EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

EM-1011

TRAVELING WAVE TUBE

4.0 to 8.0 Gc.

1 Watt Min.

30 db Gain

TENTATIVE DATA FOR EIMAC EM-1011 TRAVELING WAVE TUBE

The Eimac EM-1011 is an intermediate-power traveling wave tube amplifier designed to operate in the 4.0 to 8.0 Gc frequency range. The EM-1011 will provide a minimum saturated power output of 1 watt over this frequency range with a nominal small signal gain of 30 db.

The EM-1011 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°C 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 Saturated Output Power	1 watt
Frequency Range	4.0 to 8.0 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)	2.5 Pounds

MAXIMUM RATINGS

D-C BEAM VOLTAGE*	2600 VOLTS
D-C FOCUS ELECTRODE VOLTAGE*:	
NEGATIVE WITH RESPECT TO CATHODE	40 VOLTS
D-C CATHODE CURRENT	30 MILLIAMPERES

TYPICAL OPERATING CHARACTERISTICS

Frequency	4.0 to 8.0 gigacycles
Minimum Output Power	1.0 watt
Small Signal Gain	30 decibels
D-C Beam Voltage*	2550 volts
D-C Cathode Current	28 milliamperes
D-C Focus Electrode Voltage*	−30 volts
D-C Focus Electrode Current	0 milliamperes

*All voltages referred to cathode.

APPLICATION

Cooling: The EM-1011 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-1011 conforms generally with MIL-E-5272C, "Environmental Testing, Aeronautical 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

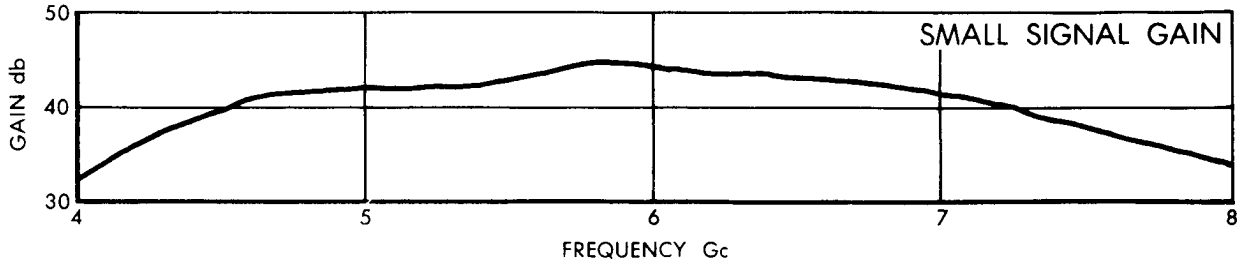
Temperature: −54°C to + 85°C

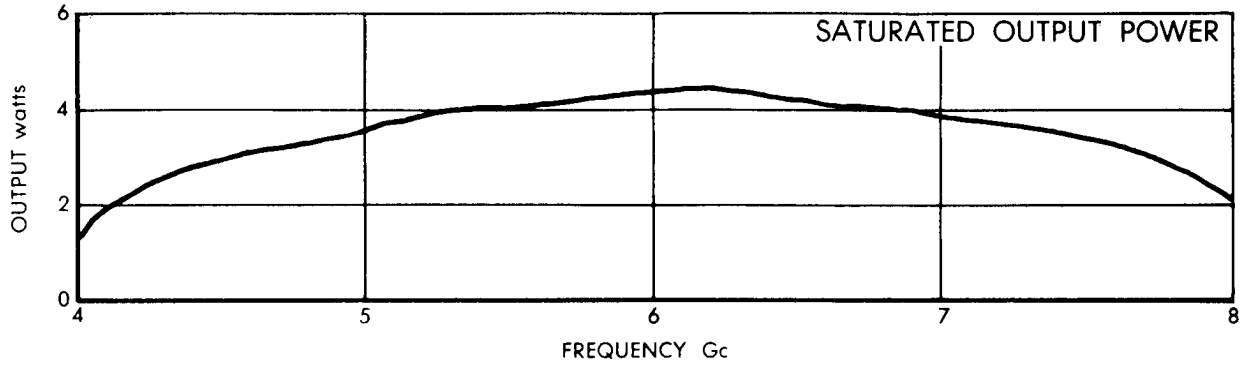
Altitude: 70,000 ft.

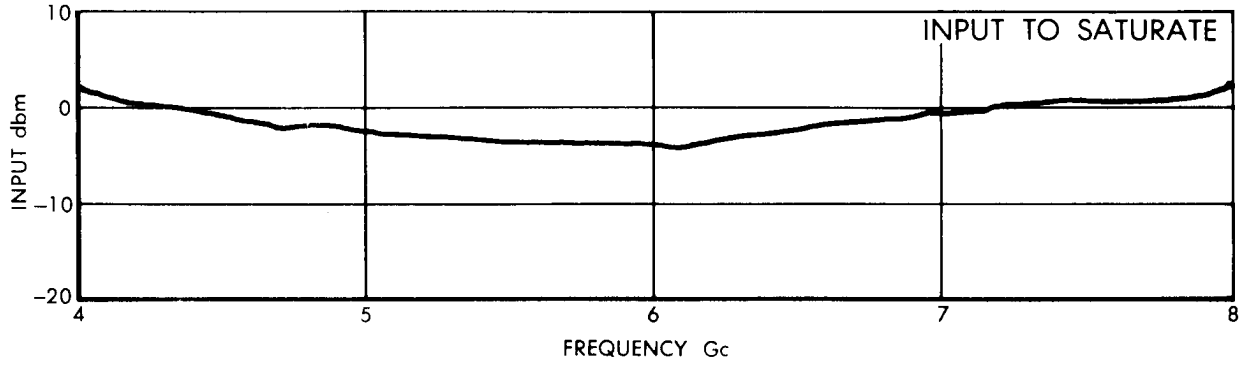
NOTE: This data should not be used for final equipment design.

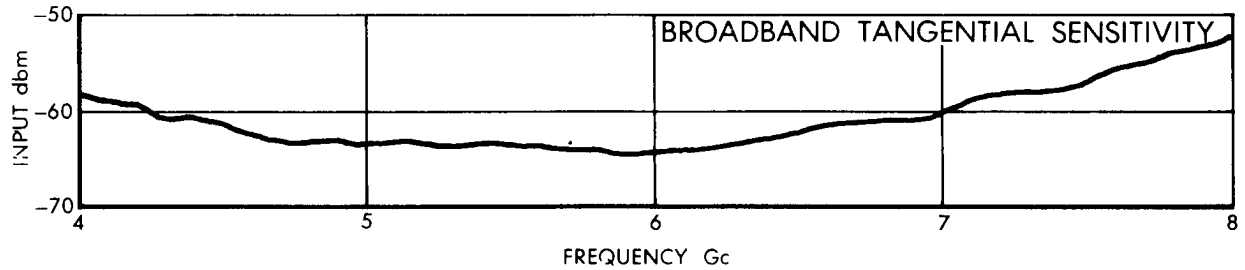
EM-1011 TYPICAL OPERATING CHARACTERISTICS

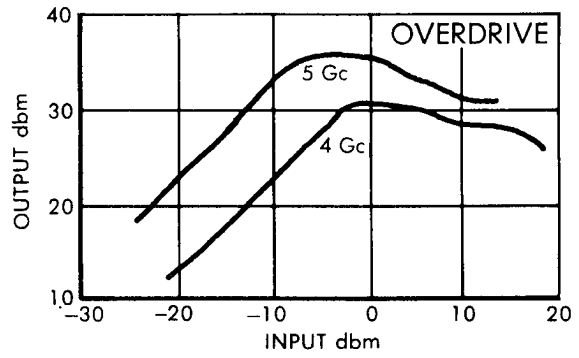
ANODE VOLTAGE	2550 Vdc	FOCUS VOLTAGE	−30 Vdc
CATHODE CURRENT	28 mAdc	FILAMENT VOLTAGE	6.3 Vac

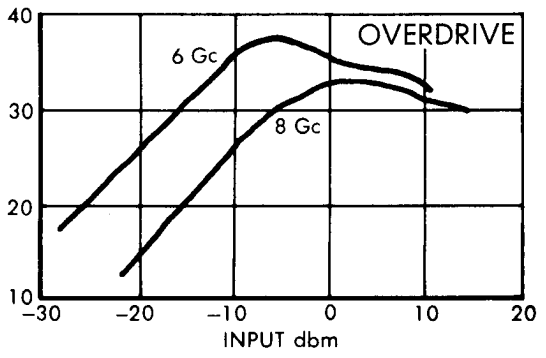












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CONNECTIONS

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