EE352 – Communication Systems I Laboratory

Lab 8 Report
AM IN NOISE

Name: Korkut Emre Arslantürk **Number: 250206039**

Submission Date: 20/05/2021

Original Image

Demodulated Image with SNR=0dB

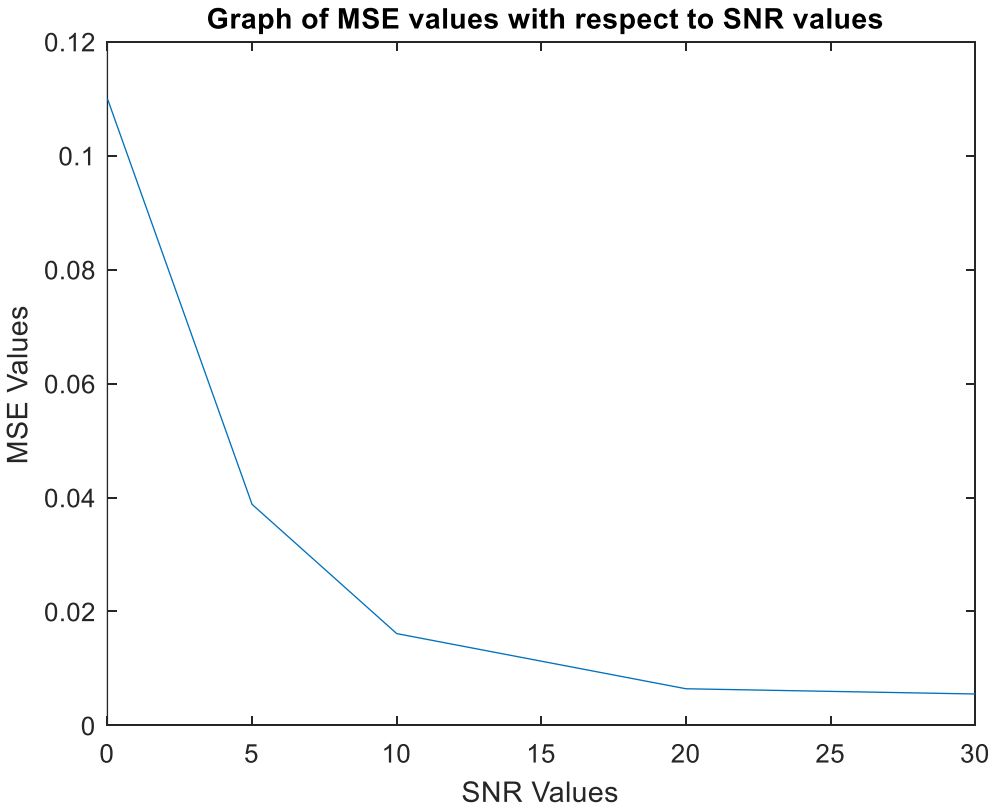
Demodulated Image with SNR=5dB

Demodulated Image with SNR=10dB

Demodulated Image with SNR=20dB

Demodulated Image with SNR=30dB

According to this graph, we can say when our SNR value is increasing we get closer result to original image. $SNR = \frac{Psignal}{Pnoise}$ and we know that noise is unwanted compenent. So we can say when the ratio of the desired component to the unwanted noise component increases, we get an image that is more similar to the original image. When filtering, to select cutoff frequency, we took the fourier Transform of our message signal and selected 12kHz according to the frequency value containing the component. Also I select filter order is 2 because when filter order is increasing the mean square error values increase because of Rolloff value increase so that order 2 is the lowest number that gives us a good image. Also in demodulation part, because of the cosine product formula we choose Acprime value equal to 2.



According to this graph, we can say when SNR values are increasing, mean square error value is decreasing. $SNR = \frac{Psignal}{Pnoise}$ and we know that noise is unwanted compenent. SNR value increasing meaning is that the ratio of the desired component to the unwanted noise component increases and according the that as we can see in the graph mean square error value is decreasing. Also, we can say that we get different MSE values for running programs every time because noise goes through a random process.