Operating a Clean Power Supply

Hams need a clean, stable, hum-free power supply for their amateur radio equipment. That means a PS that maintains a stable DC voltage under load. Also, the filtering should be adequate so that little AC ripple appears on the DC output. That suppresses hum on ones signal.

Andy KC9TAE provided assistance and loaned his Fluke 179 RMS Multimeter for tests on my four power supplies. In addition, we deployed an UltraBlok Diagnostic Surge Suppressor and Noise Filter to ensure no problem with the main power line. In these tests, there were no problems, so then the measurements were conducted without this device.

I examined three Astron linear power supplies and one Jetstream switching unit.

Astron performance specifications are 13.8 +/- 0.05 Volts DC, with less than 5 mV AC ripple under load.

The Jetstream does a poor job with its specifications. The manufacture only states an output of 13.8 VDC.

Here is a summary of testing. All passed the AC ripple test.

Power Supply	No Load	Load DC	Variance	P/F	Load AC
Astron RS-7A	13.60 DC	13.59 DC	-0.21 VDC	Fail	0.4 mVAC
Astron RS-35M	14.05	14.04	0.24	Fail	0.4
Astron RS-50M	13.76	13.75	-0.05	Pass	1.5
Jetstream JTPS28	13.84	13.80	0.00	Pass	2.6

Even though two Astron power supplies fail the DC voltage test, is that a problem? No, not for my application. For example, my Kenwood TS-590S transceiver specification calls for a supply voltage of 13.8 VDC +/- 15%. So it could operate acceptably between 15.87 and 11.73 volts. Thus, my AC power supplies, as well as gas generator and car & GEL batteries, are well within tolerance.

Larry Peterson WB9KMW

FCARC Technical Director