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MILITARY SPECIFICATION

TEST SET, ELECTRON TUBE, SEMI-AUTOMATIC

AN/USM-118 ( )

1. SCOPE

1.1 This specification describes a semi-portable, semi-automatic programmed instrument for performing quantitative and qualitative measurements of electron tube characteristics under shipboard environmental conditions.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for approval, form a part of this specification to the extent specified herein:

SPECIFICATIONS

MILITARY

MIL-E-1 - Electron Tubes and Crystal Rectifiers.
MIL-T-27 - Transformers and Inductors (Audio, Power and Pulse).
MIL-S-901 - Shock Tests, H. I. (High-Impact); Shipboard Machinery, Equipment and Systems, Requirements for.
MIL-T-945 - Test Equipment, For Use With Electronic Equipment: General Specification.
MIL-M-10304 - Meters, Electrical Indicating, Panel Type, Ruggedized.
MIL-M-15071 - Manuals, Equipment and Systems.
MIL-E-15090 - Enamel, Equipment, Light Gray (Formula No.111).
MIL-E-16400 - Electronic Equipment, Naval Ship and Shore: General Specification.
MIL-I-16910 - Interference Measurement, Radio, Methods and Limits; 14 Kilocycles to 1000 Megacycles.
MIL-E-17555 - Electronic and Electrical Equipment and Associated Repair Parts, Preparation for Delivery of.

FSC 6625

MILITARY (cont'd)

MIL-S-19500 - Semi-conductor Devices; General Specification for.
MIL-T-20138 - Transformers, Pulse, Low Power, General Specification For.

STANDARDS

FEDERAL

FED-STD-151 - Metals; Test Methods.

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-108 - Definitions of and Basic Requirements for Enclosures for Electric and Electronic Equipment.
MIL-STD-200 - Electron Tubes; Selection and Use of.
MIL-STD-415 - Test Points and Test Facilities, Design Standard for.
MIL-STD-701 - Preferred and Guidance List of Semiconductor Devices.

DRAWINGS

BUREAU OF SHIPS

RE10D2360 - Case, Card Kit.
RE62D2005 - Power Cable Assembly.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Qualification.- The test set furnished under this specification shall be a product which has been tested and has passed the qualification tests specified herein and has been listed on or approved for listing on the applicable qualified products list.

3.2 Functional description.- The AN/USM-118( ) test set shall be a semi-portable test set using punched card programming to provide quick and reliable means of evaluating operational capabilities of low and medium power electron tubes (hereinafter called tubes) under test conditions which are based on the tube design specifications of MIL-E-1 and which more closely simulate, actual operating conditions. Operation of the tester and interpretation of

the results shall be simplified to the extent that untrained personnel can accurately determine the condition of the tube under test . Additional manual controls located in an auxiliary compartment shall permit performance of special tests by skilled personnel. The instrument shall be programmable for self-test and calibration.

3.3. Composition. - This equipment shall consist of the following items and other component parts specified herein and as required to make up a complete equipment.

(a) Combination case (3. 6. 5)
(b) Panel (3. 6. 6)
(c) Indicating Meter (3. 8. 3)
(d) Card switch (3. 8. 6)
(e) Filament power supply (3. 4. 4. 1)
(f) Main B+ power supply (3. 4. 4. 2)
(g) Auxiliary B+ power supply (3. 4. 4. 3)
(h) Negative bias supply (3. 4. 4. 4)
(i) Bias-off supply (3. 4. 4. 5)
(j) Positive bias supply (3. 4. 4. 6)
(k) AC power supply (3. 4. 4. 7)
(l) Signal supply (3. 4. 4. 8)
(m) Mutual conductance (GM) circuits (3. 4. 4. 9).
(n) Meter shunts and multipliers (3. 4. 4. 10)
(o) Decade resistance network (3. 4. 4. 12)
(p) Overload relay (3. 8. 4)
(q) Controls (3. 6. 6. 3)
(r) Indicators (3. 6. 6. 4)
(s) Accessories (3. 4. 6)

3.4 Performance requirements. -

3.4.1 Card switch operation. - The tester shall provide a card information storage and programming system for setting up tests on tubes in accordance with the specified characteristics of the tubes. The card switch

mechanism shall permit manual operation of the switch contacts and use of hand-punched programming cards for special tests. Extensive self-tests and calibration shall be carried out using test cards provided for the purpose.

3.4.2 General performance requirements.- The AN/USM-118( ) test set shall be capable of performing the following tests with a minimum of manual operations. Testing shall be initiated by placing the tube in the proper socket and inserting the proper test card for that tube type in the programming switch slot. Each pin of the tube-under-test sockets shall be provided with one suitable ferrite bead to preclude oscillation of the tube under test. Each bead shall be on the lead, and immediately adjacent to the pin of the test socket at the load end of the lead.

3.4.2.1 Shorts.- On completion of the above operations, the AN/USM-118( ) test set shall indicate unmistakably the existence of any shorts between any tube elements except between the heater and the cathode.

3.4.2.1.1 Short indicator.- The short indicator shall consist of five neon lamps in a series string with the cathode connection at the positive end of the string and the other tube elements connected to the lamp junctions in the following order: Control grid, suppressor grid, screen grid, plate. If the tube under test has no shorts no lamps shall light, while a short in the tube shall light all lamps except those between the shorted elements. Multiple shorts in the tube shall give the same indications as a single short between the farthest separated shorted elements in the lamp string. The lamp bank when mounted on the panel of the equipment shall be arranged from left to right in the order of increasing positive potential at the junctions and the panel shall be marked with the abbreviations of the tube elements in their proper locations in the lamp string.

3.4.2.1.2 Short test voltage and sensitivity.- Voltages applied to the tube elements for short testing shall not exceed the corresponding voltage ratings for the tube type under test. Particular attention shall be given to establishing the voltage gradient between grid and cathode as high as possible within the voltage rating of the tube in the proper polarity to allow the indication of grid emission. The test shall indicate as a short a resistance of one megohm or less between adjacent elements. A resistance of 2 megohms or more between adjacent elements shall not give a short indication. Indication of shorts between non-adjacent elements shall increase in sensitivity so that between the farthest separated elements in the short test series lamp string shorts shall be indicated for resistances of 25 megohms or less, and shall be not indicated for resistances of greater than 50 megohms.

3.4.2.1.3 Sensitive grid shorts. - The normal test for grid shorts shall have the same sensitivity as the test for short circuits between adjacent elements, (see 3.4.2.1.2). A momentary switch in the auxiliary compartment shall increase the sensitivity of the grid-cathode short test. When the switch is actuated, a resistance of 10 megohms or less between grid and cathode shall cause a short indication and a resistance of 20 megohms or more shall not cause a short indication.

3.4.2.2 Heater-cathode leakage. - At the same time short-circuits are indicated, the panel meter shall provide an accept-reject indication of heater-cathode current. The applied voltage shall be 100 volts. The card switch shall be capable of selecting shunts so that the meter will indicate "reject" when the leakage current exceeds the nominal value for the selected range. The nominal range values shall be 10, 20, 50, 70, 100, 150, and 165 microamperes (ua).

3.4.2.3 Gas. - The gas test shall be performed when the designated panel push-button switch is activated. The meter pointer shall indicate accept or reject on a gas-test scale. The reject indication shall be displayed when the meter measures 3 ua or more of current in the grid circuit while the tube is operating at rated plate current and zero grid signal. For tubes having more stringent gas test requirements, a notation shall be made on the tube test card. Any up-scale meter deflection from zero on the meter during gas tests of these tubes shall be cause for rejection.

3.4.2.4 Cathode activity test. - Actuation of a push-button switch in the auxiliary compartment shall reduce filament voltage by 10 percent. A substantial change in Gm or plate current indicated by the meter will provide a qualitative indication of cathode activity. The push-button switch shall be lockable so that other measurements may be made under low filament voltage conditions. When the switch is actuated a warning indicator lamp on the main panel shall be illuminated.

3.4.3 Tube tests. - The equipment shall have the capabilities for performing the tests specified hereinafter on the tube classes indicated and shall have facilities for testing other types of tubes and other special tests on the tube classes listed. The specific tests to which a tube is subjected shall be determined by the tube test cards provided for performing tests on that tube type.

3.4.3.1 Diode and rectifier tests. -

3.4.3.1.1 Full-wave power rectifier. - Tubes such as the 5U4 and 6X4 shall be tested in a full wave rectifier circuit, 500 volts a.c. shall be applied plate-to-plate and a capacitively shunted programmable load resistance capable of passing 200 milliamperes (ma) shall limit the output current to the typical handbook ratings. This output current shall be measured by the meter.

3.4.3.1.2 Half-wave power rectifier. - Tubes such as the 35W4 shall be tested in a half-wave rectifier circuit. The tube shall be subjected to its rated inverse voltage while the rated output current is measured by the meter through a programmable load resistance.

3.4.3.1.3 Damper-type diodes. - Tubes such as the 6AX4 shall be tested in a half-wave power rectifier circuit. The output current shall be measured by the meter through a capacitively shunted programmable load resistance while the tube is subjected to a large inverse voltage of the order of 1200 volts.

3.4.3.1.4 High-voltage low-current rectifiers. - Tubes such as the 1X2 shall be tested at a point on the emission curve indicated by tube manufacturers' handbooks using a d.c. power supply. A limiting resistance shall be used to prevent tubes with higher than normal omission form reading off scale on the meter.

3.4.3.1.5 High perveance detector type diodes. - Types such as the 6AL5 shall be tested for plate current in a low voltage d.c. circuit. A low voltage d.c. power source shall be used with sufficient circuit resistance to obtain end-of-life plate current correlation with MIL-E-1.

3.4.3.1.6 Low perveance detector diodes. - Types such as the 6AV6, shall be tested in a d.c. test circuit for plate current. A low voltage regulated d.c. power source shall be used in series with a programmable resistance so that at the specified reject plate current the specified voltage exists across the tube.

3 4.3 1.7 Gas-type diodes. - Tubes used for voltage regulator purposes such as the 0A2 and 0A3 shall be tested for d.c. voltage drop across them at the rated current level extremes. Voltage regulation shall be determined from the difference in readings. Limits shall be shown on the appropriate tube cards. A 50-volt d.c. leakage test shall precede the voltage drop test. The voltage-drop test circuitry shall immediately detect and indicate an open jumper within the tube.

3.4.3.2 Triode tests. -

3.4.3.2.1 Mutual conductance. - The most common test applied to a triode shall be for mutual conductance under class A operation. Either a self-bias cathode resistor shunted by a 800 microfarad (uf) capacitor or a fixed grid bias voltage shall be selected. Dual triodes with common cathodes shall have both triodes operating while a mutual conductance measurement is being made on one triode only. The 6J6 shall be tested in this manner.

3.4.3.2.2 Plate current. - This equipment shall have capabilities to measure plate curent under the following conditions:

(a) Class A operation with fixed bias.
(b) Class A operation with self-bias.
(c) Zero grid bias under reduced plate voltage conditions.
(d) High negative grid bias with the plate current cut off (plate current measured in microamperes).

3.4.3.2.3 Plate-cathode voltage drop. - It shall be possible to program measurement of plate-cathode voltage drop at zero grid bias while the tube is conducting a specified plate current.

3.4.3.3 Tetrodes and pentodes. -

3.4.3.3.1 Mutual conductance. - The tests for tetrode and pentode amplifier tubes shall employ the fixed or self biasing methods specified in 3.4.3.2. The screen and plate voltages shall be the same for class A operation, but the mutual conductance meter shall be in the plate circuit only.

3.4.3.3.2 Plate current. - This equipment shall measure tetrode and pentode plate current under the same conditions as triode plate current conditions of 3.4.3.2.2.

3.4.3.3.3 "Knee" test for horizontal deflection amplifiers. - The plate current of horizontal deflection amplifiers such as type 6BQ6 shall be measured with a "Knee" test which provides a low voltage on the plate, a normal voltage on the screen, and zero grid bias.

3 4.3.4 Hexodes and heptodes. - Hexodes and heptodes shall be subjected to the types of tests described for triodes and pentodes and the additional tests listed herein.

3 4 3.4.1 Mutual conductance. - The mutual conductance of two control grid types of heptodes such as the 6DT6 shall have the same bias applied to the first and third grids with the signal applied only to the first or third grid.

3.4.3.4.2 Oscillator transconductance. - Oscillator transconductance tests shall also be made on mixer tubes with the screen and plate connected in accordance with handbook recommendations.

3.4.3.5. Thyratrons. - Thyratron tubes (2D21, 884, and so forth) shall be tested for emission at zero grid bias. An anode-to-cathode voltage drop (arc drop) measurement shall be made. An "off" or no-conductance test shall be made by applying a negative grid voltage to prevent conduction.

3.4.3.6 Twin-section tubes. - Tubes having two sections with identical characteristics shall be tested using a single test card. An indicator on the main panel shall light to indicate that dual tests are to be performed. When the dual-test momentary switch on the main panel is actuated, the second section shall undergo in the same manner the tests performed on the first section.

3.4.3.7 DC filament tubes. - Tubes having directly heated or filamentary cathodes shall be tested as triodes or pentodes except that d.c. shall be applied to the filaments of the tubes. During short tests erroneous indications of cathode to filament leakage may occur and shall be disregarded. The short test shall otherwise give the same indication of tube condition that it does for indirectly heated tubes.

3.4.3.8 Low plate-voltage tubes. - Tubes using 12 volts or similar low voltages on their plates shall be tested under conditions designed for their use wherein low plate and screen voltages are employed.

3.4.4 Circuit requirements. -

3 4.4.1 Filament power supply. -

3.4.4.1.1 Voltage range. - The filament power supply shall provide for selection of a. c. voltages from 0.1 volt to 119.9 volts in 0.1-volt steps. With the equipment operating from line power within the range of 3.5.1 each open circuit filament voltage shall be within 1 percent of its nominal value after filament standardization adjustment.

3.4.4.1.2 Voltage regulation. - The filament power supply shall be capable of supplying 100 ma. from all voltage taps up to the 119.9-volt tap with not more than 5 percent drop in the output voltage; 600 ma. up to the 20 volt tap with not more than a 5 percent drop; and 4 amperes 5 volts with not more than a 15 percent drop. These voltage drops are exclusive of overload protection insertion loss.

3.4.4.1.3 Overload protection. - The filament power supply shall be protected against overloads and short circuits. This protection shall be completely automatic so that any short circuit or overload shall not damage either the protecting device or the supply while the equipment is connected to a source of line voltage within the range of 3.5.1. The overload protection shall not cause an insertion loss greater than 5 percent with a 20 volt-amperes load on the filament supply. The overload protection shall limit the power dissipated in the filament power supply to 40 volt-amperes with the output short circuit.

3.4.4.1.4 Cathode activity. - The design of the filament power supply shall permit the proper reduction of filament voltage for the performance of the cathode activity test of 3.4.2.4.

3.4.4.1.5 Filament standardization adjustment. - A momentary switch in the auxiliary compartment shall permit the filament standardization voltage to be indicated on the meter. The standardization adjustment switch in the auxiliary compartment shall provide for standardization of the filament voltage for every 2.5 volts of line voltage variation from 104 to 125 volts. The switch position for 115 volts input shall be marked for routine testing.

3.4 4.1.6 D.c. filament power.- A full-wave bridge rectifier circuit operated from the a.c. filament power supply shall provide up to 1 ampere of d.c. filament current over the voltage range of 0.1 volt to 50 volts. This circuit shall be protected bv a fuse with a blown fuse indicator on the front panel of the equipment.

3.4.4.2 Main B+ power supply. -

3.4.4.2.1 Voltage range. - The main B+ power supply shall provide d.c. voltages from 10 to 260 volts in the steps of table I. When the equipment has been calibrated at 20 volts, each other voltage shall be within 2 percent of its nominal value, except that the 10 volt step shall be within 10 percent.

3.4.4.2.2 Output current. - The main B+ power supply shall furnish the currents shown in table I for the indicated voltage levels without overloading or loss of regulation.

Table I. - B+ Power supply voltage and current ratings.

Volts	Ma(max)	Volts	Ma(max)	Volts	Ma(max)
10	69	100	100	190	102
20	72	110	110	200	94
30	75	120	120	210	85
40	76	130	130	220	77
50	80	140	140	230	68
60	82	150	138	240	60
70	86	160	129	250	50
80	90	170	120	260	42
90	95	180	110		

3.4.4.2 3. Voltage regulation. - The main B+ power supply shall be electronically regulated against line voltage and load current changes. Any selected output voltage from 20 volts to 250 volts shall be constant with + 1 percent or +1volt, whichever is larger, when line voltage varies within the limits of 3.5.1 and load current, if any, is held constant. Any selected output voltage from 20 volts to 250 volts shall be constant within ± 1 percent or ± 1 volt, whichever is larger, when the load current varies from zero to the maximum shown in table I for the corresponding voltage, and the line voltage remains constant within 1 percent.

3.4.4.2.4 Ripple. - The ripple content shall not exceed 0.1 percent of the dc output voltage or 20 millivolts rms, whichever is larger, for any selected B+ voltage between 20 and 250 volts under maximum rated lead current in accordance with table I.

3.4.4.2.5 Protection. - The B+ power supply shall be protected against overloads and short circuits by a manual-reset protective device.

3.4.4.3 Auxiliary B+ power supply. -

3.4.4.3.1 Voltage range. - The auxiliary B+ power supply shall provide a voltage adjustable over the range of 30 to 300 volts. The voltage shall be adjusted by a single continuous control located in the auxiliary compartment.

3.4.4.3.2 Current range. - The auxiliary B+ supply shall supply currents from zero to 30 ma.

3.4.4.3.3 Voltage regulation. - The auxiliary B+ power supply shall be electronically regulated against line voltage and load current changes. Any selected voltage between 30 volts and 230 volts shall be constant within 1 percent or 1 volt, whichever is larger, when line voltage varies within the range of 3.5.1 and the load current is held constant. Any selected output voltage from 30 volts to 280 volts shall be constant within 1 percent or 1 volt, whichever is larger when the load current varies from zero to 30 ma and the line voltage remains constant within 1 percent.

3.4.4.3.4 Voltage indication. - Actuation of a momentary switch in the auxiliary compartment shall cause the voltage to be indicated on the meter. Actual voltage shall be within 3 percent of three times the reading on the 0-100 meter scale.

3.4.4.3.5 Protection. - The auxiliary B+ power supply shall be protected against overloads and short circuits by a fuse with a blown fuse indicator mounted on the front panel.

3.4.4.4 Negative bias supply. - The negative bias supply shall provide programmable negative voltages from 0.1 volt to 120 volts in approximately 0.1-volt steps.

3.4.4.4.1 Voltage control. - The negative bias voltage shall be controlled by the decade resistance network of 3.4.4.12.

3.4.4.4.2 Accuracy. - The negative bias supply voltages shall be accurate within 2 percent of their nominal value from 0.1 volt to 10 volts; accuracy shall decrease uniformly from 2 percent at 10 volts to 5 percent at 60 volts. The accuracy shall be within 10 percent from 60 volts to 120 volts.

3.4.4.5 Bias-off supply. - A fixed negative voltage shall be provided of sufficient voltage to hold one section of a dual section tube beyond cutoff while the other section is undergoing tests.

3.4.4.6 Positive bias supply. - A regulated fixed positive bias voltage of 7 1/2 volts ± 1 percent shall be provided to allow the use of large self-bias resistors in special tube tests.

3.4.4.7 A.c. supplies.- An unregulated 250 volt a.c. supply and an unregulated 500 volt a.c. supply shall supply 200 ma for half-wave rectifier tests and 200 ma at 250 volts each side of the center tap for full-wave rectifier tests. These supplies shall be protected by fuses installed in each side of the power line to prevent damage from overloads or short circuits.

3.4.4.8 Signal supply. - The signal voltage shall be supplied from a calibrated and regulated source adjustable within 0.1 percent to 222 millivolts at line power frequency. The signal voltage shall be constant within 1 percent when line voltage and frequency vary within the range of 3.5.1.

3.4.4.9 Mutual conductance circuits. - The mutual conductance circuits shall be capable of accurately measuring mutual conductance from 500 to 128,000 micromhos in the presence of direct plate currents of less than 50 μa to more than 100 ma.

3.4.4.9.1. Mutual conductance ranges.- The mutual conductance detection bridge and the meter shunt and multiplier system shall be capable of providing the following mutual conductance mid-scale values.

(a) 250 to 13,000 micromhos mid scale in 50 micromho steps.
(b) 250 to 64,000 micromhos mid scale in 250 micromho steps.

3.4.4.9.2 Accuracy. - The equipment shall be capable of measuring mutual conductance of receiving type electron tubes to within a basic tolerance of 3 percent. An inherent linear decrease in the mutual conductance reading as plate current increases shall be allowed. It shall be possible to maintain the 3 percent tolerance on Gm by application of a correction factor to the meter reading in accordance with figure I.

3.4.4.9.3 Bridge balance. - The equipment shall provide for establishing bridge balance to eliminate d.c. current effects from Gm readings. The balance controls and a switch to remove grid signal from the tube under test shall be located in the auxiliary compartment for use in special tests. The balance controls shall be marked to indicate the control settings for routine testing.

3.4.4.9.4 Bridge protection. - A separate fuse with a blown fuse indicator located on the front panel shall protect the bridge circuitry from excessive currents.

3.4.4.10 Meter shunt and multiplier system. - A meter shunt system shall be provided for making half-scale measurements in the range of 50 ua to 2.6 ma in 10 μa steps. Multipliers shall be provided for making half-scale measurements from 50 ua to 12.8 ma in 50 ua steps and from 1 ma to 255 ma in 1 ma steps. All meter shunt and multiplier resistors shall be approved types of 1 percent resistors.

3.4.4.11 Meter (voltage) multiplier system. - A meter multiplier system shall be provided for making half-scale d.c. voltage measurements on 296 ranges in one-volt steps from 5 volts to 300 volts. The voltage measurements shall be accurate within 2.5 percent of the mid-scale value.

3.4.4.12 Decade resistance network. - The decade resistance network shall provide selected resistances from 0 ohm to 70,000 ohms in 10 ohm steps. Each resistance value from 10 ohms to 10,000 ohms shall be within ± 1 percent of the nominal selected value. Each resistance value between 10,000 ohms and 70,000 ohms shall be within ± 5 percent of the nominal selected value. All resistance values up to 1000 ohms shall be capable of sustained operation at 200 ma without damage. All resistance values from 1000 ohms to 70,000 ohms shall be capable of sustained operation at 200 volts without damages.

3.4.4.13 Capacitors. - A non-polarized 4 μf capacitor with a d.c. voltage rating of a least 600 volts shall be provided for by-passing resistance loads during tests of diode and rectifier tubes or special test circuit applications. A polarized 800 μf 50-volt capacitor shall be provided for by passing self-resistance networks and special test circuit applications.

3.4.5 Card programming system. - The system for semi-automatic operation of this instrument shall consist of a rugged card switch capable of performing all required operations without the use of relays or stepping switches. The card switch shall be activated by the insertion of a punched card, and deactivated by a manual operation which will release the card for removal from the switch.

3.4.5.1 Program capability. - The programming system shall be so designed as to allow flexible use of various circuit sections in performing many types of tests. (This capability shall not be limited to the tests specified herein but shall include types of tests which may be specified at a later date.)

3.4.5.2 Pin selection. - A section of the card information storage and programming system shall be devoted to connecting the programmed test circuit to the proper pins of the tube under test. Pin selection shall include pins 1 through 9, plus a cap for all tube test sockets specified in 3.6.6.5.

3.4.5.3 Programming switch application. - The programming switch shall have the individual contact actuation levers arranged in the same manner as shown for the holes in the programming cards in Figure 2 with the individual switches identified by the letter row and then the number row of the intercept point. The individual switch control of circuit values and interconnections shall be as follows:

3.4.5.3.1 Tube test socket connections. - The tube sockets shall be connected as follows:

Tube socket pin number	Switches
1	Row A switches 1 through 8.
2	Row B switches 1 through 8.
3	Row C switches 1 through 8.
4	Row D switches 1 through 8.
5	Row E switches 1 through 8.

Tube socket pin number	Switches
6	Row F switches 1 through 8.
7	Row G switches 1 through 8.
8	Row H switches 1 through 8.
9	Row J switches 1 through 7.
Test cap	Row K switches 3, 4, 6, and 7.

The tube test socket feed lines shall be connected as follows:

Number 1 fil, ac or +dc voltage	A-1, B-1, C-1, D-1, E-1, F-1, G-1, H-1, and J-1
Number 2 fil, ac or -dc voltage	A-2, B-2, C-2, D-2, E-2, F-2, G-2, H-2, and J-2
Grid supply	A-3, B-3, C-3, D-3, E-3, F-3, G-3, H-3, J-3, and K-3
Cathode supply	A-4, B-4, C-4, D-4, E-4, F-4, G-4, H-4, J-4, and K-4
Screen supply	A-5, B-5, C-5, D-5, E-5, F-5, G-5, H-5, and J-5
Suppressor supply	A-6, B-6, C-6, D-6, E-6, F-6, G-6, H-6, J-6, and K-6,
Plate supply	A-7, B-7, C-7, D-7, E-7, F-7, G-7, H-7, J-7, and K-7
Auxiliary (aux.) cathode, or Ø volts, or aux B+	A-8, B-8, C-8, D-8, E-8, F-8, G-8, and H-8

3.4.5.3.2 Decade resistor assembly. - The decade resistance assembly shall be connected to the programming switch so that switch contacts by-pass the resistors. The desired resistance shall be established by the open (unactuated) switches as follows:

10 ohms	D-13	100 ohms	E-13
20 ohms	D-14	200 ohms	E-14
30 ohms	D-15	300 ohms	E-15
40 ohms	D-16	400 ohms	E-16
1000 ohms	F-13	10,000 ohms	G-13
2000 ohms	F-14	20,000 ohms	G-14
3000 ohms	F-15	30,000 ohms	G-15
4000 ohms	F-16		

3.4.5.3.3. Filament voltage.- The filament voltage shall be established by actuating only the switches for the voltage required and the zero voltage switch on decades having a zero voltage requirement.

One tenth volt decade		One volt decade		Ten volt decade	
Voltage	Switch	Voltage	Switch	Voltage	Switch
0.0	A-11	0	A-10	0	A-9
0.1	B-11	1	B-10	10	B-9
0.2	C-11	2	C-10	20	C-9
0.3	D-11	3	D-10	30	D-9
0.4	E-11	4	E-10	40	E-9
0.5	F-11	5	F-10	50	F-9
0.6	G-11	6	G-10	60	G-9
0.7	H-11	7	H-10	70	H-9
0.8	J-11	8	J-10	80	J-9
0.9	K-11	9	K-10	90	K-9
				100	L-9
				110	L-10

3.4.5.3.4 Leakage current shunts.- During leakage tests the leakage current shall be selected singly or in combination to give a reject point current as follows:

Reject current microamperes	Switches actuated
10	None
20	A-14
50	B-14
70	A-14; B-14
100	C-14
150	B-14; C-14
165	A-14; B-14; C-14

3.4.5.3.5 Main B+ voltage control. - Main B+ voltage level shall be controlled by actuation of single switches or combinations of switches as follows:

Cardinal Points (single switch points		Combination Points			
Voltage	Switches	Voltage	Switches	Voltage	Switches
50	D-17	10	D-17, L-3, L-4	130	B-17, E-17, L-4
110	C-17	20	D-17, E-17, L-4	140	B-17, L-4
160	B-17	30	D-17, L-4	150	B-17, E-17
210	L-2	40	D-17, E-17	170	L-2, L-3, L-4
240	L-3	60	C-17, E-17, L-3, L-4	180	E-17, L-2, L-4
240	L-4	70	C-17, L-3, L-4	190	L-2, L-4
250	E-17	80	C-17, E-17, L-4	200	E-17, L-2
260	None	90	C-17, L-4	220	L-3, L-4
		100	C-17, E-17	230	E-17, L-4
		120	B-17, L-3, L-4		

3.4.5.3.6 Meter shunts and multipliers. - Meter shunts and multipliers for the transconductance, current, and voltage ranges shall operate as follows:

3.4.5.3.6.1 Meter shunts. - The meter shunts shall shunt the meter or the meter and the lower value multiplier resistors. The meter shunts shall be in the meter circuit when the individual shunt switches are actuated as follows:

Switch	Shunt value Ohms
K-12	10
J-12	20
H-12	40
G-12	80
F-12	160
E-12	320
D-12	640
C-12	1280

3.4.5.3.6.2 Meter multipliers. - Meter multipliers when the switches are actuated shall be controlled as follows:

Switch	Function
A-13	Removes 100,000 ohm multiplier.
L-7	Shunts the 25,340 ohm multiplier resistor with the 1070 ohm multiplier resistor.
L-12	Removes 1070 ohm and 25,340 ohm multiplier resistor.

3.4.5.3.7 Interconnection switches. - Interconnection and miscellaneous functions of individual switches when the switches are actuated shall be as follows:

Switch	Function
H-14	Cathode supply line to decade resistors network.
J-14	Cathode supply line to 4 µf capacitor.
K-14	Cathode supply line to positive terminal of the 800 µf capacitor.
L-14	Cathode supply line to Ø volts.
L-16	Cathode supply line to suppressor supply line
K-16	Suppressor supply line to Ø volts.
J-16	Suppressor supply line to bias off voltage supply.
H-16	Suppressor supply line to decade resistor network.

Switch (Cont'd)	Function (Cont'd)
K-13	Grid supply line to grid bias line.
L-13	Grid supply line to Gm signal and grid bias line.
H-15	Screen supply line to Gm bridge power line.
J-15	Screen supply line to regulated B+ power supply.
K-15	Screen supply line to Gm bridge signal line.
C-13	Gm bridge circuit to + end meter multiplier and shunt network.
F-17	Ø volts to + end of the meter multiplier and shunt network.
J-13	Ø volts to - end of the meter multiplier and shunt network. network.
H-13	10 volts rms bridge reference to - end meter multiplier and shunt network.
L-1	Auxiliary B+ supply to tube feed line number 8.
K-8	Auxiliary cathode to tube feed line number 8.
L-8	Ø volts to tube feed line number 8.
L-15	Screen supply line to 250 volts a.c. power supply.
L-5	Screen supply line to auxiliary B+ power supply.
J-17	Plate supply line to meter shunt and multiplier network.
K-17	Plate supply line to Gm bridge circuit.
L-17	Plate supply line to 250 volts a.c. power supply.
G-16	Unreg. B+ to decade resistance network.
L-11	+Fil or fil number 1 power supply line to filament power supply center tap network.
A-12	A.c. fil voltage to fil number 1 supply line.
B-12	A.c. fil voltage to fil number 1 supply line.
B-15	A.c. fil voltage to fil number 2 supply line.
K-1	A.c. fil voltage to dc fil rectifier circuit.
K-2	D.c. filament voltage to- fil or fil number 2 supply line.
G-17	Leakage test off.
J-8	Dual test indicator lamp on.
A-15	Ø volts to Gm bridge circuit.
C-15	Ø volts to grid bias line.
K-5	Reg. B+ power supply to Gm bridge circuit.
L-6	Positive bias supply to grid bias line.
A-16	Grid bias line to decade resistance.
B-16	Gm bridge to decade resistance network.
C-16	Negative bias supply to decade resistance network.
B-13	Gm bridge circuit reference signal to + end meter multiplier and shunt network.
A-17	Guide pin.
H-17	Open.

3.4.6 Accessories.- The following accessories shall be included:

3.4.6.1 Manual.- Two copies each of a manual prepared in accordance with MIL-M-15071 and tube test conditions booklet shall be furnished with the equipment.

3.4.6.2 Calibration cell.- Unless otherwise specified in the contract or order, a calibration cell having the following characteristics shall be provided with each equipment. (A non-mercury calibration cell may be required).

(a) A current source of approximately 50 microamperes when used with test card number 1 for meter current calibration near the midscale point. When a 256 ohm ± 0.1 percent resistor is placed across pin 1 and pin 6 and when a direct short is placed across pins 1 and 8. 50μa ± 0.25μa shall flow through the resistor.

(b) A voltage source of approximately 12.8 millivolts when used with test card number 1 for meter voltage calibration near the midscale point. A 256 ohm ± 0.1 percent resistor is placed across pin 7 and pin 8 and a direct short is placed across pins 1 and 8. The voltage across the resistor shall be measured with a suitable high impedance VTVM.

(c) A resistance network for checking short test sensitivity in conjunction with the proper test cards.

(d) A resistive network for checking sensitive grid short test sensitivity in conjunction with the proper test cards.

3.4.6.2.1 Cell construction.- The calibration cell shall consist of a low-loss phenolic octal tube base containing the resistors and mercury cell shown in figure 3. This unit shall be hermetically sealed.

3.4.6.2.2 Cell calibration.- The precise current and voltage available shall be determined in accordance with 3.4.6.2 (a) and (b) and these values shall be marked in corresponding meter divisions on the cell. These markings shall be located in a position on the cell cover for ease in reading during cell use.

3.4.6.3 Hand punch.-- A hand punch shall be furnished to punch clean 3/16 inch diameter round holes in program cards. The punch shall have a reach of a least 2 inches.

3.4.6.4 Programming cards. - Three groups of programming cards prepared from the material specified in 3.8.6 shall be provided with each equipment as follows. The cards shall be of the sizes specified in figure 2 with the proper nomenclature data hot stamped in the contrasting color to the card material in the locations indicated in figure 2.

3.4.6.4.1 Blank cards. - Fifty blank tube test programming cards shall be supplied with each equipment.

3.4.6.4.2 Tube test cards. - A group of approximately 200 cards to perform the test specified on the tubes listed in appendix I of this specification, or as specified in the individual contract or order (see 6.1), appropriately marked and punched shall be provided with each equipment.

3.4.6.4.3 Calibration and self-test cards. - The following groups of 53 calibration and self-test cards appropriately marked and punched shall be furnished with each test set AN/USM-118A:

Test Card		Actuated Switches
1.	Meter current and voltage calibration	A-4, 5, 7, 8, 13, 16; B-16; C-13; F-3; G-6; H-4; J-8, 17; K-8, 13; L-12.
2.	Short test (no indication)	A-4; B-3.
3.	Short test (indication)	A-4; C-3.
4.	High sensitivity grid-cathode shorts (no indication)	A-4; D-3.
5.	High sensitivity grid-cathode (indication)	A-4; E-3.
6.	Negative bias voltage	A-13; D-16; C-16; D-12; F-12, 17; J-17; K-17.
7.	Positive fixed bias voltage	A-16; B-15; C-6, 13; E-17; F-7, 13; G-14; H-14, 16; J-4, 5, 13, 17; K-15; L-6, 12.

Test card (cont'd.)		Actuated Switches (cont'd.)
8.	Main B+ power supply	B-16; C-5, 13, 12; D-12, 13, 17; E-12, 13, 15, 16, 17; F-3, 6, 8, 12, 13, 14, 15, 16; G-13, 14, 15; H-14; J-8, 13, 15; K-8, 15, 16, 17; L-4, 12.
9.	Gm balance (low current).	A-13; B-13; H-13, 15; C-17; E-17; H-13, 17; L-12.
10.	Gm balance (high current).	A-13; B-13, 15, 16, 17; C-12; E-12, 13, 17; F-12, 14, 15, 16; G-13, 14, 15; H-12, 13, 14, 15, 17; J15; L-12, 14.
11.	Signal voltage	A-16; C-3; F-6; H-16; J-4, 7; L13.
12.	Filament standardization	A-9, 11, 12; B-15; C-1; F-2, 10.
13.	Main B+ feedback adjustment.	A-13; C-12; D-12, 17; E-12, 17; F-12, 17; G-12; J-12, 15, 17; K-15, 17; L-3, 4, 12.
14A.	Main B+, 6CD6 Screen adjustment.	A-4, 7; B-15; C-4, 12, 13, 15; E-12, 13; F-3, 13, 14, 15, 16; G-13, 14, 15; H-12, 14, 16; J-13, 15; K-12, 13, 15, 16, 17; L-2, 3, 4, 12.
15A.	Main B+ control 10 volts.	A-16; C-5, 12, 13, 15; D-13, 14, 15, 16, 17; E-12, 13, 14, 15, 16; F-3, 13, 14, 15, 16; G-4, 7, 13, 14, 15; H-14; J-15, 17; K-13, 15; L-3, 4, 12.
16A.	Main B+ control 20 volts (test I)	C-5, 12, 13; D-12, 17; E-12, 17; F-3, 6, 12; J-13, 15; K-15, 16; L-4, 12.
17A.	Main B+ control 20 volts (test 2)	C-5, 12, 13; D-12, 17; E-12, 17; F-3, 6, 12; J-13, 15; K-15, 16; L-3, 12.

Test card (cont'd.)		Actuated Switches (cont'd.)
18A.	Main B+ control 60 volts	C-5, 12, 13, 17; D-12; E-12, 17; F-4, 7; G-12; H-12; J-15, 17; K-15; L-3, 4, 12, 14.
19A.	Main B+ control 110 volts.	B-17; C-5, 12, 13; E-17; F-4, 7, 12; H-12; J-12, 15, 17; K-15; L-3, 4, 12.
20A.	Main B+ control 160 volts	C-5, 12, 13, 15; D-12; E-17; F-4, 7, 12; G-12; H-14; J-15, 17; K-12, 15; L-2, 3, 4, 12, 14.
21A.	Main B+ control 210 volts.	C-5, 12, 13; E-12, 17; F-4, 7, 12; G-12; H-12; J-12, 15, 17; K-12, 15; L-3, 4, 12, 14.
22A.	Main B+ control 260 volts	C-5, 12, 13; D-12; E-12; F-4, 7, 12; G-12; H-12; J-12, 15, 17; K-12, 15; L-12, 14.
23.	Main B+ regulation.	B-16, 17; C-5, 12, 13; D-15; E-17; F-3, 6, 8, 13, 14, 15, 16; G-12, 13, 14, 15; H-14; J-8, 13, 15; K-8, 12, 15, 16. 17; L-12.
24.	Dc. filament and cathode.	A-9, 14; B-11, 14; C-1, 6, 14; D-14, 15, 16; E-13, 14, 15, 16; F-2, 4, 7, 13, 14, 15, 16, 17; G-13, 14, 15, 17; H-14, 16; J-10, 17; K-1, 2, 16; L-12.
25.	Auxiliary B+	B-16; C-5, 12, 13; E-13; F-3, 6, 8, 14, 16; G-12, 13, 14, 15; H-14; J-13; K-12, 15, 16, 17; L-5, 12.
26.	Meter shunt 1280 ohms.	B-16; C-12, 16; D-14; E-13, 14, 15, 16; F-14, 15, 16, 17; G-13, 14, 15; H-14, 17; J-17; K-17; L-7, 14.

Test card (cont'd.)		Actuated Switches (cont'd.)
27.	Meter shunt 640 ohms.	A-4, 7, 13; C-13; D-12, 13, 14, 16, 17; E-14, 15, 16, 17; F-13; G-13, 14, 15; H-14, 16, 17; J-15, 17; K-15, 16; L-4.
28.	Meter shunt 320 ohms.	A-4, 7, 13; C-13; D-13, 15, 16, 17; E-12, 13, 15, 17; F-13, 14, 15; G-13, 14, 15; H-14, 16, 17; J-15, 17; K-15, 16; L-4.
29.	Meter shunt 160 ohms.	A-4, 7, 13; C-13; D-13, 14, 16, 17; E-13, 14, 16, 17; F-12, 13, 15, 16; G-13, 14, 15; H-14, 16, 17; J-15, 17; K-15, 16; L-4.
30.	Meter shunt 80 ohms.	A-4, 7, 13; C-13; D-13, 14, 17; E-14, 15, 16, 17; F-14, 15, 16; G-12, 13, 14, 15; H-14, 16, 17; J-15, 17; K-15, 16; L-4;
31.	Meter shunt 40 ohms.	A-4, 7, 13; C-13; D-14, 17; E-13, 16 17; F-13, 14, 15, 16; G-13, 14, 15; H-12, 14, 16, 17; J-15, 17; K-15, 16; L-4.
32.	Meter shunt 20 ohms.	A-4, 7, 13; C-13; D-13, 14, 16, 17; E-14, 15, 16, 17; F-13, 15; G-13, 14, 15; H-14, 16, 17; J-12, 15, 17; K-15, 16; L-4, 7.
33.	Meter shunt 10 ohms.	A-4, 7, 13; C-13; D-13, 14, 15, 16, 17; E-14, 15, 16, 17; F-13, 14, 16; G-13, 14, 15; H-14, 16, 17; J-15, 17; K-12, 15, 16; L-4, 7;
34.	Meter multiplier 25,340 ohms.	A-13; B-15, 16; C-16; D-13, 14, 16; E-14, 15, 16; F-13, 14, 15, 16, 17; G-13, 14, 15; H-14, 17; J-17; K-17; L-14.
35.	Meter multiplier 1,070 ohms.	A-13; B-16; C-16; F-12, 17; J-12, 17; K-12, 17; L-7.

Test card (cont'd.)	Actuated switches (cont'd.)
36. Meter multiplier 100,000 ohms.	B-15,16; C-16; D-13,15,16; E-13,16; F-13,14,15,16,17; G-13,14,15; H-14,17; J-17; K-17; L-1,2,14;
37. Decade resistor 10 ohms.	A-9,13,14; B-14,16; C-1,6,14; D-14,15,16; E-13,14,15,16; F-2,4,10,12,13,14,15,16,17; G-11,13,14,15,17; H-14; J-12,17; K-1,2,12,16,17;
38. Decade resistor 20 ohms.	A-9,13,14; B-14,16; C-1,6,14; D-13,15,16; E-13,14,15,16; F-2,4,12,13,14,15,16,17; G-13,14,15,17; H-10,14; J-11,12,17; K-1,2,12,16,17;
39. Decade resistor 30 ohms.	A-10,13,14; B-9,11,14,16; C-1,6,14; D-13,14,16; E-13,14,15,16; F-2,4,12,13,14,15,16,17; G-13,14,15,17; H-14; J-12,17; K-1,2,12,16,17;
40. Decade resistor 40 ohms.	A-13,14; B-9,14,16; C-1,6,10,14; D-13,14,15; E-11,13,14,15,16; F-2,4,12,13,14,15,16,17; G-13,14,15,17; H-14; J-12,17; K-1,2,12,16,17;
41. Decade resistor 100 ohms.	A-11,13,14; B-14,16; C-1,6,9,14; D-13,14,15,16; E-14,15,16; F-2,4,12,13,14,15,16,17; G-10,13,14,15,17; H-14; J-12,17; K-1,2,12,16,17;
42. Decade resistor 200 ohms.	A-11,13,14; B-14,16; C-1,6,14; D-13,14,15,16; E-9,13,15,16; F-2,4,12,13,14,15,16,17; G-13,14,15,17; H-14; J-12,17; K-1,2,10,12,16,17;

Test card (cont'd.)		Actuated Switches (cont'd.)
43.	Decade resistor 300 ohms.	A-4, 7, 13; C-13; D-12, 13, 14, 15, 16, 17; E-12, 13, 14, 16, 17; F-12, 13, 14, 15, 16; G-12, 13, 14, 15; H-12, 14, 16, 17; J-15, 17; K-15, 16; L-4.
44.	Decade resistor 400 ohms.	A-4, 7, 13; C-12, 13; D-12, 13, 14, 15, 16, 17; E-12, 13, 14, 15, 17; F-12, 13, 14, 15, 16; G-13, 14, 15; H-12, 14, 16, 17; J-15, 17; K-15, 16; L-4.
45.	Decade resistor 1000 ohms.	A-4, 7, 13; C-12, 13; D-12, 13, 14, 15, 16, 17; E-13, 14, 15, 16, 17; F-14, 15, 16; G-12, 13, 14, 15; H-14, 16, 17; J-15, 17; K-15, 16; L-4.
46.	Decade resistor 2000 ohms.	A-4, 7, 13; C-12, 13; D-12, 13, 14, 15, 16, 17; E-12, 13, 14, 15, 16, 17; F-13, 15, 16; G-13, 14, 15; H-14, 16, 17; J-12, 15, 17; K-12, 15, 16; L-4, 7.
47.	Decade resister 3000 ohms.	A-4, 7, 13; C-13; D-13, 14, 15, 16, 17; E-12, 13, 14, 15, 16, 17; F-13, 14, 16; G-13, 14, 15; H-14, 16, 17; J-15, 17; K-12, 15, 16; L-4, 7.
48.	Decade resistor 4000 ohms.	A-4, 7, 13; C-12, 13; D-12, 13, 14, 15, 16, 17; E-13, 14, 15, 16, 17; F-13, 14, 15; G-13, 14, 15; H-12, 14, 16, 17; J-12, 15, 17; K-15, 16; L-4, 7.

Test card (cont'd.)	Actuated Switches (cont'd.)
49. Decade resistor 10,000 ohms.	A-4,7,13; C-12, 13; D-12,13,14, 15, 16,17; E-13,14,15,16,17; F-13,14,15,16; G-14,15; H-14, 16,17; J-12,15,17; K-12,15,16; L-4,12.
50. Decade resistor 20,000 ohms.	A-4,7,13; C-12,13; D-12,13,14, 15,16,17; E-12,13,14,15,16, 17; F-12,13,14,15,16; G-12, 13,15; H-14,16,17; J-12,15, 17; K-15,16; L-4, 12.
51. Decade resitor 30,000 ohms.	A-4,7,13; C-13; D-12,13,14,15, 16,17; E-12,13,14,15,16,17; F-12,13,14,15,16; G-12,13, 14; H-12,14,16,17;
52A. Overload relay, no-go	A-4,5; D-15,16,17; E-14,15,16, 17; F-13,14,15,16; G-13,14, 15; H-14,16; J-15; K-16; L-4.
53A. Overload relay, dc overload	A-4, 5; D-14, 17; E-13, 14, 15, 16; F-13, 14, 15, 16; G-13, 14, 15; H-14, 16; J-15; K-16; L-4.

54. This number not used.

3.4.6.5 Programming card kit.- If required by the contract or order, a programming card kit shall be furnished. This kit shall consist of a combination case and one or more sets of programming cards.

3.4.6.5.1 Combination case.- The combination case shall meet the requirements of 3.6.5 except that it shall also contain a card tray and card holders as shown on RE10D2360.

3.4.6.5.2 Programming card sets.- The cards shall be of the sizes shown on figure 2 and the material specified in 3.8.2.1.7 with the proper nomenclature data hot-stamped in a color contrasting to the card material in the location shown on figure 2.

3.4.6.5.2.1 MK-704( )/U.- If the MK-704( )/U is required in the contract or order the programming cards in the set to perform the tests specified on the tubes listed in appendix II shall be provided.

3.4.6.5.2.2 MK- ( )/U.- If the MK- ( )/U is required (see 6.1) the programming cards in the set shall perform the tests specified on the tubes listed in appendix III.

3.4.6.5.3 MK- ( )/U.- If MK- ( )/U is required (see 6.1) a set of programming cards shall be provided to perform the tests specified on the tubes listed in appendix IV.

3.5 Electrical requirements.-

3.5.1 Power source.- The test set shall operate from 115 volts ± 10 percent single phase input at 50 cps ± 5 percent, 60 cps ± 5 percent, or 400 cps, ± 10 percent.

3.5.1.1 Voltage transients.- The equipment shall be capable of withstanding a voltage transient of ± 20 percent from any point within the ± 10 percent steady-state tolerance band of 3.5.1, recoverable to this point within two seconds. Momentary inpairment of operation during the transient is permissible, but the transient shall not prevent resumption of normal operation.

3.5.1.2 Frequency transients.- The equipment shall be capable of operation during frequency transients of ± 3 percent, of which not more than one percent is outside the steady-state tolerance band of frequency as specified in 3.5.1. The transient shall recover to the steady-state frequency within this band within 2 seconds. Momentary inpairment of operation during the transient is permissible, but the transient shall not prevent resumption of normal operation.

3.5.2 Total power.- The maximum power required to operate the test set shall not exceed 250 watts. The power required to operate the test set with no card inserted in the card switch shall not exceed 80 watts when the equipment is operating from a 115 volt 60 cps source. When the equipment is operating from a 50 cps or 400 cps source the power consumed shall be not more than 10 percent greater than the power consumed at 60 cps input with other conditions remaining constant.

3.5.3 Overload protection.- A fuse shall be installed in each side of the power line between the power source and the power switch circuit.

3.5.4 Radio interference requirements.- The equipment shall meet the applicable radio interference requirements of MIL-I-16910 for portable equipment. Any parts employed for the reduction of radio interference such as capacitors and filters shall be approved by the Bureau of Ships.

3.5.4.1 Test socket wiring.- Test sockets shall be wired with appropriate suppression devices for elimination of parasitic oscillations during tube tests.

3.6 Mechanical requirements. -

3.6.1 Size. - The over-all dimensions of the equipment, including the cover, handle, latches and feet shall not exceed 19-1/2 inches wide by 10-inches high by 17-1/4 inches deep. Dimensions excluding handle or handles, latches and feet shall not exceed 19-1/2 inches wide by 9-1/2 inches high by 16-1/2 inches deep.

3.6.2 Weight. - The over-all weight of the equipment, including the cover and accessories except the tube test cards, shall be held to a minimum consistent with requirements specified herein and shall not exceed 50 pounds.

3.6.3 Finish. - The exterior finish of the instrument shall be gray enamel in accordance with type III, class 2, of MIL-E-15090.

3.6.4 Accessibility. - The construction shall allow maximum accessibility to internal parts and subassemblies.

3.6.5 Combination case. - The equipment shall be enclosed in a combination case constructed in accordance with the requirements of MIL-T-945. The case shall be dripproof in accordance with MIL-STD-108. The cover shall be approximately two inches in depth. The case shall be provided with two sets of four dimples, one set on the bottom and one set on the rear. Two trunk-type pull-down latches (hooks in the cover, latches in the case) and two separable hinges (hooks with cover cross-bar in the case), shall be provided. A one hinge metal handle mounted on the side between the latches, shall be provided. No conductive projections or contacts on the outside of the case shall be connected to the equipment ground.

3.6.5.1 Identification Plate. - The identification plate shall be affixed to the outside top of the combination case.

3.6.5.2 Accessory stowage. - The technical manual, the calibration cell, the hand punch, the test program cards, and the blank program cards shall be stowed in the cover of the combination case. The tube test program cards shall be stowed in the case. Five spare fuses shall be stowed in an appropriate container under the perforated power supply cover.

3.6.6 Panel. - The layout of the panel shall be approved by the Bureau of Ships.

3.6.6.1 Panel marking. - Panel markings shall be engraved, cast, or etched into the panel. Silk screen processes shall not be used. The panel markings shall be filled with a permanent white material.

3.6.6.2 Fluorescent filling. - When required (see 6.1) fluorescent filling shall be used in the panel marking, knob pointers, meter scales, and meter pointer to facilitate operation in subdued light.

3.6.6.3 Controls. - All controls necessary for normal operation of the equipment shall be placed on the front panel. Controls for additional tests to be performed by skilled personnel shall be in an auxiliary compartment accessible through a hinged cover plate in the front panel. If internal-external concentric controls are used, the internal knobs shall be of such design that it will be possible for the operator to turn them while wearing gloves without turning the external knobs.

3.6.6.3.1 Main panel. - Only the following controls shall be required for normal equipment operation by unskilled personnel.

3.6.6.3.1.1 Power switch. - The power switch shall be a toggle switch. In the off position, it shall disconnect both sides of the power line from the equipment by de-energizing the line slave relay. In the on position, it shall restore power to the instrument by momentarily energizing the line slave relay circuit.

3.6.6.3.1.2 Test button number 2. - A test button bearing the numeral shall actuate the quality or Gm test switch.

3.6.6.3.1.3 Test button number 3. - A test button bearing the numeral 3 shall actuate the gas test switch.

3.6.6.3.1.4 Test button number 4. - A test button bearing the numeral 4 shall actuate a switch connecting the elements of the second section of a dual-section tube for testing when the tests of the first section have been completed.

3.6.6.3.1.5 Card release knob.- The card release knob shall open all card switch contacts and release the program card.

3.6.6.3.1.6 Power cable assembly.- The power cable assembly shall be type B in accordance with Drawing RE62D2005.

3.6.6.3.2 Auxiliary compartment. - The following controls and adjustments shall be available in the auxiliary compartment for special tests and routine calibrations to be performed by skilled personnel.

3.6.6.3.2.1 Filament standardization pushbutton switch. - A pushbutton switch shall be provided to cause the relative filament voltage level to be indicated on the meter.

3.6.6.3.2.2 Filament standardization adjustment. - A multi-position rotary switch shall control the filament voltage standardization.

3.6.6.3.2.3 Sensitive grids shorts pushbutton switch. - A pushbutton switch shall be available for increasing the sensitivity of the grid-to-cathode short test.

3.6.6.3.2.4 Cathode activity test pushbutton switch. - A locking pushbutton switch shall be provided to reduce filament voltage for a qualitative test of cathode activity. This switch shall disengage when any of the other auxiliary pushbutton switches are actuated.

3.6.6.3.2.5 Auxiliary B+ pushbutton switch. - A pushbutton switch shall be provided to cause the output voltage of the auxiliary B+ power supply to be indicated on the meter.

3.6.6.3.2.6 Auxiliary B+ adjustment. - A continuously variable control shall control the output voltage of the auxiliary B+ power supply.

3.6.6.3.2.7 Grid signal pushbutton switch. - A locking pushbutton switch shall be provided to disconnect the grid signal from the tube under test when Gm bridge balance adjustments are made. This switch shall disengage when any of the other pushbutton switches in the auxiliary compartment are actuated.

3.6.6.3.2.8 Gm bridge balance adjustments. - Two continuously variable controls shall be provided for Gm bridge balance, one for low current balance, the other for high current balance.

3.6.6.3.2.9 Short test calibration adjustments. - Two screwdriver-adjusted potentiometers shall be provided for short-test calibration, one for the normal sensitivity range and one for the high sensitivity grid shorts range.

3.6.6.3.2.10 Bias voltage calibration adjustments. - Two screwdriver adjusted potentiometers shall be provided for bias calibration, one for positive bias and one for the programable negative bias. The negative bias calibration adjustment shall be provided with a locking nut on the shaft.

3.6.6.3.2.11 Main B+calibration adjustment. - A screwdriver-adjusted potentiometer shall be provided for calibration of the main B+ power supply voltage. The adjustment shall be provided with a locking nut on the shaft.

3.6.6.3.2.12 Signal voltage calibration. - Two screwdriver-adjusted potentiometers shall be provided for calibration of the signal voltage, one to adjust the regulation of the signal voltage with line variations and one to set the signal voltage amplitude. These adjustments shall be provided with a locking nut on the shafts.

3.6.6.3.2.13 Meter calibration. - A screwdriver-adjusted potentiometer shall be provided for calibration of the millivolt range of the meter. The adjustment shall be provided with a locking nut on the shaft.

3.6.6.3.2.14 Filament standardization calibration. - A screwdriver-adjusted potentiometer shall be provided to adjust the meter for proper indication of the standard filament voltage.

3.6.6.4 Indicators. - All indicator lamps and the meter shall be on the front panel.

3.6.6.4.1 Pilot light. - A pilot light shall indicate when the equipment is turned on.

3.6.6.4.2 Blown fuse indicators. - Three blown fuse indicators shall be provided, one for the Gm bridge fuse, one for the auxiliary B+ power supply fuse, and one for the d.c. filament supply fuse. Each indicator shall be mounted adjacent to its associated fuse and shall light if its fuse fails.

3.6.6.4.3 Grid signal off indicator. - A grid signal off lamp shall light when the grid signal disconnect pushbutton switch in the auxiliary compartment is actuated.

3.6.6.4.4 Cathode activity test indicator.- A cathode activity test indicator lamp shall light when the cathode activity test pushbutton switch is actuated lowering filament voltage.

3.6.6.45 Dual test indicator. - A neon lamp shall light when a dual-section tube is undergoing test, to indicate that test button number 4 be used to test the second section.

3.6.6.4.6 Short test indicators. - The five neon short test lamps shall be mounted in line on the front panel under a glare shield.

3.6.6.5 Tube sockets. - Eleven tube sockets shall be supplied with the equipment. A jumbo 9-pin socket, an in-line subminiature socket and a round subminiature socket shall be installed on the front panel. A replaceable tube socket plate shall carry a grid cap lead with a clip and the following tube sockets:

(a) 7-pin miniature	(e) 7 pin
(b) 9-pin miniature	(f) 6 pin
(c) Octal	(g) 5 pin
(d) Loctal	(h) 4 pin

3.6.6.6 Tube pin straighteners. - Pin straighteners for 7-pin and 9-pin miniature tubes shall be mounted on the front panel. The straighteners shall have sleeves above the straightening section to insure proper alignment of the pins with the tube shell.

3.6.6.7 Fuse receptacles.- Receptacles for fuses for the Gm bridge, auxiliary B+ supply, d.c. filament supply and each side of the power line shall be mounted on the front panel.

3.6.6.8 Instruction plate.- An aluminum plate bearing brief operating instructions shall be fastened to the inside cover.

3.6.6.9 Card switch.- The card switch mechanism shall be installed in the lower left-hand section of the panel in a manner to provide easy insertion and removal of the test cards.

3.7 Environmental requirements.-

3.7.1 Shock, vibration, and inclination.- This equipment shall meet the shock, vibration, and inclination requirements of MIL-E-16400.

3.7.1.1 The test set shall withstand the grade A, Class I, type A shock test for lightweight equipment in accordance with MIL-S-901.

3.7.2 Temperature and humidity.- This equipment shall operate within the accuracies specified herein over the entire temperature range from -28° to $+65^{\circ}$C., with a relative humidity of 95 percent and shall conform to class 2 of MIL-E-16400 except as specified herein. Where reference is made to temperature and humidity ranges specified herein, table II shall apply:

Table II - Temperature and humidity ranges.

Range	Temperature	Relative Humidity percent
I	$+15^{\circ}$C to $+35^{\circ}$C	75
II	0°C to $+50^{\circ}$C	90
III	-28°C to $+65^{\circ}$C	95

Temperatures up to 85°C shall not damage the equipment when it is not operating.

3.7.3 Altitude.- Under operating conditions, there shall be no degradation of performance when the equipment is subject to decreased barometric pressures of not less than 20.6 inches of mercury approximating an altitude of 10,000 feet. Under non-operating conditions, it shall withstand 3.4 inches of mercury approximating an altitude of 50,000 feet.

3.8 Parts and materials requirements.- Regardless of any other requirements, materials, and parts containing mercury shall not be used in this equipment unless specifically required or approved and unless the presence of mercury is noted in that requirement or approval.

3.8.1 Materials.- The materials used in this equipment shall be selected in accordance with the requirements of MIL-E-16400.

3.8.1.1 Corrosion.- The equipment shall be protected from corrosion in accordance with MIL-E-16400.

3.8.1.2 Fungus.- The materials used in this equipment shall be selected in accordance with the fungus inert materials required of MIL-E-16400. The general fungus resistant treatment and the requirement for coating soldered joints and wire with varnish as specified in MIL-T-945 shall not apply.

3.8.2 Parts.- Unless otherwise specified herein, all parts used in this equipment shall be selected in accordance with the requirements of MIL-E-16400.

3.8.2.1 Standard parts.- Unless otherwise specified herein or otherwise approved by the Bureau of Ships, all parts shall be standard parts as defined in MIL-E-16400.

3.8.2.1.1 Electron tubes and semiconductor devices.- Electron tubes and semi-conductor devices used in this equipment shall be selected in accordance with the following documents:

(a) Electron tubes - MIL-STD-200 and Navy Supplement thereto.
(b) Semiconductors (including transistors and semiconductor diodes) - MIL-STD-701.

3.8.2.1.2 Transformers and inductors.- All audio, power and pulse transformers and inductors shall conform to grade 4 or 5, class R, S, or T, life expectancy X, in accordance with MIL-T-27 and class 2 of MIL-E-16400 except that low level pulse transformers shall conform to MIL-T-21038.

3.8.2.1.2.1 Transformer diagrams.- A transformer diagram shall be printed on the case of each transformer, or on a plate attached to the case. The diagram shall also be available in the technical manual. All other data pertinent to the transformer type shall be marked on the transformer case as required in MIL-T-27.

3.8.2.1.3 Capacitors.- All polarized filter capacitors shall be octal plug-in types, and shall be clamped to avoid objectionable vibration with the exception of the filter capacitor in the meter protection circuit and the differential capacitor in the GM bridge.

3.8.2.1.4 Indicating meter.- Except as specified herein, the indicating meter shall meet the requirements of MIL-M-10304.

3.8.2.1.4.1 Meter sensitivity.- The meter shall have a 100-microampere full-scale sensitivity. The meter shall be of a torsion (taut-band) construction. Friction (jewel)bearings shall not be used.

3.8.2.1.4.2 Accuracy.- The accuracy of the meter shall be ± 2 percent of full scale, except for the mid-scale point which shall be accurate to ±1/2 percent of the full scale value.

3.8.2.1.4.3 Size.- The meter case shall be 4-1/2 inches in diameter.

3.8.2.1.4.4 Overload.- The meter by itself shall be capable of withstanding a momentary overload of twenty-five times its full-scale current value either up or down scale without sustaining mechanical or electrical damage. Sudden positive or negative overloads of 1630 ua., or more, from zero meter reading shall activate the solid-state meter protection device which, in turn, will cause the slave relay to de-energize and to disconnect both sides of the power line.

3.8.2.1.4.5 Meter face.- The meter face shall have a white background and four scales.

3.8.2.1.4.5.1 Meter scales.- The meter face shall have one numerical scale reading from 0 to 100 having 100 equal divisions for making quantitative measurements in terms of percentage of known full-scale values. The meter face shall have three arc-type scales arranged to indicate "good" and "reject" conditions for leakage, quality, and gas tests.

3.8.2.1.4.5.2 Meter scale colors.- The scales shall be printed in three colors, green for "good" areas, read for "reject" areas and black for lettering, numbering, division marks and outlining.

3.8.2.1.4.5.3 Meter resistances.- The meter resistance shall be 256 ohms ±10 percent. A series calibration adjustment shall be provided to set the effective meter resistance to 256 ohms.

3.8.2.1.5 Overload relay circuit.- The overload relay shall disconnect both sides of the power line in case of overloads in the main B+ power supply or ac power supply, and in case of upscale or downscale meter overloads. The relay shall also serve as the main power-on switch.

3.8.2.1.5.1 Overload relays.- Two separate relays shall be provided to sense overloads. The relays shall have the characteristics specified hereinafter.

3.8.2.1.5.1.1 Line slave relay.- The line slave relay shall switch both sides of the power line. This shall be a dc operated relay and shall derive its power from the transformer secondary. This relay shall be actuated by the d.c. overload relay, solid state protection circuit, or the on-off switch.

3.8.2.1.5.1.2 D.c. overload relay.- The d.c. overload relay shall release the line slave relay when direct currents in excess of approximately 200 milliamperes are drawn from the main B+ supply.

3.8.2.1.5.1.3 ON-OFF switch.- The on-off switch shall be a 4 pole 3 position off normal type. This switch shall momentarily supply power to the circuit to turn-on unit and shall release the line slave relay to turn-off unit.

3.8.2.1.5.2 Relay contacts.- The relay contacts shall be self-wiping and have means to adjust relay sensitivity if required.

3.8.2.1.6 Card switch.- The card switch shall consist of the same orderly arrangement of switches as shown for the test card holes in figure 2. The switches shall be normally open single-pole single-throw switches with the actuation and switch closure occuring where holes are not present in the test card in use.

3.8.2.1.6.1 Card insertion slot.- The test card insertion slot shall allow ease in test card insertion and insure proper alignment of test card holes with the switches.

3.8.2.1.6.2 Contact characteristics.- The contacts used in the card switch shall employ a self-wiping action and shall have the following nominal ratings:

(a) Current - 10 amperes.
(b) Pin to contact resistance - 0.00025 ohms.
(c) Contact to pin to contact resistance - 0.00050 ohms.

3.8.2.1.6.3 Energizing action.- Complete insertion of a program card shall automatically energize the switch action. The energizing action shall be so designed that improper insertion of a program card or a plain card of the same dimensions as the code card shall not actuate the switch. All switching of filament power circuits shall occur prior to application of filament power to the tube under test to avoid currents greater than 0.5 amperes through switch contacts during switching.

3.8.2.1.6.4 Deactivating action.- The program switch shall be deactivated by a separate control knob.

3.8.2.1.6.5 Hand operation.- The card switch shall be designed so that hand operation of each individual switch shall be possible by removal of the card switch cover and insertion of a special card designed for the purpose. The individual switches shall then be actuated by insertion of a 3/16 inch diameter or smaller rod through the proper hole in the top switch plate.

3.8.2.1.7 Program card material.- The program cards shall be made of mylar sheet, material 0.010±0.001 inch thick.

3.8.2.2 Nonstandard parts.- If it is determined that none of the parts listed in the applicable specification permit conformance with the other requirements of this specification, the contractor shall furnish the following information concurrently with the information required in figure 6.

(a) Details about the critical parameters.
(b) Schematic diagrams showing the applicable voltages, currents, impedances, gain and isolation considerations.
(c) Complete procurement information including any drawings or other requirements to be included or understood in the contractor's purchase order. This shall include a full description of the quality control to be placed upon the proposed part by both the manufacturer and the contractor.
(d) A statement by the manufacturer of the proposed part that appropriate specification sheets (that is, MIL-S-19500 for semiconductor devices, MIL-E-1 for tubes, MIL-R- for resistors, and so forth) will be prepared and furnished to the Bureau of Ships within 60 days of authorization for the use of the nonstandard part and that the proposed part will be manufactured and inspected in accordance therewith. This requirement is imposed to assure adequate quality control and to assure that the proposed part will be reprocurable as needed to maintain the equipment.

3.8.2.2.1 Provisioning on nonstandard parts.- When provisioning documentation is required on authorized nonstandard parts, copies of the parts data approved by the bureau or agency concerned prior to qualification testing shall be included with the provisioning documentation.

3.8.2.2.2 Changes in nonstandard parts.- If it becomes known, after approval of the parts, that any specification or purchase description for any authorized nonstandard part should be modified to assure suitability of that part for the authorized use, the request for authorization together with a clear description of the needed changes shall be resubmitted.

3.9 Reliability requirements.- The equipment will be subjected to continuous use for long periods under the varied and severe conditions of Military service without overhaul and with little maintenance. If it is to meet these conditions, it is imperative that reliability of operation be considered of prime importance in the design and manufacture of the equipment. The manufacturer shall employ all methods possible in the process of manufacture which will assure quality and maximum reliability consistent with the state of the art. In the functional application of parts to equipment circuits, adequate factors of safety shall be provided by suitable deratings from the part specification values in order to ensure high equipment reliability under all service conditions. The design shall include all possible features which will result in reliable and stable operation with reduced requirements for adjustment and alignment, reduced frequency of failure, reduced requirements for maintenance and simplified maintenance, thus reducing requirements for highly skilled maintenance personnel.

3.9.1 Service conditions.- The equipment shall be designed to give optimum performance and reliable service during continuous or intermittent operation periods of at least 200 hours under the conditions specified herein without the necessity of major calibration or servicing except for the routine adjustments that can be made with the self-calibration test cards.

3.10 Maintainability requirements.-

3.10.1 Plug-in construction.- Optimum use shall be made of plug-in construction.

3.10.2 Interchangeability.- Mechanical and electrical interchangeability shall exist between similar assemblies, subassemblies, and replaceable parts, regardless of the manufacturer or supplier. Interchangeability does not mean identity, but requires that substitution of such like assemblies, subassemblies, and replaceable parts be easily affected without physical or electrical modifications of any part of the equipment including cabling, wiring and mounting. In the design of the equipment, provisions shall be made for design tolerance sufficient to accommodate various articles such as tubes, resistors, and other parts having the limiting dimensions and characteristics set forth in the specifications for the particular part involved without departure from the specified performance.

3.10.3 Calibration and trouble shooting.- Calibration and trouble shooting shall be accomplished through the use of special test and calibration cards. The procedures and operations shall involve a minimum amount of external test equipment.

3.11 Safety requirements.- This equipment shall be designed to optimize operator safety. Fuse and other safety protection devices shall be provided in accordance with MIL-E-16400 and as specified herein.

3.11.1 Fail safe.- Operator safety shall be maintained despite failure of any components in this equipment.

3.12 Test points and test features.- Test points and test features shall be provided in accordance with MIL-STD-415.

3.13 General requirements.- Unless otherwise specified herein, this equipment shall meet the requirements of MIL-E-16400.

3.14 Workmanship.- Workmanship shall be in accordance with MIL-E-16400.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.- Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 General inspection.- Unless otherwise specified herein, sampling, examination and testing of this equipment shall be in accordance with MIL-E-16400, and shall consist of the following classifications:

(a) Qualification tests (4.3).
(b) Quality conformance inspection (see 4.5).
    (1) Production.
    (2) Production control.
    (3) Environmental.

4.3 Qualification tests[1/].- Qualification tests shall be conducted at a laboratory satisfactory to the Bureau of Ships. Qualification tests shall consist of the tests specified in 4.5.3, 4.5.4, 4.5.5, and 4.5.6. Four models, built with approved parts, shall be furnished for qualification purposes.

4.3.1 Three sets of the information on standard and nonstandard parts required by figure 6 and 3.8.2.2.1 shall be submitted for approval. One set of the parts information shall be on brown line reproducible master or equal. Qualification tests on the product will not be authorized until the parts data is acceptable.

4.3.2 The contractor shall perform the tests of 4.4, 4.5.3 4.5.4 and 4.5.5 on all four qualification models. The tests of 4.5.6 shall be performed only on two of the models. The tests of 4.5.6 may be divided between the two models provided that at least the temperature and humidity, altitude, and accelerated life tests are run on one of the models and at least shock and vibration tests are run on the other model. The remaining tests of 4.5.6 may be run on either of these two models.

4.4 Preliminary inspection.- Preliminary inspection during process of manufacture shall include such visual, electrical, and mechanical examination and testing of the equipment, materials, subassemblies, parts and accessories (including source items) as may be required to assure that the complete equipment will meet all the requirements of the specification.

4.5 Quality conformance inspection.- Quality conformance inspection shall be conducted on all production lots.

4.5.1 Test accessories.- The equipment, test accessories, test cards, and electron tubes specified hereinafter shall be provided for qualification testing and quality conformance inspection.

1/ Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification" (see 6.2 and 6.3).

4.5.1.1 Test equipment.- The following items of test equipment, or units of equal or greater accuracy and range shall be used to conduct the tests specified herein. Use of any equipment in place of that listed requires approval of the Bureau of Ships.

	Equipment	Type
(a)	Wattmeter	Hickok Model 900C or Simpson 390 or Weston 432
(b)	Variable frequency power supply	CML Model 1430 or RF Lab Model 500
(c)	Variable line transformer	General Radio type W5 Variac or Standard Electric Model 500B or Ohmi Type VT8.
(d)	Resistance bridge	General Radio Type 1652A or Leeds and Northrop Model 4735
(e)	Ac-dc voltmeter	John Fluke Model 803 or Kintel Model 301.
(f)	Microammeter millivolt meter	Specially constructed, having a ±1/2 percent full scale accuracy meter movement, 100 ua full scale, 256 ohm ±1/2 percent internal resistance.
(g)	Microampere current source	----------
(h)	Ac voltmeter-high Impedance	AN/USM-116 or Hickok Model 1601 Hewlett-Packard Model 410B
(i)	Vacuum tube bridge	General Radio 1661-A or 561D
(j)	Power resistance decade	Clariostat Model 240C
	Environmental equipment	
(k)	Vibration test machine	See MIL-E-16400
(l)	Shock test machine	See MIL-E-16400
(m)	Temperature, humidity and altitude chamber(s)	Any chamber(s) capable of performing the applicable environmental tests herein.
(n)	Fungus incubator.	See MIL-T-945.
(o)	Tilt table	A table whose top can be horizontal and can be tilted to 75 degrees from the horizontal.
	Special equipment	
(p)	Weighing scale	Detecto or equivalent.

4.5.1.2 Test accessories. - Necessary adaptors as listed below shall be provided for tests.

(a) Short test sensitivity range adapter. This adapter shall be mounted on an octal plug and wired as shown in figure 4.

4.5.1.3 Production and production control test cards. - Production and production control test cards shall include test cards 1 through 53 of 3.4.6.4 and the following test cards 55 through 94.

Card Number	Function tested	Actuated switches
55.	Filament voltage 0.1 volt.	A-9, 10, 12, 13, 14, 15; B-11, 13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-13, 14, 15, 16; E-13, 15, 16; F-1, 7, 14, 15, 16; G-13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.
56.	Filament voltage, 0.2 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 11, 12, 14; D-12, 13, 15; E-12, 13, 14, 16; F-1, 7, 14, 15, 16; G-13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.
57.	Filament voltage, 0.3 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-11, 13; E-12, 13, 14, 16; F-1, 7, 12, 14, 15, 16; G-13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.
58.	Filament voltage, 0.4 volt	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-12 13, 14, 15, 16; E-11, 13, 14, 15, F-1, 7, 14, 15, 16; G-12, 13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.

Card Number(cont'd)	Function tested(cont'd)	Actuated switches (cont'd)
59.	Filament voltage, 0.5 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-13, 15, 16; E-13, 14, 15; F-1, 7, 11, 12, 14, 15, 16; G-12, 13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.
60.	Filament voltage, 0.6 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-12, 14, 16; E-12, 13, 14, 15; F-1, 7, 12, 14, 15, 16; G-11, 12, 13, 14, 15, 17; H-13, 14, 15; J-8; K-8, 16; L-12.
61.	Filament voltage, 0.7 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-14, 15; E-12, 13, 14, 15; F-1, 7, 14, 15, 16; G-13, 14, 15, 17; H-11, 12, 13, 14, 15; J-8; K-8, 16; L-12.
62.	Filament voltage, 0.8 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-12, 13, 15; E-13, 14, 15; F-1, 7, 12, 14, 15, 16; G-13, 14, 15, 17; H-12, 13, 14, 15; J-8, 11; K-8, 16; L-12.
63.	Filament voltage, 0.9 volt.	A-9, 10, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-13, 15; E-13, 14- 15; F-1, 7, 14, 15, 16; G-12, 13, 14, 15, 17; H-12, 13 14, 15; J-8; K-8, 11, 16; L-12.
64.	Filament voltage, 1.5 volts.	A-9, 12, 13, 14, 15; B-10, 13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-14; E-12, 13, 14, 15; F-1, 7, 11, 14, 15, 16; G-12, 13, 14, 15, 17; H-13, 14, 15; J-8, 12; K-8, 16; L-12.

Card Number (cont'd)	Function tested (cont'd)	Actuated switches (cont'd)
65.	Filament voltage, 1.0 volt.	A-9, 11, 12, 13, 14, 15; B-10, 13, 14, 15, 16; C-2, 4, 6, 8, 12, 14; D-12, 13, 14; E-12, 13, 14, 15; F-1, 7, 14, 15, 16; G-12, 13, 14, 15, 17; H-12, 13, 14, 15; J-8; K-8, 16; L-12.
66.	Filament voltage, 2 volts.	A-9, 11, 12, 13, 14, 15; B-13, 14, 15, 16; C-2, 4, 6, 8, 10, 14; D-12, 13, 14, 15, 16; E-13, 14, 15; F-1, 7, 12, 14, 15, 16; G-12, 13, 14; 15, 17; H-12, 13, 14, 15; J-8, 12; K-8, 16; L-12.
67.	Filament voltage, 3 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 12, 14; D-10, 13, 14, 15, 16; E-12, 13, 14, 15, 16; F-2, 4, 12, 17; G-13, 14, 15, 17; H-14; J-17; K-1, 2, 16, 17; L-12.
68.	Filament voltage, 4 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 14; D-12, 13, 14, 15, 16; E-10, 12, 13, 14, 15, 16; F-2, 4, 17; G-12, 13, 14, 15, 17; H-14; J-17; K-1, 2, 16, 17; L-12.
69.	Filament voltage, 5 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 12, 14; D-12, 13, 14, 15, 16; E-12, 13, 14, 15, 16; F-2, 4, 10, 12, 17; G-12, 13, 14, 15, 17; H-14; J-17; K-1, 2, 16, 17; L-12.
70.	Filament voltage, 6 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 14; D-13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 12, 17; G-10, 13, 14, 15, 17; H-12, 14; J-17; K-1, 2, 16, 17; L-12.

Card Number(cont'd)	Function tested (cont'd)	Actuated switches (cont'd)
71.	Filament voltage, 7 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 14; D-13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 17; G-12, 13, 14, 15, 17; H-10, 12, 14; J-17; K-1, 2, 16, 17; L-12.
72.	Filament voltage, 8 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 12, 14; D-13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 12, 17; G-12, 13, 14, 15, 17; H-12, 14; J-10, 17; K-1, 2, 16, 17; L-12.
73.	Filament voltage, 9 volts.	A-9, 11, 13, 14; B-14, 16; C-1, 6, 14; D-12, 13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 17; G-13, 14, 15, 17; H-14; J-12, 17; K-1, 2, 10, 16, 17; L-12.
74.	Filament voltage, 15 volts.	A-11, 13, 14; B-9, 14, 16; C-1, 6, 14; D-13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 10, 12, 17; G-12, 13, 14, 15, 17; H-12, 14; J-12, 17; K-1, 2, 16, 17; L-12.
75.	Filament voltage, 10 volts.	A-10, 11, 13, 14; B-9, 14, 16; C-1, 6, 12, 14; D-12, 13, 14, 15, 16; E-13, 14, 15, 16; F-2, 4, 12, 17; G-13, 14, 15, 17; H-14; J-12, 17; K-1, 2, 16, 17; L-12.
76.	Filament voltage, 20 volts.	A-10, 11, 13, 14; B-14, 16; C-1, 6, 9, 14; D-12, 13, 14, 15, 16; E-12, 13, 15, 16; F-2, 4, 17; G-13, 14, 15, 17; H-12, 14; J-17; K-1, 2, 12, 16, 17; L-12.

Card Number (cont'd)	Function tested (cont'd)	Actuated switches (cont'd)
77.	Filament voltage, 30 volts.	A-10, 11, 13, 14; B-14, 16; C-1, 6, 12, 14; D-9, 12, 13, 14, 15, 16; E-12, 14, 15, 16; F-2, 4, 12, 17; G-12, 13, 14, 15, 17; H-12, 14; J-12, 17; K-1, 2, 12, 16, 17; L-12.
78.	Filament voltage, 40 volts.	A-10, 11, 14; B-14, 16; D-12, 13, 14, 15, 16; E-9, 12, 13, 14, 15, 16; F-2, 4, 12, 13, 14, 15, 16, 17; G-12, 13, 14, 15, 17; H-14; J-17; K-1, 2, 16, 17; L-12.
79.	Gmbridge balance	A-13, 14; B-13, 14, 16; C-4, 8, 14, 17; D-13, 15, 16; E-13, 15, 16, 17; F-13; G-13, 14, 15, 17; H-13, 14, 15; J-15; L-7, 8.
80.	Filament voltage, 50 volts.	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-13, E-17; F-1, 8, 9; G-12, 13, 14, 15, 17; H-13, 14, 15; J-12, 15; L-7, 8.
81.	Filament voltage, 60 volts	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-14; E-12, 13, 15, 17; F-1, 8; G-9, 13, 14, 15, 17; H-12, 13, 14, 15; J-12, 15; L-7, 8.
82.	Filament voltage, 70 volts.	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-14, 15, 16; E-13, 14, 15, 17; F-1, 8, 12; G-12, 13, 14, 15, 17; H-9, 12, 13, 14, 15; J-12, 15; L-7, 8.

Card Number (cont'd)	Function tested (cont'd)	Actuated switches (cont'd)
83.	Filament voltage, 80 volts.	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-14, 15, 16; E-12, 13, 15, 16, 17; F-1, 8, 12; G-13, 14, 15, 17; H-13, 14, 15; J-9, 15; K-12; L-7, 8.
84.	Filament voltage, 90 volts	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-14, 15; E-13, 14, 15, 16, 17; F-1, 8; G-13, 14, 15, 17; H-12, 13, 14, 15; J-15, K-9, 12; L-7, 8.
85.	Filament voltage, 100 volts	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-14, 15; E-12, 13, 17; F-1, 8, 13; G-12, 13, 14, 15, 17; H-12, 13, 14, 15; J-15; K-12; L-7, 8, 9.
86.	Filament voltage, 110 volts	A-10, 11, 12, 13, 14; B-13, 14, 15, 16; C-2, 4, 14, 17; D-13, 15, 16; E-12, 13, 17; F-1, 8; G-12, 13, 14, 15, 17; H-12, 13, 14, 15; J-15; K-12; L-7, 8, 10.
87.	Short test sensitivity.	A-4; B-15; C-3.
88.	Short test sensitivity and leakage	A-4, 14; B-15; C-6; F-2.
89.	Short test sentivity and leakage	A-4; B-14, 15; C-5; E-3.
90.	Short test sensitivity and leakage	A-4; B-15; C-7, 14; D-2.

Card Number (cont'd)	Function tested (cont'd)	Actuated switches (cont'd)
91.	Gas test	A-3, 4, 16; C-16; D-13, 14, 15; E-13, 15; 16; F-13, 14, 15, 16; G-13, 14, 15; H-14; K-13; L-14.
92-1	Meter overload Go up and down scale	A-4, 5, 8, 13; C-3, 6, 7, 13, 16; D-13, 16; E-13, 14, 15, 16; F-13, 14, 15, 16; G-13, 14, 15; H-14, 16; J-8, 17; K-8, 15; L-12, 14.
92A	Meter overload no - go down scale	A-4, 5, 8, 13; C-3, 6, 7, 13, 16; D-15, 16; E-13, 15, 16; F-13, 14, 15, 16; G-13, 14, 15; H-14, 16; J-8, 17; K-8, 15; L-14.
92B	Meter overload no - go up scale	A-4, 5, 8, 13; C-3, 6, 7, 13, 16; D-16; E-16; F-13, 14, 15, 16; G-13, 14, 15; H-14, 16; J-17; K-8, 15; L-14.
93.	Fuse indicator	A-4, 5, 7, 16; C-15; H-14; K-5, 17; L-5;
94.	Filament overload	F-9; G-9.

4.5.1.4 Test electron tubes.- The following electron tubes shall be calibrated using the vacuum tube bridge and other approved laboratory standards under the same electrical conditions used for testing the tubes in the AN/USM-118( ) test set.

Tube Type	Function
0Z4	No filament, octal socket, dual test, full wave rectifier, 1 test card.
1B3	Low filament voltage, octal socket, 1 test card.
0A2	Voltage regulator, miniature 7 pin socket, 4 test cards.

Tube type (cont'd)	Function (cont'd)
5U4	Full wave rectifier, octal socket, 1 test card.
6A7	Pentagrid converter, large 7 pin socket, 2 test cards.
6AX4	Damper diode, octal socket, 1 test card.
6AL5	High perveance diode, miniature 7 pin socket, 1 test card.
6CD6	TV horizontal deflection amplifier, octal socket 2 test card.
6D6	Pentode, large 6 pin socket, 1 test card.
6DT6	Gating type pentode, suppressor test, miniature 7 pin socket, 2 test cards.
6J6	Dual triode, both triodes operating, miniature 7 pin socket, 1 test card.
7N7	Dual triode, fixed bias, locktal socket, 1 test card.
12AX7	Dual triode, fixed bias miniature 9 pin socket, 1 test card.
12BY7	Pentode, high Gm, miniature 9 pin socket, 1 test card.
12AV6	Dual diode, miniature 7 pin socket, 2 test cards.
27	Triode, fixed bias, 5 pin socket, 1 test card.
35W4	Half-wave rectifier, miniature, 7 pin socket, 1 test card.
50C5	Power amplifier pentode, fixed bias, miniature 7 pin socket, 1 test card.
12CX6	12 volt plate and screen pentode, miniature 7 pin socket, 1 test card.
80	Full wave rectifier, 4 pin socket, 1 test card.
5702	Sub-miniature pentode in line socket, 1 test card.
6080	Dual triode, self bias, high current, octal socket, 3 test cards.
6111	Sub-miniature dual triode, sub-miniature 8 pin round socket, 1 test card.

4.5.2 Facilities. - The contractor shall furnish any additional facilities, equipment and personnel required to assure that the equipment meets the requirements of this specification.

4.5.3 Production inspection. - The production inspection specified herein shall be performed on every unit delivered.

4.5.3.1 Surface inspection. - Each production unit shall be examined to assure high quality of:

(a) Workmanship, assembly and fit, mechanical safety and marking.
(b) Materials, parts and finish.
(c) Treatment for prevention of corrosion.
(d) Accessibility of components for replacement.

4.5.3.2 Specific operating tests. - Each equipment shall be energized and subjected to an operating test to insure qualitatively the proper functioning of the equipment and all operating controls, and conformance with the safety requirements.

4.5.3.2.1 Test equipment. - The following items of 4.5.1.1 shall be used for production inspection:

(a) Microammeter, Millivoltmeter
(b) D. c. voltmeter
(c) Resistance bridge
(d) A. c. voltmeter (high-impedance)
(e) Variable line transformer (Variac)

4.5.3.2.1.1 Test accessories. - The following items shall be used for production inspection.

(a) Calibration cell (3.4.6.2)
(b) Test cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 25, 52A, 53A, 87, 88, 89, 90, 91, 92-1, 92A, 92B and 94 (3.4.6.4.3 and 4.5.1.3)
(c) Short test sensitivity range adapter (4.5.1.2)

4.5.3.2.2 Test conditions. - Unless otherwise specified herein all tests shall be performed under the following conditions.

(a) Ambient conditions. - The tests shall be performed at factory or laboratory atmospheric conditions.
(b) Input power. - The input power shall be 115 volts, 60 cps. a. c.
(c) Warmup. - The equipment shall be turned on and permitted to warm up for 5 minutes before any test is conducted.

4.5.3.3 Cell calibration.- The calibration cell to be provided as an accessory with the equipment shall be tested as follows:

4.5.3.3.1 Cell current and voltage.-

(a) Connect pin number 8 to pin number 1 of the octal plug.
(b) Using the microammeter, measure the current between pin number 6 and pin number 1.
(c) The current shall be numerically equal, within 0.5 percent, to the "Press 2" calibration marking on the cell.
(d) Using the millivolt meter measure the voltage from pin number 7 to pin number 8.
(e) The voltage in millivolts shall be numerically equal, within 0.5 percent, to the "Press 2 and 4" calibration marking on the cell multiplied by nominal meter resistance divided by 1000.
(f) Remove the connection between pins number 1 and number 8.

4.5.3.3.2 Resistor calibration.-

(a) Using the resistance bridge connect the leads to pin number 1 and pin number 3. The bridge shall measure 1 megohm ± 5 percent.
(b) Connect the bridge leads to pins number 1 and number 2 of the plug. The bridge shall measure 2 megohms ± 5 percent.
(c) Connect the bridge leads to pins number 1 and number 5 of the plug. The bridge shall measure 10 megohms ± 5 percent.
(d) Connect the bridge leads to pins number 1 and number 4 of the plug. The bridge shall measure 20 megohms ± 5 percent.

4.5.3.4 Equipment calibration and tests.-

4.5.3.4.1 Meter calibration and short sensitivity tests.- These tests shall be conducted using the calibration cell (3.4.6.2).

4.5.3.4.1.1 Meter calibration.- The meter calibration shall be listed in the following manner:

(a) Insert calibration card number 1, meter, into the switch. Plug the calibration cell into the octal test socket. The number 1 Short lamp (counting from left to right) and the "Repeat Tests" lamp shall glow.

(b) Press button number 2 for check of meter microamp cal. The meter should read within ± 1 division of the figure written in the top blank on the calibration cell cover. If the reading is out of tolerance the meter should be checked against a meter standard for 50 μamp indication at mid-scale. If the error is significant, the meter should be replaced.

(c) Hold down button number 2 and press button number 4 to check meter millivolt sensitivity . The meter should read within ± 1 division of the figure written in the bottom blank on the calibration cell cover. If the reading is out of tolerance, adjust the "METER CAL" control for proper reading (located in the auxiliary control compartment).

4.5.3.4.1.2 Short sensitivity test. - Maintain cell in test socket.

(a) Insert calibration card number 2, SHORTS 2 MEG. NO-GO. Observe that no short lamps are lighted. If any lamps are glowing adjust "LO SENS" short test control to just extinguish all lamps.

(b) Insert card number 3, SHORTS 1 MEG GO. The left four lamps should glow. If they are not glowing re-adjust the LO SENS control until they glow with card number 3 and are extinguished with card number 2, as listed above.

(c) Insert card number 4, SHORT 20 MEG NO-GO. Press SENSITIVE GRID SHORTS button located in the auxiliary compartment. No short lamps should glow. (If any are lighted adjust the HI SENS control).

(d) Insert card number 5, SHORT 10 MEG CO. Press SENSITIVE GRID SHORTS button located in the auxiliary compartment. The number 4 lamp only (counting left to right) should glow. NOTE: The lamp may flicker or glow dimly as compared to the LO SENS short indication. If the number four lamp is not glowing re-adjust the HI SENS control until it glows with card number 5 and is extinguished with card number 4, as before.

(e) Remove calibration cell from octal socket.

4.5.3.4.2 Negative fixed bias. - The negative fixed bias shall be tested in the following manner.

(a) Insert card number 6, FIXED BIAS CAL NEG. No short lamps should glow.
(b) Press button number 2. Meter should read half scale. If reading is other than half scale, adjust "BIAS CAL NEG" control for proper indication.
(c) Test tolerances 49 to 51 divisions.

4.5.3.4.3 Positive fixed bias. - The positive fixed bias shall be tested in the following manner.

(a) Insert card number 7. FIXED BIAS CAL POS. Short lamps 1 and 2 should glow.
(b) Connect the d. c. voltmeter from pin number 3 to pin number 6 of the octal socket with the positive meter lead to pin number 3. Any meter reading observed should be disregarded.
(c) Press button number 2, the d. c. voltmeter should read 7.5 volts and the panel meter shall indicate 49 to 51 divisions.
(d) If the d. c. voltmeter reading is not proper, adjust "BIAS CAL POS" control (located in the auxiliary control compartment) for correct indication.

4.5.3.4.4 Main B plus power supply. - The main B plus supply shall be tested in the following manner.

(a) Insert card number 8, MAIN B PLUS CAL. Short lamps 1, 2, 3 and 5 should glow.
(b) Maintain the d. c. voltmeter connections as in step (b) of 4.5.3.4.3.
(c) Press button number 2, the d. c. voltmeter should read 20 volts and the panel meter shall indicate 49 to 51 divisions.

(d) If the d. c. voltmeter reading is not proper, adjust the MAIN B PLUS CAL control (located in the auxiliary compartment) for correct indication.
(e) Insert card number 23, MAIN B PLUS REG. Short lamps 1, 2, 3 and 5 should glow.
(f) Press button number 2. The panel meter shall indicate 48 to 52 divisions. Note the exact reading.
(g) Press buttons number2 and number 4. The meter shall indicate the exact reading of step (f) ± 1 division.

4.5.3.4.5 GM circuit balance. - The Gm circuit shall be tested in the following manner. Check that the white dots on the Gm BAL HI lb and LO lb knobs are in line with the associated dots labeled NOM (Nominal)on the panel,

(a) Insert card number 9 GM BAL LOW lB. Press button number 2. Meter should read zero, +3 divisions or minus the equivalent of 3 divisions. If the reading is out of tolerance of LO lb control may be adjusted for a zero reading and the knob reset on the control shaft to properly align the dots.
(b) Insert card number 10, GM BAL HI IB. Press button number 2. The meter should read zero, + 3 divisions or minus the equivalent of 3 divisions. If the reading is out of tolerance the HI Ib control may be adjusted in manner noted for LO Ib above.

4.5.3.4.6 Signal supply voltage. - The signal supply voltage shall be tested in the following manner.

(a) Connect the equipment to the power line through a variac and monitor the voltage delivered to the instrument with an a. c. voltmeter.
(b) Connect a high-impedance a. c. voltmeter from pin number 3 to pin number 6 of the octal socket.
(c) Insert card number 11, SIG, REG and AMP. Short lamp 1 should glow.
(d) Check for regulation of the signal supply voltage by holding down button number 2 and varying the line voltage from 105 to 125 volts. Note reading indicated on the high-impedance meter. The indicated voltage at 105 and 125 should be identical and shall not vary more than 1 percent from the indicated voltage at 115 volts line.

(e) If the circuit is not regulating (varies more than 1 percent) as an item (b), adjust the SIGNAL CAL REGULATION control and vary the line voltage to attain the desired regulation.

(f) After the signal regulation is properly adjusted, set the exact level of 0.222 volt rms by adjusting the SIGNAL CAL AMPLITUDE control.

4.5.3.4.7 Filament standardization. - The filament standardization shall be tested in the following manner.

(a) Maintaining the variac and a. c. voltmeter connections as in steps (a) and (b) of 4.5.3.4.6, set the line voltage to 115 volts.
(b) Insert card number 12, FILAMENT STD: ADJUSTMENT.
(c) Set the FILAMENT STD. ADJUSTMENT located in the auxiliary control compartment, to the NOM 115v position (white dot on knob lines up with dot on panel). The high-impedance voltmeter should read 4.95 to 5.05 volts.
(d) Press the FILAMENT STD. ADJUSTMENT push button. The panel meter shall indicate 50 divisions.
(e) If correction is necessary, adjust the FILAMENT STD. CAL control located in the upper right corner of the control compartment, for proper indication of 50 divisions.
(f) Insert test card number 24 in the program switch. Cathode to plate short indication shall occur.
(g) Actuate test switch number 2. The panel meter shall indicate 47 to 53 divisions. The exact reading shall be noted.
(h) Actuate the cathode activity test switch in the auxiliary compartment. The cathode activity test warning lamp on the main panel shall light.
(i) Actuate test switch number 2. The panel meter shall read 4 to 6 divisions lower than the reading noted in (g) above.

4.5.3.4.8 Auxiliary B plus power supply. - The auxiliary B plus power supply range shall be tested as follows:

(a) Install test card number 25, auxiliary B plus reg. Short lamps 1, 2, 3 and 5 shall glow.
(b) Actuate the auxiliary B plus read switch in the auxiliary compartment, vary the auxiliary B plus range control in the auxiliary compartment and observe that the meter reading can be varied from less than 10 to more than 100 scale divisions.

(c) Set the auxiliary B plus range control for a reading of 50 divisions.
(d) Release the auxiliary B plus read button and actuate button number 2. The meter shall read 49 to 51 divisions.
(e) Press button number 4 while holding down button number 2. The meter indication shall change less than 3 division from the indication obtained with only button actuated.

4.5.3.4.9 Overload protection. - Overload protection shall be tested in the following manner.

(a) Insert test card number 52A, relay, No Go. Short lamps 1 and 2 shall glow.
(b) Actuate test switch number 2. The equipment overload device shall not operate.
(c) Insert test card number 53A, relay Go. Short lamps 1 and 2 shall glow. Cathode to suppression grid short indication shall occur.
(d) Actuate test switch number 2. The overload device shall operate.
(e) Restore equipment operation.
(f) Insert test card number 92-1 meter overload. Disregard any glowing short lamps.
(g) Observe the meter pointer while actuating test switch number 2. The meter pointer shall move beyond full scale and the overload protective relay shall operate.
(h) Restore equipment operation.
(i) Observe the meter pointer while actuating test switches number 4 and 2 simultaneously. The meter shall move down-scale from zero and the overload protective relay shall operate.
(j) Restore equipment operation.
(k) Install test card number 92A.
(l) Press test buttons number 2 and 4 simultaneously. The meter pointer shall move downscale from zero and the overload relay shall not operate.
(m) Remove test card number 92A and install test card number 92B.
(n) Press test button number 2. The meter pointer shall move beyond full scale and the overload relay shall not operate.
(o) Insert test card number 94, FIL OVERLOAD. The 100 watt lamp shall light at once. This lamp is located under the front panel and shall be observed through an opening in the auxiliary control compartment.

4.5.3.4.10 Shorts and leakage test. - The shorts and leakage test shall be tested in the following manner.

(a) Install the short test sensitivity range adapter (4.5.3.4.1.2) in the octal test socket.
(b) Insert card number 87. Short lamps 1, 2, 3 and 4 shall glow.
(c) Insert card number 88. Short lamps 1, 2 and 3 shall glow and the panel meter shall indicate 8 to 12 divisions.
(d) Insert card number 89. Short lamps 1 and 2 shall glow and the panel meter shall indicate 8 to 12 divisions.
(e) Insert card number 90. Short lamp 1 shall glow and the panel meter shall indicate 8 to 12 divisions.

4.5.3.4.11 Gas test. - The gas test shall be tested in the following manner.

(a) Insert card number 91, gas test. Short lamps 1, 2, 3 and 4 shall glow.
(b) Press button number 3 and the meter shall indicate 45 to 55 divisions.

4.5.3.4.12 Electron tube tests. - The electron tubes of 4.5.1.4 shall be tested in the equipment. The readings on the 0 to 100 scale shall be within 5 percent of the calibration values plus the correction of figure 1 and the readings shall be repeatable of all equipments within 3 percent.

4.5.4 Production control inspection. - Production control inspection shall be conducted on a random sampling basis in accordance with the sampling plan specified herein. This inspection shall comprise such examination and testing as will prove satisfactory performance throughout the entire range of operation, detect deterioration of the design or deviations from approved processing of materials and demonstrate that the equipment will function satisfactorily under adverse conditions.

4.5.4.1 Sampling plan. - From each lot which has passed the production inspection, a random sample of units shall be selected as specified and shall be subjected to production control inspection. The number selected and lot acceptance level shall be based on table III. Reduced inspection may be instituted at the discretion of the inspector when the manufacturer has met the requirements stated in MIL-STD-105.

Table III- Sampling for production control inspection
AQL-1.5 inspection level II - normal

Lot size or monthly production	Sample size	Number of units non-conforming in any production control test.	
		Acceptance number	Rejection number
2 to 8	2	0	1
9 to 15	3	0	1
16 to 25	5	0	1
26 to 40	7	0	1
41 to 65	10	0	1
66 to 110	15	0	1
111 to 180	25	1	2
181 to 300	35	1	2

4.5.4.2 Rejection. - Each of the units selected in accordance with the sampling plan shall be subjected to the production control tests. The results of each test shall be compared with the requirements of this specification. Failure to conform to this specification for any test shall be counted as a defect and the unit shall be rejected. If the number of rejections in any sample exceeds the acceptance number for the sample, the lot represented by the sample shall be rejected. Rejected lots may be offered again for acceptance provided the contractor has inspected all units of the lot by performing the test(s) causing rejection and correcting all noncompliance.

4.5.4.3 Test materials and conditions. -

4.5.4.3.1 Test equipment. - The following items of 4.5.1.1 shall be used for production control inspection.

(a) D. c. voltmeter
(b) Variable line autotransformer
(c) A. c. voltmeter (for power line measurements)
(d) A. c. voltmeter (high impedance)

(e) Wattmeter
(f) Variable frequency power source

4.5.4.3.2 Test accessories and test cards. - The following item of 3.4.6 and 4.5.1.3 shall be used for production control inspection.

(a) Calibration cell (3.4.6.2)
(b) Test cards 1, 11, 12, 15 through 51, 55 through 86, 93.

4.5.4.3.3 Test conditions. - Unless otherwise specified herein, test conditions shall be the same as specified in 4.5.3.2.2.

4.5.4.4 Specific production control tests. -

4.5.4.4.1 Meter circuit test. -

4.5.4.4.1.1 Meter calibration. - The meter calibration shall be tested as follows:

(a) Install the calibration cell in the octal test socket.
(b) Insert test card number 1 in the program switch.
(c) Actuate test switch number 2. The meter shall indicate within 1 division the current calibration value marked on the cell.
(d) Actuate test switches number 2 and number 4. The meter shall indicate within 1 division of the divisions value marked on the cell.

4.5.4.4.1.2 Meter shunts and multipliers. - The meter shunts and multipliers shall be tested using the cards listed herein. Actuating test switch number 2 after each test card is inserted shall give a meter indication of 48 to 52 divisions.

Card number	Resistor under test	Short indications
	ohms	
26	1280	None
27	640	Cathode to plate
28	320	Cathode to plate
29	160	Cathode to plate
30	80	Cathode to plate
31	40	Cathode to plate
32	20	Cathode to plate
33	10	Cathode to plate
34	25,340	None
35	1070	None
36	100K	None

4.5.4.4.2 Decade resistors. - The decade resistors shall be tested using the test cards listed herein. Actuating test switch number 2 shall give the meter indication shown in the table.

Test Card	Decade resistor under test	Short indications	Meter indications
	ohms		divisions
37	10	Cathode to Suppressor grid	48 to 52
38	20	Cathode to Suppressor grid	48 to 52
39	30	Cathode to Suppressor grid	48 to 52
40	40	Cathode to Suppressor grid	48 to 52
41	100	Cathode to Suppressor grid	48 to 52
42	200	Cathode to Suppressor grid	48 to 52
43	300	Cathode to plate	48 to 52
44	400	Cathode to plate	48 to 52
45	1,000	Cathode to plate	48 to 52
46	2,000	Cathode to plate	48 to 52
47	3,000	Cathode to plate	48 to 52
48	4,000	Cathode to plate	48 to 52
49	10,000	Cathode to plate	46 to 54
50	20,000	Cathode to plate	46 to 54
51	30,000	Cathode to plate	46 to 54

4.5.4.4.3 Main B plus power supply. -

4.5.4.4.3.1 Output voltage. - The main B plus power supply output voltage shall be tested in the following manner.

(a) Connect the d. c. voltmeter to pins 3 and 6 of the octal test socket with the positive meter lead to pin number 3. The meter shall be placed on the 300v range except when test switch number 2 is actuated with a test card in place.
(b) Actuating test switch number 2 shall give a meter indication of 48 to 52 divisions and the voltmeter shall read the voltage indicated herein, except for card 15A which shall give a meter indication of 45 to 55 divisions.

Card number	Short indications	Voltage and tolerance percent
15A	Cathode to plate	10 volts ± 1 V.
16A	Control grid to suppressor grid	20 volts ± 0.2 V
17A	Control grid to suppressor grid	20 volts ± 0.2 V.
18A	Cathode to plate	60 volts ± 1.2 V.
19A	Cathode to plate	110 volts ± 2.2 V.
20A	Cathode to plate	160 volts ± 3.2 V.
21A	Cathode to plate	210 volts ± 4.2 V.
22A	Cathode to plate	260 volts ± 5.2 V.

4.5.4.4.3.2 Regulation. - The main B plus power supply regulation shall be tested in the manner specified herein.

(a) Connect the variable frequency source to the power input line through the variable line transformer as shown in figure 5.
(b) Connect the d. c. voltmeter to pins 3 and 6 of the octal test socket with the positive voltmeter lead to pin 3. The meter shall be placed on the 300 volt range except when test switch number 2 is actuated.

(c) Set the line voltage at 115 volts 60 cps and insert test card number 23. Control grid to suppressor short indication shall occur. Actuate test switch number 2. The panel meter shall read 48 to 52 divisions and the d. c. voltmeter shall read 150 volts + 2 percent.

(d) With test switch number 2 actuated change the line voltage to 125 volts. The panel meter indication shall not change more than ± 1 division from the reading in step (c) and the d. c. voltmeter shall not change more than 1 percent from the reading in step (c).

(e) With test switch number 2 actuated change the line voltage to 105 volts. The panel meter indication shall not change more than ± 1 division from the indication in step (c). The d. c. voltmeter reading shall not change more than 1 percent from the reading in step (c).

(f) With test switch number 2 actuated, and the power line voltage at 105 volts actuate test switch number 4. The panel meter indication shall not change more than 1 division. The d. c. voltmeter indication shall not change more than 1 percent from the reading of step (e).

(g) Repeat steps (a) through (f) with the variable frequency power source set at 50 cps.

(h) Repeat steps (a) through (f) with the variable frequency power source set at 400 cps.

4.5.4.4.4 Auxiliary B plus power supply. - The auxiliary B plus power supply shall be tested as follows:

(a) With the equipment connected to the power line as shown in figure 5 set the line voltage for 115 volts 60 cps.

(b) Insert test card number 25 in the program switch. Control grid to suppressor short indication shall occur.

(c) Actuate the auxiliary B plus read switch in the auxiliary compartment and adjust the auxiliary B plus voltage control for a reading of 50 divisions on the meter.

(d) Actuate test switch number 2. The meter shall read 48 to 52 divisions. Note the exact value.

(e) Adjust the line voltage to 125 volts rms. Note the meter reading with test switch number 2 actuated. The meter reading shall not deviate more than 1 division from the reading of step (d).

(f) Adjust the line voltage to 105 volts rms and actuate test switch number 2. The meter shall read within 1 division of the reading noted in step (d). Note the exact reading. Actuate test switch number 4 with test switch number 2 held down. The meter indication shall not change more than 1 division from the indication with only test switch number 2 actuated.

4.5.4.4.5 Signal voltage supply. - The signal voltage supply shall be tested as follows:

(a) With the equipment connected to the power line as shown in figure 5, set the line voltage for 115 volts 60 cps.
(b) Connect the high impedance a. c. voltmeter to pins number 3 and number 6 of the octal test socket.
(c) Insert test card number 11 in the program switch. Cathode to plate short indication shall occur.
(d) Actuate test switch number 2. The a. c. voltmeter shall indicate 0.222 volt rms ± 1.0 percent.
(e) With test switch number 2 actuated vary the line voltage from 105 volts to 125 volts. The a. c. voltmeter reading shall not change more than 1 percent.
(f) Repeat steps (d) and (e) with the variable frequency power source set at 50 cps.
(g) Repeat steps (d) and (e) with the variable frequency power source set at 400 cps.

4.5.4.4.6 Filament power supply. -

4.5.4.4.6.1 Filament standardization. - The filament standardization shall be tested in the following manner.

(a) Connect the a. c. voltmeter to pins 3 and 6 of the octal test socket.
(b) Insert test card number 12 in the program switch. The a. c. voltmeter shall indicate 5v rms.
(c) Actuate the filament standardization read switch in the auxiliary compartment and adjust the filament standardization switch for a meter indication of 50 ± 1 division. The a. c. voltmeter shall read 4.95 to 5.05 volts rms.

(d) With the filament standardization read switch actuated vary the filament standardization switch. Each switch position change shall give approximately 1 division change in meter indication except the change from the lowest voltage step to the highest voltage step.
(e) Set the filament standardization for a meter indication of 49 to 51 divisions.

4.5.4.4.6.2 Filament voltage. - The filament voltage shall be tested in the following manner.

4.5.4.4.6.2.1 Filament voltage from 0.1 volt through 2 volts. - The filament voltage from 0.1 volt through 2 volts shall be tested in the following manner.

(a) With each test card listed below inserted in the programming switch actuate test switch number 2 and check for a zero meter indication. Adjust for zero indication using the G.m balance LO IP control in the auxiliary control compartment if required.
(b) Cathode to plate short indication shall occur and the dual test indicator shall light on all test cards.
(c) Actuate test switches number 2 and number 4. The panel meter shall read 47 to 53 divisions.
(d) The a. c. voltmeter connected between pins 3 and 6 of the octal test socket shall indicate the voltage indicated herein for the card in use within 1 percent.

Card number	Voltage
55	0.1
56	0.2
57	0.3
58	0.4
59	0.5
60	0.6
61	0.7
62	0.8
63	0.9
64	1.5
65	1.0
66	2.0

4.5.4.4.6.2.2 Filament voltage from 3 volts through 40 volts. - The filament voltage from 3 volts through 40 volts shall be tested as specified herein:

(a) With each of the test cards listed below inserted in the program switch, the cathode to suppressor grid short indication shall occur.
(b) Actuating test switch number 2 shall give a meter indication of 47 to 53 divisions.
(c) Connect the d. c. voltmeter between pins 3 and 6 of the octal test socket, with the positive meter lead to pin 3. The voltmeter shall indicate the voltage shown below for the test card in use within 1 percent.

Card number	Voltage
67	1.8
68	2.7
69	3.6
70	4.5
71	5.3
72	6.2
73	7.1
74	12.5
75	8.0
76	17.1
77	26.3
78	35.0

4.5.4.4.6.2.3 Filament voltage from 50 volts through 110 volts. - The filament voltage from 50 volts through 110 volts shall be tested as specified herein:

(a) Insert test card number 79 in the program switch, actuate test switch number 2 and adjust the Gm balance LO IPif necessary for zero meter reading.
(b) Connect the a. c. voltmeter between pins 3 and 6 of the octal test socket. The voltmeter shall indicate the voltage shown below for the test card in use within 1 percent.
(c) With any of the test cards below inserted in the program switch and test switch number 2 actuated the meter shall indicate 47 to 53 divisions.

Card number	Voltage
80	50
81	60
82	70
83	80
84	90
85	100
86	110

4.5.4.4.7 Blown fuse indicators. - The blown fuse indicators shall be tested as specified herein:

(a) Remove the d. c. filament fuse, Gm bridge fuse, and auxiliary B plus fuse.
(b) Insert test card number 93 in the program switch. Cathode to plate short indication shall occur.
(c) Actuate test switch number 2 and observe that the three blown fuse indicators light.

4.5.4.4.8 Power consumption tests. - The total wattage of the equipment shall be tested as specified herein:

(a) Connect the equipment to the 115 volt 60 cycle power line through the wattmeter.
(b) With no card inserted and the equipment on the power shall not exceed 80 watts.
(c) With test card number 52A installed and test switch number 2 actuated the power shall not exceed 215 watts.

4.5.4.4.9 Weight and dimensions.-The weight and size shall be measured as specified hereinafter:

(a) Weigh the equipment including all accessories. The weight shall not exceed 50 pounds.
(b) Measure the equipment as required by 3.6.1. The dimensions shall not exceed the requirements of 3.6.1.

4.5.5 Additional qualification tests. Unless otherwise specified, the following tests shall be performed only on the four qualification models. These tests shall be conducted after successful conclusion of the production and preproduction control tests of 4.5.3 and 4.5.4.

4.5.5.1 Test equipment. - The following items of 4.5.1.1 shall be used for the additional sampling tests:

(a) Resistance bridge.
(b) D.c. voltmeter.
(c) Microampere current source.
(d) Electron tubes.
(e) Variable frequency power source.
(f) A. c. voltmeter, high impedance.

4.5.5.2 Test cards. - The test cards of 4.5.1.3 and 4.5.1.4 shall be used for the additional qualification tests.

4.5.5.3 Test conditions. - Unless otherwise specified, test conditions shall be the same as 4.5.3.2.2.

4.5.5.4 Specific tests. -

4.5.5.4.1 Meter linearity. - The meter linearity shall be tested as follows:

(a) Install test card number 1 in the equipment.
(b) Connect the microampere current source to pins 1 and 6 of the octal test socket with the positive lead to pin number 6.
(c) With test switch number 2 actuated set the microampere source from 0 to 100 microamperes in 10 microampere steps. The meter shall indicate the source current within ±2 microamperes except at the 50 microampere point where it shall indicate source current within ±1 microampere.

4.5.5.4.2 Main B plus power supply. - The main B plus power supply voltage control and load regulation shall be tested in the following manner using the test cards specified hereinafter:

(a) Connect the d.c. voltmeter between pins 3 and 6 of the octal test socket with the positive voltmeter lead to pin 3.
(b) Connect the power resistance decade box between pins 3 and 6 of the octal test socket with the resistance set to maximum and at least 500,000 ohms.
(c) Insert card number 22 and actuate test switch number 2. The d.c. voltmeter shall read 260 volts ±2 percent.
(d) With test switch number 2 actuated, reduce the power resistance decade box resistance from maximum to 6200. The d.c. voltmeter reading shall remain within 1 percent of the reading with maximum resistance.

4.5.5.4.2.1 Main B plus power supply ripple. - The main B plus power supply ripple shall be tested using test card 23:

(a) Connect the high impedance a.c. voltmeter between pins 3 and 6 of the octal test socket.
(b) Insert card 23 and actuate push button 2. The ripple content read on the a.c. voltmeter, or equivalent, shall not exceed 150 mv. Disregard any glowing short lamps.

4.5.5.4.3 Auxiliary B plus power supply. - The auxiliary B plus power supply control and load regulation shall be tested as specified hereinafter.

(a) Connect the d. c. voltmeter between pins 3 and 6 of the octal test socket with the positive voltmeter lead to pin 3.
(b) Connect the power decade resistance box between pins 3 and 6 of the octal test socket with the resistance set to maximum.
(c) Install test card number 25 in the programming switch.
(d) With test switch number 2 actuated adjust the auxiliary B plus voltage to each of the values listed below using the auxiliary B plus voltage control in the auxiliary compartment.
(e) At each voltage listed below vary the resistance of the power resistance decade box from maximum to the resistance value listed below for the voltage under test. The voltmeter reading shall remain within 1 percent of the reading or 1 volt whichever is larger with maximum resistance when the resistance is varied.

Voltage volts	Resistance ohms
30	1,000
90	3,000
150	5,000
210	7,000
230	7,667

4.5.5.4.4 Negative bias power supply. - The negative bias power supply control shall be tested in the following manner.

(a) Connect high-impedance d. c. voltmeter between pins 3 and 6 of the octal test socket with the positive voltmeter lead to pin 6.
(b) The meter shall read the voltage indicated below for the card in use within the tolerance indicated below when test switch number 2 is actuated.
(c) Insert card number 166 and actuate test switch number 2. The d. c. voltmeter shall read 150 volts + 3 percent.
(d) The actuated switches for card 166 shall be A-16; C-3, 16; F-8, K-13, and L-8.

4.5.5.4.5 Electron tube tests.- Each of the electron tubes of 4.5.1.4 shall be tested as follows:

(a) With the equipment operating from the variable frequency power source with 115-volt, 60-c.p.s. power input, test and record the readings of each tube at each test.
(b) Adjust the variable frequency power source to 115 volts, 48-c.p.s. Perform all tests on each tube. The readings shall not decrease by more than 4 percent of the readings recorded in step (a).
(c) Adjust the variable frequency power source to 115 volts, 440-c.p.s. and perform the tests on each tube. The readings shall not increase more than 10 percent from the readings recorded in step (a).

Changes of readings in a direction opposite to that indicated in steps (b) and (c), respectively, shall not exceed 2 percent.

4.5.6 Environmental inspection.- Environmental test shall be conducted on each lot, except that the government inspector may at his discretion waive all or part of this requirement when the manufacturer has maintained a high level of quality. These tests shall comprise such examinations and testing as will prove satisfactory performance during or after severe environmental conditions of immersion, shock, vibration, inclination, temperature, humidity and salt spray.

4.5.6.1 Sampling plan.- From each lot which has passed the production inspection, a random sample of units shall be selected and shall be subjected to production control inspection as specified in table IV.

Table IV - Sampling plan for environmental inspection

Lot size (or monthly production)	Sample size	Number of units non-conforming in any environmental test.	
		Acceptance number	Rejection number
1 - 100	1	0	1
100 - 300	2	0	1
301 - 500	4	1	2
501 or more	8	2	3

4.5.6.1.1 Rejection. - Each of the units selected in accordance with the sampling plan shall be subjected to the environmental tests. The results of each test shall be compared with the requirements of this specification. Any deviations from this specification for any such tests shall be counted as a defect and the unit shall be rejected. Rejected lots may be offered again for inspection provided the cause of defect has been determined and corrected in all units of the lot and the contractor has tested a random sample of reworked units to determine their compliance.

4.5.6.2 Test equipment. - Test equipment for environmental testing shall be selected in accordance with the requirements of this specification and of MIL-E-16400.

4.5.6.3 Specific environmental tests. - In addition to the satisfactory operation tests specified hereinafter, the inspector may require performance of any of the tests of 4.5.3, 4.5.4 or 4.5.5 as part of the temperature, humidity, shock, vibration and life tests described herein.

4.5.6.3.1 Satisfactory operation tests. - The check for satisfactory operation during the course of environmental tests shall consist of the repetition of the tests specified hereinafter when the equipment is operated in a controlled environment chamber, input power connections shall be through sealed feed through connections in the chamber and the equipment shall be energized. The calibration controls located in the auxiliary compartment shall not be adjusted unless specified.

4.5.6.3.1.1 Calibration tests. - The test of table V shall be performed prior to 4.5.6.3.2(d). Any necessary calibrations shall be made by the contractor. Thereafter, the tests shall be performed without further adjustment except for adjustments with cards, through 10, not to exceed once every four cycles.

Table V - Temperature and humidity test limits

Test card	Range I Tester indication	Range I External meter	Range II Tester indication	Range II External meter	Range III Tester indication	Range III External meter	Remarks
1	± 1 Div ± 1 Div		± 1 Div ± 2 Div		± 1 Div ± 2 Div		Meter μa Meter mv
2	No-Go		No-Go		No-Go		S. T. . Low Sens.
3	Go		Go		Go		S. T. Low Sens.
4	No-Go		No-Go		No-Go		S. T. Hi. Sens.
5	Go		Go		Go		S. T. Hi. Sens.
6	50 ± 1 Div		50 ± 2 Div		50 ± 2 Div		Neg. Bias
7	50 ± 1 Div	7.5VDC ± 0.2V	50 ± 2 Div	7.5 ± 0.3V	50 ± 2 Div	7.5 ± 0.3V	Pos. Bias
8	50 ± 1 Div	20VDC ± 0.4V	50 ± 2 Div	20VDC ± 0.8V	50 ± 2 Div	20VDC ± 0.8V	Main B plus Calibration
15A	50 ± 5 Div	10VDC ±1.0V	50 ± 6 Div	10VDC ±1.2V	50 ± 7 Div	10VDC ±1.4V	Main B plus 10V
22A	50 ± 1 Div	260VDC ± 5.2V	50 ± 2 Div	260VDC ±10.4V	50 ± 2 Div	260VDC ±10.4V	Main B plus 260V
24	50 ± 3 Div	5VDC ± 0.4	50 ± 3 Div	5VDC ± 0.4	50 ± 3 Div	5VDC ± 0.4	D. c. Fil.
52A	No-Go		No-Go		No-Go		Main B plus overload
53A	Go		Go		Go		Relay
92-1	Go		Go		Go		Meter overload go up and down
92A	No-Go		No-Go		No-Go		Meter overload No-Go, down
92B	No-Go		No-Go		No-Go		Meter overload No-Go up

4.5.6.3.1.2 Calibration cell tests. -

(a) Install calibration cell in actual test socket.
(b) Insert test card number 1 in the programming switch.
(c) Actuate test button number and record the panel meter reading. The reading obtained shall meet the limits specified in table V.
(d) Actuate test buttons number 2 and number 4 and record the panel meter reading. The reading obtained shall meet the limits specified in table V.
(e) Remove test card number 1 and install test card number 2. The short indicator shall indicate no shorts.
(f) Remove test card number 2 and install test card number 3. Cathode to control grid short indication shall occur.
(g) Remove test card number 3 and install test card number 4. Actuate the sensitive grid shorts switch in the auxiliary compartment. No short indicators shall light.
(h) Remove test card number 4 and install test card number 5. Actuate the sensitive grid shorts switch in the auxiliary compartment. Control grid to suppressor grid short indicator shall light.
(i) Remove test card number 5 and the calibration cell.

4.5.6.3.1.3 Voltage tests. - All voltage measurements shall be made by actuating test button number 2 and recording the panel meter reading.

(a) Install test card number 6, actuate test button number 2. The reading obtained shall be recorded and shall meet the limits specified in table V.
(b) Remove test card number 6 and install test card number 7.
(c) Connect the d. c. voltmeter from pin number 3 to pin number 6 of the octal socket with the positive meter lead to pin number 3. The meter reading observed shall be disregarded.
(d) Actuate test button number 2, the panel meter and the d. c. voltmeter readings obtained shall be recorded and shall meet the limits specified in table V.
(e) Remove test card number 7 and install test card number 8.
(f) With the voltmeter connected as in step (c) actuate test button number 2, the panel meter and the d. c. voltmeter readings obtained shall be recorded and shall meet the limits specified in table V.
(g) Remove test card number 8 and install test card number 15A.

(h) With the voltmeter connected as in step (c) actuate test button number 2, the panel meter and d. c. voltmeter reading obtained shall be recorded and shall meet the limits specified in table V.
(i) Remove test card number 15A and install test card number 22A.
(j) With the voltmeter connected as in step (c) actuate test button number 2, the panel meter and d. c. voltmeter readings obtained shall be recorded and shall meet the limits specified in table V.
(k) Remove test card number 22 and install test card number 24.
(l) With the voltmeter connected as in step (c) actuate test button number 2, the panel meter and d. c. voltmeter readings obtained shall be recorded and shall meet the limits specified in table V.
(m) Remove test card number 24 and disconnect the d. c. voltmeter.

4.5.6.3.1.4 Gm balance.- The balance of the Gm bridge circuitry shall be adjusted in the following manner.

(a) Install test card number 9 and actuate test button number 2.
(b) Adjust the low L_o balance control in the auxiliary compartment for a zero indication on the panel meter.
(c) Remove test card number 9 and install test card 10.
(d) Actuate test button number 2 and adjust the high Ib balance control in the auxiliary compartment for a zero indication on the panel meter.
(e) Remove test card number 10.

4.5.6.3.1.5 Protection and meter protection test.-

(a) Install test card number 52A and actuate test button number 2. The equipment overload relay shall not operate.
(b) Remove test card number 52A and install test card number 53A.
(c) Actuate test button number 2. The equipment overload relay shall operate.
(d) Remove test card number 53A and restore equipment operation.
(e) Install test card number 92-1.
(f) Actuate test button number 2. The meter pointer shall move beyond full scale and the overload relay shall operate.
(g) Restore equipment operation.
(h) Actuate test buttons number 2 and number 4 simultaneously. The meter pointer shall move down-scale from zero and the overload relay shall operate.

(i) Remove test card number 92 and restore equipment operation.
(j) Install test card number 92A.
(k) Actuate test buttons number 2 and number 4 simultaneously. The meter pointer shall move down scale from zero and the overload relay shall not operate.
(l) Remove test card number 92A and install test card number 92B.
(m) Actuate test button number 2. The meter pointer shall move beyond full scale, and the overload relay shall not operate.

4.5.6.3.1.6 Electron tube tests. - The following tubes shall be subjected to the short test, heater-cathode leakage test, and gas test as well as the tests specified hereinafter. The readings shall be within the range specified in table VI.

(a) Test 12AX7 tube for Gm and record reading.
(b) Test 6080 tube for Gm and record reading.
(c) Test 12BY7A tube for Gm and record reading.
(d) Test 6203 tube for emission and record reading.

Table VI - Tube checks

Tube tests	Range I	Range II	Range III
	Percent of Laboratory standards	Percent of Laboratory standards	Percent of Laboratory standards
12AX7	(1) 5	7	10
12BY7	(1) 5	7	10
6203	(1) 5	7	10
6080	(1) 5	7	10

4.5.6.3.2 Temperature and humidity test. -

4.5.6.3.2.1 Non-operating tests. - The equipment shall be subjected to the following temperature cycle and tests:

(a) Set up the equipment for test in a temperature controlled chamber or room. Reduce chamber temperature in steps of 10°C each 30 minutes until -62°C is reached. Maintain -62°C ± 3°C for at least 24 hours.

(b) Increase chamber temperature in steps of 10°C each 30 minutes until +75°C is reached. Maintain +75°C ± 3°C for at least 4 hours.
(c) Reduce chamber temperature in steps of 10°C each 30 minutes until 25°C is reached. Maintain 25°C ± 3°C for at least 4 hours.
(d) Perform the tests of 4.5.6.3.1. The accuracies of temperature and humidity (T&H) Range I shall apply.

4.5.6.3.2.2 Operating test. - The equipment shall be capable of normal operation without alignment or adjustment of other than the operating controls throughout the temperature cycle specified hereinafter.

4.5.6.3.2.2.1 Conditioning. - Set up the equipment in a temperature and humidity controlled chamber or room. Energize the equipment. Maintain a temperature of 45°C. ±5°C. and a relative humidity (R. H.) of 25 ± 5 percent for 8 hours. Decrease the temperature to 25°C in 2 equal steps of 30 minutes each. De-energize the equipment.

4.5.6.3.2.2.2 Cycling tests. - During the following tests the relative humidity need not be controlled at temperatures below ±5°C.

(a) Maintain 25°C ± 2°C and 25 percent ± 5 percent RH for 4 hours.
(b) Perform the tests of 4.5.6.3.1. The limits of T&H Range I shall apply.
(c) Decrease the temperature to 15°C. Maintain 15°C ± 2°C and 25 percent ± 5 percent RH for 4 hours.
(d) Perform the tests of 4.5.6.3.1. The limits of T&H Range I shall apply.
(e) Decrease the temperature to 0°C in two approximately equal steps of 20 minutes each. Maintain 0°C ± 2°C.

(f) Perform the tests of 4.5.6.3.1. The limits of T&H Range II shall apply.
(g) Decrease the temperature to -28°C in three approximately equal steps of 30 minutes each. Maintain -28°C ± 2°C.

(h) Perform the tests of 4.5.6.3.1. The limits of T&H Range III shall apply.
(i) Increase the temperature to +35°C in steps of approximately 10°C each 30 minutes. Maintain 35°C ± 2°C and 25 percent ±5 percent R.H. for 4 hours.

(j) Perform the tests of 4.5.6.3.1. The limits of T&H Range I shall apply.
(k) Increase the temperature to +50°C in two equal steps of 20 minutes each. Maintain 50°C ± 2°C and 25 percent ± 5 percent RH for 4 hours.
(l) Perform the tests of 4.5.6.3.1. The limits of T&H Range II shall apply.
(m) Increase the temperature to 65°C in two equal steps of 30 minutes each. Maintain 65°C ± 2°C and 25 percent ± 5 percent RH for 4 hours.
(n) Perform the tests of 4.5.6.3.1. The limits of T&H Range III shall apply.
(o) Decrease the temperature to 25°C in steps of approximately 10°C each 30 minutes.
(p) Repeat (b) through (o) for relative humidities of 50 percent, 75 percent, 90 percent and 95 percent. The limits shall be as required therein except as shown below:

RH	Temperature	Accuracy of T&H Range
90 percent	0°C to 50°C	II
Any	-28°C to 0°C.	III
95 percent	Any	III

(q) Repeat 4.5.6.3.2.2.1 and 4.5.6.3.2.2.2 (a) and (b).

4.5.6.3.2.3 Examination. - The equipment shall be examined in detail to detect evidence of physical degradation, such as corrosion of metal parts, distortion of plastic parts, and insufficient lubrication of moving parts. When it is necessary to replace parts to obtain satisfactory performance of the equipment the failed part or parts shall be analyzed to determine the cause of unsatisfactory operation. The results of the analysis shall be reported with the results of measurements of the equipment operating parameters. The unsatisfactory parts or material shall be replaced by adequate substitutes.

4.5.6.3.3 Vibration test.- The vibration test shall be performed as follows:

(a) Using suitable canvas straps, mount the equipment (installed in its combination case but with the cover separately mounted) to the vibration table with the major horizontal axis of the equipment horizontal and parallel to the direction of vibration.

(b) Energize the equipment. After a 30 minute warm-up period, perform the tests of 4.5.6.3.1. During vibration, the equipment shall be measuring tube type 7N7.

(c) Determine the presence of resonances in the equipment under test by vibrating at frequencies from 5 cps to 33 cps at a table vibratory amplitude (for example, one-half the total excursion) of 0.010±0.002 inch. The change in frequency shall be made in discrete steps of 1 cps and maintained for about 15 seconds. Record frequencies at which resonances occur.

(d) Repeat (c) with 5 minute steps.

(e) Perform the tests of 4.5.6.3.1.

(f) Vibrate the equipment for a total period of at least 2 hours, at the resonant frequencies chosen by the test engineer. If no resonance was observed, this test shall be performed at 33 cps. The amplitudes of vibration shall be in accordance with table VII.

Table VII- Amplitudes of vibration

Frequency range (cps)	Table amplitude plus or minus inch
5 to 15	0.030 ± 0.006
16 to 25	.020 ± .004
26 to 33	.010 ± .002

(g) Perform the tests of 4.5.6.3.1.

(h) Repeat (a) through (f) with the equipment mounted with its major horizontal axis parallel to the table and perpendicular to the direction of vibration.

(i) Repeat (a) through (f) with the equipment mounted with its major horizontal axis perpendicular to the table.

(j) Acceptability will be contingent upon the ability of the equipment to withstand tests specified above and the ability to perform its principal functions during and after vibration tests. Minor damage or distortion will be permitted during test providing such damage or distortion does not in any way impair the ability of the equipment to perform its principal functions. Nonrepetitive failures of such parts as vacuum tubes, condensers, and wiring, which can be easily replaced or repaired are generally considered minor failures. If minor failures occur the test shall be stopped, the repair made, and the entire test in that plane repeated. If major failures occur, the test shall be discontinued and, after repair, the entire test shall be repeated, unless otherwise specified by the bureau or agency concerned. The manufacturer may, at his option, substitute an entirely new equipment for retest. If this option is taken, it shall be noted in the test report furnished as specified in 4.5.6.3.3.1.

4.5.6.3.3.1 Test report.- The test report to be furnished the bureau or agency concerned by the testing laboratory shall include detailed descriptions of any damage or malfunctioning incurred and at what stage in the tests it occurred. Photographs of physical damage shall be included. Recommendations are desired as to what corrective measure, if any, should be taken. At the discretion of the test engineer, it shall also include other pertinent information, such as the overall dimensions of the equipment, its weight, approximate location of the center of gravity, and a sketch or photograph of the methods used in mounting it on the test machines.

4.5.6.3.4 Shock test. - Except as specified herein, each equipment shall be subjected to the shock tests specified in MIL-S-901. The following conditions shall apply:

(a) The equipment shall be mounted with suitable canvas straps. The cover shall be removed from the case and separately mounted to the shock table.
(b) The tests of 4.5.6.3.1 shall be performed before any blows and after the 3 blows of each plane.
(c) During the blows, the equipment shall be measuring tube type 7N7.
(d) Three blows shall be applied parallel to each of the three principal axes of the apparatus being tested. The three blows in each horizontal direction shall be with heights of hammer drop of 1 foot, 2 feet, and 3 feet, respectively, and the three blows in the vertical direction shall be with heights of 2 feet, 3 feet, and 4 feet, respectively.

4.5.6.3.5 Accelerated life tests.- The equipment shall be subjected to the following conditioning and tests:

4.5.6.3.5.1 Conditioning.-

4.5.6.3.5.1.1 Normal operation. - The equipment shall first be set up in a chamber in an ambient temperature of 25° ± 5°C. with a relative humidity of 50 ± 3 percent, and operated under nominal conditions of line voltage and frequency in accordance with 3.5.1. Following warm-up, the test of 4.5.6.3.1 shall be performed. The results shall be recorded as reference data.

4.5.6.3.5.1.2 High temperature operation. - Chamber temperature shall be increased to 65° plus or minus 5°C. and not less than 90 percent relative humidity. The equipment shall be operated under nominal supply voltage and frequency, for a period of 2 hours. During the last 30 minutes the test of 4.5.6.3.1 shall be performed.

4.5.6.3.5.2 Test cycling. - Immediately following the high-temperature conditioning the equipment shall be subjected to the following series of cycles while operating in an ambient temperature of 65° ± 5°C. and a relative humidity of not less than 90 percent.

(a) Increase input voltage to 126.5 volts and operate in this condition for 1 hour and 15 minutes.
(b) Decrease input voltage to 103.5 volts and operate in this condition for 1 hour.
(c) Increase input voltage to 115 volts, operate the equipment for 30 minutes in this condition and then remove power for 15 minutes. During the last 30 minutes of operation, repeat 4.5.6.3.1.
(d) At the end of the 15-minute shut-down period energize the equipment with 103.5 volts and operate in this condition for 1 hour.
(e) Increase input voltages to 126.5 volts and operate in this condition for 1 hour and 15 minutes.
(f) Decrease input voltage to nominal and operate for 30 minutes repeating 4.5.6.3.1. At the end of the 30 minute period shut down the equipment for 15 minutes.
(g) Repeat (a) through (f) without interruption for a period of 200 hours.

4.5.6.3.5.3 Procedure in case of shut-down.- Should a single shut-down for more than 1 hour or a total down time of 5 hours during the 200 hours of continuous operation be necessary, the continuation of the test shall be for 200 hours from the time of resumption of the run.

4.5.6.3.5.4 Temperature measurement. - Temperature measuring instruments shall be placed at critical points throughout the equipment, covering suspected hot spots. Data shall be recorded at least once during each cycle, at the end of the period of high voltage operation.

4.5.6.3.6 Drip-proof (enclosure) test for combination case. -

(a) Repeat 4.5.6.3.1.
(b) Mount the equipment de-energized in its combination case with cover installed in such fashion as to permit tilting of its vertical axis in any direction to the extent of 75 degrees to the horizontal. The equipment so mounted shall be placed on the tilt table directly below a hose with a 1-inch uniform diameter nozzle installed not less than 3 feet above the top of the equipment. The nozzle shall be fitted with a domestic type sprinkling faucet.
(c) The enclosure of the equipment shall be tested by subjecting it to a stream of water under a velocity head at the nozzle of 1 foot. The nozzle shall be directed downward to the test position.
(d) During the test the unit shall be tilted in all directions and subjected to the test in accordance with the following schedule:

(1) Stream directed unto top (with table horizontal) for 15 minutes.
(2) Stream directed for 5 minutes onto each completely closed side containing controls, panels, cable entrances, louvers and so forth (tilt the table so that the side being sprayed is 75 degrees from the horizontal).

(e) Return the equipment to the horizontal (tilt table horizontal) and repeat 4.5.6.3.1. Remove the instrument from its combination case. Any leakage accumulated in pockets in the bottom or in any other part of the enclosure will constitute failure of this test.

4.5.6.3.7 Post environmental tests. - The specific operating tests of 4.5.3.2 shall be repeated after all of the environmental tests of 4.5.6.3.2 through 4.5.6.3.6 being performed on a given unit have been performed. Any unit failing to conform to the requirements of 4.5.3.2 shall be counted as failing to pass to the environmental test and shall be rejected.

4.5.6.3.8 Fungi test.- If required by the inspector parts of the equipment not completely in accordance with MIL-E-16400 shall be tested in accordance with MIL-T-945 to assure compliance with 3.8.1.2.

4.5.6.3.9 Salt spray test.- Parts of the equipment not in accordance with MIL-E-16400 shall be subjected to a 100-hour saltspray test in accordance with FED-STD-151 as specified in MIL-E-16400.

4.5.6.3.10 Radio interference and undesired radiation tests.- Radio interference and undesired radiation tests for portable equipment shall be conducted in accordance with MIL-I-16910.

4.5.6.3.11 Weld test.- When required by the inspector, sample pieces representative of production, and welded on the machines used therefor, shall be tested to destruction to determine conformance with MIL-E-16400.

5. PREPARATION FOR DELIVERY

5.1 Domestic shipment and early equipment installation and storage of onboard repair parts.-

5.1.1 Test set, AN/USM-118( ).-

5.1.1.1 Preservation and packaging.- Preservation and packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the using activity and until early installation and may conform to the supplier's commercial practice when such meets these requirements.

5.1.1.2 Packing.- Packing shall be accomplished in a manner which will insure acceptance by common carrier at the lowest rate and will afford protection against physical or mechanical damage during direct shipment from the supply source to the using activity for early installation The shipping containers or method of packing shall conform to the Uniform Freight Classification Rules and Regulations or other carrier regulations as applicable to the mode of transportation and may conform to the supplier's commercial practice when such meets these requirements.

5.1.1.3 Marking.- Shipment marking information shall be provided on interior packages and exterior shipping containers in accordance with the contractor's commercial practice. The information shall include momenclature, Federal stock number or manufacturer's part number, contract or order number, contractor's name and destination.

5.1.2 Onboard repair parts.- Onboard repair parts shall be preserved and packaged level A; packed level C and marked in accordance with MIL-E-17555.

5.2 Domestic shipment and storage or overseas shipment.- The requirements and levels of preservation, packaging, packing, and marking for shipment shall be as specified by the procuring activity (see 6.1).

(5.2.1 The following provides various levels of protection during domestic shipment and storage or overseas shipment, which may be required when procurement is made.

5.2.1.1 Preservation and packaging, packing, and marking.- Equipment, accessories, manuals, and repair parts shall be preserved and packaged level A or C; packed level A or B and marked as specified (see 6.1) in accordance with MIL-E-17555. Method II shall apply for level A packaging of equipment except that Method IC5 shall apply where storage time will not exceed 6 months.)

6. NOTES

6.1 Ordering data.- Procurement documents should specify the following:

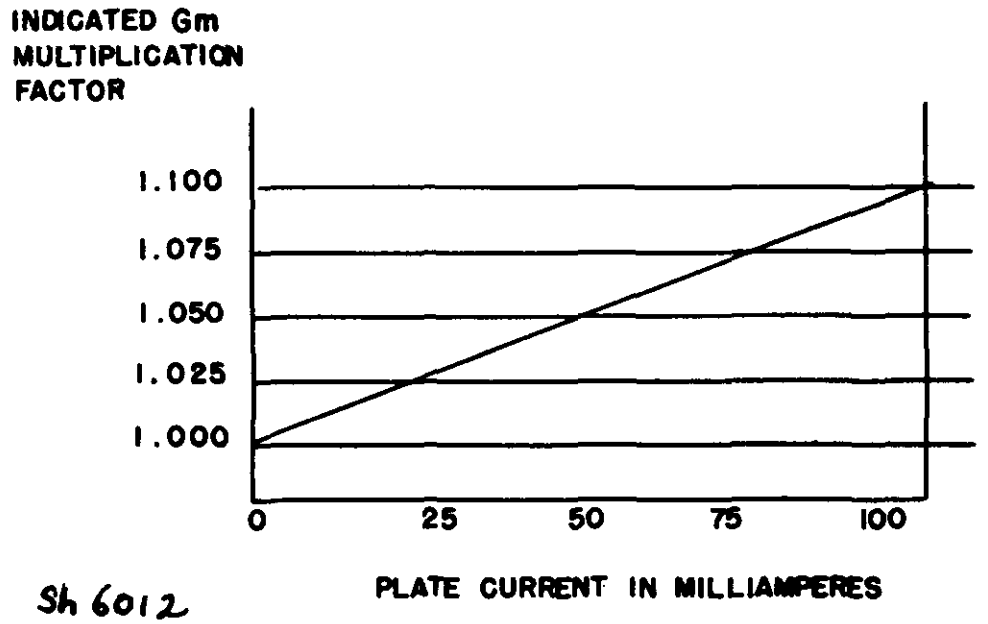
(a) Title, number and date of this specification.
(b) Which, if any programming card kit is required (see 3.4.6.5).
(c) Fluorescent filing if required (see 3.6.6.2).
(d) Preservation and packaging, packing, and marking instructions if other than as specified in 5.1(see 5.2).

6.2 With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion in Qualified Products List QPL 23125, whthere or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification, in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the qualified products list is the Bureau of Ships, Department of the Navy, Washington D.C. 20360, and information pertaining to qualification of products may be obtained from that activity. Application for qualification tests shall be made in accordance with "Provisions Governing Qualification" (see 6.3).

6.3 Copies of "Provisions Governing Qualification" may be obtained upon application to Commanding Officer, Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

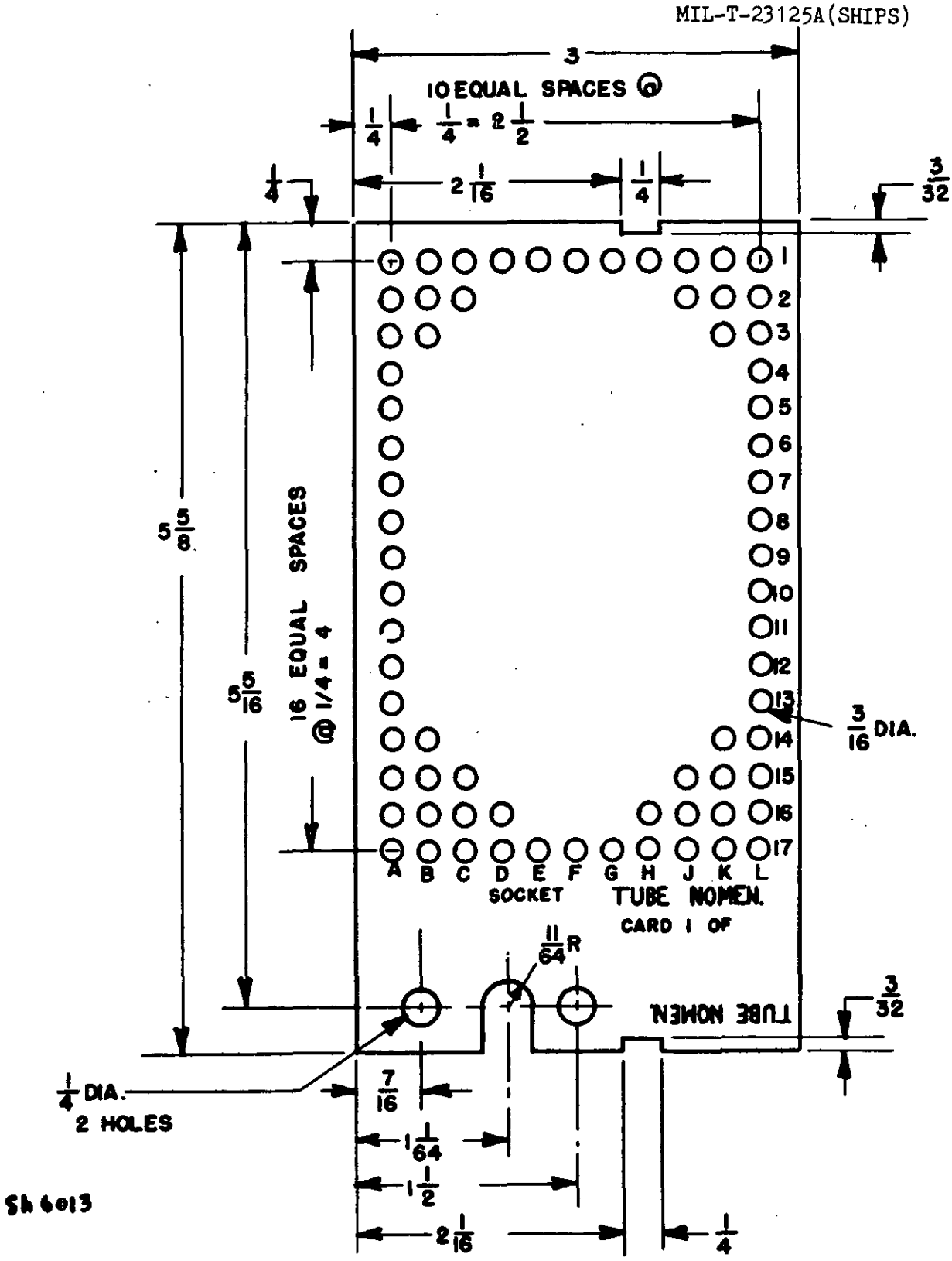
6.4 Change from previous issue.- The extent of changes (deletions, additions, etc.) preclude the annotation of the individual changes from the previous issue of this document.

Preparing activity:
Navy - Ships
(Project 6625-N361Sh)



Sh 6012

Figure 1 - GM correction factor chart.



A. PREFERRED ELECTRON TUBE TEST CARDS

Figure 2 - Program switch and switch card layout.

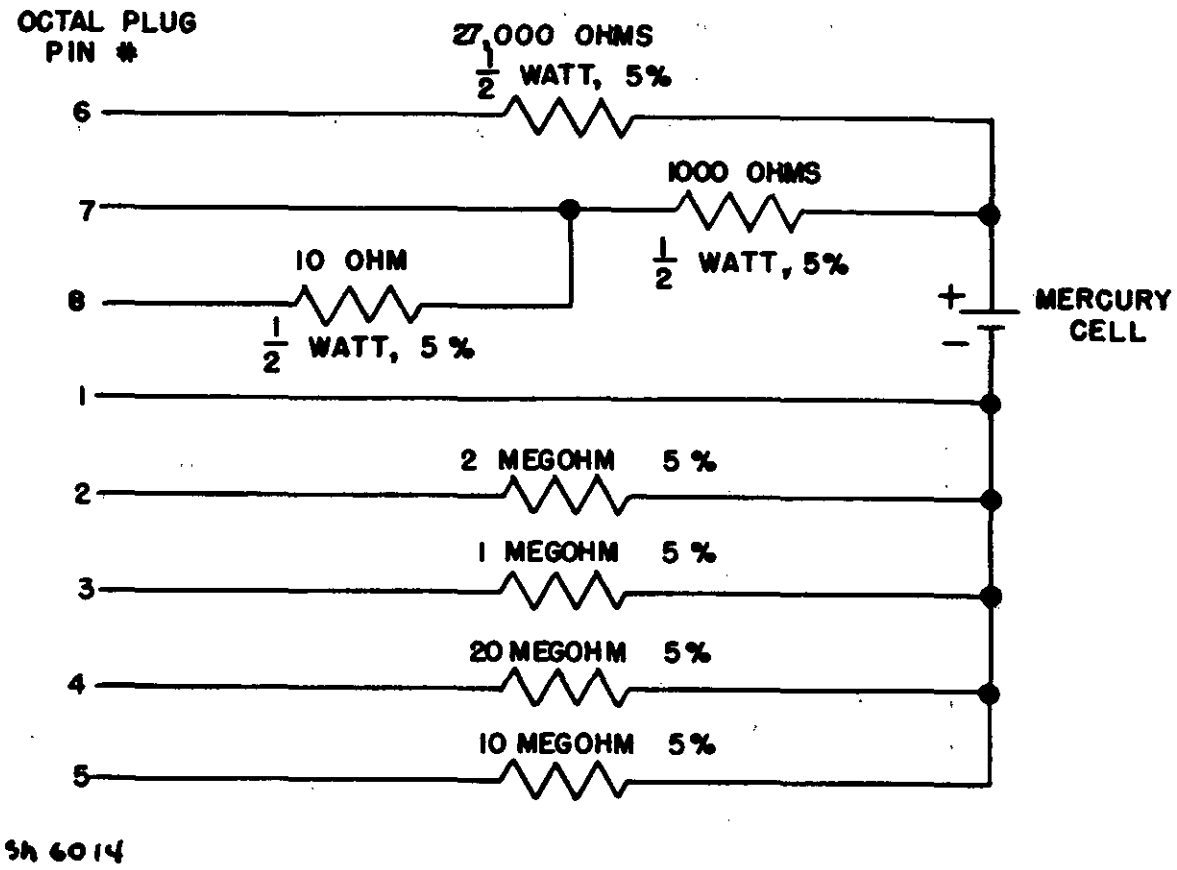
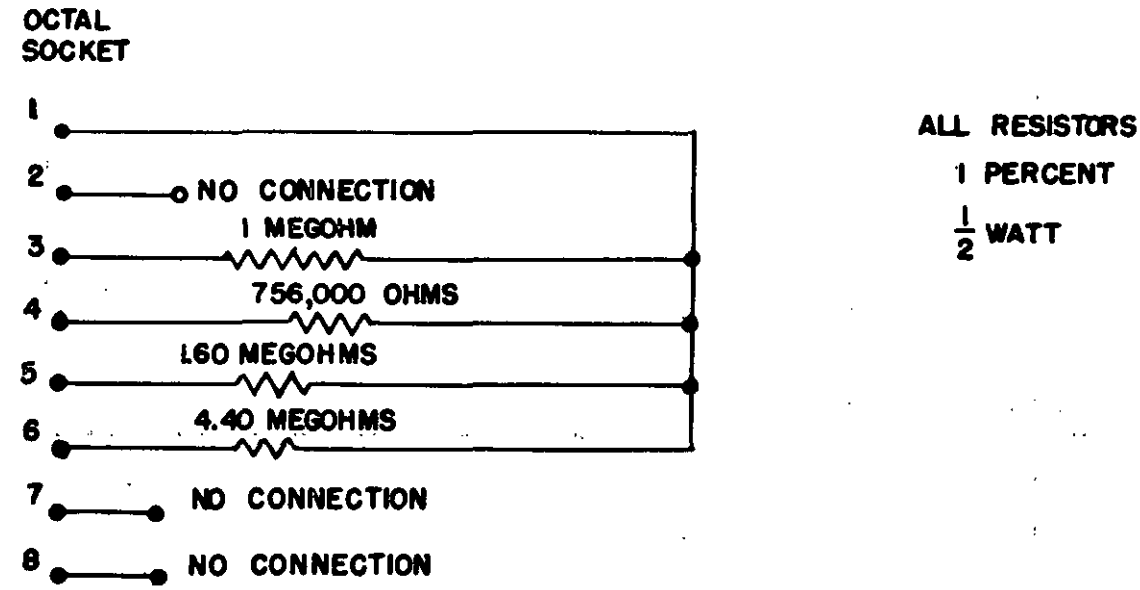


Figure 3 - Calibration cell.



Sh 6015

Figure 4 - Short test sensitivity range adapter.

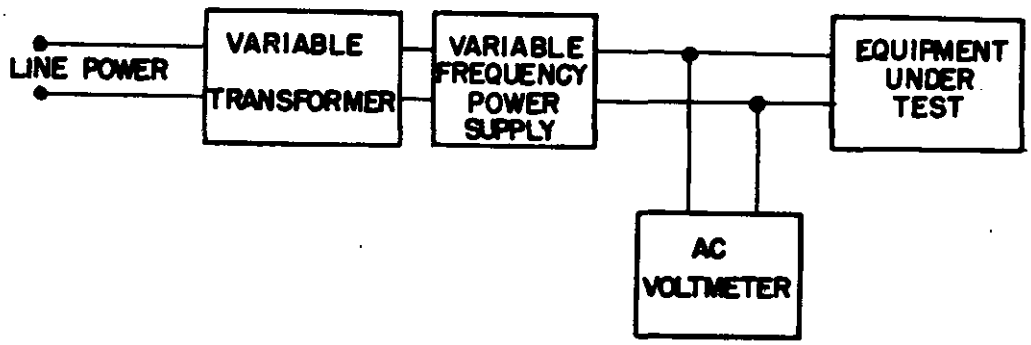


Figure 5 - Variable frequency source connection.

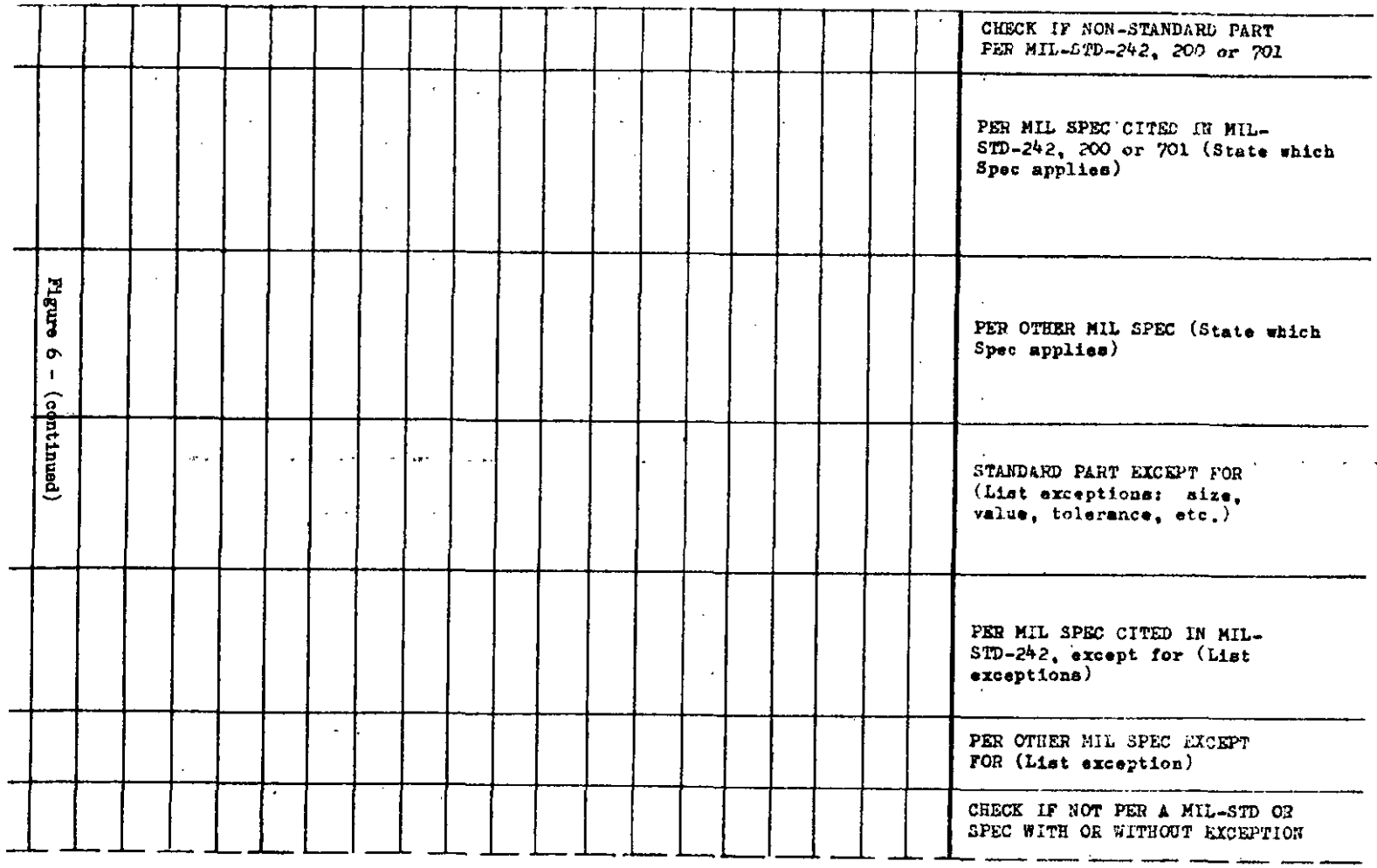
CIRCUIT SYMBOL DESIGNATION	DESCRIPTION	PART NUMBER	VALUE	CRITICAL TOLERANCE

Figure 6 - Format for information on standard and nonstandard parts.

MAX. USABLE SIZE WITHOUT REDESIGN					CHECK STANDARD PART PER MIL-STD-242, 200 or 701	CHECK IF NON-STANDARD PART	QUALITY ASSURANCE		
DIAMETER	LENGTH	HEIGHT	WIDTH OR THICKNESS	WEIGHT			PER SPEC NO:	EXCEPT FOR	OTHER THAN MIL SPEC

Figure 6 - (continued)

Figure 6 - (continued)



PREVIOUSLY APPROVED FOR		
EQUIPMENT	NObsr	MANUFACTURER OR QPL AND PART NUMBER

Figure 6 (continued)

LIST ANY STANDARD PART WHICH CAN BE USED WITHOUT AFFECTING CIRCUIT PERFORMANCE	CHECK IF STANDARD PART REQUIRES MECHANICAL REDESIGN	CHECK IF STANDARD PART REQUIRES ELECTRICAL REDESIGN	CHECK IF STANDARD PART IS INTERCHANGEABLE WITH PROPOSED PART	CHECK IF STANDARD PART IS CONTRACTUALLY REQUIRED	EXPLANATORY NOTES

Figure 6 (continued)

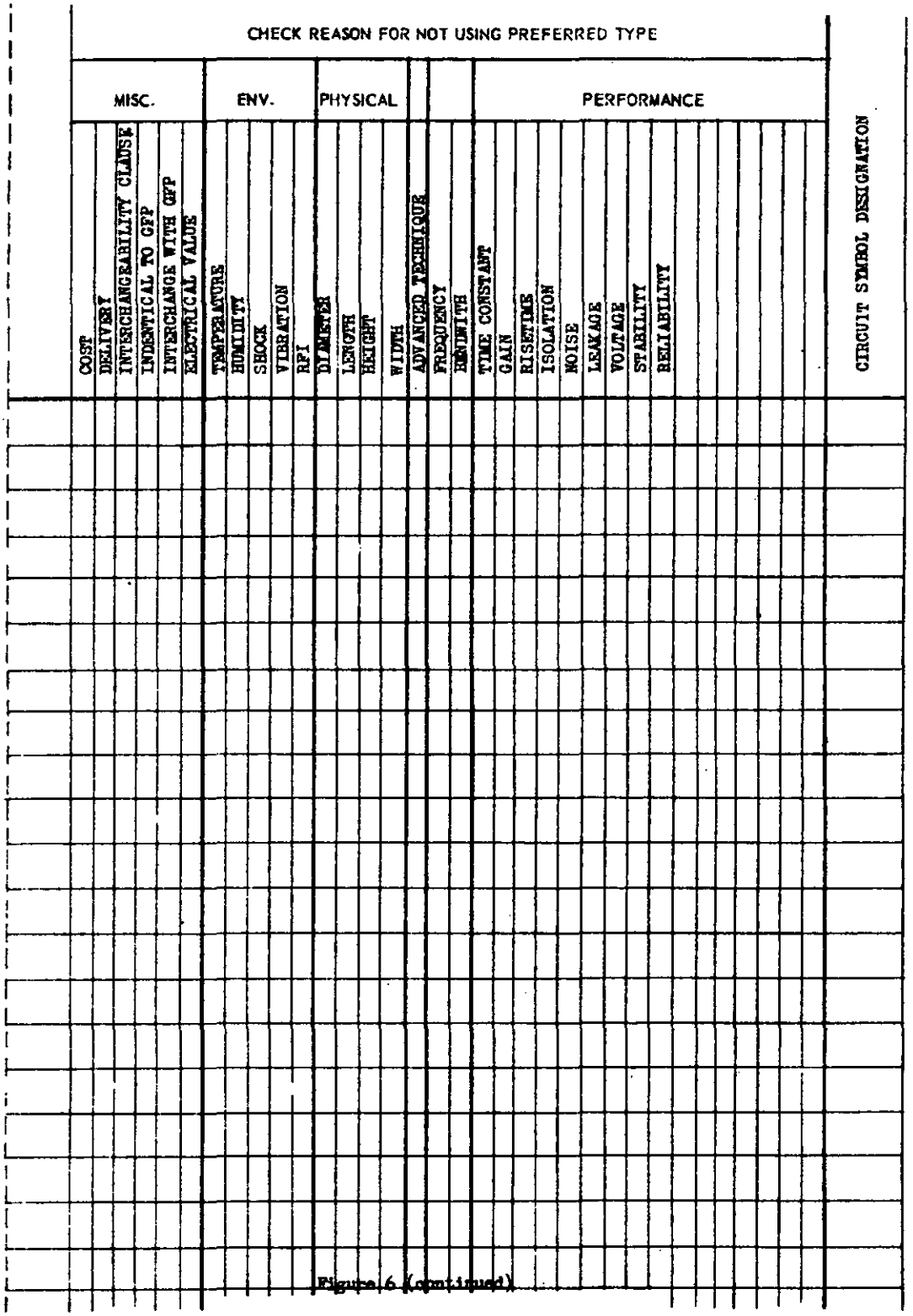


Figure 6 (continued)

Appendix I

Tube Test cards: tube tester

Tube type	Card	Card function
0A2	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0A3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0B2	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0B3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0C3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0D3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
1B3	1 of 1	Plate current test
1R5	1 of 2	Grid No. 1 and No. 3 to plate Gm test
	2 of 2	Grid No. 1 to plate, grid No. 2 and No. 4 Gm test
1X2	1 of 1	Plate current test

Tube type	Card	Card function
1Z2	1 of 1	Half wave output current test
2A3	1 of 1	Plate current test
3A5	1 of 2	Gm test, Pins 5 and 6 used
	2 of 2	Gm test, Pins 2 and 3 used
5R4	1 of 1	Full wave output current test
5T4	1 of 1	Full wave output current test
5U4	1 of 1	Full wave output current test
5Y3	1 of 1	Full wave output current test
6AC7	1 of 1	Gm test
6AD4	1 of 1	Gm test
6AG5	1 of 1	Gm test
6AG7	1 of 1	Gm test
6AH6	1 of 1	Gm test
6AK6	1 of 1	Gm test
6AN5	1 of 1	Gm test
6AN8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6AS7	1 of 1	Dual triode Gm tests
6BA5	1 of 1	Gm test
6BA7	1 of 2	Grid No. 3 to plate Gm test
	2 of 2	Grid No. 1 to plate, grid No. 2 and No. 4 Gm test
6BG6	1 of 2	Gm test
	2 of 2	Knee plate current test
6BH6	1 of 1	Gm test
6BL7A	1 of 1	Dual triode Gm tests
6BQ6	1 of 2	Gm test
	2 of 2	Knee plate current test
6C4	1 of 1	Gm test
6C6	1 of 1	Gm test
6CB6	1 of 1	Gm test
6CL6	1 of 1	Gm test
6CQ8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6D4	1 of 3	Cathode current test
	2 of 3	Plate-cathode voltage test
	3 of 3	Plate current cut-off test
6D6	1 of 1	Gm test
6E5	1 of 2	Indicator eye open test
	2 of 2	Indicator eye shut test
6H6	1 of 1	Dual diode plate current tests
6J4	1 of 3	Gm test, pin 6 used
	2 of 3	Gm test, pin 5 used
	3 of 3	Gm test, pin 1 used
6J5	1 of 1	Gm test
6J6	1 of 1	Dual triode Gm tests

Tube type	Card	Card function
6J7	1 of 1	Gm test
6L6	1 of 1	Gm test
6L7	1 of 2	Grid No. 1 to plate Gm test
	2 of 2	Grid No. 3 to plate Gm test
6N7	1 of 1	Dual triode Gm tests
6SA7	1 of 2	Grid No. 3 to plate Gm test
	2 of 2	Grid No. 1 to plate, grid No. 2 and No. 4 Gm test
6SG7	1 of 1	Gm test
6SH7	1 of 1	Gm test
6SJ7	1 of 1	Gm test
6SK7	1 of 1	Gm test
6SL7	1 of 1	Dual triode Gm tests
6SN7	1 of 1	Dual triode Gm tests
6SU7	1 of 2	Dual Triode Gm tests
	2 of 2	Dual triode plate-cathode voltage tests
6U8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6V6	1 of 1	Gm test
6X4	1 of 1	Full wave output current test
6X5	1 of 1	Full wave output current test
6Y6	1 of 1	Gm test
7F8	1 of 1	Dual triode Gm tests
12A6	1 of 1	Gm test
12AT7	1 of 1	Dual triode Gm tests
12AU7	1 of 1	Dual triode Gm tests
12AX7	1 of 1	Dual triode Gm tests
12BH7	1 of 1	Dual triode Gm tests
12BY7A	1 of 1	Gm test
12SG7	1 of 1	Gm test
12SK7	1 of 1	Gm test
25L6	1 of 1	Gm test
25Z5	1 of 1	Dual diode half wave output current tests
76	1 of 1	Gm test
807	1 of 1	Gm test
5639	1 of 1	Gm test
5651	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
5654/6AK5W	1 of 2	Gm test. Pin 7 used
	2 of 2	Gm test. Pin 2 used

Tube type	Card	Card function
5663	1 of 3	Plate current test
	2 of 3	Plate-cathode voltage test
	3 of 3	Plate current cut-off test
5670	1 of 1	Dual triode Gm tests
5686	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate-cathode voltage test
5687	1 of 2	Dual triode Gm tests
	2 of 2	Dual triode plate current tests
5691	1 of 1	Dual triode Gm tests
5692	1 of 1	Dual triode Gm tests
5693	1 of 1	Gm test
5696	1 of 3	Cathode current test
	2 of 3	Plate-cathode voltage test
	3 of 3	Plate current cut-off test
5702	1 of 1	Gm test
5703	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cut-off test
5704	1 of 1	Half wave output current test
5718	1 of 1	Gm test
5719	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cut-off test
5725/6AS6W	1 of 2	Grid No. 1 to plate Gm test
	2 of 2	Grid No. 3 to plate Gm test
5726/6AL5W	1 of 1	Dual diode plate current tests
5727/2D21W	1 of 3	Plate current test
	2 of 3	Plate-cathode voltage test
	3 of 3	Plate current cut-off test
5744	1 of 2	Gm test
	2 of 2	Plate current cut-off test
5749/6BA6W	1 of 1	Gm test
5750/6BE6W	1 of 2	Grid No. 3 to plate Gm test
	2 of 2	Grid No. 1 to plate, grid No. 2 and No. 4 Gm test
5751	1 of 1	Dual triode Gm tests
5763	1 of 2	Gm test. Pin 9 used.
	2 of 2	Gm test. Pin 8 used
5784	1 of 2	Grid No. 1 to plate Gm test
	2 of 2	Grid No. 3 to plate Gm test
5814A	1 of 1	Dual triode Gm tests
5829	1 of 1	Dual diode plate current tests
5840	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cut-off test

Tube type	Card	Card function
5842	1 of 4	Gm test. Pin 8 used.
	2 of 4	Plate current test. Pin 7 used.
	3 of 4	Plate current test. Pin 5 used.
	4 of 4	Plate current cut-off test. Pin 4 used.
5847	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cut-off test
5896	1 of 1	Dual diode plate current tests
5902	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cut-off test
5931	1 of 1	Full wave output current test
5932	1 of 1	Gm test
5933	1 of 1	Gm test
5963	1 of 3	Dual triode Gm tests
	2 of 3	Dual triode plate current tests
	3 of 3	Dual triode plate current cut-off tests
5977	1 of 2	Gm test
	2 of 2	Plate current cut-off test
6005/6AQ5W	1 of 2	Gm test. Pin 7 used.
	2 of 2	Gm test. Pin 1 used.
6021	1 of 2	Dual triode Gm tests
	2 of 2	Dual triode plate current cut-off tests
6072	1 of 2	Dual triode Gm tests
	2 of 2	Dual triode plate current cut-off tests
6080WA	1 of 3	Dual triode Gm tests
	2 of 3	Dual triode plate-cathode voltage tests
	3 of 3	Dual triode plate current cut-off tests
6098/6AR6WA	1 of 1	Gm test
6111	1 of 1	Dual triode Gm tests
6112	1 of 1	Dual triode Gm tests
6135	1 of 2	Gm test. Pin 5 used
	2 of 2	Gm test. Pin 1 used
6146	1 of 3	Gm test. Pin 1 used
	2 of 3	Gm test. Pin 4 used
	3 of 3	Gm test. Pin 6 used
6186/6AG5WA	1 of 3	Gm test
	2 of 3	Plate current
	3 of 3	Plate current cut-off test

Tube type	Card	Card function
9001	1 of 2	Gm test. Pin 7 used
	2 of 2	Gm test. Pin 2 used
9003	1 of 2	Gm test. Pin 7 used
	2 of 2	Gm test. Pin 2 used

Appendix II

Tube test cards: card kit

Unless otherwise required in the contract or order, the following tube test cards shall be supplied in the card kit.

Tube type	Card	Card function
0A2	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0A3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0A4	1 of 2	Instruction card
	2 of 2	Cathode current test
0B2	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0B3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0C2	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0C3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
0D3	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test

Tube type	Card	Card function
0G3/85A3	1 of 3	Instruction card
	2 of 3	Low current voltage test
	3 of 3	High current voltage test
0Z4A/1003	1 of 1	Full wave output current test.
1A3	1 of 2	Plate current pin 6 used
	2 of 2	Plate current pin 2 used
1A5	1 of 1	Gm test
1A7	1 of 2	Grid no. 1 and no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, Grid no. 1 and no. 4 Gm test
1AB5	1 of 1	Plate current test
1AD4	1 of 1	Gm test
1AE4	1 of 2	Plate current test pin 1 used
	2 of 2	Plate current test pin 5 used
1AF4	1 of 1	Plate current test
1AG5	1 of 2	Pentode plate current test
	2 of 2	Diode plate current test
1AX2	1 of 1	Plate current test
1B3	1 of 1	Plate current test
1C5	1 of 1	Plate current test
1C21	1 of 2	Instruction card
	2 of 2	Cathode current test
1D8	1 of 3	Pentode plate current test
	2 of 3	Triode plate current test
	3 of 3	Diode plate current test
1G4	1 of 1	Plate current test
1G6	1 of 1	Dual triode plate current test
1H4	1 of 1	Plate current test

Tube type	Card	Card function
1H5	1 of 2	Triode plate current test
	2 of 2	Diode plate current test
1J3	1 of 1	Plate current test
1K3	1 of 1	Plate current test
1L4	1 of 1	Gm test
1L6	1 of 2	Grid no. 1 and no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
1LA4	1 of 1	Gm test
1LA6	1 of 2	Grid no. 1 and no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
1LB4	1 of 1	Gm test
1LC5	1 of 1	Gm test
1LC6	1 of 2	Grid no. 1 and no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, Grid no. 3 and no. 5 Gm test
1LD5	1 of 2	Pentode plate current test
	2 of 2	Diode plate current test
1LE3	1 of 1	Plate current test
1LH4	1 of 2	Triode plate current test
	2 of 2	Diode plate current test
1LN5	1 of 1	Gm test
1N5	1 of 1	Gm test
1P5	1 of 1	Gm test
1Q5	1 of 1	Plate current test
1R4/1294	1 of 1	Plate current test

Tube type	Card	Card function
1R5	1 of 2	Grid no. 1 and no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
1S4	1 of 1	Gm test
1S5	1 of 2	Pentode plate current test
	2 of 2	Diode plate current test
1T4	1 of 1	Gm test
1T5	1 of 1	Plate current test
1U4	1 of 1	Gm test
1U5	1 of 2	Pentode plate current test
	2 of 2	Diode plate current test
1V	1 of 1	Half wave output current test
1V2	1 of 1	Plate current test
1V5	1 of 1	Plate current test
1X2	1 of 1	Plate current test
1Z2	1 of 1	Half wave output current test
2A3	1 of 1	Plate current test
2A4	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
2A5	1 of 1	Gm test
2A6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
2A7	1 of 2	Grid no. 1 and no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
2AC15	1 of 1	Plate current test

Tube type	Card	Card function
2AS15	1 of 1	Plate current test
2B22	1 of 1	Plate current test
2C4	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
2C22	1 of 2	Instruction card
	2 of 2	Gm test
2C26A	1 of 3	Instruction card
	2 of 3	Gm test
	3 of 3	Plate to cathode voltage test
2C34	1 of 2	Gm test pin 3 and cap 1 used
	2 of 2	Gm test pin 5 and cap 2 used
2C40	1 of 2	Instruction card
	2 of 2	Gm test
2C42	1 of 2	Instruction card
	2 of 2	Gm test
2C43	1 of 2	Instruction card
	2 of 2	Gm test
2C46	1 of 2	Instruction card
	2 of 2	Gm test
2C50	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate to cathode voltage
	3 of 3	test
		Dual triode plate current cutoff test
2C51	1 of 1	Dual triode Gm test
2C52	1 of 4	Triode Gm test
	2 of 4	Cathode current test
	3 of 4	Triode Gm test
	4 of 4	Cathode current test
2C53	1 of 2	Short test only
	2 of 2	Cathode current test

Tube type	Card	Card function
2D21	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
2E22	1 of 2	Plate current test
	2 of 2	Plate to cathode voltage test
2E24	1 of 3	Plate current test pin 6 used
	2 of 3	Plate current test pin 4 used
	3 of 3	Plate to cathode voltage test
2E25	1 of 1	Plate current test
2E26	1 of 3	Gm test pin 6 used
	2 of 3	Gm test pin 4 used
	3 of 3	Plate to cathode voltage test
2E30	1 of 1	Plate current test
2E31	1 of 1	Plate current test
2E35	1 of 1	Plate current test
2G21	1 of 2	Pentode plate current test
	2 of 2	Triode plate current test
2X2A	1 of 1	Plate current test
3A4	1 of 2	Gm test pin 6 used
	2 of 2	Gm test pin 2 used
3A5	1 of 2	Gm test pins 5 and 6 used
	2 of 2	Gm test pin 2 and 3 used
3B2	1 of 1	Plate current test
3B4	1 of 2	Plate current test
	2 of 2	Screen current test
3B7	1 of 1	Dual triode plate current test
3B24	1 of 2	Plate current test. Pins 1 and 2 used
	2 of 2	Plate current test. Pins 1 and 4 used
3D6/1299	1 of 1	Plate current test

Tube type	Card	Card function
3D21A	1 of 2	Gm test
	2 of 2	Plate current test
3Q4	1 of 1	Gm test
3Q5	1 of 1	Gm test
3S4	1 of 1	Gm test
3V4	1 of 1	Gm test
4BQ7A	1 of 1	Dual triode Gm test
5A6	1 of 2	Plate current test
	2 of 2	Plate current cut off test
5AN8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
5AQ5	1 of 1	Gm test
5AZ4	1 of 1	Full wave output current test
5R4	1 of 1	Full wave output current test
5T4	1 of 1	Full wave output current test
5U4	1 of 1	Full wave output current test
5U8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
5V4	1 of 2	Half wave output current test (Pin 6 used)
	2 of 2	Half wave output current test (Pin 4 used)
5X4	1 of 1	Full wave output current test
5Y3	1 of 1	Full wave output current test
5Y4	1 of 1	Full wave output current test
5Z3	1 of 1	Full wave output current test

Tube type	Card	Card function
5Z4	1 of 1	Full wave output current test
6A3	1 of 1	Plate current test
6A6	1 of 1	Dual triode Gm test
6A7	1 of 2 2 of 2	Grid no. 1 and no. 4 to plate Gm test Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
6A8	1 of 2	Grid no. 4 to plate Gm test Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
6AB4	1 of 1	Gm test
6AB7	1 of 1	Gm test
6AC5	1 of 1	Plate current test
6AC7	1 of 1	Gm test
6AD4	1 of 1	Gm test
6AD7	1 of 2 2 of 2	Pentode Gm test Triode Gm test
6AF4	1 of 1	Gm test
6AF6	1 of 2 2 of 2	Eye open test Eye shut test
6AG5	1 of 1	Gm test
6AG7	1 of 1	Gm test
6AH6	1 of 1	Gm test
6AJ5	1 of 2 2 of 2	Gm test pin 7 used Gm test pin 2 used
6AK5	1 of 1	Gm test
6AK6	1 of 1	Gm test
6AL5	1 of 1	Dual diode plate current test

Tube type	Card	Card function
6AL7	1 of 2	Indicator bright test
	2 of 2	Indicator dim test
6AM4	1 of 1	Gm test
6AM8	1 of 2	Pentode Gm test
	2 of 2	Diode plate current test
6AN4	1 of 1	Gm test
6AN5	1 of 1	Gm test
6AN6	1 of 2	Dual diode plate current test pin 5 and 3 used
	2 of 2	Dual diode plate current test pin 4 and 2 used
6AN8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6AQ5	1 of 1	Gm test
6AQ6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6AR5	1 of 1	Gm test
6AR6	1 of 1	Gm test
6AS5	1 of 1	Gm test
6AS6	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 1 and no. 3 to plate Gm test
6AS7	1 of 1	Dual triode Gm test
6AS8	1 of 2	Pentode Gm test
	2 of 2	Diode plate current test
6AT6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6AU4	1 of 1	Half wave output current test

Tube type	Card	Card function
6AU5	1 of 2	Gm test
	2 of 2	Plate current knee test
6AU6	1 of 1	Gm test
6AU8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6AV5	1 of 2	Gm test
	2 of 2	Plate current test
6AV6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6AX4	1 of 1	Half wave output current test
6AX5	1 of 1	Full wave output current test
6B4	1 of 1	Plate current test
6B7	1 of 2	Pentode Gm test
	2 of 2	Dual diode plate current test
6B8	1 of 2	Pentode Gm test
	2 of 2	Dual diode plate current test
6BA5	1 of 1	Gm test
6BA7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate grid no. 2 and no. 4 Gm test
6BC4	1 of 1	Gm test
6BC5	1 of 1	Gm test
6BC7	1 of 2	Diode plate current test
	2 of 2	Dual diode plate current test
6BD6	1 of 1	Gm test
6BE6	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate. grid no. 2 and no. 4 Gm test

Tube type	Card	Card function
6BF5	1 of 1	Gm test
6BF6	1 of 2	Triode Gm Test
	2 of 2	Dual diode plate current test
6BF7W	1 of 1	Dual triode Gm test
6BG6	1 of 2	Gm test
	2 of 2	Plate current knee test
6BH6	1 of 1	Gm test
6BJ6	1 of 1	Gm test
6BJ7	1 of 2	Plate current test
	2 of 2	Dual diode plate current test
6BK4	1 of 1	Cathode current test
6BK7A	1 of 1	Dual triode Gm test
6BL7	1 of 1	Dual triode Gm test
6BN4	1 of 1	Gm test
6BN6	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test
6BQ5/EL84	1 of 1	Gm test
6BQ6	1 of 2	Gm test
	2 of 2	Plate current knee test
6BQ7A	1 of 1	Dual triode Gm test
6BV8	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6BW4	1 of 1	Full wave output current test
6BX7	1 of 2	Dual triode Gm test
	2 of 2	Dual triode plate current test
6BY6	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test

Tube type	Card	Card function
6BZ6	1 of 1	Gm test
6C4	1 of 1	Gm test
6C5	1 of 1	Gm test
6C6	1 of 1	Gm test
6C8	1 of 1	Dual triode Gm test
6CB6	1 of 1	Gm test
6CD6	1 of 2 2 of 2	Gm test Plate current knee test
6CG7		Dual triode Gm test
6CL6	1 of 1	Gm test
6CM6	1 of 1	Gm test
6CM8	1 of 2 2 of 2	Pentode Gm test Triode Gm test
6CQ8	1 of 2 2 of 2	Pentode Gm test Triode Gm test
6CS6	1 of 2 2 of 2	Grid no. 1 to plate Gm test Grid no. 3 to plate Gm test
6CY5	1 of 1	Gm test
6CZ5	1 of 1	Gm test
6D4	1 of 3 2 of 3 3 of 3	Cathode current test Plate to cathode voltage test Plate current cut off test
6D6	1 of 1	Gm test
6DC6	1 of 1	Gm test
6DE6	1 of 1	Gm test
6DK6	1 of 1	Gm test

Tube type	Card	Card function
6DQ5	1 of 2	Gm test
	2 of 2	Plate current knee test
6DQ6	1 of 2	Gm test
	2 of 2	Plate current knee test
6E5	1 of 2	Indicator eye open test
	2 of 2	Indicator eye shut test
6E6	1 of 1	Dual triode Gm test
6EZ8	1 of 2	Gm test
	2 of 2	Dual triode Gm test
6F5	1 of 1	Gm test
6F6	1 of 1	Gm test
6F7	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6F8	1 of 1	Dual triode Gm test
6G6	1 of 1	Gm test
6H6	1 of 1	Diode plate current test
6J4	1 of 3	Gm test pin 6 used
	2 of 3	Gm test pin 5 used
	3 of 3	Gm test pin 1 used
6J5	1 of 1	Gm test
6J6	1 of 1	Dual triode Gm test
6J7	1 of 1	Gm test
6J8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6K5	1 of 1	Gm test
6K6	1 of 1	Gm test

Tube type	Card	Card function
6K7	1 of 1	Gm test
6K8	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Triode Gm test
6L5	1 of 1	Gm test
6L6	1 of 1	Gm test
6L7	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test
6N4	1 of 2	Gm test pins no. 7 and 6 used
	2 of 2	Gm test pins no. 1 and 2 used
6N7	1 of 1	Dual triode Gm test
6P5	1 of 1	Gm test
6Q7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6R7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
6S4	1 of 1	Gm test
6S7	1 of 1	Gm test
6SA7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
6SB7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
6SC7	1 of 1	Dual triode Gm test
6SD7	1 of 1	Gm test
6SF5	1 of 1	Gm test
6SF7	1 of 2	Pentode Gm test
	2 of 2	Diode plate current test

Tube type	Card	Card function
6SG7	1 of 1	Gm test
6SH7	1 of 1	Gm test
6SJ7	1 of 1	Gm test
6SK7	1 of 1	Gm test
6SL7	1 of 1	Dual triode Gm test
6SN7	1 of 1	Dual triode Gm test
6SQ7	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
6SR7	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
6SS7	1 of 1	Gm test
6ST7	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
6SU7	1 of 2 2 of 2	Dual triode Gm test Dual triode plate to cathode voltage test
6SZ7	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
6T4	1 of 1	Gm test
6T7	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
6T8	1 of 3 2 of 3 3 of 3	Triode Gm test Diode plate current test Dual diode plate current test
6U5	1 of 2 2 of 2	Indicator eye open test Indicator eye closed test
6U6	1 of 1	Gm test
6U7	1 of 1	Gm test

Tube type	Card	Card function
6U8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6V3	1 of 1	Half wave output current test
6V6	1 of 1	Gm test
6W4	1 of 1	Half wave output current test
6X4	1 of 1	Full wave output current test
6X5	1 of 1	Full wave output current test
6X8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
6Y6	1 of 1	Gm test
6Y7	1 of 1	Dual triode Gm test
6Z4	1 of 1	Full wave output current test
6ZY5	1 of 1	Full wave output current test
7A4	1 of 1	Gm test
7A5	1 of 1	Gm test
7A6	1 of 1	Dual diode plate current test
7A7	1 of 1	Gm test
7A8	1 of 2	Grid no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
7AD7	1 of 1	Gm test
7AG7	1 of 1	Gm test
7AK7	1 of 3	Gm test
	2 of 3	Plate current cut off test grid no. 1
	3 of 3	Plate current cut off test grid no. 3
7B4	1 of 1	Gm test

Tube type	Card	Card function
7B5	1 of 1	Gm test
7B6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
7B7	1 of 1	Gm test
7B8	1 of 2	Grid no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
7C4/1203A	1 of 1	Plate current test
7C5	1 of 1	Gm test
7C6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
7C7	1 of 1	Gm test
7E5/1201	1 of 2	Gm test pins 5, 6, and 7 used
	2 of 2	Gm test pins 1, 3, and 4 used
7E6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
7E7	1 of 2	Pentode Gm test
	2 of 2	Dual diode plate current test
7F7	1 of 1	Dual triode Gm test
7F8	1 of 1	Dual triode Gm test
7G7/1232	1 of 1	Gm test
7G8	1 of 2	Gm test pins 3, 5, 6, 7 used
	2 of 2	Gm test pins 2346 used
7H7	1 of 1	Gm test
7J7	1 of 2	Heptode Gm test
	2 of 2	Triode Gm test
7K7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test

Tube type	Card	Card function
7L7	1 of 1	Gm test
7N7	1 of 1	Dual Triode Gm test
7Q7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
7S7	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
7V7	1 of 1	Gm test
7W7	1 of 1	Gm test
7X7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
7Y4	1 of 1	Full wave output current test
7Z4	1 of 1	Full wave output current test
12A6	1 of 1	Gm test
12A7	1 of 2	Gm test
	2 of 2	Half wave output current test
12A8	1 of 2	Grid no. 4 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 3 and no. 5 Gm test
12AF6	1 of 1	Gm test
12AH7	1 of 1	Dual triode Gm test
12AL5	1 of 1	Dual diode plate current test
12AQ5	1 of 1	Gm test
12AT6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
12AT7	1 of 1	Dual triode Gm test

Tube type	Card	Card function
12AU6	1 of 1	Gm test
12AU7	1 of 1	Dual triode Gm test
12AV6	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
12AV7	1 of 1	Dual triode Gm test
12AW6	1 of 1	Gm test
12AX7	1 of 1	Dual triode Gm test
12AY7	1 of 1	Dual triode Gm test
12AZ7	1 of 1	Dual triode Gm test
12B4A	1 of 1	Gm test
12BA6	1 of 1	Gm test
12BD6	1 of 1	Gm test
12BE6	1 of 2 2 of 2	Grid no. 3 to plate Gm test Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
12BF6	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
12BH7A	1 of 1	Dual triode Gm test
12BY7A	1 of 1	Gm test
12BZ7	1 of 1	Dual triode Gm test
12C8	1 of 2 2 of 2	Pentode Gm test Dual diode plate current test
12D4	1 of 1	Half wave output current test
12H6	1 of 1	Dual diode plate current test
12J5	1 of 1	Gm test

Tube type	Card	Card function
12J7	1 of 1	Gm test
12K7	1 of 1	Gm test
12K8	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Triode Gm test
12L8	1 of 2	Gm test pins 1, 2, 5, and 8 used
	2 of 2	Gm test pins 2, 3, 4, and 5 used
12Q7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
12SA7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
12SC7	1 of 1	Dual triode Gm test
12SF5	1 of 1	Gm test
12SF7	1 of 2	Pentrode Gm test
	2 of 2	Diode plate current test
12SG7	1 of 1	Gm test
12SH7	1 of 1	Gm test
12SJ7	1 of 1	Gm test
12SK7	1 of 1	Gm test
12SL7	1 of 1	Dual triode Gm test
12SN7	1 of 1	Dual triode Gm test
12SQ7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
12SR7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test

Tube type	Card	Card function
12SW7	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
12SX7	1 of 1	Dual triode Gm test
12SY7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, Grid no. 2 and no. 4 Gm test
14A7	1 of 1	Gm test
14AF7	1 of 1	Dual triode Gm test
14B6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
14C5	1 of 1	Gm test
14C7	1 of 1	Gm test
14E6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
14F7	1 of 1	Dual triode Gm test
14H7	1 of 1	Gm test
14J7	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
14Q7	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
14R7	1 of 2	Pentode Gm test
	2 of 2	Dual diode plate current test
14S7	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
14W7	1 of 1	Gm test
15	1 of 1	Gm test
19T8	1 of 3	Triode Gm test
	2 of 3	Diode plate current test
	3 of 3	Dual diode plate current test

Tube type	Card	Card function
19X8	1 of 2	Pentode Gm test
	2 of 2	Triode Gm test
24A	1 of 1	Gm test
25A7	1 of 2	Pentode Gm test
	2 of 2	Half wave output current test
25BQ6	1 of 2	Gm test
	2 of 2	Plate current knee test
25L6	1 of 1	Gm test
25Z5	1 of 1	Dual half wave output current test
25Z6	1 of 1	Dual half wave output current test
26	1 of 1	Gm test
26A6	1 of 1	Gm test
26A7	1 of 2	Gm test pins 1, 2, 5 and 8 used
	2 of 2	Gm test pins 2, 3, 4 and 5 used
26C6	1 of 2	Triode Gm test
	2 of 2	Dual diode plate current test
26D6	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and no. 4 Gm test
26E6	1 of 1	Gm test
26Z5W	1 of 1	Dual half wave output current test
27	1 of 1	Gm test
28D7	1 of 2	Gm test pins 3, 5, 6 and 7 used
	2 of 2	Gm test pins 2, 3, 4 and 6 used
30	1 of 1	Plate current test
32	1 of 1	Plate current test
32L7	1 of 2	Gm test
	2 of 2	Half wave output current test

Tube type	Card	Card function
35	1 of 1	Gm test
35A5	1 of 1	Gm test
35B5	1 of 1	Gm test
35C5	1 of 1	Gm test
35W4	1 of 1	Half wave output current test
35Y4	1 of 1	Half wave output current test
35Z3	1 of 1	Half wave output current test
35Z4	1 of 1	Half wave output current test
35Z5	1 of 1	Half wave output current test
36	1 of 1	Gm test
37	1 of 1	Gm test
38	1 of 1	Gm test
39/44	1 of 1	Gm test
41	1 of 1	Gm test
42	1 of 1	Gm test
43	1 of 1	Gm test
45	1 of 1	Gm test
45Z3	1 of 2	Half wave output current test pin 6 used
	2 of 2	Half wave output current test pin 2 used
46	1 of 1	Plate current test
47	1 of 1	Gm test
50A5	1 of 1	Gm test
50B5	1 of 1	Gm test

Tube type	Card	Card function
50C5	1 of 1	Gm test
50L6	1 of 1	Gm test
50Y6	1 of 1	Dual half wave output current test
53	1 of 1	Dual triode Gm test
56	1 of 1	Gm test
57	1 of 1	Gm test
58	1 of 1	Gm test
59	1 of 1	Gm test
70L7	1 of 2 2 of 2	Gm test Half wave output current test
71A	1 of 1	Plate current test
75	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
76	1 of 1	Gm test
77	1 of 1	Gm test
78	1 of 1	Gm test
79	1 of 1	Dual triode Gm test
80	1 of 1	Full wave output current test
81	1 of 1	Half wave output current test
82	1 of 1	Full wave output current test
83	1 of 1	Full wave output current test
83V	1 of 1	Full wave output current test
85	1 of 2 2 of 2	Triode Gm test Dual diode plate current test
89	1 of 1	Gm test

Tube type	Card	Card function
117L7	1 of 2	Gm test
	2 of 2	Half wave output current test
117M7	1 of 1	Gm test
	2 of 2	Half wave output current test
117N7	1 of 3	Gm test
	2 of 3	Short test only
	3 of 3	Half wave output current test
117P7	1 of 3	Gm test
	2 of 3	Short test only
	3 of 3	Half wave output current test
117Z3	1 of 1	Half wave output current test
117Z4	1 of 1	Half wave output current test
117Z6	1 of 1	Dual half wave output current test
1613	1 of 1	Gm test
1614	1 of 1	Gm test
1619	1 of 1	Gm test
1620	1 of 1	Gm test
1621	1 of 1	Gm test
1622	1 of 1	Gm test
1624	1 of 2	Plate current test
	2 of 2	Plate to cathode voltage test
1625	1 of 1	Gm test
1626	1 of 1	Gm test
1629	1 of 2	Indicator eye open
	2 of 2	Indicator eye shut
1631	1 of 1	Gm test
1633	1 of 1	Dual triode Gm test
1635	1 of 4	Gm test pin 5 and 6 used
	2 of 4	Plate to cathode voltage pin 5 and 6 used

Tube type	Card	Card function
1635 (Con't.)	3 of 4	Gm test pin 3 and 4 used
	4 of 4	Plate to cathode voltage pin 3 and 4 used
1641	1 of 2	Half wave output current test Cap 1 used
	2 of 2	Half wave output current test cap 2 used
1851	1 of 1	Gm test
2050	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
2051	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
5618	1 of 1	Gm test
5636	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test
5639	1 of 1	Gm test
5641	1 of 3	Half wave output current test pin 8 used
	2 of 3	Half wave output current test pin 4 used.
	3 of 3	Half wave output current test
5642	1 of 1	Plate current test
5643	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
5644	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
5647	1 of 2	Instruction card
	2 of 2	Half wave output current test

Tube type	Card	Card function
5651	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
5654	1 of 2	Gm test pin 7 used
	2 of 2	Gm test pin 2 used
5656	1 of 2	Gm test pins 2 and 8 used
	2 of 2	Gm test pins 7 and 3 used
5663	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage
	3 of 3	Plate current cutoff test
5670	1 of 1	Dual triode Gm test
5672	1 of 1	Gm test
5676	1 of 1	Gm test
5677	1 of 1	Plate current test
5678	1 of 1	Gm test
5686	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate to cathode voltage test
5687	1 of 2	Dual triode Gm test
	2 of 2	Dual triode plate current test
5691	1 of 1	Dual triode Gm test
5692	1 of 1	Dual triode Gm test
5693	1 of 1	Gm test
5696	1 of 3	Cathode current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
5702	1 of 1	Gm test
5703	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5704	1 of 1	Half wave output current test

Tube type	Card	Card function
5718	1 of 1	Gm test
5719	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5725	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test
5726	1 of 1	Dual diode plate current test
5727	1 of 3	Plate current test
	2 of 3	Plate to cathode voltage test
	3 of 3	Plate current cutoff test
5744	1 of 2	Gm test
	2 of 2	Plate current cutoff test
5749	1 of 1	Gm test
5750	1 of 2	Grid no. 3 to plate Gm test
	2 of 2	Grid no. 1 to plate, grid no. 2 and 4 Gm test
5751	1 of 1	Dual triode Gm test
5763	1 of 2	Gm test pin 9 used
	2 of 2	Gm test pin 8 used
5783	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
5784	1 of 2	Grid no. 1 to plate Gm test
	2 of 2	Grid no. 3 to plate Gm test
5787	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
5798	1 of 1	Dual triode Gm test
5814A	1 of 1	Dual triode Gm test
5829	1 of 1	Dual diode plate current test

Tube type	Card	Card function
5838	1 of 1	Full wave output current test
5839	1 of 1	Full wave output current test
5840	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5842	1 of 4	Gm test pin 8 used
	2 of 4	Plate current test pin 7 used
	3 of 4	Plate current test pin 5 used
	4 of 4	Plate current cutoff test pin 4 used
5844	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
5847	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5852	1 of 1	Full wave output current test
5854	1 of 1	Plate current test
5875	1 of 1	Plate current test
5879	1 of 1	Gm test
5881	1 of 1	Gm test
5886	1 of 2	Short test only
	2 of 2	Plate current test
5896	1 of 1	Dual diode plate current test
5899	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Gm cutoff test
5902	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5903	1 of 1	Dual diode plate current test
5904	1 of 1	Gm test

Tube type	Card	Card function
5905	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5906	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
5915	1 of 4	Gm test
	2 of 4	Plate current test
	3 of 4	Plate current cutoff test
	4 of 4	Plate current cutoff test
5930	1 of 1	Plate current test
5931	1 of 1	Full wave output current test
5932	1 of 1	Gm test
5933	1 of 1	Gm test
5963	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
5964	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triodeplate current cutoff test
5965	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
5977	1 of 2	Gm test
	2 of 2	Plate current cutoff test
5987	1 of 3	Gm test pin 8 used
	2 of 3	Gm test pin 4 used
	3 of 3	Plate current test pin 2 used
5992	1 of 2	Gm test
	2 of 2	Plate current test
5993	1 of 1	Full wave output current test
6004	1 of 2	Half wave output current test cap 1 used
	2 of 2	Half wave output current test cap 2 used

Tube type	Card	Card function
6005	1 of 2	Gm test pin 7 used
	2 of 2	Gm test pin 1 used
6021	1 of 2	Dual triode Gm test
	2 of 2	Dual triode plate current cutoff test
X6030	1 of 2	Output current test pin 5 used
	2 of 2	Output current test pin 4 used
6051	1 of 1	Gm test
6072	1 of 2	Dual triode Gm test
	2 of 2	Dual triode Gm test
6073	1 of 1	Instruction card
6074	1 of 1	Instruction card
6080	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate to cathode voltage test
	3 of 3	Dual triode plate current cutoff test
6082	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate to cathode voltage test
	3 of 3	Dual triode plate current cutoff test
6088	1 of 1	Plate current test
6094	1 of 2	Gm test pins 9, 6 and 7 used
	2 of 2	Gm test pins 4, 1 and 2 used
6098	1 of 1	Gm test
6110	1 of 1	Dual diode plate current test
6111	1 of 1	Dual triode Gm test
6112	1 of 1	Dual triode Gm test
6135	1 of 2	Gm test pin 5 used
	2 of 2	Gm test pin 1 used
6146	1 of 3	Gm test pin 1 used
	2 of 3	Gm test pin 4 used
	3 of 3	Gm test pin 6 used

Tube type	Card	Card function
6147	1 of 1	Plate current test
6159	1 of 3	Gm test pin 1 used
	2 of 3	Gm test pin 4 used
	3 of 3	Gm test pin 6 used
6184	1 of 1	Dual diode plate current test
6186	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
6188	1 of 2	Dual triode Gm test
	2 of 2	Dual triode Plate current cutoff test
6189	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6197	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
6203	1 of 1	Full wave output current test
6205	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
6206	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Gm cutoff test
6211	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6216	1 of 2	Gm test
	2 of 2	Plate current test
6247	1 of 2	Gm test
	2 of 2	Plate current test
6265	1 of 2	Gm test
	2 of 2	Plate current cutoff test
6286	1 of 1	Plate current test

Tube type	Card	Card function
6293	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
6308	1 of 4	Instruction card
	2 of 4	Leakage test
	3 of 4	Low current voltage test
	4 of 4	High current voltage test
6350	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6360	1 of 2	Gm test pins 1, 2, 6 and 7 used
	2 of 2	Gm test pins 2, 3, 7 and 8 used
6384	1 of 1	Gm test
6386	1 of 1	Dual triode Gm test
6397	1 of 1	Gm test
6414	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6418	1 of 2	Short test only
	2 of 2	Plate and grid no. 2 current test
6463	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6485	1 of 1	Gm test
6526	1 of 1	Gm test
6533	1 of 3	Gm test pins 2 and 8 used
	2 of 3	Gm test pins 4 and 3 used
	3 of 3	Plate current test pins 1 and 3 used
6540	1 of 1	Gm test
6550	1 of 1	Gm test
6626	1 of 1	Instruction card

Tube type	Card	Card function
6627	1 of 1	Instruction card
6677	1 of 2	Gm test pins 9 and 8 used
	2 of 2	Gm test pins 2 and 3 used
6688/E180F	1 of 2	Gm test
	2 of 2	Plate current test
6754	1 of 1	Dual full wave output current test
6788	1 of 3	Gm test
	2 of 3	Plate current test
	3 of 3	Plate current cutoff test
6829	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6832	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6900	1 of 2	Dual triode Gm test
	2 of 2	Dual triode plate current test
6922/E88CC	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
6947	1 of 1	Dual triode Gm test
6948	1 of 1	Dual triode Gm test
6977	1 of 2	Plate current test phosphor glows
	2 of 2	Plate current cutoff test phosphor does not glow
7025	1 of 1	Dual triode Gm test
7044	1 of 3	Dual triode Gm test
	2 of 3	Dual triode plate current test
	3 of 3	Dual triode plate current cutoff test
7193	1 of 2	Instruction card
	2 of 2	Gm test
7308E188CC	1 of 2	Dual triode Gm test
	2 of 2	Dual triode plate current test

Tube type	Card	Card function
8013A	1 of 1	Plate current test
9001	1 of 2	Gm test pin 7 used
	2 of 2	Gm test pin 2 used
9002	1 of 2	Gm test pins 5 and 7 used
	2 of 2	Gm test pins 1 and 2 used
9003	1 of 2	Gm test pin 7 used
	2 of 2	Gm test pin 2 used
9006	1 of 2	Halfwave output current test pins 5 and 7 used
	2 of 2	Halfwave output current test pins 1 and 2 used
38142	1 of 1	Plate current test
ECC82	1 of 1	Dual triode Gm test

ELECTRON TUBE TEST CARDS

CARD KIT

Tube Type	Card	Card Function
O1A	1 of 1	Plate Current Test
OA2	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OA3	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OA4	1 of 2	Instruction Card
	2 of 2	Cathode Current Test
OB2	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OB3	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OC2	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OC3	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OD3	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
OE3/85A1	1 of 3	Instruction Card
	2 of 3	Low Current Voltage Test
	3 of 3	High Current Voltage Test

Tube Type	Card	Card Function
OG3/85A2	1 of 3	Instruction Card
	2 of 3	Low Current Voltage Test
	3 of 3	High Current Voltage Test
OZ4	1 of 1	Dual Diode Plate Current Test
OZ4A/1003	1 of 1	Full Wave Output Current Test
1A3	1 of 2	Plate Current Pin 6 used
	2 of 2	Plate Current Pin 2 used
1A4	1 of 1	Plate Current Test
1A5	1 of 1	Gm Test
1A7	1 of 2	Grid No. 1 and No. 4 to plate Gm Test
	2 of 2	Grid No. 1 to plate, Grid No. 1 and No. 4 Gm Test
1AB5	1 of 1	Plate Current Test
1AB6/DK96	1 of 2	Grid No. 2 and Plate Current Test
	2 of 2	Grid No. 4 and Plate Current Test
1AD4	1 of 1	Gm Test
1AD5	1 of 1	Plate Current Test
1AE4	1 of 2	Plate Current Test Pin 1 used
	2 of 2	Plate Current Test Pin 5 used
1AF4	1 of 1	Plate Current Test
1AG4	1 of 1	Gm Test
1AG5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1AH4	1 of 1	Gm Test
1AH5/DAF96	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1AJ4/DF96	1 of 1	Plate Current Test

Tube Type	Card	Card Function
1AJ5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1AK4	1 of 1	Plate Current Test
1AU3	1 of 1	Plate Current Test
1AX2	1 of 1	Plate Current Test
1B3	1 of 1	Plate Current Test
1B4	1 of 1	Plate Current Test
1C5	1 of 1	Plate Current Test
1C21	1 of 2	Instruction Card
	2 of 2	Cathode Current Test
1D8	1 of 3	Pentode Plate Current Test
	2 of 3	Triode Plate Current Test
	3 of 3	Diode Plate Current Test
1DN5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1G3	1 of 1	Plate Current Test
1G4	1 of 1	Plate Current Test
1G6	1 of 1	Dual Triode Plate Current Test
1H2	1 of 1	Plate Current Test
1H4	1 of 1	Plate Current Test
1H5	1 of 2	Triode Plate Current Test
	2 of 2	Diode Plate Current Test
1J3	1 of 1	Plate Current Test
1K3	1 of 1	Plate Current Test
1L4	1 of 1	Gm Test
1L6	1 of 2	Grid No. 1 and No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test

Tube Type	Card	Card Function
1LA4	1 of 1	Gm Test
1LA6	1 of 2	Grid No. 1 and No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
1LB4	1 of 1	Gm Test
1LC5	1 of 1	Gm Test
1LC6	1 of 2	Grid No. 1 and No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
1LD5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1LE3	1 of 1	Plate Current Test
1LF3	1 of 1	Plate Current Test
1LG5	1 of 1	Gm Test
1LH4	1 of 2	Triode Plate Current Test
	2 of 2	Diode Plate Current Test
1LN5	1 of 1	Gm Test
1M3/DM70	1 of 2	Plate Current Test (Bar Lighted)
	2 of 2	Plate Current Cut-off Test (Dot Lighted)
1N2	1 of 1	Plate Current Test
1N3/DM71	1 of 2	Plate Current Test (Bar Lighted)
	2 of 2	Plate Current Cut-off Test (Dot Lighted)
1N5	1 of 1	Gm Test
1P5	1 of 1	Gm Test
1Q5	1 of 1	Plate Current Test
1R4/1294	1 of 1	Plate Current Test
1R5	1 of 2	Grid No. 1 and No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test

Tube Type	Card	Card Function
1S2A/DY87	1 of 1	Plate Current Test
1S4	1 of 1	Gm Test
1S5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1T4	1 of 1	Gm Test
1T5	1 of 1	Plate Current Test
1U4	1 of 1	Gm Test
1U5	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
1U6	1 of 2	Plate Current Test
	2 of 2	Plate Grid 2, Grid 3 and Grid 5 Current Test
1V	1 of 1	Half Wave Output Current Test
1V2	1 of 1	Plate Current Test
1V5	1 of 1	Plate Current Test
1V6	1 of 2	Pentode Plate Current Test
	2 of 2	Triode Plate Current Test
1W5	1 of 1	Plate Current Test
1X2	1 of 1	Plate Current Test
1Z2	1 of 1	Half Wave Output Current Test
2A3	1 of 1	Plate Current Test
2A4	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
2A5	1 of 1	Gm Test
2A6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
2A7	1 of 2	Grid No. 1 and No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
2AC15	1 of 1	Plate Current Test
2AF4	1 of 1	Gm Test
2AS15	1 of 1	Plate Current Test
2B3	1 of 1	Plate Current Test
2B4	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
2B7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
2B22	1 of 1	Plate Current Test
2BN4	1 of 1	Gm Test
2C4	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
2C22	1 of 2	Instruction Card
	2 of 2	Gm Test
2C26A	1 of 3	Instruction Card
	2 of 3	Gm Test
	3 of 3	Plate to Cathode Voltage Test
2C34	1 of 2	Gm Test Pin 3 and Cap 1 used
	2 of 2	Gm Test Pin 5 and Cap 2 used
2C40	1 of 2	Instruction Card
	2 of 2	Gm Test
2C42	1 of 2	Instruction Card
	2 of 2	Gm Test
2C43	1 of 2	Instruction Card
	2 of 2	Gm Test

Tube Type	Card	Card Function
2C46	1 of 2	Instruction Card
	2 of 2	Gm Test
2C50	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate to Cathode Voltage Test
	3 of 3	Dual Triode Plate Current Cut-off Test
2C51	1 of 1	Dual Triode Gm Test
2C52	1 of 4	Triode Gm Test
	2 of 4	Cathode Current Test
	3 of 4	Triode Gm Test
	4 of 4	Cathode Current Test
2C53	1 of 2	Short Test Only
	2 of 2	Cathode Current Test
2CW4	1 of 1	Gm Test
2CY5	1 of 1	Gm Test
2D21	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
2DS4	1 of 1	Gm Test
2DZ4	1 of 1	Gm Test
2E5	1 of 2	Indicator Eye Open
	2 of 2	Indicator Eye Shut
2E22	1 of 2	Plate Current Test
	2 of 2	Plate to Cathode Voltage Test
2E24	1 of 3	Plate Current Test Pin 6 used
	2 of 3	Plate Current Test Pin 4 used
	3 of 3	Plate to Cathode Voltage Test
2E25	1 of 1	Plate Current Test
2E26	1 of 3	Gm Test Pin 6used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Plate to Cathode Voltage Test
2E30	1 of 1	Plate Current Test

Tube Type	Card	Card Function
2E31	1 of 1	Plate Current Test
2E32	1 of 1	Plate Current Test
2E35	1 of 1	Plate Current Test
2E36	1 of 1	Plate Current Test
2E41	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
2E42	1 of 2	Pentode Plate Current Test
	2 of 2	Diode Plate Current Test
2EA5	1 of 1	Gm Test
2EN5	1 of 1	Dual Diode Plate Current Test
2ER5	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
2ES5	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
2EV5	1 of 1	Gm Test
2FH5	1 of 1	Gm Test
2FQ5	1 of 1	Gm Test
2FS5	1 of 1	Gm Test
2FY5/XC97	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
2G21	1 of 2	Pentode Plate Current Test
	2 of 2	Triode Plate Current Test
2GK5	1 of 1	Gm Test
2GW5	1 of 1	Gm Test
2HA5/XC900	1 of 1	Gm Test
2T4	1 of 1	Gm Test
2V2	1 of 1	Plate Current Test

Tube Type	Card	Card Function
2V3	1 of 1	Plate Current Test
2X2A	1 of 1	Plate Current Test
3A2	1 of 1	Plate Current Test
3A3	1 of 1	Plate Current Test
3A4	1 of 2 2 of 2	Gm Test Pin 6 used Gm Test Pin 2 used
3A5	1 of 2 2 of 2	Gm Test Pins 5 and 6 used Gm Test Pins 2 and 3 used
3AF4	1 of 1	Gm Test
3AJ8/XCH81	1 of 2 2 of 2	Heptode Gm Test Pins 1, 2, 3, 6, 7 Triode Gm Test Pins 3, 8, 9
3AL5	1 of 1	Dual Diode Plate Current Test
3AU6	1 of 1	Gm Test
3AV6	1 of 2 2 of 2	Triode Gm Test Dual Diode Plate Current Test
3AW3	1 of 1	Plate Current Test
3B2	1 of 1	Plate Current Test
3B4	1 of 2 2 of 2	Plate Current Test Screen Current Test
3B7	1 of 1	Dual Triode Plate Current Test
3B24	1 of 2 2 of 2	Plate Current Test Pins 1 and 2 used Plate Current Test Pins 1 and 4 used
3BA6	1 of 1	Gm Test
3BC5	1 of 1	Gm Test
3BE6	1 of 2 2 of 2	Plate Gm Test Grid 2, Grid 4, Plate Gm Test
3BN4	1 of 1	Gm Test

Tube Type	Card	Card Function
3BN6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
3BU8	1 of 2	Plate Current Test-Plate Pin 8, Supp Pin 9
	2 of 2	Plate Current Test-Plate Pin 3, Supp Pin 6
3BX6/XF80	1 of 2	Gm Test Cathode Pin 3 used
	2 of 2	Gm Test Cathode Pin 1 used
3BY6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
3BZ6	1 of 1	Gm Test
3C2	1 of 1	Plate Current Test
3C4/DL96	1 of 1	Plate Current Test
3CB6	1 of 1	Gm Test
3CE5	1 of 1	Gm Test
3CF6	1 of 1	Gm Test
3CS6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
3CY5	1 of 1	Gm Test
3D6/1299	1 of 1	Plate Current Test
3D21A	1 of 2	Gm Test
	2 of 2	Plate Current Test
3DG4	1 of 1	Fullwave Output Current Test
3DK6	1 of 1	Gm Test
3DT6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
3DZ4	1 of 1	Gm Test
3E6	1 of 1	Plate Current Test
3EA5	1 of 1	Gm Test

Tube Type	Card	Card Function
3EH7/XF183	1 of 2	Gm Test
	2 of 2	Plate Current Test
3EJ7/XF184	1 of 2	Gm Test
	2 of 2	Plate Current Test
3ER5	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
3ES5	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
3EV5	1 of 1	Gm Test
3FH5	1 of 1	Gm Test
3FQ5	1 of 1	Gm Test
3FS5	1 of 1	Gm Test
3FY5/YC97	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
3GK5	1 of 1	Gm Test
3GS8	1 of 2	Plate Current Test Pentode No. 1
	2 of 2	Plate Current Test Pentode No. 2
3GW5	1 of 1	Gm Test
3HA5/LC900	1 of 1	Gm Test
3HM6	1 of 1	Gm Test
3HT6	1 of 1	Gm Test
3JD6	1 of 1	Gm Test
3KF8	1 of 2	Gm Test Pentode No. 1
	2 of 2	Gm Test Pentode No. 2
3LF4	1 of 1	Gm Test
3Q4	1 of 1	Gm Test
3Q5	1 of 1	Gm Test

Tube Type	Card	Card Function
3S4	1 of 1	Gm Test
3V4	1 of 1	Gm Test
4AU6	1 of 1	Gm Test
4AV6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
4BA6	1 of 1	Gm Test
4BC5	1 of 1	Gm Test
4BC8	1 of 1	Dual Triode Gm Test
4BE6	1 of 2	Grid 2, Grid 4 and Plate Gm Test
	2 of 2	Plate Gm Test
4BL8/XCF80	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
4BN6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
4BQ7A	1 of 1	Dual Triode Gm Test
4BS8	1 of 1	Dual Triode Gm Test
4BU8	1 of 2	Plate Current Test Plate Pin 8 used
	2 of 2	Plate Current Test Plate Pin 3 used
4BX8	1 of 1	Dual Triode Gm Test
4BZ6	1 of 1	Gm Test
4BZ7	1 of 1	Dual Triode Gm Test
4BZ8	1 of 1	Dual Triode Gm Test
4CB6	1 of 1	Gm Test
4CE5	1 of 1	Gm Test
4CS6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
4CY5	1 of 1	Gm Test

Tube Type	Card	Card Function
4DE6	1 of 1	Gm Test
4DK6	1 of 1	Gm Test
4DT6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
4EH7/YF183	1 of 2	Gm Test Cathode Pin 3 used
	2 of 2	Plate Current Test Cathode Pin 1 used
4EJ7/YF184	1 of 2	Gm Test Cathode Pin 3 used
	2 of 2	Plate Current Test Cathode Pin 1 used
4ES8/XCC189	1 of 1	Dual Triode Gm Test
4EW6	1 of 1	Gm Test
4GK5	1 of 1	Gm Test
4GS8	1 of 2	Plate Current Test Plate No. 1
	2 of 2	Plate Current Test Plate No. 2
4GW5	1 of 1	Gm Test
4GZ5	1 of 1	Gm Test
4HA5	1 of 1	Gm Test
4HS8	1 of 2	Gm Test Plate No. 1
	2 of 2	Gm Test Plate No. 2
4HT6	1 of 1	Gm Test
4JD6	1 of 1	Gm Test
4KF8	1 of 2	Gm Test Plate No. 1
	2 of 2	Gm Test Plate No. 2
5A6	1 of 2	Plate Current Test
	2 of 2	Plate Current Cut-Off Test
5AM8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
5AN8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
5AQ5	1 of 1	Gm Test
5AR4/GZ34	1 of 1	Fullwave Output Current Test
5AS4	1 of 1	Fullwave Output Current Test
5AS8	1 of 2 2 of 2	Pentode Gm Test Diode Plate Current Test
5AT8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
5AU4	1 of 1	Fullwave Output Current Test
5AV8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
5AW4	1 of 1	Fullwave Output Current Test
5AZ4	1 of 1	Fullwave Output Current Test
5B8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
5BC3	1 of 1	Fullwave Output Current Test
5BE8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
5BK7A	1 of 1	Dual Triode Gm Test
5BQ7A	1 of 1	Dual Triode Gm Test
5BR8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
5BS8	1 of 1	Dual Triode Gm Test
5BT8	1 of 2 2 of 2	Pentode Gm Test Dual Diode Plate Current Test
5BW8	1 of 2 2 of 2	Pentode Gm Test Dual Diode Plate Current Test
5BZ7	1 of 1	Dual Triode Gm Test
5CG8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test

Tube Type	Card	Card Function
5CL8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5CM6	1 of 1	Gm Test
5CM8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5CQ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5CZ5	1 of 1	Gm Test
5DH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5DJ4	1 of 2	Fullwave Output Current Test Pins 1, 4, 5 and 8 used
	2 of 2	Fullwave Output Current Test Pins 2, 3, 6 and 7 used
5EA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5EH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5ES8/YCC189	1 of 1	Dual Triode Gm Test
5EU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5EW6	1 of 1	Gm Test
5FG7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5FV8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5GH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5GM6	1 of 1	Gm Test
5GX6	1 of 1	Gm Test
5HG8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
5J6	1 of 1	Dual Triode Gm Test
5KE8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5R4	1 of 1	Fullwave Output Current Test
5T4	1 of 1	Fullwave Output Current Test
5T8	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test, Diodes 2, 3
5U4	1 of 1	Fullwave Output Current Test
5U8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5V3	1 of 1	Fullwave Output Current Test
5V4	1 of 2	Halfwave Output Current Test (Pin 6 used)
	2 of 2	Halfwave Output Current Test (Pin 4 used)
5V6	1 of 1	Gm Test
5W4	1 of 1	Fullwave Output Current Test
5X4	1 of 1	Fullwave Output Current Test
5X8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
5Y3	1 of 1	Fullwave Output Current Test
5Y4	1 of 1	Fullwave Output Current Test
5Z3	1 of 1	Fullwave Output Current Test
5Z4	1 of 1	Fullwave Output Current Test
6A3	1 of 1	Plate Current Test
6A4	1 of 1	Plate Current Test
6A6	1 of 1	Dual Triode Gm Test
6A7	1 of 2	Grid No. 1 and No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test

Tube Type	Card	Card Function
6A8	1 of 2	Grid No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
6AB4	1 of 1	Gm Test
6AB5	1 of 2	Eye Shut
	2 of 2	Eye Open
6AB7	1 of 1	Gm Test
6AB8/ECL80	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AC5	1 of 1	Plate Current Test
6AC7	1 of 1	Gm Test
6AD4	1 of 1	Gm Test
6AD7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AF3	1 of 1	Halfwave Output Current Test
6AF4	1 of 1	Gm Test
6AF6	1 of 2	Eye Open Test
	2 of 2	Eye Shut Test
6AG5	1 of 1	Gm Test
6AG7	1 of 1	Gm Test
6AH4	1 of 1	Gm Test
6AH6	1 of 1	Gm Test
6AH7	1 of 1	Dual Triode Gm Test
6AJ4	1 of 1	Gm Test
6AJ5	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 2 used
6AJ8/ECH81	1 of 2	Heptode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
6AK5	1 of 1	Gm Test
6AK6	1 of 1	Gm Test
6AK8/EABC80	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test, Diodes 2, 3, 1, 7
6AL3/EY88	1 of 1	Halfwave Output Current Test
6AL5	1 of 1	Dual Diode Plate Current Test
6AL7	1 of 2	Indicator Bright Test
	2 of 2	Indicator Dim Test
6AM4	1 of 1	Gm Test
6AM5	1 of 1	Gm Test
6AM8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6AN4	1 of 1	Gm Test
6AN5	1 of 1	Gm Test
6AN6	1 of 2	Dual Diode Plate Current Test Pins 5 and 3 used
	2 of 2	Dual Diode Plate Current Test Pins 4 and 2 used
6AN8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AQ4/EC91	1 of 2	Gm Test Pins 5, 6 and 7 used
	2 of 2	Gm Test Pins 1, 2 and 7 used
6AQ5	1 of 1	Gm Test
6AQ6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6AQ7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6AQ8/ECC85	1 of 1	Dual Triode Gm Test

Tube Type	Card	Card Function
6AR5	1 of 1	Gm Test
6AR6	1 of 1	Gm Test
6AR8	1 of 3	Gm Test Plates Connected
	2 of 3	Plate Current Cut-off Test Plate No. 1
	3 of 3	Plate Current Cut-off Test Plate No. 2
6AS5	1 of 1	Gm Test
6AS6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 1 and No. 3 to Plate Gm Test
6AS7	1 of 1	Dual Triode Gm Test
6AS8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6AT6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6AT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AU4	1 of 1	Halfwave Output Current Test
6AU5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6AU6	1 of 1	Gm Test
6AU7	1 of 1	Dual Triode Gm Test
6AU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AV5	1 of 2	Gm Test
	2 of 2	Plate Current Test
6AV6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6AW8A	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AX4	1 of 1	Halfwave Output Current Test

Tube Type	Card	Card Function
6AX5	1 of 1	Fullwave Output Current Test
6AX7	1 of 1	Dual Triode Plate Current Test
6AX8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6AY3	1 of 1	Halfwave Output Current Test
6AZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6B4	1 of 1	Plate Current Test
6B6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6B7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6B8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BA3	1 of 1	Halfwave Output Current Test
6BA5	1 of 1	Gm Test
6BA6	1 of 1	Gm Test
6BA7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate Grid No. 2 and No. 4 Gm Test
6BA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6BC4	1 of 1	Gm Test
6BC5	1 of 1	Gm Test
6BC7	1 of 2	Diode Plate Current Test
	2 of 2	Dual Diode Plate Current Test
6BC8	1 of 1	Dual Triode Gm Test
6BD4	1 of 1	Cathode Current Test
6BD5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test

Tube Type	Card	Card Function
6BD6	1 of 1	Gm Test
6BD7A/EBC81	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BE6	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate Grid No. 2 and No. 4 Gm Test
6BE7/EQ80	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 1 to Grids 2, 3, 4, 5, 6 & Plate Gm Test
6BE8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6BF5	1 of 1	Gm Test
6BF6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BF7W	1 of 1	Dual Triode Gm Test
6BF8	1 of 3	Dual Diode Plate Current Test-Diodes 1, 4
	2 of 3	Dual Diode Plate Current Test-Diodes 2, 5
	3 of 3	Dual Diode Plate Current Test-Diodes 3, 6
6BG6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6BG7	1 of 1	Dual Triode Gm Test
6BH3	1 of 1	Halfwave Output Current Test
6BH6	1 of 1	Gm Test
6BH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6BJ5/N78	1 of 1	Gm Test
6BJ6	1 of 1	Gm Test
6BJ7	1 of 2	Plate Current Test Pins 8 and 9 used
	2 of 2	Dual Diode Plate Current Test
6BJ8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
6BK4	1 of 1	Cathode Current Test
6BK5	1 of 1	Gm Test
6BK6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BK7A	1 of 1	Dual Triode Gm Test
6BL4	1 of 1	Halfwave Output Current Test
6BL7	1 of 1	Dual Triode Gm Test
6BL8/ECF80	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6BM8/ECL82	1 of 2	Pentode Gm Test
	2 of 2	Triode Plate Current Test
6BN4	1 of 1	Gm Test
6BN5/EL85	1 of 1	Gm Test
6BN6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
6BN8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BQ5/EL84	1 of 1	Gm Test
6BQ6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6BQ7A	1 of 1	Dual Triode Gm Test
6BR5/EM80	1 of 2	Indicator Bright Test
	2 of 2	Indicator Dim Test
6BR7	1 of 1	Gm Test
6BR8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6BS3	1 of 1	Halfwave Output Current Test
6BS7	1 of 1	Gm Test

Tube Type	Card	Card Function
6BS8	1 of 1	Dual Triode Gm Test
6BT6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BT8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BU8	1 of 2	Plate Current Test Plate No. 1
	2 of 2	Plate Current Test Plate No. 2
6BV8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BW4	1 of 1	Fullwave Output Current Test
6BW6/6061	1 of 1	Gm Test
6BW8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6BX6/EF80	1 of 2	Gm Test Cathode Pin 3 used
	2 of 2	Gm Test Cathode Pin 1 used
6BX7	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Test
6BX8	1 of 1	Dual Triode Gm Test
6BY5	1 of 2	Halfwave Output Current Test Diode No. 1
	2 of 2	Halfwave Output Current Test Diode No. 2
6BY6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3to Plate Gm Test
6BY7/EF85	1 of 1	Gm Test
6BY8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6BZ6	1 of 1	Gm Test
6BZ7	1 of 1	Dual Triode Gm Test
6BZ8	1 of 1	Dual Triode Gm Test
6C4	1 of 1	Gm Test

Tube Type	Card	Card Function
6C5	1 of 1	Gm Test
6C6	1 of 1	Gm Test
6C8	1 of 1	Dual Triode Gm Test
6CA4/EZ81	1 of 1	Fullwave Output Current Test
6CA5	1 of 1	Gm Test
6CA7/EL34	1 of 1	Gm Test
6CB5	1 of 2 2 of 2	Gm Test Plate Current Knee Test
6CB6	1 of 1	Gm Test
6CD6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
6CD7/EM34	1 of 3 2 of 3 3 of 3	Indicator Eyes Open Test Indicator Eye 1 Open Test Indicator Eye 2 Open Test
6CE5	1 of 1	Gm Test
6CF6	1 of 1	Gm Test
6CG7	1 of 1	Dual Triode Gm Test
6CG8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
6CH6/6132	1 of 1	Gm Test
6CH7	1 of 1	Dual Triode Gm Test
6CH8	1 of 2 2 of 2	Pentode Gm Test Triode Gm Test
6CJ6/EL81	1 of 2 2 of 2	Gm Test Plate Current Knee Test
6CK4	1 of 2 2 of 2	Gm Test Plate Current Test
6CK6/EL83	1 of 1	Gm Test

Tube Type	Card	Card Function
6CL5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6CL6	1 of 1	Gm Test
6CL8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CM4/EC86	1 of 1	Gm Test
6CM5/EL36	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6CM6	1 of 1	Gm Test
6CM7	1 of 2	Gm Test Triode No. 1
	2 of 2	Gm Test Triode No. 2
6CM8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CN6/EL38	1 of 1	Gm Test
6CN7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6CQ4	1 of 1	Halfwave Output Current Test
6CQ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CR6	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6CR8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CS6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
6CS7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6CU5	1 of 1	Gm Test
6CU6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test

Tube Type	Card	Card Function
6CU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CW4	1 of 1	Gm Test
6CW5/EL86	1 of 1	Gm Test
6CW7/ECC84	1 of 1	Dual Triode Gm Test
6CX8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6CY5	1 of 1	Gm Test
6CY7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6CZ5	1 of 1	Gm Test
6D4	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
6D6	1 of 1	Gm Test
6DA4	1 of 1	Halfwave Output Current Test
6DA5/EM81	1 of 2	Indicator Bright Test
	2 of 2	Indicator Dim Test
6DA6/EF89	1 of 1	Gm Test
6DA7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6DB5	1 of 2	Gm Test Pins 1, 6, 7 and 9 used
	2 of 2	Gm Test Pins 1, 2, 3 and 9 used
6DB6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
6DC6	1 of 1	Gm Test
6DC8/EBF89	1 of 2	Pentode Gm Test
	2 of2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
6DE4	1 of 1	Halfwave Output Current Test
6DE6	1 of 1	Gm Test
6DE7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6DG6	1 of 1	Gm Test
6DJ8/ECC88	1 of 1	Dual Triode Gm Test
6DK6	1 of 1	Gm Test
6DL4/EC88	1 of 1	Gm Test
6DL5/EL95	1 of 1	Gm Test
6DM4	1 of 1	Halfwave Output Current Test
6DN6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6DN7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6DQ4	1 of 1	Halfwave Output Current Test
6DQ5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6DQ6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6DR4	1 of 1	Gm Test Pin 5 used
6DR7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6DR8/EBF83	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6DS4	1 of 1	Gm Test
6DS5	1 of 1	Gm Test

Tube Type	Card	Card Function
6DS8/ECH83	1 of 2	Pentode Plate Current Test
	2 of 2	Triode Gm Test
6DT4	1 of 1	Halfwave Output Current Test
6DT5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6DT6	1 of 2	Grid 1 to Plate Gm Test
	2 of 2	Grid 3 to Plate Gm Test
6DT8	1 of 1	Dual Triode Gm Test
6DW4	1 of 1	Halfwave Output Current Test
6DW5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6DX8/ECL84	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6DZ4	1 of 1	Gm Test
6DZ7	1 of 2	Section 1 Gm Test
	2 of 2	Section 2 Gm Test
6DZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6E5	1 of 2	Indicator Eye Open Test
	2 of 2	Indicator Eye Shut Test
6E6	1 of 1	Dual Triode Gm Test
6E7	1 of 1	Gm Test
6EA5	1 of 1	Gm Test
6EA7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6EA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6EB5	1 of 1	Dual Diode Plate Current

Tube Type	Card	Card Function
6EB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6EH5	1 of 1	Gm Test
6EH7/EF183	1 of 2	Gm Test
	2 of 2	Plate Current Test
6EH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6EJ7/EF184	1 of 2	Gm Test
	2 of 2	Plate Current Test
6EM5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6EM7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
6EQ7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6ER5/EC95	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
6ES5	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
6ES6/EF97	1 of 1	Gm Test
6ES8/ECC189	1 of 1	Dual Triode Gm Test
6ET6/EF98	1 of 1	Gm Test
6ET7	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Dual Diode Plate Current Test
6EU7	1 of 1	Dual Triode Gm Test
6EU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6EV5	1 of 1	Gm Test

Tube Type	Card	Card Function
6EV7	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6EW6	1 of 1	Gm Test
6EW7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6EX6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6EY6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6EZ5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6EZ 8	1 of 2	Gm Test
	2 of 2	Dual Triode Gm Test
6F5	1 of 1	Gm Test
6F6	1 of 1	Gm Test
6F7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6F8	1 of 1	Dual Triode Gm Test
6F33	1 of 1	Gm Test
6FA7	1 of 3	Pentode Plate No. 1 Gm Test
	2 of 3	Pentode Rate No. 2 Gm Test
	3 of 3	Diode Plate Current Test
6FD6	1 of 1	Gm Test
6FD7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6FE5	1 of 1	Gm Test
6FG5	1 of 1	Gm Test
6FG6/EM84	1 of 2	Indicator Split Bar Test
	2 of 2	Indicator Solid Bar Test

Tube Type	Card	Card Function
6FG7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6FH5	1 of 1	Gm Test
6FH6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6FH8	1 of 4	Tetrode Plate No. 1 Gm Test
	2 of 4	Tetrode Plate No. 2 Gm Test
	3 of 4	Tetrode Plate No. 3 Gm Test
	4 of 4	Triode Gm Test
6FM8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6FQ5	1 of 1	Gm Test
6FQ7	1 of 1	Dual Triode Gm Test
6FS5	1 of 1	Gm Test
6FV6	1 of 1	Gm Test
6FV8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6FW5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6FW8	1 of 1	Dual Triode Gm Test
6FY5/EC97	1 of 2	Gm Test Cathode Pin 7 used
	2 of 2	Gm Test Cathode Pin 1 used
6FY8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6G5	1 of 2	Indicator Eye Open Test
	2 of 2	Indicator Eye Closed Test
6G6	1 of 1	Gm Test
6GC5	1 of 2	Gm Test
	2 of 2	Plate Current Test
6GC6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test

Tube Type	Card	Card Function
6GD7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6GE8	1 of 4	Pentode Gm Test
	2 of 4	Triode Gm Test
	3 of 4	Triode Plate Current Test
	4 of 4	Triode Plate Current Cut-off Test
6GF7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6GH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6GJ5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6GJ7/ECF801	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6GJ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6GK5	1 of 1	Gm Test
6GK6	1 of 1	Gm Test
6GL7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6GM5	1 of 1	Gm Test
6GM6	1 of 1	Gm Test
6GM8/ECC86	1 of 1	Dual Triode Gm Test
6GN8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
6GS8	1 of 2	Plate No. 1 Plate Current Test
	2 of 2	Plate No. 2 Plate Current Test
6GT5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6GU5	1 of 1	Gm Test

Tube Type	Card	Card Function
6GU7	1 of 1	Dual Triode Gm Test
6GV8/ECL85	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
6GW5	1 of 1	Gm Test
6GW6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6GW8/ECL86	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6GX6	1 of 1	Gm Test
6GY6	1 of 1	Gm Test
6GY8	1 of 3	Triode No. 1 Plate Current Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 3 Gm Test
6H6	1 of 1	Diode Plate Current Test
6HA5/EC900	1 of 1	Gm Test
6HB6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6HC8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
6HF8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6HG8/ECF86	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6HJ8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6HL8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6HM6	1 of 1	Gm Test

Tube Type	Card	Card Function
6HR6	1 of 1	Gm Test
6HS6	1 of 1	Gm Test
6HS8	1 of 2	Plate No. 1 Gm Test
	2 of 2	Plate No. 2 Gm Test
6HT6	1 of 1	Gm Test
6HU6/EM87	1 of 2	Indicator Split Bar Test
	2 of 2	Indicator Solid Bar Test
6HU8/ELL80	1 of 2	Pentode No. 1 Gm Test
	2 of 2	Pentode No. 2 Gm Test
6HW8	1 of 3	Pentode Gm Test
	2 of 3	Plate Current Cut-off Test (Plate No. 2)
	3 of 3	Plate Current Cut-off Test (Plate No. 1)
6HZ6	1 of 1	Gm Test
6HZ8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
6J4	1 of 3	Gm Test Pin 6 used
	2 of 3	Gm Test Pin 5 used
	3 of 3	Gm Test Pin 1 used
6J5	1 of 1	Gm Test
6J6	1 of 1	Dual Triode Gm Test
6J7	1 of 1	Gm Test
6J8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6JA8	1 of 2	Tetrode Gm Test
	2 of 2	Triode Gm Test
6JB6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
6JB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
6JC8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6JD6	1 of 1	Gm Test
6JE8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6JF8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Diode Halfwave Output Current Test
6JH6	1 of 1	Gm Test
6JH8	1 of 3	Pentode Gm Test
	2 of 3	Plate Current Cut-off Test (Plate No. 1)
	3 of 3	Plate Current Cut-off Test (Plate No. 2)
6JK8	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
6JT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6JU8	1 of 2	Dual Diode Plate Current Test (Diodes 1, 3)
	2 of 2	Dual Diode Plate Current Test (Diodes 2, 4)
6JV8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6JX8/ECH84	1 of 2	Pentode Plate Current Test
	2 of 2	Triode Gm Test
6K5	1 of 1	Gm Test
6K6	1 of 1	Gm Test
6K7	1 of 1	Gm Test
6K8	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Triode Gm Test
6KA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6KD8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
6KE8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6KF8	1 of 2	Plate No. 1 Gm Test
	2 of 2	Plate No. 2 Gm Test
6KL8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6KM8	1 of 4	Tetrode Plate No. 1 Gm Test
	2 of 4	Tetrode Plate No. 2 Gm Test
	3 of 4	Tetrode Plate No. 3 Gm Test
	4 of 4	Diode Plate Current Test
6KS8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6KT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6KZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6L5	1 of 1	Gm Test
6L6	1 of 1	Gm Test
6L7	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
6LB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6M3	1 of 1	Halfwave Output Current Test
6N4	1 of 2	Gm Test Pins No. 7 and 6 used
	2 of 2	Gm Test Pins No. 1 and 2 used
6N5	1 of 2	Indicator Eye Shut Test
	2 of 2	Indicator Eye Open Test
6N7	1 of 1	Dual Triode Gm Test
6N8/EBF80	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
6P5	1 of 1	Gm Test

Tube Type	Card	Card Function
6Q5	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
6Q7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6R3/EY81	1 of 1	Halfwave Output Current Test
6R4/EC81	1 of 1	Gm Test
6R7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6R8	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test (diodes 2, 3)
6S2/EY86	1 of 1	Plate Current Test
6S4	1 of 1	Gm Test
6S7	1 of 1	Gm Test
6S8	1 of 3	Triode Gm Test
	2 of 3	Diode Plate Current Test (Diode No. 1)
	3 of 3	Dual Diode Plate Current Test (Diodes 2, 3)
6SA7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and Grid No. 4 Gm Test
6SB7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and Grid No. 4 Gm Test
6SC7	1 of 1	Dual Triode Gm Test
6SD7	1 of 1	Gm Test
6SF5	1 of 1	Gm Test
6SF7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6SG7	1 of 1	Gm Test

Tube Type	Card	Card Function
6SH7	1 of 1	Gm Test
6SJ7	1 of 1	Gm Test
6SK7	1 of 1	Gm Test
6SL7	1 of 1	Dual Triode Gm Test
6SN7	1 of 1	Dual Triode Gm Test
6SQ7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6SR7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6SS7	1 of 1	Gm Test
6ST7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6SU7	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate to Cathode Voltage Test
6SV7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
6SZ7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6T4	1 of 1	Gm Test
6T7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6T8	1 of 3	Triode Gm Test
	2 of 3	Diode Plate Current Test
	3 of 3	Dual Diode Plate Current Test
6U5	1 of 2	Indicator Eye Open Test
	2 of 2	Indicator Eye Closed Test
6U6	1 of 1	Gm Test
6U7	1 of 1	Gm Test

Tube Type	Card	Card Function
6U8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6V3	1 of 1	Halfwave Output Current Test
6V4/EZ80	1 of 1	Fullwave Output Current Test
6V6	1 of 1	Gm Test
6V7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
6V8	1 of 3	Triode Gm Test
	2 of 3	Diode Plate Current Test (Diode No. 1)
	3 of 3	Dual Diode Plate Current Test (Diodes 2, 3)
6W4	1 of 1	Halfwave Output Current Test
6W6	1 of 1	Gm Test
6W7	1 of 1	Gm Test
6X4	1 of 1	Fullwave Output Current Test
6X5	1 of 1	Fullwave Output Current Test
6X6	1 of 2	Indicator Eye Open Test
	2 of 2	Indicator Eye Closed Test
6X8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
6Y6	1 of 1	Gm Test
6Y7	1 of 1	Dual Triode Gm Test
6Z4	1 of 1	Fullwave Output Current Test
6Z5/12Z5	1 of 1	Fullwave Output Current Test
6ZY5	1 of 1	Fullwave Output Current Test
7A4	1 of 1	Gm Test
7A5	1 of 1	Gm Test
7A6	1 of 1	Dual Diode Plate Current Test

Tube Type	Card	Card Function
7A7	1 of 1	Gm Test
7A8	1 of 2	Grid No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5Gm Test
7AD7	1 of 1	Gm Test
7AF7	1 of 1	Dual Triode Gm Test
7AG7	1 of 1	Gm Test
7AH7	1 of 1	Gm Test
7AK7	1 of 3	Gm Test
	2 of 3	Plate Current Cut-off Test, Grid No. 1
	3 of 3	Plate Current Cut-off Test, Grid No. 3
7AU7	1 of 1	Dual Triode Gm Test
7B4	1 of 1	Gm Test
7B5	1 of 1	Gm Test
7B6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7B7	1 of 1	Gm Test
7B8	1 of 2	Grid No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
7C4/1203A	1 of 1	Plate Current Test
7C5	1 of 1	Gm Test
7C6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7C7	1 of 1	Gm Test
7DJ8/PCC88	1 of 1	Dual Triode Gm Test
7E5/1201	1 of 2	Gm Test Pins 5, 6, and 7 used
	2 of 2	Gm Test Pins 1, 3, and 4 used

Tube Type	Card	Card Function
7E6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7E7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
7ES8/PCC189	1 of 1	Dual Triode Gm Test
7EY6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
7F7	1 of 1	Dual Triode Gm Test
7F8	1 of 1	Dual Triode Gm Test
7G7/1232	1 of 1	Gm Test
7G8	1 of 2	Gm Test Pins 3, 5, 6, 7 used
	2 of 2	Gm Test Pins 2, 3, 4, 6 used
7H7	1 of 1	Gm Test
7HG8/PCF86	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7J7	1 of 2	Heptode Gm Test
	2 of 2	Triode Gm Test
7K7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7L7	1 of 1	Gm Test
7N7	1 of 1	Dual Triode Gm Test
7Q7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
7R7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
7S7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7T7	1 of 1	Gm Test

Tube Type	Card	Card Function
7V7	1 of 1	Gm Test
7W7	1 of 1	Gm Test
7X6	1 of 1	Dual Diode Plate Current Test
7X7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7Y4	1 of 1	Fullwave Output Current Test
7Z4	1 of 1	Fullwave Output Current Test
8AU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8AW8A	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8B8/XCL82	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8BA8A	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8BH8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8BN8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
8BQ5/XL84	1 of 1	Gm Test
8CG7	1 of 1	Dual Triode Gm Test
8CM7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
8CN7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
8CS7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
8CX8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
8CY7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
8EB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8EM5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
8ET7	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Dual Diode Plate Current Test
8FQ7	1 of 1	Dual Triode Gm Test
8GN8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
8JK8	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
8JT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8JV8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8KA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8KS8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8SN7	1 of 1	Dual Triode Gm Test
9A8/PCF80	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
9AQ8/PCC85	1 of 1	Dual Triode Gm Test
9AU7	1 of 1	Dual Triode Gm Test
9BR7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
9CL8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
9DZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
9GV8/XCL85	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
9U8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
9X8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
10BQ5	1 of 1	Gm Test
10C8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
10DA7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
10DE7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
10DR7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
10EG7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
10EM7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
10EW7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
10FD7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test

Tube Type	Card	Card Function
10GF7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
10GN8	1 of 3	Pentode Gm Test
	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test
10HF8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
10JT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
10JY8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
10LB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
11C5	1 of 1	Gm Test
11CY7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
11JE8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
12A4	1 of 1	Gm Test
12A6	1 of 1	Gm Test
12A7	1 of 2	Gm Test
	2 of 2	Halfwave Output Current Test
12A8	1 of 2	Grid No. 4 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 3 and No. 5 Gm Test
12AB5	1 of 1	Gm Test
12AC6	1 of 1	Gm Test
12AD6	1 of 1	Gm Test
12AD7	1 of 1	Dual Triode Gm Test

Tube Type	Card	Card Function
12AE6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12AE7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
12AF3	1 of 1	Halfwave Output Current Test
12AF6	1 of 1	Gm Test
12AG6	1 of 1	Gm Test
12AH7	1 of 1	Dual Triode Gm Test
12AJ6	1 of 3	Short Test
	2 of 3	Triode Plate Current Test
	3 of 3	Dual Diode Plate Current Test
12AJ7/HCH81	1 of 2	Heptode Gm Test
	2 of 2	Triode Gm Test
12AL5	1 of 1	Dual Diode Plate Current Test
12AL8	1 of 2	Tetrode Gm Test
	2 of 2	Triode Plate Current Test
12AQ5	1 of 1	Gm Test
12AS5	1 of 1	Gm Test
12AT6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12AT7	1 of 1	Dual Triode Gm Test
12AU6	1 of 1	Gm Test
12AU7	1 of 1	Dual Triode Gm Test
12AU8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
12AV5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12AV6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
12AV7	1 of 1	Dual Triode Gm Test
12AW6	1 of 1	Gm Test
12AX4	1 of 1	Halfwave Output Current Test
12AX7	1 of 1	Dual Triode Gm Test
12AY3	1 of 1	Halfwave Output Current Test
12AY7	1 of 1	Dual Triode Gm Test
12AZ7	1 of 1	Dual Triode Gm Test
12B4A	1 of 1	Gm Test
12BA6	1 of 1	Gm Test
12BA7	1 of 2 2 of 2	Grid No. 3 to Plate Gm Test Grid No. 1 to Plate Gm Test
12BD6	1 of 1	Gm Test
12BE6	1 of 2 2 of 2	Grid No. 3 to Plate Gm Test Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
12BF6	1 of 2 2 of 2	Triode Gm Test Dual Diode Plate Current Test
12BH7A	1 of 1	Dual Triode Gm Test
12BK5	1 of 1	Gm Test
12BK6	1 of 2 2 of 2	Triode Gm Test Dual Diode Plate Current Test
12BL6	1 of 1	Gm Test
12BN6	1 of 2 2 of 2	Grid No. 1 to Plate Gm Test Grid No. 3 to Plate Gm Test
12BQ6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
12BR7	1 of 2 2 of 2	Triode Gm Test Dual Diode Plate Current Test

Tube Type	Card	Card Function
12BS3	1 of 1	Halfwave Output Current Test
12BT6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12BV7	1 of 1	Gm Test
12BW4	1 of 1	Fullwave Output Current Test
12BX6	1 of 2	Gm Test Cathode Pin 3 used
	2 of 2	Gm Test Cathode Pin 1 used
12BY7A	1 of 1	Gm Test
12BZ6	1 of 1	Gm Test
12BZ7	1 of 1	Dual Triode Gm Test
12C5	1 of 1	Gm Test
12C8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
12CA5	1 of 1	Gm Test
12CM6	1 of 1	Gm Test
12CN5	1 of 1	Gm Test
12CR6	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
12CS6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
12CT8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
12CU5	1 of 1	Gm Test
12CU6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12CX6	1 of 1	Gm Test
12D4	1 of 1	Halfwave Output Current Test

Tube Type	Card	Card Function
12DB5	1 of 2	Gm Test Cathode Pin 7, Grid Pin 6 used
	2 of 2	Gm Test Cathode Pin 2, Grid Pin 3 used
12DE8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
12DF5	1 of 1	Dual Diode Halfwave Output Current Test
12DF7	1 of 1	Dual Triode Gm Test
12DJ8	1 of 1	Dual Triode Gm Test
12DK6	1 of 1	Gm Test
12DK7	1 of 2	Tetrode Gm Test
	2 of 2	Dual Diode Plate Current Test
12DL8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
12DM4	1 of 1	Halfwave Output Current Test
12DM5	1 of 2	Gm Test Grid Pin 2 used
	2 of 2	Gm Test Grid Pin 5 used
12DQ4	1 of 1	Halfwave Output Current Test
12DQ6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12DQ7	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12DS7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
12DT5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12DT7	1 of 1	Dual Triode Gm Test
12DT8	1 of 1	Dual Triode Gm Test
12DU7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
12DV7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
12DV8	1 of 2	Tetrode Gm Test
	2 of 2	Dual Diode Plate Current Test
12DW5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12DW7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
12DW8	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Diode Plate Current Test
12DY8	1 of 2	Tetrode Gm Test
	2 of 2	Triode Gm Test
12DZ6	1 of 1	Gm Test
12DZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
12EA6	1 of 1	Gm Test
12EC8	1 of 3	Short Test
	2 of 3	Pentode Plate Current Test
	3 of 3	Triode Plate Current Test
12ED5	1 of 1	Gm Test
12EG6	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
12EH5	1 of 1	Gm Test
12EK6	1 of 1	Gm Test
12EL6	1 of 2	Triode Plate Current Test
	2 of 2	Dual Diode Plate Current Test
12EM6	1 of 2	Tetrode Gm Test
	2 of 2	Diode Plate Current Test
12EN6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12EQ7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test

Tube Type	Card	Card Function
12EZ6	1 of 1	Gm Test
12F5	1 of 1	Gm Test
12F8	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
12FK6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12FM6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12FQ8	1 of 2	Dual Triode Gm Test (Plates 1 & 3)
	2 of 2	Dual Triode Gm Test (Plates 2 & 4)
12FR8	1 of 3	Pentode Gm Test
	2 of 3	Triode Gm Test
	3 of 3	Diode Plate Current Test
12FT6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12FV7	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Cut-off Test
12FX8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
12G8	1 of 1	Gm Test
12GA6	1 of 1	Gm Test
12GC6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12GJ5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12GN7	1 of 1	Gm Test
12GT5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
12GW6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test

Tube Type	Card	Card Function
12H6	1 of 1	Dual Diode Plate Current Test
12HU8/PLL80	1 of 2	Pentode No. 1 Gm Test
	2 of 2	Pentode No. 2 Gm Test
12J5	1 of 1	Gm Test
12J7	1 of 1	Gm Test
12J8	1 of 3	Pentode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Diode No. 2 Plate Current Test
12K5	1 of 1	Gm Test
12K7	1 of 1	Gm Test
12K8	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Triode Gm Test
12KL8	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
12L6	1 of 1	Gm Test
12L8	1 of 2	Gm Test Pins 1, 2, 5 and 8 used
	2 of 2	Gm Test Pins 2, 3, 4 and 5 used
12Q7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12R5	1 of 1	Gm Test
12S8	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test (Diodes 2, 3)
12SA7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
12SC7	1 of 1	Dual Triode Gm Test
12SF5	1 of 1	Gm Test
12SF7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test

Tube Type	Card	Card Function
12SG7	1 of 1	Gm Test
12SH7	1 of 1	Gm Test
12SJ7	1 of 1	Gm Test
12SK7	1 of 1	Gm Test
12SL7	1 of 1	Dual Triode Gm Test
12SN7	1 of 1	Dual Triode Gm Test
12SQ7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12SR7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12SW7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
12SX7	1 of 1	Dual Triode Gm Test
12SY7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
12U7	1 of 3	Shorts and Leakage Test
	2 of 3	Triode No. 1 Plate Current Test
	3 of 3	Triode No. 2 Plate Current Test
12V6	1 of 1	Gm Test
12W6	1 of 1	Gm Test
12X4	1 of 1	Fullwave Output Current Test
12Z3	1 of 1	Halfwave Output Current Test
13CM5/XL36	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
13CW4	1 of 1	Gm Test
13DE7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test

Tube Type	Card	Card Function
13DR7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
13EM7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
13FD7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
13FR7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
13GF7	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
14A4	1 of 1	Gm Test
14A5	1 of 1	Gm Test
14A7	1 of 1	Gm Test
14AF7	1 of 1	Dual Triode Gm Test
14B6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
14B8	1 of 2	Heptode Gm Test
	2 of 2	Dual Diode Plate Current Test
14C5	1 of 1	Gm Test
14C7	1 of 1	Gm Test
14E6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
14E7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
14F7	1 of 1	Dual Triode Gm Test
14F8	1 of 1	Dual Triode Gm Test
14GT8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test

Tube Type	Card	Card Function
14H7	1 of 1	Gm Test
14J7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
14JG8	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
14N7	1 of 1	Dual Triode Gm Test
14Q7	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
14R7	1 of 2	Pentode Gm Test
	2 of 2	Dual Diode Plate Current Test
14S7	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
14W7	1 of 1	Gm Test
14X7	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
14Y4	1 of 1	Fullwave Output Current Test
15	1 of 1	Gm Test
15A6/PL83	1 of 1	Gm Test
15CW5/PL84	1 of 1	Gm Test
15EA7	1 of 3	Triode No. 1 Gm Test
	2 of 3	Triode No. 2 Gm Test
	3 of 3	Triode No. 2 Plate Current Test
15EW6	1 of 1	Gm Test
15HB6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
16A5/PL82	1 of 1	Gm Test
16A8/PCL82	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
16AQ3/XY88	1 of 1	Halfwave Output Current Test

Tube Type	Card	Card Function
17AV5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17AX4	1 of 1	Halfwave Output Current Test
17AY3	1 of 1	Halfwave Output Current Test
17BH3	1 of 1	Halfwave Output Current Test
17BQ6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17BS3	1 of 1	Halfwave Output Current Test
17C5	1 of 1	Gm Test
17CA5	1 of 1	Gm Test
17CQ4	1 of 1	Halfwave Output Current Test
17CU5	1 of 1	Gm Test
17D4	1 of 1	Halfwave Output Current Test
17DE4	1 of 1	Halfwave Output Current Test
17DM4	1 of 1	Halfwave Output Current Test
17DQ4	1 of 1	Halfwave Output Current Test
17DQ6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17EW8/HCC85	1 of 1	Dual Triode Gm Test
17GJ5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17GT5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17GW6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17H3	1 of 1	Halfwave Output Current Test
17HC8	1 of 3	Pentode Gm Test
192	2 of 3	Pentode Plate Current Knee Test
	3 of 3	Triode Gm Test

Tube Type	Cards	Card Function
17JB6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
17JK8	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
17L6	1 of 1	Gm Test
17R5	1 of 1	Gm Test
17Z3/PY81	1 of 1	Halfwave Output Current Test
18A5	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
18DZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
18FW6	1 of 1	Gm Test
18FX6	1 of 2	Pentode Gm Test
	2 of 2	Pentode as Triode Gm Test
18FY6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
18GD6	1 of 1	Gm Test
18HB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
19	1 of 1	Dual Triode Plate Current Test
19AJ8	1 of 2	Heptode Gm Test
	2 of 2	Triode Gm Test
19AU4	1 of 1	Halfwave Output Current Test
19BG6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
19C8	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test (Diodes 2, 3
19CL8	1 of 2	Tetrode Gm Test
	2 of 2	Triode Gm Test

Tube Type	Card	Card Function
19D8/UCH81	1 of 2	Heptode Gm Test
	2 of 2	Triode Gm Test
19EA8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
19EZ8	1 of 2	Triode No. 3 Gm Test
	2 of 2	Dual Triode Gm Test (Triodes 1, 2)
19G3	1 of 1	Halfwave Output Current Test
19HR6	1 of 1	Gm Test
19HS6	1 of 1	Gm Test
19HV8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
19J6	1 of 1	Dual Triode Gm Test
19JN8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
19KG8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
19T8	1 of 3	Triode Gm Test
	2 of 3	Diode Plate Current Test
	3 of 3	Dual Diode Plate Current Test
19V8	1 of 3	Triode Gm Test
	2 of 3	Diode No. 1 Plate Current Test
	3 of 3	Dual Diode Plate Current Test (Diodes 2, 3)
19X8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
20EQ7	1 of 2	Pentode Gm Test
	2 of 2	Diode Plate Current Test
20EZ7	1 of 1	Dual Triode Gm Test
21A6/PL81	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
21EX6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test

Tube Type	Card	Card Function
22BH3	1 of 1	Halfwave Output Current Test
22DE4	1 of 1	Halfwave Output Current Test
24A	1 of 1	Gm Test
25A6	1 of 1	Gm Test
25A7	1 of 2 2 of 2	Pentode Gm Test Halfwave Output Current Test
25AV5	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25AX4	1 of 1	Halfwave Output Current Test
25BK5	1 of 1	Gm Test
25BQ6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25C5	1 of 1	Gm Test
25C6	1 of 1	Gm Test
25CA5	1 of 1	Gm Test
25CD6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25CU6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25DK4	1 of 1	Halfwave Output Current Test
25DN6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25DQ6	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25DT5	1 of 2 2 of 2	Gm Test Plate Current Knee Test
25E5/PL36	1 of 2 2 of 2	Gm Test Plate Current Knee Test

Tube Type	Card	Card Function
25EC6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
25EH5	1 of 1	Gm Test
25F5	1 of 1	Gm Test
25L6	1 of 1	Gm Test
25W4	1 of 1	Halfwave Output Current Test
25W6	1 of 1	Gm Test
25Y5	1 of 1	Dual Diode Halfwave Output Current Test
25Z5	1 of 1	Dual Halfwave Output Current Test
25Z6	1 of 1	Dual Halfwave Output Current Test
26	1 of 1	Gm Test
26A6	1 of 1	Gm Test
26A7	1 of 2	Gm Test Pins 1, 2, 5 and 8 used
	2 of 2	Gm Test Pins 2, 3, 4 and 5 used
26AQ8/UCC85	1 of 1	Dual Triode Gm Test
26BK6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
26C6	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
26D6	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
26E6	1 of 1	Gm Test
26Z5W	1 of 1	Dual Halfwave Output Current Test
27	1 of 1	Gm Test
28AK8/UABC80	1 of 3	Gm Test
	2 of 3	Diode Plate Current Test Pins 6, 7
	3 of 3	Dual Diode Plate Current Test Pins 2, 3, 1, 7

Tube Type	Card	Card Function
28D7	1 of 2	Gm Test Pins 3, 5, 6 and 7 used
	2 of 2	Gm Test Pins 2, 3, 4 and 6 used
30	1 of 1	Plate Current Test
31	1 of 1	Plate Current Test
32	1 of 1	Plate Current Test
32ET5	1 of 1	Gm Test G Pin 2 used
32L7	1 of 2	Gm Test
	2 of 2	Halfwave Output Current Test
34GD5	1 of 1	Gm Test
35	1 of 1	Gm Test
35A5	1 of 1	Gm Test
35B5	1 of 1	Gm Test
35C5	1 of 1	Gm Test
35CD6	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
35DZ8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
35EH5	1 of 1	Gm Test
35GL6	1 of 1	Gm Test
35HB8	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
35L6	1 of 1	Gm Test
35W4	1 of 1	Halfwave Output Current Test
35Y4	1 of 1	Halfwave Output Current Test
35Z3	1 of 1	Halfwave Output Current Test
35Z4	1 of 1	Halfwave Output Current Test

Tube Type	Card	Card Function
35Z5	1 of 1	Halfwave Output Current Test
35Z6	1 of 1	Dual Diode Halfwave Output Current Test
36	1 of 1	Gm Test
36AM3	1 of 1	Halfwave Output Current Test
37	1 of 1	Gm Test
38	1 of 1	Gm Test
38A3/UY85	1 of 1	Halfwave Output Current Test
39/44	1 of 1	Gm Test
40FR5	1 of 1	Gm Test Pin 2 used
41	1 of 1	Gm Test
42	1 of 1	Gm Test
43	1 of 1	Gm Test
45	1 of 1	Gm Test
45Z3	1 of 2 2 of 2	Halfwave Output Current Test Pin 6 used Halfwave Output Current Test Pin 2 used
46	1 of 1	Plate Current Test
47	1 of 1	Gm Test
48	1 of 1	Gm Test
50A5	1 of 1	Gm Test
50B5	1 of 1	Gm Test
50BK5	1 of 1	Gm Test
50BM8/UCL82	1 of 2 2 of 2	Pentode Gm Test Pin 2, 3, 6 and 7 Triode Plate Current Test Pin 1, 8, 9
50C5	1 of 1	Gm Test
50C6	1 of 1	Gm Test

Tube Type	Card	Card Function
50DC4	1 of 1	Halfwave Output Current Test
50EH5	1 of 1	Gm Test G Pin 2 used
50FA5	1 of 1	Gm Test
50FE5	1 of 1	Gm Test
50FK5	1 of 1	Gm Test
50FY8	1 of 2 2 of 2	Pentode Gm Test Pins 2, 3, 6, 7 Triode Gm Test Pins 1, 8, 9
50HC6	1 of 1	Gm Test G Pin 2 used
50HK6	1 of 1	Gm Test
50L6	1 of 1	Gm Test
50X6	1 of 1	Dual Diode Halfwave Output Current Test
50Y6	1 of 1	Dual Halfwave Output Current Test
50Y7	1 of 1	Dual Diode Halfwave Output Current Test
53	1 of 1	Dual Triode Gm Test
55	1 of 2 2 of 2	Triode Gm Test Dual Diode Plate Current Test
56	1 of 1	Gm Test
57	1 of 1	Gm Test
58	1 of 1	Gm Test
59	1 of 1	Gm Test
60FX5	1 of 1	Gm Test G Pin 2 used
70L7	1 of 2 2 of 2	Gm Test Halfwave Output Current Test
71A	1 of 1	Plate Current Test
72	1 of 1	Plate Current Test

Tube Type	Card	Card Function
75	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
76	1 of 1	Gm Test
77	1 of 1	Gm Test
78	1 of 1	Gm Test
79	1 of 1	Dual Triode Gm Test
80	1 of 1	Fullwave Output Current Test
81	1 of 1	Halfwave Output Current Test
82	1 of 1	Fullwave Output Current Test
83	1 of 1	Fullwave Output Current Test
83V	1 of 1	Fullwave Output Current Test
84	1 of 1	Fullwave Output Current Test
85	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
89	1 of 1	Gm Test
90C1	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
CK108	1 of 1	Gm Test
117L7	1 of 2	Gm Test
	2 of 2	Halfwave Output Current Test
117M7	1 of 2	Gm Test
	2 of 2	Halfwave Output Current Test
117N7	1 of 3	Gm Test
	2 of 3	Short Test Only
	3 of 3	Halfwave Output Current Test
117P7	1 of 3	Gm Test
	2 of 3	Short Test Only
	3 of 3	Halfwave Output Current Test

Tube Type	Card	Card Function
117Z3	1 of 1	Halfwave Output Current Test
117Z4	1 of 1	Halfwave Output Current Test
117Z6	1 of 1	Dual Halfwave Output Current Test
X155	1 of 1	Dual Triode Gm Test
TS251	1 of 2 2 of 2	Pentode Gm Test Pins 3, 4, 5, 8 Halfwave Output Current Test Pins 1, 6
292A	1 of 2 2 of 2	Triode Gm Test Plate Current Test
303A	1 of 2 2 of 2	Triode Gm Test Diode Plate Current Test
307A	1 of 1	Plate Current Test
311A	1 of 1	Gm Test
347A	1 of 1	Gm Test
351A	1 of 1	Fullwave Output Current Test
384A	1 of 2 2 of 2	Instruction Card Gm Test
395A	1 of 3 2 of 3 3 of 3	Instruction Card Starter Voltage Drop Anode Voltage Drop
502A	1 of 3 2 of 3 3 of 3	Cathode Current Test Plate to Cathode Voltage Test Plate Current Cut-off Test
CK512AX	1 of 1	Pentode as Triode Gm Test
CK526AX	1 of 1	Plate Current Test
CK533AX	1 of 1	Plate Current Test
559	1 of 1	Plate Current Test
CK573AX	1 of 1	Plate Current Test

Tube Type	Card	Card Function
629	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
713A	1 of 2	Gm Test Pin 5 used
	2 of 2	Gm Test Pin 3 used
717A	1 of 2	Gm Test Pin 5 used
	2 of 2	Gm Test Pin 3 used
801A	1 of 2	Triode Plate Current Test
	2 of 2	Triode as Diode Plate to Cathode Voltage Test
807	1 of 1	Gm Test
809	1 of 1	Plate Current Test
811A	1 of 1	Triode as Diode Plate to Cathode Voltage Test
815	1 of 2	Gm Test Pins 2, 3, 4, right cap
	2 of 2	Gm Test Pins 4. 6, 7, left cap
816	1 of 1	Halfwave Output Current Test
837	1 of 1	Gm Test
842	1 of 2	Triode Plate Current Test
	2 of 2	Triode as Diode Halfwave Output Current Test
843	1 of 2	Gm Test
	2 of 2	Plate to Cathode Voltage Test
865	1 of 1	Plate Current Test
866A	1 of 1	Halfwave Output Current Test
874	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
884	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
885	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test

Tube Type	Card	Card Function
1005	1 of 3	Dual Diode Plate Current Test
	2 of 3	Plate to Cathode Voltage Test Pin 5 used
	3 of 3	Plate to Cathode Voltage Test Pin 3 used
CK1006	1 of 2	Halfwave Output Current Test Pin 3 used
	2 of 2	Halfwave Output Current Test Pin 2 used
1007	1 of 3	Dual Diode Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test Pin 5 used
	3 of 3	Plate to Cathode Voltage Test Pin 3 used
1229	1 of 1	Plate Current Test
1273	1 of 1	Gm Test
1280	1 of 1	Gm Test
1603	1 of 1	Gm Test
1609	1 of 1	Plate Current Test
1612	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
1613	1 of 1	Gm Test
1614	1 of 1	Gm Test
1619	1 of 1	Gm Test
1620	1 of 1	Gm Test
1621	1 of 1	Gm Test
1622	1 of 1	Gm Test
1624	1 of 2	Plate Current Test
	2 of 2	Plate to Cathode Voltage Test
1625	1 of 1	Gm Test
1626	1 of 1	Gm Test
1629	1 of 2	Indicator Eye Open
	2 of 2	Indicator Eye Shut
1631	1 of 1	Gm Test

Tube Type	Card	Card Function
1633	1 of 1	Dual Triode Gm Test
1635	1 of 4	Gm Test Pins 5 and 6 used
	2 of 4	Plate to Cathode Voltage Pins 5 and 6 used
	3 of 4	Gm Test Pins 3 and 4 used
	4 of 4	Plate to Cathode Voltage Pins 3 and 4 used
1641	1 of 2	Halfwave Output Current Test Cap 1 used
	2 of 2	Halfwave Output Current Test Cap 2 used
1644	1 of 2	Gm Test Pins 1 and 8 used
	2 of 2	Gm Test Pins 3 and 4 used
1851	1 of 1	Gm Test
1852	1 of 1	Gm Test
2050	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
2051	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
5608A	1 of 1	Gm Test
5618	1 of 1	Gm Test
5636	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
5639	1 of 1	Gm Test
5641	1 of 3	Halfwave Output Current Test Pin 8 used
	2 of 3	Halfwave Output Current Test Pin 4 used
	3 of 3	Halfwave Output Current Test
5642	1 of 1	Plate Current Test
5643	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
5644	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test

Tube Type	Card	Card Function
5647	1 of 2	Instruction Card
	2 of 2	Halfwave Output Current Test
5651	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
5654	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 2 used
5656	1 of 2	Gm Test Pins 2 and 8 used
	2 of 2	Gm Test Pins 7 and 3 used
5659	1 of 1	Gm Test
5661	1 of 1	Gm Test
5663	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage
	3 of 3	Plate Current Cut-off Test
5670	1 of 1	Dual Triode Gm Test
5672	1 of 1	Gm Test
5676	1 of 1	Gm Test
5677	1 of 1	Plate Current Test
5678	1 of 1	Gm Test
5686	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate to Cathode Voltage Test
5687	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Test
5690	1 of 2	Halfwave Output Current Pins 5 and 8
	2 of 2	Halfwave Output Current Pins 3 and 4
5691	1 of 1	Dual Triode Gm Test
5692	1 of 1	Dual Triode Gm Test
5693	1 of 1	Gm Test

Tube Type	Card	Card Function
5696	1 of 3	Cathode Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
5702	1 of 1	Gm Test
5703	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5704	1 of 1	Halfwave Output Current Test
5718	1 of 1	Gm Test
5719	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5725	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test
5726	1 of 1	Dual Diode Plate Current Test
5727	1 of 3	Plate Current Test
	2 of 3	Plate to Cathode Voltage Test
	3 of 3	Plate Current Cut-off Test
5744	1 of 2	Gm Test
	2 of 2	Plate Current Cut-off Test
5749	1 of 1	Gm Test
5750	1 of 2	Grid No. 3 to Plate Gm Test
	2 of 2	Grid No. 1 to Plate, Grid No. 2 and No. 4 Gm Test
5751	1 of 1	Dual Triode Gm Test
5763	1 of 2	Gm Test Pin 9 used
	2 of 2	Gm Test Pin 8 used
5783	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
5784	1 of 2	Grid No. 1 to Plate Gm Test
	2 of 2	Grid No. 3 to Plate Gm Test

Tube Type	Card	Card Function
5787	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
5798	1 of 1	Dual Triode Gm Test
5812	1 of 1	Plate Current Test
5814A	1 of 1	Dual Triode Gm Test
5829	1 of 1	Dual Diode Plate Current Test
5838	1 of 1	Fullwave Output Current Test
5839	1 of 1	Fullwave Output Current Test
5840	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5842	1 of 4	Gm Test Pin 8 used
	2 of 4	Plate Current Test Pin 7 used
	3 of 4	Plate Current Test Pin 5 used
	4 of 4	Plate Current Cut-off Test Pin 4 used
5844	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
5847	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5852	1 of 1	Fullwave Output Current Test
5854	1 of 1	Plate Current Test
5875	1 of 1	Plate Current Test
5879	1 of 1	Gm Test
5881	1 of 1	Gm Test
5886	1 of 2	Short Test Only
	2 of 2	Plate Current Test
5896	1 of 1	Dual Diode Plate Current Test

Tube Type	Card	Card Function
5899	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Gm Cut-off Test
5902	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5903	1 of 1	Dual Diode Plate Current Test
5904	1 of 1	Gm Test
5905	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5906	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
5907	1 of 3	Gm Test Pin 8 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Plate Current Test Pin 2 used
5908	1 of 2	Gm Test
	2 of 2	Plate Current Test
5910	1 of 2	Plate Current Test
	2 of 2	Plate Current Cut-off Test
5915	1 of 4	Gm Test
	2 of 4	Plate Current Test
	3 of 4	Plate Current Cut-off Test
	4 of 4	Plate Current Cut-off Test
5920/E90CC	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
5930	1 of 1	Plate Current Test
5931	1 of 1	Fullwave Output Current Test
5932	1 of 1	Gm Test
5933	1 of 1	Gm Test

Tube Type	Card	Card Function
5963	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
5964	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
5965	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
5971	1 of 2	Plate Current Test Pin 4 used
	2 of 2	Plate Current Cut-off Test Pin 2 used
5977	1 of 2	Gm Test
	2 of 2	Plate Current Cut-off Test
5987	1 of 3	Gm Test Pin 8 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Plate Current Test Pin 2 used
5992	1 of 2	Gm Test
	2 of 2	Plate Current Test
5993	1 of 1	Fullwave Output Current Test
6000	1 of 2	Gm Test
	2 of 2	Plate to Cathode Voltage Test
6004	1 of 2	Halfwave Output Current Test Cap 1 used
	2 of 2	Halfwave Output Current Test Cap 2 used
6005	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 1 used
6007/DL67	1 of 1	Plate Current Test
6021	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Cut-off Test
6028	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 2 used
6029	1 of 1	Plate Current Test
X6030	1 of 2	Output Current Test Pin 5 used
	2 of 2	Output Current Test Pin 4 used

Tube Type	Card	Card Function
6050	1 of 1	Plate Current Test
6051	1 of 1	Gm Test
6064	1 of 1	Gm Test
6065/EF92	1 of 1	Gm Test
6072	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Gm Test
6073	1 of 1	Instruction Card
6074	1 of 1	Instruction Card
6080	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate to Cathode Voltage Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6082	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate to Cathode Voltage Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6084/E80F	1 of 1	Gm Test
6085/E80CC	1 of 1	Dual Triode Gm Test
6087	1 of 1	Fullwave Output Current Test
6088	1 of 1	Plate Current Test
6094	1 of 2	Gm Test Pins 9, 6 and 7 used
	2 of 2	Gm Test Pins 4, 1 and 2 used
6095	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 1 used
6098	1 of 1	Gm Test
6099	1 of 3	Dual Triode Gm Test Pins 1, 6 and 7
	2 of 3	Dual Triode Plate Current Test Pins 1, 6, 7
	3 of 3	Dual Triode Plate Current Cut-off Test Pins 1, 6 and 7
6100	1 of 3	Gm Test Pin 5 used
	2 of 3	Plate Current Test Pin 1 used
	3 of 3	Plate Current Cut-off Test Pin 1 used

Tube Type	Card	Card Function
6101	1 of 1	Dual Triode Gm Test
6106	1 of 1	Fullwave Output Current Test
6110	1 of 1	Dual Diode Plate Current Test
6111	1 of 1	Dual Triode Gm Test
6112	1 of 1	Dual Triode Gm Test
6113	1 of 1	Dual Triode Gm Test
6134	1 of 1	Gm Test
6135	1 of 2	Gm Test Pin 5 used
	2 of 2	Gm Test Pin 1 used
6136	1 of 1	Gm Test
6137	1 of 1	Gm Test
6146	1 of 3	Gm Test Pin 1 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Gm Test Pin 6 used
6147	1 of 1	Plate Current Test
6148	1 of 1	Gm Test
6159	1 of 3	Gm Test Pin 1 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Gm Test Pin 6 used
6184	1 of 1	Dual Diode Plate Current Test
6186	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6188	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Cut-off Test
6189	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test

Tube Type	Card	Card Function
6197	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6201	1 of 1	Dual Triode Gm Test
6202	1 of 1	Fullwave Output Current Test
6203	1 of 1	Fullwave Output Current Test
6205	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6206	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Gm Cut-off Test
6211	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6216	1 of 2	Gm Test
	2 of 2	Plate Current Test
6221	1 of 2	Gm Test Pin 8 used
	2 of 2	Plate Current Test
6222	1 of 2	Gm Test Pin 8 used
	2 of 2	Plate Current Cut-off Test Pin 4
6223	1 of 3	Gm Test Pin 8 used
	2 of 3	Plate Current Test Pin 4 used
	3 of 3	Plate Current Cut-off Test Pin 2 used
6225	1 of 3	Gm Test Pin 8 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Plate Current Test Pin 2 used
6227/E80L	1 of 1	Gm Test
6245	1 of 2	Gm Test
	2 of 2	Plate Current Cut-off Test
6247	1 of 2	Gm Test
	2 of 2	Plate Current Test

TubeType	Card	Card Function
6265	1 of 2	Gm Test
	2 of 2	Plate Current Cut-off Test
6267/EF86	1 of 1	Gm Test
6286	1 of 1	Plate Current Test
6293	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6308	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
6350	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6354/150B2	1 of 3	Instruction Card
	2 of 3	Low Current Voltage Test
	3 of 3	High Current Voltage Test
6360	1 of 2	Gm Test Pins 1, 2, 6 and 7 used
	2 of 2	Gm Test Pins 2, 3, 7 and 8 used
6374/EY84	1 of 1	Halfwave Output Current Test
6384	1 of 1	Gm Test
6385	1 of 1	Dual Triode Gm Test
6386	1 of 1	Dual Triode Gm Test
6395	1 of 2	Plate Current Test
	2 of 2	Plate Current Cut-off Test
6397	1 of 1	Gm Test
6414	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6418	1 of 2	Short Test Only
	2 of 2	Plate and Grid No. 2 Current Test

Tube Type	Card	Card Function
6463	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6485	1 of 1	Gm Test
6526	1 of 1	Gm Test
6533	1 of 3	Gm Test Pins 2 and 8 used
	2 of 3	Gm Test Pins 4 and 3 used
	3 of 3	Plate Current Test Pins 1 and 3 used
6540	1 of 1	Gm Test
6542	1 of 4	Instruction Card
	2 of 4	Leakage Test
	3 of 4	Low Current Voltage Test
	4 of 4	High Current Voltage Test
6550	1 of 1	Gm Test
6626	1 of 1	Instruction Card
6627	1 of 1	Instruction Card
6660	1 of 1	Gm Test
6661	1 of 1	Gm Test
6662	1 of 1	Gm Test
6663	1 of 1	Dual Diode Plate Current Test
6669	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 1 used
6677	1 of 2	Gm Test Pins 9 and 8 used
	2 of 2	Gm Test Pins 2 and 3 used
6678	1 of 4	Pentode Gm Test
	2 of 4	Pentode Gm Test Reduced Fila. Voltage
	3 of 4	Triode Gm Test
	4 of 4	Triode Gm Test Reduced Fila. Voltage
6679	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Gm Test Reduced Fila. Voltage

Tube Type	Card	Card Function
6680	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Gm Test Reduced Fila. Voltage
6681	1 of 1	Dual Triode Gm Test
6686/E81L	1 of 2	Gm Test Pin 6 used
	2 of 2	Plate Current Test Pin 1 used
6687/E91H	1 of 3	Plate Current Test
	2 of 3	Plate Current Cut-off Test Pin 1 used
	3 of 3	Plate Current Cut-off Test Pin 7 used
6688/E180F	1 of 2	Gm Test
	2 of 2	Plate Current Test
6689/E83F	1 of 1	Gm Test
6754	1 of 1	Dual Fullwave Output Current Test
6761	1 of 2	Gm Test Pins 6, 8 used
	2 of 2	Plate Current Test Pins 1, 3 used
6788	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6814	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
6829	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6832	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6877	1 of 3	Gm Test Pin 6, 9 used
	2 of 3	Plate Current Test Pins 1, 4 used
	3 of 3	Plate Current Cut-off Test Pins 1, 4 used
6883	1 of 3	Gm Test Pin 1 used
	2 of 3	Gm Test Pin 4 used
	3 of 3	Gm Test Pin 6 used
5887	1 of 2	Plate Current Test Diode No. 1
	2 of 2	Plate Current Test Diode No. 2

Tube Type	Card	Card Function
6888	1 of 3	Plate Current Test
	2 of 3	Plate Current Cut-off Test Pin 4 used
	3 of 3	Plate Current Cut-off Test Pin 3 used
6900	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Test
6922/E88CC	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
6939	1 of 2	Pentode No. 1 Gm Test
	2 of 2	Pentode No. 2 Gm Test
6943	1 of 2	Gm Test Pin 8 used
	2 of 2	Plate Current Cut-off Test
6947	1 of 1	Dual Triode Gm Test
6948	1 of 1	Dual Triode Gm Test
6973	1 of 2	Gm Test Pins 6, 8 used
	2 of 2	Gm Test Pins 3, 1 used
6977	1 of 2	Plate Current Test Phosphor Glows
	2 of 2	Plate Current Cut-off Test Phosphor Does Not Glow
7025	1 of 1	Dual Triode Gm Test
7027	1 of 2	Gm Test Pins 3, 4, 5, 8 used
	2 of 2	Plate Current Test Pins 1, 3, 6, 8 used
7036	1 of 4	Gm Test
	2 of 4	Plate Current Test
	3 of 4	Plate Current Cut-off Test Pin 1 used
	4 of 4	Plate Current Cut-off Test Pin 7 used
7044	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
7054	1 of 1	Gm Test Pin 3 used
7055	1 of 1	Dual Diode Plate Current Test
7056	1 of 1	Gm Test

Tube Type	Card	Card Function
7057	1 of 1	Dual Triode Gm Test Pins 6, 7, 8 used
7058	1 of 1	Dual Triode Gm Test
7059	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7060	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7061	1 of 2	Pentode No. 1 Gm Test
	2 of 2	Pentode No. 2 Gm Test
7062/E180CC	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
7119/E182CC	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
7137	1 of 3	Gm Test
	2 of 3	Plate Current Test
	3 of 3	Plate Current Cut-off Test
7167	1 of 2	Gm Test Pin 2 used
	2 of 2	Gm Test Pin 7 used
7189	1 of 1	Gm Test
7193	1 of 2	Instruction Card
	2 of 2	Gm Test
7199	1 of 2	Instruction Card
	2 of 2	Gm Test
7247	1 of 2	Triode No. 1 Gm Test
	2 of 2	Triode No. 2 Gm Test
7258	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7308/E188CC	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Test
7316	1 of 1	Dual Triode Gm Test
7355	1 of 1	Gm Test

Tube Type	Card	Card Function
7360	1 of 3	Gm Test
	2 of 3	Plate Current Test Pentode No. 1
	3 of 3	Plate Current Test Pentode No. 2
7370	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Test
7408	1 of 2	Gm Test
	2 of 2	Plate Current Knee Test
7534/E130L	1 of 1	Gm Test
7543	1 of 1	Gm Test
7551	1 of 2	Gm Test Pins 8, 9 used
	2 of 2	Plate Current Test Pins 1, 3 used
7558	1 of 2	Gm Test Pins 8, 9 used
	2 of 2	Plate Current Test Pins 1, 3 used
7581	1 of 1	Gm Test
7586	1 of 1	Gm Test
7587	1 of 1	Gm Test
7591	1 of 2	Gm Test Pin 8 used
	2 of 2	Plate Current Test Pin 4 used
7643/E80CF	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7687	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7693/E90F	1 of 1	Gm Test
7694/E99F	1 of 1	Gm Test
7695	1 of 1	Gm Test
7699	1 of 2	Pentode No. 1 Gm Test
	2 of 2	Pentode No. 2 Gm Test
7701	1 of 1	Gm Test Pins 1, 7 used
7716	1 of 2	Triode Gm Test
	2 of 2	Pentode Gm Test

Tube Type	Card	Card Function
7717	1 of 1	Gm Test
7719	1 of 2	Gm Test Pins 6, 7 used
	2 of 2	Plate Current Test Pins 1, 2 used
7722/E280F	1 of 1	Gm Test Pin 1 used
7724	1 of 2	Triode Gm Test
	2 of 2	Dual Diode Plate Current Test
7728	1 of 1	Dual Triode Gm Test
7729	1 of 1	Dual Triode Gm Test
7730	1 of 1	Dual Triode Gm Test
7731	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
7732	1 of 1	Gm Test
7733	1 of 1	Gm Test
7734	1 of 4	Pentode Gm Test
	2 of 4	Triode Gm Test
	3 of 4	Triode Plate Current Test
	4 of 4	Triode Plate Current Cut-off Test
7737/E186F	1 of 2	Gm Test Pin 3 used
	2 of 2	Plate Current Test Pin 1 used
7754	1 of 1	Gm Test
7759	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Cut-off Test
7760	1 of 1	Dual Triode Gm Test
7761	1 of 1	Gm Test
7762	1 of 3	Gm Test Pin 8 used
	2 of 3	Plate Current Test Pin 4 used
	3 of 3	Plate Current Cut-off Test
7788/E810F	1 of 2	Gm Test
	2 of 2	Plate Current Test

Tube Type	Card	Card Function
7802	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate to Cathode Voltage Test
	3 of 3	Dual Triode Plate Current Cut-off Test
7861	1 of 1	Dual Triode Gm Test
7867	1 of 1	Dual Triode Gm Test
7868	1 of 2	Gm Test Pins 2, 7 used
	2 of 2	Plate Current Test Pins 1, 6 used
7889	1 of 2	Dual Triode Gm Test
	2 of 2	Dual Triode Plate Current Cut-off Test
7895	1 of 1	Gm Test
7898	1 of 1	Dual Triode Gm Test
7905	1 of 1	Plate Current Test Pin 8 used
8013A	1 of 1	Plate Current Test
8016	1 of 1	Plate Current Test
8056	1 of 1	Gm Test
8058	1 of 2	Instruction Card
	2 of 2	Gm Test Pin 2 used
8102	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
8106	1 of 1	Gm Test Pins 8, 9 used
8185	1 of 1	Gm Test Pin 7 used
8186	1 of 1	Gm Test Pin 7 used
9001	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 2 used
9002	1 of 2	Gm Test Pins 5 and 7 used
	2 of 2	Gm Test Pins 1 and 2 used
9003	1 of 2	Gm Test Pin 7 used
	2 of 2	Gm Test Pin 2 used

Tube Type	Card	Card Function
9006	1 of 2	Halfwave Output Current Test Pins 5, 7 used
	2 of 2	Halfwave Output Current Test Pins 1, 2 used
38142	1 of 1	Plate Current Test
DC90	1 of 2	Plate Current Test Pins 3, 5 used
	2 of 2	Plate Current Test Pins 2, 6 used
E82CC	1 of 1	Dual Triode Gm Test
E92CC	1 of 3	Dual Triode Gm Test
	2 of 3	Dual Triode Plate Current Test
	3 of 3	Dual Triode Plate Current Cut-off Test
EAA91	1 of 1	Dual Diode Plate Current Test
EB91	1 of 1	Dual Diode Plate Current Test
ECC81	1 of 1	Dual Triode Gm Test
ECC82	1 of 1	Dual Triode Gm Test
ECC83	1 of 1	Dual Triode Gm Test
ECF83	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
ECF804	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
ECH35	1 of 2	Pentode Gm Test
	2 of 2	Triode Gm Test
EF91	1 of 1	Gm Test
EF804	1 of 1	Gm Test
EL37	1 of 1	Gm Test
EL821	1 of 1	Gm Test
EL822	1 of 1	Gm Test
EZ90	1 of 1	Fullwave Output Current Test
GZ32	1 of 1	Fullwave Output Current Test
GZ33	1 of 1	Fullwave Output Current Test

Tube Type	Card	Card Function
KT61	1 of 1	Gm Test
KT66	1 of 1	Gm Test
KT88	1 of 1	Gm Test
UF89	1 of 1	Gm Test
W77	1 of 1	Gm Test
Z729	1 of 1	Gm Test

ELECTRON TUBE TEST CARDS

TUBE TYPE	CARD	CARD FUNCTION
01A	1 of 1	PLATE CURRENT TEST
0E3/85A1	1 of 3	INSTRUCTION CARD
	2 of 3	LOW CURRENT VOLTAGE TEST
	3 of 3	HIGH CURRENT VOLTAGE TEST
0Z4	1 of 1	DUAL DIODE PLATE CURRENT TEST
1A4	1 of 1	PLATE CURRENT TEST
1AB6/DK96	1 of 2	GRID NO.2 AND PLATE CURRENT TEST
	2 of 2	GRID NO.4 AND PLATE CURRENT TEST
1AD5	1 of 1	PLATE CURRENT TEST
1AG4	1 of 1	GM TEST
1AH4	1 of 1	GM TEST
1AH5/DAF96	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	DIODE PLATE CURRENT TEST
1AJ4/DF96	1 of 1	PLATE CURRENT TEST
1AJ5	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	DIODE PLATE CURRENT TEST
1AK4	1 of 1	PLATE CURRENT TEST
1AU3	1 of 1	PLATE CURRENT TEST
1B4	1 of 1	PLATE CURRENT TEST
1DN5	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	DIODE PLATE CURRENT TEST
1G3	1 of 1	PLATE CURRENT TEST
1H2	1 of 1	PLATE CURRENT TEST
1LF3	1 of 1	PLATE CURRENT TEST
1LG5	1 of 1	GM TEST
1M3/DM70	1 of 2	PLATE CURRENT TEST (BAR LIGHTED)
	2 of 2	PLATE CURRENT CUTOFF TEST(DOT LIGHTED

TUBE TYPE	CARD	CARD FUNCTION
1N2	1 of 1	PLATE CURRENT TEST
1N3/DM71	1 of 2	PLATE CURRENT TEST (BAR LIGHTED)
	2 of 2	PLATE CURRENT CUTOFF TEST (DOT LIGHTED)
1S2A/DY87	1 of 1	PLATE CURRENT TEST
1U6	1 of 2	PLATE CURRENT TEST
	2 of 2	PLATE, GRID 2, GRID 3 AND GRID 5 CURRENT TEST
1V6	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	TRIODE PLATE CURRENT TEST
1W5	1 of 1	PLATE CURRENT TEST
2AF4	1 of 1	GM TEST
2B3	1 of 1	PLATE CURRENT TEST
2B4	1 of 3	PLATE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
2B7	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
2BN4	1 of 1	GM TEST
2CW4	1 of 1	GM TEST
2CY5	1 of 1	GM TEST
2DS4	1 of 1	GM TEST
2DZ4	1 of 1	GM TEST
2E5	1 of 2	INDICATOR EYE OPEN
	2 of 2	INDICATOR EYE SHUT
2E32	1 of 1	PLATE CURRENT TEST
2E36	1 of 1	PLATE CURRENT TEST
2E41	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	DIODE PLATE CURRENT TEST
2E42	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
2EA5	1 of 1	GM TEST
2EN5	1 of 1	DUAL DIODE PLATE CURRENT TEST
2ER5	1 of 2 2 of 2	GM TEST CATHODE PIN 7 USED GM TEST CATHODE PIN 1 USED
2ES5	1 of 2 2 of 2	GM TEST CATHODE PIN 7 USED GM TEST CATHODE PIN 1 USED
2EV5	1 of 1	GM TEST
2FH5	1 of 1	GM TEST
2FQ5	1 of 1	GM TEST
2FS5	1 of 1	GM TEST
2FY5/XC97	1 of 2 2 of 2	GM TEST CATHODE PIN 7 USED GM TEST CATHODE PIN 1 USED
2GK5	1 of 1	GM TEST
2GW5	1 of 1	GM TEST
2HA5/XC900	1 of 1	GM TEST
2T4	1 of 1	GM TEST
2V2	1 of 1	PLATE CURRENT TEST
2V3	1 of 1	PLATE CURRENT TEST
3A2	1 of 1	PLATE CURRENT TEST
3A3	1 of 1	PLATE CURRENT TEST
3AF4	1 of 1	GM TEST
3AJ8/XCH81	1 of 2 2 of 2	HEPTODE GM TEST - PINS 1,2,3,6,7 TRIODE GM TEST - PINS 3,8,9
3AL5	1 of 1	DUAL DIODE PLATE CURRENT TEST
3AU6	1 of 1	GM TEST
3AV6	1 of 2 2 of 2	TRIODE GM TEST DUAL DIODE PLATE CURRENT TEST
3AW3	1 of 1	PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
3BA6	1 of 1	GM TEST
3BC5	1 of 1	GM TEST
3BE6	1 of 2	PLATE GM TEST
	2 of 2	GRID 2, GRID 4, PLATE GM TEST
3BN4	1 of 1	GM TEST
3BN6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
3BU8	1 of 2	PLATE CURRENT TEST - PLATE PIN 8, SUPP PIN 9
	2 of 2	PLATE CURRENT TEST - PLATE PIN 3, SUPP PIN 6
3BX6/XF80	1 of 2	GM TEST CATHODE PIN 3 USED
	2 of 2	GM TEST CATHODE PIN 1 USED
3BY6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
3BZ6	1 of 1	GM TEST
3C2	1 of 1	PLATE CURRENT TEST
3C4/DL96	1 of 1	PLATE CURRENT TEST
3CB6	1 of 1	GM TEST
3CE5	1 of 1	GM TEST
3CF6	1 of 1	GM TEST
3CS6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
3CY5	1 of 1	GM TEST
3DG4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
3DK6	1 of 1	GM TEST
3DT6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
3DZ4	1 of 1	GM TEST
3E6	1 of 1	PLATE CURRENT TEST
3EA5	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
3EH7/XF183	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
3EJ7/XF184	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
3ER5	1 of 2	GM TEST CATHODE PIN 7 USED
	2 of 2	GM TEST CATHODE PIN 1 USED
3ES5	1 of 2	GM TEST CATHODE PIN 7 USED
	2 of 2	GM TEST CATHODE PIN 1 USED
3EV5	1 of 1	GM TEST
3FH5	1 of 1	GM TEST
3FQ5	1 of 1	GM TEST
3FS5	1 of 1	GM TEST
3FY5/YC97	1 of 2	GM TEST CATHODE PIN 7 USED
	2 of 2	GM TEST CATHODE PIN 1 USED
3GK5	1 of 1	GM TEST
3GS8	1 of 2	PLATE CURRENT TEST PENTODE NO.1
	2 of 2	PLATE CURRENT TEST PENTODE NO.2
3GW5	1 of 1	GM TEST
3HA5/LC900	1 of 1	GM TEST
3HM6	1 of 1	GM TEST
3HT6	1 of 1	GM TEST
3JD6	1 of 1	GM TEST
3KP8	1 of 2	GM TEST. PENTODE NO.1
	2 of 2	GM TEST. PENTODE NO.2
3LF4	1 of 1	GM TEST
4AU6	1 of 1	GM TEST
4AV6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
4BA6	1 of 1	GM TEST
4BC5	1 of 1	GM TEST
4BC8	1 of 1	DUAL TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
4BE6	1 of 2	GRID 2, GRID 4,and PLATE GM TEST
	2 of 2	PLATE GM TEST
4BL8/XCF80	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
4BN6	1 of 2	GRID NO. 1 TO PLATE GM TEST
	2 of 2	GRID NO. 3 TO PLATE GM TEST
4BS8	1 of 1	DUAL TRIODE GM TEST
4BU8	1 of 2	PLATE CURRENT TEST PLATE PIN 8 USED
	2 of 2	PLATE CURRENT TEST PLATE PIN 3 USED
4BX8	1 of 1	DUAL TRIODE GM TEST
4BZ6	1 of 1	GM TEST
4BZ7	1 of 1	DUAL TRIODE GM TEST
4BZ8	1 of 1	DUAL TRIODE GM TEST
4CB6	1 of 1	GM TEST
4CE5	1 of 1	GM TEST
4CS6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
4CY5	1 of 1	GM TEST
4DE6	1 of 1	GM TEST
4DK6	1 of 1	GM TEST
4DT6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
4EH7/YF183	1 of 2	GM TEST-CATHODE PIN 3 USED
	2 of 2	PLATE CURRENT TEST-CATHODE PIN 1 USED
4EJ7/YF184	1 of 2	GM TEST-CATHODE-PIN 3 USED
	2 of 2	PLATE CURRENT TEST - CATHODE PIN 1 USED
4ES8/XCC189	1 of 1	DUAL TRIODE GM TEST
4EW6	1 of 1	GM TEST
4GK5	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
4CS8	1 of 2	PLATE CURRENT TEST PLATE NO.1
	2 of 2	PLATE CURRENT TEST PLATE NO.2
4GW5	1 of 1	GM TEST
4GZ5	1 of 1	GM TEST
4HA5	1 of 1	GM TEST
4HS8	1 of 2	GM TEST PLATE NO. 1
	2 of 2	GM TEST PLATE NO. 2
4HT6	1 of 1	GM TEST
4JD6	1 of 1	GM TEST
4KF8	1 of 2	GM TEST PLATE NO. 1
	2 of 2	GM TEST PLATE NO. 2
5AM8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
5AR4/GZ34	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5AS4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5AS8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
5AT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5AU4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5AV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5AW4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5B8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5BC3	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5BE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5BK7A	1 of 1	DUAL TRIODE GM TEST
5BQ7A	1 of 1	DUAL TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
5ER8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5BS8	1 of 1	DUAL TRIODE GM TEST
5BT8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
5EW8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
5BZ7	1 of 1	DUAL TRIODE GM TEST
5CG8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5CL8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5CM6	1 of 1	GM TEST
5CM8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5CQ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5CZ5	1 of 1	GM TEST
5DH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5DJ4	1 of 2	FULLWAVE OUTPUT CURRENT TEST PINS 1, 4, 5 & 8 USED
	2 of 2	FULLWAVE OUTPUT CURRENT TEST PINS 2, 3, 6 & 7 USED
5EA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5EH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5ES8/YCC189	1 of 1	DUAL TRIODE GM TEST
5EU8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5EW6	1 of 1	GM TEST
5FG7	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
5FV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5GH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5GM6	1 of 1	GM TEST
5GX6	1 of 1	GM TEST
5HG8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5J6	1 of 1	DUAL TRIODE GM TEST
5KE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
5T8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO. 1 PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST-DIODES 2 and 3
5V3	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5V6	1 of 1	GM TEST
5W4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
5X8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6A4	1 of 1	PLATE CURRENT TEST
6AB5	1 of 2	EYE SHUT
	2 of 2	EYE OPEN
6AB8/ECL80	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6AF3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6AH4	1 of 1	GM TEST
6AH7	1 of 1	DUAL TRIODE GM TEST
6AJ4	1 of 1	GM TEST
6AJ8/ECH81	1 of 2	HEPTODE GM TEST
	2 of 2	TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6AK8/EABC80	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO.1 PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST-DIODES 2 & 3
6AL3/EY88	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6AM5	1 of 1	GM TEST
6AQ4/EC91	1 of 2	GM TEST - PINS 5, 6 & 7 USED
	2 of 2	GM TEST - PINS 1, 2 & 7 USED
6AQ7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6AQ8/ECC85	1 of 1	DUAL TRIODE GM TEST
6AR8	1 of 3	GM TEST - PLATES CONNECTED
	2 of 3	PLATE CURRENT CUTOFF TEST-PLATE NO. 1
	3 of 3	PLATE CURRENT CUTOFF TEST-PLATE NO.2
6AT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6AU7	1 of 1	DUAL TRIODE GM TEST
6AW8A	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6AX7	1 of 1	DUAL TRIODE PLATE CURRENT TEST
6AX8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6AY3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6AZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6B6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BA3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6BA6	1 of 1	GM TEST
6BA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6BC8	1 of 1	DUAL TRIODE GM TEST
6BD4	1 of 1	CATHODE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
6BD5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6BD7A/EBC81	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BE7/EQ80	1 of 2	GRID NO. 1 TO PLATE GM TEST
	2 of 2	GRID NO. 1 TO GRIDS 2,3,4,5,6 & PLATE GM TEST
6BE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6BF8	1 of 3	DUAL DIODE PLATE CURRENT TEST-DIODES 1 & 4
	2 of 3	DUAL DIODE PLATE CURRENT TEST-DIODES 2 & 5
	3 of 3	DUAL DIODE PLATE CURRENT TEST-DIODES 3 & 6
6BG7	1 of 1	DUAL TRIODE GM TEST
6BH3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6BH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6BJ5/N78	1 of 1	GM TEST
6BJ8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BK5	1 of 1	GM TEST
6BK6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BL4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6BL8/ECF80	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6BM8/ECL82	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE PLATE CURRENT TEST
6BN5/EL85	1 of 1	GM TEST
6BN8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BR5/EM80	1 of 2	INDICATOR BRIGHT TEST
	2 of 2	INDICATOR DIM TEST
6BR7	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6BR8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6BS3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6BS7	1 of 1	GM TEST
6BS8	1 of 1	DUAL TRIODE GM TEST
6BT6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BT8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BU8	1 of 2	PLATE CURRENT TEST-PLATE NO. 1
	2 of 2	PLATE CURRENT TEST-PLATE NO. 2
6BW6/6061	1 of 1	GM TEST
6BW8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6BX6/EF80	1 of 2	GM TEST-CATHODE PIN 3 USED
	2 of 2	CM TEST-CATHODE PIN 1 USED
6BX8	1 of 1	DUAL TRIODE GM TEST
6BY5	1 of 2	HALFWAVE OUTPUT CURRENT TEST-DIODE NO.1
	2 of 2	HALFWAVE OUTPUT CURRENT TEST-DIODE NO.2
6BY7/EF85	1 of 1	GM TEST
6BY8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6BZ7	1 of 1	DUAL TRIODE GM TEST
6BZ8	1 of 1	DUAL TRIODE GM TEST
6CA4/EZ81	1 of 1	FULLWAVE OUTPUT CURRENT TEST
6CA5	1 of 1	GM TEST
6CA7/EL34	1 of 1	GM TEST
6CB5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6CD7/EM34	1 of 3	INDICATOR EYES OPEN TEST
	2 of 3	INDICATOR EYE 1 OPEN TEST
	3 of 3	INDICATOR EYE 2 OPEN TEST

TUBE TYPE	CARD	CARD FUNCTION
6CE5	1 of 1	GM TEST
6CF6	1 of 1	GM TEST
6CG8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CH6/6132	1 of 1	GM TEST
6CH7	1 of 1	DUAL TRIODE GM TEST
6CH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CJ6/EL81	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6CK4	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
6CK6/EL83	1 of 1	GM TEST
6CL5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6CL8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CM4/EC86	1 of 1	GM TEST
6CM5/EL36	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6CM7	1 of 2	GM TEST - TRIODE NO. 1
	2 of 2	GM TEST - TRIODE NO. 2
6CN6/EL38	1 of 1	GM TEST
6CN7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6CQ4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6CR6	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6CR8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CS7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6CU5	1 of 1	GM TEST
6CU6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6CU8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CW4	1 of 1	GM TEST
6CW5/EL86	1 of 1	GM TEST
6CW7/ECC84	1 of 1	DUAL TRIODE GM TEST
6CX8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6CY7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
6DA4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6DA5/EM81	1 of 2	INDICATOR BRIGHT TEST
	2 of 2	INDICATOR DIM TEST
6DA6/EF89	1 of 1	GM TEST
6DA7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
6DB5	1 of 2	GM TEST-PINS 1,6,7 & 9 USED
	2 of 2	GM TEST-PINS 1,2,3 & 9 USED
6DB6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
6DC8/EBF89	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6DE4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6DE7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
6DG6	1 of 1	GM TEST
6DJ8/ECC88	1 of 1	DUAL TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6DL4/EC88	1 of 1	GM TEST
6DL5/EL95	1 of 1	GM TEST
6DM4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6DN6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6 DN7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
6DQ4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6 DR4	1 of 1	GM TEST PIN 5 USED
6DR7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT
6DR8/EBF83	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6DS4	1 of 1	GM TEST
6DS5	1 of 1	GM TEST
6DS8/ECH83	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	TRIODE GM TEST
6DT4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6DT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6DT6	1 of 2	GRID 1 TO PLATE GM TEST
	2 of 2	GRID 3 TO PLATE GM TEST
6DT8	1 of 1	DUAL TRIODE GM TEST
6DW4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6DW5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6DX8/ECL84	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6DZ4	1 of 1	GM TEST
6DZ7	1 of 2	SECTION 1 GM TEST
	2 of 2	SECTION 2 GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6DZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6E7	1 of 1	GM TEST
6EA5	1 of 1	GM TEST
6EA7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
6EA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6EB5	1 of 1	DUAL DIODE PLATE CURRENT TEST
6EB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6EH5	1 of 1	GM TEST
6EH7/EF183	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
6EH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6EJ7/EF184	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
6EM5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6EM7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
6EQ7	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6ER5/EC95	1 of 2	GM TEST-CATHODE PIN 7 USED
	2 of 2	GM TEST-CATHODE PIN 1 USED
6ES5	1 of 2	GM TEST-CATHODE PIN 7 USED
	2 of 2	GM TEST-CATHODE PIN 1 USED
6ES6/EF97	1 of 1	GM TEST
6ES8/ECC189	1 of 1	DUAL TRIODE GM TEST
6ET6/EF98	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6ET7	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST
6EU7	1 of 1	DUAL TRIODE GM TEST
6EU8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6EV5	1 of 1	GM TEST
6EV7	1 of 3	DUAL TRIODE GM TEST
	2 of 3	DUAL TRIODE PLATE CURRENT TEST
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST
6EW6	1 of 1	GM TEST
6EW7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
6EX6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6EY6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6EZ5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6F33	1 of 1	GM TEST
6FA7	1 of 3	PENTODE PLATE NO. 1 GM TEST
	2 of 3	PENTODE PLATE NO. 2 GM TEST
	3 of 3	DIODE PLATE CURRENT TEST
6FD6	1 of 1	GM TEST
6FD7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
6FE5	1 of 1	GM TEST
6FG5	1 of 1	GM TEST
6FG6/EM84	1 of 2	INDICATOR SPLIT BAR TEST
	2 of 2	Indicator SOLID BAR TEST
6FG7	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6FH5	1 of 1	GM TEST
6FH6	1 of 2	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6FH6	2 of 2	PLATE CURRENT KNEE TEST
6FH8	1 of 4	TETRODE PLATE NO. 1 GM TEST
	2 of 4	TETRODE PLATE NO. 2 GM TEST
	3 of 4	TETRODE PLATE NO. 3 GM TEST
	4 of 4	TRIODE GM TEST
6FM8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6FQ5	1 of 1	GM TEST
6FQ7	1 of 1	DUAL TRIODE GM TEST
6FS5	1 of 1	GM TEST
6FV6	1 of 1	GM TEST
6FV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6FW5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6FW8	1 of 1	DUAL TRIODE GM TEST
6FY5/EC97	1 of 2	GM TEST-CATHODE PIN 7 USED
	2 of 2	GM TEST-CATHODE PIN 1 USED
6FY8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6G5	1 of 2	INDICATOR EYE OPEN TEST
	2 of 2	INDICATOR EYE CLOSED TEST
6GC5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
6GC6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6GD7	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6GE8	1 of 4	PENTODE GM TEST
	2 of 4	TRIODE GM TEST
	3 of 4	TRIODE PLATE CURRENT TEST
	4 of 4	TRIODE PLATE CURRENT CUTOFF TEST
6GF7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6GH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6GJ5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6GJ7/ECF801	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6GJ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6GK5	1 of 1	GM TEST
6GK6	1 of 1	GM TEST
6GL7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
6GM5	1 of 1	GM TEST
6GM6	1 of 1	GM TEST
6GM8/ECC86	1 of 1	DUAL TRIODE GM TEST
6GN8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
6GS8	1 of 2	PLATE NO. 1 PLATE CURRENT TEST
	2 of 2	PLATE NO. 2 PLATE CURRENT TEST
6GT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6GU5	1 of 1	GM TEST
6GU7	1 of 1	DUAL TRIODE GM TEST
6GV8/ECL85	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
6GW5	1 of 1	GM TEST
6GW6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6GW8/ECL86	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6GX6	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6GY6	1 of 1	GM TEST
6QY8	1 of 3	TRIODE NO. 1 PLATE CURRENT TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 3 GM TEST
6HA5/EC900	1 of 1	GM TEST
6HB6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6HC8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
6HF8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6HG8/ECF86	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6HJ8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6HL8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6HM6	1 of 1	GM TEST
6HR6	1 of 1	GM TEST
6HS6	1 of 1	GM TEST
6HS8	1 of 2	PLATE NO. 1 GM TEST
	2 of 2	PLATE NO. 2 GM TEST
6HT6	1 of 1	GM TEST
6HU6/EM87	1 of 2	INDICATOR SPLIT BAR TEST
	2 of 2	INDICATOR SOLID BAR TEST
6HU8/ELL80	1 of 2	PENTODE NO. 1 GM TEST
	2 of 2	PENTODE NO. 2 GM TEST
6HW8	1 of 3	PENTODE GM TEST
	2 of 3	PLATE CURRENT CUTOFF TEST (Pl.2)
	3 of 3	PLATE CURRENT CUTOFF TEST (Pl.1)
6HZ6	1 of 1	GM TEST
6HZ8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST

TUBE TYPE	CARD	CARD FUNCTION
6HZ8	3 of 3	TRIODE GM TEST
6JA8	1 of 2	TETRODE GM TEST
	2 of 2	TRIODE GM TEST
6JB6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
6JB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6JC8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6JD6	1 of 1	GM TEST
6JE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6JF8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	DIODE HALFWAVE OUTPUT CURRENT TEST
6JH6	1 of 1	GM TEST
6JH8	1 of 3	PENTODE GM TEST
	2 of 3	PLATE CURRENT CUTOFF TEST(Plate 1)
	3 of 3	PLATE CURRENT CUTOFF TEST(Plate 2)
6JK8	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
6JT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6JU8	1 of 2	DUAL DIODE PLATE CURRENT TEST (DIODES 1 and 3)
	2 of 2	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 4)
6JV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6JX8/ECH84	1 of 2	PENTODE PLATE CURRENT TEST
	2 of 2	TRIODE GM TEST
6KA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6KD8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6KE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6KF8	1 of 2	PLATE NO. 1 GM TEST
	2 of 2	PLATE NO. 2 GM TEST
6KL8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6KM8	1 of 4	TETRODE PLATE NO. 1 GM TEST
	2 of 4	TETRODE PLATE NO. 2 GM TEST
	3 of 4	TETRODE PLATE NO. 3 GM TEST
	4 of 4	DIODE PLATE CURRENT TEST
6KS8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6KT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6KZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6 LB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
6M3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6N5	1 of 2	INDICATOR EYE SHUT TEST
	2 of 2	INDICATOR EYE OPEN TEST
6N8/EBF80	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6Q5	1 of 3	CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
6R3/EY81	1 of 1	HALFWAVE OUTPUT CURRENT TEST
6R4/EC81	1 of 1	GM TEST
6R8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO. 1 PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 3)
6S2/EY86	1 of 1	PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
6S8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE PLATE CURRENT TEST(DIODE 1)
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 3)
6SV7	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
6V4/EZ80	1 of 1	FULLWAVE OUTPUT CURRENT TEST
6V7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
6V8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE PLATE CURRENT TEST(DIODE 1)
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 3)
6W6	1 of 1	GM TEST
6W7	1 of 1	GM TEST
6X6	1 of 2	INDICATOR EYE OPEN TEST
	2 of 2	INDICATOR EYE CLOSED TEST
6Z5/12Z5	1 of 1	FULLWAVE OUTPUT CURRENT TEST
7AF7	1 of 1	DUAL TRIODE GM TEST
7AH7	1 of 1	GM TEST
7AU7	1 of 1	DUAL TRIODE GM TEST
7DJ8/PCC88	1 of 1	DUAL TRIODE GM TEST
7ES8/PCC189	1 of 1	DUAL TRIODE GM TEST
7EY6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
7HG8/PCF86	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7R7	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
7T7	1 of 1	GM TEST
7X6	1 of 1	DUAL DIODE PLATE CURRENT TEST
8AU8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8AW8A	1 of 2	PENTODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
8AW8A	2 of 2	TRIODE GM TEST
8B8/XCL82	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8BA8A	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8BH8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8BN8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
8BQ5/XL84	1 of 1	GM TEST
8CG7	1 of 1	DUAL TRIODE GM TEST
8CM7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
8CN7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
8CS7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
8CX8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8CY7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
8EB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8EM5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
8ET7	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST
8FQ7	1 of 1	DUAL TRIODE GM TEST
8GN8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
8JK8	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST

TUBE TYPE	CARD	CARD FUNCTION
8JT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8JV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8KA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8KS8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
8SN7	1 of 1	DUAL TRIODE GM TEST
9A8/PCF80	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
9AQ8/PCC85	1 of 1	DUAL TRIODE GM TEST
9AU7	1 of 1	DUAL TRIODE GM TEST
9BR7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
9CL8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
9DZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
9GV8/XCL85	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
9U8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
9X8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
10BQ5	1 of 1	GM TEST
10C8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
10DA7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
10DE7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
10DR7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
10EG7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
10EM7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
10EW7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
10FD7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
10GF7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
10GN8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
10HP8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
10JT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
10JY8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
10LB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
11C5	1 of 1	GM TEST
11CY7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
11JE8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
12A4	1 of 1	GM TEST
12AB5	1 of 1	GM TEST
12AC6	1 of 1	GM TEST
12AD6	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
12AD7	1 of 1	DUAL TRIODE GM TEST
12AE6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12AE7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
12AF3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12AG6	1 of 1	GM TEST
12AJ6	1 of 3	SHORT TEST
	2 of 3	TRIODE PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST
12AJ7/HCH81	1 of 2	HEPTODE GM TEST
	2 of 2	TRIODE GM TEST
12AL8	1 of 2	TETRODE GM TEST
	2 of 2	TRIODE PLATE CURRENT TEST
12AS5	1 of 1	GM TEST
12AU8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
12AV5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12AX4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12AY3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12BA7	1 of 2	GRID NO. 3 TO PLATE GM TEST
	2 of 2	GRID NO. 1 TO PLATE GM TEST
12BK5	1 of 1	GM TEST
12BK6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12BL6	1 of 1	GM TEST
12BN6	1 of 2	GRID NO. 1 TO PLATE GM TEST
	2 of 2	GRID NO. 3 TO PLATE GM TEST
12BQ6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12BR7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
12BS3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12BT6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12BV7	1 of 1	GM TEST
12BW4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
12BX6	1 of 2	GM TEST-CATHODE PIN 3 USED
	2 of 2	GM TEST-CATHODE PIN 1 USED
12BZ6	1 of 1	GM TEST
12C5	1 of 1	GM TEST
12CA5	1 of 1	GM TEST
12CM6	1 of 1	GM TEST
12CN5	1 of 1	GM TEST
12CR6	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
12CS6	1 of 2	GRID NO. 1 to PLATE GM TEST
	2 of 2	GRID NO. 3 TO PLATE GM TEST
12CT8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
12CU5	1 of 1	GM TEST
12CU6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12CX6	1 of 1	GM TEST
12DB5	1 of 2	GM TEST-CATHODE PIN 7, GRID PIN 6 USED
	2 of 2	GM TEST-CATHODE PIN 2, GRID PIN 3 USED
12DE8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
12DF5	1 of 1	DUAL DIODE HALFWAVE OUTPUT CURRENT TEST
12DF7	1 of 1	DUAL TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
12DJ8	1 of 1	DUAL TRIODE GM TEST
12DK6	1 of 1	GM TEST
12DK7	1 of 2	TETRODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DL8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DM4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12DM5	1 of 2	GM TEST-GRID PIN 2 USED
	2 of 2	GM TEST-GRID PIN 5 USED
12DQ4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
12DQ6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12DQ7	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12DS7	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12DT7	1 of 1	DUAL TRIODE GM TEST
12DT8	1 of 1	DUAL TRIODE GM TEST
12DU7	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DV7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DV8	1 of 2	TETRODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12DW5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12DW7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
12DW8	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
12DY8	1 of 2	TETRODE GM TEST
	2 of 2	TRIODE GM TEST
12DZ6	1 of 1	GM TEST
12DZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
12EA6	1 of 1	GM TEST
12EC8	1 of 3	SHORT TEST
	2 of 3	PENTODE PLATE CURRENT TEST
	3 of 3	TRIODE PLATE CURRENT TEST
12ED5	1 of 1	GM TEST
12EG6	1 of 2	GRID NO. 1 TO PLATE GM TEST
	2 of 2	GRID NO. 3 TO PLATE GM TEST
12EH5	1 of 1	GM TEST
12EK6	1 of 1	GM TEST
12EL6	1 of 2	TRIODE PLATE CURRENT TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12EM6	1 of 2	TETRODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
12EN6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12EQ7	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
12EZ6	1 of 1	GM TEST
12F5	1 of 1	GM TEST
12F8	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12FK6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12FM6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12FQ8	1 of 2	DUAL TRIODE GM TEST(PLATES 1&3)
	2 of 2	DUAL TRIODE GM TEST(PLATES 2&4)
12FR8	1 of 3	PENTODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
12FR8	2 of 3	TRIODE GM TEST
	3 of3	DIODE PLATE CURRENT TEST
12FT6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
12FV7	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE PLATE CURRENT CUTOFF TEST
12FX8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
12G8	1 of 1	GM TEST
12GA6	1 of 1	GM TEST
12GC6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12GJ5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12GN7	1 of 1	GM TEST
12GT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12GW6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
12HU8/PLL80	1 of 2	PENTODE NO. 1-GM TEST
	2 of 2	PENTODE NO. 2-GM TEST
12J8	1 of 3	PENTODE GM TEST
	2 of 3	DIODE NO. 1-PLATE CURRENT TEST
	3 of 3	DIODE NO. 2-PLATE CURRENT TEST
12K5	1 of 1	GM TEST
12KL8	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
12L6	1 of 1	GM TEST
12R5	1 of 1	GM TEST
12S8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO. 1-PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 & 3)

TUBE TYPE	CARD	CARD FUNCTION
12U7	1 of 3	SHORTS AND LEAKAGE TEST
	2 of 3	TRIODE NO. 1 PLATE CURRENT TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
12V6	1 of 1	GM TEST
12W6	1 of 1	GM TEST
12X4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
1223	1 of 1	HALFWAVE OUTPUT CURRENT TEST
13CM5/XL36	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
13CW4	1 of 1	GM TEST
13DE7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
13DR7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
13EM7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
13FD7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
13FR7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
13GF7	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
14A4	1 of 1	GM TEST
14A5	1 of 1	GM TEST
14B8	1 of 2	HEPTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
14E7	1 of 2	PENTODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
14F8	1 of 1	DUAL TRIODE GM TEST
14GT8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
14JG8	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
14N7	1 of 1	DUAL TRIODE GM TEST
14X7	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST
14Y4	1 of 1	FULLWAVE OUTPUT CURRENT TEST
15A6/PL83	1 of 1	GM TEST
15CW5/PL84	1 of 1	GM TEST
15EA7	1 of 3	TRIODE NO. 1 GM TEST
	2 of 3	TRIODE NO. 2 GM TEST
	3 of 3	TRIODE NO. 2 PLATE CURRENT TEST
15EW6	1 of 1	GM TEST
15HB6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
16A5/PL82	1 of 1	GM TEST
16A8/PCL82	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
16AQ3/XY88	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17AV5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17AX4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17AY3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17BH3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17BQ6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17BS3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17C5	1 of 1	GM TEST
17CA5	1 of 1	GM TEST
17CQ4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17CU5	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
17D4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17DE4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17DM4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17DQ4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17DQ6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17EW8/HCC85	1 of 1	DUAL TRIODE GM TEST
17GJ5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17GT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17GW6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17H3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
17HC8	1 of 3	PENTODE GM TEST
	2 of 3	PENTODE PLATE CURRENT KNEE TEST
	3 of 3	TRIODE GM TEST
17JB6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
17JK8	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
17L6	1 of 1	GM TEST
17R5	1 of 1	GM TEST
17Z3/PY81	1 of 1	HALFWAVE OUTPUT CURRENT TEST
18A5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
18DZ8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
18FW6	1 of 1	GM TEST
18FX6	1 of 2	PENTODE GM TEST
	2 of 2	PENTODE AS TRIODE GM TEST
18FY6	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
18GD6	1 of 1	GM TEST
18HB8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
19	1 of 1	DUAL TRIODE PLATE CURRENT TEST
19AJ8	1 of 2	HEPTODE GM TEST
	2 of 2	TRIODE GM TEST
19AU4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
19BG6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
19C8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO. 1 PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 3)
19CL8	1 of 2	TETRODE GM TEST
	2 of 2	TRIODE GM TEST
19D8/UCH81	1 of 2	HEPTODE GM TEST
	2 of 2	TRIODE GM TEST
19EA8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
19EZ8	1 of 2	TRIODE NO. 3 GM TEST
	2 of 2	DUAL TRIODE GM TEST (TRIODES 1&2)
19G3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
19HR6	1 of 1	GM TEST
19HS6	1 of 1	GM TEST
19HV8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
19J6	1 of 1	DUAL TRIODE GM TEST
19JN8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
19KG8	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
19V8	1 of 3	TRIODE GM TEST
	2 of 3	DIODE NO. 1 PLATE CURRENT TEST
	3 of 3	DUAL DIODE PLATE CURRENT TEST (DIODES 2 and 3)

TUBE TYPE	CARD	CARD FUNCTION
20EQ7	1 of 2	PENTODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
20EZ7	1 of 1	DUAL TRIODE GM TEST
21A6/PL81	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
21EX6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
22BH3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
22DE4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
25A6	1 of 1	GM TEST
25AV5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25AX4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
25BK5	1 of 1	GM TEST
25C5	1 of 1	GM TEST
25C6	1 of 1	GM TEST
25CA5	1 of 1	GM TEST
25CD6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25CU6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25DK4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
25DN6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25DQ6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25DT5	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25E5/PL36	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
25EC6	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST

TUBE TYPE	CARD	CARD FUNCTION
25EH5	1 of 1	GM TEST
25F5	1 of 1	GM TEST
25W4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
25W6	1 of 1	GM TEST
25Y5	1 of 1	DUAL DIODE HALFWAVE OUTPUT CURRENT TEST
26AQ8/UCC85	1 of 1	DUAL TRIODE GM TEST
26BK6	1 of 2 2 of 2	TRIODE GM TEST DUAL DIODE PLATE CURRENT TEST
28AK8/UABC80	1 of 3 2 of 3 3 of 3	GM TEST DIODE PLATE CURRENT TEST PINs 6,7 DUAL DIODE PLATE CURRENT TEST PINS 2, 3, - 1, 7
31	1 of 1	PLATE CURRENT TEST
32ET5	1 of 1	GM TEST, G PIN 2 USED
34GD5	1 of 1	GM TEST
35CD6	1 of 2 2 of 2	GM TEST PLATE CURRENT KNEE TEST
35DZ8	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
35EH5	1 of 1	GM TEST
35GL6	1 of 1	GM TEST
35HB8	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
35L6	1 of 1	GM TEST
35Z6	1 of 1	DUAL DIODE HALFWAVE OUTPUT CURRENT TEST
36AM3	1 of 1	HALFWAVE OUTPUT CURRENT TEST
38A3/UY85	1 of 1	HALFWAVE OUTPUT CURRENT TEST
40FR5	1 of 1	GM TEST-PIN 2 USED
48	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
50BK5	1 of 1	GM TEST
50BM8/UCL82	1 of 2 2 of 2	PENTODE GM TEST, PIN 2,3,6,7 TRIODE PLATE CURRENT TEST, PIN 1, 8, 9
50C6	1 of 1	GM TEST
50DC4	1 of 1	HALFWAVE OUTPUT CURRENT TEST
50EH5	1 of 1	GM TEST-G PIN 2 USED
50FA5	1 of 1	GM TEST
50FE5	1 of 1	GM TEST
50FK5	1 of 1	GM TEST
50FY8	1 of 2 2 of 2	PENTODE GM TEST-PINS 2, 3, 6, 7 TRIODE GM TEST-PINS 1, 8, 9
50HC6	1 of 1	GM TEST, G PIN 2 USED
50HK6	1 of 1	GM TEST
50X6	1 of 1	DUAL DIODE HALFWAVE OUTPUT CURRENT TEST
50Y7	1 of 1	DUAL DIODE HALFWAVE OUTPUT CURRENT TEST
55	1 of 2 2 of 2	TRIODE GM TEST DUAL DIODE PLATE CURRENT TEST
60FX5	1 of 1	GM TEST-G PIN 2 USED
72	1 of 1	PLATE CURRENT TEST
84	1 of 1	FULLWAVE OUTPUT CURRENT TEST
90C1	1 of 4 2 of 4 3 of 4 4 of 4	INSTRUCTION CARD LEAKAGE TEST LOW CURRENT VOLTAGE TEST HIGH CURRENT VOLTAGE TEST
CK108	1 of 1	GM TEST
X-155	1 of 1	DUAL TRIODE GM TEST
TS251	1 of 2 2 of 2	PENTODE GM TEST-PINS 3,4,5,8 HALFWAVE OUTPUT CURRENT TEST-PINS 1,6

TUBE TYPE	CARD	CARD FUNCTION
292A	1 of 2	TRIODE GM TEST
	2 of 2	PLATE CURRENT TEST
303A	1 of 2	TRIODE GM TEST
	2 of 2	DIODE PLATE CURRENT TEST
307A	1 of 1	PLATE CURRENT TEST
311A	1 of 1	GM TEST
347A	1 of 1	GM TEST
351A	1 of 1	FULL-WAVE OUTPUT CURRENT TEST
384A	1 of 2	INSTRUCTION CARD
	2 of 2	GM TEST
395A	1 of 3	INSTRUCTION CARD
	2 of 3	STARTER VOLTAGE DROP
	3 of 3	ANODE VOLTAGE DROP
502A	1 of 3	CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
CK512AX	1 of 1	PENTODE AS TRIODE GM TEST
CK526AX	1 of 1	PLATE CURRENT TEST
CK533AX	1 of 1	PLATE CURRENT TEST
559	1 of 1	PLATE CURRENT TEST
CK573AX	1 of 1	PLATE CURRENT TEST
629	1 of 3	CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
713A	1 of 2	GM TEST PIN 5 USED
	2 of 2	GM TEST PIN 3 USED
717A	1 of 2	GM TEST PIN 5 USED
	2 of 2	GM TEST PIN 3 USED
801A	1 of 2	TRIODE PLATE CURRENT TEST
	2 of 2	TRIODE AS DIODE PLATE TO CATHODE VOLTAGE TEST
807	1 of 1	GM TEST
809	1 of 1	PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
811A	1 of 1	TRIODE AS DIODE PLATE TO CATHODE VOLTAGE TEST
815	1 of 2	GM TEST PINS 2, 3, 4, RIGHT CAP
	2 of 2	GM TEST PINS 4, 6, 7, LEFT CAP
816	1 of 1	HALF-WAVE OUTPUT CURRENT TEST
837	1 of 1	GM TEST
842	1 of 2	TRIODE PLATE CURRENT TEST
	2 of 2	TRIODE AS DIODE HALFWAVE OUTPUT CURRENT TEST
843	1 of 2	GM TEST
	2 of 2	PLATE TO CATHODE VOLTAGE TEST
865	1 of 1	PLATE CURRENT TEST
866A	1 of 1	HALFWAVE OUTPUT CURRENT TEST
874	1 of 4	INSTRUCTION CARD
	2 of 4	LEAKAGE TEST
	3 of 4	LOW CURRENT VOLTAGE TEST
	4 of 4	HIGH CURRENT VOLTAGE TEST
884	1 of 3	CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
885	1 of 3	CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
1005	1 of 3	DUAL DIODE PLATE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST PIN 5 USED
	3 of 3	PLATE TO CATHODE VOLTAGE TEST PIN 3 USED
CK1006	1 of 2	HALF-WAVE OUTPUT CURRENT TEST PIN 3 USED
	2 of 2	HALF-WAVE OUTPUT CURRENT TEST PIN 2 USED
1007	1 of 3	DUAL DIODE CATHODE CURRENT TEST
	2 of 3	PLATE TO CATHODE VOLTAGE TEST PIN 5 USED
	3 of 3	PLATE TO CATHODE VOLTAGE TEST PIN 3 USED
1229	1 of 1	PLATE CURRENT TEST
1273	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
1280	1 of 1	GM TEST
1603	1 of 1	GM TEST
1609	1 of 1	PLATE CURRENT TEST
1612	1 of 2	GM TEST PIN 5 AND CAP USED
	2 of 2	GM TEST PIN 5 USED
1644	1 of 2	GM TEST PINS 1, 8 USED
	2 of 2	GM TEST PINS 3, 4 USED
1852	1 of 1	GM TEST
5608A	1 of 1	GM TEST
5659	1 of 1	GM TEST
5661	1 of 1	GM TEST
5690	1 of 2	HALF-WAVE OUTPUT CURRENT PINS 5,8
	2 of 2	HALF-WAVE OUTPUT CURRENT PINS 3,4
5812	1 of 1	PLATE CURRENT TEST
5907	1 of 3	GM TEST PIN 8 USED
	2 of 3	GM TEST PIN 4 USED
	3 of 3	PLATE CURRENT TEST PIN 2 USED
5908	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
5910	1 of 2	PLATE CURRENT TEST
	2 of 2	PLATE CURRENT CUTOFF TEST
5920/E90CC	1 of 3	DUAL TRIODE GM TEST
	2 of 3	DUAL TRIODE PLATE CURRENT TEST
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST
5971	1 of 2	PLATE CURRENT TEST PIN 4 USED
	2 of 2	PLATE CURRENT CUTOFF TEST PIN 2 USED
6000	1 of 2	GM TEST
	2 of 2	PLATE TO CATHODE VOLTAGE TEST AS DIODE
6007/DL67	1 of 1	PLATE CURRENT TEST
6028	1 of 2	GM TEST PIN 7 USED
	2 of 2	GM TEST PIN 2 USED
6029	1 of 1	PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
6050	1 of 1	PLATE CURRENT TEST
6064	1 of 1	GM TEST
6065/EF92	1 of 1	GM TEST
6084/E80F	1 of 1	GM TEST
6085/E80CC	1 of 1	DUAL TRIODE GM TEST
6087	1 of 1	FULL-WAVE OUTPUT CURRENT TEST
6095	1 of 2	GM TEST PIN 7 USED
	2 of 2	GM TEST PIN 1 USED
6099	1 of 3	DUAL TRIODE GM TEST PINS 1, 6, & 7
	2 of 3	DUAL TRIODE PLATE CURRENT TEST PINS 1, 6, & 7
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST PINS 1, 6, & 7
6100	1 of 3	GM TEST PIN 5 USED
	2 of 3	PLATE CURRENT TEST PIN 1 USED
	3 of 3	PLATE CURRENT CUTOFF TEST PIN 1 USED
6101	1 of 1	DUAL TRIODE GM TEST
6106	1 of 1	FULL-WAVE OUTPUT CURRENT TEST
6113	1 of 1	DUAL TRIODE GM TEST
6134	1 of 1	GM TEST
6136	1 of 1	GM TEST
6137	1 of 1	GM TEST
6148	1 of 1	GM TEST
6201	1 of 1	DUAL TRIODE GM TEST
6202	1 of 1	FULL-WAVE OUTPUT CURRENT TEST
6221	1 of 2	GM TEST PIN 8 USED
	2 of 2	PLATE CURRENT TEST
6222	1 of 2	GM TEST PIN 8 USED
	2 of 2	PLATE CURRENT CUTOFF TEST PIN 4
6223	1 of 3	GM TEST PIN 8 USED
	2 of 3	PLATE CURRENT TEST PIN 4 USED
	3 of 3	PLATE CURRENT CUTOFF TEST PIN 2 USED

TUBE TYPE	CARD	CARD FUNCTION
6225	1 of 3	GM TEST PIN 8 USED
	2 of 3	GM TEST PIN 4 USED
	3 of 3	PLATE CURRENT TEST PIN 2 USED
6227/E80L	1 of 1	GM TEST
6245	1 of 2	GM TEST
	2 of 2	PLATE CURRENT CUTOFF TEST
6267/EF86	1 of 1	GM TEST
6354/150B2	1 of 3	INSTRUCTION CARD
	2 of 3	LOW CURRENT VOLTAGE TEST
	3 of 3	HIGH CURRENT VOLTAGE TEST
6374/EY84	1 of 1	HALF-WAVE OUTPUT CURRENT TEST
6385	1 of 1	DUAL TRIODE GM TEST
6395	1 of 2	PLATE CURRENT TEST
	2 of 2	PLATE CURRENT CUTOFF TEST
6542	1 of 4	INSTRUCTION CARD
	2 of 4	LEAKAGE TEST
	3 of 4	LOW CURRENT VOLTAGE TEST
	4 of 4	HIGH CURRENT VOLTAGE TEST
6660	1 of 1	GM TEST
6661	1 of 1	GM TEST
6662	1 of 1	GM TEST
6663	1 of 1	DUAL DIODE PLATE CURRENT TEST
6669	1 of 2	GM TEST PIN 7 USED
	2 of 2	GM TEST PIN 1 USED
6678	1 of 4	PENTODE GM TEST
	2 of 4	PENTODE GM TEST REDUCED FILA. VOLTAGE
	3 of 4	TRIODE GM TEST
	4 of 4	TRIODE GM TEST REDUCED FILA. VOLTAGE
6679	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE GM TEST REDUCED FILA. VOLTAGE
6680	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE GM TEST REDUCED FILA. VOLTAGE
6681	1 of 1	DUAL TRIODE GM TEST

TUBE TYPE	CARD	CARD FUNCTION
6686/E81L	1 of 2	GM TEST PIN 6, USED
	2 of 2	PLATE CURRENT TEST PIN 1 USED
6687/E91H	1 of 3	PLATE CURRENT TEST
	2 of 3	PLATE CURRENT CUTOFF TEST PIN 1 USED
	3 of 3	PLATE CURRENT CUTOFF TEST PIN 7 USED
6689/E83F	1 of 1	GM TEST
6761	1 of 2	GM TEST. PINS 6, 8 USED
	2 of 2	PLATE CURRENT TEST PINS 1,3, USED
6814	1 of 3	GM TEST
	2 of 3	PLATE CURRENT TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
6877	1 of 3	GM TEST. PIN 6, 9, USED
	2 of 3	PLATE CURRENT TEST. PINS 1, 4 USED
	3 of 3	PLATE CURRENT CUTOFF TEST. PINS 1, 4 USED
6883	1 of 3	GM TEST PIN 1 USED
	2 of 3	GM TEST PIN 4 USED
	3 of 3	GM TEST PIN 6 USED
6887	1 of 2	PLATE CURRENT TEST DIODE NO. 1
	2 of 2	PLATE CURRENT TEST DIODE NO. 2
6888	1 of 3	PLATE CURRENT TEST
	2 of 3	PLATE CURRENT CUTOFF TEST. PIN 4 USED
	3 of 3	PLATE CURRENT CUTOFF TEST. PIN 3 USED
6939	1 of 2	PENTODE NO. 1 GM TEST
	2 of 2	PENTODE NO. 2 GM TEST
6943	1 of 2	GM TEST PIN 8 USED
	2 of 2	PLATE CURRENT CUTOFF TEST
6973	1 of 2	GM TEST PINS 6, 8 USED
	2 of 2	GM TEST PINS 3, 1 USED
7027	1 of 2	GM TEST PINS 3, 4, 5, 8, USED
	2 of 2	PLATE CURRENT TEST PINS 1,3,6,8 USED
7036	1 of 4	GM TEST
	2 of 4	PLATE CURRENT TEST
	3 of 4	PLATE CURRENT CUTOFF TEST.PIN 1 USED
	4 of 4	PLATE CURRENT CUTOFF TEST.PIN 7 USED

TUBE TYPE	CARD	CARD FUNCTION
7054	1 of 1	GM TEST, PIN 3 USED
7055	1 of 1	DUAL DIODE PLATE CURRENT TEST
7056	1 of 1	GM TEST
7057	1 of 1	DUAL TRIODE GM TEST. PINS 6, 7, 8 USED
7058	1 of 1	DUAL TRIODE GM TEST
7059	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7060	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7061	1 of 2	PENTODE NO. 1 GM TEST
	2 of 2	PENTODE NO. 2 GM TEST
7062/E180CC	1 of 3	DUAL TRIODE GM TEST
	2 of 3	DUAL TRIODE PLATE CURRENT TEST
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST
7119/E182CC	1 of 3	DUAL TRIODE GM TEST
	2 of 3	DUAL TRIODE PLATE CURRENT TEST
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST
7137	1 of 3	GM TEST
	2 of 3	PLATE CURRENT TEST
	3 of 3	PLATE CURRENT CUTOFF TEST
7167	1 of 2	GM TEST. PIN 2 USED
	2 of 2	GM TEST. PIN 7 USED
7189	1 of 1	GM TEST
7199	1 of 2	INSTRUCTION CARD
	2 of 2	GM TEST
7247	1 of 2	TRIODE NO. 1 GM TEST
	2 of 2	TRIODE NO. 2 GM TEST
7258	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7316	1 of 1	DUAL TRIODE GM TEST
7355	1 of 1	GM TEST
7360	1 of 3	GM TEST
	2 of 3	PLATE CURRENT TEST. PENTODE NO. 1
	3 of 3	PLATE CURRENT TEST. PENTODE NO. 2

TUBE TYPE	CARD	CARD FUNCTION
7370	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE PLATE CURRENT TEST
7408	1 of 2	GM TEST
	2 of 2	PLATE CURRENT KNEE TEST
7534/E130L	1 of 1	GM TEST
7543	1 of 1	GM TEST
7551	1 of 2	GM TEST PINS 8, 9 USED
	2 of 2	PLATE CURRENT TEST PINS 1, 3 USED
7558	1 of 2	GM TEST PIN 8, 9 USED
	2 of 2	PLATE CURRENT TEST PINS 1, 3 USED
7581	1 of 1	GM TEST
7586	1 of 1	GM TEST
7587	1 of 1	GM TEST
7591	1 of 2	GM TEST PIN 8 USED
	2 of 2	PLATE CURRENT TEST PIN 4 USED
7643/E80CF	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7687	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7693/E90F	1 of 1	GM TEST
7694/E99F	1 of 1	GM TEST
7695	1 of 1	GM TEST
7699	1 of 2	PENTODE NO. 1 GM TEST
	2 of 2	PENTODE NO. 2 GM TEST
7701	1 of 1	GM TEST. PINS 1, 7 USED
7716	1 of 2	TRIODE GM TEST
	2 of 2	PENTODE GM TEST
7717	1 of 1	GM TEST
7719	1 of 2	GM TEST. PINS 6, 7 USED
	2 of 2	PLATE CURRENT TEST PIN 1, 2 USED
7722/E280F	1 of 1	GM TEST PIN 1 USED
7724	1 of 2	TRIODE GM TEST
	2 of 2	DUAL DIODE PLATE CURRENT TEST

TUBE TYPE	CARD	CARD FUNCTION
7728	1 of 1	DUAL TRIODE GM TEST
7729	1 of 1	DUAL TRIODE GM TEST
7730	1 of 1	DUAL TRIODE GM TEST
7731	1 of 2	PENTODE GM TEST
	2 of 2	TRIODE GM TEST
7732	1 of 1	GM TEST
7733	1 of 1	GM TEST
7734	1 of 4	PENTODE GM TEST
	2 of 4	TRIODE GM TEST
	3 of 4	TRIODE PLATE CURRENT TEST
	4 of 4	TRIODE PLATE CURRENT CUTOFF TEST
7737/E186F	1 of 2	GM TEST PIN 3 USED
	2 of 2	PLATE CURRENT TEST-PIN 1 USED
7754	1 of 1	GM TEST
7759	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE PLATE CURRENT CUTOFF TEST
7760	1 of 1	DUAL TRIODE GM TEST
7761	1 of 1	GM TEST
7762	1 of 3	GM TEST-PIN 8 USED
	2 of 3	PLATE CURRENT TEST-PIN 4 USED
	3 of 3	PLATE CURRENT CUTOFF TEST
7788/E810F	1 of 2	GM TEST
	2 of 2	PLATE CURRENT TEST
7802	1 of 3	DUAL TRIODE GM TEST
	2 of 3	DUAL TRIODE PLATE TO CATHODE VOLTAGE TEST
	3 of 3	DUAL TRIODE PLATE CURRENT CUTOFF TEST
7861	1 of 1	DUAL TRIODE GM TEST
7867	1 of 1	DUAL TRIODE GM TEST
7868	1 of 2	GM TEST PINS 2, 7 USED
	2 of 2	PLATE CURRENT TEST PINS 1,6 USED
7889	1 of 2	DUAL TRIODE GM TEST
	2 of 2	DUAL TRIODE PLATE CURRENT CUTOFF TEST

TUBE TYPE	CARD	CARD FUNCTION
7895	1 of 1	GM TEST
7898	1 of 1	DUAL TRIODE GM TEST
7905	1 of 1	PLATE CURRENT TEST, PIN 8 USED
8016	1 of 1	PLATE CURRENT TEST
8056	1 of 1	GM TEST
8058	1 of 2 2 of 2	INSTRUCTION CARD GM TEST, PIN 2 USED
8102	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
8106	1 of 1	GM TEST, PINS 8, 9 USED
8185	1 of 1	GM TEST, PIN 7 USED
8186	1 of 1	GM TEST, PIN 7 USED
DC90	1 of 2 2 of 2	PLATE CURRENT TEST, PINS 3,5 USED PLATE CURRENT TEST, PINS 2,6 USED
E82CC	1 of 1	DUAL TRIODE GM TEST
E92CC	1 of 3 2 of 3 3 of 3	DUAL TRIODE GM TEST DUAL TRIODE PLATE CURRENT TEST DUAL TRIODE PLATE CURRENT CUTOFF TEST
EAA91	1 of 1	DUAL DIODE PLATE CURRENT TEST
EB91	1 of 1	DUAL DIODE PLATE CURRENT TEST
ECC81	1 of 1	DUAL TRIODE GM TEST
ECC83	1 of 1	DUAL TRIODE GM TEST
ECF83	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
ECF804	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
ECH35	1 of 2 2 of 2	PENTODE GM TEST TRIODE GM TEST
EF91	1 of 1	GM TEST

TUBE TYPE	CARD	CARD FUNCTION
EF804	1 of 1	GM TEST
EL37	1 of 1	GM TEST
EL821	1 of 1	GM TEST
EL822	1 of 1	GM TEST
EZ90	1 of 1	FULLWAVE OUTPUT CURRENT TEST
GZ32	1 of 1	FULLWAVE OUTPUT CURRENT TEST
GZ33	1 of 1	FULLWAVE OUTPUT CURRENT TEST
KT61	1 of 1	GM TEST
KT66	1 of 1	GM TEST
KT88	1 of 1	GM TEST
UF89	1 of 1	GM TEST
W77	1 of 1	GM TEST
Z729	1 of 1	GM TEST

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