Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Uplink enhancement for FDD**
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Re:	IEEE 802.16e D2 Draft
Abstract	Uplink enhancement for FDD
Purpose	To incorporate the changes here proposed into the 802.16e D2 draft.
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Uplink OFDMA enhancement for FDD

1 Background

The current OFDMA PHY and MAC are optimized towards the TDD operation. However, for the FDD operation, due to the UL/DL reciprocal property is not valid. In addition, the FDD spectrum is still the major allocation scheme. We highlight the uplink enhancement areas for the FDD application.

2 Areas of the FDD Up link enhancement

The FDD up link enhancement can be classified into the following categories:

- Allow concurrent AMC allocation of sub-channel and diversity sub-channel to the same MSS:
  - Rate control on the AMC sub-channel
  - Power control on the diversity channel
  - Fixed rate data channel
  - Variable packet data channel
- UL H-ARQ:
  - Use CTC for the simple encoding in MSS
  - Same H-ARQ operation as DL
- UL Signaling channels to support scheduling:
  1. DL ACK/NAK signaling to support UL HARQ
  2. MSS buffer status
  3. MSS transmit power margin
  4. MSS rate indicator

3 Summary

Several UL enhancements areas are proposed. Most of these areas can be easily modified as 802.16e enhancements.