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

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

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **31.111** | **CR** | **0765** | **rev** |  | **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)*.* |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***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:*** | 2022-01-13 |
|  |  |  |  |  |
| ***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, 5.3, 6.4.27.2, 7.5.2, 7.5.2.1, 7.5.2.2, 8.52.x, 8.73, 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 Timing Advance Information) |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |
|  |  |  |  |  |  |  |  |  |  | RFU |

## 5.3 Definition of display parameters in Profile download

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

### 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/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.

#### 7.5.2.2 Structure of ENVELOPE (EVENT DOWNLOAD – Network Rejection)

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

## 8.73 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 NG-RAN or 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 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 Intra-frequency measurements

'0B' NG-RAN Inter-frequency measurements

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

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

All other values are reserved

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

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

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | NG-RAN Timing Advance tag | 1 |
| 2 | Length = '04'  | 1 |
| 3 | ME Status | 1 |
| 4 - 6 | 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 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 RRC connected mode on the current cell, the value of the NG-RAN Primary Timing Advance shall be set to 'FF FF FF'.

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