

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>Comments for 802.16.4 PHY Spec Strawman</b>	
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Re:	This document is in response to the Call for Comments on IEEE 802.16.4 PHY Strawman (IEEE 802.16.4-.01/05 and 06).	
Abstract	General comments regarding the PHY strawman and additional proposed changes relative to the 802.11a PHY document.	
Purpose	Assist in creating a PHY standard for 802.16.4.	
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## Comments for 802.16.4 PHY Spec Strawman

### Reference Docs

802.16.4-01/06 – PHY Strawman

802.11a-1999 – Wireless LAN MAC/PHY Specification at 5GHz Bands

### Comments

In reviewing the 802.11a PHY Specification and the 802.16.4 proposal, the following issues were identified as points of discussion in the session #12 meeting. The majority of these issues are driven by the fundamental differences of the LAN vs MAN coverage area.

1. Typo in strawman doc: Base station accuracy should be in ppm instead of pip.
2. An additional temperature range class needs to be added to 802.11a section 18.4.6.14 to include outdoor units. Recommend creating class 4 to represent equipment made to operate from  $-40$  to  $+85^{\circ}\text{C}$ .
3. The channel plan and numbering scheme needs to be updated to account for reduced channels widths and guard bands for 5 and 10MHz. Suggest using the same numbering scheme as 802.11a with an alpha suffix so that subchannels of channel 51 consists of 51a, 51b, 51c, 51d, 51e, 51f. Note that due to channel center locations, 6 subchannels definitions would be required for 5 and 10MHz spacing.

Channel Number	Center Freq
Channel Na	$F_0 - 7.5\text{MHz}$
Channel Nb	$F_0 - 5\text{MHz}$
Channel Nc	$F_0 - 2.5\text{MHz}$
Channel N	$F_0$
Channel Nd	$F_0 + 2.5\text{MHz}$
Channel Ne	$F_0 + 5\text{MHz}$
Channel Nf	$F_0 + 7.5\text{MHz}$

4. A receiver sensitivity table similar to 802.11a Table 91 needs to be created to cover the proposed bandwidths and expected performance conditions. Creation of this table will encompass understanding the SNR requirements, receiver capabilities and antenna effects and should involve some group discussion.
5. Table 91 of 802.11a also includes the minimum adjacent channel performance specs. Additional discussion regarding the RF environment and the expected interference requirements for a MAN system is encouraged.
6. The use of transmit and receive diversity or MIMO concepts should not be excluded nor required.
7. If some vendors are considering split RF/Indoor architectures, it may be useful to propose an optional interface between indoor and outdoor units so that standardization can help drive the cost down. The following signals could be included:
  - a. Receive Frequency: Propose 44Mhz.
  - b. Transmit Frequency: Propose something in the 6-30 MHz range.

- c. Transmit Enable: Propose that the message preamble is defined such that the Transmit control could be driven by detection of the RF signal. This avoids the requirement for a separate control signal or artificially limiting the length of a transmit burst.
  - d. Frequency Reference: Propose 10MHz or 24MHz, spaced to avoid transmit frequency.
  - e. Communication Link: TBD, but something in the KHz frequency range.
  - f. DC power: Propose 24VDC.
8. Handshake signals between the MAC and PHY should be identified and defined in detail.
  9. The APC dynamic range appears low relative to other MAN systems. Does any documentation justifying these levels exist?