Q. If $S_e(f)$ has a shape not desirable, then what to do?

A1. replace $a_{tx}(t)$ by $u_{tx}(t)$

A2. insert a "precoder"

Threshold Detector

$$P_N \triangleq \int_{-\infty}^{\infty} S_N(f)df = R_N(T)\bigg|_{T=0} \triangleq E[n(t)n(t+T)]$$

$$(\tilde{a}, \tilde{b}) \text{ is max when } \tilde{a} = \tilde{c}$$
\[ \int |H_{\text{tx}}(f)|^2 df = \int |h_{\text{tx}}(t)|^2 dt \]

amplify signal
suppress noise

\[ E \]