BEAM POWER TUBE

DATA

Electrical:
Filament, Thoriated Tungsten:
Voltage. ............ 10.0 ± 5% .... ac or dc volts
Current at 10.0 volts. .... 5.0 .... amp
Transconductance (Approx.), for plate-
vols = 2000, grid-No. 2 volts = 400,
and plate current = 50 ma .... 3750 μhos
Mu-Factor, grid No. 2 to grid No. 1,
for plate volts = 2000; grid-No. 2
volts = 400, and plate current = 50 ma .... 8.5
Direct Interelectrode Capacitances:
Grid No. 1 to plate ........ 0.25 max. μμf
Grid No. 1 to filament, grid No. 2,
and grid No. 3 ............ 16.3 μμf
Plate to filament, grid No. 2,
and grid No. 3 ............ 14 μμf

Mechanical:
Mounting Position:
Vertical ........ Base up or down
Horizontal ....... Pins 2 and 6 in vertical plane
Maximum Overall Length .... 7-1/2"
Seated Length ........ 6-5/8" ± 1/4"
Maximum Diameter .... 2-9/16"
Weight (Approx.) .... 8 oz
Bulb ................. T-20
Cap. ................ Medium (JETEC No.C1-5)
Base ........ Medium-Metal-Shell Giant 7-Pin
with Bayonet (JETEC No.A7-17)
Basing Designation for BOTTOM VIEW .... SBA
Pin 1—Filament
Pin 2—No
Connection
Pin 3—Grid No. 2
Pin 4—Grid No. 1
Pin 5—Grid No. 3,
Pin 6—No
Connection
Pin 7—Filament
Cap—Plate

AF POWER AMPLIFIER & MODULATOR - Class AB

Maximum Ratings, Absolute Values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CCS*</th>
<th>ICAS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>2250 max.</td>
<td>2500 max. volts</td>
</tr>
<tr>
<td>DC GRID-No.2 (SCREEN) VOLTAGE</td>
<td>1100 max.</td>
<td>1100 max. volts</td>
</tr>
<tr>
<td>MAX.—SIGNAL DC PLATE CURRENT*</td>
<td>180 max.</td>
<td>225 max. ma</td>
</tr>
<tr>
<td>MAX.—SIGNAL PLATE INPUT*</td>
<td>360 max.</td>
<td>450 max. watts</td>
</tr>
<tr>
<td>MAX.—SIGNAL GRID-No. 2 INPUT*</td>
<td>22 max.</td>
<td>22 max. watts</td>
</tr>
<tr>
<td>PLATE DISSIPATION*</td>
<td>100 max.</td>
<td>125 max. watts</td>
</tr>
</tbody>
</table>

* Without external shield and with base shell floating.

#,...,,: See next page. Indicates a change.
**BEAM POWER TUBE**

**Typical Operation:**

<table>
<thead>
<tr>
<th></th>
<th><strong>CCS</strong></th>
<th><strong>ICAS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Plate Voltage</td>
<td>1500</td>
<td>2000</td>
</tr>
<tr>
<td>DC Grid-No.3 (Suppressor) Voltage</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DC Grid-No.2 Voltage</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>DC Grid-No.1 (Control-Grid) Voltage</td>
<td>-85</td>
<td>-90</td>
</tr>
<tr>
<td>From fixed-bias source</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak AF Grid-No.1-to-Grid-No.1 Voltage</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>Zero-Signal DC Plate Current</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Max.-Signal DC Plate Current</td>
<td>305</td>
<td>265</td>
</tr>
<tr>
<td>Zero-Signal DC Grid-No.2 Current</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Max.-Signal DC Grid-No.2 Current</td>
<td>45</td>
<td>43</td>
</tr>
<tr>
<td>Effective Load Resistance (Plate to Plate)</td>
<td>9300</td>
<td>16000</td>
</tr>
<tr>
<td>Max.-Signal Driving Power (Approx.)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max.-Signal Power Output (Approx.)</td>
<td>260</td>
<td>335</td>
</tr>
</tbody>
</table>

**Maximum Circuit Values (CCS or ICAS):**

Grid-No.1-Circuit Resistance:##

- With fixed bias ........................................ 30000 max. ohms
- With cathode bias .................................... Not recommended

**RF POWER AMPLIFIER - Class B Telephony**

Carrier conditions per tube with a max. modulation factor of 1.0

**Maximum Ratings, Absolute Values:**

<table>
<thead>
<tr>
<th></th>
<th><strong>CCS</strong></th>
<th><strong>ICAS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>2000 max.</td>
<td>2250 max.</td>
</tr>
<tr>
<td>DC GRID-No.2 (SCREEN) VOLTAGE</td>
<td>400 max.</td>
<td>400 max.</td>
</tr>
<tr>
<td>DC PLATE CURRENT</td>
<td>100 max.</td>
<td>125 max.</td>
</tr>
<tr>
<td>PLATE INPUT</td>
<td>150 max.</td>
<td>200 max.</td>
</tr>
<tr>
<td>GRID-No.2 INPUT</td>
<td>15 max.</td>
<td>20 max.</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>100 max.</td>
<td>125 max.</td>
</tr>
</tbody>
</table>

# Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

* Averaged over any audio-frequency cycle of sine-wave form.

** Preferably obtained from a separate source or from the plate-voltage supply with a voltage divider.

◆ The driver stage should be capable of supplying the no. 1 grids of the class AB1 stage with the specified driving voltage at low distortion.

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**SEPT. 1, 1955**

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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* **, **, **: see next page.  ➞ indicates a change.
# BEAM POWER TUBE

## Typical Operation:

| CCS | ICAS
---|---
DC Plate Voltage | 1500 2000 | 2250 volts
DC Grid-No.3 (Suppressor) Voltage | 0 0 | 0 volts
DC Grid-No.2 Voltage | 400 400 | 400 volts
DC Grid-No.1 (Control-) Grid Voltage | -60 -75 | -60 volts
Peak RF Grid-No.1 Voltage | 70 80 | 70 volts
DC Plate Current | 100 75 | 85 ma
DC Grid-No.2 Current | 4 3 | 3 ma
DC Grid-No.1 Current | ★ ★ | ★ ma
Driving Power | ★ ★ | ★ watts
Power Output (Approx.) | 50 50 | 70 watts

## Maximum Circuit Values (CCS or ICAS):

- Grid-No.1-Circuit Resistance | 30000 max. ohms

## GRID-MODULATED RF POWER AMPLIFIER - Class C Telephony

*Carrier conditions per tube with a max. modulation factor of 1.0*

## Maximum Ratings, Absolute Values:

| CCS | ICAS
---|---
DC PLATE VOLTAGE | 2000 max. | 2250 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE | 400 max. | 400 max. volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE | -200 max. | -200 max. volts
DC PLATE CURRENT | 100 max. | 125 max. ma
PLATE INPUT | 150 max. | 200 max. watts
GRID-No.2 INPUT | 15 max. | 20 max. watts
PLATE DISSIPATION | 100 max. | 125 max. watts

## Typical Operation:

| CCS | ICAS
---|---
DC Plate Voltage | 1500 2000 | 2250 volts
DC Grid-No.3 (Suppressor) Voltage | 0 0 | 0 volts
DC Grid-No.2 Voltage | 400 400 | 400 volts
DC Grid-No.1 Voltage | -140 -120 | -110 volts
Peak RF Grid-No.1 Voltage | 145 120 | 135 volts
Peak AF Grid-No.1 Voltage | 60 60 | 55 volts
DC Plate Current | 70 75 | 85 ma
DC Grid-No.2 Current | 3 3 | 2.5 ma
DC Grid-No.1 Current | ★ ★ | ★ ma
Driving Power | ★ ★ | ★ watts
Power Output (Approx.) | 40 50 | 75 watts

---

**#** The type of input coupling network used should not introduce too much resistance in the grid-No.1 circuit. Transformer or impedance coupling devices are recommended. When the B13 is operated in class A1 service, only fixed bias should be used.

**†** Use of a fixed supply or bypassed cathode resistor is recommended.

**□** At crest of audio-frequency cycle with a modulation factor of 1.0.

**▲** Never more than 2 watts.

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**● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●    

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**SEPT. 1, 1955**

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**DATA 2**

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**TUBE DIVISION**

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**RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY**
BEAM POWER TUBE

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance:
With fixed bias. 30000 max. ohms
With cathode bias. Not recommended

PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony
Carrier conditions per tube with a max. modulation factor of 1.0

Maximum Ratings, Absolute Values:

<table>
<thead>
<tr>
<th></th>
<th>CCS</th>
<th>ICAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>1600 max.</td>
<td>2000 max.</td>
</tr>
<tr>
<td>DC GRID-No.2 (SCREEN) VOLTAGE</td>
<td>400 max.</td>
<td>400 max.</td>
</tr>
<tr>
<td>DC GRID-No.1 (CONTROL-GRID) VOLTAGE</td>
<td>-300 max.</td>
<td>-300 max. volts</td>
</tr>
<tr>
<td>DC PLATE CURRENT</td>
<td>150 max.</td>
<td>200 max.</td>
</tr>
<tr>
<td>DC GRID-No.1 CURRENT</td>
<td>25 max.</td>
<td>30 max.</td>
</tr>
<tr>
<td>PLATE INPUT.</td>
<td>240 max.</td>
<td>400 max. watts</td>
</tr>
<tr>
<td>GRID-No.2 INPUT.</td>
<td>15 max.</td>
<td>20 max. watts</td>
</tr>
<tr>
<td>PLATE DISSIPATION.</td>
<td>67 max.</td>
<td>100 max. watts</td>
</tr>
</tbody>
</table>

Typical Operation:

DC Plate Voltage 1250 1600 2000 volts
DC Grid-No.3 (Suppressor)
Voltage 0 0 0 volts
DC Grid-No.2 Voltage 300 300 350 volts
From a series resistor of 27000 43000 41000 ohms
DC Grid-No.1 Voltage -160 -160 -175 volts
From a grid resistor of 12500 13500 11000 ohms
Peak RF Grid-No.1 Voltage 250 250 300 volts
DC Plate Current 150 150 200 ma
DC Grid-No.2 Current 35 30 40 ma
DC Grid-No.1 Current (Approx.) 13 12 16 ma
Driving Power (Approx.) 2.9 2.7 4.3 watts
Power Output (Approx.) 140 180 300 watts

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance 30000 max. ohms

* Usually negligible.
** Obtained from fixed supply, or cathode resistor unbypassed for audio frequencies.
† RF driving power is never more than 2 watts. AF power is usually not more than 1 watt.
AA Obtained from separate source modulated along with the plate supply, or from the modulated plate supply through a series resistor of the value shown for each operating condition.

See next page. Indicates a change.

SEPT. 1, 1955 TUBE DIVISION RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY DATA 2
### RF Power Amplifier & Oscillator - Class C Teletype

**Maximum Ratings, Absolute Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CCS</th>
<th>ICAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Plate Voltage</td>
<td>2000 max.</td>
<td>2250 max. volts</td>
</tr>
<tr>
<td>DC Grid-No. 2 (Screen) Voltage</td>
<td>400 max.</td>
<td>400 max. volts</td>
</tr>
<tr>
<td>DC Grid-No. 1 (Control-) Voltage</td>
<td>-300 max.</td>
<td>-300 max. volts</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>180 max.</td>
<td>225 max. ma</td>
</tr>
<tr>
<td>DC Grid-No. 1 Current</td>
<td>25 max.</td>
<td>30 max. ma</td>
</tr>
<tr>
<td>Plate Input</td>
<td>360 max.</td>
<td>500 max. watts</td>
</tr>
<tr>
<td>Grid-No. 2 Input</td>
<td>22 max.</td>
<td>22 max. watts</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>100 max.</td>
<td>125 max. watts</td>
</tr>
</tbody>
</table>

**Typical Operation:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Plate Voltage</td>
<td>1250</td>
</tr>
<tr>
<td>DC Grid-No. 3 (Suppressor) Voltage</td>
<td>0</td>
</tr>
<tr>
<td>DC Grid-No. 2 Voltage</td>
<td>300</td>
</tr>
<tr>
<td>From a series resistor of</td>
<td>27000</td>
</tr>
<tr>
<td>DC Grid-No. 1 Voltage†††</td>
<td>-75</td>
</tr>
<tr>
<td>From a grid resistor of</td>
<td>6000</td>
</tr>
<tr>
<td>From a cathode resistor of</td>
<td>330</td>
</tr>
<tr>
<td>Peak RF Grid-No. 1 Voltage</td>
<td>160</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>180</td>
</tr>
<tr>
<td>DC Grid-No. 2 Current</td>
<td>35</td>
</tr>
<tr>
<td>DC Grid-No. 1 Current (Approx.)</td>
<td>12</td>
</tr>
<tr>
<td>Driving Power (Approx.)‡‡‡</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Maximum Circuit Values (CCS or ICAS):**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-No. 1 - Circuit Resistance</td>
<td>30000 max. ohms</td>
</tr>
</tbody>
</table>

---

* Bulletin Commercial and Amateur Service.

††† obtained from a grid-no. 1 resistor, from cathode resistor, or from a combination of grid-no. 1 resistor with either fixed supply or cathode resistor.

Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 15% of the carrier conditions.

‡‡‡ obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown for each operating condition. A series grid-no. 2 resistor should be used only when the 813 is used in a circuit which is not keyed. Grid-No. 2 voltage must not exceed 800 volts under key-up conditions.

‡‡‡ if preceding stage is keyed, the grid-no. 1 bias must be obtained partially from a fixed supply in order to limit the plate current and, therefore, the plate dissipation to a safe value.

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*†‡‡‡: See next page.  

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SEPT. 1, 1955  

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
SELF-RECTIFYING OSCILLATOR or AMPLIFIER - Class C

Maximum CCC® Ratings, Absolute Values:

- AC PLATE VOLTAGE (RMS) ........................................ 2800 max. volts
- AC GRID-No.2 (SCREEN) VOLTAGE (RMS) .................. 550 max. volts
- DC GRID-No.1 (CONTROL-GRID) VOLTAGE ............. -100 max. volts
- DC PLATE CURRENT .............................................. 95 max. ma
- DC GRID-No.1 CURRENT ........................................ 10 max. ma
- PLATE INPUTAA .................................................. 295 max. watts
- GRID-No.2 INPUTAA ............................................ 22 max. watts
- PLATE DISSIPATION ............................................. 100 max. watts

Typical Operation:

- AC Plate Voltage (RMS) ........................................ 2800 volts
- DC Grid-No.3 (Suppressor) Voltage† .................... 0 volts
- AC Grid-No.2 Voltage (RMS)oo ..................... 530 volts
- DC Grid-No.1 Voltage†† .................................. -37 volts
  From a grid resistor of .................................. 37000 ohms
- DC Plate Current ............................................... 95 ma
- DC Grid-No.2 Current ......................................... 12 ma
- DC Grid-No.1 Current (Approx.) ........................... 1 ma
- Driving Power (Approx.) ................................. 1 watt
- Output-Circuit Efficiency (Approx.) .................. 75 per cent
- Useful Power Output (Approx.) ....................... 170 watts

Maximum Circuit Values:

- Grid-No.1-Circuit Resistance .............................. 30000 max. ohms

AMPLIFIER or OSCILLATOR - Class C

With Separate, Rectified, Unfiltered, Single-Phase, Full-Wave Plate and Grid-No.2 Supply

Maximum CCC® Ratings, Absolute Values:

- DC PLATE VOLTAGE ............................................. 1800 max. volts
- DC GRID-No.2 (SCREEN) VOLTAGE .......................... 360 max. volts
- DC GRID-No.1 (CONTROL-GRID) VOLTAGE ............. -200 max. volts
- DC PLATE CURRENT ............................................ 190 max. ma
- DC GRID-No.1 CURRENT ....................................... 22 max. ma
- PLATE INPUT†† .................................................. 360 max. watts
- GRID-No.2 INPUT†† ........................................... 22 max. watts
- PLATE DISSIPATION ........................................... 100 max. watts

- Continuous Commercial Service.
- Power input is 1.11 times the product of the ac voltage (rms) and the dc current.
- † From a self-rectified driver.
- oo obtained from a separate ac supply in phase with the plate supply or from a low-voltage tap on the plate transformer. Use of a grid-No.2 series voltage-dropping resistor is not recommended.
- †† Power input is 1.23 times the product of dc voltage and dc current.

†, ††, ‡‡ See next page. → indicates a change.

SEPT. 1, 1955
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY DATA 3
Typical Operation:

- DC Plate Voltage: 1800 volts
- DC Grid-No.3 (Suppressor) Voltage: 0 volts
- DC Grid-No.2 Voltage: 250 volts
- DC Grid-No.1 Voltage: -120 volts

From a grid resistor of 10000 ohms

- DC Plate Current: 160 ma
- DC Grid-No.2 Current: 37 ma
- DC Grid-No.1 Current (Approx.): 12 ma
- Driving Power (Approx.): 2 watts
- Output-Circuit Efficiency (Approx.): 75 per cent
- Useful Power Output (Approx.): 210 watts

Maximum Circuit Values:

- Grid-No.1-Circuit Resistance: 30000 max. ohms

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

<table>
<thead>
<tr>
<th>Note</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Current</td>
<td>1</td>
<td>4.7</td>
</tr>
<tr>
<td>Direct Interelectrode Capacitances:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid No.1 to plate</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Grid No.1 to filament, grid No.2, and grid No.3</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Plate to filament, grid No.2, and grid No.3</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Plate current (1)</td>
<td>1,3</td>
<td>35</td>
</tr>
<tr>
<td>Plate current (2)</td>
<td>1,4</td>
<td>-</td>
</tr>
<tr>
<td>Grid-No.2 current</td>
<td>1,3</td>
<td>-</td>
</tr>
<tr>
<td>Useful power output</td>
<td>1,5</td>
<td>198</td>
</tr>
</tbody>
</table>

Note 1: With 10 volts dc on filament.
Note 2: With no external shield and with base shell floating.
Note 3: With dc plate voltage of 2000 volts, grid No.3 connected to negative filament terminal, dc grid-No.2 voltage of 400 volts, and dc grid-No.1 voltage of -35 volts.
Note 4: With dc plate voltage of 2000 volts, grid No.3 connected to negative filament terminal, dc grid-No.2 voltage of 400 volts, and dc grid-No.1 voltage of -80 volts.
Note 5: In a self-excited oscillator with dc plate voltage of 2000 volts, grid No.3 connected to negative filament terminal, dc grid-No.2 voltage of 400 volts, dc grid-No.1 current of 9.6 to 14.4 ma, grid-No.1 resistor of 10000 ± 10% ohms, dc plate current of 100 ma, and frequency of 15 Mc.

Grid No.3 should be connected to mid-tap on filament-transformer secondary winding or to negative end of filament operated on dc.

Value shown for each operating condition is power required by grid No.1 and biasing device when the 813 is operated at frequency sufficiently low to avoid high-frequency losses. At moderate frequencies, the driver stage should be capable of providing about twice the tabulated value; at higher frequencies, the driver stage may have to supply 3 to 10 times the value shown.

† ‡ §: See next page.

Indicates a change.
Obtained from a grid-No.1 resistor of the value shown or from a combination of grid-No.1 resistor and cathode resistor. Fixed-bias operation is not recommended. The bias resistors should not be bypassed for the plate and grid-No.2 voltage supply frequency.

This value of useful power is measured at load of output circuit having indicated efficiency.

Obtained from a separate, rectified, unfiltered, single-phase, full-wave supply in phase with the plate supply, or from the rectified, unfiltered, single-phase, full-wave supply by means of taps on the plate transformer.

From a driver with a rectified, unfiltered, single-phase, full-wave plate supply.

Data on operating frequencies for the 813 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY
AVERAGE CHARACTERISTICS

$E_f = 10$ VOLTS DC  GRID-Nº 2 VOLTS = 300
GRID Nº 3 CONNECTED TO FILAMENT (-)

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92CM-4967R2
AVERAGE CHARACTERISTICS

$E_p = 10 \text{ VOLTS DC}$

GRID $\#2$ VOLTS = 400

GRID $\#3$ CONNECTED TO FILAMENT (-)

PLATE ($I_b$) OR GRID-$\#2$ ($I_{c2}$) AMPERES

MARCH 27, 1947

TUBE DIVISION

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92CM-4968 R2
AVERAGE CHARACTERISTICS

$E_F = 10$ VOLTS AC
GRID-NR2 VOLTS = 750
GRID NR 3 CONNECTED TO CENTER TAP
OF FILAMENT WINDING

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PLATE (I_b) OR GRID-NR2 (I_c2) AMPERES

PLATE VOLTS
E. f. = 10 VOLTS AC
GRID-N° 2 VOLTS = 1000
GRID N° 3 CONNECTED TO CENTER TAP OF FILAMENT WINDING