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RP-230271

3GPP TSG RAN#99
Rotterdam, NL, Mar 20-23, 2023
Agenda Item: 9.3.2.6

On objective 3: PC5-based BRID and DAA

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Background

- RAN#94 (Dec. 2021) approved Rel-18 work on NR UAVs. One of the heavily discussed item was using PC5 for broadcast remote ID and detect-and-avoid.
- Since SA2 had not concluded at that time, the objective was listed in the WID (see RP-213600) as a placeholder.
- RAN#98e (Dec. 2022) made updates to the objective#3, however, a checkpoint was left as shown below (see RP-223545) :

3. Study and specify, if needed, enhancements to NR PC5 and LTE PC5 to support UAV identification broadcast [RAN2]. Check at RAN#99 for further elaboration of this objective, based on RAN2 discussions and SA2 development. Note: This objective is not intended to introduce new band(s) with support for the PC5 interface. UAV use of LTE PC5 or NR PC5 is not addressing any operator licensed band.

- RAN2#121 (Feb. 2023) discussed and made some progress on this objective.
- We provide some views on this based on RAN2 and SA2 development.

RAN2 and SA2 progress

- RAN2 received LS from SA2 (see R2-2300080) where SA2 indicates the following

  SA2 has progressed the study on Phase 2 for UAS, UAV and UAM (FS_UAS_Ph2) with TR 23.700-58.

  Regarding Key Issue#3 "Support of Detect and Avoid Mechanism in 3GPP system", SA2 has concluded to progress Solution#5 "U2X for support of Broadcast Remote ID and direct DAA via PC5" defined in clause 6.5 for normative work for both LTE PC5 and NR PC5 (Please see clause 8.3)

- RAN2#121 made the following agreements (session chair notes in R2-2301903)

  Agreements:
  - *PC5-U is used to support BRID for UAV*
  - *Support both in-coverage and out-of-coverage scenarios*
  - *Mode 2 will be supported. FFS whether further mode 1 will be supported.*
  - *FFS whether separate pools are needed*
  - *FFS whether current configurations can support UAV requirements*

Observations and Proposal

Based on RAN2 discussions and SA2 conclusions, following are observed:

- **Observation 1**: SA2 conclusions propose to progress to normative phase PC5-based solutions for the Broadcast Remote ID (BRID) and Detect And Avoid (DAA) in accordance with solution #5 in the SA2 TR 23.700-58.
- **Observation 2:** SA2 conclusions specifically refer to normative work for both LTE PC5 and NR PC5.
- **Observation 3**: SA2 expects RAN to define necessary enhancements as described in solution #5.
- **Observation 4**: The exact definition of the BRID and DAA messages is outside of the scope of 3GPP.
- **Observation 5:** When PC5-U is used, specification effort to support PC5 broadcast-based DAA is similar to that for supporting PC5 broadcast-based remote ID.

Based on the above, following is proposed:

- **Proposal**: Update WID objective #3 to include PC5-based detect and avoid (DAA), for both LTE and NR.

Proposed text changes for WID objective #3 is shown in the next slide.

Proposed updates for Rel-18 WI obj#3 in RP-223545

3. ~~Study and specify, if needed,~~ Specify enhancements to NR PC5 and LTE PC5 to support UAV identification broadcast (BRID) and detect and avoid (DAA) [RAN2]. ~~Check at RAN#99 for further elaboration of this objective, based on RAN2 discussions and SA2 development.~~ Note: This objective is not intended to introduce new band(s) with support for the PC5 interface. UAV use of LTE PC5 or NR PC5 is not addressing any operator licensed band.

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