

IEEE 802.11
Wireless Access Method and Physical Layer Specification

Title: **Measurements of the Power Spectral Density of a 16-PPM @1Mbps Optical Signal**

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Summary

In [1] a transmit spectrum mask was proposed that specifies a -20dB point @ 15 MHz. In this document we present experimental results on the measurements of the Power Spectral Density (PSD) of the optical signal transmitted by a baseband infrared transmitter, using 16-PPM at 1 Mbps. The presented experimental results are in good agreement with previously presented theoretical results [1] and show that the spectrum bandwidth of practical transmitters is narrower than 15 MHz, but can be higher than 10 MHz.

1. Introduction

In [1], the theoretical PSD of the optical signal generated by a baseband infrared transmitter operating at 2 Mbps (4-PPM) was presented, and a Transmit Spectrum Mask for a conformant transmitter was proposed. In [1], it was proposed that the spectrum bandwidth of the transmitted signal should be narrower than 15 MHz.

In this document, experimental results for the PSD of the optical signal generated by a transmitter operating at 1 Mbps (16-PPM) are presented. Since the transmitted pulse shape is the same for both data rates (1 and 2 Mbps), the resulting PSD is quite similar.

2. Measurement Setup

The experimental results presented above were obtained using the setup depicted in figure 1. The time domain measurements were performed using a fast sampling digital storage oscilloscope. The frequency domain measurements were performed using a spectrum analyser. The transmitted optical signal was generated by a conformant transmitter, using a very simple drive circuit.

