

MSA Progress
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Following are some photos showing the current progress of my MSA/TG/VNA. I have currently almost finished building/installing all modules in the “microwave section”. The main outputs of this section are the 10.7 MHz second IF (IF2) and the 10.7 MHz phase reference, which will run to the “IF2 Processing” section, for which the modules are built but not yet installed.

My boards are the original Verification Unit design, from ExpressPCB without solder mask. I also added a splitter board to provide an external output for PLO3, which can ultimately be used to extend the VNA range to about 2.2 GHz. I added a +23V supply board to get a slightly higher tuning supply for PLO 1 and 3, and to get better ripple filtering in the high voltage supply. Finally, my PLO1 board is a redesign using the ABA-52563 MMIC amp instead of the ERA-33SM, to get a more reliable 21db gain from the MMICs. I will also be installing an amp with external connections, to be available to amplify the TG output and to give it a good 50-ohm output impedance.

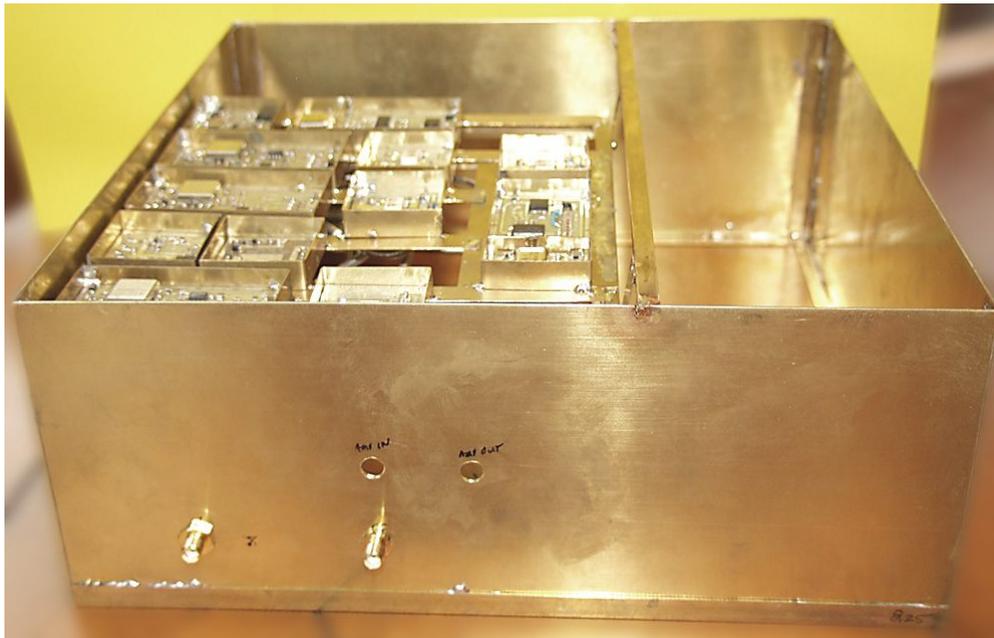


Figure 1—Front view. The modules are installed on a brass grid mounted in a 10”x10”x4” homemade brass box. SMA connectors on the front are for the input and tracking generator output. Holes are for an amplifier yet to be installed. Space on right side of box is for the IF2 processing modules.



Figure 2—View of the back and left side. Parallel connector is on back; a separate power connector will be added. Side holds output connectors for DDS1, DDS2 and PLO3.

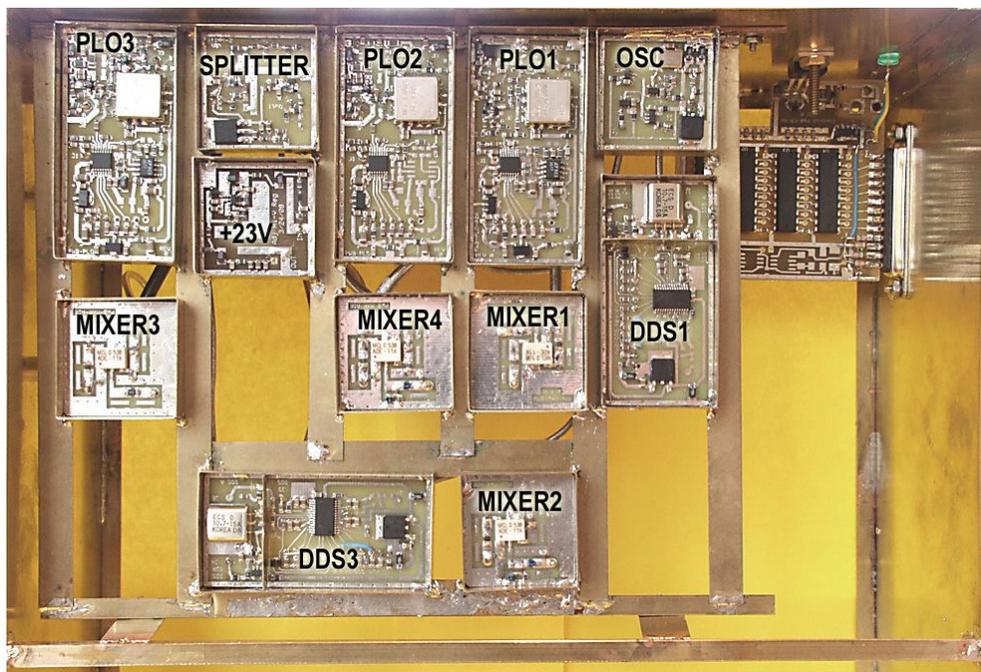


Figure 3—Top view. Modules are labeled. Control board is upper right. Cavity filter will fit upright into space at right, extending a bit below the support bar running across the bottom of the picture. The space off the bottom of the

picture is for the IF2 processing modules. The modules across the top generate most of the heat in the MSA, and are mounted to a thick brass strip bolted to the left side (picture top) to dissipate the heat to the wall. A fan may be mounted at the upper right.

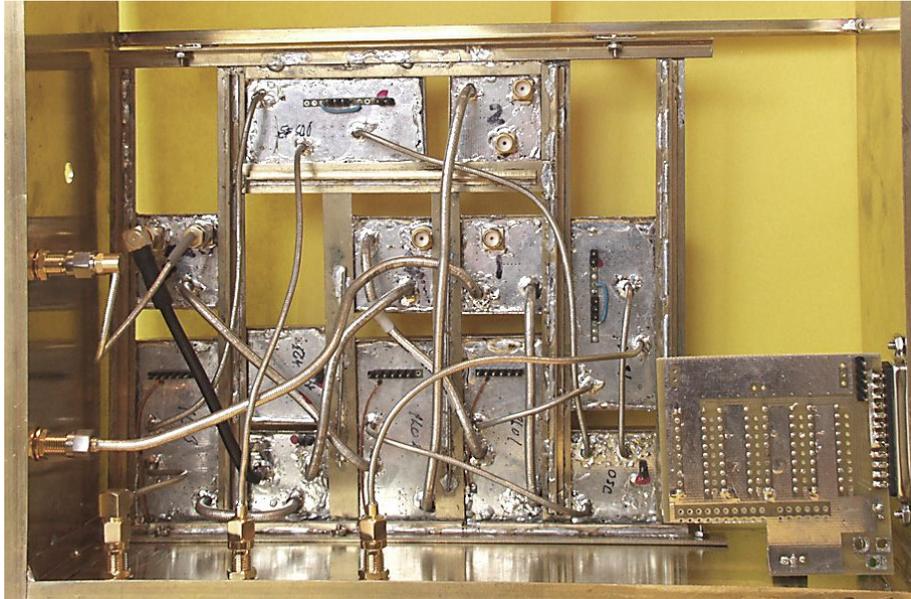


Figure 4—View from bottom, showing cable connections. Power and data lines are not yet installed. MSA front is on left of picture, containing the input (bottom of left side) and TG output (top of left side). You can also see that the brass strips comprising the support grid are reinforced on the bottom with small brass tees.