**3GPP TSG-CT WG1 Meeting #123-eC1-202xxx**

**Electronic meeting, 16-24 April 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.587** | **CR** | **0016** | **rev** | **1** | **Current version:** | **16.0.0** |  |
|  |
| *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:***  | Updates to the link release procedure |
|  |  |
| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eV2XARC |  | ***Date:*** | 2020-04-10 |
|  |  |  |  |  |
| ***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)* |
|  |  |
| ***Reason for change:*** | 1. Lack of resources may also cause UE to initiate the PC5 unicast link release, so it is proposed to add the cause value #5 ‘lack of resources for proposed link’ as one of the release reasons.
2. The target UE shall stop all the running timers associated with the link that to be released.
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|  |  |
| ***Summary of change:*** | 1. Add the cause value #5 ‘lack of resources for proposed link’ as one of the release reasons, and rename cause value #5 to ‘lack of resources for PC5 unicast link’
2. Besides the captured timer T5001 and T5002, the target UE shall also stop the timer T5003, T5004 and T5005 if running.
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| ***Consequences if not approved:*** | 1. Not support release a direct link due to lack of resource.
2. T5003, T5004 and T5005 are still running after link release.
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|  |  |
| ***Clauses affected:*** | 6.1.2.4.2, 6.1.2.4.3 |
|  |  |
|  | **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) 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; or

b) the target UE has been non-responsive, e.g. no response in the PC5 unicast link modification procedure or PC5 unicast link identifier update procedure.

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.

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. The initiating UE shall release the direct link locally if the release reason is #4 "direct connection is not available anymore". Otherwise, the initiating UE shall start timer T5002.



Figure 6.1.2.4.2.1: PC5 unicast link release procedure

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

##### 6.1.2.4.3 PC5 unicast link release procedure accepted by the target UE

Upon receiving a DIRECT LINK RELEASE REQUEST message, the target UE shall stop timer T5001, timer T5002, timer T5003, T5004 and T5005 for this PC5 unicast link, if any of those timers is running, and abort any other ongoing PC5 signalling protocol procedures on this link. The target UE shall respond with a DIRECT LINK RELEASE ACCEPT message. After the message is sent, the target UE shall release the PC5 unicast link.

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

### 8.4.9 PC5 signalling protocol cause

The purpose of the PC5 signalling protocol cause information element is to indicate the cause used in the PC5 signalling protocol procedures.

The PC5 signalling protocol cause is a type 3 information element with a length of 2 octets.

The PC5 signalling protocol cause information element is coded as shown in figure 8.4.9.1 and table 8.4.9.1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PC5 signalling protocol cause IEI | octet 1 |
| PC5 signalling cause value | octet 2 |

Figure 8.4.9.1: PC5 signalling protocol cause information element

Table 8.4.9.1: PC5 signalling protocol cause information element

|  |
| --- |
| PC5 signalling cause value (octet 2) |
|  |
| Bits |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Direct communication to the target UE not allowed |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | Direct communication to the target UE no longer needed |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | Conflict of Layer 2 ID for unicast communication is detected |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | Direct connection is not available anymore |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | Lack of resources for PC5 unicast link |
|  |  |  |  |  |  |  |  |  |  |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |  | Protocol error, unspecified |
|  |  |  |  |  |  |  |  |  |  |
| Any other value received by the UE shall be treated as 0110 1111, "protocol error, unspecified". |

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