3GPP TSG-RAN WG2 #114-e R2-21xxxxx

Online Meeting, 19th – 27th May 2021

Agenda Item: 6.3.3

Source: Ericsson

Title: Summary for LPP Corrections for Positioning

Document for: Discussion, Decision

# Introduction

The below papers have been submitted in the LPP AI 6.3.3 which requires to be summarized (i.e excluding IPA papers).

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| --- |
| R2-2104842 37.355 Draft CR on timestamp reference in NR positioning measurement report vivo draftCR Rel-16 37.355 16.4.0 NR\_pos-Core  R2-2105054 Correction to PRS-only TP Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0305 - F NR\_pos-Core  R2-2105056 Correction to NR-ARFCN of the TRP Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0306 - F NR\_pos-Core  R2-2105962 Clarification on UE Signaling and measurements of DL-PRS for multiple Positioning Frequency Layers Ericsson CR Rel-16 37.355 16.4.0 0307 - F NR\_pos-Core  R2-2105963 Correction of Expected RSTD to reflect Optional Presence for Broadcast Ericsson, Fraunhofer IIS, Fraunhofer HHI CR Rel-16 37.355 16.4.0 0308 - F NR\_pos-Core |

# Discussion

## R2-2104842 Clarify that the time Stamp associated in the field nr-TimeStamp is with respect to reference cell

The UE reports the parameters associated with the IE NR-TimeStamp (shown below) as part of measurement reporting for NR positioning methods (DL-TDOA, DL-AoD, Multi-RTT).

#### *– NR-TimeStamp*

The IE *NR-TimeStamp* defines the UE measurement associated time stamp.

-- ASN1START

NR-TimeStamp-r16 ::= SEQUENCE {

dl-PRS-ID-r16 INTEGER (0..255),

nr-PhysCellID-r16 NR-PhysCellID-r16 OPTIONAL, -- Need ON

nr-CellGlobalID-r16 NCGI-r15 OPTIONAL, -- Need ON

nr-ARFCN-r16 ARFCN-ValueNR-r15 OPTIONAL, -- Need ON

nr-SFN-r16 INTEGER (0..1023),

nr-Slot-r16 CHOICE {

scs15-r16 INTEGER (0..9),

scs30-r16 INTEGER (0..19),

scs60-r16 INTEGER (0..39),

scs120-r16 INTEGER (0..79)

},

...

}

-- ASN1STOP

| *NR-TimeStamp* field descriptions |
| --- |
| ***dl-PRS-ID***  This field specifies the DL-PRS ID of the TRP for which the *nr-SFN* is applicable. |
| ***nr-ARFCN***  This field specifies the ARFCN of the TRP associated with the *dl-PRS-ID*. |
| ***nr-SFN***  This field specifies the NR system frame number for the time stamp. |
| ***nr-Slot***  This field specifies the NR slot number within the NR system frame number indicated by *nr-SFN* for the time stamp. |

However, in the field description ***nr-TimeStamp*** as below; it is unclear as what are the above field associated to. Is it associated with the dl-PRS-ReferenceInfo or with respect to the measured DL PRS ID; neighbor TRP etc?

***nr-TimeStamp***

This field specifies the time instance at which the TOA and DL PRS-RSRP (if included) measurement is performed. Note, the TOA measurement refers to the TOA of this neighbour TRP or the reference TRP, as applicable, used to determine the *nr-RSTD* or *nr-RSTD-ResultDiff*

The CR clarifies that the time stamp should be associated with reference DL PRS ID.

***nr-TimeStamp***

This field specifies the time instance at which the TOA and DL PRS-RSRP (if included) measurement is performed. Note, the TOA measurement refers to the TOA of this neighbour TRP or the reference TRP, as applicable, used to determine the *nr-RSTD* or *nr-RSTD-ResultDiff* including dl-PRS-ID,nr-ARFCN,nr-SFN and nr-Slot.These values correspond to the reference which is provided by *nr-DL-PRS-ReferenceInfo*.

1. RAN2 to agree to convert draft CR R2-2104842 to normal CR and clarify that the timestamp in measurement reporting is associated with *nr-DL-PRS-ReferenceInfo*.

## R2-2105054 Correction to PRS-only TP

The CR aims to say that on absence of the fields nr-PhysCellID and nr-CellGlobalID in the AD the UE may assume that the PRS is not associated with a cell, i.e. PRS-only TP.

Further, UE shall report the Cell ID, cell Global ID, ARFCN in the measurement report when the UE has been provided with one.

Rapporteur’s comment: In stage 2 TS 38.305 and NRPPa already says PRS-Only TP can be used. The Optional field in AD allows the NW to include/omit cell ID, gloabal ID etc. RAN2 need to discuss if such clarification is required in the stage 3 LPP specification to explictly indicate that a TP is PRS only-TP.

1. RAN2 to discuss CR R2-2105054 and decide if PRS-only TP applicability explicitly needs to be clarified in LPP specification.

## R2-2105056 Correction to NR-ARFCN of the TRP

The correction aims to simplify the description of NR-ARFN and adds a reference for this as below.

| ***nr-ARFCN***  This field specifies the RF channel frequencyof the TRP in TS 38.104 [xx]. |
| --- |

Rapporteur’s comment: The abbreviation of ARFCN already is included which says:

ARFCN Absolute Radio Frequency Channel Number

Thus, the field description simplification may not be needed.

1. RAN2 to discuss if update of field description of nr-ARFCN and corresponding reference is needed or not.

## R2-2105962 Clarification on UE Signaling and measurements of DL-PRS for multiple Positioning Frequency Layers

The CR adds below clarification that the signaling of measurement gap request is independent of how UE capability of performing the measurements. The CR cites that this was previously discussed in previous meetings/e-mail discussion and based upon the input received from those discussion the CR is provided.

The change is provided below.

The *NR-DL-PRS-ProcessingCapability* is defined for a single positioning frequency layer (i.e., a target device supporting multiple positioning frequency layers is expected to process one frequency layer at a time). However, UE may signal measurement gap request for multiple positioning frequency layers at once (see TS 38.331 [35]).

1. RAN2 to discuss whether clarification on “UE to send multiple PFL at the same time is not limited by UE capability to perform measurement of one PFL at a time” is needed or not.

## R2-2105963 Correction of Expected RSTD to reflect Optional Presence for Broadcast

The CR adds conditional presence for the fields expectedRSTD and expecetdRSTD-Uncertainty. The CR says that for broadcast the parameteres shall not be mandatory.

The changes provided are though NBC as it adds one bit OPTIONAL field.

1. RAN2 to discuss whether expectedRSTD and expectedRSTD-Uncertainty is OPTIONAL for broadcast and NBC change is to be done or not.

# Conclusion

Based on the discussion in section 2 we propose the following:

Proposal 1 RAN2 to agree to convert draft CR R2-2104842 to normal CR and clarify that the timestamp in measurement reporting is associated with *nr-DL-PRS-ReferenceInfo*.

Proposal 2 RAN2 to discuss CR R2-2105054 and decide if PRS-only TP applicability explicitly needs to be clarified in LPP specification.

Proposal 3 RAN2 to discuss if update of field description of nr-ARFCN and corresponding reference is needed or not.

Proposal 4 RAN2 to discuss whether clarification on “UE to send multiple PFL at the same time is not limited by UE capability to perform measurement of one PFL at a time” is needed or not.

Proposal 5 RAN2 to discuss whether expectedRSTD and expectedRSTD-Uncertainty is OPTIONAL for broadcast and NBC change is to be done or not.

# References

[1] AI 6.3.3