

Tube Of The Month

VT-127

When World War II began in Europe, it became obvious that the new RADAR technology was going to play a leading role. The United States needed to catch up in a hurry. There were few tubes in production that would operate above 200 MHz and have enough emission to produce high power. The Eimac line of triodes showed potential. The US Navy contacted Eimac in 1938 and requested a 100-watt dissipation tube with extra plate and grid leads protruding out the sides. A 100TL with a standard 4 pin base, twice the filament current and the required leads was made and it was designated the 100TS. The first Navy RADAR tests were made with these tubes.

The circuit that these tubes were to be used in is called a ring oscillator. Most old hams know that you get an oscillator when you build an amplifier with poor isolation between grid and plate tanks. We have made them when we didn't mean to. A ring oscillator is like two pairs of push pull tubes with the grid tanks connected to the opposite pairs. The outputs from each pair were then combined. Push pull circuitry doesn't require perfectly matched tubes so this circuit would allow four tubes to be combined. The oscillators were pulsed with 16,000 volts for short durations. The average power was low, but the peak power was several KW for a 100-watt dissipation tube.

The prototype tube worked, but it wasn't easy to install. A new version called the VT-127 was the same tube without the base. The filament leads could be clipped into the frame. A more easily produced version was developed in about 1942 and became the VT-127A. If you stack a pair of four tube units, you get the output of eight tubes. The larger frames that were used in the field had 16 tubes and produced outputs of about 1,000,000 watts pulse. It was good that the Navy had very large ships, as the equipment wasn't very portable. The Army used this configuration in their early air search RADAR and to direct anti-aircraft guns. Very large numbers of these tubes were made and they became very common for small change after the War. Hams could buy a pair and run a KW input for almost nothing. They never became very popular and new tubes are still seen at swap meets today.

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