**3GPP TSG-CT WG1 Meeting #127-eC1-20xxxx**

**Online, , 13th Nov 2020 - 20th Nov 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.587** | **CR** | **161** | **rev** | **0** | **Current version:** | **16.2.1** |  |
|  |
| *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:***  | Handling of abnormal scenario in the PC5 unicast link release |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eV2XARC |  | ***Date:*** | 2020-11-06 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)* |
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| ***Reason for change:*** | In the current specificaton, it is specified in 6.1.2.4.2 that if the release reason is “direct connection is not available anymore”, there is no need to start the guard timer T5002 at the initiating UE and the UE shall localy release the PC5 unicast link. But UE still sends the DIRECT LINK RELEASE REQUEST.But according to current specification, irrespective of the release reason, the target UE shall respond with the RELEASE ACCEPT message. Later, for completing the release procedure, it is specified that the the initiating UE shall inform the lower layer about the PC5 link identifier. But in this case (when the release reason is “direct connection is not available anymore”), the initiating UE has already deleted the PC5 link context and so PC5 link identifier does not exist. This needs to be corrected. |
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| ***Summary of change:*** | It is corrected that if the DIRECT LINK RELEASE ACCEPT message is received and only when the timer T5002 is running, the initiating UE shall inform the lower layers with PC5 link identifier and delete the PC5 unicast link context.  |
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| ***Consequences if not approved:*** | Incorrect specification |
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| ***Clauses affected:*** | 6.1.2.4.4 |
|  |  |
|  | **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 \* \* \* \*

##### 6.1.2.4.2 PC5 unicast link release procedure initiation by initiating UE

The initiating UE shall initiate the procedure if a request from upper layers to release a PC5 unicast link with the target UE which uses a known layer-2 ID (for unicast communication) is received and there is an existing PC5 unicast link between these two UEs.

The initiating UE may initiate the procedure if the target UE has been non-responsive, e.g. no response in the PC5 unicast link modification procedure, PC5 unicast link identifier update procedure, PC5 unicast link re-keying procedure or PC5 unicast link keep-alive procedure.

The initiating UE may initiate the procedure to release an established PC5 unicast link if the UE has reached the maximum number of established PC5 unicast links and there is a need to establish a new PC5 unicast link. In this case, which PC5 unicast link is to be released is up to UE implementation.

In order to initiate the PC5 unicast link release procedure, the initiating UE shall create a DIRECT LINK RELEASE REQUEST message with a PC5 signalling protocol cause IE indicating one of the following cause values:

#1 direct communication with the target UE not allowed;

#2 direct communication to the target UE no longer needed;

#4 direct connection is not available anymore;

#5 lack of resources for PC5 unicast link; or

#111 protocol error, unspecified.

The initiating UE shall include the new MSB of KNRP ID in the DIRECT LINK RELEASE REQUEST message.

After the DIRECT LINK RELEASE REQUEST message is generated, the initiating UE shall pass this message to the lower layers for transmission along with the initiating UE's layer-2 ID and the target UE's layer-2 ID, and shall stop T5011 if running. The initiating UE shall start timer T5002.



Figure 6.1.2.4.2.1: PC5 unicast link release procedure

\* \* \* Next Change \* \* \* \*

###### 6.1.2.4.5.1 Abnormal cases at the initiating UE

If retransmission timer T5002 expires and the release reason in the DIRECT LINK RELEASE REQUEST message was #4 "direct connection is not available anymore", the initiating UE shall release the PC5 unicast link locally and delete the KNRP ID associated with this link. From this time onward the initiating UE shall no longer send or receive any messages via this link.

If retransmission timer T5002 expires, the initiating UE shall initiate the transmission of the DIRECT LINK RELEASE REQUEST message again and restart timer T5002.

If no response is received from the target UE after reaching the maximum number of allowed retransmissions, the initiating UE shall release the PC5 unicast link locally and delete the KNRP ID associated with this link. From this time onward the initiating UE shall no longer send or receive any messages via this link.

NOTE: The maximum number of allowed retransmissions is UE implementation specific.

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