6252AX9T

AMPEREX TUBE TYPE 6252/AX-9910

GENERAL DESCRIPTION

The 6252/AX-9910 is a double tetrode intended for use as a Class C amplifier at frequencies up to 600 mc. Total anode dissipation is 20 watts, CCS. Allowable plate input is 90 watts CCS and 112 watts ICAS as a straight through, Class C, R.F. amplifier. The tube has built-in, cross neutralizing capacitors whose value are adjusted to be equal to the direct grid-plate capacities. This insures neutralization over the entire operating band.

GENERAL CHARACTERISTICS

ELECTRICAL DATA

	Min.	Nominal	Max.	
Heater sections connected in series				
Heater voltage	11.35	12.6	13.85	volts
Heater current (at 12.6 volts)	0.55	0.65	0.75	amp
Heater sections connected in parallel				
Heater voltage	5.7	6.3	6.9	volts
Heater current (at 6.3 volts)	1.1	1.3	1.5	amps
Amplification factor				
G_2-G_1 Mu at I_b = 20 ma	6.5	8.0	9.5	
Transconductance at I_b = 20 ma		2500		micromhos
Direct Interelectrode Capacitances				
Input (each section)	6.0	6.5	7.0	uuf
Output (each section)	2.0	2.5	3.0	uuf
Input (push-pull)		4.4		uuf
Output (push-pull)		1.6		uuf
Heater-cathode voltage			max. 100	volts

MECHANICAL DATA

Mounting position . . . . . any
Temperature of bottom seal . . . . . 180°C max.
Temperature of anode seal . . . . . 200°C max.
Temperature of bulb . . . . . 250°C max.
Base . . . . . Standard 7 pin
Plate Connector . . . . . Amperex S-3712 or equal
Socket . . . . . Johnson 122-205 or equal

Plate connectors providing a high degree of heat transfer by radiation or by conduction should be used. Generally natural cooling is sufficient with a plate voltage of:

600 volts at frequencies up to 150 Mc
500 volts at frequencies up to 200 Mc
300 volts at frequencies up to 470 Mc

Above these limits or with high ambient temperatures it may be necessary to direct an airflow of about 0.5 cu. ft. per min. on top of the bulb to keep the seal temperature within the stated limit.

Net Weight . . . . . 2 Oz.

6252/AX-9910

R.F. POWER AMPLIFIER AND OSCILLATOR CLASS C - TELEGRAPHY

(Key down conditions per tube without modulation)[2]

Maximum Ratings Absolute Values	CCS	ICAS	
D.C. Plate Voltage	600	750 max.	volts
D.C. Grid No. 2 Voltage	300	300 max.	volts
Grid No. 2 Supply Voltage	600	600 max.	volts
D.C. Grid No. 1 Voltage	−200	−200 max.	volts
D.C. Cathode Current	2x82	2x82 max.	ma
Grid No. 2 Input	2x2	2x2 max.	watts
Plate Dissipation	2x10	2x12.5 max.	watts
Plate Input	2x45	2x56 max.	watts
Grid No. 1 Circuit Resistance With Fixed Bias	50,000	50,000 max.	ohms
Grid No. 1 Circuit Resistance With Grid Leak	0.1	0.1 max.	megohm
Heater-Cathode Voltage	100	100 max.	volts

Typical Operation

	CCS	CCS	CCS	CCS	
Frequency	220	220	220	200	Mc.
D.C. Plate Voltage	600	400	300	600	volts
D.C. Grid No. 2 Voltage	250	250	250	250	volts
D.C. Grid No. 1 Voltage	−60	−50	−40	−60	volts
D.C. Plate Current	2x50	2x50	2x50	2x70	ma.
D.C. Grid No. 2 Current	2x4	2x4	2x4.5	2x7	ma.
D.C. Grid No. 1 Current (approx.)	2x0.7	2x0.7	2x0.7	2x2	ma.
Driving Power[1]	1.5	1.0	1.0	2	watts
Power Output	48	30	21	67	watts

Frequency	462	462	462	600	Mc.
D.C. Plate Voltage	400	300	200	400	volts
D.C. Grid No. 2 Voltage	250	250	200	250	volts
D.C. Grid No. 1 Voltage	−90	−40	−90	−90	volts
D.C. Plate Current	2x50	2x50	2x50	2x50	ma
D.C. Grid No. 2 Current	2x2.5	2x2.5	2x3	2x2.5	ma.
D.C. Grid No. 1 Current (approx.)	2x0.7	2x0.6	2x0.5	2x0.7	ma.
Driving Power	3.0	2.0	1.5	—	watts
Power Output (approx.)	25	17	11	20	watts

FREQUENCY TRIPLER - CLASS C - TELEGRAPHY

Maximum Ratings, Absolute Values	CCS	ICAS	
D.C. Plate Voltage	600	600 max.	volts
D.C. Grid No. 2 Voltage	250	250 max.	volts
D.C. Grid No. 1 Voltage	−200	−200 max.	volts
D. C. Cathode Current	2x50	2x60 max.	ma
Grid No. 2 Input	2x1.5	2x2 max.	watts
Grid No. 1 Input	2x0.5	2x0.55 max.	watts
Plate Input	2x18	2x22.5 max.	watts
Plate Dissipation	2x10	2x12.5 max.	watts
Grid No. 1 Circuit Resistance With Fixed Bias	50,000	50,000 max.	ohms
Grid No. 1 Circuit Resistance With Automatic Bias	0.1	0.1 max.	megohm
Heater-Cathode Voltage	100	100 max.	volts

Typical Operation

	CCS	CCS	CCS	ICAS	
Frequency	66.7/200	133/400	154/462	154/462	Mc.
D.C. Plate Voltage	300	300	350	350	volts
D.C. Grid No. 2 Voltage	250	250	250	250	volts
D.C. Grid No. 1 Voltage	−175	−175	−175	−175	volts
D.C. Plate Current	2x45	2x45	2x45	2x55	ma
D.C. Grid No. 2 Current	2x3	2x2.8	5.5	5.0	ma
D.C. Grid No. 1 Current (approx.)	2x1.5	2x1.2	2x1.2	2x1.8	ma
Driving Power[1]	4	5	5	6	watts
Power Output	10.0	8.0	9.5	11.5	watts

PLATE & SCREEN GRID MODULATED R.F. POWER AMPLIFIER - CLASS C - TELEPHONY

(Carrier conditions with two units in push-pull for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values	CCS	ICAS	
D.C. Plate Voltage	500	600 max.	volts
D.C. Grid No. 2 Voltage	300	300 max.	volts
Grid No. 2 Supply Voltage	600	600 max.	volts
D.C. Grid No. 1 Voltage	−200	−200 max.	volts
D.C. Cathode Current	2x60	2x60 max.	ma
Grid No. 2 Input	2x1.5	2x1.5 max.	volts
Grid No. 1 Input	2x0.5	2x0.55 max.	volts
D.C. Grid No. 1 Current	2x2	2x2.2 max.	ma
Plate Dissipation	2x6.7	2x8.3 max.	watts
Plate Input	2x30	2x36 max.	watts
Heater-Cathode Voltage	100	100 max.	volts

Typical Operation

	CCS	CCS	CCS	CCS	
Frequency	200	200	200	400	Mc
D.C. Plate Voltage	500	500	300	300	volts
D.C. Grid No. 2 Voltage	250	250	250	250	volts
D.C. Grid No. 1 Voltage	−80	−80	−50	−50	volts
D.C. Plate Current	2x50	2x40	2x40	2x40	ma
D.C. Grid No. 2 Current	2x6	2x4	2x4	2x3	ma
D.C. Grid No. 1 Current (approx.)	2x1.5	2x1	2x2	2x1	ma
Driving Power[1]	4	3	1.5	—	watts
Power Output (approx.)	40	.31	17	13	watts

A.F. POWER AMPLIFIER AND MODULATOR CLASS B

Maximum Ratings, Absolute Values	CCS	
D.C. Plate Voltage	600 max.	volts
D.C. Grid No. 2 Voltage	250 max.	volts
D.C. Grid No. 1 Voltage	−75 max.	volts
Max. Signal D.C. Cathode Current	2x55 max.	ma
Grid Resistance[3]	50,000 max.	ohms
Grid Resistance[4]	100,000 max.	ohms
Heater - Cathode Voltage	100 max.	volts
Grid No. 2 Dissipation	2x1.5 max.	watts
Plate Dissipation	2x10 max.	watts

Typical Operation

	CCS	CCS	
D.C. Plate Voltage	500	300	volts dc
Grid No. 2 Voltage	250	250	volts dc
Grid No. 1 Voltage	−26	−25	volts dc
Effective Load Resistance, Plate to Plate	20,000	11,000	ohms
Peak A.F. Grid No. 1 to Grid No. 1 Voltage	52	50	volts
Zero Signal D.C. Plate Current	2x12.5	2x12.5	ma
Max. Signal D.C. Plate Current	2x36.5	2x35	ma
Zero Signal D.C. Grid No. 2 Current	2x0.35	2x0.6	ma
Max. Signal D.C. Grid No. 2 Current	2x8.1	2x9.5	ma
Max. Signal Plate Input	36.5	21	watts
Max. Signal Plate Dissipation	2x6.5	2x3.9	watts
Power Output	23.5	13.2	watts
Distortion	3.5	3.5	%
Efficiency	63.5	63	%

[1] Driving Power includes typical fixed-frequency grid-circuit loss.

[2] Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.

[3] Fixed bias

[4] Cathode bias

RF LINEAR AMPLIFIER - CLASS AB_1

SINGLE SIDEBAND SUPPRESSED CARRIER OPERATION

Both Sections in Parallel

Maximum Ratings, Absolute Values
(Frequencies to 250 Mc/s)

	CCS	ICAS	
D-C Plate Voltage	600	750	volts
D-C Grid No. 2 Voltage	300	300	volts
D-C Grid No. 1 Voltage	−200	−200	volts
D-C Cathode Current	2 x 82	2 x 82	mA
D-C Grid No. 1 Current	2 x 0.5	2 x 0.55	mA
Plate Input	2 x 45	2 x 56	watts
Grid No. 2 Input	2 x 2	2 x 2	watts
Plate Dissipation	2 x 10	2 x 12.5	watts

Typical Operation
Single Tone and/or Two Tone Operation

	CCS	ICAS	
Frequency	30	30	Mc/s
D-C Plate Voltage	600	750	volts
D-C Grid No. 2 Voltage	225	225	volts
D-C Grid No. 1 Voltage	−26.5	−26.5	volts
Zero Signal D-C Plate Current	2 x 13.5	2 x 14	mA
Zero Signal D-C Grid No. 2 Current	1	1	mA
Effective RF Load Resistance	4000	4800	ohms

Single Tone Modulation

	CCS	ICAS	
Frequency	30	30	Mc/s
Max Signal D-C Plate Current	2 x 43	2 x 44.5	mA
Max Signal D-C Grid No. 2 Current	10	12	mA
Max Signal Grid No. 1 Current	0	0	mA
Max Signal Peak RF Grid Voltage	24	25.5	volts
Max Signal Driving Power	0	0	watts
Max Signal Plate Power Output	33.2	43.2	watts

Two Tone Modulation

	CCS	ICAS	
Frequency	30	30	Mc/s
Average D-C Plate Current	2 x 30.5	2 x 31	mA
Average D-C Grid No. 2 Current	6	6	mA
Average D-C Grid No. 1 Current	0	0	mA
Max Resultant Peak RF Grid Voltage	24	25.5	volts
Average Plate Power Output	16.6	21.6	watts
3rd Order Intermodulation Distortion	30	30	db

ELECTRICAL DATA AND LIMITS

Characteristics	Conditions		Limits Min.	Max.	
Plate Current	E_b = 300 V E_{c2} = 250 V E_{c1} = −40 V	I_b		1.5	mA
Plate Current	E_b = 300 V E_{c2} = 250 V E_{c1} = −25 V	I_b	2	26	mA
Plate Current	E_b = 300 V E_{c2} = 250 V E_{c1} = −12 V	I_b	40	80	mA
Grid No. 2 Current	E_b = 300 V E_{c2} = 250 V E_{c1} = −25 V	I_{c2}		3.5	mA
Power Output	E_b = 600 V E_{c2} = 250 V E_{c1} = −60 V I_b = 100 mA f = 150 Mc	P_o	40		watts

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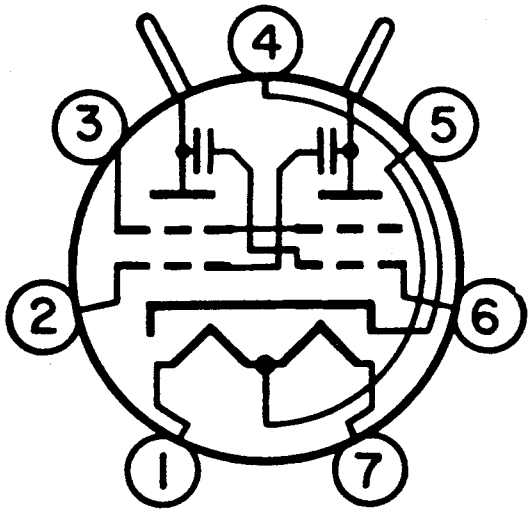
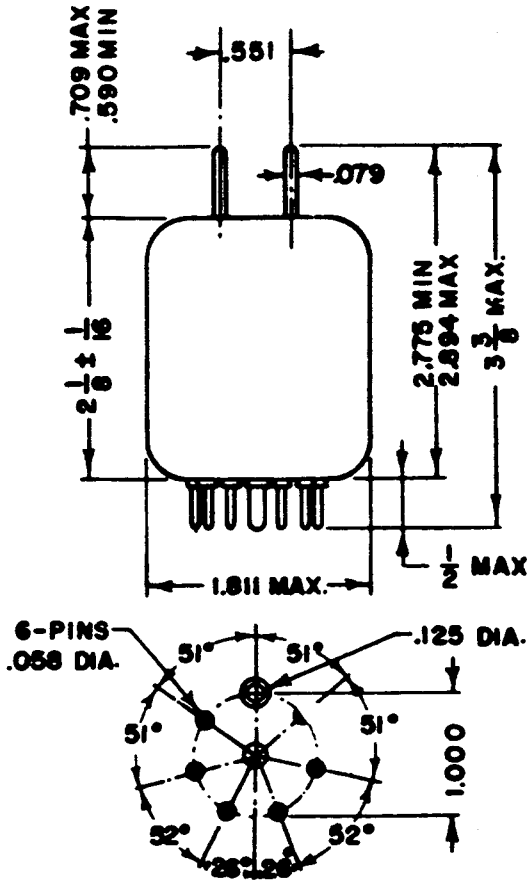
BOTTOM VIEW





Pin 1 - Heater

Pin 2 - Grid No. 1, Section No. 1

Pin 3 - Grid No. 2, Sections No. 1 and 2

Pin 4 - Cathode

Pin 5 - Heater center-tap

Pin 6 - Grid No. 1, Section No. 2

Pin 7 - Heater

Top Connections - Plate, Section No. 1

Plate, Section No. 2

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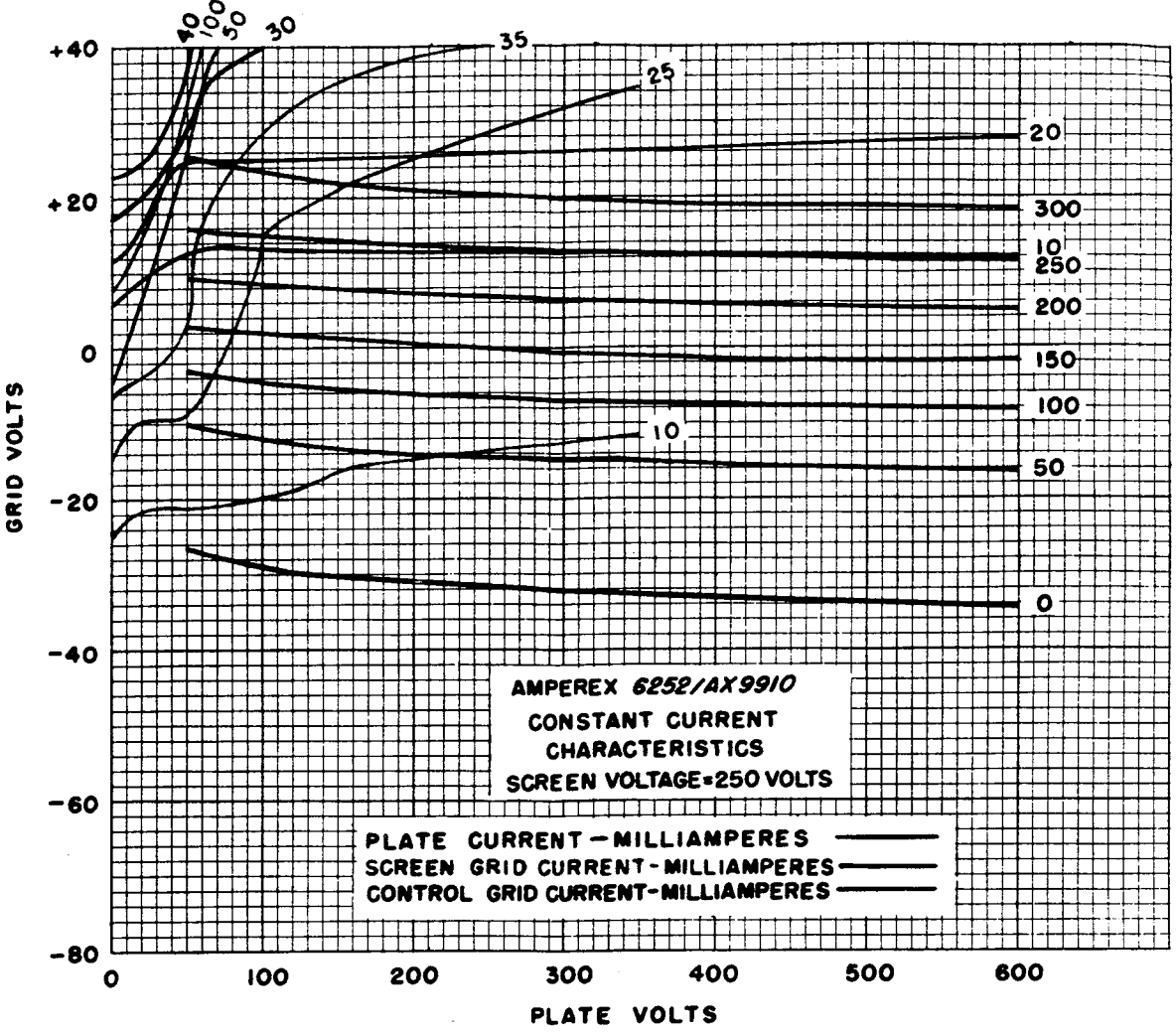
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20
300
10
250
200
150
100
50
10
0
+40
+20
0
-20
-40
-60
-80
GRID VOLTS
0
100
200
300
400
500
600
PLATE VOLTS
AMPEREX 6252/AX9910
CONSTANT CURRENT
CHARACTERISTICS
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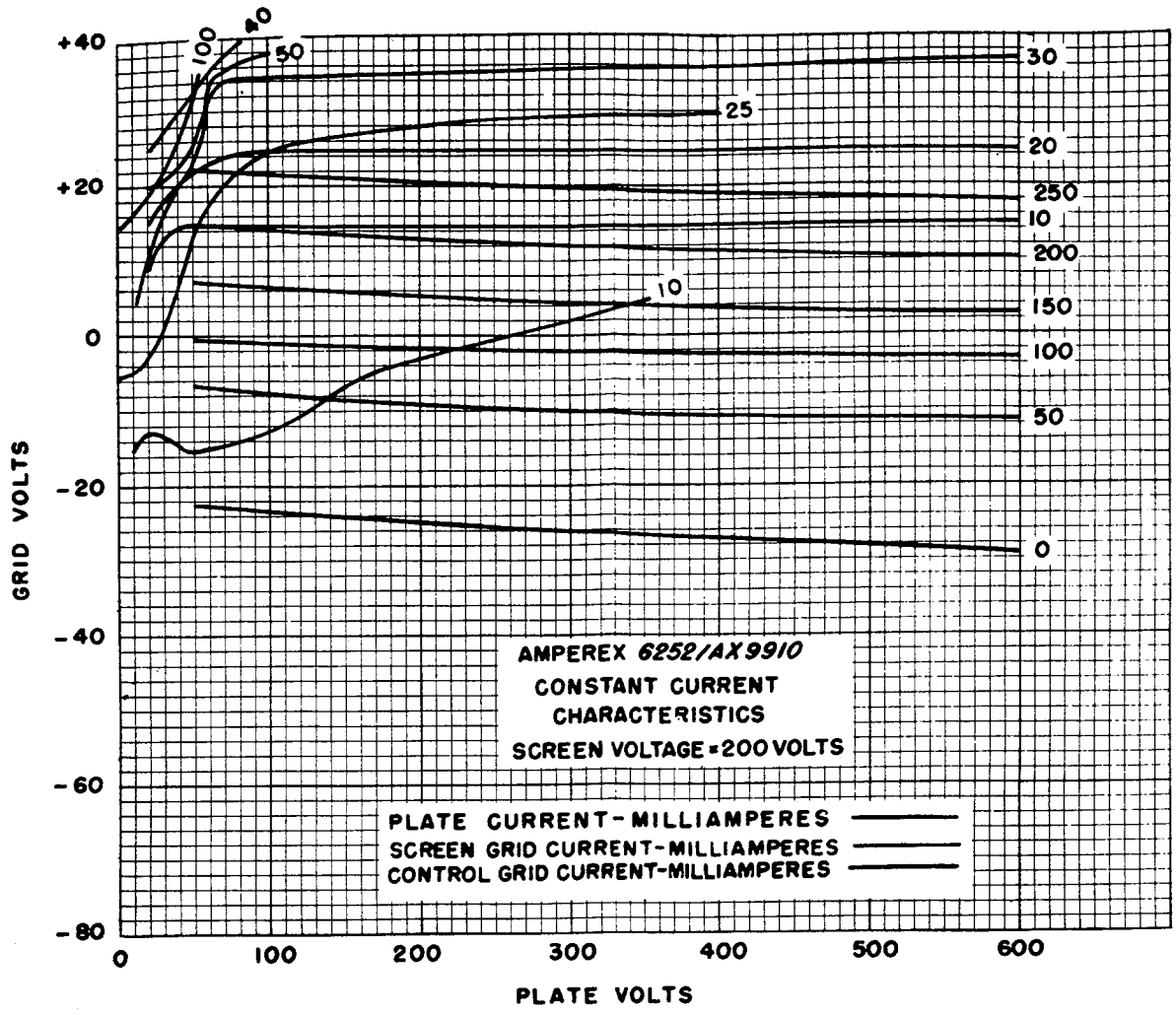
PLATE CURRENT — MILLIAMPERES
SCREEN GRID CURRENT - MILLIAMPERES
CONTROL GRID CURRENT - MILLIAMPERES


+40
+20
0
-20
-40
-60
-80
GRID VOLTS
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100
200
300
400
500
600
PLATE VOLTS
100
50
25
30
20
250
10
200
150
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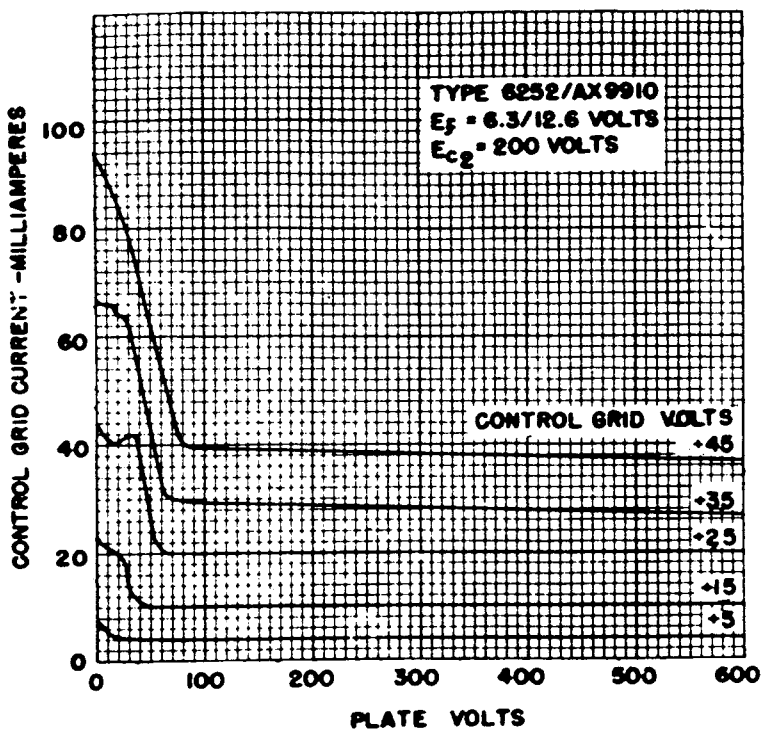
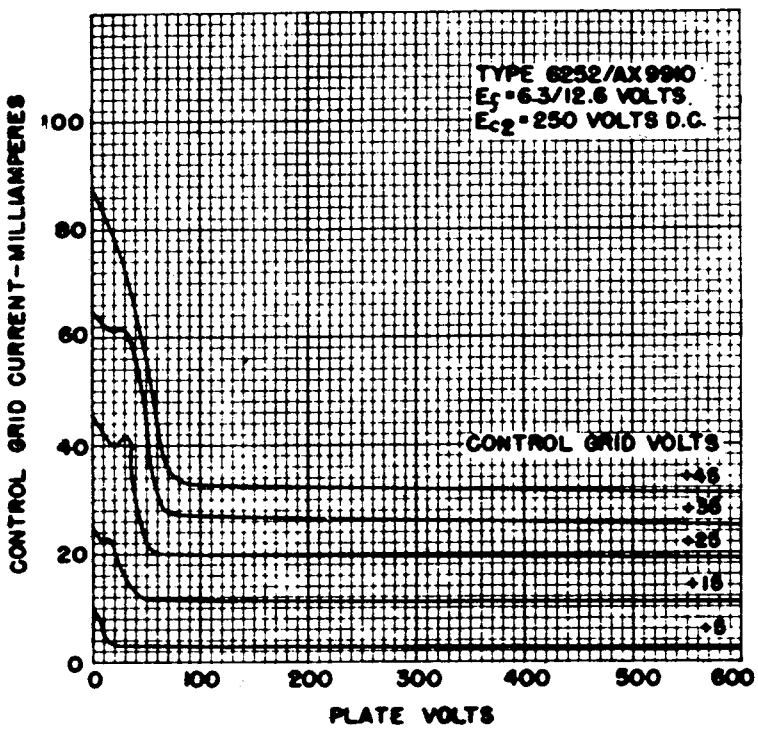
0
AMPEREX 6252/AX9910
CONSTANT CURRENT
CHARACTERISTICS
SCREEN VOLTAGE = 200 VOLTS
PLATE CURRENT - MILLIAMPERES
SCREEN GRID CURRENT - MILLIAMPERES
CONTROL GRID CURRENT - MILLIAMPERES

AVERAGE CONTROL GRID CHARACTERISTICS



AVERAGE CONTROL GRID CHARACTERISTICS



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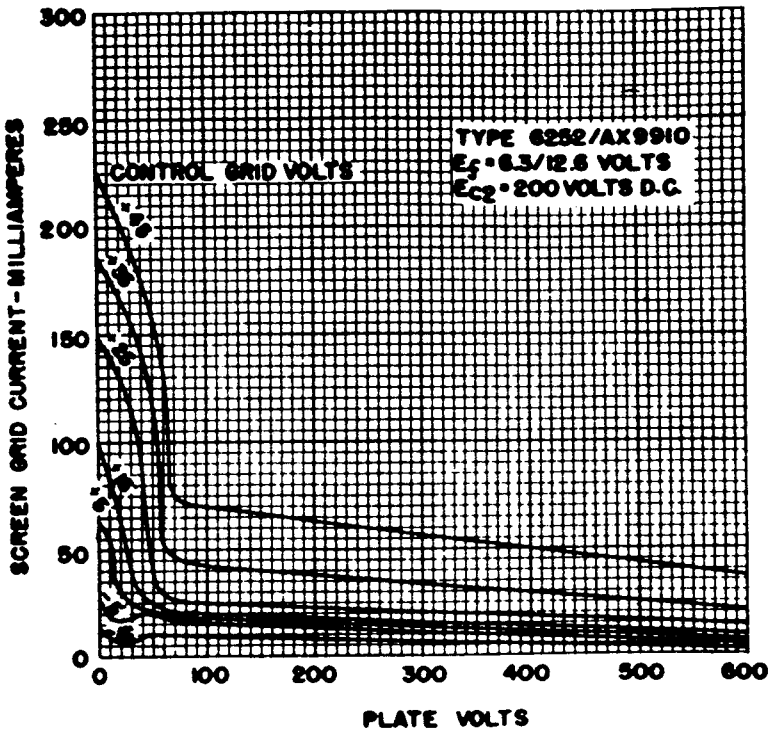
AVERAGE SCREEN GRID CHARACTERISTICS



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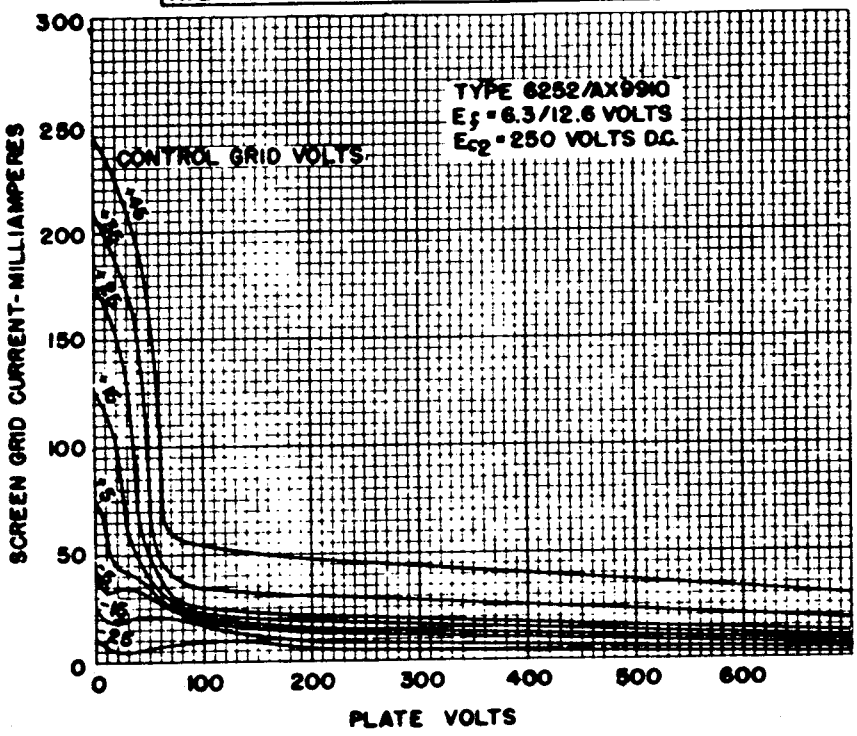

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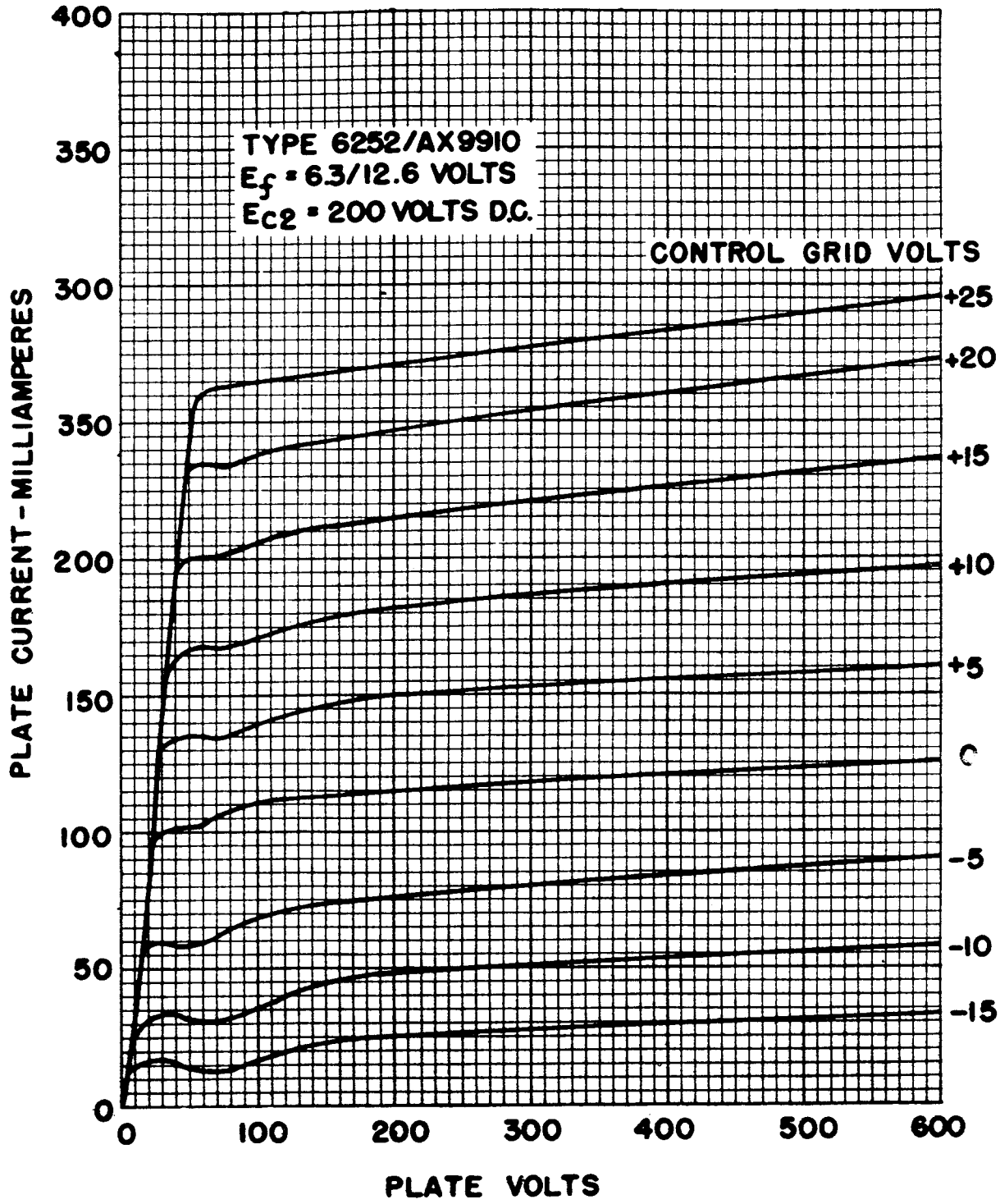
AVERAGE PLATE CHARACTERISTICS



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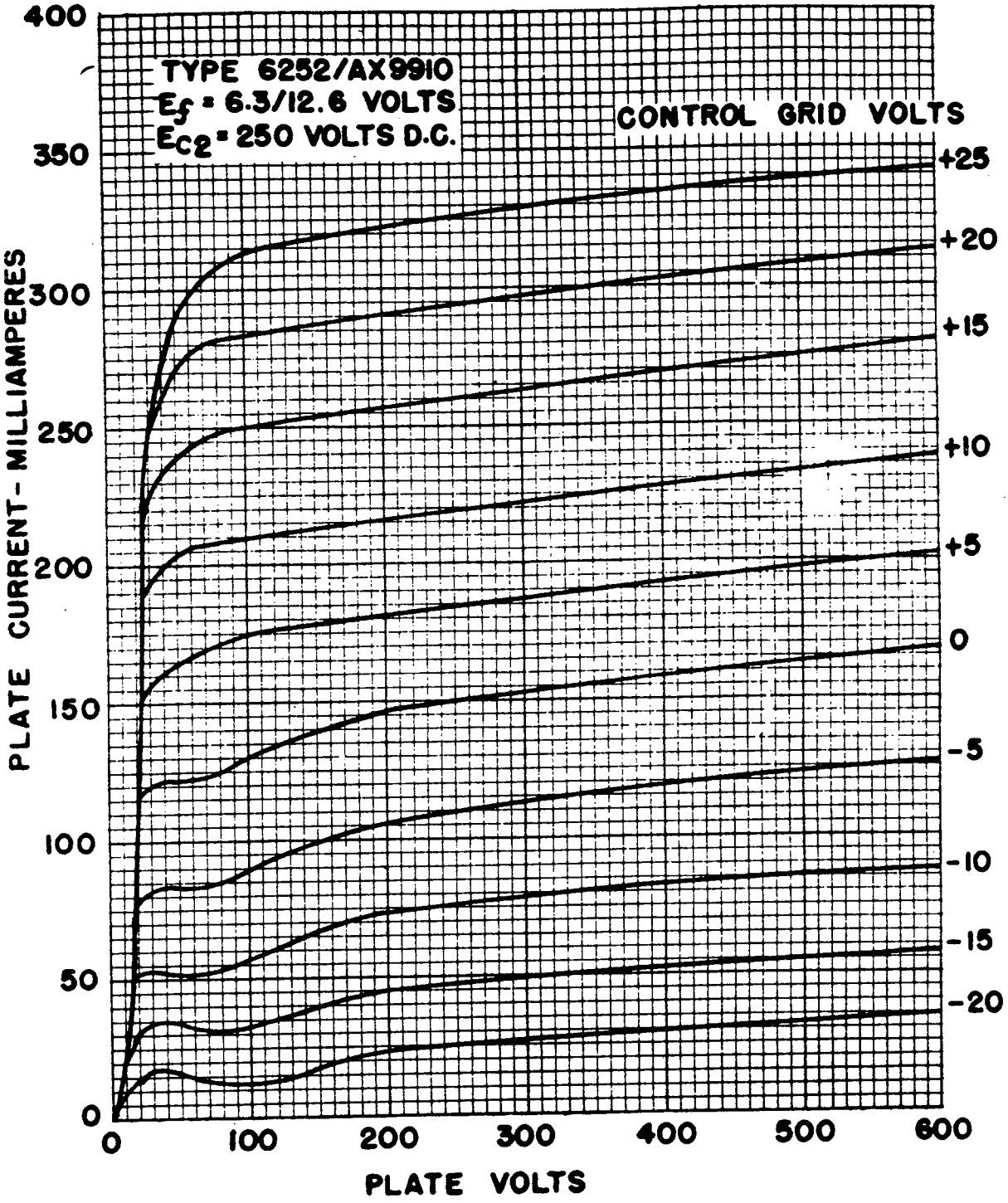
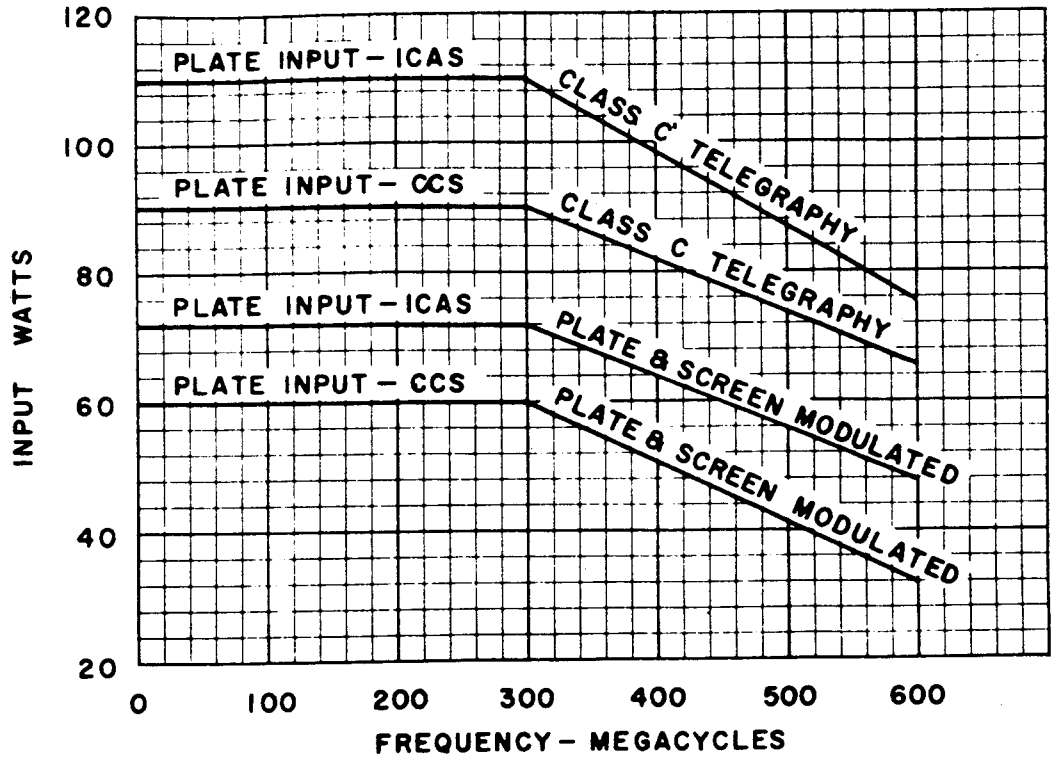
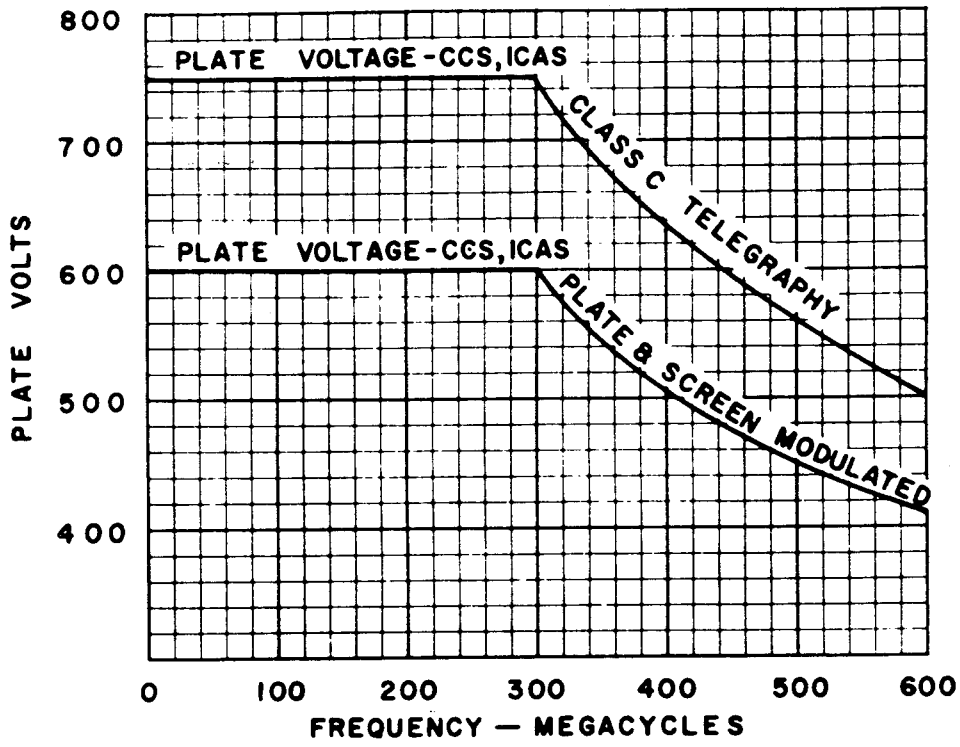
AVERAGE PLATE CHARACTERISTICS




120
100
80
60
40
20
INPUT WATTS
PLATE INPUT – ICAS
CLASS C TELEGRAPHY
PLATE INPUT – CCS
CLASS C TELEGRAPHY
PLATE INPUT – ICAS
PLATE & SCREEN MODULATED
PLATE INPUT – CCS
PLATE & SCREEN MODULATED
0
100
200
300
400
500
600
FREQUENCY – MEGACYCLES


800
700
600
500
400
PLATE VOLTS
PLATE VOLTAGE-CCS, ICAS
CLASS C TELEGRAPHY
PLATE VOLTAGE-CCS, ICAS
PLATE & SCREEN MODULATED
0
100
200
300
400
500
600
FREQUENCY — MEGACYCLES