

Views on Rel-18 Uncrewed Aerial Vehicle

3GPP TSG-RAN #94e

Electronic Meeting, December 06 – 17, 2021

Introduction

- ◆ *Rel-15 is the first 3GPP release for LTE aerial vehicles supporting essential functionality for a working UAV system.*
- ◆ *This contribution provides NEC views on New WID on NR support for UAV.*

New WID on NR Support for UAV

1. Specify the following enhancements on 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

Note: Work done in LTE is a starting point for this objective. NR-specific enhancements can be considered, if needed
2. Specify the signalling to support subscription-based aerial-UE identification [RAN3/SA2 interaction/RAN2]
Note: Work done in LTE is a starting point for this objective.
3. [Specify needed enhancements for broadcast of UAV identification [RAN2, RAN1, SA2 interaction]]
Applicable to both LTE and NR
Note: This description is a placeholder for a more detailed objective to be drafted once SA2 will have concluded their study on the architectural aspects.
4. [Second priority] Study and, if needed, specify additional trigger condition(s) for CHO [RAN2].
5. [Second priority] Study and, if needed, specify the enhancements on beam management, with the following assumptions [RAN1, RAN4, RAN2]:
 - FR1 with directional antenna at UE side
 - gNB uptilt beamforming

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◆ First priority objectives

The first priority in Rel-18 must be to introduce the minimum essential functionality to NR, taking previous LTE work as the baseline.

□ RRM enhancements

- UE-triggered measurement report based on configured height thresholds
- Reporting of height, location and speed in measurement report

□ Mobility enhancement

- Flight path reporting

□ Interference control

- Measurement reporting based on a configured number of cells (i.e. larger than one) fulfilling the triggering criteria simultaneously

□ UE identification

- Subscription-based aerial-UE identification

Proposal 1: Focus on porting essential LTE functionality to NR.

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◆ Objective which should be deprioritized

The following objective would consume a significant number of TUs if included, and we believe other objectives are of higher importance, therefore this objective should be deprioritized.

- Specify needed enhancements for broadcast of UAV identification [RAN2, RAN1, SA2 interaction]
Applicable to both LTE and NR.

Proposal 2: Deprioritize enhancements for broadcast of UAV identification.

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◆ Objective which should not be included

Should be dropped considering work load in RAN2.

- [second priority] Study and, if needed, specify additional trigger condition(s) for CHO [RAN2]

The requirement of early and more frequent measurement reports for CHO may compromise the performance of the interference control.

Proposal 3: Do not consider additional trigger condition(s) for CHO.

◆ Revised WID according to our proposals.

New WID on NR Support for UAV

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~~3. [Specify needed enhancements for broadcast of UAV identification [RAN2, RAN1, SA2 interaction]]~~

~~Applicable to both LTE and NR~~

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~~4. [Second priority] Study and, if needed, specify additional trigger condition(s) for CHO [RAN2].~~

5. [Second priority] Study and, if needed, specify the enhancements on beam management, with the following assumptions [RAN1, RAN4, RAN2]:

- FR1 with directional antenna at UE side
- gNB up tilt beamforming

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