

Views on NR Positioning for Rel-18

3GPP TSG RAN Rel-18 workshop
June 28-July 2, 2021

Agenda Item: 4.3

RWS-210301

Source: Sony

Motivation

- NR ePos in Rel-17 addresses IIoT use-cases with the following requirements:
 - <0.2 m and <1 m for Horizontal and vertical accuracy
 - <100 ms end-to-end latency for position estimation
- Further UE localization is required in certain use-cases/scenarios with specific requirements (e.g., accuracy, latency, power consumption, integrity).
- There is a need to continue NR positioning work item [NR FePOS] to address
 - Features/enhancements which have not been addressed in Rel-17 WI.
 - SA1 input on Ranging Based Service.
- Positioning aspects that are required in some new areas:
 - Positioning for RedCap UE.
 - V2X Positioning
 - NTN Positioning

Further enhanced NR Positioning (NR FePOS)

Background

- Techniques/enhancements listed in study item report TR 38.857 have not completely been addressed in Rel-17.
- On supporting Ranging based service requirements as described in TS 22.261

Proposals:

- Further enhancements on accuracy and latency reduction.
- Enhancement to reduce UE power consumption, including supporting low power high accuracy.
- Enhancement to support network efficiency
- Integrity aspects for RAT dependent positioning methods.
- Study the requirements and solutions (including positioning techniques) to support Ranging based service requirements

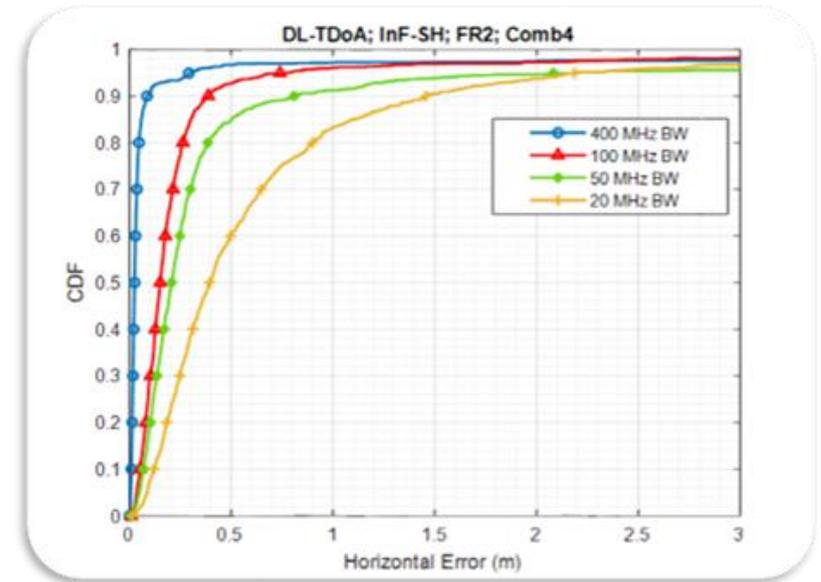
Positioning for RedCap UE

Background

- RedCap device is introduced in Rel-17 with certain limitation/capability. For example:
- Max BW for FR1 and FR2 RedCap UE are 20 MHz and 100 MHz, respectively.
- One primary use-cases for RedCap device is for IIoT where positioning is often required.

Proposals

- Study the positioning requirements for RedCap device in FR1 and FR2.
- To support RedCap device with high accuracy positioning, low latency, and low power consumption.



Impact of DL PRS BW to Positioning accuracy

V2X Positioning

Background

- 5GAA has identified the advanced C-V2X use cases and the corresponding positioning requirements.
- On-going Rel-17 SI: Study on scenarios and requirements of in-coverage, partial coverage, and out-of-coverage NR positioning use cases (TR 38.845)

Proposals:

- Specify technical solutions (particularly RAT dependent) to support relative and absolute positioning for V2X positioning according to the use-cases/requirements in TR 38.845.

NTN Positioning

Background

- NR NTN is currently assuming the device is equipped with GNSS receiver.
- The usage of separate GNSS receiver increases UE power consumption.

Proposals:

- Study to support positioning without GNSS for legacy NR NTN deployment scenarios in (e.g., LEO, MEO, GEO), it includes
 - Identify scenarios and deployments for multi-Satellite NTN positioning evaluation
 - Study on RAT dependent positioning methods for NTN.
- Continue with the normative work based on the study outcome.

Summary

- Various potential positioning topics related SI/WI suitable for Rel-18 have been identified. However, it is expected there is a limited TU availability for positioning.
- Some of the topics can be in a non-positioning WI (e.g., V2X positioning in V2X WI).
- Prioritize:
 - NR FePOS Work Item in Rel-18, particularly to further enhance positioning accuracy, reducing latency, device efficiency, and integrity.
 - Support of V2X positioning in Rel-18.

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