# Beam Power Tube

**HIGH POWER SENSITIVITY**
**RCA "DARK HEATER" WITH 21- TO 31-VOLT RANGE**

**85 WATTS CW INPUT (ICAS) UP TO 60 Mc**
**CONTROLLED ZERO-BIAS PLATE CURRENT**

**50 WATTS CW INPUT (ICAS) AT 175 Mc**
**CONTROLLED POWER OUTPUT AT REDUCED HEATER VOLTAGE**

**For RF Power Amplifier and Oscillator Service and as an AF Power Amplifier and Modulator in Both Mobile and Fixed Equipment. The 6159B is Unilaterally Interchangeable with Types 6159, 6159A.**

*The 6159B is the same as the 6146B/8298A except for the following items:*

**Electrical:**

| | | |
|---|---|---|
| Heater, for Unipotential Cathode: | | |
| Voltage (AC or DC) | 26.5 | volts |
| Current at heater volts = 26.5 | 0.3 | amp |
| Minimum heating time | 60 | sec |
| Direct Interelectrode Capacitances:[a] | | |
| Grid No.1 to plate | 0.24 max. | pf |

[a] With no external shield.

**CHARACTERISTICS RANGE VALUES**

| *Test No.* | | *Note* | *Min.* | *Max.* | |
|---|---|---|---|---|---|
| 1 | Direct Interelectrode Capacitances: Grid-No.1 to plate | 1 | – | 0.24 | pf |

Note 1: With no external shield.

**SPECIAL PERFORMANCE DATA**

**Stationary Equipment Operation:**

| | *Min.* | *Design Center* | *Max.* | |
|---|---|---|---|---|
| Heater, for Unipotential Cathode: | | | | |
| Voltage (AC or DC)[V] | – | 26.5 | – | volts |
| Current at 26.5 volts | 0.28 | – | 0.32 | amp |
| Useful Power Output[W] | 59 | – | – | watts |

[V] It is recommended that the design-center heater voltage be 26.5 volts; the heater power supply should not fluctuate more than 10% to insure long life.

[W] In a single-tube, self-excited oscillator circuit, and with ac heater voltage of 26.5 volts, dc plate voltage of 600 volts, dc grid-No.2 voltage of 200 volts, grid-No.1 resistor of 24,000 ± 10% ohms, dc plate current of 150 max. ma., dc grid-No.1 current of 2.5 to 3 ma., and frequency of 15 Mc.

**Mobile Equipment Operation:**

| | *Min.* | *Design Range* | *Max.* | |
|---|---|---|---|---|
| Heater, for Unipotential Cathode: | | | | |
| Voltage (AC or DC)[x] | – | 24 to 29 | – | volts |
| Current at 26.5 volts | 0.28 | – | 0.32 | amp |
| Useful Power Output I[y] | 59 | – | – | watts |
| Useful Power Output II | | See *Note Z* | | |

[x] It is recommended that the heater voltage operate within the range of 24 to 29 volts and within excursions from 21 to 31 volts in battery operation. See *Useful Power Output II* and *Overvoltage Tests.*

[y] In a single-tube, self-excited oscillator circuit, and with ac heater voltage of 26.5 volts, dc plate voltage of 600 volts, dc grid-No.2 voltage of 200 volts, grid-No.1 resistor of 24,000 ± 10% ohms, dc plate current of 150 max. ma., dc grid-No.1 current of 2.5 to 3 ma., and frequency of 15 Mc.

[z] With conditions in note (y) above, reduce heater voltage to 21 volts. Useful power output will be at least 90% of the power output at heater voltage of 26.5 volts.

**Overvoltage Heater Life Tests:**

Continuous heater life tests are performed periodically on sample lots of tubes with 31 volts on the heater, all other electrodes "floating". Intermittent heater life tests are performed periodically on sample lots of tubes with 43 volts on the heater, a cycle of 1 minute "ON" and 4 minutes "OFF". After 1000 hours of the continuous heater life test and after 48 hours of the intermittent heater life test, the following tests are performed:

With heater voltage of 26.5 volts and ± 100 dc volts between cathode and heater, the heater-cathode leakage current will not exceed 150 microamperes.

With ac or dc heater voltage of 26.5 volts, grid-No.1 volts = −200 and cathode, grid No.2, and plate grounded, the minimum grid-No.1 leakage resistance will be 10 megohms.

With ac or dc heater voltage of 26.5 volts, plate volts = −200, and cathode grid No.1 and grid No.2 grounded, the minimum plate leakage will be 10 megohms.