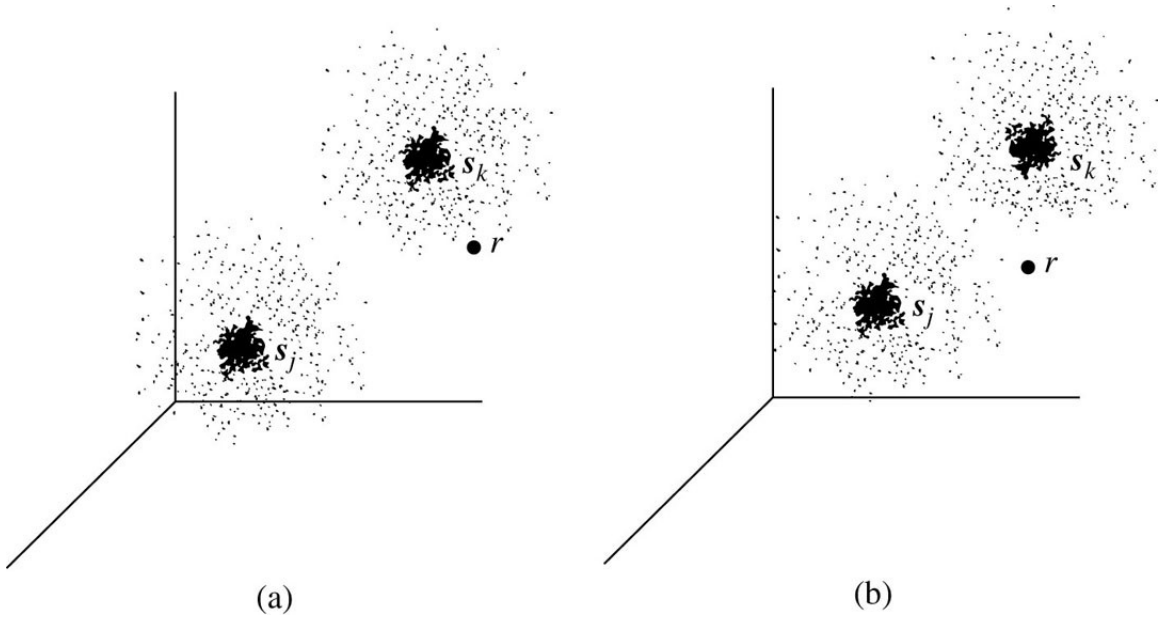
Optimum Receiver for White Gaussian Noise Channels



Sn(w)=N/2 , r(t)=Sk(t)+nw(t) , r(t) is Received signal signal at receiver, Because of the noise nw(t) is white , r = sk+nw , the signal vector s_k

Figure Binary communication in the presence of noise.

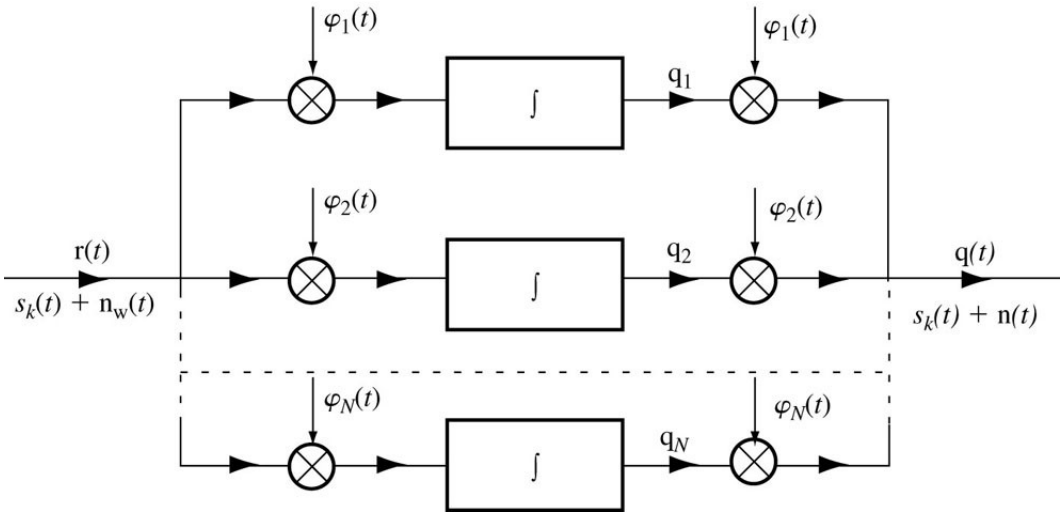


Figure Eliminating the noise orthogonal to signal space.

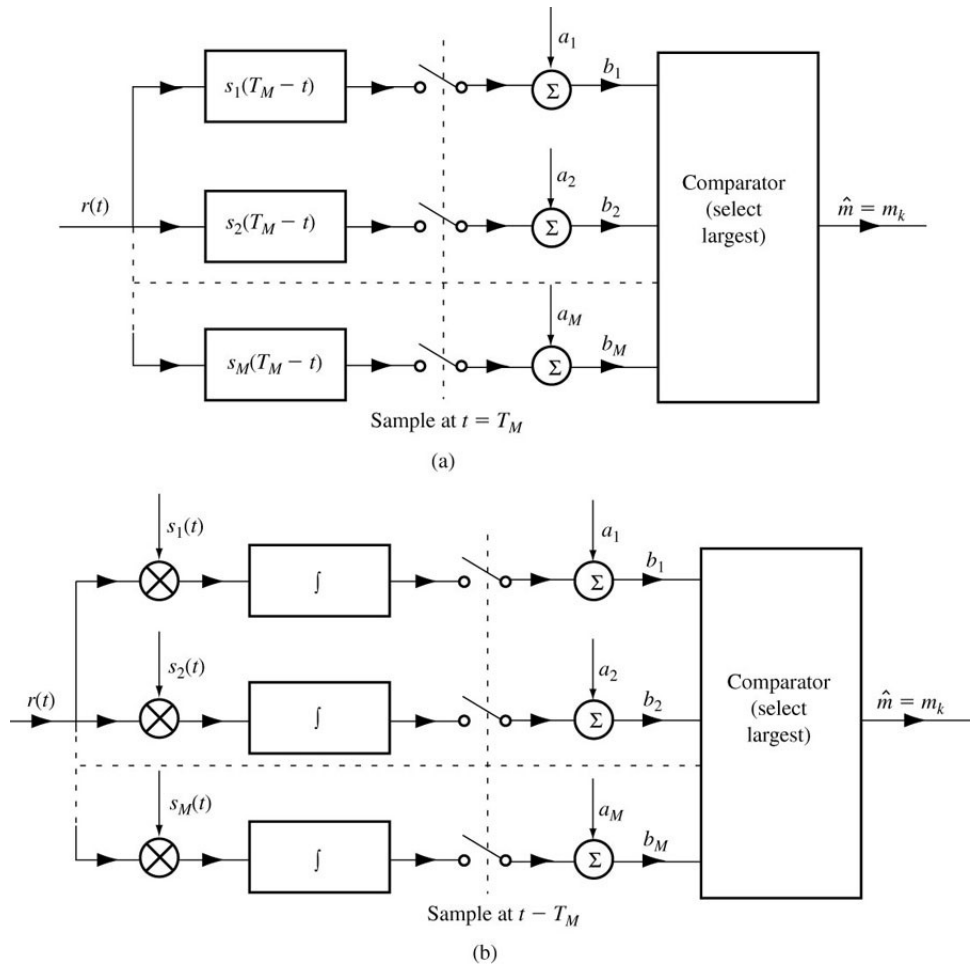


Figure Optimum *M*-ary receiver: (a) matched filter detector; (b) correlation detector.

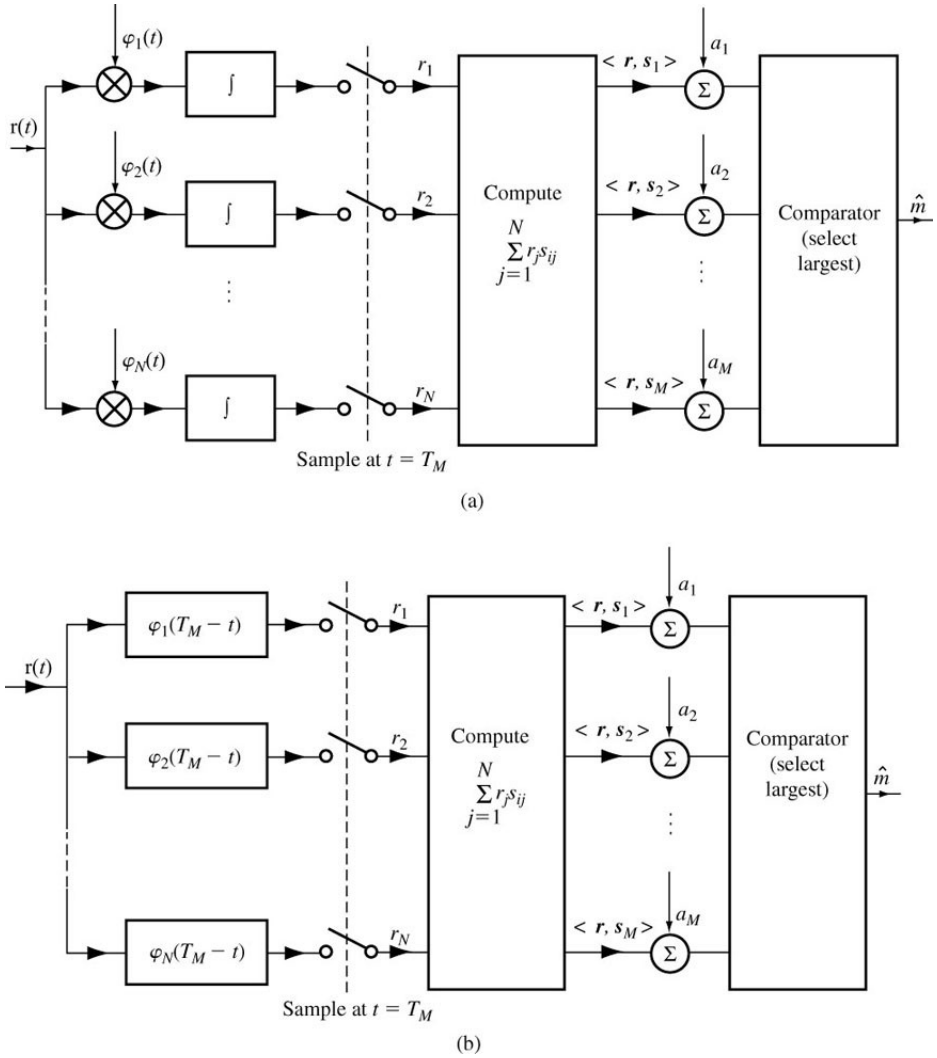


Figure Another form of optimum *M*-ary receiver: (a) correlator; (b) matched filter.

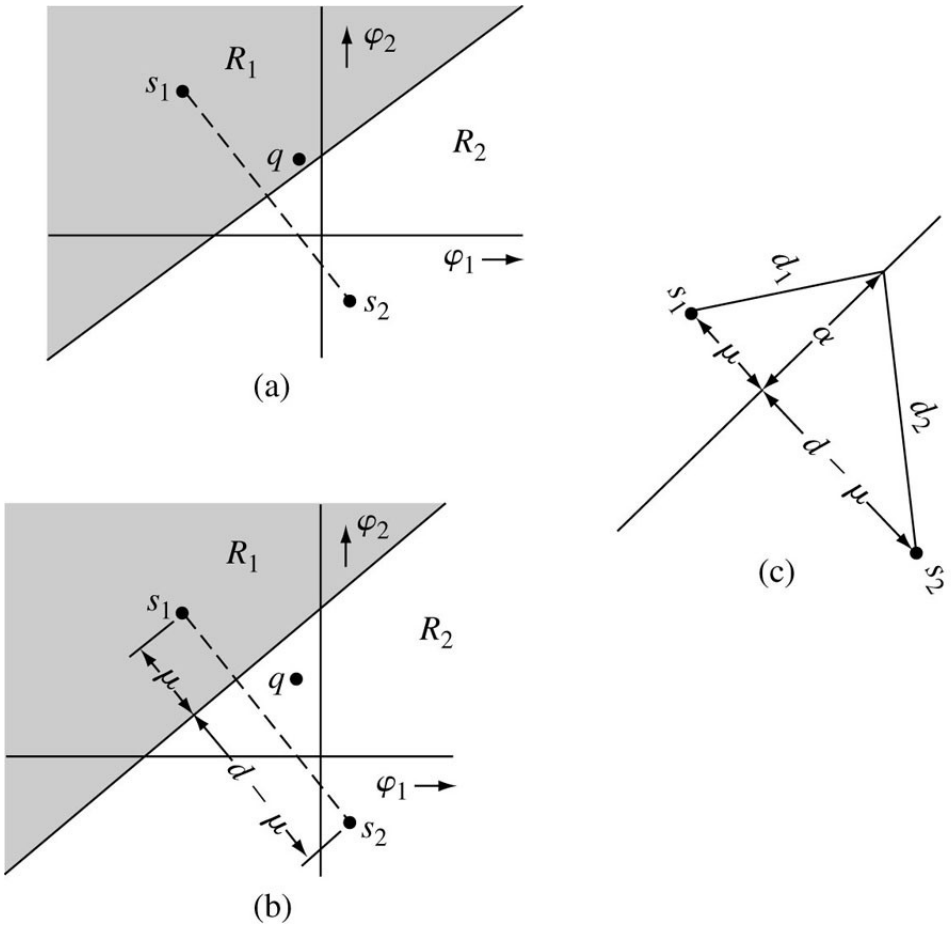


Figure Determining optimum decision regions in a binary case.

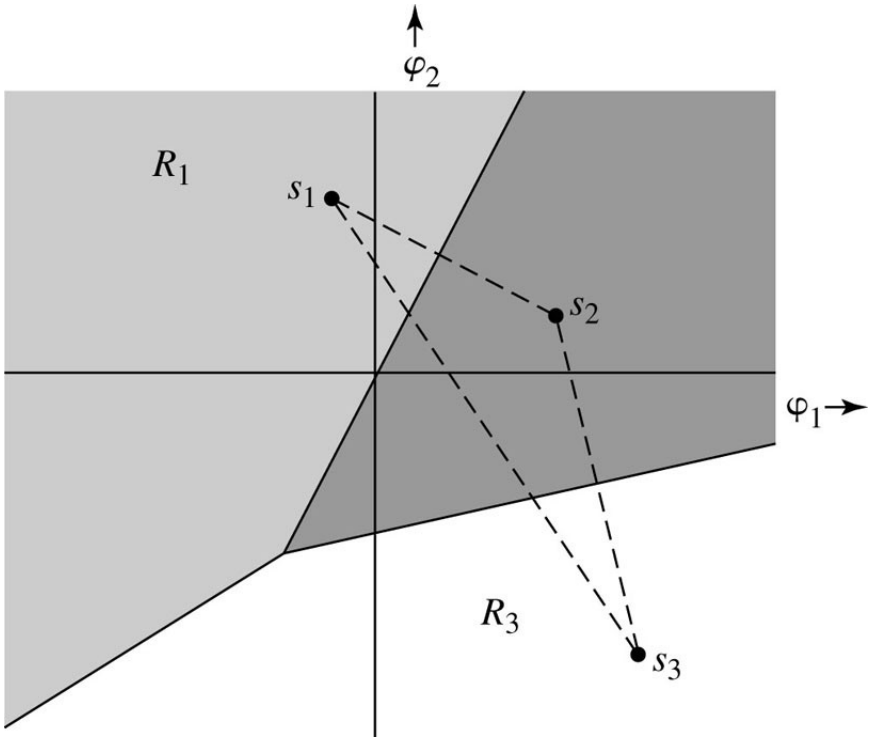
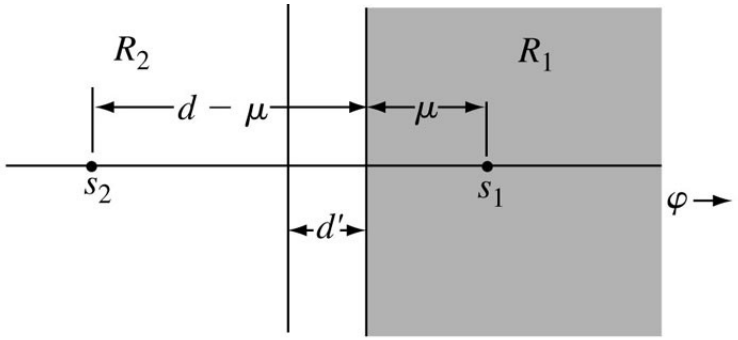
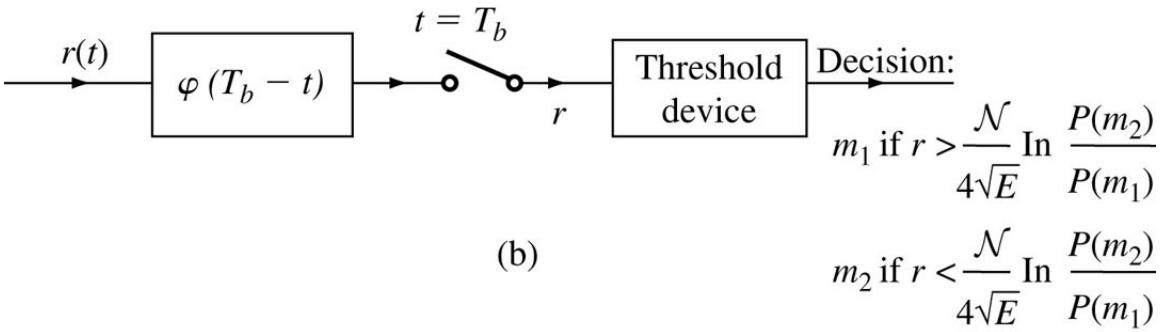


Figure 11.21 Determining optimum decision regions.



(a)



(b)

Figure Decision regions for the binary case in this example.

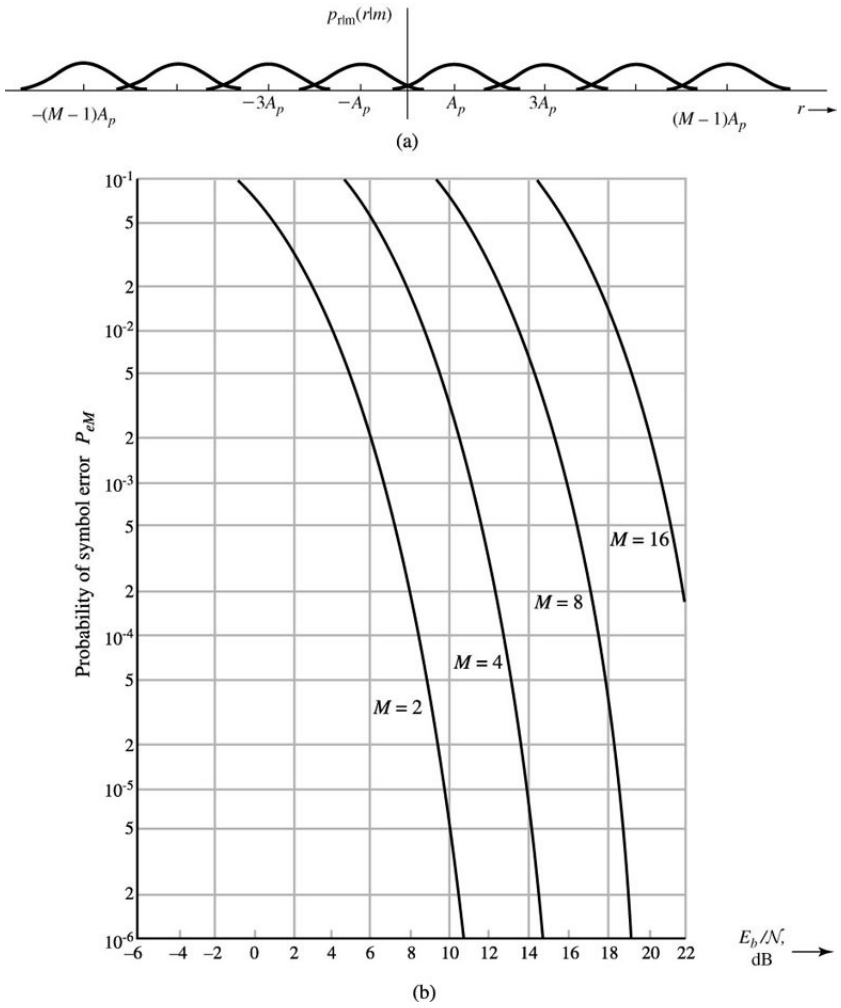


Figure (a) Conditional PDFs in PAM. (b) Error probability in PAM.

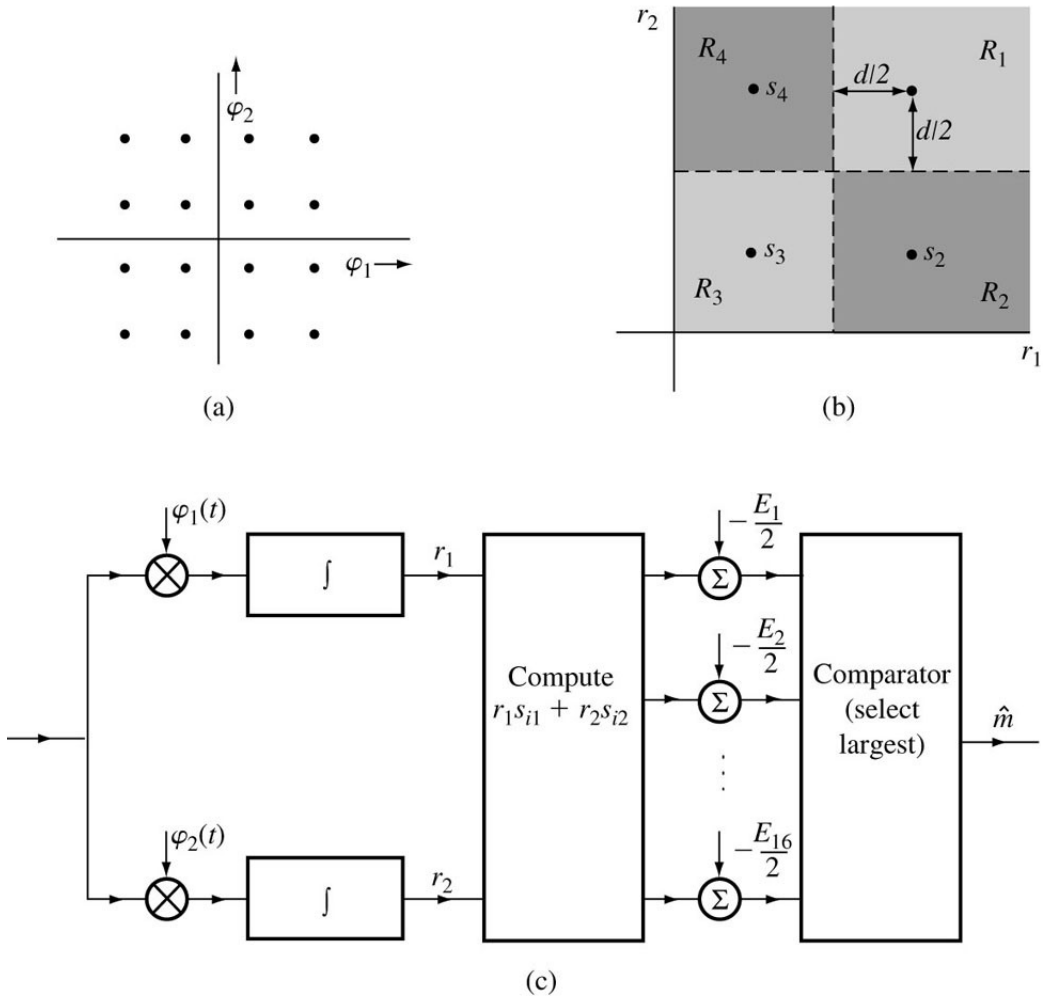


Figure 16-ary QAM.

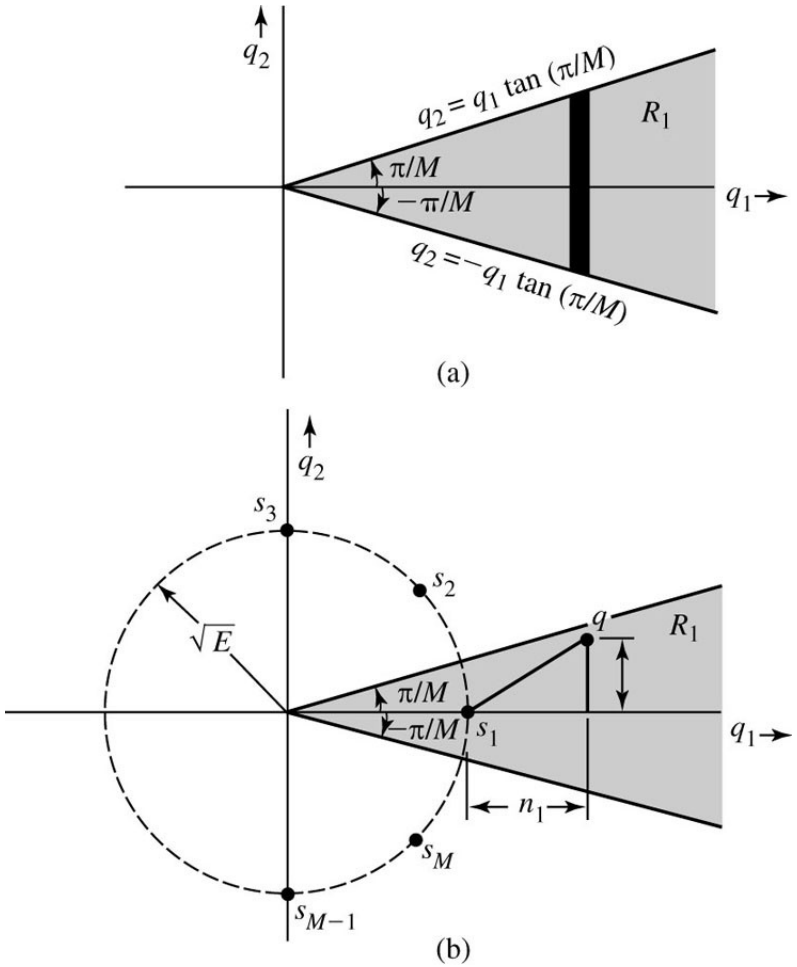


Figure MPSK signals.

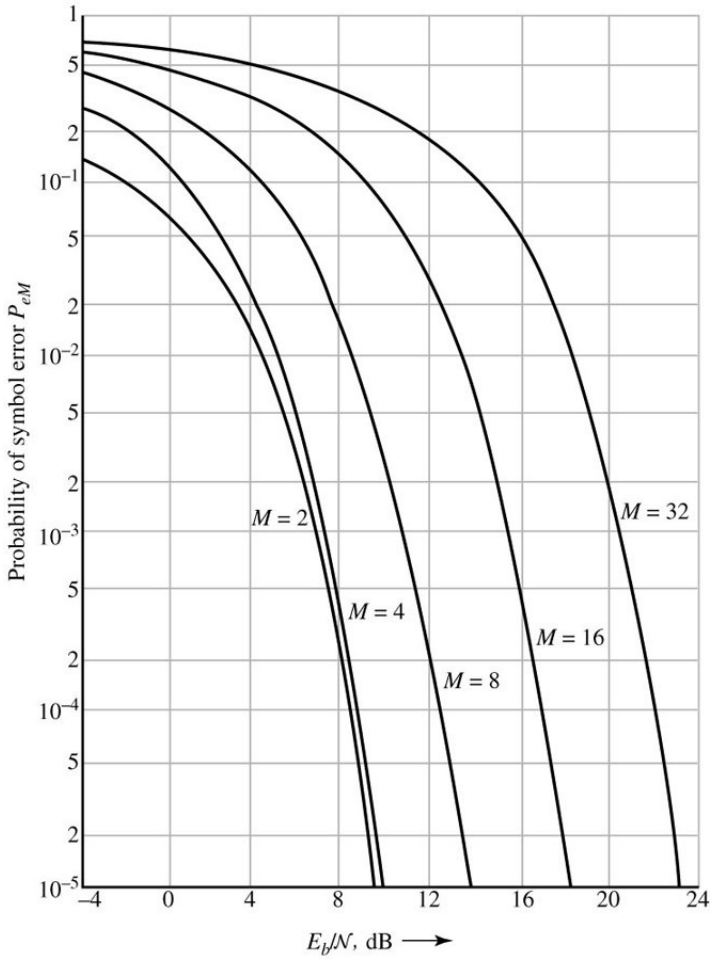


Figure Error probability of MPSK.

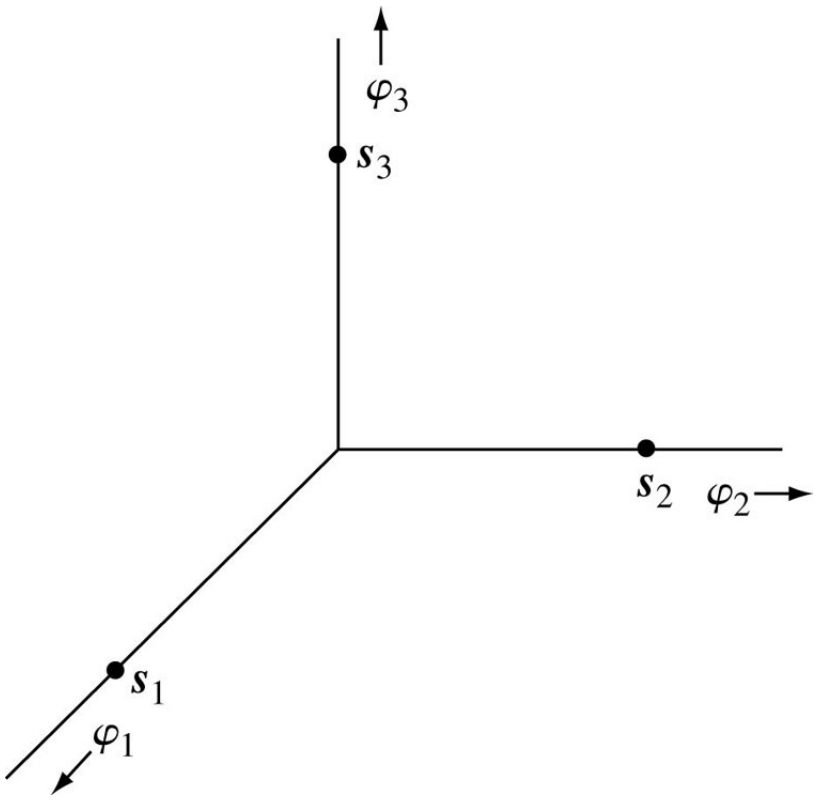


Figure Orthogonal signals.

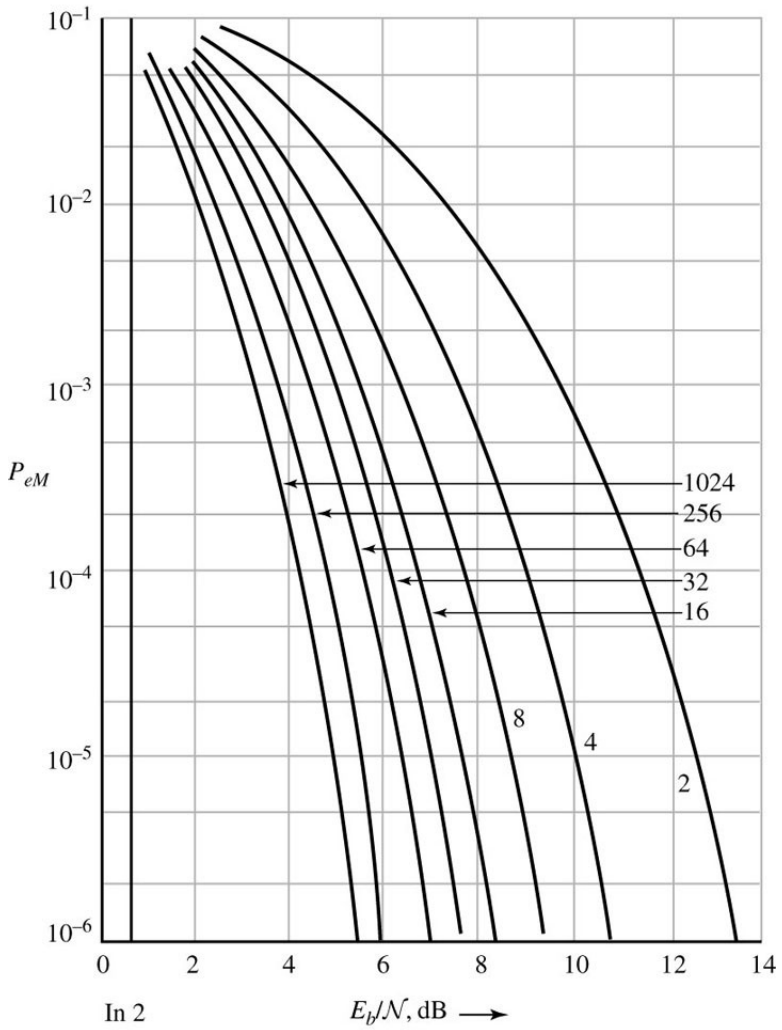


Figure Error probability of orthogonal signaling and coherent MFSK.

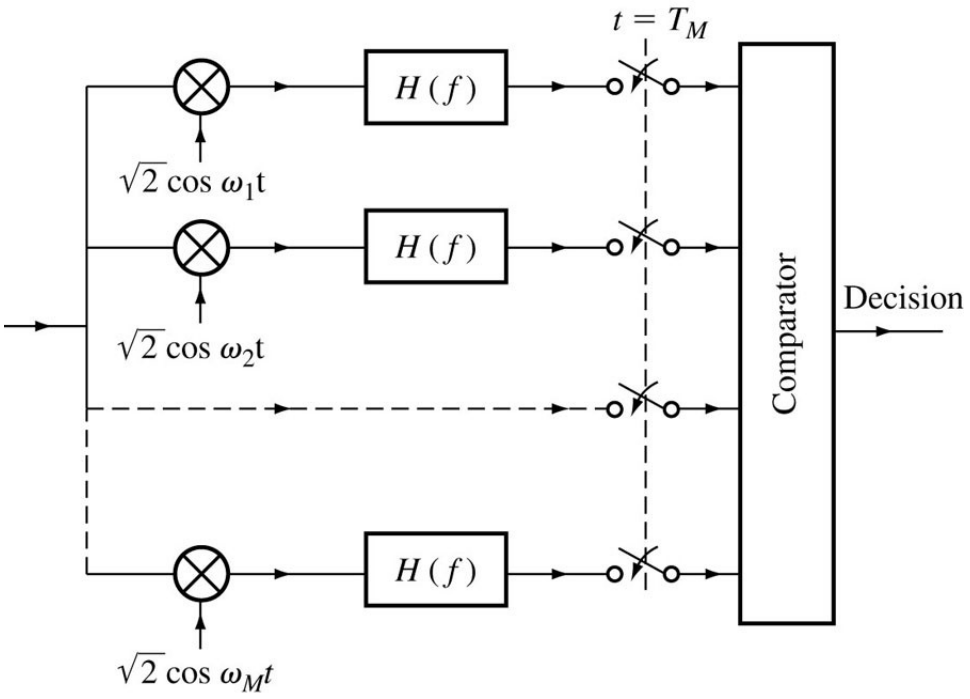


Figure Coherent MFSK receiver.

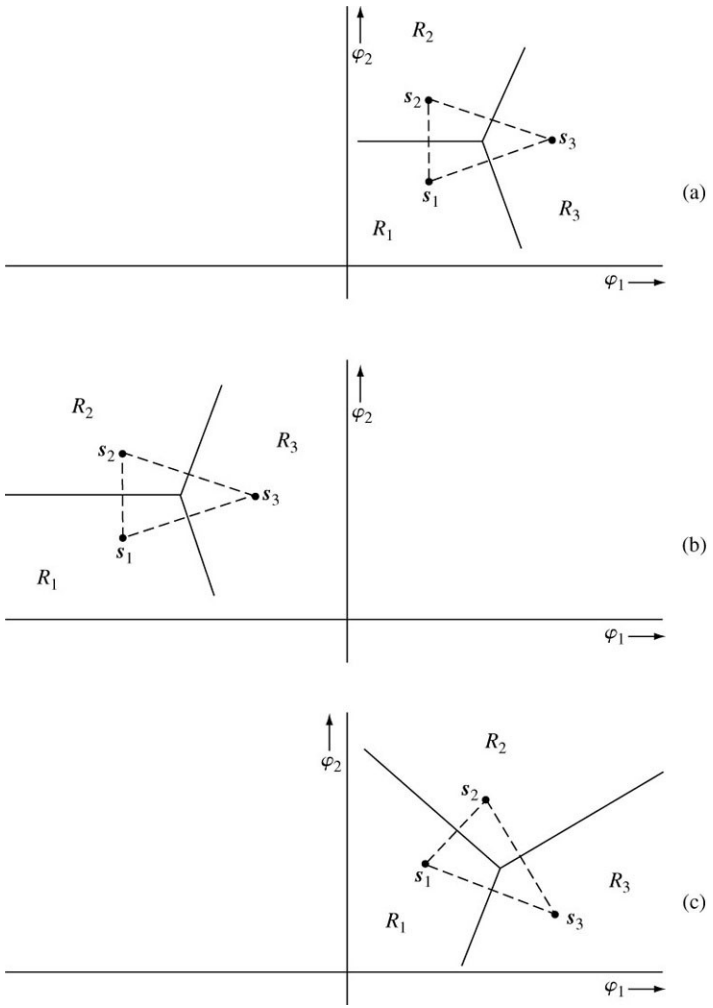


Figure Translation and rotation of coordinate axes.

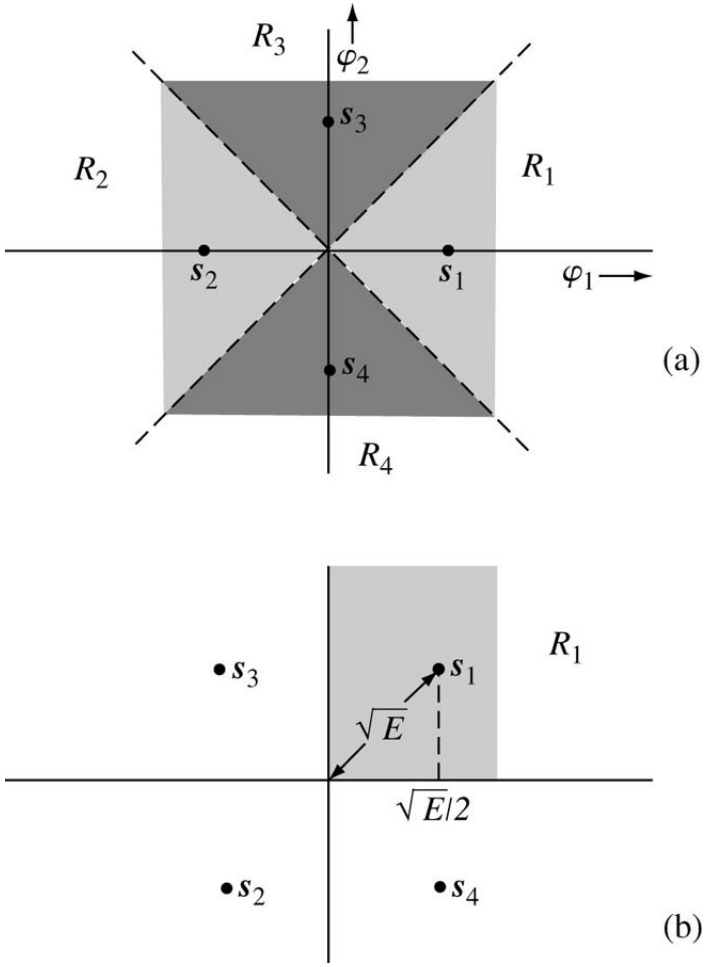


Figure Analysis of QPSK.