MQAM system

June 7, 2017

MQAM system is a complex block of code that simulates the modulation, transmission and demodulation of an optical signal using M-QAM modulation.

It is composed of four blocks: a transmitter, a receiver, a communication channel and a block that performs a Bit Error Rate (BER) measurement. The schematic representation of the system is presented in figure 1.

MQAM transmitter

A complete description of the MQAM transmitter either block by block or as a whole can be found in the *lib* repository.

This block generates one or two optical signals. It also generates a binary signal that is used to perform a BER measurement.

MQAM receiver (homodyne receiver)

A complete description of the MQAM transmitter either block by block or as a whole can be found in the *lib* repository.

The MQAM receiver is a homodyne receiver. It accepts one input optical signal and outputs a binary signal. It performs the M-QAM demodulation of the input signal.

BER measurement

In this section we present the results of the BER measurement for the MQAM system.

Input parameters

The input parameters of the system are the ones from the MQAM transmitter plus the ones from the MQAM receiver.

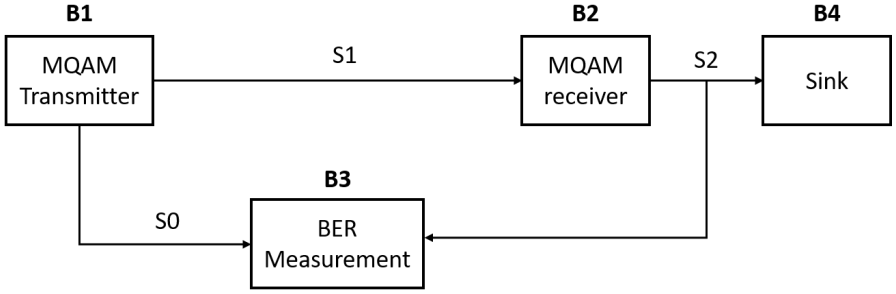

Figure 1: Schematic representation of the MQAM system.

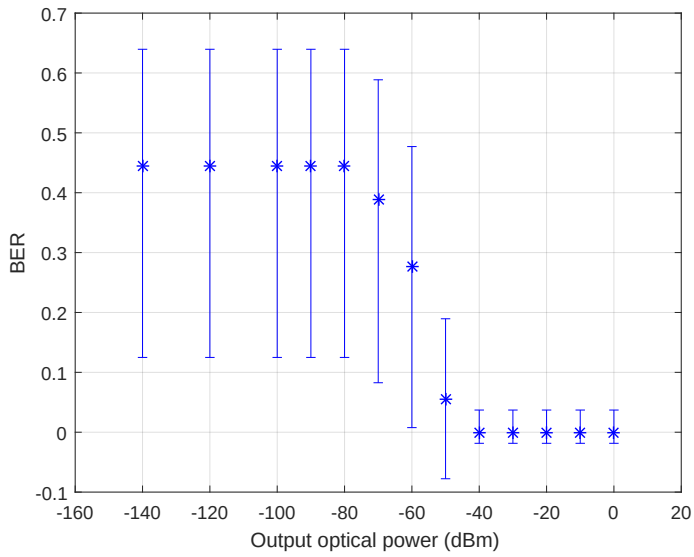

Figure 2: BER measurement for a local oscillator power of 0 dBm and a noise level of 20

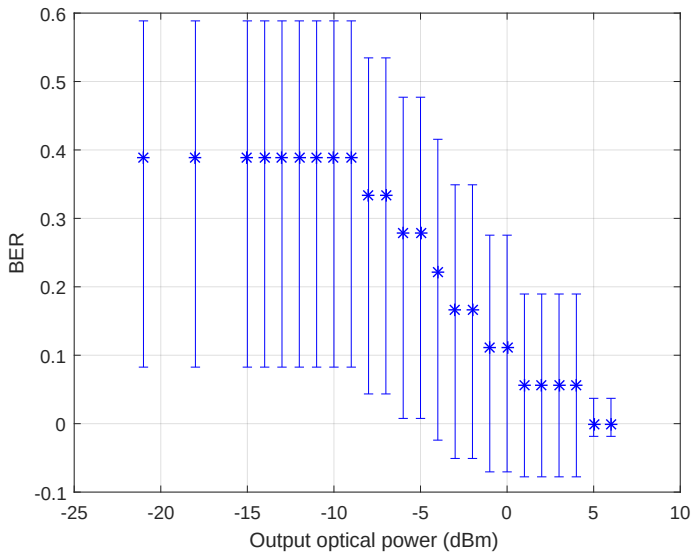

Figure 3: BER measurement for a local oscillator power of 0 dBm and a noise level of 10000