

Measuring the Sensitivity of the Tiny SA

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A very inexpensive (\$55) spectrum analyzer called the "tiny SA" has recently appeared on the market.

I was curious to determine the sensitivity of the unit which I hope will be useful for tracking down RFI.

I connected my HP461 (73MK) to a Kay toggle switch attenuator and ran thru a wide range of attenuations generating different temperatures which were injected into the tiny SA sweeping from 20 to 21 MHz with a resolution bandwidth of 30 kHz. Each of those temperatures was converted to dBm (decibels below 1 mw) and is plotted on the X-axis below. The tiny SA displays measured signal strengths in dBm (plotted on the Y-axis).

For input signals below about -102 dBm the tiny SA measurement was constant at about -97 dBm which is the noise floor of the SA. The noise generated by the SA was higher than the noise being generated by the HP/Kay.

The blue vertical line is the galactic background in a 30 kHz bandwidth expressed in dBm at 20 MHz.

If you terminated the SA antenna port with a 50 ohm resistor and then connected a 20 MHz antenna you would not see the trace move up (unless you had local RFI adding to the GB temp).

For input signals stronger than about -102 dBm the tiny SA trace level fairly accurately represented the input signal level. (well, within about 3 dB)

For weak RFI hunting the tiny SA could use about 10 to 15 dB of low noise gain in the form of a preamp.

