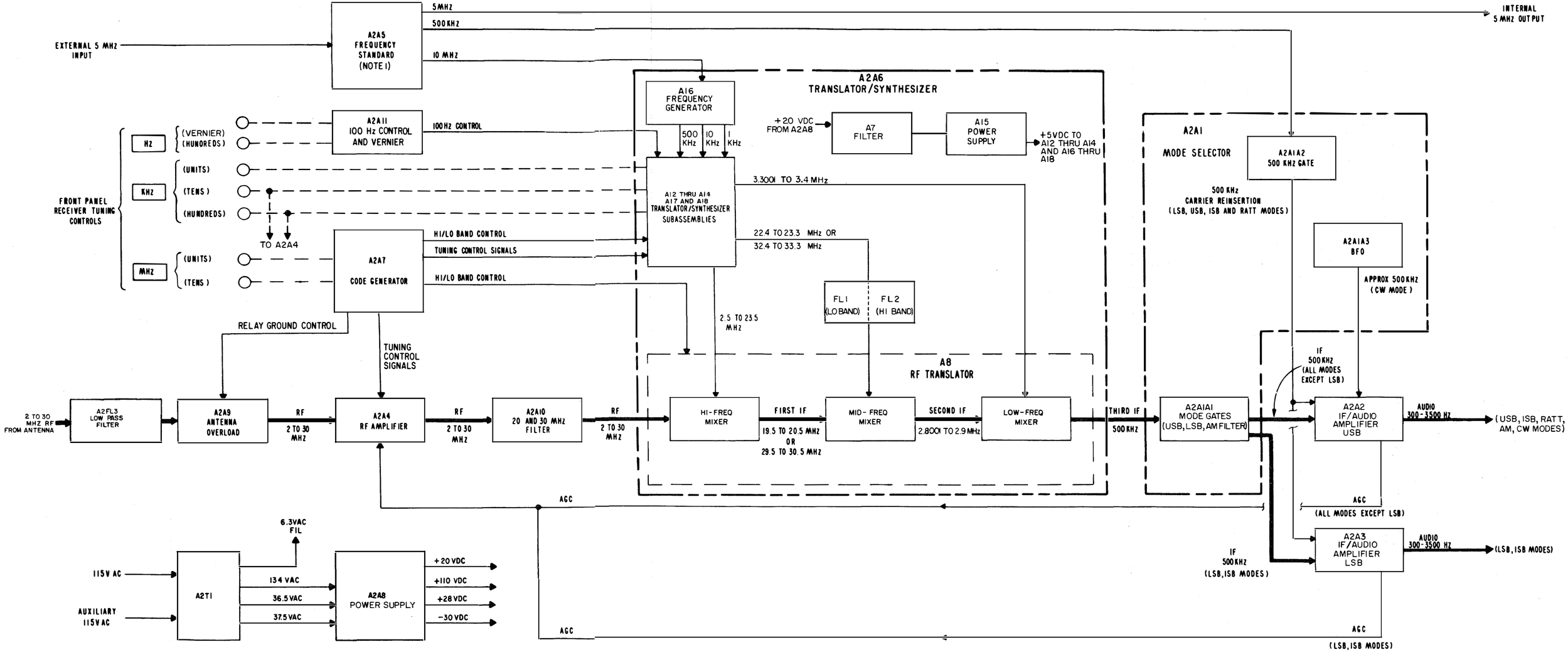


Figure 3-1. Radio Receiver R-1051G/URR, ●verall Functional Block Diagram

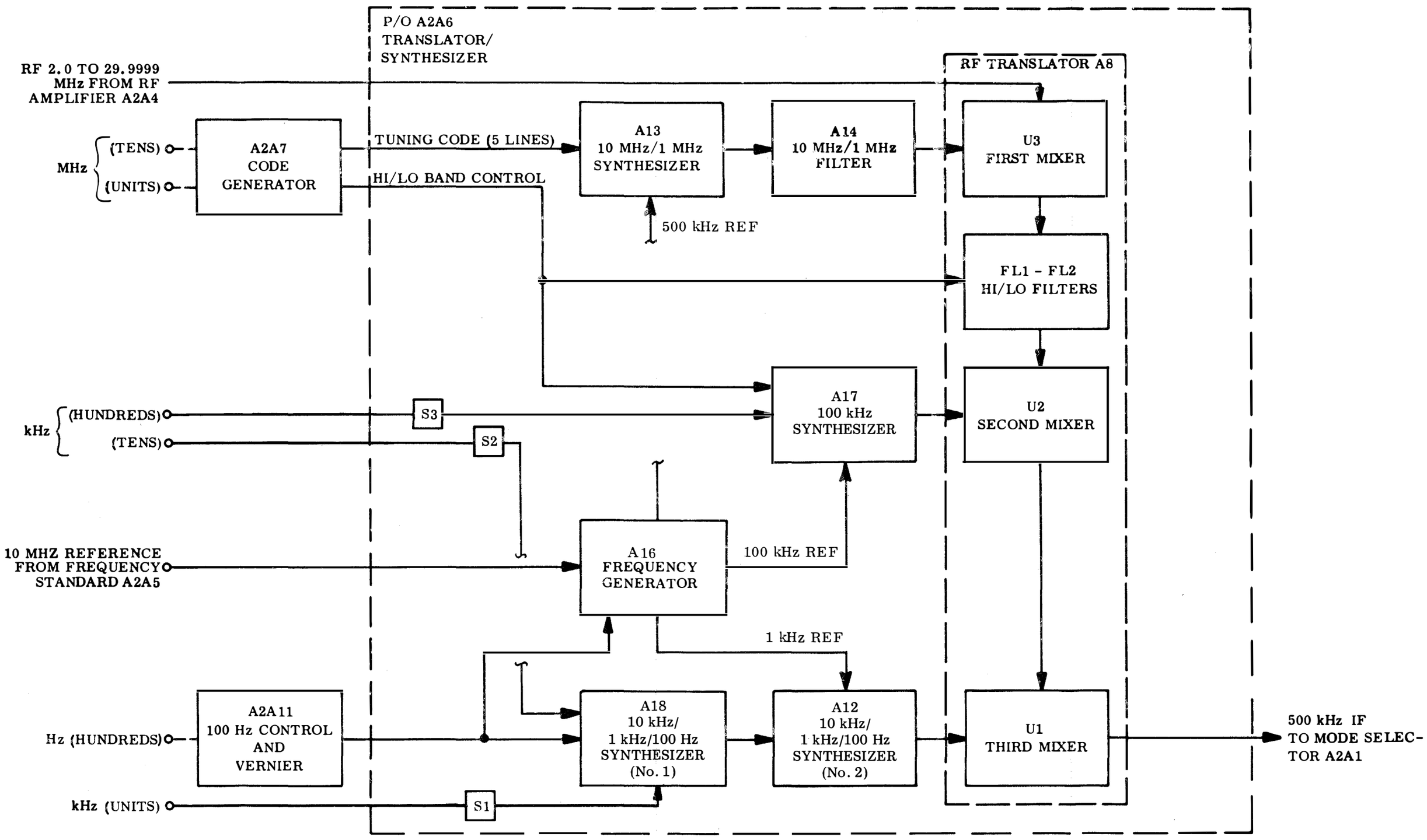


Figure 3-2. Frequency Synthesis and Translation, Functional Block Diagram

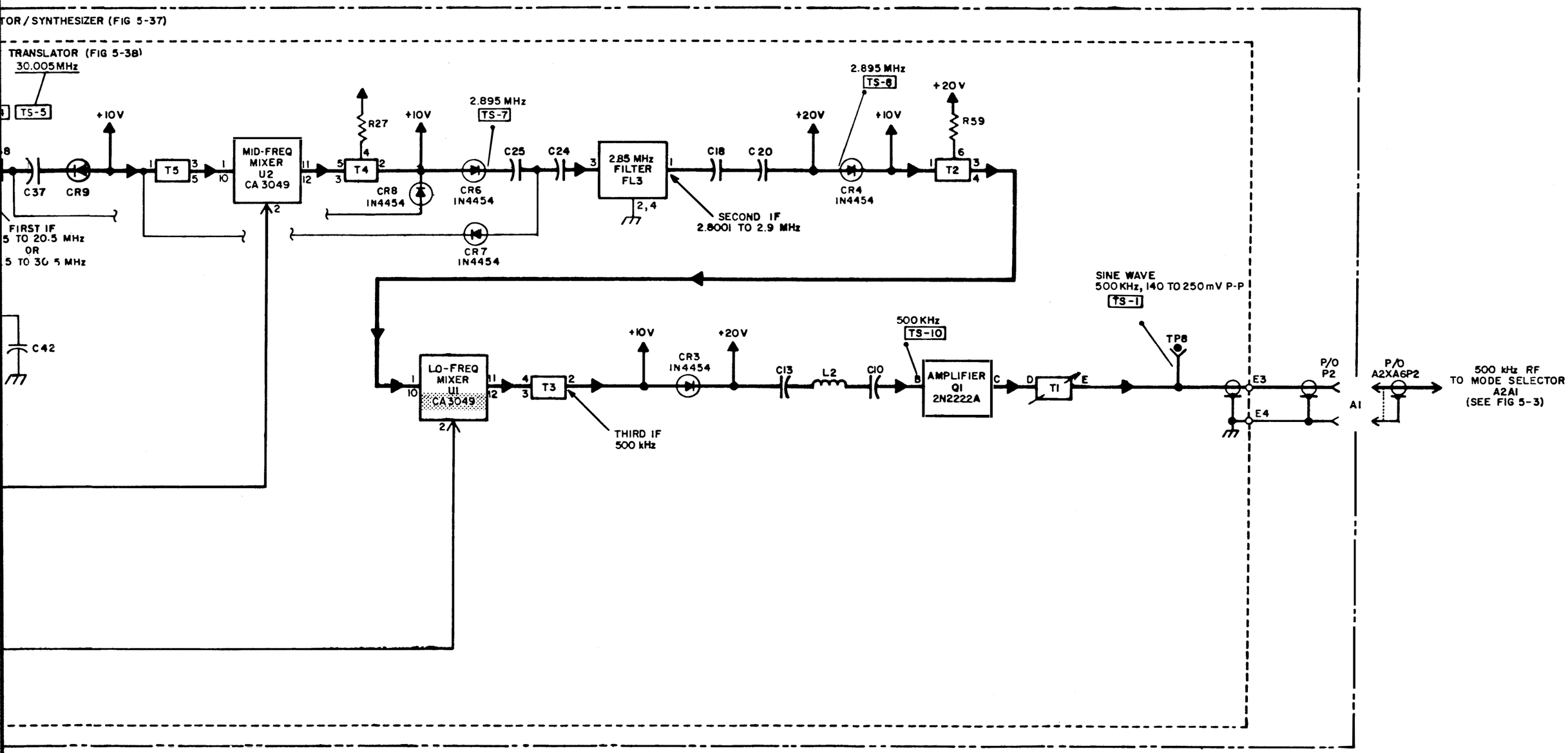
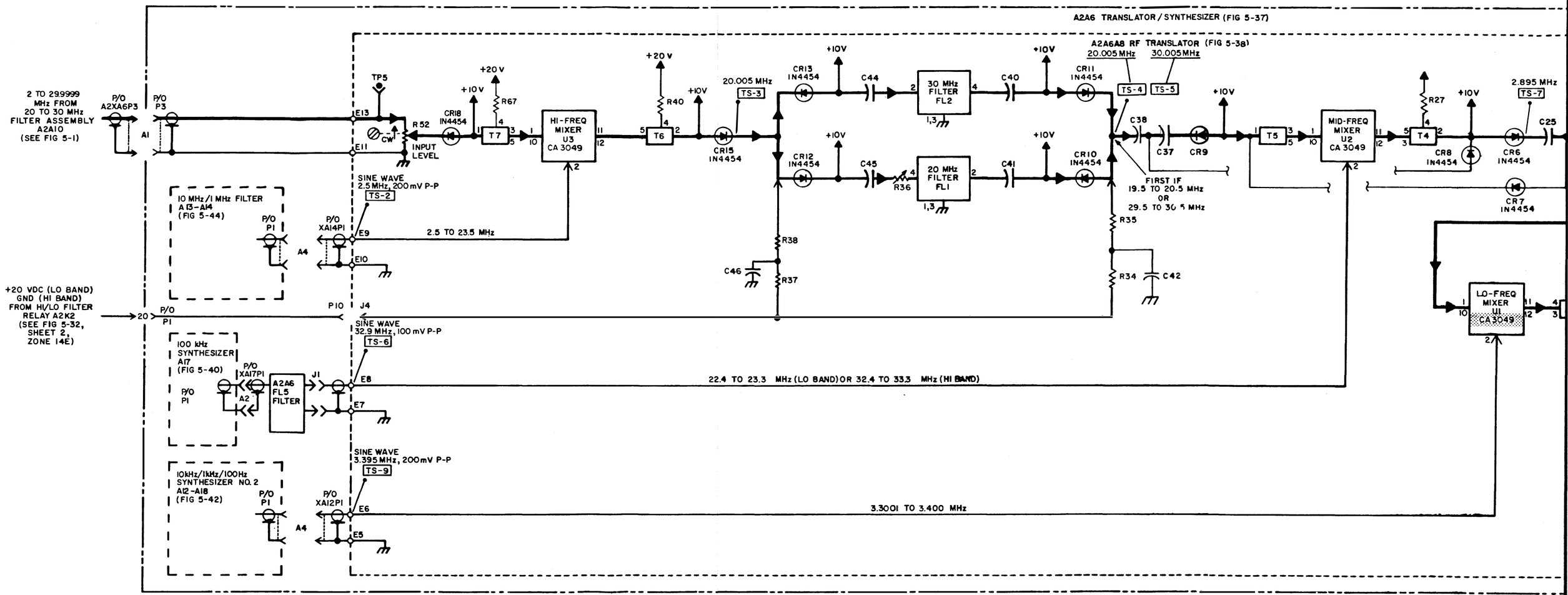


Figure 5-2. RF-to-IF Conversion, Signal Flow Diagram


A2A6 TRANSLATOR / SYNTHESIZER (FIG 5-37)
A2A6A8 RF TRANSLATOR (FIG 5-38)
20.005 MHz
30.005 MHz
2 TO 299999 MHz FROM 20 TO 30 MHz FILTER ASSEMBLY A2A10 (SEE FIG 5-1)
P/O A2XA6P3
P/O P3
A1
TP5
E13
E11
R52
CW
INPUT LEVEL
CR18 IN4454
+10V
+20V
R67
T7
HI-FREQ MIXER U3 CA 3049
R40
T6
20.005 MHz
TS-3
CR15 IN4454
CR13 IN4454
CR12 IN4454
C44
C45
30 MHz FILTER FL2
20 MHz FILTER FL1
R36
C40
C41
CR11 IN4454
CR10 IN4454
TS-4
TS-5
C38
C37
CR9
FIRST IF
19.5 TO 20.5 MHz
OR
29.5 TO 30.5 MHz
T5
MID-FREQ MIXER U2 CA 3049
R27
T4
2.895 MHz
TS-7
C25
CR8 IN4454
CR6 IN4454
CR7 IN4454
R35
R34
C42
R38
R37
C46
SINE WAVE
2.5 MHz, 200 mV P-P
TS-2
10 MHz/1 MHz FILTER A13-A14 (FIG 5-44)
P/O P1
P/O XA14P1
A4
E9
E10
2.5 TO 23.5 MHz
+20 VDC (LO BAND) GND (HI BAND) FROM HI/LO FILTER RELAY A2K2 (SEE FIG 5-32, SHEET 2, ZONE 14E)
20
P10
J4
SINE WAVE
32.9 MHz, 100 mV P-P
TS-6
100 kHz SYNTHESIZER A17 (FIG 5-40)
P/O XA17P1
A2
A2A6 FL5 FILTER
J1
E8
E7
22.4 TO 23.3 MHz (LO BAND) OR 32.4 TO 33.3 MHz (HI BAND)
LO-FREQ MIXER U1 CA 3049
SINE WAVE
3.395 MHz, 200 mV P-P
TS-9
10kHz/1kHz/100Hz SYNTHESIZER NO. 2 A12-A18 (FIG 5-42)
P/O XA12P1
E6
E5
3.3001 TO 3.400 MHz

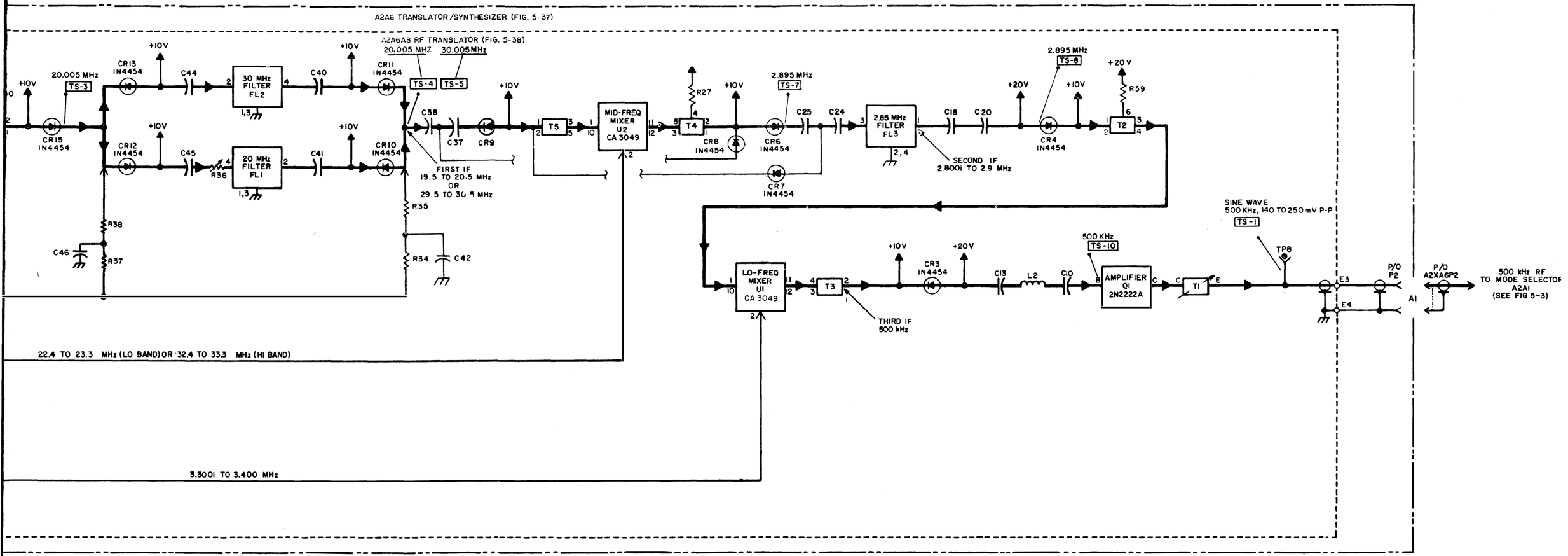
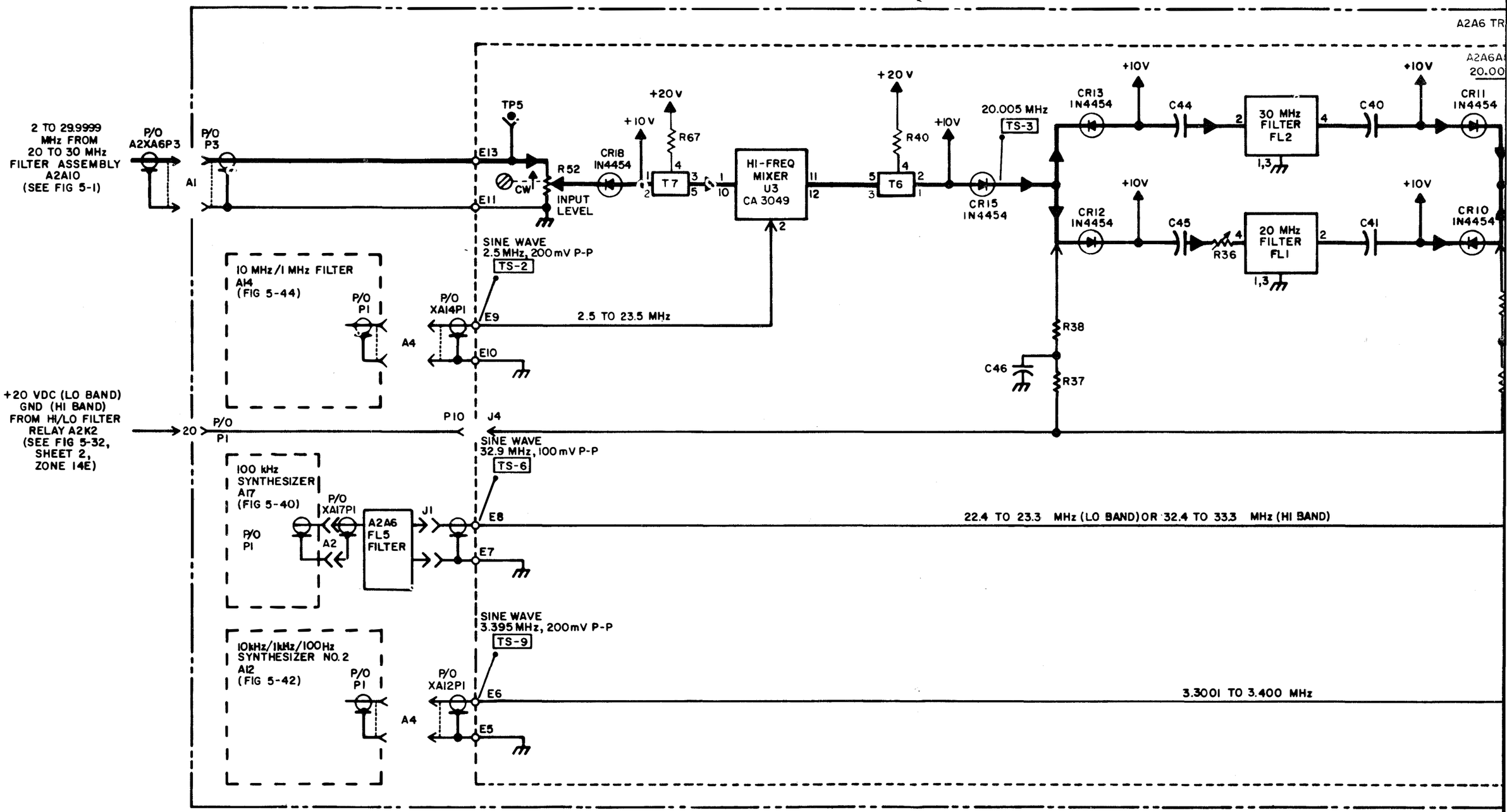


Figure 5-2A. RF-to-IF Conversion, Signal Flow Diagram


A2A6 TR
A2A6A
20.00
2 TO 29.9999 MHz FROM 20 TO 30 MHz FILTER ASSEMBLY A2A10 (SEE FIG 5-1)
P/O A2XA6P3
P/O P3
A1
E13
E11
TP5
CW
R52
INPUT LEVEL
CR18 IN4454
+10V
+20V
R67
T7
HI-FREQ MIXER U3 CA 3049
+20V
R40
T6
+10V
20.005 MHz
TS-3
CR15 IN4454
CR13 IN4454
+10V
C44
30 MHz FILTER FL2
C40
+10V
CR11 IN4454
CR12 IN4454
C45
R36
20 MHz FILTER FL1
C41
CR10 IN4454
R38
C46
R37
SINE WAVE 2.5 MHz, 200 mV P-P
TS-2
10 MHz/1 MHz FILTER A14 (FIG 5-44)
P/O P1
P/O XA14P1
A4
E9
E10
2.5 TO 23.5 MHz
+20 VDC (LO BAND) GND (HI BAND) FROM HI/LO FILTER RELAY A2K2 (SEE FIG 5-32, SHEET 2, ZONE 14E)
20
P/O P1
P10
J4
SINE WAVE 32.9 MHz, 100 mV P-P
TS-6
100 kHz SYNTHESIZER A17 (FIG 5-40)
P/O XA17P1
P/O P1
A2
A2A6 FL5 FILTER
J1
E8
E7
22.4 TO 23.3 MHz (LO BAND) OR 32.4 TO 33.3 MHz (HI BAND)
SINE WAVE 3.395 MHz, 200 mV P-P
TS-9
10kHz/1kHz/100Hz SYNTHESIZER NO. 2 A12 (FIG 5-42)
P/O P1
P/O XA12P1
A4
E6
E5
3.3001 TO 3.400 MHz

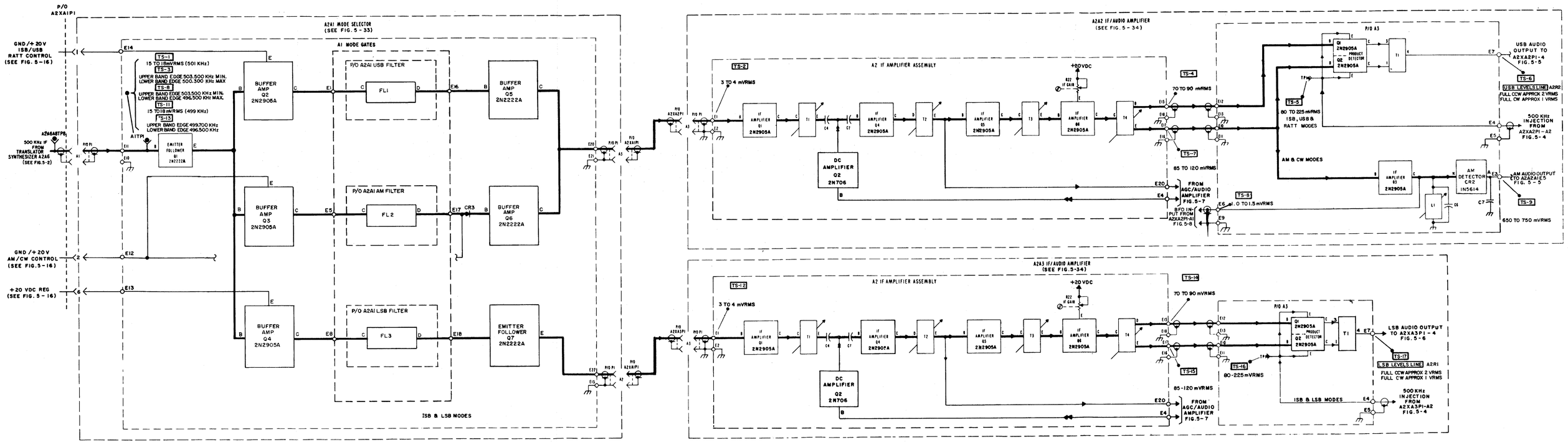


Figure 5-3. IF Amplification and Control, Signal Flow Diagram

TS-7 SET RF SIGNAL GENERATOR FOR A LOCKED FREQUENCY OUTPUT OF 2.100 MHz. MODULATE THE RF SIGNAL GENERATOR OUTPUT WITH 1000 Hz AT 30 PERCENT. SET MODE SELECTOR SWITCH A2S2 TO AM, AND VERIFY THE MEASUREMENTS AT THE TEST POINTS FOR TS-1 AND TS-2, OBSERVING THE SAME INDICATIONS ON THE RF MILLIVOLTMETER. MEASURE THE IF INPUT SIGNAL TO THE BASE OF THE USB PRODUCT DETECTOR A2A2A3Q2 ON THE RF MILLIVOLTMETER AT A2A2A2E17 TO BE AS INDICATED.

TS-8 SET THE SIGNAL GENERATOR FOR CW OPERATION AND MEASURE THE -3 DB POINTS FOR AM/CW OPERATION IN A MANNER SIMILAR TO THAT OUTLINED IN TS-3 FOR USB OPERATION.

TS-9 MEASURE THE AUDIO OUTPUT VOLTAGE OF THE AM DETECTOR ON THE AC VOLTMETER AT A2A2A3E3 TO BE AS INDICATED.

TS-10 REMOVE THE MODULATION FROM THE OUTPUT SIGNAL OF THE RF SIGNAL GENERATOR. SET THE MODE SELECTOR SWITCH A2S2 TO CW. MEASURE THE BFO INPUT SIGNAL TO THE CATHODE OF THE AM DETECTOR ON THE RF MILLIVOLTMETER AT A2A2A3E6 TO BE AS INDICATED. CONNECT HEADSET TO PHONE USB JACK A2J2. WITH THE USB LEVELS LINE CONTROL A2R2 AT MIDRANGE AND USB LEVELS PHONE CONTROL A2A5 AT THE FULLY COUNTERCLOCKWISE POSITION, ADJUST A2R5 SLOWLY CLOCKWISE UNTIL THE AUDIO LEVEL IS COMFORTABLE, THEN VARY BFO FREQUENCY CONTROL A2R6. AN AUDIBLE TONE SHOULD BE HEARD IN THE EARPHONES WITH A ZERO BEAT NEAR THE MIDRANGE OF BFO CONTROL A2R6.

TS-11 DISCONNECT TEST EQUIPMENT FROM JACK A1A1J5. CONNECT A 620 OHM LOAD RESISTOR ACROSS PINS A AND B OF LSB AUDIO OUT JACK A1A1J6. CONNECT VERTICAL INPUT OF OSCILLOSCOPE AND AC VOLTMETER INPUT ACROSS PINS A AND B OF JACK A1A1J6; CONNECT LOW SIDE OF AC VOLTMETER AND OSCILLOSCOPE TO PIN B. SET MODE SELECTOR SWITCH A2S2 TO LSB. ADJUST RF SIGNAL GENERATOR OUTPUT FREQUENCY FOR 2.099 MHz BY PEAKING AUDIO OUTPUT OF RECEIVER AS OBSERVED ON AC VOLTMETER. ADJUST RF GAIN CONTROL A2R3 TO OBTAIN INPUT SIGNAL LEVEL TO THE MODE SELECTOR AT A2A2A1TP1, OF 15 TO 18 mVRMS ON THE RF MILLI-VOLTMETER.

TS-12 MEASURE THE 499 kHz IF INPUT SIGNAL LEVEL TO THE IF/AUDIO AMPLIFIER AT A2A3A2E1 ON THE RF MILLIVOLTMETER TO BE AS INDICATED.

TS-13 IN A MANNER SIMILAR TO TS-3, MEASURE THE -3 DB POINTS FOR LSB OPERATION.

TS-14 MEASURE THE 499 kHz IF SIGNAL TO THE LSB PRODUCT DETECTOR A2A3A3Q1 ON THE RF MILLIVOLTMETER AT A2A3A2E15 TO BE AS INDICATED.

TS-15 MEASURE THE 499 kHz IF SIGNAL TO THE LSB PRODUCT DETECTOR A2A3A3Q2 ON THE RF MILLIVOLTMETER AT A2A3A2E17 TO BE AS INDICATED.

TS-16 MEASURE THE 500 kHz IF INJECTION SIGNAL TO THE PRODUCT DETECTOR ON THE RF MILLIVOLTMETER AT A2A3A3TP1 TO BE AS INDICATED.

TS-17 MEASURE THE AUDIO OUTPUT SIGNAL OF THE LSB IF/AUDIO AMPLIFIER WITH A2R1 FULL CCW AND WITH A2R1 FULL CW ON THE AC VOLTMETER AT A2A3A1E1. VOLTAGES TO BE AS INDICATED.

TEST DATA FOR FIGURE 5-4 (CONTINUED)

SPECIFIC NOTES (CONT.)

3. TEST STEPS:

TS-1 REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST. USING THE MULTIMETER, MEASURE THE OPERATING VOLTAGE INPUT TO THE 500 kHz GATE SUBASSEMBLY AT A2A1A2E5 TO BE AS INDICATED FOR ISB. SET THE MODE SELECTOR SWITCH CONSECUTIVELY TO RATT, AM, CW, USB, AND LSB, AND VERIFY THAT THE VOLTAGE AMPLITUDE AT A2A1A2E5 IS AS SPECIFIED. RESET THE MODE SELECTOR SWITCH TO LSB.

TS-2 USING THE RF MILLIVOLTMETER, MEASURE THE 500 kHz OUTPUT SIGNAL FROM THE 500 kHz GATE SUBASSEMBLY AT A2A1A2E2 TO BE AS SPECIFIED.

TS-3 MEASURE THE GATED 500 kHz INPUT SIGNAL TO THE USB IF AUDIO AMPLIFIER AT A2A2A3TP1 ON THE RF MILLIVOLTMETER TO BE AS SPECIFIED.

TS-4 MEASURE THE GATED 500 kHz INPUT SIGNAL TO THE LSB IF AUDIO AMPLIFIER AT A2A3A3TP2 ON THE RF MILLIVOLTMETER TO BE AS SPECIFIED.

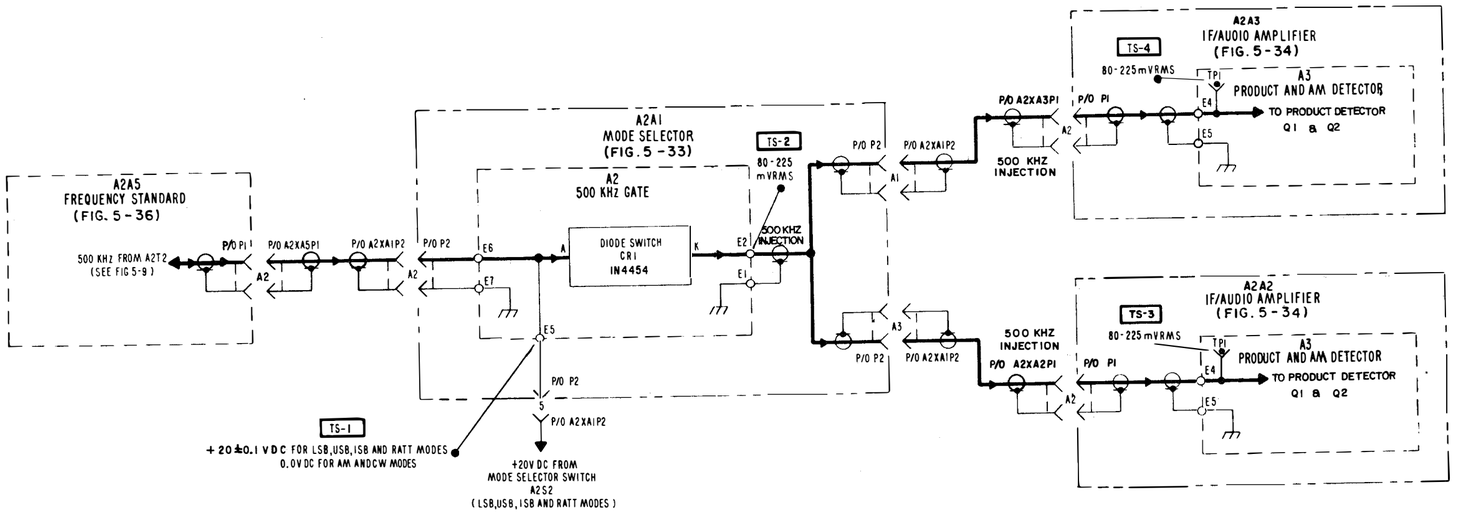


Figure 5-4. 500 kHz Gating, Signal Flow Diagram

TEST DATA FOR FIGURE 5-4

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
MULTIMETER AN/USM-311 OR EQUIVALENT
RF MILLIVOLTMETER 04901-92B-S5
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. SEE NOTE B.
EXTENDER CABLES 98738-30A226277-21-11 AND 98738-30A226427-21-11 FOR MODE SELECTOR ASSEMBLY A2A1

B. THE INFORMATION CONTAINED IN THE FOLLOWING NOTES AND ON THE SIGNAL FLOW DIAGRAM 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 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. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-51
CORRECTIVE MAINTENANCE, PARAGRAPH 6-45
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-60, 7-8, 7-10, 7-12 AND 7-15

SPECIFIC NOTES

1. PRELIMINARY SETUP. MAKE PRIMARY POWER AVAILABLE TO THE EQUIPMENT BY PLACING SYSTEM CIRCUIT BREAKER TO ON. LOOSEN FRONT-PANEL SCREWS AND SLIDE MAIN-FRAME CHASSIS OUT OF CASE. DEFEAT INTERLOCK SWITCH A1S1 BY PULLING SHAFT OUT, SO THAT PLUNGER EXTENDS FORWARD OF CASE. MAKE THE FOLLOWING PRELIMINARY CONTROL SETTINGS BEFORE BEGINNING THE TEST PROCEDURE:

UNIT	CONTROL	POSITION
RADIO RECEIVER R-1051G/URR	MODE SELECTOR SWITCH A2S2	STD BY
	FREQUENCY CONTROLS	2.100 MHz

2. TEST SETUP.

   a. REMOVE RECEIVER MODE SELECTOR ASSEMBLY A2A1 FROM RECEIVER, AND RECONNECT VIA THE EXTENDER CABLES.

   b. LOOSEN THE SCREWS AND REMOVE COVER FROM MODE SELECTOR.

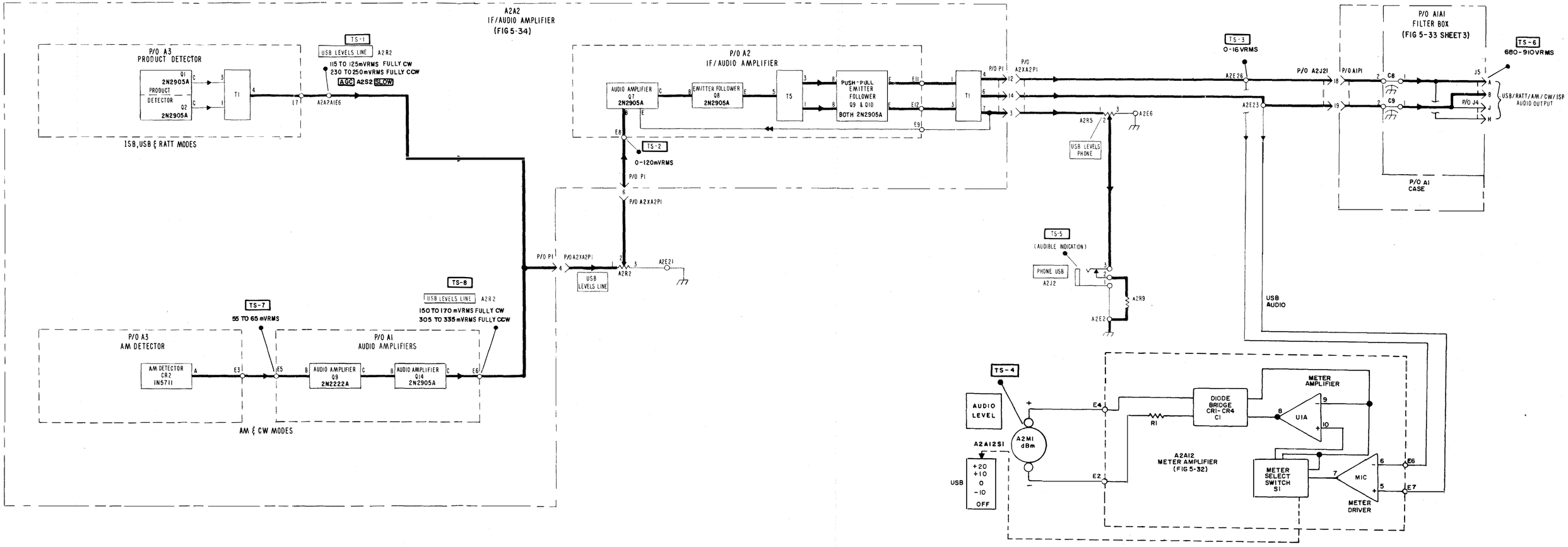


Figure 5-5. Audio Amplification (USB, RATT, AM and CW Modes), Signal Flow Diagram

TEST DATA FOR FIGURE 5-5

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT
AC VOLTMETER 28480-400E OR EQUIVALENT (2 REQUIRED)
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. SEE NOTE B.
EARPHONE HEADSET NT-49985/A
EXTENDER CABLE 98738-30A226280-21-11 FOR IF/AUDIO AMPLIFIER ASSEMBLIES A2A2 AND A2A3
RESISTOR, 620 OHMS

B. THE INFORMATION CONTAINED IN THE FOLLOWING NOTES AND ON THE SIGNAL FLOW DIAGRAM 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 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. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

C. REFERENCE: IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-64
TROUBLESHOOTING SEQUENCE, FIGURE 5-23
CORRECTIVE MAINTENANCE, PARAGRAPH 6-56
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-12 THROUGH 7-15

D. SWITCH A2A12S1 SHOWN IN USB, +20 dBm POSITION.

E. ▭ INDICATES EQUIPMENT FRONT PANEL MARKING.

F. —≀— INDICATES BREAK POINTS USED TO REDUCE DIAGRAM CLUTTER.

G. ◄— DENOTES FEEDBACK.

SPECIFIC NOTES

1. PRELIMINARY SETUP. MAKE PRIMARY POWER AVAILABLE TO THE EQUIPMENT BY PLACING SYSTEM CIRCUIT BREAKER TO ON. LOOSEN FRONT PANEL SCREWS AND SLIDE MAIN FRAME CHASSIS OUT OF CASE. DEFEAT INTERLOCK SWITCH A1S1 BY PULLING SHAFT OUT, SO THAT PLUNGER EXTENDS FORWARD OF CASE. MAKE THE FOLLOWING PRELIMINARY CONTROL SETTINGS BEFORE BEGINNING THE TEST PROCEDURE:

UNIT	CONTROL	POSITION
RADIO RECEIVER R-1051G/URR	MODE SELECTOR SWITCH A2S2	STD BY
	AGC SWITCH A2S3	SLOW
	USB/OFF/LSB AUDIO LEVEL SWITCH A2A12S1	USB, 20 dBm
	Hz SWITCH A2A11S1	000
	FREQUENCY CONTROLS	2.100 MHz

2. TEST SETUP.

a. APPLY THE RF OUTPUT FROM THE RF SIGNAL GENERATOR TO THE RECEIVER ANT JACK A1J23. SET THE RF SIGNAL GENERATOR OUTPUT FOR A FREQUENCY OF 2.101 MHz, AT 500 uV.

b. REMOVE IF/AUDIO AMPLIFIER ASSEMBLY A2A2 FROM RECEIVER, AND RECONNECT VIA THE EXTENDER CABLE.

c. LOOSEN THE SCREWS AND REMOVE COVER FROM IF/AUDIO AMPLIFIER A2A2.

d. CONNECT A 620 OHM TERMINATING RESISTOR BETWEEN PINS A AND B OF USB AUDIO OUT JACK A1A1J5. CONNECT VERTICAL INPUT OF OSCILLOSCOPE AND AC VOLTMETER INPUT TO PINS A AND B OF A1A1J5; CONNECT LOW SIDE OF AC VOLTMETER AND OSCILLOSCOPE TO PIN B. SET THE MODE SELECTOR SWITCH A2S2 TO USB.

NOTE

ADJUST THE RF SIGNAL GENERATOR FOR OPTIMUM OUTPUT FREQUENCY BY ADJUSTING THE FREQUENCY CONTROL FOR MAXIMUM AUDIO OUTPUT AS OBSERVED ON THE AC VOLTMETER AT A1A1J5.

3. TEST STEPS.

TS-1 REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST. USING THE AC VOLTMETER, MEASURE THE PRODUCT DETECTOR OUTPUT AUDIO SIGNAL LEVEL TO BE AS INDICATED AT A2A2A1E6.

TS-2 MEASURE THE SIGNAL LEVEL AT A2A2A2E8 TO BE AS INDICATED: AC VOLTMETER INDICATION DEPENDS ON SETTING OF USB LEVELS LINE CONTROL A2R2.

TS-3 MEASURE THE AUDIO SIGNAL LEVEL BETWEEN A2E26 AND A2E23 TO BE AS INDICATED; AC VOLTMETER INDICATION DEPENDS ON SETTING OF USB LEVELS LINE CONTROL A2R2. THE AC VOLTMETER CONNECTED ACROSS PINS A AND B OF A1A1J5 GIVES THE SAME INDICATION AT TS-6.

TS-4 THE AUDIO LEVEL METER HAS A RANGE FROM -20 dBm TO +22 dBm IN 10 dB STEPS. THE ZERO READING ON THE METER IS THE LEVEL INDICATED BY THE SWITCH POSITIONS -10, 0, +10, OR +20 dBm. THE INDICATION OF THE AUDIO LEVEL METER VARIES WITH THE SETTING OF THE USB LEVELS LINE CONTROL A2R2. SET THE AUDIO LEVEL SWITCH TO +20 dBm USB. ADJUST THE USB LEVELS LINE CONTROL A2R2 TO OBTAIN A READING OF 0 dBm ON THE AUDIO OUTPUT METER. THE READING ON THE AC VOLTMETER CONNECTED BETWEEN A2E23 AND A2E26 SHOULD READ +20 ±1 dBm. SWITCH THE METER TO THE +10 dBm SCALE, AND ADJUST A2R2 FOR A 0 dB READING. CHECK THAT THE AC VOLTMETER READS +10 ±1 dBm. SWITCH THE METER TO THE 0 dBm SCALE, AND ADJUST A2R2 FOR A 0 dBm READING. CHECK THAT THE AC VOLTMETER READS 0 ±1 dBm. SWITCH THE METER TO THE -10 dBm SCALE, AND ADJUST A2R2 FOR A 0 dBm READING. CHECK THAT THE AC VOLTMETER READS -10 ±1 dBm.

TS-5 WITH EARPHONES CONNECTED TO THE PHONE USB JACK A2J2, THE AUDIO LEVEL SHOULD FOLLOW THE VARIATION OF THE USB LEVELS PHONE CONTROL A2R5. WITH USB LEVELS LINE CONTROL A2R2 SET SO THAT AUDIO LEVEL METER A2M1 INDICATES 0 dBm, THE USB PHONE LEVEL SHOULD VARY IN INTENSITY OF TONE AT THE EARPHONES FROM AN ADEQUATE AUDIBLE LEVEL AT A FULLY CLOCKWISE SETTING OF USB LEVELS PHONE CONTROL A2R5 TO NO TONE AT A FULLY COUNTERCLOCKWISE SETTING.

TS-6 CONNECT AC VOLTMETER BETWEEN PINS A AND B OF CONNECTOR A1A1J5. THE TEST POINT MEASUREMENT ON THE AC VOLTMETER IS AS INDICATED WITH THE AUDIO LEVEL METER A2M1 INDICATION OF 0 dBm, AS ADJUSTED BY USB LEVELS LINE CONTROL A2R2, AND WITH USB LEVELS PHONE CONTROL A2R5 ADJUSTED FULLY CLOCKWISE. SET THE MODE SELECTOR SWITCH A2S2 TO RATT, VOLTAGE AS MEASURED ON AC VOLTMETER TO BE AS INDICATED. SET THE MODE SELECTOR SWITCH A2S2 TO CW, ADJUST THE BFO CONTROL TO OBTAIN A 1000 Hz TONE, VOLTAGE AS MEASURED ON AC VOLTMETER TO BE AS INDICATED, SET THE MODE SELECTOR SWITCH A2S2 TO AM, MODULATE THE RF SIGNAL GENERATOR WITH 1000 Hz AT 30 PERCENT, VOLTAGE AS MEASURED ON AC VOLTMETER TO BE AS INDICATED, ADJUST USB LEVELS LINE CONTROL A2R2 AS NECESSARY TO MAINTAIN A READING OF 0 dBm ON AUDIO LEVEL METER A2M1 DURING EACH OF THESE MEASUREMENTS.

TS-7 USING THE AC VOLTMETER, MAKE THE SIGNAL MEASUREMENT AT A2A2A1E5 TO BE AS INDICATED.

TS-8 MEASURE THE SIGNAL VOLTAGE AT A2A2A1E6 TO BE AS INDICATED ON THE AC VOLTMETER.

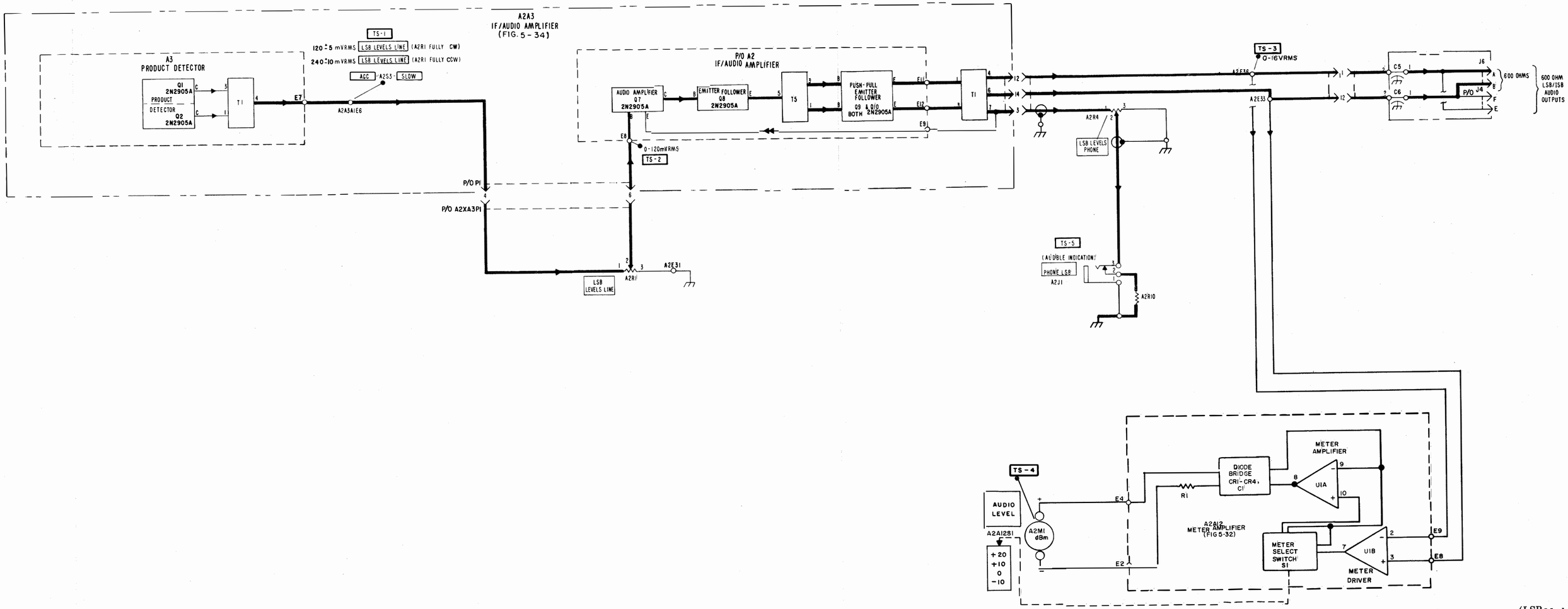


Figure 5-6. Audio Amplification (LSB Mode), Signal Flow Diagram

TEST DATA FOR FIGURE 5-6

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT.
AC VOLTMETER 28480-400E OR EQUIVALENT (2 REQUIRED)
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. SEE NOTE B
EARPHONE HEADSET NT-49985/A
EXTENDER CABLE 98738-30A226280-21-11 FOR IF/AUDIO AMPLIFIER ASSEMBLIES A2A2 AND A2A3
RESISTOR, 620 OHMS

B. THE INFORMATION CONTAINED IN THE FOLLOWING NOTES AND ON THE SIGNAL FLOW DIAGRAM 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 AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. THE SIGNAL LEVELS INDICATED ON THE SIGNAL FLOW DIAGRAMS SHALL BE USED TO DUIDE THE SETTINGS OF THE ASSOCIATED TEST GENERATORS. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

C. REFERENCES. IF NECESSARY MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-68
TROUBLESHOOTING SEQUENCE, FIGURE 5-24
CORRECTIVE MAINTENANCE, PARAGRAPH 6-56
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-12 THROUGH 7-14

D. SWITCH A2S10 SHOWN IN 20 dB m POSITION.

E. ▭ INDICATES EQUIPMENT FRONT PANEL MARKING.

F. ◄── DENOTES FEEDBACK.

SPECIFIC NOTES

1. PRELIMINARY SETUP. MAKE PRIMARY POWER AVAILABLE TO THE EQUIPMENT BY PLACING SYSTEM CIRCUIT BREAKER TO ON. LOOSEN FRONT PANEL SCREWS AND SLIDE MAIN FRAME CHASSIS OUT OF CASE. DEFEAT INTERLOCK SWITCH A1S1 BY PULLING SHAFT OUT, SO THAT PLUNGER EXTENDS FORWARD OF CASE. MAKE THE FOLLOWING PRELIMINARY CONTROL SETTINGS BEFORE BEGINNING THE TEST PROCEDURE:

UNIT	CONTROL	POSITION
RADIO RECEIVER R-1051G/URR	MODE SELECTOR SWITCH A2S2	STD BY
	AGC SWITCH A2S3	SLOW
	USB/OFF/LSB AUDIO LEVEL SWITCH A2A12S1	LSB, 20 dBm
	Hz SWITCH A2A11S1	000
	FREQUENCY CONTROLS	2.100 MHz

2. TEST SETUP.
   a. APPLY THE RF OUTPUT FROM THE SIGNAL GENERATOR TO THE RECEIVER ANT JACK A1J23. SET THE SIGNAL GENERATOR OUTPUT FOR A FREQUENCY OF 2.099 MHz AT 500 uV.
   b. REMOVE RECEIVER IF/AUDIO AMPLIFIER ASSEMBLY A2A3 FROM RECEIVER, AND RECONNECT VIA THE EXTENDER CABLE.
   c. LOOSEN THE SCREWS AND REMOVE COVER FROM IF/AUDIO AMPLIFIER A2A3.
   d. CONNECT A 620 OHM TERMINATING RESISTOR BETWEEN PINS A AND B OF LSB AUDIO OUT JACK A1A1J6. CONNECT VERTICAL INPUT OF OSCILLOSCOPE AND AC VOLTMETER INPUT TO PINS A AND BE OF JACK A1A1J6; CONNECT LOW SIDE OF AC VOLTMETER AND OSCILLOSCOPE TO PIN B. SET THE MODE SELECTOR SWITCH A2S2 TO LSB.

NOTE

ADJUST THE RF SIGNAL GENERATOR FOR OPTIMUM FREQUENCY OUTPUT BY ADJUSTING THE FREQUENCY CONTROL FOR MAXIMUM AUDIO OUTPUT AS OBSERVED ON THE AC VOLTMETER AT A1A1J6.

3. TEST STEPS:

TS-1 REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST. MEASURE THE AUDIO SIGNAL LEVEL AT THE OUTPUT OF THE PRODUCT DETECTOR AT A2A3A1E6 ON THE AC VOLTMETER TO BE AS INDICATED.

TS-2 MEASURE THE SIGNAL LEVEL AT A2A3A2E8 TO BE AS INDICATED: AC VOLTMETER INDICATION DEPENDS ON SETTING OF LSB LEVELS LINE CONTROL A2R1.

TS-3 MEASURE THE AUDIO SIGNAL LEVEL BETWEEN A2E36 AND A2E33 TO BE AS INDICATED; AC VOLTMETER INDICATION DEPENDS ON SETTING OF LSB LEVELS LINE CONTROL A2R1. CONNECT A2E33 TO LOW SIDE OF AC VOLTMETER. THE AC VOLTMETER CONNECTED ACROSS PINS A AND B OF A1A1J6 SHOWS THE SAME INDICATION.

TS-4 THE AUDIO LEVEL METER HAS A RANGE FROM -20 dBm TO +22 dBm IN 10 dB STEPS. THE ZERO READING ON THE METER IS THE LEVEL INDICATED BY THE SWITCH POSITIONS -10, 0, +10, OR +20 dBm. THE INDICATION OF THE AUDIO LEVEL METER VARIES WITH THE SETTING OF THE LSB LEVELS LINE CONTROL A2R1. SET THE AUDIO LEVEL SWITCH TO +20 dBm LSB. ADJUST THE LSB LEVELS LINE CONTROL A2R1 TO OBTAIN A READING OF 0 dBm ON THE AUDIO OUTPUT METER. THE READING ON THE AC VOLTMETER CONNECTED BETWEEN A2E33 AND A2E36 SHOULD READ +20 ±1 dBm. SWITCH THE METER TO THE +10 dBm SCALE, AND ADJUST A2R1 FOR A 0 dB READING. CHECK THAT THE AC VOLTMETER READS +10 ±1 dBm. SWITCH THE METER TO THE 0 dBm SCALE, AND ADJUST A2R1 FOR A 0 dBm READING. CHECK THAT THE AC VOLTMETER READS 0 ±1 dBm. SWITCH THE METER TO THE -10 dBm SCALE, AND ADJUST A2R1 FOR A 0 dBm READING. CHECK THAT THE AC VOLTMETER READS -10 ±1 dBm.

TS-5 WITH EARPHONES CONNECTED TO PHONE LSB JACK A2J1, THE AUDIO LEVEL SHOULD FOLLOW THE LEVEL OF THE LSB LEVELS PHONE CONTROL A2R4. WITH THE LSB LEVELS LINE CONTROL A2R1 SET AT 0 dBm ON AUDIO LEVEL METER A2M1, THE LSB PHONE LEVEL SHOULD VARY IN INTENSITY OF TONE AT THE EARPHONES FROM AN ADEQUATE AUDIBLE LEVEL AT A FULLY CLOCKWISE SETTING OF LSB LEVELS PHONE CONTROL A2R4 TO NO TONE AT A FULLY COUNTERCLOCKWISE SETTING OF A2R4.

AGC TEST MEASUREMENT SUMMARY CHART

WHEN TESTING ASSEMBLY A2A2, SET MODE SELECTOR SWITCH A2S2 TO USB, AND SET RF SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. WHEN TESTING ASSEMBLY A2A3, SET MODE SELECTOR SWITCH A2S2 TO LSB, AND SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz.

TEST STEP	TEST POINT (A2A2 OR A3A2)	AGC SWITCH A2S3		
		OFF	SLOW	FAST
TS-1	A1E3	0 VDC	+1.4 TO 1.6 VDC	19.9 TO 20.1 VDC
TS-2	A1E10	+1.0 TO +2.0 VDC*	0 VDC	0 VDC
TS-3	A1R19	A1C12 NEG. END	2.0 TO 2.2 VDC	2.0 TO 2.2 VDC
TS-4	A1Q13 COLLECTOR	+3.8 TO 4.2 VDC	0 VDC	19.9 TO 20.1 VDC
TS-5	A1TP1	+0.4 TO +1.2 VDC*	+0.8 TO 1.0 VDC	+0.8 TO 1.0 VDC
		CAUTION OBSERVE NEGATIVE VOLTAGES AT TEST STEP TS-6		
TS-6	A1TP2	0 TO -23 VDC*	-6.4 TO -7.0 VDC	-6.4 TO -7.0 VDC

* VOLTAGE INDICATION VARIES BETWEEN THESE LIMITS FOR THE FULLY CLOCKWISE TO FULLY COUNTERCLOCKWISE POSITION OF RF GAIN CONTROL A2R3.

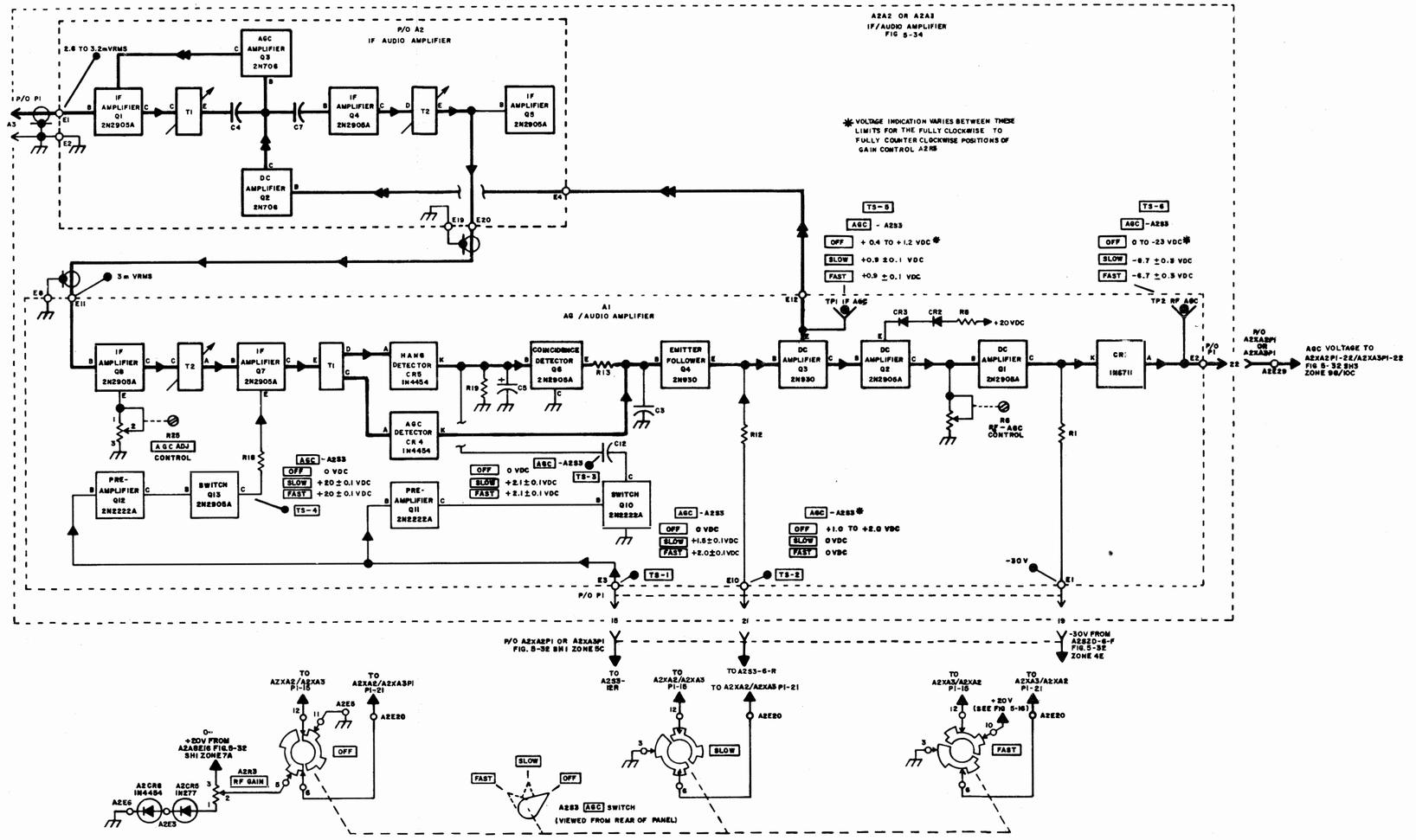


Figure 5-7. Automatic Gain Control, Signal Flow Diagram

TEST DATA FOR FIGURE 5-7

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. SEE NOTE B.
EXTENDER CABLE, 98738 - 30A226280-21-11, FOR IF/AUDIO AMPLIFIER ASSEMBLIES A2A2 AND A2A3

B. THE INFORMATION CONTAINED IN THE FOLLOWING NOTES AND ON THE SIGNAL FLOW DIAGRAM 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 AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. THE SIGNAL LEVELS INDICATED ON THE SIGNAL FLOW DIAGRAMS SHALL BE USED TO GUIDE THE SETTING OF THE ASSOCIATED TEST GENERATORS. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

C. REFERENCES: IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-54
TROUBLESHOOTING SEQUENCE, FIGURE 5-25
CORRECTIVE MAINTENANCE, PARAGRAPH 6-56
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-12 THROUGH 7-14

D. ▭ INDICATES EQUIPMENT FRONT PANEL MARKING.

E. —◀◀— DENOTES 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.

SPECIFIC NOTES

1. PRELIMINARY SETUP. MAKE PRELIMINARY POWER AVAILABLE TO THE EQUIPMENT BY PLACING SYSTEM CIRCUIT BREAKER TO ON. LOOSEN FRONT PANEL SCREWS AND SLIDE MAIN FRAME CHASSIS OUT OF CASE. DEFEAT INTERLOCK SWITCH A1S1 BY PULLING SHAFT OUT, SO THAT PLUNGER EXTENDS FORWARD OF CASE. MAKE THE FOLLOWING PRELIMINARY CONTROL SETTINGS BEFORE BEGINNING THE TEST PROCEDURE:

UNIT	CONTROL	POSITION
RADIO RECEIVER R-1051G/URR	MODE SELECTOR SWITCH A2S2	STD BY
	FREQUENCY CONTROLS	2,100 MHz

2. TEST SETUP

a. APPLY THE INPUT FROM THE RF SIGNAL GENERATOR TO THE RECEIVER ANT JACK A1J23. SET THE SIGNAL GENERATOR OUTPUT FOR A FREQUENCY OF 2.101 MHz, AT 500 uVrms.

b. REMOVE IF/AUDIO AMPLIFIER ASSEMBLIES A2A2 AND A2A3 FROM RECEIVER, AND RECONNECT THEM VIA THE EXTENDER CABLES.

c. LOOSEN SCREWS AND REMOVE COVERS FROM IF/AUDIO AMPLIFIERS.

3. THIS TEST PROCEDURE REQUIRES MAKING MEASUREMENTS AT EACH OF SIX TEST POINTS WITH THE MODE SELECTOR SWITCH A2S2 AT USB AND THE AGC SWITCH A2S3 IN EACH OF ITS THREE POSITIONS WHEN TESTING IF/AUDIO AMPLIFIER ASSEMBLY A2A2 (A TOTAL OF 18 MEASUREMENTS). THE ENTIRE PROCEDURE IS THEN REPEATED WITH THE MODE SELECTOR SWITCH A2S2 AT LSB WHEN TESTING IF/AUDIO AMPLIFIER ASSEMBLY A2A3. THE INPUT FREQUENCY FROM THE RF SIGNAL GENERATOR IS SET AT 2.101 MHz FOR A2A2, AND AT 2.099 MHz FOR A2A3. THE PROCEDURE GIVEN BELOW TESTS EACH TEST POINT INDIVIDUALLY ON BOTH ASSEMBLIES AND IN ALL POSITIONS OF AGC SWITCH A2S3. HOWEVER, IT MAY BE MORE CONVENIENT TO TEST EACH OF THE ASSEMBLIES SEPARATELY, OR TO PERFORM THE TESTING IN ORDER BY THE POSITIONS OF AGC SWITCH A2A3. THEREFORE, THE ENTIRE TEST PROCEDURE IS SUMMARIZED IN THE CHART WHICH FOLLOWS THE TEST STEPS.

4. TEST STEPS:

TS-1 REFER TO NOTES 1, 2 AND 3 BEFORE PERFORMING TEST. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE DC CONTROL INPUT TO AGC/AUDIO AMPLIFIER AT A2A2A1E3 TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE DC CONTROL INPUT TO AGC/AUDIO AMPLIFIER AT A2A3A1E3 TO BE AS INDICATED.

TS-2 SET RF SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE DC CONTROL INPUT TO AGC/AUDIO AMPLIFIER AT A2A2A1E10 TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE DC CONTROL INPUT TO AGC/AUDIO AMPLIFIER AT A2A3A1E10 TO BE AS INDICATED.

TS-3 SET RF SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE VOLTAGE LEVEL AT JUNCTION OF A2A2A1C12/R19 TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE VOLTAGE LEVEL AT JUNCTION OF A2A2A1C12/R19 TO BE AS INDICATED.

TS-4 SET SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION MEASURE THE VOLTAGE LEVEL AT A2A2A1Q13 COLLECTOR TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE VOLTAGE LEVEL AT A2A3A1Q13 COLLECTOR TO BE AS INDICATED.

TS-5 SET SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE VOLTAGE LEVEL AT A2A2A1TP1 TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE VOLTAGE LEVEL AT A2A3A1TP1 TO BE AS INDICATED.

CAUTION

OBSERVE NEGATIVE VOLTAGES AT TEST STEP TS-6.

TS-6 SET SIGNAL GENERATOR OUTPUT FOR 2.101 MHz. SET MODE SELECTOR SWITCH A2S2 TO USB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE USB IF/AUDIO AMPLIFIER OUTPUT LEVEL AT A2A2A1TP2 TO BE AS INDICATED. SET RF SIGNAL GENERATOR OUTPUT FOR 2.099 MHz. SET MODE SELECTOR SWITCH A2S2 TO LSB, AND AGC SWITCH A2S3 CONSECUTIVELY TO OFF, SLOW, AND FAST. AT EACH POSITION, MEASURE THE LSB IF/AUDIO AMPLIFIER OUTPUT LEVEL AT A2A3A1TP2 TO BE AS INDICATED.

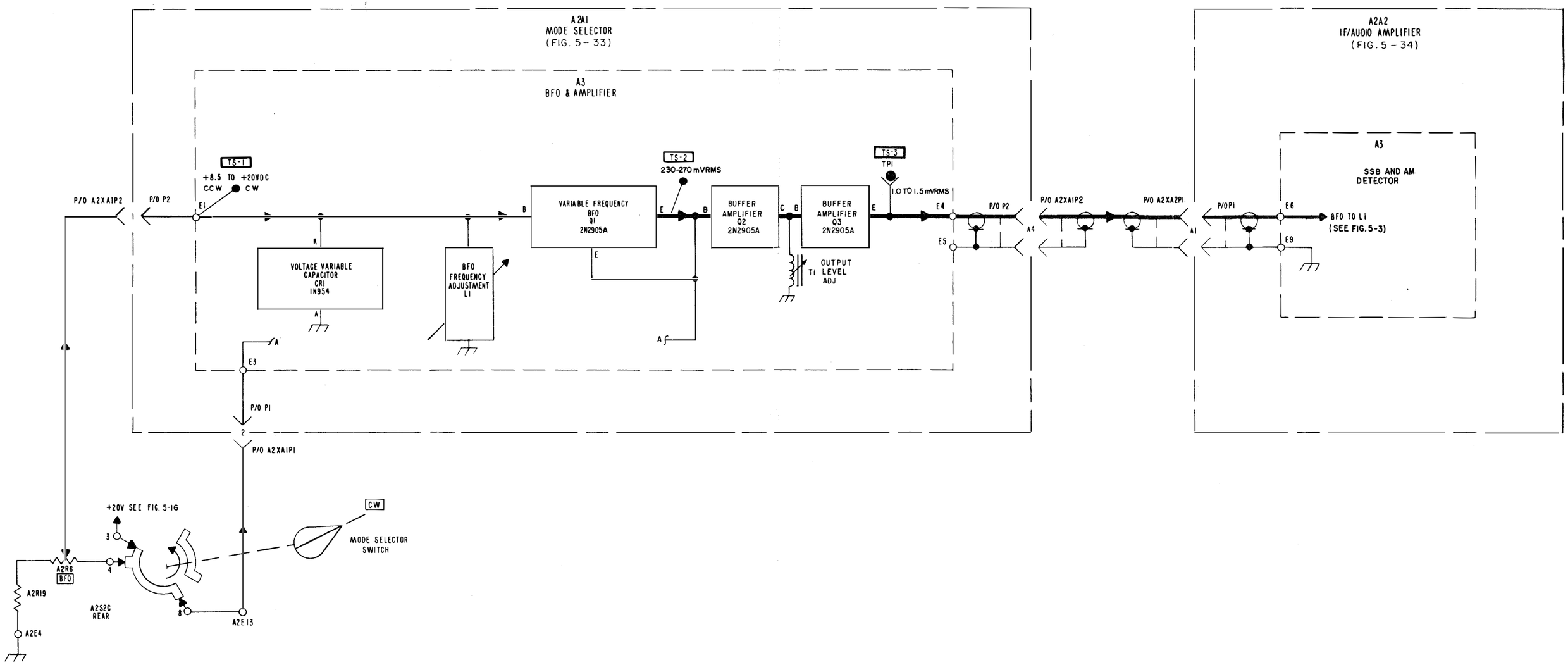


Figure 5-8. Beat Frequency Oscillator, Signal Flow Diagram

TEST DATA FOR FIGURE 5-8

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
RF MILLIVOLTMETER 04901-92B-S5 OR EQUIVALENT
RF SIGNAL GENERATOR 28480-8640B-001-003 OR EQUIVALENT
AMPLIFIER/MODE SELECTOR TEST FIXTURE TS-3670/WRC-1. SEE NOTE B.
EARPHONE HEADSET NT-49985/A
EXTENDER CABLES 98738-30A226277-21-11 AND 98738 - 30A226427-21-11 FOR MODE SELECTOR ASSEMBLY A2A1
RESISTOR, 620 OHMS

B. THE INFORMATION CONTAINED IN THE FOLLOWING NOTES AND ON THE SIGNAL FLOW DIAGRAM 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 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. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-52
TROUBLESHOOTING SEQUENCE, FIGURE 5-26
CORRECTIVE MAINTENANCE, PARAGRAPH 6-45
PHYSICAL LOCATION OF TEST POINTS, FIGURES 7-8 AND 7-11.

D. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING.

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.

SPECIFIC NOTES

1. PRELIMINARY SETUP. MAKE PRIMARY POWER AVAILABLE TO THE EQUIPMENT BY PLACING SYSTEM CIRCUIT BREAKER TO ON. LOOSEN FRONT PANEL SCREWS AND SLIDE MAIN FRAME CHASSIS OUT OF CASE. DEFEAT INTERLOCK SWITCH A1S1 BY PULLING SHAFT OUT, SO THAT PLUNGER EXTENDS FORWARD OF CASE. MAKE THE FOLLOWING PRELIMINARY CONTROL SETTINGS BEFORE BEGINNING THE TEST PROCEDURE:

UNIT	CONTROL	POSITION
RADIO RECEIVER R-1051G/URR	MODE SELECTOR SWITCH A2S2	STD BY
	AGC SWITCH A2S3	SLOW
	HZ SWITCH A2A11S1	000
	FREQUENCY CONTROLS	2.100 MHz

2. TEST SETUP.

   a. REMOVE MODE SELECTOR ASSEMBLY A2A1 FROM RECEIVER, AND CONNECT IT VIA EXTENDER CABLES.

   b. LOOSEN SCREWS AND REMOVE COVER OF MODE SELECTOR.

   c. CONNECT A 620 OHM RESISTOR ACROSS PINS A AND B OF USB AUDIO OUT JACK A1A1J5.

3. TEST STEPS:

[TS-1] REFER TO NOTES 1 AND 2 BEFORE PERFORMING TEST. SET MODE SELECTOR SWITCH A2S2 TO CW. USING ELECTRONIC MULTIMETER, MEASURE THE BFO FREQUENCY CONTROL VOLTAGE FROM BFO FREQUENCY CONTROL A2R6 AT A2A1A3E1 WITH A2R6 SET FULLY COUNTERCLOCKWISE AND THEN FULLY CLOCKWISE. THE VOLTAGE INDICATIONS SHOULD BE WITHIN THE LEVELS SHOWN.

[TS-2] USING RF MILLIVOLTMETER, MEASURE THE BFO OUTPUT VOLTAGE AT THE EMITTER OF VARIABLE FREQUENCY BFO A2A1A3Q1 TO BE AS INDICATED.

[TS-3] USING RF MILLIVOLTMETER, MEASURE THE BFO OUTPUT LEVEL FROM THE OUTPUT OF BUFFER AMPLIFIER A2A1A3Q3 TO BE AS INDICATED AT A2A1A3TP1.

CONNECT RF SIGNAL GENERATOR TO ANT JACK A1J23, AND ADJUST THE OUTPUT FOR A FREQUENCY OF 2.100 MHz, AT 500 uV. CONNECT HEADSET TO PHONE USB JACK A2J2. WITH THE USB LEVELS LINE CONTROL A2R2 AT MIDRANGE AND USB LEVELS PHONE CONTROL A2R5 AT THE FULLY COUNTERCLOCKWISE POSITION, ADJUST A2R5 SLOWLY CLOCKWISE UNTIL THE AUDIO LEVEL IS COMFORTABLE, THEN VARY BFO FREQUENCY CONTROL A2R6. AN AUDIBLE TONE SHOULD BE HEARD IN THE EARPHONES WITH A ZERO BEAT NEAR THE MIDRANGE OF BFO CONTROL A2R6.

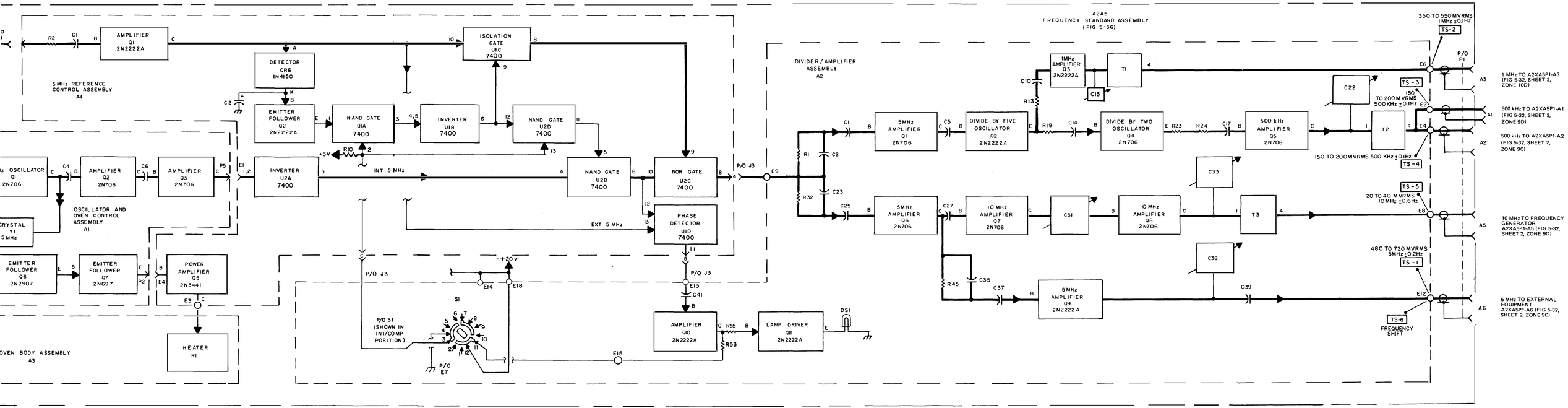
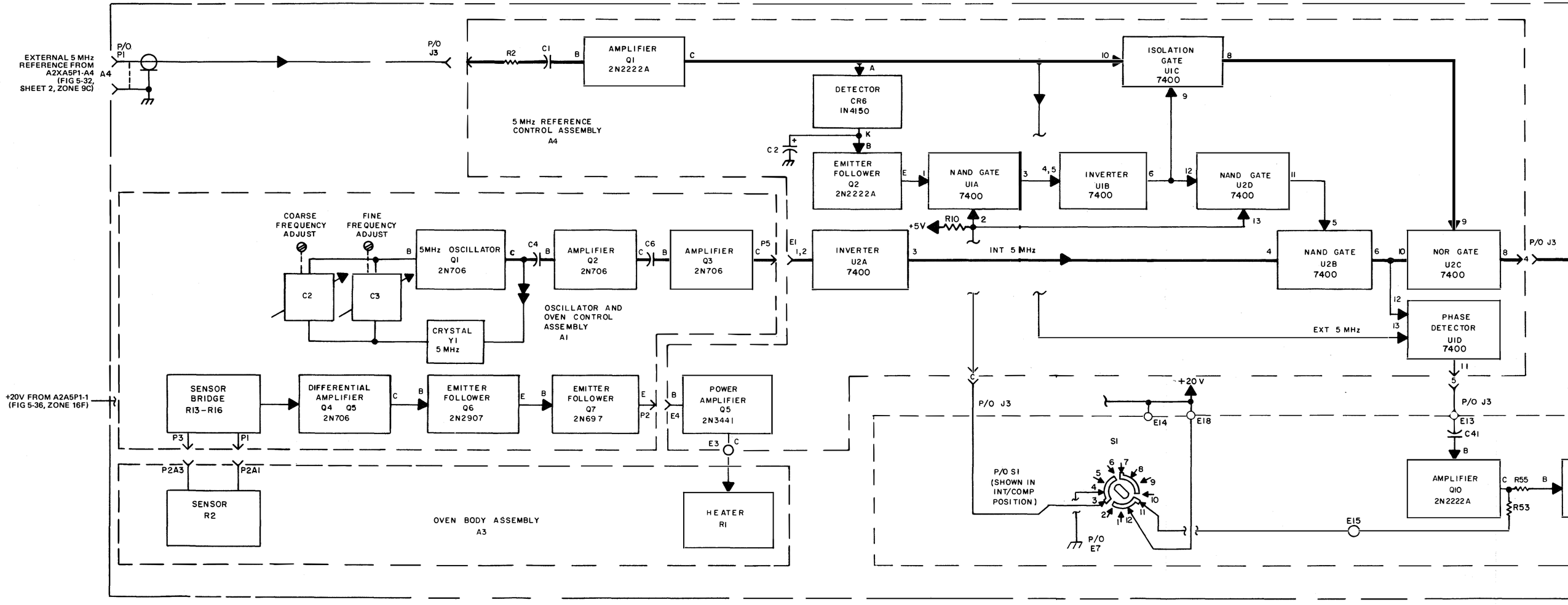


Figure 5-9. Standard Frequency Generation and Distribution, Signal Flow Diagram


EXTERNAL 5 MHz REFERENCE FROM A2XA5P1-A4 (FIG 5-32, SHEET 2, ZONE 9C)
P/O P1
A4
P/O J3
5 MHz REFERENCE CONTROL ASSEMBLY A4
R2
C1
AMPLIFIER Q1 2N2222A
DETECTOR CR6 IN4150
C2
EMITTER FOLLOWER Q2 2N2222A
NAND GATE U1A 7400
INVERTER U1B 7400
ISOLATION GATE U1C 7400
NAND GATE U2D 7400
R10
+5V
COARSE FREQUENCY ADJUST
FINE FREQUENCY ADJUST
5MHz OSCILLATOR Q1 2N706
C2
C3
C4
AMPLIFIER Q2 2N706
C6
AMPLIFIER Q3 2N706
CRYSTAL Y1 5 MHz
OSCILLATOR AND OVEN CONTROL ASSEMBLY A1
INVERTER U2A 7400
INT 5 MHz
NAND GATE U2B 7400
NOR GATE U2C 7400
P/O J3
EXT 5 MHz
PHASE DETECTOR U1D 7400
+20V FROM A2A5P1-1 (FIG 5-36, ZONE 16F)
SENSOR BRIDGE R13-R16
DIFFERENTIAL AMPLIFIER Q4 Q5 2N706
EMITTER FOLLOWER Q6 2N2907
EMITTER FOLLOWER Q7 2N697
POWER AMPLIFIER Q5 2N3441
P3
P1
P2A3
P2A1
SENSOR R2
OVEN BODY ASSEMBLY A3
HEATER R1
+20 V
E14
E18
S1
P/O S1 (SHOWN IN INT/COMP POSITION)
P/O E7
E15
C41
AMPLIFIER Q10 2N2222A
R55
R53

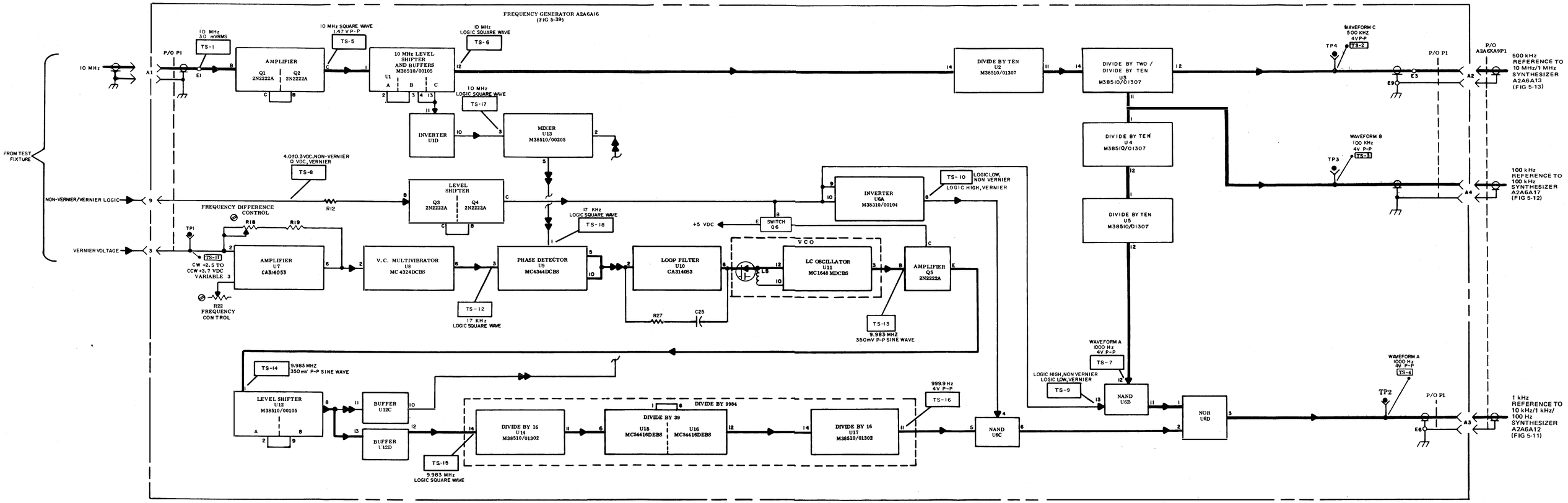


Figure 5-10. Frequency Generator A2A6A16, Signal Flow Diagram

TEST DATA FOR FIGURE 5-10

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
EXTENDER BOARD 98738-01A228396-01 FOR FREQUENCY GENERATOR A2A6A16
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-19
DIGITAL MULTIMETER 8800A/AA
RF MILLIVOLTMETER 04901-92B-S5 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

B. TESTS TO BE PERFORMED AT DEPOT ONLY.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-73
TROUBLESHOOTING SEQUENCE, FIGURE 5-28
CORRECTIVE MAINTENANCE, PARAGRAPH 6-88
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-69

D. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING

E. ◄— DENOTES FEEDBACK

F. WAVEFORMS, TABLE 6-6.

G. LOGIC HIGH STATE AND LOW STATE VOLTAGES ARE NOMINALLY +4.0 VDC AND +0.7 VDC RESPECTIVELY.

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 RECEIVE MODE, WITHOUT VERNIER ACTION, AND A NORMAL 20 VDC LEVEL. DO NOT APPLY POWER TO TEST FIXTURE.

2. TEST SETUP.

   a. CONNECT DIGITAL MULTIMETER 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.

3. PRELIMINARY CHECK.

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

   b. DISCONNECT DIGITAL MULTIMETER.

4. TEST STEPS:

TS-1 REFER TO NOTES 1, 2, AND 3 BEFORE PERFORMING TEST. CONNECT RF MILLIVOLTMETER TO A2A6A16E1 AND BY MEANS OF 10 MHz LEVEL CONTROL ON TEST FIXTURE ADJUST FOR AN INPUT LEVEL OF 30 mVrms.

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 A2A6A16U1-12. 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.

TS-11 SET TEST FIXTURE CONTROLS TO TEST WITH VERNIER ACTION. OPERATE VERNIER ADJUST CONTROL FROM FULLY CCW TO FULLY CW. MEASURE VARIABLE VOLTAGE TO BE AS INDICATED AT A2A6A16TP1. SET VERNIER ADJUST CONTROL FOR 17 kHz AT A2A6A16U8-6.

TS-12 OBSERVE SQUARE WAVE AT A2A6A16U9-8. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-13 OBSERVE SINE WAVE AT A2A6A16Q5 BASE. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-14 OBSERVE SINE WAVE AT A2A6A16U12A-1. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-15 OBSERVE SQUARE WAVE AT A2A6A16U14-14. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-16 OBSERVE WAVEFORM A AT A2A6A16U17-11. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-17 OBSERVE SQUARE WAVE AT A2A6A9U13-3. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

TS-18 OBSERVE SQUARE WAVE AT A2A6A16U9-1. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

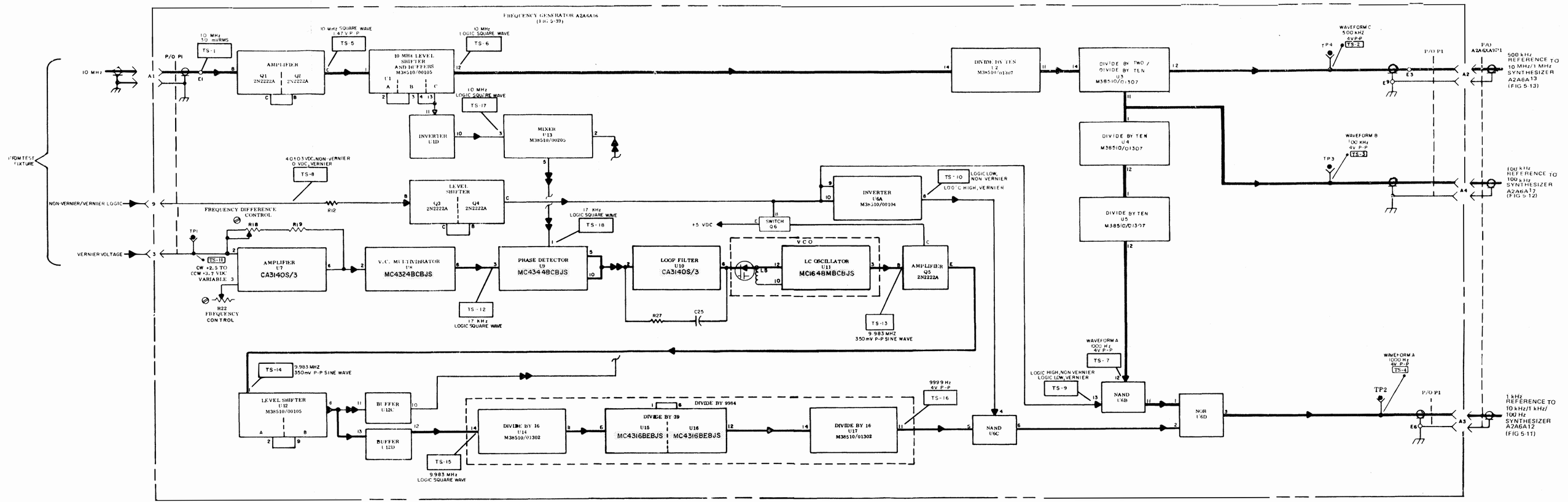


Figure 5-10A. Frequency Generator A2A6A16, Signal Flow Diagram

TEST DATA FOR FIGURE 5-10

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
EXTENDER BOARD 50097/BO4088-001 FOR FREQUENCY GENERATOR A2A6A16
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-19
DIGITAL MULTIMETER 8800A/AA
RF MILLIVOLTMETER 04901-92B-S5 OR EQUIVALENT
ELECTRONIC COUNTER AN/USM-207 OR EQUIVALENT

B. TESTS TO BE PERFORMED AT DEPOT ONLY.

C. REFERENCES. IF NECESSARY, MAKE THE FOLLOWING REFERENCES:
FUNCTIONAL DESCRIPTION, PARAGRAPH 3-65
TROUBLESHOOTING SEQUENCE, FIGURE 5-28
CORRECTIVE MAINTENANCE, PARAGRAPH 6-88
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-69

D. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING

E. ◄— DENOTES FEEDBACK

F. WAVEFORMS, TABLE 6-6.

G. LOGIC HIGH STATE AND LOW STATE VOLTAGES ARE NOMINALLY +4.0 VDC AND +0.7 VDC RESPECTIVELY.

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 RECEIVE MODE, WITHOUT VERNIER ACTION, AND A NORMAL 20 VDC LEVEL. DO NOT APPLY POWER TO TEST FIXTURE.

2. TEST SETUP.

   a. CONNECT DIGITAL MULTIMETER 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.

3. PRELIMINARY CHECK.

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

   b. DISCONNECT DIGITAL MULTIMETER.

4. TEST STEPS:

TS-1	REFER TO NOTES 1, 2, AND 3 BEFORE PERFORMING TEST. CONNECT RF MILLIVOLTMETER TO A2A6A16E1 AND BY MEANS OF 10 MHz LEVEL CONTROL ON TEST FIXTURE ADJUST FOR AN INPUT LEVEL OF 30 mVrms.
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 A2A6A16U1-12. 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.
TS-11	SET TEST FIXTURE CONTROLS TO TEST WITH VERNIER ACTION. OPERATE VERNIER ADJUST CONTROL FROM FULLY CCW TO FULLY CW. MEASURE VARIABLE VOLTAGE TO BE AS INDICATED AT A2A6A16TP1. SET VERNIER ADJUST CONTROL FOR 17 kHz AT A2A6A16U8-6.
TS-12	OBSERVE SQUARE WAVE AT A2A6A16U9-8. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-13	OBSERVE SINE WAVE AT A2A6A16Q5 BASE. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-14	OBSERVE SINE WAVE AT A2A6A16U12A-1. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-15	OBSERVE SQUARE WAVE AT A2A6A16U14-14. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-16	OBSERVE WAVEFORM A AT A2A6A16U17-11. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-17	OBSERVE SQUARE WAVE AT A2A6A9U13-3. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.
TS-18	OBSERVE SQUARE WAVE AT A2A6A16U9-1. FREQUENCY AND AMPLITUDE TO BE AS INDICATED.

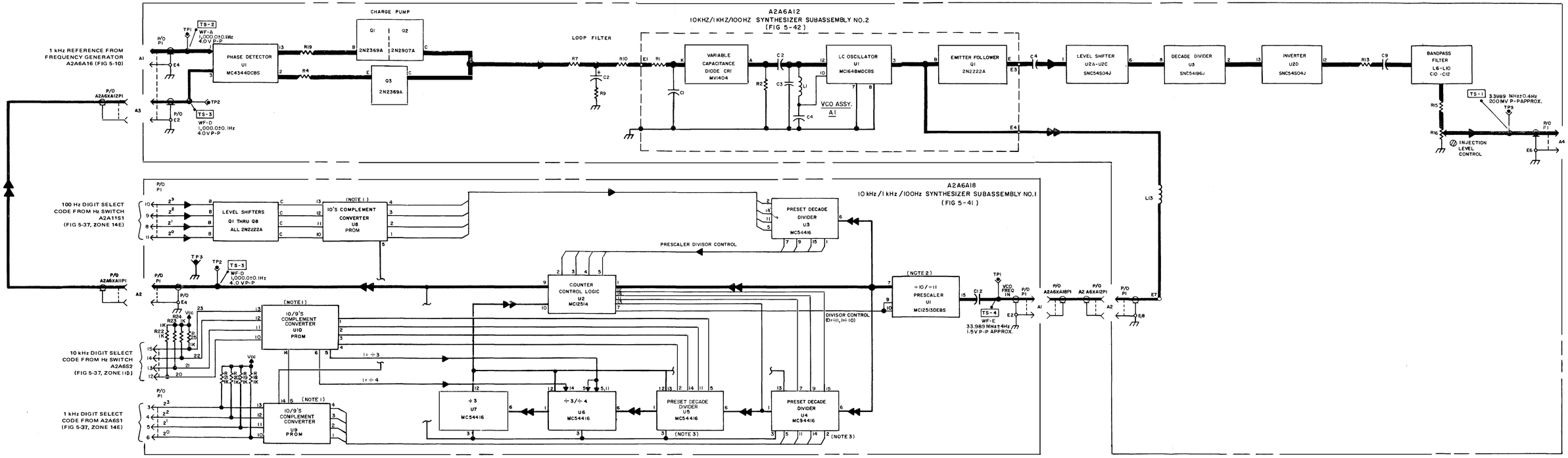


Figure 5-11. 10 kHz/1 kHz/100 Hz Synthesizer A2A6A12/A2A6A18, Signal Flow Diagram

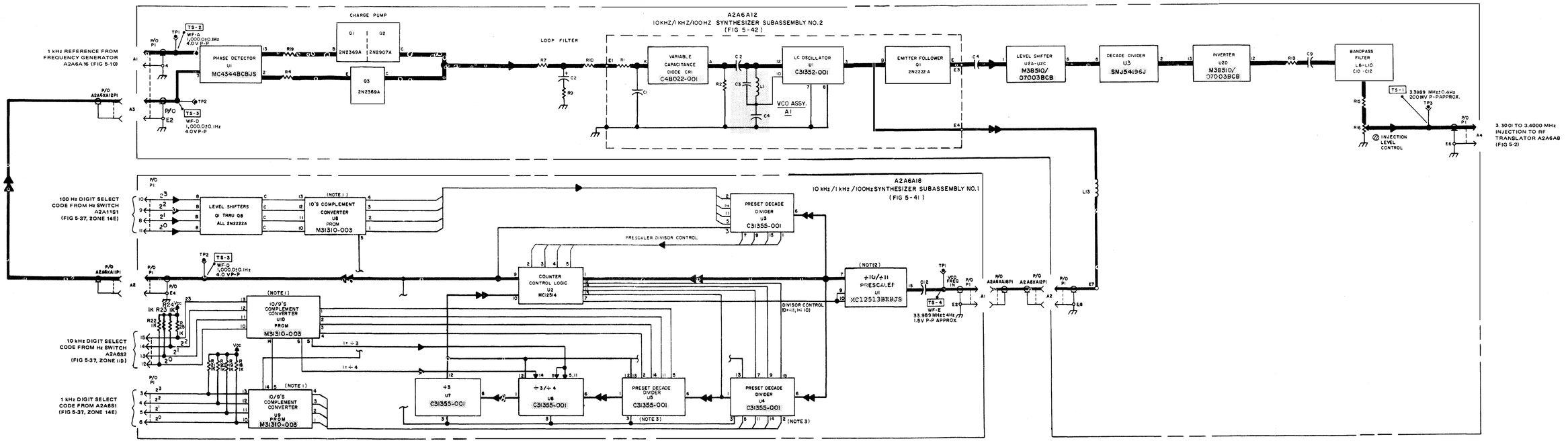


Figure 5-11A. 10 kHz/1 kHz/100 Hz Synthesizer A2A6A12/A2A6A18, Signal Flow Diagram

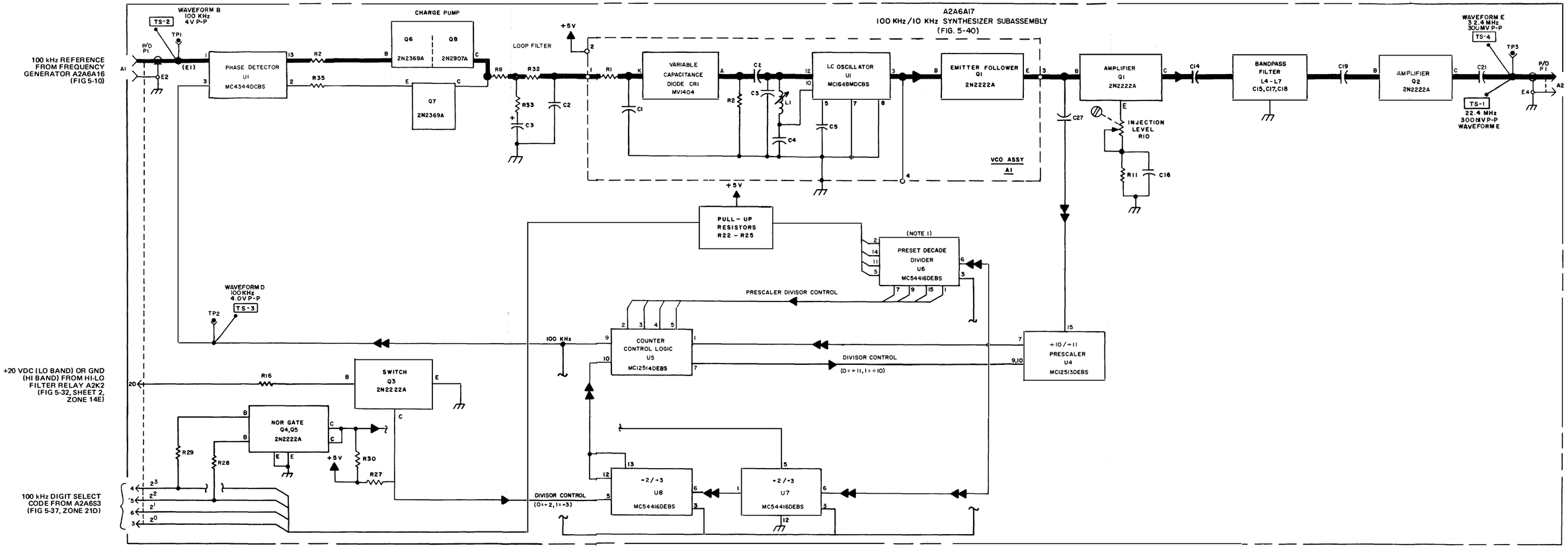


Figure 5-12. 100 kHz Synthesizer A2A6A17, Signal Flow Diagram

DEPOT TEST DATA FOR FIGURE 5-12

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-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 3-88
TROUBLESHOOTING SEQUENCE, FIGURE 5-30
CORRECTIVE MAINTENANCE, PARAGRAPH 6-88.
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-70

D. WAVEFORMS, TABLE 6-6

SPECIFIC NOTES

1. FUNCTION TABLE FOR A2A6A17U6.

100 kHz	COUNT	BIT	2^3	2^2	2^1	2^0
		DATA PIN	2	14	11	5
		OUTPUT PIN	1	15	9	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

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 RECEIVE MODE, WITHOUT VERNIER ACTION, AND A NORMAL 20 VDC LEVEL. 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.

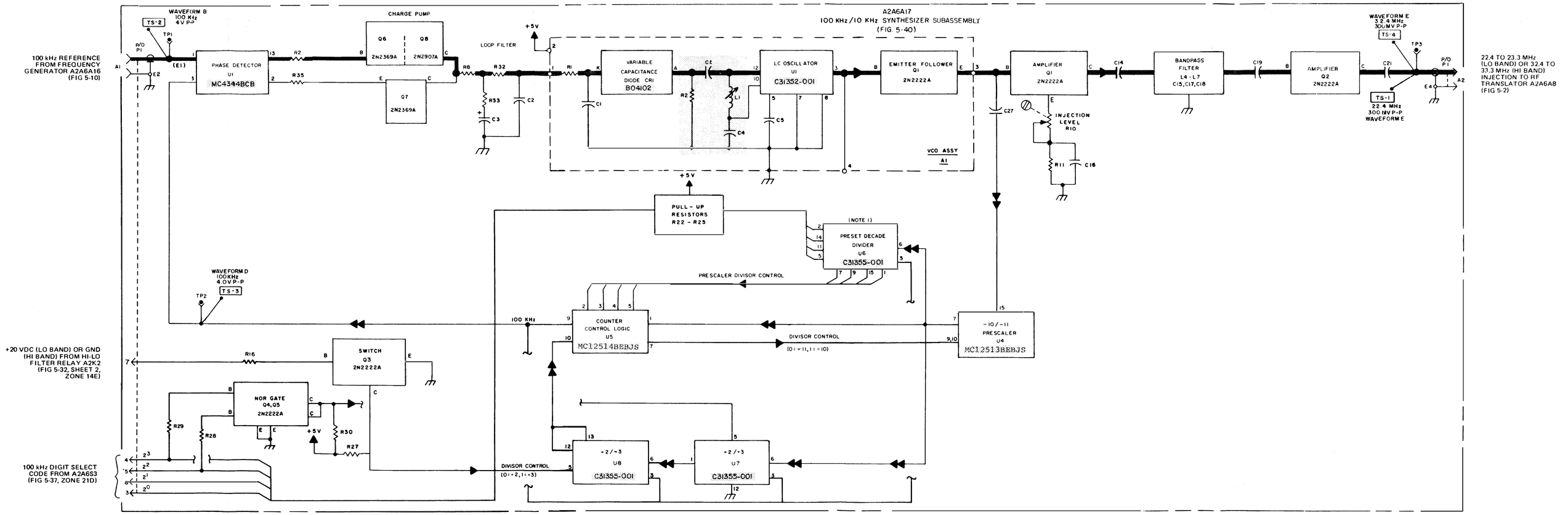


Figure 5-12A. 100 kHz Synthesizer A2A6A17, Signal Flow Diagram

DEPOT TEST DATA FOR FIGURE 5-12

GENERAL NOTES

A. TEST EQUIPMENT REQUIRED:
TRANSLATOR/SYNTHESIZER TEST FIXTURE TS-3665/WRC-1
OSCILLOSCOPE AN/USM-281 OR EQUIVALENT
ELECTRONIC MULTIMETER AN/USM-311 OR EQUIVALENT
FREQUENCY STANDARD AN/URQ-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 3-88
TROUBLESHOOTING SEQUENCE, FIGURE 5-30
CORRECTIVE MAINTENANCE, PARAGRAPH 6-88.
PHYSICAL LOCATION OF TEST POINTS, FIGURE 7-70

D. WAVEFORMS, TABLE 6-6

SPECIFIC NOTES

1. FUNCTION TABLE FOR A2A6A17U6.

		BIT	2^3	2^2	2^1	2^0
	COUNT	DATA PIN	2	14	11	5
100 kHz		OUTPUT PIN	1	15	9	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

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 RECEIVE MODE, WITHOUT VERNIER ACTION, AND A NORMAL 20 VDC LEVEL. 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.

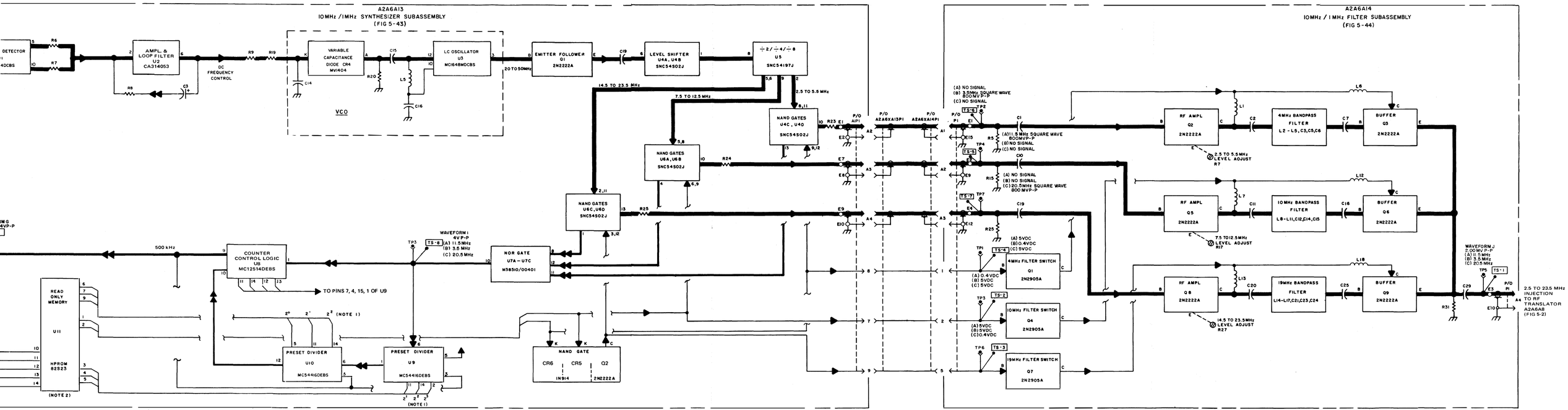
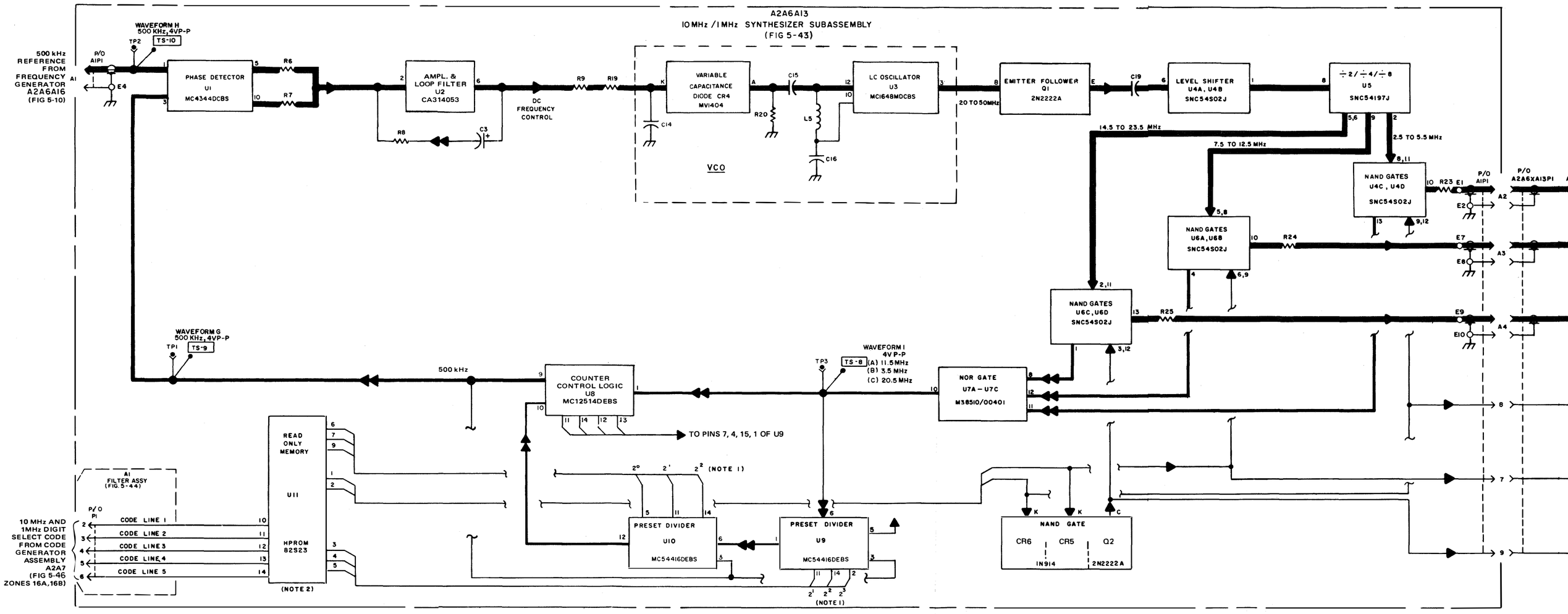


Figure 5-13. 10 MHz/1 MHz Synthesizer A2A6A13 and Filter Subassembly A2A6A14, Signal Flow Diagram


A2A6A13
10 MHz / 1 MHz SYNTHESIZER SUBASSEMBLY
(FIG 5-43)
500 kHz REFERENCE FROM FREQUENCY GENERATOR A2A6A16 (FIG 5-10)
A1
P/O A1P1
E4
WAVEFORM H
500 KHz, 4VP-P
TP2
TS-10
PHASE DETECTOR
U1
MC4344DCBS
R6
R7
AMPL. & LOOP FILTER
U2
CA314053
R8
C3
DC FREQUENCY CONTROL
R9
R19
VARIABLE CAPACITANCE DIODE CR4
MV1404
C14
R20
C15
L5
C16
VCO
LC OSCILLATOR
U3
MC1648MDCBS
20 TO 50 MHz
EMITTER FOLLOWER
Q1
2N2222A
C19
LEVEL SHIFTER
U4A, U4B
SNC54S02J
÷2/÷4/÷8
U5
SNC54197J
14.5 TO 23.5 MHz
7.5 TO 12.5 MHz
2.5 TO 5.5 MHz
NAND GATES
U4C, U4D
SNC54S02J
R23
E1
P/O A1P1
E2
A2
NAND GATES
U6A, U6B
SNC54S02J
R24
E7
E8
A3
NAND GATES
U6C, U6D
SNC54S02J
R25
E9
E10
A4
P/O A2A6XA13P1
WAVEFORM G
500 KHz, 4VP-P
TP1
TS-9
500 kHz
COUNTER CONTROL LOGIC
U8
MC12514DEBS
TO PINS 7, 4, 15, 1 OF U9
WAVEFORM I
4V P-P
(A) 11.5 MHz
(B) 3.5 MHz
(C) 20.5 MHz
TP3
TS-8
NOR GATE
U7A – U7C
M38510/00401
A1
FILTER ASSY
(FIG. 5-44)
P/O P1
10 MHz AND 1MHz DIGIT SELECT CODE FROM CODE GENERATOR ASSEMBLY A2A7 (FIG 5-46 ZONES 16A, 16B)
CODE LINE 1
CODE LINE 2
CODE LINE 3
CODE LINE 4
CODE LINE 5
READ ONLY MEMORY
U11
HPROM
82S23
(NOTE 2)
PRESET DIVIDER
U10
MC54416DEBS
PRESET DIVIDER
U9
MC54416DEBS
(NOTE 1)
NAND GATE
CR6
IN914
CR5
Q2
2N2222A

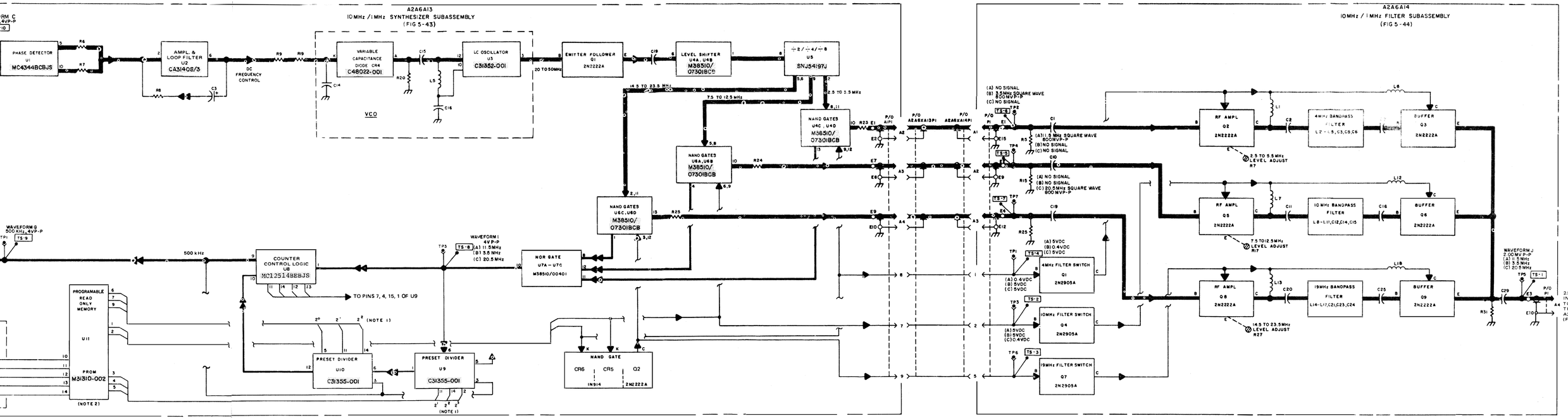
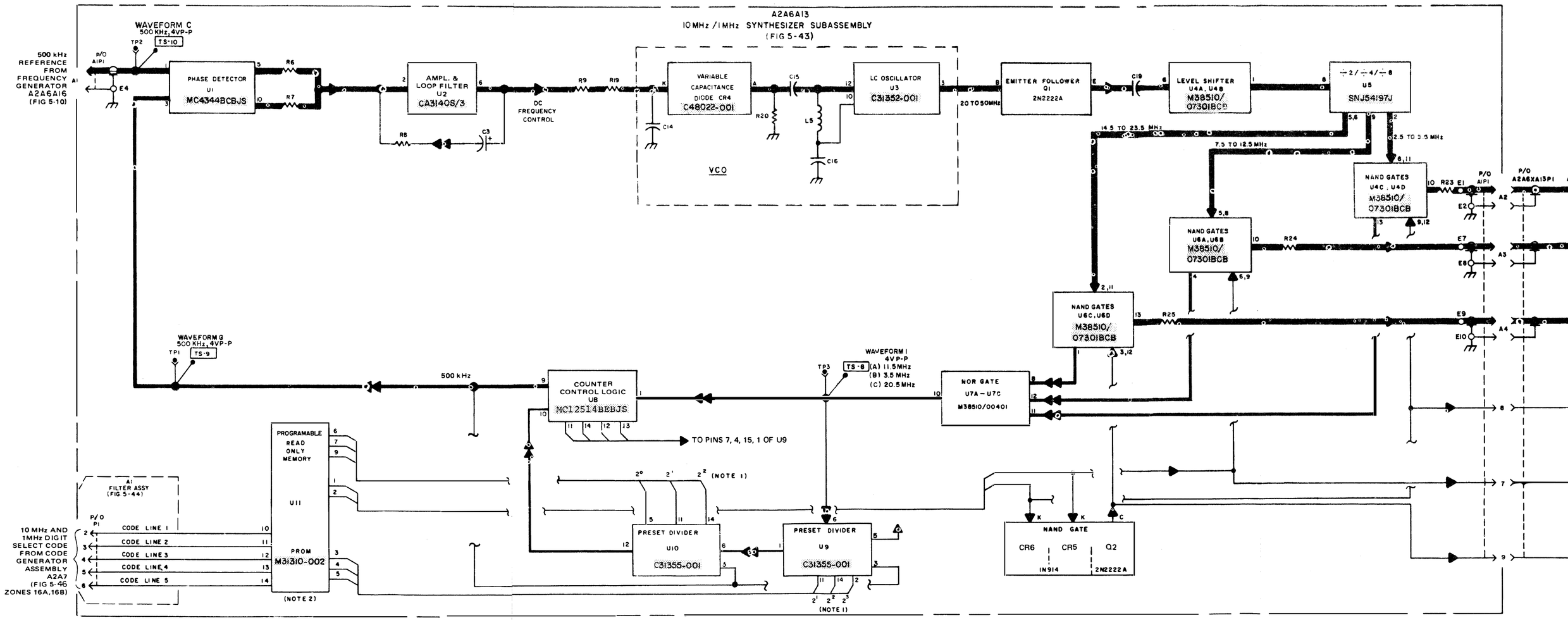


Figure 5-13A. 10 MHz/1 MHz Synthesizer A2A6A13 and Filter Subassembly A2A6A14, Signal Flow Diagram


A2A6A13
10 MHz / 1 MHz SYNTHESIZER SUBASSEMBLY
(FIG 5-43)
500 kHz REFERENCE FROM FREQUENCY GENERATOR A2A6A16 (FIG 5-10)
WAVEFORM C
500 KHz, 4VP-P
TP2
TS-10
P/O A1P1
E4
PHASE DETECTOR U1 MC4344BCBJS
R6
R7
AMPL. & LOOP FILTER U2 CA3140S/3
R8
C3
DC FREQUENCY CONTROL
R9
R19
VARIABLE CAPACITANCE DIODE CR4 C48022-001
C14
VCO
R20
C15
L5
C16
LC OSCILLATOR U3 C31352-001
20 TO 50MHz
EMITTER FOLLOWER Q1 2N2222A
C19
LEVEL SHIFTER U4A, U4B M38510/07301BCB
÷2/÷4/÷8 U5 SNJ54197J
14.5 TO 23.5 MHz
7.5 TO 12.5 MHz
2.5 TO 3.5 MHz
NAND GATES U4C, U4D M38510/07301BCB
R23
E1
P/O A1P1
P/O A2A6XA13P1
A2
NAND GATES U6A, U6B M38510/07301BCB
R24
E7
E8
A3
NAND GATES U6C, U6D M38510/07301BCB
R25
E9
E10
A4
WAVEFORM G
500 KHz, 4VP-P
TP1
TS-9
500 kHz
COUNTER CONTROL LOGIC U8 MC12514BEBJS
TO PINS 7, 4, 15, 1 OF U9
WAVEFORM I
4VP-P
(A) 11.5MHz
(B) 3.5 MHz
(C) 20.5MHz
TP3
TS-8
NOR GATE U7A – U7C M38510/00401
A1 FILTER ASSY (FIG 5-44)
P/O P1
10 MHz AND 1MHz DIGIT SELECT CODE FROM CODE GENERATOR ASSEMBLY A2A7 (FIG 5-46 ZONES 16A,16B)
CODE LINE 1
CODE LINE 2
CODE LINE 3
CODE LINE 4
CODE LINE 5
PROGRAMABLE READ ONLY MEMORY U11
PROM M3I310-002
(NOTE 2)
2⁰ 2¹ 2² (NOTE 1)
PRESET DIVIDER U10 C31355-001
PRESET DIVIDER U9 C31355-001
2¹ 2² 2³ (NOTE 1)
NAND GATE
CR6 IN914
CR5
Q2 2N2222A

NOTES FOR FIGURE 5-14

GENERAL NOTES

A. A2S2 (MODE SELECTOR SWITCH) IS SHOWN IN LSB POSITION. A2S2B FRONT CONTACTS 10 AND 11 AND A2S2A FRONT CONTACTS 6 AND 7 ARE OPEN WHEN SWITCH IS IN OFF POSITION.

B. [ ] INDICATES EQUIPMENT FRONT PANEL MARKINGS.

C. SCHEMATIC DIAGRAM, FIGURE 5-32.

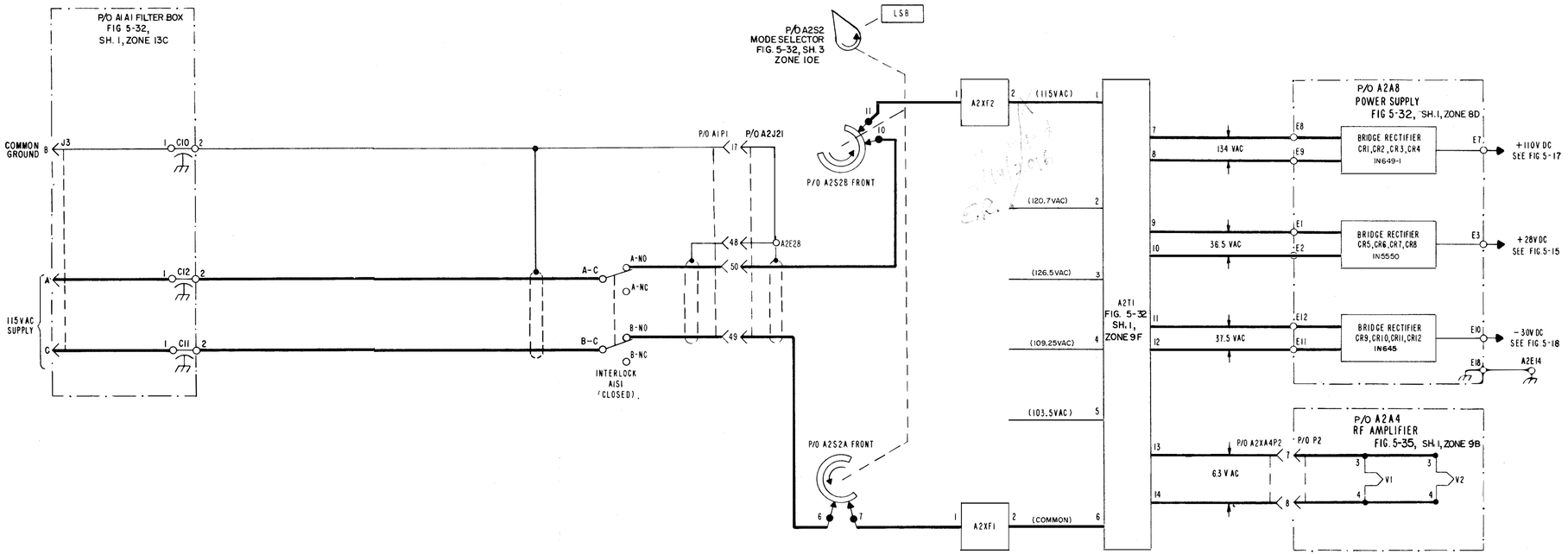


Figure 5-14. Ac Power Distribution Diagram

NOTES FOR FIGURE 5-15

GENERAL NOTES

A. ALL RELAYS SHOWN IN NORMAL OPERATING POSITION.

B. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING.

SPECIFIC NOTES

1. CHART 1 GIVES THE CLOSED CONTACTS FOR MODE SELECTOR SWITCH A2S2 IN EACH OF ITS POSITIONS. REFER TO FIGURE 5-32, SHEET 3.

CHART 1

A2S2D (REAR)	
FUNCTION	TERMINAL
OFF	4 TO 5
STD BY	6 TO 5
LSB (SHOWN)	4 TO 3
RATT	4 TO 5
AM	4 TO 5
CW	6 TO 5
USB	4 TO 5
ISB	4-3-5

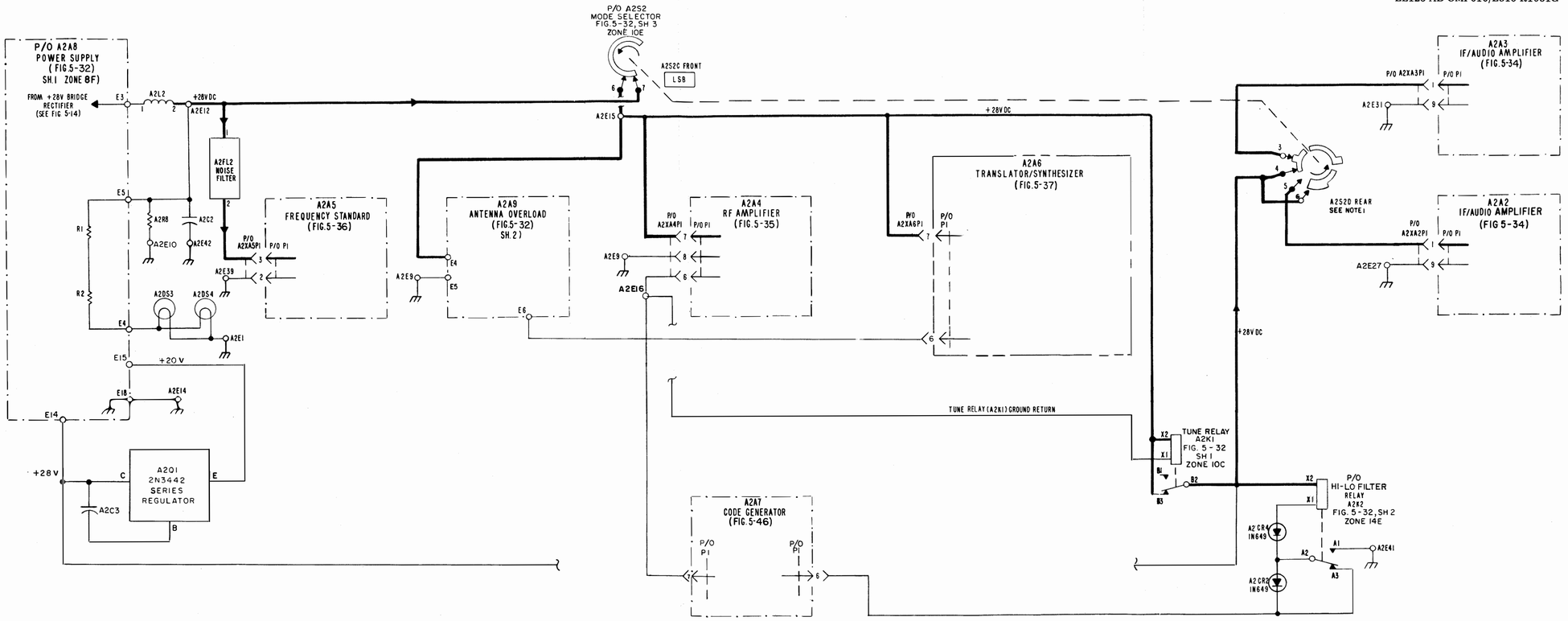


Figure 5-15. +28 Vdc Power Distribution Diagram

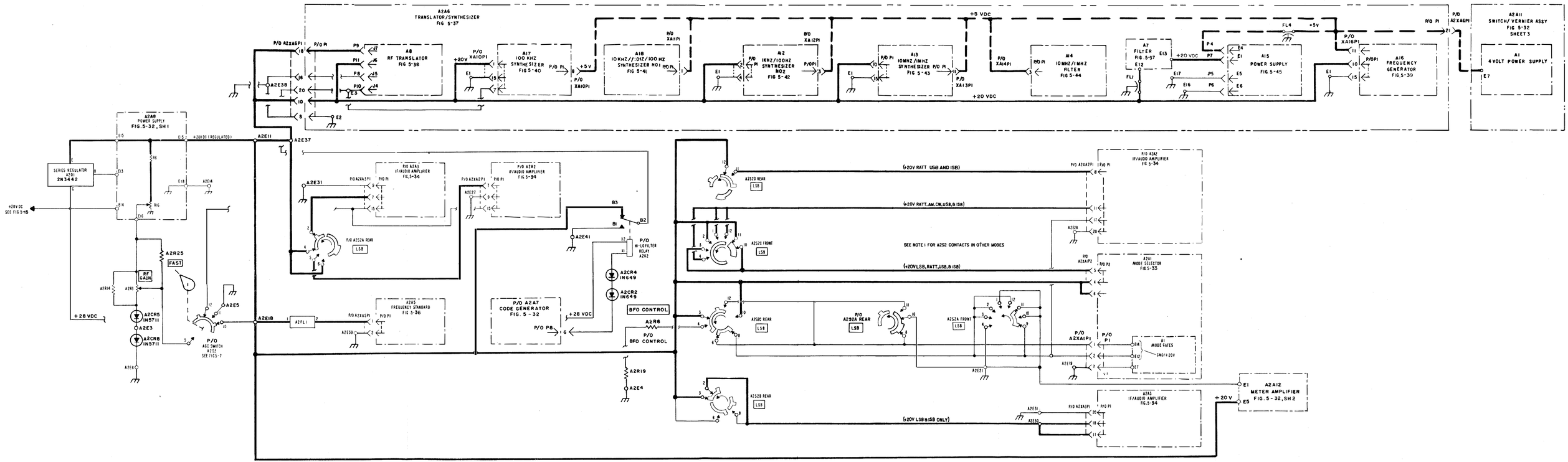


Figure 5-16. +20 Vdc and +5 Vdc Power Distribution Diagram

NOTES FOR FIGURE 5-16

GENERAL NOTES

A. ALL RELAYS SHOWN IN NORMAL OPERATING POSITION.

B. ▭ INDICATES EQUIPMENT FRONT PANEL MARKING.

C. —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.

D. ——— +20 VDC PATH.

E. - - - - - +5 VDC PATH

SPECIFIC NOTES

1. CHARTS 1 THRU 6 GIVE THE CONTACTS FOR MODE SELECTOR SWITCH A2S2 IN EACH OF ITS POSITIONS FOR THE PARTS OF THE SWITCH SHOWN ON THIS DIAGRAM. SWITCH SETTINGS SHOWN ARE FOR LSB ONLY. (REFER TO FIGURE 5-32, SHEET 3).

CHART 1

A2S2A (FRONT)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	9 TO 11
RATT	12 TO 10
AM	11 TO 1
CW	12 TO 2
USB	3 TO 1
ISB	2 TO 4

CHART 2

A2S2A (REAR)	
FUNCTION	TERMINAL
OFF	6-5-10
STD BY	8 TO 10
LSB (SHOWN)	8 TO 10, 4 TO 2
RATT	4 TO 5
AM	11 TO 10, 4 TO 5
CW	11 TO 10, 4 TO 5
USB	6 TO 5
ISB	4-5-2

CHART 3

A2S2B (REAR)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	3 TO 2
RATT	NO CONNECTION
AM	NO CONNECTION
CW	NO CONNECTION
USB	NO CONNECTION
ISB	6 TO 8

CHART 4

A2S2C (FRONT)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	11 TO 10
RATT	11-10-12
AM	11-12-1
CW	2-1-12
USB	2-1-3
ISB	2-3-4

CHART 5

A2S2C (REAR)	
FUNCTION	TERMINAL
OFF	4 TO 6
STD BY	3-4-12
LSB (SHOWN)	6 TO 8
RATT	3 TO 6
AM	10 TO 8
CW	3-4-8
USB	10 TO 12
ISB	10 TO 6

CHART 6

A2S2D (REAR)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	NO CONNECTION
RATT	12 TO 11
AM	NO CONNECTION
CW	NO CONNECTION
USB	12 TO 11
ISB	12 TO 11

NOTES FOR FIGURE 5-17

GENERAL NOTES

A. ALL RELAYS SHOWN IN NORMAL OPERATING POSITION.

B. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING.

C. —\\— 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. CHART 1 GIVES THE CONTACTS FOR MODE SELECTOR SWITCH A2S2 IN EACH OF ITS POSITIONS, FOR THE CONTACTS SHOWN ON THE DIAGRAM. REFER TO FIGURE 5-32, SHEET 3 FOR OTHER SWITCH INFORMATION.

CHART 1

A2S2B (REAR)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	10 TO 9
RATT	10 TO 9
AM	10 TO 11
CW	10 TO 9
USB	10-9-11
ISB	10 TO 9

A2S2C (FRONT)	
FUNCTION	TERMINAL
OFF	NO CONNECTION
STD BY	NO CONNECTION
LSB (SHOWN)	6 TO 7
RATT	6 TO 7
AM	6 TO 7
CW	6 TO 7
USB	6 TO 7
ISB	6 TO 7

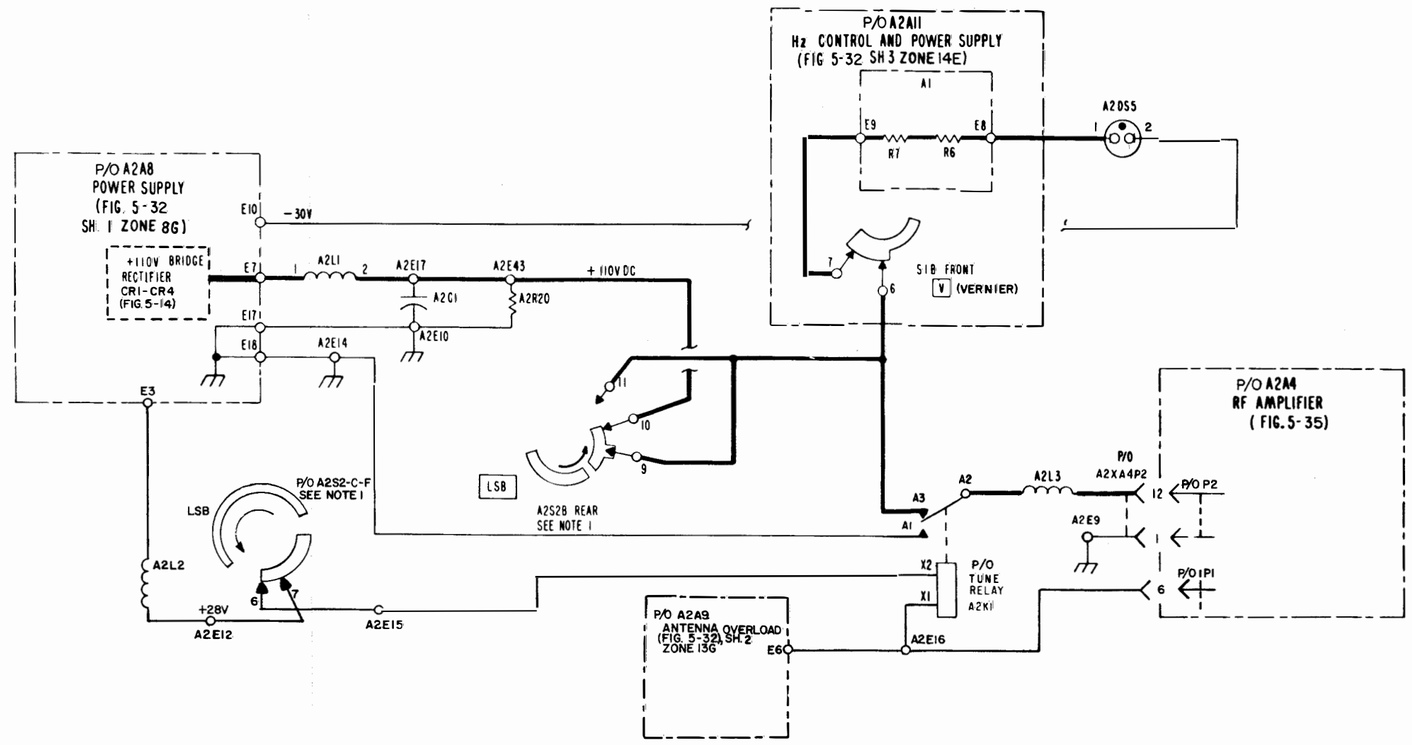


Figure 5-17. +110 Vdc Power Distribution Diagram

NOTES FOR FIGURE 5-18

GENERAL NOTES

A. [ ] INDICATES EQUIPMENT FRONT PANEL MARKING.

B. —≠— 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. CHART 1 GIVES THE CONTACTS FOR MODE SELECTOR SWITCH A2S2 IN EACH OF ITS POSITIONS, FOR THOSE CONTACTS SHOWN ON THE DIAGRAM. REFER TO FIGURE 5-32 FOR ALL OTHER SWITCH INFORMATION.

CHART 1

A2S2D (FRONT)	
FUNCTION	TERMINAL
OFF	11 TO 10
STD BY	11 TO 12
LSB (SHOWN)	12 TO 2
RATT	11 TO 10
AM	11 TO 10
CW	11 TO 10
USB	11 TO 10
ISB	7-6, 11-10

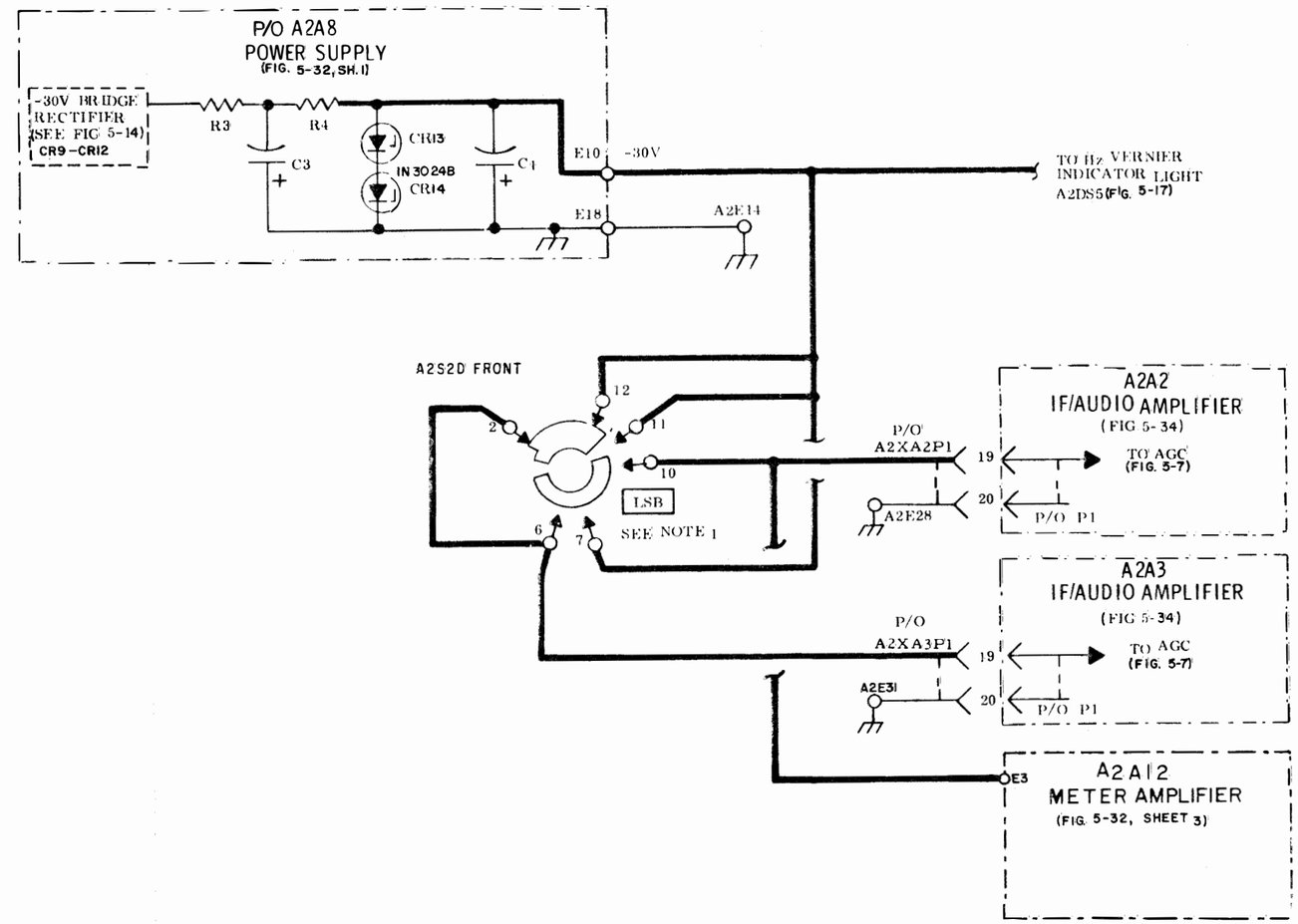


Figure 5-18. -30 Vdc Power Distribution Diagram

NOTES FOR FIGURE 5-19

GENERAL NOTES

A. ▭ INDICATES EQUIPMENT FRONT PANEL MARKING.

B. SWITCHES S1-A AND S1-B ARE SHOWN AT SETTING 2.

C. GROUND A2A7 (CODE GENERATOR) AT PIN 9 WHEN 1 AND 10 MHz CONTROLS ARE POSITIONED AT 00 OR 01.

SPECIFIC NOTES

1. ALL CIRCUIT-OPEN CODE LINES ON A2XA4P1-1 THROUGH A2XA4P1-5 ARE CONNECTED TOGETHER THROUGH CODE GENERATOR ASSEMBLY A2A7 (FIGURE 5-46).

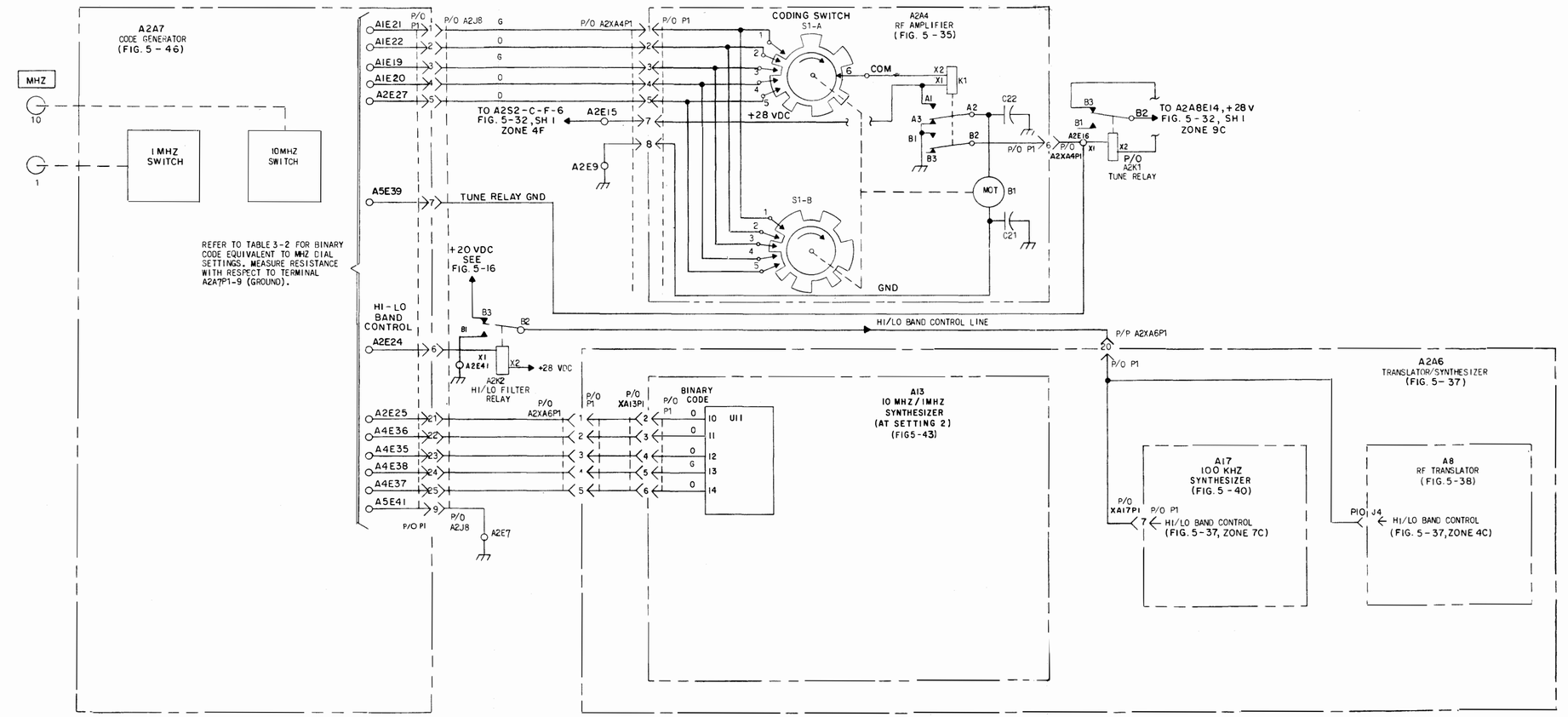


Figure 5-19. Tuning Control Diagram

NOTES FOR FIGURE 5-20

GENERAL NOTES

A. ENSURE THAT THE PROPER POWER SUPPLY VOLTAGES ARE APPLIED TO ASSEMBLIES UNDER TEST.

B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-1.

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-32 AND 5-35.

D. ALL AC VOLTAGES IN RMS.

E. LEGEND:
YES _____
NO - - - - - - - - - - - -

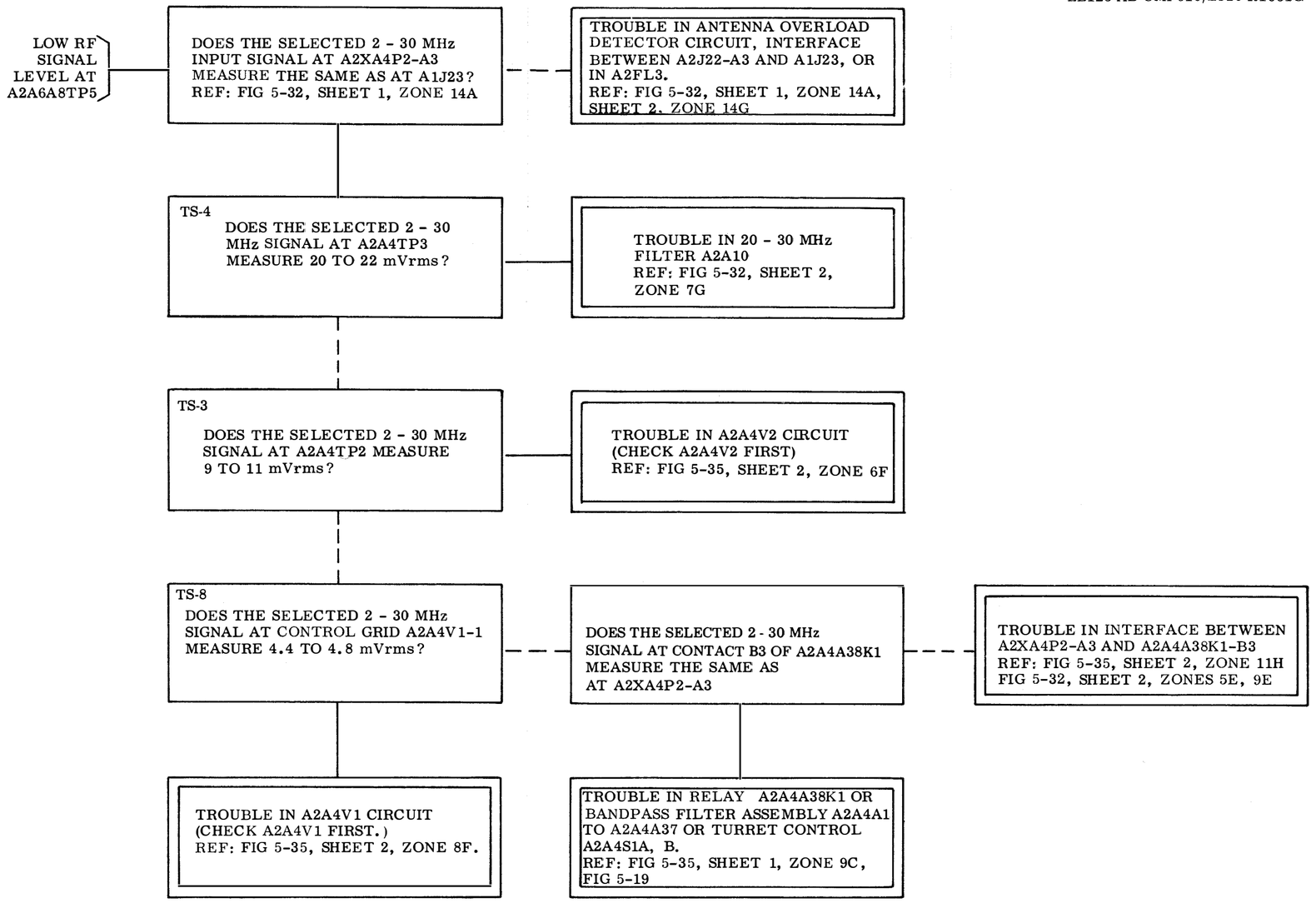


Figure 5-20. RF Selection, Tuning and Overload Protection, Fault Logic Diagram

NOTES FOR FIGURE 5-21

GENERAL NOTES

A. THIS DIAGRAM FOR DEPOT USE ONLY.

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

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-37, 5-38, 5-40 THROUGH 5-44.

D. LEGEND
YES _____
NO - - - - - - - - -

E. WAVEFORMS, TABLE 6-6.

F. SPECTRUM ANALYZER MUST USE HIGH IMPEDANCE INPUT PROBE.

G. USE SIGNAL GENERATOR TO VERIFY FREQUENCY.

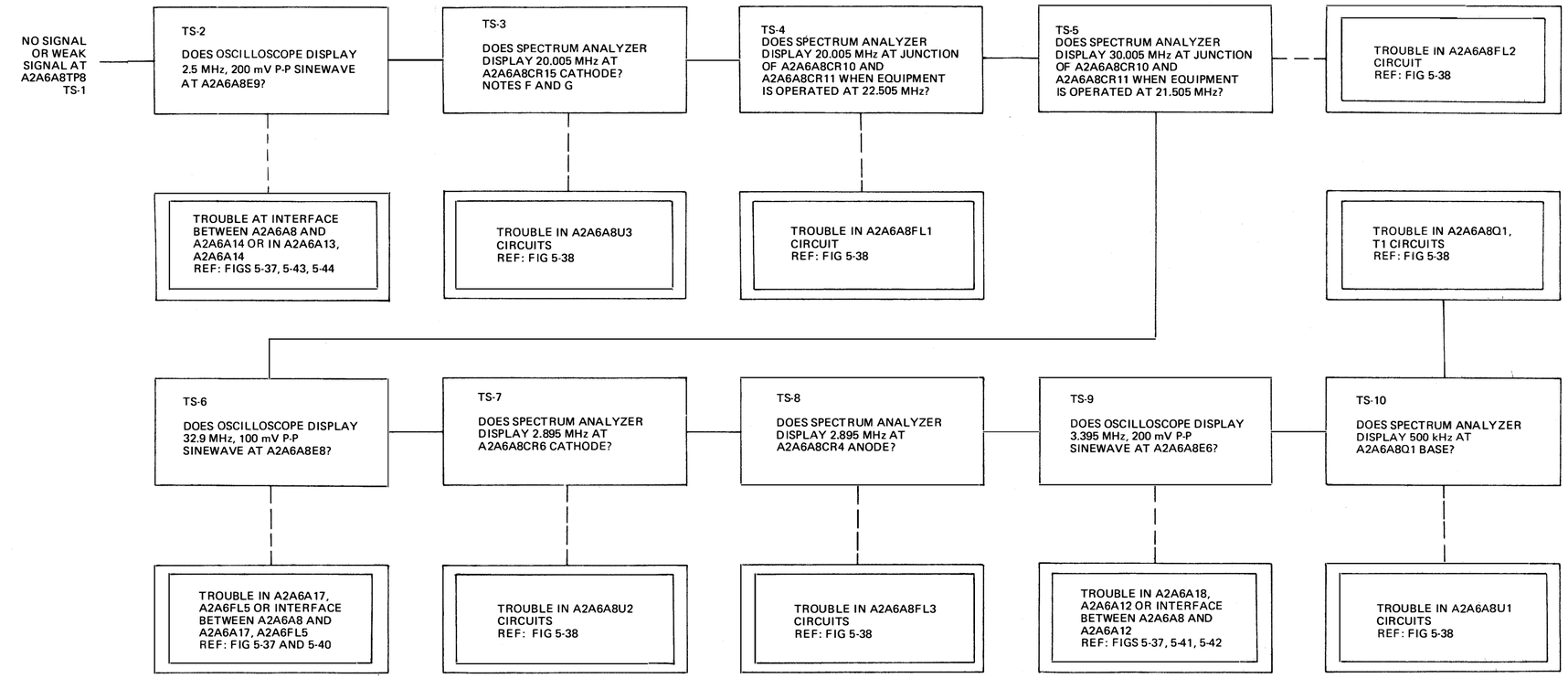


Figure 5-21. RF-to-IF Conversion, Fault Logic Diagram

GENERAL NOTES

A. ENSURE THAT THE PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED TO THE CIRCUIT UNDER TEST.

B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-3.

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-33 AND 5-34.

D. ALL AC VOLTAGES IN RMS.

E. MEASUREMENTS ARE TYPICAL IN-OPERATION VALUES.

F. LEGEND:
YES _____
NO - - - - - - - - - - -

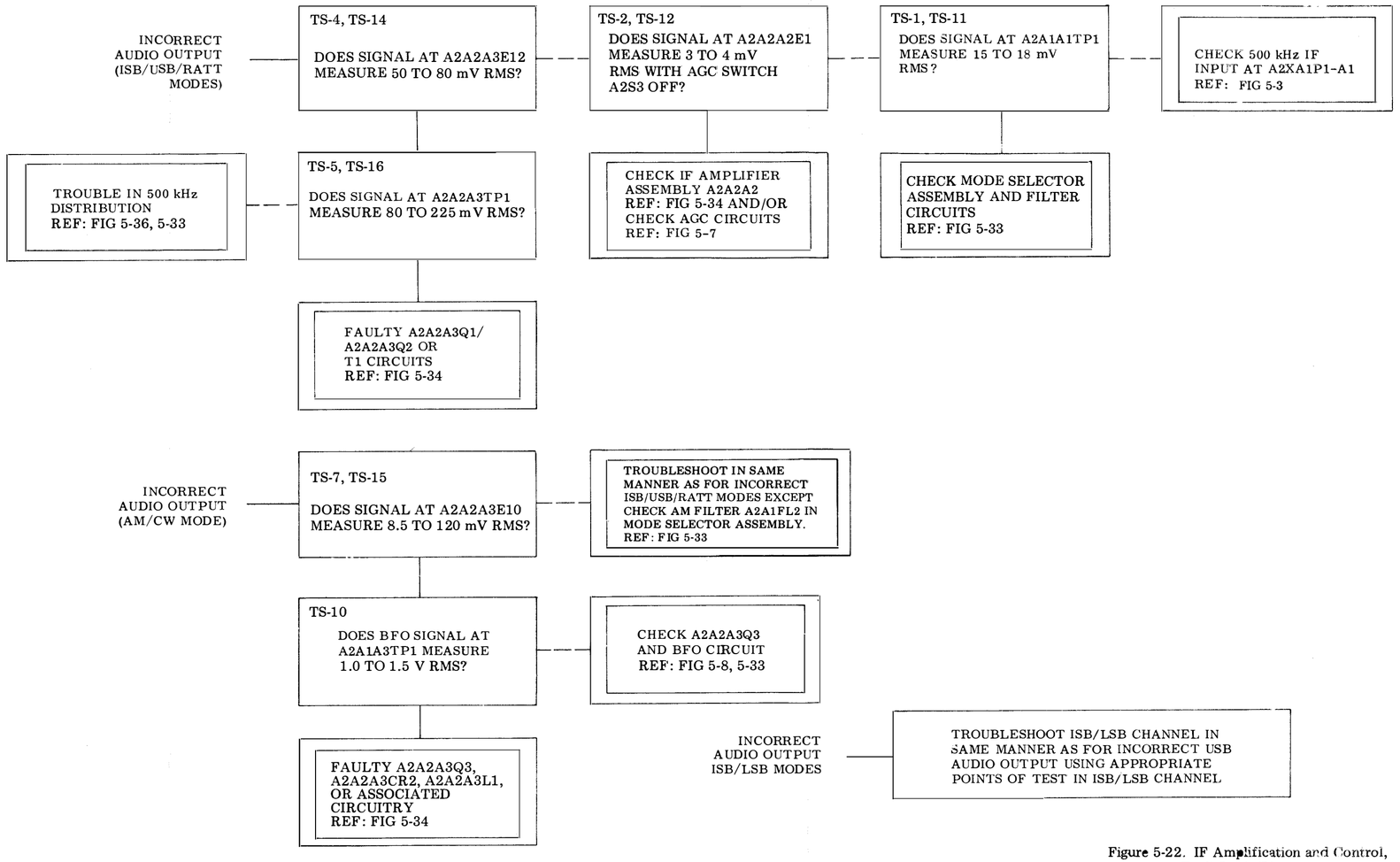


Figure 5-22. IF Amplification and Control, Fault Logic Diagram

NOTES FOR FIGURE 5-23

GENERAL NOTES

A. ENSURE THAT PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED TO THE CIRCUIT UNDER TEST.

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

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-32 AND 5-34.

D. ALL AC VOLTAGES IN RMS.

E. LEGEND:
YES———
NO - - - - - - - -

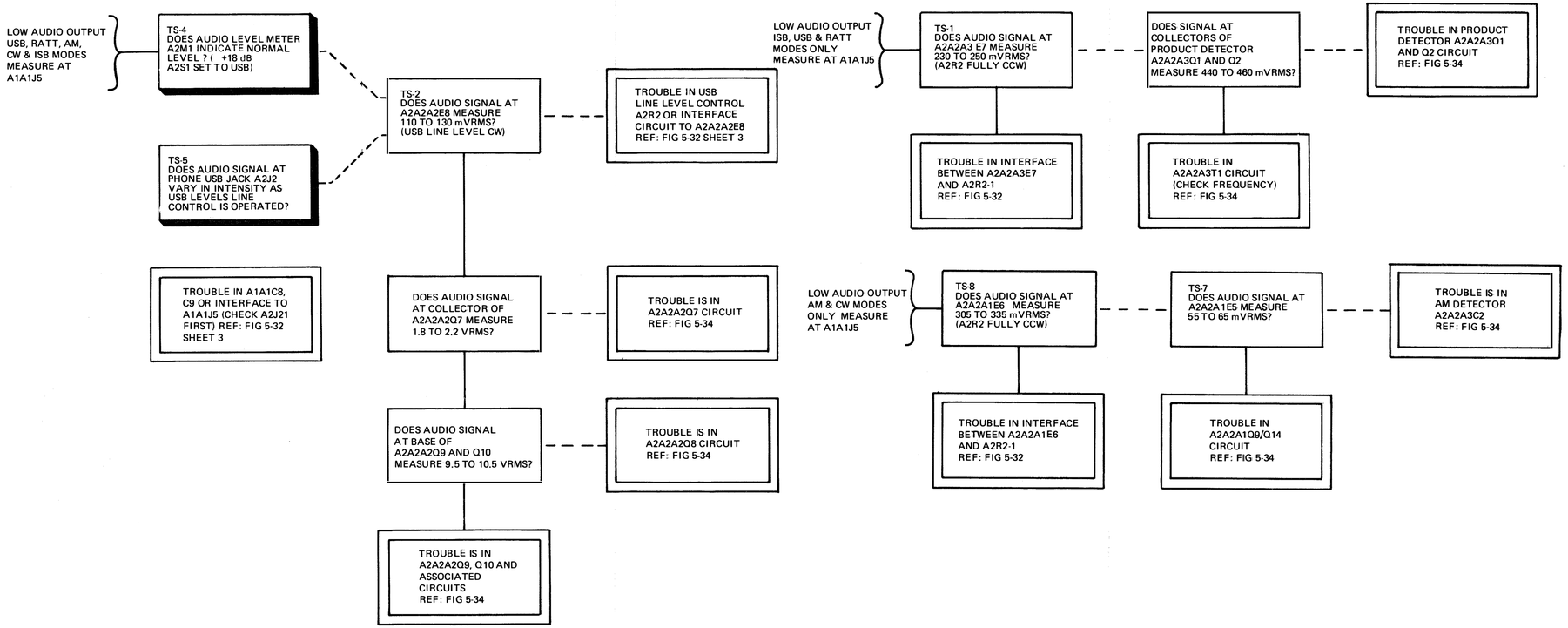


Figure 5-23. Audio Amplification (USB,RATT, AM and CW Modes), Fault Logic Diagram

GENERAL NOTES

A. ENSURE THAT THE PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED TO THE CIRCUIT UNDER TEST.

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

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-32 AND 5-34.

D. ALL AC VOLTAGES IN RMS.

E. LEGEND

YES _____

NO _____

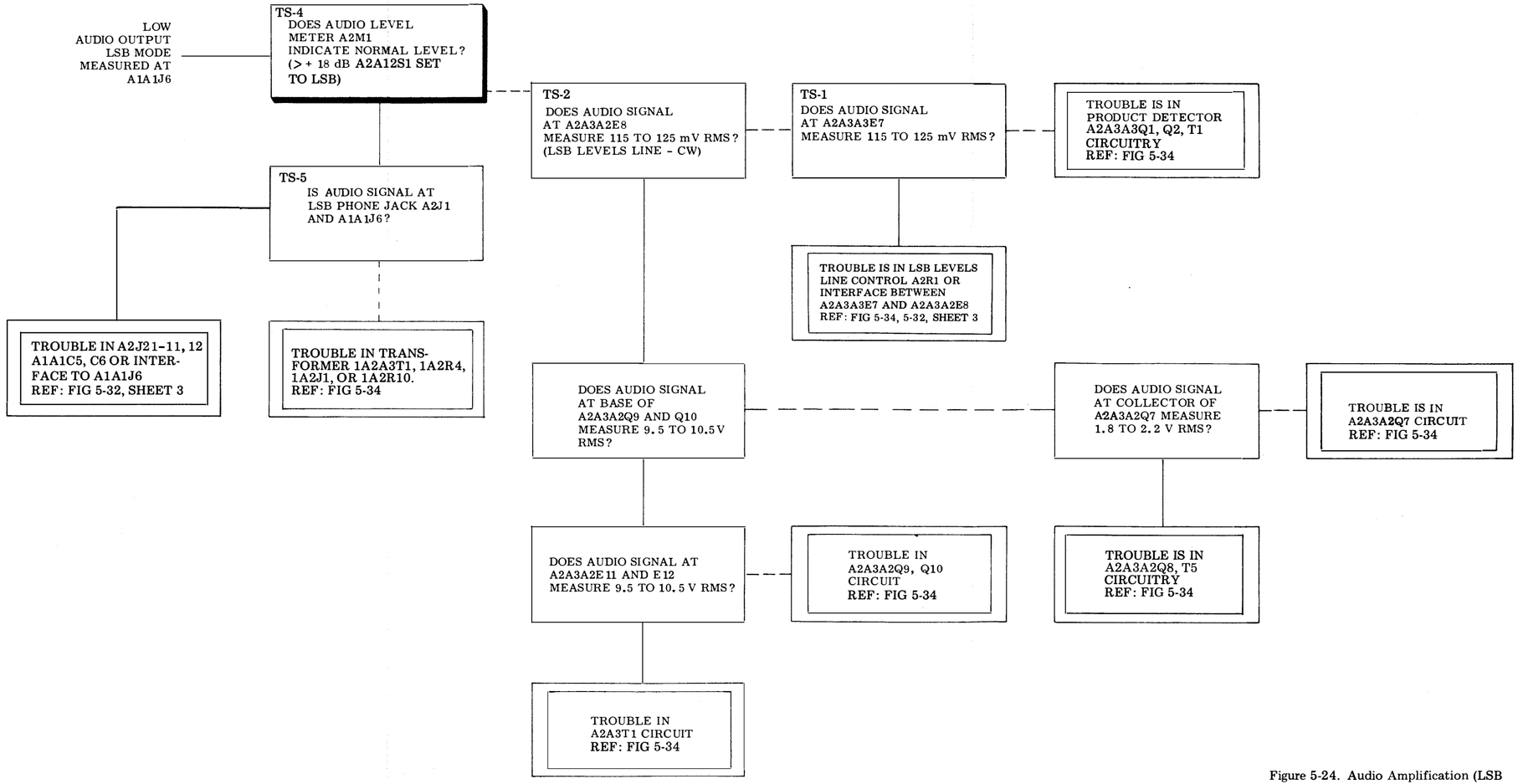


Figure 5-24. Audio Amplification (LSB Mode), Fault Logic Diagram

GENERAL NOTES

A. ENSURE THAT THE PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED TO THE CIRCUIT UNDER TEST.

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

C. REFER TO SCHEMATIC DIAGRAM, FIGURE 5-34.

D. ALL AC VOLTAGES IN RMS.

E. LEGEND:
YES _____
NO - - - - - - - - - -

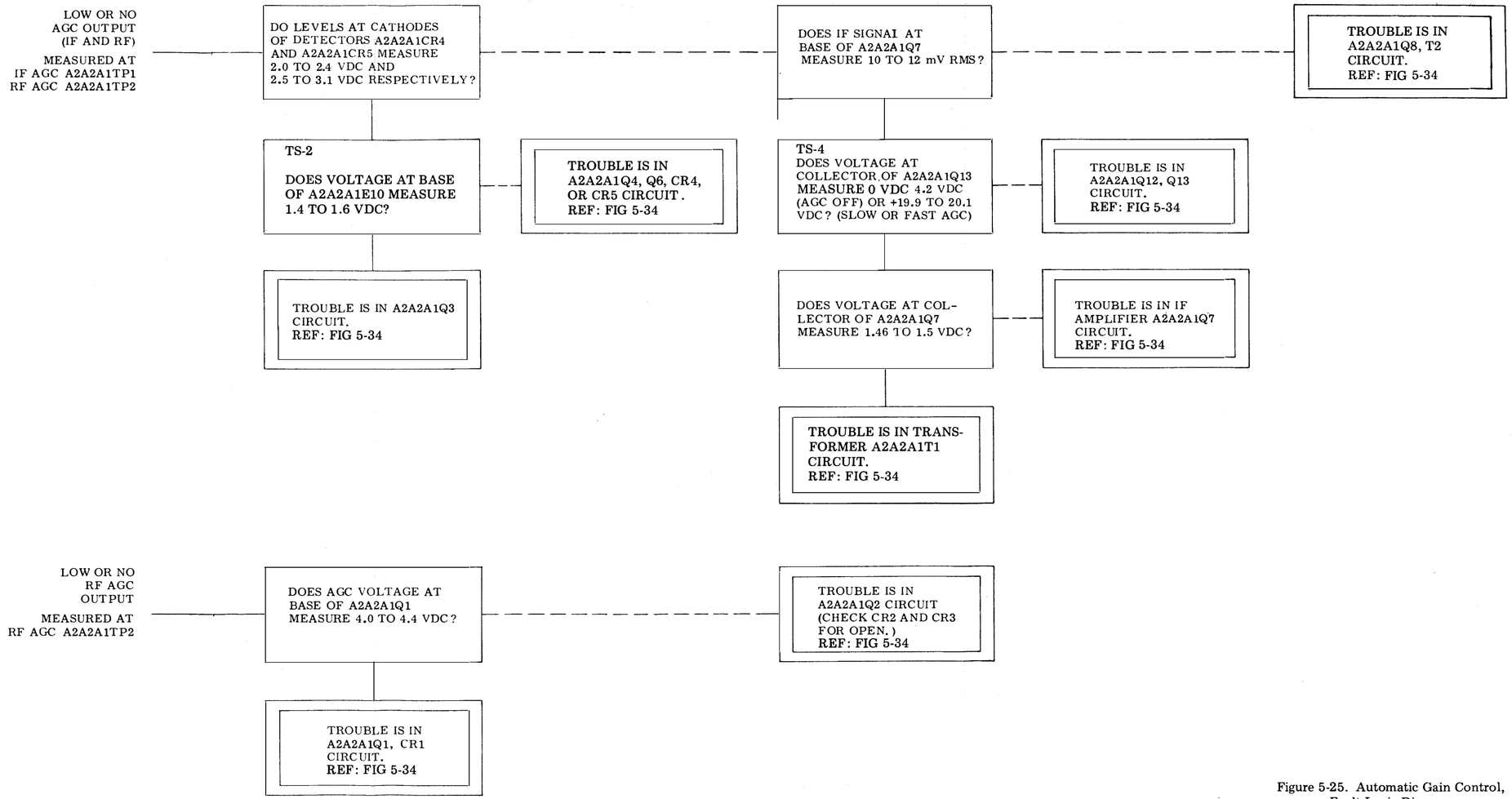


Figure 5-25. Automatic Gain Control, Fault Logic Diagram

GENERAL NOTES

A. ENSURE THAT THE PROPER POWER SUPPLY AND GATING VOLTAGES ARE APPLIED TO THE CIRCUIT UNDER TEST.

B. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-8.

C. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-32, 5-33, AND 5-34.

D. ALL AC VOLTAGES IN RMS.

E. LEGEND:
YES _____
NO ----------

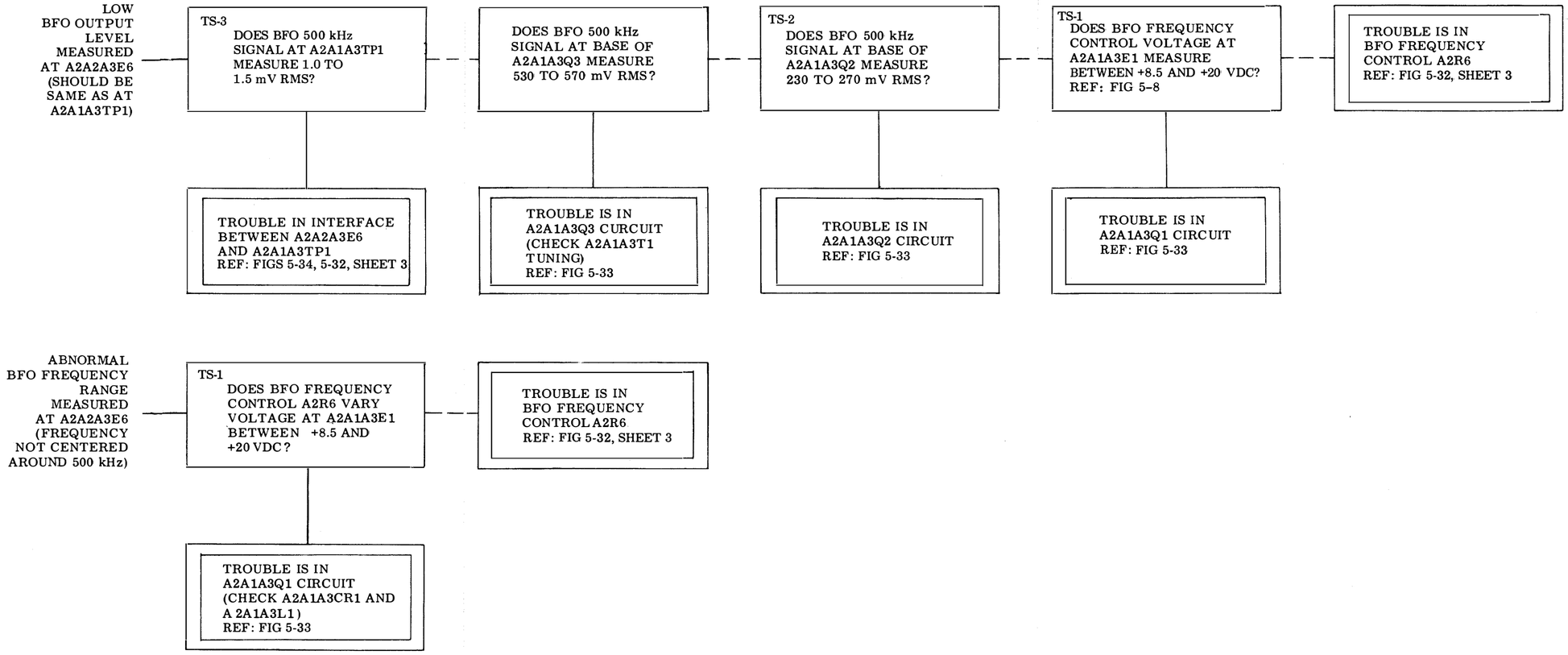


Figure 5-26. Beat Frequency Oscillator, Fault Logic Diagram

GENERAL NOTES

A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-9.

B. REFER TO SCHEMATIC DIAGRAM, FIGURE 5-36.

C. LEGEND:
YES ——————————
NO — — — — — — — —

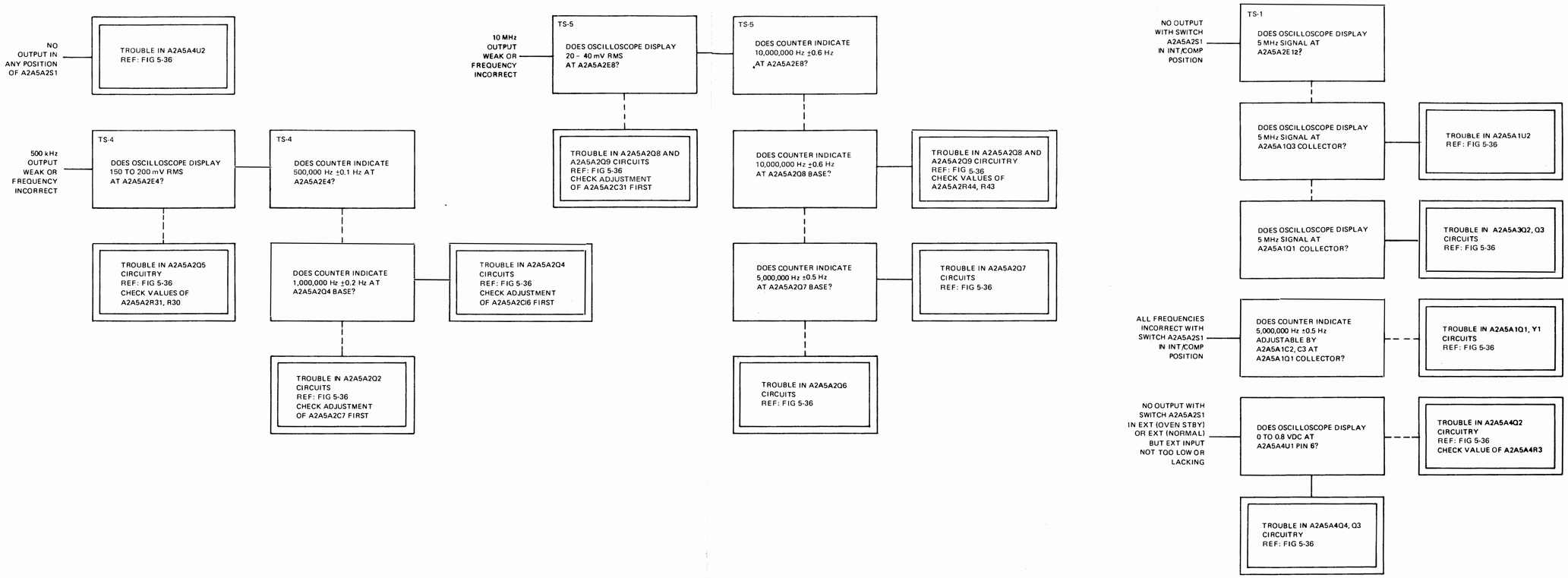


Figure 5-27. Standard Frequency Generation and Distribution, Fault Logic Diagram

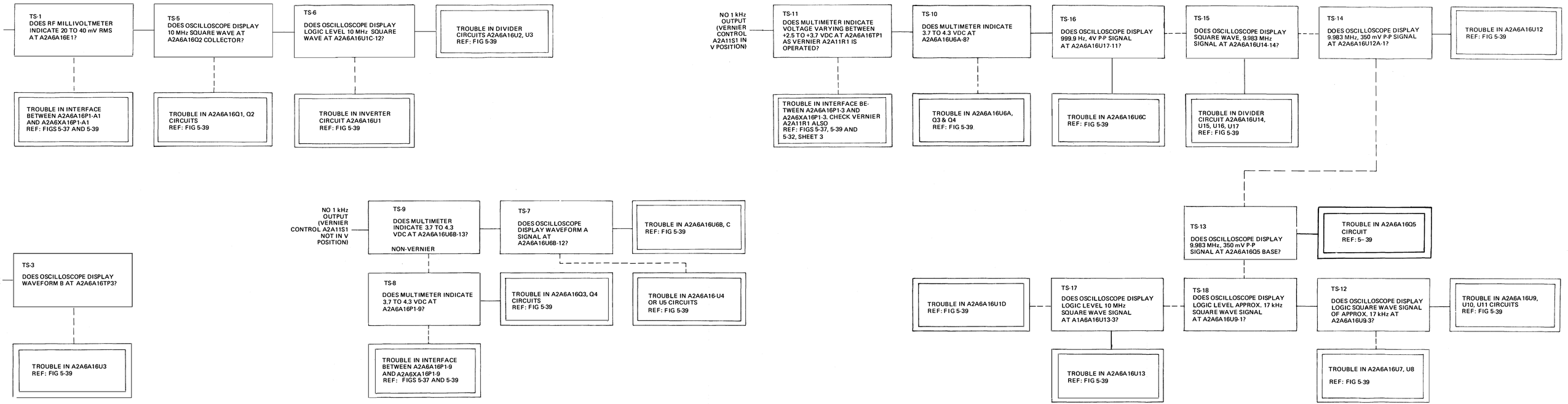


Figure 5-28. Frequency Generator A2A6A16, Fault Logic Diagram

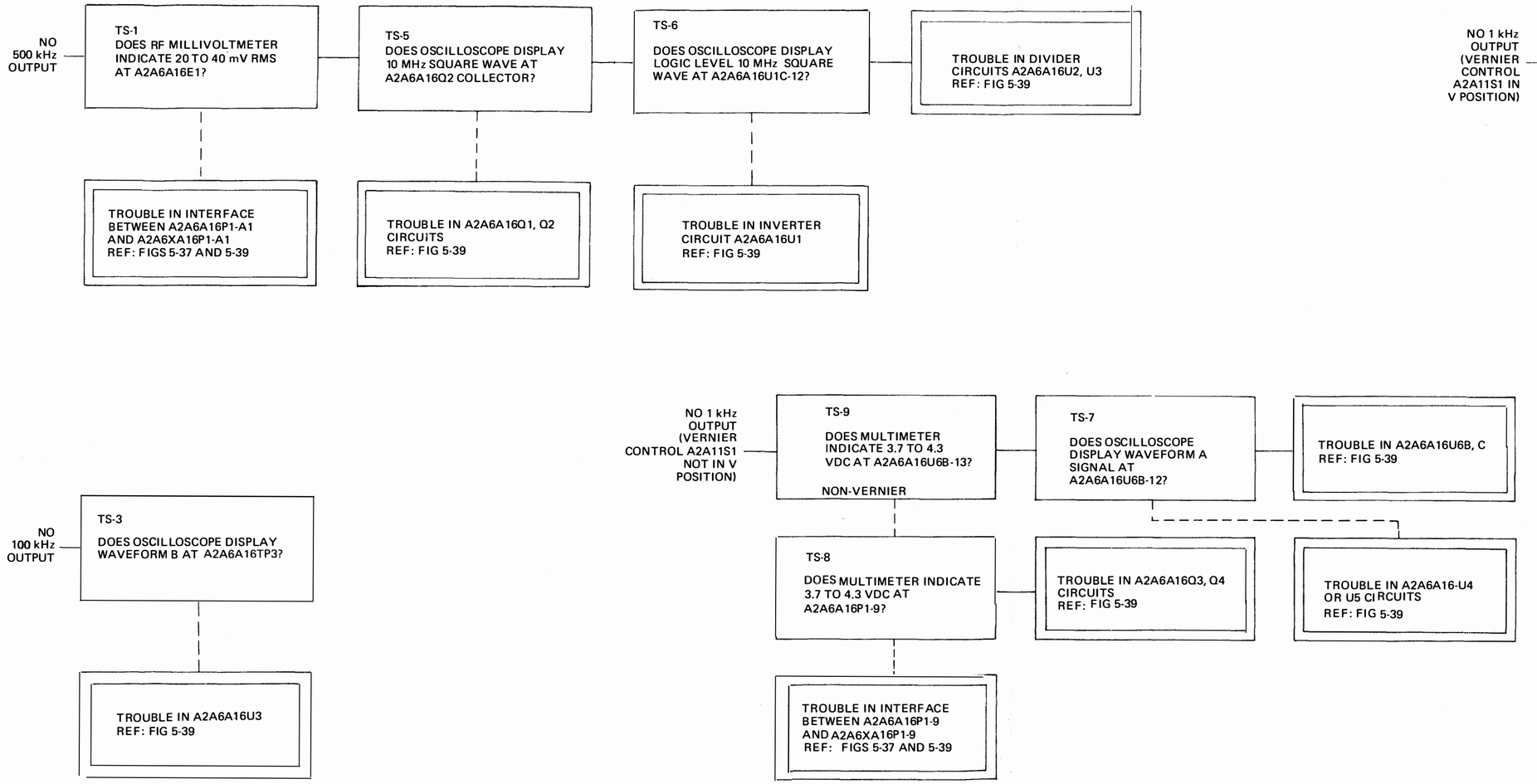
GENERAL NOTES

A. TEST SETUP:
REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-10.

B. REFER TO SCHEMATIC DIAGRAMS, FIGURES 5-37 AND 5-39.

C. LEGEND
YES ————————
NO - - - - - - - - - -

D. SEE TABLE 6-6 FOR REFERENCED WAVEFORMS.



NOTES FOR FIGURE 5-29

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-11, FOR TS-2 AND TS-4 TEST STEPS AND FOR WAVEFORM INFORMATION.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-37, 5-41 AND 5-42.

C. LEGEND:
YES ———————
NO - - - - - - - - - -

D. SEE TABLE 6-6 FOR REFERENCED WAVEFORMS.

SPECIFIC NOTES

1. REMOVE POWER FROM TEST FIXTURE. RELEASE LATCHES AND REMOVE 10 kHz/1 kHz/100 Hz SYNTHESIZER SUBASSEMBLIES A2A6A18 AND 10 kHz/1 kHz/100 Hz SYNTHESIZER SUBASSEMBLY A2A6A12. PLACE EXTENDER BOARD IN A2A6A18 LOCATION AND MATE CONNECTOR A2A6A18P1 WITH CONNECTOR ON EXTENDER BOARD. DO NOT REINSTALL THE A2A6A12 SUBASSEMBLY. SET THE TEST FIXTURE CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE NON-VERNIER RECEIVE MODE AT 2.0011 MHz. SET RF SIGNAL GENERATOR 28480-8640B-001-003 FOR A 300 mV RMS 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 5-11. 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 10 kHz/1 kHz/100 Hz SYNTHESIZER SUBASSEMBLY A2A6A12. PLACE EXTENDER BOARD IN A2A6A12 LOCATION AND MATE CONNECTOR A2A6A12P1 WITH CONNECTOR ON EXTENDER BOARD. DO NOT REINSTALL THE A2A6A18 SUBASSEMBLY. SET THE TEST FIXTURE CONTROLS TO TEST A WRC-1 100 Hz TYPE MODULE IN THE NON-VERNIER RECEIVER MODE AT 2.0011 MHz. SET SIGNAL 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 5-11.

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.

4. FREQUENCY SHOULD BE 1.0 kHz. AMPLITUDE SHOULD BE 4 V PEAK.

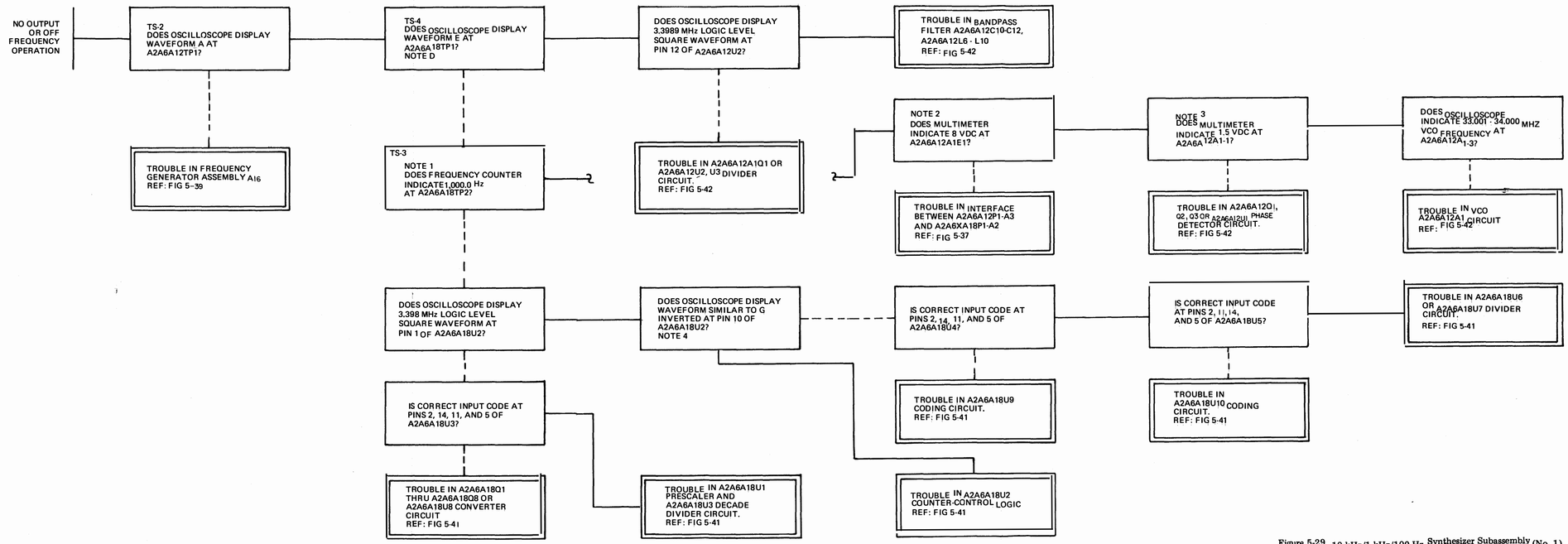


Figure 5-29. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 1) A2A6A18 and 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Fault Logic Diagram

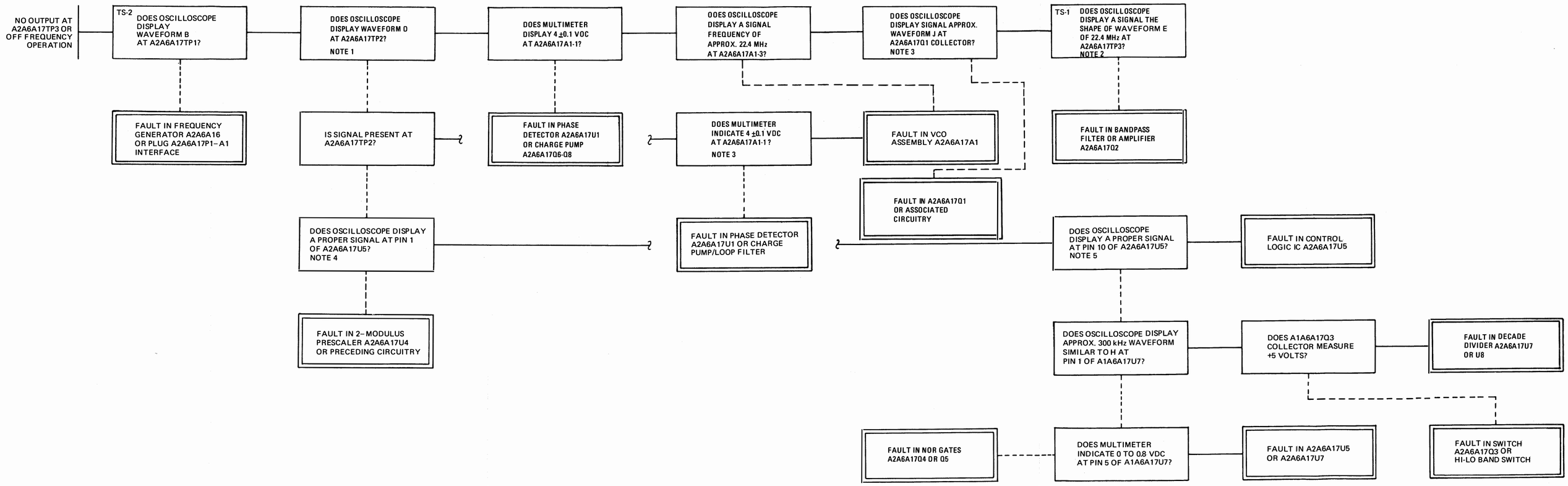


Figure 5-30. 100 kHz Synthesizer A2A6A17, Fault Logic Diagram

NOTES FOR FIGURE 5-30

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-12, FOR TEST STEPS AND WAVEFORM INFORMATION.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAM, FIGURE 5-40.

C. LEGEND:
YES ————————
NO - - - - - - - - - -

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

E. SEE TABLE 6-6 FOR REFERENCED WAVEFORMS.

SPECIFIC NOTES

1. WAVEFORM FREQUENCY MUST BE 100 kHz AS MEASURED ON FREQUENCY COUNTER. 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 BOARD. 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 A2A6A17A1-1. CHANGE FUNCTION GENERATOR FREQUENCY TO 110 kHz AND MEASURE DC VOLTAGE AT A2A6A17A1-1.

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.

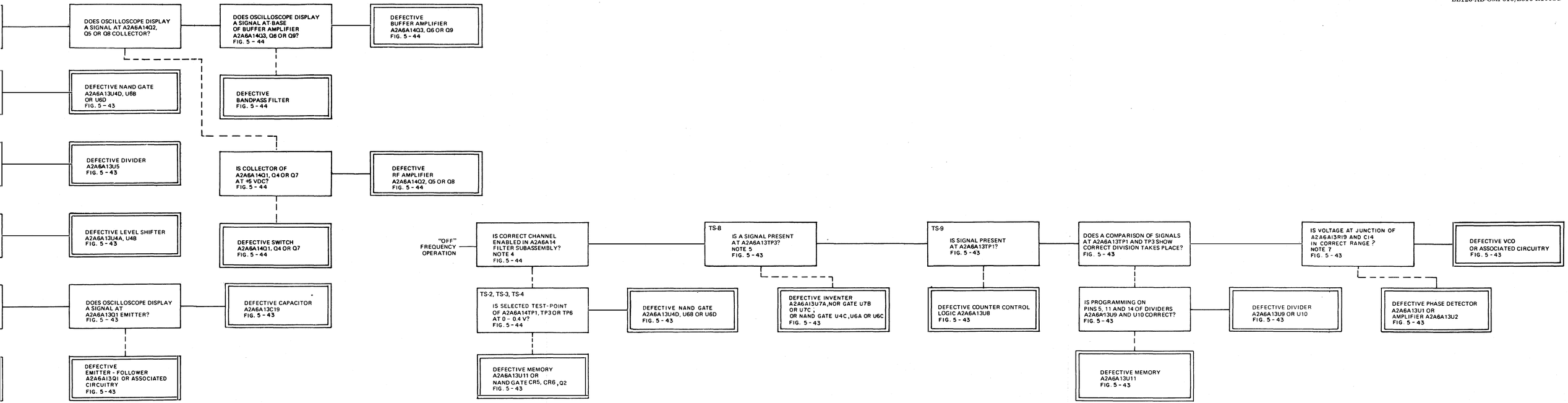


Figure 5-31. 10 MHz/1 MHz Synthesizer Subassemblies A2A6A13 and A2A6A14, Fault Logic Diagram

GENERAL NOTES

A. REFER TO SIGNAL FLOW DIAGRAM, FIGURE 5-13 FOR TEST STEPS AND WAVEFORM INFORMATION.

B. REFER TO MAINTENANCE SCHEMATIC DIAGRAMS, FIGURES 5-43 AND 5-44.

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 5-13, MUST BE PERFORMED IN THEIR ENTIRETY TO DETERMINE WHICH FREQUENCY RANGES ARE MALFUNCTIONING BEFORE FAULT LOGIC DIAGRAM 5-31 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.

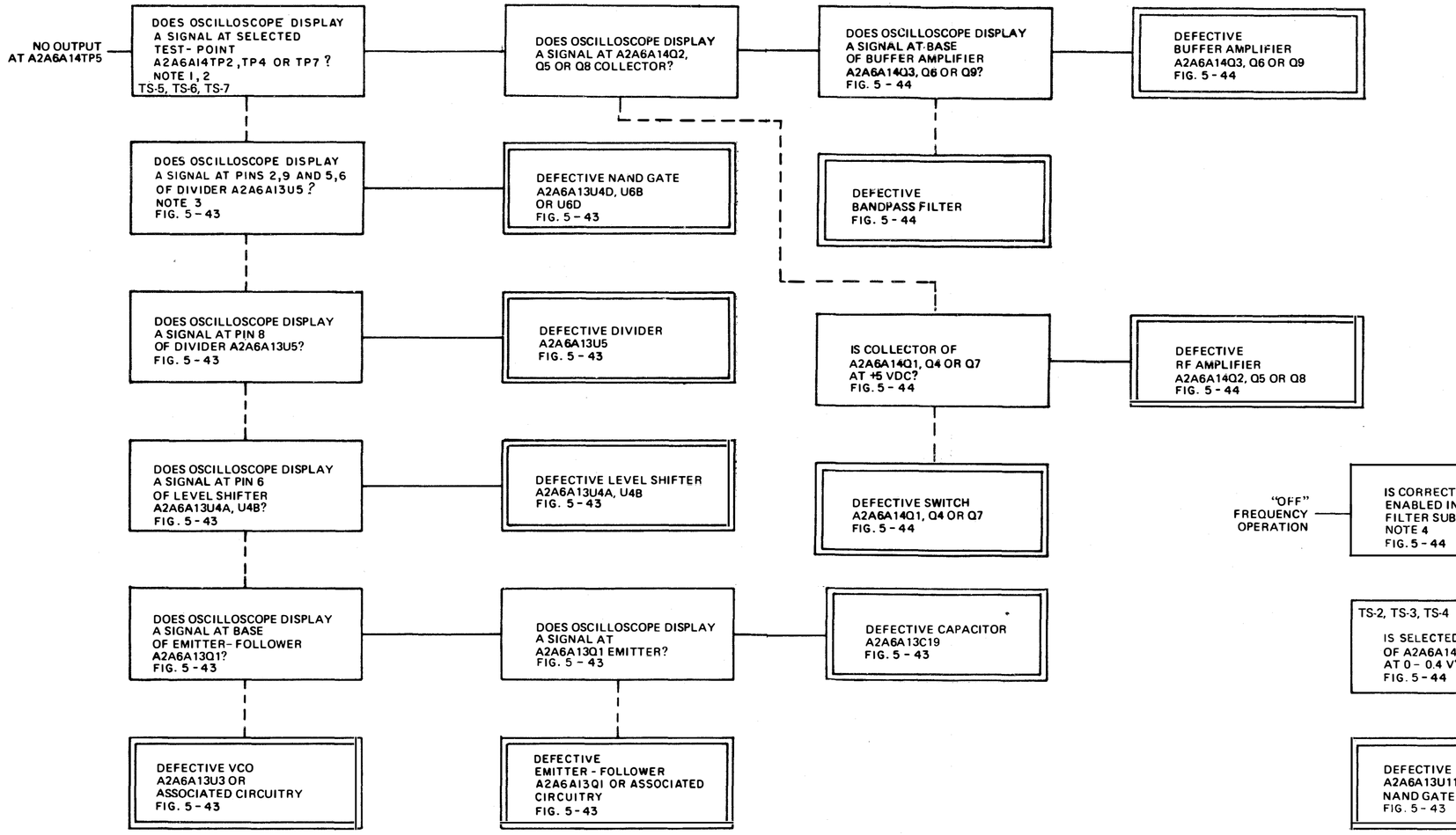
3. REMOVE POWER FROM TEST FIXTURE. REMOVE A2A6A13 AND A2A6A14 SUBASSEMBLIES AND REINSTALL ON EXTENDER BOARDS.

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

5. SIGNAL SHOULD HAVE A PEAK AMPLITUDE OF 4 V. 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 PEAK 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.



NOTES FOR FIGURE 5-32 (CONTINUED)

PART LOCATION INDEX

REF. DESIG.	SHEET	ZONE
A2A12R13	3	3D
R14	3	4D
S1	3	6D-6G
		5D-5G
		4D-4G
U1A	3	7E
U1B	3	4E
U1C	3	4D

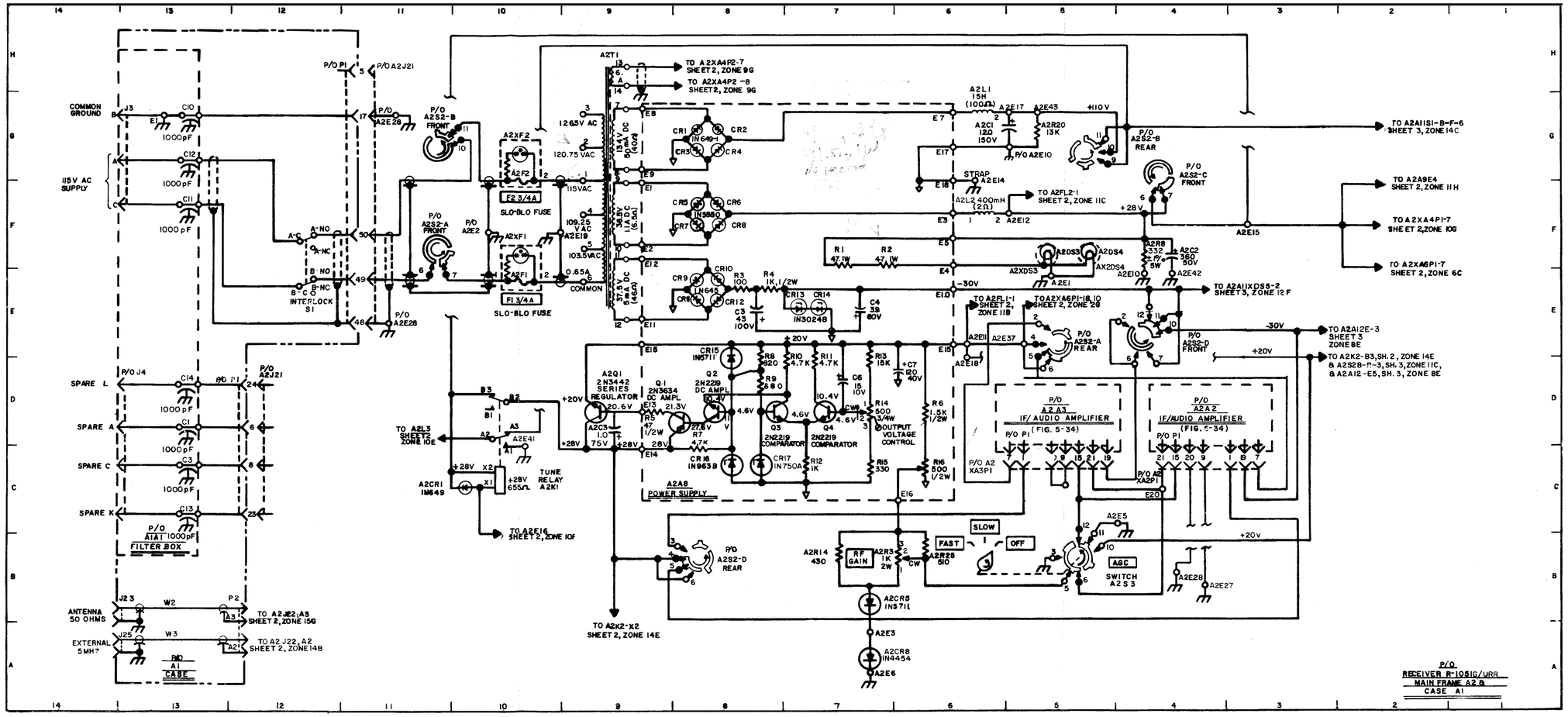


Figure 5-32. Receiver Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 1 of 3)

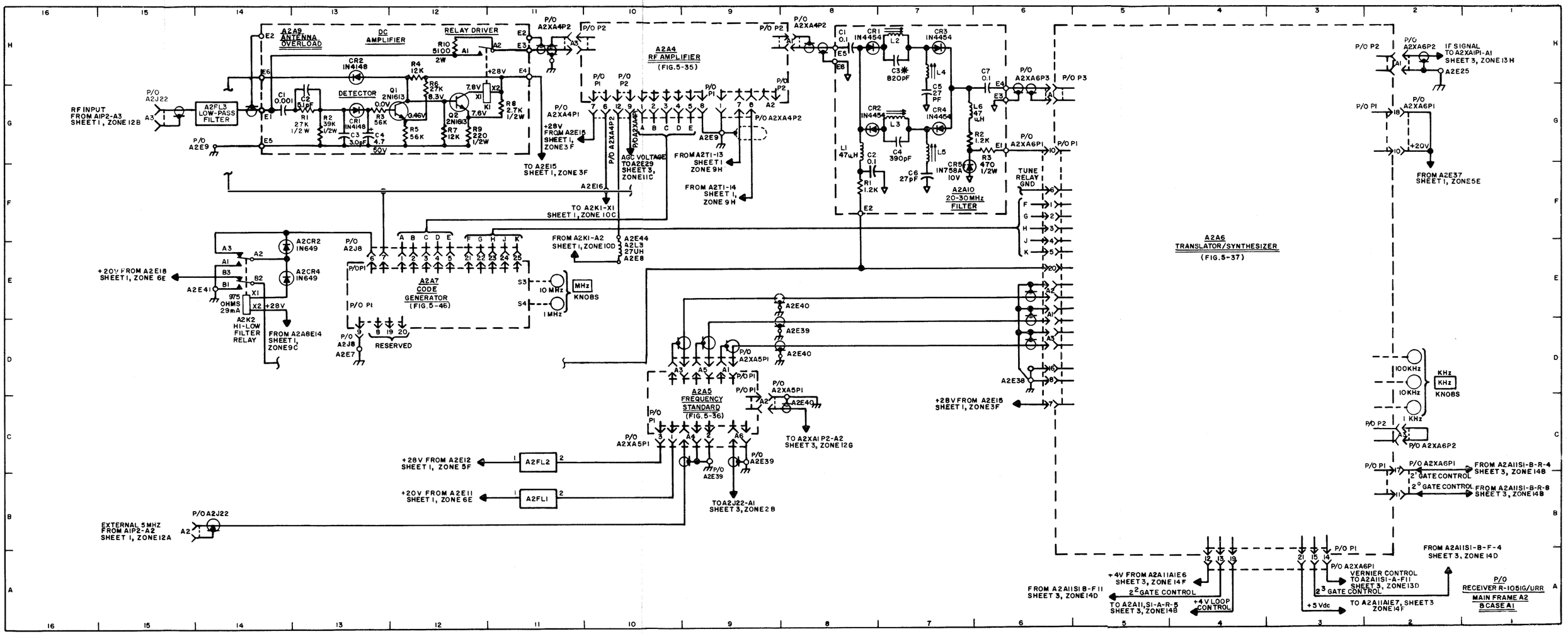


Figure 5-32. Receiver Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 2 of 3)

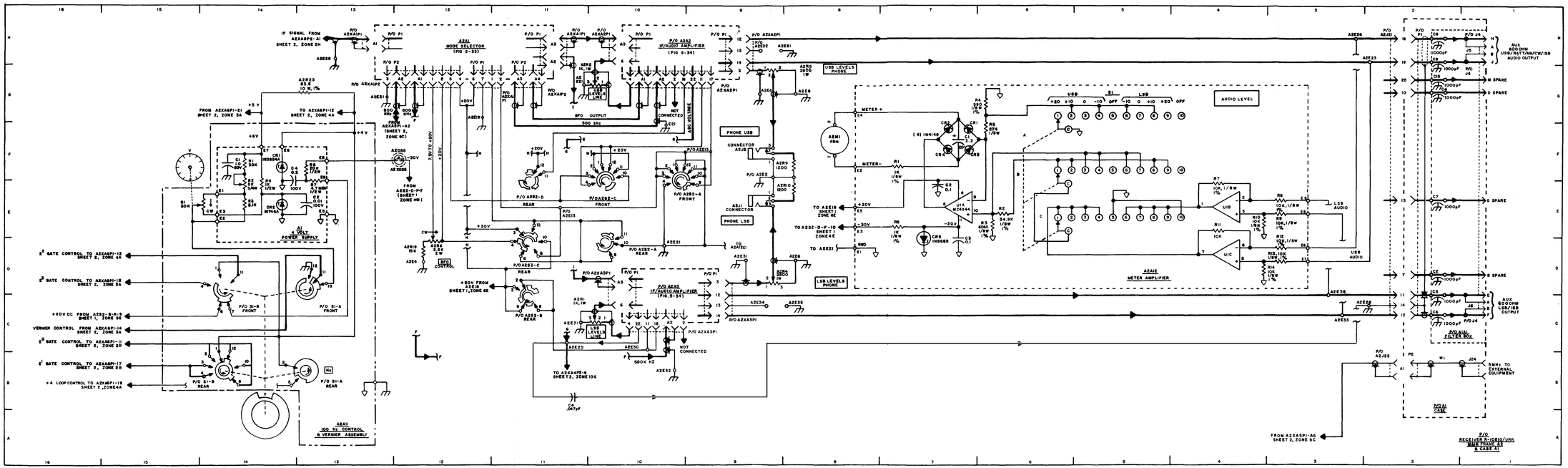


Figure 5-32. Receiver Case A1 and Main Frame A2, Maintenance Schematic Diagram (Sheet 3 of 3)

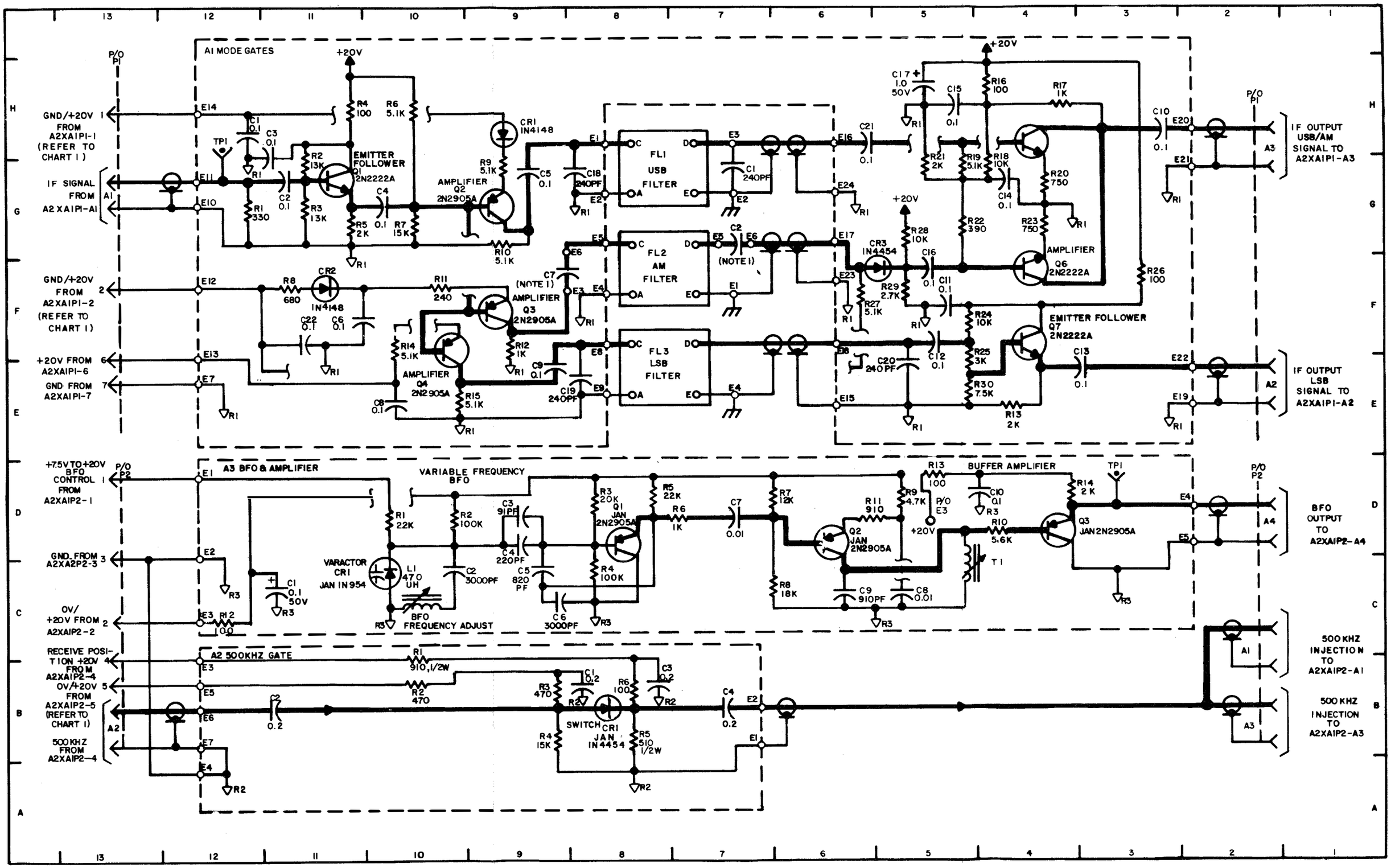


Figure 5-33. Receiver Mode Selector Assembly A2A1, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-33

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 PICOFARADS, UF = MICROFARADS.
ALL COIL RESISTANCES ARE LESS THAN 1 OHM.

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

D. ⊰⊱ 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

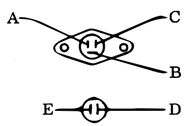
1. CAPACITANCE TO BE SELECTED ACCORDING TO COLOR DOT ON FILTERS.
ORANGE - 130 pF ±2%
YELLOW - 140 pF ±2%
GREEN - 150 pF ±2%

2. CONTROL VOLTAGE CHART

PIN	LSB	RATT	AM	CW	USB	ISB
P1-1	GND	+20V	GND	GND	+20V	+20V
P1-2	GND	GND	+20V	+20V	GND	GND
P2-2	-	-	-	+20V	-	-
P2-5	+20V	+20V	-	-	+20V	+20V
V_S	+10V	+10V	+6.7V	+6.7V	+10V	+10V

3. FILTERS A2A1A1FL1, A2A1A1FL2 AND A2A1A1FL3 ARE FERRITE BEAD PARASITIC SUPPRESSORS.

4. TERMINAL IDENTIFICATION FOR A2A1FL1, A2A1FL2, AND A2A1FL3 IS AS FOLLOWS:



PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A1C1	7G	A2A1A1C18	8G	A2A1A1R9	9G
C2	7G	C19	8E	R10	9G
E1	7F	C20	5E	R11	10F
E2	7G	C21	6H	R12	9F
E3	7H	C22	11F	R13	4E
E4	7E	CR1	9H	R14	10F
E5	7G	CR2	11F	R15	10E
E6	7G	CR3	5F	R16	4H
FL1	8G	E1 **	8H	R17	4H
FL2	8F	E2 **	8G	R18	4G
FL3	8E	E3 **	8F	R19	5G
P1-1	13H	E4 **	8F	R20	4G
P1-2	13F	E5 **	8G	R21	5G
P1-3 thru P1-5	*	E6 **	8F	R22	5G
		E7 **	12E	R23	4G
		E8 **	8F	R24	5F
P1-6	13E	E9 **	8E	R25	5E
P1-7	13E	E10**	12G	R26	3F
P1-A1	13G	E11**	12G	R27	6F
P1-A2	2E	E12**	12F	R28	5G
P1-A3	2H	E13**	12E	R29	5F
P2-1	13D	E14**	12H	R30	5E
P2-2	13C	E15**	6E	TP1	12H
P2-3	13C	E16**	6H	A2A1A2C1	8B
P2-4	13C	E17**	6G	C2	11B
P2-5	13B	E18**	6F	C3	8B
P2-A1	2C	E19**	2E	C4	7B
P2-A2	13B	E20**	2H	CR1	8B
P2-A3	2B	E21**	2G	E1**	7B
P2-A4	2D	E22**	2E	E2**	7B
A2A1A1C1	12H	E23**	6F	E3**	12C
C2	11G	E24**	6G	E4**	12A
C3	11G	Q1	11G	E5**	12B
C4	10G	A2	9G	E6**	12B
C5	9G	A3	9F	E7**	12B
C6	10F	Q4	10F	R1	10C
C7	8F	Q5	4H	R2	10B
C8	10E	A6	4F	R3	9B
C9	9E	A7	4F	R4	9B
C10	3H	R1	12G	R5	8B
C11	5F	R2	11G	R6	8B
C12	5F	R3	11G	A2A1A3C1	11C
C13	3E	R4	11H	C2	10C
C14	4G	R5	11G	C3	9D
C15	5H	R6	10H	C4	9D
C16	5F	R7	10G	C5	9C
C17	5H	R8	11F	C6	9C

* NOT USED
** WIRING TERMINATIONS - FOR REFERENCE ONLY

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A1A3C7	7D	A2A1A3L1	10C	A2A1A3R7	6D
C8	5C	Q1	8D	R8	6C
C9	6C	Q2	6D	R9	5D
C10	4D	Q3	4D	R10	4D
CR1	10C	R1	10D	R11	6D
E1**	12D	R2	10D	R12	12C
E2**	12C	R3	8D	R13	5D
E3**	12C	R4	8C	R14	4D
E4**	2D	R5	8D	T1	5C
E5**	2D	R6	7D	TP1	3D

* NOT USED
** WIRING TERMINATIONS - FOR REFERENCE ONLY

TRANSISTOR DC VOLTAGE CHART

	E	B	C	
A2A1A1Q1	9.3V	9.9V	19.8V	
A2A1A1Q2	15.5V	14.9V	3.9V	
A2A1A1Q3	0 V	14.9V	0 V	
A2A1A1Q4	15.5V	14.9V	4.5V	USB MODE
A2A1A1Q5	2.8V	3.5V	19.2V	
A2A1A1Q6	2.8V	3.5V	19.2V	
A2A1A1Q7	7.4V	6.8V	19.7V	
A2A1A1Q1	9.3V	9.9V	19.8V	
A2A1A1Q2	0 V	14.9V	0 V	
A2A1A1Q3	15.5V	14.9V	3.9V	
A2A1A1Q4	15.5V	14.9V	4.5V	CW MODE
A2A1A1Q5	2.8V	3.5V	19.2V	
A2A1A1Q6	2.8V	3.5V	19.2V	
A2A1A1Q7	7.4V	6.8V	19.7V	
A2A1A3Q1	19.4V	18.8V	0	
A2A1A3Q2	12.6V	12.0V	0	CW MODE
A2A1A3Q3	1.2V	1.8V	0	

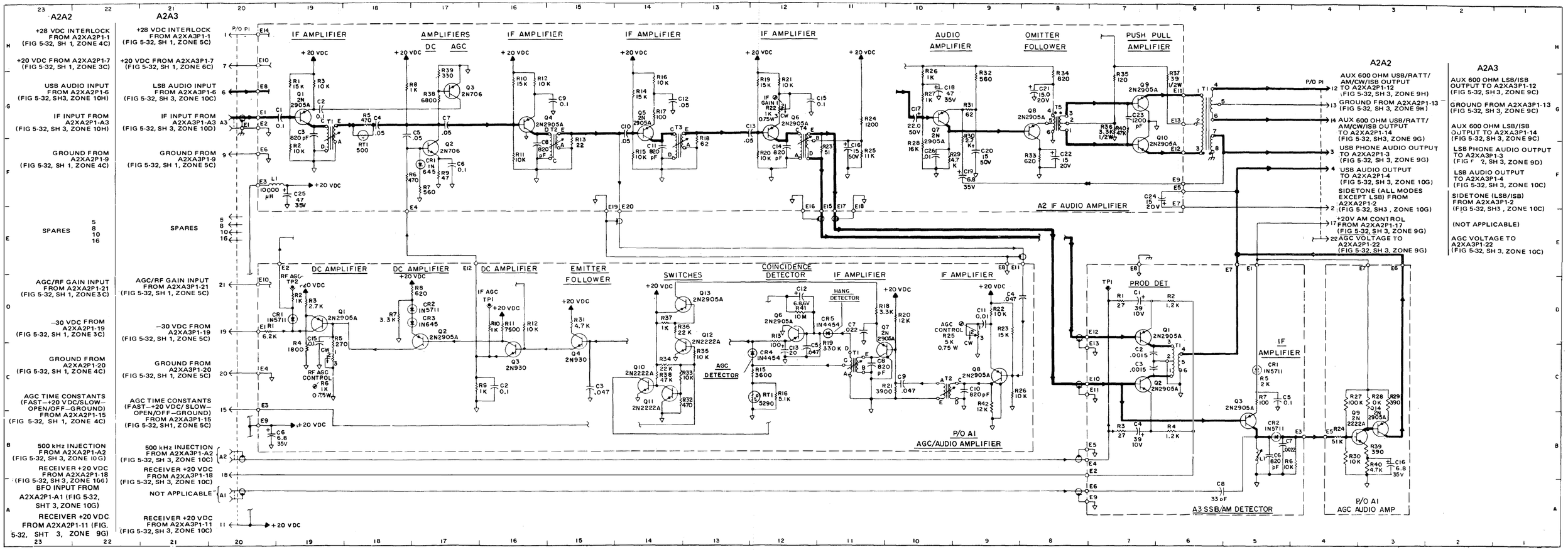


Figure 5-34. Receiver IF/Audio Amplifier Assemblies A2A2 and A2A3, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-35 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	SHEET	ZONE
A2A4A38E5	1	10E
E6	1	10F
FL1	1	9G
FL2	1	5G
K1	1	5E
K1A1	1	5F
K1A2	1	5F
K1A3	1	5F
K1B1	1	5F
K1B2	1	5F
K1B3	1	5F
K1X1	1	5F
K1X2	1	5E
L1	1	9E
Q1	1	9G
Q2	1	7G
Q3	1	5G
R1	1	9F
R2	1	9H
R3	1	9F
R4	1	9H
R5	1	9G
R6	1	9F
R7	1	8H
R8		*
R9	1	7H
R10	1	7F
R11	1	7H
R12	1	7G
R13	1	7F
R14	1	7H
R15	1	7G
R16	1	6H
R17	1	6F
R18	1	5H
R19	1	5G
R20	1	5F
R21	1	8F
TP1	1	9G
TP2	1	10H

*NOT USED.

SPECIFIC NOTES

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

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	1250	1250	.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	-	-	28.50000

4. A2A4A38FL1 THROUGH A2A4A38FL3 ARE FERRITE BEADS.

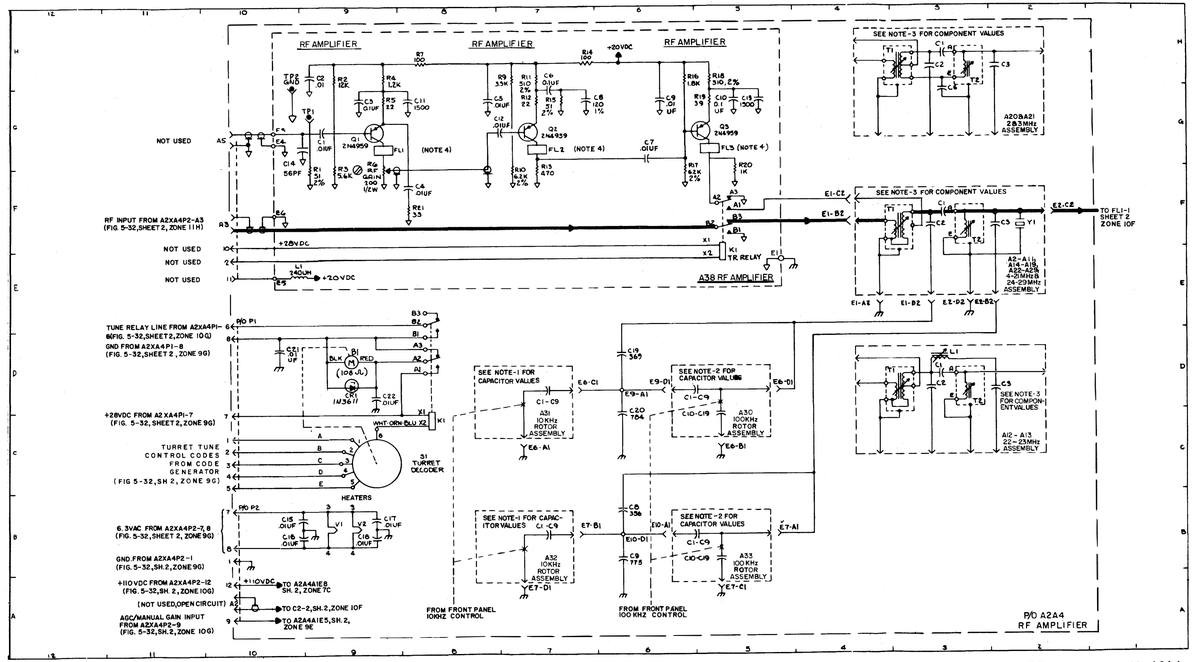


Figure 5-35. RF Amplifier Assembly A2A4, Maintenance Schematic Diagram (Sheet 1 of 2)

SPECIFIC NOTES

1. 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

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

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

3. 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

4. A2A4FL1 THROUGH A2A4FL3 ARE FERRITE BEADS.

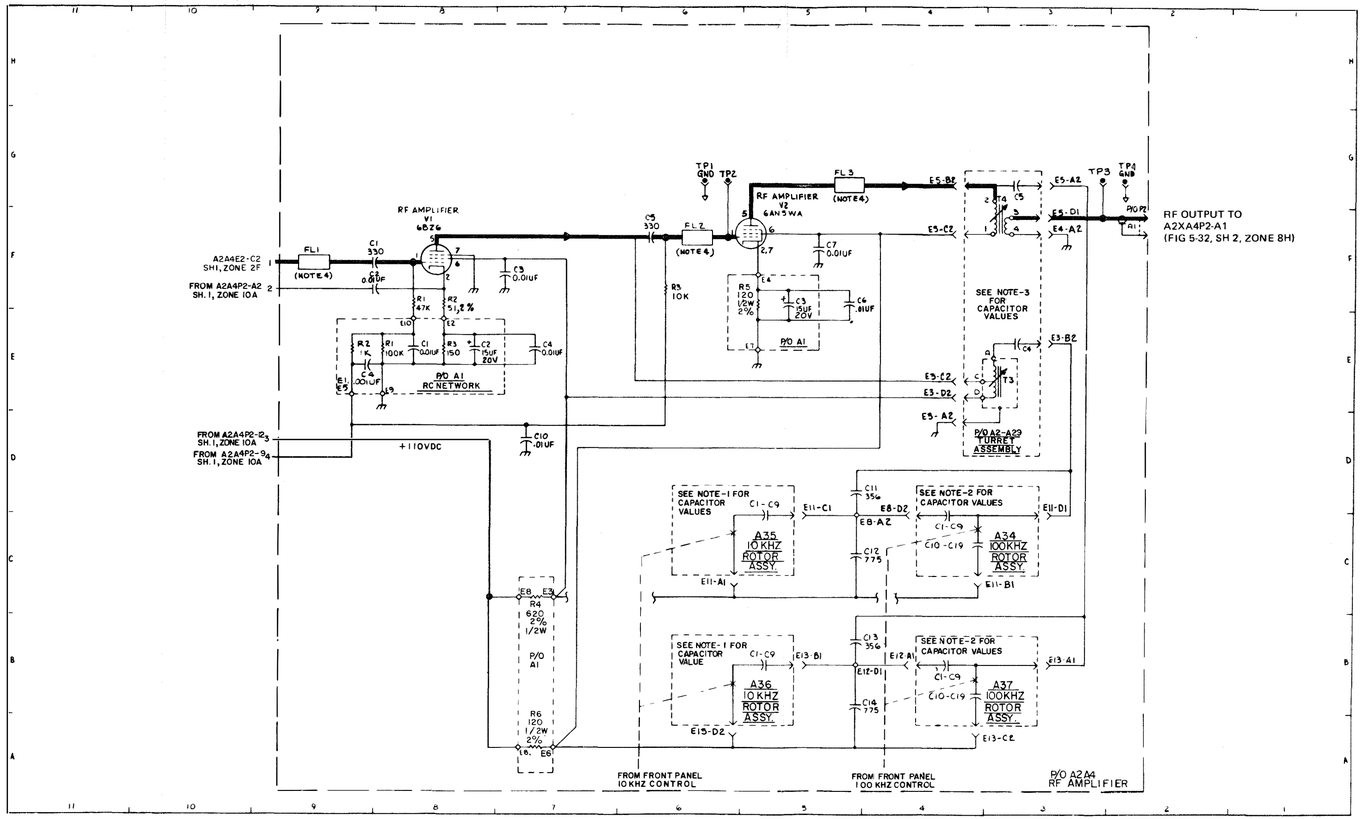


Figure 5-35. RF Amplifier Assembly A2A4, Maintenance Schematic Diagram (Sheet 2 of 2)

NOTES FOR FIGURE 5-36

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.
ALL CAPACITORS ARE IN PICOFARADS ±5%, 500 VDCW.
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. * ON SCHEMATIC INDICATES A COMPONENT OF SELECTED VALUE (NOMINAL VALUE SHOWN). REFER TO CHAPTER 7 PARTS LIST FOR PART NUMBERS AND RANGE OF VALUES; TABLE 6-5, STEP 5-9, DESCRIBES HOW PARTS ARE SELECTED.

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 FEEDBACK.

G. A2A5A4P1 TERMINAL IDENTIFICATION: COMPONENT SIDE 1 2 3 4 5 6
FOIL SIDE A B C D E F

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5C1	16F	A2A5J3-C	12E	A2A5P1-A4	16E
C2	15C	J3-D	15D	P1-A5	3D
E1 thru E4	*	J3-E	*	P1-A6	3D
		J3-F	15D	P1-1	16F
		J3-1	15E	P1-2	16D
E5	**	J3-2	15C	P1-3	16C
E6	**	J3-3	15E	A2A5A1C1	14A
E7	15D, 16E	J3-4	12D	C2	14B
	10E	J3-5	12D	C3	14B
J1	*	J3-6	12D	C4	14B
J2	*	P1	3F, 16F	C5	13A
J3	11E, 15E	P1-A1	3F	C6	12B
J3-A	15D	P1-A2	3E	C7	12B
J3-B	*	P1-A3	3D	C8	14B

* NOT USED.
** WIRING TERMINATIONS FOR REFERENCE ONLY.

NOTES FOR FIGURE 5-36 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5A1C9	*	A2A5A2C1	8E	A2A5A2DS1	6B
C10	14A	C2	8E	E1	3E, 3D**
C11	14B	C3	*	E2	3F
CR1	11B	C4	7E	E3	*
CR2	13A	C5	7E	E4	3E
E1	14B	C6	7F	E5	*
E2	14B	C7	6F	E6	3D
P1	11C	C8	6F	E7	*
P2	10C	C9	6E	E8	3D
P3	11C	C10	6E	E9	9D
P4	10C	C11	6F	E10	*
P5	12B	C12	6E	E11	*
Q1	13B	C13	6F	E12	3D
Q2	13B	C14	5E	E13	9D
Q3	12B	C15	5F	E14	9F
Q4	10B	C16	4F	E15	8E
Q5	10B	C17	4E	E16	*
Q6	10B	C18	4F	E17	*
Q7	9B	C19	4E	E18	9E
R1	14B	C20	4F	L1	7E
R2	13B	C21	4F	L2	4E
R3	13B	C22	3E	L3	6D
R4	13B	C23	8D	L4	4D
R5	13B	C24	7D	Q1	7E
R6	13B	C25	7C	Q2	7E
R7	13B	C26	7C	Q3	6E
R8	12B	C27	7D	Q4	5E
R9	11B	C28	7C	Q5	4E
R10	14A	C29	6D	Q6	7C
R11	13A	C30	6C	Q7	6C
R12	12B	C31	6D	Q8	5C
R13	11B	C32	6C	Q9	4C
R14	11B	C33	5D	Q10	7B
R15	11A	C34	6D	Q11	6B
R16	11B	C35	5C	R1	8E
R17	10B	C36	4D	R2	7E
R18	10B	C37	5C	R3	7F
R19	10A	C38	4D	R4	7E
R20	9A	C39	4D	R5	7E
R21	9A	C40	3C	R6	7E
R22	10B	C41	7B	R7	7F
R23	10B	C42	7B	R8	7F
R24	9B	C43	*	R9	7E
Y1	14B	C44	6F	R10	7E

* NOT USED.
** WIRING TERMINATIONS FOR REFERENCE ONLY.

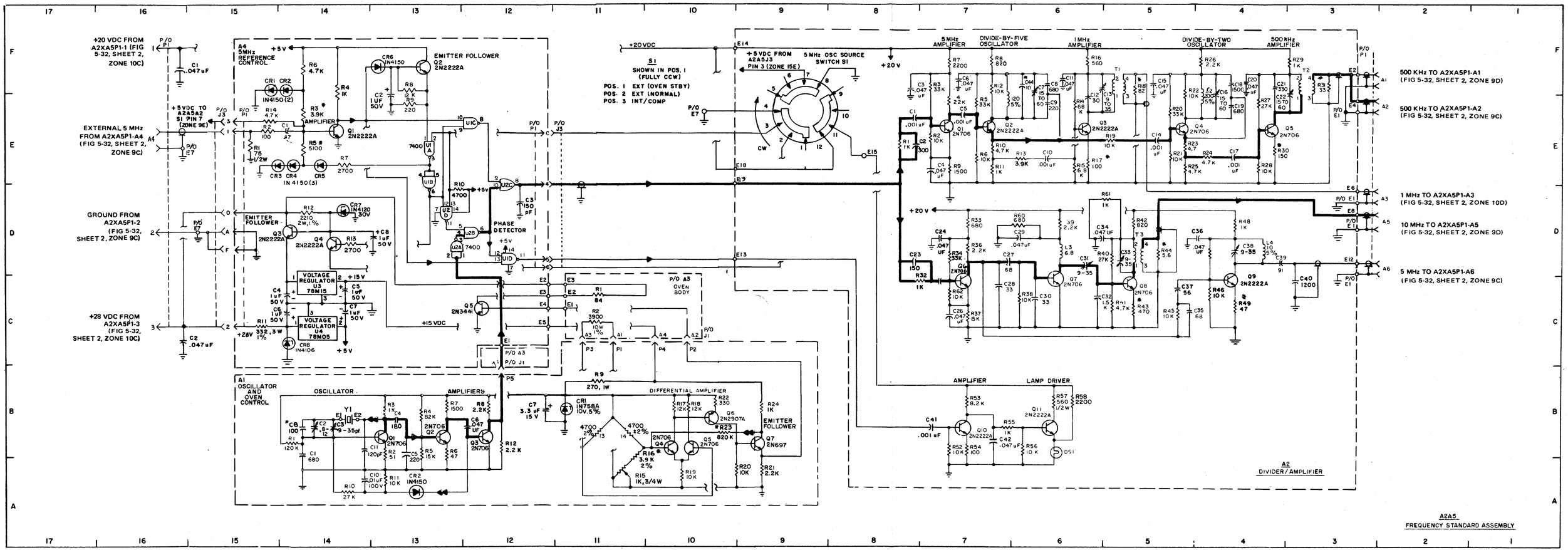


Figure 5-36. Frequency Standard Assembly A2A5, Mainenance Schematic Diagram

NOTES FOR FIGURE 5-36 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A5A2R11	7E
R12	7F
R13	6E
R14	6E
R15	6E
R16	6F
R17	6E
R18	5F
R19	5E
R20	5E
R21	5E
R22	5F
R23	5E
R24	4E
R25	5E
R26	4F
R27	4E
R28	4E
R29	3F
R30	4E
R31	3F
R32	8C
R33	7D
R34	7D
R35	*
R36	7D
R37	7C
R38	6C
R39	6D
R40	5D
R41	5C
R42	5D
R43	5C
R44	5D
R45	5C
R46	4C
R47	4D
R48	4D
R49	4C
R50	*
R51	*
R52	7B
R53	7B
R54	7B
R55	7B
R56	6B
R57	6B
R58	6B
R59	*
R60	6D
R61	5D
R62	7C
S1 thru S1-12	8E, 9E, 9F
S1-1	9E
S1-2	9E
S1-3	9E
S1-4	9E
S1-5	9E
S1-6	9F
S1-7	9F
S1-8	9F
S1-9	8E
S1-10	8E
S1-11	8E
S1-12	9E
T1	5F
T2	3F
T3	5D
A2A5A3E1	12C
E2	12C
E3	12C
J1	11C
J2	10C
J3	11C
J4	10C
J5	12C
R1	11C
R2	11C
A2A5A4C1	14E
C2	13E
C3	12D
C4	14C
C5	14C
C6	14C
C7	14C
C8	13D
CR1	15F
A2A5A4CR2	14F
CR3	15E
CR4	14E
CR5	14E
CR6	13F
CR7	14D
CR8	14C
E1 thru E5	12C **
P1-1	15E
P1-2	15C
P1-3	15E
P1-4	12D
P1-5	12D
P1-6	12D
P1-A	15D
P1-B	*
P1-C	11E
P1-D	15D
P1-E	*
P1-F	15D
Q1	14E
Q2	13F
Q3	14D
Q4	14D
Q5	14E
R1	15E
R2	15E
R3	14E
R4	14F
R5	14E
R6	14F
R7	14E
R8	13F
R9	13E
R10	12D
R11	15C
R12	14D
R13	14D
R14	15E
U1	12D, 12E, 13E (4 PLACES)
U2	12D, 13D (2 PLACES)
U3	14C
U4	14C

* NOT USED.
** WIRING TERMINATIONS FOR REFERENCE ONLY.

TRANSISTOR DC VOLTAGE CHART

		E	B	C	
A2A5A1Q1		0.03	0.65	9.4	COLLECTOR VOLTAGES VARY WITH ADJUSTMENT OF A2A5A1R15.
	Q2	0.2	0.8	5	
	Q3	0	0.5	5	
	Q4	4	5	9	
	Q5	4	5	5.5	
	Q6	10	9.5	1.5	
	Q7	1	1.5	16	
A2A5A2Q1		4.2	4.2	4	
	Q2	10	6	*	
	Q3	0.4	1.2	14	
	Q4	4	3	11	
	Q5	1.5	1.5	1.2	
	Q6	5.8	4.5	6.5	
	Q7	0	0	2	
	Q8	0.5	1	7	
	Q9	0	0	3	
	Q10	0	0	9	
	Q11	7	8	7	
A2A5A4Q1		0	0.63	0.08	
	Q2	0.05	0.05	5.0	
	Q3	24.5	25	25.5	
	Q4	0	0.06	25	
	Q5	0	0.60	4.0	

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A2A5A4U1	0.5	0	3.7	3.7	3.7	0.06	0	4.2	0.07	0.07	4.4	0.1	0.08	5.0
U2	5.0	5.0	1.0	1.0	3.8	3.0	0	4.8	4.0	0.1	4.1	0.06	0	4.6
U3	24.5	20.0	0											
U4	11.5	5.0	0											

* NOT MEASURABLE DUE TO CIRCUIT LOADING

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING OSCILLOSCOPE AN/USM-281 AND 10X PROBE, 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)

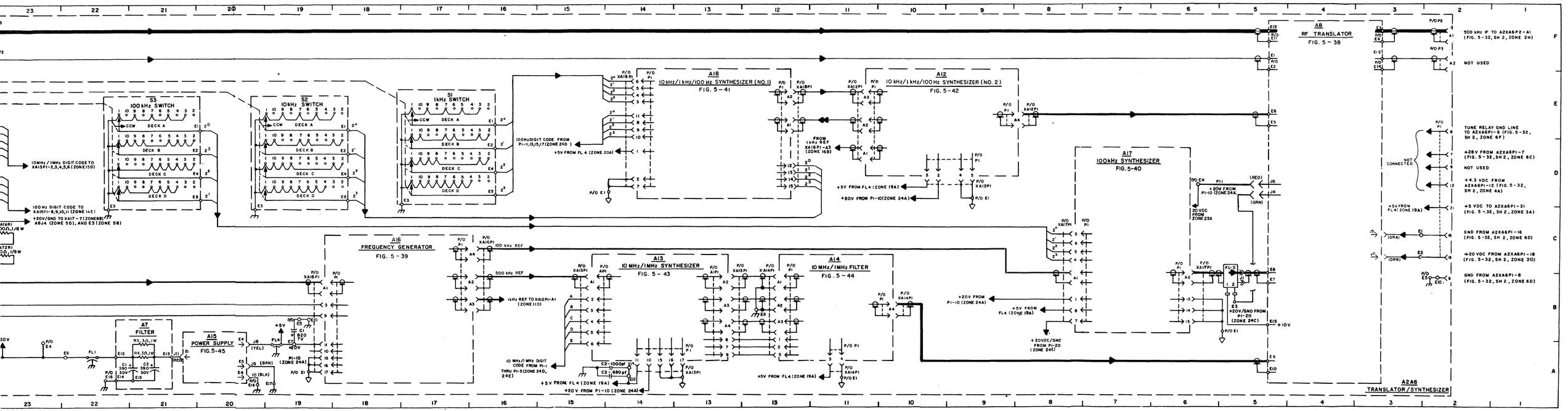


Figure 5-37. Translator/Synthesizer Assembly A2A6, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-37 (CONTINUED)

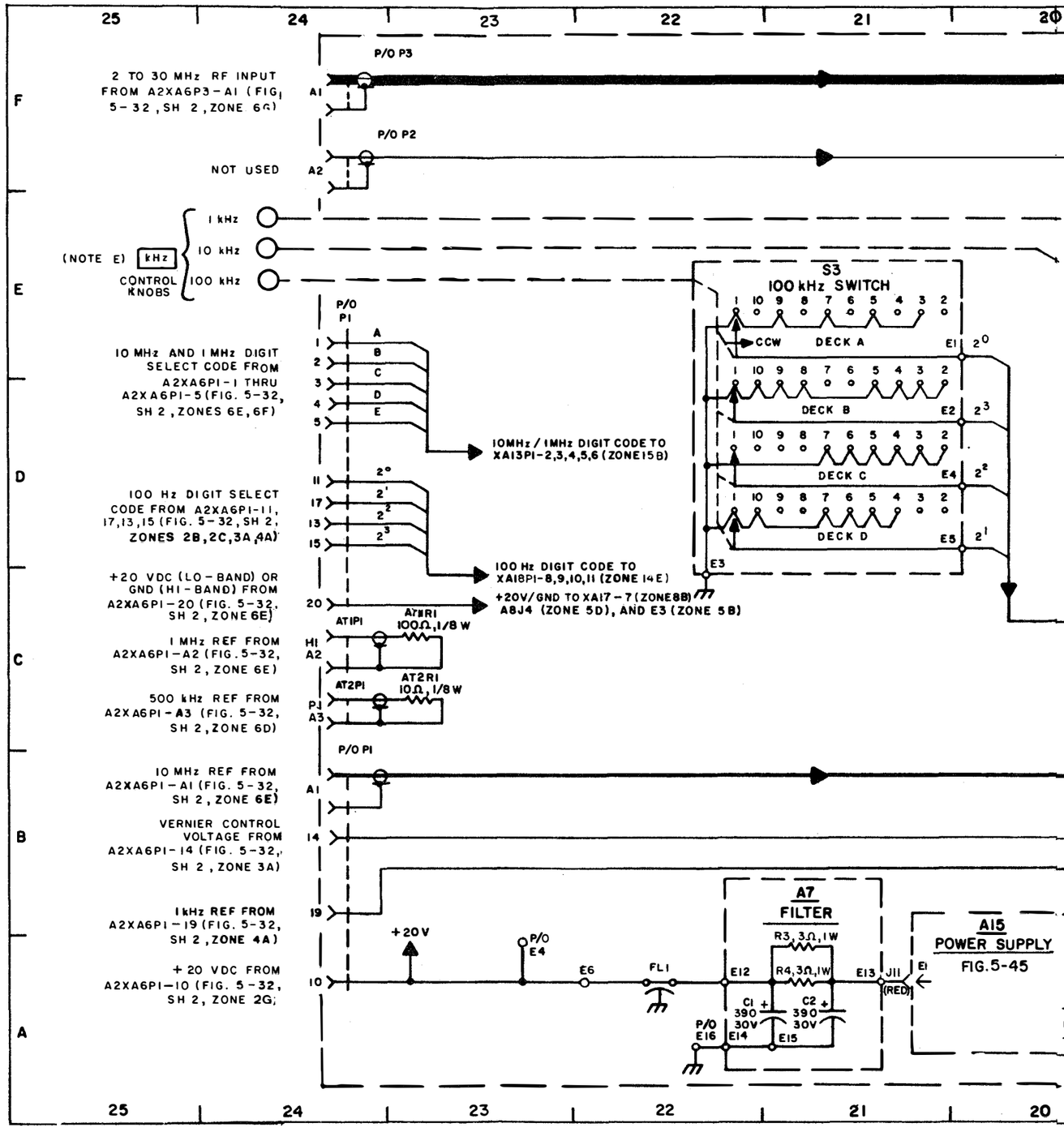
PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A7E2	
thru	*
E11	
E12	22A
E13	21A
E14	22A
E15	21A
R1	*
R2	*
R3	21A
R4	21A
A2A6A8E1	5F
E2	5F
E3	3F
E4	3F
E5	5E
E6	5E
E7	5B
E8	5B
E9	5A
E10	5A
E11	5F
E12	3F
E13	5F
E14	3F
E15	5B
J1	
thru	*
J3	
J4	5D
J5	3C
J6	5D
J7	3C
A2A6A12P1-A1	11D
P1-A2	11E
P1-A3	11E
P1-A4	8E
A2A6A13A1P1-A1	15B
A1P1-A2	13B
A1P1-A3	13B
A1P1-A4	13B
A1P1-1	*

REF DES	ZONE
A2A6A13A1P1-2	15B
A1P1-3	15B
A1P1-4	15B
A1P1-5	15B
A1P1-6	15B
A1P1-7	13A
A1P1-8	13B
A1P1-9	13A
A1P1-10	14A
A1P1-11	14A
A1P1-12	*
A1P1-13	*
A1P1-14	*
A1P1-15	14A
A1P1-16	14A
A1P1-17	13A
A2A6A14P1-A1	12B
P1-A2	12B
P1-A3	12B
P1-A4	10B
P1-1	12B
P1-2	12A
P1-3	11A
P1-4	11A
P1-5	12A
A2A6A15E1	21A
E2	*
E3	*
E4	20A
E5	20A
E6	20A
A2A6A16P1-A1	19B
P1-A2	17B
P1-A3	17B
P1-A4	17C
P1-1	*
P1-2	*
P1-3	19B
P1-4	
thru	*
P1-8	
P1-9	19B

REF DES	ZONE
A2A6A16P1-10	19A
P1-11	19A
P1-12	
thru	*
P1-14	
P1-15	19A
P1-16	19A
P1-17	19A
A2A6A17P1-A1	8B
P1-A2	6B
P1-1	8B
P1-2	*
P1-3	8C
P1-4	8C
P1-5	8C
P1-6	8C
P1-7	8B
P1-8	8B
P1-9	
thru	*
P1-12	
P1-13	6B
P1-14	6B
P1-15	6B
A2A6A18P1-A1	12E
P1-A2	12E
P1-1	14D
P1-2	14D
P1-3	14E
P1-4	14E
P1-5	14E
P1-6	14E
P1-7	14D
P1-8	14E
P1-9	14E
P1-10	14D
P1-11	14E
P1-12	12D
P1-13	12D
P1-14	12D
P1-15	12D

* NOT USED



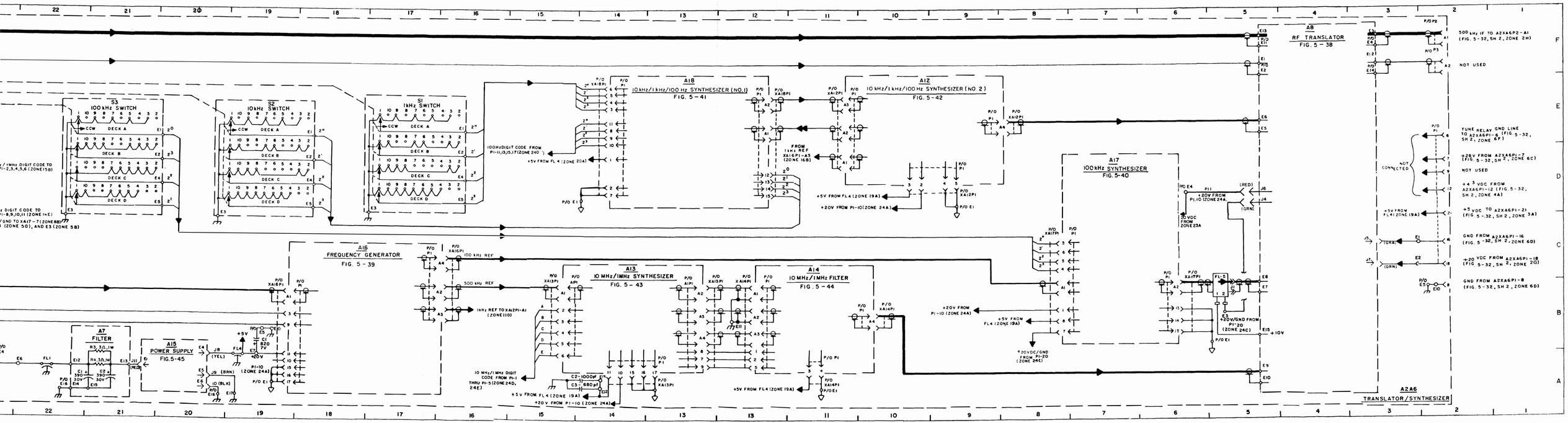
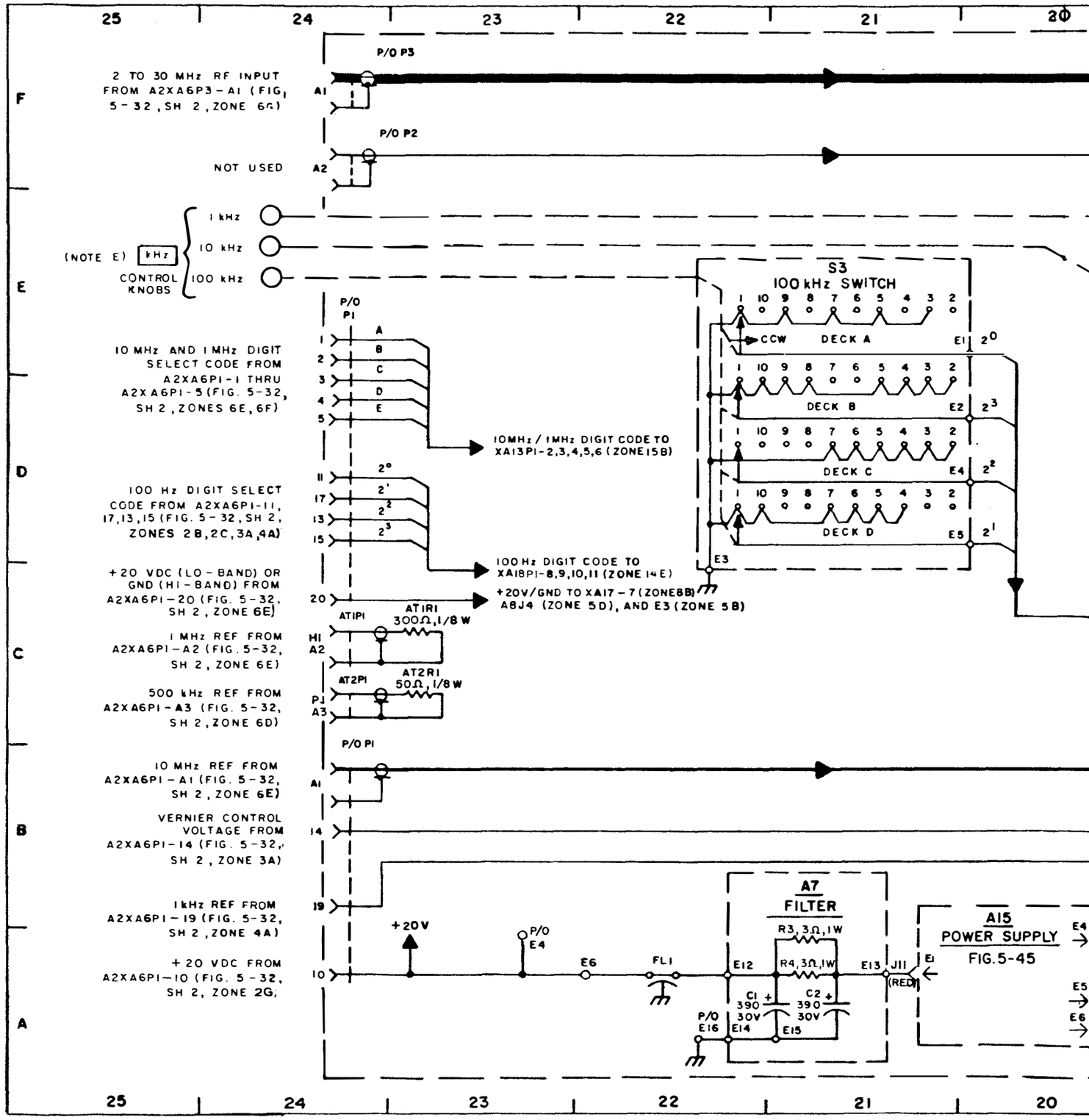


Figure 5-37A. Translator/Synthesizer Assembly A2A6, Maintenance Schematic Diagram

REDUNDANT PARTS LOCATION INDEX DELETED BY CHANGE 2.



NOTES FOR FIGURE 5-38

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 R-1051G/URR 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 POTENTIOMETERS 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.

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	15C
C8	21C	C23	23A	C38	12D
C9	17D	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 5-38 (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	5C
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	21D
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
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,J5	24E
J6	24A
J7	24E
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
A2A6A8R9	17D
R10	21C
R11	20B
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	16D
R25	12D
R26	15C
R27	13C
R28	13D
R29	15D
R30	13C
R31	13B
R32	14C
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

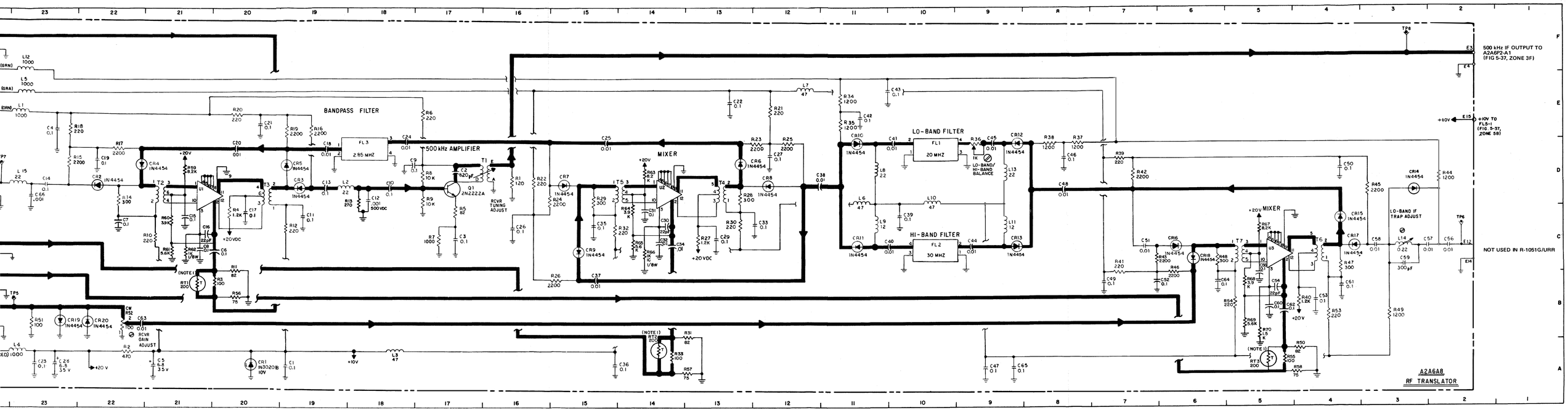


Figure 5-38. RF Translator Subassembly A2A6A8, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-38 (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	
R56	20B	R69	5B	thru	*
R57	13A	R70	5B	TP4	
R58	4A	RT1	21B	TP5	23B
R59	21D	RT2	14A	TP6	2C
R60	21C	RT3	5A	TP7	24D
R61	21C	T1	16D	TP8	3F
R62	21C	T2	21D	U1	20D
R63	14D	T3	20D	U2	14D
R64	14D	T4	13D	U3	5C
R65	14C	T5	14D		

* NOT USED

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	9.86	5.95	5.81	0	0	0	0	0	0	9.86	12.7	12.7
U2	9.86	5.84	5.11	0	0	0	0	0	0	9.86	13.1	13.1
U3	9.86	5.61	4.83	0	0	0	0	0	0	9.72	15.3	15.3

SPECIFIC NOTES

1. RESISTANCE OF THERMISTORS RT1 THRU RT3 IS 180 TO 220 OHMS AT REFERENCE TEMPERATURE OF 25°C.

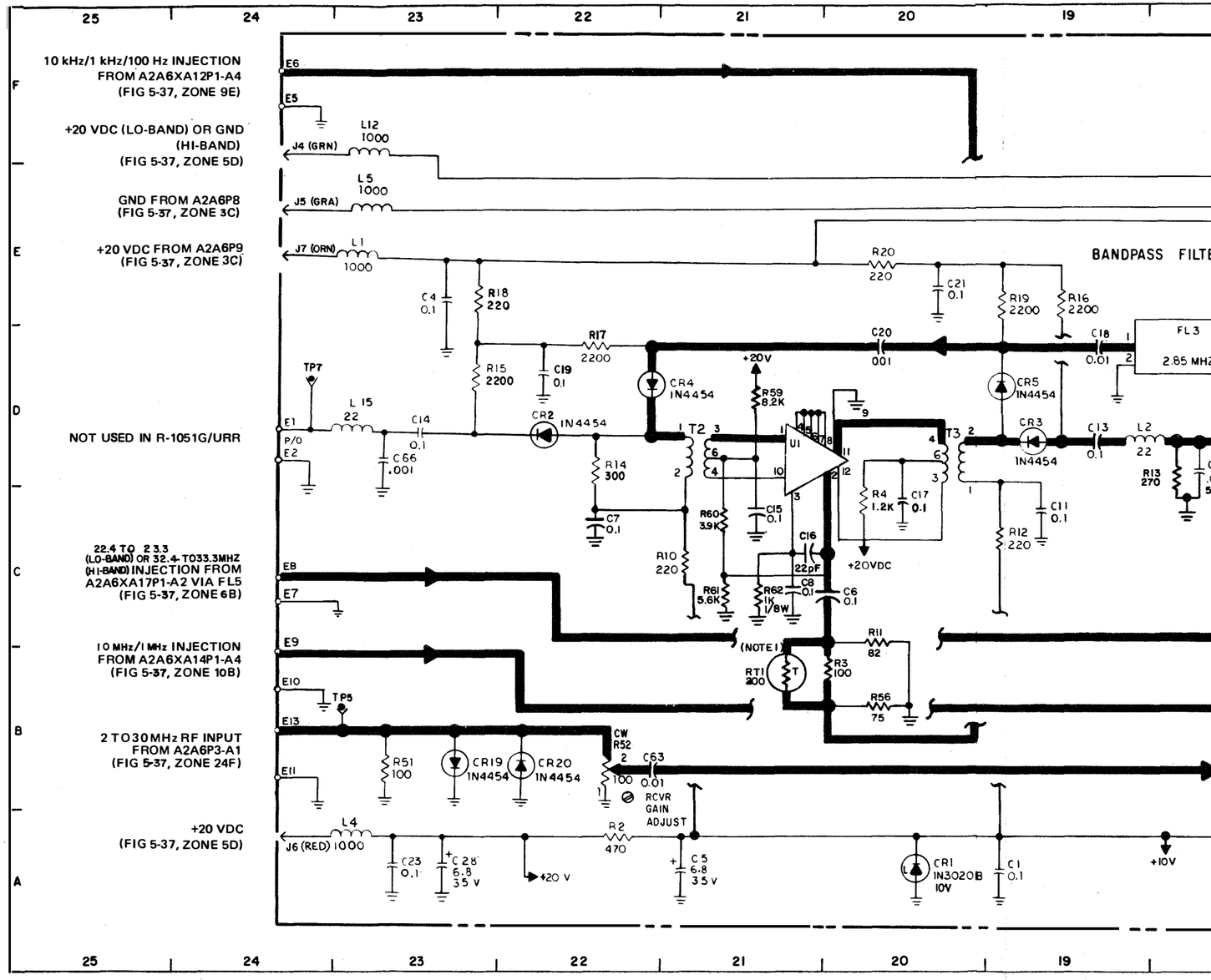
2. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L1, L4, L5, L12	17.5 OHMS
L3, L6, L7, L10	2.1 OHMS
L9, L1	1.1 OHMS
L15	3.3 OHMS

3. MAXIMUM RESISTANCE OF TRANSFORMER WINDINGS FOLLOWS:

T1	3.2 OHMS (PRIMARY)
	1.4 OHMS (SECONDARY)
T2	1.3 OHMS (SECONDARY)
T3	1.3 OHMS (SECONDARY)

4. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH TEST FIXTURE CONTROLS SET FOR 2.5 MHz OPERATION IN LSB MODE.



INTEGRATED CIRCUIT VOLTAGE CHART

	PINS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.35	1.14	1.14	1.78	1.59	.05	0	.05	1.62	1.08	1.77	1.06	1.73	5.02	-	-
U2	1.78	0	0	0	5.02	0	0	1.51	1.46	0	.78	1.77	0	1.06	-	-
U3	1.88	0	0	0	5.02	0	0	1.60	1.58	0	.84	1.87	0	.78	-	-
U4	.84	0	0	0	5.02	0	0	1.65	1.61	0	.85	1.93	0	.84	-	-
U5	1.94	0	0	0	5.02	0	0	1.66	1.63	0	.86	1.99	0	.86	-	-
U6	2.10	4.09	2.01	.10	2.03	4.09	0	.10	5.02	5.02	2.10	2.00	5.02	5.02	-	-
U7	.04	3.90	3.90	0	.04	4.90	9.87	6.26	-	-	-	-	-	-	-	-
U8	5.03	4.90	3.46	3.47	0	1.94	0	4.06	0	0	0	0	0	5.03	-	-
U9	1.80	3.85	1.96	3.06	1.17	2.83	0	.02	0	1.29	3.85	3.33	3.06	5.03	-	-
U10	.05	1.29	1.30	0	.05	5.19	9.87	6.53	-	-	-	-	-	-	-	-
U11	4.80	0	3.68	0	1.39	0	0	0	0	1.61	0	1.58	0	4.80	-	-
U12	1.27	1.16	1.62	.06	1.62	.06	0	1.60	1.16	1.40	1.60	1.40	1.60	5.03	-	-
U13	1.73	1.37	1.05	1.69	1.58	2.03	0	.07	3.97	1.09	1.61	1.63	1.11	5.03	-	-
U14	1.67	0	0	0	5.03	0	0	1.86	1.82	0	1.89	1.67	0	1.42	-	-
U15	.81	5.00	1.52	1.89	5.00	1.89	1.92	0	1.61	.78	0	.15	.15	0	1.62	5.03
U16	.08	0	1.52	1.87	5.00	.80	1.94	0	1.95	.76	5.0	.15	.15	0	.08	5.03
U17	1.92	0	0	0	5.03	0	0	2.00	2.28	0	2.02	1.92	0	.15	-	-

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 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 THEIR COUNTER-PART CONTROLS OF THE R-1051G/URR.

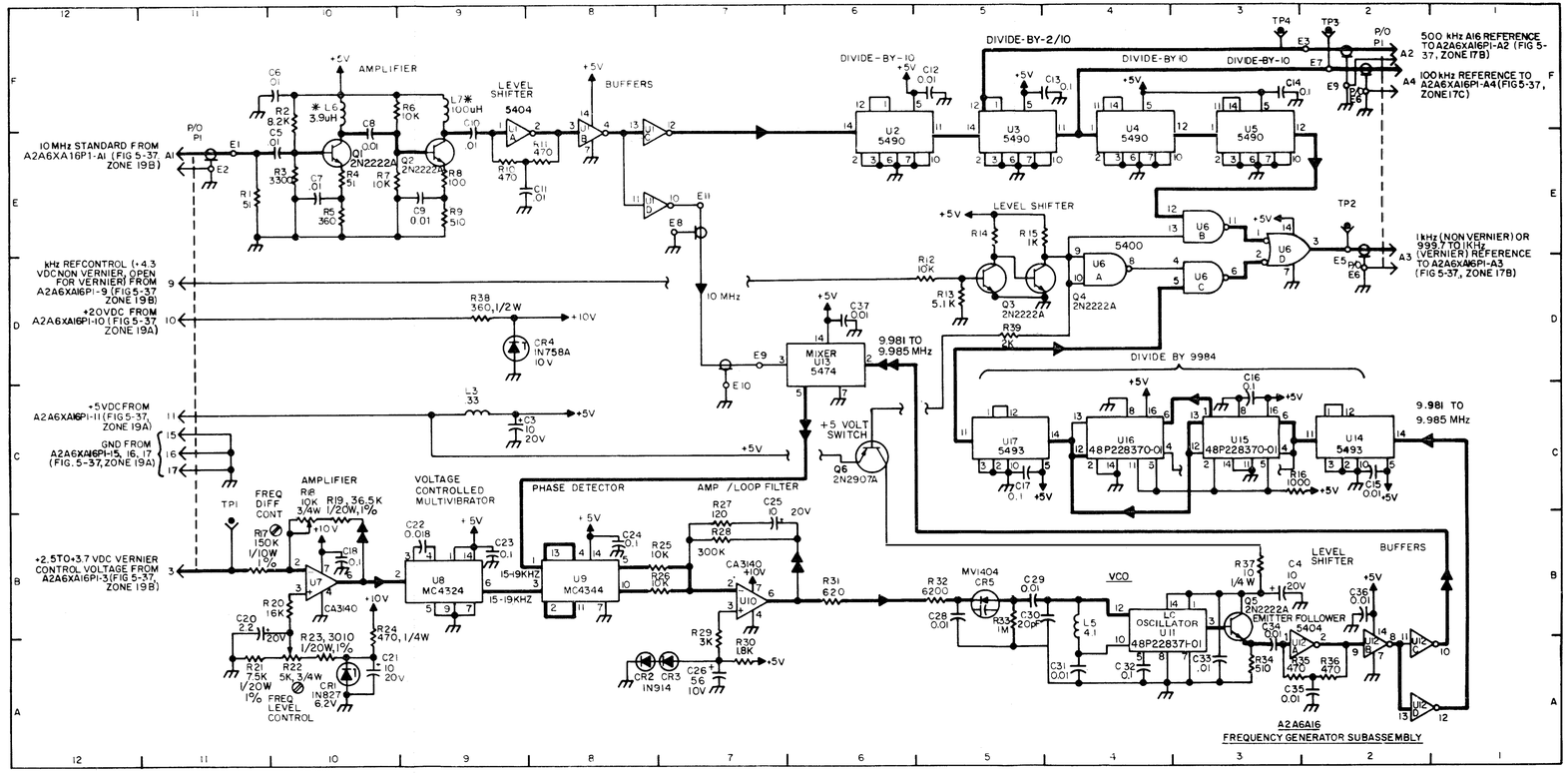


Figure 5-39. Frequency Generator Subassembly A2A6A16, Maintenance Schematic Diagram

INTEGRATED CIRCUIT VOLTAGE CHART

	PINS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.35	1.14	1.14	1.78	1.59	.05	0	.05	1.62	1.08	1.77	1.06	1.73	5.02	-	-
U2	1.78	0	0	0	5.02	0	0	1.51	1.46	0	.78	1.77	0	1.06	-	-
U3	1.88	0	0	0	5.02	0	0	1.60	1.58	0	.84	1.87	0	.78	-	-
U4	.84	0	0	0	5.02	0	0	1.65	1.61	0	.85	1.93	0	.84	-	-
U5	1.94	0	0	0	5.02	0	0	1.66	1.63	0	.86	1.99	0	.86	-	-
U6	2.10	4.09	2.01	.10	2.03	4.09	0	.10	5.02	5.02	2.10	2.00	5.02	5.02	-	-
U7	.04	3.90	3.90	0	.04	4.90	9.87	6.26	-	-	-	-	-	-	-	-
U8	5.03	4.90	3.46	3.47	0	1.94	0	4.06	0	0	0	0	0	5.03	-	-
U9	1.80	3.85	1.96	3.06	1.17	2.83	0	.02	0	1.29	3.85	3.33	3.06	5.03	-	-
U10	.05	1.29	1.30	0	.05	5.19	9.87	6.53	-	-	-	-	-	-	-	-
U11	4.80	0	3.68	0	1.39	0	0	0	0	1.61	0	1.58	0	4.80	-	-
U12	1.27	1.16	1.62	.06	1.62	.06	0	1.60	1.16	1.40	1.60	1.40	1.60	5.03	-	-
U13	1.73	1.37	1.05	1.69	1.58	2.03	0	.07	3.97	1.09	1.61	1.63	1.11	5.03	-	-
U14	1.67	0	0	0	5.03	0	0	1.86	1.82	0	1.89	1.67	0	1.42	-	-
U15	.81	5.00	1.52	1.89	5.00	1.89	1.92	0	1.61	.78	0	.15	.15	0	1.62	5.03
U16	.08	0	1.52	1.87	5.00	.80	1.94	0	1.95	.76	5.0	.15	.15	0	.08	5.03
U17	1.92	0	0	0	5.03	0	0	2.00	2.28	0	2.02	1.92	0	.15	-	-

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

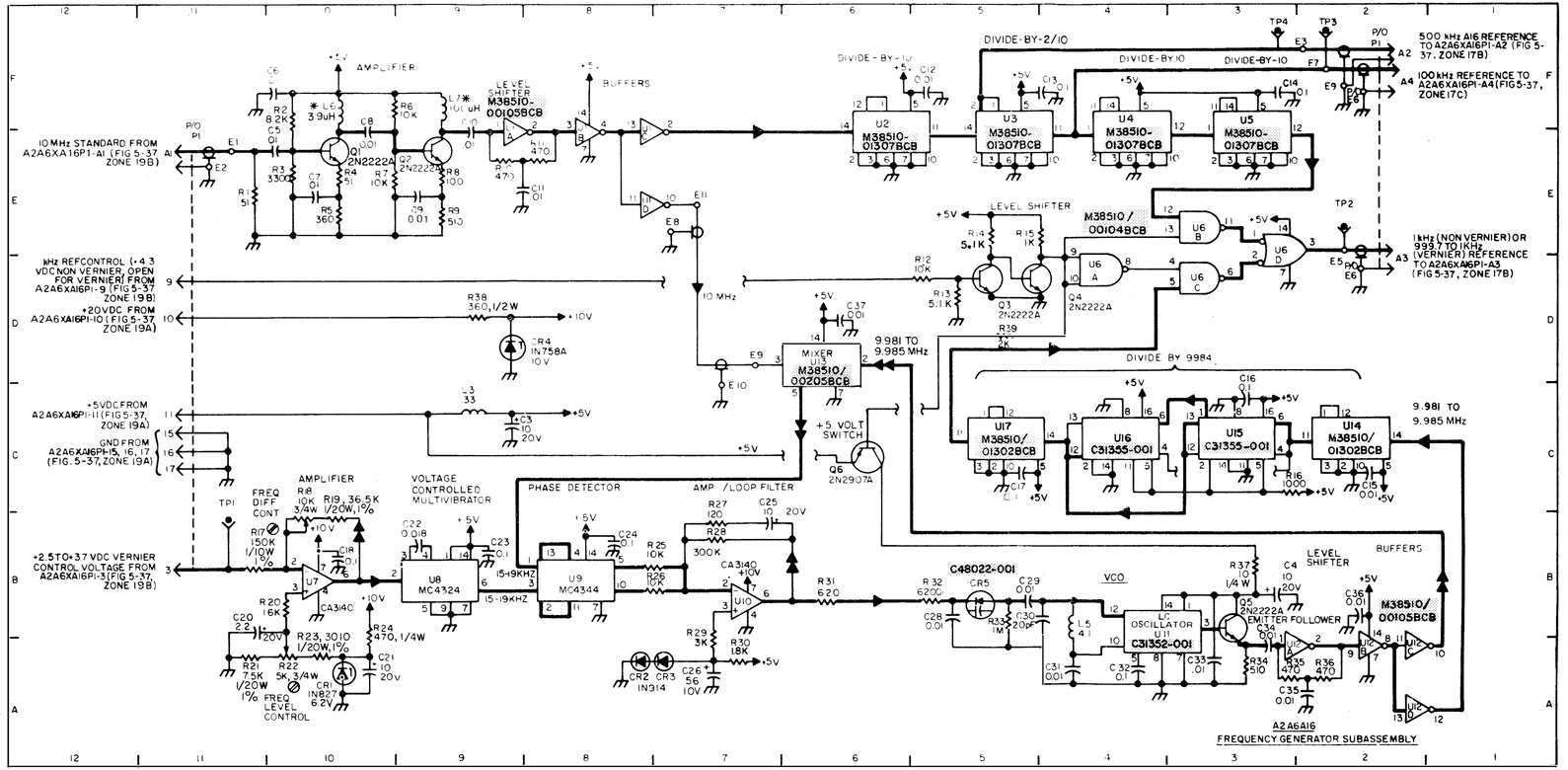


Figure 5-39A. Frequency Generator Subassembly A2A6A16, Maintenance Schematic Diagram

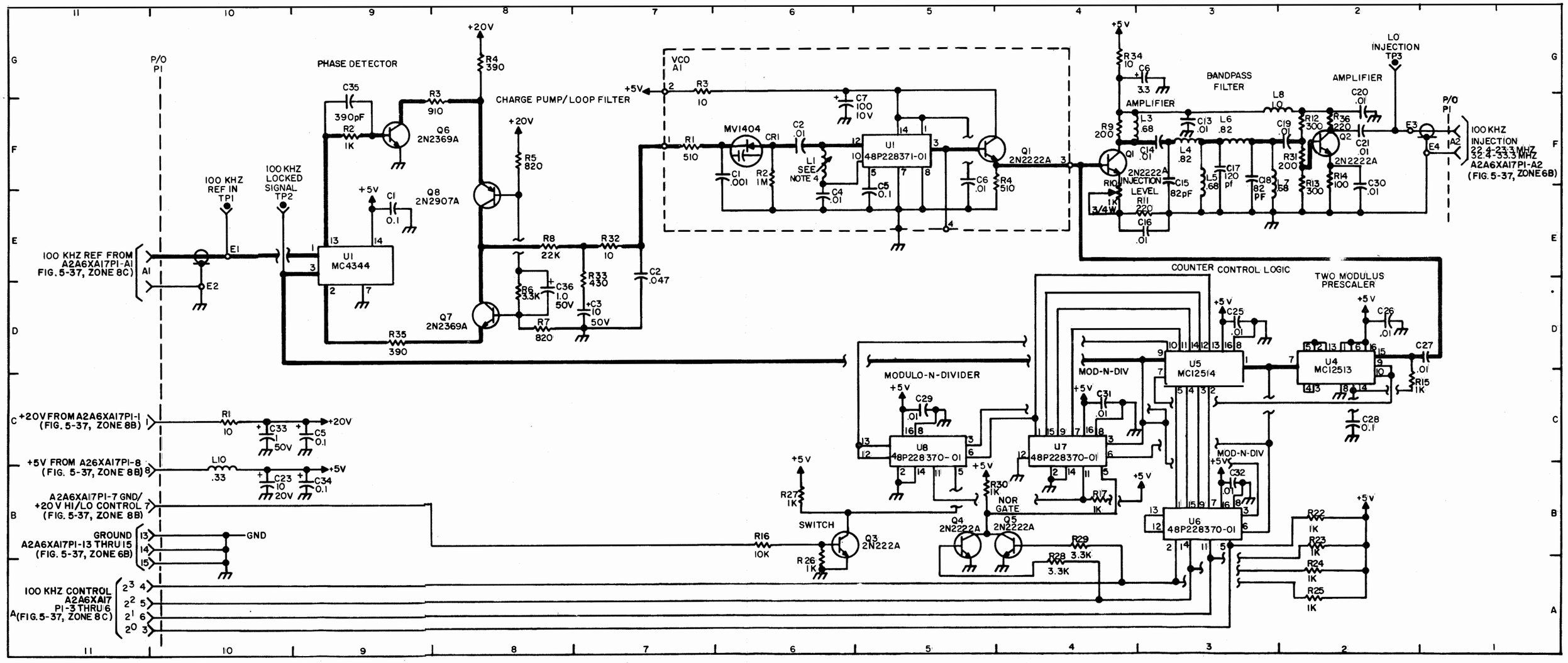


Figure 5-40. 100 kHz Synthesizer Subassembly A2A6A17, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-40

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 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. THE DIVISION RATIOS FOR THE MODULO - N DIVIDERS ARE AS FOLLOWS:

   LOW BAND 224 - 233
   HIGH BAND 324 - 333

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.11 MHz OPERATION IN LSB MODE.

3. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

   L8 - 1.0 OHM

4. 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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

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
E1	10E
E2	10D
E3	2F
E4	2F
L1	*
L2	*
L3	3F
L4	3F
L5	3F
L6	3F
A2A6A17L7	3F
L8	3F
L9	*
L10	10B
P1	10G
P1-1	11C
P1-2	*
P1-3	11A
P1-4	11A
P1-5	11A
P1-6	11A
P1-7	*
P1-8	11B
P1-9 thru P1-12	*
P1-13	11B
P1-14	11B
P1-15	11A
Q1	4F
Q2	2F
Q3	5B
Q4	5B
Q5	4B
Q6	9F
Q7	8D
Q8	8E
R1	10C
R2	9F
R3	9F
R4	8G
R5	8F
R6	8D
R7	8D
R8	8E
R9	4F
R10	4E
R11	3E
R12	2F
R13	2E
R14	2F
R15	2C
R16	6B
R17	4B
A2A6A17R18 thru R21	*
R22	2B
R23	2B
R24	2A
R25	2A
R26	6B
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.

NOTES FOR FIGURE 5-40 (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	0.02
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	3.90

INTEGRATED CIRCUIT VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8
U1	0.85	3.87	3.56	0.01	0	3.25	0	0
U4	5.03	3.85	3.83	3.83	3.86	5.03	2.25	0
U5	2.26	2.20	1.53	1.82	0.85	1.51	3.00	0
U6	0.85	0	3.58	1.52	5.03	2.08	2.11	0
U7	0.81	0	3.58	1.50	0.04	2.02	1.83	0
U8	0.08	0	3.58	1.52	0.03	0.81	1.91	0

	9	10	11	12	13	14	15	16
U1	0	0.01	1.56	4.09	3.56	5.04	-	-
U4	3.00	3.02	0.03	0.06	3.86	3.87	3.82	5.03
U5	3.57	1.80	1.88	1.45	0.81	1.77	0	5.03
U6	1.53	0.88	0	0.32	0.30	4.00	1.78	5.03
U7	1.84	0.60	5.09	0	5.00	0	1.47	5.03
U8	0.82	0.70	5.03	1.80	1.80	0	0.09	5.03

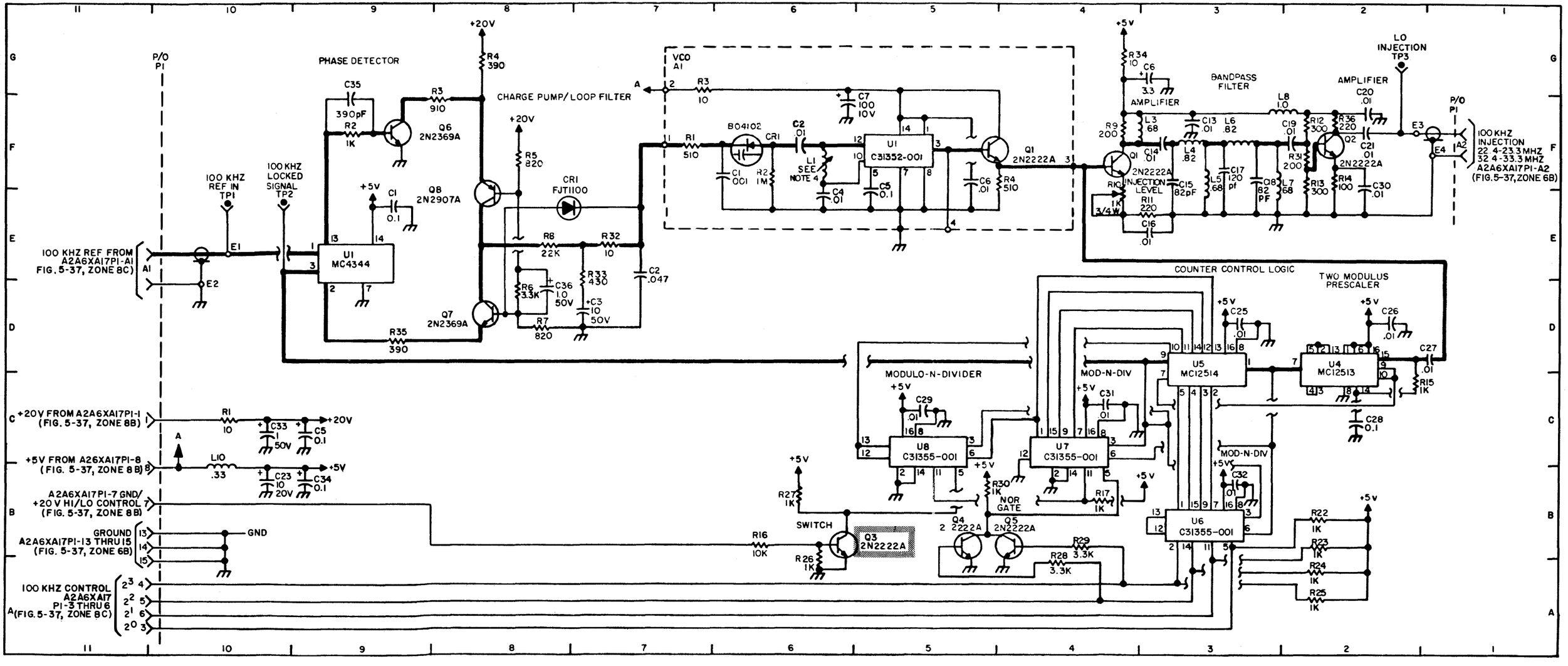


Figure 5-40A. 100 kHz Synthesizer Subassembly A2A6A17, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-40A

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 RESISTANCE 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 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. THE DIVISION RATIOS FOR THE MODULO -N DIVIDERS ARE AS FOLLOWS:

   LOW BAND 224 - 233
   HIGH BAND 324 - 333

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.11 MHz OPERATION IN LSB MODE.

3. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

   L8 - 1.0 OHM

4. 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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

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
C34	9B
C35	9F
C36	8D
CR1	8E
E1	10E
E2	10D
E3	2F
E4	2F
L1	*
L2	*
L3	3F
L4	3F
L5	3F
L6	3F
A2A6A17L7	3F
L8	3F
L9	*
L10	10B
P1	10G
P1-1	11C
P1-2	*
P1-3	11A
P1-4	11A
P1-5	11A
P1-6	11A
P1-7	*
P1-8	11B
P1-9	
thru	*
P1-12	
P1-13	11B
P1-14	11B
P1-15	11A
Q1	4F
Q2	2F
Q3	5B
Q4	5B
Q5	4B
Q6	9F
Q7	8D
Q8	8E
R1	10C
R2	9F
R3	9F
R4	8G
R5	8F
R6	8D
R7	8D
R8	8E
R9	4F
R10	4E
R11	3E
R12	2F
R13	2E
R14	2F
R15	2C
R16	6B
R17	4B
A2A6A17R18	
thru	*
R21	
R22	2B
R23	2B
R24	2A
R25	2A
R26	6B
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.

NOTES FOR FIGURE 5-40A (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	0.02
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	3.90

INTEGRATED CIRCUIT VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	0.85	3.87	3.56	0.01	0	3.25	0	0
U4	5.03	3.85	3.83	3.83	3.86	5.03	2.25	0
U5	2.26	2.20	1.53	1.82	0.85	1.51	3.00	0
U6	0.85	0	3.58	1.52	5.03	2.08	2.11	0
U7	0.81	0	3.58	1.50	0.04	2.02	1.83	0
U8	0.08	0	3.58	1.52	0.03	0.81	1.91	0

	9	10	11	12	13	14	15	16
U1	0	0.01	1.56	4.09	3.56	5.04	-	-
U4	3.00	3.02	0.03	0.06	3.86	3.87	3.82	5.03
U5	3.57	1.80	1.88	1.45	0.81	1.77	0	5.03
U6	1.53	0.88	0	0.32	0.30	4.00	1.78	5.03
U7	1.84	0.60	5.09	0	5.00	0	1.47	5.03
U8	0.82	0.70	5.03	1.80	1.80	0	0.09	5.03

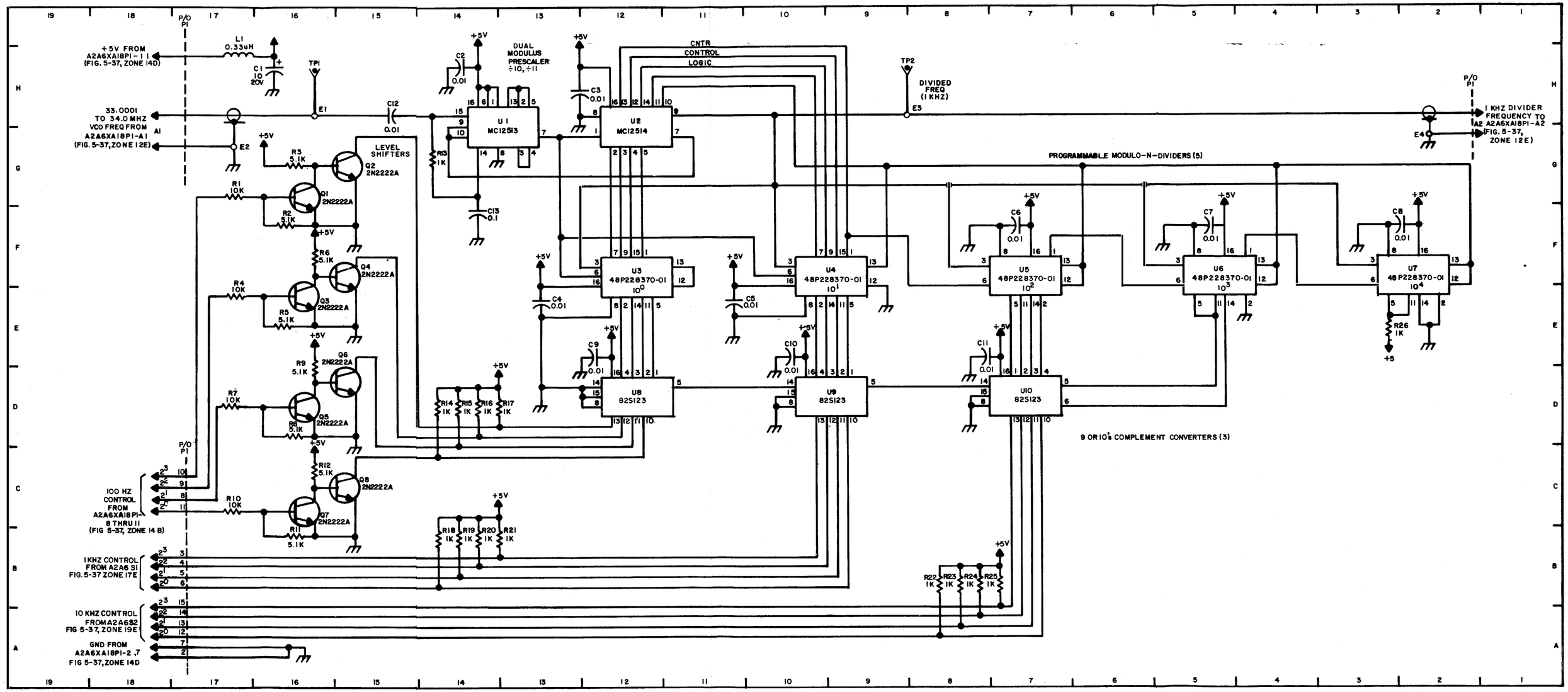


Figure 5-41. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 1) A2A6A18, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-41

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.

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	16H	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	17H	Q6	15D	R21	13B
P1-A1	18G	Q7	16C	R22	8B
P1-A2	1H	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

* NOT USED.

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	13G	U5	7F	U9	9D
U2	12G	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	0.67
Q8	0V	0.67	0.02

INTEGRATED CIRCUIT VOLTAGE CHART

PINS

	1	2	3	4	5	6	7	8
U1	4.99	3.83	3.81	3.81	3.83	4.99	1.95	0V
U2	1.95	1.84	1.52	1.54	0.81	1.49	3.81	0V
U3	0.81	0.22	3.67	1.49	0.02	1.95	1.84	0V
U4	0.82	4.27	3.66	0	4.20	1.95	1.85	0V
U5	0.83	4.96	3.67	1.50	4.96	0.82	1.92	0V
U6	0.76	0V	3.67	1.50	4.96	0.83	1.95	0V
U7	0.09	0V	3.67	1.50	4.97	0.77	1.63	0V
U8	4.06	0.12	0.12	4.09	4.23	0.11	0.11	0V
U9	0.12	3.12	0.11	4.30	4.27	0.10	0V	0
U10	4.17	0.12	0.12	4.17	4.06	0.12	0.09	0

	9	10	11	12	13	14	15	16
U1	3.82	3.82	0	0	3.83	3.77	3.78	4.99
U2	3.67	0.12	1.85	1.55	0.82	1.53	0	4.99
U3	1.52	0.37	0.22	0.22	0.22	0.22	1.54	4.99
U4	1.53	0.64	0.12	0	0.12	0.13	1.55	4.99
U5	1.56	0.63	0V	0.12	0.12	0V	1.57	4.99
U6	1.62	0.67	4.96	0.12	0.12	0.10	1.41	4.99
U7	1.62	0.65	4.98	0.12	0.12	0V	0.09	4.99
U8	0.10	4.99	0	0	0	0	0V	4.99
U9	0.09	4.99	0	0	0	0	0	4.99
U10	0	0	0	0	0	0	0	4.99

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND (A2A6A18E4) USING MULTIMETER AN/USM-311 WITH TEST FIXTURE CONTROLS SET FOR 2.0011 MHz OPERATION IN LSB MODE.

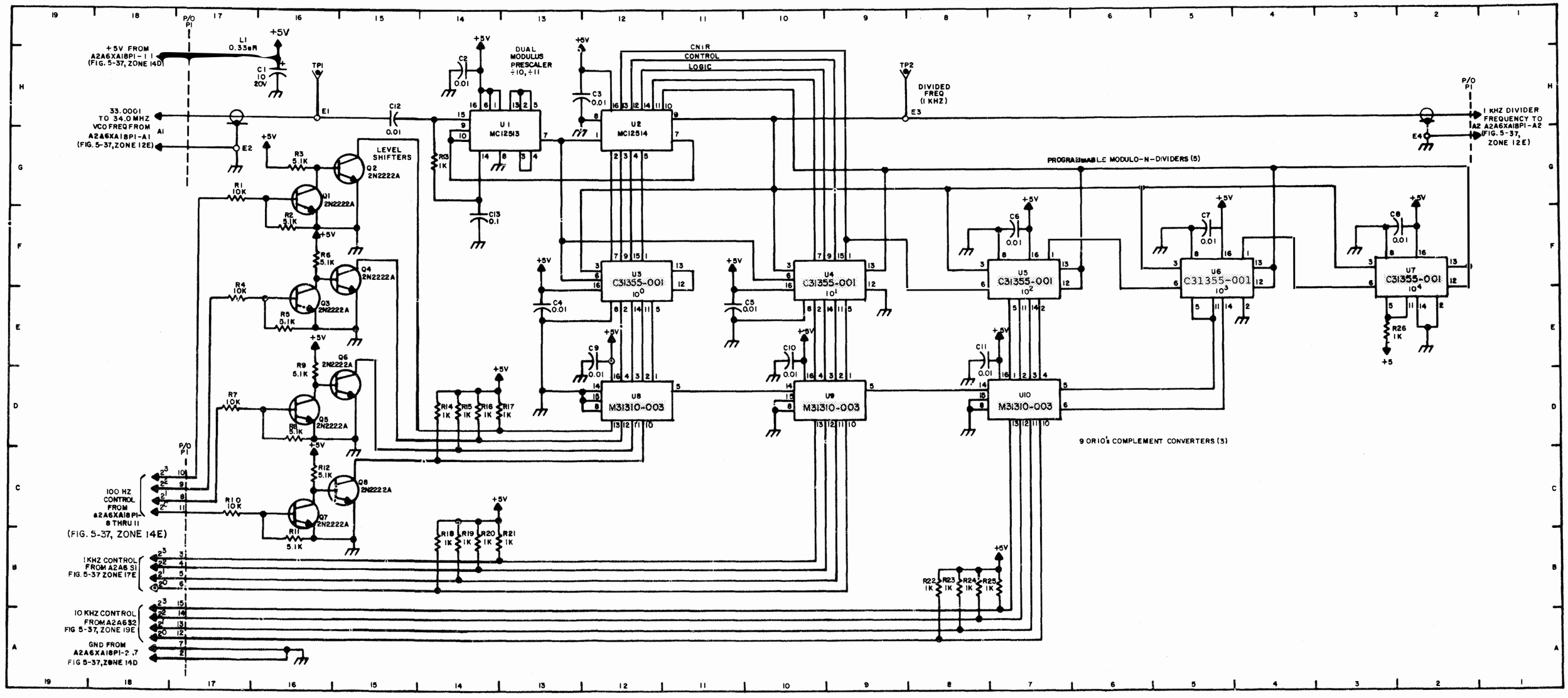


Figure 5-41A. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 1) A2A6A18, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-41

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.

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	16H	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	17H	Q6	15D	R21	13B
P1-A1	18G	Q7	16C	R22	8B
P1-A2	1H	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

* NOT USED.

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	13G	U5	7F	U9	9D
U2	12G	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	0.67
Q8	0V	0.67	0.02

INTEGRATED CIRCUIT VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	4.99	3.83	3.81	3.81	3.83	4.99	1.95	0V
U2	1.95	1.84	1.52	1.54	0.81	1.49	3.81	0V
U3	0.81	0.22	3.67	1.49	0.02	1.95	1.84	0V
U4	0.82	4.27	3.66	0	4.20	1.95	1.85	0V
U5	0.83	4.96	3.67	1.50	4.96	0.82	1.92	0V
U6	0.76	0V	3.67	1.50	4.96	0.83	1.95	0V
U7	0.09	0V	3.67	1.50	4.97	0.77	1.63	0V
U8	4.06	0.12	0.12	4.09	4.23	0.11	0.11	0V
U9	0.12	3.12	0.11	4.30	4.27	0.10	0V	0
U10	4.17	0.12	0.12	4.17	4.06	0.12	0.09	0

	9	10	11	12	13	14	15	16
U1	3.82	3.82	0	0	3.83	3.77	3.78	4.99
U2	3.67	0.12	1.85	1.55	0.82	1.53	0	4.99
U3	1.52	0.37	0.22	0.22	0.22	0.22	1.54	4.99
U4	1.53	0.64	0.12	0	0.12	0.13	1.55	4.99
U5	1.56	0.63	0V	0.12	0.12	0V	1.57	4.99
U6	1.62	0.67	4.96	0.12	0.12	0.10	1.41	4.99
U7	1.62	0.65	4.98	0.12	0.12	0V	0.09	4.99
U8	0.10	4.99	0	0	0	0	0V	4.99
U9	0.09	4.99	0	0	0	0	0	4.99
U10	0	0	0	0	0	0	0	4.99

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND (A2A6A18E4) USING MULTIMETER AN/USM-311 WITH TEST FIXTURE CONTROLS SET FOR 2.0011 MHz OPERATION IN LSB MODE.

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.
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 FEEDBACK.

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

TRANSISTOR DC VOLTAGE CHART

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

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	0	0	2.04	0	0	0	0	1.58	4.08	3.53	5.06	-	-
U2	1.47	1.33	1.32	2.30	0	1.24	0	.08	1.65	.08	1.65	2.31	1.44	5.06	-	-
U3	1.67	1.45	.37	.39	1.80	1.80	0	1.28	1.42	.38	.37	.74	1.61	5.06	-	-

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.0011 MHz OPERATION IN LSB MODE.

2. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L7	1.0 OHM
L9	1.0 OHM

SPECIFIC NOTES (CONTINUED)

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLE-SHOOTING 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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR. REFERENCE TABLE 6-6 FOR DISTORTION MEASUREMENT PROCEDURE.

4. THE VALUE OF A2A6A12R3, IF USED, IS SELECTED FOR MINIMUM DISTORTION AT AT A2A6A8TP8. REFER TO CHAPTER 7 FOR PART NUMBERS AND RESISTANCE VALUES (OPEN CIRCUIT PREFERRED).

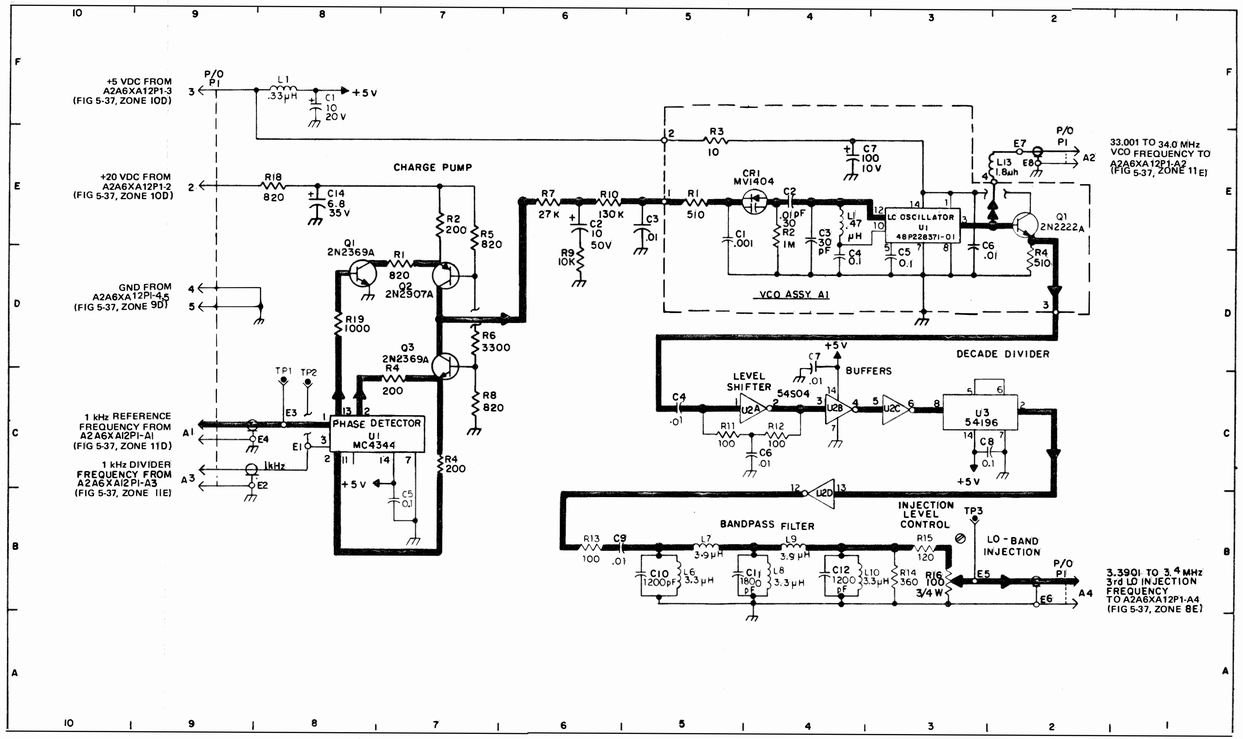


Figure 5-42. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Maintenance Schematic Diagram

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.
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 FEEDBACK.

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

TRANSISTOR DC VOLTAGE CHART

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

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	0	0	2.04	0	0	0	0	1.58	4.08	3.53	5.06	-	-
U2	1.47	1.33	1.32	2.30	0	1.24	0	.08	1.65	.08	1.65	2.31	1.44	5.06	-	-
U3	1.67	1.45	.37	.39	1.80	1.80	0	1.28	1.42	.38	.37	.74	1.61	5.06	-	-

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.0011 MHz OPERATION IN LSB MODE.

2. MAXIMUM RESISTANCE OF INDUCTORS FOLLOWS:

L7	1.0 OHM
L9	1.0 OHM

SPECIFIC NOTES (CONTINUED)

3. THE INFORMATION CONTAINED IN THESE NOTES IS ORGANIZED TO ALLOW TROUBLE-SHOOTING 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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR. REFERENCE TABLE 6-6 FOR DISTORTION MEASUREMENT PROCEDURE.

4. THE VALUE OF A2A6A12R3, IF USED, IS SELECTED FOR MINIMUM DISTORTION AT AT A2A6A8TP8. REFER TO CHAPTER 7 FOR PART NUMBERS AND RESISTANCE VALUES (OPEN CIRCUIT PREFERRED).

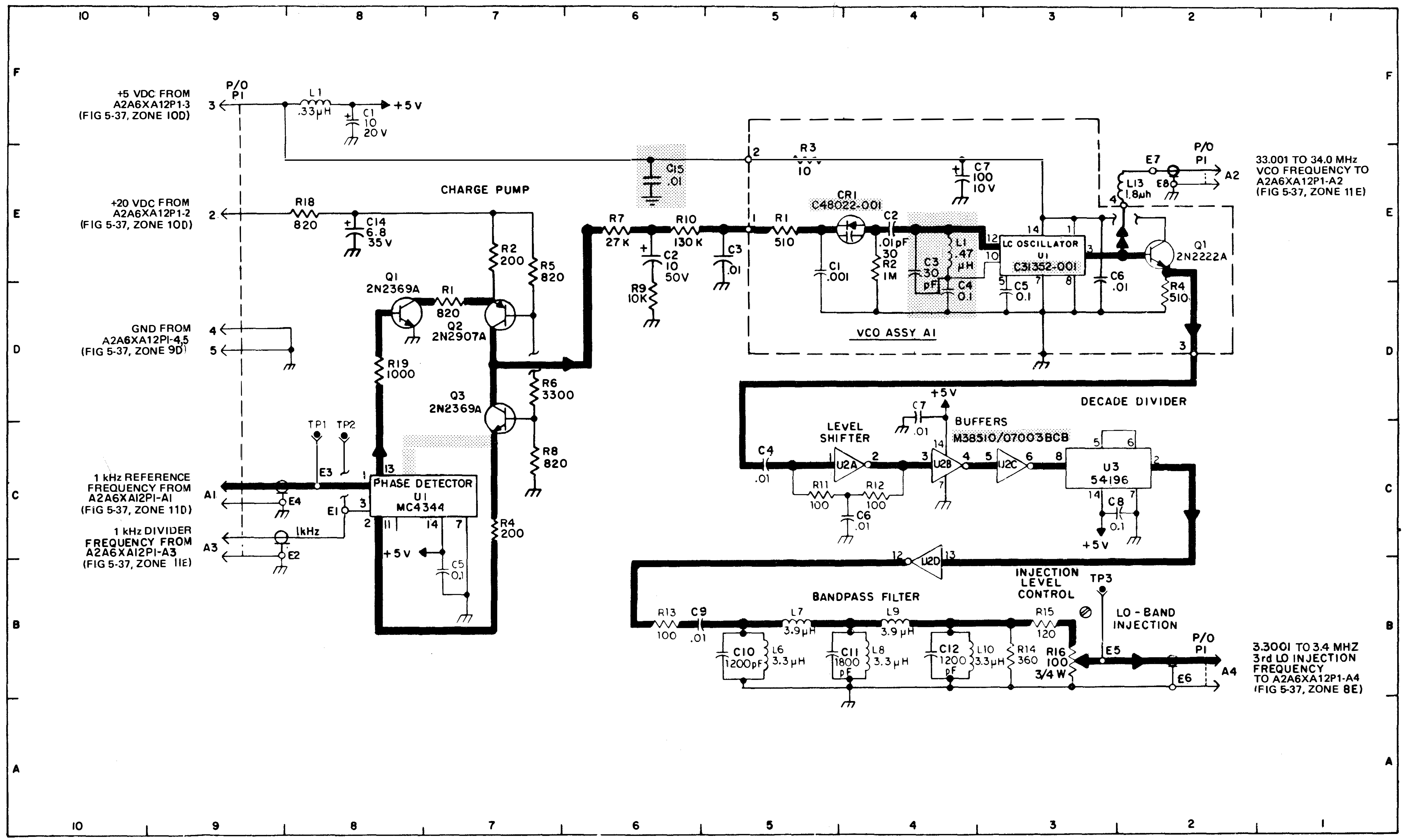


Figure 5-42A. 10 kHz/1 kHz/100 Hz Synthesizer Subassembly (No.2) A2A6A12, Maintenance Schematic Diagram

NOTES FOR FIGURE 5-43

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 FEEDBACK.

E. —22— 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
A2A6A13C1	11E	A2A6A13CR1	10D	A2A6A13L8	13B
C2	9E	CR2	9D	L9	13B
C3	9E	CR3	13D	L10	13B
C4	9E	CR4	7E	Q1	6E
C5	*	CR5	10B	Q2	9B
C6	9D	CR6	10B	R1	13C
C7	12C	CR7	9B	R2	13B
C8	11D	E1	3C	R3	13B
C9	10D	E2	3C	R4	13B
C10	*	E3	11F	R5	13B
C11	13D	E4	13F	R6	9E
C12	*	E5	11F	R7	9E
C13	6F	E6	10F	R8	9E
C14	7D	E7	3B	R9	8E
C15	7E	E8	3B	R10	9D
C16	7D	E9	3B	R11	9D
C17	6D	E10	3A	R12	11C
C18	6E	L1	*	R13	11C
C19	5E	L2	13D	R14	11B
C20	5D	L3	*	R15	11B
C21	4D	L4	*	R16	11C
C22	3D	L5	7E	R17	11C
C23	6C	L6	13C	R18	11B
C24	5B	L7	13B	R19	8E

* NOT USED

NOTES FOR FIGURE 5-43 (CONTINUED)

PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A13R20	7D
R21	5D
R22	5D
R23	3C
R24	3B
R25	3B
R26	10B
R27	10B
R28	9B
R29	9C
R30	9B
R31	5E
R32	9E
R33	6F
R34	13E
TP1	11E
TP2	10F
TP3	12E
U1	10E
U2	9E

REF DES	ZONE
A2A6A13U3	6E
U4	3C, 4D
	5C, 5D
U5	4D
U6	3B, 5B
U7	6C, 7B
U8	12E
U9	12D
U10	11D
U11	12B
A2A6A13A1CR1	14C
CR2	14B
CR3	14B
CR4	14B
CR5	14B
FL1	14C
FL2	14B
FL3	14B
FL4	14B
FL5	14B

REF DES	ZONE
A2A6A13A1P1-A1	14F
P1-A2	2C
P1-A3	2B
P1-A4	2B
P1-1	*
P1-2	14C
P1-3	14B
P1-4	14B
P1-5	14B
P1-6	14B
P1-7	2A
P1-8	2A
P1-9	2A
P1-10	14E
P1-11	14D
P1-12 thru P1-14	*
P1-15	14E
P1-16	14E
P1-17	14E

* NOT USED

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	3.00	3.61	4.80
Q2	0	0.74	.03

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.88	3.74	3.54	3.76	1.31	1.86	0	0.11	0	1.31	3.73	3.98	3.76	5.01	-	-
U2	0.06	1.31	1.32	0	0.06	5.41	13.0	6.75	-	-	-	-	-	3.8	-	-
U3	4.80	0	3.62	0	1.43	0	0	0	0	1.64	0	1.63	0	4.8	-	-
U4	2.52	1.51	0	1.52	0	1.47	0	1.69	5.05	0.13	1.72	5.06	0.18	5.03	-	-
U5	1.74	1.73	0.40	0.42	1.51	1.51	0	2.55	1.56	0.47	0.47	1.78	1.7	5.02	-	-
U6	2.04	1.51	.003	0.15	1.58	5.06	0	1.58	5.1	0.13	1.51	.003	1.56	5.02		
U7	0.085	1.76	1.78	0.098	4.0	4.0	0	2.07	0.098	1.28	0.18	0.15	4.0	5.02		
U8	1.28	1.57	1.53	1.53	1.53	1.51	0.11	0	3.57	1.46	1.78	1.62	0.70	1.47	0	5.02
U9	0.70	0.15	3.57	1.55	5.01	1.27	1.79	0	1.48	1.26	0.16	0	5.0	5.0	1.63	5.02
U10	0.08	0	3.57	1.51	5.01	0.70	1.84	0	1.90	1.12	5.01	0.46	0.46	0.15	0.08	5.02
U11	5.05	5.05	0.16	5.01	0.16	5.01	5.01	0	0.16	0.16	0.16	0.16	5.0	0.65	0	5.02

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz OPERATION.

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

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 TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

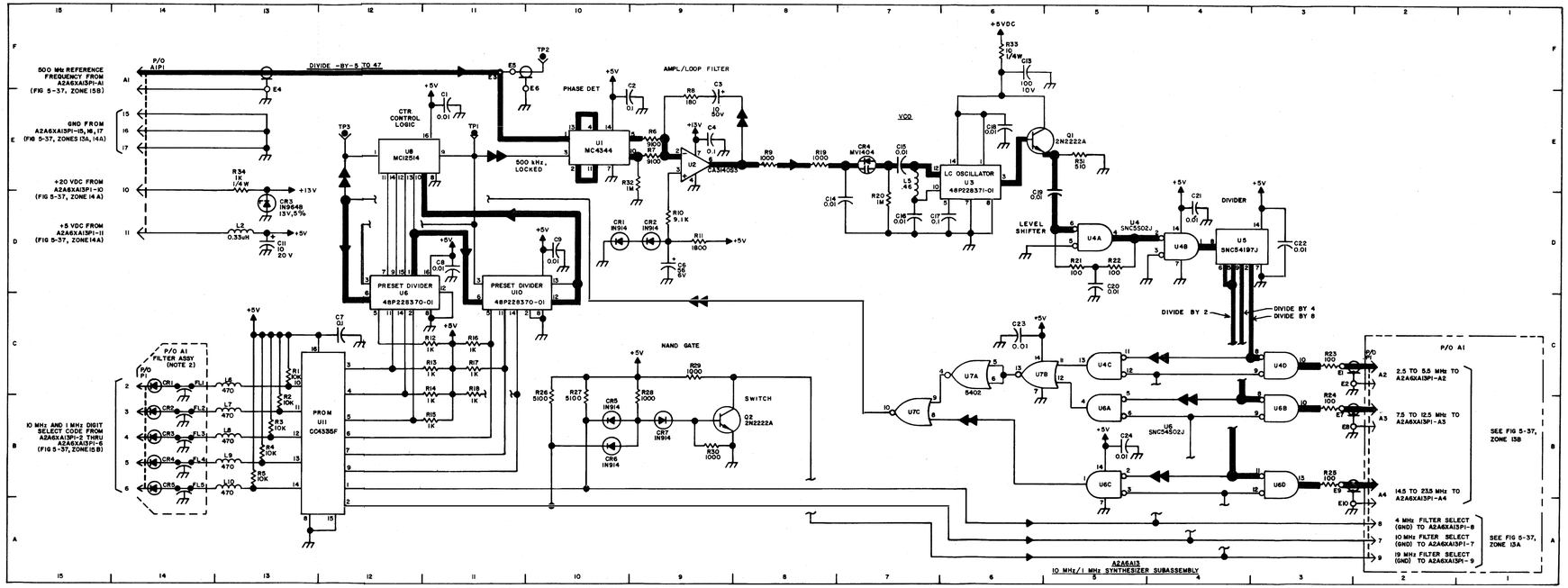


Figure 5-43. 10 MHz/1 MHz Synthesizer Subassembly A2A6A13, Maintenance Schematic Diagram

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	.88	3.74	3.54	3.76	1.31	1.86	0	0.11	0	1.31	3.73	3.98	3.76	5.01	-	-
	.06	1.31	1.32	0	0.06	5.41	13.0	6.75	-	-	-	-	-	3.8	-	-
	.80	0	3.62	0	1.43	0	0	0	0	1.64	0	1.63	0	4.8	-	-
	.52	1.51	0	1.52	0	1.47	0	1.69	5.05	0.13	1.72	5.06	0.18	5.03	-	-
	.74	1.73	0.40	0.42	1.51	1.51	0	2.55	1.56	0.47	0.47	1.78	1.7	5.02	-	-
	.04	1.51	.003	0.15	1.58	5.06	0	1.58	5.1	0.13	1.51	.003	1.56	5.02		
	.085	1.76	1.78	0.098	4.0	4.0	0	2.07	0.098	1.28	0.18	0.15	4.0	5.02		
	.28	1.57	1.53	1.53	1.53	1.51	0.11	0	3.57	1.46	1.78	1.62	0.70	1.47	0	5.02
	.70	0.15	3.57	1.55	5.01	1.27	1.79	0	1.48	1.26	0.16	0	5.0	5.0	1.63	5.02
	.08	0	3.57	1.51	5.01	0.70	1.84	0	1.90	1.12	5.01	0.46	0.46	0.15	0.08	5.02
	.05	5.05	0.16	5.01	0.16	5.01	5.01	0	0.16	0.16	0.16	0.16	5.0	0.65	0	5.02

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz OPERATION.
2. DIODES A1CR1 THRU A1CR5 ARE TYPE 1N3611. THE VALUE OF FILTERS A1FL1 THRU A1FL5 IS ONE MICROFARAD ±20%.
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 TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

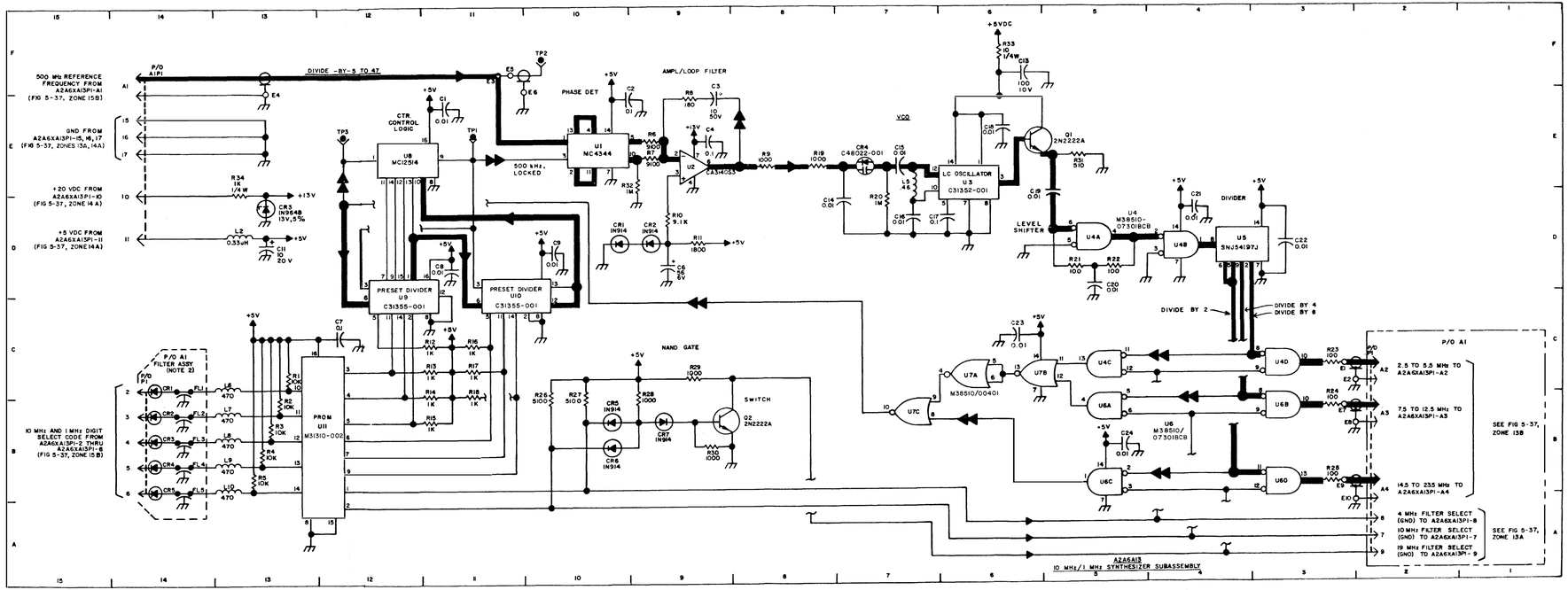


Figure 5-43A. 10MHz/1 MHz Synthesizer Subassembly A2A6A13, Maintenance Schematic Diagram

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
U1	1.88	3.74	3.54	3.76	1.31	1.86	0	0.11	0	1.31	3.73	3.98	3.76	5.01	-	-
U2	0.06	1.31	1.32	0	0.06	5.41	13.0	6.75	-	-	-	-	-	3.8	-	-
U3	4.80	0	3.62	0	1.43	0	0	0	0	1.64	0	1.63	0	4.8	-	-
U4	2.52	1.51	0	1.52	0	1.47	0	1.69	5.05	0.13	1.72	5.06	0.18	5.03	-	-
U5	1.74	1.73	0.40	0.42	1.51	1.51	0	2.55	1.56	0.47	0.47	1.78	1.7	5.02	-	-
U6	2.04	1.51	.003	0.15	1.58	5.06	0	1.58	5.1	0.13	1.51	.003	1.56	5.02		
U7	0.085	1.76	1.78	0.098	4.0	4.0	0	2.07	0.098	1.28	0.18	0.15	4.0	5.02		
U8	1.28	1.57	1.53	1.53	1.53	1.51	0.11	0	3.57	1.46	1.78	1.62	0.70	1.47	0	5.02
U9	0.70	0.15	3.57	1.55	5.01	1.27	1.79	0	1.48	1.26	0.16	0	5.0	5.0	1.63	5.02
U10	0.08	0	3.57	1.51	5.01	0.70	1.84	0	1.90	1.12	5.01	0.46	0.46	0.15	0.08	5.02
U11	5.05	5.05	0.16	5.01	0.16	5.01	5.01	0	0.16	0.16	0.16	0.16	5.0	0.65	0	5.02

SPECIFIC NOTES

1. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz OPERATION.

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

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 TEST FIXTURE TS-3665/WRC-1. TEST FIXTURE CONTROL SETTINGS SHALL CORRESPOND TO THE SETTINGS OF THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

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.
ALL TRANSISTORS ARE TYPE 2N2222A.
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.

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	6F	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	7F
C28	8D	L12	4D	R4	6F
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	3F	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	9B
R16	7C	R27	6A	TP7	8C

TRANSISTOR VOLTAGE CHART

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

SPECIFIC NOTES

1. TRANSISTOR VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 AND WITH EQUIPMENT CONTROLS SET FOR 2.5 MHz OPERATION 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

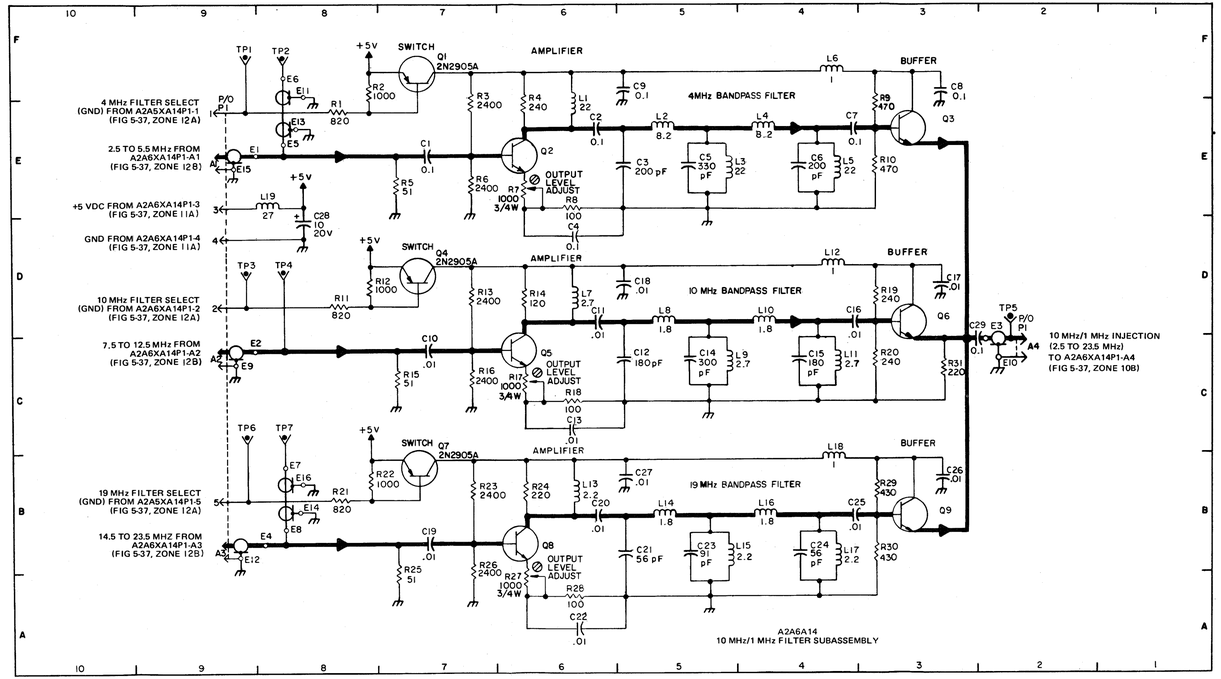


Figure 5-44. 10 MHz/1 MHz Filter Subassembly A2A6A14, Maintenance Schematic Diagram

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 FEEDBACK.

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

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	19.2	18.82	5.65
Q2	19.10	19.0	2.34
Q3	5.39	5.64	19.01

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	0	9.7	9.42	0	18.95	18.95	9.38	19.08
U2	5.03	18.78	19.07	0	2.19	2.33	4.43	4.96

SPECIFIC NOTES

1. THE VALUE OF A2A6A15R15 IS SELECTED FROM 330 TO 1800 OHMS FOR A +5.1 TO +5.2 VDC INDICATION AT A2A6A15TP2 WITH A 2 AMPERE LOAD. REFER TO CHAPTER 7 FOR PART NUMBERS AND RESISTANCE VALUES.

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT MODE SELECTOR SWITCH SET AT LSB POSITION.

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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

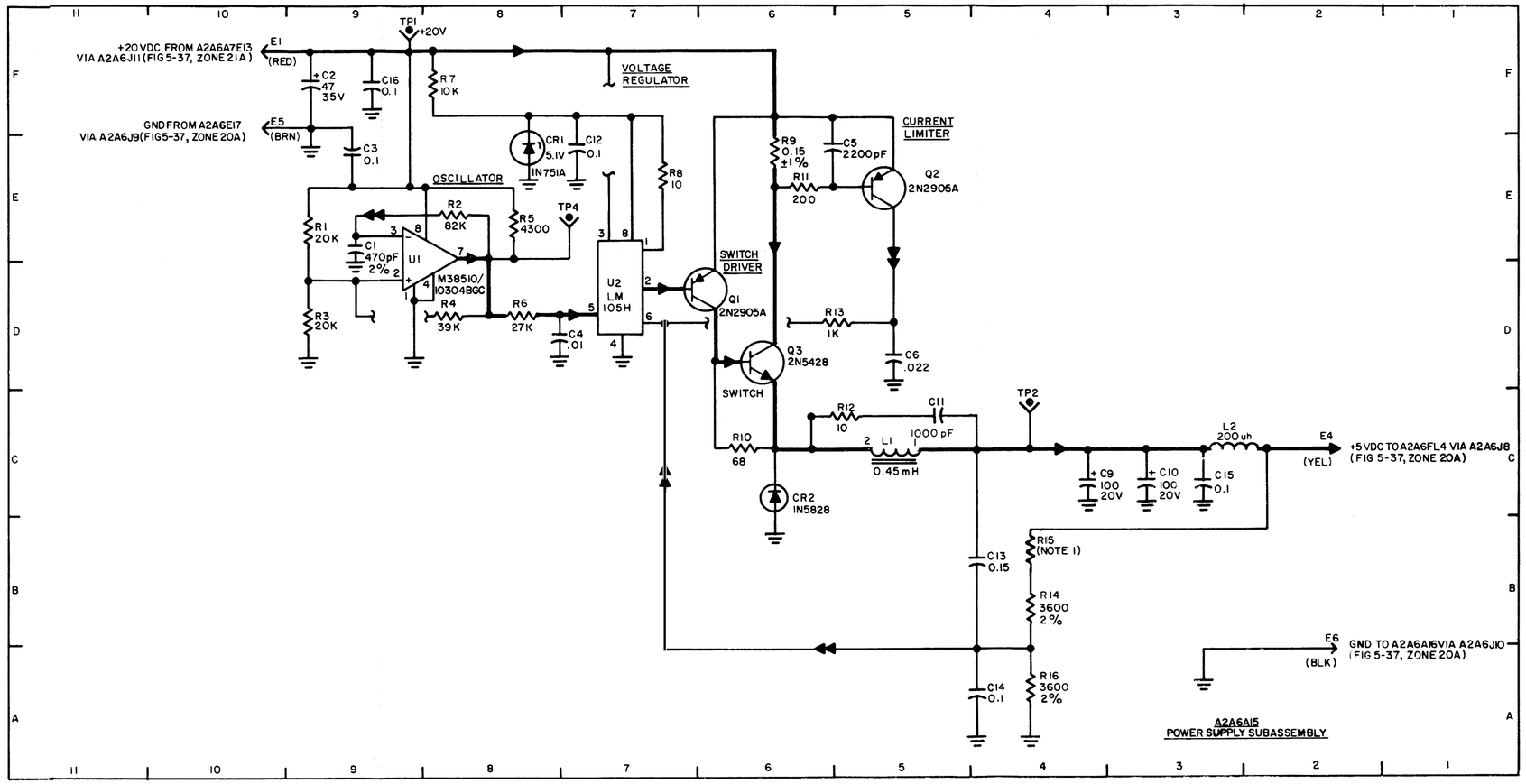


Figure 5-45. Power Supply Subassembly A2A6A15, Maintenance Schematic Diagram

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 FEEDBACK.

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

TRANSISTOR DC VOLTAGE CHART

	E	B	C
Q1	19.2	18.82	5.65
Q2	19.10	19.0	2.34
Q3	5.39	5.64	19.01

INTEGRATED CIRCUIT DC VOLTAGE CHART

	PINS							
	1	2	3	4	5	6	7	8
U1	0	9.7	9.42	0	18.95	18.95	9.38	19.08
U2	5.03	18.78	19.07	0	2.19	2.33	4.43	4.96

SPECIFIC NOTES

1. THE VALUE OF A2A6A15R15 IS SELECTED FROM 330 TO 1800 OHMS FOR A +5.1 TO +5.2 VDC INDICATION AT A2A6A15TP2 WITH A 2 AMPERE LOAD. REFER TO CHAPTER 7 FOR PART NUMBERS AND RESISTANCE VALUES.

2. TRANSISTOR AND INTEGRATED CIRCUIT VOLTAGE MEASUREMENTS TAKEN TO GROUND USING MULTIMETER AN/USM-311 WITH EQUIPMENT MODE SELECTOR SWITCH SET AT LSB POSITION.

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 THEIR COUNTERPART CONTROLS OF THE R-1051G/URR.

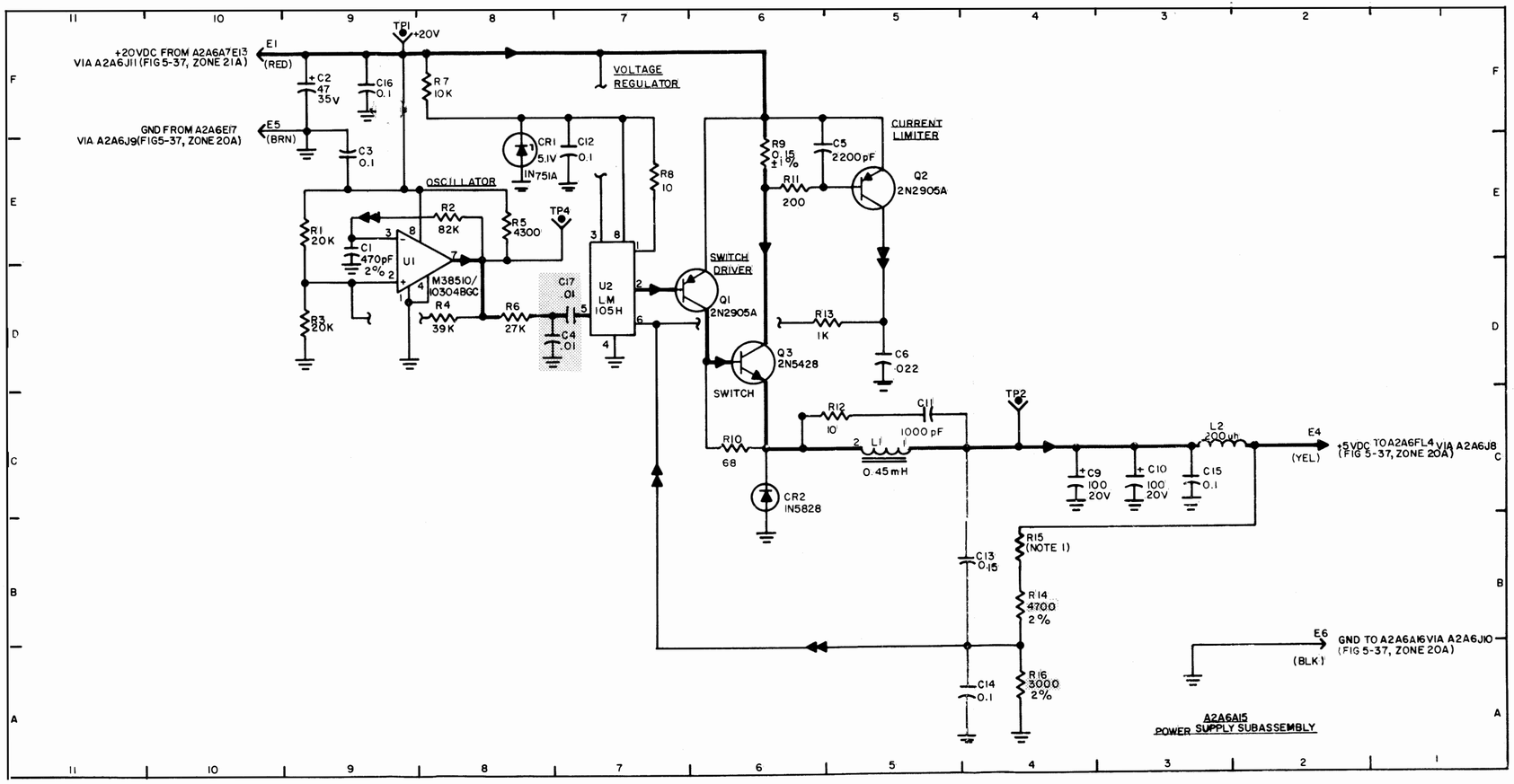
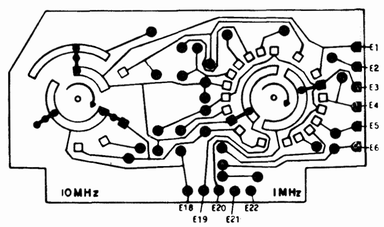
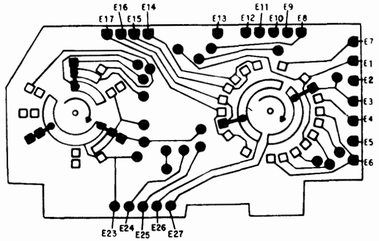


Figure 5-45A. Power Supply Subassembly A2A6A15, Maintenance Schematic Diagram

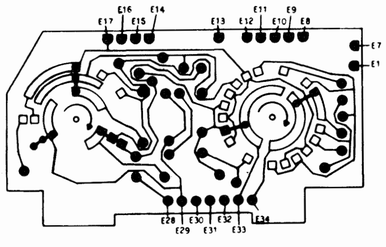
FRONT SURFACES



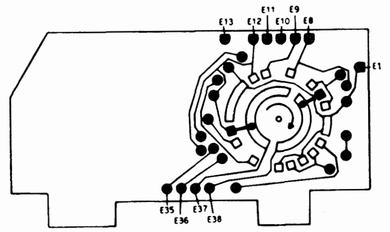
A2A7A1



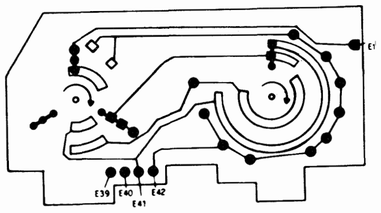
A2A7A2



A2A7A3

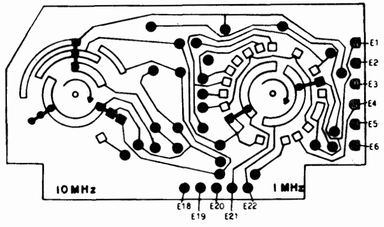


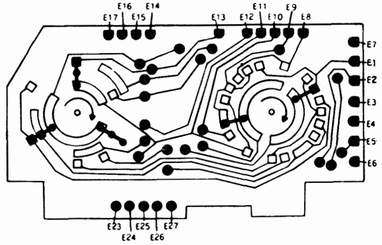
A2A7A4

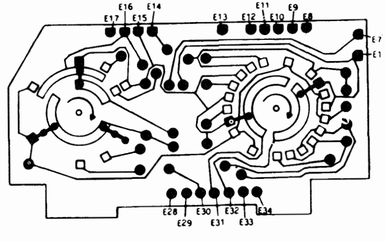


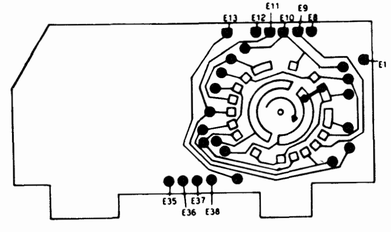
A2A7A5

REAR SURFACES (VIEWED THRU BOARD FROM FRONT SURFACE)









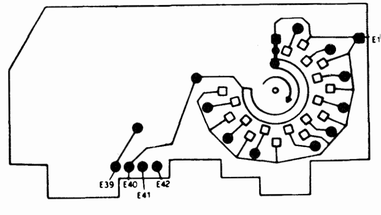


Figure 5-46. Code Generator Assembly A2A7, Maintenance Schematic Diagram

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 5-32, SHEET 2, ZONES 11D/11E, 12D/12E, AND 13D/13E.

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 (XMTR). NOT USED (RCVR).
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 (XMTR). NOT USED (RCVR).
A5E42	P1-11	GND PULSE TO A2K6-X1 (XMTR). NOT USED (RCVR).
A5E41	P1-9	GROUND INPUT FROM A2E7 (RCVR) OR A2E1 (XMTR).
A3E28	P1-18	RF POWER AMPL RANGE (XMTR). NOT USED (RCVR).
A5E40 A1E18 A3E23	P1-8 P1-19 P1-20	RESERVED.

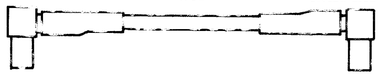
I. FOLLOWING TERMINALS OF SWITCH ASSEMBLIES ARE CONNECTED TOGETHER:

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.

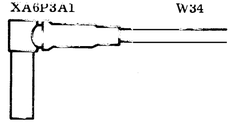
FRON

REAR SURFACES (V
BOARD FROM FRO

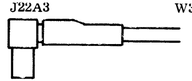
XA6P1A3	W19	XA5P1A1
XA5P1A2	W20	XA1P2A2
XA5P1A3	W21	XA6P1A2
XA5P1A4	W22	J22A2
XA6P1A1	W23	XA5P1A5
XA5P1A6	W24	J22A1
XA6P2A1	W27	XA1P1A3
XA3P1A3	W28	XA1P1A2
XA2P1A3	W29	XA1P1A1
XA1P2A1	W30	XA3P1A2
XA1P2A3	W31	XA2P1A2
XA1P2A4	W32	XA2P1A1

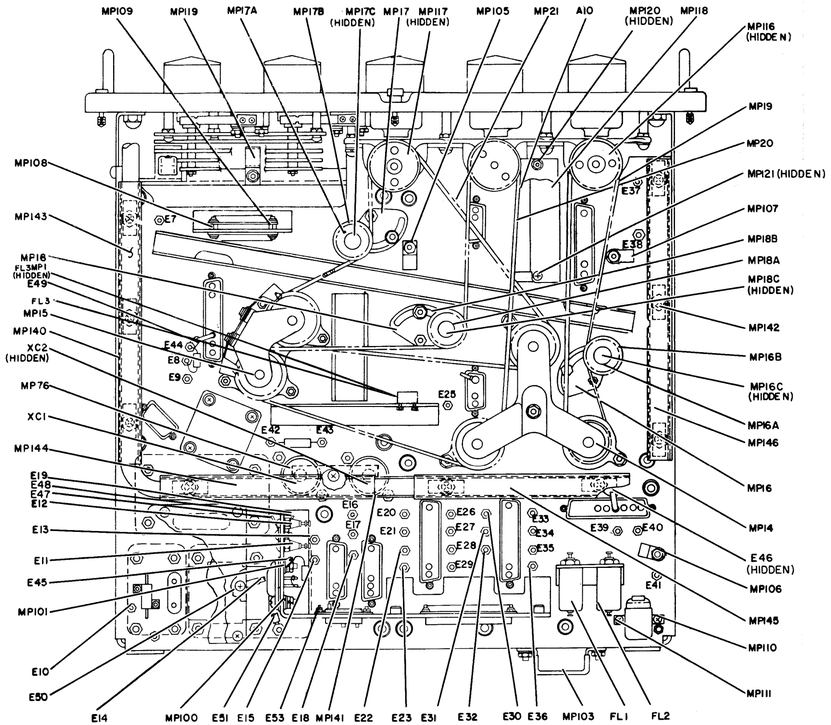


XA4P2A1	W25
XA6P3A1	W34

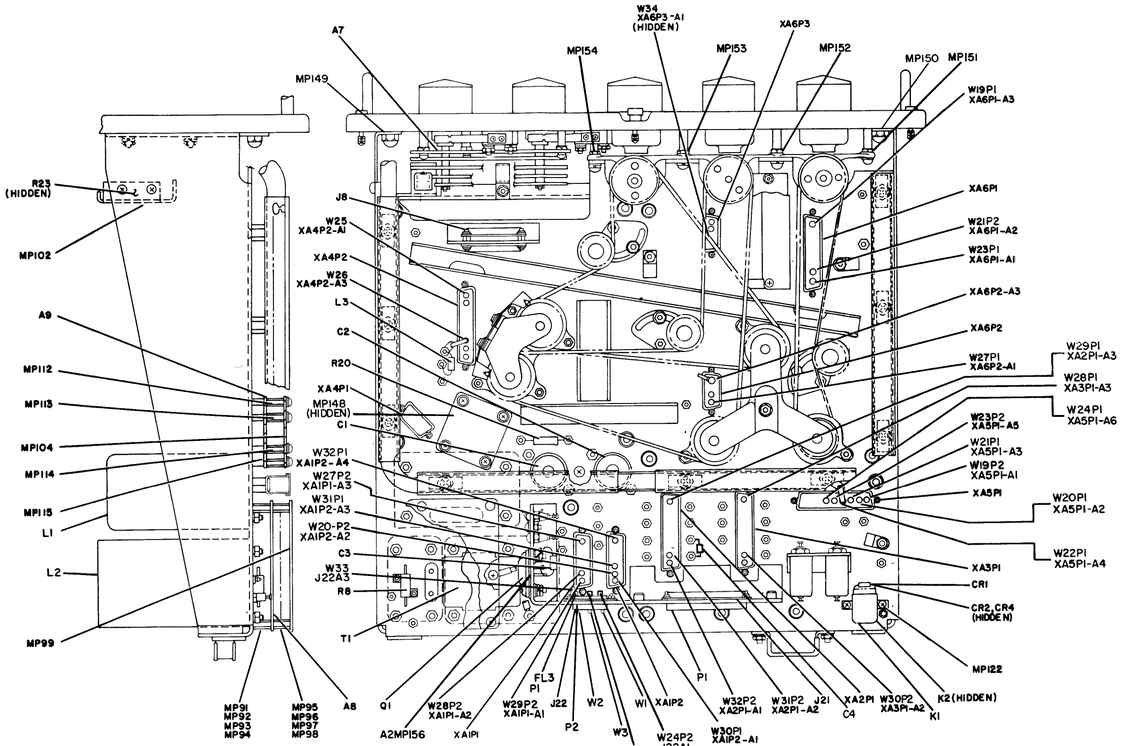


XA4P2A3	W26
J22A3	W33





BOTTOM VIEW A



SIDE VIEW S

BOTTOM VIEW B

Figure 7-4. Receiver Main Frame A2, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A1A1C1	4F
C2	7G
C3	6G
C4	5F
C5	4F
C6	2F
C7	3G
C8	2G
C9	1F
C10	1B
C11	3B
C12	1B
C13	2A
C14	1D
C15	2C
C16	2C
C17	3D
C18	3F
C19	2F
C20	1B
C21	2D
C22	3E
CR1	4E
CR2	3F
CR3	1C
* E1	4F
* E2	3F
* E3	3G
* E4	2G
*A2A1A1E5	2G
* E6	2G
* E7	3G
* E8	1F
* E9	1F
* E10	7G
* E11	7G
* E12	3E
* E13	3B
* E14	4E
* E15	1B
* E16	2E
* E17	1D
* E18	1B
* E19	1A
* E20	1C
* E21	1B
* E22	2A
* E23	1D
* E24	1E
Q1	6F
Q2	4F
Q3	3F
Q4	2F
Q5	2D
Q6	2B
Q7	2A
R1	6G
A2A1A1R2	6G
R3	6G
R4	5G
R5	5G
R6	5G
R7	5G
R8	3F
R9	4F
R10	4F
R11	2F
R12	2G
R13	2A
R14	1G
R15	1G
R16	2D
R17	2B
R18	2C
R19	2D
R20	1D
R21	2E
R22	2C
R23	1C
R24	2B
R25	2B
R26	2B
R27	2C
R28	2C
R29	1C
R30	2B
TP1	6G

* Wiring termination - for reference only.

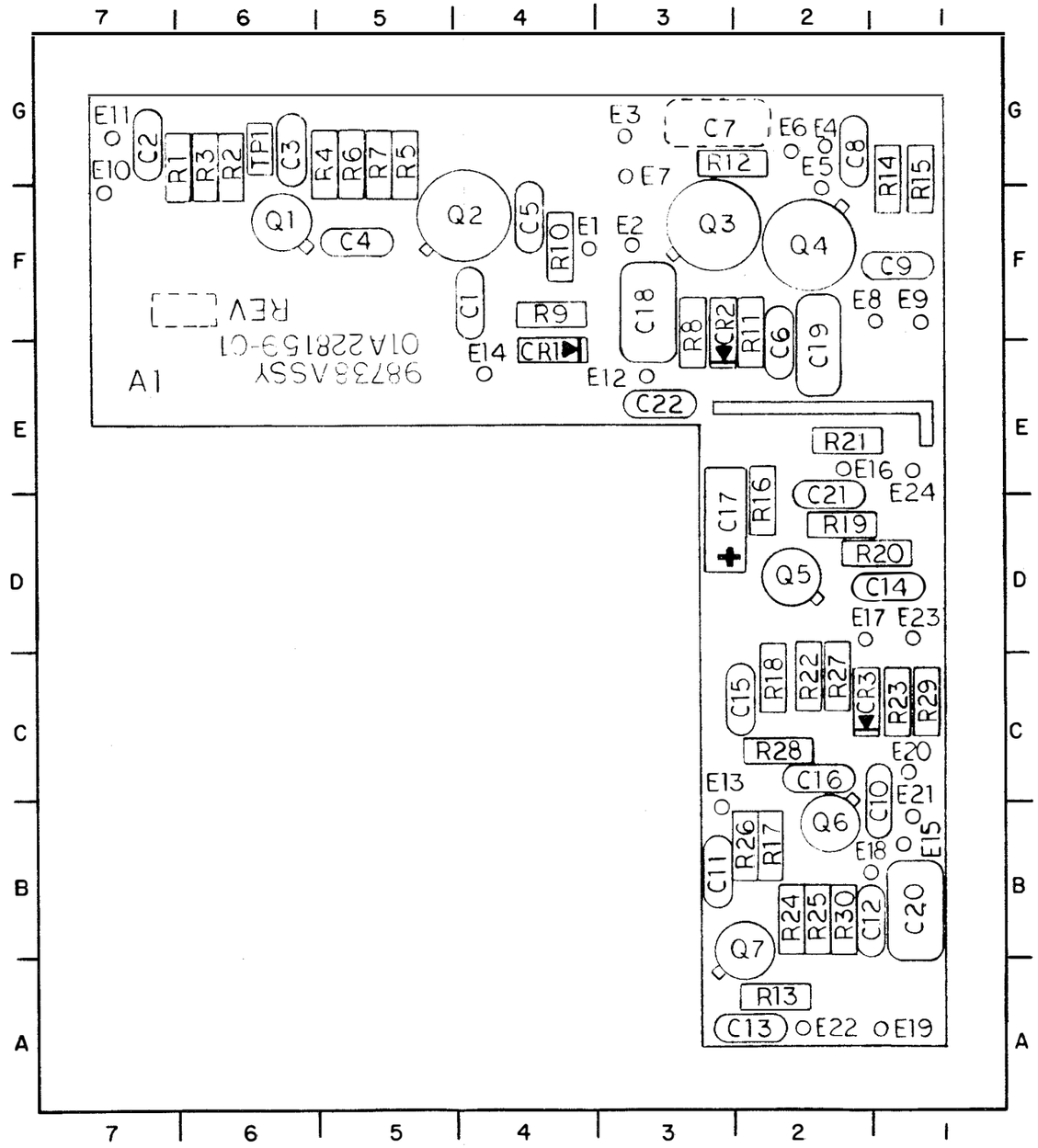


Figure 7-9. Mode Gate Subassembly A2A1A1, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A2A1C1	*
C2	4E
C3	5C
C4	2B
C5	6C
C6	3E
C7	3B
C8	4B
C9	3B
C10	2B
C11	2B
C12	6D
C13	5D
C14	*
C15	2F
C16	6F
CR1	1C
CR2	3E
CR3	3E
CR4	5B
CR5	5B
** E1	2D
** E2	2D
** E3	4D
** E4	4D
** E5	5D
** E6	6D
** E7	6D
** E8	1B
** E9	3D
** E10	5D
** E11	1B
** E12	4D
MP1	2A
MP2	2C
MP3	5B
A2A2A1MP4	6B
MP5	6D
MP6	3F
MP7	2E
Q1	2E
Q2	3F
Q3	4F
Q4	5F
Q5	*
Q6	6B
Q7	2C
Q8	2A
Q9	5E
Q10	6C
Q11	5C
Q12	3C
Q13	5B
Q14	6D
R1	2D
R2	1C
R3	2D
R4	1F
R5	2D
R6	1D
R7	4E
R8	3E
R9	4E
R10	4E
R11	3E
R12	4E
R13	5B
A2A2A1R14	*
R15	5A
R16	6A
R17	*
R18	3B
R19	5B
R20	3D
R21	3C
R22	1C
R23	2C
R24	5E
R25	1C
R26	1B
R27	5E
R28	6E
R29	6E
R30	6E
R31	4E
R32	4C
R33	4C
R34	4C
R35	3C
R36	4C
R37	4C
R38	4C
R39	5F
R40	5F
R41	6C
R42	3A
RT1	6A
T1	5A
T2	3A
TP1	1F
TP2	1E
A2A3A1's	Identical to A2A2A1's

* Not Used.
** Wiring termination - for reference only.

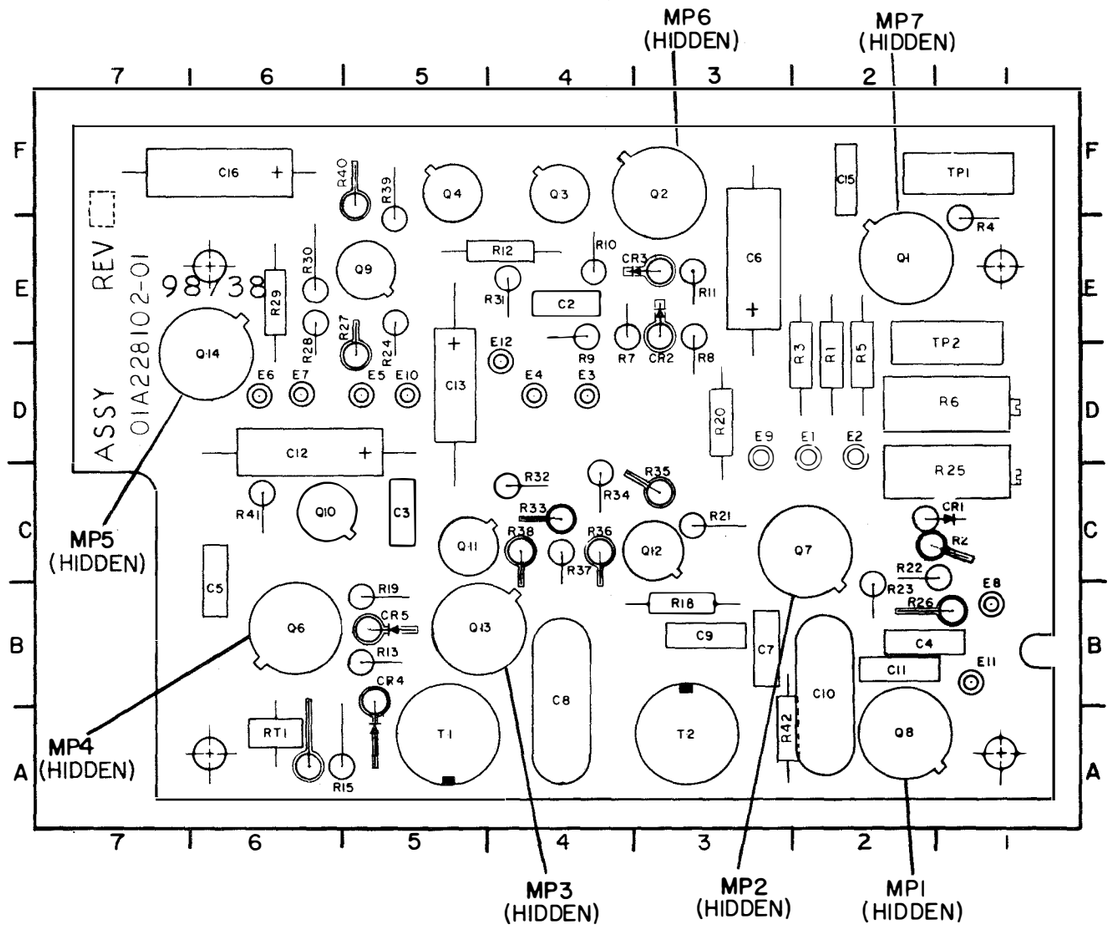


Figure 7-13. AGC Audio Amplifier Subassemblies A2A2A1 and A2A3A1, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A2A2C1	2G
C2	4F
C3	3G
C4	5F
C5	4F
C6	6F
C7	4E
C8	5E
C9	3E
C10	5D
C11	5D
C12	4D
C13	5C
C14	5C
C15	4C
C16	5A
C17	2F
C18	2D
C19	2D
C20	2D
C21	4B
C22	3C
C23	2B
C24	3A
C25	1F
C26	3D
CR1	5F
** E1	2G
** E2	2G
** E3	2F
** E4	2F
** E5	3A
** E6	1C
** E7	2A
** E8	2F
** E9	1D
** E10	1C
** A2A2A2E11	1B
** E12	2A
** E13	2A
** E14	2B
** E15	5B
** E16	5B
** E17	6B
** E18	6B
** E19	6E
** E20	6E
L1	2F
MP1	4E
MP2	3F
MP3	3D
MP4	4C
Q1	3F
Q2	5F
Q3	3E
Q4	4E
Q5	4D
Q6	4C
Q7	3D
Q8	4C
Q9	2C
Q10	1B
R1	3F
R2	2G
R3	3F
R4	*
R5	5G
R6	3F
R7	5G
R8	3E
R9	5F
R10	4F
R11	4E
A2A2A2R12	3F
R13	6E
R14	4E
R15	5E
R16	4D
R17	4D
R18	6C
R19	4C
R20	4C
R21	4C
R22	5B
R23	5C
R24	5B
R25	5B
R26	2E
R27	2E
R28	2F
R29	3D
R30	3D
R31	3D
R32	2C
R33	3C
R34	2C
R35	3B
R36	3A
R37	2A
R38	3E
R39	4E
R40	2B
RT1	4F
T1	4G
T2	5E
T3	5D
T4	5C
T5	3B
A2A3A2	Identical to A2A2A2

* Not Used
** Wiring termination - for reference only.

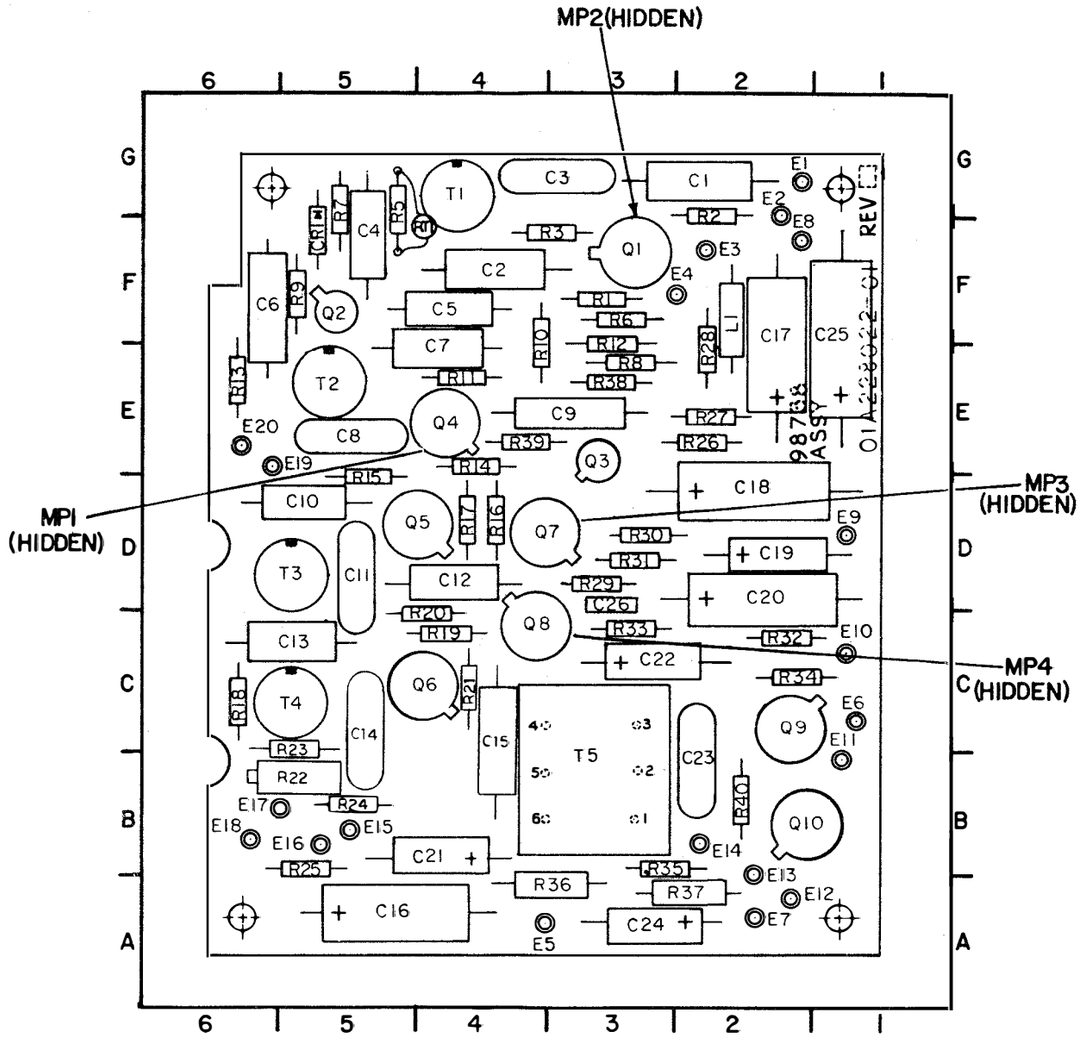
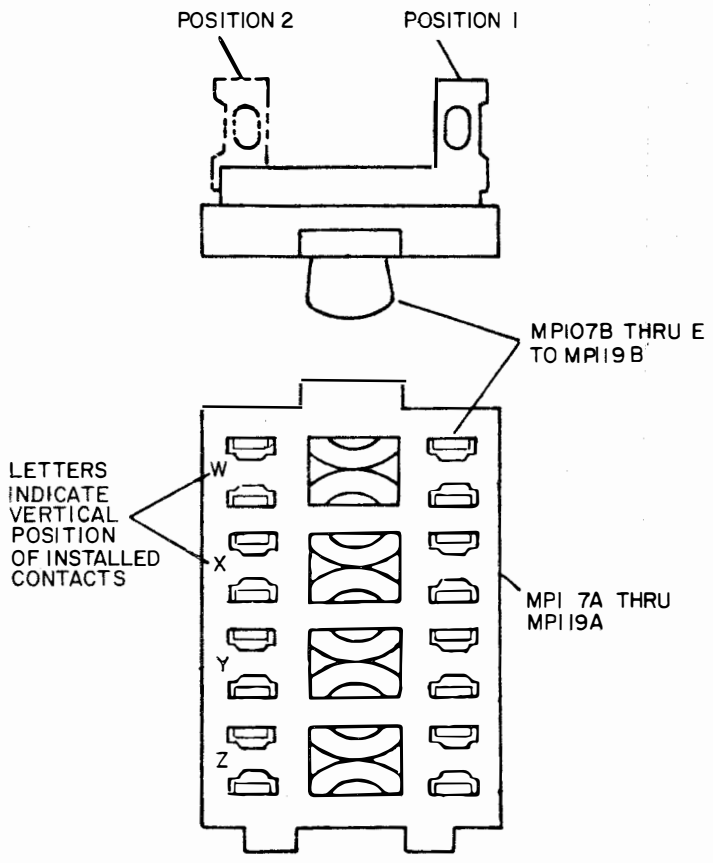
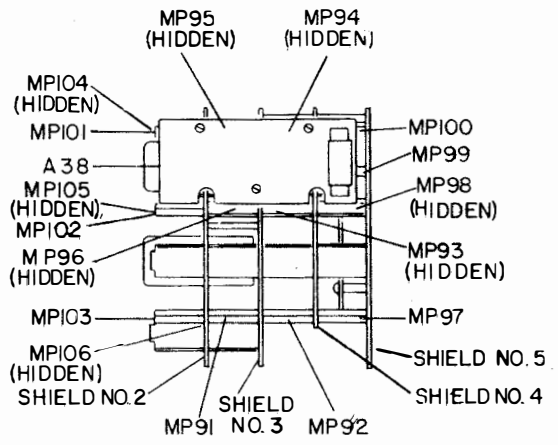


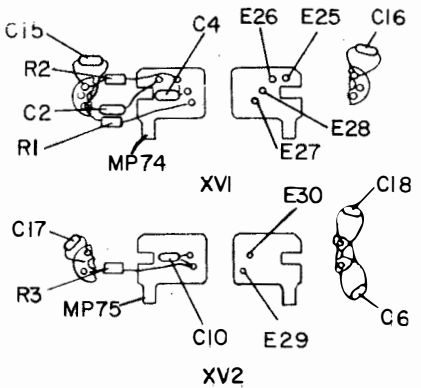
Figure 7-14. IF/Audio Amplifier Subassemblies A2A2A2 and A2A3A2, Component Locations



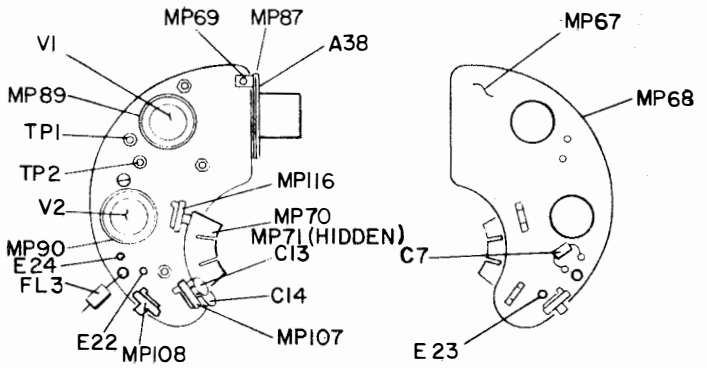
VIEW K



VEIW A

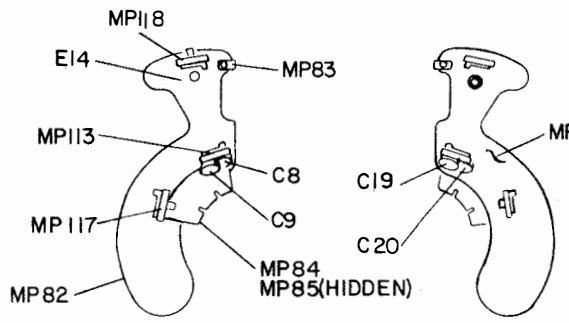


TUBE SOCKET& TUBE SOCKET SHIELD WIRING VIEW B



TOP SHIELD NO. 2 VIEW C

BOTTOM VIEW D

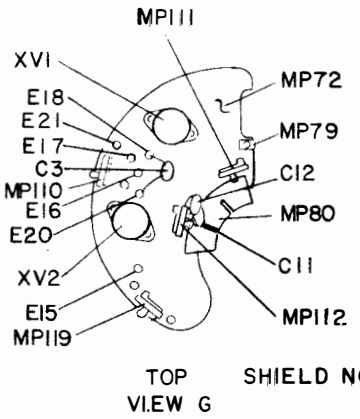


TOP SHIELD NO. 4 VIEW E

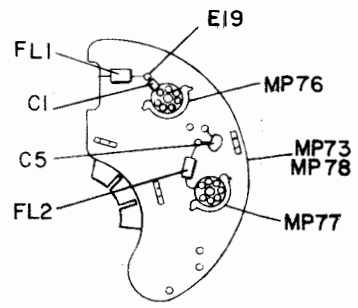
BOTTOM VIEW F

CONTACT LOCATION CHART

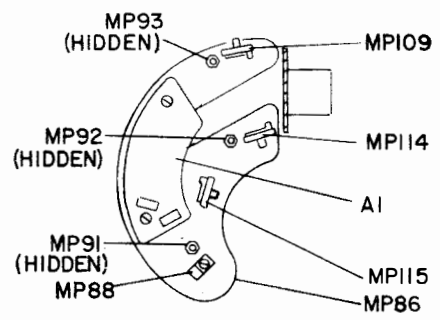
Stator Plate	Contact Location
MP107	W1, X1, Y2, Z2
MP108	W2, X2, Y1, Z1
MP109 and MP110	W2, X2, Y2, Z2
MP111	W2, Z2
MP112 thru MP114	W1, X1, Y1, Z1
MP115 thru MP117	W1, Z1
MP118	X2, Y2, Z2
MP119	W2



TOP SHIELD NO.3 VIEW G



BOTTOM VIEW H



SHIELD NO.5 VIEW I

Figure 7-19. RF Chassis Assembly (P/O A2A4), Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A4A38C1	3G
C2	2F
C3	2H
C4	2H
C5	4F
C6	2E
C7	3E
C8	2F
C9	3E
C10	2E
C11	1G
C12	3F
C13	2E
C14	3G
E1	2A
E2	*
** E3	3G
** E4	4G
** A2A4A38E5	4E
** E6	2C
FL1	2G
FL2	3E
FL3	3D
K1	2C, 3C
L1	3E
Q1	2G
Q2	2F
Q3	2D
R1	3G
R2	2G
R3	2G
R4	2G
R5	2H
R6	3H
R7	2F
R8	*
A2A4A38R9	3F
R10	3F
R11	3F
R12	2F
R13	3F
R14	3E
R15	1F
R16	2E
R17	3D
R18	2E
R19	2D
R20	3D
R21	1H
TP1	3H
TP2	4H
W1	2G
W2	2B, 2C
W2P1	2A, 3A

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

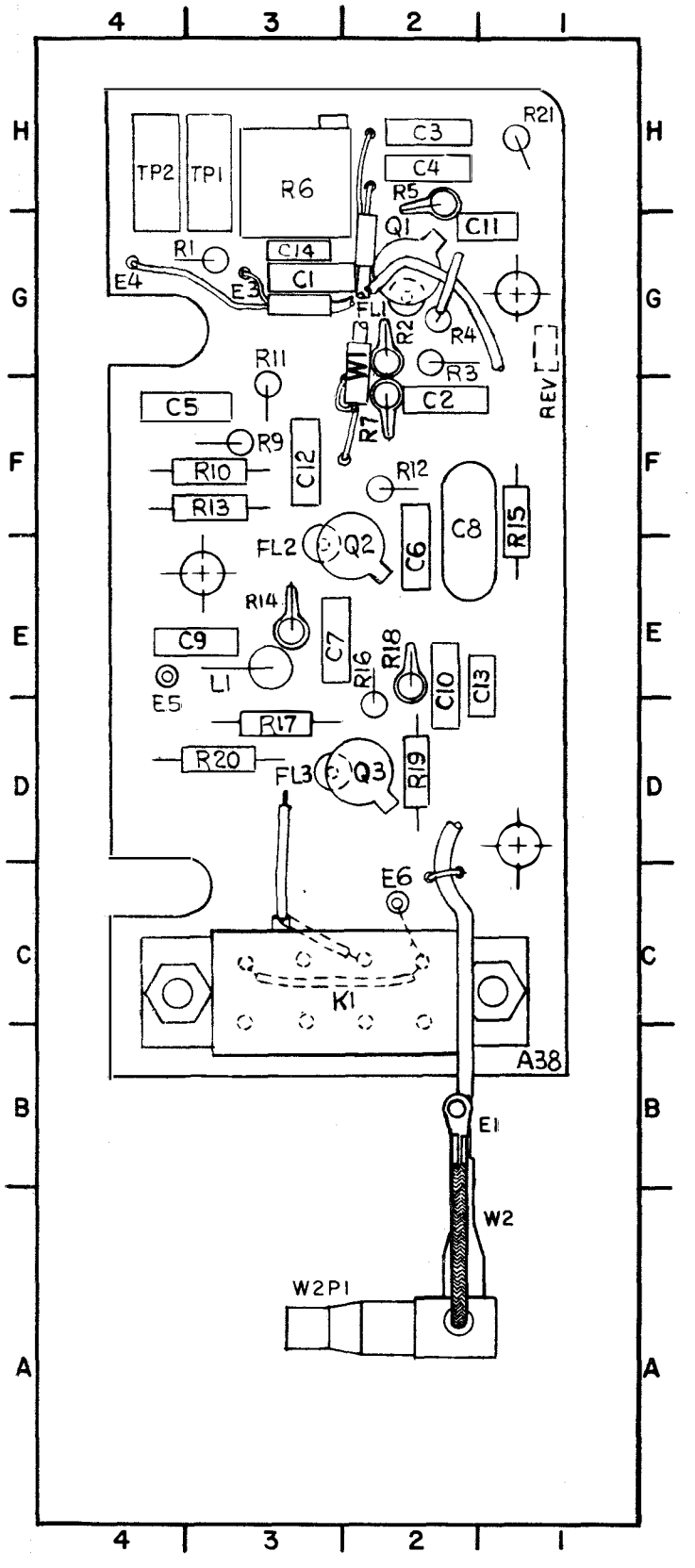


Figure 7-59. RF Mixer Amplifier Subassembly A2A4A38, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5A1C1	1C	A2A5A1P1	3A	A2A5A1R8	1A
C2	1C, 1D	P2	3A	R9	2A
C3	1D	P3	2A	R10	1C
C4	1C	P4	2A	R11	1B
C5	2B	P5	2A	R12	1A
C6	2B	Q1	1C	R13	2B
C7	1A	Q2	2B	R14	3C
C8	2C	Q3	1B	R15	3D
C9	*	Q4	3B	R16	3C
C10	1B	Q5	3C	R17	3B
C11	1C	Q6	2B	R18	3B
CR1	1B	Q7	3B	R19	3C
CR2	1B	R1	2C	R20	3A
E1	3C	R2	1C	R21	2A
E2	2C	R3	2C	R22	3B
MP1	3C	R4	2C	R23	3A
MP2	2D	R5	2B	R24	2B
MP3	3D	R6	2B	Y1	2D, 3D
MP4	2D	R7	2C		

* NOT USED

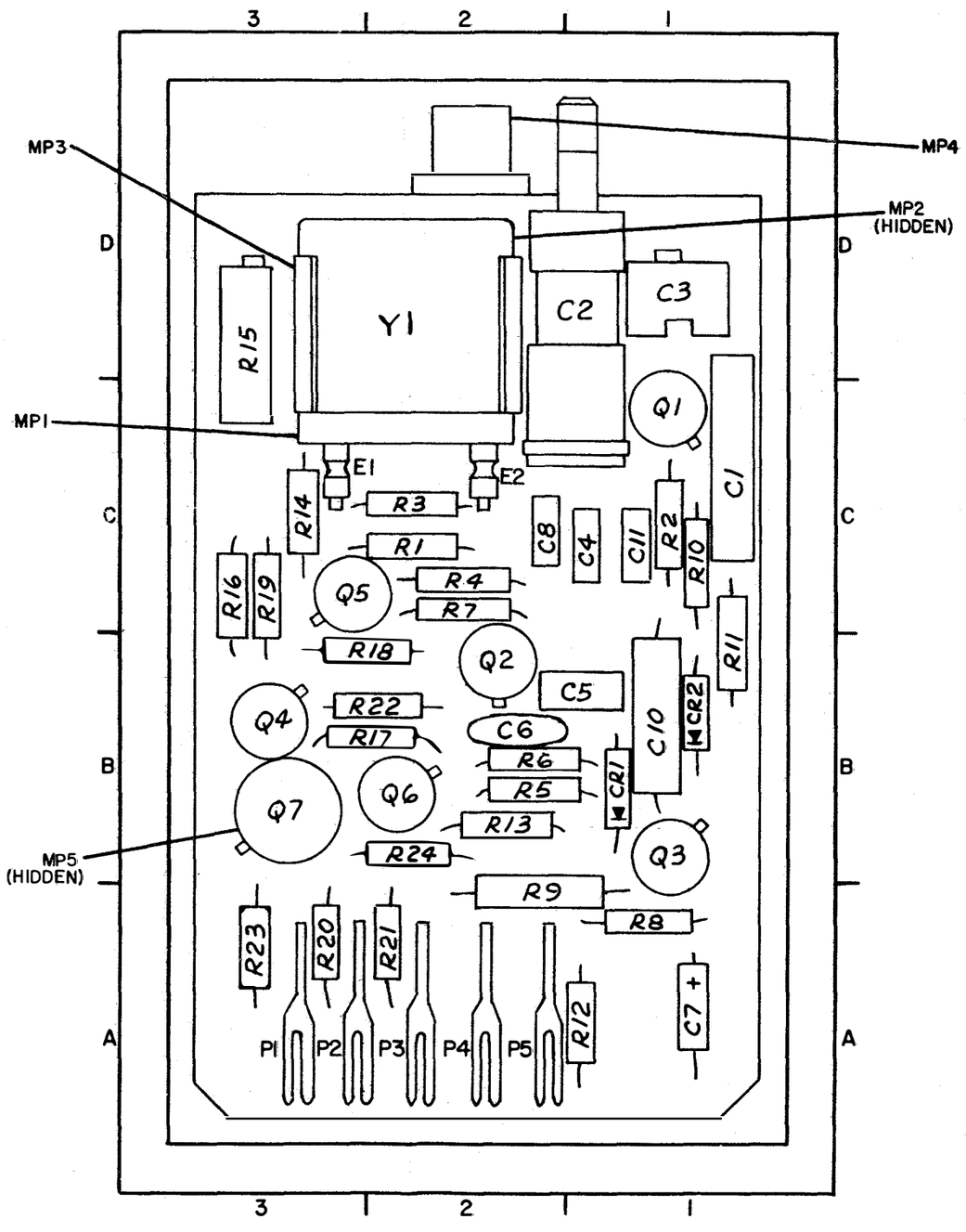


Figure 7-62. Oscillator and Oven Control Subassembly A2A5A1, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A5A2C1	4D
C2	3C
C3	4D
C4	3D
C5	4D
C6	3D
C7	4F
C8	4E
C9	4E
C10	3E
C11	3F
C12	3F
C13	2F
C14	2E
C15	2D
C16	2E
C17	2C
C18	1E
C19	1D
C20	2D
C21	3C
C22	2C
C23	3C
C24	4B
C25	4C
C26	3B
C27	4B
C28	3B
C29	4B
C30	4B
C31	4B
C32	3B
C33	3A
C34	4B
C35	4C
C36	5C
C37	5C
C38	5C
C39	5D
C40	5D
C41	5E
C42	5F
C43	*
C44	4F
DS1	5D
** E1	2B
** E2	1B
A2A5A2E3	*
** E4	1B
E5	*
** E6	2F
E7	*
** E8	2A
** E9	3B
E10	*
E11	*
** E12	5D
** E13	6C
** E14	6B
** E15	6C
L1	4E
L2	1E
L3	4A
L4	6C
MP1	5D
MP2	5D
Q1	4D
Q2	4E
Q3	3F
Q4	2D
Q5	2C
Q6	4C
Q7	4B
Q8	2B
Q9	5C
Q10	5E
Q11	5F
R1	3D
R2	3D
R3	4C
R4	4D
R5	4E
R6	3D
R7	4C
R8	4D
R9	3D
R10	3E
R11	3E
R12	4E
R13	3E
R14	3F
R15	3E
R16	4F
R17	3F
R18	2F
A2A5A2R19	3E
R20	2E
R21	2D
R22	2E
R23	1D
R24	2D
R25	2D
R26	2D
R27	3C
R28	2D
R29	3D
R30	2C
R31	2C
R32	3C
R33	5A
R34	4B
R35	*
R36	5B
R37	3C
R38	4B
R39	4A
R40	3B
R41	3B
R42	3A
R43	3B
R44	2A
R45	5C
R46	5D
R47	5C
R48	5B
R49	5D
R50	*
R51	*
R52	5E
R53	5F
R54	5E
R55	5F
R56	5F
R57	6F
R58	6F
R59	*
R60	4B
R61	3B
R62	3C
S1	5A, 5B
T1	2F
T2	2C
T3	3A

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

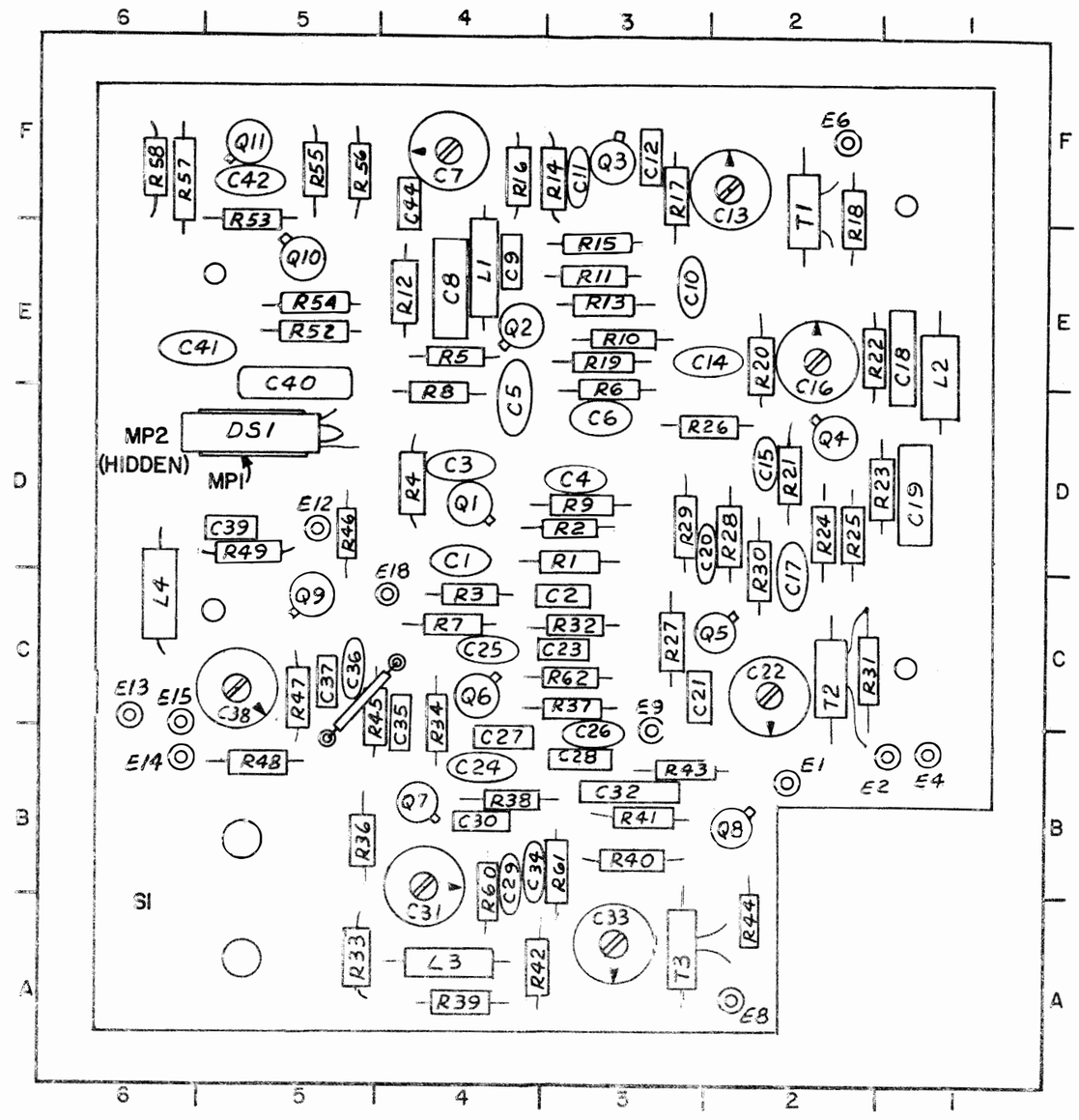
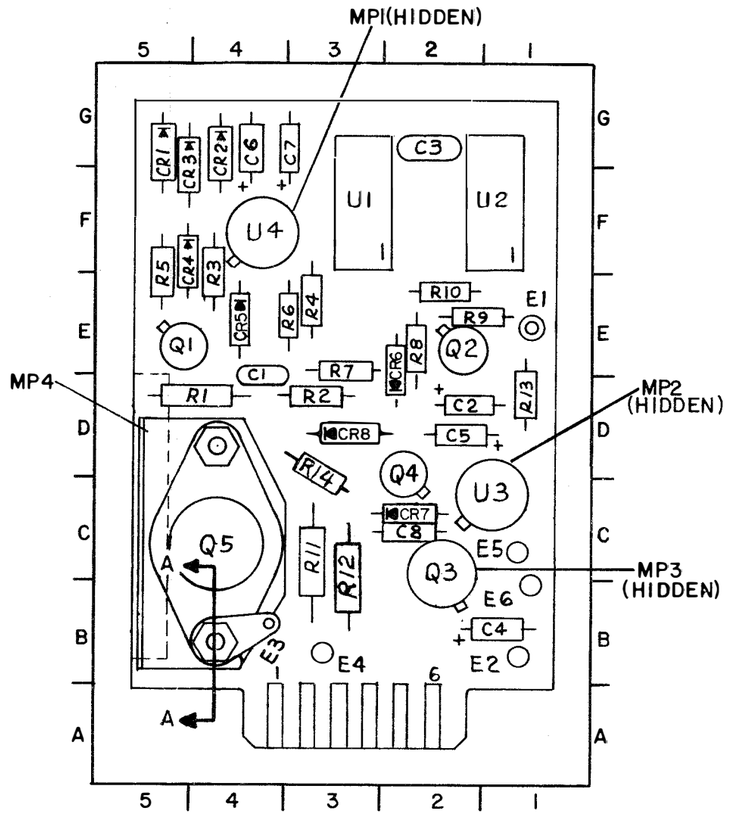


Figure 7-63. Divider/Amplifier Subassembly A2A5A2, Component Locations

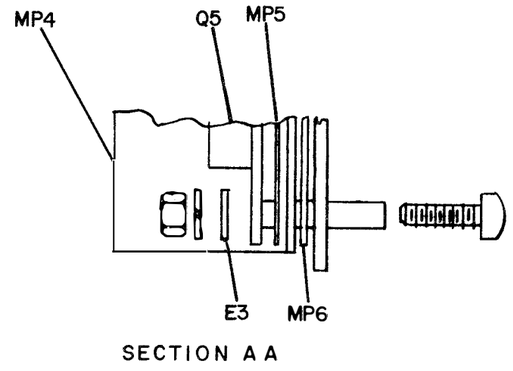
PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A5A4C1	4E, 4D	A2A5A4CR8	3D	A2A5A4R4	3E
C2	2D	E1	1E	R5	4F, 4E
C3	2G	** E2	2B	R6	4E
C4	1B	E3	4B	R7	3E
C5	2D	** E4	3B	R8	2E
C6	4G	** E5	1C	R9	2E
C7	4G	** E6	1B	R10	2E
C8	2C	Q1	5E	R11	3C
CR1	5G	Q2	2E	R12	3B, 3C
CR2	4G	Q3	2B, 2C	R13	1D
CR3	5G	Q4	2C, 2D	R14	3D
CR4	5F	Q5	4C	U1	3F, 3G
CR5	4E	R1	4D, 5D	U2	1F, 1G
CR6	2E, 2D	R2	3D	U3	1C, 1D
CR7	2C	R3	4F, 4E	U4	4F

** WIRING TERMINATION - FOR REFERENCE ONLY.

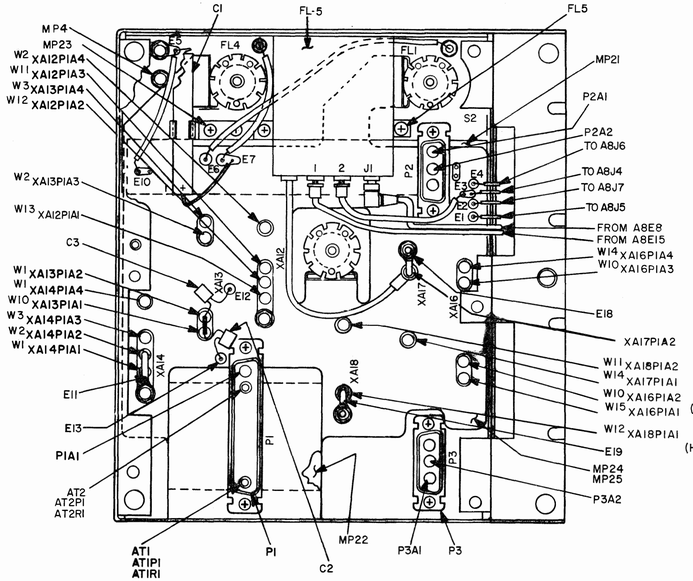


*TERMINAL IDENTIFICATION
FOIL SIDE 1,2,3,4,5,6,
OTHER SIDE A,B,C,D,E,F

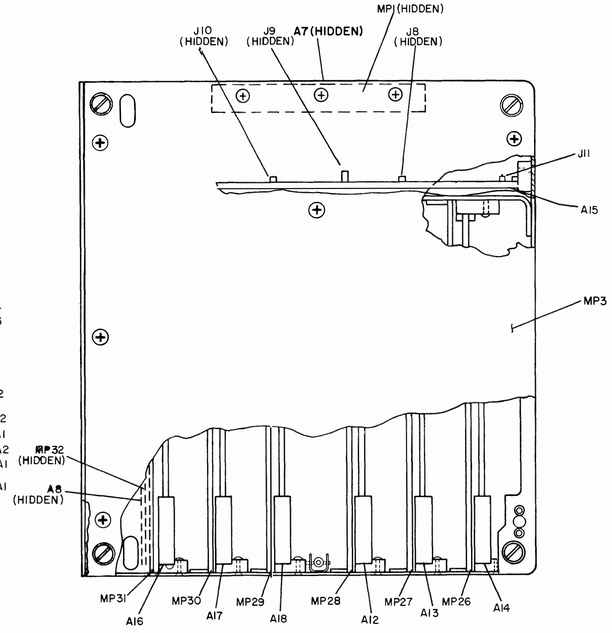


SECTION A A

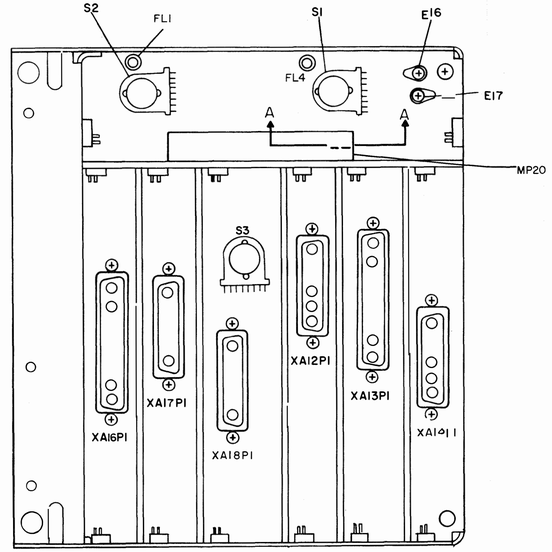
Figure 7-65. 5 MHz Reference Control Subassembly A2A5A4, Component Locations



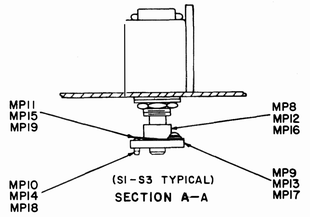
BOTTOM VIEW
(MP1 REMOVED)



TOP VIEW



TOP VIEW, AI2 THRU AI8 REMOVED



MP8-MP11 ARE USED ON S1.
MP12-MP15 ARE USED ON S2.
MP16-MP19 ARE USED ON S3.

Figure 7-66. Translator/Synthesizer Assembly A2A6, Component Locations

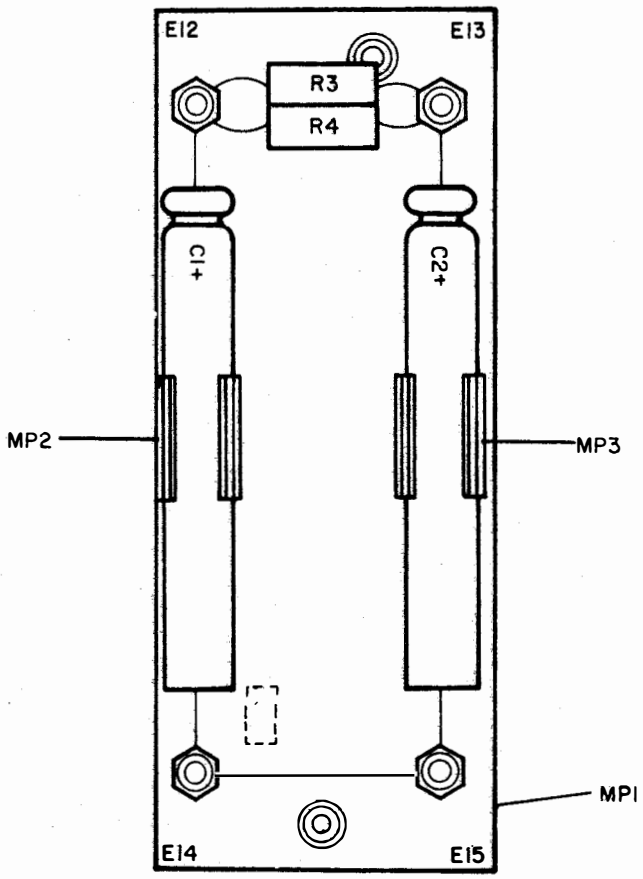


Figure 7-67. Filter Assembly A2A6A7, Component Locations

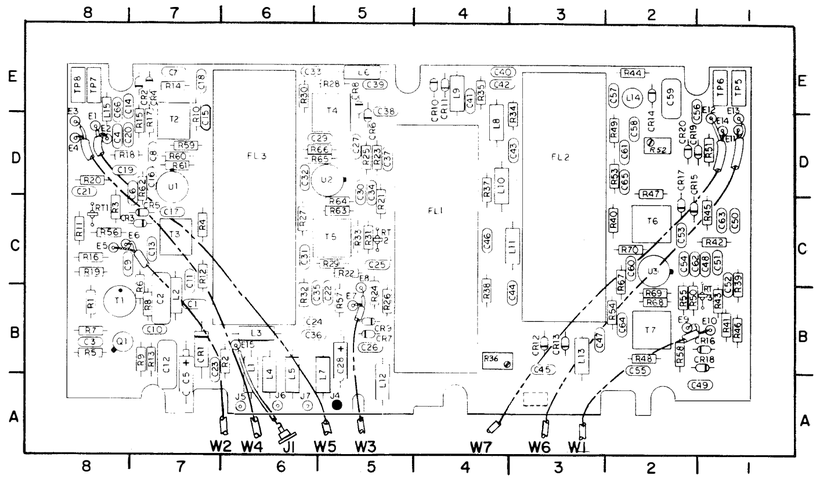
PART LOCATION INDEX

REF DES	ZONE
A2A6A8C1	7B
C2	7B
C3	8B
C4	8D
C5	7B
C6	7D
C7	7E
C8	7D
C9	8C
C10	7B
C11	7C
C12	7B
C13	7C
C14	8E
C15	7D
C16	7D
C17	7C
C18	7E
C19	8D
C20	7D
C21	8D
C22	5B
C23	7B
C24	5B
C25	5C
C26	5B
C27	5D
C28	5B
C29	5D
C30	5D
C31	6C
C32	6D
C33	6E
C34	5D
C35	5B
C36	5B
C37	5D
C38	5E
C39	5E
C40	4E
C41	4E
C42	4E
C43	3D
C44	3B
C45	3B
A2A6A8C46	4C
C47	3B
C48	1C
C49	1A
C50	1C
C51	1C
C52	1C
C53	2C
C54	2C
C55	2B
C56	1E
C57	2E
C58	2D
C59	2E
C60	2C
C61	2D
C62	2C
C63	1C
C64	2B
C65	2D
C66	8E
CR1	7B
CR2	7E
CR3	7C
CR4	7E
CR5	7C
CR6	5E
CR7	5B
CR8	5E
CR9	5B
CR10	4E
CR11	4E
CR12	3B
CR13	3B
CR14	2E
CR15	2C
CR16	1B
CR17	2C
CR18	1B
CR19	1D
CR20	2D
** E1	8D
** E2	8D
** E3	8D
** E4	8D
**A2A6A8E5	8C
** E6	7C
** E7	5B
** E8	5B
** E9	2B
** E10	1B
** E11	1D
** E12	1D
** E13	1D
** E14	1D
** E15	6B
FL1	4B,4C,4D
FL2	3C,3D,3E
FL3	6C,6D,6E
J1	*
J2	*
J3	*
J4	5A
J5	6A
J6	6A
J7	6A
L1	6B
L2	7B
L3	6B
L4	6B
L5	6B
L6	5E
L7	5B
L8	4D
L9	4E
L10	4D
L11	3C
L12	5A
L13	3B
L14	2E
L15	8E
P1	6A
Q1	8B
R1	8B
R2	6B
R3	8C
R4	7C
R5	8B
R6	7B
R7	8B
R8	7B

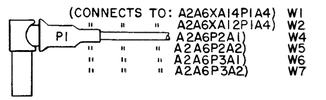
PART LOCATION INDEX (CONTINUED)

REF DES	ZONE
A2A6A8R9	7B
R10	7E
R11	8C
R12	7C
R13	7B
R14	7E
R15	7D
R16	8C
R17	7D
R18	8D
R19	8C
R20	8D
R21	5C
R22	5C
R23	5D
R24	5B
R25	5D
R26	5B
R27	6C
R28	5E
R29	5C
R30	6E
R31	5C
R32	6C
R33	5C
R34	3D
R35	4E
R36	4B
R37	4D
R38	4B
A2A6A8R39	1C
R40	2C
R41	1B
R42	1C
R43	1B
R44	2E
R45	1C
R46	1B
R47	2D
R48	2B
R49	2D
R50	2B
R51	1D
R52	2D
R53	2D
R54	2B
R55	2B
R56	8C
R57	5B
R58	2B
R59	7D
R60	7D
R61	7D
R62	7D
R63	5C
R64	5C
R65	5D
R66	5D
R67	2C
R68	2B
A2A6A8R69	2B
R70	2C
RT1	8C
RT2	5C
RT3	1B
T1	8B
T2	7D
T3	7C
T4	5E
T5	5C
T6	2C
T7	2B
TP1 thru TP4	*
TP5	1E
TP6	1E
TP7	8E
TP8	8E
U1	7D
U2	5D
U3	2C
W1	3A
W2	6A
W3	5A
W4	6A
W5	5A
W6	3A
W7	4A

* Not Used
** Wiring termination - for reference only.



A2A6A8 CONNECTORS



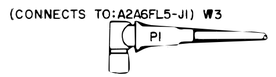


Figure 7-68. RF Translator Subassembly A2A6A8, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A16C1	*	** A2A6A16E4	1C	A2A6A16R16	2B
C2	*	** E5	3C	R17	5E
C3	4C	** E6	3C	R18	6E
C4	4C	** E7	3C	R19	6E
C5	4E	** E8	3D	R20	5E
C6	3E	** E9	5C	R21	5E
C7	4D	** E10	5C	R22	4E
C8	3D	** E11	3D	R23	5E
C9	3D	L1	*	R24	4D
C10	2E	L2	*	R25	6C
C11	2E	L3	3B	R26	7C
C12	1E	L4	*	R27	7C
C13	2C	L5	6B	R28	7C
C14	4C	L6	3E	R29	7C
C15	2A	L7	3E	R30	6C
C16	1B	MP1	7E	R31	7B
C17	3B	MP2	1E	R32	7B
C18	5D	MP3	3C	R33	6B
C19	*	MP4	3C	R34	5A
C20	4D	P1	3A, 4A	R35	6A
C21	5D	P1A1	5A	R36	6A
C22	7D	P1A2	4A	R37	4B
C23	6D	P1A3	3A	R38	4C
C24	6D	P1A4	3A	R39	3B
C25	6C	Q1	4E	TP1	6E
C26	6D	Q2	3D	TP2	3E
C27	*	Q3	3B	TP3	3E
C28	6B	Q4	2B	TP4	2E
C29	5B	Q5	5A	U1	2D
C30	5B	Q6	4B	U2	1D
C31	5B	R1	4E	U3	1C
C32	5B	R2	4E	U4	2C
C33	5B	R3	4D	U5	3C
C34	6A	R4	4D	U6	3C
C35	6A	R5	4D	U7	5D
C36	6A	R6	3D	U8	7D
C37	5C	R7	3E	U9	5D
CR1	4D	R8	3D	U10	7C
CR2	6C	R9	3D	U11	5B
CR3	6C	R10	2E	U12	7A
CR4	5C	R11	2D	U13	5C
CR5	6B	R12	3B	U14	1A
** E1	4E	R13	3B	U15	1B
** E2	4D	R14	3B	U16	1C
** E3	1D	R15	2B	U17	2C

* Not used.
** Wiring termination - for reference only.

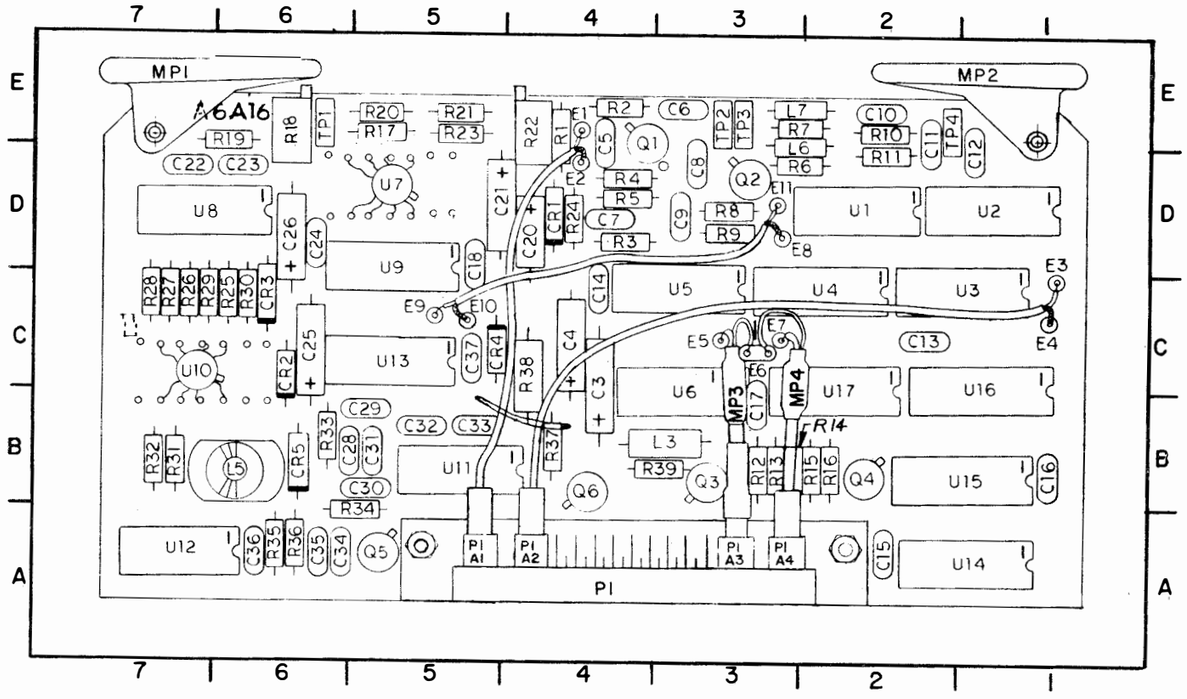


Figure 7-69. Frequency Generator Subassembly A2A6A16, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A17C1	1C
C2	5D
C3	5D
C4	*
C5	4B
C6	5B
C7 thru C12	*
C13	5B
C14	5B
C15	5B
C16	5B
C17	6B
C18	6A
C19	6B
C20	5B
C21	6B
C22	*
C23	4B
C24	*
C25	1C
C26	4C
C27	4C
C28	4C
C29	4C
C30	7B
C31	1C
C32	2B
C33	4B
C34	4C
C35	2D
C36	4C
** E1	2C
** E2	2C
** E3	4C
** A2A6A17E4	4C
L1	*
L2	*
L3	5B
L4	6B
L5	6B
L6	6B
L7	6B
L8	5B
L9	*
L10	4B
MP1	6D, 7D
MP2	1D, 2D
P1	3A, 4A
P1A1	4A
P1A2	3A
Q1	5B
Q2	6B
Q3	4B
Q4	3B
Q5	4B
Q6	3C
Q7	3C
Q8	3C
R1	4B
R2	2C
R3	4C
R4	4C
R5	4C
R6	4C
R7	4C
R8	4C
R9	5B
R10	5C
R11	4B
A2A6A17R12	6B
R13	7C
R14	6B
R15	4C
R16	3B
R17	3B
R18	*
R19	*
R20	*
R21	*
R22	2B
R23	2B
R24	2B
R25	2B
R26	4B
R27	3B
R28	3B
R29	3B
R30	3B
R31	6B
R32	5C
R33	4C
R34	5B
R35	4C
R36	5B
TP1	3D
TP2	2D
TP3	5D
U1	2C
U2	*
U3	*
U4	3C
U5	2C
U6	2B
U7	2C
U8	3C
W1	4B, 4C
W2	3B, 4B
A2A6A17A1	(Potted)

* Not Used

** Wiring termination - for reference only.

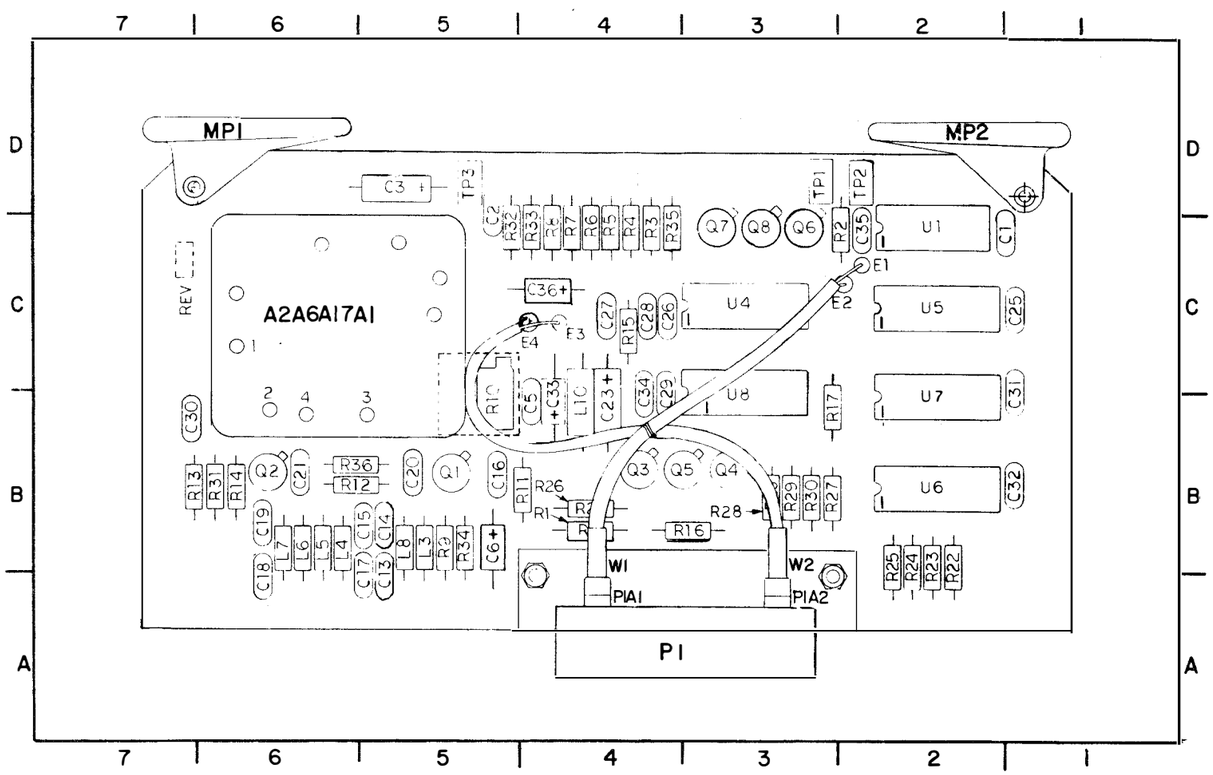


Fig re 7-70. 100 kHz/10 kHz Synthesizer Subassembly A2A6A17, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A17C1	1C
C2	5D
C3	5D
C4	*
C5	4B
C6	5B
C7 thru C12	*
C13	5B
C14	5B
C15	5B
C16	5B
C17	6B
C18	6A
C19	6B
C20	5B
C21	6B
C22	*
C23	4B
C24	*
C25	1C
C26	4C
C27	4C
C28	4C
C29	4C
C30	7B
C31	1C
C32	2B
C33	4B
C34	**4C**
C35	**2D**
C36	**4C**
CR1	**4D**
** **E1**	**2C**
** **E2**	**2C**
** **E3**	**4C**
** A2A6A17E4	4C
L1	*
L2	*
L3	5B
L4	6B
L5	6B
L6	6B
L7	6B
L8	5B
L9	*
L10	4B
MP1	6D, 7D
MP2	1D, 2D
P1	3A, 4A
P1A1	4A
P1A2	3A
Q1	5B
Q2	6B
Q3	4B
Q4	3B
Q5	4B
Q6	3C
Q7	3C
Q8	3C
R1	4B
R2	2C
R3	4C
R4	4C
R5	4C
R6	4C
R7	4C
R8	4C
R9	5B
R10	5C
R11	4B
A2A6A17R12	6B
R13	7C
R14	6B
R15	4C
R16	3B
R17	3B
R18	*
R19	*
R20	*
R21	*
R22	2B
R23	2B
R24	2B
R25	2B
R26	4B
R27	3B
R28	3B
R29	3B
R30	3B
R31	6B
R32	5C
R33	4C
R34	5B
R35	4C
R36	5B
TP1	3D
TP2	2D
TP3	5D
U1	2C
U2	*
U3	*
U4	3C
U5	2C
U6	2B
U7	2C
U8	3C
W1	4B, 4C
W2	3B, 4B
A2A6A17A1	(Potted)

* Not Used

** Wiring termination - for reference only.

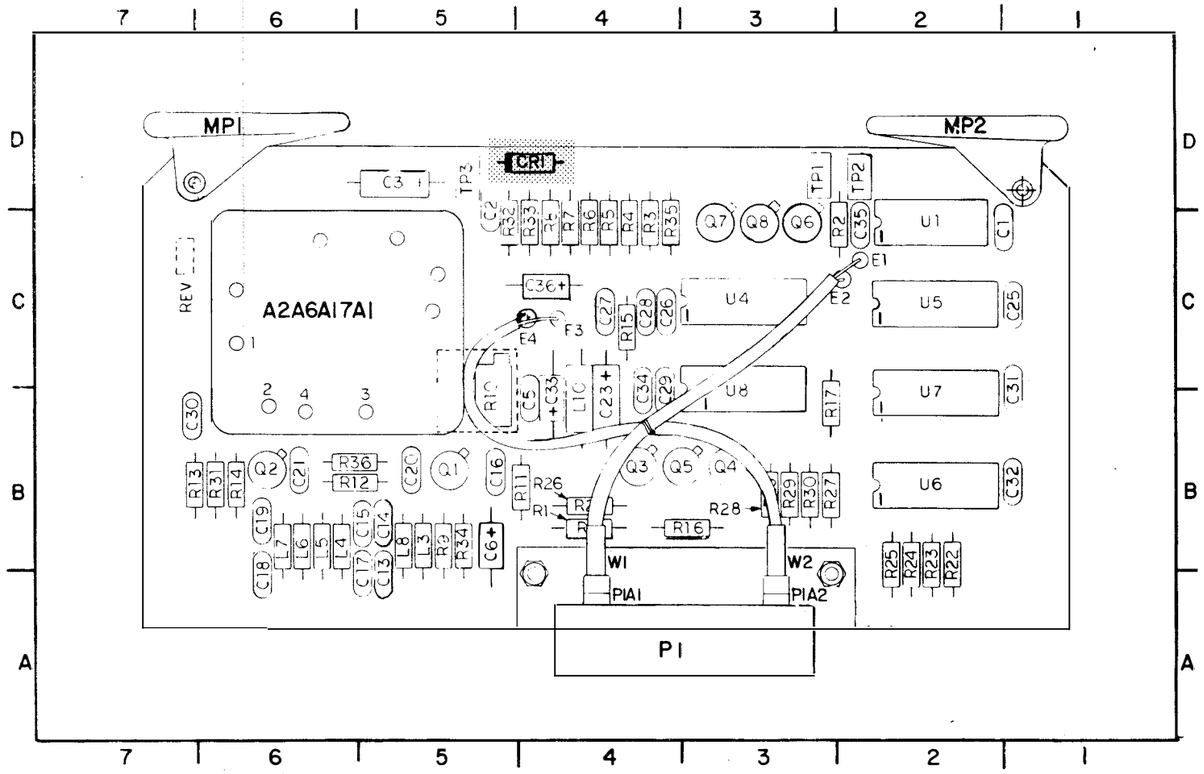


Figure 7-70A. 100 kHz/10 kHz Synthesizer Subassembly A2A6A17, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A18C1	4B
C2	4B
C3	4C
C4	4D
C5	4C
C6	2C
C7	1C
C8	1B
C9	5C
C10	3D
C11	2D
C12	4B
C13	5B
** E1	4B
** E2	4B
** E3	4B
** E4	4C
L1	5B
MP1	6D
MP2	1D
P1	3A, 4A, 5A
P1A1	4B
P1A2	3B
A2A6A18Q1	5B
Q2	5B
Q3	5B
Q4	5B
Q5	6B
Q6	6B
Q7	6B
Q8	6B
R1	5A
R2	5A
R3	5C
R4	5A
R5	5A
R6	5C
R7	6A
R8	6A
R9	6C
R10	6A
R11	6A
R12	6C
R13	4B
R14	6B
R15	6C
A2A6A18R16	5B
R17	5C
R18	3B
R19	3B
R20	3C
R21	3C
R22	2C
R23	2C
R24	3B
R25	3B
R26	1A
TP1	3D
TP2	4D
U1	4B
U2	4C
U3	5D
U4	4C
U5	2C
U6	1C
U7	1B
U8	6C
U9	3C
U10	2C
W1	4B, 4C
W2	3B

** WIRING TERMINATION - FOR REFERENCE ONLY.

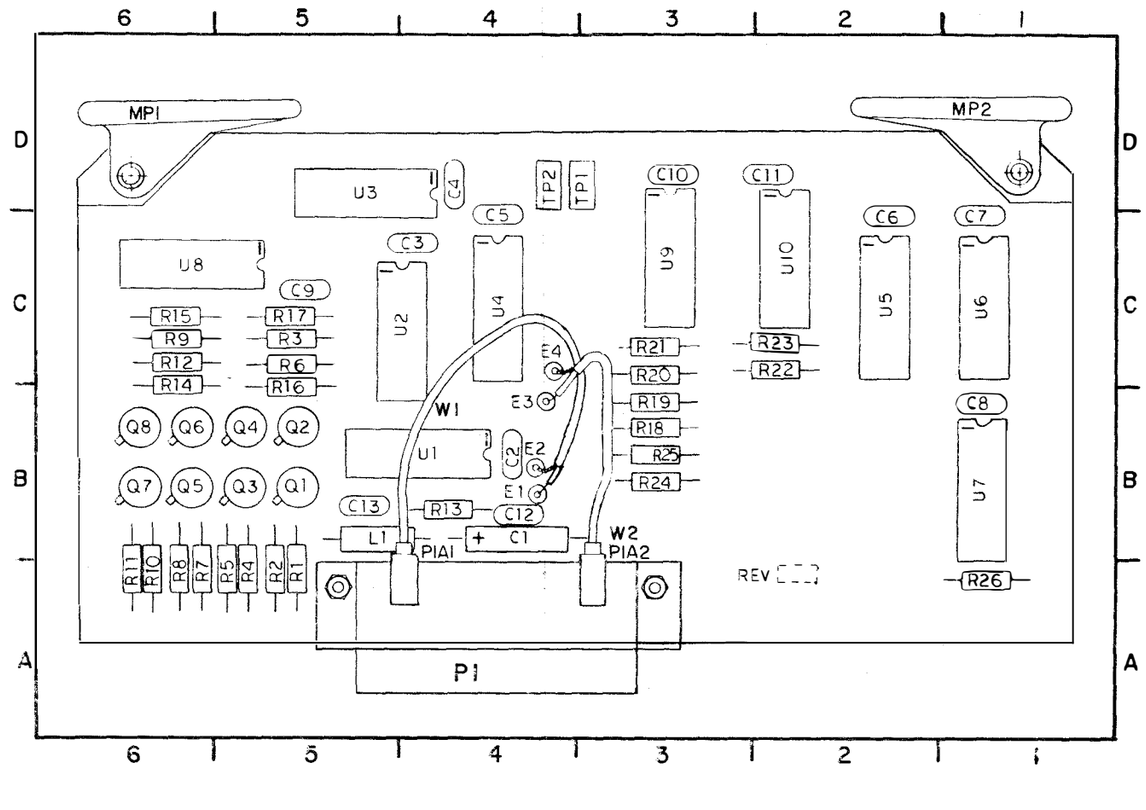


Figure 7-71. 1 kHz/100 Hz Synthesizer Subassembly (No. 1) A2A6A18, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A12C1	1C
C2	5B
C3	4B
C4	6C
C5	7A
C6	6C
C7	6C
C8	7C
C9	6C
C10	6C
C11	5C
C12	4C
C13	*
C14	1B
** E1	6B
** E2	6B
** E3	6B
** E4	6B
** E5	5D
** E6	5C
** E7	2C
** E8	2C
L1	2B
L2 thru L5	*
A2A6A12L6	5C
L7	5C
L8	5C
L9	5C
L10	4C
L11	*
L12	*
L13	2C
MP1	6D
MP2	2D
P1	2A, 3A
P1A1	3B
P1A2	3B
P1A3	3B
P1A4	2B
Q1	6B
Q2	5B
Q3	6B
R1	6B
R2	5B
R3	***
R4	6B
R5	5B
R6	5B
R7	5B
A2A6A12R8	5B
R9	4B
R10	4B
R11	5C
R12	5C
R13	6C
R14	5C
R15	5C
R16	5D
R17	*
R18	2B
R19	6B
TP1	6D
TP2	5C
TP3	5C
U1	7B
U2	6C
U3	7C
W1	4B, 5C
W2	3B, 2C
W3	3B, 5B
W4	2B, 5B
A2A6A12A1 (Potted)	2C, 3C

* Not Used.
** Wiring termination - for reference only.
*** No usage preferred.

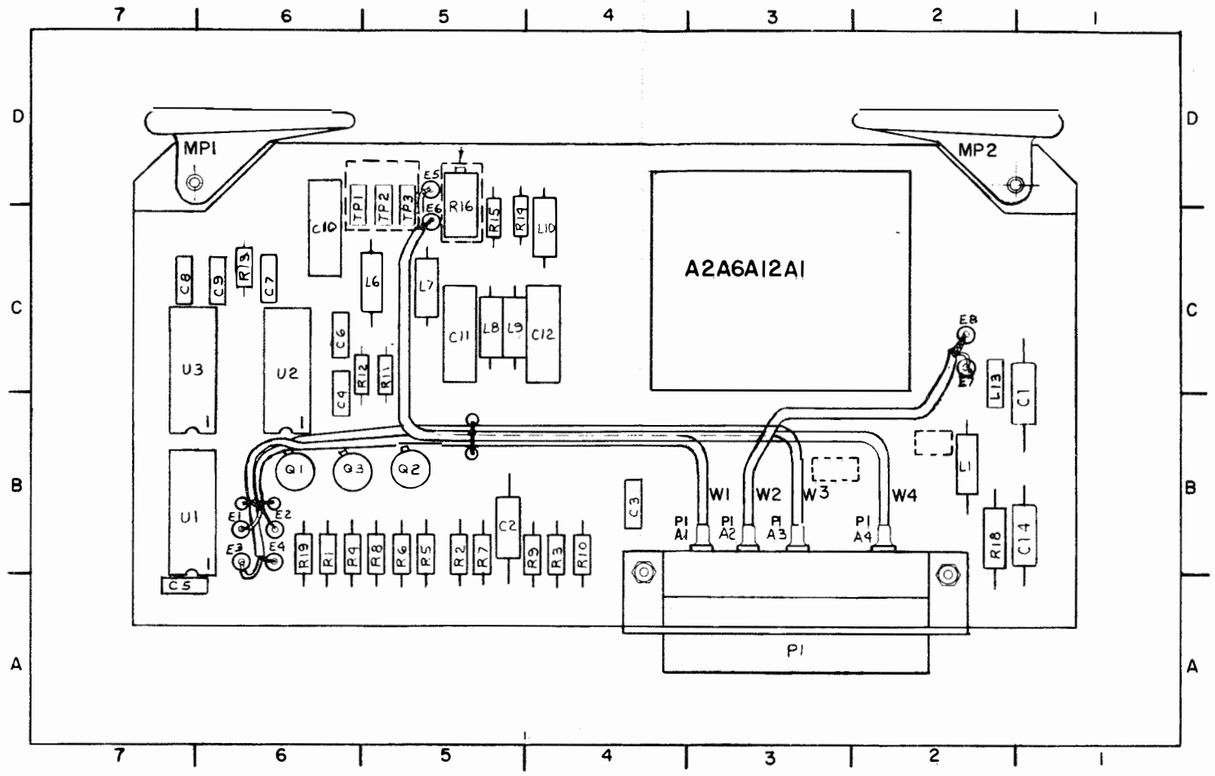


Figure 7-72. 1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A12C1	1C	A2A6A12L6	5C	A2A6A12R8	5B
C2	5B	L7	5C	R9	4B
C3	4B	L8	5C	R10	4B
C4	6C	L9	5C	R11	5C
C5	7A	L10	4C	R12	5C
C6	6C	L11	*	R13	6C
C7	6C	L12	*	R14	5C
C8	7C	L13	2C	R15	5C
C9	6C	MP1	6D	R16	5D
C10	6C	MP2	2D	R17	*
C11	5C	P1	2A,3A	R18	2B
C12	**4C**	P1A1	3B	R19	6B
C13	*	P1A2	3B	TP1	6D
C14	**1B**	P1A3	3B	TP2	5C
C15	**C2** ■	P1A4	2B	TP3	5C
** **E1**	**6B**	Q1	6B	U1	7B
** **E2**	**6B**	Q2	5B	U2	6C
** **E3**	**6B**	Q3	6B	U3	7C
** **E4**	**6B**	R1	6B	W1	4B,5C
** **E5**	**5D**	R2	5B	W2	3B,2C
** **E6**	**5C**	R3	***	W3	3B,5B
** **E7**	**2C**	R4	6B	W4	2B,5B
** **E8**	**2C**	R5	5B	A2A6A12A1 (Potted)	2C,3C
L1	**2B**	R6	5B		
L2 thru L5		R7	5B		

* Not Used.
** Wiring termination - for reference only.
*** No usage preferred.

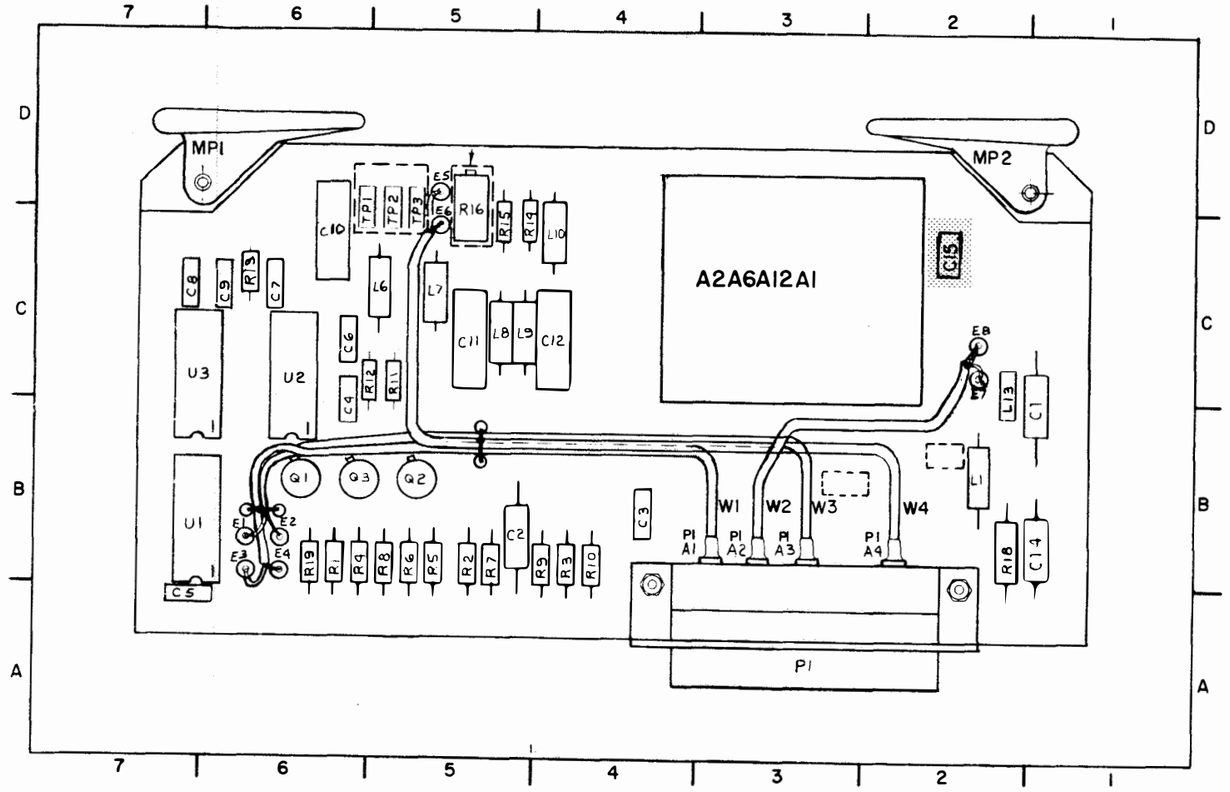
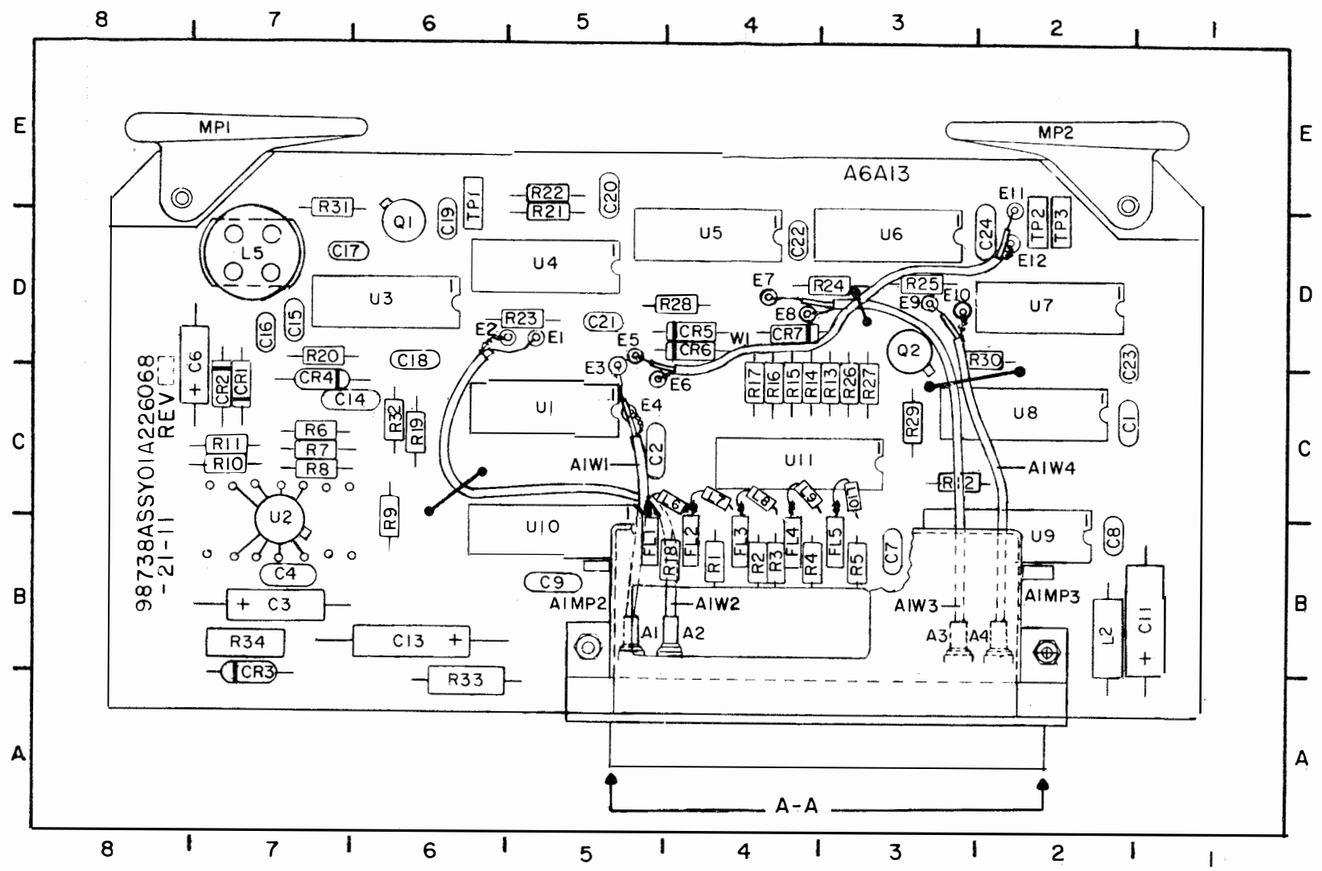


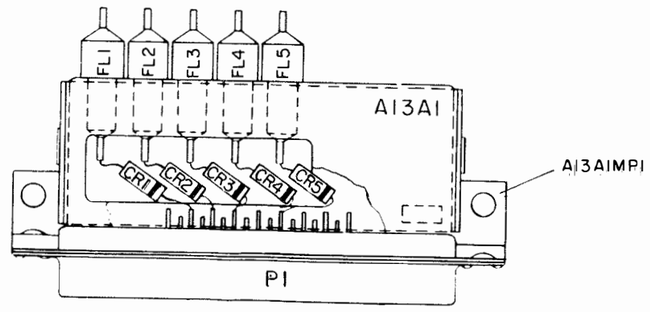
Figure 7-72A. 1 kHz/100 Hz Synthesizer Subassembly (No. 2) A2A6A12, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A13C1	2C	A2A6A13L1	*	A2A6A13R30	2D
C2	4C	L2	2B	R31	4D
C3	7B	L3	*	R32	6C
C4	7B	L4	*	R33	6A
C5	*	L5	7D	R34	7B
C6	8D	L6	4B	TP1	6D
C7	3B	L7	4B	TP2	2D
C8	2B	L8	4B	TP3	2D
C9	5B	L9	4B	U1	5C
C10	*	L10	3B	U2	7B
C11	1B	MP1	7E	U3	6D
C12	*	MP2	2E	U4	5D
C13	6B	Q1	6D	U5	4D
C14	7C	Q2	3D	U6	3D
C15	7D	R1	4B	U7	2D
C16	7D	R2	4B	U8	2C
C17	7D	R3	4B	U9	2B
C18	6D	R4	4B	U10	5B
C19	6D	R5	3B	U11	4C
C20	5E	R6	7C	W1	3D, 4D
C21	5D	R7	7C	A2A6A13A1CR1	
C22	4D	R8	7C	thru	**
C23	2D	R9	6B	CR5	
C24	2D	R10	7C	FL1	**
CR1	7C	R11	7C	FL2	**
CR2	7C	R12	3C	FL3	**
CR3	7B	R13	3C	FL4	**
CR4	7C	R14	3C	FL5	**
CR5	4D	R15	4C	MP1	**
CR6	4D	R16	4C	MP2	5B
CR7	4D	R17	4C	MP3	2B
*** E1	5D	R18	4B	P1	**
*** E2	5D	R19	6C	P1A1	5B
*** E3	5C	R20	7D	P1A2	4B
*** E4	5C	R21	5D	P1A3	3B
*** E5	5D	R22	5E	P1A4	2B
*** E6	5C	R23	5D	W1	5B, 5C
*** E7	4D	R24	3D	W2	4B, 5C
*** E8	4D	R25	3D	W3	3B, 3C
*** E9	3D	R26	3D	W4	2B, 2C
*** E10	3D	R27	3D		
** E11	2E	R28	4D		
** E12	2B	R29	3C		

* NOT USED.
** SEE VIEW AA.
*** WIRING TERMINATION - FOR REFERENCE ONLY.





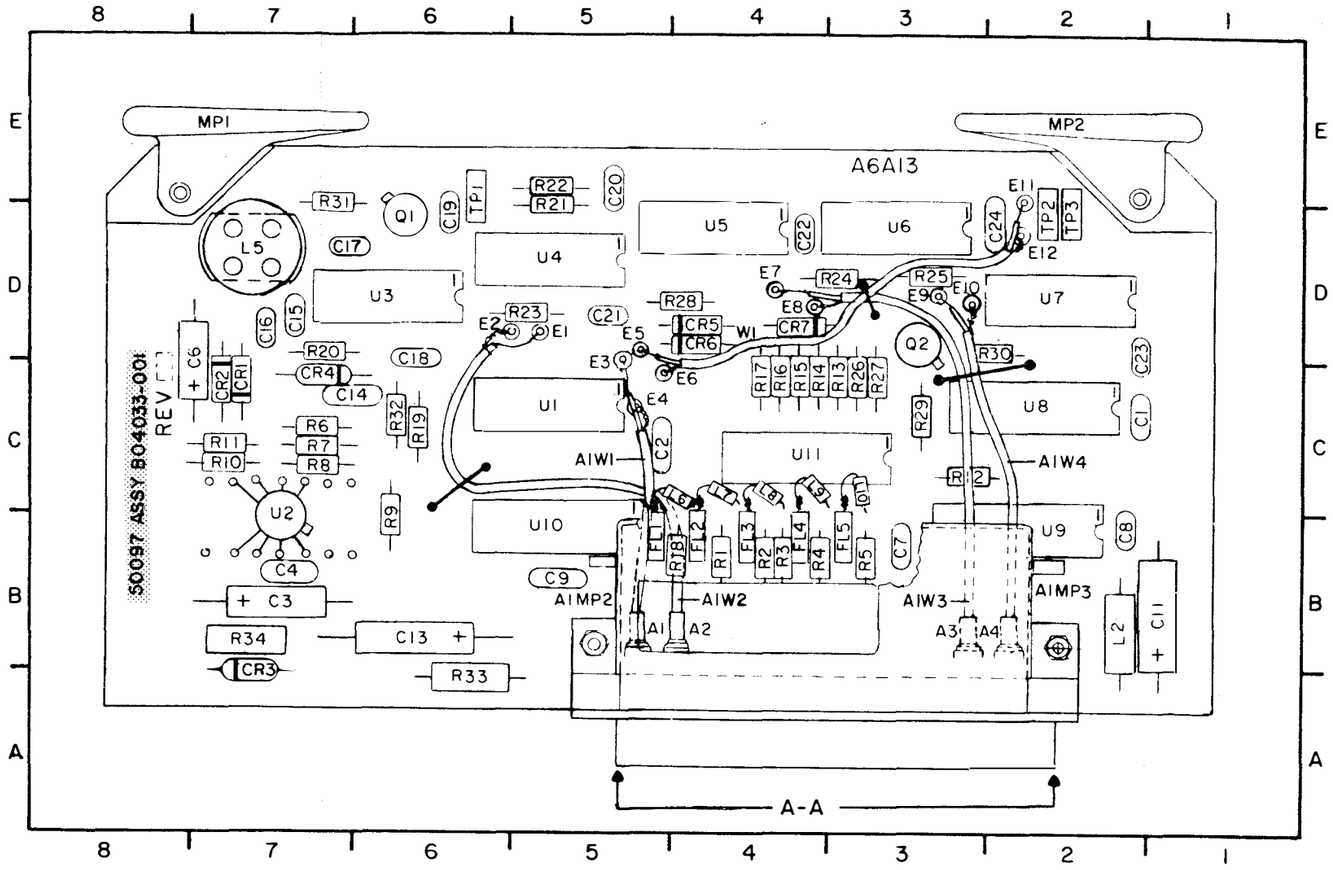
VIEW A - A

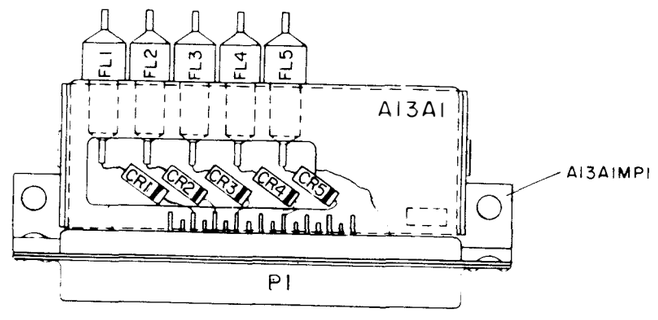
Figure 7-73. 10 MHz/1 MHz Synthesizer Subassembly A2A6A13, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A13C1	2C	A2A6A13L1	*	A2A6A13R30	2D
C2	4C	L2	2B	R31	4D
C3	7B	L3	*	R32	6C
C4	7B	L4	*	R33	6A
C5	*	L5	7D	R34	7B
C6	8D	L6	4B	TP1	6D
C7	3B	L7	4B	TP2	2D
C8	2B	L8	4B	TP3	2D
C9	5B	L9	4B	U1	5C
C10	*	L10	3B	U2	7B
C11	1B	MP1	7E	U3	6D
C12	*	MP2	2E	U4	5D
C13	6B	Q1	6D	U5	4D
C14	7C	Q2	3D	U6	3D
C15	7D	R1	4B	U7	2D
C16	7D	R2	4B	U8	2C
C17	7D	R3	4B	U9	2B
C18	6D	R4	4B	U10	5B
C19	6D	R5	3B	U11	4C
C20	5E	R6	7C	W1	3D,4D
C21	5D	R7	7C	A2A6A13A1CR1	
C22	4D	R8	7C	thru	**
C23	2D	R9	6B	CR5	
C24	2D	R10	7C	FL1	**
CR1	7C	R11	7C	FL2	**
CR2	7C	R12	3C	FL3	**
CR3	7B	R13	3C	FL4	**
CR4	7C	R14	3C	FL5	**
CR5	4D	R15	4C	MP1	**
CR6	4D	R16	4C	MP2	5B
CR7	4D	R17	4C	MP3	2B
*** E1	5D	R18	4B	P1	**
*** E2	5D	R19	6C	P1A1	5B
*** E3	5C	R20	7D	P1A2	4B
*** E4	5C	R21	5D	P1A3	3B
*** E5	5D	R22	5E	P1A4	2B
*** E6	5C	R23	5D	W1	5B,5C
*** E7	4D	R24	3D	W2	4B,5C
*** E8	4D	R25	3D	W3	3B,3C
*** E9	3D	R26	3D	W4	2B,2C
*** E10	3D	R27	3D		
** E11	2E	R28	4D		
** E12	2B	R29	3C		

* NOT USED.
** SEE VIEW AA.
*** WIRING TERMINATION - FOR REFERENCE ONLY.





VIEW A-A

Figure 7-73A. 10 MHz/1 MHz Synthesizer Subassembly A2A6A13, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A14C1	5B
C2	5B
C3	6C
C4	5C
C5	6C
C6	5C
C7	5C
C8	5D
C9	6B
C10	4C
C11	4C
C12	4B
C13	3C
C14	3B
C15	3C
C16	3C
C17	3C
C18	4B
C19	2B
C20	1B
C21	1C
C22	2C
C23	1C
C24	2C
C25	2C
C26	1D
C27	1B
C28	3B
C29	3D
*E1	5B
*E2	4C
*E3	3D
*E4	2B
*E5	5B
*E6	4D
*E7	2C
*E8	2B
*E9	4C
*E10	3D
*E11	4D
*E12	2B
*E13	5B
*A2A6A14E14	2B
*E15	5B
*E16	2C
L1	6B
L2	6C
L3	6C
L4	6C
L5	5C
L6	6C
L7	4C
L8	3C
L9	3C
L10	3C
L11	3C
L12	3C
L13	1B
L14	1C
L15	1C
L16	1C
L17	2C
L18	1C
L19	4B
MP1	6D
MP2	1D
MP3	5B
MP4	4C
MP5	1B
P1	3A, 4A
P1A1	4B
P1A2	4B
P1A3	3B
P1A4	3B
Q1	5B
Q2	5B
Q3	5D
Q4	4C
Q5	4C
Q6	2C
Q7	1B
Q8	2B
Q9	2D
R1	5B
A2A6A14R2	6B
R3	6B
R4	6B
R5	5B
R6	5B
R7	5B
R8	5C
R9	6C
R10	5D
R11	4C
R12	4B
R13	4C
R14	4C
R15	4C
R16	4C
R17	4C
R18	4C
R19	3C
R20	3C
R21	2A
R22	2A
R23	1B
R24	1B
R25	2B
R26	2B
R27	2B
R28	2C
R29	1C
R30	2C
R31	3D
TP1	5D
TP2	4D
TP3	3D
TP4	4D
TP5	3D
TP6	2D
TP7	2D
W1	4B, 5B
W2	4B, 4C
W3	2B, 3B
W4	3B, 3C
W5	2B, 2C
W6	5B, 5C

* WIRING TERMINATION - FOR REFERENCE ONLY.

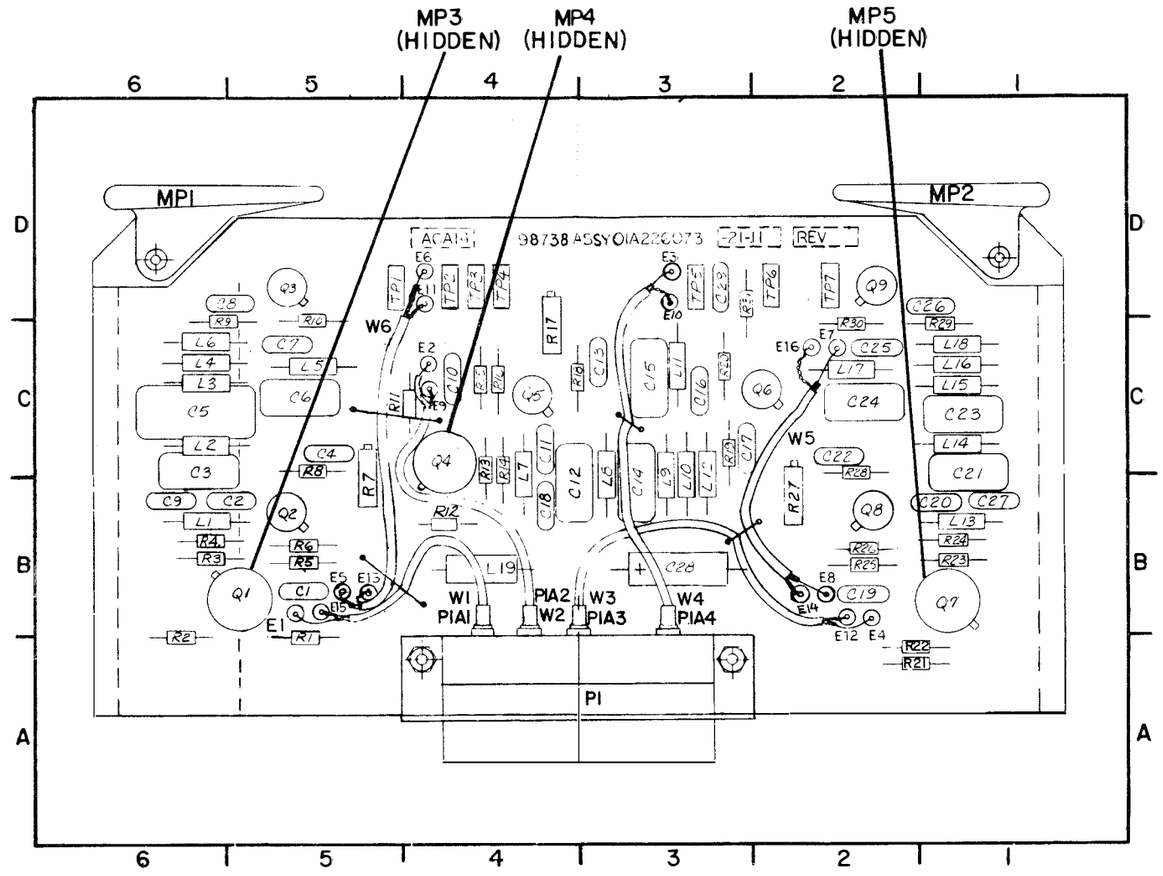


Figure 7-74. 10 MHz/1 MHz Filter Subassembly A2A6A14, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A14C1	5B	* A2A6A14E14	2B	A2A6A14R2	6B
C2	5B	* E15	5B	R3	6B
C3	6C	* E16	2C	R4	6B
C4	5C	L1	6B	R5	5B
C5	6C	L2	6C	R6	5B
C6	5C	L3	6C	R7	5B
C7	5C	L4	6C	R8	5C
C8	5D	L5	5C	R9	6C
C9	6B	L6	6C	R10	5D
C10	4C	L7	4C	R11	4C
C11	4C	L8	3C	R12	4B
C12	4B	L9	3C	R13	4C
C13	3C	L10	3C	R14	4C
C14	3B	L11	3C	R15	4C
C15	3C	L12	3C	R16	4C
C16	3C	L13	1B	R17	4C
C17	3C	L14	1C	R18	4C
C18	4B	L15	1C	R19	3C
C19	2B	L16	1C	R20	3C
C20	1B	L17	2C	R21	2A
C21	1C	L18	1C	R22	2A
C22	2C	L19	4B	R23	1B
C23	1C	MP1	6D	R24	1B
C24	2C	MP2	1D	R25	2B
C25	2C	MP3	5B	R26	2B
C26	1D	MP4	4C	R27	2B
C27	1B	MP5	1B	R28	2C
C28	3B	P1	3A, 4A	R29	1C
C29	3D	P1A1	4B	R30	2C
* E1	5B	P1A2	4B	R31	3D
* E2	4C	P1A3	3B	TP1	5D
* E3	3D	P1A4	3B	TP2	4D
* E4	2B	Q1	5B	TP3	3D
* E5	5B	Q2	5B	TP4	4D
* E6	4D	Q3	5D	TP5	3D
* E7	2C	Q4	4C	TP6	2D
* E8	2B	Q5	4C	TP7	2D
* E9	4C	Q6	2C	W1	4B, 5B
* E10	3D	Q7	1B	W2	4B, 4C
* E11	4D	Q8	2B	W3	2B, 3B
* E12	2B	Q9	2D	W4	3B, 3C
* E13	5B	R1	5B	W5	2B, 2C
				W6	5B, 5C

* WIRING TERMINATION - FOR REFERENCE ONLY.

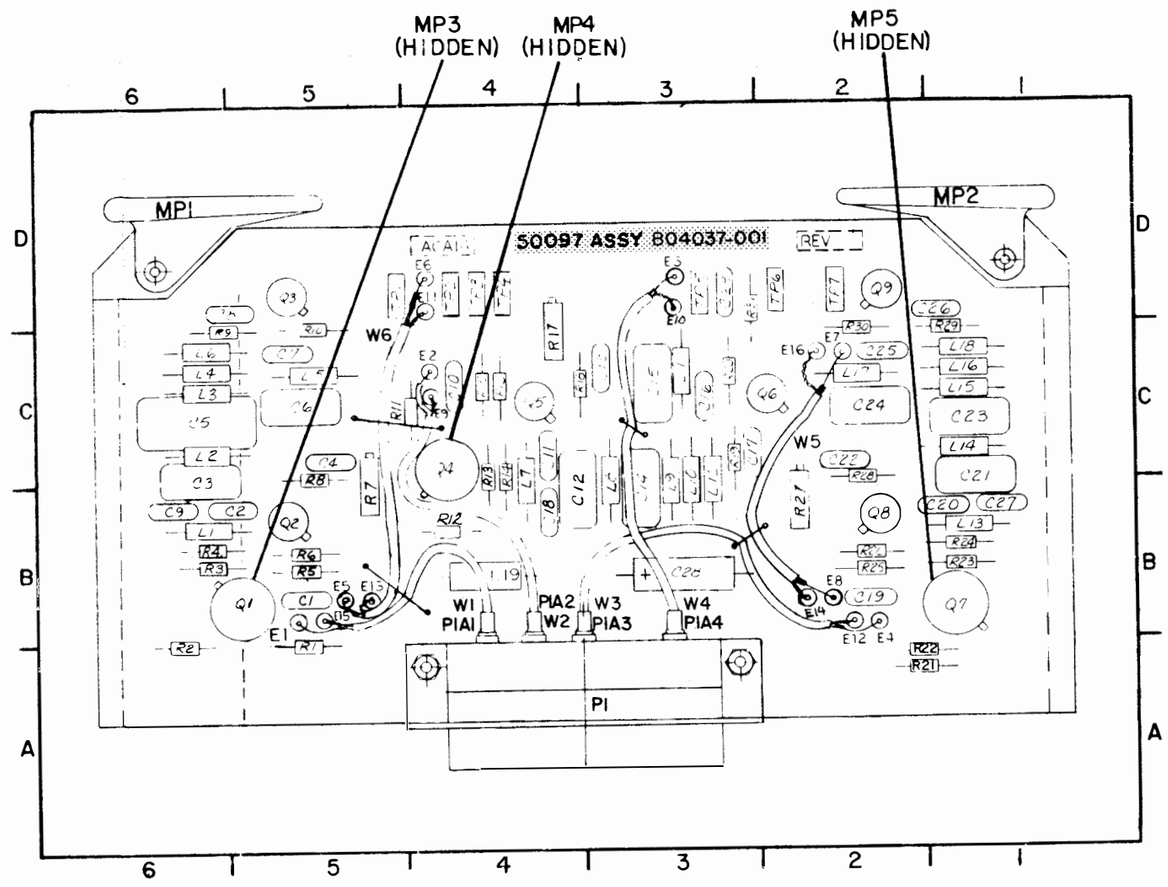


Figure 7-74A. 10 MHz/1 MHz Filter Subassembly A2A6A14, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A6A15C1	5A	A2A6A15E1	6D	A2A6A15R5	6B
C2	6C	E2	2C	R6	5A
C3	5B	E3	*	R7	5B
C4	4A	E4	5D	R8	5B
C5	1B	E5	4D	R9	1C
C6	1B	E6	3D	R10	1C
C7	*	L1	3A, 3B	R11	1D
C8	*	L2	3C, 4C	R12	2B
C9	5C	MP1	3C, 3D	R13	1B
C10	4C	MP2	2C, 2D	R14	2B
C11	2B	MP3	4B	R15	2D
C12	5B	MP4	1B	R16	2B
C13	4C	Q1	5B	TP1	5D
C14	2B	Q2	1B	TP2	2D
C15	4D	Q3	2C, 2D	TP3	*
C16	6B	R1	6B	TP4	6D
CR1	5B	R2	6A	U1	5A
CR2	3C, 3D	R3	6B	U2	5A
		R4	6A		

* Not Used

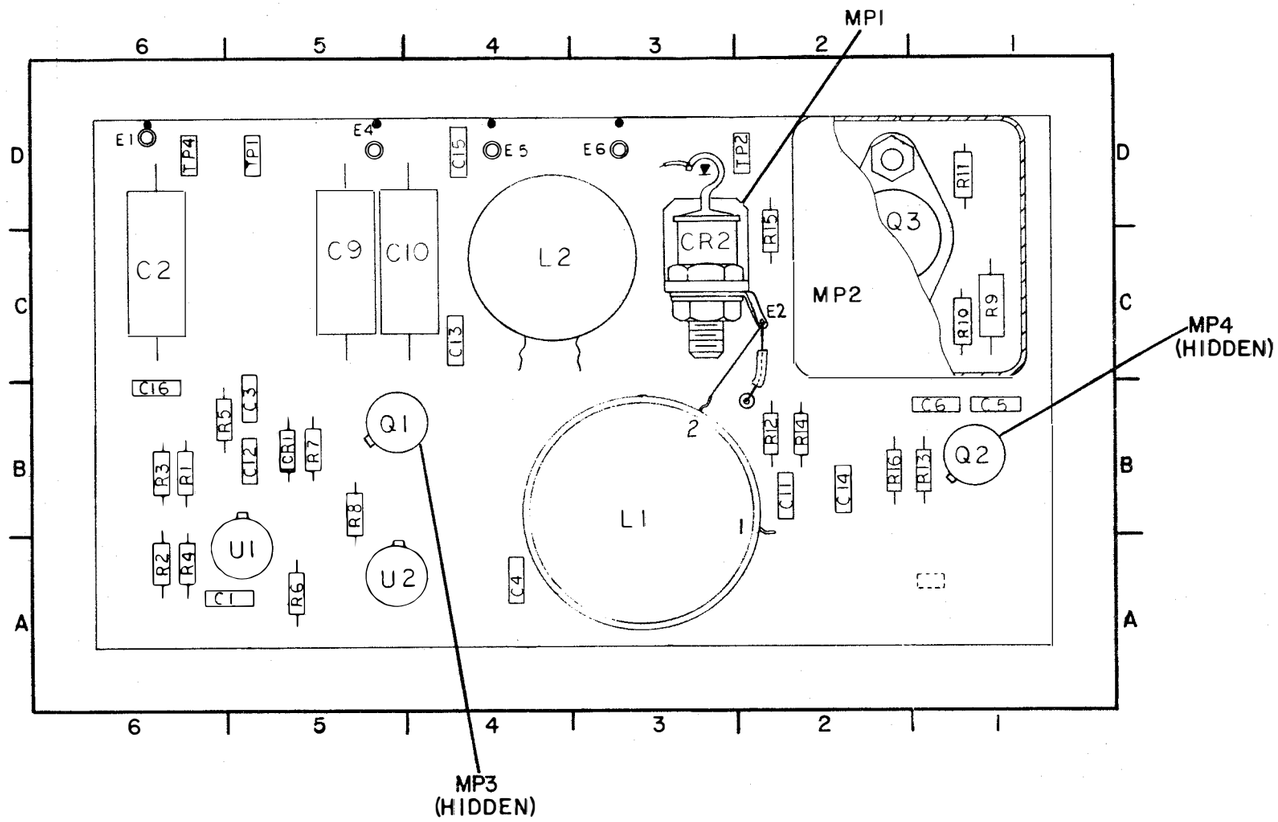


Figure 7-75. Power Supply Subassembly A2A6A15, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A6A15C1	5A
C2	6C
C3	5B
C4	4A
C5	1B
C6	1B
C7	*
C8	*
C9	5C
C10	4C
C11	2B
C12	5B
C13	4C
C14	**2B**
C15	**4D**
C16	**6B**
C17	**4A** ■
CR1	**5B**
CR2	**3C, 3D**
A2A6A15E1	6D
E2	2C
E3	*
E4	5D
E5	4D
E6	3D
L1	3A, 3B
L2	3C, 4C
MP1	3C, 3D
MP2	2C, 2D
MP3	4B
MP4	1B
Q1	5B
Q2	1B
Q3	2C, 2D
R1	6B
R2	6A
R3	6B
R4	6A
A2A6A15R5	6B
R6	5A
R7	5B
R8	5B
R9	1C
R10	1C
R11	1D
R12	2B
R13	1B
R14	2B
R15	2D
R16	2B
TP1	5D
TP2	2D
TP3	*
TP4	6D
U1	5A
U2	5A

* Not Used

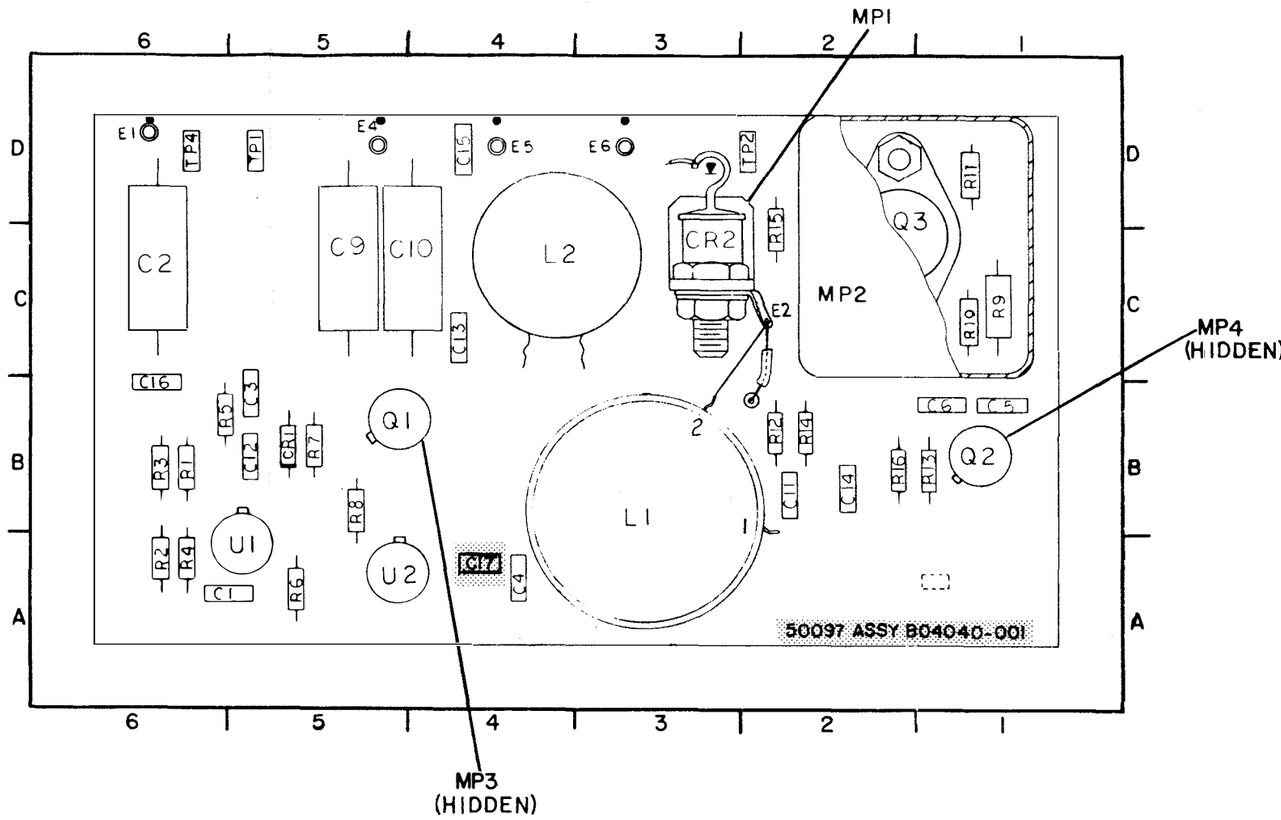


Figure 7-75A. Power Supply Subassembly A2A6A15, Component Locations

PART LOCATION INDEX

REF DES	ZONE	REF DES	ZONE	REF DES	ZONE
A2A8C1	*	A2A3CR15	1C	A2A8MP1	2B
C2	*	CR16	3B	Q1	2B
C3	4D	CR17	3B	Q2	2C
C4	4D	** E1	7A	Q3	2D
C5	*	** E2	6A	Q4	3D
C6	2D	** E3	6A	R1	6D
C7	3E	** E4	6A	R2	6B
CR1	5B	** E5	5A	R3	4C
CR2	5B	** E6	*	R4	4D
CR3	5B	** E7	5A	R5	3A
CR4	4B	** E8	4A	R6	1C
CR5	7D	** E9	4A	R7	3B
CR6	6C	** E10	4A	R8	1D
CR7	6C	** E11	3A	R9	2C
CR8	6C	** E12	3A	R10	1C
CR9	4B	** E13	3A	R11	1D
CR10	3B	** E14	3A	R12	3C
CR11	4B	** E15	2A	R13	2E
CR12	4B	** E16	2A	R14	2E
CR13	5D	** E17	7A	R15	3E
CR14	4E	** E18	3F	R16	1B

* Not used.
** Wiring termination - for reference only.

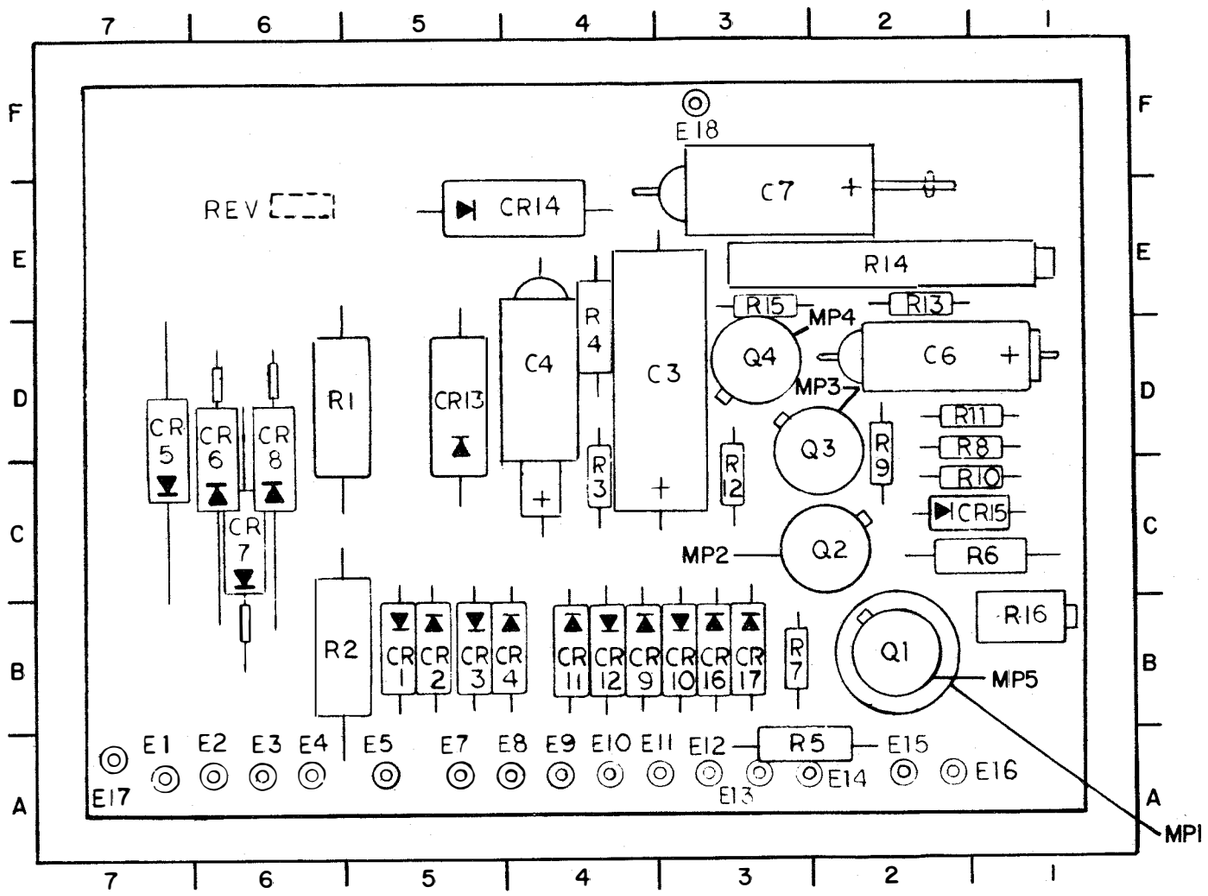


Figure 7-77. Power Supply Assembly A2A8, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A9C1	4B
C2	4C
C3	4D
C4	3E
CR1	4D
CR2	2C
** E1	4B
** E2	4B
** A2A9E3	3B
** E4	3B
** E5	2B
** E6	2B
K1	3C
Q1	2D
Q2	3D
R1	4C
A2A9R2	5C
R3	4E
R4	3C
R5	1D
R6	2C
R7	2E
R8	3C
R9	2D
R10	3A

** Wiring termination - for reference only.

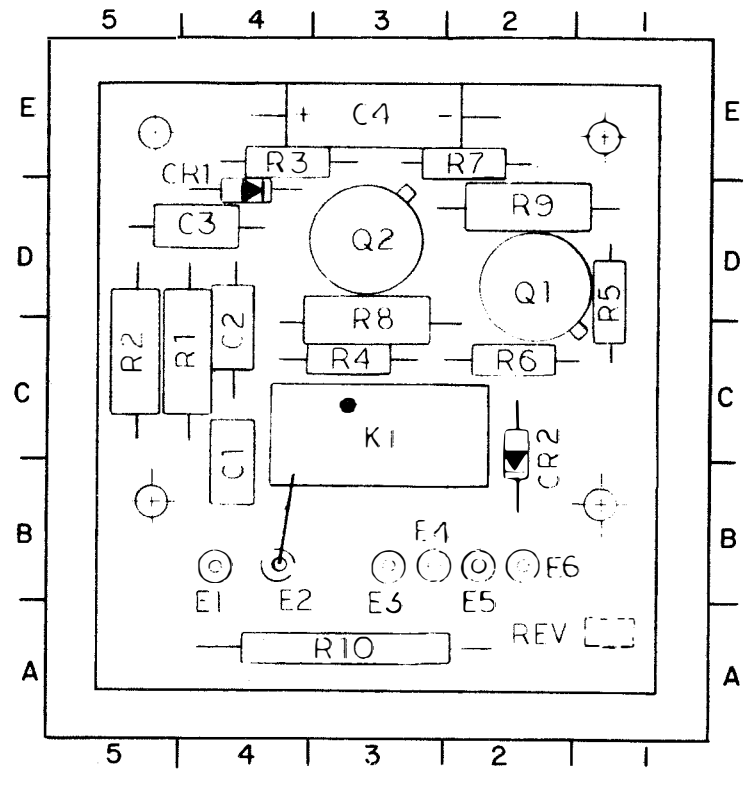


Figure 7-78. Antenna Overload Assembly A2A9, Component Locations

PART LOCATION INDEX

REF DES	ZONE
A2A12C1	3J
C2	6F
C3	4H
CR1	2G
CR2	2G
CR3	3G
CR4	2G
CR5	3H
** E1	6H
** E2	6H
** E3	6G
** A2A12E4	6G
** E5	6F
** E6	6F
** E7	6F
** E8	6E
** E9	6E
R1	5J
R2	2D
R3	2F
R4	5J
R5	6G
A2A12R6	5H
R7	3F
R8	3D
R9	3D
R10	3F
R11	2F
R12	2D
R13	2D
R14	2F
S1	4,5A thru F
U1	4G, 5G

** Wiring termination - for reference only.

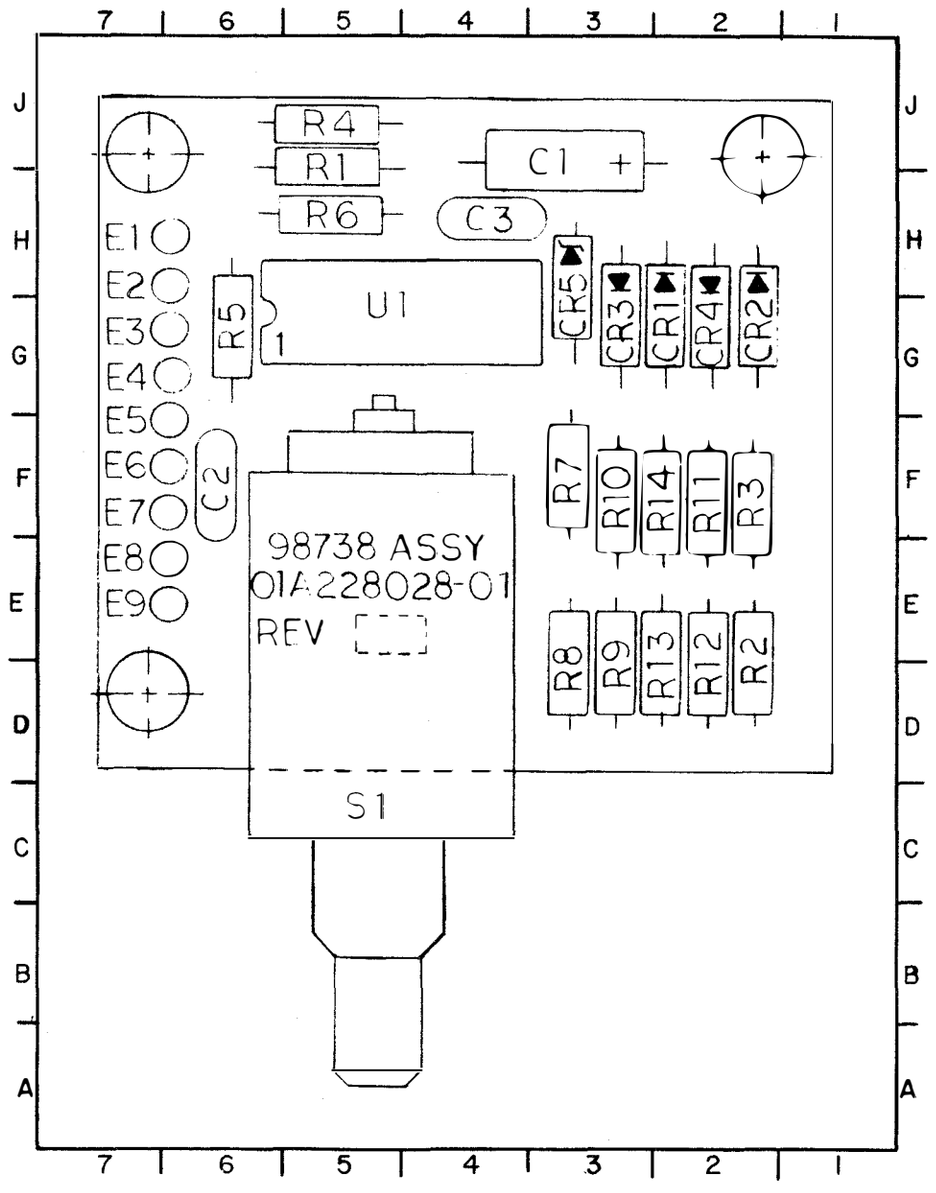


Figure 7-84. Meter Amplifier Assembly A2A12, Component Locations

NOTES:

1. FOR CONTRACT N00039-79-C-0109 SHOCK-MOUNT MT-3114/UR 01A226064-21-11 IS PROVIDED WITH THE R-1051G/URR.

2. CLEARANCE ON EACH SIDE OF THE EQUIPMENT SHALL BE 6 INCHES. SIDE MOVEMENT DUE TO SHOCK MOUNTING MAY REACH A MAXIMUM OF 2.5 INCHES IN EITHER DIRECTION.

3. PROVIDE A MINIMUM OF 2 INCHES BETWEEN EQUIPMENT, WHEN INSTALLED IN CY-4516, FOR AIR CIRCULATION.

4. MOUNTING BRACKET MANUFACTURING DETAILS:

   A. MATERIAL - .125" THICK QQ-S-766, CLASS 302, CONDITION A (CRES)

   B. FINISH: PASSIVATION PER QQ-P-35.

   C. USE EXISTING MOUNTING SCREWS.

   D. MOUNTING BRACKET IS INTENDED TO PROVIDE BONDING AND GROUNDING BETWEEN CABINET AND R-1051G/URR.

5. BONDING AND GROUNDING.

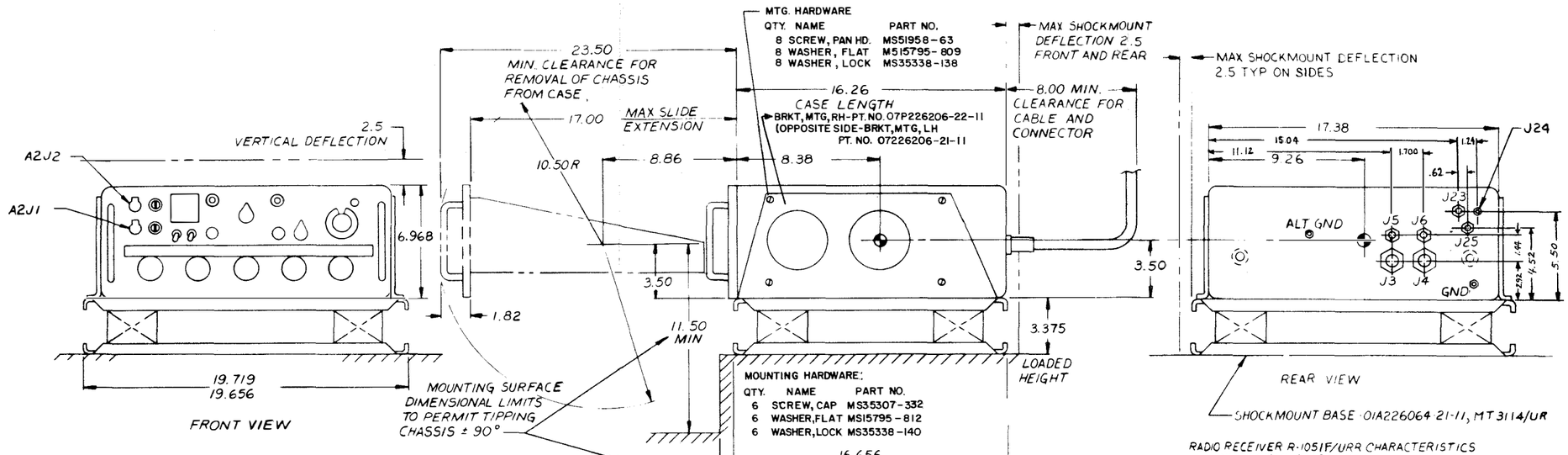
   A. BONDING AND GROUNDING SHALL BE IN ACCORDANCE WITH MIL-STD-1310 EXCEPT THAT GROUND STRAPS SHALL BE INSTALLED AT DIAGONALLY OPPOSITE CORNERS ON THE SIDES OF THE EQUIPMENT. ENSURE THAT GROUNDING SURFACES ARE PREPARED IN ACCORDANCE WITH MIL-STD-1310.

6. ALL DIMENSIONS ARE IN INCHES.

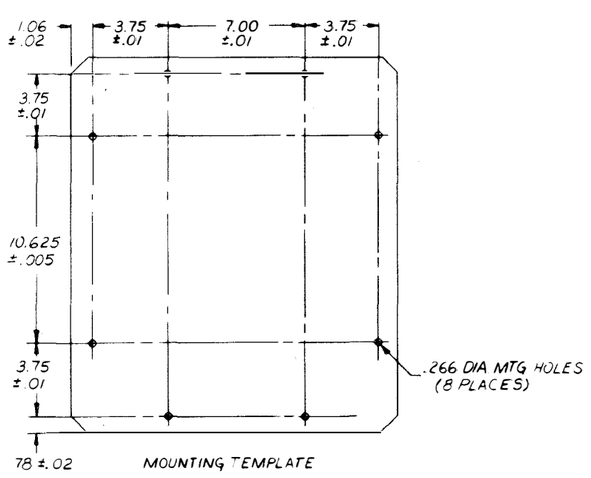
7. THE ENCLOSURE MATERIAL IS ALUMINUM.

8. WHEN R-1051G/URR IS INSTALLED IN CY-4516/UR USE INSTALLATION KIT MK-979/URR.

9. LENGTH OF SCREW HEX HD WAS CALCULATED FOR A MOUNTING SURFACE THICKNESS UP TO 0.25 IN. IF THE MOUNT MT-3114/UR 01A226064-21-11 IS TO BE MOUNTED ON SUPPORT MATERIAL GREATER THAN 0.25 IN., THE INSTALLING ACTIVITY MUST INCREASE THE LENGTH OF THIS ITEM.



CONNECTOR IDENTIFICATION				
R-1051F/URR			MATING CONNECTOR	
PART NUMBER AND REF DESIG.	PIN NO.	FUNCTION	DESCRIPTION	CONNECTOR TYPE
A2J1 M641/12-1	TIP SLEEVE	ISB/LSB AUDIO, 600 OHMS UNBALANCED GROUND	HEAD PHONE ISB/LSB AUDIO	PJ-0558
A2J2 M641/12-1	TIP SLEEVE	ISB/RATT/USB/AM/CW AUDIO 600 OHM UNBAL GROUND	HEAD PHONE ISB/RATT/USB/AM/CW AUDIO	PJ-0558
A1J3 SIMILAR TO MS 3102 EXCEPT JAM NUT MOUNTING	A B C	115 VAC GROUND 115 VAC COMMON	PRIMARY POWER SOURCE (115 VAC SUPPLY)	MS 3106A-16S-5S CABLE CLAMP MS 3057-8A
A1J4 SIMILAR TO MS 3114		NOT CONNECTED		MS 3116F14-12S
A1J5 SIMILAR TO MS 3102 EXCEPT JAM NUT MTG	A B	ISB/RATT/USB/AM/CW AUDIO OUTPUT	AUDIO TO REMOTE SYSTEM	MS 3106A-10SL-4S STRAIN RELIEF BOOT 06845-4032585-0701
A1J6, SIMILAR TO MS 3102 EXCEPT JAM NUT MTG	A B	ISB/LSB AUDIO OUTPUT	AUDIO TO REMOTE SYSTEM	MS 3106A-10SL-4S STRAIN RELIEF BOOT 06845-4032585-0701
A1J23, SIMILAR TO UG-159D/U			ANTENNA SYSTEM 50 OHMS	M39012/01-0005 (N)
A1J24, SIMILAR TO UG-909C-U			INTERNAL 5 MHZ OUTPUT	M39012/16-0001 (SNC)
A1J25, SIMILAR TO UG-159D/U			EXTERNAL 5 MHZ INPUT	M39012/01-0005 (N)

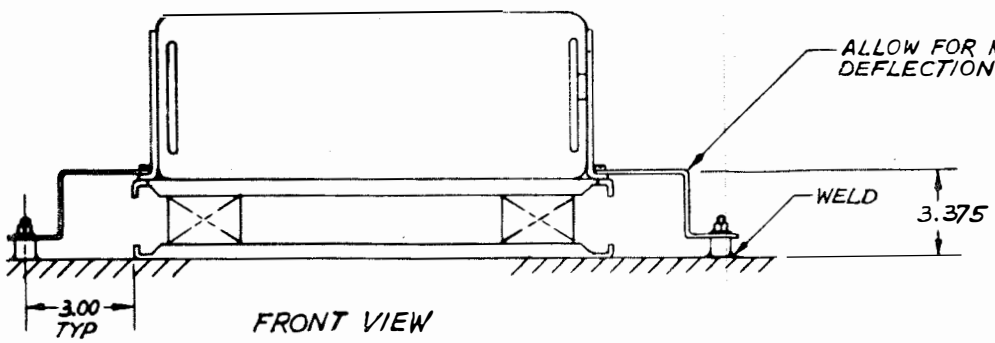


MOUNTING HARDWARE (NOTE 9)

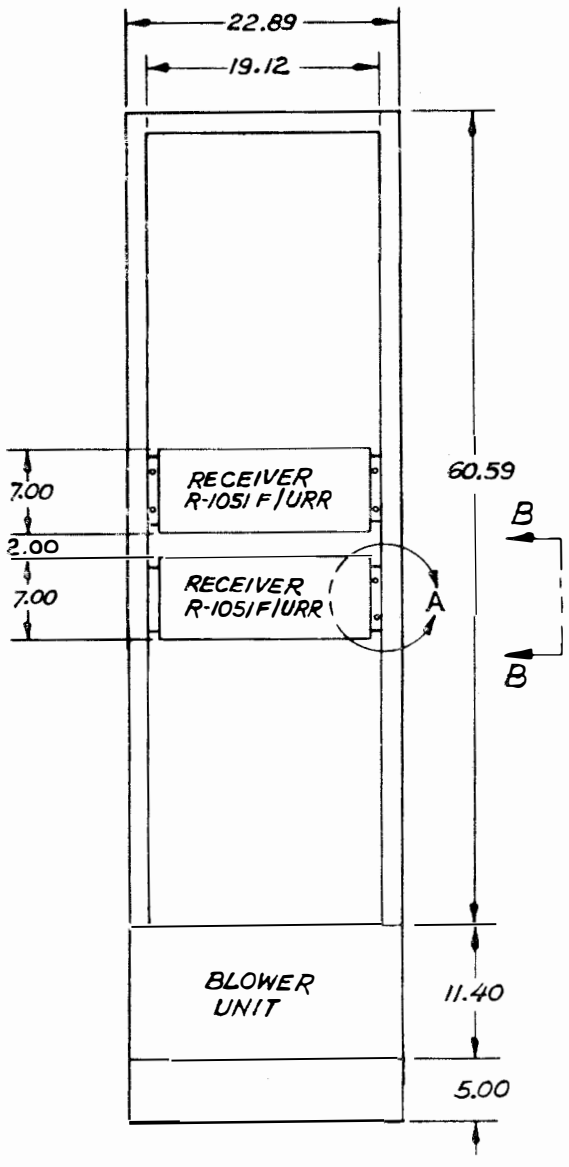
QTY	NAME	PART NO.
8	SCREW, HEX HD	MS-16208-6 (1/4 20UNC-2A)
8	WASHER, FLAT	MS-15795-810
8	WASHER, LOCK	MS-35338-139
8	NUT	MS-35649-2254

RADIO RECEIVER R-1051F/URR CHARACTERISTICS
1. DIMENSIONS (OVERALL)
   a. HEIGHT - 7 IN.
   b. WIDTH - 17.38 IN.
   c. DEPTH - 18.9 IN.
   d. VOLUME - 1.33 CU. FT
2. WEIGHT - 75 LB. MAX.
3. ELECTRICAL
   a. PRIMARY POWER: 115 VAC ±10% 6 AMPS PF 89
      SINGLE PHASE, 48 TO 450 HZ TYPE 1 PWR.
   b. POWER CONSUMPTION: 70 WATTS
   c. AUDIO OUTPUT - 60 MILLIWATTS INTO 600 OHMS
4. ENVIRONMENTAL
   a. TEMPERATURE LIMITS: 0°C TO 50°C
      HUMIDITY - 0 TO 95%
      HEAT DISSIPATION - 55 WATTS 171 BTU
SHOCK MOUNT BASE 01A226064-21-11, MT3114/UR
1. DIMENSIONS (OVERALL)
   a. HEIGHT - 3.62 IN.
   b. WIDTH - 19.71 IN.
   c. DEPTH - 16.66 IN.
   d. VOLUME - 0.81 CU. FT.
2. WEIGHT - 16 LB
3. DETAIL DATA
   a. TYPE MOUNTS: RESILIENT
   b. NUMBER OF MOUNTS: 1
   c. UPPER LOAD RATINGS 75 LBS.
   d. W.T. DISTRIBUTION/MT: 75 LBS.
   e. MANUFACTURER:
      STEWART WARNER ELECTRONICS
      1300 N. KOSTNER
      CHICAGO, ILL. 60651.
CRATED DATA R1051/URR
1. DIMENSIONS (OVERALL)
   a. HEIGHT - 13.25 IN.
   b. WIDTH - 24.00 IN.
   c. DEPTH - 32.00 IN.
   d. VOLUME - 5.2 CU.FT.
e. WEIGHT - 85 LB.
CRATED DATA MT3114/UR
   a. VOLUME - 1.1 CU.FT.
   b. WEIGHT - 23 LB.

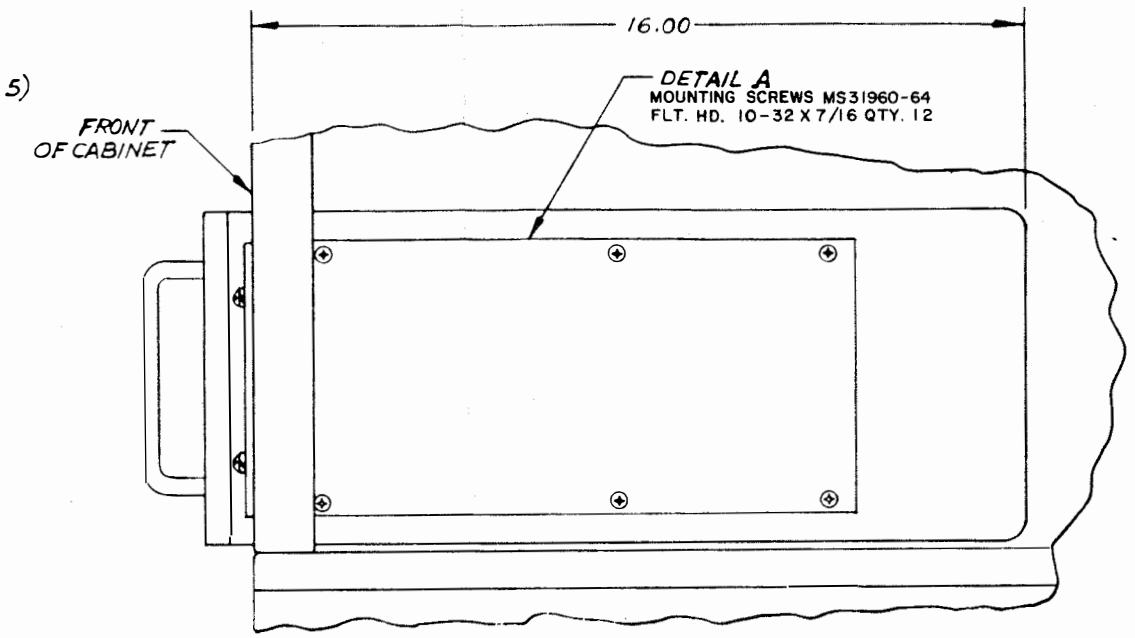
Figure 8-2. Radio Receiver R-1051G/URR, Outline and Mounting Dimensions (Sheet 1 of 2)



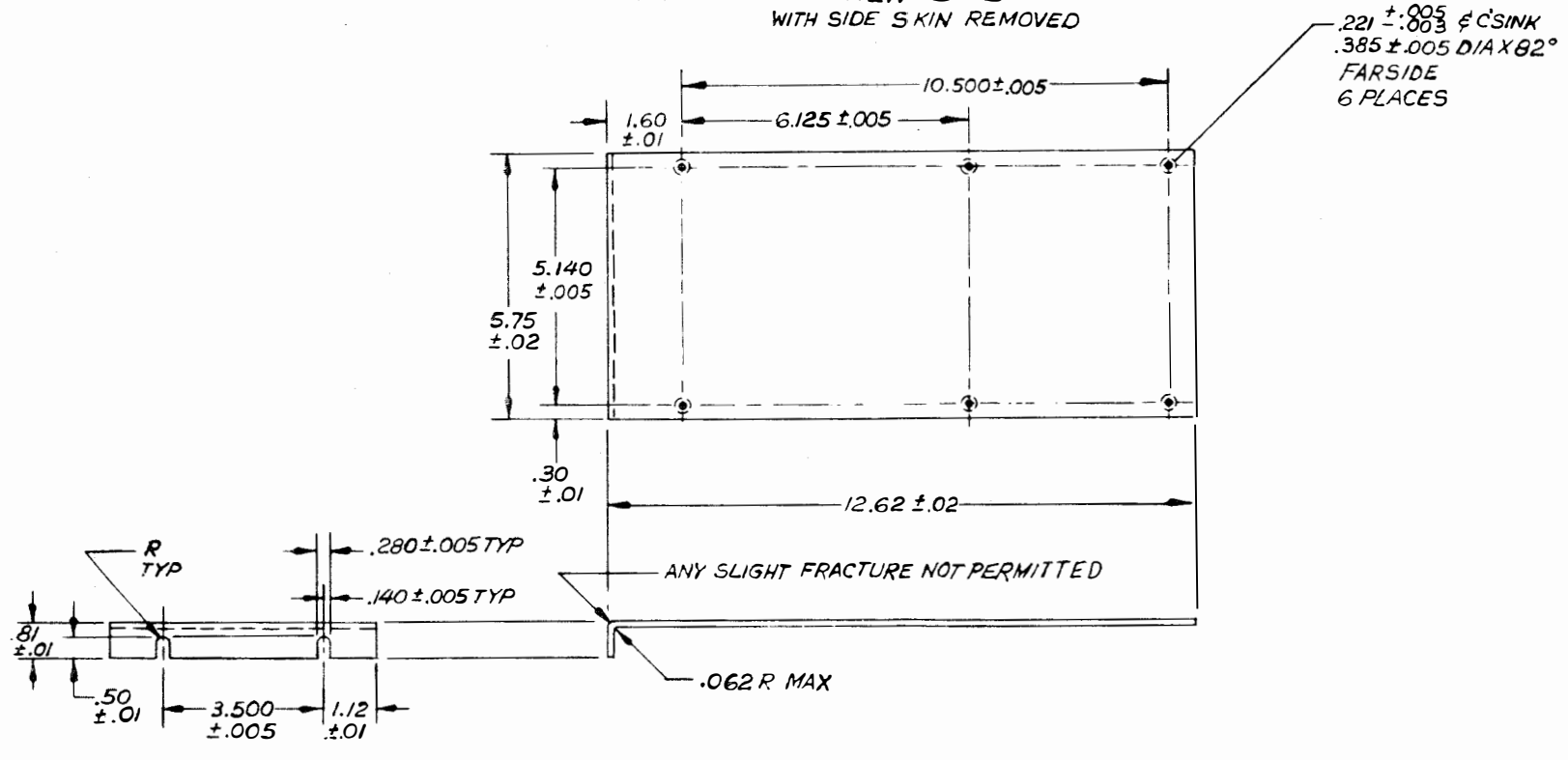
FRONT VIEW
SHOWING METHOD OF BONDING AND GROUNDING



EQUIPMENT CABINET (SEE NOTE 3)



VIEW B - B
WITH SIDE SKIN REMOVED



DETAIL -A
MOUNTING BRACKET FOR RACK MOUNTING
(SEE NOTE 4)
REF. PT. NO. 4010005-0001 (CODE IDENT. 06845)

Figure 8-2. Radio Receiver R-1051G/URR, Outline and Mounting Dimentions (Sheet 2 of 2)

NOTES:

1. LENGTH OF ITEM 13, SCREWS HEX. HD., WAS CALCULATED FOR A MOUNTING SURFACE THICKNESS UP TO 0.025 IN. IF THE MOUNTING BASE 01A226064-21-11 IS TO BE MOUNTED ON SUPPORT MATERIAL GREATER THAN 0.25 IN., THE INSTALLING ACTIVITY MUST INCREASE THE LENGTH OF THIS ITEM.

2. POWER CABLE IS TO BE TNW-3; ITS LENGTH SHALL NOT EXCEED 190 FEET.

3. FOR CONTRACT N00039-79-C-0109 SHOCK MOUNT BASE MT3114/UR IS PROVIDED WITH R-1051G/URR.

4. MK979/U MOUNTING KIT IS USED TO INSTALL R-1051G/URR IN CY-4516/S.

ITEM NO.	QUANTITY NSWE	QUANTITY SWE	NOMENCLATURE	PART, TYPE OR MODEL NUMBER	MANUFACTURER'S NAME OR FEDERAL SUPPLY CODE	REMARKS
1		1	RADIO RECEIVER	R-1051G/URR	98738	
2		1	KIT, CONNECTOR MATING CONSISTING OF:	78A226005-21-11	98738	
		2	CONNECTOR PLUG	MS-3106-A-10SL-4S		FOR REMOTE AUDIO
		2	BOOT, STRAIN RELIEF	4032585-0701	06845	
		1	CONNECTOR, PLUG	MS-3106-A-16S-5S		PRIMARY POWER
		1	CABLE CLAMP	MS-3057-8A		
		1	CONNECTOR, COAXIAL	M39012/01-0005		TRANSMISSION LINE SPECIAL APPLICATION
		1	CONNECTOR, PLUG	MS-3116-F-14-12S		
		1	CONNECTOR, COAXIAL	M39012/6-001		
		1	INSTRUCTION SHEET	68P226036		
3	1		KIT, SHOCK MOUNT CONSISTING OF:	01A226007-21-11	98738	USED TO MOUNT R-1051G/URR TO 01A226064-21-11, MT3114/UR
	1		BASE, SHOCK MOUNT	MT-3114/UR		
	1		BRACKET, MOUNTING LEFT	07P226206-21-11		
	1		BRACKET, MOUNTING RIGHT	07P226206-22-11		
	8		SCREW, PAN HD.	MS51958-63 (10-32x1/2)		
	8		WASHER, LOCK	MS35338-138 (.190)		
	8		WASHER, FLAT	MS15795-809 (.250)		
	6		SCREW, CAP	MS35307-332 (5/16x3/4)		
	6		WASHER, FLAT	MS51795-912 (.344)		
	6		WASHER, LOCK	MS35338-140 (5/16)		
4	X		CABLE	TTSU 1-1/2		LENGTH AS REQUIRED FOR REMOTE AUDIO
5	X		COAXIAL CABLE	M17/074-RG213		LENGTH AS REQUIRED TRANSMISSION LINE
6	X		CABLE	TNW-3 (2)		LENGTH AS REQUIRED PRIMARY POWER
7	1		CONNECTOR, COAXIAL	M39012/01-0005		EXTERNAL FREQ. STD. INPUT
8	X		COAXIAL CABLE	RG213/U		EXT. FREQ. STD. INPUT
9	8		SCREW, HEX. HD.	MS16208-6 (1/4-20x7/8)		ITEMS 13 THRU 16 REQUIRED TO INSTALL MOUNTING BASE
10	8		FLAT WASHER	MS15795-810 (.280)		01A226064-21-11 (SEE NOTE 1)
11	8		LOCKWASHER	MS35338-139 (1/4)		
12	8		NUT	MS35649-2254 (1/4-20)		
13	2 12		MOUNTING BRACKET AND SCREW, FLAT HEAD	4010005-0001 MS51960-64 (10-32x7/16)	06845	USED TO MOUNT R-1051G/URR TO CABINET
14	1		MOUNTING KIT	MK-979/U		REF. NOTE 4

Figure 8-3. Radio Receiver R-1051G/URR, Summary List of Installation Materials

CABLE TYPE & SIZE TNW (NOTE 3)	ACTIVE WIRES 3	CABLE DESIGNATION (NOTE 4)
	UNIT A	UNIT B
UNIT NUMBER	UNIT 1	SHIPS POWER
UNIT NAME	RADIO RECEIVER R-1051G/URR	
CABLE CONNECTOR	MS3106A16S5S CLAMP MS3057-8A	DETERMINED BY INSTALLATION ACTIVITY

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J3 PIN A	1	BLACK		115 VAC
B	2	GREEN		GRD
C	3	WHITE		115 VAC GRD

CABLE TYPE & SIZE TTSU-1-1/2	ACTIVE WIRES 2	CABLE DESIGNATION R-RR (1)
	UNIT A	UNIT B
UNIT NUMBER	UNIT 1	NONE
UNIT NAME	RADIO RECEIVER R-1051G/URR	RECEIVER TRANSFER SWITCHBD.
CABLE CONNECTOR	MS3106A10SL4S 4032585-0701 BOOT	NSWE

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J5 PIN A	1	WHITE		AUDIO USB
J5 PIN B	2	BLACK		AUDIO USB
SPARE	3	RED		NOT CONNECTED

CABLE TYPE & SIZE TTSU-1-1/2	ACTIVE WIRES 2	CABLE DESIGNATION R-RR (2)
	UNIT A	UNIT B
UNIT NUMBER	UNIT 1	NONE
UNIT NAME	RADIO RECEIVER, R-1051G/URR	RECEIVER TRANSFER SWITCHBD.
CABLE CONNECTOR	MS3106A10SL4S 4032585-0701 BOOT	NSWE

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J6 PIN A	1	WHITE		AUDIO LSB
J6 PIN B	2	BLACK		AUDIO LSB
SPARE	3	RED		NOT CONNECTED

CABLE TYPE & SIZE RG-213/U	ACTIVE WIRES 1	CABLE DESIGNATION R-RR (3)
	UNIT A	UNIT B
UNIT NUMBER	1	NONE
UNIT NAME	RADIO RECEIVER R-1051G/URR	RADIO FREQUENCY AMPLIFIER
CABLE CONNECTOR	M39012/01-0005	NSWE

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J25				EXTERNAL 5 MHz

CABLE TYPE & SIZE RG-213/U	ACTIVE WIRES 1	CABLE DESIGNATION R-RR (4)
	UNIT A	UNIT B
UNIT NUMBER	1	NONE
UNIT NAME	RADIO RECEIVER R-1051G/URR	ANTENNA FILTER ASSEMBLY
CABLE CONNECTOR	M39012/01-0005	NSWE

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J23				TRANSMISSION LINE

Figure 8-4. Radio Receiver R-1051G/URR, Cable Running Sheets

NOTES FOR FIGURE 8-4

GENERAL NOTES

1. J4 IS PROVIDED FOR SPECIAL USE WITH AUTHORIZED AN/BRT-2 SYSTEM INSTALLATIONS.

2. MAXIMUM ALLOWABLE VOLTAGE DROP IS 11.5 VAC BASED ON 115 VAC AVAILABLE AT SHIP'S POWER PANEL. WHEN POWER PANEL VOLTAGE IS LESS THAN 115 VAC, CABLE VOLTAGE DROP SHALL NOT REDUCE AC VOLTAGE AVAILABLE AT THE R-1051G/URR BELOW 103.5 VAC.

3. POWER CABLE IS TO BE TNW-3; ITS LENGTH SHALL NOT EXCEED 190 FEET.

4. THE NUMBER IN PARENTHESIS IN THE NAVY CABLE DESIGNATIONS ARE FOR REFERENCE ONLY: THE ACTUAL NUMBERS ARE TO BE ASSIGNED BY THE INSTALLING ACTIVITY.

CABLE TYPE & SIZE NOTE 1	ACTIVE WIRES 12	CABLE DESIGNATION NOTE 1
	UNIT A	UNIT B
UNIT NUMBER	UNIT 1	
UNIT NAME	RADIO RECEIVER R-1051G/URR	AS REQUIRED BY INSTALLING ACTIVITY
CABLE CONNECTOR	MS3116F14-12S	

UNIT A TERM. NO.	WIRE NO.	COLOR CODE	UNIT B TERM. NO.	FUNCTION
J4 PIN G	1			SPARE (NOTE 1)
L	2			
K	3			
D	4			
C	5			
A	6			
B	7			
M	8			
H	9		AUX 600 OHM AUDIO OUTPUT	USB/RATT/AM/CW/ISB
J	10			
E	11		AUX 600 OHM AUDIO OUTPUT	LSB/ISB
J4 PIN F	12			