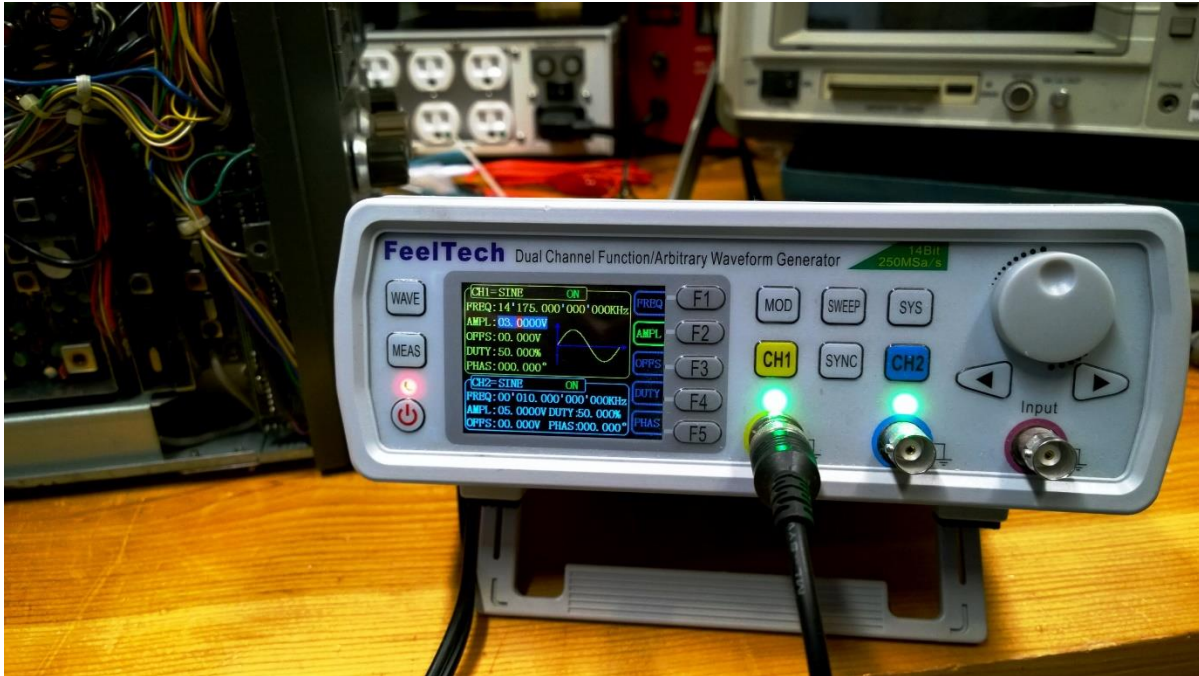


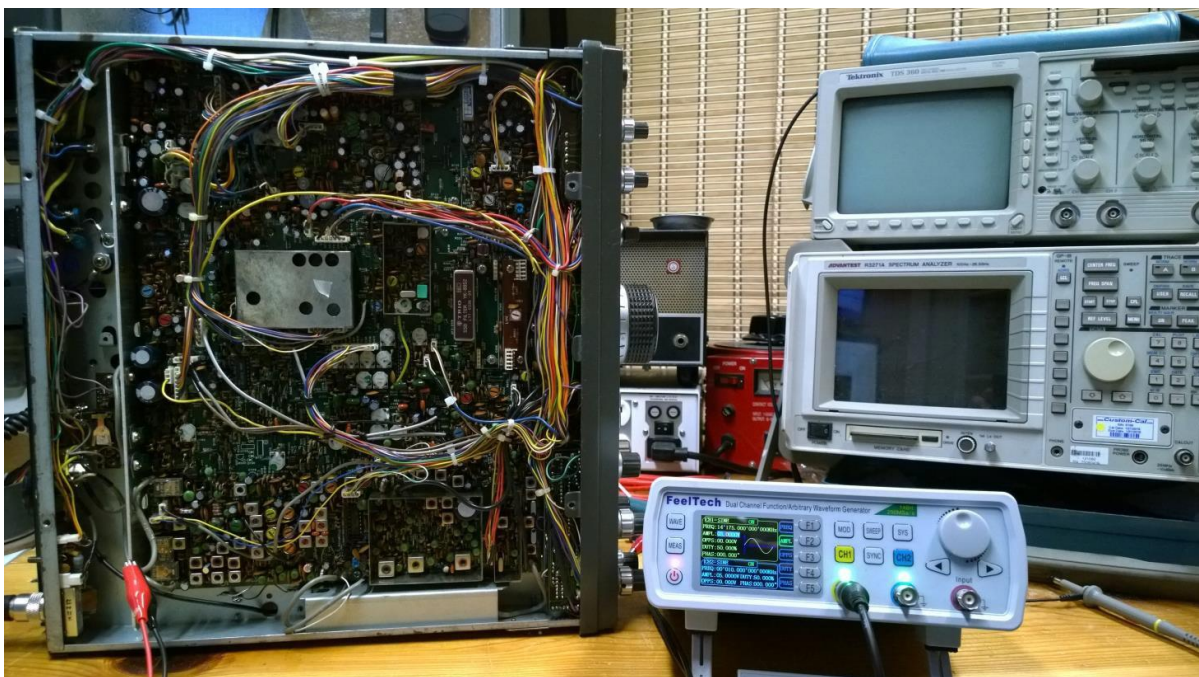
## KENWOOD TS-930S POWER AMP – RF VOLTS IN VS RF POWER OUT

W3AFC

This information should help those with low power output determine whether their Signal Unit or Power Amplifier are the problem. The data was generated using the inexpensive 0-60 MHz signal generator reviewed elsewhere on my web site. This generator is not lab grade, but it's good enough for most HAM radio work. The PA used is a stock "Red Dot" TS-930S unit. The B+ ranged from 28.15V at loads up to 5 amps, to 28.13V at 10 amps so for all intents and purposes, the supply voltage was steady. The power supply in my test bed TS-930S is the regulated 20/26-amp Phoenix Quint model 286776.



The test setup is shown below. The output from the generator is simply attached to the cable end from the signal board to the PA, without a 50-ohm load. If you were to measure the SU output at the DRV terminal with an oscilloscope, then your readings would be at an impedance of 10 Megohms anyway. With the band switch set to 14M, and the generator connected, pressing the SEND switch produced the readings shown on the next page. I had an inline DMM connected (not shown) to monitor the PA current. This setup tests the PA in the same environment that exists in the radio, rather than on a test bench.



### TS-930S POWER AMP READINGS

The readings in the table below are what you should see with RF input levels ranging from 0.5V to 4.0V, P-P. Once the SEND button is pressed, the current and power out levels will begin to creep upward, so these were taken after 5 seconds. Your readings may vary somewhat, but they should be close. The bar chart at the end is what one would expect to see from a non-linear device like an RF power amp.

RF INPUT VOLTS	PA CURRENT (AMPS)	PA POWER INPUT *	POWER OUT (WATTS)
0.5	1.2	34	2
1	2.45	69	8
1.5	3.75	106	18
2	5	141	30
2.5	6.5	183	50
3.0	7.75	218	70
3.5	9	253	90
4	10.15	285	115

\* Approximate PA Power Input at 28.15 VDC

