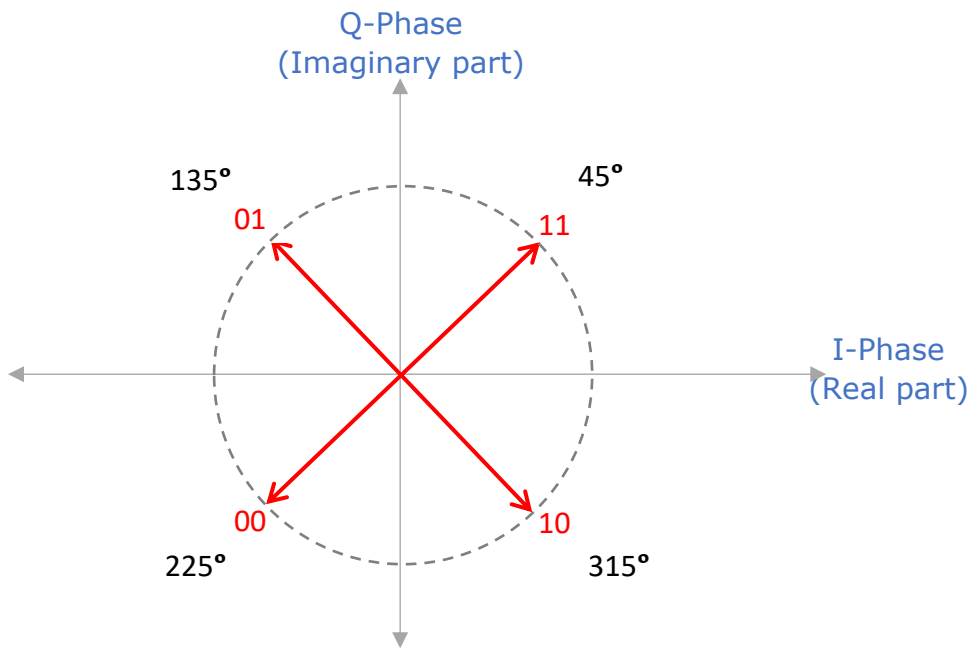


THEORY RELATED TO EXP-4

► QPSK Constellation Diagram (M=4)



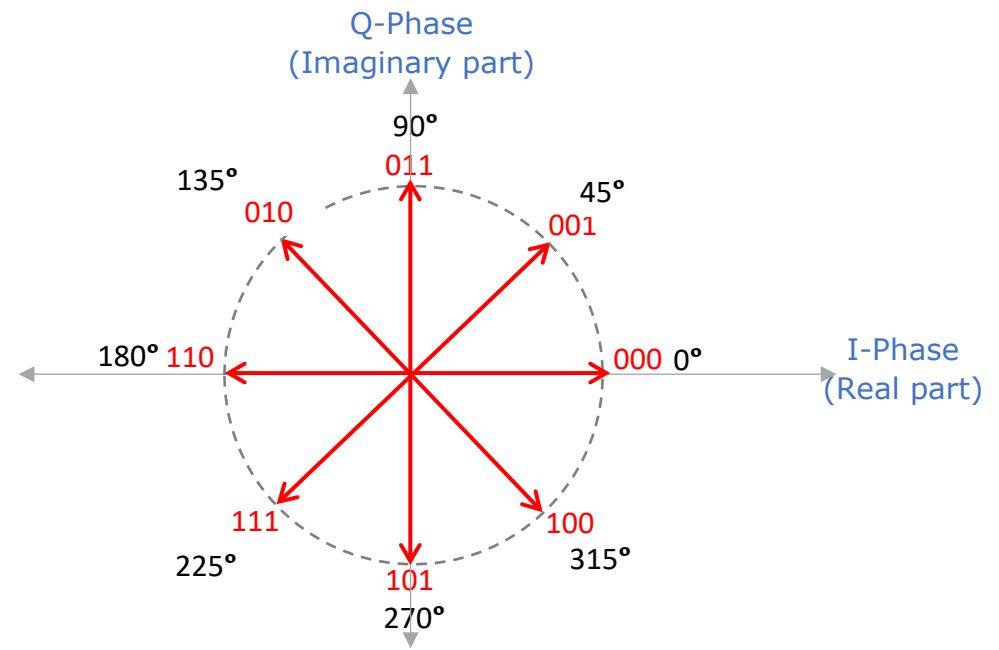
► SER Formula (Theoretical)

$$\text{SER} = \text{erfc} \left(\sqrt{\frac{E_b}{N_0}} \right)$$

► BER Formula for Gray Encoding (Theoretical)

$$\text{BER} = \frac{1}{\log_2 M} \times \text{erfc} \left(\sqrt{\frac{E_b}{N_0}} \right)$$

► 8-PSK Constellation Diagram (M=8)



► SER Formula (Theoretical)

$$\text{SER} = \text{erfc} \left(\left(\sqrt{\log_2 M \times \left(\frac{E_b}{N_0} \right)} \right) \times \sin \left(\frac{180^\circ}{M} \right) \right)$$

► BER Formula for Gray Encoding (Theoretical)

$$\text{BER} = \frac{1}{\log_2 M} \text{erfc} \left(\left(\sqrt{\log_2 M \times \left(\frac{E_b}{N_0} \right)} \right) \times \sin \left(\frac{180^\circ}{M} \right) \right)$$