**3GPP TSG-SA5 Meeting #155 *S5-242994***

**Jeju, South Korea, 27 - 31 May 2024** **(revision of S5-242702)**

**Source: China Mobile**

**Title: New SID on Charging Aspects of Uncrewed Aerial Systems**

**Document for: Approval**

**Agenda Item: 7.2**

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: New SID on Charging aspects of Uncrewed Aerial Systems

Acronym: FS\_UAS\_CH

Unique identifier: TBD

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 |  |
| No | X | X | X |  |  |
| Don't know |  |  |  |  | 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) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 810013 | Remote Identification of Unmanned Aerial Systems | SA1 R17 Work Item |
|  |  |  |
| 900014 | (Stage 2 of) Support of Uncrewed Aerial Systems Connectivity, Identification, and Tracking | SA2 R17 Work Item |
| 980012 | (Stage 2 of UAS Ph2) Further Architecture Enhancement for UAV and UAM | SA2 R18 Work Item |

# 3 Justification

An Uncrewed Aerial System (UAS) is the combination of an Uncrewed Aerial Vehicle (UAV) and a UAV controller. Interest in using cellular connectivity to support UAS is strong, and the 3GPP system offers excellent benefits for UAS operation by providing ubiquitous coverage, high reliability and QoS, robust security, and seamless mobility.

The 3GPP system can provide communication services for UAS, such as data services for command and control (C2), telematics, UAS-generated data, remote identification, and authorisation, enforcement, and regulation of UAS operation as defined in SA1 TS 22.125.

Accordingly, SA2 has already defined the system level support of UAS in TS 23.256 since Release 17, in particular, the 3GPP system can be used to enable UAS identification and tracking, and to support UAS command and control functions, and UAV-to-UAV communications using cellular technologies (e.g. PC5).

Based on the progress of SA1 and SA2 in Release 17 and Release 18, the following aspects may be considered by the charging of UAS:

- A UAV that is configured for UAS services is provisioned with a single CAA-Level UAV ID defined in TS 23.256 which is assigned by functions in the aviation domain (e.g. USS) and may be introduced in charging domain.

- The communication requirements for UAS cover both the Command and Control (C2), and uplink and downlink data to/from the UAS components towards the serving 3GPP network.

- The UAS Network Function is supported by the NEF or SCEF+NEF and used for external exposure of services to the USS.

- Direct UAV to UAV communications using cellular technologies.

- QoS handling for Aircraft-to-Everything (A2X) communication.

- Roaming support for A2X services.

Based on the above information, the enhancement to the charging aspect of UAS needs to be studied.

# 4 Objective

The objective of this study item is to study the charging aspects of uncrewed aerial systems based on Release 18 TS 23.256, including:

- WT-1: Identify charging scenarios and requirements for supporting UAS;

- WT-2: Evaluate the potential solutions to support the above charging scenarios and charging requirements.

## TU estimates and dependencies

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Work Task ID** | **TU Estimate****(Study)** | **TU Estimate****(Normative)** | **RAN Dependency****(Yes/No/Maybe)**  | **SA Dependency****(Yes/No/Maybe)** | **Non-3GPP Dependency** |
| WT-1 | 2 | 1 | No | No | No |
| WT-2 | 3 | 2 | No | No | No |

**Total TU estimates for the study phase: 5**

**Total TU estimates for the normative phase: 3**

**Total TU estimates: 8**

# 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 |
| Internal TR | 28.XXX | Study on charging aspects of uncrewed aerial systems | TSG#105 (Sep. 2024) | TSG#106 (Dec. 2024) |  |
|  |  |  |  |  |  |

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# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA5

# 8 Aspects that involve other WGs

None.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| China Mobile |
| CATT |
| China Telecom |
| MATRIXX Software |
| Nokia |
| HiSilicon |
| Huawei |