**3GPP TSG-SA WG1 Meeting #92e S1-204149**

**Electronic Meeting, 10 - 19 November 2020** *(revision of S1-20xxxx)*

Title: Use case for multiple working modes of vehicle mounted base station

Agenda Item: 7.14.1

Source: CATT, Qualcomm

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*Abstract: This document proposes a new use case regarding multiple working modes of vehicle mounted base station and related potential requirements to be included into the FS\_VMR TR 22.839.*

---------- Use Case template ----------

## x.1 Multiple working modes of vehicle mounted base station

### x.1.1 Description

In order to fulfil the high demand of extra cellular coverage and capacity in large cities with a dense population, either buses or cars with on board base stations, are expected to act as relay and help provide convenient and efficient data delivery service to the city residents.

Generally speaking, car is privately owned and the base station mounted on it usually supports a private working mode, i.e., it only allows individual access to the car owner’s UEs, e.g., his/her family members, friends, etc.

On the contrary, base station mounted on a bus usually works in a public manner. All the passengers in the bus or in the vicinity can access to the base station on the bus along its predictable itinerary regarding their extra 5G cellular access requirements.



Figure x.x.1-1: Vehicle mounted base station

### x.1.2 Pre-conditions

To enable this use, following pre-conditions should be met:

* Alice wants to join a music festival and share the live show to her friend Bob.
* Alice’s car is installed with an on-board base station.
* The bus that Bob takes is also equipped with on board base station along its itinerary.
* In the area around the spot of the music festival, the base station mounted on the vehicle is allowed to provide 5G coverage to neighbouring UEs outside the vehicles.
* Either the base station on a car or bus is able to connect the NG-RAN and 5G Core network.

### x.1.3 Service Flows

1. Alice drives by her own car to the spot of the music festival with her family. Alice as well as her family’s UEs is connected to the base station on her car, which provides private access only.
2. Alice parks her car in a parking lot near the spot of the music festival. John is a stranger in the nearby. His UE tries to connect to the base station on Alice’s car, but it fails without be granted authentication from Alice.
3. At the same time, Bob takes a bus back home, with a base station mounted on it. Bob’s UE is connected to the base station on the bus, which provides public access to all the passengers on the bus.
4. Alice starts sharing video with Bob the live video during the concert festival.

### x.1.4 Post-conditions

Alice shares the live video of the music festival to Bob via 5G access from the base station on her car.

Bob is happy to watch a live show via 5G access from the base station on bus.

### x.1.5 Existing features partly or fully covering the use case functionality

The mobility management of the vehicle mounted base station shall be taken into account.

Multi-network connectivity and service delivery across operators will be used to assist this use case. The 5G system shall be able to maintain service continuity with minimum service interruption when the serving network is changed to a different serving network operated by a different operator.

### x.1.6 Potential New Requirements needed to support the use case

The 3GPP system shall support the use of vehicle mounted base stations, which provide 5G access to UEs in the vicinity.

The 3GPP system shall support means for the vehicle mounted base station relay to allow access to all UEs, or to only allow access to authorized UEs e.g., vehicle owner’s family members, friends, etc.

Editor’s Note: Further clarity on how limits to authorization to certain UEs as described in this requirement is for further study.