**3GPP TSG-CT WG1 Meeting #135-eC1-222749**

**E-Meeting, 6th – 12th April 2022**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.554** | **CR** | **0028** | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  |
| *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 |  |

|  |
| --- |
|  |
| ***Title:***  | Add target user ID in relay discovery solicitation message |
|  |  |
| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_ProSe |  | ***Date:*** | 2022.03.28 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | As per SA2 CR 0074 (S2-2201308) agreed that during the UE-to-network relay discovery procedure with model B, the target info can optionally be included in the UE-to-network relay discovery solicitation message. See below:*1. The 5G ProSe Remote UE sends a 5G ProSe UE-to-Network Relay Discovery Solicitation message. The 5G ProSe UE-to-Network Discovery Solicitation message contains the Type of Discovery Message, Discoverer Info, RSC and optionally Target Info, and is send using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.3. The 5G ProSe Remote UE discovering a 5G ProSe UE-to-Network Relay sends a solicitation message with the RSC which is associated to the desired connectivity service. The RSC is based on the Policy/Parameters specified in clause 5.1.4.1.*and*- Target Info: provides information (i.e. User Info ID) about the targeted discoveree user.*So this CR proposes to add the discoveree info in the the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation to provide the user info ID of the targeted discoveree UE. |
|  |  |
| ***Summary of change:*** | 1. Add the optional target discoveree info in the the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation;2. Add the match procedure of discoveree UE;3. Add the target discoveree info IE in the corresponding message definition table. |
|  |  |
| ***Consequences if not approved:*** | Missing of discoveree info in the the PROSE PC5 DISCOVERY message for UE-to-network relay discovery with model B. |
|  |  |
| ***Clauses affected:*** | 8.2.1.3.1.2, 8.2.1.3.2.2, 10.2.1, 10.2.X(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 \* \* \* \*

###### 8.2.1.3.1.2 Discoverer UE procedure for UE-to-network relay discovery initiation

The UE is authorised to perform the discoverer UE procedure for UE-to-network relay discovery if:

a) one of the following is true:

1) the UE is not served by NG-RAN, is authorised to act as a remote UE towards a UE-to-network relay UE, and is configured with the radio parameters to be used for ProSe UE-to-network relay discovery when not served by NG-RAN;

2) the UE is served by NG-RAN, is authorised to act as a remote UE towards a UE-to-network relay UE; or

3) the UE is:

i) in 5GMM-IDLE mode, in limited service state as specified in 3GPP TS 23.122 [14], and the reason for the UE being in limited service state is one of the following:

A) the UE is unable to find a suitable cell in the selected PLMN as specified in 3GPP TS 38.304 [15];

B) the UE received a REGISTRATION REJECT message or a SERVICE REJECT message with the 5GMM cause #11 "PLMN not allowed" as specified in 3GPP TS 24.501 [11]; or

C) the UE received a REGISTRATION REJECT message or a SERVICE REJECT message with the 5GMM cause #7 "5GS services not allowed" as specified in 3GPP TS 24.501 [11]; and

ii) authorised to act as a remote UE towards a UE-to-network relay UE when the UE is not served by NG-RAN, and configured with the radio parameters to be used for ProSe UE-to-network relay discovery use when not served by NG-RAN;

b) the UE is configured with the relay service code parameter identifying the connectivity service to be solicited and with the User info ID for the UE-to-network relay discovery parameter, as specified in clause 5.2.5; and

c) for 5G ProSe layer-2 remote UE, the UE is camped on a cell whose TAI is not in the list of "non-allowed tracking areas" or is camped on a cell whose TAI is in the list of "allowed tracking areas",

otherwise, the UE is not authorised to perform the discoverer UE procedure for UE-to-network relay discovery.

Figure 8.2.1.3.1.2.1 illustrates the interaction of the UEs in the discoverer UE procedure for UE-to-network relay discovery.



Figure 8.2.1.3.1.2.1: Discoverer UE procedure for UE-to-network Relay discovery

For PROSE PC5 DISCOVERY message signal strength measurement, the UE manages a periodic measurement timer T5091, which is used to trigger the periodic PROSE PC5 DISCOVERY message signal strength measurement between the UE and the ProSe UE-to-network relay UE with which the UE has a link established. It is started whenever the UE has established a direct link with a 5G ProSe UE-to-network relay UE and restarted whenever the UE receives the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response from the 5G ProSe UE-to-network relay UE with which the UE has a link established.

When the UE is triggered by an upper layer application to solicit proximity of a connectivity service provided by a UE-to-network relay UE, or when the periodic measurement timer T5091 expires, and if the UE is authorised to perform the discoverer UE procedure for UE-to-network relay discovery, then the UE:

a) if the UE is served by NG-RAN, and the UE in 5GMM-IDLE mode needs to request resources for sending PROSE PC5 DISCOVERY messages for relay discovery as specified in 3GPP TS 38.331 [13], shall perform a service request procedure as specified in 3GPP TS 24.501 [11];

b) shall obtain a valid UTC time for the discovery transmission from the lower layers and generate the UTC-based counter corresponding to this UTC time;

c) shall generate a PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation. In the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation, the UE:

1) shall set the discoverer info parameter to the User info ID for the UE-to-network relay discovery parameter, configured in clause 5.2.5;

2) shall set the relay service code parameter to the relay service code parameter identifying the connectivity service to be solicited, configured in clause 5.2.5;

3) shall set the UTC-based counter LSB parameter to include the four least significant bits of the UTC-based counter;

4) shall set the ProSe direct discovery PC5 message type parameter as specified in table 10.2.1.9; and

5) may include the target discoveree info parameter set to the user info ID of the targeted discoveree user if the target discoveree info is provided by the application layer;

d) shall apply the DUIK, DUSK, or DUCK with the associated Encrypted Bitmask, along with the UTC-based counter to the PROSE PC5 DISCOVERY message for whichever security mechanism(s) configured to be applied, e.g., integrity protection, message scrambling or confidentiality protection of one or more above parameters, as specified in 3GPP TS 33.503 [34];

Editor's note: Details of security related content in d) are FFS and will be determinated by SA3.

e) shall set the default destination layer-2 ID as specified in clause 5.2.5 to the destination layer-2 ID, and self-assign a source layer-2 ID for sending the UE-to-network relay discovery solicitation message; and

f) shall pass the resulting PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation along with the source layer-2 ID, destination layer-2 ID, and an indication that the message is for 5G ProSe direct discovery to the lower layers for transmission over the PC5 interface.

If the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation is used to solicit proximity of a connectivity service provided by a UE-to-network relay UE, the UE shall ensure that it keeps on passing the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation for transmission until the UE is triggered by an upper layer application to stop soliciting proximity of a connectivity service provided by a UE-to-network relay UE, or until the UE stops being authorised to perform the discoverer UE procedure for UE-to-network relay discovery. How this is achieved is left up to UE implementation.

If the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation is used to trigger the PROSE PC5 DISCOVERY message signal strength measurement between the UE and the 5G ProSe UE-to-network Relay UE with which the UE has a link established, the UE shall start the retransmission timer T5090. If retransmission timer T5090 expires, the UE shall retransmit the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation and restart timer T5090. If no response is received from the ProSe UE-to-network relay UE with which the UE has a link established after reaching the maximum number of allowed retransmissions, the UE shall trigger relay reselection procedure.

NOTE 1: The maximum number of allowed retransmissions is UE implementation specific.

Upon reception of a PROSE PC5 DISCOVERY message for UE-to-network relay discovery response along with the destination layer-2 ID which the UE is configure to respond for, for the target relay service code of the connectivity service which the UE is authorized to discover, the UE shall use the associated DUSK, if configured, and the UTC-based counter obtained during the reception operation to unscramble the PROSE PC5 DISCOVERY message as described in 3GPP TS 33.503 [34]. Then, if a DUCK is configured, the UE shall use the DUCK and the UTC-based counter to decrypt the configured message-specific confidentiality-protected portion, as described in 3GPP TS 33.503 [34]. Finally, if a DUIK is configured, the UE shall use the DUIK and the UTC-based counter to verify the MIC field in the unscrambled PROSE PC5 DISCOVERY message for UE-to-network relay discovery response.

Editor's note: Details of Discoverer UE procedure upon reception of a PROSE PC5 DISCOVERY message for direct discovery response are FFS and will be determinated by cooperation with SA WG3.

NOTE 2: The UE can determine the received PROSE PC5 DISCOVERY message for UE-to-network relay discovery response is for 5G ProSe direct discovery based on an indication from the lower layer.

Then if:

a) the relay service code parameter of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response is the same as the relay service code parameter of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation; and

b) the User info ID of the UE-to-network Relay is not configured as specified in clause 5.2.5 for the connectivity service being solicited, or the Discoverer info parameter of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response is the same as the User info ID of the UE-to-network Relay configured as specified in clause 5.2.5 for the connectivity service being solicited,

then the UE shall consider that the connectivity service the UE seeks to discover has been discovered. In addition, the UE can measure the signal strength of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response for relay selection or reselection. If the UE has received the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response from the ProSe UE-to-network Relay UE with which the UE has a link established, the UE shall stop the retransmission timer T5090, and start the periodic measurement timer T5091.

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

###### 8.2.1.3.2.2 Discoveree UE procedure for UE-to-network relay discovery initiation

The UE is authorised to perform the discoveree UE procedure for UE-to-network relay discovery if:

a) the UE is authorised to act as a UE-to-network relay UE in the PLMN indicated by the serving cell, and

1) the UE is served by NG-RAN; or

2) the UE is not served by NG-RAN, and intends to use the provisioned radio resources for UE-to-network relay discovery;

b) the UE is configured with:

1) the relay service code parameter identifying the connectivity service to be responded to as specified in clause 5.2.5, and for 5G ProSe layer-3 UE-to-network relay UE,

i) the S-NSSAI associated with that relay service code shall belong to the allowed NSSAI of the UE; and

ii) if the UE is camped on a cell whose TAI is in the list of "non-allowed tracking areas" or is camped on a cell whose TAI is not in the list of "allowed tracking areas", then the relay service code shall be associated with an emergency service or high priority access as defined in clause 5.3.5 of 3GPP TS 24.501 [11]; and

2) the User info ID for the UE-to-network relay discovery parameter, as specified in clause 5.2.5; and

c) the back-off timer T3346 used for NAS mobility management congestion control as specified in clause 5.3.9 of 3GPP TS 24.501 [11] is not running at the UE;

otherwise, the UE is not authorised to perform the discoveree UE procedure for UE-to-network relay discovery.

Figure 8.2.1.3.2.2.1 illustrates the interaction of the UEs in the discoveree UE procedure for UE-to-network relay discovery.



Figure 8.2.1.3.2.2.1: Discoveree UE procedure for UE-to-network Relay discovery

When the UE is triggered by an upper layer application to start responding to solicitation on proximity of a connectivity service provided by the UE-to-network Relay, and if the UE is authorised to perform the discoveree UE procedure for UE-to-network Relay discovery, then the UE:

a) if the UE is served by NG-RAN, and the UE in 5GMM-IDLE mode needs to request resources for sending PROSE PC5 DISCOVERY messages as specified in 3GPP TS 38.331 [13], shall perform a service request procedure as specified in 3GPP TS 24.501 [11]; and

b) shall instruct the lower layers to start monitoring for PROSE PC5 DISCOVERY messages.

Upon reception of a PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation, for the relay service code of the connectivity service which the UE is authorized to respond, the UE shall use the associated DUSK, if configured, and the UTC-based counter obtained during the reception operation to unscramble the PROSE PC5 DISCOVERY message as described in 3GPP TS 33.503 [34]. Then, if a DUCK is configured, the UE shall use the DUCK and the UTC-based counter to decrypt the configured message-specific confidentiality-protected portion, as described in 3GPP TS 33.503 [34]. Finally, if a DUIK is configured, the UE shall use the DUIK and the UTC-based counter to verify the MIC field in the unscrambled PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation.

Editor's note: Details of Discoverer UE procedure upon reception of a PROSE PC5 DISCOVERY message for direct discovery response are FFS and will be determinated by cooperation with SA WG3.

NOTE: The UE can determine the received PROSE PC5 DISCOVERY message for 5G ProSe direct discovery announcement is for 5G ProSe direct discovery based on an indication from the lower layer.

Then, if

a) the relay service code parameter of the received PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation is the same as the relay service code parameter configured as specified in clause 5.2.5 for the connectivity service; and

b) the target discoveree info parameter of the received PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation is the same as the user info ID provided by application layer of the UE, if the target discoveree info parameter is included in the received PROSE PC5 DISCOVERY message,

then the UE:

a) shall obtain a valid UTC time for the discovery transmission from the lower layers and generate the UTC-based counter corresponding to this UTC time;

b) shall generate a PROSE PC5 DISCOVERY message for UE-to-network relay discovery response. In the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response, the UE:

1) shall set the Discoveree info parameter to the User info ID for the UE-to-network Relay discovery parameter, configured in clause 5.2.5;

2) shall set the relay service code parameter to the relay service code parameter of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation;

3) shall set the UTC-based counter LSB parameter to include the eight least significant bits of the UTC-based counter;

4) shall set the ProSe direct discovery PC5 message type parameter as specified in table 10.2.1.10; and

5) if acting as 5G ProSe layer-2 UE-to-network relay UE, shall set the NCGI parameter to the NCGI of its serving cell;

c) shall apply the DUIK, DUSK, or DUCK with the associated Encrypted Bitmask, along with the UTC-based counter to the PROSE PC5 DISCOVERY message for whichever security mechanism(s) configured to be applied, e.g., integrity protection, message scrambling or confidentiality protection of one or more above parameters, as specified in 3GPP TS 33.503 [34];

Editor's note: Details of security related content in c) are FFS and will be determinated by SA3.

d) shall set the destination layer-2 ID to the source layer-2 ID from the discoverer UE used in the transportation of the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation, and self-assign a source layer-2 ID for sending the UE-to-network relay discovery response message; and

e) shall pass the resulting PROSE PC5 DISCOVERY message for UE-to-network relay discovery response along with the source layer-2 ID, destination layer-2 ID, and an indication that the message is for 5G ProSe direct discovery to the lower layers for transmission over the PC5 interface.

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

### 10.2.1 Message definition

This message is sent by the UE over the PC5 interface for open 5G ProSe direct discovery and restricted 5G ProSe direct discovery. See table 10.2.1.1, table 10.2.1.2, table 10.2.1.3, table 10.2.1.4, table 10.2.1.5, table 10.2.1.6, table 10.2.1.7, table 10.2.1.8, table 10.2.1.9, table 10.2.1.10 and table 10.2.1.11.

Message type: PROSE PC5 DISCOVERY

Significance: dual

Direction: UE to peer UE

Editor's note: Whether Metadata IE and all other optional IEs are subject to security protection is FFS and depends on SA3 requirements.

Table 10.2.1.1: PROSE PC5 DISCOVERY message content for open 5G ProSe direct discovery announcement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | ProSe application code | ProSe application code11.2.2 | M | V | 23 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 7A | Metadata | Metadata11.2.13 | O | TLV-E | 4-8195 |
| NOTE: The discovery type is set to "Open discovery" and the content type is set to "Announcement". |

Table 10.2.1.2: PROSE PC5 DISCOVERY message content for restricted 5G ProSe direct discovery announcement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | ProSe restricted code | ProSe restricted code11.2.3 | M | V | 23 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 7A | Metadata | Metadata11.2.13 | O | TLV-E | 4-8195 |
| NOTE: The discovery type is set to "Restricted discovery" and the content type is set to "Announcement". |

Table 10.2.1.3: PROSE PC5 DISCOVERY message content for restricted 5G ProSe direct discovery solicitation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | ProSe query code | ProSe restricted code11.2.3 | M | V | 23 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| NOTE: The discovery type is set to "Restricted discovery" and the content type is set to "Solicitation". |

Table 10.2.1.4: PROSE PC5 DISCOVERY message content for restricted 5G ProSe direct discovery response

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | ProSe response code | ProSe restricted code11.2.3 | M | V | 23 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 7A | Metadata | Metadata11.2.13 | O | TLV-E | 4-8195 |
| NOTE: The discovery type is set to "Restricted discovery" and the content type is set to "response". |

Table 10.2.1.5: PROSE PC5 DISCOVERY message for group member discovery announcement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Application layer group ID | Application layer group ID11.2.6 | M | LV | 2-257 |
|  | Announcer info | User info ID11.2.7 | M | V | 6 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 7A | Metadata | Metadata11.2.13 | O | TLV-E | 4-8195 |
| NOTE: The discovery type is set to "Restricted discovery", the content type is set to "Group member discovery announcement/group member discovery response" and the discovery model is set to "Model A". |

Table 10.2.1.6: PROSE PC5 DISCOVERY message for group member discovery solicitation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Application layer group ID | Application layer group ID11.2.6 | M | LV | 2-256 |
|  | Discoverer info | User info ID11.2.7 | M | V | 6 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 28 | Target user info | User info ID11.2.7 | O | TV | 7 |
| NOTE: The discovery type is set to "Restricted discovery", the content type is set to "Group member discovery solicitation" and the discovery model is set to "Model B". |

Table 10.2.1.7: PROSE PC5 DISCOVERY message for group member discovery response

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Application layer group ID | Application layer group ID11.2.6 | M | LV | 2-256 |
|  | Discoveree info | User info ID11.2.7 | M | V | 6 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB11.2.14 | M | V | 1 |
| 7A | Metadata | Metadata11.2.13 | O | TLV-E | 4-8195 |
| NOTE: The discovery type is set to "Restricted discovery", the content type is set to "Group member discovery announcement/group member discovery response" and the discovery model is set to "Model B". |

Table 10.2.1.8: PROSE PC5 DISCOVERY message for UE-to-network relay discovery announcement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE 1) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Announcer info | User info ID11.2.7 | M | V | 6 |
|  | Relay service code (NOTE 2) | Relay service code11.2.8 | M | V | 3 |
|  | Status indicator | Status indicator11.2.9 | M | V | 1 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB 11.2.11 | M | V | 1 |
| 52 | NCGI | NCGI11.2.12 | O | TV | 9 |
| NOTE 1: The discovery type is set to "Restricted discovery", the content type is set to "UE-to-network relay discovery announcement/UE-to-network relay discovery response" and the discovery model is set to "Model A".NOTE 2: If the announcing UE works as a 5G ProSe Layer-3 UE-to-network relay UE, the S-NSSAI associated with the relay service code belongs to the allowed NSSAI of the UE. |

Table 10.2.1.9: PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Discoverer info | User info ID11.2.7 | M | V | 6 |
|  | Relay service code | Relay service code11.2.8 | M | V | 3 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB 11.2.11 | M | V | 1 |
| XX | Target discoveree info | User info ID11.2.7 | O | TV | 7 |
| NOTE: The discovery type is set to "Restricted discovery", the content type is set to "UE-to-network relay discovery solicitation" and the discovery model is set to "Model B". |

Table 10.2.1.10: PROSE PC5 DISCOVERY message for UE-to-network relay discovery response

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE 1) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Discoveree info | User info ID11.2.7 | M | V | 6 |
|  | Relay service code (NOTE 2) | Relay service code11.2.8 | M | V | 3 |
|  | Status indicator | Status indicator11.2.9 | M | V | 1 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB 11.2.11 | M | V | 1 |
| 52 | NCGI | NCGI11.2.12 | O | TV | 9 |
| NOTE 1: The discovery type is set to "Restricted discovery", the content type is set to "UE-to-network relay discovery announcement/UE-to-network relay discovery response" and the discovery model is set to "Model B".NOTE 2: If the discoveree UE works as a 5G ProSe Layer-3 UE-to-network relay UE, the S-NSSAI associated with the relay service code belongs to the allowed NSSAI of the UE. |

Table 10.2.1.11: PROSE PC5 DISCOVERY message for relay discovery additional information

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | ProSe direct discovery PC5 message type (NOTE) | ProSe direct discovery PC5 message type11.2.1 | M | V | 1 |
|  | Relay service code | Relay service code11.2.8 | M | V | 3 |
|  | Announcer info | User info ID11.2.7 | M | V | 1 |
|  | MIC | MIC11.2.4 | M | V | 4 |
|  | UTC-based counter LSB | UTC-based counter LSB 11.2.11 | M | V | 1 |
| 52 | NCGI | NCGI11.2.12 | O | TV | 9 |
| 51 | Relay TAI | TAI11.2.10 | O | TV | 4 |
| NOTE: The discovery type is set to "Restricted discovery", the content type is set to "Relay discovery additional information" and the discovery model is set to "Model A". |

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

### 10.2.X Target discoveree info

The target discoveree info IE shall be included in PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation as in table 10.2.1.9 if the target discoveree info is provided by the application layer.

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