EITEL-McCULLOUGH, INC.
SAN CARLOS · CALIFORNIA

OBJECTIVE DATA

X850 X-BAND 20 KW CW POWER AMPLIFIER KLYSTRON

The X850 is the most recent product of the Eimac High Power Microwave Tube Laboratory. It is the first of a series of Eimac X-band power klystrons which will ultimately include tubes at all commonly used power levels.

Four integral cavities are used in the X850. Each tube is pretuned at the laboratory to the frequency chosen by the user, within the 7.125 to 8.5 kMc band.

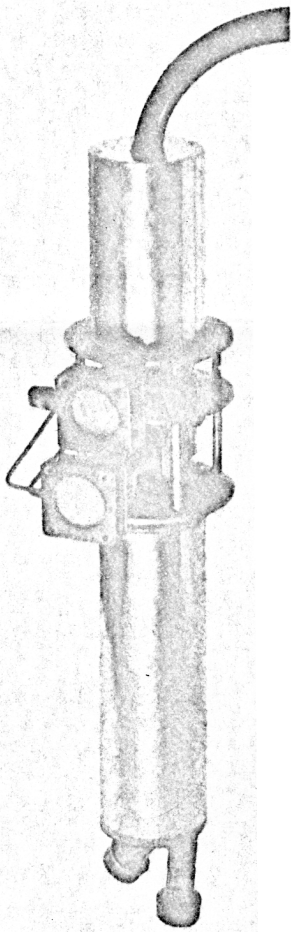
The X850 is intended especially for use in space age applications including missile and satellite tracking systems, radar astronomy, and space communications.

The electron gun of the X850 utilizes a convergent confined flow field which results in non-critical focusing adjustments and produces a stable, quiet beam. This electron gun is rugged in structure and completely enclosed in a metal shield with integral, shielded, connecting leads, to reduce the high-voltage hazard to a minimum.

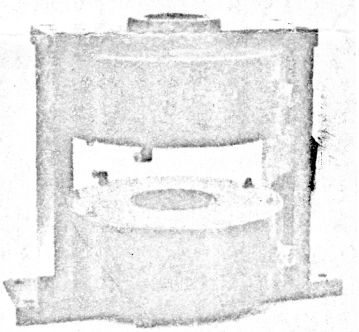
Fixed input and output couplings are used in the X850. The output window is a thick beryllium oxide disc. Unusual stability, for this power and frequency, is achieved through the use of improved body cooling.

The superior bandwidth of this klystron, 35 Mc minimum, and low beam voltage are due to high perveance design. Exceptionally high convergence of the electron gun, 50:1, means very low cathode emission density resulting in long life expectancy.

A focusing electromagnet and klystron supporting structure, Catalog Number H-160, has been designed for use with the X850. Only one power supply is required for the electromagnet.



X-850



H-160

CHARACTERISTICS

ELECTRICAL

Heater:	Voltage - - -	10	volts
	Current - - -	3.0	amperes
	Maximum Starting Current	6.0	amperes
Cathode:	Impregnated, Unipotential		
	Heating Time - -	5	minutes
Power Gain - - - -		43	decibels
Output Power - - - -		20	kilowatts
Frequency Range - - -		7.125 to 8.5	kilomegacycles

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WALMORE ELECTRONICS
LIMITED
11-15 BETTERTON STREET,
DRURY LANE, LONDON, W.C.2.,
TEMPLE BAR 0201-5

MECHANICAL (continued)

Operating Position		Any
RF Coupling:		
Input		WR-112 Waveguide
Output		WR-112 Waveguide
Dimensions:		
Klystron only	6x7x25	inches
H-160 Electromagnet:		
Length	17	inches
Width	18	inches
Depth	12	inches
Weight:		
Klystron only	20	lbs
H-160 Electromagnet	200	lbs
Cooling: Water and Forced Air		

	Flow Rate	Pressure Drop
Cathode	5 cfm	free
Klystron Body and Electromagnet	2 gpm	100 psi
Klystron Collector	8.5 gpm	45 psi

ELECTROMAGNET POWER-SUPPLY REQUIREMENTS

Voltage	50	volts
Current	25	amperes

MAXIMUM RATINGS

DC BEAM VOLTAGE	22	KILOVOLTS
DC BEAM CURRENT	3.5	AMPERES
DC BODY CURRENT (with RF drive)	80	MILLIAMPERES
COLLECTOR DISSIPATION	70	KILOWATTS
INLET WATER PRESSURE	120	PSI

TYPICAL OPERATION

Frequency	7.6	kilomegacycles
Output Power	22	kilowatts
Driving Power	1	watt
Power Gain	43	decibels
DC Beam Voltage	20	kilovolts
DC Beam Current	3.1	amperes
Beam Power Efficiency	35.5	percent
DC Body Current	40	milliamperes
3 db bandwidth	35	megacycles

The Eimac EM778 Traveling Wave Tube in recommended as a driver for this klystron.

For additional information or information regarding a specific application, write to Eitel-McCullough, Inc., San Carlos, California.