Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**WirelessMAN-OFDMA System PHY Profiles**
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Re:	Response to the call for contributions to IEEE Standard 802.16e/D5-2004.
Abstract	This contribution describes the missing WirelessMAN-OFDMA system PHY profiles.
Purpose	To incorporate the text modification proposed in this contribution into IEEE 802.16 standard.
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WirelessMAN-OFDMA System PHY Profiles

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1.   Problem Statement

In order to reflect new opportunities for providing broadband service in the 2.5 to 2.7 GHz bands, the FCC in June 2004, among other things, renamed the Multipoint Distribution Service (MDS) in the U.S. to become the Broadband Radio Service (BRS). Also, it renamed the Instructional Television Fixed Service (ITFS) in the same bands the Educational Broadband Service (EBS) for the same reason.   The bands remain known as either MDS or the Multichannel, Multipoint Distribution Service (MMDS) in many other parts of the world. The FCC decision also expanded the original BRS/EBS (aka MDS-ITFS) band by adding to it five megahertz of additional spectrum from the Mobile Satellite Service below 2500 MHz, which increases the total size of the higher band to 194 megahertz.

There are missing WirelessMAN-OFDMA system profile definitions in *Table 411* of IEEE Standard 802.16e/D5-2004.

2.   Proposed solutions

We would like to propose 5MHz, 10Mhz, and 20MHz channel profiles (TDD only) to BRS licensed band.

3.   Specific text changes

[Modify the following text to **Table 411** in section **12.4 WirelessMAN-OFDMA and WirelessHUMAN(-OFDMA) system profiles**]

=== Start text changes ====

Table 411—Profile Definitions

Identifier	Description
OFDMA_profM1	WirelessMAN-OFDMA basic packet PMP MAC Profile
OFDMA_profP1	WirelessMAN-OFDMA 1.25 MHz channel basic PHY Profile
OFDMA_profP2	WirelessMAN-OFDMA 3.5 MHz channel basic PHY Profile
OFDMA_profP3	WirelessMAN-OFDMA 5 MHz channel basic PHY Profile
OFDMA_profP34	WirelessMAN-OFDMA 7 MHz channel basic PHY Profile
OFDMA_profP5	WirelessMAN-OFDMA 8.75 MHz channel basic PHY Profile
OFDMA_profP6	WirelessMAN-OFDMA 10 MHz channel basic PHY Profile
OFDMA_profP7	WirelessMAN-OFDMA 14 MHz channel basic PHY Profile
OFDMA_profP8	WirelessMAN-OFDMA 20 MHz channel basic PHY Profile
OFDMA_profP59	WirelessMAN-OFDMA 28 MHz channel basic PHY Profile
OFDMA_profP610	WirelessHUMAN(-OFDMA) 10 MHz channel basic PHY Profile
OFDMA_profP711	WirelessHUMAN(-OFDMA) 20 MHz channel basic PHY Profile

=== End text changes ====

[Add the following text before section **12.4.3.4 WirelessMAN-OFDMA 7 MHz channel basic PHY Profile**]

=== Start text changes ====

12.4.3.4 WirelessMAN-OFDMA 5 MHz channel basic PHY Profile
Profile identifier: OFDMA_ProfP3.
Systems implementing OFDMA_ProfP3 shall meet the minimum performance requirements listed in Table 416:

Table 416—Minimum Performance requirements for OFDMA_ProfP3

Capability	Minimum Performance
Channel bandwidth	5 MHz
Operation mode	Licensed bands only
FFT Size	512
BER performance threshold, BER=10-6 (using all subchannels BS/SS) QPSK-1/2 QPSK-3/4 16QAM-1/2 16QAM-3/4 64QAM-2/3 (if 64-QAM supported) 64QAM-3/4 (if 64-QAM supported) (Add 1) $10 \cdot \log_{10}\left(\dfrac{k}{17}\right)$ for UL, or 2) $10 \cdot \log_{10}\left(\dfrac{k}{8}\right)$ for FUSC DL, or 3) $10 \cdot \log_{10}\left(\dfrac{k}{15}\right)$ for PUSC DL to sensitivity when not all subchannels are used in the BS/SS Rx, where k is the number of used subchannels)	 $\leq$ -85 dBm $\leq$ -82 dBm $\leq$ -78 dBm $\leq$ -75 dBm $\leq$ -71 dBm $\leq$ -69 dBm

Reference frequency tolerance
    BS to BS
    BS
    SS to BS synchronization tolerance
	
	Synchronized with GPS receiver
	$\leq$ ± 2*10-6
	$\leq$ 50 Hz

Frame duration code set	{5, 10}

=== End text changes ====

[Add the following text before section **12.4.3.6 WirelessMAN-OFDMA 14 MHz channel basic PHY Profile**]

=== Start text changes ====

12.4.3.6 WirelessMAN-OFDMA 10 MHz channel basic PHY Profile

Profile identifier: OFDMA_ProfP6.

Systems implementing OFDMA_ProfP6 shall meet the minimum performance requirements listed in Table 418:

Table 418—Minimum Performance requirements for OFDMA_ProfP6

Capability	Minimum Performance
Channel bandwidth	10 MHz
Operation mode	Licensed bands only
FFT Size	1024
BER performance threshold, BER=10-6 (using all subchannels BS/SS) QPSK-1/2 QPSK-3/4 16QAM-1/2 16QAM-3/4 64QAM-2/3 (if 64-QAM supported) 64QAM-3/4 (if 64-QAM supported) (Add 1) $10 \cdot \log_{10}\left(\dfrac{k}{35}\right)$ for UL, or 2) $10 \cdot \log_{10}\left(\dfrac{k}{16}\right)$ for FUSC DL, or 3) $10 \cdot \log_{10}\left(\dfrac{k}{30}\right)$ for PUSC DL to sensitivity when not all subchannels are used in the BS/SS Rx, where k is the number of used subchannels)	$\leq$ -82 dBm $\leq$ -79 dBm $\leq$ -75 dBm $\leq$ -72 dBm $\leq$ -68 dBm $\leq$ -66 dBm

Reference frequency tolerance
   BS to BS
   BS
   SS to BS synchronization tolerance
	
	Synchronized with GPS receiver
	$\leq \pm 2*10$-6
	$\leq$ 50 Hz

Frame duration code set	{5, 10}

=== End text changes ====

[Add the following text before section **12.4.3.8 WirelessMAN-OFDMA 28 MHz channel basic PHY Profile**]

=== Start text changes ====

12.4.3.6 WirelessMAN-OFDMA 20 MHz channel basic PHY Profile
Profile identifier: OFDMA_ProfP8.
Systems implementing OFDMA_ProfP8 shall meet the minimum performance requirements listed in Table 418:

Table 418—Minimum Performance requirements for OFDMA_ProfP8

Capability	Minimum Performance
Channel bandwidth	20 MHz
Operation mode	Licensed bands only
FFT Size	2048
BER performance threshold, BER=10-6 (using all subchannels BS/SS) QPSK-1/2 QPSK-3/4 16QAM-1/2 16QAM-3/4 64QAM-2/3 (if 64-QAM supported) 64QAM-3/4 (if 64-QAM supported) (Add 1) $10 \cdot \log_{10}\left(\dfrac{k}{92}\right)$ for UL, or 2) $10 \cdot \log_{10}\left(\dfrac{k}{32}\right)$ for FUSC DL, or 3) $10 \cdot \log_{10}\left(\dfrac{k}{60}\right)$ for PUSC DL to sensitivity when not all subchannels are used in the BS/SS Rx, where k is the number of used subchannels)	 $\leq$ -79 dBm $\leq$ -76 dBm $\leq$ -72 dBm $\leq$ -69 dBm $\leq$ -65 dBm $\leq$ -63 dBm

Reference frequency tolerance
    BS to BS
    BS
    SS to BS synchronization tolerance
	
	Synchronized with GPS receiver
	$\leq \pm 2*10$-6
	$\leq$ 50 Hz

Frame duration code set	{5, 10}

=== End text changes ====

4.   References

[1]   IEEE Standard 802.16e/D5-2004
[2]   IEEE Standard 802.16-2004