

Fading In Satellite Radio

By fading of a radio signal we mean that incident wave change in the field strength of signal received from distant transmitter. The fading of signal may be put into the following two categories namely general fading or synchronous fading and selective fading. The fading is caused due to interference between waves that have traveled by slightly different paths. The fading in general is slow taking some minutes to go from maximum to minimum signal strength. Generally the entire signal fades synchronously. Such a fading is termed as general fading or synchronous fading. Amplitude modulated signals traveling through ionosphere experience general fading. The fading is sometimes sensitive to frequency. Thus in amplitude modulated carrier wave the carrier and the two side bands may not fade in and out synchronously. Such a fading is termed as selective fading. Selective fading commonly results in signals involving large bandwidth such as frequency modulated signal or television signals. On the other hand the amplitude modulated signals involving only ten kilo hertz bandwidth suffer from selective fading only occasionally. Selective fading introduces distortion in the receiving signal.

This distortion is particularly great when the carrier fades to small amplitude leaving the sidebands not attenuated. The general fading can be reduced to a small magnitude by use of automatic gain control in the radio receiver by use of highly directional antennas, by diversity reception and by MUSA receiving system. Frequency modulated signals transmitted over long distances under conditions where there is more than one path, suffer much greater distortion than to the amplitude modulated signal. The maximum distortion level is at two modulation frequencies and high depths of modulation. The distortion results from the fact that the instantaneous frequency modulated signal varies continuously so that when two waves arrive at the receiving antenna after having traveled unequal distances they have different instantaneous frequencies. The resultant signal then involves a new modulation involving both frequency modulation and amplitude modulation at a frequency which depends upon the path difference and is not harmonically related to the modulation product at the transmitter. By the term static is meant the radio disturbance caused by natural causes such as lightning, electrical sparks etc. the disturbances so produced in a receiver are sometimes called noise but usually the word noise is used to denote the electrical disturbance of man made origin. Static disturbances received by a receiver can be classified into four different categories like impulses of high intensity occurring by intermittently such as caused by local thunder storms, steady rattling or a cracking caused by electrical disturbances produced by distant thunder storms, steady hiss type of static obtained at high frequencies having interstellar origin and perception static.

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/articles>