Abstract

In the current scenario so many advanced techniques are finding a way as a substitute for complex DFT-based OFDM system. One of such type of technique is Discrete Hartley Transform. The requirement of only real arithmetic computations for the proposed technique makes it more advantageous in terms of simplicity and computational speed than conventional one. This technique is very closely related to Discrete Fourier Transform. The performance of DHT based OFDM system is carried out using raw data as well as with some images as the sources and after processing at the transmitter end, the signals are then transmitted through channel. Additive White Gaussian Noise (AWGN) has been considered for channel modeling. For accuracy of this simulation, the measurement of parameters has been repeated multiple times. The simulated resulting graph between Bit Error rate and SNR shows the improvement of performance. The system performance was analyzed for M-PSK mapping schemes with various values of M, where M is order of modulation technique used. Simulation has been performed on MATLAB 7.0.
References

- John A. C. Bingham.
- Saad Bouguezel, M. Omair Ahmad, and M. N. S. Swamy. New parametric discrete
  fourier and hartley transforms, and algorithms for fast computation. IEEE Transactions
  December 1983.
  1994.
- Chin-Kuo Jao, Syu-Siang Long, and Muh-Tian Shiue. On the dht-based multicarrier
  tranceiver over multipath fading channel. pages 1662–1666, September 2009.
- Chin-Kuo Jao, Syu-Siang Long, and Muh-Tian Shiue. Dht-based ofdm system for
  passband transmission over frequency-selective channel. IEEE Signal Processing
- Zakaria Sembiring and M Syahruddin. Performance analysis of discrete hartley
  transform based ofdm modulator and demodulator. Proc. IEEE 3rd International Conf. on
  Intelligent Systems Modelling and Simulations (ISMS), 82:674–679, February 2012.
- Vijay Kumar Sharma, Richa Agrawal, U. C. Pati, and K. K. Mahapatra. 2-d separable
  discrete hartley transform architecture for efficient fpga resource. IEEE Signal Processing
- Hsieh S. Hou. The fast hartley transform algorithm. IEEE Transactions on Computers,
  C-36(2), February 1987.
  hartley transform based multicarrier modulation. Proc. IEEE ICASSP, 5:2513–2516,
  June 2000.

Index Terms

Computer Science

Communication Systems

Keywords

DHT-OFDM  FFT-OFDM  AWGN  BER