**3GPP TSG SA WG5 Meeting #158 S5-246773**

**Orlando, USA, 18– 22 November, 2024**

**Source: CATT**

**Title: Update background for UE-satellite-UE communication**

**Document for: Approval**

**Agenda Item: 7.5.1**

# 1 Decision

***The group is asked to discuss and agree on the proposal.***

# 2 References

[1] 3GPP TR 28.846: " Study on charging aspects of satellite access Phase 3 ".

# 3 Rationale

This pCR proposes to update background for UE-satellite-UE communication.

# 4 Detailed proposal

The following changes are proposed to be incorporated into the new TR.

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| **1st Modified Section** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.261: "Service requirements for the 5G system; Stage 1".

[3] 3GPP TR 23.700-29: "Study on integration of satellite components in the 5G architecture; Phase 3".

[4] 3GPP TR 22.844: "Study on charging aspects of satellite in the 5G System"

[5] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[6] 3GPP TR 22.822: "Study on using Satellite Access in 5G ".

[7] 3GPP TS 32.251: " Packet Switched (PS) domain charging".

[8] 3GPP TS 32.255: "Telecommunication management; Charging management; 5G data connectivity domain charging; Stage 2".

[9] 3GPP TS 23.502: " Procedures for the 5G System (5GS)".

[x] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[y] 3GPP TS 23.228: " IP Multimedia Subsystem (IMS); Stage 2".

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| **2nd Modified Section** |

## 4.4 UEs- SAT- UEs communications on satellite

As specified in the TS 22.261[2], a 5G system with satellite access shall support UE-Satellite-UE communication regardless of whether the feeder link is available or not. The UE-satellite-UE communication scenario is that UEs can communicate using satellite access without the user plane traffic going to the ground network. The following from Figure 6.28.1-1 of TR 23.700-29[3] shows the high-level network architecture for UE-satellite-UE communication.



Figure 4.4-1: UEs- SAT- UEs communications on satellite in same cell with ISL

Editor's note: SA5 will align with the architecture and procedure for supporting UEs- SAT- UEs communications specified by SA2.

As specified in the TS23.501[x], only IMS voice/video services between two UEs belonging to same PLMN and in non-roaming scenario are considered by UE-satellite-UE communication in this release.

As specified in the TS 23.228[y], to support IMS satellite media plane optimization, the IMS-AGW may be deployed on the satellite(s) that host the gNB and UPF (UL CL/BP and L-PSA) of the 5GC. It is assumed that the satellite(s) can always connect to the ground with IP transport networks. The P-CSCF is responsible for determining whether to activate UE-satellite-UE communication. The following figure shows the reference architecture of IMS satellite media plane optimization.



Figure 4.4-2: Reference architecture of IMS satellite media plane optimization

As specified in the TS 23.228[y], the architecture deployment assumes that ISL(s) can be set-up within the same satellite constellation or across different constellations depending on satellite operator's deployments (SLA). The set of ISL(s) builds up an IP network which is out of 3GPP scope.In addition, the routing between Onboard AGWs across satellite via ISL is assumed to be based on IP routing and the Onboard AGWs in satellite need to have non-conflicting IP address during resource allocation. It is up to the deployment to manage IP routing across ISL links and is out of 3GPP scope.

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| **End of Modified Sections** |