3GPP TSG-RAN WG2 Meeting #109-e R2-2001947

Online, 24 February – 6 March 2020

**Agenda item: 6.8.2.3**

**Source: Huawei, HiSilicon**

**Title: [Offline-622][POS] Summary on uplink capability for positioning**

**Document for: Discussion and Decision**

# 1 Introduction

This document provide the collection of summary for the following offline discussion.

* [AT109e][622][POS] Uplink capability for positioning (Huawei)

Intended outcome: Summary of agreements on whether/what UL capability is needed at LMF. Summary in R2-2001947.

Deadline: Wednesday 2020-03-04 1300 CET

# 2 Discussion

## 2.1 Whether UL capability is needed at LMF

In [1], companies provided their views on capabilities to be transferred in LPP for the purpose of positioning. Based on the input, we suggest to discuss whether UL capability is needed at LMF for different positioning method that involves UL.

### Discussion#1: Whether UL capability is needed at LMF for multi-RTT positioning

Companies are encouraged to provide their view on the options or provide other options

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| --- | --- |
| Company | Comments |
| Ericsson | UL SRS related detailed UE capability such as number of positioning frequency layers, resourceSets etc should be provided to gNB. However generic capability such as multi-RTT measurement support can be provided to LMF. |
| Qualcomm | SRS-for-positioning capabilities are needed at the LMF in order to provide appropriate assistance data to the serving gNB in the Positioning Information Exchange procedure. |
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### Discussion#2: Whether UL capability is needed at LMF for UL-only positioning

Companies are encouraged to provide their view on the options or provide other options

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| Company | Comments |
| Ericsson | UL SRS capability is not needed in LMF. Since, gNB configures the resource and depending upon the available resource gNB would always strive to provide the best configurations. This principle should work. It is ok if LMF wants to recommend on how many spatial relations it wants to be configured. This input gNB may take into consideration while configuring SRS. |
| Qualcomm | SRS-for-positioning capabilities are needed at the LMF in order to provide appropriate assistance data to the serving gNB in the Positioning Information Exchange procedure. |
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***Proposal 1:***

## 2.2 Discussion#3: What UL capability is needed at LMF

Companies are encouraged to provide their views for multi-RTT and/or UL-only positioning, if the capability is needed.

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| Company | Comments |
| Ericsson | Positioning measurement related capability whether UE supports multi-RTT UE RxTx, RTOA measurements or not. |
| Qualcomm | It may depend on the final RAN1 capabilities/feature list, but the following general capabilities seem needed at the LMF:  1. Max # of SRS Resource Sets for positioning  2. Max # of aperiodic SRS Resources for positioning  3. Max # of semi-persistent SRS Resources for positioning  4. Max # of periodic SRS Resources for positioning  5. Support of SSB for neighbour cell DL pathloss estimation and SRS for positioning power control  6. Support of DL PRS for neighbour cell DL pathloss estimation and SRS for positioning power control  7. Spatial Relation of SRS Resources for positioning with DL PRS / SSB  8. Spatial Relation of SRS Resources for positioning with SRS resources for positioning  9. Number of additional pathloss estimates across all SRS resource sets for positioning that the UE is expected to simultaneously maintain |
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***Proposal 2:***

# 3 Conclusions

TBD

# 4 References

1. R2-2000475 UE capability on positioning ([108#85][NR Pos]) Intel Corporation discussion Rel-16 37.355 NR\_pos-Core