**3GPP TSG-CT WG1 Meeting #143C1-240225**

**Goteborg, Sweden, 21 – 25 August 2023 revision of C1-235795**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.571** | **CR** | **0043** | **rev** | **2** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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 | **X** |

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| ***Title:*** | Mobile Terminated Location Request for Ranging\_SL | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Xiaomi | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Ranging\_SL | | | | |  | ***Date:*** | | | 2024-01-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | |  |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | To support the Ranging/SL Positioning, the MT-LR Procedures for UE Positioning assisted by Sidelink Positioning and involving 5GC are defined in the following are defined in clause 6.5 of TS 23.586 and clause 6.20 of TS 23.273.  The supplementary services SL-MT-LR request/response is exchanged between the UE and the LMF to support ranging and sidelink positioning. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the Mobile Terminated Location Request(MT-LR) operations to support ranging and sidelink positioning. | | | | | | | | |
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| ***Consequences if not approved:*** | | Misalignment with stage2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.1.x(new), 5.2.1.x.1(new), 5.2.1.x.2(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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

#### 5.2.1.x Sidelink Mobile TerminatingLocation Request

##### 5.2.1.x.1 General

The supplementary services SL-MT-LR operation enables the LMF to launch the ranging and sidelink mobile terminating positioning session using NAS signaling as decribed in clause 6.20.2, clause 6.20.3, clause 6.20.4 or clause 6.20. 5 of 3GPP TS 23.273 [2]. The LCS message carrying the LCS-SLMTLR Invoke component is transferred to the target UE via the serving AMF in a DL NAS TRANSPORT message. A response from the target UE is similarly returned to the LMF via the serving AMF and is transferred to the AMF in an UL NAS TRANSPORT message.

Figure 5.2.1.x.1.1 illustrates an example of the NAS signaling transport for an supplementary services SL-MT-LR operation,



Figure 5.2.1.X.1.1: Procedure for SL-MT-LR operation

##### 5.2.1.x.2 Normal operation

The LMF sends a REGISTER message to the UE containing the supplementary services LCS-SLMTLR Invoke component as defined in 3GPP TS 24.080 [5] as described in clause 6.20.2, clause 6.20.3, clause 6.20.4 or clause 6.20.5 of 3GPP TS 23.273 [2].

The UE shall initiate the handling of location request for ranging and sidelink positioning from the network as described in clause 6.20.2, clause 6.20.3, clause 6.20.4 or clause 6.20.5 of 3GPP TS 23.273 [2]. The UE shall pass the information of the related UEs for the ranging and sidelink positioning discovered by the UE if the UE receives the indication of target UE selecting located UE from the LMF or the information of the related UEs for the ranging and sidelink positioning selected by the UE if the UE receives the indication of LMF selecting located UE from the LMF.The UE may pass the sidelink positioning capabilities of the related UEs to the LMF. The UE shall pass the result of the location procedure to the LMF by sending a FACILITY message to the LMF containing an LCS-SLMTLR return result component.If the UE is unable to process or support the request received from the network, it shall return an error indication by sending a RELEASE COMPLETE message containing a return error component or reject component. Error values are specified in 3GPP TS 24.080 [5].

Figure 5.2.1.x.2.1 illustrates the signalling for normal operation between the UE and the network.

**UE Network**

REGISTER

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Facility (Invoke = LCS-SLMTLR (slmtlr-Type, supportedGADShapes, relatedUEInfo, locatedUEselect))

RELEASE COMPLETE

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Facility (Return result = LCS-MTLR(relatedUEInfo, multipleRangingSlPosProtocolPDUs))

RELEASE COMPLETE

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Facility (Return error (Error))

RELEASE COMPLETE

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Facility (Reject (Invoke\_problem))

RELEASE COMPLETE

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Figure 5.2.1.x.2.1: RangingSl Mobile Terminated location request

Only the following IEs defined in SL-MT-LR operations in 3GPP TS 24.080 [5] are used for ranging and sidelink positioning:

- slmtlr-Type

- supportedGADShapes

- relatedUEInfo

- locatedUEselect

- multipleRangingSlPosProtocolPDUs

The relatedUEInfo IE is added to the SL-MT-LR Request to allow for passing the information of candidate Located UE(s) when the required location result is absolute location, and the relatedUEInfo IE is added to the SL-MT-LR Response to allow for passing the information of discovered or selected located UE(s) when the required location results is absolute location.

The locatedUEselect IE is added to the SL-MT-LR Request to allow for indicating whether target UE or LMF selecting located UE(s) when the required location result is absolute location.

NOTE 1: multipleRangingSlPosProtocolPDUs IE is added to the SL-MT-LR Response to allow for passing multiple UE positioning information SLPP messages (e.g. UE capabilities) to the LMF. Its ASN.1 description is given in 3GPP TS 24.080 [5].

Editor's note: The IEs included in the SL-MT-LR messages will be further updated based on CT4 and SA2’s progress.

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