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	Band AMC Differential CINR reports	
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Re:	IEEE802.16e-2005	
Abstract	The contribution fixes the differential of CINR for AMC band.	
Purpose	Adoption of proposed changes into IEEE Std 802.16e-2005	
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Band AMC Differential CINR reports

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1. Problem statements

As defined in IEEE802.16e-2005, with band AMC operation, from the next frame when the MS sends the REP-RSP, the MS starts reporting the differential of CINR for four or five selected bands (increment: 1 and decrement: 0 with a step of 1dB) on its allocated CQICH channel.

Here, when the CINR of selected bands does not change, how does the MS report for its selected bands?

In addition, when the CQICH is used for differential band AMC reports by MS, the report configuration specified in the CQICH IE that allocated the current CQI channel can not be used. In this case, there are no more benefits for MS when other CQI reports exist in the current CQI channel.

2. Proposal solutions

We propose to add a new feedback header type to provide the differential CINR report for band AMC operation. This feedback header can be used by MS to report the differential CINR after sending the REP-RSP message. This proposal can be compatible with current standard.

The following should be changed to IEEE802.16e-2005.

1. Add a feedback header type to report the differential CINR for band AMC operation.
2. Change description of section 6.3.18.2, 6.3.19.1, 8.4.5.4.10.1, 8.4.6.3.2 to allow the MS to sending optional feedback header to report the differential CINR after sending the REP-RSP message.

3. Specific Text Changes

[Modify Section 6.3.2.1.2.2.1, Table 7i on Page 33]

***Table 7i—Feedback type and feedback content* (continued)**

Feedback Type (binary)	Feedback contents	Description
0111	Life span of short-term precoding feedback (4 bits) according to Table 316i.	The recommended number of frames for which the short-term precoding feedback can be used.
1000	Number of feedback types, *0*(2 bits) + *0* occurrences of 'feedback type (4 bits) + feedback content (variable)'	Multiple types of feedback.
1001	Feedback of index to long-term precoding matrix in codebook (6 bits), rank of precoding codebook (2 bits) and FEC and QAM feedback (6 bits) according to Table 316h.	Long-term precoding feedback.

1010	Combined DL average CINR of Active BSs (5 bits).	Combined DL average CINR of all Active BSs within the Diversity Set, with 5-bit payload encoding as defined in 8.4.5.4.15.
1011	MIMO channel feedback (see Table 7j for description of feedback content fields)	MIMO mode channel condition feedback.
1100	CINR Mean (8 bits) + CINR Standard Deviation (8 bits)	CINR Feedback (values and coding defined in 8.4.11.3).
1101	CL MIMO type (2 bits) If (CL MIMO type == 0b00 { Antenna grouping index (4 bits) + aver-age CQI (5 bits) } Elseif (CL MIMO type == 0b01{ Number of streams (2 bits) + Antennas selection option index (3 bits) + average CQI (5 bits) of the selected antennas} Elseif (CL MIMO type == 0b10) { Number of streams (2 bits)+Codebook index (6 bits) + average CQI (5 bits) }	Closed-loop MIMO feedback CL MIMO type: 0b00: antenna grouping 0b01: antenna selection 0b10: codebook 0b11: indication of transition from closed-loop MIMO to open-loop MIMO Antenna grouping index: 0b0000~ 0b1001 = 0b101110 ~ 0b110110 in Table 298g Antenna selection option index: 0b000 ~0b010 = 0b110000 ~ 0b110010 in Table 316f for 3 Tx antenna 0b000~0b101 = 0b110000~0b110101 in Table 316g for 4 Tx antenna Codebook index: (See 8.4.8.3.6.)
1110	Differential CINR report (6 bits per selected band)	Signed integer, which expressing the change of CINR of selected bands, in 0.25dB units.
1111	Reserved	

[Modify Section 6.3.18.2, insert new paragraph above the last paragragh on Page 223]

Alternatively, the SS may report the differential of CINR using feedback header with type 1110 (6.3.2.1.2.2.1). From the next frame when the SS sent the REP-RSP, the SS starts reporting the differential of CINR from preamble for four selected bands using feedback header with type 1110. The period of differential CINR report is specified by UCD message. If the BS does not send a unicast MAC PDU to the SS using Band AMC subchannel or send REP-REQ to indicate reporting Band AMC CINR within the specified delay (Band AMC Transmit Delay) in the UCD message, the SS shall stop reporting the differential CINR of selected bands and resume to report Band AMC CINR using REP-RSP message. If the BS sends a unicast MAC PDU to the SS using non-band AMC subcahnnels, or the CQICH allocation IE indicates to report CINR on a zone other than Band AMC zone, the SS shall stop reporting the differential CINR of selected bands, but resume to report CINR according to the report configuration specified in the latest CQICH Allocation IE .

Change 'CQICH Band AMC Transition Delay' to 'Band AMC Transition Delay' in the last second paragragh on Page 223 in Section 6.3.18.2

[Modify Section 6.3.18.2, insert new paragragh below the second paragraph on Page 224]

Alternatively, for the differential CINR reporting using feedback header, at any time, SS can send REP-RSP of reporting CINR of the non Band AMC mode to trigger a transition of the differential CINR reporting scheme to the non-Band AMC mode. When the BS receives the REP-RSP, BS may send CQICH allocation IE to the SS to direct the non-band AMC reporting scheme. When BS does not send CQICH allocation IE and/or SS

does not receive the CQICH allocation IE, SS shall keep reporting the differential CINR using feedback header with type 1110.. At any time, BS can send CQICH allocation IE to trigger a transition of the differential CINR reporting with feedback header to the non-band AMC mode.

[Modify Section 8.4.5.4.10.1, insert the sentence at the end of the second paragraph on Page 441]

For band AMC operation, the SS shall report differential of CINR of four selected bands (increment:1 and decrement: 0 with a step of 1dB) on its fast-feedback channel. Alternatively, SS may report the differential of CINR for selected bands using feedback header with type 1110.

[Modify Section 8.4.5.4.10.11, insert the sentence at the end of the paragragh on Page 454]

When the Band AMC operation is triggered, the SS shall report the differential of CINR for five selected bands (increment:1 and decrement: 0 with a step of 1dB) on its enhanced or primary fast feedback channel. The fast 32 codewords with MSB of 0 are used. Alternatively, SS may report the differential of CINR for selected bands using feedback header with type 1110.

[Modify Section 8.4.6.3.2, insert new paragragh above the last paragragh on Page 562]

Alternatively, MS may report the differential of CINR for selected bands using feedback header with type 1110. If the BS does not allocate the Band AMC subchannels within the specified delay (Band AMC Transition Delay) in the UCD message, the SS shall stop reporting the differential CINR of selected bands, but reports the updated average CINR for the allocation of subchannel with distributed subcarrier permutation.

Change '*CQICH Band AMC Transition Delay*' to '*Band AMC Transition Dela*y' in the last second paragragh on page 562 in section 8.4.6.3.2

[Modify Section 11.13.1, Table 353 on Page 665, 670]

***Table 353—UCD PHY-specific channel encodings—WirelessMAN-OFDMA* (continued)**

Name	Type (1 byte)	Length	Value
HARQ ACK delay for UL burst	171	1	
~~CQICH~~ Band AMC Transition Delay	172	1	Frame unit

Bandwidth_request_backoff_ end	201	1	Final backoff window size for contention BW requests, expressed as a power of 2. Values of n range 0-15 (the highest order bits shall be unused and set to 0). This TLV shall be used in NBR-ADV message only to represent corresponding values that appear in UCD message fields.
Uplink_burst_profile for multiple FEC types	202	1	May appear more than once (see 6.3.2.3.3 and 8.4.5.5). The length is the number of bytes in the overall object, including embedded TLV items.
AMC differential CINR report period	203	1	Frame units.