

ABSTRACT

One of the disadvantages of Visible Light Communication (VLC) for communication range as one of the factor performance parameters can be reduced using the Low Density Parity Check (LDPC) code as Forward Error Correction (FEC). LDPC is one of channel coding technique that is used to improve the performance of the transmission channel which allows the transmission signal to avoid noise. So, to improve the performance of the VLC system this research uses LDPC.

This research has evaluated the performance of the FEC using the Regular LDPC on the VLC system by using coderate variations and the number of iterations in the LDPC bit flipping decoding section so as to get a good LDPC performance then compared to a VLC system that does not use LDPC to be analyzed with the test parameters namely BER, SNR, power recieved and communication range.

Simulation results in this research found the best Regular LDPC performance when using coderate $\frac{1}{2}$ and decoding iteration of 20 times. Obtained a VLC system using Regular LDPC with a target of BER 10^{-3} reach on SNR of 2.16 dB at a distance of 12.2 m with 1.62×10^{-5} mW of power received. In this research it was proven that a VLC system that uses Regular LDPC is better than a VLC system without Regular LDPC which reach on a SNR of 7 dB with a distance 10.8 m and 2.82×10^{-5} mW of power received.

Key Words: VLC, Regular LDPC, Bit Flipping