$$z[n] \sim \mathcal{N}(0, \sigma^2)$$

$$s[n] \in \{-\sqrt{E_b}, \sqrt{E_b}\} \qquad y[n] \sim \mathcal{N}(s[n], \sigma^2)$$

$$+\sqrt{E_b} \qquad -\sqrt{E_b}$$