

Beam Power Tube

QUICK-HEATING FILAMENT
 90 WATTS CW INPUT (1CAS) UP TO 60 Mc
 60 WATTS CW INPUT (1CAS) AT 175 Mc

For Use in Push-to-Talk Mobile and Emergency-Com-
 munications Equipment as an RF Power-Amplifier Tube

GENERAL DATA

Electrical:

Filament, Coated:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.65	amp
Heating time.	1	sec

Transconductance, for plate volts = 200,

grid-No.2 volts = 200, and plate ma. = 100	6000	μmhos
---	------	-------

Mu-Factor, Grid No.2 to Grid No.1 for

plate volts = 200, grid-No.2 volts = 200, and plate ma. = 100.	4	
---	---	--

Direct Interelectrode Capacitances:

Grid No.1 to plate.	0.24 max.	μμf
-----------------------------	-----------	-----

Grid No.1 to filament & grid No.3 & internal shield, grid No.2, and base sleeve	11	μμf
---	----	-----

Plate to filament & grid No.3 & internal shield, grid No.2, and base sleeve	8.5	μμf
---	-----	-----

Mechanical:

Operating Position. Vertical, base down or up, or
 Horizontal with pins 3 and 7 in vertical plane

Maximum Overall Length. 3-13/16"

Seated Length. 3-1/8" ± 1/8"

Maximum Diameter. 1-21/32"

Bulb. T12

Cap. Small (JEDEC No.C1-1)

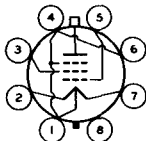
Socket. Standard Octal 8-Contact

Base. Small Wafer Octal 8-Pin with "770" Sleeve
 (JEDEC Group 1, No.B8-150)

Basing Designation for BOTTOM VIEW. 7CL

Pin 1 - Filament Tap,
 Grid No.3,
 Internal
 Shield

Pin 2 - Filament
 Pin 3 - Grid No.2



Pin 4 - Same as Pin 1
 Pin 5 - Grid No.1
 Pin 6 - Same as Pin 1
 Pin 7 - Filament
 Pin 8 - Base Sleeve
 Cap - Plate



4604

RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy[▲] and RF POWER AMPLIFIER — Class C FM Telephony

Maximum ICAS[®] Ratings, Absolute-Maximum Values:

	<i>Up to 60 Mc</i>	
DC PLATE VOLTAGE.	750 max.	volts
DC GRID-No.2 VOLTAGE.	250 max.	volts
DC GRID-No.1 VOLTAGE.	-150 max.	volts
DC PLATE CURRENT.	150 max.	ma
DC GRID-No.1 CURRENT.	4 max.	ma
PLATE INPUT	90 max.	watts
GRID-No.2 INPUT	3 max.	watts
PLATE DISSIPATION	25 max.	watts
BULB TEMPERATURE (At hottest point on bulb surface)	220 max.	°C

Typical Operation:

As amplifier at 175 Mc

DC Plate Voltage.	400	volts
DC Grid-No.2 Voltage*	190	volts
From a series resistor of	18000	ohms
DC Grid-No.1 Voltage [◆]	-60	volts
From a grid resistor of	30000	ohms
DC Plate Current.	150	ma
DC Grid-No.2 Current.	11	ma
DC Grid-No.1 Current (Approx.)	2	ma
Driving Power (Approx.)	4.5	watts
Power Output (Approx.)	30	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance [↓]	30000 max.	ohms
---	------------	------

[▲] Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

● Intermittent Commercial and Amateur Service.

★ Obtained preferably from a separate source, or from the plate supply voltage with a voltage divider, or through a series resistor. A series grid-No.2 resistor should be used only when the 4604 is used in a circuit which is not keyed. Grid-No.2 voltage must not exceed 400 volts under key-up conditions.

◆ Obtained from fixed supply, by grid-No.1 resistor, or by combination methods.

↓ When grid No.1 is driven positive and the 4604 is operated at maximum ratings, the total dc grid-No.1-circuit resistance should not exceed the specified value of 30,000 ohms. If this value is insufficient to provide adequate bias, the additional required bias must be supplied by a fixed supply.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	<i>Min.</i>	<i>Max.</i>	
Filament Current at 6.3 volts ac.	0.59	0.71	amp



Direct Interelectrode Capacitances:			
Grid No.1 to plate.	-	0.24	$\mu\mu\text{f}$
Grid No.1 to filament & grid No.3 & internal shield, grid No.2, and base sleeve	9.5	12.5	$\mu\mu\text{f}$
Plate to filament & grid No.3 & internal shield, grid No.2, and base sleeve	7.3	9.5	$\mu\mu\text{f}$
Plate Current [◆]	46	94	ma
Grid-No.2 Current [◆]	-	5.5	ma
Useful Power Output [◆]	47	-	watts

◆ with 6.3 volts ac on filament, dc plate voltage of 300 volts, dc grid-No.2 voltage of 200 volts, and dc grid-No.1 voltage of -29 volts. ←

◆ In a single-tube, self-excited-oscillator circuit, and with 6.3 volts ac on filament, dc plate voltage of 600 volts, dc grid-No.2 voltage of 200 volts, grid-No.1 resistor of $30,000 \pm 10\%$ ohms, dc plate current of 100 to 112 ma., dc grid-No.1 current of 2 to 2.5 ma., and frequency of 15 Mc.

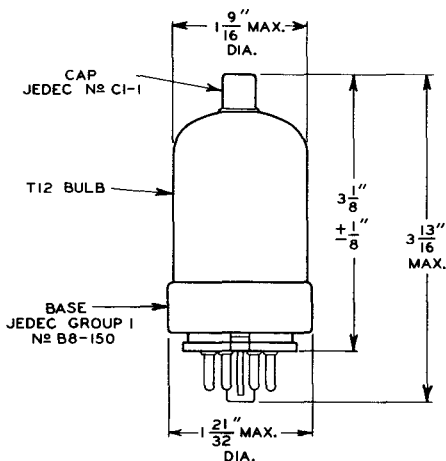
OPERATING CONSIDERATIONS

The *bulb* becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided around the 4604.

The *plate* shows no color when the 4604 is operated at full ratings under ICAS conditions. Connections to the plate should be made with a flexible lead to prevent any strain on the seal at the cap.

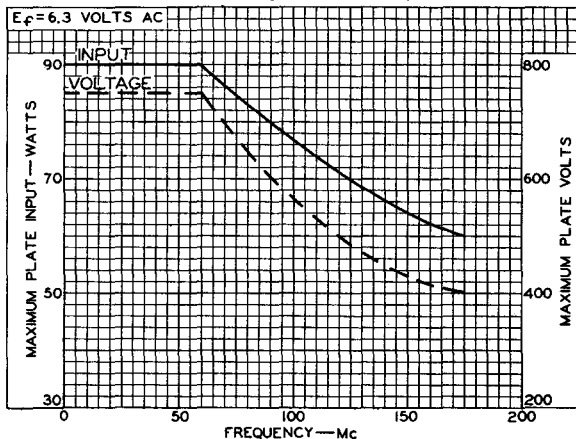
← Indicates a change.





92CS-9625R4

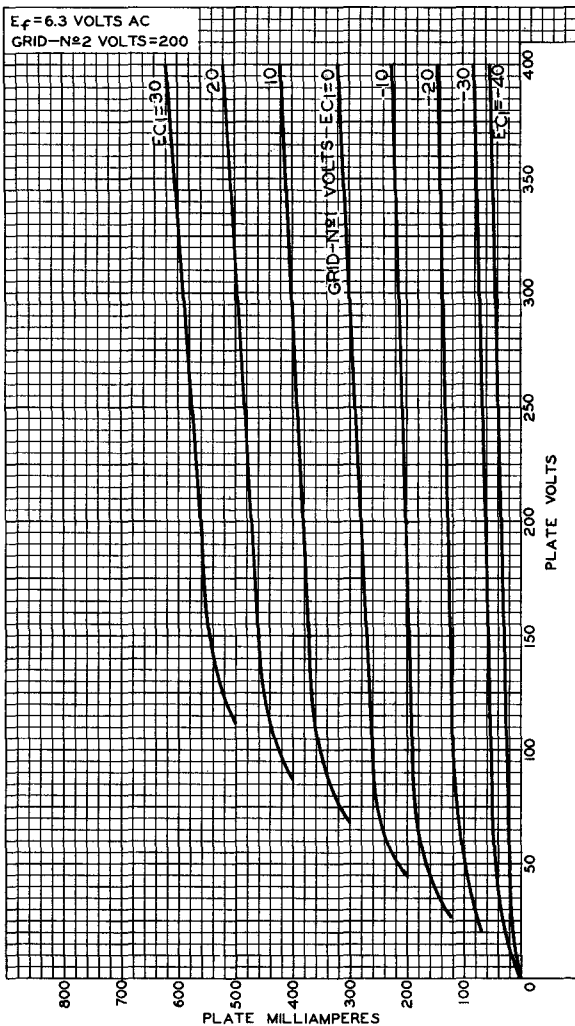
RATING CHART ICAS Class-C Telegraphy or Telephony Service



92CS-1087R1



TYPICAL PLATE CHARACTERISTICS



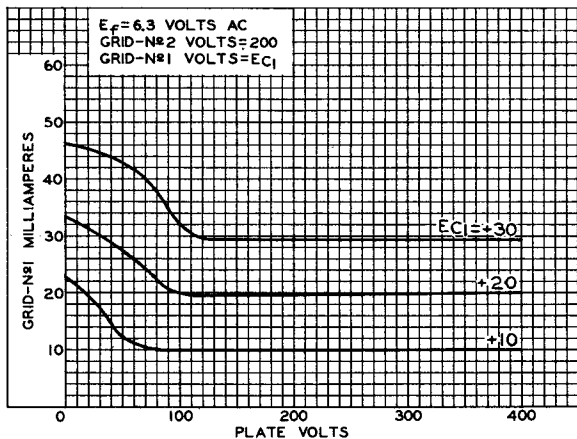
92CM-10813



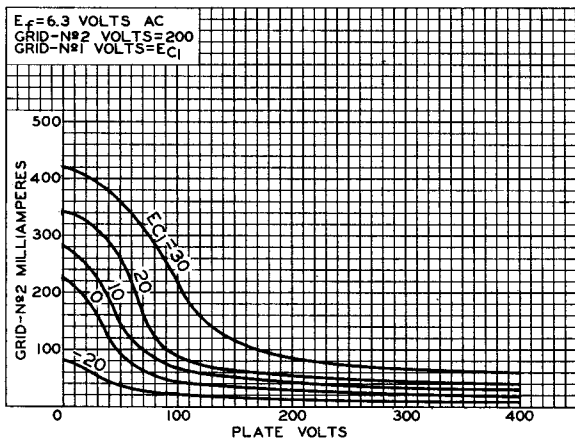
RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
1-61

TYPICAL CHARACTERISTICS



92CS-10814



92CS-10816

