

Am transmitter circuit

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..... AM Transmitter The term Amplitude Modulation (AM) refers to the type of modulation in which an audio signal is combined with a radio frequency carrier in such a way that total wave power is made to vary in accordance with the modulating audio signal (Bertrand 1). The amplitude modulation and transmission of modulated audio signal is carried out through AM Transmitter. Depending upon the type of application and level of operation, an AM Transmitter consists of following basic building blocks as shown in fig. 1. Fig. 1 Block diagram of an AM Transmitter From fig. 1 it is obvious that an AM Transmitter has following important building blocks. 1- Oscillator (OSC) 2- Buffer 3- Pre-Driver 4- Driver 5- Microphone Amplifier 6- Modulator 7- Power Amplifier 8- Transmitting Antenna For detail description of each block, the schematic diagram of a basic level AM Transmitter is given below in fig. 2. Fig. 2 Schematic circuit diagram of an AM Transmitter The circuit diagram given in fig. 2 can be broadly divided in two major sections namely; The Oscillator section. The audio amplifier section and The oscillator section (that comprises of an oscillator, buffer, pre-driver, driver and microphone amplifier and modulator) is built from the transistors Q1 (BC109) and biasing resistors (R1, R2, and R3). The components L1 and C1 constitutes the tank circuit that can be tuned in RF range of 500kHz to 1600KHz. The Q1 (BC109) that is the key component of oscillator circuit section is provided with regenerative feedback by connecting the base and collector of Q1 to opposite ends of the tank circuit. The capacitor C2 with 1nF capacitance value is used to couple the signals from the base to the top of inductance L1 while C4 capacitor with the 100pF capacitance function is to make sure that the transfer of oscillation from Q1 to the internal base emitter resistance of the transistor Q2 (BC 109) , and back to the base again.

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The resistor R7 having 1 k Ω value and connected at the emitter of Q2 (BC 109) plays an important role by performing very important task in as it avoids the oscillation to shunt to ground through the very low value internal emitter resistance, r_e of Q1(BC 109) by increasing the input impedance to the modulation signal. The transistor Q2 (BC109) constitutes the common emitter RF amplifier (power amplifier and antenna) section along with other components. The capacitor C5 decouples the emitter resistance and enables to have full gain of this stage while the variable resistor R5 4.7 k Ω controls and adjusts the amount of AM modulation. Finally the modulated signal is transmitted through an antenna. The function of microphone given in diagram 2 is to convert the voice energy into audio signals and for this purposes an electret condenser type microphone is generally used (Deka 1). Works Cited Bertrand, Rod. AM Transmitters and Receivers. May, 2002. Web. 24 Sep. 2013. Deka, Jayanto. AM Transmitter. n. d. Web. 24 Sep. 2013.