TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS WITH PARTS LIST

ORGANIZATIONAL AND DEPOT

RADIO TRANSMITTER T-827H/URT
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STEWART-WARNER ELECTRONICS
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CHAPTER 5

TROUBLESHOOTING

5-1. INTRODUCTION.

5-2. GENERAL. This chapter contains data, procedures and diagrams which aid in determining the presence of malfunctions, localizing malfunctions to an assembly or subassembly, and isolating faults to a circuit or component within that assembly. A maintenance turn-on procedure is included which contains instructions for T-827H/URT turn-on, initial checks, control settings, and test setups. From this procedure, overall equipment performance can be determined and inoperative functions identified. Signal flow diagrams provided for each equipment function, together with an overall troubleshooting index, serve to localize trouble to the malfunctioning assembly or subassembly. Fault logic diagrams help to identify faulty circuits. Schematic diagrams are included which provide more specific detail when troubleshooting the suspect assemblies, subassemblies, and circuits.

5-3. TROUBLESHOOTING DATA. Troubleshooting data included in this chapter consists of signal flow diagrams, fault logic diagrams, control diagrams, and maintenance schematic diagrams. The technician can determine which major function or supporting function is malfunctioning by comparing the results obtained during the maintenance turn-on procedure, table 5-5, with performance data in the OBSERVE column. Table 5-5 also references the applicable diagrams for analysis and correction of malfunctions. Fault logic diagrams, used in conjunction with signal flow diagrams, help identify the defective part within an assembly.

5-4. REPAIR FUNCTIONS. Troubleshooting and repairing of the T-827H/URT Case A1, Main Frame A2 and all assemblies attached thereto (A2A9. A2A10, A2A11, A2A14, A2A15, A2A21 and Code Generator A2A7) are designated Organizational functions. Troubleshooting, repairing and aligning plug-in assemblies A2A1, A2A4 through A2A6, A2A9, A2A12, A2A21Al8, A2A21A19 and A2A21A20 are designated depot level functtions.

5-5. ALIGNMENT AND CHECKOUT. When organizational repairs are made, an overall T-827H/URT alignment (table 6-1) and the performance tests in Chapter 4 must follow. Repairs to plug-in assemblies at depot level shall be followed by the alignment listed in the applicable table in Chapter 6.

5-6. TROUBLESHOOTING INDEX.

5-7. Table 5-1 lists the major and secondary T-827H/URT functions and shows the appropriate paragraphs and illustrations used in trouble analysis.

5-8. RELAY AND INDICATOR LAMP INDICES.

5-9. Table 5-2 shows the reference designation, functional name, energizing voltage, and troubleshooting diagram for all relays in the T-827H/URT. Table 5-3 provides similar information for T-827H/URT indicator lamps.

5-10. PROTECTIVE DEVICES INDEX.

5-11. Fuses and interlock switches of T-827H/URT are listed in table 5-4. The electrical rating, circuit protected, and troubleshooting diagram references are provided for each device.

5-12. MAINTENANCE TURN-ON PROCEDURE.

5-13. The maintenance turn-on procedure given in table 5-5 must be performed in the sequence shown. The T-827H/URT is taken through all steps from fully deenergized to fully operational. Observations required in each step are described and information relating to troubleshooting faults is referenced. Apply primary power to the test equipment listed below, and allow a 30-minute warm-up period before starting the procedure in table 5-5.

NOTE

When Radio Transmitter T-827H/URT is installed in Radio Transmitting Set AN/URT-23C(V)1, the turn-on procedure for the AN/URT-23C(V)1 should be used in lieu of the T-827H/URT turn-on procedure of this manual.

5-14. TROUBLESHOOTING PROCEDURES.

5-15. Careful observations made during the maintenance turn-on procedure allow troubles in major or secondary functions to be traced. The diagrams referenced in table 5-5 are used to localize the fault to a circuit or component part.

5-16. TROUBLESHOOTING DIAGRAMS.

5-17. GENERAL. The diagrams used for troubleshooting included in this chapter consist of signal flow diagrams, power distribution diagrams, a control diagram, fault logic diagrams, and maintenance schematic diagrams. These diagrams aid in troubleshooting by helping to isolate a fault to a specific component.

5-18. SIGNAL FLOW DIAGRAMS. Signal flow diagrams, figures 5-1 through 5-11, are provided for each major equipment function. These diagrams are the main troubleshooting tool. Signal flow diagrams show signal paths, connectors, test points, terminals, adjustments, indicators, and circuit stages. This information helps to isolate malfunctioning circuits or components quickly. Each signal flow diagram includes test data and setups required to obtain the measurements made at various points in the equipment. Data and setups include test equipment required, references to other areas of the manual for additional information, preliminary setup instructions, and step-by-step measurement procedures. These procedures are used to obtain the indications shown at specified test points on the signal flow diagram. Observe the following general rules when performing tests outlined on signal flow diagrams:

1. Signal levels and frequencies measured when an assembly is connected to an extender cable may differ from the measurements made when the module is plugged directly into the main frame.

2. To ensure accuracy of frequency measurements, compare rf signal generators and electronic counters to Frequency Standard AN/URQ-10 frequently.

5-19. CONTROL DIAGRAM. Keying control diagram (figure 5-12) shows control circuits involved in local and remote keying of the T-827H/URT. Signal flow is shown from the front panel (CW KEY and HANDSET connectors) and remote equipment to the keyline relays.

5-20. POWER DISTRIBUTION DIAGRAMS. Power distribution diagrams (figures 5-13 through 5-15) show the circuits involved in the +28 Vdc, +20 Vdc, +5 Vdc, and +110 Vdc distribution in the T-827H/URT. Each diagram illustrates the distribution of one (or more) voltage(s) from its source through controls and connectors to the assemblies or subassemblies where it is used.

5-21. FAULT LOGIC DIAGRAMS. A fault logic diagram (figures 5-16 through 5-27) supplements each signal flow diagram. Fault logic diagrams deal with fault indications observed during troubleshooting. They consist of a series of questions pertaining to measurements obtained at points designated on signal flow diagrams. The fault indication appears as an input at the left side of the diagram. Single-line blocks contain the questions requiring resolution. The questions are referenced to the signal flow diagrams by test step (TS) numbers. Questions resulting in a "yes" or "no" answer (represented by solid or broken connecting lines, respectively) lead to further questions. Thus the fault is progressively narrowed to the malfunctioning component or subassembly. The final question/answer leads to a double-line conclusion block which contains the identity of a malfunctioning part or a reference to a diagram used when further isolation is necessary.

5-22. MAINTENANCE SCHEMATIC DIAGRAMS. Maintenance schematic diagrams (figures 5-28 through 5-45) include the T-827H/URT case and main frame and the major assemblies and subassemblies within the T-827H/URT. These, along with the power distribution diagrams, provide complete schematic coverage of the equipment. The diagrams are drawn so that signals can be traced from assembly to assembly. Major signal paths are indicated by heavier lines. These schematic diagrams help in isolating a fault to the defective component part.

Table 5-1. Troubleshooting Index

FUNCTIONAL AREA	TROUBLE-SHOOTING DIAGRAM	FUNCTIONAL DESCRIPTION PARAGRAPH	ADJUSTMENT/ ALIGNMENT TABLE
Ac Power Distribution	5-13, 5-28	3-116	6-1(2)
Audio Amplification and Modulation, Normal Modes	5-1 (sheet 1) 5-16 (sheet 1), 5-29	3-22 thru 3-27, 3-158	6-1(5), 6-1(7), 6-3
Audio Amplification and Modulation, Data Modes	5-1 (sheet 2), 5-16 (sheet 2), 5-29	3-28 thru 3-31, 3-158	
Audio Processing and Control, Normal Modes	5-1 (sheet 1), 5-16 (sheet 1), 5-44, 5-45	3-22 thru 3-27, 3-32 thru 3-37, 3-142 thru 3-145	6-1(7), 6-4
Audio Processing and Control, Data Modes	5-1 (sheet 2), 5-16 (sheet 2), 5-44, 5-45	3-28 thru 3-31, 3-143 thru 3-147	6-4(5)
Carrier Maximization and Suppression	5-3, 5-18	3-39 thru 3-42, 3-158	6-1(7), 6-3(1) thru 6-3(7)
Carrier Reinsertion	5-3, 5-18	3-51 thru 3-58, 3-162 thru 3-164	6-3(4)
Case, Main Frame, and Front Panel	5-28	3-128 thru 3-140	6-2
Dc Voltage Generation and Distribution	5-14, 5-15, 5-28 (sheet 3), 5-37	3-14, 3-19, 3-117 thru 3-119, 3-134, 3-135	6-1(3), 6-7(1)
Filtering (Input-Output, Handset, IF)	5-28	3-129, 3-139, 3-140	6-1, 6-8
Frequency Synthesis and Translation	3-2, 5-5, 5-8 thru 5-11, 5-32 thru 5-37, 5-39, 5-40	3-9, 3-13 thru 3-17, 3-65 thru 3-73, 3-188 thru 3-233	6-7(2), 6-7(6), 6-7(7)

Table 5-1. Troubleshooting Index (Continued)

FUNCTIONAL AREA	TROUBLE-SHOOTING DIAGRAM	FUNCTIONAL DESCRIPTION PARAGRAPH	ADJUSTMENT/ ALIGNMENT TABLE
Fusing	5-28	-	5-4, 5-5(1), 5-5(2)
Gating and Mode Selection	5-1, 5-16, 5-29	3-7, 3-37 thru 3-42, 3-132, 3-158 thru 3-164	6-1(7), 6-3
IF Amplification and Level Control	5-4, 5-19 5-43	3-8, 3-59 thru 3-64, 3-246, 3-247	6-1(5), 6-8(1) 6-8(5)
IF-to-RF Conversion	5-5, 5-20	3-9, 3-65 thru 3-73	6-7(7)
Keying Control (CW, RATT, DATA and PTT)	5-12, 5-27	3-32, 3-111 thru 3-114	6-1
Metering	5-28 (Sheet 1)	3-6, 3-136, 3-137	
Modulation, Amplification, Gating, and Mode Selection	5-1, 5-16, 5-29	3-22 thru 3-31, 3-158	6-1(5), 6-1(7), 6-3(1), 6-3(5), 6-3(8)
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RATT Tone Generation	5-2, 5-17, 5-42	3-5, 3-43 thru 3-49, 3-239 thru 3-244	
RF Amplification and Level Control	5-6, 5-21 5-30	3-10, 3-74 thru 3-80, 3-165 thru 3-169	6-1(6), 6-5(1) thru 6-5(8)
Reference Frequency Generation and Distribution	5-8, 5-23, 5-38	3-12, 3-95, 3-198 thru 3-203	6-7(1)
Standard Frequency Generation and Distribution	5-7, 5-22 5-31	3-11, 3-86 thru 3-94, 3-170 thru 3-187	5-5(3), 6-1(4), 6-6(1) thru 6-6(10)
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Table 5-1. Troubleshooting Index (Continued)

FUNCTIONAL AREA	TROUBLE-SHOOTING DIAGRAM	FUNCTIONAL DESCRIPTION PARAGRAPH	ADJUSTMENT/ ALIGNMENT TABLE
Wiring and Cabling	5-28	-	6-2
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100 kHz Synthesis	5-10, 5-25	3-16, 3-101 thru 3-104, 3-218 thru 3-223	6-7(2)
10 MHz/1 MHz Synthesis and Filtering	5-11, 5-26, 5-36	3-17, 3-105 thru 3-110, 3-225 thru 3-231	6-7(4), 6-7(5)

Table 5-2. Relay Index

REFERENCE DESIGNATION	FUNCTIONAL NAME	ENERGIZING VOLTAGE	TROUBLESHOOTING DIAGRAM (FIG. NO.)
A2K1	Tune Relay	28 Vdc	5-28
A2K2	Hi-Lo Filter Relay	28 Vdc	5-28
A2K3	Transmit-Receive Relay	28 Vdc	5-28
A2K4	Push-to-Talk Relay	12 Vdc	5-28
A2K5	CW Hold Relay	28 Vdc	5-28
A2K6	Ground Pulse Relay	28 Vdc	5-28
A2A4K1	Turret Tuning Relay	28 Vdc	5-30
A2A4A38K1	Transmit-Receive Relay	28 Vdc	5-30
A2A21K1	Audio Routing Relay	27 Vdc	5-28
A2A21K2	Audio Routing Relay	27 Vdc	5-28
A2A21A18K1	Data/Normal Relay	28 Vdc	5-44
A2A21A19K1	Data/Normal Relay	28 Vdc	5-44
A2A21A20K1	Data/Normal Relay #1	27 Vdc	5-45
A2A21A20K2	Data/Normal Relay #2	27 Vdc	5-45
A2A21A20K3	SSB/ISB Relay	20 Vdc	5-45

Table 5-3. Indicator Lamp Index

REFERENCE DESIGNATION	FUNCTIONAL NAME	ENERGIZING VOLTAGE	TROUBLESHOOTING DIAGRAM (FIG. NO.)
A2DS3	Dial Lamp for MHz Indicators	28 Vdc [1]	5-28
A2DS4	Dial Lamp for kHz Indicators	28 Vdc [1]	5-28
A2A5A2DS1	Frequency Standard Visual Comparator Lamp	20 Vdc	5-31

[1] With 180 ohms series resistance.

Table 5-4. Protective Devices Index

REFERENCE DESIGNATION	FRONT-PANEL MARKING	RATING		CIRCUIT PROTECTED	TROUBLE-SHOOTING DIAGRAM (FIG. NO.)
		VOLTS	AMPERES		
A1S2	(Interlock)	125	15.0	Primary Power	5-28
A2F1	F1 1-1/2A	250	1.5A	115 Vac Primary Power	5-28
A2F2	F2 1-1/2A	250	1.5A	115 Vac Primary Power	5-28

Table 5-5. Maintenance Turn-On Procedure

STEP	OBSERVE	REFERENCE
1. Preliminary Procedure		Figures 2-1, 2-2 and 2-3
NOTE Perform the preliminary procedure before applying power to the T-827H/URT.		
a. Remove power from transmitter at bulkhead supply. Pull out mode selector switch A2S2 and set to OFF.		
b. Remove fuse A2F1 and A2F2 and check for proper value. Reinsert fuses.	A2F1 and A2F2 are 1-1/2 ampere slo-blo fuses.	Figure 2-1
c. Loosen front panel screws and slide chassis out.		
d. Check all areas visually within case and main frame for indication of electrical or mechanical failures. Ensure that assemblies are properly mated to the main frame chassis.	No visual indication of electrical or mechanical failure, and assemblies are properly mated to the main frame chassis.	Table 6-2
e. Defeat chassis interlock by pulling plunger of interlock switch A1S2 outward.	Plunger extends forward of case. Operation of the interlock switch is noted by roller positioning on high part of plunger shaft.	Figure 2-2
f. Set AUX/NORM switch A1S1 to AUX position by rotating plunger clockwise to bring slot to horizontal position.		Figure 2-2
g. Set DATA/NORMAL switch to NORMAL.		

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
1. Preliminary Procedure (Cont.)		
h. On assembly A2A21 verify that jumpers between the four terminal pairs (eight terminals designated A2-A21E43 through A2A21E50) are connected in accordance with operational requirements:		Table 2-1 (Key 25) Figure 2-1 (Sheet 3)
i. Disconnect cables from jacks A1A1J3, A1A1J4, and A1A1J23.		Figure 2-3
2. Voltage Application		
a. Connect test circuit shown in note 7 of Figure 5-1 to A1A1J4. Apply 115 Vac at pins A and C of AUX AC PWR IN jack A1A1J3 at rear of case.		Figure 2-3
b. On front panel, remove fuses A2F1 and A2F2 and replace the fuse caps.		Figure 2-1
c. Set mode selector switch A2S2 to STDBY.	A2F1 and A2F2 fuse indicators illuminate.	Figure 2-1
d. Pull mode selector switch A2S2 out, and set to OFF. Reinstall fuses A2F1 and A2F2.		Figure 2-1
e. Set mode selector switch A2S2 to STDBY.	A2F1 and A2F2 fuse indicators do not illuminate. MHz and kHz dial lamps A2DS3 and A2DS4 light, indicating that 115 Vac is now applied to Power Supply Assembly A2A8 via power transformer A2T1, and +28 Vdc is available at the output of the power supply. A2A4V1 and A2A4V2 in RF Amplifier filaments are lit.	Figures 2-1, 5-13, 5-28

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
2. Voltage Application (Cont.)	WARNING Lethal voltages are now present in transmitter case and main frame. Take great care to avoid contact.	
f. Check operation of the AUX/NORM switch A1S1 by momentarily rotating plunger 90 degrees counterclockwise. Return to the AUX position.	MHz and kHz dial lights and tube filaments extinguish when plunger is rotated 90 degrees CCW, and relight when plunger is returned to AUX position.	Figure 2-2
	CAUTION Hand guide main frame cable at rear of chassis over edge of case when rotating main frame to vertical position.	
g. Ensure chassis is fully extended; then tilt chassis 90 degrees to expose bottom.		
h. Set Digital Multimeter 89536-8800A/AA to appropriate scale. Check voltages at the following tie points on underside of main frame: Tie Point A2E22 A2E9	 +23 to +31 Vdc +103 to +117 Vdc	Figure 5-14, 5-15, 5-28 (Sheet 2), 7-4
i. Use True RMS Voltmeter 50423-323-20-MOD 40 to check ripple at the following tie points: Tie Point A2E22 A2E9	 750 mVrms maximum 90 mVrms maximum	

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
2. Voltage Application (Cont.)		
	CAUTION If the observed meter indication in the following step approaches +28 Vdc or is very low, immediately set mode selector switch A2S2 to OFF and troubleshoot Power Supply Assembly A2A8. Also look for cable, connector, switch and assembly short circuits.	
j. Ensure that frequency controls are set to 2.000 MHz. Connect Digital Multimeter 89536-8800A/AA to tie point A2E24. Set mode selector switch A2S2 to LSB and observe multimeter indication.	+19.5 to +20.5 Vdc	Figures 2-1, 5-15, 5-28 (Sheet 3), 7-4
k. Set mode selector switch A2S2 to LSB. Use True RMS Voltmeter 50423-323-20-MOD 40 to measure ripple at A2E24.	6 mVrms maximum	
l. Rotate chassis to horizontal position. Check operation of RF Amplifier Assembly A2A4, by rotating MHz controls on front panel.	RF Amplifier tuning motor drives as MHz controls are rotated.	Figures 2-1, 5-6, 5-28 (Sheet 2), 5-41. Table 3-2
m. Rotate the front panel MHz controls from 02 through 29. Compare the digits viewed through the digit window on top of RF Amplifier Assembly A2A4 with those viewed at front panel MHz windows.	Digits viewed in rf amplifier window should be centered and agree with the digits viewed on the front panel.	Figures 2-1, 5-6, 5-28 (Sheet 2), 5-41. Table 3-2

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
4. Operability Checks (Cont.)		
Set test circuit AUDIO LEVEL switch to NORMAL and PTT KEY to ON. Adjust two-tone generator for 1000 Hz at 150 mVrms as measured at AUDIO LEVEL test point with AC Voltmeter 28480-400E.		
c. Connect True RMS Voltmeter 50423-323-20-MOD 40 to A2A21A18TP4 on audio processor and note voltage reading.	90 to 110 mVrms	Figures 5-1, 5-44, 7-83
d. Repeat steps (a) through (c) for LSB Audio Processor A2A21A19. Make certain that mode selector switch A2S2 is set to LSB.		Figure 2-1
e. Set LOCAL/REMOTE switch A2S1 to REMOTE, mode selector switch A2S2 to USB, and DATA/NORMAL switch A2S11 to NORMAL.		Figure 2-1
f. Set test circuit PTT KEY ON. Adjust two-tone generator for 1000 Hz output at 150 mVrms as read on AC Voltmeter 28480-400E.		
g. Connect AC Voltmeter 28480-400E to A2A12A1TP2, and measure IF output signal level.	4.5 to 5.5 mVrms	Figures 5-4, 5-43, 7-79
h. Set mode selector switch A2S2 to RATT, and RATT SHIFT SELECT switch A2S10 to 170 Hz. Connect Electronic Counter AN/USM-207 to A2A21A18TP4. Set test circuit CW/RATT KEY ON.		Figures 2-1, 5-1, 5-44, 7-83

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
3. Frequency Standard Check		
	NOTE Power must be applied to Frequency Standard Assembly A2A5 for at least 24 hours with switches set as follows before check is accomplished. 1. Mode selector switch A2S2 in a position other than OFF. 2. 5 MHz OSC SOURCE switch A2A5A2S1 in a position other than EXT NORM. Most drift will occur during the first 60 minutes of warmup; thereafter the error should be less than ±1 part per 10^7 (±0.5 Hz at 5 MHz).	
a. Disconnect external 5 MHz input from EXT 5 MHZ IN connector A1J25. Set 5 MHz OSC SOURCE switch A2A5A2S1 to INT/COMP. Connect 50 ohm load through BNC T-connector across INT 5 MHz OUT jack A1J24 at rear of case.		Figures 2-3, 6-1, 7-60

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
3. Frequency Standard Check (Cont.)		
b. Connect Electronic Counter AN/USM-207 across 50 ohm load at T-connector and measure frequency.	5 MHz ±0.5 Hz	Figures 2-2, 6-1
c. Remove Mode Selector Assembly A2A1 from chassis. Connect Electronic Counter AN/USM-207 to center conductor of connector A2XA1P2-A3. Measure frequency. Disconnect electronic counter, and reinstall A2A1 in main frame.	500 kHz +0.1 Hz.	Figures 5-1, 5-29, 7-12
d. Connect RF Millivoltmeter 04901-92B-S5 across 50 ohm load at T-connector on A1J24 and measure voltage.	480 to 720 mVrms.	Figures 2-3, 6-1
4. Operability Checks		
a. Set LOCAL/REMOTE switch A2S1 to REMOTE, mode selector switch A2S2 to USB, and DATA/NORMAL switch A2S11 to NORMAL.		Figure 2-1
b. Connect test circuit shown in note 7 of figure 5-1 to A1A1J4, A1A1J5 and A1A1J6. Adjust test circuit APC control for 3.86 Vdc and PPC control fully clockwise. Measure APC voltage at test circuit APC test point with Digital Multimeter 89536-8800A/AA.		

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
5. RF Checks (Cont.)		
e. Connect Electronic Counter AN/USM-207 to output of sampler box B.		Figure 6-1
f. Set the front panel frequency controls for 2,000 MHz.		
g. Depress cw key and measure rf output.	2.5 Vrms minimum	Figures 2-1, 5-30, 5-32
h. Adjust test circuit APC control for 8.0 Vdc at test point measured with digital multimeter 89536-8800A/AA. Depress cw hand key and measure rf output on multimeter 28480-410C.	50 mVrms maximum.	Figures 5-30, 5-32
i. Adjust test circuit APC control back to 3.86 Vdc measured at APC test point.		
j. Set the front panel MHz, kHz, and Hz controls for the following frequencies, and check output frequency and amplitude on electronic counter and rf multimeter. Key transmitter with cw hand key.	Frequency accuracy at each frequency selected. 2.5 V rms minimum at each frequency selected.	Figures 2-1, 5-30, 5-32
Selected Frequency (MHz) / Tolerance (Hz) 02.0000 ±2.0 03.1111 ±2.0 04.2222 ±2.0 05.3333 ±2.0 06.4444 ±2.0 08.5555 ±2.0 09.6666 ±2.0 10.7777 ±2.0 12.8888 ±2.0		

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
4. Operability Checks (Cont.)		
i. Set test circuit TTY KEY to SPACE and measure space tone frequency.	2081 to 2089 Hz	
j. Set test circuit TTY KEY to MARK, and measure mark tone frequency.	1911 to 1919 Hz	
k. Set RATT SHIFT SELECT switch to 850 HZ. With test circuit TTY KEY in MARK position, measure mark tone frequency.	1555 to 1595 Hz	
l. Set test circuit TTY KEY to SPACE, and measure space tone frequency.	2405 to 2445 Hz	
m. Set USB LINE LEVEL meter switch on front panel of T-827H/URT to -10 dB. Observe constant level on USB LINE LEVEL meter.	+2 dB min. Off-scale meter reading is acceptable.	Figure 2-1
5. RF Checks		
a. Set mode selector switch A2S2 to CW and LOCAL/ REMOTE switch A2S1 to LOCAL.		Figure 2-1
b. Connect cw hand key NT-26026 to connector A2J2.		Figures 2-3, 6-1
c. Connect sampler box B, probe-T-connector 28480-11042A and dummy load DA-91A/U as shown in figure 6-1.		Figure 6-1
d. Connect multimeter 28480-410C to probe-T-connector.		Figure 6-1

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
6. DATA Mode Checks (Cont.) c. Adjust the two tone generator for TONE A 1300 Hz and TONE B 1600 Hz. Connect the ac voltmeter to the two tone generator. The amplitude level of each tone should be adjusted for 1.05 Vrms (+2.6 dBm). Connect Oscilloscope AN/USM-281 to test point A2A21A18TP3, and measure the peak to peak (PP) level displayed on the oscilloscope. Disconnect test equipment from assembly test points. d. Connect the two tone generator and ac voltmeter to DATA Audio Input jack A1A1J8 pins C and D. Repeat the remainder of steps (b) and (c) for LSB audio processor A2A21A19. Make certain that mode selector switch A2S2 is set to LSB. e. Set mode selector switch A2S2 to OFF, turn off primary power at bulkhead supply, disconnect power connection from A1A1J3 and disconnect all test equipment.	8.4 to 9.4 VPP	Figure 5-44

Table 5-5. Maintenance Turn-On Procedure (Continued)

STEP	OBSERVE	REFERENCE
5. RF Checks (Cont.) Selected Frequency (MHz) / Tolerance (Hz) 14.9999 ±2.0 15.0000 ±2.0 17.0000 ±2.0 19.0000 ±2.0 20.0000 ±2.0 22.0000 ±2.0 23.0000 ±2.0 28.0000 ±2.0		
NOTE If the amplitude is less than 2.5 Vrms, connect rf millivoltmeter 04901-92B-S5 to test point A2A4A38TP1 on RF Amplifier Assembly A2A4. If the rf level of this test point is greater than 2 mVrms, troubleshoot RF Amplifier Assembly A2A4 (Figures 5-6, 5-30). If the rf level is less than 1 mVrms, troubleshoot Translator/Synthesizer Assembly A2A6 (Figures 5-5, 5-32).		
6. DATA Mode Checks		
a. Set LOCAL/REMOTE switch A2S1 to REMOTE, mode selector switch A2S2 to USB, and DATA/NORMAL switch A2S11 to DATA.		Figure 2-1
b. Disconnect test circuit and connect Two Tone Audio Signal Generator 09553-TF-2005 and AC Voltmeter 28480-400E to DATA Audio Input jack A1A1J8 pins A and B. Adjust the two tone generator for 1300 Hz at 1.05 Vrms (+2.6 dBm) as measured on the ac voltmeter. Connect the ac voltmeter to test point A2A21A18TP2 and note the voltmeter reading.	1.0 to 1.20 Vrms	Figure 5-44

TEST DATA FOR FIGURE 5-1

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
RF DUMMY LOAD DA-91A/U
TRUE RMS VOLTMETER 50423-323-20-MOD 40 OR EQUIVALENT
DIGITAL MULTIMETER 89536-8800A/AA
EXTENDER CABLES 98738-30A226271-21-11 AND 98738-30A226280-21-11 FOR A2A1 ASSEMBLY. EXTENDER CARDS 98738-01A226467-01 FOR A2A21A18 AND A2A21A19 ASSEMBLIES.
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1 (DEPOT ONLY)
AC VOLTMETER 28480-400E
TWO-TONE GENERATOR 09553-TF-2005
TEST CIRCUIT ILLUSTRATED IN NOTE 7.

B. THE SPECIFIC NOTES THAT FOLLOW DETAIL DEPOT PROCEDURES FOR TESTING THE T-827H/URT IN A FREE STANDING CONFIGURATION. THE TEST CIRCUIT SHOWN IN SPECIFIC NOTE 7 PROVIDES SWITCHING AND CONTROLS TO SIMULATE THE SHIP-BOARD COMMUNICATION SYSTEM. FOR DEPOT MAINTENANCE, THE MODULE UNDER TEST MAY ALSO BE OPERATED IN AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. THE SIGNAL LEVELS INDICATED ON THE SIGNAL FLOW DIAGRAMS SHALL BE USED TO GUIDE THE SETTINGS OF THE ASSOCIATED TEST GENERATORS. TS-3670/WRC-1 CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

C. FOR SHIPBOARD MAINTENANCE, THE T-827H/URT MAY BE OPERATED AS PART OF THE AN/URT-23C(V)1. THE AM-3924C(P)/URT PORTION OF THE AN/URT-23C(V)1 MUST BE DISABLED BY REMOVAL OF THE 500 V FUSE (2A1F2A) FROM ITS HOLDER ON THE FRONT PANEL OF POWER SUPPLY PP-3916C/UR. (RECONNECT THE FUSE HOLDER AFTER REMOVING THE 500 V FUSE CARTRIDGE.) THE POWER-ON SWITCH OF THE AN/URT-23C(V)1 MAY NOW BE CLOSED TO APPLY OPERATING VOLTAGES TO THE T-827H/URT TRANSMITTER. THE APC AND PPC VOLTAGES SUPPLIED TO THE T-827H/URT WILL BE 3.84 VDC AND 0 VDC, RESPECTIVELY, WHICH WILL DRIVE THE T-827H/URT TO ITS FULL RF OUTPUT. ADDITIONALLY, THE NORMAL COMMUNICATION SYSTEM ACTIONS MUST BE TAKEN TO PROVIDE THE DISCRETE CONDITIONS REQUIRED BY THE TEST STEPS IN SPECIFIC NOTES 3 THROUGH 6.

D. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPHS 3-22, 3-26, 3-28, 3-31.
TROUBLESHOOTING SEQUENCE, FIGURE 5-16.
CORRECTIVE MAINTENANCE, PARAGRAPHS 6-45, 6-127
MAINTENANCE SCHEMATICS, FIGURES 5-28, 5-29, 5-44, 5-45.
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-8 THRU 7-12, 7-77, 7-82 thru 7-84.

E. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING OR TEST STEP.

F. —ʃʃ— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

G. MODE SELECTOR SWITCH A2 S2 CONTACT CONNECTIONS FOR VARIOUS MODELS AS FOLLOWS:

NOTES FOR FIGURE 5-1 (CONTINUED)

MODE	A2S2-A-R	A2S2-B-R	A2S2-C-R	A2S2-D-F
LSB	(2,3,4) and (8,9)	-	-	-
RATT	3, 4, 5	-	5, 12	2, 4
AM	3, 4, 5	6, 12	6, 12	3, 5
CW	-	-	-	4, 6
USB	3, 4	8, 12	8, 12	5, 7
ISB	2, 3, 4, 5,	9, 12	9, 12	6, 8
ISB/RATT	(2,3,4,5) and (8,9)	-	10, 12	7, 9

SPECIFIC NOTES

1. PRELIMINARY SETUP, FIGURE 5-1, SHEET 1. DISCONNECT JACKS A1A1J4 THROUGH A1A1J8 AT REAR OF T-827H/URT CASE. EXTEND MAIN FRAME CHASSIS FROM CASE AND DEFEAT INTERLOCK. CONNECT DUMMY LOAD TO RF OUT JACK A1J23. SET T-827H/URT CONTROLS AS FOLLOWS:

CONTROL	POSITION
MODE SELECTOR SWITCH A2S2	STDBY
LOCAL/REMOTE SWITCH A2S1	REMOTE
AUX/NORM SWITCH A1S1	AUX
FREQUENCY CONTROLS	2,000 MHZ
HZ SWITCH A2S6	000
DATA/NO MAL SWITCH A2S11	NORMAL

2. TEST SETUP.

   a. REMOVE MODE SELECTOR ASSEMBLY A2A1 AND AUDIO PROCESSOR ASSEMBLIES A2A21A18 AND A2A21A19 FROM MAIN FRAME AND RECONNECT USING EXTENDER CABLES AND CARDS. REMOVE THE DUST COVER FROM MODE SELECTOR ASSEMBLY.

   b. SET MODE SELECTOR SWITCH A2S2 TO LSB. CONNECT TEST CIRCUIT SHOWN IN NOTE 7 TO A1A1J3, A1A1J4, A1A1J5 AND A1A1J6. SET TEST CIRCUIT AUDIO LEVEL SWITCH TO NORMAL, AND PTT KEY ON.

   c. ADJUST TWO-TONE GENERATOR FOR 1000 AND 1625 HZ AT 150 mVRMS OUTPUT FOR EACH TONE AS MEASURED AT AUDIO LEVEL TEST POINTS WITH AC VOLTMETER 28430-400E. THIS SIGNAL LEVEL MUST BE MAINTAINED FOR EACH OF THE FOLLOWING TESTS.

3. TEST STEPS: (REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST).

TS-1 CONNECT THE AC VOLTMETER TO TERMINAL A2A1E6. METER SHOULD INDICATE 0.5 mVRMS NOMINAL. TEST PROBE MUST BE SHIELDED WITH SHORT GROUND CONNECTION AT PROBE END.

TS-2 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3TP2. METER SHOULD INDICATE 6 mVRMS NOMINAL. LSB LINE LEVEL METER A2M1 SHOULD INDICATE -4 dB NOMINAL WITH LSB LINE LEVEL SWITCH A2S8 AT -10 dB.

SET MODE SELECTOR SWITCH A2S2 TO ISB, AND MEASURE 500 kHz SIGNAL LEVEL AT A2A1A3TP2. METER SHOULD INDICATE 6 mVRMS NOMINAL. LSB LINE LEVEL METER A2M1 SHOULD INDICATE -4 dB NOMINAL WITH LSB LINE LEVEL SWITFH A2S8 AT -10 dB.

NOTES FOR FIGURE 5-1 (CONTINUED)

SPECIFIC NOTES

SET MODE SELECTOR SWITCH A2S2 TO ISB RATT, AND MEASURE 500 kHz SIGNAL LEVEL AT A2A1A3TP2. METER SHOULD INDICATE 6 mVRMS NOMINAL. LSB LINE LEVEL METER A2M1 SHOULD INDICATE -4 dB NOMINAL WITH THE LSB LINE LEVEL SWITCH A2A8 IN THE -10 dB POSITION.

TS-3 SET MODE SELECTOR SWITCH A2S2 TO LSB. USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3E6. METER SHOULD INDICATE 10 mVRMS NOMINAL.

TS-4 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A2E4. METER SHOULD INDICATE 1.1 VRMS NOMINAL.

TS-5 USE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL FROM FREQUENCY STANDARD ASSEMBLY A2A5 AT A2A1A4E33. METER SHOULD INDICATE 175 mVRMS NOMINAL.

TS-6 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A21A19TP4. METER SHOULD INDICATE 100 mVRMS NOMINAL.

TS-7 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CENTER ARM OF A2A21A19R4. METER SHOULD INDICATE 90 mVRMS NOMINAL.

TS-8 USE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT PIN 6 OF A2A21T1 SECONDARY. METER SHOULD INDICATE 140 mVRMS NOMINAL. LSB LINE LEVEL METER A2M1 SHOULD INDICATE -4 dB NOMINAL WITH LSB LINE LEVEL SWITCH A2S8 IN -10 dB POSITIONS.

TS-9 SET MODE SELECTOR SWITCH TO USB. CHECK THAT TEST CIRCUIT AUDIO LEVEL SWITCH IS SET TO NORMAL, AND PTT KEY IS ON. ADJUST TWO-TONE GENERATOR FOR 1000 HZ AND 1625 HZ AT 150 mVRMS FOR EACH TONE. CONNECT THE AC VOLTMETER TO TERMINAL A2A1E6. METER SHOULD INDICATE 0.5 mVRMS NOMINAL. TEST PROBE MUST BE SHIELDED WITH SHORT GROUND CONNECTION AT PROBE END.

TS-10 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3TP1. METER SHOULD INDICATE 6 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE -4 dB NOMINAL WITH USB LINE LEVEL SWITCH A2S7 AT -10 dB.

SET THE MODE SELECTOR SWITCH A2S2 TO ISB RATT, AND MEASURE 500 kHz SIGNAL LEVEL AT A2A1A3TP1. METER SHOULD INDICATE 6 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE +2 dB WITH USB LINE LEVEL SWITCH A2S7 AT -10 dB; AN OFF-SCALE READING IS ACCEPTABLE.

SET MODE SELECTOR SWITCH A2S2 TO ISB, AND OBSERVE AC VOLTMETER CONNECTED AT A2A1A3TP1. METER SHOULD INDICATE 6 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE -4 dB NOMINAL WITH USB LINE LEVEL SWITCH A2S2 AT -10 dB.

NOTES FOR FIGURE 5-1 (CONTINUED)

TS-11 SET MODE SELECTOR SWITCH A2S2 TO USB. USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT TERMINAL A2A1A3E1. METER SHOULD INDICATE 10 mVRMS NOMINAL.

TS-12 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A1A1E4. METER SHOULD INDICATE 1.1 VRMS NOMINAL.

TS-13 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A21A18TP4. METER SHOULD INDICATE 100 mVRMS NOMINAL.

TS-14 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CENTER ARM OF AUDIO AMPLIFIER A2A21A18R4. METER SHOULD INDICATE 90 mVRMS NOMINAL.

TS-15 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT PIN 6 OF A2A21T2 SECONDARY. METER SHOULD INDICATE 140 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE -4 dB NOMINAL WITH USB LINE LEVEL SWITCH A2S7 IN -10 dB POSITION.

4. PRELIMINARY SETUP, FIGURE 5-1, SHEET 2.
DISCONNECT JACKS A1A1J4 THROUGH A1A1J8 AT REAR OF T-827H/URT CASE. EXTEND MAIN-FRAME CHASSIS FROM CASE AND DEFEAT INTERLOCK. CONNECT DUMMY LOAD TO RF OUT JACK A1J23. SET T-827H/URT CONTROLS AS FOLLOWS:

CONTROL	POSITION
MODE SELECTOR SWITCH A2S2	STDBY
LOCAL/REMOTE SWITCH A2S1	REMOTE
AUX/NORM SWITCH A1S1	AUX
FREQUENCY CONTROLS	2.000 MHZ
HZ SWITCH A2S6	000
DATA/NORMAL SWITCH A2S11	DATA

5. TEST SETUP.

a. REMOVE MODE SELECTOR ASSEMBLY A2A1 AND AUDIO PROCESSOR ASSEMBLIES A2A21A18 AND A2A21A19 FROM MAIN FRAME AND RECONNECT USING EXTENDER CABLES AND CARDS. REMOVE THE DUST COVER FROM MODE SELECTOR ASSEMBLY.

b. SET MODE SELECTOR SWITCH A2S2 TO LSB. PROVIDE THE STANDARD LINK 11 NET TEST SIGNAL AND KEY TO CONNECTOR 1A1J8.

c. DETERMINE THAT THE NET TEST SIGNAL INPUT IS SET FOR 0 dBm (.774 V) TRUE RMS.

6. TEST STEPS: (REFER TO NOTES 4 AND 5 BEFORE PERFORMING TEST.)

TS-16 CONNECT THE AC VOLTMETER TO TERMINAL A2A1E6. METER SHOULD INDICATE 0.5 mVRMS NOMINAL. TEST PROBE MUST BE SHIELDED WITH SHORT GROUND CONNECTION AT PROBE END.

TS-17 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3TP2. METER SHOULD INDICATE 4 mVRMS NOMINAL.

SET MODE SELECTOR SWITCH A2S2 TO ISB, AND MEASURE 500 kHz SIGNAL LEVEL AT A2A1A3TP2. METER SHOULD INDICATE 2.5 mVRMS NOMINAL.

SET MODE SELECTOR SWITCH A2S2 TO LSB, AND OBSERVE AC VOLTMETER CONNECTED AT A2A1A3TP2. METER SHOULD INDICATE 4 mVRMS NOMINAL. LSB LINE LEVEL METER A2M1 SHOULD INDICATE -7 dB NOMINAL WITH LSB LINE LEVEL SWITCH A2S8 AT -10 dB.

TS-18 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3E6. METER SHOULD INDICATE 6.5 mVRMS NOMINAL.

TS-19 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A2E4. METER SHOULD INDICATE 1.1 VRMS NOMINAL.

TS-20 USE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL FROM FREQUENCY STANDARD ASSEMBLY A2A5 AT A2A1A4E33. METER SHOULD INDICATE 175 mVRMS NOMINAL.

TS-21 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL OF THE AUDIO AMPLIFIER OUTPUT AT A2A21A19TP4. METER SHOULD INDICATE 73 mVRMS NOMINAL.

TS-22 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CENTER ARM OF A2A21A19R4. METER SHOULD INDICATE 90 mVRMS NOMINAL.

TS-23 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CLIPPER OUTPUT A2A21A19TP3. METER SHOULD INDICATE 1.4 VRMS NOMINAL.

TS-24 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A21A19TP1. METER SHOULD INDICATE 0.63 VRMS NOMINAL.

TS-25 USE THE TRUE RMS VOLTMETER TO MEASURE THE TGC AUDIO SAMPLE LEVEL AT A2A21A19TP2. METER SHOULD INDICATE 0.774 VRMS NOMINAL.

NOTES FOR FIGURE 5-1 (CONTINUED)

TS-26 SET MODE SELECTOR SWITCH A2S2 TO USB. CHECK THAT DATA KEY ON AUDIO TEST SET IS DEPRESSED, AND THAT AMPLITUDE OF 15 TONE OUTPUTS IS 774 mVRMS AS SEEN ON TRUE RMS VOLTMETER. USE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1E6. METER SHOULD INDICATE 0.5 mVRMS NOMINAL. TEST PROBE MUST BE SHIELDED WITH SHORT GROUND CONNECTION AT PROBE END.

TS-27 USE THE AC VOLTMETER TO MEASURE THE 500 kHz SIGNAL LEVEL AT A2A1A3TP1. METER SHOULD INDICATE 4 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE -7 dB NOMINAL WITH THE USB LINE LEVEL SWITCH A2S7 IN -10 dB POSITION.

SET MODE SELECTOR SWITCH A2S2 TO ISB. RECHECK AUDIO TEST SET FOR 774 mVRMS AND OBSERVE VOLTMETER CONNECTED AT A2A1A3TP1. METER SHOULD INDICATE 2.5 mVRMS NOMINAL. USB LINE LEVEL METER A2M2 SHOULD INDICATE 10 dB NOMINAL WITH USB LINE LEVEL SWITCH A2S7 AT -10 dB.

TS-28 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT TERMINAL A2A1A3E1. METER SHOULD INDICATE 6.5 mVRMS NOMINAL.

TS-29 USE THE AC VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A1A1E4. METER SHOULD INDICATE 1.1 VRMS NOMINAL.

TS-30 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A21A18TP4. METER SHOULD INDICATE 73 mVRMS NOMINAL.

TS-31 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CENTER ARM OF A2A21A18R4. METER SHOULD INDICATE 90 mVRMS NOMINAL.

TS-32 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT CLIPPER OUTPUT A2A21A18TP3. METER SHOULD INDICATE 1.40 VRMS NOMINAL.

TS-33 USE THE TRUE RMS VOLTMETER TO MEASURE THE SIGNAL LEVEL AT A2A21A18TP1. METER SHOULD INDICATE 630 mVRMS NOMINAL.

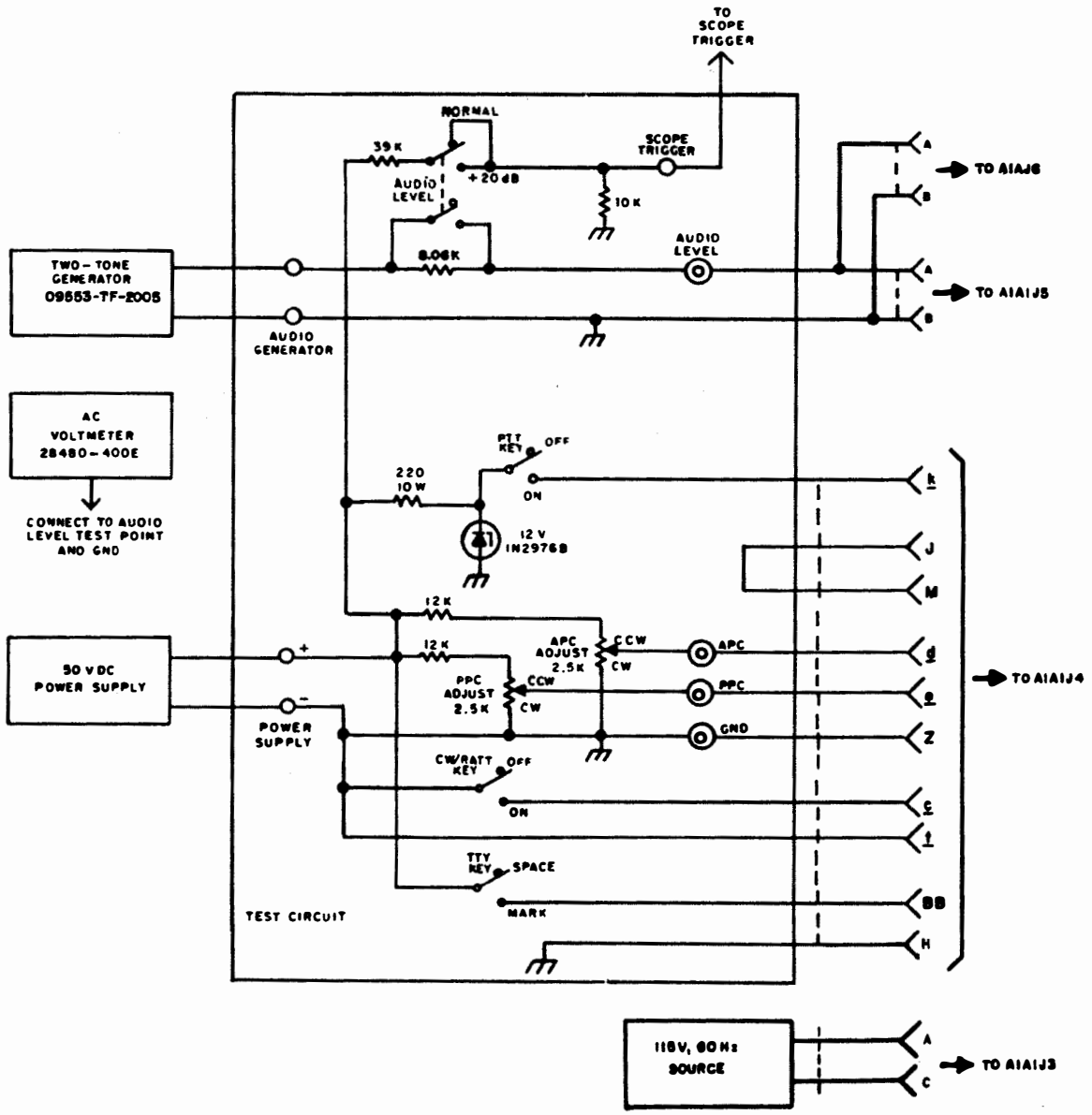
TS-34 USE THE TRUE RMS VOLTMETER TO MEASURE THE TGC AUDIO SAMPLE LEVEL AT A2A21A18TP2. METER SHOULD INDICATE 0.774 VRMS NOMINAL.

TS-35 USE THE MULTIMETER TO MEASURE THE DC VOLTAGE AT A2A21A20TP1. METER SHOULD INDICATE 0 VDC. REMOVE DATA KEY INPUT. METER SHOULD READ APPROXIMATELY +9 VDC. REAPPLY DATA KEY.

TS-36 USE THE MULTIMETER TO MEASURE THE DC VOLTAGE AT A2A21A20TP2. METER SHOULD INDICATE APPROXIMATELY 4.3 VDC. SWITCH DATA/NORMAL METER SWITCH A2S6 TO NORMAL. METER SHOULD INDICATE 0 VDC.

NOTES FOR FIGURE 5-1 (CONTINUED)

7. TEST CIRCUIT



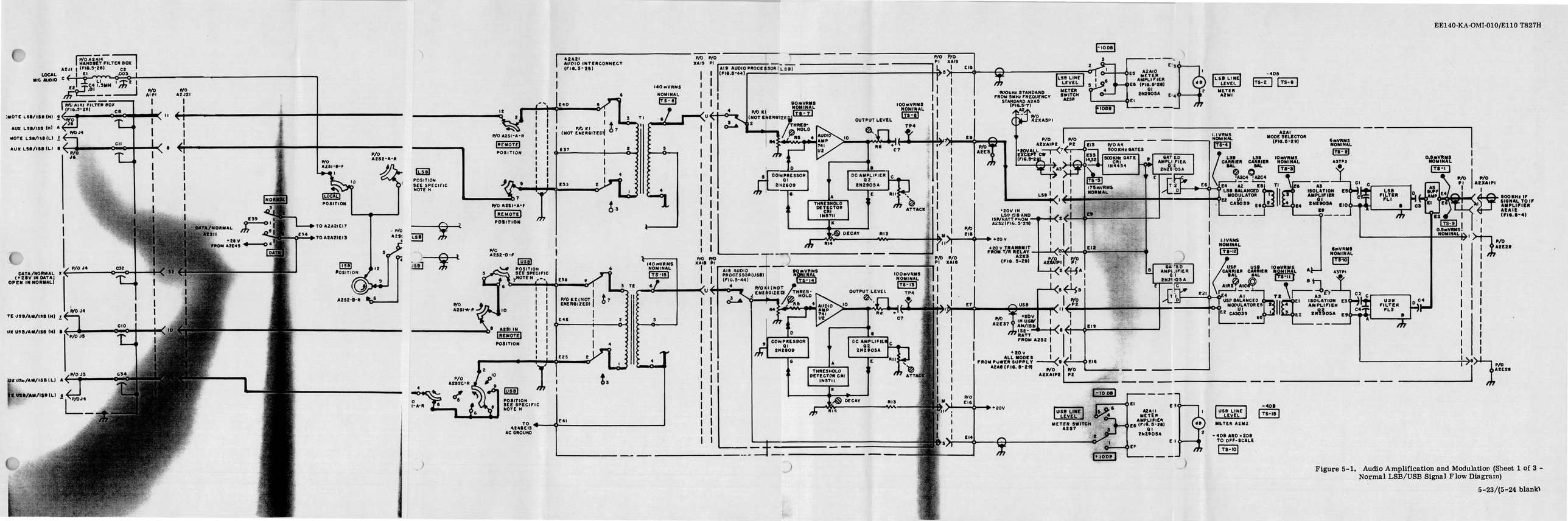


Figure 5-1. Audio Amplification and Modulation (Sheet 1 of 3 - Normal LSB/USB Signal Flow Diagram)

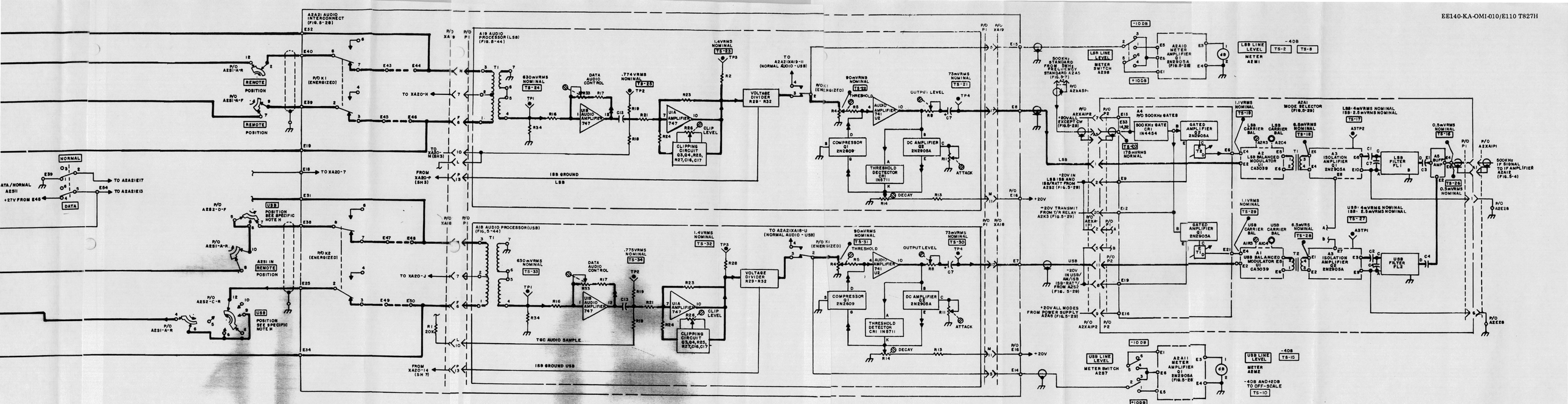
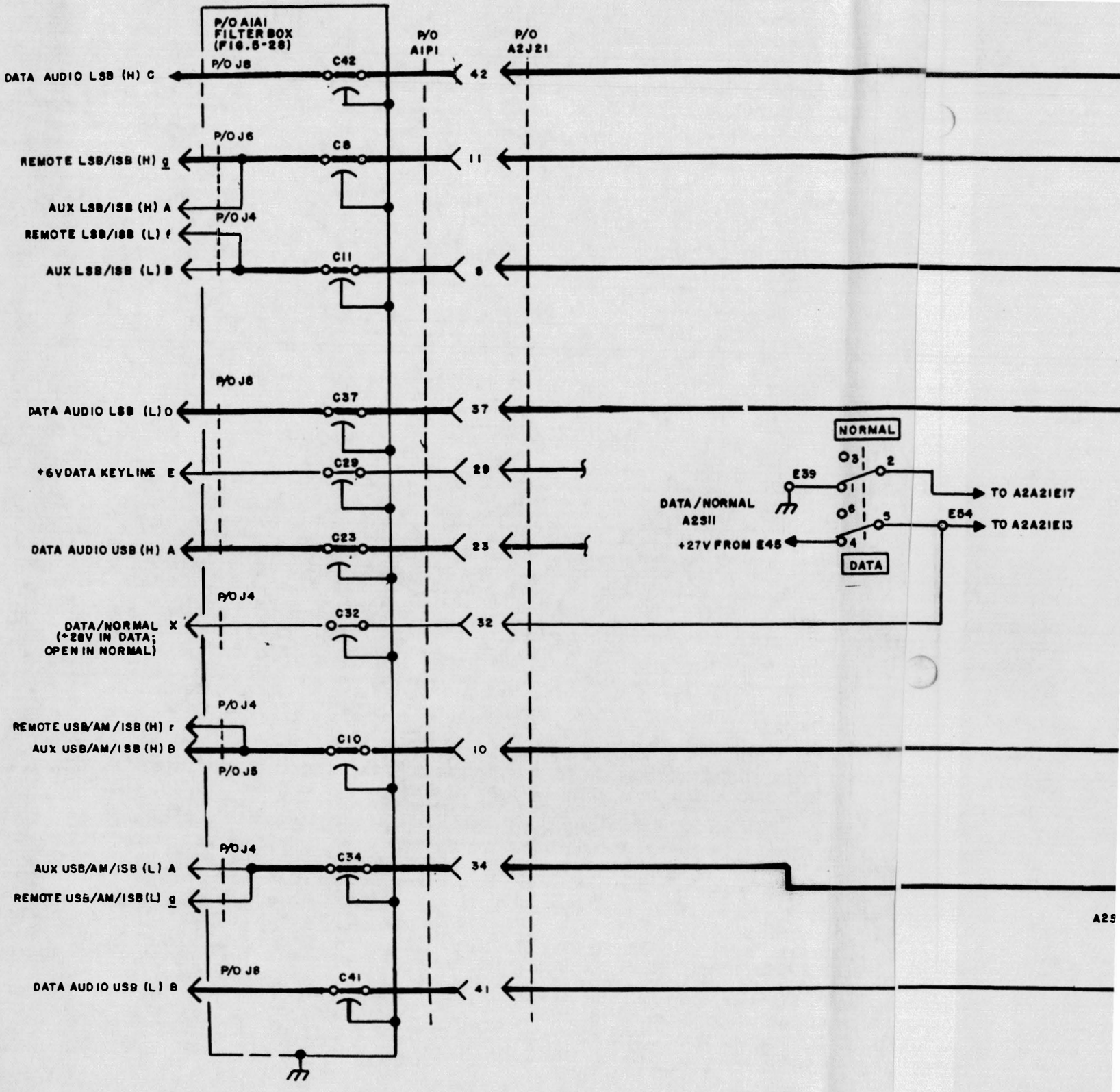


Figure 5-1. Audio Amplification and Modulation (Sheet 2 of 3 – Data LSB/USB Signal Flow Diagram)


P/O A1A1 FILTER BOX (FIG. 5-28)
P/O A1P1
P/O A2J21
DATA AUDIO LSB (H) C
P/O J8
C42
42
REMOTE LSB/ISB (H) g
P/O J6
C8
11
AUX LSB/ISB (H) A
REMOTE LSB/ISB (L) f
P/O J4
AUX LSB/ISB (L) B
C11
8
DATA AUDIO LSB (L) D
P/O J8
C37
37
+6V DATA KEYLINE E
C29
29
DATA AUDIO USB (H) A
C23
23
DATA/NORMAL X
(+28V IN DATA; OPEN IN NORMAL)
P/O J4
C32
32
REMOTE USB/AM/ISB (H) r
AUX USB/AM/ISB (H) B
P/O J4
C10
10
P/O J8
AUX USB/AM/ISB (L) A
REMOTE USB/AM/ISB (L) g
P/O J4
C34
34
DATA AUDIO USB (L) B
P/O J8
C41
41
NORMAL
DATA/NORMAL A2S11
E39
TO A2A21E17
E54
TO A2A21E13
+27V FROM E45
DATA

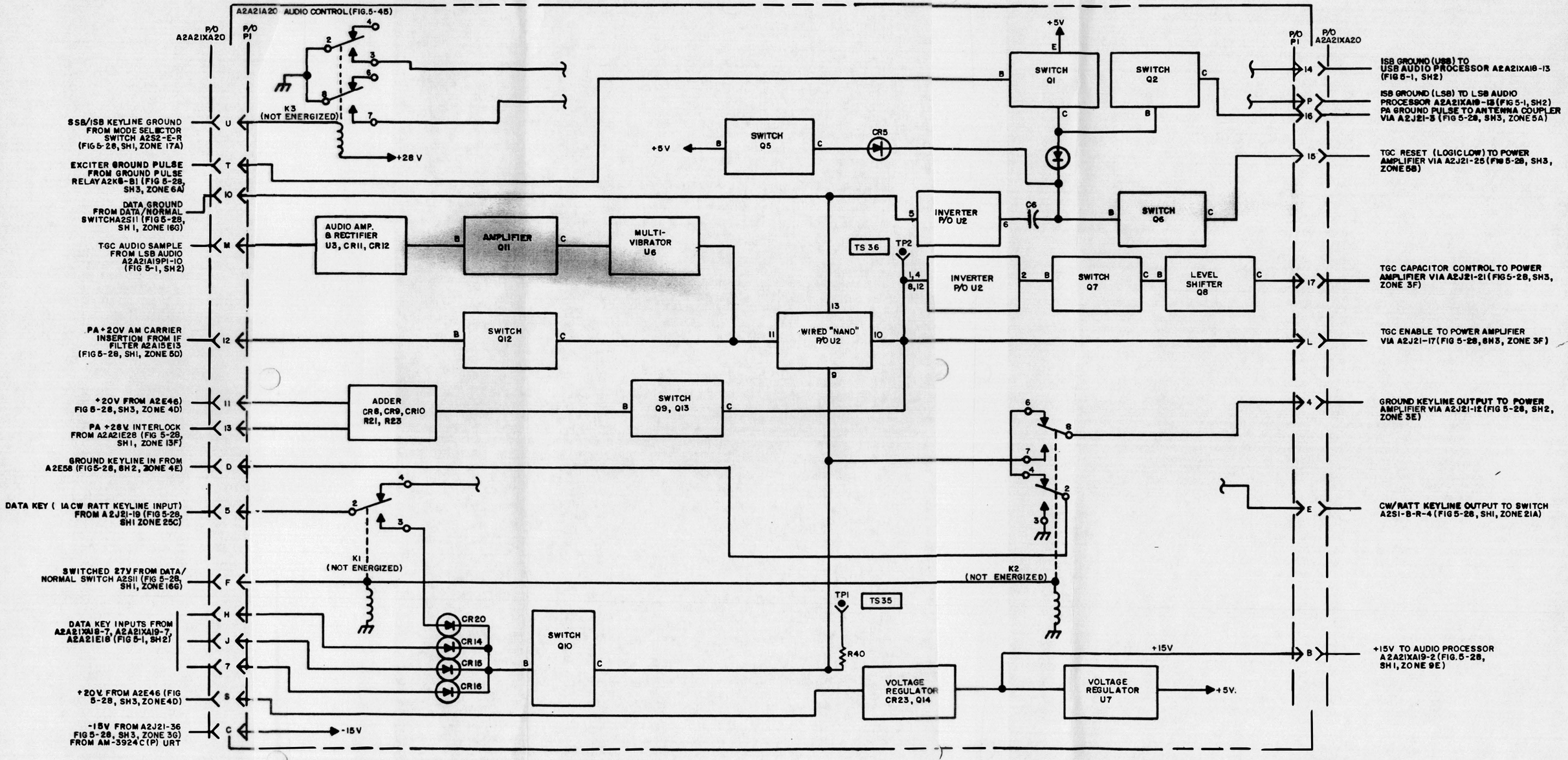


Figure 5-1. Audio Amplification and Modulation (Sheet 3 of 3 - Control Functions)

TEST DATA FOR FIGURE 5-2

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
PLUG-IN UNIT TEST SET TS-2135/WRC-1 (MODIFIED)
MULTIMETER 28480-410C OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
TEST CIRCUIT ILLUSTRATED IN FIGURE 5-1, NOTE 7
DUMMY LOAD DA-91A/U

B. THE SPECIFIC NOTES THAT FOLLOW DETAIL DEPOT PROCEDURES FOR TESTING THE T-827H/URT IN A FREE STANDING CONFIGURATION. THE TEST CIRCUIT SHOWN IN SPECIFIC NOTE 7 OF FIGURE 5-1 PROVIDES SWITCHING AND CONTROLS TO SIMULATE THE SHIPBOARD COMMUNICATION SYSTEM. FOR DEPOT MAINTENANCE, THE MODULE UNDER TEST MAY ALSO BE OPERATED IN PLUG-IN UNIT TEST SET TS-2135/WRC-1 (MODIFIED). THE SIGNAL LEVELS INDICATED ON THE FLOW DIAGRAM SHALL BE USED TO GUIDE THE SETTINGS OF THE ASSOCIATED TEST GENERATORS. TS-2135/WRC-1 CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

C. FOR SHIPBOARD MAINTENANCE, THE T-827H/URT MAY BE OPERATED AS PART OF THE AN/URT-23C(V)1. THE AM-3924C(P)/URT PORTION OF THE AN/URT-23C(V)1 MUST BE DISABLED BY REMOVAL OF THE 500 V FUSE (2A1F2A) FROM ITS HOLDER ON THE FRONT PANEL OF POWER SUPPLY PP-3916C/UR. (RECONNECT THE FUSE HOLDER AFTER REMOVING THE 500 V FUSE CARTRIDGE). THE POWER-ON SWITCH OF THE AN/URT-23C(V)1 MAY NOW BE CLOSED TO APPLY OPERATING VOLTAGES TO THE T-827H/URT TRANSMITTER. THE APC AND PPC VOLTAGES SUPPLIED TO THE T-827H/URT WILL BE 3.84 VDC AND 0 VDC, RESPECTIVELY, WHICH WILL DRIVE THE T-827H/URT TO ITS FULL RF OUTPUT. ADDITIONALLY, THE NORMAL COMM UNICATION SYSTEM ACTIONS MUST BE TAKEN TO PROVIDE THE DISCRETE CONDITIONS REQUIRED BY THE TEST STEPS IN SPECIFIC NOTE 2.

D. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING OR TEST STEP.

E. REFERENCES: IF NECESSARY MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-43
TROUBLESHOOTING SEQUENCE, FIGURE 5-17
CORRECTIVE MAINTENANCE, PARAGRAPH 6-102
MAINTENANCE SCHEMATIC, FIGURE 5-42
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-76

SPECIFIC NOTES

1. PRELIMINARY SETUP. DISCONNECT JACKS A1A1J4 THROUGH A1A1J8 AT REAR OF T-827H/URT. CONNECT TEST CIRCUIT SHOWN IN NOTE 7 OF FIGURE 5-1 TO A1A1J3 AND A1A1J4, AND SET TEST CIRCUIT CW/RATT KEY ON. EXTEND MAIN FRAME CHASSIS, DEFEAT INTERLOCK, AND CONNECT DUMMY LOAD DA-91A/U TO A1A1J23.

TEST DATA FOR FIGURE 5-2 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

CONTROL	POSITION
MODE SELECTOR SWITCH A2S2	RATT
LOCAL/REMOTE SWITCH A2S1	REMOTE
AUX/NORM SWITCH A1S1	AUX
FREQUENCY CONTROLS	2.000 MHz
Hz SWITCH A2S6	000
DATA/NORMAL SWITCH A2S11	NORMAL

2. TEST STEPS:

TS-1 WITH RATT SHIFT SELECT SWITCH A2S10 IN 850 Hz POSITION, SET TEST CIRCUIT TTY KEY TO MARK, AND MEASURE THE FREQUENCY AT A2A9A1TP5 WITH ELECTRONIC COUNTER. IT SHOULD READ 3150 ±40 Hz. SET TEST CIRCUIT TTY KEY TO SPACE. FREQUENCY SHOULD BE 4850 ±40 Hz. SET RATT SHIFT SELECT SWITCH A2S10 TO 170 Hz AND TEST CIRCUIT TTY KEY TO MARK. FREQUENCY SHOULD BE 3830 ±8 Hz. SET TEST CIRCUIT TTY KEY TO SPACE. FREQUENCY SHOULD READ 4170 ±8 Hz.

TS-2 SET TEST CIRCUIT TTY KEY TO MARK, AND MEASURE THE VOLTAGE BETWEEN A2A9A1TP1 AND A2A9A1TP2. IT SHOULD READ BETWEEN 2.0 AND 6.8 VOLTS.

TS-3 USE OSCILLOSCOPE TO MEASURE AC SIGNAL AT A2A9TP4. IT SHOULD INDICATE 1.2 ±0.2 V P-P WITH A PERIOD OF EXACTLY 1 MICROSECOND.

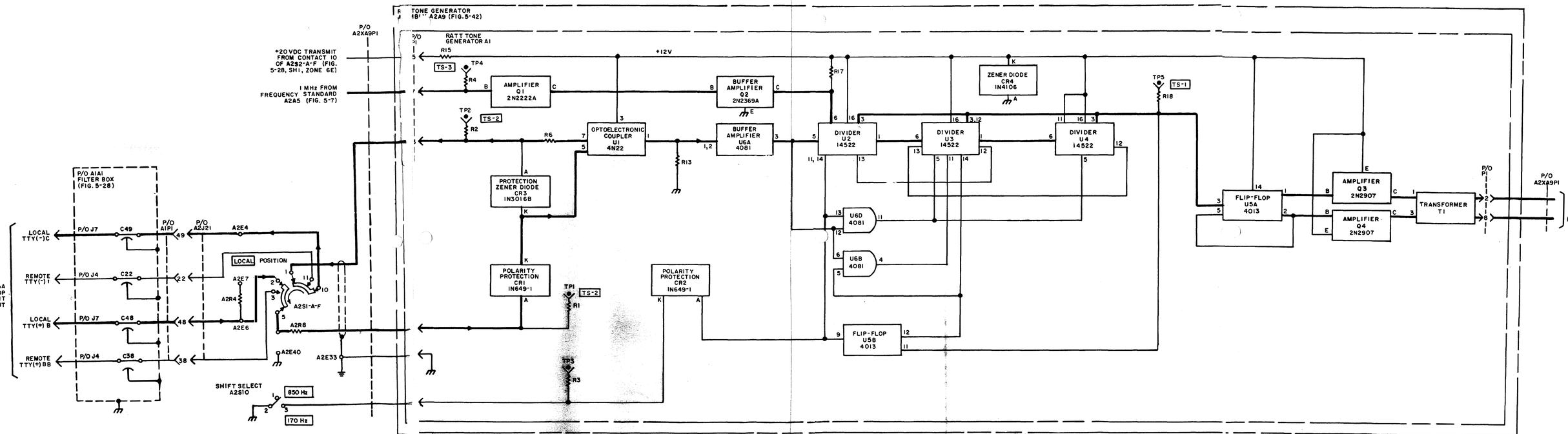


Figure 5-2. RATT Tone Generator, Signal Flow Diagram

TEST DATA FOR FIGURE 5-3

GENERAL NOTES

A. TEST EQUIPMENT
DUMMY LOAD DA-91A/U
MULTIMETER AC-DC AN/USM-311
AC VOLTMETER 28480-400E
TEST CIRCUIT ILLUSTRATED IN FIGURE 5-1, NOTE 7
EXTENDER CABLES 30A226271-21-11 AND 30A226280-21-11.
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1
SPECTRUM ANALYZER 28480-8553B-E03
SAMPLER BOX B (FIGURE 6-1)

B. THE SPECIFIC NOTES THAT FOLLOW DETAIL DEPOT PROCEDURES FOR TESTING THE T-827H/URT IN A FREE STANDING CONFIGURATION. THE TEST CIRCUIT SHOWN IN SPECIFIC NOTE 7 OF FIGURE 5-1 PROVIDES SWITCHING AND CONTROLS TO SIMULATE THE SHIPBOARD COMMUNICATION SYSTEM. FOR DEPOT MAINTENANCE, THE MODULE UNDER TEST MAY ALSO BE OPERATED IN AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. THE SIGNAL LEVELS INDICATED ON THE SIGNAL FLOW DIAGRAM SHALL BE USED TO GUIDE THE SETTINGS OF THE ASSOCIATED TEST GENERATORS. TS-3670/WRC-1 CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

C. FOR SHIPBOARD MAINTENANCE, THE T-827H/URT MAY BE OPERATED AS PART OF THE AN/URT-23C(V)1. THE AM-3924C(P)/URT PORTION OF THE AN/URT-23C(V)1 MUST BE DISABLED BY REMOVAL OF THE 500 V FUSE (2A1F2A) FROM ITS HOLDER ON THE FRONT PANEL OF POWER SUPPLY PP-3916/UR. (RECONNECT THE FUSE HOLDER AFTER REMOVING THE 500 V FUSE CARTRIDGE.) THE POWER-ON SWITCH OF THE AN/URT-23C(V)1 MAY NOW BE CLOSED TO APPLY OPERATING VOLTAGES TO THE T-827H/URT TRANSMITTER. THE APC AND PPC VOLTAGES SUPPLIED TO THE T-827H/URT WILL BE 3.84 VDC AND 0 VDC, RESPECTIVELY, WHICH WILL DRIVE THE T-827H/URT TO ITS FULL RF OUTPUT. ADDITIONALLY, THE NORMAL COMMUNICATION SYSTEM ACTIONS MUST BE TAKEN TO PROVIDE THE DISCRETE CONDITIONS REQUIRED BY THE TEST STEPS IN SPECIFIC NOTE 2.

D. REFERENCES: IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-51
TROUBLESHOOTING SEQUENCE, FIGURE 5-18
CORRECTIVE MAINTENANCE, PARAGRAPH 6-45
MAINTENANCE SCHEMATIC, FIGURE 5-29
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-12

E. MODE SELECTOR SWITCH A2S2 CONTACT CONNECTIONS FOR VARIOUS MODES AS FOLLOWS:

MODE	A2S2-A-F	A2S2-E-R
LSB	NONE	NONE
RATT	10-12	NONE
AM	1-11	NONE
CW	2-12	3-4
USB	1-3	NONE
ISB	NONE	5-6
ISB/RATT	3-5	NONE

GENERAL NOTES (CONTINUED)

F. ALTERNATE CARRIER REINSERTION SWITCH A2A1S1 CONNECTIONS ARE SHOWN IN LOWER LEFT CORNER OF SIGNAL FLOW DIAGRAM.

SPECIFIC NOTES

1. PRELIMINARY SETUP. DISCONNECT CABLES FROM JACKS A1A1J4 THROUGH A1A1J8 AT REAR OF T-827H/URT CASE. EXTEND MAIN FRAME CHASSIS FROM CASE AND DEFEAT INTERLOCK. CONNECT DUMMY LOAD TO RF OUTPUT JACK A1J23.

CONTROL	POSITION
MODE SELECTOR SWITCH A2S2	STDBY
LOCAL/REMOTE SWITCH A2S1	REMOTE
AUX/NORM SWITCH A1S1	AUX
FREQUENCY CONTROLS	2.000 MHz
Hz SWITCH A2S6	000
DATA/NORMAL SWITCH A2S11	NORMAL

2. TEST SETUP.

   a. REMOVE MODE SELECTOR ASSEMBLY A2A1 FROM MAIN FRAME AND CONNECT EXTENDER CABLES. REMOVE MODE SELECTOR COVER.

   b. CONNECT TEST CIRCUIT SHOWN IN NOTE 7 OF FIGURE 5-1 TO A1A1J3 AND A1A1J4.

   c. ENSURE THAT NO AUDIO INPUTS ARE BEING APPLIED TO THE TRANSMITTER.

TS-1 SET A2S2 IN CW POSITION. WITH AC VOLTMETER MEASURE THE VOLTAGE AT A2A1A1E14, 32, 33. VOLTAGE SHOULD BE AS INDICATED.

TS-2 SET A2S2 IN AM POSITION. WITH MULTIMETER MEASURE THE VOLTAGE AT A2A1A4E17. VOLTAGE SHOULD BE AS INDICATED.

TS-3 SET A2S2 IN CW POSITION. WITH AC VOLTMETER MEASURE THE VOLTAGE AT A2A1A4E2. VOLTAGE SHOULD BE AS INDICATED.

TS-4 SET MODE SELECTOR SWITCH A2S2 TO STDBY. REPLACE MODE SELECTOR COVER AND PLUG INTO CHASSIS. CONNECT SPECTRUM ANALYZER 28480-8553B-E03 TO A1J23 THROUGH SAMPLER BOX B AS SHOWN IN FIGURE 6-1. SET THE CARRIER REINSERTION SWITCH TO 0 AND THE MODE SELECTOR SWITCH TO USB. SET TEST CIRCUIT PTT KEY ON, AND NOTE THE 500 kHz REINSERTION AMPLITUDE LEVEL ON THE SPECTRUM ANALYZER. ADJUST APC CONTROL ON TEST CIRCUIT FOR 5 VDC AS READ ON MULTIMETER AN/USM-311 CONNECTED TO APC MONITOR JACK. THIS LEVEL IS TO BE USED AS A ZERO REFERENCE READING. SET THE CARRIER REINSERTION SWITCH TO -10; THE AMPLITUDE LEVEL ON THE SPECTRUM ANALYZER SHOULD BE REDUCED 10 dB (±1 dB). SET THE CARRIER REINSERTION SWITCH TO -20; THE AMPLITUDE LEVEL ON THE SPECTRUM ANALYZER SHOULD BE REDUCED 20 dB (±1 dB). SET THE CARRIER REINSERTION SWITCH TO∞; THE AMPLITUDE LEVEL ON THE SPECTRUM ANALYZER SHOULD BE REDUCED AT LEAST 40 dB.

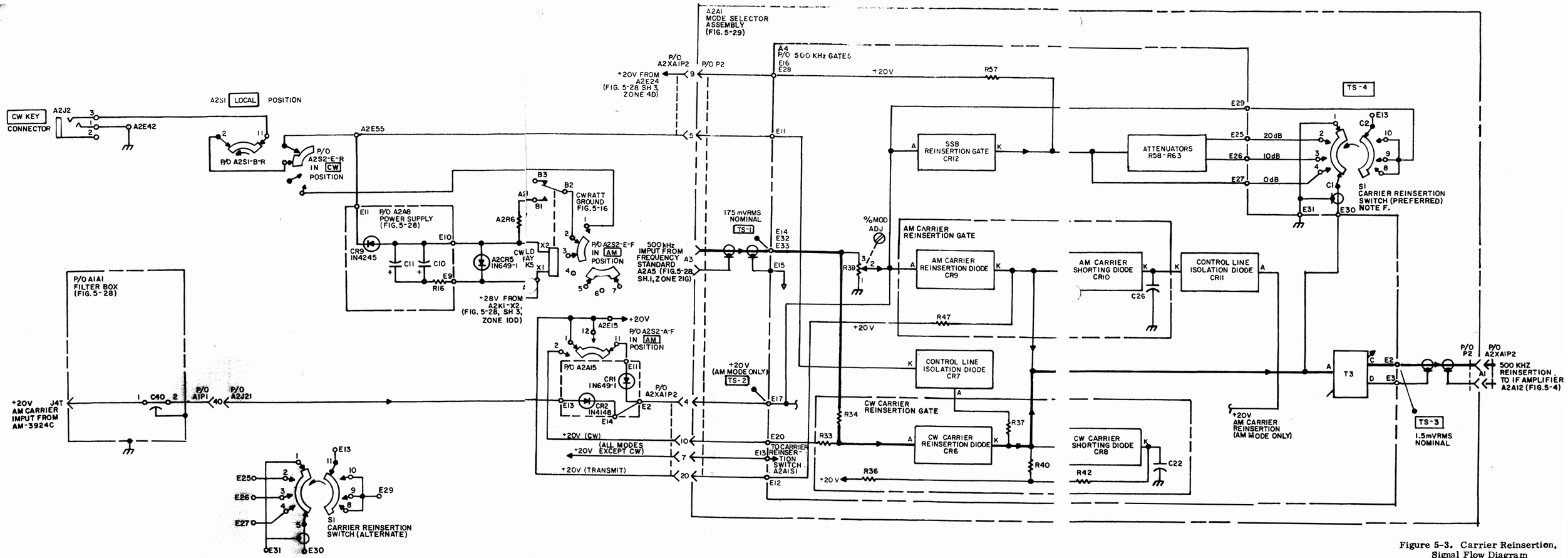


Figure 5-3. Carrier Reinsertion, Signal Flow Diagram

TEST DATA FOR FIGURE 5-4

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
PLUG-IN UNIT TEST SET TS-2135/WRC-1
MULTIMETER 28480-410C OR EQUIVALENT
AC VOLTMETER 28480-400E
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT (2 REQUIRED)
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-10 OR 28480-8640B-001-003.

B. TESTS TO BE PERFORMED IN DEPOT ONLY.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-59
TROUBLESHOOTING SEQUENCE, FIGURE 5-19
CORRECTIVE MAINTENANCE, PARAGRAPH 6-113
MAINTENANCE SCHEMATIC, FIGURE 5-43
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-79

SPECIFIC NOTES

1. PRELIMINARY SETUP. REMOVE IF AMPLIFIER A2A12A1 FROM T-827H/URT. REMOVE DUST COVER FROM A2A12A1 AND PLACE IN PLUG-IN UNIT TEST SET. CONNECT RF SIGNAL GENERATOR TO 500 kHz IF INPUT JACK ON TEST SET. SET RF SIGNAL GENERATOR OUTPUT FOR 500 kHz. APPLY POWER TO TEST SET.

2. TEST SETUP.

   a. WITH AC VOLTMETER MEASURE THE VOLTAGE AT A2A12A1TP1. ADJUST OUTPUT OF RF SIGNAL GENERATOR UNTIL THE VOLTAGE MEASURED AT A2A12A1TP1 IS 1.1 mVRMS.

   b. WITH DIGITAL MULTIMETER MEASURE THE VOLTAGE AT A2A12A1TP3 AND ADJUST TEST SET PPC CONTROL FOR READING OF 0 VDC ON DIGITAL MULTIMETER.

   c. WITH DIGITAL MULTIMETER MEASURE THE VOLTAGE AT A2A12A1TP4 AND ADJUST TEST SET APC CONTROL FOR READING OF 3.86 VDC ON DIGITAL MULTIMETER.

   d. CONNECT AC VOLTMETER TO 500 kHz IF OUTPUT JACK OF TEST SET.

3. TEST STEPS.

TS-1	OBSERVE SIGNAL OUTPUT AT A2A12A1TP2 ON AC VOLTMETER. SIGNAL SHOULD MEASURE 5 ±0.5 mVRMS. (ADJUST A2A12A1R27 TO MEET REQUIREMENT).

TEST DATA FOR FIGURE 5-4 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

TS-2 INCREASE APC VOLTAGE TO ITS MAXIMUM VALUE (8.0 VDC) USING THE TEST SET APC CONTROL. OBSERVE SIGNAL OUTPUT AT A2A12-A1TP2 ON AC VOLTMETER. SIGNAL SHOULD MEASURE APPROXIMATELY ZERO. RETURN APC VOLTAGE TO 3.86 VDC MEASURED AT A2A12A1TP4.

TS-3 INCREASE PPC VOLTAGE TO ITS MAXIMUM VALUE (5.0 VDC) USING THE TEST SET PPC CONTROL. OBSERVE SIGNAL OUTPUT AT A2A12A1TP2 ON AC VOLTMETER. SIGNAL SHOULD MEASURE APPROXIMATELY ZERO.

TS-4 SET APC TO 3.86 VOLTS. CONNECT 500 kHz INPUT FROM SIGNAL GENERATOR TO A2A12P1-A2 (500 kHz CARRIER REINSERTION) AT A LEVEL OF 2.5 mVRMS. OBSERVE SIGNAL OUTPUT AT A2A12A1TP2 ON AC VOLTMETER. SIGNAL SHOULD MEASURE APPROXIMATELY 5 mVRMS.

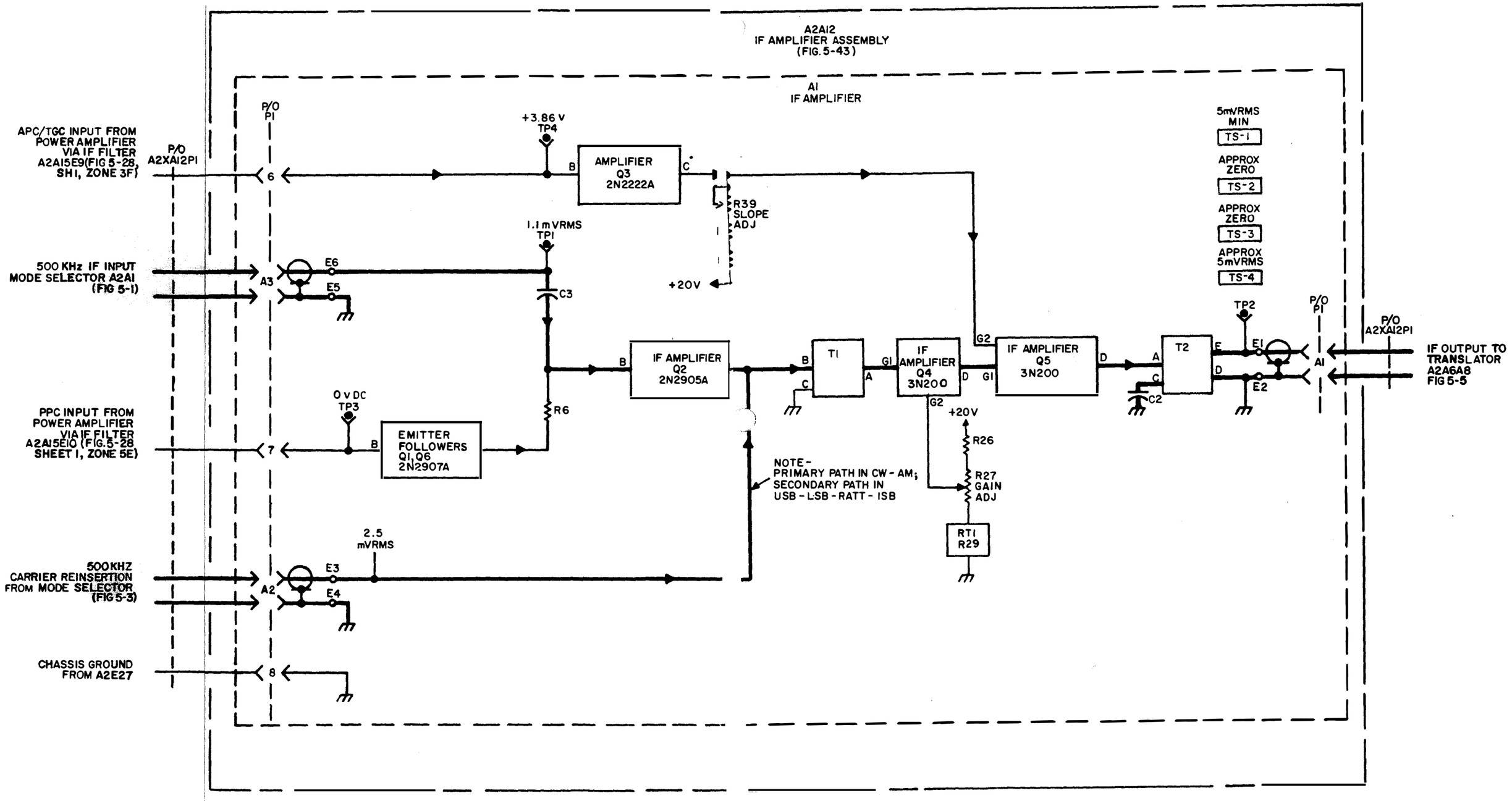


Figure 5-4. IF Amplification and Level Control, Signal Flow Diagram

TEST DATA FOR FIGURE 5-5

GENERAL NOTES

A. THE TESTS DESCRIBED IN THE FOLLOWING TEST DATA ARE TO BE PERFORMED AT DEPOT ONLY.

B. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
SPECTRUM ANALYZER 28480-8553B-E03 WITH AC PROBE 28480-1121A
FREQUENCY STANDARD AN/URQ-10 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

C. REFERENCES. IF NECESSARY MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-65
TROUBLESHOOTING SEQUENCE, FIGURE 5-20
CORRECTIVE MAINTENANCE, PARAGRAPH 6-77
MAINTENANCE SCHEMATIC, FIGURE 5-33
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-65

D. ——▶—— INDICATES SIGNAL FLOW.

E. —⟩⟨— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE, PROCEED IN PARALLEL WITH DIAGRAM BORDER.

SPECIFIC NOTES

1. PRELIMINARY SETUP: PLACE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 ON DEPOT TEST FIXTURE. BE SURE CONNECTORS AND COUPLERS ARE PROPERLY MATED. REMOVE LEFT SIDE COVER OF A2A6. SET CONTROLS ON TEST FIXTURE TO TEST A WRC-1 100 Hz INCREMENT TRANSLATOR/SYNTHESIZER ASSEMBLY IN TRANSMIT MODE. MAINTAIN A NORMAL +20 VDC SUPPLY LEVEL.

2. TEST SETUP:
   a. CONNECT FREQUENCY STANDARD 5 MHz OUTPUT TO EXTERNAL 5 MHz INPUT JACK ON REAR OF TEST FIXTURE.
   b. CONNECT RF MILLIVOLTMETER TO 10 MHz REFERENCE JACK ON REAR OF TEST FIXTURE. ADJUST 10 MHz LEVEL FOR A METER INDICATION OF 30 ± 10 mVRMS.
   c. SET TEST FIXTURE CONTROLS TO 21.505 MHz.
   d. SET 500 kHz INPUT LEVEL AT A2A6A8TP7 FOR -37 dBm (3 mVRMS).
   e. CONNECT SPECTRUM ANALYZER AND AC PROBE TO A2A6A8TP6.

[TS-1] WITH SPECTRUM ANALYZER AND AC PROBE MEASURE THE OUTPUT AT A2A6A8TP6. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED. REPEAT AT 22.505 MHz. TS2 - TS6 ARE SHOWN FOR TROUBLE SHOOTING IN THE EVENT THAT TS-1 MEASUREMENT IS UNSUCCESSFUL.

SPECIFIC NOTES FOR FIGURE 5-5 (CONTINUED)

TS-2 WITH OSCILLOSCOPE AND ELECTRONIC COUNTER MEASURE THE FREQUENCY AND PEAK-TO-PEAK VOLTAGE AT A2A6A8E9. WAVEFORM SHOULD BE A SINEWAVE WITH FREQUENCY AND AMPLITUDE AS INDICATED.

TS-3 WITH OSCILLOSCOPE AND ELECTRONIC COUNTER MEASURE THE FREQUENCY AND PEAK-TO-PEAK VOLTAGE AT A2A6A8E8. WAVEFORM SHOULD BE A SINEWAVE WITH FREQUENCY AND AMPLITUDE AS INDICATED.

TS-4 WITH OSCILLOSCOPE AND ELECTRONIC COUNTER MEASURE THE FREQUENCY AND PEAK-TO-PEAK VOLTAGE AT A2A6A8E6. WAVEFORM SHOULD BE A SINEWAVE WITH FREQUENCY AND AMPLITUDE AS INDICATED.

TS-5 WITH SPECTRUM ANALYZER AND FET PROBE MEASURE THE OUTPUT AT PIN 4 OF A2A6A8FL1. FREQUENCY AND MINIMUM AMPLITUDE SHOULD BE AS INDICATED.

TS-6 WITH SPECTRUM ANALYZER AND FET PROBE MEASURE THE OUTPUT AT PIN 3 OF A2A6A8FL3. FREQUENCY AND MINIMUM AMPLITUDE SHOULD BE AS INDICATED.

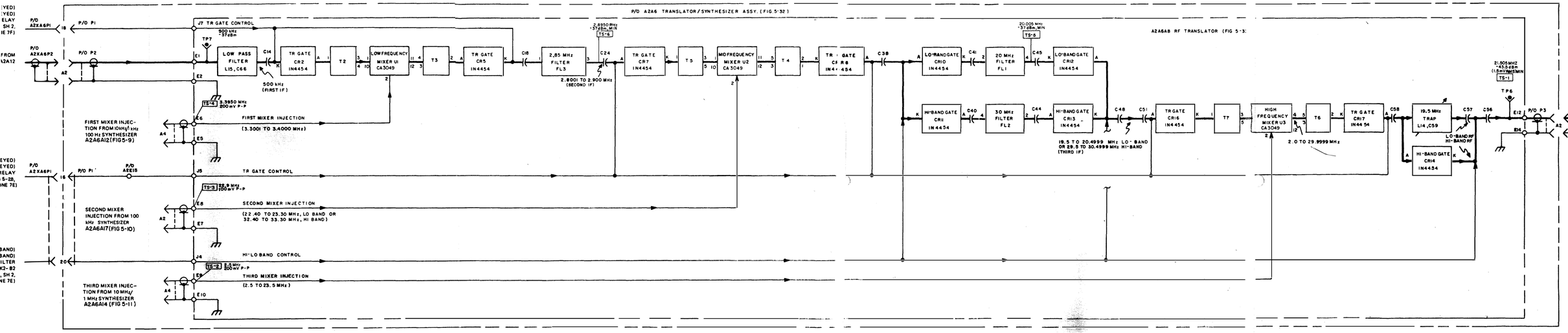
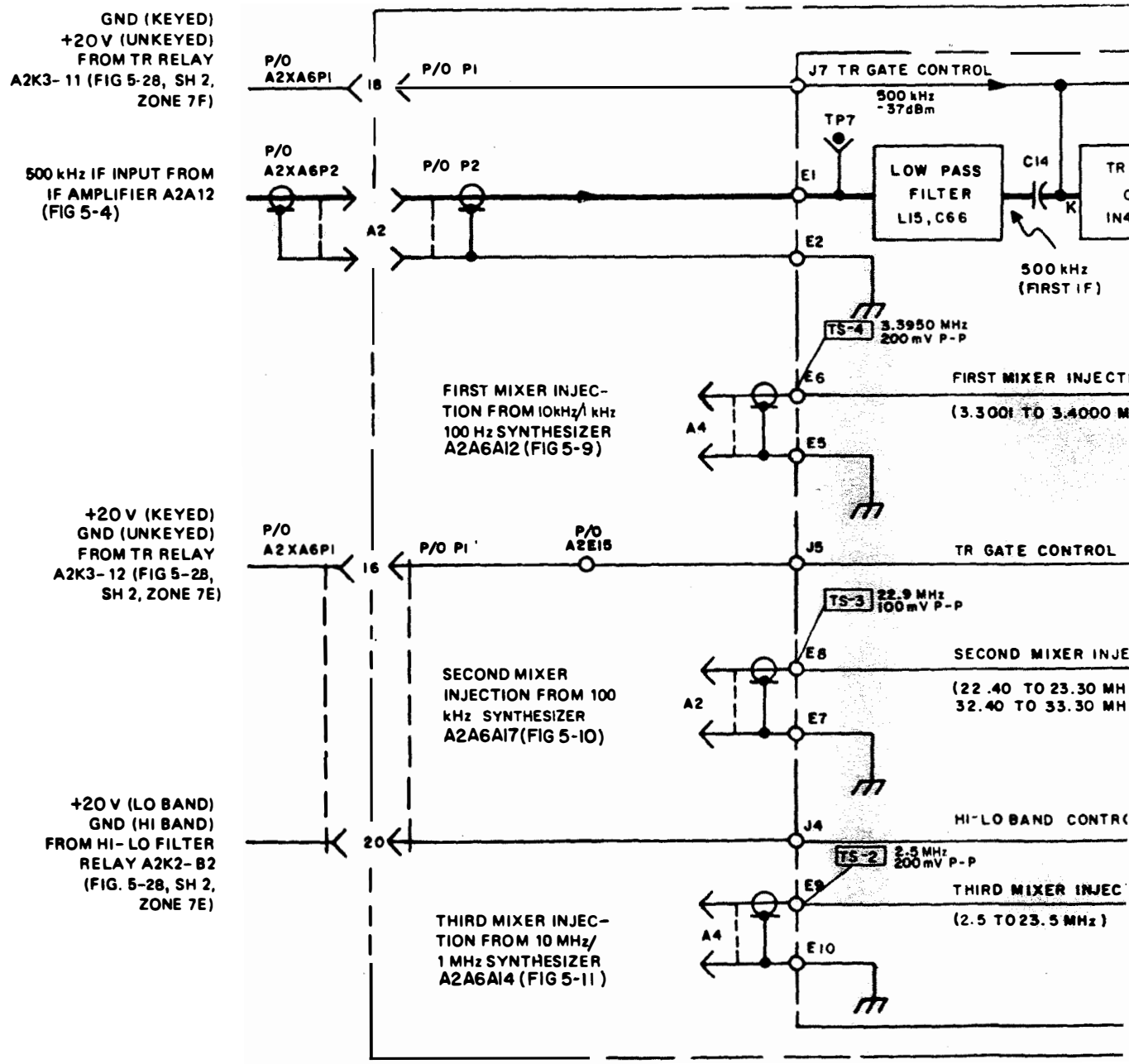


Figure 5-5. IF-TO-RF Conversion, Signal Flow Diagram


GND (KEYED)
+20 V (UNKEYED)
FROM TR RELAY
A2K3-11 (FIG 5-28, SH 2,
ZONE 7F)
P/O
A2XA6P1
18
P/O P1
J7 TR GATE CONTROL
500 kHz
-37dBm
TP7
500 kHz IF INPUT FROM
IF AMPLIFIER A2A12
(FIG 5-4)
P/O
A2XA6P2
P/O P2
A2
E1
LOW PASS
FILTER
L15, C66
C14
K
E2
500 kHz
(FIRST IF)
TS-4
3.3950 MHz
200 mV P-P
FIRST MIXER INJEC-
TION FROM 10kHz/1 kHz
100 Hz SYNTHESIZER
A2A6A12 (FIG 5-9)
A4
E6
FIRST MIXER INJECT
(3.3001 TO 3.4000 M
E5
+20 V (KEYED)
GND (UNKEYED)
FROM TR RELAY
A2K3-12 (FIG 5-28,
SH 2, ZONE 7E)
P/O
A2XA6P1
16
P/O P1
P/O
A2E15
J5
TR GATE CONTROL
TS-3
22.9 MHz
100 mV P-P
SECOND MIXER
INJECTION FROM 100
kHz SYNTHESIZER
A2A6A17 (FIG 5-10)
A2
E8
SECOND MIXER INJE
(22.40 TO 23.30 MH
32.40 TO 33.30 MH
E7
+20 V (LO BAND)
GND (HI BAND)
FROM HI-LO FILTER
RELAY A2K2-B2
(FIG. 5-28, SH 2,
ZONE 7E)
20
J4
HI-LO BAND CONTRO
TS-2
2.5 MHz
200 mV P-P
E9
THIRD MIXER INJEC
(2.5 TO 23.5 MHz)
THIRD MIXER INJEC-
TION FROM 10 MHz/
1 MHz SYNTHESIZER
A2A6A14 (FIG 5-11)
A4
E10

TEST DATA FOR FIGURE 5-6

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
RF DUMMY LOAD DA-91A/U
MULTIMETER 28480-410C
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT
RF AMPLIFIER TEST FIXTURE TS-3685/WRC-1
TEST CIRCUIT ILLUSTRATED IN FIGURE 5-1, NOTE 7

B. THE SPECIFIC NOTES THAT FOLLOW DETAIL DEPOT PROCEDURES FOR TESTING THE T-827H/URT IN A FREE STANDING CONFIGURATION. THE TEST CIRCUIT SHOWN IN SPECIFIC NOTE 7 OF FIGURE 5-1 PROVIDES SWITCHING AND CONTROLS TO SIMULATE THE SHIPBOARD COMMUNICATION SYSTEM. FOR DEPOT MAINTENANCE, THE MODULE UNDER TEST MAY ALSO BE OPERATED IN RF AMPLIFIER TEST FIXTURE TS-3685/WRC-1. THE SIGNAL LEVELS INDICATED ON THE FLOW DIAGRAM SHALL BE USED TO GUIDE THE SETTINGS OF THE ASSOCIATED TEST GENERATORS. TS-3685/WRC-1 CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

C. FOR SHIPBOARD MAINTENANCE, THE T-827H/URT MAY BE OPERATED AS PART OF THE AN/URT-23C(V)1. THE AM-3924C(P)/URT PORTION OF THE AN/URT-23C(V)1 MUST BE DISABLED BY REMOVAL OF THE 500 V FUSE (2A1F2A) FROM ITS HOLDER ON THE FRONT PANEL OF POWER SUPPLY PP-3916C/UR. (RECONNECT THE FUSE HOLDER AFTER REMOVING THE 500 V FUSE CARTRIDGE.) THE POWER-ON SWITCH OF THE AN/URT-23C(V)1 MAY NOW BE CLOSED TO APPLY OPERATING VOLTAGES TO THE T-827H/URT TRANSMITTER. THE APC AND PPC VOLTAGES SUPPLIED TO THE T-827H/URT WILL BE 3.84 VDC AND 0 VDC, RESPECTIVELY, WHICH WILL DRIVE THE T-827H/URT TO ITS FULL RF OUTPUT. ADDITIONALLY, THE NORMAL COMMUNICATION SYSTEM ACTIONS MUST BE TAKEN TO PROVIDE THE DISCRETE CONDITIONS REQUIRED BY THE TEST STEPS IN SPECIFIC NOTE 3.

D. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING OR TEST STEP.

E. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-74
TROUBLESHOOTING SEQUENCE, FIGURE 5-21
CORRECTIVE MAINTENANCE, PARAGRAPH 6-55
MAINTENANCE SCHEMATIC, FIGURE 5-30
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-13, 7-16, 7-20 THROUGH 7-47

F. ——▶—— INDICATES SIGNAL FLOW.

G. —ʃ ʃ— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE, PROCEED IN PARALLEL WITH DIAGRAM BORDER.

SPECIFIC NOTES

1. PRELIMINARY SETUP. DISCONNECT JACKS A1A1J4 THROUGH J8 AT REAR OF T-827H/URT CASE. EXTEND MAIN FRAME CHASSIS FROM CASE AND DEFEAT INTERLOCK. CONNECT DUMMY LOAD DA-91A/U TO RF OUT JACK A1J23. CONNECT TEST CIRCUIT SHOWN IN NOTE 7 OF FIGURE 5-1 TO A1A1J3 AND A1A1J4 AND SET T-827H/URT CONTROLS AS FOLLOWS:

CONTROL	POSITION
MODE SELECTOR SWITCH A2S2	CW
LOCAL/REMOTE SWITCH A2S1	REMOTE
AUX/NORM SWITCH A1S1	AUX
FREQUENCY CONTROLS	2.000 MHZ
HZ SWITCH A2S6	000

2. TEST SETUP.

   a. REMOVE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 FROM MAIN FRAME AND CONNECT THE OUTPUT OF THE RF SIGNAL GENERATOR TO A2A4A38TP1 AND A2A4A38TP2 (GROUND)

   b. SET THE RF SIGNAL GENERATOR OUTPUT FOR A CW FREQUENCY OF 2.000 MHZ AT 3.5 mVRMS.

   c. SET TEST CIRCUIT CW/RATT KEY ON.

3. TEST STEPS:

TS-1 REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST. MEASURE THE RF OUTPUT VOLTAGE FROM A2A4TP3 TO A2A4TP4 (GROUND) WITH ELECTRONIC MULTIMETER. MULTIMETER SHOULD READ 2.5 VRMS MINIMUM. (RF GAIN A2A4A38R6 SET TO MEET THIS REQUIREMENT).

TS-2 MEASURE THE VOLTAGE FROM A2A4TP2 TO A2A4TP1 (GROUND) WITH ELECTRONIC MULTIMETER. VOLTAGE SHOULD BE AS INDICATED.

* TS-3 MEASURE THE VOLTAGE FROM JUNCTION OF A2A4A20C1, A2A4A20T1 AND RF AMPLIFIER BASEPLATE (GROUND) WITH ELECTRONIC MULTIMETER. VOLTAGE SHOULD BE AS INDICATED.

* MEASUREMENT MADE AT DEPOT ONLY.

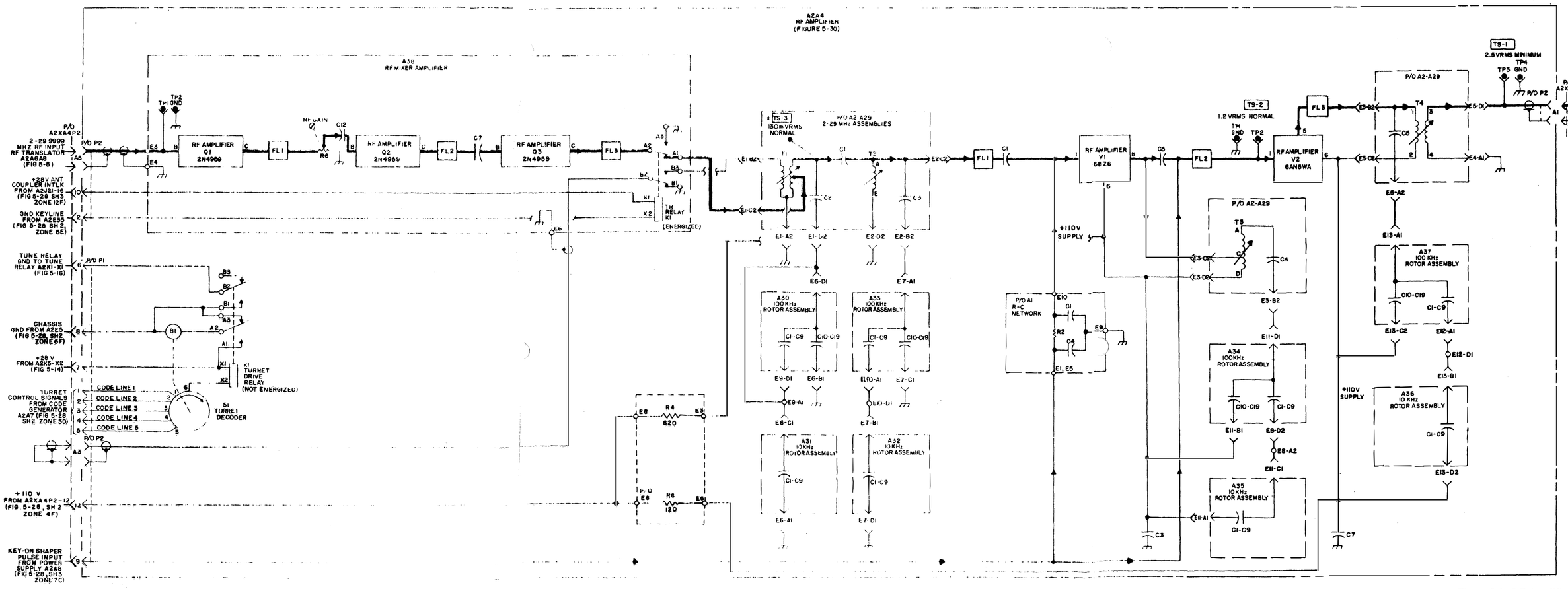


Figure 5-6. RF Amplification and Level Control, Signal Flow Diagram

TEST DATA FOR FIGURE 5-7

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
FREQUENCY STANDARD TEST FIXTURE TS-3667/WRC-1.
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
MULTIMETER, AC-DC, AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-10
DIGITAL MULTIMETER 89536-8800A/AA, OR EQUIVALENT
RF MILLIVOLTMETER 04901-92B-S5 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

B. TESTS TO BE PERFORMED IN DEPOT ONLY.

C. REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-86
TROUBLESHOOTING SEQUENCE FIGURE 5-22
CORRECTIVE MAINTENANCE, PARAGRAPH 6-67
MAINTENANCE SCHEMATIC. FIGURE 5-31
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-60

D. [ ] INDICATES FRONT PANEL MARKING OR TEST STEP.

E. ——▶—— INDICATES SIGNAL FLOW.

F. ——◀◀—— INDICATES FEEDBACK.

G. ——⟩⟨—— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

H. WHEN USING THE OSCILLOSCOPE TO MEASURE THE FREQUENCY, SET THE TIME/DIV TO 2 uSEC TO VIEW 500 kHz, 0.1 uSEC TO VIEW 10 MHz, 1 uSEC TO VIEW 1 MHz, 0.2 uSEC TO VIEW 5 MHz.

SPECIFIC NOTES

1. PRELIMINARY SETUP. SET A2A5A2S1 TO INT/COMP POSITION. PLACE FREQUENCY STANDARD ASSEMBLY A2A5 ON TEST FIXTURE. APPLY POWER, SET POWER SWITCH TO "OVEN" POSITION, SET RF LOAD SELECT SWITCH TO "LOAD" POSITION. ALLOW 1 HOUR MINIMUM TIME FOR STANDARD FREQUENCY OSCILLATOR TEMPERATURE TO STABILIZE. SET POWER SWITCH TO "OPERATE" POSITION.

2. TEST SETUP.
   a. CONNECT OSCILLOSCOPE TO SCOPE CONNECTOR ON REAR PANEL OF TEST FIXTURE.
   b. CONNECT RF MILLIVOLTMETER TO RFVTVM CONNECTOR ON REAR PANEL OF TEST FIXTURE.
   c. CONNECT ELECTRONIC COUNTER TO COUNTER CONNECTOR ON REAR PANEL OF TEST FIXTURE.

TEST DATA FOR FIGURE 5-7 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

d. SET SERVICE PROBE SELECT SWITCH TO OFF POSITION.

3. TEST STEPS:

TS-1 SET FREQUENCY OUTPUT SELECT SWITCH TO INT 5 MHz POSITION. OBSERVE SINEWAVE. COUNTER READING AND RF MILLIVOLTMETER READING SHOULD BE AS INDICATED.

TS-2 SET FREQUENCY OUTPUT SELECT SWITCH TO 1 MHz POSITION. OBSERVE SINEWAVE. COUNTER READING AND RF MILLIVOLTMETER READING SHOULD BE AS INDICATED.

TS-3 SET FREQUENCY OUTPUT SELECT SWITCH TO 500 kHz A1 POSITION. OBSERVE SINEWAVE. COUNTER READING AND RF MILLIVOLTMETER READING SHOULD BE AS INDICATED.

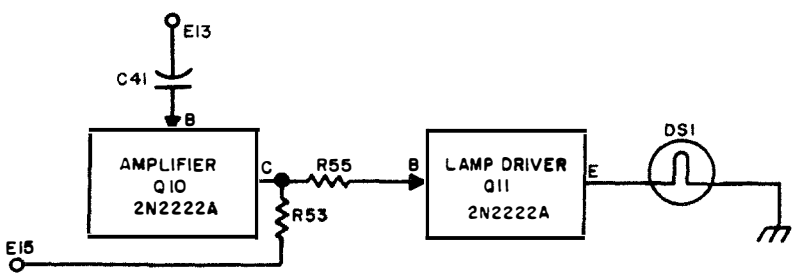
TS-4 SET FREQUENCY OUTPUT SELECT SWITCH TO 500 kHz A2 POSITION. OBSERVE SINEWAVE. COUNTER READING AND RF MILLIVOLTMETER READING SHOULD BE AS INDICATED.

TS-5 SET SELECTOR SWITCH TO 10 MHz POSITION. OBSERVE SINEWAVE. COUNTER READING AND RF MILLIVOLTMETER READING SHOULD BE AS INDICATED.

TS-6 CONNECT RF SIGNAL GENERATOR TO EXTERNAL 5 MHZ INPUT CONNECTOR ON TEST FIXTURE. SET FREQUENCY OF RF SIGNAL GENERATOR TO APPROXIMATELY 5.0001 MHz AT A MINIMUM OUTPUT LEVEL OF 1 VOLT.

SET A2A5A2S1 TO EXT NORMAL. SET FREQUENCY OUTPUT SELECT SWITCH TO INT 5 MHZ POSITION. COUNTER WILL INDICATE THE SIGNAL GENERATOR FREQUENCY. WHILE OBSERVING COUNTER, TURN EXT 5 MHz LEVEL ADJUST CONTROL ON TEST FIXTURE DOWN AS FAR AS IT WILL GO. COUNTER WILL INDICATE A FREQUENCY SHIFT, CONFIRMING THAT INTERNAL OSCILLATOR HAS BEEN SELECTED.

4. ALTERNATE COMPARATOR LAMP CIRCUIT.



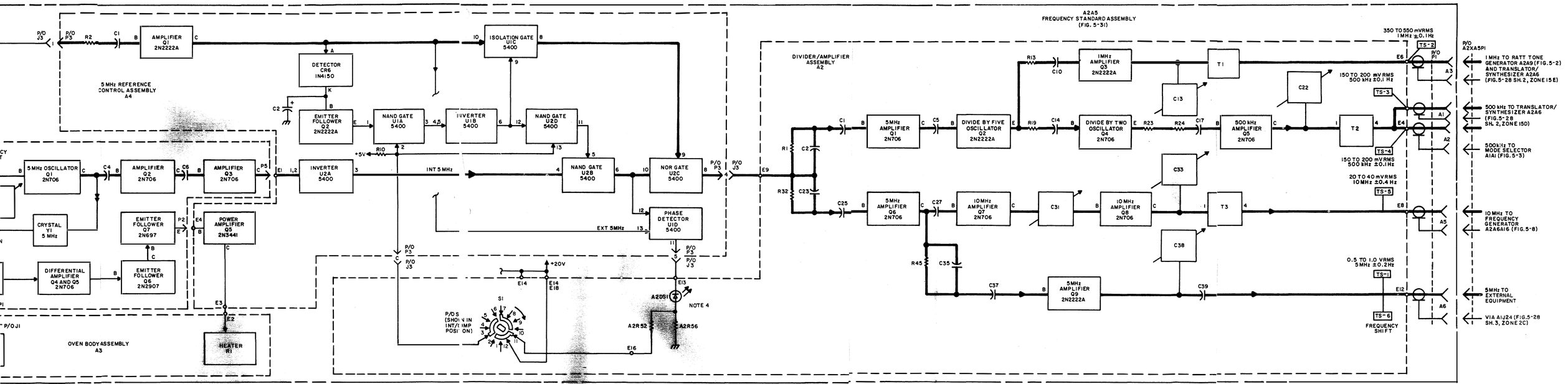
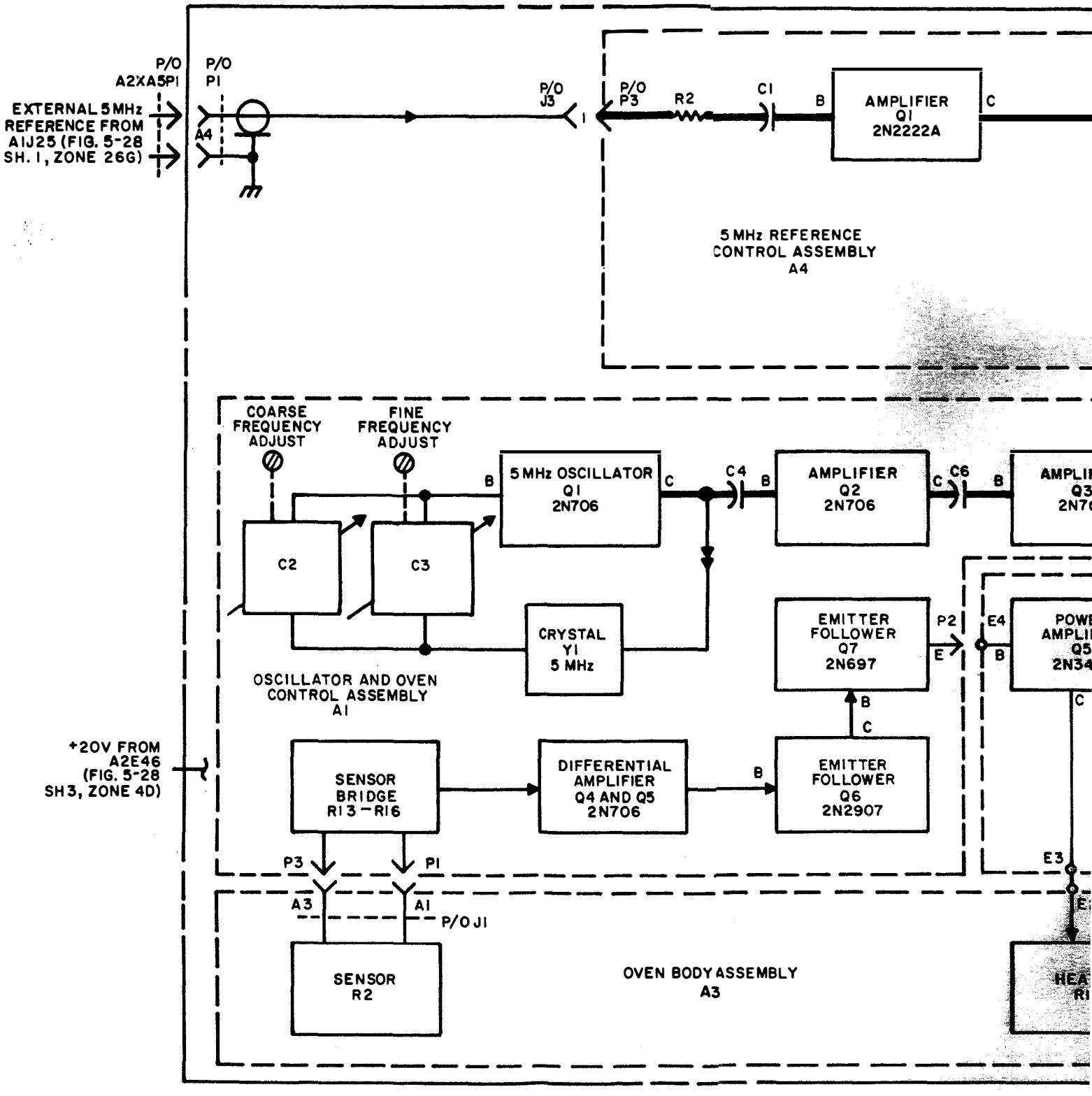


Figure 5-7. Standard Frequency Production and Distribution, Signal Flow Diagram


P/O A2XA5P1
P/O P1
EXTERNAL 5 MHz REFERENCE FROM A1J25 (FIG. 5-28 SH. 1, ZONE 26G)
A4
P/O J3
1
P/O P3
R2
C1
B
AMPLIFIER Q1 2N2222A
C
5 MHz REFERENCE CONTROL ASSEMBLY A4
COARSE FREQUENCY ADJUST
FINE FREQUENCY ADJUST
B
5 MHz OSCILLATOR Q1 2N706
C
C4
B
AMPLIFIER Q2 2N706
C
C6
B
C2
C3
CRYSTAL Y1 5 MHz
OSCILLATOR AND OVEN CONTROL ASSEMBLY A1
EMITTER FOLLOWER Q7 2N697
P2
E
E4
B
+20V FROM A2E46 (FIG. 5-28 SH3, ZONE 4D)
SENSOR BRIDGE R13-R16
DIFFERENTIAL AMPLIFIER Q4 AND Q5 2N706
B
EMITTER FOLLOWER Q6 2N2907
B
C
C
P3
P1
E3
A3
A1
P/O J1
SENSOR R2
OVEN BODY ASSEMBLY A3

TEST DATA FOR FIGURE 5-8

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
EXTENDER CARD 98738-01A228396-01 FOR FREQUENCY GENERATOR A2A6A16
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
MULTIMETER, AC-DC, AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-10
DIFFERENTIAL VOLTMETER AN/USM-381 OR EQUIVALENT
SPECTRUM ANALYZER 28480-8553B-E30
AC PROBE 28480-1121A
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

B. TESTS TO BE PERFORMED IN DEPOT ONLY.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-95
TROUBLESHOOTING SEQUENCE, FIGURE 5-23
CORRECTIVE MAINTENANCE, PARAGRAPH 6-77
MAINTENANCE SCHEMATIC, FIGURE 5-38
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-70

D. WAVEFORMS, TABLE 6-7.

E. LOGIC HIGH STATE AND LOGIC LOW STATE VOLTAGES ARE DEFINED AS:
HIGH: 2.4 TO 5.0 VDC
LOW: 0.0 TO 0.4 VDC

F. [ ] INDICATES FRONT PANEL MARKING OR TEST STEP.

G. ——▶—— INDICATES SIGNAL FLOW.

H. ——◀◀—— INDICATES FEEDBACK.

SPECIFIC NOTES

1. PRELIMINARY SETUP. PLACE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 ON TEST FIXTURE. REMOVE COVER FROM ASSEMBLY. RELEASE LATCHES AND REMOVE FREQUENCY GENERATOR SUBASSEMBLY A2A6A16. PLACE EXTENDER BOARD IN A2A6A16 LOCATION AND MATE CONNECTOR A2A6A16P1 WITH CONNECTOR ON EXTENDER BOARD. PREPARE THE TEST FIXTURE BY SETTING ITS CONTROLS TO TEST A WRC-1 100 HZ TYPE MODULE IN THE TRANSMIT MODE. DO NOT APPLY POWER TO TEST FIXTURE.

2. TEST SETUP.

   a. CONNECT DIFFERENTIAL VOLTMETER TO APPROPRIATE CONNECTOR ON TEST FIXTURE FRONT PANEL.

   b. CONNECT FREQUENCY STANDARD AN/URQ-10 5 MHZ OUTPUT TO EXT 5 MHZ INPUT CONNECTOR ON REAR OF TEST FIXTURE.

TEST DATA FOR FIGURE 5-8 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

3. PRELIMINARY CHECK.

   a. SET METER OUTPUT SELECTOR TO +20 VDC. APPLY POWER. METER SHOULD INDICATE +19.9 TO +20.1 VDC.

   b. SET METER OUTPUT SELECTOR TO +4 VDC. METER SHOULD INDICATE +4.0 TO +4.4 VDC.

   c. DISCONNECT DIFFERENTIAL VOLTMETER.

4. TEST STEPS:

TS-1 REFER TO NOTES 1, 2, AND 3 BEFORE PERFORMING TEST. CONNECT SPECTRUM ANALYZER WITH AC PROBE TO A2A6A16E1 AND BY MEANS OF 10 MHz LEVEL CONTROL ON TEST FIXTURE ADJUST FOR AN INPUT LEVEL OF 30 mVRMS.

NOTE

THE FOLLOWING TEST STEPS ARE PERFORMED WITH OSCILLOSCOPE AN/USM-281 OR EQUIVALENT, EXCEPT FOR TEST STEP 8 WHICH REQUIRES USE OF DIFFERENTIAL VOLTMETER AN/USM-381 OR EQUIVALENT.

TS-2 OBSERVE WAVEFORM C AT A2A6A16TP4. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-3 OBSERVE WAVEFORM B AT A2A6A16TP3. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-4 WITH VERNIER DISABLED, OBSERVE WAVEFORM A AT A2A6A16TP2. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-5 OBSERVE SQUARE WAVE AT A2A6A16Q2 COLLECTOR. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-6 OBSERVE SQUAREWAVE AT A2A6A16U1C-12. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-7 OBSERVE WAVEFORM A AT A2A6A16U6B-12. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-8 MEASURE THE VOLTAGE AT A2A6A16R12 TO BE AS INDICATED.

TS-9 MEASURE THE VOLTAGE AT A2A6A16U6B-12 TO BE AS INDICATED.

TS-10 MEASURE THE VOLTAGE AT A2A6A16U6A-8 TO BE AS INDICATED.

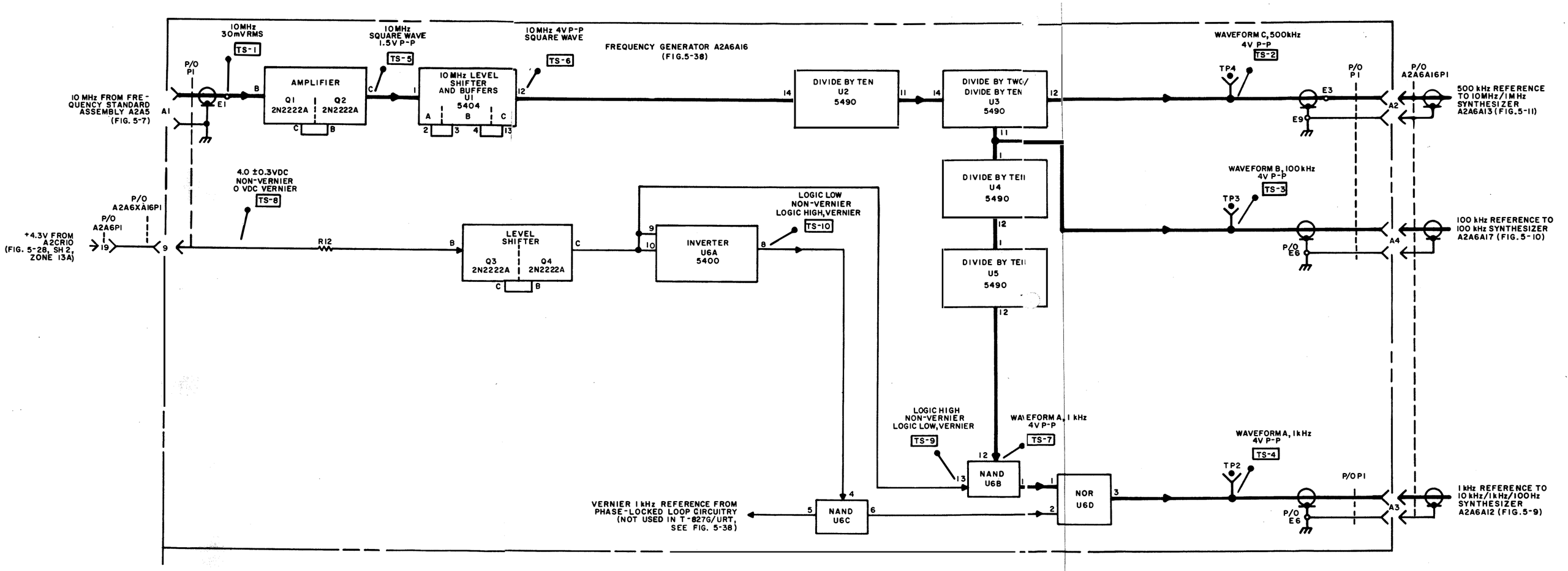


Figure 5-8. Frequency Generator A2A6A16, Signal Flow Diagram

TEST DATA FOR FIGURE 5-9

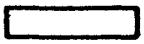
GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
MULTIMETER, AC-DC, AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-10
HIGH IMPEDANCE (FET) PROBE 28480-1121A
DIFFERENTIAL VOLTMETER AN/USM-381 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT
SPECTRUM ANALYZER 28480-8553B-E30

B. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-96
TROUBLESHOOTING SEQUENCE, FIGURE 5-24
CORRECTIVE MAINTENANCE, PARAGRAPH 6-77
MAINTENANCE SCHEMATICS, FIGURES 5-34, 5-40
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-66 AND 7-72

C. WAVEFORMS, TABLE 6-7.

D. TESTS TO BE PERFORMED IN DEPOT ONLY.

E.  INDICATES FRONT PANEL MARKING OR TEST STEP.

F.  INDICATES SIGNAL FLOW.

G.  INDICATES FEEDBACK.

H.  INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

I. PROM = PROGRAMMABLE READ ONLY MEMORY.

SPECIFIC NOTES

1. THE FOLLOWING FUNCTION TABLES FOR THE A2A6A18U8-U10 PROGRAMMABLE DIVIDERS SHOW THE VARIOUS INPUT AND OUTPUT COMBINATIONS REALIZED FOR POSSIBLE SETTINGS OF CODING SWITCHES A2A1S1, A2A6S1 AND A2A6S2. THE 0 STATE IS A LOGIC LOW (Ø) (0.0 TO 0.4 VDC); THE 1 STATE IS A LOGIC HIGH (2.4 TO 5.0 VDC).

TEST DATA FOR FIGURE 5-9 (CONTINUED)

A2A6A18U8, U9 AND U10 PROGRAM

10'S COMPLEMENT CONVERSION (PIN 14 = 0)

DIAL A2S6 A2A6S1 OR A2A6S2	INPUT PIN				OUTPUT PIN					
	13	12	11	10	6	5	4	3	2	1
0	0	0	0	0	1	0	0	0	0	0
1	0	0	0	1	0	1	1	0	0	1
2	0	0	1	0	0	1	1	0	0	0
3	0	0	1	1	0	1	0	1	1	1
4	0	1	0	0	0	1	0	1	1	0
5	0	1	0	1	0	1	0	1	0	1
6	0	1	1	0	0	1	0	1	0	0
7	0	1	1	1	0	1	0	0	1	1
8	1	0	0	0	0	1	0	0	1	0
9	1	0	0	1	0	1	0	0	0	1

9'S COMPLEMENT CONVERSION (PIN 14 = 1)

A2A1S1 A2A6S1 OR A2A6S2 DIAL	PIN				OUTPUT PIN					
	13	12	11	10	6	5	4	3	2	1
0	0	0	0	0	0	0	1	0	0	1
1	0	0	0	1	0	0	1	0	0	0
2	0	0	1	0	0	0	0	1	1	1
3	0	0	1	1	0	0	0	1	1	0
4	0	1	0	0	0	0	0	1	0	1
5	0	1	0	1	0	0	0	1	0	0
6	0	1	1	0	0	0	0	0	1	1
7	0	1	1	1	0	0	0	0	1	0
8	1	0	0	0	0	0	0	0	0	1
9	1	0	0	1	0	0	0	0	0	0

2. TABLE OF NUMBER OF DIVISIONS BY 11 OF A2A6A18U1 FOR HZ SETTINGS

A2S6 POSITION	A2A6A18U4 INPUT COUNTS
000	0
100	9
200	8
300	7
400	6
500	5
600	4
700	3
800	2
900	1

TEST DATA FOR FIGURE 5-9 (CONTINUED)

3. TABLE OF A2A6A18U4 AND U5 PRESET COUNTS FOR HZ, 1 KHZ AND 10 KHZ SWITCH POSITIONS.

KHZ SWITCH SETTING A2A6S1	A2A6A18U4 PRESET COUNTS	
	Hz = 000	HZ OTHER THAN 000
0	0	9
1	9	8
2	8	7
3	7	6
4	6	5
5	5	4
6	4	3
7	3	2
8	2	1
9	1	0
10 KHz SWITCH SETTING A2A6S2	**A2A6A8U5 PRESET COUNTS**	
	KHz AND Hz = 0	KHz OR Hz OTHER THAN 0
0	0	9
1	9	8
2	8	7
3	7	6
4	6	5
5	5	4
6	4	3
7	3	2
8	2	1
9	1	0

4. PRELIMINARY SETUP. PLACE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 ON TEST FIXTURE, AND REMOVE COVER FROM ASSEMBLY. PREPARE THE TEST FIXTURE BY SETTING ITS CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE TRANSMIT MODE. SET TEST FIXTURE FREQUENCY CONTROLS FOR 2.0011 MHz OPERATION BUT DO NOT APPLY POWER TO TEST FIXTURE.

5. TEST SETUP.

   a. CONNECT DIFFERENTIAL VOLTMETER TO APPROPRIATE CONNECTOR ON TEST FIXTURE FRONT PANEL.

   b. CONNECT FREQUENCY STANDARD AN/URQ-10 5 MHz OUTPUT TO EXT 5 MHz INPUT CONNECTOR ON REAR OF TEST FIXTURE.

   c. CONNECT ELECTRONIC COUNTER AN/USM-207 TO MEASURE FREQUENCY AS DIRECTED.

TEST DATA FOR FIGURE 5-9 (CONTINUED)

6. PRELIMINARY CHECK.

   a. SET METER OUTPUT SELECTOR TO +20 VDC. APPLY POWER. METER SHOULD INDICATE +19.9 TO +20.1 VDC.

   b. DISCONNECT DIFFERENTIAL VOLTMETER.

7. TEST STEPS:

TS-1	REFER TO NOTES 4, 5, AND 6 BEFORE PERFORMING TESTS. MEASURE THE FREQUENCY AND OBSERVE WAVEFORM AT A2A6A12TP3. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.
TS-2	MEASURE THE FREQUENCY AND OBSERVE WAVEFORM AT A2A6A12TP1. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.
TS-3	OBSERVE WAVEFORM SIMILAR TO D AT A2A6A18TP2 AND A2A6A12TP2. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.
TS-4	MEASURE THE FREQUENCY AND OBSERVE WAVEFORM E AT A2A6A18TP1. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.

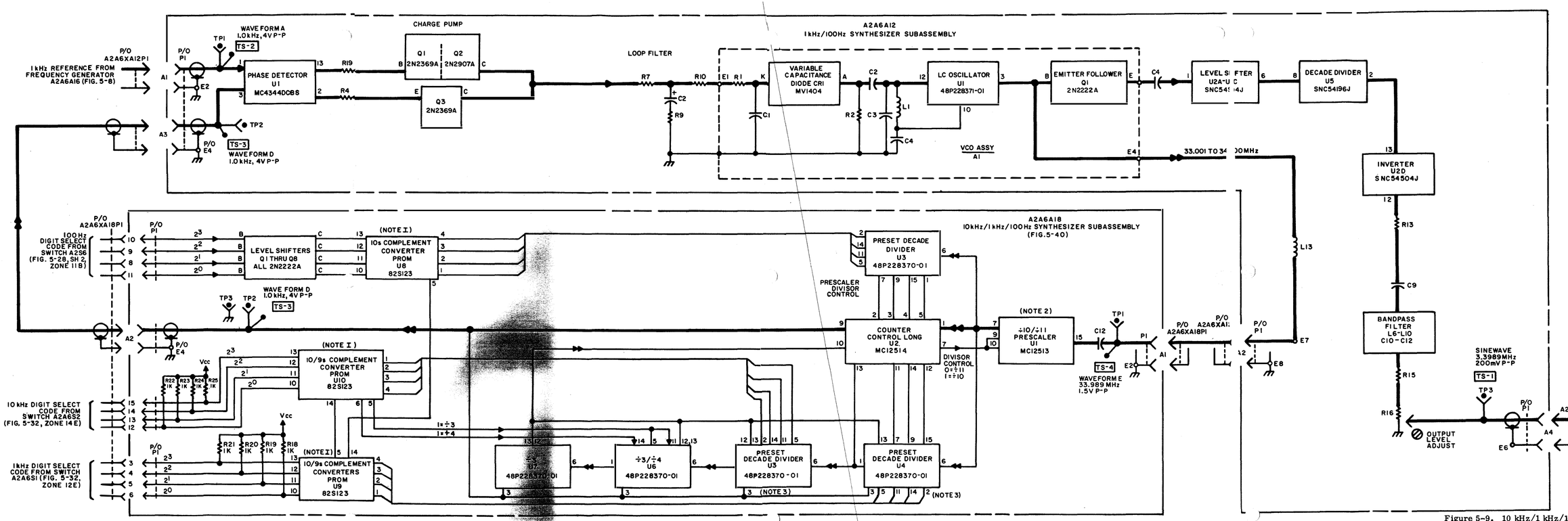


Figure 5-9. 10 kHz/1 kHz/100 Hz Synthesizer A2A6A12 and A2A6A18, Signal Flow Diagram

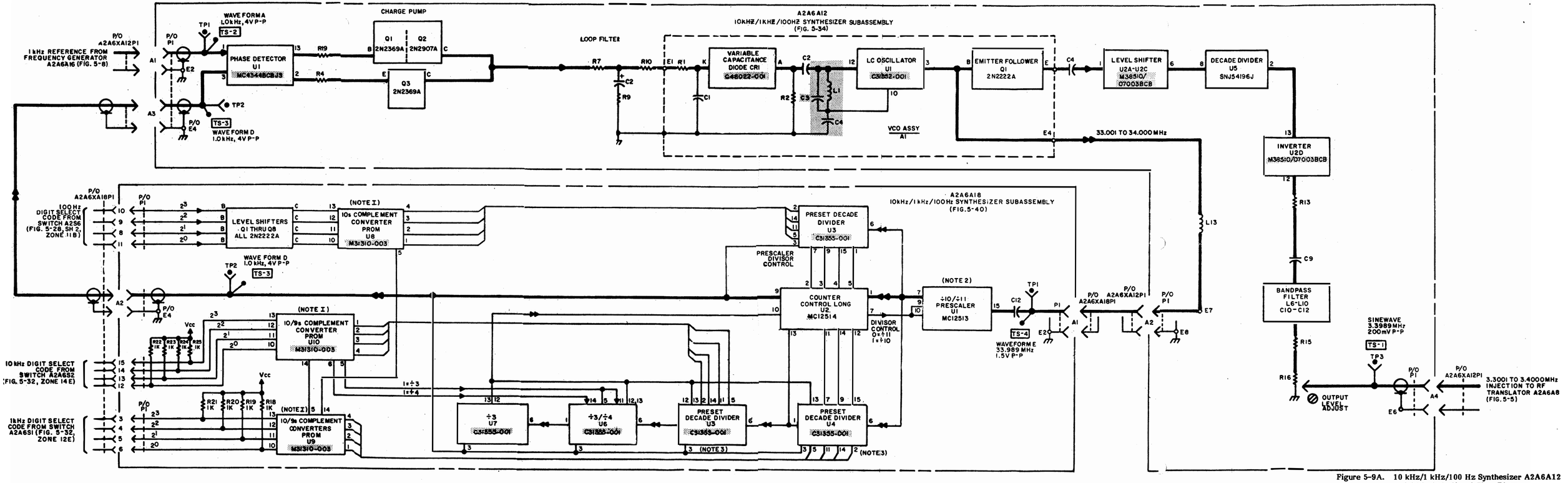


Figure 5-9A. 10 kHz/1 kHz/100 Hz Synthesizer A2A6A12 and A2A6A18, Signal Flow Diagram

TEST DATA FOR FIGURE 5-10

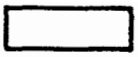
GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
MULTIMETER, AC-DC, AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URC-10
DIFFERENTIAL VOLTMETER AN/USM-381 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

B. TESTS TO BE PERFORMED IN DEPOT ONLY.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-101
TROUBLESHOOTING SEQUENCE, FIGURE 5-25
CORRECTIVE MAINTENANCE, PARAGRAPH 6-77
MAINTENANCE SCHEMATIC, FIGURE 5-39
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-71

D. WAVEFORMS, TABLE 6-7.

E.  INDICATES FRONT PANEL MARKING OR TEST STEP.

F. INDICATES SIGNAL FLOW.

G.  INDICATES FEEDBACK.

H.  INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

SPECIFIC NOTES

1. FUNCTION TABLE FOR A2A6A17U6. THE 0 STATE IS A LOGIC LOW (0.0 TO 0.4 VDC); THE 1 STATE IS A LOGIC HIGH (2.4 TO 5.0 VDC).

CONTROL SETTING 100 kHz	COUNT	BIT / DATA PIN / OUTPUT PIN	2^3 2 1	2^2 14 15	2^1 11 9	2^0 5 7
5	9		1	0	0	1
4	8		1	0	0	0
3	7		0	1	1	1
2	6		0	1	1	0
1	5		0	1	0	1
0	4		0	1	0	0
9	3		0	0	1	1
8	2		0	0	1	0
7	1		0	0	0	1
6	0		0	0	0	0

TEST DATA FOR FIGURE 5-10 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

2. PRELIMINARY SETUP. PLACE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 ON TEST FIXTURE, AND REMOVE COVER FROM ASSEMBLY. PREPARE THE TEST FIXTURE BY SETTING ITS CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE TRANSMIT MODE. SET TEST FIXTURE FREQUENCY CONTROLS FOR 2.0011 MHz OPERATION, BUT DO NOT APPLY POWER TO TEST FIXTURE.

3. TEST SETUP.

   a. CONNECT DIFFERENTIAL VOLTMETER TO APPROPRIATE CONNECTOR ON TEST FIXTURE FRONT PANEL.

   b. CONNECT FREQUENCY STANDARD AN/URQ-10 5 MHz OUTPUT TO EXT 5 MHz INPUT ON CONNECTOR ON REAR OF TEST FIXTURE.

4. PRELIMINARY CHECK.

   a. SET METER OUTPUT SELECTOR TO +20 VDC. APPLY POWER. METER SHOULD INDICATE +19.9 TO +20.1 VDC.

   b. DISCONNECT DIFFERENTIAL VOLTMETER.

5. TEST STEPS:

   TS-1 OBSERVE WAVEFORM E AT A2A6A17TP3. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.

   TS-2 OBSERVE WAVEFORM B AT A2A6A17TP1. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.

   TS-3 OBSERVE WAVEFORM D AT A2A6A17TP2. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.

   TS-4 SET TEST FIXTURE FREQUENCY CONTROLS FOR 6.0011 MHz OPERATION. OBSERVE WAVEFORM E AT A2A6A17TP3. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

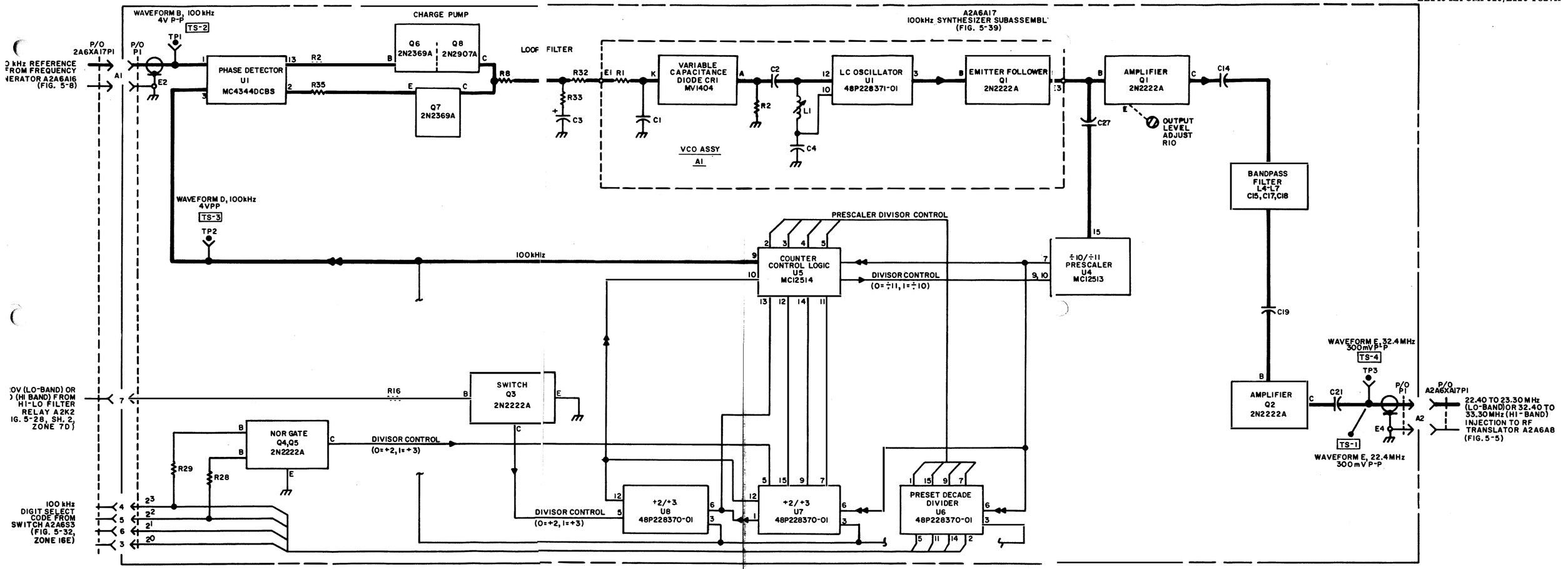


Figure 5-10. 100 kHz Synthesizer A2A6A17, Signal Flow Diagram

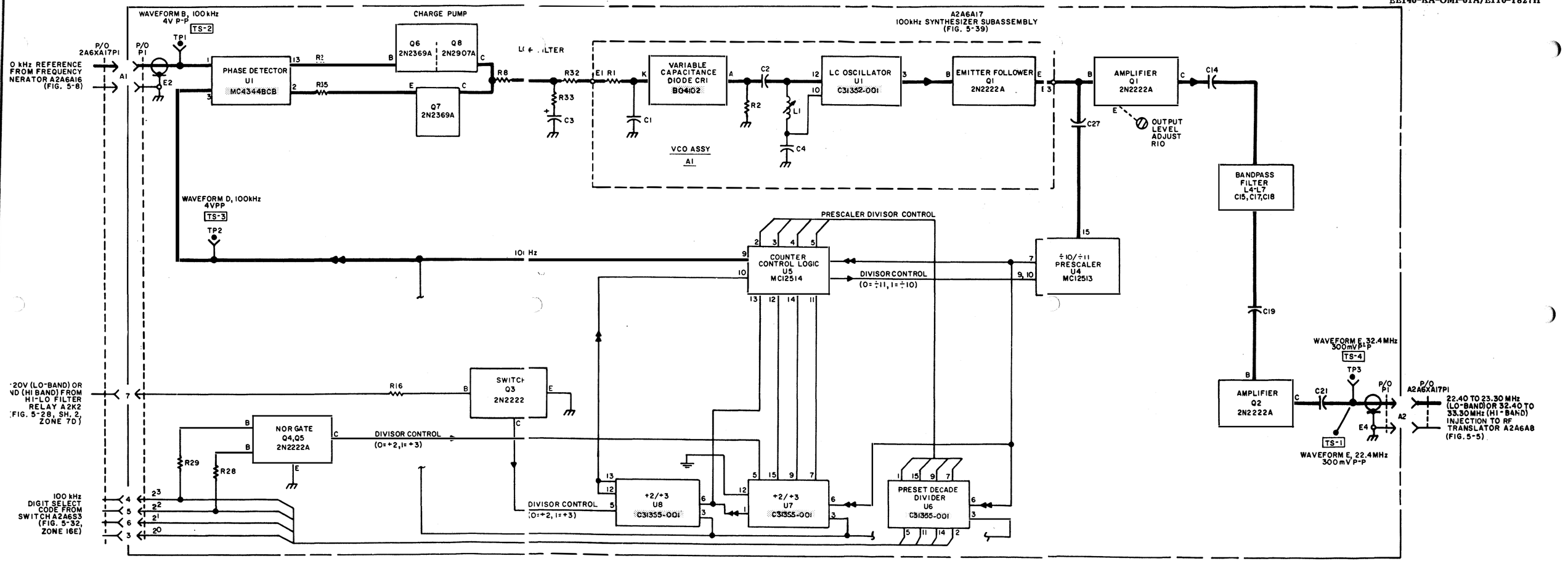


Figure 5-10A. 100 kHz Synthesizer A2A6A17, Signal Flow Diagram

TEST DATA FOR FIGURE 5-11

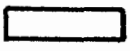
GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
MULTIMETER, AC-DC, AN/USM-311 OR EQUIVALENT
DIFFERENTIAL VOLTMETER AN/USM-381 OR EQUIVALENT
FREQUENCY STANDARD AN/URC-10
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT
SPECTRUM ANALYZER 28480-8553B-E30
AC PROBE 28480-1121A

B. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-105
TROUBLESHOOTING SEQUENCE, FIGURE 5-26
CORRECTIVE MAINTENANCE, PARAGRAPH 6-77
MAINTENANCE SCHEMATICS, FIGURES 5-35 AND 5-36
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-67 AND 7-68

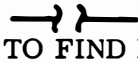
C. WAVEFORMS TABLE 6-7.

D. TESTS TO BE PERFORMED IN DEPOT ONLY.

E.  INDICATES FRONT PANEL MARKING OR TEST STEP.

F.  INDICATES SIGNAL FLOW.

G.  INDICATES FEEDBACK.

H.  INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

SPECIFIC NOTES

1. FUNCTION TABLE FOR A2A6A13U9, U10 FOLLOWS. FOR A2A6A13U9, DATA PIN 5 IS ALWAYS AT LOGIC HIGH LEVEL TO ALLOW PRESET COUNTS OF 9, 7, 5, 3, AND 1. FOR A2A6A13U10, DATA PIN 2 IS ALWAYS AT LOGIC LOW LEVEL TO ALLOW PRESET COUNTS OF 7 THRU 0. THE 0 STATE IS A LOGIC LOW (0.0 TO 0.4 VDC); THE 1 STATE IS A LOGIC HIGH (2.4 TO 5.0 VDC).

COUNT	BIT	2^3	2^2	2^1	2^0
	DATA PIN	2	14	11	5
	OUTPUT PIN	1	15	9	7
9		1	0	0	1
8		1	0	0	0
7		0	1	1	1
6		0	1	1	0
5		0	1	0	1
4		0	1	0	0
3		0	0	1	1
2		0	0	1	0
1		0	0	0	1
0		0	0	0	0

TEST DATA FOR FIGURE 5-11 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

2. FUNCTION TABLE FOR A2A6A13U11 FOLLOWS. A2A6A13U11 IS PROGRAMMED ONLY FOR THE LISTED INPUT CODES. THE 0 STATE IS A LOGIC LOW (0.0 TO 0.4 VDC); THE 1 STATE IS A LOGIC HIGH (2.4 TO 5.0 VDC.)

INJECTION FREQUENCY (MHz)	MHz CONTROL SETTINGS	INPUT PIN					OUTPUT PIN							
		10	11	12	13	14	1	2	3	4	5	6	7	9
2.5	22	1	1	1	1	0	0	1	0	1	0	0	0	0
3.5	16,23,26	0	0	0	0	1	0	1	1	1	0	0	0	0
4.5	15,25	1	1	0	0	1	0	1	0	0	1	0	0	0
5.5	14,24	1	0	0	0	1	0	1	0	0	0	1	0	0
7.5	12,27	1	1	1	0	0	1	0	0	1	0	1	0	0
8.5	11,21,28	1	1	0	0	0	1	0	1	1	0	1	0	0
9.5	20,29	1	0	0	0	0	1	0	0	0	1	1	0	0
10.5	19	0	0	0	1	1	1	0	0	0	0	0	1	0
11.5	08,18	0	0	1	1	0	1	0	1	0	0	0	1	0
12.5	07,17	0	1	1	0	0	1	0	0	1	0	0	1	0
14.5	05	1	0	0	1	0	1	1	0	0	1	0	1	0
15.5	04	0	0	1	0	0	1	1	0	0	0	1	1	0
16.5	03,13	0	1	0	0	0	1	1	1	0	0	1	1	0
17.5	02	0	0	0	1	0	1	1	0	1	0	1	1	0
19.5	10	0	0	1	0	1	1	1	0	0	1	1	1	0
20.5	09	0	1	0	1	1	1	1	0	0	0	0	0	1
23.5	06	1	0	1	1	1	1	1	1	1	0	0	0	1

3. PRELIMINARY SETUP. PLACE TRANSLATOR/SYNTHESIZER ASSEMBLY A2A6 ON TEST FIXTURE, AND REMOVE COVER FROM ASSEMBLY. PREPARE THE TEST FIXTURE BY SETTING ITS CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE TRANSMIT MODE, AND A NORMAL 20 VDC LEVEL. SET TEST FIXTURE FREQUENCY CONTROLS FOR 8.0000 MHz OPERATION, BUT DO NOT APPLY POWER TO TEST FIXTURE.

4. TEST SETUP.
   a. CONNECT DIFFERENTIAL VOLTMETER TO APPROPRIATE CONNECTOR ON TEST FIXTURE FRONT PANEL.

   b. CONNECT FREQUENCY STANDARD AN/URQ-10 5 MHz OUTPUT TO EXT 5 MHz INPUT CONNECTOR ON REAR OF TEST FIXTURE.

5. PRELIMINARY CHECKS.
   a. SET METER OUTPUT SELECTOR TO +20 VDC. APPLY POWER. METER SHOULD INDICATE +19.9 TO +20.1 VDC.

   b. DISCONNECT DIFFERENTIAL VOLTMETER.

TEST DATA FOR FIGURE 5-11 (CONTINUED)

SPECIFIC NOTES (CONTINUED)

6. THIS TEST PROCEDURE CONSISTS OF SETTING THE TEST FIXTURE FREQUENCY CONTROLS CONSECUTIVELY TO (A) 8 MHz, (B) 16 MHz AND (C) 9 MHz AND AT EACH FREQUENCY SETTING PERFORMING TESTS TS-1 THROUGH TS-8. TWO ADDITIONAL TESTS, TS-9 AND TS-10, ARE PERFORMED AT 8 MHz ONLY (A TOTAL OF 26 MEASUREMENTS). FOR CLARITY THE ENTIRE TEST IS SUMMARIZED IN THE SYNTHESIZER MEASUREMENT SUMMARY CHART WHICH FOLLOWS THE TEST STEPS. MEASURE ALL FREQUENCIES WITH SPECTRUM ANALYZER FITTED WITH AC PROBE WITH 10:1 DIVIDER TIP.

7. TEST STEPS:

TS-1	REFER TO NOTES 3, 4, 5 AND 6 BEFORE PERFORMING TEST. SET TEST FIXTURE FREQUENCY CONTROLS TO 8.0000 MHz AND OBSERVE WAVEFORM J AT A2A6A14TP5. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED (A).
TS-2	MEASURE THE VOLTAGE AT A2A6A14TP3. VOLTAGE SHOULD BE AS INDICATED (A).
TS-3	MEASURE THE VOLTAGE AT A2A6A14TP6. VOLTAGE SHOULD BE AS INDICATED (A).
TS-4	MEASURE THE VOLTAGE AT A2A6A14TP1. VOLTAGE SHOULD BE AS INDICATED (A).
TS-5	OBSERVE SIGNAL AT A2A6A14TP4. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED (A).
TS-6	OBSERVE SIGNAL AT A2A6A14TP2. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED (A).
TS-7	OBSERVE SIGNAL AT A2A6A14TP7. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED (A).
TS-8	OBSERVE WAVEFORM I AT A2A6A13TP3. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED (A). (WAVESHAPE VARIES WITH FREQUENCY).
TS-9	OBSERVE WAVEFORM G AT A2A6A13TP1. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.
TS-10	OBSERVE WAVEFORM H AT A2A6A13TP2. FREQUENCY AND AMPLITUDE SHOULD BE AS INDICATED.

SET TEST FIXTURE FREQUENCY CONTROLS TO 16.0000 MHz AND REPEAT TESTS TS-1 THROUGH TS-8. MEASUREMENT RESULTS SHOULD BE AS INDICATED (B).

SET TEST FIXTURE FREQUENCY CONTROLS TO 9.0000 MHz AND REPEAT TESTS TS-1 THROUGH TS-8. MEASUREMENT RESULTS SHOULD BE AS INDICATED (C).

TEST DATA FOR FIGURE 5-11 (CONTINUED)

10 MHz/1 MHz SYNTHESIZER MEASUREMENT SUMMARY CHART

TEST STEP	TEST POINT A2A6	TEST SET FREQUENCY SUMMARY CHART		
		(A) 8.0000 MHz	(B) 16.0000 MHz	(C) 9.0000 MHz
TS-1	A14TP5	WAVEFORM J 11.5 MHz 200 mV P-P	WAVEFORM J 3.5 MHz 200 mV P-P	WAVEFORM J 20.5 MHz 200 mV P-P
TS-2	A14TP3	0.4 VDC	5 VDC	5 VDC
TS-3	A14TP6	5 VDC	5 VDC	0.4 VDC
TS-4	A14TP1	5 VDC	0.4 VDC	5 VDC
TS-5	A14TP4	SQUARE WAVE 11.5 MHz 800 mV P-P	NO SIGNAL	NO SIGNAL
TS-6	A14TP2	NO SIGNAL	SQUARE WAVE 3.5 MHz 800 mV P-P	NO SIGNAL
TS-7	A14TP7	NO SIGNAL	NO SIGNAL	SQUARE WAVE 20.5 MHz 800 mV P-P
TS-8	A13TP3	WAVEFORM I 11.5 MHz 4 V P-P	WAVEFORM I 3.5 MHz 4 V P-P	WAVEFORM I 20.5 MHz 4 V P-P
TS-9	A13TP1	WAVEFORM G 500 kHz 4 V P-P		
TS-10	A13TP2	WAVEFORM H 500 kHz 4 V P-P		

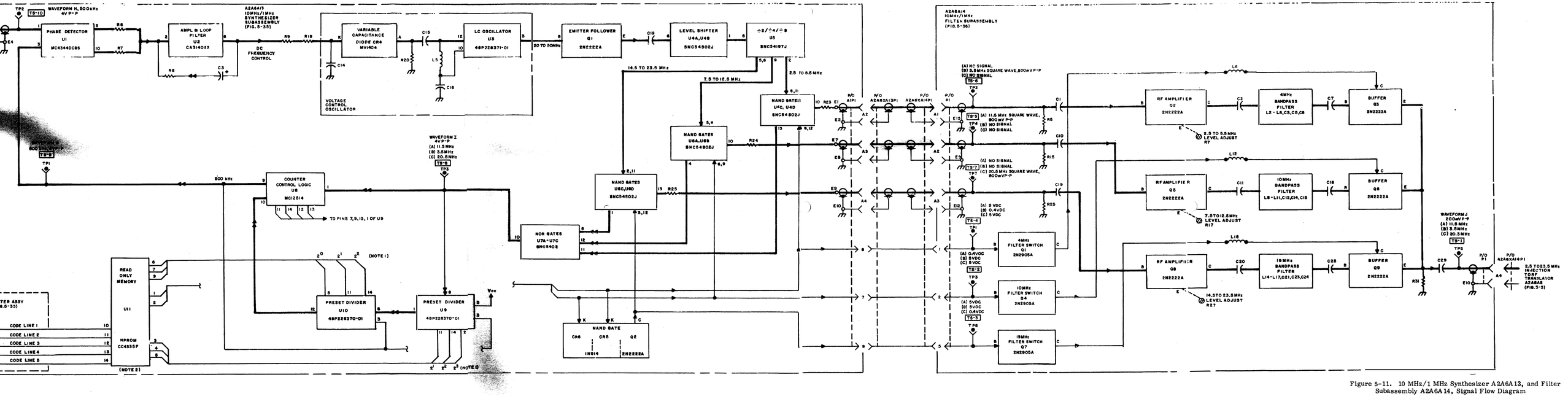
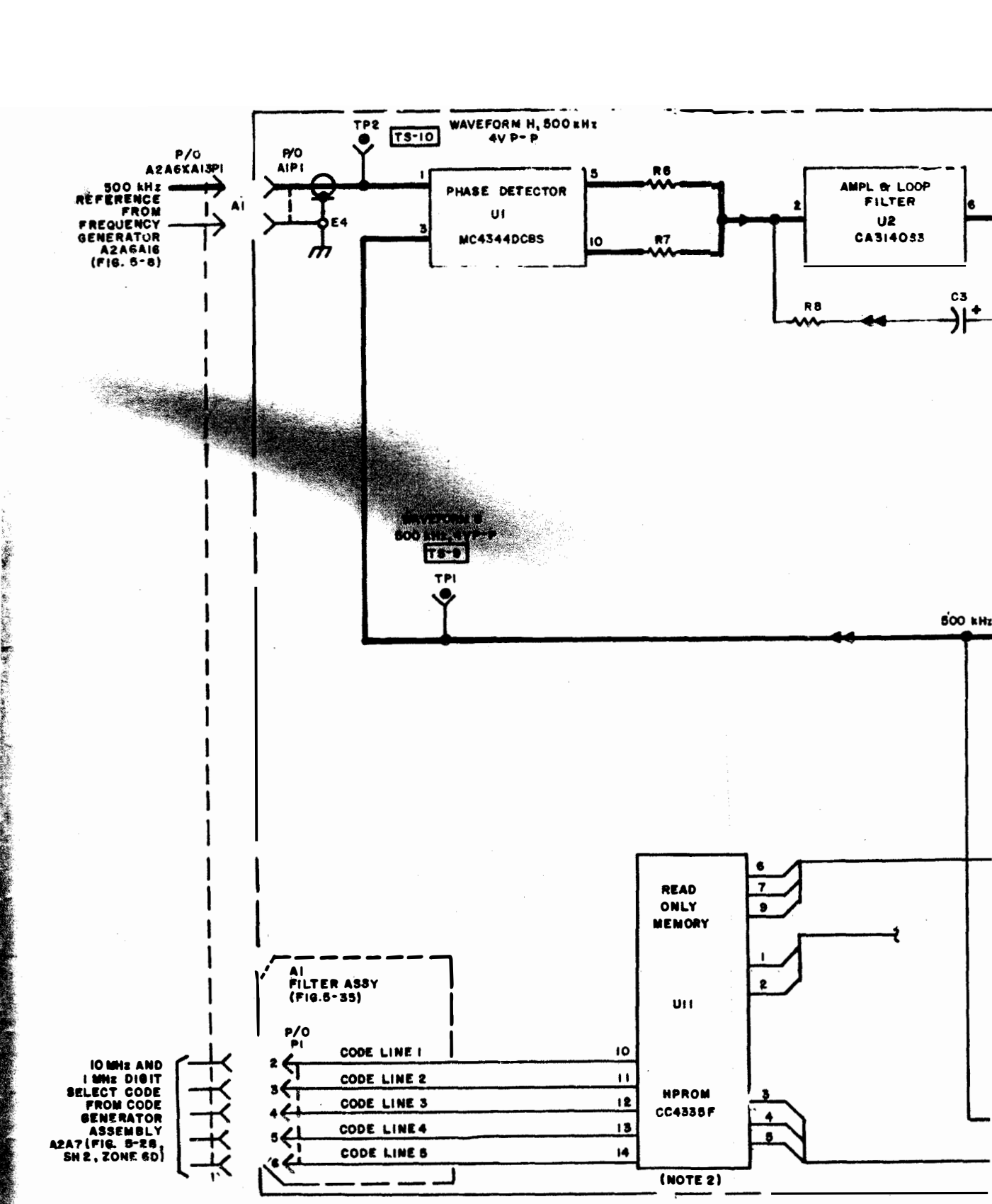


Figure 5-11. 10 MHz/1 MHz Synthesizer A2A6A13, and Filter Subassembly A2A6A14, Signal Flow Diagram


TP2
TS-10
WAVEFORM H, 500 kHz
4V P-P
P/O
A2A6XA13P1
500 kHz
REFERENCE
FROM
FREQUENCY
GENERATOR
A2A6A16
(FIG. 5-8)
A1
P/O
A1P1
E4
PHASE DETECTOR
U1
MC4344DCBS
R6
R7
AMPL & LOOP
FILTER
U2
CA3140E3
R8
C3
TP1
500 kHz
READ
ONLY
MEMORY
U11
NPROM
CC4336F
(NOTE 2)
A1
FILTER ASSY
(FIG.5-35)
P/O
P1
CODE LINE 1
CODE LINE 2
CODE LINE 3
CODE LINE 4
CODE LINE 5
10 MHz AND
1 MHz DIGIT
SELECT CODE
FROM CODE
GENERATOR
ASSEMBLY
A2A7 (FIG. 5-28,
SH 2, ZONE 6D)

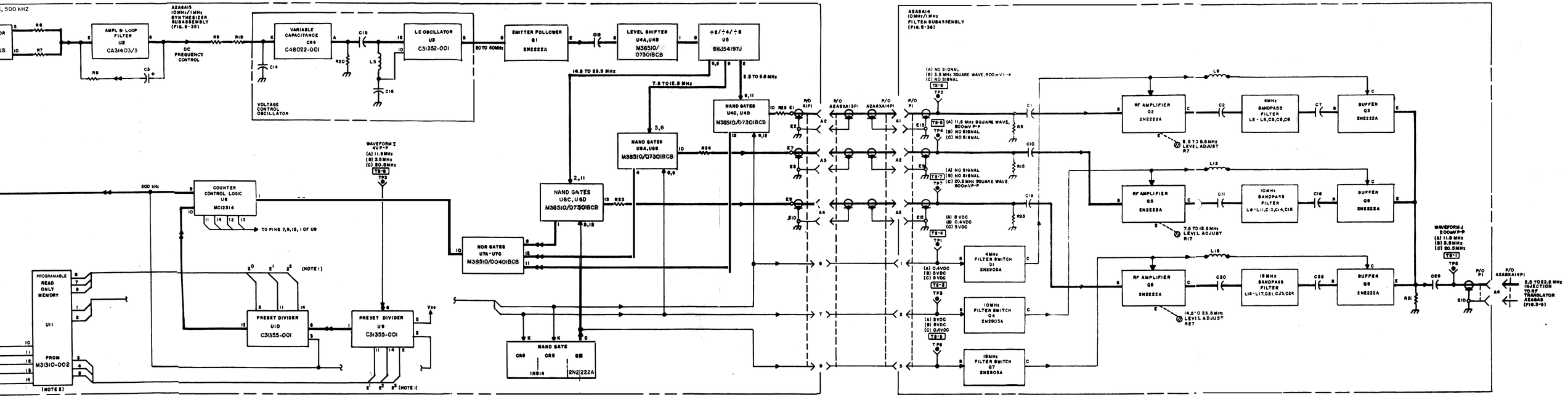
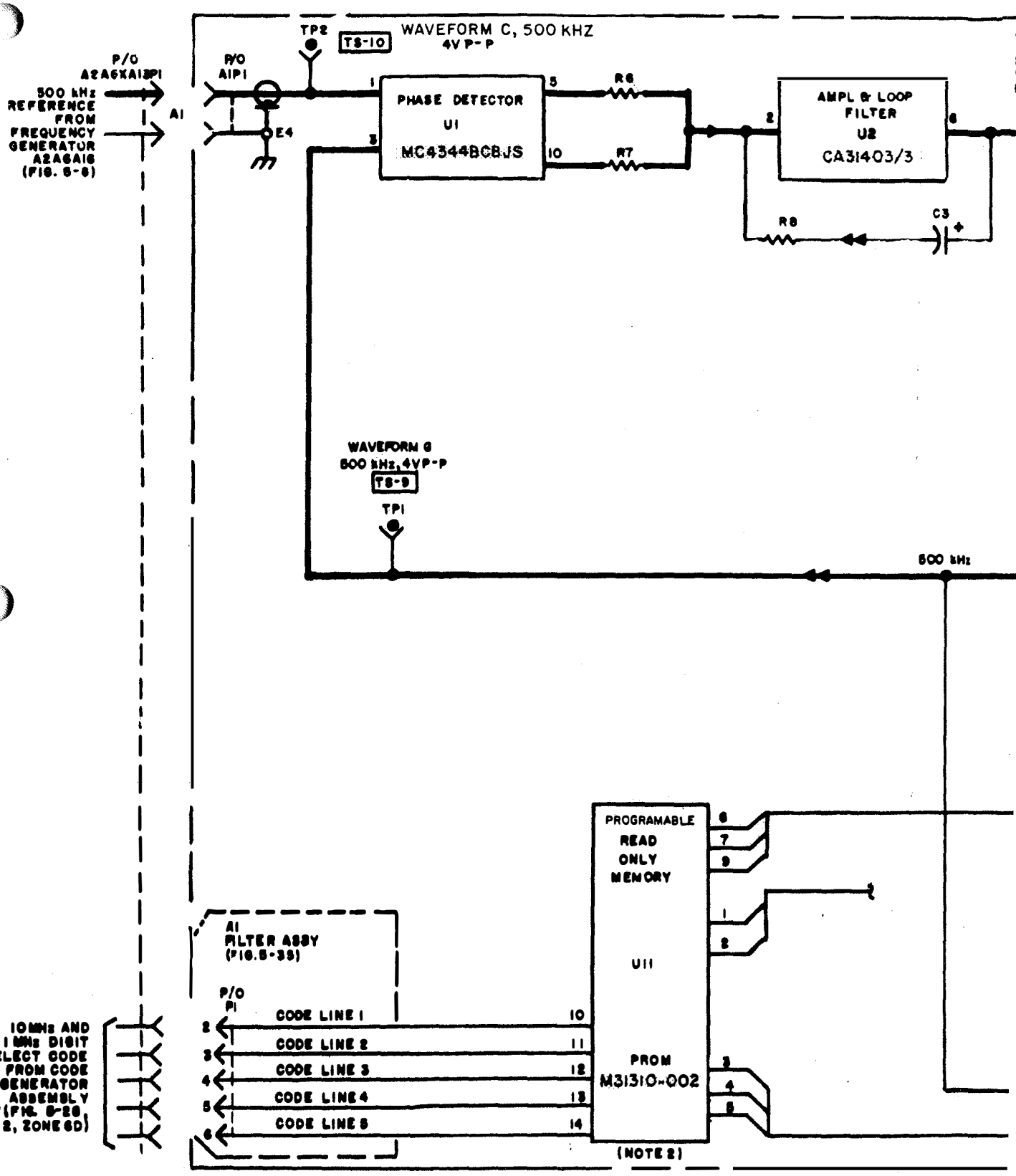


Figure 5-11A. 10 MHz/1 MHz Synthesizer A2A6A13, and Filter Subassembly A2A6A14, Signal Flow Diagram


TP2
TS-10
WAVEFORM C, 500 KHZ
4V P-P
P/O
A2A6KA13P1
500 kHz
REFERENCE
FROM
FREQUENCY
GENERATOR
A2A6A16
(FIG. 6-6)
A1
P/O
A1P1
E4
PHASE DETECTOR
U1
MC4344BCBJS
1
3
5
10
R6
R7
AMPL & LOOP
FILTER
U2
CA31403/3
2
6
R8
C3
WAVEFORM G
500 kHz, 4VP-P
TS-9
TP1
500 kHz
A1
FILTER ASSY
(FIG. 6-35)
P/O
P1
PROGRAMABLE
READ
ONLY
MEMORY
U11
PROM
M31310-002
6
7
9
1
2
3
4
5
CODE LINE 1
CODE LINE 2
CODE LINE 3
CODE LINE 4
CODE LINE 5
10
11
12
13
14
2
3
4
5
6
10MHz AND
1 MHz DIGIT
SELECT CODE
FROM CODE
GENERATOR
ASSEMBLY
A7 (FIG. 6-28,
SH 2, ZONE 6D)
(NOTE 2)

NOTES FOR FIGURE 5-12

GENERAL NOTES

SWITCH CONTACT CONNECTS FOR VARIOUS MODES AS LISTED IN CHART 1.

—⟆⟅— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE, PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

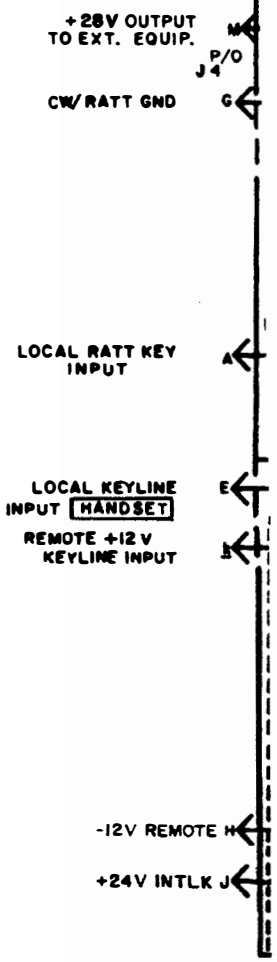


CHART 1			
MODE SELECTOR SWITCH A2S2			
FUNCTION	SECTION D-R TERMINALS	SECTION E-R TERMINALS	SECTION E-F TERMINALS
LSB	3-12	-	-
RATT	-	-	1-2, 4-6
AM	5-12	-	-
CW	-	3-4	6-8
USB	9-12	-	-
ISB	10-12	5-6	-
ISB/RATT	11-12	-	9-11

SPECIFIC NOTES

RESISTOR A2R6 IS 1 MEGOHM; THE CW HOLD TIME IS INCREASED BY DECREASING THE VALUE OF A2R6.

ALL SWITCHES AND RELAY CIRCUITS ARE SHOWN IN OPERATING POSITIONS.

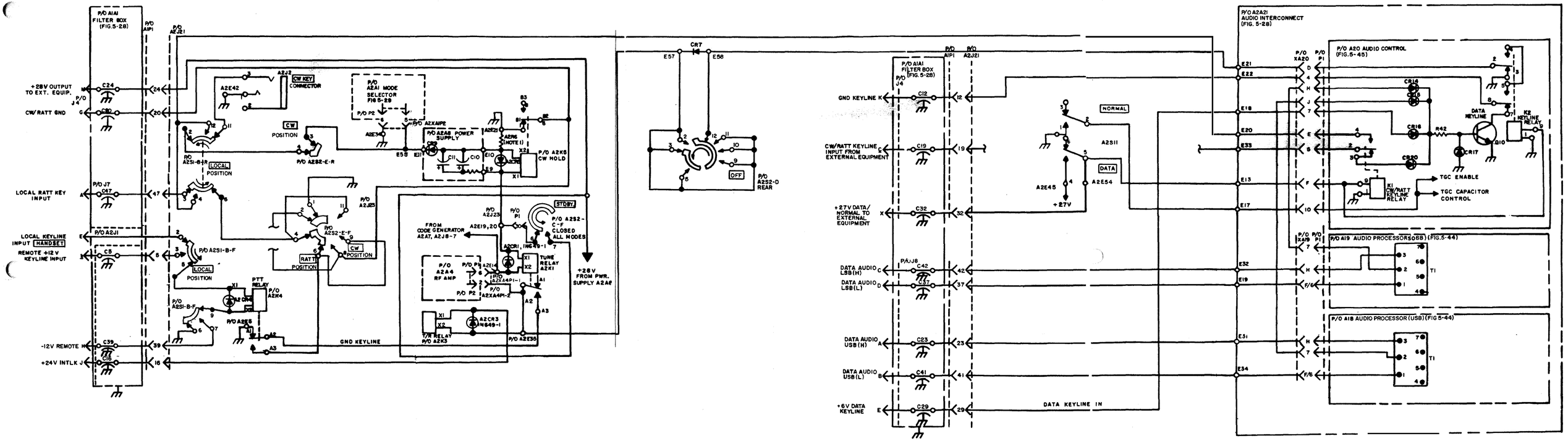


Figure 5-12. CW, RATT, DATA and PTT Keying, Control Diagram

GENERAL NOTES:

A. [ ] INDICATES EQUIPMENT MARKING.

B. MODE SELECTOR SWITCH A2S2 CONTACT CONNECTIONS FOR ALL MODES EXCEPT OFF ARE AS FOLLOWS:

SECTION	CONTACTS CONNECTED
B-F	11-10
A-F	6-7

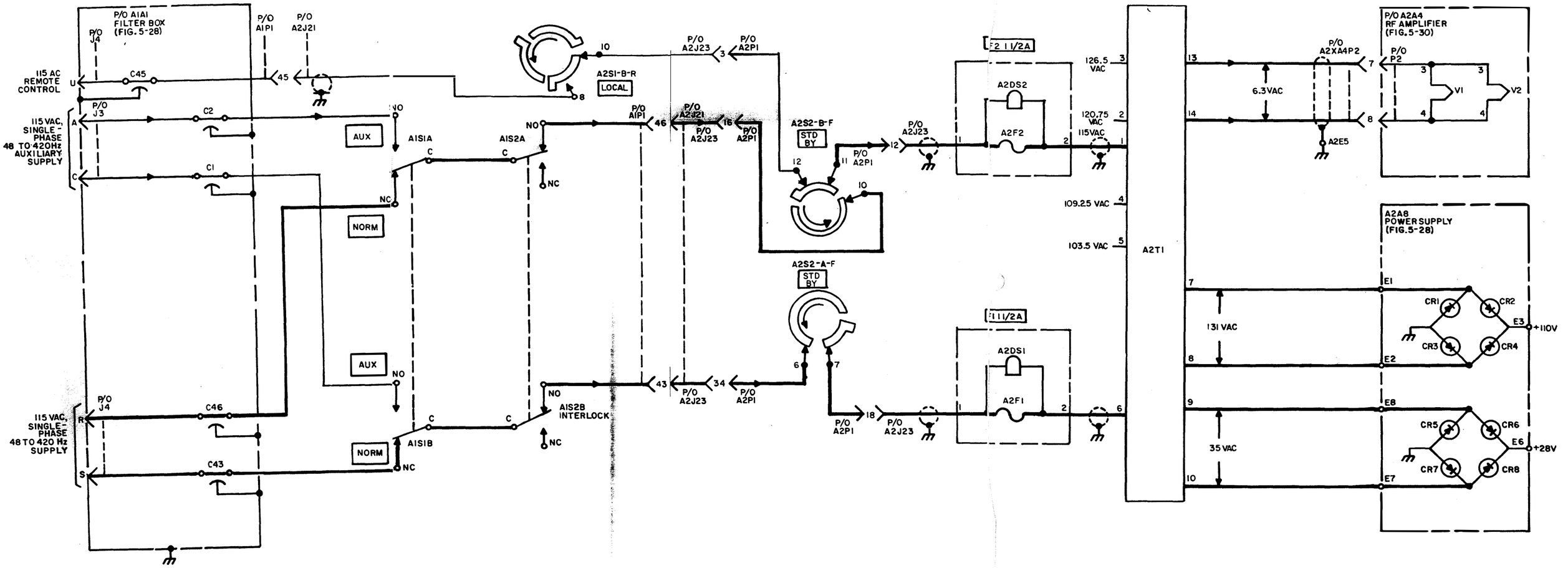


Figure 5-13. Primary Ac Power Distribution Diagram

GENERAL NOTES

A. **UNLESS OTHERWISE SPECIFIED:**
ALL RESISTANCE IS IN OHMS.
ALL CAPACITANCE IS IN MICROFARADS.
ALL RELAYS SHOWN IN DEENERGIZED POSITION.

B. ACTIVE SWITCH CONTACT CLOSURES FOR MODES FOLLOW:

MODE SELECTOR SWITCH A2S2-C-F	
FUNCTION	**TERMINALS**
LSB	**9-11, 6-7**
RATT	**6-7**
AM	**9-11, 6-7**
CW	**6-7**
USB	**6-7, 10-12**
ISB	**3-4, 6-7**
ISB/RATT	**5-3, 6-7**

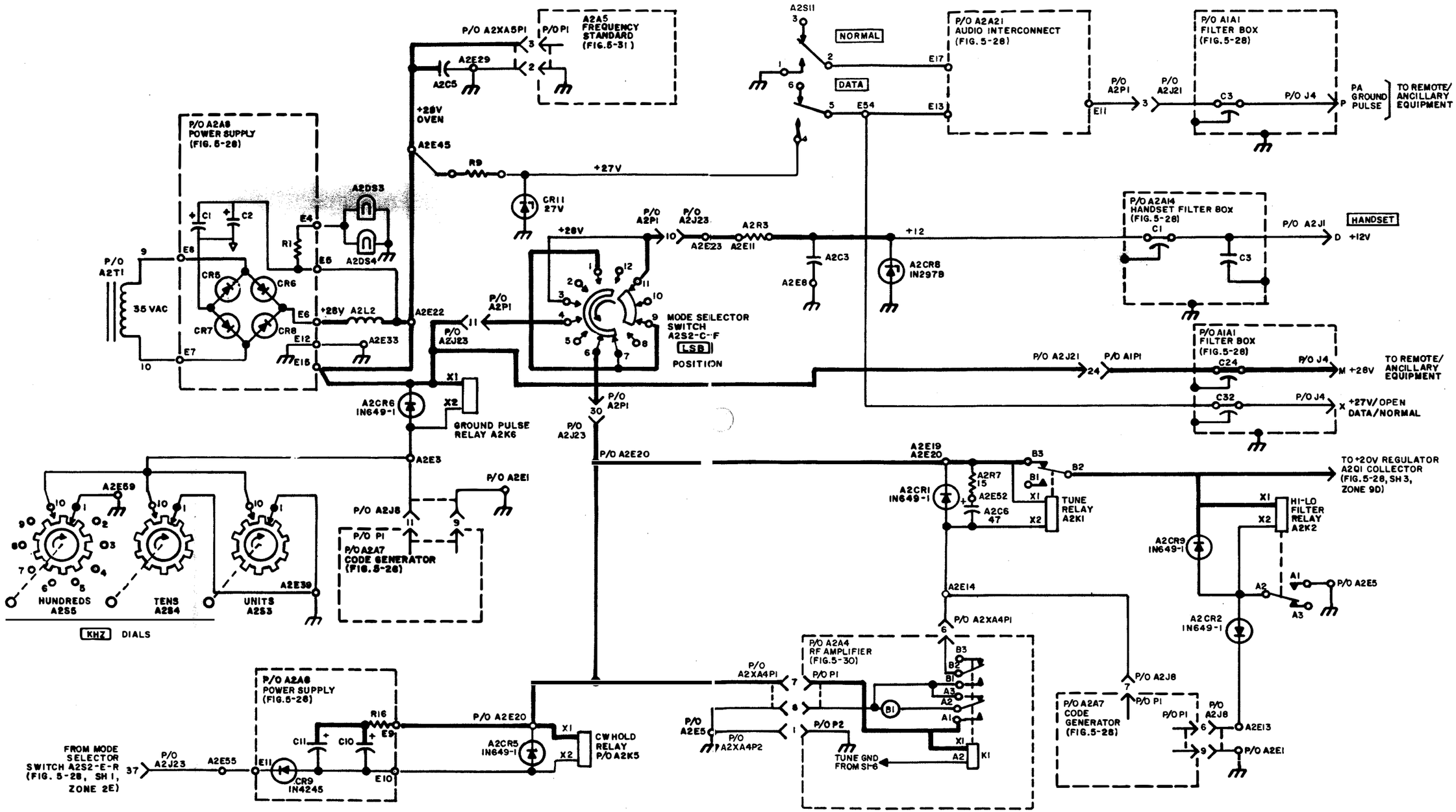


Figure 5-14. +28 V Power Distribution Diagram

NOTES FOR FIGURE 5-15

GENERAL NOTES

A. ——⟩ ⟨—— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE, PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

B. SWITCH CONTACT CONNECTIONS FOR VARIOUS MODES, AS LISTED BELOW:

MODE SELECTOR SWITCH A2S2		
FUNCTION	SECTION A-F TERMINALS	SECTION A-R TERMINALS
LSB		2-3-4
RATT	12-10	3-4-5
AM	1-11	3-4-5
CW	12-2	4-5
USB		5-6, 3-4
ISB		2-3-4-5
ISB/RATT	3-5	2-3-4-5

C. LEGEND FOLLOWS:

+110 VDC ——— -- ———
+20 VDC ———————
+5 VDC - - - - - - - - -

D. PLUG CONNECTIONS SHOWN FOR MODE SELECTOR SWITCH A2S2 ARE FOR PLUG A2P1 AND SOCKET A2J23, PER THE FOLLOWING TERMINAL CHART.

MODE SELECTOR SWITCH POWER CONNECTIONS			
+20 VDC BUS DESCRIPTION	PIN NO.	A2J23	A2P1
AM CARRIER	19	A2A15E11	A2S2-A-F-11
EXCEPT CW	29	A2SA1P2-7	A2S2-A-R-4
AM/USB/ISB	31	A2SA1P1-5 A2XA1P2-8	A2S2-A-R-5
TRANSMIT	32	A2E15	A2S2-A-R-6 A2S2-A-R-3 A2S2-A-F-3
RATT	33	A2XA9P1-5	A2S2-A-F-10 A2S2-A-F-5
CW	35	A2XA1P2-10	A2S2-A-F-2
LSB/ISB	36	A2XA1P1-2 A2XA1P2-2	A2S2-A-R-2

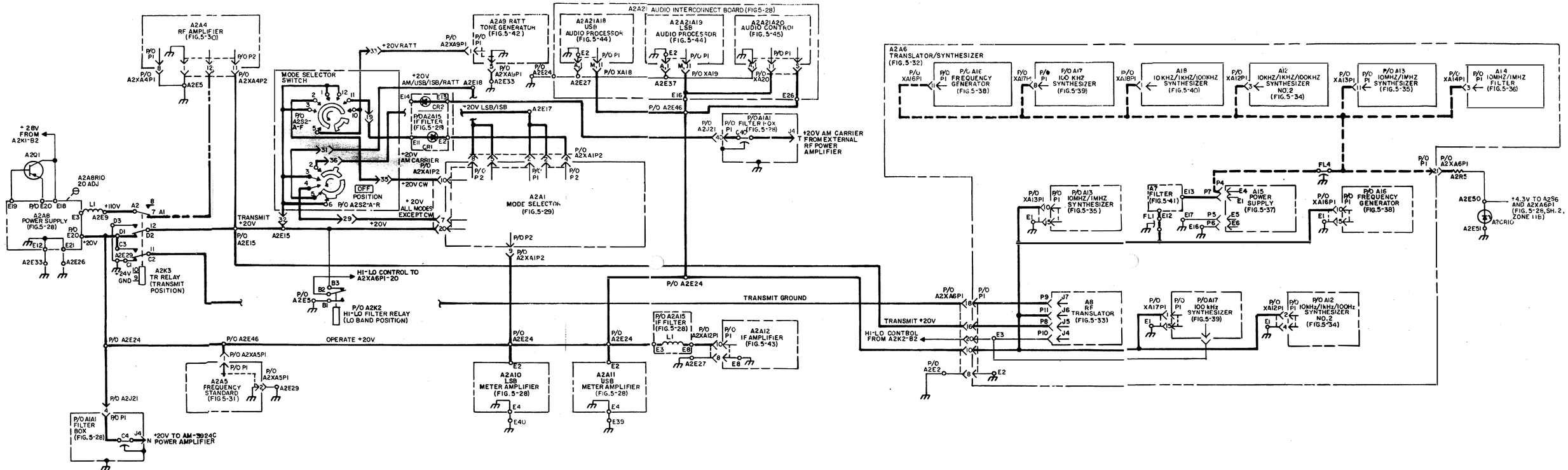


Figure 5-15. +110 Vdc, +20 Vdc, and +5 Vdc Power Distribution Diagram

NO OUTPUT WHEN MODE SELECTOR SWITCH IS SET AT LSB POSITION

GENERAL NOTES

A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-1, SHEET 1.
SET DATA/NORMAL SWITCH TO NORMAL FOR SHEET 1.
SET DATA/NORMAL SWITCH TO DATA FOR SHEET 2.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-29, 5-44, AND TO SIGNAL FLOW DIAGRAM, FIGURE 5-1, FOR TEST STEPS.

C. LEGEND:

YES ————————

NO - - - - - - - -

NO OUTPUT WHEN MODE SELECTOR SWITCH IS SET AT USB POSITION

WHEN
ECTOR
SET AT
SITION

TS-1
DOES RF VOLTMETER
INDICATE 0.35 mVRMS
AT A2A1E6?

TS-2
DOES RF VOLTMETER
INDICATE 6.6 mVRMS
AT A2A1A3TP2?

TS-3
DOES RF VOLTMETER
INDICATE 8 mVRMS
AT A2A1A3E6?

TROUBLE IN CONNECTOR
A2XA1P1-A1
REF: FIG 5-29

TROUBLE IN FILTER
A2A1FL1 OR A2A1A5Q1
REF: FIG 5-29

TROUBLE IN
A2A1A3Q1 OR
ASSOCIATED CIRCUITRY
REF: FIG 5-29

WHEN
CTOR
ET AT
ITION

TS-1
DOES RF VOLTMETER
INDICATE 0.35 mVRMS
AT A2A1E6?

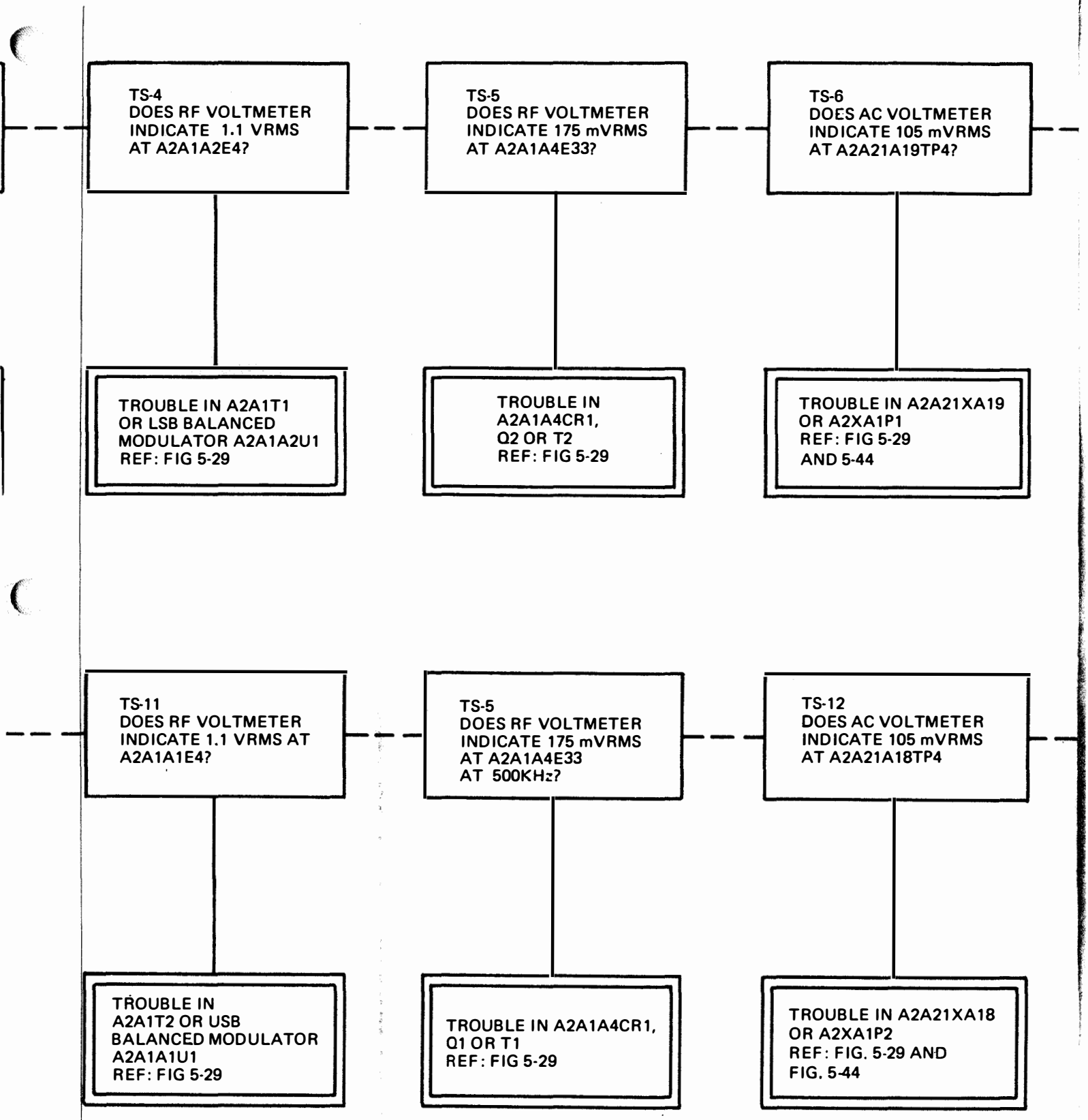
TS-9
DOES RF VOLTMETER
INDICATE 6.6 mVRMS
AT A2A1A3TP1?

TS-10
DOES RF VOLTMETER
INDICATE 8 mVRMS
AT A2A1A3E1?

TROUBLE IN CONNECTOR
A2XA1P1-A1
REF: FIG 5-29

TROUBLE IN FILTER
A2A1FL2 OR A2A1A5Q2
REF: FIG 5-29

TROUBLE IN A2A1A3Q2
OR ASSOCIATED
CIRCUITRY
REF: FIG 5-29


TS-4
DOES RF VOLTMETER INDICATE 1.1 VRMS AT A2A1A2E4?
TS-5
DOES RF VOLTMETER INDICATE 175 mVRMS AT A2A1A4E33?
TS-6
DOES AC VOLTMETER INDICATE 105 mVRMS AT A2A21A19TP4?
TROUBLE IN A2A1T1 OR LSB BALANCED MODULATOR A2A1A2U1 REF: FIG 5-29
TROUBLE IN A2A1A4CR1, Q2 OR T2 REF: FIG 5-29
TROUBLE IN A2A21XA19 OR A2XA1P1 REF: FIG 5-29 AND 5-44
TS-11
DOES RF VOLTMETER INDICATE 1.1 VRMS AT A2A1A1E4?
TS-5
DOES RF VOLTMETER INDICATE 175 mVRMS AT A2A1A4E33 AT 500KHz?
TS-12
DOES AC VOLTMETER INDICATE 105 mVRMS AT A2A21A18TP4
TROUBLE IN A2A1T2 OR USB BALANCED MODULATOR A2A1A1U1 REF: FIG 5-29
TROUBLE IN A2A1A4CR1, Q1 OR T1 REF: FIG 5-29
TROUBLE IN A2A21XA18 OR A2XA1P2 REF: FIG. 5-29 AND FIG. 5-44

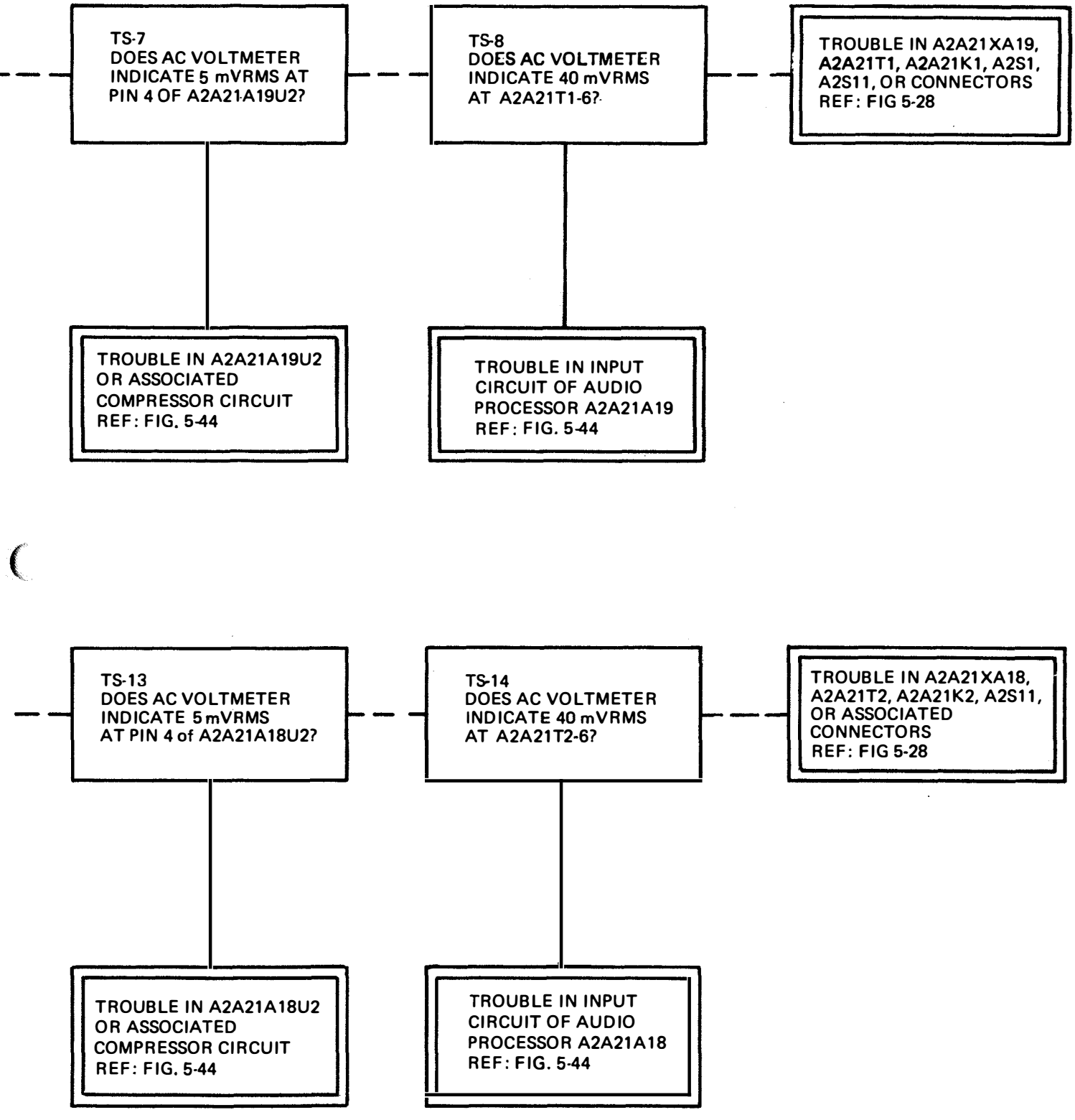
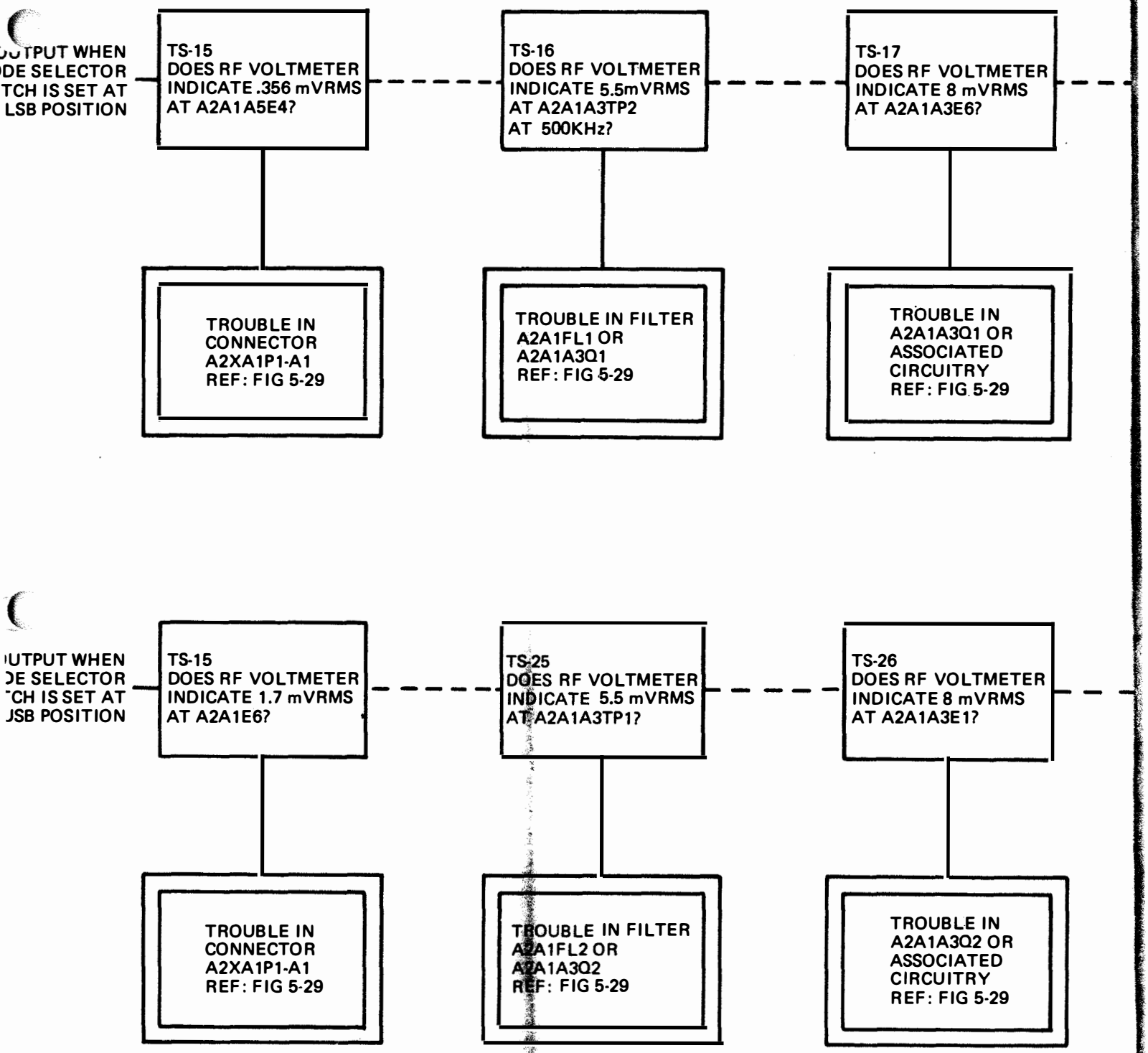
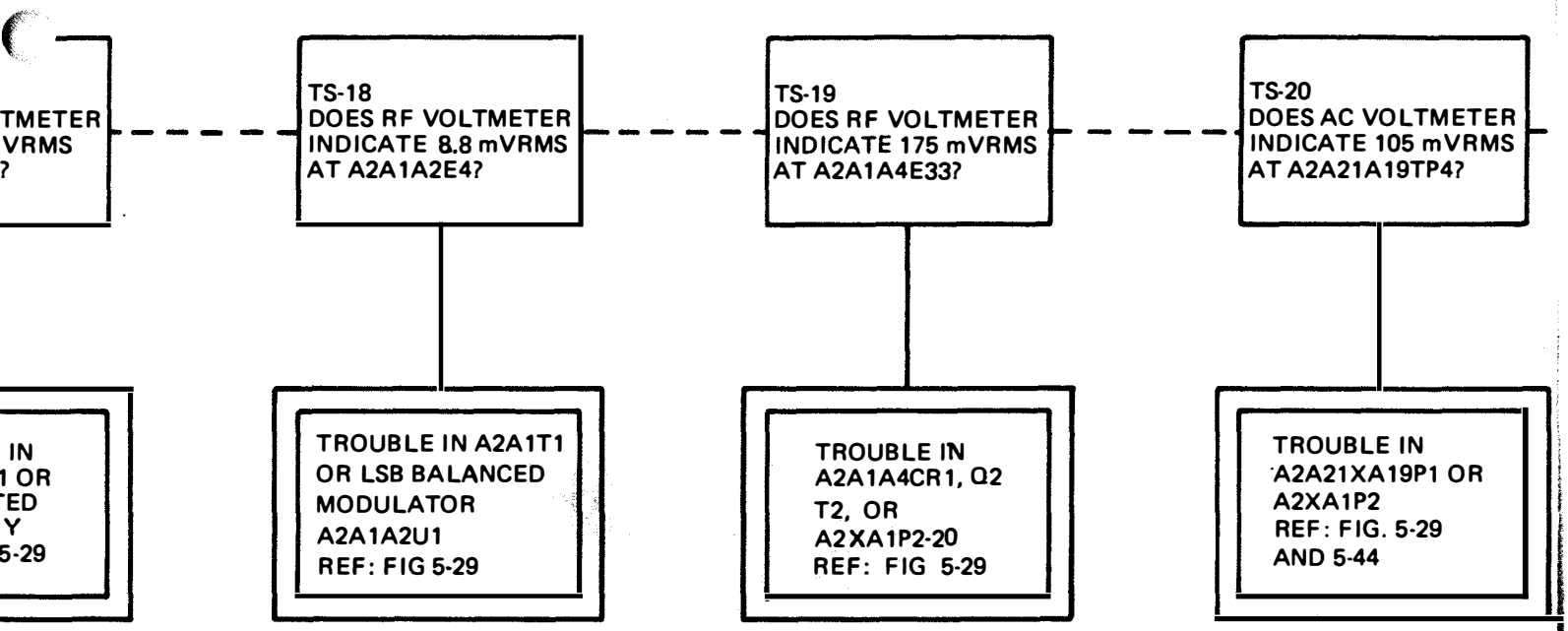
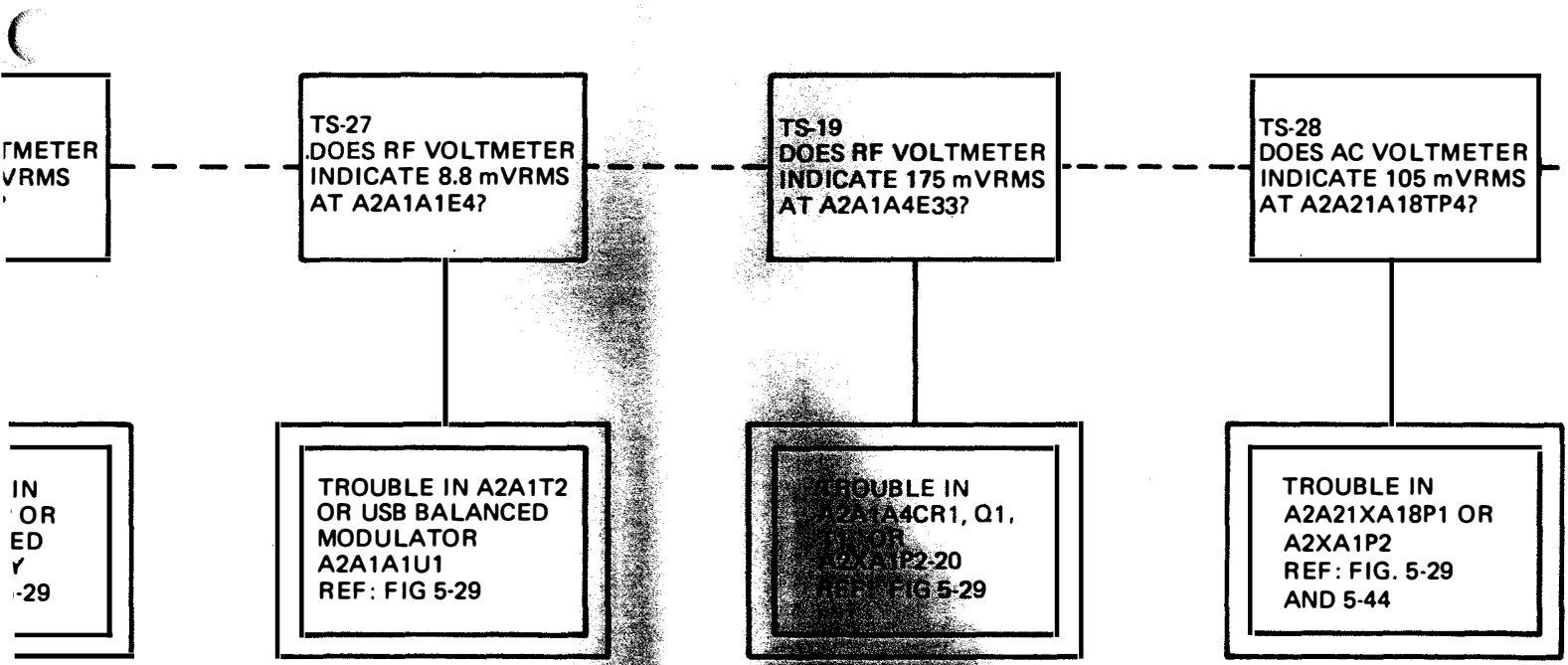
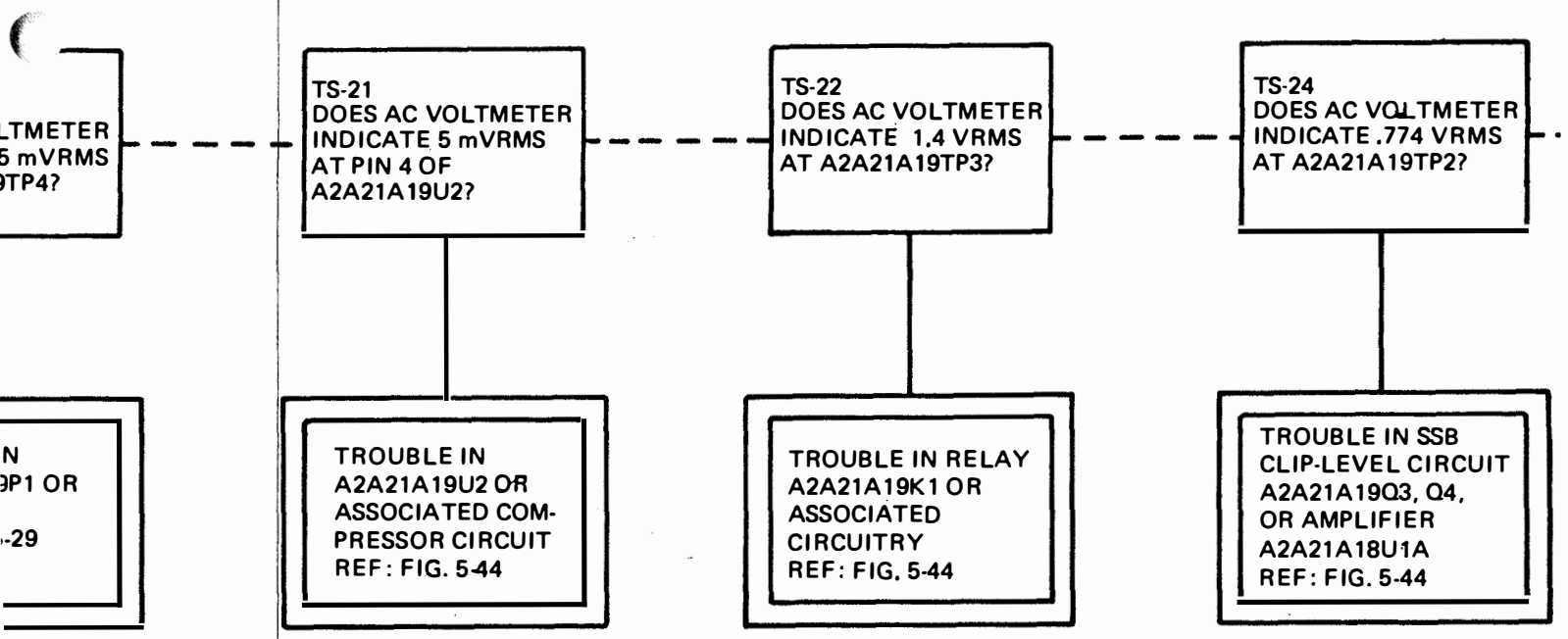


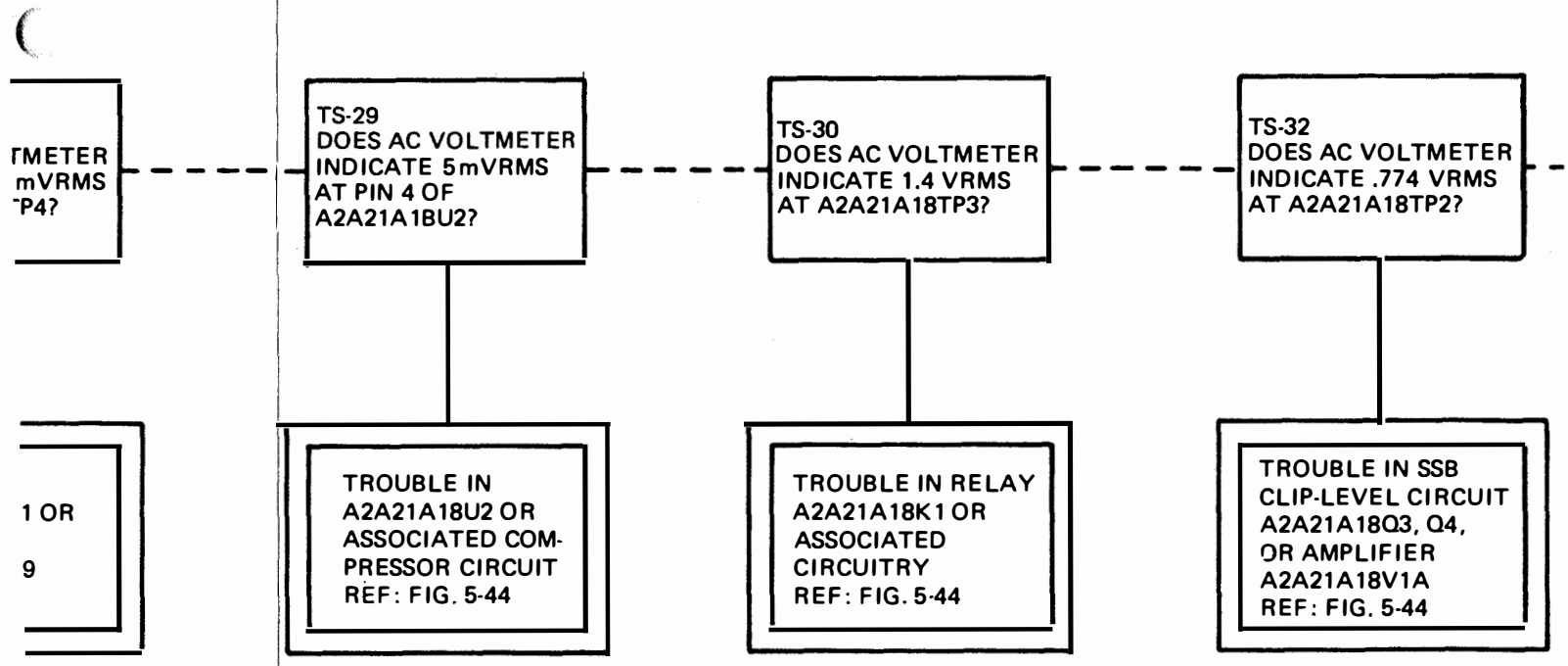
Figure 5-16. Normal Operation - Audio Amplification and Modulation, Voice Modes, Fault Logic Diagram, (Sheet 1 of 2)


UTPUT WHEN
DE SELECTOR
TCH IS SET AT
LSB POSITION
TS-15
DOES RF VOLTMETER
INDICATE .356 mVRMS
AT A2A1A5E4?
TS-16
DOES RF VOLTMETER
INDICATE 5.5mVRMS
AT A2A1A3TP2
AT 500KHz?
TS-17
DOES RF VOLTMETER
INDICATE 8 mVRMS
AT A2A1A3E6?
TROUBLE IN
CONNECTOR
A2XA1P1-A1
REF: FIG 5-29
TROUBLE IN FILTER
A2A1FL1 OR
A2A1A3Q1
REF: FIG 5-29
TROUBLE IN
A2A1A3Q1 OR
ASSOCIATED
CIRCUITRY
REF: FIG 5-29
UTPUT WHEN
DE SELECTOR
CH IS SET AT
JSB POSITION
TS-15
DOES RF VOLTMETER
INDICATE 1.7 mVRMS
AT A2A1E6?
TS-25
DOES RF VOLTMETER
INDICATE 5.5 mVRMS
AT A2A1A3TP1?
TS-26
DOES RF VOLTMETER
INDICATE 8 mVRMS
AT A2A1A3E1?
TROUBLE IN
CONNECTOR
A2XA1P1-A1
REF: FIG 5-29
TROUBLE IN FILTER
A2A1FL2 OR
A2A1A3Q2
REF: FIG 5-29
TROUBLE IN
A2A1A3Q2 OR
ASSOCIATED
CIRCUITRY
REF: FIG 5-29


TMETER
VRMS
?
TS-18
DOES RF VOLTMETER
INDICATE 8.8 mVRMS
AT A2A1A2E4?
TS-19
DOES RF VOLTMETER
INDICATE 175 mVRMS
AT A2A1A4E33?
TS-20
DOES AC VOLTMETER
INDICATE 105 mVRMS
AT A2A21A19TP4?
IN
1 OR
ED
Y
5-29
TROUBLE IN A2A1T1
OR LSB BALANCED
MODULATOR
A2A1A2U1
REF: FIG 5-29
TROUBLE IN
A2A1A4CR1, Q2
T2, OR
A2XA1P2-20
REF: FIG 5-29
TROUBLE IN
A2A21XA19P1 OR
A2XA1P2
REF: FIG. 5-29
AND 5-44


TMETER
VRMS
TS-27
DOES RF VOLTMETER
INDICATE 8.8 mVRMS
AT A2A1A1E4?
TS-19
DOES RF VOLTMETER
INDICATE 175 mVRMS
AT A2A1A4E33?
TS-28
DOES AC VOLTMETER
INDICATE 105 mVRMS
AT A2A21A18TP4?
IN
OR
ED
Y
-29
TROUBLE IN A2A1T2
OR USB BALANCED
MODULATOR
A2A1A1U1
REF: FIG 5-29
TROUBLE IN
A2A1A4CR1, Q1,
OR
A2XA1P2-20
REF: FIG 5-29
TROUBLE IN
A2A21XA18P1 OR
A2XA1P2
REF: FIG. 5-29
AND 5-44


LTMETER
5 mVRMS
9TP4?
TS-21
DOES AC VOLTMETER
INDICATE 5 mVRMS
AT PIN 4 OF
A2A21A19U2?
TS-22
DOES AC VOLTMETER
INDICATE 1.4 VRMS
AT A2A21A19TP3?
TS-24
DOES AC VOLTMETER
INDICATE .774 VRMS
AT A2A21A19TP2?
N
9P1 OR
-29
TROUBLE IN
A2A21A19U2 OR
ASSOCIATED COM-
PRESSOR CIRCUIT
REF: FIG. 5-44
TROUBLE IN RELAY
A2A21A19K1 OR
ASSOCIATED
CIRCUITRY
REF: FIG. 5-44
TROUBLE IN SSB
CLIP-LEVEL CIRCUIT
A2A21A19Q3, Q4,
OR AMPLIFIER
A2A21A18U1A
REF: FIG. 5-44


TMETER
mVRMS
P4?
TS-29
DOES AC VOLTMETER
INDICATE 5mVRMS
AT PIN 4 OF
A2A21A18U2?
TS-30
DOES AC VOLTMETER
INDICATE 1.4 VRMS
AT A2A21A18TP3?
TS-32
DOES AC VOLTMETER
INDICATE .774 VRMS
AT A2A21A18TP2?
1 OR
9
TROUBLE IN
A2A21A18U2 OR
ASSOCIATED COM-
PRESSOR CIRCUIT
REF: FIG. 5-44
TROUBLE IN RELAY
A2A21A18K1 OR
ASSOCIATED
CIRCUITRY
REF: FIG. 5-44
TROUBLE IN SSB
CLIP-LEVEL CIRCUIT
A2A21A18Q3, Q4,
OR AMPLIFIER
A2A21A18V1A
REF: FIG. 5-44

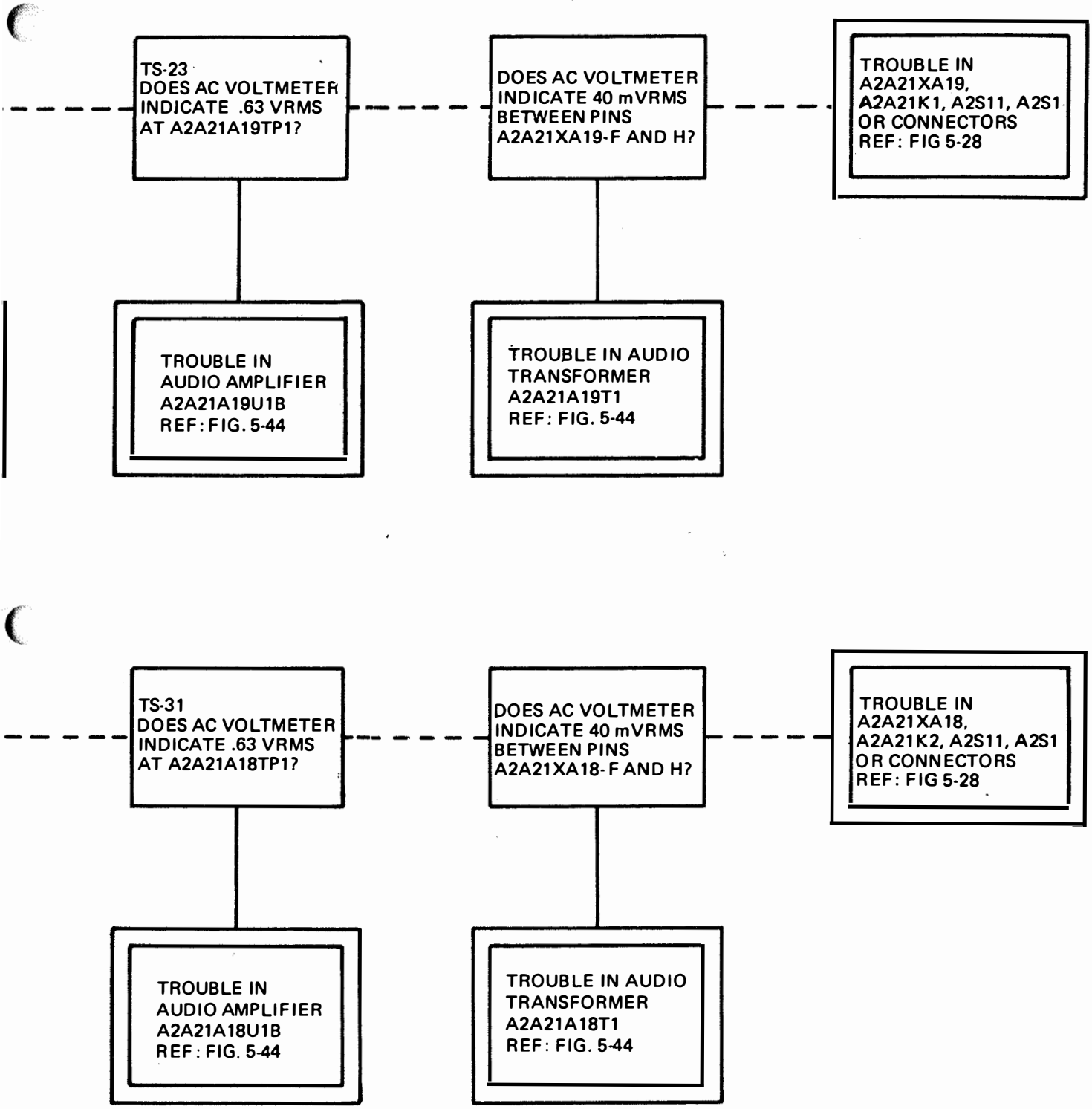


Figure 5-16. Data Operation - Audio Amplification and Modulation, Voice Modes, Fault Logic Diagram (Sheet 2 of 2)

NOTES FOR FIGURE 5-17.

GENERAL NOTES

A. ENSURE THAT PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED.

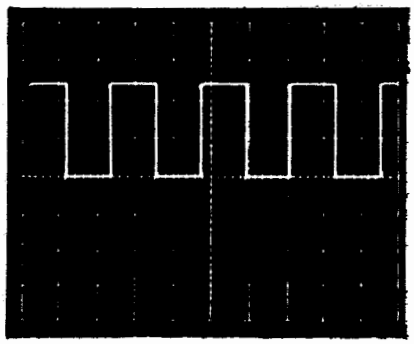
B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM 5-2.

C. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-28, 5-42, AND TO SIGNAL FLOW DIAGRAM FIGURE 5-2 FOR TEST STEPS.

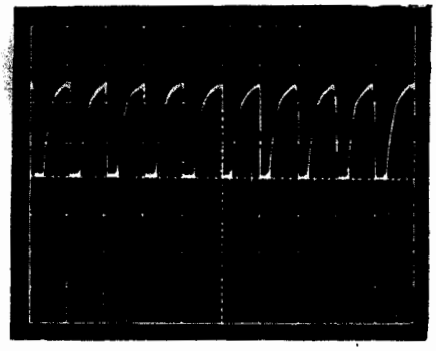
D. LEGEND
YES ————
NO - - - - -

SPECIFIC NOTES

WAVEFORMS



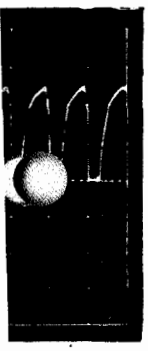
Waveform A



Waveform B

AGES ARE APPLIED.

5-28,
T STEPS.



B

NO SPACE OUTPUT

DOES COUNTER SHOW 4850 Hz AT A2A9A1TP5 FOR SPACE? (RATT SHIFT SELECT SWITCH IN 850 Hz POSITION, SEE WAVEFORM B)

NO

DOES SIGN
A2A9A1Q2
WAVEFOR

YES

TROUBLE IN A2A9A1Q3, Q4, A2A9A1T1, OR U5A CIRCUITRY REF: FIG 5-42

TROUBLE
A2A9A1U
or U6. RE

NO MARK OUTPUT

DOES COUNTER SHOW 3150 Hz AT A2A9A1TP5 FOR MARK? (RATT SHIFT SELECT SWITCH IN 850 Hz POSITION)

YES

IS VOLT
A2A9A1R1
THAN +9V

TROUBL
A2A9A1
REF: FI

NO 170 Hz SHIFT

DOES COUNTER SHOW 4170 Hz AT A2A9A1TP5 FOR SPACE? (RATT SHIFT SELECT SWITCH IN 170 Hz POSITION)

YES

IS VOLT
A2A9A1TP
THAN 10 V

TROU
A2A9
A2A9
REF:

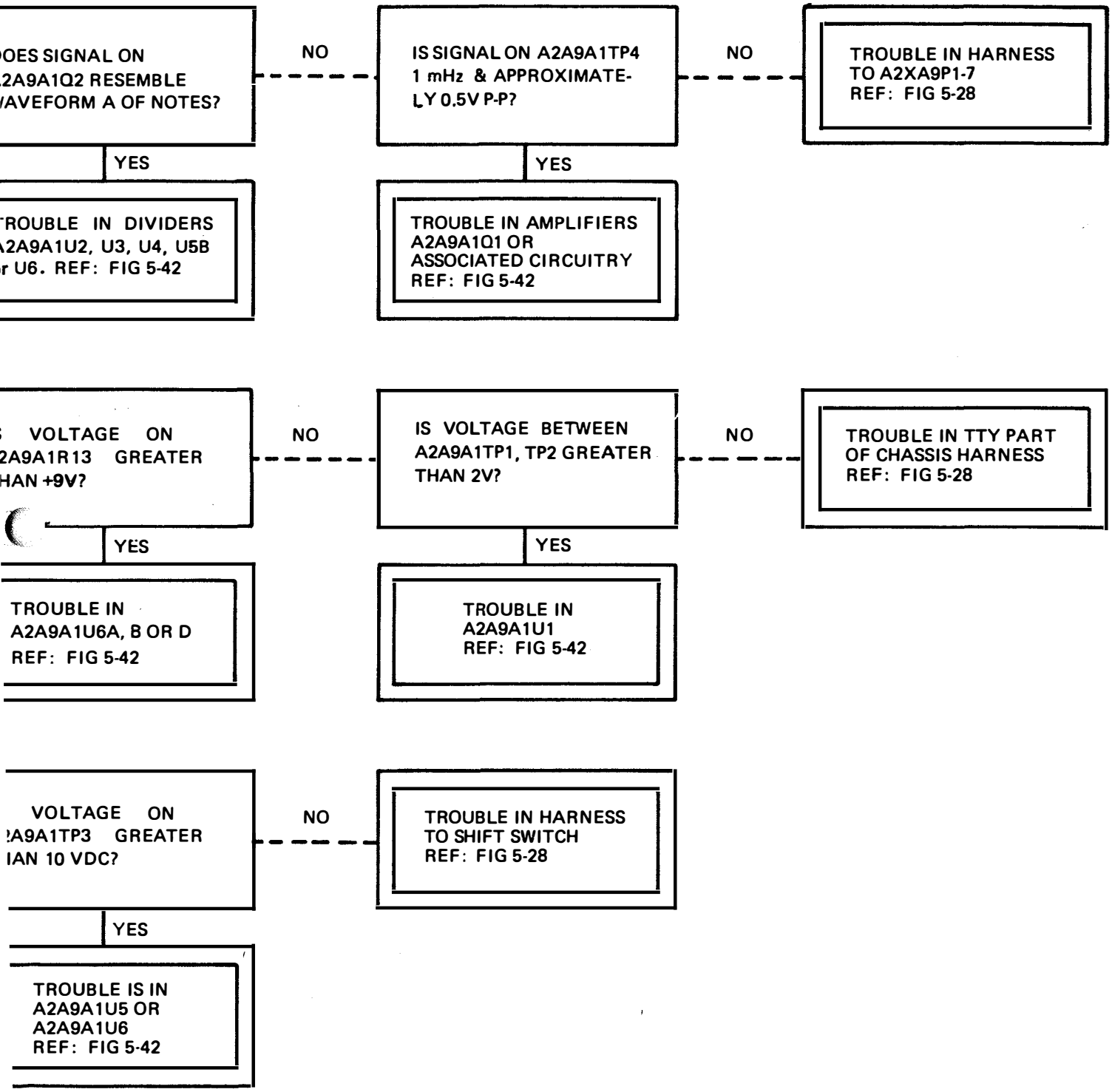


Figure 5-17. RATT Tone Generation, Fault Logic Diagram

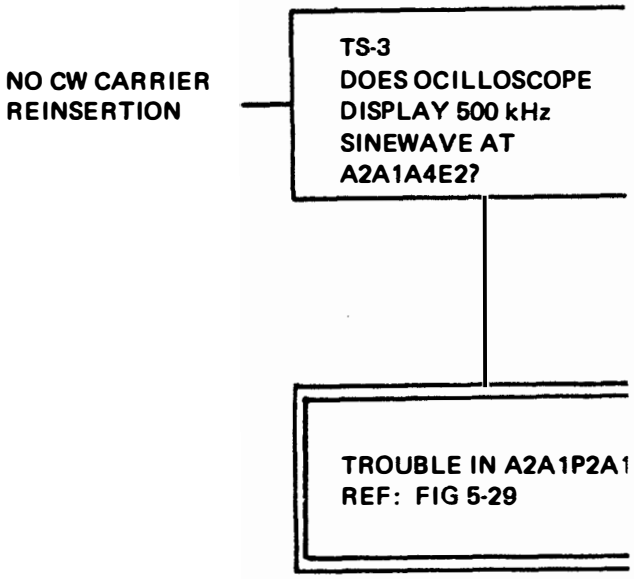
GENERAL NOTES

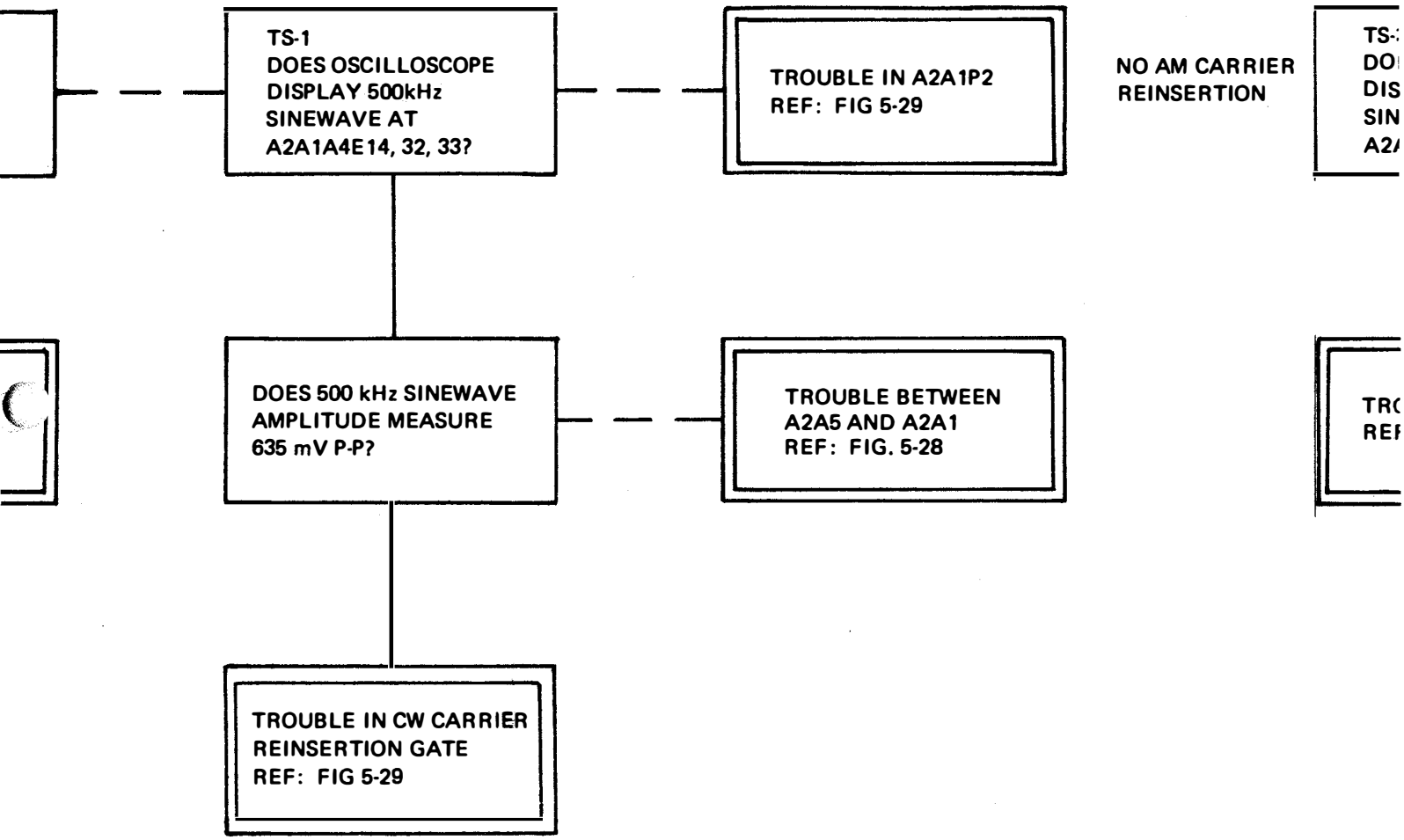
A. ENSURE THAT PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED.

B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-3.
MAKE OSCILLOSCOPE OBSERVATIONS WITH TIME BASE SET FOR 500 kHz (2 uSEC/CM).

C. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-28, 5-29.

D. LEGEND:
YES ————
NO – – – – –




TS-1
DOES OSCILLOSCOPE DISPLAY 500kHz SINEWAVE AT A2A1A4E14, 32, 33?
TROUBLE IN A2A1P2
REF: FIG 5-29
NO AM CARRIER REINSERTION
DOES 500 kHz SINEWAVE AMPLITUDE MEASURE 635 mV P-P?
TROUBLE BETWEEN A2A5 AND A2A1
REF: FIG. 5-28
TROUBLE IN CW CARRIER REINSERTION GATE
REF: FIG 5-29

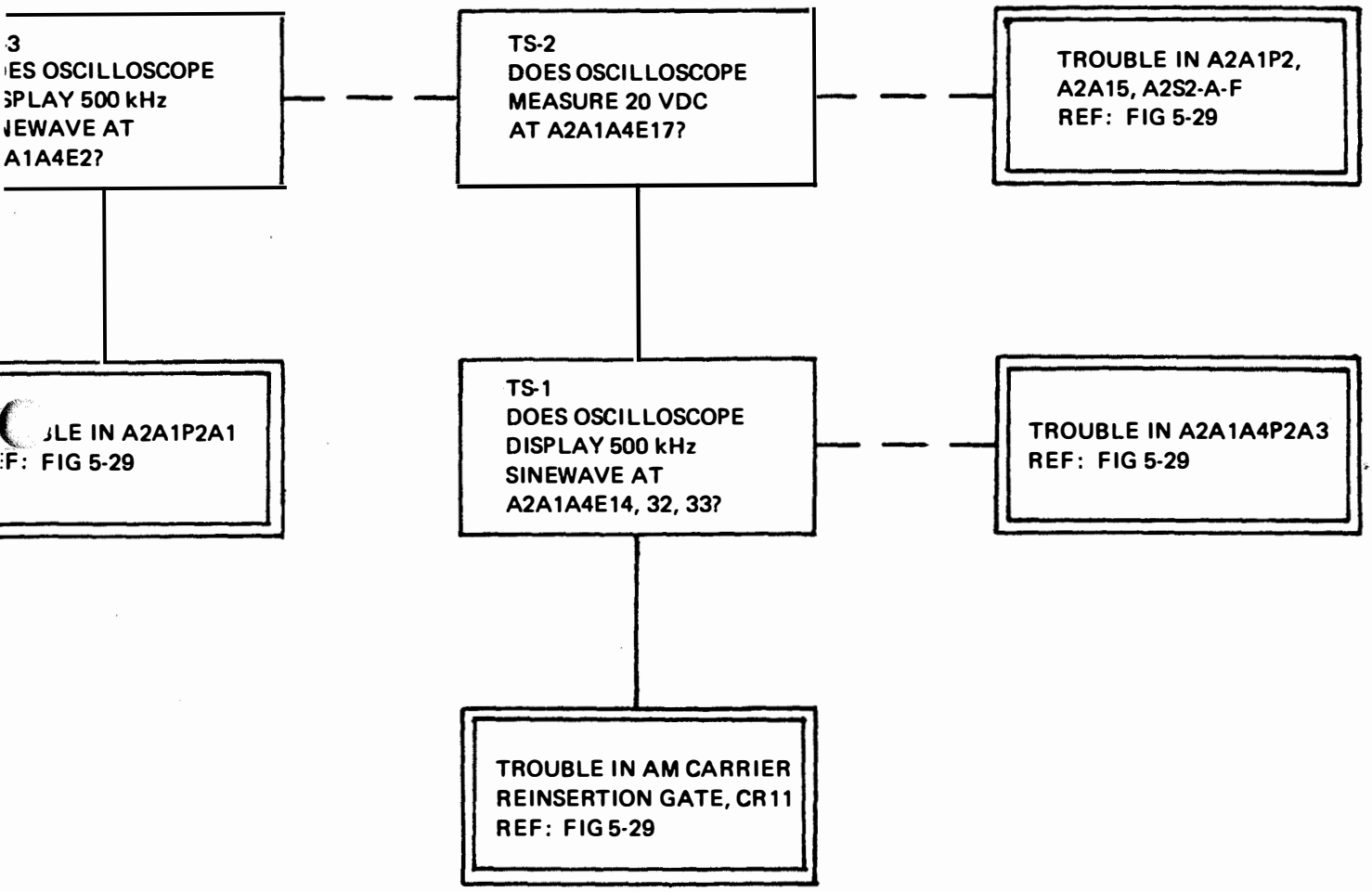


Figure 5-18. Carrier Reinsertion, Fault Logic Diagram

GENERAL NOTES

A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM 5-4.

B. REFER TO:
MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-28, 5-43.

C. LEGEND:
YES ———
NO - - - - -

NO OUTPUT OR REDUCED OUTPUT FROM IF AMPLIFIER AT A2XA12P1-A1 ———

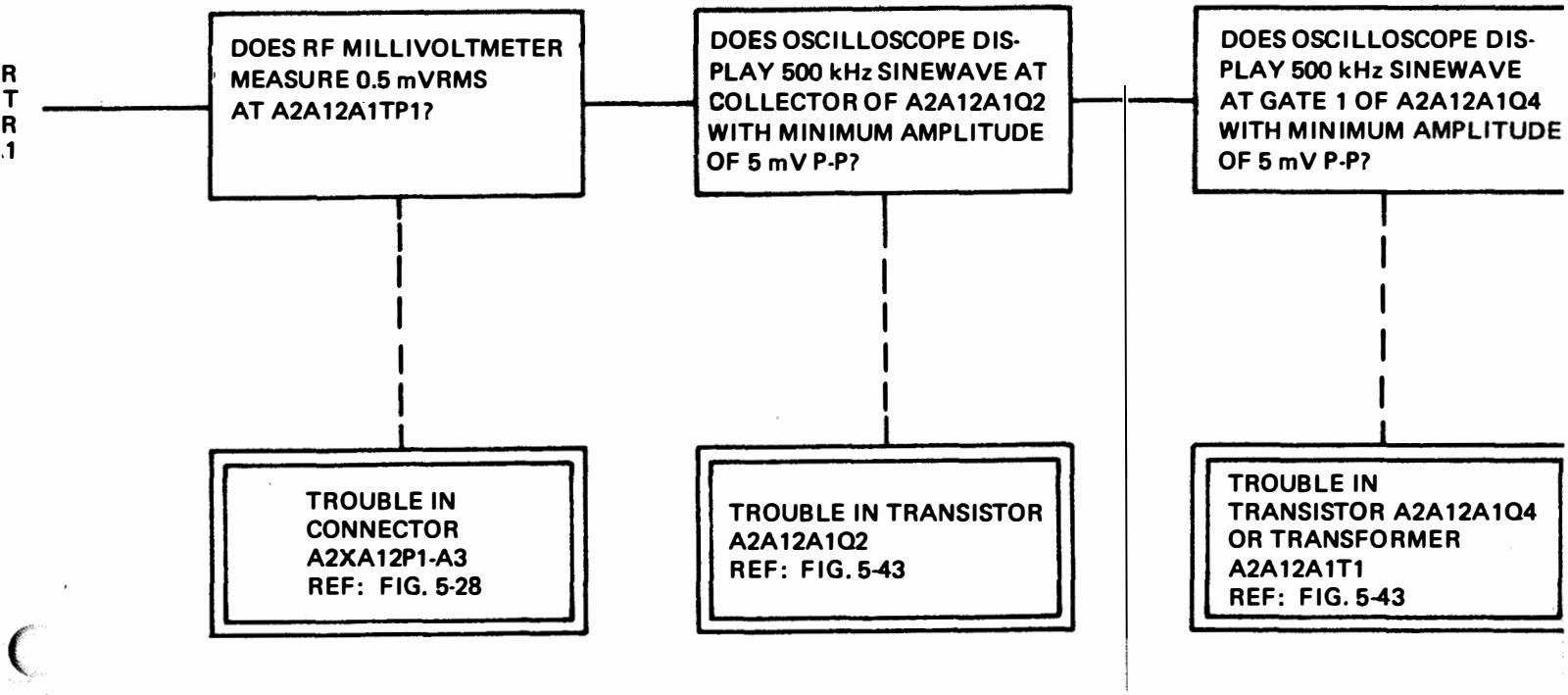
SPECIFIC NOTES

1. REMOVE IF AMPLIFIER A2A12 FROM CHASSIS AND REINSTALL ON EXTENDER CABLE.

2. USE OSCILLOSCOPE AN/USM-281 WITH AC PROBE 28480-1121A FOR TESTS.

3. OBSERVE THE OSCILLOSCOPE WITH TIME BASE SET FOR 500 KHZ (2 uSEC/CM).

4. DISCONNECT FREQUENCY STANDARD AN/URQ-10 INPUT AT A2A12P1-A2.


R
T
R
1
DOES RF MILLIVOLTMETER MEASURE 0.5 mVRMS AT A2A12A1TP1?
DOES OSCILLOSCOPE DISPLAY 500 kHz SINEWAVE AT COLLECTOR OF A2A12A1Q2 WITH MINIMUM AMPLITUDE OF 5 mV P-P?
DOES OSCILLOSCOPE DISPLAY 500 kHz SINEWAVE AT GATE 1 OF A2A12A1Q4 WITH MINIMUM AMPLITUDE OF 5 mV P-P?
TROUBLE IN CONNECTOR A2XA12P1-A3 REF: FIG. 5-28
TROUBLE IN TRANSISTOR A2A12A1Q2 REF: FIG. 5-43
TROUBLE IN TRANSISTOR A2A12A1Q4 OR TRANSFORMER A2A12A1T1 REF: FIG. 5-43

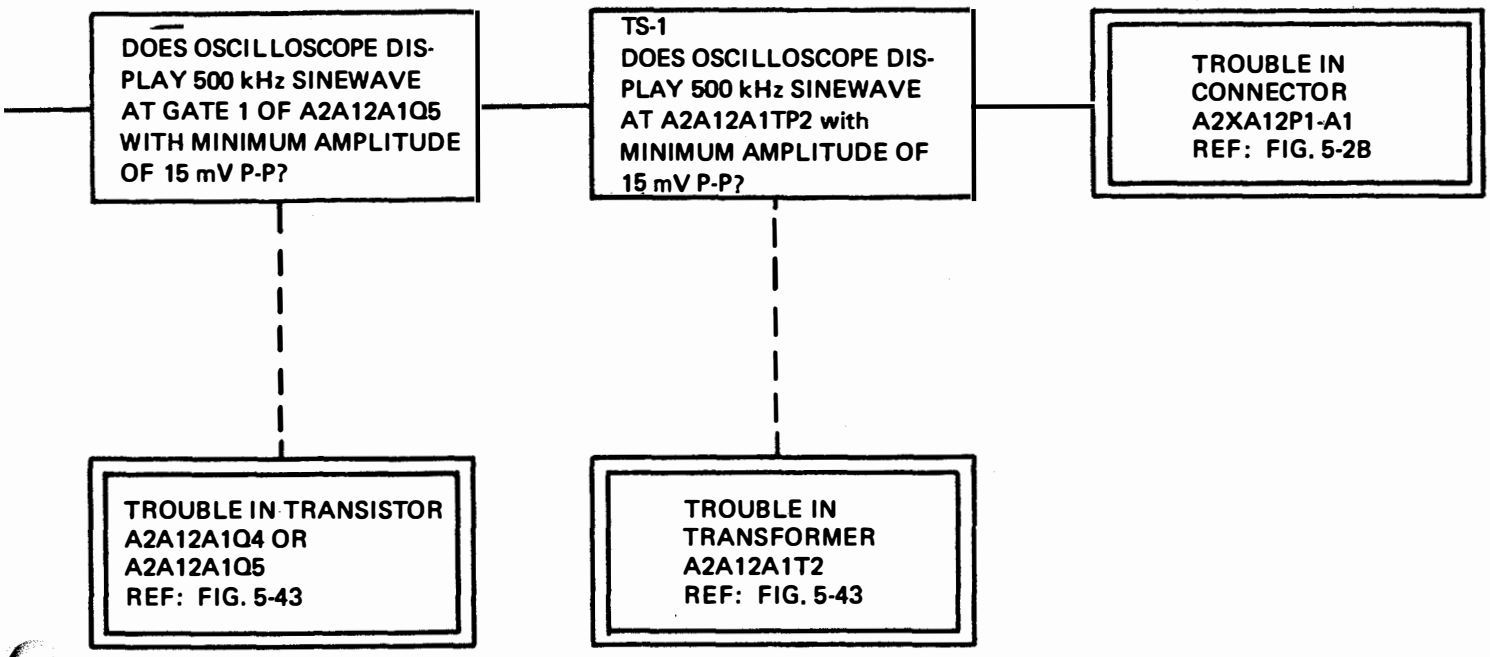


Figure 5-19. IF Amplification and Level Control Fault Logic Diagram

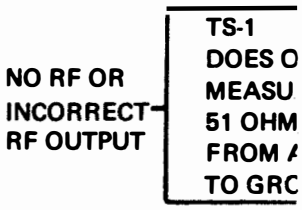
GENERAL NOTES

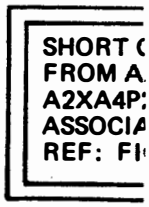
A. ENSURE THAT PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED.

B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-5.

C. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-28, 5-32, 5-33.

D. LEGEND:
YES ———
NO - - - - -



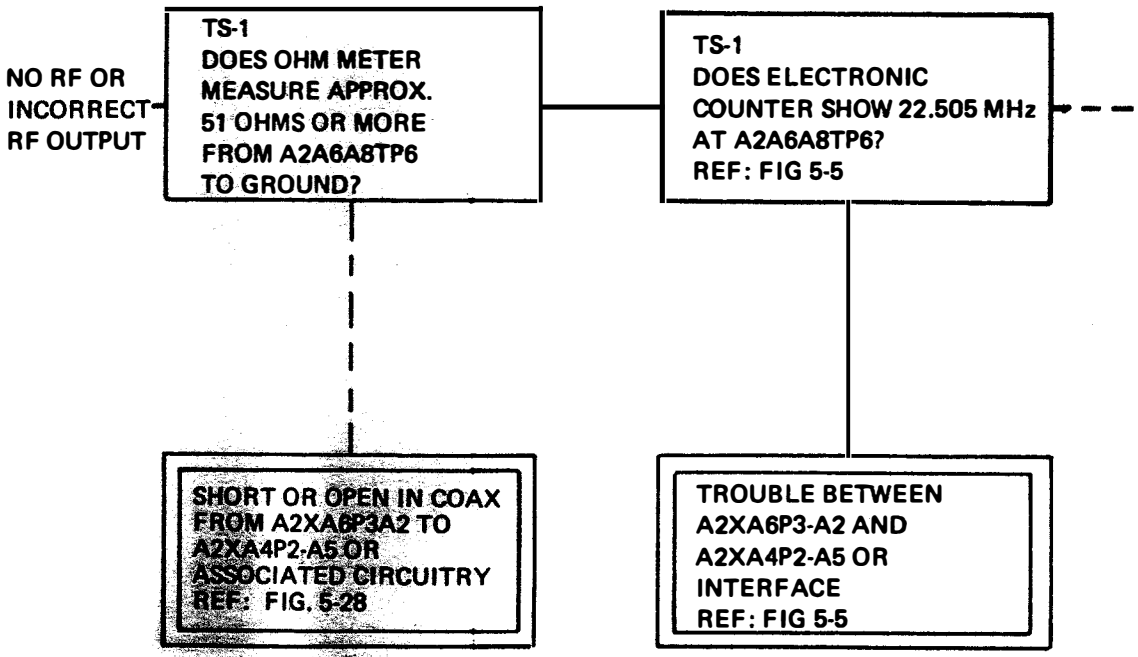


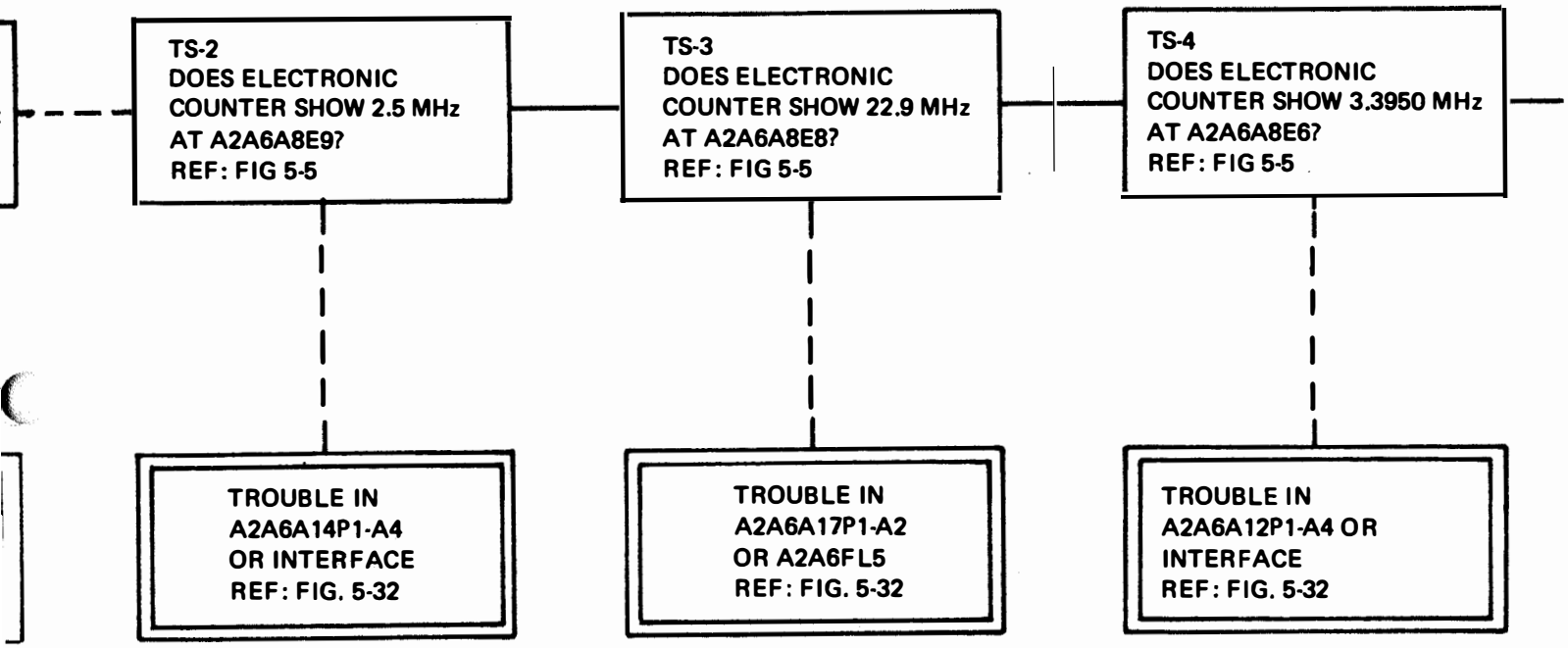
ES

UPPLY AND GATING

GRAM, FIGURE 5-5.

CHEMATIC DIAGRAMS,




TS-2
DOES ELECTRONIC
COUNTER SHOW 2.5 MHz
AT A2A6A8E9?
REF: FIG 5-5
TS-3
DOES ELECTRONIC
COUNTER SHOW 22.9 MHz
AT A2A6A8E8?
REF: FIG 5-5
TS-4
DOES ELECTRONIC
COUNTER SHOW 3.3950 MHz
AT A2A6A8E6?
REF: FIG 5-5
TROUBLE IN
A2A6A14P1-A4
OR INTERFACE
REF: FIG. 5-32
TROUBLE IN
A2A6A17P1-A2
OR A2A6FL5
REF: FIG. 5-32
TROUBLE IN
A2A6A12P1-A4 OR
INTERFACE
REF: FIG. 5-32

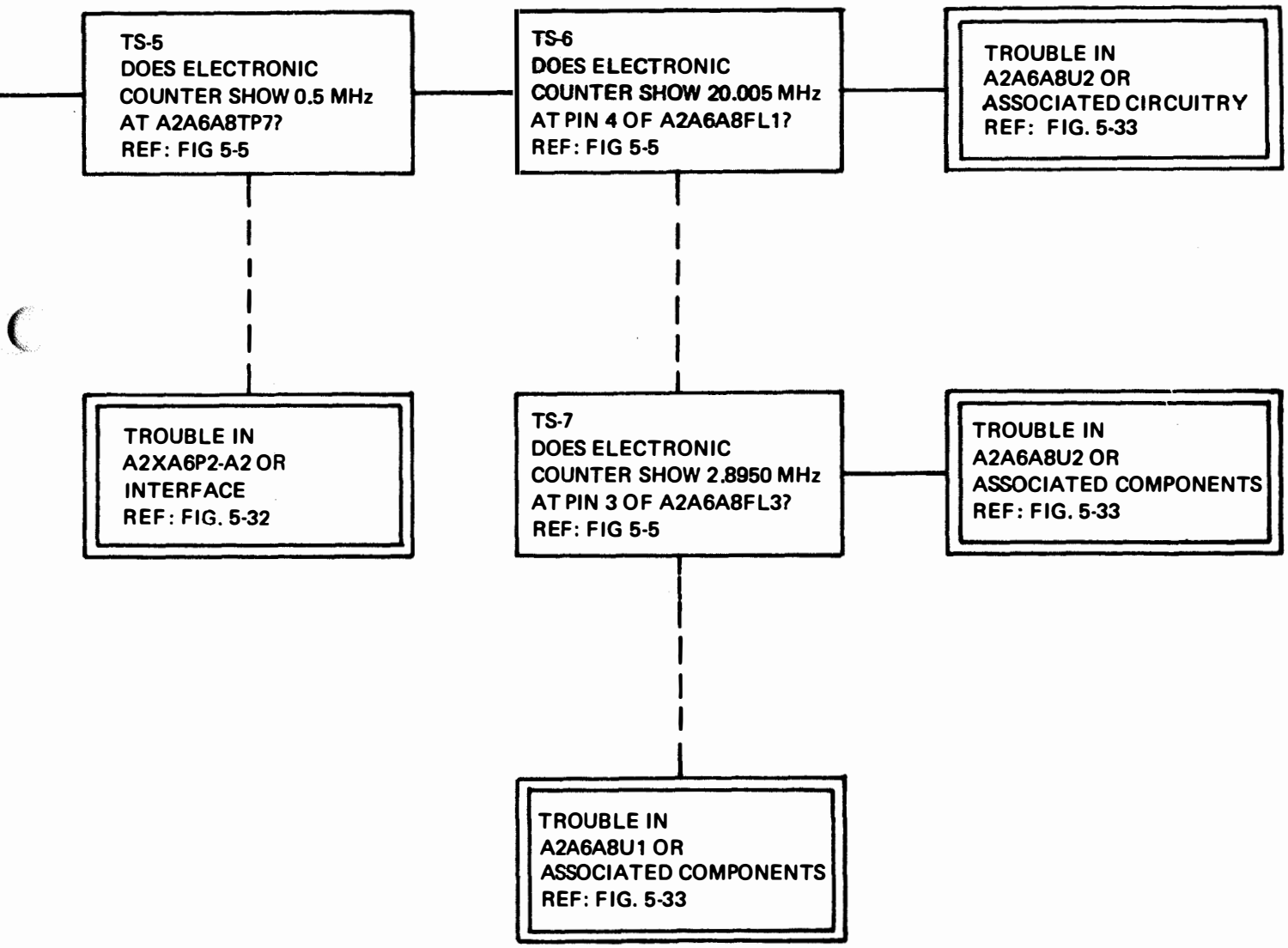


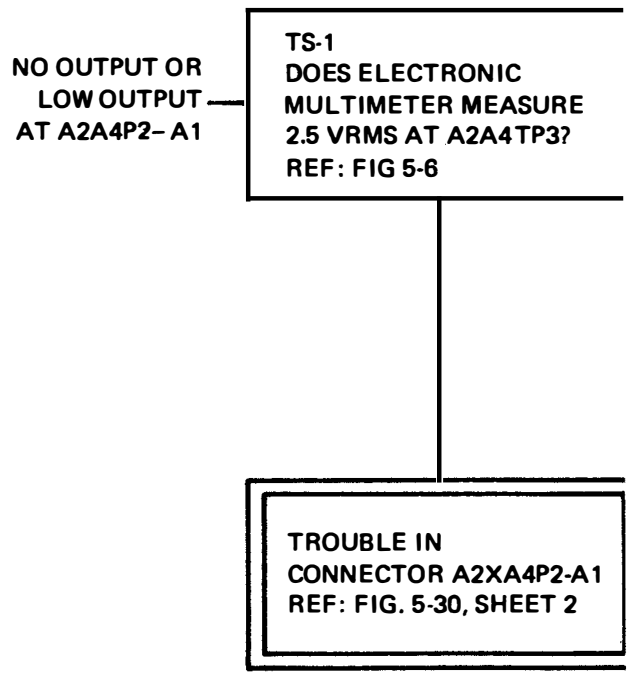
Figure 5-20. IF-to-RF Conversion, Fault Logic Diagram

GENERAL NOTES

A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-6.

B. REFER TO SCHEMATIC DIAGRAM, FIGURE 5-30.

C. LEGEND:
YES ———
NO - - - - -



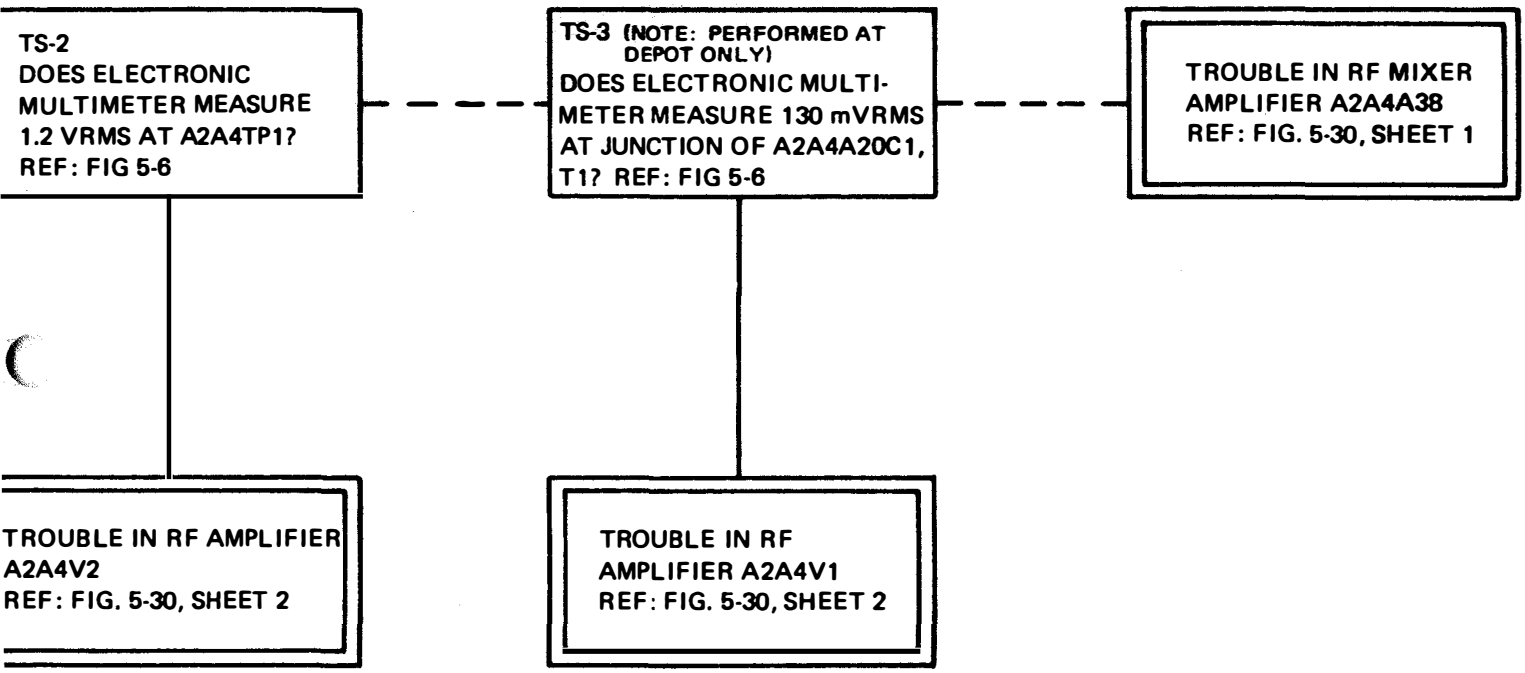


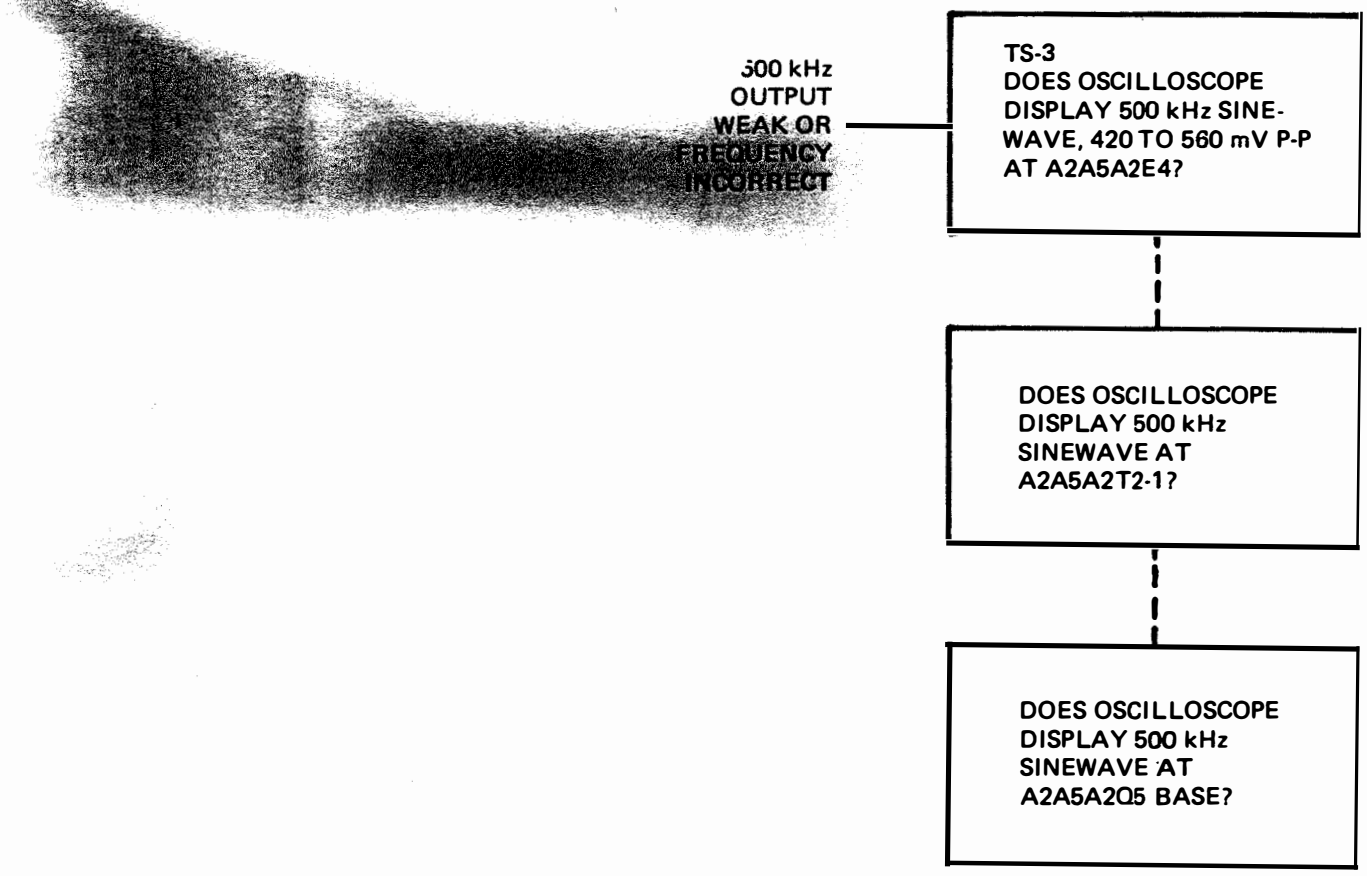
Figure 5-21. RF Amplification and Level Control, Fault Logic Diagram

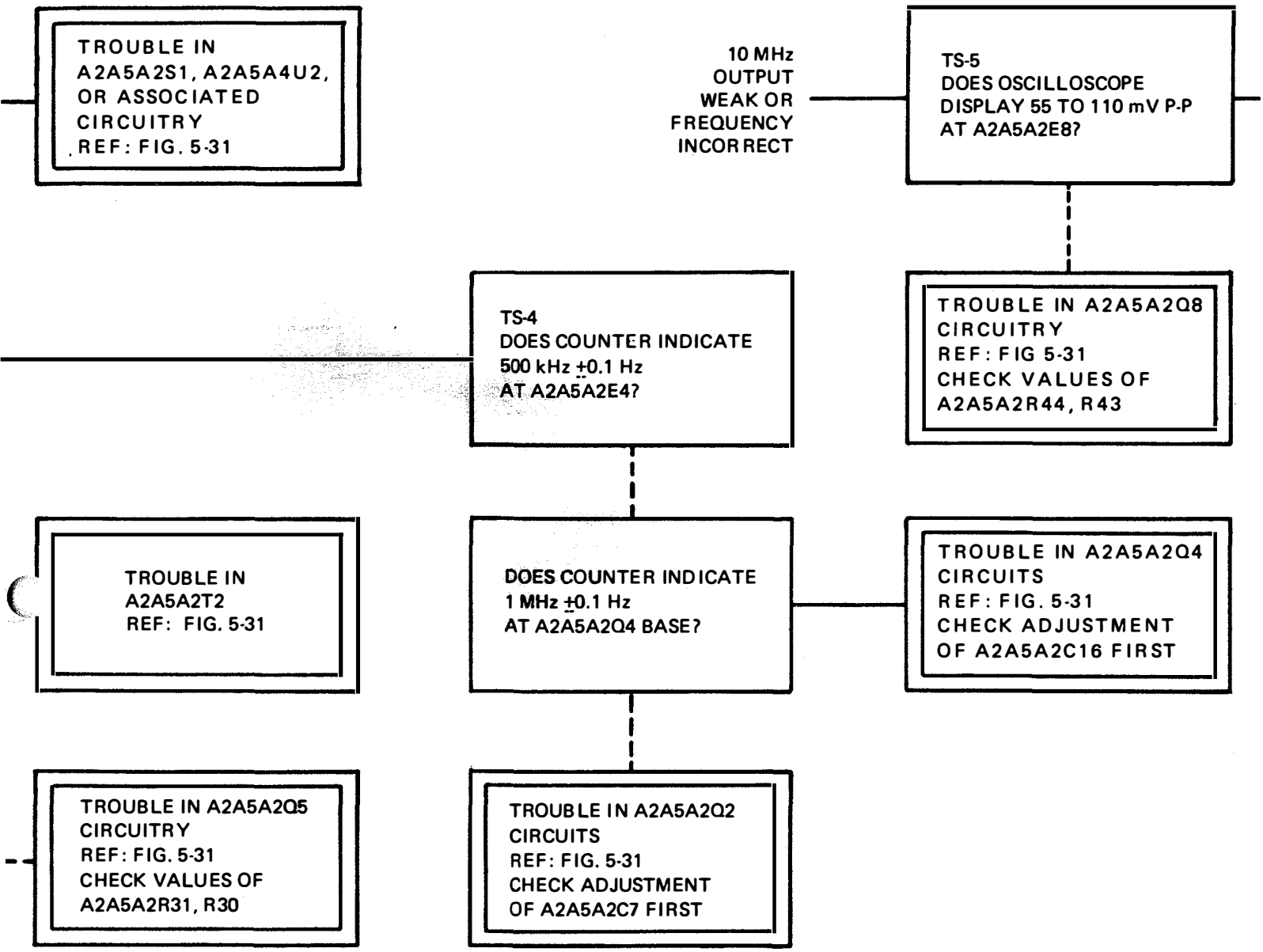
A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-7.

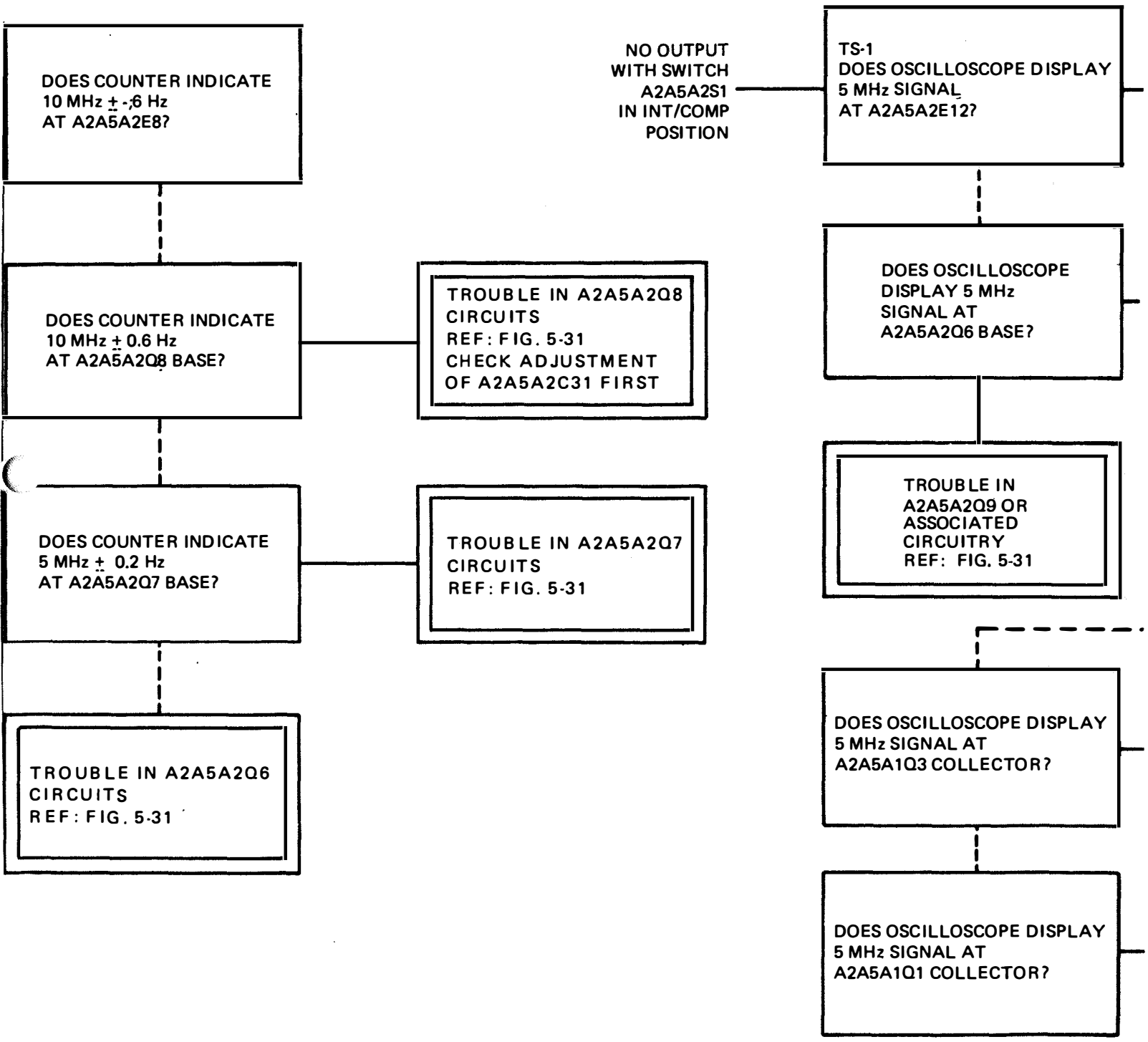
B. REFER TO SCHEMATIC DIAGRAM, FIGURE 5-31

C. LEGEND:
YES ————
NO - - - - - -

N
OUTPUT II
ANY POSITIOI
OF A2A5A2S




TROUBLE IN A2A5A2S1, A2A5A4U2, OR ASSOCIATED CIRCUITRY REF: FIG. 5-31
10 MHz OUTPUT WEAK OR FREQUENCY INCORRECT
TS-5 DOES OSCILLOSCOPE DISPLAY 55 TO 110 mV P-P AT A2A5A2E8?
TROUBLE IN A2A5A2Q8 CIRCUITRY REF: FIG 5-31 CHECK VALUES OF A2A5A2R44, R43
TS-4 DOES COUNTER INDICATE 500 kHz ±0.1 Hz AT A2A5A2E4?
TROUBLE IN A2A5A2T2 REF: FIG. 5-31
DOES COUNTER INDICATE 1 MHz ±0.1 Hz AT A2A5A2Q4 BASE?
TROUBLE IN A2A5A2Q4 CIRCUITS REF: FIG. 5-31 CHECK ADJUSTMENT OF A2A5A2C16 FIRST
TROUBLE IN A2A5A2Q5 CIRCUITRY REF: FIG. 5-31 CHECK VALUES OF A2A5A2R31, R30
TROUBLE IN A2A5A2Q2 CIRCUITS REF: FIG. 5-31 CHECK ADJUSTMENT OF A2A5A2C7 FIRST


NO OUTPUT WITH SWITCH A2A5A2S1 IN INT/COMP POSITION
TS-1
DOES OSCILLOSCOPE DISPLAY 5 MHz SIGNAL AT A2A5A2E12?
DOES OSCILLOSCOPE DISPLAY 5 MHz SIGNAL AT A2A5A2Q6 BASE?
TROUBLE IN A2A5A2Q9 OR ASSOCIATED CIRCUITRY REF: FIG. 5-31
DOES OSCILLOSCOPE DISPLAY 5 MHz SIGNAL AT A2A5A1Q3 COLLECTOR?
DOES OSCILLOSCOPE DISPLAY 5 MHz SIGNAL AT A2A5A1Q1 COLLECTOR?
DOES COUNTER INDICATE 10 MHz ± .6 Hz AT A2A5A2E8?
DOES COUNTER INDICATE 10 MHz ± 0.6 Hz AT A2A5A2Q8 BASE?
TROUBLE IN A2A5A2Q8 CIRCUITS REF: FIG. 5-31 CHECK ADJUSTMENT OF A2A5A2C31 FIRST
DOES COUNTER INDICATE 5 MHz ± 0.2 Hz AT A2A5A2Q7 BASE?
TROUBLE IN A2A5A2Q7 CIRCUITS REF: FIG. 5-31
TROUBLE IN A2A5A2Q6 CIRCUITS REF: FIG. 5-31

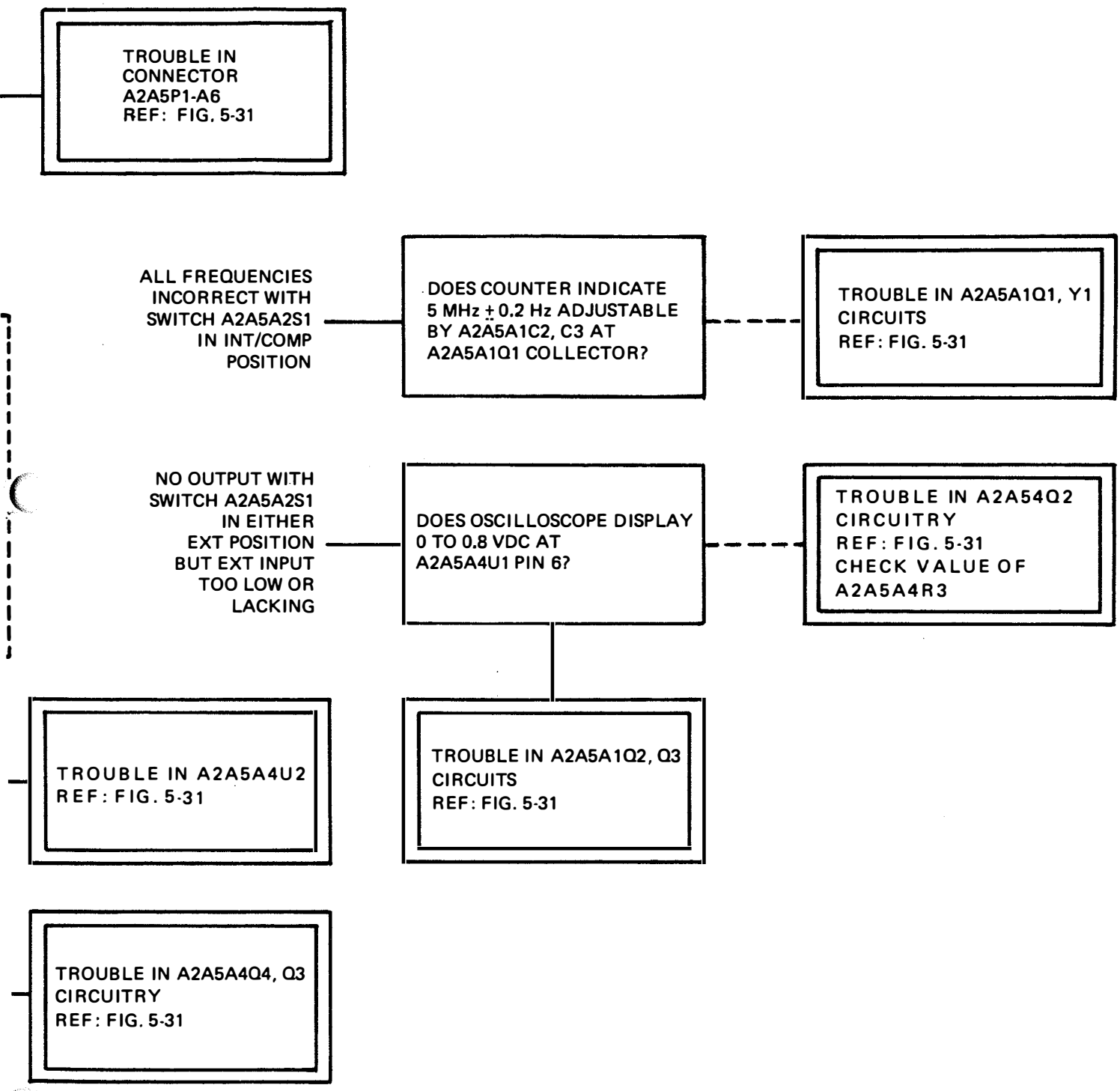


Figure 5-22. Frequency Standard A2A5, Fault Logic Diagram

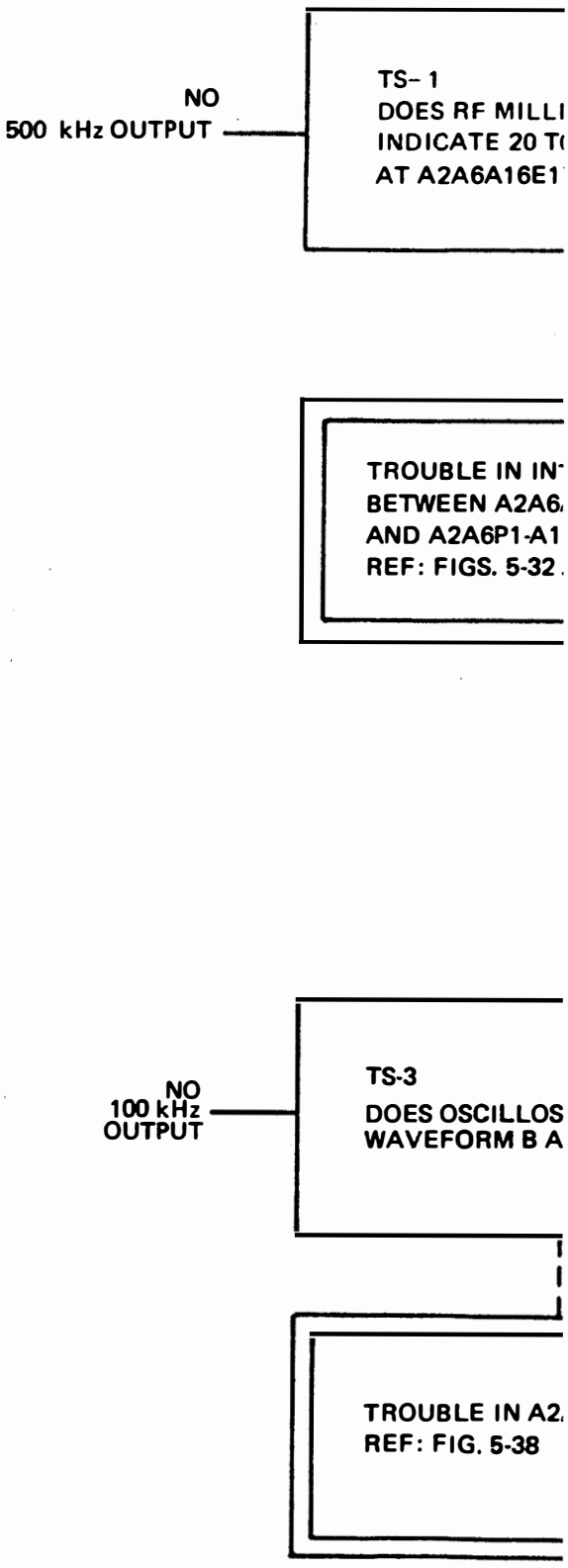
GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-8 FOR TEST SETUP, AND TABLE 6-5 FOR WAVEFORMS.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-32, 5-38.

C. LEGEND:

YES ————
NO – – – – – –



VOLTMETER
0 40 mV RMS

TERFACE
A16P1-A1

AND 5-38

OPE DISPLAY
A2A6A16TP3?

6A16U3

TS-5
DOES OSCILLOSCOPE DISPLAY
10 MHz SQUAREWAVE AT
A2A6A16Q2 COLLECTOR?

TROUBLE IN A2A6A16Q1, Q2
CIRCUITS
REF: FIG. 5-38

TS-6
DOES OSCILLOSCOPE DISPLAY
LOGIC LEVEL 10 MHz
SQUAREWAVE AT
A2A6A16U1C-12?

TROUBLE IN INVERTER
CIRCUITS A2A6A16U1A,
B, C
REF: FIG. 5-38

NO 1 kHz
OUTPUT

TS-9
DOES MULTIMETER INDICATE
3.7 TO 4.3 VDC AT
A2A6A16U6B-13 NON-VERNIER?

TS-8
DOES MULTIMETER INDICATE
3.7 TO 4.3 VDC AT
A2A6A16R12 NON-VERNIER?

TROUBLE IN INTERFACE
BETWEEN A2A6A16P1-9
AND A2A6P1-19
REF: FIGS. 5-32 AND 5-38

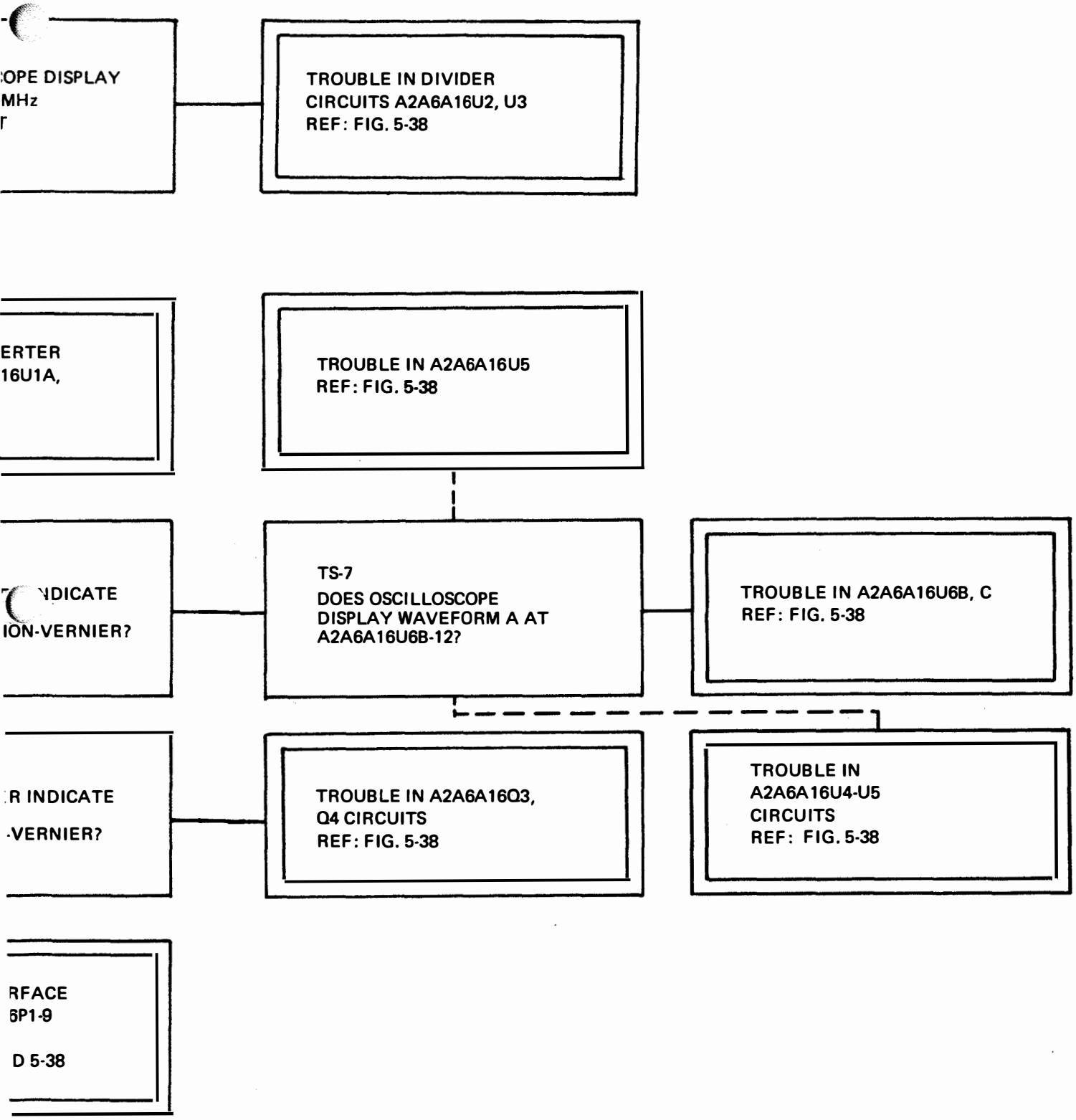


Figure 5-23. Frequency Generator A2A6A16, Fault Logic Diagram

NOTES FOR FIGURE 5-24

NO OUT
OR
FREQUE
OPERA

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-9, FOR TS-2 AND TS-4 TEST STEPS, AND TABLE 6-7 FOR WAVEFORMS.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-34, 5-38, 5-40.

C. LEGEND:
YES ————
NO - - - - - -

SPECIFIC NOTES

1. REMOVE POWER FROM TEST FIXTURE. RELEASE LATCHES AND REMOVE 10 kHz/1 kHz/100 Hz SYNTHESIZER SUBASSEMBLIES A2A6A18 AND A2A6A12. PLACE EXTENDER CARD 01A228400-01 IN A2A6A18 LOCATION AND MATE CONNECTOR A2A6A18P1 WITH CONNECTOR ON EXTENDER CARD. DO NOT REINSTALL THE A2A6A12 SUBASSEMBLY. SET THE TEST FIXTURE CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE TRANSMIT MODE AT 2.0011 MHz. SET RF SIGNAL GENERATOR 28480-8640B-001-003 FOR A 300 mVRMS OUTPUT AT 33.989 MHz AND CONNECT OUTPUT TO TEST POINT A2A6A18TP1. PERFORM ADDITIONAL TEST SETUP AND PRELIMINARY CHECK AS DESCRIBED IN NOTES 5 AND 6 OF FIGURE 5-9. AT THE COMPLETION OF CHECKS RESTORE A2A6 ASSEMBLY TO NORMAL OPERATING CONDITION.

2. REMOVE POWER FROM TEST FIXTURE. RELEASE LATCHES AND REMOVE 10 kHz/1 kHz/100 Hz SYNTHESIZER SUBASSEMBLIES A2A6A18 AND A2A6A12. PLACE EXTENDER CARD 01A228390-01 IN A2A6A12 LOCATION AND MATE CONNECTOR A2A6A12P1 WITH CONNECTOR ON EXTENDER CARD. DO NOT REINSTALL THE A2A6A18 SUBASSEMBLY. SET THE TEST FIXTURE CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE TRANSMIT MODE AT 2.0011 MHz. SET FUNCTION GENERATOR 28480-3300A FOR A 4 V PEAK OUTPUT AT 950 Hz AND CONNECT OUTPUT TO TEST POINT A2A6A12TP2. PERFORM ADDITIONAL TEST SETUP AND PRELIMINARY CHECK AS DESCRIBED IN NOTES 5 AND 6 OF FIGURE 5-9.

3. PERFORM TEST SETUP AS DESCRIBED IN NOTE 2 EXCEPT THAT SIGNAL GENERATOR IS SET FOR 1,050 Hz OUTPUT. AT THE COMPLETION OF CHECKS RESTORE A2A6 ASSEMBLY TO NORMAL OPERATING CONDITION.

TPUT
OR OFF
EQUENCY
ERATION

TS-2
DOES OSCILLOSCOPE DISPLAY WAVEFORM A AT A2A6A12TP1?
NOTE 4

TROUBLE IN FREQUENCY GENERATOR ASSEMBLY A16
REF: FIG. 5-38

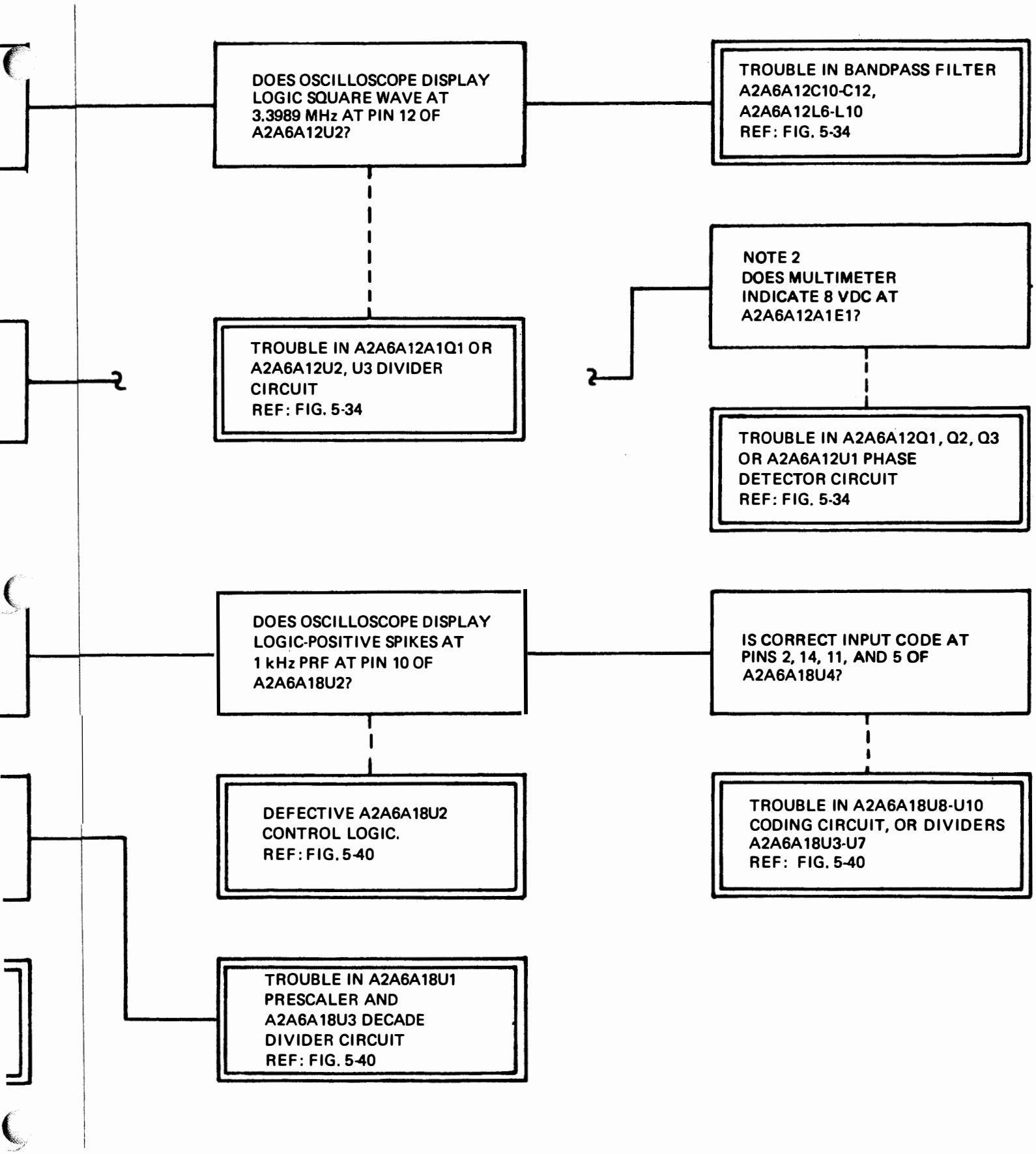
TS-4
DOES OSCILLOSCOPE DISPLAY WAVEFORM E AT A2A6A18TP1?
NOTE 4

NOTE 1
DOES FREQUENCY COUNTER INDICATE 1,000.0 Hz AT A2A6A18TP2?

DOES OSCILLOSCOPE DISPLAY LOGIC SQUARE WAVE AT 3.3989 MHz AT PIN 1 OF A2A6A18U2?

IS CORRECT INPUT CODE AT PINS 2, 14, 11, AND 5 OF A2A6A18U3?

TROUBLE IN A2A6A18Q1 THRU A2A6A18Q8 OR A2A6A18U8 CONVERTER CIRCUIT
REF: FIG. 5-40


DOES OSCILLOSCOPE DISPLAY LOGIC SQUARE WAVE AT 3.3989 MHz AT PIN 12 OF A2A6A12U2?
TROUBLE IN BANDPASS FILTER A2A6A12C10-C12, A2A6A12L6-L10 REF: FIG. 5-34
TROUBLE IN A2A6A12A1Q1 OR A2A6A12U2, U3 DIVIDER CIRCUIT REF: FIG. 5-34
NOTE 2 DOES MULTIMETER INDICATE 8 VDC AT A2A6A12A1E1?
TROUBLE IN A2A6A12Q1, Q2, Q3 OR A2A6A12U1 PHASE DETECTOR CIRCUIT REF: FIG. 5-34
DOES OSCILLOSCOPE DISPLAY LOGIC-POSITIVE SPIKES AT 1 kHz PRF AT PIN 10 OF A2A6A18U2?
IS CORRECT INPUT CODE AT PINS 2, 14, 11, AND 5 OF A2A6A18U4?
DEFECTIVE A2A6A18U2 CONTROL LOGIC. REF: FIG. 5-40
TROUBLE IN A2A6A18U8-U10 CODING CIRCUIT, OR DIVIDERS A2A6A18U3-U7 REF: FIG. 5-40
TROUBLE IN A2A6A18U1 PRESCALER AND A2A6A18U3 DECADE DIVIDER CIRCUIT REF: FIG. 5-40

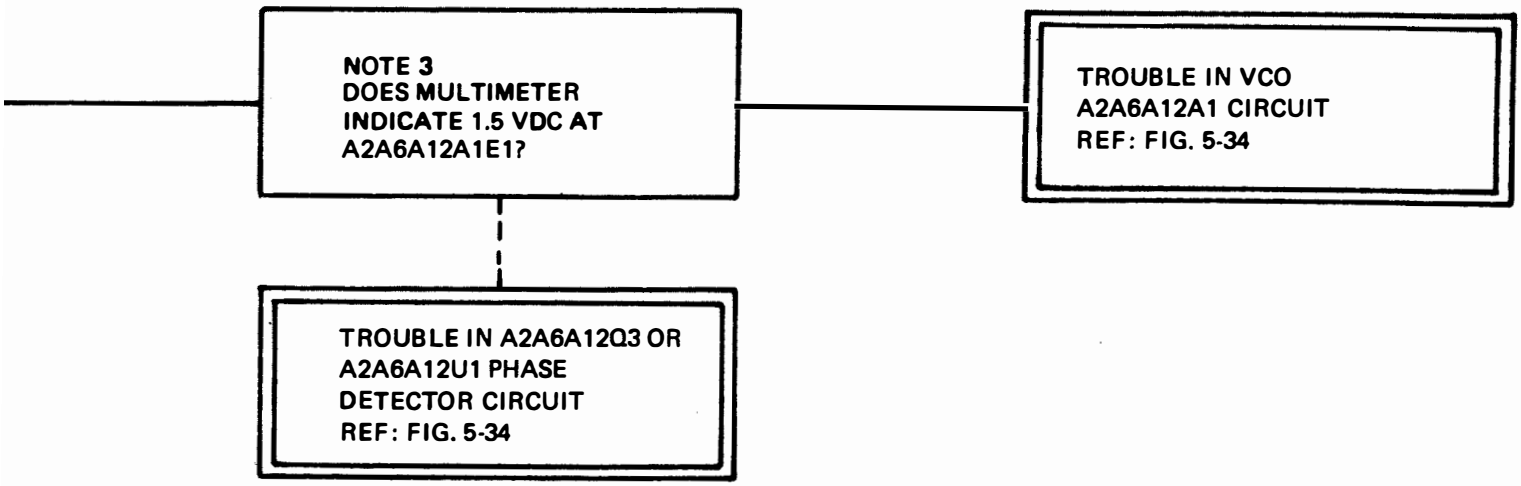


Figure 5-24. 10 kHz/1 kHz/100 Hz Synthesizer A2A6A18 and A2A6A12, Fault Logic Diagram

NOTES FOR FIGURE 5-25

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-10, FOR TEST STEPS, AND TABLE 6-5 FOR WAVEFORMS.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-32, 5-39.

C. LEGEND:
YES _____
NO - - - - - - - -

D. SET UP INITIAL TESTS BY INFORMATION GIVEN IN NOTES ON FIGURE 5-12.

SPECIFIC NOTES

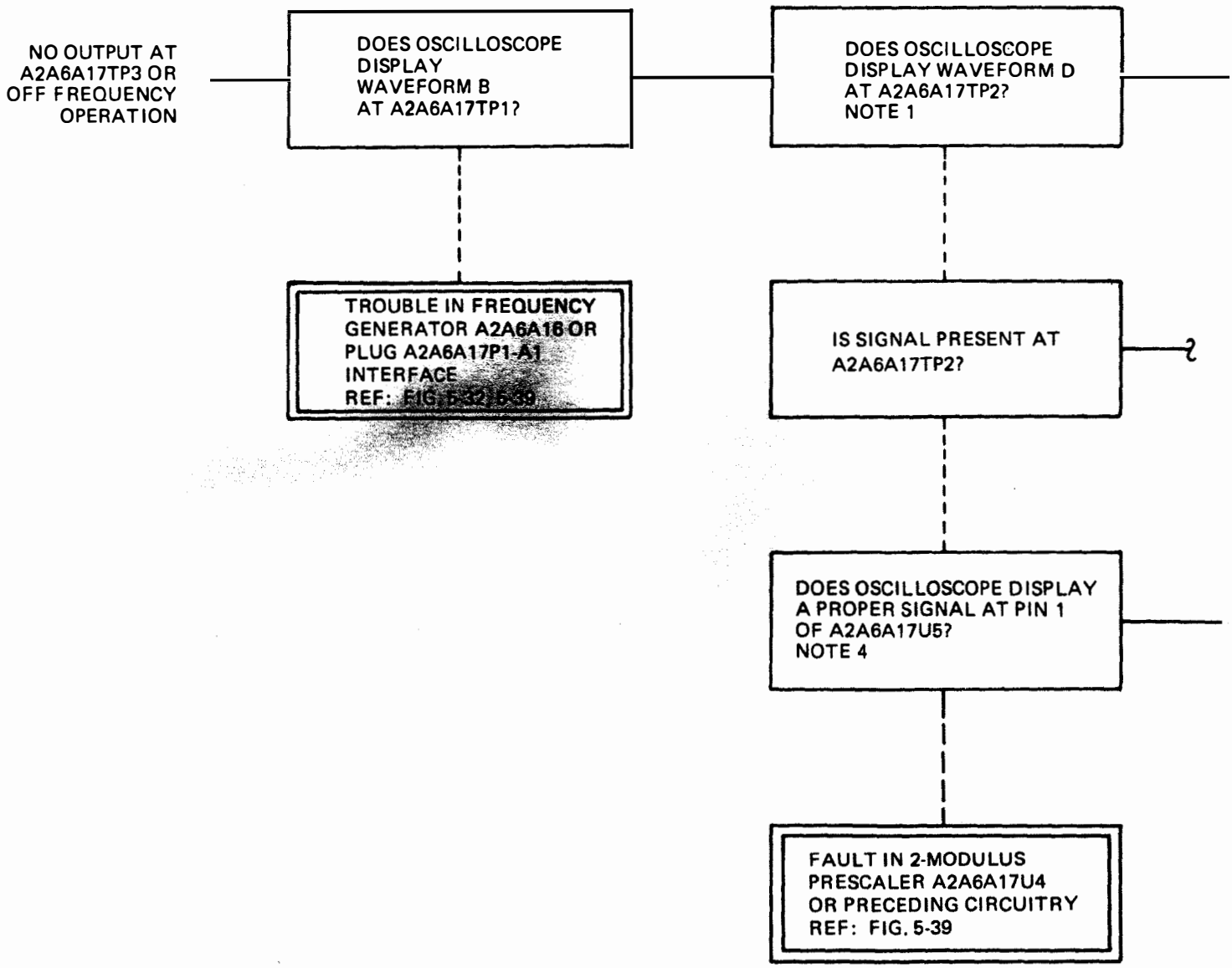
1. WAVEFORM FREQUENCY MUST BE 100 kHz AS MEASURED ON ELECTRONIC COUNTER AN/USM-207. AMPLITUDE SHOULD BE 4 V PEAK. AN INCORRECT WAVESHAPE, WAVE FREQUENCY OR PULSE AMPLITUDE INDICATES A FAULT AND SHOULD BE INTERPRETED AS "NO".

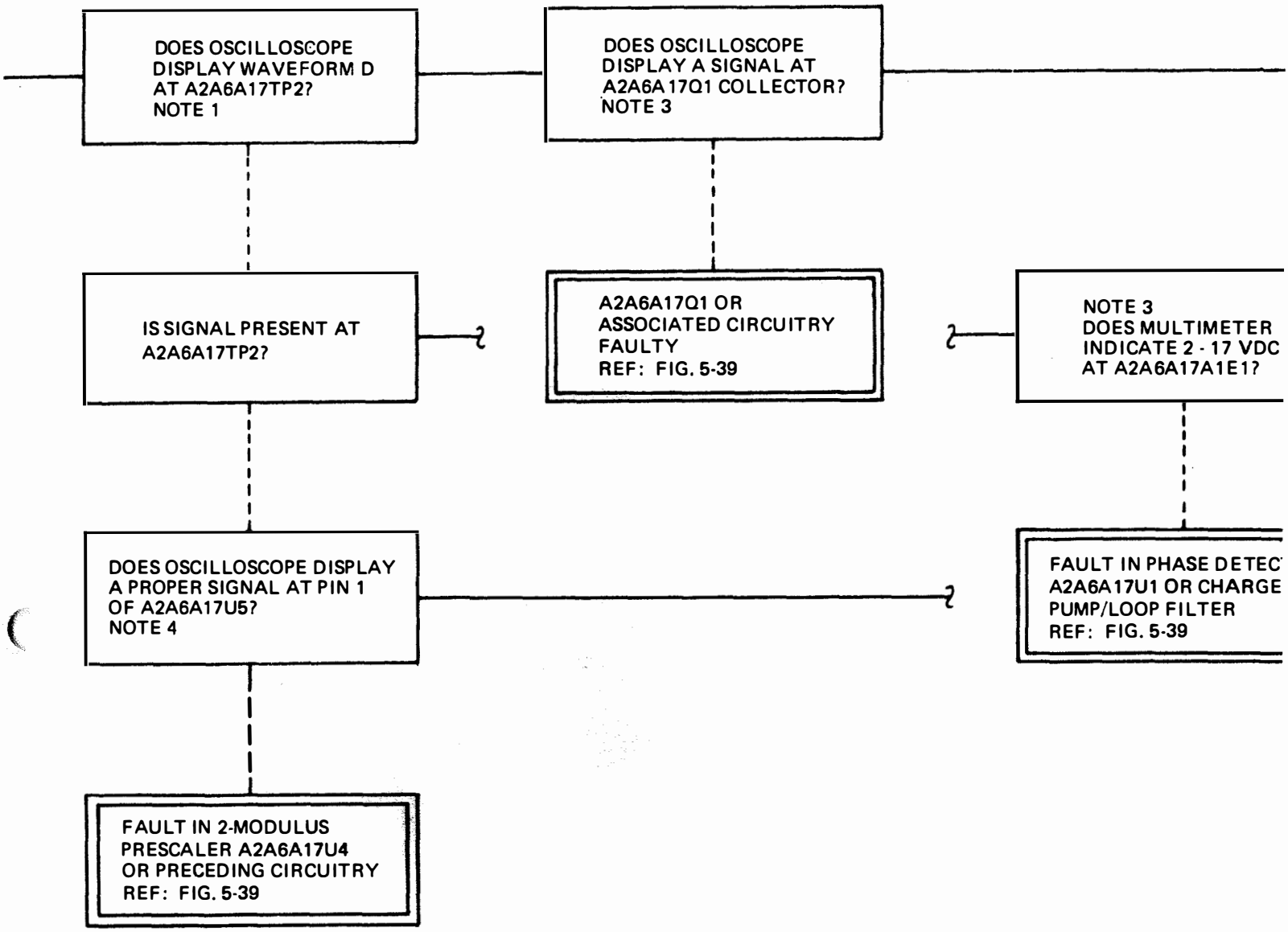
2. SIGNAL FREQUENCY SHOULD BE 22.4 MHz. WAVESHAPE SHOULD APPROXIMATE WAVEFORM J.

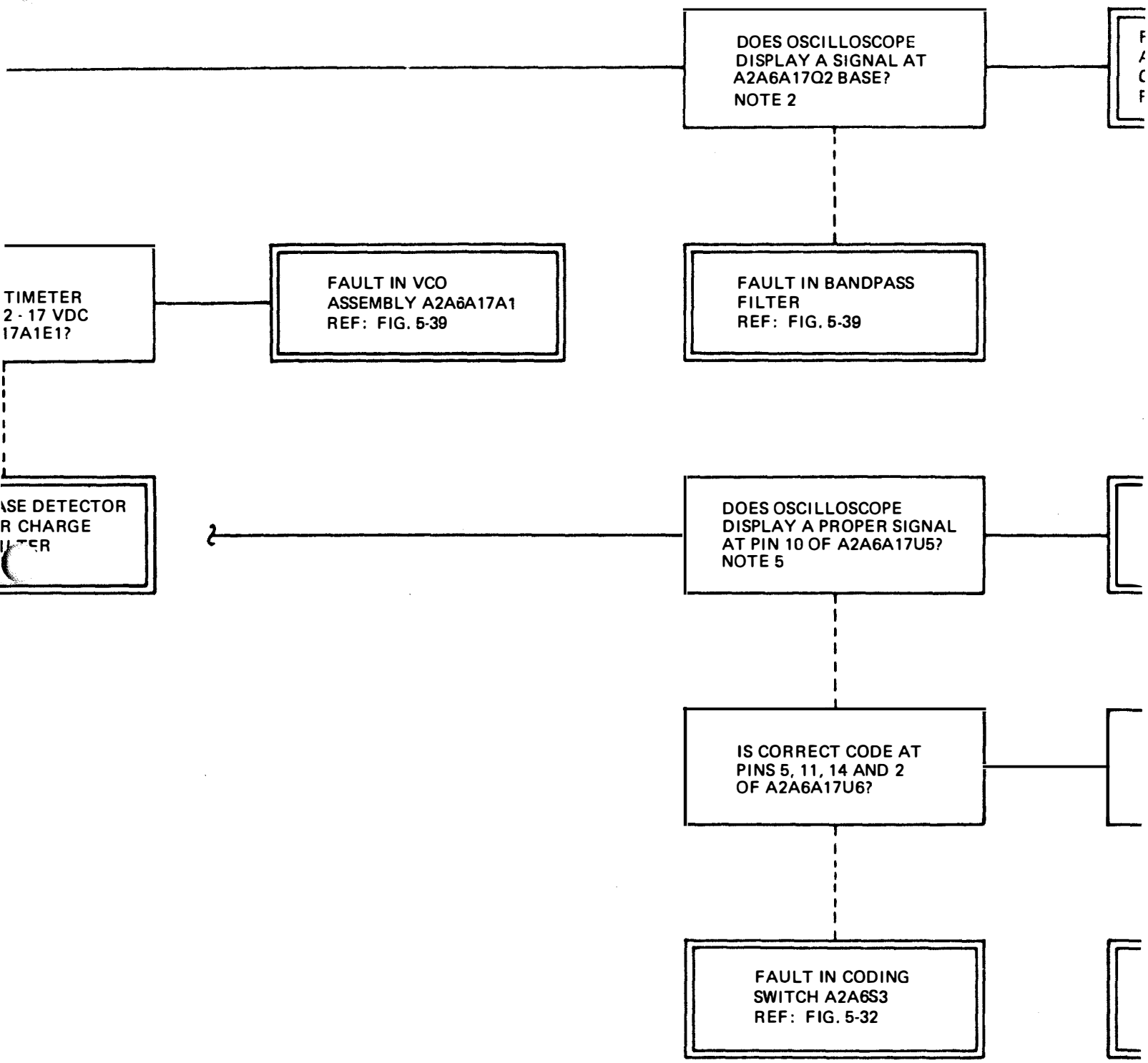
3. REMOVE POWER FROM TEST FIXTURE. REMOVE 100 kHz SYNTHESIZER SUBASSEMBLY A2A6A17 AND REINSTALL ON EXTENDER CARD 01A228398-01. REMOVE FREQUENCY GENERATOR SUBASSEMBLY A2A6A16. SET FUNCTION GENERATOR 28480-3300A FOR A 4 V P-P SQUARE WAVE OUTPUT AT 90 kHz AND CONNECT TO A2A6A17TP1. RESTORE POWER TO TEST FIXTURE. MEASURE DC VOLTAGE AT A2A6A17A1E1. CHANGE FUNCTION GENERATOR FREQUENCY TO 110 kHz AND MEASURE DC VOLTAGE AT A2A6A17A1E1.

4. REMOVE POWER FROM TEST FIXTURE. REMOVE 100 kHz SYNTHESIZER SUBASSEMBLY A2A6A17 AND REINSTALL ON EXTENDER BOARD. SIGNAL AT PIN 1 OF A2A6A17U5 SHOULD APPROXIMATE WAVEFORM H IN SHAPE AND AMPLITUDE AND BE AT A FREQUENCY OF 2.24 MHz.

5. SIGNAL AT PIN 10 OF A2A6A17U5 SHOULD APPROXIMATE WAVEFORM G INVERTED IN SHAPE AND AMPLITUDE AND BE AT A FREQUENCY OF 100 kHz.


NO OUTPUT AT A2A6A17TP3 OR OFF FREQUENCY OPERATION
DOES OSCILLOSCOPE DISPLAY WAVEFORM B AT A2A6A17TP1?
DOES OSCILLOSCOPE DISPLAY WAVEFORM D AT A2A6A17TP2? NOTE 1
TROUBLE IN FREQUENCY GENERATOR A2A6A16 OR PLUG A2A6A17P1-A1 INTERFACE REF: FIG. 5-32, 5-39
IS SIGNAL PRESENT AT A2A6A17TP2?
DOES OSCILLOSCOPE DISPLAY A PROPER SIGNAL AT PIN 1 OF A2A6A17U5? NOTE 4
FAULT IN 2-MODULUS PRESCALER A2A6A17U4 OR PRECEDING CIRCUITRY REF: FIG. 5-39


DOES OSCILLOSCOPE DISPLAY WAVEFORM D AT A2A6A17TP2? NOTE 1
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A17Q1 COLLECTOR? NOTE 3
IS SIGNAL PRESENT AT A2A6A17TP2?
A2A6A17Q1 OR ASSOCIATED CIRCUITRY FAULTY REF: FIG. 5-39
NOTE 3 DOES MULTIMETER INDICATE 2 - 17 VDC AT A2A6A17A1E1?
DOES OSCILLOSCOPE DISPLAY A PROPER SIGNAL AT PIN 1 OF A2A6A17U5? NOTE 4
FAULT IN PHASE DETEC A2A6A17U1 OR CHARGE PUMP/LOOP FILTER REF: FIG. 5-39
FAULT IN 2-MODULUS PRESCALER A2A6A17U4 OR PRECEDING CIRCUITRY REF: FIG. 5-39


DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A17Q2 BASE? NOTE 2
TIMETER 2 - 17 VDC 17A1E1?
FAULT IN VCO ASSEMBLY A2A6A17A1 REF: FIG. 5-39
FAULT IN BANDPASS FILTER REF: FIG. 5-39
SE DETECTOR R CHARGE
DOES OSCILLOSCOPE DISPLAY A PROPER SIGNAL AT PIN 10 OF A2A6A17U5? NOTE 5
IS CORRECT CODE AT PINS 5, 11, 14 AND 2 OF A2A6A17U6?
FAULT IN CODING SWITCH A2A6S3 REF: FIG. 5-32

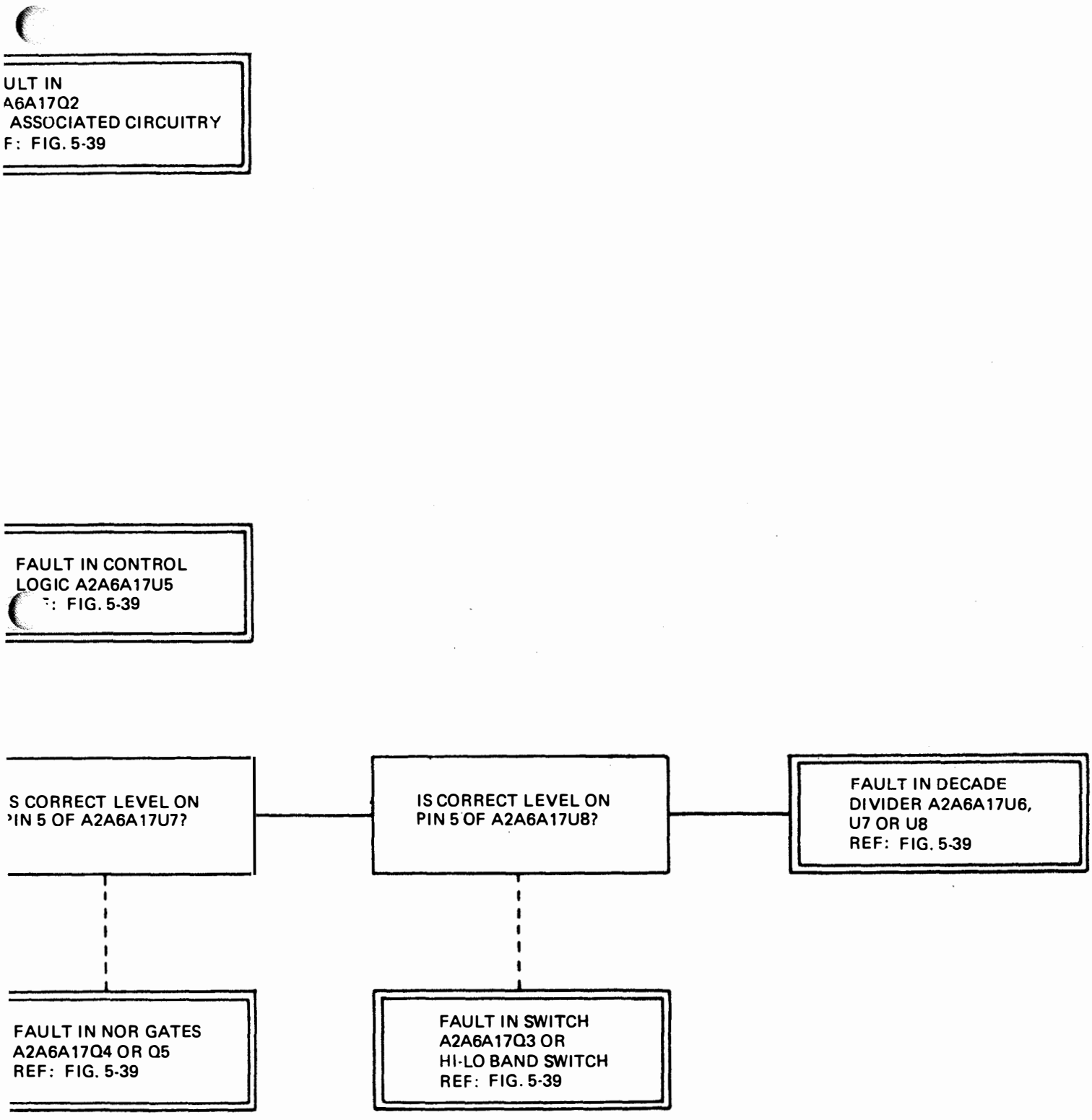


Figure 5-25. 100 kHz Synthesizer A2A6A17, Fault Logic Diagram

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-11 FOR TEST STEPS, AND TABLE 6-5 FOR WAVEFORMS.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-35, 5-36.

C. LEGEND:
YES ————
NO - - - - - - -

D. REFER TO FREQUENCY TRANSLATION CHART, TABLE 3-1.

SPECIFIC NOTES

1. TESTS OUTLINED IN THE NOTES ON SIGNAL FLOW DIAGRAM, FIGURE 5-11 MUST BE PERFORMED IN THEIR ENTIRETY TO DETERMINE WHICH FREQUENCY RANGES ARE MALFUNCTIONING BEFORE FAULT LOGIC DIAGRAM 5-26 IS USED.

2. SIGNAL SHOULD BE PRESENT AT TEST POINTS INDICATED FOR THE RANGE SELECTED ONLY.
   EXAMPLE: NO OUTPUT AT A2A6A14TP5 WHEN FREQUENCY CONTROLS ARE SET AT 8.0000 MHz. FREQUENCY TRANSLATION CHART, TABLE 3-1, SHOWS THE HIGH FREQUENCY MIXER INJECTION SIGNAL SHOULD BE 11.5 MHz. THUS ONLY A2A6A14TP4 SHOULD HAVE A SIGNAL PRESENT. SIMILARLY, ONLY A2A6A14TP3 SHOULD BE AT 0 - 0.4 VDC.

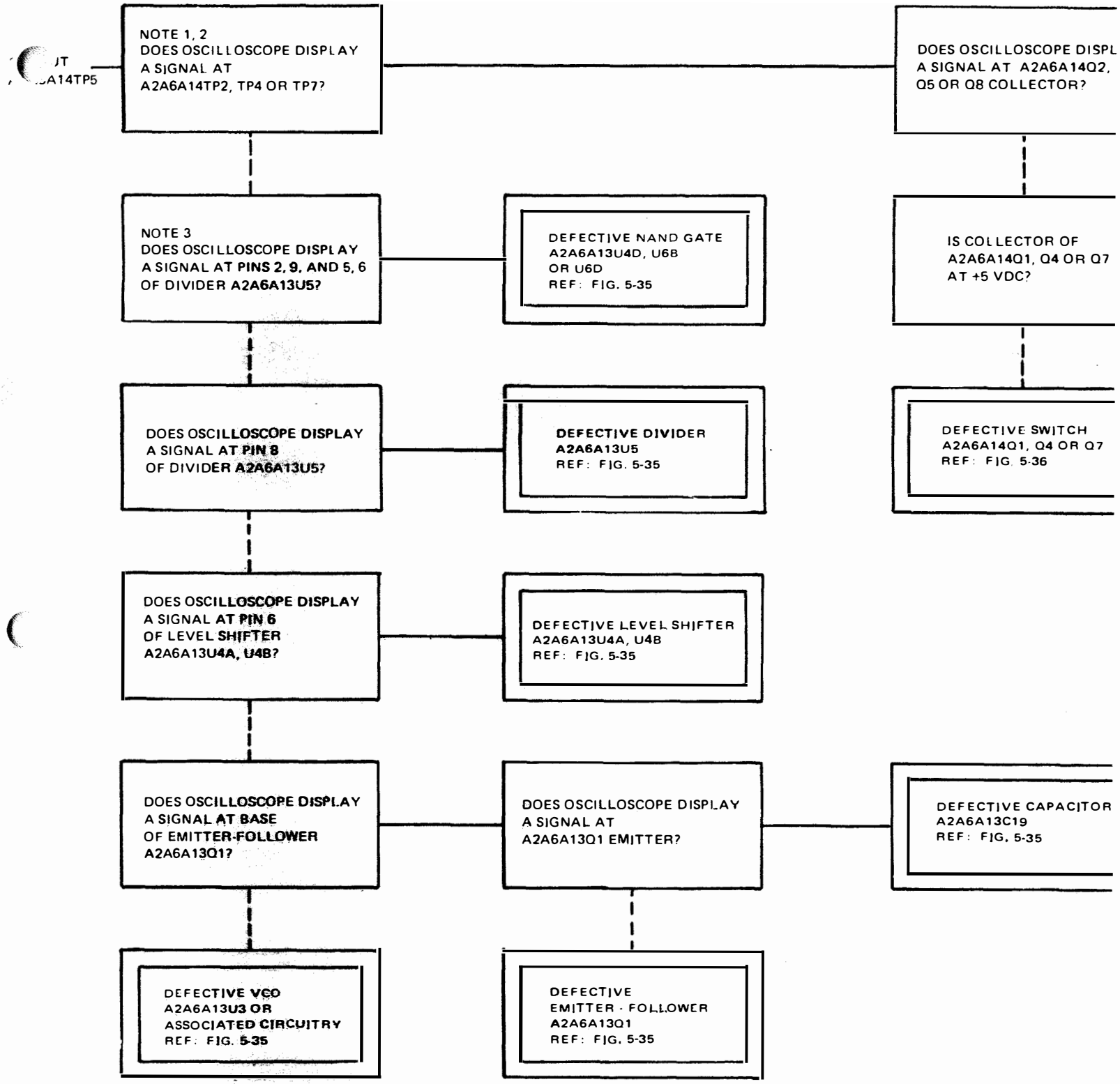
3. REMOVE POWER FROM TEST FIXTURE. REMOVE A2A6A13 AND A2A6A14 SUBASSEMBLIES AND REINSTALL ON EXTENDER CARDS 01A228392-01 AND 01A228394-01 RESPECTIVELY.

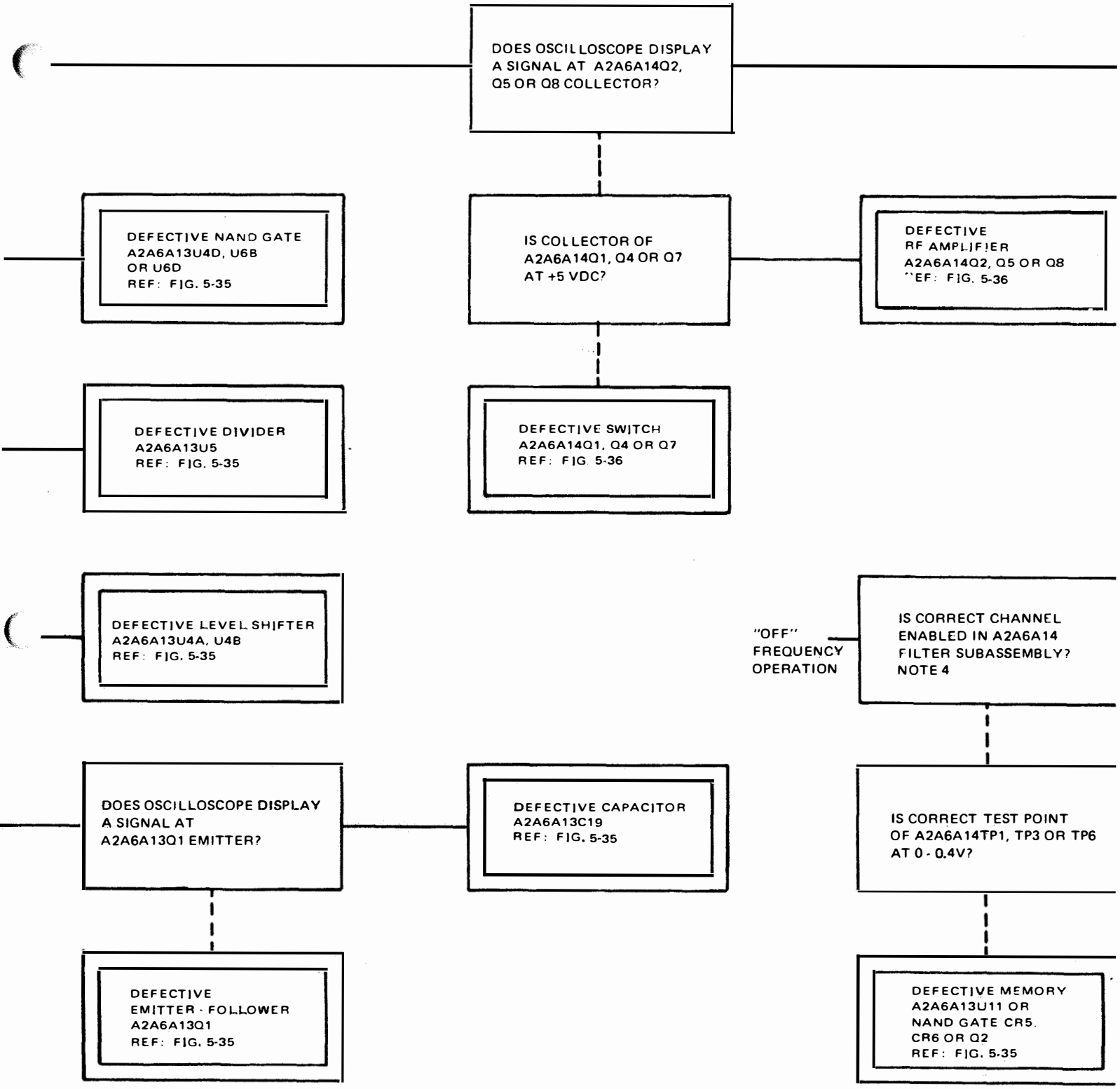
4. REFER TO FREQUENCY TRANSLATION CHART, TABLE 3-1, FOR CORRECT FREQUENCY FOR INDICATED CONTROL SETTINGS.

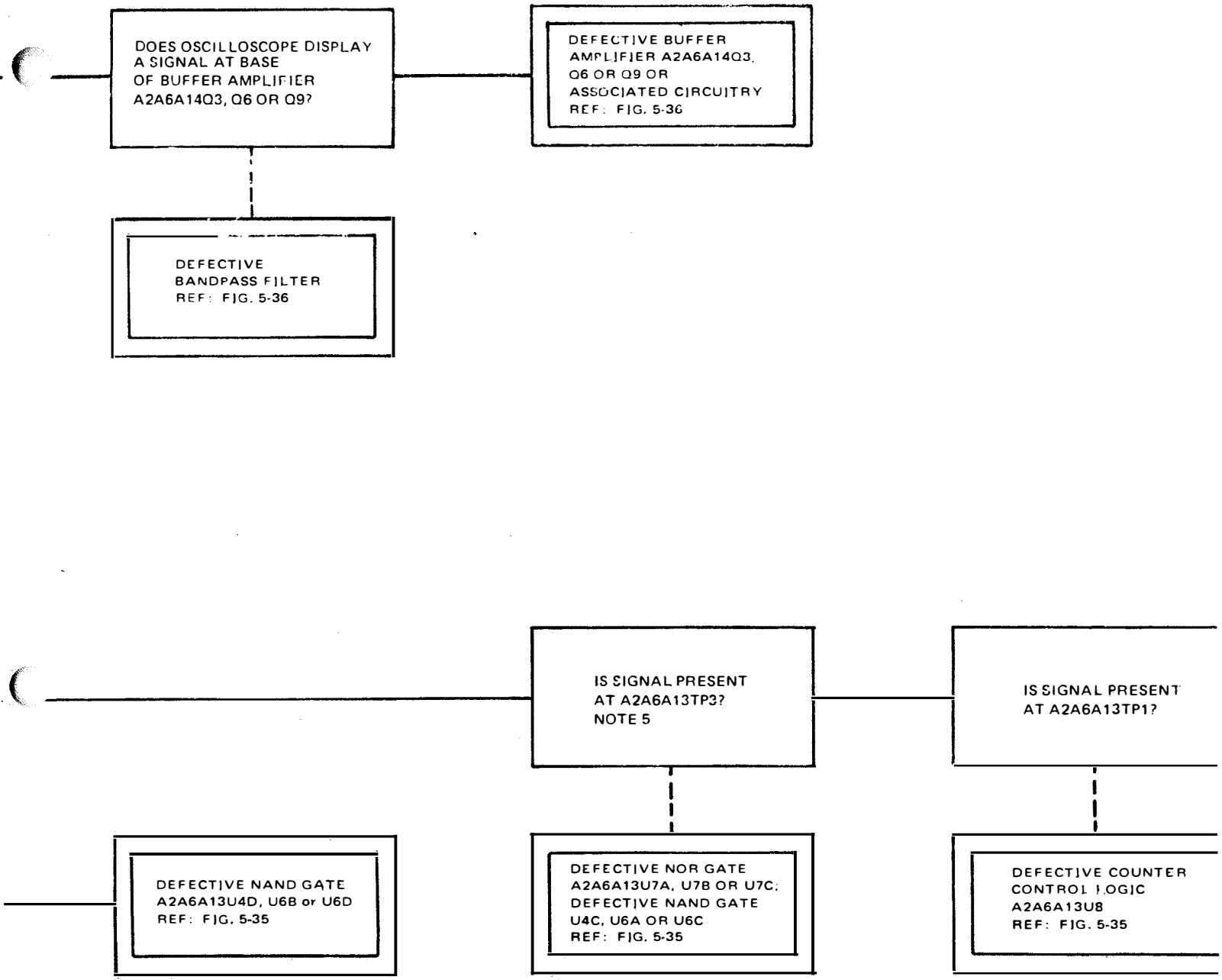
5. SIGNAL SHOULD HAVE AN AMPLITUDE OF 4 V P-P. FREQUENCY WILL VARY BUT SHOULD BE IN CORRECT RANGE.

6. COMPARE SIGNALS WITH FREQUENCY COUNTER.

7. REMOVE POWER FROM TEST FIXTURE. REMOVE FREQUENCY GENERATOR SUBASSEMBLY A2A6A16. CONNECT FUNCTION GENERATOR 28480-3300A TO A2A6A13TP2. SET CONTROLS OF FUNCTION GENERATOR FOR A 300 kHz SQUARE WAVE WITH A 4 V P-P AMPLITUDE. RE-POWER TEST FIXTURE. MEASURE VOLTAGE AT THE JUNCTION OF A2A6A13R19 AND C14. CHANGE FUNCTION GENERATOR FREQUENCY TO 1 MHz. MEASURE VOLTAGE AT JUNCTION OF A2A6A13R19 AND C14. VOLTAGE SHOULD RANGE FROM 1 VDC AT 300 kHz TO 9.5 VDC AT 1 MHz.


JT
A14TP5
NOTE 1, 2
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A14TP2, TP4 OR TP7?
DOES OSCILLOSCOPE DISPL A SIGNAL AT A2A6A14Q2, Q5 OR Q8 COLLECTOR?
NOTE 3
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT PINS 2, 9, AND 5, 6 OF DIVIDER A2A6A13U5?
DEFECTIVE NAND GATE A2A6A13U4D, U6B OR U6D REF: FIG. 5-35
IS COLLECTOR OF A2A6A14Q1, Q4 OR Q7 AT +5 VDC?
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT PIN 8 OF DIVIDER A2A6A13U5?
DEFECTIVE DIVIDER A2A6A13U5 REF: FIG. 5-35
DEFECTIVE SWITCH A2A6A14Q1, Q4 OR Q7 REF: FIG. 5-36
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT PIN 6 OF LEVEL SHIFTER A2A6A13U4A, U4B?
DEFECTIVE LEVEL SHIFTER A2A6A13U4A, U4B REF: FIG. 5-35
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT BASE OF EMITTER-FOLLOWER A2A6A13Q1?
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A13Q1 EMITTER?
DEFECTIVE CAPACITOR A2A6A13C19 REF: FIG. 5-35
DEFECTIVE VCO A2A6A13U3 OR ASSOCIATED CIRCUITRY REF: FIG. 5-35
DEFECTIVE EMITTER - FOLLOWER A2A6A13Q1 REF: FIG. 5-35


DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A14Q2, Q5 OR Q8 COLLECTOR?
IS COLLECTOR OF A2A6A14Q1, Q4 OR Q7 AT +5 VDC?
DEFECTIVE NAND GATE A2A6A13U4D, U6B OR U6D REF: FIG. 5-35
DEFECTIVE RF AMPLIFIER A2A6A14Q2, Q5 OR Q8 REF: FIG. 5-36
DEFECTIVE DIVIDER A2A6A13U5 REF: FIG. 5-35
DEFECTIVE SWITCH A2A6A14Q1, Q4 OR Q7 REF: FIG. 5-36
DEFECTIVE LEVEL SHIFTER A2A6A13U4A, U4B REF: FIG. 5-35
"OFF" FREQUENCY OPERATION
IS CORRECT CHANNEL ENABLED IN A2A6A14 FILTER SUBASSEMBLY? NOTE 4
DOES OSCILLOSCOPE DISPLAY A SIGNAL AT A2A6A13Q1 EMITTER?
DEFECTIVE CAPACITOR A2A6A13C19 REF: FIG. 5-35
IS CORRECT TEST POINT OF A2A6A14TP1, TP3 OR TP6 AT 0 - 0.4V?
DEFECTIVE EMITTER - FOLLOWER A2A6A13Q1 REF: FIG. 5-35
DEFECTIVE MEMORY A2A6A13U11 OR NAND GATE CR5, CR6 OR Q2 REF: FIG. 5-35


DOES OSCILLOSCOPE DISPLAY A SIGNAL AT BASE OF BUFFER AMPLIFIER A2A6A14Q3, Q6 OR Q9?
DEFECTIVE BUFFER AMPLIFIER A2A6A14Q3, Q6 OR Q9 OR ASSOCIATED CIRCUITRY REF: FIG. 5-36
DEFECTIVE BANDPASS FILTER REF: FIG. 5-36
IS SIGNAL PRESENT AT A2A6A13TP3? NOTE 5
IS SIGNAL PRESENT AT A2A6A13TP1?
DEFECTIVE NAND GATE A2A6A13U4D, U6B or U6D REF: FIG. 5-35
DEFECTIVE NOR GATE A2A6A13U7A, U7B OR U7C; DEFECTIVE NAND GATE U4C, U6A OR U6C REF: FIG. 5-35
DEFECTIVE COUNTER CONTROL LOGIC A2A6A13U8 REF: FIG. 5-35

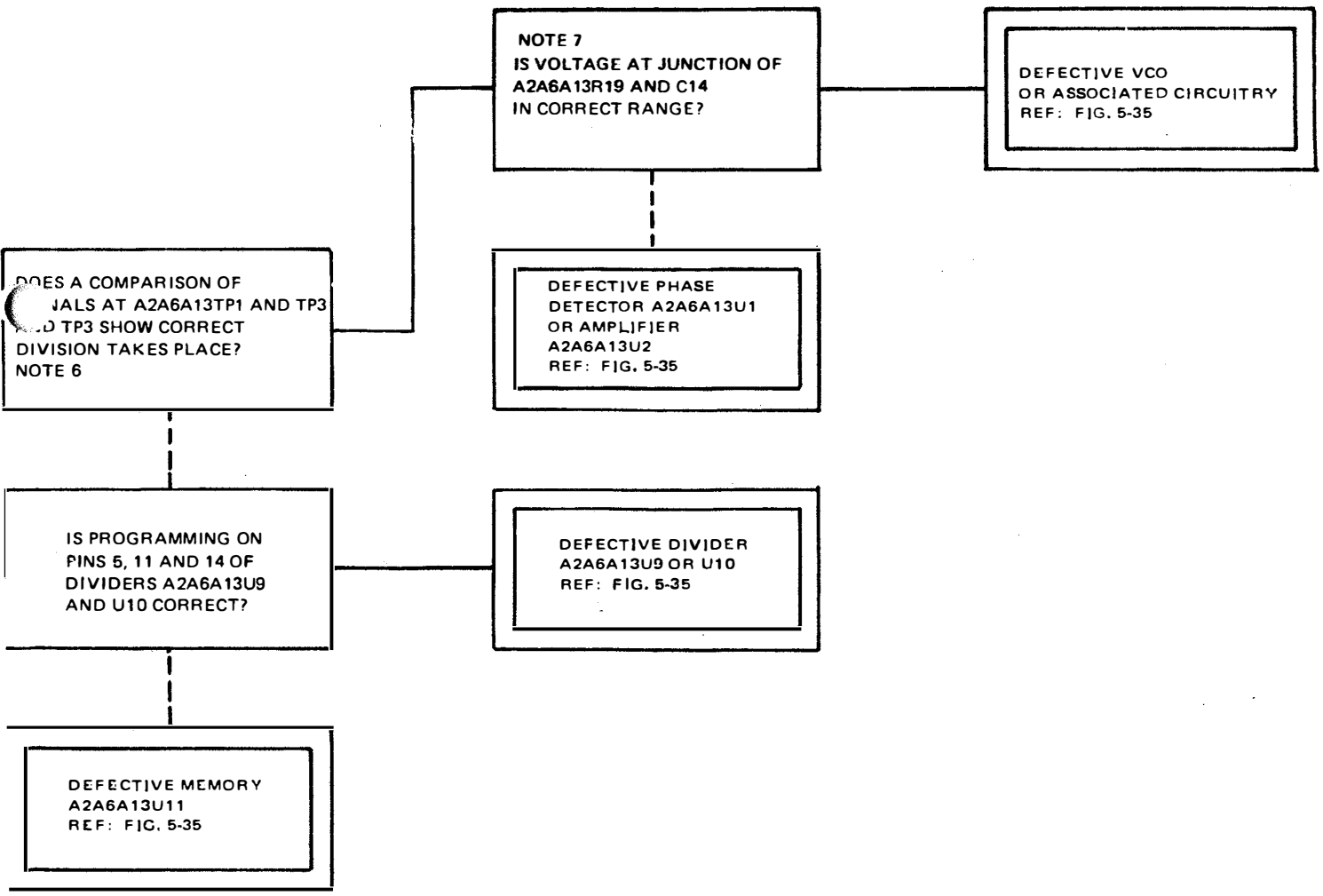


Figure 5-26. 10 MHz/1 MHz Synthesizer A2A6A13, Fault Logic Diagram

GENERAL NOTES

A. TEST SETUP: REFER TO SCHEDULED PERFORMANCE TEST SETUP, FIGURE 4-1 AND TABLE 4-3.

B. REFER TO CW, RATT, DATA AND PTT KEYING CONTROL DIAGRAM, FIGURE 5-12, MAINTENANCE SCHEMATIC DIAGRAM, FIGURE 5-28.

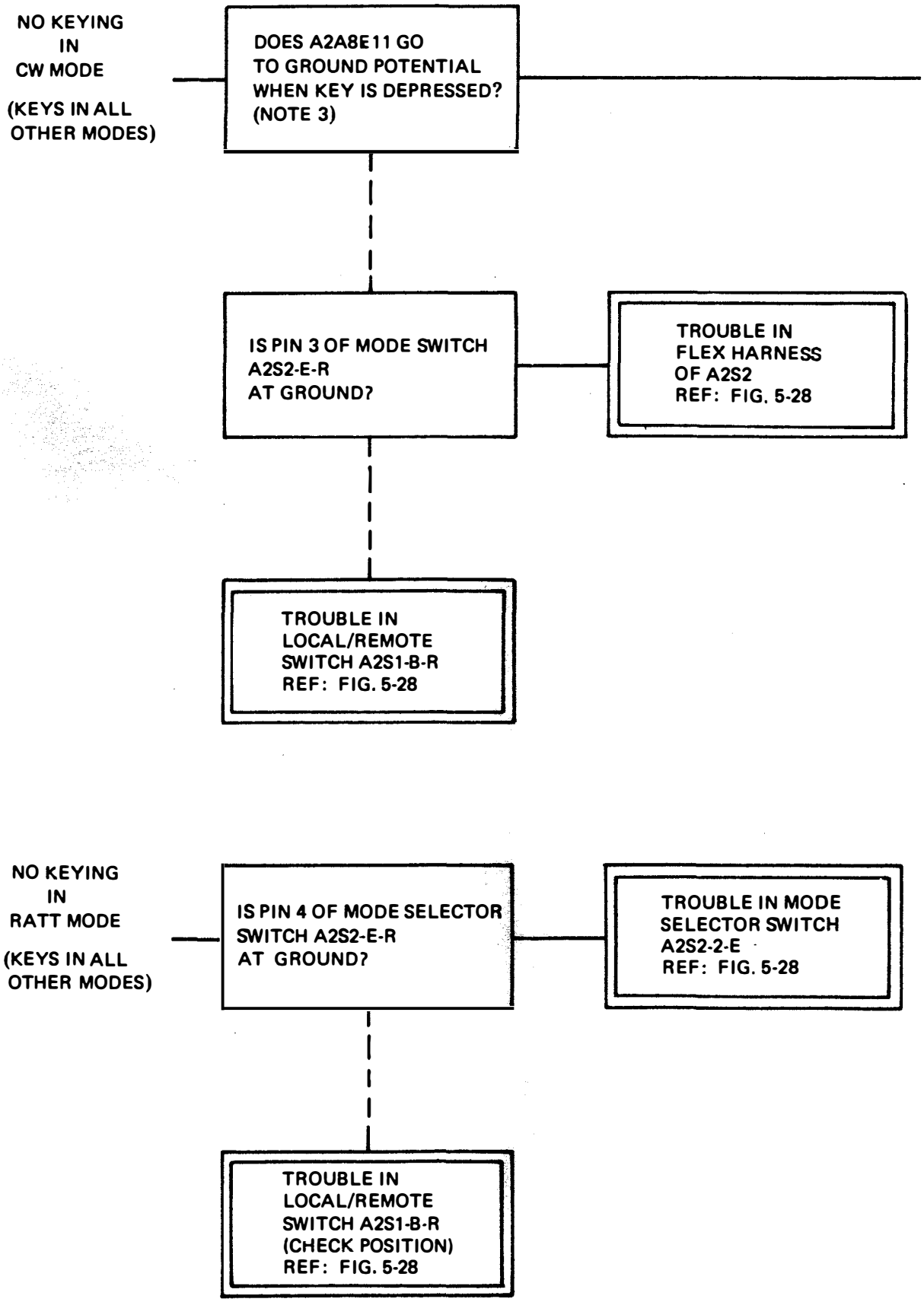
C. LEGEND:
YES ————
NO - - - - - - -

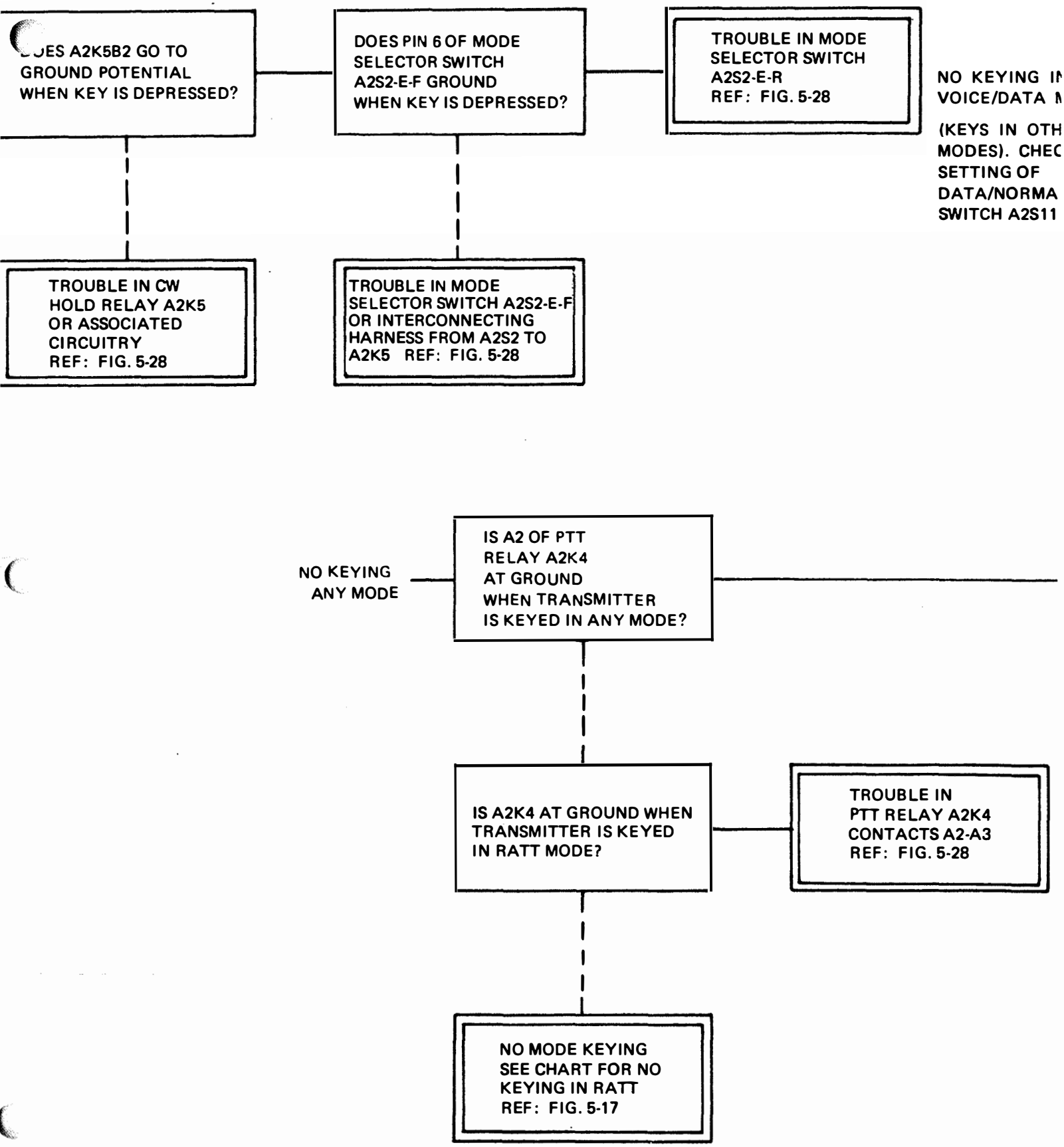
SPECIFIC NOTES

1. INSTALL CW KEY IN LOCAL JACK.

2. CHECK FOR GROUND BY CONNECTING MULTIMETER 28480-410C, SET TO MEASURE OHMS, BETWEEN SPECIFIED POINT AND CHASSIS GROUND.

3. MEASURE DC VOLTAGES BY CONNECTING ELECTRONIC MULTIMETER AN/USM-311, SET IN PROPER DC VOLTAGE RANGE, BETWEEN SPECIFIED POINT AND CHASSIS GROUND.


NO KEYING IN CW MODE
(KEYS IN ALL OTHER MODES)
DOES A2A8E11 GO TO GROUND POTENTIAL WHEN KEY IS DEPRESSED? (NOTE 3)
IS PIN 3 OF MODE SWITCH A2S2-E-R AT GROUND?
TROUBLE IN FLEX HARNESS OF A2S2 REF: FIG. 5-28
TROUBLE IN LOCAL/REMOTE SWITCH A2S1-B-R REF: FIG. 5-28
NO KEYING IN RATT MODE
(KEYS IN ALL OTHER MODES)
IS PIN 4 OF MODE SELECTOR SWITCH A2S2-E-R AT GROUND?
TROUBLE IN MODE SELECTOR SWITCH A2S2-2-E REF: FIG. 5-28
TROUBLE IN LOCAL/REMOTE SWITCH A2S1-B-R (CHECK POSITION) REF: FIG. 5-28


ES A2K5B2 GO TO GROUND POTENTIAL WHEN KEY IS DEPRESSED?
DOES PIN 6 OF MODE SELECTOR SWITCH A2S2-E-F GROUND WHEN KEY IS DEPRESSED?
TROUBLE IN MODE SELECTOR SWITCH A2S2-E-R REF: FIG. 5-28
NO KEYING I VOICE/DATA M
(KEYS IN OTH MODES). CHEC SETTING OF DATA/NORMA SWITCH A2S11
TROUBLE IN CW HOLD RELAY A2K5 OR ASSOCIATED CIRCUITRY REF: FIG. 5-28
TROUBLE IN MODE SELECTOR SWITCH A2S2-E-F OR INTERCONNECTING HARNESS FROM A2S2 TO A2K5 REF: FIG. 5-28
NO KEYING ANY MODE
IS A2 OF PTT RELAY A2K4 AT GROUND WHEN TRANSMITTER IS KEYED IN ANY MODE?
IS A2K4 AT GROUND WHEN TRANSMITTER IS KEYED IN RATT MODE?
TROUBLE IN PTT RELAY A2K4 CONTACTS A2-A3 REF: FIG. 5-28
NO MODE KEYING SEE CHART FOR NO KEYING IN RATT REF: FIG. 5-17

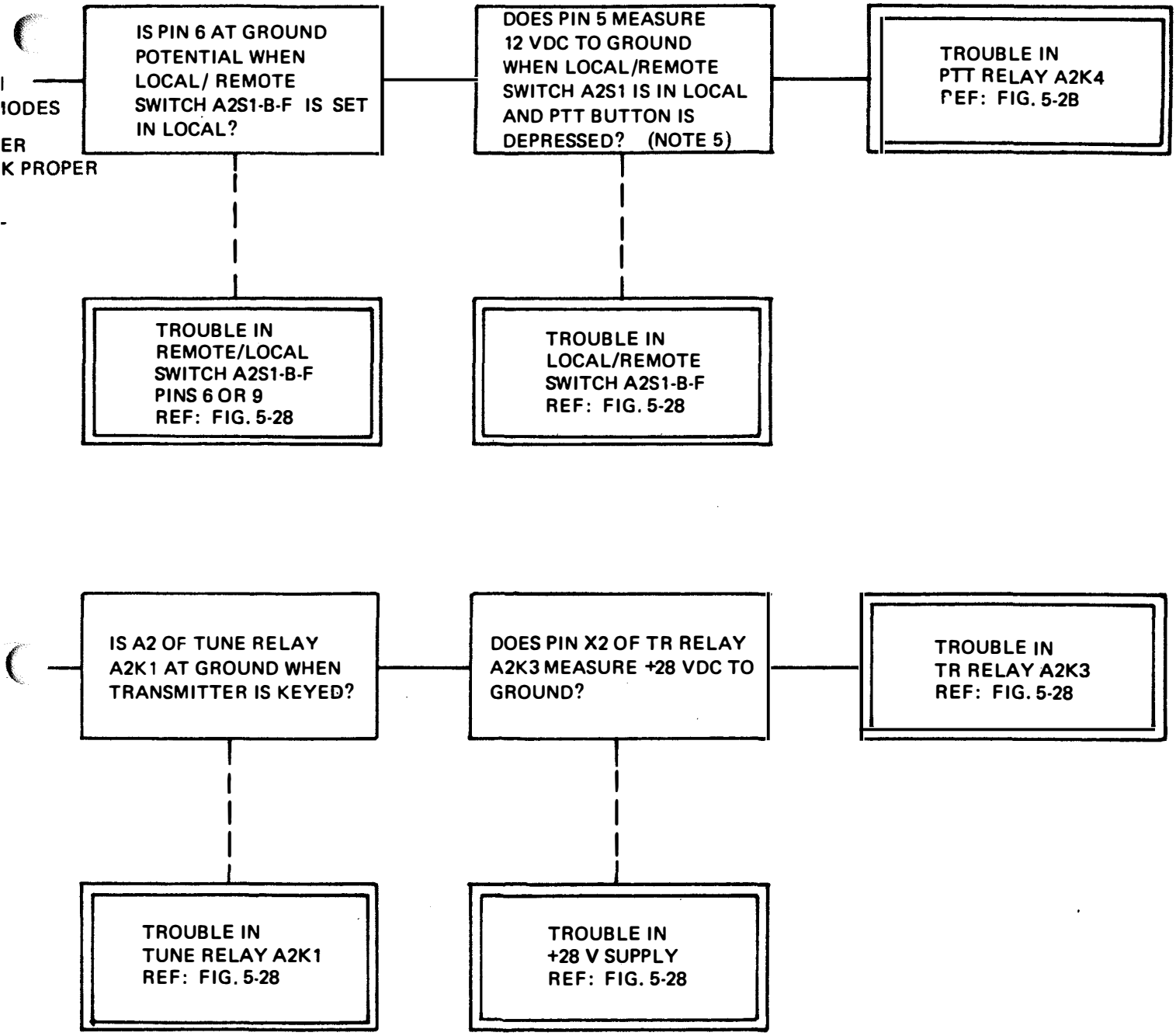


Figure 5-27. CW, RATT, DATA And PTT Keying, Fault Logic Diagram

NOTES FOR FIGURE 5-28

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS PREFIX WITH NUMBERS OF HIGHER ASSEMBLIES.

B. ALL RESISTANCE VALUES IN OHMS ±5%, ALL RESISTORS 1/4 WATT, UNLESS OTHERWISE NOTED.

C. ALL CAPACITANCE VALUES IN MICROFARADS, UNLESS OTHERWISE NOTED.

D. SWITCHES A2S1 AND A2S2 ARE SHOWN AS VIEWED FROM REAR OF FRONT PANEL. A BLACK SWITCH TERMINAL INDICATES A LONG CONTACT CLIP AT THAT POINT.

E. —⟆ ⟅— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE, PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

F. ▭ INDICATES FRONT PANEL MARKING.

SPECIFIC NOTES

1. THE VALUE OF A2R6 (SHEET 1, ZONE 4D) IS SELECTED FROM 18K TO 220K OR 1 MEGOHM TO GIVE A CW HOLD TIME OF 1 TO 1.7 SECONDS. THE CW HOLD TIME IS INCREASED BY LOWERING THE VALUE OF A2R6.

2. FOR BALANCED 600 OHM LINE OPERATION, GROUND A2E59 (SHEET 1, ZONE 16B) AND A2E60 (SHEET 1, ZONE 16A) TO A2E61 AND A2E62, RESPECTIVELY.

3. CAPACITORS A1C1 THRU C50 ARE ALL 1000 pF.

4. WHEN NTDS DATA AUDIO IS APPLIED THRU A1J8, THE JUMPER WIRES ACROSS E43 - E44, E45 - E46 (SHEET 1, ZONE 12B), E47 - E48 (SHEET 1, ZONE 9B) AND E49 - E50 (SHEET 1, ZONE 14A) SHOULD BE REMOVED.

5. TERMINAL LAYOUTS FOR SELECTED RELAYS, COILS, CONNECTORS, SWITCHES, AND TRANSISTORS APPEAR ON THE APRONS OF SHEETS 1, 2, AND 3.

6. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE VALUES ARE TABULATED ON SHEET 1.

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A1J1 thru A1J22		*	A1P1-38 thru P1-40		*
J23	2	2G	P1-41	1	25B
J24	3	2C	P1-42	1	25B
J25	1	26G	P1-43	3	11E
P1-1		*	P1-44	3	12F
P1-2		*	P1-45	3	12E
P1-3	3	5B	P1-46	3	11E
P1-4	3	3D	P1-47 thru P1-49		*
P1-5		*			
P1-6	3	12B			
P1-7	3	3F	P1-50	3	12B
P1-8		*	P2A1	1	25G
P1-9	3	12G	P2A2	1	20G
P1-10		*	P2A3	2	3G
P1-11		*	S1	3	12D
P1-12	2	3E	S2	3	11D
P1-13	3	12C	A1A1C1	3	13E
P1-14		*	C2	3	13E
P1-15		*	C3	3	2B
P1-16	3	12F	C4	3	2D
P1-17	3	3F	C5	1	25E
P1-18 thru P1-20		*	C6	3	13B
			C7	3	2F
			C8	1	25F
P1-21	3	3F	C9	3	13G
P1-22		*	C10	1	25C
P1-23	1	25B	C11	1	25F
P1-24	3	5B	C12	2	3E
P1-25	3	5B	C13	3	13C
P1-26	2	3C	C14	1	25G
P1-27	3	12B	C15	1	25G
P1-28	2	3C	C16	3	13F
P1-29	1	25A	C17	3	2F
P1-30		*	C18		*
P1-31	2	3C	C19	1	25C
P1-32	3	3F	C20	1	25B
P1-33	2	3D	C21	3	2F
P1-34		*	C22	1	25D
P1-35	2	3D	C23	1	25B
P1-36	3	3G	C24	3	2B
P1-37	1	25A	C25	3	2B

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A1A1C26	2	3C	A1A1J4-l		*
C27	3	13B	J4-m	3	2C
C28	2	3C	J4-n	3	2D
C29	1	25A	J4-o		*
C30		*	J4-p	3	2F
C31	2	3C	J4-q	1	26C
C32	3	2F	J4-r	1	26C
C33	2	3D	J4-s	3	13G
C34	1	25C	J4-t	1	26D
C35	2	3D	J4-u		*
C36	3	2G	J4-v	3	2C
C37	1	25A	J4-w	3	2F
C38	1	25D	J4-x	3	2F
C39	1	25D	J4-y	3	2E
C40	1	25F	J4-z	3	2E
C41	1	25B	J4-A	2	2D
C42	1	25B		1	26F
C43	3	13D	J4-B	2	2D
C44	3	13F		1	26F
C45	3	13E	J4-C	2	2C
C46	3	13E	J4-D	2	2C
C47	1	25C	J4-E	2	2C
C48	1	25D	J4-F	3	2D
C49	1	25D	J4-G	1	26B
C50	3	13B	J4-H	1	26D
E1	3	13B	J4-I		*
	1	26A	J4-J	3	13F
J1		*	J4-K	2	2E
J2		*	J4-L	3	2B
J3-A	3	13E	J4-M	3	2B
J3-B	3	13B	J4-N	3	2D
J3-C	3	13E	J4-O		*
J4-a	3	2G	J4-P	3	2B
J4-b	3	2F	J4-Q		*
J4-c	1	26C	J4-R	3	13E
J4-d	1	26G	J4-S	3	13D
J4-e	1	26G	J4-T	1	26F
J4-f	1	26F	J4-U	3	13E
J4-g		*	J4-V	3	2G
J4-h	3	13C	J4-W	3	2D
J4-i	3	13E	J4-X	3	2F
J4-j		*	J4-Y	3	2F
J4-k	1	26E	J4-Z	3	13B

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A1A1J4-AA	3	2E
J4-BB	1	26D
J4-CC	3	2E
J4-DD	3	2E
J4-EE	3	2E
J4-FF	3	2E
J4-GG	3	2D
J4-HH	3	2D
J5-A	1	26C
J5-B	1	26C
J6-a thru J6-f		*
J6-g	1	26F
J7-A	1	26C
J7-B	1	26D
J7-C	1	26D
J7-D	3	13B
J8-A	1	26B
J8-B	1	26B
J8-C	1	26B
J8-D	1	26A
J8-E	1	26A
J8-F	1	26A
J9 thru J24		*
J25	1	26G
A2C1	3	6F
C2	3	9D
C3	3	11A
C4	1	23F
C5	1	22F
C6	3	11D
CR1	3	10D
CR2	2	8E
CR3	3	11F
CR4	1	20D
CR5	1	4D
CR6	3	8B
CR7	2	4E
CR8	3	11A
CR9	2	8D
A2CR10	2	13A
CR11	1	2D
DS1		*
DS2		*
DS3	3	3E
DS4	3	3E
E1	2	6C
E2	2	8E
E3	2	6B
E4	1	21C
E5	1	20C
	3	6F
	2	7D
	2	6F
	2	4G
E6	1	21B
E7	1	21C
E8	3	11B
	3	11A
E9	3	6F
E10	3	6F
E11	3	11B
E12	3	11B
E13	2	7E
E14	2	6D
E15	2	7E
E16	3	11B
E17	1	6F
E18	1	6F
E19	3	10C
E20	3	10C
E21	1	4C
	1	18B
E22	3	4E
E23	3	11B
E24	3	4D
E25		*
E26	3	4E
E27	1	2F
	3	12C
	1	2C
	1	3D
	1	23F
	1	3E
	1	16A

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2E28	1	8F
	3	12B
E29	2	7F
	3	10C
	3	10F
E30	1	7F
	1	15G
E31		*
E32	3	3E
E33	3	4F
	1	19B
	1	19C
E34	1	8C
	1	5F
	1	8F
E35	2	5E
E36		*
E37	3	12B
	1	9G
	1	8B
	1	22F
	3	12F
E38	3	9D
	3	5G
E39	1	3B
	2	4A
	1	17G
E40	1	3C
	1	22C
	1	1E
	1	22D
E41		*
E42	2	13A
	2	11B
	1	21A
E43		*
E44		*
E45	3	3E
	1	17G
E46	3	4D
E47		*
E48		*

REF DES	SHEET	ZONE
A2E49	1	18B
E50	2	12B
E51	1	21E
	1	18F
	2	13A
E52	3	11C
E53	3	11F
E54	1	16G
E55	1	6D
E56	1	3C
	3	4G
E57	2	4E
E58	2	4E
E59	1	16B
E60	1	16A
E61	1	16B
E62	1	16A
	1	23F
F1	3	9E
F2	3	9F
J1-A	3	2G
J1-B	3	2G
J1-C	1	27E
J1-D	3	2A
J1-E	1	27E
J2	1	22B
J3 thru J7		*
J8-1F	2	5D
J8-2G	2	5D
J8-3H	2	5D
J8-4J	2	5D
J8-5K	2	5D
J8-6	2	6E
J8-7	2	6D
J8-8	2	6E
J8-9	2	6C
J8-10	2	6C
J8-11	2	6C
J8-12	2	6C
J8-13	2	5D

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A2J8-14	2	5D	A2J21-29	1	25A
J8-15	2	5C	J21-30		*
J8-16	2	5C	J21-31	2	3C
J8-17	2	5C	J21-32	3	3F
J8-18	2	5C	J21-33	2	3D
J8-19	2	5E	J21-34	1	25C
J8-20	2	5E	J21-35	2	3D
J8-21A	2	6C	J21-36	3	3G
J8-22B	2	6C	J21-37	1	25A
J8-23C	2	6C	J21-38	1	25D
J8-24D	2	6C	J21-39	1	25D
J8-25E	2	6D	J21-40	1	25F
J9 thru J20		*	J21-41	1	25B
			J21-42	1	25B
			J21-43		*
J21-1		*	J21-44	3	12F
J21-2		*	J21-45	3	12E
J21-3	3	5A	J21-46		*
J21-4		*	J21-47	1	25C
J21-5	1	25E	J21-48	1	25D
J21-6	3	12B	J21-49	1	25D
J21-7	3	3F	J21-50	3	12B
J21-8	1	25F	J22-A1	1	25G
J21-9	3	12G	J22-A2	1	19G
J21-10	1	25C	J22-A3	2	3G
J21-11	1	25F	J23-1		*
J21-12	2	3E	J23-2		*
J21-13	3	12C	J23-3	3	11F
J21-14	1	25G	J23-4	2	4E
J21-15	1	25G	J23-5	1	19A
J21-16	3	12F	J23-6	1	18B
J21-17	3	3F	J23-7	1	19D
J21-18		*	J23-8	1	20D
J21-19	1	25C	J23-9	1	16A
J21-20	1	25B	J23-10	3	10B
J21-21	3	3F	J23-11	3	8B
J21-22	1	25D	J23-12	3	9F
J21-23	1	25B	J23-13	1	16E
J21-24	3	5B	J23-14	1	17E
J21-25	3	5B	J23-15	1	19E
J21-26	2	3C	J23-16	3	10E
J21-27	3	12B	J23-17	1	21E
J21-28	2	3C	J23-18	3	10E

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A2J23-19	1	6E	A2K3-C3	2	7F
J23-20		*	K3-D1	2	7E
J23-21	1	2D	K3-D2	2	8F
J23-22	1	3C	K3-D3	2	7E
J23-23	1	2E	K3-X1	3	10F
J23-24	2	5E	K3-X2	3	10F
J23-25		*	K4-A1	1	21C
J23-26	1	18C	K4-A2	1	21C
J23-27	1	22D	K4-A3	1	21C
J23-28	1	18D	K4-X1	1	21C
J23-29		*	K4-X2	1	21C
J23-30	3	9A	K5-A1 thru K5-A3		*
J23-31	1	6D			
J23-32	1	6F			
J23-33	1	7D	K5-B1	1	18B
J23-34	3	10E	K5-B2	1	18B
J23-35		*	K5-B3	1	18B
J23-36	1	7E	K5-X1	1	4D
J23-37	1	3E	K5-X2	1	4D
K1-A1	1	19A	K6-A1 thru K6-A3		*
K1-A2	1	19A			
K1-A3	1	19B			
K1-B1	3	10D	K6-B1	3	9C
K1-B2	3	10D	K6-B2	3	9C
K1-B3	3	10C	K6-B3	3	9C
K1-X1	3	10D	K6-X1	3	9B
K1-X2	3	10D	K6-X2	3	9C
K2-A1	2	7D	L1	3	6F
K2-A2	2	8D	L2	3	4E
K2-A3	2	7D	M1	1	3C
K2-B1	2	7E	M2	1	3A
K2-B2	2	8E	P1-1		*
K2-B3	2	7E	P1-2		*
K2-X1	2	8D	P1-3	3	11F
K2-X2	2	8D	P1-4	2	4E
K3-A1	3	6G	P1-5	1	19A
K3-A2	3	6F	P1-6	1	18B
K3-A3	3	6G	P1-7	1	19D
K3-B1	3	10F	P1-8	1	20D
K3-B2	3	10G	P1-9	1	16A
K3-B3	3	10G	P1-10	3	10B
K3-C1	2	7F	P1-11	3	8B
K3-C2	2	8F	P1-12	3	9F

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2P1-13	1	16E
P1-14	1	17F
P1-15	1	19E
P1-16	3	10E
P1-17	1	21E
P1-18	3	10E
P1-19	1	5E
P1-20		*
P1-21	1	2D
P1-22	1	3C
P1-23	1	2E
P1-24	2	5E
P1-25		*
P1-26	1	18C
P1-27	1	22D
P1-28	1	18D
P1-29		*
P1-30	3	9A
P1-31	1	6D
P1-32	1	6F
P1-33	1	7D
P1-34	3	10E
P1-35		*
P1-36	1	7E
P1-37	1	3E
Q1	3	9D
R1	3	6F
R2	3	4E
R3	3	11B
R4	1	21B
R5	2	12B
R6	1	4D
R7	3	11C
R8	1	20B
R9	1	3C
S1-A-F	1	21B
	1	21E
S1-A-R	1	22E
	1	22C
S1-B-F	1	22C
	1	22D
S1-B-R	1	21A
	3	11F
A2S2-A-F	1	6E
	3	10E
S2-A-R	1	6D
	1	20E
S2-B-F	3	10F
S2-B-R	1	17E
S2-C-F	3	9B
S2-C-R	1	17C
S2-D-F	1	21D
S2-D-R	2	4E
S2-E-F	1	17A
S2-E-R	1	2E
S3-F	2	4A,4B
S4-F	2	5A,5B
S5-F	2	6A,6B
S5-R	2	7B
S6	2	10A,10B
S6-F	2	11B
S6-R	2	11A
S7	1	6B
S8	1	6C
S9	1	18F
S10	1	20B
S11	1	17G
T1	3	8E,8F
XA1P1A1	1	4G
P1-1	1	8G
P1-2	1	7G
P1-3		*
P1-4		*
P1-5	1	7G
P1-6	1	8G
P1-7	1	7G
P2A1	1	4G
P2A2		*
P2A3	1	8G
P2-1	1	6G
P2-2	1	6G
P2-3		*
P2-4	1	5G
P2-5	1	5G
P2-6	1	5G
P2-7	1	6G
P2-8	1	6G

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2XA1P2-9	1	5G
P2-10	1	6G
P2-11	1	6G
P2-12		*
P2-13		*
P2-14	1	5G
P2-15 thru P2-19		*
P2-20	1	6G
P2-21	1	*
P2-22	1	5G
A2XA2		*
A2XA3		*
A2XA4P1-1F	2	6F
P1-2G	2	6F
P1-3H	2	6F
P1-4J	2	6F
P1-5K	2	6F
P1-6	2	6F
P1-7	2	6F
P1-8	2	6F
P2A1	2	4G
P2A2	2	5F
P2A3	2	4G
P2A4	2	7G
P2A5	2	7G
P2-1	2	5G
P2-2	2	5G
P2-3 thru P2-6		*
P2-7	2	5G
P2-8	2	5G
P2-9	2	5G
P2-10	2	5G
P2-11	2	7G
P2-12	2	4G
A2XA5P1A1	1	21G
P1A2	1	20G
P1A3	1	22G
P1A4	1	24G
P1A5	1	21G
P1A6	1	20G

REF DES	SHEET	ZONE
A2XA5P1-1	1	23G
P1-2	1	23G
P1-3	1	22G
A2XA6P1A1	2	15F
P1A2	2	15E
P1A3	2	15D
P1-1A	2	8C
P1-2B	2	8C
P1-3C	2	8C
P1-4D	2	8C
P1-5E	2	8D
P1-6	2	8D
P1-7	2	8D
P1-8	2	8E
P1-9		*
P1-10	2	8F
P1-11	2	12B
P1-12	2	12B
P1-13	2	11B
P1-14	2	11B
P1-15	2	11B
P1-16	2	8F
P1-17	2	12B
P1-18	2	8F
P1-19	2	11B
P1-20	2	8E
P1-21	2	12B
P2A1		*
P2A2	2	15G
P2A3	2	10B
P3A1		*
P3A2	2	8G
A2XA7		*
A2XA8		*
A2XA9P1-1	1	19B
P1-2	1	19C
P1-3	1	19C
P1-4	1	19B
P1-5	1	19B
P1-6		*
P1-7	1	19B
P1-8	1	19C
P1-9	1	19B
A2XA10		*
A2XA11		*

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2XA12P1A1	1	1G
P1A2	1	3G
P1A3	1	3G
P1-1 thru P1-5		*
P1-6	1	2G
P1-7	1	2G
P1-8	1	2G
P1-9		*
P1-10	1	2G
A2A1P1A1	1	4G
P1-1	1	8G
P1-2	1	7G
P1-3		*
P1-4		*
P1-5	1	7G
P1-6	1	8G
P1-7	1	7G
P1-8		*
P1-9		*
P1-10	1	7G
P2A1	1	4G
P2A2		*
P2A3	1	8G
P2-1	1	6G
P2-2	1	6G
P2-3		*
P2-4	1	5G
P2-5	1	5G
P2-6	1	5G
P2-7	1	6G
P2-8	1	6G
P2-9	1	5G
P2-10	1	6G
P2-11	1	6G
P2-12		*
P2-13		*
P2-14	1	5G
P2-15 thru P2-19		*
P2-20	1	6G
P2-21		*
P2-22	1	5G
A2A2		*
A2A3		*
A2A4P1-1F	2	6F
P1-2G	2	6F
P1-3H	2	6F
P1-4J	2	6F
P1-5K	2	6F
P1-6	2	6F
P1-7	2	6F
P1-8	2	6F
P2A1	2	4G
P2A2	2	5F
P2A3	2	4G
P2A4	2	7G
P2A5	2	7G
P2-1	2	5G
P2-2	2	5G
P2-3 thru P2-6		*
P2-7	2	5G
P2-8	2	5G
P2-9	2	5G
P2-10	2	5G
P2-11	2	7G
P2-12	2	4G
A2A5P1A1	1	21G
P1A2	1	20G
P1A3	1	22G
P1A4	1	24G
P1A5	1	21G
P1A6	1	20G
P1-1	1	23G
P1-2	1	23G
P1-3	1	22G
A2A6AT1P1	2	14E
AT2P1	2	14D
P1A1	2	15F
P1-1A	2	8C
P1-2B	2	8C
P1-3C	2	8C
P1-4D	2	8C
P1-5E	2	8D

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A6P1-6	2	8D
P1-7	2	8D
P1-8	2	8E
P1-9		*
P1-10	2	8F
P1-11	2	12B
P1-12	2	12B
P1-13	2	11B
P1-14	2	11B
P1-15	2	11B
P1-16	2	8F
P1-17	2	12B
P1-18	2	8F
P1-19	2	11B
P1-20	2	8E
P1-21	2	12B
P2A1		*
P2A2	2	15G
P2A3	2	10B
P3A1		*
P3A2	2	8G
A2A7P1-1F	2	5D
P1-2G	2	5D
P1-3H	2	5D
P1-4J	2	5D
P1-5K	2	5D
P1-6	2	6E
P1-7	2	6D
P1-8	2	6E
P1-9	2	6C
P1-10	2	6C
P1-11	2	6C
P1-12	2	6C
P1-13	2	5D
P1-14	2	5D
P1-15	2	5C
P1-16	2	5C
P1-17P1-17	2	5C
P1-18	2	5C
P1-19	2	5E
P1-20	2	5E
P1-21A	2	6C
P1-22B	2	6C

REF DES	SHEET	ZONE
A2A7P1-23C	2	6C
P1-24D	2	6C
P1-25E	2	6D
A2A8C1	3	7E
C2	3	6E
C3	3	7D
C4	3	6D
C5	3	5D
C6	3	4D
C7	3	7C
C8	3	7B
C9	3	5F
C10	1	5D
C11	1	5D
CR1	3	7F
CR2	3	7F
CR3	3	7F
CR4	3	7F
CR5	3	7E
CR6	3	7E
CR7	3	7E
CR8	3	7E
CR9	1	5D
CR10	3	7C
CR11	3	6D
CR12	3	6C
CR13	3	6C
E1	3	7F
E2	3	7E
E3	3	6F
E4	3	4D
E5	3	4E
E6	3	4E
E7	3	7E
E8	3	7E
E9	1	5C
E10	1	5D
E11	1	5D
E12	3	4F
E13	1	5D
	3	4F
E14	3	7C
E15	3	7B

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A8E16	3	7C
E17	3	7C
E18	3	7D
E19	3	7D
E20	3	7D,4D
Q1	3	7D
Q2	3	6D
R1	3	5E
R2	3	7D
R3	3	6D
R4	3	6D
R5	3	6D
R6	3	5D
R7	3	5D
R8	3	5C
R9	3	5D
R10	3	5D
R11	3	5C
R12	3	7C
R13	3	7C
R14	3	7B
R15	3	5F
R16	1	5C
R17	3	5C
R18	3	6D
U1	3	5D
A2A9A1P1-1	1	19B
P1-2	1	19C
P1-3	1	19C
P1-4	1	19B
P1-5	1	19B
P1-6		*
P1-7	1	19B
P1-8	1	19C
P1-9	1	19B
A2A10C1	1	5B
C2	1	4B
C3	1	4C
E1	1	5C
E2	1	5C
E3	1	4B
E4	1	4C
E5	1	5C

REF DES	SHEET	ZONE
A2A10E6	1	5B
Q1	1	4B
R1	1	5C
R2	1	5C
R3	1	5C
R4	1	4C
R5	1	5C
R6	1	4C
R7	1	5B
R8	1	5B
R9	1	4B
A2A11C1	1	5A
C2	1	4A
C3	1	4B
E1	1	5B
E2	1	5B
E3	1	4A
E4	1	4B
E5	1	5A
E6	1	5A
Q1	1	4A
R1	1	5B
R2	1	5A
R3	1	5B
R4	1	4B
R5	1	5A
R6	1	4B
R7	1	5A
R8	1	5A
R9	1	4A
A2A12A1P1A1	1	1G
P1A2	1	3G
P1A3	1	3G
P1-1 thru P1-5		*
P1-6	1	2G
P1-7	1	2G
P1-8	1	2G
P1-9		*
P1-10	1	2G
A2A13		*
A2A14C1	3	10B
C2	1	23E

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A14C3	3	10A
C4	1	23D
E1	1	23E
E2	1	23D
	3	10A
L1	1	23E
A2A15C1	1	4E
C2	1	4D
C3	1	5D
CR1	1	5E
CR2	1	5D
E1	1	4D
E2	1	5E
E3	1	4E
E4	1	4E
E5	1	5E
E6		*
E7	1	4D
E8	1	4E
E9	1	4E
E10	1	4D
E11	1	5E
E12	1	5E
E13	1	5D
E14	1	5D
L1	1	4E
R1	1	4E
R2	1	5E
A2A16 thru A2A20		*
A2A21CR1	1	11B
K1-1		*
K1-2	1	15B
K1-3	1	15B
K1-4	1	15B
K1-5		*
K1-6	1	15B
K1-7	1	15B
K1-8	1	15B
K1-X1	1	12B
K1-X2	1	12B
K2-1		*

REF DES	SHEET	ZONE
A2A21K2-2	1	15A
K2-3	1	15A
K2-4	1	15A
K2-5		*
K2-6	1	15A
K2-7	1	15A
K2-8	1	15A
K2-X1	1	11B
K2-X2	1	11B
R1	1	12D
T1-1	1	15B
T1-2	1	15B
T1-3	1	15B
T1-4	1	14B
T1-5	1	14B
T1-6	1	14B
T2-1	1	15B
T2-2	1	15B
T2-3	1	15B
T2-4	1	14B
T2-5	1	14B
T2-6	1	14B
XA1 thru XA17		*
XA18-A	1	8C
XA18-B	1	9C
XA18-C	1	9C
XA18-D	1	9C
XA18-E	1	10C
XA18-F	1	10C
XA18-G		*
XA18-H	1	11C
XA18-I		*
XA18-J	1	11C
XA18-K	1	12C
XA18-L	1	12C
XA18-M	1	13C
XA18-N	1	13C
XA18-O		*
XA18-P	1	13C
XA18-Q		*
XA18-R	1	14C

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A21XA18-S	1	14C
XA18-T	1	14C
XA18-U	1	15C
XA18-V	1	15C
-1	1	8C
-2	1	9C
-3	1	9C
-4	1	9C
-5	1	10C
-6	1	10C
-7	1	11C
-8	1	11C
-9	1	12C
-10	1	12C
-11	1	13C
-12	1	13C
-13	1	13C
-14	1	14C
-15	1	14C
-16	1	14C
-17	1	15C
-18	1	15C
A2A21XA19-A	1	8D
-B	1	9D
-C	1	9D
-D	1	9D
-E	1	10D
-F	1	11D
-G		*
-H	1	11D
-I		*
-J	1	11D
-K	1	12D
-L	1	12D
-M	1	13D
-N	1	13D
-O		*
-P	1	13D
-Q		*
-R	1	14D
-S	1	14D
-T	1	14D
-U	1	15D

REF DES	SHEET	ZONE
A2A21XA19-V	1	15D
-1	1	8E
-2	1	9E
-3	1	9E
-4	1	9E
-5	1	10E
-6	1	11E
-7	1	11E
-8	1	11E
-9	1	12E
-10	1	12E
-11	1	13E
-12	1	13E
-13	1	13E
-14	1	14E
-15	1	14E
-16	1	14E
-17	1	15E
-18	1	15E
A2A21XA20-A	1	8E
-B	1	9E
-C	1	9E
-D	1	10E
-E	1	10E
-F	1	10E
-G		*
-H	1	11E
-I		*
-J	1	11E
-K	1	11E
-L	1	12E
-M	1	12E
-N	1	13E
-O		*
-P	1	13E
-Q		*
-R	1	14E
-S	1	14E
-T	1	14E
-U	1	15E
-V	1	15E
A2A21XA20-1	1	8F
-2	1	9F

* NOT USED

NOTES FOR FIGURE 5-28 (CONTINUED)

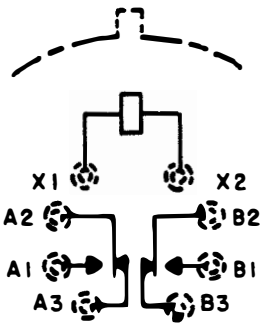
PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A2A21XA20-3	1	9F	A2A21XA20-11	1	12F
-4	1	10F	-12	1	13F
-5	1	10F	-13	1	13F
-6	1	10F	-14	1	14F
-7	1	11F	-15	1	14F
-8	1	11F	-16	1	14F
-9	1	12F	-17	1	15F
-10	1	12F	-18	1	15F

TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE CHART
(ALL VALUES ARE VDC ±10%)

	C	B	E
A2A8Q1	21.4	29.4	29.9
Q2	29.4	11.9	11.3
U1	1 = 11.3	2 = 4.8	3 = 4.2
	7 = 11.6	6 = 4.8	5 = 4.2
A2A10Q1	5.2	14.6	15.2
A2A11Q1	5.2	14.6	15.2

VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH DIGITAL MULTIMETER 89536-8800A/AA; T-827H IN ANY OPERATING MODE.



A2A21K1, K2
CIRCUIT DIAGRAM
TERMINAL VIEW

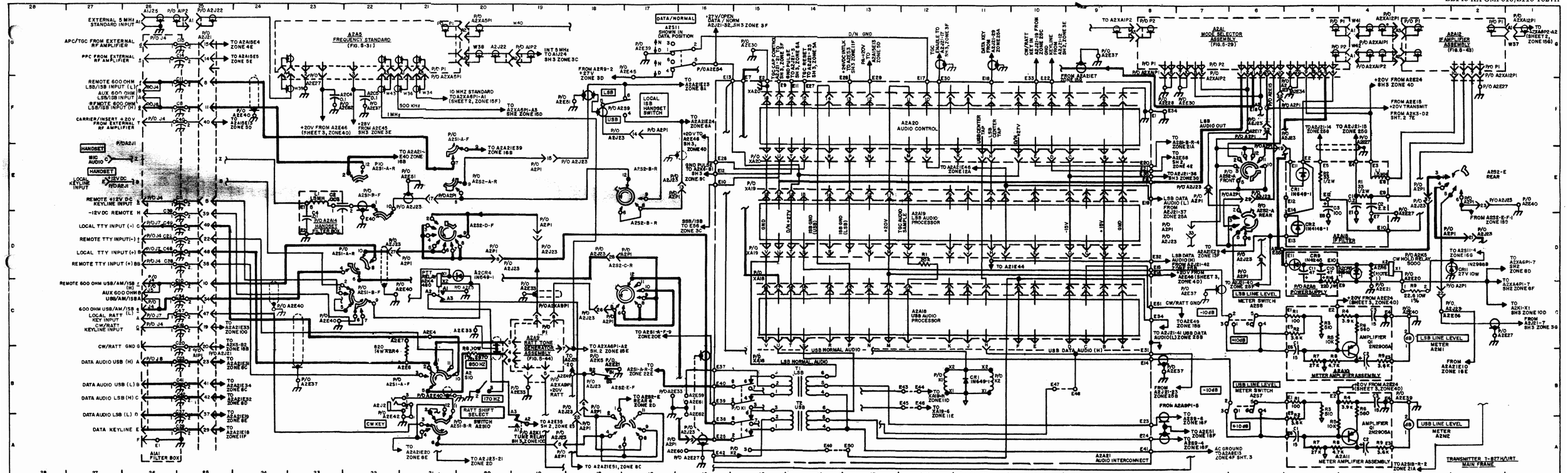
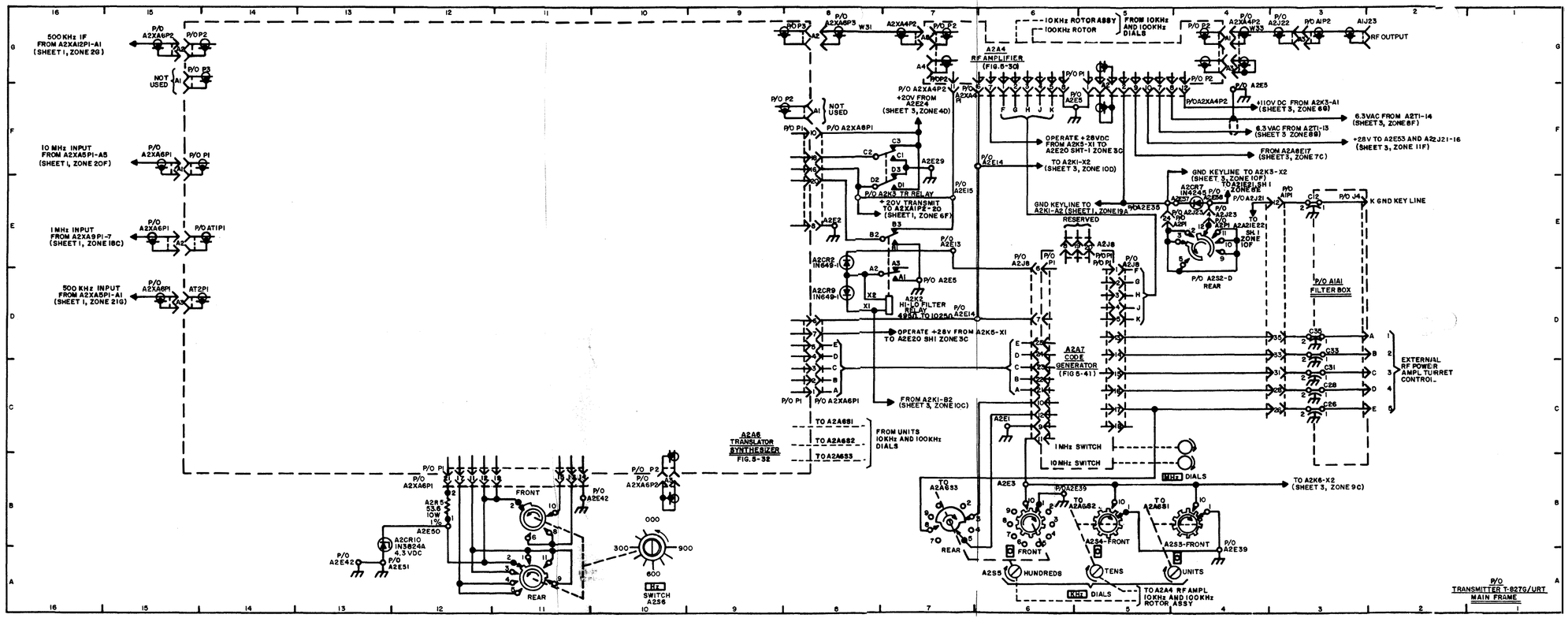


Figure 5-28. Transmitter Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 1 of 3)



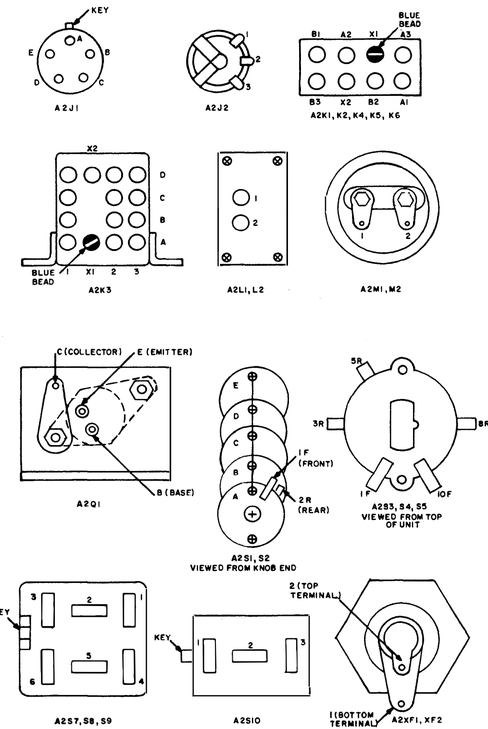


Figure 5-28. Transmitter Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 2 of 3)

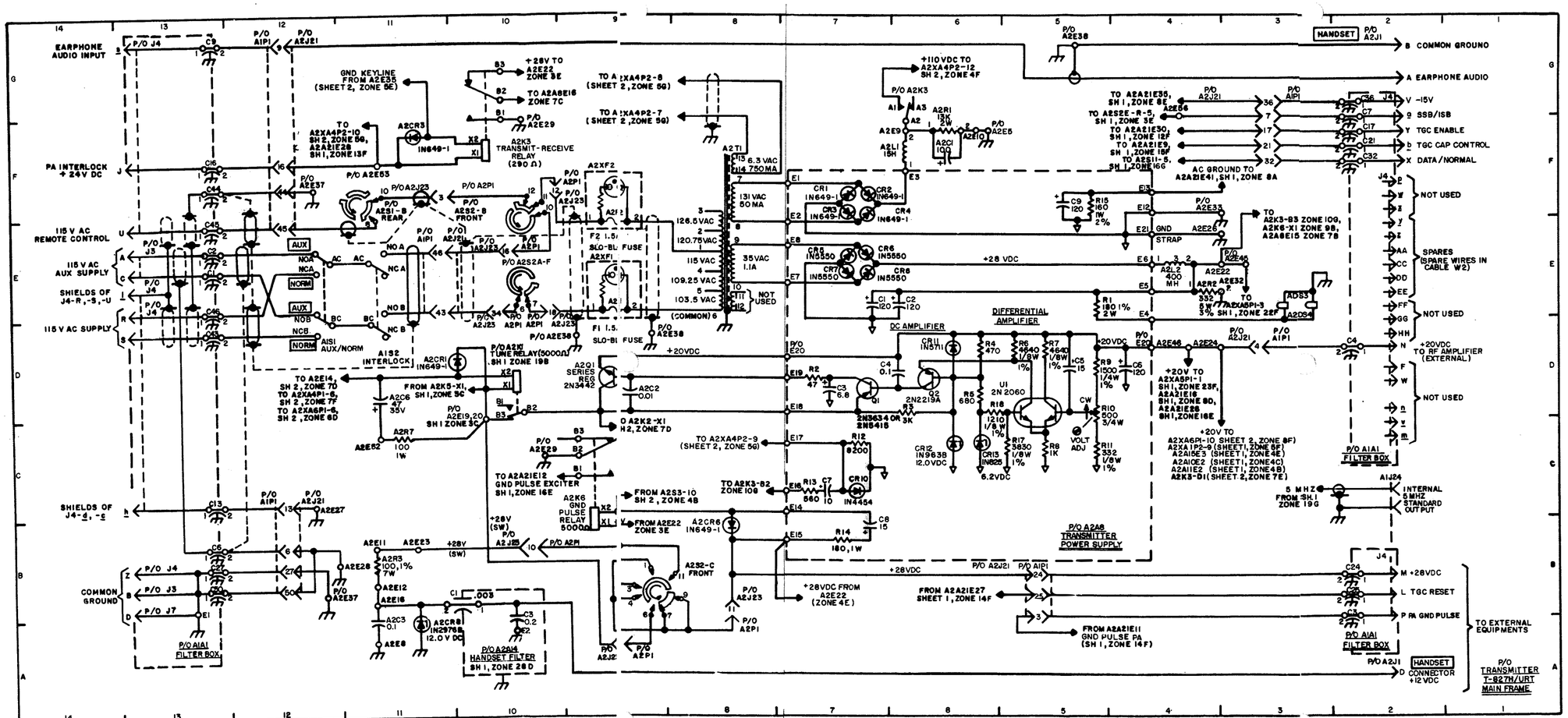


Figure 5-28. Transmitter Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 3 of 3)

NOTES FOR FIGURE 5-29

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A1 AND NUMBER OF THE PARTICULAR SUBASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN PICOFARADS.
ALL DIODES ARE 1N4454.

C. CW ON POTENTIOMETERS INDICATES DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.

D. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

E. —▶— INDICATES SIGNAL FLOW.

F. —ʃ ʃ— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

G. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

H. READINGS LISTED IN TABLE ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A1C1	9G	A2A1FL1	8G	A2A1S1-9	5E
C2	9E	FL2	8E	S1-10	5E
C3	7G	P1	17H, 2G	S1-11	5F
C4	7F	P1A1	2G	S1-12	5F
C5	14C	P2	17D, 2A	T1	12G
C6	16C	P2A1	2A	T2	12E
C7	9G	P2A2	*	W1	4G
C8	8G	P2A3	17B	W2	2A
C9	9E	S1	5F	W3	16B
C10	7E	S1-1	5F	A2A1A1C1	15E
E1	9E	S1-2	4F	C2	13E
E2	9G	S1-3	4F	C3	13F
E3	16E	S1-4	4E	C4	13E
E4	7E	S1-5	4E	C5	13F
E5	16G	S1-6	4E	C6	12E
E6	5G	S1-7	5E	E1	16E
E7	14D	S1-8	5E	E2	15D
E8	15D			E3	16E

* NOT USED.

NOTES FOR FIGURE 5-29 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A1A1E4	16E
E5	12F
E6	12E
R1	16F
R2	15F
R3	15E
R4	16E
R5	15E
R6	15E
R7	14F
R8	14E
R9	14E
R10	14E
R11	13F
R12	12G
R13	13E
R14	12E
U1	14E
A2A1A2C1	15G
C2	13G
C3	13H
C4	13G
C5	13H
C6	12G
E1	16G
E2	14G
E3	16G
E4	16G
E5	12H
E6	12G
R1	16H
R2	15H
R3	15G
R4	16G
R5	15G
R6	15G
R7	14H
R8	14G
R9	14G
R10	14G
R11	13H
R12	12H
R13	13G
R14	12G
U1	14G
A2A1A3C1	10H
A2A1A3C2	10H
C3	**
C4	10E
C5	10F
E1	11E
E2	11E
E3	9E
E4	11G
E5	9G
E6	11H
E7	11F
E8	11H
E9	9E
E10	9G
Q1	10G
Q2	10E
R1	10G
R2	10G
R3	10H
R4	10H
R5	10H
R6	10G
R7	10E
R8	10E
R9	10F
R10	10F
R11	10F
R12	10E
TP1	9E
TP2	9H
A2A1A4C1	16B
C2	16B
C3	15B
C4	15C
C5	15A
C6	14B
C7	13C
C8	13B
C9	**
C10	**
C11	**
C12	**
C13	**
C14	**
C15	**
C16	**
A2A1A4C17	7A
C18	7B
C19	6B
C20	6A
C21	6B
C22	5B
C23	5A
C24	4A
C25	3B
C26	3A
C27	5D
C28	5E
CR1	16B
CR2	**
CR3	**
CR4	**
CR5	**
CR6	7B
CR7	6B
CR8	5B
CR9	4B
CR10	4B
CR11	3B
CR12	6D
E1	16A
E2	2A
E3	2A
E4	**
E5	**
E6	12C
E7	12C
E8	16A
E9	13C
E10	**
E11	6C
E12	15C
E13	16C
E14	16B
E15	16B
E16	16A
E17	6D
E18	**
E19	15C
E20	7C
E21	14C
E22	14C

** NOT USED

NOTES FOR FIGURE 5-29 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A1A4E23	**	A2A1A4R14	**	A2A1A4R42	5B
E24	**	R15	**	R43	5A
E25	4E	R16	**	R44	5B
E26	3E	R17	**	R45	5B
E27	3E	R18	**	R46	4B
E28	5E	R19	**	R47	4B
E29	5E	R20	**	R48	4A
E30	3E	R21	**	R49	3A
E31	2E	R22	**	R50	3B
E32	16B	R23	**	R51	3A
E33	16B	R24	**	R52	3B
E34	15C	R25	**	R53	6D
Q1	15B	R26	**	R54	6D
Q2	13B	R27	**	R55	6E
R1	16B	R28	**	R56	5E
R2	16B	R29	**	R57	5D
R3	15C	R30	**	R58	4D
R4	15B	R31	**	R59	4E
R5	15C	R32	**	R60	4D
R6	15B	R33	7B	R61	3E
R7	14B	R34	7B	R62	3D
R8	13B	R35	7B	R63	3D
R9	13B	R36	6C	T1	14B
R10	13B	R37	6B	T2	12B
R11	**	R38	6B	T3	3A
R12	**	R39	7A	A2A1A5	7G
R13	**	R40	6B		7F
		R41	6A		6G, 6F

** NOT USED.

TRANSISTOR VOLTAGE MEASUREMENTS

TEST POINT	VOLTAGE	MODE
A2A1A3Q1-E	+10.9V	LSB KEYED
A3Q1-B	+10.2V	LSB KEYED
A3Q1-C	+ 5.1V	LSB KEYED
A3Q2-E	+10.9V	USB KEYED
A3Q2-B	+10.2V	USB KEYED
A3Q2-C	+ 5.1V	USB KEYED
A4Q1-E	+19.4V	USB KEYED
A4Q1-B	+18.9V	USB KEYED
A4Q1-C	0V	USB KEYED

NOTES FOR FIGURE 5-29 (CONTINUED)

TRANSISTOR VOLTAGE MEASUREMENTS (CONTINUED)

TEST POINT	VOLTAGE	MODE
A2A1A4Q2-E	+19.4V	LSB KEYED
A4Q2-B	+18.9V	LSB KEYED
A4Q2-C	0V	LSB KEYED
A2A1A5Q1-E	+ 1.8V	ALL MODES
A5Q1-B	+ 2.4V	ALL MODES
A5Q1-C	+18.5V	ALL MODES
A2A1A5Q2-E	+ 1.8V	ALL MODES
A5Q2-B	+ 2.4V	ALL MODES
A5Q2-C	+18.5V	ALL MODES

SPECIFIC NOTES

1. MODE SELECTOR SWITCH A2S2 AS SHOWN ABOVE.
2. VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH A2A1A5R6 ALIGNED FOR NORMAL OPERATION.
3. T-827H/URT KEYED.
4. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTING OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

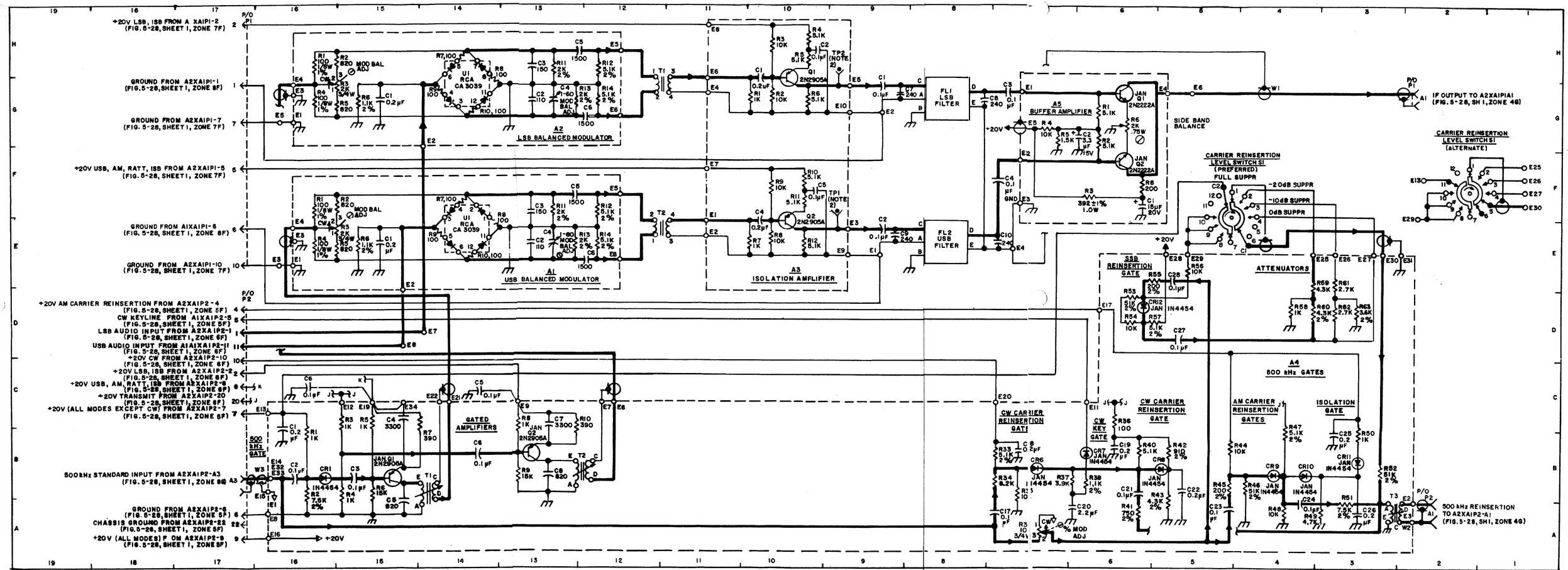


Figure 5-29. Mode Selector Assembly A2A1, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-30

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLIES.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT, K = 1000
ALL CAPACITORS ARE IN PICOFARADS. UF = MICROFARADS. FOR OTHER VALUES SEE TABLE 7-2.
RESISTANCE OF ALL COIL WINDINGS LESS THAN ONE OHM

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. —⟆⟅— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

F. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. TRANSISTOR AND VACUUM TUBE CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND (UNLESS OTHERWISE INDICATED) WITH EQUIPMENT KEYED IN ANY OPERATING MODE.

H. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	+6.5	+5.8	+2.4V
Q2	+12.5	+11.8	+7.4V
Q3	+16.4	+15.7	0

VACUUM TUBE VOLTAGE CHART (VDC, EXCEPT AS NOTED)

	PINS					
	1	2	BETWEEN PINS 3 AND 4	5	6	7
V1	0	2.2	6.3 VAC	110	110	0
V2	0	5.4	6.3 VAC	110	110	5.4

NOTES FOR FIGURE 5-30 (CONTINUED)

PART LOCATION INDEX

REF DES	SHEET	ZONE
A2A4B1	1	9D
C1	2	9F
C2	2	9F
C3	2	7F
C4	2	7E
C5	2	6G
C6	2	5F
C7	2	5F
C8	1	6B
C9	1	6B
C10	2	7E
C11	2	5D
C12	2	5C
C13	2	5B
C14	2	5B
C15	1	10B
C16	1	10B
C17	1	9B
C18	1	9B
C19	1	6D
C20	1	6C
C21	1	8C
C22	1	8D
CR1	1	8C
E1-A	1	4E
E1-B	1	4E
E1-C	1	4F
E1-D	1	3E
E2-A		*
E2-B	1	2E
E2-C	1	2F
E2-D	1	3E
E3-A	2	4E
E3-B	2	3E
E3-C	2	4E
E3-D	2	4E
E4-A	2	3E
E5-A	2	3G
E5-B	2	4G
E5-C	2	4E
E5-D	2	3G
E6-A	1	7C
E6-B	1	5C
E6-C	1	6D
E6-D	1	5D

REF DES	SHEET	ZONE
A2A4E7-A	1	5B
E7-B	1	6B
E7-C	1	5A
E7-D	1	7A
E8-A	2	5D
E8-B		*
E8-C		*
E8-D	2	4D
E9-A	1	6D
E9-B		*
E9-C		*
E9-D	1	6D
E10-A	1	6B
E10-B		*
E10-C		*
E10-D	1	6B
E11-A	2	6C
E11-B	2	4C
E11-C	2	5D
E11-D	2	3D
E12-A	2	4B
E12-B		*
E12-C		*
E12-D	2	5B
E13-A	2	3B
E13-B	2	5B
E13-C	2	4A
E13-D	2	6A
FL1	2	9F
FL2	2	6G
FL3	2	5G
K1	1	8D
K1-A1	1	8D
K1-A2	1	8D
K1-A3	1	9D
K1-B1	1	9D
K1-B2	1	8D
K1-B3	1	8D
K1-X1	1	8D
K1-X2	1	8D
P1-1	1	10D
P1-2	1	10D
P1-3	1	10D
P1-4	1	10D
P1-5	1	10D
P1-6	1	9D

* NOT USED

NOTES FOR FIGURE 5-30 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A4P1-7	1	10D
P1-8	1	10D
P2-1	1	10B
P2-2	1	10E
P2-3 thru P2-6		*
P2-7	1	10B
P2-8	1	10B
P2-9	1	10A
P2-10	1	10E
P2-11	1	10E
P2-12	1	10A
P2-A1	2	2G
P2-A2	1	10A
P2-A3	1	10F
P2-A4		*
P2-A5	1	10F
R1	2	8F
R2	2	8F
R3	2	6F
S1	1	9C
TP1	2	6G
TP2	2	6G
TP3	2	3G
TP4	2	2G
V1	2	8F
V2	2	5G
A2A4A1C1	2	8E
C2	2	8E
C3	2	5F
C4	2	9E
E1**	2	9E
E2**	2	8F
E3**	2	7C
E4**	2	5F
E5**	2	9E
E6**	2	7A
E7**	2	5E
E8**	2	7A, 7C
E9	2	8E
E10	2	8F
R1	2	8E
R2	2	9E
R3	2	8E
R4	2	7C
R5	2	5F
A2A4A1R6	2	7A
A2A4A2C1 thru A11C1	1	3F
A2A4A12C1	1	3D
A2A4A13C1	1	3D
A2A4A14C1 thru A2A4A19C1	1	3F
A2A4A20C1	1	3G
A2A4A21C1	1	3G
A2A4A22C1 thru A2A4A29C1	1	3F
A2A4A2C2 thru A2A4A11C2	1	3E
A2A4A12C2	1	3D
A2A4A13C2	1	3D
A2A4A14C2 thru A2A4A19C2	1	3E
A2A4A20C2	1	3G
A2A4A21C2	1	3G
A2A4A22C2 thru A2A4A29C2	1	3E
A2A4A2C3 thru A2A4A11C3	1	2E
A2A4A12C3	1	2D
A2A4A13C3	1	2D
A2A4A14C3 thru A2A4A19C3	1	2E
A2A4A20C3	1	2G
A2A4A21C3	1	2G
A2A4A22C3 thru A2A4A29C3	1	2E
A2A4A2C4 thru A2A4A29C4	2	3E
A2A4A2C5 thru A2A4A29C5	2	3G

* NOT USED
** WIRING TERMINATION - FOR REFERENCE ONLY

NOTES FOR FIGURE 5-30 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A4A20C6	1	3G
A2A4A21C6	1	3G
A2A4A2T1 thru A2A4A11T1	1	3E
A2A4A12T1	1	3D
A2A4A13T1	1	3D
A2A4A14T1 thru A2A4A19T1	1	3E
A2A4A20T1	1	3G
A2A4A21T1	1	3G
A2A4A22T1 thru A2A4A29T1	1	3E
A2A4A2T2 thru A2A4A11T2	1	3E
A2A4A12T2	1	3D
A2A4A13T2	1	3D
A2A4A14T2 thru A2A4A19T2	1	3E
A2A4A20T2	1	3G
A2A4A21T2	1	3G
A2A4A22T2 thru A2A4A29T2	1	3E
A2A4A2T3 thru A2A4A29T3	2	3E
A2A4A2T4 thru A2A4A9Y1	2	3F
	1	2E
A2A4A10Y1	1	2E
A2A4A12L1	1	3D
A2A4A13L1	1	3D
A2A4A19Y1	1	2E
A2A4A30C1 thru A2A4A30C9	1	5D
A2A4A30C10 thru A2A4A30C19	1	5C
A2A4A31C1 thru A2A4A31C9	1	7D
A2A4A32C1 thru A2A4A32C9	1	7B
A2A4A33C1 thru A2A4A33C19	1	5B
A2A4A34C1 thru A2A4A34C19	2	4C,4D
A2A4A35C1 thru A2A4A35C9	2	5D
A2A4A36C1 thru A2A4A36C9	2	5B
A2A4A37C1 thru A2A4A37C19	2	4B
A2A4A38C1	1	9F
C2	1	9G
C3	1	9G
C4	1	8F
C5	1	8G
C6	1	7G
C7	1	6F
C8	1	7G
C9	1	6G
C10	1	5G
C11	1	8G
C12	1	7F
C13	1	5G
E1		***
E2		*
** E3	1	10F
** E4	1	10F
** E5	1	10E
** E6	1	10F
FL1	1	9F
FL2	1	7F
FL3	1	5F
K1	1	5E
K1A1	1	5F
K1A2	1	5F
K1A3	1	5F
K1B1	1	5E
K1B2	1	5E
K1B3	1	5E

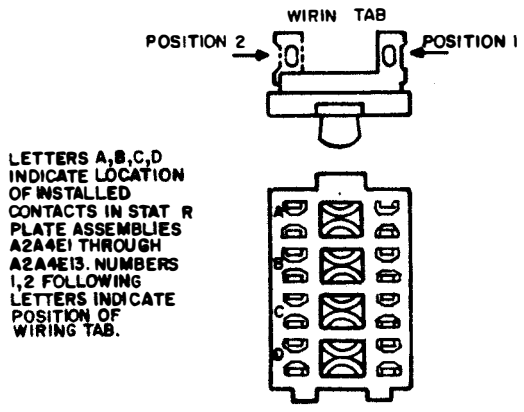
* NOT USED ** WIRING TERMINATION - FOR REFERENCE ONLY *** NOT SHOWN

NOTES FOR FIGURE 5-30 (CONTINUED)

PARTS LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE	REF DES	SHEET	ZONE
A2A4A38K1X1	1	5E	A2A4A38R10	1	7F
K1X2	1	5E	R11	1	7G
L1	1	10E	R12	1	7G
Q1	1	9F	R13	1	7F
Q2	1	7G	R14	1	7G
Q3	1	5G	R15	1	7G
R1	1	9F	R16	1	6G
R2	1	9G	R17	1	6F
R3	1	9F	R18	1	5G
R4	1	9G	R19	1	5G
R5	1	9G	R20	1	5F
R6	1	9F	R21	1	8F
R7	1	8G	TP1	1	9G
R8		*	TP2	1	10G
R9	1	7G	W1	1	8F
			W2	1	10F

* NOT USED



SPECIFIC NOTES FOR FIGURE 5-30

1. CAPACITOR VALUES FOR A2A4A31C1-C9 AND A2A4A32C1-C9 (pF)

FREQ IN MHz	CAPACITOR REF DESIG	A31	A32
.00	C1	250	260
.01	C2	215	224
.02	C3	183	190
.03	C4	153	158
.04	C5	124	128
.05	C6	96	99
.06	C7	70	72
.07	C8	45	47
.08	C9	22	23
.09	NONE	OPEN	OPEN

2. CAPACITOR VALUES FOR A2A4A30C1-C19 AND A2A4A33C1-C19 (pF)

FREQ IN MHz	CAPACITOR REF DESIG	A30	A33
.00	C1	545	517
	C10	253	257
.10	C2	426	405
	C11	219	222
.20	C3	332	316
	C12	190	193
.30	C4	257	245
	C13	165	167
.40	C5	195	186
	C14	144	146
.50	C6	143	137
	C15	125	127
.60	C7	99	95
	C16	109	110
.70	C8	61	59
	C17	95	96
.80	C9	29	28
	C18	83	83
.90	NONE	OPEN	OPEN
	C19	74	74

SPECIFIC NOTES FOR FIGURE 5-30 (CONTINUED)

3. COMPONENT VALUES FOR A2A4A2 THROUGH A2A4A29

FREQ IN MHZ	ON ASSY	C1 (pF)	C2 (pF)	C3 (pF)	C6 (uF)	L1 (mH)	Y1 (MHz)
2	A20	2.0	SHORT	SHORT	.068	-	-
3	A21	2.0	1247	1253	.047	-	-
4	A22	4.7	623	629	-	-	-
5	A23	3.9	416	422	-	-	-
6	A24	3.3	312	318	-	-	-
7	A25	3.0	250	256	-	-	-
8	A26	3.0	208	214	-	-	-
9	A27	2.7	179	185	-	-	-
10	A28	2.4	157	163	-	-	-
11	A29	2.0	140	146	-	-	-
12	A2	2.0	126	132	-	-	-
13	A3	2.0	115	120	-	-	-
14	A4	2.0	105	111	-	-	-
15	A5	1.5	97	103	-	-	-
16	A6	1.5	91	96	-	-	-
17	A7	1.5	85	90	-	-	-
18	A8	1.5	80	85	-	-	-
19	A9	1.5	75	80	-	-	21.00000
20	A10	1.5	71	76	-	-	19.00000
21	A11	1.5	67	73	-	-	-
22	A12	7.0	64	68	-	8.2	-
23	A13	3.9	61	66	-	8.2	-
24	A14	2.0	58	63	-	-	-
25	A15	2.2	56	61	-	-	-
26	A16	2.2	54	52	-	-	-
27	A17	2.4	52	57	-	-	-
28	A18	2.4	50	55	-	-	-
29	A19	2.4	48	53	-	-	-

4. A2A4FL1, FL2, FL3 AND A2A4A38FL1, FL2, FL3 ARE FERRITE BEADS.

)NTINUED)

L1 mH)	Y1 (MHz)
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	21.00000
-	19.00000
-	-
3.2	-
8.2	-
-	-
-	-
-	-
-	-
-	-
-	-

FERRITE

SPECIFIC NOTES (CONTINUED)

5. CAPACITOR VALUES FOR A2A4A35C1-C9 AND A2A4A36C1-C9

FREQ IN MHz	CAPACITOR REF DESIG	VALUE (pF)
.00	C1	260
.01	C2	224
.02	C3	190
.03	C4	158
.04	C5	128
.05	C6	99
.06	C7	72
.07	C8	47
.08	C9	23
.09	NONE	OPEN

6. CAPACITOR VALUES FOR A2A4A34C1-C19 AND A2A4A37C1-C19

FREQ IN MHz	CAPACITOR REF DESIG	VALUE (pF)
.00	C1	517
	C10	257
.10	C2	405
	C11	222
.20	C3	316
	C12	193
.30	C4	245
	C13	167
.40	C5	186
	C14	146
.50	C6	137
	C15	127
.60	C7	95
	C16	110
.70	C8	59
	C17	96
.80	C9	28
	C18	83
.90	NONE	OPEN
	C19	74

A3[illegible]1-C9

7. CAPACITOR VALUES FOR A2A4A2C4, C5 THROUGH A2A4A29C4, C5

FREQ IN MHz	ASSY	C4 (pF)	ASSY	C5 (pF)
2	A25	SHORT	A2	SHORT
3	A26	1250	A3	1259
4	A27	623	A4	629
5	A28	416	A5	422
6	A29	312	A6	318
7	A2	250	A7	256
8	A3	208	A8	214
9	A4	179	A9	185
10	A5	157	A10	163
11	A6	140	A11	146
12	A7	126	A12	132
13	A8	115	A13	120
14	A9	105	A14	111
15	A10	97	A15	103
16	A11	91	A16	96
17	A12	85	A17	90
18	A13	80	A18	85
19	A14	75	A19	80
20	A15	71	A20	76
21	A16	67	A21	73
22	A17	64	A22	68
23	A18	61	A23	66
24	A19	58	A24	63
25	A20	56	A25	61
26	A21	54	A26	59
27	A22	52	A27	57
28	A23	50	A28	55
29	A24	48	A29	53

[illegible]A37C1-C19

8. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN RF AMPLIFIER TEST FIXTURE TS-3685/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

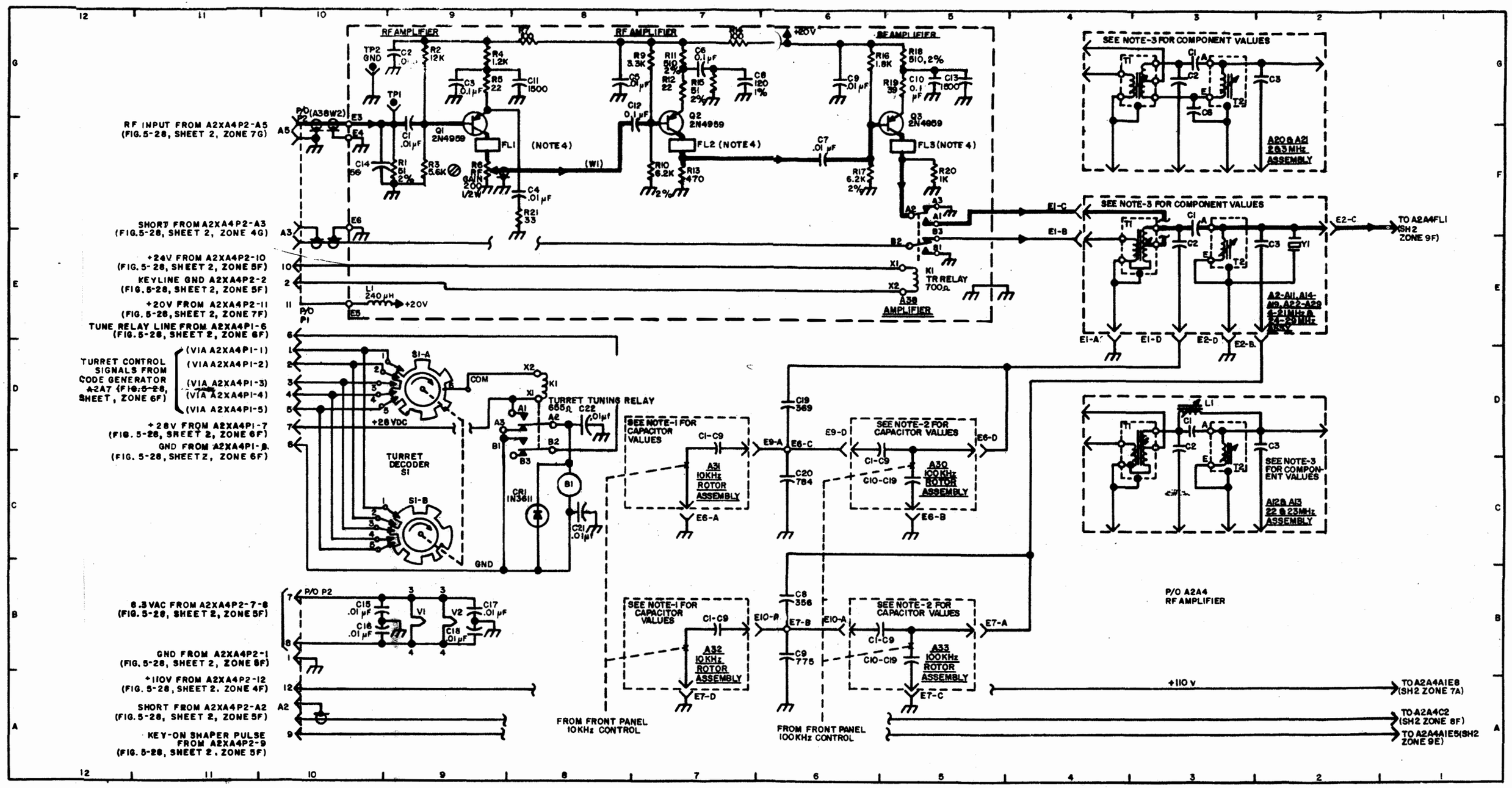


Figure 5-30. RF Amplifier Assembly A2A4, Maintenance Schematic Diagram (Sheet 1 of 2)

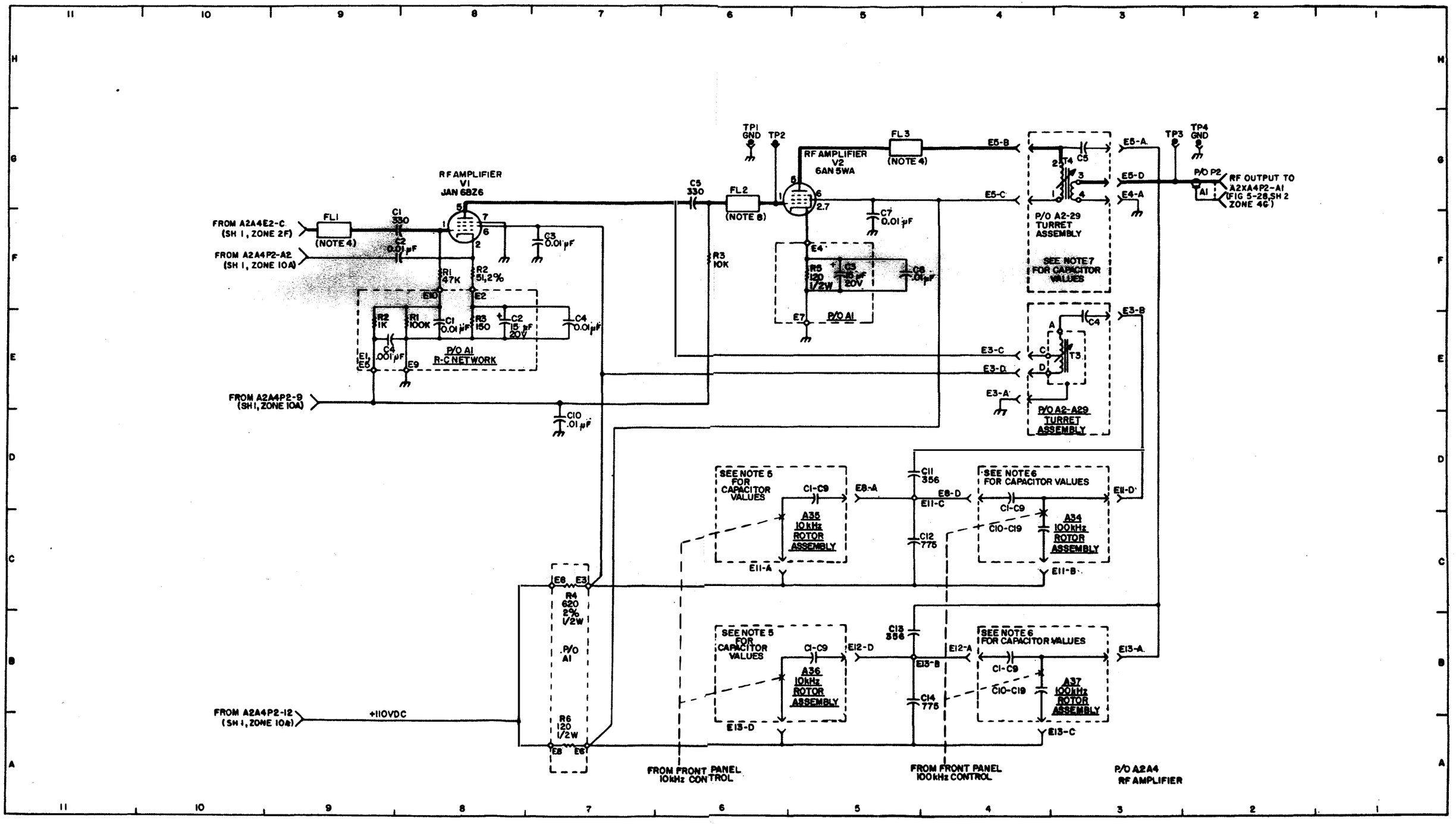


Figure 5-30. RF Amplifier Assembly A2A4, Maintenance Schematic Diagram (Sheet 2 of 2)

NOTES FOR FIGURE 5-31

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLIES.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT: K = 1000.
ALL CAPACITORS ARE IN PICOFARADS ±5%, 500 VDCW; UF = MICROFARADS.
ALL INDUCTORS ARE IN MICROHENRIES, ±10%.
RESISTANCE OF INDUCTORS AND TRANSFORMER WINDINGS IS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. * IN MAINTENANCE SCHEMATIC INDICATES A COMPONENT OF SELECTED VALUE (NOMINAL VALUE SHOWN). REFER TO CHAPTER 7 PARTS LIST FOR PART NUMBER AND RANGE OF VALUES.

E. A2A5A4P3 TERMINAL IDENTIFICATION: COMPONENT SIDE 1 2 3 4 5 6
FOIL SIDE A B C D E F

F. —ʃ ʃ— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

G. —▶— INDICATES SIGNAL FLOW.

H. —▶▶— INDICATES FEEDBACK.

I. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

J. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5C1	16F	A2A5J3-1	15E	A2A5A1C1	14B
C2	16C	J3-2	15C	C2	14B
E1 thru E6	*	J3-3	15E	C3	14B
		J3-4	12D	C4	13B
		J3-5	12D	C5	13B
E7	15D, 16E	J3-6	12D	C6	12B
	10E	P1	3F, 16F	C7	12B
J1	*	P1-A1	3F	C8	14B
J2	*	P1-A2	3E	C9	*
J3	11E, 15E	P1-A3	3D	C10	14A
J3-A	15D	P1-A4	16E	C11	14B
J3-B	*	P1-A5	3D	CR1	11B
J3-C	12E	P1-A6	3D	CR2	13A
J3-D	15D	P1-1	16F	E1	13B
J3-E	*	P1-2	16D	E2	13B
J3-F	*	P1-3	16C	P1	11C

* NOT USED OR NOT SHOWN

NOTES FOR FIGURE 5-31 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5A2R22	5F	A2A5A2R62	7C	A2A5A4P1	*
R23	5E	S1	8E,9E,	P2	*
R24	4E		9F	P3	15C,15E
R25	5E	S1-1	9E		12D,12E
R26	4F	S1-2	9E	P3-A	15D
R27	4E	S1-3	9E	P3-B	*
R28	4E	S1-4	9E	P3-C	12E
R29	3F	S1-5	9E	P3-D	15D
R30	4E	S1-6	9F	P3-E	*
R31	3F	S1-7	9F	P3-F	15D
R32	7C	S1-8	9F	P3-1	15E
R33	7D	S1-9	8E	P3-2	15C
R34	7D	S1-10	8E	P3-3	15E
R35	*	S1-11	8E	P3-4	12D
R36	7D	S1-12	9E	P3-5	12D
R37	7C	T1	5F	P3-6	12D
R38	6C	T2	3F	Q1	14E
R39	6D	T3	5D	Q2	13F
R40	5D	A2A5A3J1A1	11C	Q3	14D
R41	5C	J1A2	10C	Q4	14D
R42	5D	J1A3	11C	Q5	12C
R43	5C	J1A4	10C	R1	15E
R44	5D	J1A5	12B	R2	15E
R45	5C	R1	11C	R3	14E
R46	4C	R2	11C	R4	14F
R47	4D	A2A5A4C1	14E	R5	14E
R48	4D	C2	13E	R6	14F
R49	4C	C3	12D	R7	14E
R50	*	C4	14C	R8	13F
R51	*	C5	14C	R9	13E
R52	7B	C6	14C	R10	12D
† R53	7B	C7	14C	R11	15C
† R54	7B	C8	13D	R12	14D
† R55	7B	CR1	15F	R13	14D
R56	8D	CR2	14F	U1	12D,
† R57	6B	CR3	15E		12E,13E
† R58	6B	CR4	14E		(4 PLACES)
R59	*	CR5	14E	U2	12D,13D
R60	6D	CR6	13F		(2 PLACES)
R61	5D	CR7	14D	U3	14C
		CR8	14C	U4	14C

* NOT USED.

† USED ONLY ON ALTERNATE ASSEMBLY (SEE SHEET 2)

TRANSISTOR DC VOLTAGE CHART
(ALL VALUES IN VOLTS)

	E	B	C	
A2A5A1Q1	+0.03	±0.65	+8.9	
Q2	+0.24	±0.95	+2.4	COLLECTOR VOLTAGES VARY WITH ADJUSTMENT OF A2A5A1R15.
Q3	0	-0.35	+2.0	
Q4	+4.5	+5.0	+9.6	
Q5	+5.1	+4.5	+5.5	
Q6	+10.1	+9.6	+1.3	
Q7	+0.67	+1.3	+15.4	
A2A5A2Q1	+4.0	+4.1	+6.6	
Q2	+8.9	+4.4	18.0	
Q3	+0.63	+1.2	+16.2	
Q4	+5.7	+4/1	+17.8	
Q5	+1.4	+2.1	+10.1	
Q6	+5.8	+6.2	+7.8	
Q7	0	+0.12	+3.8	
Q8	+0.7	+1.4	+10.0	
Q9	+0.38	+0.90	+10.8	
†Q10	+0.23	0	+0.91	
†Q11	+0.70	+0.82	+19.9	
A2A5A4Q1	0	+0.63	+3.20	
Q2	+2.32	+2.91	+5.0	
Q3	+24.7	+25.4	+25.9	
Q4	0	+0.06	+25.4	
Q5	0	+0.60	+6.5	

† USED ONLY ON ALTERNATE ASSEMBLY (SEE SHEET 2). DISCONNECT EXTERNAL FREQUENCY STANDARD FROM A1J25 WHEN MAKING MEASUREMENTS ON A2A5A2Q10 AND A2A5A2Q11.

INTEGRATED CIRCUIT DC VOLTAGE CHART
(ALL VALUES IN POSITIVE VOLTS

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A2A5A4U1	2.32	0	3.5	3.5	3.5	0.08	0	3.9	0.08	3.20	1.0	2.4	3.20	5.0
U2	2.0	2.0	1.1	1.1	3.8	2.4	0	0.8	3.8	2.4	3.8	0.08	0	5.0
U3	24.7	15.0	0											
U4	6.5	5.0	0											

SEE SPECIFIC NOTES ON SHEET 2

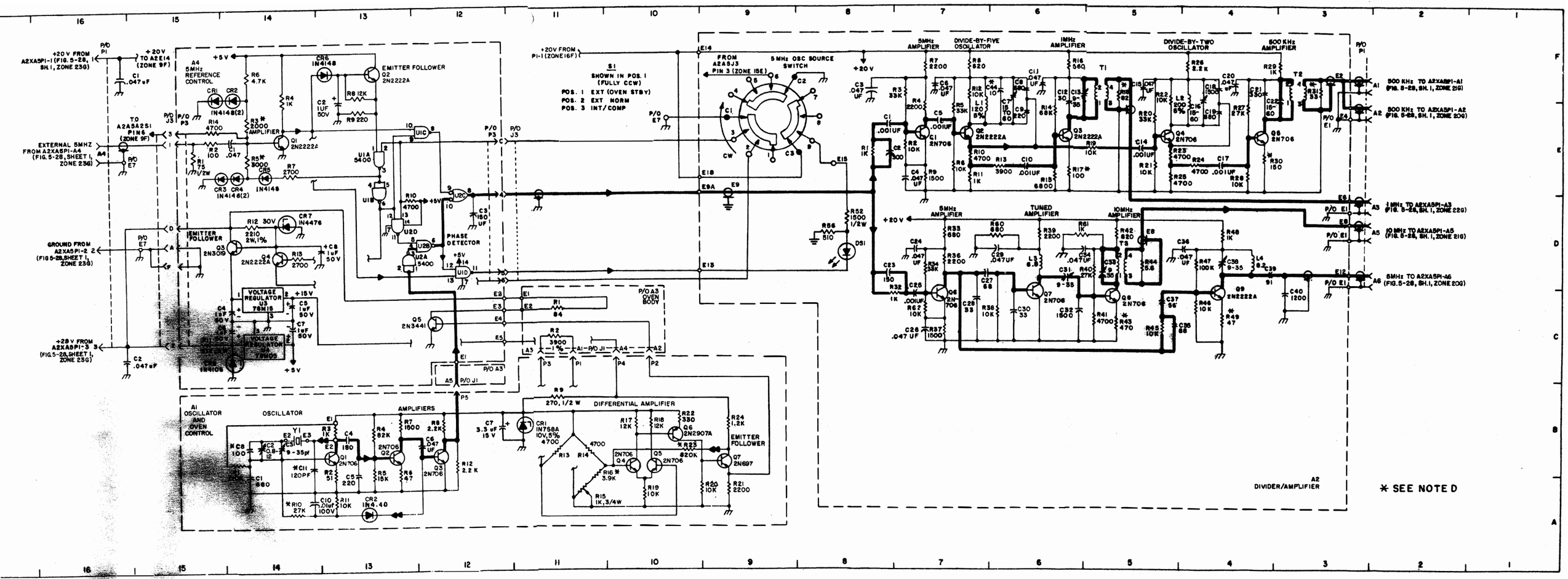


Figure 5-31. Frequency Standard Assembly A2A5, Maintenance Schematic Diagram (Sheet 1 of 2)

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND AFTER ONE HOUR WARMUP WITH SWITCH A2A5A2S1 SET AT INT/COMP.

2. MAXIMUM RESISTANCE OF INDUCTOR AND TRANSFORMER WINDINGS FOLLOWS:

A2L1	5.2 OHMS
A2L2	7.1 OHMS
A2T1	7.8 OHMS (PRIMARY)
A2T2	7.8 OHMS (PRIMARY)

3. S1-1 = EXT (OVEN STBY)
   S1-2 = EXT NORM
   S1-3 = INT/COMP
   (SWITCH SHOWN IN POSITION 1)

4. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN FREQUENCY STANDARD TEST FIXTURE TS-3667/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

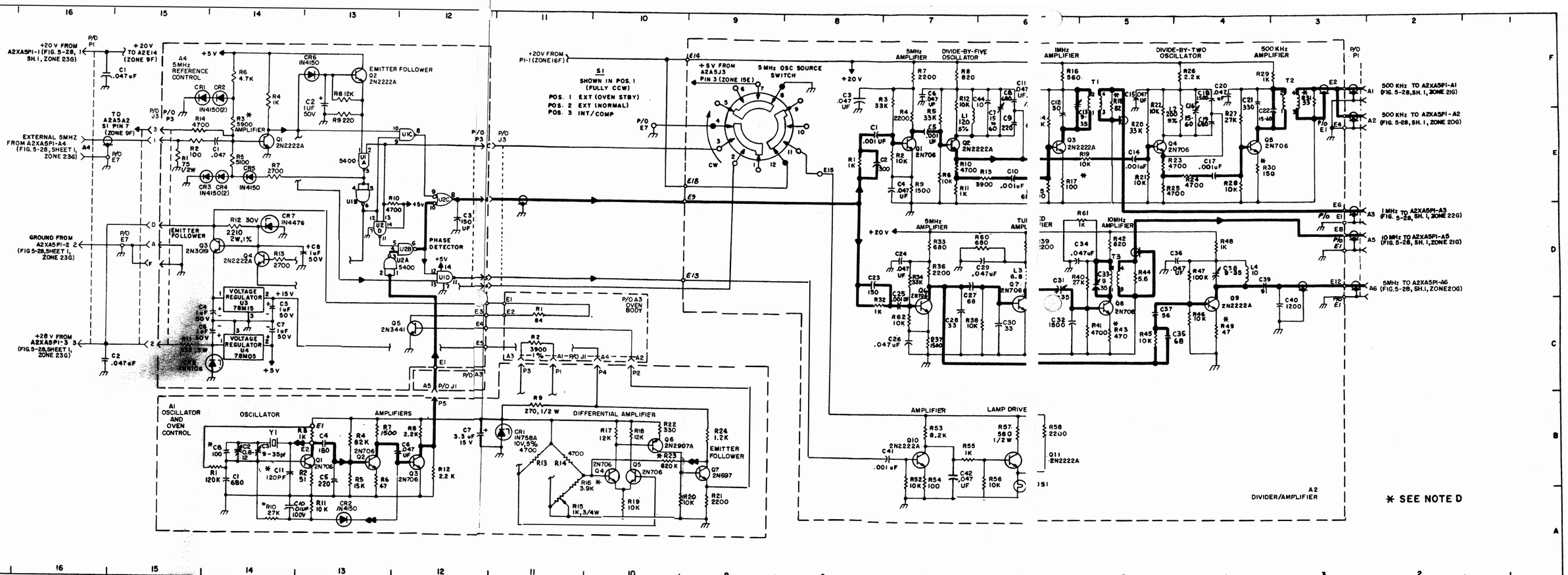


Figure 5-31. Alternate Frequency Standard Assembly A2A5, Maintenance Schematic Diagram (Sheet 2 of 2)

NOTES FOR FIGURE 5-32

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, ONE WATT.
ALL CAPACITORS ARE IN MICROFARADS.

C. CCW ON SWITCH WIPERS INDICATES DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END, AND CORRESPONDS TO CLOCKWISE ROTATION OF FRONT PANEL CONTROLS.

D. SWITCHES S1 THROUGH S3 SHOWN IN 000 kHz POSITION.

E. ◄◄ INDICATES FEEDBACK.

F. [ ] INDICATES FRONT PANEL MARKING.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6E1	11D, 14A, 8A, 7D, 4B, 2C	A2A6FL5	4B	A2A6P1-19	18B
		J1	4B	P1-20	18C
		P1A1	18B	P1-21	1C
E2	2C	P1A2	18C	P2A1	1F
E3	4C	P1A3	18C	P2A2	18F
E4	17A	P1-1	18E	P3A1	18F
E5	2B	P1-2	18E	P3A2	1F
E6	16A	P1-3	18D	P4	3D
E7 thru E9	*	P1-4	18D	P5	2C
		P1-5	18D	P6	3D
		P1-6	1E	P7	2C
E10	1B	P1-7	1D	P8	15A
E11 thru E15	*	P1-8	1B	P9	15A
		P1-9	1D	P10	15A
		P1-10	18A	P11	15A
E16	14A, 16A	P1-11	18D	P12	4C
E17	14A	P1-12	1D	P13	4C
E18	**	P1-13	18D	R1	17C
E19	**	P1-14	18B	R2	17C
FL1	16A	P1-15	18D	S1E1	12E
FL2	*	P1-16	1C	S1E2	12D
FL3	*	P1-17	18D	S1E3	13D
FL4	14A	P1-18	1C	S1E4	13D

* NOT USED
** NOT SHOWN

NOTES FOR FIGURE 5-32 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6S1E5	12D
S2E1	13E
S2E2	13D
S2E3	14C
S2E4	13D
S2E5	13D
S3E1	15E
S3E2	15D
S3E3	16C
S3E4	15D
S3E5	15D
XA12P1A1	8D
P1A2	8E
P1A3	8E
P1A4	6E
P1-1	*
P1-2	7D
P1-3	7D
P1-4	7D
P1-5	7D
XA13P1A1	11B
P1A2	9B
P1A3	9B
P1A4	9B
P1-1	*
P1-2	11B
P1-3	11B
P1-4	11B
P1-5	11B
P1-6	11A
P1-7	9A
P1-8	9A
P1-9	9A
P1-10	10A
P1-11	10A
P1-12 thru P1-14	*
P1-15	10A
P1-16	10A
P1-17	10A
XA14P1A1	9B
P1A2	9B
P1A3	9B
XA14P1A4	7B
P1-1	9A
P1-2	9A
P1-3	9A
P1-4	8A
P1-5	8A
XA15	*
XA16P1A1	14B
P1A2	12B
P1A3	12B
P1A4	12C
P1-1	*
P1-2	*
P1-3	14B
P1-4 thru P1-8	*
P1-9	14B
P1-10	14A
P1-11	14A
P1-12 thru P1-14	*
P1-15	14A
P1-16	14A
P1-17	14A
XA17P1A1	5B
P1A2	4B
P1-1	5B
P1-2	*
P1-3	5C
P1-4	5C
P1-5	5C
P1-6	5C
P1-7	5B
P1-8	5B
P1-9 thru P1-12	*
P1-13	4B
P1-14	4B
P1-15	4B
XA18P1A1	9E
P1A2	9E
XA18P1-1	10D
P1-2	10D
P1-3	10E
P1-4	10E
P1-5	10E
P1-6	10E
P1-7	10D
P1-8	10E
P1-9	10E
P1-10	10E
P1-11	10E
P1-12	9D
P1-13	9D
P1-14	9D
P1-15	9D
A2A6A1 thru A2A6A6	*
A2A6A7C1	16A
C2	16A
E1 thru E11	*
E12	16A
E13	15A
E14	16A
E15	16A
R1	*
R2	*
R3	16A
R4	16A
A2A6A8E1	3F
E2	3E
E3	2F
E4	2F
E5	3E
E6	3E
E7	3B
E8	3B
E9	3A
E10	3A
E11	3F
E12	2F
E13	3F

* NOT USED

NOTES FOR FIGURE 5-32 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A8E14	2F
E15	3C
J1 thru J3	*
J4	3D
J5	2C
J6	3D
J7	2C
A2A6A9 thru A2A6A11	*
A2A6A12P1A1	8D
P1A2	8E
P1A3	8E
P1A4	6E
P1-1	*
P1-2	7D
P1-3	7D
P1-4	7D
P1-5	7D
A2A6A13P1A1	11B
P1A2	9B
P1A3	9B
P1A4	9B
P1-1	*
P1-2	11B
P1-3	11B
P1-4	11B
P1-5	11B
P1-6	11A
P1-7	9A
P1-8	9A
P1-9	9A
P1-10	10A
P1-11	10A

REF DES	ZONE
A2A6A13P1-12 thru P1-14	*
P1-15	10A
P1-16	10A
P1-17	10A
A2A6A14P1A1	9B
P1A2	9B
P1A3	9B
P1A4	7B
P1-1	9A
P1-2	9A
P1-3	8A
P1-4	8A
P1-5	9A
A2A6A15E1	15A
E2	*
E3	*
E4	15A
E5	15A
E6	15A
A2A6A16P1A1	14B
P1A2	12B
P1A3	12B
P1A4	12C
P1-1	*
P1-2	*
P1-3	14B
P1-4 thru P1-8	*
P1-9	14B
P1-10	14A
P1-11	14A
P1-12 thru P1-14	*

REF DES	ZONE
A2A6A16P1-15	14A
P1-16	14A
P1-17	14A
A2A6A17P1A1	5B
P1A2	4B
P1-1	5B
P1-2	*
P1-3	5C
P1-4	5C
P1-5	5C
P1-6	5C
P1-7	5B
P1-8	5B
P1-9 thru P1-12	*
P1-13	4B
P1-14	4B
P1-15	4B
A2A6A18P1A1	9E
P1A2	9E
P1-1	10D
P1-2	10D
P1-3	10E
P1-4	10E
P1-5	10E
P1-6	10E
P1-7	10D
P1-8	10E
P1-9	10E
P1-10	10E
P1-11	10E
P1-12	9D
P1-13	9D
P1-14	9D
P1-15	9D

* NOT USED

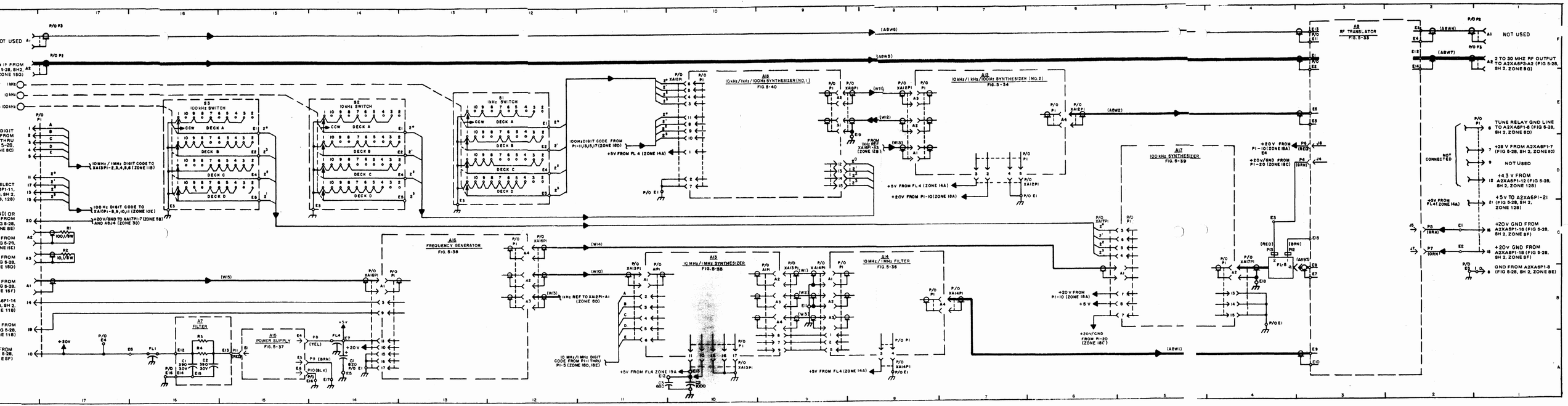
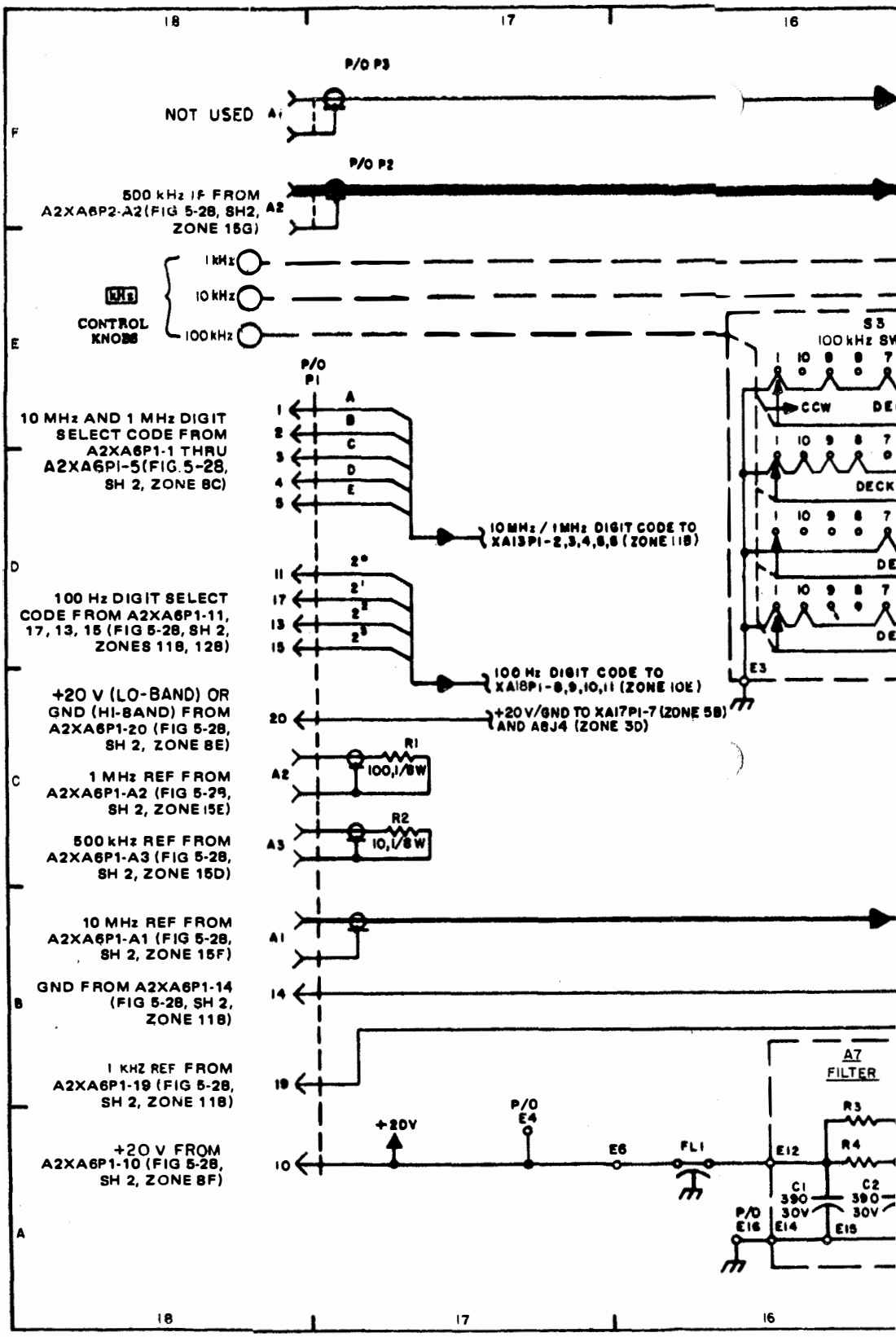


Figure 5-32. Translator/Synthesizer Assembly A2A6, Maintenance Schematic Diagram


18
17
16
P/O P3
NOT USED
A1
P/O P2
500 kHz IF FROM A2XA6P2-A2 (FIG 5-28, SH2, ZONE 15G)
A2
1 kHz
10 kHz
100 kHz
CONTROL KNOBS
S3
100 kHz SW
CCW
DECK
P/O P1
10 MHz AND 1 MHz DIGIT SELECT CODE FROM A2XA6P1-1 THRU A2XA6P1-5 (FIG 5-28, SH 2, ZONE 8C)
10 MHz / 1 MHz DIGIT CODE TO XA13P1-2,3,4,8,8 (ZONE 11B)
100 Hz DIGIT SELECT CODE FROM A2XA6P1-11, 17, 13, 15 (FIG 5-28, SH 2, ZONES 11B, 12B)
100 Hz DIGIT CODE TO XA18P1-8,9,10,11 (ZONE 10E)
E3
+20 V (LO-BAND) OR GND (HI-BAND) FROM A2XA6P1-20 (FIG 5-28, SH 2, ZONE 8E)
+20 V/GND TO XA17P1-7 (ZONE 5B) AND A8J4 (ZONE 3D)
R1
100, 1/8W
1 MHz REF FROM A2XA6P1-A2 (FIG 5-28, SH 2, ZONE 15E)
R2
10, 1/8W
500 kHz REF FROM A2XA6P1-A3 (FIG 5-28, SH 2, ZONE 15D)
10 MHz REF FROM A2XA6P1-A1 (FIG 5-28, SH 2, ZONE 15F)
GND FROM A2XA6P1-14 (FIG 5-28, SH 2, ZONE 11B)
1 KHZ REF FROM A2XA6P1-19 (FIG 5-28, SH 2, ZONE 11B)
A7
FILTER
+20V
P/O E4
E6
FL1
E12
R3
R4
C1
390
30V
C2
390
30V
P/O E16
E14
E15
+20 V FROM A2XA6P1-10 (FIG 5-28, SH 2, ZONE 8F)
F
E
D
C
B
A

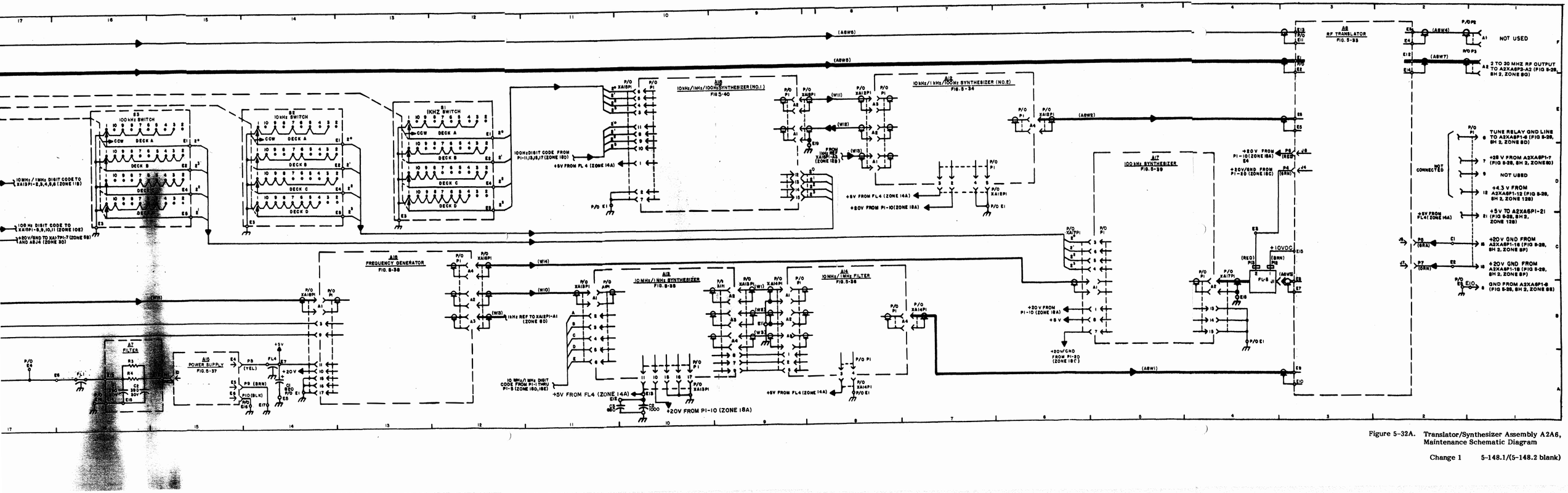
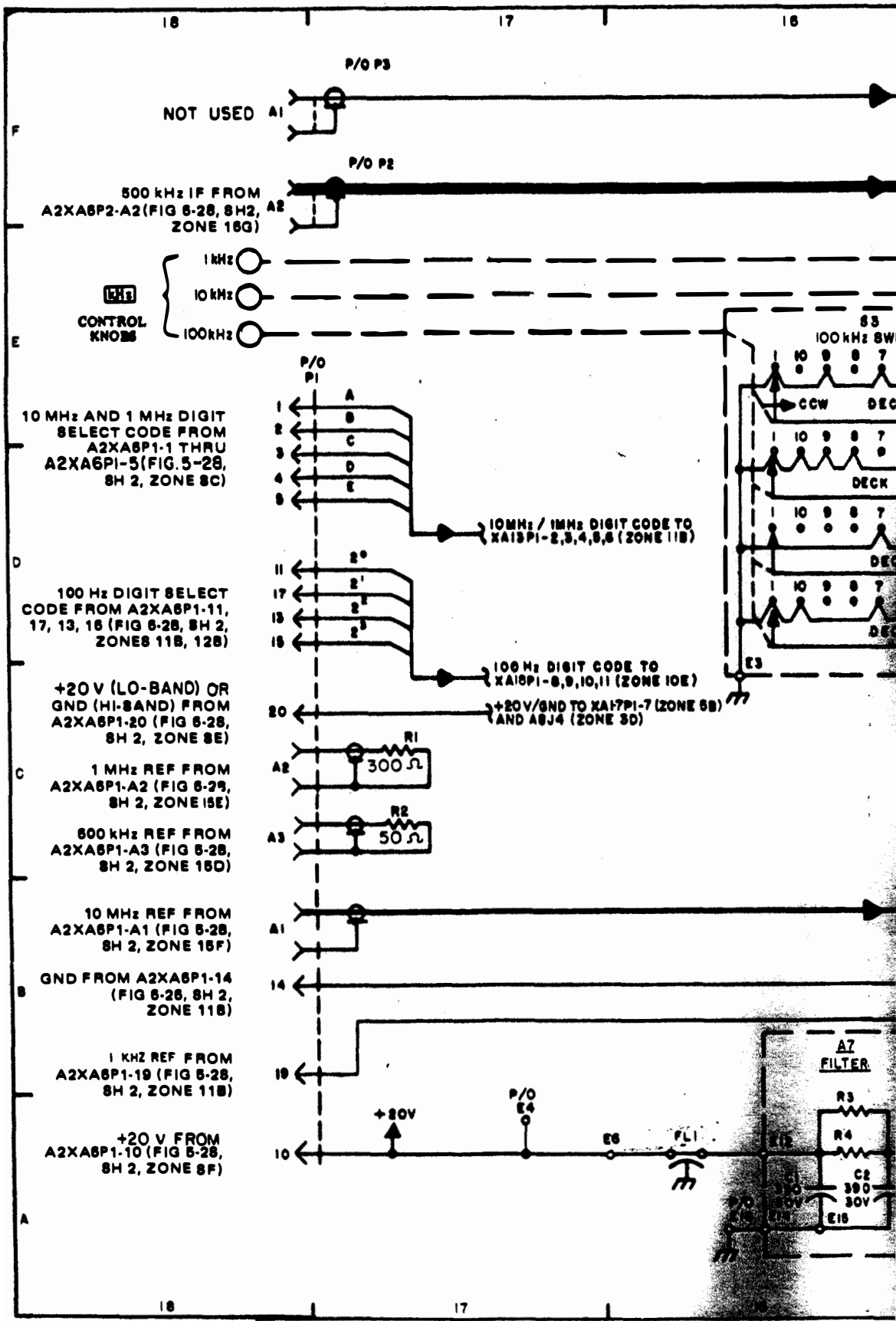


Figure 5-32A. Translator/Synthesizer Assembly A2A6, Maintenance Schematic Diagram


18
17
16
P/O P3
NOT USED
A1
P/O P2
500 kHz IF FROM A2XA6P2-A2 (FIG 6-28, SH2, ZONE 16G)
A2
1 kHz
10 kHz
100 kHz
CONTROL KNOBS
S3
100 kHz SW
CCW
DECK
P/O P1
10 MHz AND 1 MHz DIGIT SELECT CODE FROM A2XA6P1-1 THRU A2XA6P1-5 (FIG. 5-28, SH 2, ZONE 8C)
10 MHz / 1MHz DIGIT CODE TO XA13P1-2,3,4,5,6 (ZONE 11B)
100 Hz DIGIT SELECT CODE FROM A2XA6P1-11, 17, 13, 15 (FIG 6-28, SH 2, ZONES 11B, 12B)
100 Hz DIGIT CODE TO XA16P1-8,9,10,11 (ZONE 10E)
E3
+20 V (LO-BAND) OR GND (HI-BAND) FROM A2XA6P1-20 (FIG 6-28, SH 2, ZONE 8E)
+20V/GND TO XA17P1-7 (ZONE 5B) AND A6J4 (ZONE 3D)
R1
300 Ω
1 MHz REF FROM A2XA6P1-A2 (FIG 6-28, SH 2, ZONE 15E)
R2
50 Ω
500 kHz REF FROM A2XA6P1-A3 (FIG 6-28, SH 2, ZONE 15D)
10 MHz REF FROM A2XA6P1-A1 (FIG 6-28, SH 2, ZONE 15F)
GND FROM A2XA6P1-14 (FIG 6-28, SH 2, ZONE 11B)
1 KHZ REF FROM A2XA6P1-19 (FIG 6-28, SH 2, ZONE 11B)
+20 V FROM A2XA6P1-10 (FIG 6-28, SH 2, ZONE 8F)
+20V
P/O E4
E6
FL1
A7 FILTER
R3
R4
C1
C2
E18
18
17

NOTES FOR FIGURE 5-33

GENERAL NOTES

A. THE RF TRANSLATOR IS COMMON TO BOTH T-827H/URT AND R-1051G/URR. THE SIGNAL PATH AND FIGURE REFERENCES APPLY TO T-827H/URT ONLY.

B. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A8.

C. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.
ALL INDUCTORS ARE IN MICROHENRIES.
RESISTANCE OF INDUCTORS AND TRANSFORMER WINDINGS IS LESS THAN ONE OHM.

D. CW ON POTENTIOMETER INDICATES DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.

E. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSMITTER POINTS USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

F. CHASSIS GROUND IS ACCOMPLISHED VIA MOUNTING SCREWS AND CABLE SHIELDS.

G. —≀ ≀— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

H. ——▶—— INDICATES SIGNAL FLOW.

I. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

J. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

K. * IN MAINTENANCE SCHEMATIC INDICATES A COMPONENT OF SELECTED VALUE (PREFERRED VALUE SHOWN). REFER TO CHAPTER 7 PARTS LIST FOR PART NUMBERS AND RANGE OF VALUES.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A8C1	19A	A2A6A8C16	21C	A2A6A8C31	14C
C2	17D	C17	20C	C32	14C
C3	17C	C18	19D	C33	12C
C4	23E	C19	22D	C34	14C
C5	21A	C20	20D	C35	15C
C6	20C	C21	20E	C36	15A
C7	22C	C22	13E	C37	15B
C8	21C	C23	23A	C38	12D
C9	18D	C24	18D	C39	10C
C10	18D	C25	15D	C40	10C
C11	19C	C26	16C	C41	10D
C12	18D	C27	12D	C42	11E
C13	19D	C28	23A	C43	11E
C14	23D	C29	13C	C44	9C
C15	21C	C30	14C	C45	9D

* NOT USED

NOTES FOR FIGURE 5-33 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A8C46	8D
C47	9A
C48	8D
C49	7B
C50	4D
C51	7C
C52	7B
C53	4B
C54	5B
C55	5B
C56	2C
C57	3C
C58	3C
C59	3C
C60	5B
C61	4B
C62	5B
C63	22B
C64	6B
C65	9A
C66	23D
CR1	20A
CR2	22D
CR3	19D
CR4	22D
CR5	19D
CR6	13D
CR7	15D
CR8	12D
CR9	15C
CR10	11D
CR11	11C
CR12	9D
CR13	9C
CR14	3D
CR15	4C
CR16	6C
CR17	4C
CR18	6C
CR19	23B
CR20	22B
**E1	24D
**E2	24D
**E3	2F

REF DES	ZONE
**A2A6A8E4	2F
**E5	24F
**E6	24F
**E7	24C
**E8	24C
**E9	24B
**E10	24B
**E11	24B
**E12	2C
**E13	24B
**E14	2C
**E15	19A,2E
FL1	10D
FL2	10C
FL3	18D
J1	*
J2	*
J3	*
J4	24F
J5,J7	24E
J6	24A
L1	23E
L2	18D
L3	18A
L4	23A
L5	23E
L6	11D
L7	12E
L8	11D
L9	11C
L10	10D
L11	9C
L12	23F
L13	9D
L14	3C
L15	23D
Q1	17D
R1	16D
R2	22A
R3	20B
R4	20C
R5	17C
R6	17E
R7	17C
R8	17D

REF DES	ZONE
A2A6A8R9	17D
R10	21C
R11	20C
R12	19C
R13	18D
R14	22D
R15	23D
R16	19E
R17	22D
R18	23E
R19	19E
R20	20E
R21	12E
R22	16D
R23	12D
R24	15D
R25	12D
R26	15B
R27	13C
R28	13D
R29	15D
R30	13C
R31	13B
R32	15C
R33	14A
R34	11E
R35	11E
R36	9D
R37	8D
R38	8D
R39	7D
R40	4B
R41	7C
R42	7D
R43	7C
R44	2D
R45	3D
R46	6C
R47	4C
R48	6C
R49	3B
R50	4A
R51	23B
R52	22B

* NOT USED ** WIRING TERMINATION - FOR REFERENCE ONLY.

NOTES FOR FIGURE 5-33.(CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A8R53	4B	A2A6A8R66	14C	A2A6A8T6	4C
R54	5B	R67	5C	T7	5C
R55	5A	R68	5B	TP1 thru TP4	*
R56	20B	R69	5B	TP5	23B
R57	13A	R70	5B	TP6	2C
R58	4A	RT1	21B	TP7	24D
R59	21D	RT2	14A	TP8	3F
R60	21C	RT3	5A	U1	21D
R61	21C	T1	16D	U2	14D
R62	21C	T2	21D	U3	5C
R63	14D	T3	20D	* NOT USED	
R64	14D	T4	13D		
R65	14C	T5	14D		

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	8.10 V	8.73 V	17.96

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS	1	2	3	4	5	6	7	8	9	10	11	12
U1	10.0	6.0	5.32	0	0	0	0	0	0	10.0	14.1	14.1
U2	10.0	6.0	5.32	0	0	0	0	0	0	10.0	14.1	14.1
U3	10.0	6.0	5.32	0	0	0	0	0	0	10.0	14.1	14.1

SPECIFIC NOTES

1. RESISTANCE OF THERMISTORS RT1 THRU RT3 IS 180 TO 220 OHMS AT REFERENCE TEMPERATURE OF 25 DEGREES C.
2. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS: L1, L4, L5, L12 = 1.75 OHMS; L3, L6, L7, L10 = 2.1 OHMS; L9, L11 = 1.1 OHMS; L15 = 3.3 OHMS.
3. MAXIMUM RESISTANCE OF TRANSFORMER WINDINGS FOLLOWS: T1 = 3.2 OHMS (PRIMARY) AND 1.4 OHMS (SECONDARY); T2, T3 = 1.3 OHMS (SECONDARY).
4. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz IN LSB MODE, UNKEYED.
5. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTING OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

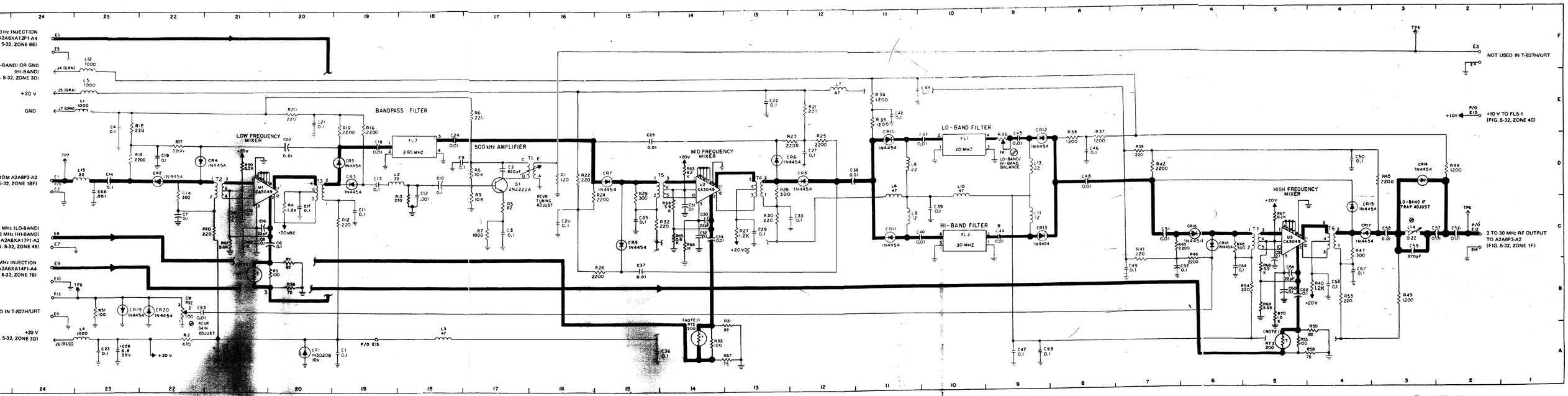
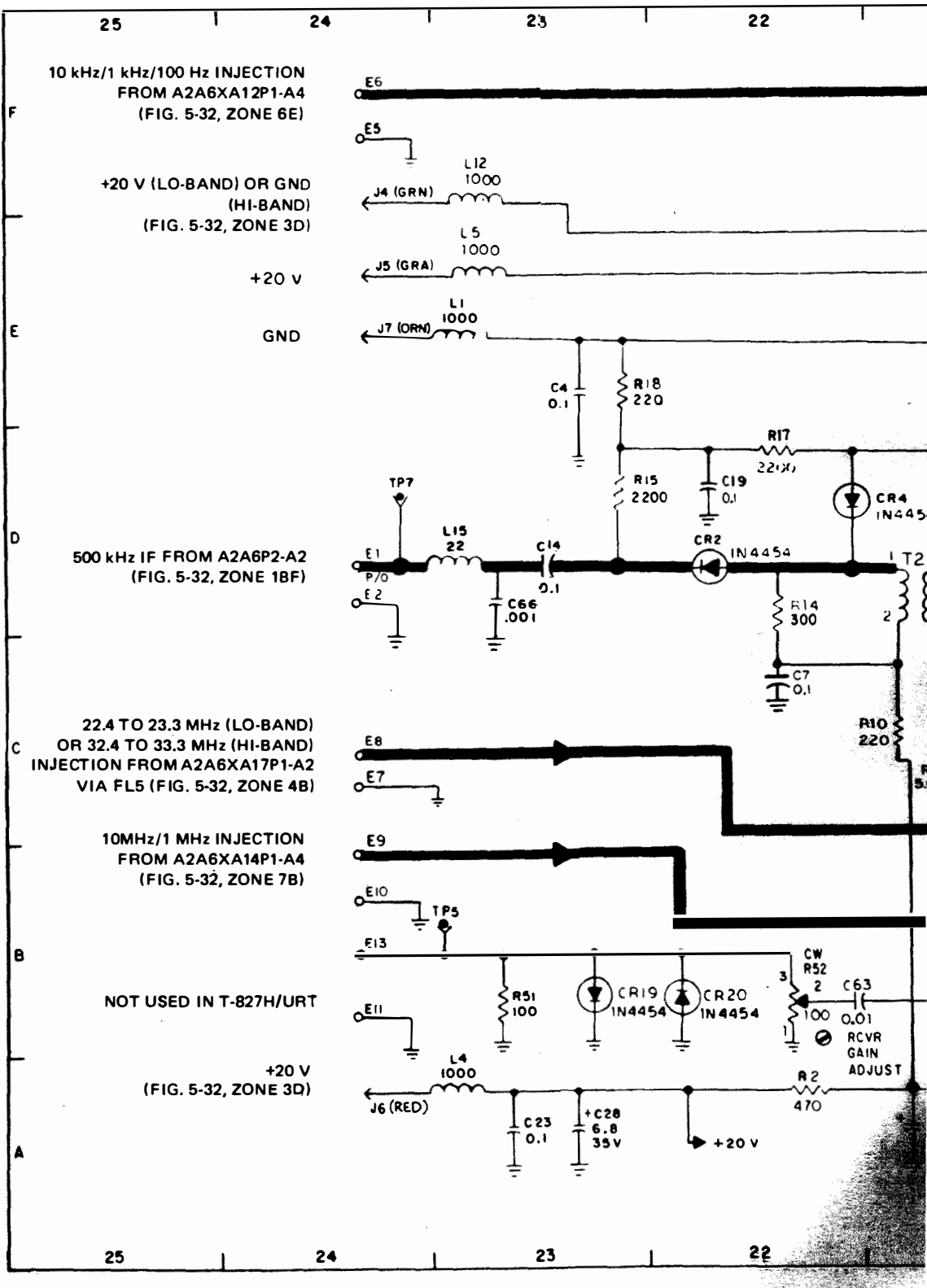


Figure 5-33. RF Translator Subassembly A2A6A8, Maintenance Schematic Diagram


25
24
23
22
10 kHz/1 kHz/100 Hz INJECTION FROM A2A6XA12P1-A4 (FIG. 5-32, ZONE 6E)
+20 V (LO-BAND) OR GND (HI-BAND) (FIG. 5-32, ZONE 3D)
+20 V
GND
500 kHz IF FROM A2A6P2-A2 (FIG. 5-32, ZONE 18F)
22.4 TO 23.3 MHz (LO-BAND) OR 32.4 TO 33.3 MHz (HI-BAND) INJECTION FROM A2A6XA17P1-A2 VIA FL5 (FIG. 5-32, ZONE 4B)
10MHz/1 MHz INJECTION FROM A2A6XA14P1-A4 (FIG. 5-32, ZONE 7B)
NOT USED IN T-827H/URT
+20 V (FIG. 5-32, ZONE 3D)
E6
E5
L12 1000
J4 (GRN)
L5 1000
J5 (GRA)
L1 1000
J7 (ORN)
C4 0.1
R18 220
R17 22(X)
R15 2200
C19 0.1
CR4 IN445
TP7
L15 22
C14 0.1
E1 P/O
E2
C66 .001
CR2 IN4454
T2
R14 300
C7 0.1
R10 220
E8
E7
E9
E10
TP5
E13
E11
R51 100
CR19 IN4454
CR20 IN4454
CW R52 2
C63 0.01
RCVR GAIN ADJUST
L4 1000
J6 (RED)
C23 0.1
+C28 6.8 35V
R2 470
+20 V
A
B
C
D
E
F

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIOI PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS, pF = PICOFARADS.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.
ALL INDUCTANCE IS IN MICROHENRIES.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. UNLESS OTHERWISE SPECIFIED, READINGS LISTED IN TABLES ARE ACCURATE TC WITHIN ±10%.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	0	.83	.16
Q2	8.2	8.4	4.50 ±2.50
Q3	3.8	1.6	4.50 ±2.50

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	2.02	3.87	3.71	NC	NC	NC	0	NC	NC	NC	NC	NC	3.53	5.00	NC	NC
U2	1.47	1.33	1.33	1.90	1.90	1.56	0	NC	NC	NC	NC	2.31	1.44	5.00	NC	NC
U3	NC	1.44	NC	NC	1.80	1.80	0	1.56	NC	NC	NC	NC	NC	5.00	NC	NC

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.0011 MHz IN LSB MODE, UNKEYED.

2. UNDERLINED VOLTAGE VALUES MAY FLUCTUATE WHILE READING DUE TO SIGNAL PRESENT.

3. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

SPECIFIC NOTES (CONTINUED)

4. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L7	1.0 OHM
L9	1.0 OHM

5. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

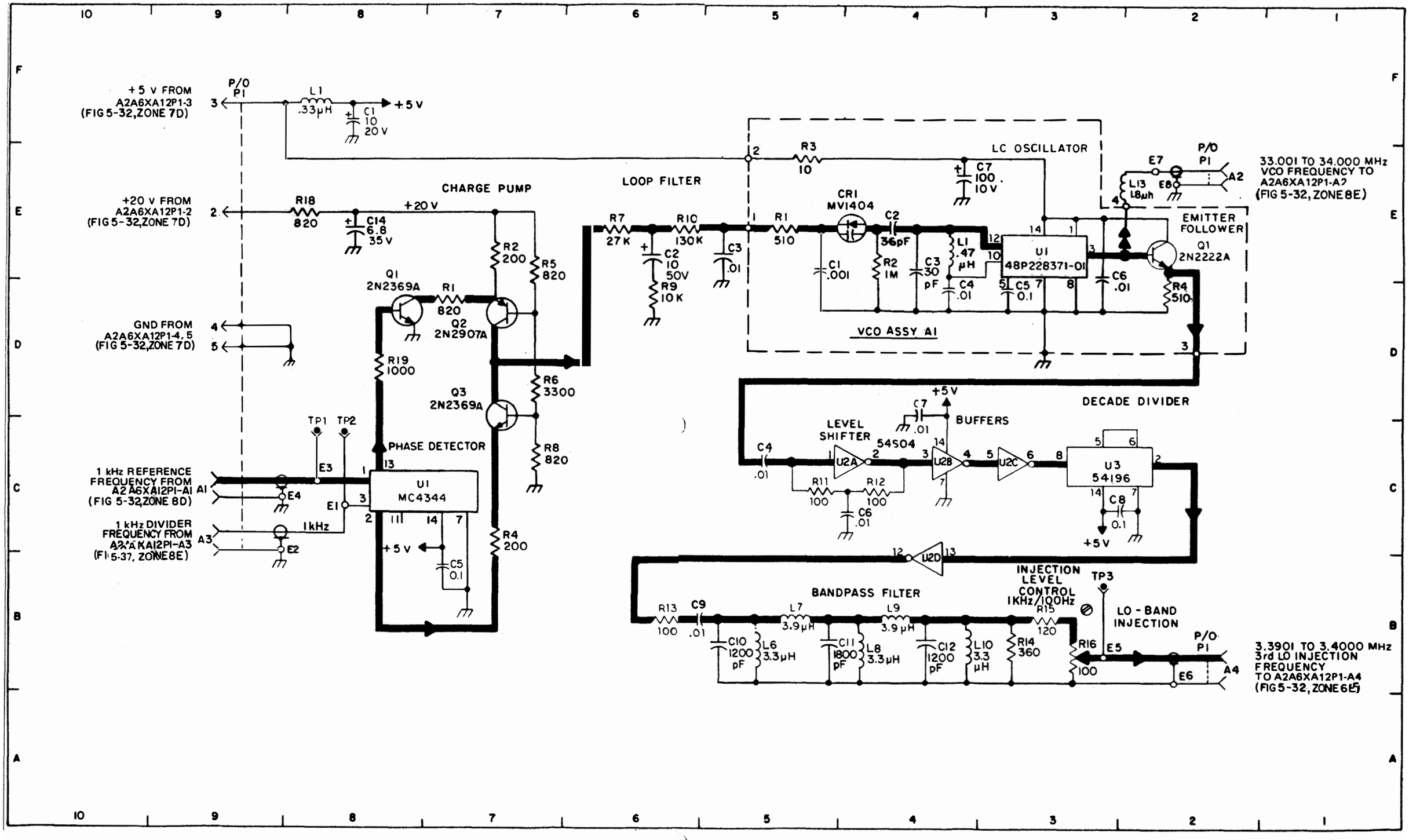


Figure 5-34. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Maintenance Schematic Diagram

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS, pF = PICOFARADS.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.
ALL INDUCTANCE IS IN MICROHENRIES.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. UNLESS OTHERWISE SPECIFIED, READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	0	.83	.16
Q2	8.2	8.4	4.50 ±2.50
Q3	3.8	1.6	4.50 ±2.50

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	2.02	3.87	3.71	NC	NC	NC	0	NC	NC	NC	NC	NC	3.53	5.00	NC	NC
U2	1.47	1.33	1.33	1.90	1.90	1.56	0	NC	NC	NC	NC	2.31	1.44	5.00	NC	NC
U3	NC	1.44	NC	NC	1.80	1.80	0	1.56	NC	NC	NC	NC	NC	5.00	NC	NC

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.0011 MHz IN LSB MODE, UNKEYED.

2. UNDERLINED VOLTAGE VALUES MAY FLUCTUATE WHILE READING DUE TO SIGNAL PRESENT.

3. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

SPECIFIC NOTES (CONTINUED)

4. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L7	1.0 OHM
L9	1.0 OHM

5. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

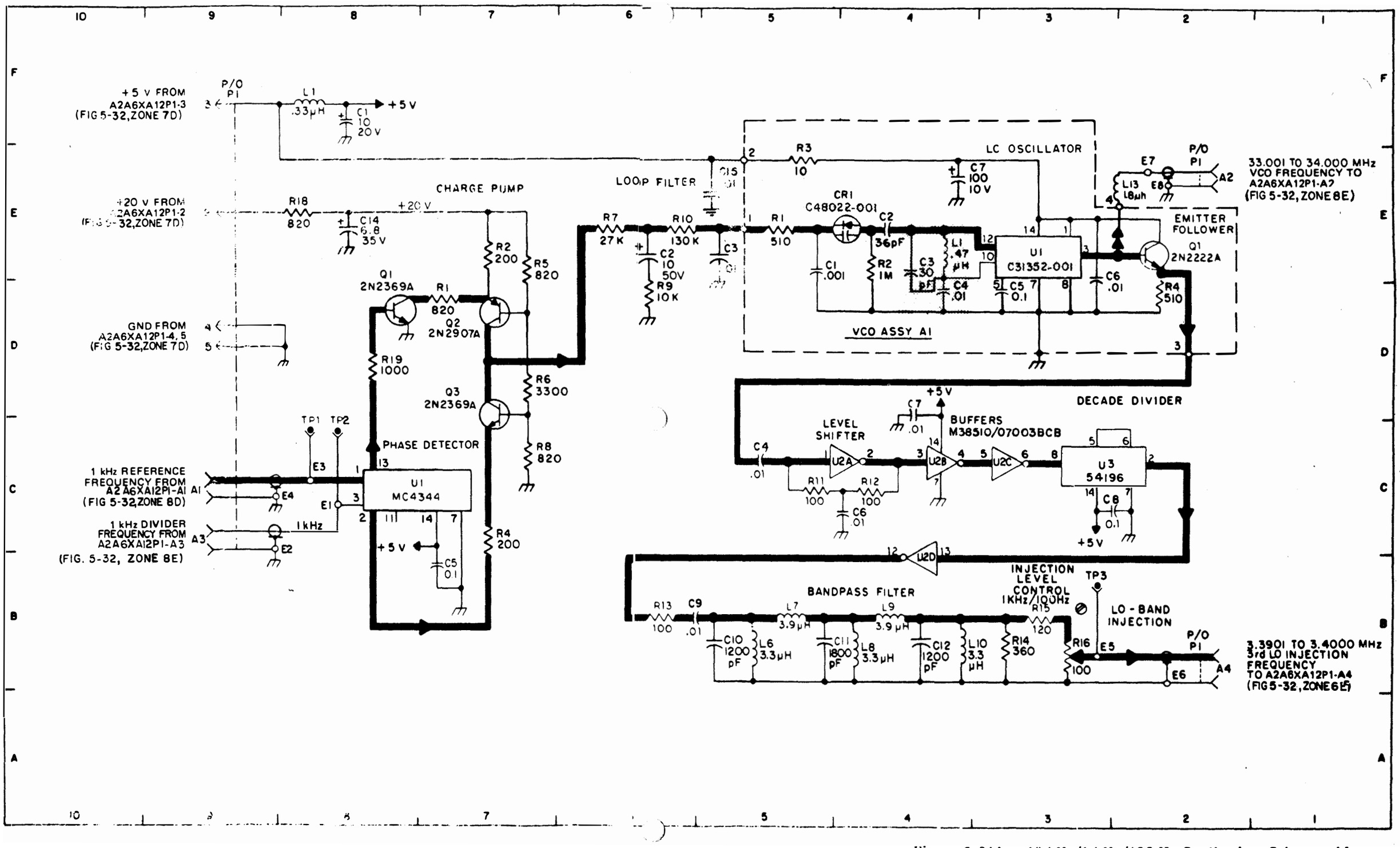


Figure 5-34A. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-35

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A13.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/8 WATT.
ALL CAPACITORS ARE IN MICROFARADS.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.
ALL INDUCTORS ARE IN MICROHENRIES.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. —⟆ ⟅— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

G. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

H. UNLESS OTHERWISE SPECIFIED, READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A13C1	11E	A2A6A13C19	5E	** A2A6A13E6	10E
C2	9E	C20	5D	** E7	3B
C3	9E	C21	4D	** E8	3B
C4	9E	C22	3D	** E9	3B
C5	*	C23	6C	** E10	3A
C6	9D	C24	5B	** E11	10F
C7	12C	CR1	10D	** E12	10E
C8	11D	CR2	9D	L1	*
C9	10D	CR3	13D	L2	13D
C10	*	CR4	7E	L3	*
C11	13D	CR5	10B	L4	*
C12	*	CR6	10B	L5	7E
C13	6F	CR7	9B	L6	13C
C14	7D	** E1	3C	L7	13B
C15	7E	** E2	3C	L8	13B
C16	7D	** E3	11F	L9	13B
C17	6D	** E4	13F	L10	13B
C18	6E	** E5	11F	Q1	6E

* NOT USED.
** WIRING TERMINATION - FOR REFERENCE ONLY.

NOTES FOR FIGURE 5-35 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A13Q2	9B	A2A6A13R27	10B	A2A6A13A1CR5	14B
R1	13C	R28	9B	FL1	14C
R2	13B	R29	9C	FL2	14B
R3	13B	R30	9B	FL3	14B
R4	13B	R31	5E	FL4	14B
R5	13B	R32	9E	FL5	14B
R6	9E	R33	6F	P1-A1	14F
R7	9E	R34	13E	P1-A2	2C
R8	9E	TP1	11E	P1-A3	2B
R9	8E	TP2	10F	P1-A4	2B
R10	9D	TP3	12E	P1-1	*
R11	9D	U1	10E	P1-2	14C
R12	11C	U2	9E	P1-3	14B
R13	11C	U3	6E	P1-4	14B
R14	11C	U4	3C, 4D,	P1-5	14B
R15	11B		5C, 5D	P1-6	14B
R16	11C	U5	4D	P1-7	2A
R17	11C	U6	3B, 5B	P1-8	2A
R18	11C	U7	6C, 7B	P1-9	2A
R19	8E	U8	12E	P1-10	14E
R20	7D	U9	12C	P1-11	14D
R21	5D	U10	11C	P1-12	*
R22	5D	U11	12B	P1-13	*
R23	3C	A2A6A13A1CR1	14C	P1-14	*
R24	3B	CR2	14B	P1-15	14E
R25	3B	CR3	14B	P1-16	14E
R26	10B	CR4	14B	P1-17	14E

* NOT USED.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	3.00	3.61	4.80
Q2	0	0.74	0.03

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U1	1.88	3.74	3.54	3.76	1.31	NC	0	NC	NC	1.31	3.73	NC	3.76	5.0(
U2	NC	1.31	1.32	0	NC	5.00*	13.0	NC	-	-	-	-	-	-
U3	4.80	NC	3.62	NC	1.43	NC	0	0	NC	1.64	NC	1.63	NC	4.8
U4	2.52	1.51	0	1.51	0	1.47	0	1.69	5.00	0.13	1.69	5.00	0.18	5.0(
U5	NC	1.73	NC	NC	1.51	1.51	0	2.52	1.56	NC	NC	NC	NC	5.0(
U6	2.04	1.51	0.003	0.15	1.56	5.00	0	1.56	5.00	0.13	1.51	0.003	1.56	5.0(
U7	NC	NC	NC	0.098	4.0	4.0	0	2.04	0.098	1.28	0.18	0.15	4.0	5.0(
U8	1.28	NC	NC	NC	NC	NC	NC	0	3.54	1.46	1.78	1.63	0.70	1.4(
U9	0.70	0.22	3.54	NC	5.00	1.28	1.78	0	1.48	NC	0.22	0	NC	5.00
U10	NC	0	3.54	NC	5.00	0.70	NC	0	NC	NC	5.01	1.46	1.46	0.19
U11	5.00	5.00	0.22	5.00	0.22	5.00	5.00	0	0.19	0.54	0.54	0.54	5.0	0.54

* TOLERANCE ±2.5 VDC.

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz IN LSB MODE, T-827H/URT UNKEYED.

2. DIODES A1CR1 THROUGH A1CR5 ARE TYPE 1N3611. THE VALUE OF FILTERS A1FL1 THROUGH A1FL5 IS ONE MICROFARAD ±20%.

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS												
3	4	5	6	7	8	9	10	11	12	13	14	15	16
3.54	3.76	1.31	NC	0	NC	NC	1.31	3.73	NC	3.76	5.00	-	-
1.32	0	NC	5.00*	13.0	NC	-	-	-	-	-	-	-	-
3.62	NC	1.43	NC	0	0	NC	1.64	NC	1.63	NC	4.8	-	-
0	1.51	0	1.47	0	1.69	5.00	0.13	1.69	5.00	0.18	5.00	-	-
NC	NC	1.51	1.51	0	2.52	1.56	NC	NC	NC	NC	5.00	-	-
0.003	0.15	1.56	5.00	0	1.56	5.00	0.13	1.51	0.003	1.56	5.00	-	-
NC	0.098	4.0	4.0	0	2.04	0.098	1.28	0.18	0.15	4.0	5.00	-	-
NC	NC	NC	NC	NC	0	3.54	1.46	1.78	1.63	0.70	1.48	NC	5.00
3.54	NC	5.00	1.28	1.78	0	1.48	NC	0.22	0	NC	5.00	1.63	5.00
3.54	NC	5.00	0.70	NC	0	NC	NC	5.01	1.46	1.46	0.19	NC	5.00
0.22	5.00	0.22	5.00	5.00	0	0.19	0.54	0.54	0.54	5.0	0.54	0	5.00

5 VDC.

SPECIFIC NOTES

TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz IN LSB MODE, T-827H/ UNKEYED.

DIODES A1CR1 THROUGH A1CR5 ARE TYPE 1N3611. THE VALUE OF FILTERS A1FL1 THROUGH A1FL5 IS ONE MICROFARAD ±20%.

THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

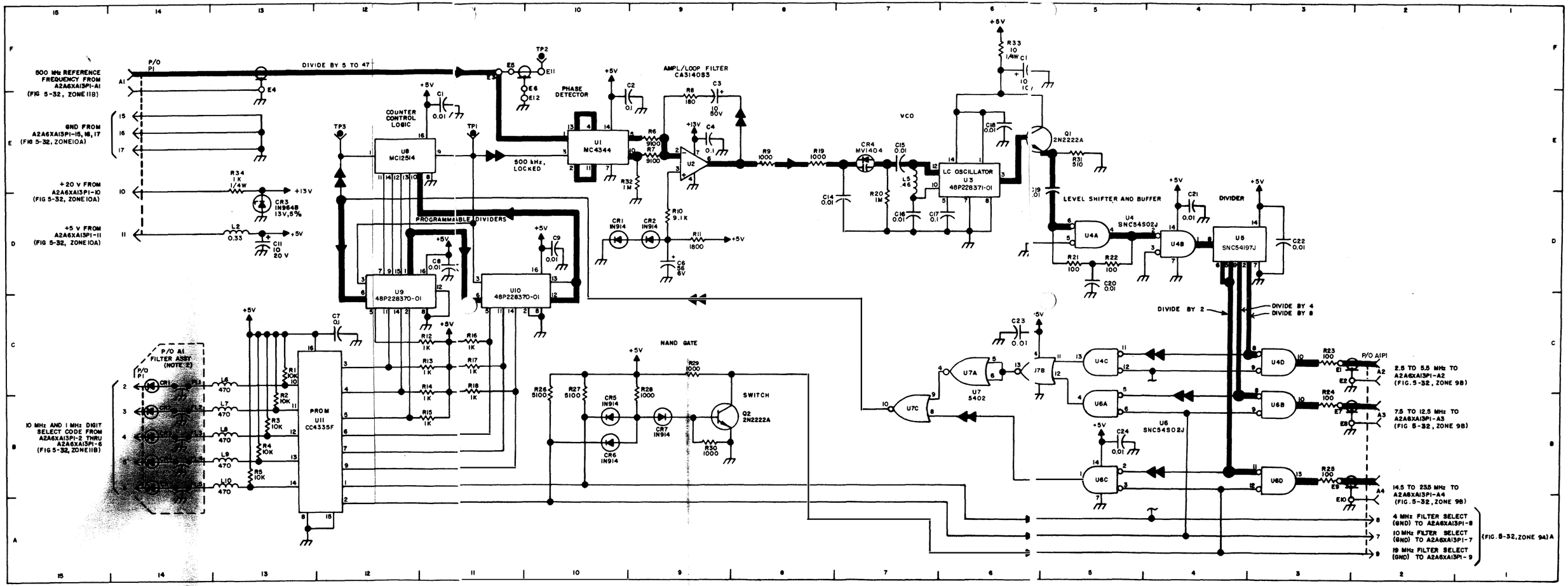


Figure 5-35. 10 MHz/1 MHz Synthesizer Subassembly A2A6A13, Maintenance Schematic Diagram

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U1	1.88	3.74	3.54	3.76	1.31	NC	0	NC	NC	1.31	3.73	NC	3.76	5.00
U2	NC	1.31	1.32	0	NC	5.00*	13.0	NC	-	-	-	-	-	-
U3	4.80	NC	3.62	NC	1.43	NC	0	0	NC	1.64	NC	1.63	NC	4.8
U4	2.52	1.51	0	1.51	0	1.47	0	1.69	5.00	0.13	1.69	5.00	0.18	5.00
U5	NC	1.73	NC	NC	1.51	1.51	0	2.52	1.56	NC	NC	NC	NC	5.00
U6	2.04	1.51	0.003	0.15	1.56	5.00	0	1.56	5.00	0.13	1.51	0.003	1.56	5.00
U7	NC	NC	NC	0.098	4.0	4.0	0	2.04	0.098	1.28	0.18	0.15	4.0	5.00
U8	1.28	NC	NC	NC	NC	NC	NC	0	3.54	1.46	1.78	1.63	0.70	1.48
U9	0.70	0.22	3.54	NC	5.00	1.28	1.78	0	1.48	NC	0.22	0	NC	5.00
U10	NC	0	3.54	NC	5.00	0.70	NC	0	NC	NC	5.01	1.46	1.46	0.19
U11	5.00	5.00	0.22	5.00	0.22	5.00	5.00	0	0.19	0.54	0.54	0.54	5.0	0.54

* TOLERANCE ±2.5 VDC.

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz IN LSB MODE, T-827H/URT UNKEYED.

2. DIODES A1CR1 THROUGH A1CR5 ARE TYPE 1N3611. THE VALUE OF FILTERS A1FL1 THROUGH A1FL5 IS ONE MICROFARAD ±20%.

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

4	5	6	7	8	9	10	11	12	13	14	15	16
3.76	1.31	NC	0	NC	NC	1.31	3.73	NC	3.76	5.00	-	-
0	NC	5.00*	13.0	NC	-	-	-	-	-	-	-	-
NC	1.43	NC	0	0	NC	1.64	NC	1.63	NC	4.8	-	-
1.51	0	1.47	0	1.69	5.00	0.13	1.69	5.00	0.18	5.00	-	-
NC	1.51	1.51	0	2.52	1.56	NC	NC	NC	NC	5.00	-	-
0.15	1.56	5.00	0	1.56	5.00	0.13	1.51	0.003	1.56	5.00	-	-
0.098	4.0	4.0	0	2.04	0.098	1.28	0.18	0.15	4.0	5.00	-	-
NC	NC	NC	NC	0	3.54	1.46	1.78	1.63	0.70	1.48	NC	5.00
NC	5.00	1.28	1.78	0	1.48	NC	0.22	0	NC	5.00	1.63	5.00
NC	5.00	0.70	NC	0	NC	NC	5.01	1.46	1.46	0.19	NC	5.00
5.00	0.22	5.00	5.00	0	0.19	0.54	0.54	0.54	5.0	0.54	0	5.00

SPECIFIC NOTES

STOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO
TH EQUIPMENT CONTROLS SET FOR 2.5 MHz IN LSB MODE, T-827H/
ED.

A1CR1 THROUGH A1CR5 ARE TYPE 1N3611. THE VALUE OF FILTERS
THROUGH A1FL5 IS ONE MICROFARAD ±20%.

FORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW
LESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN
ITING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE
E UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER
IXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL
SPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE
/URT.

'OLTAGE CHART DENOTES PIN NOT CONNECTED.

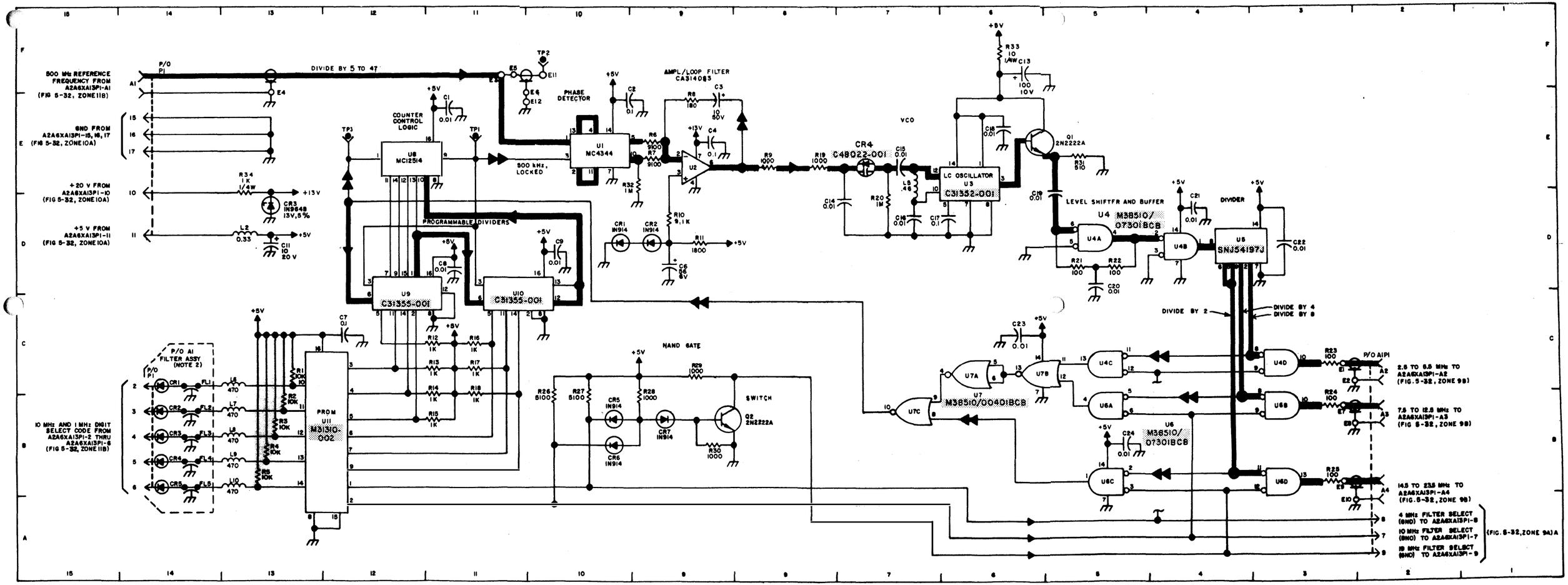


Figure 5-35A. 10 MHz/1 MHz Synthesizer Subassembly A2A6A13, Maintenance Schematic Diagram

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A14.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/8 WATT.
ALL CAPACITORS ARE IN MICROFARADS.
ALL INDUCTORS ARE IN MICROHENRIES.
RESISTANCE OF INDUCTORS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

F. READINGS LISTED IN TABLE ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A14C1	7E	A2A6A14E1	9E	A2A6A14L14	5B
C2	6E	E2	9C	L15	5B
C3	5E	E3	2C	L16	4B
C4	6D	E4	8B	L17	4B
C5	5E	E5	8E	L18	4B
C6	4E	E6	8F	L19	8E
C7	4E	E7	8B	P1A1	9E
C8	3F	E8	8B	P1A2	9C
C9	5F	E9	9C	P1A3	9B
C10	7C	E10	2C	P1A4	2C
C11	6D	E11	8F	P1-1	9E
C12	5C	E12	9B	P1-2	9D
C13	6C	E13	8E	P1-3	9E
C14	5C	E14	8B	P1-4	9D
C15	4C	E15	9E	P1-5	9B
C16	4D	E16	8B	Q1	7F
C17	3D	L1	6E	Q2	6E
C18	5D	L2	5E	Q3	3E
C19	7B	L3	5E	Q4	7D
C20	6B	L4	4E	Q5	6C
C21	5B	L5	4E	Q6	3D
C22	6A	L6	4F	Q7	7B
C23	5B	L7	6D	Q8	6B
C24	4B	L8	5D	Q9	3B
C25	4B	L9	5C	R1	8E
C26	3B	L10	4D	R2	8F
C27	5B	L11	4C	R3	7E
C28	8D	L12	4D	R4	6E
C29	2C	L13	6B	R5	7E

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A14R6	7E	A2A6A14R17	6C	A2A6A14R28	6A
R7	6E	R18	6C	R29	3B
R8	6E	R19	3D	R30	3B
R9	3E	R20	3C	R31	3C
R10	3E	R21	8B	TP1	9F
R11	8D	R22	8B	TP2	8F
R12	8D	R23	7B	TP3	9D
R13	7D	R24	6B	TP4	8D
R14	6D	R25	7A	TP5	2D
R15	7C	R26	7A	TP6	9C
R16	7C	R27	6A	TP7	8C

TRANSISTOR VOLTAGE CHART

NOTE 3	NOTE 4	NOTE 5	E	B	C
Q4	Q7	Q1	+5.0V	+5.0V	0V
Q5	Q8	Q2	0V	0V	0V
Q6	Q9	Q3	1.8V	0V	0V
Q7	Q1	Q4	+5.0V	+5.0V	0V
Q8	Q2	Q5	0V	0V	0V
Q9	Q3	Q6	1.8V	0V	0V
Q1	Q4	Q7	+5.0V	+4.3V	+5.0V
Q2	Q5	Q8	+1.8V	+2.5V	+5.0V
Q3	Q6	Q9	+1.8V	+2.5V	+5.0V

SPECIFIC NOTES

1. TRANSISTOR VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET IN LSB MODE.
2. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L1, L3, L5	3.3 OHMS
L2, L4, L6, L12, L18	2.7 OHMS
L19	1.2 OHMS

3. FOR T-827H/URT MHZ FREQUENCY CONTROL SETTINGS OF 14, 15, 16, 22, 23, 24, 25 AND 26 MHZ USE TRANSISTOR REFERENCE DESIGNATIONS LISTED IN COLUMN HEADED "NOTE 3" TO DETERMINE PROPER VOLTAGE READINGS.
4. FOR T-827H/URT MHZ FREQUENCY CONTROL SETTINGS OF 07, 08, 11, 12, 17, 18, 19, 20, 21, 27, 28 AND 29 USE TRANSISTOR REFERENCE DESIGNATIONS LISTED IN COLUMN HEADED "NOTE 4" TO DETERMINE PROPER VOLTAGE READINGS.
5. FOR T-827H/URT MHZ FREQUENCY CONTROL SETTING OF 02, 03, 04, 05, 06, 09, 10 AND 13 USE TRANSISTOR REFERENCE DESIGNATIONS LISTED IN COLUMN HEADED "NOTE 5" TO DETERMINE PROPER VOLTAGE READINGS.
6. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE T-827H/URT.

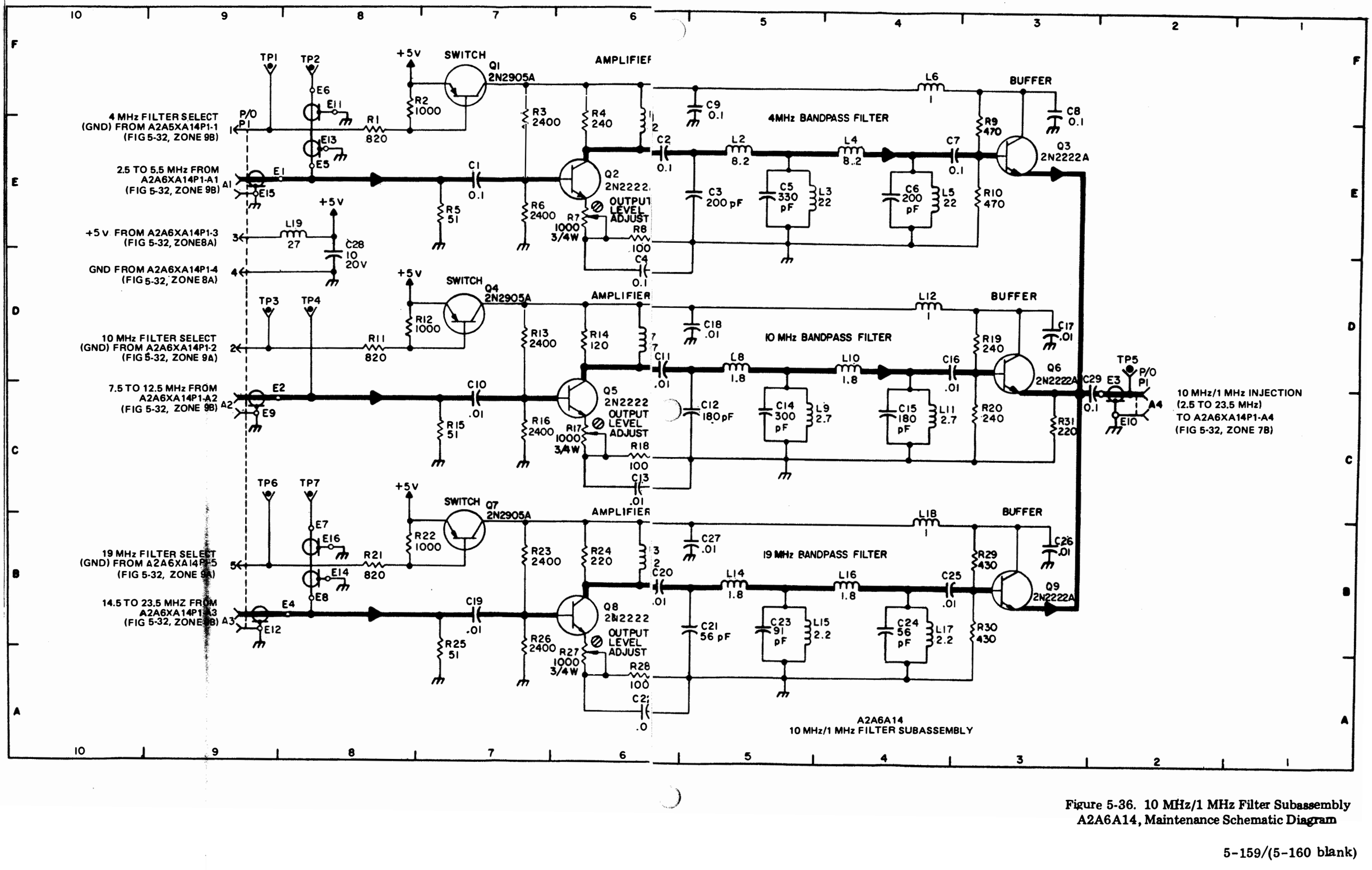


Figure 5-36. 10 MHz/1 MHz Filter Subassembly A2A6A14, Maintenance Schematic Diagram

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH A2A6A15.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.
ALL REFERENCE DIODE VOLTAGES ARE ±5%.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	19.1	18.8	5.65
Q2	19.1	19.0	2.34
Q3	5.39	5.65	19.0

INTEGRATED CIRCUIT DC VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8
U1	0	9.7	9.42	0	NC	NC	9.38	19.1
U2	5.03	18.8	19.1	0	2.19	2.33	NC	5.10

SPECIFIC NOTES

1. ON ASSEMBLIES MARKED 01A228311-01, THE VALUE OF A2A6A15R15 IS SELECTED FROM 300 TO 1800 OHMS FOR A +5.1 TO +5.2 VDC INDICATION AT A2A6A15E4 WITH A 2 AMPERE LOAD. ON ASSEMBLIES MARKED 01A228311-02, THE VALUE OF A2A6A15R15 IS SELECTED FROM 1100 TO 2400 OHMS FOR A +5.1 TO +5.3 VDC INDICATION AT A2A6A15E4 WITH A 2 AMPERE LOAD. REFER TO TABLE 7-2 FOR PART NUMBERS.

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT MODE SELECTOR SWITCH SET AT LSB POSITION.

SPECIFIC NOTES (CONTINUED)

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER VUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

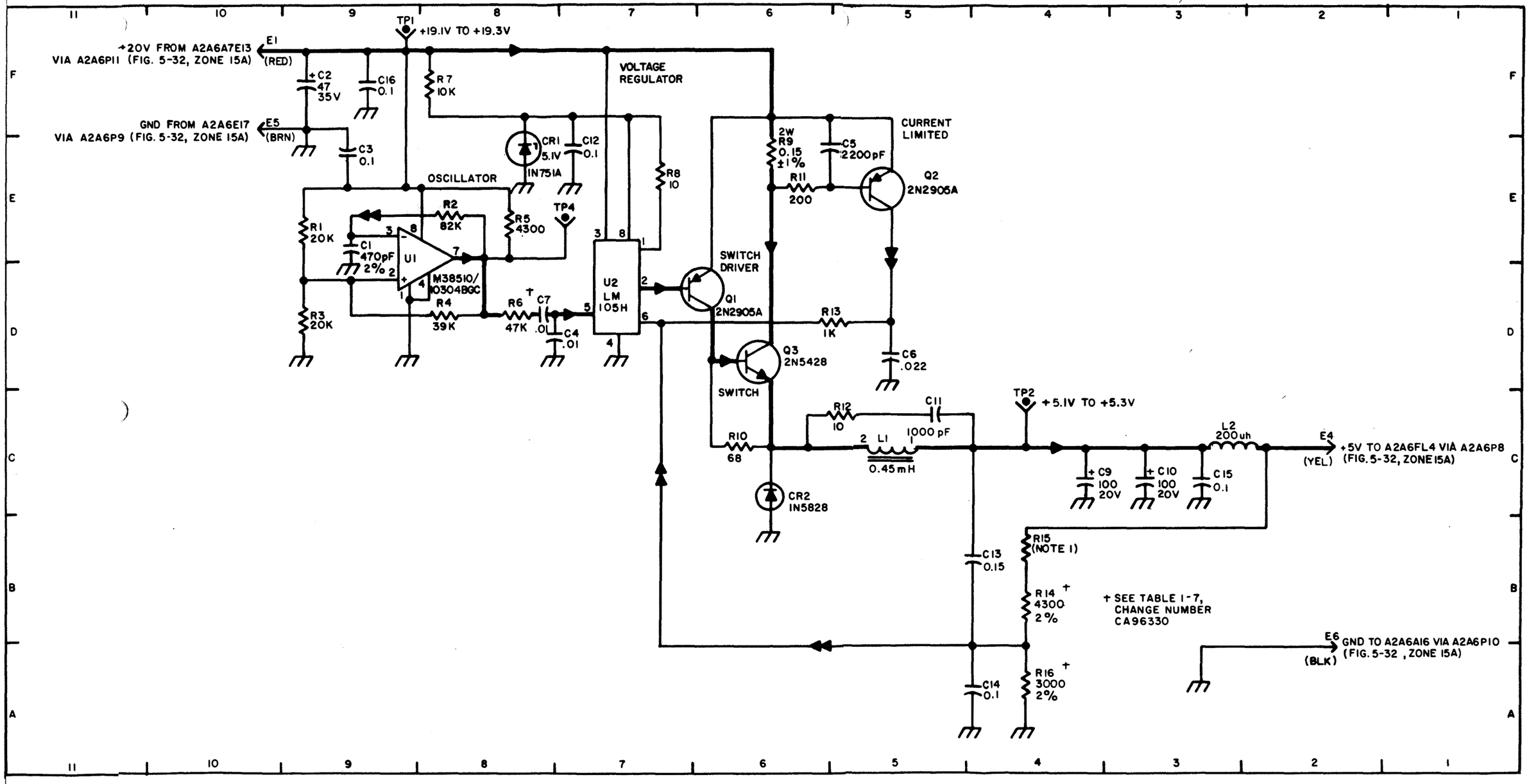


Figure 5-37. Power Supply Subassembly A2A6A15, Maintenance Schematic Diagram

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH A2A6A15.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.
ALL REFERENCE DIODE VOLTAGES ARE ±5%.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	19.1	18.8	5.65
Q2	19.1	19.0	2.34
Q3	5.39	5.65	19.0

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	0	9.7	9.42	0	NC	NC	9.38	19.1
U2	5.03	18.8	19.1	0	2.19	2.33	NC	5.10

SPECIFIC NOTES

1. THE VALUE OF A2A6A15R15 IS SELECTED FROM 300 TO 1800 OHMS FOR A +5.1 TO +5.2 VDC INDICATION AT A2A6A15E4 WITH A 2 AMPERE LOAD.
2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT MODE SELECTOR SWITCH SET AT LSB POSITION.

SPECIFIC NOTES (CONTINUED)

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER VUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

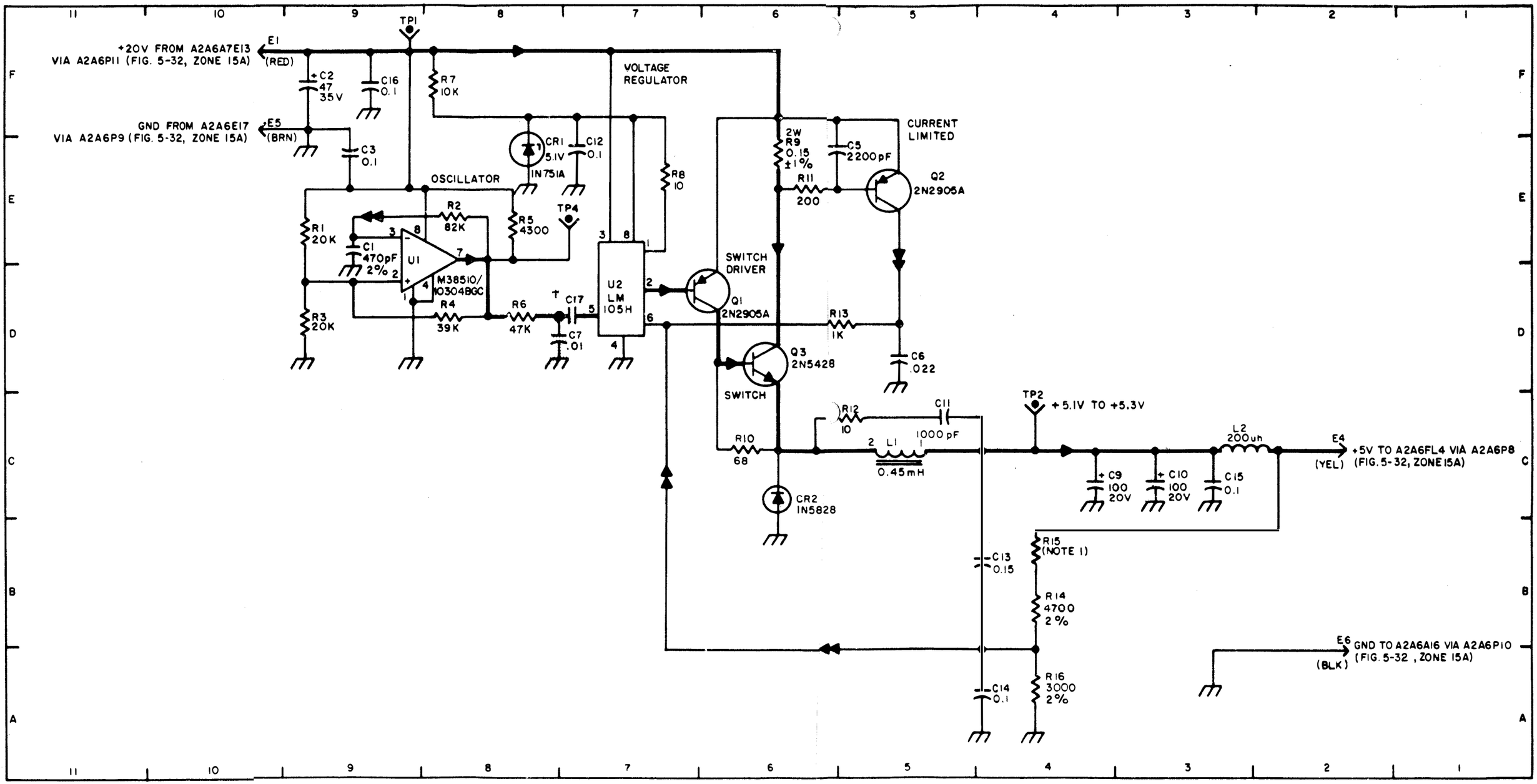


Figure 5-37A. Power Supply Subassembly A2A6A15, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-38

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A16.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/8 WATT.
ALL CAPACITORS ARE IN MICROFARADS pF = PICOFARADS
ALL INDUCTORS ARE IN MICROHENRIES.
ALL REFERENCE DIODE VOLTAGES ARE ±5%.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A16C1	*	A2A6A16C22	9B	A2A6A16E1	11E
C2	*	C23	9B	E2	11E
C3	9C	C24	8B	E3	2F
C4	3B	C25	7B	E4	*
C5	10E	C26	7A	E5	2E
C6	10F	C27	*	E6	2D, 2F
C7	10E	C28	5B	E7	2F
C8	10E	C29	5B	E8	7E
C9	9E	C30	4B	E9	7D
C10	9E	C31	4A	E10	7D
C11	9E	C32	4A	E11	7E
C12	5F	C33	3A	L1	*
C13	5F	C34	3A	L2	*
C14	3F	C35	2A	L3	9C
C15	2C	C36	2B	L4	*
C16	3C	C37	6D	L5	4B
C17	5C	CR1	10A	L6	10F
C18	10B	CR2	8A	L7	9F
C19	*	CR3	7A	P1-A1	11E
C20	11B	CR4	9D	P1-A2	2F
C21	10A	CR5	5B	P1-A3	2E

* NOT USED

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A16P1-A4	2F
Q1	10E
Q2	9E
Q3	5D
Q4	5D
Q5	3B
Q6	6C
R1	11E
R2	10F
R3	10E
R4	10E
R5	10E
R6	10F
R7	10E
R8	9E
R9	9E
R10	9E
R11	8E
R12	5D
R13	5D
R14	5E
R15	5E
R16	3C

REF DES	ZONE
A2A6A16R17	11B
R18	10B
R19	10B
R20	10B
R21	11A
R22	10A
R23	10A
R24	10B
R25	7B
R26	7B
R27	7B
R28	7B
R29	7B
R30	7A
R31	6B
R32	5B
R33	5B
R34	3A
R35	3A
R36	2A
R37	3B
R38	9D

REF DES	ZONE
A2A6A16TP1	11B
TP2	2E
TP3	2F
TP4	3F
U1	8E, 9E
U2	6E
U3	5E
U4	4E
U5	3E
U6	3E, 4E, 3D
U7	10B
U8	9B
U9	8B
U10	7B
U11	3B
U12	1A, 2A
U13	6D
U14	2C
U15	3C
U16	4C
U17	5C

TRANSISTOR VOLTAGE CHART

	E	B	C
Q1	0.82	1.45	5.00
Q2	2.01	2.45	5.00
Q3	0	0.63	0.03
Q4	0	0.03	5.00
Q5	0	0	0
Q6	5.00	5.00	0.01

INTEGRATED CIRCUIT VOLTAGE CHART
(ALL VALUES + VDC)

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.35	1.14	1.14	1.96	NC	0.05	0	NC	NC	1.05	1.96	1.06	1.96	5.00	-	-
U2	1.77	0	0	NC	5.00	0	0	NC	NC	0	0.78	1.77	NC	1.06	-	-
U3	1.88	0	0	NC	5.00	0	0	NC	NC	0	0.84	1.88	NC	0.78	-	-
U4	0.84	0	0	NC	5.00	0	0	NC	NC	0	0.85	1.93	NC	0.85	-	-
U5	1.93	0	0	NC	5.00	0	0	NC	NC	0	0.86	2.00	NC	0.86	-	-
U6	2.10	2.09	2.01	0.10	2.03	4.09	0	0.10	5.00	5.00	2.10	2.00	5.00	5.00	-	-
U7	NC	3.90	3.90	0	NC	4.90	10.0	NC	-	-	-	-	-	-	-	-
U8	5.00	4.90	3.46	3.47	0	1.94	0	NC	0	NC	NC	NC	NC	5.00	-	-
U9	1.80	3.85	1.94	3.06	1.17	NC	0	NC	NC	1.29	3.85	NC	3.06	5.00	-	-
U10	NC	1.29	1.30	0	NC	5.00*	10.0	NC	-	-	-	-	-	-	-	-
U11	0	NC	0	NC	0	NC	0	0	NC	0	NC	0	NC	0	-	-
U12	1.27	1.16	NC	NC	NC	NC	0	1.60	1.16	1.40	1.60	1.40	1.60	5.00	-	-
U13	NC	1.40	1.05	NC	1.80	NC	0	NC	NC	NC	NC	NC	NC	5.00	-	-
U14	1.67	0	0	NC	5.00	NC	NC	NC	NC	0	1.89	1.67	NC	1.40	-	-
U15	0.80	5.00	NC	1.89	5.00	1.89	NC	0	NC	NC	0	0.15	0.15	0	NC	5.00
U16	NC	0	NC	1.89	5.00	0.80	NC	0	NC	NC	5.00	0.15	0.15	0	NC	5.00
U17	1.92	0	0	NC	5.00	NC	NC	NC	NC	0	2.03	1.92	NC	0.15	-	-

* TOLERANCE ±2.5 VDC.

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR LSB OPERATION IN NON-VERNIER MODE.

2. * MAXIMUM DC RESISTANCE OF INDUCTORS FOLLOWS:
   L6 1.0 OHM
   L7 8.0 OHMS

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS RECEIVER FUNCTIONS IN AN OPERATING R-1051G/URR RECEIVER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/ SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE R-1051G/URR.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

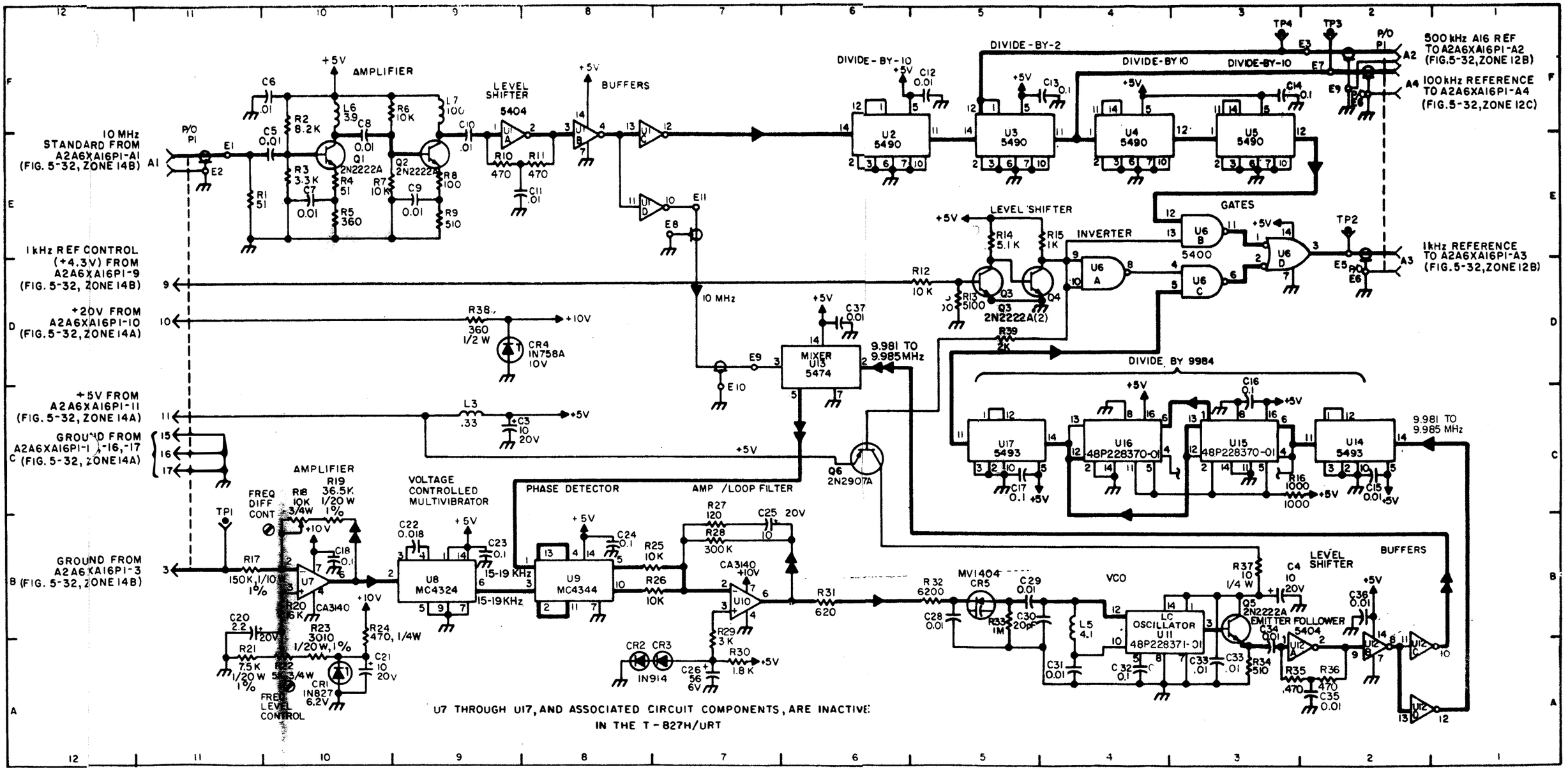


Figure 5-38. Frequency Generator Subassembly A2A6A16, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-38

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A16.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/8 WATT.
ALL CAPACITORS ARE IN MICROFARADS: pF = PICOFARADS
ALL INDUCTORS ARE IN MICROHENRIES.
ALL REFERENCE DIODE VOLTAGES ARE ±5%.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

G. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A16C1	*	A2A6A16C22	9B	A2A6A16E1	11E
C2	*	C23	9B	E2	11E
C3	9C	C24	8B	E3	2F
C4	3B	C25	7B	E4	*
C5	10E	C26	7A	E5	2E
C6	10F	C27	*	E6	2D, 2F
C7	10E	C28	5B	E7	2F
C8	10E	C29	5B	E8	7E
C9	9E	C30	4B	E9	7D
C10	9E	C31	4A	E10	7D
C11	9E	C32	4A	E11	7E
C12	5F	C33	3A	L1	*
C13	5F	C34	3A	L2	*
C14	3F	C35	2A	L3	9C
C15	2C	C36	2B	L4	*
C16	3C	C37	6D	L5	4B
C17	5C	CR1	10A	L6	10F
C18	10B	CR2	8A	L7	9F
C19	*	CR3	7A	P1-A1	11E
C20	11B	CR4	9D	P1-A2	2F
C21	10A	CR5	5B	P1-A3	2E

* NOT USED

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A16P1-A4	2F
Q1	10E
Q2	9E
Q3	5D
Q4	5D
Q5	3B
Q6	6C
R1	11E
R2	10F
R3	10E
R4	10E
R5	10E
R6	10F
R7	10E
R8	9E
R9	9E
R10	9E
R11	8E
R12	5D
R13	5D
R14	5E
R15	5E
R16	3C

REF DES	ZONE
A2A6A16R17	11B
R18	10B
R19	10B
R20	10B
R21	11A
R22	10A
R23	10A
R24	10B
R25	7B
R26	7B
R27	7B
R28	7B
R29	7B
R30	7A
R31	6B
R32	5B
R33	5B
R34	3A
R35	3A
R36	2A
R37	3B
R38	9D

REF DES	ZONE
A2A6A16TP1	11B
TP2	2E
TP3	2F
TP4	3F
U1	3E, 3E
U2	3E
U3	3E
U4	4E
U5	3E
U6	3E, 4E, 3D
U7	10B
U8	9B
U9	8B
U10	7B
U11	3E
U12	1A, 2A
U13	6D
U14	2C
U15	3C
U16	4C
U17	5C

TRANSISTOR VOLTAGE CHART

	E	B	C
Q1	0.82	1.45	5.00
Q2	2.01	2.45	5.00
Q3	0	0.63	0.03
Q4	0	0.03	5.00
Q5	0	0	0
Q6	5.00	5.00	0.01

INTEGRATED CIRCUIT VOLTAGE CHART
(ALL VALUES + VDC)

PINS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.35	1.14	1.14	1.96	NC	0.05	0	NC	NC	1.05	1.96	1.06	1.96	5.00	-	-
U2	1.77	0	0	NC	5.00	0	0	NC	NC	0	0.78	1.77	NC	1.06	-	-
U3	1.88	0	0	NC	5.00	0	0	NC	NC	0	0.84	1.88	NC	0.78	-	-
U4	0.84	0	0	NC	5.00	0	0	NC	NC	0	0.85	1.93	NC	0.85	-	-
U5	1.93	0	0	NC	5.00	0	0	NC	NC	0	0.86	2.00	NC	0.86	-	-
U6	2.10	4.09	2.01	0.10	2.03	4.09	0	0.10	5.00	5.00	2.10	2.00	5.00	5.00	-	-
U7	NC	3.90	3.90	0	NC	4.90	10.0	NC	-	-	-	-	-	-	-	-
U8	5.00	4.90	3.46	3.47	0	1.94	0	NC	0	NC	NC	NC	NC	5.00	-	-
U9	1.80	3.85	1.94	3.06	1.17	NC	0	NC	NC	1.29	3.85	NC	3.06	5.00	-	-
U10	NC	1.29	1.30	0	NC	5.00*	10.0	NC	-	-	-	-	-	-	-	-
U11	0	NC	0	NC	0	NC	0	0	NC	0	NC	0	NC	0	-	-
U12	1.27	1.16	NC	NC	NC	NC	0	1.60	1.16	1.40	1.60	1.40	1.60	5.00	-	-
U13	NC	1.40	1.05	NC	1.80	NC	0	NC	NC	NC	NC	NC	NC	5.00	-	-
U14	1.67	0	0	NC	5.00	NC	NC	NC	NC	0	1.89	1.67	NC	1.40	-	-
U15	0.80	5.00	NC	1.89	5.00	1.89	NC	0	NC	NC	0	0.15	0.15	0	NC	5.00
U16	NC	0	NC	1.89	5.00	0.80	NC	0	NC	NC	5.00	0.15	0.15	0	NC	5.00
U17	1.92	0	0	NC	5.00	NC	NC	NC	NC	0	2.03	1.92	NC	0.15	-	-

* TOLERANCE ±2.5 VDC.

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR LSB OPERATION IN NON-VERNIER MODE.

2. * MAXIMUM DC RESISTANCE OF INDUCTORS FOLLOWS:
   L6 1.0 OHM
   L7 8.0 OHMS

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS RECEIVER FUNCTIONS IN AN OPERATING R-1051G/URR RECEIVER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/ SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE R-1051G/URR.

4. NC IN VOLTAGE CHART DENOTES PIN NOT CONNECTED.

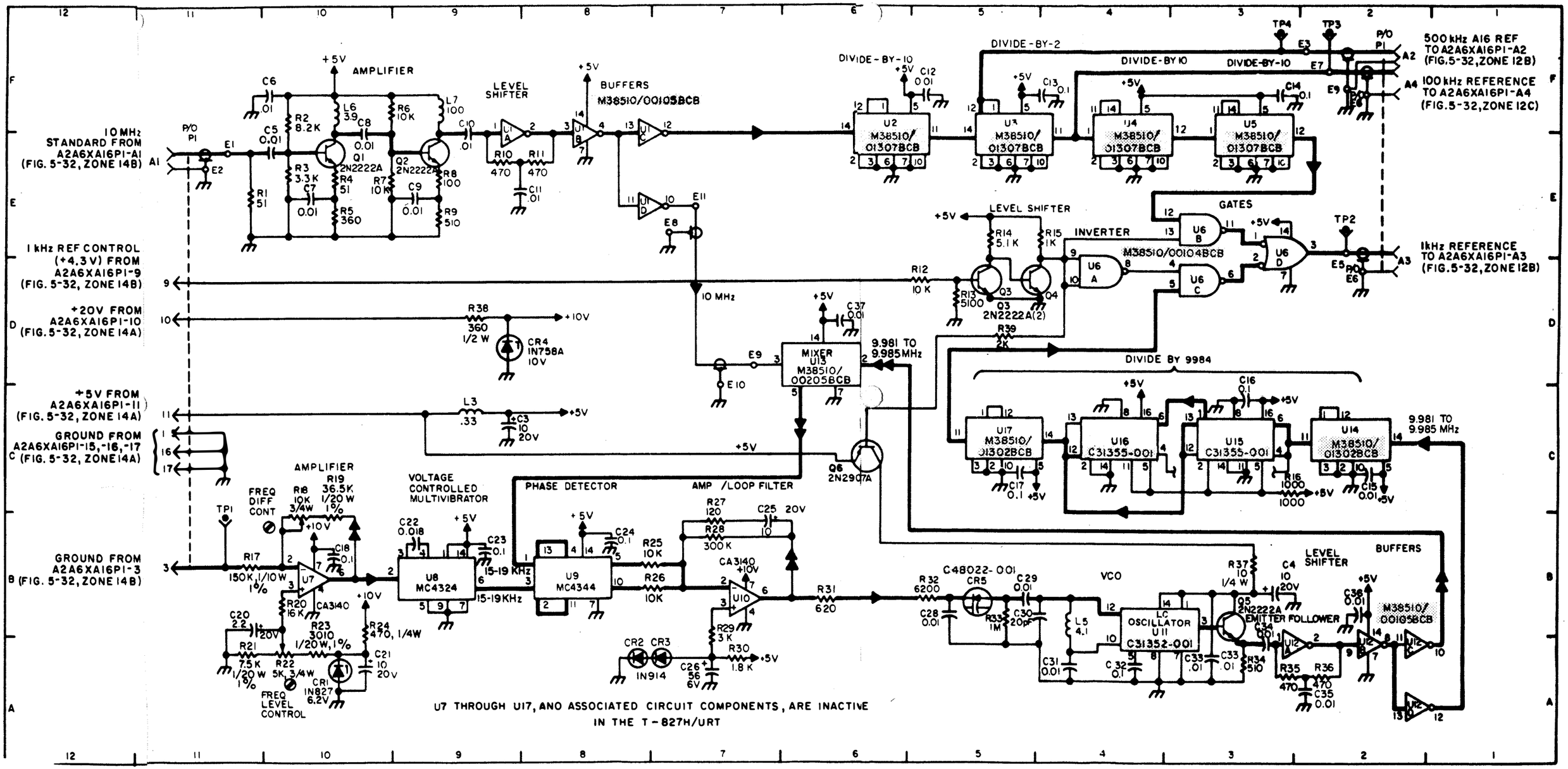


Figure 5-38A. Frequency Generator Subassembly A2A6A16, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-39

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTANCE IS IN OHMS, K = 1000
ALL RESISTORS ARE 1/4 WATT, ±5%
ALL CAPACITANCE IS IN MICROFARADS. pF = PICOFARADS
ALL COIL RESISTANCES ARE LESS THAN 1 OHM
ALL INDUCTANCE IS IN MICROHENRIES

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

G. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA

H. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

SPECIFIC NOTES

1. THE DIVISION RATIOS FOR THE PROGRAMMABLE DIVIDERS ARE AS FOLLOWS:

LOW BAND	224 - 233
HIGH BAND	324 - 333

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.11 MHz OPERATION IN LSB MODE.

3. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L8 - 1.0 OHM

4. VALUES FOR INDUCTOR A2A6A17A1L1 ARE SELECTED ACCORDING TO THE SPECIFICATIONS FOR VARACTOR DIODE A2A6A17A1CR1 AND CORRESPOND AS FOLLOWS:

VARACTOR DIODE, COLOR CODE	INDUCTANCE, uH
RED	0.82
BROWN	0.68
BLACK	0.56

PART LOCATION INDEX

REF DES	ZONE
A2A6A17C1	9E
C2	7E
C3	7D
C4	*
C5	9C
C6	3G
C7 thru C12	*
C13	3F
C14	3F
C15	3F
C16	3E
C17	3F
C18	3F
C19	2F
C20	2F
C21	2F
C22	*
C23	10B
C24	*
C25	3D
C26	2D
C27	1D
C28	2C
C29	5C
C30	2E
C31	4C
C32	3B
C33	10C
C34	9B
C35	9F
C36	8D
†CR1	7E
**E1	10E
**E2	10D
**E3	2F
**E4	1F
***E5	7E
***E6	8D
L1	*
L2	*
L3	3F
L4	3F
L5	3F
L6	3F
L7	3F

REF DES	ZONE
A2A6A17L8	3F
L9	*
L10	10B
P1A1	11E
P1A2	1F
P1-1	11C
P1-2	*
P1-3	11A
P1-4	11A
P1-5	11A
P1-6	11A
P1-7	11B
P1-8	11B
P1-9 thru P1-12	*
P1-13	11B
P1-14	11B
P1-15	11A
Q1	4F
Q2	2F
Q3	6B
Q4	5B
Q5	4B
Q6	9F
Q7	8D
Q8	8E
R1	10C
R2	9F
R3	8F
R4	8G
R5	8F
R6	8D
R7	8D
R8	8E
R9	4F
R10	4E
R11	3E
R12	2F
R13	2E
R14	2E
R15	2C
R16	6B
R17	4B

REF DES	ZONE
A2A6A17R18 thru R21	*
R22	2B
R23	2B
R24	2A
R25	2A
R26	6A
R27	6B
R28	4A
R29	4B
R30	5B
R31	2F
R32	7E
R33	7E
R34	4G
R35	9D
R36	2F
TP1	10E
TP2	10E
TP3	2G
U1	9E
U2	*
U3	*
U4	2D
U5	3D
U6	3B
U7	4C
U8	5C
A2A6A17A1C1	6F
C2	6F
C3	*
C4	6E
C5	5E
C6	5F
C7	6F
CR1	6F
L1	6F
R1	7F
R2	6F
R3	7G
R4	4F
U1	5F

* NOT USED.
** WIRING TERMINATION - FOR REFERENCE ONLY.
*** WIRING TERMINATION - FOR REFERENCE ONLY - 01 VERSION ONLY.
† REVISION F AND LATER VERSIONS ONLY.

NOTES FOR FIGURE 5-39 (CONTINUED)

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	2.41	3.06	4.87
Q2	1.15	1.82	2.39
Q3	0	0.68	0.03
Q4	0	0.68	0.04
Q5	0	0	0.04
Q6	0	0.82	0.18
Q7	3.88	3.25	3.98
Q8	13.90	16.10	3.98

INTEGRATED CIRCUIT VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8
U1	0.85	3.87	3.56	NC	NC	NC	0	NC
U4	5.00	3.6	3.83	3.83	3.86	5.00	2.15	0
U5	2.15	2.15	1.53	1.80	0.85	NC	3.00	0
U6	0.85	0	3.56	NC	5.00	2.15	2.15	0
U7	0.81	0	3.56	NC	0.04	2.15	1.85	0
U8	NC	0	3.56	NC	0.03	0.81	NC	0

	9	10	11	12	13	14	15	16
U1	NC	NC	NC	NC	3.56	5.00	-	-
U4	3.00	3.00	NC	NC	3.86	3.87	3.82	5.00
U5	3.56	1.80	1.85	1.46	0.81	1.80	NC	5.00
U6	1.53	NC	0	0.30	0.30	4.00	1.80	5.00
U7	1.80	NC	5.00	0	NC	0	1.46	5.00
U8	NC	NC	5.00	1.80	1.80	0	NC	5.00

SPECIFIC NOTES (CONTINUED)

5. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

6. NC IN VOLTAGE TABLES DENOTES PIN NOT CONNECTED.

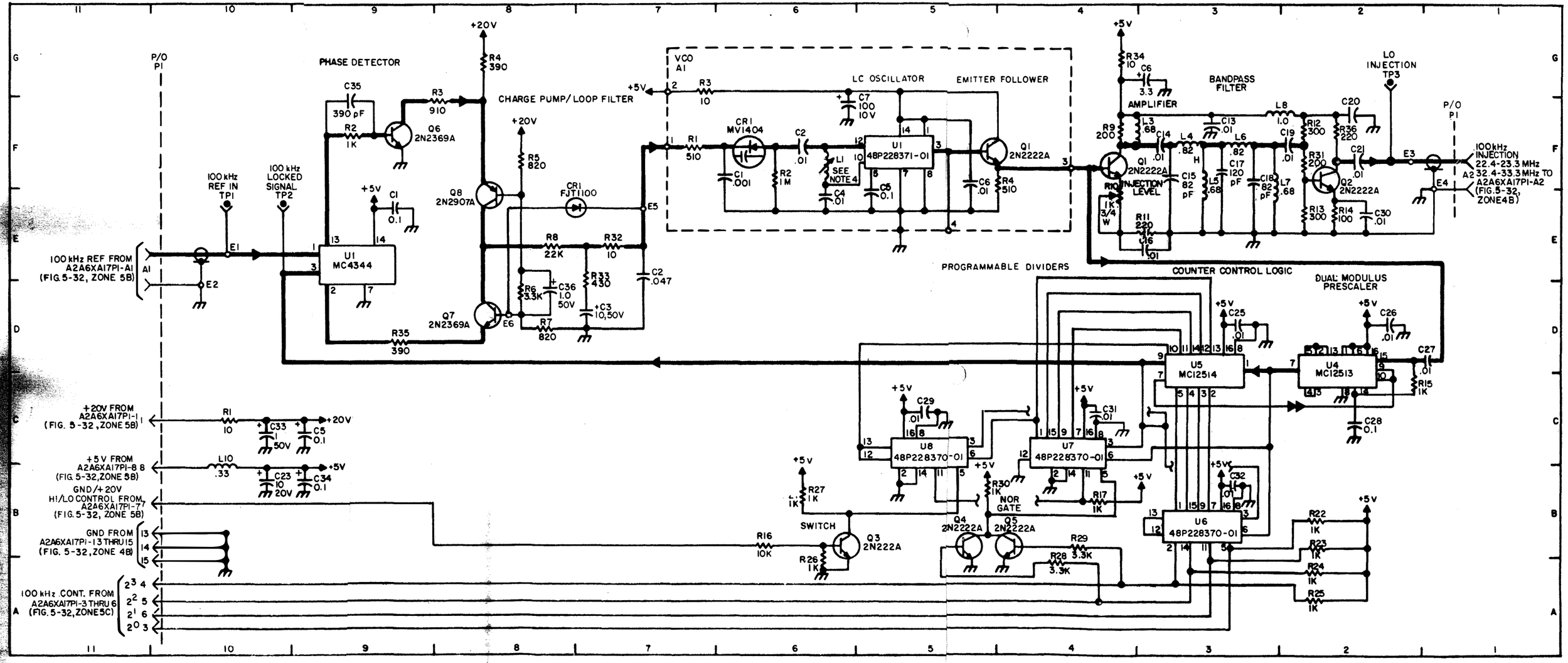


Figure 5-39. 100 kHz Synthesizer Subassembly A2A6A17, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-39

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS PREFIX WITH NUMBERS OF NEXT HIGHER ASSEMBLY.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTANCE IS IN OHMS, K = 1000
ALL RESISTORS ARE 1/4 WATT, ±5%
ALL CAPACITANCE IS IN MICROFARADS. pF = PICOFARADS
ALL COIL RESISTANCES ARE LESS THAN 1 OHM
ALL INDUCTANCE IS IN MICROHENRIES

C. WHEN MAKING RESISTANCE MEASUREMENTS AT TRANSISTOR POINTS, USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. ——▶—— INDICATES SIGNAL FLOW.

E. ——◀◀—— INDICATES FEEDBACK.

F. ——⟆ ⟅—— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED FROM BREAK POINT IN PARALLEL WITH DIAGRAM BORDER.

G. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA

H. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

SPECIFIC NOTES

1. THE DIVISION RATIOS FOR THE PROGRAMMABLE DIVIDERS ARE AS FOLLOWS:

LOW BAND	224 - 233
HIGH BAND	324 - 333

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR 2.11 MHz OPERATION IN LSB MODE.

3. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

   L8 - 1.0 OHM

4. VALUES FOR INDUCTOR A2A6A17A1L1 ARE SELECTED ACCORDING TO THE SPECIFICATIONS FOR VARACTOR DIODE A2A6A17A1CR1 AND CORRESPOND AS FOLLOWS:

BROWN	BO4102-001	0.68uH	BO4101-001
YELLOW	BO4102-002	0.56uH	BO4101-003
RED	BO4102-003	0.82uH	BO4101-002

   NOTE: COLOR OF VARACTOR DIODE MUST MATCH COLOR OF INDUCTOR.

PART LOCATION INDEX

REF DES	ZONE
A2A6A17C1	9E
C2	7E
C3	7D
C4	*
C5	9C
C6	3G
C7 thru C12	*
C13	3F
C14	3F
C15	3F
C16	3E
C17	3F
C18	3F
C19	2F
C20	2F
C21	2F
C22	*
C23	10B
C24	*
C25	3D
C26	2D
C27	1D
C28	2C
C29	5C
C30	2E
C31	4C
C32	3B
C33	10C
C34	9B
C35	9F
C36	8D
CR1	7E
**E1	10E
**E2	10D
**E3	2F
**E4	1F
***E5	7E
***E6	8D
L1	*
L2	*
L3	3F
L4	3F
L5	3F
L6	3F
L7	3F

REF DES	ZONE
A2A6A17L8	3F
L9	*
L10	10B
P1A1	11E
P1A2	1F
P1-1	11C
P1-2	*
P1-3	11A
P1-4	11A
P1-5	11A
P1-6	11A
P1-7	11B
P1-8	11B
P1-9 thru P1-12	*
P1-13	11B
P1-14	11B
P1-15	11A
Q1	4F
Q2	2F
Q3	6B
Q4	5B
Q5	4B
Q6	9F
Q7	8D
Q8	8E
R1	10C
R2	9F
R3	8F
R4	8G
R5	8F
R6	8D
R7	8D
R8	8E
R9	4F
R10	4E
R11	3E
R12	2F
R13	2E
R14	2E
R15	2C
R16	6B
R17	4B

REF DES	ZONE
A2A6A17R18 thru R21	*
R22	2B
R23	2B
R24	2A
R25	2A
R26	6A
R27	6B
R28	4A
R29	4B
R30	5B
R31	2F
R32	7E
R33	7E
R34	4G
R35	9D
R36	2F
TP1	10E
TP2	10E
TP3	2G
U1	9E
U2	*
U3	*
U4	2D
U5	3D
U6	3B
U7	4C
U8	5C
A2A6A17A1C1	6F
C2	6F
C3	*
C4	6E
C5	5E
C6	5F
C7	6F
CR1	6F
L1	6F
R1	7F
R2	6F
R3	7G
R4	4F
U1	5F

* NOT USED.
** WIRING TERMINATION - FOR REFERENCE ONLY.
*** WIRING TERMINATION - FOR REFERENCE ONLY.

NOTES FOR FIGURE 5-39 (CONTINUED)

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	2.41	3.06	4.87
Q2	1.15	1.82	2.39
Q3	0	0.68	0.03
Q4	0	0.68	0.04
Q5	0	0	0.04
Q6	0	0.82	0.18
Q7	3.88	3.25	3.98
Q8	13.90	16.10	3.98

INTEGRATED CIRCUIT VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8
U1	0.85	3.87	3.56	NC	NC	NC	0	NC
U4	5.00	3.6	3.83	3.83	3.86	5.00	2.15	0
U5	2.15	2.15	1.53	1.80	0.85	NC	3.00	0
U6	0.85	0	3.56	NC	5.00	2.15	2.15	0
U7	0.81	0	3.56	NC	0.04	2.15	1.85	0
U8	NC	0	3.56	NC	0.03	0.81	NC	0

	9	10	11	12	13	14	15	16
U1	NC	NC	NC	NC	3.56	5.00	-	-
U4	3.00	3.00	NC	NC	3.86	3.87	3.82	5.00
U5	3.56	1.80	1.85	1.46	0.81	1.80	NC	5.00
U6	1.53	NC	0	0.30	0.30	4.00	1.80	5.00
U7	1.80	NC	5.00	0	NC	0	1.46	5.00
U8	NC	NC	5.00	1.80	1.80	0	NC	5.00

SPECIFIC NOTES (CONTINUED)

5. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

6. NC IN VOLTAGE TABLES DENOTES PIN NOT CONNECTED.

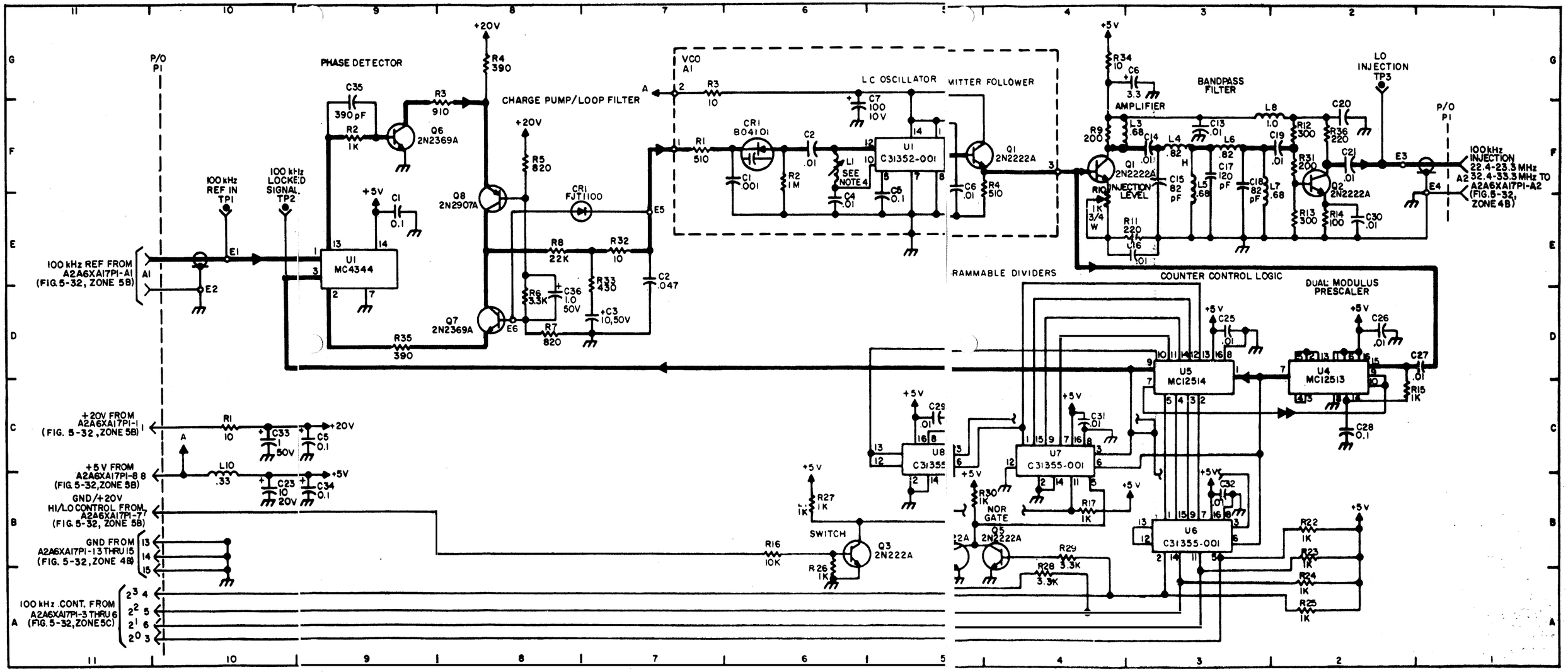


Figure 5-39A. 100 kHz Synthesizer Subassembly A2A6A17, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-40

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A6A18.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT
ALL CAPACITORS ARE IN MICROFARADS.
RESISTANCE OF INDUCTORS IS LESS THAN ONE OHM.
ALL INDUCTANCE IS IN MICROHENRIES.

C. WHEN MAKING RESISTANCE MEASUREMENTS AT RESISTOR POINTS USE HIGHEST POSSIBLE OHMMETER RANGE TO PREVENT DAMAGE TO TRANSISTORS.

D. INDICATES FEEDBACK.

E. INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A18C1	15H	A2A6A18P1-4	17B	A2A6A18R4	17E
C2	14H	P1-5	17B	R5	16E
C3	12H	P1-6	17B	R6	16F
C4	13E	P1-7	17A	R7	17D
C5	11E	P1-8	17C	R8	16D
C6	7F	P1-9	17C	R9	16D
C7	5F	P1-10	17C	R10	17C
C8	2F	P1-11	17C	R11	16B
C9	12E	P1-12	17A	R12	16C
C10	10E	P1-13	17A	R13	14G
C11	8E	P1-14	17A	R14	14D
C12	15H	P1-15	17B	R15	14D
C13	14F	Q1	16G	R16	14D
E1	16H	Q2	15G	R17	13D
E2	17G	Q3	16E	R18	14B
E3	8H	Q4	15F	R19	14B
E4	2G	Q5	16D	R20	14B
L1	16H	Q6	15D	R21	13B
P1-A1	18G	Q7	16C	R22	8B
P1-A2	2H	Q8	15C	R23	8B
P1-1	18H	R1	17G	R24	8B
P1-2	17A	R2	16F	R25	7B
P1-3	17B	R3	16G	R26	3E

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A18TP1	16H	A2A6A18U3	12F	A2A6A18U7	2F
TP2	9H	U4	9F	U8	12D
U1	13H	U5	7F	U9	9D
U2	12H	U6	5F	U10	7D

TRANSISTOR VOLTAGE CHART

	E	B	C
Q1	0V	0	0.67
Q2	0V	0.67	0.02
Q3	0V	0	0.67
Q4	0V	0.67	0.02
Q5	0V	0	0.67
Q6	0V	0.67	0.02
Q7	0V	0.67	0.02
Q8	0V	0.02	5.00

SPECIFIC NOTES

1. VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.
2. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.
3. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND (A2A6A18E4) WITH EQUIPMENT CONTROLS SET FOR 2.0011 MHz OPERATION IN LSB MODE.
4. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT
5. NC IN VOLTAGE TABLES DENOTES NOT CONNECTED.

ED)

REF DES	ZONE
A2A6A18U7	2F
U8	12D
U9	9D
U10	7D

67
02
67
02
67
02
02
00

INTEGRATED CIRCUIT VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	5.00	3.83	3.81	3.81	3.83	5.00	1.95	0V
U2	1.95	1.84	1.52	1.54	0.81	NC	3.82	0V
U3	0.81	4.25	3.67	NC	4.20	1.95	1.84	0V
U4	0.82	4.30	3.67	NC	0.12	1.95	1.85	0V
U5	0.83	4.17	3.67	NC	4.17	0.82	NC	0V
U6	0.76	0V	3.67	NC	4.96	0.83	NC	0V
U7	NC	0V	3.67	NC	4.98	0.76	NC	0V
U8	4.20	0.12	0.12	4.25	4.31	NC	NC	0V
U9	0.12	0.12	0.12	4.30	4.31	NC	NC	0V
U10	4.17	0.12	0.12	4.17	4.96	0.12	NC	0V

	9	10	11	12	13	14	15	16
U1	3.82	3.82	NC	NC	3.83	3.77	3.78	5.00
U2	3.67	0.12	1.85	1.55	0.82	1.53	NC	5.00
U3	1.52	NC	0.12	0.22	0.22	0.12	1.54	5.00
U4	1.53	NC	0.12	0	0.12	0.12	1.55	5.00
U5	NC	NC	0.12	0.12	0.12	0.12	NC	5.00
U6	NC	NC	4.96	0.12	0.12	0.12	NC	5.00
U7	NC	NC	4.98	0.12	0.12	0V	NC	5.00
U8	NC	5.00	0	0	0	0V	0V	5.00
U9	NC	5.00	0	0	0	4.31	0V	5.00
U10	NC	0	0	0	0	4.31	0V	5.00

LTIMETER 89536-8800A/AA.

THIN ±10%.

EASUREMENTS TAKEN TO
ET FOR 2.0011 MHz OPER-

RGANIZED TO ALLOW
FUNCTIONS IN AN OPER-
TENANCE THE MODULE
NTHESIZER TEST FIX-
TINGS SHALL CORRES-
ROLS OF THE T-827H/URT.

ED.

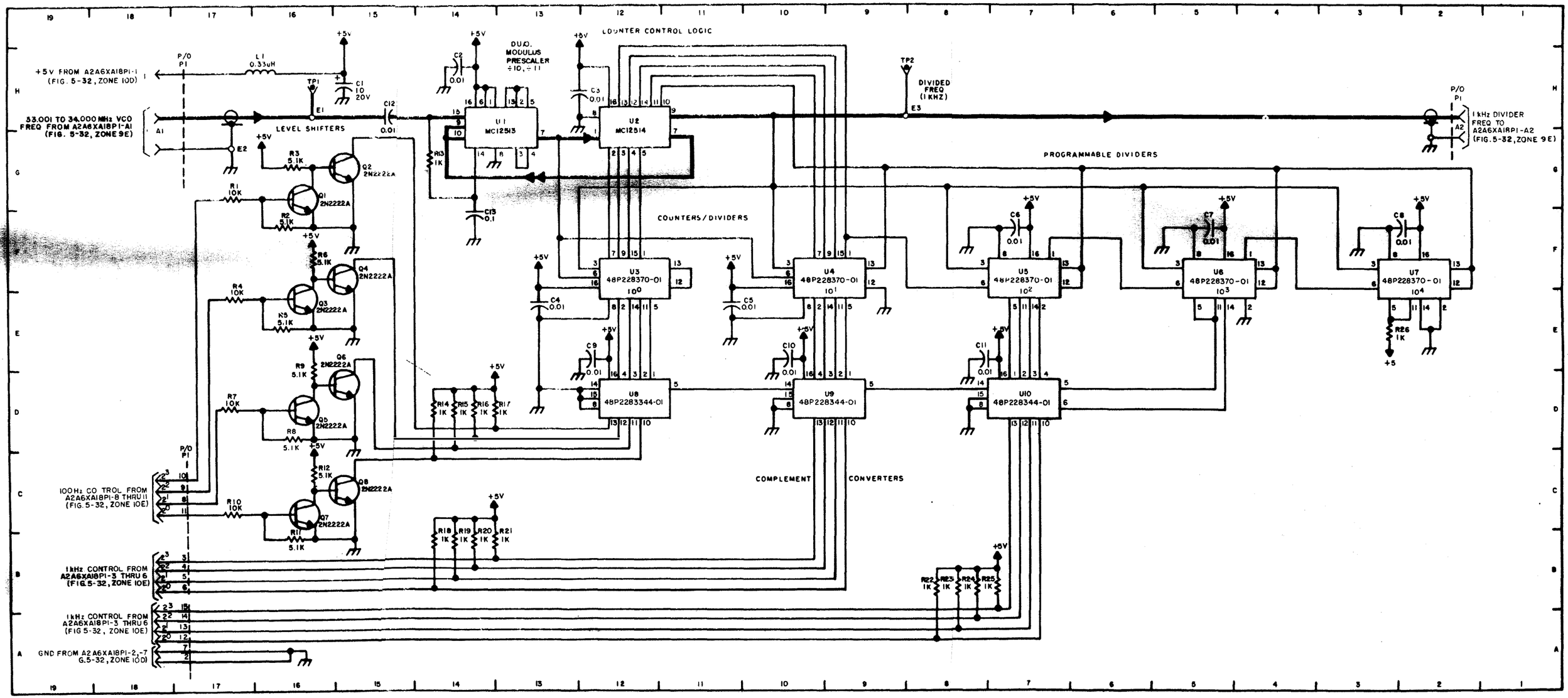


Figure 5-40. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 1) A2A6A18, Maintenance Schematic Diagram

GENERAL NOTES

A. SOLID CIRCLES INDICATE THAT FRONT AND REAR OF PRINTED WIRING BOARD ARE CONNECTED TOGETHER AT THAT POINT.

B. SWITCH WIPERS SHOWN IN 00 MHz POSITION.

C. SWITCH ASSEMBLY A2A7A1 IS LOCATED CLOSEST TO FRONT PANEL.

D. MHz TUNING SHAFTS THROUGH LEFT AND RIGHT HAND SWITCH ROTORS MOVE ALL 10 MHz OR 1 MHz WIPERS IN UNISON.

E. REFER TO TABLE 3-2 FOR CODE OUTPUTS CORRESPONDING TO POSITIONS OF 10 MHz AND 1 MHz SWITCH WIPERS.

F. A2A7P1 CONNECTS TO A2J8. SEE FIGURE 5-28, SHEET 2, ZONES 5C/5D/5E AND 6C/6D/6E.

G. PLUG A2A7P1 WIRING DATA:

FROM	TO	FUNCTION
A1E21 A1E22 A1E19 A1E20 A2E27	P1-1 P1-2 P1-3 P1-4 P1-5	BANDSWITCH CODE FOR RF AMPLIFIER ASSEMBLY A2A4.
A2E25 A4E36 A4E35 A4E38 A4E37	P1-21 P1-22 P1-23 P1-24 P1-25	10 MHz AND 1 MHz DIGIT SELECT CODE FOR SYNTHESIZER SUBASSEMBLY A2A6A13.
A3E32 A3E31 A3E34 A3E33 A2E26	P1-13 P1-14 P1-15 P1-16 P1-17	BANDSWITCH CODE FOR EXTERNAL RF POWER AMPLIFIER.
A2E24	P1-6	HI-LO BAND CONTROL TO RELAY A2K2.
A5E39	P1-7	TUNE RELAY GND TO A2K1-X1.
A3E29 A3E30	P1-10 P1-12	100 kHz IMAGE CONTROL FROM A2S5-R.

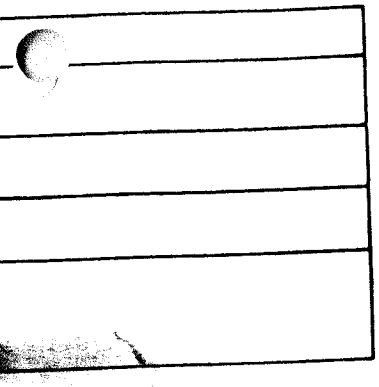
FROM	TO	FUNCTION
A5E42	P1-11	GND PULSE TO A2K6-X1.
A5E41	P1-9	GROUND INPUT FROM A2E1.
A3E28	P1-18	RF POWER AMPL RANGE.
A5E40 A1E18 A3E23	P1-8 P1-19 P1-20	RESERVED.

FRONT SURFACES

H. FOLLOWING TERMINALS OF SWITCH ASSEMBLIES ARE CONNECTED TOGETHER:

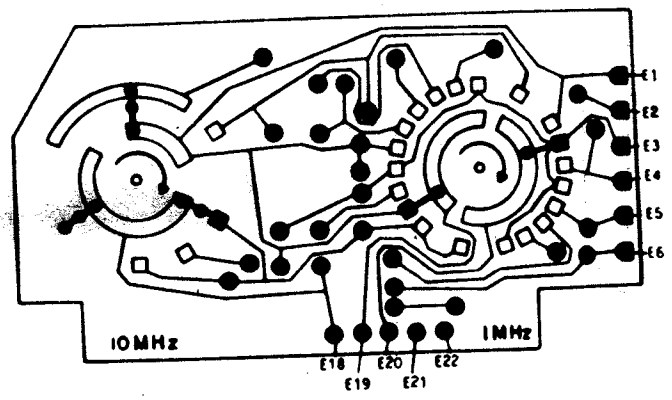
E1 OF A1 THRU A5.
E2 OF A1 AND A2.
E3 OF A1 AND A2.
E4 OF A1 AND A2.
E5 OF A1 AND A2.
E6 OF A1 AND A2.
E7 OF A2 AND A3.
E8 OF A2 THRU A4.
E9 OF A2 THRU A4.
E10 OF A2 THRU A4.
E11 OF A2 THRU A4.
E12 OF A2 THRU A4.
E13 OF A2 THRU A4.
E14 OF A2 AND A3.
E15 OF A2 AND A3.
E16 OF A2 AND A3.
E17 OF A2 AND A3.

REAR SURFACES (VIEWED THR
BOARD FROM FRONT SURFACE



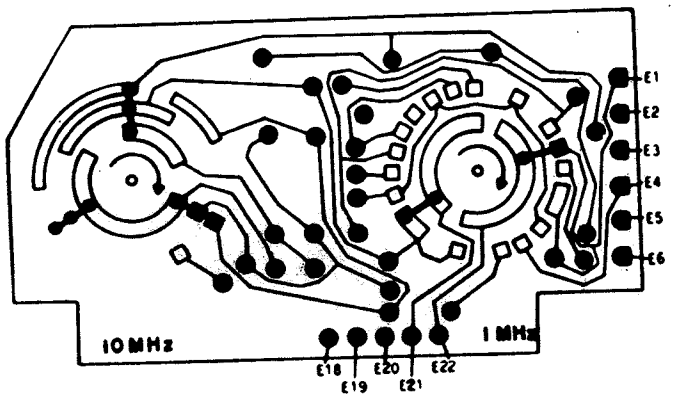
LIES ARE CONNECTED

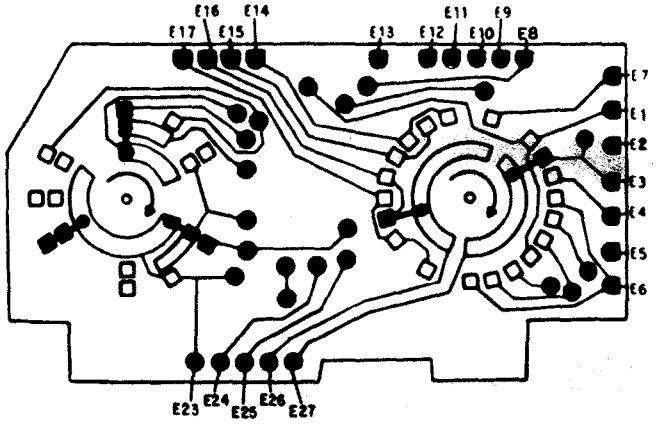
FRONT SURFACES



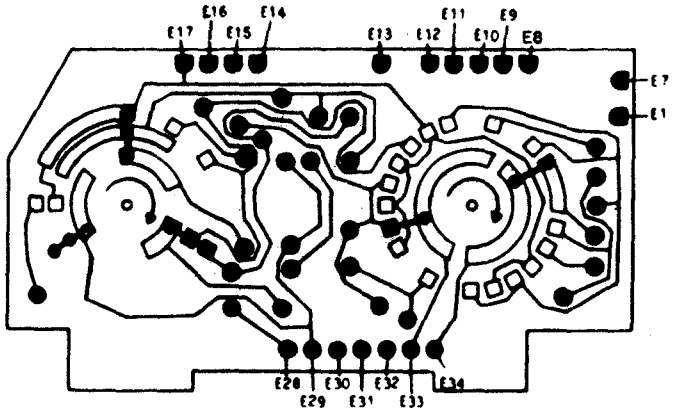
A2A7A1

REAR SURFACES (VIEWED THRU BOARD FROM FRONT SURFACE)

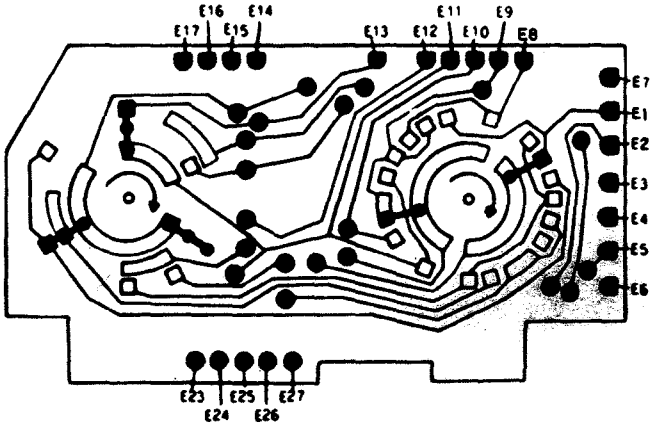


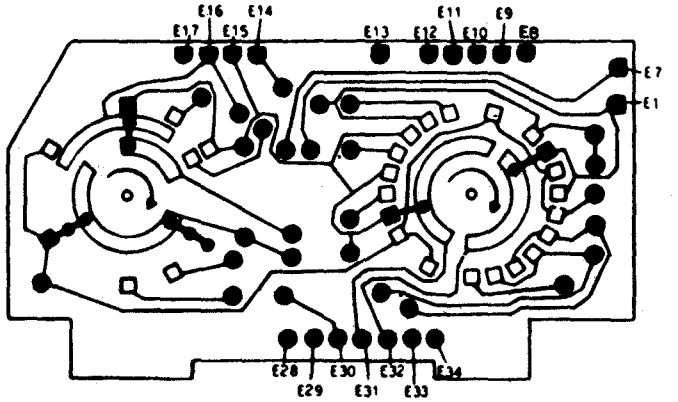


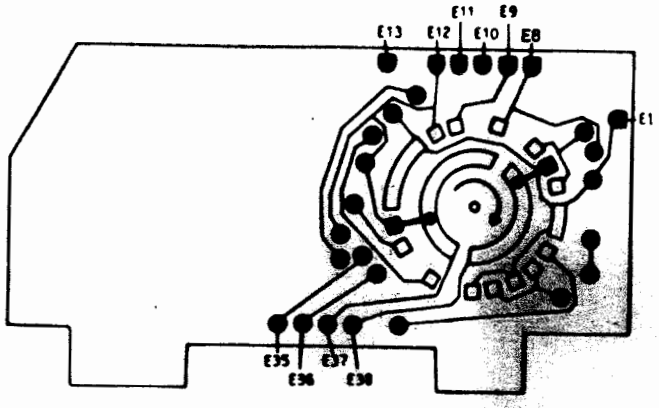
A2A7A2



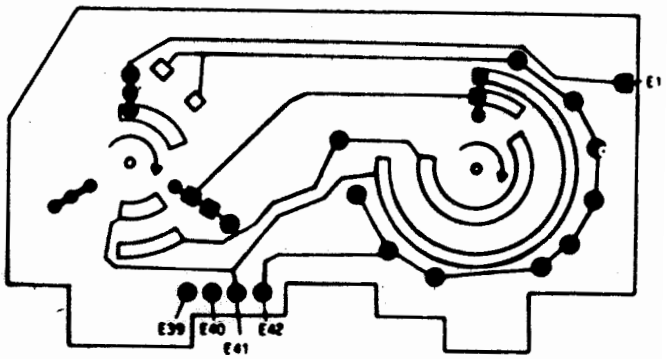
A2A7A3



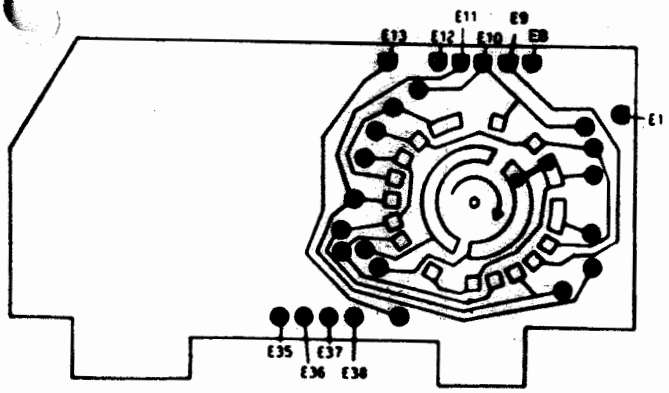




A2A7A4



A2A7A5



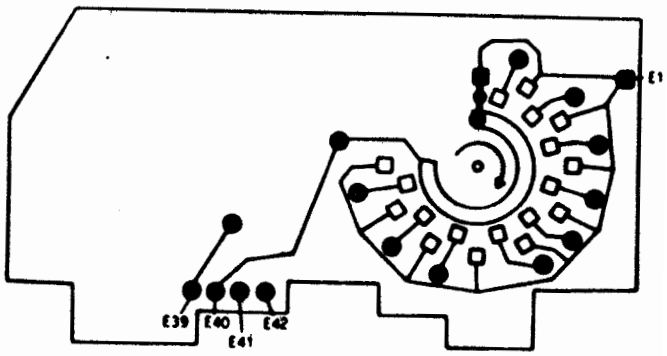


Figure 5-41. Code Generator Assembly A2A7, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-42

GENERAL NOTES

PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX PARTIAL REFERENCE DESIGNATOR WITH APPLICABLE UNIT, ASSEMBLY AND/OR SUBASSEMBLY DESIGNATOR.

UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.

VOLTAGE MEASUREMENTS TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A9A1C1	7A	A2A9A1Q2	5A	A2A9A1R19	3C
C2	7B	Q3	3C	R20	3C
C3	6A	Q4	3C	R21	2C
C4	6A	R1	7D	R22	2C
C5	5D	R2	7C	R23	2C
C6	4D	R3	7B	R24	2C
CR1	7C	R4	7B	R25	5B
CR2	6B	R5	7A	T1	3C
CR3	7C	R6	7C	TP1	7D
CR4	6D	R7	6B	TP2	7C
P1-1	8B	R8	6A	TP3	7B
P1-2	1C	R9	6A	TP4	7B
P1-3	8C	R10	6B	TP5	3C
P1-4	8C	R11	6A	U1	6C
P1-5	8D	R12	6A	U2	5C
P1-6	*	R13	6B	U3	4C
P1-7	8A	R14	6B	U4	4C
P1-8	1C	R15	6D	U5	3C,5B
P1-9	8B	R16	6A	U6	5B,5C
P1-10	*	R17	5C		6B
Q1	6A	R18	3C		

* NOT USED.

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	0	1.15	2.91
Q2	0	-0.89	5.97
Q3	12.3	11.9	6.0
Q4	12.3	11.9	6.0

INTEGRATED CIRCUIT DC VOLTAGE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	0	NC	12.3	-	0	-	0	-	-	-	-	-	-	-	-	-
U2	2.35	0	0.04	0	0	5.97	NC	0	NC	0	12.3	0.4	0.5	12.3	NC	12.3
U3	2.35	0	0.04	0	0	2.35	NC	0	NC	0	0	0.5	5.8	0	NC	12.3
U4	NC	0	0.04	0	0	2.35	NC	0	NC	0	12.3	5.8	12.3	0	NC	12.3
U5	6.0	6.1	0.04	0	6.1	0	0	0	12.3	0	0.04	0	NC	12.3		
U6	0	0	0	0	12.3	0	0	0	0	NC	0	0	0	12.3		

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS ARE TAKEN TO GROUND WITH EQUIPMENT KEYED IN RATT MODE AND RATT SHIFT SELECTOR SET AT 850 HZ. TTY INPUT ZERO MILLIAMPERES (SPACE).

2. NC IN VOLTAGE TABLES DENOTES PIN NOT CONNECTED.

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN PLUG-IN UNIT TEST SET TS-2135/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.

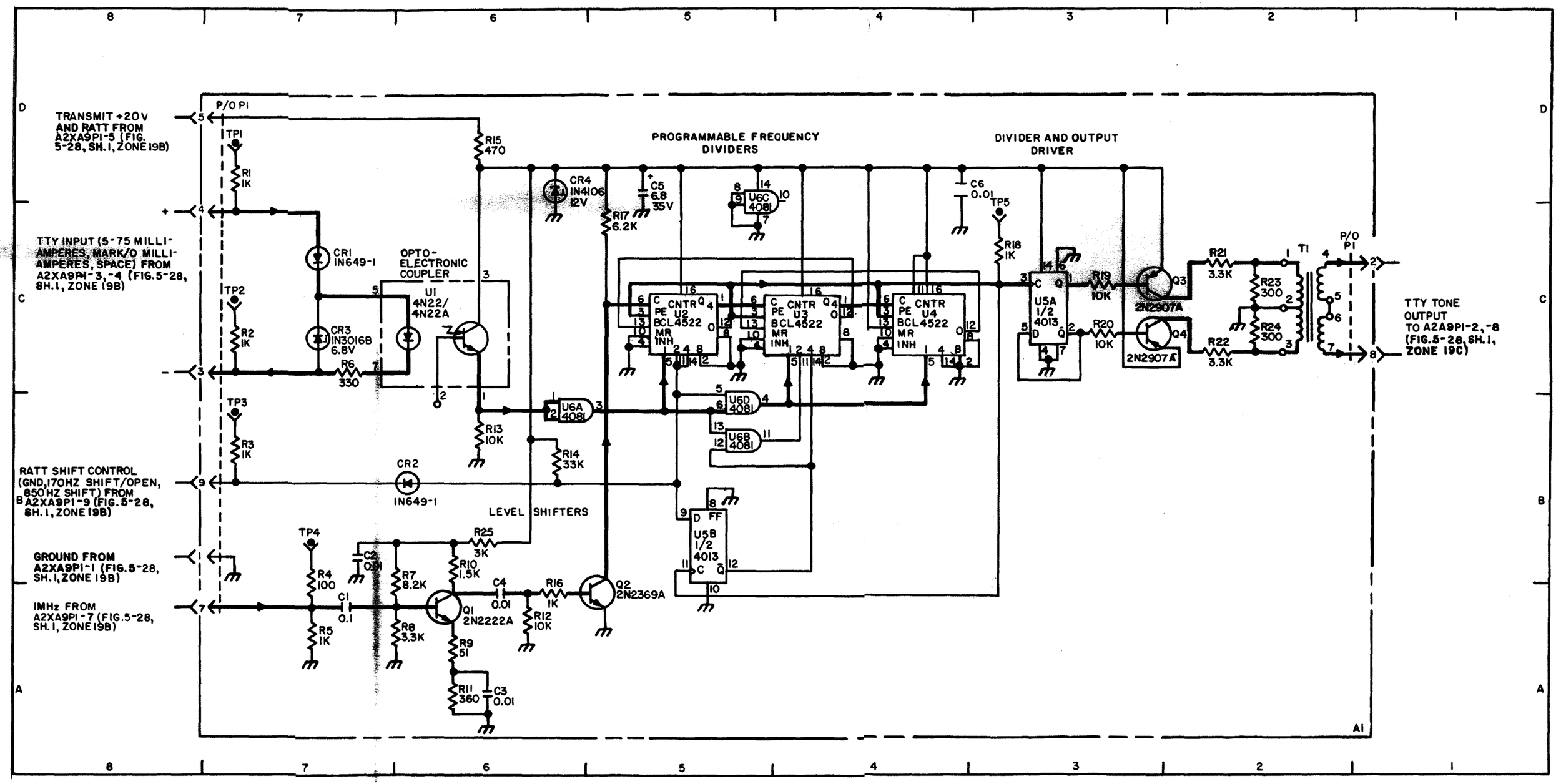


Figure 5-42. RATT Tone Generator Assembly A2A9, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-43

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX PARTIAL REFERENCE DESIGNATORS WITH APPLICABLE UNIT, ASSEMBLY AND/OR SUBASSEMBLY DESIGNATORS.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT
ALL CAPACITORS ARE IN MICROFARADS.

C. —}{— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

D. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

E. READING LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A12A1C1	3D	A2A12A1P1-6	8B	A2A12A1R12	7B
C2	3D	P1-7	8D	R13	7B
C3	7F	P1-8	8C	R14	7B
C4	6E	P1-9	*	R15	8B
C5	6E	P1-10	8B	R16	7B
C6	6D	P1-A1	2E	R17	7C
C7	7B	P1-A2	8C	R18	7C
C8	6B	P1-A3	8E	R19	6B
C9	6B	Q1	7D	R20	6C
C10	6B	Q2	7E	R21	6D
C11	6C	Q3	7B	R22	5D
C12	6C	Q4	5D	R23	5C
C13	5D	Q5	3E	R24	5D
C14	4D	Q6	7D	R25	5C
C15	4C	R1	8D	R26	5C
C16	4D	R2	8D	R27	5B
C17	4C	R3	7E	R28	5B
C18	3C	R4	7F	R29	5B
C19	3D	R5	7F	R30	3D
C20	3D	R6	7E	R31	4D
CR1	6C	R7	3D	R32	4D
CR2	5C	R8	6F	R33	4D
P1-1		R9	6E	R34	4D
thru	*	R10	6E	R35	4C
P1-5		R11	6E	R36	3C

* NOT USED

NOTES FOR FIGURE 5-43 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A12A1R37	4C	A2A12A1T1	5E	A2A12A1TP2	2E
R38	3D	T2	2D	TP3	8E
RT1	5B	TP1	7F	TP4	7C

TRANSISTOR DC VOLTAGE CHART

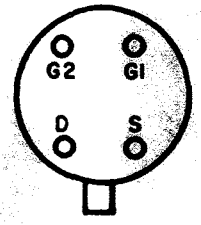
	E	B	C
Q1	+1.2	+0.6	0
Q2	+7.7	+7.1	0
Q3	+0.75	+1.30	+10
Q6	+0.6	0	0

	G		D	S
	G1	G2		
Q4	+7.5	+7.5	+16.0	+7.8
Q5	+7.5	+10.0	+18.2	+7.8

SPECIFIC NOTES

1. TRANSISTOR VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH R27 AND R39 SET FOR PROPER OPERATION AND WITH EQUIPMENT CONTROLS SET FOR OPERATION IN NORMAL LSB MODE, UNKEYED.

2. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLESHOOTING OF THE VARIOUS TRANSMITTER FUNCTIONS IN AN OPERATING T-827H/URT TRANSMITTER. FOR DEPOT MAINTENANCE THE MODULE UNDER TEST WILL BE OPERATED IN PLUG-IN UNIT TEST SET TS-2135/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THE COUNTERPART CONTROLS OF THE T-827H/URT.



BASE CONFIGURATION FOR 3N200
(BOTTOM VIEW)

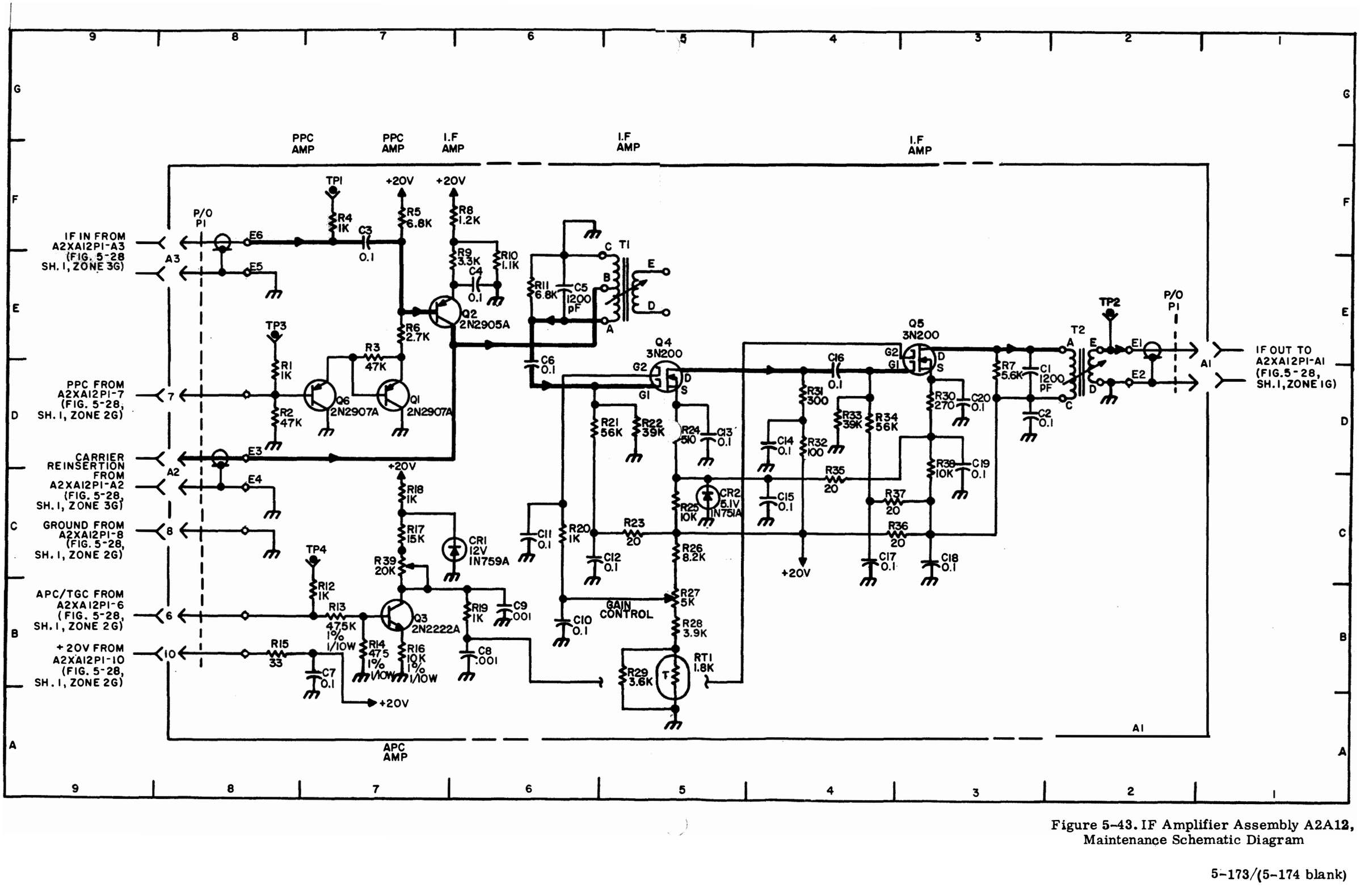


Figure 5-43. IF Amplifier Assembly A2A12, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-44

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATORS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX PARTIAL REFERENCE DESIGNATORS WITH APPLICABLE UNIT, ASSEMBLY AND/OR SUBASSEMBLY DESIGNATORS.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.

C. ⟶⟨⟩⟵ INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

D. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

E. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A21A19C1	6F	A2A21A19E1 thru E8	**	A2A21A19P1-D	9B
C2	5F	K1	8D	P1-E	**
C3	5E	P1-1	9A	P1-F	9C
C4	*	P1-2	9B	P1-G	**
C5	*	P1-3	9E	P1-H	9B
C6	*	P1-4	9B	P1-I	*
C7	4E	P1-5	**	P1-J	**
C8	3E	P1-6	9C	P1-K	**
C9	2D	P1-7	9C	P1-L	1A
C10	3E	P1-8	**	P1-M	9A
C11	6C	P1-9	*	P1-N	**
C12	5B	P1-10	1A	P1-O	*
C13	4C	P1-11	9A	P1-P	9C
C14	*	P1-12	**	P1-Q	**
C15	*	P1-13	9C	P1-R	**
C16	6D	P1-14	**	P1-S	1D
C17	7D	P1-15	**	P1-T	9C
C18 thru C22	*	P1-16	9C	P1-U	9D
C23	8D	P1-17	1D	P1-V	9A
C24	6E	P1-18	9A	Q1	6F
CR1	2E	P1-A	9A	Q2	2E
CR2	8C	P1-B	9B	Q3	7D
CR3	8E	P1-C	**	Q4	6D
				Q5	7F
				R1	6F

* NOT USED.
** NOT SHOWN.

NOTES FOR FIGURE 5-44 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A21A19R2	6F	A2A21A19R18	5C	A2A21A19R34	3B
R3	5F	R19	5C	R35	5F
R4	7E	R20	5C	R36	7E
R5	7E	R21	5C	R37	8E
R6	6E	R22	5C	R38 thru R55	*
R7	5E	R23	6D		
R8	4E	R24	6D		
R9	3E	R25	7D	R56	6E
R10	3E	R26	7D	RT1	5E
R11	2E	R27	7C	T1	9C
R12	2E	R28	8C	TP1	7B
R13	1E	R29	8C	TP2	5C
R14	1E	R30	9C	TP3	8C
R15	7F	R31	8D	TP4	4E
R16	3C	R32	8D	U1	4C,5C
R17	4C	R33	4C	U2	5E

* NOT USED. ** NOT SHOWN.

TRANSISTOR DC VOLTAGE CHART

	S	G	D
Q1	0	+0.5V	0
	E	B	C
Q2	+0.5V	+0.1V	0
Q3	0	-2.3V	0
Q4	0	+4.3V	0
Q5	+20V	+19.4V	+1.0V

INTEGRATED CIRCUIT DC VOLTAGE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U1	0	0.0	NC	-15.0	NC	0	0	NC	+15.0	0	NC	0	+15	NC
U2	NC	NC	NC	0	0.0	-15	NC	NC	NC	0	+15.0	NC	NC	NC

SPECIFIC NOTES

1. LSB AND USB AUDIO PROCESSOR PCB SUBASSEMBLIES A2A21A18 AND A2A21A19 ARE IDENTICAL. THE PREFIXES A2A21A18 AND A2A21A19 MAY THEREFORE BE USED INTERCHANGEABLY IN THE PARTS LOCATION INDEX.
2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS ARE TAKEN TO GROUND WITH ALL VARIABLE RESISTORS ADJUSTED FOR PROPER OPERATION AND EQUIPMENT CONTROLS SET FOR OPERATION IN NORMAL (NON-DATA) LSB MODE.
3. NC IN VOLTAGE TABLES DENOTES PIN NOT CONNECTED.

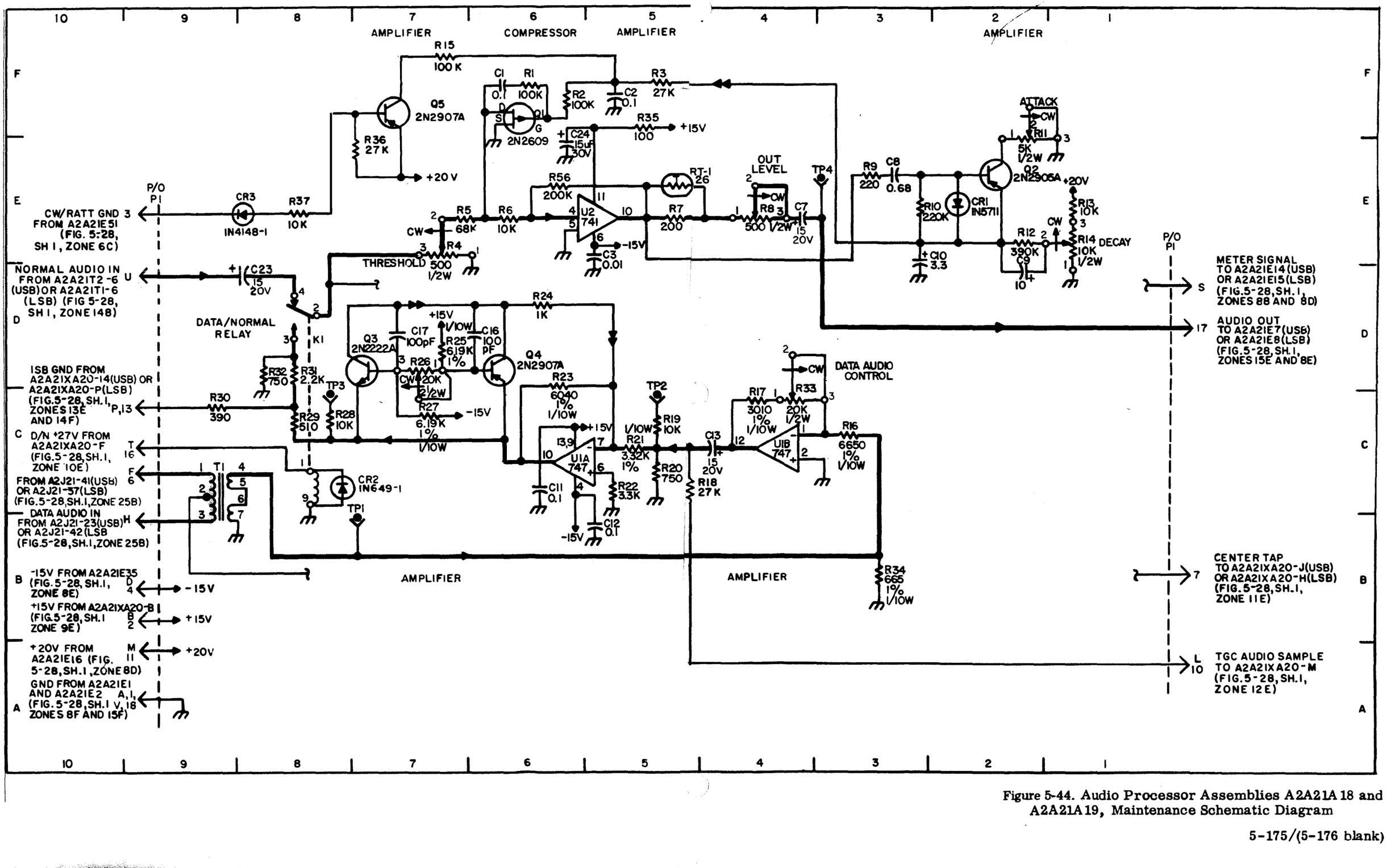


Figure 5-44. Audio Processor Assemblies A2A21A18 and A2A21A19, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-45

GENERAL NOTES

A. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX PARTIAL REFERENCE DESIGNATORS WITH APPLICABLE UNIT, ASSEMBLY AND/OR SUBASSEMBLY DESIGNATORS.

B. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE IN OHMS, ±5%, 1/4 WATT.
ALL CAPACITORS ARE IN MICROFARADS.

C. ⟶ ⟵ INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER. TO FIND MATING END OF BROKEN LINE PROCEED IN PARALLEL WITH DIAGRAM BORDER.

D. VOLTAGE MEASUREMENTS ARE TAKEN WITH DIGITAL MULTIMETER 89536-8800A/AA.

E. READINGS LISTED IN TABLES ARE ACCURATE TO WITHIN ±10%.

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A21A20C1	*	A2A21A20CR13	*	A2A21A20P1-12	18B
C2	*	CR14	17B	P1-13	18F
C3	*	CR15	18B	P1-14	2G
C4	*	CR16	17B	P1-15	2G
C5	11H	CR17	15B	P1-16	2H
C6	9G	CR18	11C	P1-17	2D
C7	16E	CR19	18G	P1-18	18A
C8	6D	CR20	14A	P1-19 thru P1-21	*
C9	5C	CR21	8D		
C10	*	CR22	*		
C11	*	CR23	17C	P1-A	18A
C12	15C	K1	13A	P1-B	2C
C13	6D	K2	9D	P1-C	18H
CR1	*	K3	17G	P1-D	18D
CR2	9H	P1-1	18A	P1-E	2B
CR3	8H	P1-2	**	P1-F	18A
CR4	5F	P1-3	*	P1-G	*
CR5	7G	P1-4	2E	P1-H	18B
CR6	12H	P1-5	18A	P1-J	18B
CR7	15F	P1-6	*	P1-K	*
CR8	16F	P1-7	18B	P1-L	2F
CR9	17E	P1-8	*	P1-M	18D
CR10	17F	P1-9	*	P1-N	*
CR11	4E	P1-10	18F	P1-O	*
CR12	4D	P1-11	18F	P1-P	2H
				P1-Q	*

* NOT USED
** NOT SHOWN

TRANSISTOR DC VOLTAGE CHART

DATA/NORMAL SWITCH IN DATA POSITION.
DATA KEY AND AUDIO DATA PRESENT

	E	D	C
Q1	5.0	4.7	0
Q2	0	0	24
Q5	0	0.7	0
Q6	0	0	5.0
Q7	0.7	0.07	0.65
Q8	-15	-14.4	-14.9
Q9	4.8	4.2	0
Q10	0	0.7	0.15
Q11	0	0.6	0.85
Q12	0	0	0.2
Q13	0	0	4.05
Q14	16.3	16.9	20.0

INTEGRATED CIRCUIT DC VOLTAGE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U2	4.05	0.07	0.	4.05	0	4.8	0	4.05	0.5	4.05	0.20	4.05	0	5.00
U3	-	16.3	0.02	0	-15	0	0	16.3	-	NC	-	-	-	-
U6	0.85	5.00	5.00	5.00	5.00	0.2	0	NC	NC	NC	0	NC	0.9	5.00
U7	16.3	5.00	0	-	-	-	-	-	-	-	-	-	-	-

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND WITH EQUIPMENT CONTROLS SET FOR OPERATION IN DATA LSB MODE, KEYED. DATA AUDIO SIGNAL (OR 1 kHz TONE) AT A LEVEL OF 0 dBm IS ALSO REQUIRED.

2. NC IN VOLTAGE TABLES DENOTES PIN NOT CONNECTED.

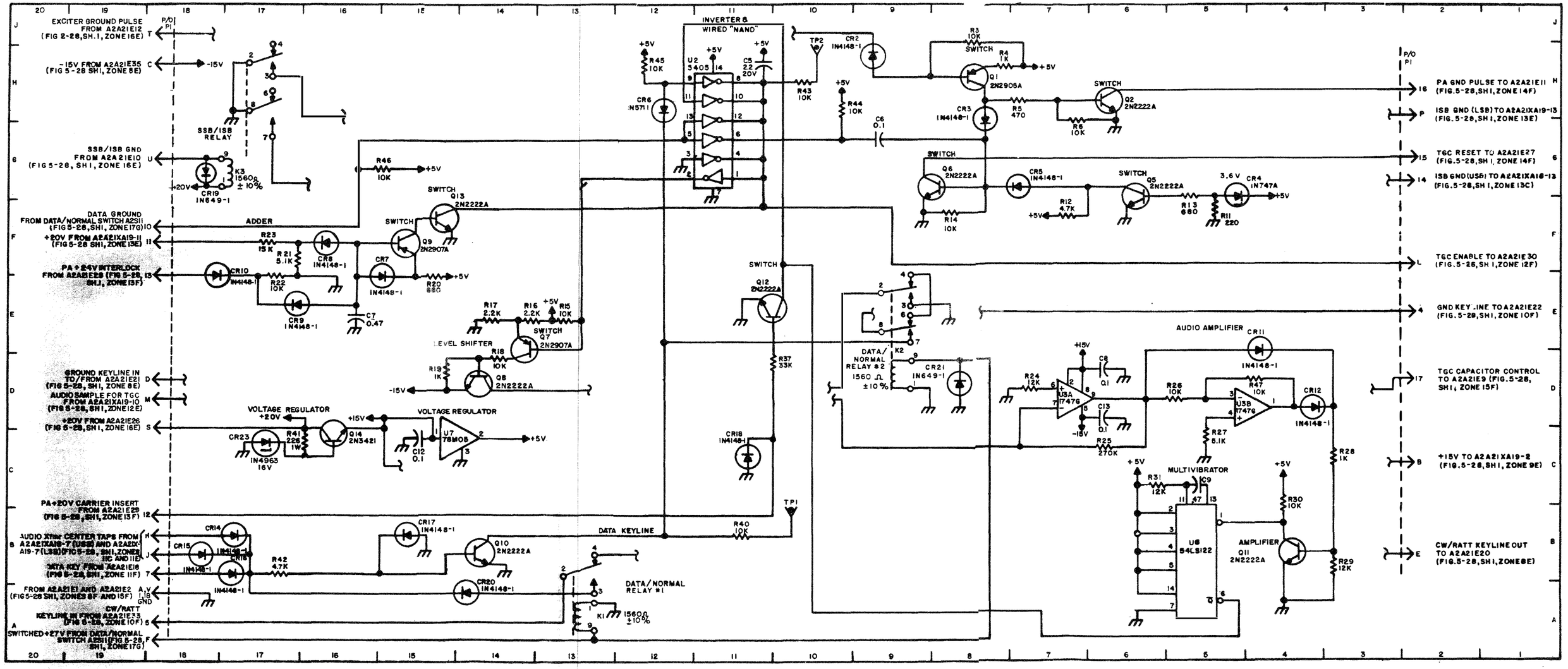


Figure 5-45. Audio Control A2A21A20, Maintenance Schematic Diagram