SUPPLEMENT NUMBER: SU-10073-0019-2
TO
PUBLICATION NUMBER: 10073-0020A
MARCH 1983

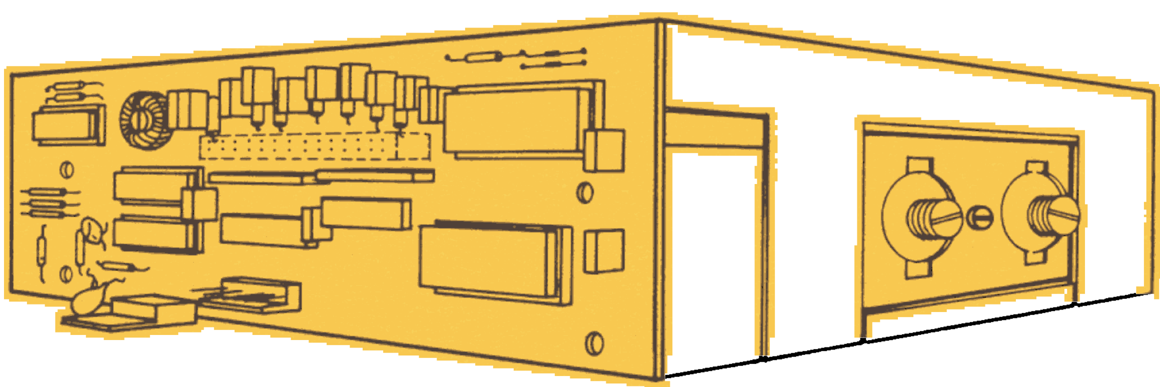
HARRIS

RF COMMUNICATIONS

RF-596-02

PRESELECTOR MODULE

(A19 ASSEMBLY)



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(A19 ASSEMBLY)

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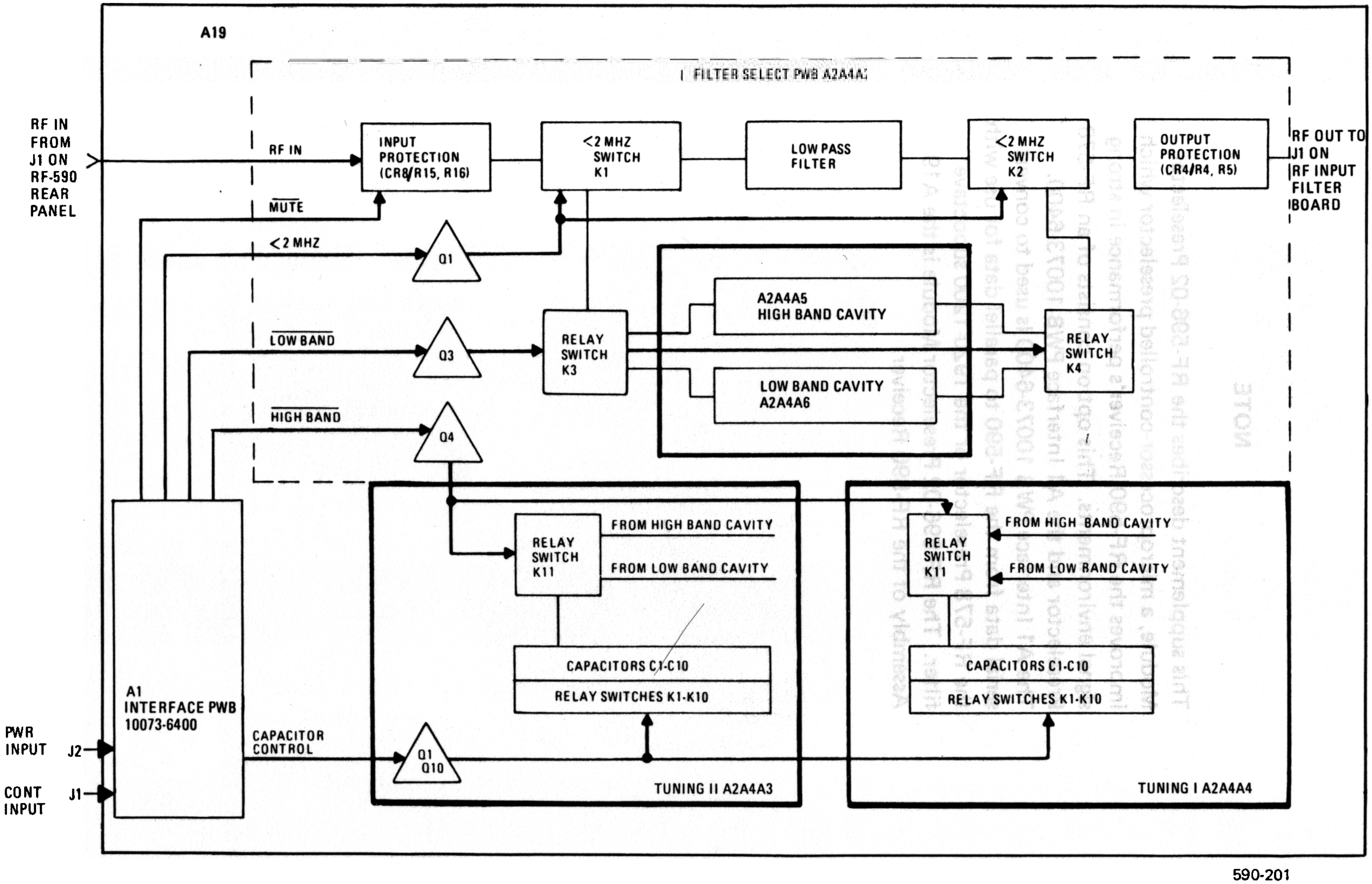
This supplement describes the RF-596-02 Preselector Module, a microprocessor-controlled preselector which improves the RF-590 Receiver's performance in strong signal environments. This option consists of an RF-578 Preselector and the A1 Interface PWB 10073-6400. The A1 Interface PWB 10073-6400 is used to convert serial data from the RF-590 to parallel data for use with the RF-578 Preselector or the 1920-1200 suboctave filter. The RF-596-02 Preselector Module is the A19 Assembly of the RF-590 Receiver.



RF-596-02 Preselector Module (A19 Assembly) Functional Block Diagram

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1. GENERAL DESCRIPTION

The RF-596-02 Preselector Module is a microprocessor-controlled preselector which improves the RF-590 Receiver's performance in strong signal environments. This option consists of an RF-578 Preselector and the A1 Interface PWB 10073-6400. The A1 Interface PWB 10073-6400 is used to convert serial data from the RF-590 to parallel data for use with the RF-578 Preselector or the 1920-1200 suboctave filter. Serial data is constantly clocked through shift registers U1 and U2 by the clock pulses. Only a frequency change on the RF-590 front panel causes a strobe pulse to be applied at the end of a serial word to U1 and U2. This strobe pulse causes the outputs of U1 and U2 to change to a parallel data format. The parallel output of shift registers U1 and U2 is the address that is used by EPROMS U3 and U4 to select capacitor control lines CO through C9 of the RF-578 or bands for the one-half octave filter. Figure 1 shows the location of the A1 Interface PWB on the RF-596-02 Preselector Module.

2. TECHNICAL CHARACTERISTICS

Weight:

Preselector Module	2.6 pounds (1.8 kilograms)
Control PWB Assemblies	0.5 pounds (0.23 kilograms)

Dimensions:

Preselector Module	5.31 (H) x 5.84 (W) x 2.09 (D) inches 13.49 (H) x 14.83 (W) x 5.31 (D) centimeters
Power Requirements:	5 Vdc -15 Vdc
Frequency Range:	0.1 to 30 MHz
Insertion Loss:	4 to 6 dB
Selectivity:	20 dB minimum at a frequency 10% from f_o
Overload Protection:	On-channel - 10 Vrms nominal Off-channel - 30 Vrms nominal

3. FUNCTIONAL DESCRIPTION

3.1 Filter Select Assembly A19A2

An RF input signal from the antenna enters the Filter Select PWB at J2, and is fed via the normally energized contacts of relay K6, to relay K1. Relays K1 and K2 are under the control of the <2 MHz input from Interface PWB A19A1. If the receive frequency is less than 2 MHz, a low input would be present at E5. Q1 is now biased on energizing K1, K2; opening the signal path to the cavity filters; and coupling the

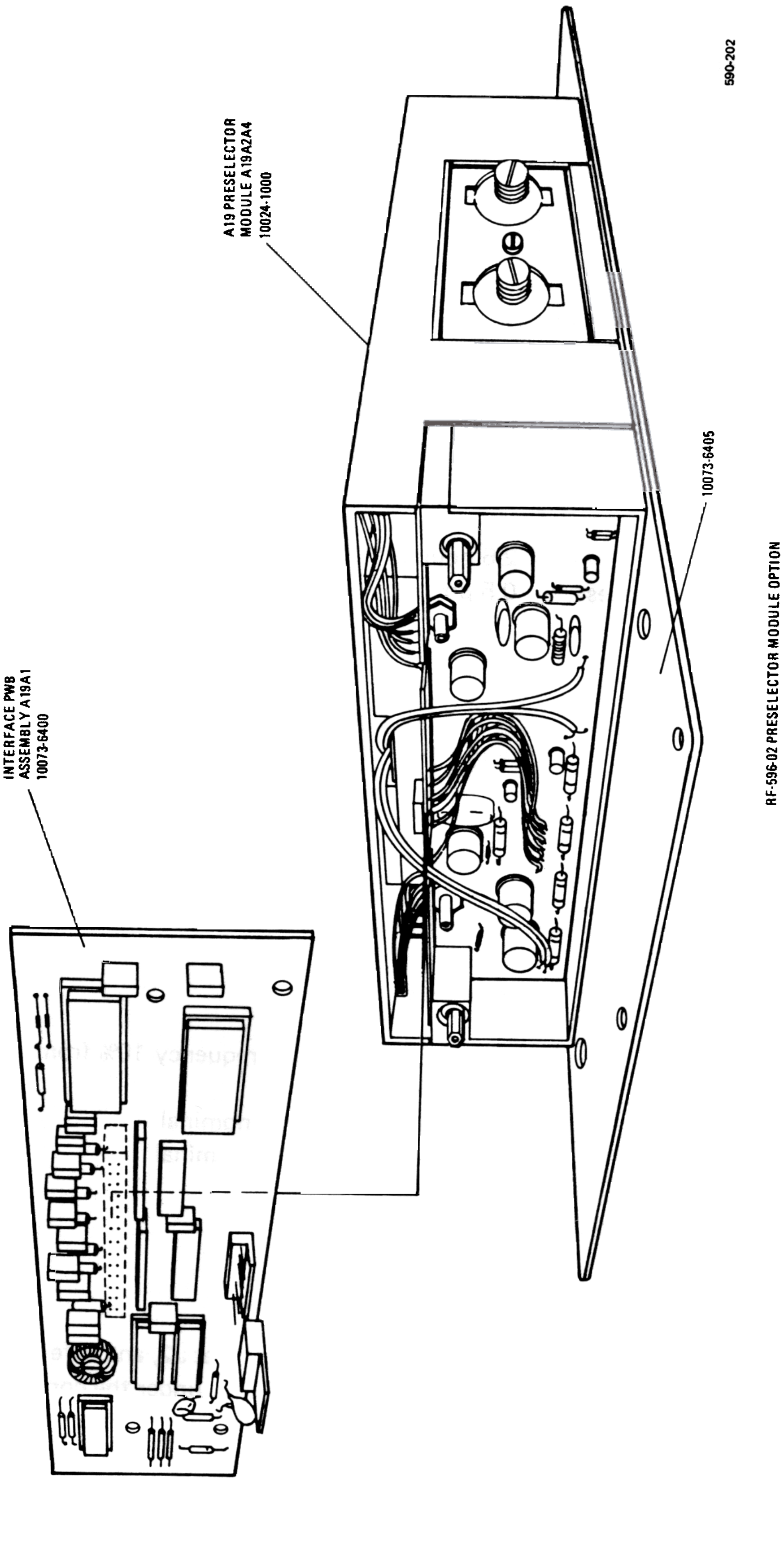


Figure 1. RF-596-02 Preselector Module Option (A19 Assembly)

RF signal via the low pass filter network C2, L3, C3, and C4, normally energized K5, to the input of Input Filter PWB A1 of the RF-590.

For a receive frequency greater than 2 MHz (as decoded by Interface PWB A19A1), Q1 is held at cut-off by R2. This keeps relays K1 and K2 deenergized. The RF signal (>2 MHz) is now passed, via the normally closed contacts of K1, to band select relay K3. Relays K3 and K4 operate in unison, under the control of A19A1. When Interface PWB A19A1 determines the receive frequency to be within the low band limits (2 MHz to 7.99 MHz), a low logic level is applied to Q3, via E1 and R10. Q3, now being forward biased, energizes relays K3 and K4, while C18, L8, and L9 serve to decouple any stray RF that may be present on the supply line. Energized relays K3 and K4 couple the RF signal to a high-Q, doubly-tuned bandpass filter, whose resonant frequency is determined by the tuning of the coils within the low band cavity assembly, and the capacitors (located on Tuning Assembly I and Tuning Assembly II) switched into the circuit by control data from A19A1. The individual filter shape is determined by several factors, which include filter tuning (capacitive and inductive) and the coil-to-coil coupling within the low band cavity. With the low band circuitry properly adjusted, each filter is designed to cover a specific frequency band with a one-half dB bandwidth of approximately 1/60 of an octave. From the low band cavity filter, the RF signal reenters the Filter Select PWB at E10, via low pass filter (C20, C21, L10, L11, and R14/L2), energized relay K4, normal K2 contacts, and energized relay K5, then is applied to the J1 RF output.

Similarly, if Interface PWB A19A1 determines the selected frequency to be 8 MHz or greater, a high logic level is applied to E1. This biases Q3 off, deenergizing relays K3 and K4. Deenergized relays K3 and K4 couple the RF signal to the high band cavity which functions in a manner similar to the low band cavity. The same groups of capacitors are used in both the high band and low band filters with any minor capacitive differences between high and low band cavities being compensated for by C21, C22 on Tuning Assembly I and C22, C23 on Tuning Assembly II. From the high band cavity, the RF signal reenters the Filter Select PWB at E12 via a low pass filter (C15, C16, L6, L7, and R11/L1), deenergized relays K4 and K2 and energized relay K5. The RF signal is then applied to the RF-590 A1 Input Filter (10073-5100). In addition, a low logic level is applied to the base of Q4, via E13 and R13, biasing Q4 on, which energizes relays K11 on Tuning Assemblies I and II of the RF-596-02 Preselector Module.

A high level, out-of-band input signal at J2 is coupled by C24 to the voltage divider network consisting of R15 and R16. This voltage, detected by CR8, is seen as a negative voltage at the base of Q5. This increases proportionally to the RF input level. At a level of 30 Vrms, the voltage developed across CR8 becomes sufficiently negative to bias Q6 off, deenergizing K6 and opening the antenna input path. Voltage divider network R4, R5, and detector CR4 develop a negative voltage proportional to the in-band signal level present at C7. At an in-band signal level of 10 Vrms or greater, the negative voltage at the base of Q2 becomes sufficient to bias Q2 off, deenergizing relay K5 and shorting the RF input to the receiver.

3.2 Tuning Assemblies I and II (A2A4A4, A2A4A3)

Tuning Assembly I (A2A4A4), and Tuning Assembly II (A2A4A3) are similar in design and function, with the exception that Tuning Assembly II contains the ten relay driver transistors (Q1 through Q10). Each PWB assembly is comprised of ten capacitor sections with their associated control relays (K1 through K10), and a high/low band select relay K11.

Refer to the Tuning Assemblies schematic diagram for the following discussion. Relay driver transistors Q1 through Q10, on Tuning Assembly II, are normally reversed biased by a 5 Vdc level supplied by Interface PWB A19A1. The Interface PWB A19A1 decodes the serial data stream from the RF-590 into a parallel word that is used to supply band information to CO through C9. Active control signals appear at the inputs of Tuning Assembly II as low logic levels, while inactive control lines are identified by the presence of the 5 Vdc on the Tuning Assembly II inputs.

For the following discussion, assume that the receiver's front panel frequency select switches are set to 2.15 MHz. The frequency and band information for 2.15 MHz contained in the RF-590 frequency code is decoded by A19A1, which in turn presents a series of low (active) control inputs to Tuning Assembly II. In this example, all control inputs are low (active), with the exception of A3J1-2 (C8) which remains high (inactive). This low level at $\overline{C0}$ through $\overline{C7}$ and $\overline{C9}$, forward biases Q1 through Q7, Q9, and Q10, while the high level at A3J1-2 ($\overline{C8}$) holds Q8 at cut-off. Transistors Q1 through Q7, Q9, and Q10 are now forward biased and energize their respective control relays (K1 through K10) on Tuning Assembly II, and via A3P1 and A3P2, control relays (K1 through K10) on Tuning Assembly I. Energized control relays K1 through K7, K9, and K10 switch their associated capacitors into the signal path from the cavity filter, in this case, the low band cavity.

In addition, since the frequency selected (2.15 MHz) is within the low band range, relays K11 on Tuning Assemblies I and II will be deenergized, connecting the capacitor network to the low band cavity.

CAUTION

The trimmer capacitors located on Tuning Assemblies I and II and adjustments on the cavity assemblies have been set for optimum response characteristics at the desired frequencies, and should not require any further adjustments under normal use. Severe degradation in receiver performance will result if attempts are made to adjust these capacitors without the use of proper test equipment (i.e., H.P. Spectrum Analyzer Model 8553B, equipped with Model 8444A Tracking Generator, or equivalent).

3.3 Interconnect Schematic

An interconnect schematic for the RF-596-02 Preselector Module is found at the end of this section.

4. MAINTENANCE

4.1 General

The RF-596-02 Preselector Module requires no periodic lubrication or adjustments of a mechanical nature. Under normal operation, no further adjustment to the high band cavities, low band cavities, or to the variable capacitors on the two Tuning Assemblies should be required.

4.2 Troubleshooting Procedure

After localizing the receiver's malfunction to the RF-596-02 Preselector Module, it must be further determined which assembly within the module itself is the cause of the problem. To localize faults within the RF-596-02 Preselector, seven different frequencies can be used to test the band selection relays and the tuning capacitors as shown in tables 1 and 2.

Table 1. Filter Select Assemblies I and II Troubleshooting Aid

	Relays											
	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	A3P1-7	A4P2-2
	Terminals											
Frequency MHz	E1	E11	E2	E8	E7	E4	E5	E6	E9	E10	A3K11	A4K11
2.150	L	L	L	L	L	L	L	H	L	L	H	H
2.90	X	X	X	X	X	X	X	L	H	X	X	X
7.890	H	H	H	H	H	H	H	H	H	H	X	X
8.0	X	X	X	X	X	X	X	X	X	X	L	L

Notes:

L = Low Logic Level/Relay Energized
H = High Logic Level/Relay Deenergized
X = Don't Care
Low Level to Activate Control Functions

Table 2. Filter Select PWB A2A4A2 Frequency vs. Relay Operation

	Relays	
Frequency MHz	K1, K2	K3, K4
1.5	Closed	Open
2.0	Open	Closed
8.0	Open	Open

When using tables 1 and 2, note that active control lines are indicated by low logic levels, while inactive control lines remain high (approximately 5 Vdc). The low levels on capacitor control lines C0 through C9 forward bias relay driver transistors Q1 through Q10, energizing their associated control relays. For example, assume that the front panel switches are set for 2,150 MHz. Table 1 indicates that for the frequency of 2.150 MHz, all capacitor control relays on Tuning Assemblies I and II (A2A4A4 and A2A4A3, respectively) should be energized with the exception of control relay K8. In addition, all terminals (E2 through E10) on Control Input PWB A2A4A1 should indicate a low logic level, with the exception of E6 which should read a high level (approximately 5 Vdc). Should any control line(s) indicate other than what is shown in table 1, the fault is located before the module proper (i.e. Interface PWB A19A1). Similarly, if the status of the control lines reflect what is shown in the table, but the respective control relays remain de-energized, that fault is most likely within the module proper, (i.e., Tuning Assemblies I and II).

The frequencies in table 2 will check the following control lines; 2 MHz Control, Low Band Control, and High Band Control. The use of tables 1 and 2, together with the schematic drawings supplied, should ease fault location and repair.

5. ASSEMBLY A19 ALIGNMENT

5.1 General Information

The RF-596-02 Preselector Module, when used in conjunction with the RF-590 Receiver, will normally require no alignment. Read the following warning before attempting any alignment routine.

WARNING

Do not attempt any Preselector Module Alignment/ Adjustment procedure until all other possible causes for degraded performance have been checked and ruled out. As an example, if appropriate relays on the Tune I and Tune II boards are not switching in pairs, it could appear to be an alignment problem. Attempting to align the unit under these conditions would be futile and would probably require returning the unit to the factory to correct. Remember, realignment should never be required unless mechanical positioning of reactive elements are accidentally (or purposely) disturbed.

5.2 Prealignment Performance Check

The prealignment performance check should consist of measuring the insertion loss (in dB), the accuracy at which the "selectivity window" is centered on frequency, and ensuring that the selectivity is at least −20 dB at ±10 percent removed from the center frequency (F_C). This may be accomplished by setting the receiver frequency select switches to the frequencies specified in table 3 and observing the results with a spectrum analyzer and tracking generator tuned to the appropriate frequency (figure 2).

5.3 Assembly A19 Alignment Procedure

This alignment procedure is not intended to become a part of a periodic maintenance routine. Any attempt to adjust this assembly without the required test equipment (or equivalent) will cause severe degradation in receiver performance. The RF-596-02 Preselector Module has been factory set for optimum response characteristics over the operating frequency range, and should not require further adjustment. If after a component replacement, measured performance indicates that a realignment is required; proceed as follows:

NOTE

Do not make the following adjustments without the use of a Hewlett-Packard Spectrum Analyzer Model HP-8553B, equipped with Model HP-8444A Tracking Generator (or equivalent). See figure 3 for alignment test setup.

Table 3. Optimum Response Curve Characteristics

Center Frequency F_c (MHz)	−10% Below F_c (MHz)	+10% Above F_c (MHz)
2.015	1.813	2.216
2.500	2.250	2.750
5.000	4.500	5.500
7.945	7.150	8.739
8.050	7.245	8.855
10.000	9.000	11.000
15.000	13.500	16.500
20.000	18.000	22.000
25.000	22.500	27.500
29.999	27.000	33.000

5.3.1 Low Band Adjustment (Initial Setup)

a. For the location of the aperture screw and link assembly mentioned in the following procedure, refer to figure 4.

b. Turn aperture screw fully counterclockwise to the rear of the cavity, then rotate five turns clockwise.

c. Turn low band link assemblies fully clockwise, then rotate two turns clockwise.

d. Set cores fully clockwise.

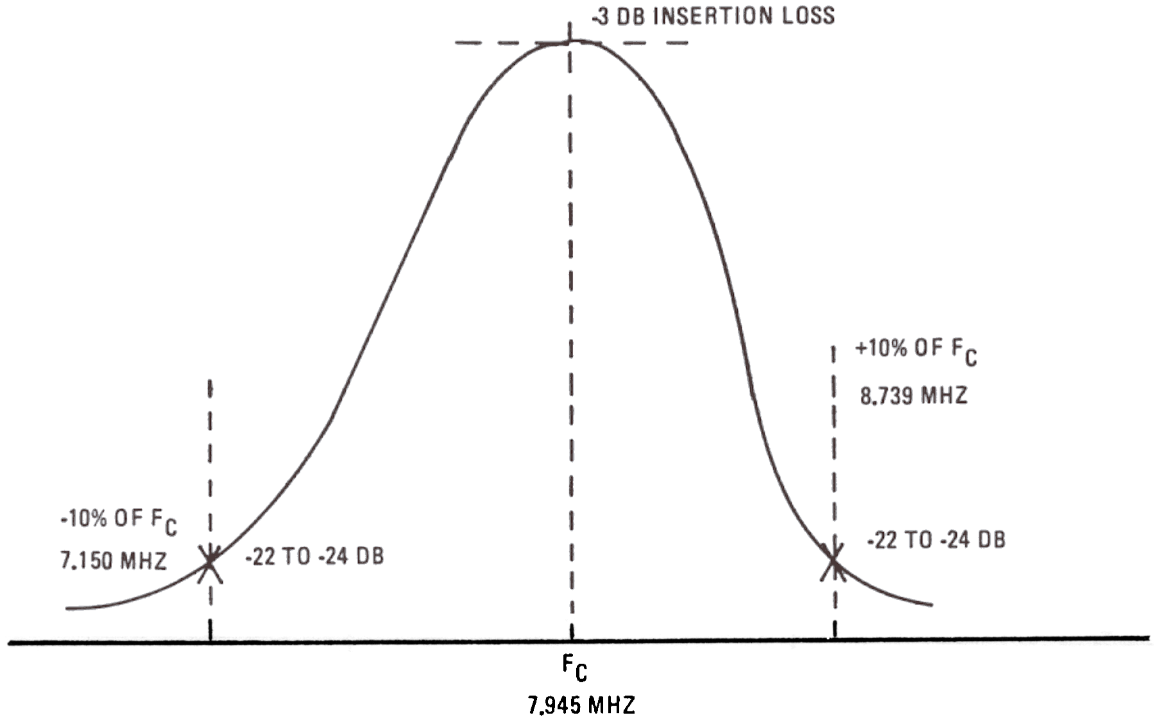


Figure 2. Typical Response Curve for Cavity Filter

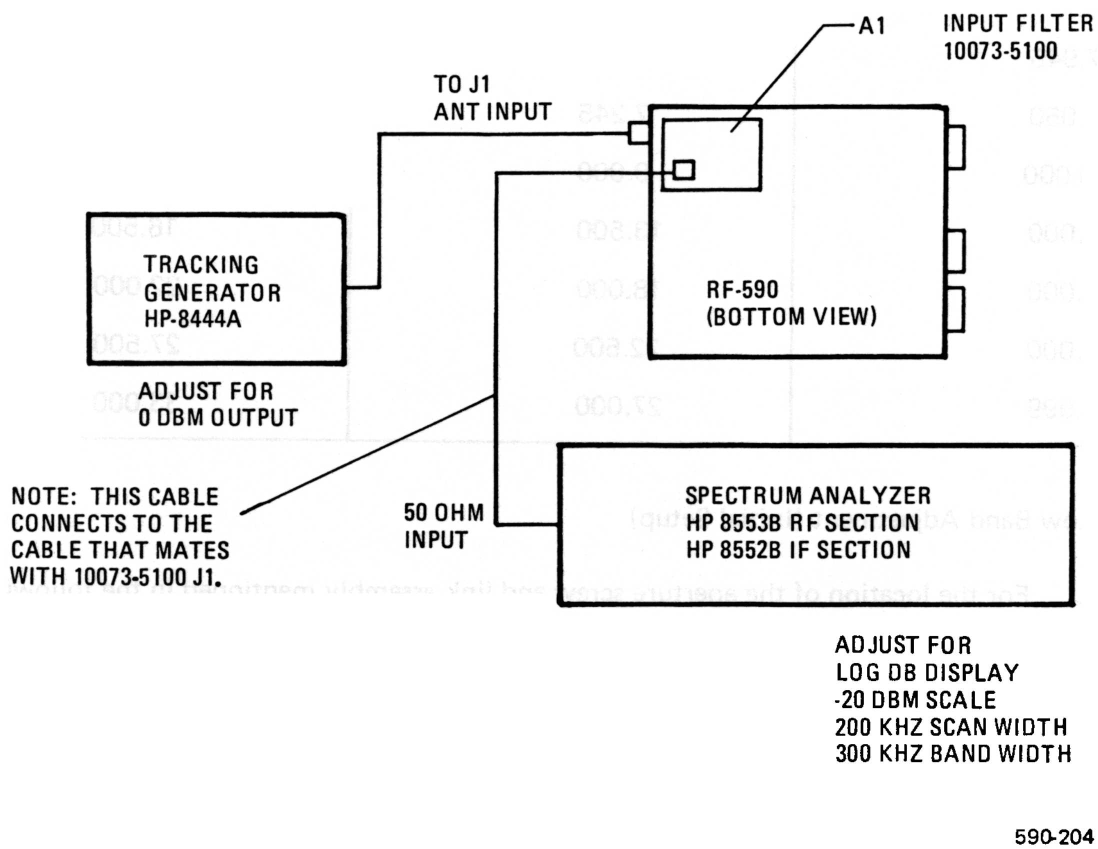


Figure 3. Alignment Test Setup for Assembly A19

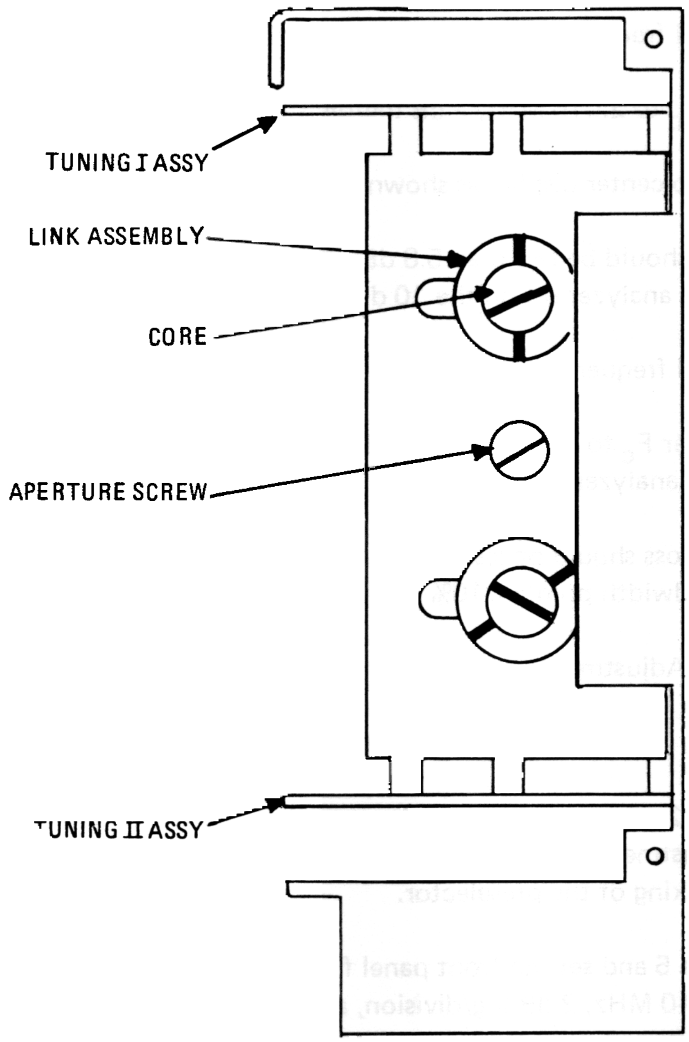


Figure 4. High/Low Band Cavity Coil Adjustment Locations

e. Set front panel frequency switches to 7.9450 MHz.

Set analyzer to 7.945 MHz, bandwidth to 300 kHz, scan width to 0.2 MHz, 2 dB log/division. Set A3C21 and A4C22 for a centered display on the spectrum analyzer.

g. Adjust link assemblies and aperture screw to obtain a 3 to 4 dB insertion loss. Set analyzer to 10 dB log/division. Check the points ±10% of the center frequency (7.150 and 8.739 MHz) for a –22 to –24 dB level consistent with the 3 to 4 dB level at the center frequency (F_c). Adjust link assemblies as necessary.

Low Band Adjustments (Tuning)

a. Set front panel frequency switches to 2.015 MHz.

b. Set analyzer F_c to 2.015 MHz, 2 dB log/division.

c. Adjust cores to center display as shown in figure 4.

d. Insertion loss should be less than 5.8 dB. Check the points at ±10% of F_c (1.813 and 2.216 MHz) with the analyzer set on the 10 dB log/division. They should be a –22 to –24 dB.

e. Set front panel frequency switches to 7.945 MHz.

f. Set the analyzer F_c to 7.945 MHz, 2 dB log/division. Adjust A3C21 and C4C22 to center display on the analyzer.

g. The insertion loss should be less than 4 dB. With the analyzer set to 10 dB log/division, check the bandwidth points ±10% of F_c (7.150 and 8.739) for a –22 to –24 dB level.

Variable Capacitor Adjustment

NOTE

Use 2 dB log position on the spectrum analyzer. Precise adjustment of these trimmers is required for proper tracking of the preselector.

a. Refer to figure 5 and set the front panel frequency switches to 7.840 MHz. Set the analyzer to a F_c of 7.840 MHz, 2 dB log/division, and bandwidth of 300 kHz. Adjust A3C10 and A4C10 to center and peak the response.

b. Set front panel frequency switches to 7.760 MHz, and analyzer F_c at 7.760 MHz. Adjust A3C1 and A4C1 to center and peak response.

c. Set front panel frequency switches to 7.565 MHz, and analyzer F_c to 7.565 MHz. Adjust A3C2 and A4C2 to center and peak display.

d. Set front panel frequency switches to 7.260 MHz, and analyzer F_c to 7.260 MHz. Adjust A3C3 and A4C3 to center and peak display.

e. Repeat steps 5.3.1e through g and 5.3.3a through d.

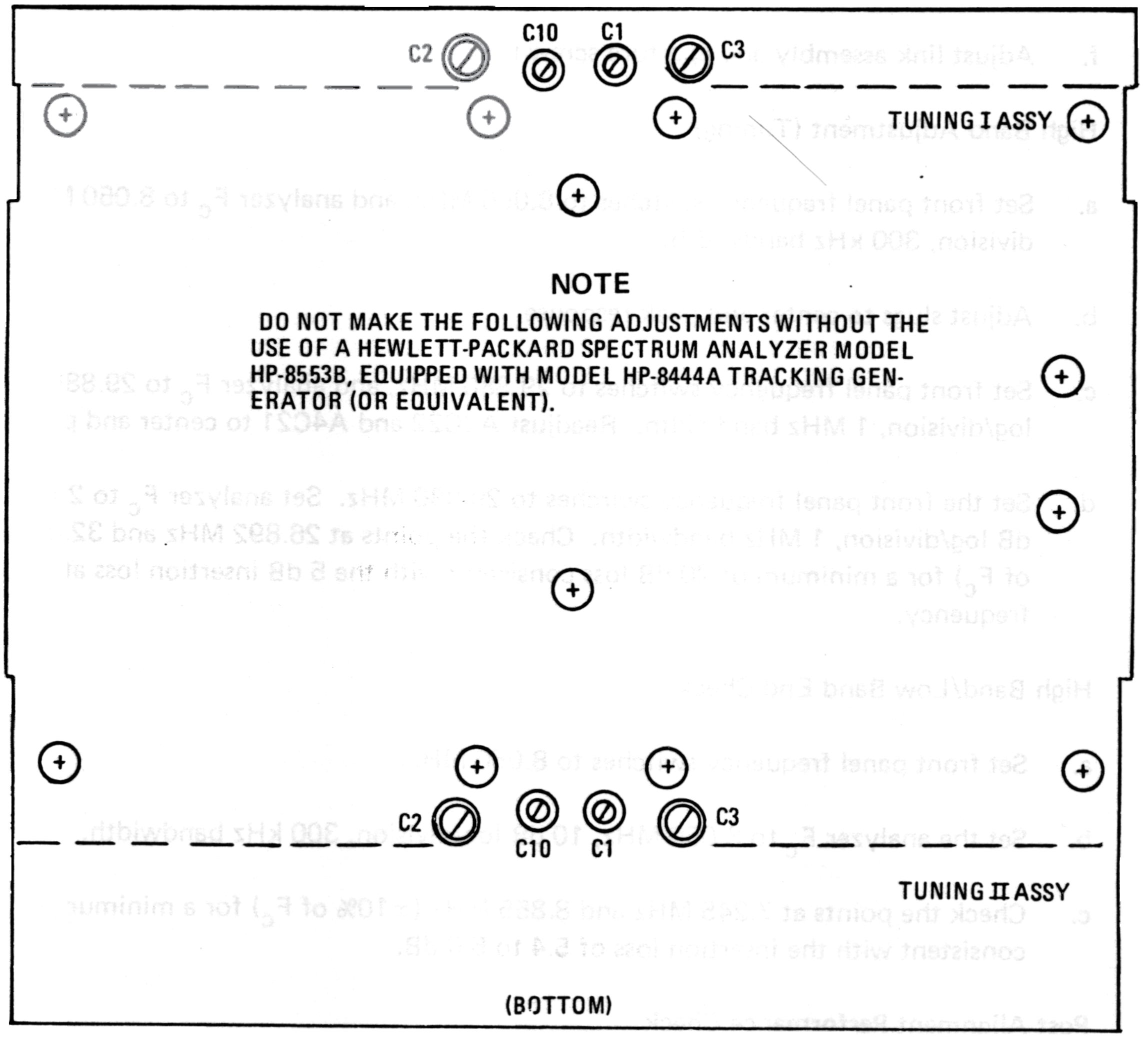


Figure 5. RF-596-02 Preselector Module Rear Panel Adjustments

5.3.4 High Band Adjustment (Initial Setup)

a. Turn aperture screw (see figure 4) fully counterclockwise to rear of cavity, then rotate two turns clockwise.

b. Turn link assemblies fully clockwise, then rotate four turns counterclockwise.

c. Set cores fully clockwise.

d. Set front panel frequency switches to 29.880.

e. Set analyzer F_c to 29.880, 2 dB log/division, and bandwidth to 1 MHz. Adjust A3C22 and A4C21 to center and peak the response.

f. Adjust link assembly and aperture screw to obtain a 5 dB insertion loss.

High Band Adjustment (Tuning)

a. Set front panel frequency switches to 8.050 MHz, and analyzer F_c to 8.050 MHz, 2 dB log/division, 300 kHz bandwidth.

b. Adjust slugs to center and peak response.

c. Set front panel frequency switches to 29.880 MHz, and analyzer F_c to 29.880 MHz, 2 dB log/division, 1 MHz bandwidth. Readjust A3C22 and A4C21 to center and peak display.

d. Set the front panel frequency swirches to 29.880 MHz. Set analyzer F_c to 29.880 MHz, 10 dB log/division, 1 MHz bandwidth. Check the points at 26.892 MHz and 32.868 (±10% of F_c) for a minimum of 20 dB loss consistent with the 5 dB insertion loss at the center frequency.

5.3.6 High Band/Low Band End Check

a. Set front panel frequency switches to 8.050 MHz.

b. Set the analyzer F_c to 8.050 MHz, 10 dB log/division, 300 kHz bandwidth.

c. Check the points at 7.245 MHz and 8.855 MHz (±10% of F_c) for a minimum of 20 dB loss consistent with the insertion loss of 5.4 to 5.6 dB.

Post Alignment Performance Check

In addition to evaluating performance data (insertion loss and selectivity at ±10% of F_c) at the frequencies specified in the alignment procedure, spot checks should be made throughout the system frequency range to ensure proper tracking of the cavity filters. This may be accomplished by setting the receiver frequency select switches to the frequencies specified in table 4 and observing the results with a spectrum analyzer/tracking generator tuned to the appropriate frequency.

NOTE

A properly adjusted preselector will have the selectivity windows centered on frequency and meet published insertion loss and selectivity at ±10% from the center frequency.

Table 4. Post Alignment Test Frequencies

Center Frequency (F_c)	-10% of F_c	$+10\%$ of F_c
2.500	2.250	2.750
5.000	4.500	5.500
10.000	9.000	11.000
15.000	13.500	16.500
20.000	18.000	22.000
25.000	22.500	27.500
29.999	27.000	33.000

6. PARTS LISTS

Tables 5 through 8 are comprehensive parts lists of all replaceable components for the RF-596-02 Preselector Module. When ordering parts from the factory, include a full description of the part. Manufacturers are referenced by a five digit code found in table 9. Figures 6 through 10 are component location diagrams for the RF-596-02 Preselector Module.

7 SCHEMATIC DIAGRAMS

Figures 11 through 14 are the RF-596-02 Preselector Module schematic diagrams.

Table 5. Filter Select PWB Assembly Parts List

Ref. Desig.	Part No.	Description
A2	10024-2210	Filter Select PWB Assembly
C1	C11-0005-104	Capacitor, Ceramic, .1 uF
C2	CD15FA122J03	Capacitor, Mica, 1200 pF
C3	CMR04C750JODM	Capacitor, Mica, 75 pF
C4	CD15FA122J03	Capacitor, Mica, 1200 pF
C5, C6	C11-0005-104	Capacitor, Ceramic, .1 uF
C7	C320C103MIUICA	Capacitor, Ceramic, .01 uF; mfr 31433
C8	C330C104MIUICA	Capacitor, Ceramic, .1 uF; mfr 31433
C9-C14	C11-0005-104	Capacitor, Ceramic, .1 uF
C15		Not Used
C16		Not Used
C17-C19	C11-0005-104	Capacitor, Ceramic, .1 uF
C20	CMR04F361JODL	Capacitor, Mica, 360 pF
C21	CMR04F241JODL	Capacitor, Mica, 240 pF
C22, C23	C11-0005-104	Capacitor, Ceramic, .1 uF
C24	C320C103MIUICA	Capacitor, Ceramic, .01 uF; mfr 31433
CR1-CR2	1N4148	Diode, Silicon
CR4	HP5082-2800	Diode, Hot Carrier; mfr 28480
CR5-CR6	1N4148	Diode, Silicon
CR8	HP5028-2800	Diode, Hot Carrier; mfr 28480
CR9	1N4148	Diode, Silicon
K1-K4	712-5	Relay, DPDT
K5, K6	712-12	Relay, DPDT; mfr 11532
L1		Not Used
L2		See R14
L3	MS18130-14	Inductor, Fixed, 3.3 uH
L4, L5	MS181130-8	Inductor, Fixed, 1.0 uH
L6		Not Used
L7		Not Used
L8, L9	MS181130-8	Inductor, Fixed, 1.0 uH
L10	MS75083-11	Inductor, Fixed, .68 uH
L11	MS18130-9	Inductor, Fixed, 1.2 uH
L12, L13	MS181130-8	Inductor, Fixed, 1.0 uH
Q1	2N2907	Transistor, PNP
Q2	2N2222A	Transistor, NPN
Q3-Q4	2N2907	Transistor, PNP
Q5	2N2222A	Transistor, NPN
R1	RCR07G270J	Resistor, Fixed, Composition, 27 ohms, 1/4 W, 5%
R2	RCR07G103J	Resistor, Fixed, Composition, 10K ohms, 1/4 W, 5%
R3	RCR07G102J	Resistor, Fixed, Composition, 1000 ohms, 1/4 W, 5%
R4, R5	100NS2700-5	Resistor, 2,700 ohms, 1 W, 5%, mfr 00213
R6	RCR07G162J	Resistor, Fixed, Composition, 1.6K ohms, 1/4 W, 5%
R7	RCR07G822J	Resistor, Fixed, Composition, 8200 ohms, 1/4 W, 5%

Table 5. Filter Select PWB Assembly Parts List (Cont.)

Ref. Desig.	Part No.	Description
R8	RCR07G123J	Resistor, Fixed, Composition, 12K ohms, 1/4 W, 5%
R9	RCR07G103J	Resistor, Fixed, Composition, 10K ohms, 1/4 W, 5%
R10	RCR07G102J	Resistor, Fixed, Composition, 1000 ohms, 1/4 W, 5%
R11		Not Used
R12	RCR07G103J	Resistor, Fixed, Composition, 10K ohms, 1/4 W, 5%
R13	RCR07G102J	Resistor, Fixed, Composition, 1000 ohms, 1/4 W, 5%
R14/L2	6905-0610	Resistor/Inductor, Fixed
R15, R16	100NS2700-5	Resistor, High Power, 2700 ohms, 1 W, 5%; mfr 00213
R17	RCR07G183J	Resistor, Fixed, Composition, 18K ohms, 1/4 W, 5%
R18	RCR07G123J	Resistor, Fixed, Composition, 12K ohms, 1/4 W, 5%
R19	RCR07G822J	Resistor, Fixed, Composition, 8200 ohms, 1/4 W, 5%
R20	RCR07G273J	Resistor, Fixed, Composition, 27K ohms, 1/4 W, 5%
R21, R22	RCR07G750J	Resistor, Fixed, Composition, 75 ohms, 1/4 W, 5%
VR1, VR2	1N5242B	Diode, Zener .12 V, 5%
JMP1, 2	MP-1142	Jumper molded

Table 6. Tuning Assembly I Parts List

Ref. Desig.	Part No.	Description
A4	10024-2220	Tuning I PWB Assembly
C1	5801	Capacitor, Variable, .3 to 3.5 pF; mfr 91293
C2, C3	5201	Capacitor, Variable, .8 to 10 pF; mfr 91293
C4	6905-0606-1	Capacitor, Mica, 15 pF
C5	6905-0606-2	Capacitor, Mica, 30 pF
C6	6905-0606-3	Capacitor, Mica, 56 pF
C7	6905-0606-4	Capacitor, Mica, 110 pF
C8, C9	6905-0606-5	Capacitor, Mica, 220 pF
C10	5801	Capacitor, Variable, .3 to 3.5 pF; mfr 91293
C11-C20	C11-0005-104	Capacitor, Ceramic, .1 uF
C21, C22	5201	Capacitor, Variable, .8 to 10 pF; mfr 91293
C23	C11-0005-104	Capacitor, Ceramic, .1 uF
CR1 to CR11	1N3064	Diode, Silicon
K1 to K10	6905-0607	Reed, Relay
K11	6905-0608	Relay, DPDT
P1, P2	1100-1-107-02	Connector; mfr 26742

Table 7. Tuning Assembly II Parts List

Ref. Desig.	Part No.	Description
A3	10024-2230	Tuning II PWB Assembly
C1	5801	Capacitor, Variable, .3 to 3.5 pF; mfr 91293
C2, C3	5201	Capacitor, Variable, .8 to 10 pF; mfr 91293
C4	6905-0606-1	Capacitor, Mica, 15 pF
C5	6905-0606-2	Capacitor, Mica, 30 pF
C6	6905-0606-3	Capacitor, Mica, 56 pF
C7	6905-0606-4	Capacitor, Mica, 110 pF
C8, C9	6905-0606-5	Capacitor, Mica, 220 pF
C10	5801	Capacitor, Variable, .3 to 3.5 pF; mfr 91293
C11-C20	C11-0005-104	Capacitor, Ceramic, .1 uF
C21, C22	5201	Capacitor, Variable, .8 to 10 pF; mfr 91293
C23	C11-0005-104	Capacitor, Ceramic, .1 uF
CR1-CR11	1N3064	Diode, Silicon
J1, J2	1300-007	Connector; mfr 26742
K1-K10	6905-0607	Reed, Relay
K11	6905-0608	Relay, DPDT
P1, P2	1100-1-107-02	Connector; mfr 26742
Q1-Q10	MPS-6562	Transistor, PNP; mfr 04713
R1	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R2	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R3	RCR05G103J	Resistor, Fixed Composition, 10K ohms, 1/8 W, 5%
R4	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R5	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R6	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R7	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R8	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R9	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R10	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R11	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R12	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R13	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R14	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R15	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R16	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R17	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%
R18, R19	RCR05G392J	Resistor, Fixed, Composition, 3900 ohms, 1/8 W, 5%
R20	RCR05G103J	Resistor, Fixed, Composition, 10K ohms, 1/8 W, 5%

Table 8. Preselector Interface PWB Assembly Parts List

Ref. Desig.	Part No.	Description
A19	10073-6400	Preselector Interface PWB Assembly
C1	CK06BX104M	Capacitor, Ceramic, 0.1 uF, 50 V
C2		Not Used
C3 – C6	CK06BX104M	Capacitor, Ceramic, 0.1 uF, 50 V
C7	C26-0025-100	Capacitor, Tantalum, 10 uF, 25 V
C8 – C21	CK06BX104M	Capacitor, Ceramic, 0.1 uF, 50 V
C22	C26-0025-339	Capacitor, Tantalum, 3.3 uF, 25 V
CR1 – CR5	1N4454	Diode
J1	J46-0032-010	Header, 10 Pin
J2	J46-0032-006	Header, 6 Pin
J3	J70-0007-010	Card Connector, 20 Pin
J4	J46-0032-005	Header, 5 Pin
JMP1	MP-1142	Molded Jumper
L1 – L12	L-0652	Inductor, Fixed, 1 uH
L13	10073-7029	Inductor, Toroid
L14	L-0652	Inductor, Fixed, 1 uH
R1	R65-0003-103	Resistor, Film, 1/4 W, 10K
R2	R65-0003-153	Resistor, Film, 1/4 W, 15K
R3, R4	R65-0003-103	Resistor, Film, 1/4 W, 10K
R5	R65-0003-153	Resistor, Film, 1/4 W, 15K
R6, R7	R65-0003-103	Resistor, Film, 1/4 W, 10K
R8	R65-0003-153	Resistor, Film, 1/4 W, 15K
R9, R10	R65-0003-103	Resistor, Film, 1/4 W, 10K
R11, R12	R50-0010-103	Resistor, SIP, 10K
U1, U2	I01-0000-156	CD4094
U3, U4	10073-8006-701	PROM
U5	I30-0003-000	LM324
U6, U7	I05-0000-005	SN74LS05
VR1	I11-0001-001	Regulator 5 V

Table 9. List of Manufacturer's Codes

Mfr. Code	Name & Address	Mfr. Code	Name & Address
00213	Nytronics Components Group Inc. Orange Street Darlington, SC 29532	26742	Methode Electronics Inc. 7447 W. Wilson Avenue Chicago, IL 60656
01295	Texas Instruments Inc. Semiconductor Group P.O. Box 5012 13500 N. Central Expressway Dallas, TX 75222	27014	National Semiconductor 2900 Semiconductor Drive Santa Clara, CA 95051
		28480	Hewlett-Packard Company 1501 Page Mill Road Palo Alto, CA 94304
04713	Motorola Inc. Semiconductor Division 5005 E. McDowell Road Phoenix, AZ 85036	31433	Union Carbide Corporation Components Division Greenville, SC 29606
07263	Fairchild Semiconductor Div. 464 Ellis Street Mountain View, CA 94042	53387	3M Company Electronic Products Division 3M Center St. Paul, MN 55101
11532	Teledyne Relays 3155 W. EL Segundo Blvd. Hawthorne, CA 90250	91293	Johason Manufacturing Company Box 329 Boonton, NJ 07005
13848	E.F. Johnson Company Comco/Communications Div. Coral Way Suite 106 Miami, FL 33155		
18342	Amp Inc. Syscom Division 3711 Paxton Street Harrisburg, PA 17101		
21921	RCA Corporation Distributor and Special Products Clements Bridge Road P.O. Box 100 Deptford, NJ 08096		

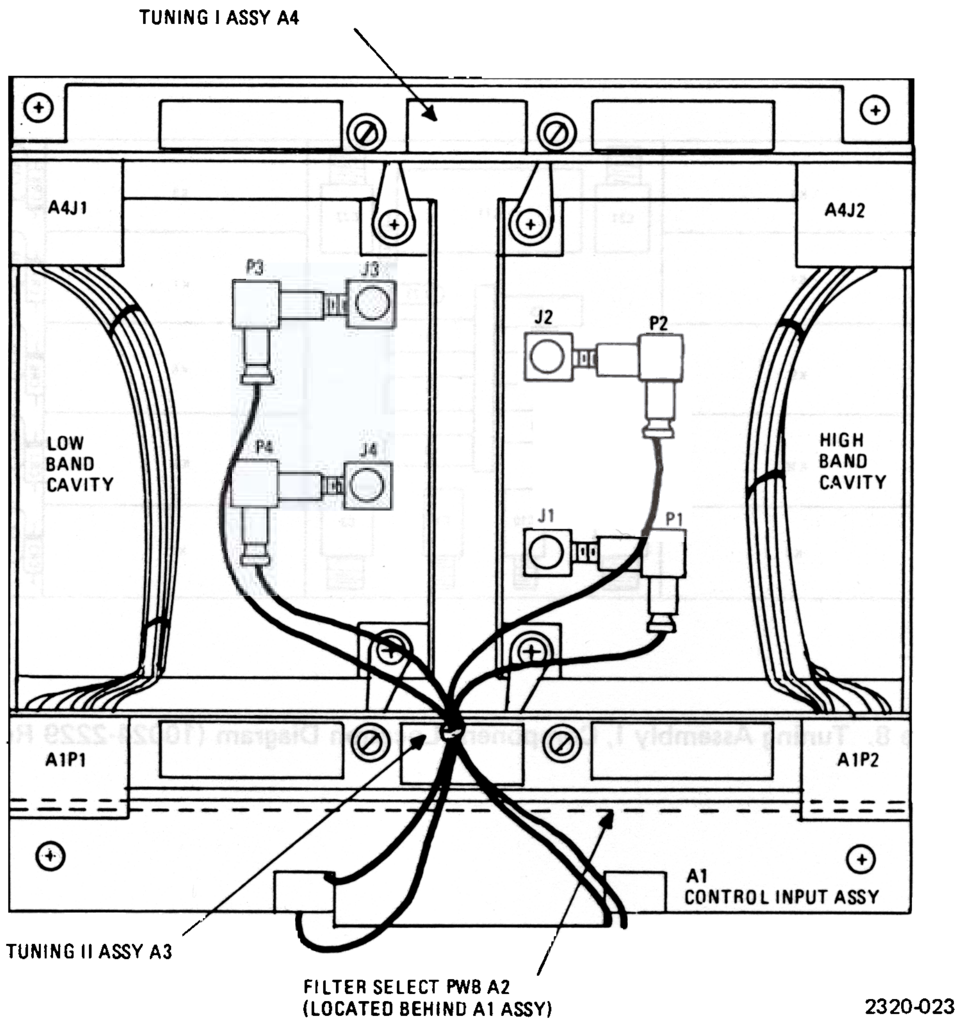


Figure 6. RF-596-02 Filter Assembly Module Locations

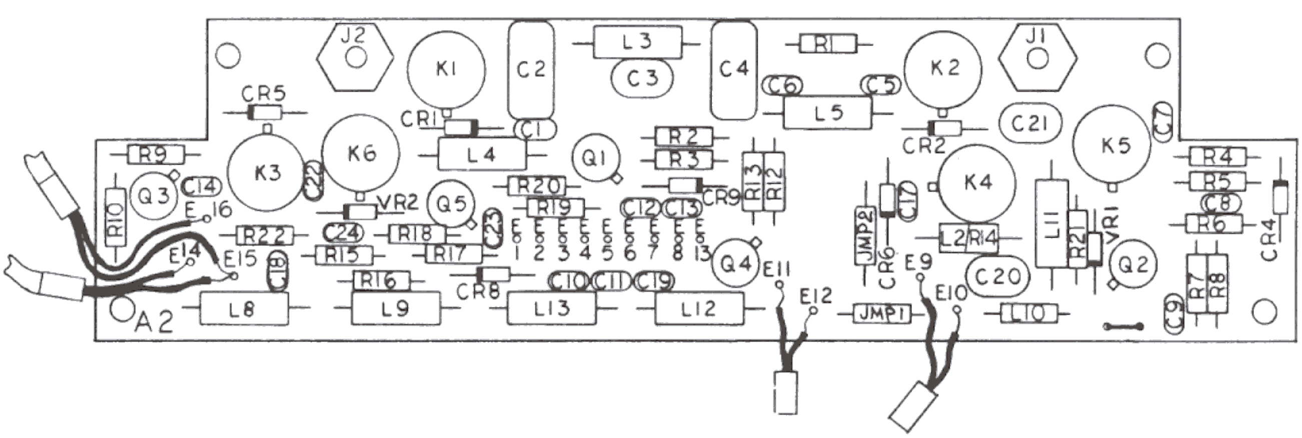


Figure 7. Filter Select PWB, Component Location Diagram (10024-2210)

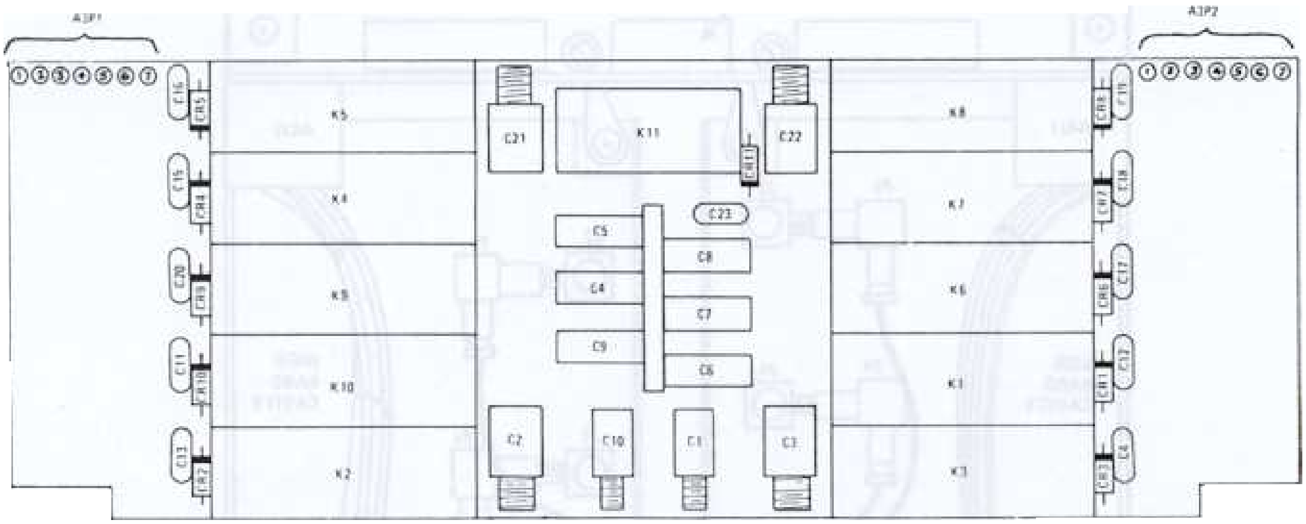


Figure 8. Tuning Assembly I, Component Location Diagram (10024-2229 Rev. A)

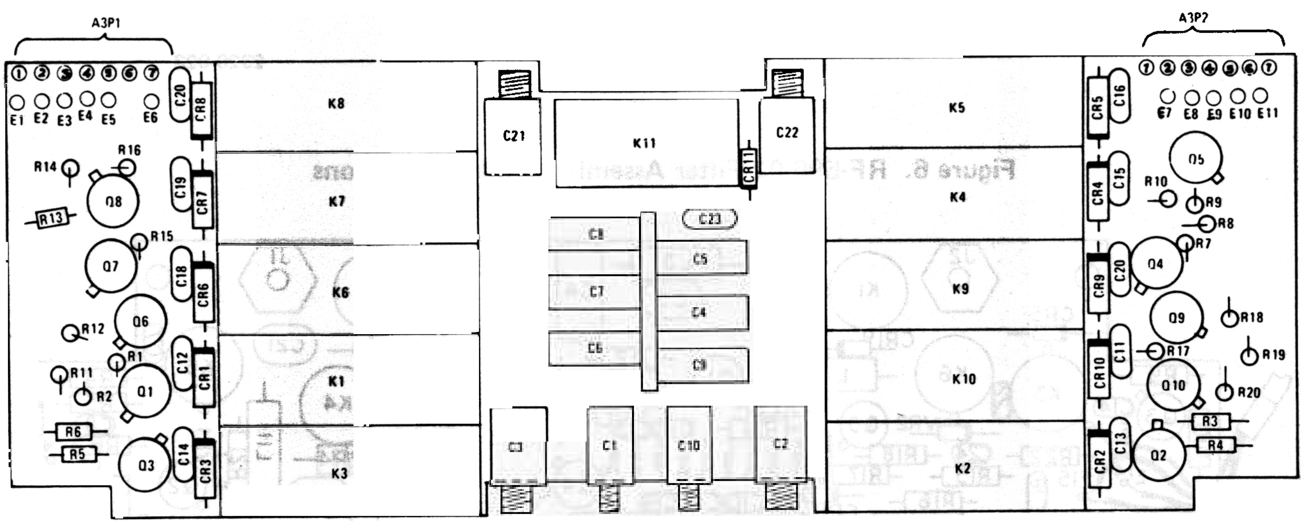


Figure 9. Tuning Assembly II, Component Location Diagram (10024-2339 Rev. A)

NOTES
1. COMPLETED ASSY SHALL BE IN ACCORDANCE WITH QC-3000.
2. MOUNT CONNECTOR J3 ON FARSIDE
3. C21 MOUNTS ON FARSIDE OF BOARD BETWEEN ITEM 10 AT E2 AND ITEM 9. SEE DETAIL "A".
4. REMOVE PIN 5 OF J1, PIN 3 OF J2 AND PIN 3 OF J4 FOR KEYING PURPOSES

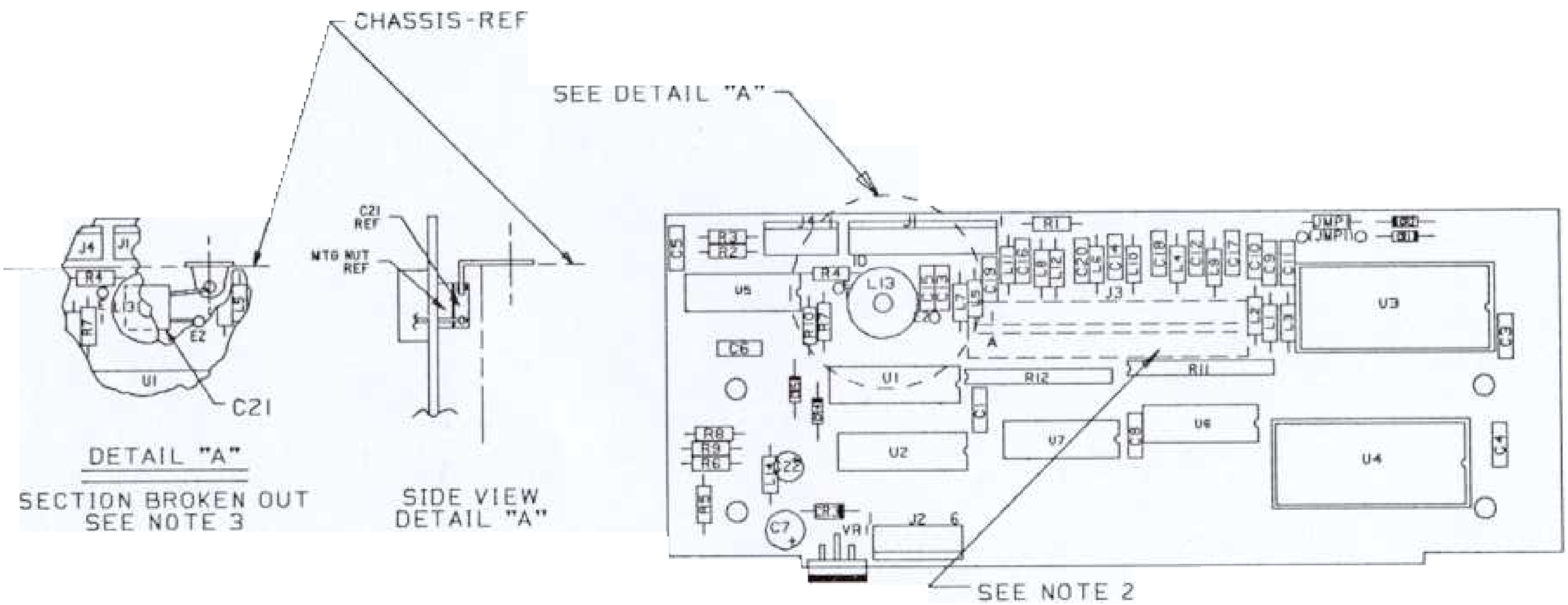


Figure 10. Interface PWB, Component Location Diagram

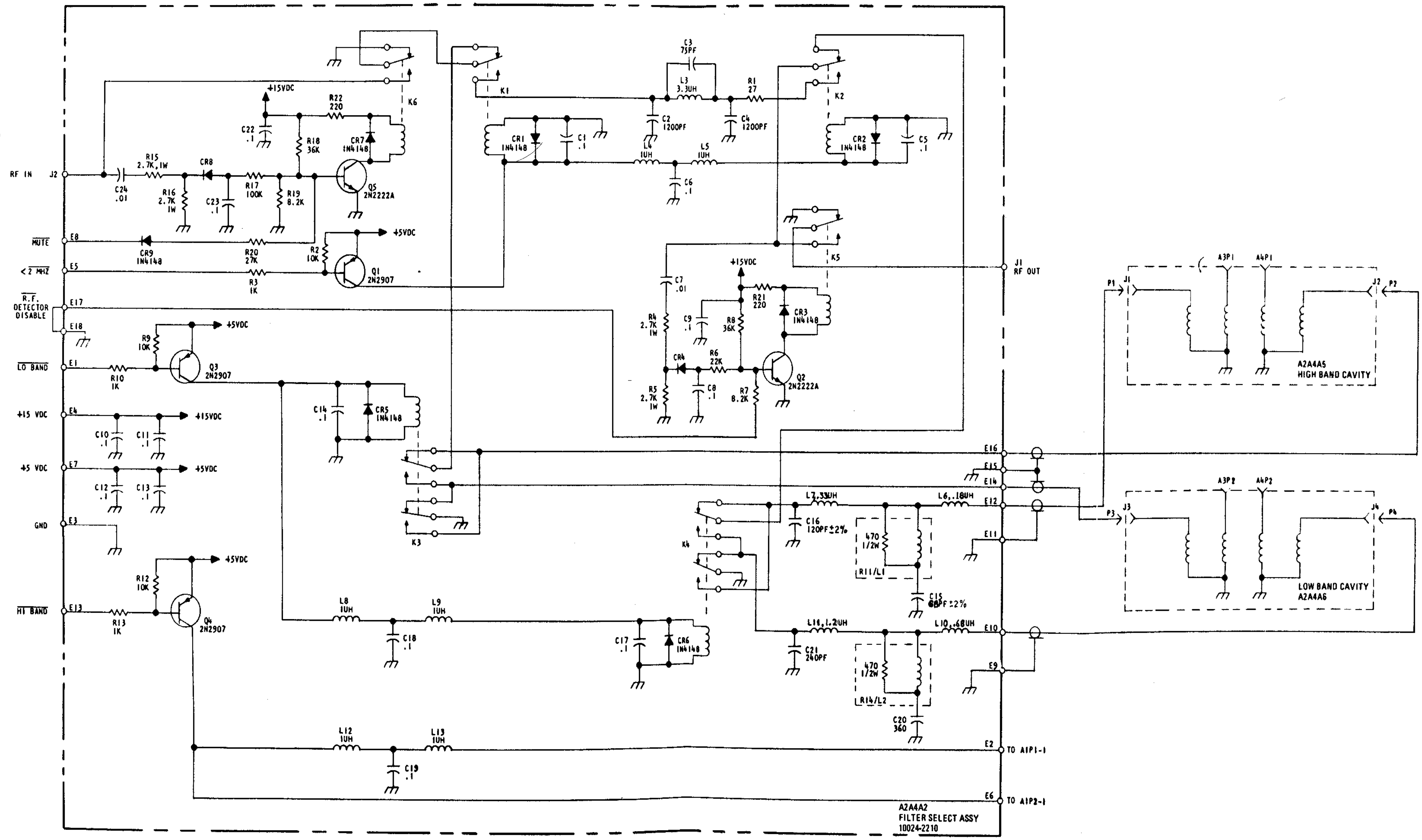


Figure 11. Filter Select PWB Schematic Diagram

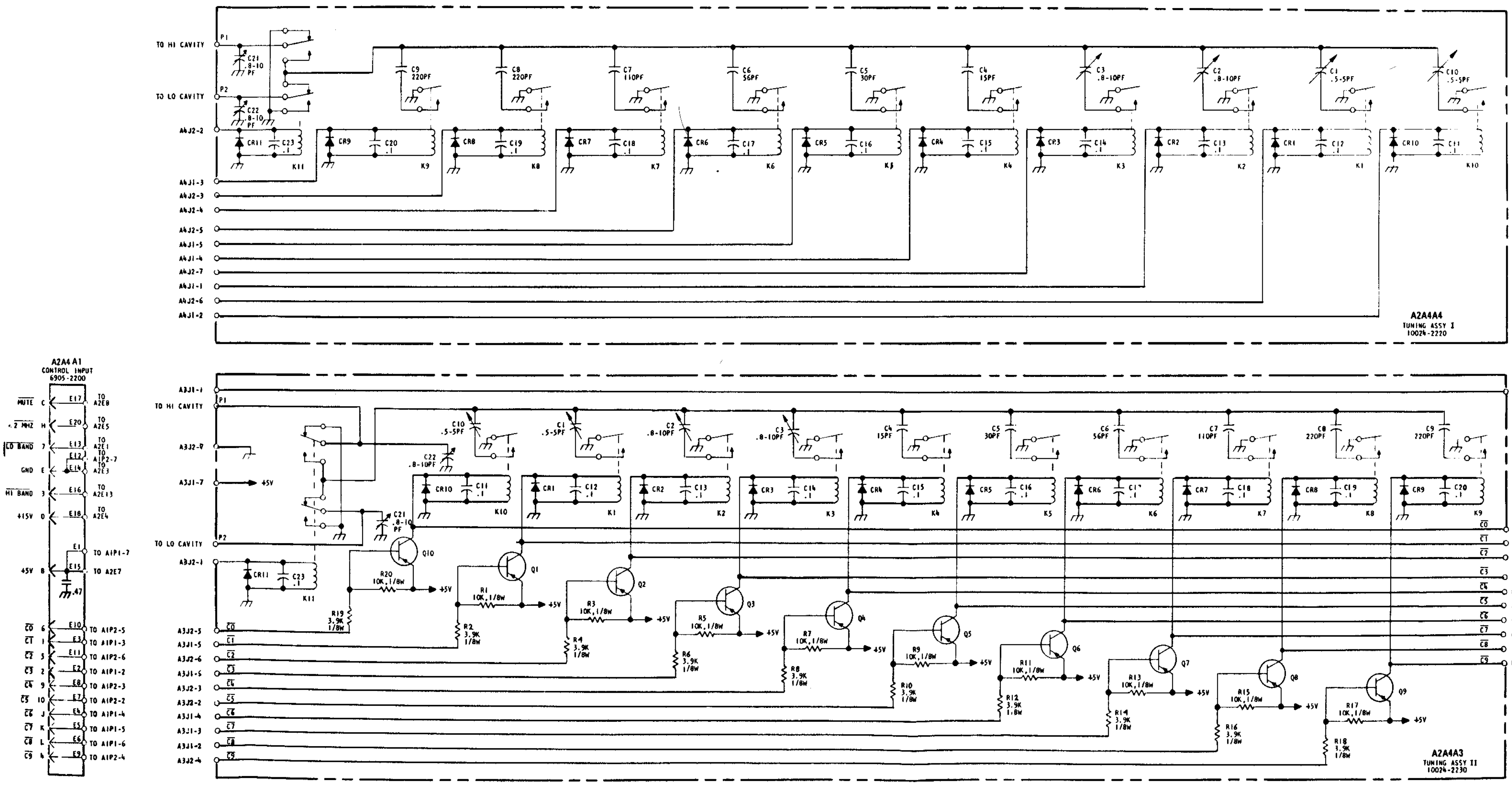
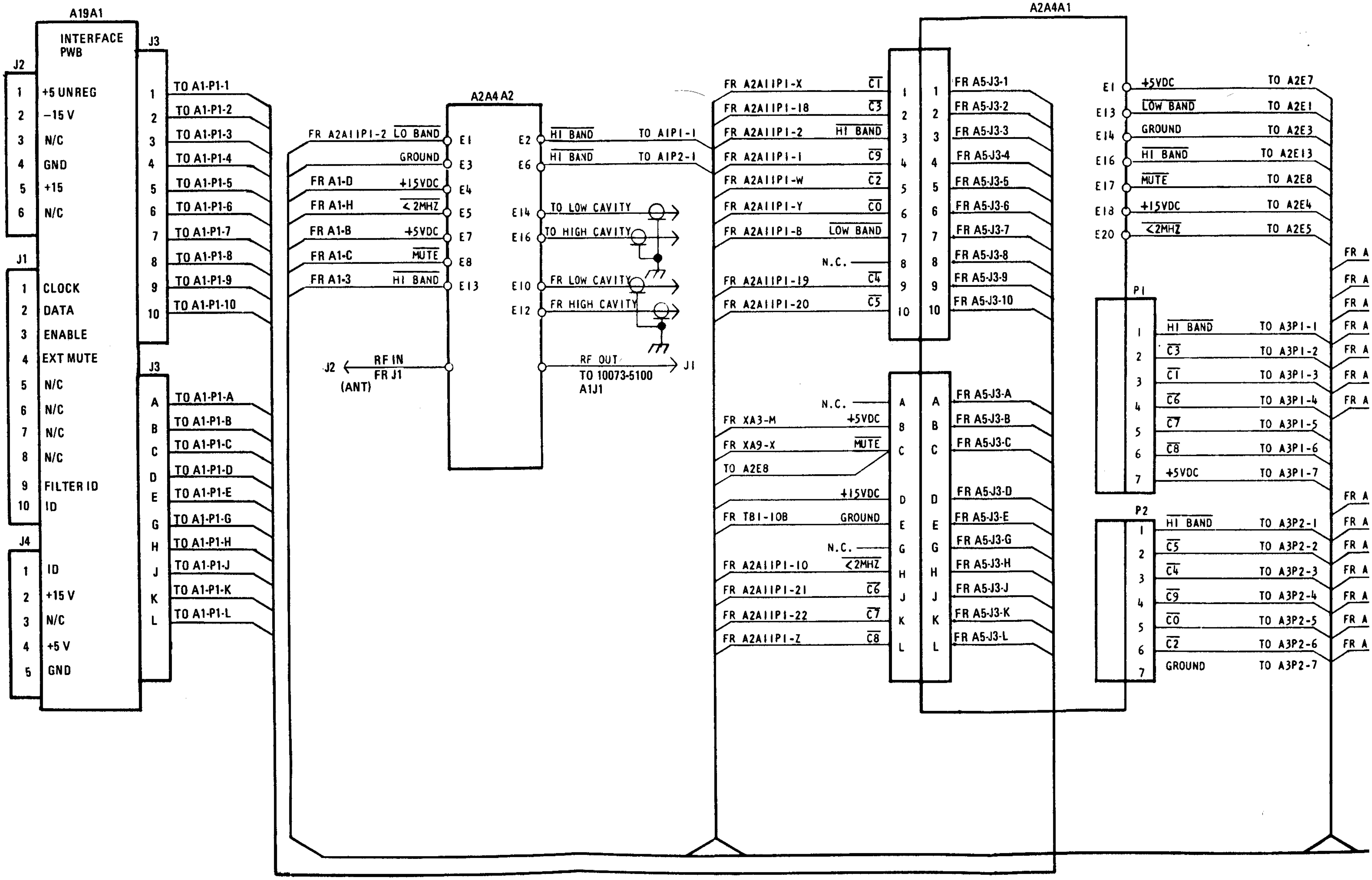


Figure 12. Tuning Assemblies I and II, Schematic Diagram



A19A1
INTERFACE PWB
J2
1 +5 UNREG
2 −15 V
3 N/C
4 GND
5 +15
6 N/C
J1
1 CLOCK
2 DATA
3 ENABLE
4 EXT MUTE
5 N/C
6 N/C
7 N/C
8 N/C
9 FILTER ID
10 ID
J4
1 ID
2 +15 V
3 N/C
4 +5 V
5 GND
J3
1 TO A1-P1-1
2 TO A1-P1-2
3 TO A1-P1-3
4 TO A1-P1-4
5 TO A1-P1-5
6 TO A1-P1-6
7 TO A1-P1-7
8 TO A1-P1-8
9 TO A1-P1-9
10 TO A1-P1-10
J3
A TO A1-P1-A
B TO A1-P1-B
C TO A1-P1-C
D TO A1-P1-D
E TO A1-P1-E
G TO A1-P1-G
H TO A1-P1-H
J TO A1-P1-J
K TO A1-P1-K
L TO A1-P1-L
A2A4A2
FR A2A11P1-2 LO BAND E1
GROUND E3
FR A1-D +15VDC E4
FR A1-H <2MHZ E5
FR A1-B +5VDC E7
FR A1-C MUTE E8
FR A1-3 HI BAND E13
E2 HI BAND TO A1P1-1
E6 HI BAND TO A1P2-1
E14 TO LOW CAVITY
E16 TO HIGH CAVITY
E10 FR LOW CAVITY
E12 FR HIGH CAVITY
J2 RF IN FR J1 (ANT)
RF OUT TO 10073-5100 A1J1 J1
A2A4A1
FR A2A11P1-X C1 1 1 FR A5-J3-1
FR A2A11P1-18 C3 2 2 FR A5-J3-2
FR A2A11P1-2 HI BAND 3 3 FR A5-J3-3
FR A2A11P1-1 C9 4 4 FR A5-J3-4
FR A2A11P1-W C2 5 5 FR A5-J3-5
FR A2A11P1-Y C0 6 6 FR A5-J3-6
FR A2A11P1-B LOW BAND 7 7 FR A5-J3-7
N.C. 8 8 FR A5-J3-8
FR A2A11P1-19 C4 9 9 FR A5-J3-9
FR A2A11P1-20 C5 10 10 FR A5-J3-10
N.C. A A FR A5-J3-A
FR XA3-M +5VDC B B FR A5-J3-B
FR XA9-X MUTE C C FR A5-J3-C
TO A2E8
+15VDC D D FR A5-J3-D
FR TB1-10B GROUND E E FR A5-J3-E
N.C. G G FR A5-J3-G
FR A2A11P1-10 <2MHZ H H FR A5-J3-H
FR A2A11P1-21 C6 J J FR A5-J3-J
FR A2A11P1-22 C7 K K FR A5-J3-K
FR A2A11P1-Z C8 L L FR A5-J3-L
E1 +5VDC TO A2E7
E13 LOW BAND TO A2E1
E14 GROUND TO A2E3
E16 HI BAND TO A2E13
E17 MUTE TO A2E8
E18 +15VDC TO A2E4
E20 <2MHZ TO A2E5
P1
1 HI BAND TO A3P1-1
2 C3 TO A3P1-2
3 C1 TO A3P1-3
4 C6 TO A3P1-4
5 C7 TO A3P1-5
6 C8 TO A3P1-6
7 +5VDC TO A3P1-7
P2
1 HI BAND TO A3P2-1
2 C5 TO A3P2-2
3 C4 TO A3P2-3
4 C9 TO A3P2-4
5 C0 TO A3P2-5
6 C2 TO A3P2-6
7 GROUND TO A3P2-7
FR A

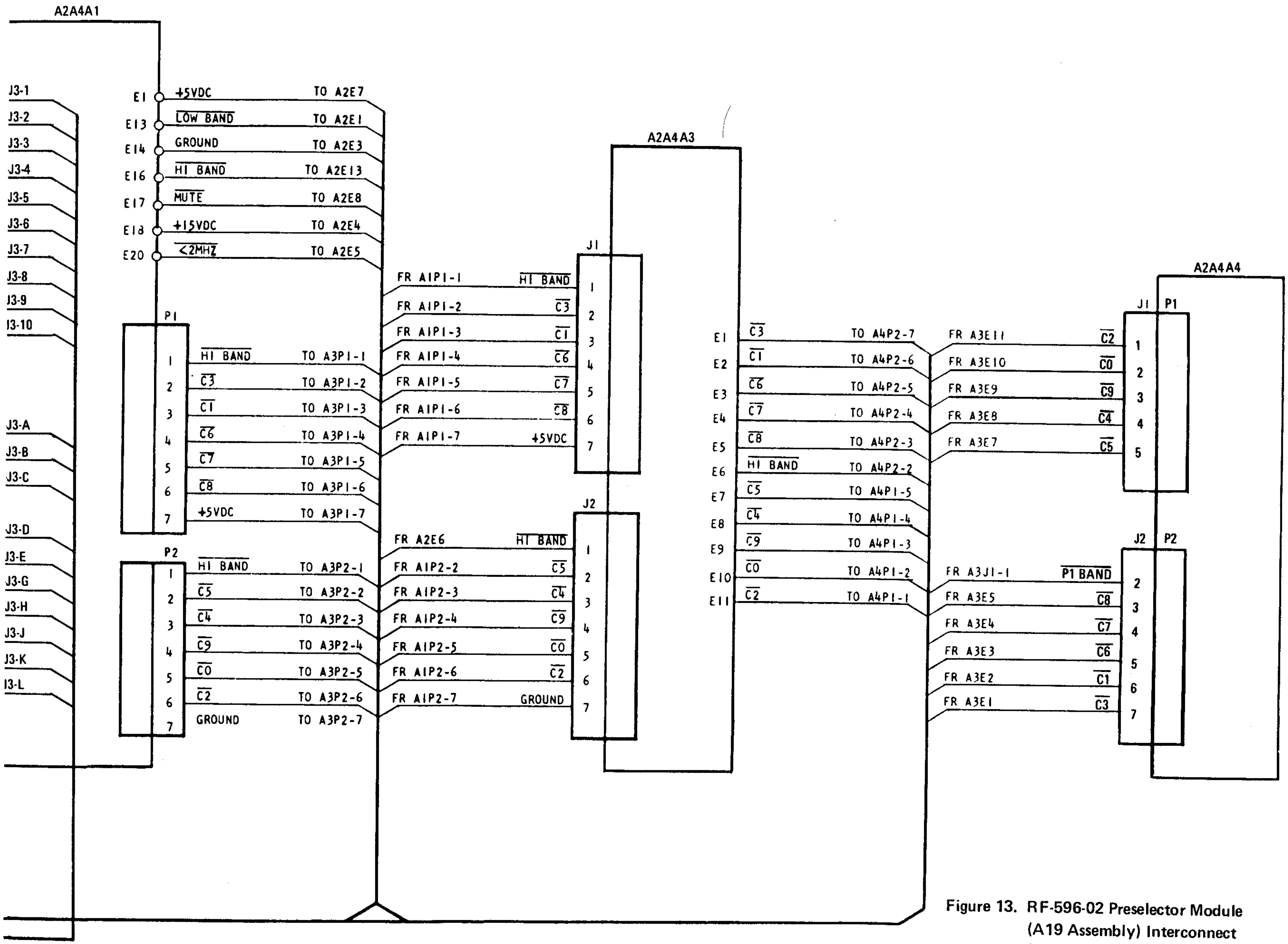
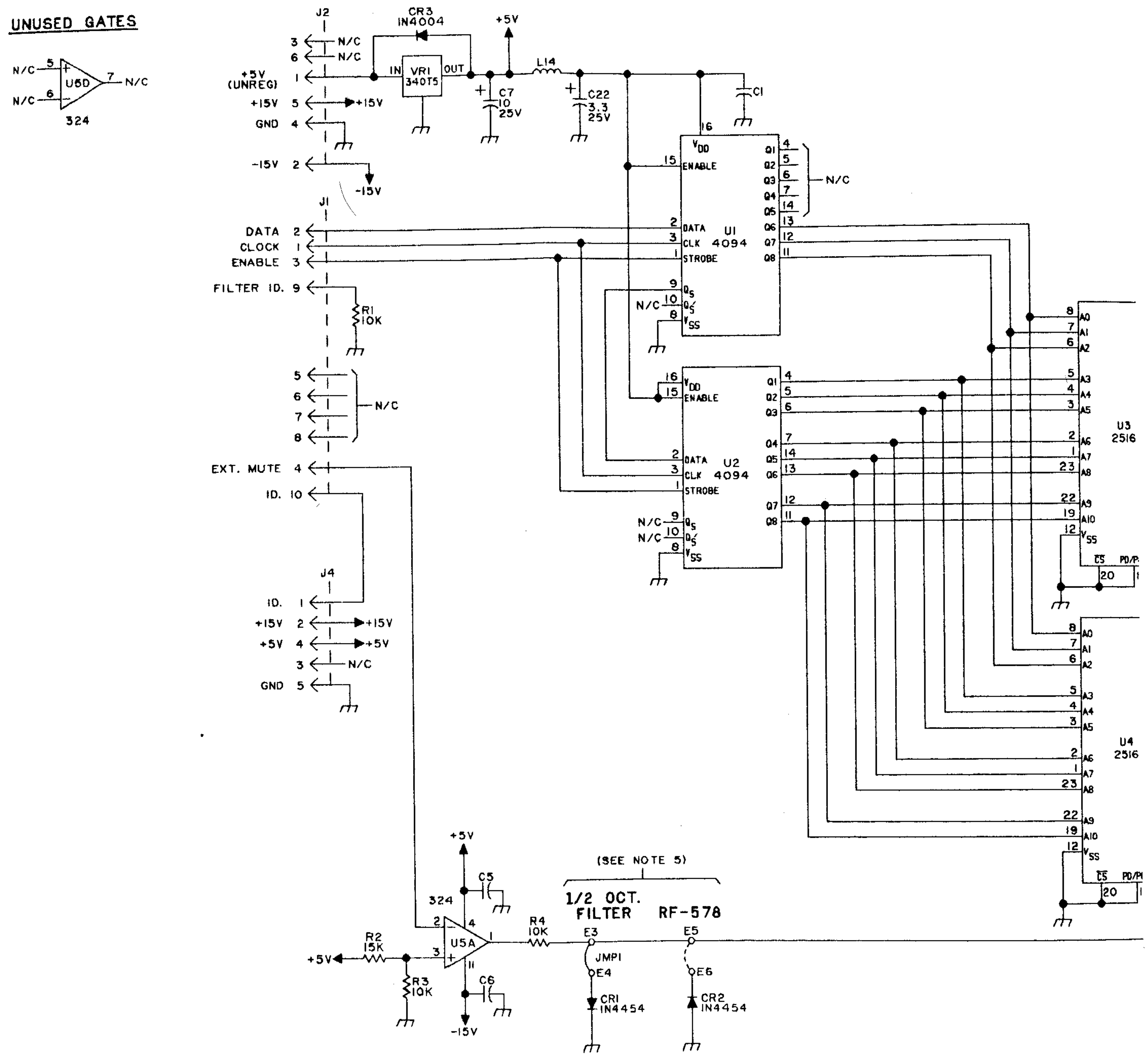


Figure 13. RF-596-02 Preselector Module (A19 Assembly) Interconnect Schematic Diagram

NOTE: UNLESS OTHERWISE SPECIFIED:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR A COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND/OR ASSEMBLY NO. DESIGNATION.
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, ±5%.
3. ALL CAPACITOR VALUES ARE 0.1 MICROFARAD.
4. ALL INDUCTOR VALUES ARE 1000 MICROHENRYS.
5. STRAP BETWEEN E3 AND E4 (JMP1) FOR 1/2 OCT. FILTER. STRAP E5 TO E6 FOR RF-578.
6. VENDOR PART NO. CALLOUTS ARE FOR REFERENCE ONLY. COMPONENTS ARE SUPPLIED PER PART NO. IN PARTS LIST.
7. C21 IS TO BE GROUNDED TO AN EXTERNAL CHASSIS THROUGH A TERMINAL LUG OFF THE PWB AS SHOWN.

UNUSED GATES



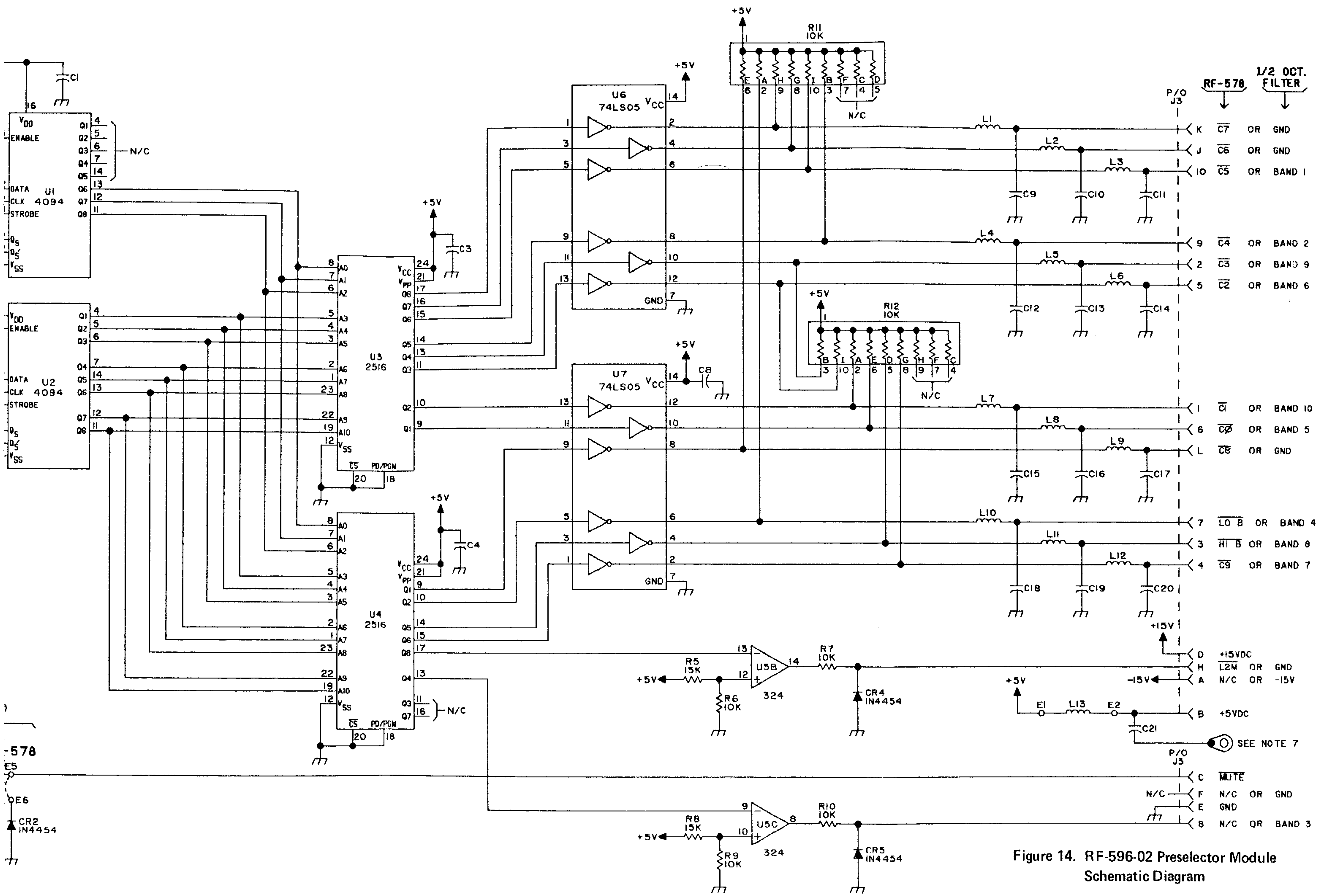


Figure 14. RF-596-02 Preselector Module Schematic Diagram