

APPENDIX B
TYPE WJ-8711/PRE
SUBOCTAVE PRESELECTOR OPTION
P/N 900826-001, Revision B

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Unless otherwise noted, all references to the WJ-8711 references to the WJ-8711 Digital HF Receiver are also applicable to the WJ-8711A and WJ-2001 versions.

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TYPE WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION**REVISION RECORD**

Revision	Description	Date
A	Initial Release	9/00
B	Incorporated ECO 042752.	01/03

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APPENDIX B

TYPE WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

B.1 ELECTRICAL CHARACTERISTICS

The WJ-8711/PRE Suboctave Preselector option filters unwanted out-of-band signal energy from the RF applied to the WJ-8711 Digital HF Receiver. The WJ-8711/PRE option uses eleven preselector bands to improve WJ-8711 second and third order intercept performance. The WJ-8711 digitally selects the appropriate preselector filter based on the receiver's tuned frequency. The WJ-8711/PRE also features two RF overvoltage protection circuits. **Table B-1** lists the WJ-8711/PRE specifications.

Table B-1. WJ-8711/PRE Suboctave Preselector Option Specifications

Input Impedance	50 ohms, nominal
Output Impedance.....	50 ohms, nominal
Control.....	Digital, via multipin connector to the WJ-8711 tuner board
Second Order Intercept.....	> +60 dBm, typical
Third Order Intercept.....	> +30 dBm, typical
Input VSWR.....	2:1
Input Protection	Spark gap, > 1 watt relay threshold
Dimensions.....	6-1/4" x 5-5/8" x 1-5/16"
Operating Temperature Range.....	0°to +50°C
Power Requirements.....	+5 Vdc @ 200mA
	-12 Vdc @ 2 mA
	+12 Vdc @ 3 mA

B.2 MECHANICAL CHARACTERISTICS

The WJ-8711/PRE Suboctave Preselector option consists of the Type 797033-1 preselector assembly, one BNC cable assembly, and replacement EPROM A2U12. (EPROM A2U12 is only replaced in the WJ-8711 version.) The preselector assembly is housed in an aluminum chassis, which is installed inside the WJ-8711 on its rear panel.

The BNC cable measures six inches and has two male ends. This cable connects the preselector RF output to the WJ-8711 RF input.

EPROM A2U12 contains the internal control software necessary for the WJ-8711 to use the preselector. This chip replaces the current WJ-8711 A2U12 in units containing internal control software releases earlier than 1.40. (EPROM A2U12 is only replaced in the WJ-8711 version.)

B.3 CIRCUIT DESCRIPTIONS

B.3.1 TYPE 797033-1 PRESELECTOR ASSEMBLY, (A4)

Refer to the Type 797033-1 Preselector Assembly (A3) Block Diagram in **Figure B-1** as a reference for the following module description. For a more detailed component level illustration of the Preselector circuitry, refer to the Type 797033-1 Preselector Assembly schematic diagram, **FO-B-2**. RF is input to the Preselector from the rear panel at A4J1. K1 is normally energized which allows RF to be routed to one of the eleven filters. **Table B-2** lists the band, frequency range, insertion loss, 10 dB attenuation points, and type of each of the eleven filters. The receiver's operating frequency determines which filter is activated. Filter selection data from the Digital Assembly (A2), via the RF Assembly (A3), is loaded into a pair of shift registers. The outputs of the registers select the appropriate filter for the RF signal path. The RF is filtered and made available at A4J2 for use by the WJ-8711.

Power sensing at the preselector RF input protects the preselector and receiver from high-level RF signals. Power levels greater than 1W causes the input relay K1 to deenergize, opening the RF path. Spark gap protection at the preselector input shunts any voltages of 75 V or greater to ground.

B.3.1.1 Type 797033-1 Preselector Assembly Input Protection

Protection from high static voltages induced in the antenna is provided by the spark gap, V1. Levels exceeding 75V cause a "spark" to ground, discharging the hazardous voltages.

Controlling the state of the input relay, K1, performs protection from high-level RF signals. Under normal conditions Q2 is forward biased which applies a low DC voltage to one side of K1. This voltage energizes the input relay and allows RF to pass to the band filters. When the input RF at A4J1 reaches 1W, relay K1 is deenergized, removing the RF signal from the preselector. The input RF is scaled by R1 and R2, rectified by CR4, and filtered by C1 and R3 to produce a DC bias voltage to the base of Q1. When the input signal reaches 1W, the DC bias voltage is high enough to activate Q1. When Q1 is forward biased, a low is applied to the base of Q2, shutting the transistor off. With Q2 cut off, K1 deenergizes to protect the preselector and a logic high is sent to the Digital Assembly (A2), via the RF Assembly (A3) to indicate an overload (OVRD) input condition.

B.3.1.2 Type 797033-1 Preselector Assembly Filter Selection

The appropriate filter or Band (A through K) is activated by control signals originating on the Digital Assembly (A2). These signals are routed to the Preselector Assembly (A4) anytime the Preselector option is installed in the WJ-8711 Receiver. A logic high PRE/OPT signal is sent to the Digital Assembly (A2), through the RF Assembly (A3), to inform the control microprocessor that frequency control data is required. The +5 Vdc, filtered by R46 and C233, provides the hard-wired PRE/OPT signal that is sent out P1, pin 9.

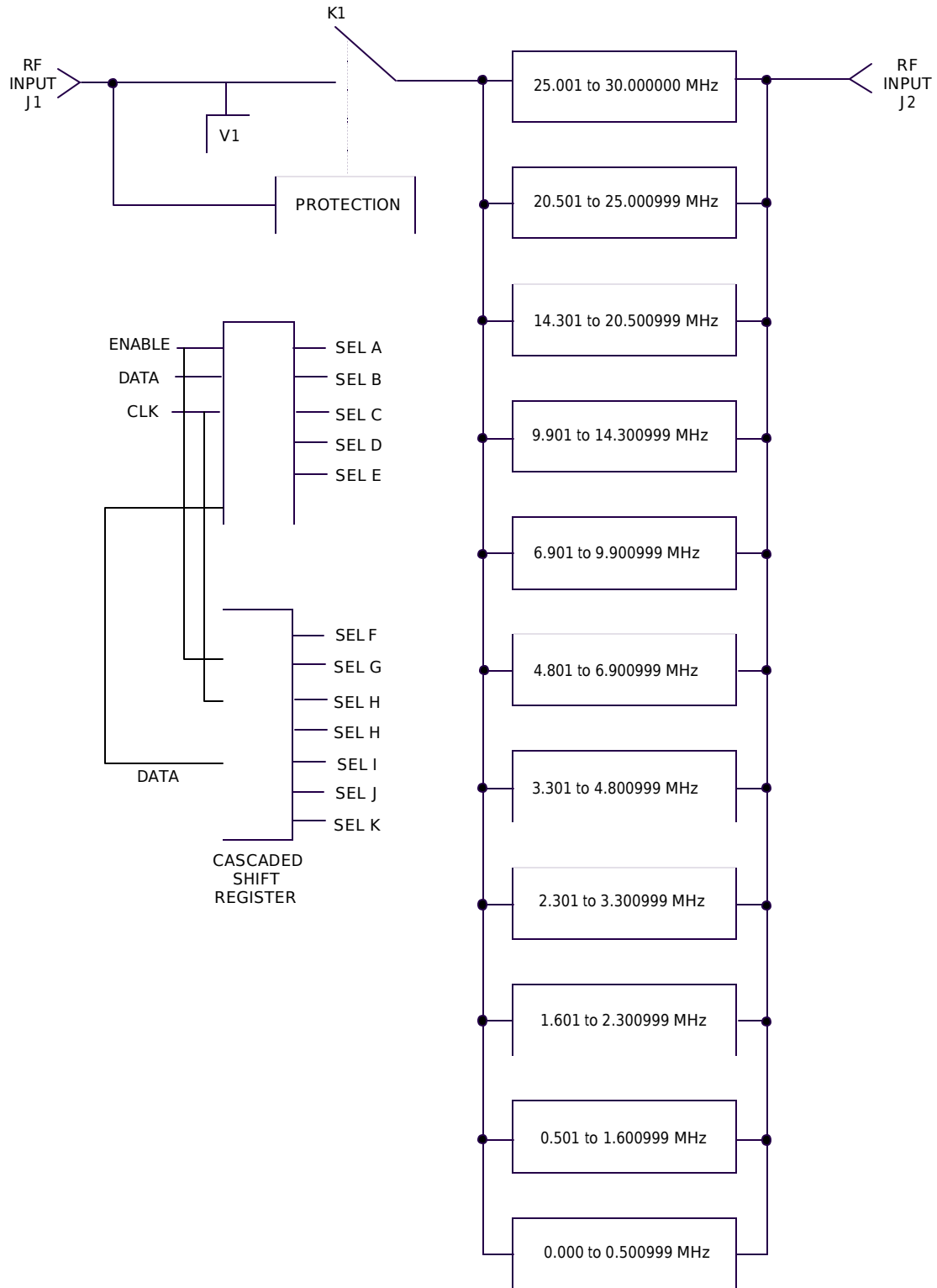


Figure B-1. Type 797033-1 Preselector Assembly (A4), Block Diagram

Table B-2. WJ-8711/PRE Suboctave Preselector Option Filter Information

Band	Frequency Range (MHz)	Insertion Loss (dB Typ.)	10 dB Attenuation Points (MHz Typ.)	Type
A	25.001 to 30.000000	2.5	18.7 and 36.9	Bandpass
B	20.501 to 25.000999	2.5	15.6 and 30.9	Bandpass
C	14.301 to 20.500999	2.0	8.4 and 30.8	Bandpass
D	9.901 to 14.300999	2.0	5.3 and 21.5	Bandpass
E	6.901 to 9.900999	2.0	3.7 and 14.9	Bandpass
F	4.801 to 6.900999	2.0	2.7 and 10.6	Bandpass
G	3.301 to 4.800999	2.0	1.9 and 7.1	Bandpass
H	2.301 to 3.300999	1.5	1.4 and 5.2	Bandpass
I	1.601 to 2.300999	1.5	0.9 and 3.6	Bandpass
J	0.501 to 1.600999	1.5	2.6	Lowpass
K	0.000 to 0.500999	2.0	0.8	Lowpass

The Digital Assembly (A2) routes three (3) control signals to the Preselector Assembly (A4) for filter selection: a Preselector Enable (PEN-#), a Preselector Clock (PCLK), and Preselector Data (PDATA). PEN-# is a strobe signal that is only active long enough to load data into the two shift registers, U1 and U2. When the signal is inactive (low), the outputs of U5-B and U5-C are held high, and the data and clock signals are disconnected from the shift registers. The clock signal, PCLK, is a sequence of eight-bit clock bursts that are used for timing of the serial data transfer. The PCLK signal is connected to the shift registers by U5-B. PDATA is a serial eight-bit data stream that is clocked into the shift registers during power-up and operating frequency changes.

U1 and U2 are cascaded together to form an eleven-bit shift register, with each output corresponding to a filter selection control signal. Once loaded into the shift register by receipt of the PEN-# strobe, the PDATA will cause a single low output of U1 (Q4 through Q8) or U2 (Q1 through Q6) for a band to be enabled. All other outputs of the shift register are high. The low output turns on the corresponding driver transistors (Q3 through Q13), which route approximately +3Vdc (SELA through SELK) to the required filter. This positive voltage forward biases the input and output diodes of the selected filter. For example, when the operating frequency is between 25.001 and 30.000 MHz, SELA is active and CR5 and CR6 is forward biased. At the same time, the input and output diodes of the other filters are held at cutoff by the applied -12Vdc.

B.3.1.3 Type 797033-1 Preselector Assembly RF Signal Path

The RF input from the antenna enters the Preselector Assembly (A4) at J1. The RF signal is routed through the normally closed contacts of K1, to a low pass filter, (L2, L3, C10, C13, C14, and C17). The low pass filter is designed to provide an input VSWR of < 2:1 for RF signals between 0 and 30 MHz. The RF is then passed through the activated filter, to the output of the Preselector Assembly (A4), at J2.

B.4 EQUIPMENT SUPPLIED

Equipment supplied with the WJ-8711/PRE Suboctave Preselector option consists of:

- 1 WJ-8711/PRE Suboctave Preselector Assembly (Type 797033-1)
- 1 six-inch BNC cable (WJ P/N 383140-1)
- Mounting hardware consisting of:
 - a. Seven 4-40 x 5/16 large Pan Head Machine screws (P/N MS51957-14)
 - b. Seven No. 4 Flat Washers (P/N MS15795-803)
 - c. Seven No. 4 Lock Washers (P/N MS35338-135)
 - d. Four Standoffs (P/N 20755-293)
 - e. Two Star Washers
 - f. Two BNC Mounting Nuts

B.5 EQUIPMENT REQUIRED BUT NOT SUPPLIED

A WJ-8711 Digital HF Receiver and a 50-ohm HF antenna are necessary to obtain full use of the WJ-8711/PRE Suboctave Preselector option.

B.6 INSTALLATION

The WJ-8711/PRE Suboctave Preselector option is installed in the WJ-8711 Digital HF Receiver at the factory when ordered with the receiver.

Follow the steps listed in **paragraph B.6.2** when back-fitting the WJ-8711 Digital HF Receiver with the WJ-8711/PRE Suboctave Preselector option.

B.6.1 CONNECTOR SIGNALS

When installed, all WJ-8711/PRE option external connectors are located on the rear panel of the WJ-8711. **Table B-3** lists these connectors and provides a brief description of each. **Figure B-2** shows the location of these connectors.

Table B-3. List of WJ-8711/PRE Option External Connectors

Connector	Reference Designation	Function
Preselector RF Input	A4J1	BNC female. RF input from antenna.
Preselector RF Output	A4J2	BNC female. Preselected RF output for use by the WJ-8711 RF IN connector (A3J1).

Connector A4P1 contains all the power and control signals necessary for WJ-8711/PRE option operation. **Table B-4** lists the pins, signal names, signal functions, and the signal directions for connector A4P1.

Table B-4. List of WJ-8711/PRE Option A4P1 Connector Signals

Pin	Signal	Function	Direction
1	PDAT	Preselector Selection Data	Input
2	PCLK	Preselector Clock	Input
3	PEN-#	Preselector Enable Strobe	Input
4	OVRLD	RF Overload	Output
5	+5 Vdc	+5 Vdc Supply	Input
6	+12 Vdc	+12 Vdc Supply	Input
7	-12 Vdc	-12 Vdc Supply	Input
8	GND	Ground	Input
9	PRE/OPT	Preselector Identification	Output
10	NOT USED		

B.6.2

FIELD-INSTALLING THE WJ-8711/PRE OPTION INTO THE WJ-8711

1. Deenergize the WJ-8711 and disconnect the power cord from FL1J1 on the WJ-8711 rear panel.
2. Remove the WJ-8711 top cover.
3. If connected, disconnect the user-provided antenna from the RF IN connector, A3J1, on the WJ-8711 rear panel.
4. WJ-8711s (serial numbers 688 and above) have two 0.532-inch diameter preselector connector holes and three 0.145-inch diameter preselector mounting holes as shown in **Figure B-1**. Earlier WJ-8711s do not have these holes. If the WJ-8711 does not have these holes, use the information in **Figure B-2**, or the template in **Figure B-3**, to measure and mark the necessary WJ-8711 rear panel.

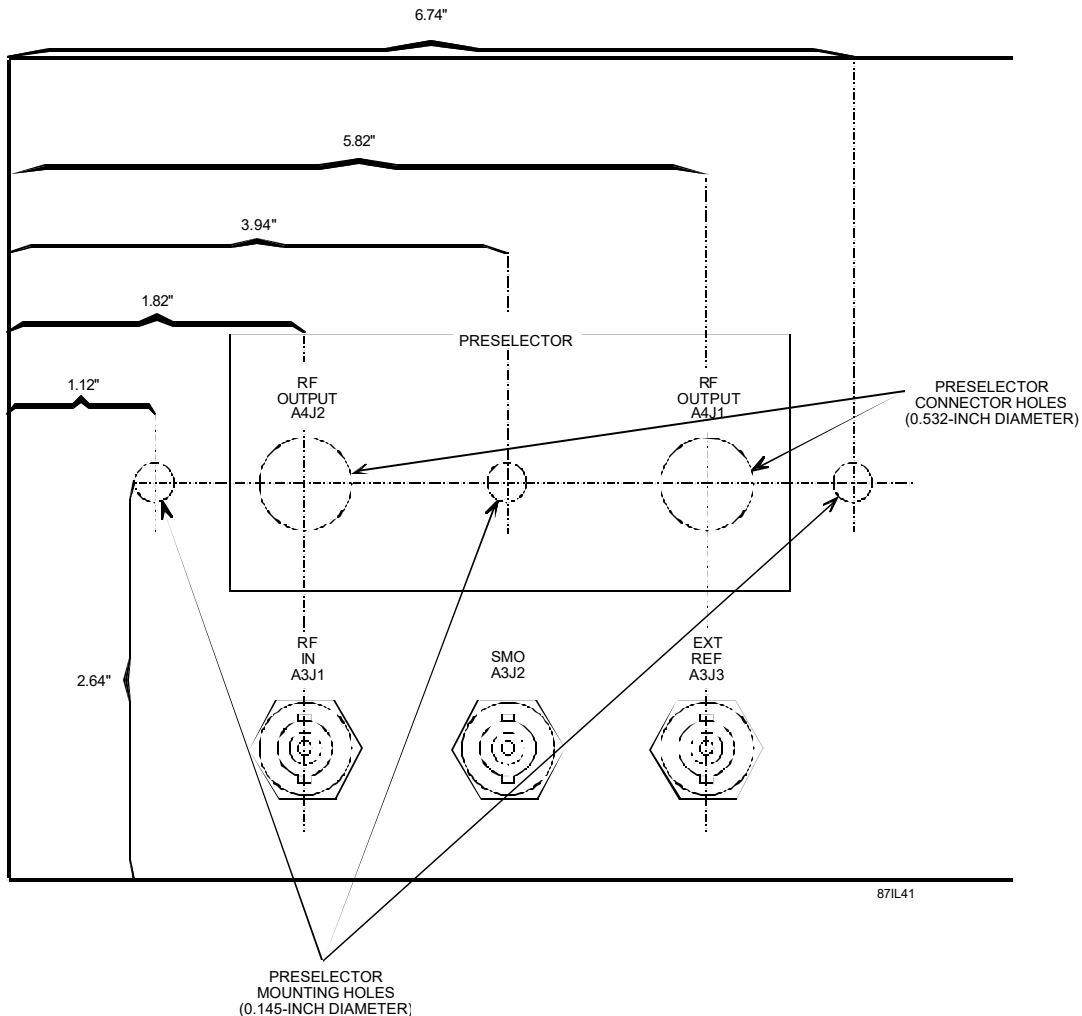
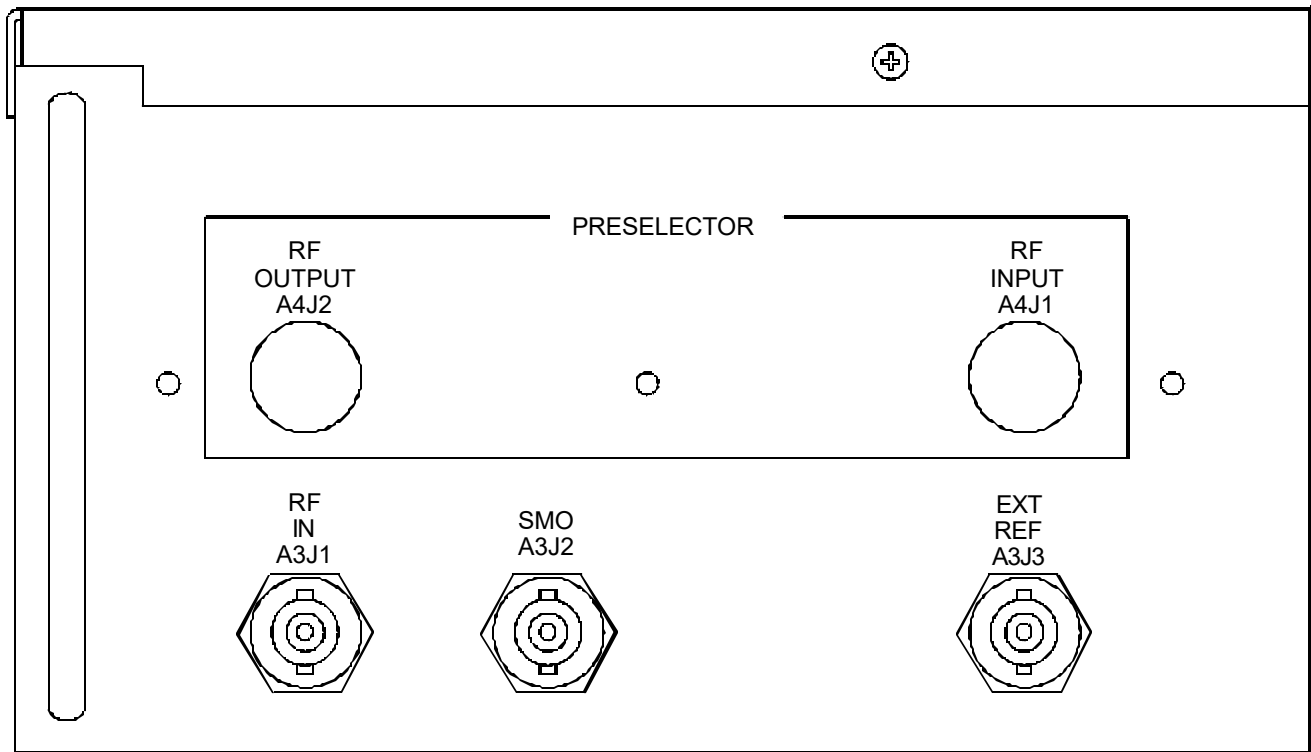


Figure B-2. WJ-8711 Rear Panel (Left Side) Showing Locations of Preselector Mounting and Connector Holes



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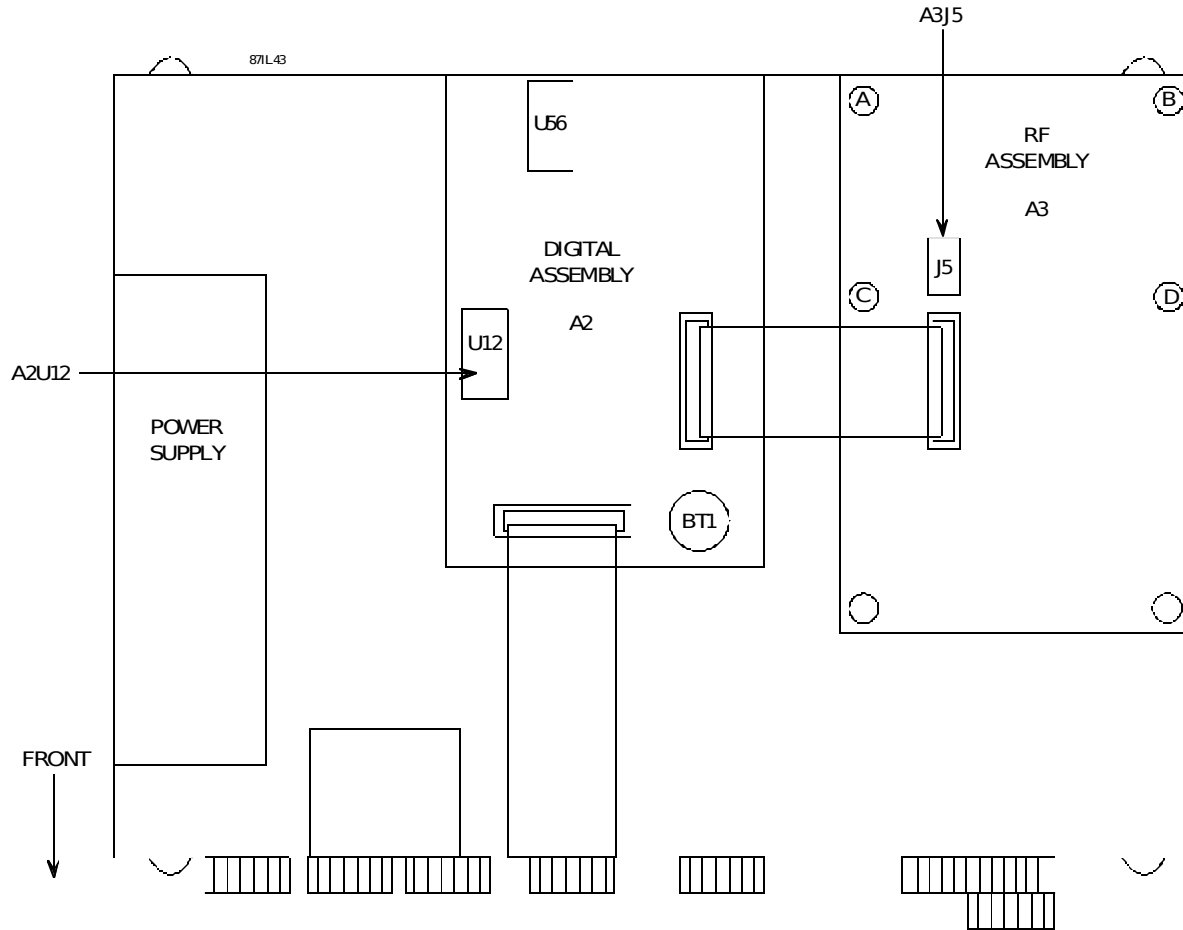
Figure B-3. WJ-8711/PRE Mounting Template

5. To use the template, photocopy the template. Cut out the five preselector holes, the three BNC holes, and the rear handle hole on the template photocopy. Place the template over the WJ-8711 rear panel (left side) and tape the template in place. Use a 0.532 inch drill bit to drill the two preselector connector holes and a 0.145-inch drill bit to drill the three preselector mounting holes in the WJ-8711 rear panel.

NOTE

Take care when drilling both the mounting holes and the connector holes. Ensure that no filings are introduced into the body of the receiver. The metal filings are conductive and can cause equipment malfunctions.

6. Remove the four screws from the RF assembly (A3) marked A, B, C, and D in **Figure B-4**.
7. Replace the four removed screws with the four provided standoffs. Mount each standoff with a lock washer and a flat washer between the standoff and the circuit board.



**Figure B-4. WJ-8711 Top Down View (with Cover Removed)
Showing Locations of A2U12 and A3J5**

8. Lower the WJ-8711/PRE Suboctave Preselector assembly onto the standoffs, while ensuring that connectors A4J1 and A4J2 extend through the preselector connector holes (**Figure B-2**). Secure the preselector assembly to the standoffs using four of the provided screws and associated lock washers and flat washers. When installing the screws, ensure that a lock washer and a flat washer is installed between the screw and the preselector assembly.
9. Secure the preselector assembly to the rear panel of the WJ-8711 through the preselector mounting holes (**Figure B-2**) using three of the provided screws and associated lock washers.
10. Secure the preselector RF IN and RF OUT connectors to the WJ-8711 rear panel using the provided two star washers and two BNC mounting nuts.

11. Connect the free end of the preselector assembly-connected ribbon cable to A3J5 located on the Type 796949-1 RF assembly (A3) circuit board. Refer to **Figure B-4** for the location of A3J5.
12. Connect one end of the supplied BNC cable to the RF IN connector, A3J1, located on the WJ-8711 rear panel.
13. Connect the remaining end of the BNC cable to the preselector RF OUTPUT connector, A4J2, located on the WJ-8711 rear panel.
14. Visually check A2U12's software release. Refer to **Figure B-4** for the location of A2U12. If the release is earlier than 1.40, remove A2U12 and install the supplied A2U12 containing the necessary software release. If the release is later than 1.40, no replacement of A2U12 is needed.
15. Replace the WJ-8711 top cover.
16. Affix the Rear Panel Preselector Decal (**Figure B-5**) to the WJ-8711 rear panel as shown in **Figure B-2**.
17. Connect the user-provided antenna to the Preselector RF Input connector, A4J1, located on the WJ-8711 rear panel.
18. Connect the power cord to FL1J1 and energize the WJ-8711.

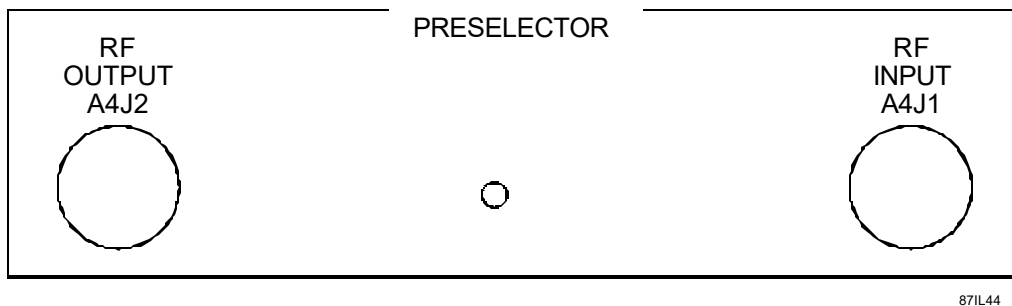


Figure B-5. WJ-8711/PRE Rear Panel Preselector Decal

B.7

OPERATION

Once installed, WJ-8711 digital control automatically detects and operates the WJ-8711/PRE Suboctave Preselector option.

B.7.1 PRESELECTOR OVERLOAD

During operations, the preselector continually checks its input for an overload condition. An overload condition exists when the power at the preselector RF Input (A4J1) is greater than one watt. When an overload exists, the WJ-8711 front panel displays the preselector overload message in the alphanumeric display in the Memory/Scan section of the front panel as shown below:



To reset the preselector overload message, press the CLEAR key, located in the Memory/Scan section of the WJ-8711 front panel.

During the overload, the overload-sensing circuit automatically protects the preselector by removing the applied RF signal from the preselector input. Accordingly, during the overload, the preselector sends no signal to the receiver. A preselector overload condition also sets bit 13 of the Device Dependent Error register. Refer to the base manual for more information on the Device Dependent Error register.

B.8 MAINTENANCE

B.8.1 TEST EQUIPMENT REQUIRED

Procedures for testing the WJ-8711/PRE Suboctave Preselector option have been developed for performance using a minimum of common test equipment. The test equipment listed in **Table B-5**, or equivalents, are required to perform the troubleshooting procedures and performance tests described in this section.

Table B-5. Required Test Equipment

Equipment	Recommended Type	Requirement
Signal Generator	Marconi 2031	Frequency Range to 30 MHz
Frequency Counter	Fluke 1953A	Frequency Range to 100 MHz
RF Millivoltmeter	Boonton 92B	dB Scale Referenced to 600 Ohm Load
RF Probe	Boonton 91-12F	
"T" Adapter	Boonton 91-14A	
50 Ohm Termination	Boonton 91-15A	
Digital Voltmeter	Fluke 8001A	DC Voltage Measurement

B.8.2 TROUBLESHOOTING AND FAULT ISOLATION

The test procedures that are provided in this section verify proper preselector operation and assist in fault isolation to a malfunctioning assembly or circuit. They have been developed to set known laboratory conditions that eliminate external conditions as a possible cause of the malfunction. Use performance tests in **paragraph B.8.3**, and the circuit descriptions in **paragraph B.3** to assist in fault isolation to a circuit within the Preselector Assembly (A4). The procedures provided assume the WJ-8711 Receiver functions properly with the WJ-8711/Pre Suboctave Preselector option removed.

B.8.3 WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION PERFORMANCE TESTS

1. Connect the WJ-8711 Receiver and test equipment as illustrated in **Figure B-6**.

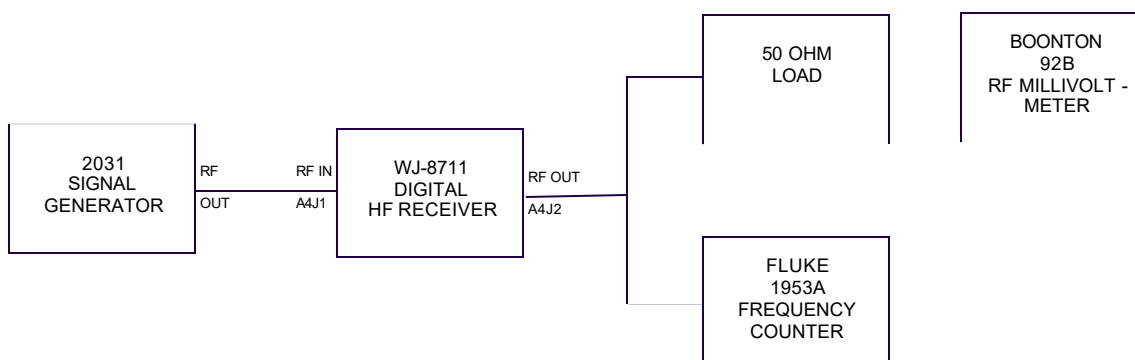


Figure B-6. WJ-8711/PRE Suboctave Preselector Option Test Equipment Connection

2. Set the signal generator as follows:

Frequency:	27.5000 MHz
Modulation:	OFF
Output Level:	-20 dBm
3. Set the WJ-2001 Receiver as follows:

Frequency:	27.5000 MHz
------------	-------------
4. With the digital voltmeter measure the DC voltage at TP11. (Refer to **FO-B-1** for Test Point location.) The meter should indicate approximately +3 Vdc.
5. With the digital voltmeter measure the DC voltage at TP10 and TP12 through TP20. The meter should indicate approximately -12 Vdc.
6. Note the Preselector Assembly (A4) RF output level indicated by the RF millivoltmeter. The meter should indicate a signal level of greater than -23 dBm. (Refer to **Table B-2** for the expected insertion loss for each filter.)
7. Set the signal generator to 18.7000 MHz at -20 dBm. The RF millivoltmeter should indicate < -30 dBm.

8. Set the signal generator to 36.9000 MHz at -20 dBm. The RF millivoltmeter should indicate < -30 dBm.
9. Repeat **steps 2** through **8** for Bands B through K. Use the frequency and test points listed in **Table B-6**.

Table B-6. Performance Test Values and Parameters

Bands	Step 2	Step 3	Step 4	Step 5	Step 7	Step 8
B	22.5 MHz	22.5 MHz	TP12	TP10, TP11, TP13-TP20	15.6 MHz	30.9 MHz
C	17.5 MHz	17.5 MHz	TP13	TP10-TP12 & TP14-TP20	8.40 MHz	30.8 MHz
D	12.2 MHz	12.2 MHz	TP14	TP10-TP13 & TP15-TP20	5.30 MHz	21.5 MHz
E	8.40 MHz	8.40 MHz	TP15	TP10-TP14 & TP16-TP20	3.70 MHz	14.9 MHz
F	5.30 MHz	5.30 MHz	TP16	TP10-TP15 & TP17-TP20	2.70 MHz	10.6 MHz
G	4.00 MHz	4.00 MHz	TP17	TP10-TP16 & TP18-TP20	1.90 MHz	7.10 MHz
H	2.80 MHz	2.80 MHz	TP18	TP10-TP17 & TP19-TP20	1.40 MHz	5.20 MHz
I	1.90 MHz	1.90 MHz	TP19	TP10-TP18 & TP20	0.90 MHz	3.60 MHz
J	1.00 MHz	1.00 MHz	TP20	TP10-TP19	NA	2.60 MHz
K	0.25 MHz	0.25 MHz	TP10	TP11-TP20	NA	0.80 MHz

B.8.4 TROUBLESHOOTING PROCEDURES

1. Perform the test procedure in **paragraph B.8.3** noting which of the steps passed and which steps failed. It is important to complete the procedure for all eleven frequency Bands.
2. In **steps 4** and **5** of the performance test only one of the bands should measure +3 Vdc at the “SEL” test point while the remaining ten should measure -12 Vdc. Refer to **Table B-7** for the correct troubleshooting procedure.

Table B-7. Select Voltage Troubleshooting

All Bands passed steps 4 and 5	Voltages other than +3 Vdc and -12 Vdc are present.	Only one of the frequency bands failed steps 4 and 5 .	Bands F through K failed steps 4 and 5 .	All Bands failed steps 4 and 5 .
Proceed to step 9	Proceed to step 3	Proceed to step 6	Proceed to step 7	Proceed to step 8

3. Voltages present other than +3 Vdc and –12 Vdc indicate a supply voltage problem. With a digital multimeter measure the DC voltage at TP8. If the digital multimeter does not indicate +5 Vdc proceed with **step 4**. If the voltage is correct, skip to **step 5**.
4. With a digital multimeter measure the DC voltage at either side of L61. If the digital multimeter does not indicate +12 Vdc the most likely faulty components are C225, C226, C227 or L61. If the DC voltage at L61 is correct, troubleshoot the U3/Q14 regulator circuit.
5. With a digital multimeter measure the DC voltage at TP3. If the digital multimeter does not indicate -12 Vdc the most likely faulty components are C228, C229, C230 or L60.
6. When only one of the frequency bands fail **steps 4** and **5**, the driver circuit is most likely faulty. The driver circuit for Band A consists of Q3, R8, C27 and C33. Refer to **Foldout FO-B-2** for the other ten circuits.

NOTE

It is possible for one of the shift register outputs to open. If the driver circuit is good, troubleshoot U1 or U2.

7. Replace U2.
8. If all frequency bands fail **steps 4** and **5**, either the Digital Assembly (A2) does not realize the preselector is installed or the control circuit is faulty. If E1 pin 9 is not a logic high (PRE/OPT), check R46, R70 and C233. If the PRE/OPT signal is present, troubleshoot U5, U1, U2 and R71.
9. **Steps 6** through **8** of the performance test, measure the preselector ability to filter in-band frequencies, with a minimal amount in **paragraph B.8.3** of insertion loss, while rejecting out-of-band signals. Refer to **Table B-8** for the correct troubleshooting procedure.

Table B-8. Frequency Response Troubleshooting

All Bands have no output. (step 6)	All bands have a low output. (step 6)	One band has no output. (step 6)	One band fails steps 6, 7 or 8 .
Proceed to step 10 .	Proceed to step 11 .	Proceed to step 12 .	Proceed to step 13 .

10. When there is not an RF output present from the preselector, K1 is either faulty or deenergized. Check the DC voltage at TP2. If a low is present, check K1 and CR3. If a high is present at TP2, troubleshoot the Q1/Q2 circuit. Note: A secondary cause could be an open component in the RF path, i.e. C2, L2, L3 or C216.
11. Troubleshoot the low pass filter circuit L2, L3, C10, C13, C14 or C17.
12. When only one band fails to pass the RF signal, the fault circuit is most likely the input/output switch for that band. The input/output switch for Band A consists of CR5, CR6, R5, R6, R7, C21 and C36. Refer to **FO-B-2** for the other ten circuits. Note: A secondary cause could be an open component in the RF path, i.e. L4, C25, C30 or L6.
13. Failing **steps 6, 7 or 8** would indicate a faulty component in the filter circuit of the selected band. Refer to **FO-B-2** for the applicable components.

B.9 REFERENCE DESIGNATION PREFIX

The use of partial reference designations are used on the equipment and on the manual illustrations. This partial reference designation consists of the component type letter(s) and the identifying component number. The complete reference designation may be obtained by placing the proper prefix before the partial reference designation. Reference designation prefixes are included on the drawings and illustrations in the figure titles (in parenthesis).

B.10 LIST OF MANUFACTURERS

The manufacturers listed below are supply sources used for obtaining certain parts in the option, and are not listed in the base manual. All other manufacturers not listed below can be found in the base manual.

<u>Mrf. Code</u>	<u>Name and Address</u>	<u>Mrf. Code</u>	<u>Name and Address</u>
00779	AMP, Incorporated 2800 Fulling Mill Road P. O. Box 3608 Middletown, PA 17105-3608	34371	Harris Corporation Semiconductor Sector 200 Palm Bay Blvd. P. O. Box 883 Melbourne, FL 32902-0833
16179	M/A-COM, Inc. M/A-COM Control Components Division 21 Continental Blvd. Merrimack, NH 03054	71482	CP Clare Corporation 3101 W. Pratt Blvd. Chicago, IL 60645-4125
17540	Alpha Industries, Inc. Headquarters Semiconductor Division 20 Sylvan Road P. O. Box 1044 Woburn, MA 01801-1854	95348	Gordos Arkansas, Inc. 1000 N 2nd Street P. O. Box 824 Rogers, AR 72757

B.11 PARTS LIST

The following parts lists contain all the electrical components used in the unit, along with mechanical parts which may be subject to unusual wear or damage. When ordering replacement parts from the Signia-IDT, Inc., specify the unit type, the serial number, and the option configuration. Also include the reference designation and the description of each item ordered. The list of manufacturers, provided in **paragraph B.9**, and the manufacturer's part number, provided in **paragraph B.11.1**, are supplied as a guide to aid the user of the equipment while in the field. The parts listed may not necessarily be identical with the parts installed in the unit. The parts listed in **paragraph B.11.1** will provide for satisfactory unit operation.

Replacement parts may be obtained from any manufacturer provided that the physical characteristics and electrical parameters of the replacement item are compatible with the original part. In the case where components are defined by a military or industrial specification, a vendor which can provide the necessary component is suggested as a convenience to the user.

NOTE

As improvements in semiconductors are made, it is the policy of Signia-IDT, Inc. to incorporate them in proprietary products. As a result, some transistors, diodes and integrated circuits which are installed in the unit may not agree with the parts lists or schematic diagrams of this manual. However, semiconductor devices listed in this manual may be substituted with satisfactory results.

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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B.11.1 TYPE 8711/PRE PRESELECTOR OPTION

A4	Preselector Assembly	1	797033-1	14632	
	Resistor, Valriable, 10 KB Side Adjust Potentiometer	1	3269X-1-103	80294	
A4A1	Preselector PC Assy	1	482202-1	14632	

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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B.11.1.1 Type 482202-1 Preselector PC Assy

REF DESIG PREFIX A4A1

	Revision C1				
E1	Cable Assembly 10 POS M-4 IN LG GRAY 28AWG	1	IDMD-5-T-4-C-G	55322	
C1	Capacitor, Ceramic, .047 μ F \pm 10%, 50V 0805	41	841415-023	14632	
C2	Capacitor, Tantalum, 10 μ F \pm 20%, 35V	3	841293-17	14632	
C3					
Thru	Not Used				
C6					
C7	Capacitor, Tantalum, 68 μ F \pm 20%, 6.3V	2	841293-24	14632	
C8	Not Used				
C9	Not Used				
C10	Capacitor, Ceramic, 51pF \pm 2%, 50V 0805	2	841416-042	14632	
C11	Not Used				
C12	Not Used				
C13	Capacitor, Ceramic, 100pF \pm 2%, 50V 0805	10	841416-049	14632	
C14	Capacitor, Ceramic, 6.2pF \pm .25pF 50V 0805	1	841416-020	14632	
C15	Not Used				
C16	Not Used				
C17	Same as C10				
C18					
Thru	Not Used				
C20					
C21	Same as C1				
C22	Capacitor, Ceramic, 33pF \pm 2%, 50V 0805	6	841416-037	14632	
C23	Capacitor, Ceramic, 6.8pF \pm .25pF 50V 0805	7	841416-021	14632	
C24	Capacitor, Ceramic, 12pF \pm 2%, 50V 0805	5	841416-027	14632	
C25	Same as C23				
C26	Capacitor, Ceramic, 22pF \pm 2%, 50V 0805	5	841416-033	14632	
C27	Same as C1				
C28	Capacitor, Ceramic, 3.3pF \pm .1pF 50V 0805	1	841416-013	14632	
C29	Same as C24				
C30	Capacitor, Ceramic, 4.7pF \pm .1pF 50V 0805	1	841416-017	14632	
C31	Not Used				
C32	Same as C22				
C33	Capacitor, Tantalum, 6.8 μ F \pm 20%, 6.3V	10	841293-14	14632	
C34	Not Used				
C35	Not Used				
C36	Same as C1				
C37	Capacitor, Ceramic, 39pF \pm 2%, 50V 0805	4	841416-039	14632	
C38	Capacitor, Ceramic, 8.2pF \pm .25pF 50V 0805	3	841416-023	14632	
C39	Same as C1				
C40	Capacitor, Ceramic, 56pF \pm 2%, 50V 0805	5	841416-043	14632	
C41	Same as C23				
C42	Same as C26				
C43	Same as C23				
C44	Capacitor, Ceramic, 27pF \pm 2%, 50V 0805	6	841416-035	14632	

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

C45	Same as C38				
C46	Same as C26				
C47	Same as C23				
C48	Same as C1				
C49	Same as C33				
C50	Same as C23				
C51	Same as C40				
C52	Same as C38				
C53	Same as C37				
C54	Same as C1				
C55	Same as C26				
C56	Capacitor, Ceramic, 5.1pF \pm 25pF 50V	2	841416-018	14632	
C57	Same as C1				
C58	Capacitor, Ceramic, 68pF \pm 2%, 50V 0805	5	841416-045	14632	
C59	Same as C24				
C60	Same as C13				
C61	Same as C44				
C62	Capacitor, Ceramic, 62pF \pm 2%, 50V 0805	5	841416-044	14632	
C63	Same as C23				
C64	Same as C13				
C65	Same as C44				
C66	Same as C24				
C67	Same as C58				
C68	Same as C1				
C69	Same as C33				
C70	Same as C56				
C71	Same as C26				
C72	Same as C1				
C73	Same as C13				
C74	Capacitor, Ceramic, 18pF \pm 2%, 50V 0805	3	841416-031	14632	
C75	Same as C1				
C76	Capacitor, Ceramic, 150pF \pm 2%, 50V 0805	6	841416-053	14632	
C77	Same as C44				
C78	Capacitor, Ceramic, 270pF \pm 2%, 50V 0805	7	841416-059	14632	
C79	Capacitor, Ceramic, 47pF \pm 2%, 50V 0805	8	841416-041	14632	
C80	Same as C1				
C81	Same as C58				
C82	Same as C24				
C83	Same as C79				
C84	Same as C78				
C85	Same as C44				
C86	Same as C33				
C87	Same as C76				
C88	Same as C74				
C89	Same as C13				

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

C90	Same as C1				
C91	Same as C76				
C92	Same as C22				
C93	Same as C1				
C94	Capacitor, Ceramic, 220pF $\pm 2\%$, 50V 0805	6	841416-057	14632	
C95	Same as C79				
C96	Capacitor, Ceramic, 330pF $\pm 2\%$, 50V 0805	4	841416-061	14632	
C97	Capacitor, Ceramic, 82pF $\pm 2\%$, 50V 0805	5	841416-047	14632	
C98	Same as C97				
C99	Same as C1				
C100	Same as C74				
C101	Same as C96				
C102	Same as C97				
C103	Same as C79				
C104	Same as C33				
C105	Same as C94				
C106	Same as C22				
C107	Same as C76				
C108	Same as C1				
C109	Capacitor, Ceramic, 180pF $\pm 2\%$, 50V 0805	5	841416-055	14632	
C110	Same as C37				
C111	Same as C1				
C112	Same as C78				
C113	Same as C62				
C114	Capacitor, Ceramic, 470pF $\pm 2\%$, 50V 0805	6	841416-065	14632	
C115	Same as C62				
C116	Same as C76				
C117	Same as C44				
C118	Same as C1				
C119	Same as C33				
C120	Same as C114				
C121	Same as C62				
C122	Same as C62				
C123	Same as C78				
C124	Same as C37				
C125	Same as C76				
C126	Same as C1				
C127	Same as C94				
C128	Same as C1				
C129	Same as C22				
C130	Same as C96				
C131	Same as C97				
C132	Same as C1				
C133	Capacitor, Ceramic, 680pF $\pm 2\%$, 50V 0805	4	841416-069	14632	
C134	Same as C79				

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

C135	Same as C78				
C136	Same as C79				
C137	Same as C133				
C138	Same as C79				
C139	Same as C97				
C140	Same as C33				
C141	Same as C96				
C142	Same as C22				
C143	Same as C94				
C144	Same as C1				
C145	Same as C78				
C146	Same as C58				
C147	Same as C1				
C148	Same as C114				
C149	Same as C13				
C150	Same as C1				
C151	Same as C1				
C152	Not Used				
C153	Not Used				
C154	Capacitor, Ceramic, 560pF $\pm 2\%$, 50V 0805	1	841416-067		14632
C155	Capacitor, Ceramic, 1000pF $\pm 2\%$, 50V 0805	1	841416-073		14632
C156	Same as C13				
C157	Same as C1				
C158	Same as C7				
C159	Same as C1				
C160	Capacitor, Ceramic, 820pF $\pm 2\%$, 50V 0805	4	841416-071		14632
C161	Capacitor, Ceramic, 120pF $\pm 2\%$, 50V 0805	2	841416-051		14632
C162	Capacitor, Ceramic, 390pF $\pm 2\%$, 50V 0805	1	841416-063		14632
C163	Same as C40				
C164	Same as C33				
C165	Same as C160				
C166	Same as C161				
C167	Same as C13				
C168	Same as C114				
C169	Same as C58				
C170	Same as C78				
C171	Same as C1				
C172	Same as C40				
C173	Same as C114				
C174	Same as C1				
C175	Same as C109				
C176	Same as C133				
C177	Same as C109				
C178	Capacitor, Ceramic, 1200pF $\pm 2\%$, 50V 0805	4	841416-075		14632
C179	Same as C79				

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

C180	Same as C1				
C181	Same as C109				
C182	Same as C178				
C183	Same as C33				
C184	Same as C109				
C185	Same as C133				
C186	Same as C114				
C187	Same as C40				
C188	Same as C94				
C189	Same as C1				
C190	Capacitor, Ceramic, .015 μ F \pm 10%, 50V 0805	1	841415-020	14632	
C191	Same as C160				
C192	Capacitor, Ceramic, 1500pF \pm 2%, 50V 0805	4	841416-077	14632	
C193	Same as C1				
C194	Same as C178				
C195	Same as C33				
C196	Same as C178				
C197	Same as C192				
C198	Same as C94				
C199	Same as C160				
C200	Same as C1				
C201	Capacitor, Ceramic, 2700pF \pm 2%, 50 WV OR L3	2	841314-083	14632	
C202	Same as C201				
C203	Not Used				
C204	Not Used				
C205	Same as C2				
C206	Same as C192				
C207	Capacitor, Ceramic, 4700pF \pm 2%, 50 WV OR S3	2	841314-089	14632	
C208	Same as C192				
C209	Same as C207				
C210	Not Used				
C211	Not Used				
C212	Same as C1				
C213	Same as C1				
C214	Not Used				
C215	Not Used				
C216	Same as C2				
C217					
Thru	Not Used				
C223					
C224	Same as C217				
C225	Same as C1				
C226	Capacitor, Tantalum, 4.7 μ F \pm 20%, 20V	4	841293-25	14632	
C227	Same as C226				
C228	Same as C1				

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

C229	Same as C226				
C230	Same as C226				
C231	Same as C13				
C232	Same as C13				
C233	Same as C1				
C234					
Thru	Not Used				
C237					
C238					
Thru	Same as C1				
C240					
CR1	Not Used				
CR2	Diode/SWPIN Dual Switching Diode Reverse Voltage	2	MMBD7000LT1	04713	
CR3	OBS; Diode Use CN 630294; General Purpose 100=V 25NA@20V	2	MMBD1203-HIGH	27014	
CR4	Same as CR3				
CR5	Diode VBR=300V RS=>10HM @ 100 MILLIGRAMS	20	SMP1300-99	17540	
CR6					
Thru	Same as CR5				
CR24					
CR25	Not Used				
CR26	Same as CR2				
CR27	Not Used				
CR28	Not Used				
CR29	Diode/PIN RS=0.5 C=2.2 TAU=6.0US POWER=7.5W	2	MA4P4001F	16179	
CR30	Same as CR29				
J1	Connector, Jack, BNC BNC RT ANG PCB/PANEL MT W/SLDR MT POSTS	2	227677-1	00779	
J2	Same as J1				
J3	Not Used				
J4	Not Used				
JW1	Jumper .05 W MAX 1A MIN@70C	5	841417	14632	
JW2					
Thru	Same as JW1				
JW5					
K1	RELAY REED NOM COIL VOLT 5 COIL RES 380W ±10%, (MFR	1	SMJ1A05-S	95348	
L1	Not Used				
L2	Inductor, 220nH ±5%, Qmin-50@100MHz >550MHz= SRF .10W=R	2	841438-033	14632	
L3	Same as L2				
L4	Inductor, 680nH ±5%, Qmin-50@25MHz >150MHz= SRF .30W=RD	9	841438-045	14632	
L5	Same as L4				
L6	Same as L4				

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
REF DESIG PREFIX A4A1					
L7	Inductor, 330mH $\pm 5\%$, Qmin-40@.79MHz 3.5MHz= SRF 14W=DCR 85	20	841444-061	14632	
L8	Same as L7				
L9	Same as L7				
L10					
Thru	Same as L4				
L12					
L13	Same as L7				
L14	Same as L7				
L15	Inductor, 560nH $\pm 5\%$, Qmin-50@25MHz >190MHz= SRF .26W=RD	3	841438-043	14632	
L16	Same as L15				
L17	Same as L15				
L18	Same as L7				
L19	Same as L7				
L20					
Thru	Same as L4				
L22					
L23	Same as L7				
L24	Same as L7				
L25	Inductor, 1.0mH $\pm 5\%$, Qmin-50@7.9MHz 100MHz= SRF .50W=DCR 6	3	841444-001	14632	
L26	Same as L25				
L27	Same as L25				
L28	Same as L7				
L29	Same as L7				
L30	Inductor, 1.5 μ H $\pm 5\%$, Qmin-50@7.9MHz 70MHz= SRF .60W=DCR 50	3	841444-005	14632	
L31	Same as L30				
L32	Same as L30				
L33	Same as L7				
L34	Same as L7				
L35	Inductor, 2.2 μ H $\pm 5\%$, Qmin-50@7.9MHz 55MHz= SRF .70W=DCR 48	3	841444-009	14632	
L36	Same as L35				
L37	Same as L35				
L38	Same as L7				
L39	Same as L7				
L40	Inductor, 3.3 μ H $\pm 5\%$, Qmin-50@7.9MHz 45MHz= SRF .80W=DCR 46	3	841444-013	14632	
L41	Same as L40				
L42	Same as L40				
L43	Same as L7				
L44	Same as L7				

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
REF DESIG PREFIX A4A1					
L45	Inductor, 4.7 μ H \pm 5%, Qmin-50@7.9MHz 35MHz= SRF 1.00W=DCR 4	3	841444-017	14632	
L46	Same as L45				
L47	Same as L45				
L48	Same as L7				
L49	Same as L7				
L50	Inductor, 5600nH \pm 5%, Qmin-35@7.9MHz >39MHz= SRF 2.1W=R	2	841438-067	14632	
L51	Inductor, 6800nH \pm 5%, Qmin-35@7.9MHz >31MHz= SRF .27W=R	1	841438-069	14632	
L52	Same as L50				
L53	Same as L7				
L54	Inductor, 680 μ H \pm 5%, Qmin-30@.79MHz 3.0MHz= SRF 30W=DCR 60	5	841444-069	14632	
L55	Same as L54				
L56	Inductor, 12 μ H Q=45 F=2.5M FR=40M R=2.7 I=16OMA IRON CORE	2	1330-46	99800	
L57	Inductor, 27 μ H Q=45 F=2.5M FR=20M R=3.5 I=14OMA IRON CORE	1	1330-54	99800	
L58	Same as L56				
L59	Same as L54				
L60	Same as L54				
L61	Inductor, 47 μ H \pm 5%, Qmin-50@2.5MHz 10MHz= SRF 5.0W=DCR 160	1	841444-041	14632	
L62					
Thru	Not Used				
L65					
L66	Same as L54				
Q1	Transistor	2	MMBT3904LT1	04713	
Q2	Same as Q1				
Q3	Transistor	11	MMBT2907ALT1	04713	
Q4					
Thru	Same as Q3				
Q13					
Q14	Transistor	1	MTD10N05E	04713	
R1	Resistor, Fixed, 3.9k Ω \pm 5%, .1W 0805	1	841414-087	14632	
R2	Resistor, Fixed, 1.0k Ω \pm 5%, .1W 0805	8	841414-073	14632	
R3	Resistor, Fixed, 10k Ω \pm 5%, .1W 0805	13	841414-097	14632	
R4	Same as R3				
R5	Resistor, Fixed, 10 Ω \pm 5%, .1W 0805	23	841414-025	14632	
R6	Same as R5				
R7	Same as R3				
R8	Resistor, Fixed, 330 Ω \pm 5%, .1W 0805	15	841414-061	14632	
R9	Same as R5				
R10	Same as R5				

REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

R11	Same as R3				
R12	Same as R8				
R13	Same as R5				
R14	Same as R3				
R15	Same as R5				
R16	Same as R8				
R17	Same as R5				
R18	Same as R3				
R19	Same as R5				
R20	Same as R8				
R21	Same as R5				
R22	Same as R3				
R23	Same as R8				
R24	Same as R5				
R25	Same as R5				
R26	Same as R3				
R27	Same as R5				
R28	Same as R8				
R29	Same as R5				
R30	Same as R3				
R31	Same as R5				
R32	Same as R8				
R33	Same as R5				
R34	Same as R3				
R35	Same as R8				
R36	Same as R5				
R37	Same as R3				
R38	Same as R5				
R39	Same as R8				
R40	Same as R5				
R41	Same as R5				
R42	Same as R3				
R43	Same as R5				
R44	Same as R8				
R45	Not Used				
R46	Same as R2				
R47	Same as R2				
R48	Resistor, Fixed, 15k Ω \pm 5%, .1W 0805	1	841414-101	14632	
R49	Resistor, Fixed, 680k Ω \pm 5%, .1W 0805	1	841414-141	14632	
R50	Resistor, Fixed, 22k Ω \pm 5%, .1W 0805	1	841414-105	14632	
R51	Resistor, Fixed, 4.7k Ω \pm 5%, .1W 0805	1	841414-089	14632	
R52	Same as R5				
R53	Same as R3				
R54	Same as R5				
R55	Same as R8				

REPLACEMENT PARTS LIST

WJ-8711/PRE SUBOCTAVE PRESELECTOR OPTION

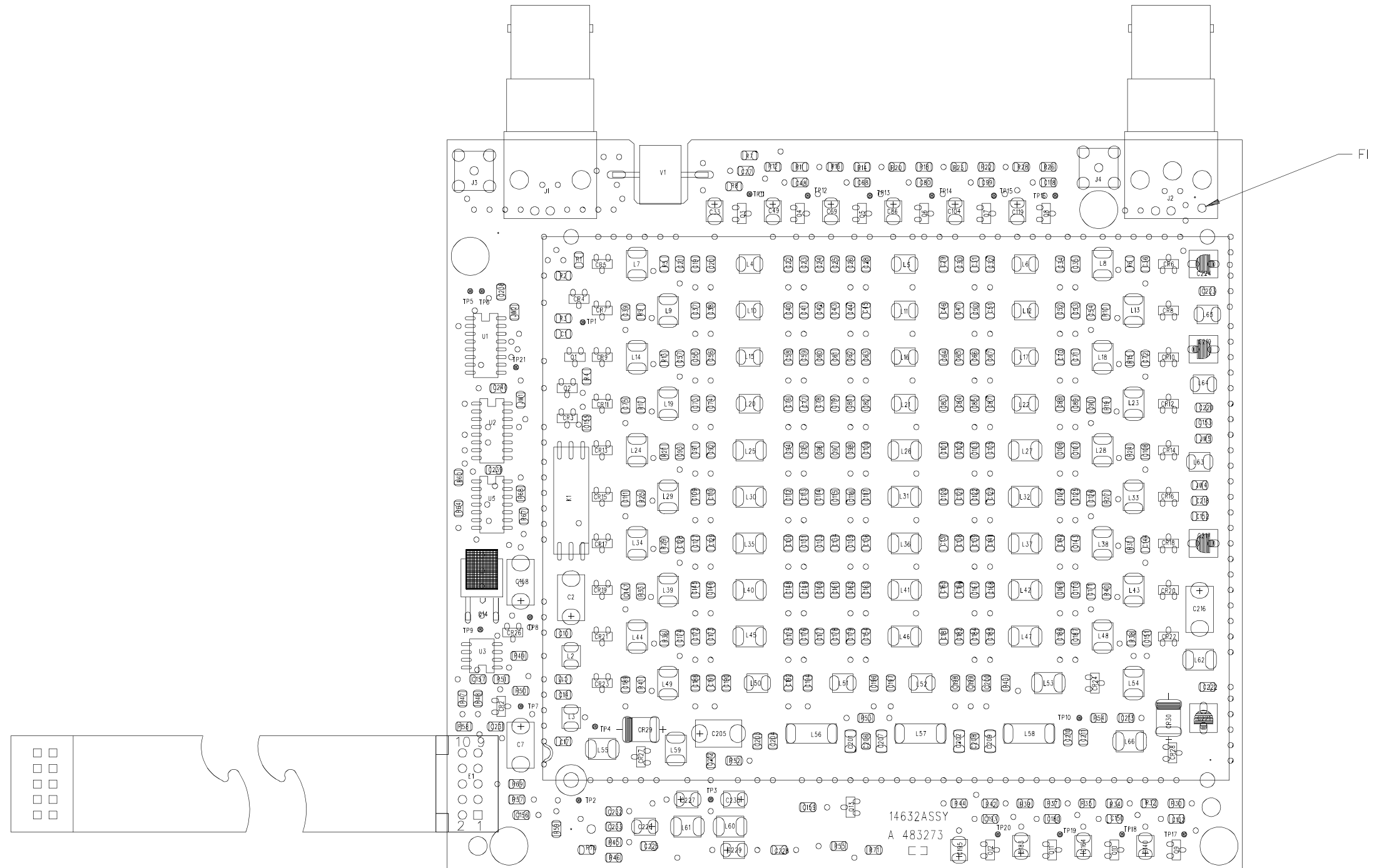
REF DESIG	DESCRIPTION	QTY PER ASSY	MANUFACTURERS PART NO.	MFR. CODE	RECM VENDOR
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REF DESIG PREFIX A4A1

R56	Not Used				
R57	Same as R8				
R58	Same as R8				
R59	Same as R8				
R60	Same as R2				
R61	Not Used				
R62	Not Used				
R63	Not Used				
R64	Same as R2				
R65	Not Used				
R66	Not Used				
R67	Same as R2				
R68	Same as R2				
R69	Same as R2				
R70	Same as R8				
R71	Same as R5				
U1	Integrated Circuit, CMOS, 8B BUS-COMPATIBLE SHF ST LCH	2	74HC4094 SO16	34371	
U2	Same as U1				
U3	Amplifier LOW PWR JFET INPUT OPERATIONAL Amplifier SO-8	1	TL061CD	04713	
U4	Not Used				
U5	Integrated Circuit, QUAD 2-INPUT NOR GATE	1	74HC02 SO14	02735	
V1	ARRESTER GAS DISCHARGE SURGE	1	CG75L	71482	

FOLDOUTS

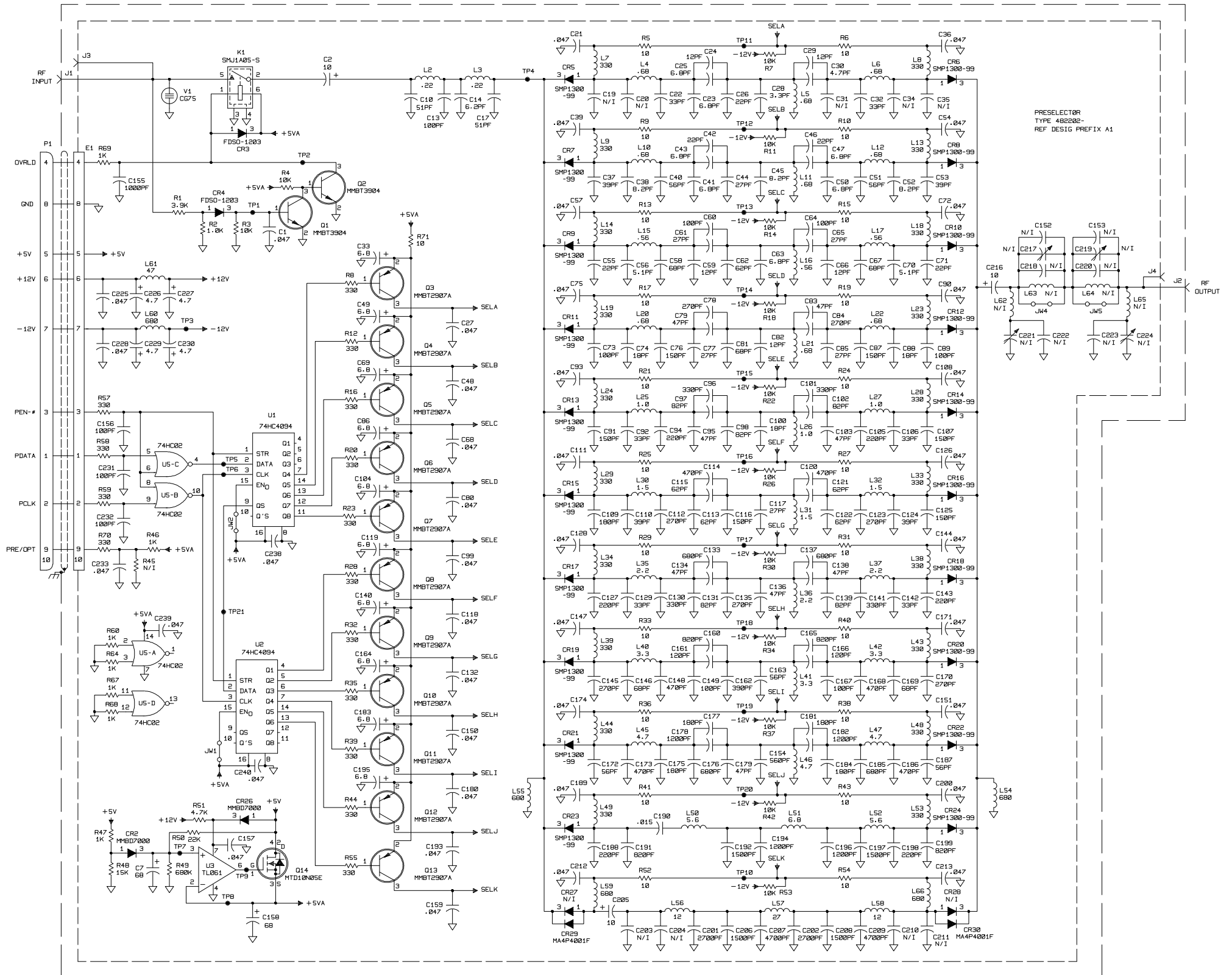
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FO-B-1. Type 797033-1 Preselector Assembly (A4)
Component Location Drawing
FP-B-1/(FP-B-2 blank)

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
 - A) RESISTANCE IS IN OHMS, $\pm 5\%$, 1/10W
 - B) CAPACITANCE IS IN μF .
 - C) INDUCTANCE IS IN μH .
2. A 14-PIN DIP SOCKET IS PROVIDED FOR INSTALLATION OF K2.



FO-B-2. Type 797033-1 Preselector Assembly (A4), Schematic Diagram 581356 (D)
 FP-B-3/(FP-B-4 blank)