

RADIO TEST EQUIPMENT
MICROWAVE TEST SETS
J68392A TRANSMITTER-RECEIVER TEST SET
MAINTENANCE
J87296A POWER SUPPLY

This section contains the adjustment and alignment procedures necessary for troubleshooting the J87296A power supply. For the circuit description of the power supply, refer to CD-81836-01. The schematic diagram is shown on SD-81836-01.

Note: Typical voltages for the power supply are given on SD-81836-01. These should be used as a guide for troubleshooting.

If the routine checks described for the J68392A transmitter-receiver test set in Section 104-415-501 cannot be performed satisfactorily, then the troubleshooting procedures outlined in this section should be performed.

Caution 1: *Since high voltages are present in the power supply, take the necessary precautions to prevent contact with exposed wiring.*

Caution 2: *Do not remove plug-in units from the chassis until the AC INPUT circuit breaker (CB1) has been placed in the OFF position.*

Caution 3: *To prevent electrical damage to the CP2, CP3, and CP4 regulator units, always insert them into the power supply after the AC INPUT circuit breaker (CB1) has been placed in the OFF position.*

Caution 4: *Do not adjust the ADJ VOLTS control located on the CP2, CP3, and CP4 units unless instructed to do so.*

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CHART 1
PRELIMINARY TESTS

APPARATUS:

1—KS-14510, List 1 Volt-Ohm-Milliammeter (VOM)

STEP	PROCEDURE
1	<p><i>Note:</i> Earlier models of the power supply do not contain fuse F5.</p> <p>Set the VOM to the 12-volt ac scale and measure the voltage between TP4 and TP5 (See Fig. 1).</p> <p><i>Requirement:</i> The voltage indication shall be between 5.0 and 7.8 volts ac.</p>
2	<p>If the voltage is not correct, check that the AC INPUT circuit breaker and/or fuse F5 is not open. If both are closed and the voltage is not correct, then the power supply chassis is defective and should be replaced or repaired.</p>
3	<p>Measure the voltage between TP4 and TP6 and between TP5 and TP6.</p> <p><i>Requirement:</i> Each voltage indication shall be between 2.5 and 3.9 volts ac.</p>
4	<p>If the voltage is not correct, then check that the ac circuit breaker and fuse F4 and/or fuse F5 is not open. If the circuit breaker and the fuse are not open, then the power supply chassis is defective and should be replaced or repaired.</p>

CHART 2
-24 VOLT DC OUTPUT TEST

APPARATUS:

1—KS-14510, List 1 Volt-Ohm-Milliammeter (VOM)

1—Oscilloscope, Part of the J68392A Test Set

1—P-48N310 Cable Assembly

STEP	PROCEDURE
1	<p>With the VOM set to the 60-volt dc scale, measure the voltage between TP7 and TP8 (See Fig. 1).</p>

CHART 2 (Cont)

STEP	PROCEDURE								
	<p>Requirement: The voltage indication shall be between -21.3 and -27.1 volts dc. If the requirement is met, proceed to Step 4. If the requirement is not met, proceed with Steps 2 and 3.</p>								
2	Check that fuse F2 is not open. Replace the fuse, if necessary, and repeat Step 1; otherwise, proceed to Step 3.								
3	Turn off the power and remove the CP1 plug-in unit. Using Table A, check that diodes CR3 and CR4 are not defective. If a defective diode is found, replace the CP1 plug-in unit or the defective diode and repeat Step 1. If the diodes are not defective, troubleshoot the -24 volt source using SD-81836-01 as a guide.								
4	<p>Make the following control settings on the oscilloscope:</p> <table border="1"> <thead> <tr> <th>CONTROL</th> <th>POSITION</th> </tr> </thead> <tbody> <tr> <td>AC-DC-OFF (- INPUT)</td> <td>AC</td> </tr> <tr> <td>SENSITIVITY</td> <td>0.1 V/CM</td> </tr> <tr> <td>BANDWIDTH</td> <td>4 KC</td> </tr> </tbody> </table> <p>Note: Check the sensitivity calibration of the oscilloscope per Section 104-415-511. Refer to the procedure regarding the 6-cm internal calibration.</p>	CONTROL	POSITION	AC-DC-OFF (- INPUT)	AC	SENSITIVITY	0.1 V/CM	BANDWIDTH	4 KC
CONTROL	POSITION								
AC-DC-OFF (- INPUT)	AC								
SENSITIVITY	0.1 V/CM								
BANDWIDTH	4 KC								
5	<p>Using the P-48N310 cable assembly, connect test points TP7 and TP8 to the +INPUT jack on the oscilloscope and observe the noise voltage.</p> <p>Requirement: The indication shall be less than 7.5 centimeters (which corresponds to 0.75 volts) peak-to-peak.</p>								
6	If this requirement cannot be met, troubleshoot the -24 volt source using SD-81836-01 as a guide.								

CHART 3

+300 VOLT OUTPUT TEST

APPARATUS:

1—KS-14510, List 1 Volt-Ohm-Milliammeter (VOM)

CHART 3 (Cont)

STEP	PROCEDURE
	<p>Note: Before proceeding with the following steps, it is assumed that the tests and adjustments outlined in Section 104-415-501, Chart 1, have been performed.</p>
1	Turn off the power and remove the CP1 plug-in unit. Using Table A, check that diodes CR6 through CR9 and CR12 are not defective.
2	If a defective diode is found, replace the diode or the CP1 plug-in unit. In either case the test and alignment procedure outlined in Chart 1 of Section 104-415-501 must be performed on the repaired or the new unit.
3	If the diodes are not defective, troubleshoot the CP4 unit using SD-81836-01 as a guide. An ED-82187 extender is provided with the test set to supply power to the plug-in unit when the plug-in unit is positioned outside the power supply chassis.

CHART 4

-150 VOLT DC OUTPUT TEST

APPARATUS:

1—KS-14510, List 1 Volt-Ohm-Milliammeter (VOM)

STEP	PROCEDURE
	<p>Note: Before proceeding with the following steps, it is assumed that the tests and adjustments outlined in Section 104-415-501, Chart 1, have been performed.</p>
1	Check that fuse F3 is not open.
2	Turn off the power and remove the CP1 plug-in unit. Using Table A, check that diodes CR10, CR11, and CR13 are not defective.
3	If a defective diode is found, replace the diode or the CP1 plug-in unit. In either case the test and alignment procedure outlined in Chart 1 of Section 104-415-501 must be performed in the repaired or the new unit.
4	If the diodes are not defective, troubleshoot the CP2 unit using SD-81836-01 as a guide. An ED-82187 extender is provided with the test set to supply power to the plug-in unit when the plug-in unit is positioned outside the power supply chassis.

CHART 5

-40 VOLT DC OUTPUT TEST

APPARATUS:

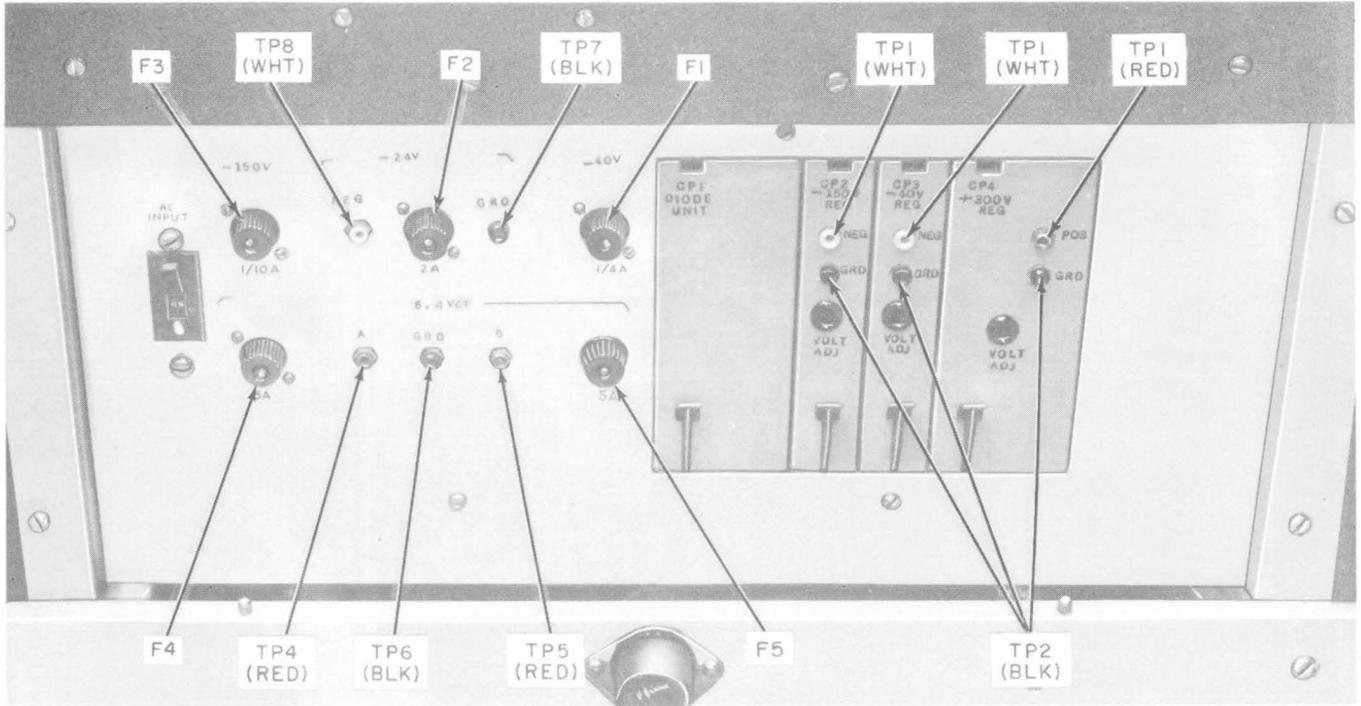
1—KS-14510, List 1 Volt-Ohm-Milliammeter (VOM)

STEP	PROCEDURE
	<p>Note: Before proceeding with the following steps, it is assumed that the tests and adjustments outlined in Section 104-415-501, Chart 1, have been performed.</p>
1	Check that fuse F1 is not open.
2	Turn off the power and remove the CP1 plug-in unit. Using Table A, check that diodes CR1, CR2, and CR5 are not defective.
3	If a defective diode is found, replace the diode on the CP1 plug-in unit. In either case the test and alignment procedure outlined in Chart 1 of Section 104-415-501 must be performed on the repaired or the new unit.
4	If the diodes are not defective, troubleshoot the CP3 unit using SD-81836-01 as a guide. An ED-82187 extender is provided with the test set to supply power to the plug-in unit when the plug-in unit is positioned outside the power supply chassis.

TABLE A
DIODE TESTS

Using a KS-14510 volt-ohm-milliammeter set to the $R \times 1$ -ohm scale, connect the test leads, and check for the conditions indicated below.

CR NO.	NEGATIVE POTENTIAL (+ LEAD) TERMINAL NO.	POSITIVE POTENTIAL (- LEAD) TERMINAL NO.	TEST CONDITION OHM	
			MINIMUM	MAXIMUM
1	10	11	5	100
2	13	14	5	100
3	7	8	5	100
4	9	8	5	100
5	12	14	5	100
6	Heat Sink on CR7	1	5	100
7	Heat Sink on CR8	Heat Sink on CR7	5	100
8	2	Heat Sink on CR8	5	100
9	4	3	5	500
10	18	17	5	100
11	19	17	5	100
12	4	5	5	500
13	16	15	5	100



NOTE:
 EARLIER MODELS OF THE POWER SUPPLY DO NOT CONTAIN FUSE F5.

Fig. 1—J87296A Power Supply