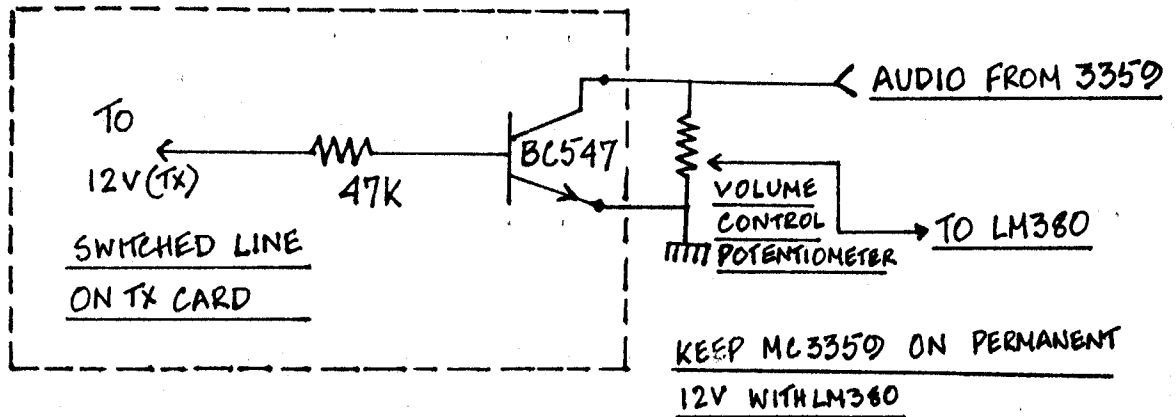


GET RID OF THAT ROAR

Rama Mohan Rao (VU2RM)

Operator's of the home brewed 2M rig must have noticed that whenever the set comes to receive mode from the transmit mode, there is a burst of VHF noise for a small period before the squelch takes over. This has taken place as the MC3359 supply was modified to the switched 12V(RX) voltage as otherwise the transmitted audio breaks through. You can now revert to the original circuitry keeping the MC3359 on the permanent supply voltage and muting the audio along with the noise burst in this simple way.



ADD ON IN DOTTED BOX

RADIO TIPS

WHAT IS DSP ?

DSP stands for "Digital Signal Processing." In the ham world we encounter DSP very often in audio filters. We use audio filters to help reduce the effects of noise and interference on received signals. Most audio filters use networks of capacitors and resistors to reject certain audio frequencies while passing others. The goal is to block unwanted signals and traditional filters work quite well in this respect. However ham's are never satisfied and that is where DSP comes in. DSP takes a completely new approach to filtering. The received signals are first "Sampled" at high speeds. Sampling is like taking many quick snapshots of a moving object. The strip of film, then run through a projector results in a continuous moving image. DSP uses analogue to digital (A/D) converters to sample the audio signal several thousand times a second. Each sample becomes a piece of digital data, reflecting a particular characteristic of the signal at a precise moment in time. A program in the filter's microprocessor sorts through the data and changes or deletes any information that belongs to a portion of the signal we want to reject.

For example, lets say that your DSP filter is programmed to look for those annoying tones caused by other hams tuning their radios near your frequency. Whenever it finds the data pattern that represents a continuous tone, the program deletes that data. When that data is converted back into audio, the tones are gone. Amateur Radio applications of DSP are limited by the sampling speed of A/D converters. Thus audio filtering is a popular use of DSP since the audio signal frequencies are well within the sampling capability of current DSP technology. However DSP hardware capable of functioning at RF frequencies is not a distant reality. In the not too distant future your radio may use DSP from the moment the signal arrives at your antenna input. Transceiver technology as we know today may virtually cease to exist.

VHF BAND OPENINGS

Two meter band openings come in several flavors. When a band opening takes place, you will be able to talk to other hams at greater distances. The most frequent opening is provided by "Tropospheric Propagation." Good tropo conditions can open the band over large parts of the country, sometimes days at a time. Hams in Madras and Bangalore enjoy communication through their local repeater on VHF/FM as a result of tropospheric propagation.

"Sporadic E Propagation" or "E Skip" also occurs on two meters and provide communications over thousand miles or more. These openings usually occur in summer months and don't last very long. They are a lot of fun and the freak conditions where Calcutta Hams have QSO's with Southern India on 2M are due to Sporadic E.

Some 2M weak signal operators like to bounce their signals off distant objects - such as meteor trails, polar auroras and even the moon. Two meter offers frequent meteor scatter opportunities. QSO's over distances of a thousand miles are common. VHF signals can also be reflected off the polar auroras, with CW being the preferred mode (auroral distortion makes the use of SSB nearly impossible).

Finally the great bullseye in the sky - the moon. Moonbounce (also called EME or earth-moon-earth) is the ultimate reflection mode. It was once assumed that stations with gigantic antennas and enormous output power could work moonbounce. Recent developments have proved that this is not always the case. Moonbounce contacts have been made with a single multi-element beam antenna and less than 100 watts. Moonbounce is one type of 2 meter activity that offers the opportunity to chase international DX. Since the returning signals are so weak (after traveling to the moon and back who wouldn't be ?), CW is the mode of choice.

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