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Title	Corrections to sounding protocol	
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Re:	IEEE P802.16e/D2-2004	
Abstract	Corrections to sounding definitions	
Purpose	Adopt changes	
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Corrections to sounding protocol

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1. Motivation

The following corrections are required to the sounding protocol:

1. Capability negotiation for sub-features of the sounding
2. Capability negotiation for the required response time
3. Reference to the UL-sounding IE from a section under UL-MAP (for clarity).
4. Remove some unnecessary overhead bits from the IE

2. Details

2.1. Capability negotiation for sub-features of the sounding

The power assignment is a different capability since it requires the SS to feed-back parameters from the downlink channel into the UL transmission pattern (whereas the default mode only requires transmission of a predefined pattern).

Also there is no limitation to the total number of sounding transmissions required from one SS.

2.2. Capability negotiation on the required response time

The current definition is that the response is in the same frame as the request. However, in worst case the UL map (carrying the request) may end at the end of the DL subframe, leaving no time for response. We suggest to add a bit to the sounding IE that indicates if the response is on current or next frame, and a capability negotiation on the SS processing time turnaround capability.

2.3. Reference to the UL-sounding IE from a section under UL-MAP (for clarity)

UL-sounding IE is defined under section 8.4.6.2 (Uplink), and is the only UL-MAP IE that is not referred to from 8.4.5.4 (UL-MAP format).

3. Changes summary

[Add a new section 8.4.5.4.X]

[8.4.5.4.X UL_Sounding_Command_IE](#)

[UL_Sounding_Command_IE](#) is defined in 8.4.6.2.8.1, table 315k.

[Replace the last sentence in the first paragraph of 8.4.6.2.8.1 with the following text]

~~In this case, the first sounding symbol is transmitted within the frame containing the relevant sounding instruction.~~

The first sounding symbol is transmitted in the frame containing the relevant sounding instruction if Sounding_Relevance is set to 0. The Sounding_Relevance_Flag indicates whether the Sounding relevance applies to all CIDs in the sounding command or whether a different Sounding Relevance can

be applied individually for each CID in the sounding command. For each sounding assignment being made in this IE, the Sounding Relevance cannot be set to 0 unless the respective SS has a sounding response time capability less than or equal to the time between the completion of the transmission of the UL_Sounding_Command_IE and the beginning of its respective sounding assignment.

[Add the following lines to table 315k, p.394 line 23, under Send Sounding Report Flag]:

Sounding_Relevance_Flag	1 bit	0 = Sounding relevance is the same for all CIDs 1 = Sounding relevance is specified for each CID
If(Sounding_Relevance_Flag==0){		
Sounding_Relevance	1 bit	0 = All CIDs respond in the frame carrying the instruction 1 = All CIDs respond in next frame
}		

[Replace the “Reserved” row in table 315k, p.395 line 29, with the following]:

If(Sounding_Relevance_Flag==1){		
Sounding_Relevance	1 bit	0 = Respond in the frame carrying the instruction 1 = Respond in next frame
}		

[Replace the “Reserved” row in table 315k, p.396 line 26, below Shortened basic CID with the following]:

If(Sounding_Relevance_Flag==1){		
Sounding_Relevance	1 bit	0 = Respond in the frame carrying the instruction 1 = Respond in next frame
}		

[Remove the following rows labeled “Reserved” in Table 315k]:

- p.394 line 49;
- p.395 lines 6, 33, 38;
- p.396 line 21

[make the following changes in table in 11.8.3.7.11 p.522]

Type	Length	Value	Scope
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161	42	Bit #0: CSIT compatibility type A. Bit #1: CSIT compatibility type B. Bit #2-7: reserved Bit #2: Power assignment capability (indicate support for non equal power assignment) Bits #3-5: Sounding response time capability Bits #6-9: max number of simultaneous sounding instructions (0 = unlimited) Bit #10-15: reserved	SBC-REQ (see 6.3.2.3.23) SBC-RSP (see 6.3.2.3.24)
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The maximum allowed sounding response time for an SS shall be 2 ms. The sounding response time capability encodings are as follows:

Bits 3-5	Time needed for SS to respond to a sounding command transmitted by the BS
000	0.25 ms
001	0.5 ms
010	0.75 ms
011	1 ms
100	1.25 ms
101	1.5 ms
110	1.75 ms
111	2 ms