3GPP TSG RAN#102

RP-233134

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Consideration on Rel-19 Positioning

Xiaomi

Motivation

- Sidelink Positioning
  - The broadcast/groupcast support for SLPP was downscoped from Rel-18 RAN positioning WI due to lack of time. However, SA2/SA3 specification(23.586/23.273/33.533) has already specified the support of groupcast and broadcast. RAN work to align RAN specification with SA specification is needed.
  - Currently, only UE roles are indicated in discovery message, which is not sufficient for UE to filter out anchor/server UEs that are not suitable for the SL positioning, resulting in unnecessary SL connection establishment and SLPP capability exchange. Unsuitable anchor/server UE may be due to, e.g.:
    - supported Positioning methods are different from target UE;
    - No LOS path exist, as a result, cannot meet the location accuracy;
    - The moving speed of the UE is too high;
    - The accuracy of the location of the UE cannot meet the location accuracy.
  - During the SLPP session, some of the anchor UEs or the server UE may not be able to serve the target UE due to mobility.

Motivation

- Carrier Phase Positioning
  - The Rel-18 CPP supports to report carrier phase measurements from PRS/SRS of only one frequency, but UE/TRP to report the carrier phase measurements of more than one frequency can improve the positioning accuracy.
- A-GNSS
  - The second generation of NavIC satellite services are introduced in India with the support of L1 navigation band. Lpp assistant data should be extended to support NavIC L1 band [1];
  - The ICD of BDS B2b signal was published in August 2020 [2], but current NR positioning don’t support B2b signal in A-BDS.

Objective

- Sidelink Positioning[RAN2]
  - Sessionless Broadcast and session-based groupcast support for SLPP, taking into account the support of multiple target UEs;
  - Discovery enhancement to avoid unnecessary SL connection establishment with unproper anchor UEs for e.g. SL-TDOA;
  - Support of anchor/server UE reselection due to mobility;

Objective

- Carrier Phase Positioning
  - Specify the signalling and procedure for supporting UE/TRP to report the carrier phase measurements of more than one frequency [RAN1,RAN2,RAN3].
- A-GNSS
  - Specify signalling support of NavIC L1 band and BDS B2b signal by introducing necessary assistance data information based on the existing A-GNSS framework, including enhancements for support of broadcast assistance data [RAN2, RAN3].
  - Specify UE performance requirements for support of NavIC L1 band and BSD B2b signal for NR[RAN4].

Way Forward

- Depends on whether there will be TU in RAN1, two possible options can be considered for Rel-19 Positioning:
  - Option 1[RAN1 is involved]: Uu CPP+ SL positioning + A-GNSS
  - Option 2[RAN1 is not involved]: SL positioning + A-GNSS

Reference

[1] RP-231976 A-GNSS support for NavIC L1 band SPS in Release19 Reliance Jio, ISRO, CEWiT

[2] *http://www.beidou.gov.cn/xt/gfxz/202008/P020230516558683155109.pdf*

Thanks