Two cells are deployed in the test, which are FR1 PCell (Cell 1) and a FR1 neighbour cell (Cell 2) on the same frequency as the PCell. The test parameters for PCell are given in Table A.6.6.X3.1.2-1, A.6.6.X3.1.2-2 and A.6.6.X3.1.2-3 below. In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

During T2, the UE is continuously scheduled with data on the PCell.

The UE is capable of NCSG and report ‘*ncsg*’ through *NeedForGapNCSG-InfoNR* for PCell.

In test 1 NCSG pattern configuration # 0 as defined in Table A.6.6.X3.1.2-2 is provided for UE that does not support per-FR gap and in test 2 NCSG pattern configuration #2 as defined in Table A.6.6.X3.1.2-2 is provided for UE that supports per-FR gap. If a UE supports per-FR gap, it is only required to pass test 2. Otherwise it is only required to pass test 1.

There are two BWPs configured in Cell 1, BWP1 which contains the cell defining SSB, and BWP2 which does not contain any SSB of Cell 1. During the whole test, BWP2 is always scheduled as the active BWP for the UE.

Table A.6.6.X3.1.2-1: 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, 40 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

Table A.6.6.X3.1.2-2: General test parameters for SA intra-frequency event triggered reporting with per-UE gaps for PCell in FR1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
|  |  |  | Test 1 | Test 2 |  |
| Active cell |  | 1, 2, 3 | Cell 1 | |  |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 | |  |
| NCSG type |  | 1, 2, 3 | Per-UE | Per-FR | Per-FR NCSG pattern is configured if UE support per-FR NCSG; otherwise, per-UE NCSG patter is configured. |
| NCSG pattern |  | 1, 2, 3 | 0 | 2 |  |
| Visible interruption repetition periodicity | ms | 1, 2, 3 | 40 | 40 |  |
| Measurement length | ms | 1, 2, 3 | 5 | 2 |  |
| NCSG offset | ms | 1, 2, 3 | 39 | 39 |  |
| 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 | |  |
| CSI-RS parameters |  | 1 | CSI-RS.1.2 FDD resource #0 | |  |
|  |  | 2 | CSI-RS.1.2 TDD resource #0 | |  |
|  |  | 3 | CSI-RS.2.2 TDD resource #0 | |  |
| A3-Offset | dB | 1, 2, 3 | -4.5 | |  |
| CP length |  | 1, 2, 3 | Normal | |  |
| Hysteresis | dB | 1, 2, 3 | 0 | |  |
| Time To Trigger | s | 1, 2, 3 | 0 | |  |
| Filter coefficient |  | 1, 2, 3 | 0 | | L3 filtering is not used |
| DRX | ms | 1, 2, 3 |  | | OFF |
| Time offset between serving and neighbour cells |  | 1 | 3 ms | | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | 2 | 3 μs | | Synchronous cells |
|  |  | 3 | 3 μs | | Synchronous cells |
| T1 | s | 1, 2, 3 | 5 | |  |
| T2 | s | 1, 2, 3 | 1 | |  |

Table A.6.6.X3.1.2-3: NR Cell specific test parameters for SA intra-frequency event triggered reporting with NCSG for PCell in FR1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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 | | N/A | |
|  |  | 3 | CR.2.1 TDD | | N/A | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.2 FDD | | N/A | |
|  |  | 2 | CCR.1.2 TDD | | N/A | |
|  |  | 3 | CCR.2.1 TDD | | N/A | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | OP.1 | |
| TRS configuration |  | 1 | TRS.1.1 FDD | | N/A | |
|  |  | 2 | TRS.1.1 TDD | | N/A | |
|  |  | 3 | TRS.1.2 TDD | | N/A | |
| IInitial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | DLBWP.0.1 ULBWP.0.1 | |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.2 | | DLBWP.1.1 | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.2 | | ULBWP.1.1 | |
| RLM-RS |  | 1, 2, 3 | CSI-RS | | SSB | |
| Note 2 | dBm/SCS | 1 | -98 | | | |
|  |  | 2 | -98 | | | |
|  |  | 3 | -95 | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | |
|  |  | 2 |  | | | |
|  |  | 3 |  | | | |
|  | dB | 1 | 4 | -1.46 | -Infinity | -1.46 |
|  |  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
|  | dB | 1 | 4 | 4 | -Infinity | 4 |
|  |  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -94 | -94 | -Infinity | -94 |
|  |  | 2 | -94 | -94 | -Infinity | -94 |
|  |  | 3 | -91 | -91 | -Infinity | -91 |
| Io | dBm/9.36 MHz | 1 | -64.60 | -62.25 | --64.60 | -62.25 |
|  | dBm/9.36 MHz | 2 | -64.60 | -62.25 | --64.60 | -62.25 |
|  | dBm/38.16 MHz | 3 | -58.50 | -56.16 | --58.50 | -56.16 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  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.6.6.X3.1.3 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

During T2, UE shall send HARQ ACK/NACK for the corresponding PDSCH scheduled in PCell in all the slots except for the case where PDSCH or PUCCH is overlapped with the VIL of NCSG pattern.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X3.2 SA event triggered reporting tests for FR1 with NCSG for inter-frequency measurement

##### A.6.6.X3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.10.

A.6.6.X3.2.2 Test parameters

In this test, there are two cells: NR cell 1 as PCell in FR1 on NR RF channel 1 and NR cell 2 as neighbour cell in FR1 on NR RF channel 2. NR RF channel 1 and NR RF channel 2 should be selected such that UE reports ‘ncsg’ for the target frequency on NR RF channel 2.

The test parameters are given in Tables A.6.6.X3.2.2-1, A.6.6.X3.2.2-2 and A.6.6.X3.2.2-3.

In test 1 measurement NCSG pattern configuration # 0 as defined in Table A.6.6.X3.2.2-2 is provided for UE that does not support per-FR NCSG, and in test 2 NCSG pattern configuration #2 as defined in Table A.6.6.X3.2.2-2 is provided for UE that supports per-FR NCSG. If a UE supports per-FR NCSG, it is only required to pass test 2, otherwise it is only required to pass test 1.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

During T2, the UE is continuously scheduled with data on the PCell.

Table A.6.6.X3.2.2-1: SA event triggered reporting tests for FR1 with NCSG for inter-frequency measurement

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

Table A.6.6.X3.2.2-2: General test parameters for event triggered reporting for FR1 with NCSG for inter-frequency measurement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
|  |  |  | Test 1 | Test 2 |  |
| NR RF Channel Number |  | Config 1,2,3 | 1, 2 | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3 | NR cell2 | | NR cell 2 is on NR RF channel number 2. |
| NCSG Pattern Id |  | Config 1,2,3 | 0 | 2 | As specified in Table 9.1.9.3-1. |
| NCSG offset |  | Config 1,2,3 | 9 | |  |
| SMTC-SSB parameters |  | Config 1 | SSB.1 FR1 | | As specified in clause A.3.10.1 |
|  |  | Config 2 | SSB.1 FR1 | | As specified in clause A.3.10.1 |
|  |  | Config 3 | SSB.2 FR1 | | As specified in clause A.3.10.1 |
| A3-Offset | dB | Config 1,2,3 | -6 | |  |
| Hysteresis | dB | Config 1,2,3 | 0 | |  |
| CP length |  | Config 1,2,3 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3 | 0 | |  |
| Filter coefficient |  | Config 1,2,3 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3 | OFF | | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1 | 3ms | | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | Config 2,3 | 3μs | | Synchronous cells. |
| T1 | s | Config 1,2,3 | 5 | |  |
| T2 | s | Config 1,2,3 | 1 | |  |

Table A.6.6.X3.2.2-3: Cell specific test parameters for SA event triggered reporting for FR1 with NCSG for inter-frequency measurement

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
|  | |  |  | T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3 | 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 | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 40: NRB,c = 106 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3 | DLBWP.0.1 | | | NA | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | | NA | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | | NA | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | | NA | |
| TRS configuration | |  | Config 1 | TRS.1.1 FDD | | | NA | |
|  | |  | Config 2 | TRS.1.1 TDD | | | NA | |
|  | |  | Config 3 | TRS.1.2 TDD | | | NA | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1,2,3 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.1.1 FDD | | |  | |
|  | |  | Config 2 | SR.1.1 TDD | | |  | |
|  | |  | Config 3 | SR2.1 TDD | | |  | |
| RMSI CORESET Reference Channel | |  | Config 1 | CR.1.1 FDD | | |  | |
|  | |  | Config 2 | CR.1.1 TDD | | |  | |
|  | |  | Config 3 | CR2.1 TDD | | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1 | CCR.1.1 FDD | | |  | |
|  | Config 2 | CCR.1.1 TDD | | |  | |
|  | Config 3 | CCR.2.1 TDD | | |  | |
| SSB parameters | |  | Config 1 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 2 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.2 FR1 | | | SSB.6 FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1 | SMTC.2 | | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2 | 15 | | | | |
|  | |  | Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3 | 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 |  | -98 | | -98 | | |
| Note2 | | dBm/SCS | Config 1,2 | -98 | | -98 | | |
|  | |  | Config 3 | -95 | | -95 | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2 | -94 | -94 | | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4,5,6 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2 | -64.59 | -64.59 | | -70.05 | -62.26 |
|  | | dBm/38.16MHz | Config 3 | -58.49 | -58.49 | | -63.94 | -56.15 |
| Propagation Condition | |  | Config 1,2,3 | 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: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. | | | | | | | | |

##### A.6.6.X3.2.3 Test Requirements

In test 1 and 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 920 ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

During T2, UE shall send HARQ-ACK for the corresponding PDSCH scheduled in PCell in all the slots except for the case where PDSCH or PUCCH is overlapped with the VIL of NCSG pattern.

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

In test 1 and 2, the UE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.6.6.X3.3 SA NR - E-UTRAN event-triggered reporting in non-DRX in FR1 with NCSG

##### A.6.6.X3.3.1 Test Purpose and Environment

The purpose of this set of tests is to verify that the UE makes correct event-triggered reporting of inter-RAT E-UTRAN measurements based on NCSG when operating in standalone (SA) operation with PCell in FR1. This test shall partly verify the cell search and measurement requirements in Clauses 9.4.2 and 9.4.3.

A.6.6.X3.3.2 Test parameters

In each test there are two cells: Cell 1 and Cell 2. Cell 1 is the NR PCell and Cell 2 is an inter-RAT E-UTRAN inter-RAT neighbour cell. In the measurement control information from the PCell it is indictated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) is to be used. Each test consists of two consecutive time periods, with durations T1 and T2, respectively. Prior to the start of time duration T1, the UE shall be fully synchronized to Cell 1. During T1, the UE shall not have any information on Cell 2.

Supported test configurations are shown in table A.6.6.X3.3.2-1. General test parameters are provided in Table A.6.6.X3.3.2-2 below. Test parameters for Cell 1 and Cell 2, valid for both time duration T1 and T2, are provided in Tables A.6.6.X3.3.2-3 and A.6.6.X3.3.2-4, respectively.

Table A.6.6.X3.3.2-1: Supported test configurations in SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode, LTE FDD |
| 2 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode, LTE FDD |
| 3 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode, LTE FDD |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode, LTE TDD |
| 5 | NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode, LTE TDD |
| 6 | NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode, LTE TDD |
| Note: The UE is only required to be tested in one of the supported test configurations | |

Table A.6.6.X3.3.2-2: General test parameters for SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| NR RF Channel Number |  | 1 | 1 NR carrier frequency is used in the test |
| LTE RF Channel Number |  | 1 | 1 LTE carrier frequency is used in the test |
| Channel Bandwidth | MHz | As specified in Tables A.6.6.3.1.1-2 and A.6.6.3.1.1-3. |  |
| Active cell |  | Cell 1 | Cell 1 is on RF channel number 1 |
| Neighbour cell |  | Cell 2 | Cell 2 is on RF channel number 2 |
| NCSG Pattern Id |  | 0 | As specified in clause Table 9.1.9.3-1. |
| NCSG offset | ms | 39 |  |
| NCSG mgta | ms | 0 |  |
| NR measurement quantity |  | SS-RSRP | Measurement quantity for Cell 1 |
| Inter-RAT E-UTRAN measurement quantity |  | RSRP | Measurement quantity for Cell 2 |
| b2-Threshold1 | dBm | Note 1 | SS-RSRP threshold for SS-RSRP measurement on cell1 for event B2 |
| b2-Threshold2EUTRA | dBm | -95 | E-UTRAN RSRP threshold for SS-RSRP measurement on cell1 for event B2 |
| Hysteresis | dB | 0 |  |
| TimeToTrigger | s | 0 |  |
| Filter coefficient |  | 0 | L3 filtering is not used |
| DRX |  | OFF | OFF |
| T1 | s | 5 |  |
| T2 | s | 5 |  |
| Note 1: Values are defined in Table A.6.6.3.1.1-3 | | | |

Table A.6.6.X3.3.2-3: PCell specific test parameters for SA inter-RAT E-UTRA event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Configuration | Cell 1 | |
|  | | |  |  | T1 | T2 |
| RF channel number | | |  | 1, 2, 3, 4, 5, 6 | 1 | |
| Duplex mode | | |  | 1, 2, 3 | FDD | |
|  | | |  | 4, 5, 6 | TDD | |
| TDD Configuration | | SCS=15 KHz |  | 2, 5 | TDDConf.1.1 | |
|  | | SCS=30 KHz |  | 3, 6 | TDDConf.2.1 | |
| BWchannel | | | MHz | 1, 4 | 10: NRB,c = 52 (FDD) | |
|  | | |  | 2, 5 | 10: NRB,c = 52 (TDD) | |
|  | | |  | 3, 6 | 40: NRB,c = 106 (TDD) | |
| PDSCH reference measurement channel | | |  | 1, 4 | SR.1.1 FDD | |
|  | | |  | 2, 5 | SR.1.1 TDD | |
|  | | |  | 3, 6 | SR.2.1 TDD | |
| RMSI CORSET reference channel | | |  | 1, 4 | CR.1.1 FDD | |
|  | | |  | 2, 5 | CR.1.1 TDD | |
|  | | |  | 3, 6 | CR.2.1 TDD | |
| Dedicated CORSET reference channel | | |  | 1, 4 | CCR.1.1 FDD | |
|  | | |  | 2, 5 | CCR.1.1 TDD | |
|  | | |  | 3, 6 | CCR.2.1 TDD | |
| BWP configurations | Initial DL BWP | |  | 1, 2, 3, 4, 5, 6 | DLBWP.0.1 | |
|  | Dedicated DL BWP | |  | 1, 2, 3, 4, 5, 6 | DLBWP.1.1 | |
|  | Initial UL BWP | |  | 1, 2, 3, 4, 5, 6 | ULBWP.0.1 | |
|  | Dedicated UL BWP | |  | 1, 2, 3, 4, 5, 6 | ULBWP.1.1 | |
| OCNG patternNote1 | | |  | 1, 2, 3, 4, 5, 6 | OP.1 | |
| SMTC configuration | | |  | 1, 2, 3, 4, 5, 6 | SMTC.1 | |
| SSB configuration | | |  | 1, 2, 4, 5 | SSB.1 FR1 | |
|  | | |  | 3, 6 | SSB.2 FR1 | |
| CSI-RS for tracking | | |  | 1, 4 | TRS.1.1 FDD | |
|  | 2, 5 | TRS.1.1 TDD | |
|  | 3, 6 | TRS.1.2 TDD | |
| b2-Threshold1 | | | dBm | 1, 2, 4, 5 | --96 | |
|  | | |  | 3, 6 | --93 | |
| EPRE ratio of PSS to SSS | | | dB | 1, 2, 3, 4, 5, 6 | 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\_DMRS | | |  |  |  | |
| EPRE ratio of OCNG DMRS to SSS | | |  |  |  | |
| EPRE ratio of OCNG to OCNG DMRS | | |  |  |  | |
| *Noc*Note2 | | | dBm/15 KHz | 1, 2, 3, 4, 5, 6 | -104 | |
| *Noc*Note2 | | | dBm/SCS | 1, 2, 4, 5 | -104 | |
|  | | |  | 3, 6 | -101 | |
| Ês/Noc | | | dB | 1, 2, 3, 4, 5, 6 | 116 | 70 |
| Ês/IotNote3 | | | dB | 1, 2, 3, 4, 5, 6 | 116 | 70 |
| SS-RSRPNote3 | | | dBm/SCS | 1, 2, 4, 5 | --88 | --104 |
|  | | |  | 3, 6 | --85 | --101 |
| SSB\_RPNote3 | | | dBm/SCS | 1, 2, 4, 5 | --88 | --104 |
|  | | |  | 3, 6 | --85 | --101 |
| IoNote3 | | | dBm/9.36 MHz | 1, 2, 4, 5 | --59.94 | --73.04 |
|  | | | dBm/38.16 MHz | 3, 6 | --53.84 | --66.93 |
| Propagation condition | | |  | 1, 2, 3, 4, 5, 6 | TDL-C 300ns 100Hz | |
| Antenna Configuration and Correlation Matrix | | |  | 1, 2, 3, 4, 5, 6 | 1x2 Low | |
| 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: Ês/Iot, SS-RSRP, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | |

Table A.6.6.X3.3.2-4: E-UTRAN neighbour cell specific test parameters for SA inter-RAT E-UTRAN event triggered reporting in non-DRX with PCell in FR1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 2 | |
|  |  |  | **T1** | **T2** |
| RF channel number |  | 1, 2, 3, 4, 5, 6 | 1 | |
| Duplex mode |  | 1, 2, 3 | FDD | |
|  |  | 4, 5, 6 | TDD | |
| TDD special subframe configurationNote1 |  | 4, 5, 6 | 6 | |
| TDD uplink-downlink configurationNote1 |  | 4, 5, 6 | 1 | |
| BWchannel | MHz | 1, 2, 3, 4, 5, 6 | 5 MHz: NRB,c = 25  10 MHz: NRB,c = 50  20 MHz: NRB,c = 100 | |
| PDSCH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.7 FDD  10 MHz: R.3 FDD  20 MHz: R.6 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.4 TDD  10 MHz: R.0 TDD  20 MHz: R.3 TDD | |
| PCFICH/PDCCH/PHICH parameters:  DL Reference Measurement ChannelNote2 |  | 1, 2, 3 | 5 MHz: R.11 FDD  10 MHz: R.6 FDD  20 MHz: R.10 FDD | |
|  |  | 4, 5, 6 | 5 MHz: R.11 TDD  10 MHz: R.6 TDD  20 MHz: R.10 TDD | |
| OCNG PatternsNote2 |  | 1, 2, 3 | 5 MHz: OP.20 FDD  10 MHz: OP.10 FDD  20 MHz: OP.17 FDD | |
|  |  | 4, 5, 6 | 5 MHz: OP.9 TDD  10 MHz: OP.1 TDD  20 MHz: OP.7 TDD | |
| PBCH\_RA | dB | 1, 2, 3, 4, 5, 6 | 0 | |
| PBCH\_RB |  |  |  | |
| PSS\_RA |  |  |  | |
| SSS\_RA |  |  |  | |
| PCFICH\_RB |  |  |  | |
| PHICH\_RA |  |  |  | |
| PHICH\_RB |  |  |  | |
| PDCCH\_RA |  |  |  | |
| PDCCH\_RB |  |  |  | |
| PDSCH\_RA |  |  |  | |
| PDSCH\_RB |  |  |  | |
| OCNG\_RANote3 |  |  |  | |
| OCNG\_RBNote3 |  |  |  | |
| NocNote4 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -104 | |
| Ês/Noc | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| Ês/IotNote5 | dB | 1, 2, 3, 4, 5, 6 | -Infinity | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2, 3, 4, 5, 6 | -Infinity | -87 |
| IoNote5 | dBm/9MHz | 1, 2, 3, 4, 5, 6 | -76.22+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition |  | 1, 2, 3, 4, 5, 6 | ETU70 | |
| Antenna Configuration and Correlation Matrix |  | 1, 2, 3, 4, 5, 6 | 1x2 Low | |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].  Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.  Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 4: 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 Noc to be fulfilled.  Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | |

##### A.6.6.X3.3.3 Test Requirements

The UE shall send one Event B2 triggered measurement report for Cell 2 to the PCell, with a measurement reporting delay less than 3.84s from the start of period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event-triggered measurement reports as long as the reporting criteria is not fulfilled.

During T2, UE shall send HARQ-ACK for the corresponding PDSCH scheduled in PCell in all the slots except for the case where PDSCH or PUCCH is overlapped with the VIL of NCSG pattern.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.6.6.X3.4 Event triggered reporting on SCC with deactivated SCell test with per-UE NCSG under non-DRX

A.6.6.X3.4.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the cell search requirements on SCC with deactivated SCell in clauses 9.2.7.1 and 9.2.7.2.

A.6.6.X3.4.2 Test parameters

Three cells are deployed in the test, which are FR1 PCell (Cell 1), FR1 SCell (Cell 2) and FR1 neighbour cell (Cell 3) on the same frequency as the SCell. The SCell is deactivated during the test. The test parameters for PCell, the SCell and the neighbour cell are given in Table A.6.6.X3.4.2-1 and A.6.6.X3.4.2-2 below. In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A6 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 3. The PCell shall continuously scheduled with data in the DL starting from T1 until the UE has sent the measurement report during T2.

**Table A.6.6.X3.4.2-1: 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, 40 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. | |

**Table A.6.6.X3.4.2-2: General test parameters for event triggered reporting on SCC with deactivated SCell with per-UE NCSG for FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Active cell |  | 1, 2, 3 | Cell 1 |  |
| Configured deactivated SCell |  | 1, 2, 3 | Cell 2 |  |
| Neighbour cell |  | 1, 2, 3 | Cell 3 | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 |  |
| RF Channel Number |  | 1, 2, 3 | 2: Cell 2 and Cell 3 |  |
| Measurement gap type |  | 1, 2, 3 | Per-UE NCSG |  |
| NCSG pattern |  | 1, 2, 3 | ID # 0 | Defined in Table 9.1.9.3-1 |
| MGTA | ms | 1, 2, 5 | 0 |  |
| 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 |  |
| A6-Offset | dB | 1, 2, 3 | -4.5 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| Time To Trigger | s | 1, 2, 3 | 0 |  |
| Filter coefficient |  | 1, 2, 3 | 0 | L3 filtering is not used |
| DRX |  | 1, 2, 3 |  | OFF |
| SCell measurement cycle (measCycleSCell) | ms | 1, 2, 3 | 160 |  |
| Cell 2 timing offset to Cell 1 | μs | 1, 2, 3 | 0 |  |
| Time alignment error between Cell 2 and Cell 1 | μs | 1, 2, 3 | ≤ Time alignment error as specified in TS 38.104 [13] clause 6.5.3.1. | The value of time alignment error depends upon the type of carrier aggregation. |
| Cell 3 timing offset to Cell 1 | μs | 1, 2, 3 | 3 | Synchronous cells |
| T1 | s | 1, 2, 3 | 5 |  |
| T2 | s | 1, 2, 3 | 5 |  |

**Table A.6.6.X3.4.2-3: NR Cell specific test parameters for event triggered reporting on SCC with deactivated SCell with per-UE NCSG for FR1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | | **Cell 2** | | **Cell 3** | |
|  |  |  | **T1** | **T2** | **T1** | **T2** | **T1** | **T2** |
| TDD configuration |  | 1 | N/A | | N/A | | N/A | |
|  |  | 2 | TDDConf.1.1 | | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3 | TDDConf.2.1 | | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC configuration |  | 1 | SR.1.1 FDD | | N/A | | N/A | |
|  |  | 2 | SR.1.1 TDD | |  | |  | |
|  |  | 3 | SR.2.1 TDD | |  | |  | |
| RMSI CORESET RMC configuration |  | 1 | CR.1.1 FDD | | N/A | | N/A | |
|  |  | 2 | CR.1.1 TDD | | N/A | | N/A | |
|  |  | 3 | CR.2.1 TDD | | N/A | | N/A | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.1 FDD | | N/A | | N/A | |
|  |  | 2 | CCR.1.1 TDD | | N/A | | N/A | |
|  |  | 3 | CCR.2.1 TDD | | N/A | | N/A | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | OP.1 | | OP.1 | |
| TRS Configuration |  | 1 | TRS.1.1 FDD | | TRS.1.1 FDD | |  | |
|  |  | 2 | TRS.1.1 TDD | | TRS.1.1 TDD | | N/A | |
|  |  | 3 | TRS.1.2 TDD | | TRS.1.2 TDD | | N/A | |
| IInitial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | DLBWP.0.1 ULBWP.0.1 | | N/A | |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.1 | | DLBWP.1.1 | | N/A | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.1 | | ULBWP.1.1 | | N/A | |
| Note 2 | dBm/SCS | 1 | -98 | | | | | |
|  |  | 2 | -98 | | | | | |
|  |  | 3 | -95 | | | | | |
| Note 2 | dBm/15 kHz | 1, 2, 3 | -98 | | | | | |
|  | dB | 1, 2, 3 | 4 | 4 | 4 | -1.46 | -Infinity | -1.46 |
|  | dB | 1, 2, 3 | 4 | 4 | 4 | 4 | -Infinity | 4 |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -94 | -94 | -94 | -94 | -Infinity | -94 |
|  |  | 2 | -94 | -94 | -94 | -94 | -Infinity | -94 |
|  |  | 3 | -91 | -91 | -91 | -91 | -Infinity | -91 |
| Io | dBm/9.36 MHz | 1 | -64.60 | -64.60 | -64.60 | -62.25 | -64.60 | -62.25 |
|  | dBm/9.36 MHz | 2 | -64.60 | -64.60 | -64.60 | -62.25 | -64.60 | -62.25 |
|  | dBm/38.16 MHz | 3 | -58.50 | -58.50 | -58.50 | -56.16 | -58.50 | -56.16 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  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.6.6.X3.4.3 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 1600 ms from the beginning of time period T2. The UE is not required to read the neighbour cell SSB index in this test.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 100% of all expected ACK/NACKs shall be transmitted by the UE.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

For a test to be considered successful requirements on both Event A6 detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 6th hange>

<Start of the 7th change>

### A.7.6.X1 SA event triggered reporting tests with Pre-MG

#### A.7.6.X1.1 Intra-frequency measurement test with SA event triggered reporting tests: with autonomous activation/deactivation of Pre-MG in FR2

##### A.7.6.X1.1.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event with autonomous activation/deactivation of Pre-MG. This test will partly verify the TDD intra-frequency cell search requirements in clause 9.2.5.1 and 9.2.5.2.

##### A.7.6.X1.1.2 Test parameters

Supported test configurations are shown in Table A.7.6.X1.1.2-1. 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 parameters for the Cell 1 and Cell 2 are given in Table A.7.6.X1.1.2-2, A.7.6.X1.1.2-3 and A.7.6.X1.1.2-4 below.

In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A4 is used.

Before the test starts,

UE is connected to Cell 1 (PCell) on radio channel 1 (PCC).

UE is configured with 2 different UE-specific bandwidth parts for Cell 1 (PCell), BWP-1 and BWP-2, before starting the test.

BWP-1 includes bandwidth of the initial DL BWP and SSB.

BWP-2 does not include bandwidth of the initial DL BWP and SSB.

UE is indicated in *firstActiveDownlinkBWP-Id* that the active DL BWPis BWP-1 in PCell.

The TE schedules ontinuous DL data on PCell throughout the test.

The test consists of 3 successive time periods, with durations of T1, T2 and T3, respectively.

During time period T1, BWP-1 is the active BWP. The Pre-MG is expected to be deactivated. UE shall be able to measure neighbor cell without gap.

The time period T2 starts when a DCI format 1\_1 command for PCell DL BWP switch, sent from the test equipment to the UE, is received at the UE side in PCell’s slot # denoted *i*. The UE shall switch its bandwidth part from BWP-1 to BWP-2.

During time period T3, BWP-2 is the active BWP. The Pre-MG is expected to be activated. UE shall be able to measure neighbor cell within Pre-MG.

Table A.7.6.X1.1.2-1: supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.6.X1.1.2-2: General test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| Active cell |  | PCell (Cell 1) |  |
| Neighbour cell |  | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1: Cell 1 and Cell 2 | One TDD carrier frequency is used for the NR cells. |
| SMTC configuration |  | SMTC.1 |  |
| A4-Offset | dB | -120 |  |
| CP length |  | Normal |  |
| Hysteresis | dB | 0 |  |
| Time To Trigger | s | 0 |  |
| Filter coefficient |  | 0 | L3 filtering is not used |
| DRX |  | OFF |  |
| Gap Pattern Id |  | 13 |  |
| Measurement gap offset | ms | 39 |  |
| Time offset between Cell 1 and Cell 2 |  | 3 μs | Synchronous cells |
| T1 | s | 0.1 |  |
| T2 | s | 0.2 |  |
| T3 | s | 5 |  |

Table A.7.6.X1.1.2-3: NR Cell specific test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|  |  | T1 | T2 | T3 | T1 | T2 | T3 |
| TDD configuration |  | TDDConf.3.1 | | | TDDConf.3.1 | | |
| BWchannel | MHz | 100: NRB,c = 66 | | | 100: NRB,c = 66 | | |
| Data RBs allocated |  | 24 | | | 24 | | |
| Intial BWP configuration |  | DLBWP.0.1  ULBWP.0.1 | | | DLBWP.0.1  ULBWP.0.1 | | |
| BWP-1 Configuration |  | DLBWP.1.6  ULBWP.1.6 | | | N/A | | |
| BWP-2 Configuration |  | DLBWP.1.5  ULBWP.1.5 | | | N/A | | |
| RLM-RS |  | CSI-RS | | | N/A | | |
| PDSCH RMC configuration |  | SR.3.2 TDD | | | N/A | | |
| RMSI CORESET RMC configuration |  | CR.3.1 TDD | | | N/A | | |
| Dedicated CORESET RMC configuration |  | CCR.3.1 TDD | | | N/A | | |
| TRS configuration |  | TRS.2.1 TDD | | | N/A | | |
| PDSCH/PDCCH TCI states |  | TCI.State.2 | | | N/A | | |
| PDSCH/PDCCH subcarrier spacing | kHz | 120 | | | 120 | | |
| OCNG Patterns |  | OP.5 | | | N/A | | |
| cellIndividualOffset | dB | N/A | | | 16 | | |
| SSB |  | SSB.1 FR2 | | | SSB.7 FR2 | | |
| Propagation Condition |  | AWGN | | | AWGN | | |

Table A.7.6.X1.1.2-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | Cell 2 | | |
| T1 | T2 | T3 | T1 | T2 | T3 |
| AoA setup |  | Setup 3 defined in A.3.15.3 | | | | | |
| AoA1 | | | AoA2 | | |
| Beam assumptionNote 3 |  | Rough | | | Rough | | |
| Es | dBm/SCS | -89 | -89 | -89 | -infinity | -89 | -89 |
| BB Note 4 | dB | -0.12 | -0.12 | -0.12 | -Infinity | -0.12 | -0.12 |
| SSB\_RP | dBm/SCS | -89 | -89 | -89 | -infinity | -89 | -89 |
|  | dBm/95.04MHz | -64.41 | -64.41 | -64.41 | -Infinity | -64.41 | -64.41 |
| Time multiplexing of the downlink transmissions from each AoA | | Defined in Figure A.7.6.1.1.1-1 | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  Note 2: Es/Iot, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 4: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | |

##### A.7.6.X1.1.3 Test Requirements

During T1, the UE shall be able to receive PDSCH and report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions.

During T2 and T3, the UE shall not report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, starting from the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*i+TBWPswitchDelay*) + 5ms as defined in clause 8.19.2.

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than Y ms from the beginning of time period T3, where Y is

- 3.2s for a UE supporting power class 1 and 5,

- 1.92s for a UE supporting power class 2, 3 and 4

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.7.6.X1.2 Intra-frequency measurement test with SA event triggered reporting tests: with network-controlled activation/deactivation of Pre-MG in FR2

##### A.7.6.X1.2.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event with network-controlled activation/deactivation of Pre-MG. This test will partly verify the TDD intra-frequency cell search requirements in clause 9.2.5.1 and 9.2.5.2.

##### A.7.6.X1.2.2 Test parameters

Supported test configurations are shown in Table A.7.6.X1.2.2-1. 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 parameters for the Cell 1 and Cell 2 are given in Table A.7.6.X1.2.2-2, A.7.6.X1.2.2-3 and A.7.6.X1.2.2-4 below.

In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used.

Before the test starts,

UE is connected to Cell 1 (PCell) on radio channel 1 (PCC).

UE is configured with 2 different UE-specific bandwidth parts for Cell 1 (PCell), BWP-1 and BWP-2, before starting the test.

BWP-1 includes bandwidth of the initial DL BWP and SSB with the Pre-MG status set to ‘deactivated’.

BWP-2 does not include bandwidth of the initial DL BWP and SSB with the Pre-MG status set to ‘activated’.

UE is indicated in *firstActiveDownlinkBWP-Id* that the active DL BWPis BWP-1 in PCell.

The TE schedules continuous DL data on PCell throughout the test.

The test consists of 3 successive time periods, with durations of T1, T2 and T3, respectively.

The time period T1 starts when a DCI format 1\_1 command for PCell DL BWP switch, sent from the test equipment to the UE, is received at the UE side in PCell’s slot # denoted *i*. The UE shall switch its bandwidth part from BWP-1 to BWP-2.

The time period T3 starts when a DCI format 1\_1 command for PCell DL BWP switch, sent from the test equipment to the UE, is received at the UE side in PCell’s slot # denoted *j*. The UE shall switch its bandwidth part from BWP-2 to BWP-1.

Table A.7.6.X1.2.2-1: supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.6.X1.2.2-2: General test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| Active cell |  | PCell (Cell 1) |  |
| Neighbour cell |  | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1: Cell 1 and Cell 2 | One TDD carrier frequency is used for the NR cells. |
| SMTC configuration |  | SMTC.1 |  |
| A3-Offset | dB | -11 |  |
| CP length |  | Normal |  |
| Hysteresis | dB | 0 |  |
| Time To Trigger | s | 0 |  |
| Filter coefficient |  | 0 | L3 filtering is not used |
| DRX |  | OFF |  |
| Gap Pattern Id |  | 13 |  |
| Measurement gap offset | ms | 39 |  |
| Time offset between Cell 1 and Cell 2 |  | 3 μs | Synchronous cells |
| T1 | s | 0.1 |  |
| T2 | s | 0.2 |  |
| T3 | s | 5 |  |

Table A.7.6.X1.2.2-3: NR Cell specific test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|  |  | T1 | T2 | T3 | T1 | T2 | T3 |
| TDD configuration |  | TDDConf.3.1 | | | TDDConf.3.1 | | |
| BWchannel | MHz | 100: NRB,c = 66 | | | 100: NRB,c = 66 | | |
| Data RBs allocated |  | 24 | | | 24 | | |
| Intial BWP configuration |  | DLBWP.0.1  ULBWP.0.1 | | | DLBWP.0.1  ULBWP.0.1 | | |
| BWP-1 Configuration |  | DLBWP.1.6  ULBWP.1.6 | | | N/A | | |
| BWP-2 Configuration |  | DLBWP.1.5  ULBWP.1.5 | | | N/A | | |
| RLM-RS |  | CSI-RS | | | N/A | | |
| PDSCH RMC configuration |  | SR.3.2 TDD | | | N/A | | |
| RMSI CORESET RMC configuration |  | CR.3.1 TDD | | | N/A | | |
| Dedicated CORESET RMC configuration |  | CCR.3.1 TDD | | | N/A | | |
| TRS configuration |  | TRS.2.1 TDD | | | N/A | | |
| PDSCH/PDCCH TCI states |  | TCI.State.2 | | | N/A | | |
| PDSCH/PDCCH subcarrier spacing | kHz | 120 | | | 120 | | |
| OCNG Patterns |  | OP.5 | | | N/A | | |
| cellIndividualOffset | dB | N/A | | | 16 | | |
| SSB |  | SSB.1 FR2 | | | SSB.7 FR2 | | |
| Propagation Condition |  | AWGN | | | AWGN | | |

Table A.7.6.X1.2.2-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting with network-controlled activation/deactivation of Pre-MG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | Cell 2 | | |
| T1 | T2 | T3 | T1 | T2 | T3 |
| AoA setup |  | Setup 3 defined in A.3.15.3 | | | | | |
| AoA1 | | | AoA2 | | |
| Beam assumptionNote 3 |  | Rough | | | Rough | | |
| Es | dBm/SCS | -89 | -89 | -89 | -infinity | -89 | -89 |
| BB Note 4 | dB | -0.12 | -0.12 | -0.12 | -Infinity | -0.12 | -0.12 |
| SSB\_RP | dBm/SCS | -89 | -89 | -89 | -infinity | -89 | -89 |
|  | dBm/95.04MHz | -64.41 | -64.41 | -64.41 | -Infinity | -64.41 | -64.41 |
| Time multiplexing of the downlink transmissions from each AoA | | Defined in Figure A.7.6.1.1.1-1 | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  Note 2: Es/Iot, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 4: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | |

##### A.7.6.X1.2.3 Test Requirements

During T1 and T2, the UE shall not report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, starting from the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*i+TBWPswitchDelay*) + 5ms as defined in clause 8.19.2.

During T3, the UE shall be able to receive PDSCH and report corresponding valid ACK/NACK for those PDSCHs scheduled in the slots overlapped with the Pre-MG occasions, starting from the 1st complete Pre-MG occasion after the beginning of PCell’s DL slot (*j+TBWPswitchDelay*) + 5ms as defined in clause 8.19.2.

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than X ms from the beginning of time period T3, where X is

- 1.6s for a UE supporting power class 1 and 5,

- 0.96s for a UE supporting power class 2, 3 and 4

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 7th change>

<Start of the 8th change>

### A.7.6.X2 SA event triggered reporting tests with concurrent gaps

#### A.7.6.X2.1 SA event triggered reporting tests For FR2 with fully non-overlapping concurrent MGs for SSB-based inter-frequency measurements

##### A.7.6.X2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event with fully non-overlapping concurrent MGs for SSB-based inter-frequency measurements. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4.

In this test, there are three cells: NR cell 1 as PCell in FR2 on NR RF channel 1, NR cell 2 as neighbour cell in FR2 on NR RF channel 2, and NR cell 3 as neighbour cell in FR2 on NR RF channel 3. The test parameters and configurations are given in Tables A.7.6.X2.1.1-1, A.7.6.X2.1.1-2, and A.7.6.X2.1.1-3.

Two measurement gaps with pattern configuration # 14 as defined in Table A.7.6.X2.1.1-2 are provided for UE. The measurement object for NR RF channel 2 is associated with MG#1, and measurement object for NR RF channel 3 is associated with MG#2.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 or NR cell 3.

Supported test configurations are shown in table A.7.6.X2.1.1-1.

Table A.7.6.X2.1.1-1 SA event triggered reporting tests without SSB index reading for FR2 with fully non-overlapping concurrent MGs for SSB-based inter-frequency measurements

|  |  |
| --- | --- |
| Config | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.6.X2.1.1-2: General test parameters for SA inter-frequency event triggered reporting for FR2 with fully non-overlapping concurrent MGs for SSB-based inter-frequency measurements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1 | 1, 2, 3 | Three FR2 NR carrier frequencies is used. |
| Active cell |  | Config 1 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1 | NR cell 2 and 3 | NR cell 2 is on NR RF channel number 2. NR cell 3 is on NR RF channel number 3. |
| Gap Pattern Id |  | Config 1 | 14 for both gaps | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1 | 79 for MG#1  19 for MG#2 |  |
| SMTC-SSB parameters |  | Config 1 | SSB.3 FR2 | As specified in clause A.3.10.2 |
| offsetMO | dB | Config 1 | 16 | Applied to NR Cell 2 and 3 measurement object |
| A3-Offset | dB | Config 1 | -11 |  |
| Hysteresis | dB | Config 1 | 0 |  |
| CP length |  | Config 1 | Normal |  |
| TimeToTrigger | s | Config 1 | 0 |  |
| Filter coefficient |  | Config 1 | 0 | L3 filtering is not used |
| DRX |  | Config 1 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1 | 3μs | Cell 2 and 3 are synchronous cells to cell 1. |
| T1 | s | Config 1 | 5 |  |
| T2 | s | Config 1 | 5.2 for PC1; 3.5 for other PC |  |

Table A.7.6.X2.1.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR2 with fully non-overlapping concurrent MGs for SSB-based inter-frequency measurements

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | | **Cell 3** | | |
|  | |  |  | T1 | | T2 | T1 | T2 | T1 | | T2 |
| AoA setup | |  | Config 1 | Setup 3 as specified in clause A.3.15 | | | | | | | |
|  | |  |  | AoA1 | | | AoA2 | | AoA2 | | |
| Beam AssumptionNote 4 | |  | 1,2 | Rough | | | Rough | | Rough | | |
| NR RF Channel Number | |  | Config 1 | 1 | | | 2 | | 3 | | |
| Duplex mode | |  | Config 1 | TDD | | | TDD | | TDD | | |
| TDD configuration | |  | Config 1 | TDDConf.3.1 | | | TDDConf.3.1 | | TDDConf.3.1 | | |
| BWchannel | | MHz | Config 1 | 100: NRB,c = 66 | | | 100: NRB,c = 66 | | 100: NRB,c = 66 | | |
| Data RBs allocated | |  | Config 1 | 66 | | | 66 | | 66 | | |
| BWP BW | | MHz | Config 1 | 100: NRB,c = 66 | | | 100: NRB,c = 66 | | 100: NRB,c = 66 | | |
| BWP configuration | Initial DL BWP |  | Config 1 | DLBWP.0.1 | | | N/A | |  | | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | | N/A | |  | | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | | N/A | |  | | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | | N/A | |  | | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1 | OP.1 | | | OP.1 | | OP.1 | | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.3.1 TDD | | | - | | - | | |
| CORESET Reference Channel | |  | Config 1 | CR.3.1 TDD | | | - | | - | | |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 | |  | Config 1 | SMTC.1 | | | SMTC.1 | | SMTC.1 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1 | 120 | | | 120 | | 120 | | |
| TRS configuration | |  | Config 1 | TRS.2.1 TDD | | | N/A | | N/A | | |
| PDSCH/PDCCH TCI state | |  | Config 1 | TCI.State.2 | | | N/A | | N/A | | |
| EPRE ratio of PSS to SSS | |  |  |  | | |  | |  | | |
| 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 | |  | Config 1 | 0 | | | 0 | | 0 | | |
| 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) | |  |  |  | | |  | |  | | |
| Ês | | dBm/SCS | Config 1 | -87 | -87 | | -Infinity | -87 | -Infinity | -87 | |
| SSBRP Note 2 | | dBm/SCS Note3 | Config 1 | -87 | -87 | | -Infinity | -87 | -Infinity | -87 | |
| BB Note 5 | | dB | Config 1 | 1.89 | 1.89 | | -Infinity | 1.89 | -Infinity | 1.89 | |
| IoNote 2 | | dBm/95.04 MHz Note3 | Config 1 | -58.01 | -58.01 | | -Infinity | -58.01 | -Infinity | -58.01 | |
| Propagation Condition | |  | Config 1 | 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: SSBRP, Es/Iot and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 4: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 5: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBS from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | | | | | |

##### A.7.6.X2.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for each neighboring cell, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

10240 for UE supporting power class 1, or

6400 for UE supporting other power class.

The UE is not required to report SSB time index. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.7.6.X2.2 SA event triggered reporting tests For FR2 with concurrent measurement gaps without SSB time index detection when DRX is not used (PCell in FR2)

##### A.7.6.X2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event for each neighbour cell. This test will partly verify the SA inter-frequency NR cell search requirements and collision handling between two partially-partial overlapping gaps in clause 9.1.8.

In this test, there are three cells: NR cell 1 as PCell in FR2 on NR RF channel 1, NR cell 2 as neighbour cell in FR2 on NR RF channel 2 and NR cell 3 as another neighbour cell in FR2 on NR RF channel 3. The test parameters and configurations are given in Tables A.7.6.X2.2.1-1, A.7.6.X2.2.1-2, and A.7.6.X2.2.1-3.

Two measurement gaps are configured to UE with measurement gap pattern configuration #13 and #14 respectively. Measurement gap with pattern #13 is associated with inter-frequency measurement on NR cell 2, and measurement gap with pattern #14 is associated with inter-frequency measurement on NR cell 3. Measurement gap pattern configuration # 13 and #14 as defined in Table A.7.6.X2.2.1-2 are provided to for UE that does not support per-FR gap and for UE that supports per-FR gap.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3.

Supported test configurations are shown in table A.7.6.X2.2.1-1.

Table A.7.6.X2.2.1-1 SA event triggered reporting tests without SSB index reading for FR2-FR2

|  |  |
| --- | --- |
| Config | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note 1: Void. | |

Table A.7.6.X2.2.1-2: General test parameters for SA inter-frequency event triggered reporting for FR2 concurrent gap with partially partial overlapping scenario for SSB-based measurements without SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1 | 1, 2, 3 | Three FR2 NR carrier frequencies is used. |
| Active cell |  | Config 1 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| 1st Neighbour cell |  | Config 1 | NR cell 2 | NR cell 2 is on NR RF channel number 2. |
| 2nd Neighbour cell |  | Config 1 | NR cell 3 | NR cell 3 is on NR RF channel number 3. |
| 1st Gap Pattern Id |  | Config 1 | 13 | As specified in clause 9.1.2-1. |
| 2nd Gap Pattern Id |  | Config 1 | 14 | As specified in clause 9.1.2-1. |
| 1st gap offset |  | Config 1 | 39 |  |
| 2nd gap offset |  | Config 1 | 4 |  |
| 1st gap priority |  | Config 1 | 1 | Second level priority |
| 2nd gap priority |  | Config 1 | 2 | Highest priority |
| SMTC-SSB parameters |  | Config 1 | SSB.3 FR2 | As specified in clause A.3.10.2 |
| offsetMO | dB | Config 1 | 16 | Applied to NR Cell 2 and NR Cell 3 measurement objects |
| A3-Offset | dB | Config 1 | -11 |  |
| Hysteresis | dB | Config 1 | 0 |  |
| CP length |  | Config 1 | Normal |  |
| TimeToTrigger | s | Config 1 | 0 |  |
| Filter coefficient |  | Config 1 | 0 | L3 filtering is not used |
| DRX |  | Config 1 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1 | 3μs | Synchronous cells. |
| T1 | s | Config 1 | 5 |  |
| T2 | s | Config 1 | 5.2 for PC1; 3.5 for other PC |  |

Table A.7.6.X2.2.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR2 without SSB time index detection

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | Cell 3 | | | |
|  | |  |  | T1 | T2 | T1 | T2 | T1 | | T2 | |
| AoA setup | |  | Config 1 | Setup 3 as specified in clause A.3.15 | | | | | | | |
|  | |  |  | AoA1 | | AoA2 | | AoA3 | | | |
| Beam AssumptionNote 7 | |  | 1,2 | Rough | | Rough | | Rough | | | |
| NR RF Channel Number | |  | Config 1 | 1 | | 2 | | 3 | | | |
| Duplex mode | |  | Config 1 | TDD | | TDD | | TDD | | | |
| TDD configuration | |  | Config 1 | TDDConf.3.1 | | TDDConf.3.1 | | TDDConf.3.1 | | | |
| BWchannel | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | |
| Data RBs allocated | |  | Config 1 | 66 | | 66 | | 66 | | | |
| BWP BW | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | |
| BWP configuration | Initial DL BWP |  | Config 1 | DLBWP.0.1 | | N/A | | N/A | | | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | | N/A | | | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | | N/A | | | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | | N/A | | | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1 | OP.1 | | OP.1 | | OP.1 | | | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.3.1 TDD | | - | | - | | | |
| CORESET Reference Channel | |  | Config 1 | CR.3.1 TDD | | - | | - | | | |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 | |  | Config 1 | SMTC.1 | | SMTC.1 | | SMTC.Y | | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1 | 120 | | 120 | | 120 | | | |
| TRS configuration | |  | Config 1 | TRS.2.1 TDD | | N/A | | N/A | | | |
| PDSCH/PDCCH TCI state | |  | Config 1 | TCI.State.2 | | N/A | | N/A | | | |
| EPRE ratio of PSS to SSS | |  |  |  | |  | |  | | | |
| 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 | |  | Config 1 | 0 | | 0 | | 0 | | | |
| 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) | |  |  |  | |  | |  | | | |
| Ês | | dBm/SCS | Config 1 | -87 | -87 | -Infinity | -87 | -Infinity | | | -87 |
| SSBRP Note 3 | | dBm/SCS Note5 | Config 1 | -87 | -87 | -Infinity | -87 | -Infinity | | | -87 |
| BB Note 8 | | dB | Config 1 | 1.89 | 1.89 | -Infinity | 1.89 | -Infinity | | | 1.89 |
| IoNote3 | | dBm/95.04 MHz Note5 | Config 1 | -58.01 | -58.01 | -Infinity | -58.01 | -Infinity | | | -58.01 |
| Propagation Condition | |  | Config 1 | 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: Void  Note 3: SSBRP, Es/Iot and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Void  Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 6: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 8: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBS from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | | | | | |

##### A.7.6.X2.2.2 Test Requirements

For both NR cell 2 and NR cell 3, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

10240 for UE supporting power class 1, or

6400 for UE supporting other power class.

The UE is not required to report SSB time index. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.7.6.X2.3 SA event triggered reporting tests for FR2 concurrent gap with partially partial overalpping scenario for SSB-based measurements and PRS-based measurement

##### A.7.6.X2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the concurrent gap capable UE makes correct reporting of events. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4 and PRS-RSRP measurement delay requirements specified in clause 9.9.3.5.

In this test, there are three cells: NR cell 1 as PCell in FR2 on NR RF channel 1, NR cell 2 as neighbour cell in FR2 on NR RF channel 2, and NR cell 3 as neighbour cell in FR2 on NR RF channel 1. The test parameters are given in Tables A.7.6.X2.3.1-1, A.7.6.X2.3.1-2 and A.7.6.X2.3.1-3.

Two measurement gap patterns (MeasGapId #0 and MeasGapId #1) are configured with the gap pattern ID #0 and #1 as defined in Table A.7.6.X2.3.1-2. MeasGapId #1 is configured with a higher priority than MeasGapId #0. MeasGapId #0 and MeasGapId #1 are associated with the MOs for RF channel numbers #1 and #2, respectively.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used for carrier 2. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2 and NR cell 3. Cell 1 and cell 3 transmit PRS during T2.

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 MG instance of MeasGapId #1 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.

Table A.7.6.X2.3.1-1: SA event triggered reporting tests for FR2

|  |  |
| --- | --- |
| Config | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |

Table A.7.6.X2.3.1-2: General test parameters for SA inter-frequency event triggered reporting for FR2 concurrent gap with partially partial overalpping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1 | 1: Cell 1 and Cell 3  2: Cell 2 | Two TDD carrier frequencies are 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, NR cell 3 | Cell 2 is an inter-frequency cell neighbor cell  Cell 3 is a neighbour cell in the positioning assistance data. |
| Gap Pattern Id |  | Config 1 | 0 for MeasGapId #0  1 for MeasGapId #1 | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1 | 7 for MeasGapId #0  11 for MeasGapId #1 |  |
| A3-Offset | dB | Config 1 | -6 |  |
| Hysteresis | dB | Config 1 | 0 |  |
| CP length |  | Config 1 | Normal |  |
| TimeToTrigger | s | Config 1 | 0 |  |
| Filter coefficient |  | Config 1 | 0 | L3 filtering is not used |
| DRX |  | Config 1 | OFF | DRX is not used |
| Time offset between cell 1 and neighbour cell 2 |  | Config 1 | 3μs | Synchronous cells. |
| Time offset between cell 1 and neighbour cell 3 |  | Config 1 | 3μs | Synchronous cells. |
| Expected RSTD between cell 1 and cell 3 | μs | Config 1 | 3 |  |
| Expected RSTD uncertainty between cell 1 and cell 3 | μs | Config 1 | 5 |  |
| T1 | s | Config 1 | 5 |  |
| T2 | s | Config 1 | 11 |  |

Table A.7.6.X2.3.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 concurrent gap with partially-partial overalpping scenario for SSB-based measurements and PRS measurement

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | | Cell 3 | |
|  | |  | T1 | T2 | T1 | T2 | | T1 | T2 |
| AoA setup | |  | Config 1 | Setup 1 as specified in clause A.3.15 | | | | | | |
| Beam AssumptionNote 7 | |  | Config 1 | Rough | | Rough | | | Rough | |
| TDD configuration | |  | Config 1 | TDDConf.3.1 | | TDDConf.3.1 | | | TDDConf.3.1 | |
| Duplex mode | |  | Config 1 | TDD | | TDD | | | TDD | |
| BWchannel | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | 100: NRB,c = 66 | |
| BWP BW | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | | 100: NRB,c = 66 | |
| BWP configuration | Initial DL BWP |  | Config 1 | DLBWP.0.1 | | N/A | | |  | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | | |  | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | | |  | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | | |  | |
| OCNG Patterns defined in A.3.2.1.1 (OP.1) | |  | Config 1 | OP.1 | | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.3.1 TDD | | - | | | - | |
| CORESET Reference Channel | |  | Config 1 | CR.3.1 TDD | | - | | | - | |
| Dedicated CORESET RMC configuration | |  | Config 1 | CCR.3.1 TDD | | - | | | - | |
| TRS configuration | |  | Config 1 | TRS.2.1 TDD | | - | | | - | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1 | 120 | | 120 | | | 120 | |
| SSB parameters | |  | Config 1 | SSB.1 FR2 | | SSB.1 FR2 | | | SSB.1 FR2 | |
| SMTC configuration defined in A.3.11 | |  | Config 1 | SMTC.4 | | SMTC.4 | | | SMTC.4 | |
| PRS configuration | |  | Config 1 | PRS.1.1 FR2 | | N/A | | | PRS.1.2 FR2 | |
| PRS muting configuration | |  | Config 1 | ‘10’ | | N/A | | | ‘01’ | |
| EPRE ratio of PSS to SSS | |  |  |  | |  | | |  | |
| 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 | |  | Config 1 | 0 | | 0 | | | 0 | |
| 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 Note5 |  | -102 | | -104.7 | | | -102 | |
| Note2 | | dBm/SCS Note4 | Config 1 | -93 | | -95.7 | | | -93 | |
| SS-RSRP Note 3 | | dBm/SCS Note5 | Config 1 | -89.7 | -89.7 | -Infinity | | -86.7 | -Infinity | -86.7 |
| PRS-RSRP Note 3 | | dBm/SCS Note5 | Config 1 | -Infinity | -96 | N/A | | N/A | -Infinity | -103 |
| PRS | | dB | Config 1 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| PRS | | dB | Config 1 | -Infinity | -3 | N/A | | N/A | -Infinity | -10 |
| IoNote3 | | dBm/95.04 MHz Note5 | Config 1 | -58.56 | | -66.7 | | -57.2 | -57.2 | |
| Propagation Condition | |  | Config 1 | 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/PRS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: PRS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 6: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation | | | | | | | | | | |

##### A.7.6.X2.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

10240 for UE supporting power class 1, or

6400 for UE supporting other power class.

The PRS RSRP measurement time fulfils the requirements specified in Clause 9.9.3.5. 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 9.9.3.5 starting from the beginning of time interval T2.

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 10.1.24.3, i.e., between PRS RSRP\_0 and PRS RSRP\_126.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

IUE is not required to report SSB time index.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 8th change>

<Start of the 9th change>

### A.7.6.X3 SA event triggered reporting tests with NCSG

#### A.7.6.X3.1 SA event triggered reporting test with per-UE NCSG under non-DRX

##### A.7.6.X3.1.1 Test purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in clause 9.2.7.1 and 9.2.7.2, and also verify the scheduling availability during intra-frequency measurement with NCSG in clause 9.2.7.3. Supported test configurations are shown in table A.7.6.1.1.x-1.

Table A.7.6.X3.1.1-1: supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 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 parameters for the Cell 1 and Cell 2 are given in Table A.7.6.X3.1.1-2 ~ 4 below.

There are two BWPs configured in Cell 1, BWP1 which contains the cell defining SSB, and BWP2 which does not contain any SSB of Cell 1. During the whole test, BWP2 is always scheduled as the active BWP for the UE.

During T2, the UE is continuously scheduled with data on the PCell.

The UE is capable of NCSG and report ‘*ncsg*’ through *NeedForGapNCSG-InfoNR* for PCell.

In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used.

The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

Table A.7.6.X3.1.1-2: General test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 with per-UE NCSG without DRX

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Config | Value | Comment |
| Active cell |  | 1, 2 | PCell (Cell 1) |  |
| Neighbour cell |  | 1, 2 | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1, 2 | 1: Cell 1 and Cell 2 | One TDD carrier frequency is used for the NR cells. |
| NCSG type |  | 1, 2 | Per-FR |  |
| NCSG pattern |  | 1, 2 | 13 |  |
| NCSG repitition periodicity | ms | 1, 2 | 40 |  |
| ML | ms | 1, 2 | 5 |  |
| NCSG offset | ms | 1, 2 | 39 |  |
| SMTC configuration |  | 1, 2 | SMTC.1 |  |
| CSI-RS parameters |  | 1, 2 | CSI-RS.3.2 TDD |  |
| A3-Offset | dB | 1, 2 | -11 |  |
| CP length |  | 1, 2 | Normal |  |
| Hysteresis | dB | 1, 2 | 0 |  |
| Time To Trigger | s | 1, 2 | 0 |  |
| Filter coefficient |  | 1, 2 | 0 | L3 filtering is not used |
| DRX |  | 1, 2 | OFF |  |
| Time offset between Cell 1 and Cell 2 |  | 1, 2 | 3 μs | Synchronous cells |
| T1 | s | 1, 2 | 5 |  |
| T2 | s | 1, 2 | 5 |  |

Table A.7.6.X3.1.1-3: NR Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 with per-UE NCSG without DRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Config | Cell 1 | | Cell 2 | |
|  |  |  | T1 | T2 | T1 | T2 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | TDDConf.3.1 | |
| BWchannel | MHz | 1, 2 | 100: NRB,c = 66 | | 100: NRB,c = 66 | |
| Data RBs allocated |  | 1 | 24 | | 24 | |
| 2 | 48 | | 48 | |
| Intial BWP configuration |  | 1, 2 | DLBWP.0.1  ULBWP.0.1 | | DLBWP.0.1  ULBWP.0.1 | |
| Active DL BWP configuration |  | 1, 2 | DLBWP.1.2 | | DLBWP.1.1 | |
| Active UL BWP configuration |  | 1, 2 | ULBWP.1.2 | | ULBWP.1.1 | |
| RLM-RS |  | 1, 2 | CSI-RS | | SSB | |
| PDSCH RMC configuration |  | 1 | SR.3.2 TDD | | N/A | |
| 2 | SR.3.3 TDD | |
| RMSI CORESET RMC configuration |  | 1 | CR.3.1 TDD | | CR.3.1 TDD | |
| 2 | CR.3.2 TDD | | CR.3.2 TDD | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.3.1 TDD | | CCR.3.1 TDD | |
| 2 | CCR.3.7 TDD | | CCR.3.7 TDD | |
| TRS configuration |  | 1, 2 | TRS.2.1 TDD | | N/A | |
| PDSCH/PDCCH TCI states |  | 1, 2 | TCI.State.2 | | N/A | |
| PDSCH/PDCCH subcarrier spacing | kHz | 1, 2 | 120 | | 120 | |
| OCNG Patterns |  | 1, 2 | OP.5 | | N/A | |
| cellIndividualOffset | dB | 1~2 | N/A | | 16 | |
| SSB |  | 1 | SSB.3 FR2 | | SSB.7 FR2 | |
|  |  | 2 | SSB.4 FR2 | | SSB.8 FR2 | |
| Propagation Condition |  | 1, 2 | AWGN | | AWGN | |

Table A.7.6.X3.1.1-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 with per-UE NCSG without DRX

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Config | Cell 1 | | Cell 2 | | |
| T1 | T2 | T1 | | T2 |
| AoA setup |  | 1, 2 | Setup 3 defined in A.3.15.3 | | | | |
|  |  |  | AoA1 | | AoA2 | | |
| Beam AssumptionNote 4 |  | 1,2 | Rough | | Rough | | |
| Es | dBm/SCS | 1 | -89 | -89 | | -Infinity | -89 |
|  |  | 2 | -86 | -86 | | -Infinity | -86 |
| BB Note 5 | dB | 1, 2 | -0.12 | -0.12 | | -Infinity | -0.12 |
| SSB\_RP | dBm/SCS | 1 | -89 | -89 | -Infinity | | -89 |
|  |  | 2 | -86 | -86 | -Infinity | | -86 |
|  | dBm/95.04MHz | 1 | -64.41 | -64.41 | -Infinity | | -64.41 |
| 2 | -61.41 | -61.41 | -Infinity | | -61.41 |
| Time multiplexing of the downlink transmissions from each AoA | | 1 | Defined in Figure A.7.6.X3.1.1-1 | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  Note 2: Void  Note 3: Es/Iot, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 5: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | |



Figure A.7.6.X3.1.1-1: Time multiplexed downlink transmissions (Config 1 example)

##### A.7.6.X3.1.2 Test Requirements

In the test, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

- 3.2s for a UE supporting power class 1,

- 1.92s for a UE supporting power class 2, 3 and 4

The UE is not required to read the neighbour cell SSB index in this test.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

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

During T2, UE shall send HARQ ACK/NACK for the corresponding PDSCH scheduled in PCell in all the slots except for the case where PDSCH or PUCCH is overlapped with the VIL of NCSG pattern.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.7.6.X3.2 SA event triggered reporting tests on inter-frequency measurement with NCSG for FR2 when DRX is not used (PCell in FR2)

##### A.7.6.X3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.10. The test will partly verify the interruption requirements on PCell in clause 9.1.9.1.

In this test, there are two cells: NR cell 1 as PCell in FR2 on NR RF channel 1 and NR cell 2 as neighbour cell in FR2 on NR RF channel 2. The test parameters and configurations are given in Tables A.7.6.X3.2.1-1, A.7.6.X3.2.1-2, and A.7.6.X3.2.1-3.

In test 1 measurement gap pattern configuration # 0 as defined in A.7.6.X3.2.1-2 is provided for a UE that does not support *ncsg-MeasGapPerFR-r17*, and in test 2 measurement gap pattern configuration #13 as defined in Table A.7.6.X3.2.1-2 is provided for UE that support *ncsg-MeasGapPerFR-r17*. If a UE supports *ncsg-MeasGapPerFR-r17*, it is only required to pass test 2. Otherwise it is only required to pass test 1.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

Supported test configurations are shown in table A.7.6.X3.2.1-1.

Table A.7.6.X3.2.1-1 SA event triggered reporting tests with NCSG without SSB index reading for FR2-FR2

|  |  |
| --- | --- |
| Config | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note 1: Void. | |

Table A.7.6.X3.2.1-2: General test parameters for SA inter-frequency event triggered reporting with NCSG for FR2 without SSB time index detection

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
| Test 1 | Test 2 |
| NR RF Channel Number |  | Config 1 | 1, 2 | | Two FR2 NR carrier frequencies is used. |
| Active cell |  | Config 1 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1 | NR cell 2 | | NR cell 2 is on NR RF channel number 2. |
| NCSG Pattern Id |  | Config 1 | 0 | 13 | As specified in clause 9.1.9.3-1. |
| NCSG offset |  | Config 1 | 39 | |  |
| SMTC-SSB parameters |  | Config 1 | SSB.3 FR2 | | As specified in clause A.3.10.2 |
| offsetMO | dB | Config 1 | 16 | | Applied to NR Cell 2 measurement object |
| A3-Offset | dB | Config 1 | -11 | |  |
| Hysteresis | dB | Config 1 | 0 | |  |
| CP length |  | Config 1 | Normal | |  |
| TimeToTrigger | s | Config 1 | 0 | |  |
| Filter coefficient |  | Config 1 | 0 | | L3 filtering is not used |
| DRX |  | Config 1 | OFF | | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1 | 3μs | | Synchronous cells. |
| T1 | s | Config 1 | 5 | |  |
| T2 | s | Config 1 | 5.2 for PC1; 3.5 for other PC | |  |

Table A.7.6.X3.2.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting with NCSG for FR2 without SSB time index detection

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | | |
|  | |  |  | T1 | T2 | T1 | | T2 |
| AoA setup | |  | Config 1 | Setup 3 as specified in clause A.3.15 | | | | |
|  | |  |  | AoA1 | | AoA2 | | |
| Beam AssumptionNote 7 | |  | 1,2 | Rough | | Rough | | |
| NR RF Channel Number | |  | Config 1 | 1 | | 2 | | |
| Duplex mode | |  | Config 1 | TDD | | TDD | | |
| TDD configuration | |  | Config 1 | TDDConf.3.1 | | TDDConf.3.1 | | |
| BWchannel | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | |
| Data RBs allocated | |  | Config 1 | 66 | | 66 | | |
| BWP BW | | MHz | Config 1 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | |
| BWP configuration | Initial DL BWP |  | Config 1 | DLBWP.0.1 | | N/A | | |
|  | Initial UL BWP |  |  | ULBWP.0.1 | | N/A | | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | N/A | | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | N/A | | |
| OCNG Patterns defined in A.3.2.1.1 | |  | Config 1 | OP.2 | | OP.2 | | |
| PDSCH Reference measurement channel | |  | Config 1 | SR.3.1 TDD | | - | | |
| CORESET Reference Channel | |  | Config 1 | CR.3.1 TDD | | - | | |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 | |  | Config 1 | SMTC.1 | | SMTC.1 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1 | 120 | | 120 | | |
| TRS configuration | |  | Config 1 | TRS.2.1 TDD | | N/A | | |
| PDSCH/PDCCH TCI state | |  | Config 1 | TCI.State.2 | | N/A | | |
| EPRE ratio of PSS to SSS | |  |  |  | |  | | |
| 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 | |  | Config 1 | 0 | | 0 | | |
| 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 Note5 |  | -104.7 | | -104.7 | | |
| Note2 | | dBm/SCS Note4 | Config 1 | -95.7 | | -95.7 | | |
|  | | dB | Config 1 | 6 | 6 | -Infinity | | 9 |
| SSB\_RP Note 3 | | dBm/SCS Note5 | Config 1 | -89.7 | -89.7 | -Infinity | | -86.7 |
| BB Note 8 | | dB | Config 1 | 6 | 6 | -Infinity | | 9 |
| IoNote3 | | dBm/95.04 MHz Note5 | Config 1 | -59.74 | -59.74 | -Infinity | | -57.2 |
| Propagation Condition | |  | Config 1 | 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: Void  Note 3: SSB\_RP, Es/Iot and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Void  Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 6: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementation  Note 8: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBS from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | | | |

##### A.7.6.X3.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than X ms from the beginning of time period T2, where X is

5120 for UE supporting power class 1, or

3200 for UE supporting other power class.

The UE is not required to report SSB time index. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

The UE shall be scheduled on PCell continuously throughout the test. During the time duration T2, the interruption on PCell shall not be more than the values specified for SA in clause 9.1.9.1.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE: For a UE that supports per-FR NCSG, it only needs to pass test case with per-FR NCSG, otherwise, it only needs to pass test case with per-UE NCSG.

#### A.7.6.X3.3 Event triggered reporting test on deactivated Scell measurement via NCSG in FR2 in non-DRX

##### A.7.6.X3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the delay and interruption requirements for deactived SCell measurement stated in clause 9.2.7 and 8.2 respectively, when both PCell and SCell are in FR2.

The supported test configurations are shown in Table A.7.6.X3.3.1-1 below. The general test parameters are defined in Table A.7.6.X3.3.1-2. Three cells are deployed in the test, which are one FR2 PCell (Cell 1) on frequency 1 and one FR2 SCell (Cell 2) on frequency 2 and one neighboring cell (Cell3) on frequency 2. The cell-specific test parameters are given in A.7.6.X3.3.1-3 below. OTA related test parameters are shown in table A.7.6.X3.3.1-4 below.

In the measurement control information, a measurement object is configured for the frequency of the SCell, and it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of 2 successive time periods, with duration of T1 and T2, respectively.

Before the test starts the UE is connected to PCell (Cell 1) but is not aware of SCell (Cell 2) nor the neighboring cell (Cell 3). The UE is only monitoring the PCC. 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 SCell (Cell 2) becomes configured on radio channel 2. The UE now starts monitoring the deactivated SCC.

NCSG is configured with the NCSG pattern ID #0 as defined in Table A.7.6.X3.3.1-2.

Table A.7.6.X3.3.1-1: Supported test configurations for FR2 deactivated Scell measurement via NCSG

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | NR 120 kHz SSB SCS, 100MHz bandwidth, TDD duplex mode |
| Note 1: Same configuration applies to both PCell and SCell | |

Table A.7.6.X3.3.1-2: General test parameters for FR2 deactivated Scell measurement via NCSG

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| RF Channel Number |  | 1, 2 | Two NR radio channels are used for this test. Cell 1 uses RF channel 1. Cell 2 and Cell 3 use RF channel 2. |
| Hysteresis | dB | 0 |  |
| A3-Offset | dBm | -11 |  |
| TimeToTrigger | s | 0 |  |
| Filter coefficient |  | 0 | L3 filtering is not used |
| DRX |  | OFF | DRX is not used |
| NCSG Pattern Id |  | 0 | As specified in clause Table 9.1.9.3-1. |
| NCSG offset | ms | 39 |  |
| NCSG mgta | ms | 0 |  |
| Time offset between Cell 2 and Cell 3 | us | 3 | Synchronous cells |
| SCell measurement cycle (measCycleSCell) | ms | 160 |  |
| T1 | s | 5 |  |
| T2 | s | 15 |  |

Table A.7.6.X3.3.1-3: Cell specific test parameters for FR2 deactivated Scell measurement via NCSG

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ParameterNote 5 | Unit | Cell 1 | Cell 2 | Cell 3 |
| SSB ARFCN |  | freq1 | freq2 | freq2 |
| Duplex mode |  | TDD | | |
| TDD configuration |  | TDDConf.3.1 | | |
| Downlink initial BWP Configuration |  | DLBWP.0.1 | DLBWP.0.1 | DLBWP.0.1 |
| Downlink dedicated BWP Configuration |  | DLBWP.1.1 | DLBWP.1.1 | DLBWP.1.1 |
| Uplink initial BWP configuration |  | ULBWP.0.1 | ULBWP.0.1 | ULBWP.0.1 |
| Uplink dedicated BWP configuration |  | ULBWP.1.1 | ULBWP.1.1 | ULBWP.1.1 |
| TRS configuration |  | TRS.2.1 TDD | TRS.2.1 TDD | N/A |
| TCI state |  | TCI.State.0 | TCI.State.0 | N/A |
| BWchannel | MHz | 100: NRB,c = 66 | | |
| Data RBs allocated |  | 24 | 24 | 24 |
| PDSCH Reference measurement channel |  | SR.3.2 TDD | SR.3.2 TDD | N/A |
| RMSI CORESET Parameters |  | CR.3.1 TDD | - | N/A |
| Dedicated CORESET Parameters |  | CCR.3.1 TDD | CCR.3.1 TDD | N/A |
| OCNG Patterns |  | OP.1 | OP.5 | N/A |
| SSB Configuration |  | SSB.1 FR2 | SSB.1 FR2 | SSB.7 FR2 |
| SMTC Configuration |  | SMTC.1 | SMTC.1 | |
| cellIndividualOffset |  | N/A | N/A | 16 |
| 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\_DMRS |
| EPRE ratio of OCNG DMRS to SSSNote 1 |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |
| Propagation conditions |  | 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. | | | | |

Table A.7.6.X3.3.1-4: OTA related test parameters for FR2 deactivated Scell measurement via NCSG

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | Cell 2 | | | Cell 3 | | |
|  |  | T1 | T2 | T1 | | T2 | T1 | | T2 |
| Angle of arrival configuration |  | Setup 3 defined in A.3.15.3 | | | | | | | |
| AoA1 | | AoA1 | | | AoA2 | | |
| Assumption for UE beams Note 3 |  | Rough | | Rough | | | Rough | | |
| Es | dB | -89 | | -89 | -89 | | -infinity | -89 | |
| SSB\_RPNote2 | dBm/SCS Note4 | -89 | | -89 | -89 | | -infinity | -89 | |
| BB Note 4 | dB | -0.12 | | -0.12 | -0.12 | | -infinity | -0.12 | |
| IoNote2 | dBm/95.04 MHz Note4 | -64.41 | | -64.41 | -64.41 | | --infinity | -64.41 | |
| Time multiplexing of the downlink transmissions from each AoA | | N/A | | Defined in Figure A.7.6.1.1.1-1 | | | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  Note 2: SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Information about types of UE beam is given in B.2.1.3 and does not limit UE implementation or test system implementation.  Note 4: Calculation of Es/IotBB includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4 | | | | | | | | | |

##### A.7.6.X3.3.2 Test Requirements

UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than X1 ms from the beginning of time period T2, where X1 is

12.8s for UE supporting power class 1 and 5, or

7.68s for UE supporting other power class.

UE is not required to report SSB time index. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

During the T1 and T2, UE be able to report ACK/NACK for all slots with PDCCH/PDSCH on PCell excluding those slots overlapped with

* VIL1, ML and VIL2 of NCSG for intra-band FR2 CA
* VIL1 and VIL2 of NCSG for inter-band FR2 CA

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

<End of the 9th change>