Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	**MAC Topics Identified by PHY Group (802.16.3)**	
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Source(s)	802.16.3 PHY Working Group Michael Stewart Escape Communications, Inc.	Voice: 310.379.2305 Fax: 310.379.2306 [mailto:mstewart@escapecom.com]
Re:	PHY interface with MAC for 802.16.3	
Abstract	Work on the MAC-PHY convergence layer.	
Purpose	Topics for discussion	
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MAC ISSUES (FROM PHY Sub-group)

Michael Stewart

1. **SYMBOL SIZES**
    a. **Multicarrier**
        i. **OFDM - MODE A* 192 carriers per basic block – (256 FFT mandatory) – closest to Single Carrier due to TDMA upstream**
            1. **Example QPSK rate ½ is 24 bytes per basic block**
        ii. **OFDMA - MODE B 144 carriers per basic block -- (2K FFT mandatory)**
            1. **Example QPSK rate ½ is 18 bytes per basic allocations**
    b. **Single Carrier**
2. **ADAPTIVE MODULATION AND FEC**
    a. **Both multi- and single carrier support QPSK, 16-QAM, and 64-QAM**
    b. **Multicarrier**
        i. **Table 4, page 18 - mandatory**
        ii. **Table 7, page 21 – extended**
    c. **Single Carrier**
3. **Ranging**
    a. **Multicarrier**
        i. **CDMA code assignment for Mode B**
        ii. **Power control (different ?)**
            1. **Downstream power-control in OFDMA**
        iii. **Synchronization**
            1. **OFDM**
            2. **OFDMA**
            3. **Any differences in TDD vs FDD ?**
    b. **Single Carrier**
4. **Framing structure**
    a. **Multicarrier**
        i. **Pre-amble**
        ii. **Mid-amble**
        iii. **Training sequences**
    b. **Single Carrier**
        i. **Unique Word**
5. **How does “MAC mini-slot” correspond to symbol ?**

- **a. Multicarrier**
  - **i. OFDMA scheduling (sub-channel assignment)**
    1. **Uplink**
    2. **Downlink (mode A / mode B)**
- **b. Single carrier**

6. **Retransmission / fragmentation /ARQ**
7. **Bandwidth request / response protocols**
   - **a. Spectral efficiency (request packet shortening, polling, CDMA)**
8. **MAC support to**
   - **a. adaptive antenna arrays / SDMA**
   - **b. Multiple transmit antenna**
   - **c. Multiple receive antenna**
   - **d. Base station vs CPE**
9. **CPE initialization handshaking (any differences from TG1?)**
   - **a. SC vs OFDM**
   - **b. Modes of above supported**
   - **c. Extended FEC (TPC) supported**
   - **d. Coexistence – especially for TG4**
     - **i. relative to 802.11 & 802.15**
     - **ii. other TG4 systems**
10. **Considerations for TDD vs FDD operation**
    - **a. Any half duplex FDD ?**
    - **b. Symmetry / asymmetry TDD**
    - **c. Guard time selection for TDD mode / all upstream**
11. **Considerations for burst mode vs continuous mode downlink**
    - **a. Broadcast / multicast downstream**
    - **b. Non-broadcast (esp SDMA)**