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Abstract	[Description of document contents.]
Purpose	[Description of what the author wants 802.16 to do with the information in the document.]
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Call for Contributions on the Preamble Design for the OFDM-Based PHY

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Purpose of the Document

The purpose of this document is to make a call for contributions to evaluate the performance of preamble design proposals for the OFDM-based PHY of the IEEE 802.16a specification for fixed wireless access in the licensed frequency bands between 2 and 11 GHz.

Background

There are currently several proposals for the preamble design in the OFDM-based PHY of the IEEE 802.16s specification for fixed wireless access in the licensed frequency bands between 2 and 11 GHz. But no performance results are available for most of these proposals. Their performance needs to be assessed in order to choose the most appropriate solution. Contributions to performance assessment of different preamble designs are invited for presentation at the next IEEE 802.16 meeting.

This document gives some guidelines set by the Preamble Ad-Hoc Group of the IEEE 802.16 .3 Task Group. These guidelines concern the evaluation criteria of different proposals and the conditions in which the evaluations are to be made. It is recommended that the proposers follow these guidelines as much as possible.

This concerns the design of preambles for both the downstream and the upstream. The evaluations are to be made for the 256-carrier OFDM which is the only mandatory mode for OFDM.

Evaluation Criteria

The suggested evaluation criteria are summarized in the following table.

	Time Sync	Frequency Sync	Channel Est.
Accuracy			RMS error
Limitations			
SNR Performance			
Required Time (OFDM symbol)			
Complexity			
Overhead (OFDM symbols)			

Other Features / Benefits			

Evaluation Conditions:

Performance evaluation should be done under the following conditions:

Channel models to be used:

- AWGN - 3.5MHz channel, 20MHz channel
- SUI6 - 3.5MHz channel, 20MHz channel
- SUI4 - 3.5MHz channel, 20MHz channel

Conditions for evaluation of timing synchronization:

- No frequency uncertainty
- 20 ppm frequency uncertainty with carrier frequencies of 2.5GHz and 10.5GHz.

Conditions for evaluation of frequency synchronization:

- No *a priori* knowledge (not time synchronized).
- *A priori* knowledge (time synchronized).

Conditions for evaluation of channel estimation:

- Perfect knowledge of timing and carrier frequency.
- 1% (OFDM symbol) timing and (inter-carrier spacing) frequency error.