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Title	Clarification of MAC Extended Subheader	
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Re:	Response to Sponsor Ballot on IEEE802.16e/D7 document.	
Abstract	C802.16e-05/163r3 and C802.16e-05/95r3 related to extended subheader were also accepted. However, the content of these contributions wasn't reflected	
Purpose	This contribution proposes to clarify new extended subheaders which were not incorporated into D7 and rearrange section number.	
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Clarification of MAC Extended Subheader

Harmonize with comment #4040-remedy 2, #4047, #4048, #4049, #4352, and #4376.
Pink color indicates changes and additions in the r1 version of this contribution.

Introduction

C802.16e-05/115r3, C802.16e-05/163r3 and C802.16e-05/95r3 related to extended subheader were also accepted. However, the content of these contributions wasn't reflected.

Proposal

This contribution proposes to clarify new extended subheaders which were not incorporated into D7 and rearrange section number.

References

a) IEEE Std 802.16-2004

b) IEEE P802.16e-D7

c) Comment resolution 80216-05_012r3

d) C80216e-05/163r3

e) C80216e-05/95r3

f) C80216e-05/197r2

g) C802.16e-05/115r3

Suggested Changes

Notes to editor: In this section, the text in black is the original text in p802.16e/D7. Instruction to editor is in 'GREEN'. Proposed text change is in 'BLUE' and 'RED'.

6.3.2.2.7 Extended Subheader Format

The Extended Subheader format is specified in Figure 20f. The Extended Subheader Format, when used, shall always appear immediately after the GMH and before all other subheaders, as described in 6.3.2.2. The ESF and all extended subheaders related to it shall not be encrypted, but shall be protected by the payload CRC field. The ESF and all extended subheaders associated to it are transmitted sequentially. The support of each Extended Subheader shall be negotiated between the BS and MS as part of the registration dialog(REG-REQ/RSP)

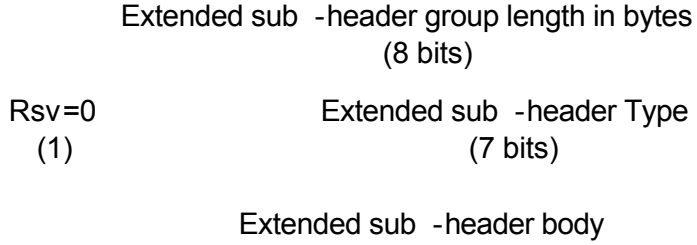

Figure 21 - Extended Subheader Format

The fields of the Extended Subheader structure are described in Table 13a

Table 13a - Extended subheader format (ESF)

Name	Length (bits)	Description
Extended subheader group length	8	The Extended Subheader Group Length field indicates the length of the subheader group, including all the subheaders and including this length byte
Reserved	1	Reserved =0
Extended Subheader type	7	Type of subheader as defined in table 13b
Extended subheader body	Variable	As defined in table 13b for DL and 13c for UL

1. Modify the Table 13b based on 80216-05_012r3

Table 13b - Description of Extended subheaders (DL)

ESF Type value	Name	Length (bytes)	Description
0	SDU_SN Extended subheader	1	See ~~6.3.2.2.7.5~~ 6.3.2.2.7.1
1	~~Generic downlink sleep header~~ DL Sleep control Extended subheader	3	See ~~6.3.2.2.9~~ 6.3.2.2.7.2
2	Feedback request Extended subheader	3	See ~~6.3.2.2.7.4~~ 6.3.2.2.7.3
3	PDU SN(short) Extended subheader	1	See 6.3.2.2.7.4
4	PDU SN(long) Extended subheader	2	See 6.3.2.2.7.4
Bits #5-127	Reserved		

Table 13c - Description of Extended subheaders (UL)

ESF Type value	Name	Length (bytes)	Description
0	MIMO mode feedback Extended subheader	1	See ~~6.3.2.2.7.1~~ 6.3.2.2.7.5
1	UL Tx power report Extended subheader	1	See ~~6.3.2.2.7.6~~ 6.3.2.2.7.6
2	Mini-Feedback Extended subheader	2	See 6.3.2.2.7.7
3	PDU SN(short) Extended subheader	1	See 6.3.2.2.7.4
4	PDU SN(long) Extended subheader	2	See 6.3.2.2.7.4
Bits #5-127	Reserved		

2. Change section 6.3.2.2.7.3 to section 6.3.2.2.7.1 and include comment #3098 resolution

~~6.3.2.2.8~~ 6.3.2.2.7.1 SDU SN Extended Subheader

The SDU SN Extended subheader shall only be sent by the BS if SN Feedback capability is supported and if SDU_SN~~SN~~ Feedback is enabled for a DL connection. The SDU SN Extended subheader shall contain the last virtual MAC SDU sequence number of current MAC PDU. ~~The format of the Feedback request extended subheader is as described in Table 13g~~. The format of the SDU SN Extended subheader is as described in Table 13~~h~~d.

Table 13~~h~~d – SDU SN Extended Subheader format

3. Change section 6.3.2.2.10 to section 6.3.2.2.7.2

~~6.3.2.2.10~~ 6.3.2.2.7.2 DL Sleep control Extended subheader

The ~~following message~~ DL Sleep control Extended subheader is sent by the BS to activate/ deactivate certain Power Saving Class. The requested operation is effective from the next frame after the one where the message was transmitted. The format of DL Sleep control Extended subheader is as described in Table 13e

Table 13~~f~~ e– ~~MOB_SLP_DLC extended~~ DL Sleep control Extended subheader format ~~(DL)~~

4. Change section 6.3.2.2.11 to section 6.3.2.2.7.3

~~6.3.2.2.11~~ 6.3.2.2.7.3 Feedback request Extended subheader

The Feedback request Extended subheader shall be only sent by BS to allocate dedicated UL resource for obtaining the feedback value from an MSS. The format of Feedback request Extended subheader is as described in Table 13~~g~~ f

Table 13~~g~~ f – Feedback request Extended subheader format

5 . Harmonize with comment #4049

6.3.2.2.7.4 PDU SN Extended Subheader

Specify the PDU sequence number in a monotonic increasing manner. The format of the PDU SN Extended Subheader is shown in table 13g and table 13h

Table 13g - Description of PDU SN(short) Extended subheader

Name	Size (bits)	Descirption
PDU SN(short)	8	Specify the PDU SN number

Table 13h - Description of PDU SN(long) Extended subheader

Name	Size (bits)	Descirption
PDU SN(long)	16	Specify the PDU SN number

6. Include comment #3092 (C80216e-05/163r3) resolution

[Insert new section 6.3.2.2.7.4]

6.3.2.2.7.5 MIMO mode Feedback Extended subheader

An MS uses the MIMO Feedback Extended Subheader to provide its feedback in terms of MIMO mode feedback. When there is an UL MAC PDU payload to be transmitted at the same time. The format of the MIMO mode Feedback Extended subheader is as described in Table 13i

Table 13i – MIMO mode Feedback Extended subheader format

Name	Length (bits)	Description
Feedback type	2	00: feedback type '000' as defined in Table 302a 01: feedback type '001' as defined in Table 302a 10: feedback type '010' as defined in Table 302a 11: feedback type '011' as defined in Table 302a

Feedback content	6	Feedback contents and the corresponding feedback payload (6 bits) are the same as that defined in Table 302a and sections 8.4.5.4.10.4, 8.4.5.4.10.5, 8.4.5.4.10.6, 8.4.5.4.10.7, 8.4.5.4.10.8, 8.4.5.4.10.9, 8.4.5.4.10.10 for the Enhanced Fast-feedback channel

For each MSS, if a MIMO mode Feedback Extended subheader is present, it shall only appear in the first unicast PDU transmitted by that MS in that frame.

[Remove section 6.3.2.2.8 and section 6.3.2.2.9]

~~6.3.2.2.8 Mode Selection Feedback Extended Subheader~~

~~6.3.2.2.9 Fast UL Feedback subheader~~

7. Include comment #3053 (C80216e-05/95r3) resolution and harmonize with comment #4048.

6.3.2.2.7.6 UL Tx Power Report Extended Subheader

This subheader is sent from MS to BS to report the Tx power of the burst that carriers this subheader. The format of the UL Tx power report Extended subheader is as described in Table 13j

Table 13j— UL Tx power report Extended subheader format

Name	Size (bits)	Descirption
UL Tx power	~~7~~ 8	Tx power level for the burst carries this header(11.1.1). The maximum value shall be reported for the burst
~~Reserved~~	~~1~~	~~Set to 0~~

8. Include comment #3066 resolution and harmonize with comment #4040 remedy 2

6.3.2.2.7.7 Mini-Feedback Extended Subheader

The format of the mini-feedback Extended subheader is shown in table 13k

Table 13k - Description of Mini-Feedback Extended Subheaders

Name	Size (bits)	Descirption
Feedback type	4	Type of feedback: see table 7i
Feedback content	12	

[Remove section 6.3.2.1.6.2]

~~6.3.2.1.6.2 Mini Feedback header~~

9. Insert capability related to extended subheader based on C802.16e-05/197r2 and harmonize with comment # 4352, 4376.

11.7.24 Extension capability

Specifies extension capability supports (DL)

Type	Length	Value	Scope
??	1	Bit#0: Support SDU SN Extended subheader Bit#1: Support DL Sleep control Extended subheader Bit#2: Support Feedback request Extended subheader Bit#3: Support PDU SN(short) Extended subheader	REG-REQ/RSP

		Bit#4: Support PDU SN(long) Extended subheader Bit#5-7: Reserved	

Specifies extension capability supports (UL)

Type	Length	Value	Scope
??	1	Bit#0: Support MIMO mode feedback Extended subheader Bit#1: Support UL Tx power report Extended subheader Bit#2: Support Mini-Feedback Extended subheader Bit#3: Support PDU SN(short) Extended subheader Bit#4: Support PDU SN(long) Extended subheader Bit#5-7: Reserved	REG-REQ/RSP

[Change 11.8.2 Capabilities for construction and transmission of MAC PDUs]

Type	Length	Value	Scope
4	1	Bit #0: Ability to receive requests piggybacked with data Bit #1: Specifies the size of FSN values used when forming MAC PDUs on non-ARQ connections 0: Only 3-bit FSN values are supported 1: Only 11-bit FSN values are supported Bits #2–7: *Reserved*; shall be set to zero ~~Bit #2: Specifies support for MSF extended subheader (see 6.3.2.2.7.1)~~ ~~Bit #3: Specifies support for Generic Sleep Extended subheader. (see 6.3.2.2.7.2)~~ ~~Bit #4: Specifies support for Feedback Request Extended subheader (see6.3.2.2.7.3)~~ ~~Bits #5-#7: *Reserved*, shall be set to zero~~	~~REG-REQ~~ ~~REG-RSP~~ SBC-REQ SBC-RSP

[Modify 11.7.17 MS Feedback support because the Mode selection Feedback subheader and header already removed]

The 'MS Feedback support' field indicates the support of ~~Mode Selection Feedback~~. Feedback header

Type	Length	Value	Scope
20	1	Bit #0: ~~Mode Selection Feedback Extended Subheader supported~~ Feedback header supported ~~Bit #1: Mode Selection Feedback Header~~ Bits #~~2~~ 1–7: *Reserved:* shall be set to zero	REG-REQ REG-RSP