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Date of Experiment(s): 06th October 2022

Experiment - 1

Title: Pulse Code Modulation

Aim: The Aim of this experiment is to show the results of Pulse Code Modulation.

Components Required: MATLAB software (R2020 version or higher)

Graphs Obtained: (After running the code)

Note: Value of n is chosen as 4 and the number of samples is 8.

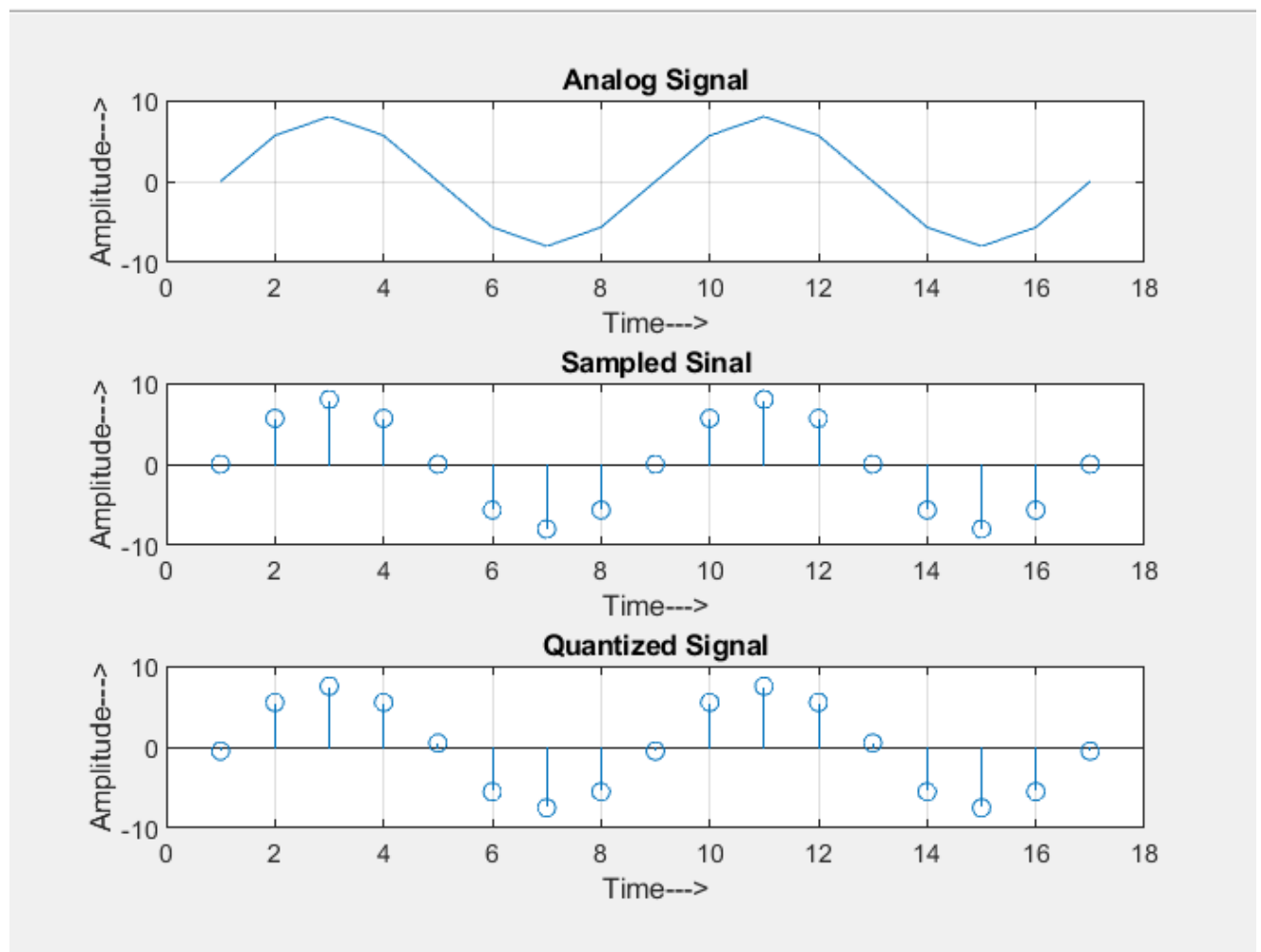


Fig: Graphs of analog signal, sampled and quantized signal.

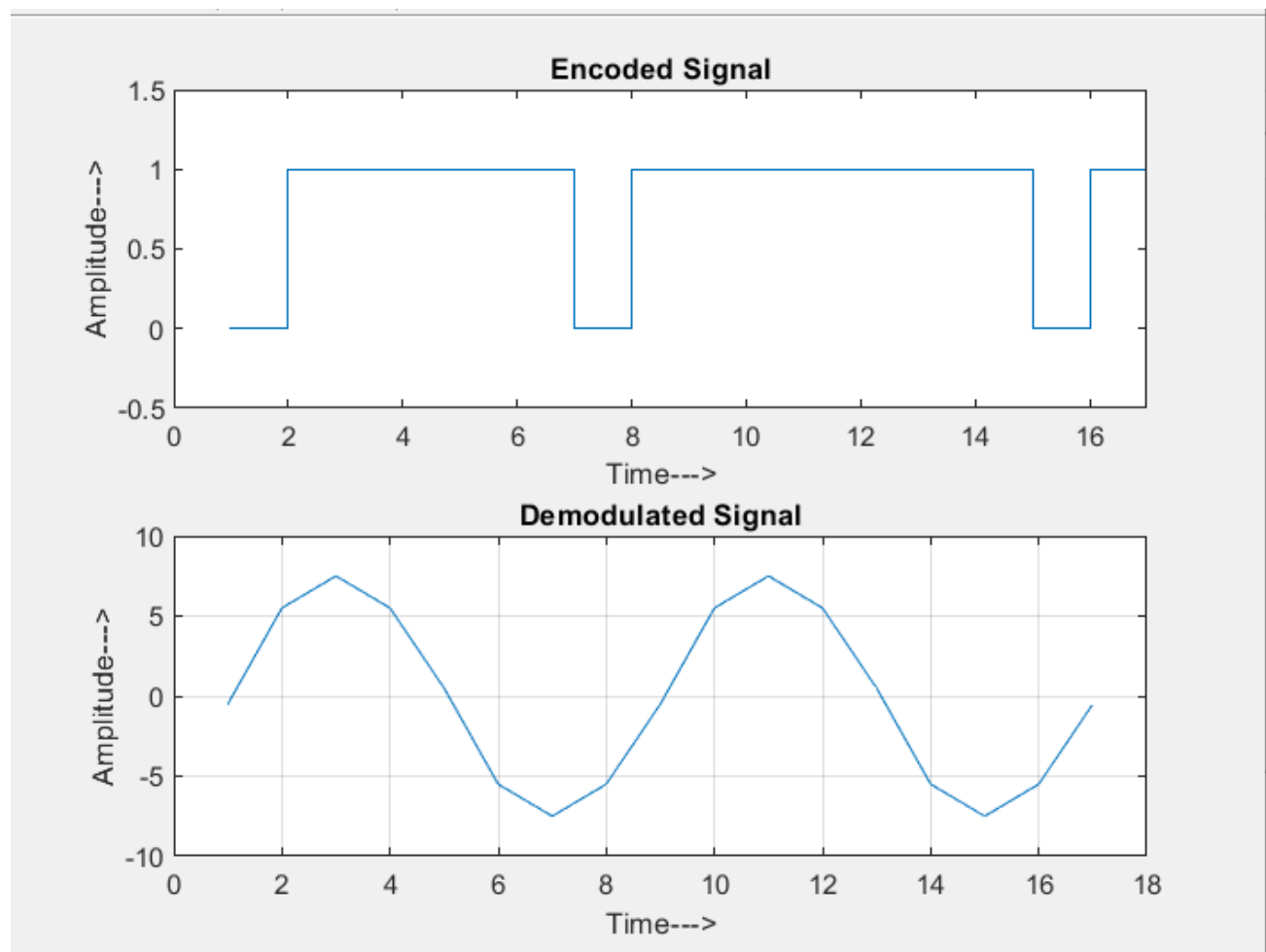


Fig: Graphs of the encoded and decoded signals

Result: The experiment has been carried out successfully.

Experiment - 2

Title: Random Process functions

Aim: The Aim of this experiment is to show the results of different Random Process functions.

Components Required: MATLAB software (R2020 version or higher)

Graphs Obtained: (After running the code)

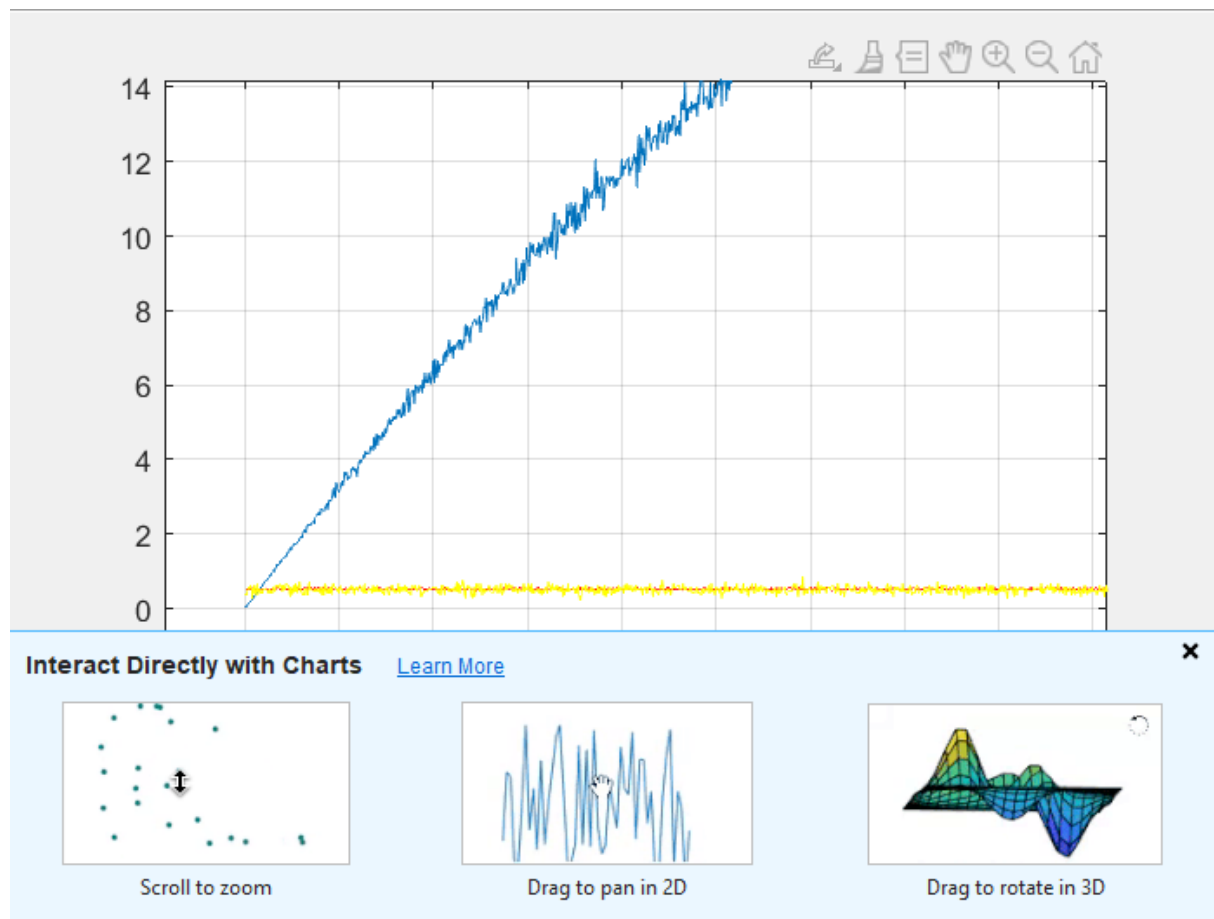


Fig: Random Process function1 graph

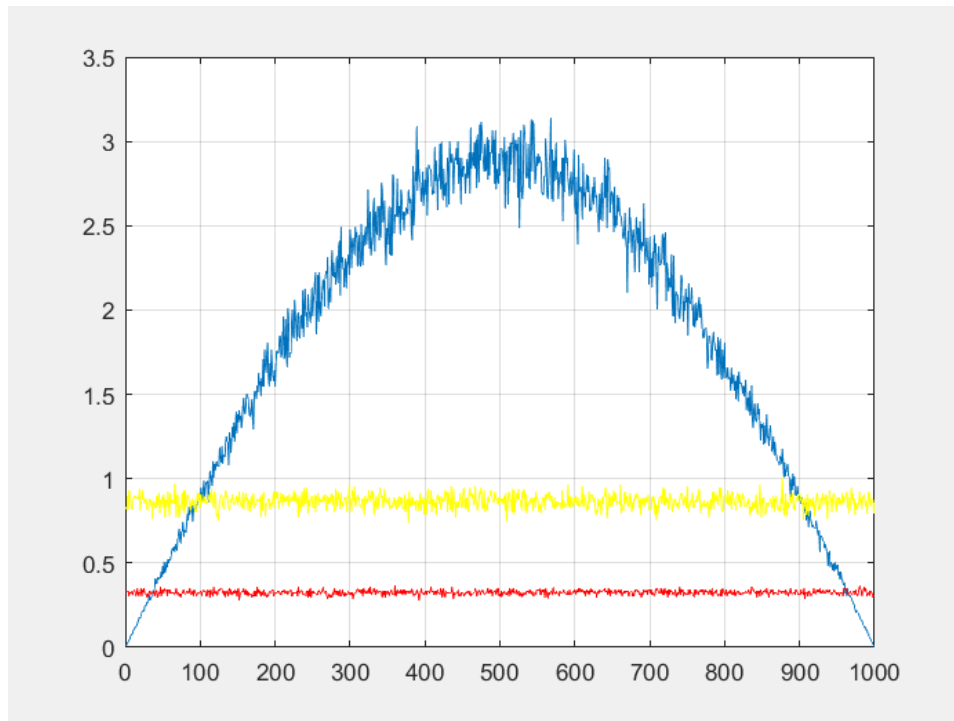


Fig: Random Process function 2 graph

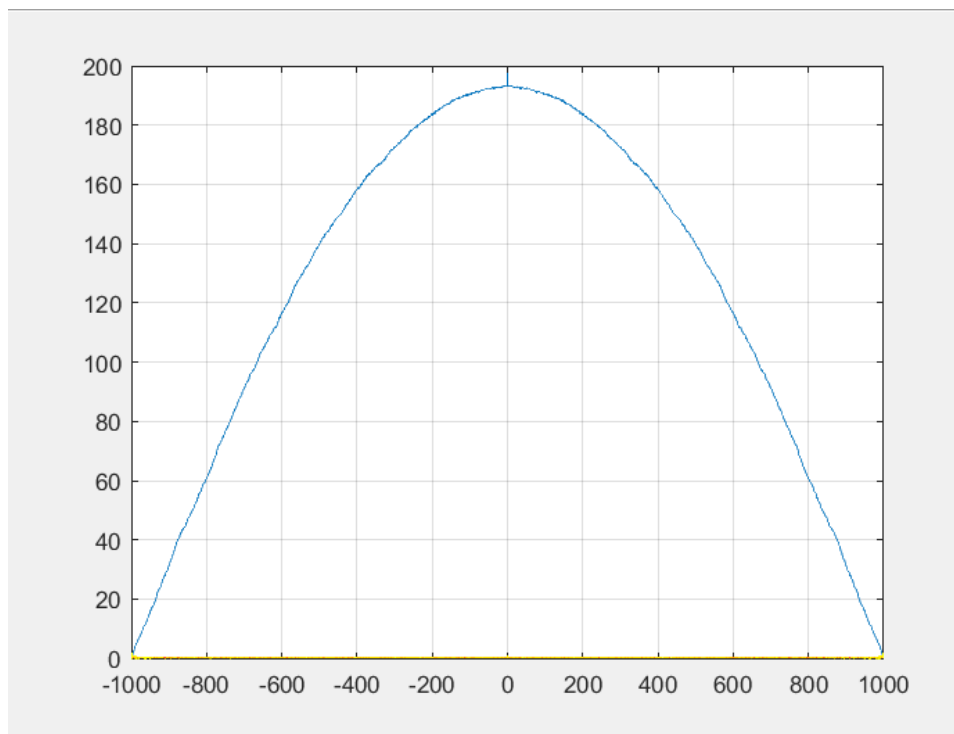


Fig: Random Process function 3 graph

Result: The experiment has been carried out successfully.

Experiment - 3

Title: Binary Phase Shift Keying (BPSK)

Aim: The Aim of this experiment is to show the results of BPSK also known as Binary Phase Shift Keying.

Components Required: MATLAB software (R2020 version or higher)

Graphs Obtained: (After running the code)

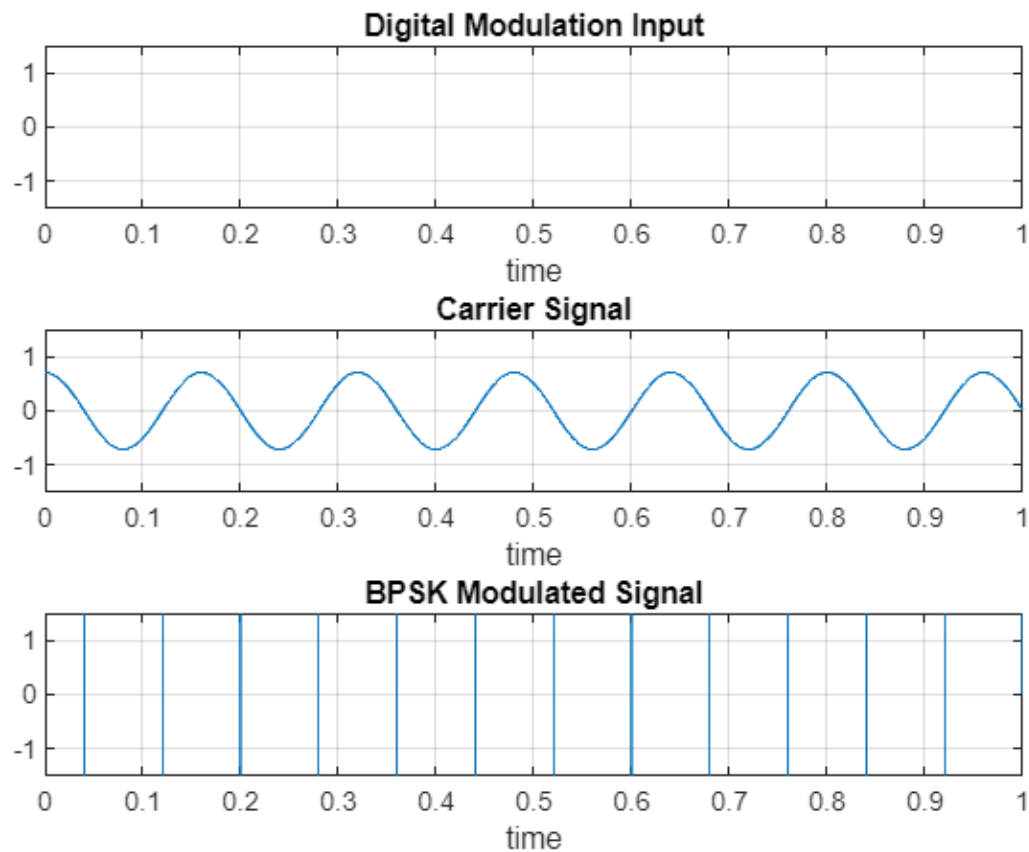


Fig: Digital modulation input of 11001101, Carrier signal and BPSK modulated signal

Result: We have obtained the BPSK modulated signal after running the code successfully.

Experiment - 4

Title: BER performance of 2x2 MIMO using Zero Forcing for BPSK and 16-QAM

Aim: The Aim of this experiment is to compare the results of Bit Rate error (BER) against average Signal Noise Ratio (SNR) for BPSK and 16-QAM with constraints of zero forcing.

Components Required: MATLAB software (R2020 version or higher)

Graphs Obtained: (After running the code)

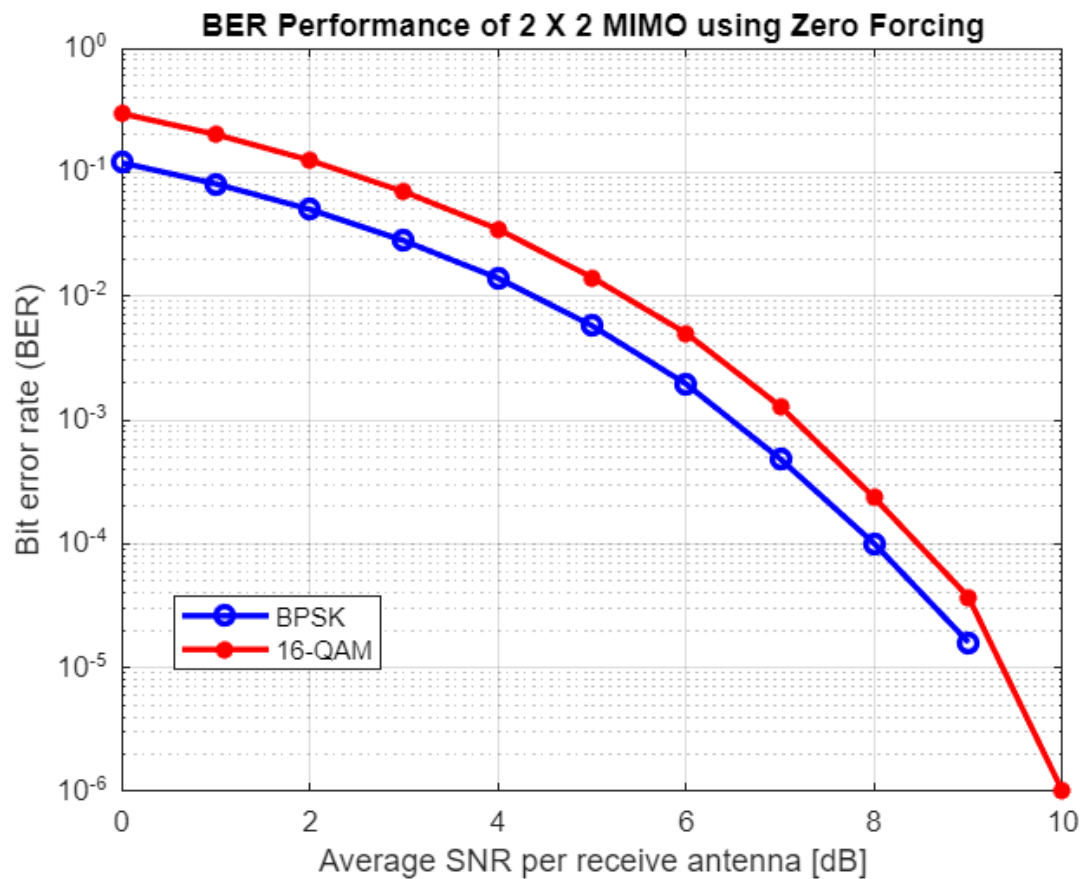


Fig: Graph giving comparison between BPSK and 16-QAM for BER vs avg SNR

Result: The comparison experiment has been performed successfully.

Experiment - 5
Title: Path Loss Models

Aim: The Aim of this experiment is to compare different Path loss models like Free PL, log distance PL and log-norm PL.

Components Required: MATLAB software (R2020 version or higher)

Graphs Obtained: (After running the code)

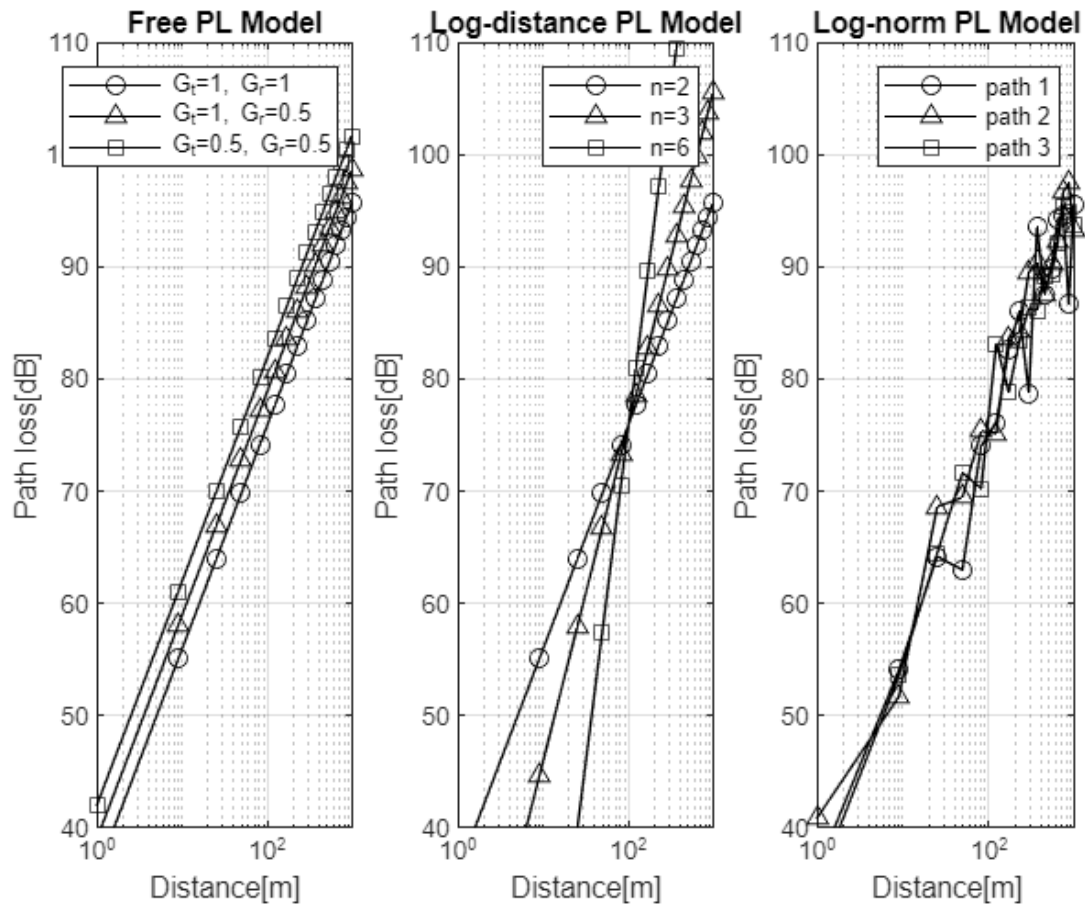


Fig: Graphs depicting comparison of the three PL models.

Result: The experiment has been carried out successfully.

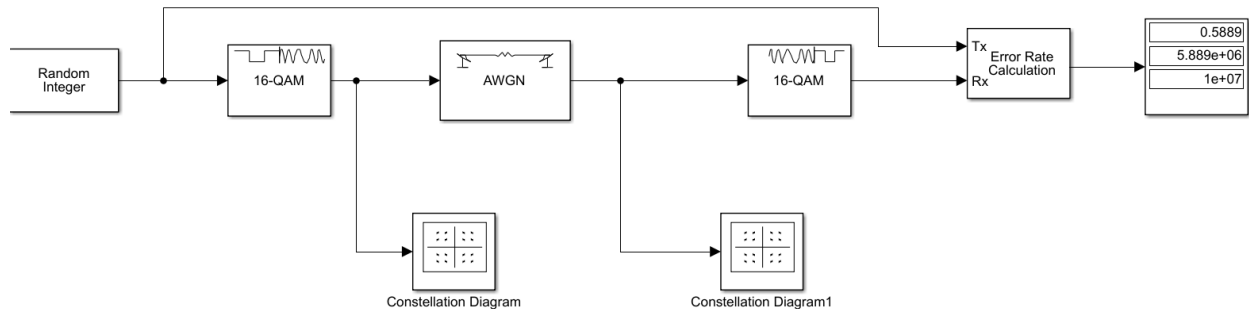
Experiment - 6

Title: 16-QAM model with and without AWGN

Aim: The Aim of this experiment is to compare the constellation diagrams of a communication model block before and after adding Additive gaussian White noise to a 16-QAM block

Components Required: MATLAB software (R2020 version or higher) and Simulink

Simulink model:



Graphs Obtained: (After compiling the model)

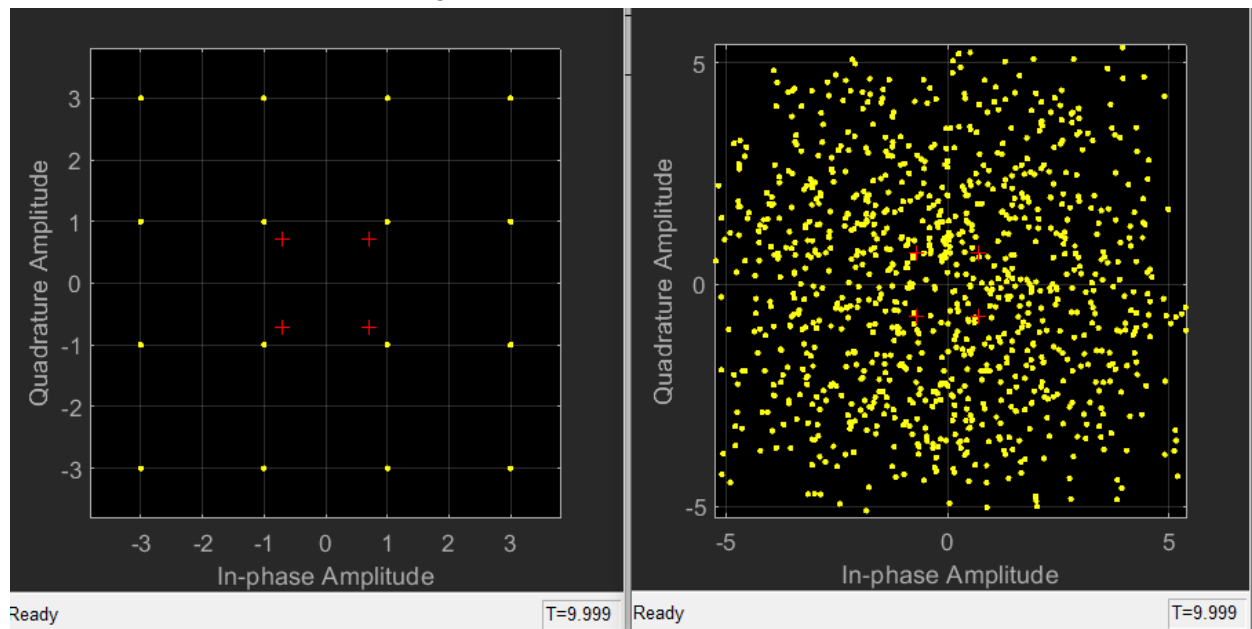


Fig: Constellation diagram before and after adding AWGN

Result: The experiment has been carried out successfully.

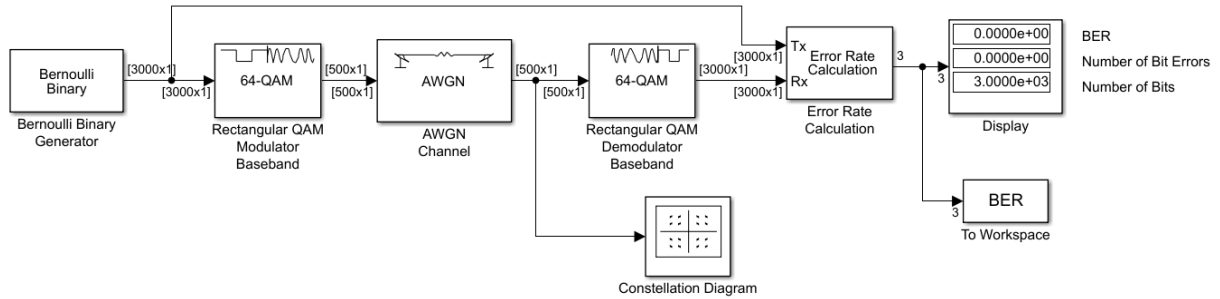
Experiment - 7

Title: 64-QAM

Aim: The Aim of this experiment is to show working of a 64-QAM

Components Required: MATLAB software (R2020 version or higher) and Simulink

Simulink model:



Graphs obtained: (After compiling the model)

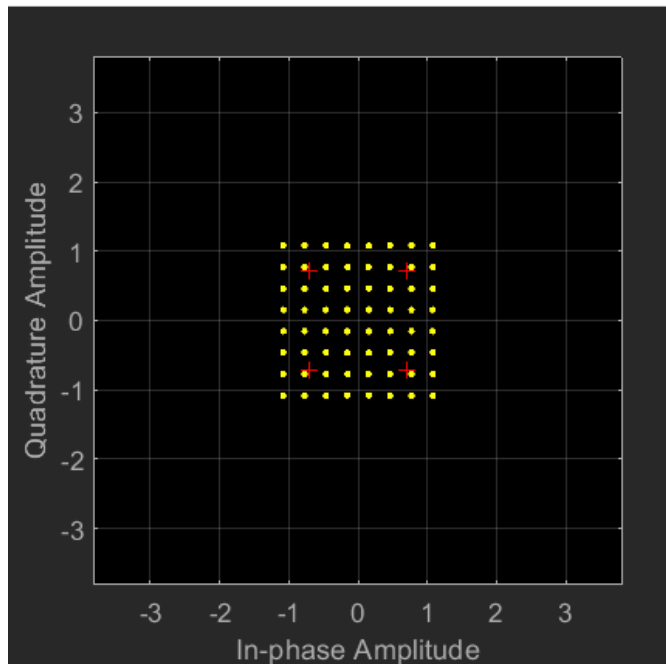


Fig: Constellation diagram obtained after AWGN

Result: The experiment has been carried out successfully.

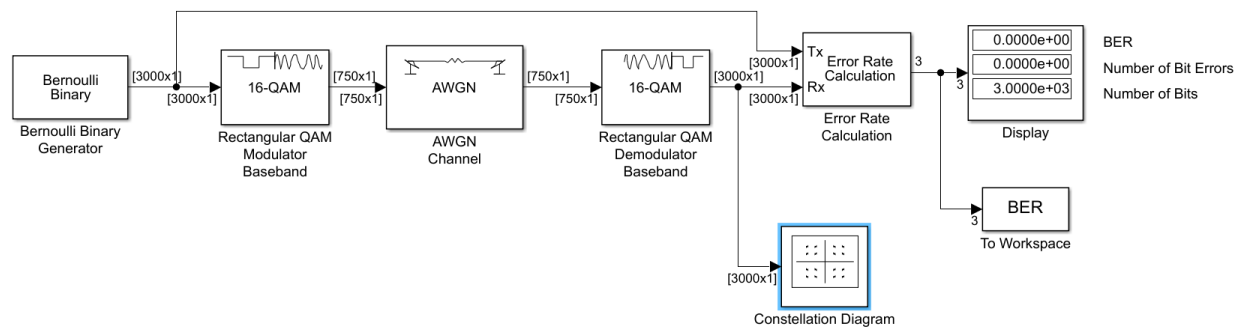
Experiment - 8

Title: 16-QAM

Aim: The Aim of this experiment is to show working of a 16-QAM

Components Required: MATLAB software (R2020 version or higher) and Simulink

Simulink model:



Graphs Obtained: (After running the model):

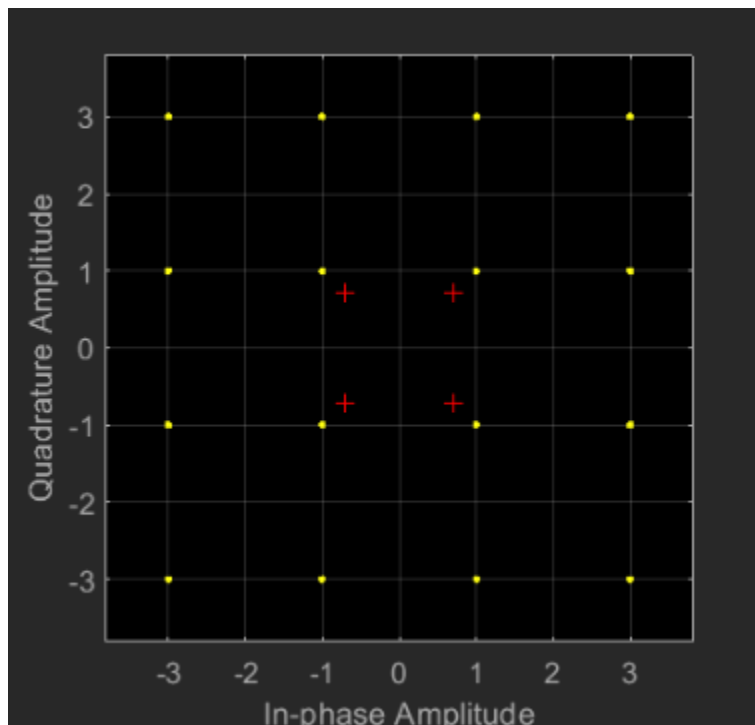


Fig: Constellation Diagram Obtained

Result: The Experiment has been carried out successfully.