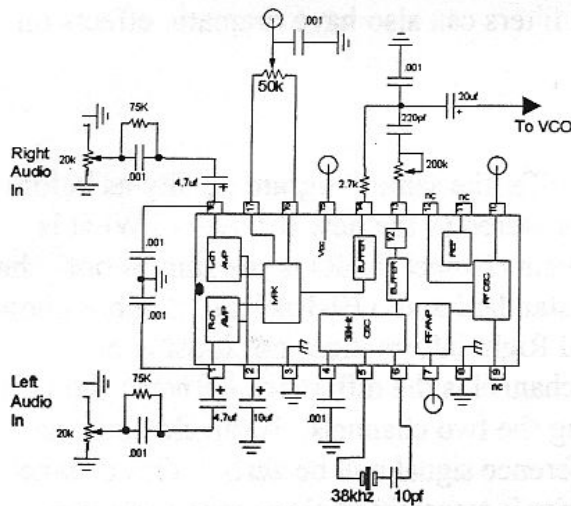


Not all commercial radio stations transmit these signals, and they are unheard of in the micro power radio scene.

Recently Rolm, an electronic chip manufacturer, has developed a stereo transmitter on a

### Stereo Composite Generator



chip. Known as a BA1404, it is available at many electronics part suppliers at about two dollars apiece in single quantity. It was developed to connect CD players to car stereos but has also showed up in many low cost stereo broadcaster kits. When used with a 38kHz crystal it can produce a fairly nice stereo composite signal that can be fed into a separate transmitter or be fed into its own oscillator and FM amp. Shown in Figure X-X is an example of the BA1404 used to generate a stereo composite signal to be fed into a VCO. Note the 75uS pre-emphasis network on the right and left audio audio inputs (see next section.) The 50k variable resistor is the left-right balance control and the 200k variable resistor is the 19kHz pilot level control. It should be noted

that the BA1404 operates on 1.5 to 3 volts. Operating it with more than 3.5 volts may damage the chip.

### Pre-Emphasis

In a typical audio signal the high frequency sounds have less energy than the low ones and so produce less deviation of the carrier. This makes the high frequency sounds more susceptible to noise when received. To avoid this high frequency energy is boosted before being transmitted.

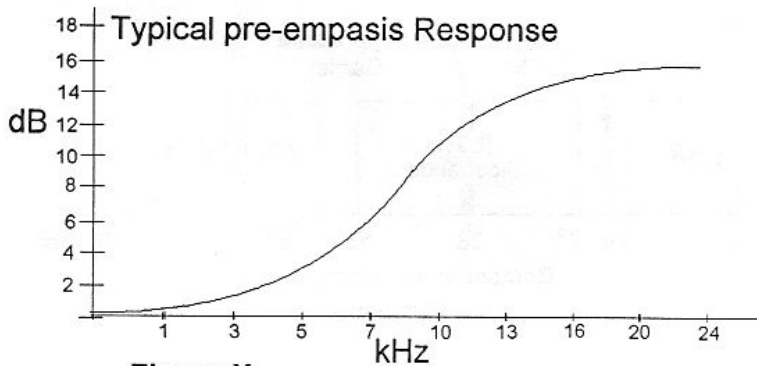


Figure X

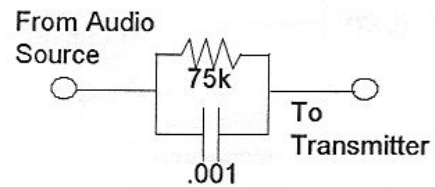


Figure X

This is called *pre-emphasis*. In the receiver the frequencies are cut by the same amount, this is called *de-emphasis*. The end result of

pre-emphasis and de-emphasis is that the overall frequency response stays flat, but the background noise is reduced a lot.

Pre-emphasis and de-emphasis networks are characterized by their *time constant*. In the United States the standard is 75uS (micro seconds), but in Europe it is 50uS, and the de-emphasis networks are built in all of today's FM receivers. In a mono transmitter the pre-emphasis network can be built into the front end of the exciter. For a stereo transmitter the network must be installed before the stereo composite generator and there must be a network for each channel.