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TEST PROCEDURES AN/AIC-27 SYSTEM AND COMPONENT UNITS

Job Order 11-209

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For

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TRACKING AND COMMUNICATIONS DEVELOPMENT DIVISION

National Aeronautics and Space Administration
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TECHNICAL REPORT INDEX/ABSTRACT

(See instructions on reverse side.)

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13. ABSTRACT

The AN/AIC-27 (v) intercommunication system is a 30-channel audio distribution system which consists of:

- Air crew station units
- Maintenance station units
- A central control unit

This document contains a test procedure for each of the above units and also a test procedure for the system.

The intent of the test is to provide data for use in Shuttle audio subsystem design.

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Shuttle Audio Communications

TEST PROCEDURES AN/AIC-27 SYSTEM AND COMPONENT UNITS

Job Order 11-209

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SYMBOLS AND ABBREVIATIONS

AGC	Automatic Gain Control
CCU	Central Control Unit
CSU	Crew Station Unit
Hz	Hertz
MSU	Maintenance Station Unit
T/R	Transmit/Receive
Z_{IN}	Input Impedance
Z_{OUT}	Output Impedance
dB	Decibel
mV	Millivolt
rms	Root-mean-square

1.0 GENERAL

The AN/AIC-27(v) intercommunication system is a 30-channel audio distribution system which consists of:

- Air crew station units
- Maintenance station units
- A central control unit

This document contains a test procedure for each of the above units and also a test procedure for the system. The component and system data sheets may be found in the four appendices.

The intent of the test is to provide data for use in Shuttle audio subsystem design.

2.0 TEST EQUIPMENT

The tests require use of the following equipment or an equivalent approved by the cognizant engineer:

- Distortion Analyzer, Hewlett Packard, Model 333A
- Signal Generator, Hewlett Packard, Model 651A
- Power Supply, 28 Volts ±0.5 Vdc at 2 amperes
- Power Supply, Sorensen Model QB6-8
  (Set at 5V ± 0.5 Vdc)
- Storage Oscilloscope, Tektronix, Model 564
- Ammeter, 0-2 amperes
- Amplifier, Hewlett Packard, Model 465A
- Frequency Selective Voltmeter, Philco, Model 129B
- All resistors will be 1 percent tolerance or better.
- Attenuator panel
- Control panel

3.0 LS-622/AIC-27 AIR CREW STATION TEST PROCEDURE

3.1 TRANSMIT SECTION TESTS

All of the voltage measurements described in this section must be made using a voltmeter with a floating input. For this purpose, the Hewlett Packard Model 333A distortion analyzer is recommended.

All measurements which must be recorded will be recorded on data sheets A-1, A-2, and A-3, which may be found in appendix A.

3.1.1 Input Impedance

1. Connect the equipment as shown in figure 3-1.
2. Set the attenuator to 40.
3. Turn on the 28-volt power supply and oscillator.
4. Set the oscillator to 1000 Hertz (Hz).
5. Adjust the oscillator output level to obtain 0.25 millivolts (mV) across the 35-ohm resistor (E_2). This signal level is to be maintained until a specific change is noted. Be sure to use a voltmeter with a floating input.
6. Measure the voltage across the 150-ohm resistor (E_1) and record this value on line 1 of data sheet A-1.
7. Compute the input impedance (Z_{IN}) using the

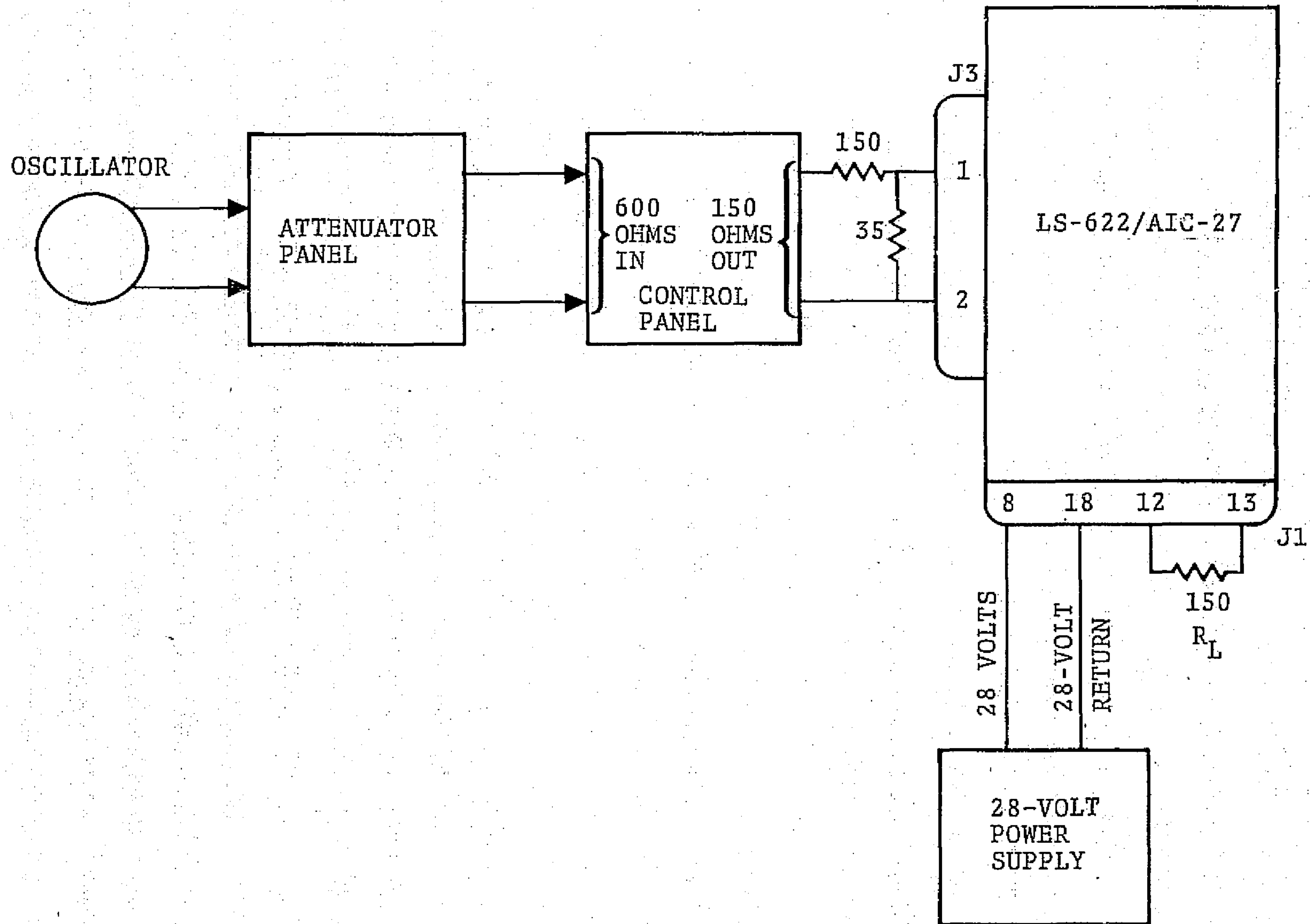


Figure 3-1. — Test setup: transmit section.

following formula:

$$Z_{IN} = \frac{525}{14E_1 - 15}$$

To use the formula, E_1 must be expressed in millivolts.

8. Record Z_{IN} on data sheet A-1.
9. Reset the attenuator to 60 and again measure E_1 and the voltage across the 35-ohm resistor (E_2). Record these values on line 2 of data sheet A-1.
10. Compute the input impedance using the following formula:

$$Z_{IN} = \frac{1050\ E_2}{7E_1 - 30E_2}$$

Record Z_{IN} on line 2.

11. Reset the attenuator to 20 and repeat steps 9 and 10.

3.1.2 Frequency Response

1. Connect a root-mean-square (rms) voltmeter across R_L .
2. Reset the attenuator to 40.
3. Measure the voltage (E_L) and record the reading on line 4 of the data sheet.
4. Compute the voltage which is 3 decibels (dB) below this value and enter it on lines 5 and 6 of the data sheet.

5. Locate the frequencies, above and below 1000 Hz which yield, across R_L , the voltage computed in step 4. Record these frequencies on lines 5 and 6.

6. Measure the record the voltages (E_L) obtained for the frequencies listed on lines 7 through 13 of the data sheet.

3.1.3 Harmonic Distortion

1. Connect a harmonic distortion analyzer across R_L .

2. Measure the harmonic distortion for the frequencies and attenuator settings listed on lines 14 through 34 of data sheet A-2.

3.1.4 Internal Noise

1. Turn off the oscillator.

2. Measure the (rms) internal noise across R_L . Record this value on line 35 of data sheet A-2.

3.1.5 Output Impedance

1. Turn on the signal generator and adjust for a frequency of 1000 Hz.

2. Remove the 150-ohm resistor (R_L) from pins 12 and 13 of J1.

3. Set the oscillator level to obtain 1.2 volts rms at pins 12 and 13 of J1.

4. Reconnect the 150-ohm resistor to pins 12 and 13 of J1.

5. Measure the voltage E_L across this resistor and record it on line 36 of data sheet A-3.

6. Compute the output impedance (Z_{OUT}) as follows:

$$Z_{OUT} = \frac{150(1.2 - E_L)}{E_L}$$

Record Z_{OUT} on line 37 of data sheet A-3.

7. Turn off the 28-volt power supply.

3.1.6 (AGC) Attack and Release Time

1. Connect the equipment as shown in figure 3-2.

2. Set the attenuator to 40.

3. Set the control panel function switch to AGC and the mode switch to RELEASE.

4. Set the control panel power switch to ON.

5. Turn on the 28-volt power supply.

6. Adjust the signal generator to 1000 Hz.

7. Slowly increase (from zero) the output level of the signal generator until the rms voltage across R_L just reaches 1.5 volts. This adjustment must be carefully made since the AGC will limit the voltage across R_L to about 1.5 volts. Therefore, a large range of input signal levels will yield 1.5 volts output. The objective of this step is to set the input level at the AGC threshold (i.e., the smallest input signal which yields 1.5 volts output). Record this input level (i.e., the voltage across the 35-ohm resistor) on line 38.

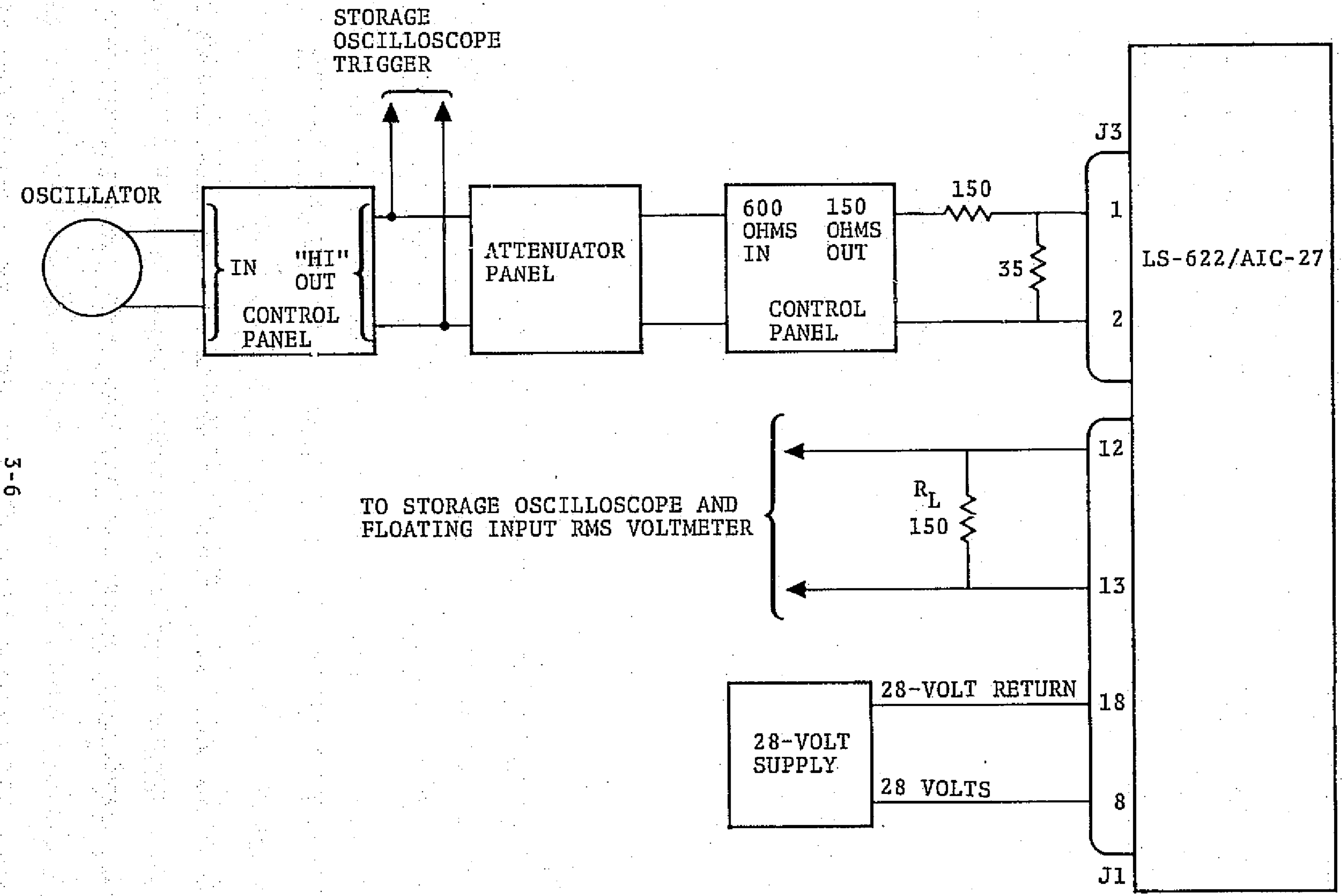


Figure 3-2. — Test setup: AGC attack time.

8. Adjust the oscilloscope to 50 milliseconds per centimeter sweep rate and set the trigger source switch to EXTERNAL.

9. Adjust the oscilloscope trigger level just below the triggering point.

10. Set the oscilloscope to SINGLE SWEEP. Set the storage controls to STORE.

11. Set the control panel mode switch to ATTACK. The oscilloscope should now display a waveform similar to that shown in figure 3-3. Measure the AGC attack time as shown and record it on line 39, of data sheet A-3.

12. Set the attenuator to 55.

13. Set the control panel mode switch to RELEASE.

14. Monitor the voltage across R_L and record on line 40, the time (AGC release time) required for the voltage to build up to 1.5 volts.

3.2 RECEIVE SECTION TESTS

All voltage measurements will be made using a true reading rms voltmeter.

All measurements to be recorded, will be recorded on data sheets A-4, A-5, or A-6.

3.2.1 Input Impedance

1. Connect the equipment as shown in figure 3-4.

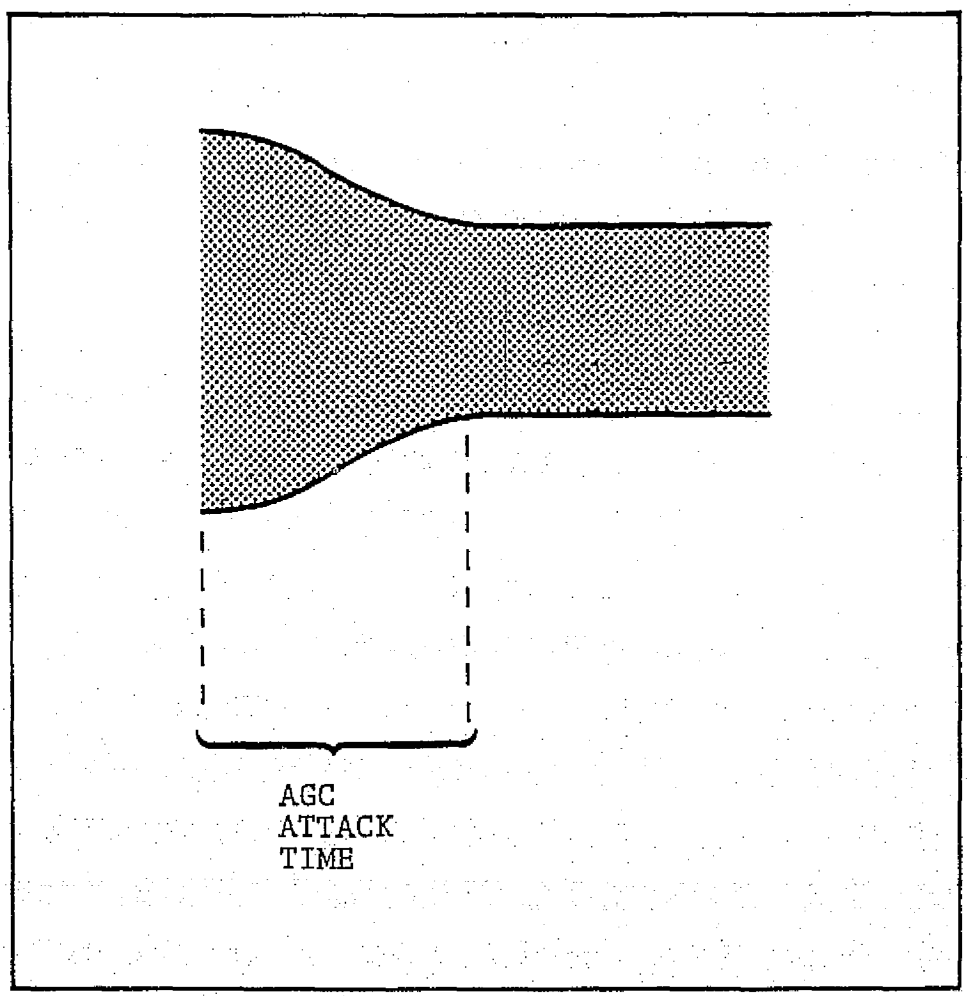


Figure 3-3. — AGC attack time waveform.

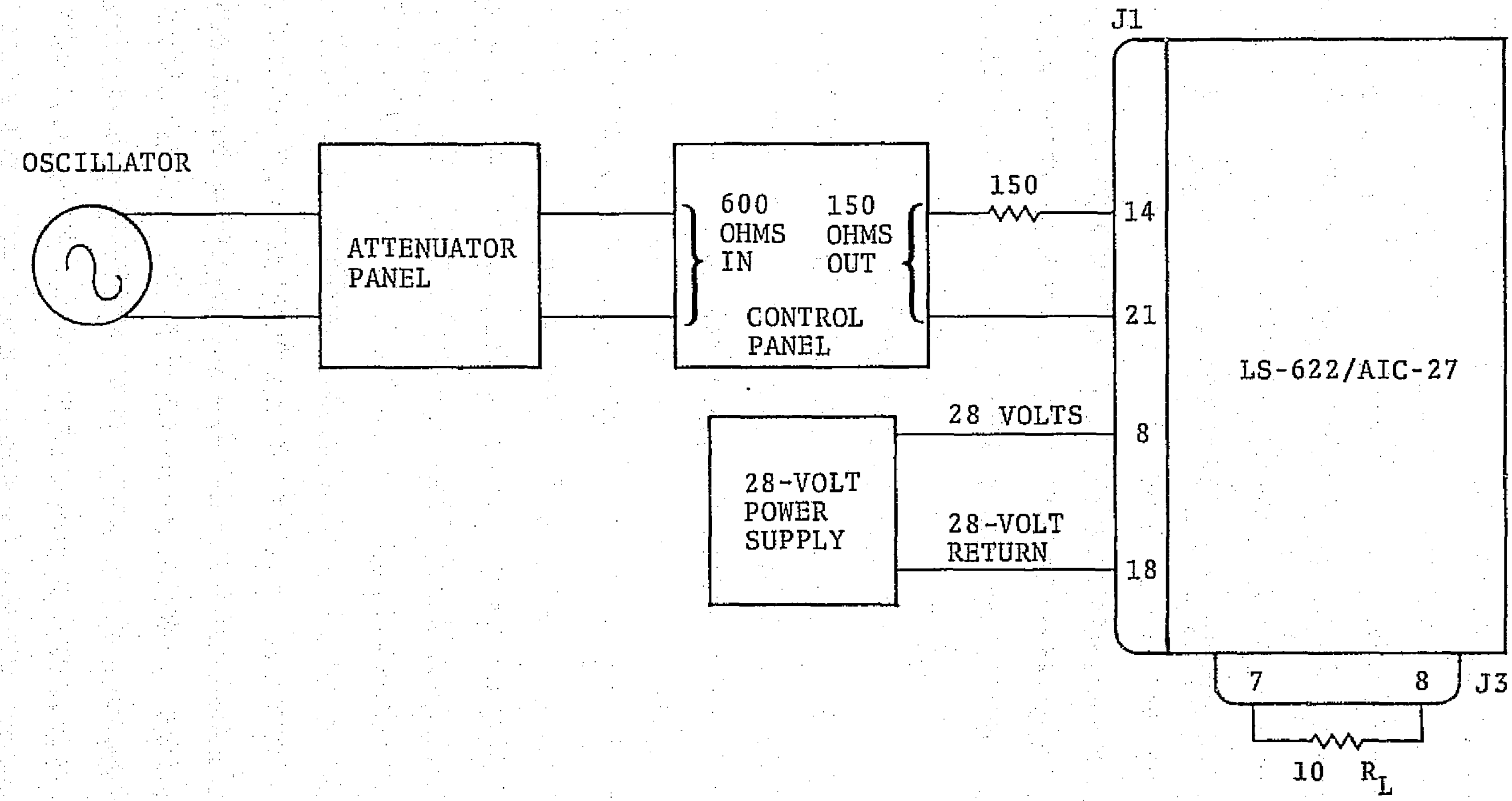


Figure 3-4. — Test setup: receive section.

2. Turn on the 28-volt power supply.

3. Set the master volume control to the full clockwise position.

4. Set the oscillator to 1000 Hz and adjust the signal level to obtain 0.75 volts (E_1) measured across pins 14 and 21 of J1.

5. Measure the voltage across the 150-ohm resistor (E_2) and record on line 1 of data sheet A-4.

6. Compute the input impedance using the following formula:

$$Z_{IN} = \frac{112.5}{E_2}$$

7. Record Z_{IN} on line 2.

3.2.2 Output Impedance

1. Measure the voltage E_L across R_L and record it on line 3.

2. Remove R_L and measure the voltage (E) across pins 7 and 8 of J3. Record this value on line 4.

3. Compute the output impedance using the following formula:

$$Z_{OUT} = \frac{10(E - E_L)}{E_L}$$

4. Record this value on line 5 of data sheet A-4.

3.2.3 Output Range

1. Reconnect the 10-ohm resistor (R_L) across pins 7 and 8 of J3.
2. Measure the rms voltage across R_L for all five master volume control settings.
3. Record the voltages (E_L) on lines 6 through 10 of the data sheet.
4. Connect the Hewlett Packard 465A amplifier between the oscillator and the attenuator. Set the gain switch to 20 dB and the power switch to ON.
5. Set the oscillator to 1000 Hz. Set the level of the oscillator to obtain 1.5 volts across pins 14 and 21.
6. Measure the rms voltage across R_L for all master volume control settings and record these values on lines 11 through 15.

3.2.4 Frequency Response

1. Adjust the signal generator to obtain 0.75 volts at E_1.
2. Set the volume control to the full clockwise position.
3. Measure the voltage (E_L) across R_L and record the value on line 16. Multiply this voltage by 0.71 and record the value on lines 17 and 18.
4. Find the two frequencies which yield, across R_L, the voltage computed in step 3. Record these frequencies on lines 17 and 18.

5. Record the voltages (E_L) obtained across R_L for the frequencies located on lines 19 through 27.

3.2.5 Harmonic Distortion

1. Measure and record the harmonic distortion at R_L for the frequencies listed on lines 28 through 33.
2. Reset the signal generator output to obtain 1.5 volts at E_1.
3. Measure the distortion at R_L for the frequencies listed on lines 34 through 39.

3.2.6 Internal Noise

1. Shut off the signal generator.
2. Measure the rms voltage across R_L and record the value on line 40.

3.2.7 Receive-to-Transmit Crosstalk

1. Connect a 5-ohm resistor across pins 1 and 2 of J3.
2. Turn on the signal generator and adjust the output to obtain a frequency of 1000 Hz and a signal level of 0.75 volts across pins 14 and 21 of J1.
3. Connect a 150-ohm resistor across pins 12 and 13 of J1.
4. Using the Philco frequency selective voltmeter, measure the voltage across pins 12 and 13 for all five master volume control settings. Record these values on lines 41 through 45.

5. Reset the voltage across pins 14 and 21 to 0.75 volts.
6. Repeat step 4, recording the voltages on lines 46 through 50.

3.2.8 Input Current

1. Turn the power switch of the 28-volt power supply to OFF.
2. Connect an ammeter in series with the 28-volt power supply.
3. Measure the input current for all five volume control positions.
4. Record the current levels on lines 51 through 55.
5. Adjust the signal generator to obtain 1.5 volts across pins 14 and 21 of J1.
6. Repeat step 4 and record the currents measured on lines 56 through 60.
7. Turn off all test equipment and power supplies.
8. Connect a +5 volt power supply to pins 9 and 10 of J1, with an ammeter in series, as shown in figure 3-5.
9. Turn on the 5-volt power supply.
10. Measure the input current and record on line 61 the value obtained.
11. Turn off the 5-volt power supply.

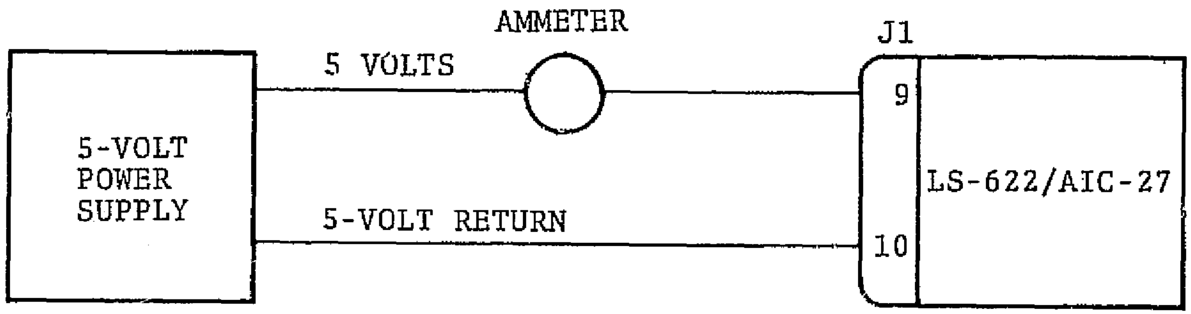


Figure 3-5. — Test setup: current requirement.

4.0 LS-623/AIC-27 MAINTENACE STATION UNITS TEST PROCEDURE

4.1 TRANSMIT SECTION TESTS

All measurements which must be recorded for this part of the test will be recorded on data sheets B-1, B-2, or B-3.

Pins C and E of J1 must be isolated from dc ground at all times. Consequently, any voltage measurements made at these points will be made using voltmeter with a floating input such as the Hewlett-Packard 333A distortion analyzer.

In addition, care must be taken when connecting test equipment to pins A, B, and D of J1, to assure that pin D is isolated from chassis grounds, power returns, and signal ground.

4.1.1 Input Impedance

1. Connect the equipment as shown in figure 4-1.
2. Set the attenuator to 40.
3. Turn on the 28-volt power supply, the oscillator, and the control panel.
4. Set the oscillator to 1000 Hz and adjust the output level to obtain 0.25 mV across the 35-ohm resistor (E_2). Be sure to use a voltmeter with a floating input.
5. Measure the voltage across the 150-ohm resistor (E_1) and record this value on line 1 of the data sheet.

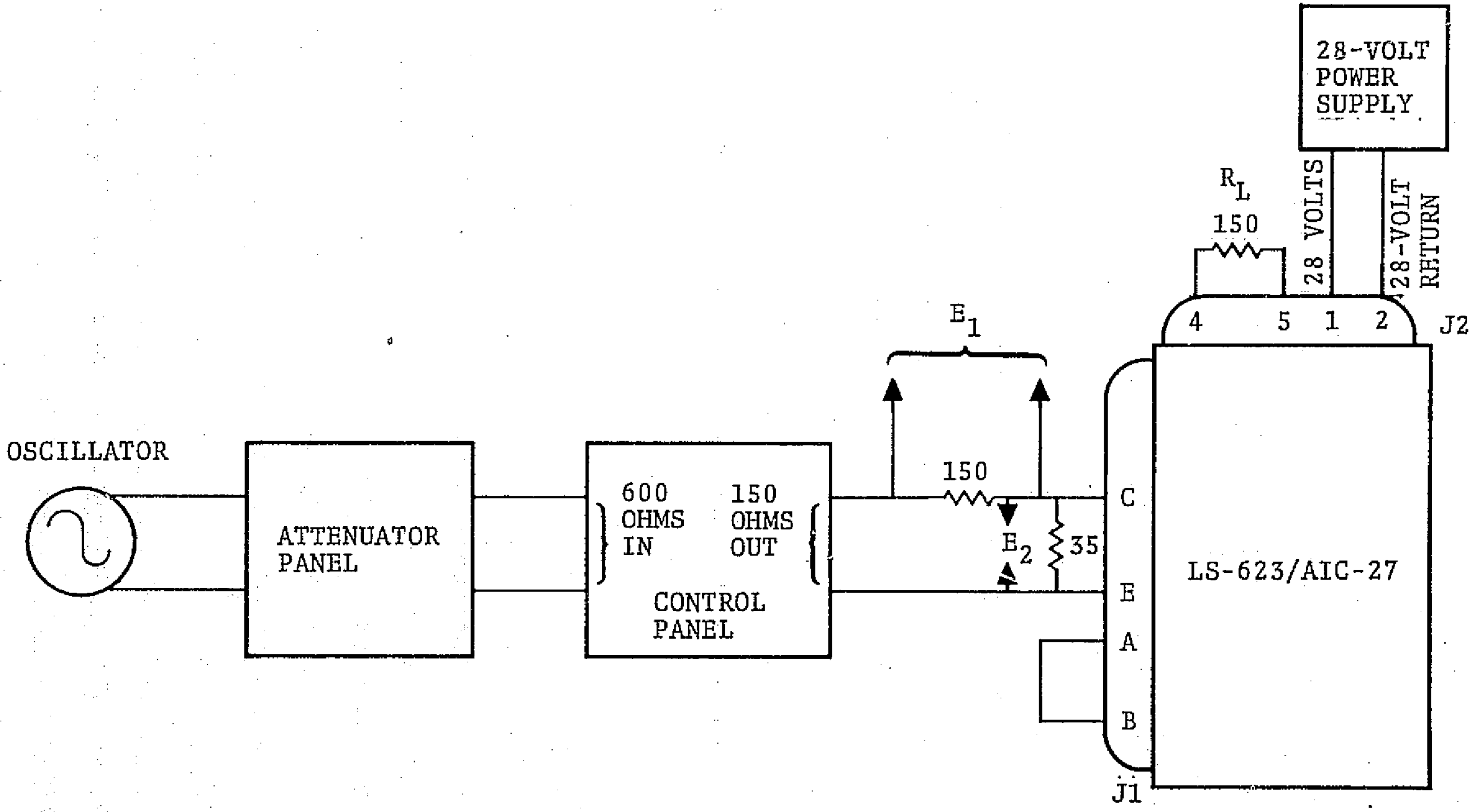


Figure 4-1. — Test setup: transmit section.

6. Compute Z_{IN} using the following formula:

$$Z_{IN} = \frac{525}{14E_1 - 15}$$

To use the formula, be sure to express E_1 in millivolts.

7. Record Z_{IN} on line 1.

4.1.2 Frequency Response

1. Connect on rms voltmeter across R_L .
2. Measure the voltage E_L across R_L and record this value on line 2.
3. Compute the voltage which is 3 dB below the voltage measured in step 2 and enter the resultant value on lines 3 and 4.
4. Locate the frequencies, above and below 1000 Hz, which yield this voltage across R_L . Record the two frequencies on lines 3 and 4.

   When changing oscillator frequencies, check to assure that the oscillator level does not change. This instruction applies throughout the procedure.
5. Measure the record the voltages (E_L) obtained across R_L for the frequencies listed on lines 5 through 14 of data sheet B-1.

4.1.3 Harmonic Distortion

1. Connect a harmonic distortion analyzer across R_L .

2. Measure the harmonic distortion for the frequencies and input levels (i.e., the voltage across the 35-ohm resistor) listed on lines 15 through 38.

   Record the distortion levels on lines 15 through 38.

4.1.4 Internal Noise

1. Turn off the signal generator.
2. Measure the rms internal noise across R_L. Record this value on line 39.

4.1.5 Output Impedance

1. Turn on the signal generator and adjust it to 1000 Hz.
2. Remove the 150-ohm resistor (R_L) from pins 4 and 5 of J2.
3. Set the oscillator level to obtain 1.2 volts at pins 4 and 5.
4. Reconnect the 150-ohm resistor to pins 4 and 5.
5. Measure the voltage E_L across this resistor and record it on line 40.
6. Compute Z_{OUT} as follows:

$$Z_{OUT} = \frac{150(1.2 - E_L)}{E_L}$$

   Record this value on line 41.
7. Turn off the 28-volt power supply.

4.1.6 AGC Attack and Release Time

1. Connect the equipment as shown in figure 4-2.
2. Set the attenuator to 40.
3. Set the control panel function switch to AGC and the mode switch to RELEASE.
4. Set the control panel power switch to ON. Turn on the 28-volt power supply.
5. Adjust the signal generator to 1000 Hz.
6. Slowly increase (from zero) the output level of the signal generator until the rms voltage across R_L just reaches 1.5 volts. Be careful with this adjustment since the AGC will limit the voltage across R_L to approximately 1.5 volts. Therefore a large range of input signals will yield 1.5 volts across R_L. The objective of this step is to set the input level at the AGC threshold (i.e., the smallest signal input which yields 1.5 volts across R_L. Record this input level on line 42 of data sheet B-3.
7. Adjust the external trigger level just below the triggering point with the sweep rate set at 50 milliseconds per centimeter.
8. Set the oscilloscope to SINGLE SWEEP and the storage controls to STORE.
9. Set the control panel mode switch to ATTACK.
10. The oscilloscope should now display a waveform like that shown in figure 3-3. Measure the AGC

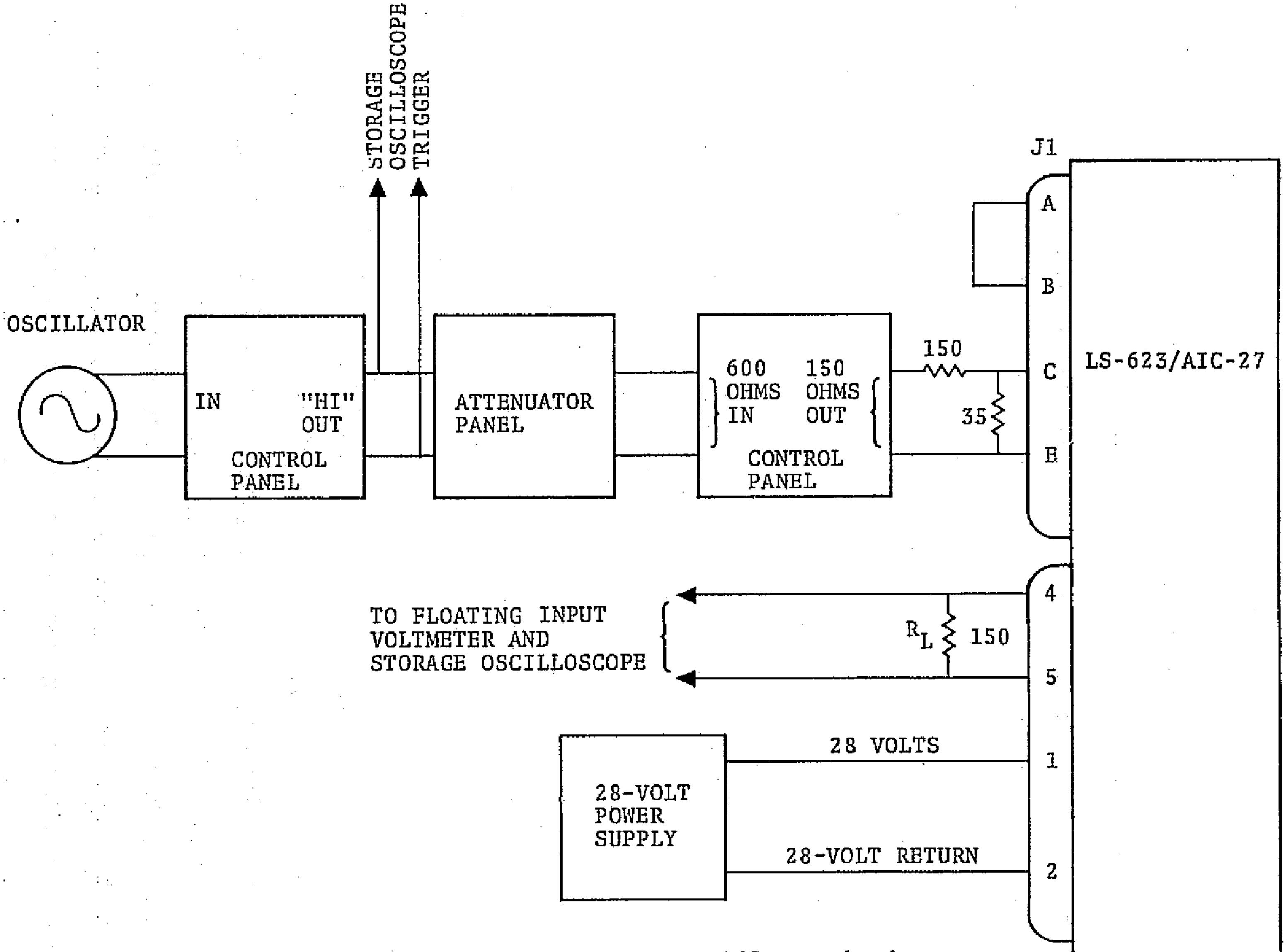


Figure 4-2. — Test setup: AGC attack time.

attack time as shown and record the value obtained on line 43.

11. Set the control panel mode switch to RELEASE and measure the time required for the voltage across R_L to build up to 1.5 volts.

12. Record the AGC release time on line 44.

4.2 RECEIVE SECTION TESTS

All measurements which must be recorded in this part of the test will be recorded on data sheets B-4, B-5, or B-6.

All voltage measurements will be taken using a true reading rms voltmeter.

When connecting test equipment to pins B and D of J1 be very careful to avoid connecting pin D to ground.

4.2.1 Input Impedance

1. Connect the equipment as shown in figure 4-3.
2. Set the power switch of the 28-volt power supply to ON.
3. Set the amplification control of the Hewlett-Packard 465A amplifier 20 dB and the power switch to ON.
4. Set the LS-623 volume control to the full clockwise position.
5. Set the oscillator to 1000 Hz and adjust the output level to obtain 1.5 volts (E_2) across pins 4 and 5 of J2.

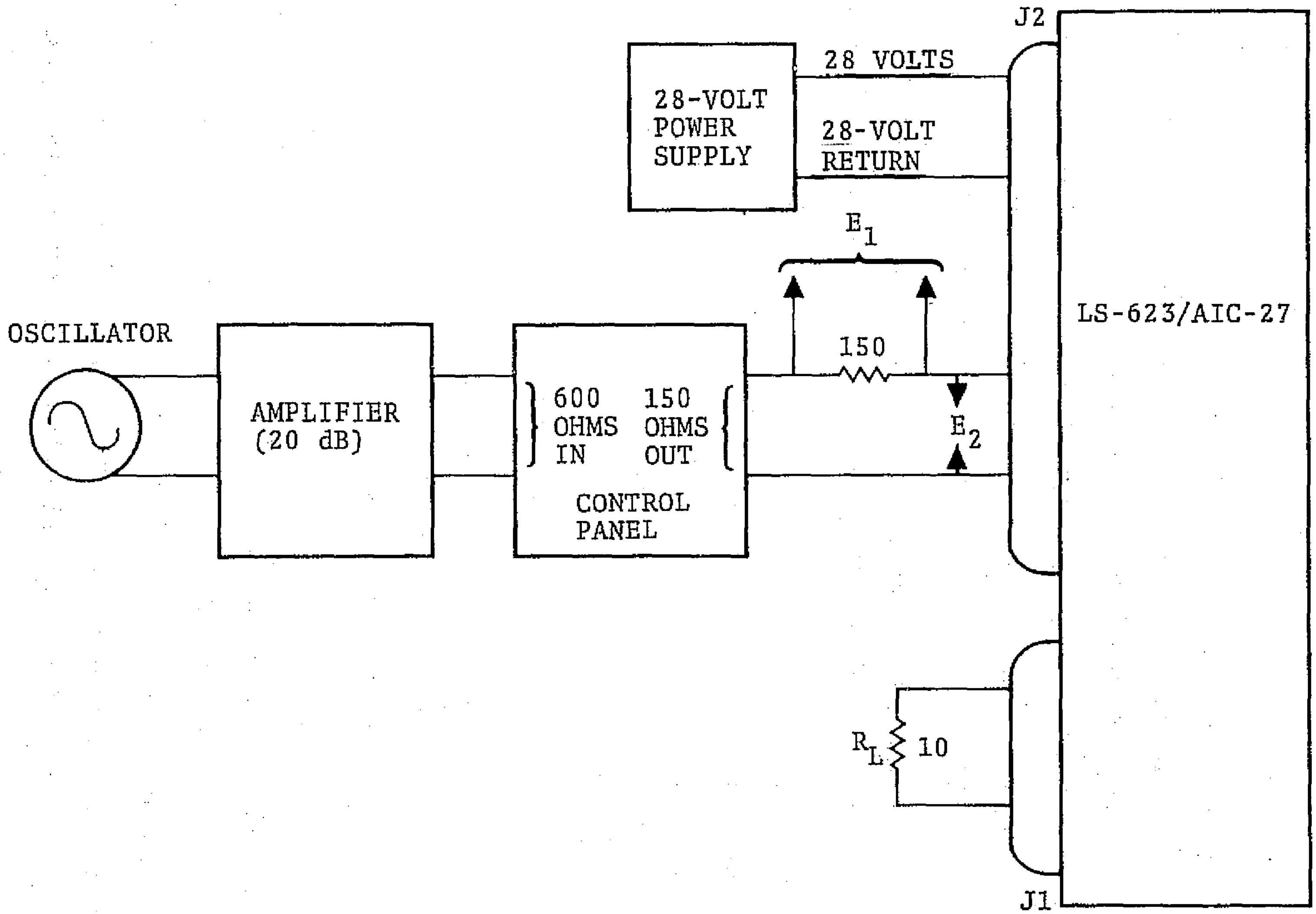


Figure 4-3. — Test setup: receive section.

6. Measure E_1 and record the value on line 1 of the data sheet.

7. Compute the input impedance using the following formula:

$$Z_{IN} = \frac{225}{E_1}$$

8. Record Z_{IN} on line 2.

4.2.2 Output Impedance

1. Measure the voltage E_L across pins D and B of J1 and record the resultant value on line 3.

2. Remove the 10-ohm resistor and measure the voltage (E) across pins D and B. Record this voltage on line 4.

3. Compute Z_{OUT} according to the following formula:

$$Z_{OUT} = \frac{10(E - E_L)}{E_L}$$

4. Record this value on line 5.

4.2.3 Output Range

1. Reconnect the 10-ohm resistor across pins D and B of J1.

2. Measure and record on lines 6 and 7 the voltage across the 10-ohm resistor with the volume control in the full clockwise and full counterclockwise positions.

3. Connect the equipment as shown in figure 4-4.

4. Set the oscillator to obtain 0.25 mV across pins C and E at 1000 Hz.

5. Measure the voltage across pins B and D and record on line 8, the value obtained with the volume control in the full clockwise position.

4.2.4 Frequency Response

1. Reconnect the equipment as shown in figure 4-3.

2. Check to assure that the volume control is in full clockwise position.

3. Set the power switches of the 28-volt power supply, the 20 dB amplifier, the control panel and the oscillator to ON.

4. Set the oscillator frequency to 1000 Hz and the level to obtain 1.5 volts across pins 4 and 5.

5. Measure the voltage E_L across R_L and record the value on line 9.

6. Multiply this voltage by 0.71 and record the value on lines 10 and 11 of the data sheet.

7. Find the frequencies which yield this voltage across R_L. Record these frequencies on lines 10 and 11.

8. Measure and record the voltages (E_L) obtained across R_L for the frequencies listed on lines 12 through 21.

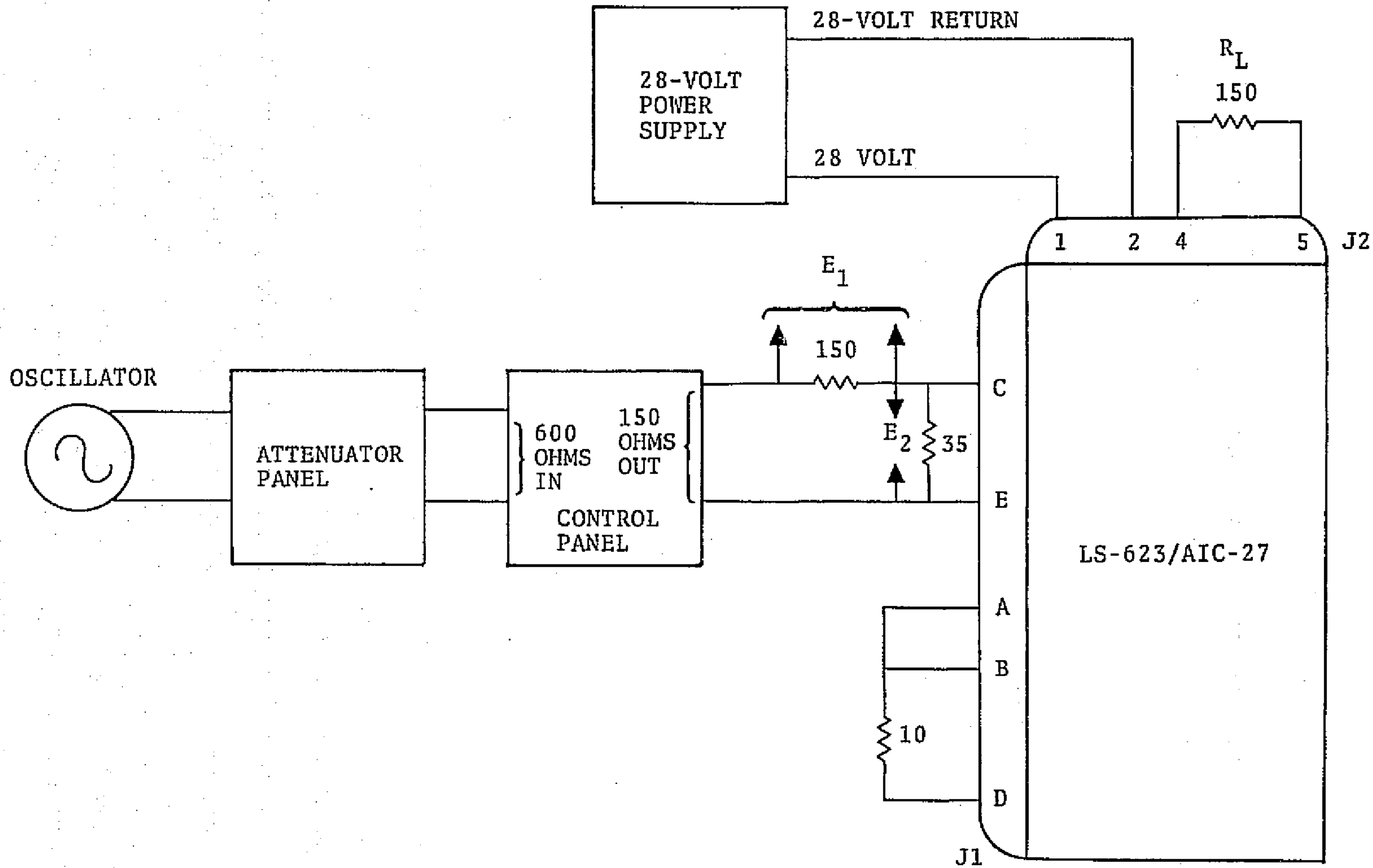


Figure 4-4. — Test setup: sidetone level.

4.2.5 Harmonic Distortion

1. Measure and record the harmonic distortion at R_L for the frequencies listed on lines 22 through 30.

4.2.6 Internal Noise

1. Set the signal generator power switch to OFF.
2. With the volume control in the full clockwise position measure the rms noise across R_L and record the value on line 31.

4.2.7 Current Requirement

1. Set the 28-volt power supply power switch to OFF.
2. Connect an ammeter in series with the 28-volt power supply.
3. Turn on the 28-volt power supply.
4. Measure the input current with the volume control in the full clockwise and full counterclockwise positions. Record the values on lines 32 and 33.
5. Turn on the oscillator and set the frequency to 1000 Hz and the level to 1.5 volts.
6. Measure the input current for both volume control positions as in step 4. Record the currents on lines 34 and 35.
7. Turn off all power supplies and test equipment.

5.0 C-9458/AIC-27 CENTRAL CONTROL UNIT TEST PROCEDURE

The AN/AIC-27 is a 30-channel audio distribution system. The AIC-27 Crew Station Unit has 12 transmit/receive (T/R) switches which are each assigned a channel through the wiring of a programming connector.

Eight connectors have been provided to perform the tests of this procedure. The eight connectors are wired in only three ways, as listed in table I. When the test procedure calls for transmitting on a given channel, for example, channel 19, the following procedure will be used:

1. Determine from table C-I which programming connector to use. For example, channel 19 requires the use of programming connector PC-2.
2. Install this connector in the crew station.
3. From table I, determine the appropriate T/R switch to use. For channel 19 switch 7 is the proper one.
4. If this T/R switch <u>is</u> <u>not</u> switch 9, then short pins 4 and 7 of J3 of the crew station. Then momentarily pull out the T/R switch.
5. If switch 9 is the proper switch, then check to assure that pins 4 and 7 <u>are</u> <u>not</u> shorted together. Then momentarily pull out switch 9.

TABLE I. — CHANNEL ASSIGNMENT TO THE PROGRAMMING CONNECTORS

T/R switch #	Channel assignment PC - 1	PC - 2	PC - 3
1	1	13	25
2	2	14	26
3	3	15	27
4	4	16	28
5	5	17	29
6	6	18	30
7	7	19	
8	8	20	
9	9	21	
10	10	22	
11	11	23	
12	12	24	

5.1 TRANSMIT SECTION TESTS

5.1.1 Input Impedance

1. Connect the equipment as shown in figure 5-1 using plug P-1.
2. Turn on the +28 volt power supply and the test equipment.
3. Adjust the signal generator to obtain 1.5 volts at 1000 Hz at E_2. Use a floating input voltmeter for all measurements involving Z_{IN}.
4. Measure E_1 and record the value on data sheet C-1.
5. Compute Z_{IN} according to the following formula: $Z_{IN} = 225/E_1$, record Z_{IN} on the data sheet.
6. Repeat steps 1 through 5 above for the remaining five connectors P2 through P6.

5.1.2 Frequency Response/Harmonic Distortion

1. Connect the equipment in the test set-up of figure 5-1 starting with plug P-1.
2. Activate the channel 2 transmit mode by momentarily pulling out T/R switch 2 of the crew station. The channel 2 transmit light on the test panel should light.
3. Set the signal generator to 1000 Hz, 1.5 volts rms at E_2.
4. Measure the voltage and distortion across the 150-ohm resistor across the channel 2 output.

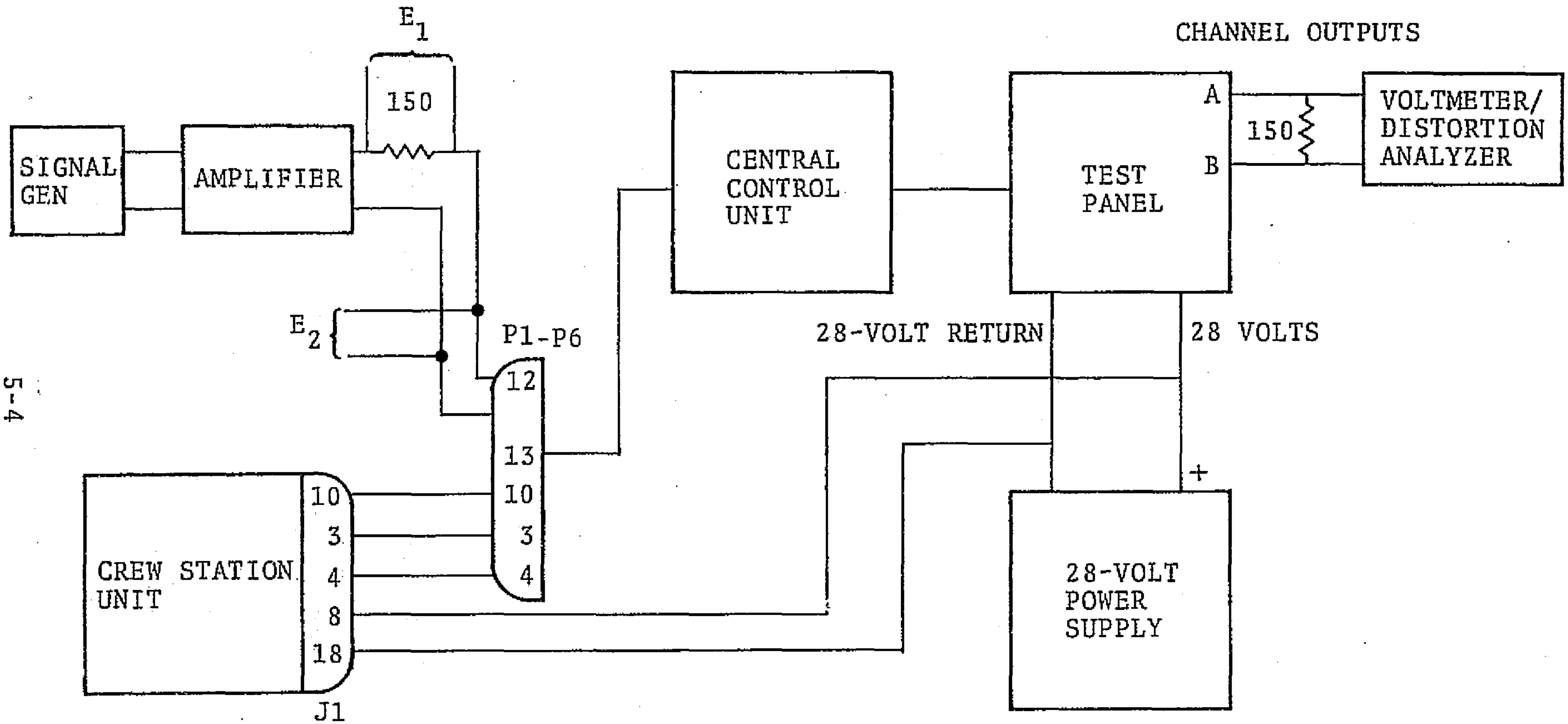


Figure 5-1. — Transmit section test setup.

5. Record these values on data sheet C-1 in column P-1.

6. Compute 0.71 of the voltage found in step 4 above, and record the value on the data sheet.

7. Locate the frequencies, above and below 1000 Hz, which yield the voltage computed in step 6. Record these frequencies on the data sheet. Measure and record the distortion at both of these frequencies. When changing oscillator frequency, check to assure that the oscillator output level remains constant.

8. Measure the voltages and distortion levels across the channel 2 output which result from adjusting the oscillator to the remaining frequencies listed on data sheet C-1. Record these voltages and distortion levels.

9. Repeat steps 1 through 5 and also step 8 with plugs P-2 through P-6 connected in the test set-up of figure 5-1. Record the resultant voltages and distortion levels in the appropriate column of data sheet C-1.

10. Actuate the channel 1 transmit mode with connector P-6 connected in the test set-up of figure 5-1. Connect a 150-ohm resistor across this channel output.

11. Set the signal generator to 1000 Hz and the rms voltage at E_2 to 1.5 volts.

12. Measure the rms voltage and distortion across the channel 1 output. Record these values on data sheet C-2.

13. Compute 0.71 of the voltage found in step 11 and find the two frequencies which yield this voltage across the channel 1 output. Record these frequencies on data sheet C-2.

14. Measure and record the distortion at the two frequencies found in step 13 above.

15. Repeat steps 10 through 14 for the remaining 29 channels. Record the data on data sheets C-2 and C-3

5.1.3 Internal Noise

1. Insure that the test set-up is as shown in figure 5-1. Turn off the signal generator.

2. For each of the 30 channel outputs, measure the peak and rms noise across a 150-ohm load in both the transmit and no transmit modes.

3. Record the resultant voltages on data sheet C-4.

5.1.4 Transmit-to-Transmit Isolation

1. Connect the equipment as shown in figure 5-2, using plugs P-2 and P-3.

2. Set the signal generator to 1000 Hz, 1.5 volts rms at E_2 .

3. Install programming connector PC-1 in both CSU's.

4. Momentarily pull out switch 1 of CSU 1. Check to assure that a 1.5 volt rms sine wave is present across the 150-ohm resistor across the channel 1

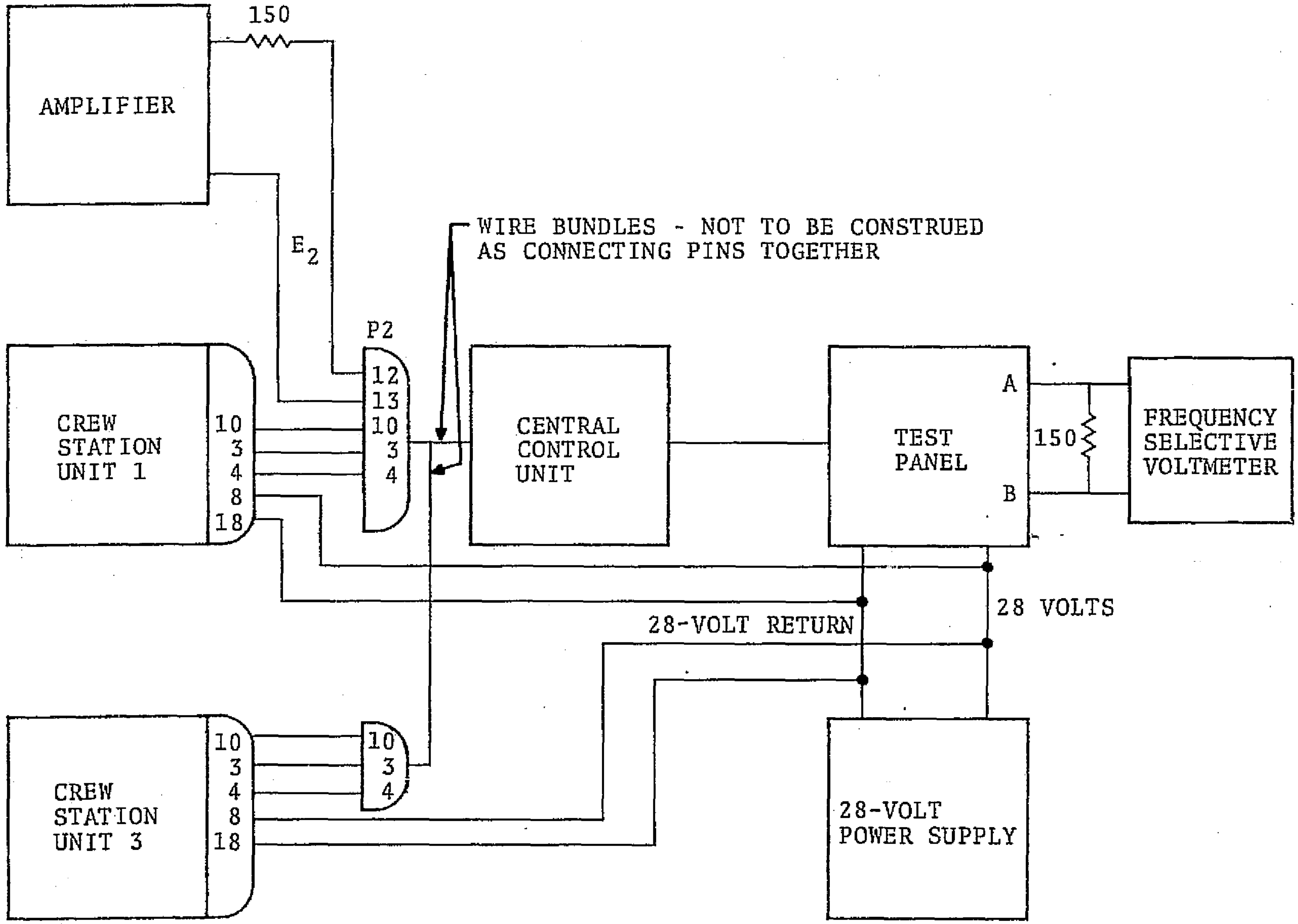


Figure 5-2. — Transmit section isolation test setup.

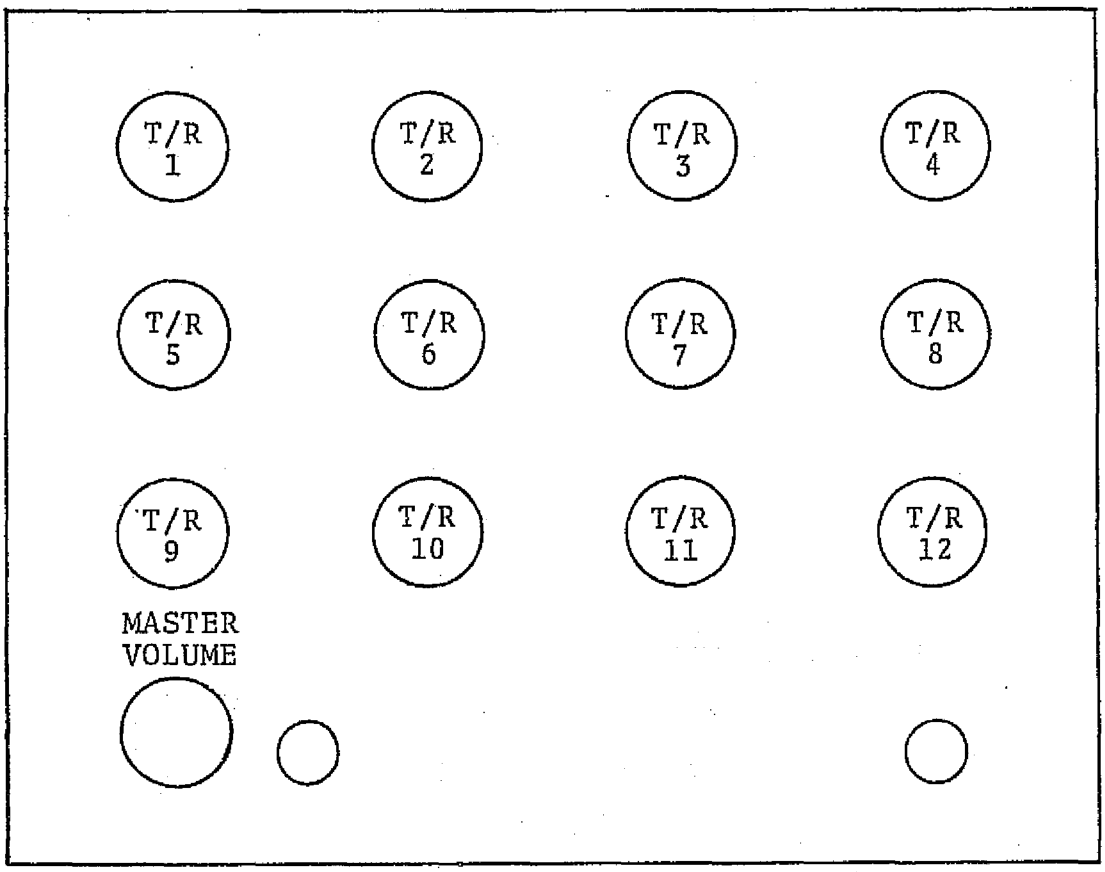


Figure 5-3. — LS-622/AIC-27 crew station unit controls location.

output. The channel 1 transmit light on the test panel should be lighted.

5. Activate transmission on channel 2 from CSU 2. Using a Philco model 129B, frequency selective voltmeter, measure the voltage across channel 2 (150-ohm load). Record this voltage on data sheet C-5.

6. Repeat step 5 for the remaining 28 channels. Record the resultant data on data sheets C-5, C-6, C-7, and C-8. All three programming connectors will be needed to access the required channels.

7. Actuate the channel 2 transmit mode from CSU 1. Check to assure that the transmit indicator light for channel 2 is lighted and that a 1.5 volt rms sine wave is present at the channel 2, 150-ohm load.

8. Measure the voltage across all other channels with these channels in a transmit mode and actuated from CSU 2. Record the resultant values on data sheets C-5, C-6, C-7, and C-8.

9. Repeat steps 7 and 8 for the remaining 28 channels.

5.2 Receive Section Tests

5.2.1 Input Impedance

1. Connect the equipment as shown in Figure 5-4 starting with the channel 1 input. Set the input loading switches on the test panel to the LOAD position.

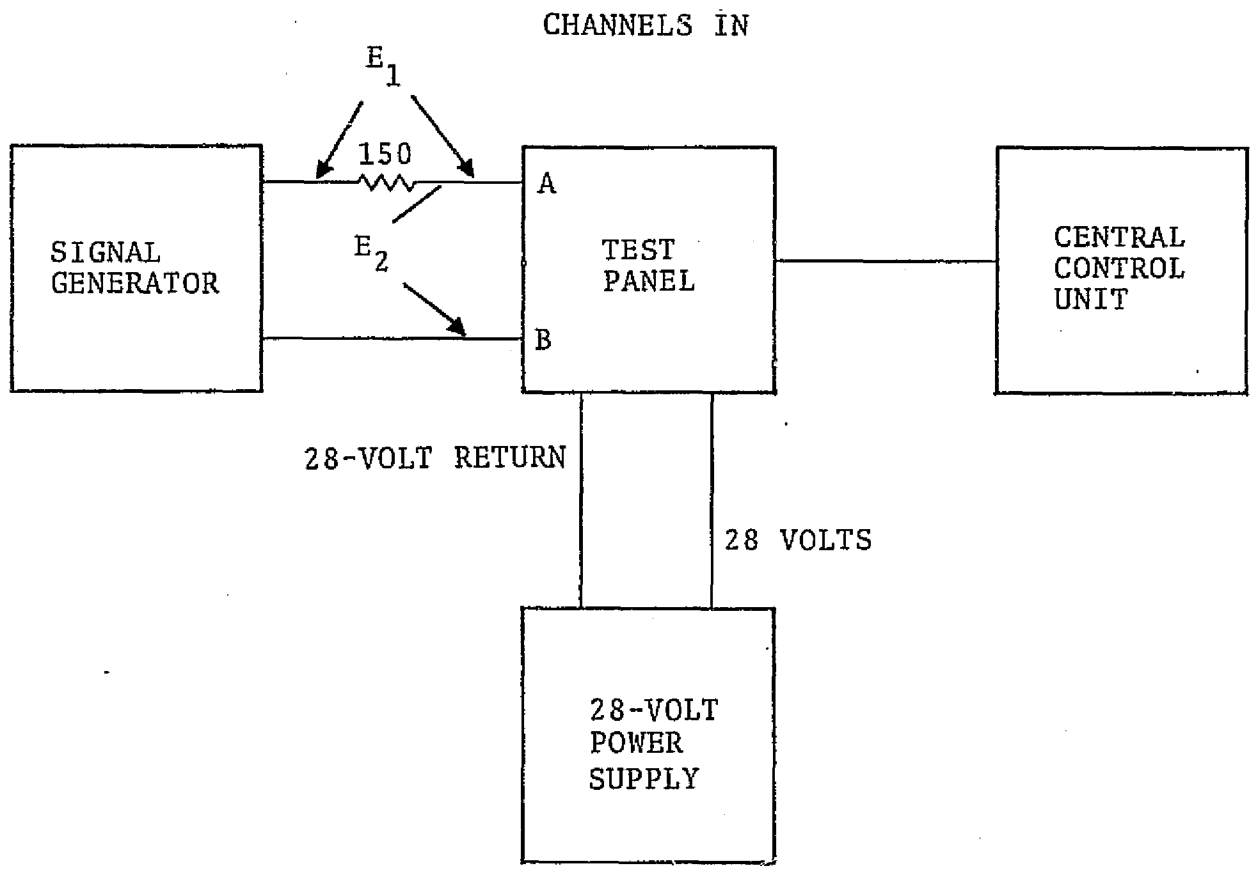


Figure 5-4. — Receive section input impedance test setup.

2. Set the oscillator to 1.5 volts rms at 1000 Hz at E_2 .

3. Measure the voltage, E_1 , and record the value on data sheet C-9.

4. Compute and record on the data sheet Z_{IN} according to the following formula:

$$Z_{IN} = \frac{225}{E_1}$$

5. Repeat steps 1 through 5 for the 29 other channels and record E_1 and Z_{IN} on the appropriate line of data sheet C-9.

5.2.2 Frequency Response/Harmonic Distortion

1. Connect the equipment as shown in figure 5-5 starting with plug P-1 and connecting the signal generator to the channel 2 input.

2. Set the signal generator to 1000 Hz at 1.3 volts rms at E_1 .

3. Install programming connector PC-1 in the crew station unit. Assure that all T/R switches are off.

4. Measure the rms voltage, E , and harmonic distortion for all five volume control positions of T/R switch 2. Record the measured values on data sheet C-10.

5. Compute 0.71 times the voltages measured in step 4 above. Record these voltages on data sheet C-10 in columns 3 and 4.

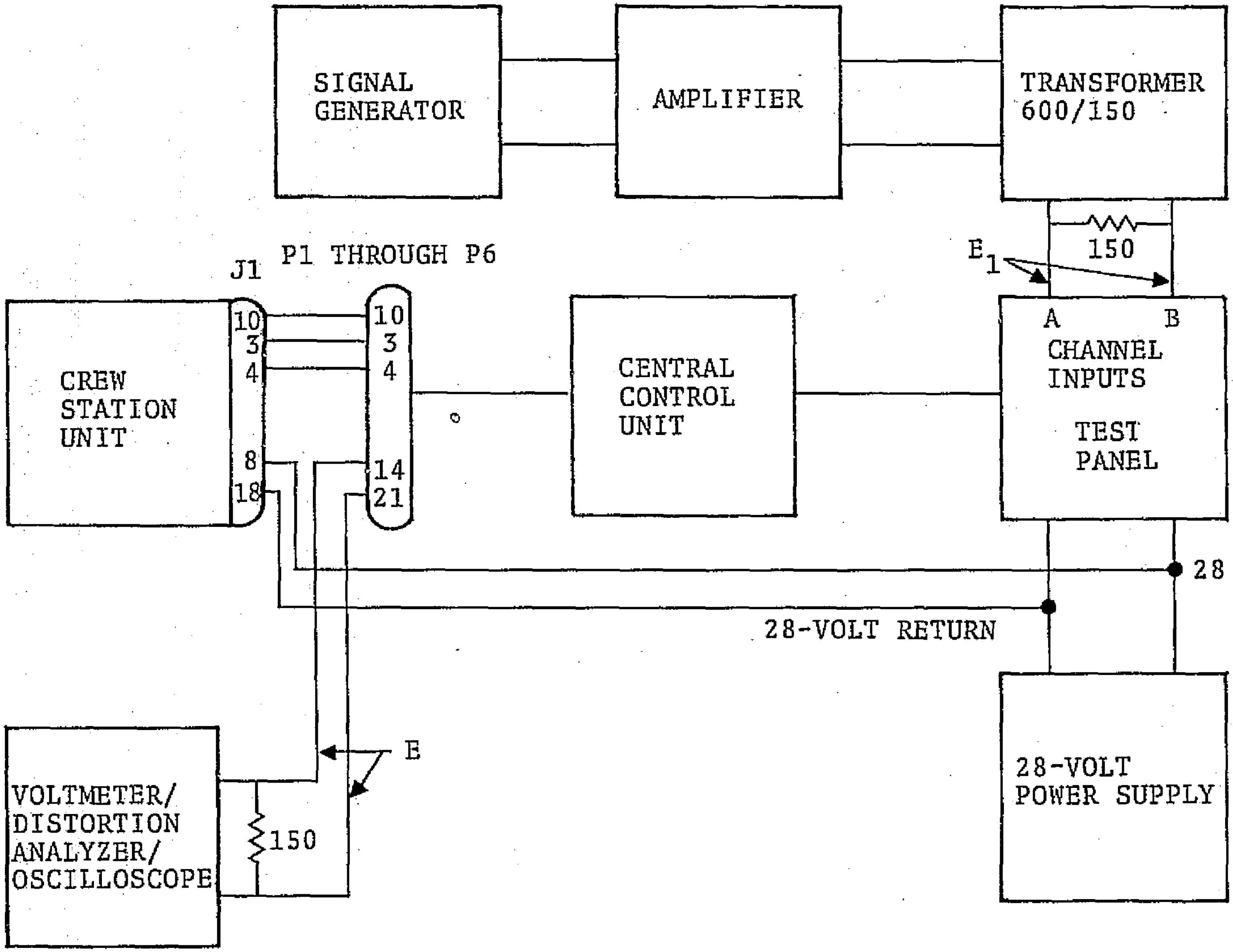


Figure 5-5. — Receive section frequency response/distortion/internal noise test setup.

6. Find the two frequencies which yield these voltages, E for the various volume control positions. Record these frequencies in columns 3 and 4 of the data sheet.

7. Measure and record the distortion at these two frequencies for all five volume control positions.

8. Measure and record the voltage and distortion at all five volume control positions for the remaining frequencies listed on the data sheet.

9. Repeat the above procedure with the remaining five plugs, P-2 through P-6 connected in the test set-up of figure 5-5. Record the resultant data on data sheets C-11 through C-15.

10. Repeat steps 1 through 7 above for all of the channels listed on data sheet C-12. Use plug P-6, only, and volume control position 5, only. Record the resultant data on data sheets C-16, C-17, and C-18.

5.2.3 Internal Noise

1. Connect the equipment as shown in figure 5-5 using plug P-2.

2. Turn off the signal generator and the amplifier.

3. Measure the peak and rms noise for the T/R switch positions listed on data sheet C-19. Record the resultant values on the data sheet.

4. Repeat the above procedure for plugs P-2 through P-6.

5.2.4 Receive-to-Receive Isolation

1. Connect the equipment as shown in figure 5-6 starting with plugs P-2 and P-3 for CSU 1 and 2 respectively.
2. Adjust the signal generator to obtain 0 75 volts rms, 1000 Hz, at E_1 with T/R switch 2 in position 5.
3. Set channel 1 to receive at full volume (T/R position 5) at CSU 2. Set all other CSU 2 T/R switches to OFF.
4. Measure the voltage E_1 as shown in the diagram, using the frequency selective voltmeter. Record this voltage on data sheet C-20.
5. Repeat steps 3 and 4 for channels 3 through 30.
6. Repeat steps 3 and 4 for plugs P-1, P-4, P-5, and P-6. Record the data on data sheet C-20.
7. Connect the equipment as shown in figure 5-7. Install programming connector PC-1 in each CSU.
8. Set all volume controls to position 5.
9. Adjust the signal generator level to obtain 0.75 volts at E_1 .
10. Set CSU 2, T/R switch 2 to position 5.
11. Measure and record on data sheet C-20 (under composite) the voltage, E_1 , using the frequency selective voltmeter as before.

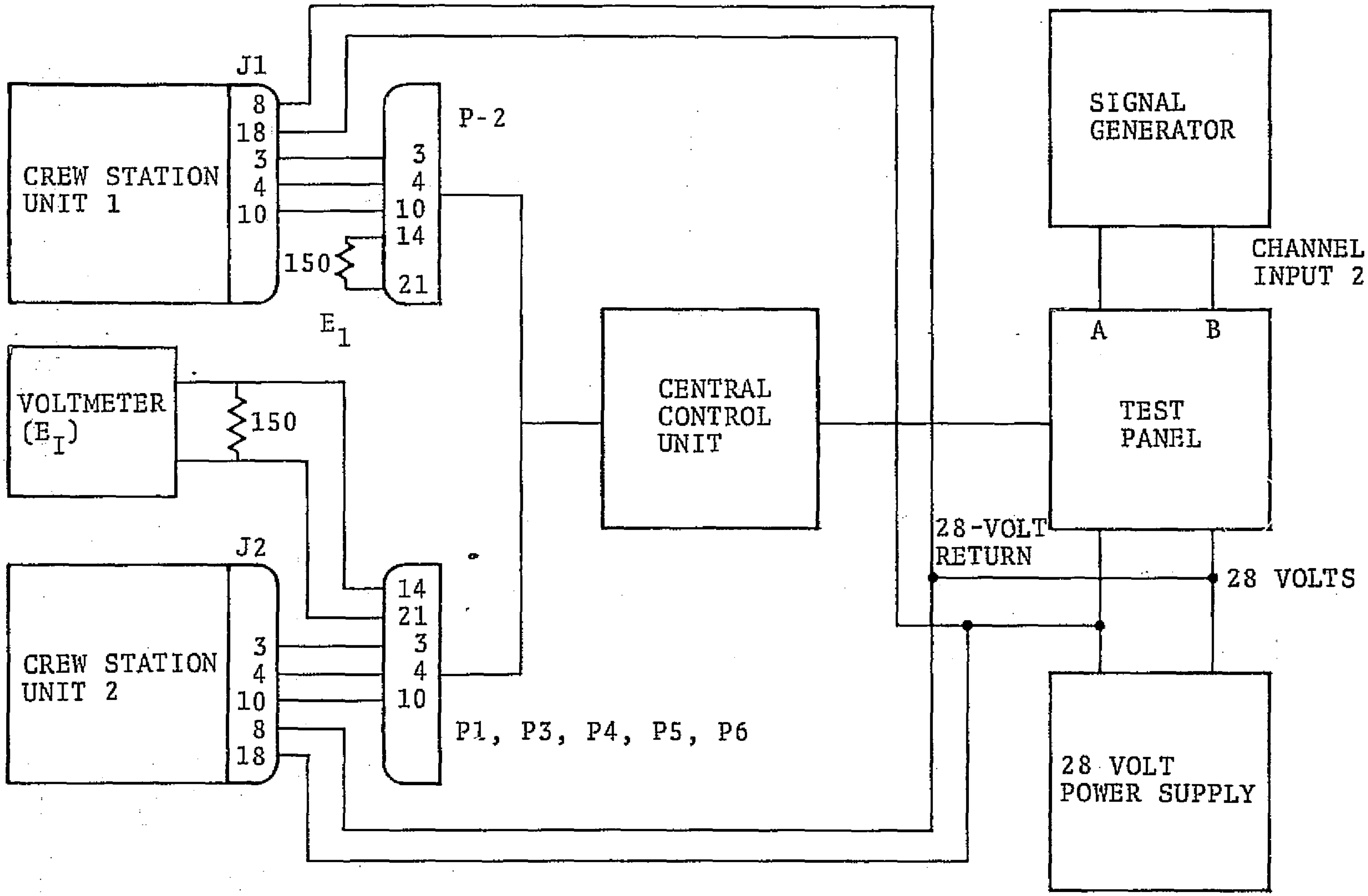
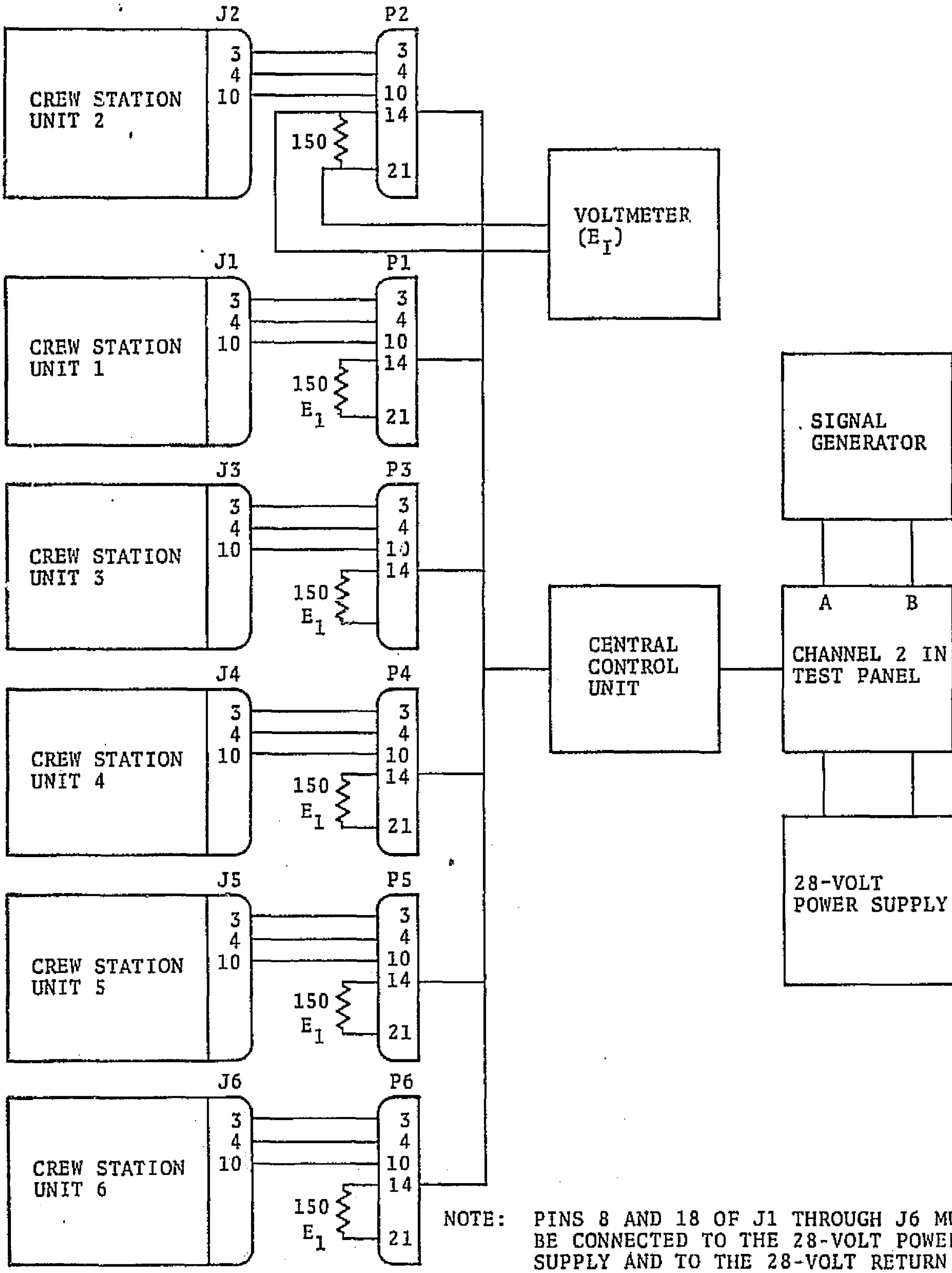


Figure 5-6. — Receive section isolation test setup.



NOTE: PINS 8 AND 18 OF J1 THROUGH J6 MUST BE CONNECTED TO THE 28-VOLT POWER SUPPLY AND TO THE 28-VOLT RETURN, RESPECTIVELY.

Figure 5-7. — Receive section test setup.

5.3 AUXILIARY TESTS

5.3.1 Receive-to-Transmit Crosstalk

1. Connect the equipment as shown in figure 5-8 starting with the channel 1 output and plug P-1.
2. Adjust the signal generator to obtain 0.75 volts, 1000 Hz, at E_1 with the channel 2 receive volume set in position 5.
3. Activate the channel 1 transmit mode. Measure the voltage across the channel 1 output as shown, using the frequency selective voltmeter.
4. Record the voltage on data sheet C-21.
5. Repeat the above procedure for channels 2 through 30. Record the resultant data on data sheets C-21 and C-22.
6. Repeat the above procedure for plugs P-2 through P-6.
7. Connect the test equipment as shown in figure 5-9. Adjust the signal generator to obtain 1.5 volts rms, 1000 Hz, at E .
8. Set all crew stations to receive channel 2 at full volume and set all other T/R switches to OFF.
9. Set CSU 6 to transmit on channel 1.
10. Measure the voltage across the channel 1 output using the frequency selective voltmeter.
11. Record the voltage on data sheet C-21 in the column marked ALL.

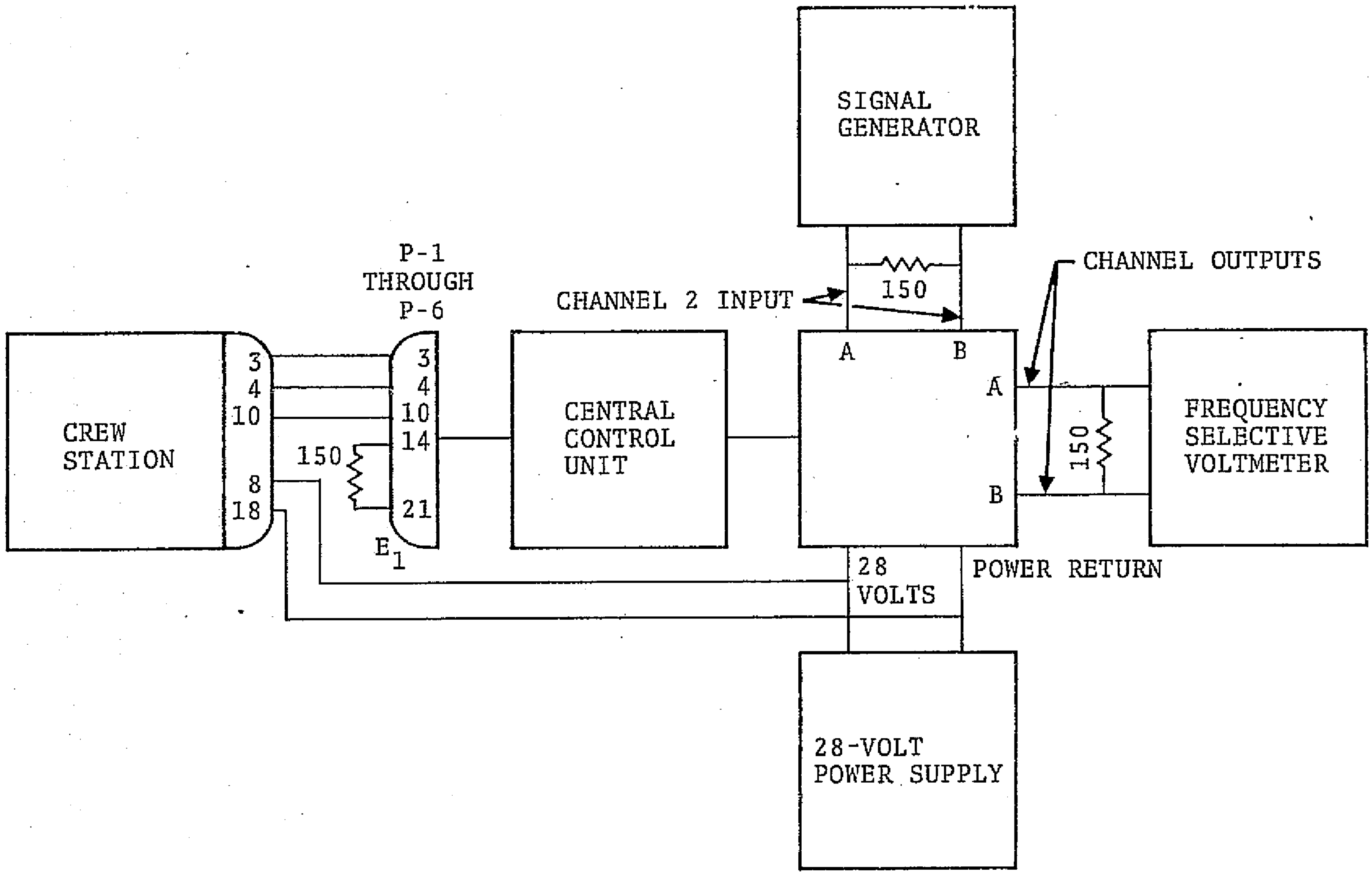


Figure 5-8. — Receive-to-transmit crosstalk test setup 1.

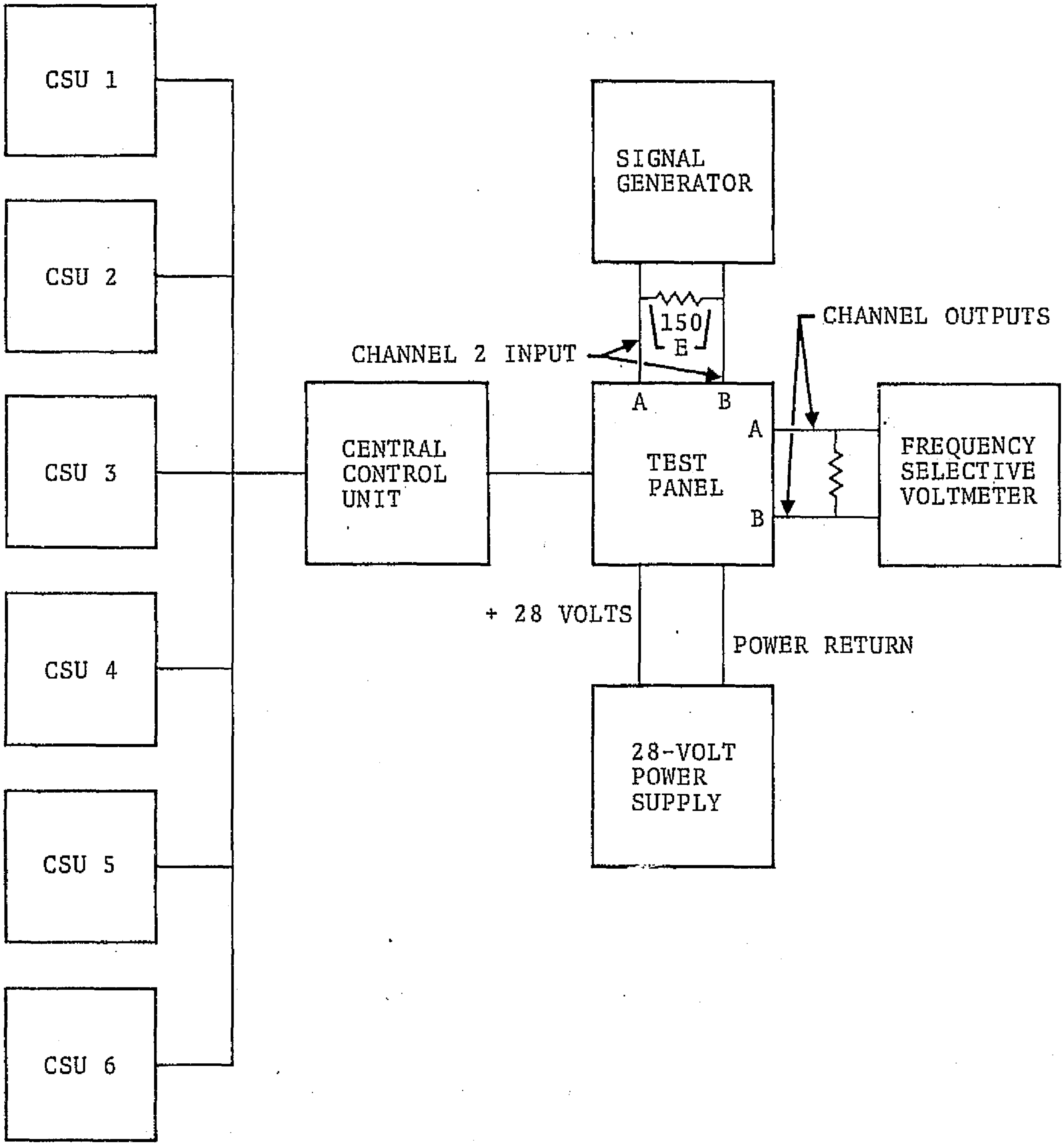


Figure 5-9. — Receive-to-transmit crosstalk test setup 2.

12. Repeat steps 9, 10, and 11 for the remaining 29 channels.

5.3.2 Transmit-to-Receive Crosstalk

1. Connect the equipment as shown in figure 5-10, starting with plug P-1.
2. Set CSU 1 to transmit on channel 2. Adjust the signal generator to obtain 1.5 volts rms, 1000 Hz, at E .
3. Set CSU 2 to receive channel 1 at full volume (position 5). Set all other T/R switches to OFF.
4. Measure the voltage, E_c , as shown in the illustration. Record E_c on data sheet C-23.
5. Repeat steps 3 and 4 for the remaining 29 channels.
6. Repeat steps 3, 4, and 5 with plugs P-3, P-4, P-5, and P-6 connected to CSU 2.

5.3.3 Current Requirements

1. Disconnect the plugs from the crew station units. Disconnect the 28-volt power supply from the crew station units.
2. Turn on the 28-volt power supply.
3. Measure the current as shown and record the value on data sheet C-24.

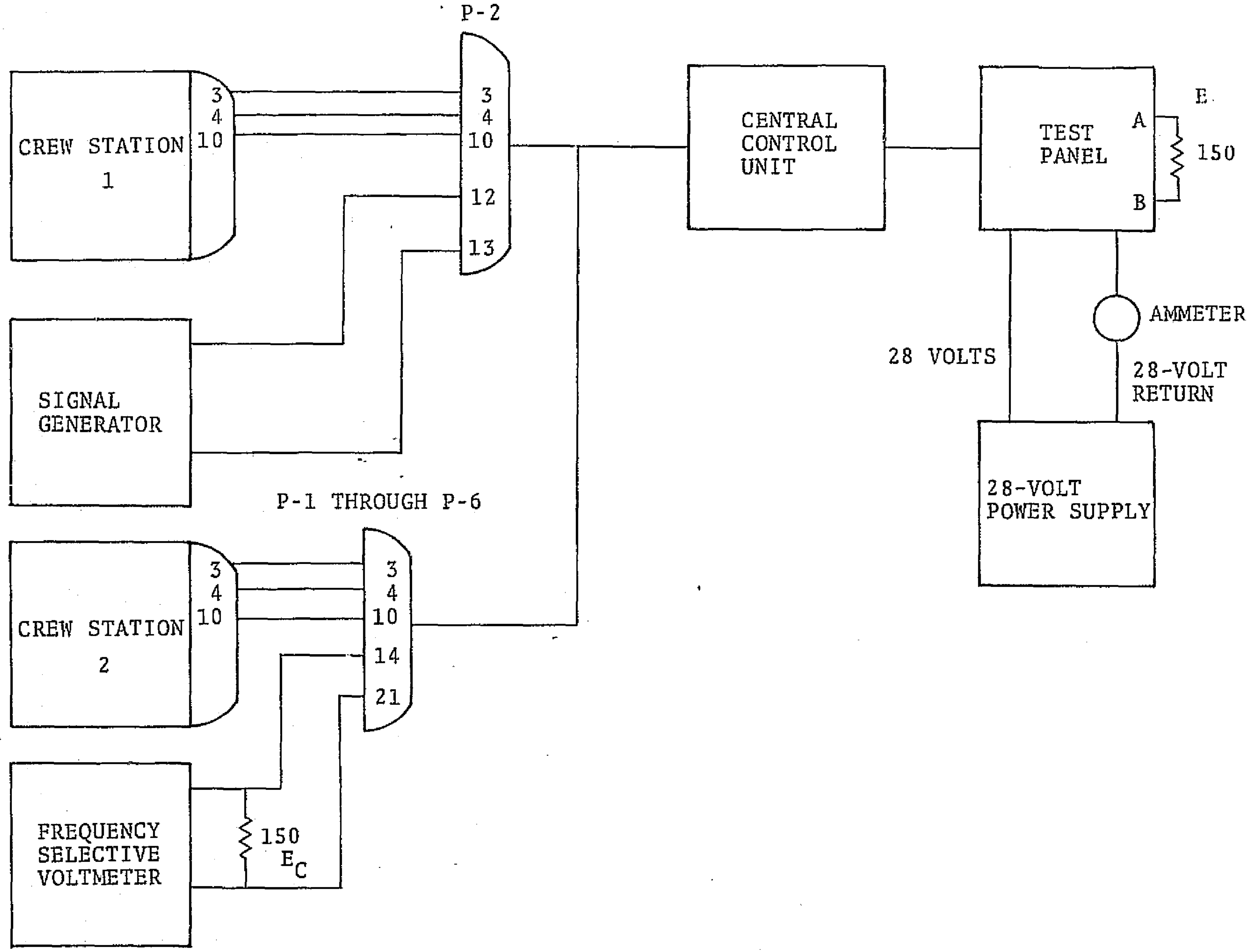


Figure 5-10. — Transmit-to-receive crosstalk test setup.

6.0 AN/AIC-27 SYSTEM TEST PROCEDURE

The tests which the following sections describe, requires various test set-ups. Figure 6-1 is typical for the intercomm mode and transmit mode tests, figure 6-2 is typical for the receive section tests and separate illustrations are provided for the auxiliary tests.

6.1 INTERCOMM MODE TESTS

6.1.1 Frequency Response/Distortion

1. Connect the equipment as shown in figure 6-1.
2. Set the signal generator to obtain 0.25 mV across the 35-ohm resistor at a frequency of 1000 Hz.
3. Set CSU 1 to transmit on channel 1, according to the procedure of section 5.0.
4. Set CSU 2 to receive channel 1 at full volume (both the channel 1 volume and the master volume).
5. Connect the channel 1 output on the test panel to the channel 1 input on the test panel. Assure that the channel input load switches are in the LOAD position.
6. Measure the voltage and distortion as shown in the illustration, across pins 7 and 8 and record the voltage on data sheet D-1 and distortion on data sheet D-2.
7. Repeat the above procedure for the channels listed on data sheet D-1 and D-2.

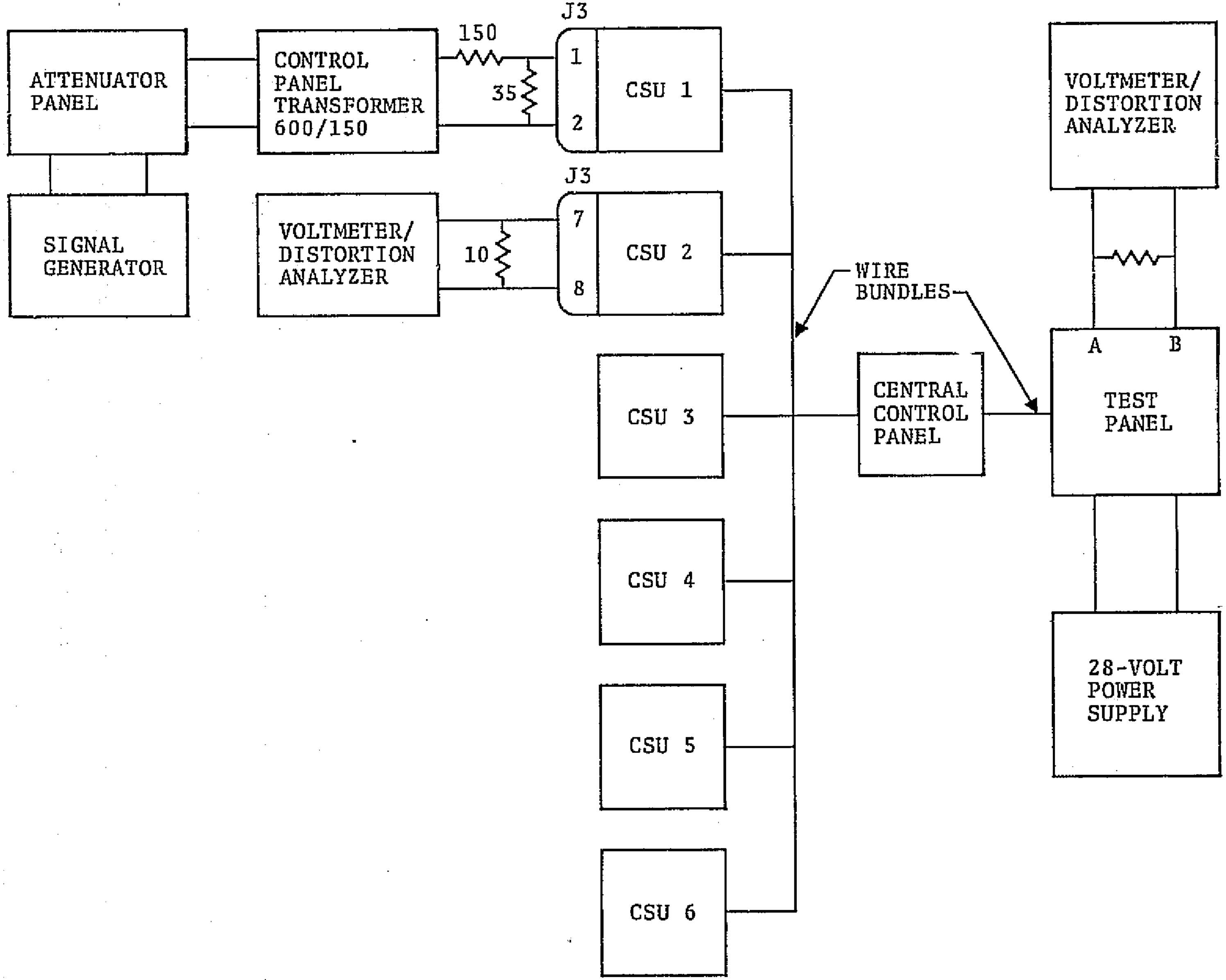


Figure 6-1. — Intercomm mode and transmit mode typical test setup.

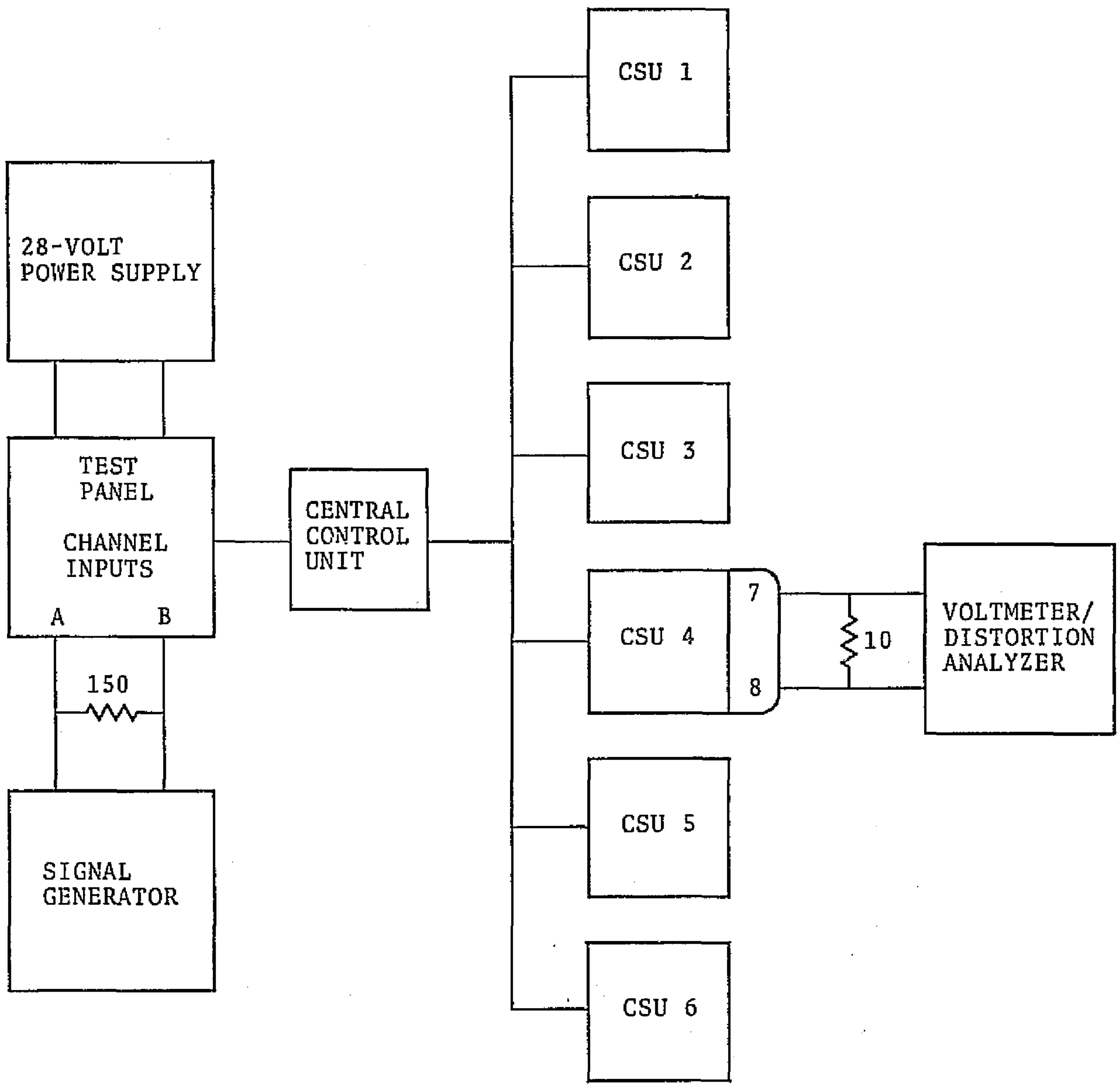


Figure 6-2. — Receive section typical test setup.

8. Repeat the above procedure for the remaining frequencies listed on the data sheets. Ignore the columns marked 3 dB or -3 dB.

9. For the columns marked 3 dB or -3 dB find the frequencies above and below 1000 Hz which result in a voltage 3 dB below the voltage measured at 1000 Hz. Enter these frequencies in the 3 dB and -3 dB columns of data sheet D-1. Measure the distortion at these frequencies and enter the percent distortion on data sheet D-2.

10. Connect the channel 2 output to the channel 2 input on the test panel.

11. Set CSU 1 to transmit (at 1000 Hz) on channel 2 as described in steps 2 and 3.

12. Measure the rms voltage and percent distortion across pins 7 and 8 of each of the six crew stations. The crew stations must be adjusted to receive channel 2 at full volume, with all other channel volume controls set to OFF.

13. Record these voltages and distortion levels on data sheets D-3 and D-4.

14. Multiply each voltage found in step 12 by 0.71 (3 dB).

15. Find the two frequencies, above and below 1000 Hz which yield the voltages computed in step 14 above for each crew station measurement (12 frequencies in all).

16. Record these frequencies on data sheet D-3.

17. Measure the percent distortion for the two frequencies for each of the six crew stations. Record these distortion levels on data sheet D-4.

18. Repeat the above test procedure with transmission occurring from CSU 2 through 6.

6.1.2 Internal Noise

1. Set the master volume control of all crew stations to one step below full gain.

2. Short all of the alarm inputs (on the test panel) to circuit ground.

3. Install programming connector PC-1 in each of the crew stations.

4. Set switch 9 of CSU 1 to the full clockwise position. Momentarily pull out switch 9. Set all other T/R switches to OFF.

5. Terminate the channel 9 output on the test panel in a 150-ohm load.

6. Short out all other channel outputs (A to B).

7. Connect a 10-kHz low pass filter across pins 7 and 8 of CSU 1. Pins 7 and 8 should also be loaded with 10 ohms.

8. No signal should be applied to pins 1 and 2 of J3 of CSU 1 but these pins should have 5 ohms connecting them.

9. Measure the rms voltage at the output of the 10-kHz filter Record this voltage on data sheet D-5.

10. Disconnect the alarm shorts and measure the rms voltage again. Record the voltage on data sheet D-5.

11. Short the alarms again and remove the 10-kHz filter. Measure and record the rms voltage across pins 7 and 8.

12. Repeat the above test procedure for crew stations 2 through 6.

6.1.3 Loop-to-Loop Isolation

1. Disconnect the alarm shorts, the 10-kHz filter, and the channel output shorts used in the previous tests.

2. Connect the channel 1 output to the channel 1 input on the test panel. Similarly, connect the output to the inputs of channels 6, 11, 16, 21, and 26.

3. Set CSU 1 to transmit on channel 1. Adjust the signal generator to 1000 Hz and 0.25 mV across the 35-ohm resistor.

4. Set CSU 2 to receive channel 1 at full volume (both the master volume and the channel volume). Set all other T/R switches to OFF.

5. Set CSU 3 to transmit (no signal) and CSU 4 to receive (full volume) on channel 6.

6. Measure the voltage across pins 7 and 8 (10-ohm load) of J3 of CSU 4. Record this voltage on data sheet D-6.

7. Repeat steps 5 and 6 for the remaining channels listed on the data sheet.

8. Repeat steps 3 and 4 for channel 6.

9. Repeat steps 5, 6, and 7.

10. Repeat steps 3 and 4 for channel 11.

11. Repeat steps 5, 6, and 7.

12. Repeat steps 3 and 4 for channel 16.

13. Repeat steps 5, 6, and 7.

14. Repeat steps 3 and 4 for channel 21.

15. Repeat steps 5, 6, and 7.

16. Repeat steps 3 and 4 for channel 26.

17. Repeat steps 5, 6, and 7.

18. Repeat the above procedure, but substitute crew station 5 for CSU 3; substitute CSU 6 for CSU 4. Be sure to set the T/R switches of CSU 3 and CSU 4 to OFF.

19. Repeat steps 1 through 17 above with the following substitutions:

    1. CSU 3 for CSU 1
    2. CSU 4 for CSU 2
    3. CSU 1 for CSU 3
    4. CSU 2 for CSU 4

6.1.4 Call Mode Tests

1. Connect the equipment as shown in figure 6-1.

2. Set the oscillator to obtain 0.25 mV, 1000 Hz, across the 35-ohm resistor.

3. Set the master volume control to the full clockwise position for all 6 CSU's. Depress the CALL button.

4. Measure the voltage and percent distortion across pins 7 and 8 (10-ohm load) of J3, CSU 2.

5. Compute 0.71 (3 dB) of the voltage measured in step 4 above. Find the two frequencies, one above and one below 1000 Hz which yield this voltage across pins 7 and 8. Record this data on data sheet D-7.

6. Measure and record the distortion at these two frequencies.

7. Measure and record the voltage and distortion for the remaining frequencies listed on the data sheet.

8. Repeat the above test procedure (steps 2 through 7); transmit from CSU 3 and take the measurements at CSU 4.

9. Repeat steps 2 through 7 above, transmitting from CSU 5 and receiving at CSU 6.

6.2 TRANSMIT SECTION TESTS

6.2.1 Frequency Response/Distortion

1. Connect the equipment as shown in figure 6-1.

2. Set the signal generator to obtain 0.25 mV at 1000 Hz across the 35-ohm resistor.

3. Set CSU 1 to transmit on channel 1.

4. Measure and record on data sheet D-8 the voltage and distortion across the channel 1 output (150-ohm load).

5. Multiply the voltage found in step 4 above by 0.71.

6. Find the frequencies above and below 1000 Hz which yield the voltage computed in step 5. Record these frequencies on data sheet D-8.

7. Measure the distortion at these two frequencies and record the percentage on data sheet D-8.

8. Repeat steps 2 through 7 using CSU 2, 3, 4, 5, and 6; using channel 2 as the channel of transmission. Record the resultant data on data sheet D-9.

9. For CSU 2, transmitting on channel 2, measure the voltage and distortion for the remaining frequencies listed on data sheet D-9.

6.2.2 Internal Noise

1. Connect the equipment as shown in figure 6-1. Set the signal generator to OFF.

2. Transmit from channel 1 from CSU 1. Terminate the channel 1 output in a 150-ohm load.

3. Measure and record on data sheet D-10 the peak and rms noise across the channel 1 output.

4. Repeat steps 2 and 3 for channels 6, 11, 16, 21, and 26.

5. Repeat steps 2, 3, and 4 for CSU's 2, 3, 4, 5, and 6.

6.2.3 Transmit-to-Transmit Isolation

1. Connect the equipment as shown in figure 6-1, with

the signal generator attenuator and resistors connected to CSU 1.

2. Terminate the channel 2 output in a 150-ohm load.

3. Set CSU 1 to transmit on channel 2 and all other T/R switches to OFF. Set the oscillator to obtain 0.25 mV across the 35-ohm resistor, at 1000 Hz.

4. Set CSU 5 to transmit on channel 1. Terminate the channel 1 output in a 150-ohm load.

5. Using a frequency selective voltmeter measure the channel 1 output. Record the voltage on data sheet D-11.

6. Repeat steps 4 and 5 for the remaining 29 channels.

7. Repeat steps 1 and 3 for CSU 2, then repeat steps 4, 5, and 6.

8. Repeat steps 1 and 3 for CSU 3, then repeat steps 4, 5, and 6.

9. Repeat steps 1 and 3 for CSU 4, then repeat steps 4, 5, and 6.

10. Repeat steps 1 and 3 for CSU 6, then repeat steps 4, 5, and 6.

6.3 RECEIVE MODE TESTS

6.3.1 Frequency Response/Distortion

1. Connect the equipment as shown in figure 6-2.

2. Adjust the signal generator to obtain 1.4 volts. Obtain 1.4 volts rms (1000 Hz) across the 150-ohm resistor across the channel 1 input.

3. Set the CSU 1, channel 1 volume control and the master volume control to receive at full volume. Set all other T/R switches to OFF.

4. Measure and record on data sheet D-12 and D-13, the voltage and distortion across pins 7 and 8 of J3, CSU 1.

5. Compute 0.71 times the voltage found in step 4. Find the frequencies, above and below 1000 Hz, which yield this voltage across pins 7 and 8. Record these frequencies on data sheet D-12. Measure the distortion at these two frequencies and record on data sheet D-13.

6. Repeat steps 2 through 5 above for channels 6, 11, 16, 21, and 26.

7. Repeat steps 2, 3, 4, 5, and 6 for the remaining five crew stations.

8. Set all crew stations to receive on channel 2 at full volume. Connect the oscillator to the channel 2 input (150-ohm load).

9. Adjust the oscillator to obtain 1.4 volts, 1000 Hz, rms across the channel 2 input.

10. Measure the voltage and distortion across CSU 1, J3 pins 7 and 8 (10-ohm load). Record the voltage on data sheet D-14.

11. Compute 0.71 times the voltage found in step 10. Find the frequencies which yield this voltage across pins 7 and 8. Record these frequencies on data sheet D-14.

12. Measure and record the distortion at these two frequencies and record the percentages on data sheet D-14.

13. Measure and record the voltage and distortion for the remaining frequencies listed on data sheet D-14.

14. Repeat steps 9 through 13 for the remaining five CSU's.

6.3.2 Volume Range

1. Connect the signal generator to the channel 2 input. Adjust the signal generator to obtain 1.4 volts rms across the 150-ohm resistor.

2. Connect a voltmeter across pins 7 and 8 of CSU 2 (10-ohm load).

3. Set all channel T/R switches (except for the channel 2 switch) to OFF.

4. Set the master volume control of CSU 2 to position 1 and the channel 2 volume control to position 1.

5. Measure the voltage across pins 7 and 8.

6. Repeat steps 4 and 5 for the remaining channel volume control positions.

7. Repeat steps 4, 5, and 6 for the remaining master volume control positions.

6.3.3 Internal Noise

1. Set the master volume control of all crew stations to the full clockwise position.

2. Assure that the signal generator is off.

3. Measure the peak and rms noise across pins 7 and 8 of each CSU for each of the 6-channel volume control positions. Record these values on data sheet D-16.

6.3.4 Receive Isolation

1. Connect the signal generator to the channel 2 input. Adjust the generator to obtain 1.4 volts rms across 150 ohms.

2. Set CSU 1 to receive channel 2 at full volume (both channel volume and master volume).

3. Measure the voltage across pins 7 and 8 of the remaining five CSU's and record on data sheet D-17.

4. Repeat steps 2 and 3 for the remaining five CSU's.

5. Set CSU's 1, 3, 4, 5, and 6 to receive channel 2 at full volume.

6. Set CSU 2 to receive channel 1 at full volume and measure the voltage across pins 7 and 8 of J3. Record this voltage on data sheet D-18.

7. Repeat step 6 for channels 3 through 30.

6.4 AUXILIARY TESTS

6.4.1 Receive-to-Transmit Crosstalk

1. Connect the equipment as shown in figure 6-3.

2. Adjust the signal generator to obtain 1.4 volts rms across the 150-ohm resistor.

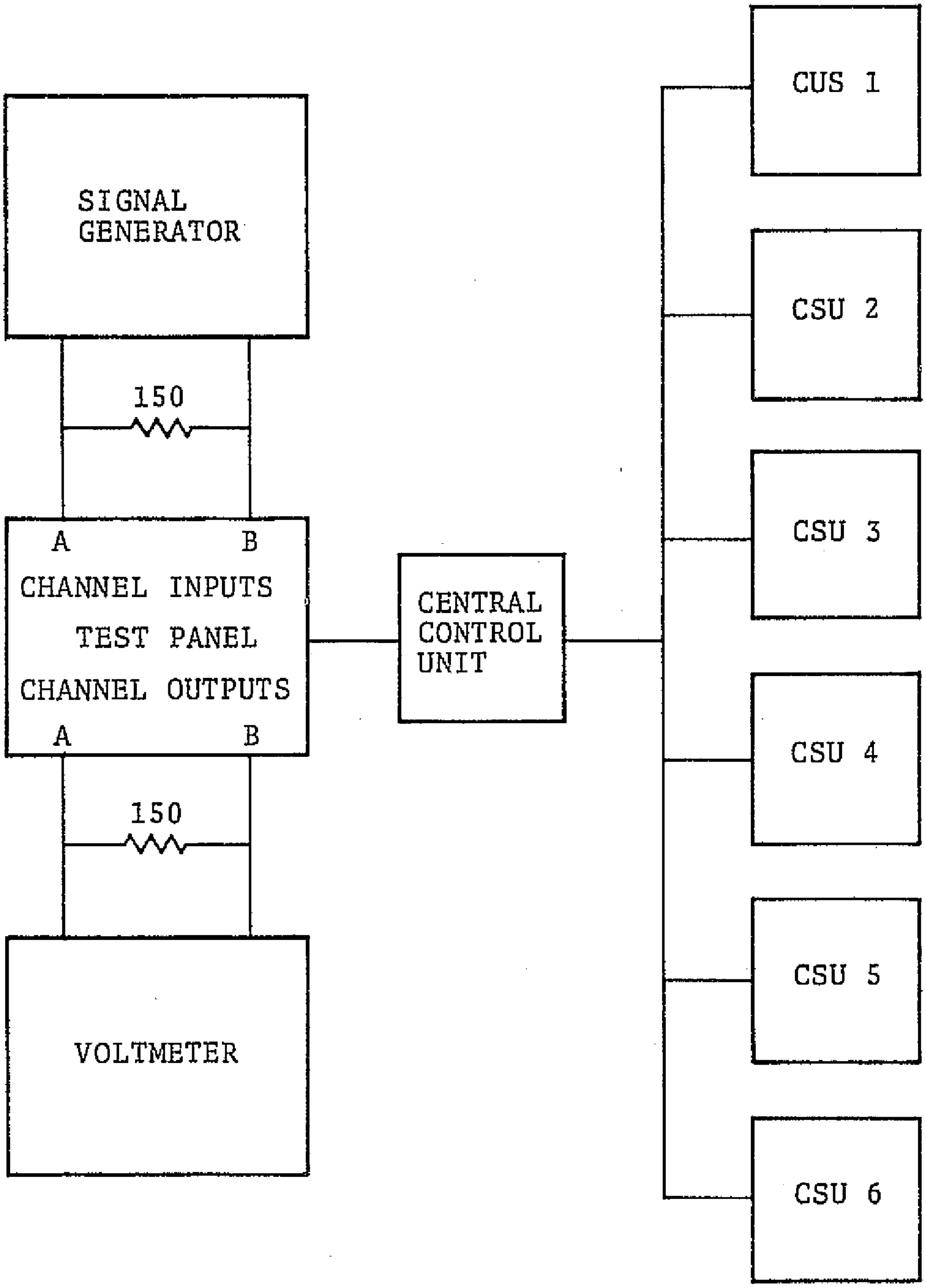


Figure 6-3. — Receive-to-transmit crosstalk test setup.

3. Adjust all crew station volume controls to receive channel 2 at full volume (master volume and channel volume). Set all other T/R switches to OFF.
4. Check to assure that all channel red/black switches on the test panel are set to BLACK.
5. Set the channel 1 T/R switch of CSU 1 to transmit.
6. Measure the voltage across the channel 1 output, using a frequency selective voltmeter. Record this voltage on data sheet D-19.
7. Repeat steps 5 and 6 for the remaining five crew stations.
8. Repeat steps 5, 6, and 7 for channels 6, 11, 16, 21, and 26.
9. Set the channel 1, 6, 11, 16, 21, and 26 red/black channel designation switches on the test panel to RED.
10. Repeat steps 5, 6, 7, and 8.
11. Connect the equipment as shown in figure 6-1, except that the signal generator, control panel, and attenuator panel must be connected to CSU 2, pins 1 and 2.
12. Set the signal generator to obtain 0.25 mV across the 35-ohm resistor.
13. Depress the CALL button of CSU 2.
14. Set CSU 1 to transmit on channel 1.
15. Using a frequency selective voltmeter, measure the voltage across the channel 1 output and record the voltage on data sheet D-20.

16. Repeat steps 13, 14, and 15 for CSU 3, 4, 5, and 6.
17. Repeat steps 13, 14, 15, and 16 for channels 6, 11, 16, 21, and 26.

6.4.2 T/R-to-Transmit Composite Crosstalk

1. Connect the equipment as shown in figure 6-1.
2. Adjust the signal generator to obtain 0.25 mV across the 35-ohm resistor.
3. Set the channel 1, 6, 11, 16, 21, and 26 red/black switches on the test panel to RED.
4. Connect the channel 2 output to the channel 2 input at the test panel.
5. Set CSU 2 to transmit on channel 2.
6. Set all crew stations to receive channel 2 at full volume.
7. Set CSU 1 to transmit on channel 1. Measure the voltage across the channel 1 output using a frequency selective voltmeter. Record this voltage on data sheet D-21.
8. Repeat step 7 for CSU 3, 4, 5, and 6.
9. Repeat steps 7 and 8 for channels 6, 11, 16, 21, and 26.
10. Set the channel 1, 6, 11, 16, 21, and 26 red/black switches to the BLACK position.
11. Repeat steps 8 and 9.

6.4.3 Transmit-to-Receive Crosstalk

1. Connect the equipment as shown in figure 6-1.
2. Adjust the signal generator to obtain 0.25 mV across the 35-ohm resistor.
3. Set CSU 2 to transmit on channel 2.
4. With CSU 1 set to receive at full volume on channel 1, measure the voltage across pins 7 and 8 of J3 of CSU 1. Use a frequency selective voltmeter. Record the voltage on data sheet D-22. Be sure that all other T/R switches are on OFF.
5. Repeat step 4 for CSU 3, 4, 5, and 6.
6. Repeat steps 4 and 5 for channels 6, 11, 16, 21, and 26.

6.4.4 Backup Channel Tests

1. Connect the equipment as shown in figure 6-1.
2. Adjust the signal generator to obtain 0.25 mV across the 35-ohm resistor.
3. Set the backup mode switch on the test panel to the ON position. The backup channel mode light should light.
4. Short out pins 4 and 7 of J3 of CSU 1.
5. Measure the rms voltage and distortion across the channel 1 output (150-ohm load). Record these values on data sheet D-23.
6. Measure and record the voltage and distortion for the remaining frequencies listed on the data sheet.

7. Multiply the voltage found in step 5 by 0.71. Find the two frequencies, above and below 1000 Hz, which yield this voltage across the channel 1 output. Record these frequencies in the +3 dB and -3 dB columns of data sheet D-23.

8. Measure the distortion at the two frequencies found in step 7 and record them on data sheet D-23.

9. Set the signal generator to OFF.

10. Measure the peak and rms noise across the channel 1 output. Record these voltages on data sheet D-23.

11. Connect a signal generator across the channel 1 input (150-ohm load). Connect a voltmeter and distortion analyzer across the CSU 1, J3, pins 7 and 8 (load = 10 ohms).

12. Adjust the signal generator to obtain 1.4 volts rms across the 150-ohm load (1000 Hz).

13. Set the master volume control of CSU 1 to the full clockwise position.

14. Measure the voltage and distortion across the 10-ohm resistor (pins 7 and 8). Record the data on data sheet D-23.

15. Multiply the voltage measured in step 14 by 0.71. Find the frequencies which yield this voltage across pins 7 and 8. Record these two frequencies on data sheet D-23 in the section marked Rx.

16. Measure the voltage and distortion (across pins 7 and 8) for the remaining frequencies listed on data sheet D-23.

17. Set the signal generator to OFF.

18. Measure the peak and rms noise across the channel 1 output and also across pins 7 and 8 of CSU 1. Record these four voltages on data sheet D-23.

6.4.5 Current Requirements

1. Connect the equipment as shown in figure 6-4.

2. Turn on the 28-volt power supply and the 5-volt power supply.

3. Measure the current drawn from each supply and record the current on data sheet D-23.

6.4.6 MSU Tests

1. Connect the equipment as shown in figure 6-5.

2. Adjust the signal generator to obtain 0.25 mV across the 35-ohm resistor, at 1000 Hz.

3. Set CSU 2 to transmit on channel 2 and to receive channel 2 at full volume.

4. Set the MSU volume control to the full clockwise position.

5. Measure the voltage and distortion across pins B and D of J1 of the MSU. Record the voltage and distortion levels on data sheet D-24.

6. Multiply the voltage found in step 5 by 0.71. Find the two frequencies above and below 1000 Hz, which yield this voltage across pins B and D. Record these frequencies on data sheet D-24. Measure the

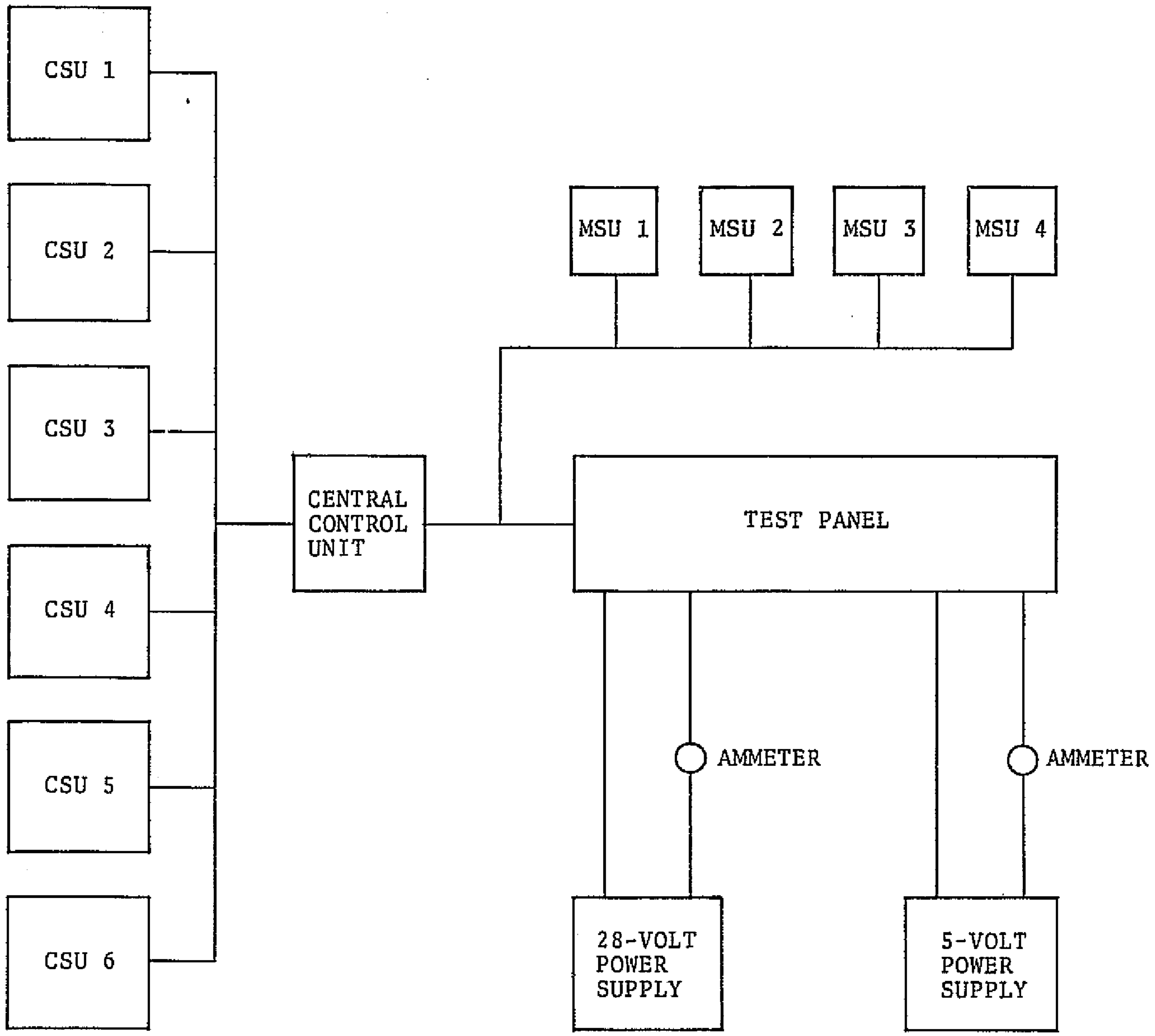


Figure 6-4. — Power requirements test setup.

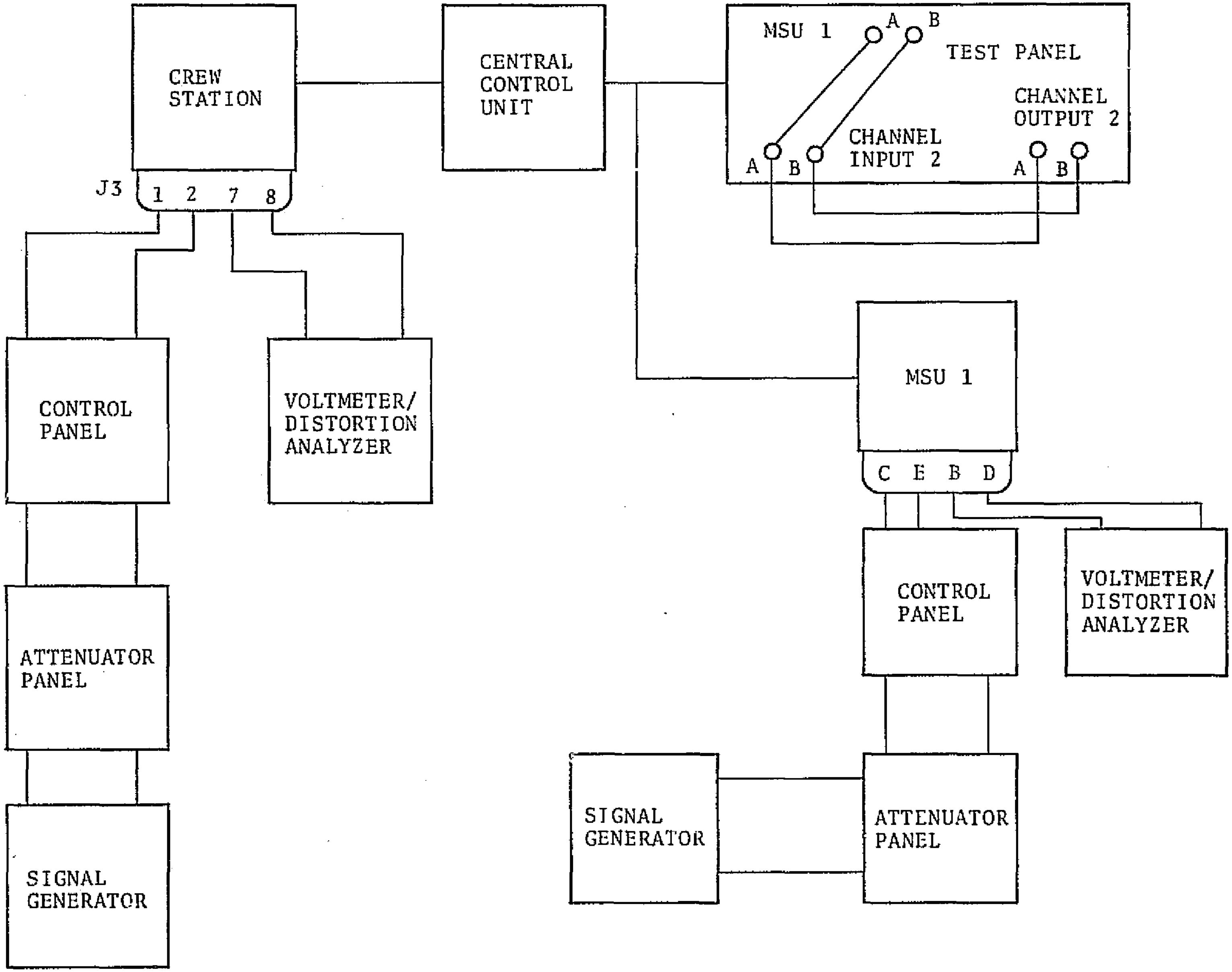


Figure 6-5. — MSU test setup.

distortion at these two frequencies and record the percentages on the data sheet.

7. Measure the voltage and distortion for the remaining frequencies listed on data sheet D-24. Record the resultant data on data sheet D-24.

8. Set the crew station signal generator to OFF and the maintenance station signal generator to obtain 0.25 mV (1000 Hz) across the 35-ohm resistor (at the MSU).

9. Short out pins A and B of J1 of the MSU.

10. Set the CSU to receive channel 2 at full volume.

11. Measure the voltage across pins 7 and 8 of the CSU. Record the voltage on data sheet D-24.

12. Multiply the voltage found in step 11 by 0.71. Find the two frequencies above and below 1000 Hz, which yield this voltage across pins 7 and 8. Record these frequencies on data sheet D-24.

13. Measure the distortion at the two frequencies found in step 11 and record the percentages on the data sheet.

14. Measure the voltage and distortion for the remaining frequencies listed on the data sheet. Record the resultant data on data sheet D-24.

15. Set the signal generator to OFF.

16. Measure the peak and rms noise across pins 7 and 8. Record the voltages on data sheet D-24.

17. Set the CSU to transmit on channel 2. Measure the peak and rms noise across pins B and D of J1 of the MSU. Record these voltages on data sheet D-24.

APPENDIX A

LS-622/AIC-27 AIR CREW STATION TEST DATA SHEETS

DATA SHEET A-1

LS-622/AIC-27-TEST

TRANSMIT SECTION

Tested By ____________________ Date Tested ____________

NASA Serial # ____________

INPUT IMPEDANCE

	ATTENUATOR	E_1	E_2	Z_{IN}
1	40	______	______	______
2	60	______	______	______
3	20	______	______	______

FREQUENCY RESPONSE

	FREQUENCY	E_L
4	1000	______
5	____	______
6	____	______
7	300	______
8	700	______
9	1500	______
10	7000	______
11	3000	______
12	4000	______
13	5000	______

DATA SHEET A-2

HARMONIC DISTORTION

	FREQUENCY	ATTENUATOR	DISTORTION
14	150	40	________
15	300		________
16	700		________
17	1000		________
18	2000		________
19	3000		________
20	5000		________
21	5000	20	________
22	3000		________
23	2000		________
24	1000		________
25	700		________
26	300		________
27	150		________
28	150	60	________
29	300		________
30	700		________
31	1000		________
32	2000		________
33	3000		________
34	5000		________

INTERNAL NOISE

35 RMS Noise ____________________

DATA SHEET A-3

OUTPUT IMPEDANCE

36 E_L ______________________

37 Z_{OUT} ______________________

AGC TESTS

38 AGC Threshold ____________________

39 AGC Attack Time ____________________

40 AGC Release Time ____________________

DATA SHEET A-4

LS-622/AIC-27 TEST

RECEIVE SECTION

Tested By ______________________ Date Tested ____________

NASA Serial # ______________

INPUT IMPEDANCE

1. E_2 ____________
2. Z_{IN} ____________

OUTPUT IMPEDANCE

3. E_L ____________
4. E n ____________
5. Z_{OUT} ____________

OUTPUT RANGE

6	OFF	____________	
7	1	____________	
8	2	____________	INPUT 0.75 Volts
9	3	____________	
10	4	____________	
11	OFF	____________	
12	1	____________	
13	2	____________	INPUT 1.5 Volts
14	3	____________	
15	4	____________	

DATA SHEET A-5

FREQUENCY RESPONSE

	FREQUENCY (Hz)	E_L (RMS Volts)
16	1000	
17		
18		
19	200	
20	300	
21	700	
22	1500	
23	2000	
24	3000	
25	4000	
26	10,000	
27	20,000	

HARMONIC DISTORTION

	FREQUENCY (Hz)		DISTORTION
28	1000		
29	150		
30	300	INPUT 0.75 Volts	
31	3000		
32	20,000		
33	25,000		
34	25,000		
35	20,000		
36	3000		
37	1000	INPUT 1.5 Volts	
38	300		
39	150		

DATA SHEET A-6

INTERNAL NOISE

40. RMS Noise ____________

RECEIVE TO TRANSMIT CROSSTALK

41	OFF	____________	
42	1	____________	
43	2	____________	INPUT 1.5 Volts
44	3	____________	
45	4	____________	
46	OFF	____________	
47	1	____________	
48	2	____________	INPUT 0.75 Volts
49	3	____________	
50	4	____________	

INPUT CURRENT

51	OFF	____________	
52	1	____________	
53	2	____________	INPUT 1.5 Volts
54	3	____________	
55	4	____________	
56	OFF	____________	
57	1	____________	
58	2	____________	INPUT 0.75 Volts
59	3	____________	
60	4	____________	

61 5 Volt Supply ____________

APPENDIX B

LS-623/AIC-27 MAINTENANCE STATION UNITS

TEST DATA SHEETS

DATA SHEET B-1
LS623/AIC-27 TEST
TRANSMIT SECTION

TESTED BY ____________________ DATE TESTED __________

NASA SERIAL # ________________

INPUT IMPEDANCE

	E_1	E_2	Z_{IN}
1.		0.25 mV	

FREQUENCY RESPONSE

	FREQUENCY	E_L
2.	1000	______
3.	______	______
4.	______	______
5.	300	______
6.	700	______
7.	1500	______
8.	2000	______
9.	3000	______
10.	4000	______
11.	5000	______
12.	10,000	______
13.	15,000	______
14.	20,000	______

DATA SHEET B-2

HARMONIC DISTORTION

INPUT LEVEL:

	FREQUENCY	ATTENUATOR/E_2	DISTORTION
15.	150	40/0.25 mV	________
16.	300		________
17.	700		________
18.	1000		________
19.	2000		________
20.	3000		________
21.	10,000		________
22.	20,000		________
23.	150	60/0.1 mV	________
24.	300		________
25.	700		________
26.	1000		________
27.	2000		________
28.	3000		________
29.	10,000		________
30.	20,000		________
31.	150	20/2.5 mV	________
32.	300		________
33.	700		________
34.	1000		________
35.	2000		________
36.	3000		________
37.	10,000		________
38.	20,000		________

DATA SHEET B-3

INTERNAL NOISE

39 RMS NOISE ________________

OUTPUT IMPEDANCE

40 E_L = ____________________________

41 Z_{OUT} * ____________________________

AGC CHARACTERISTICS

42 AGC THRESHOLD __________________________

43 AGC ATTACK TIME __________________________

44 AGC RELEASE TIME _______________________

DATA SHEET B-4

LS-623/AIC-27 (V) TEST

RECEIVE SECTION

TESTED BY ______________________________ DATE TESTED ______________

NASA SERIAL # ______________________

INPUT IMPEDANCE

1. E_1 ____________________________

2. Z_{IN} ____________________________

OUTPUT IMPEDANCE

3. E_L ____________________________

4. E ____________________________

5. Z_{OUT} ____________________________

OUTPUT RANGE

6. CW ____________________________

7. CCW ____________________________

8. SIDETONE ________________________

DATA SHEET B-5

FREQUENCY RESPONSE

	FREQUENCY (Hz)	E_L
9.	1,000	______
10.	______	______
11.	______	______
12.	1,500	______
13.	2,000	______
14.	3,000	______
15.	4,000	______
16.	5,000	______
17.	10,000	______
18.	20,000	______
19.	150	______
20.	300	______
21.	700	______

HARMONIC DISTOTION

	FREQUENCY	DISTORTION
22.	150	______
23.	300	______
24.	700	______
25.	1,000	______
26.	2,000	______
27.	3,000	______
28.	5,000	______
29.	10,000	______
30.	20,000	______

DATA SHEET B-6

INTERNAL NOISE

31. RMS NOISE ______________________________

CURRENT REQUIREMENTS

32.	CW	__________________________	NO INPUT
33.	CCW	__________________________	
34.	CW	__________________________	1.5 Volt, 1000 Hz INPUT
35.	CCW	__________________________	

APPENDIX C

C-9458/AIC-27 CENTRAL CONTROL UNIT TEST DATA SHEETS

AIC-27 DATA SHEET C –

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P–

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

C.2

AIC-27 DATA SHEET C – 1

INPUT IMPEDANCE/DISTORTION/FREQUENCY RESPONSE

	P1	P2	P3	P4	P5	P6
E_1						
Z_{IN}						

	VOLTAGE/DISTORTION CHANNEL 2					
FREQUENCY Hz	P1	P2	P3	P4	P5	P6
1000						
200						
300						
700						
2000						
3000						
5000						
10,000						

AIC-27 DATA SHEET C-2
FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

CHANNEL #	FREQUENCY -3 dB.	FREQUENCY 3 dB.	VOLTAGE @ 1000 Hz.	DISTORTION -3 dB.	DISTORTION 3 dB.	DISTORTION 1000 Hz.	I_{150}		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

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AIC-27 DATA SHEET C-3
FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

CHANNEL #	FREQUENCY -3 dB.	FREQUENCY 3 dB.	VOLTAGE 1000 Hz.	DISTORTION -3 dB.	DISTORTION 3 dB.	DISTORTION 1000 Hz.	I_{150}		
26									
27									
28									
29									
30									

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AIC-27 DATA SHEET C — 4

INTERNAL NOISE

CHANNEL NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TRANSMIT	RMS															
	PEAK															
NO TRANSMIT	RMS															
	PEAK															

CHANNEL NUMBER		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
TRANSMIT	RMS															
	PEAK															
NO TRANSMIT	RMS															
	PEAK															

AIC-27 DATA SHEET C-5 TRANSMIT-TO-TRANSMIT ISOLATION
MEASURE ISOLATION AT CHANNEL NUMBER LISTED BELOW

TRANSMIT FROM CHANNEL #	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

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AIC-27 DATA SHEET C-6
MEASURE ISOLATION AT CHANNEL # LISTED BELOW

TRANSMIT FROM CHANNEL #	11	12	13	14	15	16	17	18	19	20
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

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AIC-27 DATA SHEET C-7 TRANSMIT-TO-TRANSMIT ISOLATION
MEASURE ISOLATION AT CHANNEL # LISTED BELOW

TRANSMIT FROM CHANNEL #	21	22	23	24	25	26	27	28	29	30
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

AIC-27 DATA SHEET C-8 TRANSMIT-TO-TRANSMIT ISOLATION
MEASURE ISOLATION AT CHANNEL # LISTED BELOW

	1	2	3	4	5	6	7	8	9	10
26										
27										
28										
29										
30										

MEASURE ISOLATION AT CHANNEL # LISTED BELOW

	11	12	13	14	15	16	17	18	19	20
26										
27										
28										
29										
30										

MEASURE ISOLATION AT CHANNEL # LISTED BELOW

	21	22	23	24	25	26	27	28	29	30
26										
27										
28										
29										
30										

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AIC-27 DATA SHEET C — 9

INPUT IMPEDANCE

	CHANNEL NUMBER														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
E_1															
Z_{IN}															

	CHANNEL NUMBER														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
E_1															
Z_{IN}															

AIC-27 DATA SHEET C — 10

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P—1

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C – 11

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P– 2

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C — 12

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P—3

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C — 13

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P—4

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C — 14

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P—5

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C — 15

FREQUENCY RESPONSE/DISTORTION/CURRENT DRIVE

PLUG P— 6

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000
1											
2											
3											
4											
5											

DISTORTION

VOL.	1000	____	____	150	300	700	1500	2000	3000	5000	10000	I_{150}
1												
2												
3												
4												
5												

VOLTAGE

AIC-27 DATA SHEET C — 16

FREQUENCY RESPONSE AND DISTORTION PLUG P-6 FREQUENCY 1000 Hz

	CHANNEL NUMBERS														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
VOLTAGE															
DISTORTION															

	CHANNEL NUMBERS														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
VOLTAGE															
DISTORTION															

AIC-27 DATA SHEET C — 17

FREQUENCY RESPONSE AND DISTORTION PLUG P-6 FREQUENCY LOWER 3 dB POINT

	CHANNEL NUMBERS														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FREQUENCY															
DISTORTION															

	CHANNEL NUMBERS														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FREQUENCY															
DISTORTION															

AIC-27 DATA SHEET C — 18

FREQUENCY RESPONSE AND DISTORTION PLUG P-6 FREQUENCY LOWER 3 dB POINT

	CHANNEL NUMBERS														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FREQUENCY															
DISTORTION															

	CHANNEL NUMBERS														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FREQUENCY															
DISTORTION															

AIC-27 DATA SHEET C – 19

INTERNAL NOISE

		P-1	P-2	P-3	P-4	P-5	P-6
T/R SWITCH 1 IN POSITION 5 AND ALL OTHERS OFF	PEAK						
	RMS						
T/R SWITCH 1 IN POSITION 4 AND ALL OTHERS OFF	PEAK						
	RMS						
ALL T/R SWITCHES IN POSITION 5	PEAK						
	RMS						

AIC-27 DATA SHEET C-20
RECEIVE-TO-RECEIVE ISOLATION

CHANNEL #	E_I	P-1	P-3	P-4	P-5	P-6	COMPOSITE		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

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AIC-27 DATA SHEET C-21
RECEIVE-TO-RECEIVE ISOLATION

CHANNEL #	E_I								
26									
27									
28									
29									
30									

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AIC-27 DATA SHEET C-22
RECEIVE-TO-TRANSMIT CROSSTALK

CHANNEL #	P-1	P-2	P-3	P-4	P-5	P-6	ALL		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

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AIC-27 DATA SHEET C-23
RECEIVE-TO-TRANSMIT CROSSTALK

CHANNEL #	P-1	P-2	P-3	P-4	P-5	P-6	ALL		
27									
28									
29									
30									

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AIC-27 DATA SHEET C-24
TRANSMIT-TO-RECEIVE CROSSTALK

CHANNEL #	P-1	P-2	P-3	P-4	P-5	P-6			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

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AIC-27 DATA SHEET C-25
TRANSMIT-TO-RECEIVE CROSSTALK

CHANNEL #	P-1	P-2	P-3	P-4	P-5	P-6			
26									
27									
28									
29									
30									
		CURRENT REQUIREMENT							

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APPENDIX D

AN/AIC-27(v) SYSTEM TEST DATA SHEETS

AIC-27 DATA SHEET D-1
FREQUENCY RESPONSE – CSU 1 TO CSU 2

FREQUENCY

CHANNEL #	1000 Hz.	3 dB.	-3 dB.	200 Hz.	300 Hz.	2000 Hz.	3000 Hz.	5000 Hz.	10,000 Hz	
1										
6										
11										
16										
21										
26										

INTERCOMM MODE

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AIC-27 DATA SHEET D-2
DISTORTION — CSU 1 TO CSU 2

CHANNEL #	1000 Hz	3 dB	-3 dB	200 Hz	300 Hz	2000 Hz	3000 Hz	5000 Hz	10,000 Hz	
1										
6										
11										
16										
21										
26										

INTERCOMM MODE

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AIC-27 DATA SHEET D-3

FREQUENCY RESPONSE — CHANNEL 2, FULL VOLUME

TRANSMIT FROM CSU #		MEASURE FREQUENCY RESPONSE AT CSU # 1	2	3	4	5	6			
1	1000 Hz									
	3 dB									
	-3 dB									
2	1000 Hz									
	3 dB									
	-3 dB									
3	1000 Hz									
	3 dB									
	-3 dB									
4	1000 Hz									
	3 dB									
	-3 dB									
5	1000 Hz									
	3 dB									
	-3 dB-									
6	1000 Hz									
	3 dB									
	-3 dB									

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INTERCOMM MODE

AIC-27 DATA SHEET D-4

TRANSMIT FROM CSU #		MEASURE DISTORTION AT CSU # 1	2	3	4	5	6			
	1000 Hz							CHANNEL 2 ONLY: FULL VOLUME		
1	3 dB									
	-3 dB									
	1000 Hz									
2	3 dB									
	-3 dB									
	1000 Hz									
3	3 dB									
	-3 dB									
	1000 Hz									
4	3 dB									
	-3 dB									
	1000 Hz									
5	3 dB									
	-3 dB									
	1000 Hz									
6	3 dB									
	-3 dB									

INTERCOMM MODE

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AIC-27 DATA SHEET D-5
INTERNAL NOISE — AS PER HUGHES PROCEDURE

CSU #	WITH 10-kHz FILTER	WITHOUT 10-kHz FILTER	WITHOUT ALARMS SHORTED						
1									
2									
3									
4									
5									
6									

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AIC-27 DATA SHEET D-6
LOOP-TO-LOOP ISOLATION

	CSU 3 TO CSU 4					
	1	6	11	16	21	26
CSU 1 TO CSU 2 1						
6						
11						
16						
21						
26						

THE CREW STATION LOOPS LISTED VERTICALLY ARE THE LOOPS ON WHICH A SIGNAL IS BEING TRANSMITTED.

	CSU 5 TO CSU 6					
	1	6	11	16	21	26
CSU 1 TO CSU 2 1						
6						
11						
16						
21						
26						

THE LOOPS LISTED HORIZONTALLY ARE THE ISOLATION MEASUREMENT LOOPS

	CSU 1 TO CSU 2					
	1	6	11	16	21	26
CSU 3 TO CSU 4 1						
6						
11						
16						
21						
26						

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INTERCOMM MODE

DATA SHEET D-7
CALL MODE TEST DATA

	CSU 1 TO CSU 2		CSU 3 TO CSU 4		CSU 5 TO CSU 6				
	FREQUENCY RESPONSE	DISTORTION	FREQUENCY RESPONSE	DISTORTION	FREQUENCY RESPONSE	DISTORTION			
1000 Hz									
+3 dB									
-3 dB									
200									
300									
700									
2000									
3000									
5000									
10,000									

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INTERCOMM MODE

AIC-27 DATA SHEET D-8
FREQUENCY RESPONSE AND DISTORTION

TRANSMIT FROM CSU 2 TO CHANNEL OUTPUT #

	VOLTAGE 1000 Hz	FREQUENCY -3 dB	FREQUENCY 3 dB		DISTORTION AT 1000 Hz	DISTORTION AT -3 dB	DISTORTION AT 3 dB			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

TRANSMIT SECTION

AIC-27 DATA SHEET D-8 (CONTINUED)
FREQUENCY RESPONSE AND DISTORTION

TRANSMIT FROM CSU 2 TO CHANNEL OUTPUT #

	VOLTAGE 1000 Hz	FREQUENCY -3 dB	FREQUENCY 3 dB		DISTORTION AT 1000 Hz	DISTORTION AT -3 dB	DISTORTION AT 3 dB			
26										
27										
28										
29										
30										

TRANSMIT SECTION

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DATA SHEET D-9
FREQUENCY RESPONSE AND DISTORTION

					FREQUENCY (Hz)					
	1000 Hz	+3 dB	-3 dB	300 Hz	700 Hz	2000 Hz	3000 Hz	5000 Hz	10,000 Hz	
CSU 2										
CSU 3										
CSU 4										
CSU 5										
CSU 6										
					FREQUENCY RESPONSE					
CSU 2										
CSU 3										
CSU 4										
CSU 5										
CSU 6										
					DISTORTION					

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TRANSMIT SECTION

AIC-27 DATA SHEET D-10
INTERNAL NOISE

CHANNEL #	CSU 1		CSU 2		CSU 3		CSU 4		CSU 5	
	PEAK	RMS	PEAK	RMS	PEAK	RMS	PEAK	RMS	PEAK	RMS
1										
6										
11										
16										
21										
26										

CHANNEL #	CSU 6	
	PEAK	RMS
1		
6		
11		
16		
21		
26		

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TRANSMIT SECTION

AIC-27 DATA SHEET D-11
TRANSMIT ISOLATION

	TRANSMIT ON CHANNEL 2 FROM CSU #									
MEASURE ISOLATION AT CHANNEL #	1	2	3	4	6					
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

TRANSMIT SECTION

DATA SHEET D-11 (CONTINUED)

	TRANSMIT ON CHANNEL 2 FROM CSU #									
CHANNEL #	1	2	3	4	6					
26										
27										
28										
29										
30										

TRANSMIT SECTION

AIC-27 DATA SHEET D-12
FREQUENCY RESPONSE

CHANNEL #		CSU 1			CSU 2			CSU 3		
	1000 Hz	+3 dB	-3 dB	1000 Hz	+3 dB	-3 dB	1000 Hz	+3 dB	-3 dB	
1										
6										
11										
16										
21										
26										

CHANNEL #		CSU 4			CSU 5			CSU 6		
1										
6										
11										
16										
21										
26										

RECEIVE SECTION

AIC-27 DATA SHEET D-13
DISTORTION (%)

CHANNEL #		CSU 1			CSU 2			CSU 3		
	1000 Hz	-3 dB	+3 dB	1000 Hz	-3 dB	+3 dB	1000 Hz	-3 dB	+3 dB	
1										
6										
11										
16										
21										
26										
		CSU 4			CSU 5			CSU 6		
1										
6										
11										
16										
21										
26										

RECEIVE STATION

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AIC-27 DATA SHEET D-14
FREQUENCY RESPONSE AND DISTORTION

CSU #	1000 Hz	-3 dB	+3 dB	200	300	700	2000	3000	5000	10,000
1										
2										
3										
4										
5										
6										
					FREQUENCY RESPONSE					
1										
2										
3										
4										
5										
6										
					DISTORTION (%)					

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RECEIVE SECTION — CHANNEL 2 ONLY

AIC-27 DATA SHEET D-15
VOLUME RANGE

MASTER VOLUME	CHANNEL VOLUME POSITION 1	2	3	4	5					
1										
2										
3										
4										
5										
6										

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RECEIVE SECTION — CHANNEL 2 ONLY

AIC-27 DATA SHEET D-16
INTERNAL NOISE

	CSU 1		CSU 2		CSU 3		CSU 4		CSU 5	
CHANNEL 2 VOLUME CONTROL POSITION	PEAK	RMS	PEAK	RMS	PEAK	RMS	PEAK	RMS	PEAK	RMS
0										
1										
2										
3										
4										
5										
	CSU 6									
CHANNEL 2 VOLUME CONTROL POSITION	PEAK	RMS								
0										
1										
2										
3										
4										
5										
			MASTER VOLUME CONTROL — FULL CLOCKWISE							

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RECEIVE SECTION — CHANNEL 2

AIC-27 DATA SHEET D-17
RECEIVE ISOLATION

MEASURE ISOLATION AT CSU #

	RECEIVE CHANNEL 2 (FULL VOLUME) AT CSU #									
	1	2	3	4	5	6				
1										
2										
3										
4										
5										
6										

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RECEIVE SECTION

AIC-27 DATA SHEET D-18
RECEIVE ISOLATION

ISOLATION AT CSU 2 – FULL VOLUME

ISOLATION AT CSU 2

1				27						
3				28						
4				29						
5				30						
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16							ALL OTHER CREW STATIONS			
17							RECEIVING CHANNEL 2 AT			
18							FULL VOLUME			
19										
20										
21										
22										
23										
24										
25										
26										

RECEIVE SECTION

AIC-27 DATA SHEET D-19
RECEIVE-TO-TRANSMIT CROSSTALK

CHANNEL OF TRANSMISSION	TRANSMIT/RECEIVE AT CSU # 1	2	3	4	5	6				
1										
6										
11										
16							CHANNELS DESIGNATED			
21							"BLACK"			
26										
			RECEIVE CHANNEL 2 AT FULL VOLUME							
			AT ALL CREW STATIONS AND ACTUATE							
			THE TRANSMIT MODE FOR THE INDICATED							
			CHANNEL AND CREW STATION							
1										
6										
11										
16										
21							CHANNELS DESIGNATED			
26							"RED"			

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AIC-27 DATA SHEET D-20 CALL MODE
RECEIVE-TO-TRANSMIT CROSSTALK

TRANSMIT/RECEIVE AT CSU #

CHANNEL OF TRANSMISSION	1	2	3	4	5	6				
1										
6										
11										
16										
21										
26										

"CALL" FROM CSU 2
RED/BLACK CHANNEL DESIGNATION IRRELEVANT

AIC-27 DATA SHEET D-21

TX/RX-TO-TRANSMIT COMPOSITE CROSSTALK

	CSU #									
	1	3	4	5	6					
1										
6										
11										
16						"RED" CHANNEL				
21						DESIGNATION				
26										
1										
6										
11										
16						"BLACK" CHANNEL				
21						DESIGNATION				
26										

SET UP CHANNEL 2 AS AN INTERCOMM LOOP WITH ALL CREW STATIONS RECEIVING IT AT FULL VOLUME, FROM CSU 2. THEN TRANSMIT ON THE INDICATED CHANNEL FROM THE INDICATED CREW STATION.

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AIC-27 DATA SHEET D-24
MSU TESTS

	1000 Hz	+3 dB	-3 dB	200 Hz	300 Hz	700 Hz	2000 Hz	3000 Hz	5000 Hz	10,000 Hz
CSU TO MSU										
MSU TO CSU										
				FREQUENCY	RESPONSE					
CSU TO MSU										
MSU TO CSU										
				DISTORTION						