Channel B IF (637-2647-( ))

Rockwell International

instructions

Collins Telecommunications Products Division

Printed in USA

523-0767965-003211
3rd Edition, 1 January 1979

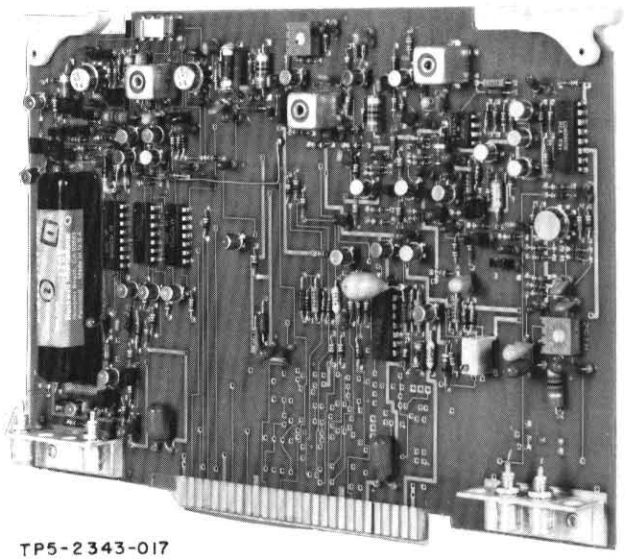
1. DESCRIPTION

Channel B IF 637-2647-( ), shown in figure 1, is a 2-layer planar card with 56-pin, edge-on connector (2 layers, 28 pins each). The channel B if card has subminiax rf connectors for connecting to channel A if output (J1), channel A if input (J4), 450-kHz injection input (J5), and 450-kHz receive if input (J6).

The channel B if card consists of filter control, channel B if, channel B audio detector, and channel B AGC circuits.

The channel B if configuration differences are as follows:

a. 637-2647 -001, FL2 has 2.75-kHz bandwidth (250 to 3000 Hz, LSB).
b. 637-2647-002, FL2 has 3.05-kHz bandwidth (250 to 3300 Hz, LSB).
c. 637-2647-003, FL2 has 3.10-kHz bandwidth (300 to 3400 Hz, LSB).



Channel B IF
Figure 1

2. PRINCIPLES OF OPERATION

2.1 General

The channel B if receives the 450-kHz receive if input, filters the 450-kHz receive if signal, and provides the following:

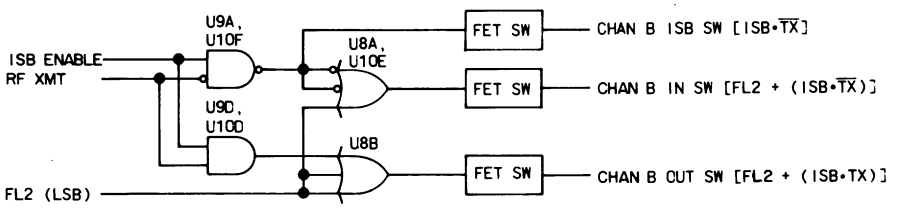
a. 450-kHz receive if output
b. A product-detected channel B SSB audio output
c. AGC control signals

2.2 Bandpass Filter Control Circuits (Refer to figure 2.)

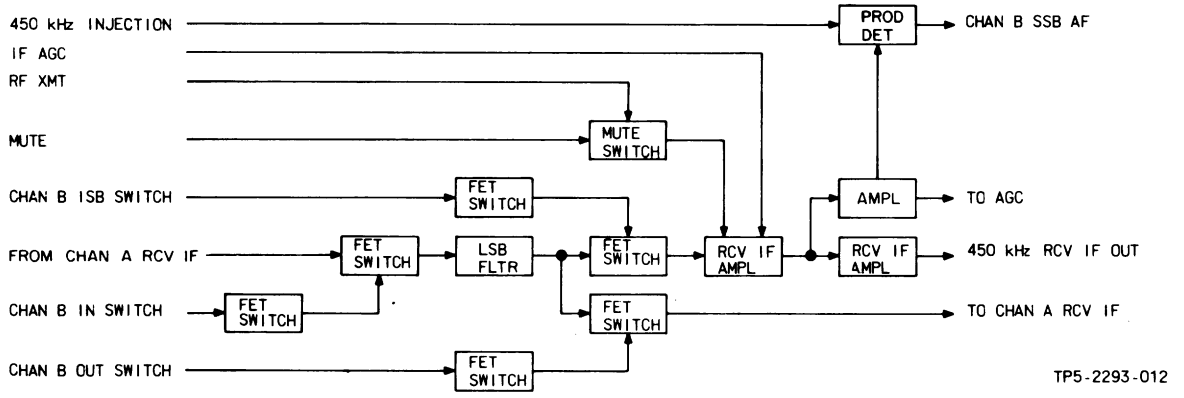
The channel B if provides filter selection for receive if signals. Filter selection is initiated by the mode control signal, bandwidth control signal, and/or rf transmit signal. This means only that these signals are applied to the channel B if card to initiate filter selection; it does not reflect a mode of operation, selection of a bandwidth, or transmission of an rf signal.

FL2 (LSB) is selected when an FL2 (LSB) enable signal or an ISB enable and rf transmit signals are applied to the channel B if card.

NOTICE: This section replaces second edition dated 1 June 1978.



Channel B Filter and IF Control Circuits
Figure 2



Channel B IF Circuits
Figure 3

2.3 Channel B IF Circuits (Refer to figure 3.)

The channel B if card receives 450-kHz receive if and supplies the 450-kHz if frequency to the LSB bandpass filter. After ISB mode or filter FL2 is selected, the 450-kHz if signal is supplied through the LSB bandpass filter. The output of the LSB bandpass filter is supplied as a channel B receive if output or is amplified and then applied as follows:

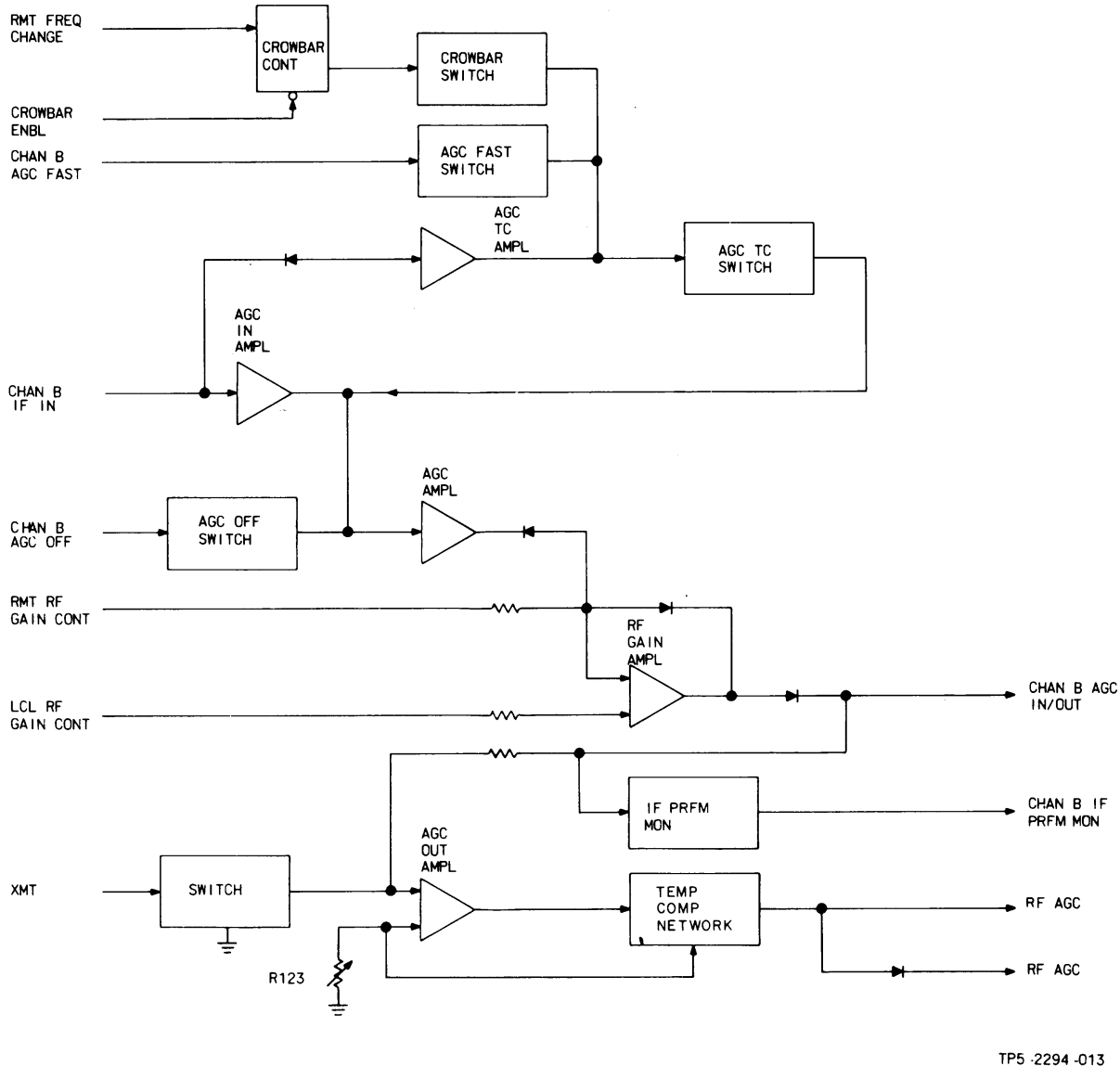
a. To AGC circuits
b. Through a receive if amplifier as an external 450-kHz receive if output
c. Through an amplifier to a channel B SSB audio product detector. The SSB product detector receives the receive if and a 450-kHz injection, and supplies a product-detected SSB audio output.

2.4 AGC Circuits (Refer to figure 4.)

Channel B if is received by the AGC input amplifier. The AGC input amplifier and associated AGC time constant switches develop the AGC level and decay time to be used by the receiver. The AGC level is amplified and applied through rf gain amplifier, and supplied to the if performance monitor and AGC output amplifier. The if AGC and rf AGC signals are developed and supplied to associated attenuator circuits.

With the AGC control in the SLOW position, only the AGC time constant amplifier and AGC time constant switch are enabled and establish a 1.0-second AGC decay time. (The AGC to amplifier and AGC to switch are enabled for all AGC functions.) With the AGC control in the FAST position, the AGC fast switch is enabled, reducing the time constant of the AGC circuits and establishing a 0.1-second AGC decay time. With the AGC control in the OFF position, the output of the AGC input amplifier is disabled and removed from the input of the AGC amplifier.

With the receiver in remote control and a crowbar enable applied, a remote frequency change enables the crowbar switch and reduces the AGC time constant, establishing the AGC decay time at about 2 milliseconds. The crowbar function is used for fast frequency hopping or scanning operation under processor control.
The gain of the rf gain amplifier is controlled by a local rf gain control signal. The dc voltage level



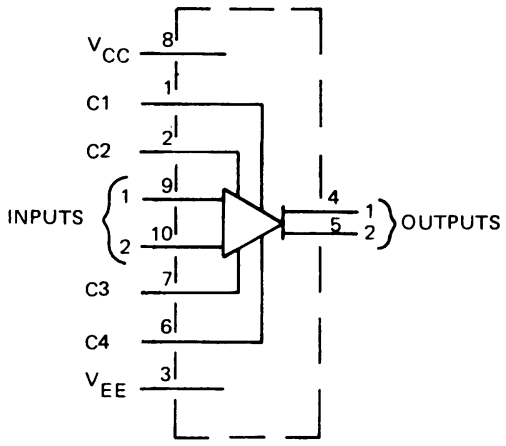
AGC Circuits
Figure 4

applied to the noninverting input of the rf gain amplifier establishes its gain. The remote rf gain control signal establishes the minimum gain output of the rf gain amplifier.

From the rf gain amplifier, the AGC output is supplied to channel B AGC out for use by other cards and to the channel B if performance monitor for channel B AGC indications. The rf gain amplifier output is supplied to AGC output amplifier and through AGC switch to the if/rf AGC outputs. R123 and temperature compensating network are used to keep the if/rf AGC outputs constant throughout the frequency/temperature range.

2.5 Differential Output Operational Amplifier 351-1050-030 (Refer to figure 5.)

The 351-1050-030 is a wide-band general-purpose operational amplifier which features both differential inputs and outputs. Open loop gain is adjustable with external feedback components.



CHARACTERISTICS

SUPPLY VOLTAGE: V_{CC} +8 V DC MAX., V_{EE} −8 V DC MAX.

INPUT DIFF VOLTAGE: ±8 V DC MAX.

INPUT COMMON MODE VOLTAGE: ±3.0 V PEAK

INPUT RESISTANCE: 2.0 M OHM TYPICAL

OUTPUT RESISTANCE: 50 OHM TYPICAL

OPEN LOOP GAIN: SINGLE ENDED– 750 V/V MIN, 1500 V/V TYPICAL; DIFFERENTIAL – 1500 V/V MIN,. 3000 V/V TYPICAL

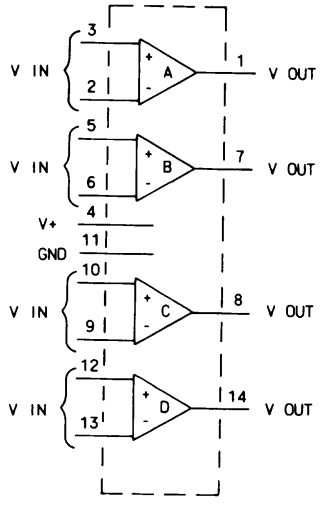
BANDWIDTH: OPEN LOOP–2.0 MHz TYPICAL; CLOSED LOOP –10.0 MHz TYPICAL

TP5-2282-011

Differential Output Operational Amplifier 351-1050-030
Figure 5

2.6 Quad Operational Amplifier 351-1141-030 (Refer to figure 6.)

The 351-1141-030 consists of four independent, high-gain, internally frequency-compensated operational amplifiers that are designed to operate from a single power supply over a wide range of voltages. Common applications include transducer amplifiers, dc gain blocks, and all conventional operational amplifier circuits.



CHARACTERISTICS

SUPPLY VOLTAGE (V+): 32 V DC MAX
INPUT DIFF VOLTAGE: 32 V DC MAX
INPUT COMMON MODE VOLTAGE: V+ (-1.5 V DC)
OUTPUT SHORT CIRCUIT DURATION:
CONTINUOUS ⟨1⟩
VOLTAGE GAIN: 25 MIN

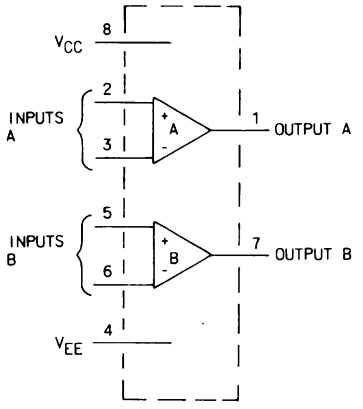
NOTE:
⟨1⟩ SUPPLY VOLTAGE EQUAL TO OR LESS THAN 15 V.

TP5-2289-013

Quad Operational Amplifier 351-1141-030
Figure 6

2.7 Dual Operational Amplifier 351-1071-070 (Refer to figure 7.)

The 351-1071-070 consists of two operational amplifiers in one package, designed for use as summing amplifiers, integrators, or amplifiers with operating characteristics as a function of the external feedback components.

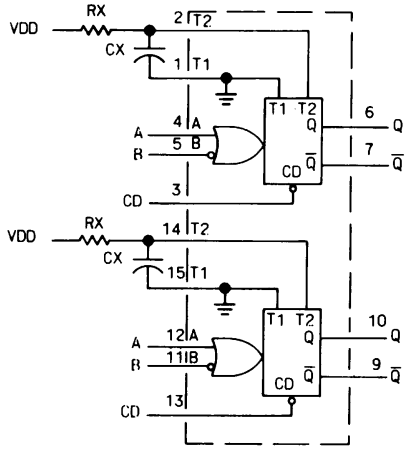


CHARACTERISTICS
SUPPLY VOLTAGE: V_{CC} +18 V DC MAX
V_{EE} -18 V DC MAX
INPUT DIFF VOLTAGE: ±30 V MAX
INPUT COMMON MODE VOLTAGE:
±15 V MAX ⟨1⟩
OUTPUT SHORT CIRCUIT DURATION:
CONTINUOUS ⟨2⟩
INPUT RESISTANCE: 300 kΩ MIN, 2.0 MΩ MAX
OUTPUT RESISTANCE: 75Ω TYPICAL
VOLTAGE GAIN: 15 MIN

NOTES:
⟨1⟩ FOR SUPPLY VOLTAGE LESS THAN ±15.0 V, MAX INPUT VOLTAGE EQUAL TO SUPPLY VOLTAGE.
⟨2⟩ SUPPLY VOLTAGE EQUAL TO OR LESS THAN 15 V.

TP5-2285-013

Dual Operational Amplifier 351-1071-070
Figure 7



NOTE:
RX AND CX ARE EXTERNAL COMPONENTS.

CHARACTERISTICS:
SUPPLY VOLTAGE (VDD): -0 5 TO +18 V DC.
INPUT VOLTAGE: EQUAL TO VDD, MAX.

CHARACTERISTIC		VDD 5.0 V DC	VDD 10.0 V DC	VDD 15.0 V DC
OUTPUT VOLTAGE	"0"	0.05 V DC MAX.	0.05 V DC MAX.	0.05 V DC MAX.
	"1"	4.95 V DC MIN.	9.95 V DC MIN.	14.95 V DC MIN.
INPUT VOLTAGE	"0"	2.25 V DC MAX.	4.50 V DC MAX.	6.75 V DC MAX.
	"1"	2.75 V DC MIN.	5.50 V DC MIN.	8.25 V DC MIN.
EXTERNAL TIMING	RX	1000 Ω MIN	1000 Ω MIN.	1000 Ω MIN.
	CX	NO LIMITS	NO LIMITS	NO LIMITS

TP5-2290-013

Dual Monstable Multivibrator 351-8278-010
Figure 8

2.8 Dual Monostable Multivibrator 351-8278-010 (Refer to figure 8.)

The 351-8278-010 is a dual, retriggerable, resettable monostable multivibrator. It may be triggered from either edge of an input pulse and will produce an accurate output pulse over a wide range of widths, the duration and accuracy of which are determined by the external timing components, C_X and R_X.

2.9 Balanced Modulator-Demodulator 351-0043-020 (Refer to figure 9.)

The 351-0043-020 is designed for use where the output voltage is a product of an input voltage (signal) and a switching function carrier. Typical applications include suppressed carrier and amplitude modulation, synchronous detection, FM detection, phase detection, and chopper applications.

3. TESTING/TROUBLESHOOTING PROCEDURES

3.1 Test Equipment and Power Requirements

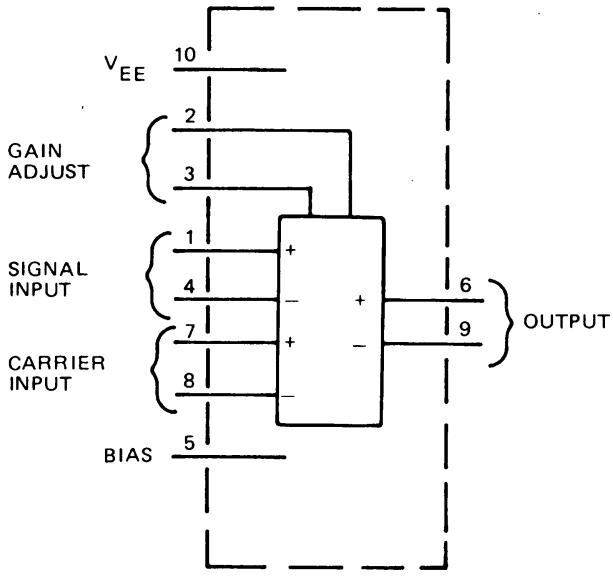
Test equipment and power sources required to test, troubleshoot, and repair the channel B if card are listed in the maintenance section of this instruction book.

3.2 Testing

Test procedures in table 1 check total performance of the channel B if card. These test procedures permit isolation of a fault to a specific component or circuit when the results are used with the schematic to circuit trace the fault.

Note

In emergencies, Channel B IF 637-2647-( ) can be replaced by Channel B IF 635-0902-( ). In this type of repair, use the test procedures given in table 1 to test Channel B IF 635-0902-( ).



CHARACTERISTICS

APPLIED VOLTAGE: 30 V DC MAX PIN–TO–IN.

DIFFERENTIAL INPUT VOLTAGE: ±5 V DC MAX

CARRIER SUPPRESSION: 65 dB TYPICAL AT 0.5 MHz; 50 dB TYPICAL AT 10 MHz.

TRANSADMITTANCE BANDWIDTH:
CARRIER INPUT–300 MHz TYPICAL;
SIGNAL INPUT–80 MHz TYPICAL

SINGLE-ENDED INPUT RESISTANCE (SIGNAL INPUT): 200 k OHM TYPICAL (AT 5.0 MHz)

SINGLE-ENDED INPUT RESISTANCE (SIGNAL INPUT): 40 k OHM TYPICAL (AT 10 MHz)

DIFFERENTIAL OUTPUT VOLTAGE SWING: 8.0 V P–P TYPICAL

TP5-2291-011

Balanced Modulator-Demodulator 351-0043-020
Figure 9

Table 1. Channel B IF, Testing and Troubleshooting Procedures.

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
1. Setup	a. Remove top cover of unit containing the channel B if that is to be tested.		
	b. Remove channel A or channel B if (as noted by particular test step). Install it on an extender card and place it in the unit.		
	c. Set unit LINE SELECTOR switch 115 V.		
	d. Connect unit to 115-V ac power source and set power on.		
	e. Measure dc voltages (on channel B if) between the following pins and ground (TP1, brown):		
	P1-23 and P1-51 P1-27 P1-6	+15 ±1.0 V dc +5 ±0.5 V dc -15 ±1.0 V dc	Check associated power supply.
	Note Unless otherwise specified, all rf signal levels applied at J2, receive if in, are referenced to 50 Ω.		
2. FL2 (LSB) filter and ISB enable	***Note*** Channel B if card extended.		
	a. Set front panel MODE switch to SSB/CW and BANDWIDTH switch to A.		
	b. Measure dc voltage at the following test points to ground (TP1, brown):		
	TP3 (orange) TP4 (yellow)	-9.5 ±1.0 V dc -9.5 ±1.0 V dc	Proceed to step m.
	c. Set front panel BANDWIDTH switch to LSB.		
	d. Measure dc voltage at the following test points to ground:		
	TP3 TP4	NMT 0.5 V dc NMT 0.5 V dc	Proceed to step n.
	e. Apply a +5.0-V dc signal at P1-41.		
	f. Measure dc voltage at the following test points to ground:		
	TP3 TP4	NMT 0.5 V dc -9.5 ±1.0 V dc.	Proceed to step n.
	g. Remove +5.0-V dc signal from P1-41.		
	h. Set front panel MODE switch to ISB.		
	i. Measure dc voltage at the following test points to ground:		
(Cont)	TP2 (red TP3 (orange)	NMT 0.5 V dc -9.5 ±1.0 V dc	Proceed to step o.

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
2. (Cont)	TP4 (yellow) TP5 (green)	NMT 0.5 V dc NMT 0.5 V dc	
	j. Apply a +5.0-V dc signal at P1-41.		
	k. Measure dc voltage at the following test points to ground.		
	TP2 TP3 TP4 TP5	-9.5 ±1.0 V dc NMT 0.5 V dc -9.5 ±1.0 V dc NLT +3.0 V dc	Proceed to step p.
	l. Remove P1-41 +5.0 V dc signal.		
	FL2 (LSB) ENABLE AND ISB ENABLE TESTING COMPLETE		
	TROUBLESHOOTING		
	m. Measure dc voltage at the following pins to ground:		
	P1-42	NMT 0.5 V dc	Check FL2 (LSB) enable input circuit.
	P1-44	NMT 0.5 V dc	Check ISB enable input circuit.
	P1-41	NMT 0.5 V dc	Check rf transmit input circuit.
		If all voltages in step m are normal, check U9, U10, U8, and Q28 (for TP3) or Q27 (for TP4).	
	n. Measure dc voltage at P1-42 to ground.	NLT +3.0 V dc. Check U8 and Q28 (for TP3) or Q27 (for TP4).	Check FL2 (LSB) enable input circuit.
	o. Measure dc voltage at the following pins to ground:		
	P1-42	NMT 0.5 V dc	Check FL2 (LSB) enable input circuit.
	P1-44	NLT +3.0 V dc	Check ISB enable input circuit.
	P1-41	NMT 0.5 V dc	Check rf transmit input circuit.
(Cont)		If all voltages in step o are normal, check U9 and Q30 (for TP2); U9, U10,	

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
2. (Cont)		and U8 (for TP3 or TP4); and U10 (for TP5).	
	p. Measure dc voltage at the following pins to ground:		
	P1-42	NMT 0.5 V dc	Check FL2 (LSB) enable input circuit.
	P1-44	NLT +3.0 V dc	Check ISB enable input circuit.
	P1-41	NLT +3.0 V dc	Check rf transmit input circuit.
		If all voltages in step p are normal, check U9 and Q30 (for TP2); U9, U10, and U8 (for TP3 or TP4); and U10 (for TP5).	
3. 2.75-kHz LSB filter measurement	***Note*** This test applies only to 2.75-kHz LSB filter (526-9956-010). Channel A if card extended.		
	a. Set front panel MODE switch to SSB/CW and BANDWIDTH switch to LSB.		
	b. Set AGC switch to OFF.		
	c. Set receive input to channel A if (A8J2) at 9.4517 MHz.		
	d. Using an rf voltmeter, measure rf voltage at J1 (A8J4). Adjust receive input level and frequency for a 70-mV peak reading at J1 (A8J4).	Reference	
	e. Adjust input frequency up until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NLT 9.453 000 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
	f. Adjust input frequency down until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NMT 9.450 250 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
3A. 3.05-kHz LSB filter measurement (Cont)	***Note*** This test applies only to 3.05-kHz LSB filter (526-9981-010). Channel A if card extended.		

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
3A. (Cont)	a. Set front panel MODE switch to SSB/CW and BANDWIDTH switch to LSB.		
	b. Set AGC switch to OFF.		
	c. Set receive input to channel A if (A8J2) at 9.4518 MHz.		
	d. Using an rf voltmeter, measure rf voltage at J1 (A8J4). Adjust receive input level and frequency for a 70-mV peak reading at J1 (A8J4).	Reference	
	e. Adjust input frequency up until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NLT 9.453 300 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
	f. Adjust input frequency down until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NMT 9.450 250 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
3B. 3.10-kHz LSB filter measurement	***Note*** This test applies only to 3.10-kHz LSB filter (526-9986-010). Channel A if card extended. a. Set front panel MODE switch to SSB/CW and BANDWIDTH switch to LSB.		
	b. Set AGC switch to OFF.		
	c. Set receive input to channel A if (A8J2) at 9.4518 MHz.		
	d. Using an rf voltmeter, measure rf voltage at J1 (A8J4). Adjust receive input level and frequency for a 70-mV peak reading at J1 (A8J4).	Reference	
	e. Adjust input frequency up until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NLT 9.453 400 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
	f. Adjust input frequency down until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NMT 9.450 300 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
3C. 5.80-kHz LSB filter measurement (Cont)	***Note*** This test applies only to 5.80-kHz LSB filter (526-9977-010). Channel A if card extended. a. Set front panel MODE switch to SSB/CW and BANDWIDTH switch to LSB.		

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
3C. (Cont)	b. Set AGC switch to OFF.		
	c. Set receive input to channel A if (A8J2) at 9.4541 MHz.		
	d. Using an rf voltmeter, measure rf voltage at J1 (A8J4). Adjust receive input level and frequency for a 70-mV peak reading at J1 (A8J4).	Reference	
	e. Adjust input frequency up until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NLT 9.45 6 000 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
	f. Adjust input frequency down until rf voltage at J1 (A8J4) is 3 dB below level of step d. Note input frequency.	NMT 9.450 200 MHz	Check FL2, Q3, Q4, Q5, Q6, and associated circuits.
4. AGC attack and decay times	***Note*** Channel A if card extended.		
	a. Set front panel MODE switch to ISB.		
	b. Set receive input to channel A if (A8J2) at 9.4517 MHz and 1 mV at output of switching device. Set the switching device for 0.25 s on and 2.5 s off.		
	Note If a switching device is not available, one may be fabricated using figure 10.		
	c. Set front panel AGC switch to FAST.		
	d. Using an oscilloscope, measure AGC attack time at Q19-C (connect test lead to Q19-C and reinstall channel B if in unit).	NMT 5 ms	
	Note AGC attack time is the time interval from the first appearance of an rf burst to the point where the rf envelope stays within 6 dB of the final value.		
	e. Set receive input to channel A if (A8J2) at 9.4517 MHz and 200 μV at output of switching device. Set the switching device to alternate between a 200-μV output and a 10-μV output.		

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
	f. Using an oscilloscope, measure AGC decay time at Q19-C. **Note** AGC decay time is the time interval from 200-μV to 10-μV transition and the point when the rf envelope reaches 70% of the final value.	75 to 200 ms	Check Q22, Q24, U4, and associated circuits.
	g. Repeat steps e and f with the front panel AGC switch at SLOW.	1 to 2 s	Check U4 and associated circuits.
5. 450-kHz injection frequency suppression	**Note** Channel A if card extended. a. Set receive input to channel A if (A8J2) at 9.4517 MHz and 1000 μV. b. Set AGC switch to FAST. c. Set front panel MODE switch to ISB. d. Using a spectrum analyzer, measure the desired if out at J6 (CH B IF jack on rear panel).	Note level.	
	e. Measure the 450-kHz injection frequency leakage at the receive if out jack J6 (CH B IF jack on rear panel).	NLT 40 dB down from receive if above. **Note** It may be necessary to remove the receive input to locate the 450-kHz leakage. Measure it with the receive input applied.	Check U1, Q1, and associated circuits.
6. Receive audio distortion	**Note** Channel A if card extended. a. Set receive input to channel A if (A8J2) at 9.4517 MHz and 500 μV. b. Set front panel MODE switch to ISB. c. Using an audio distortion analyzer, measure the audio distortion at RCV AF 600 Ω-B on rear panel (TB1-4, -6).	NMT 0.5%	Check U7, U2, U3, Q12, Q18, Q19, and associated circuits.

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
7. AGC range	***Note***		
	Channel A if card extended.		
	a. Set front panel MODE switch to ISB.		
	b. Set AGC switch to FAST.		
	c. Set receive input to channel A if (A8J2) at 9.4517 MHz and 0 μV.		
	d. Connect dvm to P1-21 (TB1-9 on rear panel).		
	e. Increase receive input until dvm just begins to increase from 70 mV dc.	Note input level at this point. (Nominally 5μV rms)	
	f. Using an rf voltmeter, note rf level at J6 (CH B IF jack on rear panel).	Reference	
	g. Increase receive input 80 dB higher than the input level notes in step e.		
	h. Note the rf level at J6 (CH B IF jack on rear panel) and that no sign of an overload exists on Q19-C.	NMT 6 dB above that noted in step f. No overload on Q19-C.	Check U2, U3, and associated circuits.
8. Remote rf gain	***Note***		
	This test applies only to unit with a remote control connected.		
	Channel A if card extended.		
	a. Set receive input to channel A if (A8J2) at 9.4517 MHz and 5 μV.		
	b. Set front panel CONT switch to REM.		
	c. Set remote control MODE switch to ISB.	Reference if output level at J6 (CH B IF jack on rear panel).	
	d. Set remote control AGC switch off.		
	e. Adjust remote control RF GAIN control full counterclockwise. Increase receive input at A8J2 until if output level equals reference of step c.	Total attenuation over RF GAIN control range minimum 80 dB	Check U4 and associated circuits.
	f. Set receive input for 60 dB above 5-μV input. Adjust remote control RF GAIN control until if output level equals reference of step c.		
	g. Note the input at P1-11 (A8P1-11).	-5.0 ±0.1 V dc	Same as step e.
	h. Set front panel CONT switch to LCL.		

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

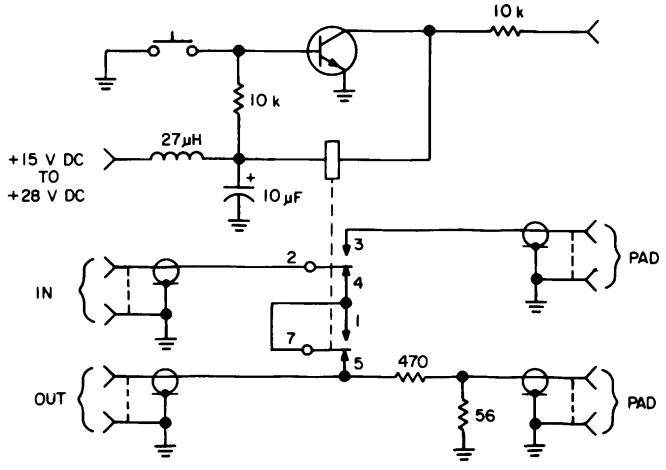
TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
9. Local rf gain	**Note** Channel A if card extended.		
	a. Set receive input to channel A if (A8J2) at 9.4517 MHz and 5 μV.		
	b. Set front panel MODE switch to ISB.	Reference if output level at J6 (CH B IF jack on rear panel).	
	c. Set front panel AGC switch to OFF.		
	d. Adjust front panel RF GAIN control full counterclockwise. Increase receive input at A8J2 until if output level equals reference of step b.	Total attenuation over RF GAIN control range minimum 80 dB	Check U4 and associated circuits.
	e. Set receive input for 60 dB above 5-μV input. Adjust RF GAIN control until if output level equals reference of step b.		
	f. Note the input at P1-39 (A8P1-39).	+2.8 ±0.3 V dc	Same as step d.
10. AGC in/out	**Note** Channel A if card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set front panel AGC switch to FAST.		
	c. Set receive input to channel A if (A8J2) at 9.4517 MHz and 5 μV.		
	d. Check the AGC in/out voltage at P1-21 (TB1-9 on rear panel) with this input applied.	≅70 mV dc	Check U4B and associated circuits.
	e. Increase the receive input to channel A if (A8J2) by 80 dB.		
	f. Check the AGC in/out voltage at P1-21 (TB1-9 on rear panel) with this input applied.	7.8 ±0.8 V dc	Same as step e.
11. Rf AGC	**Note** Channel A if card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set front panel AGC switch to FAST.		
(Cont)	c. Set receive input to channel A if (A8J2) at 9.4517 MHz and 5 μV.	Reference	

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
11. (Cont)	d. Using a dvm, monitor the rf AGC voltage at P1-18 (A8P1-18).		
	e. Adjust front panel RF GAIN control for 0 V dc at P1-18 (A8P1-18).		
	f. Note the rf AGC voltage while slowly increasing the receive input to 80 dB above level in step c.	Rf AGC increases at a constant rate from 0 to 3 V dc. (60-dB point = NLT 3.0 V dc)	Check Q20, U4A, U4B, and associated circuits.
12. Mute	***Note*** Channel A if card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set receive input to channel A if (A8J2) at 9.4517 MHz and 50 μV.		
	c. Using an rf voltmeter, monitor the if output at J6 (CH B IF jack on rear panel).	Output signal is present.	Check U2, U3, and associated circuits.
	d. Apply a ground at P1-13 (A8P1-13).	Output signal is muted.	Check Q8 thru Q11 and associated circuits.
	e. Remove P1-13 (A8P1-13) ground.	Output signal is restored.	
13. Performance monitor	***Note*** Channel A if card and parallel input card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set receive input to channel A if (A8J2) at 9.4517 MHz and 50 μV.		
	c. Using a dvm, measure the dc voltage at P1-2 (A11P1-18).	0.5 ±0.5 V dc	Check Q25 and associated circuits.
	d. Remove receive input and measure the dc voltage at P1-2 (A11P1-18).	+4.5 ±0.5 V dc	Same as step c.
14. Crowbar enable	***Note*** Channel B if card extended.		
	a. Set the front panel CONT switch to REM.		
	b. Apply +5 V dc to P1-37.		
(Cont)	c. Using an oscilloscope, monitor the waveform at U6-7.	NLT +3.0 V dc	Check U6 and associated circuits.

Table 1. Channel B IF, Testing and Troubleshooting Procedures (Cont).

TEST	PROCEDURE	NORMAL INDICATION	IF INDICATION IS ABNORMAL
14. (Cont)	d. Note dc level and duration of U6-7 pulse while slowly changing the remote control frequency settings.	0.5±0.5 V dc for 20 ±10 ms between each frequency change.	Same as step b.
	e. Using an oscilloscope, monitor the waveform at P1-18.	During the logic 0 pulse, waveform at P1-18 shall be 0.5 ±0.5 V dc	Check Q24 and associated circuits.
	f. Remove +5 V dc from P1-37.		
	g. Set the front panel CONT switch to LCL.		
15. Sensitivity	***Note*** Channel A if card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set AGC switch to OFF.		
	c. Using an audio voltmeter, monitor the audio at P1-34 (A6TP8) (with no receive input).		
	d. Set receive input to channel A if (A8J2) at 9.4517 MHz.		
	e. Adjust receive input for +10 dB (s+n)/n at P1-34 (A6TP8).		
	f. Note the receive input level.	NMT 1 μV rms (into 50-Ω, 2-μV rms open circuit)	Check U2, U3, and associated circuits.
16. If output	***Note*** Channel A if card extended.		
	a. Set the front panel MODE switch to ISB.		
	b. Set receive input to channel A if (A8J2) at 9.4517 MHz and 15 μV.		
	c. Set front panel AGC switch to FAST.		
	d. Using an rf voltmeter, measure the receive if output at J6 (CH B IF jack on rear panel).	27 ±10 mV rms.	Check U2, U3, and associated circuits.



TPA-1345-013

AGC Switching Device
Figure 10

4. ALIGNMENT/ADJUSTMENT

4.1 Filter Gain Adjustments (Selection of R29 and R41)

a. Set front panel MODE switch to ISB. Set AGC switch to FAST.
b. Connect receive input of 9.4517 MHz to channel A if J2.

Note

Select values of R29 and R41 only if Q3, Q5, and/or FL2 circuits have been repaired.

c. Set receive signal to 50 μV (9.4517 MHz). Find a passband reponse minimum between 9.4507 and 9.4511 MHz at J1. Measure voltage gain between J4 and J1. Should be 8.2 ±2.0 dB. Select values of R29 and R41 (200 thru 1000 Ω) to give a voltage gain of 8.2 ±2.0 dB.

4.2 Receive Gain Adjustment (Adjustment of L5, L7, R68, and R123)

a. Set front panel MODE switch to ISB. Adjust R68 for minimum gain (full ccw). Adjust receive input until channel B if output (measured at J6) indicates about 20 mV rms.
b. Adjust L5 and L7 for a peak channel B if output. Decrease the receive input as necessary to maintain channel B if output at 20 mV rms.
c. Repeat step b until no further increase in channel B if output is possible.
d. Set the receive input to 5 μV (9.4517 MHz) and adjust R68 for +70 ±5-mV dc AGC voltage (measured at P1-21).
e. Increase receive input to 5.0 mV (9.4517 MHz) and adjust R123 until AGC voltage (measured at P1-21) equals +5.0 ±0.1 V dc.
f. Repeat steps d and e until no further improvement is possible.

4.3 SSB Output Level Adjustment (Adjustment of R152)

a. Set front panel MODE switch to ISB.
b. Set receive input for 15.0 μV (9.4517 MHz) and adjust R152 for 10 ±0.5-mV rms audio output (measured at P1-34).

5. REPAIR

Repair of the channel B if card is accomplished using standard maintenance and planar card repair procedures. Refer to the maintenance section of this instruction book for planar card repair procedures.

6. PARTS LIST/DIAGRAMS

This paragraph assists in identification, requisition, and issuance of parts and in maintenance of equipment. A parts location illustration, schematic diagram, parts list tabulation, and modification history are included in the schematic diagram (figures 11 and 12.) The parts location illustration is a design engineering drawing that shows exact component placement on the circuit cards.

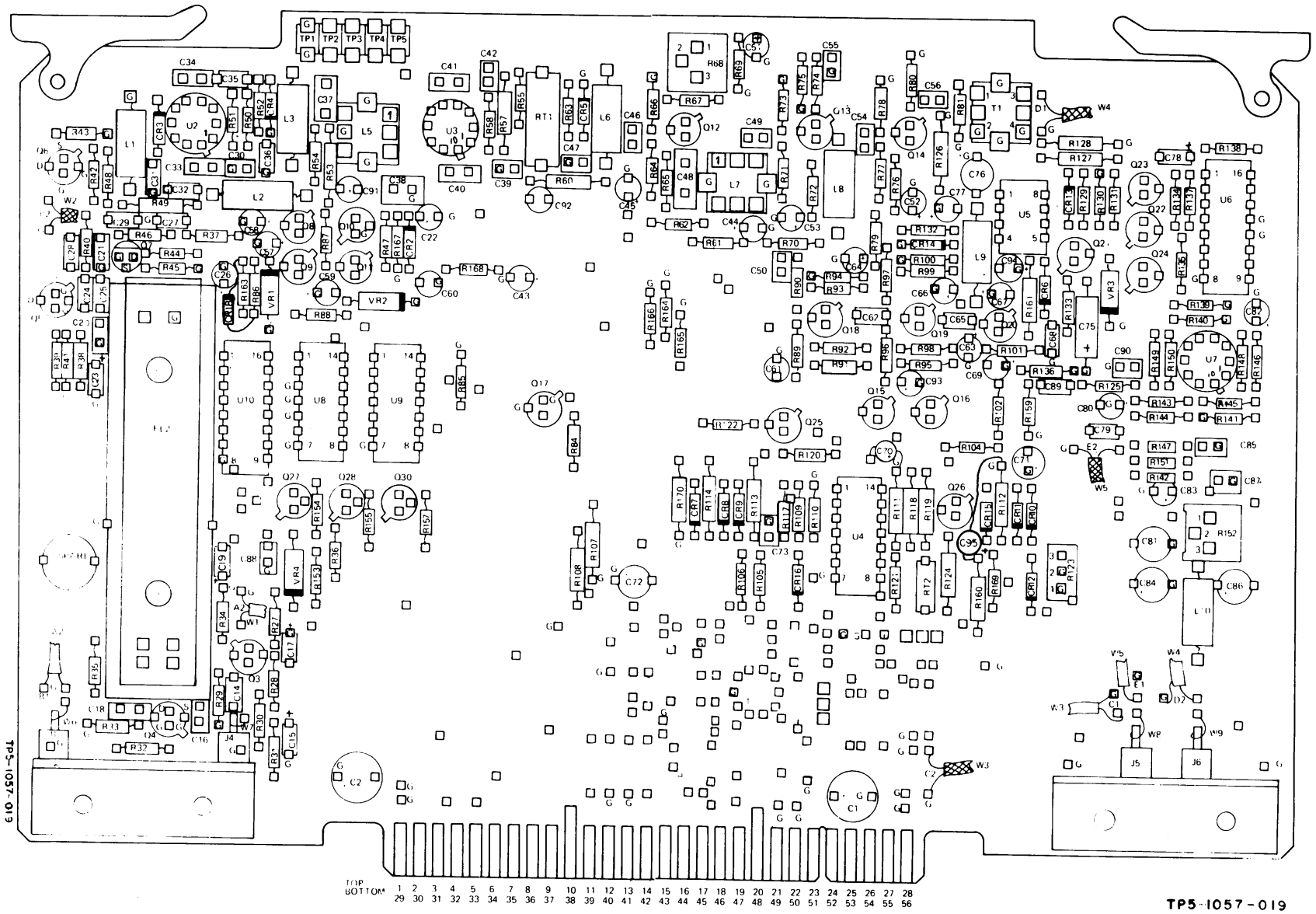
Use reference designator indicated on the schematic and parts location diagram to locate parts in the parts list tabulation. The Collins part number and description is listed for each reference designator.

Modifications are identified by an alphanumeric identifier assigned to each design change. These identifiers are referenced in the DESCRIPTION column of the parts list in parentheses and on the schematic diagram inside an arrow that points at the change. Each change relates to the revision identifier (REV) stamped on the circuit card/subassembly and is listed in the EFFECTIVITY column of the modification history.

Listed below are the circuit cards/subassemblies with the latest effectivity covered by these instructions.

CIRCUIT CARD/ SUBASSEMBLY	COLLINS PART NUMBER	LATEST EFFECTIVITY
Channel B if	637-2647-001	REV U
Channel B if	637-2647-002	REV U
Channel B if	637-2647-003	REV U
Channel B if	637-2647-004	*

* Not covered in this printing.



Channel B IF, Through REV T, Schematic Diagram
Figure 11 (Sheet 1 of 5)

PARTS LIST

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
	CHANNEL B IF A7	637-2647-001	A
	CHANNEL B IF A7	637-2647-002	B
	CHANNEL B IF A7	637-2647-003	C
CR1	NOT USED		
CR2	SEMICOND DEVICE 1N4454	353-3644-010	
CR3-CR5	SEMICOND DEVICE 1N5767	922-6119-010	
CR6-CR14	SEMICOND DEVICE 1N4454	353-3644-010	
CR15	SEMICOND DEVICE 1N816 (A2)	353-2564-000	
CR15	SEMICOND DEVICE 1N5767	922-6119-010	
CR16	SEMICOND DEVICE 1N4454	353-3644-010	
CR17	NOT USED		
CR18	SEMICOND DEVICE 1N4454 (A2)	353-3644-010	
C1,C2	CAPACITOR,FXD ELCTLT, 47UF, 20%, 20V	184-9102-630	
C3-C13	NOT USED		
C14	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C15	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V (A1)	913-5019-200	
C15	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C16	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C17	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V (A4)	913-5019-200	
C17	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C18	CAPACITOR,FXD MICA DIEL, 15PF, PORM 0.5PF, 300V (A4)	912-4141-130	
C18	CAPACITOR,FXD MICA DIEL, 22PF, PORM 0.5PF, 300V	912-4141-030	
C19	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V (A2)	913-5019-200	
C19	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C20	CAPACITOR,FXD MICA DIEL, 20PF, PORM 0.5PF, 100V	912-4141-150	
C21	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C22	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C23	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V (A2)	913-5019-200	
C23	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C24,C25	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C26	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C27-C29	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C30	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C31,C32	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C33,C34	CAPACITOR,FXD MICA DIEL, 4PF, PORM 0.5PF, 300V	912-4141-080	
C35,C36	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C37	CAPACITOR,FXD CER DIEL, 1200PF, 5%, 100V	913-3281-290	
C38	CAPACITOR,FXD MICA DIEL, 400PF, 5%, 50V	912-4141-520	
C39	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C40,C41	CAPACITOR,FXD MICA DIEL, 4PF, PORM 0.5PF, 300V	912-4141-080	
C42	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C43-C45	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C43-C45	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C46,C47	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C48	CAPACITOR,FXD CER DIEL, 5600PF, 5%, 100V	913-3281-380	
C49,C50	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C51	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C51	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C52	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V (A4)	184-9102-350	
C52	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C53	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A4)	184-9102-290	
C53	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C54-C56	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C57-C61	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C57-C61	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C62	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C63	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V (A4)	184-9102-350	
C63	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C64	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C64	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C65	CAPACITOR,FXD CER DIEL, 470PF, 10%, 200V	913-4014-000	
C66	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C66	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C67	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C67	CAPACITOR,FXD CER DIEL, 0.1UF, 10%, 100V	913-5019-440	
C68	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C69	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C69	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C70	CAPACITOR,FXD ELCTLT, 47UF, 20%, 20V	184-9102-630	
C71	CAPACITOR,FXD ELCTLT, 22UF, 20%, 15V	184-9102-140	
C72	CAPACITOR,FXD ELCTLT, 47UF, 20%, 6V	184-9102-470	
C73	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C74	NOT USED		
C75	CAPACITOR,FXD ELCTLT, 4.7UF, 10%, 10V (A1)	184-9086-140	
C75	CAPACITOR,FXD ELCTLT, 2.2UF, 10%, 20V	184-9086-430	
C76	CAPACITOR,FXD ELCTLT, 6.8UF, 20%, 6V	184-9102-450	
C77	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C77	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C78	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C78	CAPACITOR,FXD CER DIEL, 0.1UF, 10%, 100V	913-5019-440	
C79	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C80	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C80	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C81	CAPACITOR,FXD ELCTLT, 22UF, 20%, 10V	184-9102-520	
C82,C83	CAPACITOR,FXD ELCTLT, 0.1UF, 20%, 35V (A7)	184-9102-290	
C82,C83	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C84	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-610	
C85	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V (A4)	913-3279-110	

PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
C85	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C86	CAPACITOR,FXD ELCTLT, 6.8UF, 20%, 25V	184-9102-670	
C87	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V (A4)	913-3279-110	
C87	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C88	CAPACITOR,FXD CER DIEL, 0.1UF, 20%, 50V	913-3279-180	
C89	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C90	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C91	CAPACITOR,FXD ELCTLT, 0.47UF, 20%, 35V	184-9102-330	
C92	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C93	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V (A4)	184-9102-350	
C93	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C94	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C95	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V (A6)	184-9102-660	
C95	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
FL1	NOT USED		
FL2	FILTER,LSB,2.75 KHZ	526-9956-010	A
FL2	FILTER,LSB,3.05 KHZ	526-9981-010	B
FL2	FILTER,LSB,3.10 KHZ	526-9986-010	C
J1	CONNECTOR,RCPT ELEC	357-7207-100	
J2,J3	NOT USED		
J4-J6	CONNECTOR,RCPT ELEC	357-7207-100	
L1	COIL,RF 2700UH	240-2715-540	
L2,L3	COIL,RF 1000UH	240-2715-490	
L4	NOT USED		
L5	INDUCTOR,RF	242-0441-010	
L6	COIL,RF 1000UH	240-2715-490	
L7	INDUCTOR,RF	242-0441-020	
L8	COIL,RF 1000UH	240-2715-490	
L9	COIL,RF 8200UH	240-2715-600	
L10	COIL,RF 1000UH	240-2715-490	
Q1,Q2	NOT USED		
Q3-Q6	TRANSISTOR 2N4416	352-0756-010	
Q7	TRANSISTOR SPF557	352-1068-010	
Q8	TRANSISTOR 2N2222A	352-0661-020	
Q9	TRANSISTOR 2N2907A	352-0551-010	
Q10	TRANSISTOR 2N2222A	352-0661-020	
Q11	TRANSISTOR 2N2907A	352-0551-010	
Q12-Q14	TRANSISTOR 2N2222A	352-0661-020	
Q15	TRANSISTOR 2N2907A	352-0551-010	
Q16	TRANSISTOR 2N2222A	352-0661-020	
Q17	TRANSISTOR 2N2608	352-0605-010	
Q18,Q19	TRANSISTOR 2N2222A	352-0661-020	
Q20	TRANSISTOR 2N2907A	352-0551-010	
Q21	TRANSISTOR 2N2222A	352-0661-020	
Q22,Q23	TRANSISTOR 2N2907A	352-0551-010	
Q24	TRANSISTOR 2N2608	352-0605-010	
Q25,Q26	TRANSISTOR 2N2222A	352-0661-020	
Q27,Q28	TRANSISTOR 2N2608	352-0605-010	
Q29	NOT USED		
Q30	TRANSISTOR 2N2608	352-0605-010	
RT1	RESISTOR,THRM 3K, 10%, 1W	714-1715-000	
RT2	RESISTOR,THRM 100K, 10%, 0.5W	714-1736-000	
R1-R26	NOT USED		
R27	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R28	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R29	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W (A4)	745-2332-000	
R29	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R30	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W (A2)	745-2332-000	
R30	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R31	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W (A1)	745-2304-000	
R31	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R32	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R33	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W	745-2332-000	
R34	RESISTOR,FXD FILM, 5.11K, 1%, 1/8W	705-1030-000	
R35	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W (A2)	745-2304-000	
R35	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R36,R37	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R38	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R39	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R40	RESISTOR,FXD FILM, 5.11K, 1%, 1/8W	705-1030-000	
R41	RESISTOR,FXD,CMPSN, 200 THRU 680 OHMS,5%,1/8W (A4)	637-2529-001	
R41	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R42	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R43	RESISTOR,FXD,CMPSN, 200 THRU 680 OHMS,5%,1/8W (A2)	637-2529-001	
R43	RESISTOR,FXD CMPSN, 390 OHMS, 10%, 1/8W	745-2326-000	
R44	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R45	RESISTOR,FXD CMPSN, 680 OHMS, 10%, 1/8W (A1)	745-2335-000	
R45	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R46	RESISTOR,FXD CMPSN, 470K, 10%, 1/8W	745-2437-000	
R47	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R48	RESISTOR,FXD CMPSN, 2.2K, 10%, 1/8W	745-2353-000	
R49	RESISTOR,FXD FILM, 20.5K, 1%, 1/8W	705-1059-000	
R50	RESISTOR,FXD CMPSN, 390 OHMS, 10%, 1/8W	745-2326-000	
R51	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R52	RESISTOR,FXD CMPSN, 2.2K, 10%, 1/8W	745-2353-000	
R53	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R54	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R55	RESISTOR,FXD CMPSN, 1.5K, 10%, 1/8W	745-2347-000	
R56	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W (B2)	745-2329-000	

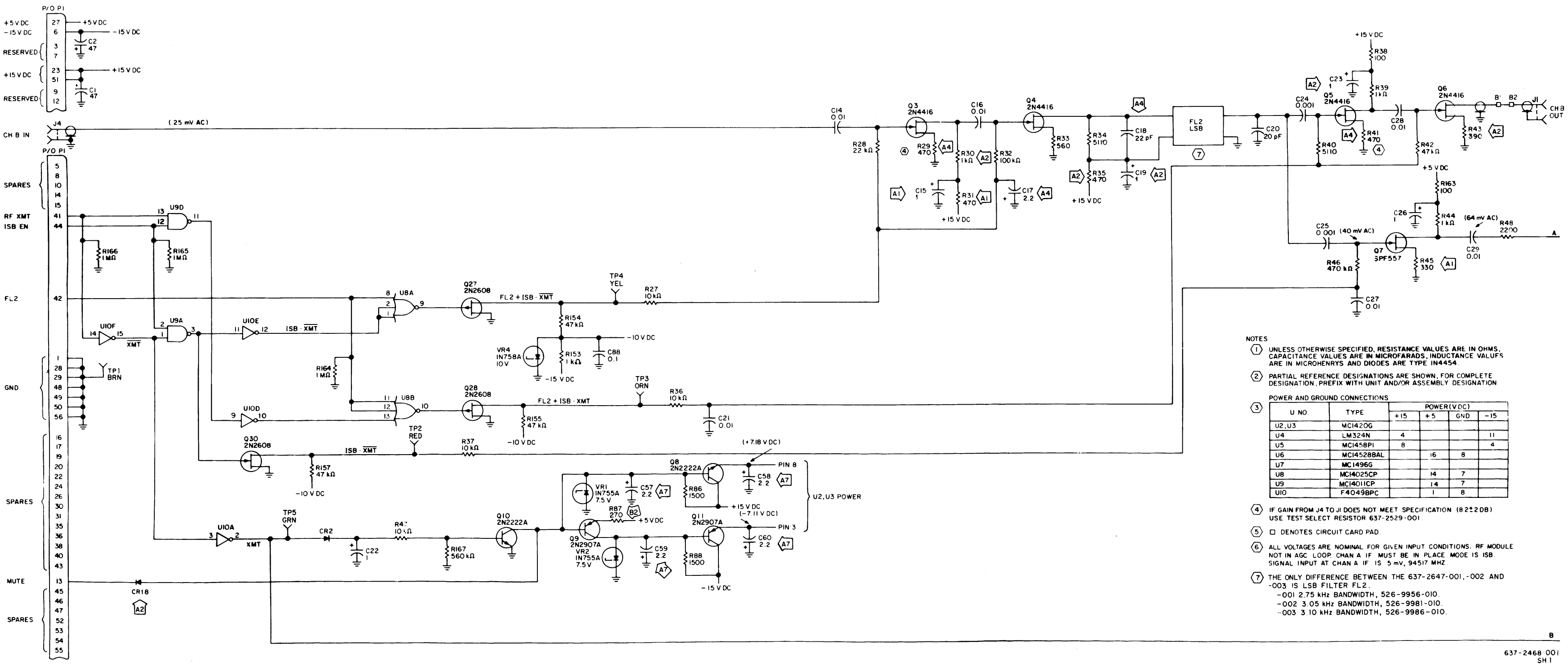
PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
R57	RESISTOR,FXD CMPSN, 1.5K, 10%, 1/8W	745-2347-000	
R58	RESISTOR,FXD CMPSN, 15K, 10%, 1/8W	745-2383-000	
R59	NOT USED		
R60	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R61	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R62	RESISTOR,FXD CMPSN, 220 OHMS, 10%, 1/8W	745-2317-000	
R63	RESISTOR,FXD CMPSN, 1.2K, 10%, 1/8W	745-2344-000	
R64	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R65	RESISTOR,FXD CMPSN, 15K, 10%, 1/8W (B1)	745-2383-000	
R65	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W	745-2332-000	
R66	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R67	RESISTOR,FXD CMPSN, 220 OHMS, 10%, 1/8W	745-2317-000	
R68	RESISTOR,FXD CMPSN, 36 OHMS, 5%, 1/8W	745-1863-140	
R100	RESISTOR,FXD CMPSN, 270 OHMS, 10%, 1/8W	745-2320-000	
R101	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R102	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R103	NOT USED		
R72	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R104	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R105,	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R106			
R107	RESISTOR,FXD FILM, 1.40K, 1%, 1/8W	705-1003-000	
R108	RESISTOR,FXD FILM, 18.7K, 1%, 1/8W	705-1057-000	
R109	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R110	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R111	RESISTOR,FXD FILM, 10K, 1%, 1/8W	705-1044-000	
R112	RESISTOR,FXD FILM, 12.4K, 1%, 1/8W	705-3605-520	
R113,	RESISTOR,FXD FILM, 47.5K, 1%, 1/8W	705-3605-800	
R114,			
R115,	NOT USED		
R116			
R117	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R118	RESISTOR,FXD FILM, 37.4K, 1%, 1/8W	705-3605-750	
R119	RESISTOR,FXD FILM, 30.1K, 1%, 1/8W	705-1067-000	
R120,	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R121			
R122	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R123	RESISTOR,VAR NON-WW,20K, 10%	382-0052-470	
R124	RESISTOR,FXD FILM, 22.6K, 1%, 1/8W (A3)	705-1061-000	
R124	RESISTOR,FXD FILM, 15.4K, 1%, 1/8W	705-1053-000	
R125	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W (A5)	745-2377-000	
R125	RESISTOR,FXD CMPSN, 6.8K, 10%, 1/8W	745-2371-000	
R126	RESISTOR,FXD FILM, 100K, 1%, 1/8W	705-1092-000	
R127	RESISTOR,FXD FILM, 38.3K, 1%, 1/8W	705-1072-000	
R128	RESISTOR,FXD FILM, 13K, 1%, 1/8W	705-3605-530	
R129	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R130	RESISTOR,FXD CMPSN, 270K, 10%, 1/8W (A1)	745-2428-000	
R130	RESISTOR,FXD CMPSN, 470K, 10%, 1/8W	745-2437-000	
R131	RESISTOR,FXD CMPSN, 18K, 10%, 1/8W	745-2386-000	
R132	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R133	RESISTOR,FXD CMPSN, 680 OHMS, 10%, 1/8W	745-2335-000	
R134	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R135	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R136	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R137	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R138	RESISTOR,FXD CMPSN, 560K, 10%, 1/8W	745-2440-000	
R139,	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R140			
R141	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R142	RESISTOR,FXD CMPSN, 820 OHMS, 10%, 1/8W	745-2338-000	
R143	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R144	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R145,	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R146			
R147	RESISTOR,FXD CMPSN, 1.3K, 5%, 1/8W	745-1863-520	
R148	RESISTOR,FXD CMPSN, 180 OHMS, 10%, 1/8W	745-2314-000	
R149	RESISTOR,FXD CMPSN, 3K, 5%, 1/8W	745-1863-600	
R150	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R151	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R152	RESISTOR,VAR 2K, 20%, 1/2W	382-0038-050	
R153	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R154,	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R155			
R156	NOT USED		
R157	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R158	NOT USED		
R159	RESISTOR,FXD CMPSN, 8.2MEGO, 5%, 1/8W	745-1864-470	
R160	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/4W	745-0713-000	
R161	RESISTOR,FXD FILM, 221K, 1%, 1/8W	705-3604-170	
R162	NOT USED		
R163	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R164-	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R166			
R167	RESISTOR,FXD CMPSN, 560K, 10%, 1/8W	745-2440-000	
R168	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R169	RESISTOR,FXD CMPSN, 330K, 5%, 1/8W (A2)	745-1864-130	
R169	RESISTOR,FXD CMPSN, 430K, 5%, 1/8W	745-1864-160	
R170	RESISTOR,FXD FILM, 10K, 1%, 1/8W	705-1044-000	
TP1	JACK,TIP BRN	360-0484-070	
TP2	JACK,TIP RED	360-0484-020	

PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
TP3	JACK,TIP ORN	360-0484-050	
TP4	JACK,TIP YEL	360-0484-060	
TP5	JACK,TIP GRN	360-0484-040	
T1	TRANSFORMER,RF	278-0432-030	
U1	NOT USED		
U2,U3	INTEGRATED CIRCUIT MC1420G	351-1050-030	
U4	INTEGRATED CIRCUIT LM324N	351-1141-030	
U5	INTEGRATED CIRCUIT MC1458P1	351-1071-070	
U6	INTEGRATED CIRCUIT CD4098BE	351-8278-010	
U7	INTEGRATED CIRCUIT MC1496G	351-0043-020	
U8	INTEGRATED CIRCUIT MC14025CP	351-8159-150	
U9	INTEGRATED CIRCUIT MC14011CP	351-8159-040	
U10	INTEGRATED CIRCUIT F4049BPC	351-8159-210	
VR1,VR2	SEMICOND DEVICE 1N755A	353-2718-000	
VR3	SEMICOND DEVICE 1N751A	353-2710-000	
VR4	SEMICOND DEVICE 1N758A	353-2724-000	
R29,R41	RESISTOR,FXD,CMPSN, 200 THRU 1K, 5%,1/8W (TEST SELECT)	637-2529-001	

Channel B IF, Through REV T, Schematic Diagram
Figure 11 (Sheet 2)



NOTES

1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, INDUCTANCE VALUES ARE IN MICROHENRYS AND DIODES ARE TYPE IN4454.
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN, FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
3. POWER AND GROUND CONNECTIONS

U NO.	TYPE	POWER (V DC)			
		+15	+5	GND	-15
U2,U3	MC1420G				
U4	LM324N	4			11
U5	MC1458P1	8			4
U6	MC14528BAL		16	8	
U7	MC1496G				
U8	MC14025CP		14	7	
U9	MC14011CP		14	7	
U10	F4049BPC		1	8	

4. IF GAIN FROM J4 TO J1 DOES NOT MEET SPECIFICATION (8 ± 2 DB) USE TEST SELECT RESISTOR 637-2529-001.
5. □ DENOTES CIRCUIT CARD PAD.
6. ALL VOLTAGES ARE NOMINAL FOR GIVEN INPUT CONDITIONS. RF MODULE NOT IN AGC LOOP. CHAN A IF MUST BE IN PLACE. MODE IS ISB. SIGNAL INPUT AT CHAN A IF IS 5 mV, 9.4517 MHZ.
7. THE ONLY DIFFERENCE BETWEEN THE 637-2647-001, -002 AND -003 IS LSB FILTER FL2.
   - -001 2.75 kHz BANDWIDTH, 526-9956-010.
   - -002 3.05 kHz BANDWIDTH, 526-9981-010.
   - -003 3.10 kHz BANDWIDTH, 526-9986-010.

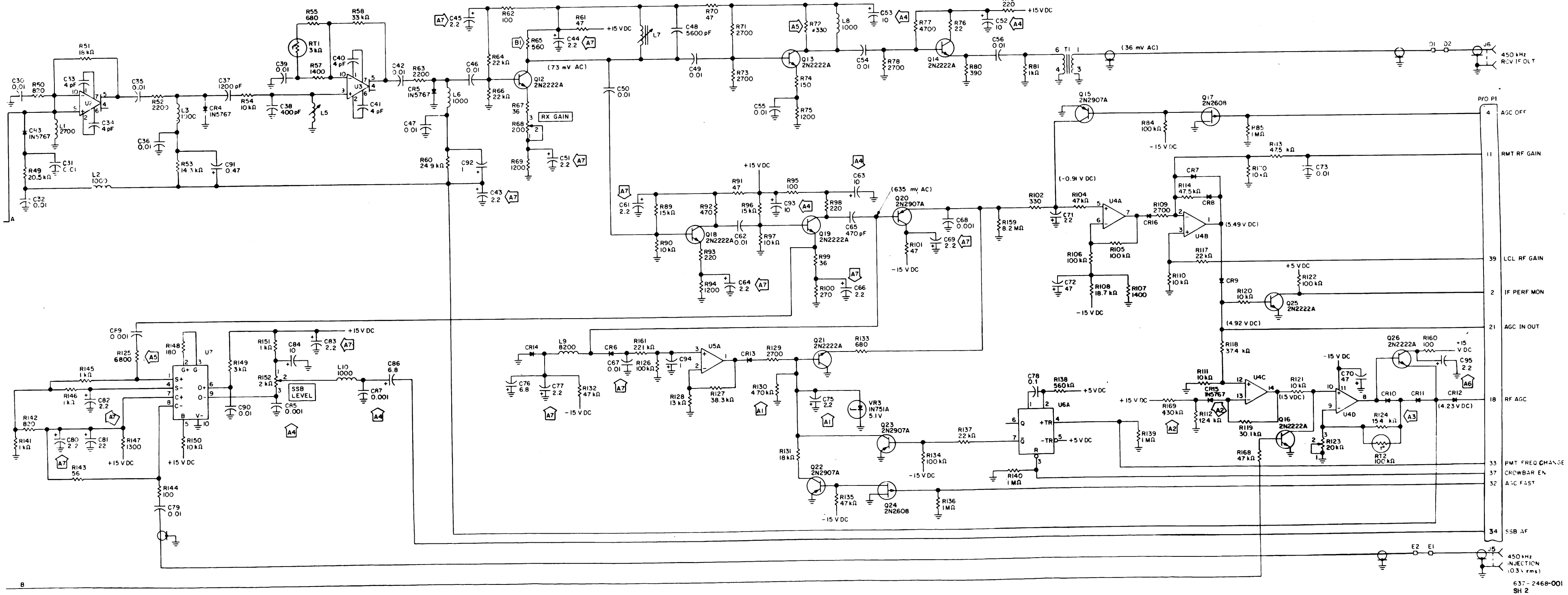
637-2468-001 SH 1

Channel B IF, Through REV T, Schematic Diagram
Figure 11 (Sheet 3)

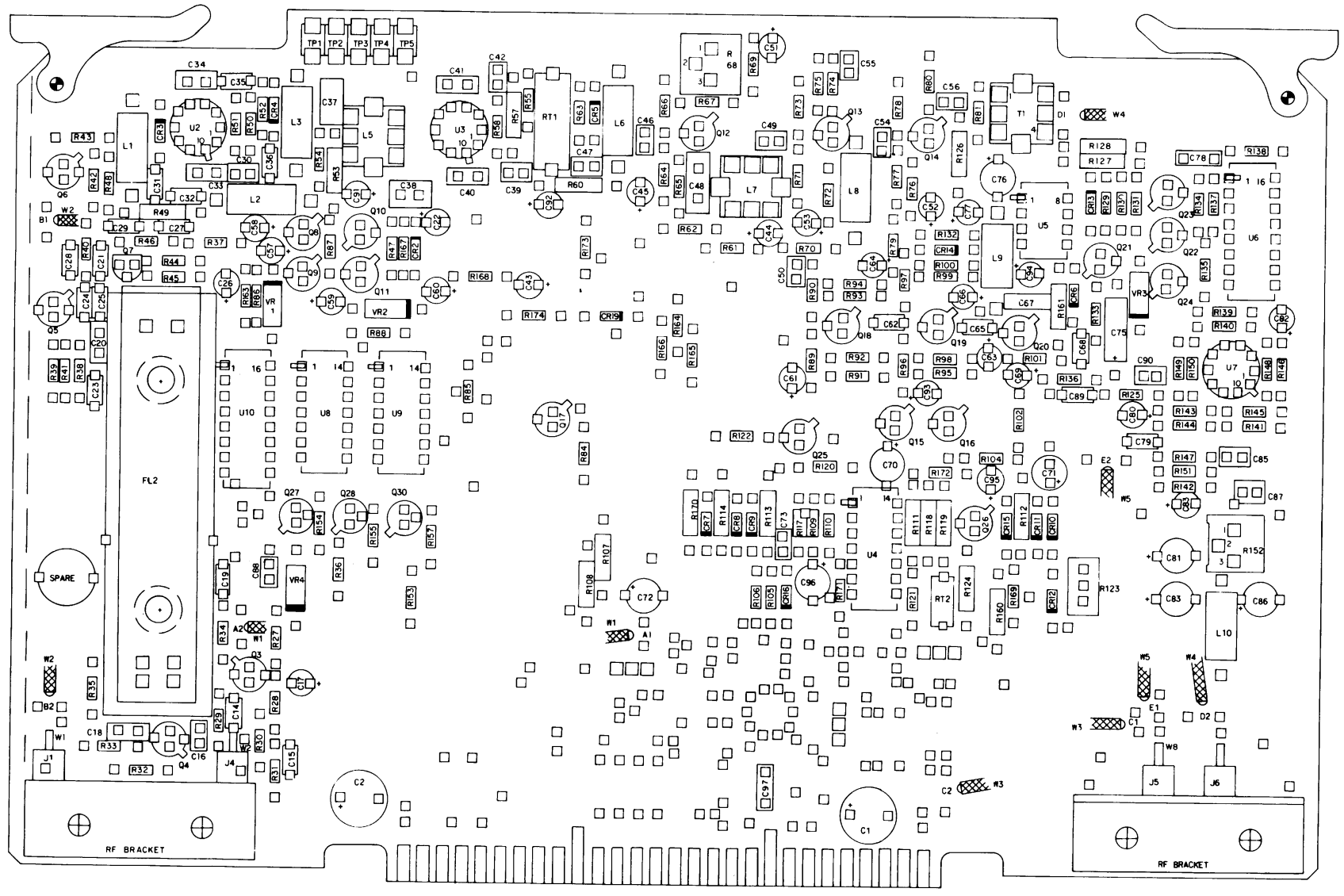
MODIFICATION HISTORY

REVISION IDENT	DESCRIPTION OF REVISION AND REASON FOR CHANGE	EFFECTIVITY
A1	Changed: C15 from 0.01 μF to 1 μF. C75 from 4.7 μF to 2.2 μF. R31 from 100Ω to 470Ω. R45 from 680Ω to 330Ω. R130 from 270kΩ to 470kΩ.	REV C and above
A2	Added CR18, 1N4454. Changed: CR15 from 1N8116 to 1N5767. C19 from 0.01 μF to 1 μF. C23 from 0.01 μF to 1 μF. R30 from 560Ω to 1kΩ. R35 from 100Ω to 470Ω. R43 from test select of 200Ω thru 680Ω to fixed 390Ω. R169 from 330kΩ to 430kΩ.	REV D and above
A3	Changed R124 from 22.6kΩ to 13.4kΩ.	REV E and above
A4	Changed: C17 from 0.01 μF to 2.2 μF. C18 from 15pF to 22pF. C52 from 1 μF to 10 μF. C53 from 1 μF to 10 μF. C63 from 1 μF to 10 μF. C85 from 0.01 μF to 1000pF. C87 from 0.01 μF to 1000pF. C93 from 1 μF to 10 μF. R29 from 560Ω to 470Ω. R41 from test select of 200Ω thru 680Ω to fixed 470Ω.	REV F and above
A5	Changed: R72 from 470Ω to 330Ω. R125 from 10kΩ to 6800Ω.	REV J and above.
A6	Added C95, 2.2 μF.	REV K and above
A7	Changed: C43 from 0.1 μF to 2.2 μF. C44 from 0.1 μF to 2.2 μF. C57 from 0.1 μF to 2.2 μF. C58 from 0.1 μF to 2.2 μF. C59 from 0.1 μF to 2.2 μF. C60 from 0.1 μF to 2.2 μF. C61 from 0.1 μF to 2.2 μF. C64 from 0.1 μF to 2.2 μF. C66 from 0.1 μF to 2.2 μF. C67 from 0.1 μF to 0.01 μF. C69 from 0.1 μF to 2.2 μF. C77 from 0.1 μF to 2.2 μF. C78 from 0.1 μF to 0.01 μF. C80 from 0.1 μF to 2.2 μF. C82 from 0.1 μF to 2.2 μF. C83 from 0.1 μF to 2.2 μF.	REV L and above
B1	Changed R65 from 1200Ω to 560Ω.	REV N and above.
B2	Changed R87 from 470Ω to 270Ω.	REV T and above.

Channel B IF, Through REV T, Schematic Diagram
Figure 11 (Sheet 4)



Channel B IF, Through REV T, Schematic Diagram
Figure 11 (Sheet 5)



Channel B IF, REV U and Above,
Schematic Diagram
Figure 12 (Sheet 1 of 5)

PARTS LIST

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
	CHANNEL B IF A7	637-2647-001	A
	CHANNEL B IF A7	637-2647-002	B
	CHANNEL B IF A7	637-2647-003	C
CR1	NOT USED		
CR2	SEMICOND DEVICE 1N4454	353-3644-010	
CR3-CR5	SEMICOND DEVICE 1N5767	922-6119-010	
CR6-CR14	SEMICOND DEVICE 1N4454	353-3644-010	
CR15	SEMICOND DEVICE 1N5767	922-6119-010	
CR16	SEMICOND DEVICE 1N4454	353-3644-010	
CR17,	NOT USED		
CR18			
CR19	SEMICOND DEVICE 1N4454	353-3644-010	
C1,C2	CAPACITOR,FXD ELCTLT, 47UF, 20%, 20V	184-9102-630	
C3-C13	NOT USED		
C14	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C15	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C16	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C17	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C18	CAPACITOR,FXD MICA DIEL, 22PF, PORM 0.5PF, 300V	912-4141-030	
C19	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C20	CAPACITOR,FXD MICA DIEL, 20PF, PORM 0.5PF, 100V	912-4141-150	
C21	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C22,C23	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C24,C25	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C26	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C27-C29	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C30	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C31,C32	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C33,C34	CAPACITOR,FXD MICA DIEL, 4PF, PORM 0.5PF, 300V	912-4141-080	
C35,C36	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C37	CAPACITOR,FXD CER DIEL, 1200PF, 5%, 100V	913-3281-290	
C38	CAPACITOR,FXD MICA DIEL, 400PF, 5%, 50V	912-4141-520	
C39	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C40,C41	CAPACITOR,FXD MICA DIEL, 4PF, PORM 0.5PF, 300V	912-4141-080	
C42	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C43-C45	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C46,C47	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C48	CAPACITOR,FXD CER DIEL, 5600PF, 5%, 100V	913-3281-380	
C49,C50	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C51	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C52,C53	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C54-C56	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C57-C61	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C62	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C63	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C64	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C65	CAPACITOR,FXD CER DIEL, 470PF, 10%, 200V	913-4014-000	
C66	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C67	CAPACITOR,FXD CER DIEL, 0.1UF, 10%, 100V	913-5019-440	
C68	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C69	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C70	CAPACITOR,FXD ELCTLT, 15UF, 20%, 20V	184-9102-620	
C71	CAPACITOR,FXD ELCTLT, 22UF, 20%, 15V	184-9102-140	
C72	CAPACITOR,FXD ELCTLT, 47UF, 20%, 6V	184-9102-470	
C73	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C74	NOT USED		
C75	CAPACITOR,FXD ELCTLT, 2.2UF, 10%, 20V	184-9086-430	
C76	CAPACITOR,FXD ELCTLT, 6.8UF, 20%, 6V	184-9102-450	
C77	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C78	CAPACITOR,FXD CER DIEL, 0.1UF, 10%, 100V	913-5019-440	
C79	CAPACITOR,FXD CER DIEL, 0.01UF, 10%, 100V	913-5019-200	
C80	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C81	CAPACITOR,FXD ELCTLT, 22UF, 20%, 10V	184-9102-520	
C82,C83	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C84	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-610	
C85	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C86	CAPACITOR,FXD ELCTLT, 6.8UF, 20%, 25V	184-9102-670	
C87	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C88	CAPACITOR,FXD CER DIEL, 0.1UF, 20%, 50V	913-3279-180	
C89	CAPACITOR,FXD CER DIEL, 1000PF, 10%, 200V	913-4018-000	
C90	CAPACITOR,FXD CER DIEL, 0.01UF, 20%, 50V	913-3279-110	
C91	CAPACITOR,FXD ELCTLT, 0.47UF, 20%, 35V	184-9102-330	
C92	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C93	CAPACITOR,FXD ELCTLT, 10UF, 20%, 20V	184-9102-170	
C94	CAPACITOR,FXD ELCTLT, 1UF, 20%, 35V	184-9102-350	
C95	CAPACITOR,FXD ELCTLT, 2.2UF, 20%, 25V	184-9102-220	
C96	CAPACITOR,FXD ELCTLT, 15UF, 20%, 20V	184-9102-620	
C97	CAPACITOR,FXD CER DIEL, 0.1UF, 10%, 100V	913-5019-440	
FL1	NOT USED		
FL2	FILTER,LSB,2.75 KHZ	526-9956-010	A
FL2	FILTER,LSB,3.05 KHZ	526-9981-010	B
FL2	FILTER,LSB,3.10 KHZ	526-9986-010	C
L1	COIL,RF 2700UH	240-2715-540	
L2,L3	COIL,RF 1000UH	240-2715-490	
L4	NOT USED		
L5	INDUCTOR,RF	242-0441-010	
L6	COIL,RF 1000UH	240-2715-490	
L7	INDUCTOR,RF	242-0441-020	
L8	COIL,RF 1000UH	240-2715-490	
L9	COIL,RF 8200UH	240-2715-600	

PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
L10	COIL,RF 1000UH	240-2715-490	
Q1,Q2	NOT USED		
Q3-Q6	TRANSISTOR 2N4416	352-0756-010	
Q7	TRANSISTOR SPF557	352-1068-010	
Q8	TRANSISTOR 2N2222A	352-0661-020	
Q9	TRANSISTOR 2N2907A	352-0551-010	
Q10	TRANSISTOR 2N2222A	352-0661-020	
Q11	TRANSISTOR 2N2907A	352-0551-010	
Q12-Q14	TRANSISTOR 2N2222A	352-0661-020	
Q15	TRANSISTOR 2N2907A	352-0551-010	
Q16	TRANSISTOR 2N2222A	352-0661-020	
Q17	TRANSISTOR 2N2608	352-0605-010	
Q18,Q19	TRANSISTOR 2N2222A	352-0661-020	
Q20	TRANSISTOR 2N2907A	352-0551-010	
Q21	TRANSISTOR 2N2222A	352-0661-020	
Q22,Q23	TRANSISTOR 2N2907A	352-0551-010	
Q24	TRANSISTOR 2N2608	352-0605-010	
Q25,Q26	TRANSISTOR 2N2222A	352-0661-020	
Q27,Q28	TRANSISTOR 2N2608	352-0605-010	
Q29	NOT USED		
Q30	TRANSISTOR 2N2608	352-0605-010	
RT1	RESISTOR,THRM 3K, 10%, 1W	714-1715-000	
RT2	RESISTOR,THRM 100K, 10%, 0.5W	714-1736-000	
R1-R26	NOT USED		
R27	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R28	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R29	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R30	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R31	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R32	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R33	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W	745-2332-000	
R34	RESISTOR,FXD FILM, 5.11K, 1%, 1/8W	705-1030-000	
R35	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R36,R37	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R38	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R39	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R40	RESISTOR,FXD FILM, 5.11K, 1%, 1/8W	705-1030-000	
R41	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R42	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R43	RESISTOR,FXD CMPSN, 390 OHMS, 10%, 1/8W	745-2326-000	
R44	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R45	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R46	RESISTOR,FXD CMPSN, 470K, 10%, 1/8W	745-2437-000	
R47	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R48	RESISTOR,FXD CMPSN, 2.2K, 10%, 1/8W	745-2353-000	
R49	RESISTOR,FXD FILM, 20.5K, 1%, 1/8W	705-1059-000	
R50	RESISTOR,FXD CMPSN, 820 OHMS, 10%, 1/8W	745-2338-000	
R51	RESISTOR,FXD CMPSN, 18K, 10%, 1/8W	745-2386-000	
R52	RESISTOR,FXD CMPSN, 2.2K, 10%, 1/8W	745-2353-000	
R53	RESISTOR,FXD FILM, 14.3K, 1%, 1/8W	705-3605-550	
R54	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R55	RESISTOR,FXD CMPSN, 680 OHMS, 10%, 1/8W	745-2335-000	
R56	NOT USED		
R57	RESISTOR,FXD FILM, 1.40K, 1%, 1/8W	705-1003-000	
R58	RESISTOR,FXD CMPSN, 33K, 10%, 1/8W	745-2395-000	
R59	NOT USED		
R60	RESISTOR,FXD FILM, 24.9K, 1%, 1/8W	705-1063-000	
R61	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R62	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R63	RESISTOR,FXD CMPSN, 2.2K, 10%, 1/8W	745-2353-000	
R64	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R65	RESISTOR,FXD CMPSN, 1.2K, 10%, 1/8W	745-2344-000	A,B
R65	RESISTOR,FXD CMPSN, 560 OHMS, 10%, 1/8W	745-2332-000	C
R66	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R67	RESISTOR,FXD CMPSN, 36 OHMS, 5%, 1/8W	745-1863-140	
R68	RESISTOR,VAR 200 OHMS, 20%, 1/2W	382-0038-020	
R69	RESISTOR,FXD CMPSN, 1.2K, 10%, 1/8W	745-2344-000	
R70	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R71	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R72	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R73	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R74	RESISTOR,FXD CMPSN, 150 OHMS, 10%, 1/8W	745-2311-000	
R75	RESISTOR,FXD CMPSN, 1.2K, 10%, 1/8W	745-2344-000	
R76	RESISTOR,FXD CMPSN, 22 OHMS, 10%, 1/8W	745-2280-000	
R77	RESISTOR,FXD CMPSN, 4.7K, 10%, 1/8W	745-2365-000	
R78	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R79	RESISTOR,FXD CMPSN, 220 OHMS, 10%, 1/8W	745-2317-000	
R80	RESISTOR,FXD CMPSN, 390 OHMS, 10%, 1/8W	745-2326-000	
R81	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R82,R83	NOT USED		
R84	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R85	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R86	RESISTOR,FXD CMPSN, 1.5K, 10%, 1/8W	745-2347-000	
R87	RESISTOR,FXD CMPSN, 270 OHMS, 10%, 1/8W	745-2320-000	
R88	RESISTOR,FXD CMPSN, 1.5K, 10%, 1/8W	745-2347-000	
R89	RESISTOR,FXD CMPSN, 15K, 10%, 1/8W	745-2383-000	
R90	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R91	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R92	RESISTOR,FXD CMPSN, 470 OHMS, 10%, 1/8W	745-2329-000	
R93	RESISTOR,FXD CMPSN, 220 OHMS, 10%, 1/8W	745-2317-000	
R94	RESISTOR,FXD CMPSN, 1.2K, 10%, 1/8W	745-2344-000	
R95	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	

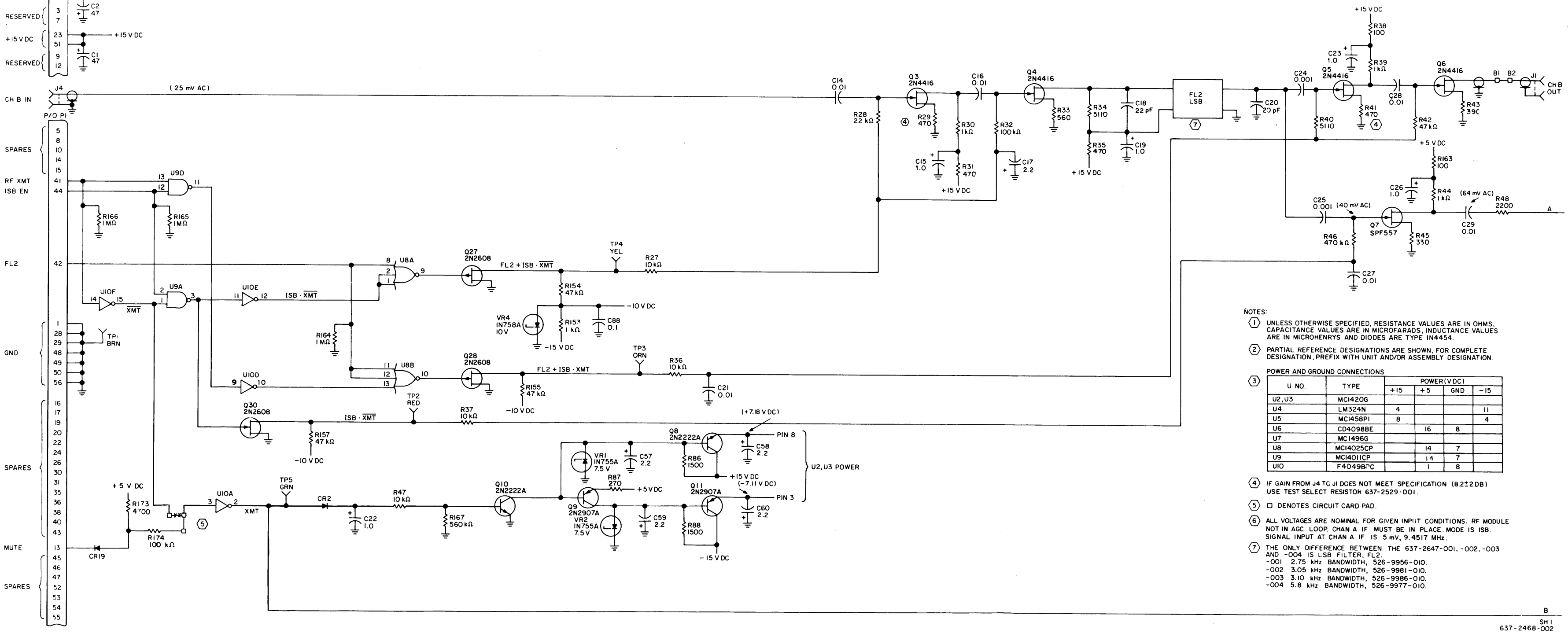
PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
R96	RESISTOR,FXD CMPSN, 15K, 10%, 1/8W	745-2383-000	
R97	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R98	RESISTOR,FXD CMPSN, 220 OHMS, 10%, 1/8W	745-2317-000	
R99	RESISTOR,FXD CMPSN, 36 OHMS, 5%, 1/8W	745-1863-140	
R100	RESISTOR,FXD CMPSN, 270 OHMS, 10%, 1/8W	745-2320-000	
R101	RESISTOR,FXD CMPSN, 47 OHMS, 10%, 1/8W	745-2292-000	
R102	RESISTOR,FXD CMPSN, 330 OHMS, 10%, 1/8W	745-2323-000	
R103	NOT USED		
R104	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R105,	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R106			
R107	RESISTOR,FXD FILM, 1.40K, 1%, 1/8W	705-1003-000	
R108	RESISTOR,FXD FILM, 18.7K, 1%, 1/8W	705-1057-000	
R109	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R110	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R111	RESISTOR,FXD FILM, 10K, 1%, 1/8W	705-1044-000	
R112	RESISTOR,FXD FILM, 12.4K, 1%, 1/8W	705-3605-520	
R113,	RESISTOR,FXD FILM, 47.5K, 1%, 1/8W	705-3605-800	
R114			
R115,	NOT USED		
R116			
R117	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R118	RESISTOR,FXD FILM, 37.4K, 1%, 1/8W	705-3605-750	
R119	RESISTOR,FXD FILM, 30.1K, 1%, 1/8W	705-1067-000	
R120,	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R121			
R122	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R123	RESISTOR,VAR NON-WW,20K, 10%	382-0052-470	
R124	RESISTOR,FXD FILM, 15.4K, 1%, 1/8W	705-1053-000	
R125	RESISTOR,FXD CMPSN, 6.8K, 10%, 1/8W	745-2371-000	
R126	RESISTOR,FXD FILM, 100K, 1%, 1/8W	705-1092-000	
R127	RESISTOR,FXD FILM, 38.3K, 1%, 1/8W	705-1072-000	
R128	RESISTOR,FXD FILM, 13K, 1%, 1/8W	705-3605-530	
R129	RESISTOR,FXD CMPSN, 2.7K, 10%, 1/8W	745-2356-000	
R130	RESISTOR,FXD CMPSN, 470K, 10%, 1/8W	745-2437-000	
R131	RESISTOR,FXD CMPSN, 18K, 10%, 1/8W	745-2386-000	
R132	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R133	RESISTOR,FXD CMPSN, 680 OHMS, 10%, 1/8W	745-2335-000	
R134	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
R135	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R136	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R137	RESISTOR,FXD CMPSN, 22K, 10%, 1/8W	745-2389-000	
R138	RESISTOR,FXD CMPSN, 560K, 10%, 1/8W	745-2440-000	
R139,	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R140			
R141	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R142	RESISTOR,FXD CMPSN, 820 OHMS, 10%, 1/8W	745-2338-000	
R143	RESISTOR,FXD CMPSN, 56 OHMS, 10%, 1/8W	745-2295-000	
R144	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R145,	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R146			
R147	RESISTOR,FXD CMPSN, 1.3K, 5%, 1/8W	745-1863-520	
R148	RESISTOR,FXD CMPSN, 180 OHMS, 10%, 1/8W	745-2314-000	
R149	RESISTOR,FXD CMPSN, 3K, 5%, 1/8W	745-1863-600	
R150	RESISTOR,FXD CMPSN, 10K, 10%, 1/8W	745-2377-000	
R151	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R152	RESISTOR,VAR 2K, 20%, 1/2W	382-0038-050	
R153	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R154,	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R155			
R156	NOT USED		
R157	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R158,	NOT USED		
R159			
R160	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/4W	745-0713-000	
R161	RESISTOR,FXD FILM, 221K, 1%, 1/8W	705-3604-170	
R162	NOT USED		
R163	RESISTOR,FXD CMPSN, 100 OHMS, 10%, 1/8W	745-2304-000	
R164-	RESISTOR,FXD CMPSN, 1MEGO, 10%, 1/8W	745-2449-000	
R166			
R167	RESISTOR,FXD CMPSN, 560K, 10%, 1/8W	745-2440-000	
R168	RESISTOR,FXD CMPSN, 47K, 10%, 1/8W	745-2401-000	
R169	RESISTOR,FXD CMPSN, 430K, 5%, 1/8W	745-1864-160	
R170	RESISTOR,FXD FILM, 10K, 1%, 1/8W	705-1044-000	
R171,	RESISTOR,FXD CMPSN, 1K, 10%, 1/8W	745-2341-000	
R172			
R173	RESISTOR,FXD CMPSN, 4.7K, 10%, 1/8W	745-2365-000	
R174	RESISTOR,FXD CMPSN, 100K, 10%, 1/8W	745-2413-000	
TP1	JACK,TIP BRN	360-0484-070	
TP2	JACK,TIP RED	360-0484-020	
TP3	JACK,TIP ORN	360-0484-050	
TP4	JACK,TIP YEL	360-0484-060	
TP5	JACK,TIP GRN	360-0484-040	
T1	TRANSFORMER,RF	278-0432-030	
U1	NOT USED		
U2,U3	INTEGRATED CIRCUIT MC1420G	351-1050-030	
U4	INTEGRATED CKT LM324N	351-1141-030	
U5	INTEGRATED CIRCUIT MC1458P1	351-1071-070	
U6	INTEGRATED CIRCUIT CD4098BE	351-8278-010	
U7	INTEGRATED CIRCUIT MC1496G	351-0043-020	
U8	INTEGRATED CIRCUIT MC14025CP	351-8159-150	
U9	INTEGRATED CIRCUIT MC14011CP	351-8159-040	

PARTS LIST (CONT)

REF DES	DESCRIPTION	COLLINS PART NUMBER	USABLE ON CODE
U10	INTEGRATED CIRCUIT F4049BPC	351-8159-210	
VR1,VR2	SEMICOND DEVICE 1N755A	353-2718-000	
VR3	SEMICOND DEVICE 1N751A	353-2710-000	
VR4	SEMICOND DEVICE 1N758A	353-2724-000	
R29,R41	RESISTOR,FXD,CMPSN, 200 THRU 1K, 5%,1/8W (TEST SELECT)	637-2529-001	

Channel B IF, REV U and Above, Schematic Diagram Figure 12 (Sheet 2)



NOTES:

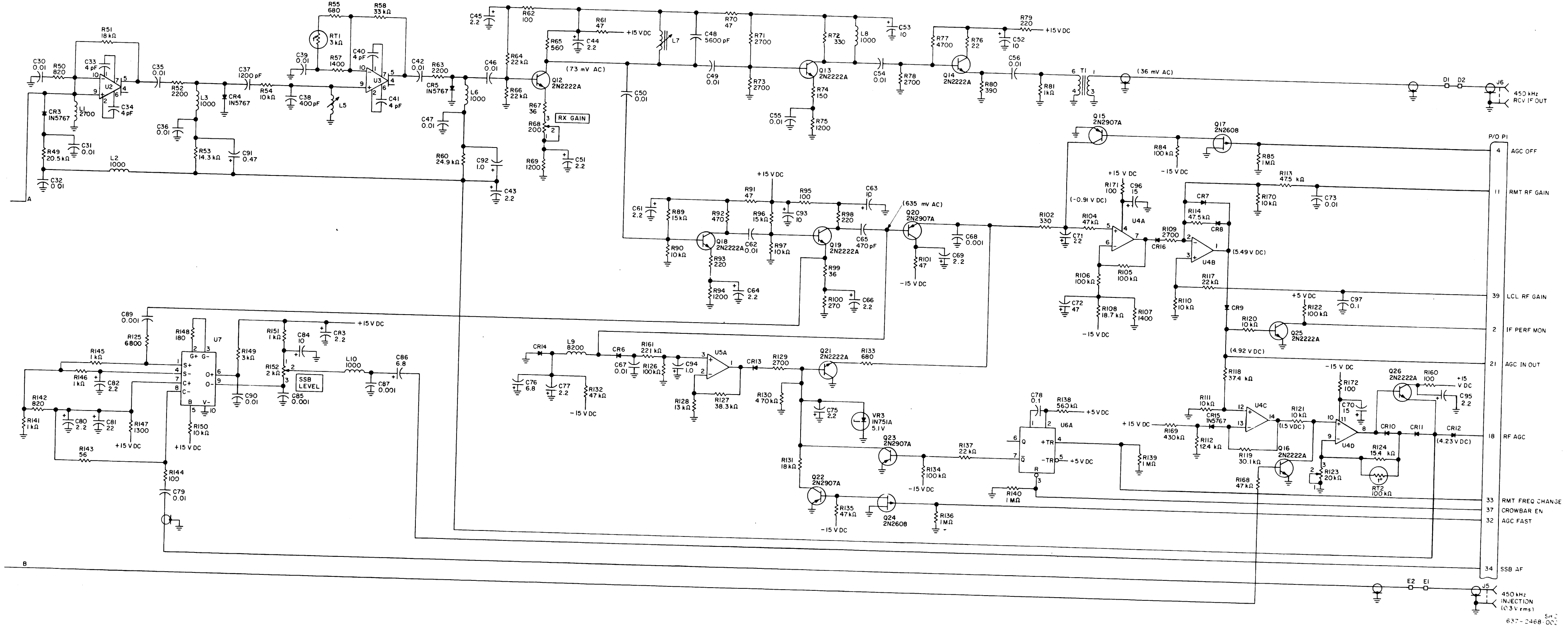
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, INDUCTANCE VALUES ARE IN MICROHENRYS AND DIODES ARE TYPE IN4454.
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN, FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
3. POWER AND GROUND CONNECTIONS

U NO.	TYPE	POWER(V DC) +15	+5	GND	-15
U2,U3	MC1420G				
U4	LM324N	4			11
U5	MC1458P1	8			4
U6	CD4098BE		16	8	
U7	MC1496G				
U8	MC14025CP		14	7	
U9	MC14011CP		14	7	
U10	F4049BPC		1	8	

4. IF GAIN FROM J4 TO J1 DOES NOT MEET SPECIFICATION (8.2±2 DB) USE TEST SELECT RESISTOR 637-2529-001.
5. □ DENOTES CIRCUIT CARD PAD.
6. ALL VOLTAGES ARE NOMINAL FOR GIVEN INPUT CONDITIONS. RF MODULE NOT IN AGC LOOP. CHAN A IF MUST BE IN PLACE. MODE IS ISB. SIGNAL INPUT AT CHAN A IF IS 5 mV, 9.4517 MHz.
7. THE ONLY DIFFERENCE BETWEEN THE 637-2647-001, -002, -003 AND -004 IS LSB FILTER, FL2.
   -001 2.75 kHz BANDWIDTH, 526-9956-010.
   -002 3.05 kHz BANDWIDTH, 526-9981-010.
   -003 3.10 kHz BANDWIDTH, 526-9986-010.
   -004 5.8 kHz BANDWIDTH, 526-9977-010.

SH 1
637-2468-002

Channel B IF, REV U and Above, Schematic Diagram
Figure 12 (Sheet 3)



Channel B IF, REV U and Above, Schematic Diagram
Figure 12 (Sheet 4)