**3GPP TSG-CT WG1 Meeting #134-e *C1-221993***

**E-Meeting, 17th – 25th February 2022 was C1-221717**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **4129** | **rev** | **1** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *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 |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Taking GNSS fix time into account in UE NAS layer | | | | | | | | | |
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| ***Source to WG:*** | MediaTek Inc. | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSAT\_ARCH-CT | | | | |  | ***Date:*** | | | 2022-02-24 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Based on the RAN2 LS in R2-2111612, the lower layers need to acquire GNSS position for timing and frequency pre-compensation prior to uplink transmission over satellite access. If the GNSS position is not available, uplink (UL) messages from UE to NW cannot be transmitted. The acquisition time for the GNSS position varies between ~ 2s (GNSS hot state) and more than 100s (GNSS cold state), depending on the GNSS fix acquisition state in the lower layers.  E.g. at initiation of 5GMM procedure the UE enters an XYZ-INITIATED substate and starts a specific control timer at sending the message e.g. sending REGISTRATION REQUEST message the UE enters 5GMM-REGISTERED-INITIATED and starts T3510 (15 seconds). If the GNSS fix time is not taken into account and e.g. cold state applies in the AS (e.g. delay ~100 seconds), the NAS timers expires before the GNSS is acquired.  To be noted that the UE NAS layer needs to take into account that UL NAS message will take longer due to GNSS fix in lower layers. | | | | | | | | |
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| ***Summary of change:*** | | Added a NOTE to inform that possible GNSS fix in lower layers is delaying UL NAS message transmission. | | | | | | | | |
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| ***Consequences if not approved:*** | | It’s not clear how GNSS fix time impacts on the UE NAS layer. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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### 5.1.1 General

The main function of the 5GS mobility management (5GMM) sublayer is to support the identification, security, mobility of a UE as well as generic message transport.

A further function of the 5GMM sublayer is to provide connection management services to the other sublayer(s).

NOTE: In a satellite E-UTRAN access, a GNSS fix time in lower layers can delay transmission of an initial UL NAS message up to 100 seconds (GNSS cold state).