

ABSTRACT

Broadband Technology PLC networks using power lines as a medium for broadband communication. The PLC channel has a characteristic scale, the damping as a function of frequency, the impedance changes and fading. Various source of noise, appears in the electric power network, i.e. of various electrical devices that connect to the network, as well as from the network environment. This negative effect of the PLC system, namely the occurrence of the transmitted data errors. On the other hand to provide high data rate, PLC networks have to operate in the frequency range up to 30 MHz. However, the frequency range is also used by various radio communication services and other emerging environmental noise PLC, causing the characteristic frequency selective channel with. This condition requires an effective modulation scheme. So, to reduce the negative impact on the transmission medium PLC systems requires a modulation techniques one of which is spread spectrum, strong against narrowband interference and attenuation effects at certain frequencies on PLC networking, and can be operated at low power levels.

One of spread spectrum that used for this final project is MC-CDMA (Multi Carrier Code Division Multiple Access). Using “multi-carrier spread spectrum systems” can improve network performances, consistency of BER, and improve resistancy of errors.

In this final task will be analysis and compare the performance of the system of influence, the number of subcarrier, code rate, channel multipath propagation and impulse noise in PLC channels. Simulation results show that MC-CDMA technique provides a relatively good performance, which achieved the target BER at E_b / N_0 8dB, a large number of subcarrier can improve the value of BER, it is evident from the change in 16 subcarrier into 64 subcarrier occurs strengthening of 9.2dB, and code of smaller rate provides coding gain of 7dB.

Keyword: *code rate, MC-CDMA, PLC, impulse noise, BER (Bit Error Rate)*