



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

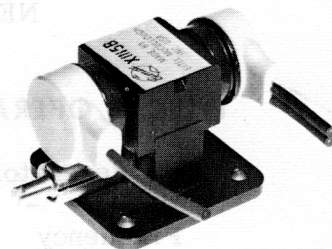
TENTATIVE DATA

X1115B

REFLEX KLYSTRON

The Eimac X1115B is a ceramic and metal, conduction-cooled reflex klystron designed for local oscillator service in 12.2 - 12.7 Gc. microwave relay equipments. The tube provides a minimum power output of 30 mW and is tunable across the entire 500 Mc. band.

The X1115B features low-noise gridless gun construction, good power and frequency stability and is conservatively warranted for 1000 hours life.



GENERAL CHARACTERISTICS

ELECTRICAL

Cathode:	Unipotential, oxide coated		
Warm-up time	- - - - -	30	seconds
Heater: Voltage	- - - - -	6.3	volts
Current	- - - - -	0.8	ampere
Typical Output Power (Load VSWR 1.15:1)	- - - - -	30	milliwatts
Frequency Range	- - - - -	12,200 to 12,700	megacycles

MECHANICAL

Operating Position	- - - - -	- - - - -	Any
Mounting	- - - - -	- - - - -	WR-75 Waveguide Flange
Cooling	- - - - -	- - - - -	Conduction
Electrical Connections	- - - - -	- - - - -	Flexible Leads
RF Output Coupling	- - - - -	- - - - -	WR-75 Waveguide
Net Weight	- - - - -	- - - - -	4 ounces
Shipping Weight (Approximate)	- - - - -	- - - - -	2 pounds
Maximum Overall Dimensions:			
Height	- - - - -	- - - - -	1.4 inches
Width	- - - - -	- - - - -	1.5 inches
Length	- - - - -	- - - - -	2.5 inches

ENVIRONMENTAL

Maximum Ambient Temperature	- - - - -	- - - - -	150° C
Maximum Altitude	- - - - -	- - - - -	No limit
Maximum Non-operating Shock (11 ms duration)	- - - - -	- - - - -	40 g
Maximum Operating Shock* (11 ms duration)	- - - - -	- - - - -	40 g
Maximum Operating Vibration** (20 to 2000 cps)	- - - - -	- - - - -	10 g

*Based on a permanent frequency shift after drop of 2 megacycles.

**Based on a maximum peak-to-peak frequency deviation of 250 kilocycles.

MAXIMUM RATINGS

DC RESONATOR VOLTAGE*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	425	MAX. VOLTS
DC CATHODE CURRENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	MAX. MA
RESONATOR DISSIPATION	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	MAX. WATTS
PEAK REPELLER VOLTAGE*																	
POSITIVE WITH RESPECT TO CATHODE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	MAX. VOLTS
NEGATIVE WITH RESPECT TO CATHODE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	MAX. VOLTS

TYPICAL OPERATION (Load VSWR less than 1.15 to 1)

DC Resonator Voltage*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	volts
Mode	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6-3/4
Frequency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,450	megacycles
DC Cathode Current	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	milliamperes
DC Repeller Voltage*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-130	volts
DC Repeller Current	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	microampere
Power Output	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	milliwatts
Electronic Tuning (3 db bandwidth)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	megacycles
Modulation Sensitivity ($E_r = \pm 3$ volts)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	Mc/volt
Peak-to-peak FM Deviation (10 g, 20 - 2000 cps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	kilocycles
Residual FM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	kilocycles

*All voltages referred to cathode.

APPLICATION

Cooling: At sea level this tube will not require forced air cooling when operated at its maximum rated dissipation with an ambient temperature less than 125° Centigrade. The waveguide flange connection will normally provide the required heat sink for conduction cooling. If an insulator is used between the tube and waveguide for DC isolation, forced air cooling may be required to maintain the ceramic-to-metal seal temperatures below the maximum rating of 150° Centigrade.

Resonator: The resonator of the X1115B is integral with the body of the klystron. For this reason it is often convenient to operate the resonator at chassis potential, with the repeller and cathode at appropriate negative potentials.

Cathode: The heater voltage should be maintained within $\pm 5\%$ of the rated value of 6.3 volts if variations in performance are to be minimized and the best tube life obtained.

The heater and cathode of the X1115B are internally connected. When the resonator of this tube is operated at chassis potential, the heater transformer must be insulated for the cathode-to-resonator voltage.

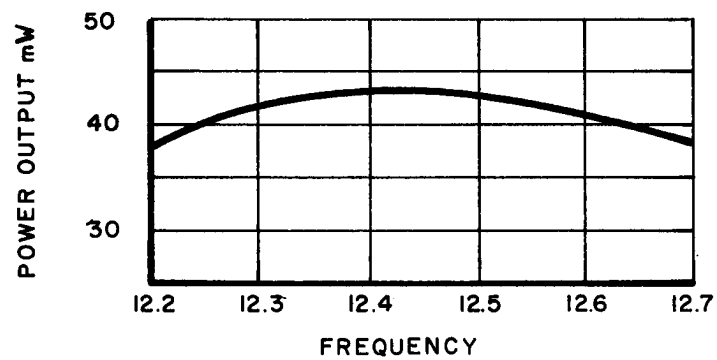
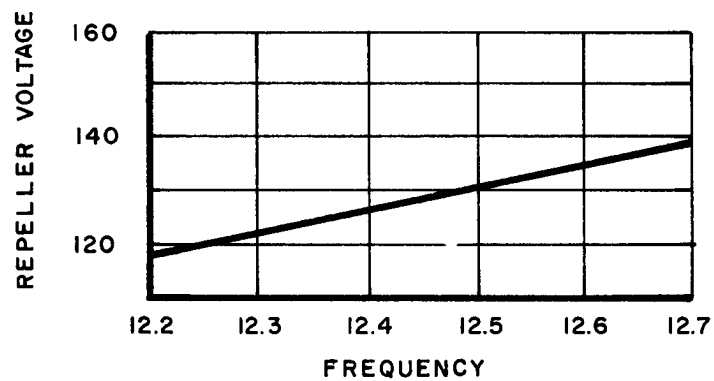
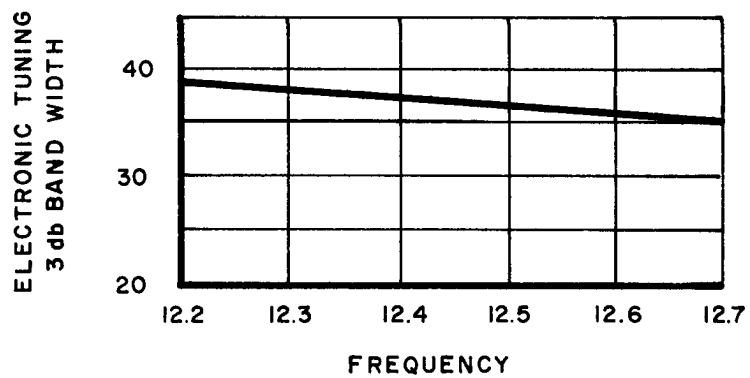
Mechanical Tuning: In the X1115B a fixed-tuned inner cavity is closely coupled through a ceramic window to a secondary cavity outside the vacuum. Mechanical tuning is accomplished by a capacitive slug in the secondary cavity with a tuning rate of approximately 150 megacycles per turn. This design allows repeated tuner cycling without damaging the vacuum seals. The maximum tuner torque is 40 inch-ounces.

A clockwise rotation of the tuner will produce a decrease in frequency.



X1115B OPERATING CHARACTERISTICS

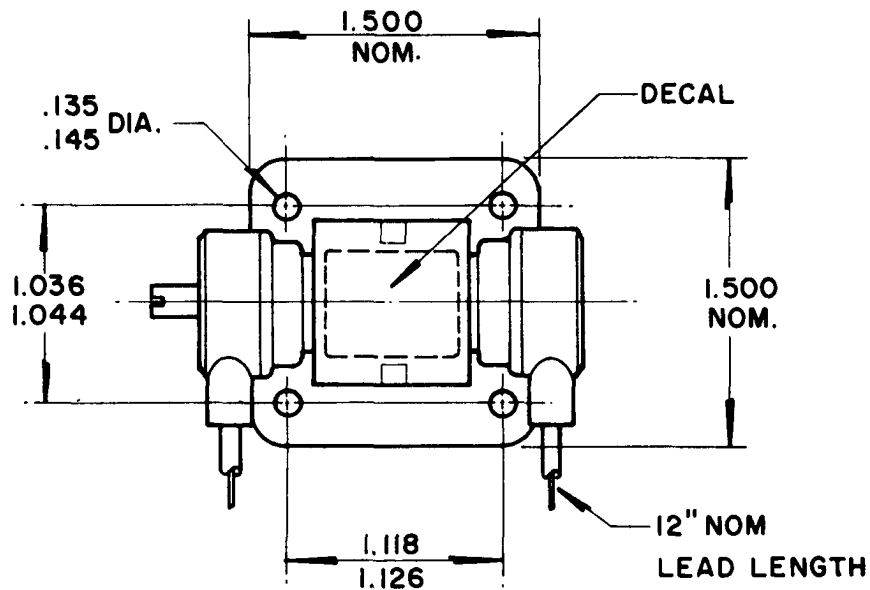
$E_{rs} = 300 \text{ V.}$
 $6\frac{3}{4}$ MODE





X1115B

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CONNECTIONS

REPELLER - RED

HEATER - WHITE

* CATHODE - BLACK

* HEATER - BLACK

* INTERNALLY
CONNECTED

