Abstract

OFDM with quadrature amplitude modulation (QAM) technique can be used for high speed optical applications. Increasing the order of modulation, the bit error rate (BER) increases. Forward Error correction (FEC) coding like LDPC coding is generally used to improve the BER performance. LDPC provides large minimum distance and also the power efficiency of the LDPC code increases significantly with the code length. In this paper we have compared the Soft decision and Hard decision algorithms of LDPC codes. A long Irregular LDPC code is simulated over the BIAWGN channel demonstrating the fact that LDPC coded OFDM with soft decision decoding provides very lower bit error rate as well as a larger gain in transmitter power and thus making the link more power efficient than the case with hard decision decoding. Through simulation, we have shown the advantages of using this long Irregular LDPC coded OFDM link in Optical wireless communication (OWC).

**Index Terms**

- Computer Science
- Data Communication

**Keywords**

- Long Irregular LDPC code
- BIAWGN channel
- Soft decision decoding
- Message-passing (MP) algorithm

Error rate floors
Long Irregular LDPC coded OFDM with Soft Decision