**3GPP TSG-CT WG1 Meeting #131-eC1-21XXXX**

**E-meeting, 19-27 August 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **3352** | **rev** | **1** | **Current version:** | **17.3.1** |  |
|  | | | | | | | | |
| *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:*** | MUSIM and PEIs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Mediatek Inc. | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MUSIM | | | | |  | ***Date:*** | | | 2021/08/19 |
|  |  | | | |  | |  | | |  |
| ***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 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:*** | | In 23.501 5.38  *…A Multi-USIM UE shall use a separate PEI for each USIM when it registers to the network…* | | | | | | | | |
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| ***Summary of change:*** | | Implement the stage 2 requirement in stage 3 SPEC | | | | | | | | |
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| ***Consequences if not approved:*** | | Stage 2 requirement is not implemented in stage 3 SPEC | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\* change \*\*\*\*\*

### 5.3.2 Permanent identifiers

A globally unique permanent identity, the 5G subscription permanent identifier (SUPI), is allocated to each subscriber for 5GS-based services. The IMSI, the network specific identifier, the GCI and the GLI are valid SUPI types. When the SUPI contains a network specific identifier, a GCI or a GLI, it shall take the form of a network access identifier (NAI). When the UE performs initial registration for onboarding services in SNPN or is registered for onboarding services in SNPN, the SUPI contains the onboarding SUPI derived from the default UE credentials. The UE derives the onboarding SUPI before or during the initial registration for onboarding services in SNPN and uses the derived onboarding SUPI in the initial registration for onboarding services in SNPN and while registered for onboarding services in SNPN.

Editor's note (WI:eNPN, CR#3203): Format of the onboarding SUPI is FFS.

The structure of the SUPI and its derivatives are specified in 3GPP TS 23.003 [4].

The UE provides the SUPI to the network in concealed form. The SUCI is a privacy preserving identifier containing the concealed SUPI. When the SUPI contains a network specific identifier, a GCI or a GLI, the SUCI shall take the form of a NAI as specified in 3GPP TS 23.003 [4].

A UE supporting N1 mode includes a SUCI:

a) in the REGISTRATION REQUEST message when the UE is attempting initial registration procedure and a valid 5G-GUTI is not available;

b) in the IDENTITY RESPONSE message, if the SUCI is requested by the network during the identification procedure; and

c) in the DEREGISTRATION REQUEST message when the UE initiates a de-registration procedure and a valid 5G-GUTI is not available.

If the UE uses the "null-scheme" as specified in 3GPP TS 33.501 [24] to generate a SUCI, the SUCI contains the unconcealed SUPI. The UE shall use the "null-scheme" if:

a) the home network has not provisioned the public key needed to generate a SUCI;

b) the home network has configured "null-scheme" to be used for the UE;

c) the UE needs to perform a registration procedure for emergency services after the failure of authentication procedure or after reception of a REGISTRATION REJECT message with the 5GMM cause #3 "Illegal UE", or to initiate a de-registration procedure before the registration procedure for emergency services was completed successfully, and the UE does not have a valid 5G-GUTI for the selected PLMN; or

d) the UE receives an identity request for SUCI during a registration procedure for emergency services or during a de-registration procedure that was initiated before the registration procedure for emergency services was completed successfully.

Editor's note (WI:eNPN, CR#3203): It is FFS whether "null-scheme" can be used with SUCI containing onboarding SUPI and if so, how usage of "null-scheme" is controlled.

A W-AGF acting on behalf of an FN-RG shall use the "null-scheme" as specified in 3GPP TS 33.501 [24] to generate a SUCI.

A W-AGF acting on behalf of an N5GC device shall use the "null-scheme" as specified in 3GPP TS 33.501 [24] to generate a SUCI.

If a UE is a Multi-USIM UE, the UE shall use a separate permanent equipment identifier (PEI) for each USIM the UE operates for accessing 5GS-based services; otherwise, each UE contains a permanent equipment identifier (PEI) for accessing 5GS-based services.

In this release of the specification, the IMEI, the IMEISV, the MAC address together with the MAC address usage restriction indication and the EUI-64 are the only PEI formats supported by 5GS. The structure of the PEI and its formats are specified in 3GPP TS 23.003 [4].

Each UE supporting at least one 3GPP access technology (i.e. NG-RAN, E-UTRAN, UTRAN or GERAN) contains a PEI in the IMEI format and shall be able to provide an IMEI and an IMEISV upon request from the network.

Each UE not supporting any 3GPP access technologies and supporting NAS over untrusted or trusted non-3GPP access shall have a PEI in the form of the Extended Unique Identifier EUI-64 [48] of the access technology the UE uses to connect to the 5GC.

A UE supporting N1 mode includes a PEI:

a) when neither SUPI nor valid 5G-GUTI is available to use for emergency services in the REGISTRATION REQUEST message with 5GS registration type IE set to "emergency registration";

b) when the network requests the PEI by using the identification procedure, in the IDENTITY RESPONSE message; and

c) when the network requests the IMEISV by using the security mode control procedure, in the SECURITY MODE COMPLETE message.

Each 5G-RG supporting only wireline access and each FN-RG shall have a permanent MAC address configured by the manufacturer. For 5G-CRG, the permanent MAC address configured by the manufacturer shall be a cable modem MAC address.

When the 5G-RG contains neither an IMEI nor an IMEISV, the 5G-RG shall use as a PEI the 5G-RG's permanent MAC address configured by the manufacturer and the MAC address usage restriction indication set to "no restrictions".

The W-AGF acting on behalf of the FN-RG shall use as a PEI the MAC address provided by the FN-RG and if the MAC address provided by the FN-RG is not unique or does not correspond to the FN-RG's permanent MAC address according to W-AGF's configuration, the MAC address usage restriction indication set to "MAC address is not usable as an equipment identifier" otherwise the MAC address usage restriction indication set to "no restrictions".

The 5G-RG containing neither an IMEI nor an IMEISV shall include the PEI containing the MAC address together with the MAC address usage restriction indication:

a) when neither SUPI nor valid 5G-GUTI is available to use for emergency services in the REGISTRATION REQUEST message with 5GS registration type IE set to "emergency registration";

b) when the network requests the PEI by using the identification procedure, in the IDENTIFICATION RESPONSE message; and

c) when the network requests the IMEISV by using the security mode control procedure, in the SECURITY MODE COMPLETE message.

NOTE 1: In case c) above, the MAC address is provided even though AMF requests the IMEISV.

The W-AGF acting on behalf of the FN-RG shall include the PEI containing the MAC address together with the MAC address usage restriction indication:

a) when the network requests the PEI by using the identification procedure, in the IDENTIFICATION RESPONSE message; and

b) when the network requests the IMEISV by using the security mode control procedure, in the SECURITY MODE COMPLETE message.

NOTE 2: In case b) above, the MAC address is provided even though AMF requests the IMEISV.

The W-AGF acting on behalf of the N5GC device shall use as a PEI the MAC address provided by the N5GC device and the MAC address usage restriction indication set to "no restrictions". Based on operator policy, the W-AGF acting on behalf of the N5GC device may encode the MAC address of the N5GC device using the EUI-64 format as specified in [48] and use as a PEI the derived EUI-64.

NOTE 3: The MAC address of an N5GC device is universally/globally unique.

The AMF can request the PEI at any time by using the identification procedure.

\*\*\*\*\* end of change \*\*\*\*\*