**3GPP TSG-CT WG6 Meeting #109-bis-eC6-** **220068**

**Online; 18th January 2022 – 21st January 2022**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **31.111** | **CR** | **0765** | **rev** | **1** | **Current version:** | **17.2.0** |  |
|  |
| *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 | **X** | ME | **X** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Satellite NG-RAN introduction |
|  |  |
| ***Source to WG:*** | Thales DIS |
| ***Source to TSG:*** | CT6 |
|  |  |
| ***Work item code:*** | TEI17 and 5GSAT\_ARCH-CT |  | ***Date:*** | 2022-01-18 |
|  |  |  |  |  |
| ***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 canbe 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-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)**Rel-17 (Release 17)* |
|  |  |
| ***Reason for change:*** | With introduction on Satellite NG-RAN on PLMN selection in TS 31.102 (CR0908, TDoc [C6-210023](https://www.3gpp.org/ftp/tsg_ct/WG6_Smartcard_Ex-T3/CT6-104e/Docs/C6-210023.zip)) the Satellite NG-RAN shall be introduced into TS 31.111 to have consistency on all CT6 specifcations. |
|  |  |
| ***Summary of change:*** | ME support of Event Network Rejection for Satellite NG-RAN:* Clause 5.2: New bit in TERMINAL PROFILE for ME support of Event Network Rejection for Satellite NG-RAN
* Clause 7.5.2: Network Rejection event clarification

OPEN CHANNEL support of Satellite NG-RAN* Clause 6.4.27.2 and 8.52.x: add Satellite NG-RAN with NG-RAN
 |
|  |  |
| ***Consequences if not approved:*** | Satellite NG-RAN is not supported in all CT6 specifications |
|  |  |
| ***Clauses affected:*** | 5.2, 6.4.15, 6.4.27.2, 6.6.15, 6.8.7, 7.3.1.6, 7.3.1.9, 7.3.1.10, 7.3.2.2, 7.5, 7.5.2, 7.5.2.1, 7.5.25.2, 8.6, 8.19.4, 8.49, 8.52.x, 8.61, 8.73, 8.92, 8.93, 8.99, 8.137, 8.138, 8.139, 8.142, 8.144, 9.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |   |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
|  |  |
|  |  |
| ***This CR's revision history:*** | was C6-220044 |

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

## 5.2 Structure and coding of TERMINAL PROFILE

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data:

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Clause | M/O/C | Length |
| Profile | - | M | lgth |

- Profile:

Contents:

- The list of USAT facilities that are supported by the ME.

Coding:

- 1 bit is used to code each facility:

- bit = 1: facility supported by ME.

- bit = 0: facility not supported by ME.

NOTE: several bits may need to be set to 1 for the support of the same facility. This is because of backward compatibility with SAT: several options existed in SAT for a given facility, and they are mandatory in USAT when this facility is supported.

First byte (Download):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 |
|  |  |  |  |  |  |  |  |  |  | See TS 102 223 [32] clause 5.2 |
|  |  |  |  |  |  |  |  |  |  | SMS-PP data download |
|  |  |  |  |  |  |  |  |  |  | Cell Broadcast data download |
|  |  |  |  |  |  |  |  |  |  | See TS 102 223 [32] clause 5.2 |
|  |  |  |  |  |  |  |  |  |  | Bit = 1 if SMS-PP data download is supported |
|  |  |  |  |  |  |  |  |  |  | See TS 102 223 [32] clause 5.2 |
|  |  |  |  |  |  |  |  |  |  | Bit = 1 if Call Control by USIM is supported  |
|  |  |  |  |  |  |  |  |  |  | Bit = 1 if Call Control by USIM is supported  |

…

Thirty sixth byte:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 |
|  |  |  |  |  |  |  |  |  |  | Data Connection Status Change Event support – PDU Connection |
|  |  |  |  |  |  |  |  |  |  | Event: Network Rejection for NG-RAN |
|  |  |  |  |  |  |  |  |  |  | Non-IP Data Delivery support (if class "e" and class "ai" are supported) |
|  |  |  |  |  |  |  |  |  |  | Support of PROVIDE LOCATION INFORMATION, Slice information |
|  |  |  |  |  |  |  |  |  |  | REFRESH "Steering of Roaming” SOR-CMCI parameter support |
|  |  |  |  |  |  |  |  |  |  | Event: Network Rejection for Satellite NG-RAN |

Thirty seventh byte:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 |
|  |  |  |  |  |  |  |  |  |  | Reserved for 3GPP (for future usage) |

Thirty eighth byte:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 |
|  |  |  |  |  |  |  |  |  |  | Reserved for 3GPP (for future usage) |

Subsequent bytes:

- See ETSI TS 102 223 [32] clause 5.2.

Response parameters/data:

- None.

Thirty nineth byte:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 |
|  |  |  |  |  |  |  |  |  |  | Proactive UICC: PROVIDE LOCAL INFORMATION (NG-RAN/Satellite NG-RAN Timing Advance Information) |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |

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

### 6.4.15 PROVIDE LOCAL INFORMATION

This command requests the ME to send current local information to the UICC. At present, this information is restricted to:

- location information: the mobile country code (MCC), mobile network code (MNC), location area code/tracking area code (LAC/TAC) and cell ID of the current serving cell;

NOTE: For UTRAN the cell ID returned in terminal response is the last known cell ID which may not be the current serving cell, when the ME is on a dedicated channel.

- the IMEI or IMEISV of the ME;

- the Network Measurement Results (and the BCCH channel list if connected to GERAN);

- the current date, time and time zone;

- the current ME language setting;

- the Timing Advance, suitable for GERAN,E-UTRAN, NG-RAN and Satellite NG-RAN

- the current access technology;

- the current network search mode;

- the charge state of the battery (if class "g" is supported);

- the WSID of the current I-WLAN connection;

- the WLAN identifier of the current WLAN connection;

- the CSG ID list and corresponding HNB names (if available in the broadcasted information to the ME) of detected CSG or Hybrid cells in the Allowed CSG list or the Operator CSG list (if class "q" is supported);

- the H(e)NB IP address. (if class "v" is supported);

- the list of location information for surrounding macrocells (if class "w" is supported);

- the list of slice(s) information.

The above information can be requested only if supported by the ME as indicated in the TERMINAL PROFILE.

The ME shall return the requested local information within a TERMINAL RESPONSE.

Where location information or Network Measurement Results or list of slice(s) information has been requested and no service is currently available, then the ME shall return TERMINAL RESPONSE (ME currently unable to process command - no service).

Where location information or Network Measurement Results or list of slice(s) information has been requested and the ME is on limited service (e.g. emergency calls only), the ME shall return the data requested in the TERMINAL RESPONSE with the general result (Limited Service).

Where Network Measurement Results has been requested and the ME is connected to a different access technology to the one requested (e.g. UTRAN Measurement Qualifier included when ME is connected to a GERAN), then the ME shall return TERMINAL RESPONSE (ME currently unable to process command - no service).

Network Measurement Results are available on a per access technology basis and indicated as such in the Terminal Profile.

Network Measurement Results for a GERAN:

If the NMR are requested and a call is in progress, the value of all the returned parameters provided by the ME in the response to the command will be valid. The NMR returned when a call is in progress from Mes supporting multiband operation, shall be according to the value of the multiband reporting parameter as defined in TS 44.018 [27]. If a call is not in progress (i.e. ME is in idle mode) some of the returned parameters (e.g. RXQUAL) may be invalid. In idle mode, Mes supporting multiband operation shall ignore the value of the multiband reporting parameter and the NMR returned shall be as defined in TS 44.018 [27] when the multiband reporting parameter equals zero.

NOTE 1: When in idle mode, the only information element on which it is possible to rely on is the RXLEV-FULL-SERVING-CELL, which contains the value of the received signal strength on the BCCH of the current serving cell.

NOTE 2: Network Measurement Results are defined in TS 44.018 [27] as Measurement Results.

The BCCH channel list is only available if the ME is connected to a GERAN.

Network Measurement Results for a UTRAN:

The USIM request for measurement information shall not trigger any measurement activities in ME in addition to those requested by UTRAN.

The ME shall only report measurement results that are valid according to the current RRC state or the UTRAN configuration requested.

NOTE 3: The returned parameters provided by the ME, in the response to the command, are subject to the ME capability, currently used radio configuration, current RRC state and the UTRAN configuration requested as defined in the TS 25.331 [38].

NOTE 4: Network Measurement Results are defined in TS 25.331 [38] as the MEASUREMENT REPORT message.

Network Measurement Results for a E-UTRAN:

The USIM request for measurement information shall not trigger any measurement activities in ME in addition to those requested by E-UTRAN.

The ME shall only report measurement results that are valid according to the current RRC state or the E-UTRAN configuration requested.

NOTE 5: The returned parameters provided by the ME, in the response to the command, are subject to the ME capability, currently used radio configuration, current RRC state and the E-UTRAN configuration requested as defined in the TS 36.331 [49].

NOTE 6: Network Measurement Results are defined in TS 36.331 [49] as the *MeasurementReport* message.

Network Measurement Results for a NG-RAN and Satellite NG-RAN:

The USIM request for measurement information shall not trigger any measurement activities in ME in addition to those requested by NG-RAN and Satellite NG-RAN.

The ME shall only report measurement results that are valid according to the current RRC state or the NG-RAN or Satellite NG-RAN configuration requested.

NOTE 7: The returned parameters provided by the ME, in the response to the command, are subject to the ME capability, currently used radio configuration, current RRC state and the NG-RAN or Satellite NG-RAN configuration requested as defined in the TS 38.331 [71].

NOTE 8: Network Measurement Results are defined in TS 38.331 [71] as the *MeasurementReport* message.

The ME shall return the current date and time as set by the user. An ME of type NK or type ND may return the date and time received from the network with the NITZ feature (see TS 22.042 [3]), if this is available. If available, the ME shall also return the time zone known from the network with the NITZ feature (see TS 22.042 [3]). If the time zone information is not available, the ME shall return 'FF' for this element.

If language setting is requested, the ME shall return the currently used language.

Timing advance is available if the ME is connected to a GERAN,E-UTRAN, NG-RAN or Satellite NG-RAN. If the Timing Advance is requested, the ME shall return the timing advance value that was received from the BTS,eNodeB or gNodeB during the last active dedicated connection (e.g. for call or SMS). Timing advance is defined for GERAN in TS 44.018 [27] , for E-UTRAN in 3GPP TS 36.211 [66] and for NG-RAN and Satellite NG-RAN in 3GPP TS 38.211[73]. An ME supporting the Timing Advance feature shall be able to store the last value of timing advance. In addition to the timing advance value, the ME shall return its current status (i.e. ME is in idle mode or not) in order for the application to be aware of potential misinterpretation of the timing advance value. Caution should be taken if using the Timing Advance value for distance measurement as reflections from the external environment (buildings etc.) may affect the accuracy.

If the access technology is requested, the ME shall return the current access technology that the ME is using.

The WSID or the WLAN identifier is only available if the ME is connected to a I-WLAN or a WLAN respectively. If the WSID or the WLAN identifier is requested, the ME shall return the WSID or the WLAN identifier respectively of the currently connected I-WLAN or a WLAN respectively. Where a WSID or the WLAN identifier has been requested and no I-WLAN or WLAN respectively is currently connected, then the ME shall return TERMINAL RESPONSE (ME currently unable to process command - no service).

When CSG ID list is requested, the ME shall return the CSG ID list and the corresponding HNB name (if available in the broadcasted information to the ME). If the CSG ID list has been requested, and the ME is currently not camped on a CSG or Hybrid cell, the ME shall return TERMINAL RESPONSE (ME currently not able to process command – no service).

The proactive command PROVIDE LOCAL INFORMATION – H(e)NB IP address is issued on the H(e)NB-HPSIM interface, see TS 31.104 [56].

When the IP address is requested, the H(e)NB shall return the IP address reported to H(e)MS and/or HNB-GW for location verification based on IP address (which may be a local IP address). If no such IP address is available to the H(e)NB, the H(e)NB shall return TERMINAL RESPONSE (ME currently not able to process command – no service). If several such IP addresses are available, the H(e)NB provides all of them to the UICC.

The proactive command PROVIDE LOCAL INFORMATION – H(e)NB surrounding macrocell is issued on the H(e)NB-HPSIM interface, see TS 31.104 [56].

When the list of surrounding macrocells is requested, the H(e)NB shall provide the list of location information for detected macrocells.

- For the HNB, all cell information contained in: intra-frequency neighbor list, inter-frequency neighbor list, inter-RAT neighbor list, that are reported to the HMS, see TS 32.582 [57] sec 6.1.1.

- For the HeNB, all cell information contained in: LTE cell neighbor list, UMTS cell neighbor list, GSM cell neighbor list, that are reported to the HeMS, see TS 32.592 [58] sec 6.1.15.

Location information contains the mobile country code (MCC), mobile network code (MNC), location area code/tracking area code (LAC/TAC) and cell ID. The list of surrounding macrocells is provided for all access technologies supported by the H(e)NB, up to the limit of the TERMINAL RESPONSE APDU command size.

NOTE 9: the HPSIM request for H(e)NB surrounding macrocell does not trigger a network scan; the H(e)NB reports available information to the HPSIM.

When the list of slice(s) information is requested, the Serving PLMN S-NSSAIs list shall be returned.

An S-NSSAI, as specified in 3GPP TS 23.003 [30], is comprised of,:

- A Slice/Service type (SST)

- A Slice Differentiator (SD)

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

#### 6.4.27.2 OPEN CHANNEL related to GPRS/UTRAN packet service/E-UTRAN/NG-RAN/Satellite NG-RAN

The procedures defined in ETSI TS 102 223 [32] clause 6.4.27.2 apply, understanding that:

- "packet data service" means GPRS, UTRAN packet service, E-UTRAN, NG-RAN or Satellite NG-RAN,

- "activation of packet data service" means activation of a PDP context or EPS PDN connection or PDU session.

The UICC provides to the terminal a list of parameters necessary to activate a packet data service. The UICC has three ways to indicate to the ME the QoS it requires:

- either use a Bearer Description called "Bearer description for GPRS/UTRAN Packet Service/E-UTRAN", which is valid for GPRS, UTRAN packet service and E-UTRAN

- or use a Bearer Description called "Bearer description for UTRAN Packet Service with extended parameters and HSDPA" which is valid for a UTRAN packet service, HSDPA and E-UTRAN.

- or use a Bearer Description called "Bearer description for E-UTRAN and mapped UTRAN packet service", which is valid for UTRAN packet service and E-UTRAN.

For NG-RAN and Satellite NG-RAN, Quality of Service parameters are not applicable

Upon receiving this command, the ME shall decide if it is able to execute the command.

If the 3GPP PS data off status is "active", and the UE is not configured with indication that Bearer Independent Protocol is a 3GPP PS data off exempt service (see Annex S), then the ME shall send the TERMINAL RESPONSE (ME currently unable to process command) immediately. The operation is aborted.

In addition to the examples given in ETSI TS 102 223 [32] clause 6.4.27.2 the following example applies:

- if the command is rejected because the ME is busy on an SS transaction and unable to activate a PDP context in parallel with this SS transaction, the ME informs the UICC using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction). The operation is aborted.

The "Bearer description" provided in the command gives recommended values for parameters that the ME should use to establish the data link. However if the ME or network does not support these values, the ME selects the most appropriate values.

If class "ai" is supported, the "Bearer description" provided in the command shall indicate a Non-IP PDP Type in order to establish a Non-IP data link. The UICC shall provide the Network Access Name data object.

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

### 6.6.15 PROVIDE LOCAL INFORMATION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Clause | M/O/C | Min | Length |
| Proactive UICC command Tag | 9.2 | M | Y | 1 |
| Length (A+B+C) | - | M | Y | 1 or 2 |
| Command details | 8.6 | M | Y | A |
| Device Identities | 8.7 | M | Y | B |
| UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier | 8.73 | C | N | C |

UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier: This data object applies when the Command Qualifier in Command details is set to indicate "Network Measurement results". It shall be included to indicate to the ME that "Network Measurement Results for a UTRAN" or "Network Measurement Results for a E-UTRAN" or "Network Measurement Results for a NG-RAN and Satellite NG-RAN " is required. It shall be excluded to indicate to the ME that "Network Measurement Results for a GERAN" is required. It shall only be included/excluded if the ME has indicated that it supports the implied access technology via the respective Terminal Profile setting.

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

### 6.8.7 Local information

For Local Information values defined in clause 8.6 then ETSI TS 102 223 [32] clause 6.8.7 applies, with the addition of the following procedures:

- Where the UICC has requested the Network Measurement Results, the TERMINAL RESPONSE shall contain

- for GERAN: The NMR data object and the BCCH channel list data object

- for UTRAN: The Network Measurement Results are coded as the MEASUREMENT REPORT message as defined in TS 25.331 [38].

- for E-UTRAN: The Network Measurement Results are coded as the *MeasurementReport* message defined in TS 36.331 [49]

- for NG-RAN or Satellite NG-RAN: The Network Measurement Results are coded as the *MeasurementReport* message defined in TS 38.331 [71]

- Where the UICC has requested the Network Measurement Results for multiple access technologies, TERMINAL RESPONSE shall contain the Access Technology data object listing all current access technologies, followed by one NMR data object and one BCCH channel list data object for each current access technology in the same sequence. The BCCH channel list data object shall immediately follow the NMR data object, even if not supported by a network access technology. If no NMR data or no BCCH channel list is available for an access technology, the respective data object shall have length zero.

- Where the UICC has requested the Timing Advance, the TERMINAL RESPONSE shall contain the Timing Advance data object if supported by the network access technology.

- Where the UICC has requested the WLAN Specific Identifier, the TERMINAL RESPONSE shall contain the WSID of the current I-WLAN connection.

- Where the UICC has requested the WLAN Identifier, the TERMINAL RESPONSE shall contain the SSID, the BSSID when available, and the HESSID when available, of the current WLAN connection.

- Where the UICC has requested the CSG ID list Identifier, the TERMINAL RESPONSE shall contain the CSG ID list and the corresponding HNB name (if available in the broadcasted information to the ME) of the detected CSG or Hybrid cells in the Allowed CSG list or the Operator CSG list. (if class "q" is supported)

- Where the UICC has requested the H(e)NB IP address, the TERMINAL RESPONSE shall contain the list of all IP addresses available on the H(e)NB-network interface, as a sequence of "Other Address" Data Objects in the TERMINAL RESPONSE. (if class "v" is supported)

- Where the UICC has requested the list of surrounding macrocells, the TERMINAL RESPONSE shall contain, for all supported access technologies, the Access Technology data object listing all current access technologies, followed by one location information data object for each current access technology in the same sequence, up to the limit of the TERMINAL RESPONSE APDU command size. If no location information is available for an access technology, the respective data object shall have length zero. (if class "w" is supported).

- Where the UICC has requested the list of slice(s) information, the TERMINAL RESPONSE shall contain the slices information data object listing all slice(s) information, up to the limit of the TERMINAL RESPONSE APDU command size. If no slice information is available, the respective data object shall have length zero.

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

#### 7.3.1.6 Structure of ENVELOPE (CALL CONTROL)

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Clause | M/O/C | Min | Length |
| Call control tag | 9.1 | M | Y | 1 |
| Length (A+B+C+D+E+F+G+H) | - | M | Y | 1 or 2 |
| Device identities | 8.7 | M | Y | A |
| Address or SS string or USSD string or PDP context activation parameters or EPS PDN connection activation parameters or IMS URI or PDU session establishment parameters | 8.1, 8.14 or 8.17 or 8.72 or 8.98 or 8.108 or 8.143 | M | Y | B |
| Capability configuration parameters 1 | 8.4 | O | N | C |
| Subaddress | 8.3 | O | N | D |
| Location information | 8.19 | C | N | E |
| Capability configuration parameters 2 | 8.4 | O | N | F |
| Media Type | 8.132 | C | N | G |
| URI truncated | 8.135 | C | N | H |

- Device identities: the ME shall set the device identities to:

source: ME;

destination: UICC.

- Address or SS string or USSD string or PDP context activation parameters or EPS PDN connection activation parameters or IMS URI or PDU session establishment parameters: only one data object shall be sent to the UICC:

for a call set-up, the address data object is used and holds the Called Party Number, as defined in TS 24.008 [9], to which the ME is proposing setting up the call;

for a supplementary service, the SS string data object is used and holds the corresponding supplementary service;

for a USSD operation, the USSD string data object is used and holds the corresponding USSD control string;

USIM Applications and MEs should take into account that early implementations of USAT use the SS string data object for coding of USSD control strings (instead of the USSD string data object). This behaviour is only possible for USSD control strings consisting of digits (0-9,\*,#). The UICC can identify MEs having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the TERMINAL PROFILE. The ME can identify USIMs having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the USIM Service Table.

 For a PDP context activation, the Activate PDP context request parameters are used, as defined in TS 24.008 [9]. Except for the following parameters:

- Requested QoS;

- Access Point Name; and

- Protocol configuration options,

 the UICC should not modify any other parameters included in the ACTIVATE PDP CONTEXT REQUEST message as defined in TS 24.008 [9] to avoid that the UE sends a value of any of these parameters that is not compliant to TS 24.008 [9];

 for an EPS PDN connection activation, the PDN Connectivity Request parameters are used, as defined in TS 24.301 [46]. Except for the following parameters:

- Access Point Name; and

- Protocol configuration options,

the UICC should not modify any other parameters included in the PDN CONNECTIVITY REQUEST message as defined in TS 24.301 [46] to avoid that the UE sends a value of any of these parameters that is not compliant to TS 24.301 [46];

 for an IMS communication establishment, the IMS Request-URI field is used and the IMS URI data object holds the SIP URI or tel URI, as defined in TS 24.229[52], to which the ME is proposing setting up the communication. If the URI is longer than the maximum length that can be transmitted to the UICC, then the URI shall be truncated to the maximum length that can be transmitted to the UICC and the request shall contain a URI truncated tag.

for a PDU session establishment, the PDU Session Establishment Request parameters are used, as defined in TS 24.501 [70]. Except for the following parameters:

- SM PDU DN request container; and

- operator specific parameters in Extended Protocol configuration options,

the UICC should not modify any other parameters included in the PDU SESSION ESTABLISHMENT REQUEST message as defined in TS 24.501 [70] to avoid that the UE sends a value of any of these parameters that is not compliant to TS 24.501 [70].

- Capability configuration parameters: Only used for a call set-up, this contains the Bearer capabilities that the ME is proposing to send to the network. The first capability configuration parameters corresponds to the bearer capability 1 information element of a mobile originating SETUP message, as defined in TS 24.008 [9]. The second capability configuration parameters correspond to the bearer capability 2 information element of a mobile originating SETUP message, as defined in TS 24.008 [9]. If no capability configuration parameters are present, this shall indicate a speech call.

- Subaddress: Only used for a call set-up, this contains the called party subaddress that the ME is proposing to send to the network. If one is not present, this shall indicate that the ME is proposing not to send this information element to the network.

- Location information: This data object contains the identification (MCC, MNC, LAC/TAC, Cell Identity) of the current serving cell of the UE. The comprehension required flag of this data object in this command shall be set to '0'. This data object shall be present if the call is performed over GERAN, UTRAN, E-UTRAN, NG-RAN or Satellite NG-RAN.

- Media Type: This data object indicates the type of media the ME is proposing using to set up the communication. If the type of media to be used by the ME is one of those listed in the Terminal Profile and if the "Media Type support" service is allocated and activated in the USIM or ISIM Service Table, the Media Type data object shall be present.

- URI truncated: This data object indicates that the URI in the request was truncated because too long to be transmitted to the UICC.

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

#### 7.3.1.9 Procedure for IMS communications establishment

If the service "communication control for IMS by USIM" is available in the USIM Service Table (see TS 31.102 [14]), then for all IMS communication establishment, the ME shall first pass the corresponding IMS Request-URI contained in SIP INVITE message (see TS24.229 [52]) to the UICC, using the ENVELOPE (CALL CONTROL) command defined above. The ME shall also pass to the UICC in the ENVELOPE (CALL CONTROL) command the current serving cell if the IMS communication is established over GERAN, UTRAN, E-UTRAN, NG-RAN or Satellite NG-RAN. If the type of media to be used by the ME is one of those listed in the Terminal Profile and if the "Media Type support" service is allocated and activated in the USIM or ISIM Service Table, the ME shall pass to the UICC in the ENVELOPE (CALL CONTROL) command the media type of the SIP communication session it is setting up.

This procedure replaces the call control by USIM using the Address TLV (clause 8.1) when the call is originated over IMS and the service "communication control for IMS by USIM" is available in the USIM Service Table (see TS 31.102 [14]).

When the ME detects that an IMS emergency call is being initiated, the ME shall set up an emergency call without sending the ENVELOPE (CALL CONTROL) command to the UICC.

The UICC shall respond in the same way as for mobile originated communications. The ME shall interpret the response as follows:

- if the UICC responds with '90 00', the ME shall send the SIP INVITE message with the information as sent to the UICC;

- if the UICC responds with '93 00', the ME shall not send SIP INVITE message and may retry the command;

- if the UICC provides response data, then the response data from the UICC shall indicate to the ME whether to send the SIP INVITE message as proposed, not send the SIP INVITE message or send the SIP INVITE message using the IMS-Request URI supplied by the UICC. It is mandatory for the ME to perform the SIP INVITE request in accordance with the data from the UICC, if it is within the ME's capabilities to do so. If the UICC requires SIP INVITE request that is beyond the ME's capabilities, then the ME shall not send SIP INVITE request at all.

#### 7.3.1.10 Procedure for PDU session establishment

If the service "call control on PDU session by USIM" is available in the USIM Service Table (see TS 31.102 [14]), then for all PDU session establishment (including those resulting from a OPEN CHANNEL proactive UICC command where NG-RAN or Satellite NG-RAN is selected), the ME shall first pass the corresponding PDU Session Establishment Request message (see TS 24.501 [70]) to the UICC, using the ENVELOPE (CALL CONTROL) command defined above. The ME shall also pass to the UICC in the ENVELOPE (CALL CONTROL) command the current serving cell.

When the ME performs an emergency PDU session establishment, the ME shall not send the ENVELOPE (CALL CONTROL) command to the UICC.

The UICC shall respond in the same way as for mobile originated calls. The ME shall interpret the response as follows:

- if the UICC responds with '90 00', the ME shall send the PDU Session Establishment Request message with the information as sent to the UICC;

- if the UICC responds with '93 00', the ME shall not send the PDU Session Establishment Request message and may retry the command;

- if the UICC provides response data, then the response data from the UICC shall indicate to the ME whether to send the PDU Session Establishment Request message as proposed, not send the PDU Session Establishment Request message or send the PDU Session Establishment Request message using the data supplied by the UICC. It is mandatory for the ME to perform the PDU session establishment in accordance with the data from the UICC, if it is within the ME's capabilities to do so. If the UICC requires PDU session establishment that is beyond the ME's capabilities, then the ME shall not perform PDU session establishment at all.

In the case where the initial PDU Session Establishment Request results from a proactive command OPEN CHANNEL where NG-RAN or Satellite NG-RAN is selected:

- if the call control result is "not allowed", the ME shall inform the UICC using TERMINAL RESPONSE ("interaction with call control by USIM or MO short message control by USIM, permanent problem; action not allowed");

- if the PDU session establishment data is changed by call control, then the ME shall establish the PDU session using the data given by the UICC, if it is within the ME's capabilities to do so. If the UICC requires a PDU session establishment that is beyond the ME's capabilities, then the ME shall not establish the PDU session at all.

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

#### 7.3.2.2 Structure of ENVELOPE (MO SHORT MESSAGE CONTROL)

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Clause | M/O/C | Min | Length |
| MO Short Message control tag | 9.1 | M | Y | 1 |
| Length (A+B+C+D) | - | M | Y | 1 or 2 |
| Device identities | 8.7 | M | Y | A |
| Address data object 1 | 8.1 or 8.108 | M | Y | B |
| Address data object 2 | 8.1 or 8.108 | M | Y | C |
| Location information | 8.19 | C | Y | D |

- Device identities: the ME shall set the device identities to:

source: ME;

destination: UICC.

- Address data object 1: this address data object 1 contains the RP\_Destination\_Address of the Service Centre to which the ME is proposing to send the short message. If the USIM or the ISIM Service Table indicates URI support for MO SHORT MESSAGE CONTROL, then the address data object 1 may contain the Public Service Identity of the SM-SC to which the ME is proposing to send the short message. The type of address data object shall not be modified.

- Address data object 2: this address data object 2 contains the TP\_Destination\_Address to which the ME is proposing to send the short message. If the USIM or the ISIM Service Table indicates URI support for MO SHORT MESSAGE CONTROL, then the address data object 2 may contain the Public Identity (IMPU) of the receiver to which the ME is proposing to send the short message. The type of address data object shall not be modified.

- Location information: this data object contains the identification (MCC, MNC, LAC/TAC, Cell Identity) of the current serving cell of the UE. This data object shall be present if the short message is sent over GERAN, UTRAN, E-UTRAN, NG-RAN or Satellite NG-RAN.

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

## 7.5 Event download

See ETSI TS 102 223 [32] clause 7.5.

Regarding all the call events, the following equivalences shall apply:

- the "call setup message" is the SETUP message as defined in TS 24.008 [09];

- the "call connect message" is the CONNECT message as defined in TS 24.008 [09];

- the "disconnect messages" are the DISCONNECT, RELEASE, RELEASE COMPLETE messages as defined in TS 24.008 [09];

- the "NULL state" is the CC-U0 state as defined in TS 24.008 [09].

Regarding the location status event, the following equivalence shall apply:

- the "idle" state is the MM-IDLE state as defined in TS 24.008 [09] for GERAN/UTRAN, the EMM-IDLE state as defined in TS 24.301 [46] for E-UTRAN and 5GMM-IDLE state as defined in TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

Where events occur and the UICC responds with '93 00', the ME shall retry to deliver the event download messages to the UICC.

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

### 7.5.2 Network Rejection event

#### 7.5.2.1 Procedure

If the Network Rejection event is part of the current event list (as set up by the last SET UP EVENT LIST command, see ETSI TS 102 223 [32] clause 6.4.16), then, in the case of GERAN/UTRAN if the terminal receives a LOCATION UPDATING REJECT message or a GPRS ATTACH REJECT message or a ROUTING AREA UPDATE REJECT message (as defined in TS 24.008 [9]) or in the case of E-UTRAN if the terminal receives an EMM ATTACH REJECT message or TRACKING AREA UPDATE REJECT message (as defined in TS 24.301 [46]), or in the case of NG-RAN and Satellite NG-RAN if the terminal receives a REGISTRATION REJECT message (as defined in TS 24.501 [70]), the terminal shall inform the UICC that this has occurred, by using the ENVELOPE (EVENT DOWNLOAD – Network Rejection Event) command as defined below.

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

#### 7.5.25.2 Structure of ENVELOPE (EVENT DOWNLOAD – Data Connection Status Change)

Direction: ME to UICC

The command header is specified in TS 31.101 [13].

Command parameters/data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Clause | M/O/C | Min | Length |
| Event download tag | 9.1 | M | Y | 1 |
| Length (A+B+C+D+E+F+G+H+I+J+K+L) | - | M | Y | 1 or 2 |
| Event list | 8.25 | M | Y | A |
| Device identities | 8.7 | M | Y | B |
| Data connection status | 8.137 | M | Y | C |
| Data connection type | 8.138 | M | Y | D |
| (E/5G)SM cause  | 8.139 | C | Y | E |
| Transaction identifier | 8.28 | M | Y | F |
| Date-Time and Time zone | 8.39 | C | Y | G |
| Location Information | 8.19 | C | Y | H |
| Access Technology | 8.62 | C | Y | I |
| Location status | 8.27 | M | Y | J |
| Network Access Name | 8.61 | C | Y | K |
| PDP/PDN/PDU type | 8.142 | C | Y | L |

- Event list: the Event list data object shall contain only one event (value part of length 1 byte), and the ME shall set the event to:

- Data Connection Status Change.

- Device identities: the terminal shall set the device identities to:

- source: Network for network originated messages. ME for ME originated messages;

- destination: UICC.

- Data connection status: This data object shall contain the status of the data connection.

- Data connection type: This data object shall contain the type of data connection.

- (E/5G)SM cause: If an (E/5G)SM cause is available, this data object shall contain either the SM cause as defined in 3GPP TS 24.008 [9] or the ESM cause as defined in 3GPP TS 24.301 [46], or the 5GSM cause as defined in 3GPP TS 24.501 [70].

- Transaction identifier: The Transaction identifier data object shall contain one transaction identifier as defined in clause 8.28.

- Date-Time and Time zone: If the date-time and time zone information is available in the ME, this data object is mandatory and shall contain the Date-Time and Time zone at the ME detected moment of occurrence of the event.

- Location Information: This data object contains the identification (MCC, MNC, LAC/TAC, Cell Identity) of the current serving cell of the UE. The comprehension required flag of this data object in this command shall be set to '0'. This data object shall be present if the data connection is performed over GERAN, UTRAN, E-UTRAN, NG-RAN or Satellite NG-RAN.

- Access Technology: This data object shall contain the access technology of the rejecting or accepting network.

- Location Status: This data object indicates the current service state of the terminal.

- Network Access Name: This data object shall contain the Access Point Name value present in the Activate PDP context request (for a PDP context activation, as defined in TS 24.008 [9]) or the PDN connectivity request (for an EPS PDN connection activation, as defined in TS 24.301 [46]), or it shall contain the Data Network Name value present in the UL NAS TRANSPORT message for PDU Session Establishment request, as defined TS 24.501 [70]. It is present only when Data connection status is either successful or rejected.

- PDP/PDN/PDU type: This data object shall contain the PDP/PDN/PDU type requested in the Activate PDP context request (for a PDP context activation, as defined in TS 24.008 [9]) or the PDN connectivity request (for an EPS PDN connection activation, as defined in TS 24.301 [46]), or the PDU Session Establishment request (as defined in TS 24.501 [70]). It is present only when Data connection status is either successful or rejected.

Response parameters/data: None for this type of ENVELOPE command.

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

## 8.6 Command details

The content and the coding of the Command Details TLV object is defined in ETSI TS 102 223 [32] clause 8.6, except for the following.

The coding of the Command Qualifier is defined for the following commands:

- SEND SS:

this byte is RFU.

- SEND USSD:

this byte is RFU.

- PROVIDE LOCAL INFORMATION.

 The following additional values are defined:

 '00' = Location Information (MCC, MNC, LAC/TAC, Cell Identity and Extended Cell Identity).

 '02' = Network Measurement results.

 '05' = Timing Advance.

 '0C' = current WSID.

 '11' = CSG ID list and corresponding HNB name.

 '12' = H(e)NB IP address.

 '13' = H(e)NB surrounding macrocells.

 '14' = current WLAN identifier.

 '15' = slices information.

 '16' to '19' = reserved for 3GPP (for future usage)

The following values do not apply

 '07' = Reserved by ETSI (ESN)

 '0B' = Reserved by ETSI (MEID)

- REFRESH. The following additional values are defined:

 '07' = Steering of Roaming as defined in TS 23.122 [7].

 '08' = Steering of Roaming for I-WLAN as defined in TS 24.234 [42].

- Geographical Location Request:

 this byte is RFU.

- OPEN CHANNEL related to CS bearer, GPRS/UTRAN packet service/E-UTRAN/NG-RAN/Satellite NG-RAN, local bearer, Default (network) bearer, I-WLAN bearer, WLAN bearer, Terminal Server Mode, UICC Server Mode:

- As defined in ETSI TS 102 223 [32]

- OPEN CHANNEL for IMS:

this byte is RFU.

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

### 8.19.4 Location Information for NG-RAN and Satellite NG-RAN

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '0B' or '03' (see Note) | 1 |
| 3 – 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 – 8 | Tracking Area Code (TAC) (see Note) | 3 |
| 9 – 13 | NR Cell Identifier (NCI) (see Note) | 5 |
| NOTE: When this object is used in the Network Rejection event download, the Tracking Area Code (TAC) and the NR Cell Identifier (NCI) fields shall not be present and the length field shall be set to '03'. |

The Mobile Country Code (MCC), the Mobile Network Code (MNC) is coded as in TS 24.008 [9].

The Tracking Area Code (TAC) for NG-RAN or Satellite NG-RAN is coded in 3 bytes as specified in TS 24.501 [70]. The most significant bit of TAC is coded on the most significant bit of byte 6. The least significant bit of TAC is coded on the least significant bit of byte 8.

NR Cell Identifier (NCI) Value is coded on 36 bits as referenced in TS 38.413 [69] clause 9.3.1.7. The most significant bit of NCI is coded on the most significant bit of byte 9. The least significant bit of NCI is coded on the 4th bit of byte 13. The 4 least significant bits of byte 13 shall be set to 1.

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

## 8.22 Network Measurement Results

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Network Measurement Results tag | 1 |
| 2 | Length (X) of bytes following | 1 |
| 3 – to X+2 | Network Measurement Results | X |

For GERAN: The Network Measurement Results are coded as for the Measurement Results information element in TS 44.018 [27], starting at octet 2 (the IEI is removed, as this information is duplicated by the data object tag). The Length shall be set to '10' (16 decimal).

For UTRAN: The Network Measurement Results are coded as for the "MeasurementReport" information element as defined in the ASN.1 description of TS 25.331 [38], according to the following:

- The "Measurement identity" field in the MEASUREMENT REPORT shall be set to the value '1'.

- If "intra-frequency measurements" are requested by USIM, the ME shall, in the MEASUREMENT REPORT, include IE "Intra-frequency measured results list" in IE "Measured Results". The ME shall report CPICH Ec/No, CPICH RSCP and pathloss for the up to 6 strongest (highest Ec/No value) intra-frequency cells, if available in the ME according to TS 25.331 [38] and  TS 25.133 [39].

- If "inter-frequency measurements" are requested by USIM, the ME shall, in the MEASUREMENT REPORT, include IE "inter-frequency measured results list" in IE "Measured Results". The ME shall report CPICH Ec/No, CPICH RSCP and pathloss for the up to 6 strongest (highest Ec/No value) inter-frequency cells per monitored frequency, if available in the ME according to TS 25.331 [38] and  TS 25.133 [39].

- If "inter-RAT (GERAN) measurements" are requested by USIM, the ME shall, in the MEASUREMENT REPORT, include IE "inter-RAT measured results list" in IE "Measured Results". The ME shall report GSM carrier RSSI for up to 8 strongest (highest RSSI value) inter-RAT GERAN cells (identified by the BCCH ARFCN), if available in the ME according to TS 25.331 [38] and  TS 25.133 [50].

- If "inter-RAT (E-UTRAN)" are requested by USIM, the ME shall, in the MEASUREMENT REPORT, include IE "E-UTRA measured results". The ME shall report RSRP and RSRQ for the up to 4 strongest (highest RSRQ value) inter-RAT E-UTRAN cells per monitored frequency, if available in the ME according to TS 25.331 [38] and  TS 25.133 [39].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

For E-UTRAN:

Intra-frequency & inter-RAT (GERAN): the Network Measurement Results are coded as for the *MeasurementReport* information element as defined in the ASN.1 description of TS 36.331 [49], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServCell" with RSRP and RSRQ of the serving cell.

- If "intra-frequency measurements" are requested by USIM, the ME shall, in the *MeasurementReport*, include IE "measResultListEUTRA" in IE "measResults". The ME shall report RSRP, RSRQ, Physical Cell ID and IE "cgi-Info" for the up to 8 strongest (highest RSRQ value) intra-frequency cells, if available in the ME according to TS 36.331 [49] and  TS 36.133 [50].

- If "inter-RAT (GERAN) measurements" are requested by USIM, the ME shall, in the *MeasurementReport*, include IE "measResultListGERAN" in IE "measResults". The ME shall report GERAN carrier RSSI and Physical Cell ID for the up to 8 strongest (highest RSSI value) inter-RAT GERAN cells (identified by the BCCH ARFCN) and IE "cgi-Info", if available in the ME according to TS 36.331 [49] and  TS 36.133 [50].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

Inter-frequency & inter-RAT (UTRAN): the ME can send more than one Network Measurement Results TLV object, each containing the results of one frequency. Each Network Measurement Results shall include 2 bytes with the frequency value coded as the ARFCN-ValueEUTRA for inter-frequency measurements or as the ARFCN-ValueUTRA for inter-RAT (UTRAN) measurements as defined in TS 36.331 [49], followed by the *MeasurementReport* information element as defined in the ASN.1 description of TS 36.331 [49], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServCell" with RSRP and RSRQ of the serving cell.

- If "inter-frequency measurements" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE " measResultListEUTRA" in IE "measResults". The ME shall report RSRP, RSRQ, Physical Cell ID and IE "cgi-Info" for the up to 8 strongest (highest RSRQ value) inter-frequency cells per monitored frequency, if available in the ME according to TS 36.331 [49] and TS 36.133 [50].

- If "inter-RAT (UTRAN) measurements" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE " measResultListUTRA" in IE "measResults". The ME shall report CPICH Ec/No, CPICH RSCP, Physical Cell ID and IE "cgi-Info" for the up to 8 strongest (highest Ec/No value) inter-RAT UTRAN cells per monitored frequency, if available in the ME according to TS 36.331 [49] and  TS 36.133 [50].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

For inter-frequency measurement results with EARFCN that exceeds maxEARFCN, the ME shall use the E-UTRAN Inter-frequency Network Measurement Results TLV objects if the service "extended EARFCN" is available in the USIM Service Table (see TS 31.102 [14]) or not include them otherwise.

Inter-RAT (NR): the ME can send more than one Network Measurement Results TLV object, each containing the results of one frequency. Each Network Measurement Results shall include 4 bytes containing the frequency value coded as the ARFCN-ValueNR for inter-RAT (NR) measurements as defined in TS 36.331 [49], where the least significant byte of the frequency value is stored in the least significant byte of this 4 byte field and the unused bytes of these 4 byte field are set to 0, followed by the *MeasurementReport* information element as defined in the ASN.1 description of TS 36.331 [49], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServCell" with RSRP and RSRQ of the serving cell.

- If "inter-RAT (NR) measurements" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE "measResultNeighCellListNR" in IE "measResults". The ME shall report Physical Cell ID, related RSRP,RSRQ and SINR for the up to 8 strongest inter-RAT NR cells per monitored frequency, if available in the ME according to TS 36.331 [49] and TS 36.133 [50].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

For NG-RAN and Satellite NG-RAN:

Intra-frequency : the Network Measurement Results are coded as for the *MeasurementReport* information element as defined in the ASN.1 description of TS 38.331 [71], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServingCell" with RSRP,RSRQ and the available SINR of the serving cell.

- If "intra-frequency measurements" are requested by USIM, the ME shall, in the *MeasurementReport*, include IE "MeasResultListNR" in IE "measResults". The ME shall report Physical Cell ID,related RSRP,RSRQ,SINR and IE " cgi-Info" for the up to 8 strongest intra-frequency cells, if available in the ME according to TS 38.331 [71] and  TS 38.133 [72].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

Inter-frequency and inter-RAT (E-UTRAN): the ME can send more than one Network Measurement Results TLV object, each containing the results of one frequency. Each Network Measurement Results shall include 3 bytes containing the frequency value coded as the ARFCN-ValueNR for Inter-frequency measurements or as the ARFCN-ValueEUTRA for inter-RAT (E-UTRAN) measurements as defined in TS 38.331[71].the Network Measurement Results are coded as for the *MeasurementReport* information element as defined in the ASN.1 description of TS 38.331 [71], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServingCell" with RSRP,RSRQ and the available SINR of the serving cell.

- If "inter-frequency measurements" are requested by USIM, the ME shall, in the *MeasurementReport*, include IE "MeasResultListNR" in IE "measResults". The ME shall report Physical Cell ID,related RSRP,RSRQ,SINR and IE " cgi-Info" for the up to 8 strongest inter-frequency cells per monitored frequency, if available in the ME according to TS 38.331 [71] and  TS 38.133 [72].

- If "inter-RAT (E-UTRAN)" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE " measResultListEUTRA" in IE "measResults". The ME shall report RSRP, RSRQ, SINR,Physical Cell ID and IE "cgi-Info" for the up to 8 strongest inter-RAT E-UTRAN cells per monitored frequency, if available in the ME according to TS 38.331 [71] and TS 38.133 [72].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

Inter-frequency & inter-RAT (UTRAN): the ME can send more than one Network Measurement Results TLV object, each containing the results of one frequency. Each Network Measurement Results shall include 3 bytes with the frequency value coded as the ARFCN-ValueNR for Inter-frequency measurements or as the ARFCN-ValueUTRA for inter-RAT (UTRAN) measurements as defined in TS 38.331 [49], followed by the *MeasurementReport* information element as defined in the ASN.1 description of TS 38.331 [49], according to the following:

- The "measId" field in the "measResults" shall be set to the value '1'.

- the ME shall include IE "measResultServCell" with RSRP and RSRQ and the available SINR of the serving cell.

- If "inter-frequency measurements" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE " measResultListNR" in IE " measResults ". The ME shall report Physical Cell ID,related RSRP,RSRQ,SINR and IE " cgi-Info" for the up to 8 strongest inter-frequency cells per monitored frequency, if available in the ME according to TS 38.331 [71] and  TS 38.133 [72].

- If "inter-RAT (UTRAN) measurements" are requested by the USIM, the ME shall, in the *MeasurementReport*, include IE "measResultListUTRA-FDD-r16" in IE "measResults". The ME shall report CPICH Ec/No, CPICH RSCP, Physical Cell ID for the up to 8 strongest (highest Ec/No value) inter-RAT UTRAN cells per monitored frequency, if available in the ME according to TS 38.331 [49] and  TS 38.133 [50].

- All other optional fields in the *MeasurementReport* shall be set to be absent.

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

## 8.49 Bearer

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Bearer tag | 1 |
| 2 to (Y + 1) | Length (X) | Y |
| (Y+2) to (Y + X +1)  | List of bearers in order of priority requested | X |

The ME shall use this list to choose which bearers are allowed in order of priority.

Coding of the bearers:

- '00' = SMS;

- '01' = CSD;

- '02' = USSD;

- '03' = GPRS/UTRAN packet service/E-UTRAN/NG-RAN/Satellite NG-RAN;

- '04' to 'FF' = RFU.

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

### 8.52.0 Structure of Bearer description

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Bearer description tag | 1 |
| 2 | Length (X+1) | 1 |
| 3 | Bearer type | 1 |
| 4 to (3+X) | Bearer parameters | X |

- Bearer Type coding: in addition to the values defined in ETSI TS 102 223 [32], the following are defined:

'01' = CSD;

'02' = GPRS / UTRAN packet service / E-UTRAN / NG-RAN / Satellite NG-RAN.

'09' = UTRAN packet service with extended parameters / HSDPA / E-UTRAN / NG-RAN / Satellite NG-RAN.

'0A' = (I-)WLAN.

'0B' = E-UTRAN / NG-RAN / Satellite NG-RAN / mapped UTRAN packet service.

'0C' = NG-RAN / Satellite NG-RAN

'0D' and '0E' = reserved for 3GPP (for future usage)

- Bearer parameters coding: see the following clauses.

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

### 8.52.2 Bearer parameters for GPRS / UTRAN Packet Service / E-UTRAN / NG-RAN / Satellite NG-RAN

Contents: parameters describing the Quality of Service (QoS) and the type of PDP. This is an element of the PDP context. These parameters can be used for 3GPP network packet service.

In this case X=6.

Coding:

- The following values are as defined in the TS 27.007 [12], for the "+CGQREQ" extended command. They are coded in hexadecimal.

Coding of Byte 4:

- Precedence class: same as the "precedence" subparameter, defined in TS 27.007 [12].

Coding of Byte 5:

- Delay class: same as the "delay" subparameter, defined in TS 27.007 [12].

Coding of Byte 6:

- Reliability class: same as the "reliability" subparameter, defined in TS 27.007 [12].

Coding of Byte 7:

- Peak throughput class: same as the "peak" subparameter, defined in TS 27.007 [12].

Coding of Byte 8:

- Mean throughput class: same as the "mean" subparameter, defined in TS 27.007 [12].

Coding of Byte 9:

- Packet data protocol type (PDP type):

'02' = IP (Internet Protocol, IETF STD 5);

'07' = Non-IP (Transfer of Non-IP data to external packet data network);

all other values are reserved.

NOTE 1: The mapping between the UTRAN and E-UTRAN QoS parameters are defined in TS 23.203 [47].

NOTE 2: For NG-RAN and Satellite NG-RAN, QoS parameters are not applicable.

### 8.52.3 Bearer parameters for UTRAN Packet Service with extended parameters / HSDPA / E-UTRAN / NG-RAN / Satellite NG-RAN

Contents: parameters describing the Quality of Service (QoS) and the type of PDP. This is an element of the PDP context.

In this case X=17.

Coding:

- The following values are as defined in the TS 27.007 [12], for the "+CGEQREQ" extended command. They are coded in hexadecimal.

Coding of Byte 4:

- Traffic class: same as the "Traffic class" subparameter, defined in TS 27.007 [12].

Coding of Byte 5 and 6:

- Maximum bitrate UL: same as the "Maximum bitrate UL" subparameter, defined in TS 27.007 [12]. The ME shall fill all octets with 'FF' in case the value exceeds the maximum that can be represented.

Coding of Byte 7 and 8:

- Maximum bitrate DL: same as the "Maximum bitrate DL" subparameter, defined in TS 27.007 [12]. The ME shall fill all octets with 'FF' in case the value exceeds the maximum that can be represented.

Coding of Byte 9 and 10:

- Guaranteed bitrate UL: same as the "Guaranteed bitrate UL" subparameter, defined in TS 27.007 [12]. The ME shall fill all octets with 'FF' in case the value exceeds the maximum that can be represented.

Coding of Byte 11 and 12:

- Guaranteed bitrate DL: same as the "Guaranteed bitrate DL" subparameter, defined in TS 27.007 [12]. The ME shall fill all octets with 'FF' in case the value exceeds the maximum that can be represented.

Coding of Byte 13:

- Delivery order: same as the "Delivery order" subparameter, defined in TS 27.007 [12].

Coding of Byte 14:

- Maximum SDU size: same as the "Maximum SDU size" subparameter, defined in TS 24.008 [9].

Coding of Byte 15:

- SDU error ratio: same as the "SDU error ratio" subparameter, defined in TS 24.008 [9], coded in the first 4 bits. The 4 most significant bits shall be set to 0.

Coding of Byte 16:

- Residual bit error ratio: same as the "Residual bit error ratio" subparameter, defined in TS 24.008 [9], coded in the first 4 bits. The 4 most significant bits shall be set to 0.

Coding of Byte 17:

- Delivery of erroneous SDUs: same as the "Delivery of erroneous SDUs" subparameter, defined in TS 27.007 [12].

Coding of Byte 18:

- Transfer delay: same as the "Transfer delay" subparameter, defined in TS 24.008 [9] , coded in the first 6 bits. The 2 most significant bits shall be set to 0.

Coding of Byte 19:

- Traffic handling priority: same as the "Traffic handling priority" subparameter, defined in TS 27.007 [12].

Coding of Byte 20:

- PDP\_type: same as the "PDP type" subparameter, defined in TS 24.008 [9] for ETSI or IETF allocated address.

NOTE 1: HSDPA parameters and UTRAN Packet Service parameters are the same except for the maximum bitrate DL and the guaranteed bitrate DL, which can be higher for HSDPA (see TS 24.008 [9]).

NOTE 2: The mapping between the UTRAN and E-UTRAN QoS parameters are defined in TS 23.203 [47].

NOTE 3: For NG-RAN and Satellite NG-RAN, QoS parameters are not applicable.

### 8.52.4 Bearer parameters for (I-)WLAN

Content: parameters specific to the bearer. RFU.

In this case X=0

### 8.52.5 Bearer parameters for E-UTRAN / NG-RAN / Satellite NG-RAN / mapped UTRAN packet service

Contents: parameters describing the Quality of Service (QoS) and the type of PDP. This is an element of the PDP context.

In this case X=2 or X=6 or X=10 or X=14, depending on the size of the "EPS quality of service" information element and the resource type (GBR or non-GBR).

In case of a non-GBR QCI, the QoS octets in the "EPS quality of service" information element are ignored by the UE, as specified in TS 24.301 [46]. In this case, the UE shall use X=2, passing only the QCI value.

Coding of Byte 4 to Byte X+2:

Byte 4 same as "octet 3" of the "EPS quality of service" information element, defined in TS 24.301 [46].

For a GBR QCI each subsequent Byte shall be present only if the corresponding next octet in the "EPS quality of service" information element is present. The coding of the corresponding bytes shall be the same.

Coding of Byte X+3:

- PDP\_type: same as the "PDP type" subparameter, defined in TS 24.008 [9] for ETSI or IETF allocated address.

NOTE 1: the UICC should handle the cases with X > 14 gracefully, ignoring additional octets.

NOTE 2: For NG-RAN and Satellite NG-RAN, QoS parameters are not applicable.

### 8.52.6 Bearer parameters for NG-RAN / Satellite NG-RAN

Contents: parameters describing the type of PDU session. This is an element of the PDU session context.

When the ME has successfully established PDU session it shall include this Bearer parameter in the TERMINAL RESPONSE to inform the USIM.

The Bearer parameters for NR shall contain the PDU session type.

Length:

- 1 to X Bytes

Coding:

- Coding of Byte 4:

PDU session type: same as the "PDU session type", defined in Figure 9.11.4.11.1 of TS 24.501 [70].

- Coding of further Bytes:

RFU

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

## 8.61 Network Access Name

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Network Access Name tag | 1 |
| 2 | Length (X)  | 1 |
| 3 to 3+X-1 | Network Access Name | X |

Content:

- The Network Access Name is used to identify the Gateway entity (GGSN) or a Packet Data Network Gateway (PDN-GW) or a User Plane Function (UPF), which provides interworking with an external packet data network. For GPRS, UTRAN packet service and E-UTRAN, the Network Access Name is an APN. For NG-RAN and Satellite NG-RAN, the Network Access Name is a DNN (which is coded same as an APN).

Coding:

- As defined in TS 23.003 [30].

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

## 8.73 UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier

This information is only available when the ME is connected to a UTRAN or an E-UTRAN or a NG-RAN or a Satellite NG-RAN.

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier tag | 1 |
| 2 | Length (1)  | 1 |
| 3 | UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier | 1 |

UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier

Contents: Qualifier specific to the UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN NMR

Coding

'01' UTRAN Intra-frequency measurements

'02' UTRAN Inter-frequency measurements

'03' UTRAN Inter-RAT (GERAN) measurements

'04' UTRAN Inter-RAT (E-UTRAN) measurements

'05' E-UTRAN Intra-frequency measurements

'06' E-UTRAN Inter-frequency measurements

'07' E-UTRAN Inter-RAT (GERAN) measurements

'08' E-UTRAN Inter-RAT (UTRAN) measurements

'09' E-UTRAN Inter-RAT (NR) measurements

'0A' NG-RAN/Satellite NG-RAN Intra-frequency measurements

'0B' NG-RAN/Satellite NG-RAN Inter-frequency measurements

'0C' NG-RAN/Satellite NG-RAN Inter-RAT (E-UTRAN) measurements

'0D' NG-RAN/Satellite NG-RAN Inter-RAT (UTRAN) measurements

All other values are reserved

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

## 8.92 Update/Attach/Registration Type

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Update/Attach/Registration Type Tag | 1 |
| 2 | Length | 1 |
| 3  | Update/Attach/Registration Type | 1 |

Contents:

- In the case of GERAN/UTRAN, the terminal shall use this information as a mechanism to indicate to the UICC the location updating type that was sent in the LOCATION UPDATING REQUEST message or the attach type that was sent in the GPRS Attach Request message or the update type that was sent in the Routing Area Updating Request message, as specified in TS 24.008 [9].

- In the case of E-UTRAN, the terminal shall use this information as a mechanism to indicate to the UICC the EPS attach type that was sent in the EMM ATTACH REQUEST message or the EPS update type that was sent in the TRACKING AREA UPDATE REQUEST message, as specified in TS 24.301 [46].

- In the case of NG-RAN/Satellite NG-RAN, the terminal shall use this information as a mechanism to indicate to the UICC the 5GS registration type that was sent in the REGISTRATION REQUEST message, as specified in TS 24.501 [70].

Coding:

- '00' = "Normal Location Updating" in the case of a Location Updating Request message;

- '01' = "Periodic Updating" in the case of a Location Updating Request message;

- '02' = "IMSI Attach" in the case of a Location Updating Request message;

- '03' = "GPRS Attach" in the case of a GPRS Attach Request message;

- '04' = "Combined GPRS/IMSI Attach" in the case of a GPRS Attach Request message;

- '05' = "RA Updating" in the case of a Routing Area Update Request message;

- '06' = "Combined RA/LA Updating" in the case of a Routing Area Update Request message;

- '07' = "Combined RA/LA Updating with IMSI Attach" in the case of a Routing Area Update Request message;

- '08' = "Periodic Updating" in the case of a Routing Area Update Request message

- '09' = "EPS Attach" in the case of an EMM ATTACH REQUEST message

- '0A' = "Combined EPS/IMSI Attach" in the case of an EMM ATTACH REQUEST message

- '0B' = "TA updating " in the case of an EMM TRACKING AREA UPDATE REQUEST message

- '0C' = "Combined TA/LA updating" in the case of an EMM TRACKING AREA UPDATE REQUEST message

- '0D' = "Combined TA/LA updating with IMSI attach" in the case of an EMM TRACKING AREA UPDATE REQUEST message

- '0E' = "Periodic updating" in the case of an EMM TRACKING AREA UPDATE REQUEST message

- '0F' = "Initial Registration" in the case of a 5GMM REGISTRATION REQUEST message

- '10' = "Mobility Registration updating" in the case of a 5GMM REGISTRATION REQUEST message

- '11' = "Periodic Registration updating" in the case of a 5GMM REGISTRATION REQUEST message

- All other values are reserved for future use

## 8.93 Rejection Cause Code

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Rejection Cause Code Tag | 1 |
| 2 | Length | 1 |
| 3 | Rejection Cause Code | 1 |

For GERAN/UTRAN, in the case of a Location Updating Reject message, this object shall contain the Reject Cause as received in the Location Updating Reject message. The Reject Cause is coded in the same manner as the value part of the Reject Cause information element as specified in TS 24.008 [9]

For GERAN/UTRAN, in the case of a GPRS Attach Reject message or a Routing Area Update Reject message, this object shall contain the GMM Cause as received in the GPRS Attach Reject message or Routing Area Update Reject message. The GMM Cause is coded in the same manner as the value part of the GMM Cause information element as specified in TS 24.008 [9].

For E-UTRAN, in the case of an EMM ATTACH REJECT message or an EMM TRACKING AREA UPDATE REJECT message, this object shall contain the EMM Cause as received in the EMM ATTACH REJECT message or EMM TRACKING AREA UPDATE REJECT message. The EMM Cause is coded in the same manner as the value part of the EMM Cause information element as specified in TS 24.301 [46].

For NG-RAN/Satellite NG-RAN, in the case of a 5GMM REGISTRATION REJECT message, this object shall contain the 5GMM Cause as received in the 5GMM REGISTRATION REJECT message. The 5GMM Cause is coded in the same manner as the value part of the 5GMM Cause information element as specified in TS 24.501 [70].

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

## 8.99 Tracking Area Identification

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Tracking Area Identification Tag | 1 |
| 2 | Length | 1 |
| 3 - 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 - X | Tracking Area Code (TAC) (See NOTE) | X - 5 |
| NOTE: TAC is coded in 2 bytes for E-UTRAN and in 3 bytes for NG-RAN and Satellite°NG‑RAN |

This object shall contain the Tracking Area Identification information of rejecting network (i.e. MCC, MNC and TAC). The value part of this object is coded in the same manner as the value part of the Tracking Area Identity information element as specified in TS 24.301 [46] for E-UTRAN, or as the value part of the Tracking Area Identity information element as specified in TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

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

## 8.137 Data connection status

This data object shall contain the result of the PDP request procedure, PDN request procedure or PDU establishment procedure as defined in 3GPP TS 24.008 [9] for GERAN and UTRAN, 3GPP TS 24.301 [46] for E-UTRAN or 3GPP TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Data connection status tag | 1 |
| 2 | Length = '01' | 1 |
| 3 | Data connection status value | 1 |

Data connection status value coding:

- '00' = Data connection successful; Successful means accepted by the network and completed by the device.

- '01' = Data connection rejected;

- '02' = Data connection dropped or deactivated.

- Other values RFU

## 8.138 Data connection type

This data object shall contain the type of procedure, PDP request procedure, PDN request procedure or PDU establishment procedure, as defined in 3GPP TS 24.008 [9] for GERAN and UTRAN, 3GPP TS 24.301 [46] for E-UTRAN or 3GPP TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Data connection type tag | 1 |
| 2 | Length = '01' | 1 |
| 3 | Data connection type | 1 |

Data connection type coding:

- '00' = PDP connection

- '01' = PDN connection

- '02' = PDU connection

- Other values RFU

## 8.139 (E/5G)SM cause

This data object shall contain the value of the SM cause for PDP as defined in 3GPP TS 24.008 [9] for GERAN & UTRAN, the ESM Cause for PDN as defined in 3GPP TS 24.301 [46] for E-UTRAN or the 5GSM Cause for PDU as defined in 3GPP TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | (E/5G)SM cause tag | 1 |
| 2 | Length = '01' | 1 |
| 3 | (E/5G)SM cause value | 1 |

(E/5G)SM cause value coding:

For PDP procedures:

The coding of the cause is defined in 3GPP TS 24.008 [9]

- If the data connection (i.e. request procedure) is accepted, (E/5G)SM cause value is the SM cause value contained in the message for PS session management (i.e. ACTIVATE PDP CONTEXT ACCEPT message) coded as in TS 24.008 [9] clause 10.5.6.6a;

- If the data connection (i.e. request procedure) fails or is deactivated, (E/5G)SM cause value is the SM cause value contained in the messages for PS session management (i.e. ACTIVATE PDP CONTEXT REJECT message or REQUEST PDP CONTEXT ACTIVATION REJECT message or the DEACTIVATE PDP CONTEXT REQUEST message) and is coded as in TS 24.008 [9] clause 10.5.6.6.

For PDN procedures:

The coding of the cause is defined in 3GPP TS 24.301 [46].

- If the data connection (i.e. request procedure) fails or is deactivated, (E/5G)SM cause value is the ESM cause value contained in the message types for EPS session management (ie. in the PDN CONNECTIVITY REJECT message or ACTIVATE DEFAULT EPS BEARER CONTEXT REJECT message or the DEACTIVATE EPS BEARER CONTEXT REQUEST message) and is coded as in TS 24.301 [46] clause 9.9.4.4.

For PDU procedures:

The coding of the cause is defined in 3GPP TS 24.501 [70].

- If the data connection (i.e. request procedure) fails or is deactivated/released, (E/5G)SM cause value is the 5GSM cause value contained in the message types for 5GS session management (ie. in the PDU SESSION ESTABLISHMENT REJECT message or in the PDU SESSION RELEASE REQUEST message) and is coded as in TS 24.501 [70] clause 9.11.4.2.

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

## 8.142 PDP/PDN/PDU type

This data object shall contain the PDP, PDN or PDU Session type, as defined in 3GPP TS 24.008 [9] for GERAN and UTRAN, in 3GPP TS 24.301 [46] for E-UTRAN or in 3GPP TS 24.501 [70] for NG-RAN and Satellite NG-RAN.

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | PDP/PDN/PDU type tag (see Note) | 1 |
| 2 | Length = '01' | 1 |
| 3 | PDP/PDN type or PDU Session type | 1 |
| NOTE: Interpretation of the type depends on the value for the Access Technology (see clause 8.62) |

PDP/PDN type coding:

- '00' = IPv4

- '01' = IPv6

- '03' = IPv4v6

- '04' = PPP

- '05' = non IP

All other values are RFU.

PDU Session type coding:

- '00' = IPv4

- '01' = IPv6

- '03' = IPv4v6

- '04' = Unstructured

- '05' = Ethernet

All other values are RFU.

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

## 8.144 NG-RAN/Satellite NG-RAN Primary Timing Advance Information

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | NG-RAN/Satellite NG-RAN Timing Advance tag | 1 |
| 2 | Length = '04'  | 1 |
| 3 | ME Status | 1 |
| 4 - 6 | NG-RAN/Satellite NG-RAN Primary Timing Advance value | 3 |

Coding of ME status:

- '00' = ME is in the idle state;

- '01' = ME is in inactive state;

- '02' = ME is in connect state;

- '03' to 'FF' = reserved values.

The NG-RAN/Satellite NG-RAN Primary Timing Advance value is equal to the total "Timing offset between uplink and downlink radio frames at the UE, expressed in units of Ts" (Basic time unit), as defined in TS 38.211 [73].

If the ME has never been in NG-RAN or Satellite NG-RAN RRC connected mode on the current cell, the value of the NG-RAN/Satellite NG-RAN Primary Timing Advance shall be set to 'FF FF FF'.

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

## 9.3 COMPREHENSION-TLV tags in both directions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Length of tag | Tag value, bits 1-7 (Range: '01' - '7E') | Tag(CR and Tag value) | Reassign (see NOTE) |
| SS string tag | 1 | '09' | '09' or '89' | yes |
| BSSID tag |
| PLMN ID tag | 1 | '09' | '09' or '89' | yes |
| E-UTRAN Timing Advance tag |
| USSD string tag | 1 | '0A' | '0A' or '8A' | yes |
| HESSID tag |
| SMS TPDU tag | 1 | '0B' | '0B' or '8B' | yes |
| PDP/PDN/PDU type tag |
|  |  |  |  |  |
| Cell Broadcast page tag | 1 | '0C' | '0C' or '8C' | yes |
| PDU session establishment parameters tag |
| Cause tag | 1 | '1A' | '1A' or '9A' | yes |
| BCCH channel list tag | 1 | '1D' | '1D' or '9D' | yes |
| Data connection status tag |
| BC Repeat Indicator tag | 1 | '2A' | '2A' or 'AA' | yes |
| Data connection type tag |
| Timing Advance tag | 1 | '2E' | '2E' or 'AE' | yes |
| (E/5G)SM cause tag |
| PDP context Activation parameters tag | 1 | '52' | '52' or 'D2' | yes |
| Surrounding macrocells tag |
| UTRAN/E-UTRAN/NG-RAN/Satellite NG-RAN Measurement Qualifier tag | 1 | '69' | '69' or 'E9' | yes |
| IP address list tag |
| I-WLAN Identifier tag | 1 | '4A' | '4A' or 'CA' | yes |
| SSID tag |
| (I-)WLAN Access Status tag | 1 | '4B' | '4B' or 'CB' | yes |
| PLMNwAcT List tag | 1 | '72' | '72' or 'F2' | yes |
| Routing Area Information tag | 1 | '73' | '73' or 'F3' | yes |
| URI truncated |
| SOR-CMCI tag |
| Update/Attach Type tag | 1 | '74' | '74' or 'F4' | yes |
| ProSe Report Data Tag |
| Rejection Cause Code tag | 1 | '75' | '75' or 'F5' | yes |
| Geographical Location Parameters tag | 1 | '76' | '76' or 'F6' | yes |
| IARI tag |
| GAD shapes tag | 1 | '77' | '77' or 'F7' | yes |
| IMPU list tag |
| NMEA sentence tag | 1 | '78' | '78' or 'F8' | yes |
| IMS Status-Code tag |
| PLMN List tag | 1 | '79' | '79' or 'F9' | yes |
| E-UTRAN Inter-frequency Network Measurement Results tag |
| EPS PDN connection Activation parameters tag | 1 | '7C' | '7C' or 'FC' | yes |
| Tracking Area Identification tag | 1 | '7D' | '7D' or 'FD' | yes |
| CSG ID list tag | 1 | '7E' | '7E' or 'FE' | yes |
| Media type tag |
| CSG cell selection status tag | 1 | '55' | '55' or 'D5' | yes |
| IMS call disconnection cause tag |
| CSG ID tag | 1 | '56' | '56' or 'D6' | yes |
| Slice information tag |
| HNB name tag | 1 | '57' | '57' or 'D7' | yes |
| Extended rejection cause code tag |
| IMS URI tag | 1 | '31' | '31' or 'B1' | yes |
| NG-RAN/Satellite NG-RAN Primary Timing Advance Information |
| NOTE: Starting from Release 10, tag values are assigned in a context specific manner, i.e. the same tag value can be used for different data objects, provided that the object can be uniquely identified from the context of the proactive command or ENVELOPE command in which it is used. The column "Reassign" indicates whether it is expected that a tag can be reassigned in a context specific manner (yes), whether that is not recommended (NR) because of potential future conflicts or if this shall not be done (no). |

\*\*\*\*\* End of changes \*\*\*\*\*