**3GPP TSG-SA3 Meeting #119 S3-xxxxxx**

**Orlando, USA 11 - 15 November 2024** **(revision of S3-245047)**

**Source: CATT, Nokia, China Unicom, Ericsson**

**Title: New WID 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: Security Aspects of 5G Satellite Access Phase 3

Acronym: 5GSAT\_Ph3\_SEC

Unique identifier:

Potential target Release: Rel-19

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study |
|  | Normative – Stage 1 |
| X | 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) |
| FS\_5GSAT\_Ph3\_SEC | SA3 | 1020044 | Study on Security Aspects of 5G Satellite Access Phase 3 |

### 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 |
| 1010033 | Study on Integration of satellite components in the 5G architecture Phase 3 | SA2 Rel-19 SID for Integration of satellite components in the 5G architecture |
| 1040027 | Integration of satellite components in the 5G architecture Phase 3 | SA2 Rel-19 WID for Integration of satellite components the 5G architecture |
|  |  |  |

# 3 Justification

This work item aims at specifying security and privacy aspects of satellite access in the 5G System Phase 3, as concluded by the Study on Security Aspects of 5G Satellite Access Phase 3 (FS\_5GSAT\_Ph3\_SEC, TR 33.700-29).

An NG-RAN consisting of a gNB embarked on an airborne or space-borne NTN vehicle communicates with the ground-based infrastructure via a feeder link of a ground-based NTN Gateway. The backhaul logical segment connecting the gNB on an NTN vehicle and the ground based SEG is carried over a feeder link. The orbiting satellite movement results into frequent switches of a feeder link from a source NTN Gateway to a target NTN Gateway. It may result into a change in IP address of the gNB. Consequently, that requires IKEv2 managing the change in outer IP addresses of IPsec tunnel and updating the security associations addresses. Support for MOBIKE already is specified in TS 33.501 and TS 38.401 for use case of NG-RAN wireless backhauling and in TS 23.501, TS 24.502, TS 33.402 for use case of non-3GPP access.

# 4 Objective

The objective of this work item is to specify the security and privacy aspects of satellite access in the 5G system Phase 3. This WID is based on the current conclusions in TR 33.700-29 and TR 23.700-29 and the corresponding contents in TS 23.401.

The following security and privacy aspects are considered based on TR 33.700-29:

- Security protection in Store and Forward Satellite operation in EPS. Both split MME architecture and full EPC in satellite architecture are supported. (Key Issue #1)

- Privacy protection in Store and Forward Satellite operation in EPS. (Key Issue #2)

- Normative work to support for MOBIKE in IKEv2/IPsec to optimize 3GPP backhaul over the feeder link

# 5 Expected Output and Time scale

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| TS 33.401 | Add updates to support 5GSAT\_Ph3\_SEC | TSG#108  (Jun, 2025) |  |
| TS 33.501 | Specify support for MOBIKE extension in IKEv2/IPsec for 3GPP backhaul between 5G NTN generic regenerative gNB and SEG. | TSG#108  (Jun, 2025) | This TS covers Stage 2. There is no Stage 3 impact since existing interaction for IKEv2/IPsec and profile from TS 33.210 are reused. |

# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

SA2 for system architecture,

RAN WGs for RAN aspects,

CT WGs for stage 3 aspects.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| CATT |
| Nokia |
| CAICT |
| China Unicom |
| China Telecommunications |
| Ericsson |
| ZTE |
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