

Amplitude Modulation Tutorial Solutions

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Amplitude Modulation Tutorial Solutions

Here, $f_m \times x = f_c + f_m$ and $f_m \times n = f_c - f_m$. Substitute, $f_m \times x$ and $f_m \times n$ values in bandwidth formula. $BW = f_c + f_m - (f_c - f_m) \Rightarrow BW = 2 f_m$. Thus, it can be said that the bandwidth required for amplitude modulated wave is twice the frequency of the modulating signal.

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The equation of amplitude wave is given by $s(t) = 20 \cos(2\pi \times 10^6 t) \cos(2\pi \times 10^3 t)$. Find the carrier power, the total sideband power, and the band width of AM wave. Solution. Given, the equation of Amplitude modulated wave is.

Numerical Problems 1 - Tutorialspoint

Tutorial No 1 Solutions Communications Tutorial 1 - Modulation - Solutions. 1), i.e. $V_m = 5$ Volts, $f_m = 10$ kHz. Modulation Depth Experiment 4: Amplitude Modulation - Electrical, Computer ...

Amplitude Modulation Solved Problems - Pdfdocuments.com ...

$s(t) = A_c (1 + k_a m(t)) \cos(2\pi f_c t)$ Calculations: (For $V_m = 2$ V) $A_{max} = 650$ mV. $A_{min} = 615$ mV. Modulation Index (μ) = $(A_{max} - A_{min}) / (A_{max} + A_{min}) = 0.02767$. Since $\mu < 1$, we can obtain the message signal after demodulation without any loss of information. (2) Demodulation using Envelope Detector.

AMPLITUDE-MODULATION-AND-DEMODULATION - Electronics Tutorial

How we think about solutions ... This tutorial is part of the National Instruments Measurement Fundamentals series. Each tutorial in this series teaches you a specific topic of common measurement applications by explaining the theory and giving practical examples. ... Amplitude modulation (AM) is one form of analog modulation. Figure 1. Basic ...

Amplitude Modulation - NI

In the continuous-wave modulation, a high frequency sine wave is used as a carrier wave. This is further divided into amplitude and angle modulation. If the amplitude of the high frequency carrier wave is varied in accordance with the instantaneous amplitude of the modulating signal, then such a technique is called as Amplitude Modulation.

Principles of Communication - Modulation - Tutorialspoint

Amplitude of the carrier signal, $A_c = 20$ V Frequency of the carrier signal, $f_c = 4 \times 10^6$ Hz = 4 MHz Frequency of the message signal, $f_m = 1 \times 10^3$ Hz = 1 kHz Modulation index, $\beta = 9$ Here, the value of modulation index is greater than one. Hence, it is Wide Band FM. We know the formula for modulation index as $\beta = \frac{\Delta f}{f_m}$

Numerical Problems 2 - Tutorialspoint

A tutorial on the most common digital modulation techniques used in both wireless and wired communications and how they compare to one another in spectral efficiency with relevant examples.

Understanding Modern Digital Modulation Techniques ...

(a) Determine the modulation index. (b) Calculate the transmission efficiency. (c) Determine the amplitude of the carrier which must be added to attain a modulation index of 0.3. Problem 2 The efficiency μ of a single-tone AM signal is defined as the percentage of the total power carried by the sidebands, that is:

Solved Problems taken from: http://course.ie.cuhk.edu.hk ...

Introduction •As see before, modulation is needed to: -Avoid interference since intelligence signals are at approximately the same frequency -Avoid impractical large antennas since intelligence signals have low frequencies •Problem: how to put intelligence signal onto a carrier (high frequency) signal for transmission •Simplest solution: put intelligence into carrier's

Chapter 2: Amplitude Modulation Transmission

The other type of modulation in continuous-wave modulation is Angle Modulation. Angle Modulation is the process in which the frequency or the phase of the carrier signal varies according to the message signal. The standard equation of the angle modulated wave is In amplitude modulation, the ...

Analog Communication - Angle Modulation - Tutorialspoint

Example 1: A sinusoidal carrier voltage of frequency 1 MHz and amplitude 60 volts is amplitude modulated by a sinusoidal frequency 10 KHz producing 50% modulation. Calculate the frequency and amplitude of upper and lower sideband terms. Solution: Frequency of upper sideband = 1000 KHz + 10 KHz = 1010 KHz

Amplitude Modulation Derivation ... - Electronics Tutorials

Amplitude modulation is a simple method to transmit a signal for example sound, from one end to other. A sound is a form of energy or vibrations. It travels in the air like waves, read more about Amplitude modulation and its applications at Vedantu.com

Amplitude Modulation | Definition and its Applications

Amplitude modulation is "a technique in which the amplitude of the carrier signal is varied in proportion to the transmitting signal". ... tutorial. Impedance. 1:00. tutorial. Voltage Dividers Show more. Need more help understanding amplitude modulation? ... Step-by-step solutions. View the step-by-step solutions for thousands of textbooks.

Definition of Amplitude Modulation | Chegg.com

Fourier Trigonometric Series in Amplitude-Phase Format Agbo & Sadiku; Section 2.5 Page 27 00 n1 00 22 1 Equations (2.13) and (2.14) should read: $(\cos \theta) \tan \theta$ Also known as polar form of Fourier series. $n \cos n \theta = \frac{1}{2} [e^{jn\theta} + e^{-jn\theta}]$ and $b_n \sin n \theta = \frac{1}{2j} [e^{jn\theta} - e^{-jn\theta}]$

The Fourier Transform

Amplitude Modulation Lecture By: Mr. Pradeep Kshetrapal, Tutorials Point India Private Limited.

Amplitude Modulation

Short Questions and Answers on Angle Modulation (FM and PM) Q.1. What do you mean by angle modulation? Ans. Angle modulation may be defined as the process in which the total phase angle of a carrier wave is varied in accordance with the instantaneous value of the modulating or message signal while keeping the amplitude of the carrier constant.

Angle Modulation (FM And PM) Questions and Answers ...

Quadrature amplitude modulation (QAM) requires changing the phase and amplitude of a carrier sine wave. One of the easiest ways to implement QAM with hardware is to generate and mix two sine waves that are 90 degrees out of phase with one another.