**3GPP TSG-RAN WG1 Meeting #111 R4-2410213**

**Fukuoka, Japan, May 20th –24th , 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | 0114 | **rev** | **2** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Big CR on RRM performance requirements for NR Mobile IAB | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_mobile\_IAB-Perf | | | | |  | ***Date:*** | | | 2024-05-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | * Introduction of measurement accuracy requirements and RRM test cases | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduction of measurement accuracy requirements  Introduction of the following test cases:   * Hand over * Timing test cases * Signaling characteristics * Measurement procedures – intra-frequency measurement tests * Measurement performance – intra-frequency measurement accuracy tests | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Measurement accuracy requirements and RRM test cases will not be defined | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 12.5, 12.5B, G.2.1.2, G2.2, G.2.3B, G2.4, G2.4B, G.2.5B | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **N** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **N** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **N** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

## 12.5 Void

## 12.5B Measurement Performance Requirements For mIAB MTs

### 12.5B.1 NR Measurements

#### 12.5B.1.1 Introduction

The requirements in clause 12.5B.1 apply for PCell measurements.

#### 12.5B.1.2 Intra-frequency RSRP accuracy requirements for FR1

##### 12.5B.1.2.1 Intra-frequency SS-RSRP requirements

###### 12.5B.1.2.1.1 Absolute SS-RSRP Accuracy

Unless otherwise specified, the requirements for absolute accuracy of SS-RSRP in this clause apply to a cell on the same frequency as that of the serving cell in FR1.

The accuracy requirements in Table 12.5B.1.2.1.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.2.1.1-1: SS-RSRP Intra frequency absolute accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | | | |
|  |  |  | NR operating band groups | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
| ±4.5 | ±9 | ≥-6 | Note 2 | -118 | -115 | N/A | -70 |
| ±8 | ±11 | ≥-6 | Note 2 | N/A | N/A | -70 | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: NR operating bands in FR1 are as defined in clause 5.2. | | | | | | | |

###### 12.5B.1.2.1.2 Relative SS-RSRP Accuracy

The relative accuracy of SS-RSRP is defined as the SS-RSRP measured from one cell compared to the SS-RSRP measured from another cell on the same frequency, or between any two SS-RSRP levels measured on the same cell in FR1.

The accuracy requirements in Table 12.5B.1.2.1.2-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.2.1.2-1: SS-RSRP Intra frequency relative accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot Note 2 | Io Note 1 range | | | | |
|  |  |  | NR operating band groups | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
| ±2 | ±3 | ≥-3 | Note 4 | -118 | -115 | N/A | -50 |
| ±3 | ±3 | ≥-6 | Note 4 | Note 3 | Note 3 | N/A | Note 3 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: The parameter SSB Ês/Iot is the minimum SSB Ês/Iot of the pair of cells to which the requirement applies.  NOTE 3: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.  NOTE 4: NR operating band groups in FR1 are as defined in clause 5.2. | | | | | | | |

#### 12.5B.1.3 Intra-frequency RSRP accuracy requirements for FR2

Unless otherwise specified, the requirements for absolute accuracy of SS-RSRP in this clause apply to a cell on the same frequency as that of the serving cell in FR2.

##### 12.5B.1.3.1 Intra-frequency SS-RSRP requirements

###### 12.5B.1.3.1.1 Absolute SS-RSRP Accuracy

Unless otherwise specified, the requirements for absolute accuracy of SS-RSRP in this clause apply to a cell on the same frequency as that of the serving cell in FR2.

The accuracy requirements in Table 12.5B.1.3.1.1-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3.3 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.3.1.1-1: SS-RSRP Intra frequency absolute accuracy in FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 2 range | | | |
|  |  |  | Minimum Io | | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 1 | | dBm/BWChannel | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |  |
| ±6 | ±9 | ≥-6 | TBD | | N/A | -70 |
| ±8 | ±11 |  | N/A | | -70 | -50 |
| Note 1: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  Note 2: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  Note 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | | |

###### 12.5B.1.3.1.2 Relative SS-RSRP Accuracy

The relative accuracy of SS-RSRP is defined as the SS-RSRP measured from one cell compared to the SS-RSRP measured from another cell on the same frequency, or between any two SS-RSRP levels measured on the same cell in FR2.

The accuracy requirements in Table 12.5B.1.3.1.2-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3.3 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.3.1.2-1: SS-RSRP Intra frequency relative accuracy in FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 2 range | | |
|  |  |  | Minimum Io | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 1 | | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |
| ±6 | ±9 | ≥-6 | TBD | | -50 |
| Note 1: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  Note 2: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  Note 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | |

#### 12.5B.1.4 RSRP Measurement Report Mapping

The reporting range of SS-RSRP for L3 reporting is defined from -156 dBm to -31 dBm with 1 dB resolution. The reporting range of SS-RSRP and CSI-RSRP for L1 reporting is defined from -140 to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 12.5B.1.4-1. The range in the signalling may be larger than the guaranteed accuracy range.

The reporting range of differential SS-RSRP and CSI-RSRP for L1 and and L3 reporting is defined from 0 dB to -30 dB with 2 dB resolution.

The mapping of measured quantity is defined in Table 12.5B.1.3-2. The range in the signalling may be larger than the guaranteed accuracy range.

Table 12.5B.1.4-1: SS-RSRP and CSI-RSRP measurement report mapping

|  |  |  |  |
| --- | --- | --- | --- |
| Reported value | Measured quantity value (L3 SS-RSRP) and CSI-RSRP | Measured quantity value (L1 SS-RSRP and CSI-RSRP) | Unit |
| RSRP\_0 | SS-RSRP<-156 | Not valid | dBm |
| RSRP\_1 | -156≤ SS-RSRP<-155 | Not valid | dBm |
| RSRP\_2 | -155≤ SS-RSRP<-154 | Not valid | dBm |
| RSRP\_3 | -154≤ SS-RSRP<-153 | Not valid | dBm |
| RSRP\_4 | -153≤ SS-RSRP<-152 | Not valid | dBm |
| RSRP\_5 | -152≤ SS-RSRP<-151 | Not valid | dBm |
| RSRP\_6 | -151≤ SS-RSRP<-150 | Not valid | dBm |
| RSRP\_7 | -150≤ SS-RSRP<-149 | Not valid | dBm |
| RSRP\_8 | -149≤ SS-RSRP<-148 | Not valid | dBm |
| RSRP\_9 | -148≤ SS-RSRP<-147 | Not valid | dBm |
| RSRP\_10 | -147≤ SS-RSRP<-146 | Not valid | dBm |
| RSRP\_11 | -146≤ SS-RSRP<-145 | Not valid | dBm |
| RSRP\_12 | -145≤ SS-RSRP<-144 | Not valid | dBm |
| RSRP\_13 | -144≤ SS-RSRP<-143 | Not valid | dBm |
| RSRP\_14 | -143≤ SS-RSRP<-142 | Not valid | dBm |
| RSRP\_15 | -142≤ SS-RSRP<-141 | Not valid | dBm |
| RSRP\_16 | -141≤ SS-RSRP<-140 | RSRP<-140 | dBm |
| RSRP\_17 | -140≤ SS-RSRP<-139 | -140≤RSRP<-139 | dBm |
| RSRP\_18 | -139≤ SS-RSRP<-138 | -139≤ RSRP<-138 | dBm |
| … | … |  | … |
| RSRP\_111 | -46≤ SS-RSRP<-45 | -46≤ RSRP<-45 | dBm |
| RSRP\_112 | -45≤ SS-RSRP<-44 | -45≤ RSRP<-44 | dBm |
| RSRP\_113 | -44≤ SS-RSRP<-43 | -44≤ RSRP | dBm |
| RSRP\_114 | -43≤ SS-RSRP<-42 | Not valid | dBm |
| RSRP\_115 | -42≤ SS-RSRP<-41 | Not valid | dBm |
| RSRP\_116 | -41≤ SS-RSRP<-40 | Not valid | dBm |
| RSRP\_117 | -40≤ SS-RSRP<-39 | Not valid | dBm |
| RSRP\_118 | -39≤ SS-RSRP<-38 | Not valid | dBm |
| RSRP\_119 | -38≤ SS-RSRP<-37 | Not valid | dBm |
| RSRP\_120 | -37≤ SS-RSRP<-36 | Not valid | dBm |
| RSRP\_121 | -36≤ SS-RSRP<-35 | Not valid | dBm |
| RSRP\_122 | -35≤ SS-RSRP<-34 | Not valid | dBm |
| RSRP\_123 | -34≤ SS-RSRP<-33 | Not valid | dBm |
| RSRP\_124 | -33≤ SS-RSRP<-32 | Not valid | dBm |
| RSRP\_125 | -32≤ SS-RSRP<-31 | Not valid | dBm |
| RSRP\_126 | -31≤ SS-RSRP | Not valid | dBm |
| RSRP\_127 (Note) | Infinity | Infinity | dBm |
| Note: The value of RSRP\_127 is applicable for RSRP threshold configured by the network as defined in TS 38.331 [2], but not for the purpose of measurement reporting. | | | |

Table 12.5B.1.4-2.: Differential SS-RSRP and CSI-RSRP measurement (for L1 reporting and L3 reporting) report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value (difference in measured RSRP from strongest RSRP) | Unit |
| DIFFRSRP\_0 | 0≥ΔRSRP>-2 | dB |
| DIFFRSRP\_1 | -2≥ΔRSRP>-4 | dB |
| DIFFRSRP\_2 | -4≥ΔRSRP>-6 | dB |
| DIFFRSRP\_3 | -6≥ΔRSRP>-8 | dB |
| DIFFRSRP\_4 | -8≥ΔRSRP>-10 | dB |
| DIFFRSRP\_5 | -10≥ΔRSRP>-12 | dB |
| DIFFRSRP\_6 | -12≥ΔRSRP>-14 | dB |
| DIFFRSRP\_7 | -14≥ΔRSRP>-16 | dB |
| DIFFRSRP\_8 | -16≥ΔRSRP>-18 | dB |
| DIFFRSRP\_9 | -18≥ΔRSRP>-20 | dB |
| DIFFRSRP\_10 | -20≥ΔRSRP>-22 | dB |
| DIFFRSRP\_11 | -22≥ΔRSRP>-24 | dB |
| DIFFRSRP\_12 | -24≥ΔRSRP>-26 | dB |
| DIFFRSRP\_13 | -26≥ΔRSRP>-28 | dB |
| DIFFRSRP\_14 | -28≥ΔRSRP>-30 | dB |
| DIFFRSRP\_15 | -30≥ΔRSRP | dB |

#### 12.5B.1.5 Intra-frequency RSRQ accuracy for FR1

##### 12.5B.1.5.1 Absolute SS-RSRQ Accuracy in FR1

Unless otherwise specified, the requirements for absolute accuracy of SS-RSRQ in this clause apply to a cell on the same frequency as that of the serving cell in FR1.

The accuracy requirements in Table 12.5B.1.5.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.5.1-1: SS-RSRQ Intra frequency absolute accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | | | |
|  |  |  | NR operating band groups Note 3 | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
| ±2.5 | ±4 | ≥-3 | Note 3 | -118 | -115 | N/A | -50 |
| ±3.5 | ±4 | ≥-6 | Note 3 | Note 2 | Note 2 | Note 2 | Note 2 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.  NOTE 3: NR operating band groups in FR1 are as defined in clause 5.2. | | | | | | | |

#### 12.5B.1.6 Intra-frequency RSRQ accuracy for FR2

##### 12.5B.1.6.1 Absolute SS-RSRQ Accuracy in FR2

Unless otherwise specified, the requirements for absolute accuracy of SS-RSRQ in this clause apply to a cell on the same frequency as that of the serving cell in FR2.

The accuracy requirements in Table 12.5B.1.6.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

- The measured signals are in the directions covered by the mIAB-MT as declared.

Table 12.5B.1.6.1-1: SS-RSRQ Intra frequency absolute accuracy in FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 2 range | | |
|  |  |  | Minimum Io | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 1 | | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |
| ±2.5 | ±4 | ≥-3 | TBD | | -50 |
| ±3.5 | ±4 | ≥-6 |  | |  |
| Note 1: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  Note 2: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  Note 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | |

#### 12.5B.1.7 RSRQ Report Mapping

##### 12.5B.1.7.1 SS-RSRQ and CSI-RSRQ measurement report mapping

The reporting range of SS-RSRQ measurement is defined from -43 dB to 20 dB with 0.5 dB resolution. The mapping of measured quantity is defined in Table 12.5B.1.7.1-1. The range in the signaling may be larger than the guaranteed accuracy range.

Table 12.5B.1.7.1-1: SS-RSRQ measurement report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value | Unit |
| SS-RSRQ\_0 | SS-RSRQ<-43 | dB |
| SS-RSRQ\_1 | -43≤ SS-RSRQ<-42.5 | dB |
| SS-RSRQ\_2 | -42.5≤ SS-RSRQ<-42 | dB |
| SS-RSRQ\_3 | -42≤ SS-RSRQ<-41.5 | dB |
| SS-RSRQ\_4 | -41.5≤ SS-RSRQ<-41 | dB |
| .. | .. | … |
| SS-RSRQ\_122 | 17.5≤ SS-RSRQ<18 | dB |
| SS-RSRQ\_123 | 18≤ SS-RSRQ<18.5 | dB |
| SS-RSRQ\_124 | 18.5≤ SS-RSRQ<19 | dB |
| SS-RSRQ\_125 | 19≤ SS-RSRQ<19.5 | dB |
| SS-RSRQ\_126 | 19.5≤ SS-RSRQ<20 | dB |
| SS-RSRQ\_127 | 20 ≤ SS-RSRQ | dB |

#### 12.5B.1.8 Intra-frequency SINR accuracy requirements for FR1

##### 12.5B.1.8.1 Absolute SS-SINR Accuracy in FR1

Unless otherwise specified, the requirements for absolute accuracy of SS-SINR in this clause apply to a cell on the same frequency as that of the serving cell in FR1.

The accuracy requirements in Table 12.5B.1.8.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band.

Table 12.5B.1.8.1-1: SS-SINR Intra frequency absolute accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | | | |
|  |  |  | NR operating band groups Note 3 | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
| ±3.0 | ±4 | ≥-3 | Note 3 | -118 | -115 | N/A | -50 |
| ±3.5 | ±4 | ≥-6 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.  NOTE 3: NR operating band groups in FR1 are as defined in clause 5.2. | | | | | | | |

#### 12.5B.1.9 Intra-frequency SINR accuracy requirements for FR2

##### 12.5B.1.9.1 Absolute SS-SINR Accuracy in FR2

Unless otherwise specified, the requirements for absolute accuracy of SS-SINR in this clause apply to a cell on the same frequency as that of the serving cell in FR2.

The accuracy requirements in Table 12.5B.1.9.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for intra-frequency measurements are fulfilled according to Annex X.X for a corresponding Band.

- The measured signals are in the directions covered by the mIAB-MT as declared.

Table 12.5B.1.9.1-1: SS-SINR Intra frequency absolute accuracy in FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 2 range | | |
|  |  |  | Minimum Io | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 1 | | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |
| ±3 | ±4 | ≥-3 | TBD | | -50 |
| ±3.5 | ±4 | ≥-6 |  | |  |
| Note 1: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  Note 2: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  Note 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table.  Note 4: The requirements apply for SSB Ês/Iot ≤ 25 dB. | | | | | |

#### 12.5B.1.10 SINR Report Mapping

##### 12.5B.1.16.1 SS-SINR and CSI-SINR measurement report mapping

The reporting range of SS-SINR for L3 reporting is defined from -23 dB to 40 dB with 0.5 dB resolution. The mapping of measured quantity is defined in Table 12.5B.1.16.1-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 12.5B.1.16.1-1: SS-SINR measurement report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value (L3 SS-SINR) | Unit |
| SINR\_0 | SINR<-23 | dB |
| SINR\_1 | -23≤ SINR<-22.5 | dB |
| SINR\_2 | -22.5≤ SINR<-22 | dB |
| SINR\_3 | -22≤ SINR<-21.5 | dB |
| SINR\_4 | -21.5≤ SINR<-21 | dB |
| .. | .. | … |
| SINR\_123 | 38≤ SINR<38.5 | dB |
| SINR\_124 | 38.5≤ SINR<39 | dB |
| SINR\_125 | 39≤ SINR<39.5 | dB |
| SINR\_126 | 39.5≤ SINR<40 | dB |
| SINR\_127 | 40≤ SINR | dB |

#### 12.5B.1.11 L1-RSRP Accuracy Requirements for FR1

##### 12.5B.1.11.1 SSB based L1-RSRP accuracy requirements

Unless otherwise specified, the requirements for absolute accuracy and relative accuracy of SSB based L1-RSRP in this clause apply to all SSBs of the serving cell configured for L1-RSRP measurement.

###### 12.5B.1.11.1.1 Absolute Accuracy

The accuracy requirements in Table 12.5B.1.11.1.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.11.1.1-1: SSB based L1-RSRP absolute accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | | | |
|  |  |  | NR operating band groups Note 2 | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
| ±5.0 | ±9.5 | ≥-3 |  | -118 | -115 | N/A | -70 |
| ±8.5 | ±11.5 | ≥-3 |  | N/A | N/A | -70 | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: NR operating band groups in FR1 are as defined in clause 5.2. | | | | | | | |

###### 12.5B.1.11.1.2 Relative Accuracy

The relative accuracy of SSB based L1-RSRP is defined as the L1-RSRP measured from one SSB compared to the largest measured value of L1-RSRP among all SSBs of the cell on which the mIAB-MT performs L1-RSRP measurements.

The accuracy requirements in Table 12.5B.1.11.1.2-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

Table 12.5B.1.11.1.2-1: SSB based L1-RSRP relative accuracy in FR1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot Note 2 | Io Note 1 range | | | | |
|  |  |  | NR operating band groups Note 4 | Minimum Io | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSSSB | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSSSB = 15 kHz | SCSSSB = 30 kHz |  |  |
|  |  |  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,  NR\_SDL\_FR1\_A | -121 | -118 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_B | -120.5 | -117.5 | N/A | -50 |
|  |  |  | NR\_TDD\_FR1\_C | -120 | -117 | N/A | -50 |
| ±3 | ±4 | ≥-3 | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -116.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -116 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_F | -118.5 | -115.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_G | -118 | -115 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_H | -117.5 | -114.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -111.5 | N/A | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: The parameter SSB Ês/Iot is the minimum SSB Ês/Iot of the pair of SSBs to which the requirement applies.  NOTE 3: Void  NOTE 4: NR operating band groups in FR1 are as defined in clause 3.5.2. | | | | | | | |

##### 12.5B.1.11.2 CSI-RS based L1-RSRP accuracy requirements

###### 12.5B.1.11.2.1 Absolute Accuracy

Unless otherwise specified, the requirements for absolute accuracy of CSI-RS based L1-RSRP in this clause apply to all CSI-RS resources of the serving cell configured for L1-RSRP measurement.

The accuracy requirements in Table 12.5B.1.11.2.1-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant CSI-RS.

- The bandwidth of CSI-RS is 48 PRBs and the density is 3.

The performance with larger bandwidth of CSI-RS is equal to or better than the accuracy requirements in Table 12.5B.1.11.2.1-1.

Table 12.5B.1.11.2.1-1: CSI-RS based L1-RSRP absolute accuracy in FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | | |
| Normal condition | Extreme condition | CSI-RS Ês/Iot | Io Note 1 range | | | | | |
|  |  |  | NR operating band groups Note 2 | Minimum Io | | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSCSI-RS | | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSCSI-RS = 15 kHz | SCSCSI-RS = 30 kHz | SCSCSI-RS = 60 kHz |  |  |
|  |  |  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,  NR\_SDL\_FR1\_A | -121 | -118 | -115 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_B | -120.5 | -117.5 | -114.5 | N/A | -70 |
|  |  |  | NR\_TDD\_FR1\_C | -120 | -117 | -114 | N/A | -70 |
| ±5.0 | ±9.5 | ≥-3 | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -116.5 | -113.5 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -116 | -113 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_F | -118.5 | -115.5 | -112.5 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_G | -118 | -115 | -112 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_H | -117.5 | -114.5 | -111.5 | N/A | -70 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -111.5 | -108.5 | N/A | -70 |
| ±8.5 | ±11.5 | ≥-3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,  NR\_SDL\_FR1\_A,  NR\_FDD\_FR1\_B, NR\_TDD\_FR1\_C, NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D, NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E, NR\_FDD\_FR1\_F,  NR\_FDD\_FR1\_G, NR\_FDD\_FR1\_H,  NR\_FDD\_FR1\_N | N/A | N/A | N/A | -70 | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: NR operating band groups in FR1 are as defined in clause 3.5.2. | | | | | | | | |

###### 12.5B.1.11.2.2 Relative Accuracy

The relative accuracy of CSI-RS based L1-RSRP is defined as the L1-RSRP measured from one CSI-RS compared to the largest measured value of L1-RSRP among all CSI-RS resources of the serving cell.

The accuracy requirements in Table 12.5B.1.11.2.2-1 are valid under the following conditions:

- Conditions defined in clause 7.2.2 or 10.3.2 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant CSI-RS.

- The bandwidth of CSI-RS is 48 PRBs and the density is 3.

The performance with larger bandwidth of CSI-RS is equal to or better than the accuracy requirements in Table 12.5B.1.11.2.2-1.

Table 12.5B.1.11.2.2-1: CSI-RS based L1-RSRP relative accuracy in FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | | | |
| Normal condition | Extreme condition | CSI-RS Ês/Iot Note 2 | Io Note 1 range | | | | | |
|  |  |  | NR operating band groups Note 4 | Minimum Io | | | | Maximum Io |
| dB | dB | dB |  | dBm / SCSCSI-RS | | | dBm/BWChannel | dBm/BWChannel |
|  |  |  |  | SCSCSI-RS = 15 kHz | SCSCSI-RS = 30 kHz | SCSCSI-RS = 60 kHz |  |  |
|  |  |  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,  NR\_SDL\_FR1\_A | -121 | -118 | -115 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_B | -120.5 | -117.5 | -114.5 | N/A | -50 |
|  |  |  | NR\_TDD\_FR1\_C | -120 | -117 | -114 | N/A | -50 |
| ±3 | ±4 | ≥-3 | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -116.5 | -113.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -116 | -113 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_F | -118.5 | -115.5 | -112.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_G | -118 | -115 | -112 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_H | -117.5 | -114.5 | -111.5 | N/A | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -111.5 | -108.5 | N/A | -50 |
| NOTE 1: Io is assumed to have constant EPRE across the bandwidth.  NOTE 2: The parameter CSI-RS Ês/Iot is the minimum CSI-RS Ês/Iot of the pair of CSI-RS resources to which the requirement applies.  NOTE 3: Void  NOTE 4: NR operating band groups in FR1 are as defined in clause 3.5.2. | | | | | | | | |

#### 12.5B.1.12 L1-RSRP Accuracy Requirements for FR2

##### 12.5B.1.12.1 SSB based L1-RSRP accuracy requirements

Unless otherwise specified, the requirements for absolute accuracy and relative accuracy of SSB based L1-RSRP in this clause apply to all SSBs of the serving cell configured for L1-RSRP measurement and all SSBs of cell(s) with different PCI from serving cell configured for L1-RSRP measurement in FR2.

###### 12.5B.1.12.1.1 Absolute Accuracy

The accuracy requirements in Table 10.1.20.1.1-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

- The measured signals are in the directions covered by the mIAB-MT as declared.

Table 10.1.20.1.1-1: SSB based L1-RSRP absolute accuracy in FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | | |
|  |  |  | Minimum Io | | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 2 | | dBm/BWChannel | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |  |
| ±6.5 | ±9.5 | ≥-3 | TBDl | | N/A | -70 |
| ±8.5 | ±11.5 | ≥-3 | N/A | | -70 | -50 |
| Note 1: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  Note 2: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  Note 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | | |

###### 12.5B.1.12.1.2 Relative Accuracy

The relative accuracy of SSB based L1-RSRP is defined as the L1-RSRP measured from one SSB compared to the largest measured value of L1-RSRP among all SSBs of the cell (serving cell or cell with different PCI from serving cell) on which the mIAB-MT performs L1-RSRP measurements.

The accuracy requirements in Table 12.5B.1.12.1.2-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant SSB.

- The measured signals are in the directions covered by the mIAB-MT as declared.

Table 12.5B.1.12.1.2-1: SSB based L1-RSRP relative accuracy in FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | |
| Normal condition | Extreme condition | SSB Ês/Iot | Io Note 1 range | | |
|  |  |  | Minimum Io | | Maximum Io |
| dB | dB | dB | dBm / SCSSSB Note 3 | | dBm/BWChannel |
|  |  |  | SCSSSB = 120kHz | SCSSSB = 240kHz |  |
| ±6.5 | ±9.5 | ≥-3 | TBD | | -50 |
| NOTE 1: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  NOTE 2: The parameter SSB Ês/Iot is the minimum SSB Ês/Iot of the pair of SSBs to which the requirement applies.  NOTE 3: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  NOTE 4: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | |

##### 12.5B.1.12.2 CSI-RS based L1-RSRP accuracy requirements

###### 12.5B.1.12.2.1 Absolute Accuracy

Unless otherwise specified, the requirements for absolute accuracy of CSI-RS based L1-RSRP in this clause apply to all CSI-RS resources of the serving cell configured for L1-RSRP measurement.

The accuracy requirements in Table 12.5B.1.12.2.1-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant CSI-RS.

- The bandwidth of CSI-RS is 48 PRBs and the density is 3.

- The measured signals are in the directions covered by the mIAB-MT as declared.

The performance with larger bandwidth of CSI-RS is equal to or better than the accuracy requirements in Table 12.5B.1.12.2.1-1.

Table 12.5B.1.12.2.1-1: CSI-RS based L1-RSRP absolute accuracy in FR2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | | |
| Normal condition | Extreme condition | CSI-RS Ês/Iot | Io Note 1 range | | | |
|  |  |  | Minimum Io | | | Maximum Io |
| dB | dB | dB | dBm / SCSCSI-RS Note 2 | | dBm/BWChannel | dBm/BWChannel |
|  |  |  | SCSCSI-RS = 60kHz | SCSCSI-RS = 120kHz |  |  |
| ±6.5 | ±9.5 | ≥-3 | TBD | | N/A | -70 |
| ±8.5 | ±11.5 | ≥-3 | N/A | | -70 | -50 |
| NOTE 1: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  NOTE 2: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  NOTE 3: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | | |

###### 12.5B.1.12.2.2 Relative Accuracy

The relative accuracy of CSI-RS based L1-RSRP is defined as the L1-RSRP measured from one CSI-RS compared to the largest measured value of L1-RSRP among all CSI-RS resources of the serving cell.

The accuracy requirements in Table 12.5B.1.12.2.2-1 are valid under the following conditions:

- Conditions defined in clause 10.3.3 for reference sensitivity are fulfilled.

- Conditions for L1-RSRP measurements are fulfilled according to Annex X.X for a corresponding Band for each relevant CSI-RS.

- The bandwidth of CSI-RS is 48 PRBs and the density is 3.

- The measured signals are in the directions covered by the mIAB-MT as declared.

The performance with larger bandwidth of CSI-RS is equal to or better than the accuracy requirements in Table 12.5B.1.12.2.2-1.

Table 12.5B.1.12.2.2-1: CSI-RS based L1-RSRP relative accuracy in FR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Accuracy | | Conditions | | | |
| Normal condition | Extreme condition | CSI-RS Ês/Iot | Io Note 1 range | | |
|  |  |  | Minimum Io | | Maximum Io |
| dB | dB | dB | dBm / SCSCSI-RS | | dBm/BWChannel |
|  |  |  | SCSCSI-RS = 60kHz | SCSCSI-RS = 120kHz |  |
| ±6.5 | ±9.5 | ≥-3 | TBD | | -50 |
| NOTE 1: Io specified at the Reference point, and assumed to have constant EPRE across the bandwidth.  NOTE 2: The parameter CSI-RS Ês/Iot is the minimum CSI-RS Ês/Iot of the pair of CSI-RS resources to which the requirement applies.  NOTE 3: Values based on Refsens and EIS in declared direction. Applicable side condition selected depending on angle of arrival.  NOTE 4: In the test cases, the SSB Ês/Iot and related parameters may need to be adjusted to ensure Ês/Iot at mIAB-MT baseband is above the value defined in this table. | | | | | |

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

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

G.2.1.2 Void

### G.2.1.2B Handover for mIAB-MT

#### G.2.1.2B.1 Intra-frequency handover from FR1 to FR1; known target cell

G.2.1.2B.1.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR1-NR FR1 intra frequency handover requirements specified in clause 12.1.2B.2.

G.2.1.2B.1.2 Test Parameters

Supported test configurations are shown in table G.2.1.2B.1.2-1. Both handover delay and interruption length are tested by using the parameters in table G.2.1.2B.1.2-2, and G.2.1.2B.1.2-3.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the mIAB-MT may not have any timing information of cell 2.

NR shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the mIAB-MT during period T2, after the mIAB-MT has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

**Table G.2.1.2B.1.2-1: Intra-frequency handover from FR1 to FR1 test configurations**

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

**Table G.2.1.2B.1.2-2: General test parameters Intra-frequency handover from FR1 to FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | **Comment** |
| Initial conditions | Active cell |  | Cell 1 |  |
|  | Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| A3-Offset | | dB | 0 |  |
| Hysteresis | | dB | 0 |  |
| Time To Trigger | | s | 0 |  |
| Filter coefficient | |  | 0 | L3 filtering is not used |
| Access Barring Information | | - | Not Sent | No additional delays in random access procedure. |
| Time offset between cells | |  | 3 μs | Synchronous cells |
| T1 | | s | 5 |  |
| T2 | | s | ≤5 |  |
| T3 | | s | 1 |  |

**Table G.2.1.2B.1.2-3: Cell specific test parameters for NR FR1-FR1 Intra frequency handover test case**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **Cell 1** | | | | | | **Cell 2** | | | | |
|  | | |  | **T1** | | **T2** | | **T3** | | **T1** | | **T2** | | **T3** |
| NR RF Channel Number | | |  | 1 | | | | | | 1 | | | | |
| Duplex mode | | Config 1 |  | FDD | | | | | | | | | | |
|  | | Config 2,3 |  | TDD | | | | | | | | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | | | | | | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | | | | | | | | |
|  | | Config 3 |  | TDDConf.2.1 | | | | | | | | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | | | | | |
| BWP BW | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | | | | | |
| DRX Cycle | | | ms | Not Applicable | | | | | | | | | | |
| PDSCH Reference | | Config 1 |  | SR.1.1 FDD | | | | | | | | | | |
| measurement channel | | Config 2 |  | SR.1.1 TDD | | | | | | | | | | |
|  | | Config 3 |  | SR2.1 TDD | | | | | | | | | | |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | | | | | | | | | | |
|  | | Config 2 | CR.1.1 TDD | | | | | | | | | | |
|  | | Config 3 | CR2.1 TDD | | | | | | | | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | | | | | | | | | | |
|  | | Config 2 |  | TRS.1.1 TDD | | | | | | | | | | |
|  | | Config 3 |  | TRS.1.2 TDD | | | | | | | | | | |
| OCNG Patterns | | |  | OP.1 | | | | | | | | | | |
| SMTC Configuration | | |  | SMTC.1 | | | | | | | | | | |
| SSB Configuration | | Config 1,2 |  | SSB.1 FR1 | | | | | | | | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | | | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | | | | | |
| PUCCH/PUSCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | | | | | |
| PRACH configuration | | |  | FR1 PRACH configuration 1 | | | | | | | | | | |
| BWP configuration | | Initial DL BWP |  | DLBWP.0.1 | | | | | | | | | | |
|  | | Dedicated DL BWP |  | DLBWP.1.1 | | | | | | | | | | |
|  | | Initial UL BWP |  | ULBWP.0.1 | | | | | | | | | | |
|  | | Dedicated UL BWP |  | ULBWP.1.1 | | | | | | | | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | | | | | | | | | | |
| EPRE ratio of PBCH DMRS to SSS | | |
| EPRE ratio of PBCH to PBCH DMRS | | |
| EPRE ratio of PDCCH DMRS to SSS | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | |
| EPRE ratio of PDSCH DMRS to SSS | | |
| EPRE ratio of PDSCH to PDSCH | | |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |
| Note2 | | | dBm/15kHz | -98 | | | | | | | | | | |
| Note2 | Config 1,2 | | dBm/SCS | -98 | | | | | | | | | | |
|  | Config 3 | |  | -95 | | | | | | | | | | |
|  | | | dB | 8 | -3.3 | | -3.3 | | -Infinity | | 2.36 | | 2.36 | |
|  | | | dB | 8 | 8 | | 8 | | -Infinity | | 11 | | 11 | |
| SSB\_RP | Config 1,2 | | dBm/SCS | -90 | -90 | | -90 | | -Infinity | | -87 | | -87 | |
|  | Config 3 | | dBm/SCS | -87 | -87 | | -87 | | -Infinity | | -84 | | -84 | |
| IoNote3 | Config 1,2 | | dBm/  9.36MHz | -61.41 | -57.06 | | -57.06 | | -61.41 | | -57.06 | | -57.06 | |
|  | Config 3 | | dBm/  38.16MHz | -55.31 | -50.96 | | -50.96 | | -55.31 | | -50.96 | | -50.96 | |
| Propagation condition | | | - | AWGN | | | | | AWGN | | | | | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.  Note 3: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | | | | | | | | | |

G.2.1.2B.1.3 Test Requirements

The mIAB-MT shall start to transmit the PRACH to Cell 2 less than 72 ms from the beginning of time period T3.

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

NOTE: The handover delay can be expressed as: RRC procedure delay + Tinterrupt, where:

RRC procedure delay = 10 ms and is specified in clause 12 in TS 38.331 [2].

Tinterrupt = 62 ms in the test. Tinterrupt is defined in clause 12.1.2B.2.2.

#### G.2.1.2B.2 Intra-frequency handover from FR1 to FR1; unknown target cell

G.2.1.2B.2.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR1-NR FR1 intra frequency handover requirements specified in clause 12.1.2B.2.

G.2.1.2B.2.2 Test Parameters

Supported test configurations are shown in table G.2.1.2B.2.2-1. Both handover delay and interruption length are tested by using the parameters in table G.2.1.2B.2.2-2, and G.2.1.2B.2.2-3.

The test scenario comprises of two carriers and one cell on each carrier. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the mIAB-MT does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the mIAB-MT receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the mIAB-MT.

**Table G.2.1.2B.2.2-1: Intra-frequency handover from FR1 to FR1 test configurations**

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

**Table G.2.1.2B.2.2-2: General test parameters Intra-frequency handover from FR1 to FR1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | **Comment** |
| **Initial conditions** | Active cell |  | Cell 1 |  |
|  | Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| Access Barring Information | | - | Not Sent | No additional delays in random access procedure. |
| Time offset between cells | |  | 3 μs | Synchronous cells |
| T1 | | s | 5 |  |
| T2 | | s | ≤5 |  |

**Table G.2.1.2B.2.2-3: Cell specific test parameters for NR FR1-FR1 Intra frequency handover test case**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **Cell 1** | | | | **Cell 2** | | |
|  | | |  | **T1** | | **T2** | | **T1** | | **T2** |
| NR RF Channel Number | | |  | 1 | | | | 1 | | |
| Duplex mode | | Config 1 |  | FDD | | | | | | |
|  | | Config 2,3 |  | TDD | | | | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | | | | |
|  | | Config 3 |  | TDDConf. 2.1 | | | | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | |
| BWP BW | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | |
| DRX Cycle | | | ms | Not Applicable | | | | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | | | | | | |
|  | | Config 2 |  | SR.1.1 TDD | | | | | | |
|  | | Config 3 |  | SR2.1 TDD | | | | | | |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | | | | | | |
|  | | Config 2 |  | CR.1.1 TDD | | | | | | |
|  | | Config 3 |  | CR2.1 TDD | | | | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | | | | | | |
|  | | Config 2 |  | TRS.1.1 TDD | | | | | | |
|  | | Config 3 |  | TRS.1.2 TDD | | | | | | |
| OCNG Patterns | | |  | OP.1 | | | | | | |
| SMTC Configuration | | |  | SMTC.1 | | | | | | |
| SSB Configuration | | Config 1,2 |  | SSB.1 FR1 | | | | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | |
| PUCCH/PUSCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | |
|  | | Config 3 |  | 30 kHz | | | | | | |
| PRACH configuration | | |  | FR1 PRACH configuration 1 | | | | | | |
| BWP configuration | | Initial DL BWP |  | DLBWP.0.1 | | | | | | |
|  | | Dedicated DL BWP |  | DLBWP.1.1 | | | | | | |
|  | | Initial UL BWP |  | ULBWP.0.1 | | | | | | |
|  | | Dedicated UL BWP |  | ULBWP.1.1 | | | | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | | | | | | |
| EPRE ratio of PBCH DMRS to SSS | | |  |  | | | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | |  |  | | | | | | |
| EPRE ratio of PDCCH DMRS to SSS | | |  |  | | | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | |  |  | | | | | | |
| EPRE ratio of PDSCH DMRS to SSS | | |  |  | | | | | | |
| EPRE ratio of PDSCH to PDSCH | | |  |  | | | | | | |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |  |  | | | | | | |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |  |  | | | | | | |
| Note2 | | | dBm/15kHz | -98 | | | | | | |
| Note2 | Config 1,2 | | dBm/SCS | -98 | | | | | | |
|  | Config 3 | |  | -95 | | | | | | |
|  | | | dB | 8 | -0.64 | | -Infinity | | -0.64 | |
|  | | | dB | 8 | 8 | | -Infinity | | 8 | |
| SSB\_RP | Config 1,2 | | dBm/SCS | -90 | -90 | | -Infinity | | -90 | |
|  | Config 3 | | dBm/SCS | -87 | -87 | | -Infinity | | -87 | |
| IoNote3 | Config 1,2 | | dBm/  9.36MHz | -61.41 | -58.71 | | -61.41 | | -58.71 | |
|  | Config 3 | | dBm/  38.16MHz | -55.31 | -52.60 | | -55.31 | | -52.60 | |
| Propagation condition | | | - | AWGN | | | AWGN | | | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.  Note 3: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | | | | | |

G.2.1.2B.2.3 Test Requirements

The mIAB-MT shall start to transmit the PRACH to Cell 2 less than 92 ms from the beginning of time period T2.

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

NOTE: The handover delay can be expressed as: RRC procedure delay + Tinterrupt, where:

RRC procedure delay = 10 ms and is specified in clause 12 in TS 38.331 [2].

Tinterrupt = 82 ms in the test. Tinterrupt is defined in clause 12.1.2B.2.2.

#### G.2.1.2B.3 Intra-frequency handover from FR2-1 to FR2-1; known target cell

G.2.1.2B.3.1 Test Purpose and Environment

This test is to verify the requirement for the NR FR2-1-NR FR2-1 intra frequency handover requirements specified in clause 12.1.2B.3.

G.2.1.2B.3.2 Test Parameters

Supported test configurations are shown in table G.2.1.2B.3.2-1. Both handover delay and interruption length are tested by using the parameters in table G.2.1.2B.3.2-2, and G.2.1.2B.3.2-3.

The test scenario comprises of carriers and one cell on each carrier. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the mIAB-MT does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the mIAB-MT receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the mIAB-MT.

Table G.2.1.2B.3.2-1: Intra-frequency handover from FR2-1 to FR2-1 test configurations

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

Table G.2.1.2B.3.2-2: General test parameters Intra-frequency handover from FR2-1 to FR2-1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
| Initial conditions | Active cell |  | Cell 1 |  |
| Neighbouring cell |  | Cell 2 |  |
| Final condition | Active cell |  | Cell 2 |  |
| Access Barring Information | | - | Not Sent | No additional delays in random access procedure. |
| Time offset between cells | |  | 3 μs | Synchronous cells |
| T1 | | s | 5 |  |
| T2 | | s | ≤10 |  |

Table G.2.1.2B.3.2-3: Cell specific test parameters for NR FR2-1-FR2-1 Intra frequency handover test case

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Cell 1 | | | | Cell 2 | | |
|  | | |  | T1 | | T2 | | T1 | | T2 |
| Assumption for mIAB-MT beamsNote 6 | | |  | Rough | | | | Rough | | |
| AoA setup | | |  | Setup 1 as defined in G.1.8.1 | | | | | | |
| NR RF Channel Number | | |  | **1** | | | | **1** | | |
| Duplex mode | | |  | TDD | | | | | | |
| TDD configuration | | |  | TDDConf.3.1 | | | | | | |
| BWchannel | | | MHz | 100: NRB,c = 66 | | | | | | |
| BWP BW | | | MHz | 100: NRB,c = 66 | | | | | | |
| Data RBs allocated | | |  | 66 | | | | | | |
| DRX Cycle | | | ms | Not Applicable | | | | | | |
| PDSCH Reference measurement channel | | |  | SR3.1 TDD | | | | | | |
| RMSI CORESET Reference Channel | | |  | CR3.1 TDD | | | | | | |
| Control Channel RMC | | |  | CCR.3.1 TDD | | | | | | |
| OCNG Patterns | | |  | OP.1 | | | | | | |
| SMTC Configuration | | |  | SMTC pattern 1 | | | | | | |
| SSB Configuration | | |  | SSB. 3 FR2-1 | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | | kHz | 120 kHz | | | | | | |
| PUCCH/PUSCH subcarrier spacing | | | kHz | 120 kHz | | | | | | |
| PRACH configuration | | |  | FR2-1 PRACH configuration 1 | | | | | | |
| TRS configuration | | |  | TRS.2.1 TDD | | | | | | |
| PDSCH/PDCCH TCI state | | |  | TCI.State.2 | | | | | | |
| BWP configuraiton | | Initial DL BWP |  | DLBWP.0.1 | | | | | | |
|  | | Dedicated DL BWP |  | DLBWP.1.1 | | | | | | |
|  | | Initial UL BWP |  | ULBWP.0.1 | | | | | | |
|  | | Dedicated UL BWP |  | ULBWP.1.1 | | | | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | | | 0 | | | |
| EPRE ratio of PBCH DMRS to SSS | | |  |  | | |  | | | |
| EPRE ratio of PBCH to PBCH DMRS | | |  |  | | |  | | | |
| EPRE ratio of PDCCH DMRS to SSS | | |  |  | | |  | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | |  |  | | |  | | | |
| EPRE ratio of PDSCH DMRS to SSS | | |  |  | | |  | | | |
| EPRE ratio of PDSCH to PDSCH | | |  |  | | |  | | | |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |  |  | | |  | | | |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |  |  | | |  | | | |
| Note2 | | | dBm/15kHz | -104.7 | | | | | | |
| Note2 |  | | dBm/SCS | -95.7 | | | | | | |
|  | | | dB | 6 | -1.8 | | -Infinity | | 0 | |
|  | | | dB | 6 | 6 | | -Infinity | | 7 | |
| IoNote3 |  | | dBm/  BW | -59.7 | -56.7 | | -59.7 | | -56.7 | |
| Propagation condition | | | - | AWGN | | | AWGN | | | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.  Note 3: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of mIAB-MT beam does not limit mIAB-MT implementation or test system implementation | | | | | | | | | | |

G.2.1.2B.3.3 Test Requirements

The mIAB-MT shall start to transmit the PRACH to Cell 2 less than 232 ms from the beginning of time period T2.

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

NOTE: The handover delay can be expressed as: RRC procedure delay + Tinterrupt, where:

RRC procedure delay = 10 ms and is specified in clause 12 in TS 38.331 [2].

Tinterrupt = 222 ms in the test. Tinterrupt is defined in clause 12.1.2B.3.2.

This gives a total of 232 ms.

**----------------------END OF CHANGE 2----------------------------**

**----------------------START OF CHANGE 3----------------------------**

### G.2.2 Timing

#### G.2.2.1 Transmit timing

##### G.2.2.1.1 NR IAB-MT and mIAB-MT Transmit Timing Test for FR1

G.2.2.1.1.1 Test Purpose and environment

The purpose of this test is to verify that the IAB-MT can follow frame timing change of the connected gNodeb and that the IAB-MT initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 12.2.1.2. mIAB-MT type 1-H and local area IAB-MT type 1-H shall be tested with this test.

Supported test configurations are shown in Table G.2.2.1.1.1-1.

Table G.2.2.1.1.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | NR TDD, SSB SCS 15 kHz, data SCS 15 kHz, BW 10 MHz |
| 2 | NR TDD, SSB SCS 30 kHz, data SCS 30 kHz, BW 40 MHz |
| Note: The IAB-MT is only required to be tested in one of the supported test configurations | |

For this test a single NR cell (Cell 1) is used. Table G.2.2.1.1.1-2 defines the parameters to be configured and strength of the transmitted signals. The transmit timing is verified by the IAB-MT transmitting SRS using the configuration defined in Table G.2.2.1.1.1-3.

Table G.2.2.1.1.1-2: Cell Specific Test Parameters for UL Transmit Timing test

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Config | Test1 |
| SSB ARFCN |  | 1,2,3 | 1 |
| TDD configuration |  | 1 | TDDConf.1.1 |
| 2 | TDDConf.1.2 |
| BWchannel | MHz | 1 | 10: NRB,c = 52 |
| 2 | 10: NRB,c = 52 |
| 3 | 40: NRB,c = 106 |
| Initial BWP Configuration |  | 1,2,3 | DLBWP.0.1  ULBWP.0.1 |
| Dedicated BWP Configuration |  | 1,2,3 | DLBWP.1.1  ULBWP.1.1 |
| DRX Cycle | ms |  | N/A |
| PDSCH Reference measurement channel |  | 1 | SR.1.1 TDD |
| 2 | SR.2.1 TDD |
| RMSI CORESET Reference Channel |  | 1 | CR.1.1 TDD |
| 2 | CR.2.1 TDD |
| Dedicated CORESET Reference Channel |  | 1 | CCR.1.1 TDD |
| 2 | CCR.2.1 TDD |
| OCNG Patterns |  | 1,2,3 | OP.1 |
| SSB configuration |  | 1,2 | SSB.1 FR1 |
| 3 | SSB.2 FR1 |
| SMTC Configuration |  | 1,2 | SMTC.1 |
| 3 | SMTC.2 |
| TRS configuration |  | 1 | TRS.1.1 TDD |
|  | 2 | TRS.1.2 TDD |
| EPRE ratio of PSS to SSS | dB | 1,2,3 | 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/15 kHz | 1,2,3 | -98 |
| Note2 | dBm/SCS | 1,2 | -98 |
| 3 | -95 |
|  |  | 1,2,3 | 3 |
|  |  | 1,2,3 | 3 |
| SS-RSRPNote3 | dBm/SCS | 1,2 | -95 |
| 3 | -92 |
| IoNote3 | dBm/9.36MHz | 1,2 | -65.2 |
| dBm/38.1MHz | 3 | -59.2 |
| Propagation condition |  | 1,2,3 | AWGN |
| SRS Config |  | 1,2 | SRSConf.1Note5 |
|  | 3 | SRSConf.1Note5 |
| Note 1: OCNG shall be used such that the resources in Cell 1 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.  Note 5: SRS configs are given in Table G.2.2.1.1.1-3 | | | |

Table G.2.2.1.1.1-3: SRS Configuration for Timing Accuracy Test

|  |  |  |  |
| --- | --- | --- | --- |
|  | Field | SRSConf.1 | Comments |
| SRS-ResourceSet | srs-ResourceSetId | 0 |  |
| srs-ResourceIdList | 0 |  |
| resourceType | Periodic |  |
| Usage | Codebook |  |
| SRS-Resource | SRS-ResourceId | 0 |  |
| nrofSRS-Ports | Port1 |  |
| transmissionComb | n2 |  |
| combOffset-n2 | 0 |  |
| cyclicShift-n2 | 0 |  |
| resourceMapping  startPosition | 0 |  |
| resourceMapping  nrofSymbols | n1 |  |
| resourceMapping  repetitionFactor | n1 |  |
| freqDomainPosition | 0 |  |
| freqDomainShift | 0 |  |
| freqHopping  c-SRS | 14 for test configuration 1,2  25 for test configuration 3 | Matches NRB,c |
| freqHopping  b-SRS | 0 |  |
| freqHopping  b-hop | 0 |  |
| groupOrSequenceHopping | Neither |  |
| resourceType | Periodic |  |
| periodicityAndOffset-p | sl1, 0 |  |
| sequenceId | 0 | Any 10 bit number |

G.2.2.1.1.2 Test requirements

The test sequence shall be carried out in RRC\_CONNECTED for every test case.

Following will be the test sequence for this test

1) Setup NR PCell according to parameters given in Table G.2.2.1.1.1-1.

2) After connection set up with the cell, the test equipment will verify that the timing of the NR cell is within (NTA + NTA\_offset) ×Tc ± Te of the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

a. The NTA offset value (in Tc units) is 25600

b. The Te values depend on the DL and UL SCS for which the test is being run and are given in Table 12.2.1.2-1

3) The test system shall adjust the timing of the DL path by values given in Table G.2.2.1.1.2-1

Table G.2.2.1.1.2-1: Adjustment Value for DL Timing

|  |  |
| --- | --- |
| SCS of SSB signals (KHz) | Adjustment Value |
|  | Test1 |
| 15 | +64\*64Tc |
| 30 | +32\*64Tc |

4) The test system shall verify that the adjustment step size and the adjustment rate shall be according to requirements specified in clause 12.2.1.2 Table 12.2.1.2.1-1 until the IAB-MT transmit timing offset is within (NTA + NTA\_offset) ×Tc ± Te respective to the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

5) The test system shall verify that the IAB-MT transmit timing offset stays within (NTA + NTA\_offset) ×Tc ± Te of the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

##### G.2.2.1.2 NR IAB-MT and mIAB-MT Transmit Timing Test for FR2-1

G.2.2.1.2.1 Test Purpose and environment

The purpose of this test is to verify that the IAB-MT can follow frame timing change of the connected gNodeb and that the IAB-MT initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 12.2.1.2. mIAB-MT type 2-O and local area IAB-MT type 2-O shall be tested with this test.

Supported test configurations are shown in Table G.2.2.1.2.1-1.

Table G.2.2.1.2.1-1: Supported test configurations for FR2-1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | NR TDD, SSB SCS 240 kHz, data SCS 120 kHz, BW 100 MHz |

For this test a single NR cell is used. Tables G.2.2.1.2.1-2 and Tables G.2.2.1.2.1-2A define the parameters to be configured and strength of the transmitted signals. The transmit timing is verified by the IAB-MT transmitting SRS using the configuration defined in Table G.2.2.1.2.1-3.

Table G.2.2.1.2.1-2: Cell Specific Test Parameters for UL Transmit Timing test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Config | Test1 | Test2 |
| SSB ARFCN |  | 1 | Freq1 | Freq1 |
| BWchannel | MHz | 1 | 100: NRB,c = 66 | |
| Initial BWP Configuration |  | 1 | DLBWP.0.1  ULBWP.0.1 | |
| Dedicated BWP Configuration |  | 1 | DLBWP.1.1  ULBWP.1.1 | |
| TRS Configuration |  | 1 | TRS.2.1 TDD | |
| TCI State |  | 1 | CSI-RS.Config.0 | |
| DRx Cycle | ms |  | N/A | |
| PDSCH Reference measurement channel |  | 1 | SR.3.1 TDD | |
| RMSI CORESET Reference Channel |  | 1 | CR.3.1 TDD | |
| Dedicated CORESET Reference Channel |  | 1 | CCR.3.1 TDD | |
| OCNG Patterns |  | 1 | OP.1 | |
| SSB Configuration |  | 1 | SSB.4 FR2-1 | |
| SMTC Configuration |  | 1 | SMTC.1 | |
| EPRE ratio of PSS to SSS | dB | 1 | 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) |  |  |  |  |
| Propagation condition |  | 1 | AWGN | |
| SRS Config |  | 1 | SRSConf.1Note5 | SRSConf.2Note5 |
| 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.  Note 5: SRS configs are given in Table G.2.2.1.2.1-3 | | | | |

Table G.2.2.1.2.1-2A: OTA related test parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test 1 | Test 2 |
| Angle of arrival configuration |  | Setup 1 according to clause G.1.8 | |
| Note1 | dBm/15kHzNote4 | -112 | |
| Note1 | dBm/SCSNote3 | -103 | |
|  | dB | 4 | |
| SS-RSRPNote2 | dBm/SCS Note4 | -99 | |
|  | dB | 4 | |
| IoNote2 | dBm/95.04 MHz Note4 | -68.5 | |
| Note 1: 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 2: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the centre of the quiet zone | | | |

Table G.2.2.1.2.1-3: SRS Configuration for Timing Accuracy Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field | SRSConf.1 | SRSConf.2 | Comments |
| SRS-ResourceSet | srs-ResourceSetId | 0 | 0 |  |
|  | srs-ResourceIdList | 0 | 0 |  |
|  | resourceType | Periodic | Periodic |  |
|  | Usage | Codebook | Codebook |  |
| SRS-Resource | SRS-ResourceId | 0 | 0 |  |
|  | nrofSRS-Ports | Port1 | Port1 |  |
|  | transmissionComb | n2 | n2 |  |
|  | combOffset-n2 | 0 | 0 |  |
|  | cyclicShift-n2 | 0 | 0 |  |
|  | resourceMapping  startPosition | 0 | 0 |  |
|  | resourceMapping  nrofSymbols | n1 | n1 |  |
|  | resourceMapping  repetitionFactor | n1 | n1 |  |
|  | freqDomainPosition | 0 | 0 |  |
|  | freqDomainShift | 0 | 0 |  |
|  | freqHopping  c-SRS | 17 | 17 | Matches NRB,c |
|  | freqHopping  b-SRS | 0 | 0 |  |
|  | freqHopping  b-hop | 0 | 0 |  |
|  | groupOrSequenceHopping | Neither | Neither |  |
|  | resourceType | Periodic | Periodic |  |
|  | periodicityAndOffset-p | sl1, 0 | sl2560, 4 |  |
|  | sequenceId | 0 | 0 | Any 10 bit number |

G.2.2.1.2.2 Test requirements

The test sequence shall be carried out in RRC\_CONNECTED for every test case.

Following will be the test sequence for this test:

1) Setup NR PCell according to parameters given in Table G.2.2.1.2.1-1.

2) After connection set up with the cell, the test equipment will verify that the timing of the NR cell is within (NTA + NTA\_offset) ×Tc ± Te of the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

a. The NTA offset value (in Tc units) is 13792

b. The Te values depend on the DL and UL SCS for which the test is being run and are given in Table 12.2.1.2-1

3) The test system shall adjust the timing of the DL path by values given in Table G.2.2.1.2.2-1

Table G.2.2.1.2.2-1: Adjustment Value for DL Timing

|  |  |  |
| --- | --- | --- |
| SCS of SSB signals (kHz) | Adjustment Value | |
|  | Test1 | Test2 |
| 240 | +8\*64Tc | +4\*64Tc |

4) The test system shall verify that the adjustment step size and the adjustment rate shall be according to requirements specified in clause 12.2.1.2 Table 12.2.1.2.1-1 until the IAB-MT transmit timing offset is within (NTA + NTA\_offset) ×Tc ± Te respective to the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

5) The test system shall verify that the IAB-MT transmit timing offset stays within (NTA + NTA\_offset) ×Tc ± Te of the first path (in time) of DL SSB used by the IAB-MT to determine downlink timing is received from the reference cell at the IAB-MT antenna.

#### G.2.2.2 Timing advance

##### G.2.2.2.1 Void

##### G.2.2.2.1B NR mIAB-MT FR2-1 timing advance adjustment accuracy

###### G.2.2.2.1B.1 Test Purpose and Environment

The purpose of the test is to verify mIAB-MT Timing Advance adjustment delay and accuracy requirement defined in clause 12.2.3. mIAB-MT type 2-O shall be tested with this test.

###### G.2.2.2.1B.2 Test Parameters

Supported test configurations are shown in table G.2.2.2.1B.2-1. Both timing advance adjustment delay and accuracy are tested by using the parameters in table G.2.2.2.1B.2-2, G.2.2.2.1B.2-3 and G.2.2.2.1B.2-4.

In all test cases, single cell is used. Each test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the mIAB-MT and Sounding Reference Signals (SRS), as specified in table G.2.2.2.1B.2-3, are sent from the mIAB-MT and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in clause 6.1.3.4 in TS 38.321 [14]. The Timing Advance Command value shall be set to 31, which according to clause 4.2 in TS 38.213 [10] results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the mIAB-MT is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table G.2.2.2.1B.2-2. This value shall result in changes of the timing advance used by the mIAB-MT, and the accuracy of the change shall then be measured, using the SRS sent from the mIAB-MT.

As specified in Clause 12.2.3.1, the mIAB-MT adjusts its uplink timing at slot n+k+1 for a timing advance command received in slot n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the mIAB-MT.

The mIAB-MT Time Alignment Timer, described in Clause 5.2 in TS 38.321 [14], shall be configured so that it does not expire in the duration of the test.

Table G.2.2.2.1B.2-1: Timing advance supported test configurations

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

Table G.2.2.2.1B.2-2: General test parameters for timing advance

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| RF channel number |  | 1 |  |
| Initial DL BWP |  | DLBWP.0.1 | As specified in Table G.1.4.2.1-1 |
| Dedicated DL BWP |  | DLBWP.1.1 | As specified in Table G.1.4.2.2-1 |
| Initial UL BWP |  | ULBWP.0.1 | As specified in Table G.1.4.2.1-1 |
| Dedicated UL BWP |  | ULBWP.1.1 | As specified in Table G.1.4.2.2-1 |
| Timing Advance Command (*TA*) value during T1 |  | 31 | *NTA\_new = NTA\_old* for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2 |
| Timing Advance Command (*TA*) value during T2 |  | 39 | *For 120 kHz SCS NTA\_new = NTA\_old + 1024\*Tc* (based on equation in clause 4.2 of TS 38.213 [10]) |
| T1 | s | 5 |  |
| T2 | s | 5 |  |

Table G.2.2.2.1B.2-3: Cell specific test parameters for timing advance

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test1 | |
|  |  | T1 | T2 |
| Duplex mode |  | TDD | |
| TDD configuration |  | TDDConf.3.1 | |
| BWchannel | MHz | 100: NRB,c = 66 | |
| BWP BW | MHz | 100: NRB,c = 66 | |
| DRx Cycle | ms | Not Applicable | |
| PDSCH Reference measurement channel |  | SR.3.1 TDD | |
| CORESET Reference Channel |  | CR.3.1 TDD | |
| OCNG Patterns |  | OCNG pattern 1 | |
| TRS configuration |  | TRS.2.1 TDD | |
| PDSCH/PDCCH TCI state |  | TCI.State.2 | |
| SMTC configuration |  | SMTC.1 FR2 | |
| SSB Configuration |  | SSB.3 FR2 | |
| PDSCH/PDCCH subcarrier spacing | kHz | 120 kHz | |
| PUCCH/PUSCH subcarrier spacing | kHz | 120 kHz | |
| EPRE ratio of PSS to SSS | dB | 0 | |
| EPRE ratio of PBCH DMRS to SSS |  |  | |
| EPRE ratio of PBCH to PBCH DMRS |  |  | |
| EPRE ratio of PDCCH DMRS to SSS |  |  | |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  | |
| EPRE ratio of PDSCH DMRS to SSS |  |  | |
| EPRE ratio of PDSCH to PDSCH |  |  | |
| EPRE ratio of OCNG DMRS to SSS(Note 1) |  |  | |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) |  |  | |
| Propagation condition | - | AWGN | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.  Note 3: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0 dBi gain antenna at the centre of the quiet zone | | | |

Table G.2.2.2.1B.2-3A: OTA related test parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test 1 | |
|  |  | T1 | T2 |
| Angle of arrival configuration |  | Setup 1 according to clause G.1.8 | |
| Assumption for mIAB-MT beamsNote 6 |  | Fine | |
| Note1 | dBm/15kHzNote4 | -112 | |
| Note1 | dBm/SCSNote3 | -103 | |
|  | dB | 4 | |
| SS-RSRPNote2 | dBm/SCS Note4 | -99 | |
|  | dB | 4 | |
| IoNote2 | dBm/95.04 MHz Note4 | -68.5 | |
| Note 1: 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 2: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of mIAB-MT beam does not limit mIAB-MT implementation or test system implementation | | | |

Table G.2.2.2.1B.2-4: Sounding Reference Symbol Configuration for timing advance

|  |  |  |
| --- | --- | --- |
| Field | Value | Comment |
| c-SRS | 16 | Frequency hopping is disabled |
| b-SRS | 0 |  |
| b-hop | 0 |  |
| freqDomainPosition | 0 | Frequency domain position of SRS |
| freqDomainShift | 0 |  |
| groupOrSequenceHopping | neither | No group or sequence hopping |
| SRS-PeriodicityAndOffset | sl5=4 | Once every 5 slots |
| pathlossReferenceRS | ssb-Index=0 | SSB #0 is used for SRS path loss estimation |
| usage | Codebook | Codebook based UL transmission |
| startPosition | 0 | resourceMapping setting. SRS on last symbol of slot, and 1symbols for SRS without repetition. |
| nrofSymbols | n1 |  |
| repetitionFactor | n1 |  |
| combOffset-n2 | 0 | transmissionComb setting |
| cyclicShift-n2 | 0 |  |
| nrofSRS-Ports | port1 | Number of antenna ports used for SRS transmission |
| Note: For further information see clause 6.3.2 in TS 38.331 [15]. | | |

###### G.2.2.2.1B.3 Test Requirements

The mIAB-MT shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. *k+1* slots after the reception of the timing advance command, where *k* = 11.

The Timing Advance adjustment accuracy shall be within the limits specified in clause 12.2.3.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

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

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

### G.2.3B Signalling Characteristics for IAB MTs

#### G.2.3B.1 Radio link Monitoring

##### G.2.3B.1.1 Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with SSB-based RLM RS in non-DRX mode

G.2.3B.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the FR1 radio link monitoring requirements in clause 12.3.1.

In the test, mIAB-MT is configured to perform RLM on SSB, with *detectionResource* included in *RadioLinkMonitoringRS* set to SSB#0 and SSB#1, and *purpose* set to ‘*rlf*’. Supported test configurations are shown in table G.2.3B.1.1.1-1. The test parameters are given in Tables G.2.3B.1.1-2 and G.2.3B.1.1.1-3 below. There is one cell (Cell 1), which is the active NR cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure G.2.3B.1.1.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 5 ms.

Table G.2.3B.1.1.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD, SSB SCS 15 kHz, data SCS 15 kHz, BW 10 MHz |
| 2 | TDD, SSB SCS 30 kHz, data SCS 30 kHz, BW 40 MHz |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.1.1.1-2: General test parameters for FR1 out-of-sync testing in non-DRX mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | | Unit | Value |
|  | | |  | Test 1 |
| Active PCell | | |  | Cell 1 |
| RF Channel Number | | |  | 1 |
| Duplex mode | | Config 1,2 |  | TDD |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 |
|  | | Config 2 |  | 40: NRB,c = 106 |
| DL initial BWP configuration | | Config 1, 2 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | | Config 1, 2 |  | DLBWP.1.1 |
| UL initial BWP configuration | | Config 1, 2 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | | Config 1, 2 |  | ULBWP.1.1 |
| TDD Configuration | | Config 1 |  | TDDConf.1.1 |
| Config 2 |  | TDDConf.2.1 |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 TDD |
| Config 2 |  | CR.2.1 TDD |
| SSB Configuration | | Config 1 |  | SSB.1 FR1 |
| Config 2 |  | SSB.2 FR1 |
| SMTC Configuration | | Config 1 |  | SMTC.1 |
| Config 2 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | | Config 1 |  | 15 kHz |
| Config 2 |  | 30 kHz |
| PRACH Configuration | | Config 1 |  | TBD |
| Config 2 |  | TBD |
| SSB index assigned as RLM RS | | |  | 0 |
| OCNG parameters | | |  | OP.1 |
| CP length | | |  | Normal |
| Correlation Matrix and Antenna Configuration | | |  | 2x2 Low |
| Out of sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 8 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 4 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 4 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| DRX | | |  | OFF |
| Layer 3 filtering | | |  | *Enabled* |
| T310 timer | | | ms | *0* |
| T311 timer | | | ms | 1000 |
| N310 | | |  | 1 |
| N311 | | |  | 1 |
| CSI-RS configuration for CSI reporting | | Config 1 |  | CSI-RS.1.1 TDD |
| Config 2 |  | CSI-RS.2.1 TDD |
| CSI-RS for tracking | | Config 1 |  | TRS.1.1 TDD |
| Config 2 |  | TRS.1.2 TDD |
| T1 | | | s | 0.2 |
| T2 | | | s | 0.48 |
| T3 | | | s | 0.48 |
| D1 | | | s | 0.44 |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | |

Table G.2.3B.1.1.1-3: Cell specific test parameters for FR1 (Cell 1) for out-of-sync radio link monitoring tests in non-DRX mode

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | |
|  | |  | T1 | T2 | T3 |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 4 | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB | 0 | | |
| EPRE ratio of PBCH DMRS to SSS | | dB | 0 | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |
| EPRE ratio of PSS to SSS | | dB |
| EPRE ratio of PDSCH DMRS to SSS | | dB |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |
| EPRE ratio of OCNG DMRS to SSS | | dB |
| EPRE ratio of OCNG to OCNG DMRS | | dB |
| SNR on RLM-RS | Config 1 | dB | 1 | -7 | -15 |
|  | Config 2 | 1 | -7 | -15 |
|  | Config 3 | 1 | -7 | -15 |
| SNR on other channels and signals | Config 1, 2, 3 | dB | 1 | | |
|  | Config 1 | dBm/SCS | -98 | | |
| Config 2 | -95 | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 3: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 4: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in Figure G.2.3B.1.1.1-1.  Note 5: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT which supports 4RX on all bands, the SNR during T3 is defined in clause G.1.3 | | | | | |

A diagram of a diagram

Description automatically generated

Figure G.2.3B.1.1.1-1: SNR variation for out-of-sync testing

G.2.3B.1.1.2 Test Requirements

The mIAB-MT behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting.

The mIAB-MT shall stop transmitting uplink signal no later than time point C (D1 second after the start of the time duration T3).

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

##### G.2.3B.1.2 Radio Link Monitoring In-sync Test for FR1 PCell configured with SSB-based RLM RS in non-DRX mode

G.2.3B.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the FR1 radio link monitoring requirements in clause 12.3.1.

In the test, mIAB-MT is configured to perform RLM on SSB, with *detectionResource* included in *RadioLinkMonitoringRS* set to SSB#0 and SSB#1, and *purpose* set to ‘*rlf*’. Supported test configurations are shown in table G.2.3B.1.2.1-1. The test parameters are given in Tables G.2.3B.1.2.1-2, and G.2.3B.1.2.1-3 below. There is one cell (Cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.1.2.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 5 ms.

Table G.2.3B.1.2.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD, SSB SCS 15 kHz, data SCS 15 kHz, BW 10 MHz |
| 2 | TDD, SSB SCS 30 kHz, data SCS 30 kHz, BW 40 MHz |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.1.2.1-2: General test parameters for FR1 in-sync testing in non-DRX mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | | Unit | Value |
|  | | |  | Test 1 |
| Active PCell | | |  | Cell 1 |
| RF Channel Number | | |  | 1 |
| Duplex mode | | Config 1, 2 |  | TDD |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 |
| Config 2 | 40: NRB,c = 106 |
| DL initial BWP configuration | | Config 1, 2 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | | Config 1, 2 |  | DLBWP.1.1 |
| UL initial BWP configuration | | Config 1, 2 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | | Config 1, 2 |  | ULBWP.1.1 |
| TDD Configuration | | Config 1 |  | TDDConf.1.1 |
| Config 2 |  | TDDConf.2.1 |
| CORESET Reference Channel | | Config 1 |  | CR.1.1 TDD |
| Config 2 |  | CR.2.1 TDD |
| SSB Configuration | | Config 1 |  | SSB.1 FR1 |
| Config 2 |  | SSB.2 FR1 |
| SMTC Configuration | | Config 1,2 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | | Config 1 |  | 15 kHz |
| Config 2 |  | 30 kHz |
| PRACH Configuration | | Config 1 |  | TBD |
| Config 2 |  | TBD |
| SSB index assigned as RLM RS | | |  | 0 |
| OCNG parameters | | |  | OP.1 |
| CP length | | |  | Normal |
| Correlation Matrix and Antenna Configuration | | |  | 2x2 Low |
| In sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 4 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 0 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 0 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| Out of sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 8 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 4 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 4 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| DRX | | |  | OFF |
| Layer 3 filtering | | |  | *Enabled* |
| T310 timer | | | ms | 1000 |
| T311 timer | | | ms | 1000 |
| N310 | | |  | 1 |
| N311 | | |  | 1 |
| CSI-RS configuration for CSI reporting | Config 1 | |  | CSI-RS.1.1 TDD |
| Config 2 | |  | CSI-RS.2.1 TDD |
| CSI-RS for tracking | Config 1 | |  | TRS.1.1 TDD |
| Config 2 | |  | TRS.1.2 TDD |
| T1 | | | s | 0.2 |
| T2 | | | s | 0.2 |
| T3 | | | s | 0.24 |
| T4 | | | s | 0.2 |
| T5 | | | s | 0.88 |
| D1 | | | s | 0.84 |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | |

Table G.2.3B.1.2.1-3: Cell specific test parameters for FR1 (Cell 1) for in-sync radio link monitoring tests in non-DRX mode

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 4 | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB | 0 | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB | 0 | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |
| EPRE ratio of PSS to SSS | | dB |
| EPRE ratio of PDSCH DMRS to SSS | | dB |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |
| EPRE ratio of OCNG DMRS to SSS | | dB |
| EPRE ratio of OCNG to OCNG DMRS | | dB |
| SNR on RLM-RS | Config 1 | dB | 1 | -7 | -15 | -4.5 | 1 |
|  | Config 2 |  | 1 | -7 | -15 | -4.5 | 1 |
|  | Config 3 |  | 1 | -7 | -15 | -4.5 | 1 |
| SNR on other channels and signals | Config 1, 2, 3 | dB | 1 |  |  |  |  |
|  | Config 1 | dBm/SCS | -98 | | | | |
| Config 2 | -95 | | | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 3: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 4: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in Figure G.2.3B.1.2.1-1.  Note 5: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT which supports 4RX on all bands, the SNR during T3 and T4 is modified as specified in clause G.1.3. | | | | | | | |

A diagram of a diagram

Description automatically generated

Figure G.2.3B.1.2.1-1: SNR variation for in-sync testing

G.2.3B.1.2.2 Test Requirements

The mIAB-MT behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (D1 second after the start of time duration T5) the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting.

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

##### G.2.3B.1.3 Radio Link Monitoring Out-of-sync Test for FR2-1 PCell configured with SSB-based RLM RS in non-DRX mode

G.2.3B.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the FR2-1 radio link monitoring requirements in clause 12.3.1.

In the test, mIAB-MT is configured to perform RLM on SSB, with *detectionResource* included in *RadioLinkMonitoringRS* set to SSB#0 and SSB#1, and *purpose* set to ‘*rlf*’. Supported test configurations are shown in table G.2.3B.1.3.1-1. The test parameters are given in Tables G.2.3B.1.3.1-2 and G.2.3B.1.3.1-3 below. There is one cell (Cell 1), which is the active NR cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure G.2.3B.1.3.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states, and Figure G.2.3B.1.3.1-2 shows the Time multiplexed downlink transmissions from each Angle of Arrival. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 5 ms.

Table G.2.3B.1.3.1-1: Supported test configurations for FR2-1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD, SSB SCS 120 KHz, data SCS 120KHz, BW 100 MHz |

Table G.2.3B.1.3.1-2: General test parameters for FR2-1 out-of-sync testing in non-DRX mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | | Unit | Value |
| Test 1 |
| Active PCell | | |  | Cell 1 |
| RF Channel Number | | |  | 1 |
| Duplex mode | | Config 1 |  | TDD |
| BWchannel | | Config 1 |  | 100: NRB,c = 66 |
| DL initial BWP configuration | | Config 1 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | | Config 1 |  | DLBWP.1.1 |
| UL initial BWP configuration | | Config 1 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | | Config 1 |  | ULBWP.1.1 |
| TDD Configuration | | Config 1 |  | TDDConf.3.1 |
| CORESET Reference Channel | | Config 1 |  | CR.3.1 TDD |
| SSB Configuration | | Config 1 |  | SSB.1 FR2 |
| SMTC Configuration | | Config 1 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | | Config 1 |  | 120 KHz |
| PRACH Configuration | | Config 1 |  | TBD |
| SSB index assigned as RLM RS | | Config 1 |  | 0,1 |
| OCNG parameters | | |  | OP.2 |
| CP length | | |  | Normal |
| Out of sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 8 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 4 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 4 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| DRX | | |  | OFF |
| Layer 3 filtering | | |  | *Enabled* |
| T310 timer | | | ms | *0* |
| T311 timer | | | ms | 1000 |
| N310 | | |  | 1 |
| N311 | | |  | 1 |
| CSI-RS for CSI reporting | | Config 1 |  | CSI-RS.3.1 TDD |
| TCI states for PDCCH/PDSCH | | |  | TCI.State.2 |
| CSI-RS for tracking | | Config 1 |  | TRS.2.1 TDD |
| T1 | | | s | 0.2 |
| T2 | | | s | 4.88 |
| T3 | | | s | 4.88 |
| D1 | | | s | 4.84 |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | |

Table G.2.3B.1.3.1-3: OTA related cell specific test parameters for FR2-1 (Cell 1) for out-of-sync radio link monitoring tests in non-DRX mode

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | | |
| T1 | T2 | T3 | T1 | T2 | T3 |
| AoA setup | |  | Setup 2 as specified in clause G.1.8.2 | | | | | |
| **AoA1** | | | **AoA2** | | |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 4 | | | Not sent | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB | 0 | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |
| EPRE ratio of PBCH to PBCH DMRS | | dB |
| EPRE ratio of PSS to SSS | | dB |
| EPRE ratio of PDSCH DMRS to SSS | | dB |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |
| EPRE ratio of OCNG DMRS to SSS | | dB |
| EPRE ratio of OCNG to OCNG DMRS | | dB |
| ssb-Index 0 SNR | Config 1 | dB | 2Note 6 | -6Note 6 | -15 |
| ssb-Index 1 SNR | Config 1 |  | Not sent | | | 2Note 6 | -15 | -15 |
| SNR on other channels and signals | Config 1 | dB | 2Note 6 | | | N/A | | |
|  | Config 1 | dBm/ 15kHz | -92.1 | | | -92.1 | | |
| Time multiplexing of the downlink transmissions from each AoA | |  | Defined in Figure G.2.3B.1.3.1-2 | | | | | |
| Propagation condition | |  | TDL-A 30ns 75Hz | | | TDL-A 30ns 75Hz | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 3: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 4: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT which supports 4RX on all bands, the SNR during T3 is defined in clause G.1.3.  Note 5: Void  Note 6: This value allows up to 1dB degradation from applied SNR to mIAB-MT baseband. | | | | | | | | |

A diagram of a line

Description automatically generated

Figure G.2.3B.1.3.1-1: SNR variation for out-of-sync testing



Figure G.2.3B.1.3.1-2: Time multiplexed downlink transmissions

G.2.3B.1.3.2 Test Requirements

The mIAB-MT behavior in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting.

The mIAB-MT shall stop transmitting uplink signal no later than time point C (D1 second after the start of the time duration T3).

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

##### G.2.3B.1.4 Radio Link Monitoring In-sync Test for FR2-1 PCell configured with SSB-based RLM RS in non-DRX mode

G.2.3B.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the FR2-1 radio link monitoring requirements in clause 12.3.1.

In the test, mIAB-MT is configured to perform RLM on SSB, with *detectionResource* included in *RadioLinkMonitoringRS* set to SSB#0 and SSB#1, and *purpose* set to ‘*rlf*’. Supported test configurations are shown in table G.2.3B.1.4.1-1. The test parameters are given in Tables G.2.3B.1.4.1-2, and G.2.3B.1.4.1-3 below. There is one cell (Cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.1.4.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states, and Figure G.2.3B.1.4.1-2 shows the Time multiplexed downlink transmissions from each Angle of Arrival. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to Cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 5 ms.

Table G.2.3B.1.4.1-1: Supported test configurations for FR2-1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD, SSB SCS 120 KHz, data SCS 120KHz, BW 100 MHz |

Table G.2.3B.1.4.1-2: General test parameters for FR2-1 in-sync testing in non-DRX mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | | Unit | Value |
|  | | |  | Test 1 |
| Active PCell | | |  | Cell 1 |
| RF Channel Number | | |  | 1 |
| Duplex mode | | Config 1 |  | TDD |
| BWchannel | | Config 1 |  | 100: NRB,c = 66 |
| DL initial BWP configuration | | Config 1 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | | Config 1 |  | DLBWP.1.1 |
| UL initial BWP configuration | | Config 1 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | | Config 1 |  | ULBWP.1.1 |
| TDD Configuration | | Config 1 |  | TDDConf.3.1 |
| CORESET Reference Channel | | Config 1 |  | CR.3.1 TDD |
| SSB Configuration | | Config 1 |  | SSB.1 FR2-1 |
| SMTC Configuration | | Config 1 |  | SMTC.3 |
| PDSCH/PDCCH subcarrier spacing | | Config 1 |  | 120 KHz |
| PRACH Configuration | | Config 1 |  | TBD |
| SSB index assigned as RLM RS | | Config 1 |  | 0,1 |
| OCNG parameters | | |  | OP.2 |
| CP length | | |  | Normal |
| In sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 4 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 0 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 0 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| Out of sync transmission parameters | DCI format | |  | 1-0 |
| Number of Control OFDM symbols | |  | 2 |
| Aggregation level | | CCE | 8 |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | | dB | 4 |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | | dB | 4 |
| DMRS precoder granularity | |  | REG bundle size |
| REG bundle size | |  | 6 |
| DRX | | |  | OFF |
| Layer 3 filtering | | |  | *Enabled* |
| T310 timer | | | ms | 4000 |
| T311 timer | | | ms | 1000 |
| N310 | | |  | 1 |
| N311 | | |  | 1 |
| CSI-RS for CSI reporting | | Config 1 |  | CSI-RS.3.1 TDD |
| TCI states for PDCCH/PDSCH | | |  | TCI.State.2 |
| CSI-RS for tracking | | Config 1 |  | TRS.2.1 TDD |
| T1 | | | s | 0.2 |
| T2 | | | s | 0.2 |
| T3 | | | s | 1.88 |
| T4 | | | s | 0.2 |
| T5 | | | s | 3.84 |
| D1 | | | s | 3.8 |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | |

Table G.2.3B.1.4.1-3: OTA related cell specific test parameters for FR2-1 (Cell 1) for in-sync radio link monitoring tests in non-DRX mode

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | | | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 | T1 | T2 | T3 | T4 | T5 |
| AoA setup | |  | Setup 2 as specified in clause G.1.8.2 | | | | | | | | | |
|  | |  | **AoA1** | | | | | **AoA2** | | | | |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 4 | | | | | Not sent | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB | 0 | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |
| EPRE ratio of PBCH to PBCH DMRS | | dB |
| EPRE ratio of PSS to SSS | | dB |
| EPRE ratio of PDSCH DMRS to SSS | | dB |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |
| EPRE ratio of OCNG DMRS to SSS | | dB |
| EPRE ratio of OCNG to OCNG DMRS | | dB |
| ssb-Index 0 SNR | Config 1 | dB | 2Note 6 | -6Note 6 | -15 | -4.5 | 2Note 6 |
| ssb-Index 1 SNR | Config 1 |  | Not sent | | | | | 2Note 6 | -15 | -15 | -15 | -15 |
| SNR on other channels and signals | Config 1 | dB | 2Note 6 | | | | | N/A | | | | |
|  | Config 1 | dBm/ 15kHz | -92.1 | | | | | -92.1 | | | | |
| Time multiplexing of the downlink transmissions from each AoA | |  | Defined in Figure G.2.3B.1.4.1-2 | | | | | | | | | |
| Propagation condition | |  | TDL-A 30ns 75Hz | | | | | TDL-A 30ns 75Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 3: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 4: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT which supports 4RX on all bands, the SNR during T3 is defined in clause G.1.3.  Note 5: Void.  Note 6: This value allows up to 1dB degradation from applied SNR to mIAB-MT baseband | | | | | | | | | | | | |

A diagram of a line graph

Description automatically generated with medium confidence

Figure G.2.3B.1.4.1-1: SNR variation for in-sync testing



Figure G.2.3B.1.4.1-2: Time multiplexed downlink transmissions

G.2.3B.1.4.2 Test Requirements

The mIAB-MT behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (D1 second after the start of time duration T5) the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting.

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

##### G.2.3B.1.5 Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with CSI-RS-based RLM in non-DRX mode

G.2.3B.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync for the purpose of monitoring downlink CSI-RS based radio link quality of the PCell. This test will partly verify the FR1 PCell CSI-RS Out-of-sync radio link monitoring requirements in clause 12.3.1.3. This test case is applicable only for local area mIAB-MT and for IAB type 1-H.

The test parameters are given in Tables G.2.3B.1.5.1-1, G.2.3B.1.5.1-2 and G.2.3B.1.5.1-3 below. There is one cell, cell 1 which is the PCell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure G.2.3B.1.5.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity defined in CSI-RS configuration. In the test, SSB0 is configured as the BFD-RS.

Table G.2.3B.1.5.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD duplex mode, 15 kHz SSB SCS, 10 MHz bandwidth |
| 2 | TDD duplex mode, 30 kHz SSB SCS, 40 MHz bandwidth |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.1.5.1-2: General test parameters for FR1 PCell for CSI-RS out-of-sync testing in non-DRX

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | mIAB-MT |
|  | |  | Test 1 |
| Active PCell | |  | Cell 1 |
| RF Channel Number | |  | 1 |
| Duplex mode | Config 1, 2 |  | TDD |
| TDD Configuration | Config 1 |  | TDDConf.1.1 |
|  | Config 2 |  | TDDConf.2.1 |
| DL initial BWP configuration | Config 1, 2 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | Config 1, 2 |  | DLBWP.1.1 |
| UL initial BWP configuration | Config 1, 2 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | Config 1, 2 |  | ULBWP.1.1 |
| CORESET Reference Channel | Config 1 |  | CR.1.1 TDD |
|  | Config 2 |  | CR.2.1 TDD |
| SSB Configuration | Config 1 |  | SSB.1 FR1 |
|  | Config 2 |  | SSB.2 FR1 |
| SMTC Configuration | Config 1 |  | SMTC.1 |
|  | Config 2 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | Config 1 |  | 15 kHz |
|  | Config 2 |  | 30 kHz |
| TRS configuration | Config 1 |  | TRS.1.1 TDD |
|  | Config 2 |  | TRS.1.2 TDD |
| CSI-RS for RLM | Config 1 |  | Resource #4 in TRS.1.1 TDD |
|  | Config 2 |  | Resource #4 in TRS.1.2 TDD |
| TCI configuration for PDCCH/PDSCH | |  | TCI.State.2 |
| OCNG parameters | |  | OP.1 |
| CP length | |  | Normal |
| Correlation Matrix and Antenna Configuration | |  | 2x2 Low |
| Out of sync transmission parameters | DCI format |  | 1-0 |
|  | Number of Control OFDM symbols |  | 2 |
|  | Aggregation level | CCE | 8 |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 4 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 4 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| Layer 3 filtering | |  | *Enabled* |
| T310 timer | | ms | *0* |
| T311 timer | | ms | 1000 |
| N310 | |  | 1 |
| N311 | |  | 1 |
| CSI-RS configuration for CSI reporting | Config 1 |  | CSI-RS.1.1 TDD |
|  | Config 2 |  | CSI-RS.2.1 TDD |
| T1 | | s | 0.2 |
| T2 | | s | 0.48 |
| T3 | | s | 0.48 |
| D1 | | s | 0.44 |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | |

Table G.2.3B.1.5.1-3: Cell specific test parameters for FR1 for CSI-RS out-of-sync radio link monitoring in non-DRX

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | |
|  | |  | T1 | T2 | T3 |
| PDCCH\_beta | | dB | 4 | | |
| PDCCH\_DMRS\_beta | | dB | 4 | | |
| PBCH\_beta | | dB | 0 | | |
| PSS\_beta | | dB |  | | |
| SSS\_beta | | dB |  | | |
| PDSCH\_beta | | dB |  | | |
| OCNG\_beta | | dB |  | | |
| SNR on RLM-RS | Config 1, 2 | dB | 1 | -7 | -15 |
| SNR on other channels and signals | Config 1, 2 | dB | 1 | | |
|  | Config 1, 2 | dBm/15kHz | -98 | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 5: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 6: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 7: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.1.5.1-1.  Note 8: The SNR mIAB-MTs are specified for testing a mIAB-MT which supports 2RX on at least one band. For testing of mIAB-MT which supports 4RX on all bands, the SNR during T3 is specified in clause G.1.3.1.1. | | | | | |



Figure G.2.3B.1.5.1-1: SNR variation for CSI-RS out-of-sync testing

G.2.3B.1.5.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, and T3 shall be as follows:

During time durations T1, T2 and T3, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

The mIAB-MT shall stop transmitting uplink signal in Cell 1 no later than time point C (D1 ms after the start of the time duration T3) on the PCell.

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

##### G.2.3B.1.6 Radio Link Monitoring In-sync Test for FR1 PCell configured with CSI-RS-based RLM in non-DRX mode

G.2.3B.1.6.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the in sync for the purpose of monitoring downlink CSI-RS based radio link quality of the PCell. This test will partly verify the FR1 PCell CSI-RS In-sync radio link monitoring requirements in clause 12.3.1.3. This test case is applicable only for local area mIAB-MT and for IAB type 1-H.

The test parameters are given in Tables G.2.3B.1.6.1-1, G.2.3B.1.6.1-2, and G.2.3B.1.6.1-3 below. There is one cells, cell 1which is the PCell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.1.6.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity defined in CSI-RS configuration. In the test, SSB0 is configured as the BFD-RS.

Table G.2.3B.1.6.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD duplex mode, 15 kHz SSB SCS, 10 MHz bandwidth |
| 2 | TDD duplex mode, 30kHz SSB SCS, 40 MHz bandwidth |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.1.6.1-2: General test parameters for FR1 PCell for CSI-RS in-sync testing in non-DRX

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | mIAB-MT |
|  | |  | Test 1 |
| Active PCell | |  | Cell 1 |
| RF Channel Number | |  | 1 |
| Duplex mode | Config 1, 2 |  | TDD |
| TDD Configuration | Config 1 |  | TDDConf.1.1 |
|  | Config 2 |  | TDDConf.2.1 |
| DL initial BWP configuration | Config 1, 2 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | Config 1, 2 |  | DLBWP.1.1 |
| UL initial BWP configuration | Config 1, 2 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | Config 1, 2 |  | ULBWP.1.1 |
| CORESET Reference Channel | Config 1 |  | CR.1.1 TDD |
|  | Config 2 |  | CR.2.1 TDD |
| SSB Configuration | Config 1 |  | SSB.1 FR1 |
|  | Config 2 |  | SSB.2 FR1 |
| SMTC Configuration | Config 1, 2 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | Config 1 |  | 15 kHz |
| Config 2 |  | 30 kHz |
| TRS configuration | Config 1 |  | TRS.1.1 TDD |
|  | Config 2 |  | TRS.1.2 TDD |
| CSI-RS for RLM | Config 1 |  | Resource #4 in TRS.1.1 TDD |
|  | Config 2 |  | Resource #4 in TRS.1.2 TDD |
| TCI configuration for PDCCH/PDSCH | |  | TCI.State.2 |
| OCNG parameters | |  | OP.1 |
| CP length | |  | Normal |
| Correlation Matrix and Antenna Configuration | |  | 2x2 Low |
| Out of sync transmission parameters | DCI format |  | 1-0 |
| Number of Control OFDM symbols |  | 2 |
| Aggregation level | CCE | 8 |
| Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 4 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 4 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| In sync transmission parameters | DCI format |  | 1-0 |
|  | Number of Control OFDM symbols |  | 2 |
|  | Aggregation level | CCE | 4 |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 0 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 0 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| Layer 3 filtering | |  | *Enabled* |
| T310 timer | | ms | 1000 |
| T311 timer | | ms | 1000 |
| N310 | |  | 1 |
| N311 | |  | 1 |
| CSI-RS configuration for CSI reporting | Config 1 |  | CSI-RS.1.1 TDD |
| Config 2 |  | CSI-RS.2.1 TDD |
| T1 | | s | 0.2 |
| T2 | | s | 0.2 |
| T3 | | s | 0.44 |
| T4 | | s | 0.2 |
| T5 | | s | 0.88 |
| T6 | | s | 0.84 |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | |

Table G.2.3B.1.6.1-3: Cell specific test parameters for FR1 for CSI-RS in-sync radio link monitoring in non-DRX

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| PDCCH\_beta | | dB | 4 | | | | |
| PDCCH\_DMRS\_beta | | dB | 4 | | | | |
| PBCH\_beta | | dB | 0 | | | | |
| PSS\_beta | | dB |  | | | | |
| SSS\_beta | | dB |  | | | | |
| PDSCH\_beta | | dB |  | | | | |
| OCNG\_beta | | dB |  | | | | |
| SNR on RLM-RS | Config 1, 2 | dB | 1 | -7 | -15 | -4.5 | 1 |
| SNR on other channels and signals | Config 1, 2 | dB | 1 | | | | |
|  | Config 1, 2 | dBm/15kHz | -98 | | | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 5: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 6: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 7: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure G.2.3B.1.6.1-1.  Note 8: The SNR mIAB-MTs are specified for testing a mIAB-MT which supports 2RX on at least one band. For testing of mIAB-MT which supports 4RX on all bands, the SNR during T3 is specified in clause G.1.3.1.1. | | | | | | | |

A diagram of a diagram

Description automatically generated

Figure G.2.3B.1.6.1-1: SNR variation for CSI-RS in-sync testing

G.2.3B.1.6.2 Test Requirements

The mIAB-MT behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (T6 second after the start of time duration T5) the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting on the PCell.

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

##### G.2.3B.1.7 Radio Link Monitoring Out-of-sync Test for FR2-1 PCell configured with CSI-RS-based RLM in non-DRX mode

G.2.3B.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the out of sync for the purpose of monitoring downlink CSI-RS based radio link quality of the PCell. This test will partly verify the FR2-1 PCell CSI-RS Out-of-sync radio link monitoring requirements in clause 12.3.1.3. This test case is applicable only for local area mIAB-MT and for IAB type 2-0.

The test parameters are given in Tables G.2.3B.1.7.1-1, G.2.3B.1.7.1-2 and G.2.3B.1.7.1-3 below. There is one cell, cell 1 which is the PCell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure G.2.3B.1.7.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 10 ms. In the test, SSB0 and SSB1 are configured as BFD-RS.

Table G.2.3B.1.7.1-1: Supported test configurations for FR2-1 PCell

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

Table G.2.3B.1.7.1-2: General test parameters for FR2-1 PCell for CSI-RS out-of-sync testing in non-DRX

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | mIAB-MT |
|  | |  | Test 1 |
| Active PCell | |  | Cell 1 |
| RF Channel Number | |  | 1 |
| Duplex mode | Config 1 |  | TDD |
| TDD Configuration | Config 1 |  | TDDConf.3.1 |
| DL initial BWP configuration | Config 1 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | Config 1 |  | DLBWP.1.1 |
| UL initial BWP configuration | Config 1 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | Config 1 |  | ULBWP.1.1 |
| CORESET Reference Channel | Config 1 |  | CCR.3.1 TDD  CCR.3.3 TDD |
| SSB Configuration | Config 1 |  | SSB.1 FR2-1 |
| SMTC Configuration | Config 1 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | Config 1 |  | 120 KHz |
| CSI-RS for RLM | Config 1 |  | Resource #4 in TRS.2.1 TDD  Resource #4 in TRS.2.2 TDD |
| TRS configuration | |  | TRS.2.1 TDD  TRS.2.2 TDD |
| TCI configuration for PDCCH#1/PDSCH | |  | TCI.State.2 |
| TCI configuration for PDCCH#2 | |  | TCI.State.3 |
| OCNG parameters | |  | OP.1 |
| CP length | |  | Normal |
| Out of sync transmission parameters | DCI format |  | 1-0 |
|  | Number of Control OFDM symbols |  | 2 |
|  | Aggregation level | CCE | 8 |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 4 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 4 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| Layer 3 filtering | |  | *Enabled* |
| T310 timer | | ms | *0* |
| T311 timer | | ms | 1000 |
| N310 | |  | 1 |
| N311 | |  | 1 |
| CSI-RS for CSI reporting | Config 1 |  | CSI-RS.3.1 TDD |
| T1 | | s | 0.2 |
| T2 | | s | 0.35 |
| T3 | | s | 0.35 |
| D1 | | s | 0.31 |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | |

Table G.2.3B.1.7.1-3: Cell specific test parameters for FR2-1 for CSI-RS out-of-sync radio link monitoring in non-DRX

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | | |
|  | |  | T1 | T2 | T3 | T1 | T2 | T3 |
| AoA setup | |  | AoA setup as defined in clause G.1.8 | | | | | |
|  | |  | **AoA1** | | | **AoA2** | | |
| Assumption for mIAB-MT beamsNote 8 | |  | Rough | | | Rough | | |
| PDCCH\_beta | | dB | 4 | | | Not sent | | |
| PDCCH\_DMRS\_beta | | dB | 4 | | |  | | |
| PBCH\_beta | | dB | 0 | | |  | | |
| PSS\_beta | | dB |  | | |  | | |
| SSS\_beta | | dB |  | | |  | | |
| PDSCH\_beta | | dB |  | | |  | | |
| OCNG\_beta | | dB |  | | |  | | |
| SNR on RLM-RS1 | Config 1 | dB | 2Note 9 | -6Note 9 | -15 |  | | |
| SNR on RLM-RS2 | Config 1 |  | Not sent | | | 2Note 9 | -14 | -15 |
| SNR on other channels and signals | Config 1 | dB | 2Note 9 | | | N/A | | |
|  | Config 1 | dBm/ 15kHz | -92.1 | | | -92.1 | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | TDL-C 300ns 100Hz | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 5: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 6: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 7: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.1.7.1-1.  Note 8: Information about types of mIAB-MT beam does not limit mIAB-MT implementation or test system implementation.  Note 9: This mIAB-MT allows up to 1dB degradation from applied SNR to mIAB-MT baseband | | | | | | | | |

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Description automatically generated

Figure G.2.3B.1.7.1-1: SNR variation for CSI-RS out-of-sync testing

G.2.3B.1.7.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, and T3 shall be as follows:

During time durations T1, T2 and T3, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

The mIAB-MT shall stop transmitting uplink signal in Cell 1 no later than time point C (D1 second after the start of the time duration T3) on the PCell.

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

##### G.2.3B.1.8 Radio Link Monitoring In-sync Test for FR2-1 PCell configured with CSI-RS-based RLM in non-DRX mode

G.2.3B.1.8.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects the in sync for the purpose of monitoring downlink CSI-RS based radio link quality of the PCell. This test will partly verify the FR2 PCell CSI-RS In-sync radio link monitoring requirements in clause 12.3.1.3. This test case is applicable only for local area mIAB-MT and for IAB type 2-O.

The test parameters are given in Tables G.2.3B.1.8.1-1, G.2.3B.1.8.1-2 and G.2.3B.1.8.1-3 below. There is one cells, cell 1which is the PCell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.1.8.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 10 ms. In the test, SSB0 and SSB1 are configured as BFD-RS.

Table G.2.3B.1.8.1-1: Supported test configurations for FR2-1 PCell

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

Table G.2.3B.1.8.1-2: General test parameters for FR2-1 PCell for CSI-RS in-sync testing in non-DRX

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | mIAB-MT |
|  | |  | Test 1 |
| Active PCell | |  | Cell 1 |
| RF Channel Number | |  | 1 |
| Duplex mode | Config 1 |  | TDD |
| TDD Configuration | Config 1 |  | TDDConf.3.1 |
| DL initial BWP configuration | Config 1 |  | DLBWP.0.1 |
| DL dedicated BWP configuration | Config 1 |  | DLBWP.1.1 |
| UL initial BWP configuration | Config 1 |  | ULBWP.0.1 |
| UL dedicated BWP configuration | Config 1 |  | ULBWP.1.1 |
| CORESET Reference Channel | Config 1 |  | CCR.3.1 TDD  CCR.3.3 TDD |
| SSB Configuration | Config 1 |  | SSB.1 FR2-1 |
| SMTC Configuration | Config 1 |  | SMTC.1 |
| PDSCH/PDCCH subcarrier spacing | Config 1 |  | 120 KHz |
| CSI-RS for RLM | Config 1 |  | Resource #4 in TRS.2.1 TDD  Resource #4 in TRS.2.2 TDD |
| TRS configuration | |  | TRS.2.1 TDD  TRS.2.2 TDD |
| TCI configuration for PDCCH#1/PDSCH | |  | TCI.State.2 |
| TCI configuration for PDCCH#2 | |  | TCI.State.3 |
| OCNG parameters | |  | OP.1 |
| CP length | |  | Normal |
| Out of sync transmission parameters | DCI format |  | 1-0 |
| Number of Control OFDM symbols |  | 2 |
| Aggregation level | CCE | 8 |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 4 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 4 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| In sync transmission parameters | DCI format |  | 1-0 |
|  | Number of Control OFDM symbols |  | 2 |
|  | Aggregation level | CCE | 4 |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 0 |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 0 |
|  | DMRS precoder granularity |  | REG bundle size |
|  | REG bundle size |  | 6 |
| Layer 3 filtering | |  | *Enabled* |
| T310 timer | | ms | 1000 |
| T311 timer | | ms | 1000 |
| N310 | |  | 1 |
| N311 | |  | 1 |
| CSI-RS for CSI reporting | Config 1 |  | CSI-RS.3.1 TDD |
| T1 | | s | 0.2 |
| T2 | | s | 0.2 |
| T3 | | s | 0.24 |
| T4 | | s | 0.2 |
| T5 | | s | 0.88 |
| D1 | | s | 0.84 |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | |

Table G.2.3B.1.8.1-3: Cell specific test parameters for FR2-1 for CSI-RS in-sync radio link monitoring in non-DRX

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | | | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 | T1 | T2 | T3 | T4 | T5 |
| AoA setup | |  | AoA setup as defined in clause G.1.8 | | | | | | | | | |
|  | |  | **AoA1** | | | | | **AoA2** | | | | |
| Assumption for mIAB-MT beamsNote 8 | |  | Rough | | | | | Rough | | | | |
| PDCCH\_beta | | dB | 4 | | | | | Not sent | | | | |
| PDCCH\_DMRS\_beta | | dB | 4 | | | | |  | | | | |
| PBCH\_beta | | dB | 0 | | | | |  | | | | |
| PSS\_beta | | dB |  | | | | |  | | | | |
| SSS\_beta | | dB |  | | | | |  | | | | |
| PDSCH\_beta | | dB |  | | | | |  | | | | |
| OCNG\_beta | | dB |  | | | | |  | | | | |
| SNR on RLM-RS1 | Config 1 | dB | 2Note 9 | -6Note 9 | -15 | -4.5 | 2Note 9 |  | | | | |
| SNR on RLM-RS2 | Config 1 |  | Not sent | | | | | 2Note 9 | -14 | -15 | -15 | -14 |
| SNR on other channels and signals | Config 1 | dB | 2Note 10 | | | | | N/A | | | | |
|  | Config 1 | dBm/ 15KHz | -92.1 | | | | | -92.1 | | | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | | | TDL-C 300ns 100Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 5: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 6: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 7: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure G.2.3B.1.8.1-1.  Note 8: Information about types of mIAB-MT beam does not limit mIAB-MT implementation or test system implementation.  Note 9: This mIAB-MT allows up to 1dB degradation from applied SNR to mIAB-MT baseband. | | | | | | | | | | | | |

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Description automatically generated

Figure G.2.3B.1.8.1-1: SNR variation for CSI-RS in-sync testing

G.2.3B.1.8.2 Test Requirements

The mIAB-MT behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (D1 second after the start of time duration T5) the mIAB-MT shall transmit uplink signal at least in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting on the PCell.

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

#### G.2.3B.2 Beam Failure Detection and Link Recovery Procedure

##### G.2.3B.2.1 Beam Failure Detection and Link Recovery Test for FR1 PCell configured with SSB-based BFD and LR

G.2.3B.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects SSB-based beam failure in the set q0 configured for a serving cell and that the mIAB-MT performs correct SSB-based link recovery based on beam candidate set q1. The purpose is to test the downlink monitoring for beam failure detection within the mIAB-MTs active DL BWP, during the evaluation period, and link recovery. This test will partly verify the SSB based beam failure detection and link recovery for an FR1 serving cell requirements in clause 12.3.2.

The test parameters are given in Tables G.2.3B.2.1.1-1, G.2.3B.2.1.1-2 and G.2.3B.2.1.1-3 below. There is one cell, cell 1 which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.2.1.1-1 shows the variation of the downlink SNR of the SSB in set q0 in the active cell to emulate SSB based beam failure. Figure G.2.3B.2.1.1-1 additionally shows the variation of the downlink L1-RSRP of the SSB in set q1 of the candidate beam used for link recovery. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 2 ms. The mIAB-MT is configured to perform inter-frequency measurements using GP ID #0 (40ms) in test 1.

Table G.2.3B.2.1.1-1: Supported test configurations for FR1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD duplex mode, 15 kHz SSB SCS, 10 MHz bandwidth |
| 2 | TDD duplex mode, 30 kHz SSB SCS, 40 MHz bandwidth |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.2.1.1-2: General test parameters for FR1 PCell for SSB-based beam failure detection and link recovery testing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | | Unit | Value | Comment |
|  | | | |  | Test 1 |  |
| Active PSCell | | | |  | Cell 1 |  |
| RF Channel Number | | | |  | 1 |  |
| Duplex mode | | | Config 1, 2 |  | TDD |  |
| BWchannel | | | Config 1 | MHz | 10: NRB,c = 52 |  |
|  | | | Config 2 |  | 40: NRB,c = 106 |  |
| DL initial BWP configuration | | | Config 1, 2 |  | DLBWP.0.1 |  |
| DL dedicated BWP configuration | | | Config 1, 2 |  | DLBWP.1.1 |  |
| UL initial BWP configuration | | | Config 1, 2 |  | ULBWP.0.1 |  |
| UL dedicated BWP configuration | | | Config 1, 2 |  | ULBWP.1.1 |  |
| CORESET Reference Channel | | | Config 1 |  | CR.1.1 TDD |  |
|  | | | Config 2 |  | CR.2.1 TDD |  |
| SSB Configuration | | | Config 1 |  | SSB.3 FR1 |  |
|  | | | Config 2 |  | SSB.4 FR1 |  |
| SMTC Configuration | | | Config 1 |  | SMTC.1 |  |
|  | | | Config 2 |  | SMTC.1 |  |
| PDSCH/PDCCH subcarrier spacing | | | Config 1 |  | 15 KHz |  |
|  | | | Config 2 |  | 30 KHz |  |
| PRACH Configuration | | | Config 1 |  | Table G.X |  |
|  | | | Config 2 |  | Table G.X |  |
| SSB Index assigned as BFD RS (q0) | | | |  | 0 |  |
| SSB Index assigned as CBD RS (q1) | | | |  | 1 |  |
| OCNG parameters | | | |  | OP.1 |  |
| CP length | | | |  | Normal |  |
| Correlation Matrix and Antenna Configuration | | | |  | 2x2 Low |  |
| Beam failure detection transmission parameters | DCI format | | |  | 1-0 |  |
| Number of Control OFDM symbols | | |  | 2 |  |
| Aggregation level | | | CCE | 8 |  |
| Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | | | dB | 0 |  |
| Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | | | dB | 0 |  |
| DMRS precoder granularity | | |  | REG bundle size |  |
| REG bundle size | | |  | 6 |  |
| rlmInSyncOutOfSyncThreshold | | | |  | absent | When the field is absent, the mIAB-MT applies the value 0. (Table 8.1.1-1 of TS 38.133). |
| rsrp-ThresholdSSB | | Config 1 | | dBm/SCS kHz | -98 | Threshold used for Qin\_LR\_SSB |
|  | | Config 2 | |  | -95 |  |
| powerControlOffsetSS | | | |  | db0 | Used for deriving rsrp-ThresholdCSI-RS |
| beamFailureInstanceMaxCount | | | |  | n1 | see clause 5.17 of TS 38.321 [14] |
| beamFailureDetectionTimer | | | |  | pbfd4 | see clause 5.17 of TS 38.321 [14] |
| CSI-RS configuration for CSI reporting | Config 1 | | |  | CSI-RS.1.1 TDD |  |
|  | Config 2 | | |  | CSI-RS.2.1 TDD |  |
| CSI-RS for tracking | Config 1 | | |  | TRS.1.1 TDD |  |
|  | Config 2 | | |  | TRS.1.2 TDD |  |
| SSB Index assigned as RLM RS |  | | | 0, 1 |  |  |
| T310 Timer | ms | | | 1000 |  |  |
| N310 |  | | | 2 |  |  |
| T1 | | | | s | 0.2 | During this time the the mIAB-MT shall be fully synchronized to cell 1 |
| T2 | | | | s | 0.37 |  |
| T3 | | | | s | 0.24 |  |
| T4 | | | | s | 0 |  |
| T5 | | | | s | 0.17 |  |
| D1 | | | | s | 0.13 |  |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | | | |

Table G.2.3B.2.1.1-3: Cell specific test parameters for FR1 PCell for SSB-based beam failure detection and link recovery testing

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 0 | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB |  | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |  | | | | |
| EPRE ratio of PSS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |  | | | | |
| EPRE ratio of OCNG DMRS to SSS | | dB |  | | | | |
| EPRE ratio of OCNG to OCNG DMRS | | dB |  | | | | |
| SNR\_SSB of set q0 | Config 1 | dB | 5 | -3 | -12 | -12 | -12 |
|  | Config 2 |  | 5 | -3 | -12 | -12 | -12 |
| SNR\_SSB of set q1 | Config 1 | dB | -10 | -10 | 10 | 10 | 10 |
|  | Config 2 |  | -10 | -10 | 10 | 10 | 10 |
| SSB\_RP of set q1 | Config 1 | dBm/SCS kHz | -108 | -108 | -88 | -88 | -88 |
|  | Config 2 |  | -105 | -105 | -85 | -85 | -85 |
|  | Config 1 | dBm/15 KHz | -98 | | | | |
|  | Config 2 |  | -98 | | | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: Void.  Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 6: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 7: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.2.1.1-1.  Note 9: The SNR values are specified for testing a mIAB-MT which supports 2RX on at least one band. For testing of a mIAB-MT which supports 4RX on all bands, the SNR during T3 is modified as specified in clause G.1.3. | | | | | | | |



Figure G.2.3B.2.1.1-1: SNR and L1-RSRP variation SSB for SSB-based beam failure detection and link recovery testing

G.2.3B.2.1.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the time duration T1 and T2, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

During T3 the mIAB-MT shall detect beam failure and initiate link recovery. During T4 and T5 the mIAB-MT measures and evaluate beam candidate from beam candidate set q1.

No later than time point F occurring no later than D1 = 120+10 ms after the start of T5, the mIAB-MT shall transmit preamble on a beam associated with the candidate beam set q1. The mIAB-MT shall not transmit preamble on a beam associated with the candidate beam set q1 earlier than time point B.

Test is concluded once the test equipment has received the initial preamble transmission from the mIAB-MT. The rate of correct events observed during repeated tests shall be at least 90%.

##### G.2.3B.2.2 Beam Failure Detection and Link Recovery Test for FR2-1 PCell configured with SSB-based BFD and LR

G.2.3B.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects SSB-based beam failure in the set q0 configured for a serving cell and that the mIAB-MT performs correct SSB-based link recovery based on beam candidate set q1. The purpose is to test the downlink monitoring for beam failure detection within the mIAB-MT active DL BWP, during the evaluation period, and link recovery, when no DRX is used. This test will partly verify the SSB based beam failure detection and link recovery for an FR2-1 serving cell requirements in clause 12.3.2.2.

The test parameters are given in Tables G.2.3B.2.2.1-1, G.2.3B.2.2.1-2 and G.2.3B.2.2.1-3 below. There is one cell, cell 1 which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.2.X.1-1 shows the variation of the downlink SNR of the SSB in set q0 in the active cell to emulate SSB based beam failure. Figure G.2.3B.2.2.1-1 additionally shows the variation of the downlink L1-RSRP of the SSB in set q1 of the candidate beam used for link recovery. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of 2 ms. In the test, DRX configuration is not enabled.

Table G.2.3B.2.2.1-1: Supported test configurations for FR2-1 PCell

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD duplex mode, 120 kHz SSB SCS, 100 MHz bandwidth |
| 2 | TDD duplex mode, 240 kHz SSB SCS, 100 MHz bandwidth |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR2-1 | |

Table G.2.3B.2.2.1-2: General test parameters for FR2-1 PCell for SSB-based beam failure detection and link recovery testing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | | Unit | Value | Comment |
| Test 1 |  |
| Active PCell | | | |  | Cell 1 |  |
| RF Channel Number | | | |  | 1 |  |
| Duplex mode | Config 1, 2 | | |  | TDD |  |
| BWchannel | Config 1, 2 | | |  | 100: NRB,c = 66 |  |
| DL initial BWP configuration | Config 1, 2 | | |  | DLBWP.0.1 |  |
| DL dedicated BWP configuration | Config 1, 2 | | |  | DLBWP.1.1 |  |
| UL initial BWP configuration | Config 1, 2 | | |  | ULBWP.0.1 |  |
| UL dedicated BWP configuration | Config 1, 2 | | |  | ULBWP.1.1 |  |
| CORESET Reference Channel | Config 1, 2 | | |  | CR. 3.1 TDD |  |
| SSB Configuration | Config 1 | | |  | SSB.1 FR2-1 |  |
|  | Config 2 | | |  | SSB.2 FR2-1 |  |
| SMTC Configuration | Config 1, 2 | | |  | SMTC.3 |  |
| PDSCH/PDCCH subcarrier spacing | Config 1, 2 | | |  | 120 KHz |  |
| SSB index assigned as BFD RS (q0) | | | |  | 0 |  |
| SSB index assigned as CBD RS (q1) | | | |  | 1 |  |
| OCNG parameters | | | |  | OP.1 |  |
| CP length | | | |  | Normal |  |
| Beam failure detection transmission parameters | DCI format | | |  | 1-0 |  |
|  | Number of Control OFDM symbols | | |  | 2 |  |
|  | Aggregation level | | | CCE | 8 |  |
|  | Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | | | dB | 0 |  |
|  | Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | | | dB | 0 |  |
|  | DMRS precoder granularity | | |  | REG bundle size |  |
|  | REG bundle size | | |  | 6 |  |
| DRX | | | |  | OFF |  |
| rlmInSyncOutOfSyncThreshold | | | |  | absent | When the field is absent, the mIAB-MT applies the value 0. (Table 8.1.1-1 in TS 38.133 [6]). |
| rsrp- | | Config 1 | | dBm/SSB | -94.5 | Threshold used |
| ThresholdSSB | | Config 2 | | SCS | -91.5 | for Qin\_LR\_SSB |
| powerControlOffsetSS | | | |  | db0 | Used for deriving rsrp-ThresholdCSI-RS |
| beamFailureInstanceMaxCount | | | |  | n1 | see clause 5.17 of TS 38.321 [7] |
| beamFailureDetectionTimer | | | |  | pbfd4 | see clause 5.17 of TS 38.321 [7] |
| CSI-RS configuration for CSI reporting | | | Config 1, 2 |  | CSI-RS.3.1 TDD |  |
| TCI states | | | |  | TCI.State.0 |  |
| CSI-RS for tracking | | | Config 1, 2 |  | TRS.2.1 TDD |  |
| SSB index assigned as RLM RS | | | |  | 0, 1 |  |
| T310 Timer | | | | ms | 1000 |  |
| N310 | | | |  | 2 |  |
| T1 | | | | s | 1 | During this time the the mIAB-MT shall be fully synchronized to cell 1 |
| T2 | | | | s | 2.61 |  |
| T3 | | | | s | 1.64 |  |
| T4 | | | | s | 0 |  |
| T5 | | | | s | 1.01 |  |
| D1 | | | | s | 0.97 |  |
| Note 1: All configurations are assigned to the mIAB-MT prior to the start of time period T1.  Note 2: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | | | |

*Editor’s note: An additional RS for RLM, different from BFD-RS at constant high SNR shall be configured as part of the test configuration.*

Table G.2.3B.2.2.1-3: Cell specific test parameters for FR2-1 PCell for SSB-based beam failure detection and link recovery testing

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| AoA setup | |  | Setup 1 defined in G.1.18 | | | | |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 0 | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB |  | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |  | | | | |
| EPRE ratio of PSS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |  | | | | |
| EPRE ratio of OCNG DMRS to SSS | | dB |  | | | | |
| EPRE ratio of OCNG to OCNG DMRS | | dB |  | | | | |
| SNR\_SSB of set q0 | Config 1 | dB | 5 | -3 | -12 | -12 | -12 |
|  | Config 2 |  | 5 | -3 | -12 | -12 | -12 |
| SNR\_SSB of set q1 | Config 1 | dB | 0.2 | 0.2 | 20.2 | 20.2 | 20.2 |
|  | Config 2 |  | 0.2 | 0.2 | 20.2 | 20.2 | 20.2 |
| SSB\_RP of set q1 | Config 1 | dBm/SSB | -104.5 | -104.5 | -84.5 | -84.5 | -84.5 |
|  | Config 2 | SCS | -101.5 | -101.5 | -81.5 | -81.5 | -81.5 |
|  | Config 1 | dBm/120 KHz | -104.7 | | | | |
|  | Config 2 |  | -104.7 | | | | |
| Propagation condition | |  | TDL-A 30ns 75Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: Void  Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 6: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 7: SNR levels correspond to the signal to noise ratio over the SSS REs.  Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.2.X.1-1.  Note 9: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT hich supports 4RX on all bands, the SNR during T3 is modified as specified in clause G.1.3. 1 | | | | | | | |



Figure G.2.3B.2.2.1-1: SNR and L1-RSRP variation SSB for SSB-based beam failure detection and link recovery testing in non-DRX mode

G.2.3B.2.2.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the time duration T1 and T2, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

During T3 the mIAB-MT shall detect beam failure and initiate link recovery. During T4 and T5 the mIAB-MT measures and evaluate beam candidate from beam candidate set q1.

No later than time point F occurring no later than D1 = 560+650 ms after the start of T5, the mIAB-MT shall transmit preamble on a beam associated with the candidate beam set q1. The mIAB-MT shall not transmit preamble on a beam associated with the candidate beam set q1 earlier than time point B.

Test is concluded once the test equipment has received the initial preamble transmission from the mIAB-MT. The rate of correct events observed during repeated tests shall be at least 90%.

##### G.2.3B.2.3 Beam Failure Detection and Link Recovery Test for FR1 PCell configured with CSI-RS-based BFD and LR

G.2.3B.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects CSI-RS-based beam failure in the set q0 configured for a serving cell and that the mIAB-MT performs correct CSI-RS-based link recovery based on beam candicate set q1. The purpose is to test the downlink monitoring for beam failure detection within the mIAB-MTs active DL BWP, during the evaluation period, and link recovery. This test will partly verify the CSI-RS based beam failure detection and link recovery for an FR1 serving cell requirements in clause 12.3.2.

The test parameters are given in Tables G.2.3B.2.3.1-1, G.2.3B.2.3.1-2 and G.2.3B.2.3.1-3 below. There is one cell, cell 1 which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.2.3.1-1 shows the variation of the downlink SNR of the CSI-RS in set q0 in the active cell to emulate CSI-RS based beam failure. Figure G.2.3B.2.3.1-1 additionally shows the variation of the downlink L1-RSRP of the CSI-RS in set q1 of the candidate beam used for link recovery. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of [2] ms.

**Table G.2.3B.2.3.1-1: Supported test configurations for FR1 PCell**

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | TDD duplex mode, 15 kHz SSB SCS, 10 MHz bandwidth |
| 2 | TDD duplex mode, 30 kHz SSB SCS, 40 MHz bandwidth |
| Note: The mIAB-MT is only required to pass in one of the supported test configurations in FR1 | |

Table G.2.3B.2.3.1-2: General test parameters for FR1 PCell for CSI-RS-based beam failure detection and link recovery testing

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Value | Comment |
|  | | |  | Test 1 |  |
| Active PCell | | |  | Cell 1 |  |
| RF Channel Number | | |  | 1 |  |
| Duplex mode | Config 1, 2 | |  | TDD |  |
| CORESET Reference Channel | Config 1 | |  | CR.1.1 TDD |  |
| Config 2 | |  | CR.2.1 TDD |  |
| SSB Configuration | Config 1 | |  | SSB.1 FR1 |  |
| Config 2 | |  | SSB.2 FR1 |  |
| SMTC Configuration | Config 1 | |  | SMTC.1 | G.1.6 |
| Config 2 | |  | SMTC.1 |  |
| PDSCH/PDCCH subcarrier spacing | Config 1 | |  | 15 KHz |  |
| Config 2 | |  | 30 KHz |  |
| csi-RS-Index assigned as beam failure detection RS in set q0 | | |  | 0 |  |
| OCNG parameters | | |  | OP.1 | G.1.2.1 |
| CP length | | |  | Normal |  |
| Correlation Matrix and Antenna Configuration | | |  | 2x2 Low |  |
| Beam failure detection transmission parameters | DCI format | |  | 1-0 |  |
| Number of Control OFDM symbols | |  | 2 |  |
| Aggregation level | | CCE | 8 |  |
| Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | | dB | 0 |  |
| Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | | dB | 0 |  |
| DMRS precoder granularity | |  | REG bundle size |  |
| REG bundle size | |  | 6 |  |
| csi-RS-Index assigned as candidate beam detection RS in set q1 | | |  | 1 | N |
| rlmInSyncOutOfSyncThreshold | | |  | absent | When the field is absent, the mIAB-MT applies the value 0. (Table 8.1.1-1of TS 38.133). |
| rsrp-ThresholdSSB | | Config 1 | dBm/SCS kHz | -98 | Threshold used for Qin\_LR\_SSB |
| Config 2 |  | -95 |  |
| powerControlOffsetSS | | |  | db0 | Used for deriving rsrp-ThresholdCSI-RS |
| beamFailureInstanceMaxCount | | |  | n1 | see clause 5.17 of TS 38.321 [14] |
| beamFailureDetectionTimer | | |  | pbfd4 | see clause 5.17 of TS 38.321 [14] |
| CSI-RS configuration for q0 and q1 | | Config 1 |  | CSI-RS.1.2 TDD |  |
|  | | Config 2 | CSI-RS.2.2 TDD |  |
| CSI-RS configuration for CSI reporting | | Config 1 |  | CSI-RS.1.1 TDD |  |
|  | | Config 2 |  | CSI-RS.2.1 TDD |  |
| TRS configuration | | Config 1 |  | TRS.1.1 TDD |  |
|  | | Config 2 |  | TRS.1.2 TDD |  |
| CSI-RS-Index assigned as RLM RS | | Config 1 |  | CSI-RS.1.2 TDD |  |
|  | | Config 2 |  | CSI-RS.2.2 TDD |  |
| T310 Timer | | | ms | 1000 |  |
| N310 | | |  | 2 |  |
| T1 | | | s | 0.2 | During this time the the mIAB-MT shall be fully synchronized to cell 1 |
| T2 | | | s | 0.18 |  |
| T3 | | | s | 0.14 |  |
| T4 | | | s | 0 |  |
| T5 | | | s | 0.08 |  |
| D1 | | | s | 0.04 |  |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | | |

**Table G.2.3B.2.3.1-3: Cell specific test parameters for FR1 PCell for CSI-RS-based beam failure detection and link recovery testing**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 0 | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB |  | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |  | | | | |
| EPRE ratio of PSS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |  | | | | |
| EPRE ratio of OCNG DMRS to SSS | | dB |  | | | | |
| EPRE ratio of OCNG to OCNG DMRS | | dB |  | | | | |
| SNR\_CSI-RS of set q0 | Config 1 | dB | 5 | -3 | -12 | -12 | -12 |
|  | Config 2 |  | 5 | -3 | -12 | -12 | -12 |
| SNR\_CSI-RS of set q1 | Config 1 | dB | -10 | -10 | 10 | 10 | 10 |
|  | Config 2 |  | -10 | -10 | 10 | 10 | 10 |
| CSI-RS\_RP of set q1 | Config 1 | dBm/SCS kHz | -108 | -108 | -88 | -88 | -88 |
|  | Config 2 |  | -105 | -105 | -85 | -85 | -85 |
|  | Config 1 | dBm/15 KHz | -98 | | | | |
|  | Config 2 |  | -98 | | | | |
| Propagation condition | |  | TDL-C 300ns 100Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: Void  Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 6: The signal contains PDCCH for mIAB-MTs other than the device under test as part of OCNG.  Note 7: SNR levels correspond to the signal to noise ratio over the REs carrying CSI-RS.  Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.2.2.1-1.  Note 9: The SNR values are specified for testing a mIAB-MT which supports 2RX on at least one band. For testing of a mIAB-MT which supports 4RX on all bands, the SNR during T3 is modified as specified in clause G.1.3. | | | | | | | |



Figure G.2.3B.2.3.1-1: SNR and L1-RSRP variation for CSI-RS-based beam failure detection and link recovery testing

G.2.3B.2.3.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the time duration T1 and T2, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

During T3 the shall detect beam failure and initiat link recovery. During T4 and T5 the mIAB-MT measures and evaluate beam candidate from beam candidate set q1.

No later than time point F occurring no later than D1 = 30+10 ms after the start of T5, the mIAB-MT shall transmit preamble on a beam associated with the candidate beam set q1. The mIAB-MT shall not transmit preamble on a beam associated with the candidate beam set q1 earlier than time point B.

Test is concluded once the test equipment has received the initial preamble transmission from the mIAB-MT. The rate of correct events observed during repeated tests shall be at least 90%.

##### G.2.3B.2.4 Beam Failure Detection and Link Recovery Test for FR2-1 PCell configured with CSI-RS-based BFD and LR in non-DRX mode

G.2.3B.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the mIAB-MT properly detects CSI-RS-based beam failure in the set q0 configured for a serving cell and that the mIAB-MT performs correct CSI-RS-based link recovery based on beam candicate set q1. The purpose is to test the downlink monitoring for beam failure detection within the mIAB-MT’s active DL BWP, during the evaluation period, and link recovery, when no DRX is used. This test will partly verify the CSI-RS based beam failure detection and link recovery for an FR2-1 serving cell requirements in clause 12.3.2.

The test parameters are given in Tables G.2.3B.2.4.1-1, G.2.3B.2.4.1-2, and G.2.3B.2.4.1-3 below. There is one cell, cell 1 which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure G.2.3B.2.4.1-1 shows the variation of the downlink SNR of the CSI-RS in set q0 in the active cell to emulate CSI-RS based beam failure. Figure G.2.3B.2.4.1-1 additionally shows the variation of the downlink L1-RSRP of the CSI-RS in set q1 of the candidate beam used for link recovery. Prior to the start of the time duration T1, the mIAB-MT shall be fully synchronized to cell 1. The mIAB-MT shall be configured for periodic CSI reporting with a reporting periodicity of [2] ms. In the test, DRX configuration is not enabled.

Table G.2.3B.2.4.1-1: Supported test configurations for FR2-1 PCell

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

Table G.2.3B.2.4.1-2: General test parameters for FR2-1 PCell for CSI-RS based beam failure detection and link recovery testing in non-DRX mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | | Unit | Value | Comment |
|  | |  | Test 1 |
| Active PCell | |  | Cell 1 |  |
| RF Channel Number | |  | 1 |  |
| Duplex mode | Config 1 |  | TDD |  |
| TDD Configuration | Config 1 |  | TBD |  |
| CORESET Reference Channel | Config 1 |  | CR.3.1 TDD | G.1.1.2 |
| SSB Configuration | Config 1 |  | SSB.3 FR2-1 | G.1.5 |
| SMTC Configuration | Config 1 |  | SMTC.3 | G.1.6 |
| PDSCH/PDCCH subcarrier spacing | Config 1 |  | 120KHz |  |
| csi-RS-Index assigned as beam failure detection RS in set q0 | |  | 0 |  |
| TRS configuration | |  | TRS.2.1 TDD | G.1.10.2 |
| TCI configuration | |  | TBD |  |
| OCNG parameters | |  | OP.1 | G.1.2.1 |
| CP length | |  | Normal |  |
| Beam failure detection transmission parameters | DCI format |  | 1-0 |  |
| Number of Control OFDM symbols |  | 2 |  |
| Aggregation level | CCE | 8 |  |
| Ratio of hypothetical PDCCH RE energy to average CSI-RS RE energy | dB | 0 |  |
| Ratio of hypothetical PDCCH DMRS energy to average CSI-RS RE energy | dB | 0 |  |
| DMRS precoder granularity |  | REG bundle size |  |
| REG bundle size |  | 6 |  |
| DRX | |  | OFF |  |
| csi-RS-Index assigned as candidate beam detection RS in set q1 | |  | 1 |  |
| rlmInSyncOutOfSyncThreshold | |  | absent | When the field is absent, the mIAB-MT applies the value 0. (Table 8.1.1-1 in TS 38.133 [6]). |
| rsrp-ThresholdSSB | | dBm/SCS kHz | -94.5 | Threshold used for Qin\_LR\_SSB |
| powerControlOffsetSS | |  | db0 | Used for deriving rsrp-ThresholdCSI-RS |
| beamFailureInstanceMaxCount | |  | n1 | see clause 5.17 of TS 38.321 [14] |
| beamFailureDetectionTimer | |  | pbfd4 | see clause 5.17 of TS 38.321 [14] |
| CSI-RS configuration for q0 and q1 | Config 1 |  | CSI-RS.3.2 TDD | G.1.7.1 |
| CSI-RS configuration for CSI reporting | Config 1 |  | CSI-RS.3.1 TDD | G.1.7.1 |
| csi-RS-Index assigned as RLM RS | |  | 0, 1 | G.1.7.1 |
| T310 Timer | | ms | 1000 |  |
| N310 | |  | 2 |  |
| T1 | | s | 1 | During this time the the mIAB-MT shall be fully synchronized to cell 1 |
| T2 | | s | 1.17 |  |
| T3 | | s | 0.9 |  |
| T4 | | s | 0 |  |
| T5 | | s | 0.31 |  |
| D1 | | s | 0.27 |  |
| Note 1: mIAB-MT-specific PDCCH is not transmitted after T1 starts. | | | | |

Table G.2.3B.2.4.1-3: Cell specific test parameters for FR2-1 PCell for CSI-RS based beam failure detection and link recovery testing in non-DRX mode

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| AoA setup | |  | Setup 1 defined in G.1.8 | | | | |
| EPRE ratio of PDCCH DMRS to SSS | | dB | 0 | | | | |
| EPRE ratio of PDCCH to PDCCH DMRS | | dB |  | | | | |
| EPRE ratio of PBCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PBCH to PBCH DMRS | | dB |  | | | | |
| EPRE ratio of PSS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH DMRS to SSS | | dB |  | | | | |
| EPRE ratio of PDSCH to PDSCH DMRS | | dB |  | | | | |
| EPRE ratio of OCNG DMRS to SSS | | dB |  | | | | |
| EPRE ratio of OCNG to OCNG DMRS | | dB |  | | | | |
| SNR\_CSI-RS of set q0 | Config 1 | dB | 5 | -3 | -12 | -12 | -12 |
| SNR\_CSI-RS of set q1 | Config 1 | dB | 0.2 | 0.2 | 20.2 | 20.2 | 20.2 |
| CSI-RS\_RP of set q1 | Config 1 | dBm/SCS kHz | -104.5 | -104.5 | -84.5 | -84.5 | -84.5 |
|  | Config 1 | dBm/15 KHz | -104.7 | | | | |
| Propagation condition | |  | TDL-A 30ns 75Hz | | | | |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: The uplink resources for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 3: NZP CSI-RS resource set configuration for CSI reporting are assigned to the mIAB-MT prior to the start of time period T1.  Note 4: Void  Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.  Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.  Note 7: SNR levels correspond to the signal to noise ratio over the REs carrying CSI-RS.  Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2 and SNR3 respectively in figure G.2.3B.2.x.1-1.  Note 9: The SNR values are specified for testing an mIAB-MT which supports 2RX on at least one band. For testing of an mIAB-MT which supports 4RX on all bands, the SNR during T3 is modified as specified in clause G.1.3.2. | | | | | | | |



Figure G.2.3B.2.4.1-1: SNR and L1-RSRP variation for CSI-RS based beam failure detection and link recovery testing in non-DRX mode

G.2.3B.2.4.2 Test Requirements

The mIAB-MT behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the time duration T1 and T2, the mIAB-MT shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1.

During the period from time point A to time point B the mIAB-MT shall transmit uplink signal in Cell 1 in all uplink slots configured for CSI transmission according to the configured periodic CSI reporting for Cell 1.

During T3 the mIAB-MT shall detect beam failure and initiate link recovery. During T4 and T5 the mIAB-MT measures and evaluate beam candidate from beam candidate set q1.

No later than time point F occurring no later than D1 = 30 +10 ms after the start of T5, the mIAB-MT shall transmit preamble on a beam associated with the candidate beam set q1. The mIAB-MT shall not transmit preamble on a beam associated with the candidate beam set q1 earlier than time point B.

Test is concluded once the test equipment has received the initial preamble transmission from the mIAB-MT. The rate of correct events observed during repeated tests shall be at least 90%.

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

**----------------------START OF CHANGE 5----------------------------**

#### G.2.3B.3 Active TCI state switch delay

##### G.2.3B.3.1 MAC-CE based active TCI state switch

G.2.3B.3.1.1 NR PCell FR2 active TCI state switch for a known TCI state

G.2.3B.3.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the active TCI state switch delay requirement defined in clause 12.3B.3. Supported test configuration is shown in Table G.2.3B.3.1.1.1-1.

The test scenario comprises of one NR PCell (Cell 1) as given in Table G.2.3B.3.1.1.1-2. Cell-specific parameters of NR PCell are specified in Table G.2.3B.3.1.1.1-3 below. The OTA related test parameters for FR2 are shown in Table G.2.3B.3.1.1.1-4.

PDCCHs indicating new transmissions shall be sent continuously on PCell to ensure that the Mobile IAB MT would have ACK/NACK sending.

Before the test starts,

- Mobile IAB MT is connected to Cell 1 (PCell) on radio channel 1 (PCC).

- Mobile IAB MT is configured with 2 different TCI states for PCell, PDCCH TCI state 0 (QCL’d to SSB0) and TCIstate 1 (QCL’d to SSB1), in Cell 1 before starting the test.

- Mobile IAB MT is indicated in TCI state 0 as the active PDCCH TCI state

- Target TCI state is not in the active TCI state list.

The test consists of two time periods, T1 and T2. Figure G.2.3B.3.1.1.1-1 and Figure G.2.3B.3.1.1.1-2 show the Time multiplexed (allocation in Frequency is symbolic) downlink transmissions from each Angle of Arrival. During T1 only SSB to which PDCCH-TCI-state0 is QCL’d is transmitted. At the beginning of T2, the SSB corresponding to TCI state 1 starts transmitting. The Mobile IAB MT is configured to provide periodic L1-RSRP reports. In slot n which is within 1280ms of Mobile IAB MT providing L1-RSRP report with results for both SSB0 and SSB1, Mobile IAB MT receives a MAC-CE command indicating a switch to TCI state 1. *tci-PresentInDCI* is not configured in the PDSCH configuration, i.e. TCI state for the PDSCH is identical to the PDCCH TCI state.

The test equipment verifies that Mobile IAB MT can be scheduled on PCell on TCI state 0 till n+ THARQ +3 ms. The test equipment also verifies the TCI state switch time in PCell by scheduling the Mobile IAB MT on TCI state 1 after n+ THARQ +3 ms + (Tfirst-SSB + TSSB-proc).

Table G.2.3B.3.1.1.1-1: Supported test configurations

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

Table G.2.3B.3.1.1.1-2: General test parameters for TCI state switch

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| NR RF Channel Number |  | 1 | One NR radio channel is used for this test |
| Active PCell |  | Cell 1 | PCell on RF channel number 1. |
| CP length |  | Normal |  |
| DRX |  | OFF |  |
| T1 | s | 0.2 |  |
| T2 | s | 0.2 |  |

Table G.2.3B.3.1.1.1-3: NR Cell specific test parameters for TCI state switch

|  |  |  |
| --- | --- | --- |
| Parameter | Unit | Cell 1 |
| Frequency Range |  | FR2 |
| Duplex mode |  | TDD |
| TDD configuration |  | TDDConf.3.1 |
| BWchannel |  | 100 MHz: NRB,c = 66 |
| Data RBs allocated |  | 24 |
| Initial DL BWP Configuration |  | DLBWP.0.2 |
| Dedicated DL BWP Configuration |  | DLBWP.1.1 |
| Initial UL BWP Configuration |  | ULBWP.0.2 |
| Dedicated UL BWP Configuration |  | ULBWP.1.1 |
| PDSCH Reference measurement channel |  | SR.3.2 TDD |
| RMSI CORESET parameters |  | CR.3.1 TDD |
| Dedicated CORESET parameters |  | CCR.3.1 TDD |
| OCNG Patterns |  | OP.5 |
| SSB Configuration |  | SSB.1 FR2 |
| SMTC Configuration |  | SMTC.1 |
| TCI State 0 |  | TC. State.2 |
| TCI State 1 |  | TCI.State.3 |
| TRS Configuration |  | TRS.2.1 TDD  TRS.2.2 TDD |
| Correlation Matrix and Antenna Configuration |  | 1x2 Low |
| EPRE ratio of PSS to SSS | dB | 0 |
| EPRE ratio of PBCH DMRS to SSS |  |  |
| EPRE ratio of PBCH to PBCH DMRS |  |  |
| EPRE ratio of PDCCH DMRS to SSS |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  |
| EPRE ratio of PDSCH DMRS to SSS |  |  |
| EPRE ratio of PDSCH to PDSCH |  |  |
| EPRE ratio of OCNG DMRS to SSS(Note 1) |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) |  |  |
| Propagation Condition |  | AWGN |
| Note 1: OCNG shall be used such that a constant total transmitted power spectral density is achieved for all OFDM symbols. | | |

Table G.2.3B.3.1.1.1-4: OTA related test parameters for TCI state switch

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | | |
|  |  | SSB0 | | SSB1 | | |
|  |  | T1 | T2 | T1 | | T2 |
| Angle of arrival configuration |  | Setup 3 according to clause G.1.8.2 | | | | |
|  |  | AoA1 | | | AoA2 | |
| Assumption for Mobile IAB MT beams Note 6 |  | Rough | | | | |
| Ês | dBm/SCS | -80.6 | -80.6 | -Infinity | | -80.6 |
| SSB\_RP Note 2 | dBm/ SCS | -80.6 | -80.6 | -Infinity | | -80.6 |
| BB Note 7 | dB | 8.3 | 8.3 | -Infinity | | 8.3 |
| IoNote2 | dBm/95.04 MHz Note4 | -55.41 | -55.41 | - Infinity | | -55.41 |
| Note 1: Void  Note 2: SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Void  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the center of the quiet zone.  Note 6: Information about types of Mobile IAB MT beam is given in B.2.1.3 and does not limit Mobile IAB MT implementation or test system implementation.  Note 7: Calculation of Es/IotBB includes the effect of Mobile IAB MT internal noise up to the value assumed for the associated Refsens requirement in clause 10.3.3. | | | | | | |



Figure G.2.3B.3.1.1.1-1: Time multiplexed downlink transmissions during T1



Figure G.2.3B.3.1.1.1-2: Time multiplexed downlink transmissions during T2

G.2.3B.3.1.1.2 Test Requirements

During T2, Mobile IAB MT shall send L1-RSRP report with results for both SSB0 and SSB1.

After receiving MAC-CE command in slot n, Mobile IAB MT shall:

- be able to continue to receive on TCI state 0 till n+ THARQ +3 ms

- be able to start receiving on TCI state 1 after n+ THARQ +5 ms + Tfirst-SSB

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

##### G.2.3B.3.2 RRC based active TCI state switch

G.2.3B.3.2.1 NR PCell FR2 active TCI state switch for a known TCI state

G.2.3B.3.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the active TCI state switch delay requirement defined in clause 12.3B.3. Supported test configuration is shown in Table G.2.3B.3.2.1.1-1.

The test scenario comprises of one NR PCell as given in Table G.2.3B.3.2.1.1-2. Cell-specific parameters of NR PCell is specified in Table G.2.3B.3.2.1.1-3 below. The OTA related test parameters for FR2 is shown in Table G.2.3B.3.2.1.1-4.

PDCCHs indicating new transmissions shall be sent continuously on PCell to ensure that the Mobile IAB MT would have ACK/NACK sending.

Before the test starts,

- Mobile IAB MT is connected to Cell 1 (PCell) on radio channel 1 (PCC).

- Mobile IAB MT is configured with 1 TCI state for PCell, PDCCH-TCI-state0 (QCL’d to SSB0)

- Mobile IAB MT is indicated in TCI state0 as the active TCI state

The test consists of two time periods, T1 and T2. Figure G.2.3B.3.2.1.1-1 and Figure G.2.3B.3.2.1.1-2 show the Time multiplexed (allocation in Frequency is symbolic) downlink transmissions from each Angle of Arrival. During T1 only SSB to which TCI-state0 is QCL’d is transmitted. At the beginning of T2, the SSB corresponding to TCI-state1 starts transmitting. The Mobile IAB MT is configured to provide periodic L1-RSRP reports. In slot n which is within 1280 ms of Mobile IAB MT providing L1-RSRP report with results for both SSB0 and SSB1, Mobile IAB MTreceives a RRC command indicating a switch to TCI-state1.

The test equipment verifies the TCI state switch time in PCell by scheduling the Mobile IAB MT on TCI state 1 after n+ TRRC\_processing  + Tfirst-SSB + 2ms.

Table G.2.3B.3.2.1.1-1: Supported test configurations

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

Table G.2.3B.3.2.1.1-2: General test parameters for TCI state switch

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Value | Comment |
| NR RF Channel Number |  | 1 | One NR radio channel is used for this test |
| Active PCell |  | Cell 1 | PCell on RF channel number 1. |
| CP length |  | Normal |  |
| DRX |  | OFF |  |
| T1 | s | 0.2 |  |
| T2 | s | 2 |  |

Table G.2.3B.3.2.1.1-3: NR Cell specific test parameters for TCI state switch

|  |  |  |
| --- | --- | --- |
| Parameter | Unit | Cell 1 |
| Frequency Range |  | FR2 |
| Duplex mode |  | TDD |
| TDD configuration |  | TDDConf.3.1 |
| BWchannel |  | 100 MHz: NRB,c = 66 |
| Data RBs allocated |  | 24 |
| Initial DL BWP Configuration |  | DLBWP.0.2 |
| Dedicated DL BWP Configuration |  | DLBWP.1.1 |
| Initial UL BWP Configuration |  | ULBWP.0.2 |
| Dedicated UL BWP Configuration |  | ULBWP.1.1 |
| PDSCH Reference measurement channel |  | SR.3.2 TDD |
| RMSI CORESET parameters |  | CR.3.1 TDD |
| Dedicated CORESET parameters |  | CCR.3.1 TDD |
| OCNG Patterns |  | OP.5 |
| SSB Configuration |  | SSB.1 FR2 |
| SMTC Configuration |  | SMTC.1 |
| TCI State 0 |  | TC. State.2 |
| TCI State 1 |  | TCI.State.3 |
| reportConfigType |  | ssb-Index-RSRP |
| reportConfigType |  | periodic |
| Number of reported RS |  | 2 |
| L1-RSRP reporting period | slot | 640 |
| timeRestrictionForChannelMeasurements |  | configured |
| TRS Configuration |  | TRS.2.1 TDD  TRS.2.2 TDD |
| Correlation Matrix and Antenna Configuration |  | 1x2 Low |
| EPRE ratio of PSS to SSS | dB | 0 |
| EPRE ratio of PBCH DMRS to SSS |  |  |
| EPRE ratio of PBCH to PBCH DMRS |  |  |
| EPRE ratio of PDCCH DMRS to SSS |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  |
| EPRE ratio of PDSCH DMRS to SSS |  |  |
| EPRE ratio of PDSCH to PDSCH |  |  |
| EPRE ratio of OCNG DMRS to SSS(Note 1) |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) |  |  |
| Propagation Condition |  | AWGN |
| Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. | | |

Table G.2.3B.3.2.1.1-4: OTA related test parameters for TCI state switch

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Cell 1 | | | | |
|  |  | SSB0 | | SSB1 | | |
|  |  | T1 | T2 | T1 | | T2 |
| Angle of arrival configuration |  | Setup 3 according to clause G.1.8.2 | | | | |
|  |  | AoA1 | | | AoA2 | |
| Assumption for Mobile IAB MT beams Note 6 |  | Rough | | | | |
| Ês | dBm/SCS | -80.6 | -80.6 | -Infinity | | -80.6 |
| SSB\_RP Note 2 | dBm/ SCS | -80.6 | -80.6 | -Infinity | | -80.6 |
| BB Note 7 | dB | 8.3 | 8.3 | -Infinity | | 8.3 |
| IoNote2 | dBm/95.04 MHz Note4 | -55.41 | -55.41 | - Infinity | | -55.41 |
| Note 1: Void  Note 2: SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Void  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the center of the quiet zone.  Note 6: Information about types of Mobile IAB MTbeam is given in B.2.1.3 and does not limit Mobile IAB MT implementation or test system implementation.  Note 7: Calculation of Es/IotBB includes the effect of Mobile IAB MT internal noise up to the value assumed for the associated Refsens requirement in clause 10.3.3. | | | | | | |



Figure G.2.3B.3.2.1.1-1: Time multiplexed downlink transmissions during T1



Figure G.2.3B.3.2.1.1-2: Time multiplexed downlink transmissions during T2

G.2.3B.3.2.1.2 Test Requirements

During T2, Mobile IAB MT shall send L1-RSRP report with both SSB0 and SSB1.

After receiving RRC command in slot n, Mobile IAB MT shall be able to start receiving on TCI state 1 after n+ TRRC\_processing  + Tfirst-SSB + 2ms.

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

**----------------------END OF CHANGE 5----------------------------**

**----------------------START OF CHANGE 6----------------------------**

#### G.2.3B.4 Uplink spatial relation switch delay

##### G.2.3B.4.1 MAC-CE based Spatial Relation switch

G.2.3B.4.1.1 NR PCell FR2 spatial relation associated with known DL-RS

G.2.3B.4.1.1.1 Test Purpose and Environment

The purpose of this test is to verify fulfillment of the uplink spatial relation switch delay requirement defined in clause 12.3B.4 by a Mobile IAB MT capable of beam correspondence without the need for UL beam sweeping. The supported test configurations are shown in Table G.2.3B.4.1.1.1-1.

The test scenario comprises one PCell (Cell 1) as outlined in Table G.2.3B.4.1.1.1-2. Cell-specific parameters are provided in Table G.2.3B.4.1.1.1-3. OTA-related test parameters are provided in Table G.2.3B.4.1.1.1-4.

Throughout the test, PDCCH indicating new transmissions shall ge sent continuously on PCell to ensure that the Mobile IAB MT will send ACK/NACKs on PUCCH.

Before the test starts,

Mobile IAB MT is connected to Cell 1 on radio channel 1.

Mobile IAB MT is configured with a single TCI state, TCI State-0, which is QCLed with SSB0.

Mobile IAB MT is configured with two spatial relation information configurations Spatial Relation Info-0 and Spatial Relation Info-1 for PUCCH, each associated with SSB0 and SSB1, respectively.

Mobile IAB MT is indicated via MAC-CE activation of *PUCCH-SpatialRelationInfoId* corresponding to Spatial Relation Info-0

Mobile IAB MT is configured with a CSI measurement configuration indicating L1-RSRP measurements on SSB0 and SSB1 with periodic reporting. The L1-RSRP measurement period is influenced by the following: the higher layer parameter *timeRestrictionForChannelMeasurement* is configured, measured SSBs are fully overlapping with SMTC window, and there are no conflicts with measurement gaps.

The test consists of two time periods, T1 and T2. During T1 only the SSB associated with PDCCH TCI state-0 and PUCCH Spatial Relation Info-0 is transmitted. At the beginning of T2, transmission of the SSB associated with PUCCH Spatial Relation Info-1 starts. The Mobile IAB MT conducts periodic L1-RSRP measurements and *SSB-Index-RSRP* reporting for SSB0 and SSB1. In slot *n*, which is within 1280ms after Mobile IAB MT receiving both SSB0 and SSB1, and after reporting valid results for both the SSB0 and the SSB1, the Mobile IAB MT receives a MAC-CE indicating a switch of spatial relation to PUCCH Spatial Relation Info 1

The test equipment verifies that the Mobile IAB MT transmits according to PUCCH Spatial Relation Info 0 up until slot *n* + THARQ/NR slot length + , and according to PUCCH Spatial Relation Info 1 from slot *n* + THARQ/NR slot length + + 1 and onwards.

**Table G.2.3B.4.1.1.1-1: Supported test configurations**

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

**Table G.2.3B.4.1.1.1-2: General test parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Unit** | **Value** | **Comment** |
| NR RF Channel Number |  | 1 | One NR radio channel is used for this test |
| Active PCell |  | Cell 1 | PCell on RF channel number 1. |
| CP length |  | Normal |  |
| DRX |  | OFF |  |
| L1-RSRP reporting period | slot | 160 | Periodic L1-RSRP reporting configured |
| L1-RSRP measured RS |  | SSB0, SSB1 | L1-RSRP measurements of SSB0 and SSB1. |
| Number of reported RS |  | 2 | L1-RSRP reporting of measurements on SSB0 and SSB1. |
| T1 | s | [0.2] |  |
| T2 | s | [2] |  |

**Table G.2.3B.4.1.1.1-3: NR Cell specific test parameters**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Cell 1** |
| Frequency Range |  | FR2 |
| Duplex mode |  | TDD |
| TDD configuration |  | TDDConf.3.1 |
| BWchannel |  | 100 MHz: NRB,c = 66 |
| Initial DL BWP Configuration |  | DLBWP.0.2 |
| Dedicated DL BWP Configuration |  | DLBWP.1.1 |
| Initial UL BWP Configuration |  | ULBWP.0.2 |
| Dedicated UL BWP Configuration |  | ULBWP.1.1 |
| PDSCH Reference measurement channel |  | SR.3.1 TDD |
| RMSI CORESET parameters |  | CR.3.1 TDD |
| Dedicated CORESET parameters |  | CCR.3.1 TDD |
| OCNG Patterns |  | OP.1 |
| SSB Configuration |  | SSB.1 FR2 |
| SMTC Configuration |  | SMTC.1 |
| TCI State-0 Configuration |  | TCI.State.0 |
| reportConfigType |  | ssb-Index-RSRP |
| reportConfigType |  | periodic |
| timeRestrictionForChannelMeasurements |  | configured |
| TRS Configuration |  | TRS.2.1 TDD |
| Spatial Relation Info-0 Configuration |  | PUCCH.SRI.0 |
| Spatial Relation Info-1 Configuration |  | PUCCH.SRI.1 |
| Correlation Matrix and Antenna Configuration |  | 1x2 Low |
| EPRE ratio of PSS to SSS | dB | 0 |
| EPRE ratio of PBCH DMRS to SSS |
| EPRE ratio of PBCH to PBCH DMRS |
| EPRE ratio of PDCCH DMRS to SSS |
| EPRE ratio of PDCCH to PDCCH DMRS |
| EPRE ratio of PDSCH DMRS to SSS |
| EPRE ratio of PDSCH to PDSCH |
| EPRE ratio of OCNG DMRS to SSSNote 1 |
| EPRE ratio of OCNG to OCNG DMRSNote 1 |
| Propagation Condition |  | AWGN |
| Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. | | |

**Table G.2.3B.4.1.1.1-4: OTA related test parameters**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Cell 1** | | | |
| **SSB0** | | **SSB1** | |
| **T1** | **T2** | **T1** | **T2** |
| Angle of arrival configuration |  | Setup 3 according to clause A.3.15.3 | | | |
| AoA1 | | AoA2 | |
| Assumption for Mobile IAB MT beams Note 6 |  | Rough | | | |
| NocNote 1 | dBm/15 kHz | -92.1 | | | |
| NocNote 1 | dBm/SCS | -83.1 | | | |
| Ês/Noc | dB | 1 | | -infinity | 1 |
| SS-RSRP Note 2 | dBm/120 kHz Note3 | -82.1 | | -infinity | -82.1 |
| IoNote2 | dBm/95.04 MHz Note4 | -50.6 | | -54.1 | -50.6 |
| Note 1: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.  Note 2: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the center of the quiet zone.  Note 6: Information about types of Mobile IAB MT beam is given in B.2.1.3 and does not limit Mobile IAB MT implementation or test system implementation. | | | | | |

G.2.3B.4.1.1.2 Test Requirements

During T2, the Mobile IAB MT shall send L1-RSRP report with results for SSB0 and SSB1.

After receiving MAC-CE command in slot *n*, the Mobile IAB MT shall:

Continue transmitting using PUCCH spatial relation associated with SSB0 up to and including slot *n* + THARQ/NR slot length +

Start transmitting using PUCCH spatial relation associated with SSB1 from slot *n* + THARQ/NR slot length + + 1 and onwards.

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

##### G.2.3B.4.2 RRC based spatial relation switch

G.2.3B.4.2.1 NR PCell FR2 spatial relation switch associated with a known DL-RS

G.2.3B.4.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the RRC based spatial relation switch delay requirement defined in clause 12.3B.4 by a Mobile IAB MT capable of beam correspondence without the need for UL beam sweeping. In the test the higher layer parameter *timeRestrictionForChannelMeasurements* is configured. Supported test configuration is shown in Table G.2.3B.4.2.1.1-1.

The test scenario comprises of one PCell (Cell 1) as given in Table G.2.3B.4.2.1.1-2. Cell-specific parameters of PCell is specified in Table G.2.3B.4.2.1.1-3 below. The OTA related test parameters for FR2 is shown in Table G.2.3B.4.2.1.1-4.

Periodic SRS is transmitted on PCell (Cell 1), and the SRS configuration is SRSConf.1 given in Table A.5.4.1.1.1-3.

Before the test starts,

- Mobile IAB MT is connected to Cell 1 (PCell) on radio channel 1 (PCC).

- Mobile IAB MT is configured with 1 SRS-SpatialRelation0 associated with SSB0.

- Mobile IAB MT is indicated SRS-SpatialRelation0 as the active SRS spatial relation.

The test consists of two time periods, T1 and T2. During T1 only SSB0 to which SRS-SpatialRelation0 associated is transmitted. Mobile IAB MT shall transmit periodic SRS with SRS-SpatialRelation0 on the UL of the PCell.

T2 start when the tester initiates transmission of SSB1 corresponding to SRS-SpatialRelation1. The Mobile IAB MT is configured to transmit periodic L1-RSRP reports.

In slot n, which is within [1280]ms of Mobile IAB MT providing the L1-RSRP report with results for both SSB0 and SSB1, the Mobile IAB MT receives an RRC command indicating a switch to transmit periodic SRS with target SRS-SpatialRelation1. The Mobile IAB MT shall be able to transmit periodic SRS with target spatial relation (SRS-SpatialRelation1) on PCell in slot n + TRRC\_processing/NR slot length +1.

**Table G.2.3B.4.2.1.1-1: Supported test configurations**

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

**Table G.2.3B.4.2.1.1-2: General test parameters for spatial relation switch associated with a known DL-RS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Unit** | **Value** | **Comment** |
| NR RF Channel Number |  | 1 | One NR radio channel is used for this test |
| Active PCell |  | Cell 1 | PCell on RF channel number 1. |
| CP length |  | Normal |  |
| DRX |  | OFF |  |
| Cell-individual offset for cells on RF channel number 1 | dB | 0 | Individual offset for cells on PCC. |
| timeRestrictionForChannelMeasurements |  | configured | Time domain measurement restriction for the channel (signal) measurements (see TS 38.214 [19], clause 5.2.1.1) |
| T1 | s | 0.5 |  |
| T2 | s | 1.5 |  |

**Table G.2.3B.4.2.1.1-3: NR Cell specific test parameters for spatial relation switch associated with a known DL-RS**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unit** | **Cell 1** |
| Frequency Range |  | FR2 |
| Duplex mode |  | TDD |
| TDD configuration |  | TDDConf.3.1 |
| BWchannel |  | 100 MHz: NRB,c = 66 |
| Initial DL BWP Configuration |  | DLBWP.0.2 |
| Dedicated DL BWP Configuration |  | DLBWP.1.1 |
| Initial UL BWP Configuration |  | ULBWP.0.2 |
| Dedicated UL BWP Configuration |  | ULBWP.1.1 |
| PDSCH Reference measurement channel |  | SR.3.1 TDD |
| RMSI CORESET parameters |  | CR.3.1 TDD |
| Dedicated CORESET parameters |  | CCR.3.1 TDD |
| OCNG Patterns |  | OP.1 |
| SSB Configuration |  | SSB.1 FR2 |
| SMTC Configuration |  | SMTC.1 |
| SRS-SpatialRelation0 |  | SRS.SRI0 |
| SRS-SpatialRelation1 |  | SRS.SRI1 |
| reportConfigType |  | ssb-Index-RSRP |
| reportConfigType |  | periodic |
| Number of reported RS |  | 2 |
| L1-RSRP reporting period | slot | 160 |
| TRS Configuration |  | TRS.2.1 TDD |
| Correlation Matrix and Antenna Configuration |  | 1x2 Low |
| EPRE ratio of PSS to SSS | dB | 0 |
| EPRE ratio of PBCH DMRS to SSS |  |  |
| EPRE ratio of PBCH to PBCH DMRS |  |  |
| EPRE ratio of PDCCH DMRS to SSS |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  |
| EPRE ratio of PDSCH DMRS to SSS |  |  |
| EPRE ratio of PDSCH to PDSCH |  |  |
| EPRE ratio of OCNG DMRS to SSS (Note 1) |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) |  |  |
| Propagation Condition |  | AWGN |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. | | |

**Table G.2.3B.4.2.1.1-4: OTA related test parameters for spatial relation switch associated with a known DL-RS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Cell 1** | | | |
|  |  | **SSB0** | | **SSB1** | |
|  |  | **T1** | **T2** | **T1** | **T2** |
| Angle of arrival |  | Setup 3 according to clause A.3.15.3 | | | |
| configuration |  | **AoA1** | | **AoA2** | |
| Assumption for Mobile IAB MT beamsNote 6 |  | Rough | | Rough | |
| NocNote 1 | dBm/15 kHz | -92.1 | | | |
| NocNote 1 | dBm/SCS | -83.1 | | | |
| Ês/Noc | dB | 1 | 1 | -Infinity | 1 |
| SS-RSRP Note 2 | dBm/120 kHz Note3 | -82.1 | -82.1 | -Infinity | -82.1 |
| IoNote2,Note6 | dBm/95.04 MHz Note4 | -50.6 | -50.6 | -54.1 | -50.6 |
| Note 1: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.  Note 2: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the center of the quiet zone.  Note 6: Information about types of Mobile IAB MT beam is given in B.2.1.3, and does not limit Mobile IAB MT implementation or test system implementation | | | | | |

G.2.3B.4.2.1.2 Test Requirements

During T1 Mobile IAB MT shall send L1-RSRP report with SSB0 to which SRS-SpatialRelation0 is associated. During T2, Mobile IAB MT shall send L1-RSRP report with SSB1 to which SRS-SpatialRelation1 is associated.

After receiving RRC command in slot n, Mobile IAB MT shall be able to transmit target periodic SRS with SRS-SpatialRelation1 on the PCell in the slot n + TRRC\_processing/*NR slot length* + 1.

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

**----------------------END OF CHANGE 6----------------------------**

**----------------------START OF CHANGE 7----------------------------**

### G.2.4 Void

### G.2.4B Measurement procedure for mobile IAB MT

#### G.2.4B.1 Event triggered intra-frequency measurement reporting test in FR1

##### G.2.4B.1.1 Test purpose and Environment

The purpose of this test is to verify that the Mobile IAB MT makes correct reporting of an event. This test will partly verify the intra-frequency cell search requirements in clauses 12.4B.2.

##### G.2.4B.1.2 Test parameters

Two cells are deployed in the test, which are FR1 PCell (Cell 1) and a FR1 neighbour cell (Cell 2) on the same frequency as the PCell. The test parameters for PCell and neighbour cell are given in Table G.2.4B.1.1-1 and G.2.4B.1.1-2 below. In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the Mobile IAB MTthat 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 Mobile IAB MT shall not have any timing information of Cell 2.

Table G.2.4B.1.1.2-1: Supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| Note: The Mobile IAB MT is only required to be tested in one of the supported test configurations. | |

Table G.2.4B.1.2-2: General test parameters for SA intra-frequency event triggered reporting without gap for FR1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| Active cell |  | 1, 2, 3 | Cell 1 |  |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | Cell to be identified. |
| RF Channel Number |  | 1, 2, 3 | 1: Cell 1 and Cell 2 |  |
| SSB configuration |  | 1 | SSB.1 FR1 |  |
|  |  | 2 | SSB.1 FR1 |  |
|  |  | 3 | SSB.2 FR1 |  |
| SMTC configuration |  | 1 | SMTC.2 |  |
|  |  | 2 | SMTC.1 |  |
|  |  | 3 | SMTC.1 |  |
| A3-Offset | dB | 1, 2, 3 | -4.5 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| Hysteresis | dB | 1, 2, 3 | 0 |  |
| Time To Trigger | s | 1, 2, 3 | 0 |  |
| Filter coefficient |  | 1, 2, 3 | 0 | L3 filtering is not used |
| DRX |  | 1, 2, 3 |  | OFF |
| Time offset between serving and neighbour cells |  | 1 | 3 ms | Asynchronous cells.  The timing of Cell 2 is 3ms later than the timing of Cell 1. |
|  |  | 2 | 3 μs | Synchronous cells |
|  |  | 3 | 3 μs | Synchronous cells |
| T1 | s | 1, 2, 3 | 5 |  |
| T2 | s | 1, 2, 3 | 5 |  |

Table G.2.4B.1.2-3: NR Cell specific test parameters for SA intra-frequency event triggered reporting without gap for FR1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | | Cell 2 | |
|  |  |  | T1 | T2 | T1 | T2 |
| TDD configuration |  | 1 | TN/A | | TN/A | |
|  |  | 2 | TDDConf.1.1 | | TDDConf.1.1 | |
|  |  | 3 | TDDConf.2.1 | | TDDConf.2.1 | |
| PDSCH RMC configuration |  | 1 | SR.1.1 FDD | | N/A | |
|  |  | 2 | SR.1.1 TDD | |  | |
|  |  | 3 | SR.2.1 TDD | |  | |
| RMSI CORESET RMC configuration |  | 1 | CR.1.1 FDD | | N/A | |
|  |  | 2 | CR.1.1 TDD | | N/A | |
|  |  | 3 | CR.2.1 TDD | | N/A | |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.1 FDD | | N/A | |
|  |  | 2 | CCR.1.1 TDD | | N/A | |
|  |  | 3 | CCR.2.1 TDD | | N/A | |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | | OP.1 | |
| TRS Configuration |  | 1 | TRS.1.1 FDD | | N/A | |
|  |  | 2 | TRS.1.1 TDD | | N/A | |
|  |  | 3 | TRS.1.2 TDD | | N/A | |
| IInitial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | | DLBWP.0.1 ULBWP.0.1 | |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.1 | | DLBWP.1.1 | |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.1 | | ULBWP.1.1 | |
| RLM-RS |  | 1, 2, 3 | SSB | | SSB | |
| Note 2 | dBm/SCS | 1 | -98 | | | |
|  |  | 2 | -98 | | | |
|  |  | 3 | -95 | | | |
| Note 2 | dBm/15 kHz | 1 | -98 | | | |
|  |  | 2 |  | | | |
|  |  | 3 |  | | | |
|  | dB | 1 | 4 | -1.46 | -Infinity | -1.46 |
|  |  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
|  | dB | 1 | 4 | 4 | -Infinity | 4 |
|  |  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
| SS-RSRP Note 3 | dBm/SCS kHz | 1 | -94 | -94 | -Infinity | -94 |
|  |  | 2 | -94 | -94 | -Infinity | -94 |
|  |  | 3 | -91 | -91 | -Infinity | -91 |
| Io | dBm/9.36 MHz | 1 | -64.60 | -62.25 | --64.60 | -62.25 |
|  | dBm/9.36 MHz | 2 | -64.60 | -62.25 | --64.60 | -62.25 |
|  | dBm/38.16 MHz | 3 | -58.50 | -56.16 | --58.50 | -56.16 |
| Propagation Condition |  | 1, 2, 3 | AWGN | | | |
| Note 1: The resources for uplink transmission are assigned to the Mobile IAB MT prior to the start of time period T2.  Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.  Note 3: SS-RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. | | | | | | |

##### G.2.4B.1.3 Test Requirements

The Mobile IAB MT 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 Mobile IAB MT is not required to read the neighbour cell SSB index in this test.

The Mobile IAB MT 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.

#### G.2.4B.2 Event triggered intra-frequency measurement reporting test in FR2

##### G.2.4B.2.1 Test purpose and Environment

The purpose of this test is to verify that the Mobile IAB MT makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in clause 12.4B.2. Supported test configurations are shown in table G.2.4B.2.1-1.

Table G.2.4B.2.1-1: supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note: The Mobile IAB MT is only required to be tested in one of the supported test configurations. | |

There are two cells in the test, PCell (Cell 1) and a FR2 neighbour cell (Cell 2) on the same frequency as the PCell. The test parameters for the Cell 1 and Cell 2 are given in Table G.2.4B.2.1-2, G.2.4B.2.1-3 and G.2.4B.2.1-4 below.

In the measurement control information, a measurement object is configured for the frequency of the PCell, and it is indicated to the Mobile IAB MT 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 Mobile IAB MT shall not have any timing information of Cell 2.

Table G.2.4B.2.1-2: General test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap without DRX

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

Table G.2.4B.2.1-3: NR Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap without DRX

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

Table G.2.4B.2.1-4: NR OTA Cell specific test parameters for intra-frequency event triggered reporting for SA with TDD PCell in FR2 without gap without DRX

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Config** | **Cell 1** | | **Cell 2** | |
| **T1** | **T2** | **T1** | **T2** |
| AoA setup |  | 1, 2 | Setup 3 defined in A.3.15.3 | | | |
| AoA1 | | AoA2 | |
| Beam assumptionNote 4 |  | 1,2 | Rough | | Rough | |
| Es | dBm/SCS | 1 | -89 | -89 | -Infinity | -89 |
| 2 | -86 | -86 | -Infinity | -86 |
| BB Note 5 | dB | 1, 2 | -0.12 | -0.12 | -Infinity | -0.12 |
| SSB\_RP | dBm/SCS | 1 | -89 | -89 | -Infinity | -89 |
| 2 | -86 | -86 | -Infinity | -86 |
|  | dBm/95.04MHz | 1 | -64.41 | -64.41 | -Infinity | -64.41 |
| 2 | -61.41 | -61.41 | -Infinity | -61.41 |
| Time multiplexing of the downlink transmissions from each AoA | | 1, 2 | Defined in Figure G.2.4B.2.1-1 | | | |
| Note 1: The resources for uplink transmission are assigned to the Mobile IAB MT prior to the start of time period T2.  Note 2: Void  Note 3: Es/Iot, SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: Information about types of Mobile IAB MTbeam is given in B.2.1.3, and does not limit Mobile IAB MT implementation or test system implementation  Note 5: Calculation of Es/IotBB includes the effect of Mobile IAB MT 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 Mobile IAB MT multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4. | | | | | | |



Figure G.2.4B.2.1-1: Time multiplexed downlink transmissions (Config 1 example)

##### G.2.4B.2.2 Test Requirements

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

- 2.4s for a Mobile IAB MT supporting power class 1,

- 1.44s for a Mobile IAB MT supporting power class 2, 3 and 4

The Mobile IAB MT is not required to read the neighbour cell SSB index in this test.

The Mobile IAB MT 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 7----------------------------**

**----------------------START OF CHANGE 8----------------------------**

## G.2.5 Void

## G.2.5B Measurement Performance requirements

Unless explicitly stated otherwise:

- Reported measurements shall be within defined range of accuracy limits defined in Clause 12.5B for at least 90 % of the reported cases. If multiple measurement performance requirements are verified in the same test, the reported measurements for each requirement shall be within defined range of accuracy limits of the corresponding requirement defined in Clause 10 for at least 90% of the reported cases.

- Measurements are performed in RRC\_CONNECTED state.

- The reference channels assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

### G.2.5B.1 SS-RSRP

#### G.2.5B.1.1 Intra-frequency case measurement accuracy with FR1 serving cell and FR1 target cell

##### G.2.5B.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clauses 12.5B.1.2.1.1 and 12.5B.1.2.1.2 for intra-frequency measurements.

##### G.2.5B.1.1.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Supported test configurations are shown in table G.2.5B.1.1.2-1. Both absolute and relative accuracy of SS-RSRP intra-frequency measurements are tested by using the parameters in G.2.5B.1.1.2-2. In all test cases, Cell 1 is the PCell, and Cell 2 is the target cell.

Table G.2.5B.1.1.2-1: SS-RSRP Intra frequency SS-RSRP supported test configurations

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

Table G.2.5B.1.1.2-2: SS-RSRP Intra frequency test parameters

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Test 1 | | Test 2 | | Test 3 | |
|  | | |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Cell ID | | |  | 489 | 0 | 489 | 0 | 489 | 0 |
| SSB ARFCN | | |  | freq1 | | freq1 | | freq1 | |
| Duplex mode | | Config 1 |  | FDD | | | | | |
|  | | Config 2,3 |  | TDD | | | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | |
| BWP BW | | Config 1 |  | 10: NRB,c = 52 | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | |
| Downlink initial BWP configuration | | |  | DLBWP.0.1 | | | | | |
| Downlink dedicated BWP configuration | | |  | DLBWP.1.1 | | | | | |
| Uplink initial BWP configuration | | |  | ULBWP.0.1 | | | | | |
| Uplink dedicated BWP configuration | | |  | ULBWP.1.1 | | | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD | NA | TRS.1.1 FDD | NA | TRS.1.1 FDD | NA |
|  | | Config 2 |  | TRS.1.1 TDD | NA | TRS.1.1 TDD | NA | TRS.1.1 TDD | NA |
|  | | Config 3 |  | TRS.1.2 TDD | NA | TRS.1.2 TDD | NA | TRS.1.2 TDD | NA |
| DRX Cycle | | | ms | Not Applicable | | | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | - | SR.1.1 FDD | - | SR.1.1 FDD | - |
|  | | Config 2 |  | SR.1.1 TDD |  | SR.1.1 TDD |  | SR.1.1 TDD |  |
|  | | Config 3 |  | SR2.1 TDD |  | SR2.1 TDD |  | SR2.1 TDD |  |
| RMSI CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | - | CR.1.1 FDD | - | CR.1.1 FDD | - |
|  | | Config 2 |  | CR.1.1 TDD |  | CR.1.1 TDD |  | CR.1.1 TDD |  |
|  | | Config 3 |  | CR2.1 TDD |  | CR2.1 TDD |  | CR2.1 TDD |  |
| Control channel RMC | | Config 1 |  | CCR.1.1 FDD | - | CCR.1.1 FDD | - | CCR.1.1 FDD | - |
|  | | Config 2 |  | CCR.1.1 TDD |  | CCR.1.1 TDD |  | CCR.1.1 TDD |  |
|  | | Config 3 |  | CCR2.1 TDD |  | CCR2.1 TDD |  | CCR2.1 TDD |  |
| SSB configuration | | Config 1 |  | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 |
|  | | Config 2 |  | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 | SSB.1 FR1 |
|  | | Config 3 |  | SSB.2 FR1 | SSB.2 FR1 | SSB.2 FR1 | SSB.2 FR1 | SSB.2 FR1 | SSB.2 FR1 |
| Time offset with Cell 1 | | Config 1 | ms | - | 3 | - | 3 | - | 3 |
|  | | Config 2,3 | μs | - | 3 | - | 3 | - | 3 |
| SMTC configuration | | Config 1 |  | SMTC.2 | | | | | |
|  | | Config 2,3 |  | SMTC.1 | | | | | |
| OCNG Patterns | | |  | OCNG pattern 1 | | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | |
|  | | Config 3 |  | 30kHz | | | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | 0 | 0 | 0 | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS | | |  |  |  |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS | | |  |  |  |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS | | |  |  |  |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS | | |  |  |  |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS | | |  |  |  |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH | | |  |  |  |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |  |  |  |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |  |  |  |  |  |  |  |
| Note2 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/15KhZ | -106 | | -88 | | -114 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | -113.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | -113 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | -112.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | -112 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | -111.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | -111 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | -110.5 | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | Not applicableNote 5 | | -94 | | -114 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | -113.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | -113 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | -112.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | -112 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | -111.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | -111 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | -110.5 | |
| Note2 | Config 1,2 | | dBm/SCS | -106 | | -88 | | Same as Noc/15kHz | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | Not applicableNote 5 | | -91 | | -111 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | -110.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | -110 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | -109.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | -109 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | -108.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | -108 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | -107.5 | |
|  | | | dB | 2.46 | -5.97 | 2.46 | -5.97 | -0.01 | -4.76 |
|  | | | dB | 6 | 1 | 6 | 1 | 3 | 0 |
| SS-RSRPNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/SCS | -100 | -105 | -82 | -87 | -111.00 | -114.00 |
|  |  | NR\_FDD\_FR1\_B |  |  |  |  |  | -110.50 | -113.50 |
|  |  | NR\_TDD\_FR1\_C |  |  |  |  |  | -110.00 | -113.00 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  |  | -109.50 | -112.50 |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  |  |  | -109.00 | -112.00 |
|  |  | NR\_FDD\_FR1\_F |  |  |  |  |  | -108.50 | -111.50 |
|  |  | NR\_FDD\_FR1\_G |  |  |  |  |  | -108.00 | -111.00 |
|  |  | NR\_FDD\_FR1\_H |  |  |  |  |  | -107.50 | -110.50 |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | Not applicableNote 5 | Not applicableNote 5 | -85 | -90 | -108.00 | -111.00 |
|  |  | NR\_FDD\_FR1\_B |  |  |  |  |  | -107.50 | -110.50 |
|  |  | NR\_TDD\_FR1\_C |  |  |  |  |  | -107.00 | -110.00 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  |  | -106.50 | -109.50 |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  |  |  | -106.00 | -109.00 |
|  |  | NR\_FDD\_FR1\_F |  |  |  |  |  | -105.50 | -108.50 |
|  |  | NR\_FDD\_FR1\_G |  |  |  |  |  | -105.00 | -108.00 |
|  |  | NR\_FDD\_FR1\_H |  |  |  |  |  | -104.50 | -107.50 |
| IoNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  9.36MHz | -70.09 | | -52.09 | | -80.03 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | -79.53 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | -79.03 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | -78.53 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | -78.03 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | -77.53 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | -77.03 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | -76.53 | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  38.16MHz | Not applicableNote 5- | | -51.99 | | -73.94 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | -73.44 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | -72.94 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | -72.44 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | -71.94 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | -71.44 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | -70.94 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | -70.44 | |
| Propagation condition | | | - | AWGN | | | | | |
| Antenna configuration | | |  | 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.  Note 5: Subtest 1 is not used when testing with 30kHz SSB SCS.  Note 6: The test configuration excludes support for band n51 and it is not required to run this test on band n51 in this release of the specification | | | | | | | | | |

##### G.2.5B.1.1.3 Test Requirements

The SS-RSRP measurement accuracy for cell 1 and cell 2 shall fulfil absolute requirement in clause 12.5B.2.1.1 and relative requirement in clause 12.5B.2.1.2.

#### G.2.5B.1.2 SA intra-frequency case measurement accuracy with FR2 serving cell and FR2 target cell

##### G.2.5B.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clauses 12.5B.3.1.1 and 12.5B.3.1.2 for intra-frequency measurements.

##### G.2.5B.1.2.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Supported test configurations are shown in Table G.2.5B.1.2.2-1. Both absolute and relative accuracy of SS-RSRP intra-frequency measurements are tested by using the parameters in Table G.2.5B.1.2.2-2 and G.2.5B.1.2.2-3. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The TCI status for Cell 1 is defined in Table A.3.16.2-1 and TRS configuration for Cell 1 is defined in Table A.3.17.2.1-1. The test consists of two time phases T1 and T2.

Table G.2.5B.1.2.2-1: SS-RSRP Intra frequency SS-RSRP supported test configurations

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

Table G.2.5B.1.2.2-2: SS-RSRP Intra frequency general test parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | T1 | | T2 | |
|  |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Cell ID |  | 489 | 0 | 489 | 0 |
| SSB ARFCN |  | freq1 | | freq1 | |
| Duplex mode |  | TDD | | TDD | |
| TDD configuration |  | TDDConf.3.1 | | TDDConf.3.1 | |
| BWchannel | MHz | 100: NRB,c = 66 | | 100: NRB,c = 66 | |
| Data RBs allocated |  | 24 | | 24 | |
| Downlink initial BWP configuration |  | DLBWP.0.1 | - | DLBWP.0.1 | - |
| Downlink dedicated BWP configuration |  | DLBWP.1.1 | - | DLBWP.1.1 | - |
| Uplink initial BWP configuration |  | ULBWP.0.1 | - | ULBWP.0.1 | - |
| Uplink dedicated BWP configuration |  | ULBWP.1.1 | - | ULBWP.1.1 | - |
| DRX cycle configuration |  | Not applicable | - | Not applicable | - |
| TRS configuration |  | TRS.2.1 TDD | - | TRS.2.1 TDD | - |
| TCI state |  | TCI.State.0 | - | TCI.State.0 | - |
| PDSCH Reference measurement channel |  | SR.3.2 TDD | - | SR.3.2 TDD | - |
| RMSI CORESET Reference Channel |  | CR.3.1 TDD | - | CR.3.1 TDD | - |
| Dedicated CORESET Reference channel |  | CCR.3.1 TDD | - | CCR.3.1 TDD | - |
| OCNG Patterns |  | OP.3 | OP.3 | OP.3 | OP.3 |
| SSB configuration |  | SSB.3 FR2 | SSB.3 FR2 | SSB.3 FR2 | SSB.3 FR2 |
| SMTC configuration |  | SMTC.1 | SMTC.1 | SMTC.1 | SMTC.1 |
| Time offset with Cell 1 | μs | - | 3 | - | 3 |
| PDSCH/PDCCH subcarrier spacing | kHz | 120 | 120 | 120 | 120 |
| EPRE ratio of PSS to SSS | dB | 0 | 0 | 0 | 0 |
| EPRE ratio of PBCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PBCH to PBCH\_DMRS |  |  |  |  |  |
| EPRE ratio of PDCCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH\_DMRS |  |  |  |  |  |
| EPRE ratio of PDSCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH\_DMRS |  |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 |  |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |  |  |  |  |  |
| Propagation conditions |  | AWGN | AWGN | AWGN | AWGN |
| Antenna configuration |  | 1x2 | 1x2 | 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. | | | | | |

Table G.2.5B.1.2.2-3: SS-RSRP Intra frequency OTA related test parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | T1 | | T2 | |
|  |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Angle of arrival configuration |  | Setup 1 according to clause G.1.8.1 | | | |
| Assumption for mIAB-MT beamsNote 7 |  | Rough | | Rough | |
| Note1 | dBm/15kHzNote4 | -91.6 | | N/A | |
| Note1 | dBm/SCSNote4 | -82.6 | | N/A | |
|  | dB | 6.0 | 1.0 | N/A | N/A |
| Es | dBm/SCSNote4 |  |  | (SSB\_RP derived based on declared sensitivity+2.1dB) | (SSB\_RP derived based on declared sensitivity +2.1dB) |
| SSB\_RPNote2 | dBm/SCS | -76.6 | -81.6 | (SSB\_RP derived based on declared sensitivity +2.1dB) | (SSB\_RP derived based on declared sensitivity +2.1dB) |
| BB Note6 | dB | 2.44 | -5.98 | -5.98 | -5.98 |
| IoNote2 | dBm/95.04 MHz Note4 | -50.05 | | (SSB\_RP derived based on declared sensitivity+29.70dB) | |
| Note 1: Where used, 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 2: SSB\_RP, Es/Iot and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: Void  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: Void  Note 6: Calculation of Es/IotBB includes the effect of mIAB-MT internal noise up to the value assumed for the associated Refsens requirement in clause 7.2.2  Note 7: Information about types of mIAB-MT beam is given by declaration | | | | | |

##### G.2.5B.1.2.3 Test Requirements

The SS-RSRP measurement accuracy shall fulfil the absolute accuracy requirements in clauses 12.5B.3.1.1 and relative accuracy requirements in clause 12.5B.3.1.2. The following requirements are to be verified:

During T1:

Absolute accuracy of Cell 1 and absolute accuracy of Cell 2. The mIAB-MT is deemed to meet the requirement if the reported SS-RSRP is in the range shown in table G.2.5B.1.2.3-1.

Relative accuracy of Cell 2 compared with Cell 1. The mIAB-MT is deemed to meet the requirement if the difference in reported SS-RSRP meets the requirements in Table 12.5B.3.1.2-1.

During T2:

Absolute accuracy of Cell 1 and absolute accuracy of Cell 2. The mIAB-MT is deemed to meet the requirement if the reported SS-RSRP is in the range shown in table G.2.5B.1.2.3-1.

Relative accuracy of Cell 2 compared with Cell 1. The mIAB-MT is deemed to meet the requirement if the difference in reported SS-RSRP meets the requirements in Table 12.5B.3.1.2-1.

During T1 and T2:

Relative accuracy of Cell 1 during T2 compared with Cell 1 during T1. The mIAB-MT is deemed to meet the requirement if the difference in reported SS-RSRP meets the requirements in Table 12.5B.3.1.2-1

Relative accuracy of Cell 2 during T2 compared with Cell 2 during T1. The mIAB-MT is deemed to meet the requirement if the difference in reported SS-RSRP meets the requirements in Table 12.5B.3.1.2-1.

Table G.2.5B.1.2.3-1: SS-RSRP absolute accuracy test requirement

|  |  |
| --- | --- |
|  | Test requirement Notes1,2,3 |
| Cell 1 | SSB\_RP1 -δ +Gmin ≤ Reported RSRP(dBm) ≤ SSB\_RP1 +δ +Gmax |
| Cell 2 | SSB\_RP2 -δ +Gmin ≤ Reported RSRP(dBm) ≤ SSB\_RP2 +δ +Gmax |
| Note 1: SSB\_RPn is the equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone configured in the test for the cell n under consideration  Note 2: δ is the RSRP absolute accuracy requirement from Table 12.5B.3.1.1-1, selected according to the Io used in the test  Note 3: Gmin and Gmax are the minimum and maximum mIAB-MT gain values according to declaration | |

### G.2.5B.2 SS-RSRQ

#### G.2.5B.2.1 Intra-frequency measurement accuracy with FR1 serving cell and FR1 target cell

##### G.2.5B.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 12.5B.7.1.1.

##### G.2.5B.2.1.2 Test Parameters

In this test case all cells are on the same carrier frequency. Supported test configuration are shown in Table G.2.5B.2.1.2-1. The absolute accuracy of SS-RSRQ intra-frequency measurement is tested by using the parameters in Table G.2.5B.2.1.2-2. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Table G.2.5B.2.1.2-1: SS-RSRQ Intra frequency SS-RSRQ supported test configurations

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

Table G.2.5B.2.1.2-2: SS-RSRQ Intra frequency test parameters

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Test 1 | | Test 2 | | | | Test 3 | |
|  | | |  | Cell 1 | Cell 2 | Cell 1 | | Cell 2 | | Cell 1 | Cell 2 |
| Cell ID | | |  | 489 | 0 | 489 | | 0 | | 489 | 0 |
| SSB ARFCN | | |  | freq1 | | freq1 | | | | freq1 | |
| Duplex mode | | Config 1 |  | FDD | | | | | | | |
|  | | Config 2,3 |  | TDD | | | | | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | | | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | | | | | |
|  | | Config 3 |  | TDDConf.2.1 | | | | | | | |
| BWchannel | | Config 1 | MHz | 10: NRB,c = 52 | | | | | | | |
|  | | Config 2 |  | 10: NRB,c = 52 | | | | | | | |
|  | | Config 3 |  | 40: NRB,c = 106 | | | | | | | |
|  | |  |  |  | | | | | | | |
| BWP configuration | | Initial DL BWP |  | DLBWP.0.1 | | | | | | | |
|  | | Dedicated DL BWP |  | DLBWP.1.1 | | | | | | | |
|  | | Initial UL BWP |  | ULBWP.0.1 | | | | | | | |
|  | | Dedicated UL BWP |  | ULBWP.1.1 | | | | | | | |
| DRX Cycle | | | ms | Not Applicable | | | | | | | |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | - | SR.1.1 FDD | | - | | SR.1.1 FDD | - |
|  | | Config 2 |  | SR.1.1 TDD |  | SR.1.1 TDD | |  | | SR.1.1 TDD |  |
|  | | Config 3 |  | SR2.1 TDD |  | SR2.1 TDD | |  | | SR2.1 TDD |  |
| RMSI CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | - | CR.1.1 FDD | | - | | CR.1.1 FDD |  |
|  | | Config 2 |  | CR.1.1 TDD |  | CR.1.1 TDD | |  | | CR.1.1 TDD |  |
|  | | Config 3 |  | CR.2.1 TDD |  | CR.2.1 TDD | |  | | CR.2.1 TDD |  |
| Control Channel RMC | | Config 1 |  | CCR.1.1 FDD | - | CCR.1.1 FDD | | - | | CCR.1.1 FDD | - |
|  | | Config 2 |  | CCR.1.1 TDD |  | CCR.1.1 TDD | |  | | CCR.1.1 TDD |  |
|  | | Config 3 |  | CCR.2.1 TDD |  | CCR.2.1 TDD | |  | | CCR.2.1 TDD |  |
| TRS Configuration | | Config 1 |  | TRS.1.1 FDD | - | TRS.1.1 FDD | | - | | TRS.1.1 FDD | - |
|  | | Config 2 |  | TRS.1.1 TDD |  | TRS.1.1 TDD | |  | | TRS.1.1 TDD |  |
|  | | Config 3 |  | TRS.1.2 TDD |  | TRS.1.2 TDD | |  | | TRS.1.2 TDD |  |
| OCNG Patterns | | |  | OP. 1 | | | | | | | |
| SS-RSSI-Measurement | | |  | Not Applicable | | | | | | | |
| Time offset with Cell 1 | | Config 1 | ms | - | 3 | - | 3 | | - | | 3 |
|  | | Config 2,3 | μs | - | 3 | - | 3 | | - | | 3 |
| SMTC configuration | | Config 1 |  | SMTC.2 | | | | | | | |
|  | | Config 2,3 |  | SMTC.1 | | | | | | | |
| SSB configuration | | Config 1,2 |  | SSB.1 FR1 | | | | | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | | | | | |
| CSI-RS for tracking | | Config 1 |  | TRS.1.1 FDD | | | | | | | |
| Config 2 | TRS.1.1 TDD | | | | | | | |
| Config 3 | TRS.1.2 TDD | | | | | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 kHz | | | | | | | |
|  | | Config 3 |  | 30kHz | | | | | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | 0 | 0 | | 0 | | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS | | |  |  |  |  | |  | |  |  |
| EPRE ratio of PBCH to PBCH DMRS | | |  |  |  |  | |  | |  |  |
| EPRE ratio of PDCCH DMRS to SSS | | |  |  |  |  | |  | |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS | | |  |  |  |  | |  | |  |  |
| EPRE ratio of PDSCH DMRS to SSS | | |  |  |  |  | |  | |  |  |
| EPRE ratio of PDSCH to PDSCH | | |  |  |  |  | |  | |  |  |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |  |  |  |  | |  | |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |  |  |  |  | |  | |  |  |
| Note2 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/15kHz | -85 | | -101 | | | | -114 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | | -113.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | | -113 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | | -112.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | | -112 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | | -111.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | | -111 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | | -110.5 | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | -91 | | - | | | | -114 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | | -113.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | | -113 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | | -112.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | | -112 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | | -111.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | | -111 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | | -110.5 | |
| Note2 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/SCS | -85 | | -101 | | | | -114  -113.5  -113  -112.5  -112  -111.5  -111  -110.5 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | -88 | | - | | | | -111 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | | -110.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | | -110 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | | -109.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | | -109 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | | -108.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | | -108 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | | -107.5 | |
|  | | | dB | -1.76 | | -4.7 | | | | -5..46 | -5.46 |
|  | | | dB | 3 | 3 | -2.9 | | -2.9 | | -4 | -4 |
| SS-RSRPNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/SCS | -82 | -82 | -103.9 | | -103.9 | | -118 | -118 |
|  |  | NR\_FDD\_FR1\_B |  |  |  |  | |  | | -117.5 | -117.5 |
|  |  | NR\_TDD\_FR1\_C |  |  |  |  | |  | | -117 | -117 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  | |  | | -116.5 | -116.5 |
|  |  | NR\_FDD\_FR1\_E,  NR\_TDD\_FR1\_E |  |  |  |  | |  | | -116 | -116 |
|  |  | NR\_FDD\_FR1\_F |  |  |  |  | |  | | -115.5 | -115.5 |
|  |  | NR\_FDD\_FR1\_G |  |  |  |  | |  | | -115 | -115 |
|  |  | NR\_FDD\_FR1\_H |  |  |  |  | |  | | -114.5 | -114.5 |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | -85 | -85 | - | | - | | -115 | -115 |
|  |  | NR\_FDD\_FR1\_B |  |  |  |  | |  | | -114.5 | -114.5 |
|  |  | NR\_TDD\_FR1\_C |  |  |  |  | |  | | -114 | -114 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  | |  | | -113.5 | -113.5 |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  |  | |  | | -113 | -113 |
|  |  | NR\_FDD\_FR1\_F |  |  |  |  | |  | | -112.5 | -112.5 |
|  |  | NR\_FDD\_FR1\_G |  |  |  |  | |  | | -112 | -112 |
|  |  | NR\_FDD\_FR1\_H |  |  |  |  | |  | | -111.5 | -111.5 |
| SS-RSRQ Note3 | | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dB | -14.77 | -14.77 | -16.76 | | -16.76 | | -17.34 | -17.34 |
|  | | NR\_FDD\_FR1\_B |  |  |  |  | |  | |  |  |
|  | | NR\_TDD\_FR1\_C |  |  |  |  | |  | |  |  |
|  | | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  | |  | |  |  |
|  | | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  |  | |  | |  |  |
|  | | NR\_FDD\_FR1\_F |  |  |  |  | |  | |  |  |
|  | | NR\_FDD\_FR1\_G |  |  |  |  | |  | |  |  |
|  | | NR\_FDD\_FR1\_H |  |  |  |  | |  | |  |  |
| IoNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  9.36MHz | -50 | | -70 | | | | -83.5 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | | -83 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | | -82.5 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | | -82 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | | -81.5 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | | -81 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | | -80.5 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | | -80 | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  38.16MHz | -50 | | - | | | | -77.4 | |
|  |  | NR\_FDD\_FR1\_B |  |  | |  | | | | -76.9 | |
|  |  | NR\_TDD\_FR1\_C |  |  | |  | | | | -76.4 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | |  | | | | -75.9 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | |  | | | | -75.4 | |
|  |  | NR\_FDD\_FR1\_F |  |  | |  | | | | -74.9 | |
|  |  | NR\_FDD\_FR1\_G |  |  | |  | | | | -74.4 | |
|  |  | NR\_FDD\_FR1\_H |  |  | |  | | | | -73.9 | |
| Propagation condition | | | - | AWGN | AWGN | AWGN | | AWGN | | AWGN | AWGN |
| Antenna configuration | | |  | 1x2 | 1x2 | 1x2 | | 1x2 | | 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-RSRQ, SS-RSRP, and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-RSRQ, SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: NR operating band groups are as defined in clause 3.5.2.  Note 6: The test configuration excludes support for band n51 and it is not required to run this test on band n51 in this release of the specification. | | | | | | | | | | | |

##### G.2.5B.2.1.3 Test Requirements

The SS-RSRQ measurement accuracy shall fulfil the requirements in clause 12.5B.7.1.1.

#### G.2.5B.2.2 SA intra-frequency measurement accuracy with FR2 serving cell and FR2 target cell

##### G.2.5B.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 12.5B.8.1.1.

##### G.2.5B.2.2.2 Test Parameters

In this test case all cells are on the same carrier frequency. Supported test configurations are shown in Table G.2.5B.2.2.2-1. . The absolute accuracy of SS-RSRQ intra-frequency measurement is test by using the parameters in Table G.2.5B.2.2.2-2 and Table G.2.5B.2.2.2-3. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table G.2.5B.2.2.2-1: SS-RSRQ Intra frequency SS-RSRQ supported test configurations

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

Table G.2.5B.2.2.2-2: SS-RSRQ Intra frequency test parameters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | Test 2 | |
|  | |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Cell ID | |  | 489 | 0 | 489 | 0 |
| SSB ARFCN | |  | Freq1 | | Freq1 | |
| Duplex mode | |  | TDD | | TDD | |
| TDD configuration | |  | TDDConf.3.1 | | TDDConf.3.1 | |
| BWchannel | | MHz | 100: NRB,c = 66 | | 100: NRB,c = 66 | |
| Data RBs allocated | |  | 66 | | 66 | |
| BWP configuration | Initial DL BWP |  | DLBWP.0.1 | | | |
|  | Dedicated DL BWP |  | DLBWP.1.1 | | | |
|  | Initial UL BWP |  | ULBWP.0.1 | | | |
|  | Dedicated UL BWP |  | ULBWP.1.1 | | | |
| TRS configuration | |  | TRS.2.1 TDD |  | TRS.2.1 TDD |  |
| TCI state | |  | TCI.State.0 |  | TCI.State.0 |  |
| PDSCH Reference measurement channel | |  | SR.3.1 TDD |  | SR.3.1 TDD |  |
| RMSI CORESET Reference Channel | |  | CR.3.1 TDD | - | CR.3.1 TDD |  |
| Control channel RMC | |  | CCR.3.1 TDD | - | CCR.3.1 TDD | - |
| OCNG Patterns | |  | OP.1 | OP.1 | OP.1 | OP.1 |
| SMTC configuration | |  | SMTC.1 | | | |
| SSB configuration | |  | SSB.1 FR2 | SSB.1 FR2 | SSB.1 FR2 | SSB.1 FR2 |
| PDSCH/PDCCH subcarrier spacing | | kHz | 120 | 120 | 120 | 120 |
| SS-RSSI-Measurement | |  | Not Applicable | | | |
| EPRE ratio of PSS to SSS | | dB | 0 | 0 | 0 | 0 |
| EPRE ratio of PBCH\_DMRS to SSS | |  |  |  |  |  |
| EPRE ratio of PBCH to PBCH\_DMRS | |  |  |  |  |  |
| EPRE ratio of PDCCH\_DMRS to SSS | |  |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH\_DMRS | |  |  |  |  |  |
| EPRE ratio of PDSCH\_DMRS to SSS | |  |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH\_DMRS | |  |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 | |  |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 | |  |  |  |  |  |
| Propagation condition | |  | AWGN | | AWGN | |
| Antenna configuration | |  | 1x2 | 1x2 | 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: Void  Note 3: Void  Note 4: Void  Note 5: Void | | | | | | |

Table G.2.5B.2.2.2-3: SS-RSRQ Intra frequency OTA related test parameters

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Unit | Test 1 | | | Test 2 | | | |
|  |  | Cell 1 | Cell 2 | | Cell 1 | | Cell 2 | |
| Angle of arrival configuration |  | Setup 1 according to clause G.1.8.1 | | | Setup 1according to clause G.1.8.1 | | | |
| Assumption for mIAB-MT beamsNote 6 |  | Rough | | | | | | |
| Note1 | dBm/15kHzNote4 | -95 | | | | -95 | | |
| Note1 | dBm/SCSNote3 | -86 | | | | -86 | | |
|  | dB | 3 | | 3 | | -3 | | -3 |
| SSB\_RPNote2 | dBm/SCS Note4 | -83 | | -83 | | -89 | | -89 |
| SS-RSRQ Note2 | dB | -14.77 | | -14.77 | | -16.81 | | -16.81 |
|  | dB | -1.76 | | -1.76 | | -4.76 | | -4.76 |
| IoNote2 | dBm/95.04 MHz Note4 | -50 | | | | -54 | | |
| Note 1: 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 2: SS-RSRQ, SSB\_RP, and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-RSRQ and SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone  Note 5: As observed with 0dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of mIAB-MT beam is given by declaration | | | | | | | | |

##### G.2.5B.2.2.3 Test Requirements

The SS-RSRQ absolute measurement accuracy in test 1shall be within the range Nominal SS-RSRQ+2.5dB to Nominal SS-RSRQ-2.5dB and the SS-RSRQ measurement accuracy in test 2 shall be within the range Nominal RSRQ+3.5dB to Nominal RSRQ-3.5dB according to the requirements in clause 12.5B.8.1.1. Nominal RSRQ is the value shown in table G.2.5B.2.2.2-3.

### G.2.5B.3 SS-SINR

#### G.2.5B.3.1 SA intra-frequency measurement accuracy with FR1 serving cell and FR1 target cell

##### G.2.5B.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-SINR measurement accuracy is within the specified limits. This test will verify the requirements in clause 12.5B.12.1.1.

##### G.2.5B.3.1.2 Test Parameters

In this test case all cells are on the same carrier frequency. Supported test configuration are shown in Table G.2.5B.3.1.2-1. The absolute accuracy of SS-SINR intra-frequency measurement is tested by using the parameters in Table G.2.5B.3.1.2-2. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Table G.2.5B.3.1.2-1: SS-SINR Intra frequency SS-SINR supported test configurations

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

Table G.2.5B.3.1.2-2: SS-SINR Intra frequency test parameters

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | | Unit | Test 1 | | Test 2 | |
|  | | |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Cell ID | | |  | 489 | 0 | 489 | 0 |
| SSB ARFCN | | |  | freq1 | | freq1 | |
| Duplex mode | | Config 1 |  | FDD | | | |
|  | | Config 2,3 |  | TDD | | | |
| TDD configuration | | Config 1 |  | Not Applicable | | | |
|  | | Config 2 |  | TDDConf.1.1 | | | |
|  | | Config 3 |  | TDDConf.2.1 | | | |
| Downlink initial BWP configuration | | |  | DLBWP.0.1 | | | |
| Downlink dedicated BWP configuration | | |  | DLBWP.1.1 | | | |
| Uplink initial BWP configuration | | |  | ULBWP.0.1 | | | |
| Uplink dedicated BWP configuration | | |  | ULBWP.1.1 | | | |
| DRX Cycle configuration | | | ms | Not Applicable | | | |
| TRS configuration | | Config 1 |  | TRS.1.1 FDD |  | TRS.1.1 FDD |  |
| Config 2 |  | TRS.1.1 TDD |  | TRS.1.1 TDD |  |
| Config 3 |  | TRS.1.2 TDD |  | TRS.1.2 TDD |  |
| PDSCH Reference measurement channel | | Config 1 |  | SR.1.1 FDD | - | SR.1.1 FDD | - |
|  | | Config 2 |  | SR.1.1 TDD |  | SR.1.1 TDD |  |
|  | | Config 3 |  | SR.2.1 TDD |  | SR2.1 TDD |  |
| RMSI CORESET Reference Channel | | Config 1 |  | CR.1.1 FDD | - | CR.1.1 FDD |  |
|  | | Config 2 |  | CR.1.1 TDD |  | CR.1.1 TDD |  |
|  | | Config 3 |  | CR.2.1 TDD |  | CR.2.1 TDD |  |
| Dedicated CORESET Reference Channel | | Config 1 |  | CCR.1.1 FDD | - | CCR.1.1 FDD | - |
|  | | Config 2 |  | CCR.1.1 TDD |  | CCR.1.1 TDD |  |
|  | | Config 3 |  | CCR.2.1 TDD |  | CCR.2.1 TDD |  |
| OCNG Patterns | | |  | OP.1 | | | |
| SS-RSSI-Measurement | | |  | Not Applicable | | | |
| SMTC configuration | | Config 1  Config 2,3 |  | SMTC.2 | | | |
|  | SMTC.1 | | | |
| Time offset with Cell 1 | | Config 1  Config 2,3 | ms | - | 3 | - | 3 |
| ms | - | 3 | - | 3 |
| SSB configuration | | Config 1,2 |  | SSB.1 FR1 | | | |
|  | | Config 3 |  | SSB.2 FR1 | | | |
| PDSCH/PDCCH subcarrier spacing | | Config 1,2 | kHz | 15 | | | |
|  | | Config 3 |  | 30 | | | |
| EPRE ratio of PSS to SSS | | | dB | 0 | 0 | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS | | |  |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS | | |  |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS | | |  |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS | | |  |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS | | |  |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH | | |  |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSS(Note 1) | | |  |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS (Note 1) | | |  |  |  |  |  |
| Note2 | | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/15kHz | -93 | | -116 | |
|  | | NR\_FDD\_FR1\_B |  |  | | -115.5 | |
|  | | NR\_TDD\_FR1\_C |  |  | | -115 | |
|  | | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | | -114.5 | |
|  | | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | | -114 | |
|  | | NR\_FDD\_FR1\_F |  |  | | -113.5 | |
|  | | NR\_FDD\_FR1\_G |  |  | | -113 | |
|  | | NR\_FDD\_FR1\_H |  |  | | -112.5 | |
| Note2 | Config 1,2 | | dBm/SCS | -93 | | Same as Noc for 15 kHz | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | -90 | | -113 | |
|  |  | NR\_FDD\_FR1\_B |  |  | | -112.5 | |
|  |  | NR\_TDD\_FR1\_C |  |  | | -112 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | | -111.5 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | | -111 | |
|  |  | NR\_FDD\_FR1\_F |  |  | | -110.5 | |
|  |  | NR\_FDD\_FR1\_G |  |  | | -110 | |
|  |  | NR\_FDD\_FR1\_H |  |  | | -109.5 | |
|  | | | dB | 0 | -3.19 | -5.46 | -5.46 |
|  | | | dB | 4.54 | 2.66 | -4 | -4 |
| SS-RSRPNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/SCS | -88.46 | -90.34 | -120 | -120 |
|  |  | NR\_FDD\_FR1\_B |  |  |  | -119.5 | -119.5 |
|  |  | NR\_TDD\_FR1\_C |  |  |  | -119 | -119 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -118.5 | -118.5 |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -118 | -118 |
|  |  | NR\_FDD\_FR1\_F |  |  |  | -117.5 | -117.5 |
|  |  | NR\_FDD\_FR1\_G |  |  |  | -117 | -117 |
|  |  | NR\_FDD\_FR1\_H |  |  |  | -116.5 | -116.5 |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 |  | -85.46 | -87.34 | -117 | -117 |
|  |  | NR\_FDD\_FR1\_B |  |  |  | -116.5 | -116.5 |
|  |  | NR\_TDD\_FR1\_C |  |  |  | -116 | -116 |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 | -115.5 |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 | -115 |
|  |  | NR\_FDD\_FR1\_F |  |  |  | -114.5 | -114.5 |
|  |  | NR\_FDD\_FR1\_G |  |  |  | -114 | -114 |
|  |  | NR\_FDD\_FR1\_H |  |  |  | -113.5 | -113.5 |
| SS-SINR Note3 | | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dB | 0 | -3.19 | -5.46 | -5.46 |
|  | | NR\_FDD\_FR1\_B |  |  |  |  |  |
|  | | NR\_TDD\_FR1\_C |  |  |  |  |  |
|  | | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  |  |  |
|  | | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  |  |  |
|  | | NR\_FDD\_FR1\_F |  |  |  |  |  |
|  | | NR\_FDD\_FR1\_G |  |  |  |  |  |
|  | | NR\_FDD\_FR1\_H |  |  |  |  |  |
| IoNote3 | Config 1,2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  9.36MHz | -57.5 | | -85.51 | |
|  |  | NR\_FDD\_FR1\_B |  |  | | -85.01 | |
|  |  | NR\_TDD\_FR1\_C |  |  | | -84.51 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | | -84.01 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | | -83.51 | |
|  |  | NR\_FDD\_FR1\_F |  |  | | -83.01 | |
|  |  | NR\_FDD\_FR1\_G |  |  | | -82.51 | |
|  |  | NR\_FDD\_FR1\_H |  |  | | -82.01 | |
|  | Config 3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 6 | dBm/  38.16MHz | -51.41 | | -79.41 | |
|  |  | NR\_FDD\_FR1\_B |  |  | | -78.91 | |
|  |  | NR\_TDD\_FR1\_C |  |  | | -78.41 | |
|  |  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  | | -77.91 | |
|  |  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  | | -77.41 | |
|  |  | NR\_FDD\_FR1\_F |  |  | | -76.91 | |
|  |  | NR\_FDD\_FR1\_G |  |  | | -76.41 | |
|  |  | NR\_FDD\_FR1\_H |  |  | | -75.91 | |
| Propagation condition | | | - | AWGN | | | |
| Antenna configuration | | | - | 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-SINR, SS-RSRP, and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: SS-SINR, SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: NR operating band groups are as defined in clause 3.5.2.  Note 6: The test configuration excludes support for band n51 and it is not required to run this test on band n51 in this release of the specification. | | | | | | | |

##### G.2.5B.3.1.3 Test Requirements

The SS-SINR measurement accuracy shall fulfil the requirements in clause 12.5B.12.1.1.

#### G.2.5B.3.2 SA intra-frequency case measurement accuracy with FR2 serving cell and FR2 target cell

##### G.2.5B.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SS-SINR measurement accuracy is within the specified limits. This test will verify the requirements in Clause 12.5B.13.1.1.

##### G.2.5B.3.2.2 Test Parameters

In this test case all cells are on the same carrier frequency. Supported test configurations are shown in Table G.2.5B.3.2.2-1. . The absolute accuracy of SS-SINR intra-frequency measurement is test by using the parameters in Table G.2.5B.3.2.2-2 and Table G.2.5B.3.2.2-3. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The TCI status for Cell 1 is defined in Table A.3.16.2-1 and TRS configuration for Cell 1 is defined in Table A.3.17.2.1-1.

Table G.2.5B.3.2.2-1: SS-SINR Intra frequency SS-SINR supported test configurations

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

Table G.2.5B.3.2.2-2: SS-SINR Intra frequency test parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test 1 | | Test 2 | |
|  |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Cell ID |  | 489 | 0 | 489 | 0 |
| SSB ARFCN |  | Freq2 | | Freq2 | |
| Duplex mode |  | TDD | | TDD | |
| TDD configuration |  | TDDConf.3.1 | | TDDConf.3.1 | |
| BWchannel | MHz | 100: NRB,c = 66 | | 100: NRB,c = 66 | |
| Data RBs allocated |  | 66 | | 66 | |
| Downlink initial BWP configuration |  | DLBWP.0.1 | | | |
| Downlink dedicated BWP configuration |  | DLBWP.1.1 | | | |
| Uplink initial BWP configuration |  | ULBWP.0.1 | | | |
| Uplink dedicated BWP configuration |  | ULBWP.1.1 | | | |
| DRX cycle configuration | ms | Not applicable | | | |
| TRS configuration |  | TRS.2.1 TDD | | | |
| TCI state |  | TCI.State.0 | | | |
| PDSCH Reference measurement channel |  | SR.3.1 TDD |  | SR.3.1 TDD |  |
| RMSI CORESET Reference Channel |  | CR.3.1 TDD | - | CR.3.1 TDD |  |
| Dedicated RMSI CORESET Reference Channel |  | CCR.3.1 TDD | - | CCR.3.1 TDD | - |
| OCNG Patterns |  | OP.1 | OP.1 | OP.1 | OP.1 |
| SMTC configuration |  | SMTC.1 | | | |
| SSB configuration |  | SSB.1 FR2 | SSB.1 FR2 | SSB.1 FR2 | SSB.1 FR2 |
| PDSCH/PDCCH subcarrier spacing | kHz | 120 | 120 | 120 | 120 |
| SS-RSSI-Measurement |  | Not Applicable | | | |
| EPRE ratio of PSS to SSS | dB | 0 | 0 | 0 | 0 |
| EPRE ratio of PBCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PBCH to PBCH\_DMRS |  |  |  |  |  |
| EPRE ratio of PDCCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH\_DMRS |  |  |  |  |  |
| EPRE ratio of PDSCH\_DMRS to SSS |  |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH\_DMRS |  |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 |  |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |  |  |  |  |  |
| Propagation conditions |  | AWGN | | | |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  Note 2: Void  Note 3: Void.  Note 4: Void | | | | | |

Table G.2.5B.3.2.2-3: SS-SINR Intra frequency OTA related test parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Unit | Test 1 | | Test 3 | |
|  |  | Cell 1 | Cell 2 | Cell 1 | Cell 2 |
| Angle of arrival configuration |  | Setup 1 according to clause G.1.8.1 | | Setup 1 according to clause G.1.8.1 | |
| Assumption for mIAB-MT beamsNote 6 |  | Rough | | Rough | |
| Note1 | dBm/15kHz Note4 | -105 | | -105 | |
| Note1 | dBm/SCS Note3 | -96 | | -96 | |
|  | dB | 4.54 | 2.66 | -3 | -3 |
| SSB\_RPNote2 | dBm/SCS Note4 | -91.46 | -93.34 | -99 | -99 |
| SS-SINR Note2 | dB | 0 | -3.2 | -4.76 | -4.76 |
|  | dB | 0 | -3.2 | -4.76 | -4.76 |
| IoNote2 | dBm/95.04 MHz Note4 | -59.2 | | -64 | |
| Note 1: 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 2: SS-SINR, SSB\_RP, and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 3: SS-SINR and SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 4: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zone  Note 5: As observed with 0 dBi gain antenna at the centre of the quiet zone  Note 6: Information about types of mIAB-MT beam is given by declaration | | | | | |

##### G.2.5B.3.2.3 Test Requirements

The SS-SINR absolute measurement accuracy in test 1 shall be within the range Nominal SS-SINR+3B to Nominal SS-SINR -3dB and the SS-SINR measurement accuracy in test 2 shall be within the range Nominal SS-SINR +3.5dB to Nominal SS-SINR -3.5dB according to the requirements in clause 12.5B.10.13.1.

### G.2.5B.4 L1-RSRP measurement for beam reporting

#### G.2.5B.4.1 SSB based L1-RSRP measurement for FR1

##### G.2.5B.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the L1-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clause 9.5.2 and clause 12.5B.19.1 for L1-RSRP measurements based on SSB with the testing configurations for NR cells in Table G.2.5B.4.1.1-1.

Table G.2.5B.4.1.1-1: Applicable NR configurations for FR1 SSB based L1-RSRP test

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

##### G.2.5B.4.1.2 Test parameters

In this set of test cases there one cell in the test, PCell (Cell 1). The test parameters for the Cell 1 are given in Table G.2.5B.4.1.2-1 below. The absolute and relative accuracy of L1-RSRP measurements are tested by using the parameters in Table G.2.5B.4.1.2-1.

There is no measurement gap configured in the test. Before the test, mIAB-MT is configured one SSB resource set with two SSB resources. mIAB-MT is configured to perform RLM, BFD and L1-RSRP measurement based on the SSB resources 0 and 1.

Table G.2.5B.4.1.2-1: FR1 SSB based L1-RSRP test parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | | Config | Unit | Test 1 | Test 2 |
| SSB GSCN | | 1~3 |  | freq1 | freq1 |
| Duplex mode | | 1 |  | FDD | FDD |
|  | | 2 |  | TDD | TDD |
|  | | 3 |  | TDD | TDD |
| BWchannel | | 1 | MHz | 10: NRB,c = 52 | 10: NRB,c = 52 |
|  | | 2 |  | 10: NRB,c = 52 | 10: NRB,c = 52 |
|  | | 3 |  | 40: NRB,c = 106 | 40: NRB,c = 106 |
| PDSCH Reference measurement channel | | 1 |  | SR.1.1 FDD | SR.1.1 FDD |
|  | | 2 |  | SR.1.1 TDD | SR.1.1 TDD |
|  | | 3 |  | SR.2.1 TDD | SR.2.1 TDD |
| RMSI CORESET Reference Channel | | 1 |  | CR.1.1 FDD | CR.1.1 FDD |
|  | | 2 |  | CR.1.1 TDD | CR.1.1 TDD |
|  | | 3 |  | CR.2.1 TDD | CR.2.1 TDD |
| Dedicated CORESET Reference Channel | | 1 |  | CCR.1.1 FDD | CCR.1.1 FDD |
|  | | 2 |  | CCR.1.1 TDD | CCR.1.1 TDD |
|  | | 3 |  | CCR.2.1 TDD | CCR.2.1 TDD |
| SSB configuration | | 1 |  | SSB.3 FR1 | SSB.3 FR1 |
|  | | 2 |  | SSB.3 FR1 | SSB.3 FR1 |
|  | | 3 |  | SSB.4 FR1 | SSB.4 FR1 |
| OCNG Patterns | | 1~3 |  | OP.1 | OP.1 |
| Initial BWP Configuration | | 1~3 |  | DLBWP.0.1  ULBWP.0.1 | DLBWP.0.1  ULBWP.0.1 |
| TRS configuration | | 1 |  | TRS.1.1 FDD | TRS.1.1 FDD |
|  | | 2 |  | TRS.1.1 TDD | TRS.1.1 TDD |
|  | | 3 |  | TRS.1.2 TDD | TRS.1.2 TDD |
| Dedicated BWP configuration | | 1~3 |  | DLBWP.1.1  ULBWP.1.1 | DLBWP.1.1  ULBWP.1.1 |
| SMTC configuration | | 1~3 |  | SMTC.1 | SMTC.1 |
| reportConfigType | | 1~3 |  | periodic | periodic |
| reportQuantity | | 1~3 |  | ssb-Index-RSRP | ssb-Index-RSRP |
| Number of reported RS | | 1~3 |  | 2 | 2 |
| L1-RSRP reporting period | | 1~3 |  | slot80 | slot80 |
| EPRE ratio of PSS to SSS | | 1~3 | dB | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS | |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS | |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH DMRS | |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 | |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 | |  |  |  |  |
| Note2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1~3 | dBm/15kHz | -94.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
| Note2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/SSB SCS | -94.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 |  | -91.65 | -114 |
|  | NR\_FDD\_FR1\_B |  |  |  | -113.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -114 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -112.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -112 |
|  | NR\_FDD\_FR1\_F |  |  |  | -111.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -111 |
|  | NR\_FDD\_FR1\_H |  |  |  | -110.5 |
|  | | 1~3 | dB | 10 | -3 |
| SSB RSRP Note3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/SSB SCS | -84.65 | -120 |
|  | NR\_FDD\_FR1\_B |  |  |  | -119.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -119 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -118.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -118 |
|  | NR\_FDD\_FR1\_F |  |  |  | -117.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -117 |
|  | NR\_FDD\_FR1\_H |  |  |  | -116.5 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 |  | -81.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
| Io Note3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/9.36 MHz | -56.28 | -87.28 |
|  | NR\_FDD\_FR1\_B |  |  |  | -86.78 |
|  | NR\_TDD\_FR1\_C |  |  |  | -86.28 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -85.78 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -85.28 |
|  | NR\_FDD\_FR1\_F |  |  |  | -84.78 |
|  | NR\_FDD\_FR1\_G |  |  |  | -84.28 |
|  | NR\_FDD\_FR1\_H |  |  |  | -83.78 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 | dBm/38.16 MHz | -50.19 | -81.19 |
|  | NR\_FDD\_FR1\_B |  |  |  | -80.69 |
|  | NR\_TDD\_FR1\_C |  |  |  | -80.19 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -79.69 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -79.19 |
|  | NR\_FDD\_FR1\_F |  |  |  | -78.69 |
|  | NR\_FDD\_FR1\_G |  |  |  | -78.19 |
|  | NR\_FDD\_FR1\_H |  |  |  | -77.69 |
|  | | 1~3 | dB | 10 | -3 |
| Propagation condition | | 1~3 |  | AWGN | AWGN |
| Antenna configuration | | 1~3 |  | 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: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: The test configuration excludes support for band n51 and it is not required to run this test on band n51 in this release of the specification. | | | | | |

##### G.2.5B.4.1.3 Test Requirements

The L1-RSRP measurement accuracy for SSB resource reported by mIAB-MT in L1-RSRP report (SSB#0 or SSB#1) of Cell 2 shall fulfil the requirements in clauses 12.5B.19.1.

#### G.2.5B.4.2 SSB based L1-RSRP measurement for FR2-1

##### G.2.5B.4.2.1 Test Purpose and Environment

The purpose of this test is to verify that the L1-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clauses 9.5.2 and clause 12.5B.20.1 for L1-RSRP measurements based on SSB with the testing configurations for NR cells in Table G.2.5B.4.2.1-1.

The AoA setup for this test is Setup 1 as defined in clause A.3.15.

**Table G.2.5B.4.2.1-1: Applicable NR configurations for FR2 SSB based L1-RSRP test**

|  |  |
| --- | --- |
| **Config** | **Description** |
| 1 | NR 120 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| 2 | NR 240 kHz SSB SCS, 100 MHz bandwidth, TDD duplex mode |
| Note: The mIAB-MT is only required to be tested in one of the supported test configurations in each supported band | |

##### G.2.5B.4.2.2 Test parameters

In this set of test cases there are two cells in the test, PCell (Cell 1). The test parameters for the Cell 1 are given in Table G.2.5B.4.2.2-1 and Table G.2.5B.4.2.2-2 below. The absolute and relative accuracy of L1-RSRP measurements are tested by using the parameters in Table G.2.5B.4.2.2-1 and Table G.2.5B.4.2.2-2.

Here is no measurement gap configured in the test. Before the test, mIAB-MT is configured one SSB resource set with two SSB resources. mIAB-MT is configured to perform RLM, BFD and L1-RSRP measurement based on the SSB resources 0 and 1.

Table G.2.5B.4.2.2-1: FR2 SSB based L1-RSRP general test parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Config | Unit | Test 1 | Test 2 |
| SSB GSCN | 1~2 |  | freq1 | freq1 |
| Duplex mode | 1~2 |  | TDD | TDD |
| BWchannel | 1~2 | MHz | 100: NRB,c = 66 | 100: NRB,c = 66 |
| Data RBs allocated | 1~2 |  | 66 | 66 |
| PDSCH Reference measurement channel | 1 |  | SR.3.2 TDD | SR.3.2 TDD |
|  | 2 |  | SR.3.3 TDD | SR.3.3 TDD |
| RMSI CORESET Reference Channel | 1 |  | CR.3.1 TDD | CR.3.1 TDD |
|  | 2 |  | CR.3.2 TDD | CR.3.2 TDD |
| Dedicated CORESET Reference Channel | 1 |  | CCR.3.1 TDD | CCR.3.1 TDD |
|  | 2 |  | CCR.3.7 TDD | CCR.3.7 TDD |
| SSB configuration | 1 |  | SSB.1 FR2 | SSB.1 FR2 |
|  | 2 |  | SSB.2 FR2 | SSB.2 FR2 |
| OCNG Patterns | 1~2 |  | OP.1 | OP.1 |
| Initial BWP Configuration | 1~2 |  | DLBWP.0.1  ULBWP.0.1 | DLBWP.0.1  ULBWP.0.1 |
| Dedicated BWP configuration | 1~2 |  | DLBWP.1.3  ULBWP.1.3 | DLBWP.1.3  ULBWP.1.3 |
| TRS Configuration | 1~2 |  | TRS.2.1 TDD | TRS.2.1 TDD |
| PDCCH/PDSCH TCI Configuration | 1~2 |  | TCI.State.2 | TCI.State.2 |
| SMTC configuration | 1~2 |  | SMTC.1 | SMTC.1 |
| reportConfigType | 1~2 |  | periodic | periodic |
| reportQuantity | 1~2 |  | ssb-Index-RSRP | ssb-Index-RSRP |
| Number of reported RS | 1~2 |  | 2 | 2 |
| L1-RSRP reporting period | 1~2 |  | slot320 | slot320 |
| Propagation condition | 1~2 |  | AWGN | AWGN |
| Antenna configuration | 1~2 |  | 1x2 | 1x2 |
| EPRE ratio of PSS to SSS | 1~2 | dB | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH DMRS |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |  |  |  |  |
| 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. | | | | |

Table G.2.5B.4.2.2-2: FR2 SSB based L1-RSRP OTA related test parameters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Config | Unit | Test 1 | | Test 2 NOTE 3 | |
|  |  |  | SSB0 | SSB1 | SSB0 | SSB1 |
| Angle of arrival configuration |  |  | Setup 1 according to G.1.8.1 | | Setup 1 according to G.1.8.1 | |
| Assumption for mIAB-MT beamsNote 4 |  |  | Rough | | Rough | |
|  | 1~2 | dBm/15kHz | -100 | | n.a. | |
|  | 1 | dBm/SSB SCS | -91 | | n.a. | |
|  | 2 |  | -88 | | n.a. | |
|  | 1~2 | dB | 10 | -2 | n.a. | |
| SSB\_RPNote1 | 1 | dBm/SCS | -81 | -93 | As derived based on declared sensitivity | |
|  | 2 |  | -78 | -90 | As As derived based on declared sensitivity | |
| IoNote1 | 1~2 | dBm/  95.04MHz | -51.57 | | SSB\_RP+28.98 | |
|  | 1~2 | dB | 10 | -2 | n.a. | |
| Note 1: SSB\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 2: Void.  Note 3: No additional noise is added by the test system in Test 2.  Note 4: Information about types of mIAB-MT beams is given by declaration | | | | | | |

##### G.2.5B.4.2.3 Test Requirements

After 320ms from the beginning of the test, the L1-RSRP measurement accuracy for SSB#0 and SSB#1 of Cell 2 shall fulfil the requirements in clauses 12.5B.1.12.1. The following requirements are to be verified:

For Test 1:

Absolute accuracy of SSB0. The mIAB-MT is deemed to meet the requirement if the reported L1-RSRP is in the range shown in Table G.2.5B.4.2.3-1.

Relative accuracy of SSB0 compared with SSB1. The mIAB-MT is deemed to meet the requirement if the difference in reported L1-RSRP meets the requirements in Table 12.5B.1.12.1.2-1.

For Test 2:

Absolute accuracy of SSB resource reported by mIAB-MT in L1-RSRP report (SSB0 or SSB1). The mIAB-MT is deemed to meet the requirement if the reported L1-RSRP is in the range shown in Table G.2.5B.4.2.3-1.

Relative accuracy of SSB0 compared with SSB1. The mIAB-MT is deemed to meet the requirement if the difference in reported L1-RSRP meets the requirements in Table 12.5B.1.12.1.2-1..

**Table G.2.5B.4.2.3-1: L1-RSRP absolute accuracy test requirement**

|  |  |
| --- | --- |
|  | **Test requirement** Notes1,2,3 |
| SSB0 | SSB\_RP0 -δ + Gmin ≤ Reported RSRP(dBm) ≤ SSB\_RP0 +δ + Gmax |
| SSB1 | SSB\_RP1 -δ + Gmin ≤ Reported RSRP(dBm) ≤ SSB\_RP1 +δ + Gmax |
| Note 1: SSB\_RPn is the equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone configured in the test for the SSB n under consideration  Note 2: δ is the RSRP absolute accuracy requirement from Table 12.5B.12.1.1-1, selected according to the Io used in the test  Note 3: Gmin and Gmax are the minimum and maximum mIAB-MT gain values based on declaration | |

#### G.2.5B.4.3 CSI-RS based L1-RSRP measurement on resource set with repetition off for FR1

##### G.2.5B.4.3.1 Test Purpose and Environment

The purpose of this test is to verify that the L1-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clause 12.4B and clause 12.5B.1.12.2 for L1-RSRP measurements based on CSI-RS with the testing configurations for NR cells in Table G.2.5B.4.3.1-1.

Table G.2.5B.4.3.1-1: Applicable NR configurations for FR1 CSI-RS based L1-RSRP test

|  |  |
| --- | --- |
| Config | Description |
| 1 | NR 15 kHz CSI-RS SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | NR 15 kHz CSI-RS SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | NR 30kHz CSI-RS SCS, 40 MHz bandwidth, TDD duplex mode |
| Note: The mIAB-MT is only required to be tested in one of the supported test configurations in each supported band | |

##### G.2.5B.4.3.2 Test parameters

In this set of test cases there are one cell in the test, PCell (Cell 1). The test parameters for the Cell 1 are given in Table G.2.5B.4.3.2-1 below. The absolute and relative accuracy of L1-RSRP measurements are tested by using the parameters in Table G.2.5B.4.3.2-1.

There is no measurement gap configured in the test. Before the test, mIAB-MT is configured one CSI-RS resource set with two CSI-RS resources. mIAB-MT is configured to perform RLM and BFD based on SSB 0 and 1. CSI-RS is not transmitted in the same OFDM symbols as SSB.

**Table G.2.5B.4.3.2-1: FR1 CSI-RS based L1-RSRP test parameters**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Config** | **Unit** | **Test 1** | **Test 2** |
| SSB GSCN | | 1~3 |  | freq1 | freq1 |
| Duplex mode | | 1 |  | FDD | FDD |
|  | | 2 |  | TDD | TDD |
|  | | 3 |  | TDD | TDD |
| BWchannel | | 1 | MHz | 10: NRB,c = 52 | 10: NRB,c = 52 |
|  | | 2 |  | 10: NRB,c = 52 | 10: NRB,c = 52 |
|  | | 3 |  | 40: NRB,c = 106 | 40: NRB,c = 106 |
| PDSCH Reference measurement channel | | 1 |  | SR.1.1 FDD | SR.1.1 FDD |
|  | | 2 |  | SR.1.1 TDD | SR.1.1 TDD |
|  | | 3 |  | SR.2.1 TDD | SR.2.1 TDD |
| RMSI CORESET Reference Channel | | 1 |  | CR.1.1 FDD | CR.1.1 FDD |
|  | | 2 |  | CR.1.1 TDD | CR.1.1 TDD |
|  | | 3 |  | CR.2.1 TDD | CR.2.1 TDD |
| Dedicated CORESET Reference Channel | | 1 |  | CCR.1.1 FDD | CCR.1.1 FDD |
|  | | 2 |  | CCR.1.1 TDD | CCR.1.1 TDD |
|  | | 3 |  | CCR.2.1 TDD | CCR.2.1 TDD |
| SSB configuration | | 1 |  | SSB.3 FR1 | SSB.3 FR1 |
|  | | 2 |  | SSB.3 FR1 | SSB.3 FR1 |
|  | | 3 |  | SSB.4 FR1 | SSB.4 FR1 |
| OCNG Patterns | | 1~3 |  | OP.1 | OP.1 |
| TRS configuration | | 1 |  | TRS.1.1 FDD | TRS.1.1 FDD |
|  | | 2 | TRS.1.1 TDD | TRS.1.1 TDD |
|  | | 3 | TRS.1.2 TDD | TRS.1.2 TDD |
| Initial BWP Configuration | | 1~3 |  | DLBWP.0.1  ULBWP.0.1 | DLBWP.0.1  ULBWP.0.1 |
| Dedicated BWP configuration | | 1~3 |  | DLBWP.1.1  ULBWP.1.1 | DLBWP.1.1  ULBWP.1.1 |
| SMTC configuration | | 1~3 |  | SMTC.1 | SMTC.1 |
| CSI-RS | | 1 |  | CSI-RS 1.2 FDD | CSI-RS 1.2 FDD |
|  | | 2 | CSI-RS 1.2 TDD | CSI-RS 1.2 TDD |
|  | | 3 | CSI-RS 2.2 TDD | CSI-RS 2.2 FDD |
| reportConfigType | | 1~3 |  | periodic | periodic |
| reportQuantity | | 1~3 |  | cri-RSRP | cri-RSRP |
| Number of reported RS | | 1~3 |  | 2 | 2 |
| L1-RSRP reporting period | | 1~3 |  | slot80 | slot80 |
| EPRE ratio of PSS to SSS | | 1~3 | dB | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS | |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS | |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS | |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH DMRS | |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 | |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 | |  |  |  |  |
| Note2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1~3 | dBm/15kHz | -94.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
| Note2 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/CSI-RS SCS | -94.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 |  | -91.65 | -114 |
|  | NR\_FDD\_FR1\_B |  |  |  | -113.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -114 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -112.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -112 |
|  | NR\_FDD\_FR1\_F |  |  |  | -111.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -111 |
|  | NR\_FDD\_FR1\_H |  |  |  | -110.5 |
|  | | 1~3 | dB | 10 | -3 |
| CSI-RS RSRP Note3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/CSI-RS SCS | -84.65 | -120 |
|  | NR\_FDD\_FR1\_B |  |  |  | -119.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -119 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -118.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -118 |
|  | NR\_FDD\_FR1\_F |  |  |  | -117.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -117 |
|  | NR\_FDD\_FR1\_H |  |  |  | -116.5 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 |  | -81.65 | -117 |
|  | NR\_FDD\_FR1\_B |  |  |  | -116.5 |
|  | NR\_TDD\_FR1\_C |  |  |  | -116 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -115.5 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -115 |
|  | NR\_FDD\_FR1\_F |  |  |  | -114.5 |
|  | NR\_FDD\_FR1\_G |  |  |  | -114 |
|  | NR\_FDD\_FR1\_H |  |  |  | -113.5 |
| Io Note3 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 1,2 | dBm/9.36 MHz | -56.28 | -87.28 |
|  | NR\_FDD\_FR1\_B |  |  |  | -86.78 |
|  | NR\_TDD\_FR1\_C |  |  |  | -86.28 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -85.78 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -85.28 |
|  | NR\_FDD\_FR1\_F |  |  |  | -84.78 |
|  | NR\_FDD\_FR1\_G |  |  |  | -84.28 |
|  | NR\_FDD\_FR1\_H |  |  |  | -83.78 |
|  | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A NOTE 5 | 3 | dBm/38.16 MHz | -50.19 | -81.19 |
|  | NR\_FDD\_FR1\_B |  |  |  | -80.69 |
|  | NR\_TDD\_FR1\_C |  |  |  | -80.19 |
|  | NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D |  |  |  | -79.69 |
|  | NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E |  |  |  | -79.19 |
|  | NR\_FDD\_FR1\_F |  |  |  | -78.69 |
|  | NR\_FDD\_FR1\_G |  |  |  | -78.19 |
|  | NR\_FDD\_FR1\_H |  |  |  | -77.69 |
|  | | 1~3 | dB | 10 | -3 |
| Propagation condition | | 1~3 |  | AWGN | AWGN |
| Antenna configuration | | 1~3 |  | 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: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 5: The test configuration excludes support for band n51 and it is not required to run this test on band n51 in this release of the specification. | | | | | |

##### G.2.5B.4.3.3 Test Requirements

The L1-RSRP measurement accuracy for CSI-RS resource reported by mIAB-MT in L1-RSRP report (CSI-RS#0 or CSI-RS#1) of Cell 1 shall fulfil the requirements in clause 12.5B.1.12.1.

#### G.2.5B.4.4 CSI-RS based L1-RSRP measurement on resource set with repetition off for FR2-1

##### G.2.5B.4.4.1 Test Purpose and Environment

The purpose of this test is to verify that the L1-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in clauses 12.4B and clause 12.5B.1.12.2 for L1-RSRP measurements based on CSI-RS with the testing configurations for NR cells in Table G.2.5B.4.4.1-1.

The AoA setup for this test is Setup 1 as defined in clause A.3.15.

Table G.2.5B.4.4.1-1: Applicable NR configurations for FR1 CSI-RS based L1-RSRP test

|  |  |
| --- | --- |
| Config | Description |
| 1 | NR 120 kHz CSI-RS SCS, 100 MHz bandwidth, TDD duplex mode |

##### G.2.5B.4.4.2 Test parameters

In this set of test cases there are one cell in the test, PCell (Cell 1). The test parameters for the Cell 1 are given in Table G.2.5B.4.4.2-1 and Table G.2.5B.4.4.2-2 below. The absolute and relative accuracy of L1-RSRP measurements are tested by using the parameters in Table G.2.5B.4.4.2-1 and Table G.2.5B.4.4.2-2.

There is no measurement gap configured in the test. Before the test, mIAB-MT is configured one CSI-RS resource set with two CSI-RS resources. mIAB-MT is configured to perform RLM and BFD based on SSB 0 and 1. CSI-RS is not transmitted in the same OFDM symbols as SSB.

**Table G.2.5B.4.4.2-1: FR2 CSI-RS based L1-RSRP general test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Config | Unit | Test 1 | Test 2 |
| SSB GSCN | 1 |  | freq1 | freq1 |
| Duplex mode | 1 |  | TDD | TDD |
| BWchannel | 1 | MHz | 100: NRB,c = 66 | 100: NRB,c = 66 |
| PDSCH Reference measurement channel | 1 |  | SR.3.1 TDD | SR.3.1 TDD |
| RMSI CORESET Reference Channel | 1 |  | CR.3.1 TDD | CR.3.1 TDD |
| Dedicated CORESET Reference Channel | 1 |  | CCR.3.1 TDD | CCR.3.1 TDD |
| SSB configuration | 1 |  | SSB.1 FR2 | SSB.1 FR2 |
| OCNG Patterns | 1 |  | OP.1 | OP.1 |
| Initial BWP Configuration | 1 |  | DLBWP.0.1  ULBWP.0.1 | DLBWP.0.1  ULBWP.0.1 |
| Dedicated BWP configuration | 1 |  | DLBWP.1.1  ULBWP.1.1 | DLBWP.1.1  ULBWP.1.1 |
| TRS Configuration | 1 |  | TRS.2.1 TDD | TRS.2.1 TDD |
| PDCCH/PDSCH TCI Configuration | 1 |  | TCI.State.2 | TCI.State.2 |
| SMTC configuration | 1 |  | SMTC.1 | SMTC.1 |
| CSI-RS | 1 |  | CSI-RS.3.2 TDD | CSI-RS.3.2 TDD |
| reportConfigType | 1 |  | periodic | periodic |
| reportQuantity | 1 |  | cri-RSRP | cri-RSRP |
| Number of reported RS | 1 |  | 2 | 2 |
| L1-RSRP reporting period | 1 |  | slot80 | slot80 |
| Propagation condition | 1 |  | AWGN | AWGN |
| Antenna configuration | 1 |  | 1x2 | 1x2 |
| EPRE ratio of PSS to SSS | 1 | dB | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PBCH to PBCH DMRS |  |  |  |  |
| EPRE ratio of PDCCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PDCCH to PDCCH DMRS |  |  |  |  |
| EPRE ratio of PDSCH DMRS to SSS |  |  |  |  |
| EPRE ratio of PDSCH to PDSCH DMRS |  |  |  |  |
| EPRE ratio of OCNG DMRS to SSSNote 1 |  |  |  |  |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |  |  |  |  |
| 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. | | | | |

Table G.2.5B.4.4.2-2: FR2 CSI-RS based L1-RSRP OTA related test parameters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Config | Unit | Test 1 | | Test 2 NOTE 3 | |
|  |  |  | CSI-RS0 | CSI-RS1 | CSI-RS0 | CSI-RS1 |
| Angle of arrival configuration |  |  | Setup 1 according to G.1.8.1 | | Setup 1 according to G.1.8.1 | |
| Assumption for mIAB-MT beamsNote 4 |  |  | Rough | | Rough | |
|  | 1~2 | dBm/15kHz | -100 | | n.a. | |
|  | 1~2 | dBm/SSB SCS | -91 | | n.a.  n.a. | |
|  | 1~2 | dB | 10 | -2 | n.a. | |
| CSI-RS-RSRPNote1 | 1~2 | dBm/SCS | -81 | -93 | As in Table B.2.4-2 | |
| IoNote1 | 1~2 | dBm/  95.04MHz | -59.86 | | SS-RSRP+28.98 | |
|  | 1~2 | dB | -51.57 | -2 | n.a. | |
| Note 1: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  Note 2: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  Note 3: No additional noise is added by the test system in Test 2.  Note 4: Information about types of mIAB-MT beam is given by declaration | | | | | | |

##### G.2.5B.4.4.3 Test Requirements

After 640ms from the beginning of the test, the L1-RSRP measurement accuracy for CSI-RS#0 and CSI-RS#1 of Cell 1 shall fulfil the requirements in clause 12.5B.1.12.2 The following requirements are to be verified:

For Test 1:

Absolute accuracy of CSI-RS0. The mIAB-MT is deemed to meet the requirement if the reported L1-RSRP is in the range shown in Table G.2.5B.4.4.3-1.

Relative accuracy of CSI-RS0 compared with CSI-RS1. The mIAB-MT is deemed to meet the requirement if the difference in reported L1-RSRP meets the requirements in Table 12.5B.1.12.2.2-1.

For Test 2:

Absolute accuracy of CSI-RS resource reported by mIAB-MT in L1-RSRP report (CSI-RS0 or CSI-RS1). The mIAB-MT is deemed to meet the requirement if the reported L1-RSRP is in the range shown in Table G.2.5B.4.4.3-1.

Relative accuracy of CSI-RS0 compared with CSI-RS1. The mIAB-MT is deemed to meet the requirement if the difference in reported L1-RSRP meets the requirements in Table 12.5B.1.12.2.2-1.

Table G.2.5B.4.4.3-1: L1-RSRP absolute accuracy test requirement

|  |  |
| --- | --- |
|  | Test requirement Notes1,2,3 |
| CSI-RS0 | CSI-RS \_RP0 -δ + Gmin ≤ Reported RSRP(dBm) ≤CSI-RS \_RP0 +δ + Gmax |
| CSI-RS1 | CSI-RS \_RP1 -δ + Gmin ≤ Reported RSRP(dBm) ≤CSI-RS \_RP1 +δ + Gmax |
| Note 1: CSI-RS\_RPn is the equivalent power received by an antenna with 0dBi gain at the centre of the quiet zone configured in the test for the CSI-RS n under consideration  Note 2: δ is the RSRP absolute accuracy requirement from Table 12.5B.1.12.2.1-1, selected according to the Io used in the test  Note 3: Gmin and Gmax are the minimum and maximum mIAB-MT gain values based on declaration | |

**----------------------END OF CHANGE 8----------------------------**