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CLASS B MODULATOR

R-F POWER AMPLIFIER, OSCILLATOR

Filament	Thoriated Tungsten	
Voltage	10	a-c or d-c volts
Current	3.25	amp.
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	8	μf
Grid to Filament	6.5	μf
Plate to Filament	5	μf
Maximum Overall Length		7-7/8"
Maximum Diameter		2-5/16"
Bulb		T-18
Base		Jumbo 4-Large Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	1250 max.	volts
Max-Sig. D-C Plate Current*	175 max.	ma.
Max-Sig. Plate Input*	220 max.	watts
Plate Dissipation*	100 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	0	0	volts
Peak A-F Grid-to-Grid Voltage	200	200	volts
Zero-Sig. D-C Plate Current	106	148	ma.
Max.-Sig. D-C Plate Current	320	320	ma.
Load Resistance (per tube)	1725	2250	ohms
Effective Load Res. (Plate to plate)	6900	9000	ohms
Max.-Sig. Driving Power	7	7.5 approx.	watts
Max.-Sig. Power Output #	200	260 approx.	watts

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

Approximately 4% harmonic distortion.

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	1250 max.	volts
D-C Plate Current	150 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	150 max.	watts
Plate Dissipation	100 max.	watts

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	1000	1250	volts
D-C Grid Voltage	0	0	volts
Peak R-F Grid voltage	70	60	volts
D-C Plate Current	130	106	ma.
D-C Grid Current**	15	15 approx.	ma.
Driving Power ° **	8	6 approx.	watts
Power Output	40	42.5 approx.	watts

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

** See next page.

Indicates a change



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CLASS B MODULATOR **R-F POWER AMPLIFIER, OSCILLATOR**

(continued from preceding page)

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	1000 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	175 max.	ma.
D-C Grid Current	70 max.	ma.
R-F Grid Current	6 max.	amp.
Plate Input	175 max.	watts
Plate Dissipation	67 max.	watts
Typical Operation:		
Filament Voltage	10	10 a-c volts
D-C Plate Voltage	750	1000 volts
D-C Grid Voltage	-100	-135 volts
Peak R-F Grid Voltage	220	255 volts
D-C Plate Current	150	150 ma.
D-C Grid Current **	60	60 <u>approx. ma.</u>
Driving Power **	14	16 <u>approx. watts</u>
Power Output	65	100 <u>approx. watts</u>

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

*Key-down conditions per tube without modulation**

→ D-C Plate Voltage	1250 max.	volts
D-C Grid Voltage	-400 max.	volts
D-C Plate Current	175 max.	ma.
D-C Grid Current	70 max.	ma.
R-F Grid Current	7.5 max.	amp.
Plate Input	220 max.	watts
Plate Dissipation	100 max.	watts
Typical Operation:		
Filament Voltage	10	10 10 a-c volts
D-C Plate Voltage	750	1000 1250 volts
D-C Grid Voltage	-80	-85 -90 volts
Peak R-F Grid Voltage	190	195 200 volts
D-C Plate Current	150	150 150 ma.
D-C Grid Current **	30	30 30 <u>approx. ma.</u>
Driving Power **	6	6 6 <u>approx. watts</u>
Power Output	65	100 130 <u>approx. watts</u>

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

** Subject to wide variations as explained on sheet TRANS. TUBERATINGS.

For use of the 838 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and
 SOCKET CONNECTIONS for the 838 are the same
 as for the 211.

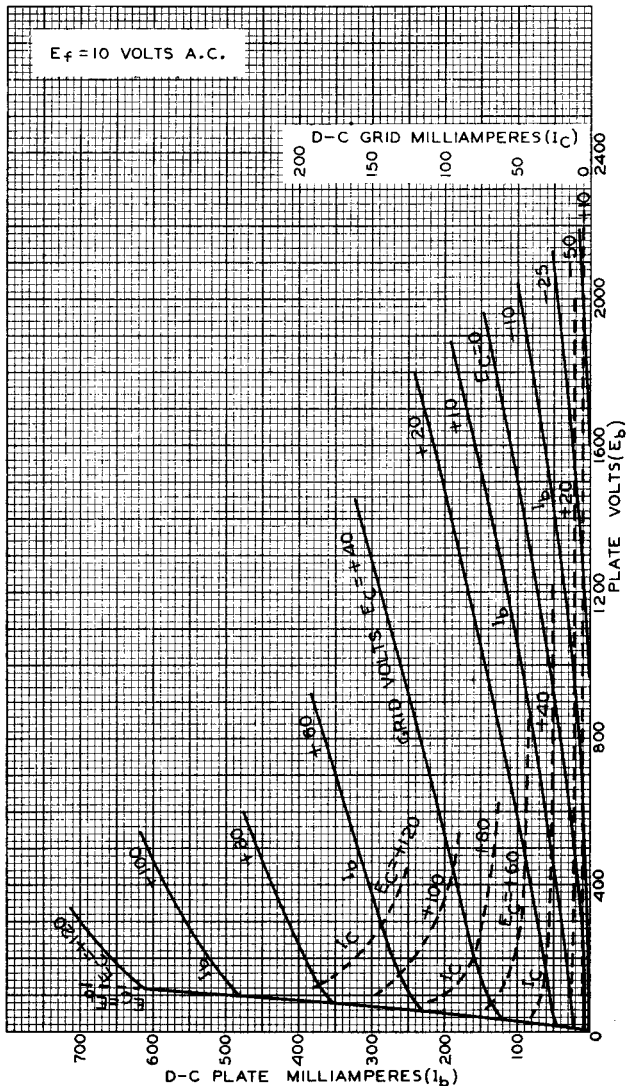
• Indicates a change



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AVERAGE PLATE CHARACTERISTICS



APRIL 15, 1935

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

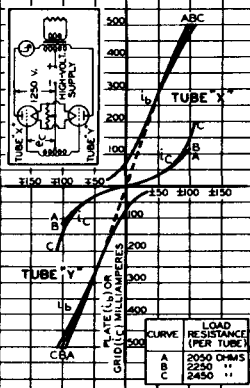
92C-4404



CHARACTERISTICS CURVES

DYNAMIC TRANSFER CHARACTERISTICS

$E_f = 10$ VOLTS A.C. TYPE 838
 PLATE VOLTS = 1250
 D-C GRID BIAS VOLTS = 0

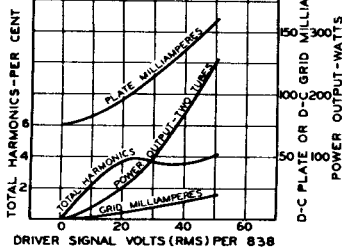
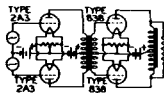
INSTANTANEOUS A-F GRID VOLTS (e_c)

92C-4407R1

OPERATION CHARACTERISTICS

$E_f = 10$ VOLTS A.C. FOR 838'S
 2.5 VOLTS A.C. FOR 2A3'S

INPUT: CLASS A-TWO TYPE 2A3'S PUSH PULL
 PLATE VOLTS = 250, GRID VOLTS = -45
 OUTPUT: CLASS B-TWO TYPE 838'S
 PLATE VOLTS = 1250, GRID VOLTS = 0
 INTERSTAGE TRANSFORMER:
 VOLTAGE RATIO = 3.2
 $\frac{P_{out}}{P_{in}} = 17.2$ SEC.
 PEAK POWER EFFICIENCY = 90%



DRIVER SIGNAL VOLTS (RMS) PER 838

92C-4406R1