IEEE 802.11
Wireless LANs

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| PHY Evaluation Methodology |
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Abstract

This document proposes a procedure for the evaluation of PHY proposals in TGbb.

# Introduction

# PHY evaluation methodology

## Scenarios

Proposals for PHY contributions shall be evaluated against simulation scenarios described in TGbb doc. 11-18/1423r8 which is based on the TGbb usage model doc. 11-18/1109r5 after selecting the primary usage models. Simulations shall implement the TGbb channel modeling described in doc. 11-18/1582r4. TGbb has made available a number of channel impulse responses that can be downloaded from Mentor in doc. 11-18/1603r1.

Choice of process:

* Simulation scenarios
	+ AWGN
	+ Industrial Wireless
	+ Enterprise
* Parameters to be used
	+ Copy corresponding PHY parameters from doc. 11-18/1423r8 for the relevant simulation environments.
* Analytical front-end model
	+ Convolute the channel filters describing the analogue front-end model defined in doc.11-19/0087r1 with the following Channel Impulse responses:
		- Industrial Wireless Figure 28(g), CIR D7 (all LEDs transmit simultaneously)
			* Go to doc. 11-18-1603r1 \ simulation scenario enterprise \ overall cirs \ Optical CIRs \ D7
		- Enterprise Figure 15(a), CIRs D1 and D2
			* Go to doc. 11-18-1603r1 \ simulation scenario-enterprise conference room \ individual cirs \ Optical cirs \ S1-D1 and S1-D2 and S3-D1 and S3-D2

Simulator calibration:

The following basic PHY shall be simulated for all selected CIRs and presented with trhe results of a new proposal.

DCO-OFDM using 802.11a frame format. Full buffer with following selected parameters.

20MHz baseband

64 subcarriers

52 occupied,

Convolutional Code from 802.11a

Code Rate ½

MCS = QPSK

# Metrics

# The aim of the evaluation is first to demonstrate that the PHY is consistently defined and parametrized. Therefore, proposers shall evaluate the preamble detection performance, the error rate of the header and the error rate of the payload.

# 1) Preamble

# For the preamble, the detection probability (for false alarm rate = 0.1%) vs. SNR (cf. doc. 15-18-0106/r0) and the required SNR where the probability of misdetection (timing error) is <0.1%.

# 2) Header

# For the header, proposers are required to present the BER vs. SNR including all associated channel and line coding (if applicable) assuming random data for the header information.

# 3) Payload

# For the payload, BER vs. SNR shall be plotted incl. any channel coding (if applicable) assuming random data for the payload. Proposers shall use their lowest and highest modulation and coding scheme (MCS) that is intended to be supported. Providing results for intermediate MCS is considered optional.

 4) Throughput at PHY SAP should be specified by the proposers

# If there are any questions, please use the TGbb email reflector.