

# 5866/AX-9900

# AMPEREX TUBE TYPE 5866/AX-9900

## MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

### A.F. Power Amplifier and Modulator—Class B

Maximum Ratings, Absolute Values

D.C. Plate Voltage	2500 volts max.
Maximum Signal D.C. Plate Current <sup>1</sup>	205 ma max.
Maximum Signal Plate Input <sup>1</sup>	512 watts max.
Plate Dissipation <sup>1</sup>	135 watts max.

Typical Operation

Unless otherwise specified, values are for two tubes.

D.C. Plate Voltage	1000	1500	2000	2500	volts
D.C. Grid Voltage	-23	-46	-65	-86	volts
Peak A.F. Grid to Grid Voltage	295	340	394	412	volts
Zero Signal D.C. Plate Current	60	60	60	60	ma
Maximum Signal D.C. Current	420	420	416	356	ma
Effective Load Resistance, Plate to Plate	5000	8500	12000	16200	ohms
Maximum Signal Driving Power, approximate <sup>2</sup>	10.8	12.2	14.6	15.6	watts
Maximum Signal Power Output, approximate	274	450	630	700	watts

### R.F. Power Amplifier—Class B

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

Maximum Ratings, Absolute Values

D.C. Plate Voltage	2500	volts max.
D.C. Plate Current	120	ma max.
Plate Input	215	watts max.
Plate Dissipation	135	watts max.

Typical Operation

D.C. Plate Voltage	1300	2000	2500	volts
D.C. Grid Voltage	-5	-87	-87	volts
Peak R.F. Grid Voltage	100	100	100	volts
D.C. Plate Current	120	97	70	ma
D.C. Grid Current, approximate <sup>2</sup>	9.6	5.1	3.6	watts
Driving Power, approximate <sup>2</sup>	59	64	65	watts
Power Output, approximate	59	64	65	watts

### Plate-Modulated R.F. Power Amplifier

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

Maximum Ratings, Absolute Values

D.C. Plate Voltage	2000	volts max.
D.C. Grid Voltage	160	ma max.
D.C. Plate Current	45	ma max.
Plate Input	320	watts max.
Plate Dissipation	90	watts max.

Typical Operation

D.C. Plate Voltage	1000	1500	2000	volts
D.C. Grid Voltage	-130	-180	-180	volts
Peak R.F. Grid Voltage	320	370	415	volts
D.C. Plate Current	127	127	127	ma
D.C. Grid Current, approximate	40	40	40	ma
Driving Power, approximate	12	14	15	watts
Power Output, approximate	95	153	204	watts

<sup>1</sup> Exceeded over any audio-frequency cycle of sine-wave form.  
<sup>2</sup> At crest of A.F. cycle with modulation factor of 1.0.

### R.F. Power Amplifier and Oscillator

#### Class C Telephony

Key-down conditions per tube without amplitude modulation<sup>1</sup>

Maximum Ratings, Absolute Values

D.C. Plate Voltage	2500	volts max.
D.C. Grid Voltage	-300	volts max.
D.C. Plate Current	205	ma max.
D.C. Grid Current	45	ma max.
Plate Input	512	watts max.
Plate Dissipation	135	watts max.

Typical Operation, Grounded-Filament Circuit

D.C. Plate Voltage	1000	1500	2000	2500	volts
D.C. Grid Voltage	-80	-110	-130	-200	volts
Peak R.F. Grid Voltage	290	300	340	380	volts
D.C. Plate Current	205	205	205	205	ma
D.C. Grid Current, approximate	40	40	40	40	ma
Driving Power, approximate	10	11	13	14	watts
Power Output, approximate	126	210	285	380	watts

#### Class C Telephony

Some Values as for Grounded-Filament Circuit with the following exceptions:

Driving Power, approximate	50	59	68	79	watts
Power Output, approximate <sup>4</sup>	166	258	350	455	watts

Maximum ratings apply up to 150 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below (other maximum ratings are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

Percentage of Maximum Rated Plate Voltage and Plate Input

Frequency (mc)	150	200
Plate Voltage	100%	80%
Plate Input	100	80
Class B Plate Telephony	100	80
Class C Telephony	100	70

### Electrical Data and Limits

Characteristic Conditions

Class B Plate Telephony	100%	80%	70%
Class C Telephony	100	80	70

Limits

Class B Plate Telephony	100%	80%	70%
Class C Telephony	100	80	70

<sup>1</sup> Represents maximum useable cathode current (plate current plus grid current) for any condition of operation.  
<sup>2</sup> At maximum ratings and frequencies above 50 megacycles, forced-air cooling of the envelope is required.  
<sup>3</sup> Includes power transferred from driver stage.

The 5866/AX-9900 is a three-electrode tube designed for use as a radio-frequency power amplifier, modulator and oscillator. The anode is capable of dissipating 135 watts. The cathode is a thoriated-tungsten filament. Maximum ratings apply up to 150 megacycles. At reduced ratings it may be operated up to 200 megacycles.

## GENERAL CHARACTERISTICS

### ELECTRICAL DATA

Filament Voltage	6.0	6.3	6.6	volts
Filament Current at Bogey Voltage	5.2	5.6	6.1	amperes
Amplification Factor	22	25	28	
I <sub>b</sub> —54 ma, E <sub>b</sub> —2500 volts	—	—	—	1600 ma
Peak Cathode Current <sup>1</sup>	—	—	—	—

### Direct Interelectrode Capacitances

Grid to Plate	4.9	5.5	6.1	μμf
Grid to Filament	5.2	5.8	6.4	μμf
Plate to Filament	0.08	0.1	0.13	μμf

### MECHANICAL DATA

Mounting Position—vertical, base up or down

Maximum Plate Temperature	850° C.
Required Air Flow to Envelope <sup>2</sup>	5 cfm

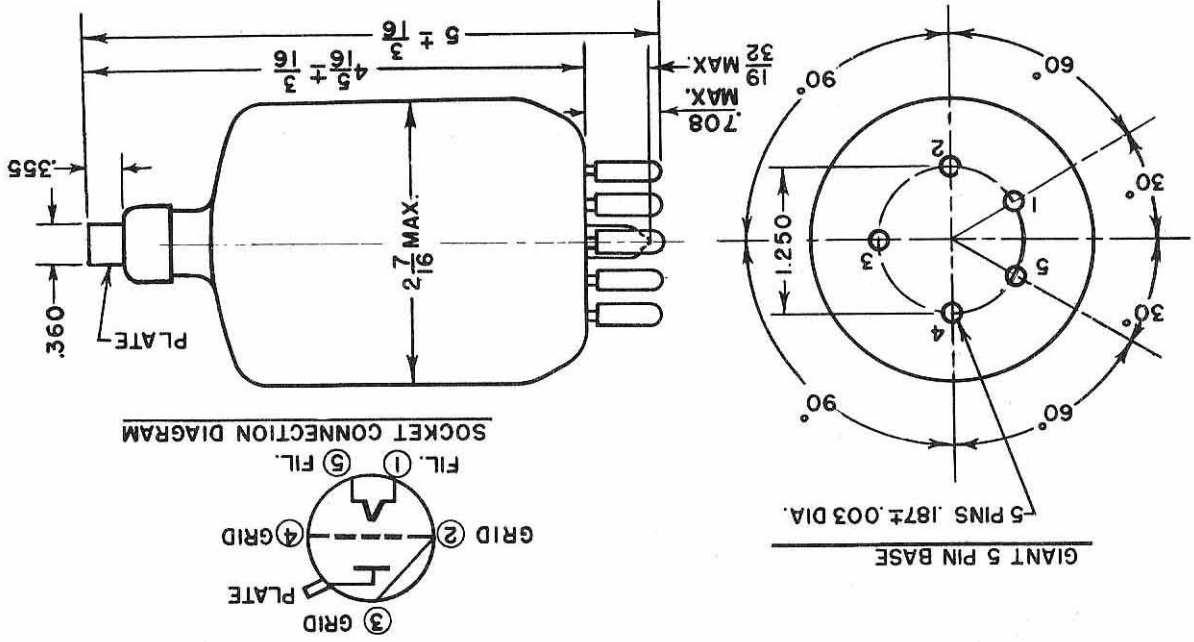
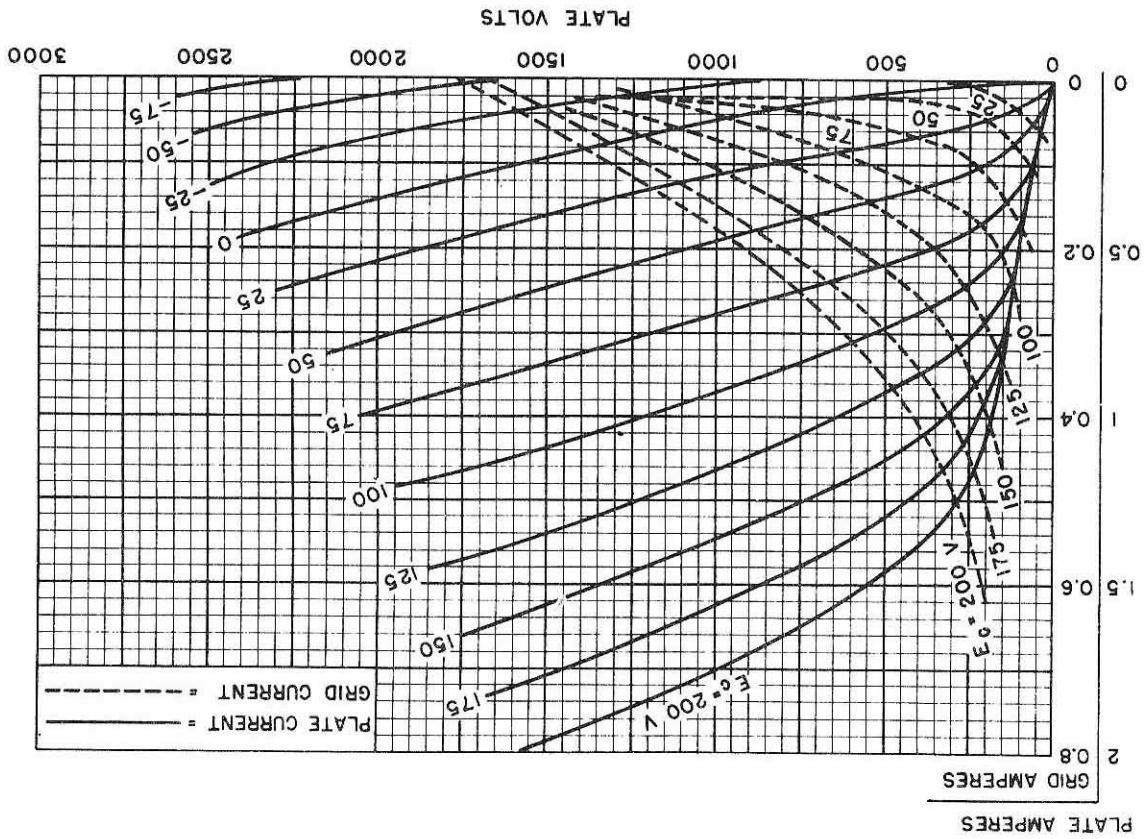
### Maximum Glass Temperature

at bottom seals	180° C.
at plate seal	220° C.
Net Weight, approximate	4 ounces

<sup>1</sup> Represents maximum useable cathode current (plate current plus grid current) for any condition of operation.  
<sup>2</sup> At maximum ratings and frequencies above 50 megacycles, forced-air cooling of the envelope is required.

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TYPICAL PERFORMANCE CURVES

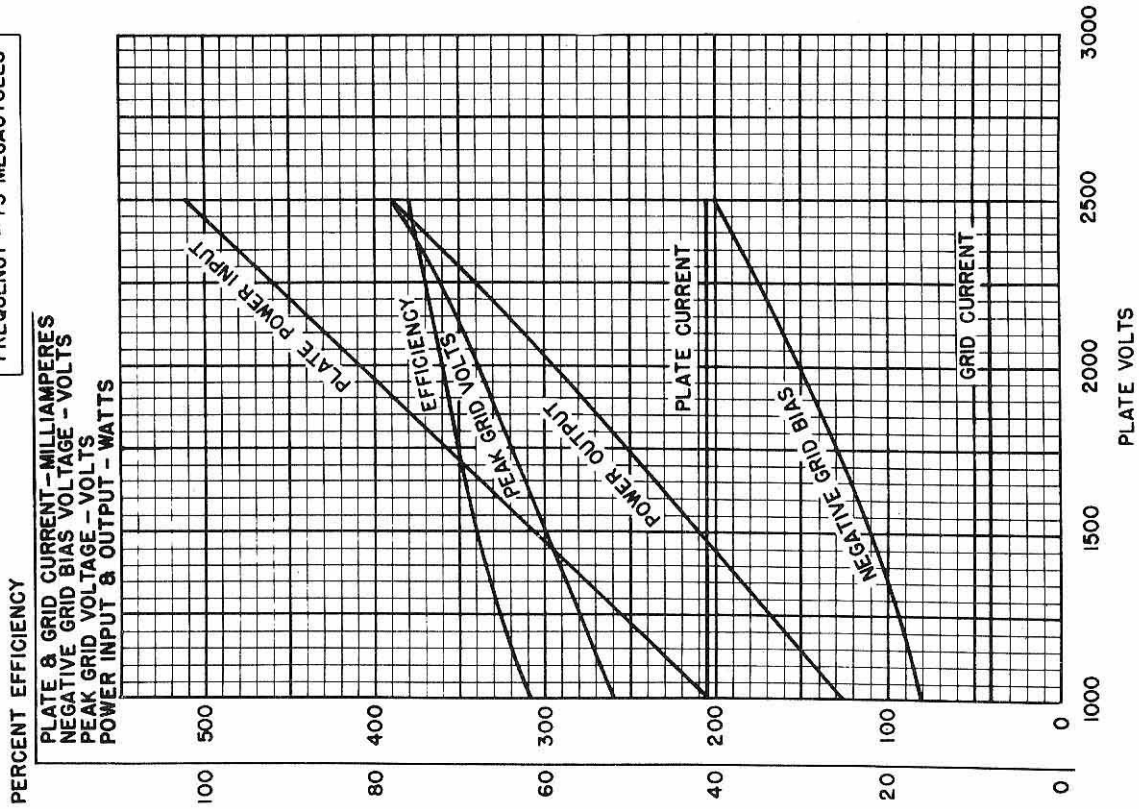


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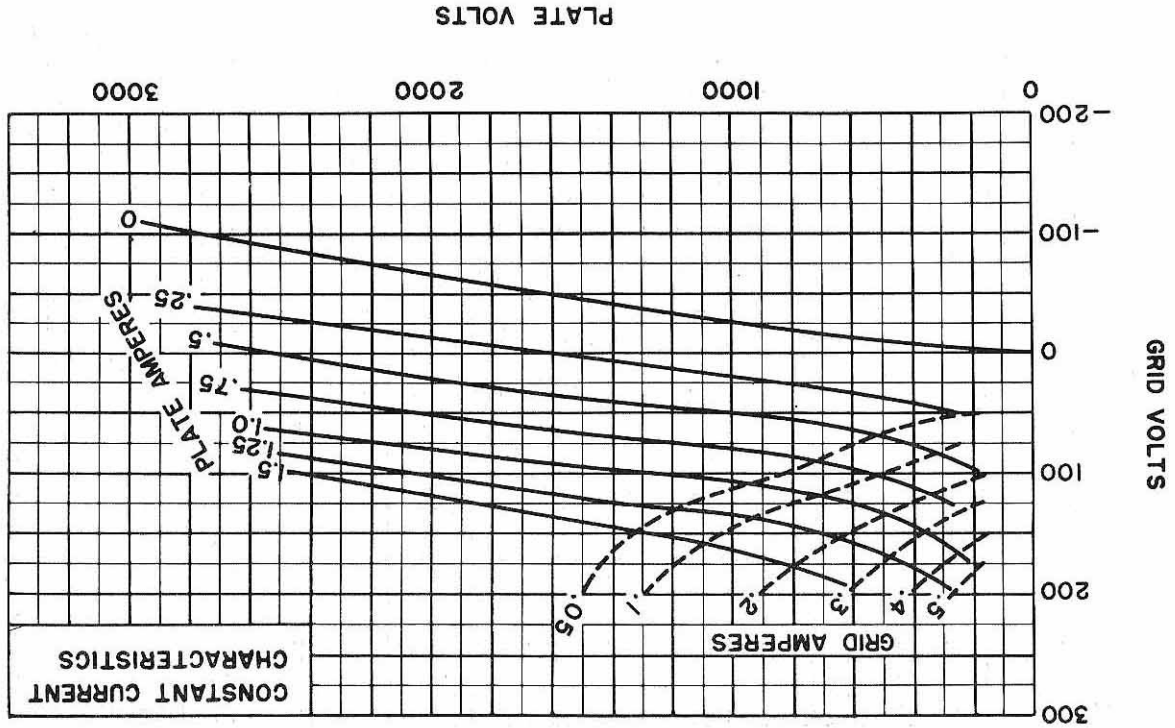
TYPICAL PERFORMANCE CURVES

CLASS C TELEGRAPHY  
FREQUENCY = 75 MEGACYCLES



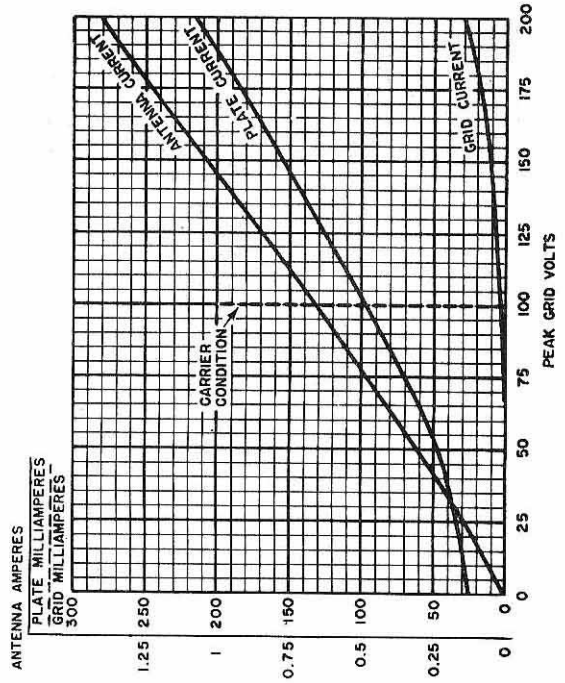
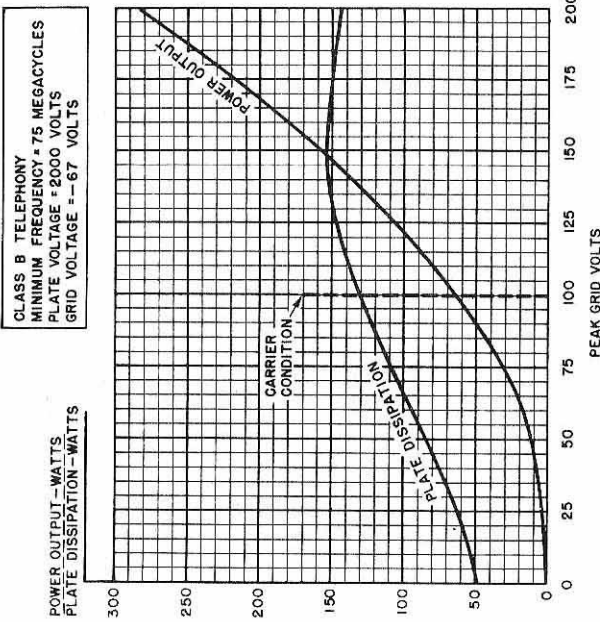
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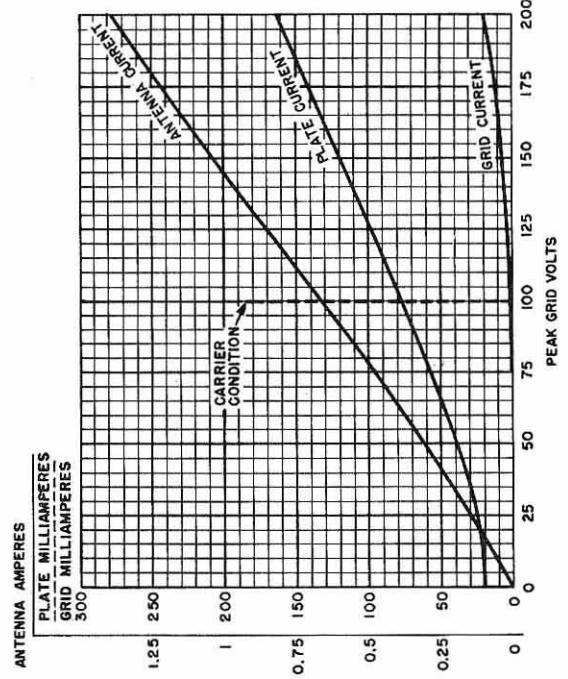
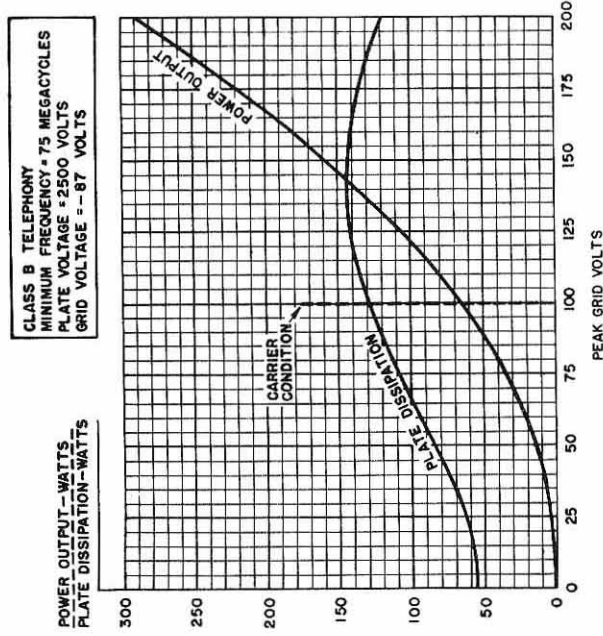
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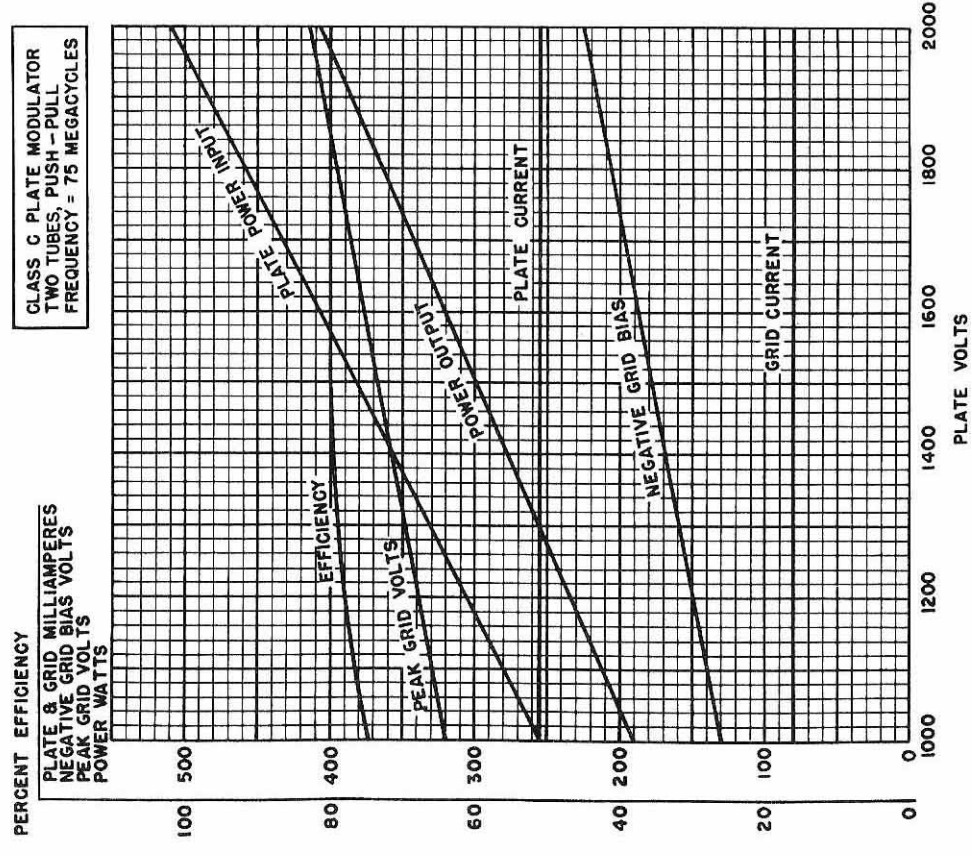
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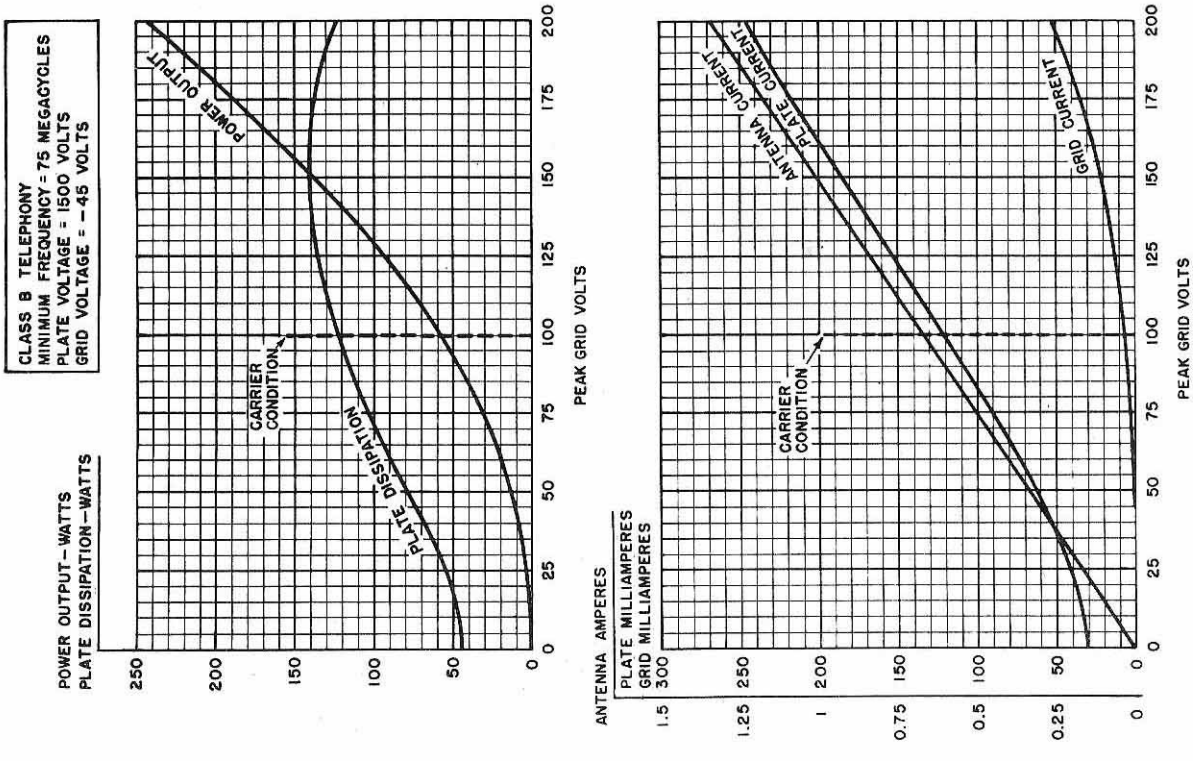
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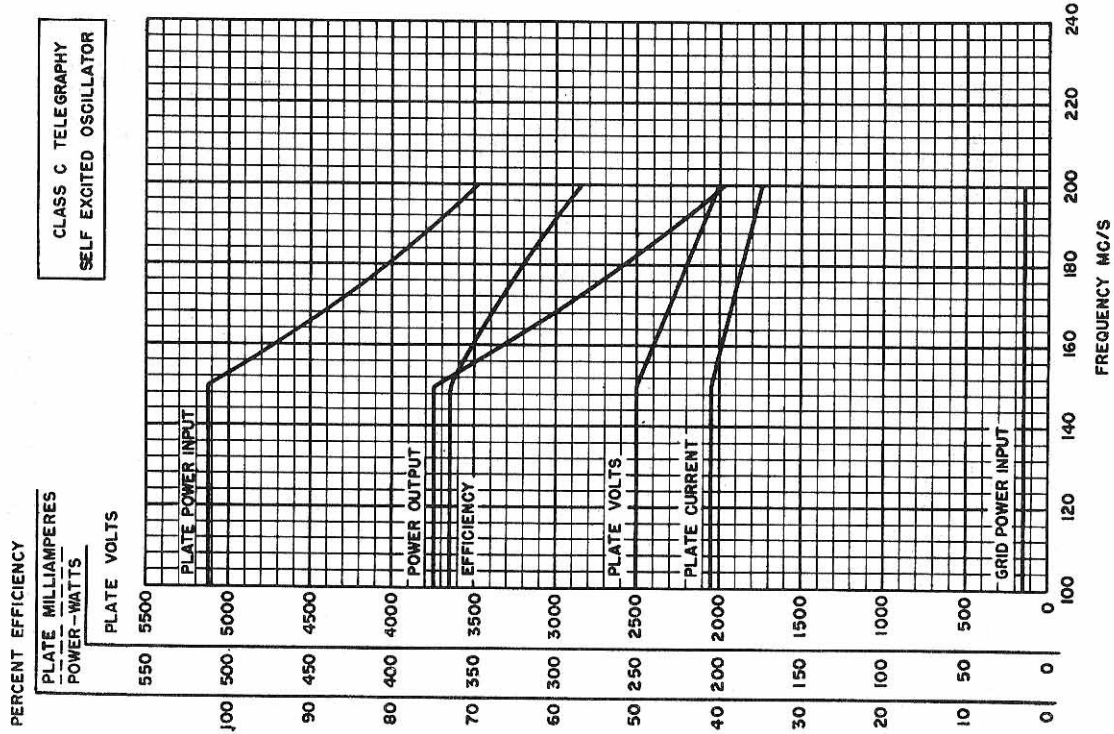
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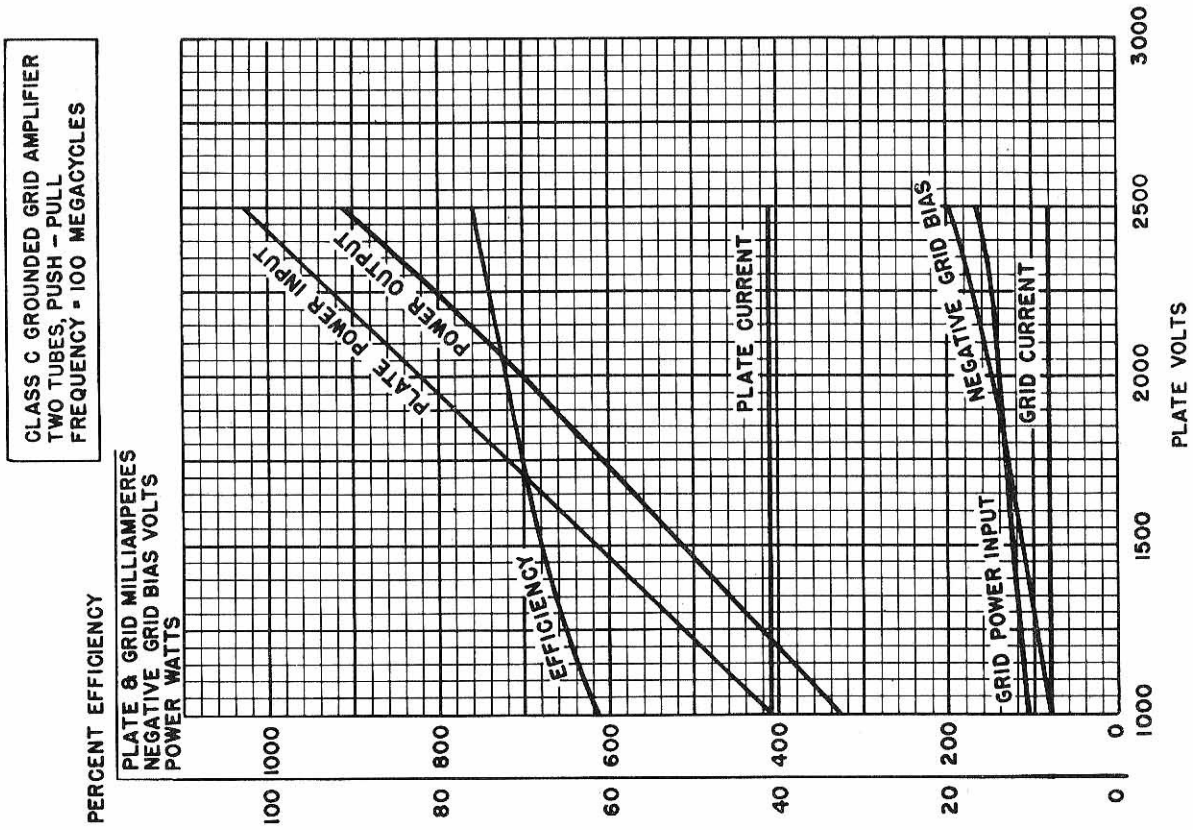
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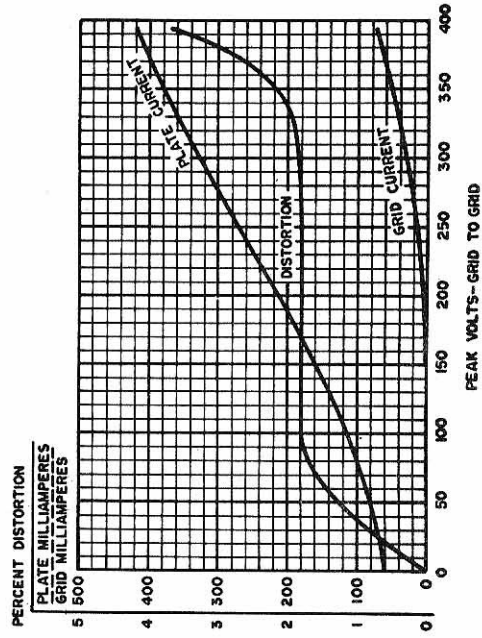
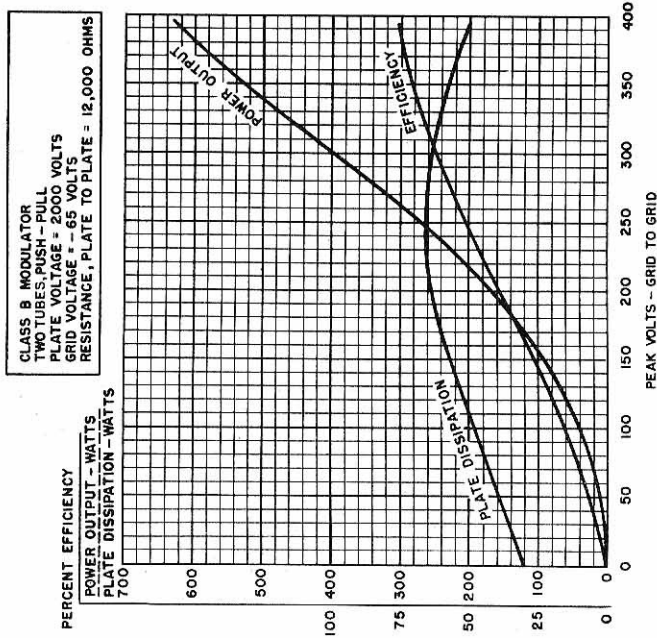
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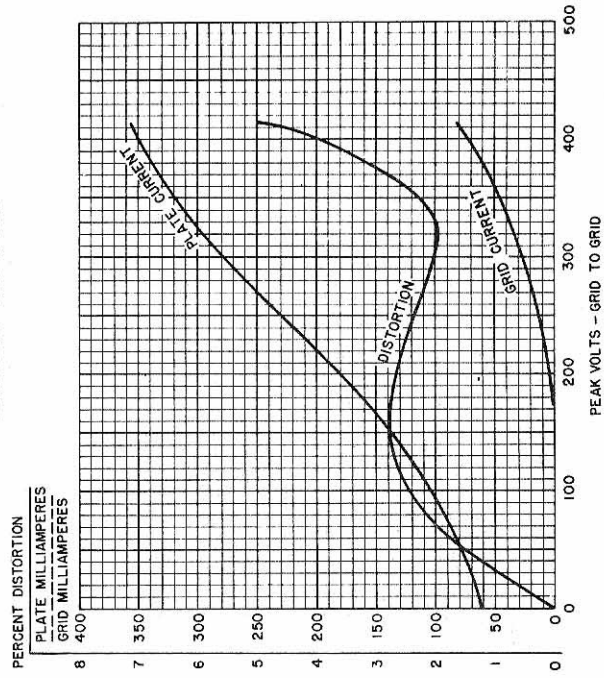
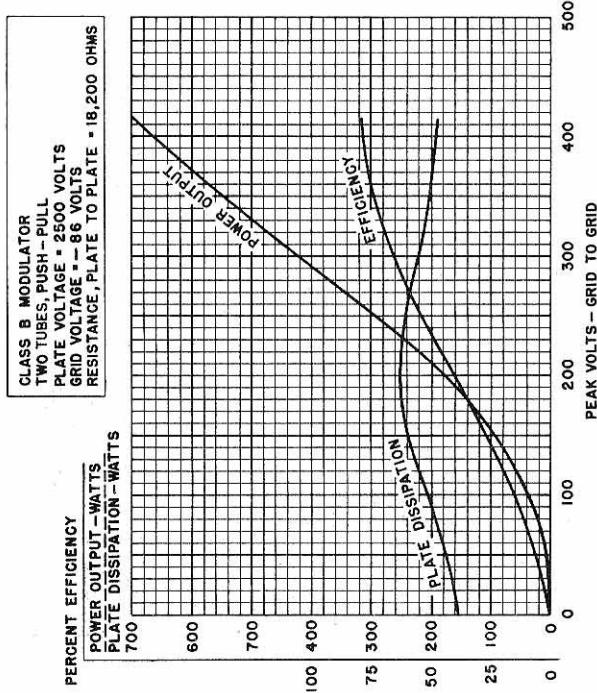
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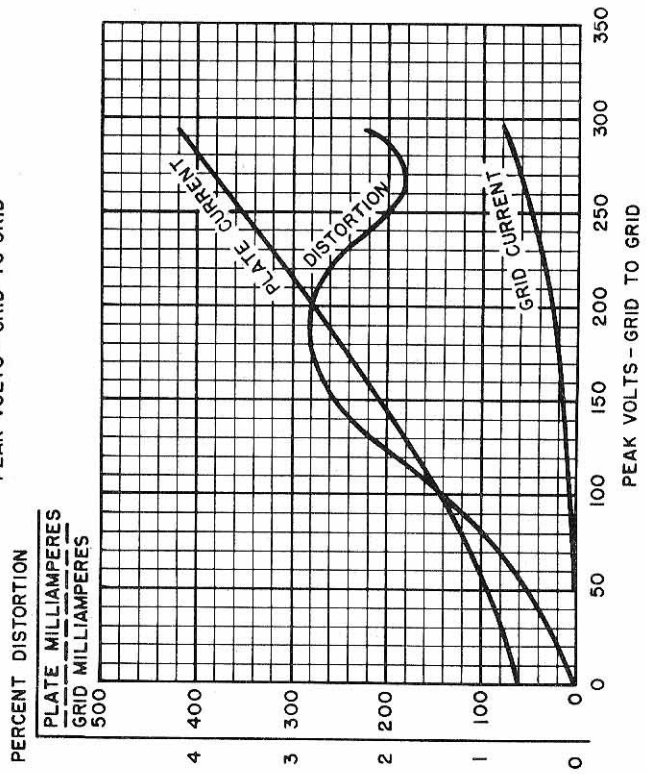
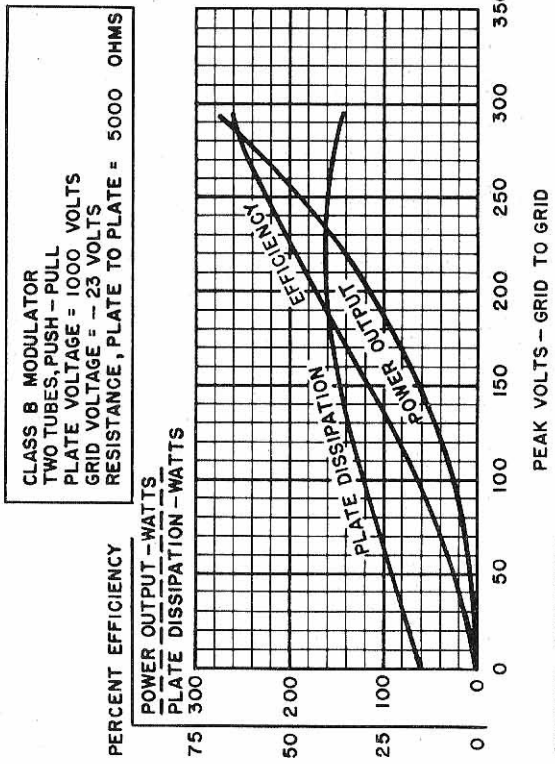
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