Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Proposed Changes related to Contention-Based Random Access Bandwidth Request (15.2.11.1.1)**
Date Submitted	**2009-11-06**
Source(s)	Lei Wang Voice : +1 858 205-7286 InterDigital Communications, LLC E-mail: leiw@billeigean.com
Re:	IEEE 802.16 Working Group Letter Ballot #30a on P802.16m/D2
Abstract	The contribution proposes changes related to Contention-Based Random Access Bandwidth Request (15.2.11.1.1).
Purpose	To be discussed and adopted by TGm for the 802.16m DRAFT amendment.
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Proposed Changes related to Contention-Based Random Access Bandwidth Request (15.2.11.1.1)

Lei Wang

InterDigital Communications, LLC

1   Introduction

The sentences in line 53 to line 59 on page 174 are addressing the issue that, in the 5-step BR procedure, collision occurs in the step 3, i.e., UL transmission in an allocation allocated anonymously. The TBD there needs to be further clarified. Also, some language clean-up is needed.

In addition, in case the ABS detects such a collision during the receptions of the Step 3 from the AMS's transmissions, either in original transmission or HARQ retransmissions, as long as such a detection is before the max number of HARQ retransmissions has reached, we should consider to allow the ABS to send out a quick and short collision-indicator to the AMSs, e.g., a signaling header, so that the AMSs involved in such a collision can restart the BR procedure as early as possible, thus reducing the waste of resources used for the retransmissions.

This contribution proposes the changes in 802.16m/D2 to address the above issues.

2   Suggested changes in the 802.16m/D2

Based on the above discussion, we propose the following changes in the 802.16m/D2. Note that the new text is marked with blue and underline; the deleted text are marked with red and strikethrough.

Suggested change #1: on page 174, line 50

Change the paragraph in line 50 on page 174 as follows:

During the 3-step BR procedure of Figure 424, if the ABS is unable to decode the quick access message, the ABS falls back to the 5-step BR procedure illustrated in Figure 425. In that case, in Step 2, the ABS shall provide an UL grant to the AMS using a BR ACK A-MAP IE or CDMA Allocation A-MAP IE. The ABS shall limit the maximum HARQ retransmission of the transmission in an anonymous UL allocation in Step 3 ~~BR REQ header~~ to N_MAX_ReTx_RA that should be less than N_MAX_ReTx ~~TBD~~ ~~through the BR ACK A-MAP IE or CDMA Allocation A-MAP IE~~. In Step 3, the AMS transmits a standalone BW REQ header or use the given UL resource for its uplink data transmission instead of the BW-REQ message. In both cases, STID shall be carried in the uplink transmission. Before reaching the maximum HARQ retransmissions (i.e., N_MAX_ReTx_RA), if the ABS detects a collision in an anonymous UL allocation in Step 3, the ABS may send an anonymous UL allocation collision indication to the AMSs.

~~Note: N_MAX_ReTx_RA should be less than N_MAX_ReTx~~

Suggested change #1: on page 175, line 1

Change the paragraph in line 1 on page 175 as follows:

The AMS may restart the BR procedure if BR timer is expired, or the AMS receives a negative acknowledgement that is generated locally at the AMS, or the AMS receives an anonymous UL allocation collision indication from the ABS. Local positive/negative acknowledgement for BR header shall be enabled.

Suggested change #3: on page 175, Figure 425

In Figure 425, on page 175, add a dotted arrow line from SABS to AMS between Step 3 and Step 4, name it as "anonymous UL allocation collision indication ".

Suggested change #4: on page 30, Table 669

In table 669, insert a row for the newly proposed DL MAC signaling header, called as "anonymous UL allocation collision indication", as follows:

Table 669—Type field encodings for MAC signaling header type

Type field (4)bits	MAC Signaling Header Type
0000	BR with STID; UL only
0001	BR without STID; UL only
0010	Service specific BR without STID; UL only
0011	Sleep Control; DL only;
0100 1111	Reserved anonymous UL allocation collision indication; DL only
0101 - 1111	Reserved

Suggested change #5: on page 32, line 43

Insert the follow text before line 43 on page 32

15. 2.2.3.4   Anonymous UL allocation Collision Indicator MAC Signaling Header

The anonymous UL allocation collision indication MAC signaling header may be used by ABS to inform the AMSs a collision detected in an anonymous UL allocation.

Table 672a— anonymous UL allocation collision indication Signaling Header Format

Syntax	Size (bit)	Notes
Control Message Acknowledgement Signaling Header() {		
FID	4	Flow Identifier. This field indicates MAC signaling header, i.e., 0b0010.
Type	4	MAC signaling header type.
RA_ID	12	Indicate the anonymous UL allocation where collision has been detected. The RA-ID is calculated by a hash function with the AMS' random access attributes (frame number index (4 bits), ranging code/BR code index (6 bits) and opportunity index (2 bits) as defined in Section 15.2.11.2.
Reserved	4	Reserved. This field shall be filled by 0.
}		

3 References

[1] IEEE Std 802.16-2009

[2] IEEE P802.16m/D2, "DRAFT Amendment to IEEE Standard for Local and metropolitan area networks"