

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Proposed Reference System Configuration Parameters for Draft IEEE 802.16m Evaluation Methodology Document	
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Re:	IEEE 802.16m-07/014r1– Call for Comments on Draft 802.16m Evaluation Methodology Document	
Abstract	This document contains proposed text for the draft evaluation methodology for IEEE 802.16m technical proposals.	
Purpose	For discussion and approval by TGm	
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1. Introduction and Background

The IEEE 802.16m amendment is expected to develop backward compatible enhancements and extensions to WirelessMAN-OFDMA Reference System specified by the WiMAX Forum Mobile System Profile Release 1.0 (http://www.wimaxforum.org/technology/documents/wimax_forum_mobile_system_profile_v1.40.pdf), which is a subset of mandatory and optional features of the IEEE 802.16e-2005 standard. Since a great number of IEEE 802.16m requirements (http://www.ieee802.org/16/tgm/docs/80216m-07_002r1.pdf) require measuring relative enhancements with respect to the reference system/reference configuration, it is imperative to accurately define the parameters of the reference system so that verification, evaluation, and comparison of the technical proposals based on common set of assumptions are facilitated.

Since the Wireless-MAN-OFDMA Reference System in several cases does not exclusively specify the parameters of the reference configuration, an attempt has been made in this contribution to specify the configuration parameters based on the widely acceptable practices in WiMAX Forum community and consistent with the WiMAX Forum Mobile System Profile.

2. Reference System Baseline Configuration

The Tables 2.4.1-1, 2.4.2-1, and 2.4.3-1 in Section 2.4 of http://ieee802.org/16/tgm/contrib/C80216m-07_080r1.zip should be replaced with the 2.1-1, 2.2-1, and 2.3-1 in this document.

2.1. Base Station Model

Parameter	Description	Value Range
P_{BS}	BS power amplifier 1dB compression point	TBD [39-60 dBm]
PAR_{BS}	Peak-to-average backoff at BS	12 dB
P_{BS}	MAX transmit power per sector/carrier	43 dBm @ 10MHz bandwidth
H_{BS}	Base station height	32m
G_{BS}	Gain (boresight)	15 dBi
θ_{BS}	3-dB beamwidth	$3 : \theta_{BS} : 70^{\circ}$
G_{FB}	Front-to-back power ratio	20 dB
M_{TX}	Number of transmit antennas	MIMO: 2 Beamforming: 4

M_{RX}	Number of receive antennas	2
d_{BS}	BS antenna spacing (ref: ULA)	3λ for MIMO $\lambda/2$ for Beamforming
ρ_{MS}	BS Antenna correlation	0.5
NF_{BS}	Noise figure (transmit & receive)	5 dB
HW_{BS}	Hardware loss (cable, implementation, etc.)	2 dB

Table 2.1-1: BS equipment model

2.2. Mobile Station Model

Parameter	Description	Value Range
P_{SS}	MS power amplifier 1dB compression point	TBD [29-54 dBm]
PAR_{SS}	Peak-to-average backoff at SS	12 dB
P_{SS}	RMS transmit power/per SS	23 dBm
H_{SS}	Subscriber station height	1.5m
G_{SS}	Gain (boresight)	0 dBi
$\{\theta_{SS}\}, G(\{\theta_{SS}\})$	Gain as a function of Angle-of-arrival	Omni
N_{TX}	Number of transmit antennas	1
N_{RX}	Number of receive antennas	2
d_{SS}	MS antenna correlation	0.5
	MS antenna gain mismatch	3 dB
NF_{SS}	Noise figure (transmit & receive)	7 dB
HW_{SS}	Hardware loss (cable, implementation, etc.)	2 dB

Table 2.2-2: MS Equipment Model

2.3. OFDMA Numerology

Parameter	Description	Value Range
OFDMA symbol parameters		
BW	Total bandwidth	10
n	Over sampling Factor	28/25
F_S	Sampling Frequency	10.9375 kHz
$1/F_S$	Sample time	91.43 us
N_{FFT}	Number of points in full FFT	1024
CF	Cyclic prefix length (fraction of T_S)	1/8
T_O	OFDMA symbol duration w/ CP	102.82 us for CP=1/8
Frame parameters		
T_F	Frame length	5 ms
N_F	Number of OFDMA symbol in frame	48
$R_{DL UL}$	Ratio of DL to UL (TDD mode)	2:1
T_{duplex}	Duplex time between UL and DL	TBD [0.67 to 20 ms]
T_{clas}	Classification of traffic	TBD Control or Data
Permutation parameters		
DL_{pern}	DL permutation type	PUSC
UL_{pern}	UL permutation type	PUSC
BS_{Nused}	DL: number of sub-carriers for BS TX	For 10MHz, PUSC: $SS_{Nused} = 841$
SS_{Nused}	UL: number of sub-carriers for MS TX	PUSC $SS_{Nused} = 24$
$SubCh_{MAXDL}$	Maximum number of subchannels in DL permutation	PUSC (30)
$SubCh_{MAXUL}$	Maximum number of subchannels in UL permutation	PUSC (35)

Table 2.3-3: OFDMA Air Interface Parameters