Power Triode

FORCED-AIR COOLED

GENERAL DATA

Electrical:
Filament, Multistrand Thoriated Tungsten:
Excitation. Single-Phase AC or DC
Voltage. 11 ± 5% volts
Current at heater volts = 285 amp
Minimum heating time. 15 sec
Amplification Factor for grid volts = -50, plate amperes = 40
Direct Interelectrode Capacitances
(Approx.):
Grid to plate 50 μf
Grid to filament 90 μf
Plate to filament 1.5 μf

Mechanical:
Operating Position. Vertical, filament end up
Maximum Overall Length. 25"
Maximum Diameter. 17"
Weight (Approx.). 228 pounds
Radiator. Integral part of tube
Air Jacket. RCA-241F1

Thermal:
Air Flow:
Through radiator—The specified air flow for various plate
dissipations as indicated below should be delivered by a
blower vertically upward through the radiator before and
during the application of any voltages. Filament power,
plate power, and air may be removed simultaneously.
Plate Dissipation. 15 20 25 kw
Air Flow 1100 1450 1800 cfm
Static Pressure 0.85 1.5 2.2 in. of water
To filament seals. 10 min. cfm

The specified air flow should be directed from a 1-1/4"-
diameter nozzle into the filament header before and during
the application of any voltages to limit the temperature
of the filament seals to the maximum value.

Indicates a change.
Input Air Temperature (To radiator) ........ 45 max. °C
Radiator Temperature .................. 180 max. °C
Bulb Temperature ...................... 180 max. °C
Seal Temperature (Filament, grid, and plate) ........ 165 max. °C

**AF POWER AMPLIFIER and MODULATOR — Class B**

**Maximum CCS$^b$ Ratings, Absolute-Maximum Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>15000 max. volts</td>
</tr>
<tr>
<td>MAX.-SIGNAL DC PLATE CURRENT$^c$</td>
<td>6 max. amp</td>
</tr>
<tr>
<td>MAX.-SIGNAL PLATE INPUT$^c$</td>
<td>90 max. kw</td>
</tr>
<tr>
<td>PLATE DISSIPATION$^c$</td>
<td>25 max. kw</td>
</tr>
</tbody>
</table>

**Typical Operation:**

Values are for 2 tubes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Voltage</td>
<td>10 11 volts</td>
</tr>
<tr>
<td>DC Plate Voltage</td>
<td>10200 15000 volts</td>
</tr>
<tr>
<td>DC Grid Voltage</td>
<td>-2200 -320 volts</td>
</tr>
<tr>
<td>Peak AF Grid-to-Grid Voltage</td>
<td>900 1600 volts</td>
</tr>
<tr>
<td>Zero-Signal DC Plate Current</td>
<td>0.6 0.6 amp</td>
</tr>
<tr>
<td>Max.-Signal DC Plate Current</td>
<td>5.8 10 amp</td>
</tr>
<tr>
<td>Effective Load Resistance (Plate to plate)</td>
<td>3600 3320 ohms</td>
</tr>
<tr>
<td>Max.-Signal Driving Power (Approx.)$^d$</td>
<td>120 600 watts</td>
</tr>
<tr>
<td>Max.-Signal Power Output (Approx.)$^d$</td>
<td>37 100 kw</td>
</tr>
</tbody>
</table>

**PLATE-MODULATED RF POWER AMPLIFIER — Class C Telephony**

Carrier conditions per tube for use with a max. modulation factor of 1

**Maximum CCS$^b$ Ratings, Absolute-Maximum Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC PLATE VOLTAGE</td>
<td>12500 max. volts</td>
</tr>
<tr>
<td>DC GRID VOLTAGE</td>
<td>-2000 max. volts</td>
</tr>
<tr>
<td>DC PLATE CURRENT</td>
<td>4.5 max. amp</td>
</tr>
<tr>
<td>DC GRID CURRENT</td>
<td>1 max. amp</td>
</tr>
<tr>
<td>PLATE INPUT</td>
<td>55 max. kw</td>
</tr>
<tr>
<td>PLATE DISSIPATION</td>
<td>17 max. kw</td>
</tr>
</tbody>
</table>

**Typical Operation:**

At 1.6 Mc

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Voltage</td>
<td>10 11 volts</td>
</tr>
<tr>
<td>DC Plate Voltage</td>
<td>10200 12500 volts</td>
</tr>
<tr>
<td>DC Grid Voltage$^e$</td>
<td>-1500 -1500 volts</td>
</tr>
<tr>
<td>From a fixed supply of</td>
<td>2100 1500 ohms</td>
</tr>
<tr>
<td>From a grid resistor of</td>
<td>2070 2180 volts</td>
</tr>
<tr>
<td>Peak RF Grid Voltage</td>
<td>3.3 4 amp</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>0.72 1 amp</td>
</tr>
<tr>
<td>DC Grid Current (Approx.)$^d$</td>
<td>1350 1960 watts</td>
</tr>
<tr>
<td>Driving Power (Approx.)$^d$</td>
<td>28 40 kw</td>
</tr>
<tr>
<td>Power Output (Approx.)$^d$</td>
<td></td>
</tr>
</tbody>
</table>
RF POWER AMPLIFIER and OSCILLATOR — Class C Telegraphy

Key-down conditions per tube without modulation

Maximum CCS Ratings, Absolute-Maximum Values:

- DC PLATE VOLTAGE: 15000 max. volts
- DC GRID VOLTAGE: -2000 max. volts
- DC PLATE CURRENT: 8 max. amp
- DC GRID CURRENT: 1 max. amp
- PLATE INPUT: 100 max. kw
- PLATE DISSIPATION: 25 max. kw

Typical Operation:

At 1.6 Mc

- Filament Voltage: 10 11 volts
- DC Plate Voltage: 12500 15000 volts
- DC Grid Voltage:
  - From a fixed supply of: -1250 -1500 volts
  - From a cathode resistor of: 190 225 ohms
  - From a grid resistor of: 1300 1500 ohms
- Peak RF Grid Voltage: 1970 2270 volts
- DC Plate Current: 5.8 6 amp
- DC Grid Current (Approx.): 0.95 1 amp
- Driving Power (Approx.): 1700 2040 watts
- Power Output (Approx.): 55 70 kw

When the 5671 is operated at less than maximum ratings, the filament voltage may be reduced to 9.75 volts.

 CCS Continuous Commercial Service.

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

The driving stage should have good regulation and should be capable of supplying considerably more than the required driving power.

Obtained from a fixed supply, grid resistor, or a combination of both.

Low frequency driving power is absorbed by the grid and grid resistor and does not include circuit losses. At higher frequencies the power furnished by the driver must be greater because of increased tube and circuit losses.

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

Obtained from a fixed supply, a cathode resistor, a grid resistor, or from a combination of a fixed supply and self-bias.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

- Filament Current: 1 265 305 amp
- Amplification Factor: 1,2 35 45
- Direct Interelectrode Capacitances:
  - Grid to plate: 45 59 μf
  - Grid to filament: 72 104 μf
  - Plate to filament: 1.1 1.9 μf
- Plate Voltage: 1,3 3200 4200 volts
- Plate Voltage: 1,4 6700 8700 volts
- Grid Voltage: 1,5 -310 -490 volts
- Grid Voltage: 1,6 - 1100 volts

Indicates a change.
Peak Cathode Current ........... 7 50 – amp
Grid Current .................... 1.6 – 9.5 amp
Useful Power Output .......... 1.8 59 – kw

Note 1: With 11 volts ac on filament.
Note 2: With dc grid voltage of -50 volts and dc plate voltage adjusted to give dc plate current of 2 amperes.
Note 3: With dc grid voltage of 0 volts and dc plate voltage adjusted to give dc plate current of 2 amperes.
Note 4: With dc grid voltage of -100 volts and dc plate voltage adjusted to give dc plate current of 2 amperes.
Note 5: With dc plate voltage of 15000 volts and dc grid voltage adjusted to give dc plate current of 50 ma.
Note 6: With dc plate voltage of 2600 volts and instantaneous grid voltage adjusted to give instantaneous plate current of 35 amperes.
Note 7: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.
Note 8: In self-excited oscillator circuit and with dc plate voltage of 15000 volts, dc plate current of 6.6 amperes, dc grid current of 0.8 to 1.0 ampere, grid resistor of 1600 ± 10% ohms, and frequency of 1.6 Mc.

MAXIMUM RATINGS vs OPERATING FREQUENCY

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>10</th>
<th>18</th>
<th>25</th>
<th>Mc</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE AND INPUT: Class C Telephony (Plate-Modulated)</td>
<td>100</td>
<td>88</td>
<td>80</td>
<td>%</td>
</tr>
<tr>
<td>Class C Telegraphy</td>
<td>100</td>
<td>88</td>
<td>80</td>
<td>%</td>
</tr>
</tbody>
</table>
NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.
TYPICAL PLATE CHARACTERISTICS

$E_t = 11 \text{ VOLTS AC}$

PLATE AMPERES

PLATE VOLTS ($E_b$)

40,000

30,000

20,000

15,000

5,000

0

92CM-6899RI

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