**SA WG2 Meeting #159S2-2311382**

**October 9th – 13th, 2023; Xiamen, CN (revision of S2-23010457)**

**Source: CATT, Thales**

**Title: FS\_5GSAT\_ARCH\_Ph3 TR Scope**

**Document for: Approval**

**Agenda Item: 19.1**

**Work Item / Release: FS\_5GSAT\_ARCH\_Ph3 / Rel-19**

*Abstract of the contribution: This paper proposes the scope of FS\_5GSAT\_ARCH\_Ph3.*

# 1 Discussion

It is proposed to define the TR scope based on the description of WTs just expressed in the SID as:

## “*4 Objective*

*The study aims at investigating further 3GPP core network function enhancements to support satellite with the following architectural assumptions:*

*- eNB/gNB on board.*

*- Inter Satellite Link capability by default supported as a transport link (not in the scope of 3GPP standards to specify).*

 *NOTE 1: SA2 will need to align with the RAN scope and RAN study outcomes. The assumptions enable SA2 to start the work already on topics non-dependent on RAN and complete it once RAN has determined to start a study and before RAN study concludes.*

*WT1: Regenerative payload generic architecture study*

*WT-1.1: Study and identify any impacts on 5GS and EPS for the scenario with gNB/eNB embedded on the satellite.*

*WT2: Store and Forward*

*WT-2.1: Study, and if applicable, define the parameters needed to characterize and support S&F Satellite operation from a data service perspective, both for NR NTN (5GS) and IOT NTN (EPS).*

*WT-2.2: Study, and if applicable, define the control plane and user plane enhancements, including the minimum necessary set of Core Network functions to be embedded in the satellite, to support S&F Satellite data operation, both for NR NTN (5GS) and IoT-NTN (EPS). Co-ordinate with SA3 LI if needed.*

*NOTE 2: S&F for IoT NTN will be studied first and if there is remaining time available NR NTN can then be studied.*

*WT3: Study UE-satellite-UE communication enhancements for 5GS, supporting NR NTN NGSO constellation with and without ISL, with feeder link available (at least for session establishment).*

*WT-3.1: Following SA1 requirements, study how at least IMS enablers including mission critical can be supported locally. Study minimum necessary set of 5GS network functions onboard the satellite(s) and study such UE-Satellite-UE communication. Co-ordinate with SA3 LI if needed.*

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# 2 Proposal

**It is proposed to update TR 23.700-29 for FS\_5GSAT\_ARCH\_Ph3 as followed.**

# 1 Scope

The scope of this Technical Report is to study the following aspects of 5GS/EPS integrating of satellite component in Rel-19, including:

- Regenerative payload generic architecture:

- Impact to 5GS and EPS to support gNB/eNB onboard the satellite payload.

- Store and Forward Satellite operation for delay tolerant services:

- The control plane and user plane enhancements if applicable, including the minimum necessary set of Core Network elements to be embedded in the satellite, to support S&F Satellite operation, both for IoT NTN (EPS) and NR NTN (5GS);

- The parameters needed to characterize and support S&F Satellite operation from a delay tolerant services perspective if applicable, both for IoT NTN (EPS) and NR NTN (5GS).

NOTE1: S&F Satellite operation for IoT NTN will be studied first and if there is remaining time available NR NTN can then be studied.

- UE-Satellite-UE communication enhancements for 5GS, supporting NR NTN NGSO constellation with and without ISL, with feeder link always available:

- Following SA1 requirements, local support of at least IMS enablers including mission critical;

- Minimum necessary set of 5GS network functions onboard the satellite(s) to support such UE-Satellite-UE communication.

NOTE2: Only the scenario of IMS server on the ground is to be considered.