

IEEE Standard for Wireless Access in Vehicular Environments (WAVE)— Networking Services

Corrigendum 1: Miscellaneous Corrections

IEEE Vehicular Technology Society

Sponsored by the
Intelligent Transportation Systems Committee

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**Intelligent Transportation Systems Committee
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IEEE Vehicular Technology Society**

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Abstract: Three errors in IEEE Std 1609.3-2010 related to Gateway MAC Address, EDCA Parameter Set, and 3DLocationAndConfidence fields are addressed in this corrigendum.

Keywords: 3D location, EDCA, Gateway MAC Address, IEEE 1609.3, WAVE Routing Advertisement, WAVE Service Advertisement

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Introduction

This introduction is not part of IEEE Std 1609.3-20120/Cor 1-2012, IEEE Standard for Wireless Access in Vehicular Environments (WAVE)—Networking Services—Corrigendum 1: Miscellaneous Corrections.

This corrigendum corrects three errors in IEEE Std 1609.3-2010 related to Gateway MAC Address, EDCA Parameter Set, WSMP-S primitives, and 3DLocationAndConfidence fields.

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NOTE—The editing instructions contained in this corrigendum define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strike through~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.

8. WAVE information formats

8.2 WSA format

8.2.1 General

Replace Figure 17 to remove Gateway MAC address from the WAVE Routing Advertisement segment, since it is an optional extension field.

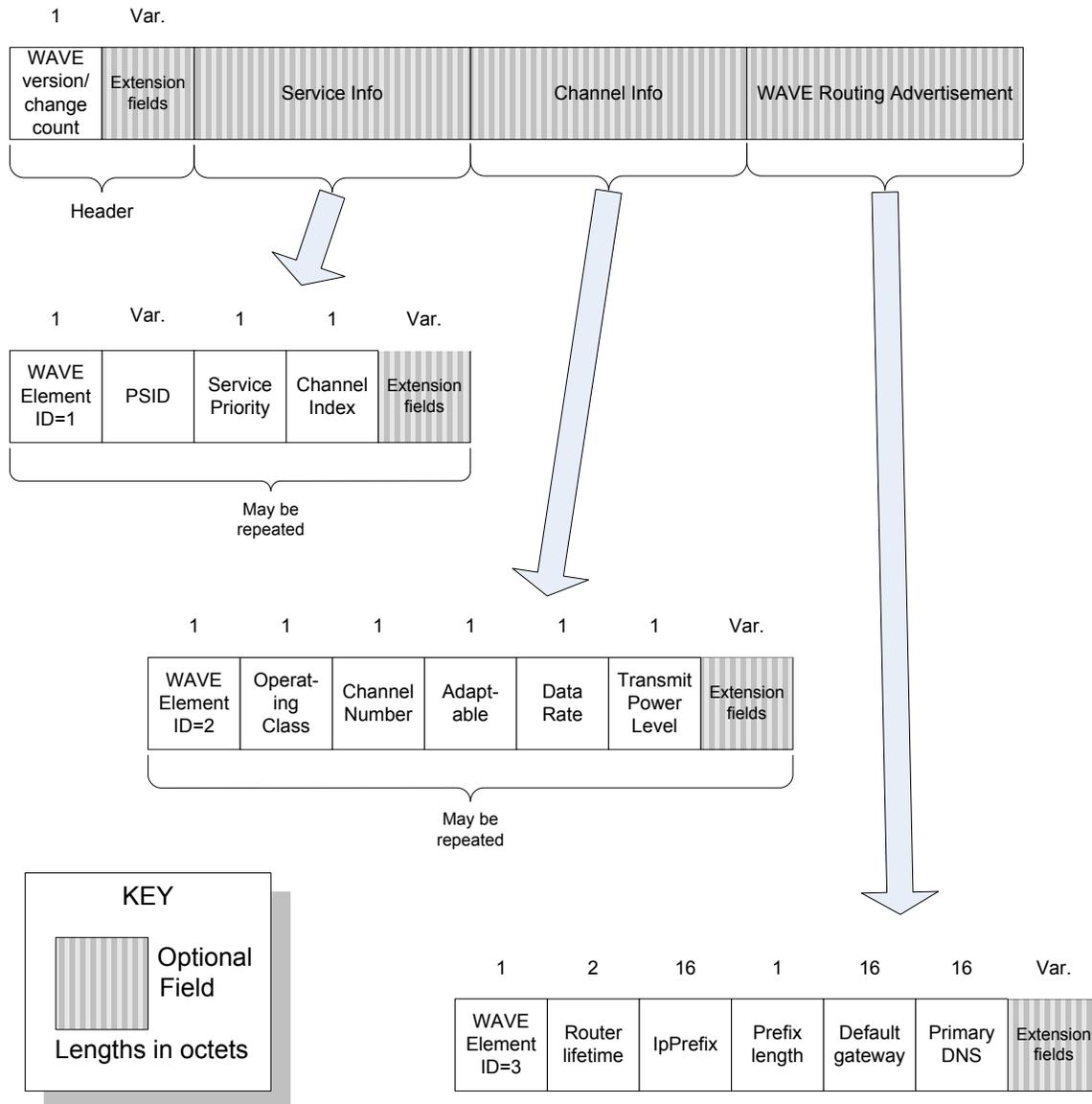


Figure 17 —WaveServiceAdvertisement format

8.2.4 Channel Info

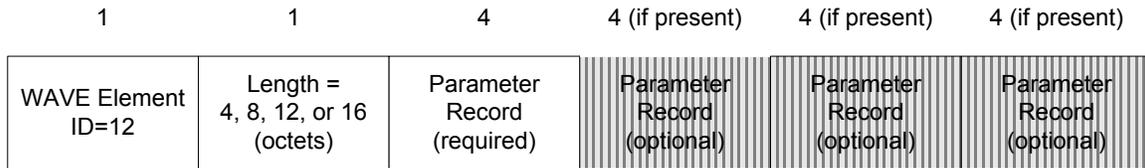
8.2.4.7 Channel Info extension fields

8.2.4.7.2 EDCA Parameter Set

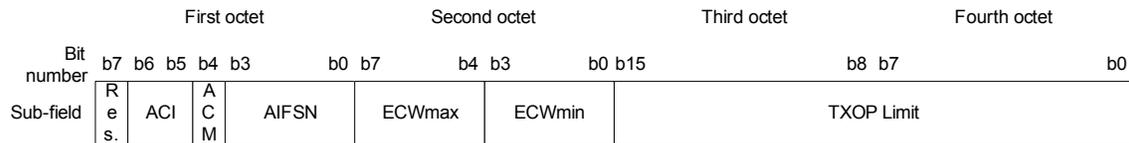
Change the text of the subclause as follows and add the first figure below. (The second figure below is included for continuity and does not introduce any changes.)

If present, this indicates the MAC-layer channel access parameters to be used by the various devices communicating on the channel. The format of the *EDCA Parameter Set* is shown in the subsequent figures, where each subfield is coded as specified in IEEE Std 802.11.

The *EDCA Parameter Set* contains one, two, three, or four *Parameter Records*. Each *Parameter Record* occupies four octets. The number of octets in the *EDCA Parameter Set* is indicated in the *Length* field.



Each *Parameter Record* (1 through 4) is encoded as shown in the figure below, where each subfield is encoded as specified in IEEE Std 802.11.



8.3 WSM format

8.3.1 General

Replace Figure 21 with the figure below, which changes the indicated length of the PSID field in the WSMP header from “4” to “Var.”

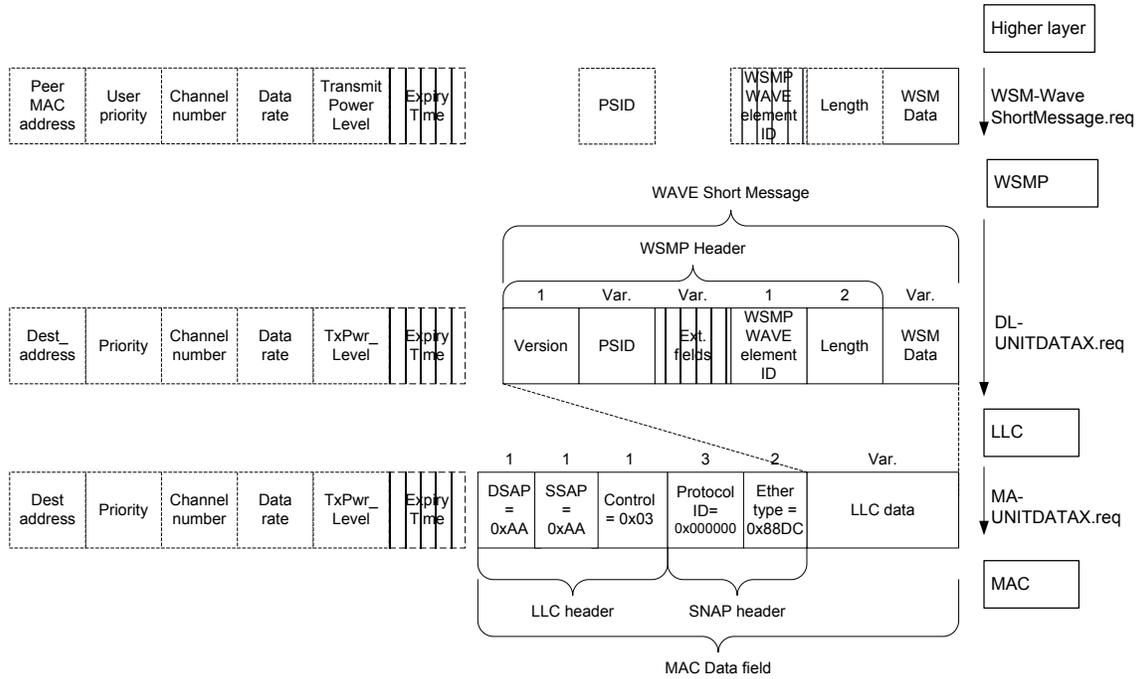


Figure 21 — Building the WSM package

Annex F

(normative)

WSMP safety supplement

F.4 Information formats

In Figure F.2, change the second `WSMS-WaveShortMessage.req` to `WSM-WaveShortMessage.req` as illustrated below.

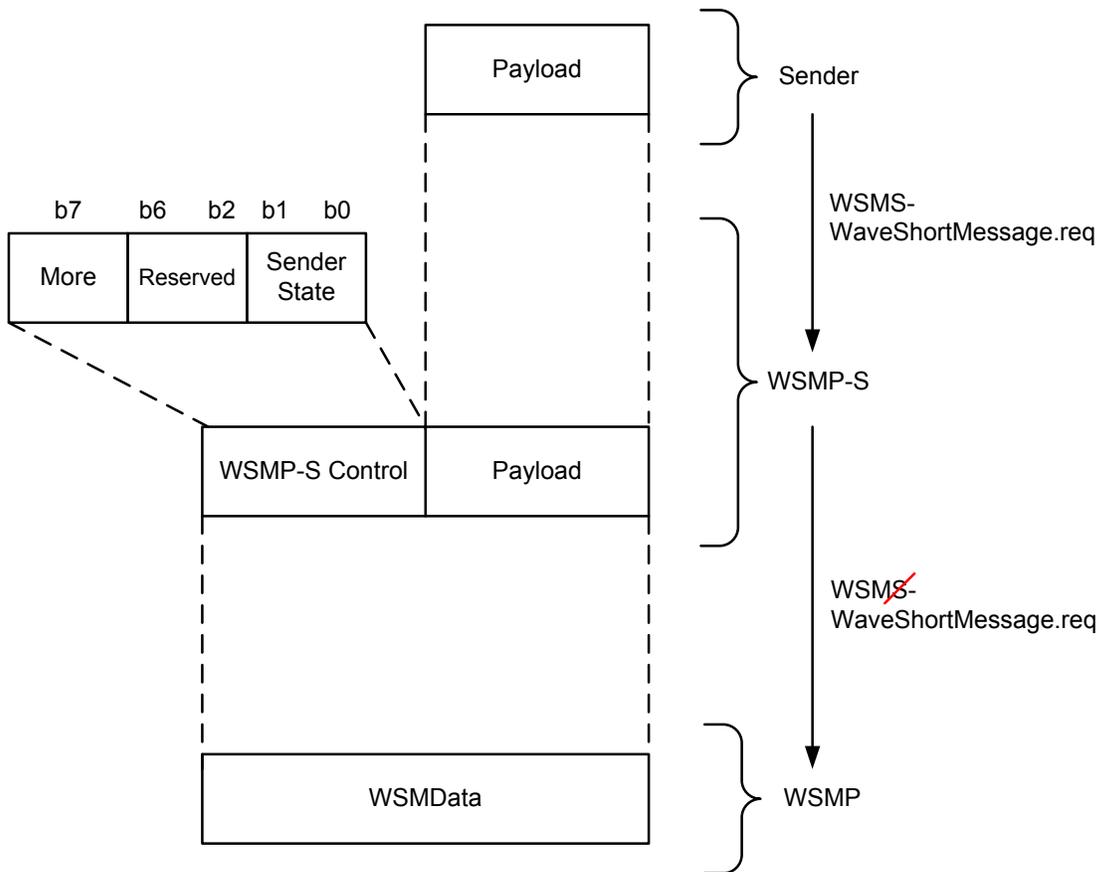


Figure F.2 — WSMP-S Control Field

Annex G

(informative)

Packet format examples

G.1 WSA example

Change the WSA header portion of the table to correct the hex values of latitude and longitude in the WSA 3DLocationAndConfidence field.

Change the Channel Info portion of the table to show a valid example of EDCA Parameter Set encoding per 8.2.4.7.2.

Field name		Length (octets)	Value (hex)	Description	
WSA header	<i>WAVE Version/Change Count</i>	1	06	WAVE Version = 1 (6 bits) Change Count = 2 (2 bits) 0x06 = 0b(000001)(10)	
	WSA header extension fields	<i>Repeat Rate</i>	3	11 01 64	WAVE Element ID = 17 Length = 1 100 times
		<i>Transmit Power Used</i>	3	04 01 1E	WAVE Element ID = 4 Length = 1 30 dBm
		<i>3DLocationAndConfidence</i>	17	06 0F 01 7A 12 AC 0E C4 BA B8 07 36 F8 BB 48 25 B7 4E 03 E8 36 FF FF FF FF	WAVE Element ID = 6 Length = 15 latitude (4 octets): +24.777388° longitude (4 octets): +121.043131° elevation (2 octets): +100m position confidence (4 bits): 3 = 100 m elevation confidence (4 bits): 6 = 10 m positional accuracy (4 octets): 'unavailable'
		<i>Advertiser Identifier</i>	7	07 05 49 54 52 49 00	WAVE Element ID = 7 Length = 5 ASCII content: 'ITRI' 0x49 = I 0x54 = T 0x52 = R 0x49 = I 0x00 = NULL
		<i>Country String</i>	5	12 03 54 57 4F	WAVE Element ID = 18 Length = 3 Country Code: 'TW' (Taiwan) 0x54 = T 0x57 = W 0x4F = 'O': outdoor environment
Channel Info	<i>Channel Info WAVE element ID</i>	1	02	per Annex E	
	<i>Operating Class</i>	1	0E	Operating Class: 14	
	<i>Channel Number</i>	1	AC	channel: 172	

	<i>Adaptable</i>	1	00	0: fixed
	<i>DataRate</i>	1	0C	Data Rate: 6 Mb/s
	<i>Transmit Power Level</i>	1	1E	30 dBm
Channel Info extension fields	<i>EDCA Parameter Set</i>	<u>22</u> <u>10</u>	0C 14 08 0C 12 00 00 06 A4 00 00 29 A4 00 00 43 43 00 00 62 32 00 00	WAVE Element ID = 12 Length = 20 8 per IEEE Std 802.11: IEEE 802.11 Element ID = 12 Length = 18 QoS Info = 0 Reserved = 0 AC_BE: Reserved (1 bit) = 0 ACI (2 bits) = 0 ACM (1bit) = 0 AIFSN (4 bits) = 6 ECWmax (4 bits) = 10 ECWmin (4 bits) = 4 TXOP limit (16 bits) = 0 AC_BK: Reserved (1 bit) = 0 ACI (2 bits) = 1 ACM (1bit) = 0 AIFSN (4 bits) = 9 ECWmax (4 bits) = 10 ECWmin (4 bits) = 4 TXOP limit (16 bits) = 0 AC_VI: Reserved (1 bit) = 0 ACI (2 bits) = 2 ACM (1bit) = 0 AIFSN (4 bits) = 3 ECWmax (4 bits) = 4 ECWmin (4 bits) = 3 TXOP limit (16 bits) = 0 AC_VO: Reserved (1 bit) = 0 ACI (2 bits) = 3 ACM (1bit) = 0 AIFSN (4 bits) = 2 ECWmax (4 bits) = 3 ECWmin (4 bits) = 2 TXOP limit (16 bits) = 0
			<i>Channel access</i>	3