**3GPP TSG-RAN4 Meeting #109 *R4-2321485***

**Chicago, US, 13 – 17 November, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **3902** | **rev** | 1 | **Current version:** | **17.11.0** |  |
|  | | | | | | | | |
| *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:*** | Correction of requirements and parameters for RedCap testing | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_redcap-Perf | | | | |  | ***Date:*** | | | 2023-11-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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:*** | | Included the changes from R4-2319115, and R4-2319119   1. Some conformance requirements contain square brackets 2. R4-2314467 removed irrelevant sub-test(s) and phrases due to sub-test(s) defined for UE supporting per-FR gap (*independentGapConfig*) is not relevant xas there is not FR2 cell at all in the sub-test(s). Corresponding RedCap test cases also need that correction. 3. A.16.6.2.5 and A.16.6.2.6 are missing 4. Cell specific test parameters for FR2 RedCap Cell reselection test cases need correction. 5. MG and SMTC configuration is incompatiblen the gap doesn’t cover target cell SMTC 6. Typos exist 7. RAN1 had reached following agreement related to transmissions of NCD-SSB for TDD:  |  | | --- | | Agreement:   * For RedCap UE in TDD, the NW ensures that the NCD-SSB time domain location is a subset of the time domain location of CD-SSB |   In current test cases concerning NCD-SSB with TDD configurations, there is an offset between NCD-SSB and CD-SSB transmission of 5 ms which is modified to 0 to align with this RAN1 agreement. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Removed square brackets in the requirements 2. Removed irrelevant sub-tests and phrases. 3. A.16.6.2.5 and A.16.6.2.6 were defined 4. Cell specific test parameters has been corrected. 5. New SMTC with 10 ms offset added to Annex A.3.11A 6. Typos corrected | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test cases might not be correctly implemented by RAN5. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.16.6.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**----------------------START OF CHANGE 1----------------------------**

### 9.3B.4 Inter-frequency measurement with measurement gaps

When measurement gaps are provided, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable inter frequency cell within Tidentify\_inter\_without\_index\_RedCap if UE is not indicated to report SSB based RRM measurement result with the associated SSB index (*reportQuantityRsIndexes* or *maxNrofRSIndexesToReport* is not configured). Otherwise UE shall be able to identify a new detectable inter frequency cell within Tidentify\_inter\_with\_index\_RedCap. The UE shall be able to identify a new detectable inter frequency SS block of an already detected cell within Tidentify\_inter\_without\_index\_RedCap.

Tidentify\_inter\_without\_index\_RedCap = (TPSS/SSS\_sync\_inter\_RedCap + T SSB\_measurement\_period\_inter\_RedCap) ms

Tidentify\_inter\_with\_index\_RedCap = (TPSS/SSS\_sync\_inter\_RedCap + T SSB\_measurement\_period\_inter\_RedCap + TSSB\_time\_index\_inter\_RedCap) ms

Where:

TPSS/SSS\_sync\_inter\_RedCap: it is the time period used in PSS/SSS detection given in table 9.3B.4-1, table 9.3B.4-2, table 9.3B.4-3.

TSSB\_time\_index\_inter\_RedCap: it is the time period used to acquire the index of the SSB being measured given in table 9.3B.4-4, table 9.3B.4-5, table 9.3B.4-6.

TSSB\_measurement\_period\_inter\_RedCap: equal to a measurement period of SSB based measurement given in table 9.3B.5-1, table 9.3B.5-2, table 9.3B.5-3.

For 2 Rx RedCap UE:

Mpss/sss\_sync\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, Mpss/sss\_sync\_inter\_RedCap = 64 samples. For a UE supporting FR2 power class 2, 3, 4 or 7, Mpss/sss\_sync\_inter\_RedCap = 40 samples.

MSSB\_index\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, MSSB\_index\_inter\_RedCap = 40 samples. For a UE supporting FR2 power class 2, 3,4 or 7, MSSB\_index\_inter\_RedCap = 24 samples.

Mmeas\_period\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, Mmeas\_period\_inter\_RedCap =64 samples. For a UE supporting FR2 power class 2, 3, 4 or 7, Mmeas\_period\_inter\_RedCap =40 samples.

CSSFinter\_RedCap: it is a carrier specific scaling factor and is determined according to CSSFwithin\_gap\_RedCap,i in clause 9.1A.5.2 for measurement conducted within measurement gaps.

Table 9.3B.4-1: Time period for PSS/SSS detection (Frequency range FR1) for 2Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TPSS/SSS\_sync\_inter\_RedCap** |
| No DRX | Max(600ms, 8 × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(600ms, Ceil(8\*1.5) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | 8 × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

Table 9.3B.4-2: Time period for PSS/SSS detection, (Frequency range FR2) for 2Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TPSS/SSS\_sync\_inter\_RedCap** |
| No DRX | Max(600ms, Mpss/sss\_sync\_inter\_RedCap × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(600ms, (1.5 × Mpss/sss\_sync\_inter\_RedCap) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | Mpss/sss\_sync\_inter\_RedCap × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

Table 9.3B.4-3: Time period for PSS/SSS detection (Frequency range FR1) for 1Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TPSS/SSS\_sync\_inter\_RedCap** |
| No DRX | Max(600ms, 10 × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(600ms, Ceil(10 \*1.5) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | 10 × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

Table 9.3B.4-4: Time period for time index detection (Frequency range FR1) for 2Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TSSB\_time\_index\_inter\_RedCap** |
| No DRX | Max(120ms, 3 × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(120ms, Ceil(3 × 1.5) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | 3 × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

Table 9.3B.4-5: Time period for time index detection (Frequency range FR2) for 2Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TSSB\_time\_index\_inter\_RedCap** |
| No DRX | Max(200ms, MSSB\_index\_inter\_RedCap × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(200ms, (1.5 × MSSB\_index\_inter\_RedCap) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | MSSB\_index\_inter\_RedCap × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

Table 9.3B.4-6: Time period for time index detection (Frequency range FR1) for 1Rx RedCap UE

|  |  |
| --- | --- |
| **Condition NOTE1** | **TSSB\_time\_index\_inter\_RedCap** |
| No DRX | Max(160ms, 6 × Max(MGRP, SMTC period)) × CSSFinter\_RedCap |
| DRX cycle ≤ 320ms | Max(160ms, Ceil(6 × 1.5) × Max(MGRP, SMTC period, DRX cycle)) × CSSFinter\_RedCap |
| DRX cycle > 320ms | 6 × DRX cycle × CSSFinter\_RedCap |
| NOTE 1: DRX or non DRX requirements apply according to the conditions described in clause 3.6.1 | |

**------UNCHANGED CLAUSES SKIPPED------**

### 9.3B.7 Inter frequency measurements without measurement gaps

#### 9.3B.7.1 Inter frequency Cell identification

If UE supports *interFrequencyMeas-NoGap-r16* and the flag *interFrequencyConfig-NoGap-r16* is configured by the Network, UE shall be able to identify a new detectable inter frequency cell within Tidentify\_inter\_without\_index\_RedCap if UE is not indicated to report SSB based RRM measurement result with the associated SSB index (*reportQuantityRsIndexes* or *maxNrofRSIndexesToReport* is not configured). Otherwise UE shall be able to identify a new detectable inter frequency cell within Tidentify\_inter\_with\_index\_RedCap. The UE shall be able to identify a new detectable inter frequency SS block of an already detected cell within Tidentify\_inter\_without\_index\_RedCap. It is assumed that when UE performs inter-frequency measurements without measurement gaps in a TDD bands on FR1 and FR2, the following conditions are met:

- SFN and frame boundary across serving cell and inter-frequency neighbor cells is aligned, and

- the timing of SSBs across serving cell and inter-frequency neighbor cells are aligned

Tidentify\_inter\_without\_index\_RedCap = (TPSS/SSS\_sync\_inter\_RedCap + T SSB\_measurement\_period\_inter\_RedCap) ms

Tidentify\_inter\_with\_index\_RedCap = (TPSS/SSS\_sync\_inter\_RedCap + T SSB\_measurement\_period\_inter\_RedCap + TSSB\_time\_index\_inter\_RedCap) ms

Where:

TPSS/SSS\_sync\_inter\_RedCap: it is the time period used in PSS/SSS detection given in table 9.3B.7.1-1, table 9.3B.7.1-2 and table 9.3B.7.1-3.

TSSB\_time\_index\_inter\_RedCap: it is the time period used to acquire the index of the SSB being measured given in table 9.3B.7.1-4 and table 9.3B.7.1-5.

T SSB\_measurement\_period\_inter\_RedCap: equal to a measurement period of SSB based measurement given in table 9.3B.7.2-1, table 9.3B.7.2-2 and table 9.3B.7.2-3.

CSSFinter\_RedCap: it is a carrier specific scaling factor and is determined according to CSSFoutside\_gap\_RedCap,i in clause 9.1A.5.1 for measurement conducted outside measurement gaps, i.e. when interfrequency SMTC is fully non overlapping or partially overlapping with measurement gaps or according to CSSFwithin\_gap\_RedCap,i in clause 9.1A.5.2 for measurement conducted within measurement gaps, i.e. when interfrequency SMTC is fully overlapping with measurement gaps.

Mpss/sss\_sync\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, Mpss/sss\_sync\_inter\_RedCap = 40 samples. For a UE supporting FR2 power class 2, 3, 4 or 7, Mpss/sss\_sync\_inter\_RedCap = 24 samples.

MSSB\_index\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, MSSB\_index\_inter\_RedCap = 40 samples. For a UE supporting FR2 power class 2, 3, 4 or 7, MSSB\_index\_inter\_RedCap = 24 samples.

Mmeas\_period\_inter\_RedCap: For a UE supporting FR2 power class 1 or 5, Mmeas\_period\_inter\_RedCap =40 samples. For a UE supporting FR2 power class 2, 3, 4 or 7, Mmeas\_period\_inter\_RedCap =24 samples.

When inter-frequency SMTC is fully non overlapping with measurement gaps or inter-frequency SMTC is fully overlapping with MGs, Kp=1.

When inter-frequency SMTC is partially overlapping with measurement gaps, Kp = 1/(1- (SMTC period /MGRP)), where SMTC period < MGRP.

For FR2,

Klayer1\_measurement =1,

- if all of the reference signals configured for RLM, BFD, CBD or L1-RSRP for beam reporting on any FR2 serving frequency in the same band outside measurement gap are not fully overlapped by inter-frequency SMTC occasions, or

- if all of the reference signal configured for RLM, BFD, CBD or L1-RSRP for beam reporting on any FR2 serving frequency in the same band outside measurement gap and fully-overlapped by inter-frequency SMTC occasions are not overlapped with any of the SSB symbols and the RSSI symbols, and 1 symbol before each consecutive SSB symbols and the RSSI symbols, and 1 symbol after each consecutive SSB symbols and the RSSI symbols, given that *SSB-ToMeasure* and *SS-RSSI-Measurement* are configured, where SSB symbols are indicated by *SSB-ToMeasure* and RSSI symbols are indicated by *SS-RSSI-Measurement*;

Klayer1\_measurement=1.5, otherwise.

If the above-mentioned reference signal configured for L1-RSRP measurement is aperiodic CSI-RS resource, longer cell identification delay would be expected.

Table 9.3B.7.1-1: Time period for PSS/SSS detection (FR1) for 2Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | TPSS/SSS\_sync\_inter\_RedCap |
| No DRX | max( 600ms, ceil( 5 x Kp) x SMTC period )Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max( 600ms, ceil(1.5x 5 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil(5 x Kp) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.1-2: Time period for PSS/SSS detection (FR2) for 2Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | TPSS/SSS\_sync\_inter\_RedCap |
| No DRX | max(600ms, ceil(Mpss/sss\_sync\_inter\_RedCap x Kp x Klayer1\_measurement)x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(600ms, ceil(1.5 x Mpss/sss\_sync\_inter\_RedCap x Kp x Klayer1\_measurement)x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil(Mpss/sss\_sync\_inter\_RedCap x Kp x Klayer1\_measurement) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.1-3: Time period for PSS/SSS detection (FR1) for 1Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | TPSS/SSS\_sync\_inter\_RedCap |
| No DRX | max( 600ms, ceil( 7 x Kp) x SMTC period )Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max( 600ms, ceil(1.5x 7 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil(7 x Kp) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.1-4: Time period for time index detection (FR1) for 2Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | TSSB\_time\_index\_inter\_RedCap |
| No DRX | max(120ms, ceil( 3 x Kp )x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(120ms, ceil (1.5 x 3 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | Ceil(3 x Kp) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.1-5: Time period for time index detection (FR1) for 1Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | TSSB\_time\_index\_inter\_RedCap |
| No DRX | max(160ms, ceil( 6 x Kp )x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(160ms, ceil (1.5 x 6 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | Ceil(6 x Kp) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

#### 9.3B.7.2 Measurement period

The RedCap UE physical layer shall be capable of reporting SS-RSRP, SS-RSRQ and SS-SINR measurements to higher layers with measurement accuracy as specified in clauses 10.1A.4, 10.1A.5, 10.1A.8, 10.1A.9, 10.1A.12 and 10.1A.13, respectively, as shown in table 9.3B.7.2-1 and 9.3B.7.2-2 for 2Rx RedCap and table 9.3B.7.2-3 for 1Rx RedCap respectively, if UE supports inter-frequency measurement without measurement gaps:

Table 9.3B.7.2-1: Measurement period for inter-frequency measurements without gaps ((FR1) for 2Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | T SSB\_measurement\_period\_inter |
| No DRX | max(200ms, ceil( 5 x Kp) x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(200ms, ceil(1.5x 5 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil( 5 x Kp ) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.2-2: Measurement period for inter-frequency measurements without gaps (FR2) for 2Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | T SSB\_measurement\_period\_inter\_RedCap |
| No DRX | max(400ms, ceil(Mmeas\_period\_inter\_RedCap x Kp x Klayer1\_measurement) x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(400ms, ceil(1.5x Mmeas\_period\_inter\_RedCap x Kp x Klayer1\_measurement) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil(Mmeas\_period\_inter\_RedCap xKp x Klayer1\_measurement) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

Table 9.3B.7.2-3: Measurement period for inter-frequency measurements without gaps ((FR1) for 1Rx RedCap UE

|  |  |
| --- | --- |
| DRX cycle | T SSB\_measurement\_period\_inter |
| No DRX | max(200ms, ceil( 5 x Kp) x SMTC period)Note 1 x CSSFinter\_RedCap |
| DRX cycle≤ 320ms | max(200ms, ceil(1.5x 5 x Kp) x max(SMTC period,DRX cycle)) x CSSFinter\_RedCap |
| DRX cycle>320ms | ceil( 5 x Kp ) x DRX cycle x CSSFinter\_RedCap |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identified | |

**----------------------END OF CHANGE 1----------------------------**

**----------------------START OF CHANGE 2----------------------------**

### A.16.6.2 Inter-frequency Measurements

#### A.16.6.2.1 SA event triggered reporting tests for FR1 without SSB time index detection when DRX is used for 1 Rx UE

##### A.16.6.2.1.1 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 SA inter-frequency NR cell search requirements in clause 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.1.1-1, A.16.6.21.1-2 and A.16.6.2.1.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.1.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

UE needs to be provided with new Timing Advance Command MAC control element at least once during each time alignment timer period to maintain uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.1.1-1: 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 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.1.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | | | Comment |
| Test 1 | | Test 2 | |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | | | |  |
| A3-Offset | dB | Config 1,2,3,4 | -6 | | | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | | | |  |
| CP length |  | Config 1,2,3,4 | Normal | | | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | | | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | DRX.1 | | DRX. 7 | | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 | | | |  |
| T2 | s | Config 1,2,3,4 | 1.1 | | 12 | |  |

Table A.16.6.2.1.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | | Cell 2 | |
|  | |  |  | T1 | T2 | | | T1 | T2 | |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | | 2 | | |
| Duplex mode | |  | Config 1 | FDD | | | | | | |
|  | |  | Config 2,3 | TDD | | | | | | |
| Config 4 | HD-FDD | | | | | | |
| TDD configuration | |  | Config 1 | Not Applicable | | | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3,4 | DLBWP.0.1 | | | | NA | | |
|  | Initial UL BWP |  | Config 1, 2, 3,4 | ULBWP.0.1 | | | | NA | | |
|  | Dedicated DL BWP |  | Config 1, 2, 3,4 | DLBWP.1.1 | | | | NA | | |
|  | Dedicated UL BWP |  | Config 1, 2, 3,4 | ULBWP.1.1 | | | | NA | | |
| TRS configuration | |  | Config 1,4 | 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 1,2,3,4 | OP.1 | | | | OP.1 | | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | | | NA | | |
|  | |  | Config 2 | SR.1.1 TDD | | | | NA | | |
|  | |  | Config 3 | SR2.1 TDD | | | | NA | | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | | | NA | | |
|  | |  | Config 2 | CR.1.1 TDD | | | | NA | | |
|  | |  | Config 3 | CR.2.1 TDD | | | | NA | | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | | | NA | | |
|  | Config 2 | CCR.1.1 TDD | | | | NA | | |
|  | Config 3 | CCR.2.1 TDD | | | | NA | | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | | | SSB.5 FR1 | | |
|  | |  | Config 2 | SSB.1 FR1 | | | | SSB.5 FR1 | | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | | SSB.3 RedCap FR1 | | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | | SMTC.5 | | |
|  | |  | Config 2, 3 | SMTC.1 | | | | SMTC.4 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 15 | | | | | | |
|  | |  | Config 3 | 30 | | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 | Config 1,2,3,4 | -98 | | -98 | | | | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | | | | |
|  | |  | Config 3 | -95 | | -95 | | | | |
| SSB\_RP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | | -Infinity | -91 | |
|  | |  | Config 3 | -91 | -91 | | | -Infinity | -88 | |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | | -Infinity | 7 | |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | | -Infinity | 7 | |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | | -70.05 | -62.2 | |
|  | | dBm/18.36 MHz | Config 3 | -61.66 | -61.66 | | | -67.11 | -59.32 | |
| Propagation Condition | |  | Config 1,2,3,4 | 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: SSB\_RP 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. | | | | | | | | | | |

Table A.16.6.2.1.1-4: DRX-Configuration for SA inter-frequency event triggered reporting without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Field | Test1&3 | Test2&4 | Comment |
|  | Value | Value |  |
| drx-onDurationTimer | ms1 | ms1 | As specified in clause 6.3.2 in TS 38.331 [2] |
| drx-InactivityTimer | ms1 | ms1 |  |
| drx-RetransmissionTimerDL | sl1 | sl1 |  |
| drx-RetransmissionTimerUL | sl1 | sl1 |  |
| drx-LongCycleStartOffset | ms40 | Ms640 |  |
| shortDRX | disable | disable |  |

Table A.16.6.2.1.1-5: *TimeAlignmentTimer* -Configuration SA inter-frequency event triggered reporting without SSB time index detection

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| TimeAlignmentTimer | ms500 | As specified in clause 6.3.2 in TS 38.331 [2] |

##### A.16.6.2.1.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1080 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%.

In test 2 with per-UE gap, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 11520 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%.

In test 1and 2 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.16.6.2.2 SA event triggered reporting tests for FR1 without SSB time index detection when DRX is used for 2 Rx UE

##### A.16.6.2.2.1 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 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.22.2.1-1, A.16.6.2.2.1-2 and A.16.6.2.2.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.2.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

UE needs to be provided with new Timing Advance Command MAC control element at least once during each time alignment timer period to maintain uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.2.1-1: 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 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.2.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | | | Comment |
| Test 1 | | Test 2 | |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | | | |  |
| A3-Offset | dB | Config 1,2,3,4 | -6 | | | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | | | |  |
| CP length |  | Config 1,2,3,4 | Normal | | | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | | | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | DRX.1 | | DRX. 7 | | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 | | | |  |
| T2 | s | Config 1,2,3,4 | 1.1 | | 11 | |  |

Table A.16.6.2.2.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | | Cell 2 | |
|  | |  |  | T1 | T2 | | | T1 | T2 | |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | | 2 | | |
| Duplex mode | |  | Config 1 | FDD | | | | | | |
|  | |  | Config 2,3 | TDD | | | | | | |
| Config 4 | HD-FDD | | | | | | |
| TDD configuration | |  | Config 1 | Not Applicable | | | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3,4 | DLBWP.0.1 | | | | NA | | |
|  | Initial UL BWP |  | Config 1, 2, 3,4 | ULBWP.0.1 | | | | NA | | |
|  | Dedicated DL BWP |  |  | DLBWP.1.1 | | | | NA | | |
|  | Dedicated UL BWP |  |  | ULBWP.1.1 | | | | NA | | |
| TRS configuration | |  | Config 1,4 | 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 1,2,3,4 | OP.1 | | | | OP.1 | | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | | | NA | | |
|  | |  | Config 2 | SR.1.1 TDD | | | | NA | | |
|  | |  | Config 3 | SR2.1 TDD | | | | NA | | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | | | NA | | |
|  | |  | Config 2 | CR.1.1 TDD | | | | NA | | |
|  | |  | Config 3 | CR.2.1 TDD | | | | NA | | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | | | NA | | |
|  | Config 2 | CCR.1.1 TDD | | | | NA | | |
|  | Config 3 | CCR.2.1 TDD | | | | NA | | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | | | SSB.5 FR1 | | |
|  | |  | Config 2 | SSB.1 FR1 | | | | SSB.5 FR1 | | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | | SSB.3 RedCap FR1 | | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | | SMTC.5 | | |
|  | |  | Config 2, 3 | SMTC.1 | | | | SMTC.4 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2, 4 | 15 | | | | | | |
|  | |  | Config 3 | 30 | | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3, 4 | 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 | Config 1,2,3 | -98 | | -98 | | | | |
| Note2 | | dBm/SCS | Config 1,2 | -98 | | -98 | | | | |
|  | |  | Config 3 | -95 | | -95 | | | | |
| SSB\_RRP 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 | -62.2 | |
|  | | 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: SSB\_RP 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. | | | | | | | | | | |

Table A.16.6.2.2.1-4: DRX-Configuration for SA inter-frequency event triggered reporting without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Field | Test 1 | Test 2 | Comment |
|  | Value | Value |  |
| drx-onDurationTimer | ms1 | ms1 | As specified in clause 6.3.2 in TS 38.331 [2] |
| drx-InactivityTimer | ms1 | ms1 |  |
| drx-RetransmissionTimerDL | sl1 | sl1 |  |
| drx-RetransmissionTimerUL | sl1 | sl1 |  |
| drx-LongCycleStartOffset | ms40 | Ms640 |  |
| shortDRX | disable | disable |  |

Table A.16.6.2.2.1-5: *TimeAlignmentTimer* -Configuration SA inter-frequency event triggered reporting without SSB time index detection

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| TimeAlignmentTimer | ms500 | As specified in clause 6.3.2 in TS 38.331 [2] |

##### A.16.6.2.2.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1080 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%.

In test 2 with per-UE gap, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 10240 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%.

In test 1 and 2 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.16.6.2.3 SA event triggered reporting tests for FR1 without SSB time index detection when DRX is not used for 1 Rx UE

##### A.16.6.2.3.1 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 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.3.1-1, A.16.6.2.3.1-2 and A.16.6.2.3.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.3.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

Table A.16.6.2.3.1-1: 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.3.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | |  |
| SMTC-SSB parameters |  | Config 1,2,4 | SSB.1 FR1 | | As specified in clause A.3.10.1 |
|  |  |  |  | |  |
|  |  | Config 3 | SSB.1 RedCap FR1 | | As specified in clause A.3.10.1 |
| A3-Offset | dB | Config 1,2,3,4 | -6 | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | |  |
| CP length |  | Config 1,2,3,4 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | OFF | | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 | |  |
| T2 | s | Config 1,2,3,4 | 1.1 | |  |

Table A.16.6.2.3.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
|  | |  |  | T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | | |
|  | |  | Config 2,3 | TDD | | | | |
|  | Config 4 | HD-FDD | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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 1,4 | 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 1,2,3,4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | |  | |
|  | |  | Config 2 | SR.1.1 TDD | | |  | |
|  | |  | Config 3 | SR2.1 TDD | | |  | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | |  | |
|  | |  | Config 2 | CR.1.1 TDD | | |  | |
|  | |  | Config 3 | CR2.1 TDD | | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | |  | |
|  | Config 2 | CCR.1.1 TDD | | |  | |
|  | Config 3 | CCR.2.1 TDD | | |  | |
| SSB parameters | |  | Config 1,2,4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 15 | | | | |
|  | |  | Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 1,2,4 | -98 | | -98 | | |
|  | |  | Config 3 | -95 | | -95 | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | -70.05 | -62.26 |
|  | | dBm/18.72 MHz | Config 3 | -61.68 | -61.68 | | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | 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.16.6.2.3.2 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 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.16.6.2.4 SA event triggered reporting tests for FR1 without SSB time index detection when DRX is not used for 2 Rx UE

##### A.16.6.2.4.1 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 inter-frequency NR cell search requirements in clause 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.4.1-1, A.16.6.2.4.1-2 and A.16.6.2.4.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.4.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

Table A.16.6.2.4.1-1: 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.4.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | As specified in 38.133 [6] clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | |  |
| SMTC-SSB parameters |  | Config 1,2,4 | SSB.1 FR1 | | As specified in clause A.3.10.1 |
|  |  |  |  | |  |
|  |  | Config 3 | SSB.1 RedCap FR1 | | As specified in clause A.3.10.1 |
| A3-Offset | dB | Config 1,2,3,4 | -6 | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | |  |
| CP length |  | Config 1,2,3,4 | Normal | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | OFF | | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 | |  |
| T2 | s | Config 1,2,3,4 | 1 | |  |

Table A.16.6.2.4.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
|  | |  |  | T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | | |
|  | |  | Config 2,3 | TDD | | | | |
|  | Config 4 | HD-FDD | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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 1,4 | TRS.1.1 FDD | | | NA | |
|  | |  | Config 2 | TRS.1.1 TDD | | | NA | |
|  | |  | Config 3 | TRS.1.2 TDD | | | NA | |
| OCNG Patterns defined in A.2 | |  | Config 1,2,3,4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | | NA | |
|  | |  | Config 2 | SR.1.1 TDD | | | NA | |
|  | |  | Config 3 | SR2.1 TDD | | | NA | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | | NA | |
|  | |  | Config 2 | CR.1.1 TDD | | | NA | |
|  | |  | Config 3 | CR2.1 TDD | | | NA | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | | NA | |
|  | Config 2 | CCR.1.1 TDD | | | NA | |
|  | Config 3 | CCR.2.1 TDD | | | NA | |
| SSB parameters | |  | Config 1,2,4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 15 | | | | |
|  | |  | Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 1,2,4 | -98 | | -98 | | |
|  | |  | Config 3 | -95 | | -95 | | |
| SSB\_RP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | -70.05 | -62.26 |
|  | | dBm/18.72 MHz | Config 3 | -61.68 | -61.68 | | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | 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: SSB\_RP 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.16.6.2.4.2 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 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.16.6.2.5 SA event triggered reporting tests for FR1 with SSB time index detection when DRX is not used for 1 Rx UE

##### A.16.6.2.5.1 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 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.5.1-1, A.16.6.2.5.1-2 and A.16.6.2.5.1-3.7

Measurement gap pattern configuration defined in Table A.16.6.2.5.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

Table A.16.6.2.5.1-1: 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.5.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 |  |
| SMTC-SSB parameters |  | Config 1,2,4 | SSB.1 FR1 | As specified in clause A.3.10.1 |
|  |  |  |  |  |
|  |  | Config 3 | SSB.1 RedCap FR1 | As specified in clause A.3.10.1 |
| A3-Offset | dB | Config 1,2,3,4 | -6 |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 |  |
| CP length |  | Config 1,2,3,4 | Normal |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 |  |
| T2 | s | Config 1,2,3,4 | 1 |  |

Table A.16.6.2.5.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
|  | |  |  | T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | | |
|  | |  | Config 2,3 | TDD | | | | |
|  | Config 4 | HD-FDD | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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 1,4 | 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 1,2,3,4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | |  | |
|  | |  | Config 2 | SR.1.1 TDD | | |  | |
|  | |  | Config 3 | SR2.1 TDD | | |  | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | |  | |
|  | |  | Config 2 | CR.1.1 TDD | | |  | |
|  | |  | Config 3 | CR2.1 TDD | | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | |  | |
|  | Config 2 | CCR.1.1 TDD | | |  | |
|  | Config 3 | CCR.2.1 TDD | | |  | |
| SSB parameters | |  | Config 1,2,4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 15 | | | | |
|  | |  | Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 1,2,4 | -98 | | -98 | | |
|  | |  | Config 3 | -95 | | -95 | | |
| SSB\_RP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | -70.05 | -62.26 |
|  | | dBm/18.72 MHz | Config 3 | -61.68 | -61.68 | | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | AWGN | | AWGN | | |
| Antenna Configuration | |  | Config 1,2,3,4 | 1x1 | | 1x1 | | |
| 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: SSB\_RP 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.16.6.2.5.2 Test Requirements

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. 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.16.6.2.6 SA event triggered reporting tests for FR1 with SSB time index detection when DRX is not used for 2 Rx UE

##### A.16.6.2.6.1 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 SA inter-frequency NR cell search requirements in clause 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.6.1-1, A.16.6.2.6.1-2 and A.16.6.2.6.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.6.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

Table A.16.6.2.6.1-1: 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.5.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 |  |
| SMTC-SSB parameters |  | Config 1,2,4 | SSB.1 FR1 | As specified in clause A.3.10.1 |
|  |  |  |  |  |
|  |  | Config 3 | SSB.1 RedCap FR1 | As specified in clause A.3.10.1 |
| A3-Offset | dB | Config 1,2,3,4 | -6 |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 |  |
| CP length |  | Config 1,2,3,4 | Normal |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | Config 1,4 | 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 1,2,3,4 | 5 |  |
| T2 | s | Config 1,2,3,4 | 1 |  |

Table A.16.6.2.6.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
|  | |  |  | T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | | |
|  | |  | Config 2,3 | TDD | | | | |
|  | Config 4 | HD-FDD | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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 1,4 | 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 1,2,3,4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | |  | |
|  | |  | Config 2 | SR.1.1 TDD | | |  | |
|  | |  | Config 3 | SR2.1 TDD | | |  | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | |  | |
|  | |  | Config 2 | CR.1.1 TDD | | |  | |
|  | |  | Config 3 | CR2.1 TDD | | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | |  | |
|  | Config 2 | CCR.1.1 TDD | | |  | |
|  | Config 3 | CCR.2.1 TDD | | |  | |
| SSB parameters | |  | Config 1,2,4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 15 | | | | |
|  | |  | Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 | Config 1,2,3,4 | -98 | | -98 | | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | | |
|  | |  | Config 3 | -95 | | -95 | | |
| SSB\_RP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | -70.05 | -62.26 |
|  | | dBm/18.36 MHz | Config 3 | -61.68 | -61.68 | | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | AWGN | | AWGN | | |
| Antenna Configuration | |  | Config 1,2,3,4 | 1x2 | | 1x2 | | |
| 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: SSB\_RP 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.16.6.2.6.2 Test Requirements

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. 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.16.6.2.7 SA event triggered reporting tests for FR1 with SSB time index detection when DRX is used for 1 Rx UE

##### A.16.6.2.7.1 Test Purpose and Environment

The purpose of this test is to verify that 1 Rx RedCap UE makes correct reporting of an event in FR1. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3B.4.

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. The test parameters are given in Tables A.16.6.2.7.1-1, A.16.6.2.7.1-2 and A.16.6.2.7.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.7.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

UE needs to be provided with new Timing Advance Command MAC control element at least once during each time alignment timer period to maintain uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.7.1-1: SA event triggered reporting tests with 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 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.7.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | | | Comment |
| Test 1 | | Test 2 | |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | | | As specified in clause 9.1A.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | | | |  |
| A3-Offset | dB | Config 1,2,3,4 | -6 | | | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | | | |  |
| CP length |  | Config 1,2,3,4 | Normal | | | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | | | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | DRX.1 | | DRX. 7 | | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1,4 | 3 ms | | | | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | Config 2,3 | 3 μs | | | | Synchronous cells. |
| T1 | s | Config 1,2,3,4 | 5 | | | |  |
| T2 | s | Config 1,2,3,4 | 1.5 | | 16 | |  |

**Table A.16.6.2.7.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 with SSB time index detection**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | |
|  | |  |  | T1 | T2 | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | |
|  | Config 2,3 | TDD | | | |
|  | Config 4 | HD-FDD | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3,4 | 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 1,4 | 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 1,2,3,4 | OP.1 | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | NA | |
|  | |  | Config 2 | SR.1.1 TDD | |  | |
|  | |  | Config 3 | SR2.1 TDD | |  | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | - | |
|  | |  | Config 2 | CR.1.1 TDD | |  | |
|  | |  | Config 3 | CR2.1 TDD | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | - | |
|  | Config 2 | CCR.1.1 TDD | |
|  | Config 3 | CCR.2.1 TDD | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | SSB.5 FR1 | |
|  | |  | Config 2 | SSB.1 FR1 | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 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 | Config 1,2,3,4 | -98 | | -98 | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | |
|  | |  | Config 3 | -95 | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | -Infinity | -88 |
| Ês/Iot | | dB | Config 1,2,3,4 | 4 | 4 | -Infinity | 7 |
| Ês/Noc | | dB | Config 1,2,3,4 | 4 | 4 | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | -70.05 | -62.26 |
|  | | dBm/18.36MHz | Config 3 | -61.68 | -61.68 | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | AWGN | | AWGN | |
| Antenna Configuration | |  | Config 1,2,3,4 | 1x1 | | 1x1 | |
| 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.16.6.2.7.2 Test Requirements

In test 1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1440 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%.

In test 2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 15360 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%.

In test 1and 2 UE is 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.16.6.2.8 SA event triggered reporting tests for FR1 with SSB time index detection when DRX is used for 2 Rx UE

##### A.16.6.2.8.1 Test Purpose and Environment

The purpose of this test is to verify that 2 Rx RedCap UE makes correct reporting of an event in FR1. This test will partly verify the SA inter-frequency NR cell search requirements in clause 9.3.4.

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. The test parameters are given in Tables A.16.6.2.8.1-1, A.16.6.2.8.1-2 and A.16.6.2.8.1-3.

Measurement gap pattern configuration defined in Table A.16.6.2.1.1-2 is provided for a UE that does not support per-FR gap, and no gap pattern (Gap Pattern Id and Measurement gap offset) is configured for a UE capable of 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.

UE needs to be provided with new Timing Advance Command MAC control element at least once during each time alignment timer period to maintain uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.8.1-1: SA event triggered reporting tests with 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 30 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 4 | NR 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.8.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | | | Comment |
| Test 1 | | Test 2 | |
| NR RF Channel Number |  | Config 1,2,3,4 | 1, 2 | | | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3,4 | NR cell 1 (Pcell) | | | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3,4 | NR cell2 | | | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3,4 | 0 | | | | As specified in clause 9.1A.2-1. |
| Measurement gap offset |  | Config 1,2,3,4 | 9 | | | |  |
| A3-Offset | dB | Config 1,2,3,4 | -6 | | | |  |
| Hysteresis | dB | Config 1,2,3,4 | 0 | | | |  |
| CP length |  | Config 1,2,3,4 | Normal | | | |  |
| TimeToTrigger | s | Config 1,2,3,4 | 0 | | | |  |
| Filter coefficient |  | Config 1,2,3,4 | 0 | | | | L3 filtering is not used |
| DRX |  | Config 1,2,3,4 | DRX.1 | | DRX. 7 | | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1,4 | 3 ms | | | | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | Config 2,3 | 3 μs | | | | Synchronous cells. |
| T1 | s | Config 1,2,3,4 | 5 | | | |  |
| T2 | s | Config 1,2,3,4 | 1.3 | | 13.5 | |  |

Table A.16.6.2.8.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | Cell 2 | |
|  | |  |  | T1 | T2 | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | 2 | |
| Duplex mode | |  | Config 1 | FDD | | | |
|  | Config 2,3 | TDD | | | |
|  | Config 4 | HD-FDD | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | |
|  | |  | Config 2 | TDDConf.1.1 | | | |
|  | |  | Config 3 | TDDConf.2.1 | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | |
| BWP BW | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | |
|  | |  | Config 3 | 20: NRB,c = 51 | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3,4 | 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 1,4 | 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 1,2,3,4 | OP.1 | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | NA | |
|  | |  | Config 2 | SR.1.1 TDD | |  | |
|  | |  | Config 3 | SR2.1 TDD | |  | |
| RMSI CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | - | |
|  | |  | Config 2 | CR.1.1 TDD | |  | |
|  | |  | Config 3 | CR2.1 TDD | |  | |
| Dedicated CORESET Reference Channel | |  | Config 1,4 | CCR.1.1 FDD | | - | |
|  | Config 2 | CCR.1.1 TDD | |
|  | Config 3 | CCR.2.1 TDD | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | SSB.5 FR1 | |
|  | |  | Config 2 | SSB.1 FR1 | | SSB.5 FR1 | |
|  | |  | Config 3 | SSB.1 RedCap FR1 | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | SMTC.5 | |
|  | |  | Config 2, 3 | SMTC.1 | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2,4 | 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 | Config 1,2,3,4 | -98 | | -98 | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | |
|  | |  | Config 3 | -95 | | -95 | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | -Infinity | -91 |
|  | |  | Config 3 | -91 | -91 | -Infinity | -88 |
| Ês/Iot | | dB | Config 1,2,3,4 | 4 | 4 | -Infinity | 7 |
| Ês/Noc | | dB | Config 1,2,3,4 | 4 | 4 | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | -70.05 | -62.26 |
|  | | dBm/18.36MHz | Config 3 | -61.68 | -61.68 | -67.13 | -59.34 |
| Propagation Condition | |  | Config 1,2,3,4 | AWGN | | AWGN | |
| Antenna Configuration | |  | Config 1,2,3,4 | 1x2 | | 1x2 | |
| 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.16.6.2.8.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event A3 triggered measurement report, 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%.

In test 2 with per-UE gap, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 12160 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%.

In test 1 and 2 UE is 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.16.6.2.9 SA event triggered reporting tests with additional mandatory gap pattern for 1 Rx UE

##### A.16.6.2.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when mandatory gap pattern with 3ms MGL is configured.

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. The test parameters are given in Tables A.16.6.2.9.1-1, A.16.6.2.9.1-2 and A.16.6.2.9.1-3.

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.

Table A.16.6.2.9.1-1: SA event triggered reporting tests without SSB index reading for FR1-FR1

|  |  |
| --- | --- |
| Config | 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.9.1-2: General test parameters for SA inter-frequency event triggered reporting with additional mandatory gap pattern

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
| Test 1 | |
| NR RF Channel Number |  | Config 1,2,3, 4 | 1, 2 | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3, 4 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3, 4 | NR cell2 | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3, 4 | 3 | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3, 4 | 9 | |  |
| 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 | 1.5 | 1 |  |

Table A.16.6.2.9.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting with additional mandatory gap pattern

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
| T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3, 4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1, 4 | 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, 4 | 10: NRB,c = 52 | | | | |
| Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2, 4 | 10: NRB,c = 52 | | | | |
| Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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, 4 | 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, 4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1, 4 | SR.1.1 FDD | | |  | |
|  | Config 2 | SR.1.1 TDD | | |  | |
|  | Config 3 | SR2.1 TDD | | |  | |
| CORESET Reference Channel | |  | Config 1, 4 | CR.1.1 FDD | | |  | |
|  | Config 2 | CR.1.1 TDD | | |  | |
|  | Config 3 | CR2.1 TDD | | |  | |
| SSB parameters | |  | Config 1, 4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | Config 2 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1, 4 | SMTC.2 | | | SMTC.5 | |
|  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2, 4 | 15 | | | | |
| Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3, 4 | 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, 4 | -98 | | -98 | | |
| Config 3 | -95 | | -95 | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2, 4 | -94 | -94 | | -Infinity | -91 |
| Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3, 4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2, 4 | -64.59 | -64.59 | | -70.05 | -62.26 |
| dBm/18.36MHz | Config 3 | -61.66 | -61.66 | | -67.11 | -59.32 |
| Propagation Condition | |  | Config 1,2,3, 4 | 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.16.6.2.9.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1440 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.16.6.2.10 SA event triggered reporting tests with additional mandatory gap pattern for 2 Rx UE

##### A.16.6.2.10.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when mandatory gap pattern with 3ms MGL is configured.

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. The test parameters are given in Tables A.16.6.2.10.1-1, A.16.6.2.10.1-2 and A.16.6.2.10.1-3.

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.

Table A.16.6.2.10.1-1: SA event triggered reporting tests without SSB index reading for FR1-FR1

|  |  |
| --- | --- |
| Config | 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.10.1-2: General test parameters for SA inter-frequency event triggered reporting with additional mandatory gap pattern

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | | Comment |
| Test 1 | |
| NR RF Channel Number |  | Config 1,2,3, 4 | 1, 2 | | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3, 4 | NR cell 1 (Pcell) | | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3, 4 | NR cell2 | | NR cell 2 is on NR RF channel number 2. |
| Gap Pattern Id |  | Config 1,2,3, 4 | 3 | | As specified in clause 9.1.2-1. |
| Measurement gap offset |  | Config 1,2,3, 4 | 9 | |  |
| 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 | 1.5 | 1 |  |

Table A.16.6.2.10.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting with additional mandatory gap pattern

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | Cell 2 | |
| T1 | T2 | | T1 | T2 |
| NR RF Channel Number | |  | Config 1,2,3, 4 | 1 | | | 2 | |
| Duplex mode | |  | Config 1, 4 | 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, 4 | 10: NRB,c = 52 | | | | |
| Config 3 | 20: NRB,c = 51 | | | | |
| BWP BW | | MHz | Config 1,2, 4 | 10: NRB,c = 52 | | | | |
| Config 3 | 20: NRB,c = 51 | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | 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, 4 | 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, 4 | OP.1 | | | OP.1 | |
| PDSCH Reference measurement channel | |  | Config 1, 4 | SR.1.1 FDD | | |  | |
|  | Config 2 | SR.1.1 TDD | | |  | |
|  | Config 3 | SR2.1 TDD | | |  | |
| CORESET Reference Channel | |  | Config 1, 4 | CR.1.1 FDD | | |  | |
|  | Config 2 | CR.1.1 TDD | | |  | |
|  | Config 3 | CR2.1 TDD | | |  | |
| SSB parameters | |  | Config 1, 4 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | Config 2 | SSB.1 FR1 | | | SSB.5 FR1 | |
|  | Config 3 | SSB.1 RedCap FR1 | | | SSB.3 RedCap FR1 | |
| SMTC configuration defined in A.3.11 | |  | Config 1, 4 | SMTC.2 | | | SMTC.5 | |
|  | Config 2, 3 | SMTC.1 | | | SMTC.4 | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2, 4 | 15 | | | | |
| Config 3 | 30 | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3, 4 | 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, 4 | -98 | | -98 | | |
| Config 3 | -95 | | -95 | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2, 4 | -94 | -94 | | -Infinity | -91 |
| Config 3 | -91 | -91 | | -Infinity | -88 |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | -Infinity | 7 |
|  | | dB | Config 1,2,3, 4 | 4 | 4 | | -Infinity | 7 |
| IoNote3 | | dBm/9.36MHz | Config 1,2, 4 | -64.59 | -64.59 | | -70.05 | -62.26 |
| dBm/18.36MHz | Config 3 | -61.66 | -61.66 | | -67.11 | -59.32 |
| Propagation Condition | |  | Config 1,2,3, 4 | 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.16.6.2.10.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1440 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.16.6.2.11 SA event triggered reporting tests for FR1 when DRX is used for 1 Rx UE

##### A.16.6.2.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE which supports interFrequencyMeas-Nogap-r16 makes correct reporting of an event. This test will partly verify the SA inter-frequency NR cell search without measurement gap requirements in clause 9.3B.7.

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 RF channel 2. The SSB of cell 2 is completely within UE’s active BWP BW. The RBs containing SSB from cell 1 and cell 2 should be different in frequency location within the cell bandwidth. The test parameters are given in Tables A.16.6.2.11.1-1, A.16.6.2.11.1-2 and A.16.6.2.11.1-3.

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.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.11.1-1: SA event triggered reporting tests when DRX is used for FR1-FR1

|  |  |
| --- | --- |
| Config | 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.11.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 when DRX is used

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1,2,3, 4 | 1, 2 | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3, 4 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3, 4 | NR cell2 | NR cell 2 is on NR RF channel number 2. |
| A3-Offset | dB | Config 1,2,3, 4 | -6 |  |
| Hysteresis | dB | Config 1,2,3, 4 | 0 |  |
| CP length |  | Config 1,2,3, 4 | Normal |  |
| TimeToTrigger | s | Config 1,2,3, 4 | 0 |  |
| Filter coefficient |  | Config 1,2,3, 4 | 0 | L3 filtering is not used |
| DRX |  | Config 1,2,3, 4 | DRX.1 | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1, 4 | 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, 4 | 5 |  |
| T2 | s | Config 1,2,3, 4 | 1 |  |

Table A.16.6.2.11.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 when DRX is used

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | | Cell 2 | |
| T1 | T2 | | | T1 | T2 | |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | | 2 | | |
| Duplex mode | |  | Config 1,4 | FDD | | | | | | |
|  | Config 2,3 | TDD | | | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | | | |
|  | Config 2 | TDDConf.1.1 | | | | | | |
|  | Config 3 | TDDConf.2.1 | | | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
| Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | | |
| Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | DLBWP.0.1 | | | | NA | | |
| Initial UL BWP |  | Config 1, 2, 3, 4 | 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 1,2,3,4 | OP.1 | | | | OP.1 | | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | | | NA | | |
|  | Config 2 | SR.1.1 TDD | | | | NA | | |
|  | Config 3 | SR2.1 TDD | | | | NA | | |
| CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | | | NA | | |
|  | Config 2 | CR.1.1 TDD | | | | NA | | |
|  | Config 3 | CR2.1 TDD | | | | NA | | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | | | SSB.1 FR1 | | |
|  | Config 2 | SSB.1 FR1 | | | | SSB.1 FR1 | | |
|  | Config 3 | SSB.1 RedCap FR1 | | | | SSB.3 RedCap FR1 | | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | | SMTC.2 | | |
|  | Config 2, 3 | SMTC.1 | | | | SMTC.1 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2, 4 | 15 | | | | | | |
| Config 3 | 30 | | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 | Config 1,2,3,4 | -98 | | -98 | | | | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | | | | |
| Config 3 | -95 | | -95 | | | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2,4 | -94 | -94 | | | -Infinity | -91 | |
| Config 3 | -91 | -91 | | | -Infinity | -88 | |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | | -Infinity | 7 | |
|  | | dB | Config 1,2,3,4 | 4 | 4 | | | -Infinity | 7 | |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | | -70.05 | -62.2 | |
| dBm/18.36MHz | Config 3 | -61.66 | -61.66 | | | -67.11 | -59.32 | |
| 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. | | | | | | | | | | |

Table A.16.6.2.11.1-4: *TimeAlignmentTimer* -Configuration SA inter-frequency event triggered reporting when DRX is used

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| TimeAlignmentTimer | ms500 | As specified in clause 6.3.2 in TS 38.331 [2] |

##### A.16.6.2.11.2 Test Requirements

In test config 1, UE is required to report SSB time index. The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1080 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%.

In test config 2 and 3, UE is not required to report SSB time index. The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 900 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%.

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.16.6.2.12 SA event triggered reporting tests for FR1 when DRX is used for 2 Rx UE

##### A.16.6.2.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE which supports interFrequencyMeas-Nogap-r16 makes correct reporting of an event. This test will partly verify the SA inter-frequency NR cell search without measurement gap requirements in clause 9.3B.7.

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 RF channel 2. The SSB of cell 2 is completely within UE’s active BWP BW. The RBs containing SSB from cell 1 and cell 2 should be different in frequency location within the cell bandwidth. The test parameters are given in Tables A.16.6.2.12.1-1, A.16.6.2.12.1-2 and A.16.6.2.12.1-3.

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.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore, UE is allocated with PUSCH resource at every DRX cycle.

Table A.16.6.2.12.1-1: SA event triggered reporting tests when DRX is used for FR1-FR1

|  |  |
| --- | --- |
| Config | 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, 20 MHz bandwidth, TDD duplex mode |
| 4 | 15 kHz SSB SCS, 10 MHz bandwidth, HD-FDD 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.16.6.2.12.1-2: General test parameters for SA inter-frequency event triggered reporting for FR1 when DRX is used

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| NR RF Channel Number |  | Config 1,2,3, 4 | 1, 2 | Two FR1 NR carrier frequencies is used. |
| Active cell |  | Config 1,2,3, 4 | NR cell 1 (Pcell) | NR Cell 1 is on NR RF channel number 1. |
| Neighbour cell |  | Config 1,2,3, 4 | NR cell2 | NR cell 2 is on NR RF channel number 2. |
| A3-Offset | dB | Config 1,2,3, 4 | -6 |  |
| Hysteresis | dB | Config 1,2,3, 4 | 0 |  |
| CP length |  | Config 1,2,3, 4 | Normal |  |
| TimeToTrigger | s | Config 1,2,3, 4 | 0 |  |
| Filter coefficient |  | Config 1,2,3, 4 | 0 | L3 filtering is not used |
| DRX |  | Config 1,2,3, 4 | DRX.1 | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | Config 1, 4 | 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, 4 | 5 |  |
| T2 | s | Config 1,2,3, 4 | 1.5 |  |

Table A.16.6.2.12.1-3: Cell specific test parameters for SA inter-frequency event triggered reporting for FR1 when DRX is used

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Cell 1 | | | | Cell 2 | |
| T1 | T2 | | | T1 | T2 | |
| NR RF Channel Number | |  | Config 1,2,3,4 | 1 | | | | 2 | | |
| Duplex mode | |  | Config 1,4 | FDD | | | | | | |
|  | Config 2,3 | TDD | | | | | | |
| TDD configuration | |  | Config 1,4 | Not Applicable | | | | | | |
|  | Config 2 | TDDConf.1.1 | | | | | | |
|  | Config 3 | TDDConf.2.1 | | | | | | |
| BWchannel | | MHz | Config 1,2,4 | 10: NRB,c = 52 | | | | | | |
| Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP BW | | MHz | Config 1,2 | 10: NRB,c = 52 | | | | | | |
| Config 3 | 20: NRB,c = 51 | | | | | | |
| BWP configuration | Initial DL BWP |  | Config 1, 2, 3, 4 | DLBWP.0.1 | | | | NA | | |
| Initial UL BWP |  | Config 1, 2, 3, 4 | 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 1,2,3,4 | OP.1 | | | | OP.1 | | |
| PDSCH Reference measurement channel | |  | Config 1,4 | SR.1.1 FDD | | | | NA | | |
|  | Config 2 | SR.1.1 TDD | | | | NA | | |
|  | Config 3 | SR2.1 TDD | | | | NA | | |
| CORESET Reference Channel | |  | Config 1,4 | CR.1.1 FDD | | | | NA | | |
|  | Config 2 | CR.1.1 TDD | | | | NA | | |
|  | Config 3 | CR2.1 TDD | | | | NA | | |
| SSB parameters | |  | Config 1,4 | SSB.1 FR1 | | | | SSB.1 FR1 | | |
|  | Config 2 | SSB.1 FR1 | | | | SSB.1 FR1 | | |
|  | Config 3 | SSB.1 RedCap FR1 | | | | SSB.3 RedCap FR1 | | |
| SMTC configuration defined in A.3.11 | |  | Config 1,4 | SMTC.2 | | | | SMTC.2 | | |
|  | Config 2, 3 | SMTC.1 | | | | SMTC.1 | | |
| PDSCH/PDCCH subcarrier spacing | | kHz | Config 1,2, 4 | 15 | | | | | | |
| Config 3 | 30 | | | | | | |
| EPRE ratio of PSS to SSS | |  | Config 1,2,3,4 | 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 | Config 1,2,3,4 | -98 | | -98 | | | | |
| Note2 | | dBm/SCS | Config 1,2,4 | -98 | | -98 | | | | |
| Config 3 | -95 | | -95 | | | | |
| SS-RSRP Note 3 | | dBm/SCS | Config 1,2,4 | -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 | 4 | | | -Infinity | 7 | |
| IoNote3 | | dBm/9.36MHz | Config 1,2,4 | -64.59 | -64.59 | | | -70.05 | -62.2 | |
| dBm/18.36MHz | Config 3 | -61.66 | -61.66 | | | -67.11 | -59.32 | |
| 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. | | | | | | | | | | |

Table A.16.6.2.12.1-4: *TimeAlignmentTimer* -Configuration SA inter-frequency event triggered reporting when DRX is used

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| TimeAlignmentTimer | ms500 | As specified in clause 6.3.2 in TS 38.331 [2] |

##### A.16.6.2.12.2 Test Requirements

In test config 1 and 4, UE is required to report SSB time index. The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1080 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%.

In test config 2 and 3, UE is not required to report SSB time index. The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 900 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%.

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.17.1.1 Cell re-selection to NR

#### A.17.1.1.1 Cell reselection to FR2 intra-frequency NR case for 2 Rx

##### A.17.1.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the intra frequency NR cell reselection requirements specified in clause 4.2B.2.3.

##### A.17.1.1.1.2 Test Parameters

The test scenario comprises of 1 NR carrier and 2 cells as given in tables A.17.1.1.1.2-1, A.17.1.1.1.2-2 and A.17.1.1.1.2-3. The test consists of three successive time periods, with time duration of T1, T2, and T3 respectively. Only cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.17.1.1.1.2-1: 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. | |

Table A.17.1.1.1.2-2: General test parameters for RedCap UE intra frequency NR cell re-selection test case

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell1 |  |
| T2 end condition | Active cell |  | 1, 2 | Cell2 |  |
|  | Neighbour cell |  | 1, 2 | Cell1 |  |
| Final condition | Active cell |  | 1, 2 | Cell1 |  |
|  | Neighbour cell |  | 1, 2 | Cell2 |  |
| RF Channel Number | |  | 1, 2 | 1 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SMTC configuration | |  | 1, 2 | SMTC.1 |  |
| DRX cycle length | | s | 1, 2 | 1.28 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | >7 | During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, the intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2 |
| T2 | | s | 1, 2 | 135 | T2 needs to be defined so that cell re-selection reaction time is taken into account. |
| T3 | | s | 1, 2 | 35 | T3 needs to be defined so that cell re-selection reaction time is taken into account. |

Table A.17.1.1.1.2-3: Cell specific test parameters for RedCap UE intra frequency NR cell re-selection test case in AWGN

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | | | **Cell 2** | | |
|  |  |  | **T1** | **T2** | **T3** | **T1** | **T2** | **T3** |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | | TDDConf.3.1 | | |
| PDSCH RMC configuration |  | 1 | SR.3.1 TDD | | | SR.3.1 TDD | | |
|  |  | 2 | SR.3.1 TDD | | | SR.3.1 TDD | | |
| RMSI CORESET RMC configuration |  | 1 | CR.3.1 TDD | | | CR.3.1 TDD | | |
|  |  | 2 | CR.3.1 TDD | | | CR.3.1 TDD | | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.3.1 TDD | | | CCR.3.1 TDD | | |
|  |  | 2 | CCR.3.1 TDD | | | CCR.3.1 TDD | | |
| SSB configuration |  | 1 | SSB.3 FR2 | | | SSB.7 FR2 | | |
|  |  | 2 | SSB.4 FR2 | | | SSB.8 FR2 | | |
| OCNG Pattern |  | 1, 2 | OP.4 | | | OP.4 | | |
| BWchannel | MHz | 1, 2 | 100: NRB,c = 66 | | | 100: NRB,c = 66 | | |
| Data RBs allocated |  | 1, 2 | 66 | | | 66 | | |
| Initial DL BWP configuration |  | 1, 2 | DLBWP.0.1 | | | DLBWP.0.1 | | |
| Initial UL BWP configuration |  | 1, 2 | ULBWP.0.1 | | | ULBWP.0.1 | | |
| RLM-RS |  | 1, 2 | SSB | | | SSB | | |
| Qrxlevmin | dBm/SCS | 1 | -138 | | | -138 | | |
|  |  | 2 | -135 | | | -135 | | |
| Pcompensation | dB | 1, 2 | 0 | | | 0 | | |
| Qhysts | dB | 1, 2 | 0 | | | 0 | | |
| Qoffsets, n | dB | 1, 2 | 0 | | | 0 | | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | | SS-RSRP | | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | | Setup 1 defined in A.3.15.1 | | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | | Rough | | |
| Note 5 | dB | 1, 2 | 7.45 | -3.55 | 0.95 | -infinity | 0.95 | -3.55 |
| Note2 | dBm/SCS | 1 | -93 | | | | | |
|  |  | 2 | -90 | | | | | |
| Note2 | dBm/15 kHz | 1, 2 | -102 | | | | | |
|  | dB | 1, 2 | 8 | -3 | 1.5 | -infinity | 1.5 | -3 |
| SSB\_RP Note3 | dBm/SCS | 1 | -85 | -96 | -91.5 | -infinity | -91.5 | -96 |
|  |  | 2 | -82 | -93 | -88.5 | -infinity | -88.5 | -93 |
| Io on SSB symbols | dBm/95.04 MHz | 1 | -60.53 | -67.40 | -65.34 | -69.17 | -65.34 | -67.40 |
| of each cell |  | 2 | -57.52 | -64.39 | -62.33 | -66.16 | -62.33 | -64.39 |
| Treselection | s | 1, 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| SintrasearchP | dB | 1, 2 | 50 | | | 50 | | |
| Propagation Condition |  | 1, 2 | 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: SSB\_RP 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. | | | | | | | | |

##### A.17.1.1.1.3 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2 and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a registration procedure for mobility and periodic registration updateon Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 130 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 1 and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a registration procedure for mobility and periodic registration updateon cell 1.

The cell re-selection delay to an already detected cell shall be less than 27 s.

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

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: Tdetect, NR\_Intra + TSI-NR, and to an already detected cell can be expressed as: Tevaluate, NR\_ intra + TSI-NR,

Where:

Tdetect, NR\_Intra See Table 4.2B.2.3-1 in clause 4.2B.2.3

Tevaluate, NR\_ intra See Table 4.2B.2.3-1 in clause 4.2B.2.3

TSI-NR Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 129.28 s, allow 130 s for the cell re-selection delay to a newly detectable cell and 26.88 s for the cell re-selection delay to an already detected cell in the test case, which we allow 27 s.

#### A.17.1.1.2 Cell reselection to FR2 inter-frequency NR case

##### A.17.1.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the inter frequency NR cell reselection requirements specified in clause 4.2B.2.4.

##### A.17.1.1.2.2 Test Parameters

The test scenario comprises of 2 cells on 2 different NR carriers respectively as given in tables A.17.1.1.2.2-1, A.17.1.1.2.2-2 and A.17.1.1.2.2-3. The test consists of three successive time periods, with time duration of T1, T2, and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.17.1.1.2.2-1: Supported test configurations

|  |  |  |
| --- | --- | --- |
| Configuration | Description for serving cell | Description for target cell |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode | 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. | | |

Table A.17.1.1.2.2-2: General test parameters for RedCap UE FR2 inter frequency NR cell re-selection test case

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell2 | The UE camps on cell 2 in the initial phase and during T1 period the UE reselects to cell 1 |
|  | Neighbour cell |  | 1, 2 | Cell1 |  |
| T1 end condition | Active cell |  | 1, 2 | Cell1 | The UE shall perform reselection to cell 1 during T1 |
|  | Neighbour cells |  | 1, 2 | Cell2 |  |
| T3 end condition | Active cell |  | 1, 2 | Cell2 | The UE shall perform reselection to cell 2 with higher priority during T3 |
|  | Neighbour cell |  | 1, 2 | Cell1 |  |
| RF Channel Number | |  | 1, 2 | 1, 2 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SSB configuration | |  | 1 | SSB.1 FR2 |  |
|  | |  | 2 | SSB.2 FR2 |  |
| SMTC configuration | |  | 1, 2 | SMTC.1 |  |
| DRX cycle length | | s | 1, 2 | 1.28 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | 35 | T1 needs to be defined so that cell re-selection reaction time is taken into account. |
| T2 | | s | 1, 2 | >7 | During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed. The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3. |
| T3 | | s | 1, 2 | 95 | T3 needs to be defined so that cell re-selection reaction time is taken into account. |

Table A.17.1.1.2.2-3: Cell specific test parameters for RedCap UE FR2 inter frequency NR cell re-selection test case in AWGN

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | | Cell 2 | | |
|  |  |  | T1 | T2 | T3 | T1 | T2 | T3 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | | TDDConf.3.1 | | |
| PDSCH RMC configuration |  | 1, 2 | SR.3.1 TDD | | | SR.3.1 TDD | | |
| RMSI CORESET parameters |  | 1, 2 | CR.3.1 TDD | | | CR.3.1 TDD | | |
| RMSI CORESET RMC configuration |  | 1, 2 | CCR.3.1 TDD | | | CCR.3.1 TDD | | |
| OCNG Pattern |  | 1, 2 | OP.1 defined in A.3.2.1 | | | OP.1 defined in A.3.2.1 | | |
| Initial DL BWP configuration |  | 1, 2 | DLBWP.0.1 | | | DLBWP.0.1 | | |
| Initial UL BWP configuration |  | 1, 2 | ULBWP.0.1 | | | ULBWP.0.1 | | |
| RLM-RS |  | 1, 2 | SSB | | | SSB | | |
| Qrxlevmin | dBm/SCS | 1 | -140 | | | -140 | | |
|  |  | 2 | -137 | | | -137 | | |
| Pcompensation | dB | 1, 2 | 0 | | | 0 | | |
| Qhysts | dB | 1, 2 | 0 | | | 0 | | |
| Qoffsets, n | dB | 1, 2 | 0 | | | 0 | | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | | SS-RSRP | | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | | Setup 1 defined in A.3.15.1 | | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | | Rough | | |
| Note 5 | dB | 1,2 | 9.95 | 9.95 | 7.45 | -11.05 | -infinity | 7.95 |
| Note2 | dBm/SCS | 1 | -93 | | | -93 | | |
|  |  | 2 | -90 | | | -90 | | |
| Note2 | dBm/15 kHz | 1, 2 | -102 | | | -102 | | |
|  | dB | 1 | 10.5 | 10.5 | 8 | -10.5 | -infinity | 8.5 |
|  |  | 2 |  |  |  |  |  |  |
| SSB\_RP Note3 | dBm/SCS | 1 | —82.5 | —82.5 | -85 | -103.5 | -infinity | -84.5 |
|  |  | 2 | -79.5 | -79.5 | -82 | -100.5 | -infinity | -81.5 |
| Io | dBm/95.04 MHz | 1, 2 | -53.11 | -53.11 | -55.34 | -63.61 | -63.98 | -54.91 |
| Treselection | s | 1, 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| SnonintrasearchP | dB | 1, 2 | 50 | | | 50 | | |
| Threshx, highP | dB | 1, 2 | 48 | | | 48 | | |
| Threshserving, lowP | dB | 1, 2 | 44 | | | 44 | | |
| Threshx, lowP | dB | 1, 2 | 50 | | | 50 | | |
| Propagation Condition |  | 1, 2 | 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: SSB\_RP 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. | | | | | | | | |

##### A.17.1.1.2.3 Test Requirements

The cell reselection delay to a higher priority cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2 and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a registration procedure for mobility and periodic registration updateon cell 2.

The cell re-selection delay to a higher priority cell shall be less than 87 s.

The cell reselection delay to a lower priority cell is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1 and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a registration procedure for mobility and periodic registration updateon cell 1.

The cell re-selection delay to a lower priority cell shall be less than 27 s.

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

NOTE: The cell re-selection delay to a higher priority cell can be expressed as: Thigher\_priority\_search + Tevaluate, NR\_ inter + TSI-NR, and to a lower priority cell can be expressed as: Tevaluate, NR\_ inter + TSI-NR,

Where:

Thigher\_priority\_search See clause 4.2B.2.7

Tevaluate, NR\_ inter See Table 4.2B.2.4-1 in clause 4.2B.2.4

TSI-NR Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 86.88 s, allow 87 s for the cell re-selection delay to a higher priority cell and 26.88 s for the cell re-selection delay to a lower priority cell in the test case, which we allow 27 s.

#### A.17.1.1.3 Cell reselection to FR2 intra-frequency NR case for UE fulfilling stationary relaxed measurement criterion for 2 Rx UE

##### A.17.1.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the intra frequency NR cell reselection requirements for UE configured with stationary relaxed measurement criterion specified in clause 4.2B.2.9.2.

##### A.17.1.1.3.2 Test Parameters

The test scenario comprises of 1 NR carrier and 2 cells as given in tables A.17.1.1.3.2-1, A.17.1.1.3.2-2 and A.17.1.1.3.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. During T1 and T2, only criteria *stationaryMobilityEvaluation* is configured andfulfilled.UE has not registered with network for the tracking area containing cell2.

Table A.17.1.1.3.2-1: 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. | |

Table A.17.1.1.3.2-2: General test parameters for FR2 intra-frequency NR cell re-selection test case for UE fulfilling stationary criterion for 2 Rx UE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell1 | The UE camps on cell 1 in the initial phase |
|  | Neighbour cells |  | 1, 2 | Cell2 |  |
| T1 end condition | Active cell |  | 1, 2 | Cell2 | The UE reselects to cell 2 during T1 period |
|  | Neighbour cells |  | 1, 2 | Cell1 |  |
| Final condition | Active cell |  | 1, 2 | Cell1 | The UE reselects to cell 1 during T2 period |
| Neighbour cells |  | 1,2 | Cell2 |  |
| RF Channel Number | |  | 1, 2 | 1 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SMTC configuration | |  | 1, 2 | SMTC.1 |  |
| DRX cycle length | | s | 1, 2 | 0.64 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | 100 |  |
| T2 | | s | 1, 2 | 100 |  |

Table A.17.1.1.3.2-3: Cell specific test parameters for FR2 intra-frequency NR cell re-selection test case in AWGN for UE fulfilling stationary mobility criterion for 2 Rx UE

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | Cell 2 | | |
|  |  |  | T1 | T2 | T1 | | T2 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | TDDConf.3.1 | | |
| PDSCH RMC |  | 1 | SR.3.1 TDD | | SR.3.1 TDD | | |
| configuration |  | 2 | SR.3.1 TDD | | SR.3.1 TDD | | |
| RMSI CORESET |  | 1 | CR.3.1 TDD | | CR.3.1 TDD | | |
| RMC configuration |  | 2 | CR.3.1 TDD | | CR.3.1 TDD | | |
| Dedicated CORESET |  | 1 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| RMC configuration |  | 2 | CCR.3.1 TDD | | CCR.3.1 TDD | | |
| SSB configuration |  | 1 | SSB.3 FR2 | | SSB.7 FR2 | | |
|  |  | 2 | SSB.4 FR2 | | SSB.8 FR2 | | |
| OCNG Pattern |  | 1, 2 | OP.4 | | OP.4 | | |
| Initial DL BWP configuration |  | 1, 2 | 100: NRB,c = 66 | | 100: NRB,c = 66 | | |
| Initial UL BWP configuration |  | 1, 2 | 66 | | 66 | | |
| RLM-RS |  | 1, 2 | SSB | | SSB | | |
| Qrxlevmin | dBm/SCS | 1 | -140 | | -140 | | |
|  |  | 2 | -137 | | -137 | | |
| SSearchDeltaP-Stationary | dB | 1, 2 | 6 | | 6 | | |
| TSearchDeltaP-Stationary | s | 1,2 | 5 | | 5 | | |
| Pcompensation | dB | 1, 2 | 0 | | 0 | | |
| Qhysts | dB | 1, 2 | 0 | | 0 | | |
| Qoffsets, n | dB | 1, 2 | 0 | | 0 | | |
| Cell\_selection\_and\_  reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | SS-RSRP | | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | Setup 1 defined in A.3.15.1 | | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | Rough | | |
| Note 5 | dB | 1 | -3.55 | 0.95 | 0.95 | -3.55 | |
|  |  | 2 |
| Note2 | dBm/SCS | 1 | -93 | | | | |
|  |  | 2 | -90 | | | | |
| Note2 | dBm/15 kHz | 1 | -102 | | | | |
|  |  | 2 |  | | | | |
|  | dB | 1 | -3 | 1.5 | 1.5 | -3 | |
|  |  | 2 |
| SS-RSRP Note3 | dBm/SCS | 1 | 96 | 91.5 | 91.5 | 96 | |
|  |  | 2 | 93 | -88.5 | 88.5 | 93 | |
| Io on SSB symbols of each cell | dBm/95.04 MHz | 1 | -67.40 | -65.34 | -65.34 | -67.40 | |
| 2 | -64.40 | -62.34 | -62.34 | -64.40 | |
| Treselection | s | 1, 2 | 0 | 0 | 0 | 0 | |
| SintrasearchP | dB | 1, 2 | 50 | | 50 | | |
| Propagation Condition |  | 1, 2 | 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 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 | | | | | | | |

##### A.17.1.1.3.3 Test Requirements

The cell reselection delay to an already detected cell for UE fulfilling stationary relaxed criterion is defined as the time from the beginning of time period T1, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to an already detected cell shall be less than 155 s.

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

NOTE: The cell re-selection delay to an already detectable cell can be expressed as: Tevaluate,NR\_Intra\_RedCap\_Relax + TSI-NR,

Where:

Tevaluate,NR\_Intra\_RedCap\_Relax See Table 4.2B.2.9.2-2 in clause 4.2B.2.9.2,

TSI-NR Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 154.88 s, allow 155 s for the cell re-selection delay to an already detected cell for UE fulfilling stationary criterion in the test case.

#### A.17.1.1.4 Cell reselection to FR2 inter-frequency NR case for UE fulfilling stationary mobility relaxed measurement criterion for 2 Rx UE

##### A.17.1.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the inter frequency NR cell reselection requirements for UE fulfilling stationary relaxed measurement criterion specified in clause 4.2B.2.10.2.

##### A.17.1.1.4.2 Test Parameters

The test scenario comprises of 2 cells (Cell 1 and Cell 2) on 2 different NR carriers respectively as given in tables A.17.1.1.4.2-1, A.17.1.1.4.2-2 and A.17.1.1.4.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and Cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing Cell 2. Cell 2 is of higher priority than Cell 1. The UE is configured with *stationaryMobilityEvaluation* criterion [2].

Table A.17.1.1.4.2-1: Supported test configurations

|  |  |  |
| --- | --- | --- |
| Configuration | Description for serving cell | Description for target cell |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode | 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. | | |

Table A.17.1.1.4.2-2: General test parameters for FR2 inter frequency NR cell re-selection test case for UE fulfilling stationary criterion for 2 Rx UE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test configuration | Value | Comment |
| Initial condition | Active cell |  | 1, 2 | Cell2 | The UE camps on cell2 and fulfils stationary (*stationaryMobilityEvaluation* [2]) criterion. |
|  | Neighbour cell |  | 1, 2 | Cell1 |
| T1 final condition | Active cell |  | 1, 2 | Cell1 | The UE reselects to low priority cell1 during T1 |
|  | Neighbour cell |  | 1, 2 | Cell2 |
| T2 final condition | Active cell |  | 1, 2 | Cell2 | The UE reselects to high priority cell2 during T2 |
|  | Neighbour cell |  |  | Cell1 |
| RF Channel Number | |  | 1, 2 | 1, 2 |  |
| Time offset between cells | |  | 1, 2 | 3 μs | Synchronous cells |
| Access Barring Information | | - | 1, 2 | Not Sent | No additional delays in random access procedure. |
| SSB configuration | |  | 1 | SSB.1 FR2 |  |
|  | | 2 | SSB.2 FR2 |  |
| SMTC configuration | |  | 1, 2 | SMTC.1 |  |
| DRX cycle length | | s | 1, 2 | 0.64 | The value shall be used for all cells in the test. |
| PRACH configuration index | |  | 1, 2 | 190 | The detailed configuration is specified in TS 38.211 clause 6.3.3.2 |
| rangeToBestCell | |  | 1, 2 | Not configured |  |
| T1 | | s | 1, 2 | 85 | T1 needs to be long enough to allow cell re-selection to already known cell1 |
| T2 | | s | 1, 2 | 85 | T2 needs to be long enough to allow cell re-selection to already known cell2 |

Table A.17.1.1.4.2-3: Cell specific test parameters for FR2 inter frequency NR cell re-selection test case in AWGN for UE fulfilling stationary criterion for 2 Rx UE

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | Cell 2 | |
|  |  |  | T1 | T2 | T1 | T2 |
| TDD configuration |  | 1, 2 | TDDConf.3.1 | | TDDConf.3.1 | |
| PDSCH RMC configuration |  | 1, 2 | SR.3.1 TDD | | SR.3.1 TDD | |
| RMSI CORESET parameters |  | 1, 2 | CR.3.1 TDD | | CR.3.1 TDD | |
| RMSI CORESET RMC configuration |  | 1, 2 | CCR.3.1 TDD | | CCR.3.1 TDD | |
| OCNG Pattern |  | 1, 2 | OP.1 defined in A.3.2.1 | | OP.1 defined in A.3.2.1 | |
| Initial DL BWP configuration |  | 1, 2 | DLBWP.0.1 | | DLBWP.0.1 | |
| Initial UL BWP configuration |  | 1, 2 | ULBWP.0.1 | | ULBWP.0.1 | |
| RLM-RS |  | 1, 2 | SSB | | SSB | |
| Qrxlevmin | dBm/SCS | 1 | -140 | | -140 | |
|  |  | 2 | -137 | | -137 | |
| Pcompensation | dB | 1, 2 | 0 | | 0 | |
| Qhysts | dB | 1, 2 | 0 | | 0 | |
| Qoffsets, n | dB | 1, 2 | 0 | | 0 | |
| Cell\_selection\_and\_reselection\_quality\_measurement |  | 1, 2 | SS-RSRP | | SS-RSRP | |
| AoA setup |  | 1, 2 | Setup 1 defined in A.3.15.1 | | Setup 1 defined in A.3.15.1 | |
| Beam assumptionNote 4 |  | 1, 2 | Rough | | Rough | |
| Note 5 | dB | 1, 2 | 9.95 | 7.45 | -11.05 | 7.95 |
| Note2 | dBm/SCS | 1 | -93 | | -93 | |
| 2 | -90 | | -90 | |
| Note2 | dBm/15 kHz | 1, 2 | -102 | | -102 | |
|  | dB | 1, 2 | 10.5 | 8 | -10.5 | 8.5 |
| SSB\_RP Note3 | dBm/SCS | 1 | -82.5 | -85 | -103.5 | -84.5 |
|  |  | 2 | -79.5 | -82 | -100.5 | -81.5 |
| Io | dBm/95.04 MHz | 1, 2 | -53.14 | -55.37 | -63.64 | -54.94 |
| TreselectionNR | s | 1, 2 | 0 | | 0 | |
| SnonintrasearchP | dB | 1, 2 | 50 | | Not sent | |
| SSearchDeltaP-Stationary | dB | 1, 2 | 6 | | 6 | |
| TSearchDeltaP-Stationary | s | 1, 2 | 5 | | 5 | |
| Threshx, highP | dB | 1, 2 | 48 | | 48 | |
| Threshserving, lowP | dB | 1, 2 | 44 | | 44 | |
| Threshx, lowP | dB | 1, 2 | 50 | | 50 | |
| Propagation Condition |  | 1, 2 | 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: SSB\_RP 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. | | | | | | |

##### A.17.1.1.4.3 Test Requirements

The cell reselection delay to an already detected low priority cell (Cell 1) for UE fulfilling stationary criterion is defined as the time from the beginning of time period T1, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to an already detected low priority cell, Cell 1, shall be less than 155 s.

The cell reselection delay to an already detected high priority cell (Cell 2) for UE fulfilling stationary criterion is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the *RRCSetupRequest* message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to an already detected high priority cell, Cell 2, shall be less than 155 s.

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

NOTE 1: The cell re-selection delay to an already detected low priority cell can be expressed as: Tevaluate,NR\_Inter\_RedCap\_Relax + TSI-NR

NOTE 2: The cell re-selection delay to an already detected higher priority cell can be expressed as: Tevaluate,NR\_Inter\_RedCap\_Relax + TSI-NR

Where:

Tevaluate,NR\_Inter\_RedCap\_Relax See Table 4.2B.2.10.2-2 in clause 4.2B.2.10.2

TSI-NR Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 154.88 s, allow 155 s for the cell re-selection delay to an already detected low priority cell for UE fulfilling stationary criterion in the test case.

This gives a total of 154.88 s, allow 155 s for the cell re-selection delay to an already detected high priority cell for UE fulfilling stationary criterion in the test case.

**----------------------END OF CHANGE 3----------------------------**

**----------------------START OF CHANGE 4----------------------------**

## A.3.11A SMTC Configurations for RedCap

### A.3.11A.1 SMTC pattern 1 for RedCap: SMTC period = 40 ms with SMTC duration = 1 ms

Table A.3.11A.1-1: SMTC.1 RedCap: SMTC Pattern 1 for SMTC period = 40 ms and duration = 1 ms

|  |  |
| --- | --- |
| SMTC Parameters | Values |
| SMTC periodicity | 40 ms |
| SMTC offset | 0 ms |
| SMTC duration | 1 ms |

### A.3.11A.2 SMTC pattern 2 for RedCap: SMTC period = 80 ms with SMTC duration = 1 ms

Table A.3.11A.2-1: SMTC.2 RedCap: SMTC Pattern 2 for SMTC period = 80 ms and duration = 1 ms

|  |  |
| --- | --- |
| SMTC Parameters | Values |
| SMTC periodicity | 80 ms |
| SMTC offset | 0 ms |
| SMTC duration | 1 ms |

### A.3.11A.3 SMTC pattern 3 for RedCap: SMTC period = 40 ms with SMTC duration = 1 ms

Table A.3.11A.3-1: SMTC.3 RedCap: SMTC Pattern 3 for SMTC period = 40 ms and duration = 1 ms

|  |  |
| --- | --- |
| SMTC Parameters | Values |
| SMTC periodicity | 40 ms |
| SMTC offset | 20 ms |
| SMTC duration | 1 ms |

### A.3.11A.4 SMTC pattern 4 for RedCap: SMTC period = 80 ms with SMTC duration = 5 ms

Table A.3.11A.4-1: SMTC.4 RedCap: SMTC Pattern 4 for SMTC period = 80 ms and duration = 5 ms

|  |  |
| --- | --- |
| SMTC Parameters | Values |
| SMTC periodicity | 80 ms |
| SMTC offset | 5 ms |
| SMTC duration | 5 ms |

**----------------------END OF CHANGE 4----------------------------**