**3GPP TSG-RAN4 Meeting #102-e *R4-220xxxx***

**Electronic Meeting, 21st February – 3rd March, 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  |
| *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:***  | draftCR on requirements for UE Rx-Tx measurement for propagation delay compensation  |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Huawei |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_IIOT\_URLLC\_enh-Core |  | ***Date:*** | 2022-02-14 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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)* |
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| ***Reason for change:*** | UE Rx-Tx measurement based on TRS or PRS within te serving cell is introduced for propagation delay compensation. |
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| ***Summary of change:*** | Define measurement requirements for UE Rx-Tx measurement for propagation delay compensation. |
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| ***Consequences if not approved:*** | Performance for UE Rx-Tx measurement for propagation delay compensation cannot be guaranteed~~.~~  |
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| ***Clauses affected:*** | 9.12 (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

<Start of Change 1>

## 9.12 Measurement for Propagation Delay Compensation

### 9.12.1 Introduction

The requirements in this clause are applicable for UE capable of RTT based propagation delay compensation based on TRS and SRS, PRS and SRS, indicated by [TBD].

### 9.12.2 Requirements Applicability

The requirements in clause 9.12 apply for [periodic/semi-persistent/aperiodic] and triggered UE Rx-Tx time difference measurements, provided:

- If UE Rx-Tx time difference measurement is based on PRS, the related side conditions given in clause [TBD] are met for a corresponding band.

- If UE Rx-Tx time difference measurement is based on TRS, the related side conditions given in clause [TBD] are met for a corresponding band.

- SRS is configured on at least one of the PCell.

### 9.12.3 Measurement Capability

If UE Rx-Tx time difference measurement is based on PRS, the capability is as indicated by the UE in [TBD].

If UE Rx-Tx time difference measurement is based on TRS, the capability is as indicated by the UE in [TBD].

### 9.12.4 Measurement period requirements

#### 9.12.4.1 PRS Measurement Period

The UE shall be able to measure UE Rx-Tx time difference on PCell after receiving [TBD, command from network that triggers the UE Rx-Tx measurement] within TUERx-Tx\_PRS, where

where

 [CSSF is the carrier-specific scaling factor for NR PRS-based measurement in the positioning as defined in clause 9.1.5.2,]

 is the time duration of available PRS resources to be measured during , and is calculated in the same way as PRS duration K defined in clause 5.1.6.5 of TS 38.214 [26].

 is the maximum number of DL PRS resources configured in a slot,

 is UE capability combination per band where N is a duration of DL PRS symbols in ms corresponding to *durationOfPRS-ProcessingSysmbols* in TS 37.355 [34] processed every T ms corresponding to *durationOfPRS-ProcessingSymbolsInEveryTms* in TS 37.355 [34] for a given maximum bandwidth supported by UE corresponding to *supportedBandwidthPRS* in clause 4.2.7.2 of TS 37.355 [34],

 is UE capability for number of DL PRS resources that it can process in a slot corresponding to *maxNumOfDL-PRS-ResProcessedPerSlot* as specified in clause 6.4.3 of TS 37.355 [34],

 is the number of UE Rx-Tx time difference measurement samples and = 4,

 is the measurement duration for the last UE Rx-Tx time difference measurement, including the sampling time and processing time, = + ,

 is periodicity of UE Rx-Tx time difference measurement:

where

 corresponds to *durationOfPRS-ProcessingSymbolsInEveryTms* in TS 37.355 [34],

 is the PRS resource periodicity specific for PDC RTT UE Rx-Tx time difference measurement.

UE is only required to perform UE Rx-Tx time difference on PRS within the active DL BWP.

When UE is configured to perform UE Rx-Tx time difference measurement based on PRS, the requirements apply provided that the SCS of the PRS is same as that of the active BWP on PCell.

#### 9.12.4.2 TRS Measurement Period

The UE shall be able to measure UE Rx-Tx time difference on PCell after receving [TBD, command from network that triggers the UE Rx-Tx measurement] within TUERx-Tx\_TRS, where

Where

 is the number of UE Rx-Tx time difference measurement samples and is [1 or 4],

 is the TRS resource periodicity specific for PDC RTT UE Rx-Tx time difference measurement.

UE is only required to perform UE Rx-Tx time difference on TRS within the active DL BWP.

When UE is configured to perform UE Rx-Tx time difference measurement based on TRS, the requirements apply provided that the SCS of the TRS is same as that of the active BWP on PCell.

<End of Change 1>