**3GPP SA WG2 Meeting #153E S2-** **220xxxx**

**Electronic meeting, 10 – 17 October 2022**

**Source: Thales, Xiaomi, Novamint?, TNO?**

**Title: New WID: 5GC enhancement for satellite access Phase 2**

**Document for: Approval**

**Agenda Item: 10.3**

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: 5GC enhancement for satellite access Phase 2

## Acronym: 5GSAT\_Ph2

## Unique identifier: *{A number to be provided by MCC at the plenary}*

Potential target Release: Rel-18

## 1 Impacts

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

Editor’s note: Items may be updated based on discussion at SA2#153e.

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
| x | Feature |
|   | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| FS\_5GSAT\_Ph2 | SA2 | 940074 | Study on 5GC enhancement for satellite access Phase 2 |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 770002 | Study on using Satellite Access in 5G | Use cases and requirements for satellite access in 5G |
| 800048 | Stage 1 of 5GSAT | Service requirements of satellite access in 5G |
| 800026 | Study on architecture aspects for using satellite access in 5G | Unresolved key issue leftover from R17  |
| 860005 | (Stage 2 of) Integration of satellite components in the 5G architecture | Baseline of 5G architecture to support satellite access |
| 930019 | Architecture support for NB-IoT/eMTC Non-Terrestrial Networks in EPS | SA2 Rel-17 WID, which includes discontinuous coverage support in NB-IoT/eMTC Non-Terrestrial Networks in EPS |

## 3 Justification

This work item aims at specifying system enhancements to support satellite discontinuous coverage. The related solutions have been documented in the TR 23.700-28.

## 4 Objective

The objective of this work item is to specify architectural enhancements of 5G System to support satellite discontinuous coverage as per conclusions reached within TR 23.700-28 (clause 8), in order to provide solutions on identified key issues in TR 23.700-28 (clause 5).

The general description of the Key Issues, as described in are:

- Mobility Management enhancement with discontinuous satellite coverage:

- Identify gaps in rel.17 solution designed in EPS (e.g. concerning minimizing a period of no coverage and/or minimizing power consumption), considering at least below aspects:

a) Study how UE determines that it has to remain with no service or it has to attempt to register on available different RAT's/ PLMNs to receive the normal service during discontinuous coverage in current NTN RAT.

b) Study how to reduce the impact to target RAT or system due to large number of UEs triggering signalling load on the target RAT or system to receive normal service.

- Propose solution to resolve these gaps.

- Power saving enhancement for UE in discontinuous coverage

- Based on the coverage information of the UE:

- whether and how to enhance the power saving mechanisms, e.g. PSM, MICO mode and eDRX in CM-IDLE state, in order to make sure that the UE:

- does not attempt PLMN access when there is no network coverage; and

- when there is network coverage the UE attempts PLMN access as needed e.g. to transfer signalling, transfer data or receive paging, etc.

Editor’s note: This clause shall be updated based on discussions in SA2#153. By the end of the meeting, this EN shall be removed and the whole clause shall be aligned with the agreed TR conclusions.

## 5 Expected Output and Time scale

|  |
| --- |
| **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 |
| N/A | N/A | N/A | N/A | N/A | N/A |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 23.501 | Architectural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.502 | Procedural enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.503 | Policy enhancements to support the stated objectives | SA#99 (March 2023) |  |
| 23.401 | General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network(E-UTRAN) access | SA#99 (March 2023) |  |
|  |  |  |  |

## 6 Work item Rapporteur(s)

Rapporteur: Jean-Yves Fine, Thales, jean-yves.fine@thalesgroup.com

Co-rapporteur: Yuxin Mao, Xiaomi, maoyuxin1@xiaomi.com

## 7 Work item leadership

SA2

## 8 Aspects that involve other WGs

SA3 for the potential security aspects, SA5 for the potential charging aspects

Editor’s note: possible RAN and CT1 dependencies depending on final solutions choice during SA2#153

## 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| CATT? |
| China Mobile? |
| China Telecom? |
| China Unicom? |
| Huawei? |
| Vivo? |
| Tencent? |
| ZTE? |
| ESA? |
| Avanti? |
| Gatehouse? |
| Intelsat? |
| Ligado? |
| TNO? |
| Novamint? |
| Gilat Satelite networks Ltd? |
| Inmarsat? |
| Hispasat? |
| III? |
| Eutelsat? |
| Spreadtrum? |