PERFORMANCE EVALUATION OF NON-UNIFORM MODULATION OF OFDM SUBCARRIER IN THE UNDERWATER ACOUSTIC ENVIRONMENT

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ABSTRACT-The development of wireless communication has become immense and rapid these days. Spectrum frequency is becoming a very serious concern due to its availability, especially in the underwater acoustic environment. Due to the bands not being put to the proper use, some of the nodes do not operate in the user defined frequency (or) spectrum. Thus, there is disorganized and unbalanced spectrum utilization. Hence this concept makes sure that the primary and secondary spectrum uses the channel for efficient transfer of data using local adaptive systems. the result using spectrum analysis by efficient utilization of radio spectrum. Furthermore, this project make sure that the OFDM subcarrier is used to its maximum potential

KEYWORDS- Underwater Acoustic Spectrum , Orthogonal frequency division multiplexing(OFDM), Multiuser detection, spectrum information INTRODUCTION- the underwater acoustic environment is a very difficult environment for wireless communication to take place. Some of the factors that primarily affect this communication are high disturbances due to noise low carrier frequency and very strong multi-path interferences. Very highly populated areas where the recreational activities take place are found where the water has a depth of less than 200metres. However, the propagation of sound waves in shallow water is hindered by various factors apart from sailing of shipments, hydroelectric engineering, catching fish and other recreational activities. Doppler effect, and other complex transmission underwater characteristics make the underwater communication more difficult than desired. Shallow underwater acoustic environment is a major challenge all over the world nowadays. Underwater acoustic channels has a unique underwater environment as opposed to shallow channels that we see in day to day recreational spots across the globe. OFDM is seen as an impressive mechanism for data transmissions at high rates due to its minimalistic effect over channels that opt for frequency fading. Thus, it has been widely used in many high costing renewable energy projects and other industrial instrumentations.

EXISTING SYSTEM- single user communication technique has become of lesser interest than the multiuser system due to its not so complex approaches. Mainly consist of ode division multiple axis ,which was used using a then popular scheme called superposition code. Single user communication systems have the problem of spectrum scarcity. In this case, the user cannot be allocated with sufficient power over the network to enhance data transmission on time secured in nature. Previous system had noise in the reconstructed OFDM symbols which led to performance degradation in the single carrier domain equalisation.

PROPOSEDSYSTEM- We propose SISO, MIMO, adaptive iteration localization, ZF-MMFE.SISO are very much easier to customize and use than MIMO. Also the order of magnitude and the trending

predictions can be used to close the envelop. Nowadays, MIMO has been widely used in RF technologies as mentioned. Since,it is a radio communication. Adaptive iteration localization is code based on the steepest gradient descent. Minimum mean square error is an evaluation method which reduces the mean square error (MSE). ZF (aka) zero forcing equalizer has a lot of aspects which is extensively used in the communication systems.

LITERATURE SURVEY

1. Equalization without noise enhancement for dual PN padding TDS-OFDM (2016) the noise in the reconstructed system where OFDM symbols are enhanced and therefore degradation of the performance is significant..

Channel estimation for TDS-OFDM system for a mobile where the time is **varied.(2018) Estimated parameters must be significantly lower than the already existing equations to make the system work.**

2. Iterative identification of other channels that are used for Mobile Communicaton using TDS-OFDM system.(2016) was intentionally removed for better understanding.

4 Sequence padding shifting TDS-OFDM modulation scheme(2014)- TDS-OFDM system are generally used to overcome circulator convolution of transmitted frequency division symbols and other impulse responses of channels. Algorithm used is OFDM system.

CONCEPTS USED-

1. OFDM-Orthogonal frequency division Multiplexing has been used for many years for various communication projects and instrumentations. Data production designing are constructed and delivered through mobile line communication systems and many other wireless communication systems that are used for traversing and transfer of data bits over very tough communication paths. It reduces the problems of Inter Symbol Interferences (ISI) and limits the channel bandwidth using Pulse Shaping.

2. Pulse Shaping- This concept involves the digital modulation of a sinusoidal wave information wherein the filtering mechanisms are altered due to sharp transitions in the harmonics of the carrier wave. This concept is clearly illustrated in this project by using a test channel in a stimulated physical environment. Each channel is spaced my 100 MHZ and is 80 MHZ wide. The graph plot is predicted and acoustic wave is as shown.

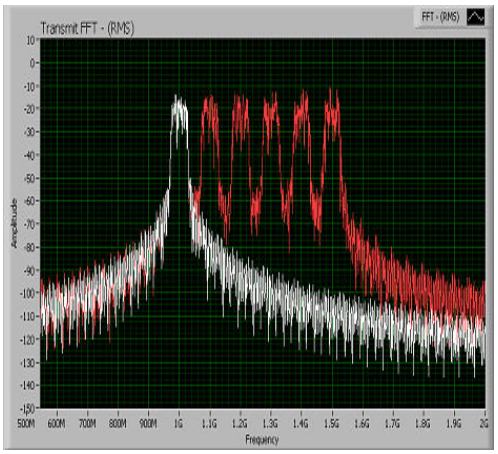
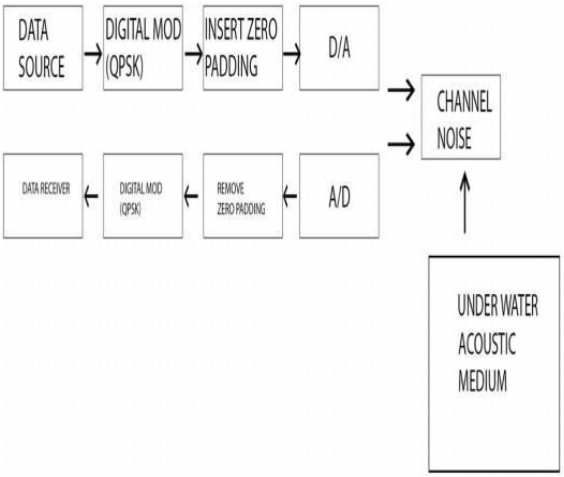


Fig 1: spread spectrum interference filter

CDMA- code division multiple axis plays a vital role in the polar code nested structure that is used in this project. hierarchy of polar codes where several codes of information are transmitted simultaneously over a single communication channel. data signal is assigned a pseudo code to modulate their signal across the underwater acoustic environment.

BLOCKDIAGRAM-



In this block diagram we are doing the underwater acoustic environment using OFDM. The signal transmission from one band to other band with the help of OFDM.

In this process first the data source has been transfer to the digital (QPSK) where the signal is transmitted into digital MOD. Then this signal is going into insert zero padding to make the sine wave in proper state from one after other. The D/A converter used to convert the signal. This signal is used to control the channel noise under the underwater acoustic medium. Then the signal is retransmitted to A/D converter to convert signal into digital form. Then the signal has removed the zero padding and sent to the digital (QPSK) after the process it sent to the signal to data receiver.

Advantages-

1. We can get highly reliable communication whenever needed
2. It has high data rate channel power allocation system
3. It has efficient utilization of radio spectrum
4. It is also used in the area where the normal network cannot reach
5. This module is used in the place where the urgent data transfer is needed

Conclusion- In this paper, a code construction scheme which is polar and has a multi user communication system is used and is embedded in the downlink. The code rate of the polar code is different from those that are normally used.

It is basically a nested core structure that allows many users to communicate without any distortions at the same time. This is basically an OFDM system which we propose. Each user can be seen in different places at the same time during the transmission process. Still there is no need to provide a career wave guide that will superimpose the signal on itself to make it travel a longer distance. However to eliminate the power allocation co-efficient

a transducer is used at the other node. The CSI is no longer needed as a pilot tone vector that makes the power utilisation of the CAPS OFDM sub carrier less. The receiver however obtains an output data that is independent without the influence of SIC. The receiver complexity is reduced therefore. Simulation of the proposed multi user detention scheme with the above proposed coded structure can reduce the distortions and the attenuation frequency that are seen in carrier wave guides that are transmitted over long distances or underwater environments as in this case.

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