**3GPP TSG-RAN4 Meeting #113 *R4-241xxxx***

**Orlando, US, 18 – 22 November, 2024**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | 5168 | **rev** | 1 | **Current version:** | **18.7.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CR on TCs for option C for BWP without restriction | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_BWP\_wor-Perf | | | | |  | ***Date:*** | | | 2024-11-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There are some iusses with intra-frequency event triggered reporting TCs for NCD-SSB.   1. The TCs are using single SSB index per cell, but there is no SSB RMC in FR2 with single SSB index for NCD-SSB. 2. In A.4.6.1.9 (EN-DC FR1), the SMTC is 20ms while NCD-SSB is 80ms which is an incorrect configuration. In A.5.6.1.6 (EN-DC FR2) and A.7.6.1.13 (SA FR2), the SSB configuration for NCD-SSB is wrong as they are referring to SSB for FR2-2. The test requirement is also based on 20ms SMTC which is incorrect. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add new SSB RMC in FR2 with single SSB index for NCD-SSB. 2. Correct the SSB configuration, SMTC configuration and test requirements for above mentioned TCs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | TCs for option C for BWP without restriction are incorrect. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.3.10.2.26 (new), A.3.10.2.27 (new), A.4.6.1.9, A.5.6.1.6, A.7.6.1.13 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of Change 1>

#### A.3.10.2.26 SSB pattern 26 in FR2: SSB allocation for SSB SCS=120 kHz in 100 MHz

Table A.3.10.2.26-1: SSB.26 FR2: SSB Pattern 26 for SSB SCS = 120 kHz in 100 MHz channel with 1 SSB per SS-burst

|  |  |
| --- | --- |
| SSB Parameters | Values |
| Channel bandwidth | 100 MHz |
| SSB SCS | 120 kHz |
| SSB periodicity (TSSB) | 80 ms |
| Number of SSBs per SS-burst | 1 |
| SS/PBCH block index | 0 |
| Symbol numbers containing SSBs Note 2 | 4-7 |
| Slot numbers containing SSB Note 2 | 0 |
| SFN containing SSB | SFN mod (max(TSSB,10ms)/10ms) = 0 |
| RB numbers containing SSBs within channel BW | (RBJ, RBJ+1,.…, RBJ+19)Note 1 |
| Note 1: RBs containing SSB can be configured in any frequency location within the associated bandwidth part except the RBs for allowed synchronization raster defined in TS 38.104 [13].  Note 2: These values have been derived from other parameters for information purposes (as per TS 38.213 [3]). They are not settable parameters themselves. | |

#### A.3.10.2.27 SSB pattern 27 in FR2: SSB allocation for SSB SCS=240 kHz in 100 MHz

Table A.3.10.2.27-1: SSB. 27 FR2: SSB Pattern 27 for SSB SCS = 240 kHz in 100 MHz channel with 1 SSB per SS-burst

|  |  |
| --- | --- |
| SSB Parameters | Values |
| Channel bandwidth | 100 MHz |
| SSB SCS | 240 kHz |
| SSB periodicity (TSSB) | 80 ms |
| Number of SSBs per SS-burst | 1 |
| SS/PBCH block index | 0 |
| Symbol numbers containing SSBs Note 2 | 8-11 |
| Slot numbers containing SSB Note 2 | 0 |
| SFN containing SSB | SFN mod (max(TSSB,10ms)/10ms) = 0 |
| RB numbers containing SSBs within channel BW | (RBJ, RBJ+1,.…, RBJ+39)Note 1 |
| Note 1: RBs containing SSB can be configured in any frequency location within the associated bandwidth part except the RBs for allowed synchronization raster defined in TS 38.104 [13].  Note 2: These values have been derived from other parameters for information purposes (as per TS 38.213 [3]). They are not settable parameters themselves. | |

<End of Change 1>

<Start of Change 2>

A.4.6.1.9 EN-DC event triggered reporting tests without gap under non-DRX with NCD-SSB

A.4.6.1.9.1 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 when NCD-SSB is configured in clause 9.2.5.1 and 9.2.5.2.

A.4.6.1.9.2 Test parameters

Three cells are deployed in the test, which are E-UTRAN PCell (Cell 1), FR1 PSCell (Cell 2) and a FR1 neighbour cell (Cell 3) on the same frequency as the PSCell. The test parameters for PSCell are given in Table A.4.6.1.9.2-1, A.4.6.1.9.2-2, A.4.6.1.9.2-3 below and the test parameters and applicability for the E-UTRAN cell are defined in A.3.7.2. The CD-SSB is configured outside active DL BWP and NCD-SSB is configured fully within active DL BWP of FR1 PSCell. In the measurement control information, a measurement object is configured for the frequency of the PSCell, 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 3.

**Table A.4.6.1.9.2-1: Supported test configurations**

|  |  |
| --- | --- |
| **Config** | **Description** |
| 1 | LTE FDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | LTE FDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | LTE FDD, NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| 4 | LTE TDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 5 | LTE TDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 6 | LTE TDD, 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 Cell 3 has the same SCS, BW and duplex mode as NR serving Cell 2 | |

**Table A.4.6.1.9.2-2: General test parameters for EN-DC intra-frequency event triggered reporting without gap for PSCell in FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test** | **Value** | **Comment** |
|  |  | **configuration** |  |  |
| Active cell |  | 1, 2, 3, 4, 5, 6 | E-UTRAN Cell 1 and NR Cell 2 |  |
| Neighbour cell |  | 1, 2, 3, 4, 5, 6 | NR Cell 3 | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3, 4, 5, 6 | 1: Cell 1  2: Cell 2 and Cell 3 |  |
| SSB configuration |  | 1, 4 | SSB.1 FR1 |  |
|  |  | 2, 5 | SSB.1 FR1 |  |
|  |  | 3, 6 | SSB.2 FR1 |  |
| NCD-SSB configuration |  | 1, 4 | SSB.9 FR1 |  |
|  |  | 2, 5 | SSB.9 FR1 |  |
|  |  | 3, 6 | SSB.10 FR1 |  |
| SMTC configuration for NCD-SSB |  | 1, 4 | SMTC.11 |  |
|  |  | 2, 5 | SMTC.10 |  |
|  |  | 3, 6 | SMTC.10 |  |
| A3-Offset | dB | 1, 2, 3, 4, 5, 6 | -4.5 |  |
| CP length |  | 1, 2, 3, 4, 5, 6 | Normal |  |
| Hysteresis | dB | 1, 2, 3, 4, 5, 6 | 0 |  |
| Time To Trigger | s | 1, 2, 3, 4, 5, 6 | 0 |  |
| Filter coefficient |  | 1, 2, 3, 4, 5, 6 | 0 | L3 filtering is not used |
| DRX |  | 1, 2, 3, 4, 5, 6 | N/A | OFF |
| Time offset between PCell and PSCell |  | 1, 2, 3, 4, 5, 6 | 3 μs | Synchronous EN-DC |
| Time offset between serving and neighbour cells |  | 1, 4 | 3 ms | Asynchronous cells.  The timing of Cell 3 is 3ms later than the timing of Cell 2. |
|  |  | 2, 5 | 3 μs | Synchronous cells |
|  |  | 3, 6 | 3 μs | Synchronous cells |
| T1 | s | 1, 2, 3, 4, 5, 6 | 5 |  |
| T2 | s | 1, 2, 3, 4, 5, 6 | 5 |  |

**Table A.4.6.1.9.2-3: NR Cell specific test parameters for EN-DC intra-frequency event triggered reporting without gap for PSCell in FR1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test** | **Cell 2** | | **Cell 3** | |
|  |  | **configuration** | **T1** | **T2** | **T1** | **T2** |
| TDD |  | 1, 4 | N/A | | N/A | |
| configuration |  | 2, 5 | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3, 6 | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC |  | 1, 4 | SR.1.1 FDD | | N/A | |
| configuration |  | 2, 5 | SR.1.1 TDD | |  | |
|  |  | 3, 6 | SR.2.1 TDD | |  | |
| RMSI CORESET |  | 1, 4 | CR.1.1 FDD | | N/A | |
| RMC |  | 2, 5 | CR.1.1 TDD | | N/A | |
| configuration |  | 3, 6 | CR.2.1 TDD | | N/A | |
| Dedicated |  | 1, 4 | CCR.1.1 FDD | | N/A | |
| CORESET RMC |  | 2, 5 | CCR.1.1 TDD | | N/A | |
| configuration |  | 3, 6 | CCR.2.1 TDD | | N/A | |
| OCNG Patterns |  | 1, 2, 3, 4, 5, 6 | OP.1 | | OP.1 | |
| TRS |  | 1, 4 | TRS.1.1 FDD | | N/A | |
| configuration |  | 2, 5 | TRS.1.1 TDD | | N/A | |
|  |  | 3, 6 | TRS.1.2 TDD | | N/A | |
| Initial BWP configuration |  | 1, 2, 3, 4, 5, 6 | DLBWP.0.1 ULBWP.0.1 | | DLBWP.0.1 ULBWP.0.1 | |
| Active DL BWP configuration |  | 1, 2, 3, 4, 5, 6 | DLBWP.1.1 | | DLBWP.1.1 | |
| Active UL BWP configuration |  | 1, 2, 3, 4, 5, 6 | ULBWP.1.1 | | ULBWP.1.1 | |
| RLM-RS |  | 1, 2, 3, 4, 5, 6 | SSB | | SSB | |
| Note 2 | dBm/SCS | 1, 4 | -98 | | | |
|  |  | 2, 5 | -98 | | | |
|  |  | 3, 6 | -95 | | | |
| Note 2 | dBm/15 kHz | 1, 4 | -98 | | | |
|  |  | 2, 5 |  | | | |
|  |  | 3, 6 |  | | | |
|  | dB | 1, 4 | 4 | -1.46 | -Infinity | -1.46 |
|  |  | 2, 5 |  |  |  |  |
|  |  | 3, 6 |  |  |  |  |
|  | dB | 1, 4 | 4 | 4 | -Infinity | 4 |
|  |  | 2, 5 |  |  |  |  |
|  |  | 3, 6 |  |  |  |  |
| SS-RSRP Note 3 | dBm/SCS kHz | 1, 4 | -94 | -94 | -Infinity | -94 |
|  |  | 2, 5 | -94 | -94 | -Infinity | -94 |
|  |  | 3, 6 | -91 | -91 | -Infinity | -91 |
| Io | dBm/9.36 MHz | 1, 4 | -64.60 | -62.25 | -64.60 | -62.25 |
|  | dBm/9.36 MHz | 2, 5 | -64.60 | -62.25 | -64.60 | -62.25 |
|  | dBm/38.16 MHz | 3, 6 | -58.50 | -56.16 | -58.50 | -56.16 |
| Propagation Condition |  | 1, 2, 3, 4, 5, 6 | 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.4.6.1.9.3 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 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%.

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 Change 2>

<Start of Change 3>

A.5.6.1.6 EN-DC event triggered reporting test without gap under non-DRX

A.5.6.1.6.1 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 9.2.5.1 and 9.2.5.2. Supported test configurations are shown in table A.5.6.1.6.1-1.

**Table A.5.6.1. X.1-1: supported test configurations**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | LTE FDD, 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | LTE TDD, 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 3 | LTE FDD, 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 4 | LTE TDD, 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 three cells in the test, E-UTRAN PCell (Cell 1), FR2 PSCell (Cell 2) and a FR2 neighbour cell (Cell 3) on the same frequency as the PSCell. The test parameters and applicability for Cell 1 are defined in A.3.7.2. The test parameters for the Cell 2 and Cell 3 are given in Table A.5.6.1.6.1-2, A.5.6.1.6.1-3 and A.5.6.1.6.1-4 below.

The CD-SSB is configured outside active DL BWP and NCD-SSB is configured fully within active DL BWP of FR2 PSCell. In the measurement control information, a measurement object is configured for the frequency of the PSCell, 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 3.

**Table A.5.6.1.6.1-2: General test parameters for intra-frequency event triggered reporting for EN-DC with TDD PSCell in FR2 without gap without DRX**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Config** | **Value** | **Comment** |
| Active cell |  | 1~4 | E-UTRAN PCell (Cell 1)  PSCell (Cell 2) |  |
| Neighbour cell |  | 1~4 | Cell 3 | Cell to be identified. |
| RF Channel Number |  | 1~4 | 1: Cell 1  2: Cell 2 and Cell 3 | One TDD carrier frequency is used for the NR cells and one TDD or FDD carrier frequency is used for E-UTRAN cell. |
| SMTC configuration |  | 1~4 | SMTC.10 |  |
| A3-Offset | dB | 1~4 | -11 |  |
| CP length |  | 1~4 | Normal |  |
| Hysteresis | dB | 1~4 | 0 |  |
| Time To Trigger | s | 1~4 | 0 |  |
| Filter coefficient |  | 1~4 | 0 | L3 filtering is not used |
| DRX |  | 1~4 | OFF |  |
| Time offset between Cell 1 and Cell 2 |  | 1~4 | 3 μs | Synchronous EN-DC |
| Time offset between Cell 2 and Cell 3 |  | 1~4 | 3 μs | Synchronous cells |
| T1 | s | 1~4 | 5 |  |
| T2 | s | 1~4 | 5 |  |

**Table A.5.6.1.6.1-3: NR Cell specific test parameters for intra-frequency event triggered reporting for EN-DC with TDD PSCell in FR2 without gap without DRX**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Config** | **Cell 2** | | **Cell 3** | |
|  |  |  | **T1** | **T2** | **T1** | **T2** |
| TDD configuration |  | 1~4 | TDDConf.3.1 | | TDDConf.3.1 | |
| BWchannel | MHz | 1~4 | 100: NRB,c = 66 | | 100: NRB,c = 66 | |
| Data RBs allocated |  | 1,2 | 24 | | 24 | |
| 3,4 | 48 | | 48 | |
| Intial BWP configuration |  | 1~4 | DLBWP.0.1  ULBWP.0.1 | | DLBWP.0.1  ULBWP.0.1 | |
| Active DL BWP configuration |  | 1~4 | DLBWP.1.1 | | DLBWP.1.1 | |
| Active UL BWP configuration |  | 1~4 | ULBWP.1.1 | | ULBWP.1.1 | |
| RLM-RS |  | 1~4 | SSB | | SSB | |
| PDSCH RMC configuration |  | 1,2 | SR.3.2 TDD | | N/A | |
| 3,4 | SR.3.3 TDD | |
| RMSI CORESET RMC configuration |  | 1,2 | CR.3.1 TDD | | N/A | |
| 3,4 | CR.3.2 TDD | | N/A | |
| Dedicated CORESET RMC configuration |  | 1,2 | CCR.3.1 TDD | | N/A | |
| 3,4 | CCR.3.7 TDD | | N/A | |
| PDSCH/PDCCH subcarrier spacing | kHz | 1~4 | 120 | | 120 | |
| OCNG Patterns |  | 1~4 | OP.5 | | N/A | |
| TRS configuration |  | 1~4 | TRS.2.1 TDD | | N/A | |
| PDSCH/PDCCH TCI state |  | 1~4 | TCI.State.2 | | N/A | |
| cellIndividualOffset | dB | 1~4 | N/A | | 16 | |
| CD-SSB configuration |  | 1, 2 | SSB.3 FR2 | | SSB.7 FR2 | |
|  |  | 3, 4 | SSB.4 FR2 | | SSB.8 FR2 | |
| NCD-SSB configuration |  | 1, 2 | SSB.26 FR2 | | SSB.26 FR2 | |
|  |  | 3, 4 | SSB.27 FR2 | | SSB.27 FR2 | |
| Propagation Condition |  | 1~4 | No external noise (Note 1) | | No external noise (Note 1) | |
| Note 1: The downlink connection between the System Simulator and the UE is without Additive White Gaussian Noise, and has no fading or multipath effects as specified in TS 38.521-2 B.0 [40]. | | | | | | |

**Table A.5.6.1.6.1-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting for EN-DC with TDD PSCell in FR2 without gap without DRX**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Config** | **Cell 2** | | **Cell 3** | |
|  |  |  | **T1** | **T2** | **T1** | **T2** |
| AoA setup |  | 1~4 | Setup 3 defined in A.3.15.3 | | | |
|  |  |  | **AoA1** | | **AoA2** | |
| Assumption for UE beamsNote 4 |  | 1~4 | Rough | | Rough | |
|  | dBm/SCS | 1, 2 | -89 | -89 | -Infinity | -89 |
|  |  | 3, 4 | -86 | -86 | -Infinity | -86 |
| BB Note 5 | dB | 1~4 | -0.12 | -0.12 | -Infinity | -0.12 |
| SSB\_RP | dBm/SCS | 1, 2 | -89 | -89 | -Infinity | -89 |
|  |  | 3, 4 | -86 | -86 | -Infinity | -86 |
|  | dBm/95.04MHz | 1,2 | -64.41 | -64.41 | -Infinity | -64.41 |
| 3,4 | -61.41 | -61.41 | -Infinity | -61.41 |
| Time multiplexing of the downlink transmissions from each AoA | | 1~4 | Defined in Figure A.5.6.1.1.1-1 | | | |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.  Note 2: 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. | | | | | | |

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**Figure A.5.6.1.1.1-1: Time multiplexed downlink transmissions (Config 1,2 example)**

A.5.6.1.6.2 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

- 9.6s for a UE supporting power class 1,

- 5.76s 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 Change 3>

<Start of Change 4>

A.7.6.1.13 SA event triggered reporting test without gap under non-DRX with NCD-SSB

A.7.6.1.13.1 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 when NCD-SSB is configured in clause 9.2.5.1 and 9.2.5.2. Supported test configurations are shown in table A.7.6.1.13.1-1.

**Table A.7.6.1.13.1-1: 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.7.6.1.13.1-2, A.7.6.1.13.1-3 and A.7.6.1.13.1-4 below.

The CD-SSB is configured outside active DL BWP and NCD-SSB is configured fully within active DL BWP of FR1 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.7.6.1.13.1-2: General test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap 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. |
| SMTC configuration for CD-SSB |  | 1, 2 | SMTC.1 |  |
| SMTC configuration for NCD-SSB |  | 1, 2 | SMTC.10 |  |
| 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.7.6.1.13.1-3: NR Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap 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.1.2 | |
| Active UL BWP configuration |  | 1, 2 | ULBWP.1.2 | | ULBWP.1.2 | |
| RLM-RS |  | 1, 2 | SSB | | 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 | | N/A | |
| 2 | CR.3.2 TDD | | N/A | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.3.1 TDD | | N/A | |
| 2 | CCR.3.7 TDD | | N/A | |
| PDSCH/PDCCH TCI states |  | 1, 2 | TCI.State.0 | | 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 | |
| CD-SSB |  | 1 | SSB.3 FR2 | | SSB.3 FR2 | |
|  | 2 | SSB.4 FR2 | | SSB.4 FR2 | |
| NCD-SSB |  | 1 | SSB.26 FR2 | | SSB.26 FR2 | |
|  | 2 | SSB.27 FR2 | | SSB.27 FR2 | |
| Propagation Condition |  | 1, 2 | AWGN | | AWGN | |
| Note 1: The starting PRB index of the CD-SSB can be any possible PRB index of the RF channel BW occurring after the last PRB of the DL active BWP.  Note 2: The starting PRB index of the NCD-SSB can be the same as the starting PRB index for DL active BWP. | | | | | | |

**Table A.7.6.1.13.1-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap 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, 2 | Defined in Figure A.7.6.1.13.1-1 | | | | |
| 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. | | | | | | | |

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**Figure A.7.6.1.13.1-1: Time multiplexed downlink transmissions (Config 1 example)**

A.7.6.1.13.2 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

- 9.6s for a UE supporting power class 1,

- 5.76s 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 Change 4>

<End of Change 5>

<End of Change 5>