**3GPP TSG-CT WG1 Meeting #136-eC1-224085**

**E-Meeting, 12th – 20th May 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.554** | **CR** | **0039** | **rev** | **4** | **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 | **x** |

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|  |
| ***Title:***  | Changes to Match report message for MIC check |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_ProSe |  | ***Date:*** | 2022-04-30 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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:*** | SA3 has agreed to use discovery message excluding the Message Type and UTC-based counter LSB to integrity protect the whole discovery message. (TS 33.503 A.6)*When calculating a MIC using the Discovery Key for open discovery or the DUIK for restricted discovery, the following parameters shall be used to form the input S to the KDF that is specified in Annex B of TS 33.220 [8]:**- FC = 0xYY.**- P0 = Message Type (see TS 24.554).**- L0 = length of above (i.e. 0x00 0x01).* *- P1 = UTC-based counter associated with the discovery slot.**- L1 = length of above (i.e. 0x00 0x04).**- P2 = discovery message excluding the Message Type and UTC-based counter LSB.**- L2 = length of above.**The MIC is set to the 32 least significant bits of the output of the KDF.**The Discovery Key, DUIK, Time parameter and discovery message follow the encoding also specified in Annex B of TS 33.220 [8].*In case the MIC check is performed by the 5G DDNMF, the match report shall include the received PROSE PC5 DISCOVERY message so that the 5G DDNMF calculates the correct MIC value. |
|  |  |
| ***Summary of change:*** | For open discovery, the match report message includes the received PROSE PC5 DISCOVERY message for which the match event occurred.For restricted discovery, if it is required to check MIC via the match report procedure, the match report message includes the received PROSE PC5 DISCOVERY message for which the match event occurred.In XML schema section, ProSe PC5 discovery message IE is introduced with hex binary format. |
|  |  |
| ***Consequences if not approved:*** | MIC check at 5G DDNMF may fail due to lack of input for MIC calculation. |
|  |  |
| ***Clauses affected:*** | 6.2.8.2, 6.2.9.2, 6.2.10.2, 10.5.3, 10.5.4.4, 11.4.2.xx(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:*** | In rev3, wrong change in 10.5.4.4 was revertedIn rev3, remove ‘s’ in the title of clause 11.4.2.xxIn rev4, correct typo on the title of 11.4.2.xx. |

\* \* \* First Change \* \* \* \*

#### 6.2.8.2 Match report procedure initiation

The UE shall meet the following pre-conditions before initiating this procedure:

a) a request from upper layers to monitor for the ProSe application ID, which resulted in the matched ProSe application code, is still in place;

b) the lower layers have provided a "Monitored PLMN ID" value, and UTC time information, along with the discovery message containing a ProSe application code; and

c) the TTL timer T5064 associated with the discovery filter, which resulted in a match event of the ProSe application code, has not expired.

If the UE is authorized to perform open 5G ProSe direct discovery monitoring in the monitored PLMN, it should initiate a match report procedure:

a) when there is a match event of one of the ProSe application codes received from the lower layers, and the UE does not have a corresponding ProSe application ID already locally stored;

b) when the UE has a locally stored mapping for the ProSe application code that resulted in a match event, but the validity timer T5072 of the ProSe application ID has expired;

c) when the UE has a locally stored mapping for the ProSe application code that resulted in a match event, but the match report refresh timer T5074 of the ProSe application filter has expired;

d) when there is a match event of one of the ProSe application codes received from the lower layers, and the UE has a locally stored ProSe application code excluding the metadata index portion located by the locally stored metadata index mask; or

e) when there is a match event of one of the ProSe application codes received from the lower layer, and the UE has not checked the MIC for the discovered ProSe application code previously.

The UE initiates the match report procedure for open 5G ProSe direct discovery by sending a MATCH\_REPORT message with a new transaction ID and shall set the message contents as follows:

a) the UE shall include the entire PROSE PC5 DISCOVERY message which contains the ProSe application code for which there was a match event;

b) the UE shall set the UE identity to the UE's SUPI;

c) the UE shall set the UTC-based counter as follows:

1) the UE shall generate two UTC-based counters with:

i) the first counter composed of:

A) the 27 most significant bits of the UTC-based counter set to the 27 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe application code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 28th most significant bit of the UTC-based counter set to '0'; and

C) the 4 least significant bits of the UTC-based counter shall be set to the 4 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe application code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

ii) the second counter composed of:

A) the 27 most significant bits of the UTC-based counter set to the 27 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe application code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 28th most significant bit of the UTC-based counter set to '1'; and

C) the 4 least significant bits of the UTC-based counter set to the 4 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe application code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

2) then the UE shall select, among the two counters described above, the counter that is nearest to the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe application code for which there was a match event encoded as specified in clause 11.2.2.18, and set the UTC-based counter in the MATCH\_REPORT message to that counter;

d) the UE shall set the monitored PLMN ID to the PLMN ID of the PLMN where the PROSE PC5 DISCOVERY message was received, as provided by the lower layers;

e) if the UE was roaming when the match event occurred, the UE shall set the VPLMN ID to the PLMN ID of the PLMN in which the UE was registered when the match event occurred; and

f) the UE shall set the metadata flag to indicate whether or not it wishes to receive metadata information associated with the ProSe application ID in the MATCH\_REPORT\_ACK message from the 5G DDNMF.

NOTE 1: A UE can include one or multiple transactions in one MATCH\_REPORT message for different ProSe application codes, and receive corresponding <match-ack> element or <match-reject> element in the MATCH\_REPORT\_ACK message for each respective transaction. In the following description of match report procedure, only one transaction is included.

NOTE 2: The value of the metadata flag is determined through an indication from upper layers in the original request to monitor for a ProSe application ID.

When the 5G DDNMF receives the MATCH\_REPORT message from the UE, the 5G DDNMF checks MIC for the received PROSE PC5 DISCOVERY message as specified in 3GPP TS 33.503 [34].

Figure 6.2.8.2.1 illustrates the interaction between the UE and the 5G DDNMF in the match report procedure.



Figure 6.2.8.2.1: Match report procedure

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

#### 6.2.9.2 Match report procedure initiation

The UE shall meet the following pre-conditions before initiating this procedure:

a) a request from upper layers to monitor for the target RPAUID, which resulted in the matched ProSe restricted code, is still in place;

b) the lower layers have provided UTC time information, along with the discovery message containing the ProSe restricted code; and

c) the TTL timer T5066 associated with the Restricted discovery filter, whose use resulted in a match event of the ProSe restricted code, has not expired.

If the UE is authorized to perform restricted 5G ProSe direct discovery monitoring model A in the monitored PLMN, it should initiate a match report procedure:

a) when there is a match event after applying one of the Restricted discovery filter(s) to a ProSe restricted code received from the lower layers, and the UE does not have a corresponding RPAUID already locally stored;

b) when the UE has a locally stored mapping for the ProSe restricted code that resulted in a match event, but the validity timer T5076 of the ProSe restricted code has expired;

c) when the UE has a locally stored mapping for the ProSe restricted code that resulted in a match event, but the match report refresh timer T5077 of the ProSe restricted code has expired;

d) when the UE desires to obtain the metadata associated with the discovered ProSe restricted code; or

e) when the UE has a locally stored mapping for the ProSe restricted code that resulted in a match event, but the UE does not have a running match report refresh timer T5077 for this ProSe restricted code and the UE is directed by the 5G DDNMF to perform the required MIC check via the match report procedure.

NOTE 1: The 5G DDNMF directs the UE to use the match report procedure to perform the MIC check by including the MIC Check Indicator parameter in the DISCOVERY\_RESPONSE message.

The UE initiates the match report procedure by sending a MATCH\_REPORT message with a new transaction ID and shall set the message contents as follows:

a) the RPAUID set to the UE's RPAUID which has requested the corresponding monitoring operation that resulted this match event;

b) the UE identity set to the UE's SUPI;

c) the discovery type set to "Restricted discovery";

d) the application identity set to the application identity of the upper layer application that triggered the monitoring operation;

e) if it is not required to check the MIC via the match report procedure, the ProSe restricted code set to the ProSe restricted code for which there was a match event;

f) if it is required to check the MIC via the match report procedure, the entire PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event;

g) if it is required to check the MIC via the match report procedure, the UTC-based counter set as follows:

1) the UE shall generate two UTC-based counters with:

i) the first counter composed of:

A) the 23 most significant bits of the UTC-based counter set to the 23 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 24th most significant bit of the UTC-based counter set to '0'; and

C) the 8 least significant bits of the UTC-based counter set to the 8 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

ii) the second counter composed of:

A) the 23 most significant bits of the UTC-based counter set to the 23 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 24th most significant bit of the UTC-based counter set to '1'; and

C) the 8 least significant bits of the UTC-based counter set to the 8 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

Editor's Note: Security aspect will be updated upon SA3 normative requirement is available.

2) then the UE shall select, among the two counters described above, the counter that is nearest to the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event encoded as specified in clause 11.2.2.18, and set the UTC-based counter in the MATCH\_REPORT message to that counter; and

h) the metadata flag set to indicate whether or not the UE wishes to receive the latest metadata information associated with the RPAUID in the MATCH\_REPORT\_ACK message from the 5G DDNMF.

NOTE 2: A UE can include one or multiple transactions in one MATCH\_REPORT message for different ProSe restricted codes, and receive a corresponding <restricted-match-ack> element or <match-reject> element in the MATCH\_REPORT\_ACK message for each respective transaction. In the following description of match report procedure, only one transaction is included.

If it is required to check the MIC via the match report procedure, the 5G DDNMF checks MIC for the received PROSE PC5 DISCOVERY message included in the MATCH\_REPORT message as specified in 3GPP TS 33.503 [34].

Figure 6.2.9.2.1 illustrates the interaction between the UE and the 5G DDNMF in the match report procedure.



Figure 6.2.9.2.1: Match report procedure for restricted discovery model A

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

#### 6.2.10.2 Match report procedure initiation

The UE shall meet the following pre-conditions before initiating this procedure:

a) a request from upper layers to discover the target RPAUID with restricted discovery model B, which resulted in the matched ProSe response code, is still in place;

b) the lower layers have provided UTC time information, along with the discovery message containing the ProSe response code; and

c) the validity timer T5070 associated with the discovery response filter, whose use resulted in a match event of the ProSe response code, has not expired.

If the UE is authorized to perform restricted 5G ProSe direct discovery model B discoverer operation in the monitored PLMN, it should initiate a match report procedure:

a) when there is a match event when applying one of the discovery response filter(s) to one of the ProSe response codes received from the lower layers, and the UE does not have a corresponding RPAUID already locally stored;

b) when the UE has a locally stored mapping for the ProSe response code that resulted in a match event, but the validity timer T5076 of the ProSe response code has expired;

c) when the UE has a locally stored mapping for the ProSe response code that resulted in a match event, but the match report refresh timer T5077 of the ProSe response code has expired;

d) when the UE desires to obtain the metadata associated with the discovered ProSe response code; or

e) when the UE has a locally stored mapping for the ProSe response code that resulted in a match event, but the UE does not have a running match report refresh timer T5077 for this ProSe response code and the UE is directed by the 5G DDNMF to perform the required MIC check via the match report procedure.

NOTE 1: The 5G DDNMF directs the UE to use the match report procedure to perform the MIC check by including the MIC Check Indicator parameter in the DISCOVERY\_RESPONSE message.

The UE initiates the match report procedure by sending a MATCH\_REPORT message with a new transaction ID and shall set the message contents as follows:

a) the RPAUID set to the UE's RPAUID which has requested the corresponding restricted discovery model B discoverer operation that resulted this match event;

b) the UE identity set to the UE's SUPI;

c) the discovery type set to "Restricted discovery";

d) the application identity set to the application identity of the upper layer application that triggered the restricted direct discovery Model B discoverer operation;

e) if it is not required to check the MIC via the match report procedure, the ProSe restricted code set to the ProSe restricted code for which there was a match event;

f) if it is required to check the MIC via the match report procedure, the entire PROSE PC5 DISCOVERY message that contained the ProSe restricted code for which there was a match event;

g) if it is required to check the MIC via the match report procedure, the UTC-based counter set as follows:

1) the UE shall generate two UTC-based counters with:

i) the first counter composed of:

A) the 27 most significant bits of the UTC-based counter set to the 27 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe response code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 24th most significant bit of the UTC-based counter set to '0'; and

C) the 8 least significant bits of the UTC-based counter shall be set to the 8 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe response code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

ii) the second counter composed of:

A) the 23 most significant bits of the UTC-based counter set to the 23 most significant bits of the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe response code for which there was a match event encoded as specified in clause 11.2.2.18;

B) the 24th most significant bit of the UTC-based counter set to '1'; and

C) the 8 least significant bits of the UTC-based counter set to the 8 least significant bits of the UTC-based counter contained in the PROSE PC5 DISCOVERY message that contained the ProSe response code for which there was a match event, as specified in 3GPP TS 33.503 [34]; and

2) then the UE shall select, among the two counters described above, the counter that is nearest to the UTC time provided by the lower layers for the PROSE PC5 DISCOVERY message that contained the ProSe response code for which there was a match event encoded as specified in clause 11.2.2.18, and set the UTC-based counter in the MATCH\_REPORT message to that counter; and

h) the metadata flag set to indicate whether or not the UE wishes to receive the latest metadata information associated with the RPAUID in the MATCH\_REPORT\_ACK message from the 5G DDNMF.

NOTE 2: A UE can include one or multiple transactions in one MATCH\_REPORT message for different ProSe response codes, and receive corresponding <restricted-match-ack> element or <match-reject> element in the MATCH\_REPORT\_ACK message for each respective transaction. In the following description of match report procedure, only one transaction is included.

If it is required to check the MIC via the match report procedure, the 5G DDNMF checks MIC for the received PROSE PC5 DISCOVERY message included in the MATCH\_REPORT message as specified in 3GPP TS 33.503 [34].

Figure 6.2.10.2.1 illustrates the interaction between the UE and the 5G DDNMF in the match report procedure.



Figure 6.2.10.2.1: Match report procedure for restricted discovery model B

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

### 10.5.3 XML schema

Implementations in compliance with the present document shall implement the XML schema defined below for messages used in 5G ProSe direct discovery procedures over PC3a interface.

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"

 xmlns="urn:3GPP:ns:5GProSe:Discovery:2021"

 elementFormDefault="qualified"

 targetNamespace="urn:3GPP:ns:5GProSe:Discovery:2021">

 <xs:annotation>

 <xs:documentation>

 Info for 5G ProSe Discovery Control Messages Syntax

 </xs:documentation>

 </xs:annotation>

 <!-- Complex types defined for parameters with complicated structure -->

 <xs:complexType name="AppID-info">

 <xs:sequence>

 <xs:element name="OS-ID">

 <xs:simpleType>

 <xs:restriction base="xs:hexBinary">

 <xs:length value="16"/>

 </xs:restriction>

 </xs:simpleType>

 </xs:element>

 <xs:element name="OS-App-ID" type="xs:string"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="PLMN-info">

 <xs:sequence>

 <xs:element name="mcc" type="xs:integer"/>

 <xs:element name="mnc" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="SUPI-info">

 <xs:sequence>

 <xs:element name="MCC" type="xs:integer"/>

 <xs:element name="MNC" type="xs:integer"/>

 <xs:element name="MSIN" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="DiscFilter-info">

 <xs:sequence>

 <xs:element name="ProSe-Application-Code" type="xs:hexBinary"/>

 <xs:element name="ProSe-Application-Mask" type="xs:hexBinary" maxOccurs="unbounded"/>

 <xs:element name="TTL-timer-T5064" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

<xs:complexType name="MatchingFilter-info">

 <xs:sequence>

 <xs:element name="Code" type="xs:hexBinary"/>

 <xs:element name="Mask" type="xs:hexBinary" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

<xs:complexType name="DUCK-info">

 <xs:sequence>

 <xs:element name="discovery-user-confidentiality-key" type="xs:hexBinary"/>

 <xs:element name="encrypted-bitmask" type="xs:hexBinary"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

</xs:complexType>

 <xs:complexType name="RestrictedDiscFilter-info">

 <xs:sequence>

 <xs:element name="filter" type="MatchingFilter-info" maxOccurs="unbounded"/>

 <xs:element name="TTL-timer-T5066" type="xs:integer"/>

 <xs:element name="RPAUID" type="xs:string" minOccurs="0" />

 <xs:element name="metadata-indicator" type="xs:integer" minOccurs="0"/>

 <xs:element name="metadata" type="xs:string" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedCodeSuffixRange-info">

 <xs:sequence>

 <xs:element name="beginning-suffix-code" type="xs:hexBinary" />

 <xs:element name="ending-suffix-code" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedMonitoringUpdate-info">

 <xs:sequence>

 <xs:element name="updated-filter" type="RestrictedDiscFilter-info" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedAnnouncingUpdate-info">

 <xs:sequence>

 <xs:element name="ProSe-Restricted-Code" type="xs:hexBinary" />

 <xs:element name="validity-timer-T5062" type="xs:integer" />

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="MonitoringUpdate-info">

 <xs:sequence>

 <xs:element name="updated-filter" type="DiscFilter-info" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="AnnouncingUpdate-info">

 <xs:sequence>

 <xs:element name="ProSe-Application-Code" type="xs:hexBinary" />

 <xs:element name="validity-timer-T5060" type="xs:integer" />

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="Update-Option-info">

 <xs:choice>

 <xs:element name="update-info-restricted-announce" type="RestrictedAnnouncingUpdate-info" />

 <xs:element name="update-info-restricted-monitor" type="RestrictedMonitoringUpdate-info" />

 <xs:element name="update-info-open-annnounce" type="AnnouncingUpdate-info" />

 <xs:element name="update-info-open-monitor" type="MonitoringUpdate-info"/>

 <xs:element name="anyExt" type="anyExtType" />

 <xs:any namespace="##other" processContents="lax"/>

 </xs:choice>

 </xs:complexType>

 <xs:complexType name="Restricted-Code-Option-info">

 <xs:choice>

 <xs:element name="ProSe-Restricted-Code" type="xs:hexBinary" />

 <xs:element name="ProSe-Response-Code" type="xs:hexBinary" />

 <xs:element name="anyExt" type="anyExtType" />

 <xs:any namespace="##other" processContents="lax"/>

 </xs:choice>

 </xs:complexType>

 <xs:complexType name="Subquery-info">

 <xs:sequence>

 <xs:element name="ProSe-Rquery-Code" type="xs:hexBinary" />

 <xs:element name="response-filter" type="MatchingFilter-info" maxOccurs="unbounded"/>

 <xs:element name="validity-timer-T5070" type="xs:integer"/>

 <xs:element name="code-sending-security-parameter" type="Restricted-Security-info" />

 <xs:element name="code-receiving-security-parameter" type="Restricted-Security-info" minOccurs="0" />

 <xs:element name="RPAUID" type="xs:string" minOccurs="0" />

 <xs:element name="metadata" type="xs:string" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="Restricted-Security-info">

 <xs:sequence>

 <xs:element name="DUSK" type="xs:hexBinary" minOccurs="0" />

 <xs:element name="DUIK" type="xs:hexBinary" minOccurs="0" />

 <xs:element name="DUCK" type="DUCK-info" minOccurs="0" />

 <xs:element name="MIC-check-indicator" type="xs:boolean" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="ApplicationCodeSuffixRange-info">

 <xs:sequence>

 <xs:element name="beginning-suffix-code" type="xs:hexBinary" />

 <xs:element name="ending-suffix-code" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="ProSeApplicationCodeACE-info">

 <xs:sequence>

 <xs:element name=" ProSe-Application-Code-Prefix" type="xs:hexBinary" />

 <xs:element name=" ProSe-Application-Code-Suffix-Range" type="ApplicationCodeSuffixRange-info" maxOccurs="unbounded" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="PC5-Security-Policies-info">

 <xs:sequence>

 <xs:element name="signalling-integrity-protection-policy" type="xs:integer"/>

 <xs:element name="signalling-ciphering-policy" type="xs:integer"/>

 <xs:element name="user-plane-integrity-protection-policy" type="xs:integer"/>

 <xs:element name="user-plane-ciphering-policy" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <!-- Complex types defined for transaction-level -->

 <xs:complexType name="AnnounceRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="ProSe-Application-Code" type="xs:hexBinary" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="ProSe-Application-Code-ACE" type="ProSeApplicationCodeACE-info" minOccurs="0"/>

 <xs:element name="validity-timer-T5060" type="xs:integer" minOccurs="0" />

 <xs:element name="discovery-key" type="xs:hexBinary" minOccurs="0" />

 <xs:element name="discovery-entry-ID" type="xs:integer" minOccurs="0" />

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="MonitorRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="discovery-filter" type="DiscFilter-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="discovery-entry-ID" type="xs:integer" minOccurs="0" />

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="DiscReq-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="command" type="xs:integer"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="ProSe-Application-ID" type="xs:string"/>

 <xs:element name="application-identity" type="AppID-info"/>

 <xs:element name="discovery-entry-ID" type="xs:integer" minOccurs="0" />

 <xs:element name="Requested-Timer" type="xs:integer" minOccurs="0" />

 <xs:element name="metadata" type="xs:string" minOccurs="0"/>

 <xs:element name="Announcing-PLMN-ID" type="PLMN-info" minOccurs="0" />

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedDiscReq-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="command" type="xs:integer"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="RPAUID" type="xs:string"/>

 <xs:element name="application-identity" type="AppID-info"/>

 <xs:element name="discovery-type" type="xs:integer"/>

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0"/>

 <xs:element name="announcing-type" type="xs:integer" minOccurs="0"/>

 <xs:element name="application-level-container" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="discovery-model" type="xs:integer" minOccurs="0"/>

 <xs:element name="Announcing-PLMN-ID" type="PLMN-info" minOccurs="0" />

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="Requested-Timer" type="xs:integer" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedAnnounceRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="ProSe-Restricted-Code" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="ProSe-Restricted-Code-Suffix-Range" type="RestrictedCodeSuffixRange-info" minOccurs="0"/>

 <xs:element name="validity-timer-T5062" type="xs:integer" minOccurs="0"/>

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0" />

 <xs:element name="code-sending-security-parameter" type="Restricted-Security-info" />

 <xs:element name="on-demand-announcing-enabled-indicator" type="xs:boolean" minOccurs="0" />

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="PC5-security-policies" type="xs:PC5-Security-Policies-info" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedMonitorRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="restricted-discovery-filter" type="RestrictedDiscFilter-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="ACE-enabled-indicator" type="xs:integer" minOccurs="0" />

 <xs:element name="application-level-container" type="xs:hexBinary"/>

 <xs:element name="code-receiving-security-parameter" type="Restricted-Security-info" minOccurs="0" />

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="PC5-security-policies" type="xs:PC5-Security-Policies-info" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedDiscovereeRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="ProSe-Response-Code" type="xs:hexBinary" />

 <xs:element name="query-filter" type="MatchingFilter-info" maxOccurs="unbounded"/>

 <xs:element name="validity-timer-T5068" type="xs:integer"/>

 <xs:element name="code-sending-security-parameter" type="Restricted-Security-info" />

 <xs:element name="code-receiving-security-parameter" type="Restricted-Security-info" minOccurs="0" />

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="PC5-security-policies" type="xs:PC5-Security-Policies-info" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedDiscovererRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="subquery-result" type="Subquery-info" minOccurs="1" maxOccurs="unbounded"/>

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="PC5-security-policies" type="xs:PC5-Security-Policies-info" minOccurs="0" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RejectRsp-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="PC3a-control-protocol-cause-value" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="UE-RejectRsp-info">

 <xs:sequence>

 <xs:element name="DDNMF-transaction-ID" type="xs:integer"/>

 <xs:element name="PC3a-control-protocol-cause-value" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="MatchRep-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="ProSe-PC5-discovery-message" type="xs:hexBinary"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="Monitored-PLMN-ID" type="PLMN-info"/>

 <xs:element name="VPLMN-ID" type="PLMN-info" minOccurs="0"/>

 <xs:element name="UTC-based-counter" type="xs:hexBinary"/>

 <xs:element name="Metadata-flag" type="xs:boolean"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedMatch-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="discovery-type" type="xs:integer"/>

 <xs:element name="application-identity" type="AppID-info"/>

 <xs:element name="RPAUID" type="xs:string"/>

 <xs:element name="Restricted-Code-Discovered" type="Restricted-Code-Option-info" minOccurs="0"/>

 <xs:element name="ProSe-PC5-discovery-message" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="UTC-based-counter" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="Metadata-flag" type="xs:boolean" />

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="MatchAck-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="ProSe-Application-ID" type="xs:string"/>

 <xs:element name="validity-timer-T5072" type="xs:integer"/>

 <xs:element name="metadata" type="xs:string" minOccurs="0"/>

 <xs:element name="metadata-index-mask" type="xs:hexBinary" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="match-report-refresh-timer-T5074" type="xs:integer"/>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="RestrictedMatchAck-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="application-identity" type="AppID-info"/>

 <xs:element name="RPAUID" type="xs:string"/>

 <xs:element name="validity-timer-T5076" type="xs:integer"/>

 <xs:element name="metadata" type="xs:string" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="match-report-refresh-timer-T5077" type="xs:integer"/>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="MatchReject-info">

 <xs:sequence>

 <xs:element name="transaction-ID" type="xs:integer"/>

 <xs:element name="PC3a-control-protocol-cause-value" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="DiscUpdateReq-info">

 <xs:sequence>

 <xs:element name="DDNMF-transaction-ID" type="xs:integer"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="update-info" type="Update-Option-info" minOccurs="0"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="DiscUpdateRsp-info">

 <xs:sequence>

 <xs:element name="DDNMF-transaction-ID" type="xs:integer"/>

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="AnnouncingAlertReq-info">

 <xs:sequence>

 <xs:element name="DDNMF-transaction-ID" type="xs:integer"/>

 <xs:element name="RPAUID" type="xs:string"/>

 <xs:element name="UE-identity" type="SUPI-info"/>

 <xs:element name="discovery-entry-ID" type="xs:integer"/>

 <xs:element name="ProSe-Restricted-Code" type="xs:hexBinary"/>

 <xs:element name="ProSe-Restricted-Code-Suffix-Range" type="RestrictedCodeSuffixRange-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="AnnouncingAlertRsp-info">

 <xs:sequence>

 <xs:element name="DDNMF-transaction-ID" type="xs:integer"/>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <!-- Complex types defined for Message-level -->

 <xs:complexType name="prose-direct-discovery-request">

 <xs:sequence>

 <xs:element name="discovery-request" type="DiscReq-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-discovery-request" type="RestrictedDiscReq-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="network-initiated-transaction-method" type="xs:integer"/>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-response">

 <xs:sequence>

 <xs:element name="Current-Time" type="xs:dateTime"/>

 <xs:element name="Max-Offset" type="xs:integer"/>

 <xs:element name="response-announce" type="AnnounceRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="response-monitor" type="MonitorRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-announce-response" type="RestrictedAnnounceRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-monitor-response" type="RestrictedMonitorRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-discoveree-response" type="RestrictedDiscovereeRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-discoverer-response" type="RestrictedDiscovererRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="response-reject" type="RejectRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="network-initiated-transaction-method" type="xs:integer"/>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-update-request">

 <xs:sequence>

 <xs:element name="discovery-update-request" type="DiscUpdateReq-info" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-update-response">

 <xs:sequence>

 <xs:element name="response-update" type="DiscUpdateRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="response-reject" type="UE-RejectRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-match-report">

 <xs:sequence>

 <xs:element name="match-report" type="MatchRep-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-match" type="RestrictedMatch-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-match-report-ack">

 <xs:sequence>

 <xs:element name="Current-Time" type="xs:dateTime"/>

 <xs:element name="match-ack" type="MatchAck-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="match-reject" type="MatchReject-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="restricted-match-ack" type="RestrictedMatchAck-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-announcing-alert-request">

 <xs:sequence>

 <xs:element name="announcing-alert-request" type="AnnouncingAlertReq-info" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <xs:complexType name="prose-direct-discovery-announcing-alert-response">

 <xs:sequence>

 <xs:element name="announcing-alert-response" type="AnnouncingAlertRsp-info" maxOccurs="unbounded"/>

 <xs:element name="response-reject" type="UE-RejectRsp-info" minOccurs="0" maxOccurs="unbounded"/>

 <xs:element name="anyExt" type="anyExtType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <!-- extension allowed -->

 <xs:complexType name="DiscMsgExtType">

 <xs:sequence>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute namespace="##any" processContents="lax"/>

 </xs:complexType>

 <!-- XML attribute for any future extensions -->

 <xs:complexType name="anyExtType">

 <xs:sequence>

 <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>

 </xs:complexType>

<!-- Top levelDiscovery Message definition -->

 <xs:element name="prose-discovery-message">

 <xs:complexType>

 <xs:choice>

 <xs:element name="DISCOVERY\_REQUEST" type="prose-direct-discovery-request"/>

 <xs:element name="DISCOVERY\_RESPONSE" type="prose-direct-discovery-response"/>

 <xs:element name="MATCH\_REPORT" type="prose-direct-discovery-match-report"/>

 <xs:element name="MATCH\_REPORT\_ACK" type="prose-direct-discovery-match-report-ack"/>

 <xs:element name="DISCOVERY\_UPDATE\_REQUEST" type="prose-direct-discovery-update-request"/>

 <xs:element name="DISCOVERY\_UPDATE\_RESPONSE" type="prose-direct-discovery-update-response"/>

 <xs:element name="ANNOUNCING\_ALERT\_REQUEST" type="prose-direct-discovery-announcing-alert-request"/>

 <xs:element name="ANNOUNCING\_ALERT\_RESPONSE" type="prose-direct-discovery-announcing-alert-response"/>

 <xs:element name="message-ext" type="DiscMsgExtType"/>

 <xs:any namespace="##other" processContents="lax"/>

 </xs:choice>

 </xs:complexType>

 </xs:element>

</xs:schema>

An entity receiving the XML body ignores any unknown XML element and any unknown XML attribute.

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

#### 10.5.4.4 Semantics of <MATCH\_REPORT>

The <MATCH\_REPORT> element contains one or more of the following elements:

a) zero, one or more <match-report> element which contains transactions sent from the UE to the 5G DDNMF to report a matching of the direct discovery. Each <match-report> consists of:

1) a <transaction-ID> element containing the parameter defined in clause 11.4.2.1;

2) a <ProSe-PC5-discovery-message> element containing the parameter defined in clause 11.4.2.xx;

3) a <UE-identity> element containing the parameter defined in clause 11.4.2.3;

4) a <Monitored-PLMN-id> element containing the parameter defined in clause 11.4.2.10;

5) an optional <VPLMN-id> element containing the parameter defined in clause 11.4.2.11;

6) a <UTC-based-counter> element containing the parameter defined in clause 11.4.2.12;

7) a <metadata-flag> element containing the parameter defined in clause 11.4.2.14;

8) zero or one <anyExt> element containing elements defined in future releases;

9) zero, one or more elements from other namespaces defined in future releases; and

10) zero, one or more attributes defined in future releases;

b) zero, one or more <restricted-match> element which contain transactions sent from the UE to the 5G DDNMF to report a matching of the restricted direct discovery model A or model B. Each <restricted-match> consists of:

1) a <transaction-ID> element containing the parameter defined in clause 11.4.2.1;

2) a <UE-identity> element containing the parameter defined in clause 11.4.2.3;

3) a <discovery-type> element containing the parameter defined in clause 11.4.2.18

4) an <application-identity> element containing the parameter defined in clause 11.4.2.5

5) an <RPAUID> element containing the parameter defined in clause 11.4.2.23;

6) zero or one <ProSe-PC5-discovery-message> element containing the parameter defined in clause 11.4.2.xx, if it is required to check the MIC via the match report procedure

7) zero or one <Restricted-Code-Discovered> element containing the ProSe Restricted Code parameter defined in clause 11.4.2.27 or ProSe Response Code parameter defined in clause 11.4.2.35, if it is not required to check the MIC via the match report procedure;

8) an <UTC-based-counter> element containing the parameter defined in clause 11.4.2.12, if it is required to check the MIC via the match report procedure;

9) a <metadata-flag> element containing the parameter defined in clause 11.4.2.14;

10) zero or one <anyExt> element containing elements defined in future releases;

11) zero, one or more elements from other namespaces defined in future releases; and

12) zero, one or more attributes defined in future releases.

c) zero or one <anyExt> element containing elements defined in future releases;

d) zero, one or more elements from other namespaces defined in future releases; and

e) zero, one or more attributes defined in future releases.

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

#### 11.4.2.xx ProSe PC5 discovery message

This parameter is used to include the entire PROSE PC5 DISCOVERY message where the match event occurred. For the restricted 5G ProSe direct discovery procedure, this parameter is included if it is required to check the MIC via the match report procedure as specified in clause 6.2.9.2 and clause 6.2.10.2.

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