TRANSMITTING BEAM POWER AMPLIFIER

**GENERAL DATA**

**Electrical:**
- Filament, Thoriated Tungsten:
  - Voltage: 5.0 a-c or d-c volts
  - Current: 7.5 amp.
- Transconductance for plate current of 75 ma: 2800 \( \mu \)mhos
- Direct Interelectrode Capacitances:
  - Grid to Plate: 0.06 \( \mu \)f
  - Input: 12 \( \mu \)f
  - Output: 6.5 \( \mu \)f

**Physical:**
- Overall Length: 5-15/16" ± 1/4"
- Seated Length: 5-5/16" ± 1/4"
- Maximum Diameter: 2-11/16"
- Mounting Position: Vertical Only: Base up or down
- Bulb: T-21
- Base: Medium Metal Shell Giant 7-Pin, Bayonet
- Basing Designation for BOTTOM VIEW: 7BM

**A-F POWER AMPLIFIER & MODULATOR – Class A1**

**Maximum Ratings, Absolute Values:**
- D-C PLATE VOLTAGE: 2000 max. volts
- D-C SCREEN VOLTAGE (Grid No. 2): 750 max. volts
- D-C PLATE CURRENT: 150 max. ma.
- D-C SCREEN CURRENT: 40 max. ma.
- PLATE INPUT: 75 max. watts
- SCREEN INPUT: 30 max. watts
- PLATE DISSIPATION: 75 max. watts

**Typical Operation:**
- D-C Plate Voltage: 500 1000 volts
- D-C Suppressor Voltage (Grid No. 3): 60 0 volts
- D-C Screen Voltage: 500 300 volts
- D-CGrid Voltage (Grid No. 1)*#: -47 -27 volts
- Peak A-F Grid Voltage: 47 27 volts
- D-C Plate Current: 150 75 ma.
- D-C Screen Current: 10 5 ma.
- Load Resistance: 2600 12000 ohms
- Power Output: 30 34 approx. watts

*; #: See next page. & See end of tabulation. Indicates a change.

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TRANSMITTING BEAM POWER AMPLIFIER

(continued from preceding page)

SUPPRESSOR-MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

**Maximum Ratings, Absolute Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-C PLATE VOLTAGE</td>
<td>2000 max. volts</td>
</tr>
<tr>
<td>D-C SUPPRESSOR VOLTAGE (Grid No. 3)</td>
<td>-500 max. volts</td>
</tr>
<tr>
<td>D-C SCREEN VOLTAGE (Grid No. 2)</td>
<td>600 max. volts</td>
</tr>
<tr>
<td>D-C GRID VOLTAGE (Grid No. 1)</td>
<td>-500 max. volts</td>
</tr>
<tr>
<td>D-C PLATE CURRENT</td>
<td>100 max. ma.</td>
</tr>
<tr>
<td>D-C GRID CURRENT</td>
<td>25 max. ma.</td>
</tr>
<tr>
<td>PLATE INPUT</td>
<td>110 max. watts</td>
</tr>
<tr>
<td>SCREEN INPUT</td>
<td>27 max. watts</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>75 max. watts</td>
</tr>
</tbody>
</table>

**Typical Operation:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-C Plate Voltage</td>
<td>1500</td>
</tr>
<tr>
<td>D-C Suppressor Voltage</td>
<td>-210</td>
</tr>
<tr>
<td>D-C Screen Voltage**</td>
<td>500</td>
</tr>
<tr>
<td>D-C Grid Voltage</td>
<td>-130</td>
</tr>
<tr>
<td>Peak A-F Suppressor Voltage</td>
<td>210</td>
</tr>
<tr>
<td>Peak R-F Grid Voltage</td>
<td>195</td>
</tr>
<tr>
<td>D-C Plate Current</td>
<td>70</td>
</tr>
<tr>
<td>D-C Screen Current</td>
<td>44</td>
</tr>
<tr>
<td>D-C Grid Current</td>
<td>8</td>
</tr>
<tr>
<td>Driving Power*</td>
<td>1.4</td>
</tr>
<tr>
<td>Power Output</td>
<td>33</td>
</tr>
</tbody>
</table>

* For a-c filament supply.

# Obtained from fixed supply or by cathode resistor. The d-c resistance in the grid circuit should not exceed 50,000 ohms with fixed bias, or 50,000 ohms with cathode bias.

** Obtained preferably from plate-voltage supply through series resistor of value shown.

O At crest of a-f cycle with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

**Maximum Ratings, Absolute Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-C PLATE VOLTAGE</td>
<td>3000 max. volts</td>
</tr>
<tr>
<td>D-C SCREEN VOLTAGE (Grid No. 2)</td>
<td>600 max. volts</td>
</tr>
<tr>
<td>D-C GRID VOLTAGE (Grid No. 1)</td>
<td>-500 max. volts</td>
</tr>
<tr>
<td>D-C PLATE CURRENT</td>
<td>135 max. ma.</td>
</tr>
<tr>
<td>D-C SCREEN CURRENT</td>
<td>30 max. ma.</td>
</tr>
<tr>
<td>D-C GRID CURRENT</td>
<td>25 max. ma.</td>
</tr>
<tr>
<td>PLATE INPUT</td>
<td>250 max. watts</td>
</tr>
<tr>
<td>SCREEN INPUT</td>
<td>18 max. watts</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>65 max. watts</td>
</tr>
</tbody>
</table>
TRANSMITTING BEAM POWER AMPLIFIER

Typical Operation:

D-C Plate Voltage........1500  2500 .... volts
D-C Suppressor Voltage(Grid No.3) 60  60 .... volts
D-C Screen Voltage ** ...... { 600  600 .... volts
                                  82000  240000 .... ohms
                                  -200  -200 .... volts
D-C Grid Voltage*** ...... { 145000 330000 .... ohms
                                  110000 250000 .... ohms
                                  310  450 .... ohms
Peak R-F Grid Voltage......  255  220 .... volts
D-C Plate Current..........  1.35  1.00 .... ma.
D-C Screen Current.........  11  8 .... ma.
D-C Grid Current...........  1.4  0.6 approx. ma.
Driving Power..............  0.4  0.1 approx. watt
Power Output..............  145  200 approx. watts

** Obtained preferably from modulated fixed supply, may also be obtained from modulated plate-voltage supply through series resistor of values shown.

*** Obtained from fixed supply, grid resistor (145000, 330000), or combination of cathode resistor (310, 450) and grid resistor (110000, 250000).

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation.

Maximum Ratings, Absolute Values:

D-C PLATE VOLTAGE.............. 4000 max. .... volts
D-C SCREEN VOLTAGE (Grid No.2) 750 max. .... volts
D-C GRID VOLTAGE (Grid No.1)  -500 max. .... volts
D-C PLATE CURRENT............. 150 max. .... ma.
D-C SCREEN CURRENT.......... 30 max. .... ma.
D-C GRID CURRENT............. 25 max. .... ma.
PLATE INPUT.................. 300 max. .... watts
SCREEN INPUT................ 25 max. .... watts
PLATE DISSIPATION............ 75 max. .... watts

Typical Operation:

D-C Plate Voltage............. 2000  3000 .... volts
D-C Suppressor Voltage(Grid No.3) 750  750 .... volts
D-C Screen VoltageΔ......... { 70000  280000 .... ohms
                                  -200  -200 .... volts
D-C Grid VoltageΔ.......... { 300000 ---- .... ohms
                                  1200  1800 .... ohms
Peak R-F Grid Voltage......  225  170 .... volts
D-C Plate Current............  150  100 .... ma.
D-C Screen Current..........  18  8 .... ma.
D-C Grid Current.............  0.7  0 approx. ma.
Driving Power...............  0.2  0 approx. watt
Power Output.................  230  235 approx. watts

◊; Δ; Δ: See next page.

Indicates a change.

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(continued from preceding page)

Diamond Suppressor should be connected to the midpoint of filament circuit operated on a.c., or to the negative end of the filament operated on d.c.

Δ Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

Δ Obtained from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. Series screen resistor should be used only where 4E27 is employed as buffer amplifier and is not keyed. The screen voltage must not exceed 1500 volts under key-up conditions.

☑ Obtained from fixed supply, grid resistor (300000), or cathode resistor (1200, 1800). When a preceding stage is keyed, sufficient fixed bias must be used to maintain the plate current at a low value when the key is up.

Data on operating frequencies for the 4E27/8001 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

 précision 2

MAR. 30, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
AVERAGE PLATE CHARACTERISTICS

$E_F = 5.0$ VOLTS D.C.  SCREEN VOLTS $= 500$
SUPPRESSOR VOLTS $= 0$

PLATE ($I_B$) OR SCREEN ($I_{C2}$) MILLIAMPERES

MAR. 26, 1945  RCA VICTOR DIVISION  92CM-6261R1
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