Exhibit 8: Operational Description

External Radio Frequency Power Amplifier OM2000+

Model OM2000+

Array Solutions
2611 North Beltline Rd
Suite 109
Sunnyvale, Texas 75182
USA
Tel: 214 954 7140
fax: 214 954 7142
E-mail: **info@arraysolutions.com**

Operational Description

The OM2000+ is a complete and self-contained linear amplifier that covers the amateur band 1.8-54MHz and provides 1500W output power with typically 70W-exciter drive. It is based on and is very similar to our previous model OM2500HF (FCC ID: **X8NX8NOM2500A**) but the final tube has been replaced by a more popular one.

Look at the schematic diagrams (Exhibit 4). The high-performance ceramic-metal radial beam tetrode V1, type FU-728F, with a plate dissipation of 1200W, is grid-driven. It can dissipate up to 1200W when forced air cooled and is specifically designed for class AB1 RF linear amplifiers. The input signal from the RF INPUT jack is passed through a broadband input matching circuit (Input Board B), which comprises some components in the INPUT PCB and a 50 Ohm/250W RF swamping resistor. This circuit tunes out the tube input capacitance. The swamping resistor is not an attenuator but it is a termination load for this circuit. It could not be eliminated since a severe impedance mismatch to the driver would prevent using the amplifier at all.

The nominal voltages and currents of the tubes at rated output power are as follows:

DC plate voltage: 2800V
DC plate current: 0.9A
DC screen voltage: 325V
DC screen current: 0mA
DC grid bias: -65V (adjusted individually for 350mA idling plate current).

The combination L1-R2 in the plate circuit is a VHF/UHF parasitic suppressor. DC plate voltage is fed through chokes L2,L3,L9 and the capacitor C4 blocks it from the output. The output circuit comprises L7, L8, C7-C13 which form a classic Pi-L network and suppress the harmonic frequency emissions. This tank is switched and tuned over the bands by ceramic switch SW1 and the air variable divided capacitors C8,C12 and C10,C13. The output signal is fed through an additional VHF low-pass filter for frequencies above 55MHz (L6, L10 and C2). Then it is passed through the vacuum antenna relay GS, wattmeter current transformer to the antenna switch and the three outputs. The choke L5 keep track of the antenna relay contact conditions and prevent the plate supply from reaching the antenna. L5 shunts the high voltage to ground should the DC blocking capacitor C4 fail.

All supply voltages are delivered from Switch-On Board (small supply for control circuits, supply for control grid) and HV Supply Board (screen grid and plate voltage). The control grid, screen grid, and plate voltages and currents, plate cooling airflow temperature, forwarded and reflected power etc. are permanently monitored. Many software-derived protections are based on this information (Exhibit 6, part 1.2.2).