3GPP TSG-WG SA3 Meeting #123 S3-252968

Goteborg, Sweden 21 – 25 August, 2025 merger of S3-292813, S3-252910

**Source: OPPO, Huawei, Qualcomm**

**Title: NEW SID on security aspect of support for Ambient power-enabled Internet of Things-Phase 2**

**Document for: Approval**

**Agenda Item: 6.2**

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 aspect of support of Ambient power-enabled Internet of Things-Phase 2

Acronym: FS\_AIoT\_Sec-Ph2

Unique identifier:

{A number to be provided by MCC at the plenary}

Potential target Release: Rel-20

# 1 Impacts

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

# 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\* |

## 2.2 Parent Work Item

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| AmbientIoT-SEC | SA3 | 1070022 | Work item on security aspect of Ambient IoT services in rel-19 |
| FS\_Ambient\_IoT\_Sec | SA3 | 1030031 | Study item on security aspect of Ambient IoT services in 5G in rel-19 |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 1020085 | Study on solutions for Ambient IoT (Internet of Things) in NR | RAN aspects of the Ambient IoT feature in Rel-19 |
| 1020030 | Service requirements for Ambient power-enabled IoT | SA1 requirements for Ambient IoT in Rel-19 |
| 1070020 | Architecture support of Ambient power-enabled Internet of Things | SA2 architecture aspect of Ambient IoT services in rel-19 |
|  | Architecture support of Ambient power-enabled Internet of Things-Phase 2 | SA2 architecture aspect of Ambient IoT services in rel-20 |

# 3 Justification

Ambient IoT is expected to support additional features and aspects in Rel-20, including support for new devices and scenarios. In addition to the study of architecture enhancement to be conducted in SA2, study of security enhancements to support these additional AIoT features will require efforts in SA3.

Based on RAN (TR 38.848) traffic assumption of an Ambient IoT device that includes DT (Device-terminated), DO-A(Device-originated – autonomous) and DO-DTT (Device-originated – device-terminated), DO-A type of communication is critical for Rel-20 study in order to support new business models (e.g., sensor data reporting).

The security features (e.g., authentication) to support DO-A type of AIoT communication scenarios warrants further study. In addition, authorization of intermediate UE for AIoT services were studied in R19 but not yet concluded require further conclusion to align with SA2.

Additionally, the AIoT system for Rel-20 is assumed to be defined as public network, i.e., PLMN.

# 4 Objective

NOTE 1: Coordination with RAN on the final scope is required to determine the Ambient IoT device types, traffic scenarios, connectivity topologies etc.

The work tasks are:

**WT#1: Study to conclude on authorization of intermediate UE for AIoT services in Topology 2**

**WT#2: Study the security aspects to support DO-A Capable AIoT Devices.**

- Identify potential threats and new security requirements

- Study security mechanisms to support DO-A type AIoT communications in order to fulfil the identified security requirements

**WT#3: Study the security aspects of the AIOT system for public network**

* The AIoT system for Rel-20 is assumed to be defined as public network, i.e., PLMN. Applicability of security requirements and procedures developed in TS 33.369 for private network will be re-assessed for Rel-20 AIoT system in a public network. For Rel-20, if the AIoT system is defined as public network i.e. PLMN, the AIoT device credentials storage shall use UICC.

TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate  (Study) | TU Estimate  (Normative) | RAN Dependency  (Yes/No/Maybe) | Inter Work Tasks Dependency |
| WT#1 | 0.5 | 0.5 | No | No |
| WT#2 | 3.5 | 1.5 | No | No |
| WT#2 | 0.5 | 0.5 | No | No |

**Total TU estimates for the study phase: 4.5**

**Total TU estimates for the normative phase: 2.5**

**Total TU estimates: 7**

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| NEW TR | New TR | Study on security aspect of Ambient IoT services-phase 2 | TSG#111 | TSG#112 |  |

# 6 Work item Rapporteur(s)

To be added.

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

SA2 for the architecture aspects,

SA5 for the OAM and Charging aspects,

RAN WGs for the RAN related issues,

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| |  | | --- | | OPPO | | Apple ? | | BUPT ? | | Cable Labs ? | | CATR ? | | CATT ? | | China Mobile ? | | China Telecom ? | | China Unicom ? | | FutureWei ? | | HiSilicon ? | | Huawei ? | | Intel ? | | Inter Digital ? | | KPN ? | | Lenovo ? | | Philips International B.V. ? | | Samsung ? | | T-Mobile, USA ? | | Verizon ? | | Vivo ? | | Xiaomi ? | | Xidian University ? | | ZTE ? | |  | |