**3GPP TSG-CT WG1 Meeting #137-eC1-225198**

**E-Meeting, 18th – 26th August 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **27.007** | **CR** | **0791** | **rev** | **1** | **Current version:** | **v17.6.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | AT command for 5GS network registration status over non-3GPP access | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Google | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc18 | | | | |  | ***Date:*** | | | 2022-08-19 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | In 5GS the UE can register to the network over both 3GPP access and non-3GPP access. The existing +C5GREG is for registration status over 3GPP access thus a new AT command for attaching over non-3GPP access is needed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce a new AT command,+C5GREGN3GPP, to report the registration status over non-3GPP access | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | AT command for reporting the registration status over non-3GPP access is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.1.00, 10.1.47, 10.1.y (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:*** | |  | | | | | | | | |

**\*\*\*\*\*\*\***

\* \* \* First Change \* \* \* \*

### 10.1.00 General remark about 5GS PDU sessions and EPS PDN connections

According to 3GPP TS 23.501 [165] and 3GPP TS 24.501 [161] there exists a one to one mapping between a 5GS PDU session and an EPS PDN connection. A 5GS PDU session is a set of QoS flows consisting of one QoS flow of the default QoS rule and optionally one or more QoS flows of non-default QoS rule. A PDN connection is set of EPS bearer contexts and consists of at least one default EPS bearer context and optionally one or more dedicated EPS bearer contexts. A PDU session can be mapped to one default EPS bearer context and zero or more dedicated bearer EPS bearer contexts. An EPS bearer context can be mapped to one or more QoS flows. The mapping between a QoS flow and an EPS bearer context is not always one to one.

Table 10.1.00-1: AT commands/results applicable for 5GS PDU session   
(equivalence between PDU Session / PDN Connection)

|  |  |
| --- | --- |
| AT commands | Comments |
| +CGDCONT | Used to define a 5GS PDU session |
| +CGACT | Used to activate a 5GS PDU session. |
| +CCSTATEREQ | Used to change the state of a PDU session |
| +CGCMOD | Used to modify a 5GS PDU session |
| +CGCONTRDP | Used to show dynamically allocated 5GS PDU session parameters. |
| +CGEV: xxx ... | Used to indicate 5GS PDU session operations status. |

Table 10.1.00-2: AT commands/results applicable for 5GS QoS flow   
(equivalence between QoS flow / EPS bearer resources)

|  |  |
| --- | --- |
| AT commands | Comments |
| +CGDSCONT | Used to define a 5GS QoS flow |
| +CGSCONTRDP | Used to show dynamically allocated 5GS QoS flow parameters |
| +CGTFT | Used to define QoS rules for a 5GS QoS flow |
| +CGTFTRDP | Used to show the network assigned QoS rules for a 5GS QoS flow |
| +C5GQOS | Used to define QoS flows of a 5GS PDU session |
| +C5GQOSRDP | Used to show the dynamically allocated QoS flows corresponding to a 5GS PDU session. |
| +C5GPDUAUTHS | Used to define 5G PDU Session Authentication settings. |
| +C5GPDUAUTHR | Used to indicate 5G PDU Session Authentication Response. |

Table 10.1.00-3: AT commands applicable for 5GS

|  |  |
| --- | --- |
| AT commands | Comments |
| +CGATT | Used to attach/detach the MT from the packet domain service. |
| +C5GREG | Indicates 5GS network registration status over 3GPP access |
| +C5GREGN3GPP | Indicates 5GS network registration status over non-3GPP access |

NOTE: The above is not a complete list of AT commands for 5GS but only those applicable to 5GS PDU sessions and 5GS QoS flows.

\* \* \* Next Change \* \* \* \*

### 10.1.47 5GS network registration status +C5GREG

Table 10.1.47-1: +C5GREG parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +C5GREG=[<n>] | *+CME ERROR: <err>* |
| +C5GREG? | **when <n>=0, 1, 2, 3, 4 or 5 and command successful:**  +C5GREG: <n>,<stat>[,[<tac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>][,<cause\_type>,<reject\_cause>]][,<cag\_stat>][,<caginfo>] |
| +C5GREG=? | +C5GREG: (list of supported <n>s) |

**Description**

The set command controls the presentation of an unsolicited result code +C5GREG: <stat> when <n>=1 and there is a change in the MT's network registration status in 5GS, or unsolicited result code +C5GREG: <stat>[,[<tac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>]] when <n>=2 and there is a change of the network cell in 5GS or the network provided an Allowed NSSAI for 3GPP access. The parameters <AcT>, <tac>, <ci>, <Allowed\_NSSAI\_length> and <Allowed\_NSSAI> are provided only if available. The value <n>=3 further extends the unsolicited result code with [,<cause\_type>,<reject\_cause>], when available, when the value of <stat> changes. The value <n>=4 extends the unsolicited result code with [,<cag\_stat>] when the value of <cag\_stat> changes. The value <n>=5 extends the unsolicited result code with [,<caginfo>] when UE camps on a CAG cell. <caginfo> is displayed only when <cag\_stat> is 1.

Refer clause 9.2 for possible <err> values.

NOTE 1: If the 5G MT in GERAN/UTRAN/E-UTRAN also supports one or more of the circuit mode services, GPRS services or EPS services, the +CREG command and +CREG: result codes, the +CGREG command and +CGREG: result codes and the +CEREG command and +CEREG: result codes apply to the registration status and location information for those services.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <tac>, <ci> and <AcT>, and parameters <Allowed\_NSSAI\_length>, <Allowed\_NSSAI>, if available, are returned only when <n>=2 and MT is registered in the network. The parameters [,<cause\_type>,<reject\_cause>], if available, are returned when <n>=3.

Test command returns values supported as a compound value. The parameter [,<cag\_stat>], if available, is returned when <n>=4. The parameter [,<caginfo>], if available, is returned when <n>=5.

**Defined values**

<n>: integer type

0 disable network registration unsolicited result code

1 enable network registration unsolicited result code +C5GREG: <stat>

2 enable network registration and location information unsolicited result code +C5GREG: <stat>[,[<tac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>]]

3 enable network registration, location information and 5GMM cause value information unsolicited result code +C5GREG: <stat>[,[<tac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>][,<cause\_type>,<reject\_cause>]]

4 enable network registration, location information, cause value information, CAG cell status information unsolicited result code +C5GREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>][,<cause\_type>,<reject\_cause>]][,<cag\_stat>]

5 enable network registration, location information, cause value information, CAG cell status information and CAG cell information unsolicited result code +C5GREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<Allowed\_NSSAI\_length>],[<Allowed\_NSSAI>][,<cause\_type>,<reject\_cause>]][,<cag\_stat>][,<caginfo>]

<stat>: integer type; indicates the NR registration status.

0 not registered, MT is not currently searching an operator to register to

1 registered, home network

2 not registered, but MT is currently trying to attach or searching an operator to register to

3 registration denied

4 unknown (e.g. out of NR coverage)

5 registered, roaming

6 registered for "SMS only", home network (not applicable)

7 registered for "SMS only", roaming (not applicable)

8 registered for emergency services only (See NOTE 2)

9 registered for "CSFB not preferred", home network (not applicable)

10 registered for "CSFB not preferred", roaming (not applicable)

11 attached for access to RLOS (See NOTE 2a) (not applicable)

NOTE 2: 3GPP TS 24.501 [161] specifies the condition when the MT is considered as registered for emergency services.

NOTE 2a: 3GPP TS 24.301 [83] specifies the condition when the MT is considered as attached for access to RLOS.

<tac>: string type; three byte tracking area code in hexadecimal format (e.g. "0000C3" equals 195 in decimal).

<ci>: string type; five byte NR cell ID in hexadecimal format.

<Allowed\_NSSAI\_length>: integer type; the Terminal Adaptor (TA) can determine the value by parsing the <Allowed\_NSSAI> parameter.

<Allowed\_NSSAI>: string type in hexadecimal format. Dependent of the form, the string can be separated by dot(s), semicolon(s) and colon(s). This parameter indicates the list of allowed S-NSSAIs for 3GPP access received from the network. The <Allowed\_NSSAI> is coded as a list of <S-NSSAI>s separated by colons. Refer parameter <S-NSSAI> in clause 10.1.1. This parameter shall not be subject to conventional character conversion as per +CSCS.

<AcT>: integer type; indicates the access technology of the serving cell.

0 GSM (not applicable)

1 GSM Compact (not applicable)

2 UTRAN (not applicable)

3 GSM w/EGPRS (see NOTE 3) (not applicable)

4 UTRAN w/HSDPA (see NOTE 4) (not applicable)

5 UTRAN w/HSUPA (see NOTE 4) (not applicable)

6 UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable)

7 E-UTRAN (not applicable)

8 EC-GSM-IoT (A/Gb mode) (see NOTE 5) (not applicable)

9 E-UTRAN (NB-S1 mode) (see NOTE 6) (not applicable)

10 E-UTRA connected to a 5GCN (see NOTE 7)

11 NR connected to a 5GCN (see NOTE 7)

12 NG-RAN (not applicable)

13 E-UTRA-NR dual connectivity (see NOTE 8) (not applicable)

NOTE 3: 3GPP TS 44.018 [156] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.

NOTE 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.

NOTE 5: 3GPP TS 44.018 [156] specifies the EC-SCH INFORMATION message which, if present, indicates that the serving cell supports EC-GSM-IoT.

NOTE 6: 3GPP TS 36.331 [86] specifies the System Information blocks which give the information about whether the serving cell supports NB-IoT, which corresponds to E-UTRAN (NB-S1 mode).

NOTE 7: 3GPP TS 38.331 [160] specifies the information which, if present, indicates that the serving cell is connected to a 5GCN.

NOTE 8: 3GPP TS 38.331 [160] specifies the information which, if present, indicates that the serving cell is supporting dual connectivity of E-UTRA with NR and is connected to an EPS core.

<cause\_type>: integer type; indicates the type of <reject\_cause>.

0 Indicates that <reject\_cause> contains an 5GMM cause value, see 3GPP TS 24.501 [161] Annex A.

1 Indicates that <reject\_cause> contains a manufacturer-specific cause.

<reject\_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause\_type>.

<cag\_stat>: integer type; indicates the camping status on a CAG cell

0 Indicates UE is not camped on CAG cell.

1 Indicates UE is currently camped on CAG cell.

<CAGinfo>: string type;

CAGinfo consists of HRNN, CAG ID and Associated PLMN MCC MNC each delimited by a comma and in this particular order only. If HRNN is unavailable, it shall be an empty field.

The display format is based on <format> value in +CCAGS command. In the alphanumeric format HRNN, CAG ID and Associated PLMN MCC MNC would be displayed while in numeric format only CAG ID and Associated PLMN MCC MNC would be displayed. See 3GPP TS 23.003 [7] for details of HRNN and CAG ID representation.

**Implementation**

Optional. This command is only applicable to UEs supporting 5GS.

\* \* \* Next Change \* \* \* \*

### 10.1.y 5GS network registration status over non-3GPP access +C5GREGN3GPP

Table 10.1.y-1: +C5GREGN3GPP parameter command syntax

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +C5GREGN3GPP=[<n>] | *+CME ERROR: <err>* |
| +C5GREGN3GPP? | **when <n>=0, 1, 2, or 3 and command successful:**  +C5GREGN3GPP: <n>,<stat>[,<Allowed\_NSSAI\_length>,<Allowed\_NSSAI>[,<cause\_type>,<reject\_cause>]] |
| +C5GREGN3GPP=? | +C5GREGN3GPP: (list of supported <n>s) |

**Description**

The set command controls the presentation of an unsolicited result code +C5GREGN3GPP: <stat> when <n>=1 and there is a change in the MT's network registration status in 5GS over non-3GPP access, or unsolicited result code +C5GREGN3GPP: <stat>[,<Allowed\_NSSAI\_length>,<Allowed\_NSSAI>] when <n>=2 and there is a change of the allowed NSSAI for non-3GPP access. The value <n>=3 further extends the unsolicited result code with [,<cause\_type>,<reject\_cause>], when available, when the value of <stat> changes.

Refer clause 9.2 for possible <err> values.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. The parameters <Allowed\_NSSAI\_length>, <Allowed\_NSSAI>, if available, are returned only when <n>=2 and MT is registered in the network. The parameters [,<cause\_type>,<reject\_cause>], if available, are returned when <n>=3.

Test command returns values supported as a compound value.

**Defined values**

<n>: integer type

0 disable network registration unsolicited result code

1 enable network registration unsolicited result code +C5GREGN3GPP: <stat>

2 enable network registration and NSSAI information unsolicited result code +C5GREGN3GPP: <stat>[,<Allowed\_NSSAI\_length>,<Allowed\_NSSAI>]

3 enable network registration, NSSAI information and 5GMM cause value information unsolicited result code +C5GREGN3GPP: <stat>[,<Allowed\_NSSAI\_length>,<Allowed\_NSSAI>[,<cause\_type>,<reject\_cause>]]

<stat>: integer type; indicates the 5GS network registration status over non-3GPP access.

0 not registered, MT is not currently searching an operator to register to

1 registered, home network

2 not registered, but MT is currently trying to attach or searching an operator to register to

3 registration denied

4 unknown (e.g. out of non-3GPP access coverage)

5 registered, roaming

6 registered for emergency services

<Allowed\_NSSAI\_length>: integer type; the Terminal Adaptor (TA) can determine the value by parsing the <Allowed\_NSSAI> parameter.

<Allowed\_NSSAI>: string type in hexadecimal format. Dependent of the form, the string can be separated by dot(s), semicolon(s) and colon(s). This parameter indicates the list of allowed S-NSSAIs for non-3GPP access received from the network. The <Allowed\_NSSAI> is coded as a list of <S-NSSAI>s separated by colons. Refer parameter <S-NSSAI> in clause 10.1.1. This parameter shall not be subject to conventional character conversion as per +CSCS.

<cause\_type>: integer type; indicates the type of <reject\_cause>.

0 Indicates that <reject\_cause> contains an 5GMM cause value, see 3GPP TS 24.501 [161] Annex A.

1 Indicates that <reject\_cause> contains a manufacturer-specific cause.

<reject\_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause\_type>.

**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 | |
| +C5GREG | | as verbose | | unsolicited | | refer clause 10.1.47 | |
| +C5GREGN3GPP | | as verbose | | unsolicited | | refer clause 10.1.y | |
| +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 18.2.2 | |
| +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 | |
| +CDNSADD | | as verbose | | unsolicited | | refer clause 10.1.80 | |
| +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 | |
| +CPAGTCC | | as verbose | | unsolicited | | refer clause 10.1.79 | |
| +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 18.2.1 | |
| +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.

\* \* \* End of Changes \* \* \* \*