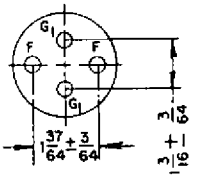
from RTMA release #1237,
Sept. 18, 1953

# AMPEREX TUBE TYPE 6075.

*The 6075 a four-electrode, water-cooled tube designed for use as a R.F. power amplifier, modulator and frequency multiplier. The anode is capable of dissipating 3 kilowatts. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 220 megacycles.*




## GENERAL CHARACTERISTICS

| | |
|---|---|
| **ELECTRICAL DATA** | |
| Filament voltage | 6.3 volts |
| Filament current | 32.5 amps |
| Amplification factor ($G_2G_1$ Mu) | 8.5 |
| Transconductance (Ib=2 amps) | 19,000 micromhos |
| Direct interelectrode Capacitances | |
| Grid No. 1 to Plate (max.) | 0.35 $\mu\mu$f |
| Input | 23.5 $\mu\mu$f |
| Output | 6.4 $\mu\mu$f |
| Peak cathode current[1] (max.) | 7 amps |
| **MECHANICAL DATA** | |
| Max. overall dimensions | |
| Length | 6-5/16 inches |
| Length with water jacket | 9¼ inches |
| Diameter | 2¾ inches |
| Mounting position | Vertical, anode down |
| Control Grid Connection | See note[2] |

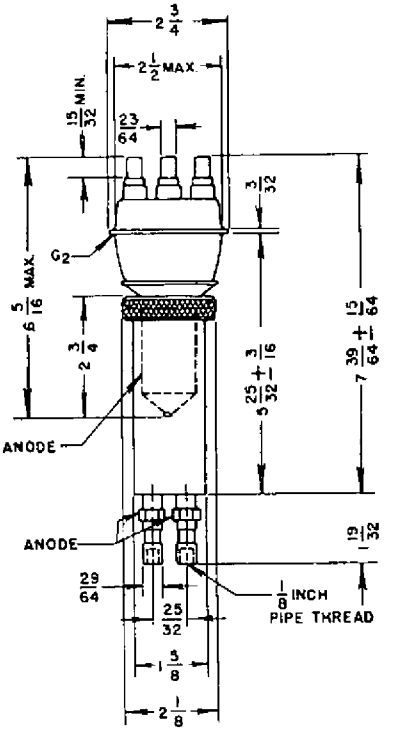
**WATER COOLING DATA**

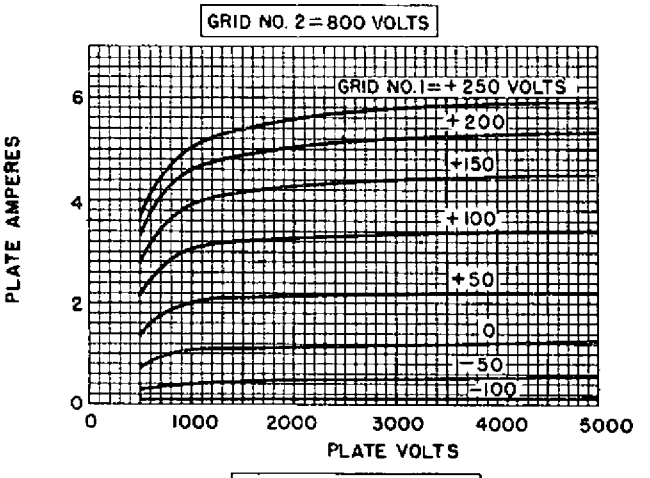
| Plate dissipation (kilowatts) | Inlet water temperature[3] (° C) | Min. Water Flow (gal. per min.) | Inlet Pressure (lbs./sq. inch) |
|---|---|---|---|
| 1 | 20 | 0.65 | 1.1 |
| 1 | 50 | 0.8 | 1.5 |
| 2 | 20 | 0.65 | 1.1 |
| 2 | 50 | 1.25 | 3.7 |
| 3 | 20 | 0.8 | 1.5 |
| 3 | 50 | 1.8 | 8 |

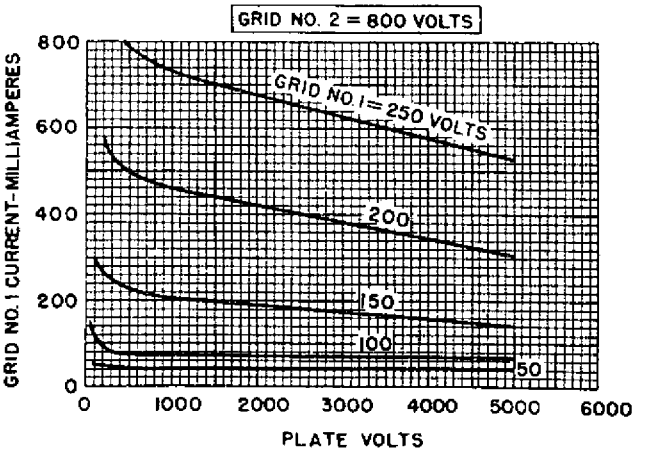
| | |
|---|---|
| Air Cooling | See note[4] |
| Max. Bulb Temperature | 250° C |
| Max. Seal Temperature[4] | 180° C |

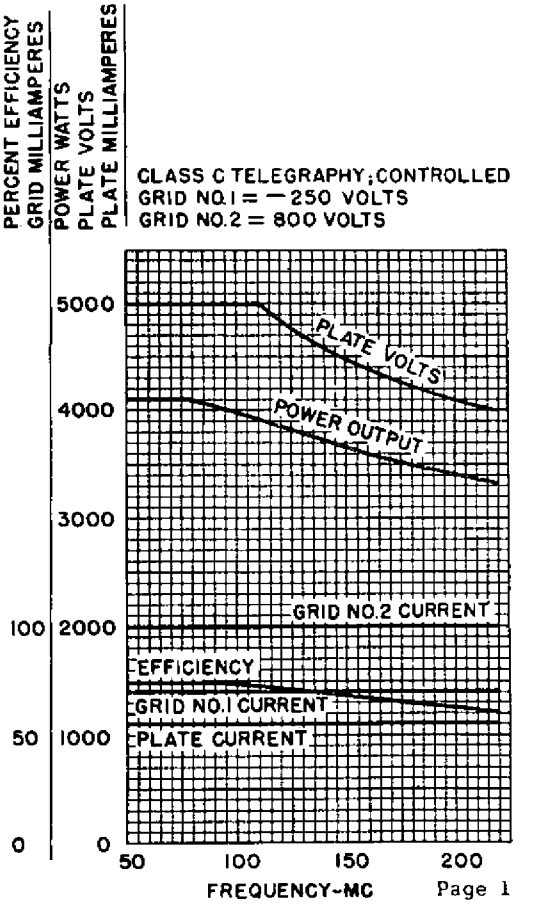
**ACCESSORIES**

| | |
|---|---|
| Water Jacket | Amperox #S-3737 |
| Grid Connector | Amperex #S-3706 |
| Filament Connector | Amperex #S-3707 |
| Net Weight—Tube (approx.) | 14 oz. |
| Net Weight—Water Jacket (approx.) | 1 lb., 5 oz. |



# 6075

## Plate and Screen Grid Modulated, R.F. Power Amplifier—Class C Telephony

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

**Maximum Ratings, Absolute Values**

**(Frequencies up to 110 mc.)**

| | CCS | |
|---|---|---|
| D.C. Plate Voltage | 4000 | max. volts |
| D.C. Grid No. 2 Voltage | 800 | max. volts |
| D.C. Grid No. 1 Voltage | —500 | max. volts |
| D.C. Plate Current | 0.9 | max. amp |
| Plate Input | 3.7 | max. kilowatts |
| Plate Dissipation | 2 | max. kilowatts |
| Grid No. 2 Dissipation | 100 | max. watts[8] |
| Grid No. 1 Dissipation | 30 | max. watts |

**Typical Operation**

(Screen grid supply via a choke of 60 henrys)

| | CCS | |
|---|---|---|
| D.C. Plate Voltage | 4000 | volts |
| D.C. Grid No. 2 Voltage | 800 | volts |
| D.C. Grid No. 1 Voltage | —375 | volts |
| Peak R.F. Grid No. 1 Voltage | 625 | volts |
| D.C. Plate Current | 0.9 | amp |
| D.C. Grid No. 2 Current | 120 | ma |
| D.C. Grid No. 1 Current | 85 | ma |
| Driving Power | 48 | watts |
| Power Output | 2.7 | kilowatts |

## Push-Pull R.F. Power Amplifier

## Class C Telegraphy

Key-down conditions per tube without amplitude modulation[4]

**Maximum Ratings, Absolute Values**

**(Frequencies up to 110 mc.)**

| | CCS | |
|---|---|---|
| D.C. Plate Voltage | 5000 | max. volts[7] |
| D.C. Grid No. 2 Voltage | 800 | max. volts |
| D.C. Grid No. 1 Voltage | —500 | max. volts |
| D.C. Plate Current | 1.1 | max. amps |
| Plate Input | 5.5 | max. kilowatts |
| Plate Dissipation | 3 | max. kilowatts |
| Grid No. 2 Dissipation | 100 | max. watts |
| Grid No. 1 Dissipation | 30 | max. watts |

**Typical Operation**

| | CCS | CCS | CCS | CCS | |
|---|---|---|---|---|---|
| Frequency | 75 | 110 | 75 | 110 | Mc |
| D.C. Plate Voltage | 4000 | 4000 | 5000 | 5000 | volts |
| D.C. Grid No. 2 Voltage | 800 | 800 | 800 | 800 | volts |
| D.C. Grid No. 1 Voltage | —250 | —250 | —250 | —250 | volts |
| D.C. Plate Current | 1.1 | 1.1 | 1.1 | 1.1 | amps |
| D.C. Grid No. 2 Current | 120 | 120 | 100 | 100 | ma |
| D.C. Grid No. 1 Current | 80 | 80 | 70 | 70 | ma |
| Peak R.F. Grid No. 1 Voltage | 500 | 500 | 480 | 480 | volts |
| Driving Power | 36 | 36 | 30 | 30 | watts |
| Power Output | 3.15 | 2.9 | 4.1 | 3.9 | kilowatts |

## Grid Modulated R.F. Power Amplifier

## Class C Television Service

Negative Modulation, Positive Synchronization

**Maximum Ratings, Absolute Values**

**(Frequencies up to 220 mc.)**

| | CCS | |
|---|---|---|
| D.C. Plate Voltage | 4000 | max. volts |
| D.C. Grid No. 2 Voltage | 800 | max. volts |
| D.C. Grid No. 1 Voltage | —500 | max. volts |
| D.C. Plate Current (sync.) | 1.5 | max. amps |
| Plate Input (sync.) | 6 | max. kilowatts |
| Plate Dissipation (sync.) | 3 | max. kilowatts |
| Grid No. 2 Dissipation (sync.) | 100 | max. watts |
| Grid No. 1 Dissipation (sync.) | 30 | max. watts |

**Typical Operation**

**Television Service at 170-220 Mc[5]**

| | CCS[10,13] | CCS[11,13] | |
|---|---|---|---|
| D.C. Plate Voltage | 4000 | 4000 | volts |
| D.C. Grid No. 2 Voltage | 800 | 800 | volts |
| D.C. Grid No. 1 Voltage | | | |
| Synchronization level | —150 | —150 | volts |
| Pedestal level | —230 | —230 | volts |
| White level | —450 | —450 | volts |
| R.F. Grid No. 1 Voltage, peak to peak | 850 | 850 | volts[6] |
| D.C. Plate Current | | | |
| Synchronization level | 2.75 | 2.75 | amps |
| Pedestal level | 2.1 | 1.7 | amps |
| D.C. Grid No. 2 Current | | | |
| Synchronization level | 110 | 250 | ma |
| Pedestal level | 50 | 80 | ma |
| D.C. Grid No. 1 Current | | | |
| Synchronization level | 100 | 80 | ma |
| Pedestal level | 50 | 25 | ma |
| Driving Power at Synchronization level | 300-400 | 200-300 | watts[12] |
| Power Output | | | |
| Synchronization level | 5 | 5.9 | kilowatts |
| Pedestal level | 2.8 | 4.0 | kilowatts |

## R.F. Power Amplifier

## Class B Television Service

Negative Modulation, Positive Synchronization

**Maximum Ratings, Absolute Values**

**(Frequencies up to 220 mc.)**

| | CCS | |
|---|---|---|
| D.C. Plate Voltage | 4000 | max. volts |
| D.C. Grid No. 2 Voltage | 800 | max. volts |
| D.C. Plate Current (sync.) | 1.5 | max. amps |
| Plate Input (sync.) | 6 | max. kilowatts |
| Plate Dissipation (sync.) | 3 | max. kilowatts |
| Grid No. 2 Dissipation (sync.) | 100 | max. watts |
| Grid No. 1 Dissipation (sync.) | 30 | max. watts |

**Typical Operation**

**Television Service at 170-220 Mc[5]**

| | CCS[14] | |
|---|---|---|
| D.C. Plate Voltage | 4000 | volts |
| D.C. Grid No. 2 Voltage | 800 | volts |
| D.C. Grid No. 1 Voltage | —150 | volts |
| R.F. Grid No. 1 Voltage, peak to peak | | |
| Synchronization level[9] | 850 | volts |
| Pedestal level[9] | 700 | volts |
| D.C. Plate Current | | |
| Synchronization level | 2.75 | amps |
| Pedestal level | 2.1 | amps |
| D.C. Grid No. 2 Current | | |
| Synchronization level | 110 | ma |
| Pedestal level | 50 | ma |
| D.C. Grid No. 1 Current | | |
| Synchronization level | 100 | ma |
| Pedestal level | 50 | ma |
| Driving Power at Synchronization level[13] | 300-400 | watts |
| Power Output | | |
| Synchronization level | 5 | kilowatts |
| Pedestal level | 2.8 | kilowatts |

[1]Represents maximum usable cathode current for any condition of operation.

[2]Both pins must be used to make connection to the control grid.

[3]The maximum permissible value of the inlet temperature is 50° C.

[4]To keep the temperature of the seals below the values as shown above, it may be necessary to direct an air flow of sufficient velocity to the seals. At frequencies below 75 mc. and a plate voltage below 4 kv, this air cooling will, in general, not be necessary (in the case of R.F., Class C plate and screen grid modulation, below 3.2 kv). At a plate voltage of 5 kv, air cooling at all frequencies is necessary.

[5]For all other modulation methods the grid No. 2 dissipation is max. 65 watts.

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

[7]At 220 Mc the D.C. Plate Voltage 4000 volts max. For other frequencies, see derating curve.

[8]Values for two tubes in push-pull.

[9]Measured by increasing fixed bias until no grid current flows.

[10]Wide band: 6.5 Mc bandwidth at 1.5 db or 12 Mc at —3 db.

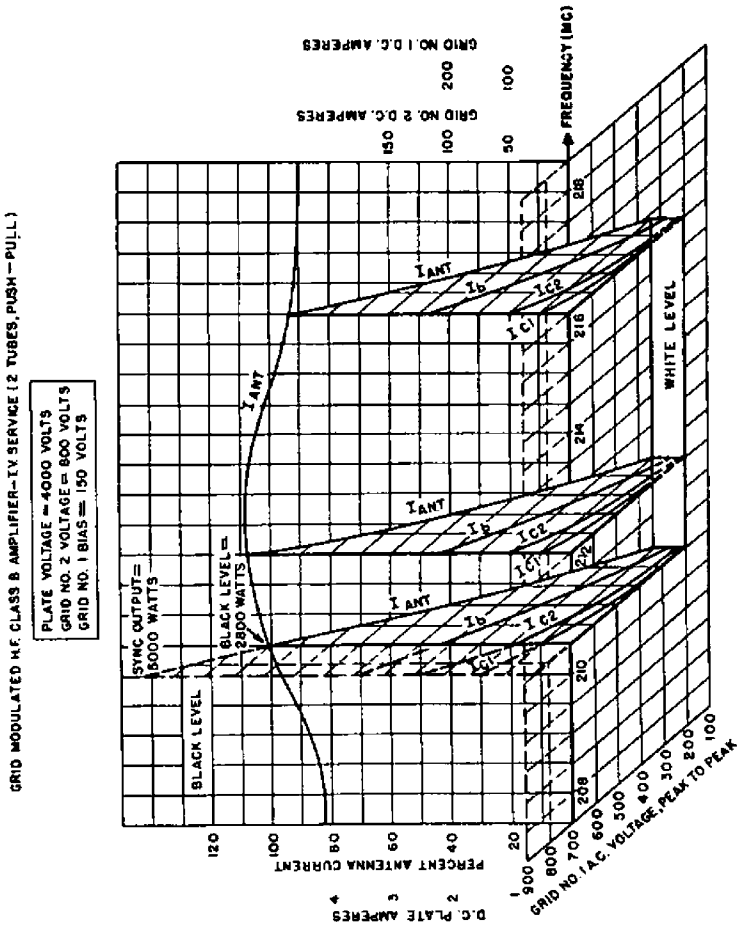
[11]Narrow band: 7.5 Mc bandwidth at 3 db.

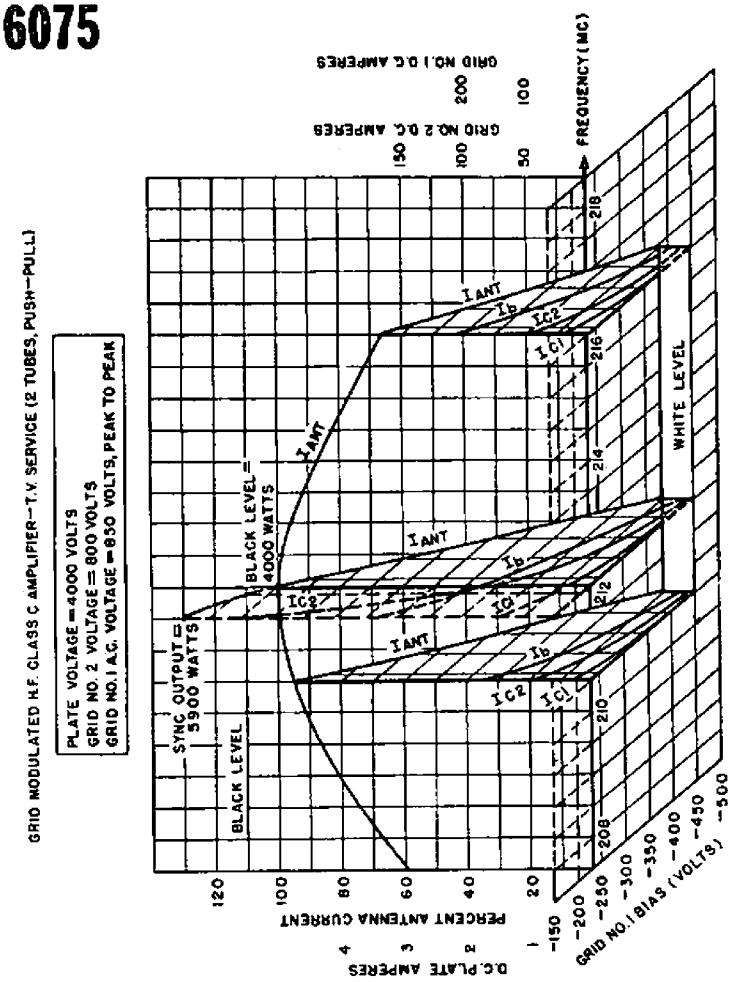
[12]The values of bandwidth are based on measurements on a circuit with a single LC-section.

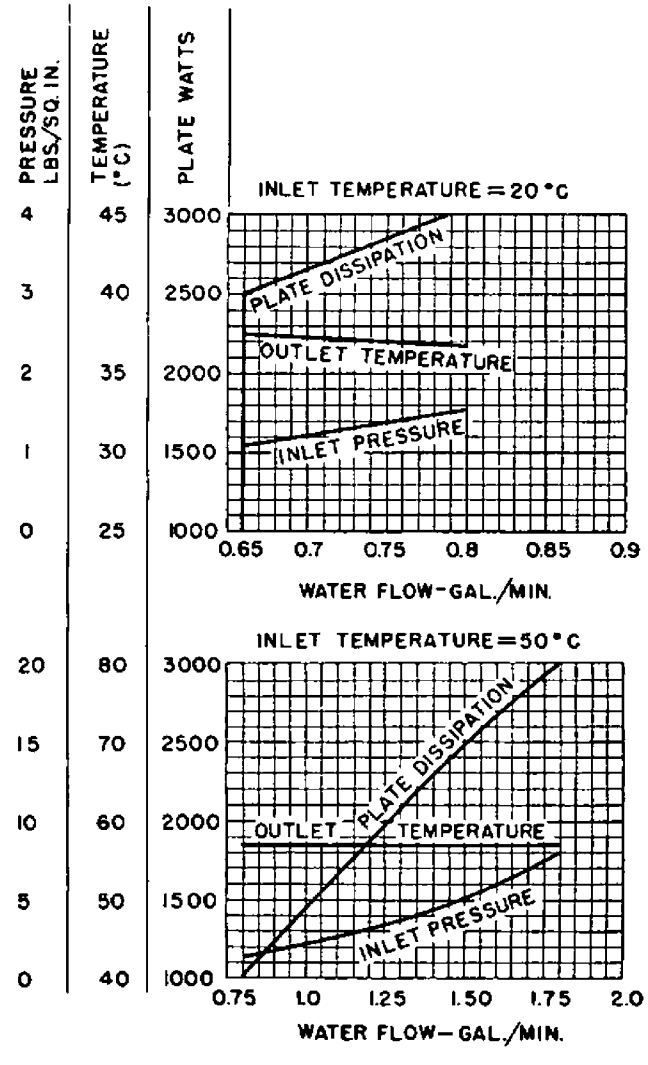
[13]Driving Power is accounted for largely by circuit losses. The indicated driving power is required to take care of losses in damping resistors, circuit losses and tube driving power.

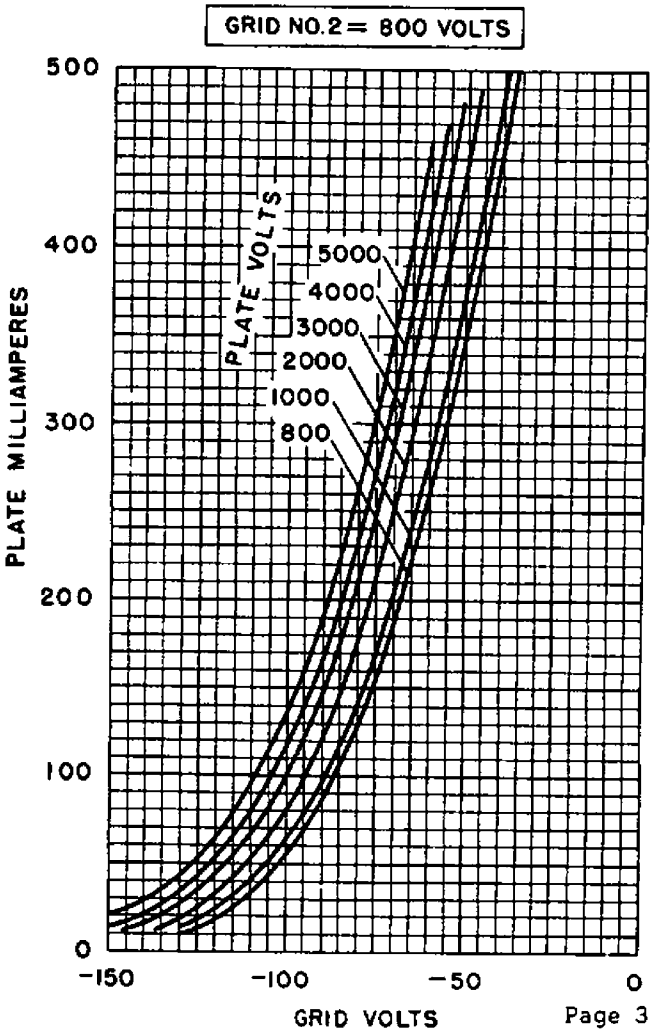
[14]Bandwidth: 6.5 Mc at 1.5 db or 12 Mc at 3 db. The values of bandwidth are based on measurements on a circuit with a single LC-section.

# 6075


GRID MODULATED H.F. CLASS B AMPLIFIER—T.V. SERVICE (2 TUBES, PUSH—PULL)
PLATE VOLTAGE = 4000 VOLTS
GRID NO. 2 VOLTAGE = 800 VOLTS
GRID NO. 1 BIAS = 150 VOLTS
SYNC OUTPUT = 6000 WATTS
BLACK LEVEL = 2800 WATTS
BLACK LEVEL
WHITE LEVEL
I ANT
Ib
Ic2
Ic1
FREQUENCY (MC)
GRID NO. 2 D.C. AMPERES
GRID NO. 1 D.C. AMPERES
PERCENT ANTENNA CURRENT
D.C. PLATE AMPERES
GRID NO. 1 A.C. VOLTAGE, PEAK TO PEAK


GRID MODULATED H.F. CLASS C AMPLIFIER—T.V. SERVICE (2 TUBES, PUSH—PULL)
PLATE VOLTAGE = 4000 VOLTS
GRID NO. 2 VOLTAGE = 800 VOLTS
GRID NO. 1 A.C. VOLTAGE = 850 VOLTS, PEAK TO PEAK
SYNC OUTPUT = 5900 WATTS
BLACK LEVEL = 4000 WATTS
BLACK LEVEL
WHITE LEVEL
I ANT
Ib
Ic2
Ic1
FREQUENCY (MC)
GRID NO. 2 D.C. AMPERES
GRID NO. 1 D.C. AMPERES
PERCENT ANTENNA CURRENT
D.C. PLATE AMPERES
GRID NO. 1 BIAS (VOLTS)


PRESSURE LBS./SQ. IN.
TEMPERATURE (°C)
PLATE WATTS
INLET TEMPERATURE = 20 °C
PLATE DISSIPATION
OUTLET TEMPERATURE
INLET PRESSURE
WATER FLOW—GAL./MIN.
INLET TEMPERATURE = 50 °C
PLATE DISSIPATION
OUTLET TEMPERATURE
INLET PRESSURE
WATER FLOW—GAL./MIN.


GRID NO. 2 = 800 VOLTS
PLATE MILLIAMPERES
PLATE VOLTS
5000
4000
3000
2000
1000
800
GRID VOLTS