**3GPP TSG RAN WG1 #107-e R1-21nnnnn**

**e-Meeting, November 11th – 19th, 2021**

**Source: Moderator (CATT)**

**Title: Summary on email discussion [107-e-NR-Pos-05] for the UE report of parameter NR-TimeStamp**

**Agenda item: 7.2.8**

**Document for:** **Discussion and Decision**

Introduction

This contribution summarizes the discussions and outcomes of email discussion [107-e-NR-Pos-05] triggered by the following Chair’s decision:

[107-e-NR-Pos-05] Email discussion/approval on the UE report of parameter *NR-TimeStamp* (Aspect #5) until November 17 – Xiaotao (CATT)

Discussion

UE report of parameter NR-TimeStamp

**Background**

In the draft CR for TS 38.214(R1-2111220) [1], it is proposed that there is misalignment between TS 37.355 [2] and TS 38.214 [3] on whether the parameters ‘*dl-PRS-ID-r16*’ and ‘*NR-TimeStamp*’ have to be reported in the UE measurement report.

As shown in the following descriptions in TS 37.355 (section 6.4.3), the TRP ID, i.e. ‘*dl-PRS-ID-r16*’, has to be reported in the *NR-TimeStamp-r16*.

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| --- |
| -- 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 |

In addition, according to the descriptions in TS 37.355, for DL-TDOA, DL-AoD and Multi-RTT positioning, the parameter ‘*NR-TimeStamp-r16*’ also has to be reported. For example, in section 6.5.11.4 of TS37.355, the measurements for DL-AoD are shown as follows:

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| -- ASN1START  NR-DL-AoD-SignalMeasurementInformation-r16 ::= SEQUENCE {  nr-DL-AoD-MeasList-r16 NR-DL-AoD-MeasList-r16,  ...  }  NR-DL-AoD-MeasList-r16 ::= SEQUENCE (SIZE(1..nrMaxTRPs-r16)) OF NR-DL-AoD-MeasElement-r16  NR-DL-AoD-MeasElement-r16 ::= SEQUENCE {  dl-PRS-ID-r16 INTEGER (0..255),  nr-PhysCellID-r16 NR-PhysCellID-r16 OPTIONAL,  nr-CellGlobalID-r16 NCGI-r15 OPTIONAL,  nr-ARFCN-r16 ARFCN-ValueNR-r15 OPTIONAL,  nr-DL-PRS-ResourceID-r16 NR-DL-PRS-ResourceID-r16 OPTIONAL,  nr-DL-PRS-ResourceSetID-r16 NR-DL-PRS-ResourceSetID-r16 OPTIONAL,  nr-TimeStamp-r16 NR-TimeStamp-r16,  nr-DL-PRS-RSRP-Result-r16 INTEGER (0..126),  nr-DL-PRS-RxBeamIndex-r16 INTEGER (1..8) OPTIONAL,  nr-DL-AoD-AdditionalMeasurements-r16  NR-DL-AoD-AdditionalMeasurements-r16 OPTIONAL,  ...  }  NR-DL-AoD-AdditionalMeasurements-r16 ::= SEQUENCE (SIZE (1..7)) OF  NR-DL-AoD-AdditionalMeasurementElement-r16  NR-DL-AoD-AdditionalMeasurementElement-r16 ::= SEQUENCE {  nr-DL-PRS-ResourceID-r16 NR-DL-PRS-ResourceID-r16 OPTIONAL,  nr-DL-PRS-ResourceSetID-r16 NR-DL-PRS-ResourceSetID-r16 OPTIONAL,  nr-TimeStamp-r16 NR-TimeStamp-r16,  nr-DL-PRS-RSRP-ResultDiff-r16 INTEGER (0..30),  nr-DL-PRS-RxBeamIndex-r16 INTEGER (1..8) OPTIONAL,  ...  }  -- ASN1STOP |

However, as described in TS 38.214 in the following paragraph in section 5.1.6.5., either ‘*dl-PRS-ID-r16*’ or ‘*NR-TimeStamp-r16*’ seems to be an optional parameter in the measurement report.

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| 5.1.6.5 PRS reception procedure [TS 38.214]  < Uncorrelated parts are omitted >  For the DL RSTD, DL PRS-RSRP, and UE Rx-Tx time difference measurements the UE can report an associated higher layer parameter *nr-TimeStamp*. The *nr-TimeStamp* can include the *dl-PRS-ID*, the SFN and the slot number for a subcarrier spacing. These values correspond to the reference which is provided by *nr-DL-PRS-ReferenceInfo*.  < Uncorrelated parts are omitted > |

Therefore, there is misalignment between TS 37.355 and TS 38.214 on whether the parameters ‘*dl-PRS-ID-r16*’ and ‘*NR-TimeStamp-r16*’ have to be reported in the measurement report.

***Issue 1: there is misalignment between TS 38.214 and TS 37.355.***

* ***In TS 37.355, both ‘dl-PRS-ID-r16’ and ‘NR-TimeStamp-r16’ are mandated to be reported.***
* ***In TS 38.214, either ‘dl-PRS-ID-r16’ or ‘NR-TimeStamp-r16’ is optional parameter in the measurement report.***

**Proposed change**

Considering the usage of these parameters, we propose to remove the words ‘can’ in TS 38.214 in order to be aligned with TS 37.355. In this way, ‘*NR-TimeStamp-r16*’ and its associated parameter ‘*dl-PRS-ID-r16*’ have to be reported.

The following text proposal is prepared to address raised above issue:

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| 5.1.6.5 PRS reception procedure < Unchanged parts are omitted > For the DL RSTD, DL PRS-RSRP, and UE Rx-Tx time difference measurements the UE reports an associated higher layer parameter *nr-TimeStamp*. The *nr-TimeStamp* includes the *dl-PRS-ID*, the SFN and the slot number for a subcarrier spacing. These values correspond to the reference which is provided by *nr-DL-PRS-ReferenceInfo*. < Unchanged parts are omitted > |

Discussion Round #1

Companies are invited to provide views on the following question for the text proposal above.

### Question 1

* Which option do you prefer to handle the text proposal proposed above?
  + Alt.1 Agree to the draft CR.
  + Alt.2 Endorse the draft CR and include the change in the editor alignment CR.
  + Alt.3 The change is not needed.

|  |  |  |
| --- | --- | --- |
| Company Name | Alt | Comments |
| Nokia/NSB | Alt 3 | This change is non-essential and the current spec is clear in our view. If you read 214 it says the UE can report this IE. Then if a reader looks at LPP it is clear that the UE has to report this IE as part of the measurement report. We don’t see how the spec could be misinterpreted. |
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Conclusion

TBD

Reference

1. R1-2111220, “Draft CR on the parameter NR-TimeStamp for Rel-16 Positioning”, CATT.
2. TS 37.355, “LTE Positioning Protocol (LPP) (Release 16)”, V16.6.0 (2021-09).
3. TS 38.214, “NR; Physical layer procedures for data (Release 16)”, V16.7.0 (2021-09).