Written by Hans Summers
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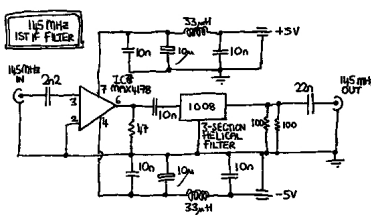
# The simple man's Spectrum Analyser
# 145 MHz IF Filter

{gallery}safilter1/1{/gallery}

Next in the order of construction is the 145MHz IF filter. Once this is built it becomes easy to loc

The filter used is a Toko {gallery}safilter1/2{/gallery}esonator type, having bandwidth of about 2MHz and

One slight difficulty is the input and output impedances of the filter, which are both 50-ohms. The ouput impedance of the preceeding 1st mixer (NE602 chip) is 1.5K, a completely unacceptable mismatch. The solution is to design and build a passive matching network (I tried and failed). Or, take the easy route - and use the MAXIM MAX4178 unity gain buffer IC, which has a 300MHz bandwidth and high output drive capability.

The circuit is shown below; note the extensive filtering of the +5V and -5V supplies. I built a PCB bulkhead between the MAX4178 section of the box and the 145MHz helical filter (see photograph above).

**Spectrum analyser 145MHz IF filter**

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Now the module can be tested using the signal generator and the  Logarithmic Amplifier module. Connect the signal generator output to the filter module input. Connect the filter module output to the logarithmic amplifier input. Monitor the logarithmic amplifier output on the oscilloscope or a voltmeter.

The signal generator should be on an appropriate range to cover 145MHz (on my signal generator, the 30-200MHz range). As the signal generator is tuned through 145MHz a sharp increase in the output of the logarithmic amplifier should be noticeable. It is possible to get some idea of the shape of the helical filter response. Now we know just where to set the signal generator for 145MHz, a very valuable piece of information indeed.