3GPP TSG CT WG4 Meeting #124 C4-243398

Maastricht, Netherlands, 19 – 23 August 2024

Source: Qualcomm Incorporated

Title: New WID on CT aspects of Vehicle Mounted Relays Phase 2

Document for: Approval

Agenda Item: 5.2

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: CT Aspects of Vehicle Mounted Relays Phase 2

Acronym: VMR\_Ph2

Unique identifier: TBD

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | x |  | x |  |
| No | x |  | x |  | x |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study  |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
| X | Normative – Stage 3 |
|  | Normative – Other\* |

## 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| VMR\_Ph2 | SA2 | 1040031 | Vehicle Mounted Relays Phase 2 |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 930021 | Stage 1 of Vehicle-Mounted Relays | Stage 1 for VMR in Rel-18 |
| 1020082 | Study on additional topological enhancements for NR | RAN aspects of the VMR feature in Rel-19 |

# 3 Justification

In Rel-18, 3GPP conducted a study followed by a work item on VMR (Vehicle-Mounted Relays). For Rel-18, it was agreed to limit the scope of the work to the IAB (Integrated Access and Backhaul) architecture, whereby the IAB-node consist of an IAB-MT and an IAB-DU, with the IAB-DU establishing an F1 interface with a donor CU over a wireless link.

In Rel-19, 3GPP SA WG2 has studied the alternative architecture option to achieve the functionality of vehicle-mounted relay as defined in TS 22.261, for instance the so-called “Velcro” solution whereby the relay node consists of a UE co-located with a full gNB, with the gNB in the relay establishing N2 and N3 interface to an AMF and UPF residing in the 5GC over a PDU session or PDU sessions. It is called MWAB (Mobile gNB with Wireless Access Backhauling) and consists of a UE component (MWAB-UE) and a gNB component (MWAB-gNB) in stage 2.

Additionally, the following other functionalities were also included in the SA2 study which were not included in the Rel-18 work:

- NTN backhauling, to provide coverage e.g. on vessels, aircrafts and in other areas without TN coverage

- a scenario where the backhaul MNO is different from the VMR provider.

SA2 concluded the study for the above-mentioned aspects as captured in TR 23.700-06, and a work item for the normative work was approved at SA#104, SP-240989.

Therefore, there is a need to have a CT work item to develop the stage 3 for the normative requirements developed by SA2.

# 4 Objective

The objective of this work item is to develop the stage 3 for the stage 2 requirements agreed under the VMR\_Ph2 stage 2 work item. The stage 3 work shall be started only after the applicable normative stage 2 requirements are available.

CT1:

* Documentation of the AMF behaviour to support the authorization/deauthorization of MWAB UE.
* Documentation of the AMF behaviour to support of UE accessing to MWAB-gNB in 5G system, including support of the UE’s access control to MWAB by reusing CAG and/or other existing SNPN control mechanisms.

CT4:

* Possible updates to the AMF to support operation of MWAB.
* Possible updates to location services to support accurate UE location estimation when the UE is served by an MWAB-gNB.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 24.501 | Documentation of the AMF behaviour to support the authorization/deauthorization of MWAN UE. | TSG CT#108(June, 2025) | CT1 |
| 23.122 | Documentation of the AMF behaviour for CAG and/or SNPN control mechanism to manage the UE's access to MWAB-gNB. | TSG CT#108(June, 2025) | CT1 |
|  |  |  |  |
| 29.515 | Possible updates to GMLC services to support accurate UE location estimation when the UE is served by an MWAB-gNB | TSG CT#108(June, 2025)  | CT4 |
| 29.518 | Possible updates to AMF services to support operation of MWAB | TSG CT#108(June, 2025) | CT4 |
| 29.571 | Possible new definition of common data types applicable for multiple 5G services to support operation of MWAB | TSG CT#108(June, 2025) | CT4 |
| 29.572 | Possible updates to LMF services to support accurate UE location estimation when the UE is served by an MWAB-gNB | TSG CT#108(June, 2025) | CT4 |

# 6 Work item Rapporteur(s)

Kim, Sunghoon, Qualcomm Incorporated, sunghoon@qti.qualcomm.com

# 7 Work item leadership

CT1

# 8 Aspects that involve other WGs

SA3 for the security aspects.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Qualcomm Incorporated |
| LG Electronics |
| Xiaomi |
| Nokia? |
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