

## **IC-7000 FM Deviation Test**

**By Matt Erickson KK5DR**

I did the FM deviation test on the IC-7000. This did not take long because the SI-4031 is easy to set for such a test, and has peak-hold and RMS features. It gave me an audio response plot as well, but that is for another test; readings were in % modulation at various frequency points.

I set the tone output for 1kHz and coupled it acoustically to the mic through a headphone speaker which worked nicely with the HM-36 mic pressed up to it tightly. There was more than enough audio output from it to get good consistent results.

Next, I set the FM mic gain on the "QS" menu item #2 to 50%, and the RF power output (item #1) to 50% as well for all testing.

Here are the results; (all deviation readings are  $\pm$  referred to center freq.)

146.520 MHz FM simplex:  
7kHz filter =  $\pm$  2.35 kHz dev.  
10kHz = 2.35 kHz  
15kHz = 4.75 kHz

446.000 MHz FM simplex:  
7kHz filter =  $\pm$  2.60 kHz dev.  
10kHz = 2.65 kHz  
15kHz = 4.81 kHz

The mic gain had no effect when set above 15%, so optimal setting should be somewhere between 15-25% for most applications. Below 15%, deviation dropped off rapidly in this test.

As you can see, any time a filter below 15 kHz is selected, the deviation drops to about half. The filters appear to work in both receive and transmit modes. The "rule of thumb" would be that if the band is clear, use the widest filter for full deviation. If the band is crowded and a narrow filter is needed for receive, the transmitted signal will also be narrower, to prevent interference to other stations in these conditions. It makes sense when you think about it in this way.

I hope this info helps to clarify group members' questions related to this topic.

73 de Matt KK5DR

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*[Editor's Note: The disadvantage of using the narrow filter and reduced deviation on a crowded band is that if the receiver has the wide filter selected, or is fitted only with a wide filter (more common), the S/N ratio of the received signal will be seriously degraded. Thus, it is best to select only the 15 kHz filter on systems using  $\pm$ 5 kHz deviation.]*