Project	**IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>**
Title	**Proposed MAC messages related to the DL Measurement/Report in Multicarrier Systems (16.2.8.2.8)**
Date Submitted	**2009-12-31**
Source(s)	Lei Wang InterDigital Communications, LLC Voice : +1 858 205-7286 E-mail: leiw@billeigean.com
Re:	IEEE 802.16 Working Group Letter Ballot #30b on P802.16m/D3
Abstract	The contribution proposes the MAC messages in 16m/D3 regarding the DL measurement/report in multicarrier systems (16.2.8.2.8).
Purpose	To be discussed and adopted by TGm for the 802.16m DRAFT amendment.
Notice	*This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups*. It represents only the views of the participants listed in the "Source(s)" field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy	The contributor is familiar with the IEEE-SA Patent Policy and Procedures: <http://standards.ieee.org/guides/bylaws/sect6-7.html#6> and <http://standards.ieee.org/guides/opman/sect6.html#6.3>. Further information is located at <http://standards.ieee.org/board/pat/pat-material.html> and <http://standards.ieee.org/board/pat>.

Proposed MAC Messages Related to DL Measurement/Report in Multicarrier Systems (16.2.8.2.8)

Lei Wang

InterDigital Communications, LLC

1 Introduction

As indicated by the paragraph in line 58 on page 188 in the 802.16m/D3, the AMS uses measurement/report MAC messages transmitted on the primary carrier to provide the DL feedback of the active secondary carriers in multicarrier systems. However, the current 802.16m/D3 does not have any details regarding the MAC messages used to provide DL feedback in Multicarrier operations.

This contribution proposes two types of MAC messages are proposed in this contribution: one is the MAC control messages, AAI_REP-REQ/RSP; and the other is a MAC signaling header for DL CINR report.

2 Suggested changes in the 802.16m/D3

Based on the above discussion, we propose the following changes in the 802.16m/D3. Note that the new text is marked with blue and underline; the deleted text are marked with red and strikethrough.

Suggested change #1: page 188, line 58

Change the paragraph in line 58 on page 188 as follows:

An ABS may assign FastFeedback channels to each carrier of an AMS. When FastFeedback channel is assigned, the AMS reports CINR for a carrier over the assigned FastFeedback channel of the corresponding carrier. ABS may also direct AMS to report CINRs of active carriers through FastFeedback channel(s) on the primary carrier at the feedback region as defined in Section 16~~5~~.3.8.3.3. When measurement/report MAC messages are used for DL CINR report operation, the messages are transmitted on the AMS's primary carrier. The measurement/report MAC messages include the DL CINR Report MAC signaling header in Section 16.2.2.1.3.5 and the AAI_REP-REQ/RSP messages in Section 16.2.3.49. The measurement/report MAC message may contain CINR reports for all carriers or for each carrier of the AMS.

Suggested change #2: on page 22, line 35

Change Table 656 on page 22 as follows:

Table 669—Type field encodings for MAC signaling header type

Type field (4)bits	MAC Signaling Header Type
0000	BR with STID
0001	BR without STID
0010	Service specific BR without STID
0011	Sleep Control
0100~~-1111~~	~~Reserved~~ DL CINR Report
0101 - 1111	Reserved

Suggested change #3: on page 27, line 23

Insert the following text before line 23 on page 27:

16.2.2.1.3.5. DL CINR Report Header

The DL CINR report header is sent through dedicated UL resource assigned to the AMS. Its format is defined in Table 659a.

Table 659a—DL CINR Report Header Format

Syntax	Size (bit)	Notes
DL CINR report header() {		
FID	4	Flow Identifier. This field indicates MAC signaling header
Type	4	MAC signaling header type.
DL carrier index	[6]	DL carrier index of the DL carrier whose CINR is reported below.
CINR	7	indicates the CINR measured by the AMS from the ABS. It shall be interpreted as a single value from –16.0 dB to 47.5 dB in units of 0.5 dB.
Reserved	3	Reserved for byte alignment. This field shall be filled by 0
}		

Suggested change #4: on page 40 line 53

Append the following two rows at the end of Table 673 in line 53 on page 40:

Message Name	Message description	Security	connection
AAI_REP-REQ	Channel Measurement report request	<TBD>	Basic
AAI_REP-RSP	Channel Measurement report response	<TBD>	Basic

Suggested change #5: on page 117 line 45

Insert the following text before line 45 on page 117:

16.2.3.49 AI_REP-REQ and AAI_REP-RSP

If the ABS requires RSSI and CINR channel measurement reports from an AMS, it shall send the Channel Measurement /report request message, AAI_REP-REQ, to the AMS. The Channel Measurement AAI_REP-REQ message shall additionally be used to request the results of the measurements the BS has previously scheduled. The AAI_REP-REQ message includes the following parameters:

- DL carrier index: indicate the DL carrier for which the channel measurement / report is requested.
- Report Request: a compound parameter that specifies the requested measurement / report.

The Channel Measurement/report response AAI_REP-RSP message shall be used by the AMS to respond to the channel measurements listed in the received Channel Measurement/report request AAI_REP-REQ messages. Where regulation mandates detection of specific signals by the AMS, the AMS shall also send a Channel Measurement/report response AAI_REP-RSP message in an unsolicited fashion upon detecting such signals on the channel in which it is operating if mandated by regulatory requirements. The AMS may also send an AAI_REP-RSP message containing channel measurement reports, in an unsolicited fashion, or when other interference is detected above a threshold value. When specific signal detection by an AMS is not mandated by regulation, the SS may indicate "Unmeasured. Channel Not Measured" in the AAI_REP-RSP message when responding to the AAI_REP-REQ message from the ABS. The AAI_REP-RSP message includes the following parameters:

- DL carrier index: indicate the DL carrier for which the channel measurement / report response is.
- Report Response: a compound parameter that contains the measurement / report responses.

17 References

[1] IEEE Std 802.16-2009

[2] IEEE P802.16m/D3, "DRAFT Amendment to IEEE Standard for Local and metropolitan area networks"