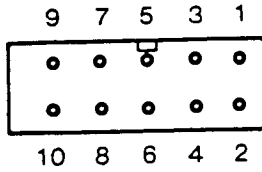
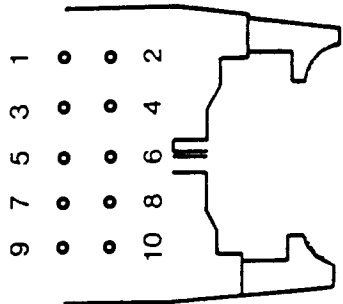


TABLE OF CONTENTS

Chapter 1 Transmitter Unit	Page No.
1.1 Specifications	1
1.2 General Information	1
1.3 Operation	1
1.4 Theory of Operation	2
1.5 Interface Connector	2
1.6 Crystal Specifications	3
1.7 Alignment	4
1.8 Board Layout	5
1.9 Schematic	6
1.10 Parts List	7
1.11 Duty Cycle Rating	8

Chapter 2 Receiver Unit	Page No.
2.1 Specifications	9
2.2 General Information	9
2.3 Operation	9
2.4 Theory of Operation	10
2.5 Pin Functions	11
2.6 Crystal Specifications	11
2.7 Alignment	12
2.8 Board Layout	13
2.9 Schematic	14
2.10 Parts List	15

1.5 Transmitter Interface Connector



Pin No.

Function

1	Data Input (2VPP into 7K resistive load)
2	Not Used
3	Ground
4	Ground
5	Not Used
6	Not Used
7	Ground
8	Keyline (high to transmit, TTL level* compatible)
9	Regulated +8.0 VDC Out (20 mA max.)
10	+12.5 VDC In

*TTL Levels: High = +2.5V to 5.0V
Low = 0V to 0.5V

1.6 Transmitter Crystal Specifications

NEULINK

XT96T CRYSTAL SPECS

APRIL 1988

CRYSTAL FUNCTION	DCL Series 900 MHz TX
PART NUMBER	XT-96T
HOLDER TYPE	HC-43/U
FORMULA	$F = F_c / 36$
MODE	Fundamental
FREQUENCY TOLERANCE	± 10 ppm
STABILITY (-10° + 60°C)	+ 4/-6 ppm
UPPER TURN POINT ($\pm 5^\circ$)	52° C
SERIES RESISTANCE	25 ohms maximum
LOAD CAPACITANCE	43 pF
DRIVE LEVEL	.5 mW

MARKINGS ON THE CRYSTAL SHOULD INDICATE TX AND THE CHANNEL OPERATING FREQUENCY.

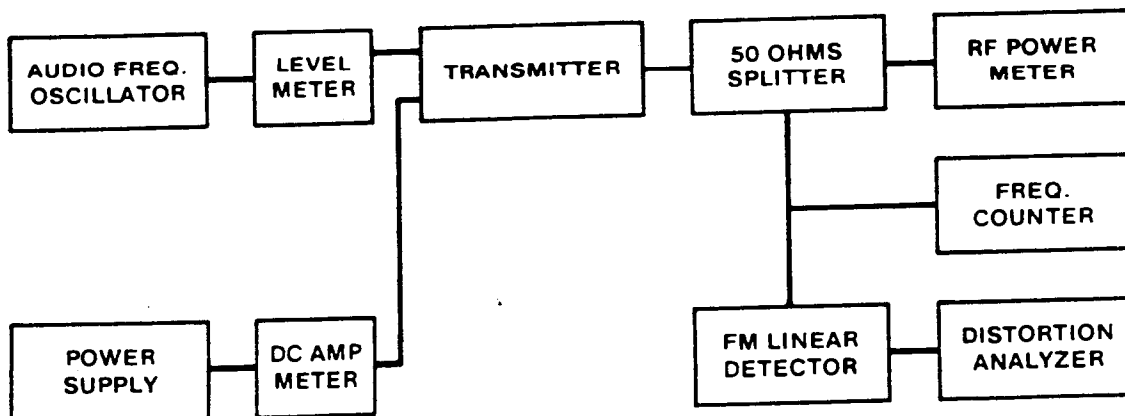
1.7 Transmitter Alignment

Test Equipment Recommended

Frequency Counter
RF Watts Meter (0-5 Watt Scale)
AF Oscillator
Level Meter
FM Linear Detector
Distortion Analyzer
Regulated Power Supply (12.5VDC 2 A)
DC Volts/Amp Meters
50 OHMS Power Splitter

Tune-Up Transmitter

1. Connect the test instruments to the transmitter as shown in diagram below.
2. Turn L1 and L2 to make voltage at TP1 maximum.
3. Turn L3 and L4 to make voltage at TP2 maximum.
4. Turn VR2 clockwise to the maximum position.
5. Turn L6, VC2 and VC3 to make current meter pointer deflection maximum.
6. Turn L11 and Vc4 to make current meter pointer deflection maximum.
7. Turn VC5 and VC6 to make spectrum analyzer swing maximum.
8. Turn VR2 to make reading of RF Power meter to 2W.
9. Set audio Osc. to + 3 dBV and turn VR1 to make reading of linear detector to 5KHz.



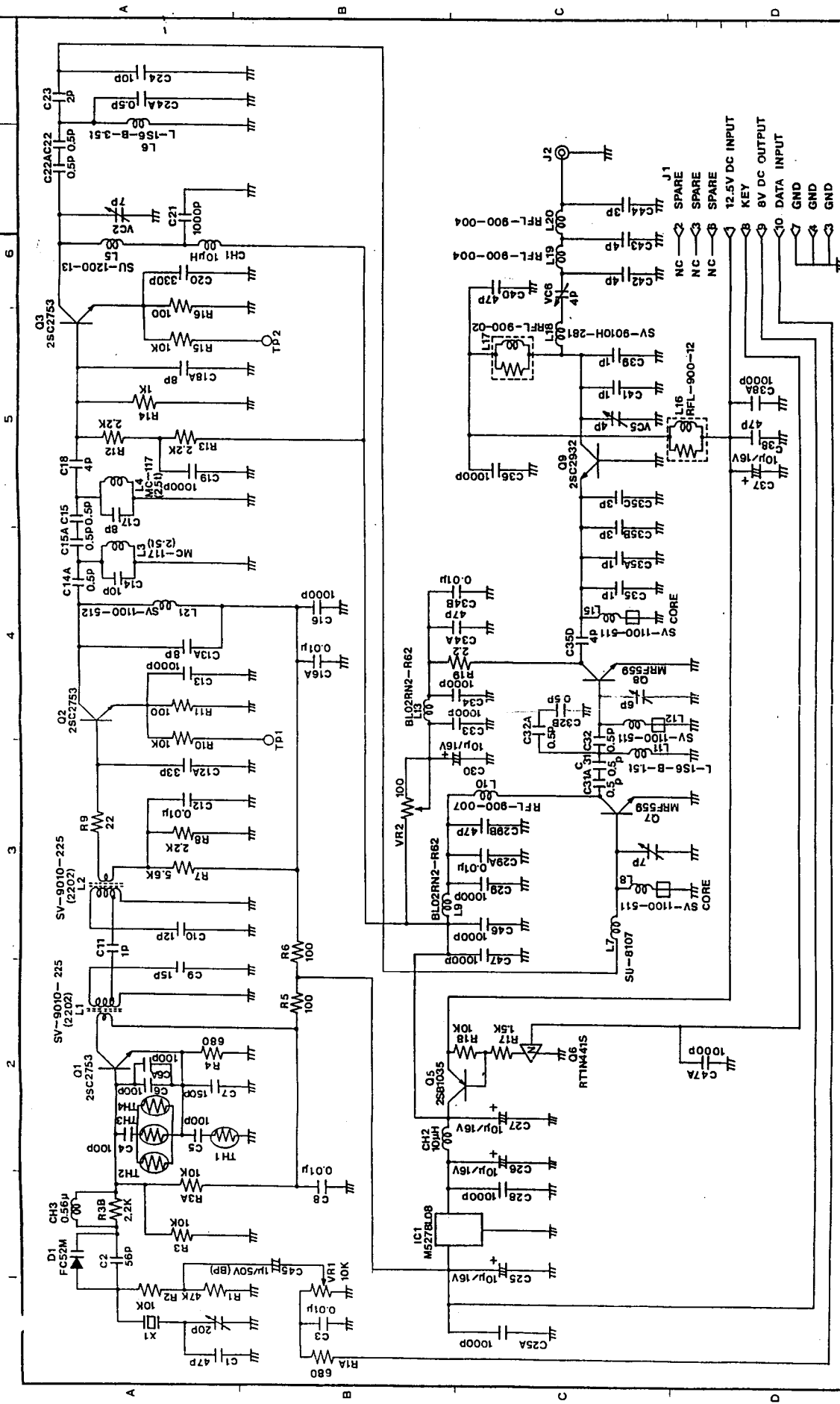
1.11 Transmitter Duty Cycle Rating

All Neulink transmitters are rated at 100% duty cycle operation. This rating is valid only at temperatures below 45 degrees Celsius (114 Fahrenheit). Above 45C, the duty cycle must be derated at 5% per degree C. The following table should help in finding the maximum allowable duty cycle.

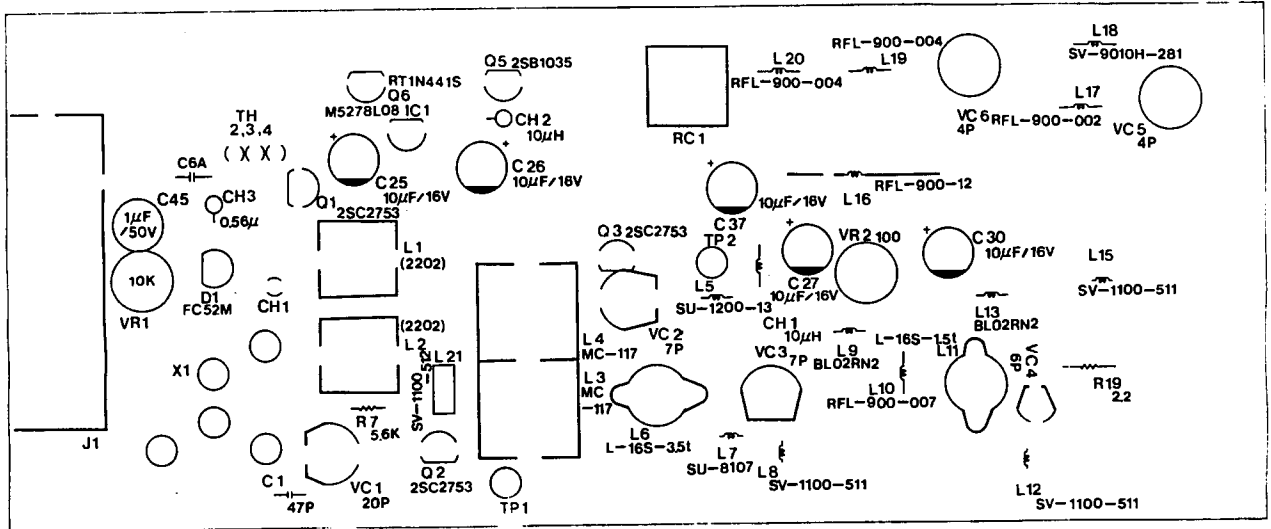
The duty cycle is the amount of transmit keying time in any 5 minute period of operating. 1 minute transmitting and 4 minutes off is a 20% duty cycle. 1 minute of transmitting and 10 minutes off is still a 20% duty cycle.

Temperature		Duty Cycle
C	F	
25	77	100%
45	113	100%
50	120	75%
55	131	50%
60	140	25%

Do not operate any Neulink product above 60 degrees Celsius, or permanent damage may occur to the unit.



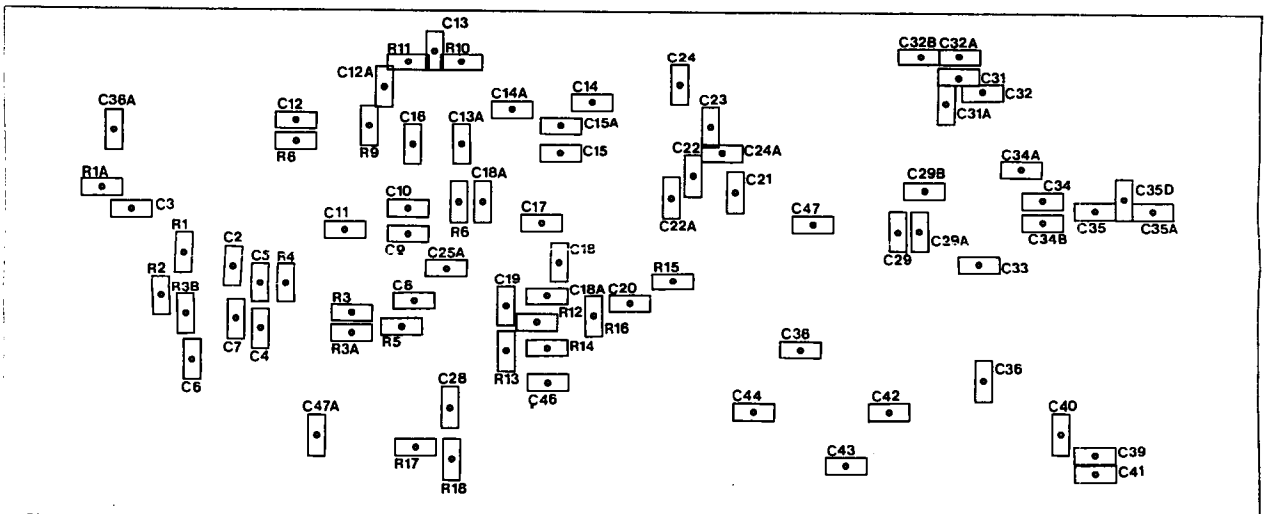
APPROVED		THIRD ANGLE PROJECTION		TITLE	
					TX SCHEMATIC DIAGRAM
			SCALE		
			WEIGHT		
		1968. 2. /			
		DRAWN			DWG. NO. RFL-900-003B
REMARKS					
788.3.37 R14					



RFL-900
TX PARTS LAYOUT (MANUAL)
RFL-900-026

Top View

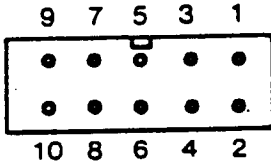
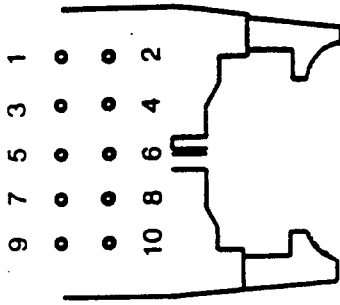
Bottom View



1.8 Board Layout

RFL-900
TX PCB CHIP PARTS LAYOUT (MANUAL)
RFL-900-023

2.5 Receiver Pin Functions



Pin No.	Function
1	Receiver Mute (high to mute, TTL level* compatible)
2	T/R Switch (+3 to +5 volts at 20 mA typ. for Tx)
3	Ground
4	Ground
5	Discriminator Output
6	Signal Present (sinks to ground when signal received)
7	Ground
8	Not Used
9	+8.0 V Test Point
10	+12.5 VDC In

*TTL Levels: High = +2.5V to +5.0V
 Low = 0V to +0.5V

2.6 Receiver Crystal Specifications

NEULINK

XT96R CRYSTAL SPECS

APRIL 1988

CRYSTAL FUNCTION	DCL Series 900 MHz RX
PART NUMBER	XT-96R
HOLDER TYPE	HC-43/U
FORMULA	$F = F_c - 45 / 18$
MODE	3rd Overtone
FREQUENCY TOLERANCE @25°C	± 10 ppm
STABILITY (-10° + 60°C)	± 5 ppm
UPPER TURN POINT (± 9°)	44° C
SERIES RESISTANCE	30 ohms maximum
LOAD CAPACITANCE	Series resonant
DRIVE LEVEL	.5 mW

MARKINGS ON THE CRYSTAL SHOULD INDICATE RX AND THE CHANNEL OPERATING FREQUENCY.

Test Equipments Recommended

- 1 Frequency Counter
- 2 FM Signal Generator
- 3 AF Oscillator
- 4 Level Meter
- 5 600 ohms Load
- 6 Distortion Analyzer
- 7 Regulated Power Supply (12.5 volts 2 A)
- 8 DC Volts Meter, DC AMP Meter

Tune-Up Procedure

1. Set up and connection
As per chart below.

2. Initial setting
Both RV1 and RV2 to clockwise, maximum position.

3. Adjustment for local osc. circuit

3-1 Insert test crystal.

3-2 Connect volt meter (3 V range) to TP1 and turn L11 and L12 to make voltage at TP1 maximum. (off tuning = 1V. approx. 1.5 V for tuned position.)

3-3 Connect volt meter (0.3V Range) to TP2 and adjust FL6 to make voltage at TP2 maximum. (off tuning = 0V. Approx. 0.2 V for tuned position.)

3-4 Connect freq. counter to TP2 and adjust L9 to make the freq. 899.825MHz +/- 200 Hz.

4. Adjustment for RF/IF circuit

4-1 To set signal generator output 944.825 MHz., modulation freq. 1 KHz. freq. deviation 3 KHz. level - 20 dBm and connect the output to J2.

4-2 Monitor J1 pin #5 and adjust L8 to make 1KHz demodulation wave form maximum.

4-3 By reducing output level of signal generator, adjust L3, L4, L5, L6, FL1 and FL2 to make 12 dB SINAD best position. Then make sure 12 dB SINAD is less than -108 dBm.

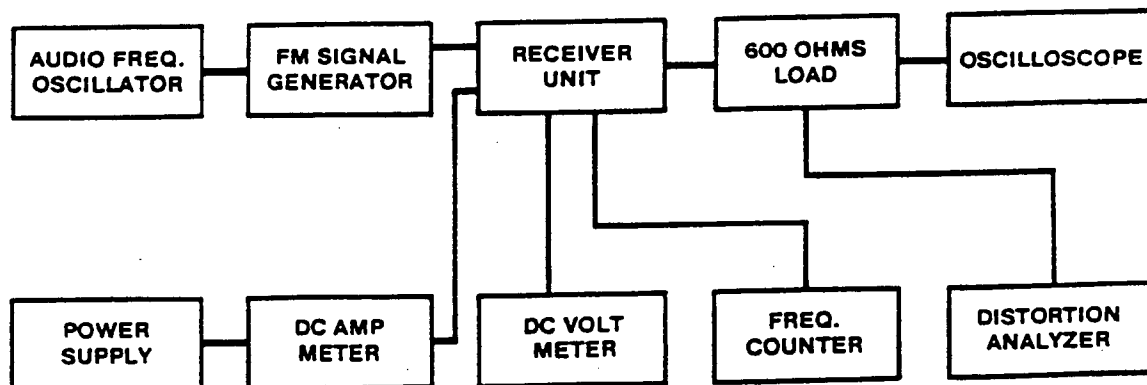
4-4 Then, make input level to -50 dBm and measure distortion to make sure it is less than 3%. If it is not less than 3%, adjust L5 and L6 slightly to make it less than 3%.

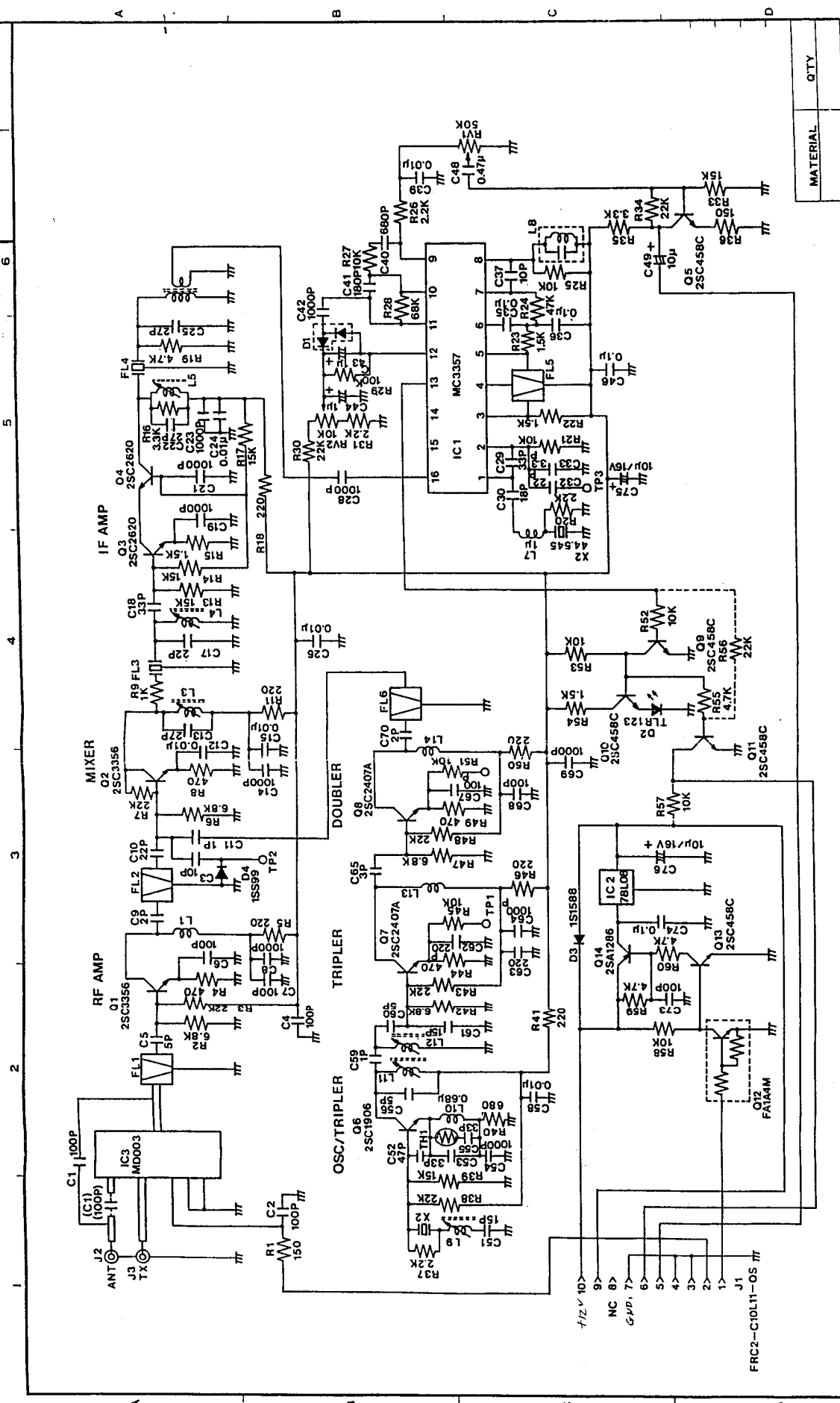
5. Adjustment for squelch circuit

5-1 Set signal generator output to -120 dBm and turn RV2 clockwise to the position D2 to be lit. Reduce the output -10 dB and make sure D2 to be turned off. Then, again set the output to -120 dBm to double check D2 to be lit again.

6. RX mute

6-1 To short J1 pin #9 and #1 and make sure total RX module to be "OFF" condition.

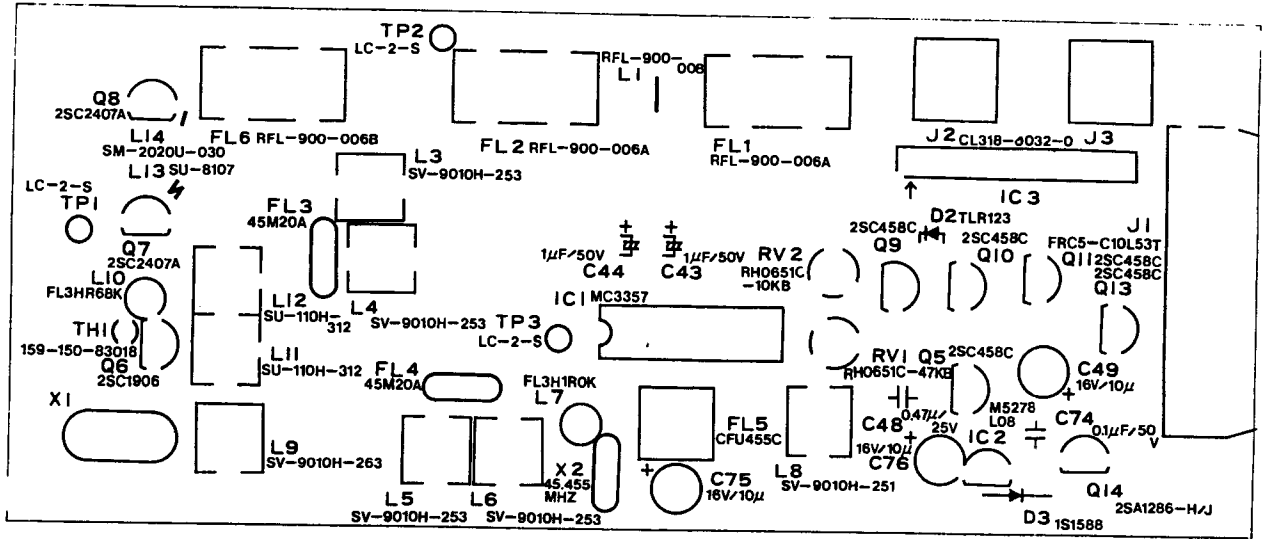




MATERIAL	QTY
----------	-----

APPROVED	THIRD ANGLE PROJECTION	TITLE
CHECKED	SCALE	RFL-900 RX
DRAWN	WEIGHT	SCHEMATIC DIAGRAM
		DWG. NO. RFL-900-014

REMARKS
 1. 900 2 30
 2. 900 2 30
 3. 900 2 30
 4. 900 2 30
 5. 900 2 30
 6. 900 2 30
 7. 900 2 30
 8. 900 2 30
 9. 900 2 30
 10. 900 2 30

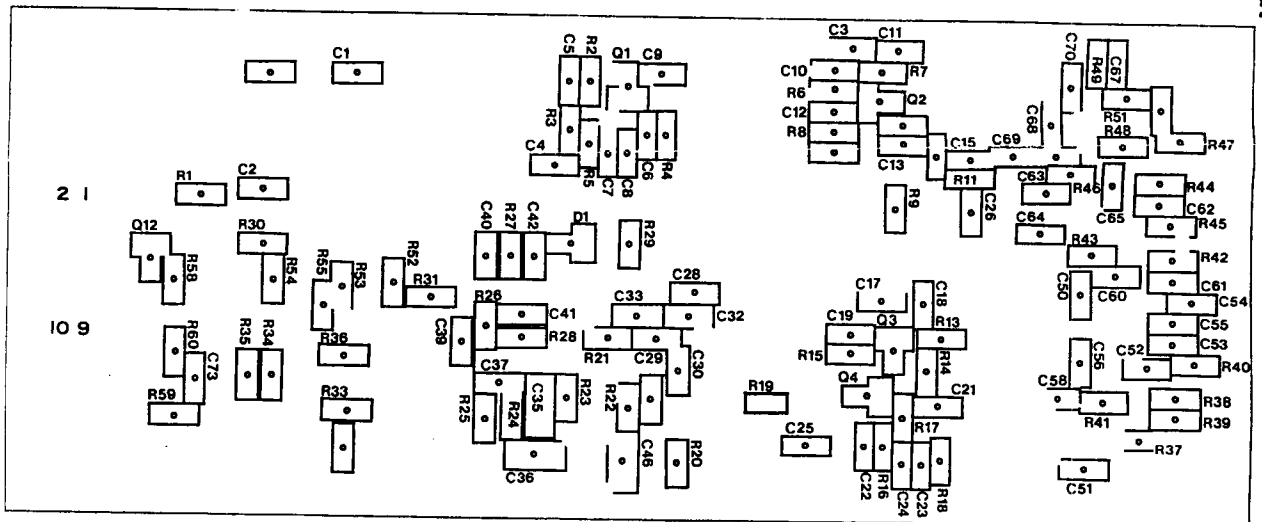


RFL-900-RX
 PCB.LAYOUT TOP VIEW(MAN.JAL)
 RFL-900-025

Top View

Bottom View

2.8 Board Layout



RFL-900-RX
 PCB.LAYOUT BOTTOM VIEW(MANUAL)
 RFL-900-024

NEULINK LIMITED WARRANTY

Neulink, a Division of Celltronics Incorporated, warrants that your Neulink product is free from defects in material workmanship for a period of 1 year after initial purchase. Neulink will in this period of time, repair or replace, at its option, any Neulink product, returned to the factory freight prepaid.

BEFORE RETURNING PRODUCT for repair, call the factory for a return materials authorization (RMA) number. This will facilitate easier processing and will expedite your repair. Include with your unit proof of purchase in the form of a copy of the invoice or packing slip from when the unit was purchased. Also include a brief description of the problem.

Neulink reserves the right to void the warranty or make reasonable charges for repair of a unit which displays evidence of misuse, abuse, or alteration of basic design.

Neulink is not responsible for damage to any other equipment or property, or any other consequential or incidental damages of any kind, whether based on contract, negligence, or strict liability. Maximum liability shall not in any case exceed the purchase price of the unit.

Warranties give you (the buyer) specific legal rights. You may also have other rights which vary from state to state. This warranty is only extended to purchases made in the United States of America or its possessions.