`Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Strawman Text for the TG4 PHY Standard**
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Re:	
Abstract	This is an outline the TG4 PHY standard applicable for WirelessHUMAN“ systems, based on the consensus reached at Session #11.5 held on 15-16 February 2000 in San Jose, CA, USA.
Purpose	As a outline and basis for the TG4 PHY Standard
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Strawman Text for TG 4 PHY Standard

1. OFDM physical layer specification for the Unlicensed band below 11 GHz with focus on 5-6 GHz band

1.1 Introduction

1.1.1 Scope
1.1.2 OFDM physical layer functions

1.2 OFDM / OFDMA PHY specific service parameter lists

1.2.1 Introduction
1.2.2 TXVECTOR parameters
1.2.3 RXVECTOR parameters

1.3 OFDM physical layer convergence procedure sub layer

1.3.1 Introduction

1.3.2 Physical layer convergence procedure (PLCP) frame format

1.3.3 PLCP preamble (SYNC)

1.3.4 Signal field (SIGNAL)

1.3.5 DATA field

1.3.6 Clear channel assessment (CCA)

1.3.7 PLCP data modulation and modulation rate change

1.3.8 Physical Medium Dependent (PMD) Operating specifications general

Channel bandwidth? 5, 10, 20 MHz needs discuss further

Access Method — TDMA with 256 FFT (64 optional) or OFDMA with 1K — more detail required

granularity of 64 sub carriers that are divided like 11a 48 sub carriers for data, 5 for pilot, and 11 for the guard band

Delay spread up to 3.2 micro sec, for 1K, 0.8 micro sec for 256,

guard interval= 1/32, 1/16, 1/8, _,

Dynamic Adaptive Modulation scheme — BPSK, QPSK, 16 QAM, 64 QAM (option)

Eg. Adaptive user by user as required by QOS and channel quality

Coding rate — _, 2/3, _ (adaptive with modulation scheme)

Coding + interleaving — ,— Convolutional, Reed Soloman+ convolutional - further discussion Interleaving -1/8 of subcarrier corrupted and AWGN simulations

APC dynamic range — more than 45 dB in the up link, more than 30 dB in down link

Time ranging - 30 % of guard interval, maximum range the system will support is 60 micro sec. Round trip delay, time between initial ranging TBD

Subcarrier based parallel polling — further discussion

Scrambler — Same as 802.11a

Dynamic Frequency Selection — Upper Layer dependent (to be addressed with MAC) — need for a quiet period — measuring mechanism and criteria — switching speed — further discussion

Base Station sync and coordination mechanisms (frame) — further discussion

Smart Antenna Support — should not be precluded — PHY Specific Reqmnts are TBD — (TJ Shan)Preamble —Dnlink: Each MAC frame has a preamble; Uplink: User burst has a preamble; (there are pilot carriers within each OFDM symbol) (Zion 1k/Octavian for 64/TJ Shan for 256)Synchronization: The TX center frequency and the symbol clock frequency shall be derived from the same reference oscillator. SS syncs with the BS both in clock and center frequency, and adopt BS clock for frequency & data sync

Base station accuracy: Need Discussion; suggested values: +/- 5 pip; +/- 20 pip

Spectrum Mask: optimization of the 802.11a mask should be addressed as a function of the carriers and the transmit power should comply with FCC and other regulatory rules

Interference mitigation : use directional antenna in the vertical and horizontal direction, describe antenna pattern, interference to other systems in this band including intra system, and interference mitigation with OFDMA

1.3.9 PMD transmit specifications

1.3.10 PMD receiver specifications

1.3.11 PLCP transmit procedure

1.3.12 PLCP receive procedure

1.4 OFDM physical layer management entity (PLME)

1.4.1 PLME_SAP sub layer management primitives

1.4.2 OFDM physical layer management information base

1.4.3 OFDM TXTIME calculation

1.4.4 OFDM PHY characteristics

1.5 OFDM physical medium dependent sublayer

1.5.1 Scope and field of application

1.5.2 Overview of service

1.5.3 Overview of interactions

1.5.4 Basic service and options

1.5.5 PMD_SAP detailed service specifications