**3GPP TSG-CT WG1 Meeting #146C1-24xxxx**

**Online, 22– 26 January 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | SL-MO-LR response in case of network congestion | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Ranging\_SL | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***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)* | |
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| ***Reason for change:*** | | Clause 6.8 of 3GPP TS 23.586 states the following:  *Either UE-only Operation or Network-based Operation is applied in the Ranging/Sidelink Positioning control procedures.*  *UE-only Operation as specified in this clause is applied for the following cases:*  *- Neither Target UE nor SL Reference UE is served by NG-RAN.*  *- Network-based Operation is not supported by the 5GC network as described in clause 5.2.3.*  *- Response to SL-MO-LR request allows the UE only operation for a period of time by the network due to congestion.*  *For any other cases, Network-based Operation as specified in clauses 6.20 of TS 23.273 [8] is applied.*  The hilighted text indicates the need to enhance the LCS-SLMOLR reurn result to allow the network permiting the UE-only ranging and slidelink positioning for a given duration when the network is congested. | | | | | | | | |
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| ***Summary of change:*** | | LCS-SLMOLR return result is enhanced to allow the network to permit the UE only operation for a given duration. | | | | | | | | |
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| ***Consequences if not approved:*** | | No means for the network to temporarly permit UE-only operation for ranging and sidelink positioning when the network is congested. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.9.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
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| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

##### 5.2.2.9.2 Normal operation

The UE invokes a SL-MO-LR by sending a REGISTER message to the network containing a LCS-SLMOLR invoke component. SS Version Indicator value 1 or above shall be used.

The receiving network entity shall initiate the handling of location request in the network. The network shall pass the result of the location procedure to the UE by sending a FACILITY message to the UE containing a LCS-SLMOLR return result component. When location estimate is kept in the network entity and this information satisfies the requested accuracy and the requested maximum age of location, then the network may reuse this information and the positioning measurement procedure may be skipped.

The network shall pass the result of the location procedure to the UE only if the location estimate is given in a format that the UE supports, as indicated by either the presence (and content) or the absence of the parameter supportedGADShapes, which may be sent by the UE in the LCS-SLMOLR operation.

The UE may terminate the dialogue by sending a RELEASE COMPLETE message in the case of single location request (see figure 5.2.2.9.2-1). The UE may also initiate another location request operation by sending a FACILITY message to the network containing a LCS-SLMOLR invoke component (see figure 5.2.2.9.2-2). After the last location request operation the UE shall terminate the dialogue by sending a RELEASE COMPLETE message.

When the network is congested and if the network decides not to perform the location procedure, the network may allow UE-only ranging and sidelink positioning for a given time duration by sending a RELEASE COMPLETE message to the UE containing an LCS-SLMOLR return result component including a ueOnlyRSLPosAllowed IE. The network shall provide the time duration in the ueOnlyRSLPosAllowed IE.

Upon receiving the LCS-SLMOLR return result component including a ueOnlyRSLPosAllowed IE, the UE may perform the UE only sidelink positioning procedure as specified in clause 6.6 of 3GPP TS 23.586 [10] within the time duration provided in the ueOnlyRSLPosAllowed IE.

If the network is unable to successfully fulfil the request received from the UE (e.g. to provide a location estimate or location assistance information), it shall clear the transaction by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3GPP TS 24.080 [5]. If the network is unable to provide a location estimate due to lack of support in the UE for the type of shape of the location estimate, then it shall use the error Facility Not Supported.

If the network has returned a result to the UE in a FACILITY message but, after some PLMN administered time period has elapsed, has not received either a new location request operation in a FACILITY message or a RELEASE COMPLETE message from the UE, the network may clear the transaction by sending a RELEASE COMPLETE message.

During the SL-MO-LR operation, the UE shall run a timer Taaa. This timer is started when the operation is sent, and stopped when a response is received from the network. If this timer expires the UE shall assume that the operation has failed, and may terminate the dialogue by sending a RELEASE COMPLETE message, and shall inform the user of the failure.

**UE Network**

REGISTER

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Facility (Invoke = LCS-SLMOLR (slmolr-Type, lcs-QoS, lcsClientExternalID, mlc-Number, supportedGADShapes, lcsServiceTypeID, pseudonymIndicator, h-gmlc-address, calculationAssistIndicator, preferredRangingResult, relatedUEInfo))

FACILITY

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Facility (Return result = LCS-SLMOLR (rangingResult))

RELEASE COMPLETE

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Facility (Return result = LCS-SLMOLR (ueOnlyRSLPosAllowed))

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 5.2.2.9.2-1: Single sidelink mobile originated location request

**UE Network**

REGISTER

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Facility (Invoke = LCS-SLMOLR (slmolr-Type, lcs-QoS, lcsClientExternalID, mlc-Number, supportedGADShapes, lcsServiceTypeID, pseudonymIndicator, h-gmlc-address, calculationAssistIndicator, preferredRangingResult, relatedUEInfo))

FACILITY

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Facility (Return result = LCS-SLMOLR (rangingResult))

RELEASE COMPLETE

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Facility (Return error (Error))

RELEASE COMPLETE

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Facility (Reject (Invoke\_problem))

FACILITY

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Facility (Invoke = LCS-SLMOLR (slmolr-Type, lcs-QoS, lcsClientExternalID, mlc-Number, supportedGADShapes, lcsServiceTypeID, pseudonymIndicator, h-gmlc-address, calculationAssistIndicator, preferredRangingResult, relatedUEInfo))

FACILITY

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Facility (Return result = LCS-SLMOLR (rangingResult))

RELEASE COMPLETE

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Facility (Return result (ueOnlyRSLPosAllowed))

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 5.2.2.9.2-2: Multiple sidelink mobile originated location requests

NOTE: Only the following IEs defined in SL-MO-LR operations in 3GPP TS 24.080 [5] are used for NG-RAN LCS:

- slmolr-Type

- lcs-QoS

- lcsClientExternalID

- mlc-Number

- supportedGADShapes

- lcsServiceTypeID

- pseudonymIndicator

- h-gmlc-address

- calculationAssistIndicator

- preferredRangingResult

- relatedUEInfo

- rangingResult

- ueOnlyRSLPosAllowed

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

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