

running a stereo composite signal into a pre-emphasis network would boost the L-R and pilot carrier information and would produce a very bad signal on a receiver.

The passive resistor/capacitor pre-emphasis networks that are typically used actually don't boost the high frequency energy, but cut down the low frequency energy. This equates to a loss of about 14dB for the low frequency energy. The end result is the same as boosting the high frequency signals, as the ratios of the difference between the low frequency and high frequency energy levels are equivalent and can be reconstructed correctly by the receiver de-emphasis network.

Simple resistor-capacitor networks like shown in Figure X-X can be calculated by multiplying the resistor value in Kilo-Ohms by the capacitor value in Farads this will give you the time constant in seconds. To calculate the examples time constant we would multiply 75 by 1×10^{-6} which would give us 75×10^{-6} seconds or 75uS the United States pre-emphasis standard. Changing the 75 K resistor to a 50 K resistor would give us a network that would match the European standard.

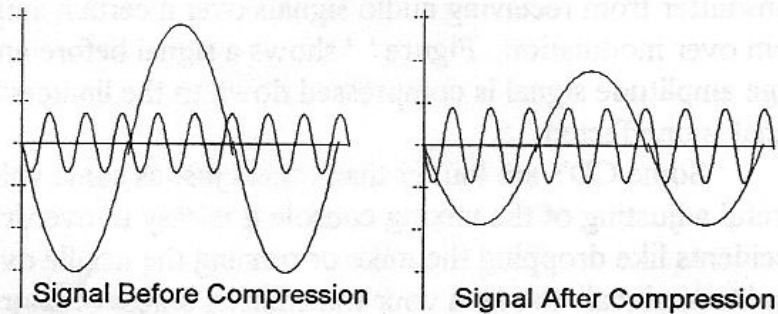


Figure X

Compressor

It is a compressor's job to compress the dynamic range of an audio signal. The term 'dynamic range' means the difference between the softest and loudest passages the audio system can handle. Typically CD players can handle a very wide dynamic range, up to 96dB, while tape players have a dynamic range of about 50dB, and FM broadcast audio systems usually weigh in at 45dB of dynamic range. Compressing dynamic range has the end result of making soft passages louder and loud passages softer. In figure ' ' as signal is show before and after compression. The large amplitude signal is compressed down and the small amplitude signal is boosted, thus the difference or dynamic range of the signal is smaller. Compressing works best when you are matching audio systems like CD players with FM broadcast audio systems or tape recorders. If a compressor is not used high level signals can be severely clipped and low level signals can be lost down in the noise of the audio system. Another effect compression will have is to make a transmitter seem 'louder' than a transmitter using no compression, but using too much compression can make a transmitter sound worse by sounding 'loud' all the time, offering little variance in signal levels.

Since the dynamic range of a tape deck is almost equal to that of a FM broadcast audio system no compression is recommended from tape sources. Another downside of compressing the output of a tape deck is that the noise from the tape deck will be amplified making the audio sound much worse. Compression does work well on the recording end of tape decks, and is recommended when recording programs for later broadcast.

Several Analog Integrated Circuits from Signetics, called compandors can be used to construct compressors. These are the NE570, NE571, and NE572 devices.