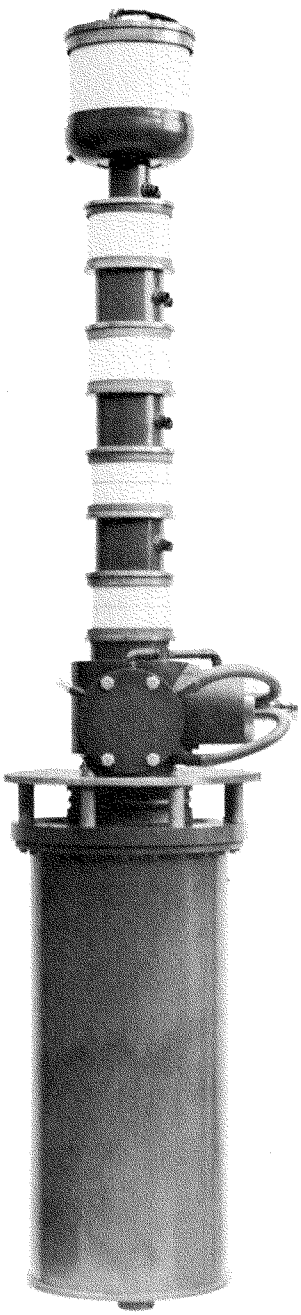
EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

5K210,000LQ

POWER-AMPLIFIER L-BAND KLYSTRON



The Eimac 5K210,000LQ is a high-gain, power-amplifier klystron designed for wide-band, tropospheric-scatter, communications service at frequencies from 755 to 985 megacycles. This klystron will deliver a CW output power of 75 kilowatts, with a minimum power gain of 42 decibels, and half-power band-width of 10 megacycles.

Five resonant cavities are used in the 5K210,000LQ. Four are external and one, the output cavity, is integral. Output coupling is achieved by means of a fixed loop and a quarter-wave, variable-impedance, coaxial coupling section which terminates in a waveguide transition.

The 5K210,000LQ has a beam microperveance of 2 which makes it possible to achieve adequate bandwidth for tropo-scatter applications without external loading of the intermediate cavities.

Eimac Klystron Amplifier Circuit Assembly H-132 has been designed for use with the 5K210,000LQ to cover the specified frequency range. This assembly includes a supporting structure, magnetic focusing coils, tuning cavities, adjustable load couplers for the input and output cavities, and a coaxial-to-waveguide transition.

CHARACTERISTICS

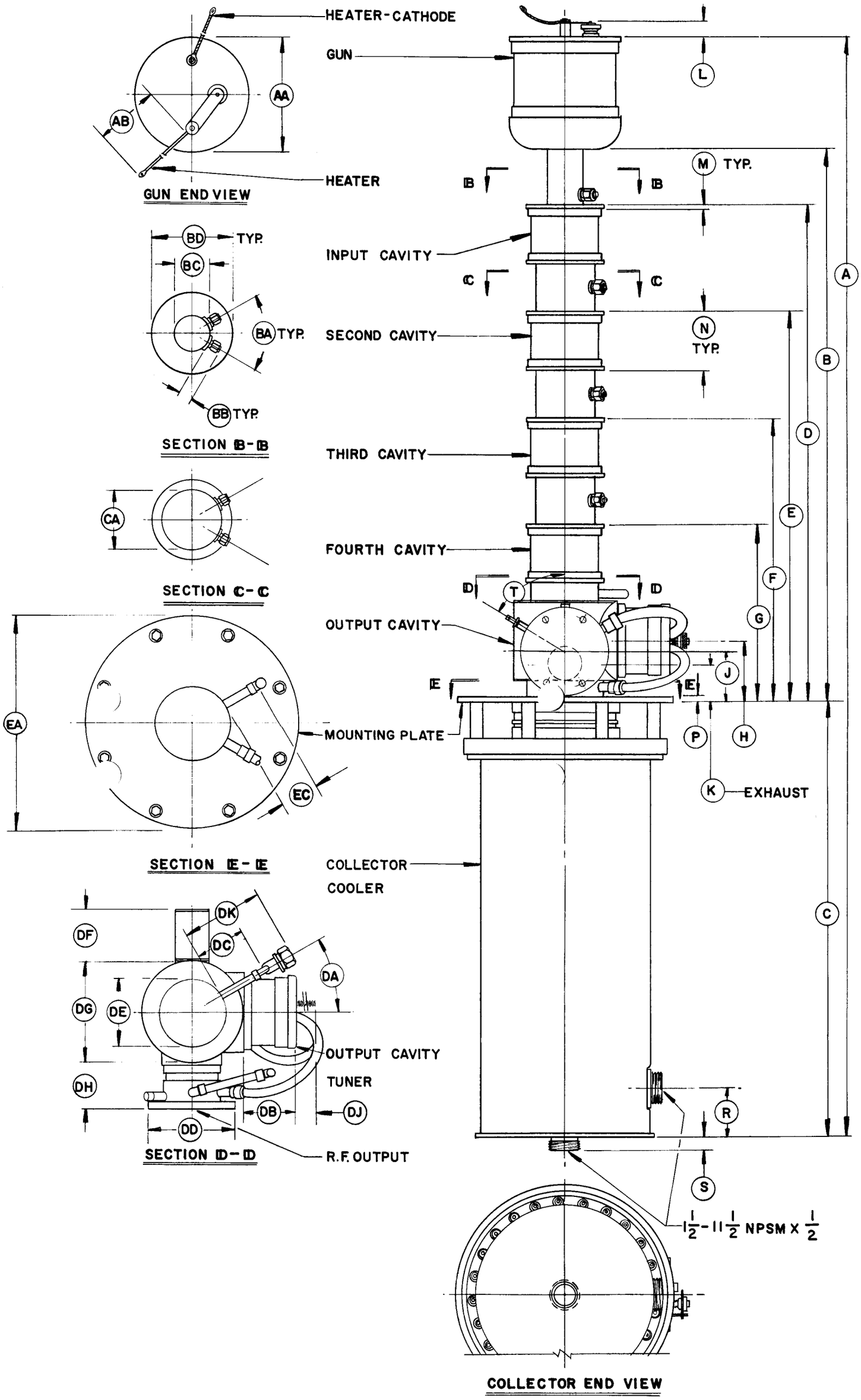
ELECTRICAL

Heater:	Voltage	15	volts
	Current	18	amperes
	Maximum Starting Current	36	amperes
Cathode:	EMA, Unipotential		
	Heating Time	5	minutes
Getter:	Voltage	5.2	volts
	Current	36	amperes
Power Gain (Wide Band)		42	decibels
Output Power		75	kilowatts
Frequency Range (H-132 Circuit Assembly)		755 to 985	megacycles

MECHANICAL

Operating Position	Axis vertical, cathode up	
R-F Coupling:		
Input	Type "N" coaxial fitting	
Output	WR-975 Waveguide	
Weight (5K210,000LQ Klystron)	380	pounds
Weight (H-132 Circuit Assembly)	1530	pounds
Cooling:	Water and Forced Air	

	Flow Rate	Pressure Drop
Second, Third and Penultimate Cavities (each)	25 cfm	1 inch H_2O
Body and Output Section	6 gpm	25 psi
Collector	50 gpm	25 psi



DIMENSIONAL DATA			
ITEM	NOM.	MIN.	MAX.
A	64.787		
B		32.244	32.786
C		25.361	25.613
D		29.066	29.544
E		22.854	23.252
F		16.642	16.960
G		10.430	10.668
H		3.576	3.728
J		2.951	3.103
K		2.206	2.348
L		29/32	1 3/32
M		.245	.255
N		3.481	3.523
P		23/64	25/64
R		2 53/64	2 59/64
S		21/32	23/32
T			
AA		6.620 DIA.	6.630 DIA.
AB		8	9
BA	60°		
BB	39/64		
BC	2.125 DIA.		
BD		4.620 DIA.	4.630 DIA.
CA	3.500 DIA.		
DA	30°		
DB		3	3 5/32
DC	2 15/32		
DD		5 11/64 DIA.	5 13/64 DIA.
DE	4.000 DIA.		
DF	4		
DG		6.000 DIA.	6.010 DIA.
DH		2 35/64	2 43/64
DJ		1.152	1.222
DK			
EA		12.748 DIA.	12.752 DIA.
EB			
EC			
ED			

5K210,000LQ KLYSTRON

MECHANICAL cont.

Maximum Dimensions of Klystron:		
Length	66.6	inches
Diameter	14	inches
Maximum Dimensions (Klystron and Circuit Assembly):		
Height	75	inches
Width	32	inches
Depth	47	inches

MAGNETIC-COIL POWER-SUPPLY REQUIREMENTS

Prefocus Coil:	Voltage	0 to 25	volts
	Current	0 to 2	amperes
Each of Four Body Coils:			
	Voltage	0 to 100	volts
	Current	0 to 12	amperes
Collector Coil:	Voltage	0 to 40	volts
	Current	0 to 5	amperes

MAXIMUM RATINGS

D-C BEAM VOLTAGE	30	KILOVOLTS
D-C BEAM CURRENT	10	AMPERES
D-C BODY CURRENT	300	MILLIAMPERES
A-C GETTER CURRENT	50	AMPERES
COLLECTOR DISSIPATION	210	KILOWATTS

TYPICAL OPERATION, WIDE-BAND, CW AMPLIFIER

RF Frequency	860	megacycles
Output Power	81	kilowatts
Driving Power	3	watts
Power Gain	44.3	decibels
D-C Beam Voltage	25	kilovolts
D-C Beam Current	7.52	amperes
Efficiency	43	percent
D-C Body Current	120	milliamperes
Half-Power Bandwidth	10.9	megacycles
Magnetic-Coil Currents:		
Prefocus coil	0.97	ampere
Body Coil #1	8.7	amperes
Body Coil #2	8.2	amperes
Body Coil #3	8.5	amperes
Body Coil #4	7.6	amperes
Collector Coil	3.6	amperes

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