**3GPP TSG-CT WG1 Meeting #138-eC1-225863**

**E-Meeting, 10th – 14th October 2022**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **88** | **CR** | **0029** | **rev** | **1** | **Current version:** | **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:*** | Add default Tx profile for initial unicast connection establishment - coding | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | , Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XARC\_Ph2 | | | | |  | ***Date:*** | | | 22 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | To perform unicast mode communication between a rel-16 UE and a rel-17 UE, the mapping of V2X service types to NR Tx Profiles for transmitting and receiving DCR messages is defined by SA2 for a rel-17 UE (see TS 23.287):  *3) Policy/parameters for PC5 RAT selection and for PC5 Tx Profile selection:*  *- the mapping of V2X service types to PC5 RAT(s) (e.g. LTE PC5, NR PC5 or both), and:*  *- for LTE PC5, to the corresponding Tx Profiles (see TS 36.300 [9] for further information);*  *- for NR PC5, to the corresponding NR Tx Profiles for broadcast and groupcast (see TS 38.300 [11] and TS 38.331 [15] for further information);*  *- for NR PC5, to the corresponding NR Tx Profiles for transmitting and receiving initial signalling to establish unicast connection (see TS 38.300 [11] and TS 38.331 [15] for further information).*  It is proposed to implement the above requirement in stage-3 spec. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Add Tx profile for initial unicast connection establishment  2. Editorial correction of the assigned octet numbers, and the "Signaling ciphering policy" to "Signalling ciphering policy"  **Backward compatibility analysis:**  The change is backward compatible. The new added Tx profile is aligned with stage-2 requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Missing implementation of stage-2 requirement | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

### 5.3.1 General

The UE policies for V2X communication over PC5 are coded as shown in figures 5.3.1.1 and table 5.3.1.1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0 | 0 | 0 | 0 | V2XP info type = {UE policies for V2X communication over PC5} | | | | octet k |
| Spare | | | |
| Length of V2XP info contents | | | | | | | | octet k+1  octet k+2 |
| Validity timer | | | | | | | | octet k+3  octet k+7 |
| VSITPMRI | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | octet k+8 |
| Served by E-UTRA or served by NR | | | | | | | | octet k+9  octet o1 |
| Not served by E-UTRA and not served by NR | | | | | | | | octet o1+1  octet o2 |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules | | | | | | | | octet (o2+1)\*  octet o3\* |
| Privacy config | | | | | | | | octet o124  (see NOTE)  octet o4 |
| V2X communication over PC5 in E-UTRA-PC5 | | | | | | | | octet o4+1  octet o5 |
| V2X communication over PC5 in NR-PC5 | | | | | | | | octet o5+1  octet l |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.1: V2XP Info = {UE policies for V2X communication over PC5}

Table 5.3.1.1: V2XP Info = {UE policies for V2X communication over PC5}

|  |
| --- |
| V2XP info type (bit 1 to 4 of octet k) shall be set to "0001" (UE policies for V2X communication over PC5) |
|  |
| Length of Length of V2XP info contents (octets k+1 to k+2) indicates the length of V2XP info contents. |
|  |
|  |
| Validity timer:  The validity timer field provides the expiration time of validity of the UE policies for V2X communication over PC5. The validity timer field is a binary coded representation of a UTC time, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds). |
|  |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules indicator (VSITPMRI)  The VSITPMRI bit indicates presence of the V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field.  Bit  **8**  0 V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is absent  1 V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is present |
|  |
| Served by E-UTRA or served by NR:  The served by E-UTRA or served by NR field is coded according to figure 5.3.1.2 and table 5.3.1.2, and contains configuration parameters for V2X communication over PC5 when the UE is served by E-UTRA or served by NR. |
|  |
| Not served by E-UTRA and not served by NR:  The not served by E-UTRA and not served by NR field is coded according to figure 5.3.1.6 and table 5.3.1.6, and contains configuration parameters for V2X communication over PC5 when the UE is not served by E-UTRA or NR. |
|  |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules:  The V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is coded according to figure 5.3.1.12 and table 5.3.1.12, and contains a list of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules. |
|  |
| Privacy config:  The Privacy config field is coded according to figure 5.3.1.15 and table 5.3.1.15, and contains configuration parameters for privacy configuration. |
|  |
| V2X communication over PC5 in E-UTRA-PC5:  The V2X communication over PC5 in E-UTRA-PC5 field is coded according to figure 5.3.1.19 and table 5.3.1.19, and contains configuration parameters for V2X communication over PC5 in E-UTRA-PC5. |
|  |
| V2X communication over PC5 in NR-PC5:  The V2X communication over PC5 in NR-PC5 field is coded according to figure 5.3.1.31 and table 5.3.1.31, and contains configuration parameters for V2X communication over PC5 in NR-PC5. |
|  |
| If the length of V2XP info contents field indicates a length bigger than indicated in figure 5.3.1.1, receiving entity shall ignore any superfluous octets located at the end of the V2XP info contents. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of served by E-UTRA or served by NR contents | | | | | | | | octet k+9  octet k+10 |
| Authorized PLMN and RATs combinations | | | | | | | | octet k+11  octet o1 |

Figure 5.3.1.2: Served by E-UTRA or served by NR

Table 5.3.1.2: Served by E-UTRA or served by NR

|  |
| --- |
| Authorized PLMN and RATs combinations:  The authorized PLMN and RATs combinations field is coded according to figure 5.3.1.3 and table 5.3.1.3. |
|  |
| If the length of served by E-UTRA or served by NR contents field indicates a length bigger than indicated in figure 5.3.1.2, receiving entity shall ignore any superfluous octets located at the end of the served by E-UTRA or served by NR contents. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of authorized PLMN and RATs combinations contents | | | | | | | | octet k+11  octet k+12 |
| Authorized PLMN and RATs combination 1 | | | | | | | | octet (k+13)\*  octet (k+16)\* |
| Authorized PLMN and RATs combination 2 | | | | | | | | octet (k+ 17)\*  octet (k+20)\* |
| ... | | | | | | | | octet (k+21)\*  octet (k+8+n\*4)\* |
| Authorized PLMN and RATs combination n | | | | | | | | octet (k+9+n\*4)\*  octet (k+12+n\*4)\* = octet o1\* |

Figure 5.3.1.3: Authorized PLMN and RATs combinations

Table 5.3.1.3: Authorized PLMN and RATs combinations

|  |
| --- |
| Authorized PLMN and RATs combination:  The authorized PLMN and RATs combination field is coded according to figure 5.3.1.4 and table 5.3.1.4. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PLMN ID | | | | | | | | octet k+17  octet k+19 |
| EPIEN | NPIEN | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | octet k+20 |

Figure 5.3.1.4: Authorized PLMN and RATs combination

Table 5.3.1.4: Authorized PLMN and RATs combination

|  |
| --- |
| PLMN ID:  The PLMN ID field is coded according to figure 5.3.1.5 and table 5.3.1.5. |
|  |
| E-UTRA-PC5 indicator when served by E-UTRA or served by NR (EPIEN):  The EPIEN bit indicates whether the UE is authorized to use V2X communication over E-UTRA-PC5 in the PLMN indicated by the PLMN ID field when served by E-UTRA or served by NR.  Bit  **8**  0 Not authorized  1 Authorized |
|  |
| NR-PC5 indicator when served by E-UTRA or served by NR (NPIEN):  The NPIEN bit indicates whether the UE is authorized to use V2X communication over NR-PC5 in the PLMN indicated by the PLMN ID field when served by E-UTRA or served by NR.  Bit  **7**  0 Not authorized  1 Authorized |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MCC digit 2 | | | | MCC digit 1 | | | | octet k+17 |
| MNC digit 3 | | | | MCC digit 3 | | | | octet k+18 |
| MNC digit 2 | | | | MNC digit 1 | | | | octet k+19 |

Figure 5.3.1.5: PLMN ID

Table 5.3.1.5: PLMN ID

|  |
| --- |
| Mobile country code (MCC):  The MCC field is coded as in ITU-T Recommendation E.212 [6], annex A. |
|  |
| Mobile network code (MNC):  The coding of MNC field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, MNC digit 3 shall be coded as "1111". |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of not served by E-UTRA and not served by NR contents | | | | | | | | octet o1+1  octet o1+2 |
| EPINENN | NPINENN | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | VPNENNI | octet o1+3 |
| E-UTRA radio parameters per geographical area list | | | | | | | | octet (o1+4)\*  octet o121\* |
| NR radio parameters per geographical area list | | | | | | | | octet o122\*  (see NOTE)  octet o2\* |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.6: Not served by E-UTRA and not served by NR

Table 5.3.1.6: Not served by E-UTRA and not served by NR

|  |
| --- |
| V2X communication over PC5 when not served by E-UTRA and not served by NR indicator (VPNENNI):  The VPNENNI bit indicates whether the UE is authorized to use V2X communication over PC5 when not served by E-UTRA and not served by NR.  Bit  **1**  0 Not authorized  1 Authorized |
|  |
| E-UTRA-PC5 indicator when not served by E-UTRA and not served by NR (PEINENN):  The EPINENN bit indicates whether the UE is authorized to use V2X communication over E-UTRA-PC5 when not served by E-UTRA and not served by NR.  Bit  **8**  0 Not authorized  1 Authorized |
|  |
| NR-PC5 indicator when not served by E-UTRA and not served by NR (NPINENN):  The NPINENN bit indicates whether the UE is authorized to use V2X communication over NR-PC5 when not served by E-UTRA and not served by NR.  Bit  **7**  0 Not authorized  1 Authorized |
|  |
| E-UTRA radio parameters per geographical area list:  If EPINENN bit is set to "Authorized", the E-UTRA radio parameters per geographical area list field is present otherwise the E-UTRA radio parameters per geographical area list field is absent. It is coded according to figure 5.3.1.7 and table 5.3.1.7. |
| NR radio parameters per geographical area list:  If NPINENN bit is set to "Authorized", the NR radio parameters per geographical area list field is present otherwise the NR radio parameters per geographical area list field is absent. It is coded according to figure 5.3.1.7 and table 5.3.1.7. |
| If the length of not served by E-UTRA and not served by NR contents field indicates a length bigger than indicated in figure 5.3.1.6, receiving entity shall ignore any superfluous octets located at the end of the not served by E-UTRA and not served by NR contents. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of radio parameters per geographical area list contents | | | | | | | | octet o1+4  octet o1+5 |
| Radio parameters per geographical area info 1 | | | | | | | | octet (o1+6)\*  octet o6\* |
| Radio parameters per geographical area info 2 | | | | | | | | octet (o6+1)\*  octet o7\* |
| ... | | | | | | | | octet (o7+1)\*  octet o8\* |
| Radio parameters per geographical area info n | | | | | | | | octet (o8+1)\*  octet o121\* |

Figure 5.3.1.7: Radio parameters per geographical area list

Table 5.3.1.7: Radio parameters per geographical area list

|  |
| --- |
| Radio parameters per geographical area info:  The radio parameters per geographical area info field is coded according to figure 5.3.1.8 and table 5.3.1.8. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of radio parameters per geographical area contents | | | | | | | | octet o6+1  octet o6+2 |
| Geographical area | | | | | | | | octet o6+3  octet o9 |
| Radio parameters | | | | | | | | octet o9+1  octet o7-1 |
| MI | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | octet o7 |

Figure 5.3.1.8: Radio parameters per geographical area info

Table 5.3.1.8: Radio parameters per geographical area info

|  |
| --- |
| Geographical area:  The geographical area field is coded according to figure 5.3.1.9 and table 5.3.1.9. |
|  |
| Radio parameters:  The radio parameters field is coded according to figure 5.3.1.11 and table 5.3.1.11, applicable in the geographical area indicated by the geographical area field when not served by E-UTRA and not served by NR. |
|  |
| Managed indicator (MI):  The Managed indicator indicates how the radio parameters indicated in the radio parameters field in the geographical area indicated by the geographical area field are managed.  Bit  **8**  0 Non-operator managed  1 Operator managed |
|  |
| If the length of radio parameters per geographical area contents field indicates a length bigger than indicated in figure 5.3.1.8, receiving entity shall ignore any superfluous octets located at the end of the radio parameters per geographical area contents. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of geographical area contents | | | | | | | | octet o6+3  octet o6+4 |
| Coordinate 1 | | | | | | | | octet (o6+5)\*  octet (o6+10)\* |
| Coordinate 2 | | | | | | | | octet (o6+11)\*  octet (o6+16)\* |
| ... | | | | | | | | octet (o6+17)\*  octet (o6-2+6\*n)\* |
| Coordinate n | | | | | | | | octet (o6-1+6\*n)\*  octet (o6+4+6\*n)\* = octet o9\* |

Figure 5.3.1.9: Geographical area

Table 5.3.1.9: Geographical area

|  |
| --- |
| Coordinate:  The coordinate field is coded according to figure 5.3.1.10 and table 5.3.1.10. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Latitude | | | | | | | | octet o6+11  octet o6+13 |
| Longitude | | | | | | | | octet o6+14  octet o6+17 |

Figure 5.3.1.10: Coordinate area

Table 5.3.1.10: Coordinate area

|  |
| --- |
| Latitude:  The latitude field is coded according to clause 6.1 of 3GPP TS 23.032 [7]. |
|  |
| Longitude:  The longitude field is coded according to clause 6.1 of 3GPP TS 23.032 [7]. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of radio parameters contents | | | | | | | | octet o9+1  octet o9+2 |
| Radio parameters contents | | | | | | | | octet o9+3  octet o7-1 |

Figure 5.3.1.11: Radio parameters

Table 5.3.1.11: Radio parameters

|  |
| --- |
| Radio parameters contents:  In E-UTRA radio parameters per geographical area list, radio parameters are defined as *SL-V2X-Preconfiguration* in clause 9 of 3GPP TS 36.331 [16].  In NR radio parameters per geographical area list, radio parameters are defined as *SL-PreconfigurationNR* in clause 9.3 of 3GPP TS 38.331 [12]. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules contents | | | | | | | | octet o2+1  octet o2+2 |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule 1 | | | | | | | | octet (o2+3)\*  octet o10\* |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule 2 | | | | | | | | octet (o10+1)\*  octet o11\* |
| ... | | | | | | | | octet (o11+1)\*  octet o12\* |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule n | | | | | | | | octet (o12+1)\*  octet o3\* |

Figure 5.3.1.12: V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules

Table 5.3.1.12: V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules

|  |
| --- |
| V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule:  The V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule field is coded according to figure 5.3.1.13 and table 5.3.1.13. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule contents | | | | | | | | octet o10+1  octet o10+2 |
| V2X service identifiers | | | | | | | | octet o10+3  octet o79 |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | UINTI | BGNTI | PC5 RAT(s) | | octet o79+1 |
| Length of E-UTRA-PC5 Tx profiles | | | | | | | | octet (o79+2)\* |
| E-UTRA-PC5 Tx profiles | | | | | | | | octet o112\* (see NOTE)  octet o82\* |
| Broadcast and groupcast mode NR-PC5 Tx profile | | | | | | | | octet o113\* (see NOTE) |
| Unicast mode initial signalling NR-PC5 Tx profile | | | | | | | | octet o114\* = o11\* (see NOTE) |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.13: V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule

Table 5.3.1.13: V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
| Unicast mode initial signalling NR-PC5 Tx profile indicator (UINTI)  The UINTI bit indicates presence of the unicast mode NR-PC5 Tx profile field.  Bit  **4**  0 unicast mode initial signalling NR-PC5 Tx profile field is absent  1 unicast mode initial signalling NR-PC5 Tx profile field is present |
| Broadcast and groupcast mode NR-PC5 Tx profile indicator (BGNTI)  The BGNTI bit indicates presence of the broadcast and groupcast mode NR-PC5 Tx profile field.  Bit  **3**  0 broadcast and groupcast mode NR-PC5 Tx profile field is absent  1 broadcast and groupcast mode NR-PC5 Tx profile field is present |
|  |
| If the PC5 RAT field is set to "E-UTRA-PC5", then the BGNTI bit is set to "broadcast and groupcast mode NR-PC5 Tx profile field is absent" and the UINTI bit is set to "unicast mode initial signalling NR-PC5 Tx profile field is absent". If the PC5 RAT field is set to "NR-PC5" or "Both E-UTRA-PC5 and NR-PC5", then the BGNTI bit can be set to "broadcast and groupcast mode NR-PC5 Tx profile field is absent" or "broadcast and groupcast mode NR-PC5 Tx profile field is present", and the UINTI bit can be set to "unicast mode initial signalling NR-PC5 Tx profile field is absent" or "unicast mode initial signalling NR-PC5 Tx profile field is present". |
|  |
| PC5 RAT(s):  The PC5 RAT(s) field indicates the PC5 RAT(s) mapped to the V2X service identifiers.  **Bits**  2 1  0 0 E-UTRA-PC5  0 1 NR-PC5  1 0 Both E-UTRA-PC5 and NR-PC5  All other values are spare.  If the PC5 RAT field is set to "E-UTRA-PC5" or "Both E-UTRA-PC5 and NR-PC5", the length of E-UTRA-PC5 Tx profiles field and the E-UTRA-PC5 Tx profiles field are present otherwise the length of E-UTRA-PC5 Tx profiles field and the E-UTRA-PC5 Tx profiles field are absent. If the PC5 RAT field is set to a spare value, the receiving entity shall ignore the V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule. |
|  |
| E-UTRA-PC5 Tx profiles: |
| The E-UTRA-PC5 Tx profiles field is coded as *v2x-TxProfileList* in clause 9.3.2 of 3GPP TS 36.331 [16]. |
|  |
| Broadcast and groupcast mode NR-PC5 Tx profile field: |
| The broadcast and groupcast mode NR-PC5 Tx profile field indicates NR Tx profile corresponding to the NR-PC5 for broadcast mode V2X communication over PC5 and groupcast mode V2X communication over PC5.  The broadcast and groupcast mode NR-PC5 Tx profile field is coded as *SL-TxProfile-r17* in clause 9.3 of 3GPP TS 38.331 [12]. |
| Unicast mode initial signalling NR-PC5 Tx profile field:  The unicast mode initial signalling NR-PC5 Tx profile field indicates NR Tx profile corresponding to transmitting and receiving initial signalling of the PC5 unicast link establishment.  The unicast mode initial signalling NR-PC5 Tx profile field is coded as *SL-TxProfile-r17* in clause 9.3 of 3GPP TS 38.331 [12]. |
| If the length of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.13, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of V2X service identifiers contents | | | | | | | | octet o10+3  octet o10+4 |
| V2X service identifier 1 | | | | | | | | octet (o10+5)\*  octet (o10+8)\* |
| V2X service identifier 2 | | | | | | | | octet (o10+9)\*  octet (o10+12)\* |
| ... | | | | | | | | octet (o10+13)\*  octet (o10+n\*4)\* |
| V2X service identifier n | | | | | | | | octet (o10+1+n\*4)\*  octet (o10+4+n\*4)\*  = octet o79\* |

Figure 5.3.1.14: V2X service identifiers

Table 5.3.1.14: V2X service identifiers

|  |
| --- |
| V2X service identifier:  The V2X service identifier field contains a binary coded V2X service identifier as specified in ISO TS 17419 ITS-AID AssignedNumbers [5]. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of privacy config contents | | | | | | | | octet o124  octet o124+1 |
| V2X services requiring privacy | | | | | | | | octet o124+2  octet o4-2 |
| Privacy timer | | | | | | | | octet o4-1  octet o4 |

Figure 5.3.1.15: Privacy config

Table 5.3.1.15: Privacy config

|  |
| --- |
| V2X services requiring privacy:  The V2X services requiring privacy field is coded according to figure 5.3.1.16 and table 5.3.1.16. |
|  |
| Privacy timer: |
| The privacy timer field contains binary encoded duration, in units of seconds, after which the UE shall change the source Layer-2 ID self-assigned by the UE while performing transmission of V2X communication over the PC5 when privacy is required. |
|  |
| If the length of privacy config contents field indicates a length bigger than indicated in figure 5.3.1.15, receiving entity shall ignore any superfluous octets located at the end of the privacy config contents. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of V2X services requiring privacy contents | | | | | | | | octet o124+2  octet o124+3 |
| V2X service requiring privacy 1 | | | | | | | | octet (o124+4)\*  octet o12\* |
| V2X service requiring privacy 2 | | | | | | | | octet (o12+1)\*  octet o13\* |
| ... | | | | | | | | octet (o13+1)\*  octet o14\* |
| V2X service requiring privacy n | | | | | | | | octet (o14+1)\*  octet (o4-2)\* |

Figure 5.3.1.16: V2X services requiring privacy

Table 5.3.1.16: V2X services requiring privacy

|  |
| --- |
| V2X service requiring privacy:  The V2X service requiring privacy field is coded according to figure 5.3.1.17 and table 5.3.1.17. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service requiring privacy contents | | | | | | | | | octet o12+1  octet o12+2 | |
| V2X service identifiers | | | | | | | | | octet o12+3  octet o15 | |
| Geographical areas | | | | | | | | | octet o15+1  octet o13 | |

Figure 5.3.1.17: V2X service requiring privacy

Table 5.3.1.17: V2X service requiring privacy

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Geographical areas:  The geographical areas field is coded according to figure 5.3.1.18 and table 5.3.1.18. |
|  |
| If the length of V2X service requiring privacy contents field indicates a length bigger than indicated in figure 5.3.1.17, receiving entity shall ignore any superfluous octets located at the end of the V2X service requiring privacy contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of geographical areas contents | | | | | | | | | octet o15+1  octet o15+2 | |
| Geographical area 1 | | | | | | | | | octet (o15+3)\*  octet o23\* | |
| Geographical area 2 | | | | | | | | | octet (o23+1)\*  octet o24\* | |
| ... | | | | | | | | | octet (o24+1)\*  octet o25\* | |
| Geographical area n | | | | | | | | | octet (o25+1)\*  octet o13\* | |

Figure 5.3.1.18: Geographical areas

Table 5.3.1.18: Geographical areas

|  |
| --- |
| Geographical area:  The geographical area field is coded according to figure 5.3.1.9 and table 5.3.1.9. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |
| Length of V2X communication over PC5 in E-UTRA-PC5 contents | | | | | | | | | | | | | | | | octet o4+1  octet o4+2 | |
| DDL2II | | VSIEFMRI | | VSAPI | | PPMR | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | octet o4+3 | |
| V2X service identifier to destination layer-2 ID mapping rules | | | | | | | | | | | | | | | | octet o4+4  octet o26 | |
| PPPP to PDB mapping rules | | | | | | | | | | | | | | | | octet (o26+1)\*  octet o27\* | |
| V2X service identifier to V2X E-UTRA frequency mapping rules | | | | | | | | | | | | | | | | octet o120\*  (see NOTE)  octet o28\* | |
| V2X services authorized for PPPR | | | | | | | | | | | | | | | | octet o106\*  (see NOTE)  octet o29\* | |
| Default destination layer-2 ID | | | | | | | | | | | | | | | | octet o107\*  (see NOTE)  octet (o107+2)\* = octet o5\* | |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.19: V2X communication over PC5 in E-UTRA-PC5

Table 5.3.1.19: V2X communication over PC5 in E-UTRA-PC5

|  |
| --- |
| Default destination layer-2 ID indicator (DDL2II):  The DDL2II bit indicates presence of the default destination layer-2 ID field.  Bit  **8**  0 Default destination layer-2 ID field is absent  1 Default destination layer-2 ID field is present |
|  |
| V2X service identifier to V2X E-UTRA frequency mapping rules indicator (VSIEFMRI):  The VSIEFMRI bit indicates presence of the V2X service identifier to V2X E-UTRA frequency mapping rules field.  Bit  **7**  0 V2X service identifier to V2X E-UTRA frequency mapping rules field is absent  1 V2X service identifier to V2X E-UTRA frequency mapping rules field is present |
|  |
| V2X services authorized for PPPR indicator (VSAPI):  The VSAPI bit indicates presence of the V2X services authorized for PPPR field.  Bit  **6**  0 V2X services authorized for PPPR field is absent  1 V2X services authorized for PPPR field is present |
| PPPP to PDB mapping rules indicator (PPMRI):  The PPMRI bit indicates presence of the PPPP to PDB mapping rules field.  Bit  **5**  0 PPPP to PDB mapping rules field is absent  1 PPPP to PDB mapping rules field is present |
| V2X service identifier to destination layer-2 ID mapping rules:  The V2X service identifier to destination layer-2 ID mapping rules field is coded according to figure 5.3.1.20 and table 5.3.1.20. |
|  |
| PPPP to PDB mapping rules:  The PPPP to PDB mapping rules field is coded according to figure 5.3.1.22 and table 5.3.1.22. |
|  |
| V2X service identifier to V2X E-UTRA frequency mapping rules:  The V2X service identifier to V2X E-UTRA frequency mapping rules field is coded according to figure 5.3.1.24 and table 5.3.1.24. |
|  |
| V2X services authorized for PPPR:  The V2X services authorized for PPPR field is coded according to figure 5.3.1.29 and table 5.3.1.29. |
|  |
| Default destination layer-2 ID:  The default destination layer-2 ID field is a binary coded layer 2 identifier. |
|  |
| If the length of V2X communication over PC5 in E-UTRA-PC5 contents field indicates a length bigger than indicated in figure 5.3.1.19, receiving entity shall ignore any superfluous octets located at the end of the V2X communication over PC5 in E-UTRA-PC5contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID mapping rules contents | | | | | | | | | octet o4+4  octet o4+5 | |
| V2X service identifier to destination layer-2 ID mapping rule 1 | | | | | | | | | octet (o4+6)\*  octet o19\* | |
| V2X service identifier to destination layer-2 ID mapping rule 2 | | | | | | | | | octet (o19+1)\*  octet o20\* | |
| ... | | | | | | | | | octet (o20+1)\*  octet o21\* | |
| V2X service identifier to destination layer-2 ID mapping rule n | | | | | | | | | octet (o21+1)\*  octet o26\* | |

Figure 5.3.1.20: V2X service identifier to destination layer-2 ID mapping rules

Table 5.3.1.20: V2X service identifier to destination layer-2 ID mapping rules

|  |
| --- |
| V2X service identifier to destination layer-2 ID mapping rule:  The V2X service identifier to destination layer-2 ID mapping rule field is coded according to figure 5.3.1.21 and table 5.3.1.21. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID mapping rule contents | | | | | | | | | octet o19+1  octet o19+2 | |
| V2X service identifiers | | | | | | | | | octet o19+3  octet o22 | |
| Destination layer-2 ID | | | | | | | | | octet o22+1  octet (o22+3) = octet o20 | |

Figure 5.3.1.21: V2X service identifier to destination layer-2 ID mapping rule

Table 5.3.1.21: V2X service identifier to destination layer-2 ID mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Destination layer-2 ID:  The destination layer-2 ID field is a binary coded layer 2 identifier. |
|  |
| If the length of V2X service identifier to destination layer-2 ID mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.21, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to destination layer-2 ID mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of PPPP to PDB mapping rules contents | | | | | | | | | octet o26+1  octet o26+2 | |
| PPPP to PDB mapping rule 1 | | | | | | | | | octet (o26+3)\*  octet (o26+5)\* | |
| PPPP to PDB mapping rule 2 | | | | | | | | | octet (o26+6)\*  octet (o26+8)\* | |
| ... | | | | | | | | | octet (o26+9)\*  octet (o26+3\*n-1)\* | |
| PPPP to PDB mapping rule n | | | | | | | | | octet (o26+3\*n)\*  octet (o26+2+3\*n)\*  = octet o27\* | |

Figure 5.3.1.22: PPPP to PDB mapping rules

Table 5.3.1.22: PPPP to PDB mapping rules

|  |
| --- |
| PPPP to PDB mapping rule:  The PPPP to PDB mapping rule field is coded according to figure 5.3.1.23 and table 5.3.1.23. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | 1 |  | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | PPPP | | | | octet o26+6 | |
| PDB | | | | | | | | | | | | | | octet o26+7  octet o26+8 | |

Figure 5.3.1.23: PPPP to PDB mapping rule

Table 5.3.1.23: PPPP to PDB mapping rule

|  |
| --- |
| ProSe per-packet priority (PPPP):  The PPPP field is a ProSe per-packet priority value.  Bits  **3 2 1**  0 0 0 PPPP value 1  0 0 1 PPPP value 2  0 1 0 PPPP value 3  0 1 1 PPPP value 4  1 0 0 PPPP value 5  1 0 1 PPPP value 6  1 1 0 PPPP value 7  1 1 1 PPPP value 8 |
|  |
| Packet delay budget (PDB): |
| The PDB field indicates binary encoded the packet delay budget value in miliseconds to which the ProSe per-packet priority value indicated by the PPPP field is mapped. |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to V2X E-UTRA frequency mapping rules contents | | | | | | | | | octet o120\*  octet (o120+2)\* | |
| V2X service identifier to V2X E-UTRA frequency mapping rule 1 | | | | | | | | | octet (o120+3)\*  octet o33\* | |
| V2X service identifier to V2X E-UTRA frequency mapping rule 2 | | | | | | | | | octet (o33+1)\*  octet o34\* | |
| ... | | | | | | | | | octet (o34+1)\*  octet o35\* | |
| V2X service identifier to V2X E-UTRA frequency mapping rule n | | | | | | | | | octet (o35+1)\*  octet o28\* | |

Figure 5.3.1.24: V2X service identifier to V2X E-UTRA frequency mapping rules

Table 5.3.1.24: V2X service identifier to V2X E-UTRA frequency mapping rules

|  |
| --- |
| V2X service identifier to V2X E-UTRA frequency mapping rule:  The V2X service identifier to V2X E-UTRA frequency mapping rule is coded according to figure 5.3.1.25 and table 5.3.1.25. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to V2X E-UTRA frequency mapping rule contents | | | | | | | | | octet o33+1  octet o33+2 | |
| V2X service identifiers | | | | | | | | | octet o33+3  octet o39 | |
| V2X E-UTRA frequencies with geographical areas list | | | | | | | | | octet o39+1  octet o34 | |

Figure 5.3.1.25: V2X service identifier to V2X E-UTRA frequency mapping rule

Table 5.3.1.25: V2X service identifier to V2X E-UTRA frequency mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| V2X E-UTRA frequencies with geographical areas list:  The V2X E-UTRA frequencies with geographical areas list field is coded according to figure 5.3.1.26 and table 5.3.1.26. |
|  |
| If the length of V2X service identifier to V2X E-UTRA frequency mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.25, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to V2X E-UTRA frequency mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X E-UTRA frequencies with geographical areas list contents | | | | | | | | | octet o39+1  octet o39+2 | |
| V2X E-UTRA frequencies with geographical areas info 1 | | | | | | | | | octet (o39+3)\*  octet o40\* | |
| V2X E-UTRA frequencies with geographical areas info 2 | | | | | | | | | octet (o40+1)\*  octet o41\* | |
| ... | | | | | | | | | octet (o41+1)\*  octet o42\* | |
| V2X E-UTRA frequencies with geographical areas info n | | | | | | | | | octet (o42+1)\*  octet o34\* | |

Figure 5.3.1.26: V2X E-UTRA frequencies with geographical areas list

Table 5.3.1.26: V2X E-UTRA frequencies with geographical areas list

|  |
| --- |
| V2X E-UTRA frequencies with geographical areas info:  The V2X E-UTRA frequencies with geographical areas info field is coded according to figure 5.3.1.27 and table 5.3.1.27. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X E-UTRA frequencies with geographical areas info contents | | | | | | | | | octet o40+1  octet o40+2 | |
| V2X E-UTRA frequencies | | | | | | | | | octet o40+3  octet o43 | |
| Geographical areas | | | | | | | | | octet o43+1  octet o41 | |

Figure 5.3.1.27: V2X E-UTRA frequencies with geographical areas info

Table 5.3.1.27: V2X E-UTRA frequencies with geographical areas info

|  |
| --- |
| V2X E-UTRA frequencies:  The V2X E-UTRA frequencies field is coded according to figure 5.3.1.28 and table 5.3.1.28. |
|  |
| Geographical areas:  The geographical areas field is coded according to figure 5.3.1.18 and table 5.3.1.18. |
|  |
| If the length of V2X E-UTRA frequencies with geographical areas info contents field indicates a length bigger than indicated in figure 5.3.1.27, receiving entity shall ignore any superfluous octets located at the end of the V2X E-UTRA frequencies with geographical areas info contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X E-UTRA frequencies contents | | | | | | | | | octet o40+3  octet o40+4 | |
| V2X E-UTRA frequency 1 | | | | | | | | | octet (o40+5)\*  octet (o40+7)\* | |
| V2X E-UTRA frequency 2 | | | | | | | | | octet (o40+8)\*  octet (o40+10)\* | |
| ... | | | | | | | | | octet (o40+11)\*  octet (o40+4+(n-1)\*3)\* | |
| V2X E-UTRA frequency n | | | | | | | | | octet (o40+5+(n-1)\*3)\*  octet (o40+4+n\*3)\* = octet o42\* | |

Figure 5.3.1.28: V2X E-UTRA frequencies

Table 5.3.1.28: V2X E-UTRA frequencies

|  |
| --- |
| V2X E-UTRA frequency:  V2X E-UTRA frequency is coded according to the EARFCN value defined in 3GPP TS 36.101 [13]. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X services authorized for PPPR contents | | | | | | | | | octet o106  octet o106+1 | |
| V2X service authorized for PPPR 1 | | | | | | | | | octet (o106+2)\*  octet o36\* | |
| V2X service authorized for PPPR 2 | | | | | | | | | octet (o36+1)\*  octet o37\* | |
| ... | | | | | | | | | octet (o37+1)\*  octet o38\* | |
| V2X service authorized for PPPR n | | | | | | | | | octet (o38+1)\*  octet o29\* | |

Figure 5.3.1.29: V2X services authorized for PPPR

Table 5.3.1.29: V2X services authorized for PPPR

|  |
| --- |
| V2X service authorized for PPPR:  The V2X services authorized for PPPR field is coded according to figure 5.3.1.30 and table 5.3.1.30. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | 1 |  | |
| Length of V2X service authorized for PPPR contents | | | | | | | | | | | | | | octet o36+1  octet o36+2 | |
| V2X service identifiers | | | | | | | | | | | | | | octet o36+3  octet o37-1 | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | PPPR | | | | octet o37 | |

Figure 5.3.1.30: V2X service authorized for PPPR

Table 5.3.1.30: V2X service authorized for PPPR

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| ProSe per-packet reliability (PPPR):  The PPPR field is a ProSe per-packet reliability value.  Bits  **3 2 1**  0 0 0 PPPR value 1  0 0 1 PPPR value 2  0 1 0 PPPR value 3  0 1 1 PPPR value 4  1 0 0 PPPR value 5  1 0 1 PPPR value 6  1 1 0 PPPR value 7  1 1 1 PPPR value 8 |
|  |
| If the length of V2X service authorized for PPPR contents field indicates a length bigger than indicated in figure 5.3.1.30, receiving entity shall ignore any superfluous octets located at the end of the V2X service authorized for PPPR contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |
| Length of V2X communication over PC5 in NR-PC5 contents | | | | | | | | | | | | | | | | octet o5+1  octet o5+2 | |
| DDL2IBI | | VSINFMRI | | PDBGI | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | octet o5+3 | |
| V2X service identifier to V2X NR frequency mapping rules | | | | | | | | | | | | | | | | octet (o5+4)\*  octet o45\* | |
| V2X service identifier to destination layer-2 ID for broadcast mapping rules | | | | | | | | | | | | | | | | octet o108  (see NOTE)  octet o46 | |
| V2X service identifier to destination layer-2 ID for groupcast mapping rules | | | | | | | | | | | | | | | | octet o46+1  octet o47 | |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules | | | | | | | | | | | | | | | | octet o47+1  octet o48 | |
| V2X service identifier to PC5 QoS parameters mapping rules | | | | | | | | | | | | | | | | octet o48+1  octet o49 | |
| AS configuration | | | | | | | | | | | | | | | | octet o49+1  octet o50 | |
| Default destination layer-2 ID for broadcast | | | | | | | | | | | | | | | | octet (o50+1)\*  octet (o50+3)\* | |
| NR-PC5 unicast security policies | | | | | | | | | | | | | | | | octet o93 (see NOTE)  octet o84 | |
| V2X service identifier to default mode of communication mapping rules | | | | | | | | | | | | | | | | octet (o84+1)  octet o85 | |
| PC5 DRX configuration for broadcast and groupcast | | | | | | | | | | | | | | | | octet (o85+1)\*  octet o123\* = octet l | |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.31: V2X communication over PC5 in NR-PC5

Table 5.3.1.31: V2X communication over PC5 in NR-PC5

|  |
| --- |
| Default destination layer-2 ID for broadcast indicator (DDL2IBI):  The DDL2IBI bit indicates presence of the default destination layer-2 ID for broadcast field.  Bit  **8**  0 Default destination layer-2 ID for broadcast field is absent  1 Default destination layer-2 ID for broadcast field is present |
|  |
| V2X service identifier to V2X NR frequency mapping rules indicator (VSINFMRI):  The VSINFMRI bit indicates presence of the V2X service identifier to V2X NR frequency mapping rules field.  Bit  **7**  0 V2X service identifier to V2X NR frequency mapping rules field is absent  1 V2X service identifier to V2X NR frequency mapping rules field is present |
|  |
| PC5 DRX configuration for broadcast and groupcast indicator (PDBGI):  The PDBGI bit indicates presence of the PC5 DRX configuration for broadcast and groupcast field.  Bit  **6**  0 PC5 DRX configuration for broadcast and groupcast field is absent  1 PC5 DRX configuration for broadcast and groupcast field is present |
|  |
| V2X service identifier to V2X NR frequency mapping rules:  The V2X service identifier to V2X NR frequency mapping rules field is coded according to figure 5.3.1.32 and table 5.3.1.32. |
|  |
| V2X service identifier to destination layer-2 ID for broadcast mapping rules:  The V2X service identifier to destination layer-2 ID for broadcast mapping rules field is coded according to figure 5.3.1.37 and table 5.3.1.37. |
|  |
| V2X service identifier to destination layer-2 ID for groupcast mapping rules:  The V2X service identifier to destination layer-2 ID for groupcast mapping rules field is coded according to figure 5.3.1.39 and table 5.3.1.39. |
|  |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules:  The V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules field is coded according to figure 5.3.1.41 and table 5.3.1.41. |
|  |
| V2X service identifier to PC5 QoS parameters mapping rules:  The V2X service identifier to PC5 QoS parameters mapping rules field is coded according to figure 5.3.1.43 and table 5.3.1.43. |
|  |
| AS configuration:  The AS configuration field is coded according to figure 5.3.1.46a and table 5.3.1.46a. |
|  |
| Default destination layer-2 ID for broadcast:  The default destination layer-2 ID for broadcast field is a binary coded layer 2 identifier. |
|  |
| NR-PC5 unicast security policies:  The NR-PC5 unicast security policies field is coded according to figure 5.3.1.50 and table 5.3.1.50. |
| V2X service identifier to default mode of communication mapping rules:  The V2X service identifier to default mode of communication mapping rules is coded according to figure 5.3.1.53 and table 5.3.1.53. |
| PC5 DRX configuration for broadcast and groupcast  The PC5 DRX configuration for broadcast and groupcast field indicates the PC5 DRX configuration for broadcast and groupcast when not served by E-UTRA and not served by NR, and is coded according to figure 5.3.1.x and table 5.3.1.x. |
|  |
| If the length of V2X communication over PC5 in NR-PC5 contents field indicates a length bigger than indicated in figure 5.3.1.31, receiving entity shall ignore any superfluous octets located at the end of the V2X communication over PC5 in NR-PC5 contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to V2X NR frequency mapping rules contents | | | | | | | | | octet o5+4  octet o5+5 | |
| V2X service identifier to V2X NR frequency mapping rule 1 | | | | | | | | | octet (o5+6)\*  octet o51\* | |
| V2X service identifier to V2X NR frequency mapping rule 2 | | | | | | | | | octet (o51+1)\*  octet o52\* | |
| ... | | | | | | | | | octet (o52+1)\*  octet o53\* | |
| V2X service identifier to V2X NR frequency mapping rule n | | | | | | | | | octet (o53+1)\*  octet o45\* | |

Figure 5.3.1.32: V2X service identifier to V2X NR frequency mapping rules

Table 5.3.1.32: V2X service identifier to V2X NR frequency mapping rules

|  |
| --- |
| V2X service identifier to V2X NR frequency mapping rule:  The V2X service identifier to V2X NR frequency mapping rule is coded according to figure 5.3.1.33 and table 5.3.1.33. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to V2X NR frequency mapping rule contents | | | | | | | | | octet o51+1  octet o51+2 | |
| V2X service identifiers | | | | | | | | | octet o51+3  octet o54 | |
| V2X NR frequencies with geographical areas list | | | | | | | | | octet o54+1  octet o52 | |

Figure 5.3.1.33: V2X service identifier to V2X NR frequency mapping rule

Table 5.3.1.33: V2X service identifier to V2X NR frequency mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| V2X NR frequencies with geographical areas list:  The V2X NR frequencies with geographical areas list field is coded according to figure 5.3.1.34 and table 5.3.1.34. |
|  |
| If the length of V2X service identifier to V2X NR frequency mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.33, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to V2X NR frequency mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X NR frequencies with geographical areas list contents | | | | | | | | | octet o54+1  octet o54+2 | |
| V2X NR frequencies with geographical areas info 1 | | | | | | | | | octet (o54+3)\*  octet o55\* | |
| V2X NR frequencies with geographical areas info 2 | | | | | | | | | octet (o55+1)\*  octet o56\* | |
| ... | | | | | | | | | octet (o56+1)\*  octet o57\* | |
| V2X NR frequencies with geographical areas info n | | | | | | | | | octet (o57+1)\*  octet o52\* | |

Figure 5.3.1.34: V2X NR frequencies with geographical areas list

Table 5.3.1.34: V2X NR frequencies with geographical areas list

|  |
| --- |
| V2X NR frequencies with geographical areas info:  The V2X NR frequencies with geographical areas info field is coded according to figure 5.3.1.35 and table 5.3.1.35. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X NR frequencies with geographical areas info contents | | | | | | | | | octet o55+1  octet o55+2 | |
| V2X NR frequencies | | | | | | | | | octet o55+3  octet o58 | |
| Geographical areas | | | | | | | | | octet o58+1  octet o56 | |

Figure 5.3.1.35: V2X NR frequencies with geographical areas info

Table 5.3.1.35: V2X NR frequencies with geographical areas info

|  |
| --- |
| V2X NR frequencies:  The V2X NR frequencies field is coded according to figure 5.3.1.36 and table 5.3.1.36. |
|  |
| Geographical areas:  The geographical areas field is coded according to figure 5.3.1.18 and table 5.3.1.18. |
|  |
| If the length of V2X NR frequencies with geographical areas info contents field indicates a length bigger than indicated in figure 5.3.1.35, receiving entity shall ignore any superfluous octets located at the end of the V2X NR frequencies with geographical areas info contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X NR frequencies contents | | | | | | | | | octet o55+3  octet o55+4 | |
| V2X NR frequency 1 | | | | | | | | | octet (o55+5)\*  octet (o55+7)\* | |
| V2X NR frequency 2 | | | | | | | | | octet (o55+8)\*  octet (o55+10)\* | |
| ... | | | | | | | | | octet (o55+11)\*  octet (o55+4+(n-1)\*3)\* | |
| V2X NR frequency n | | | | | | | | | octet (o55+5+(n-1)\*3)\*  octet (o55+4+n\*3)\* = octet o58\* | |

Figure 5.3.1.36: V2X NR frequencies

Table 5.3.1.36: V2X NR frequencies

|  |
| --- |
| V2X NR frequency:  V2X NR frequency is coded according to the NR-ARFCN value defined in 3GPP TS 38.101-1 [14] and 3GPP TS 38.101-2 [15]. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for broadcast mapping rules contents | | | | | | | | | octet o108  octet o108+1 | |
| V2X service identifier to destination layer-2 ID for broadcast mapping rule 1 | | | | | | | | | octet (o108+2)\*  octet o59\* | |
| V2X service identifier to destination layer-2 ID for broadcast mapping rule 2 | | | | | | | | | octet (o59+1)\*  octet o60\* | |
| ... | | | | | | | | | octet (o60+1)\*  octet o61\* | |
| V2X service identifier to destination layer-2 ID for broadcast mapping rule n | | | | | | | | | octet (o61+1)\*  octet o46\* | |

Figure 5.3.1.37: V2X service identifier to destination layer-2 ID for broadcast mapping rules

Table 5.3.1.37: V2X service identifier to destination layer-2 ID for broadcast mapping rules

|  |
| --- |
| V2X service identifier to destination layer-2 ID for broadcast mapping rule:  The V2X service identifier to destination layer-2 ID for broadcast mapping rule field is coded according to figure 5.3.1.38 and table 5.3.1.38. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for broadcast mapping rule contents | | | | | | | | | octet o59+1  octet o59+2 | |
| V2X service identifiers | | | | | | | | | octet o59+3  octet o62 | |
| Destination layer-2 ID for broadcast | | | | | | | | | octet o62+1  octet (o62+3)  = octet o60 | |

Figure 5.3.1.38: V2X service identifier to destination layer-2 ID for broadcast mapping rule

Table 5.3.1.38: V2X service identifier to destination layer-2 ID for broadcast mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Destination layer-2 ID for broadcast:  The destination layer-2 ID for broadcast field is a binary coded layer 2 identifier. |
|  |
| If the length of V2X service identifier to destination layer-2 ID for broadcast mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.38, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to destination layer-2 ID for broadcast mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for groupcast mapping rules contents | | | | | | | | | octet o46+1  octet o46+2 | |
| V2X service identifier to destination layer-2 ID for groupcast mapping rule 1 | | | | | | | | | octet (o46+3)\*  octet o63\* | |
| V2X service identifier to destination layer-2 ID for groupcast mapping rule 2 | | | | | | | | | octet (o63+1)\*  octet o64\* | |
| ... | | | | | | | | | octet (o64+1)\*  octet o65\* | |
| V2X service identifier to destination layer-2 ID for groupcast mapping rule n | | | | | | | | | octet (o65+1)\*  octet o47\* | |

Figure 5.3.1.39: V2X service identifier to destination layer-2 ID for groupcast mapping rules

Table 5.3.1.39: V2X service identifier to destination layer-2 ID for groupcast mapping rules

|  |
| --- |
| V2X service identifier to destination layer-2 ID for groupcast mapping rule:  The V2X service identifier to destination layer-2 ID for groupcast mapping rule field is coded according to figure 5.3.1.40 and table 5.3.1.40. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for groupcast mapping rule contents | | | | | | | | | octet o63+1  octet o63+2 | |
| V2X service identifiers | | | | | | | | | octet o63+3  octet o80 | |
| Destination layer-2 ID for groupcast | | | | | | | | | octet o80+1  octet (o80+3) = octet o64 | |

Figure 5.3.1.40: V2X service identifier to destination layer-2 ID for groupcast mapping rule

Table 5.3.1.40: V2X service identifier to destination layer-2 ID for groupcast mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Destination layer-2 ID for groupcast:  The destination layer-2 ID for groupcast field is a binary coded layer 2 identifier. |
|  |
| If the length of V2X service identifier to destination layer-2 ID for groupcast mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.40, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to destination layer-2 ID for groupcast mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules contents | | | | | | | | | octet o47+1  octet o47+2 | |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule 1 | | | | | | | | | octet (o47+3)\*  octet o66\* | |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule 2 | | | | | | | | | octet (o66+1)\*  octet o67\* | |
| ... | | | | | | | | | octet (o67+1)\*  octet o68\* | |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule n | | | | | | | | | octet (o68+1)\*  octet o48\* | |

Figure 5.3.1.41: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules

Table 5.3.1.41: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules

|  |
| --- |
| V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule:  The V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule field is coded according to figure 5.3.1.42 and table 5.3.1.42. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule contents | | | | | | | | | octet o66+1  octet o66+2 | |
| V2X service identifiers | | | | | | | | | octet o66+3  octet o81 | |
| Destination layer-2 ID for unicast initial signalling | | | | | | | | | octet o81+1  octet (o81+3)  = octet o67 | |

Figure 5.3.1.42: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule

Table 5.3.1.42: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Destination layer-2 ID for unicast initial signalling:  The destination layer-2 ID for unicast initial signalling field is a binary coded layer 2 identifier. |
|  |
| If the length of V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.42, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to PC5 QoS parameters mapping rules contents | | | | | | | | | octet o48+1  octet o48+2 | |
| V2X service identifier to PC5 QoS parameters mapping rule 1 | | | | | | | | | octet (o48+3)\*  octet o70\* | |
| V2X service identifier to PC5 QoS parameters mapping rule 2 | | | | | | | | | octet (o70+1)\*  octet o71\* | |
| ... | | | | | | | | | octet (o71+1)\*  octet o72\* | |
| V2X service identifier to PC5 QoS parameters mapping rule n | | | | | | | | | octet (o72+1)\*  octet o49\* | |

Figure 5.3.1.43: V2X service identifier to PC5 QoS parameters mapping rules

Table 5.3.1.43: V2X service identifier to PC5 QoS parameters mapping rules

|  |
| --- |
| V2X service identifier to PC5 QoS parameters mapping rule:  The V2X service identifier to PC5 QoS parameters mapping rule field is coded according to figure 5.3.1.46 and table 5.3.1.46. |
|  |

Figure 5.3.1.44: void

Table 5.3.1.44: void

Figure 5.3.1.45: void

Table 5.3.1.45: void

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |
| Length of V2X service identifier to PC5 QoS parameters mapping rule contents | | | | | | | | | | | | | | | | octet o70+1  octet o70+2 | |
| V2X service identifiers | | | | | | | | | | | | | | | | octet o70+3  octet o74 | |
| GFBRI | | MFBRI | | PLAMBRI | | RI | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | octet o74+1 | |
| PQI | | | | | | | | | | | | | | | | octet o74+2 | |
| Guaranteed flow bit rate | | | | | | | | | | | | | | | | octet (o74+3)\*  octet (o74+5)\* | |
| Maximum flow bit rate | | | | | | | | | | | | | | | | octet (o94)\* (see NOTE)  octet (o94+2)\* | |
| Per-link aggregate maximum bit rate | | | | | | | | | | | | | | | | octet (o95)\* (see NOTE)  octet (o95+2)\* | |
| Range | | | | | | | | | | | | | | | | octet (o96)\* (see NOTE)  octet (o96+2)\* = octet o71\* | |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.46: V2X service identifier to PC5 QoS parameters mapping rule

Table 5.3.1.46: V2X service identifier to PC5 QoS parameters mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Guaranteed flow bit rate indicator (GFBRI):  The GFBRI bit indicates presence of guaranteed flow bit rate field.  Bit  **8**  0 Guaranteed flow bit rate field is absent  1 Guaranteed flow bit rate field is present |
|  |
| Maximum flow bit rate indicator (MFBRI):  The MFBRI bit indicates presence of maximum flow bit rate field.  Bit  **7**  0 Maximum flow bit rate field is absent  1 Maximum flow bit rate field is present |
|  |
| Per-link aggregate maximum bit rate indicator (PLAMBRI):  The PLAMBRI bit indicates presence of per-link aggregate maximum bit rate field.  Bit  **6**  0 Per-link aggregate maximum bit rate field is absent  1 Per-link aggregate maximum bit rate field is present |
|  |
| Range indicator (RI):  The RI bit indicates presence of range field.  Bit  **5**  0 Range field is absent  1 Range field is present |
|  |
| PQI:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1  to Spare  0 0 0 1 0 1 0 0  0 0 0 1 0 1 0 1 PQI 21  0 0 0 1 0 1 1 0 PQI 22  0 0 0 1 0 1 1 1 PQI 23  0 0 0 1 1 0 0 0  to Spare  0 0 1 1 0 1 1 0  0 0 1 1 0 1 1 1 PQI 55  0 0 1 1 1 0 0 0 PQI 56  0 0 1 1 1 0 0 1 PQI 57  0 0 1 1 1 0 1 0 PQI 58  0 0 1 1 1 0 1 1 PQI 59  0 0 1 1 1 1 0 0  to Spare  0 1 0 1 1 0 0 1  0 1 0 1 1 0 1 0 PQI 90  0 1 0 1 1 0 1 1 PQI 91  0 1 0 1 1 1 0 0  to Spare  0 1 1 1 1 1 1 1  1 0 0 0 0 0 0 0  to Operator-specific PQIs  1 1 1 1 1 1 1 0  1 1 1 1 1 1 1 1 Reserved  If the UE receives a PQI value (excluding the reserved PQI values) that it does not understand, the UE shall choose a PQI value from the set of PQI values defined in this version of the protocol (see 3GPP TS 23.287 [2]) and associated with:  - GBR resource type, if the V2X service identifier to PC5 QoS parameters mapping rule includes the guaranteed flow bit rate field; and  - non-GBR resource type, if the V2X service identifier to PC5 QoS parameters mapping rule does not include the guaranteed flow bit rate field.  The UE shall use this chosen PQI value for internal operations only. The UE shall use the received PQI value in subsequent V2X communication over PC5 signalling procedures. |
|  |
| Guaranteed flow bit rate:  The guaranteed flow bit rate field indicates guaranteed flow bit rate for both sending and receiving and contains one octet indicating the unit of the guaranteed flow bit rate followed by two octets containing the value of the guaranteed flow bit rate.  Unit of the guaranteed flow bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the guaranteed flow bit rate is binary coded value of the guaranteed flow bit rate in units defined by the unit of the guaranteed flow bit rate. |
|  |
| Maximum flow bit rate:  The maximum flow bit rate field indicates maximum flow bit rate for both sending and receiving and contains one octet indicating the unit of the maximum flow bit rate followed by two octets containing the value of the maximum flow bit rate.  Unit of the maximum flow bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the maximum flow bit rate is binary coded value of the maximum flow bit rate in units defined by the unit of the maximum flow bit rate. |
|  |
| Per-link aggregate maximum bit rate:  The per-link aggregate maximum bit rate field indicates per-link aggregate maximum bit rate for both sending and receiving and contains one octet indicating the unit of the per-link aggregate maximum bit rate followed by two octets containing the value of the per-link aggregate maximum bit rate.  Unit of the per-link aggregate maximum bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the per-link aggregate maximum bit rate is binary coded value of the per-link aggregate maximum bit rate in units defined by the unit of the per-link aggregate maximum bit rate. |
|  |
| Range  The range field indicates a binary encoded value of the range in meters. |
|  |
| If the length of V2X service identifier to PC5 QoS parameters mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.46, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to PC5 QoS parameters mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of AS configuration contents | | | | | | | | | octet o49+1  octet o49+2 | |
| SLRB mapping rules | | | | | | | | | octet o49+3  octet o50 | |

Figure 5.3.1.46a: AS configuration

Table 5.3.1.46a: AS configuration

|  |
| --- |
| SLRB mapping rules:  The SLRB mapping rules field is coded according to figure 5.3.1.47 and table 5.3.1.47. |
|  |
| If the length of AS configuration contents field indicates a length bigger than indicated in figure 5.3.1.46a, receiving entity shall ignore any superfluous octets located at the end of the AS configuration contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of SLRB mapping rules contents | | | | | | | | | octet o49+3  octet o49+4 | |
| SLRB mapping rule 1 | | | | | | | | | octet (o49+5)\*  octet o75\* | |
| SLRB mapping rule 2 | | | | | | | | | octet (o75+1)\*  octet o76\* | |
| ... | | | | | | | | | octet (o76+1)\*  octet o77\* | |
| SLRB mapping rule n | | | | | | | | | octet (o77+1)\*  octet o50\* | |

Figure 5.3.1.47: SLRB mapping rules

Table 5.3.1.47: SLRB mapping rules

|  |
| --- |
| SLRB mapping rule:  The SLRB mapping rule field is coded according to figure 5.3.1.48 and table 5.3.1.48. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of SLRB mapping rule contents | | | | | | | | | octet o75+1  octet o75+2 | |
| PC5 QoS profile | | | | | | | | | octet o75+3  octet o78 | |
| Length of SLRB | | | | | | | | | octet o78+1  octet o78+2 | |
| SLRB | | | | | | | | | octet o78+3  octet o76 | |

Figure 5.3.1.48: SLRB mapping rule

Table 5.3.1.48: SLRB mapping rule

|  |
| --- |
| PC5 QoS profile:  The PC5 QoS profile field is coded according to figure 5.3.1.49 and table 5.3.1.49. |
|  |
| SLRB |
| SLRB is defined as *SL-PreconfigurationNR* in clause 9.3 of 3GPP TS 38.331 [12]. |
|  |
| If the length of SLRB mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.48, receiving entity shall ignore any superfluous octets located at the end of the SLRB mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |
| Length of PC5 QoS profile contents | | | | | | | | | | | | | | | | octet o75+3  octet o75+4 | |
| GFBRI | | MFBRI | | PLAMBRI | | RI | | PLOI | | AWI | | MDBVI | | 0  Spare | | octet o73+5 | |
| PQI | | | | | | | | | | | | | | | | octet o75+6 | |
| Guaranteed flow bit rate | | | | | | | | | | | | | | | | octet (o75+7)\*  octet (o75+9)\* | |
| Maximum flow bit rate | | | | | | | | | | | | | | | | octet o97\* (see NOTE)  octet (o97+2)\* | |
| Per-link aggregate maximum bit rate | | | | | | | | | | | | | | | | octet o98\* (see NOTE)  octet (o98+2)\* | |
| Range | | | | | | | | | | | | | | | | octet o99\* (see NOTE)  octet (o99+1)\* | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | Priority level | | | | | | octet o100\*  (see NOTE) | |
| Averaging window | | | | | | | | | | | | | | | | octet o101\*  (see NOTE)  octet (o101+1)\* | |
| Maximum data burst volume | | | | | | | | | | | | | | | | octet o102\*  (see NOTE)  octet (o102+1)\* = octet o78\* | |

NOTE: The field is placed immediately after the last present preceding field.

Figure 5.3.1.49:PC5 QoS profile

Table 5.3.1.49:PC5 QoS profile

|  |
| --- |
| Guaranteed flow bit rate indicator (GFBRI):  The GFBRI bit indicates presence of guaranteed flow bit rate field.  Bit  **8**  0 Guaranteed flow bit rate field is absent  1 Guaranteed flow bit rate field is present |
|  |
| Maximum flow bit rate indicator (MFBRI):  The MFBRI bit indicates presence of maximum flow bit rate field.  Bit  **7**  0 Maximum flow bit rate field is absent  1 Maximum flow bit rate field is present |
|  |
| Per-link aggregate maximum bit rate indicator (PLAMBRI):  The PLAMBRI bit indicates presence of per-link aggregate maximum bit rate field.  Bit  **6**  0 Per-link aggregate maximum bit rate field is absent  1 Per-link aggregate maximum bit rate field is present |
|  |
| Range indicator (RI):  The RI bit indicates presence of range field.  Bit  **5**  0 Range field is absent  1 Range field is present |
|  |
| Priority level octet indicator (OPLI):  The OPLI bit indicates presence of the octet of the priority level field.  Bit  **4**  0 The octet of the priority level is absent  1 The octet of the priority level is present |
|  |
| Averaging window indicator (AWI):  The AWI bit indicates presence of averaging window field.  Bit  **3**  0 Averaging window field is absent  1 Averaging window field is present |
|  |
| Maximum data burst volume indicator (MDBVI):  The MDBVI bit indicates presence of maximum data burst volume field.  Bit  **2**  0 Maximum data burst volume field is absent  1 Maximum data burst volume field is present |
|  |
| PQI:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 Reserved  0 0 0 0 0 0 0 1  to Spare  0 0 0 1 0 1 0 0  0 0 0 1 0 1 0 1 PQI 21  0 0 0 1 0 1 1 0 PQI 22  0 0 0 1 0 1 1 1 PQI 23  0 0 0 1 1 0 0 0  to Spare  0 0 1 1 0 1 1 0  0 0 1 1 0 1 1 1 PQI 55  0 0 1 1 1 0 0 0 PQI 56  0 0 1 1 1 0 0 1 PQI 57  0 0 1 1 1 0 1 0 PQI 58  0 0 1 1 1 0 1 1 PQI 59  0 0 1 1 1 1 0 0  to Spare  0 1 0 1 1 0 0 1  0 1 0 1 1 0 1 0 PQI 90  0 1 0 1 1 0 1 1 PQI 91  0 1 0 1 1 1 0 0  to Spare  0 1 1 1 1 1 1 1  1 0 0 0 0 0 0 0  to Operator-specific PQIs  1 1 1 1 1 1 1 0  1 1 1 1 1 1 1 1 Reserved  If the UE receives a PQI value (excluding the reserved PQI values) that it does not understand, the UE shall choose a PQI value from the set of PQI values defined in this version of the protocol (see 3GPP TS 23.287 [2]) and associated with:  - GBR resource type, if the PC5 QoS profile includes the guaranteed flow bit rate field; and  - non-GBR resource type, if the PC5 QoS profile does not include the guaranteed flow bit rate field.  The UE shall use this chosen PQI value for internal operations only. The UE shall use the received PQI value in subsequent V2X communication over PC5 signalling procedures. |
|  |
| Guaranteed flow bit rate:  The guaranteed flow bit rate field indicates guaranteed flow bit rate for both sending and receiving and contains one octet indicating the unit of the guaranteed flow bit rate followed by two octets containing the value of the guaranteed flow bit rate.  Unit of the guaranteed flow bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the guaranteed flow bit rate is binary coded value of the guaranteed flow bit rate in units defined by the unit of the guaranteed flow bit rate. |
|  |
| Maximum flow bit rate:  The maximum flow bit rate field indicates maximum flow bit rate for both sending and receiving and contains one octet indicating the unit of the maximum flow bit rate followed by two octets containing the value of the maximum flow bit rate.  Unit of the maximum flow bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the maximum flow bit rate is binary coded value of the maximum flow bit rate in units defined by the unit of the maximum flow bit rate. |
|  |
| Per-link aggregate maximum bit rate:  The per-link aggregate maximum bit rate field indicates per-link aggregate maximum bit rate for both sending and receiving and contains one octet indicating the unit of the per-link aggregate maximum bit rate followed by two octets containing the value of the per-link aggregate maximum bit rate.  Unit of the per-link aggregate maximum bit rate:  Bits  **8 7 6 5 4 3 2 1**  0 0 0 0 0 0 0 0 value is not used  0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps  0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps  0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps  0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps  0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps  0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps  0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps  0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps  0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps  0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps  0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps  0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps  0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps  0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps  0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps  0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps  0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps  0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps  0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps  0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps  0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps  0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps  0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps  0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps  0 0 0 1 1 0 0 1 value is incremented in multiples of 256 Pbps  Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.  Value of the per-link aggregate maximum bit rate is binary coded value of the per-link aggregate maximum bit rate in units defined by the unit of the per-link aggregate maximum bit rate. |
|  |
| Range:  The range field indicates a binary encoded value of the range in meters. |
|  |
| Priority level:  The Priority level field contains a ProSe per-packet priority value.  Bits  **3 2 1**  0 0 0 PPPP value 1  0 0 1 PPPP value 2  0 1 0 PPPP value 3  0 1 1 PPPP value 4  1 0 0 PPPP value 5  1 0 1 PPPP value 6  1 1 0 PPPP value 7  1 1 1 PPPP value 8 |
|  |
| Averaging window:  The averaging window field indicates a binary representation of the averaging window for both sending and receiving in milliseconds. |
|  |
| Maximum data burst volume:  The maximum data burst volume field indicates a binary representation of the maximum data burst volume for both sending and receiving in octets. |
|  |
| If the length of PC5 QoS profile contents field indicates a length bigger than indicated in figure 5.3.1.49, receiving entity shall ignore any superfluous octets located at the end of the PC5 QoS profile contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of NR-PC5 unicast security policies contents | | | | | | | | | octet o93  octet o93+1 | |
| NR-PC5 unicast security policy 1 | | | | | | | | | octet (o93+2)\*  octet o86\* | |
| NR-PC5 unicast security policy 2 | | | | | | | | | octet (o86+1)\*  octet o87\* | |
| ... | | | | | | | | | octet (o87+1)\*  octet o88\* | |
| NR-PC5 unicast security policy n | | | | | | | | | octet (o88+1)\*  octet o84\* | |

Figure 5.3.1.50: NR-PC5 unicast security policies

Table 5.3.1.50: NR-PC5 unicast security policies

|  |
| --- |
| NR-PC5 unicast security policy:  The NR-PC5 unicast security policy field is coded according to figure 5.3.1.51 and table 5.3.1.51. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of NR-PC5 unicast security policy contents | | | | | | | | | octet o86+1  octet o86+2 | |
| V2X service identifiers | | | | | | | | | octet o86+3  octet o89 | |
| Security policy | | | | | | | | | octet o89+1  octet o89+2 | |
| Geographical areas | | | | | | | | | octet o89+3  octet o87 | |

Figure 5.3.1.51: NR-PC5 unicast security policy

Table 5.3.1.51: NR-PC5 unicast security policy

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Security policy: |
| The security policy field is coded according to figure 5.3.1.52 and table 5.3.1.52 |
|  |
| Geographical areas:  The geographical areas field is coded according to figure 5.3.1.18 and table 5.3.1.18.  If the length of NR-PC5 unicast security policy contents field indicates a length bigger than indicated in figure 5.3.1.51, the receiving entity shall ignore any superfluous octets located at the end of the NR-PC5 unicast security policy contents. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0  spare | Signalling ciphering policy | | | 0  spare | Signalling integrity protection policy | | | octet o89+1 |
| 0  spare | User plane ciphering policy | | | 0  spare | User plane integrity protection policy | | | octet o89+2 |

Figure 5.3.1.52: Security policy

Table 5.3.1.52: Security policy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Signalling integrity protection policy (octet o89+1, bit 1 to 3): | | | | |
| Bits | | | | |
| **3** | **2** | **1** |  |  |
| 0 | 0 | 0 |  | Signalling integrity protection not needed |
| 0 | 0 | 1 |  | Signalling integrity protection preferred |
| 0 | 1 | 0 |  | Signalling integrity protection required |
| 0 | 1 | 1 |  |  |
| to Spare | | | | |
| 1 | 1 | 0 |  |  |
| 1 | 1 | 1 |  | Reserved |
|  | | | | |
| If the UE receives a signalling integrity protection policy value that the UE does not understand, the UE shall interpret the value as 010 "Signalling integrity protection required".    Signalling ciphering policy (octet o89+1, bit 5 to 7): | | | | |
| Bits | | | | |
| **7** | **6** | **5** |  |  |
| 0 | 0 | 0 |  | Signalling ciphering not needed |
| 0 | 0 | 1 |  | Signalling ciphering preferred |
| 0 | 1 | 0 |  | Signalling ciphering required |
| 0 | 1 | 1 |  |  |
| to Spare | | | | |
| 1 | 1 | 0 |  |  |
| 1 | 1 | 1 |  | Reserved |
|  | | | | |
| If the UE receives a signalling ciphering policy value that the UE does not understand, the UE shall interpret the value as 010 "Signalling ciphering required".  Bit 4 and 8 of octet o89+1 are spare and shall be coded as zero. | | | | |
|  | | | | |
| User plane integrity protection policy (octet o89+2, bit 1 to 3): | | | | |
| Bits | | | | |
| **3** | **2** | **1** |  |  |
| 0 | 0 | 0 |  | User plane integrity protection not needed |
| 0 | 0 | 1 |  | User plane integrity protection preferred |
| 0 | 1 | 0 |  | User plane integrity protection required |
| 0 | 1 | 1 |  |  |
| to Spare | | | | |
| 1 | 1 | 0 |  |  |
| 1 | 1 | 1 |  | Reserved |
|  | | | | |
| If the UE receives a user plane integrity protection policy value that the UE does not understand, the UE shall interpret the value as 010 "User plane integrity protection required".  User plane ciphering policy (octet o89+2, bit 5 to 7): | | | | |
| Bits | | | | |
| **7** | **6** | **5** |  |  |
| 0 | 0 | 0 |  | User plane ciphering not needed |
| 0 | 0 | 1 |  | User plane ciphering preferred |
| 0 | 1 | 0 |  | User plane ciphering required |
| 0 | 1 | 1 |  |  |
| to Spare | | | | |
| 1 | 1 | 0 |  |  |
| 1 | 1 | 1 |  | Reserved |
|  | | | | |
| If the UE receives a user plane ciphering policy value that the UE does not understand, the UE shall interpret the value as 010 "User plane ciphering required".  Bit 4 and 8 of octet o89+2 are spare and shall be coded as zero. | | | | |
|  | | | | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of V2X service identifier to default mode of communication mapping rules contents | | | | | | | | | octet o84+1  octet o84+2 | |
| V2X service identifier to default mode of communication mapping rule 1 | | | | | | | | | octet (o84+3)\*  octet o90\* | |
| V2X service identifier to default mode of communication mapping rule 2 | | | | | | | | | octet (o90+1)\*  octet o91\* | |
| ... | | | | | | | | | octet (o91+1)\*  octet o92\* | |
| V2X service identifier to default mode of communication mapping rule n | | | | | | | | | octet (o92+1)\*  octet o85\* | |

Figure 5.3.1.53: V2X service identifier to default mode of communication mapping rules

Table 5.3.1.53: V2X service identifier to default mode of communication mapping rules

|  |
| --- |
| V2X service identifier to default mode of communication mapping rule:  The V2X service identifier to default mode of communication mapping rule field is coded according to figure 5.3.1.54 and table 5.3.1.54. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 |  | |
| Length of V2X service identifier to default mode of communication mapping rule contents | | | | | | | | | | | | | | | octet o90+1  octet o90+2 | |
| V2X service identifiers | | | | | | | | | | | | | | | octet o90+3  octet o91-1 | |
| 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | 0  Spare | | DMC | | | octet o91 | |

Figure 5.3.1.54: V2X service identifier to default mode of communication mapping rule

Table 5.3.1.54: V2X service identifier to default mode of communication mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Default mode of communication (DMC):  The DMC field indicates the default mode of communication.  Bits  **2 1**  0 0 unicast  0 1 groupcast  1 0 broadcast  1 1 spare  If the DMC field is set to a spare value, the receiving entity shall ignore the V2X service identifier to default mode of communication mapping rule. |
|  |
| If the length of V2X service identifier to default mode of communication mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.54, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to default mode of communication mapping rule contents. |
|  |

Table 5.3.1.54: V2X service identifier to default mode of communication mapping rule

|  |
| --- |
| V2X service identifiers:  The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14. |
|  |
| Default mode of communication (DMC):  The DMC field indicates the default mode of communication.  Bits  **2 1**  0 0 unicast  0 1 groupcast  1 0 broadcast  1 1 spare  If the DMC field is set to a spare value, the receiving entity shall ignore the V2X service identifier to default mode of communication mapping rule. |
|  |
| If the length of V2X service identifier to default mode of communication mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.54, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to default mode of communication mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of PC5 DRX configuration for broadcast and groupcast contents | | | | | | | | | octet o85+1  octet o85+2 | |
| PC5 QoS profile to PC5 DRX cycle mapping rules | | | | | | | | | octet o85+3  octet o103 | |
| Default PC5 DRX configuration | | | | | | | | | octet o103+1  octet o123 | |

Figure 5.3.1.55: PC5 DRX configuration for broadcast and groupcast

Table 5.3.1.55: PC5 DRX configuration for broadcast and groupcast

|  |
| --- |
| PC5 QoS profile to PC5 DRX cycle mapping rules:  The PC5 QoS profile to PC5 DRX cycle mapping rules field is coded according to figure 5.3.1.56 and table 5.3.1.56. |
|  |
| Default PC5 DRX configuration:  The default PC5 DRX configuration field is coded according to figure 5.3.1.58 and table 5.3.1.58. |
|  |
| If the length of PC5 DRX configuration for broadcast and groupcast contents field indicates a length bigger than indicated in figure 5.3.1.55, receiving entity shall ignore any superfluous octets located at the end of the PC5 DRX configuration for broadcast and groupcast contents. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of PC5 QoS profile to PC5 DRX cycle mapping rules contents | | | | | | | | | octet o85+3  octet o85+4 | |
| PC5 QoS profile to PC5 DRX cycle mapping rule 1 | | | | | | | | | octet (o85+5)\*  octet o124\* | |
| PC5 QoS profile to PC5 DRX cycle mapping rule 2 | | | | | | | | | octet (o124+1)\*  octet o125\* | |
| ... | | | | | | | | | octet (o125+1)\*  octet o126\* | |
| PC5 QoS profile to PC5 DRX cycle mapping rule n | | | | | | | | | octet (o126+1)\*  octet o123\* | |

Figure 5.3.1.56: PC5 QoS profile to PC5 DRX cycle mapping rules

Table 5.3.1.56: PC5 QoS profile to PC5 DRX cycle mapping rules

|  |
| --- |
| PC5 QoS profile to PC5 DRX cycle mapping rule:  The PC5 QoS profile to PC5 DRX cycle mapping rule field is coded according to figure 5.3.1.57 and table 5.3.1.57. |
|  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| Length of PC5 QoS profile to PC5 DRX cycle mapping rule contents | | | | | | | | | octet o124+1  octet o124+2 | |
| PC5 QoS profile | | | | | | | | | octet o124+3  octet o127 | |
| PC5 DRX cycle | | | | | | | | | octet oo127+1  octet o125 | |

Figure 5.3.1.57: PC5 QoS profile to PC5 DRX cycle mapping rule

Table 5.3.1.57: PC5 QoS profile to PC5 DRX cycle mapping rule

|  |
| --- |
| PC5 QoS profile:  The PC5 QoS profile field is coded according to figure 5.3.1.49 and table 5.3.1.49. |
|  |
| PC5 DRX cycle |
| The PC5 DRX cycle field is coded as *sl-DRX-GC-BC-Cycle-r17* in clause 6.3.5 of 3GPP TS 38.331 [12]. |
|  |
| If the length of PC5 QoS profile to PC5 DRX cycle mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.z, receiving entity shall ignore any superfluous octets located at the end of the PC5 QoS profile to PC5 DRX cycle mapping rule contents. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of default PC5 DRX configuration contents | | | | | | | | octet o103+1  octet o103+2 |
| Default PC5 DRX configuration contents | | | | | | | | octet o103+3  octet o123 |

Figure 5.3.1.58: Default PC5 DRX configuration

Table 5.3.1.58: Default PC5 DRX configuration

|  |
| --- |
| Default PC5 DRX configuration contents:  The default PC5 DRX configuration field is coded as *sl-DefaultDRX-GC-BC-r17* in clause 6.3.5 of 3GPP TS 38.331 [12]. |
|  |

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