

REL-3C – Early Canadian S-Band Magnetron Equivalent to British CV38



Early cavity magnetron, similar to E-1198 and to [CV38](#).

This is one of the early types entered in production, directly derived from the E-1198, frequency variant for airborne applications of the British E-1189 prototype brought to U.S. and Canada by the Tizard Mission in 1940.

REL-3C operated at 9.1 cm wavelength, 3297 MHz. Being unstrapped, its efficiency was quite poor, around 10%. According to the spec sheet of CV38, when operating at 8 kV and 7 A input pulses the typical output pulse power was 7 kW and tubes generating 5 kW were still acceptable.

Heater operates at 6 volts, 1.2 amps.

Used in AI Mark VII radar set. AI stays for Air Intercept.

The collection includes a couple of samples of this tube, built for REL by Northern Electric Co. and still in their original cardboard packing. Remarkable in these samples are the bare cathode/heater flying wires. Northern Electric was a Canadian company related to Bell and Western Electric. In October 1940 Bell Laboratories examined the prototype of **E-1189** S-band magnetron carried by the Tizard Mission. Soon later they built a few tens of copies which were spread among universities, research institutes and industries involved in the radar development. The E-1189 design, with a simplified 4-fin radiator, went in production as **REL-3D**, equivalent to the the British **NT98**. It was used in the Naval radar Type RX-271 and in the wheeled trailer GL-3C. Its frequency variant E1198 was coded as REL-3C. Presumably Northern Electric was involved in the volume production of magnetrons by the same Bell. Anyway Bell, Western Electric and Northern Electric shared all their information on these devices.