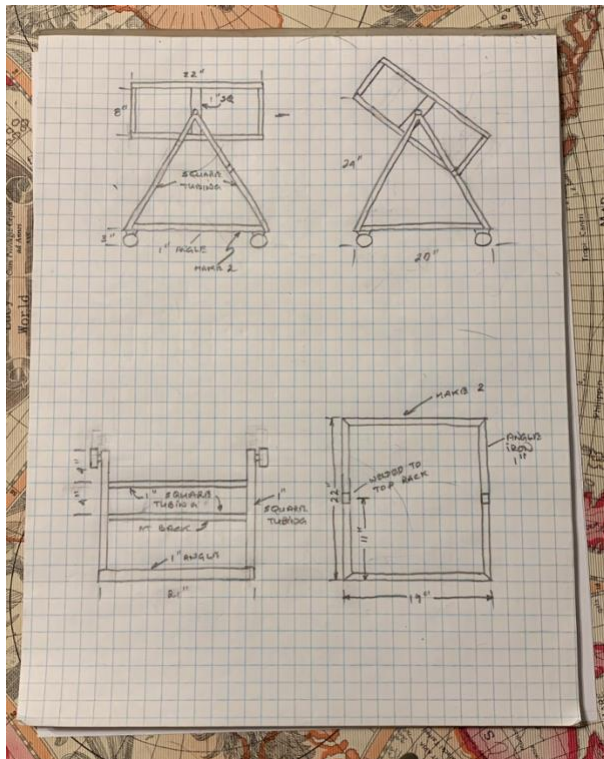


Building an Equipment Rack

Boy time flies when you're having fun...

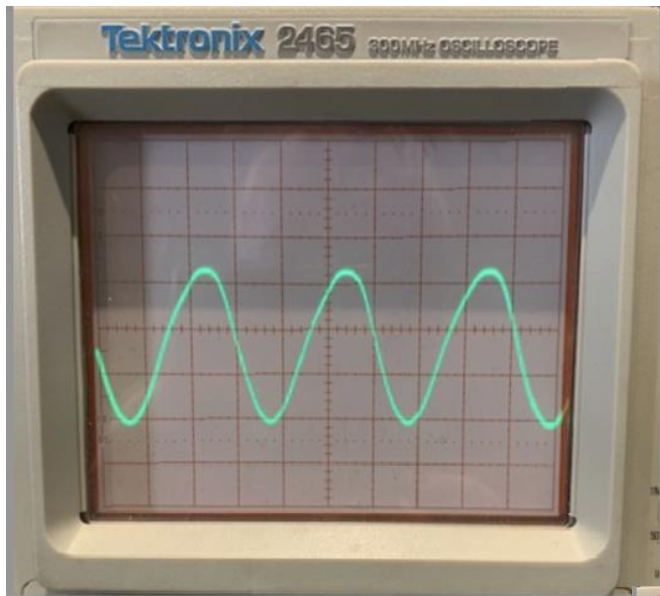
What have I been working on? My son, Tommy VE6TJB and I did some metal work and welding to make something to house my new Tektronix oscilloscope rather than having it on the shelf taking up valuable space. We started on Saturday morning and finished it in the late afternoon. The idea was to make it out of 1" square steel tubing and 3/4" angle steel and put some wheels on it so that it can move around easily on my shack tile floor. We were more than successful. Here's the result...



The preliminary drawing is above and the final product is on the right.



As I have mentioned before, I bought an HP 8660C Signal Generator a few years ago and it was sitting on top of a cabinet that is about 5' high. Not the most convenient place for it, so the plan was to have a mobile rack to put my equipment on that would make it more convenient and able to be moved to where I need it. As you can see, both items, the generator and the scope fit perfectly on the new rack. I should mention that the generator comes in at about 80 lbs so the rack had to be sturdy and by welding it all together using steel tubing and angle iron, it fit the bill. Thanks to

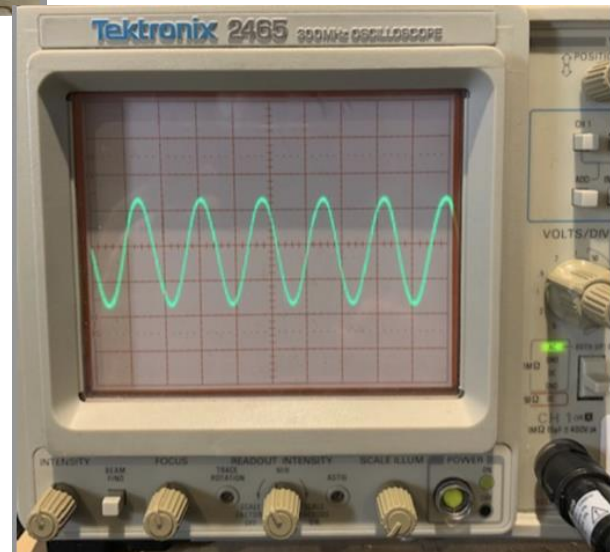


Tommy for doing the welding and helping me out last Saturday. He did a splendid job.

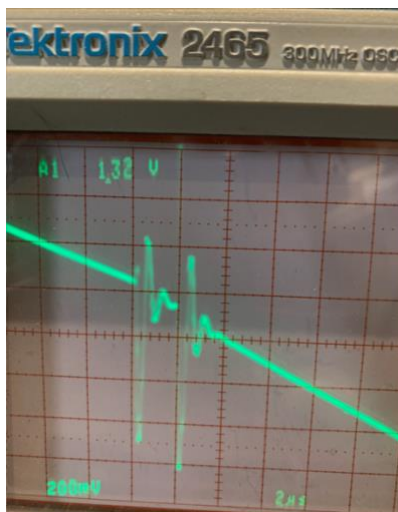
So, what else have I been doing? I like to make things as perfect as can be and one of the challenges when you work on sick radios is having a way to test the amplifiers for linearity. One of the best ways is to use a two-tone generator on the audio input so I have been trying to build a perfect two-tone generator. Now it sounds simple

enough, but in fact it isn't. I built a single transistor per tone one using a phase shift circuit. It was adequate but the waveform was a bit wonky and I didn't like it. It was sort of a sign wave but not perfect.

As you can see it is a bit weird looking and not a pure sine wave like the one on the right.



Then I tried one using an op-amp and it



was a much better sine wave but still not what I wanted. It used a 555 and a 3130 op-amp but then I noticed that there was a funny noise showing up on the scope. I actually noticed it on my digital scopes first, but it was so fast that I couldn't resolve it properly. I put it on the analog 2465 and here's what I saw...

Not good, so I abandoned that. I'm not sure what caused it but will investigate when I have some time to work on it. The glitch is so fast and at such a low level that it wouldn't affect the audio circuit in a radio, but I still don't like it and really want to find out what is

causing it. Why? Because it's there and it's niggling at me. I want to be able to have a perfect set of audio tones come out of this new piece of test equipment so am going to keep working on it. Oh and by the way, it's fun. The final unit will have two audio oscillators, one at 750 Hz and the other at 1900 Hz input which can be fed into the radios that I test. I have already made up the cables for the microphone connectors on three brands, Yaesu, Icom and Kenwood. I really want them spectrally pure so that's the goal. So the work continues...

73

Tom VE6ARG