EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

EM-1050

TRAVELING WAVE TUBE

8.0 to 12.0 Gc.

3 Watts Min.

60 db Gain

TENTATIVE DATA FOR EIMAC EM-1050 TRAVELING WAVE TUBE

The Eimac EM-1050 is an intermediate-power traveling wave tube amplifier designed to operate in the 8.0 to 12.0 Gc frequency range. The EM-1050 will provide a minimum saturated power output of 3 watts over this frequency range with a nominal small signal gain of 60 db.

The EM-1050 features rugged ceramic and metal construction and focusing is provided by built-in periodic permanent magnets. These magnets are fully temperature compensated to allow operation from –55 to + 85°C. No additional cooling is required at these temperatures due to the integral heat sink/mounting flange supplied with the tube.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode: Unipotential, oxide coated	
Minimum Heating Time	60 seconds
Heater Voltage	6.3 volts
Current	0.6 amperes
Noise Figure	25 to 34 decibels
Minimum Tangential Sensitivity (Broadband)	–50 dbm
Minimum Saturated Output Power	3 watts
Frequency Range	8.0 to 12.0 gigacycles
Input and Output Impedance	50 ohms nominal

MECHANICAL

Operating Position	Any
RF Input Coupling	Type N Female Coaxial Fitting
RF Output Coupling	Type N Female Coaxial Fitting
Focusing	Periodic Permanent Magnet
Cooling	Passive Heat Sink
Maximum Overall Dimensions	See Outline Drawing
Net Weight (Including Magnets)	4.5 Pounds

MAXIMUM RATINGS

D-C BEAM VOLTAGE*	3500 VOLTS
D-C FOCUS ELECTRODE VOLTAGE* NEGATIVE WITH RESPECT TO CATHODE	50 VOLTS
D-C CATHODE CURRENT	30 MILLIAMPERES

TYPICAL OPERATING CHARACTERISTICS

Frequency	8.0 to 12.0	gigacycles
Minimum Output Power	3.0	watts
Small Signal Gain	60	decibels
D-C Beam Voltage*	3300	volts
D-C Cathode Current	28	milliamperes
D-C Focus Electrode Voltage*	−40	volts
D-C Focus Electrode Current	0	milliamperes

*All voltages referred to cathode.

APPLICATION

Cooling: The EM-1050 is designed to be heat sink cooled by means of the mounting available and integral with the tube and PPM structure. Under environmental conditions normally encountered in military equipments, additional cooling will not be required.

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

Helix: The helix, collector and anode are internally connected to the tube body and are operated at the same potential. Therefore, it is often convenient to operate these elements at chassis potential, with the cathode and focus electrode at appropriate negative potentials. The cathode potential should be maintained within ± 1% to insure proper operation.

Focus Electrode: The focus electrode power supply must be regulated within ± 2 per cent to minimize variations in performance.

Special Applications: For any additional information concerning this tube or its application, write to Microwave Product Manager, Eitel-McCullough, Inc., San Carlos, California.

ENVIRONMENTAL

The EM-1050 conforms generally with MIL-E-5272C, "Environmental Testing, Areonautical and Associated Equipment, General Specification for," and MIL-E-5400, "Electronic Equipment, Aircraft, General Specification for," Class II.

Vibration: 10 g to 2000 cps (Curve A of Proc. XII, MIL-E-5272C)

Shock: 25 g, 11 ± 1 ms

Acceleration: Sustained, 25 g's

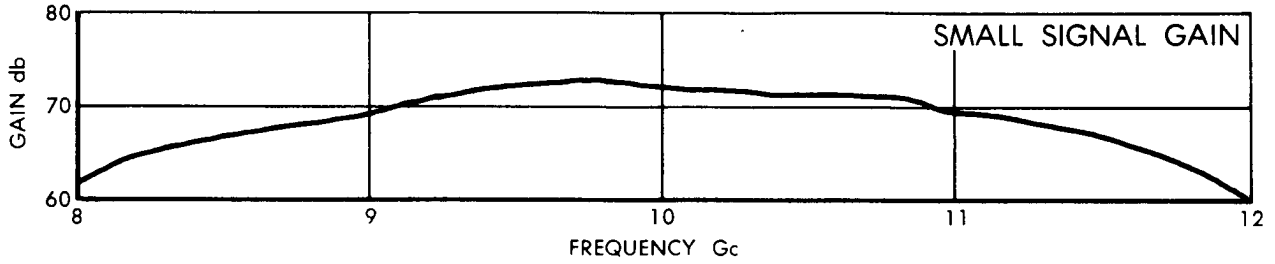
Temperature: −54°C to + 85°C

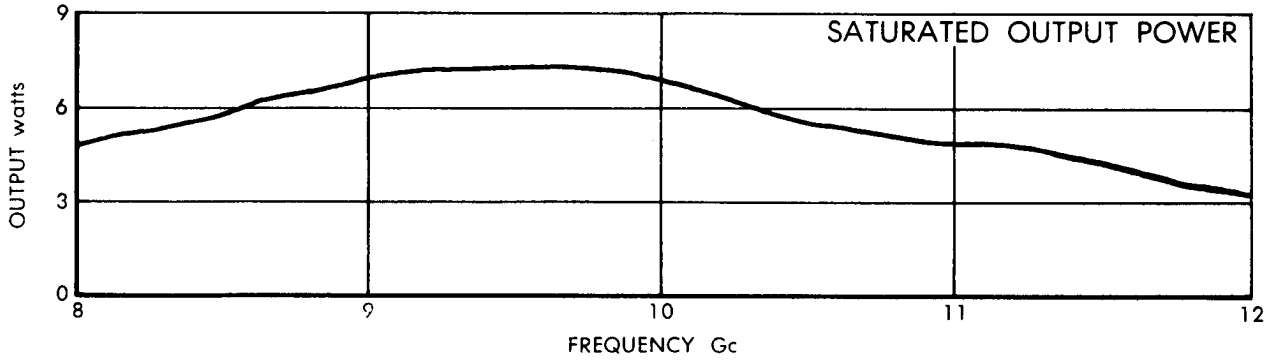
Altitude: 70,000 ft.

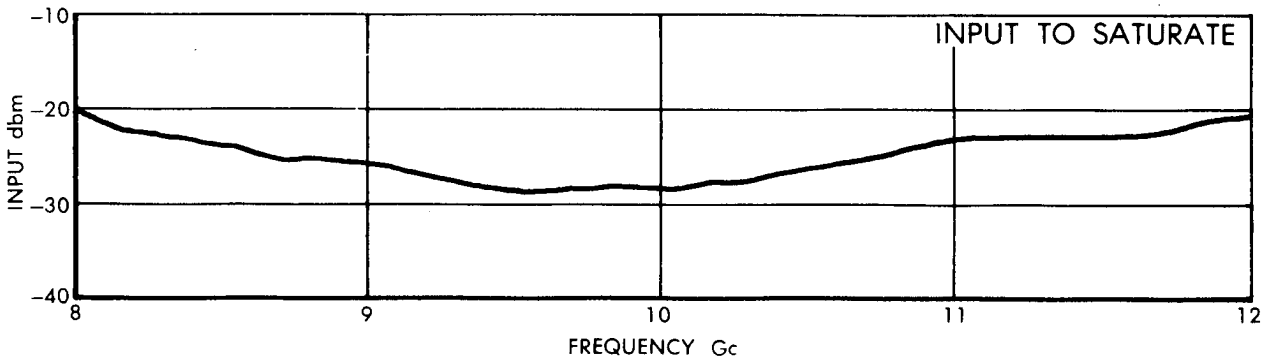
NOTE: This data should not be used for final equipment design.

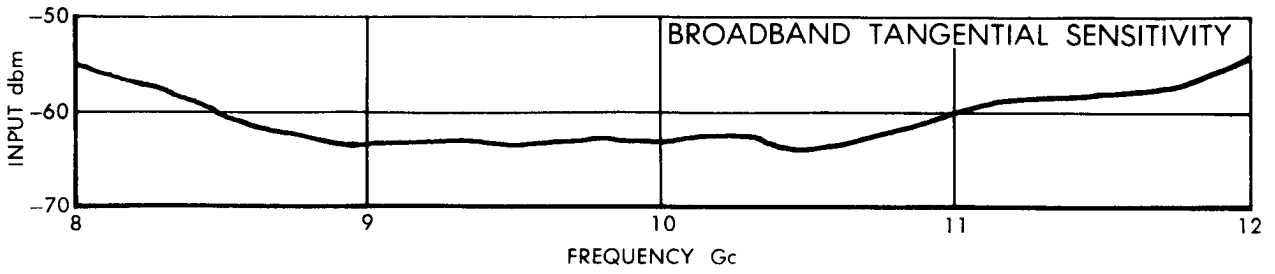
EM-1050 TYPICAL OPERATING CHARACTERISTICS

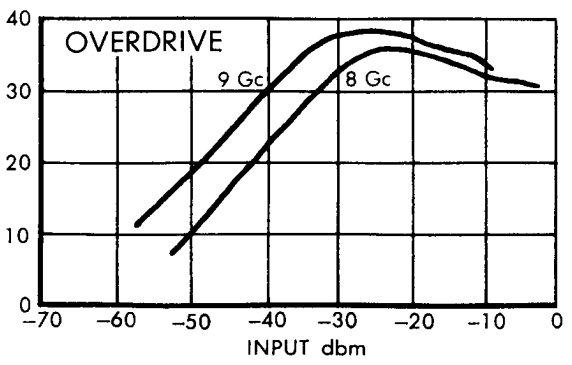
ANODE VOLTAGE 3300 Vdc
CATHODE CURRENT 28 mAdc
FOCUS VOLTAGE −40 Vdc
FILAMENT VOLTAGE 6.3 Vac

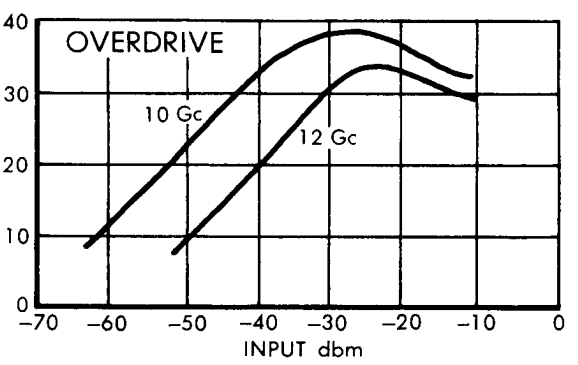












EM-1050

CONNECTIONS

1. HEATER —BROWN
2. CATHODE HEATER—YELLOW
3. FOCUS ELECTRODE —GREEN
4. BODY GROUND —BLACK