ELECTRONICS

Downeast 70225PA 70cm Amplifier on ATV

RF POWER - This amplifier is capable of outputting more than 200 Watts PEP on the 70 cm Amateur Band in all modes. RF input range is 1.0 to 15.0 Watts PEP for automatic keying, and 0 to 15.0 Watts with external keying to ground at the PTT jack. The PTT jack is pulled up to 12Vdc through the internal relay coils. Never exceed 15 Watts PEP RF input or damage could result to the amplifier, and the input power in all modes should be adjusted for no more than 200 Watts PEP output from the amplifier for best reliability. RF input and output jacks are type N and 50 Ohms. Connecting RF cables on 70 cm frequencies should have N plugs with no adapters to minimize loss, especially on the output. Also, 1/2 diameter 50 Ohm coax or larger should be used on the output.
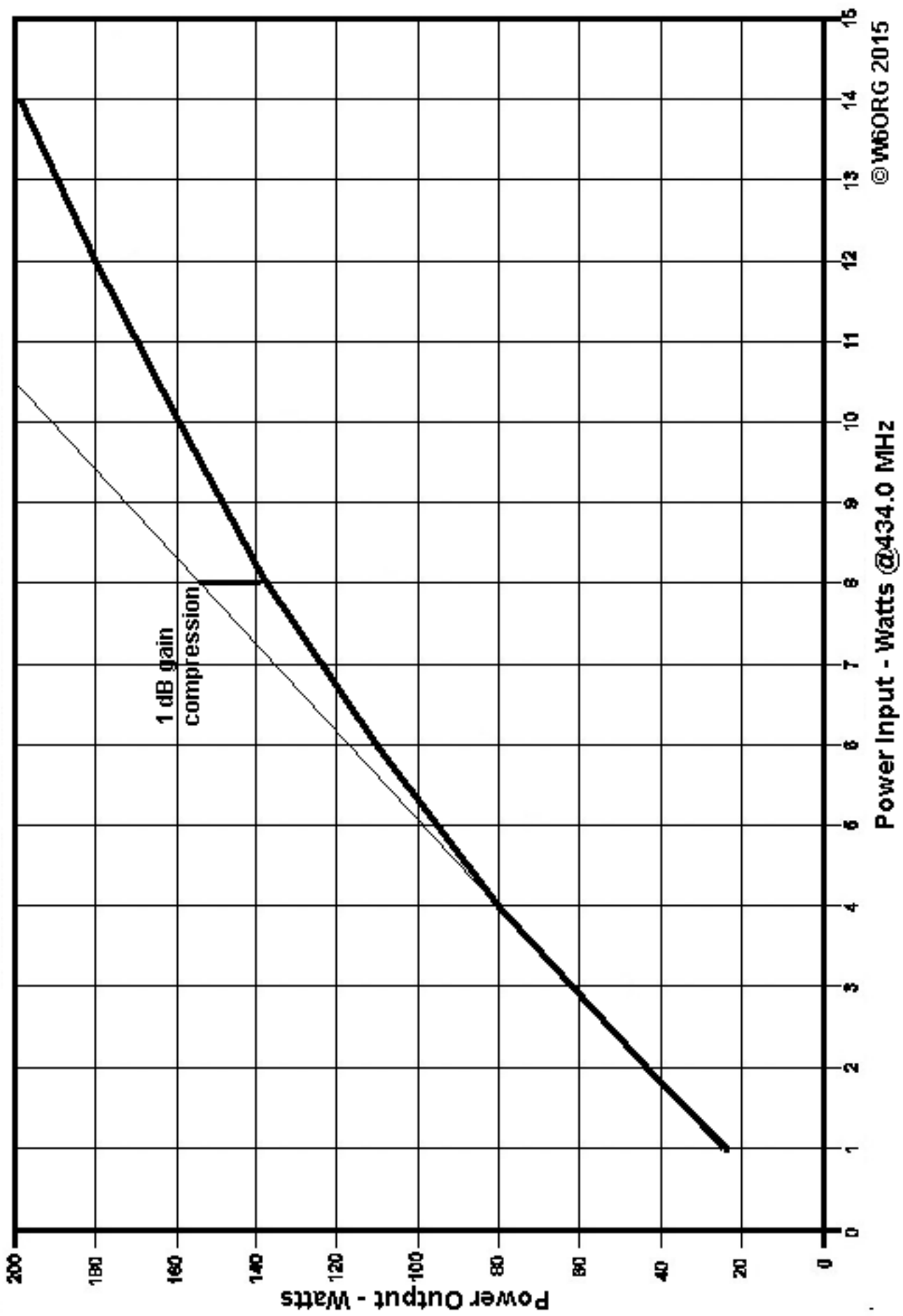
The RF output needs to be connected to a load with less than 2:1 VSWR and capable of handling up to 250 Watts. There is however high VSWR and over temperature cut out circuitry which will shut down the amp. Check for the cause of the protection trip and then reset by turning off the DC and back on. With this high of UHF power you should check the distance, antenna height and RF level for safe human exposure before operation. If for any reason the cover is removed and the amp is putting out RF power, keep your eyes away and don't touch the traces on the circuit board to keep from getting an RF burn. There are no adjustments you need to make inside.

DC POWER - The applied DC requirement is 24 to 32 Vdc regulated at up to 20 Amps. Nominally, the power supply is run at 27.0 Vdc and this is the voltage they were tested at - we used the Mean Well SE 600-27 (www.jameco.com). Connect no other equipment to this supply.   Run the amplifiers DC power leads directly to the regulated power supply terminals - Red is positive and black is negative.

ATV SET UP - To keep the video portion of the video wave form within the linear portion of the amplifiers gain curve and leave some headroom for the sound subcarrier riding on the sync, we suggest setting the sync tip to 180 Watts out per the set up below. The set up only needs to be done initially. However, you should do it if you change frequency or power supply DC voltage to insure the proper video to sync ratio. Place the amp and power supply where nothing else is within 3 inches so that the air flow will not be restricted.

1. Before plugging in your ATV transmitter to the amp, unplug any video, turn the pedestal pot to maximum power out and the RF output pot to minimum power out. Verify with a power meter that the peak envelope power does not exceed 15W.

2. With a RF power meter capable of reading 250 Watts on the 70 cm band in line with the coax to the 50 Ohm load or antenna with less than 10% reflected power, slowly increase the RF Output power pot to 180 Watts output. The 10 LED indicator is not accurate but is set for the last LED to just light at about 180 Watts.

3. Reduce the pedestal pot to read 100 Watts. Again, while not accurate, 7 of the LED's should be lit. If you want to run lower power, note the power you set in step 2, and then set the pedestal pot to 56% of that power on a RF Power meter.

4. Reconnect the video input and adjust for best picture as described by another ATVer with a P5 picture but many miles away that is not overloaded. You may also need to reduce the sound subcarrier injection by a little if the amount of sync buzz is reported to have increased vs. what is experienced without the amp. Note that the LED indicator under video modulation is meaningless and will show less than 7 LED's lit normally and vary with the average gray scale - greater the average is toward white, the less average power.

Downeast Microwave 7022SPA Linear Amplifier Input vs. Output Power Curve

Power Output - Watts

200
180
160
140
120
100
80
60
40
20
0

1 dB gain
compression

Power Input - Watts @434.0 MHz

0   1   2   3   4   5   6   7   8   9   10   11   12   13   14   15