Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	**Revision of Clause 8.3.5.2.1 to Define The Undefined**	
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Re:	IEEE 802.16 Working Group, Letter Ballot #4, IEEE P802.16a/D2-2002	
Abstract	In the current draft of IEEE 802.16a, we use are many important parameters of the OFDM and OFDMA symbol which, although they are explained in the "informative" section 8.3.5.1, they are never consisely defined in normative text. This contribution contains a proposed revision of clause 8.3.5.2.1 which adds the missing definitions.	
Purpose	The information should be considered in resolving comments to IEEE P802.16a/D2-2002.	
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Revision of Clause 8.3.5.2.1 to Define The Undefined

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1. Introduction

In the current draft of IEEE 802.16a, we use are many important parameters of the OFDM and OFDMA symbol which, although they are explained in the "informative" section 8.3.5.1, they are never consisely defined in normative text.

The next section is a proposed revision of clause 8.3.5.2.1 which adds the missing definitions. One could argue that, in the *next* revision, the primitive parameters (F_S/BW) and (T_g/T_b) should be symbolized as single variables instead of ratios. However, I felt that it would be too confusing to propose changing so much at once.

2. Proposed Revision of Clause 8.3.5.2.1

8.3.5.2.1 OFDM Symbol Parameters

8.3.5.2.1.1 Primitive Parameters

Four primitive parameters characterize the OFDM symbol. They are:

BW. This is the nominal channel bandwidth, including units of Hertz. For PHY operating in licensed bands, this parameter is selected based on regulatory requirements and is not specified in this standard. for PHY operating in unlicensed bands, this parameter is specified in 8.3.5.4.

(F_S/BW). This is the ratio of "sampling frequency" to the nominal channel bandwidth. Required values of this parameter are specified in 8.3.5.5.3 for WirelessMAN-OFDM and 8.3.5.6.3 for WirelessMAN-OFDMA.

(T_g/T_b). This is the ratio of guard time to "useful" time. All PHY shall support the following values: 1/32, 1/16, 1/8, 1/4.

N_{FFT}. This is the number of points in the FFT, if an FFT is used in the implementation. Required values of this parameter are specified in 8.3.5.3 for PHY in licensed bands and 8.3.5.4 for PHY operating in unlicensed bands.

8.3.5.2.1.2 Derived Parameters

The following parameters are defined in terms of the primitive parameters of 8.3.5.2.1.1.

$F_S = (F_S/BW) \cdot BW$ = Sampling Frequency

$\Delta f = F_S/N_{FFT}$ = Carrier Spacing

$T_b = 1/\Delta f$ = Useful Time

$T_g = (T_g/T_b) \cdot T_b$ = Guard Time

$T_S = T_b + T_g$ = OFDM Symbol Time

Sample Time = $1/F_S$