

Amplitude modulation

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Solution: *The demodulated signal is,*

$$S(t) \cos \omega t = A \cos \omega t \cos \Omega t \cos \omega t = \frac{1}{4} A \cos[(2\omega - \Omega)t] + \frac{1}{4} A \cos[(2\omega + \Omega)t] + \frac{1}{2} A \cos \Omega t .$$

The first two terms oscillate with high frequency and can be eliminated by a low-pass filter. The third term oscillates precisely with the frequency of the wanted signal Ω .