ETSITS 124 588 V19.0.0 (2025-10)



5G; Vehicle-to-Everything (V2X) services in 5G System (5GS); User Equipment (UE) policies; Stage 3 (3GPP TS 24.588 version 19.0.0 Release 19)



Reference RTS/TSGC-0124588vj00 Keywords 5G

ETSI

650 Route des Lucioles F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B Association à but non lucratif enregistrée à la Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the ETSI Search & Browse Standards application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on ETSI deliver repository.

Users should be aware that the present document may be revised or have its status changed, this information is available in the Milestones listing.

If you find errors in the present document, please send your comments to the relevant service listed under <u>Committee Support Staff</u>.

If you find a security vulnerability in the present document, please report it through our Coordinated Vulnerability Disclosure (CVD) program.

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2025. All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for ETSI members and non-members, and can be found in ETSI SR 000 314: "Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards", which is available from the ETSI Secretariat. Latest updates are available on the ETSI IPR online database.

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECTTM, **PLUGTESTS**TM, **UMTS**TM and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP**TM, **LTE**TM and **5G**TM logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M**TM logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM**[®] and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found at 3GPP to ETSI numbering cross-referencing.

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).

"must" and "must not" are NOT allowed in ETSI deliverables except when used in direct citation.

Contents

Intelle	lectual Property Rights	2
Legal	l Notice	2
Moda	al verbs terminology	2
	word	
1	Scope	
2	References	
3	Definitions of terms and abbreviations	7
3.1 3.2	Terms	7
4	Descriptions of UE policies for V2X	
4.1 4.2	Overview	
4.3	UE policies for V2X communication over Uu	
5	Encoding of UE policies for V2X	8
5.1	Overview	
5.2	Encoding of V2X policy (V2XP) UE policy part	
5.2.1 5.3	General Encoding of UE policies for V2X communication over PC5	
5.3.1	General	
5.4	Encoding of UE policies for V2X communication over Uu	
5.4.1	General	
Anne	ex A (informative): Change history	83
Histo		84

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:

Version x.y.z

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*.

Reieuse us in	te 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".

[1'	71	3GPP TS 23.003:	"Numbering	addressing an	d identification"
1 -	' I	3011 15 23.003.	1 tuillocilli,	addicooning an	a lacimilication .

[18] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[19] 3GPP TS 24.502: "Access to the 3GPP 5G Core Network (5GCN) via non-3GPP access

networks".

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

V2X service identifier

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].

FSA Frequency Selection Area MBS Multicast/Broadcast Services

NID Network Identifier

NR CGI New Radio Cell Global Identity
SNPN Stand-alone Non-Public Network
TMGI Temporary Mobile Group Identity

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); and
- UE policies for V2X communication over Uu (see clause 4.3).

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 clause 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 clause 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]).

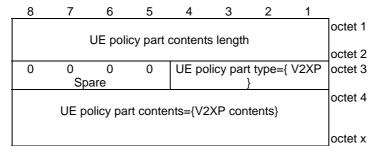


Figure 5.2.1.1: UE policy part when UE policy part type = {V2XP}

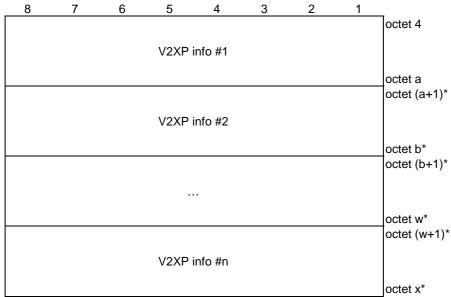


Figure 5.2.1.2: V2XP contents

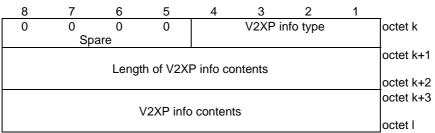


Figure 5.2.1.3: V2XP info

Table 5.2.1.1: V2XP information format

UE policy part type field is set to '0011' (=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.

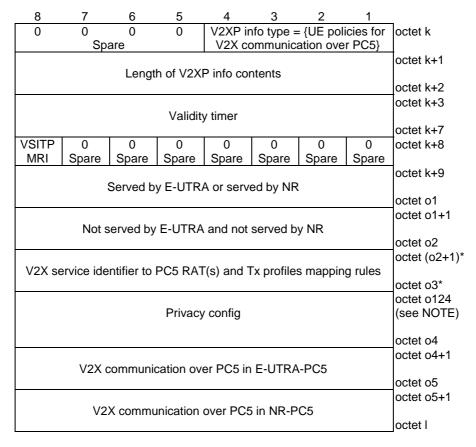
Length of V2XP info contents (octets k+1 to k+2) indicates the length of the V2XP info contents field.

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.



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

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

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

V2XP info type (bit 1 to 4 of octet k) shall be set to "0001" (UE policies for V2X communication over PC5)

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

Validity timer:

The validity timer field provides the expiration time of validity of the UE policies for V2X communication over PC5. The validity timer field is a binary coded representation of a UTC time, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds).

V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules indicator (VSITPMRI)

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

Bit

8

- 0 V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is absent
- 1 V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is present

Served by E-UTRA or served by NR:

The served by E-UTRA or served by NR field is coded according to figure 5.3.1.2 and table 5.3.1.2, and contains configuration parameters for V2X communication over PC5 when the UE is served by E-UTRA or served by NR.

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

The not served by E-UTRA and not served by NR field is coded according to figure 5.3.1.6 and table 5.3.1.6, and contains configuration parameters for V2X communication over PC5 when the UE is not served by E-UTRA or NR.

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

The V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules field is coded according to figure 5.3.1.12 and table 5.3.1.12, and contains a list of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rules.

Privacy config:

The Privacy config field is coded according to figure 5.3.1.15 and table 5.3.1.15, and contains configuration parameters for privacy configuration.

V2X communication over PC5 in E-UTRA-PC5:

The V2X communication over PC5 in E-UTRA-PC5 field is coded according to figure 5.3.1.19 and table 5.3.1.19, and contains configuration parameters for V2X communication over PC5 in E-UTRA-PC5.

V2X communication over PC5 in NR-PC5:

The V2X communication over PC5 in NR-PC5 field is coded according to figure 5.3.1.31 and table 5.3.1.31, and contains configuration parameters for V2X communication over PC5 in NR-PC5.

If the length of V2XP info contents field indicates a length bigger than indicated in figure 5.3.1.1, receiving entity shall ignore any superfluous octets located at the end of the V2XP info contents.

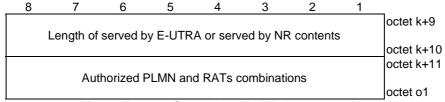


Figure 5.3.1.2: Served by E-UTRA or served by NR

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.

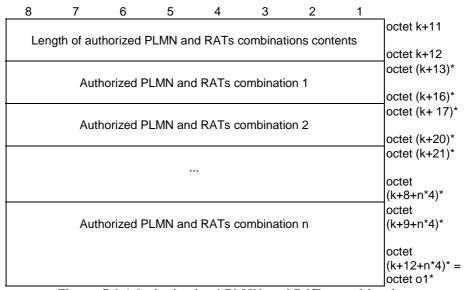


Figure 5.3.1.3: Authorized PLMN and RATs combinations

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.

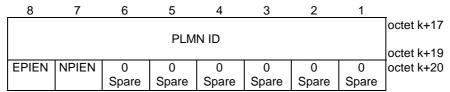


Figure 5.3.1.4: Authorized PLMN and RATs combination

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 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

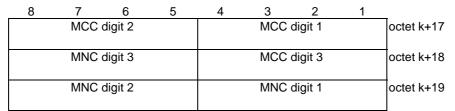


Figure 5.3.1.5: PLMN ID

Table 5.3.1.5: PLMN ID

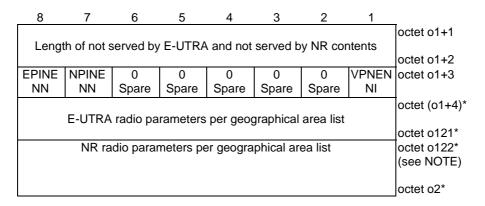
Mobile country code (MCC):

Authorized

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".



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

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

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

V2X communication over PC5 when not served by E-UTRA and not served by NR indicator (VPNENNI):

The VPNENNI bit indicates whether the UE is authorized to use V2X communication over PC5 when not served by E-UTRA and not served by NR. Bit

1

- 0 Not authorized
- 1 Authorized

E-UTRA-PC5 indicator when not served by E-UTRA and not served by NR (PEINENN): The EPINENN bit indicates whether the UE is authorized to use V2X communication over E-UTRA-PC5 when not served by E-UTRA and not served by NR. Bit

8

- 0 Not authorized
- 1 Authorized

NR-PC5 indicator when not served by E-UTRA and not served by NR (NPINENN): The NPINENN bit indicates whether the UE is authorized to use V2X communication over NR-PC5 when not served by E-UTRA and not served by NR. Bit

7

- 0 Not authorized
- 1 Authorized

E-UTRA radio parameters per geographical area list:

If EPINENN bit is set to "Authorized", the E-UTRA radio parameters per geographical area list field is present otherwise the E-UTRA radio parameters per geographical area list field is absent. It is coded according to figure 5.3.1.7 and table 5.3.1.7.

NR radio parameters per geographical area list:

If NPINENN bit is set to "Authorized", the NR radio parameters per geographical area list field is present otherwise the NR radio parameters per geographical area list field is absent. It is coded according to figure 5.3.1.7 and table 5.3.1.7.

If the length of not served by E-UTRA and not served by NR contents field indicates a length bigger than indicated in figure 5.3.1.6, receiving entity shall ignore any superfluous octets located at the end of the not served by E-UTRA and not served by NR contents.

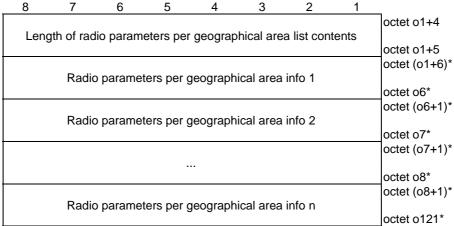


Figure 5.3.1.7: Radio parameters per geographical area list

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.

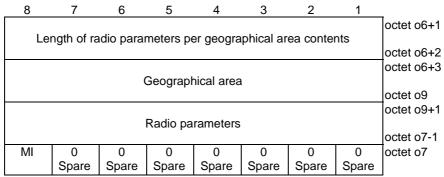


Figure 5.3.1.8: Radio parameters per geographical area info

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.

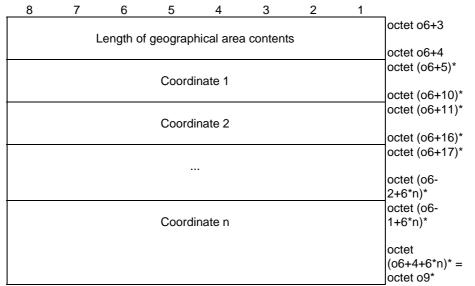


Figure 5.3.1.9: Geographical area

Coordina The coo		eld is cod	led accor	rding to fig	gure 5.3.	1.10 and	table 5.	3.1.10.		
8	7	6	5	4	3	2	1	octet o6+11		
				itude				octet o6+13 octet o6+14		
octet o6+16 Figure 5.3.1.10: Coordinate area										
		Т	able 5.	3.1.10: C	Coordina	ate area	1			
ongitud	le:			g to claus						
8	7	6	5		3		1	octet o9+1		
				eters con				octet o9+2 octet o9+3		
				3.1.11: R		ramete	rs	octet o7-1		
		Ta	able 5.3	.1.11: Ra	adio pa	rameter	s			
	RA radio 2 <i>X-Prec</i> o	Infiguration	ers per g on in clau er geogra	use 9 of 3 aphical are	GPP TS ea list, ra	36.331 [′ dio parar	[6].	ters are defined are defined as <i>SL</i>		
n NR ra		VR in clau	356 9.5 0							
n NR ra		VR in clau	5	4	3	2	1	7		
n NR ra Preconfi 8	gurationI 7	6 X service	5 identifie		RAT(s) a		-	octet o2+1 octet o2+2 octet (o2+3)*		

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

octet o11* octet (o11+1)*

octet o12* octet (o12+1)*

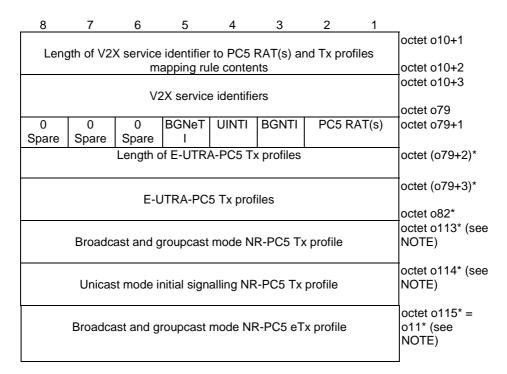
octet o3*

V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule 2

V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule n

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

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



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

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

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

V2X service identifiers:

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

Unicast mode initial signalling NR-PC5 Tx profile indicator (UINTI)

The UINTI bit indicates presence of the unicast mode NR-PC5 Tx profile field. Bit

4

0 unicast mode initial signalling NR-PC5 Tx profile field is absent

1 unicast mode initial signalling NR-PC5 Tx profile field is present

Broadcast and groupcast mode NR-PC5 Tx profile indicator (BGNTI)

The BGNTI bit indicates presence of the broadcast and groupcast mode NR-PC5 Tx profile field.

Bit

3

0 broadcast and groupcast mode NR-PC5 Tx profile field is absent

1 broadcast and groupcast mode NR-PC5 Tx profile field is present

Broadcast and groupcast mode NR-PC5 eTx profile indicator (BGNeTI)

The BGNeTI bit indicates presence of the broadcast and groupcast mode NR-PC5 eTx profile field.

Bit

5

0 broadcast and groupcast mode NR-PC5 eTx profile field is absent

1 broadcast and groupcast mode NR-PC5 eTx profile field is present

If the PC5 RAT field is set to "E-UTRA-PC5", then the BGNTI bit is set to "broadcast and groupcast mode NR-PC5 Tx profile field is absent" and the UINTI bit is set to "unicast mode initial signalling NR-PC5 Tx profile field is absent" and the BGNeTI bit is set to "broadcast and groupcast mode NR-PC5 eTx profile field is absent". If the PC5 RAT field is set to "NR-PC5" or "Both E-UTRA-PC5 and NR-PC5", then the BGNTI bit can be set to "broadcast and groupcast mode NR-PC5 Tx profile field is absent" or "broadcast and groupcast mode NR-PC5 Tx profile field is present", and the UINTI bit can be set to "unicast mode initial signalling NR-PC5 Tx profile field is absent" or "unicast mode initial signalling NR-PC5 Tx profile field is present", and the BGNeTI bit can be set to "broadcast and groupcast mode NR-PC5 eTx profile field is absent" or "broadcast and groupcast mode NR-PC5 eTx profile field is present".

PC5 RAT(s):

The PC5 RAT(s) field indicates the PC5 RAT(s) mapped to the V2X service identifiers. **Bits**

2 1

0 0 E-UTRA-PC5

0 1 NR-PC5

1 0 Both E-UTRA-PC5 and NR-PC5

All other values are spare.

If the PC5 RAT field is set to "E-UTRA-PC5" or "Both E-UTRA-PC5 and NR-PC5", the length of E-UTRA-PC5 Tx profiles field and the E-UTRA-PC5 Tx profiles field are present otherwise the length of E-UTRA-PC5 Tx profiles field and the E-UTRA-PC5 Tx profiles field are absent. If the PC5 RAT field is set to a spare value, the receiving entity shall ignore the V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule.

E-UTRA-PC5 Tx profiles:

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

Broadcast and groupcast mode NR-PC5 Tx profile field:

The broadcast and groupcast mode NR-PC5 Tx profile field indicates NR Tx profile corresponding to the NR-PC5 for broadcast mode V2X communication over PC5 and groupcast mode V2X communication over PC5.

The broadcast and groupcast mode NR-PC5 Tx profile field is coded as *SL-TxProfile-r17* in clause 9.3 of 3GPP TS 38.331 [12].

Broadcast and groupcast mode NR-PC5 eTx profile field:

The broadcast and groupcast mode NR-PC5 eTx profile field indicates NR eTx profile corresponding to the NR-PC5 for broadcast mode V2X communication over PC5 and groupcast mode V2X communication over PC5.

The broadcast and groupcast mode NR-PC5 eTx profile field is coded as SL-TxProfile-r18 in clause 6.2.2 of 3GPP TS 38.331 [12].

Unicast mode initial signalling NR-PC5 Tx profile field:

The unicast mode initial signalling NR-PC5 Tx profile field indicates NR Tx profile corresponding to transmitting and receiving initial signalling of the PC5 unicast link establishment.

The unicast mode initial signalling NR-PC5 Tx profile field is coded as *SL-TxProfile-r17* in clause 9.3 of 3GPP TS 38.331 [12].

If the length of V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.13, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to PC5 RAT(s) and Tx profiles mapping rule contents.

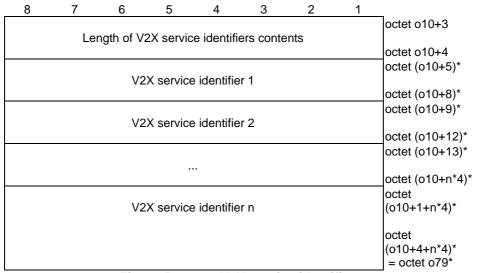


Figure 5.3.1.14: V2X service identifiers

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].

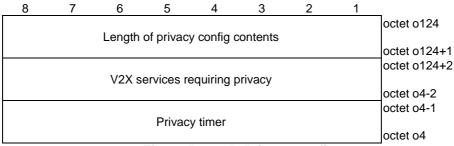


Figure 5.3.1.15: Privacy config

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.

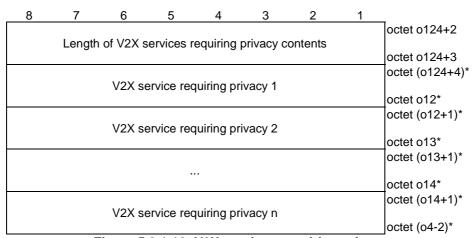


Figure 5.3.1.16: V2X services requiring privacy

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.

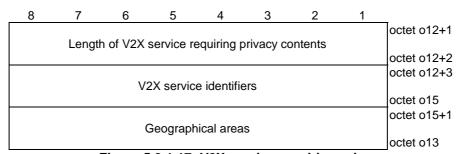


Figure 5.3.1.17: V2X service requiring privacy

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.

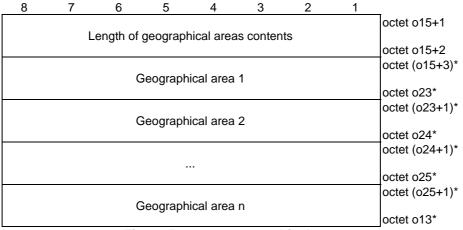


Figure 5.3.1.18: Geographical areas

Table 5.3.1.18: Geographical areas

Geographical area:

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

8	7	6	5	4	3	2	1						
	4.145.1							octet o4+1					
Length	n of V2X	communi	cation ov	er PC5 ir	i E-UTRA	A-PC5 co	ntents	octet o4+2					
DDL2II	VSIEF	VSAPI	PPMR	0	0	0	0	octet o4+3					
DDLZII	MRI	VOAIT	I I IVIIX	Spare	Spare	Spare	Spare	00101 04+3					
V2X	V2X service identifier to destination layer-2 ID mapping rules												
								octet o26					
) to DDD					octet (o26+1)*					
		PPPF	10 PDB	mapping	ruies			octet o27*					
								octet o120*					
V2X	service id	dentifier t	o V2X E-	UTRA fre	quency r	mapping	rules	(see NOTE)					
						•							
								octet o28*					
			_					octet o106*					
		V2X ser	vices aut	horized fo	or PPPR			(see NOTE)					
								octet o29*					
								octet o107*					
		Defau	ılt destina	ation laye	r-2 ID			(see NOTE)					
				•									
								octet (o107+2)*					
								= octet o5*					

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

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

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

Default destination layer-2 ID indicator (DDL2II):

The DDL2II bit indicates presence of the default destination layer-2 ID field. Bit

8

- 0 Default destination layer-2 ID field is absent
- 1 Default destination layer-2 ID field is present

V2X service identifier to V2X E-UTRA frequency mapping rules indicator (VSIEFMRI): The VSIEFMRI bit indicates presence of the V2X service identifier to V2X E-UTRA frequency mapping rules field.

Bit

7

- 0 V2X service identifier to V2X E-UTRA frequency mapping rules field is absent
- 1 V2X service identifier to V2X E-UTRA frequency mapping rules field is present

V2X services authorized for PPPR indicator (VSAPI):

The VSAPI bit indicates presence of the V2X services authorized for PPPR field. Bit

6

- 0 V2X services authorized for PPPR field is absent
- 1 V2X services authorized for PPPR field is present

PPPP to PDB mapping rules indicator (PPMRI):

The PPMRI bit indicates presence of the PPPP to PDB mapping rules field.

5

- 0 PPPP to PDB mapping rules field is absent
- 1 PPPP to PDB mapping rules field is present

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

The V2X service identifier to destination layer-2 ID mapping rules field is coded according to figure 5.3.1.20 and table 5.3.1.20.

PPPP to PDB mapping rules:

The PPPP to PDB mapping rules field is coded according to figure 5.3.1.22 and table 5.3.1.22.

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

The V2X service identifier to V2X E-UTRA frequency mapping rules field is coded according to figure 5.3.1.24 and table 5.3.1.24.

V2X services authorized for PPPR:

The V2X services authorized for PPPR field is coded according to figure 5.3.1.29 and table 5.3.1.29.

Default destination layer-2 ID:

The default destination layer-2 ID field is a binary coded layer 2 identifier.

If the length of V2X communication over PC5 in E-UTRA-PC5 contents field indicates a length bigger than indicated in figure 5.3.1.19, receiving entity shall ignore any superfluous octets located at the end of the V2X communication over PC5 in E-UTRA-PC5contents.

8	7	6	5	4	3	2	1					
								octet o4+4				
Lengt	octet o4+5											
1/21	octet (o4+6)*											
VZX	V2X service identifier to destination layer-2 ID mapping rule 1											
1/21	V2X service identifier to destination layer-2 ID mapping rule 2											
V 2 /	Service	identinei	to destin	alion lay	#I-2 ID III	apping n	ile Z	octet o20*				
								octet (o20+1)*				
								octet o21*				
, (5)												
V2X	service	identifier	to destin	ation lay	er-2 ID ma	apping ru	ıle 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.

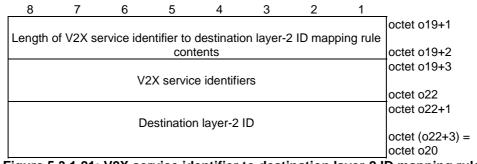


Figure 5.3.1.21: V2X service identifier to destination layer-2 ID mapping rule

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.

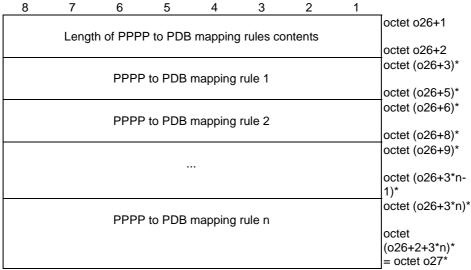


Figure 5.3.1.22: PPPP to PDB mapping rules

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.

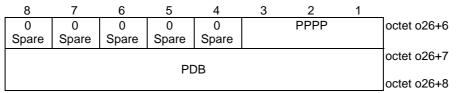


Figure 5.3.1.23: PPPP to PDB mapping rule

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
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
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.
```

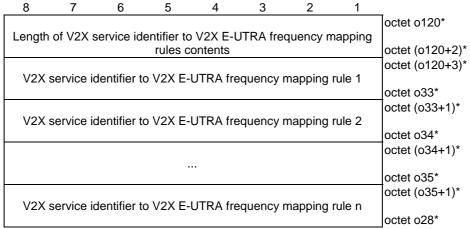


Figure 5.3.1.24: V2X service identifier to V2X E-UTRA frequency mapping rules

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

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

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

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

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

V2X service identifiers:

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

V2X E-UTRA frequencies with geographical areas list:

The V2X E-UTRA frequencies with geographical areas list field is coded according to figure 5.3.1.26 and table 5.3.1.26.

If the length of V2X service identifier to V2X E-UTRA frequency mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.25, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to V2X E-UTRA frequency mapping rule contents.

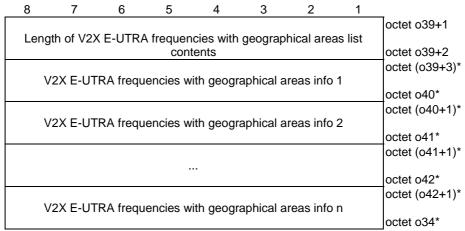


Figure 5.3.1.26: V2X E-UTRA frequencies with geographical areas list

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.

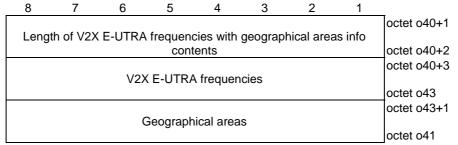


Figure 5.3.1.27: V2X E-UTRA frequencies with geographical areas info

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						
								octet o40+3					
	Length of V2X E-UTRA frequencies contents												
								octet o40+4 octet (o40+5)*					
	VOV E LITDA fraguera e A												
	V2X E-UTRA frequency 1												
		octet (o40+7)* octet (o40+8)*											
	VOV E LITDA fra much au 2												
	V2X E-UTRA frequency 2												
								octet (o40+10)* octet (o40+11)*					
								00101 (040111)					
				••				octet (o40+4+(n-					
								1)*3)*					
								octet (o40+5+(n-					
		V2>	(E-UTR/	A frequen	cy 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].

		1	2	3	4	5	6	7	8					
)6	octet o106			5555			() (0) (
06+1	octet o106	Length of V2X services authorized for PPPR contents												
	octet (o10													
O*		V2X service authorized for PPPR 1												
-	octet o36* octet (o36-													
,	00101 (000			PPPR 2	rized for	ice autho	V2X ser							
	octet o37*													
7+1)*	octet (o37-													
3*	octet o38*				•									
8+1)*	octet (o38-													
a *	octet o29*			PPPR n	rized for	ice autho	V2X ser							
87+ 8* 88+	octet (o37-					vice autho								

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.

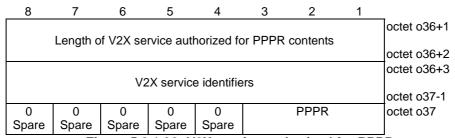


Figure 5.3.1.30: V2X service authorized for PPPR

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.
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			
								octet o5+1		
Len	gth of V2	X commu	unication	over PC	5 in NR-F	PC5 conte	ents			
DDI OI	LVOINE	DDDOI		1 0				octet o5+2		
DDL2I BI	VSINF MRI	PDBGI	0 Spare	0 Spare	0 Spare	0 Spare	0 Spare	octet o5+3		
	IVIIXI		Spare	Spare	Spare	Opare	Spare	octet (o5+4)*		
V	X service	e identifie	r to V2X	NR frequ	iency ma	nnina rul	es	00161 (03+4)		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-77 001 110	o idominio	1 10 12/1	rut noqu	acricy ina	pping rai	00	octet o45*		
	octet o108									
V2X se	napping	(see NOTE)								
								octet o46		
1/01/	,				ID (octet o46+1		
V2X sei	rvice iden	itifier to d		•	ib for gro	oupcast n	napping	cotot c47		
			ru	les				octet o47		
V2X	service i	dentifier t	o destina	ation lave	r-2 ID for	unicast i	nitial	00161 047 + 1		
\ \ZX	SCI VICC II			apping ru		unioasti	iiiiai	octet o48		
		- 3	3	-11 3 -				octet o48+1		
V2>	service	identifier	to PC5 (QoS para	meters m	apping r	ules			
				•				octet o49		
								octet o49+1		
			AS conf	iguration						
								octet o50		
	Dof	ault desti	nation la	vor 2 ID f	or broad	oost		octet (o50+1)*		
	Del	auit uestii	nalion ia	yei-z ib i	or broade	Jasi		octet (o50+3)*		
								octet 093 (see		
		NR-PC	5 unicast	security	policies			NOTE)		
								,		
								octet o84		
								octet (o84+1)		
V2X s	ervice id	entifier to			communic	cation ma	pping	octet o85		
	rules									
DCE D	t initial	octet (o85+1)*								
PC5 DRX configuration for broadcast, groupcast and unicast initial signalling								octet o123* =		
			Sign	aming				octet I		

NOTE:

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

Figure 5.3.1.31: V2X communication over PC5 in NR-PC5

Table 5.3.1.31: V2X communication over PC5 in NR-PC5

Default destination layer-2 ID for broadcast indicator (DDL2IBI):

The DDL2IBI bit indicates presence of the default destination layer-2 ID for broadcast field.

Bit

8

- 0 Default destination layer-2 ID for broadcast field is absent
- 1 Default destination layer-2 ID for broadcast field is present

V2X service identifier to V2X NR frequency mapping rules indicator (VSINFMRI):

The VSINFMRI bit indicates presence of the V2X service identifier to V2X NR frequency mapping rules field.

Bit

7

- 0 V2X service identifier to V2X NR frequency mapping rules field is absent
- 1 V2X service identifier to V2X NR frequency mapping rules field is present

PC5 DRX configuration for broadcast, groupcast and unicast initial signalling indicator (PDBGI):

The PDBGI bit indicates presence of the PC5 DRX configuration for broadcast groupcast and unicast initial signalling field.

Bit

6

- 0 PC5 DRX configuration for broadcast, groupcast and unicast initial signalling field is absent
- 1 PC5 DRX configuration for broadcast, groupcast and unicast initial signalling 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

The V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rules field is coded according to figure 5.3.1.41 and table 5.3.1.41.

V2X service identifier to PC5 QoS parameters mapping rules:

The V2X service identifier to PC5 QoS parameters mapping rules field is coded according to figure 5.3.1.43 and table 5.3.1.43.

AS configuration:

The AS configuration field is coded according to figure 5.3.1.46a and table 5.3.1.46a.

Default destination layer-2 ID for broadcast:

The default destination layer-2 ID for broadcast field is a binary coded layer 2 identifier.

NR-PC5 unicast security policies:

The NR-PC5 unicast security policies field is coded according to figure 5.3.1.50 and table 5.3.1.50.

V2X service identifier to default mode of communication mapping rules:

The V2X service identifier to default mode of communication mapping rules is coded according to figure 5.3.1.53 and table 5.3.1.53.

PC5 DRX configuration for broadcast, groupcast and unicast initial signalling. The PC5 DRX configuration for broadcast, groupcast and unicast initial signalling field indicates the PC5 DRX configuration for broadcast, groupcast and unicast initial signalling when not served by E-UTRA and not served by NR, and is coded according to figure 5.3.1.55 and table 5.3.1.55.

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.

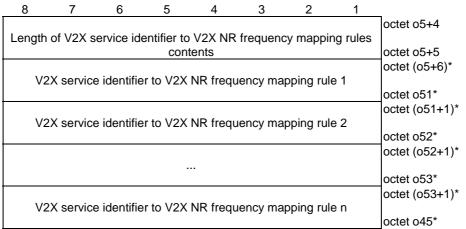


Figure 5.3.1.32: V2X service identifier to V2X NR frequency mapping rules

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				
	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.

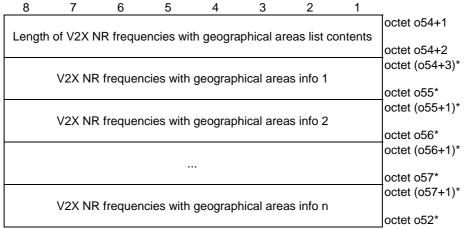


Figure 5.3.1.34: V2X NR frequencies with geographical areas list

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.

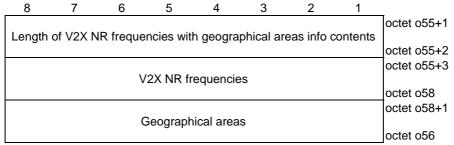


Figure 5.3.1.35: V2X NR frequencies with geographical areas info

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.

V2X NR frequency:

8	7	6	5	4	3	2	1	<u></u>					
	Length of V2X NR frequencies contents												
	VOVAID												
	V2X NR frequency 1												
								octet (o55+7)*					
		,	OV ND 6		0			octet (o55+8)*					
		V	2X NR II	equency	2								
								octet (o55+10)*					
								octet (o55+11)*					
								ootot (oEE 4 (n					
								octet (o55+4+(n- 1)*3)*					
								octet (o55+5+(n-					
		V	/2X NR fr	equency	n			1)*3)*					
		V	2/\ I\I\ II	equency	11			1, 3,					
								octet					
								(o55+4+n*3)* =					
								octet o58*					

Figure 5.3.1.36: V2X NR frequencies

Table 5.3.1.36: V2X NR frequencies

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

8 7 6 5 4 3 2 1

Length of V2X service identifier to destination layer-2 ID for broadcast mapping rules contents

octet o108+1 octet (o108+2)*

V2X service identifier to destination layer-2 ID for broadcast mapping
rule 1

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

octet (o59+1)*

octet o60*
octet (o60+1)*

V2X service identifier to destination layer-2 ID for broadcast mapping

V2X service identifier to destination layer-2 ID for broadcast mapping

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

rule n

octet o46*

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.

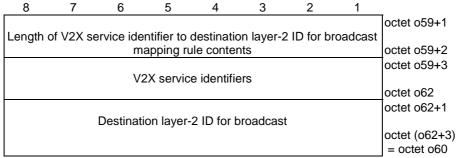


Figure 5.3.1.38: V2X service identifier to destination layer-2 ID for broadcast mapping rule

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.

8	7	6	5	4	3	2	1						
								octet o46+1					
Length of	Length of V2X service identifier to destination layer-2 ID for groupcast mapping rules contents												
	octet o46+2 octet (o46+3)*												
V2X ser	vice ider	ntifier to d	estinatio	n layer-2	ID for gro	upcast i	mapping						
			rul	e 1				octet o63*					
								octet (o63+1)*					
V2X ser	vice ider	ntifier to d	estinatio	n layer-2	ID for gro	upcast i	mapping						
			rul	e 2				octet o64*					
								octet (o64+1)*					
								octet o65*					
								octet (o65+1)*					
V2X ser	vice ider	ntifier to d	estinatio	n layer-2	ID for gro	upcast i	mapping	, ,					
				e n´	Ū	•	0	octet o47*					

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

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

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

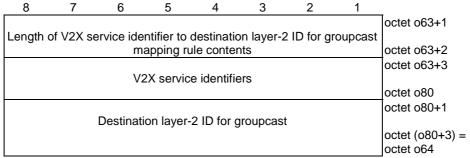


Figure 5.3.1.40: V2X service identifier to destination layer-2 ID for groupcast mapping rule

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				
Lengtl	n of V2X s	service ic	lentifier to	destina	tion layer-	·2 ID for	unicast					
	initial signalling mapping rules contents											
								octet (o47+3)*				
V2X	service id	dentifier	to destina	ation laye	er-2 ID for	unicast	initial					
		sig	nalling ma	apping rι	ıle 1			octet o66*				
								octet (o66+1)*				
V2X	service id	dentifier	to destina	ation laye	er-2 ID for	unicast	initial					
		sig	nalling ma	apping ru	ıle 2			octet o67*				
								octet (o67+1)*				
								octet o68*				
								octet (o68+1)*				
V2X	service id			•		unicast	initial					
		sig	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.

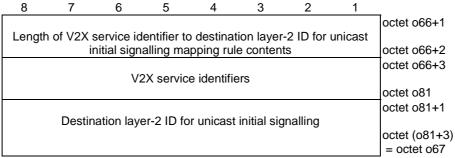


Figure 5.3.1.42: V2X service identifier to destination layer-2 ID for unicast initial signalling mapping rule

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	Length of V2X service identifier to PC5 QoS parameters mapping rules contents										
			Tules C	ontents				octet o48+2 octet (o48+3)*			
V2X	service i	identifier	to PC5 C	QoS para	meters m	apping ru	ıle 1				
				•				octet o70*			
1,01			. 505.6					octet (o70+1)*			
V2X	service	dentifier	to PC5 C	loS para	meters m	apping ru	ıle 2	octet o71*			
								octet (o71+1)*			
								octet o72*			
1,01			. 505.6					octet (o72+1)*			
V2X	service	dentifier	to PC5 C	los para	meters m	apping ru	ile n	octet o49*			

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

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

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

Figure 5.3.1.44: void

Table 5.3.1.44: void

Figure 5.3.1.45: void

Table 5.3.1.45: void

8	7	6	5	4	3	2	1	_					
1	It enote of V2Y service identifier to PC5 OoS parameters manning rule												
Length	Length of V2X service identifier to PC5 QoS parameters mapping rule contents												
	V2X service identifiers												
05001	OSDDI MEDDI DI AMBILIDI.												
GFBRI	GFBRI MFBRI PLAMB RI 0 0 0 0 0 Spare Spare Spare Spare												
		NI	P	QI	Spare	Spare	Spare	octet o74+2					
								octet (o74+3)*					
		Gua	aranteed	flow bit r	ate			octet (o74+5)*					
								octet (074+3)					
		Ma	aximum f	low bit ra	ite			NOTE)					
								octet (o94+2)*					
								octet (095)* (see					
		Per-link a	ggregate	e maximu	m bit rate	•		NOTE)					
	octet (o95+2)* octet (o96)* (see												
	NOTE)												
								octet (o96+2)* =					
								octet 071*					

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

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

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

V2X service identifiers:

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

Guaranteed flow bit rate indicator (GFBRI):

The GFBRI bit indicates presence of guaranteed flow bit rate field.

Bit

8

0 Guaranteed flow bit rate field is absent

1 Guaranteed flow bit rate field is present

Maximum flow bit rate indicator (MFBRI):

The MFBRI bit indicates presence of maximum flow bit rate field.

Bit

7

0 Maximum flow bit rate field is absent

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
            PQI 90
01011010
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
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
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
                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.

multiples of 1 Kbps

Unit of the per-link aggregate maximum bit rate:

Bits

87654321

00000000	value is not used
00000001	value is incremented in

0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps 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 1 1 1 Value is incremented in multiples of 4 Mbps
0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps

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

0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps 0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps

0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps 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 0 value is incremented in multiples of 256 Tops 0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps

0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps

0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps

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

Other values shall be interpreted as multiples of 256 Pbps in this version of the protocol.

Value of the per-link aggregate maximum bit rate is binary coded value of the per-link aggregate maximum bit rate in units defined by the unit of the per-link aggregate maximum bit rate.

Range

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

If the length of V2X service identifier to PC5 QoS parameters mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.46, receiving entity shall ignore any superfluous octets located at the end of the V2X service identifier to PC5 QoS parameters mapping rule contents.

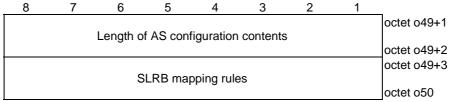


Figure 5.3.1.46a: AS configuration

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						
	1 4 (0) 55												
	Length of SLRB mapping rules contents												
								octet (o49+5)*					
		S	LRB map	ping rule	1								
								octet o75*					
								octet (o75+1)*					
		S	LRB map	ping rule	2								
								octet o76*					
								octet (o76+1)*					
								octet o77*					
								octet (o77+1)*					
		S	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.

8	7	6	5	4	3	2	1	
								octet o75+1
	L	ength of :	SLRB ma	apping ru	le conten	ts		
								octet o75+2
								octet o75+3
			PC5 Qo	S profile				
				•				octet o78
			Length (of SLRB				octet o78+1
			J					
								octet o78+2
								octet o78+3
			SL	RB				
								octet o76

Figure 5.3.1.48: SLRB mapping rule

Table 5.3.1.48: SLRB mapping rule

PC5 QoS profile:

The PC5 QoS profile field is coded according to figure 5.3.1.49 and table 5.3.1.49.

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	8 7 6 5 4 3 2 1													
	Length of PC5 QoS profile contents													
	Length of PC5 Q05 profile contents													
GFBRI	MFBRI	PLAMB	RI	PLOI	AWI	MDBVI	0 Spore	octet o75+4 octet o73+5						
	RI Spare													
	octet (o75+7)*													
	octet (o75+9)*													
		N/A	avimum f	low bit ra	to			octet o97* (see NOTE)						
		IVI	axiiiiuiii i	IOW DIL IA	ile			NOTE)						
								octet (o97+2)*						
	ı	Per-link a	ggregate	maximu	m bit rate	•		octet o98* (see NOTE)						
								ootot (009 i 2)*						
								octet (o98+2)* octet o99* (see						
			Rar	nge				NOTE)						
								octet (o99+1)*						
0	0	0	0 Spore	0	Р	riority lev	el	octet o100*						
Spare	Spare	Spare	Spare	Spare				(see NOTE) octet o101*						
	(see NOTE)													
	octet (o101+1)*													
	octet o102*													
	(see NOTE)													
	octet (o102+1)*													
								= octet o78*						

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

Figure 5.3.1.49:PC5 QoS profile

Table 5.3.1.49:PC5 QoS profile

Guaranteed flow bit rate indicator (GFBRI): The GFBRI bit indicates presence of guaranteed flow bit rate field. Bit 8 0 Guaranteed flow bit rate field is absent 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 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 Per-link aggregate maximum bit rate field is absent 0 Per-link aggregate maximum bit rate field is present Range indicator (RI): The RI bit indicates presence of range field. Bit 0 Range field is absent Range field is present Priority level octet indicator (OPLI): The OPLI bit indicates presence of the octet of the priority level field. Bit O The octet of the priority level is absent The octet of the priority level is present Averaging window indicator (AWI): The AWI bit indicates presence of averaging window field.

Bit

0 Averaging window field is absent

Averaging window field is present

Maximum data burst volume indicator (MDBVI):

The MDBVI bit indicates presence of maximum data burst volume field.

Bit 2

Maximum data burst volume field is absent

Maximum data burst volume 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
            PQI 90
01011010
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
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
                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
00011000
               value is incremented in multiples of 64 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 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:

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.

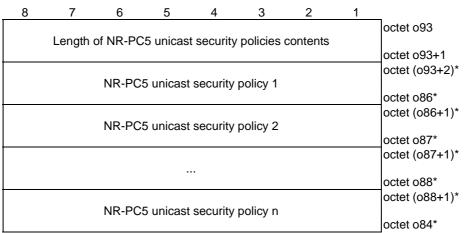


Figure 5.3.1.50: NR-PC5 unicast security policies

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.

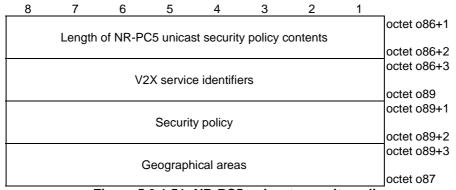


Figure 5.3.1.51: NR-PC5 unicast security policy

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 cipherii	ng policy	0	Sign	alling inte	grity	octet o89+1
spare				spare	pro	tection po	olicy	
0	User p	olane cipl	nering	0	User	plane inte	egrity	octet o89+2
spare		policy		spare	pro	tection po	licv	

Figure 5.3.1.52: Security policy

Table 5.3.1.52: Security policy

```
Signalling integrity protection policy (octet o89+1, bit 1 to 3):
Bits
3 2
0 0
      0
              Signalling integrity protection not needed
0 0 1
              Signalling integrity protection preferred
              Signalling integrity protection required
0
   1
       0
0
   1
      1
   to Spare
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".

Signalling ciphering policy (octet o89+1, bit 5 to 7):

```
Bits
7 6
0 0
     0
            Signalling ciphering not needed
0 0 1
            Signalling ciphering preferred
  1 0
            Signalling ciphering required
0
0
   1
   to Spare
1
      0
   1
   1 1
            Reserved
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 o89+1 are spare and shall be coded as zero.

User plane integrity protection policy (octet o89+2, bit 1 to 3):

```
Bits
3 2
0
   0
      0
             User plane integrity protection not needed
             User plane integrity protection preferred
0
   0 1
      0
             User plane integrity protection required
0
   1
0
   1
      1
   to Spare
1
   1 0
             Reserved
```

If the UE receives a user plane integrity protection policy value that the UE does not understand, the UE shall interpret the value as 010 "User plane integrity protection required".

User plane ciphering policy (octet o89+2, bit 5 to 7):

```
Bits
7 6
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
  to Spare
   1
      0
            Reserved
  1
```

If the UE receives a user plane ciphering policy value that the UE does not understand, the UE shall interpret the value as 010 "User plane ciphering required".

Bit 4 and 8 of octet o89+2 are spare and shall be coded as zero.

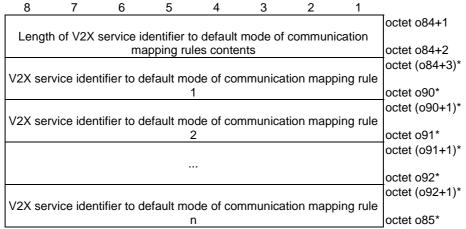


Figure 5.3.1.53: V2X service identifier to default mode of communication mapping rules

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.

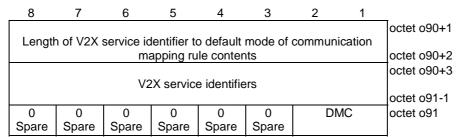


Figure 5.3.1.54: V2X service identifier to default mode of communication mapping rule

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.

8	7	6	5	4	3	2	1	
								octet o85+1
Leng	th of PC	5 DRX co	nfiguration	on for bro	oadcast, g	groupcas	t and	
	•	unicast	initial sig	nalling c	ontents			octet o85+2
								octet o85+3
	PC5 Q	oS profile	to PC5	DRX cyc	le mappin	ig rules		
								octet o103
								octet o103+1
		Default	t PC5 DF	XX config	uration			
								octet o123

Figure 5.3.1.55: PC5 DRX configuration for broadcast, groupcast and unicast initial signalling

Table 5.3.1.55: PC5 DRX configuration for broadcast, groupcast and unicast initial signalling

PC5 QoS profile to PC5 DRX cycle mapping rules:

The PC5 QoS profile to PC5 DRX cycle mapping rules field is coded according to figure 5.3.1.56 and table 5.3.1.56.

Default PC5 DRX configuration:

The default PC5 DRX configuration field is coded according to figure 5.3.1.58 and table 5.3.1.58.

If the length of PC5 DRX configuration for broadcast, groupcast and unicast initial signalling contents field indicates a length bigger than indicated in figure 5.3.1.55, receiving entity shall ignore any superfluous octets located at the end of the PC5 DRX configuration for broadcast, groupcast contents and unicast initial signalling.

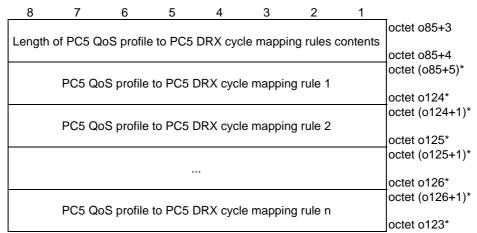


Figure 5.3.1.56: PC5 QoS profile to PC5 DRX cycle mapping rules

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

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

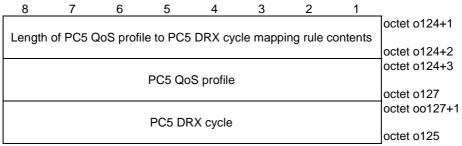


Figure 5.3.1.57: PC5 QoS profile to PC5 DRX cycle mapping rule

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

PC5 QoS profile: The PC5 QoS profile field is coded according to figure 5.3.1.49 and table 5.3.1.49. PC5 DRX cvcle The PC5 DRX cycle field is coded as sI-DRX-GC-BC-Cycle-r17 in clause 6.3.5 of 3GPP TS 38.331 [12]. If the length of PC5 QoS profile to PC5 DRX cycle mapping rule contents field indicates a length bigger than indicated in figure 5.3.1.57, receiving entity shall ignore any superfluous octets located at the end of the PC5 QoS profile to PC5 DRX cycle mapping rule contents. 6 5 4 octet o103+1 Length of default PC5 DRX configuration contents octet o103+2 octet o103+3 Default PC5 DRX configuration contents octet o123

Figure 5.3.1.58: Default PC5 DRX configuration

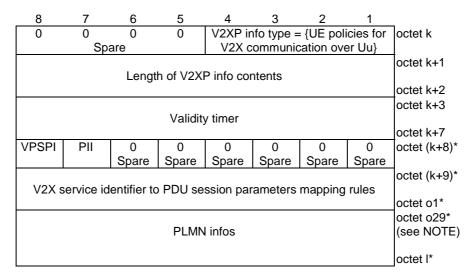
Table 5.3.1.58: Default PC5 DRX configuration

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

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.



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

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.

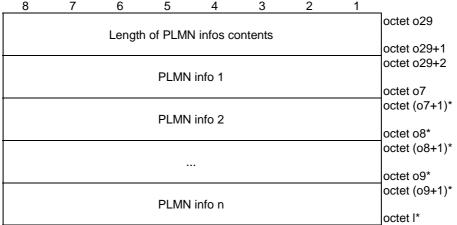


Figure 5.4.1.2: PLMN infos

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.

8	7	6	5	4	3	2	1	_			
	octet o7+1										
	octet o7+2										
	octet o7+3										
			PLMI	N IDs							
	1		1	1	1	T	T	octet o5			
VSIUII	VSIRII	VAMCI	0	0	0	0	0	octet o5+1			
			Spare	Spare	Spare	Spare	Spare				
	octet (o5+2)*										
								octet o6*			
		V2X sei	rvice ider	ntifier rela	ited info			octet o30*			
	(see NOTE)										
	octet o110* octet (o110+1)*										
	V2X AS MBS configuration										
	octet o8*										

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

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.

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 AS MBS configuration indicator (VAMCI)

The VAMCI bit indicates presence of the V2X AS MBS configuration field. Bit

6

- 0 V2X AS MBS configuration field is absent
- 1 V2X AS MBS configuration 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.

V2X AS MBS configuration

The V2X AS MBS configuration field is coded according to figure 5.4.1.3A and table 5.4.1.3A.

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.

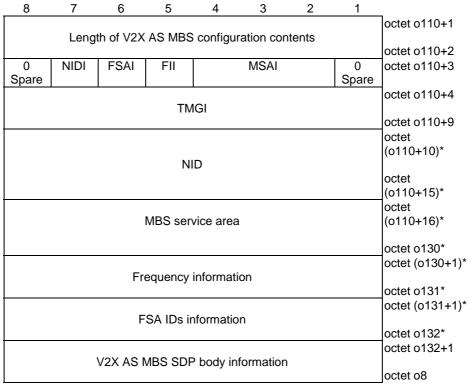


Figure 5.4.1.3A: V2X AS MBS configuration

Table 5.4.1.3A: V2X AS MBS configuration

MBS service area indicator (MSAI)

The MSAI indicates the format of the MBS service area

Bit

- 4 3 2
- 0 0 0 MBS service area not included
- 0 0 1 MBS service area included as MBS TAI list
- 1 0 MBS service area included as NR CGI list
- 0 1 1 MBS service area included as MBS TAI list and NR CGI list
- 1 0 0 MBS service area included as geographical area

All other values are reserved.

Frequency information indicator (FII)

The FII bit indicates presence of the frequency information field

5

- 0 Frequency information field is absent
- 1 Frequency information field is present

FSA IDs information indicator (FSAI)

The FSAI bit indicates presence of the FSA IDs information field Bit

6

- 0 FSA IDs information field is absent
- 1 FSA IDs information field is present

NID indicator (NIDI)

The NIDI bit indicates presence of the NID field

Bit

7

- 0 NID field is absent
- 1 NID field is present

TMG

The TMGI field contains the TMGI of the MBS service and is coded as the TMGI field defined in clause 10.5.6.13 of 3GPP TS 24.008 [18] starting from octet 3.

NID

The NID field contains the NID of an SNPN, and is coded as the NID field defined in clause 9.2.7 of 3GPP TS 24.502 [19] starting from octet 3.

MBS service area

The MBS service area field contains the information that identifies the service area of the MBS service. When the MSAI field is set to "MBS service area included as MBS TAI list", "MBS service area included as NR CGI list" or "MBS service area included as MBS TAI list and NR CGI list", the MBS service area field is coded as the MBS service area field defined in 3GPP TS 24.501 [4]. When the MSAI field is set to "MBS service area included as geographical area", the MBS service area field is coded as the geographical area field according to figure 5.4.1.15 and table 5.4.1.15.

Frequency information

The frequency information field contains the information of the MBS frequency and is coded according to figure 5.4.1.8C and table 5.4.1.8C.

FSA IDs information

The FSA IDs information field contains the list of the MBS frequency selection area IDs (MBS FSA IDs) and is coded according to figure 5.4.1.8D and table 5.4.1.8D.

V2X AS MBS SDP body information

The V2X AS MBS SDP body information field contains the information of the V2X AS MBS configuration SDP and is coded according to figure 5.4.1.3B and table 5.4.1.3B.

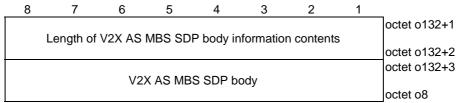


Figure 5.4.1.3B: V2X AS MBS SDP body information

Table 5.4.1.3B: V2X AS MBS SDP body information

V2X AS MBS SDP body
The V2X AS MBS SDP body field contains the encoding of the V2X AS MBS
configuration SDP as defined in 3GPP TS 24.587 [3].

8	7	6	5	4	3	2	1			
			th of PLM					octet o7+3		
	octet o7+4 octet o7+5									
	PLMN ID 1									
								octet o7+7		
			51.14					octet (o7+8)*		
			PLMI	VID 2						
								octet (o7+10)*		
								octet (o7+11)*		
			•	••				octet		
								(o7+1+(3*n))*		
								octet		
			ы М	N ID n				(o7+2+(3*n))*		
			. LIVII	11511				(07.12.(0.11))		
								octet		
								(o7+4+(3*n))* =		
								octet o5*		

Figure 5.4.1.4: PLMN IDs

Table 5.4.1.4: PLMN IDs

PLMN ID
The 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".

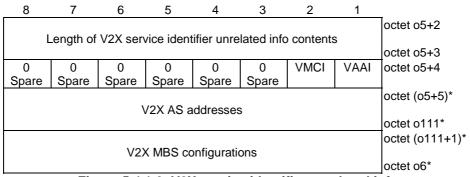


Figure 5.4.1.6: V2X service identifier unrelated info

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

V2X MBS configurations indicator (VMCI)

The VMCI bit indicates presence of the V2X MBS configurations field. Bit

2

0 V2X MBS configurations field is absent

1 V2X MBS configurations 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.

V2X MBS configurations

The V2X MBS configurations field is coded according to figure 5.4.1.8A and table 5.4.1.8A and indicates V2X MBS configurations for receiving V2X communication over Uu via MBS.

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.

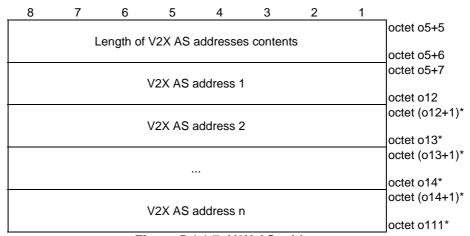


Figure 5.4.1.7: V2X AS addresses

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							
	octet o12+2							
I4AI	octet o12+3							
	00.0101210							
	octet (o12+4)*							
								octet (o12+7)*
			ID. 0 -					octet o31*
			IPv6 ad	aaress				(see NOTE)
								octet (o31+15)*
								octet o32*
	(see NOTE)							
								octet o15*
								octet o33*
		UDF	port for u	plink trar	nsport			(see NOTE)
								octet (o33+1)*
								octet o34*
		TCP po	ort for bidire	ectional	transport			(see NOTE)
		•			-			
								octet (o34+1)*
	octet o35*							
	(see NOTE)							
	octet (o35+1)*							
	octet o36*							
	(see NOTE)							
	,							
	octet o13*							

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

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 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 UDP port for downlink transport field is absent 0 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. The FQDN field contains an FQDN of a V2X application server. The first octet of the FQDN field indicates length of the FQDN and the remaining octets of the FQDN field contain the FQDN. 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.

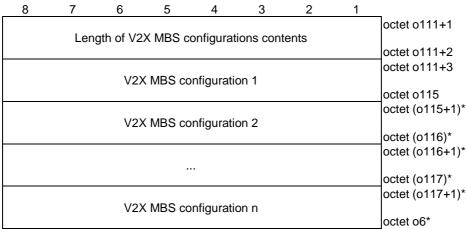


Figure 5.4.1.8A: V2X MBS configurations

Table 5.4.1.8A: V2X MBS configurations

V2X MBS configuration

The V2X MBS configuration field is coded according to figure 5.4.1.8B and table 5.4.1.8B.

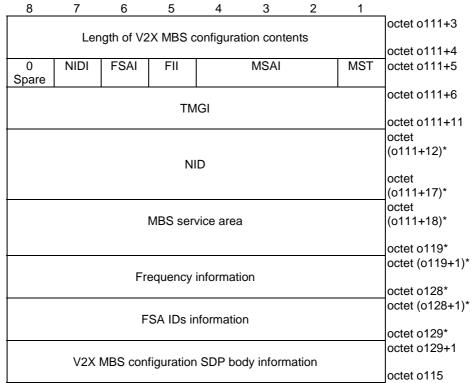


Figure 5.4.1.8B: V2X MBS configuration

Table 5.4.1.8B: V2X MBS configuration

MBS service type (MST)

The MST indicates the type of the MBS service

Bit

1

0 Broadcast MBS service

Multicast MBS service

MBS service area indicator (MSAI)

The MSAI indicates the format of the MBS service area

Bit

432

0 0 0 MBS service area not included

0 0 1 MBS service area included as MBS TAI list

0 1 0 MBS service area included as NR CGI list

0 1 1 MBS service area included as MBS TAI list and NR CGI list

1 0 0 MBS service area included as geographical area

All other values are reserved.

Frequency information indicator (FII)

The FII bit indicates presence of the frequency information field Bit

5

0 Frequency information field is absent

1 Frequency information field is present

FSA IDs information indicator (FSAI)

The FSAI bit indicates presence of the FSA IDs information field

Bit 6

'

0 FSA IDs information field is absent

1 FSA IDs information field is present

NID indicator (NIDI)

The NIDI bit indicates presence of the NID field

Bit

0 NID field is absent

1 NID field is present

TMGI

The TMGI field contains the TMGI of the MBS service and is coded as the TMGI field defined in clause 10.5.6.13 of 3GPP TS 24.008 [18] starting from octet 3.

NID

The NID field contains the NID of an SNPN, and is coded as the NID field defined in clause 9.2.7 of 3GPP TS 24.502 [19] starting from octet 3.

MBS service area

The MBS service area field contains the information that identifies the service area of the MBS service. When the MSAI field is set to "MBS service area included as MBS TAI list", "MBS service area included as NR CGI list" or "MBS service area included as MBS TAI list and NR CGI list", the MBS service area field is coded as the MBS service area field defined in 3GPP TS 24.501 [4]. When the MSAI field is set to "MBS service area included as geographical area", the MBS service area field is coded as the geographical area field according to figure 5.4.1.15 and table 5.4.1.15.

Frequency information

The frequency information field contains the information of the MBS frequency and is coded according to figure 5.4.1.8C and table 5.4.1.8C.

FSA IDs information

The FSA IDs information field contains the list of the MBS frequency selection area IDs (MBS FSA IDs) and is coded according to figure 5.4.1.8D and table 5.4.1.8D.

V2X MBS configuration SDP body information

The V2X MBS configuration SDP body information field contains the information of the V2X MBS configuration SDP and is coded according to figure 5.4.1.8E and table 5.4.1.8E.

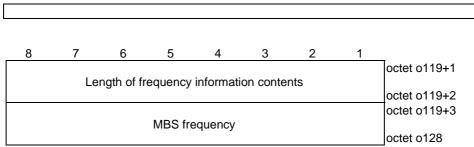


Figure 5.4.1.8C: Frequency information

Table 5.4.1.8C: Frequency information

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

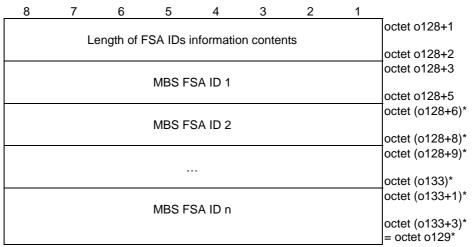


Figure 5.4.1.8D: FSA IDs information

Table 5.4.1.8D: FSA IDs information

MBS FSA ID
The MBS FSA ID field contains the value of the MBS frequency selection area ID (MBS FSA ID) and is coded as defined in 3GPP TS 23.003 [17].

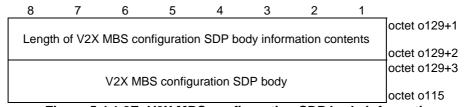
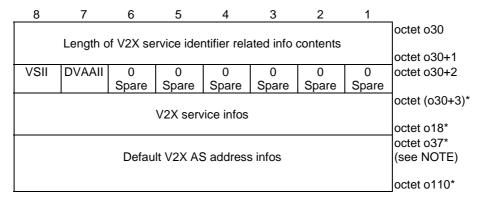


Figure 5.4.1.8E: V2X MBS configuration SDP body information

Table 5.4.1.8E: V2X MBS configuration SDP body information

V2X MBS configuration SDP body

The V2X MBS configuration SDP body field contains the encoding of the V2X MBS configuration SDP as defined in 3GPP TS 24.587 [3].



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

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 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 0 Default V2X AS address infos field is absent 1 Default V2X AS address infos 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. 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.

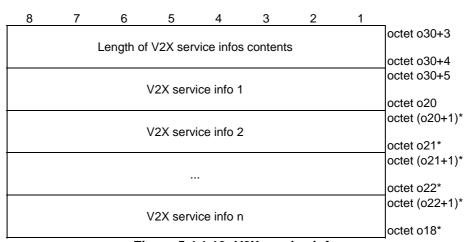


Figure 5.4.1.10: V2X service infos

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.

8	7	6	5	4	3	2	1				
								octet o20+1			
	Length of V2X service info contents										
								octet o20+2			
								octet o20+3			
		V2	X service	e identifie	ers						
								octet o23			
VAAI	VMCI	0	0	0	0	0	0	octet o23+1			
	Spare Spare Spare Spare Spare Spare										
								octet (o23+2)*			
	V2X AS addresses										
	octet o112*										
	octet o112+1*										
		V2>	K MBS co	onfigurati	ons						
	V Z/X MD G GOTTING GLOTIO										

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 MBS configurations indicator (VMCI)

The VMCI bit indicates presence of the $\dot{\text{V2X}}$ MBS configurations field. Bit

7

- 0 V2X MBS configurations field is absent
- 1 V2X MBS configurations 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.

V2X MBS configurations

The V2X MBS configurations field is coded according to figure 5.4.1.8A and table 5.4.1.8A and indicates V2X MBS configurations 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.

8	7	6	5	4	3	2	1	
								octet o20+3
	Le	ngth of V	2X servic	ce identifi	ers conte	ents		
								octet o20+4
								octet o20+5
		V2	2X service	e identifie	er 1			
								octet o20+8
								octet (o20+9)*
		V2	2X service	e identifie	er 2			
								octet (o20+12)*
								octet (o20+13)*
								octet (o20+n*4)*
								octet
		V2	2X service	e identifie	er n			(o20+1+n*4)*
								octet o23*
<u> </u>								ociei 023"

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].

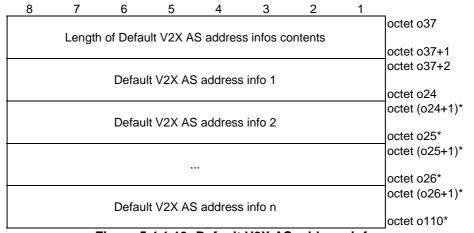
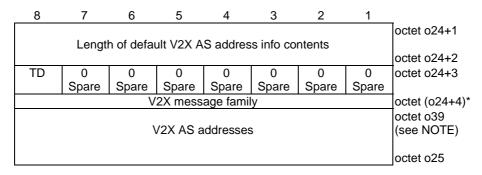


Figure 5.4.1.13: Default V2X AS address infos

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.



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

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

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.
Bit
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]
00000010
                 ISO, see ISO 29281-1 [9]
00000011
                 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
```

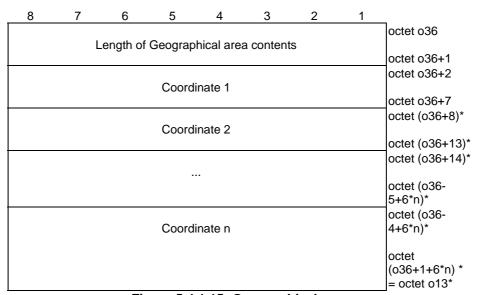


Figure 5.4.1.15: Geographical area

Table 5.4.1.15: Geographical area

oordina ne coor		eld is cod	led accor	ding to fi	gure 5.4.	1.16 and	table 5	.4.1.16.
8	7	6	5	4	3	2	1	
			Lati	tude				octet o36+8
			Lati	iuue				octet o36+10
				., ,				octet o36+11
				jitude	0 11			octet o36+13

Figure 5.4.1.16: Coordinate area

Table 5.4.1.16: Coordinate area

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

8	7	6	5	4	3	2	1	
								octet k+9
Length of	of V2X se	ervice ide			ssion para	meters r	napping	
			rules co	ontents				octet k+10
								octet k+11
V2X se	ervice id	entifier to	PDU ses	ssion pa	rameters r	napping	rule 1	
								octet o2
								octet (o2+1)*
V2X se	ervice id	entifier to	PDU ses	ssion pa	rameters r	napping	rule 2	
								octet o3*
								octet (o3+1)*
								octet o4*
								octet (o4+1)*
V2X se	ervice id	entifier to	PDU ses	ssion par	rameters r	napping	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	00101 0211
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

octet o28+7 octet o28+8

octet o29

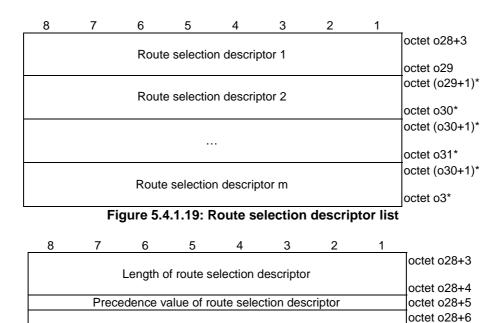


Figure 5.4.1.20: Route selection descriptor

Length of route selection descriptor contents

Route selection descriptor contents

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 contents (octets o28+8 to o29)

The route selection descriptor contents field is of variable size and contains a variable number (at least one) of route selection descriptor components. Each route selection descriptor component shall be encoded as a sequence of a one octet route selection descriptor component type identifier and a route selection descriptor component value field. The route selection descriptor component type identifier shall be transmitted first.

Route selection descriptor component type identifier Bits

DILS

87654321

0 0 0 0 0 0 0 1 SSC mode type

0 0 0 0 0 0 1 0 S-NSSAI type

0 0 0 0 0 1 0 0 DNN type

0 0 0 0 1 0 0 0 PDU session type type

0 0 0 1 0 0 0 0 Transport layer protocol type

All other values are spare. If received, they shall be ignored.

For "SSC mode type", the route selection descriptor component value field shall be encoded as a one octet SSC mode field. The bits 8 through 4 of the octet shall be spare, and the bits 3 through 1 shall be encoded as the value part of the SSC mode information element defined in clause 9.11.4.16 of 3GPP TS 24.501 [4]. The "SSC mode type" route selection descriptor component shall not appear more than once in the route selection descriptor.

For "S-NSSAI type", the route selection descriptor component value field shall be encoded as a sequence of a one octet S-NSSAI length field and an S-NSSAI value field of a variable size. The S-NSSAI value shall be encoded as the value part of the S-NSSAI information element defined in clause 9.11.2.8 of 3GPP TS 24.501 [4].

For "DNN type", the route selection descriptor component value field shall be encoded as a sequence of a one octet DNN length field and a DNN value field of a variable size. The DNN value contains an APN as defined in 3GPP TS 23.003 [17].

For "PDU session type type", the route selection descriptor component value field shall be encoded as a one octet PDU session type field. The bits 8 through 4 of the octet shall be spare, and the bits 3 through 1 shall be encoded as the value part of the PDU session type information element defined in clause 9.11.4.11 of 3GPP TS 24.501 [4]. The "PDU session type type" route selection descriptor component shall not appear more than once in the route selection descriptor.

For "Transport layer protocol type", the route selection descriptor component value field shall be encoded as:

Bits

87654321

00000001 UDP

00000010 TCP

All other values are spared.

The "Transport layer protocol type" route selection descriptor component appears only when the "PDU session type type" appears and the PDU session type value is set to "IPv4", "IPv6" or "IPv4v6". It shall not appear more than once in the route selection descriptor.

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
2020-09	CT-89e	CP-202248	0013	3	F	Update configuration parameters over Uu to meet stage2 requirements	16.2.0
2020-09	CT-89e	CP-202158	0014		F	Corrections in V2XP UE policy part	16.2.0
2020-09	CT-89e	CP-202158	0017		F	Correction of V2XP statement	16.2.0
2020-09	CT-89e	CP-202158	0018		F	Removal of V2X policy for EPC interworking	16.2.0
2020-09	CT-89e	CP-202041	0019	2	F	Adding the flag indicating the optional PPPP to PDB mapping rules	16.2.0
2020-09	CT-89e	CP-202039	0020	3	F	Radio parameters for UE neither served by E-UTRA nor served by NR	16.2.0
2020-12	CT-90e	CP-203189	0015	1	F	Corrections in UE policies for V2X communication over PC5	16.3.0
2020-12	CT-90e	CP-203189	0016	1	F	Corrections in UE policies for V2X communication over Uu	16.3.0
2020-12	CT-90e	CP-203189	0021	1	F	Update RAT selection rule	16.3.0
2020-12	CT-90e	CP-203189	0022	1	F	V2X service identifier	16.3.0
2020-12	CT-90e	CP-203189	0023	1	F	Some corrections on UE policies for V2X communication over PC5	16.3.0
2021-03	CT#91e	CP-210108	0024		F	Removal of Tx Profile for NR PC5	16.4.0
2022-03	CT#95e	CP-220254	0025	1	В.	NR-PC5 Tx profiles	17.0.0
2022-03	CT#95e	CP-220254	0025	-	В	Adding the PC5 DRX configuration for broadcast and groupcast to the UE policies for V2X communication over	17.0.0
2022-06	CT#96	CP-221216	0027	1	F	PC5 Resolving the EN related to defining the PC5 DRX	17.1.0
						configurations	
2022-06	CT#96	CP-221216	0028	1	F	Resolving the EN related to defining the NR TX Profile	17.1.0
2022-12	CT#98e	CP-223126	0029	1	F	Add default Tx profile for initial unicast connection establishment - coding	17.2.0
2022-12	CT#98e	CP-223126	0031	1	F	Policy configuration of the PC5 DRX parameters for initial signalling of PC5 V2X unicast communication	17.2.0
2022-12	CT#98e	CP-223126	0032	1	F	Removal of duplicated Table 5.3.1.54	17.2.0
2023-09	CT#101	CP-232195	0036	-	F	Correction on octet numbering in the figure of coordinate	18.0.0
2024-03	CT#103	CP-240126	0038	4	В	Encoding of V2X MBS configuration and V2X AS MBS configuration in the policies of V2X in 5GS	18.1.0
2024-06	CT#104	CP-241199	0040	2	В	Introducing the NR eTx profile for supporting NR PC5 Carrier Aggregation operations - the encoding part	18.2.0
2024-12	CT#106	CP-243231	0041	1	F	Adding the missing references for TMGI and NID definitions used for MBS over V2X	18.3.0
2025-10	-	_	-	-	-	Update to Rel-19 version (MCC)	19.0.0
		-	1	1		Topado to Not 10 version (WOO)	

History

	Document history							
V19.0.0	October 2025	Publication						