

2M21

The Toshiba 2M21 is a fixed frequency continuous wave magnetron, designed to operate on the commercial alternating wave anode supply, in the 2425 to 2475 megacycle frequency range with an average power output of 950 watts.

The tube is required liquid cooling and an external magnetic field.

The output fitting is designed for coupling to the rectangular waveguide or the heating cavity directly.

The tube is intended for use in microwave heating and cooking application.

GENERAL DATA

Electrical :

Frequency	2450 $\pm$ 25 Mc
Heater voltage	9.3 V
Heater current	33 A
Cathode preheating time	240 sec
Cold heater resistance	0.028 Ω

Mechanical :

Physical dimensions	See outline drawing
Base and electrical connection	See outline drawing
Mounting position	Cathode vertical
RF coupling	See attached drawing
Magnetic field	External
Cooling	Liquid
Net weight	1.7 kg approx.
Type of cathode	Oxide unipotential

MAXIMUM RATINGS

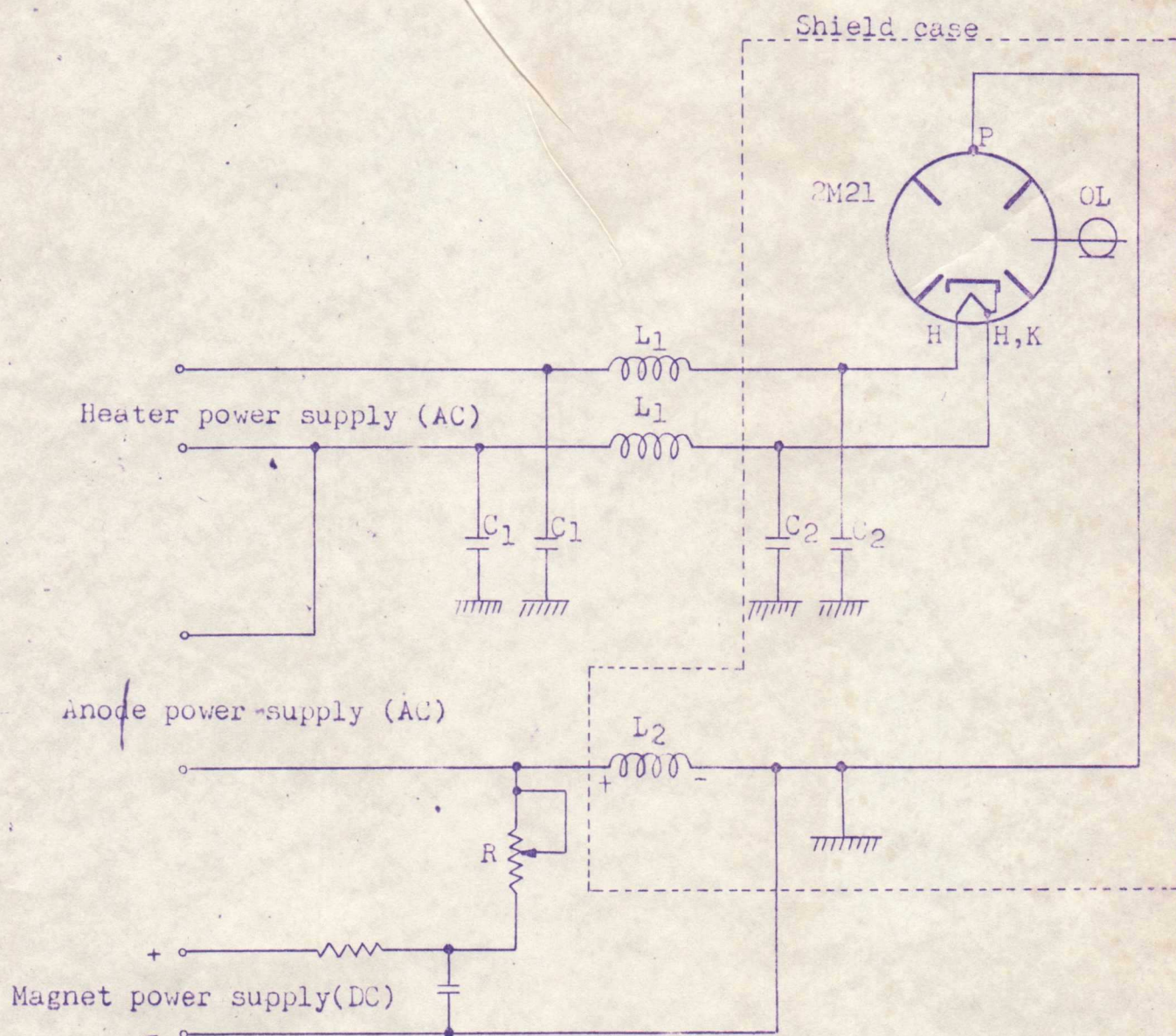
	Minimum	Maximum
Heater voltage (preheat)	8.6 V	10.0 V
Cathode preheating time	180 sec	-
Heater voltage (operate)	See attached drawing	
Peak anode voltage	-	6.5 kV
Peak anode current	-	1.6 A
Average anode current	-	295 mA _{dc}
Average anode power input	-	1900 W
Load VSWR	-	4
Anode temperature (see outline drawing measurement point)	-	100 °C
Cathode bushing temperature (see outline drawing measurement point)	-	300 °C

TYPICAL OPERATION

Frequency	Commercial AC 2450 Mc
Heater voltage (operate)	8.0 V
Peak anode voltage	6.3 kV
Average anode current	275 mA _{dc}
Average power output	950 W
Pulling factor (load VSWR 2)	12 Mc
Magnetic field strength (magnet No. 4514-800)	1450 G
Cooling quantity (water)	1 l/min

2M21

Operating Circuit

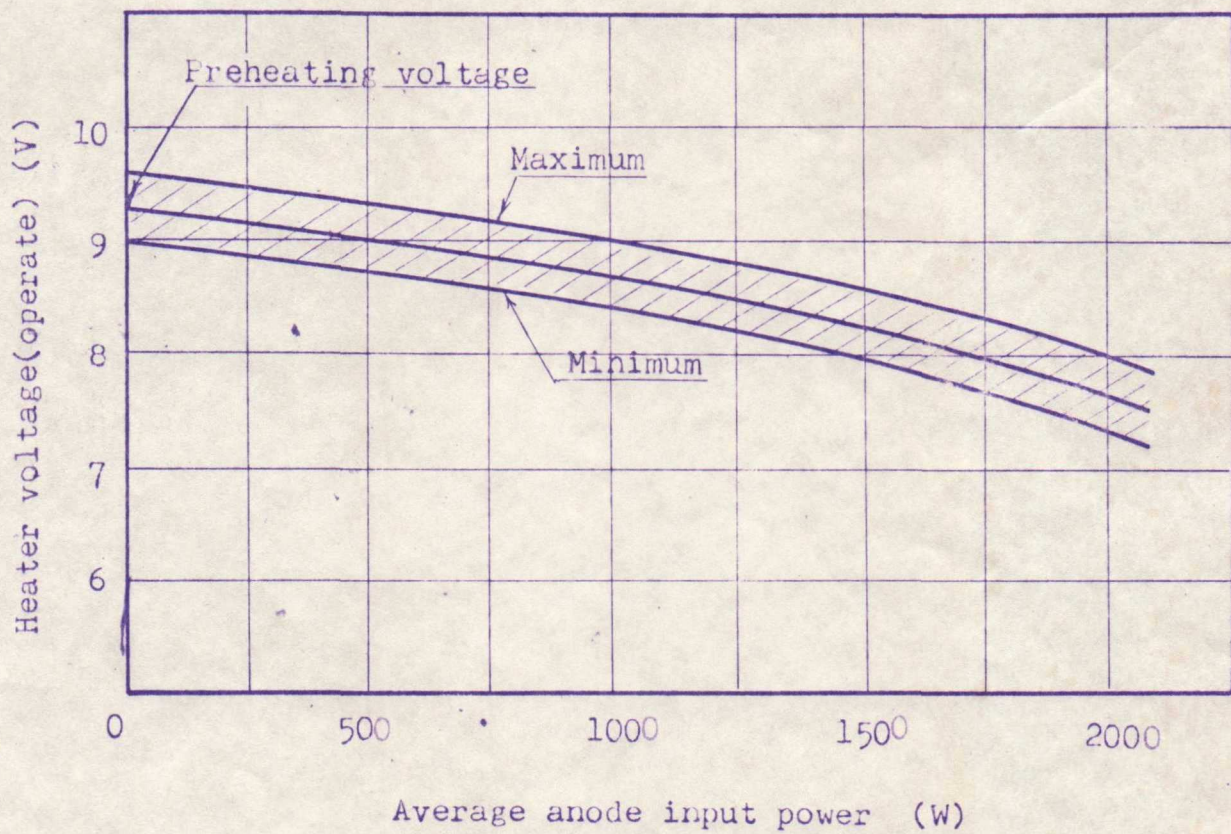

 $L_1 : 1.64 \mu\text{H} \text{ \#Z-515}$
 $L_2 : \text{Electro magnet \#4514-800}$
 $C_1 : 500 \text{ PF} \text{ \#Z-516A}$
 $C_2 : 95 \text{ PF}$

Toshiba**TECHNICAL DATA**

2M21

2M21

Heater voltage vs input power schedule



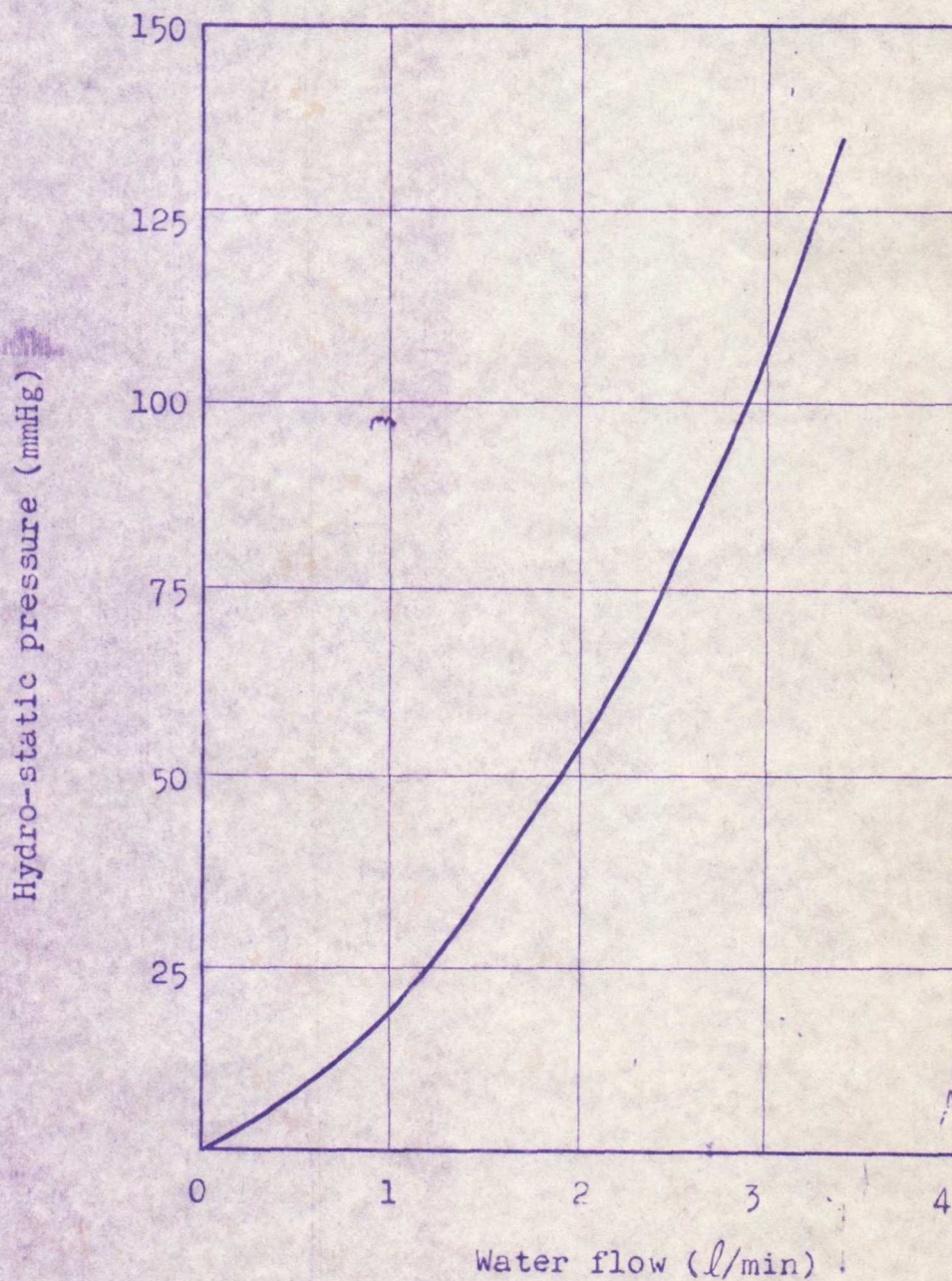
Toshiba

TECHNICAL DATA

2M21

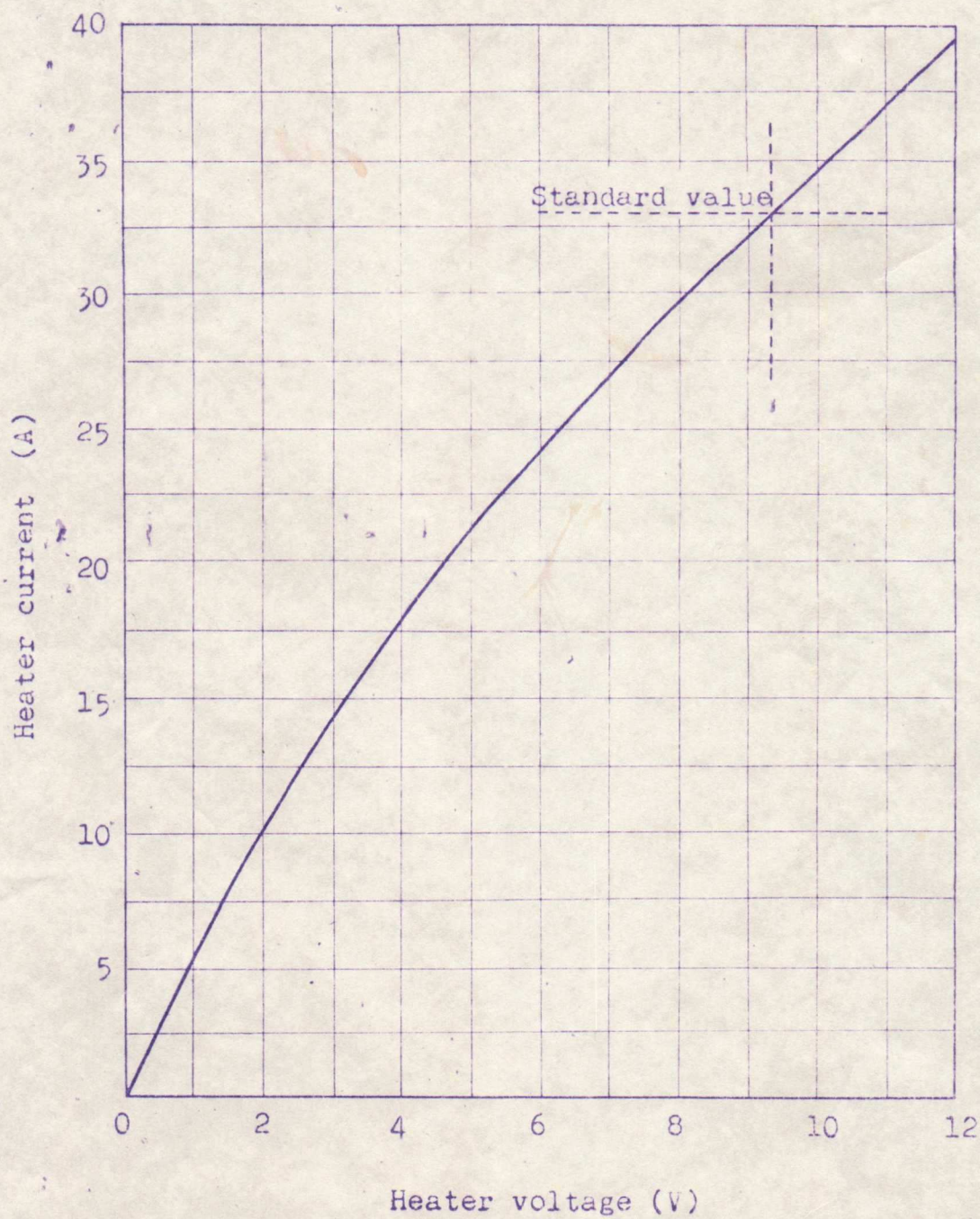
2M21

Water flow vs Pressure



2M21

Heater Characteristics





TECHNICAL DATA

Toshiba Magnetron

2M21

2M21

Operating Characteristics (Performance chart)

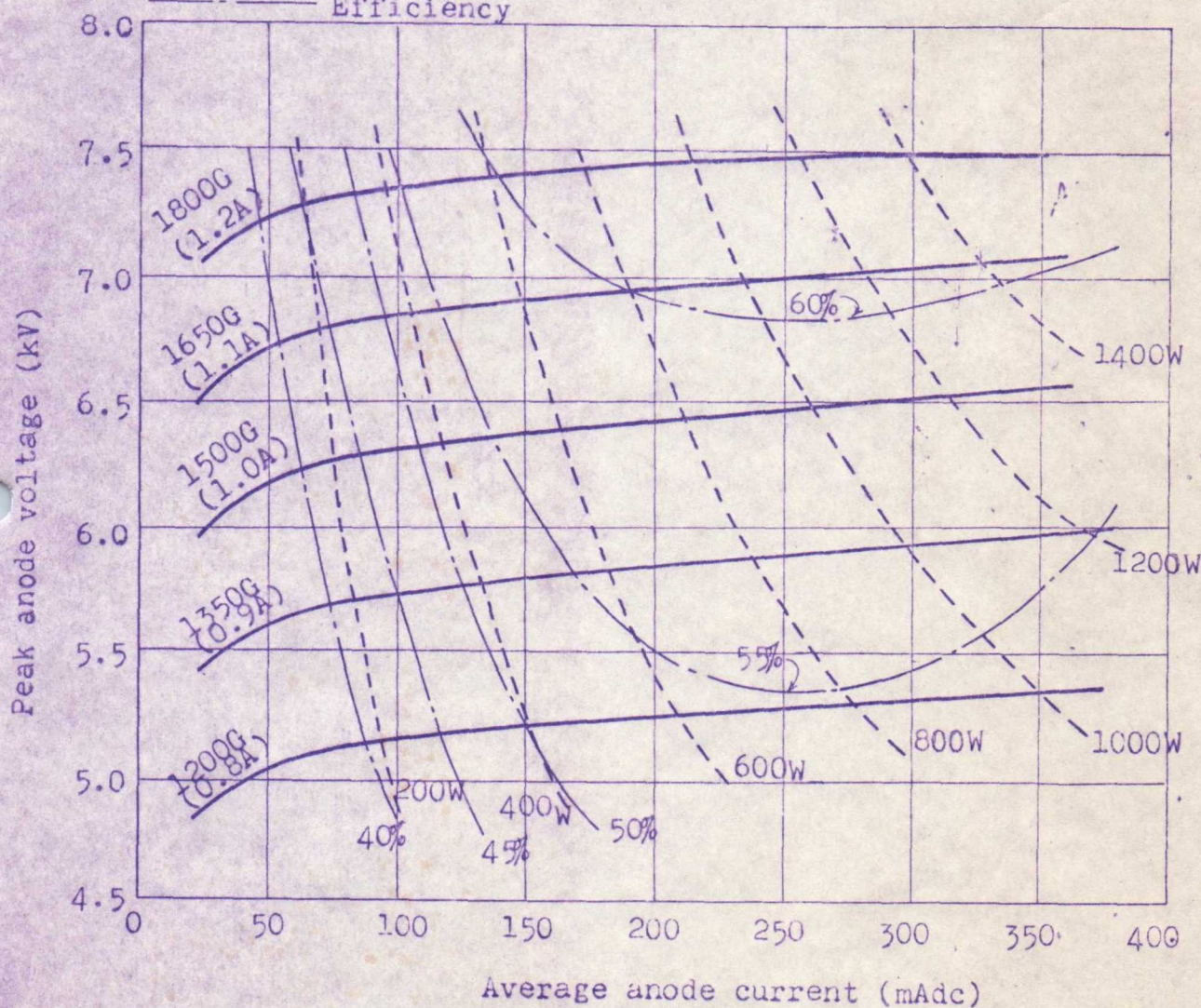
Operating conditions

Heater voltage : 8.0 V

Anode supply : commercial AC

Load VSWR : less than 1.1

----- Average power output
 ----- Magnetic flux density: In parenthesis, there is shown value of current through electro-magnet #4514-800.
 ----- Efficiency



Toshiba

TECHNICAL DATA

Toshiba Magnetron

2M21

2M21 Rieke Diagram

Operating conditions

Anode supply : Commercial AC

Heater voltage : 8.0 V

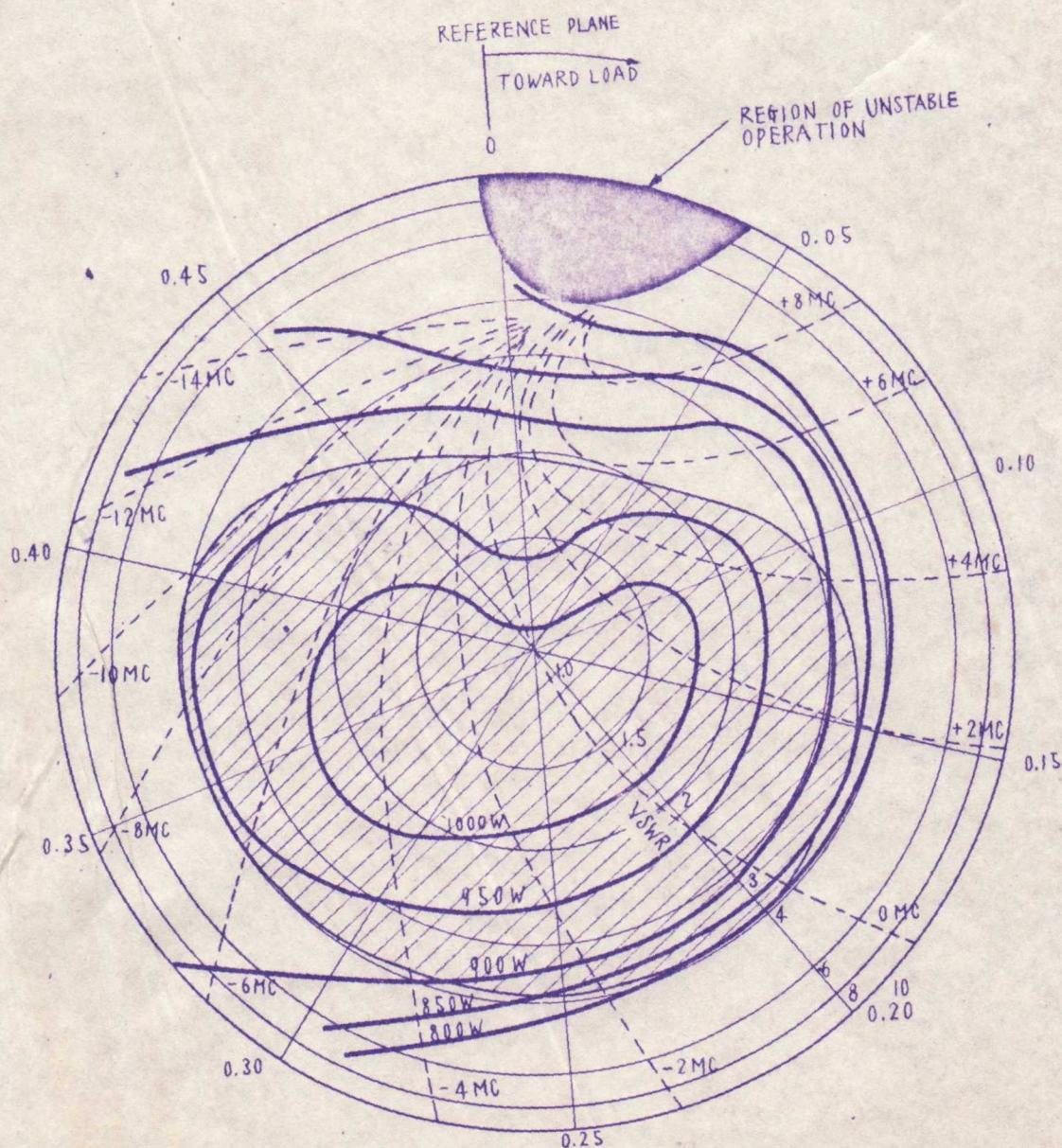
Average anode current : 275 mAdc

At matched load

Peak anode voltage : 6.3 kV

Frequency : 2450 Mc

Phase reference plane : axis of output antenna



—— AVERAGE POWER
 --- FREQUENCY

TOKYO SHIBAURA ELECTRIC CO., LTD.

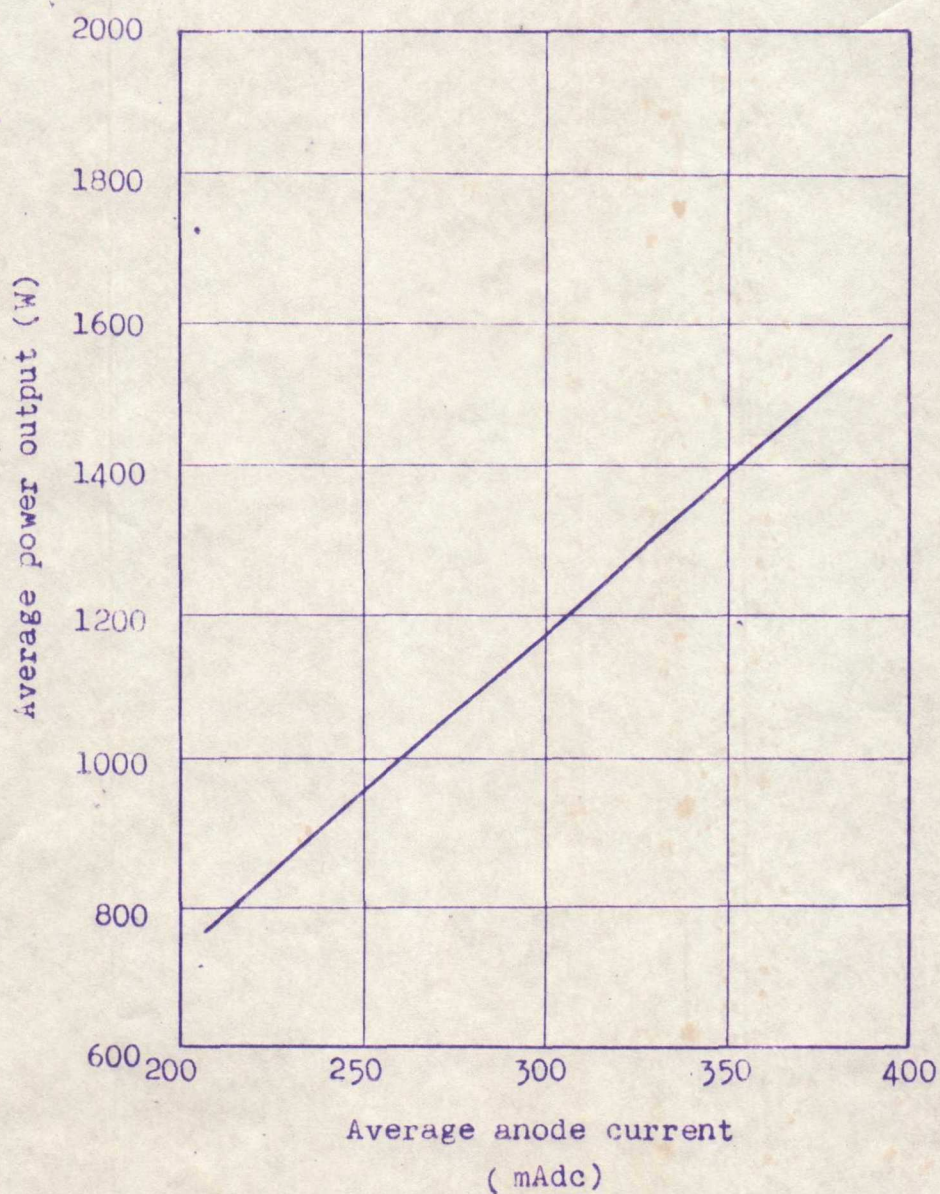
EM-2M21-2f

4-9-1964

2M21 Constant voltage characteristics

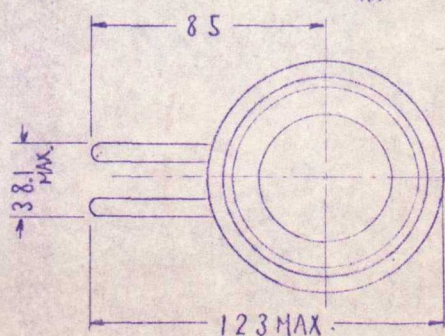
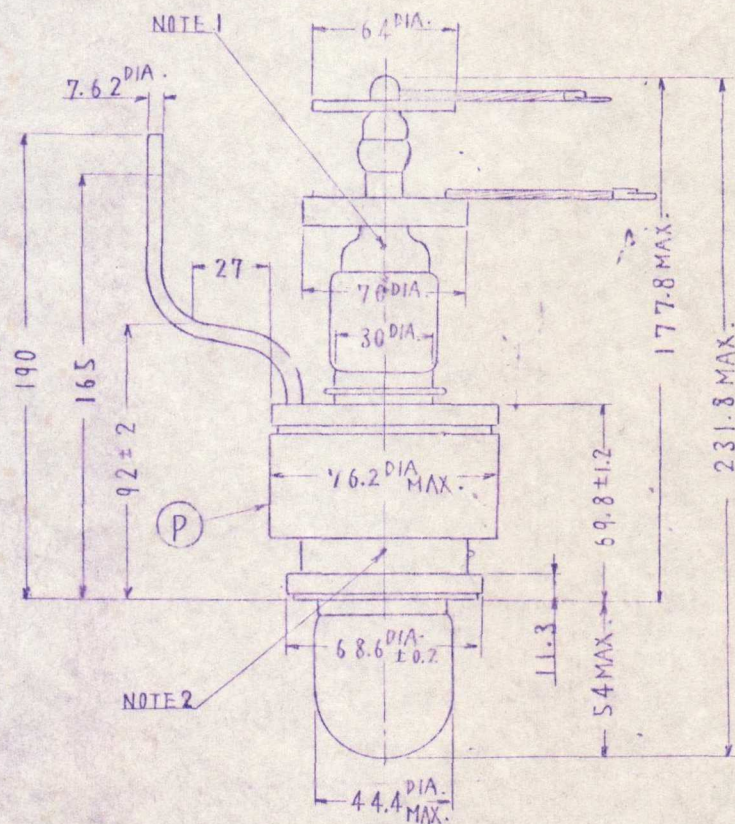
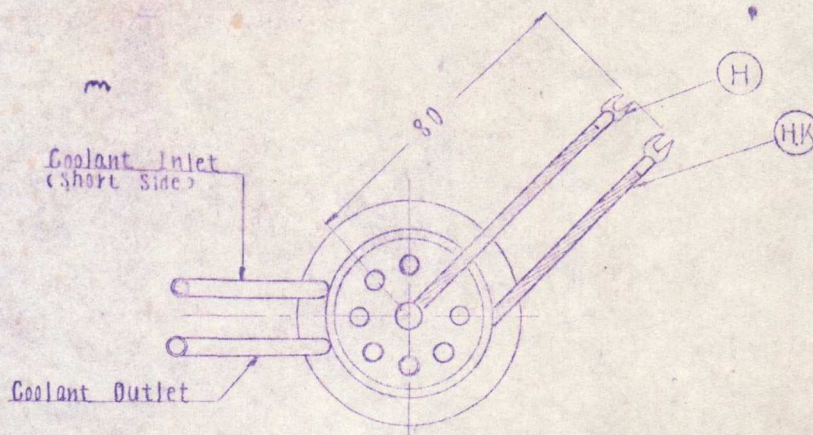
Operating conditions

Heater voltage : 8.0 V
Anode supply : Commercial AC
Peak anode voltage : 6.3 kV
Load VSWR : Less than 1.1



2M21 OUTLINE DRAWING.

Unit mm



NOTE 1. Cathode Bushing Temperature Measuring Point.

2. Anode Temperature Measuring point.

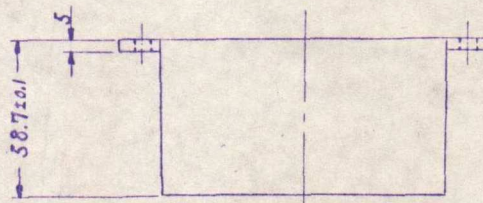
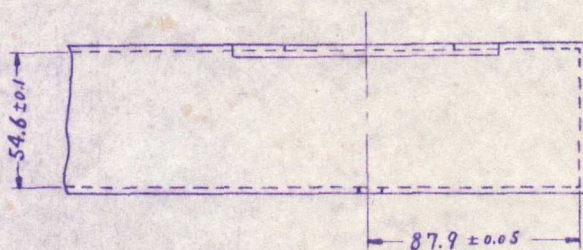
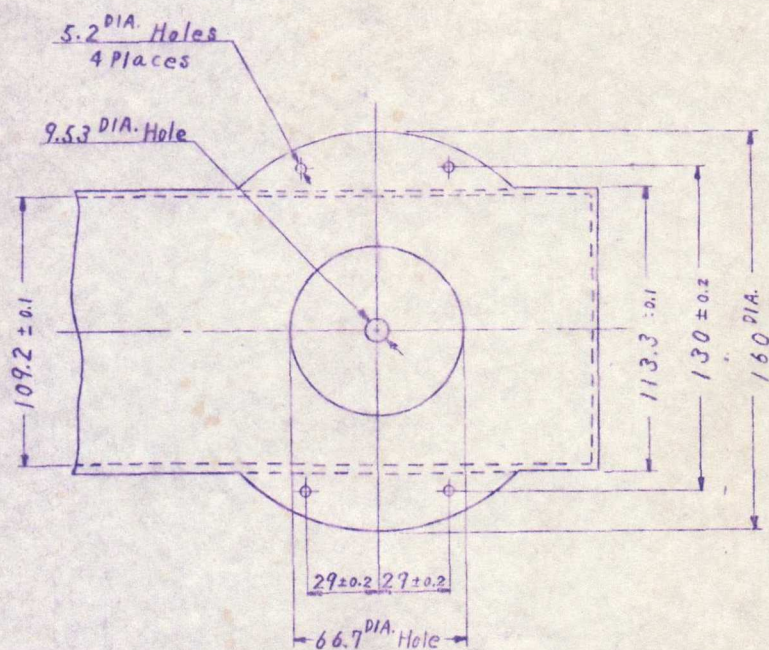
Toshiba

TECHNICAL DATA

2M21

2M21 RF. OUTPUT COUPLER

Unit mm



NOTE. The Waveguide System is WR 430

2 M 21 RECOMMENDED ELECTRO MAGNET.

Type No. 4514-800

Unit mm