**3GPP TSG-RAN WG4 Meeting #98bis-e *R4-2105844***

**Electronic Meeting, April 12 − April 20, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **DraftCR** | **rev** | **2** | **Current version:** | **16.7.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | UE Rx-Tx measurement accuracy |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_pos-Perf |  | ***Date:*** | 2021-04-20 |
|  |  |  |  |  |
| ***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:*** | This CR is based on a big CR endorsed in RAN4#98-e.UE Rx-Tx measurements accuracy requirements are missing |
|  |  |
| ***Summary of change:*** | UE Rx-Tx measurements accuracy requirements are added |
|  |  |
| ***Consequences if not approved:*** | UE Rx-Tx measurements accuracy requirements will not be defined. Measurement accuracy cannot be guaranteed. |
|  |  |
| ***Clauses affected:*** | 10.1.25.1, 10.1.25.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

### 10.1.25 UE Rx-Tx Time Difference Measurements

#### 10.1.25.1 Introduction

The requirements in Clause 10.1.25 shall apply, provided the UE has received *nr-Multi-RTT-RequestLocationInformation* message from LMF via LPP [34] requesting the UE to report one or more UE Rx-Tx time difference measurements defined in TS 38.215 [4].

#### 10.1.25.2 Measurement Accuracy Requirements

Editor’s note: FFS: The UE Rx-Tx time difference measurement accuracy requirements in this clause shall not apply, if NTA\_offset defined in Table 7.1.2-2 changes during the UE Rx-Tx measurement period.

Editor’s note: FFS: The UE Rx-Tx time difference measurement accuracy requirements in this clause shall not apply, if the uplink transmission timing changes during the UE Rx-Tx measurement period due to autonomous adjustment or based on network-configured Timing Advance.

Editor’s note: FFS the requirements for 60kHz SCS for FR2.

Editor’s note: The number of PRS BW ranges for each SCS is FFS

The accuracy requirements in Table 10.1.25.2-1 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.x for a corresponding Band.

Table 10.1.25.2-1: UE Rx-Tx time difference measurement accuracy in FR1

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | Minimum PRS bandwidth | PRS SCS | PRS resource repetition Note 3 |  | IoNote 4 range |
| NR operating band groupsNote 2 | MinimumIoNote 1 | MaximumIo |
| TcNote 5 | dB | RB | kHz |  |  | dBm / SCSPRS | dBm/BW |
| SCSPRS=15 kHz | SCSPRS=30 kHz | SCSPRS=60 kHz |
| TBD | -3 | ≥[24] | 15 | ≥[4] | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥[52] | ≥[1] | TBD | TBD | TBD | TBD | TBD |
| TBD | >[104] | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥[48] | 30,60 | ≥[4] | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥132 | ≥[1] | TBD | TBD | TBD | TBD | TBD |
| TBD | -13 | ≥[24] | 15 | ≥[1] | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥[52] | TBD | TBD | TBD | TBD | TBD |
| TBD | >[104] | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥[48] | 30,60 | TBD | TBD | TBD | TBD | TBD |
| TBD | ≥132 | TBD | TBD | TBD | TBD | TBD |
|  | 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: Tc is the basic timing unit defined in TS 38.211 [6]. |

The accuracy requirements in Table 10.1.25.2-2 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.x for a corresponding Band.

Table 10.1.25.2-2: UE Rx-Tx time difference measurement accuracy in FR2

|  |  |
| --- | --- |
| Accuracy | Conditions |
| PRS Ês/Iot | Minimum PRS bandwidth | PRS SCS | PRS resource repetitionNote 3 | IoNote 4 range |
| NR operating band groupsNote 2 | MinimumIoNote 1 | MaximumIo |
| TcNote 5 | dB | RB | kHz |  |  | dBm / SCSPRS | dBm/BWChannel |
| SCSPRS = 60 kHz | SCSPRS = 120 kHz |
| TBD | -3 | ≥[24] | 60,120 | ≥[4] | TBD | TBD | TBD | TBD |
| TBD | ≥[64] | ≥[1] | TBD | TBD | TBD | TBD |
| TBD | -13 | ≥[24] | 60,120 | ≥[4] | TBD | TBD | TBD | TBD |
| TBD | ≥[64] | ≥[1] | TBD | TBD | TBD | TBD |
| 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: Tc is the basic timing unit defined in TS 38.211 [6]. |