**Tube of the Month**

# VT13c

When we see a tube with a VT prefix, it's often assumed that it's a military tube designation for a "Vacuum Tube". Early British military tubes also used the same VT prefix but it means "Valve Transmitting". After WWI, the new Royal Air Force (RAF) continued the development of wireless for aircraft addressing the problems they had encounter during the war when they were the Royal Flying Corps.

WWI aircraft were made of wood and canvas that had been treated with a liquid called "dope" that stretched and stiffens the fabric and made it more waterproof. Many of the components of a biplane were especially flammable. I understand that the engines on these planes produced a lot of gas fumes so the planes were flying fire bombs. Early spotter planes were equipped with spark transmitters. Even the sparks from the key were dangerous. I have heard that the large keys were sometimes mounted to the outside of the fuselage where the fumes would be low. The open cockpits were also very cold and wet. Wet vacuum tubes were a problem as their bases shorted out as some of these tubes used up to 1500 volts on the plates. In 1922, the RAF developed the L4 tube base that was large but had long breakdown paths. One of the first tubes to use the new base was the VT13c.

The VT13c is a 30-watt triode with a mu of 35. The filament uses 5.6 volts at 1.45 amps and up to 1500 volts on the plate. The maximum frequency is 6 MHz. The first transmitter I can find that used the VT13c, was the RAF TR2 which used a VT13c as a modulator and a pair of the tubes as a Hartley oscillator. The 1923 transmitter would operate AM, CW and ICW. The AM was generated using Heising modulation and the ICW (Interrupted CW) was generated with a motor driven wheel to modulate the keying of the transmitter. Early transmitters needed to be able to send modulated CW as the simple tube and crystal detectors that were in common use, couldn't detect regular CW.

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