**3GPP TSG-RAN4 Meeting #98-bis-e *R4-21XXXX***

**Electronic meeting, Apr. 12 – Apr. 20, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **draft** | **rev** | **1** | **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:*** | CR on RSTD measurement requirements | | | | | | | | | |
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| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_pos-Perf | | | | |  | ***Date:*** | | | 2021-03-30 |
|  |  | | | |  | |  | | |  |
| ***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 can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. Some parameters (LPRS, multiple periodicity, multiple layers) for RSTD measurement are not defined completely. 2. The terminology is not aligned in the specification. | | | | | | | | |
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| ***Summary of change:*** | | 1. Introduce the RSTD measurement requirement for multiple layers and multiple PRS periodicities in 38.133. 2. Introduce definition of LPRS 3. Align the terminology in specification. 4. Some wording corrections. | | | | | | | | |
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| ***Consequences if not approved:*** | | RSTD measurement requirement is incomplete. | | | | | | | | |
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| ***Clauses affected:*** | | 9.9.2.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Revision of R4-2104743 | | | | | | | | |

<Start of Change 1>

#### 9.9.2.5 Measurements Period Requirements

When physical layer receives last of *NR-TDOA-ProvideAssistanceData* message and *NR-TDOA-RequestLocationInformation* message from LMF via LPP [34]*,* the UE shall be able to measure multiple (up to the UE capability specified in Clause 9.9.2.3) DL RSTD measurements, defined in TS 38.215 [4], within the measurement period during defined further in this clause.

Where ,

is the index of positioning frequency layer,

is total number of positioning frequency layers,

is the periodicity of the PRS RSTD measurement in positioning frequency layer i

is the measurement period for PRS RSTD measurement in positioning frequency layer *i* as specified below:

,

where:

is the UE Rx beam sweeping factor. In FR1, = 1; and in FR2 = 8.

is the carrier-specific scaling factor for NR PRS-based based positioning measurements in positioning frequency layer *i* as defined in clause 9.1.5.2 as CSSFwithin\_gap,i.

is the maximum number of DL PRS resources in positioning frequency layer *i* configured in a slot.

is FFS.

is the number of PRS RSTD samples and = [4]. is the measurement duration for the last PRS RSTD sample, including the sampling time and processing time, = + ,

is the periodicity of the PRS RSTD measurement in positioning frequency layer i defined as:

*=*

Where,

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

*,* the least common multiple between and .

is the periodicity of DL PRS resource on positioning frequency layer *i*.

is the maximum number of DL PRS resources in positioning frequency layer *i* 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 TS 37.355 [34].

is UE capability for number of DL PRS resources that it can process in a slot as indicated by *maxNumOfDL-PRS-ResProcessedPerSlot* specified in TS 37.355 [34].

If positioning frequency layer *i* has more than one DL PRS resource set with different PRS periodicities, the least common multiple of PRS periodicities among all PRS resources in the positioning frequency layer is used to derive the measurement period of that positioning frequency layer.

The time *s*tarts from the first MG instance aligned with a DL PRS resource(s) of positioning frequency layer *i* closest in time after both the *NR-TDOA-ProvideAssistanceData* message and *NR-TDOA-RequestLocationInformation* message are delivered from LMF to the physical layer of UE via LPP [34].

Note: No per-positioning frequency layer requirement is applied in scenarios when multiple positioning frequency layers are configured.

*Editor’s note: FFS: RSTD measurement period when PRS-RSRP is configured for DL-TDOA*

If handover occurs while RSTD measurements are being performed, then the UE shall continue and complete the on-going RSTD measurements. The UE shall also meet the RSTD measurement requirements in this clause and measurement accuracy requirements in clause 10.1.23. However, in this case the RSTD measurement period shall be as follows:

Where,

- is the number of times handover occurs during ;

- is the largest among all positioning frequency layers;

- is the time during which the RSTD measurement may not be possible due to handover; it can be up to Tinterrupt as defined in clause 6.1.

<End of Change 1>