Project	**IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>**
Title	**Corrections to Errors in Preamble Specification in 8.3.6.1**
Date Submitted	**2008-09-11**
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Re:	P802.16Rev2/D6a Sponsor Ballot
Abstract	Proposed remedies to comments concerning errors in Preamble Specification in 8.3.6.1
Purpose	Consider as part of comment resolution.
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8.3.6.1 Downlink (DL)

The DL can be divided into a three- segment structure. and includes aA preamble which begins the transmission. This preamble subcarriers are divided intouses one of the three carrier-sets specified in 8.3.6.1.1. There are three possible groups
consisting of a carrier sets each, that may used by any segment.

A DL period will followis illustrated in Figure 254.

[figure]
Figure 254—DL transmission basic structure

8.3.6.1.1 Preamble

The first symbol of the DL transmission is the preamble; there are tFor each FFT size, three different types of preamble carrier-setss,
which are defined, differing in the by allocation of different subcarriers for each one of them. Those subcarriers are modulated using a boosted BPSK modulation with a specific pseudo-noise (PN) code.
The preamble carrier-sets are defined using Equation (72).

...

n is the designating number of the preamble carrier-set, indexed 0.., 1 and.2
k is a running index, 0...-567 for 2K-FFT, 0 to -283 for 1024-FFT, 0 to- 142 for 512-FFT, and 0 to -35 for 128-FFT.

Each segment uses one type of preamble out of the three sets in the following manner:
Each segment uses a preamble composed of a single carrier-set out of the three available carrier sets in the following manner: (In the case of segment 0, the DC carrier will not be modulated at all, and the appropriate PN will be discarded. Therefore, DC carrier shall always be zeroed. For the preamble symbol, there will be 172 guard band subcarriers on the left side and the right side of the spectrum.)

— Segment 0 uses preamble carrier-set 0.
— Segment 1 uses preamble carrier-set 1.
— Segment 2 uses preamble carrier-set 2.

In the case of segment 0, the DC carrier will not be modulated at all, and the appropriate PN will be discarded. Therefore, the DC carrier shall always be zeroed.

Each segment eventually modulates each third subcarrier. As an example, Figure 255 depicts the preamble of segment 1 in the case of the 2048-FFT. In this figure, subcarrier 0 corresponds to the first subcarrier used in the preamble symbol.

[figure]
Figure 255—DL Bbasic structure of DL preamble, 2048-FFT

Therefore, each segment eventually modulates each third subcarrier. As an example, Figure 255 depicts the preamble of segment 1 (in this figure, subcarrier 0 corresponds to the first subcarrier used on the preamble symbol).

In the case of 2048-FTT, Tthe PN series modulating the preamble carrier-set is defined in Table 459. The series modulated depends on
the segment used and IDcell parameter. The defined series shall be mapped onto the preamble subcarriers in ascending order. In the case of 2048-FTT, Table 459 includes the PN sequence in an hexadecimal format. The value of the PN is
obtained by converting the series to a binary series (Wk) and starting mapping the PN starting from the MSB of each symbol to the LSB (0 mapped to +1 and 1 mapped to –1;). Ffor example, for Index = 0, sand Segment = 0, Wk = 110000010010..., and the mapping shall follow: –1 –1 +1 +1 +1 +1 +1 –1 +1 +1 –1 +1 ...).

In the case of 2048-FTT, the preamble symbol will include 86 guard band subcarriers on each side of the spectrum.

~~The modulation used on the preamble is defined in 8.3.9.4.3.1.~~

For 1024-FFT size, the PN series modulating the preamble carrier-set is defined in Table 460. ~~(In the case of segment 0, the DC carrier will not be modulated at all, and the appropriate PN will be discarded. Therefore, the DC carrier shall always be zeroed.~~ For the preamble symbol, there will be 86 guard band subcarriers on the ~~left side and the right~~each side of the spectrum.~~)~~

For 512-FFT size, the PN series modulating the preamble carrier-set is defined in Table 461. However, in this case, the final bit of the 144-bit series shown in each row of the table shall be discarded, so that the series used is 143 bits long.~~(In the case of segment 1, the DC carrier will not be modulated at all, and the appropriate PN will be discarded. Therefore, the DC carrier shall always be zeroed.~~ For the preamble symbol, there will be 42 guard band subcarriers on the left (lower-frequency) side and 41 guard band subcarriers on the right (higher-frequency) side of the spectrum.~~)~~

For 128-FFT size, the PN series modulating the preamble carrier-set is defined in Table 462. ~~(In the case of segment 0, the DC carrier will not be modulated at all, and the appropriate PN will be discarded. Therefore, the DC carrier shall always be zeroed.~~ For the preamble symbol, there will be 10 guard band subcarriers on the ~~left side and the right~~each side of the spectrum.~~)~~

The modulation used on the preamble is defined in 8.3.9.4.3.1.