**3GPP TSG-WG SA2 Meeting #164 *S2-240xxxx***

**Maastricht , Netherland, Aug 19 – 23, 2024 (revision of S2-240xxxx)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **23.401** | **CR** |  | **rev** | **-** | **Current version:** | **18.6.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Enhancements to MO data transmission for LI to support S&F satellite operation with split MME architecture |
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| ***Source to WG:*** | China Telecom |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | 5GSAT\_Ph3\_ARCH |  | ***Date:*** | 2024-08-09 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | As specified in LS from SA3-LI (S2-2405871), there is generally a requirement for interception to start and stop at the time specified in the warrant and in the case of S&F satellite operation, LI functions are required to be able to operate retrospectively on stored data to include the ability to identify the time of observation and location of the UE (with sufficient resolution to determine the UE is within the jurisdiction of the warrant at the time of the communication) of each piece of stored data in order to determine whether it should be subject to interception or not.As specified in clause 5 of ETSI TS 103 221-2, the POI sends data to the MDF as a binary stream of X2/X3 Protocol Data Units (PDUs), which include Timestamp, indicating the time that the content for the PDU was intercepted, in Conditional Attribute Fields. This time can be when the uplink data PDUs sent by the UE. As specified in TS 33.108, SGW/PGW can generate xIRI containing location information over LI\_X2.In the case of S&F satellite operation with a split MME architecture, the time and/ or the UE location when the ground network elements, e.g. MME-ground, SGW, PGW, receive uplink data PDUs is different from the time and/or the UE location when the MME-onboard receives uplink data PDUs. Moreover, ground network elements may simultaneously receive multiple uplink PDUs generated under different locations from one target UE. The aforementioned factors have impacts on EPS network elements to meet existing LI requirement. |
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| ***Summary of change:*** | Transmit to ground network elements (e.g. MME-ground, SGW, PGW) the timestamp and/or UE location information of the uplink data PDU generated by the UE.Since S&F satellite operation is used for delay-tolerant small-data communication service, to support efficient transport of the timestamp and/or UE location information, these information can be included in the GTP-U header of corresponding PDU. |
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| ***Consequences if not approved:*** | The issues of LI is not solved. |
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| ***Clauses affected:*** | 4.13.x.2.4 (new) |
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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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First change \* \* \* \*

##### 4.13.x.2.4 MO data transmission

To support the requirements of LI (e.g. the POIs associated with the EPC network functions are required to transmit timestamp and/or UE location information to LI functions, the interception based on time and/or UE location information specified in the warrant), on-board network elements (e.g. MME-onboard) can send to the ground network elements (e.g. MME-ground) the timestamp and/or UE location when uplink PDU is generated from the UE. The information of the timestamp and/or UE location when uplink PDU is generated from the UE is also transmitted between ground network elements, e.g. MME-ground and SGW, SGW and PGW.

The timestamp and/or UE location information is transmitted via S11-U, S5/S8, and included in the GTP-U header of corresponding PDU to support efficient transport. The sender can determine the transmition based on configuration or based on indication from the receiver.

\* \* \* \* End of changes \* \* \* \*