**3GPP TSG-CT WG1 Meeting #141eC1-232517**

**Electronic, 17 – 21 April 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.554** | **CR** | **0312** | **rev** | **-** | **Current version:** | **18.0.0** |  |
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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 | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | 5G ProSe direct link modification for U2U relay over shared PC5 link | | | | | | | | | |
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| ***Source to WG:*** | CATT, OPPO, InterDigital | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_ProSe\_Ph2 | | | | |  | ***Date:*** | | | 2023-04-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | In clause 6.7.1.1 of TS 23.304, it describes:  "In the case of one source 5G ProSe Layer-3 End UE communicates with multiple target 5G ProSe Layer-3 End UEs, the PC5 link between the source 5G ProSe Layer-3 End UE and the 5G ProSe Layer-3 UE-to-UE Relay can be shared for multiple target 5G ProSe Layer-3 End UEs per RSC while the PC5 links may be established individually between the 5G ProSe Layer-3 UE-to-UE Relay and target 5G ProSe Layer-3 End UEs per RSC. For the shared PC5 link, the Layer-2 link modification procedure shall be used.  In the case of multiple source 5G ProSe Layer-3 End UEs communicate with one target 5G ProSe Layer-3 End UE, the PC5 link between the 5G ProSe Layer-3 UE-to-UE Relay and the target 5G ProSe Layer-3 End UE can be shared per RSC while the PC5 links may be established individually between the source 5G ProSe Layer-3 End UEs and the 5G ProSe Layer-3 UE-to-UE Relay per RSC. For the shared PC5 link, the Layer-2 link modification procedure shall be used." | | | | | | | | |
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| ***Summary of change:*** | | Update 5G ProSe direct link modification procedure to address shared PC5 link scenarios for U2U relay, i.e. one 5G ProSe layer-3 end UE using one shared PC5 link with the 5G ProSe layer-3 U2U relay UE to communicates with multiple 5G ProSe layer-3 end UEs. | | | | | | | | |
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| ***Consequences if not approved:*** | | Shared PC5 link scenarios for U2U relay is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.2.3.1, 7.2.3.2, 7.2.3.3, 7.2.3.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* Start of Change \* \* \* \*

#### 7.2.3.1 General

The purpose of the 5G ProSe direct link modification procedure is to modify the existing ProSe direct link to:

a) add new PC5 QoS flow(s) to the existing 5G ProSe direct link;

b) modify existing PC5 QoS flow(s) for updating PC5 QoS parameters of the existing PC5 QoS flow(s);

c) modify existing PC5 QoS flow(s) for associating new ProSe application(s) with the existing PC5 QoS flow(s);

d) modify existing PC5 QoS flow(s) for removing the associated ProSe application(s) from the existing PC5 QoS flow(s);

e) remove existing PC5 QoS flow(s) from the existing 5G ProSe direct link;

f) establish 5G ProSe UE-to-UE relay communication with additional 5G ProSe layer-3 end UE(s) using the existing 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE; or

g) release 5G ProSe UE-to-UE relay communication with one of the peer 5G ProSe layer-3 end UEs using the shared 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE.

In this procedure, the UE sending the PROSE DIRECT LINK MODIFICATION REQUEST message is called the "initiating UE" and the other UE is called the "target UE".

NOTE: The 5G ProSe direct link modification procedure is not applicable for 5G ProSe layer-2 UE-to-network relay case.

#### 7.2.3.2 5G ProSe direct link modification procedure initiated by initiating UE

The initiating UE shall meet the following pre-conditions before initiating this procedure for adding a new ProSe application to the existing 5G ProSe direct link:

a) there is a 5G ProSe direct link between the initiating UE and the target UE;

b) the pair of application layer IDs and the network layer protocol of this 5G ProSe direct link are identical to those required by the application layer in the initiating UE for this ProSe application; and

c) the security policy corresponding to the ProSe identifier is aligned with the security policy of the existing 5G ProSe direct link.

After receiving the service data or request from the upper layers, the initiating UE shall perform the PC5 QoS flow match as specified in clause 7.2.8. If there is no matched PC5 QoS flow, the initiating UE shall derive the PC5 QoS parameters and assign the PQFI(s) for the PC5 QoS flows(s) to be established as specified in clause 7.2.7.

If the 5G ProSe direct link modification procedure is to add new PC5 QoS flow(s) to the existing 5G ProSe direct link, the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, initiating UE:

a) shall include the PQFI(s), the corresponding PC5 QoS parameters and optionally the ProSe identifier(s);

b) shall include the link modification operation code set to "Add new PC5 QoS flow(s) to the existing 5G ProSe direct link ";

c) may include the PC5 QoS rule(s) to indicate the packet filters of the PC5 QoS flow(s);

d) shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE, and multiple source 5G ProSe layer-3 end UEs have established direct communication with the target 5G ProSe layer-3 end UE via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

da) may include the source end UE info set to the user info ID of the source 5G ProSe end UE, if the UE acts as a 5G ProSe UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE, and only one source 5G ProSe end UE has established direct communication with the target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link;

e) shall include the target end UE info set to the user info ID of the target 5G ProSe layer-3 end UE, if the UE acts as a source 5G ProSe layer-3 end UE, the 5G ProSe direct link is between the source 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE, and the source 5G ProSe layer-3 end UE has established direct communication with multiple target 5G ProSe layer-3 end UEs via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

ea) may include the target end UE info set to the user info ID of the target 5G ProSe end UE, if:

1) the UE acts as a source 5G ProSe end UE, the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE, and the source 5G ProSe end UE has established direct communication with only one target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link; or

2) the UE acts as a 5G ProSe UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE; and

f) may include the target end UE layer-2 ID set to the layer-2 ID of the target 5G ProSe end UE, if the UE acts as a source 5G ProSe end UE and the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE.

If the 5G ProSe direct link modification procedure is to modify the PC5 QoS parameters for existing PC5 QoS flow(s) in the existing 5G ProSe direct link, the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, the initiating UE:

a) shall include the PQFI(s) and the corresponding PC5 QoS parameters, including the ProSe identifier(s);

b) shall include the link modification operation code set to "Modify PC5 QoS parameters of the existing PC5 QoS flow(s)";

c) may include the PC5 QoS rule(s) to indicate the packet filters of the PC5 QoS flow(s);

d) shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE, and multiple source 5G ProSe layer-3 end UEs have established direct communication with the target 5G ProSe layer-3 end UE via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

da) may include the source end UE info set to the user info ID of the source 5G ProSe end UE, if the UE acts as a 5G ProSe UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE, and only one source 5G ProSe end UE has established direct communication with the target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link;

e) shall include the target end UE info set to the user info ID of the target 5G ProSe layer-3 end UE, if the UE acts as a source 5G ProSe layer-3 end UE, the 5G ProSe direct link is between the source 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE, and the source 5G ProSe layer-3 end UE has established direct communication multiple target 5G ProSe layer-3 end UEs via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

ea) may include the target end UE info set to the user info ID of the target 5G ProSe end UE, if:

1) the UE acts as a source 5G ProSe end UE, the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE, and the source 5G ProSe end UE has established direct communication with only one target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link; or

2) the UE acts as a 5G ProSe UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE; and

f) may include the target end UE layer-2 ID set to the layer-2 ID of the target 5G ProSe end UE, if the UE acts as a source 5G ProSe end UE and the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE.

If the 5G ProSe direct link modification procedure is to associate new ProSe application(s) with existing PC5 QoS flow(s), the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, the initiating UE:

a) shall include the PQFI(s) and the corresponding PC5 QoS parameters, including the ProSe identifier(s);

b) shall include the link modification operation code set to "Associate new ProSe application(s) with existing PC5 QoS flow(s)";

c) may include the PC5 QoS rule(s) to indicate the packet filters of the PC5 QoS flow(s);

d) shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE, and multiple source 5G ProSe layer-3 end UEs have established direct communication with the target 5G ProSe layer-3 end UE via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

da) may include the source end UE info set to the user info ID of the source 5G ProSe end UE, if the UE acts as a 5G ProSe UE-to-UE relay UE, the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE, and only one source 5G ProSe end UE has established direct communication with the target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link;

e) shall include the target end UE info set to the user info ID of the target 5G ProSe layer-3 end UE, if the UE acts as a source 5G ProSe layer-3 end UE, the 5G ProSe direct link is between the source 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE, and the source 5G ProSe layer-3 end UE has established direct communication with multiple target 5G ProSe layer-3 end UEs via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

ea) may include the target end UE info set to the user info ID of the target 5G ProSe end UE, if:

1) the UE acts as a source 5G ProSe end UE, the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE, and the source 5G ProSe end UE has established direct communication with only one target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link; or

2) the UE acts as a 5G ProSe UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE; and

f) may include the target end UE layer-2 ID set to the layer-2 ID of the target 5G ProSe end UE, if the UE acts as a source 5G ProSe end UE and the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE.

If the PC5 5G ProSe direct link modification procedure is to remove the associated ProSe application(s) from existing PC5 QoS flow(s), the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, the initiating UE:

a) shall include the PQFI(s) and the corresponding PC5 QoS parameters including the ProSe identifier(s); and

b) shall include the link modification operation code set to "Remove ProSe application(s) from existing PC5 QoS flow(s)".

If the direct link modification procedure is to remove any PC5 QoS flow(s) from the existing 5G ProSe direct link, the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, the initiating UE:

a) shall include the PQFI(s); and

b) shall include the link modification operation code set to "Remove existing PC5 QoS flow(s) from the existing 5G ProSe direct link".

If the 5G ProSe direct link modification procedure is to establish 5G ProSe UE-to-UE relay communication with additional 5G ProSe layer-3 end UE using the existing 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, initiating UE:

a) shall include the source end UE info set to the source user info ID of the 5G ProSe layer-3 end UE received in PROSE DIRECT LINK ESTABLISHMENT REQUEST message, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE;

aa) for Ethernet traffic, shall include the MAC address of the source 5G ProSe layer-3 end UE, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE;

b) shall include the target end UE info set to the user info ID of the additional target 5G ProSe layer-3 end UE to which the 5G ProSe UE-to-UE relay communication is requested, if the UE acts as a source 5G ProSe layer-3 end UE and the 5G ProSe direct link is between the source 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE;

c) shall include the ProSe identifier(s) received from upper layer if the UE acts as a source 5G ProSe layer-3 end UE, or set to the ProSe identifier(s) received in PROSE DIRECT LINK ESTABLISHMENT REQUEST message if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE;

Editor's note: It is FFS whether the PQFI(s) and the corresponding PC5 QoS parameters, including the ProSe identifier(s), are included instead of the ProSe identifier(s) only.

Editor's note: It is FFS whether to include and how to set the ProSe identifier(s) for the 5G ProSe direct link between the source5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, and the 5G ProSe direct link between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE.

d) shall include the link modification operation code set to "Add new 5G ProSe layer-3 end UE to the existing 5G ProSe direct link"; and

e) may include the target end UE layer-2 ID set to the layer-2 ID of the target 5G ProSe layer-3 end UE, if the UE acts as a source 5G ProSe layer-3 end UE and the 5G ProSe direct link is between the source 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE.

If the 5G ProSe direct link modification procedure is to release 5G ProSe UE-to-UE relay communication with one of the peer 5G ProSe layer-3 end UEs using the shared 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the initiating UE shall create a PROSE DIRECT LINK MODIFICATION REQUEST message. In this message, initiating UE:

a) shall include the source end UE info set to the source user info ID of the 5G ProSe layer-3 end UE received in the PROSE DIRECT LINK RELEASE REQUEST message, if the UE acts as a 5G ProSe layer-3 UE-to-UE relay UE and the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the 5G ProSe layer-3 end UE;

b) shall include the target end UE info set to the user info ID of the peer 5G ProSe layer-3 end UE with which the 5G ProSe UE-to-UE relay communication is to be released, if the UE acts as a 5G ProSe layer-3 end UE and the 5G ProSe direct link is between the 5G ProSe layer-3 end UE and the 5G ProSe layer-3 UE-to-UE relay UE; and

c) shall include the link modification operation code set to "Remove 5G ProSe layer-3 end UE from the existing 5G ProSe direct link".

After the PROSE DIRECT LINK MODIFICATION 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 for 5G ProSe direct communication and the target UE's layer-2 ID for 5G ProSe direct communication and start timer T5081. The UE shall not send a new PROSE DIRECT LINK MODIFICATION REQUEST message to the same target UE while timer T5081 is running.



Figure 7.2.3.2.1: 5G ProSe direct link modification procedure

#### 7.2.3.3 5G ProSe direct link modification procedure accepted by the target UE

If the PROSE DIRECT LINK MODIFICATION REQUEST message is accepted, the target UE shall respond with the PROSE DIRECT LINK MODIFICATION ACCEPT message.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to add a new ProSe application, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow(s) in the 5G ProSe direct link, the target UE:

a) shall include the PQFI(s), the corresponding PC5 QoS parameters and optionally the ProSe identifier(s) that the target UE accepts;

b) may include the PC5 QoS rule(s) to indicate the packet filters of the PC5 QoS flow(s);

d) shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE, if the UE acts as a target 5G ProSe layer-3 end UE, the 5G ProSe direct link is between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE, and the target 5G ProSe layer-3 end UE has established direct communication with multiple source 5G ProSe layer-3 end UEs via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link; and

d1) may include the source end UE info set to the user info ID of the source 5G ProSe end UE, if the UE acts as a target 5G ProSe end UE, the 5G ProSe direct link is between the 5G ProSe UE-to-UE relay UE and the target 5G ProSe end UE, and the target 5G ProSe end UE has established direct communication with only one source 5G ProSe end UEs via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link; and

e) shall include the target end UE info set to the user info ID of the target 5G ProSe end UE, if the UE acts as a 5G ProSe UE-to-UE relay UE, the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE, and the source 5G ProSe layer-3 end UE has established direct communication with multiple target 5G ProSe layer-3 end UEs via the 5G ProSe layer-3 UE-to-UE relay UE using the same 5G ProSe direct link;

e1) may include the target end UE info set to the user info ID of the target 5G ProSe end UE, if the UE acts as a 5G ProSe UE-to-UE relay UE, the 5G ProSe direct link is between the source 5G ProSe end UE and the 5G ProSe UE-to-UE relay UE, and the source 5G ProSe end UE has established direct communication with only one target 5G ProSe end UE via the 5G ProSe UE-to-UE relay UE using the 5G ProSe direct link;

in the PROSE DIRECT LINK MODIFICATION ACCEPT message.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to remove an existing ProSe application from the 5G ProSe direct link, the target UE shall delete the ProSe identifier received in the PROSE DIRECT LINK MODIFICATION REQUEST message and the corresponding PQFI(s) and PC5 QoS parameters from the profile associated with the 5G ProSe direct link.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to remove existing PC5 QoS flow(s) from the PC5 5G ProSe direct link, the target UE shall delete the PQFI(s) and the corresponding PC5 QoS parameters from the profile associated with the 5G ProSe direct link.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to add a new ProSe application, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow(s) in the 5G ProSe direct link, after sending the PROSE DIRECT LINK MODIFICATION ACCEPT message, the target UE shall provide the added or modified PQFI(s) and corresponding PC5 QoS parameters along with PC5 link identifier to the lower layer.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to remove an existing ProSe application or to remove the existing PC5 QoS flow(s) from the 5G ProSe direct link, after sending the PROSE DIRECT LINK MODIFICATION ACCEPT message, the target UE shall provide the removed PQFI(s) along with the PC5 link identifier to the lower layer.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to establish 5G ProSe UE-to-UE relay communication with additional 5G ProSe layer-3 end UE using the existing 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the target UE:

1. if acting as the 5G ProSe layer-3 UE-to-UE relay UE, shall perform the 5G ProSe direct link establishment procedure towards the target 5G ProSe layer-3 end UE as specified in clause 7.2.2.2; and after receiving the PROSE DIRECT LINK ESTABLISHMENT ACCEPT message from the target 5G ProSe layer-3 end UE, shall create a PROSE DIRECT LINK MODIFICATION ACCEPT message;
2. if acting as the target 5G ProSe layer-3 end UE, shall create a PROSE DIRECT LINK MODIFICATION ACCEPT message; and
3. in the PROSE DIRECT LINK MODIFICATION ACCEPT message, the target UE:

1) if the UE acts as the target 5G ProSe layer-3 end UE, shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE; or

2) if the UE acts as the 5G ProSe layer-3 UE-to-UE relay UE, shall include the target end UE info set to the user info ID of the target 5G ProSe layer-3 end UE, and for Ethernet traffic, shall also include the MAC address of the target 5G ProSe layer-3 end UE.

If the PROSE DIRECT LINK MODIFICATION REQUEST message is to release 5G ProSe UE-to-UE relay communication with one of the peer 5G ProSe layer-3 end UEs using the shared 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the target UE:

1. if acting as the 5G ProSe layer-3 UE-to-UE relay UE, may initiate one of the following procedures towards the target 5G ProSe layer-3 end UE:

1) 5G ProSe direct link release procedure as specified in clause 7.2.6.2 to release the 5G ProSe direct link with the peer 5G ProSe layer-3 end UE; or

2) 5G ProSe direct link modification procedure as specified in clause 7.2.3.2 to remove the corresponding PC5 QoS flow(s), if the UE determines to keep the 5G ProSe direct link with the peer 5G ProSe layer-3 end UE; and

1. shall create a PROSE DIRECT LINK MODIFICATION ACCEPT message, and in this message, the target UE:

1) shall include the source end UE info set to the user info ID of the source 5G ProSe layer-3 end UE, if the UE acts as the target 5G ProSe layer-3 end UE; or

2) shall include the target end UE info set to the user info ID of the target 5G ProSe layer-3 end UE, if the UE acts as the 5G ProSe layer-3 UE-to-UE relay UE.

If the 5G ProSe direct link is for 5G ProSe direct communication between the 5G ProSe remote UE and the 5G ProSe layer-3 UE-to-network relay UE, and if the initiating UE is the 5G ProSe remote UE, then the target UE (as the 5G ProSe layer-3 UE-to-network relay UE) performs the QoS flows handling procedure as specified in clause 8.2.6.3.3 and clause 8.2.6.4.2.

If the target UE accepts the 5G ProSe direct link modification request, then the target UE may perform the PC5 QoS flow establishment over 5G ProSe direct link as specified in clause 7.2.7 and perform the PC5 QoS flow match over 5G ProSe direct link as specified in clause 7.2.8.

#### 7.2.3.4 5G ProSe direct link modification procedure completion by the initiating UE

Upon receipt of the PROSE DIRECT LINK MODIFICATION ACCEPT message, the initiating UE shall stop timer T5081.

Upon receipt of the PROSE DIRECT LINK MODIFICATION ACCEPT message, if the PROSE DIRECT LINK MODIFICATION REQUEST message is to add a new ProSe application, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow(s) in the 5G ProSe direct link, the initiating UE shall provide the added or modified PQFI(s) and corresponding PC5 QoS parameters along with PC5 link identifier to the lower layer.

Upon receipt of the PROSE DIRECT LINK MODIFICATION ACCEPT message, if the PROSE DIRECT LINK MODIFICATION REQUEST message is to remove an existing ProSe application or to remove the existing PC5 QoS flow(s) from the 5G ProSe direct link, the initiating UE shall provide the removed PQFI(s) along with the PC5 link identifier to the lower layer.

Upon receipt of the PROSE DIRECT LINK MODIFICATION ACCEPT message, if the PROSE DIRECT LINK MODIFICATION REQUEST message is to establish 5G ProSe UE-to-UE relay communication with additional 5G ProSe layer-3 end UE using the existing 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the initiating UE shall send a PROSE DIRECT LINK ESTABLISHMENT ACCEPT message to the source 5G ProSe layer-3 end UE as specified in clause 7.2.2.3, if the initiating UE acts as the 5G ProSe layer-3 UE-to-UE relay UE.

Editor's note: It is FFS whether to include and how to set the ProSe identifier(s) for the 5G ProSe direct link between the source5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, and the 5G ProSe direct link between the 5G ProSe layer-3 UE-to-UE relay UE and the target 5G ProSe layer-3 end UE.

Upon receipt of the PROSE DIRECT LINK MODIFICATION ACCEPT message, if the PROSE DIRECT LINK MODIFICATION REQUEST message is to release 5G ProSe UE-to-UE relay communication with one of the peer 5G ProSe layer-3 end UEs using the shared 5G ProSe direct link between the 5G ProSe layer-3 end UE and 5G ProSe layer-3 UE-to-UE relay UE, the initiating UE shall send a PROSE DIRECT LINK RELEASE ACCEPT message to the source 5G ProSe layer-3 end UE as specified in clause 7.2.6.3, if the initiating UE acts as the 5G ProSe layer-3 UE-to-UE relay UE.

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