**3GPP TSG-RAN WG4 Meeting # 98-e R4-210xxxx**

**Electronic Meeting, Jan. 25-Feb. 5, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **Draft** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Draft CR of test cases for Inter-RAT measurement for NR-U |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_unlic-Perf |  | ***Date:*** | 2020-12-30 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The test cases for Inter-RAT measurement need to be added. The test cases are defined based on the agreed structure in R4-2017352 |
|  |  |
| ***Summary of change:*** | Define the test cases for Inter-RAT measurement. |
|  |  |
| ***Consequences if not approved:*** | The corresponding test cases are missing. |
|  |  |
| ***Clauses affected:*** | A.10.4.X, A.12.4.X |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.533 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

### <Start of Change 1>

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### <End of Change 1>

### <Start of Change 2>

### A.12.4.X E-UTRA – NR Inter-RAT Measurements on tNR carrier frequency under CCA

#### A.12.4.X.1 E-UTRA-NR inter-RAT event triggered reporting tests for FR1 without SSB time index detection when DRX is not used

##### A.12.4.X.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the NR inter-RAT cell search requirements in clause 8.1.2.4.21A of TS 36.133 [15] for E-UTRAN FDD-NR measurements under CCA and clause 8.1.2.4.22A of TS 36.133 [15] for E-UTRAN TDD-NR measurements under CCA.

In this test, there are two cells: E-UTRA cell 1 as PCell on E-UTRA RF channel 1 and NR cell 2 as neighbour cell in FR1 on NR RF channel 1 on a carrier frequency with CCA. The test parameters are given in Tables A.12.4.X.1.1-1, A.12.4.X.1.1-2, A.12.4.X.1.1-3 and A.12.4.X.1.1-4. Cell transmits SSBs in DBT windows according to DL CCA model.

In test 1 measurement gap pattern configuration # 0 as defined in Table A.12.4.X.1.1-2 is provided for UE that does not support per-FR gap and in test 2 measurement gap pattern configuration #4 as defined in Table A.12.4.X.1.1-2 is provided for UE that supports per-FR gap.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) [16] is used. The UE is tested when MeasTriggerQuantity is configured as RSRP, RSRQ and SINR for each test. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

Table A.12.4.X.1.1-1: NR inter-RAT event triggered reporting tests without SSB index reading for FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | LTE FDD; NR with CCA: SCS 30 kHz, BW 40 MHz, TDD |
| 2 | LTE TDD; NR with CCA: SCS 30 kHz, BW 40 MHz, TDD |
| NOTE: The UE is only required to pass in one of the supported test configurations in FR1 |

Table A.12.4.X.1.1-2: General test parameters for NR inter-RAT event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
|  |  |  | Test 1 | Test 2 |  |
| E-UTRA RF Channel Number |  | 1, 2 | 1 | One E-UTRAcarrier frequency is used. |
| NR RF Chanel Number |  | 1, 2 | 1 | One FR1 NR carrier frequency under CCA is used. |
| DL CCA model |  |  | As specified in clause A.3.20.2.1 |  |
| UL CCA model |  |  | As specified in clause A.3.20.2.2 |  |
| Active cell |  | 1, 2 | E-UTRA cell 1 (PCell) | E-UTRA cell 1 is on E-UTRA RF channel number 1. |
| Neighbour cell |  | 1, 2 | NR cell 2 | NR cell 2 is on NR RF channel number 1. |
| Gap Pattern Id |  | 1, 2 | 0 | 4 | As specified in clause Table 8.1.2.1-1 of TS 36.133 [15]. |
| Measurement gap offset |  | 1, 2 | 39 | 19 | As specified in TS 36.331 [16]. |
| b2-Threshold1 | dBm | 1, 2 | Note 1 | E-UTRA RSRP/RSRQ/SINR threshold for E-UTRA RSRP measurement on cell 1 for event B2 [16] |
| b2-Threshold2NR | dBm | 1, 2 | Note 2 | SS-RSRP/ SS-RSRQ/ SS-SINR threshold measurement on cell 2 for event B2 [16] |
| Hysteresis | dB | 1, 2 | 0 |  |
| CP length |  | 1, 2 | Normal |  |
| TimeToTrigger | s | 1, 2 | 0 |  |
| Filter coefficient |  | 1, 2 | 0 | L3 filtering is not used |
| DRX |  | 1, 2 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | 1, 2 | 3μs | Synchronous cells. |
| T1 | s | 1, 2 | 5 |  |
| T2 | s | 1, 2 | ≥Tidentify\_irat\_cca\_without\_index | ≥Tidentify\_irat\_cca\_without\_index | Tidentify\_irat\_cca\_without\_index­ is defined in clause 8.1.2.4.21A.1 and 8.1.2.4.22A.1 in TS 36.133 |
| Note 1: The value of b2-Threshold1 is defined in Table A.12.4.X.1.1-3Note 2: The value of b2-Threshold2NR is defined in Table A.12.4.X.1.1-4 |

Table A.12.4.X.1.1-3: E-UTRAN PCell specific test parameters for NR inter-RAT event triggered reporting in non-DRX with NR neigbour cell in FR1 without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 1 |
|  |  |  | T1 | T2 |
| RF channel number |  | 1, 2 | 1 |
| Duplex mode |  | 1 | FDD |
| 2 | TDD |
| TDD special subframe configurationNote1 |  | 2 | 6 |
| TDD uplink-downlink configurationNote1 |  | 2 | 1 |
| BWchannel | MHz | 1, 2 | 5 MHz: NRB,c = 2510 MHz: NRB,c = 5020 MHz: NRB,c = 100 |
| PDSCH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.7 FDD10 MHz: R.3 FDD20 MHz: R.6 FDD |
|  |  | 2 | 5 MHz: R.4 TDD10 MHz: R.0 TDD20 MHz: R.3 TDD |
| PCFICH/PDCCH/PHICH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.11 FDD10 MHz: R.6 FDD20 MHz: R.10 FDD |
|  |  | 2 | 5 MHz: R.11 TDD10 MHz: R.6 TDD20 MHz: R.10 TDD |
| OCNG PatternsNote2 |  | 1 | 5 MHz: OP.20 FDD10 MHz: OP.10 FDD20 MHz: OP.17 FDD |
|  |  | 2 | 5 MHz: OP.9 TDD10 MHz: OP.1 TDD20 MHz: OP.7 TDD |
| b2-Threshold1 | dBm | 1, 2 | -77 for RSRP |
|  | 1, 2 | [0 for RSRQ] |
| dB | 1, 2 | [25 for SINR] |
| PBCH\_RA | dB | 1, 2 | 0 |
| PBCH\_RB |  |  |  |
| PSS\_RA |  |  |  |
| SSS\_RA |  |  |  |
| PCFICH\_RB |  |  |  |
| PHICH\_RA |  |  |  |
| PHICH\_RB |  |  |  |
| PDCCH\_RA |  |  |  |
| PDCCH\_RB |  |  |  |
| PDSCH\_RA |  |  |  |
| PDSCH\_RB |  |  |  |
| OCNG\_RANote3 |  |  |  |
| OCNG\_RBNote3 |  |  |  |
| NocNote4 | dBm/15kHz | 1, 2 | -104 |
| Ês/Noc | dB | 1, 2 | 17 | 17 |
| Ês/IotNote5 | dB | 1, 2 | 17 | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| IoNote5 | dBm/9MHz | 1, 2 | -59.13+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition Note6 |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix Note6 |  | 1, 2 | 1x2 Low |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 6: Propagation condition and correlation matrix are defined in clause B.2 in TS 36.101 [25]. |

Table A.12.4.X.1.1-4: NR neighbour cell specific test parameters for NR inter-RAT event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 2 |
|  |  |  | T1 | T2 |
| NR RF Channel Number |  | 1, 2 | 2 |
| TDD configuration |  | 1, 2 | TDDConf.2.1 |
| BWchannel | MHz | 1, 2 | 40: NRB,c = 106 |
| PCCA\_DL |  | 1, 2 | TBD |
| OCNG Patterns defined in A.3.2.1.1 (OP.1)  |  | 1, 2 | OP.1 |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 |  | 1, 2 | TBD |
| DBT window configuration |  | 1, 2 | TBD |
| SSB configuration |  | 1, 2 | TBD |
| PDSCH/PDCCH subcarrier spacing | kHz | 1, 2 | 30 |
| b2-Threshold2NR | dBm/SCS | 1, 2 | -98 for SS-RSRP |
|  |  | 1, 2 | [-5 for SS-RSRQ] |
| dB | 1, 2 | [2 For SS-SINR] |
| EPRE ratio of PSS to SSS |  | 1, 2 | 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 | 1, 2 | -98 |
| Note2 | dBm/SCS | 1, 2 | -95 |
| SS-RSRP Note 3,5 | dBm/SCS | 1, 2 | -Infinity | -88 |
| Note 5 | dB | 1, 2 | -Infinity | 7 |
|  Note 5 | dB | 1, 2 | -Infinity | 7 |
| IoNote3 | dBm/38.16MHz | 1, 2 | -63.95 | -56.16 |
| Propagation Condition  |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix |  | 1, 2, | 1x2 Low |
| 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.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: The signal levels apply for SSS REs when the discovery burst is transmitted during DBT windows. |

##### A.12.4.X.1.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 2 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 1 and test 2, the UE is not required to report SSB time index. Tidentify\_irat\_cca\_without\_index is defined in defined in clause 8.1.2.4.21A.1 and 8.1.2.4.22A.1 in TS 36.133.

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

#### A.12.4.X.2 NR Inter-RAT event triggered reporting tests for FR1 without SSB time index detection when DRX is used

##### A.12.4.X.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the NR inter-RAT cell search requirements in clause 8.1.2.4.21 of TS 36.133 [15] for E-UTRAN FDD-NR measurements and clause 8.1.2.4.22 of TS 36.133 [15] for E-UTRAN TDD-NR measurements.

In this test, there are two cells: E-UTRA cell 1 as PCell on E-UTRA RF channel 1 and NR cell 2 as neighbour cell in FR1 on NR RF channel 1. The test parameters are given in Tables A.12.4.X.2.1-1, A.12.4.X.2.1-2, A.12.4.X.2.1-3 and A.12.4.X.2.1-4.

In tests 1 and 2, measurement gap pattern configuration # 0 as defined in Table A.12.4.X.2.1-2 is provided for UE that does not support per-FR gap and in tests 3 and 4, measurement gap pattern configuration #4 as defined in Table A.12.4.X.2.1-2 is provided for UE that supports per-FR gap.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) [16] is used. The UE is tested when MeasTriggerQuantity is configured as RSRP, RSRQ and SINR for each test. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

Table A.12.4.X.2.1-1: NR inter-RAT event triggered reporting tests without SSB index reading for FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | LTE FDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| 2 | LTE TDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| Note: The UE is only required to pass in one of the supported test configurations in FR1 |

Table A.12.4.X.2.1-2: General test parameters for NR inter-RAT event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
|  |  |  | Test 1 | Test 2 | Test 3 | Test 4 |  |
| E-UTRA RF Channel Number |  | 1, 2 | 1 | One E-UTRAcarrier frequency is used. |
| NR RF Chanel Number |  | 1, 2 | 1 | One FR1 NR carrier frequency under CCA is used. |
| Active cell |  | 1, 2 | E-UTRA cell 1 (PCell) | E-UTRA cell 1 is on E-UTRA RF channel number 1. |
| Neighbour cell |  | 1, 2 | NR cell 2 | NR cell 2 is on NR RF channel number 1. |
| Gap Pattern Id |  | 1, 2 | 0 | 4 | As specified in clause Table 8.1.2.1-1 of TS 36.133 [15]. |
| Measurement gap offset |  | 1, 2 | 39 | 19 | As specified in TS 36.331 [16]. |
| b2-Threshold1 | dBm | 1, 2 | Note 1 | E-UTRA RSRP/RSRQ/SINR threshold for E-UTRA RSRP measurement on cell 1 for event B2 [16] |
| b2-Threshold2NR | dBm | 1, 2 | Note 2 | SS-RSRP/ SS-RSRQ/ SS-SINR threshold measurement on cell 2 for event B2 [16] |
| Hysteresis | dB | 1, 2 | 0 |  |
| CP length |  | 1, 2 | Normal |  |
| TimeToTrigger | s | 1, 2 | 0 |  |
| Filter coefficient |  | 1, 2 | 0 | L3 filtering is not used |
| DRX |  | 1, 2 | DRX.9 | DRX.10 | DRX.9 | DRX.10 | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | 1, 2 | 3μs | Synchronous cells. |
| T1 | s | 1, 2 | 5 |  |
| T2 | s | 1, 2 | ≥Tidentify\_irat\_cca\_without\_index | Tidentify\_irat\_cca\_without\_index­ is defined in clause 8.1.2.4.21A.1 and 8.1.2.4.22A.1 in TS 36.133 |
| Note 1: The value of b2-Threshold1 is defined in Table A.12.4.X.1.1-3Note 2: The value of b2-Threshold2NR is defined in Table A.12.4.X.1.1-4 |

Table A.12.4.X.2.1-3: E-UTRAN PCell specific test parameters for NR inter-RAT event triggered reporting in non-DRX with NR neigbour cell in FR1 without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 1 |
|  |  |  | T1 | T2 |
| RF channel number |  | 1, 2 | 1 |
| Duplex mode |  | 1 | FDD |
| 2 | TDD |
| TDD special subframe configurationNote1 |  | 2 | 6 |
| TDD uplink-downlink configurationNote1 |  | 2 | 1 |
| BWchannel | MHz | 1, 2 | 5 MHz: NRB,c = 2510 MHz: NRB,c = 5020 MHz: NRB,c = 100 |
| PDSCH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.7 FDD10 MHz: R.3 FDD20 MHz: R.6 FDD |
|  |  | 2 | 5 MHz: R.4 TDD10 MHz: R.0 TDD20 MHz: R.3 TDD |
| PCFICH/PDCCH/PHICH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.11 FDD10 MHz: R.6 FDD20 MHz: R.10 FDD |
|  |  | 2 | 5 MHz: R.11 TDD10 MHz: R.6 TDD20 MHz: R.10 TDD |
| OCNG PatternsNote2 |  | 1 | 5 MHz: OP.20 FDD10 MHz: OP.10 FDD20 MHz: OP.17 FDD |
|  |  | 2 | 5 MHz: OP.9 TDD10 MHz: OP.1 TDD20 MHz: OP.7 TDD |
| b2-Threshold1 | dBm | 1, 2 | -77 for RSRP |
|  | 1, 2 | [0 for RSRQ] |
| dB | 1, 2 | [25 for SINR] |
| PBCH\_RA | dB | 1, 2 | 0 |
| PBCH\_RB |  |  |  |
| PSS\_RA |  |  |  |
| SSS\_RA |  |  |  |
| PCFICH\_RB |  |  |  |
| PHICH\_RA |  |  |  |
| PHICH\_RB |  |  |  |
| PDCCH\_RA |  |  |  |
| PDCCH\_RB |  |  |  |
| PDSCH\_RA |  |  |  |
| PDSCH\_RB |  |  |  |
| OCNG\_RANote3 |  |  |  |
| OCNG\_RBNote3 |  |  |  |
| NocNote4 | dBm/15kHz | 1, 2 | -104 |
| Ês/Noc | dB | 1, 2 | 17 | 17 |
| Ês/IotNote5 | dB | 1, 2 | 17 | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| IoNote5 | dBm/9MHz | 1, 2 | -59.13+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition Note6 |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix Note6 |  | 1, 2 | 1x2 Low |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 6: Propagation condition and correlation matrix are defined in clause B.2 in TS 36.101 [25]. |

Table A.12.4.X.2.1-4: NR neighbour cell specific test parameters for NR inter-RAT event triggered reporting for FR1 without SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 2 |
|  |  |  | T1 | T2 |
| NR RF Channel Number |  | 1, 2 | 1 |
| TDD configuration |  | 1, 2 | TDDConf.2.1 |
| BWchannel | MHz | 1, 2 | 40: NRB,c = 106 |
| CCA model |  | 1, 2 | TBD |
| OCNG Patterns defined in A.3.2.1.1 (OP.1)  |  | 1, 2 | OP.1 |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 |  | 1, 2 | TBD |
| PDSCH/PDCCH subcarrier spacing | kHz | 1, 2 | 30 |
| b2-Threshold2NR | dBm/SCS | 1, 2 | -98 for SS-RSRP |
|  |  | 1, 2 | [-5 for SS-RSRQ] |
| dB | 1, 2 | [2 For SS-SINR] |
| EPRE ratio of PSS to SSS |  | 1, 2 | 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 | 1, 2 | -98 |
| Note2 | dBm/SCS | 1, 2 | -95 |
| SS-RSRP Note 3 | dBm/SCS | 1, 2 | -Infinity | -88 |
|  | dB | 1, 2 | -Infinity | 7 |
|  | dB | 1, 2 | -Infinity | 7 |
| IoNote3 | dBm/38.16MHz | 1, 2 | -63.95 | -56.16 |
| Propagation Condition  |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix |  | 1, 2, | 1x2 Low |
| 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.Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.Note 3: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. |

##### A.12.4.X.2.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 2 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 3 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 4 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_without\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In tests 1, 2, 3 and 4, the UE is not required to report SSB time index.

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

#### A.12.4.X.3 NR Inter-RAT event triggered reporting tests for FR1 with SSB time index detection when DRX is not used

##### A.12.4.X.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the NR inter-RAT cell search requirements in clause 8.1.2.4.21of TS 36.133 [15] for E-UTRAN FDD-NR measurements and clause 8.1.2.4.22 of TS 36.133 [15] for E-UTRAN TDD-NR measurements.

In this test, there are two cells: E-UTRA cell 1 as PCell on E-UTRA RF channel 1 and NR cell 2 as neighbour cell in FR1 on NR RF channel 1. The test parameters are given in Tables A.12.4.X.3.1-1, A.12.4.X.3.1-2, A.12.4.X.3.1-3 and A.12.4.X.3.1-4.

In test 1 measurement gap pattern configuration # 0 as defined in Table A.12.4.X.3.1-2 is provided for UE that does not support per-FR gap and in test 2 measurement gap pattern configuration #4 as defined in Table A.12.4.X.3.1-2 is provided for UE that supports per-FR gap.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) [16] is used. The UE is tested when MeasTriggerQuantity is configured as RSRP, RSRQ and SINR for each test. In the measurement configuration the UE shall be indicated to report the SSB index of the identified NR cell. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

Table A.12.4.X.3.1-1: NR inter-RAT event triggered reporting tests with SSB index reading for FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | LTE FDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| 2 | LTE TDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| Note: The UE is only required to pass in one of the supported test configurations in FR1 |

Table A.12.4.X.3.1-2: General test parameters for NR inter-RAT event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
|  |  |  | Test 1 | Test 2 |  |
| E-UTRA RF Channel Number |  | 1, 2 | 1 | One E-UTRAcarrier frequency is used. |
| NR RF Chanel Number |  | 1, 2 | 1 | One FR1 NR carrier frequency under CCA is used. |
| Active cell |  | 1, 2 | E-UTRA cell 1 (PCell) | E-UTRA cell 1 is on E-UTRA RF channel number 1. |
| Neighbour cell |  | 1, 2 | NR cell 2 | NR cell 2 is on NR RF channel number 1. |
| Gap Pattern Id |  | 1, 2 | 0 | 4 | As specified in clause Table 8.1.2.1-1 of TS 36.133 [15]. |
| Measurement gap offset |  | 1, 2 | 39 | 19 | As specified in TS 36.331 [16]. |
| b2-Threshold1 | dBm | 1, 2 | Note 1 | E-UTRA RSRP/RSRQ/SINR threshold for E-UTRA RSRP measurement on cell 1 for event B2 [16] |
| b2-Threshold2NR | dBm | 1, 2 | Note 2 | SS-RSRP/ SS-RSRQ/ SS-SINR threshold measurement on cell 2 for event B2 [16] |
| Hysteresis | dB | 1, 2 | 0 |  |
| CP length |  | 1, 2 | Normal |  |
| TimeToTrigger | s | 1, 2 | 0 |  |
| Filter coefficient |  | 1, 2 | 0 | L3 filtering is not used |
| DRX |  | 1, 2 | OFF | DRX is not used |
| Time offset between serving and neighbour cells |  | 1, 2 | 3μs | Synchronous cells. |
| T1 | s | 1, 2 | 5 |  |
| T2 | s | 1, 2 | ≥ Tidentify\_irat\_cca\_with\_index | ≥ Tidentify\_irat\_cca\_with\_index | Tidentify\_irat\_cca\_with\_index is defined in clause 8.1.2.4.21A.1 and 8.1.2.4.22A.1 in TS 36.133 |
| Note 1: The value of b2-Threshold1 is defined in Table A.12.4.X.3.1-3Note 2: The value of b2-Threshold2NR is defined in Table A.12.4.X.3.1-4 |

Table A.12.4.X.3.1-3: E-UTRAN PCell specific test parameters for NR inter-RAT event triggered reporting in non-DRX with NR neigbour cell in FR1 with SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 1 |
|  |  |  | T1 | T2 |
| RF channel number |  | 1, 2 | 1 |
| Duplex mode |  | 1 | FDD |
| 2 | TDD |
| TDD special subframe configurationNote1 |  | 2 | 6 |
| TDD uplink-downlink configurationNote1 |  | 2 | 1 |
| BWchannel | MHz | 1, 2 | 5 MHz: NRB,c = 2510 MHz: NRB,c = 5020 MHz: NRB,c = 100 |
| PDSCH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.7 FDD10 MHz: R.3 FDD20 MHz: R.6 FDD |
|  |  | 2 | 5 MHz: R.4 TDD10 MHz: R.0 TDD20 MHz: R.3 TDD |
| PCFICH/PDCCH/PHICH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.11 FDD10 MHz: R.6 FDD20 MHz: R.10 FDD |
|  |  | 2 | 5 MHz: R.11 TDD10 MHz: R.6 TDD20 MHz: R.10 TDD |
| OCNG PatternsNote2 |  | 1 | 5 MHz: OP.20 FDD10 MHz: OP.10 FDD20 MHz: OP.17 FDD |
|  |  | 2 | 5 MHz: OP.9 TDD10 MHz: OP.1 TDD20 MHz: OP.7 TDD |
| b2-Threshold1 | dBm | 1, 2 | -77 for RSRP |
|  | 1, 2 | [0 for RSRQ] |
| dB | 1, 2 | [25 for SINR] |
| PBCH\_RA | dB | 1, 2 | 0 |
| PBCH\_RB |  |  |  |
| PSS\_RA |  |  |  |
| SSS\_RA |  |  |  |
| PCFICH\_RB |  |  |  |
| PHICH\_RA |  |  |  |
| PHICH\_RB |  |  |  |
| PDCCH\_RA |  |  |  |
| PDCCH\_RB |  |  |  |
| PDSCH\_RA |  |  |  |
| PDSCH\_RB |  |  |  |
| OCNG\_RANote3 |  |  |  |
| OCNG\_RBNote3 |  |  |  |
| NocNote4 | dBm/15kHz | 1, 2 | -104 |
| Ês/Noc | dB | 1, 2 | 17 | 17 |
| Ês/IotNote5 | dB | 1, 2 | 17 | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| IoNote5 | dBm/9MHz | 1, 2 | -59.13+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition Note6 |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix Note6 |  | 1, 2 | 1x2 Low |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 6: Propagation condition and correlation matrix are defined in clause B.2 in TS 36.101 [25]. |

Table A.12.4.X.3.1-4: NR neighbour cell specific test parameters for NR inter-RAT event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 2 |
|  |  |  | T1 | T2 |
| NR RF Channel Number |  | 1, 2 | 1 |
| TDD configuration |  | 1, 2 | TDDConf.2.1 |
| BWchannel | MHz | 1, 2 | 40: NRB,c = 106 |
| CCA model |  | 1, 2 | TBD |
| OCNG Patterns defined in A.3.2.1.1 (OP.1)  |  | 1, 2 | OP.1 |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 |  | 1, 2 | TBD |
| PDSCH/PDCCH subcarrier spacing | kHz | 1, 2 | 30 |
| b2-Threshold2NR | dBm/SCS | 1, 2 | -98 for SS-RSRP |
|  |  | 1, 2 | [-5 for SS-RSRQ] |
| dB | 1, 2 | [2 For SS-SINR] |
| EPRE ratio of PSS to SSS |  | 1, 2 | 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 | 1, 2 | -98 |
| Note2 | dBm/SCS | 1, 2 | -95 |
| SS-RSRP Note 3 | dBm/SCS | 1, 2 | -Infinity | -88 |
|  | dB | 1, 2 | -Infinity | 7 |
|  | dB | 1, 2 | -Infinity | 7 |
| IoNote3 | dBm/38.16MHz | 1, 2 | -63.95 | -56.16 |
| Propagation Condition  |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix |  | 1, 2, | 1x2 Low |
| 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.Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.Note 3: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. |

##### A.12.4.X.3.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 2 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 1 and test 2, the UE is required to report SSB time index.

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

#### A.12.4.X.4 NR Inter-RAT event triggered reporting tests for FR1 with SSB time index detection when DRX is used

##### A.12.4.X.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the NR inter-RAT cell search requirements in clause 8.1.2.4.21of TS 36.133 [15] for E-UTRAN FDD-NR measurements and clause 8.1.2.4.22 of TS 36.133 [15] for E-UTRAN TDD-NR measurements.

In this test, there are two cells: E-UTRA cell 1 as PCell on E-UTRA RF channel 1 and NR cell 2 as neighbour cell in FR1 on NR RF channel 1. The test parameters are given in Tables A.12.4.X.4.1-1, A.12.4.X.4.1-2, A.12.4.X.4.1-3 and A.12.4.X.4.1-4.

In tests 1 and 2, measurement gap pattern configuration # 0 as defined in Table A.12.4.X.4.1-2 is provided for UE that does not support per-FR gap and in tests 3 and 4, measurement gap pattern configuration #4 as defined in Table A.12.4.X.4.1-2 is provided for UE that supports per-FR gap.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) [16] is used. In the measurement configuration the UE shall be indicated to report the SSB index of the identified NR cell. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of NR cell 2.

Table A.12.4.X.4.1-1: NR inter-RAT event triggered reporting tests with SSB index reading for FR1

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | LTE FDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| 2 | LTE TDD, NR SCS 30 kHz, BW 40 MHz, TDD |
| Note: The UE is only required to pass in one of the supported test configurations in FR1 |

Table A.12.4.X.4.1-2: General test parameters for NR inter-RAT event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
|  |  |  | Test 1 | Test 2 | Test 3 | Test  |  |
| E-UTRA RF Channel Number |  | 1, 2 | 1 | One E-UTRAcarrier frequency is used. |
| NR RF Chanel Number |  | 1, 2 | 1 | One FR1 NR carrier frequency under CCA is used. |
| Active cell |  | 1, 2 | E-UTRA cell 1 (PCell) | E-UTRA cell 1 is on E-UTRA RF channel number 1. |
| Neighbour cell |  | 1, 2 | NR cell 2 | NR cell 2 is on NR RF channel number 1. |
| Gap Pattern Id |  | 1, 2 | 0 | 4 | As specified in clause Table 8.1.2.1-1 of TS 36.133 [15]. |
| Measurement gap offset |  | 1, 2 | 39 | 19 | As specified in TS 36.331 [16]. |
| b2-Threshold1 | dBm | 1, 2 | Note 1 | E-UTRA RSRP/RSRQ/SINR threshold for E-UTRA RSRP measurement on cell 1 for event B2 [16] |
| b2-Threshold2NR | dBm | 1, 2 | Note 2 | SS-RSRP/ SS-RSRQ/ SS-SINR threshold measurement on cell 2 for event B2 [16] |
| Hysteresis | dB | 1, 2 | 0 |  |
| CP length |  | 1, 2 | Normal |  |
| TimeToTrigger | s | 1, 2 | 0 |  |
| Filter coefficient |  | 1, 2 | 0 | L3 filtering is not used |
| DRX |  | 1, 2 | DRX.9 | DRX.10 | DRX.9 | DRX.10 | As specified in clause A.3.3 |
| Time offset between serving and neighbour cells |  | 1, 2 | 3μs | Synchronous cells. |
| T1 | s | 1, 2 | 5 |  |
| T2 | s | 1, 2 | ≥Tidentify\_irat\_cca\_with\_index | Tidentify\_irat\_cca\_with\_index­ is defined in clause 8.1.2.4.21A.1 and 8.1.2.4.22A.1 in TS 36.133 |
| Note 1: The value of b2-Threshold1 is defined in Table A.12.4.X.4.1-3Note 2: The value of b2-Threshold2NR is defined in Table A.12.4.X.4.1-4 |

Table A.12.4.X.4.1-3: E-UTRAN PCell specific test parameters for NR inter-RAT event triggered reporting in non-DRX with NR neigbour cell in FR1 with SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Configuration | Cell 1 |
|  |  |  | T1 | T2 |
| RF channel number |  | 1, 2 | 1 |
| Duplex mode |  | 1 | FDD |
| 2 | TDD |
| TDD special subframe configurationNote1 |  | 2 | 6 |
| TDD uplink-downlink configurationNote1 |  | 2 | 1 |
| BWchannel | MHz | 1, 2 | 5 MHz: NRB,c = 2510 MHz: NRB,c = 5020 MHz: NRB,c = 100 |
| PDSCH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.7 FDD10 MHz: R.3 FDD20 MHz: R.6 FDD |
|  |  | 2 | 5 MHz: R.4 TDD10 MHz: R.0 TDD20 MHz: R.3 TDD |
| PCFICH/PDCCH/PHICH parameters:DL Reference Measurement ChannelNote2 |  | 1 | 5 MHz: R.11 FDD10 MHz: R.6 FDD20 MHz: R.10 FDD |
|  |  | 2 | 5 MHz: R.11 TDD10 MHz: R.6 TDD20 MHz: R.10 TDD |
| OCNG PatternsNote2 |  | 1 | 5 MHz: OP.20 FDD10 MHz: OP.10 FDD20 MHz: OP.17 FDD |
|  |  | 2 | 5 MHz: OP.9 TDD10 MHz: OP.1 TDD20 MHz: OP.7 TDD |
| b2-Threshold1 | dBm | 1, 2 | -77 for RSRP |
|  | 1, 2 | [0 for RSRQ] |
| dB | 1, 2 | [25 for SINR] |
| PBCH\_RA | dB | 1, 2 | 0 |
| PBCH\_RB |  |  |  |
| PSS\_RA |  |  |  |
| SSS\_RA |  |  |  |
| PCFICH\_RB |  |  |  |
| PHICH\_RA |  |  |  |
| PHICH\_RB |  |  |  |
| PDCCH\_RA |  |  |  |
| PDCCH\_RB |  |  |  |
| PDSCH\_RA |  |  |  |
| PDSCH\_RB |  |  |  |
| OCNG\_RANote3 |  |  |  |
| OCNG\_RBNote3 |  |  |  |
| NocNote4 | dBm/15kHz | 1, 2 | -104 |
| Ês/Noc | dB | 1, 2 | 17 | 17 |
| Ês/IotNote5 | dB | 1, 2 | 17 | 17 |
| RSRPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| SCH\_RPNote5 | dBm/15kHz | 1, 2 | -87 | -87 |
| IoNote5 | dBm/9MHz | 1, 2 | -59.13+10log (NRB,c /50) | -59.13+10log (NRB,c /50) |
| Propagation Condition Note6 |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix Note6 |  | 1, 2 | 1x2 Low |
| Note 1: Special subframe and uplink-downlink configurations are specified in table 4.2-1 in TS 36.211 [23].Note 2: DL RMCs and OCNG patterns are specified in clauses A 3.1 and A 3.2 of TS 36.133 [15] respectively.Note 3: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.Note 5: Ês/Iot, RSRP, SCH\_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 6: Propagation condition and correlation matrix are defined in clause B.2 in TS 36.101 [25]. |

Table A.12.4.X.4.1-4: NR neighbour cell specific test parameters for NR inter-RAT event triggered reporting for FR1 with SSB time index detection

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 2 |
|  |  |  | T1 | T2 |
| NR RF Channel Number |  | 1, 2 | 1 |
| TDD configuration |  | 1, 2 | TDDConf.2.1 |
| BWchannel | MHz | 1, 2 | 40: NRB,c = 106 |
| CCA model |  | 1, 2 | TBD |
| OCNG Patterns defined in A.3.2.1.1 (OP.1)  |  | 1, 2 | OP.1 |
| SMTC configuration defined in A.3.11.1 and A.3.11.2 |  | 1, 2 | TBD |
| PDSCH/PDCCH subcarrier spacing | kHz | 1, 2 | 30 |
| b2-Threshold2NR | dBm/SCS | 1, 2 | -98 for SS-RSRP |
|  |  | 1, 2 | [-5 for SS-RSRQ] |
| dB | 1, 2 | [2 For SS-SINR] |
| EPRE ratio of PSS to SSS |  | 1, 2 | 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 | 1, 2 | -98 |
| Note2 | dBm/SCS | 1, 2 | -95 |
| SS-RSRP Note 3 | dBm/SCS | 1, 2 | -Infinity | -88 |
|  | dB | 1, 2 | -Infinity | 7 |
|  | dB | 1, 2 | -Infinity | 7 |
| IoNote3 | dBm/38.16MHz | 1, 2 | -63.95 | -56.16 |
| Propagation Condition  |  | 1, 2 | ETU70 |
| Antenna Configuration and Correlation Matrix |  | 1, 2, | 1x2 Low |
| 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.Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.Note 3: SS-RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 4: SS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. |

##### A.12.4.X.4.2 Test Requirements

In test 1 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 2 with per-UE gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 3 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In test 4 with per-FR gap, the UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than Tidentify\_irat\_cca\_with\_index ms from the beginning of time period T2. The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The rate of correct events observed during repeated tests shall be at least 90%.

In tests 1, 2, 3 and 4, the UE is required to report SSB time index.

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

### <End of Change 2>