R.F. NOTE #88

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COOLING THE PANELS ON THE K500

The panels can run as high as 70°C at a high frequency at 26 MHz and 100KV the short current is 4000 amps, which results in a dissipation of about 25 watts per square inch in the center of a panel. The total power in a panel is 2.25 KW (100 KV at 9Mhz). At 26 MHz, the total power in a panel is 1400 watts. At present practically all this power is removed by radiation and convection to the air.

It is proposed that we remove this heat by conduction to a water cooled plate that will be glued on to the panels using RTV 162 White AG 722 obtainable from G.E. (look up previous purchase order). Assuming that RTV has the same thermal conductivity as rubber (.0005 cal/in^2/°C/sec.) the ΔT across 2 mils of RTV would be 7° C for 20 watts/in^2. If a 1/16" sheet of Cu, 4" wide with water cooling tubes soldered to it 2 1/2" apart is used, then the ΔT across the surface for an average of 20 watts per sq. inch on the whole surface is about 10°C. It would therefore be desireable to use thicker copper, but we can stand the 10° rise.

It is recommended that we try this fix on one of the stems.