**3GPP TSG-CT WG1 Meeting #128-eC1-211172**

**Electronic meeting, 25 February – 5 March 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.008** | **CR** | **3255** | **rev** | **1** | **Current version:** | **16.6.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | SNPN access operation mode | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson, Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2021-02-26 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | SA2 confined the applicability of the term “SNPN access mode” to 3GPP access. See S2-2009206 for the details.  CR #ABCD to TS 24.501 proposes a new term “SNPN access *operation* mode” for what CT1 had used to express “SNPN access mode”.  **Interoperability analysis**  Backward compatible | | | | | | | | |
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| ***Summary of change:*** | | “SNPN access mode” is replaced with “SNPN access operation mode”. | | | | | | | | |
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| ***Consequences if not approved:*** | | Due to change in the meaning of the existing term, the meaning of the existing text remains altered. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2.1.2, 4.1.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS 24.501 CR 2963 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

### 2.1.2 Vocabulary

For the purposes of the present document, the following terms and definitions apply:

**-** A **GSM security context** is established and stored in the MS and the network as a result of a successful execution of a GSM authentication challenge. The GSM security context for the CS domain consists of the GSM ciphering key and the ciphering key sequence number. The GSM security context for the PS domain consists of the GPRS GSM ciphering key and the GPRS ciphering key sequence number.

**-** A **UMTS security context** is established and stored in the MS and the network as a result of a successful execution of a UMTS authentication challenge. The UMTS security context for the CS domain consists of the UMTS ciphering key, the UMTS integrity key, the GSM ciphering key, the ciphering key sequence number and the GSM Kc128 (if an A5 ciphering algorithm that requires a 128-bit ciphering key is in use). The UMTS security context for the PS domain consists of the GPRS UMTS ciphering key, the GPRS UMTS integrity key, the GPRS GSM ciphering key, the GPRS ciphering key sequence number, the GPRS GSM Kc128 (if a GEA ciphering algorithm that requires a 128-bit ciphering key is in use) and the GPRS GSM Kint(if a GIA integrity algorithm that requires a 128-bit integrity key is in use).

- An MS is **attached for emergency bearer services** if it has successfully completed an attach for emergency bearer services or if it has only a PDN connection for emergency bearer services established.

- **idle mode:** In this mode, the mobile station is not allocated any dedicated channel; it listens to the CCCH and the BCCH;

- **group receive mode:** (Only applicable for mobile stations supporting VGCS listening or VBS listening) In this mode, the mobile station is not allocated a dedicated channel with the network; it listens to the downlink of a voice broadcast channel or voice group call channel allocated to the cell. Occasionally, the mobile station has to listen to the BCCH of the serving cell as defined in 3GPP TS 43.022 [82] and 3GPP TS 45.008 [34];

- **dedicated mode:** In this mode, the mobile station is allocated at least two dedicated channels, only one of them being a SACCH;

- **EAB:** Extended Access Barring, see 3GPP TS 22.011 [138].

- **group transmit mode:** (Only applicable for mobile stations supporting VGCS talking) In this mode, one mobile station of a voice group call is allocated two dedicated channels, one of them being a SACCH. These channels can be allocated to one mobile station at a time but to different mobile stations during the voice group call;

- **packet idle mode**: (only applicable for mobile stations supporting GPRS) In this mode, mobile station is not allocated any radio resource on a packet data physical channel; it listens to the BCCH and the CCCH, see 3GPP TS 44.060 [76].

- **packet transfer mode**: (only applicable for mobile stations supporting GPRS) In this mode, the mobile station is allocated radio resource on one or more packet data physical channels for the transfer of LLC PDUs.

- **main DCCH:** In dedicated mode and group transmit mode, only two channels are used as DCCH, one being a SACCH, the other being a SDCCH or a FACCH; the SDCCH or FACCH is called here "the main DCCH";

- A channel is **activated** if it can be used for transmission, in particular for signalling, at least with UI frames. On the SACCH, whenever activated, it must be ensured that a contiguous stream of layer 2 frames is sent;

- A TCH is **connected** if circuit mode user data can be transferred. A TCH cannot be connected if it is not activated. A TCH which is activated but not connected is used only for signalling, i.e. as a DCCH;

- The data link of SAPI 0 on the main DCCH is called the **main signalling link**. Any message specified to be sent on the main signalling link is sent in acknowledged mode except when otherwise specified;

- The term **"to establish"** a link is a short form for **"to establish the multiframe mode"** on that data link. It is possible to send UI frames on a data link even if it is not established as soon as the corresponding channel is activated. Except when otherwise indicated, a data link layer establishment is done without an information field.

- **"channel set"** is used to identify TCHs that carry related user information flows, e.g., in a multislot configuration used to support circuit switched connection(s), which therefore need to be handled together.

- A **temporary block flow** (TBF) is a physical connection used by the two RR peer entities to support the uni-directional transfer of LLC PDUs on packet data physical channels, see 3GPP TS 44.060 [76].

- **RLC/MAC block:** A RLC/MAC block is the protocol data unit exchanged between RLC/MAC entities, see 3GPP TS 44.060 [76].

- A **GMM context** is established when a GPRS attach procedure is successfully completed.

- **Network operation mode**

The network operation modes I and II are defined in 3GPP TS 23.060 [74].

The network operation mode shall be indicated as system information. For proper operation, the network operation mode should be the same in each cell of one routing area.

- **GAN mode:** See 3GPP TS 43.318 [75a].

- **GPRS MS operation mode**

The three different GPRS MS operation modes A, B, and C are defined in 3GPP TS 23.060 [74].

**- RR connection:** A RR connection is a dedicated physical circuit switched domain connection used by the two RR or RRC peer entities to support the upper layers' exchange of information flows.

**- PS signalling connection** is a peer to peer Iu mode connection between MS and CN packet domain node.

- **Inter-system change** is a change of an MS from A/Gb mode to Iu mode of operation or vice versa, or from S1 mode to A/Gb mode or Iu mode of operation.

**- GPRS:** Packet services for systems which operate the Gb or Iu-PS interfaces.

- **GSM ciphering key**: A 64-bit CS GSM ciphering key

- **GSM Kc128**: A 128-bit CS GSM ciphering key

- **GPRS GSM ciphering key**: A 64-bit PS GSM ciphering key

- **GPRS GSM Kc128**: A 128-bit PS GSM ciphering key

- **GPRS GSM** Kint: A 128-bit PS GSM integrity key.

- The label **(A/Gb mode only)** indicates this section or paragraph applies only to a system which operates in A/Gb mode, i.e. with a functional division that is in accordance with the use of an A or a Gb interface between the radio access network and the core network. For multi system case this is determined by the current serving radio access network.

- The label **(Iu mode only)** indicates this section or paragraph applies only to a system which operates in UTRAN Iu mode , i.e. with a functional division that is in accordance with the use of an Iu-CS or Iu-PS interface between the radio access network and the core network. For multi system case this is determined by the current serving radio access network.

- **In A/Gb mode,...** Indicates this paragraph applies only to a system which operates in A/Gb mode. For multi system case this is determined by the current serving radio access network.

- **In Iu mode,...** Indicates this paragraph applies only to a system which operates in UTRAN Iu mode. For multi system case this is determined by the current serving radio access network.

- **In A/Gb mode and GERAN Iu mode,...** Indicates this paragraph applies only to a system which operates in A/Gb mode or GERAN Iu mode. For multi system case this is determined by the current serving radio access network.

- **In UTRAN Iu mode,...** Indicates this paragraph applies only to a system which operates in UTRAN Iu mode. For multi system case this is determined by the current serving radio access network.

**- In a shared network,...** Indicates this paragraph applies only to a shared network. For the definition of shared network see 3GPP TS 23.122 [14].

NOTE: A shared network is applicable to GERAN and UTRAN, however, according to this definition, a multi-operator core network (MOCN) with common GERAN is not considered a shared network in 3GPP TS 23.122 [14] and in the present specification.

**-** **Multi-Operator Core Network (MOCN) with common GERAN:** a network in which different core network operators are connected to a shared GERAN broadcasting only a single, common PLMN identity.

**-** **Chosen PLMN:** The same as selected PLMN as specified in 3GPP TS 23.122 [14].

- A **default PDP context** is a PDP context activated by the PDP context activation procedure that establishes a PDN connection. The default PDP context remains active during the lifetime of the PDN connection.

- A **PDP context for emergency bearer services** is a default PDP context which was activated with request type "emergency", or any secondary PDP contexts associated to this default PDP context.

- **Non-emergency PDP context: A**ny PDP context which is not a PDP context for emergency bearer services.

**- SIM,** Subscriber Identity Module (see 3GPP TS 42.017 [7]).

**- USIM,** Universal Subscriber Identity Module (see 3GPP TS 21.111 [101]).

**- MS,** Mobile Station. The present document makes no distinction between MS and UE.

- **MS configured for dual priority:** An MS which provides dual priority support is configured for NAS signalling low priority and also configured to override the NAS signalling low priority indicator (see 3GPP TS 24.368 [135], 3GPP TS 31.102 [112]).

**- Cell Notification** is an (optimised) variant of the Cell Update Procedure which uses the LLC NULL frame for cell change notification which does not trigger the restart of the READY timer

**- DTM:** Dual Transfer Mode, see 3GPP TS 44.018 [84] and 3GPP TS 43.055 [87]

**-** The term **"eCall only"** applies to a mobile station which is in the eCall only mode, as described in 3GPP TS 22.101 [8].

**-** **"removal of eCall only restriction"** means that all the limitations as described in 3GPP TS 22.101 [8] for the eCall only mode do not apply any more.

**- "SMS-only service":** A subset of services which includes only short message service. The MS can request "SMS-only service" in order to obtain SMS.

**- Access domain selection:** The process to select whether the CS domain or the IMS/IP‑CAN is used to transmit the call control signalling between MS and core network. Definition derived from 3GPP TS 23.221 [131].

**- APN based congestion control:** Congestion control in session management where the network can reject session management requests from MSs or deactivate PDP contexts when the associated APN is congested.

**-** **NAS level mobility management congestion control:** Congestion control mechanism in the network in mobility management. "NAS level mobility management congestion control" consists of "subscribed APN based congestion control" and "general NAS level mobility management congestion control".

**-** **General NAS level mobility management congestion control:** The type of congestion control that is applied at a general overload or congestion situation in the network, e.g. lack of processing resources.

**-** **Group specific session management congestion control:** Type of congestion control at session management level that is applied to reject session management requests from MSs belonging to a particular group when one or more group congestion criteria as specified in 3GPP TS 23.060 [74] are met.

**-** **Subscribed APN based congestion control:** Congestion control in mobility management where the network can reject attach requests from MSs with a certain APN in the subscription.

**- Mapped P-TMSI:** A P-TMSI which is mapped from a GUTI previously allocated to the MS by an MME. Mapping rules are defined in 3GPP TS 23.003 [10]. Definition derived from 3GPP TS 23.401 [122].

**- Native P-TMSI:** A P-TMSI previously allocated by an SGSN. Definition derived from 3GPP TS 23.401 [122].

**- Valid LAI:** A LAI that is not deleted LAI.

- **EMM Combined UE Waiting Flag:** See 3GPP TS 29.018 [149].

**- Power Saving Mode:** Power saving mode allows the MS to reduce its power consumption. When power saving mode is active in the MS, the MS is registered to the network and in PMM-IDLE mode (in Iu mode), EMM-IDLE mode (in S1 mode) or the READY timer is not running (in A/Gb mode) but the AS layer is deactivated. Definition derived from 3GPP TS 23.060 [74] and 3GPP TS 23.401 [122].

- **ACDC:** Application specific Congestion control for Data Communication, see 3GPP TS 22.011 [138].

- **Highest ranked ACDC category:** The ACDC category with the lowest value as defined in 3GPP TS 24.105 [154].

**- Extended idle-mode DRX cycle:** Extended idle-mode DRX cycle allows the MS to reduce its power consumption in PMM-IDLE mode (in Iu mode) or when the READY timer is not running (in A/Gb mode) or in EMM-IDLE mode (in S1 mode). Extended idle-mode DRX cycle is associated with the eDRX cycle value. Definition derived from 3GPP TS 23.060 [74] and 3GPP TS 23.401 [122].

**-** **EC-GSM-IoT:** Extended coverage in GSM for IoT is a feature which enables extended coverage operation. See 3GPP TS 43.064 [159].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.401 [122], subclause 3.2, apply:

**DCN-ID**

**Globally Unique MME Identifier (GUMMEI)**

**Globally Unique Temporary Identity (GUTI)**

**Idle Mode Signalling Reduction (ISR)**

**M-Temporary Mobile Subscriber Identity (M-TMSI)**

**NarrowBand-IoT**

**PDN connection**

**Tracking Area Identity (TAI)**

**Temporary Identity used in Next update (TIN)**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.301 [120] apply:

**CSG cell**

**CSG ID**

**CSG selection**

**EMM**

**EMM-IDLE mode**

**EPS**

**ESM**

**In NB-S1 mode**

**In WB-S1 mode**

**LIPA PDN connection**

**MO MMTEL voice call is started**

**MO MMTEL video call is started**

**MO SMSoIP is started**

**MS configured to use AC11 – 15 in selected PLMN: see UE configured to use AC11 – 15 in selected PLMN**

**PDN connection for emergency bearer services**

**S1 mode**

**SIPTO at the local network PDN connection**

**SIPTO at the local network PDN connection with collocated L-GW**

**SIPTO at the local network PDN connection with stand-alone GW**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.272 [133] apply:

**CS fallback**

**SMS over SGs**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 33.401 [123] apply:

**Current EPS security context**

**Mapped security context**

**eKSI**

**CK' and IK'**

**NAS downlink COUNT**

**NAS uplink COUNT**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.251 [109] apply:

**Multi-Operator Core Network (MOCN)**

**Network Sharing non-supporting MS: see non-supporting UE.**

**Network Sharing supporting MS: see supporting UE.**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.122 [14] apply:

**Country**

**EHPLMN**

**HPLMN**

**Suitable Cell**

**VPLMN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.216 [126] apply:

**SRVCC**

**vSRVCC**

**CS to PS SRVCC**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.251 [109] and 3GPP TS 44.018 [84] apply:

**Common PLMN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 44.018 [84] apply:

**Additional PLMN**

**Network sharing**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.003 [10] apply:

**Local Home Network Identifier**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.161 [155] apply:

**RAN rules handling parameter**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.302 [156] apply:

**move-traffic-to-WLAN indication**

**move-traffic-from-WLAN indication**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.060 [74] apply:

**Dedicated core network**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.161 [158] apply:

**NBIFOM**

**multi-access PDN connection**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.167 [160] apply:

**eCall over IMS**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.101 [8] apply:

**Minimum Set of Data (MSD)**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.501 [166] apply:

**NG-RAN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.501 [167] apply:

**5GCN**

**5GMM**

**5GS**

**5GSM**

**DNN**

**DNN based congestion control**

**In NB-N1 mode**

**In WB-N1 mode**

**N1 mode**

**SNPN access operation mode**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.221 [131] apply:

**Restricted local operator services**

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

#### 4.1.1.6 Specific requirements for MS configured to use timer T3245

The following requirement applies for an MS that is configured to use timer T3245 (see 3GPP TS 24.368 [135] or 3GPP TS 31.102 [112]):

When the MS not operating in SNPN access operation mode adds a PLMN identity to the "forbidden PLMN list" or the "forbidden PLMNs for GPRS service" list or sets the SIM/USIM as invalid for non-GPRS services or GPRS services or both, and timer T3245 is not running, the MS shall start timer T3245 with a random value, uniformly drawn from the range between 12h and 24h.

When the MS operating in SNPN access operation mode adds an SNPN to the "permanently forbidden SNPNs" list or "temporarily forbidden SNPNs" list or sets the entry for the SNPN in the "list of subscriber data" as invalid for 3GPP access or non-3GPP access, and timer T3245 is not running, the MS shall start timer T3245 with a random value, uniformly drawn from the range between 12h and 24h.

Upon expiry of the timer T3245, the MS shall erase the "forbidden PLMN list" and the "forbidden PLMNs for GPRS service" list and set the SIM/USIM to valid for non-GPRS services and GPRS services. When the lists are erased, the MS performs a cell selection according to 3GPP TS 43.022 [82] and 3GPP TS 25.304 [98].

If the MS is switched off when the timer T3245 is running, the MS shall behave as follows when the MS is switched on and the SIM/USIM in the MS remains the same:

- let t1 be the time remaining for T3245 timeout at switch off and let t be the time elapsed between switch off and switch on. If t1 is greater than t, then the timer shall be restarted with the value t1 – t. If t1 is equal to or less than t, then the MS will follow the behaviour as defined in the paragraph above upon expiry of the timer T3245. If the MS is not capable of determining t, then the MS shall restart the timer with the value t1.