# 851

# MODULATOR, A-F POWER AMPLIFIER R-F POWER AMPLIFIER, OSCILLATOR

| | | |
|---|---|---|
| Filament | Thoriated Tungsten | |
| Voltage | 11 | a-c or d-c volts |
| Current | 15.5 | amp. |
| Amplification Factor | 20.5 | |
| Direct Interelectrode Capacitances (approx.): | | |
| Grid to Plate | 47 | μμf |
| Grid to Filament | 25.5 | μμf |
| Plate to Filament | 4.5 | μμf |
| Overall Length | | 17-1/2" ± 1/8" |
| Maximum Diameter | | 6-1/8" |
| Bulb | | T-48 |
| Cap | | No.1902 |
| Base | | No.3117 |

## MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

### A-F POWER AMPLIFIER & MODULATOR - Class A

| | | | | |
|---|---|---|---|---|
| D-C Plate Voltage | | | 2500 max. | volts |
| Plate Dissipation | | | 600 max. | watts |
| Typical Operation: | | | | |
| Filament Voltage | 11 | 11 | 11 | a-c volts |
| D-C Plate Voltage | 1500 | 2000 | 2500 | volts |
| D-C Grid Voltage | -40 | -65 | -92 | volts |
| Peak A-F Grid Voltage | 44 | 60 | 87 | volts |
| D-C Plate Current | 175 | 270 | 240 | ma. |
| Plate Resistance | 1800 | 1500 | 1600 | ohms |
| Load Resistance | 3700 | 3100 | 5000 | ohms |
| Power Output | 46 | 100 | 160 | watts |

### A-F POWER AMPLIFIER & MODULATOR - Class B

| | | | | |
|---|---|---|---|---|
| D-C Plate Voltage | | | 3000 max. | volts |
| Max-Signal D-C Plate Current* | | | 1 max. | amp. |
| Max-Signal Plate Input* | | | 2250 max. | watts |
| Plate Dissipation* | | | 750 max. | watts |
| Typical Operation - 2 tubes: | | | | |
| *Unless otherwise specified, values are for 2 tubes.* | | | | |
| Filament Voltage | 11 | 11 | 11 | a-c volts |
| D-C Plate Voltage | 2000 | 2500 | 3000 | volts |
| D-C Grid Voltage | -85 | -111 | -135 | volts |
| Peak A-F Grid-to-Grid Volt. | 500 | 490 | 490 | volts |
| Zero-Signal D-C Plate Cur. | 0.12 | 0.12 | 0.11 | amp. |
| Max-Signal D-C Plate Cur. | 1.7 | 1.4 | 1.2 | amp. |
| Load Resistance (per tube) | 650 | 1000 | 1400 | ohms |
| Effective Load Resistance (plate to plate) | 2600 | 4000 | 5600 | ohms |
| Max-Signal Driving Power | 20 | 12 | 6 | approx.watts |
| Max-Signal Power Output | 2.2 | 2.3 | 2.4 | approx.kw |

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

← Indicates a change

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# MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

## R-F POWER AMPLIFIER - Class B Telephony

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

| | | | | | |
|---|---|---|---|---|---|
| D-C Plate Voltage | | | 2500 | max. | volts |
| D-C Plate Current | | | 0.75 | max. | amp. |
| R-F Grid Current | | | 8 | max. | amp. |
| Plate Input | | | 1100 | max. | watts |
| Plate Dissipation | | | 750 | max. | watts |
| Typical Operation: | | | | | |
| Filament Voltage | 11 | 11 | 11 | a-c | volts |
| D-C Plate Voltage | 1500 | 2000 | 2500 | | volts |
| D-C Grid Voltage | -60 | -85 | -110 | | volts |
| → Peak R-F Grid Voltage | 150 | 140 | 135 | | volts |
| D-C Plate Current | 0.62 | 0.475 | 0.39 | | amp. |
| Driving Power ** ° | 40 | 25 | 20 | approx. | watts |
| Power Output | 275 | 300 | 325 | approx. | watts |

° 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 fact. of 1.0*

| | | | | | |
|---|---|---|---|---|---|
| D-C Plate Voltage | | | 2000 | max. | volts |
| D-C Grid Voltage | | | -500 | max. | volts |
| D-C Plate Current | | | 1 | max. | amp. |
| D-C Grid Current | | | 0.2 | max. | amp. |
| R-F Grid Current | | | 8 | max. | amp. |
| Plate Input | | | 1800 | max. | watts |
| Plate Dissipation | | | 500 | max. | watts |
| Typical Operation: | | | | | |
| Filament Voltage | | 11 | 11 | a-c | volts |
| D-C Plate Voltage | | 1500 | 2000 | | volts |
| D-C Grid Voltage | | -250 | -300 | | volts |
| Peak R-F Grid Voltage | | 475 | 525 | | volts |
| D-C Plate Current | | 0.9 | 0.85 | | amp. |
| D-C Grid Current ** | | 0.15 | 0.125 | approx. | amp. |
| Driving Power ** | | 75 | 65 | approx. | watts |
| Power Output | | 900 | 1250 | approx. | watts |

## R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

*Key-down conditions per tube without modulation**

| | | | | | |
|---|---|---|---|---|---|
| D-C Plate Voltage | | | 2500 | max. | volts |
| → D-C Grid Voltage | | | -500 | max. | volts |
| D-C Plate Current | | | 1 | max. | amp. |
| D-C Grid Current | | | 0.2 | max. | amp. |
| R-F Grid Current | | | 10 | max. | amp. |
| Plate Input | | | 2500 | max. | watts |
| Plate Dissipation | | | 750 | max. | watts |
| Typical Operation: | | | | | |
| Filament Voltage | 11 | 11 | 11 | a-c | volts |
| D-C Plate Voltage | 1500 | 2000 | 2500 | | volts |

*, ** See next page.

← Indicates a change

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# MODULATOR, A-F POWER AMPLIFIER, R-F POWER AMPLIFIER, OSCILLATOR

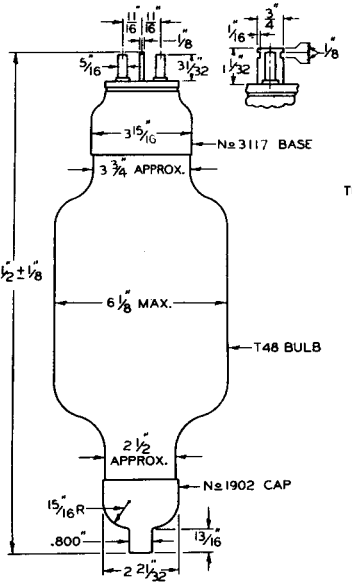
(continued from preceding page)

| | | | | |
|---|---|---|---|---|
| D-C Grid Voltage | -150 | -200 | -250 | approx.volts |
| Peak R-F Grid Voltage | 375 | 425 | 450 | approx.volts |
| D-C Plate Current | 0.9 | 0.9 | 0.9 | amp. |
| D-C Grid Current ** | 0.15 | 0.12 | 0.1 | approx.amp. |
| Driving Power ** | 55 | 50 | 45 | approx.watts |
| Power Output | 900 | 1250 | 1700 | approx.watts |

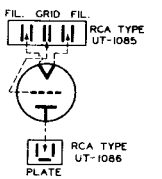
** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

For use of the 851 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.




TUBE SYMBOL & CONNECTIONS TO END-MOUNTINGS.



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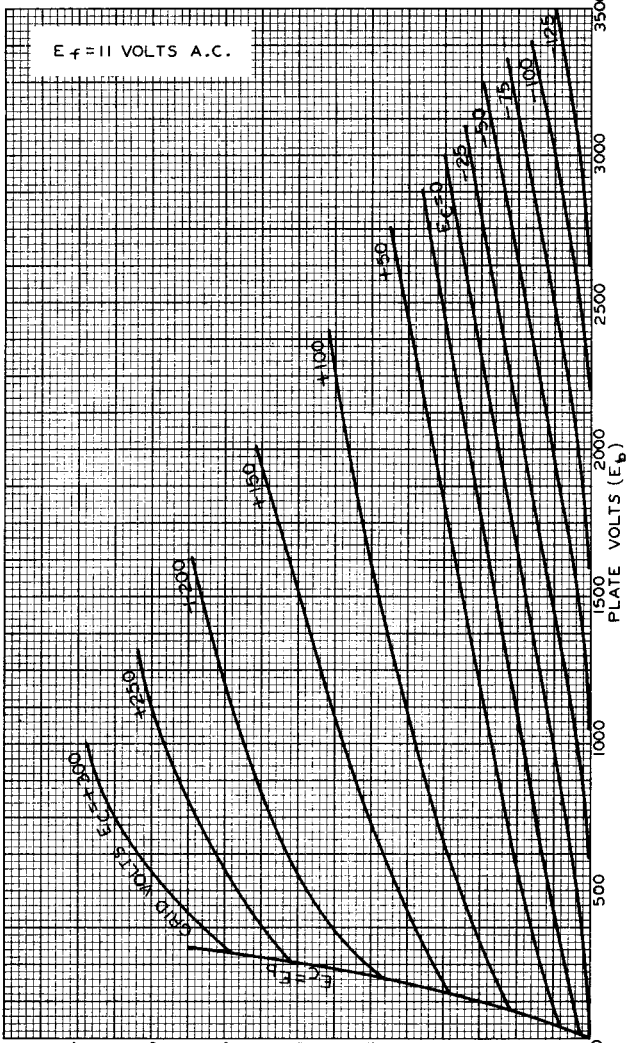
## AVERAGE PLATE CHARACTERISTICS



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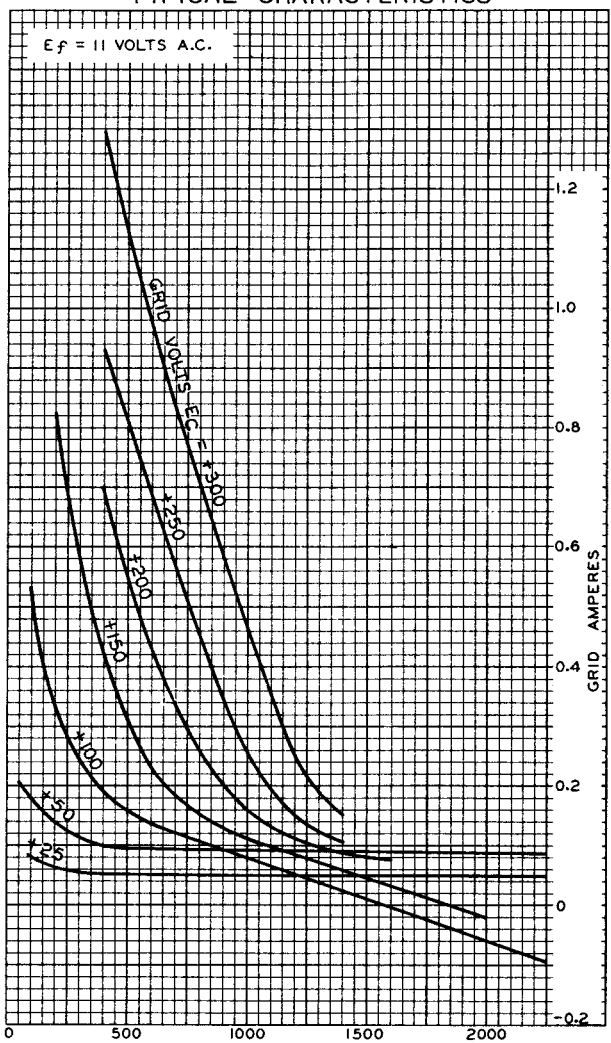
## TYPICAL CHARACTERISTICS



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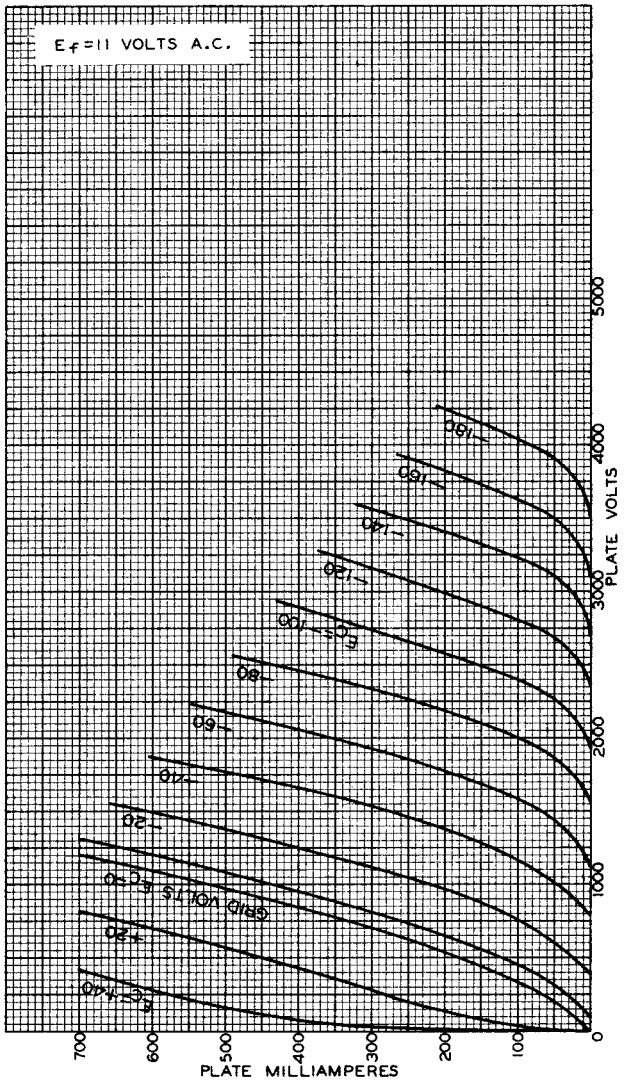
## AVERAGE PLATE CHARACTERISTICS

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RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC.

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