

TECHNICAL DATA

Frequency Range 148-174 MHz	RF Feed-through Voltage to Receiver 8 Volts RMS, maximum
Forward Power Signal Voltage 8 to 10 Volts	Receiver Loss 1.5 dB, maximum
Reverse Power Signal Voltage 0.3 Volts maximum	Power Loss at 100 Watts Input 10 Watts, maximum
Maximum Reflected Power at 60 Watts Input 3 Watts	DC Power Requirements 45 mA at 12 Volts

DESCRIPTION

GENERAL

The Filter/Antenna Switch/VSWR Sensor Module is normally used in Series 1000 transmitters. It consists of a printed circuit board that contains the solid-state antenna switch and VSWR sensing circuits; and a low-pass filter mounted in a sealed enclosure. Refer to the module schematic diagram while reading the following description.

ANTENNA SWITCH

The Antenna Switch circuit connects the antenna to the receiver input in the receive mode, and connects the transmitter output to the antenna (and shorts the receiver input) in the receive mode.

In the receive mode, the RF input from the antenna is not of sufficient amplitude to bias diodes CR1 and CR2 into conduction, and signals from the antenna are passed to the receiver. L2/C2/C3/R2 form a resonant circuit that blocks the signal from entering the transmitter.

In the transmit mode, CR1 and CR2 conduct because of the application of keying voltage (+13.6 volts) to C1.

CR1 conducts, connecting the transmitter energy through the low-pass filter to the antenna. CR2 shorts the receiver input, preventing damage to the front end. L3/C6 then form a parallel resonant circuit, keeping the RF above ground.

VSWR SENSOR

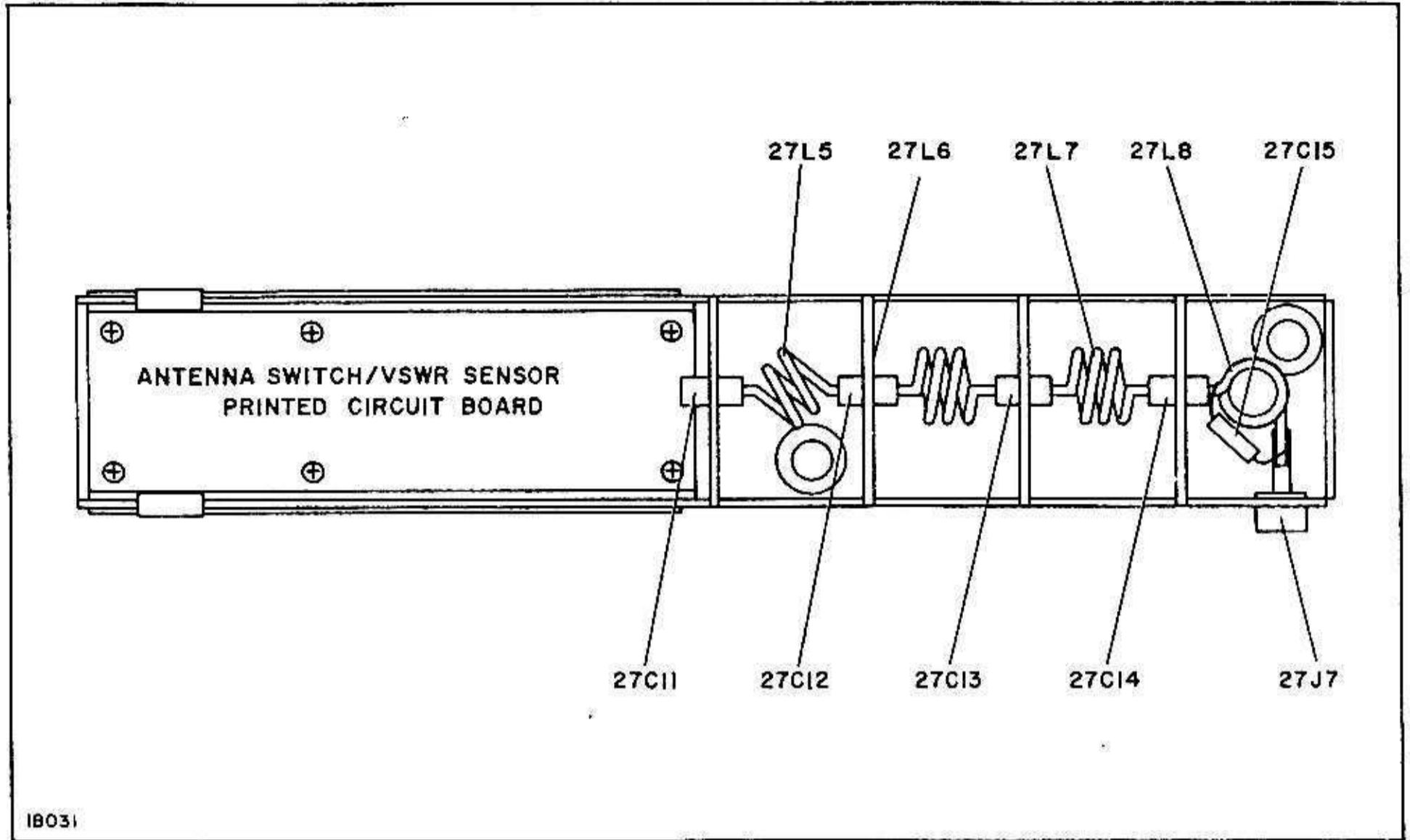
The VSWR Sensor circuit, consisting of C5/R3/T1/CR3 (reverse power sensor) and C6/R2/T2/CR4 (forward power sensor) provide output signals in proportion to the forward and reverse power levels. T1 and T2 are toroid ferrite cores. C5 and C8 null the circuits; CR3 and CR4 serve as detectors, converting the RF signals to DC.

LOW-PASS FILTER

The Low-Pass Filter circuit, comprised of C11 through C15 and L5 through L8, reduces the harmonic radiation from the transmitter output. It attenuates all signals higher in frequency than the frequency band in use.

REPLACEMENT PARTS

Symbol	Stock No.	Drawing No.	Description
	419423	3720655-501	FILTER/ANTENNA SWITCH/VSWR SENSOR MODULE-CODE B P/L 3720655-501 REV 16
27C11	428066	3723114-020	Feed-Thru, 14PFD 5% 500V
27C12	428064	3723114-022	Feed-Thru, 28PFD 5% 500V
27C13	428064	3723114-022	Feed-Thru, 28PFD 5% 500V
27C14	428065	3723114-022	Feed-Thru, 22PFD 5% 500V
27C15	219668	757607-014	Mica, 10PFD ±0.5PFD 500V
27J7	104039	8848262-002	Phono Jack
27L5	418668	3720929-003	Coil-Filter
27L6	418667	3720929-002	Coil-Filter
27L7	418667	3720929-002	Coil-Filter
27L8	418666	3720929-001	Coil-Filter
	248538	3454702-001	Screw, Taptite "6-32 x 1/4" (6 Used)
		3720655-502	Antenna Switch/VSWR Sensor Printed Circuit Board - Code D P/L 3720655-502 REV 16
27C1	112720	3450097-003	Feed-Thru, 1000PF
27C2	418657	3731259-278	Variable, 4-40PF
27C3	300196	3731348-258	Mica, 1000PF 5% 500V
27C4	300196	3731348-258	Mica, 1000PF 5% 500V
27C5	249696	3731259-276	Variable, 0.9-7PF
27C6	300546	3731348-212	Mica, 12PF 5% 500V
27C7	112720	3450097-003	Feed-Thru, 1000PF
27C8	249696	3731259-276	Variable, 0.9-7PF
27C9	112720	3450097-003	Feed-Thru, 1000PF
27C10	300196	3468205-206	Mica, 15 PF 5% 500V
27CR1	431850	3727085-001	Diode - PIN
27CR2	431852	3727085-003	Diode - PIN
27CR3	242522	3464611-001	Diode - Silicon
27CR4	242522	3464611-001	Diode - Silicon
27L1	243248	3465844-139	Choke - R.F., 2.2UH 20%
27L2	418669	3720918-001	Coil - Switch
27L3	418670	3468336-060	Coil - Switch
27L4	243248	3465844-139	Choke - R.F., 2.2UH 20%
27R1	522115	99126-052	150 Ohms 10% 2W
27R2	223769	99206-086	100,000 Ohms 10% 1/4W
27R3	502047	82283-046	47 Ohms 10% 1/2W
27R4	502047	82283-046	47 Ohms 10% 1/2W
27R5	223769	99206-086	100,000 Ohms 10% 1/4W
	228192	3450825-001	Socket 0.093 Diameter (5 Used) (Package of 5)



EMERGENCY SUBSTITUTES-SOLID STATE DEVICES

In the event of a semiconductor failure, the exact replacement found in the replacement parts list should be used. In an emergency, to minimize equipment downtime, the following common semiconductor types may be temporarily used. However, use of these substitutes may result in degraded system performance.

Component Designation	Emergency Substitute
27CR1	SMV505
27CR2	SMV505
27CR3	1N914
27CR4	1N914

PRODUCTION VARIATIONS

The production level of the module is indicated by a legend (example: CODE C) stamped on the module near the identifying drawing number. The following table lists the differences between the various production levels. To determine the difference between a given production level and the level shown on the pathfinder, schematic, and parts list, note the differences tabulated for the desired level and all subsequent levels.

ANTENNA SWITCH/VSWR SENSOR PRINTED CIRCUIT BOARD

Current Version: 3720655-502 CODE D

Code Level Difference	Reference	Changes for Code Level Difference			
A-B	Schematic and Component Values	27R6 not used			
B-C	Component Values	Symbol	Stock No.	Drawing No.	Description
		27CR1	418659	3720922-3	Diode
		27CR2	418659	3720922-3	Diode
		27R1	512127	90496-55	270 ohms 10% 1 W
		27R6	512127	90496-55	270 ohms 10% 1 W
	Schematic				
C-D	Component Values	Symbol	Stock No.	Drawing No.	Description
		27C2	418657	3731259-278	Variable, 4-40 PF
		27C3	300196	3731348-258	Mica 1000 PF 5% 500V
		27C10	300196	3731348-258	Mica 1000 PF 5% 500V
		27CR1	421956	3731462-001	Diode - Silicon
		27CR2	421956	3731462-001	Diode - Silicon
		27L2	418669	3720918-001	Coil Switch
		27L3	418670	3720918-002	Coil Switch
		27R2	223769	99206-086	100,000 ohms 10% 1/4W
	Schematic				

ANTENNA SWITCH/VSWR SENSOR PRINTED CIRCUIT BOARD

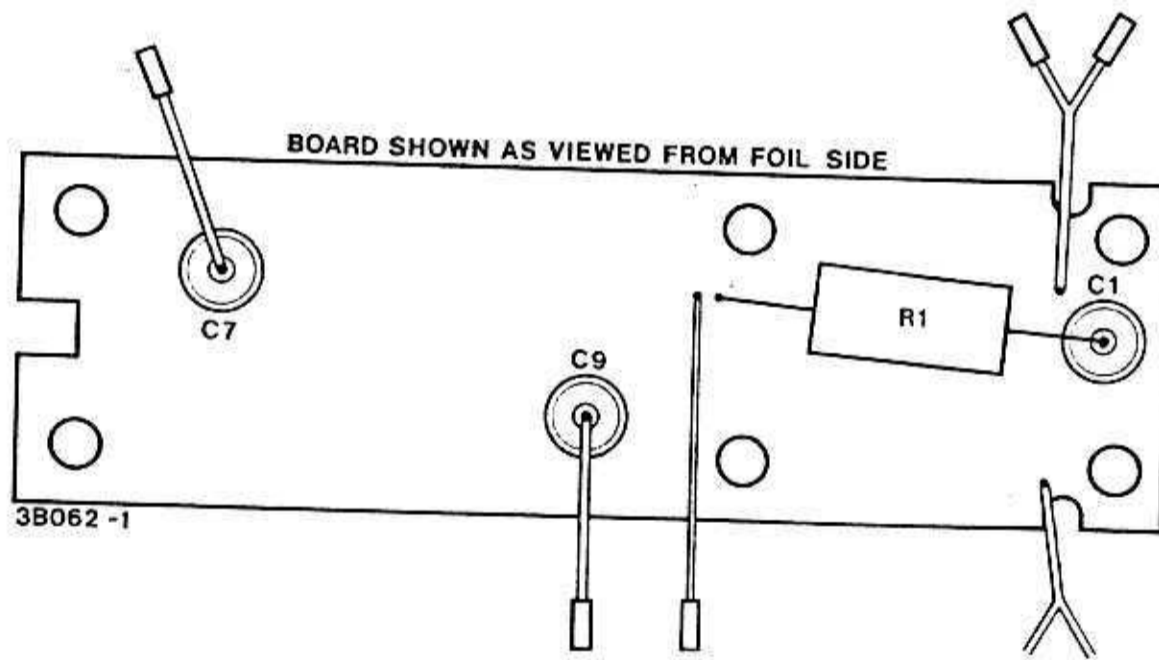
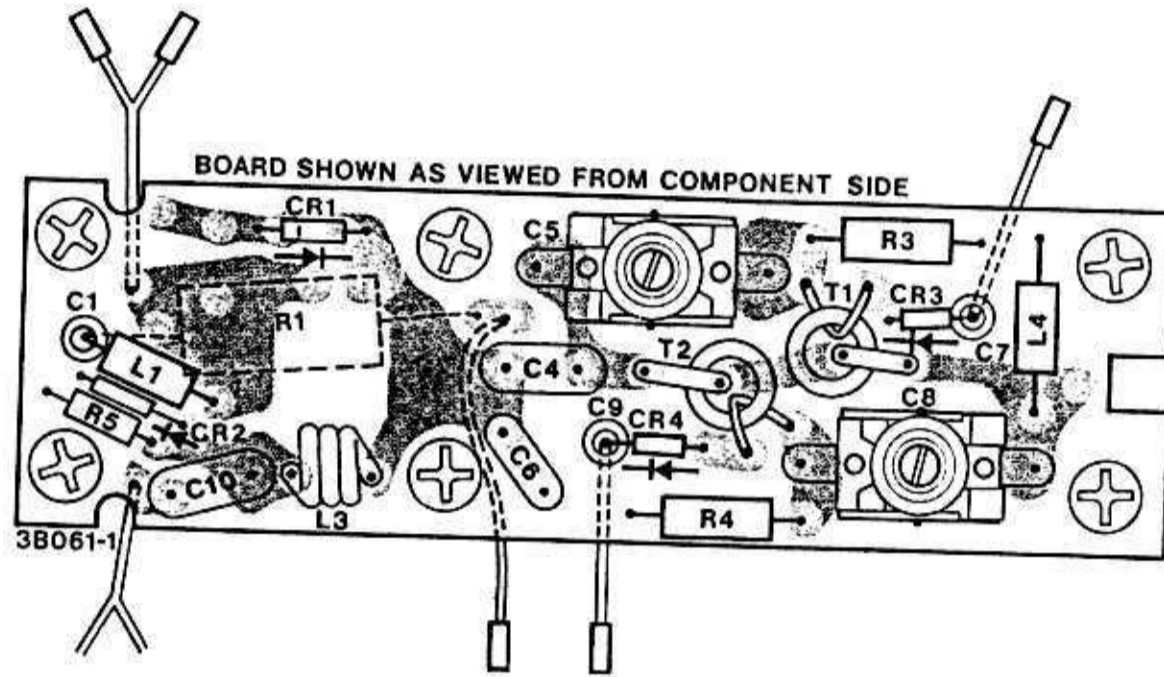
Current Version: 3720655-502 CODE C

Code Level Difference	Reference	Changes for Code Level Difference
C-D	Pathfinder	

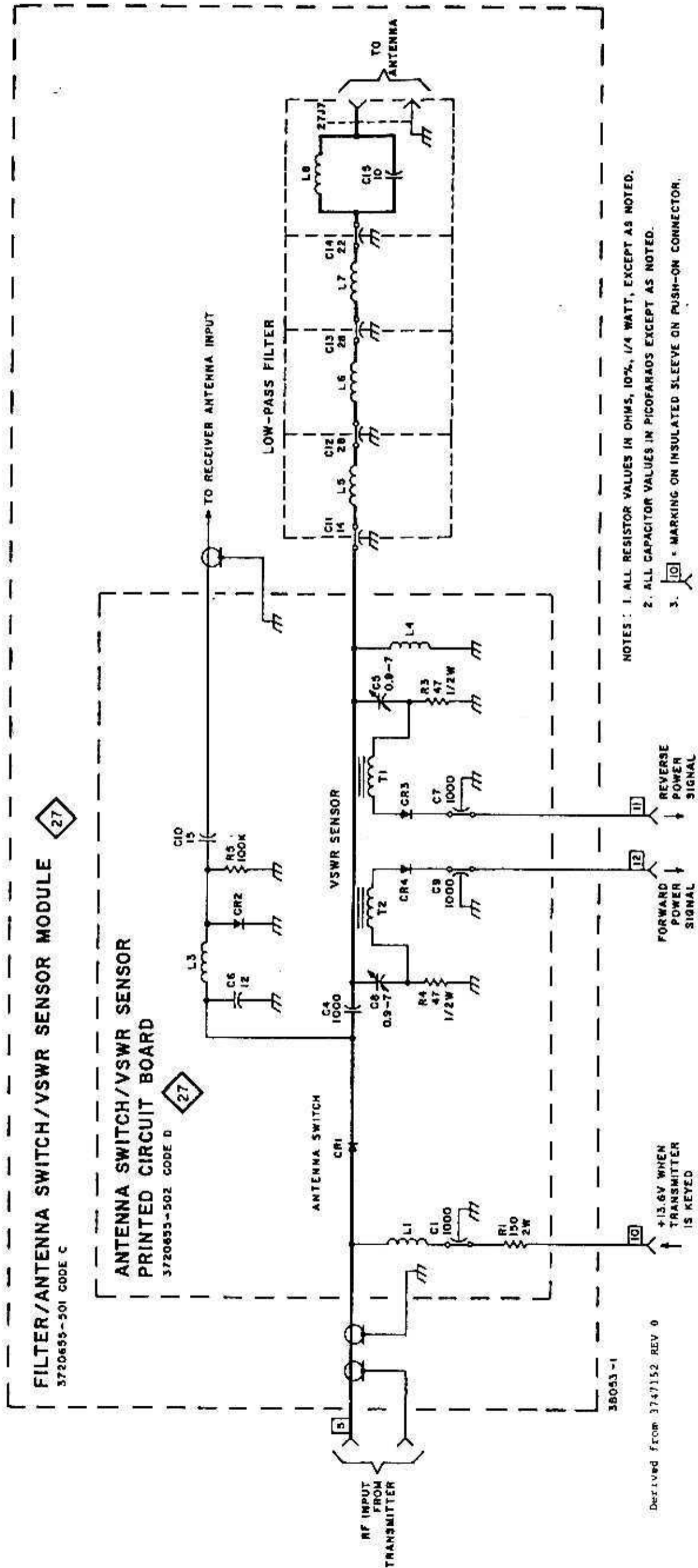
FILTER MODULE

Current Version: 3720610-501 CODE B

Code-Level Differences	Instruction Book References	Changes for Code-Level Differences			
A-B	Component Values	Symbol	Stock No.	Drawing No.	Description
		27C11	218788	8949991-001	Feed-Thru 14PFD 5% 600V
		27C12	218790	8949991-003	Feed-Thru 28PFD 5% 600V
		27C13	218790	8949991-003	Feed-Thru 28PFD 5% 600V
		27C14	218789	8949991-002	Feed-Thru 22PFD 5% 600V



Pathfinder Diagram



Schematic Diagram