Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**MAC Header Format Modifications**
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Re:	This document is submitted in response to 802.16 Letter Ballot #3
Abstract	This document proposes (1) The addition of a Type field to the Bandwidth Request Header field
Purpose	The author wants 802.16 to consider this document within a process of comments resolution for the document IEEE 802.16/D2-2001
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MAC Header Format Modifications

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1.0 Comment

Bit 0 **15**

HT (1)	**EC (1)**	**EKS (2)**	**Type (4)**	**BR (MSB) (8)**
BR (LSB) (8)				**CID (MSB) (8)**
CID (LSB) (8)				**HCS (8)**

FIGURE 1. Bandwidth Request Header Format

1.1 Page 51, Line 13, Section 6.2.2

Replace Figure 20 in IEEE 802.16/D2-2001 by Figure 1 in this contribution.

1.2 Discussion

Currently the 802.16 MAC protocol allows for two types of MAC headers, which are distinguished by the Header Type (HT) field. When HT = 1, then the MAC Header is used for Bandwidth Request packets, which are special packets containing the header only, with no payload. Currently the protocol does not define any other packet which shares this characteristic.

The addition of ARQ functionality into the MAC protocol, leads to the situation in which there are additional MAC packets required in uplink direction, which share similar properties with the Bandwidth Request packets, i.e., they are defined using the header alone with no payload. A specific instance of such a packet is the Uplink ACK packet (which acks

downstream data packets). It is necassary to have a separate Uplink ACK packet (in addition to piggybacked uplink ACKs), for the following reasons:

- For the case in which there is no uplink data, it is not possible to piggyback uplink ACKs
- When the uplink ACK is sent piggybacked, then it is forced to use the same burst profile as uplink data, which may not be the most robust one. In order to make sure that the ACK always makes it to the BS, even in a degraded channel (in order to have any utility as a feedback mechanism), it is preferable to use a more robust burst profile for uplink ACKs as compared to uplink data. This necassitates that the uplink ACK be sent as a separate burst.

It is possible to slightly modify the Bandwidth Request packet, in order to define the uplink ACK packet, as shown in Figure 1. There is a 4 bit Type field that can be used to identify other kind of control packets. Thus Bandwidth Requests and Uplink Acks can be assigned different Types.