**3GPP TSG-SA3 Meeting #113 *S3-23xxxx***

**Chicago, USA, 6 - 11 November 2023** **(revision of xx-yyxxxx)**

**Source: CATT, Nokia, Xiaomi, CAICT, China Mobile, China Unicom, ZTE, DT, Thales, China Telecommunications, Samsung**

**Title: New SID on Study on Security Aspects of 5G Satellite Access Phase 3**

**Document for: Approval**

**Agenda Item: 6**

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: Study on Security Aspects of 5G Satellite Access Phase 3

Acronym: FS\_ 5GSAT\_SEC\_Ph3

Unique identifier:

Potential target Release: Rel-19

# 1 Impacts

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

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

**\* Other = e.g. testing**

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A | N/A |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 80048 | Stage 1 of 5GSAT | Service requirements of satellite access in 5G |
| 960016 | Stage 1 of 5GSAT: FS\_5GSAT\_Ph3  Study on satellite access - Phase 3 | Defines new services requirements for R19 |
| 80026 | Study on architecture aspects for using satellite access in 5G | Unresolved key issue leftover from R17 |
| 940074 | 5GC enhancement for satellite access Phase 2 | SA2 Rel-18 SID for 5G System enhancement for satellite access |
| 980014 | 5GC/EPC enhancement for satellite access Phase 2 | SA2 Rel-18 WID for 5G System enhancement for satellite access |
| 940060 | Study on 5G System with Satellite Backhaul | SA2 Rel-18 SID for 5G System with Satellite Backhaul |
| 970018 | 5G System with Satellite Backhaul | SA2 Rel-18 WID for 5G System with Satellite Backhaul |

# 3 Justification

According to the SA’s Satellite SID proposal (SP-231199) agreed at the SA Meeting #101, SA2 will study the following topics:

- Regenerative payloads, i.e. embedding RAN (eNB/gNB) and minimum necessary set of CN (EPS/5GS) functions (if applicable) into satellite

- Store and Forward (S&F) satellite operation for delay-tolerant communication services

- UE-Satellite-UE communication without going through the ground network

For regenerative payload scenarios, some RAN are located on satellites, for which security issues need to be studied when using existing security mechanisms, for example:

- Is there additional security risk on the interface between the UE and eNB/gNB in the satellite?

- Is there additional security risk on the interface between satellite 3GPP network elements?

- Is there additional security risk on the interface between satellite 3GPP network elements and ground 3GPP network elements?

In the S&F scenario, the potential architecture enhancements and mobility management enhancements for S&F satellite operation may have security impacts in terms of authentication, authorization, NAS/AS security context handling, and data privacy protection.

Based on the UE-Satellite-UE communication function defined by SA2, SA3 may need to study related security and privacy issues and potential solutions.

Therefore, SA3 should study the security and privacy issues of 5G satellite access phase 3 and develop corresponding potential solutions.

# 4 Objective

The objective is to study the security and privacy aspects of 5G satellite access phase 3. Ensure that security solutions are aligned with the work in SA2, RANs and SA1. The work is comprised of the following parts:

- WT1: Study the security and privacy key issues of the regenerative payload generic architecture in 5GS/EPS, and develop potential solutions to address these key issues.

- WT2: Study the security and privacy key issues of the Store and Forward (S&F) Satellite operation both for NR NTN (5GS) and for IOT NTN (EPS), and develop potential solutions to address these key issues.

NOTE 1: Priority of security study between IoT NTN (EPS) and NR NTN (5GS) is to be aligned with SA2 study priority.

- WT3: Study the security and privacy key issues of UE-satellite-UE communication enhancements for 5GS, and develop potential solutions to address these key issues.

NOTE 2: Timely feedback on supporting SA2/RAN study needs to be considered.

## TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate  (Study) | TU Estimate  (Normative) | RAN Dependency  (Yes/No/Maybe) | Inter Work Tasks Dependency |
| **WT1** |  |  | **Yes** |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **WT2** |  |  | **Yes** |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **WT3** |  |  | **Yes** |  |
|  |  |  |  |  |

Total TU estimates for the study phase:

Total TU estimates for the normative phase:

Total TU estimates:

# 5 Expected Output and Time scale

***{If this WID covers both stage 2 and stage 3, clearly indicate the different completion dates.}***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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 |
| Internal TR | 33.XXX | Study on Security and Privacy Aspects of 5G Satellite Access Phase 3 | TBD | TBD |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
|  |  |  |  |

# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

Potential interactions with SA2 WG and RAN WGs during the work.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| CATT |
| CAICT |
| China Mobile |
| China Unicom |
| ZTE |
| Nokia, Nokia Shanghai Bell |
| DT |
| Thales |
| Xiaomi |
| China Telecommunications |
| Samsung |
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