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Modal verbs terminology

In the present document "shall", "shall not", "should", "should not", "may", "need not", "will", "will not", "can" and "cannot" are to be interpreted as described in clause 3.2 of the <u>ETSI Drafting Rules</u> (Verbal forms for the expression of provisions).

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Contents

Intelle	ectual Property Rights	2
	1 Notice	
Ü	al verbs terminology	
	word	
rorev	WOIQ	4
1	Scope	6
2	References	6
3	Definitions of terms and abbreviations	7
3.1	Terms	
3.2	Abbreviations	
4	Descriptions of UE policies for V2X	7
4.1	Overview	
4.2	UE policies for V2X communication over PC5	7
4.3	UE policies for V2X communication over Uu	7
5	Encoding of UE policies for V2X	8
5.1	Overview	
5.2	Encoding of V2X policy (V2XP) UE policy part	8
5.2.1	General	
5.3	Encoding of UE policies for V2X communication over PC5	9
5.3.1	General	9
5.4	Encoding of UE policies for V2X communication over Uu	54
5.4.1	General	54
Anne	ex A (informative): Change history	69
Histor	orv	70

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, certain modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

NOTE 1: The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

NOTE 2: The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

NOTE 3: The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

NOTE 4: The constructions "can" and "cannot" shall not to be used as substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency

the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an

agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the

behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency

the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

NOTE 5: The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document defines User Equipment (UE) policies that are used to configure the UE for Vehicle-to-Everything (V2X) services in 5G System (5GS) based on the architectural requirements defined in 3GPP TS 23.287 [2].

The protocol aspects for V2X services in 5G System (5GS) are described in 3GPP TS 24.587 [3].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

recease as in	to present document.
[1]	3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
[2]	3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".
[3]	3GPP TS 24.587: "Vehicle-to-Everything (V2X) services in 5G System (5GS); Stage 3".
[4]	3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".
[5]	ISO TS 17419 ITS-AID AssignedNumbers : http://standards.iso.org/iso/ts/17419/TS17419%20Assigned%20Numbers/TS17419_ITS-AID_AssignedNumbers.pdf
[6]	ITU-T Recommendation E.212: "The international identification plan for public networks and subscriptions", 2016-09-23.
[7]	3GPP TS 23.032: "Universal Geographical Area Description (GAD)".
[8]	IEEE 1609.3 2016: "IEEE Standard for Wireless Access in Vehicular Environments (WAVE) Networking Services".
[9]	ISO 29281-1 2013: "Intelligent transport systems Communication access for land mobiles (CALM) Non-IP networking Part 1: Fast networking & transport layer protocol (FNTP)".
[10]	ETSI EN 302 636-3 v1.2.1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network Architecture".
[11]	3GPP TS 24.526: "UE policies for 5G System (5GS); Stage 3".
[12]	3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".
[13]	3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception".
[14]	3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".
[15]	3GPP TS 38.101-2: "NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone".
[16]	3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

3 Definitions of terms and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

example: text used to clarify abstract rules by applying them literally.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.587 [3] apply:

E-UTRA-PC5

NR-PC5

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

V2X Vehicle-to-Everything

V2XP V2X Policy

4 Descriptions of UE policies for V2X

4.1 Overview

The V2XP in 5GS include:

- UE policies for V2X communication over PC5 (see clause 4.2);
- UE policies for V2X communication over Uu (see clause 4.3); and
- UE policies for interworking with EPC (see clause 4.4).

The V2XP can be delivered from the PCF to the UE. The UE policy delivery procedure is specified in 3GPP TS 24.501 [4].

4.2 UE policies for V2X communication over PC5

The UE policies for V2X communication over PC5 are defined in subclause 5.2.3 of 3GPP TS 24.587 [3].

NOTE: The generic description of the UE policies for V2X communication over PC5 are specified in 3GPP TS 23.287 [2].

4.3 UE policies for V2X communication over Uu

The UE policies for V2X communication over Uu are defined in subclause 5.2.4 of 3GPP TS 24.587 [3].

NOTE: The generic description of the UE policies for V2X communication over Uu are specified in 3GPP TS 23.287 [2].

5 Encoding of UE policies for V2X

5.1 Overview

The UE policies for V2X are provided to the UE in a V2X policy (V2XP) UE policy part using the UE policy delivery service as specified in 3GPP TS 24.501 [4] annex D.

5.2 Encoding of V2X policy (V2XP) UE policy part

5.2.1 General

The purpose of the V2XP is to indicate UE policies for V2X communication over PC5 and UE policies for V2X communication over Uu.

The V2XP is encoded as shown in figures 5.2.1.1 to 5.2.1.3 and table 5.2.1.1 according to the UE policy part top level format (see annex D of 3GPP TS 24.501 [4]).

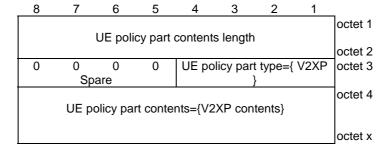


Figure 5.2.1.1: UE policy part when UE policy part type = {V2XP}

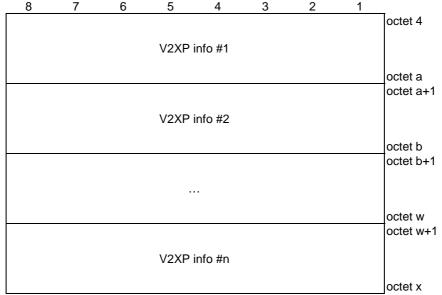


Figure 5.2.1.2: V2XP contents

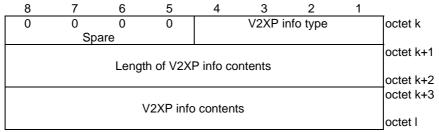


Figure 5.2.1.3: V2XP info

Table 5.2.1.1: V2XP information format

UE policy type field is set to '00000011' (=V2XP) as specified in 3GPP TS 24.501 [4] annex D.

UE policy part contents length field indicate the length of the V2XP contents in octets.

V2XP contents (octets 4 to x)

V2XP contents consist of 1 or more V2XP info(s) (see figure 5.2.1.2).

V2XP info type (bit 1 to 4 of octet k) shall be set according to the following: Bits

4 3 2 1

0 0 0 1 UE policies for V2X communication over PC5

0 0 1 0 UE policies for V2X communication over Uu

All other values are reserved.

Bits 8 to 5 of octet k are spare and shall be encoded as zero.

Length of V2XP info contents (octets k+1 to k+2) indicates the length of the V2XP info contents field.

V2XP info contents (octets k+3 to I) can be UE policies for V2X communication over PC5 (see clause 5.3.1) or UE policies for V2X communication over Uu (see clause 5.4.1).

5.3 Encoding of UE policies for V2X communication over PC5

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 ir	nfo type =	: {UE poli	cies for	octet k				
	Sp	are		V2X co	ommunic	ation ove	r PC5}					
								octet k+1				
		Lengt	h of V2X	P info co	ntents							
								octet k+2				
	octet k+3											
	octet k+7											
VOITE	VOLTO O O O O O O O											
VSITP	0	0	0	0	0	0	0	octet k+8				
MRI	Spare	Spare	Spare	Spare	Spare	Spare	Spare	octet k+9				
	ociel K+9											
	octet o1											
	Not s	served by	E-UTRA	and not	served b	v NR		octet o1+1				
		,				,		octet o2				
								octet (o2+1)*				
V2X	service id	lentifier to	PC5 RA	AT and To	profiles	mapping	rules	,				
								octet o3*				
								octet o3+1				
			Privacy	/ config								
								octet o4				
	1 (0) (505:	E 1.1TD 4	505		octet o4+1				
	V2X (communic	cation ov	er PC5 ir	E-UTRA	-PC5		actat oF				
								octet o5				
	\/2	Y commi	inication	over PC5	in ND D	C5		octet o5+1				
	٧Z	A COMMING	iiiicaliOII	Over PC:	III INK-P	Co		octet I				
								100:00:				

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 and Tx profiles mapping rules indicator (VSITPMRI) The VSITPMRI bit indicates presence of the V2X service identifier to PC5 RAT and Tx profiles mapping rules field.

Bit

8

V2X service identifier to PC5 RAT and Tx profiles mapping rules field is absent
 V2X service identifier to PC5 RAT 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 and Tx profiles mapping rules:

The V2X service identifier to PC5 RAT 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 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.

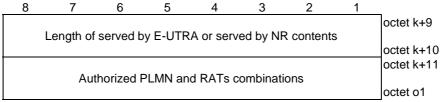


Figure 5.3.1.2: Served by E-UTRA or served by NR

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.

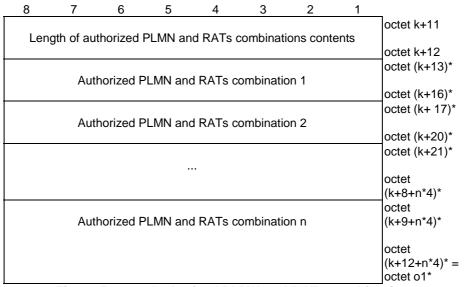


Figure 5.3.1.3: Authorized PLMN and RATs combinations

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.

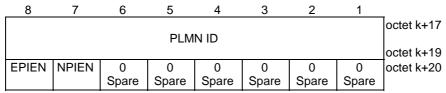


Figure 5.3.1.4: Authorized PLMN and RATs combination

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

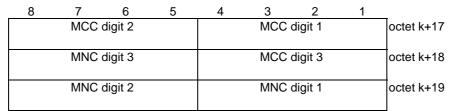


Figure 5.3.1.5: PLMN ID

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".

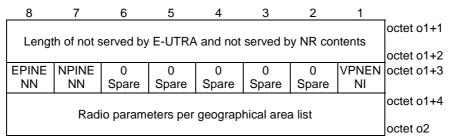


Figure 5.3.1.6: Not served by E-UTRA and not served by NR

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

Radio parameters per geographical area list:

The radio parameters per geographical area list field 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.

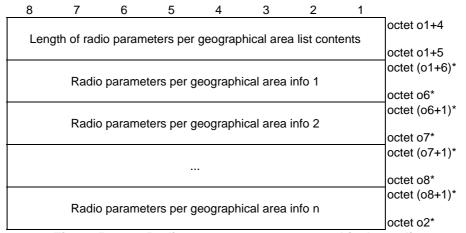


Figure 5.3.1.7: Radio parameters per geographical area list

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.

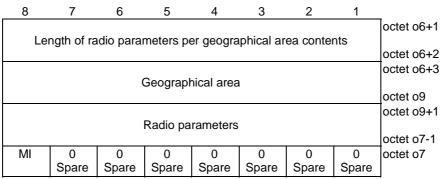


Figure 5.3.1.8: Radio parameters per geographical area info

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.

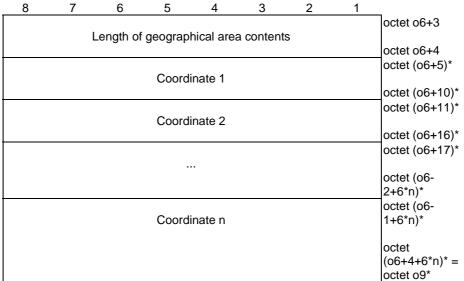


Figure 5.3.1.9: Geographical area

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.

octet o7-1

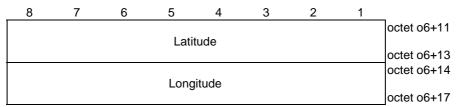


Figure 5.3.1.10: Coordinate area

Table 5.3.1.10: Coordinate area

Latitude:													
The latitu	The latitude field is coded according to subclause 6.1 of 3GPP TS 23.032 [7].												
_	Longitude:												
The long	gitude fiel	d is code	d accord	ing to sul	oclause 6	.1 of 3GF	PPTS2	23.032 [7].					
8	7	6	5	4	3	2	1						
		0	3	4	3		- 1	octet o9+1					
		Length of	radia na	ramatara	contonto			00161 09+1					
		Lenguroi	radio pa	liallicicis	COINCING	•		octet o9+2					
								octet 09+2					
		Dodi	o porom	otoro oon	tonto			00161 09+3					
		Raui	o parame	sters con	lenis								

Figure 5.3.1.11: Radio parameters

Table 5.3.1.11: Radio parameters

Radio parameters contents:
Radio parameters are defined as *SL-PreconfigurationNR* in clause 9.3 of 3GPP TS 38.331 [12].

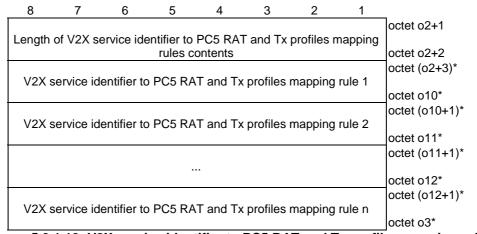


Figure 5.3.1.12: V2X service identifier to PC5 RAT and Tx profiles mapping rules

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

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

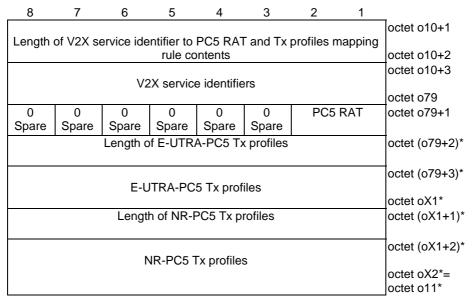


Figure 5.3.1.13: V2X service identifier to PC5 RAT and Tx profiles mapping rule

Table 5.3.1.13: V2X service identifier to PC5 RAT and Tx profiles mapping rules

V2X service identifiers:

The V2X service identifiers field is coded according to figure 5.3.1.14 and table 5.3.1.14.

PC5 RAT:

The PC5 RAT field indicates a PC5 RAT.

Bits

2 1

0 0 E-UTRA-PC5

0 1 NR-PC5

All other values are spare.

If the PC5 RAT field is set to "E-UTRA-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 "NR-PC5", the length of NR-PC5 Tx profiles field and the NR-PC5 Tx profiles field are present otherwise the length of NR-PC5 Tx profiles field and the NR-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 and Tx profiles mapping rule.

E-UTRA-PC5 Tx profiles:

The E-UTRA-PC5 Tx profiles field is coded as *v2x-TxProfileList* in subclause 9.3.2 of 3GPP TS 36.331 [16].

NR-PC5 Tx profiles:

If the length of V2X service identifier to PC5 RAT 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 and Tx profiles mapping rule contents.

Editor's note: length and coding of NR-PC5 Tx profiles is FFS as it depends on RAN2 agreement of Tx profile for NR-PC5.

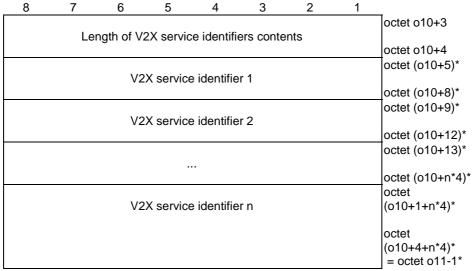


Figure 5.3.1.14: V2X service identifiers

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].

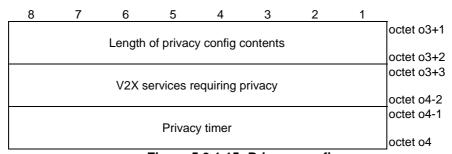


Figure 5.3.1.15: Privacy config

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.

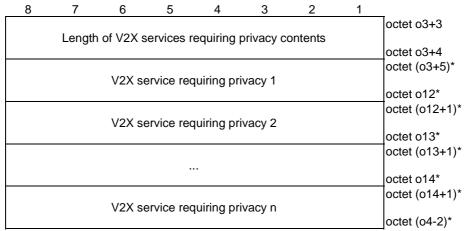


Figure 5.3.1.16: V2X services requiring privacy

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.

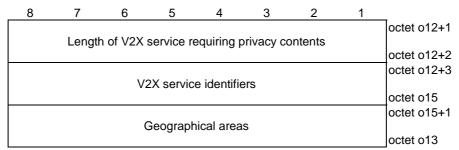


Figure 5.3.1.17: V2X service requiring privacy

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.

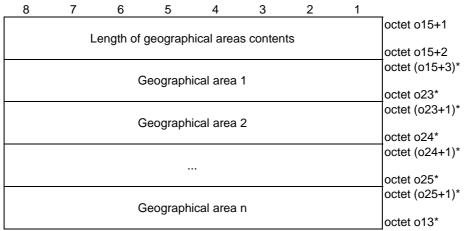


Figure 5.3.1.18: Geographical areas

Table 5.3.1.18: Geographical areas

Geographical area:
0
The geographical area field is coded according to figure 5.3.1.9 and table 5.3.1.9.

3	2	1											
			octet o4+1										
Length of V2X communication over PC5 in E-UTRA-PC5 contents													
•	•	•	octet o4+3										
Jaie	Spare	Spare	octet o4+4										
VOV convice identifier to destination layer 2 ID manning rules													
V2X service identifier to destination layer-2 ID mapping rules													
es			octet o26+1										
			octet o27										
			octet (o27+1)*										
ency r	napping	rules											
			octet o28*										
			octet (o28+1)*										
PPR			4-4 - 00*										
			octet o29*										
חו			octet (o29+1)*										
טו			octet (o29+3)* =										
			octet (029+3) =										
	UTRA 0 pare ID m	UTRA-PC5 co O O Spare ID mapping rules ency mapping i	UTRA-PC5 contents 0 0 0 pare Spare Spare ID mapping rules es ency mapping rules PPR										

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

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						
	() (0) (:		0.15		octet o4+4					
Lengti	Length of V2X service identifier to destination layer-2 ID mapping rules contents												
\ (0\)	V2X service identifier to destination layer-2 ID mapping rule 1												
VZX	service	dentifier	to destin	ation laye	er-2 ID ma	apping ru	lie 1	octet o19*					
\/2¥	V2X service identifier to destination layer-2 ID mapping rule 2												
VZX	SCIVICE	dentinei	io destin	alloniay	51-2 ID III	арріпу го	116 2	octet o20*					
								octet (o20+1)*					
			•					octet o21*					
1/01/			octet (o21+1)*										
V2X	service i	dentifier	to destin	ation laye	er-2 ID ma	apping ru	ııe n	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						
								octet o19+1					
Length of													
	octet o19+2												
		V	2X service	e identifi	ers								
								octet o22					
								octet o22+1					
		D	estinatior	layer-2	ID								
								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.

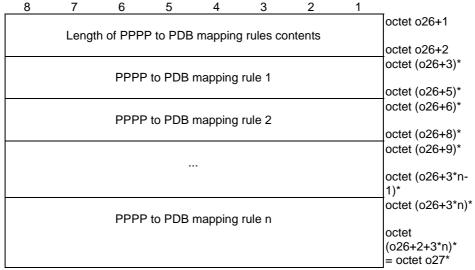


Figure 5.3.1.22: PPPP to PDB mapping rules

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.

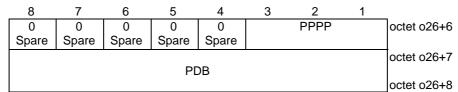


Figure 5.3.1.23: PPPP to PDB mapping rule

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							
								octet o27+1						
Length	Length of V2X service identifier to V2X E-UTRA frequency mapping													
	rules contents													
V2X s	V2X service identifier to V2X E-UTRA frequency mapping rule 1													
								octet o33*						
								octet (o33+1)*						
V2X s	service ic	lentifier t	o V2X E-	UTRA fre	equency n	napping	rule 2							
								octet o34*						
								octet (o34+1)*						
								octet o35*						
								octet (o35+1)*						
V2X s	service ic	lentifier t	o V2X E-	UTRA fre	equency n	napping	rule n							
								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.

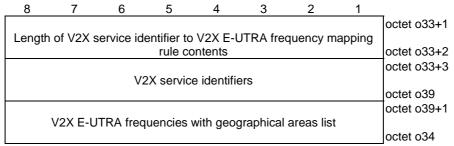


Figure 5.3.1.25: V2X service identifier to V2X E-UTRA frequency mapping rule

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.

3	7	6	5	4	3	2	1	
								octet o39+1
Length								
		octet o39+2						
		octet o39+3*						
V2	1							
								octet o40*
								octet (o40+1)*
V2	X E-UT	RA frequ	encies w	ith geogr	aphical aı	reas info	2	
								octet o41*
								octet (o41+1)*
								octet o42*
		octet (o42+1)*						
V2	X E-UT	RA frequ	encies w	ith geogr	aphical ai	reas info	n	
								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.

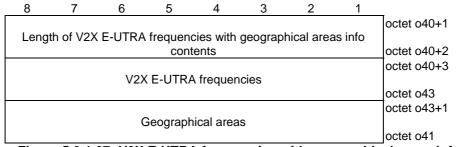


Figure 5.3.1.27: V2X E-UTRA frequencies with geographical areas info

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	<u></u>					
								octet o40+3					
	Len	gth of V2	X E-UTR	A frequei	ncies con	itents							
		octet (o40+5)*											
		octet (o40+7)*											
		octet (o40+8)*											
		octet (o40+10)*											
								octet (o40+11)*					
			-										
								octet (o40+4+(n-					
								1)*3)*					
		\(0\)	/ E LITD /	\ f				octet (o40+5+(n-					
		V2)	K E-UTRA	4 irequer	icy 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].

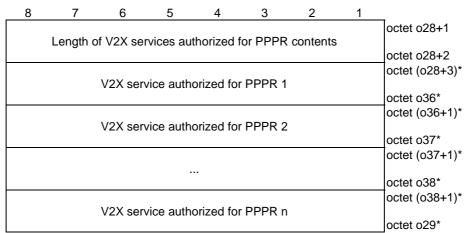


Figure 5.3.1.29: V2X services authorized for PPPR

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.

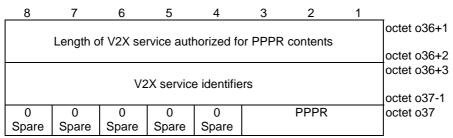


Figure 5.3.1.30: V2X service authorized for PPPR

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 1 000 PPPR value 1 0 0 1 PPPR value 2 0 1 0 PPPR value 3 0 1 1 PPPR value 4 100 PPPR value 5 101 PPPR value 6 110 PPPR value 7 111 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							
Lon	ath of \/O	V sammı	mination	over DC	F in ND F	OF contr	nto	octet o5+1						
Len	gth of V2	A COMM	iriication	over PC:	אוו ווור-ר	CO COITE	21115	octet o5+2						
DDL2I BI	VSINF MRI	0 Spare	0 Spare	0 Spare	0 Spare	0 Spare	0 Spare	octet o5+3						
V2	V2X service identifier to V2X NR frequency mapping rules													
	octet o45* octet o45+1													
V2X se	V2X service identifier to destination layer-2 ID for broadcast mapping													
12/100			rul	•		, , , , , , , , , , , , , , , , , , , ,	9	octet o46						
								octet o46+1						
V2X se	rvice iden	itifier to d		-	ID for gro	oupcast n	napping							
			rui	es				octet o47 octet o47+1						
V2X	V2X service identifier to destination layer-2 ID for unicast initial													
				apping ru				octet o48						
				_				octet o48+1						
V2)	(service	identifier	to PC5 C	oS para	meters m	apping ru	ules	octet o49						
								octet 049						
			AS confi	iguration										
								octet o50						
	D-4		4:	0 ID (octet (o50+1)*						
	Deta	ault desti	nation ia	yer-2 ID t	or broad	cast		octet (o50+3)*						
								octet o50+4						
		NR-PC	unicast	security	policies									
								octet oTBD1 =						
								octet I octet (o50+5)						
V2X s	V2X service identifier to default mode of communication mapping													
			rul					octet oX3 =						
								octet I						

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

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 laver-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.

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.

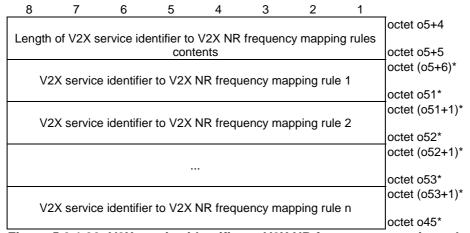


Figure 5.3.1.32: V2X service identifier to V2X NR frequency mapping rules

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			
								octet o51+1		
Length										
	octet o51+2									
	V2X service identifiers									
	octet o54									
	octet o54+1									
	V2X NR frequencies with geographical areas list									
								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.

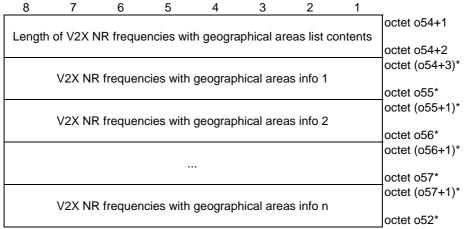


Figure 5.3.1.34: V2X NR frequencies with geographical areas list

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.

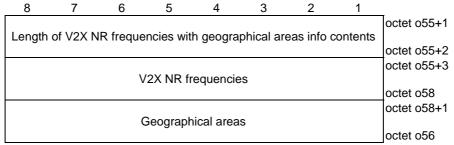


Figure 5.3.1.35: V2X NR frequencies with geographical areas info

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.

octet o61* octet (o61+1)*

octet o46*

V2X NR frequency:

V2X NR frequency 1 octet (o55+7 octet (o55+8 V2X NR frequency 2 octet (o55+1 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5	8	7	6	5	4	3	2	1	<u></u>
Octet 055+4 octet (055+5 V2X NR frequency 1 Octet (055+7 octet (055+8 V2X NR frequency 2 Octet (055+1 octet (055+1 octet (055+1 octet (055+4 1)*3)* octet (055+5									octet o55+3
V2X NR frequency 1 Octet (055+5 octet (055+7 octet (055+8 V2X NR frequency 2 Octet (055+1 octet (055+1 octet (055+1 octet (055+4 1)*3)* octet (055+5									
V2X NR frequency 1 octet (o55+7 octet (o55+8 V2X NR frequency 2 octet (o55+1 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5			-						
octet (o55+7 octet (o55+8 V2X NR frequency 2 octet (o55+1 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5			octet (o55+5)*						
Octet (o55+8 V2X NR frequency 2 octet (o55+1 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5			/ == =>+						
V2X NR frequency 2 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5	-								
octet (o55+1 octet (o55+1 octet (o55+4 1)*3)* octet (o55+5				(0) (NID (_			octet (o55+8)*
octet (o55+1 octet (o55+4 1)*3)* octet (o55+5			1 -1 /- 55 - 40)*						
octet (o55+4 1)*3)* octet (o55+5		<u> </u>							
octet (o55+4 1)*3)* octet (o55+5		octet (055+11)*							
1)*3)* octet (o55+5									
octet (o55+5									
									_ ′ ′
1/27 ND troduopov p 11/*2/*			,	/2V ND fr	oguonev	n			1)*3)*
V2X NR frequency n 1)*3)*			,	/ Z/X INIX II	equency	11			1) 3)
octet									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 is coded according to the NR-ARFCN value defined in 3GPP TS 38.101-1 [14] and 3GPP TS 38.101-2 [15]. 5 4 octet o45+1 Length of V2X service identifier to destination layer-2 ID for broadcast mapping rules contents octet o45+2 octet (o45+3)* V2X service identifier to destination layer-2 ID for broadcast mapping rule 1 octet o59* octet (o59+1)* V2X service identifier to destination layer-2 ID for broadcast mapping octet o60* rule 2 octet (o60+1)*

Figure 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 n

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.

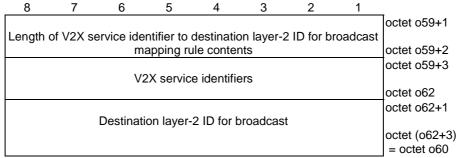


Figure 5.3.1.38: V2X service identifier to destination layer-2 ID for broadcast mapping rule

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.

octet o46+1 Length of V2X service identifier to destination layer-2 ID for groupcast mapping rules contents octet o46+2 octet (o46+3)* V2X service identifier to destination layer-2 ID for groupcast mapping rule 1 octet o63* octet (o63+1)* V2X service identifier to destination layer-2 ID for groupcast mapping octet o64* rule 2 octet (o64+1)* octet o65* octet (o65+1)* V2X service identifier to destination layer-2 ID for groupcast mapping rule n

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.

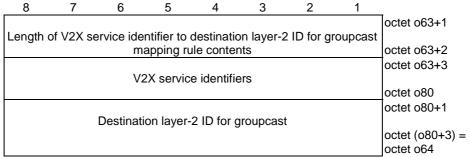


Figure 5.3.1.40: V2X service identifier to destination layer-2 ID for groupcast mapping rule

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					
								octet o47+1				
Length	Length of V2X service identifier to destination layer-2 ID for unicast											
	initial signalling mapping rules contents											
								octet (o47+3)*				
V2X	service i			,	r-2 ID for	unicast	initial					
		sigr	nalling ma	apping ru	ıle 1			octet o66*				
								octet (o66+1)*				
V2X												
	signalling mapping rule 2											
								octet o68*				
								octet (o68+1)*				
V2X	service i	dentifier t	to destina	ation laye	r-2 ID for	unicast	initial					
1		sigr	nalling ma	apping ru	ıle n			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.

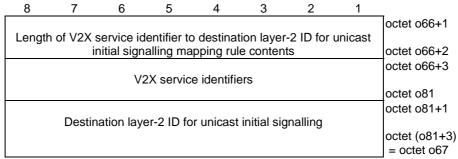


Figure 5.3.1.42: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule

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	
								octet o48+1
Length	octet o48+2							
			Tules o	ontents				octet (048+3)*
V2X	service	dentifier	to PC5 C	oS para	meters m	apping ru	ıle 1	,
								octet o70*
V2X	service	dentifier	to PC5 C	nS nara	meters m	anning ri	ıle 2	octet (o70+1)*
VZX	octet o71*							
								octet (o71+1)*
								ootot 070*
								octet o72* octet (o72+1)*
V2X	service	dentifier	to PC5 C	oS para	meters m	apping ru	ule n	(37211)
				•		0		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	_									
Longth	Length of V2X service identifier to PC5 QoS parameters mapping rule									
Lengin	octet o70+2									
	octet o70+3									
		V2	X servic	e identifie	ers					
GFBRI	MFBRI	PLAMB	RI	0	0	0	0	octet o74 octet o74+1		
GFBKI	IVIEDICI	RI	Ni	Spare	Spare	Spare	Spare	00000074+1		
	PQI									
	octet (o74+3)*									
	00161 (074+3)									
	octet (o74+5)*									
	octet (o74+6)*									
	octet (o74+8)*									
	octet (o74+9)*									
	octet (o74+11)*									
			Rai	nge				ootot (074 i 12)*		
								octet (o74+13)* = octet o71*		

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

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

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
87654321
00000000
           Reserved
00000001
  to
       Spare
00010100
00010101
           PQI 21
00010110
           PQI 22
00010111
           PQI 23
00011000
 to
      Spare
00110110
00110111
           PQI 55
00111000
           PQI 56
00111001
           PQI 57
00111010
           PQI 58
00111011
           PQI 59
00111100
 to
       Spare
01011001
01011010
           PQI 90
01011011
           PQI 91
01011100
 to
      Spare
01111111
10000000
 to
       Operator-specific PQIs
11111110
11111111
           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
87654321
00000000
                value is not used
00000001
                value is incremented in multiples of 1 Kbps
00000010
                value is incremented in multiples of 4 Kbps
00000011
                value is incremented in multiples of 16 Kbps
00000100
                value is incremented in multiples of 64 Kbps
                value is incremented in multiples of 256 Kbps
00000101
00000110
                value is incremented in multiples of 1 Mbps
00000111
                value is incremented in multiples of 4 Mbps
                value is incremented in multiples of 16 Mbps
00001000
00001001
                value is incremented in multiples of 64 Mbps
00001010
                value is incremented in multiples of 256 Mbps
00001011
                value is incremented in multiples of 1 Gbps
00001100
                value is incremented in multiples of 4 Gbps
                value is incremented in multiples of 16 Gbps
00001101
00001110
                value is incremented in multiples of 64 Gbps
00001111
                value is incremented in multiples of 256 Gbps
00010000
                value is incremented in multiples of 1 Tbps
                value is incremented in multiples of 4 Tbps
00010001
                value is incremented in multiples of 16 Tbps
00010010
00010011
                value is incremented in multiples of 64 Tbps
00010100
                value is incremented in multiples of 256 Tbps
                value is incremented in multiples of 1 Pbps
00010101
00010110
                value is incremented in multiples of 4 Pbps
                value is incremented in multiples of 16 Pbps
00010111
00011000
                value is incremented in multiples of 64 Pbps
00011001
                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
87654321
00000000
               value is not used
00000001
                value is incremented in multiples of 1 Kbps
00000010
                value is incremented in multiples of 4 Kbps
00000011
                value is incremented in multiples of 16 Kbps
00000100
                value is incremented in multiples of 64 Kbps
                value is incremented in multiples of 256 Kbps
00000101
00000110
                value is incremented in multiples of 1 Mbps
00000111
                value is incremented in multiples of 4 Mbps
                value is incremented in multiples of 16 Mbps
00001000
00001001
                value is incremented in multiples of 64 Mbps
00001010
                value is incremented in multiples of 256 Mbps
00001011
                value is incremented in multiples of 1 Gbps
00001100
                value is incremented in multiples of 4 Gbps
                value is incremented in multiples of 16 Gbps
00001101
00001110
                value is incremented in multiples of 64 Gbps
00001111
                value is incremented in multiples of 256 Gbps
00010000
                value is incremented in multiples of 1 Tbps
00010001
                value is incremented in multiples of 4 Tbps
                value is incremented in multiples of 16 Tbps
00010010
00010011
                value is incremented in multiples of 64 Tbps
00010100
                value is incremented in multiples of 256 Tbps
                value is incremented in multiples of 1 Pbps
00010101
00010110
                value is incremented in multiples of 4 Pbps
                value is incremented in multiples of 16 Pbps
00010111
00011000
                value is incremented in multiples of 64 Pbps
00011001
                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

87654321

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 0 1 value is incremented in multiples of 64 Mbps value is incremented in multiples of 256 Mbps

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 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.

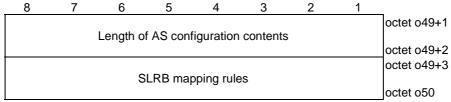


Figure 5.3.1.46a: AS configuration

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				
								octet o49+3			
	Length of SLRB mapping rules contents										
								octet (o49+5)*			
	SLRB mapping rule 1										
								octet o75*			
								octet (o75+1)*			
		SI	LRB map	ping rule	2						
								octet o76*			
								octet (o76+1)*			
								octet o77*			
								octet (o77+1)*			
		SI	LRB map	ping rule	n						
								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.

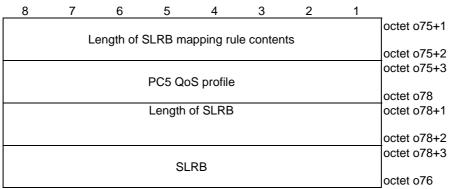


Figure 5.3.1.48: SLRB mapping rule

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.

SLRE

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				
								octet o75+3			
		Length of	f PC5 Qc	S profile	contents	3					
				1				octet o75+4			
GFBRI	MFBRI	PLAMB RI	RI	PLOI	AWI	MDBVI	0 Spare	octet o73+5			
			P	QI				octet o75+6			
		Gu	aranteed	flow bit r	ate			octet (o75+7)*			
	Guarantoou non six ratio										
		Ma	aximum f	low bit ra	ite			octet (o75+12)*			
		D = = 15=1 - =			1-144	_		octet (o75+13)*			
	ŀ	Per-link a	ggregate	maximu	m bit rate	Э		octet (o75+15)*			
								octet (075+7)*			
			Rai	nge				00101 (07317)			
								octet (o75+8)*			
0	0	0	0	0	Р	riority lev	el	octet (o75+9)*			
Spare	Spare	Spare	Spare	Spare							
								octet (o75+10)*			
		1	Averagin	g window	1						
	octet (o75+11)* octet (o75+12)*										
	Maximum data burst volume										
		IVIGAII	nam date	a Duiot VC	, and			octet (o75+13)* = octet o78*			

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

- O Guaranteed flow bit rate field is absent
- 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
- 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

- O 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
87654321
0000000
           Reserved
00000001
  to
       Spare
00010100
00010101
           PQI 21
00010110
           PQI 22
00010111
           PQI 23
00011000
 to
      Spare
00110110
00110111
           PQI 55
00111000
           PQI 56
00111001
           PQI 57
00111010
           PQI 58
00111011
           PQI 59
00111100
       Spare
 to
01011001
01011010
           PQI 90
01011011
           PQI 91
01011100
 to
      Spare
01111111
10000000
 to
       Operator-specific PQIs
11111110
11111111
           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
87654321
00000000
                value is not used
00000001
                value is incremented in multiples of 1 Kbps
00000010
                value is incremented in multiples of 4 Kbps
00000011
                value is incremented in multiples of 16 Kbps
00000100
                value is incremented in multiples of 64 Kbps
                value is incremented in multiples of 256 Kbps
00000101
00000110
                value is incremented in multiples of 1 Mbps
00000111
                value is incremented in multiples of 4 Mbps
                value is incremented in multiples of 16 Mbps
00001000
00001001
                value is incremented in multiples of 64 Mbps
00001010
                value is incremented in multiples of 256 Mbps
00001011
                value is incremented in multiples of 1 Gbps
00001100
                value is incremented in multiples of 4 Gbps
                value is incremented in multiples of 16 Gbps
00001101
00001110
                value is incremented in multiples of 64 Gbps
00001111
                value is incremented in multiples of 256 Gbps
00010000
                value is incremented in multiples of 1 Tbps
00010001
                value is incremented in multiples of 4 Tbps
                value is incremented in multiples of 16 Tbps
00010010
00010011
                value is incremented in multiples of 64 Tbps
00010100
                value is incremented in multiples of 256 Tbps
                value is incremented in multiples of 1 Pbps
00010101
00010110
                value is incremented in multiples of 4 Pbps
                value is incremented in multiples of 16 Pbps
00010111
00011000
                value is incremented in multiples of 64 Pbps
00011001
                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
87654321
00000000
               value is not used
00000001
                value is incremented in multiples of 1 Kbps
00000010
                value is incremented in multiples of 4 Kbps
00000011
                value is incremented in multiples of 16 Kbps
00000100
                value is incremented in multiples of 64 Kbps
                value is incremented in multiples of 256 Kbps
00000101
00000110
                value is incremented in multiples of 1 Mbps
00000111
                value is incremented in multiples of 4 Mbps
                value is incremented in multiples of 16 Mbps
00001000
00001001
                value is incremented in multiples of 64 Mbps
00001010
                value is incremented in multiples of 256 Mbps
00001011
                value is incremented in multiples of 1 Gbps
00001100
                value is incremented in multiples of 4 Gbps
                value is incremented in multiples of 16 Gbps
00001101
00001110
                value is incremented in multiples of 64 Gbps
00001111
                value is incremented in multiples of 256 Gbps
00010000
                value is incremented in multiples of 1 Tbps
00010001
                value is incremented in multiples of 4 Tbps
                value is incremented in multiples of 16 Tbps
00010010
00010011
                value is incremented in multiples of 64 Tbps
00010100
                value is incremented in multiples of 256 Tbps
                value is incremented in multiples of 1 Pbps
00010101
00010110
                value is incremented in multiples of 4 Pbps
                value is incremented in multiples of 16 Pbps
00010111
00011000
                value is incremented in multiples of 64 Pbps
00011001
                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 perlink aggregate maximum bit rate followed by two octets containing the value of the perlink aggregate maximum bit rate.

Unit of the per-link aggregate maximum bit rate:

```
87654321
00000000
               value is not used
00000001
               value is incremented in multiples of 1 Kbps
00000010
               value is incremented in multiples of 4 Kbps
00000011
               value is incremented in multiples of 16 Kbps
00000100
               value is incremented in multiples of 64 Kbps
00000101
               value is incremented in multiples of 256 Kbps
00000110
               value is incremented in multiples of 1 Mbps
00000111
               value is incremented in multiples of 4 Mbps
00001000
               value is incremented in multiples of 16 Mbps
00001001
               value is incremented in multiples of 64 Mbps
00001010
               value is incremented in multiples of 256 Mbps
00001011
               value is incremented in multiples of 1 Gbps
00001100
               value is incremented in multiples of 4 Gbps
00001101
               value is incremented in multiples of 16 Gbps
00001110
               value is incremented in multiples of 64 Gbps
00001111
               value is incremented in multiples of 256 Gbps
00010000
               value is incremented in multiples of 1 Tbps
00010001
               value is incremented in multiples of 4 Tbps
00010010
               value is incremented in multiples of 16 Tbps
00010011
               value is incremented in multiples of 64 Tbps
00010100
               value is incremented in multiples of 256 Tbps
00010101
               value is incremented in multiples of 1 Pbps
00010110
               value is incremented in multiples of 4 Pbps
00010111
               value is incremented in multiples of 16 Pbps
```

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 is incremented in multiples of 64 Pbps

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.

The range field indicates a binary encoded value of the range in meters.

Priority level:

00011000

00011001

The Priority level field contains a ProSe per-packet priority value.

Bits

3 2 1

000 PPPP value 1

0 0 1 PPPP value 2

0 1 0 PPPP value 3 0 1 1 PPPP value 4

100 PPPP value 5

101 PPPP value 6

110 PPPP value 7

111 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.

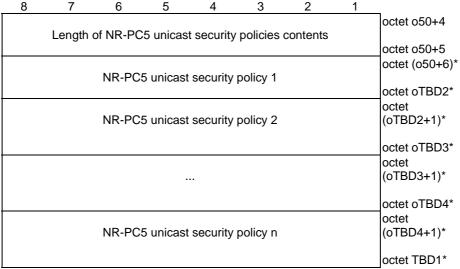


Figure 5.3.1.50: NR-PC5 unicast security policies

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			
								octet oTBD2+1		
	Length of NR-PC5 unicast security policy contents									
								octet oTBD2+2		
	V2X service identifiers									
								octet oTBD5+1		
	Security policy									
								octet oTBD5+2		
								octet oTBD5+3		
			Geograph	ical area	ıs					
			5 1					octet oTBD3		
•										

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	Signallin	g cipherir	ng policy	0	Sign	alling inte	grity	octet oTBD5+1
spare				spare	pro	tection po	olicy	
0	User	olane ciph	nering	0	User	plane int	egrity	octet oTBD5+2
spare		policy	-	spare	pro	tection po	olicy	

Figure 5.3.1.52: Security policy

Table 5.3.1.52: Security policy

```
Signalling integrity protection policy (octet oTBD5+1, bit 1 to 3):
Bits
3 2
   0
      0
              Signalling integrity protection not needed
0
0
  0
      1
              Signalling integrity protection preferred
              Signalling integrity protection required
0
   1
      0
0
   1
      1
          Spare
   to
1
   1
      0
   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".
Signaling ciphering policy (octet oTBD5+1, bit 5 to 7):
Bits
7 6
0 0
      0
              Signalling ciphering not needed
0 0 1
              Signalling ciphering preferred
              Signalling ciphering required
0
   1
      0
0
   1
      1
   to
          Spare
      0
1
   1
              Reserved
1
   1
      1
```

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 oTBD5+1 are spare and shall be coded as zero.

User plane integrity protection policy (octet oTBD5+2, bit 1 to 3):

```
Bits
3 2
0
   0
      0
             User plane integrity protection not needed
             User plane integrity protection preferred
0
   0
      1
      0
             User plane integrity protection required
n
   1
0
   1
      1
   to
          Spare
1
      0
   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 oTBD5+2, bit 5 to 7):

```
Bits
7 6
0 0
      0
             User plane ciphering not needed
0
  0
             User plane ciphering preferred
      1
0
   1
      0
             User plane ciphering required
0
   1
      1
         Spare
   to
      0
   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 oTBD5+2 are spare and shall be coded as zero.

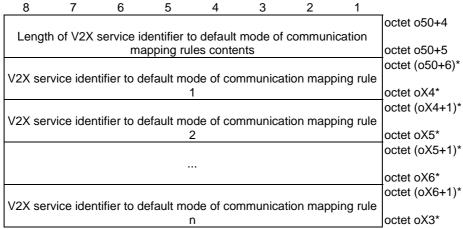


Figure 5.3.1.53: V2X service identifier to default mode of communication mapping rules

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.

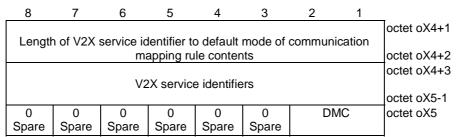


Figure 5.3.1.54: V2X service identifier to default mode of communication mapping rule

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 11 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.

5.4 Encoding of UE policies for V2X communication over Uu

5.4.1 General

The UE policies for V2X communication over Uu are coded as shown in figures 5.4.1.1 and table 5.4.1.1.

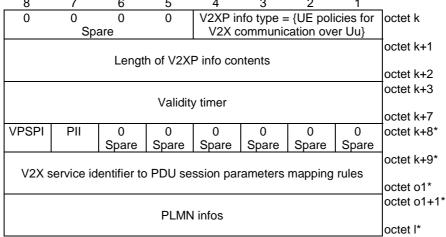


Figure 5.4.1.1: V2XP Info = {UE policies for V2X communication over Uu}

Table 5.4.1.1: V2XP Info = {UE policies for V2X communication over Uu}

V2XP info type (bit 1 to 4 of octet k) shall be set to "0010" (UE policies for V2X communication over Uu)

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 Uu. 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 PDU session parameters mapping rules indicator (VPSPI) The VPSPI bit indicates presence of the V2X service identifier to PDU session parameters mapping rules field.

Bit

8

- 0 V2X service identifier to PDU session parameters mapping rules field is absent
- 1 V2X service identifier to PDU session parameters mapping rules field is present

PLMN infos indicator (APII)

The PII bit indicates presence of the PLMN infos field.

Bit

7

- 0 PLMN infos field is absent
- 1 PLMN infos field is present

V2X service identifier to PDU session parameters mapping rules The V2X service identifier to PDU session parameters mapping rules field is coded according to figure 5.4.1.17 and table 5.4.1.17.

PLMN infos

The PLMN infos field is coded according to the figure 5.4.1.2 and table 5.4.1.2 and contains a list of PLMNs in which the UE is configured to use V2X communication over Uu.

If the length of V2XP info contents field indicates a length bigger than indicated in figure 5.4.1.1, receiving entity shall ignore any superfluous octets located at the end of the V2XP info contents.

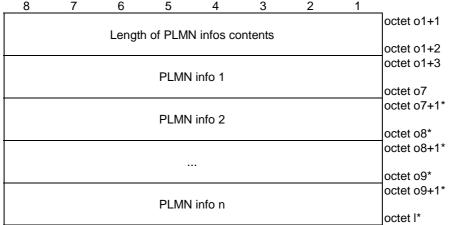


Figure 5.4.1.2: PLMN infos

Table 5.4.1.2: PLMN infos

PLMN info

The PLMN info field is coded according to figure 5.4.1.3 and table 5.4.1.3.

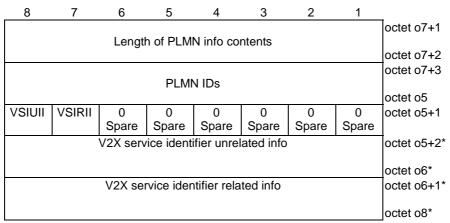


Figure 5.4.1.3: PLMN info

Table 5.4.1.3: PLMN info

PLMN IDs

The PLMN IDs field is coded according to figure 5.4.1.4 and table 5.4.1.4.

V2X service identifier unrelated info indicator (VSIUII)

The VSIUII bit indicates presence of the V2X service identifier unrelated info field. Bit

8

- 0 V2X service identifier unrelated info field is absent
- 1 V2X service identifier unrelated info field is present

V2X service identifier related info indicator (VSIRII)

The VSIRII bit indicates presence of the V2X service identifier related info field. Bit

7

- 0 V2X service identifier related info field is absent
- 1 V2X service identifier related info field is present

V2X service identifier unrelated info

The V2X service identifier unrelated info field is coded according to figure 5.4.1.6 and table 5.4.1.6, and contains information for V2X services not identified by V2X service identifiers, applicable in a PLMN indicated in the PLMN IDs field.

V2X service identifier related info

The V2X service identifier related info field is coded according to figure 5.4.1.9 and table 5.4.1.9, and contains information for V2X services identified by V2X service identifiers, applicable in a PLMN indicated in the PLMN IDs field.

If the length of PLMN info contents field indicates a length bigger than indicated in figure 5.4.1.3, receiving entity shall ignore any superfluous octets located at the end of the PLMN info contents.

8	7	6	5	4	3	2	1	
								octet o7+3
		Leng	th of PLM	IN IDs co	ntents			
								octet o7+4
								octet o7+5
			PLMN	N ID 1				
								octet o7+7
								octet o7+8*
			PLMN	N ID 2				
								octet o7+10*
								octet o7+11*
								octet
								o7+1+(3*n)*
	·							octet
			PLMN	N ID n				o7+2+(3*n)*
								octet
								o7+4+(3*n) =
								octet o5*

Figure 5.4.1.4: PLMN IDs

Table 5.4.1.4: PLMN IDs

PLMI	N ID
The I	PLMN ID field is coded according to figure 5.4.1.5 and table 5.4.1.5.

8	7	6	5	4	3	2	1	
	MCC	digit 2			MCC	digit 1		octet o7+8
	MNC	digit 3			MCC	digit 3		octet o7+9
	MNC	digit 2			MNC	digit 1		octet o7+10

Figure 5.4.1.5: PLMN ID

Table 5.4.1.5: 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".

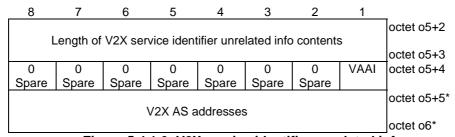


Figure 5.4.1.6: V2X service identifier unrelated info

Table 5.4.1.6: V2X service identifier unrelated info

V2X AS address indicator (VAAI)
The VAAI bit indicates presence of the V2X AS address field.
Bit

0 V2X AS address field is absent
1 V2X AS address field is present

V2X AS addresses
The V2X AS addresses field is coded according to figure 5.4.1.7 and table 5.4.1.7.

If the length of V2X service identifier unrelated info contents field indicates a length bigger than indicated in figure 5.4.1.6, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier unrelated info contents.

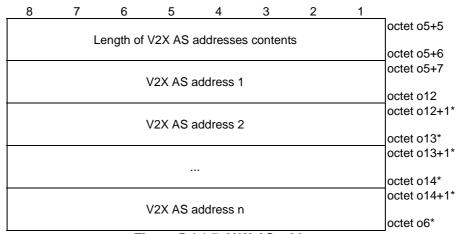


Figure 5.4.1.7: V2X AS addresses

Table 5.4.1.7: V2X AS addresses

V2X AS address

The V2X AS address field is coded according to figure 5.4.1.8 and table 5.4.1.8.

8	7	6	5	4	3	2	1				
								octet o12+1			
		Length o	f V2X AS	address	contents						
								octet o12+2			
I4AI	I6AI	FI	UPUTI	TPBTI	UPDTI	GAI	0	octet o12+3			
							Spare	octet o12+4*			
	ID-4 address										
	IPv4 address										
			iPv6 a	ddress				octet o12+23			
	FQDN										
			FQ	ווטו				octet o15*			
								octet 015			
		LIDP	port for u	ınlink trar	sport			00101 013+1			
		00.	po. (. o.)	ipiiiii tiai	юроп			octet o15+2*			
								octet o15+3*			
		TCP por	rt for bidir	ectional t	ransport						
		•						octet o15+4*			
								octet o15+5*			
		UDP p	ort for do	wnlink tra	ansport						
		·			•			octet o15+6*			
							-	octet o15+7*			
			Geograpi	hical area	a						
								octet o13*			

Figure 5.4.1.8: V2X AS address

Table 5.4.1.8: V2X AS address

IPv4 Address Indicator (I4AI) The I4AI bit indicates presence of the IPv4 address field. Bit IPv4 address field is absent IPv4 address field is present IPv6 Address Indicator (I6AI) The I6AI bit indicates presence of the IPv6 address field. Bit 0 IPv6 address field is absent 1 IPv6 address field is present FQDN Indicator (FI) The FI bit indicates presence of the FQDN field. Bit 0 FQDN field is absent 1 FQDN field is present UDP Port for Uplink Transport Indicator (UPUTI) The UPUI bit indicates presence of the UDP port for uplink transport field. Bit 0 UDP port for uplink transport field is absent 1 UDP port for uplink transport field is present TCP Port for Bidirectional Transport Indicator (TPBTI) The TPBTI bit indicates presence of the TCP port for bidirectional transport field. Bit 0 TCP port for bidirectional transport field is absent 1 TCP port for bidirectional transport field is present UDP Port for Downlink Transport Indicator (UPUTI) The UPUTI bit indicates presence of the UDP port for downlink transport field. Bit 0 UDP port for downlink transport field is absent UDP port for downlink transport field is present Geographical Area Indicator (GAI) The GAI bit indicates presence of the geographical area field. Bit 2 0 geographical area field is absent geographical area field is present IPv4 address (NOTE 2) The IPv4 address field contains an IPv4 address of a V2X application server. IPv6 address (NOTE 2) The IPv6 address field contains an IPv6 address of a V2X application server. FQDN (NOTE 2) The FQDN field contains an FQDN of a V2X application server. UDP port for uplink transport (NOTE 1) The UDP port for uplink transport field indicates binary coded UDP port to be used for uplink transport. TCP port for bidirectional transport (NOTE 1) The TCP port for bidirectional transport field indicates binary coded TCP port to be

used for bidirectional transport.

UDP port for downlink transport (NOTE 1)

The UDP port for downlink transport field indicates binary coded UDP port to be used for downlink transport.

Geographical area

The Geographical area field is coded according to figure 5.4.1.15 and table 5.4.1.15, and contains a list of points of a polygon.

If the length of V2X AS address contents field indicates a length bigger than indicated in figure 5.4.1.8, receiving entity shall ignore any superfluous octets located at the end of the V2X AS address contents.

NOTE 1: The UDP port for uplink transport field, the TCP port for bidirectional transport field, and the UDP port for downlink transport field are absent when the V2X AS address is present in the V2X service identifier unrelated info.

NOTE 2: One of the IPv4 address field, the IPv6 address field or the FQDN field is present.

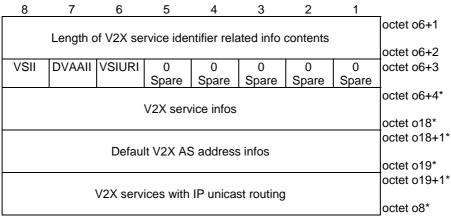


Figure 5.4.1.9: V2X service identifier related info

Table 5.4.1.9: V2X service identifier related info

V2X service infos indicator (VSII)
The VSII bit indicates presence of the V2X service infos field.
Bit
8
0 V2X service infos field is absent
1 V2X service infos field is present
Default V2X AS address infos indicator (DVAAII)
The AVSII bit indicates presence of the default V2X AS address infos field.
Bit

7

- 0 Default V2X AS address infos field is absent
- 1 Default V2X AS address infos field is present

V2X services with IP unicast routing indicator (VSIURI)

The VSIIURI bit indicates presence of the V2X services with IP unicast routing field. Bit

6

- 0 V2X services with IP unicast routing field is absent
- 1 V2X services with IP unicast routing field is present

V2X service infos

The V2X service infos field is coded according to figure 5.4.1.10 and table 5.4.1.10 and indicates a list of V2X service identifier to V2X application server address mapping rules

Default V2X AS address infos

The default V2X AS address infos field is coded according to figure 5.4.1.13 and table 5.4.1.13 and indicates default V2X application server addresses for the unicast V2X communication over Uu.

V2X services with IP unicast routing

The V2X services with IP unicast routing field is coded as V2X service identifiers according figure 5.4.1.12 and table 5.4.1.12 and indicates V2X service identifiers of the V2X services for V2X communication over Uu using existing unicast routing.

If the length of V2X service identifier related info contents field indicates a length bigger than indicated in figure 5.4.1.9, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier related info contents.

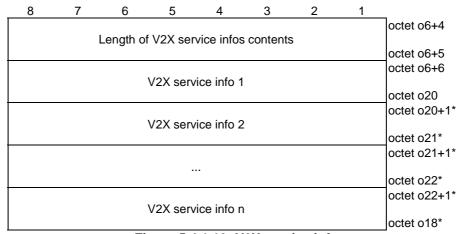


Figure 5.4.1.10: V2X service infos

Table 5.4.1.10: V2X service infos

V2X service info The V2X service info field is coded according to figure 5.4.1.11 and table 5.4.1.11. 5 octet o20+1 Length of V2X service info contents octet o20+2 octet o20+3 V2X service identifiers octet o23 VAAI 0 0 0 0 octet o23+1 Spare Spare Sp<u>are</u> Spare Spare Spare Spare octet o23+2* V2X AS addresses octet o21*

Figure 5.4.1.11: V2X service info

Table 5.4.1.11: V2X service info

V2X service identifiers

The V2X service identifiers field is coded according to figure 5.4.1.12 and table 5.4.1.12 and indicates a list of V2X service identifier.

V2X AS addresses indicator (VAAI)

The AVSII bit indicates presence of the V2X AS addresses field. Bit

8

0 V2X AS addresses field is absent

1 V2X AS addresses field is present

V2X AS addresses

The V2X AS addresses field is coded according to figure 5.4.1.7 and table 5.4.1.7 and indicates V2X application server addresses for V2X services identified by the V2X service identifiers indicated in the V2X service identifiers field.

If the length of V2X service info contents field indicates a length bigger than indicated in figure 5.4.1.11, receiving entity shall ignore any superfluous octets located at the end of the V2X service info contents.

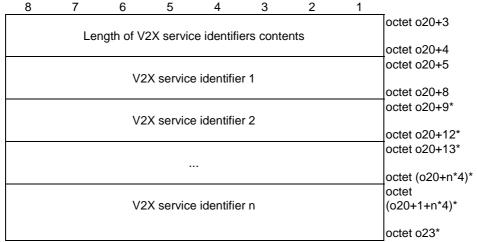


Figure 5.4.1.12: V2X service identifiers

Table 5.4.1.12: 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].

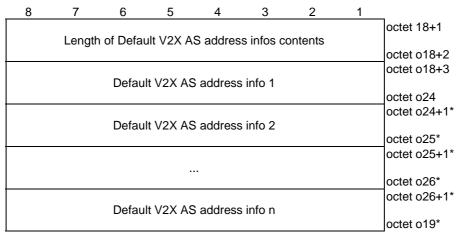


Figure 5.4.1.13: Default V2X AS address infos

Table 5.4.1.13: Default V2X AS address infos

Default V2X AS address info
The default V2X AS address info field is coded according to figure 5.4.1.14 and table 5.4.1.14.

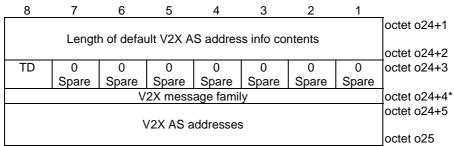


Figure 5.4.1.14: Default V2X AS address info

Table 5.4.1.14: Default V2X AS address info

Type of Data (TD) The type of data bit indicates type of data. 8 0 non-IP 1 IP If the type of data bit is set to "non-IP", then the V2X message family field is present otherwise the V2X message family field is absent. V2X message family Bits 87654321 00000001 IEEE 1609, see IEEE 1609.3 [8] 0 0 0 0 0 0 1 0 ISO, see ISO 29281-1 [9] 0 0 0 0 0 0 1 1 ETSI-ITS, see ETSI EN 302 636-3 [10] All other values are spare. V2X AS addresses The V2X AS addresses field is coded according to figure 5.4.1.7 and table 5.4.1.7 and indicates V2X application server addresses for type of data identified by the TD bit and the V2X message family (if the type of data is non-IP). If the length of default V2X AS address info contents field indicates a length bigger than indicated in figure 5.4.1.14, receiving entity shall ignore any superfluous octets located

at the end of the default V2X AS address info contents.

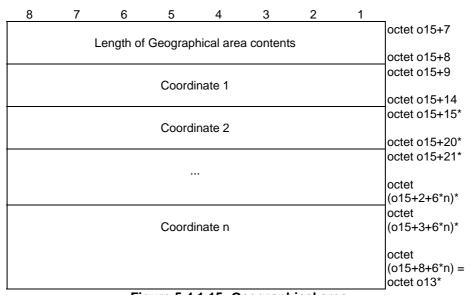


Figure 5.4.1.15: Geographical area

Table 5.4.1.15: Geographical area

Coordinate The coordinate field is coded according to figure 5.4.1.16 and table 5.4.1.16.								
8	7	6	5	4	3	2	1	
	octet o27+1							
	octet o27+3							
	octet o27+4							
			Long	jitude				octet o27+6

Figure 5.4.1.16: Coordinate area

Table 5.4.1.16: Coordinate area

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

8	7	6	5	4	3	2	1	_		
								octet k+9		
Length of	Length of V2X service identifier to PDU session parameters mapping									
			rules c	ontents				octet k+10		
V2X s	V2X service identifier to PDU session parameters mapping rule 1									
								octet o2		
								octet o2+1*		
V2X s	ervice id	entifier to	PDU se	ssion para	ameters	mapping	rule 2			
								octet o3*		
								octet o3+1*		
								octet o4*		
								octet o4+1*		
V2X s	ervice id	entifier to	PDU se	ssion para	ameters	mapping	rule n			
								octet o1*		

Figure 5.4.1.17: V2X service identifier to PDU session parameters mapping rules

Table 5.4.1.17: V2X service identifier to PDU session parameters mapping rules

V2X service identifier to PDU session parameters mapping rule The V2X service identifier to PDU session parameters mapping rule field is coded according to figure 5.4.1.18 and table 5.4.1.18.

	octet o2+1
Length of V2X service identifier to PDU session parameters mapping	
rule contents	octet o2+2
	octet o2+3
V2X service identifiers	
	octet o28
	octet o28+1
Length of route selection descriptor list	
	octet o28+2
	octet (o28+3)*
Route selection descriptor list	,
·	octet o3*

Figure 5.4.1.18: V2X service identifier to PDU session parameters mapping rule

Table 5.4.1.18: V2X service identifier to PDU session parameters mapping rule

V2X service identifiers

The V2X service identifiers field is coded according to figure 5.4.1.12 and table 5.4.1.12 and indicates a list of V2X service identifier.

Route selection descriptor list

The route selection descriptor list field is coded according to 3GPP TS 24.526 [11] subclause 5.2. Any route selection descriptor component with the route selection descriptor component type identifier other than "SSC mode type", "S-NSSAI type", "DNN type", and "PDU session type" is ignored. The route selection descriptor list field indicates the PDU session parameters to be used for a V2X service identified by a V2X service identifier in the V2X service identifiers field.

If the length of V2X service identifier to PDU session parameters mapping rule contents field indicates a length bigger than indicated in figure 5.4.1.18, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to PDU session parameters mapping rule contents.

Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2019-05	CT1#117	C1-193478				Draft skeleton provided in C1-193478 by the rapporteur.	0.0.0
2019-05	CT1#117					Implementing the following p-CR agreed by CT1: C1-193479	0.1.0
2019-09	CT1#119					Implementing the following p-CRs agreed by CT1: C1-194553, C1-194847, C1-194849 and C1-194850	0.2.0
2019-10	CT1#120					Implementing the following p-CRs agreed by CT1: C1-196493	0.3.0
2019-12	CT#86	CP-193157				Presentation for information at TSG CT	1.0.0
2019-12	CT#86	CP-193290				A title corrected	1.0.1
2020-03	CT1#122- e					Implementing the following p-CR agreed by CT1: C1-200652, C1-200933 and C1-200936	1.1.0
2020-03	CT-87e	CP-200174				Presentation for approval at TSG CT	2.0.0
2020-03	CT-87e					Version 16.0.0 created after approval	16.0.0
2020-06	CT-88e	CP-201116	0001	2	В	NR PC5 unicast security policy provisioning	16.1.0
2020-06	CT-88e	CP-201116	0002	1	F	Clarifications on the V2X policies regarding QoS	16.1.0
2020-06	CT-88e	CP-201116	0003	1	В	Update to the V2X policies regarding RAN parameters	16.1.0
2020-06	CT-88e	CP-201116	0004	1	С	Correction of coding of configuration of PC5 RAT selection and Tx profiles	16.1.0
2020-06	CT-88e	CP-201116	0005	1	F	Correction of coding of configuration of default mode of communication	16.1.0
2020-06	CT-88e	CP-201116	0006	1	F	Correction of PC5 RAT names	16.1.0
2020-06	CT-88e	CP-201116	0007	1	F	Correction of coding of PC5 QoS mapping configuration	16.1.0
2020-06	CT-88e	CP-201116	8000	1	F	Correction in coding of PC5 QoS profile	16.1.0
2020-06	CT-88e	CP-201116	0009	1	F	Correction of coding of validity timers	16.1.0
2020-06	CT-88e	CP-201116	0010	1	F	Remove IP address from privacy timer	16.1.0

History

Document history								
V16.1.0	August 2020	Publication						