

How do Radios work

We always take radios which we find in our cars, offices, or homes, for granted. We can say that we are not at all bothered about how these songs, news and other information reaches our radios and hence to our ears. Two most common types of radios are amplitude modulated and the frequency modulated radios. We do find them in our homes. These radios communicate by means of radio waves hence the name which is the lowest frequency of the electromagnetic spectrum. Waves in the electromagnetic spectrum are similar to sound waves when considering its wave character, but differ in the aspect that it is made up of electric and magnetic vectors, and not mechanical attributes.

Also radio waves have two aspects we change in order to communicate or send information namely amplitude and frequency. Information is sent by the radio station by embedding it in the radio waves before transmitting it through air by its transmitters. This technique is called modulation and it is done by changing any of its basic characteristics, frequency or amplitude. Thus there are two types of modulation techniques, Amplitude Modulation (AM) and Frequency Modulation (FM). In amplitude modulation we vary the amplitude or strength of the wave. The earliest AM technique to use by humans was the Morse code, in which the code key will turn the transmitter on and off. The strength or the amplitude of the radio waves hits the maximum during the key press and becomes nil when the transmitter is turned off with the key release. Latest amplitude modulators transmitters vary the signal level proportionally to the sound they are transmitting. This means that the positive peaks of the sound produce maximum radio energy and negative peaks of the sound produce minimum energy.

The main disadvantage associated with amplitude modulation is that most man made noises are amplitude modulated in nature and hence amplitude modulator receivers have no means to make out that which one is required and which one is not. Another point is that weak signals are quieter than strong ones, and hence the receiver may need that additional circuits to compensate for such signal level differences. But on the other hand, in frequency modulation the frequency aspect is modulated instead of the amplitude. This means that the positive peaks of the modulated signal represent higher frequencies and negative peaks lower frequencies.

Frequency modulated waves are free of the limitations of AM, and as the audio is dependent on the frequency of the signal, no compensation circuits for different signal levels are required. Also there are other types of modulation techniques, which are some variations of the conventional amplitude modulation and frequency modulation techniques.

About the Author

Tymon Hytem has worked in the electronics field for the past 15 years. He enjoys helping people decide on electronic gadgets from telephones to [XM Radio](#) and choosing the perfect [XM Satellite Radio](#) system for their needs.

Source: <http://www.spivo.com>