UNDERWATER COMMUNICATION

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ABSTRACT

The term ‘Communication’ is a process of transferring information from one entity to another. Underwater Communication is no different to this concept only with respect to it being in a different medium altogether.

This entire project is a research on signal transmission and signal propagation underwater and how some unavoidable factors like reflection, multipath or salinity affects the signal. The research is done in 2 different conditions of water first being pool water and the other being seawater. The signaling process is by using a RF transmitter operating at 40.6 MHz which is submerged into the water and this emits EM waves to penetrate the water and to be received at the receiver where in this case a spectrum analyzer (Wiltek 9201) is used.

The transmitter is placed underwater at multiple distances of 7m in distance and 1m in depth and readings of the received signal are recorded. From the collected data, the trend of the graph is analyzed as weight the equations of both conditions are developed. This analysis is done with the help of data analysis software kwon as Origin 8.1. A mathematical model is represented in polynomial series and analyzed term, by term to distinguish the factors that affect the signal transmission at that particular condition.

From that, a general mathematical model is further developed in order to represent the wave propagation in underwater communication.

The project has been carried out successfully to meet the desired aims and objectives. The developed mathematical model can be used by future researches to measure wave [propagations underwater under different conditions.

Keywords: signal propagation, signal transmission, multipath, RF transmitter, EM wave, spectrum analyzer.