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Title	CINR report for OFDMA PHY
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Re:	Response to Sponsor Ballot on IEEE802.16e/D9 document
Abstract	In this contribution, we propose a modification to the CINR report in OFDMA
Purpose	To incorporate the text changes proposed in this contribution into the 802.16e/D8 draft.
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CINR Reports For OFDMA PHY

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Overview

One aim of the CINR report is to allow BS to determine the modulation and coding scheme (MCS) for a particular SS. However, due to the multipath fading of the wide-band wireless communication channels, an average CINR report is insufficient for BS to accurately determine MCS. In such cases, a report of average CINR and an indication of variation of the CINR over the measured bandwidth will provide additional information. According to the variance of the CINR, the BS may use different mapping scheme to decide upon MCS. In this contribution, we provide such a means of providing this information.

Detailed Text Changes

[Add the text in section 8.4.11.3 as follows]

When CINR measurements are mandated by the BS, an SS shall obtain a CINR measurement (implementation-specific). From a succession of these measurements, the SS shall derive and update estimates of the mean and the standard deviation of the CINR, and report them via REP-RSP messages.

Mean and standard deviation statistics for CINR shall be reported in units of dB. To prepare such reports, statistics shall be quantized in 2 dB increments, ranging from a minimum of –10 dB (encoded 0x00) to a maximum of 52 dB (encoded 0x1F). Values outside this range shall be assigned the closest extreme value within the scale.

Average CINR and associated fading channel condition shall be used by BS for the purpose of MCS assignment because communication channel under measurement may be frequency selective. For the REP-RSP, the fading channel condition under measurement is indicated by the measured standard deviation of CINR reported to BS. If the measured standard deviation of CINR is greater than a threshold (implementation specific), the channel under measurement is regarded as frequency selective. BS may use a different mapping schemes to determine MCS according to the channel condition.

For CINR reporting via the fast-feedback channel (CQICH), the measured standard deviation of CINR is compared with the fading depth indicated by Channel Fade-Depth specified in the UL-MAP Physical Modifier IE by BS. If the measured standard deviation of CINR is greater than the fading depth indicated by Channel Fade-Depth, MSS shall set Channel Fading Indicator to 1 otherwise set Channel Fading Indicator to 0. If Channel Fading Indicator = 0/1, the channel is regarded as frequency nonselective/selective. The single bit Channel Fading Indicator shall be sent to BS via CQICH. In this case, a 6-bits CQICH channel is required and defined as xyyyyy, where x is the Channel Fading Indicator, and next 5-bits yyyyy is CINR in dB, -10 to 52 dB, with quantization of 2dB.

[Add the following entries to table 300 (CQICH_Alloc_IE), immediately before the 'Padding' field]

Table 300—OFDMA UL-MAP Physical Modifier IE format

Syntax	Size	Notes
...	...	...
~~Preamble Time Shift Index~~	~~4 bits~~	~~Specifies the cyclic time shift in equation (104): For PUSC, 0 – 0 sample cyclic shift 1 – (Nfft/14) sample cyclic shift~~ ~~…~~ ~~13 – (Nfft/14*13) sample cyclic shift 14-15 – *reserved*~~ ~~For AMC permutation, 0 – 0 sample cyclic shift 1 – (Nfft/9) sample cyclic shift~~ ~~…~~ ~~8 – (Nfft/9*8) sample cyclic shift 9-15 – *reserved*~~
~~}~~		
Channel Fade-Depth	2 bits	Depth of frequency selective channel fading (in dB) 00 = 5 01 = 10 10 = 15 15 = 20
Pilot Pattern Modifier	1 bit	0: Not applied, 1: Applied
Pilot Pattern Index	2 bits	00 – Pilot Pattern #A
		01 – Pilot Pattern #B
		10 – Pilot Pattern #C
		11 – Pilot Pattern #D
~~*Reserved*~~	~~3 bits~~	
}		