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**SOLID STATE
WALKIE TALKIE**

MODEL TRC - 60 CAT NO. 21 - 5501

SERVICE MANUAL

A PRODUCT OF RADIO SHACK



A TANDY CORPORATION COMPANY.

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ALLIED TRC-60 TRANSCEIVER
SERVICE MANUAL

1. SPECIFICATIONS

1.1 Circuit

One RF Stage, Adjustable Squelch, ANL Circuit, Recharger Jack, Center loaded telescopic Antenna, External Antenna Jack, RF Power Indicator and Battery Indicator, 6 channels Transmit and Receive.

1.2 Semiconductors

12 Transistors, 3 Diodes and 1 Thermister.

Transistors

Q1	2SC371 (R)	Local Oscillator
Q2	2SC784	RF Amplifier
Q3	2SC371 (O)	Mixer
Q4	2SC372	IF Amplifier
Q5	2SC372	IF Amplifier
Q6	2SC773	Transmitting Oscillator
Q7	2SC778	Final RF Amplifier
Q8	2SC373	Squelch Control
Q9	2SC373	Microphone Amplifier
Q10	2SC373	Audio Driver Amplifier
Q11, 12	2SB415	Audio Power Amplifier

Diodes

D1	1S188	AF Detector
D2	1S188	AF Noise Limiter
D3	1S188	RF Rectifier

Thermistors

TH1	D-2B	Temperature Compensator
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1.3 Frequency

Crystal controlled 6 channels Transmit and Receive CH-A 27.085 MHz supplied (11 channel)

1.4 Receiving Section

Circuit : Crystal Controlled Superheterodyne System

Sensitivity : Less than 2 μ V for 10 dB Signal plus Noise to Noise Ratio

Intermediate Frequency : 455 KHz

Audio Power Output : 0.5 Watt Min.

1.5 Transmitting Section

Final Input Power : 3 Watts

Final Power Output : 1.2 Watt (MIN)

Modulation : AM full 100% Modulation Capability

External Antenna : 50 ohms

Microphone : Ceramic Type

Speaker : 2-1/4" Dinamic Speaker

Power : 15 VDC 10 pcs. of "AA" Battery

Antenna : Center Loaded Special Antenna

Porality : Negative Ground Only

2. GENERAL ALIGNMENT INSTRUCTIONS

2.1 Test Equipment

- 1 Standard Signal Generator or Test Oscillator
- 2 Audio Frequency Generator
- 3 VTVM or VOM
- 4 RF Power Meter
- 5 Radiation Meter
- 6 Oscilloscope
- 7 Monitor Receiver
- 8 Frequency Counter
- 9 500 mA Full Scale Ammeter

2.2 General Alignment

- 1 Adjust the input signal from generator should be kept as low as possible all alignment.

-2 Receiving Alignment

Step	Control Setting	Test Equipment Connection	Signal Generator Setting	Adjust	Remarks
1	Volume Control : Full clockwise SQ control : Max. Counter- Clockwise CH : A 27.085 MHz	VTVM & 8 ohms dummy load to J3 SPK jack Signal Generator : through 100 PF to the Base of Q3 2SC371	Freq. 455 KHz MOD. 1KHz 30%	T4 YEL T5 WHT T6 BLK	Peak on the Voltmeter
2	"	VTVM & 8 ohms dummy load to J3 Signal Generator to J1 ANT jack	Freq. 27.085 MHz MOD. 1 KHz 30%	T1	Just below peak of gradual drop off on the voltmeter
3	"	"	"	T2 T3	Peak on the voltmeter
4	"	" Change the supply voltage from 15 to 12 volts	"	T1	Receiver should be operated if not adjust T1 again

-3 Transmitting Alignment

Step	Control Setting	Test Equipment Connection	Test Equipment Setting	Adjust	Remarks
1	CH : A 27.085 MHz	Power Meter (50 ohms) 500 mA Ammeter between Modulation winding of T10 and Collector of Q7 2SC778	Monitor receiver : 27.085 MHz Connect Oscilloscope Supply Voltage : 15 Volts		
2	Press the talk SW	"	"	T7 L3 L4	Peak on the power meter and dip on the ammeter to get 3 watts input
3	"	"	Change the supply voltage 15 to 12 volts	T7	Transmitter should be oper- ated if not tune T7 just below peak of gradual drop off on the power meter
4	"	Audio frequency generator to J2 or whistle toward a microphone	Reset the power supply supply voltage to 15 volts		Check modulation
5	Extend a tele- scopic antenna Press the talk SW	Remove Power meter Ammeter AF Generator	Radiation meter		Check radiation
6					Repeat step 2 to 4 if neces- sary

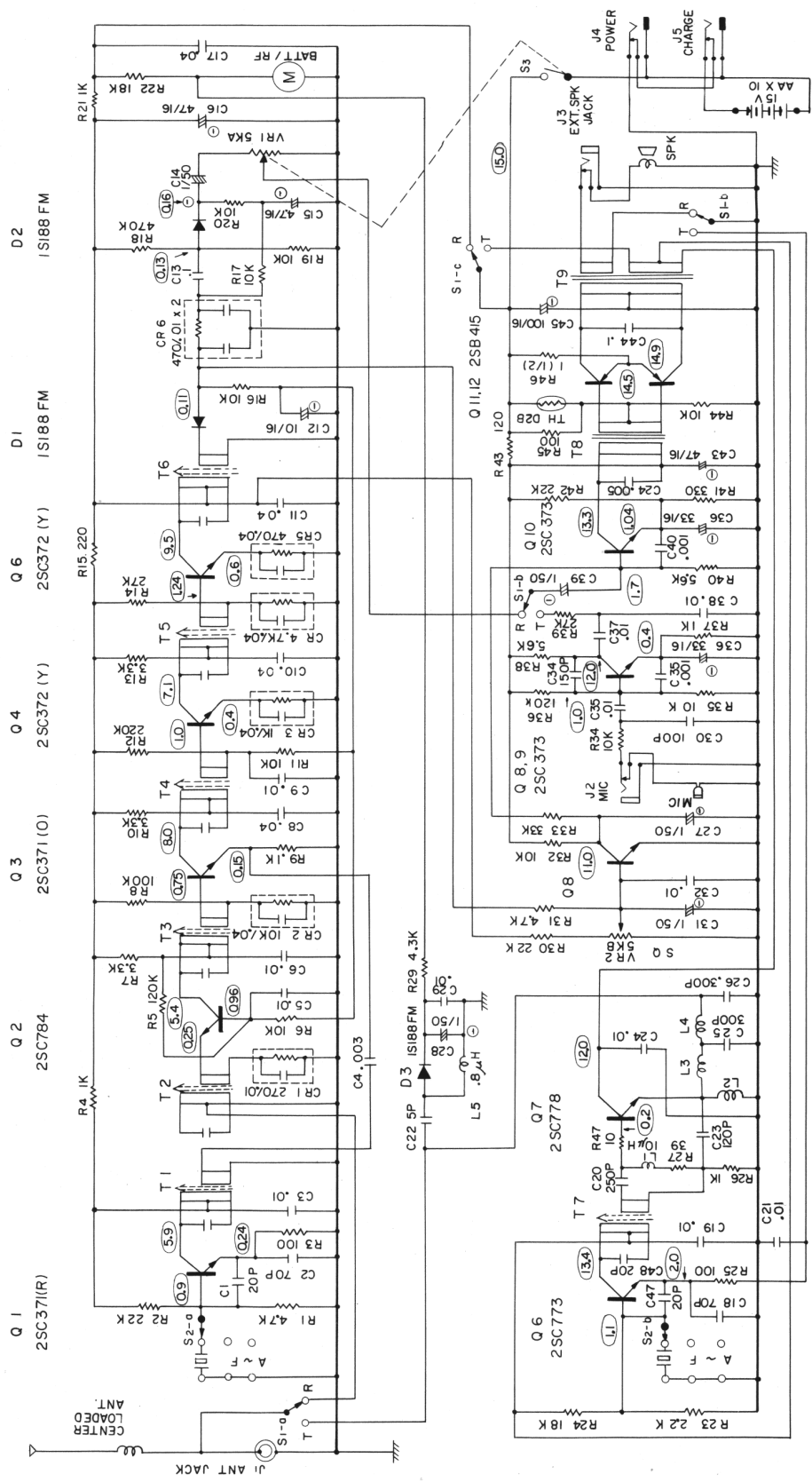
PARTS LIST

SYMBOL NO.	DESCRIPTION	RATING OR STOCK NO.	REMARKS
Q1	Transistor	2SC371 (R)	
Q2	"	2SC784	
Q3	"	2SC371 (O)	
Q4, 5	"	2SC372	
Q6	"	2SC773	
Q7	"	2SC778	
Q8, 9, 10	"	2SC373	
Q11, 12	"	2SB415	
D1, 2, 3	Diode	1S188	
TH1	Thermister	D-2B	
T1	RX OSC Coil	74XH-2187	
T2	ANT. Coil	74XC-2440	
T3	RF. Coil	74XH-1624	
T4	455 KHz IFT	LPC-4200	YEL
T5	455 KHz IFT	LPC-4201	WHT
T6	455 KHz IFT	LMC-4202	BLK
T7	TX OSC Coil	8SNC-055	
T8	Input Trans.	E2252	
T9	Output Trans.	E5679	
L1	Peaking Coil	10 μH	
L2	"	4NC-054	
L3	T Net Coil	8SNF-057	
L4	PI Net Coil	10PNP-028	
L5	Peaking Coil	1.8 μH	
T XTAL	Crystal CH-II	27.085 MHz	
R XTAL	"	26.630 MHz	
VR1	Volume 5KA/S	V12M4-1S-S16FHT5K	
VR2	Volume 5KB	V12M4-IN-16FHB5K	
	Channel Switch	4PC-036	
	Talk Switch	S-18F 1-2-6	
	Crystal Socket	SD-0107 #2	
	Twin Jack	JM-253501	
	Power Jack	SJ-061-1	
	Charge Jack	"	
	ANT. Jack	JA-C-011	
	P. C. B.	GE-16B-2757	
	Diecast Chassis	GE-16A-2844	
	Flame	GE-16A-2845	
	Back Cover	GE-16B-2846	
	Battery Cover	GE-16C-2847	
	Volume Knob	GE-16D-2850	
	Channel SW Knob	GE-16D-2851	
	Channel ring	GE-16D-2852	

SYMBOL NO.	DESCRIPTION	RATING OR STOCK NO.	REMARKS
	Talk knob	GE-16D-2853	
	Microphone	MC-3	
	Talk knob Stud	GE-16D-2856	
	Chassis Stud	GE-16D-2927	
	ANT. Mount Bracket	GE-16D-2855	
	Heat Sink	233B-840	for Final TR
	"	R1B	for AF Power TR
	Speaker	57-52 2-1/4"	
	Meter	M-1	1mA
	Antenna	GE-12B-772	
	Antenna Grommet	GE-13C-907	
	Face Plate	GE-16D-2849	
	Top Plate	GE-16D-2848	
	FCC Sticker		
	Carrying Case		
	Hand Strap		
	Shoulder Strap		
	Power Plug		
	Battery		
	Display Box	GE-16B-2943, 2944	
	Show Box		
	Instruction	A210	
	Battery Pack	GE-16D-2854	
	Channel SW Bracket	4.7 K ohm	
R1	Resistor (1/8W)	22 K ohm	ELR type
R2	"	100 ohm	"
R3	"	1K ohm	"
R4	"	120 K ohm	"
R5	"	10 K ohm	"
R6	"	3.3 K ohm	"
R7	"	100 K ohm	"
R8	"	1 K ohm	"
R9	"	3.3 K ohm	"
R10	"	10 K ohm	"
R11	"	220 ohm	"
R12	"	3.3 K ohm	"
R13	"	27 K ohm	"
R14	"	10 K ohm	"
R15	"	220 ohm	"
R16, 17	"	10 K ohm	"
R18	"	470 K ohm	"
R19, 20	"	10 K ohm	"
R21	"	1 K ohm	"
R22	"	18 K ohm	"
R23	"	2.2 K ohm	"

SYMBOL NO.	DESCRIPTION	RATING OR STOCK NO.	REMARKS
R24	Resistor (1/8W)	18 K ohm	ELR type
R25	"	100 ohm	"
R26	" (1/4W)	1 K ohm	"
R27	" (1/8W)	39 ohm	"
R29	"	4.3 K ohm	"
R30	"	22 K ohm	R type
R31	"	4.7 K ohm	ELR type
R32	"	10 K ohm	"
R33	"	33 K ohm	"
R34, 35	"	10 K ohm	"
R36	"	120 K ohm	"
R37	"	1 K ohm	"
R38	"	5.6 K ohm	"
R39	"	27 K ohm	"
R40	"	5.6 K ohm	"
R41	"	330 ohm	"
R42	"	22 K ohm	"
R43	"	120 ohm	"
R44	"	10 K ohm	"
R45	"	100 ohm	"
R46	" (1/2W)	1 ohm	R type
C1	Disc Ceramic	20 PF /50W V	NPO
C2	"	70 PF /50W V	
C3	"	0.01MF /50W V	
C4	"	0.003MF /50W V	
C5, 6	"	0.01MF /50W V	
C8	"	0.04MF /50W V	
C9	"	0.01MF /50W V	
C10, 11	"	0.04MF /50W V	
C12	Electrolytic	10MF /16W V	
C13	Disc Ceramic	0.1MF /50W V	
C14	Electrolytic	1MF /50W V	
C15	"	4.7MF /16W V	
C16	"	47MF /16W V	
C17	Disc Ceramic	0.04MF /50W V	
C18	"	70PF /50W V	
C19	"	0.01MF /50W V	
C20	"	250PF /50W V	
C21	"	0.01MF /50W V	
C22	"	5PF /50W V	
C23	"	120PF /50W V	
C24	"	0.01MF /50W V	
C25, 26	Electrolytic	300PF /50W V	NPO
C27, 28	"	1MF /50W V	
C29	Disc Ceramic	0.01MF /50W V	

SYMBOL NO.	DESCRIPTION	RATING OR STOCK NO.	REMARKS
C30	Disc Ceramic	100PF /50W V	
C31	Electrolytic	1MF /50W V	
C32, 33	Disc Ceramic	0.01MF /50W V	
C34	"	150PF /50W V	
C35	"	0.001MF /50W V	
C36	Electrolytic	33MF /16W V	
C37, 38	Disc Ceramic	0.01MF /50W V	
C39	Electrolytic	1MF /16W V /50W V	
C40	Disc Ceramic	0.001MF /50W V	
C41	Electrolytic	33MF /16W V /50W V	
C42	Disc Ceramic	0.005MF /50W V	
C43	Electrolytic	47MF /16W V	
C44	Disc Ceramic	0.1MF /50W V	
C45	Electrolytic	100MF /16W V	
C47, 48	Disc Ceramic	20PF /50W V	NPO
CR1	Composite Parts	270 ohm /0.01MF	
CR2	"	10 K ohm /0.04MF	
CR3	"	1 K ohm /0.04MF	
CR4	"	4.7 K ohm /0.04MF	
CR5	"	470 ohm /0.04MF	
CR6	"	470 ohm /0.01MF X2	



- REMARKS :
- 1 S1-a ~ S1-d : TALK SWITCH
 - 2 S2-a ~ S2-b : CHANNEL SWITCH
 - 3 S3 : POWER SWITCH WITH VR1
 - 4 VR1 : AF VOLUME CONTROL
 - 5 VR2 : SQUELCH CONTROL
 - 6 RESISTANCE VALUES IN OHMS, K=1000
 - 7 CAPACITANCE VALUES IN MF, P=MMF
 - 8 VALUES OF RESISTANCE AND CAPACITANCE MAY BE REVISED FOR IMPROVEMENTS WITHOUT NOTICE.

FIG - 1 SCHEMATIC DIAGRAM

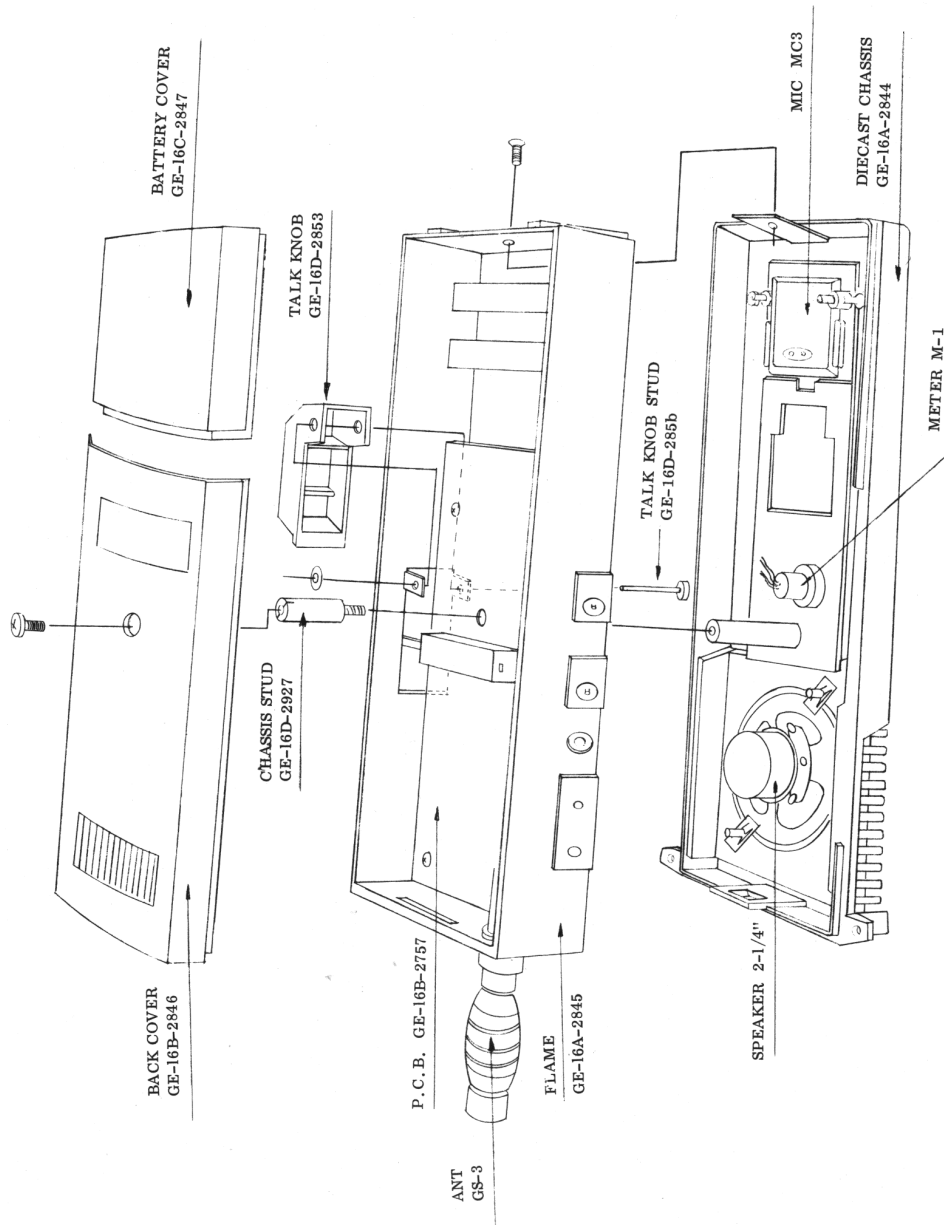


FIG - 2 DIECAST CHASSIS DISASSEMBLY

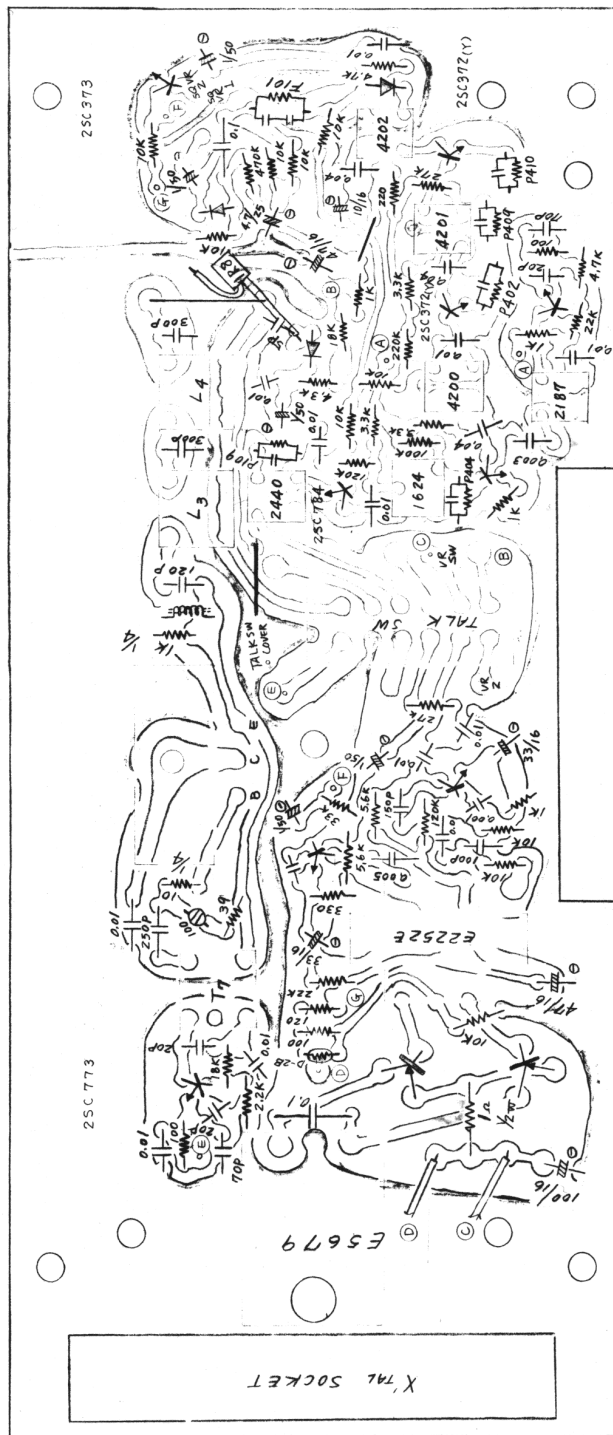


FIG - 3 PRINTED CIRCUIT BOARD TOP VIEW

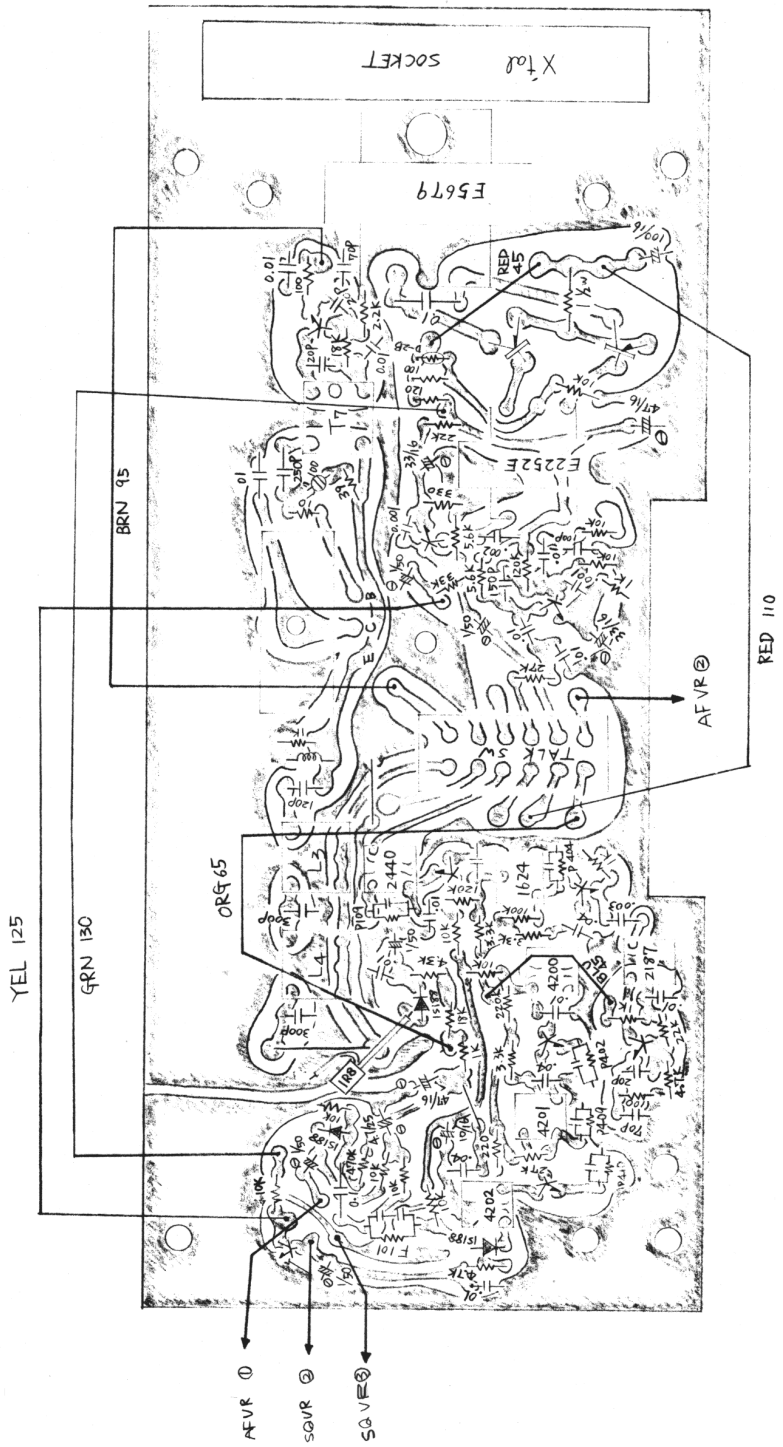


FIG - 4 PRINTED CIRCUIT BOARD REAR VIEW

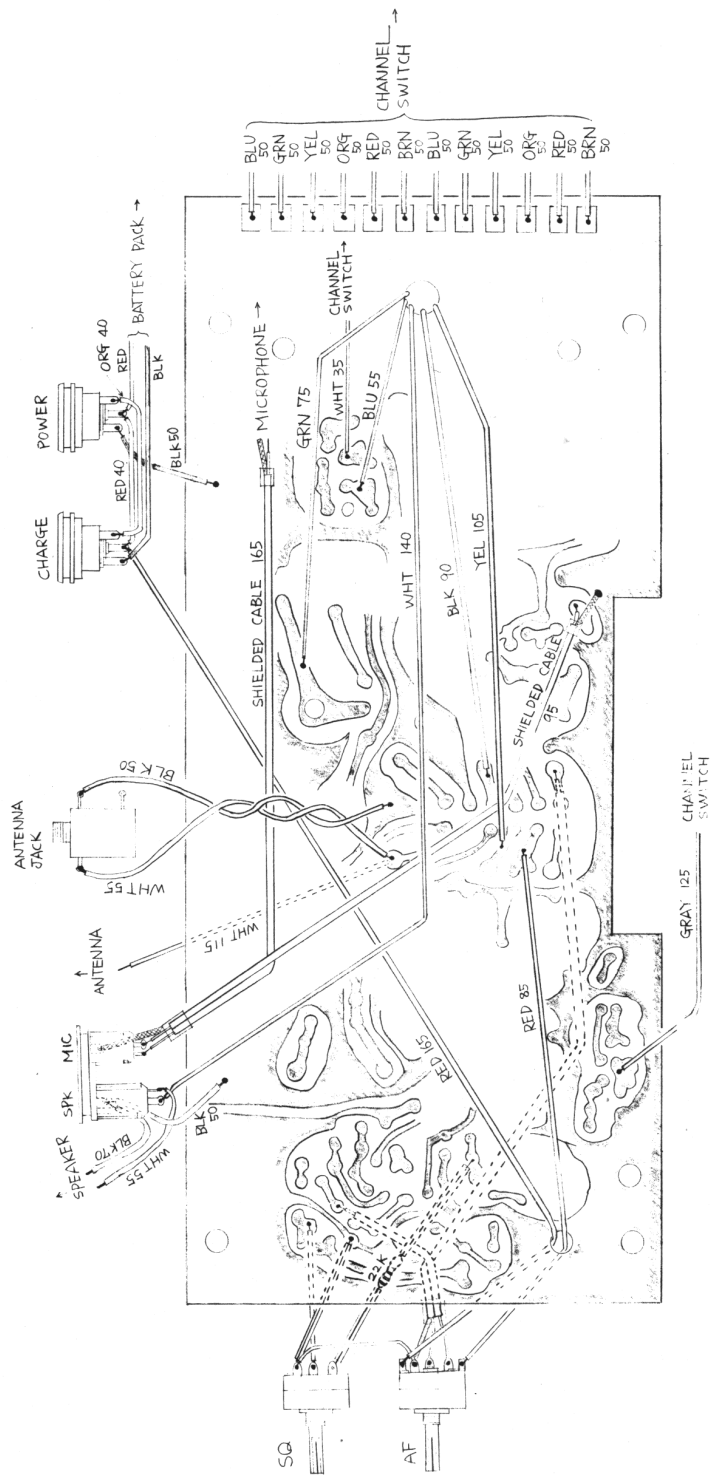


FIG - 5 WIRING DIAGRAM

