

Release No. 702B

April 20, 1949

To
Tube Engineers:

On October 19, 1948 in Release No. 702 the
RMA Data Bureau announced the registration of the tube
type designation

5721

under the sponsorship of Raytheon Manufacturing Company.

On March 5, 1949 in Release No. 702A, sponsor
proposed the reregistration of the designation on the
basis of modification of the defining data, as there indi-
cated.

No valid objection having been lodged to this
proposal, reregistration has now been made of the type
designation

5721

on the basis of the following:

Respectfully yours,

RMA DATA BUREAU

By

LCFHörle/cap

RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.



R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

Release No. 702A

March 5, 1949

To
Tube Engineers:

On October 19, 1948 in Release No. 702 the RMA Data Bureau announced the registration of the tube type designation

5721

under the sponsorship of Raytheon Manufacturing Company.

Sponsor now proposes to reregister this type designation on the basis of the following modification of the defining data as given on Page 3, Release No. 702, under heading "Typical Operation:"

<u>Item</u>	<u>As registered</u>	<u>As proposed</u>
Reflector voltage (adjusted for Max. Power Output)	-60 to -600 volts	-50 to -625 volts
Thermal Compensation (tube without cavity)	15 kc/°C	25 kc/°C

Unless valid objection to this reregistration is lodged with the Data Bureau prior to April 5, 1949, the indicated reregistration will be made and appropriate announcement will follow.

Respectfully yours,

RMA DATA BUREAU

By

LCFHorle/cap

OCT 22 1948

NOTED

RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.



R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

Release No. 702

October 19, 1948

To
Tube Engineers:

Registration has been made by the RMA
Data Bureau of the vacuum tube type designation

5721 (Registration No. 1544)

as defined by the characteristics and ratings given
in the attached data on application of

Raytheon Manufacturing Company
Waltham, Mass.

Respectfully yours,

RMA DATA BUREAU

By J. J. [Signature]

LCHorle/cap
Enc.

TYPE 5721VELOCITY MODULATION REFLEX OSCILLATORGENERAL CHARACTERISTICS

The type 5721 is a wide range velocity modulation reflex oscillator for C.W. or pulsed operation. When used with mechanically tuned external cavity resonators of suitable dimensions, the recommended operating range is between 2000 and 12000 megacycles. The special high impedance modulation grid permits pulsed operation from a low voltage source.

ELECTRICAL DATA - GENERAL

	<u>Min.</u>	<u>Bogey</u>	<u>Max</u>
Heater Voltage	5.8	6.3	6.8 volts A.C.-D.C.
Heater Current at Bogey Voltage	---	.6	--- ampere
Heater Cold Resistance	1.6	1.725	1.85 ohms
Cathode Heating Time	1.0	---	--- minute

MECHANICAL DATA - GENERAL

Cathode	Oxide coated, unipotential
Base	Special miniature 4 pin - fits Amphenol Type 78-S4S miniature socket
Connections:	
Base	Pin 1 - Control electrode
	Pin 2 - Heater
	Pin 3 - Cathode
	Pin 4 - Heater
Lower Ring	1st resonator
Upper Ring	2nd resonator
Miniature Banana Jack	Reflector

MECHANICAL DATA - GENERAL (CONT.)

Maximum Overall Dimensions	Height 1.27 inches Diameter .375 inches
Mounting	Any Position
Cooling	Conduction - 20 watts. The resonator rings should make direct contact with fast with metal of water cooled cavity.
Net Weight	1.25 ounces

ABSOLUTE - MAXIMUM RATINGS (C.W. OSCILLATOR)

Resonator Voltage	±250 volts
Resonator Current	20 milliamperes
Control Electrode Voltage - Maximum Positive	+25 volts
Maximum Negative	-25 volts
Control Electrode Current	5 milliamperes
Reflector Voltage	-800 max. -15 min.
Reflector Current	1 milliamperes
Heater-Cathode Voltage	±145 volts
Dissipation (exclusive of heater power)	20 watts
Temperature of Lower Ring	200°C.

TYPICAL OPERATION

Control Cavity as per Figure 1	
Reflector Mode	2-5, 4
Cavity Mode	4, 2
Frequency	1290 - 8310 megacycles

TYPICAL OPERATION (Cont.)

Resonator Voltage	2000 volts
Cathode Current (exclusive of control electrode current)	20 milliamperes
Reflector Voltage (Adjusted for maximum power output)	-60 to -600 volts
Reflector Current	0 milliamperes
Cont. of Electrode Voltage (adjust for 20 milliamperes cathode current)	+5 to +20 volts
Control Electrode Current	5 milliamperes maximum
Control Grid Cut-Off Voltage	-5 to -15 volts
Electronic Tuning (between half power points)	12 megacycles minimum
Modulation Sensitivity (8340 megacycles)	0.25 Mo/v.
Thermal Compensation (tube without cavity)	15 Kp/°C
Average Power Output (a.w.)	160 milliwatts
Minimum Power Output (a.w.)	100 milliwatts
Maximum Power Output (a.w.)	250 milliwatts
Average Efficiency	0.80 per cent

AUXILIARY OPERATION A.

Coaxial cavity as per Figure 2

Reflector Mode	$2\frac{3}{4}$
Cavity Mode	$\frac{1}{4}$
Frequency	2000 - 5000 megacycles
Resonator Voltage	700 volts
Cathode Current	13 milliamperes

AUXILIARY OPERATION A. (Cont.)

Reflector Voltage (adjusted for maximum power output)	-40 to -600 volts
Reflector Current	0 milliamperes
Control Electrode Voltage (adjusted for 25 milliamperes of cathode current)	+5 to +20 volts
Control Electrode Current	5 milliamperes maximum
Control Electrode Cut-off Voltage	-5 to -15 volts
Average Power Output (a.w.)	80 milliwatts
Average Efficiency	0.88 per cent

AUXILIARY OPERATION B.

Coaxial Cavity	Special design required
Reflector Mode	3-3/4
Cavity Mode	3/4
Frequency	7500 - 12000 megacycles
Resonator Voltage	1250 volts
Cathode Current	20 milliamperes
Reflector Voltage (adjusted to maximum power output)	-60 to -1000 volts
Reflector Current	0 milliamperes
Control Electrode Voltage (adjusted for 20 milliamperes of cathode current)	+10 to +20 volts
Control Electrode Current	5 milliamperes maximum
Control Electrode Cut-off Voltage	-5 to -15 volts
Average Power Output (a.w.)	30 milliwatts
Efficiency Average	0.2 per cent

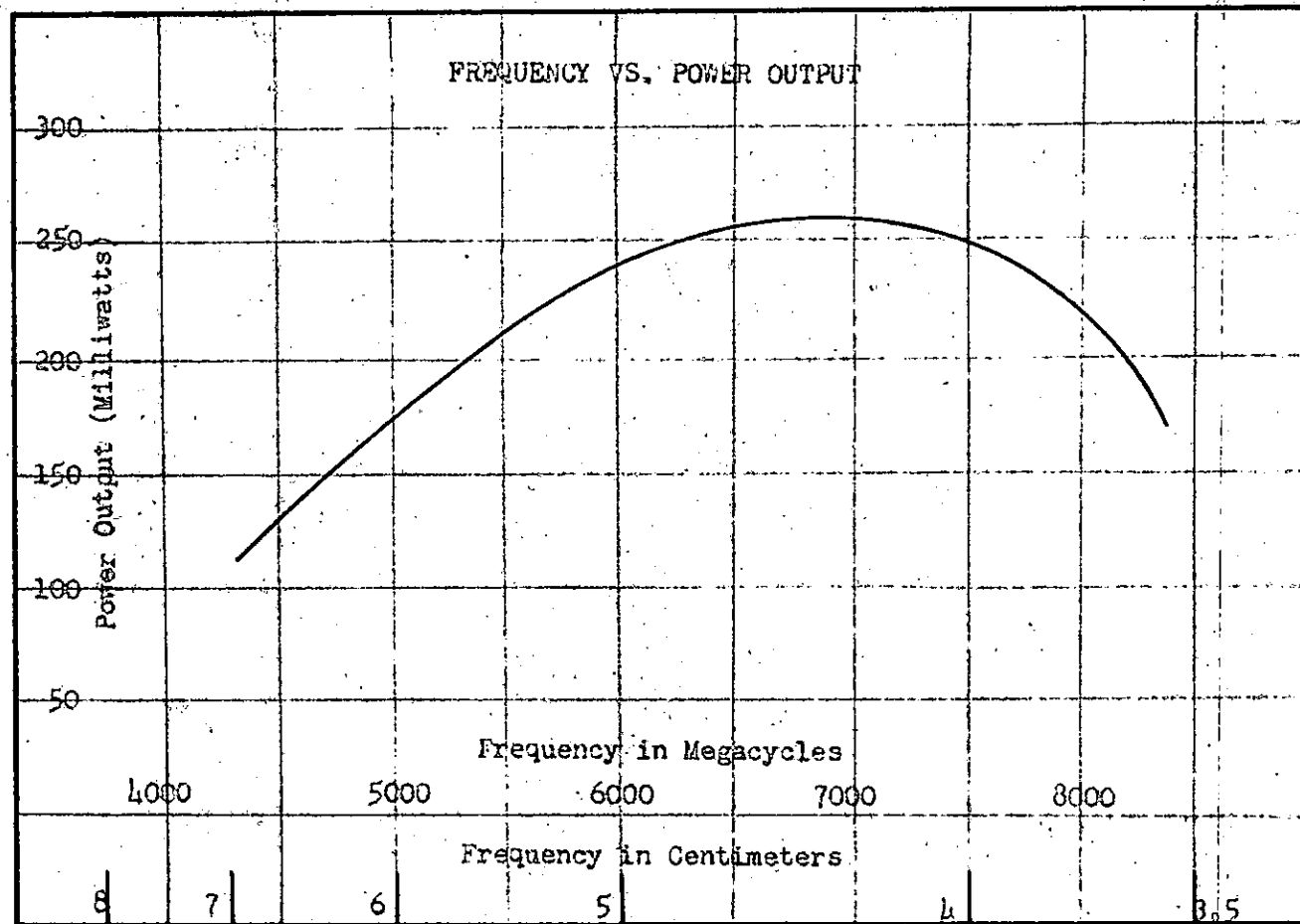
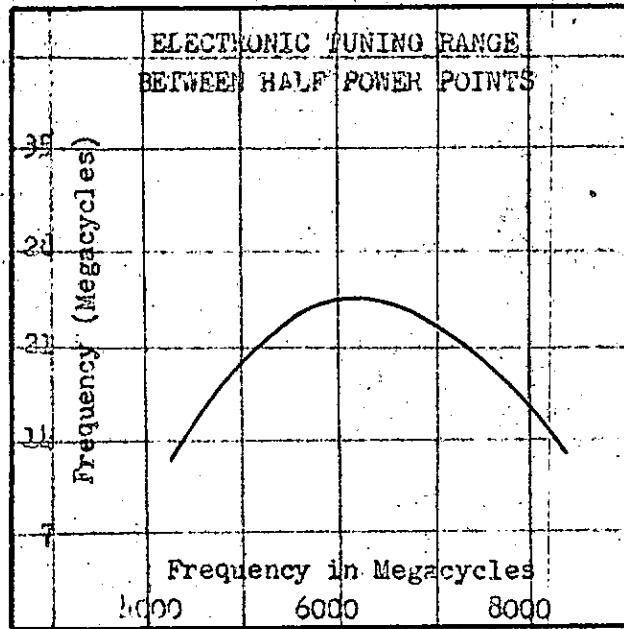
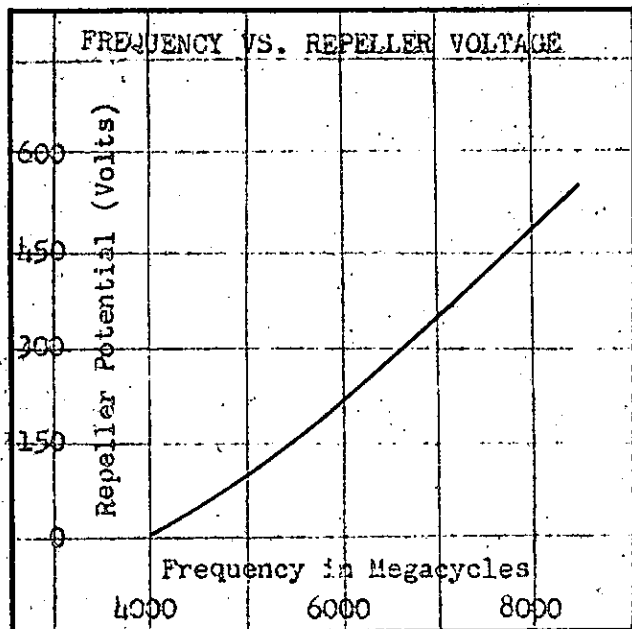
PULSED OPERATION

Under pulsed operating conditions, where the pulse repetition rate is from 40 to 4000 pulses per second and the pulse duration is from 0.5 to 30.0 microseconds, the peak pulse power output will be no more than 1.2 db below the d.c. level.

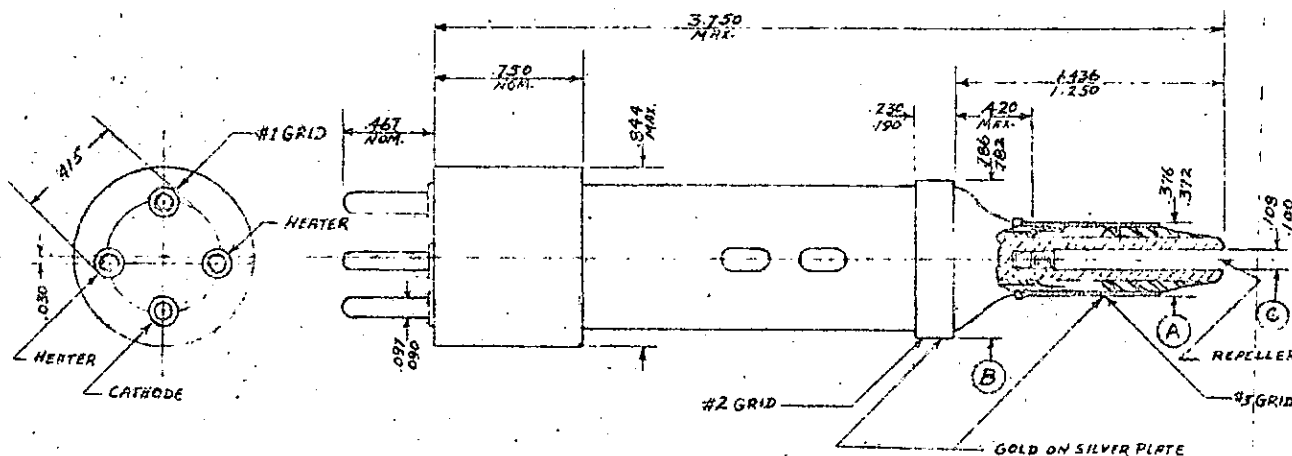
OPERATING PRECAUTIONS

1. Allow heater to warm up for 30 seconds before applying other voltages.
2. Application of beam voltages must not precede the application of any of the other voltages.
3. The Type 512 is a velocity modulation tube intended for use as a wide range modulator in mechanically tunable cavities. The choice of cavity dimensions is determined by the possibility of exciting TE_{nm} or TE_{nm} modes. Although a non-contacting plunger is recommended for optimum performance, cavity design is simplified by the use of a contacting plunger such as is shown in fig. 2. For the design of non-contacting plungers see W. H. Huggins, Proc. Inst. Radi. Eng., 15, 205 (1947).
4. Under conditions of vigorous oscillation and light loading it is possible a excessive repeller current (of the order of one milliampere) will be drawn on the long wave length end of the range. No damage will be caused by this current except in cases where repeller circuit resistance will cause the repeller potential to approach or become greater than zero volts.

ELECTRICAL CHARACTERISTICS
 TYPICAL OPERATION IN 2 3/4 REPELLER MODE AND 3/4 CAVITY MODE



OUTLINE DRAWING
TYPE 5721



NOTES

- A - REFERENCE DIAMETER
- B - THIS DIAMETER TO BE CONCENTRIC TO "A" WITHIN .005"
- C - THIS DIAMETER TO BE CONCENTRIC TO "A" WITHIN .015"

TYPICAL COAXIAL CAVITY FOR TYPE 5721

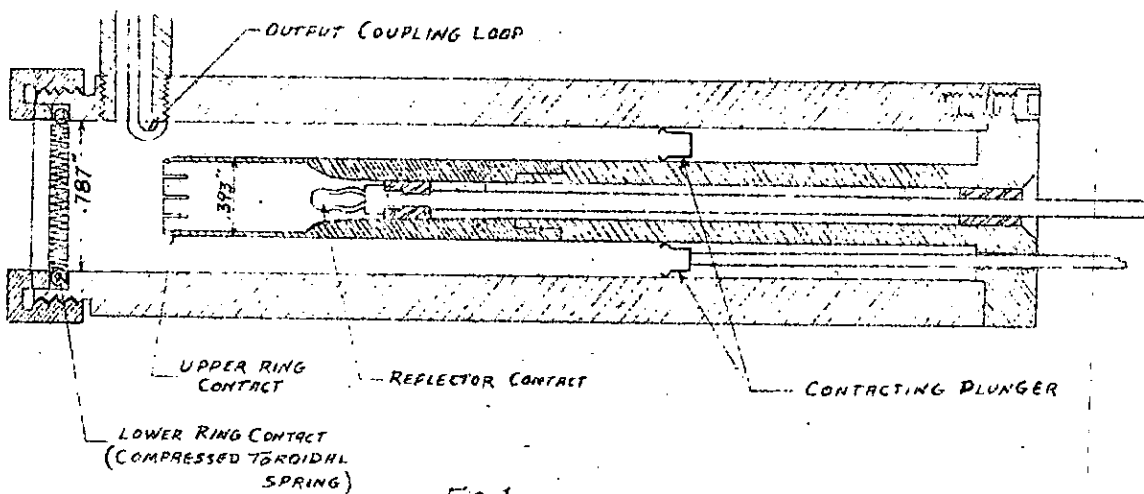


FIG. 1