**3GPP TSG-CT WG1 Meeting #133e-bisC1-22xxxx**

**E-meeting, 17-21 January 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **24.571** | **CR** | **0006** | **rev** | **1** | **Current version:** | **17.0.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | AMF LCS functionality for satellite access |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
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| ***Work item code:*** | 5G\_eLCS\_ph2, 5GSAT\_ARCH-CT |  | ***Date:*** | 2022-01-10 |
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| ***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-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:*** | As per stage 2 TS 23.273, for satellite access UE, AMF needs to initiate a 5GC-NI-LR procedure to verify a UE country for NR satellite access and then to include an indication of UE country determination to the LMF, e.g.:"*4.1a.1 Network Induced Location Request (NI-LR)**With a Network Induced Location Request (NI-LR), a serving AMF for a UE initiates localization of the UE for a regulatory service (e.g. an emergency call from the UE) or for verification of a UE location (country or international area) for NR satellite access.*""*4.3.7 Access and Mobility Management Function, AMF**The AMF contains functionality responsible for managing positioning for a target UE for all types of location request. The AMF is accessible to the GMLC and NEF via the Namf interface, to the RAN via the N2 reference point and to the UE via the N1 reference point.**Functions which may be performed by an AMF to support location services include the following.**- Initiate an NI-LR location request for a UE with an IMS emergency call or to verify a UE country for NR satellite access.*""*6.10.1 5GC-NI-LR Procedure**Figure 6.10.1-1 shows a Network Induced Location Request (NI-LR) procedure for a UE in the case where the UE initiates an emergency session or other session using NG-RAN. The procedure assumes that the serving AMF is aware of the regulatory service associated with the session (e.g. emergency session initiation - e.g. due to supporting an Emergency Registration procedure or assisting in establishing an emergency PDU Session). The procedure can also be used to verify a UE country for NR satellite access.*…*2. For verifying UE location via LCS service for NR satellite access this step is mandatory, for other triggers the step is optional. The AMF selects an LMF based on NRF query or configuration in AMF and invokes the Nlmf\_Location\_DetermineLocation service operation towards the LMF to request the current location of the UE. The service operation includes a LCS Correlation identifier, the serving cell identity of the Primary Cell in the Master RAN node and the Primary Cell in the Secondary RAN node when available based on Dual Connectivity scenarios, and an indication of a location request from a regulatory services client (e.g., emergency services) and may include an indication if UE supports LPP, the required QoS and Supported GAD shapes, the UE Positioning Capability if available. When AMF needs to know the country of the UE, an indication of this is included. If any of the procedures in clause 6.11.1 or 6.11.2 are used the service operation includes the AMF identity.**3. [Conditional] If step 2 occurs, the LMF performs one or more of the positioning procedures described in clause 6.11.1, 6.11.2 and 6.11.3. If the AMF included an indication of UE country determination at step 3, the LMF maps the UE location to a country or an international area.**4. [Conditional] If step 3 occurs, the LMF returns the Nlmf\_Location\_DetermineLocation Response towards the AMF to return the current location of the UE. The service operation includes the LCS Correlation identifier, the location estimate, its age and accuracy and may include information about the positioning method and the timestamp of the location estimate. The service operation also includes the UE Positioning Capability if the UE Positioning Capability is received in step 3 including an indication that the capabilities are non-variable and not received from AMF in step 2. When UE country determination is indicated at step 2, the service operation also returns an indication of the country or international area determined at step 3.*"The above stage 2 requirement needs to be implemented in stage 3 TS 24.571. |
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| ***Summary of change:*** | It proposes to update the AMF handling in "Figure 5.2.1.2.1: NAS signalling transport for downlink LPP messages" to add "*verify a UE country for NR satellite access*" in Case A for AMF LCS functionality. |
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| ***Consequences if not approved:*** | The stage 2 requirement on updated AMF LCS functionality for satellite access is not implemented in stage 3. |
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| ***Clauses affected:*** | 5.2.1.2 |
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|  | **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 ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | Rev#1: correct the WID code on the cover page from “5G\_eLCS\_Ph2” to “5G\_eLCS\_ph2” and change the term “NR satellite access” to “satellite NG-RAN”. |

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

#### 5.2.1.2 Positioning Information Transport

The AMF sends an LPP message and an associated Correlation Identifier in the DL NAS Transport message (refer to 3GPP TS 24.501 [3] and 3GPP TS 23.273 [2] clause 6.11.1). Figure 5.2.1.2.1 illustrates an example of the NAS signalling transport for downlink LPP messages.



Figure 5.2.1.2.1: NAS signalling transport for downlink LPP messages

\* \* \* End of Change \* \* \* \*