**3GPP TSG- Meeting #**

**, Japan, May, 20 -**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **Draft** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | Sets (2-9), (7-5) and (7-6) DL CPP performance requirements and measurement delay TCs for RSCP with UE Rx-Tx in RRC\_CONNECTED for FR1 and FR2 |
|  |  |
| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_pos\_enh2-Perf |  | ***Date:*** | 2024-05-13 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** |  |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Performance requirements for DL CPP as well as TCs for DL RSCP are missing in TS 38.133. |
|  |  |
| ***Summary of change:*** | 1. In subclause 10.1.Y1 performance requirements for the DL RSCPD measurement are introduced.
2. In subclause 10.1.Z1 performance requirements for the DL RSCP measurement are introduced
3. In Annex A.6.6.X, the test cases for DL RSRP and UE Rx-Tx time difference measurements in RRC\_CONNECTED for FR1 are introduced.
4. In Annex A.7.6.X, the test cases for DL RSRP and UE Rx-Tx time difference measurements in RRC\_CONNECTED for FR2 are introduced.
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|  |  |
| ***Consequences if not approved:*** | Missing performance requirements for NR CPP in TS 38.133. Missing test cases for DL CPP. DL CPP enhancement is not testable. |
|  |  |
| ***Clauses affected:*** | 10.1.Y1, 10.1.Y1.1, 10.1.Y1.2, 10.1.Y1.3, 10.1.Z1, 10.1.Z1.1, 10.1.Z1.2, 10.1.Z1.3, A.6.6.X, A.7.6.X (all new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.533 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | None. |
|  |  |
| ***This CR's revision history:*** | Revision of R4-2409166. |

**--- Start of change 1 ---**

### 10.1.Y1 DL RSCPD Measurement

#### 10.1.Y1.1 Introduction

The requirements in Clause 10.1.Y1 shall apply, provided the UE has received *NR-DL-TDOA-RequestLocationInformation* message with *nr-DL-PRS-RSCPD-Request* from LMF via LPP [34] requesting the UE to measure and report DL RSCPD measurement together with DL RSTD measurements defined in TS 38.215 [4]. The requirements in Clause 10.1.Y1 shall apply:

- when UE is in RRC\_CONNECTED state and the measurement is performed with MG,

- when UE is in RRC\_IDLE or RRC\_INACTIVE state.

#### 10.1.Y1.2 Measurement Accuracy Requirements

The accuracy requirements for DL RSCPD measurement are based on single measurement sample in single PFL and shall be within ±(X+Y) degree.

The accuracy requirements for DL RSTD are contained in clause 10.1.23.2.

The requirements in this clause are derived based on AWGN channel and based on two-tap channel defined in 38.101-4 Annex B.2.4 (a = 1, τd=0.45 µs and fD=5 Hz).

X is defined in Tables 10.1.Y1.2-1 for AWGN channel for FR1, provided that the following conditions are met.

- Conditions defined in clause 7.3 of TS 38.101-1 [18] for reference sensitivity are fulfilled.

- Conditions for DL RSTD measurements are fulfilled according to Annex B.2.14 for a corresponding Band for each relevant PRS resource configured for measurement.

- UE does not perform DL RSTD measurement with reduced number of samples.

X is defined in Tables 10.1.Y1.2-2 for AWGN channel and Table 10.1.Y1.2-3 for two-tap channel for FR1, provided that the following conditions are met.

- Conditions defined in clause 7.3 of TS 38.101-1 [18] for reference sensitivity are fulfilled.

- Conditions for DL RSTD measurements are fulfilled according to Annex B.2.14 for a corresponding Band for each relevant PRS resource configured for measurement.

- UE performs DL RSTD measurement with reduced number of samples.

X is defined in Table 10.1.Y1.2-4 for AWGN channel for FR2, provided that the following conditions are met.

- Conditions defined in clause 7.3 of TS 38.101-2 [19] for reference sensitivity are fulfilled.

- Conditions for DL RSTD measurements are fulfilled according to Annex B.2.14 for a corresponding Band for each relevant PRS resource configured for measurement.

- UE does not perform DL RSTD measurement with reduced number of samples.

X is defined in Tables 10.1.Y1.2-5 for AWGN channel and Table 10.1.Y1.2-6 for two-tap channel for FR2, provided that the following conditions are met.

- Conditions defined in clause 7.3 of TS 38.101-2 [19] for reference sensitivity are fulfilled.

- Conditions for DL RSTD measurements are fulfilled according to Annex B.2.14 for a corresponding Band for each relevant PRS resource configured for measurement.

- UE performs DL RSTD measurement with reduced number of samples.

Y is defined in Table 10.1.Y1.2-7 for FR1 and Table 10.1.Y1.2-8 for FR2, respectively and specifies the margin caused by impairments.

Table 10.1.Y1.2-1: DL RSCPD absolute accuracy in FR1 for AWGN channel

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition ()Note 2 | Io Note 3 range |
| NR operating band groups Note 4 | Minimum Io  | Maximum Io |
| degree | dB | kHz | RB |  |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥ -6dB (PRS Ês/Iot)*i* ≥ -13dB | 15 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 | -50 |
| NR\_TDD\_FR1\_C | -126 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -50 |
| NR\_FDD\_FR1\_F | -124.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 | -50 |
| NR\_FDD\_FR1\_H | -123.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -120.5 | -50 |
| [TBD] | ≥ 52 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 104 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 30  | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 | -50 |
| NR\_TDD\_FR1\_C | -123 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -50 |
| NR\_FDD\_FR1\_F | -121.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 | -50 |
| NR\_FDD\_FR1\_H | -120.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -117.5 | -50 |
| [TBD] | ≥ 48 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 60 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 | -50 |
| NR\_TDD\_FR1\_C | -120 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -50 |
| NR\_FDD\_FR1\_F | -118.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 | -50 |
| NR\_FDD\_FR1\_H | -117.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: NR operating band groups in FR1 are as defined in clause 3.5.2.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: Void |

Table 10.1.Y1.2-2: DL RSCPD absolute accuracy in FR1 for AWGN channel with reduced number of samples for DL RSTD

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition ()Note 2 | Io Note 3 range |
| NR operating band groups Note 4 | Minimum Io  | Maximum Io |
| degree | dB | kHz | RB |  |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥ -3dB (PRS Ês/Iot)*i* ≥ -6dB | 15 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 | -50 |
| NR\_TDD\_FR1\_C | -126 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -50 |
| NR\_FDD\_FR1\_F | -124.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 | -50 |
| NR\_FDD\_FR1\_H | -123.5 | -50 |
| NR\_FDD\_FR1\_N | -120.5 | -50 |
| [TBD] | ≥ 52 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 104 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 30  | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 | -50 |
| NR\_TDD\_FR1\_C | -123 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -50 |
| NR\_FDD\_FR1\_F | -121.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 | -50 |
| NR\_FDD\_FR1\_H | -120.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -117.5 | -50 |
| [TBD] | ≥ 48 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 60 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 | -50 |
| NR\_TDD\_FR1\_C | -120 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -50 |
| NR\_FDD\_FR1\_F | -118.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 | -50 |
| NR\_FDD\_FR1\_H | -117.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: NR operating band groups in FR1 are as defined in clause 3.5.2.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: Void |

Table 10.1.Y1.2-3: DL RSCPD absolute accuracy in FR1 for two-tap channel with reduced number of samples for DL RSTD

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition ()Note 2 | Io Note 3 range |
| NR operating band groups Note 4 | Minimum Io  | Maximum Io |
| degree | dB | kHz | RB |  |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥ -3dB (PRS Ês/Iot)*i* ≥ -6dB | 15 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 | -50 |
| NR\_TDD\_FR1\_C | -126 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -50 |
| NR\_FDD\_FR1\_F | -124.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 | -50 |
| NR\_FDD\_FR1\_H | -123.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -120.5 | -50 |
| [TBD] | ≥ 52 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 104 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 30  | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 | -50 |
| NR\_TDD\_FR1\_C | -123 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -50 |
| NR\_FDD\_FR1\_F | -121.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 | -50 |
| NR\_FDD\_FR1\_H | -120.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -117.5 | -50 |
| [TBD] | ≥ 48 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | 60 | ≥ 24 | ≥ 4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 | -50 |
| NR\_TDD\_FR1\_C | -120 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -50 |
| NR\_FDD\_FR1\_F | -118.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 | -50 |
| NR\_FDD\_FR1\_H | -117.5 | -50 |
|  |  |  | NR\_FDD\_FR1\_N | -114.5 | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| [TBD] | ≥ 132 | ≥ 1 | Note 6 | Note 6 | Note 6 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: NR operating band groups in FR1 are as defined in clause 3.5.2.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: Void |

Table 10.1.Y1.2-4: DL RSCPD absolute accuracy in FR2 for AWGN channel

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition () Note 2 | Io Note 3 range |
| Minimum Io  | Maximum Io |
| degree  | dB | kHz | RB |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥-6dB (PRS Ês/Iot)*i* ≥-13dB | 60 | ≥ 24 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 132 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | 120 | ≥ 32 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 128 | ≥ 1 | Note 5 | Note 5 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: VoidNOTE 5: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 6: Void |

Table 10.1.Y1.2-5: DL RSCPD absolute accuracy in FR2 for AWGN channel with reduced number of samples for DL RSTD

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition () Note 2 | Io Note 3 range |
| Minimum Io  | Maximum Io |
| degree  | dB | kHz | RB |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥-3dB (PRS Ês/Iot)*i* ≥-6dB | 60 | ≥ 24 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 132 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | 120 | ≥ 32 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 128 | ≥ 1 | Note 5 | Note 5 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: VoidNOTE 5: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 6: Void |

Table 10.1.Y1.2-6: DL RSCPD absolute accuracy in FR2 for two-tap channel with reduced number of samples for DL RSTD

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | PRS SCS | PRS bandwidthNote 1 | PRS resource repetition () Note 2 | Io Note 3 range |
| Minimum Io  | Maximum Io |
| degree  | dB | kHz | RB |  | dBm/SCS | dBm/BWChannel |
| [TBD] | (PRS Ês/Iot)ref ≥-3dB (PRS Ês/Iot)*i* ≥-6dB | 60 | ≥ 24 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 132 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | 120 | ≥ 32 | ≥ 4 | Same value as PRS\_RP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD] | ≥ 64 | ≥ 1 | Note 5 | Note 5 |
| [TBD] | ≥ 128 | ≥ 1 | Note 5 | Note 5 |
| NOTE 1: Minimum PRS bandwidth, which is minimum of the PRS bandwidths of the reference resource and the measured neighbour resource i.NOTE 2: Minimum number of PRS resource repetitions among the reference resource and the measured neighbour resource i. are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34], respectively.NOTE 3: Io is assumed to have constant EPRE across the bandwidth.NOTE 4: VoidNOTE 5: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 6: Void |

Table 10.1.Y1.2-7: Margin for DL RSCPD measurement accuracy in FR1

|  |  |
| --- | --- |
| PRS BW (RB number) | Margin (degree) |
| SCS=15kHz | SCS=30kHz | SCS=60kHz |
| ≥ 24 | N/A | N/A | [TBD] |
| ≥ 52 | ≥ 24 | N/A | [TBD] |
| ≥ 104 | ≥ 48 | ≥ 24 | [TBD] |
| N/A | ≥ 132 | ≥ 64 | [TBD] |
| N/A | N/A | ≥ 132 | [TBD] |

Table 10.1.Y1.2-8: Margin for DL RSCPD measurement accuracy in FR2

|  |  |
| --- | --- |
| PRS BW (RB number) | Margin (degree) |
| SCS=60kHz | SCS=120kHz |
| ≥ 24 | N/A | [TBD] |
| ≥ 64 | ≥ 32 | [TBD] |
| ≥ 132 | ≥ 64 | [TBD] |
| N/A | ≥ 128 | [TBD] |

#### 10.1.Y1.3 Report mapping

##### 10.1.Y1.3.1 Absolute DL RSCPD Measurement Reporting

The reporting range of DL RSCPD, as defined in Clause 5.1.43 of TS 38.215 [4], is defined from -180 degree to +180 degree. The reporting resolution is 0.1 degree.

The mapping of DL RSCPD measured quantity is defined in Table 10.1.Y1.3.1-1.

Table 10.1.Y1.3.1-1: DL RSCPD measurement report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value (DL RSCPD) | Unit |
| DL\_RSCPD\_0 | -180 ≤ DL RSCPD < -179.9 | degree |
| DL\_RSCPD\_1 | -179.9 ≤ DL RSCPD < -179.8 | degree |
| DL\_RSCPD\_2 | -179.8 ≤ DL RSCPD < -179.7 | degree |
| … | … | … |
| DL\_RSCPD\_1798 | -0.2 ≤ DL RSCPD < -0.1 | degree |
| DL\_RSCPD\_1799 | -0.1 ≤ DL RSCPD < 0 | degree |
| DL\_RSCPD\_1800 | 0 ≤ DL RSCPD < 0.1 | degree |
| DL\_RSCPD\_1801 | 0.1 ≤ DL RSCPD < 0.2 | degree |
| DL\_RSCPD\_1802 | 0.2 ≤ DL RSCPD < 0.3 | degree |
| … | … | … |
| DL\_RSCPD\_3598 | 179.8 ≤ DL RSCPD < 179.9 | degree |
| DL\_RSCPD\_3599 | 179.9 ≤ DL RSCPD < 180 | degree |

### 10.1.Z1 DL RSCP Measurement

#### 10.1.Z1.1 Introduction

The requirements in Clause 10.1.Z1 shall apply, provided the UE has received *NR-Multi-RTT-RequestLocationInformation* message with *nr-DL-PRS-RSCP-Request* from LMF via LPP [34] requesting the UE to measure and report DL RSCP measurement together with UE Rx-Tx time difference measurements defined in TS 38.215 [4]. The requirements in Clause 10.1.Z1 shall apply:

- when UE is in RRC\_CONNECTED state and the measurement is performed with MG,

- when UE is in RRC\_INACTIVE state.

10.1.Z1.2 Measurement Accuracy Requirements

The relative accuracy of DL RSCP measurement in this clause is defined as accuracy of the difference between two DL RSCP measurements, each based on single measurement sample in single PFL.

The accuracy requirements for UE Rx-Tx are contained in clause 10.1.25.2.

The requirements in this clause are derived based on AWGN channel and based on two-tap channel defined in 38.101-4 Annex B.2.4 (a = 1, τd=0.45 µs and fD=5 Hz).

The DL RSCP relative measurement accuracy requirements in this clause shall not apply, if:

* NTA\_offset defined in Table 7.1.2-2 changes during the DL RSCP with UE Rx-Tx measurement period or
* if the uplink transmission timing changes during the DL RSCP with UE Rx-Tx measurement period due to the network-configured Timing Advance.

The DL RSCP relative measurement accuracy requirements in this clause shall apply provided that:

- The UE transmits SRS within [-160, 160] msec of at least one DL PRS resource of each of the TRPs in the assistance data.

If the uplink transmission timing changes during the DL RSCP with UE Rx-Tx measurement period due to the autonomous timing adjustment defined in clause 7.1.2 then:

- DL RSCP and UE Rx-Tx measurement accuracy requirements shall apply for a cell, which is also the downlink reference cell (defined in section 7.1.1) for SRS transmission.

- UE Rx-Tx measurement accuracy requirements shall not apply for a cell, which is not the downlink reference cell (defined in section 7.1.1) for SRS transmission.

When a serving cell change occurs during the DL RSCP with UE Rx-Tx measurement period, UE Rx-Tx measurement accuracy requirements and DL RSCP measurement requirements do not apply.

The relative accuracy requirements in Table 10.1.Z1.2-1 for FR1 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-1 [18] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE does not perform UE Rx-Tx measurement with reduced number of samples.
* AWGN propagation condition.

The relative accuracy requirements in Table 10.1.Z1.2-2 for FR1 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-1 [18] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE performs UE Rx-Tx measurement with reduced number of samples.
* AWGN propagation condition.

The relative accuracy requirements in Table 10.1.Z1.2-3 for FR1 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-1 [18] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE performs UE Rx-Tx measurement with reduced number of samples.
* Two-tap channel propagation condition.

The relative accuracy requirements in Table 10.1.Z1.2-4 for FR2 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-2 [19] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE does not perform UE Rx-Tx measurement with reduced number of samples.
* AWGN propagation condition.

The relative accuracy requirements in Table 10.1.Z1.2-5 for FR2 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-2 [19] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE performs UE Rx-Tx measurement with reduced number of samples.
* AWGN propagation condition.

The relative accuracy requirements in Table 10.1.Z1.2-6 for FR2 are valid under the following conditions:

* Conditions defined in clause 7.3 of TS 38.101-2 [19] for reference sensitivity are fulfilled.
* PRP|dBm according to Annex B.2.14 for a corresponding Band.
* UE performs UE Rx-Tx measurement with reduced number of samples.
* Two-tap channel propagation condition.

**Table 10.1.Z1.2-1: DL RSCP relative measurement accuracy in FR1 in AWGN**

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetition Note 3** | **NR operating band groupsNote 2** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  |  | **dBm / SCSPRS** | **dBm/BW** |
| [TBD]+δ | -3 | ≥24 | 15 | ≥4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 |
| NR\_TDD\_FR1\_C | -126 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 |
| NR\_FDD\_FR1\_F | -124.5 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 |
| NR\_FDD\_FR1\_H | -123.5 |
|  |  | NR\_FDD\_FR1\_N | -120.5 |  |
| [TBD]+δ | ≥52 | ≥1 | Note 6 | Note 6 | Note 6 |
| [TBD]+δ | >104 | ≥1 | Note 6 | Note 6 | Note 6 |
| [TBD]+δ | ≥24 | 30 | ≥4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 |
| NR\_TDD\_FR1\_C | -123 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 |
| NR\_FDD\_FR1\_F | -121.5 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 |
| NR\_FDD\_FR1\_H | -120.5 |
| NR\_FDD\_FR1\_N | -117.5 |
| [TBD]+δ | ≥48 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥132 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥24 | 60 | ≥4 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A,NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 |
| NR\_TDD\_FR1\_C | -120 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 |
| NR\_FDD\_FR1\_F | -118.5 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 |
| NR\_FDD\_FR1\_H | -117.5 |
| NR\_FDD\_FR1\_N | -114.5 |
| [TBD]+δ | ≥ 64 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥ 132 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -13 | ≥24 | 15 | ≥4 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥52 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | >104 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥24 | 30 | ≥4 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥48 | 60 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥132 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥24 | ≥4 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥ 64 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥ 132 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-7. |

Table 10.1.Z1.2-2: DL RSCP relative measurement accuracy in FR1 in AWGN with reduced number of samples for UE Rx-Tx time difference

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetition Note 3** | **NR operating band groupsNote 2** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  |  | **dBm / SCSPRS** | **dBm/BW** |
| [TBD]+δ | 0 | ≥52 | 15 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 | -50 |
| NR\_TDD\_FR1\_C | -126 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -50 |
| NR\_FDD\_FR1\_F | -124.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 | -50 |
| NR\_FDD\_FR1\_H | -123.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -120.5 | -50 |
| [TBD]+δ |  | >104 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥48 | 30 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 | -50 |
| NR\_TDD\_FR1\_C | -123 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -50 |
| NR\_FDD\_FR1\_F | -121.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 | -50 |
| NR\_FDD\_FR1\_H | -120.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -117.5 | -50 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 60 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 | -50 |
| NR\_TDD\_FR1\_C | -120 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -50 |
| NR\_FDD\_FR1\_F | -118.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 | -50 |
| NR\_FDD\_FR1\_H | -117.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -114.5 | -50 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -6 | ≥52 | 15 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | >104 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥48 | 30 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 60 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-7. |

Table 10.1.Z1.2-3: DL RSCP relative measurement accuracy in FR1 in two-tap channel with reduced number of samples for UE Rx-Tx time difference

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetition Note 3** | **NR operating band groupsNote 2** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  |  | **dBm / SCSPRS** | **dBm/BW** |
| [TBD]+δ | 0 | ≥52 | 15 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -127 | -50 |
| NR\_FDD\_FR1\_B | -126.5 | -50 |
| NR\_TDD\_FR1\_C | -126 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -125.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -125 | -50 |
| NR\_FDD\_FR1\_F | -124.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -124 | -50 |
| NR\_FDD\_FR1\_H | -123.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -120.5 | -50 |
| [TBD]+δ |  | >104 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥48 | 30 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -124 | -50 |
| NR\_FDD\_FR1\_B | -123.5 | -50 |
| NR\_TDD\_FR1\_C | -123 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -122.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -122 | -50 |
| NR\_FDD\_FR1\_F | -121.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -121 | -50 |
| NR\_FDD\_FR1\_H | -120.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -117.5 | -50 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 60 | ≥1 | NR\_FDD\_FR1\_A, NR\_TDD\_FR1\_A, NR\_SDL\_FR1\_A | -121 | -50 |
| NR\_FDD\_FR1\_B | -120.5 | -50 |
| NR\_TDD\_FR1\_C | -120 | -50 |
| NR\_FDD\_FR1\_D, NR\_TDD\_FR1\_D | -119.5 | -50 |
| NR\_FDD\_FR1\_E, NR\_TDD\_FR1\_E | -119 | -50 |
| NR\_FDD\_FR1\_F | -118.5 | -50 |
| NR\_FDD\_FR1\_G, NR\_TDD\_FR1\_G | -118 | -50 |
| NR\_FDD\_FR1\_H | -117.5 | -50 |
| [TBD]+δ |  |  |  |  | NR\_FDD\_FR1\_N | -114.5 | -50 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -6 | ≥52 | 15 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | >104 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥48 | 30 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 60 | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-7. |

**Table 10.1.Z1.2-4: DL RSCP relative measurement accuracy in FR2 in AWGN**

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetitionNote 3** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  | **dBm / SCSPRS** | **dBm/BWChannel** |
| [TBD]+δ | -3 | ≥24 | 60 | ≥4 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD]+δ |  | ≥64 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥32 | 120 | ≥4 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | -50 |
| [TBD]+δ |  | ≥64 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -13 | ≥24 | 60 | ≥4 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ | ≥32 | 120 | ≥4 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter *dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeN*defined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-8. |

Table 10.1.Z1.2-5: DL RSCP relative measurement accuracy in FR2 in AWGN with reduced number of samples for UE Rx-Tx time difference

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetitionNote 3** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  | **dBm / SCSPRS** | **dBm/BWChannel** |
| [TBD]+δ | 0 | ≥64 | 60 | ≥1 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 120 | ≥1 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -6 | ≥64 | 60 | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 120 | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeNdefined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-8. |

Table 10.1.Z1.2-6: DL RSCP relative measurement accuracy in FR2 in two-tap channel with reduced number of samples for UE Rx-Tx time difference

|  |  |
| --- | --- |
| **Accuracy** | **Conditions** |
| **PRS Ês/Iot** | **Minimum PRS bandwidth** | **PRS SCS** | **PRS resource repetitionNote 3** | **IoNote 4 range** |
| **MinimumIoNote 1** | **MaximumIo** |
| **degree** | **dB** | **RB** | **kHz** |  | **dBm / SCSPRS** | **dBm/BWChannel** |
| [TBD]+δ | 0 | ≥64 | 60 | ≥1 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 120 | ≥1 | Same value as PRP in Table B.2.14-2, according to UE Power class, operating band and angle of arrival | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ | -6 | ≥64 | 60 | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥132 |  | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥64 | 120 | ≥1 | NOTE 6 | NOTE 6 |
| [TBD]+δ |  | ≥128 |  | ≥1 | NOTE 6 | NOTE 6 |
| NOTE 1: This minimum Io condition is expressed as the average Io per RE over all REs in an OFDM symbol.NOTE 2: NR operating band groups are as defined in Section 3.5.NOTE 3: are configured by higher layer parameter dl-PRS-ResourceRepetitionFactor, dl-PRS-NumSymbols and dl-PRS-CombSizeNdefined in TS 37.355 [34].NOTE 4: The Io is defined in PRS slots. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same slot.NOTE 5: VoidNOTE 6: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth of the smallest RB number for the corresponding SCS.NOTE 7: δ is the margin determined from Table 10.1.Z1.2-8. |

Table 10.1.Z1.2-7: Margin for relative DL RSCP measurement accuracy in FR1

|  |  |
| --- | --- |
| PRS BW (RB number) | Margin (degree) |
| SCS=15kHz | SCS=30kHz | SCS=60kHz |
| ≥ 24 | N/A | N/A | [TBD] |
| ≥ 52 | ≥ 24 | N/A | [TBD] |
| ≥ 104 | ≥ 48 | ≥ 24 | [TBD] |
| N/A | ≥ 132 | ≥ 64 | [TBD] |
| N/A | N/A | ≥ 132 | [TBD] |

Table 10.1.Z1.2-8: Margin for relative DL RSCP measurement accuracy in FR2

|  |  |
| --- | --- |
| PRS BW (RB number) | Margin (degree) |
| SCS=60kHz | SCS=120kHz |
| ≥ 24 | N/A | [TBD] |
| ≥ 64 | ≥ 32 | [TBD] |
| ≥ 132 | ≥ 64 | [TBD] |
| N/A | ≥ 128 | [TBD] |

#### 10.1.Z1.3 Report Mapping

Relative DL RSCP measurement reporting in clause 10.1.Z1.3.1 applies, regardless of samples used to measure PRS, to report:

- gap-based DL RSCP measurement,

- DL RSCP in RRC\_INACTIVE state.

##### 10.1.Z1.3.1 Relative DL RSCP Measurement Reporting

The reporting range of relative DL RSCP, as defined in Clause 5.1.42 of TS 38.215 [4], is defined from 0 degree to 360 degree. The reporting resolution is 0.1 degree.

The mapping of DL RSCP measured quantity is defined in Table 10.1.Z1.3.1-1.

Table 10.1.Z1.3.1-1: DL RSCP measurement report mapping

|  |  |  |
| --- | --- | --- |
| Reported value | Measured quantity value (DL RSCP) | Unit |
| DL\_RSCP\_0 | 0 ≤ DL RSCP < 0.1 | degree |
| DL\_RSCP\_1 | 0.1 ≤ DL RSCP < 0.2 | degree |
| DL\_RSCP\_2 | 0.2 ≤ DL RSCP < 0.3 | degree |
| … | … | … |
| DL\_RSCP\_1798 | 179.8 ≤ DL RSCP < 179.9 | degree |
| DL\_RSCP\_1799 | 179.9 ≤ DL RSCP < 180 | degree |
| DL\_RSCP\_1800 | 180 ≤ DL RSCP < 180.1 | degree |
| DL\_RSCP\_1801 | 180.1 ≤ DL RSCP < 180.2 | degree |
| DL\_RSCP\_1802 | 180.2 ≤ DL RSCP < 180.3 | degree |
| … | … | … |
| DL\_RSCP\_3598 | 359.8 ≤ DL RSCP < 359.9 | degree |
| DL\_RSCP\_3599 | 359.9 ≤ DL RSCP < 360 | degree |

**--- End of change 1 ---**

**--- Start of change 2 ---**

### A.6.6.X DL RSCP with UE Rx-Tx time difference measurements in RRC\_CONNECTED in FR1 SA

#### A.6.6.X.1 DL RSCP with UE Rx-Tx time difference measurement for single positioning frequency layer in FR1 SA

##### A.6.6.X.1.1 Test purpose and environment

The purpose of the test is to verify that the DL RSCP and UE Rx-Tx time difference measurements meet the requirements specified in clause 9.9.8.5 in AWGN propagation condition in FR1 in standalone scenario when single positioning frequency layer is configured for both DL RSCP measurement and UE Rx-Tx time difference measurement.

The supported test configurations are listed in Table A.6.6.X.1.1-1.

Table A.6.6.X.1.1-1: Supported test configurations

|  |  |
| --- | --- |
| Configuration | Description |
| 1 | 15 kHz SSB SCS, 20 MHz bandwidth, FDD duplex mode |
| 2 | 15 kHz SSB SCS, 20 MHz bandwidth, TDD duplex mode |
| 3 | 30 kHz SSB SCS, 50 MHz bandwidth, TDD duplex mode |
| Note: The UE is only required to be tested in one of the supported test configurations. |

There are two cells in the test: PCell (Cell 1) and a neighbour cell (Cell 2). Both cells are on the same RF channel in FR1.

The test consists of two consecutive time intervals, with duration of T1 and T2. During time duration T1, the UE shall not have any timing information of Cell 2. Both cells transmit PRS during T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The *NR-Multi-RTT-ProvideAssistanceData* message and *NR-Multi-RTT-RequestLocationInformation* message as defined in TS 37.355 [34], shall be provided to the UE during T1. In *NR-Multi-RTT-RequestLocationInformation,* the UE is configured to perform DL RSCP measurement via *nr-DL-PRS-RSCP-Request*. The UE is configured to perform both DL RSCP and UE Rx-Tx time difference measurements within the time window indicated to UE via *nr-DL-PRS-MeasurementTimeWindowsConfig*. The last TTI containing the two messages shall be provided to the UE ΔT ms before the start of T2, where ΔT = 50 ms is the maximum processing time of the multi-RTT assistance data and location information request.

The beginning of the time interval T2 shall be aligned with the beginning of the first MG instance containing the PRS resources to be measured within the configured time window.

The UE is configured with measurement gap pattern ID #0 or ID #24 before T2.

The UE is configured to transmit positioning SRS during T2.

The general test parameters and cell specific test parameters are listed in Table A.6.6.X.1.1-2 and Table A.6.6.X.1.1-3.

Table A.6.6.X.1.1-2: General test parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Value | Comment |
| Active cell |  | 1, 2, 3 | Cell 1 | Cell 1 is the PCell in *NR-Multi-RTT-ProvideAssistanceData* [34]. |
| Neighbour cell |  | 1, 2, 3 | Cell 2 | Cell 2 is a neighbour cell in *NR-Multi-RTT-ProvideAssistanceData* [34]. |
| RF Channel Number |  | 1, 2, 3 | 1 | For both Cell 1 and Cell 2 |
| BWchannel | MHz | 1 | 20: NRB,c = 106 |  |
| 2 | 20: NRB,c = 106 |  |
| 3 | 50: NRB,c = 133 |  |
| 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 |  |
| Measurement gap |  | 1, 2, 3 | GP#24 or GP#0 Note 1 |  |
| CP length |  | 1, 2, 3 | Normal |  |
| DRX |  | 1, 2, 3 | OFF |  |
| Time offset between serving and neighbour cells | μs | 1, 2, 3 | 3 | Synchronous cells |
| Time window configuration |  | 1, 2, 3 | MTW.1 | As specified in clause A.3.Y |
| T1 | s | 1, 2, 3 | 5 |  |
| T2 | s | 1, 2, 3 | 10 |  |
| Note 1: GP#24 is configured if UE supports MG#24, otherwise GP#0 is configured. |

Table A.6.6.X.1.1-3: Cell specific test parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | Test configuration | Cell 1 | Cell 2 |
|  |  | T1 | T2 | T1 | T2 |
| TDD configuration |  | 1 | N/A | N/A |
|  | 2 | TDDConf.1.1 | TDDConf.1.1 |
|  |  | 3 | TDDConf.2.1 | TDDConf.2.1 |
| PDSCH RMC configuration |  | 1 | SR.1.1 FDD | N/A |
|  | 2 | SR.1.1 TDD |  |
|  | 3 | SR.2.1 TDD |  |
| RMSI CORESET RMC configuration |  | 1 | CR.1.1 FDD | N/A |
|  | 2 | CR.1.1 TDD |
|  |  | 3 | CR.2.1 TDD |
| Dedicated CORESET RMC configuration |  | 1 | CCR.1.1 FDD | N/A |
|  | 2 | CCR.1.1 TDD |
|  | 3 | CCR.2.1 TDD |
| OCNG Patterns |  | 1, 2, 3 | OP.1 | OP.1 |
| EPRE ratio of PSS to SSS | dB | 1, 2, 3 | 0 | 0 |
| EPRE ratio of PBCH DMRS to SSS |
| EPRE ratio of PBCH to PBCH DMRS |
| EPRE ratio of PDCCH DMRS to SSS |
| EPRE ratio of PDCCH to PDCCH DMRS |
| EPRE ratio of PDSCH DMRS to SSS |
| EPRE ratio of PDSCH to PDSCH DMRS |
| EPRE ratio of OCNG DMRS to SSSNote 1 |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |
| EPRE ratio of PRS to SSS |
| TRS Configuration |  | 1 | TRS.1.1 FDD | N/A |
|  | 2 | TRS.1.1 TDD |
|  |  | 3 | TRS.1.2 TDD |
| Initial BWP configuration |  | 1, 2, 3 | DLBWP.0.1 ULBWP.0.1 | N/A |
| Active DL BWP configuration |  | 1, 2, 3 | DLBWP.1.1 | N/A |
| Active UL BWP configuration |  | 1, 2, 3 | ULBWP.1.1 | N/A |
| PRS configuration |  | 1 | PRS.1.2 FR1 | PRS.1.2 FR1 |
|  | 2 | PRS.1.2 FR1 | PRS.1.2 FR1 |
|  | 3 | PRS.2.2 FR1 | PRS.2.2 FR1 |
| PRS muting info |  | 1, 2, 3 | ‘10’ | ‘01’ |
| SRS configuration |  | 1 | POS-SRS.1 | N/A |
|  | 2 | POS-SRS.1 | N/A |
|  | 3 | POS-SRS.2 | N/A |
|  Note 2 | dBm/SCS | 1 | -98 |
|  | 2 | -98 |
|  | 3 | -95 |
|  Note 2 | dBm/15 kHz | 1 | -98 |
|  | 2 |  |
|  | 3 |  |
| PRS  | dB | 1 | -Infinity | -2.41 | -Infinity | -12.12 |
|  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
| PRS  | dB | 1 | -Infinity | -2 | -Infinity | -10 |
|  | 2 |  |  |  |  |
|  |  | 3 |  |  |  |  |
| PRP Note 3 | dBm/SCS kHz | 1 | -Infinity | -100 | -Infinity | -108 |
|  | 2 | -Infinity | -100 | -Infinity | -108 |
|  | 3 | -Infinity | -97 | -Infinity | -105 |
| Io | dBm/19.08 MHz | 1 | N/A | -64.57 | N/A | -64.57 |
| dBm/19.08 MHz | 2 | -64.57 | -64.57 |
| dBm/47.88 MHz | 3 | -60.59 | -60.59 |
| Propagation Condition |  | 1, 2, 3 | AWGN |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.Note 3: PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. |

##### A.6.6.X.1.2 Test requirements

The DL RSCP with UE Rx-Tx time difference measurement time fulfils the requirements specified in clause 9.9.8 with Nsample=4 for UE Rx-Tx time difference.

The UE shall perform and report the DL RSCP and UE Rx-Tx time difference measurements for Cell 1 and Cell 2 within the specified DL RSCP with UE Rx-Tx time difference measurement time specified in clause 9.9.8 starting from the beginning of time interval T2.

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

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%. The reported DL RSCP measurement shall be within the DL RSCP reporting range specified in clause 10.1.Z1 and the reported UE Rx-Tx measurement shall be within the UE Rx-Tx reporting range specified in clause 10.1.25.

**--- End of change 2 ---**

**--- Start of change 3 ---**

A.7.6.X DL RSCP with UE Rx-Tx time difference measurements in FR2 SA

A.7.6.X.1 DL RSCP with UE Rx-Tx time difference measurements for single positioning frequency layer in FR2 SA

A.7.6.X.1.1 Test purpose and environment

The purpose of the test is to verify that the DL RSCP and UE Rx-Tx time difference measurements meet the requirements specified in clause 9.9.8.5 in AWGN propagation condition in FR2 in standalone scenario when single positioning frequency layer is configured for both DL RSCP measurement and UE Rx-Tx time difference measurement.

The supported test configurations are listed in Table A.7.6.X.1.1-1.

**Table A.7.6.X.1.1-1: Supported test configurations**

|  |  |
| --- | --- |
| **Configuration** | **Description** |
| 1 | 120 kHz SSB and PRS SCS, 200 MHz bandwidth, TDD duplex mode |

There are two cells in the test: PCell (Cell 1) and a neighbour cell (Cell 2). Both cells are on the same RF channel in FR2.

The test consists of two consecutive time intervals, with duration of T1 and T2. During time duration T1, the UE shall not have any timing information of Cell 2. Both cells transmit PRS during T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The *NR-Multi-RTT-ProvideAssistanceData* message and *NR-Multi-RTT-RequestLocationInformation* message as defined in TS 37.355 [34], shall be provided to the UE during T1. In *NR-Multi-RTT-RequestLocationInformation,* the UE is configured to perform DL RSCP measurement via *nr-DL-PRS-RSCP-Request*. The UE is configured to perform both DL RSCP and UE Rx-Tx time difference measurements within the time window indicated to UE via *nr-DL-PRS-MeasurementTimeWindowsConfig*. The last TTI containing the two messages shall be provided to the UE ΔT ms before the start of T2, where ΔT = 50 ms is the maximum processing time of the multi-RTT assistance data and location information request.

The beginning of the time interval T2 shall be aligned with the beginning of the first MG instance containing the PRS resources to be measured within the configured time window.

The UE is configured with measurement gap pattern ID #0 or ID #24 before T2.

The UE is configured to transmit positioning SRS during T2.

The general test parameters and cell specific test parameters are listed in Table A.7.6.X.1.1-2 and Table A.7.6.X.1.1-3.

**Table A.7.6.X.1.1-2: General test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Value** | **Comment** |
| Active cell |  | 1 | Cell 1 | Cell 1 is the PCell in NR-Multi-RTT-ProvideAssistanceData [34]. |
| Neighbour cell |  | 1 | Cell 2 | Cell 2 is a neighbour cell in NR-Multi-RTT-ProvideAssistanceData [34]. |
| RF Channel Number |  | 1 | 1 | For both Cell 1 and Cell 2 |
| BWchannel | MHz | 1 | 200: NRB,c = 132 |  |
| SSB configuration |  | 1 | SSB.2 FR2 |  |
| SMTC configuration |  | 1 | SMTC.1 |  |
| Measurement gap |  | 1 | GP#24 or GP#13 Note 1 |  |
| CP length |  | 1 | Normal |  |
| DRX |  | 1 | OFF |  |
| Time offset between serving and neighbour cells | μs | 1 | 3 | Synchronous cells |
| Time window configuration |  | 1 | MTW.1 | As specified in clause A.3.Y |
| T1 | s | 1 | 5 |  |
| T2 | s | 1 | 20 |  |
| NOTE 1: GP#24 is configured if UE supports MG#24, otherwise GP#13 is configured. |

**Table A.7.6.X.1.1-3: Cell specific test parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Test configuration** | **Cell 1** | **Cell 2** |
|  |  | **T1** | **T2** | **T1** | **T2** |
| AoA setup |  | 1 | Setup 1 as specified in clause A.3.15 |
| Beam AssumptionNote 7 |  | 1 | Rough | Rough |
| TDD configuration |  | 1 | TDDConf.3.1 | TDDConf.3.1 |
| PDSCH RMC configuration |  | 1 | SR.3.1 TDD | N/A |
| RMSI CORESET RMC configuration |  | 1 | CR.3.1 TDD | N/A |
| Dedicated CORESET RMC configuration |  | 1 | CCR.3.1 TDD | N/A |
| OCNG Patterns |  | 1 | OP.1 | OP.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 DMRS |
| EPRE ratio of OCNG DMRS to SSSNote 1 |
| EPRE ratio of OCNG to OCNG DMRS Note 1 |
| EPRE ratio of PRS to SSS |
| TRS Configuration |  | 1 | TRS.2.1 TDD | N/A |
| Initial BWP configuration |  | 1 | DLBWP.0.1 ULBWP.0.1 | N/A |
| Active DL BWP configuration |  | 1 | DLBWP.1.1 | N/A |
| Active UL BWP configuration |  | 1 | ULBWP.1.1 | N/A |
| PRS configuration |  | 1 | PRS.1.1 FR2 | PRS.1.1 FR2 |
| PRS muting info |  | 1 | ‘10’ | ‘01’ |
| SRS configuration |  | 1 | POS-SRS.3 | N/A |
|  Note 2 | dBm/SCS | 1 | -89 |
|  Note 2 | dBm/15 kHz | 1 | -98 |
| PRS  | dB | 1 | -Infinity | -2.41 | -Infinity | -12.12 |
| PRS  | dB | 1 | -Infinity | -2 | -Infinity | -10 |
| PRP Note 3 | dBm/SCS kHz | 1 | -Infinity | -91 | -Infinity | -99 |
| Io | dBm/190.08 MHz | 1 | N/A | -54.62 | N/A | -54.62 |
| Propagation Condition |  | 1 | AWGN |
| Note 1: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  to be fulfilled.Note 3: PRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.Note 4: PRS-RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.Note 5: Equivalent power received by an antenna with 0 dBi gain at the centre of the quiet zoneNote 6: As observed with 0 dBi gain antenna at the centre of the quiet zoneNote 7: Information about types of UE beam is given in B.2.1.3, and does not limit UE implementation or test system implementationNote 8: Calculation of Es/Iot includes the effect of UE internal noise up to the value assumed for the associated Refsens requirement in clause 7.3.2 of TS 38.101-2 [19], and an allowance of 1dB for UE multi-band relaxation factor ΔMBP from TS 38.101-2 [19] Table 6.2.1.3-4. |

A.7.6.X.1.2 Test requirements

The DL RSCP with UE Rx-Tx time difference measurement time fulfils the requirements specified in clause 9.9.8 with Nsample=4 for UE Rx-Tx time difference.

The UE shall perform and report the DL RSCP and UE Rx-Tx time difference measurements for Cell 1 and Cell 2 within the specified DL RSCP with UE Rx-Tx time difference measurement time specified in clause 9.9.8 starting from the beginning of time interval T2.

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

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%. The reported DL RSCP measurement shall be within the DL RSCP reporting range specified in clause 10.1.Z1 and the reported UE Rx-Tx measurement shall be within the UE Rx-Tx reporting range specified in clause 10.1.25.

**--- End of change 3 ---**