

Soru: Consider the following modulated wave

$$S(t) = A_c \cos(2\pi f_c t) + m(t) \cos(2\pi f_c t) - \hat{m}(t) \sin(2\pi f_c t)$$

which represents a carrier plus an SSB signal, with $m(t)$ denoting the message signal and $\hat{m}(t)$ Hilbert transform. Determine the conditions for which an ideal envelope, with $S(t)$ as input, would produce a good approximation to the message signal $m(t)$.

Çözüm: Soeuda singli envelope detectoru sot, alyum goster diya-

Bir SSB singli:

Formülü: $S(t) = A_c \cos(2\pi f_c t) + m(t) \cos(2\pi f_c t) - \hat{m}(t) \sin(2\pi f_c t)$

bunu vermiş,

$$\underbrace{[A_c + m(t)]}_{\text{genlik}} [\cos 2\pi f_c t] - \underbrace{\hat{m}(t) \sin(2\pi f_c t)}_{\text{genlik}}$$

Envelope detector genlikleri karesini alır toplar sonucu arekdeyisi alır

$$\begin{aligned} a(t) &= \sqrt{[A_c + m(t)]^2 + [\hat{m}(t)]^2} \\ &= \sqrt{A_c^2 + 2A_c m(t) + m^2(t) + \hat{m}^2(t)} \end{aligned}$$

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