

MSA Progress
Sam Wetterlin
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Following are some photos showing the current progress of my MSA/TG/VNA, which is now operational and mostly completed. I previously had installed the “microwave section” which generates the 10.7 MHz IF2. I have now added the IF2 section which processes that IF2, ending with the ADC which measures magnitude and phase info.

I am using the expanded log detector, which precedes the log detector with a variable gain amp (VGA) and noise filter. Together, these essentially form a large range log detector with improved linearity. My IF amplifier, which pre-amplifies IF2 prior to the resolution bandwidth filters, is a 25 db amplifier using a low distortion OPA847 op amp.

Figure 1 shows the mounted modules from the top.

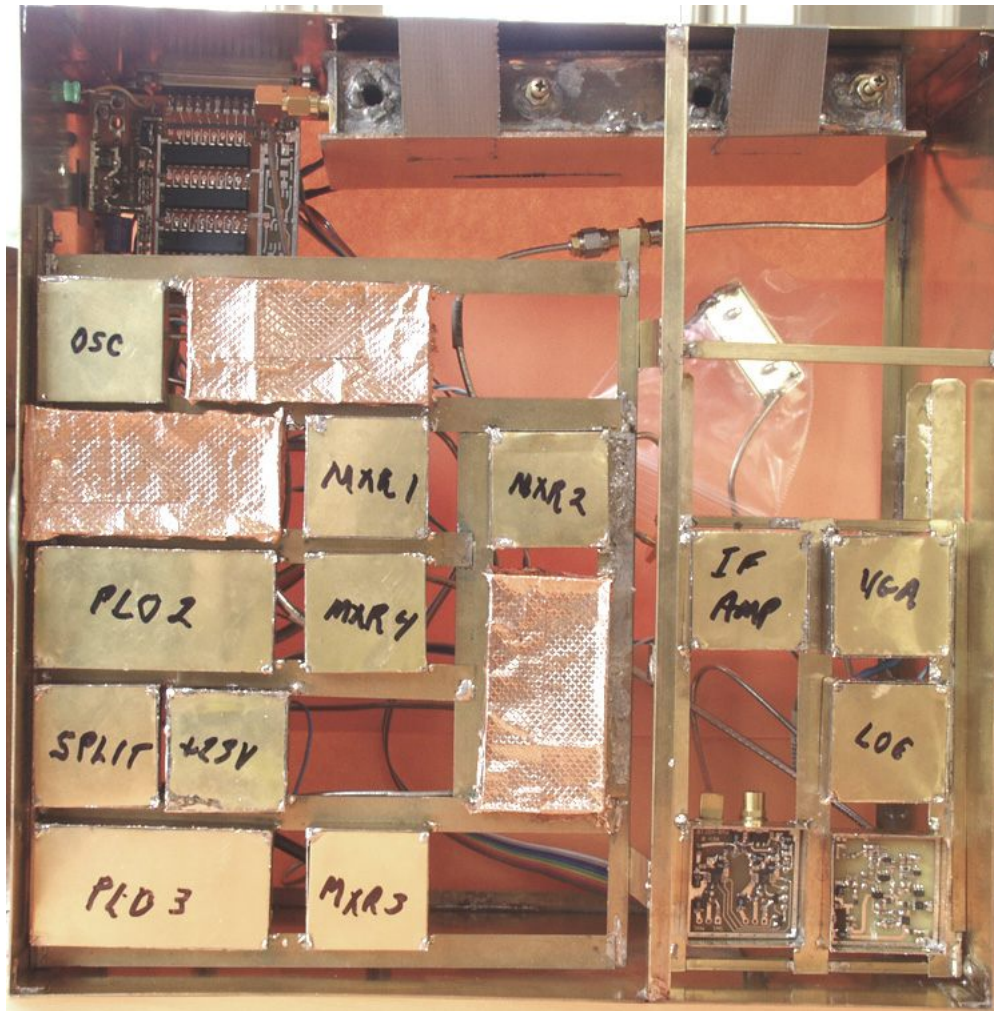


Figure 1—Top view. The brass grid on the left holds the microwave section; that on the right holds the IF2 section. A temporary cavity filter is taped in place at the top of the picture. Empty slots are to allow adding other modules.

Ultimately, each module will have a brass lid such as the ones shown, which will be soldered all the way around. They are made with 1.2" square or 1.2" x 2.4" pieces of 0.005" brass, cut on a miniature paper cutter. The bottom edges are tinned, as are the top edges of the modules. A little solder in each corner of the modules prevents the lids from falling in. They are currently tacked in place at the corners. A few modules still are covered in copper tape, which works well when you need repeated access to make changes or test an internal signal. The ADC and PDM in the lower right will also have lids added.

Figure 2 shows a view of the MSA from the bottom.

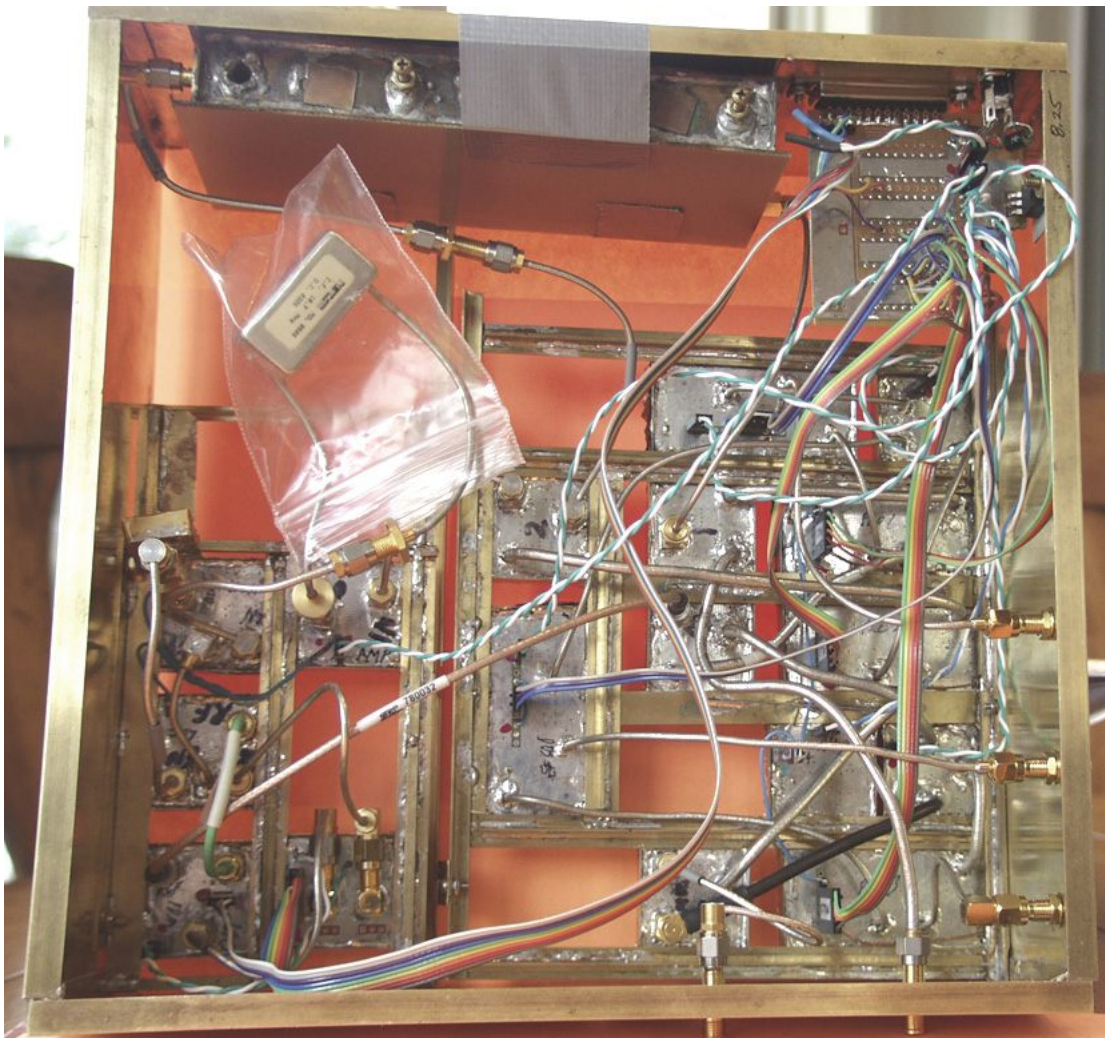


Figure 2—Bottom view of the back and left side. Control board is upper right; front of MSA is on the picture bottom. Plastic bag contains the only RBW filter currently used;

the bag is to keep it from shorting to anything. In the microwave section on the right, most coax connections are by the direct-solder method, but the IF2 section on the left is entirely connectorized.