BEAM POWER TUBE
Useful at Frequencies up to 125 Mc

GENERAL DATA

Electrical:
Heater, for Unipotential Cathode:
Voltage: 6.3 ± 0.6 ac or dc volts
Current: 0.9 amp

Transconductance (Approx.):
for plate volts = 200,
grid-no.2 volts = 250,
grid-no.1 volts = 8
6000 μhos

Mu-Factor, Grid No.2 to
Grid No.1 for plate volts =
250, grid-no.2 volts = 250,
and grid-no.1 volts = -20
8

Direct Inter-electrode Capacitances:
Grid No.1 to plate... 0.2 max. μf
Grid No.1 to cathode &
grid No.3, grid No.2,
and heater ... 12 μf
Plate to cathode & grid
No.3, grid No.2,
and heater ... 7 μf

Mechanical:
Mounting Position: Any
Maximum Overall Length: 5-3/4"
Seated Length: 4-31/32" ± 5/32"
Maximum Diameter: 2-1/16"
Weight (Approx.): 3 oz
Bulb: ST-16
Cap.: Small (JETEC No.C1-1)
Base: Medium-Mica-Shell Small 5-Pin (JETEC No.A5-11)
Basing Designation for BOTTOM VIEW: 5AW

AF POWER AMPLIFIER & MODULATOR - Class AB1
Triode Connection--Grid No.2 Connected to Plate

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>400 max.</td>
<td>400 max. volts</td>
</tr>
<tr>
<td>MAX.-SIGNAL DC PLATE CURRENT*</td>
<td>125 max.</td>
<td>125 max. ma</td>
</tr>
<tr>
<td>MAX.-SIGNAL DC PLATE PLUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRID-No.2 INPUT*</td>
<td>50 max.</td>
<td>50 max. watts</td>
</tr>
<tr>
<td>PLATE DISSIPATION PLUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRID-No.2 INPUT*</td>
<td>25 max.</td>
<td>30 max. watts</td>
</tr>
</tbody>
</table>

* With external shield JETEC No.3112.

See next page.

Indicates a change.

NOV. 5, 1954
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
BEAM POWER TUBE

### PEAK HEATER–CATHODE VOLTAGE:
- Heater negative with respect to cathode: 135 max. volts
- Heater positive with respect to cathode: 135 max. volts

### Typical Operation:
- CCS: DC Plate Voltage: 400 volts
- ICAS: DC Plate Voltage: 400 volts
- CCS: DC Grid-No.1 (Control-Grid) Voltage: -45 volts
- ICAS: DC Grid-No.1 (Control-Grid) Voltage: -45 volts
- CCS: Peak AF Grid-No.1-to-Grid-No.1 Voltage: 90 volts
- ICAS: Peak AF Grid-No.1-to-Grid-No.1 Voltage: 90 volts
- CCS: Zero-Signal DC Plate Current: 64 ma
- ICAS: Zero-Signal DC Plate Current: 64 ma
- CCS: Max.-Signal DC Plate Current: 140 ma
- ICAS: Max.-Signal DC Plate Current: 140 ma
- CCS: Effective Load Resistance (Plate to Plate): 3000 ohms
- ICAS: Effective Load Resistance (Plate to Plate): 3000 ohms
- CCS: Max.-Signal Driving Power (Approx.): 0 watts
- ICAS: Max.-Signal Driving Power (Approx.): 0 watts
- CCS: Max.-Signal Power Output (Approx.): 15 watts
- ICAS: Max.-Signal Power Output (Approx.): 15 watts

### Maximum Circuit Values (CCS or ICAS):
- Grid-No.1-Circuit Resistance: 0.1 max. meghm
- With fixed bias: 0.5 max. meghm
- With cathode bias: 0.5 max. meghm

### AF POWER AMPLIFIER & MODULATOR - Class AB1

#### Maximum Ratings, Absolute Values:
- CCS: DC PLATE VOLTAGE: 600 max. volts
- ICAS: DC PLATE VOLTAGE: 750 max. volts
- CCS: DC GRID-No.2 (SCREEN) VOLTAGE: 300 max. volts
- ICAS: DC GRID-No.2 (SCREEN) VOLTAGE: 300 max. volts
- CCS: MAX.-SIGNAL DC PLATE CURRENT*: 120 max. ma
- ICAS: MAX.-SIGNAL DC PLATE CURRENT*: 120 max. ma
- CCS: MAX.-SIGNAL DC PLATE INPUT*: 60 max. watts
- ICAS: MAX.-SIGNAL DC PLATE INPUT*: 90 max. watts
- CCS: MAX.-SIGNAL GRID-No.2 INPUT*: 3.5 max. watts
- ICAS: MAX.-SIGNAL GRID-No.2 INPUT*: 3.5 max. watts
- CCS: PLATE DISSIPATION*: 25 max. watts
- ICAS: PLATE DISSIPATION*: 30 max. watts
- CCS: PEAK HEATER–CATHODE VOLTAGE:
  - Heater negative with respect to cathode: 135 max. volts
  - Heater positive with respect to cathode: 135 max. volts

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* Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.
* In Class AB1 service, the normal design limitation is the requirement that grid-No.1 current should not flow. For this reason, the typical operating values shown for both CCS and ICAS conditions are the same.
* The driver stage should be capable of supplying the No.1 grids of the Class AB1 stage with driving voltage at low distortion.

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**NOTE:** See next page.
# BEAM POWER TUBE

## Typical Operation:

<table>
<thead>
<tr>
<th></th>
<th>CCS*</th>
<th>ICAS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values are for 2 tubes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC Plate Voltage</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>DC Grid-No.2 Voltage</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>DC Grid-No.1 (Control-Grid) Voltage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From fixed-bias source</td>
<td>-30</td>
<td>-32</td>
</tr>
<tr>
<td>Peak AF Grid-No.1-to-Grid-No.1 Voltage</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>Zero-Signal DC Plate Current</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Max.-Signal DC Plate Current</td>
<td>143</td>
<td>141</td>
</tr>
<tr>
<td>Zero-Signal DC Grid-No.2 Current</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Max.-Signal DC Grid-No.2 Current</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Effective Load Resistance (Plate to plate)</td>
<td>6800</td>
<td>8200</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>36</td>
<td>46</td>
</tr>
</tbody>
</table>

## Maximum Circuit Values (CCS or ICAS): Grid-No.1-Circuit Resistance: C0

- With fixed bias: 0.1 max. megohm
- With cathode bias: Not recommended

## AF POWER AMPLIFIER & MODULATOR - Class $AB_2$

### 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>600 max.</td>
<td>750 max.</td>
</tr>
<tr>
<td>DC GRID-No.2 (SCREEN) VOLTAGE</td>
<td>300 max.</td>
<td>300 max.</td>
</tr>
<tr>
<td>MAX.-SIGNAL DC PLATE CURRENT</td>
<td>120 max.</td>
<td>120 max.</td>
</tr>
<tr>
<td>MAX.-SIGNAL PLATE INPUT</td>
<td>60 max.</td>
<td>90 max.</td>
</tr>
<tr>
<td>MAX.-SIGNAL GRID-No.2 INPUT</td>
<td>3.5 max.</td>
<td>3.5 max.</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>25 max.</td>
<td>30 max.</td>
</tr>
</tbody>
</table>

**Peak Heater-Cathode Voltage:**
- Heater negative with respect to cathode: 135 max. 135 max. volts
- Heater positive with respect to cathode: 135 max. 135 max. volts

* Subscript 2 indicates that the grid-No.1 current flows during some part of the input cycle.
* Averaged over any audio-frequency cycle of sine-wave form.

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**Note:**
- See next page.
- Indicates a change.
BEAM POWER TUBE

Typical Operation:

<table>
<thead>
<tr>
<th>Values are for a tube</th>
<th>CCS</th>
<th>ICAS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Plate Voltage</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>DC Grid-No. 2 Voltage</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>DC Grid-No. 1 (Control) Grid Voltage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From fixed-bias source</td>
<td>-28</td>
<td>-30</td>
</tr>
<tr>
<td>Peak AF Grid-No. 1 to-Grid-No. 1 Voltage</td>
<td>80</td>
<td>96</td>
</tr>
<tr>
<td>Zero-Signal DC Plate Current</td>
<td>72</td>
<td>60</td>
</tr>
<tr>
<td>Max.-Signal DC Plate Current</td>
<td>240</td>
<td>240</td>
</tr>
<tr>
<td>Zero-Signal DC Grid-No. 2 Current</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>Max.-Signal DC Grid-No. 2 Current</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Effective Load Resistance (Plate to plate)</td>
<td>3700</td>
<td>4600</td>
</tr>
<tr>
<td>Max.-Signal Driving Power (Approx.)</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Max.-Signal Power Output (Approx.)</td>
<td>55</td>
<td>75</td>
</tr>
</tbody>
</table>

Maximum Circuit Values (CCS or ICAS):

<table>
<thead>
<tr>
<th>Grid-No. 1-Circuit Resistance: oo</th>
</tr>
</thead>
<tbody>
<tr>
<td>With fixed bias. .. .. .. .. .. .. 30000 max. ohms</td>
</tr>
<tr>
<td>With cathode bias. .. .. .. .. .. Not recommended</td>
</tr>
</tbody>
</table>

RF POWER AMPLIFIER-Class B Telephony

Carrier conditions per tube for use with a max. modulation factor of 0.0

Maximum Ratings, Absolute Values:

<table>
<thead>
<tr>
<th>Values are for a tube</th>
<th>CCS</th>
<th>ICAS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>600 max.</td>
<td>750 max. volts</td>
</tr>
<tr>
<td>DC GRID-No. 2 SCREEN VOLTAGE</td>
<td>300 max.</td>
<td>300 max. volts</td>
</tr>
<tr>
<td>DC PLATE CURRENT</td>
<td>80 max.</td>
<td>90 max. ma</td>
</tr>
<tr>
<td>PLATE INPUT</td>
<td>37.5 max.</td>
<td>45 max. wats</td>
</tr>
<tr>
<td>GRID-No. 2 INPUT</td>
<td>2.5 max.</td>
<td>2.5 max. wats</td>
</tr>
</tbody>
</table>

** Preferably obtained from a separate source, or from the plate-voltage supply with a voltage divider.
● Driver stage should be capable of supplying the specified driving power at low distortion to the No. 1 grids of the class A8 stage. The effective resistance per grid-No. 1 circuit of the class A8 stage should be kept below 500 ohms and the effective impedance should not exceed 700 ohms at the highest response frequency.
▲ With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, the regulation of the plate voltage, grid-No. 2 voltage, and grid-No. 1 voltage should not be greater than 3%, 5%, and 3%, respectively.
• • oo, See next page. —— indicates a change.

TUBE DIVISION
RADIO CORPORATION OF AMERICA, MARRIOTT, NEW JERSEY

NOV. 5, 1954
BEAM POWER TUBE

SMALL CAP
JETEC NR
C1-1

ST16 BULB

MEDIUM-SHELL
SMALL
5-PIN BASE
JETEC NR
A3-II

92CM - 4674R4

- 2 1/2" MAX.

5 3/4" MAX

4 31/32" ± 3/32"

TUBE DIVISION

RADIO CORPORATION OF AMERICA, MARISSON, NEW JERSEY
AVERAGE PLATE CHARACTERISTICS

$E_r = 8.3$ VOLTS
GRID-NR2 VOLTS = 250

PLATE MILLIAMPERES
TUBE DIVISION
807

AVERAGE CHARACTERISTICS
TRIODE CONNECTION

$E_F = 6.3$ VOLTS
GRID NO. 2 CONNECTED TO PLATE.

GRID-No.1 ($I_C$) MILLIAMPERES

PLATE ($I_P$) MILLIAMPERES

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7116RI
AVERAGE CHARACTERISTICS

**Graph 1:***
- **Grid-No. 1 Voltages:** EC1 = 6.3 V, EC1 = 0 V, EC1 = -10 V, EC1 = -20 V, EC1 = -30 V
- **Plate Voltages:** 0 to 400 V
- **Grid-No. 2 Voltages:** 0 to 140 mA

**Graph 2:***
- **Grid-No. 1 Voltages:** EC1 = 6.3 V, EC1 = 0 V, EC1 = -10 V
- **Plate Voltages:** 0 to 400 V
- **Grid-No. 2 Voltages:** 0 to 70 mA

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ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6246T3
CE-4689T4