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TRANSMITTING BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

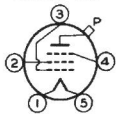
Filament, Thoriated Tungsten:		
Voltage	10 ± 0.5	ac or dc volts
Current	3.25	amp
Transconductance (Approx.) for plate current of 39 ma.	3300	μmhos
Direct Interelectrode Capacitances:°		
Grid No.1 to Plate	0.15 max.	μμf ←
Input	13.5	μμf
Output	13.5	μμf

° Without external shielding.

Mechanical:

Mounting Position	Vertical, base down; Horizontal, pins 2 & 4 in vertical plane
Overall Length	7-7/16" ± 1/4"
Seated Length	6-13/16" ± 1/4"
Maximum Diameter	2-1/16"
Bulb	T-16
Cap	Small
Base	Medium-Shell Small 5-Pin, Micanol
Basing Designation for BOTTOM VIEW	5J

Pin 1 – Filament
Pin 2 – Grid No.2
Pin 3 – Grid No.1
Pin 4 – Grid No.3
Pin 5 – Filament
Cap – Plate



RF POWER AMPLIFIER – Class B Telephony

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

Maximum Ratings, *Absolute Values*:

	CCS•	ICAS••	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	400 max.	400 max.	volts ←
DC PLATE CURRENT	60 max.	60 max.	ma
PLATE INPUT	75 max.	90 max.	watts
GRID-No.2 INPUT	6.7 max.	6.7 max.	watts
PLATE DISSIPATION	50 max.	60 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	volts
DC Grid-No.2 Voltage	200	200	250	volts
DC Grid-No.1 (Control-Grid) Voltage®	-28	-28	-35	volts

•, ••, †, ®: See next page. ← Indicates a change.

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	CCS●		ICAS●●		
Peak RF Grid-No.1 Voltage. .	50	50	56	. .	volts
DC Plate Current	60	60	60	. .	ma
DC Grid-No.2 Current	1.3	1	1.5	. .	ma
DC Grid-No.1 Current (Approx.)* . . .	1.8	1.8	1.5	. .	ma
Driving Power (Approx.)□* .	0.65	0.65	0.85	. .	watt
Power Output (Approx.) . . .	20	25	30	. .	watts

GRID-MODULATED RF POWER AMPLIFIER – Class C Telephony

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

Maximum Ratings, ***Absolute Values:***

	CCS●	ICAS●●	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
→ DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE. . . .	-250 max.	-250 max.	volts
DC PLATE CURRENT	60 max.	60 max.	ma
PLATE INPUT.	75 max.	90 max.	watts
GRID-No.2 INPUT.	6.7 max.	6.7 max.	watts
PLATE DISSIPATION.	50 max.	60 max.	watts

Typical Operation:

DC Plate Voltage	1000	1250	1500	. .	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	. .	volts
DC Grid-No.2 Voltage	200	200	250	. .	volts
DC Grid-No.1 Voltage● . . .	-100	-100	-120	. .	volts
Peak RF Grid-No.1 Voltage. .	129	129	150	. .	volts
→ Peak AF Grid-No.1 Voltage. .	64	64	90	. .	volts
DC Plate Current	60	60	60	. .	ma
DC Grid-No.2 Current	2	1.4	3	. .	ma
DC Grid-No.1 Current (Approx.)*. . . .	3	2.8	2.5	. .	ma
Driving Power (Approx.)□* .	2.5	2.3	4.2	. .	watts
Power Output (Approx.) . . .	25	29	35	. .	watts

PLATE-MODULATED RF POWER AMPLIFIER – Class C Telephony

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

Maximum Ratings, ***Absolute Values:***

	CCS●	ICAS●●	
DC PLATE VOLTAGE	1000 max.	1250 max.	volts
→ DC GRID-No.2 (SCREEN) VOLTAGE.	400 max.	400 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-300 max.	-300 max.	volts

□ At crest of audio-frequency cycle with a modulation factor of 1.0.

●,●●,†,●,*: See next page. → Indicates a change.

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	CCS*		ICAS**		
DC PLATE CURRENT	120 max.		150 max.		ma
DC GRID-No.1 CURRENT	15 max.		15 max.		ma
PLATE INPUT	120 max.		180 max.		watts
GRID-No.2 INPUT	6.7 max.		6.7 max.		watts
PLATE DISSIPATION	34 max.		50 max.		watts
Typical Operation:					
DC Plate Voltage	900	1000	1250		volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0		volts
DC Grid-No.2 Voltage▲▲	300	300	300		volts
	40000	40000	48000		ohms
DC Grid-No.1 Voltage††*	−150	−150	−150		volts
	15000	15000	15000		ohms
Peak RF Grid-No.1 Voltage	215	222	222		volts
DC Plate Current	120	120	144		ma
DC Grid-No.2 Current	15	17.5	20		ma
DC Grid-No.1 Current (Approx.)*	10	10	10		ma
Driving Power (Approx.)*	2	2	2		watts ←
Power Output (Approx.)	76	87	130		watts

▲▲ Obtained preferably from modulated plate-voltage supply through resistor of value shown.

RF POWER AMPLIFIER & OSCILLATOR – Class C Telegraphy

*Key-down conditions per tube without modulation**

Maximum Ratings, *Absolute Values*:	CCS*	ICAS**	
DC PLATE VOLTAGE	1250 max.	1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	400 max.	400 max.	volts ←
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	−300 max.	−300 max.	volts
DC PLATE CURRENT	150 max.	150 max.	ma
DC GRID-No.1 CURRENT	15 max.	15 max.	ma
PLATE INPUT	180 max.	225 max.	watts
GRID-No.2 INPUT	10 max.	10 max.	watts
PLATE DISSIPATION	50 max.	65 max.	watts
Typical Operation:			
DC Plate Voltage	1000	1250	1500	volts
DC Grid-No.3 (Suppressor) Voltage†	0	0	0	volts
DC Grid-No.2 Voltage■■*	300	300	300	volts
	40000	42000	50000	ohms
DC Grid-No.1 Voltage††*	−70	−80	−90	volts
	7000	8000	9000	ohms
	395	455	490	ohms
Peak RF Grid-No.1 Voltage	150	165	170	volts

*, **, †, ●, ▼, ††, ■, ■■, ●: see next page. ←Indicates a change.

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TRANSMITTING BEAM POWER AMPLIFIER

	CCS●		ICAS●●		
DC Plate Current	150	144	150	. .	ma
DC Grid-No.2 Current	17.5	22.5	24	. .	ma
DC Grid-No.1 Cur. (Approx.)*	10	10	10	. .	ma
Driving Power Approx.)*. . .	1.35	1.5	1.5	. .	watts
Power Output (Approx.) . . .	100	130	160	. .	watts

● Continuous Commercial Service.

●● Intermittent Commercial & Amateur Service.

† Connect grid No.3 to mid-point of filament operated on ac, or to the negative end of filament operated on dc.

* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS—Grid Current and Driving Power in the General Section.

†† Obtained preferably from grid-No.1 resistor, although combination of either grid-No.1 resistor and cathode resistor or grid resistor and fixed supply may be used.

■ 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 separate source, from the plate-voltage supply with a voltage divider, or through a series resistor (40000, ±2000, 50000).

⊕ If preceding stage is keyed, partial fixed-bias is required.

⊕ For ac filament supply.

→ CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	3.10	3.40	amp
Grid No.1-Plate Capacitance	-	-	0.15	μμf
Input Capacitance.	-	11.1	15.9	μμf
Output Capacitance	-	10.1	16.9	μμf
Plate Current.	1,2	30	48	ma
Grid-No.2 Current.	1,2	-	3.5	ma
Grid-No.1 Current.	1,3	22	52	ma
Power Output	1,4	120	-	watts

NOTE 1: DC filament volts = 10.0.

NOTE 2: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; and dc grid-No.1 voltage of -19 volts.

NOTE 3: With dc plate voltage of 175 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 175 volts; and dc grid-No.1 voltage of +65 volts.

NOTE 4: With dc plate voltage of 1250 volts; dc grid-No.3 voltage of 0 volts; dc grid-No.2 voltage of 300 volts; plate current of 150 ma., grid-No.1 current of 10 - 15 ma.; grid-No.1 resistor of 8000 ±10% ohms; and frequency of 15 Mc.

OUTLINE DIMENSIONS for Type 814 are the same as those for Type 828.

Data on operating frequencies for the 814 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

→ Indicates a change.

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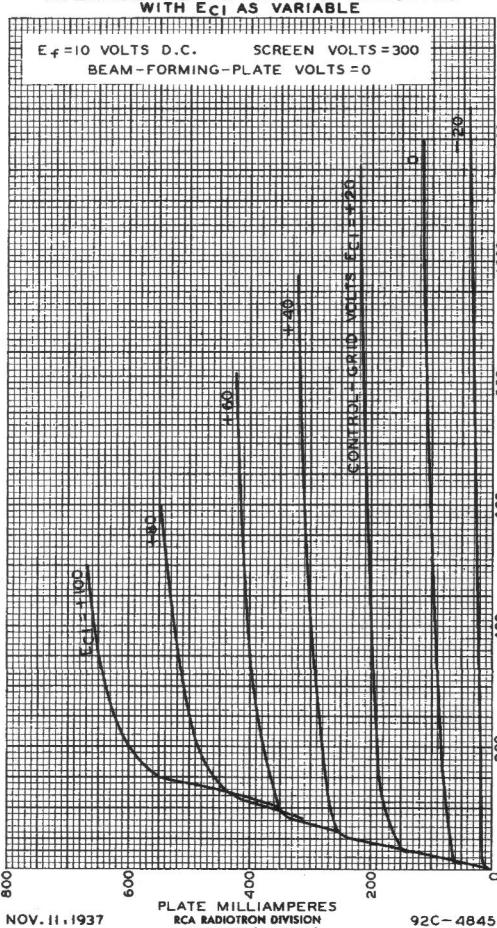
AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE



NOV. 11, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4845

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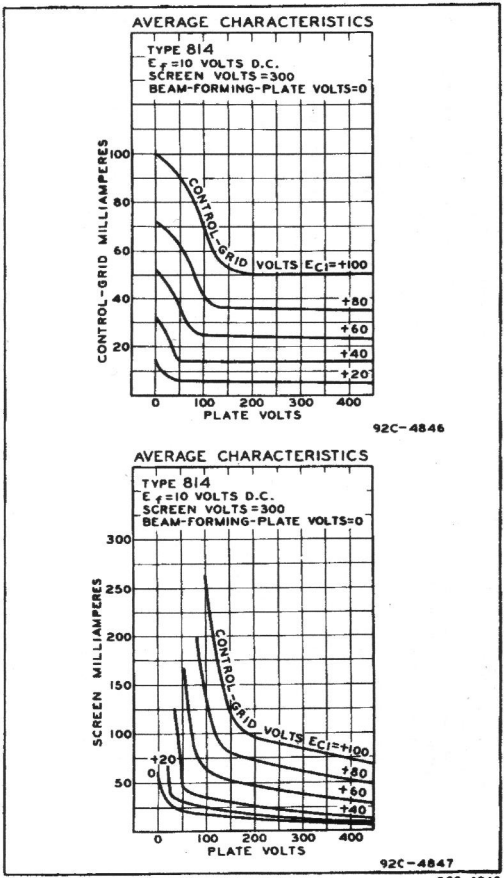
TRANSMITTING BEAM POWER AMPLIFIER



APRIL 20, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

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92C-4847