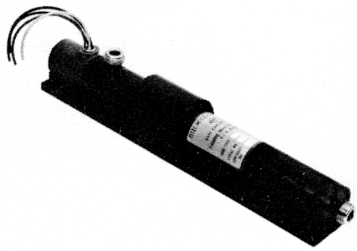
EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

EM-1031

TRAVELING WAVE TUBE
7.0 to 11.0 Gc.
5 Watts Min.
30 db Gain



TENTATIVE DATA FOR EIMAC EM-1031 TRAVELING WAVE TUBE

The Eimac EM-1031 is a very rugged, light weight power-amplifier traveling wave tube designed to operate under severe environmental extremes of shock, vibration, altitude and temperature. The EM-1031 utilizes ceramic and metal construction and is focused by a fully temperature-compensated periodic permanent magnet array. This tube will provide a minimum output power of 5 watts CW over the frequency range of 7.0 to 11.0 Gc with a nominal small signal gain of 30 db.

The integral heat sink/mounting flange allows operation to ambient temperatures of + 85°C without additional cooling. Flexible leads provide electrical connections to the tube. The integral heat sink/mounting flange permits this high temperature operation without additional cooling required for most applications.

APPLICATIONS:

Wide bandwidth, high power output and high gain make the EM-1031 ideally suited for radar augmentation or ECM applications in high performance aircraft or missile systems.

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	5 watts
Frequency Range	7.0 to 11.0 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*	3400 VOLTS
D-C FOCUS ELECTRODE VOLTAGE:* NEGATIVE WITH RESPECT TO CATHODE	40 VOLTS
D-C CATHODE CURRENT	40 MILLIAMPERES

TYPICAL OPERATING CHARACTERISTICS

Frequency	7.0 to 11.0 gigacycles
Minimum Output Power	5.0 watts
Small Signal Gain	30 decibels
D-C Beam Voltage*	3350 volts
D-C Cathode Current	34 milliamperes
D-C Focus Electrode Voltage*	−30 volts
D-C Focus Electrode Current	0 milliamperes

*All voltages referred to cathode.

APPLICATION

Cooling: The EM-1031 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.

The EM-1031 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

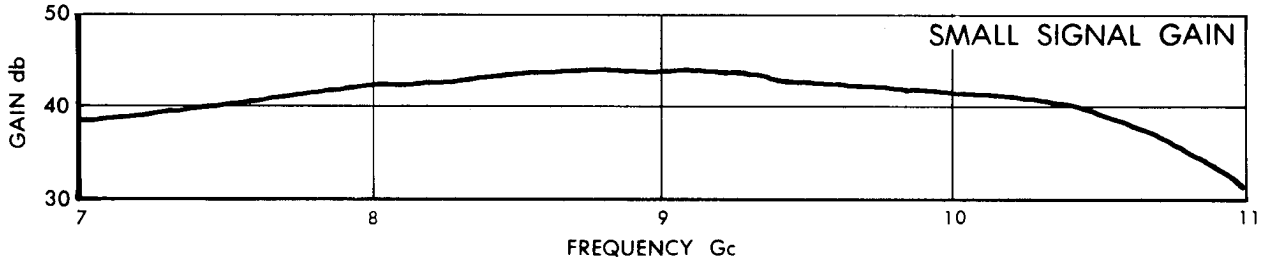
Altitude: 70,000 ft.

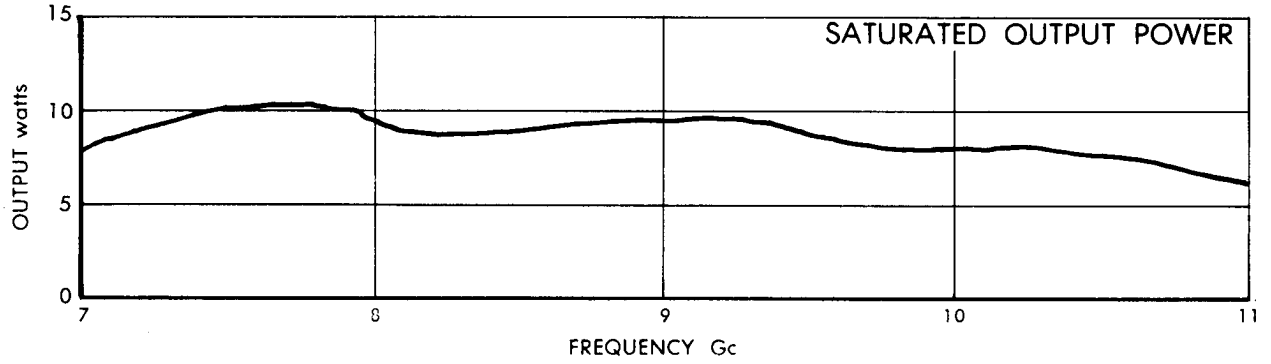
NOTE: This data should not be used for final equipment design.

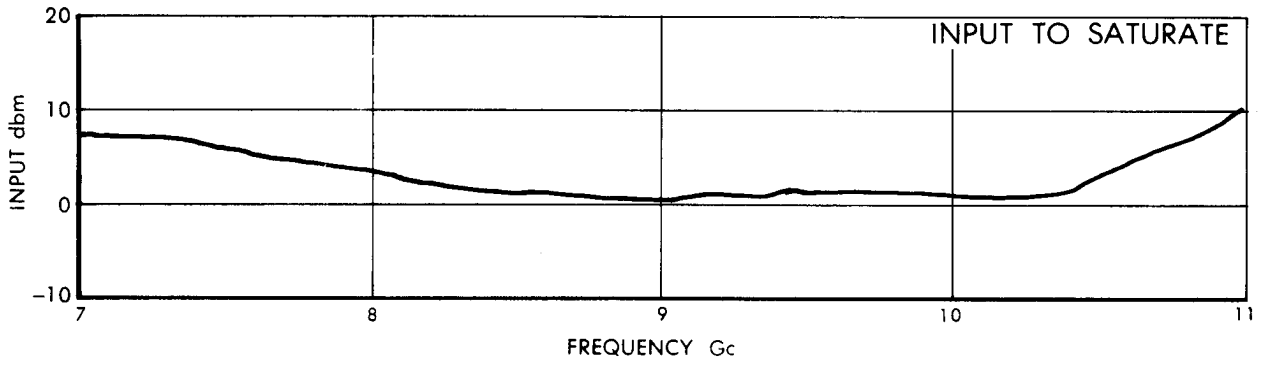
EM-1031 TYPICAL OPERATING CHARACTERISTICS

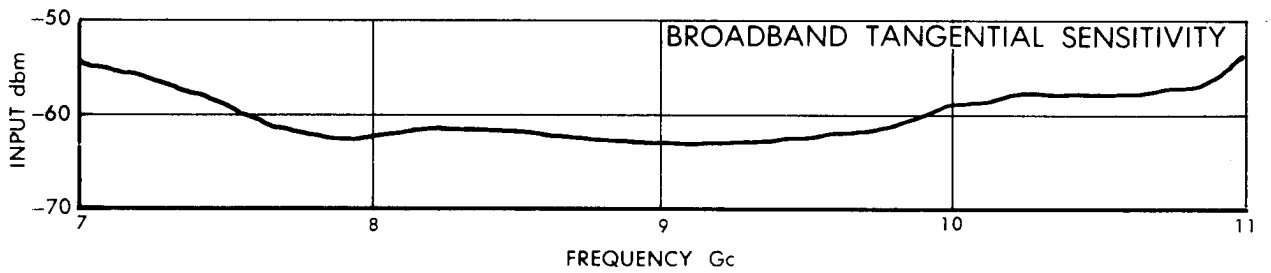
ANODE VOLTAGE 3350 Vdc
CATHODE CURRENT 34 mAdc

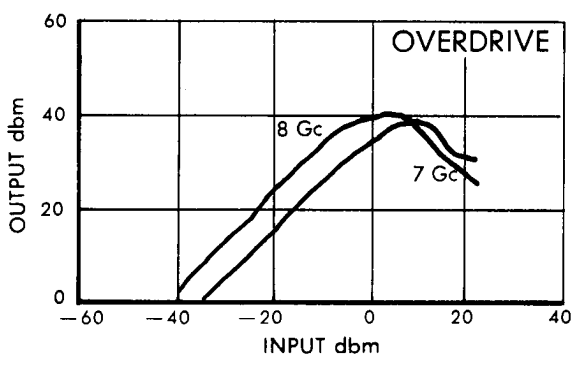
FOCUS VOLTAGE −30 Vdc
FILAMENT VOLTAGE 6.3 V

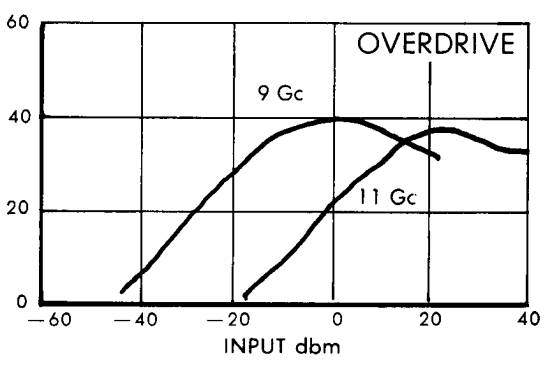












EM-1031

CONNECTIONS

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