

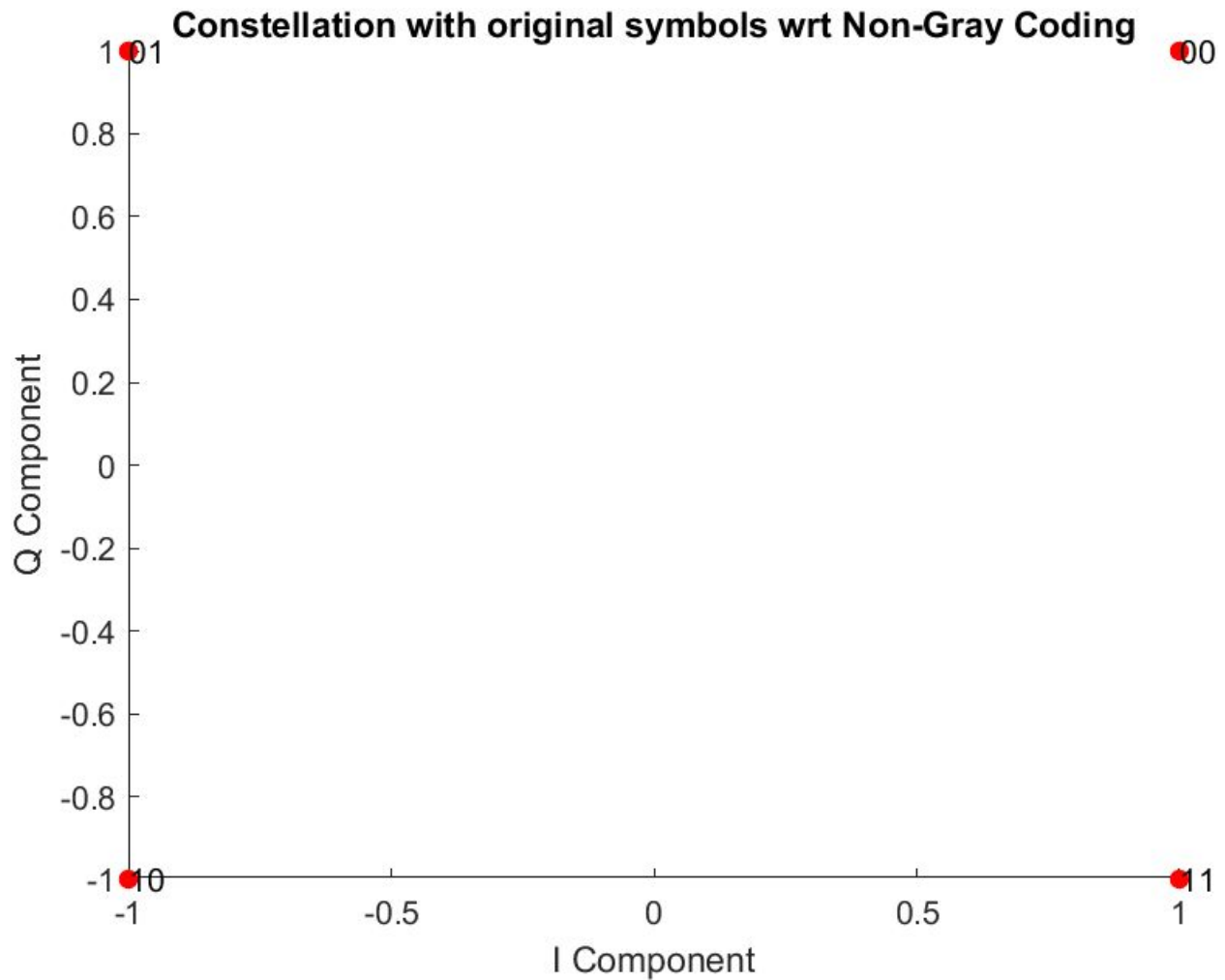
Communication Systems Lab

Lab Report (180030037)

Experiment 4 : Bit error rate of Quadrature Phase Shift Keying (QPSK) (with and without Gray labelling) in Additive White Gaussian Noise (AWGN)

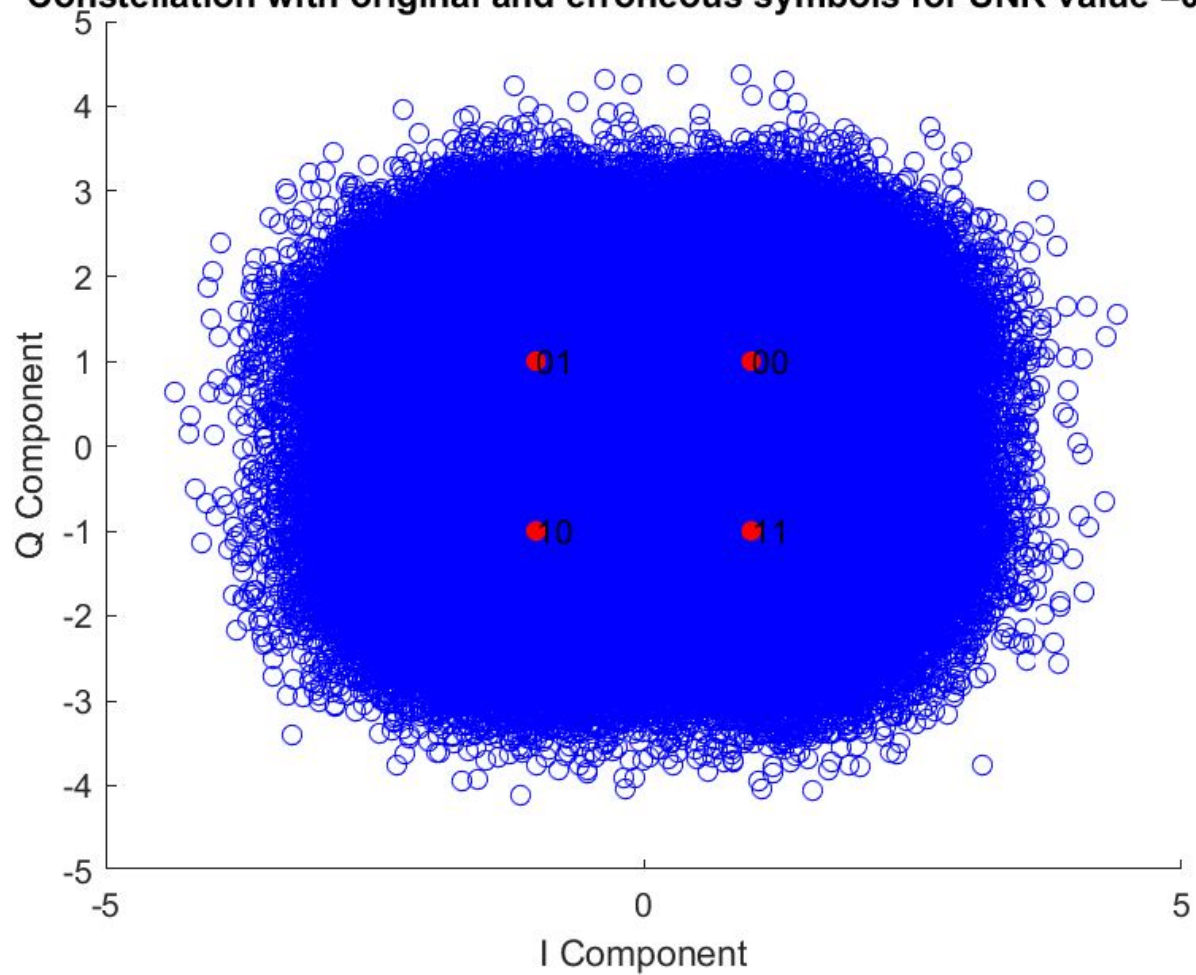
1. With Non-Gray Coding

Constellation Diagram of original Symbols

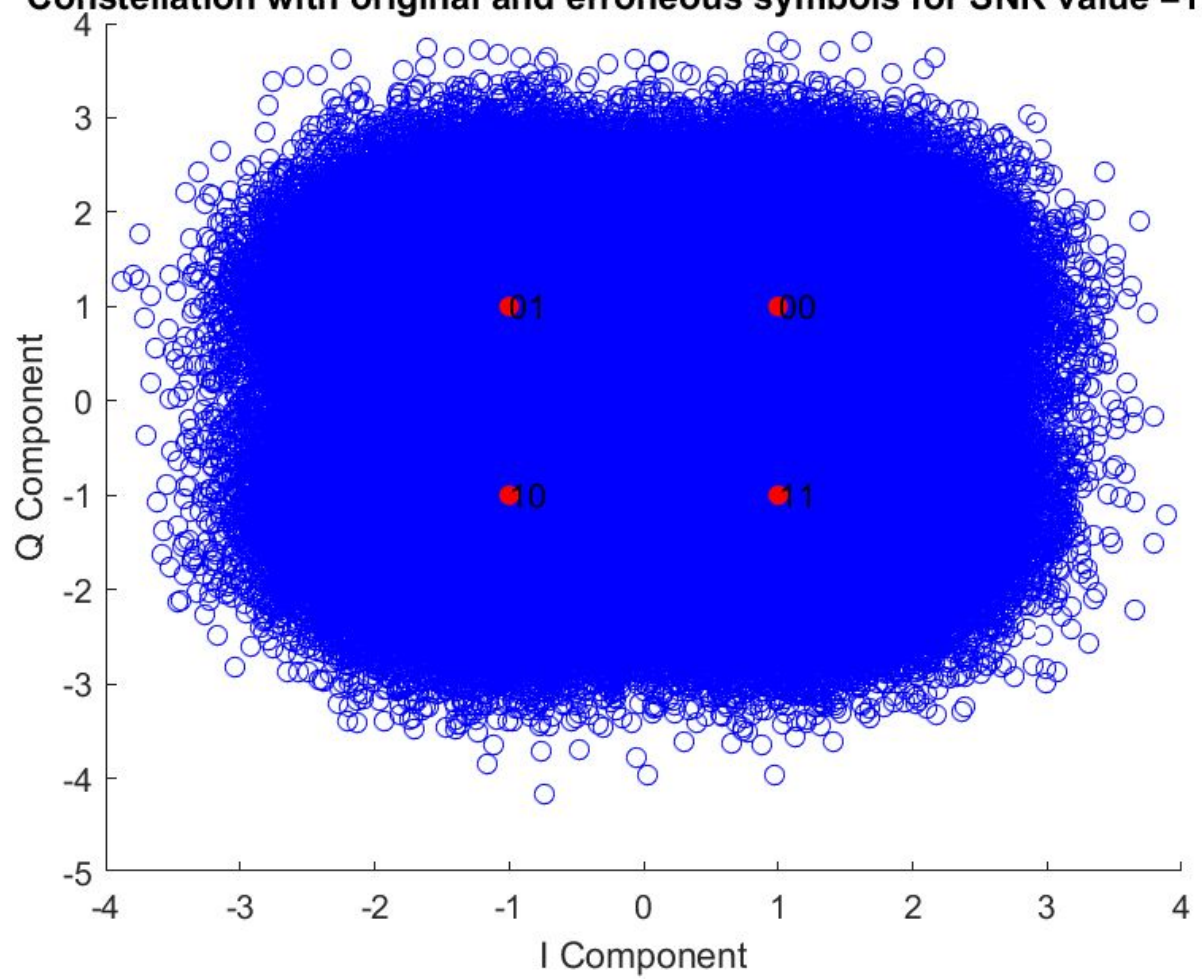


Constellation Plots for various SNR values (dB)

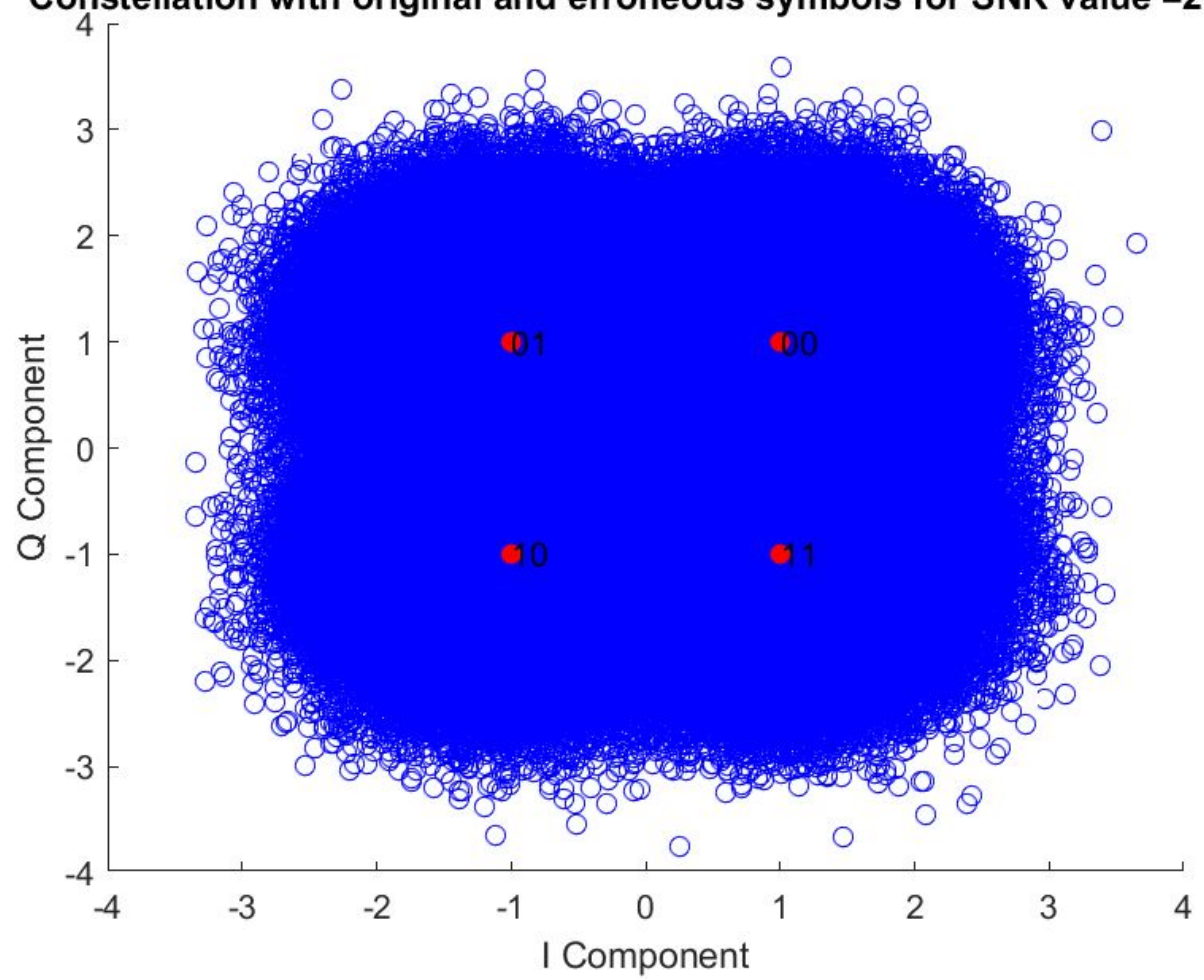
Constellation with original and erroneous symbols for SNR value =0 dB



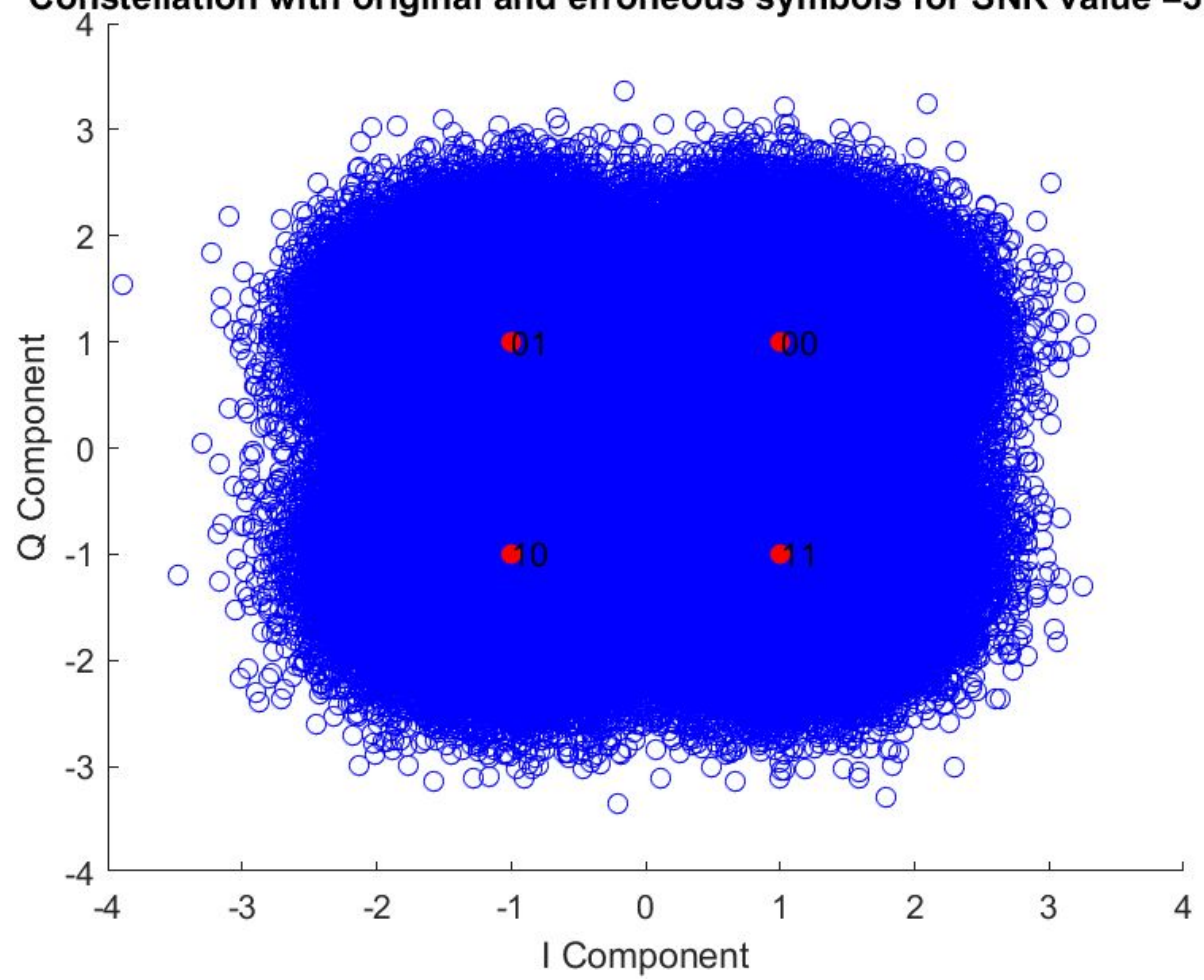
Constellation with original and erroneous symbols for SNR value =1 dB



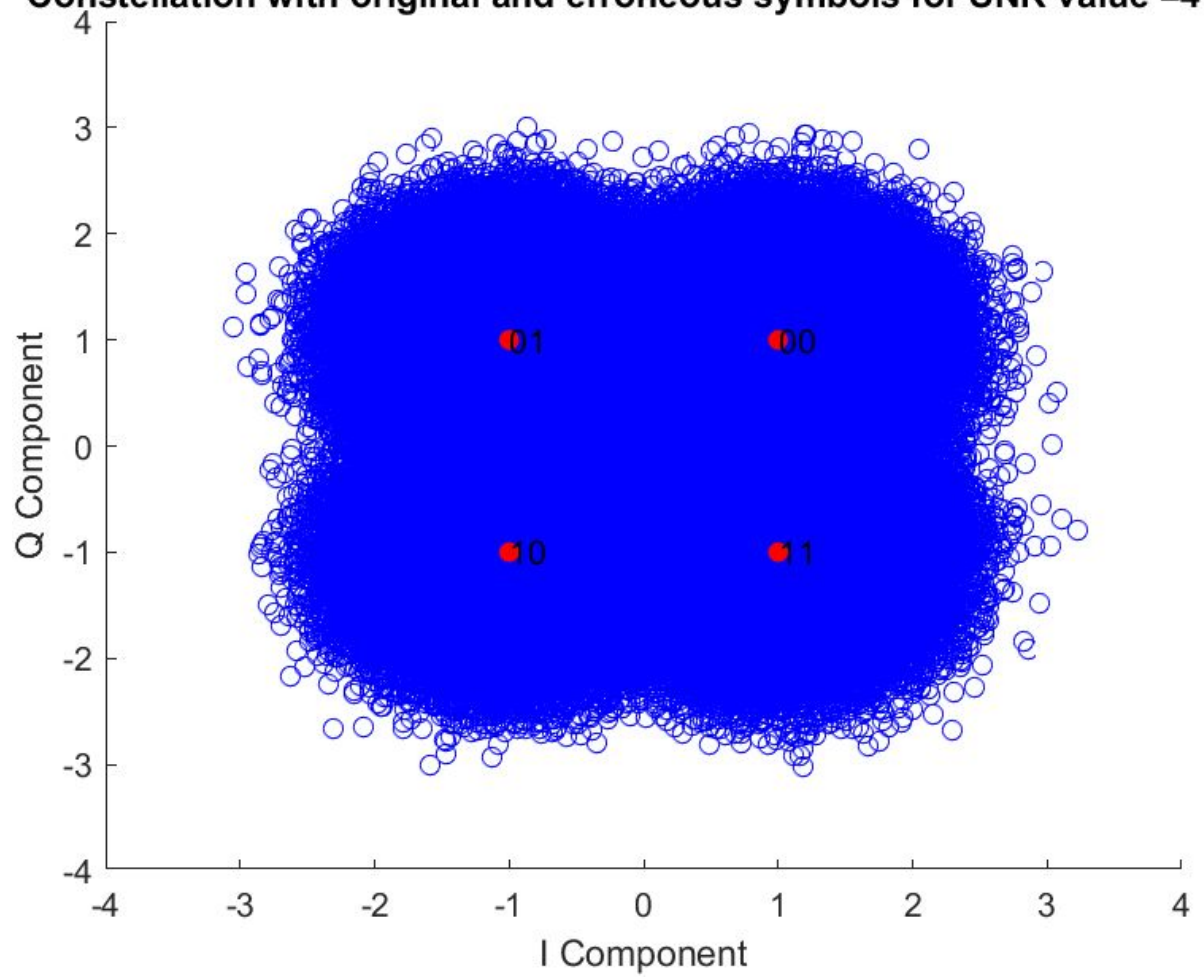
Constellation with original and erroneous symbols for SNR value =2 dB



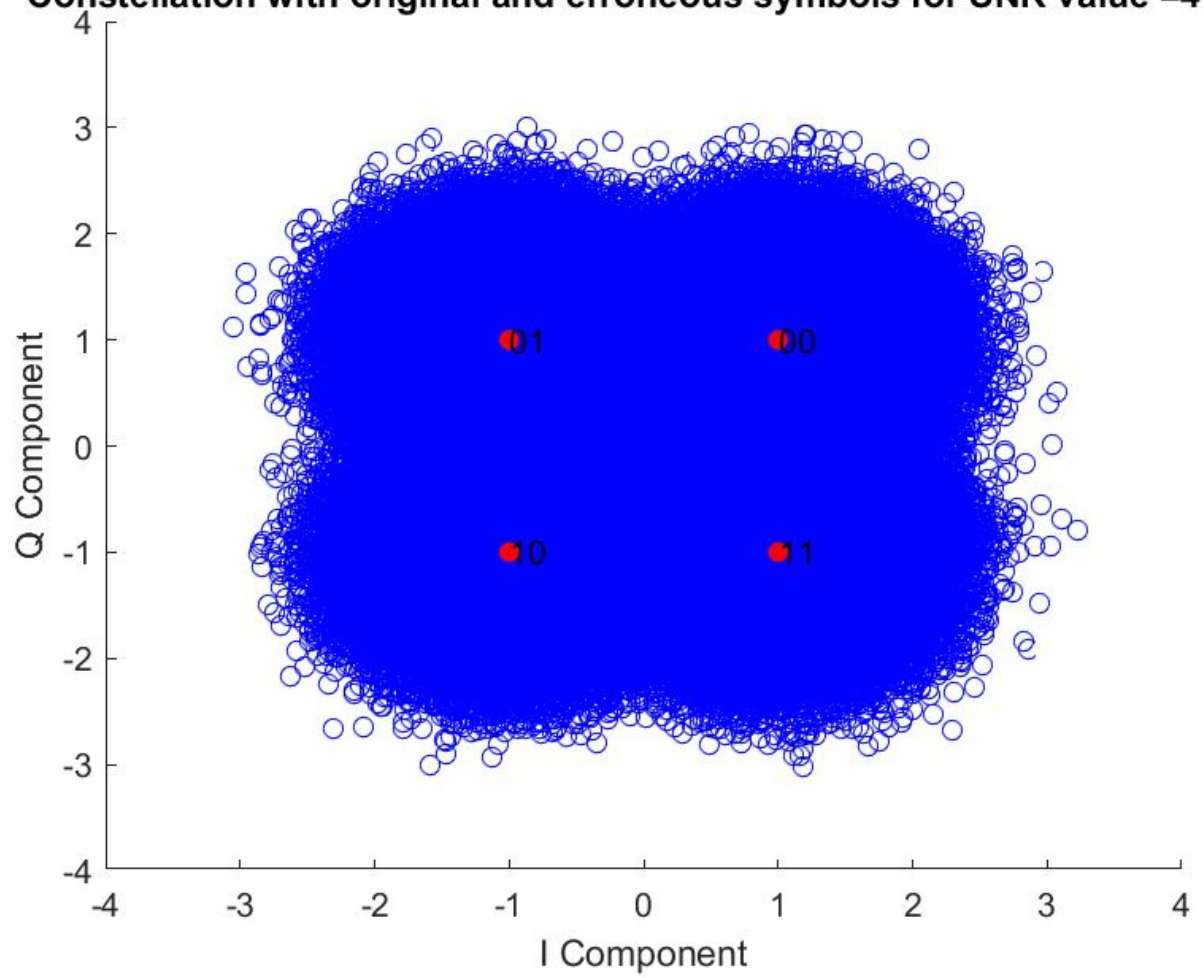
Constellation with original and erroneous symbols for SNR value =3 dB



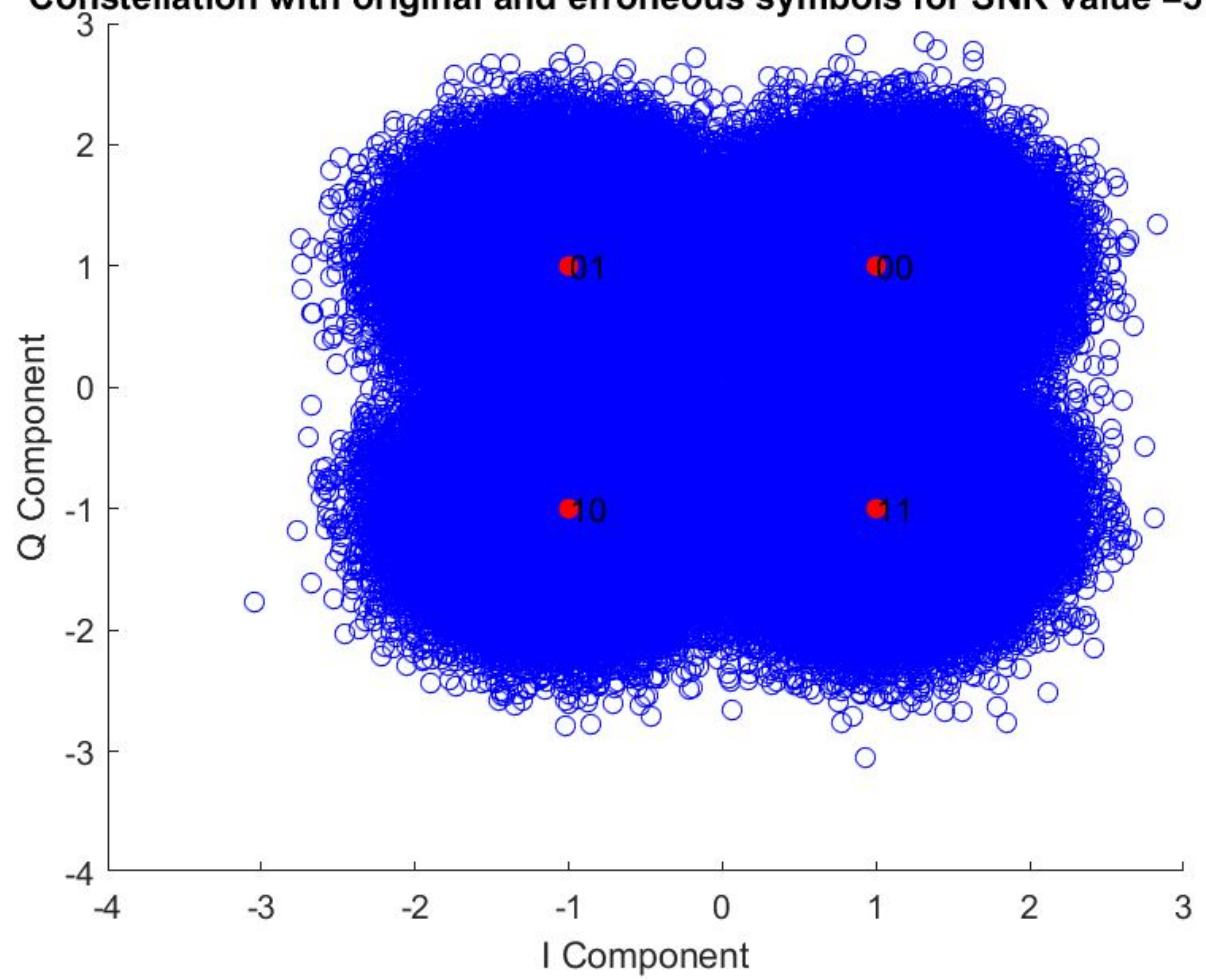
Constellation with original and erroneous symbols for SNR value =4 dB



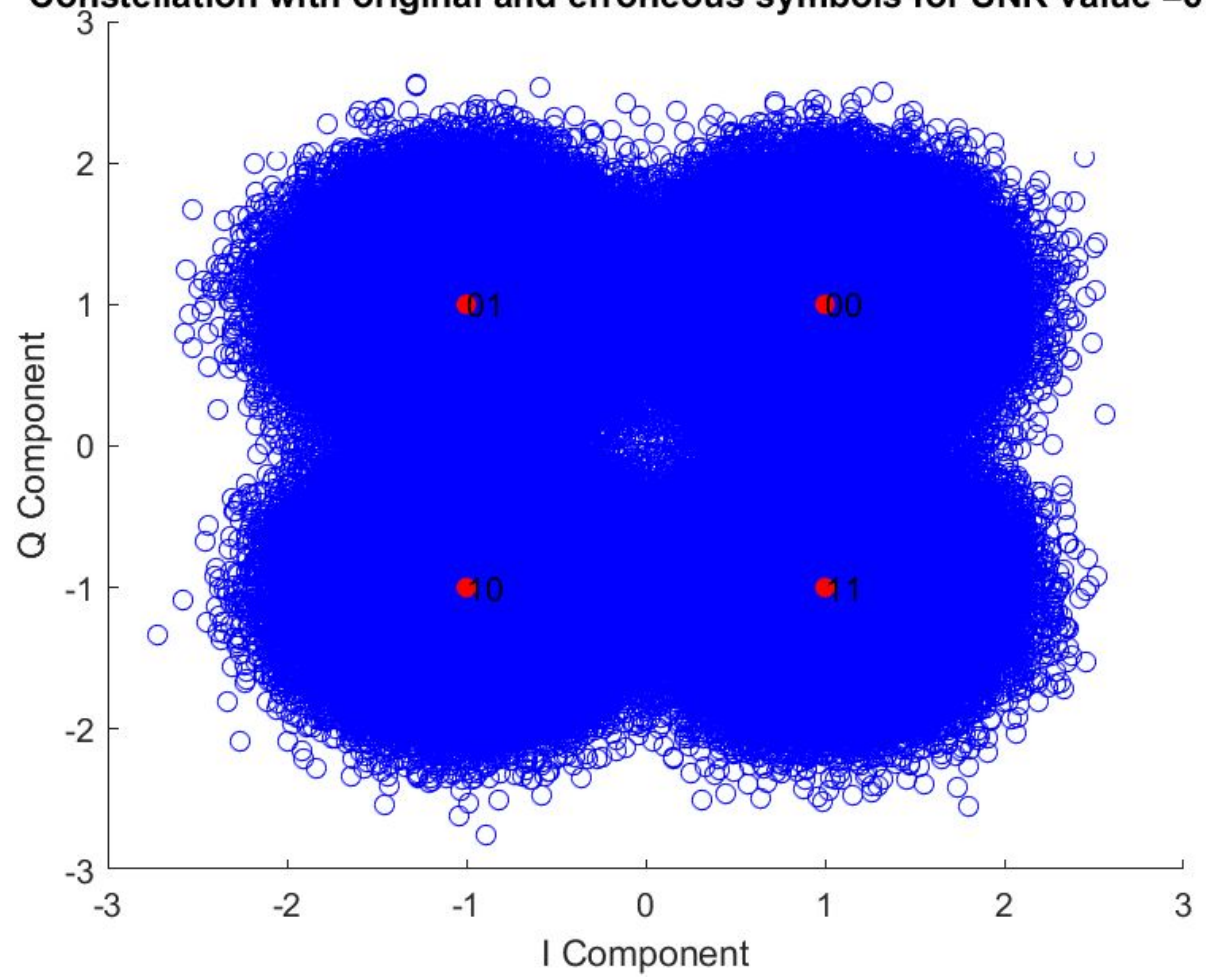
Constellation with original and erroneous symbols for SNR value =4 dB



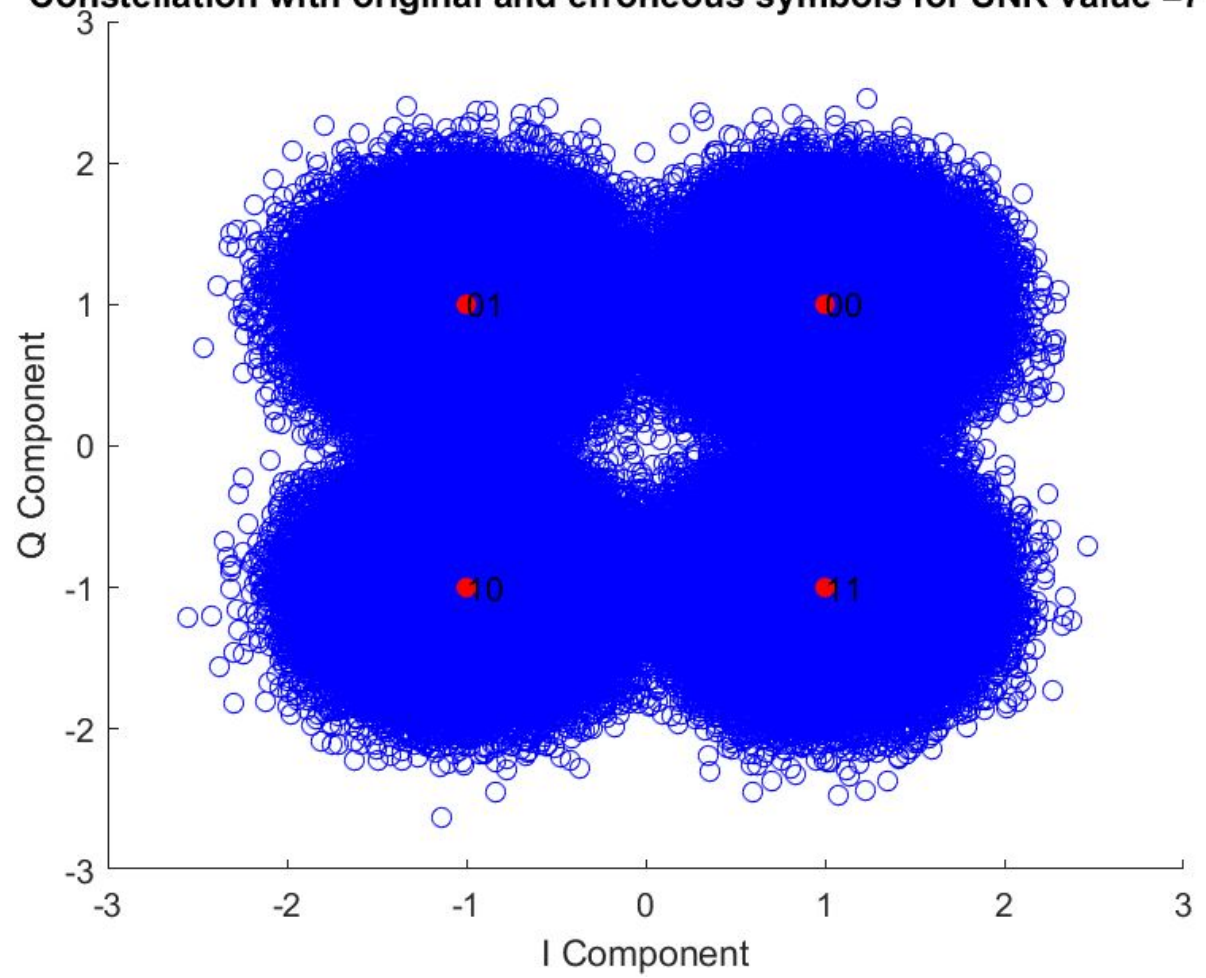
Constellation with original and erroneous symbols for SNR value =5 dB



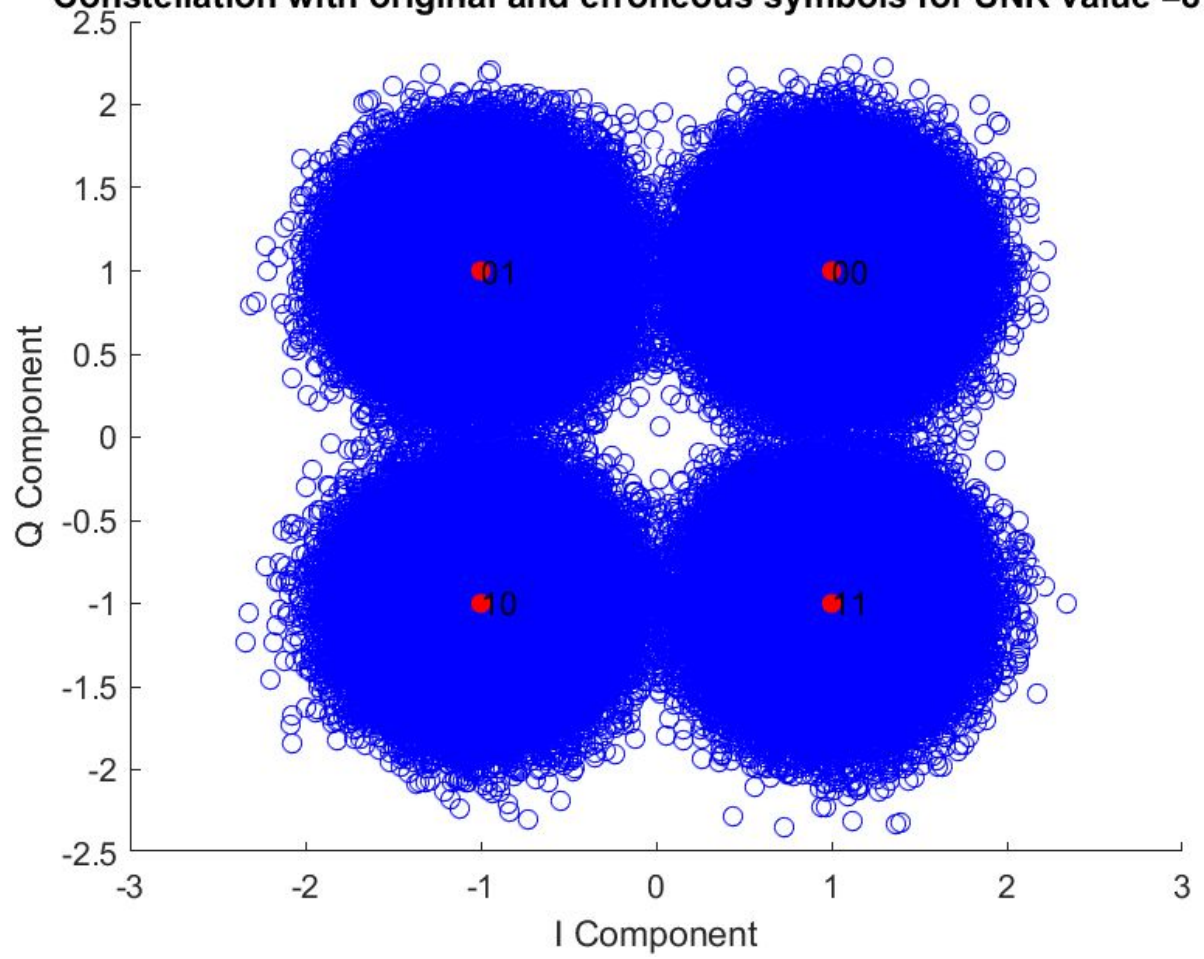
Constellation with original and erroneous symbols for SNR value =6 dB



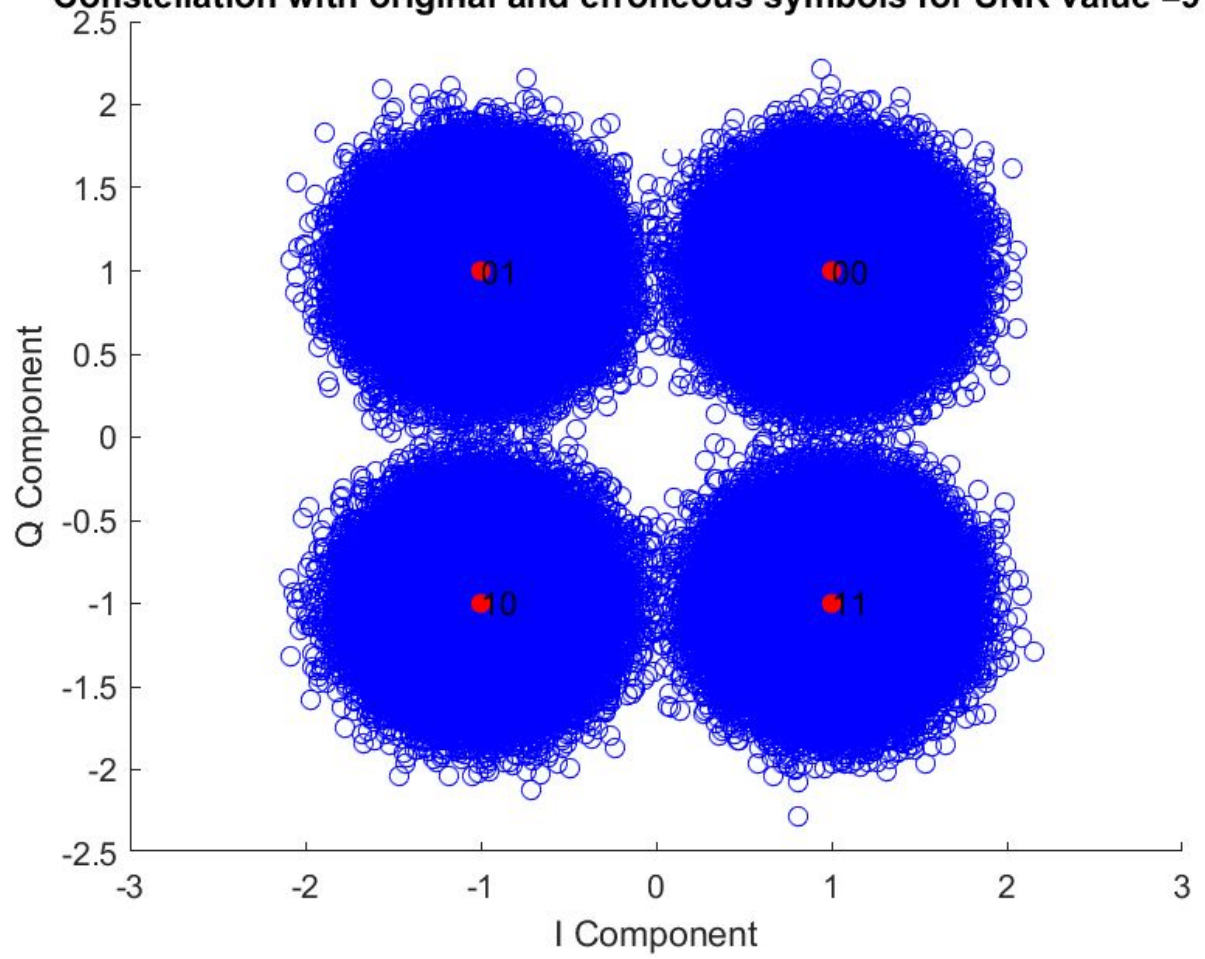
Constellation with original and erroneous symbols for SNR value =7 dB



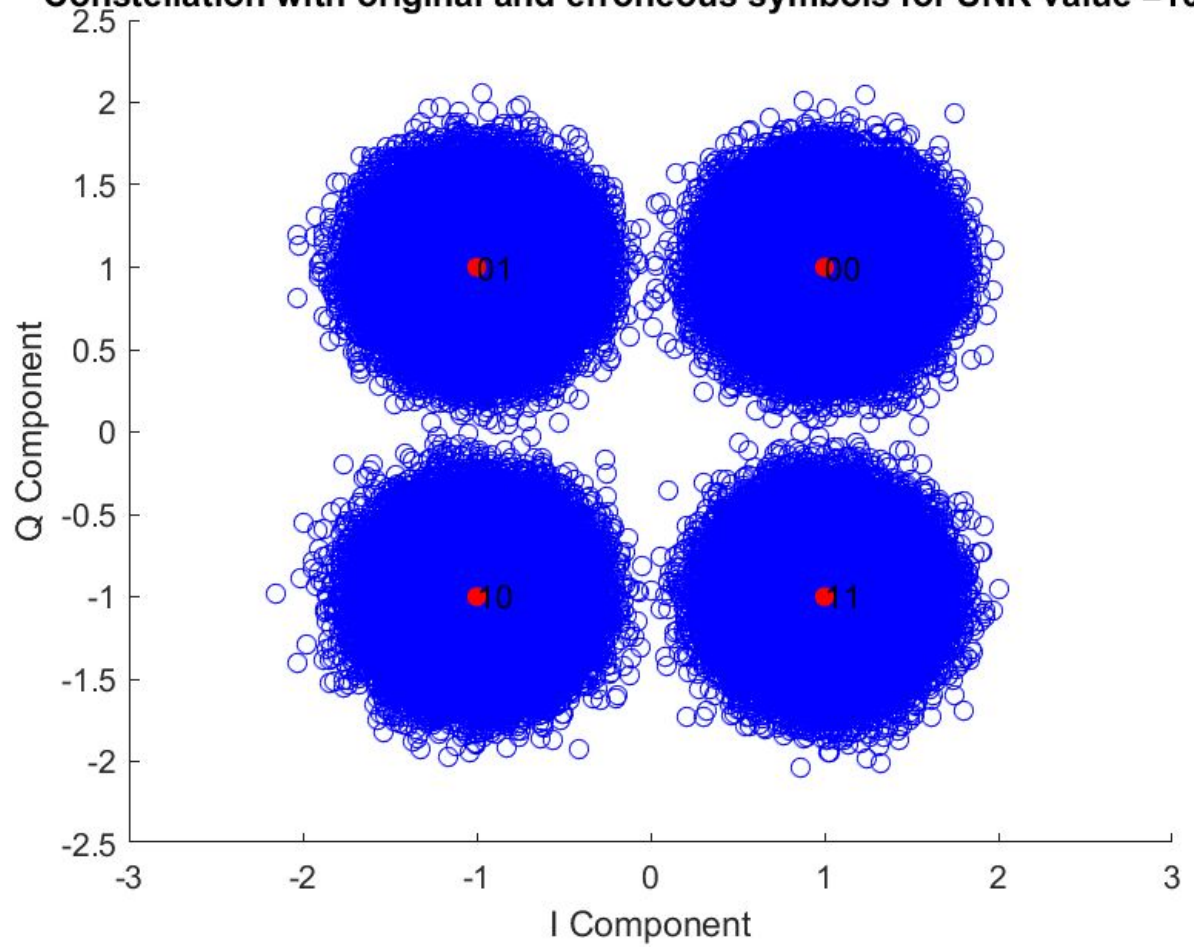
Constellation with original and erroneous symbols for SNR value =8 dB



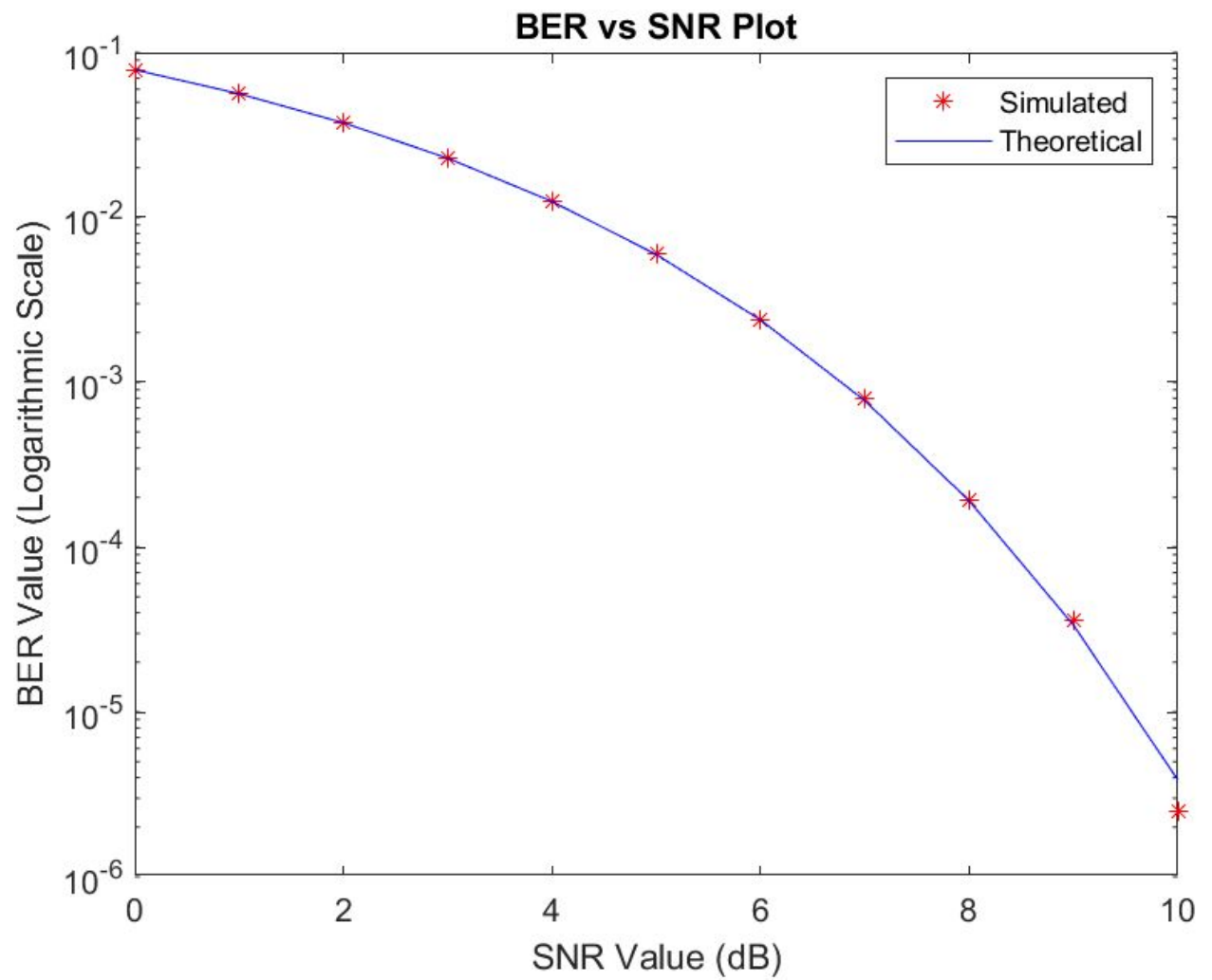
Constellation with original and erroneous symbols for SNR value =9 dB



Constellation with original and erroneous symbols for SNR value =10 dB

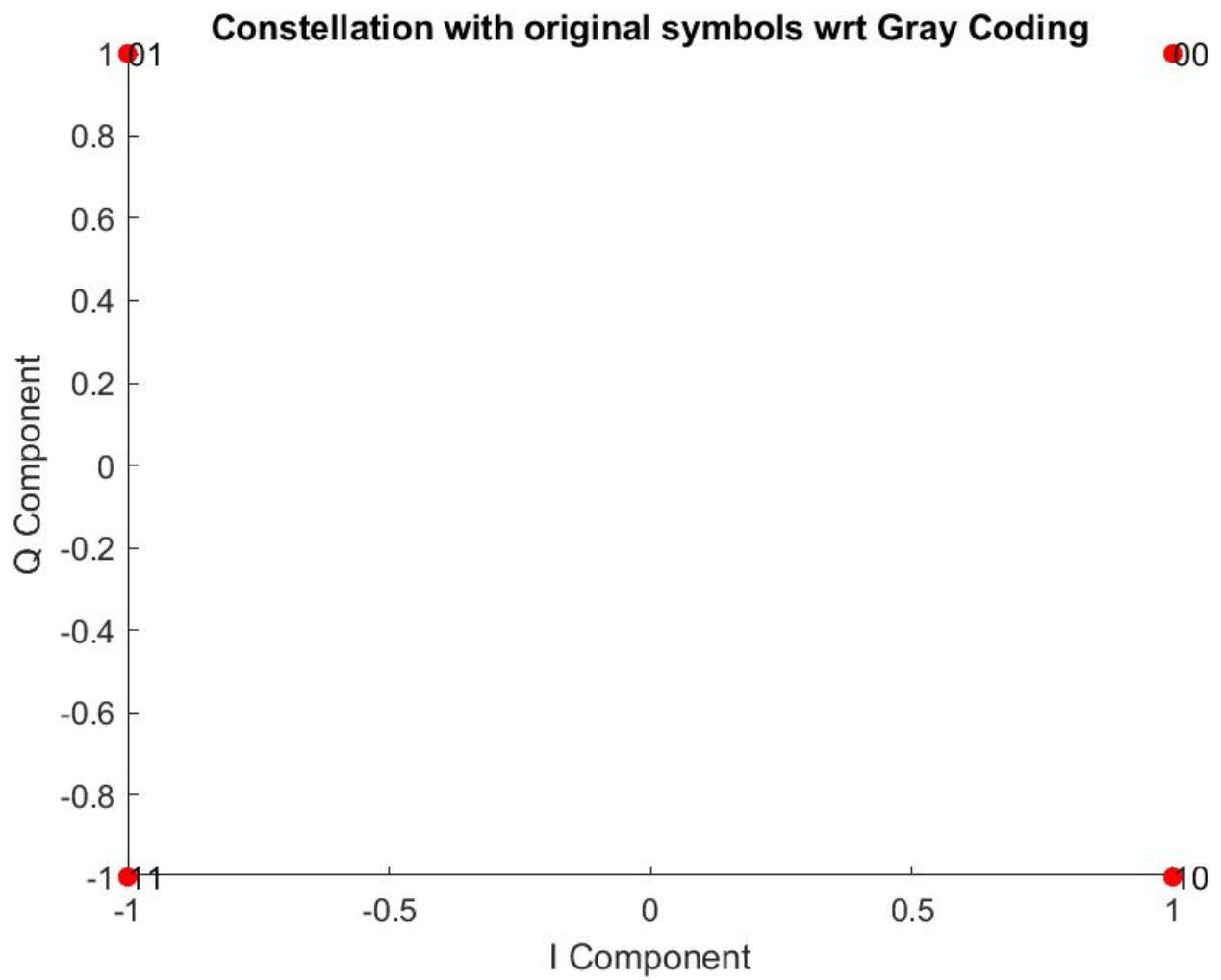


BER vs SNR Plot
(Non-Gray Coding)



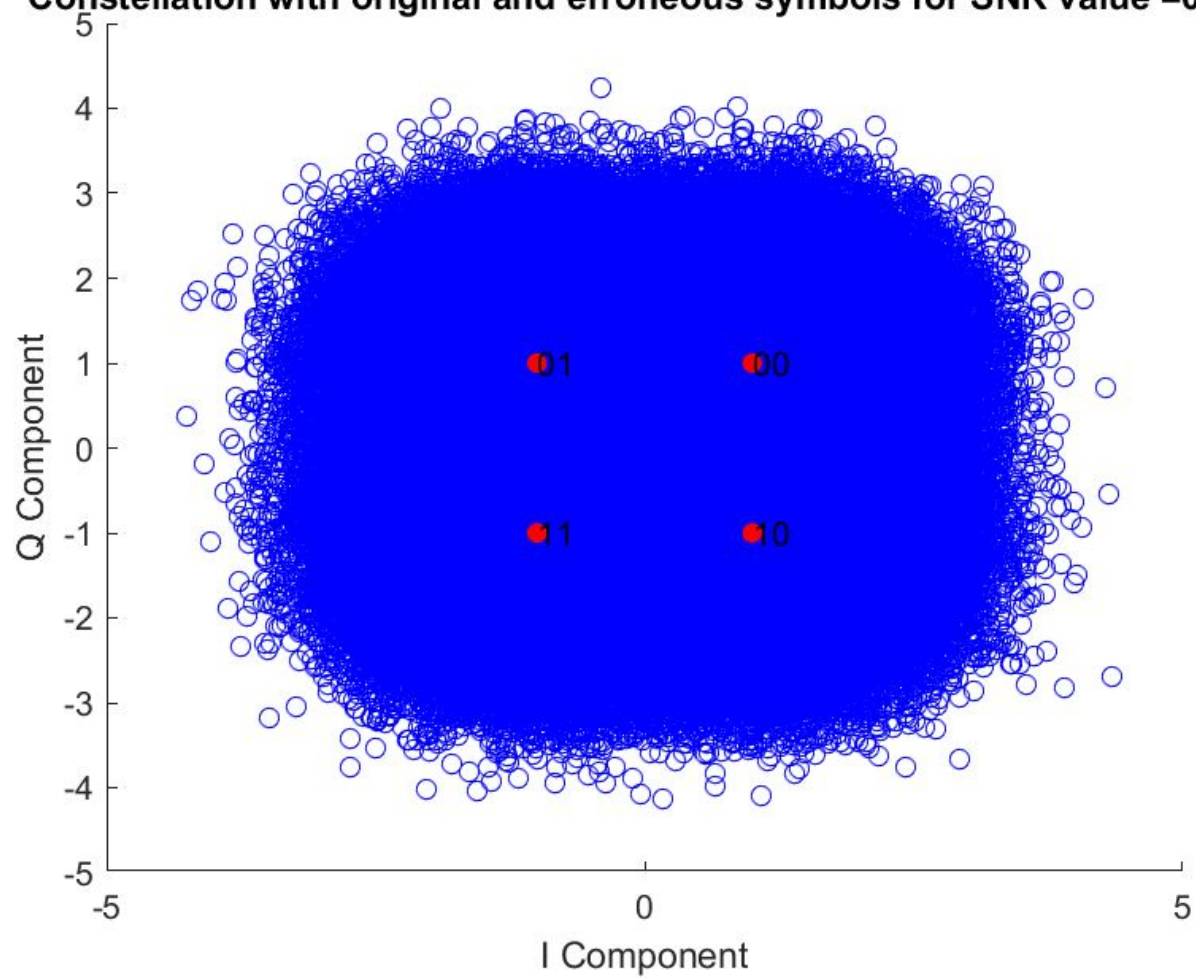
2. With Gray Coding of Symbols

Constellation Diagram of Original Symbols

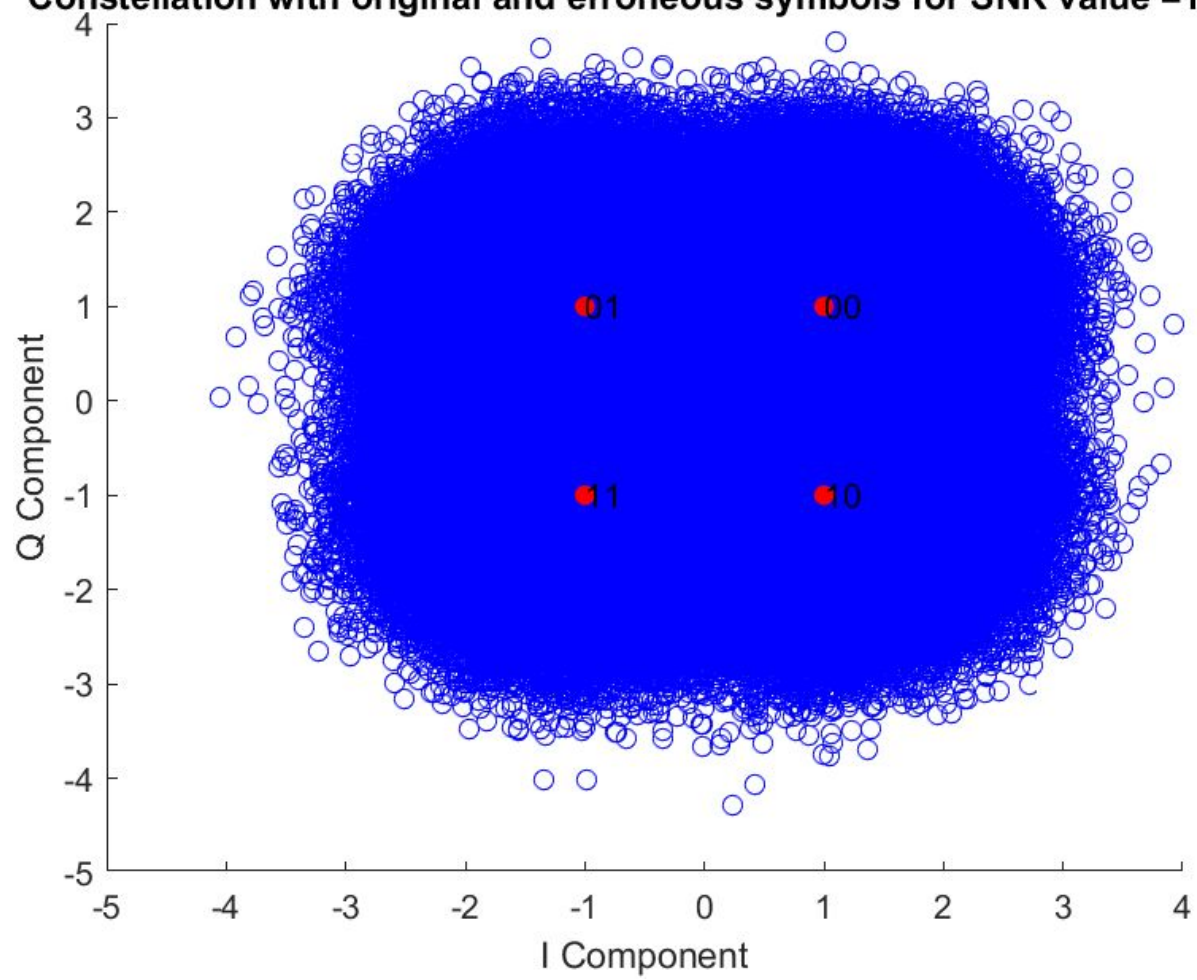


Constellation Plots for various SNR Values (dB)

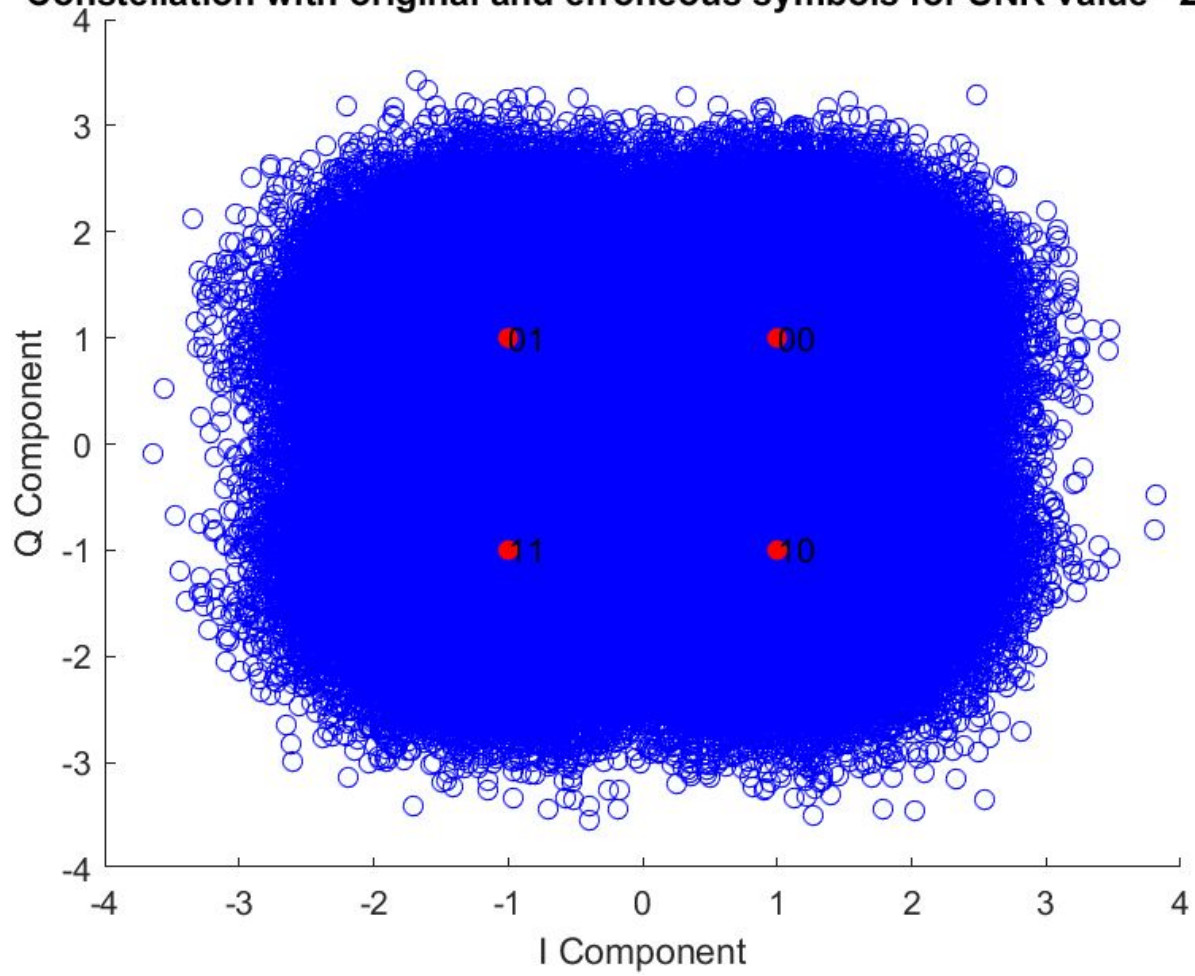
Constellation with original and erroneous symbols for SNR value =0 dB



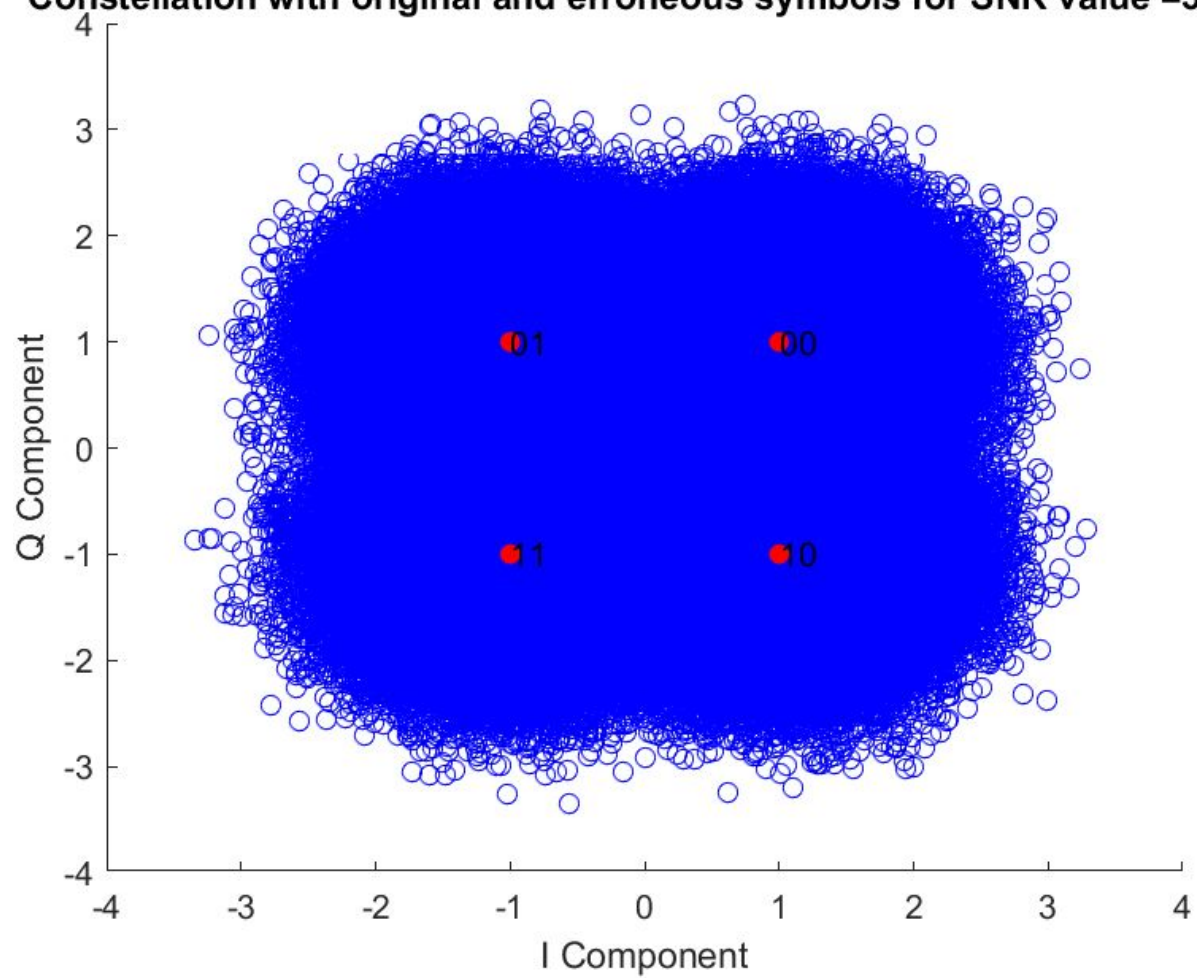
Constellation with original and erroneous symbols for SNR value =1 dB



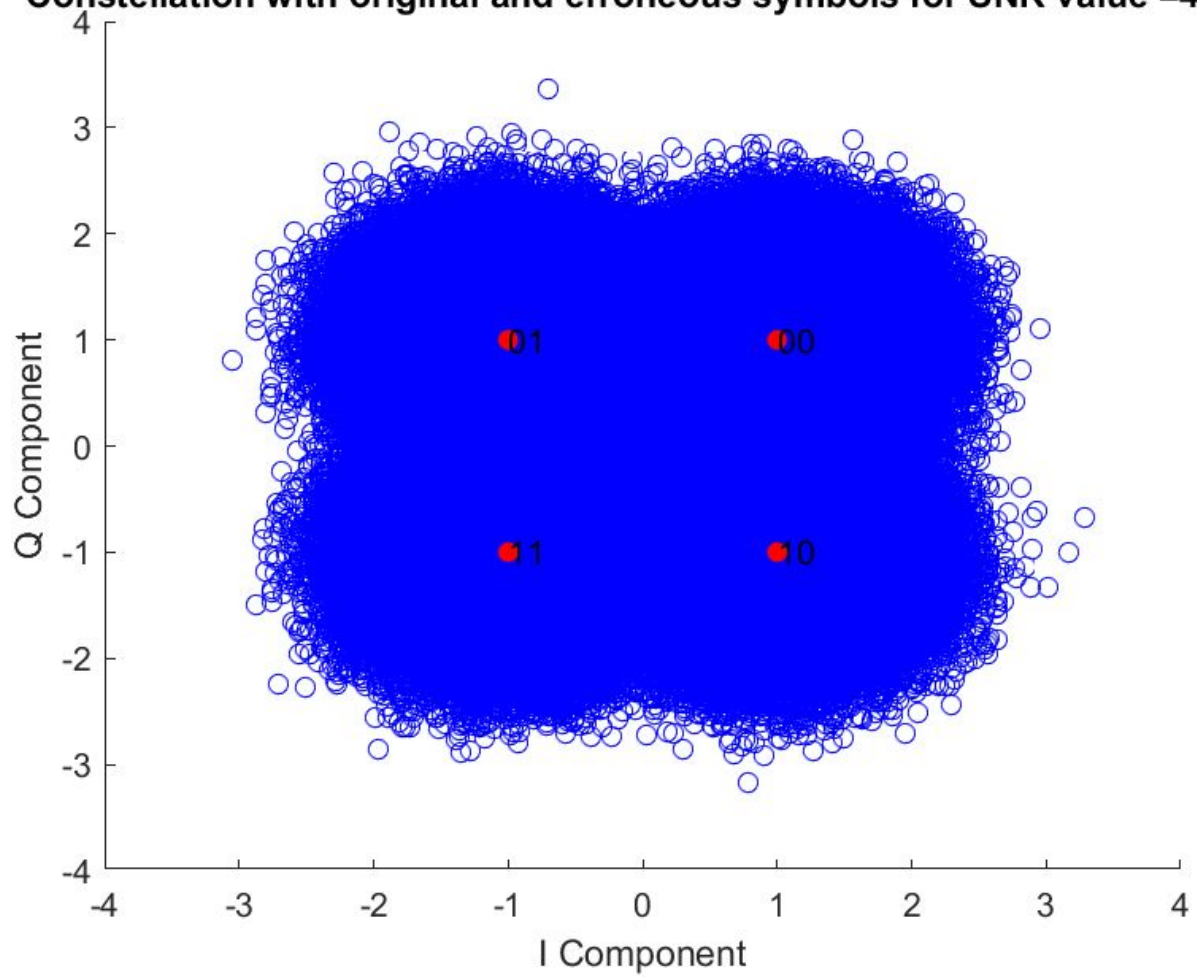
Constellation with original and erroneous symbols for SNR value =2 dB



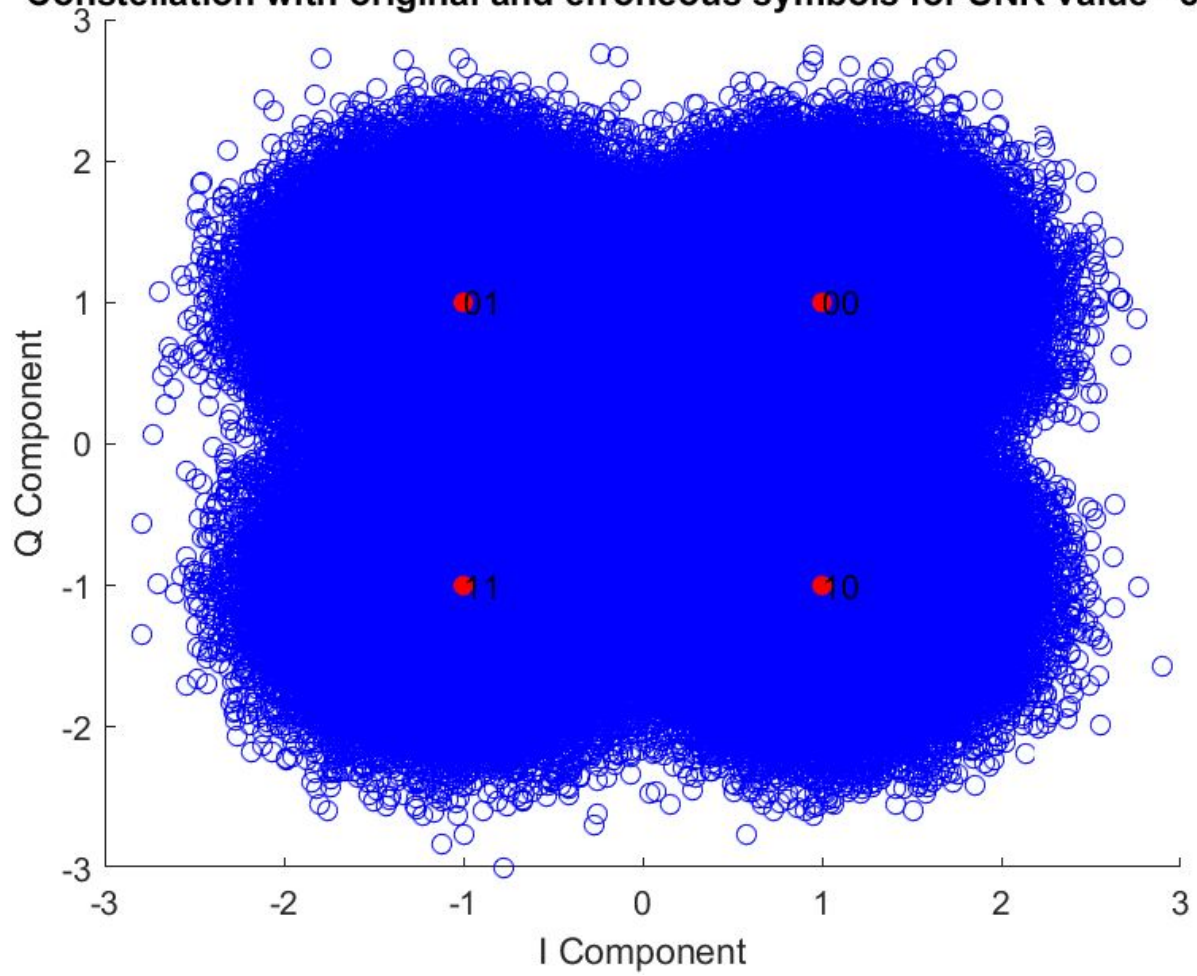
Constellation with original and erroneous symbols for SNR value =3 dB



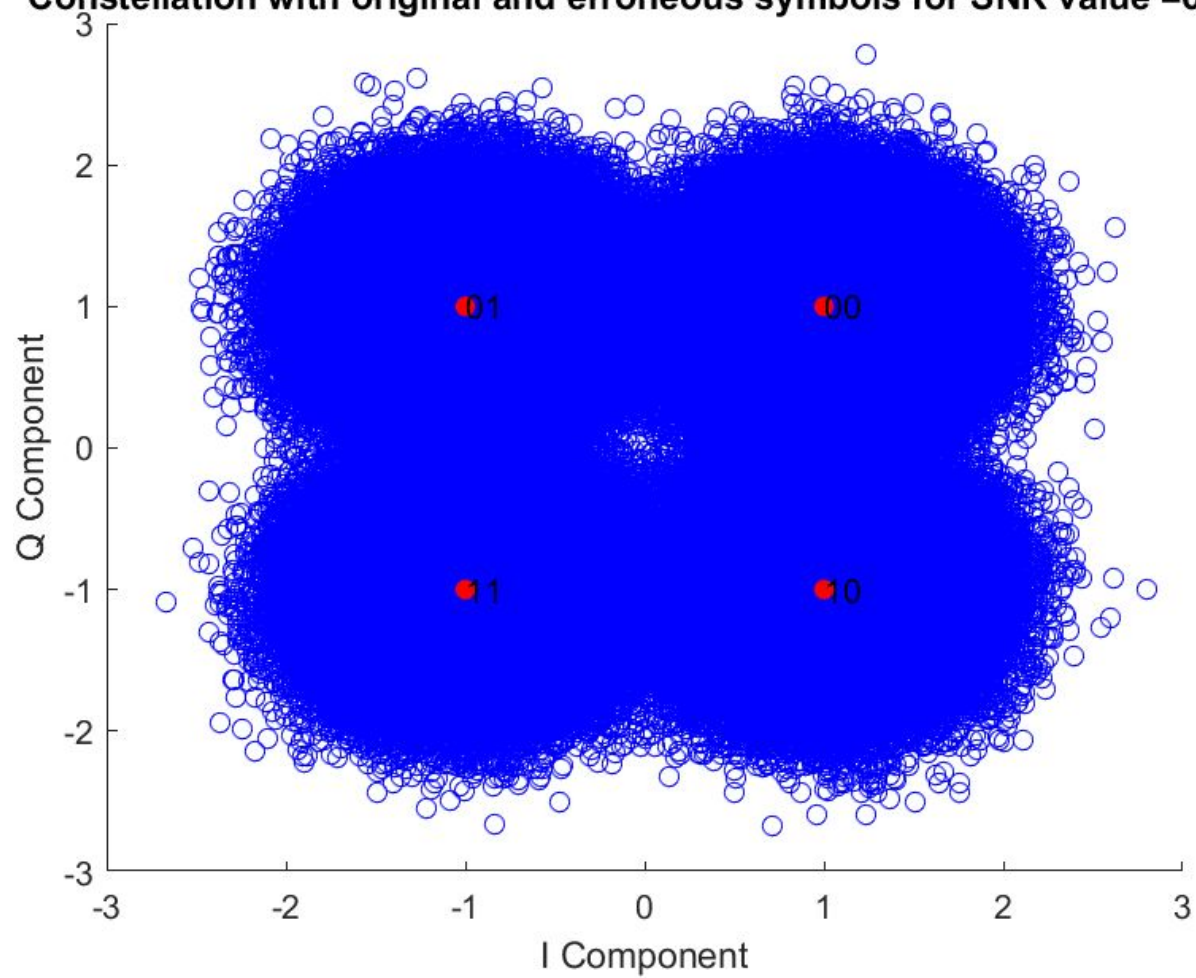
Constellation with original and erroneous symbols for SNR value =4 dB



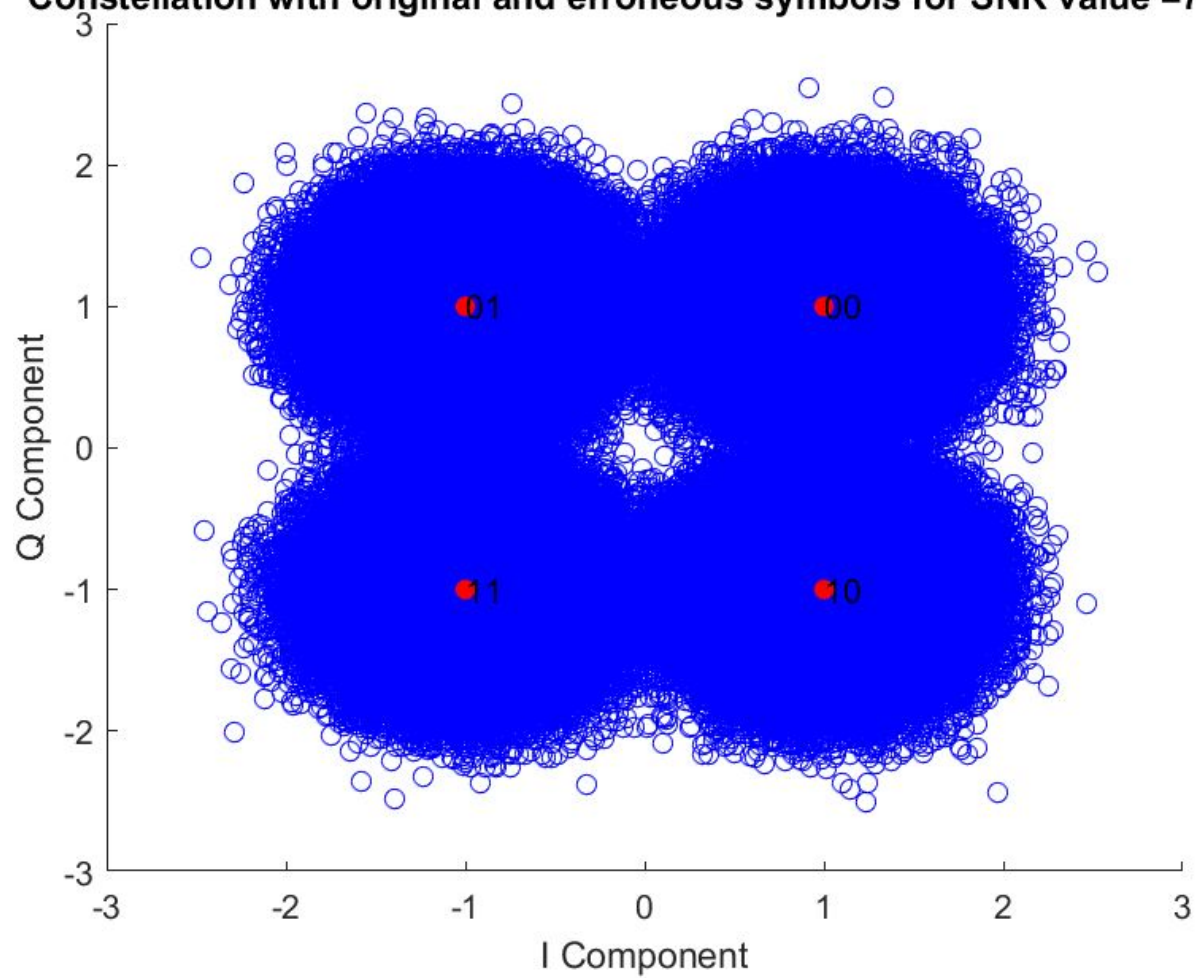
Constellation with original and erroneous symbols for SNR value =5 dB



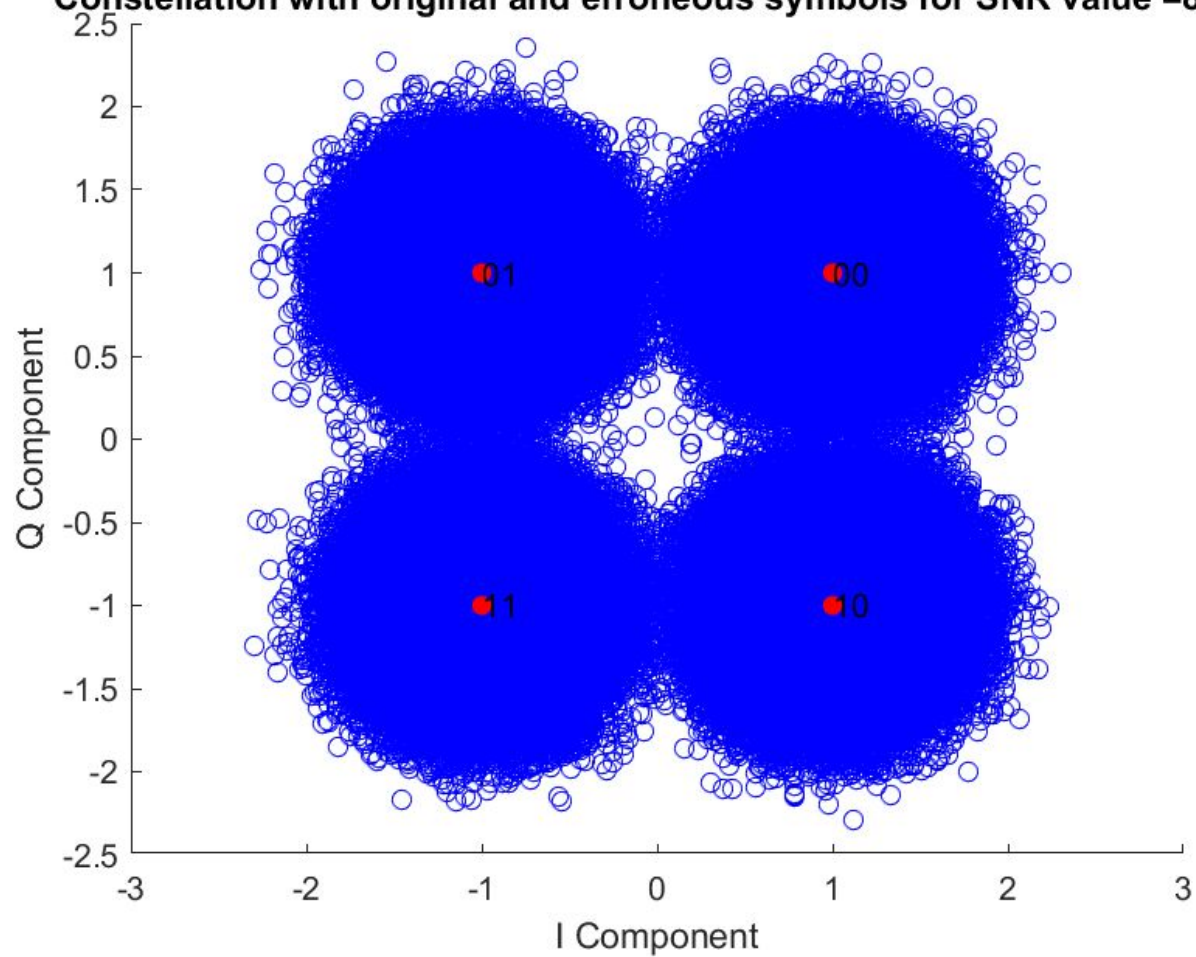
Constellation with original and erroneous symbols for SNR value =6 dB



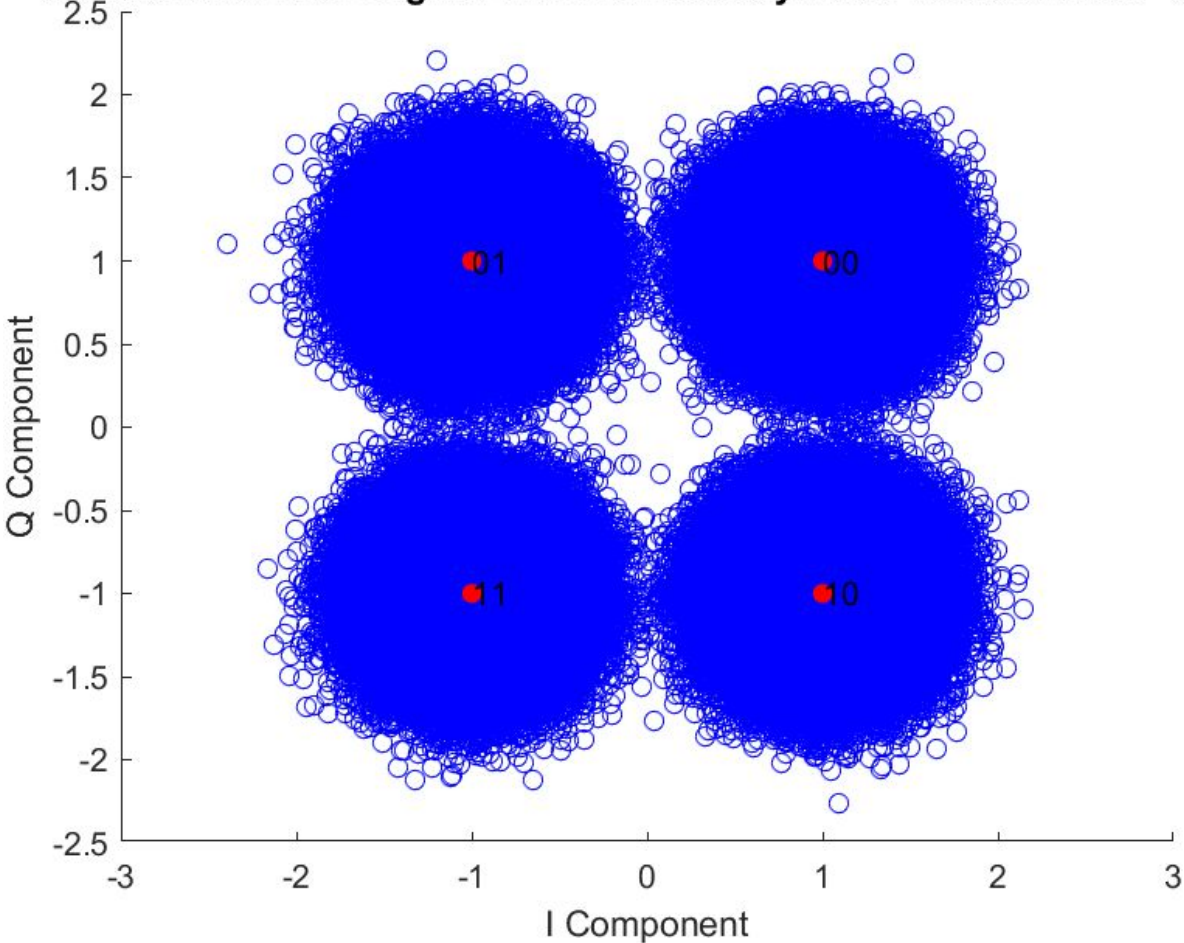
Constellation with original and erroneous symbols for SNR value =7 dB



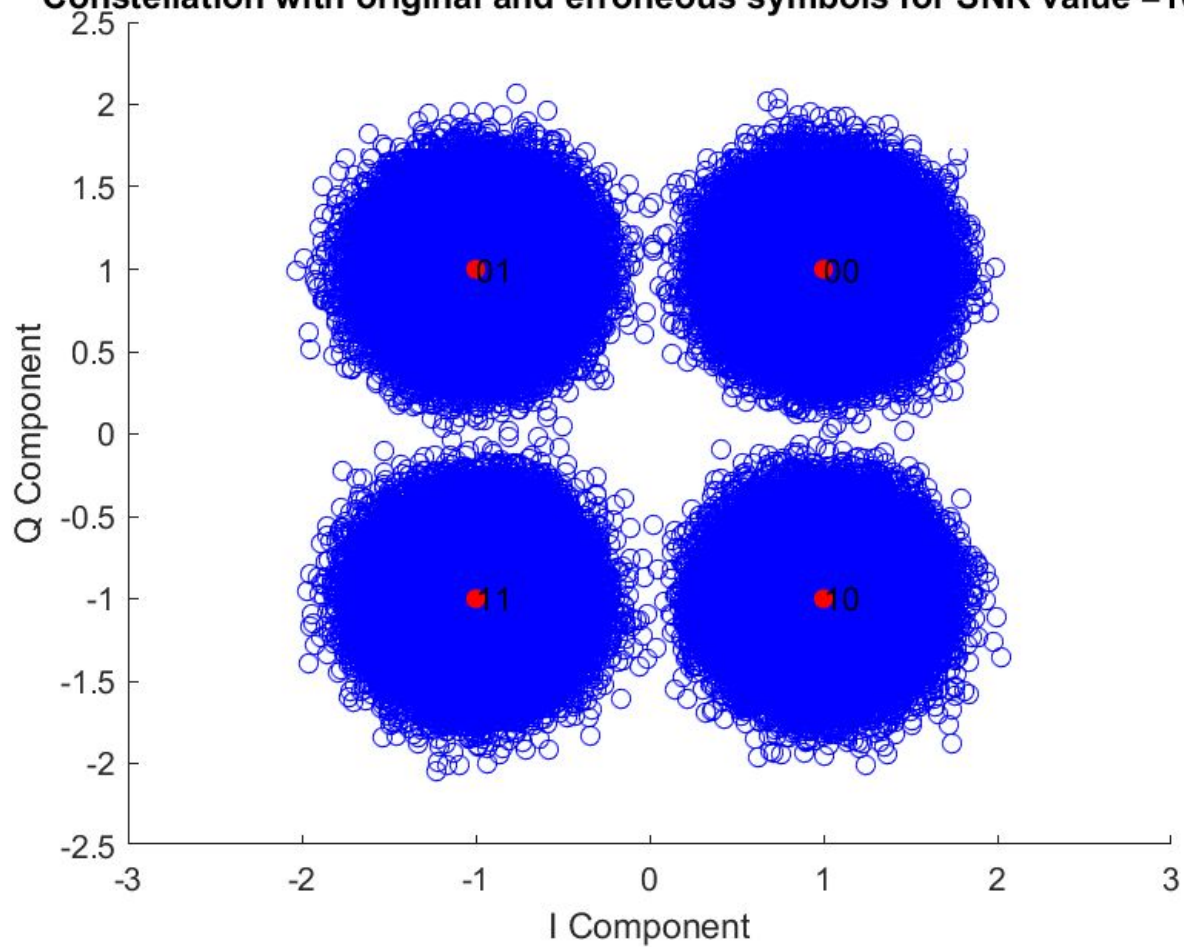
Constellation with original and erroneous symbols for SNR value =8 dB



Constellation with original and erroneous symbols for SNR value =9 dB



Constellation with original and erroneous symbols for SNR value =10 dB



BER vs SNR Plot (With Gray Coding)

