**3GPP TSG-SA WG2 Meeting #143-e (e-meeting) *S2-210xxxx***

**24 February- 9 March 2021, Elbonia *(revision of S2-210xxxx)***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.501** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **16.7.0** |  |
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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 | **X** | ME | **X** | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** | Support for IMS emergency services over SNPN | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorprorated | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNPN | | | | |  | ***Date:*** | | | 2021-02-24 |
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| ***Category:*** | **C** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This CR is introducing changes in TS 23.501 for support of Emergency Services for SNPNs based on the conclusions of Key Issue #3 in TR 23.700-07. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Introduction for support of Emergency Services for SNPN * Update clause for mobility restrictions and reachability management to include support for Emergency Services for SNPN * Indicate that there is no support for Emergency Service Fallback for SNPN * PLMN and SNPN Selection for emergency services (for access via N3IWF) * Support for eCall over IMS for SNPNs | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No support for Emergency Services for SNPN | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.16.4.1, 5.16.4.3, 5.16.4.4, 5.16.4.5, 5.16.4.8, 5.16.4.10, 5.16.4.11, 5.30.2.0, 5.30.2.3, 6.3.6.4, 6.3.6.4a (new clause) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 5.16.4.1 Introduction

Emergency Services are provided to support IMS emergency sessions. "Emergency Services" refers to functionalities provided by the serving network when the network is configured to support Emergency Services. Emergency Services are provided to normally registered UEs and to Emergency Registered UEs, that can be either normally registered or in limited service state. Depending on local regulation, receiving Emergency Services in limited service state does not require a valid subscription. Depending on local regulation and on operator's policy, the network may allow or reject a registration request for Emergency Services (i.e. Emergency Registration) from UEs that have been identified to be in limited service state. Four different behaviours of Emergency Services as defined in TS 23.401 [26] clause 4.3.12.1 are supported.

Emergency Services shall not be provided to a UE over 3GPP access and untrusted non-3GPP access concurrently, except for the following case:

- a UE may be Emergency Registered and have an emergency PDU session over non-3GPP access or may be attached for emergency session to ePDG over untrusted WLAN (as defined in TS 23.402 [43]) when 3GPP access becomes available. In which case the UE may have to register over 3GPP access and check first the support for Emergency Services over the 3GPP RAT it has selected (e.g. based on Emergency Services Support indication, Emergency Services Fallback, AS broadcast indicator). If there is native support for Emergency Services in the selected 3GPP RAT the UE will attempt to transfer the emergency PDU session from non-3GPP access to 3GPP access (see TS 23.502 [3] clause 4.9.2). If there is no native support for Emergency Services in the selected RAT, but Emergency Services Fallback to another RAT in 5GS or to another System where Emergency Services may be supported (based on the conditions defined in clause 5.16.4.11), the UE may trigger first Emergency Services Fallback (see TS 23.502 [3] clause 4.13.4.2) and then attempt to transfer the emergency PDU session from non-3GPP access to 3GPP access (see TS 23.502 [3] clause 4.9.2). In these cases the UE may thus briefly be emergency registered and receive emergency services over both 3GPP access and non-3GPP access concurrently.

A UE may only attempt to use Emergency Services over untrusted non-3GPP access or over SNPN access via PLMN if it is unable to use Emergency Services over 3GPP access as specified in TS 23.167 [18].

To provide Emergency Services, the AMF is configured with Emergency Configuration Data that are applied to Emergency Services that are established by an AMF based on request from the UE. The AMF Emergency Configuration Data contains the S-NSSAI and Emergency DNN which is used to derive an SMF. In addition, the AMF Emergency Configuration Data may contain the statically configured SMF for the Emergency DNN. The SMF may also store Emergency Configuration Data that contains statically configured UPF information for the Emergency DNN.

When the UE is camped normally in the cell, i.e. not in limited service state, during Registration procedure described in TS 23.502 [3] clause 4.2.2.2, the serving AMF includes an indication for Emergency Services Support within the Registration Accept to the UE. For 3GPP access, the Emergency Services Support indication is valid within the current Registration Area per RAT (i.e. this is to cover cases when the same registration area supports multiple RATs and they have different capability).

The Emergency Services Support is configured in the AMF according to local regulations and network capabilities. AMF includes Emergency Services Support indicator in the Registration Accept message to indicate that the UE can setup emergency PDU Session to obtain emergency services. The AMF may include additional local emergency numbers associated with the serving network for the UE, further defined in TS 24.501 [47].

During Registration procedures over 3GPP access, the 5GC includes the Emergency Services Support indicator, valid for the current Registration Area and indicating per RAT that Emergency Services are supported if any of the following conditions is true within the current Registration Area:

- the Network is able to support Emergency Services natively over 5GS;

- E-UTRA connected to 5GC supports IMS Emergency Services (e.g. voice), and the NG-RAN is able to trigger handover or redirection from NR to E-UTRA connected to 5GC at QoS Flow establishment for IMS Emergency Services (e.g. voice);

- NG-RAN is able to trigger handover to EPS at QoS Flow establishment for IMS Emergency Services (e.g. voice);

- NG-RAN is able to trigger redirection to EPS at QoS Flow establishment for IMS Emergency Services (e.g. voice); or

- NG-RAN is able to trigger 5G SRVCC handover to UTRAN for IMS Emergency Services (i.e. voice).

During Registration procedures over non-3GPP access, the 5GC indicates that Emergency Services are supported if the Network is able to support Emergency Services natively over 5GS.

The 5GC includes an indication per RAT whether it supports Emergency Services Fallback (as defined in clause 5.16.4.11) to another RAT in 5GS or to another System where Emergency Services are supported natively. The Emergency Services Fallback support indicator is valid within the current Registration Area per RAT.

If a certain RAT is restricted for Emergency Services, AMF signals that the corresponding RAT is restricted for Emergency Services Support to the Master RAN Node. This helps assist the Master RAN node determine whether to set up Dual Connectivity for Emergency Services.

UEs that are in limited service state, as specified in TS 23.122 [17], or that camp normally on a cell but failed to register successfully to the network under conditions specified in TS 24.501 [47], initiate the Registration procedure by indicating that the registration is to receive Emergency Services, referred to as Emergency Registration, and a Follow-on request is included in the Registration Request to initiate PDU Session Establishment procedure with a Request Type indicating "Emergency Request". UEs that had registered for normal services and do not have emergency PDU Sessions established and that are subject to Mobility Restriction in the present area or RAT (e.g. because of restricted tracking area) shall initiate the UE Requested PDU Session Establishment procedure to receive Emergency Services, i.e. with a Request Type indicating "Emergency Request". Based on local regulation, the network supporting Emergency Services for UEs in limited service state provides Emergency Services to these UE, regardless whether the UE can be authenticated, has roaming or Mobility Restrictions or a valid subscription.

For Emergency Services over 3GPP access, other than eCall over IMS, the UEs in limited service state determine that the cell supports Emergency Services over NG-RAN from a broadcast indicator in AS. The cell connected to EPC and 5GC broadcasts separate broadcast indicator for EPC and 5GC to indicate support of emergency services by the EPC and 5GC. For Emergency Services over untrusted non-3GPP access, other than eCall over IMS, the UE in limited service state selects any N3IWF as specified in clause 6.3.6. Emergency calls for eCall Over IMS may only be performed if the UE has a USIM.

For Emergency Services over NR via SNPN, other than eCall over IMS, the UEs in limited service state determine that the cell supports Emergency Services over NR from a broadcast indicator in AS and indication that the SNPN support Emergency Services.

A serving network (PLMN or SNPN) shall provide an Access Stratum broadcast indication from NG-RAN (NR or E-UTRA connected to 5GC) to UEs indicating whether eCall Over IMS is supported:

- When an E-UTRA cell is connected to EPC and 5GC, the cell broadcasts separate Access stratum broadcast indication for 5GC and EPC to indicate support of eCall over IMS by 5GC and EPC.

- A UE that is not in limited service state determines that the NG-RAN cell supports eCall Over IMS via 5GC using the broadcast indicator for eCall over IMS. Emergency calls for eCall over IMS are not supported over non-3GPP access.

NOTE 1: The Access Stratum broadcast indicator is determined according to operator policies and minimally indicates that the PLMN, or all of the PLMNs in the case of network sharing, and at least one emergency center or PSAP to which an eCall Over IMS can be routed, support eCall Over IMS.

NOTE 2: For the case of SNPN, in addition to the broadcast indicator that the NG-RAN cell supports eCall Over IMS via 5GC, a separate indicator is provided per SNPN.

- A UE in limited service state determines that the cell supports eCall Over IMS using both the broadcast indicator for support of Emergency Services over NG-RAN and the broadcast indicator of NG-RAN for eCall over IMS. Emergency calls for eCall Over IMS are not supported over Non-3GPP access.

NOTE 2: The broadcast indicator for eCall Over IMS does not indicate whether UEs in limited service state are supported. So, the broadcast indicator for support of Emergency Services over NG-RAN that indicates limited service state support needs to be applied in addition.

* A UE in limited service state determines that the SNPN support eCall over IMS from broadcast indication per SNPN defined in TS 38.300 [27].

For a UE that is Emergency Registered, if it is unauthenticated the security context is not set up on UE.

In order to receive Emergency Services, UEs that camp on a suitable cell in RM-DEREGISTERED state (i.e. without any conditions that result in limited service state), or that decide to access 5GC via untrusted non-3GPP access (and not in limited service state over untrusted non-3GPP access), initiate the Initial Registration procedure for normal service instead of Emergency Registration. Upon successful registration, such UEs shall initiate the UE Requested PDU Session Establishment procedure with a Request Type indicating "Emergency Request" to receive Emergency Services if the AMF indicated support for Emergency Services in 5GC (for the RAT the UE is currently camped on when UE is camping on 3GPP access). The UEs that camp normally on a cell or that are connected via untrusted Non-3GPP access or to SNPN over PLMN, are informed that the PLMN or SNPN supports Emergency Services over 5G-AN from the Emergency Services Support indicator in the Registration procedure. This applies to both 3GPP and non-3GPP Access Types.

NOTE 3: The Emergency Services Support indicator in the Registration procedures does not indicate support for eCall Over IMS.

For a UE that is Emergency Registered, normal PLMN or SNPN selection principles apply after the end of the IMS emergency session.

NOTE 4: For Emergency Services, there is no support for inter PLMN mobility thus there is a risk of service disruption due to failed inter PLMN mobility attempts.

The UE shall set the RRC establishment cause to emergency as defined in TS 38.331 [28] when it requests an RRC Connection in relation to an emergency session.

In the case of Limited Service state, UE shall not include any Network Slice related parameters when communicating with the network.

When a PLMN or SNPN supports IMS and Emergency Services:

- all AMFs in that PLMN or SNPN shall have the capability to support Emergency Services.

- at least one SMF shall have this capability.

For other emergency scenarios (e.g. UE autonomous selection for initiating Emergency Services), refer to TS 23.167 [18] for domain selection principles.

For emergency service support in Public network integrated NPNs, refer to clause 5.30.3.5.

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

#### 5.16.4.3 Mobility Restrictions and Access Restrictions for Emergency Services

When Emergency Services are supported and local regulation requires IMS Emergency Sessions to be provided regardless of the Mobility Restrictions (see clause 5.3.4.1), or access should not be applied to UEs receiving Emergency Services. When the (R)AN resources for Emergency Services are established, the ARP value for Emergency Services indicates the usage for Emergency Services to the 5G-AN.

During handover, the source NG-RAN and source AMF ignore any UE related restrictions during handover evaluation when there is an active PDU Session associated with emergency service.

During Mobility Registration Update procedures, including a Mobility Registration Update as part of a handover, the target AMF ignores any Mobility Restrictions or access restrictions for UE with emergency services where required by local regulation. Any non-emergency services are not allowed, by the target network when not allowed by the subscription for the target location. To allow the UE in limited service state (either Emergency Registered or registered for normal service) over a given Access Type to get access to normal services over this Access Type after the Emergency Session has ended and when it has moved to a new area that is not stored by the UE as a forbidden area, after allowing a period of time for subsequent Emergency Services, the UE may explicitly deregister and register for normal services over this Access Type without waiting for the emergency PDU Session Release by the SMF.

This functionality applies to all mobility procedures.

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

#### 5.16.4.4 Reachability Management

Over 3GPP access, an Emergency Registered UE when its Periodic Registration Update timer expires shall not initiate a Periodic Registration Update procedure but shall enter the RM-DEREGISTERED state. For such UEs, the AMF runs a mobile reachable timer with a similar value to the UE's Periodic Registration Update timer. After expiry of this timer the AMF may change the UE RM state for 3GPP Access in the AMF to RM-DEREGISTERED. The AMF assigns the Periodic Registration Update timer value to Emergency Registered UEs. This timer keeps the Emergency Registered UE registered for Emergency Services after change to CM-IDLE state to allow for a subsequent Emergency Service without a need for a new Emergency Registration.

Over untrusted non-3GPP access, an Emergency Registered UE is only reachable in CM-CONNECTED state: since the UE may only use Emergency Services over untrusted Non-3GPP access when it is not possible over 3GPP access, 3GPP access is assumed to be unavailable for paging the UE.

Over SNPN via PLMN, an Emergency Registered UE is only reachable in CM-CONNECTED state: since the UE may only use Emergency Services over SNPN via PLMN when it is not possible directly over 3GPP access of SNPN and without use of N3IWF, 3GPP access of SNPN is assumed to be unavailable for paging the UE.

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

#### 5.16.4.5 SMF and UPF selection function for Emergency Services

When a SMF is selected for Emergency Services, the SMF selection function described in clause 6.3.2 for normal services is applied to the Emergency DNN or the AMF selects the SMF directly from the AMF Emergency Configuration Data. If the SMF selection function described in clause 6.3.2 is used it shall always derive a SMF in the Serving PLMN or SNPN, which guarantees that the IP address is also allocated by the Serving PLMN or SNPN. When a UPF is selected for Emergency Services, the UPF selection function described in clause 6.3.3 for normal services is applied to the Emergency DNN or the SMF selects the UPF directly from the SMF Emergency Configuration Data. The information in the AMF Emergency Configuration Data and the SMF Emergency Configuration Data is specified in clause 5.16.4.1.

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

#### 5.16.4.8 IP Address Allocation

Emergency service is provided by the serving PLMN or SNPN. The UE and serving PLMN or SNPN must have compatible IP address versions in order for the UE to obtain a local emergency PDU Session.

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

#### 5.16.4.10 Support of eCall Only Mode

For service requirements for eCall only mode, refer to TS 22.101 [33].

A UE configured for eCall Only Mode shall remain in RM-DEREGISTERED state, shall camp on a network cell when available but shall refrain from any Registration Management, Connection Management or other signalling with the network. The UE may instigate Registration Management and Connection Management procedures in order to establish, maintain and release an eCall Over IMS session or a session to any non-emergency MSISDN(s) or URI(s) configured in the USIM for test and/or terminal reconfiguration services. Following the release of either session, the UE starts a timer whose value depends on the type of session (i.e. whether eCall or a session to a non-emergency MSISDN or URI for test/reconfiguration). While the timer is running, the UE shall perform normal RM/CM procedures and is permitted to respond to paging to accept and establish an incoming session (e.g. from an emergency centre, PSAP or HPLMN operator). When the timer expires, the UE shall perform a UE-initiated Deregistration procedure if still registered and enter RM-DEREGISTERED state.

NOTE 1: An HPLMN operator or a Home SP in case the UE has SNPN subscription can change the eCall Only Mode configuration state of a UE in the USIM. An HPLMN operator or Home SP can also instead add, modify or remove a non-emergency MSISDN or URI in the USIM for test and/or terminal reconfiguration services. This can occur following a UE call to a non-emergency MSISDN or URI configured for reconfiguration. When the eCall Only Mode configuration is removed, the UE operates as a normal UE that can support eCall over IMS.

NOTE 2: A test call and a reconfiguration call can be seen as normal (non-emergency) call by a serving PLMN or serving SNPN and normal charging rules can apply depending on operator policy.

NOTE 3: An MSISDN configured in the USIM for test and/or terminal reconfiguration services for eCall Over IMS can differ from an MSISDN configured in the USIM for test services for eCall over the CS domain.

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

#### 5.16.4.11 Emergency Services Fallback

In order to support various deployment scenarios for obtaining Emergency Services, the UE and 5GC may support the mechanism to direct or redirect the UE either towards E-UTRA connected to 5GC (RAT fallback) when only NR does not support Emergency Services or towards EPS (E-UTRAN connected to EPC System fallback) when the 5GC does not support Emergency Services. Emergency Services fallback may be used when the 5GS does not indicate support for Emergency Services (see clause 5.16.4.1) and indicates support for Emergency Services fallback.

Following principles apply for Emergency Services Fallback:

- If the AMF indicates support for Emergency Services fallback in the Registration Accept message, then in order to initiate Emergency Service, normally registered UE supporting Emergency Services fallback shall initiate a Service Request with Service Type set to Emergency Services fallback as defined in TS 23.502 [3] clause 4.13.4.1.

- AMF uses the Service Type Indication within the Service Request to redirect the UE towards the appropriate RAT/System. The 5GS may, for Emergency Services, trigger one of the following procedures:

- Handover or redirection to EPS.

- Handover or redirection to E-UTRA connected to 5GC.

- After receiving the Service Request for Emergency Fallback, the AMF triggers N2 procedure resulting in either CONNECTED state mobility (Handover procedure) or IDLE state mobility (redirection) to either E-UTRA/5GC or to E-UTRAN/EPC depending on factors such as N26 availability, network configuration and radio conditions. In the N2 procedure, the AMF based on support for Emergency Services in 5GC or EPC may indicate the target CN for the RAN node to know whether inter-RAT fallback or inter-system fallback is to be performed. The target CN indicated in the N2 procedure is also conveyed to the UE in order to be able to perform the appropriate NAS procedures (S1 or N1 Mode).

- When the AS re-keying procedure and the Emergency Fallback procedure collides, the AMF gives up the AS re-keying procedure and only initiates the Emergency Fallback procedure.

NOTE: Emergency Services Fallback to EPS can be followed by an onward movement to GERAN or UTRAN via CSFB procedures if the PLMN does not support IMS emergency services.

Emergency Services fallback is not support for SNPN.

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

### 5.30.2 Stand-alone non-public networks

#### 5.30.2.0 General

SNPN 5GS deployments are based on the architecture depicted in clause 4.2.3, the architecture for 5GC with untrusted non-3GPP access (Figure 4.2.8.2.1-1) for access to SNPN services via a PLMN (and vice versa) and the additional functionality covered in clause 5.30.2. In this Release, direct access to SNPN is specified for 3GPP access only.

Interworking with EPS is not supported for SNPN. Furthermore, roaming is not supported for SNPN, e.g. roaming between SNPNs. Handover between SNPNs, between SNPN and PLMN or PNI NPN are not supported. CIoT 5GS optimizations are not supported in SNPNs.

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

#### 5.30.2.3 UE configuration and subscription aspects

An SNPN-enabled UE is configured with subscriber identifier (SUPI), credentials for each subscribed SNPN identified by the combination of PLMN ID and NID. If an SNPN-enabled UE is configured with an N3IWF, it is also configured with an identifier of the country where the configured N3IWF is located.

A subscriber of an SNPN is either:

- identified by a SUPI containing a network-specific identifier that takes the form of a Network Access Identifier (NAI) using the NAI RFC 7542 [20] based user identification as defined in TS 23.003 [19] clause 28.7.2. The realm part of the NAI may include the NID of the SNPN; or

- identified by a SUPI containing an IMSI.

An SNPN-enabled UE supports the SNPN access mode. When the UE is set to operate in SNPN access mode the UE only selects and registers with SNPNs over Uu as described in clause 5.30.2.4.

Emergency services are supported in SNPN access mode. If the UE is using an SNPN subscription and is unable to find a suitable cell of any available and allowable SNPN, the UE attempts to camp on an acceptable cell of any available SNPN supporting emergency calls (irrespective of SNPN ID) or of any available PLMN supporting emergency calls (irrespective of PLMN ID), in limited service state.

If the UE is using a PLMN subscription in SNPN access mode and is unable to find a suitable cell of any available and allowable SNPN, the UE attempts to camp on an acceptable cell of any available SNPN supporting emergency calls (irrespective of SNPN ID), in limited service state.

If a UE is not set to operate in SNPN access mode, even if it is SNPN-enabled, the UE does not select and register with SNPNs. A UE not set to operate in SNPN access mode performs PLMN selection procedures as defined in clause 4.4 of TS 23.122 [17]. For a UE capable of simultaneously connecting to an SNPN and a PLMN, the setting for operation in SNPN access mode is applied only to the Uu interface for connection to the SNPN. Annex D.4 provides more details.

NOTE 2: Details of activation and deactivation of SNPN access mode are up to UE implementation.

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

#### 6.3.6.4 PLMN Selection for emergency services using N3IWF/ePDG

UE initiates PLMN selection for emergency services when it detects a user request for emergency session and determines that untrusted non-3GPP access shall be used for the emergency access.

Unless the UE is attached to 5GC via an N3IWF or to EPC via an ePDG that has indicated support for the emergency services and is located in the same country the UE is currently located in, the UE deregisters from the 5G Core non-3GPP access or terminates the existing ePDG connection, if any, and performs PLMN selection for emergency services. Otherwise, the UE should reuse the existing N3IWF or ePDG connection.

PLMN selection for emergency services is performed as follows:

- The UE determines whether it is located in the home country or a visited country;

- If the UE is located in the home country, and the UE is equipped with a UICC, then the UE selects the PLMN for emergency services based on the configured Operator Identifier Emergency FQDN;

- If the UE is located in a visited country, the UE performs a DNS query using the Visited Country Emergency FQDN, as specified in TS 23.003 [19] to discover the regulatory requirements and to determine which PLMNs in the visited country support emergency services in non-3GPP access.

- If the DNS response contains one or more records, the UE selects a PLMN that supports emergency services in non-3GPP access for the UE. Each record in the DNS response shall contain the identity of a PLMN in the visited country supporting emergency services in non-3GPP access.

- The UE shall consider these PLMNs based on their priorities in the Non-3GPP Access Node Selection Information. If the UE cannot select a PLMN in the Non-3GPP Access Node Selection Information, it shall attempt to select any PLMN in the list of PLMNs returned in the DNS response.

- If the DNS response does not contain any record, or if the DNS response contains one or more records but the UE fails to select a PLMN that supports emergency services in non-3GPP access, or if the Emergency Registration procedure has failed for all PLMNs supporting emergency services in non-3GPP access, the UE notifies the user that emergency session cannot be established.

When a PLMN has been selected, the UE determines whether to proceed with N3IWF selection or with ePDG selection in that PLMN according to the Non-3GPP Access Node Selection Information for that PLMN. For ePDG selection, the UE shall use the Operator Identifier Emergency FQDN and the Tracking/Location Area Identity Emergency FQDN as specified in TS 23.401 [26] clause 4.5.4a.2.

If the UE is not equipped with a UICC, the UE shall perform the emergency ePDG/N3IWF selection procedure without using the Non-3GPP Access Node Selection Information, i.e., the UE may construct the Operator Identifier FQDN format based on a PLMN ID obtained via implementation specific means.

When a N3IWF has been selected, the UE initiates an Emergency Registration. If the Emergency Registration fails, the UE shall attempt to select an ePDG before selecting another PLMN supporting emergency services in non-3GPP access. When an ePDG has been selected, the UE initiates an Emergency Registration. If the Emergency Registration fails, the UE shall attempt to select a N3IWF before selecting another PLMN supporting emergency services in non-3GPP access.

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

#### 6.3.6.4a SNPN Selection for emergency services using N3IWF

UE initiates SNPN selection for emergency services when it detects a user request for emergency session and determines that SNPN access via a PLMN using N3IWF shall be used for the emergency access.

The UE shall first determine the country in which it is located. If the UE cannot determine the country in which the UE is located, the UE shall stop N3IWF selection and abort the attempt to access the SNPN via PLMN for emergency services.

NOTE 1: It is up to UE implementation how to determine the country in which the UE is located.

If the UE determines that it is located in the country where the configured N3IWF is located and the UE is equipped with SNPN credentials (in ME or UICC), then the UE uses the configured N3IWF FQDN to select an N3IWF deployed in the SNPN to use for emergency services.

If the UE determines that it is located in a country different from the country where the configured N3IWF is located (called the visited country), then:

- The UE shall use the Visited Country Emergency FQDN, as specified in TS 23.003 [19] indicating that the query is for SNPN and perform a DNS query for the resulting FQDN.

- If the DNS response contains one or more records, then the UE determines that the visited country supports the selection of an N3IWF for emergency service in this country. Each record in the DNS response shall contain the identity of an N3IWF of the SNPN in the visited country which may be used for N3IWF selection for emergency services. The UE shall select an N3IWF included in the DNS response based on its own implementation means.

- If the DNS response contains no records, or if the DNS response contains one or more records but the UE fails to select a SNPN that supports emergency services via PLMN, or if the Emergency Registration procedure has failed for all SNPNs supporting emergency services over PLMN using N3IWF, the UE notifies the user that emergency session cannot be established.

NOTE 2: The identity of an SNPN's N3IWF in the visited country can be any FQDN, i.e. is not required to include the SNPN ID.

NOTE 3: It is assumed that the AMF, SMF, UPF are located in the same country as the N3IWF.

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