

Bit Error Probability for Different Modulation Formats

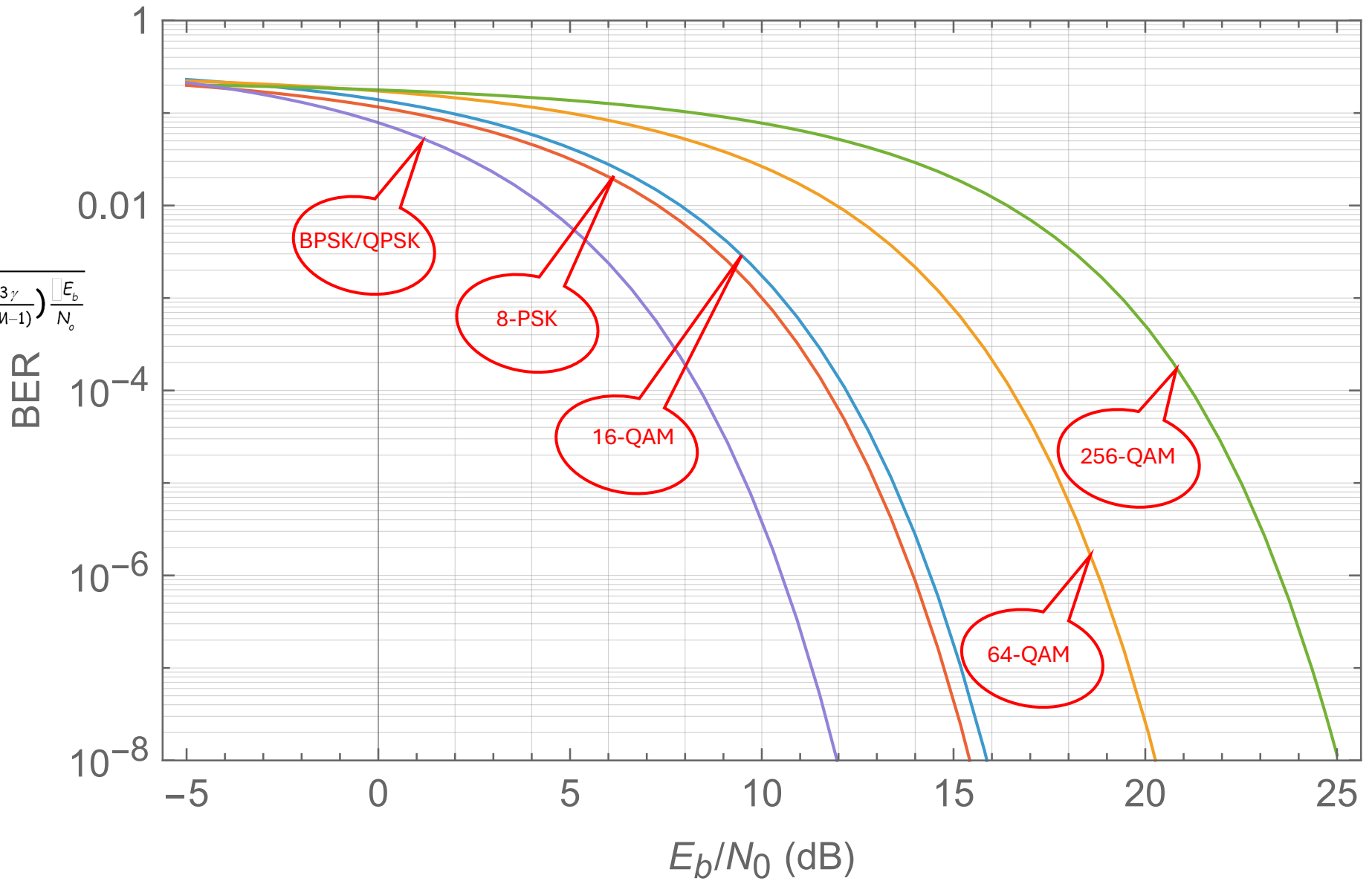
ASK Non-coherent: $P_e = \frac{1}{2} e^{-\frac{E_b}{2N_0}}$

ASK Coherent: $P_e = Q\left(\sqrt{\frac{E_b}{N_0}}\right)$

BPSK: $P_e = Q\left(\sqrt{\frac{2E_b}{N_0}}\right)$

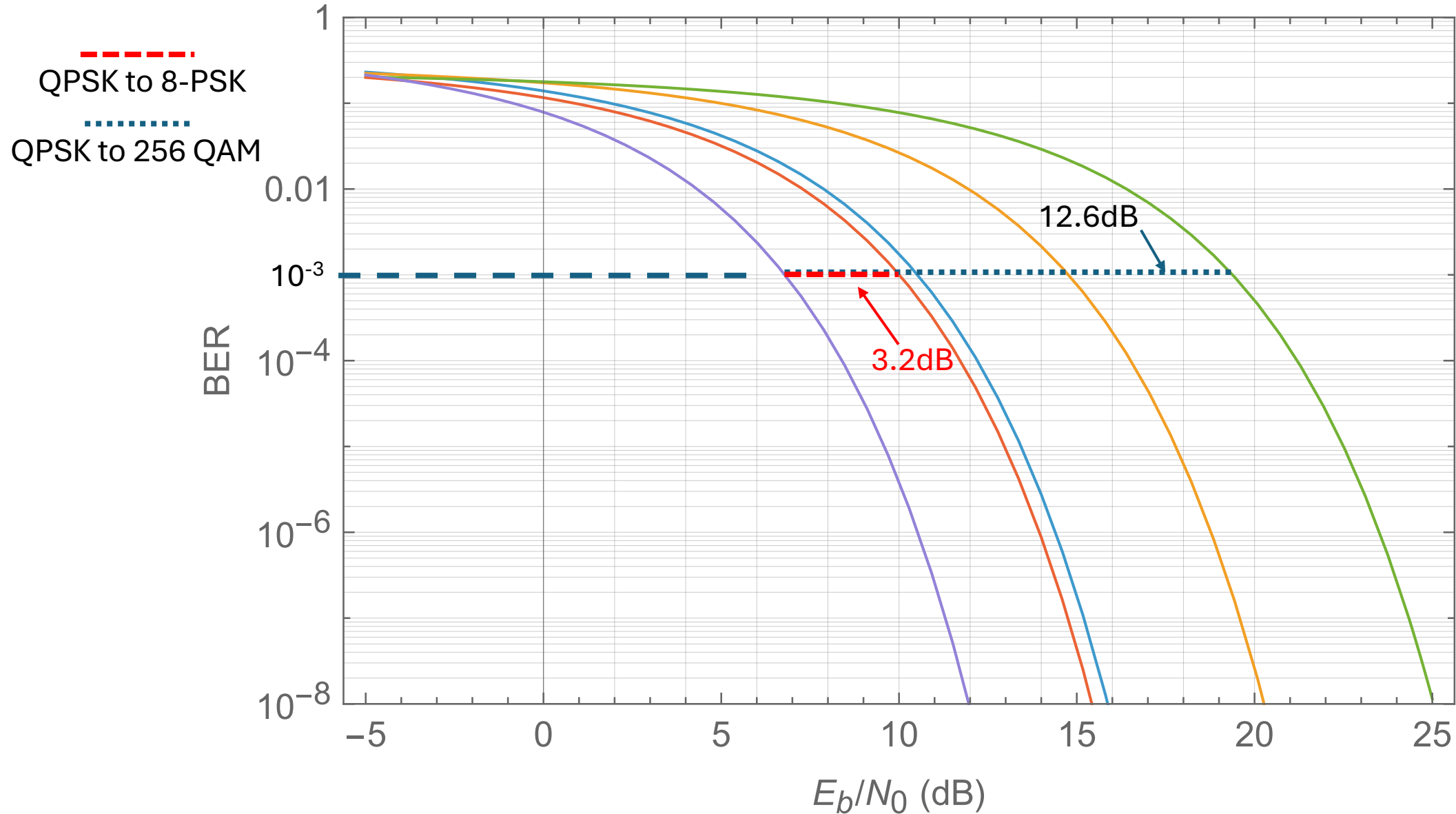
QPSK: $P_e = Q\left(\sqrt{\frac{2E_b}{N_0}}\right)$

M-QAM: $P_e = \frac{4}{\gamma} \left(1 - \sqrt{\frac{1}{M}}\right) Q\left(\sqrt{\left(\frac{3\gamma}{M-1}\right) \frac{E_b}{N_0}}\right)$



— 16-QAM — 64-QAM — 256-QAM — 8-PSK — BPSK/QPSK

Bit Error Probability for Different Modulation Formats



— 16-QAM — 64-QAM — 256-QAM — 8-PSK — BPSK/QPSK