3GPP TSG RAN#93
Online, 2021-09-13 - 2021-09-17

RP-212201

Motivation for

Rel-18 UAV

Ericsson

Background

- Rel-15 LTE WID on Drones added the following functionality:
  - Aerial UE-specific reporting [RAN2]
    - H1 and H2 which triggers when height is above/below configured thresholds.
    - Measurement reports are triggered only if fulfilled by a configured number of cells
  - Subscription-based identification [RAN3/RAN2]
  - UL power control enhancements
  - Flight path plan reporting

- An NR WID for Rel-17 was discussed but was postponed due to lack of time in Rel-17.

- The possibility of having a SI/WI on UAV for Rel-18 (and its scope) was discussed extensively in the Pre-RAN#93 email discussion, where companies showed strong support for a WI.

Motivation for the WI

- Serving drones via cellular networks is proving to be a significant opportunity for mobile operators.
- LTE has already been enhanced with some features for UAVs. But so far NR has not been enhanced with such features.
- As drones are expected to grow in number within the coming years at the same time as NR deployments will grow, it is essential to also evolve 5G NR to support aerial vehicles.
- FAA requirements demand that UAVs should support broadcasting a UE ID for the sake of ground identification.

Proposal

- Measurement reports (RAN2)
  - UE-triggered measurement report based on configured height thresholds
  - Reporting of height, location and speed in measurement report
  - Flight path reporting
  - Measurement reporting based on a configured number of cells (i.e. larger than one) fulfilling the triggering criteria simultaneously

- Signaling to support subscription-based aerial-UE identification (RAN3/RAN2/SA2 interaction)

Note: Work done in Rel-15 UAV is a starting point for the above objectives, which are intended to migrate LTE UAV functionality to NR.

- Support for broadcast/groupcast of drone identification over PC5 dependent on SA2 outcome (RAN2)
  - [Applicable to both LTE and NR]

- Study and specify if needed
  - [Additional RRM enhancements to control volume of reports (RAN2)]
  - [Mobility enhancements, e.g., for CHO]
  - [Beam management enhancements]