**3GPP TSG-CT WG1 Meeting #134-eC1-221413**

**E-Meeting, 17th – 25th February 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **27.007** | **CR** | 0763 | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Adding AT commands for ID\_UAS | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ID\_UAS | | | | |  | ***Date:*** | | | 2022-02-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | NAS layer shall transport the parameters for UUAA or for C2 authorization between TE and USS. Following parameters require AT command:   |  |  | | --- | --- | | Parameter name | Direction and contents | | Service-level device ID | From UE to USS, From USS to UE  CAA-level UAV ID | | Service-level-AA server address | From UE to USS  USS address | | Service-level-AA response | From USS to UE  UUAA result | | UUAA payload | From UE to UEE, from USS to UE  Contents of UUAA payload is out of scope | | C2 authorization payload | From UE to USS, from USS to UE  C2 aviation payload and C2 authorization result  \*C2 aviation payload can include {UAV-C pairing info, flight auth info, C2 session security info} which are transparent to MT. |   Those features are specific to UAS services, hence new clause is required to cover a set of AT commands specific to UAS services. AT command for UUAA and AT command for C2 authorization are introduced.  In rev1, according to CT1 agreement on using the term ‘C2 authorization payload’ | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add new AT commands for UUAA and C2 authorization, respectively | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Necessary parameter for UUAA and C2 authorization cannot be transported to the TE | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.2, XX(new),XX.1(new), XX.2(new), XX.2.1(new), XX.2.2(new), Annex B. | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | In rev1, the parameter name changes to C2 authrozation payload from C2 aviation payload. | | | | | | | | |

\*\*\* First change \*\*\*

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

5GCN 5G Core Network

5GS 5G System

AT ATtention; this two‑character abbreviation is always used to start a command line to be sent from TE to TA

ASCI Advanced Speech Call Items, including VGCS, VBS and eMLPP

BCD Binary Coded Decimal

BL Bandwidth reduced Low complexity

CAG Closed Access Group

CBR Channel Busy Ratio

CSG Closed Subscriber Group

eMLPP Enhanced Multi-Level Precedence and Pre-emption Service

ETSI European Telecommunications Standards Institute

FTM Frame Tunnelling Mode (refer 3GPP TS 27.001 [41] and 3GPP TS 29.007 [42])

HRNN Human-Readable Network Name

HSCSD High Speed Circuit Switched Data

IMEI International Mobile station Equipment Identity

IRA International Reference Alphabet (ITU‑T Recommendation T.50 [13])

IrDA Infrared Data Association

ISO International Standards Organization

ITU‑T International Telecommunication Union ‑ Telecommunications Standardization Sector

ME Mobile Equipment

MMTEL Multimedia Telephony

MoU Memorandum of Understanding (GSM operator joint)

MT Mobile Termination

MTU Maximum Transfer Unit

NB-IoT NarrowBand Internet of Things

NG-RAN Next Generation Radio Access Network

NSLPI NAS Signalling Low Priority Indication

PCCA Portable Computer and Communications Association

PTT Push to Talk

RDI Restricted Digital Information

RLP Radio Link Protocol

RSN Redundancy Sequence Number

SIM Subscriber Identity Module

TA Terminal Adaptor, e.g. a GSM data card (equal to DCE; Data Circuit terminating Equipment)

TE Terminal Equipment, e.g. a computer (equal to DTE; Data Terminal Equipment)

TIA Telecommunications Industry Association

UAS Uncrewed Aerial System

UAV Uncrewed Aerial Vehicle

UDI Unrestricted Digital Information

UE User Equipment

UICC Universal Integrated Circuit Card

USAT USIM Application Toolkit

USIM Universal Subscriber Identity Module

USS UAS Service Supplier

UUAA USS UAV Authorization and Authentication

VAE V2X Application Enabler

VBS Voice Broadcast Service

VGCS Voice Group Call Service

\*\*\* Next change \*\*\*

# XX Commands for UAS configuration and operation

## XX.1 General

This clause defines AT commands that a TE may use to control MT supporting UAS services. The MT supporting UAS supports UUAA procedure and C2 authorization procedure as defined in 3GPP TS 24.501 [161] for 5GS and in 3GPP TS 24.301 [83] for EPS.

A comprehensive set of UAS specific commands is defined to provide the flexibility needed by the more complex MT. The commands are designed to be expandable to accommodate new UAS feature options and interface protocols, merely by defining new values for many of the parameters. The commands use the extended information and error message capabilities described in this specification.

The +CUUAAPT command requests the UE to transport the UUAA parameters to the network and to report the UUAA parameters received from the network as defined in 3GPP TS 24.501 [161] for 5GS and in 3GPP TS 24.301 [83] for EPS.

The +CC2APT command requests the UE to transport the C2 authorization parameters to the network and to report the C2 authorization parameters received from the network as defined in 3GPP TS 24.501 [161] for 5GS and in 3GPP TS 24.301 [83] for EPS

## XX.2 Commands specific to UAS services

### XX.2.1 UUAA parameter transport +CUUAAPT

Table XX.2.1-1: +CUUAAPT parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| + CUUAAPT =<n>,<CAA\_level\_UAV\_id>[,<USS\_addr>[,<UUAA\_payload>]] | +*CME ERROR: <err*> |
| + CUUAAPT? | +CUUAAPT: [,<CAA\_level\_UAV\_id>[,<UUAA\_result>[,<UUAA\_payload>]]] |
| + CUUAAPT=? |  |

**Description**

The set command is used to request the MT to transport UUAA parameters to the network as specified in 3GPP TS 24.501 [161] for 5GS and in 3GPP TS 24.301 [83] for EPS. The unsolicited result code +CUUAAPT: [,<CAA\_level\_UAV\_id>[,<UUAA\_result>[,<UUAA\_payload>]]] reports the UUAA parameters received from the network.

The read command is used to return the current value of unsolicited result code +CUUAAPT.

Test command returns values supported as a compound value.

**Defined values**

<n>: Integer type

0 disable presentation of the unsolicited result code

1 enable presentation of the unsolicited result code +CUUAAPT: [,<CAA\_level\_UAV\_id>[,<UUAA\_result>[,<UUAA\_payload>]]]

<CAA\_level\_UAV\_id>: string type; contains the CAA-level UAV ID. <CAA\_level\_UAV\_id> is encoded as the value part of the Service-level device ID as specified in 3GPP TS 24.501 [161] clause 9.11.2.11.

<USS\_addr>: string type; contains the IP address or FQDN. <USS\_addr> is encoded as the value part of the Service-level-AA server address as specified in 3GPP TS 24.501 [161] clause 9.11.2.12.

<UUAA\_payload>: string type; contains the application-level payload for UUAA procedure. <UUAA\_payload> is encoded as the value part of the Service-level-AA payload as specified in 3GPP TS 24.501 [161] clause 9.11.2.13

<UUAA\_result>: integer type; contains the result of UUAA procedure. <UUAA\_result> is encoded corresponding to the value part of the SLAR bits of the Service-level-AA response as specified in 3GPP TS 24.501 [161] clause 9.11.2.14.

0 UUAA completed successfully

1 UUAA was not successful or revoked

**Implementation**

Optional.

\*\*\* Next change \*\*\*

### XX.2.2 C2 authorization parameter transport +CC2APT

Table XX.2.2-1: +CC2APT parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| + CC2APT =<n>,<CAA\_level\_UAV\_id>[,<C2\_authorization\_payload>] | +*CME ERROR: <err*> |
| + CC2APT? | +CC2APT: [,<CAA\_level\_UAV\_id>[,<C2\_authorization\_payload>[,<C2\_auth\_result>]]] |
| + CC2APT=? |  |

**Description**

The set command is used to request the MT to transport C2 authorization parameters to the network as specified in 3GPP TS 24.501 [161] for 5GS and in 3GPP TS 24.301 [83] for EPS. The unsolicited result code +CC2APT: [,<CAA\_level\_UAV\_id>[,<C2\_authorization\_payload>[,<C2\_auth\_result>]]] reports the C2 authorization parameters received from the network.

The read command is used to return the current value of unsolicited result code +CC2APT.

Test command returns values supported as a compound value.

**Defined values**

<n>: Integer type

0 disable presentation of the unsolicited result code

1 enable presentation of the unsolicited result code +CC2APT: [,<CAA\_level\_UAV\_id>[,<C2\_authorization\_payload>[,<C2\_auth\_result>]]]

<CAA\_level\_UAV\_id>: string type; contains the CAA-level UAV ID. <CAA\_level\_UAV\_id> is encoded as the value part of the Service-level device ID as specified in 3GPP TS 24.501 [161] clause 9.11.2.11.

<C2\_authorization\_payload>: string type; contains the application-level payload which may include UAV-C pairing information, fight authorization information, C2 session security information, if available. <C2\_authorization\_payload> is encoded as the value part of Service-level-AA payload as specified in 3GPP TS 24.501 [161] clause 9.11.2.13.

<C2\_auth\_result>: integer type; contains the result of C2 authorization procedure. <C2\_auth\_result> is encoded corresponding to the value part of the C2AR bits of the Service-level-AA response as specified in 3GPP TS 24.501 [161] clause 9.11.2.14.

0 C2 authorization completed successfully

1 C2 authorization was not successful or revoked

**Implementation**

Optional.

\*\*\* Next change \*\*\*

Annex B (normative):  
Summary of result codes

ITU‑T Recommendation V.250 [14] result codes which can be used in the present document and result codes defined in the present document:

**Table B.1: Result codes**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Verbose result code**  **(V.250 command V1 set)** | | **Numeric**  **(V0 set)** | | **Type** | | **Description** | |
| +C5GPDUAUTHU | | as verbose | | unsolicited | | refer clause 10.1.73 | |
| +C5GUSMS | | as verbose | | unsolicited | | refer clause 10.1.59 | |
| +CABTSRI | | as verbose | | unsolicited | | refer clause 10.1.41 | |
| +CACSP | | as verbose | | unsolicited | | refer clause 11.1.7 | |
| +CALV | | as verbose | | unsolicited | | refer clause 8.16 | |
| +CANCHEV | | as verbose | | unsolicited | | refer clause 11.1.8 | |
| +CAPPLEVMC | | as verbose | | unsolicited | | refer clause 8.78 | |
| +CAPTT | | as verbose | | unsolicited | | refer clause 11.1.4 | |
| +CAULEV | | as verbose | | unsolicited | | refer clause 11.1.5 | |
| +CBCAP | | as verbose | | unsolicited | | refer clause 8.59 | |
| +CBCHG | | as verbose | | unsolicited | | refer clause 8.61 | |
| +CBCON | | as verbose | | unsolicited | | refer clause 8.60 | |
| +CC2APT | | as verbose | | unsolicited | | refer clause XX.2.2 | |
| +CCCM | | as verbose | | unsolicited | | refer clause 7.16 | |
| +CCSFBU | | as verbose | | unsolicited | | refer clause 8.76 | |
| +CCSTATEREQU | | as verbose | | unsolicited | | refer clause 10.1.72 | |
| +CCWA | | as verbose | | unsolicited | | refer clause 7.12 | |
| +CCWV | | as verbose | | unsolicited | | refer clause 8.28 | |
| +CDEV | | as verbose | | unsolicited | | refer clause 8.10 | |
| +CDIP | | as verbose | | unsolicited | | refer clause 7.9 | |
| +CDUT | | as verbose | | intermediate | | refer clause 13.2.1 | |
| +CDUU | | as verbose | | unsolicited | | refer clause 13.2.1 | |
| +CECN | | as verbose | | unsolicited | | refer clause 6.28 | |
| +CEDRXSP | | as verbose | | unsolicited | | refer clause 7.40 | |
| +CEMBMSRI | | as verbose | | unsolicited | | refer clause 14.2.2 | |
| +CEMBMSSAII | | as verbose | | unsolicited | | refer clause 14.2.6 | |
| +CEMBMSSRVI | | as verbose | | unsolicited | | refer clause 14.2.3 | |
| +CEN1 | | as verbose | | intermediate  unsolicited | | refer clause 8.67 | |
| +CEN2 | | as verbose | | intermediate  unsolicited | | refer clause 8.67 | |
| +CEN3 | | as verbose | | intermediate  unsolicited | | refer clause 8.67 | |
| +CEN4 | | as verbose | | intermediate  unsolicited | | refer clause 8.67 | |
| +CEPTT | | as verbose | | unsolicited | | refer clause 11.1.10 | |
| +CEPSFBS | | as verbose | | unsolicited | | refer clause 8.81 | |
| +CEREG | | as verbose | | unsolicited | | refer clause 10.1.22 | |
| +CPBW | | as verbose | | intermediate | | refer clause 8.14 | |
| +CPNERU | | as verbose | | unsolicited | | refer clause 8.70 | |
| +CGBRRREP | | as verbose | | unsolicited | | refer clause 10.1.69 | |
| +CGDEL | | as verbose | | intermediate | | refer clause 10.1.29 | |
| +CGEV | | as verbose | | unsolicited | | refer clause 10.1.19 | |
| +CGREG | | as verbose | | unsolicited | | refer clause 10.1.20 | |
| +CHSR | | as verbose | | intermediate | | refer clause 6.16 | |
| +CIEV | | as verbose | | unsolicited | | refer clause 8.10 | |
| +CCIOTOPTI | | as verbose | | unsolicited | | refer clause 7.42 | |
| +CIREGU | | as verbose | | unsolicited | | refer clause 8.71 | |
| +CIREPH | | as verbose | | unsolicited | | refer clause 8.64 | |
| +CIREPI | | as verbose | | unsolicited | | refer clause 8.64 | |
| +CKEV | | as verbose | | unsolicited | | refer clause 8.10 | |
| +CLADNU | | as verbose | | unsolicited | | refer clause 10.1.61 | |
| +CLAV | | as verbose | | unsolicited | | refer clause 8.31 | |
| +CLIP | | as verbose | | unsolicited | | refer clause 7.6 | |
| +CMCCSI | | as verbose | | unsolicited | | refer clause 8.73 | |
| +CMCCSS<x> | | as verbose | | unsolicited | | refer clause 8.73 | |
| +CMCCSSEND | | as verbose | | unsolicited | | refer clause 8.73 | |
| +CME ERROR | | as verbose | | final | | refer clause 9.2.0 | |
| +CMICO | | as verbose | | unsolicited | | refer clause 10.1.55 | |
| +CMOLRE | | as verbose | | unsolicited | | refer clause 9.3.1 | |
| +CMOLRG | | as verbose | | unsolicited | | refer clause 8.50 | |
| +CMOLRN | | as verbose | | unsolicited | | refer clause 8.50 | |
| +CMTLR | | as verbose | | unsolicited | | refer clause 8.57 | |
| +CRTDCP | | as verbose | | unsolicited | | refer clause 10.1.44 | |
| +CMWN | | as verbose | | unsolicited | | refer clause 7.36 | |
| +CNAP | | as verbose | | intermediate  unsolicited | | refer clause 7.30 | |
| +CNEC\_MM | | as verbose | | unsolicited | | refer clause 9.1b | |
| +CNEC\_GMM | | as verbose | | unsolicited | | refer clause 9.1b | |
| +CNEC\_GSM | | as verbose | | unsolicited | | refer clause 9.1b | |
| +CNEC\_EMM | | as verbose | | unsolicited | | refer clause 9.1b | |
| +CNEC\_ESM | | as verbose | | unsolicited | | refer clause 9.1b | |
| +CNEMIU | | as verbose | | unsolicited | | refer clause 7.33 | |
| +CNEMS1 | | as verbose | | unsolicited | | refer clause 7.33 | |
| +CNEM5G | | as verbose | | unsolicited | | refer clause 7.33 | |
| +CNRREG | | as verbose | | unsolicited | | refer clause 10.1.47 | |
| +COEV | | as verbose | | unsolicited | | refer clause 8.10 | |
| +COLP | | as verbose | | intermediate  unsolicited | | refer clause 7.8 | |
| +CPAGERES | | as verbose | | unsolicited | | refer clause 10.1.78 | |
| +CPINR | | as verbose | | intermediate | | refer clause 8.65 | |
| +CPINRE | | as verbose | | intermediate | | refer clause 8.65 | |
| +CPOSR | | as verbose | | unsolicited | | refer clause 8.56 | |
| +CPNERU | | as verbose | | unsolicited | | refer clause 8.70 | |
| +CPNSTAT | | as verbose | | unsolicited | | refer clause 7.28 | |
| +CPSB | | as verbose | | unsolicited | | refer clause 7.29 | |
| +CR | | as verbose | | intermediate | | refer clause 6.9 | |
| +CREG | | as verbose | | unsolicited | | refer clause 7.2 | |
| +CREJPAG | | as verbose | | unsolicited | | refer clause 10.1.77 | |
| +CRING | | as verbose | | unsolicited | | refer clause 6.11 | |
| +CRLOSPU | | as verbose | | unsolicited | | refer clause 10.1.65 | |
| +CRTDCP | | as verbose | | unsolicited | | refer clause 10.1.44 | |
| +CRUEPOLICYU | | as verbose | | unsolicited | | refer clause 10.1.51 | |
| +CSBTSRI | | as verbose | | unsolicited | | refer clause 10.1.56 | |
| +CSCON | | as verbose | | unsolicited | | refer clause 10.1.30 | |
| +CSDBTSRI | | as verbose | | unsolicited | | refer clause 10.1.58 | |
| +CSSI | | as verbose | | intermediate | | refer clause 7.17 | |
| +CSSU | | as verbose | | unsolicited | | refer clause 7.17 | |
| +CTEV | | as verbose | | unsolicited | | refer clause 8.10 | |
| +CTZE | | as verbose | | unsolicited | | refer clause 8.41 | |
| +CTZEU | | as verbose | | unsolicited | | refer clause 8.41 | |
| +CTZV | | as verbose | | unsolicited | | refer clause 8.41 | |
| +CUSATEND | | as verbose | | unsolicited | | refer clause 12.2.4 | |
| +CUSATP | | as verbose | | unsolicited | | refer clause 12.2.4 | |
| +CUSATS | | as verbose | | unsolicited | | refer clause 12.2.3 | |
| +CUSD | | as verbose | | unsolicited | | refer clause 7.15 | |
| +CUUAAPT | | as verbose | | unsolicited | | refer clause XX.2.1 | |
| +CUUS1I | | as verbose | | intermediate | | refer clause 7.26 | |
| +CUUS1U | | as verbose | | unsolicited | | refer clause 7.26 | |
| +CWLANOLADI | | as verbose | | unsolicited | | refer clause 10.1.39 | |
| +CWLANOLCMI | | as verbose | | unsolicited | | refer clause 10.1.40 | |
| +DR | | as verbose | | intermediate | | refer clause 6.26 | |
| +ILRR | | as verbose | | intermediate | | refer clause 4.3 | |
| BUSY | | 7 | | final | | busy signal detected | |
| CONNECT | | 1 | | intermediate | | connection has been established | |
| CONNECT <text> | | manufacturer specific | | intermediate | | as CONNECT but manufacturer specific <text> gives additional information (e.g. connection data rate) | |
| ERROR | | 4 | | final | | command not accepted | |
| NO ANSWER | | 8 | | final | | connection completion timeout | |
| NO CARRIER | | 3 | | final | | connection terminated | |
| NO DIALTONE | | 6 | | final | | no dialtone detected | |
| OK | | 0 | | final | | acknowledges execution of a command line | |
| RING | | 2 | | unsolicited | | incoming call signal from network | |
| NOTE: From v6.2.0 onwards, ATV0 numeric result codes 5, 6, 7 for NO DIALTONE, BUSY and NO ANSWER respectively, have been replaced by numeric result codes 6, 7, 8 respectively, to be aligned with the values listed in ITU-T Recommendation V.250 [14] (previously V.25ter). | | | | | | | |

NOTE: The table B.1 is as an overview of the result codes, hence the complete syntax of the result codes is not shown.