

REALISTIC[®]

Service Manual

21-402

TRC-503

VOICE ACTUATED FM TRANSCEIVER

Catalog Number: 21-402

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SPECIFICATIONS

1. General Specification

Transmitter	PLL controlled, frequency modulation system
Receiver	PLL controlled, double superheterodyne system
Operation frequency	49.830 MHz ~ 49.890 MHz
Number of channel	5 channel
Temperature and humidity range	-30°C ~ +50°C and 10% ~ 90%
Current drain (Stand by)	30 mA Max
(Receive)	150 mA Max
(Transmit)	50 mA Max
Dimensions	(H)1 ¹ / ₇ "(29mm) × (W)2 ³ / ₅ "(66mm) × (D)6 ¹ / ₁₀ "(155mm)
Weight	0.4 lbs 6.49 ozs (184g)

2. Standard Test Conditions

Power supply voltage	9V DC
Modulation	2 kHz DEV/1 kHz
Receiver output impedance	16 ohm
ANT load impedance of TX	50 ohm
Ambient conditions	
Temperature	17°C ~ 20°C
Humidity	40% ~ 70%

3. Transmitter

Description	Unit	Nominal	Limit
RF Power output	dB	80	FCC max
MIC sensitivity (1 kHz/2 kHz mod)	mV	12	12 ± 4
Max modulation (1 kHz/2 kHz mod/increase 16 dB)	kHz	4	4 ± 0.5
Frequency tolerance	Hz	± 500	± 1000
Current Drain (Max mod)	mA	35	50
Spurious and harmonics emission	dB	35	36
Low voltage operation	V	5.0	5.5
TX frequency response			
(1 kHz/1 kHz mod) 300 Hz	dB	- 11.5	- 11.5 ± 2
1 kHz	dB	0	0
3 kHz	dB	5	5 ± 2.5
Call deviation at 1 kHz	kHz	3.5	3.5 ± 1

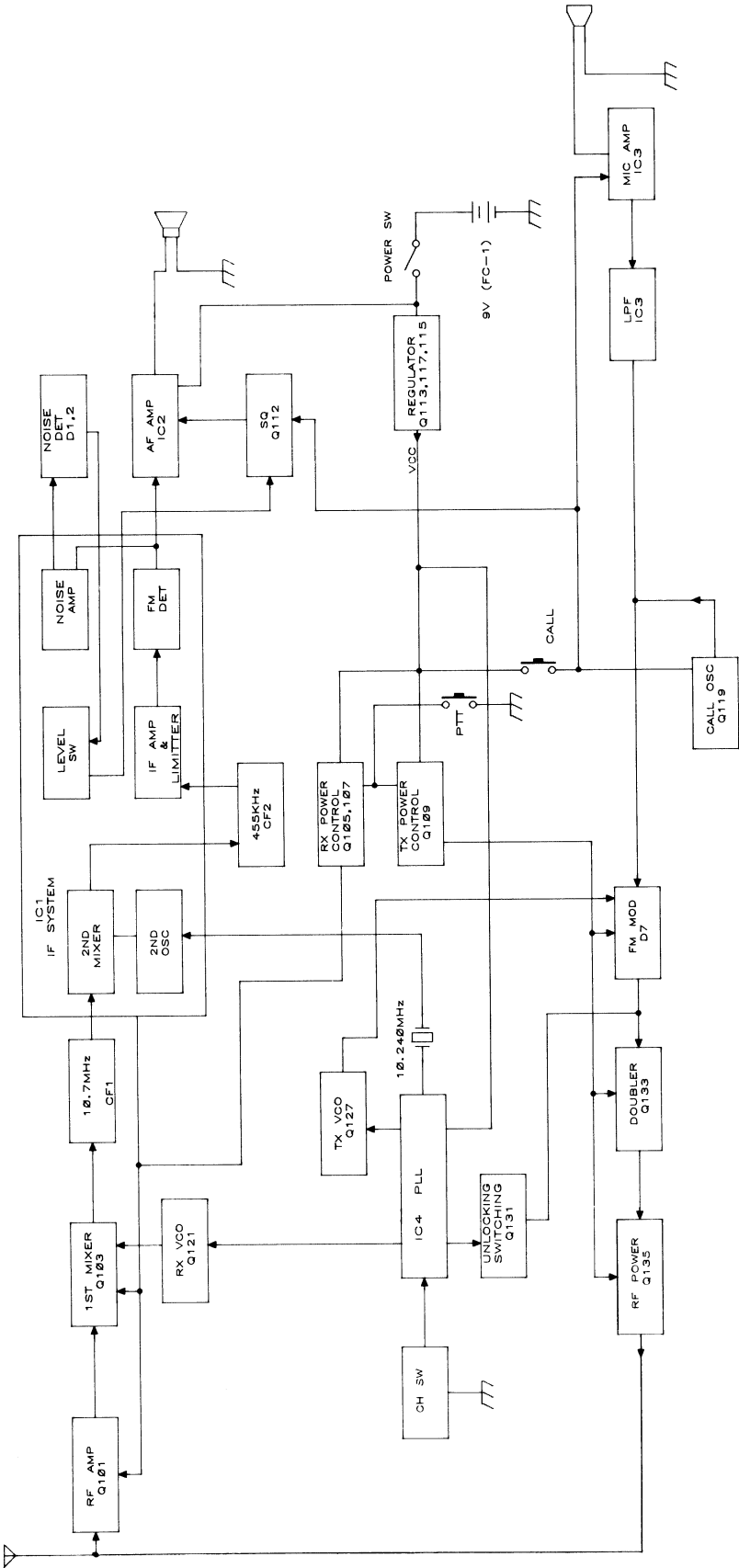
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4. Receiver Specification

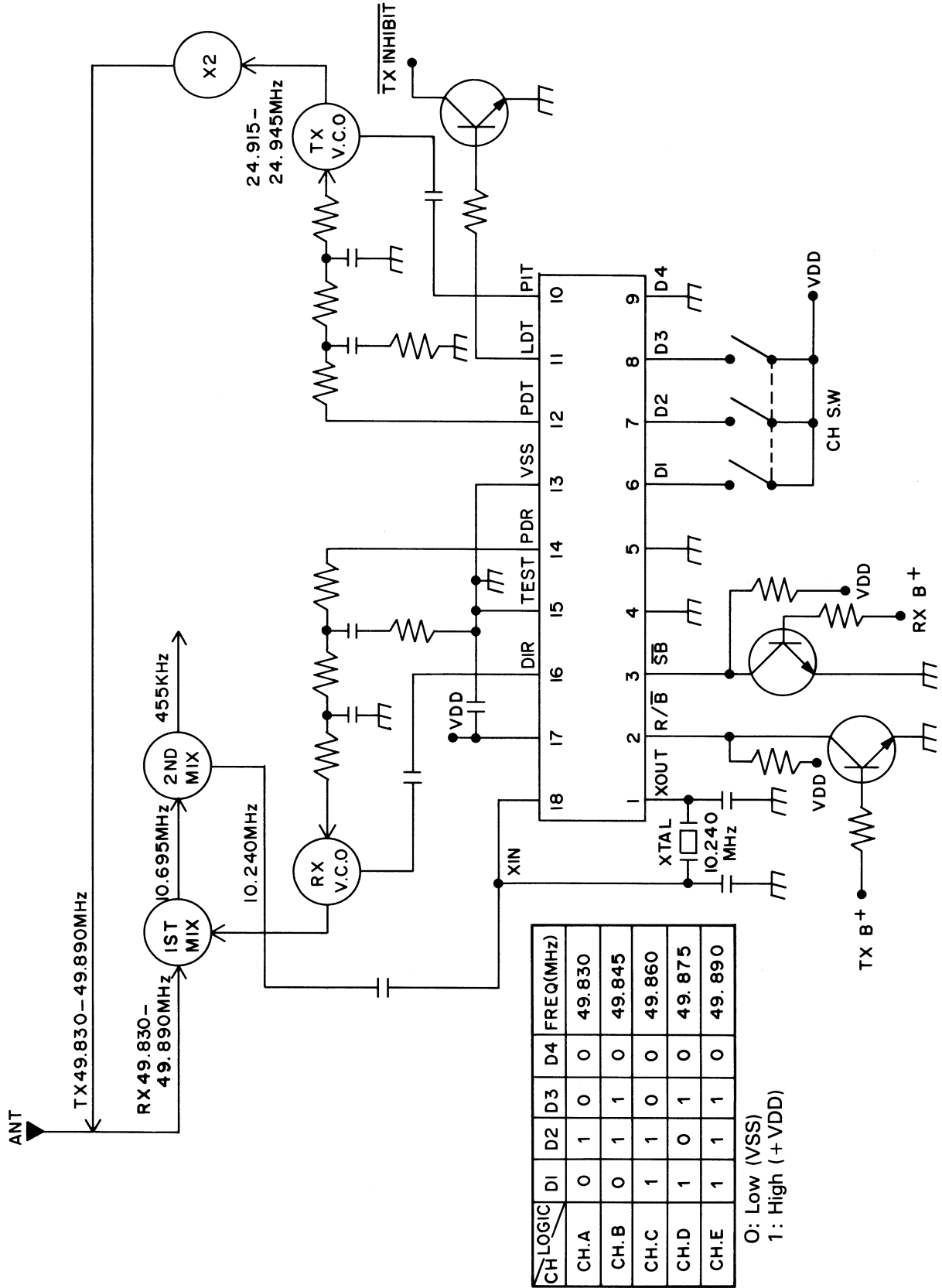
Description	Unit	Nominal	Limit
Sensitivity at 20 dB S/N	uV	0.5	1.0
Squelch open sensitivity (CH-C)	uV	0.5	1.0
Image rejection (CH-C)			
Frequency 28.470 MHz	dB	30	20
Frequency 48.950 MHz	dB	50	40
Spurious rejection (CH-C)			
Frequency 67.635 MHz	dB	35	30
Frequency 87.025 MHz	dB	30	20
Max power output (at 1mV RF input/4.0 kHz mod)	V	3	2.5
S/N ratio (At 1mV input/2 kHz mod)	dB	50	35
Distortion (At 1mV input/2 kHz mod)	%	5	10
Low voltage operation	V	5.5	6.0
Current drain (Max power/2 kHz mod)	mA	100	130
Low batt. LED indication	V	5.5	5.5±0.5
Adjacent channel rejection	dB	25	20

BLOCK DIAGRAM

Overall Block Diagram



PLL Circuit Block Diagram



ALIGNMENT INSTRUCTIONS

1. Preconnection

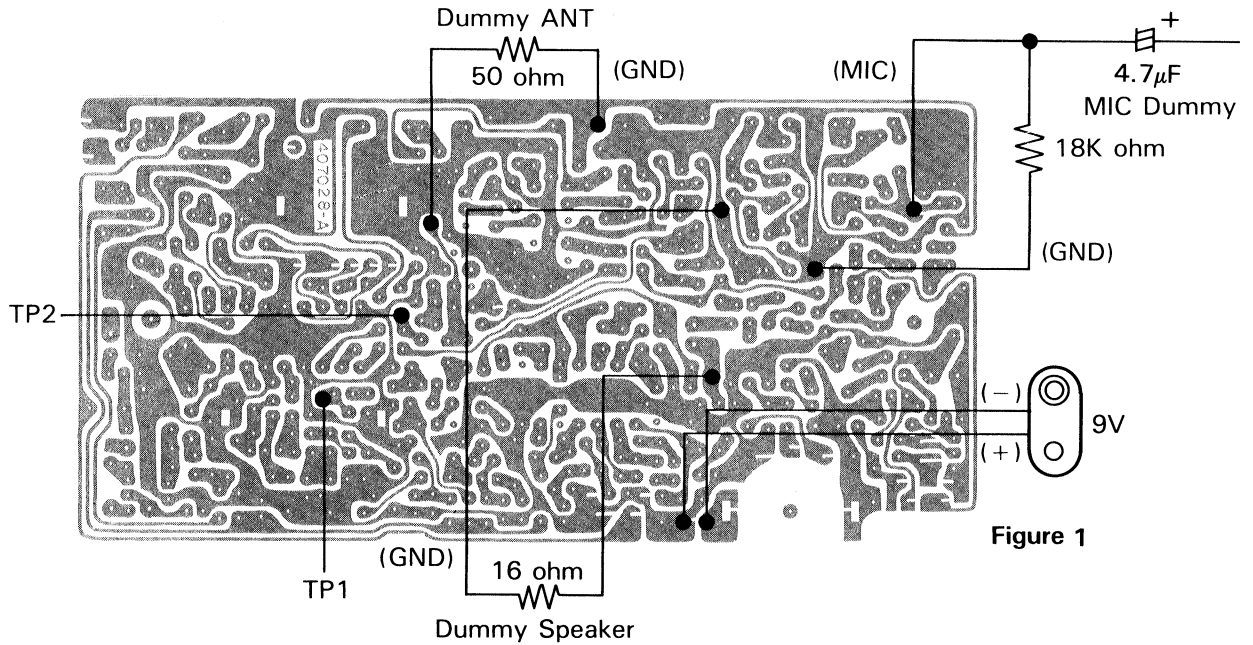


Figure 1

2. Parts Location/Test Points

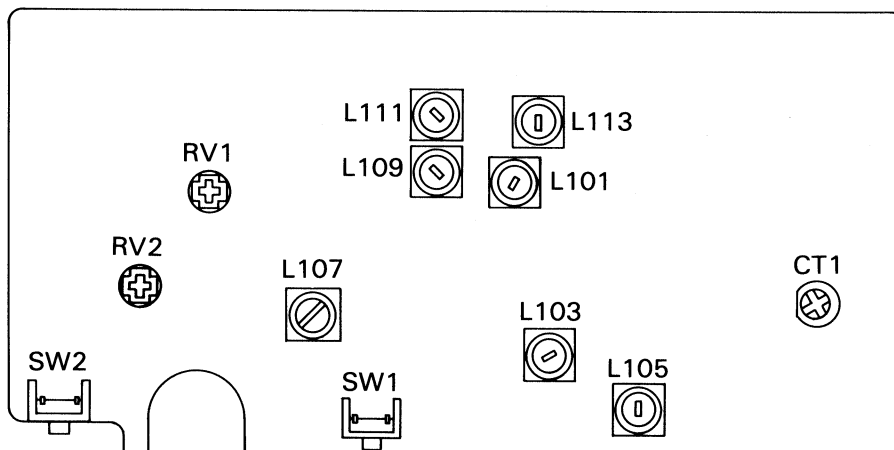


Figure 2

3. Equipment Connection

A. Carrier connection

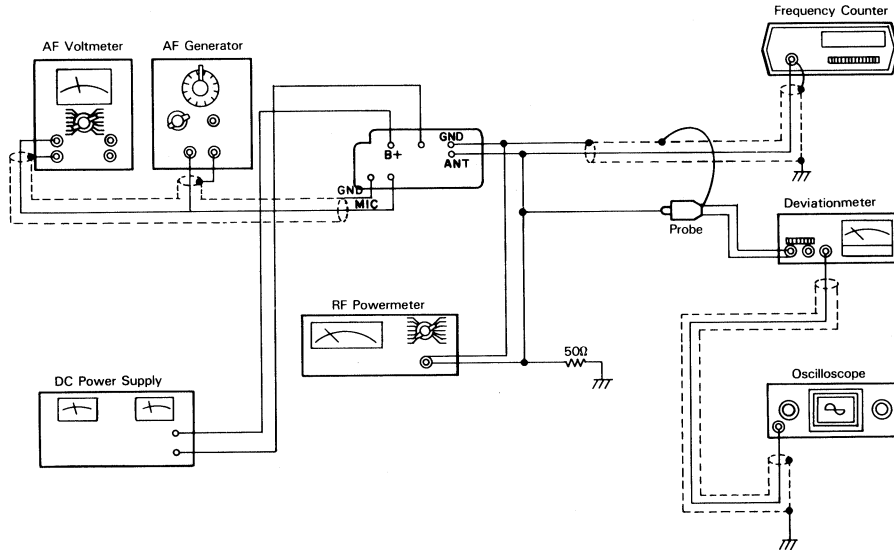


Figure 3

B. Receiver connection

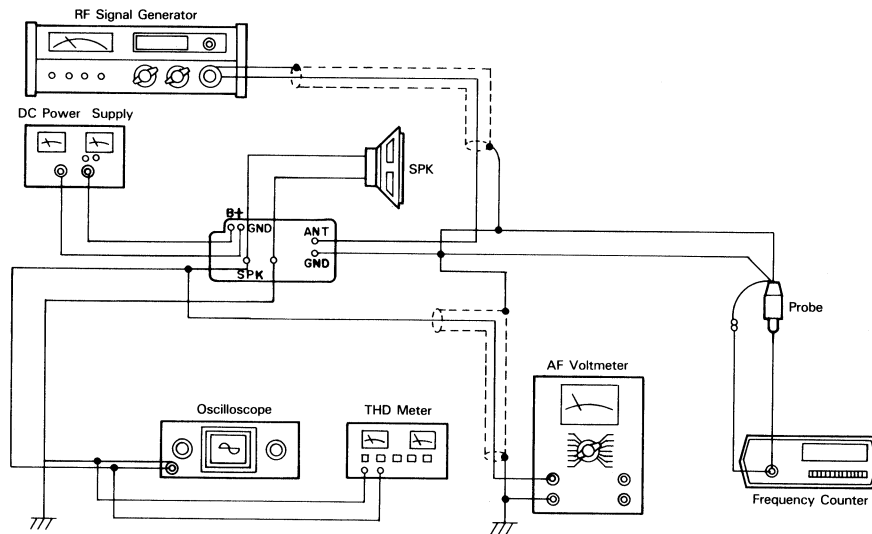


Figure 4

4. PLL Section

A. Test Equipment Required

- a. Oscilloscope
- b. DC Power Supply (9V)

B. Alignment Procedure

Step	Preset To	Adjustment
1	Connect the power supply or 9V battery (Fig. 1. 3)	
2	Connect the oscilloscope probe to TP1, TP2 and GND (Fig. 1) Adjust the coil L105 for 2V on the oscilloscope (2V is center level of full swing)	
3	SW2:Push	Adjust the coil L109 for 2V on the oscilloscope

5. Transmitter Section

A. Test Equipment Required

- a. RF powermeter
- b. Oscilloscope
- c. Audio frequency generator
- d. DC power supply (9V)
- e. Frequency counter
- f. Deviation meter
- g. AF voltmeter (SSVM)

B. Alignment Procedure

Step	Preset To	Adjustment
1	Connect the power supply or 9V battery (Figs. 1, 3)	
2	Disconnect the dummy ANT (Fig. 1)	
3	Connect the test equipment as shown in Fig. 1 and Fig. 3	
4	SW2: Push	Adjust the trimmer CT1 for 49.860 on the frequency counter at CH-C
5	Same as step 1, 2, 3	Adjust the coils L111, L113 for maximum output on the oscilloscope and RF powermeter
6	Same as step 1, 2, 3 Set the input level of AF generator to 70mV	Adjust the RV-1 for 4 kHz reading on the deviation meter
7	Repeat step 5 for maximum output on the oscilloscope	

6. Receiver Section Alignment

A. Test equipment Required

- a. RF Signal Generator
- b. AF Voltmeter (SSVM)
- c. Oscilloscope
- d. THD Meter
- e. Frequency Counter
- f. DC Power Supply (9V)

B. Alignment Procedure

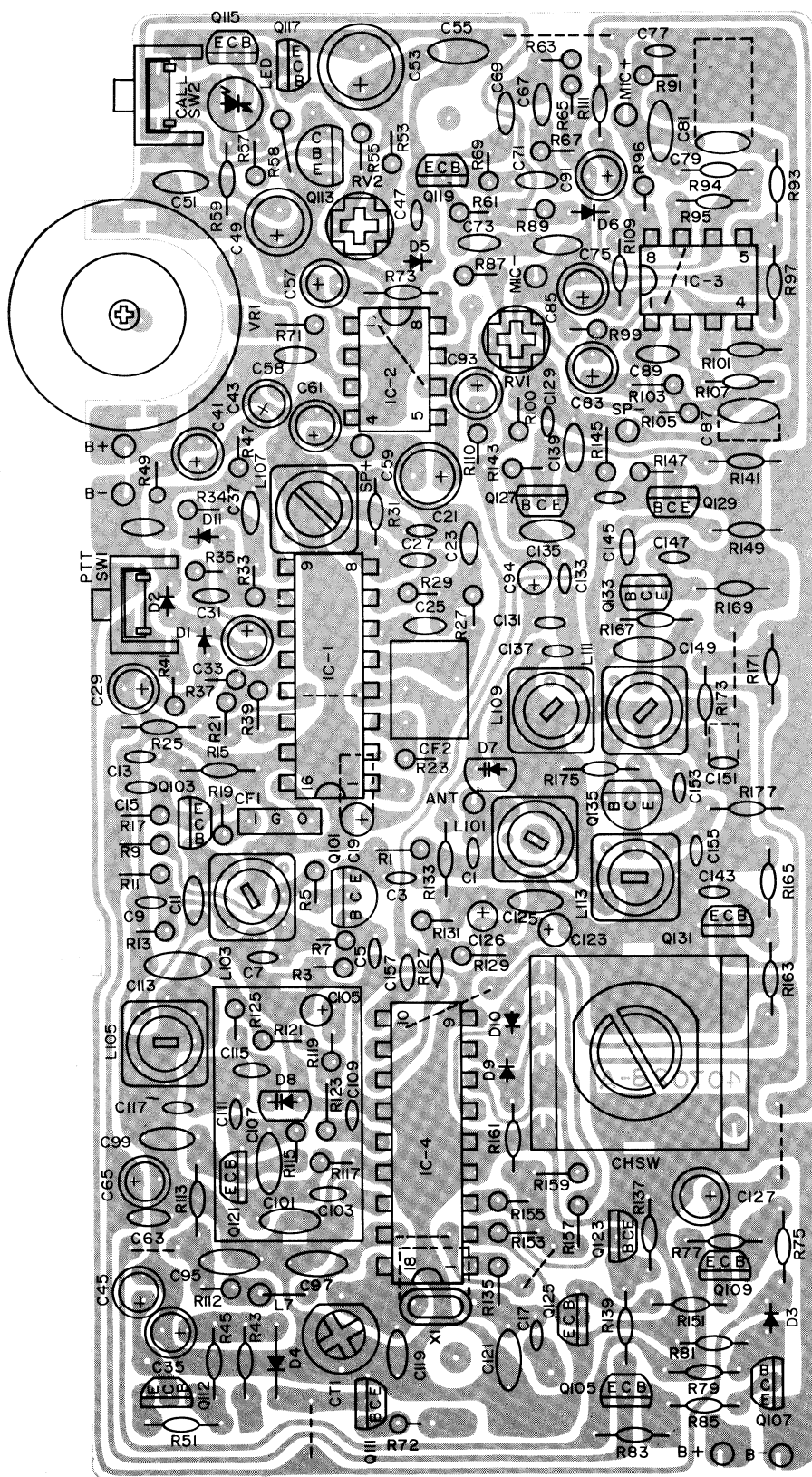
Step	Preset To	Adjustment
1	Connect the power supply or 9V battery (Figs 1, 4)	
2	Disconnect the 50 ohm dummy speaker ANT and 18k ohm MIC load and connect the 16 ohm of dummy speaker (Fig. 1)	
3	Connect the test equipment as shown in Fig. 1 and Fig. 4	
4	Set up the output of RF signal generator to 1mV 49.860 MHz (CH-C) at 1 kHz/2 kHz deviate modulation	Adjust the coils L103/L109 for maximum sensitivity

TROUBLESHOOTING HINTS

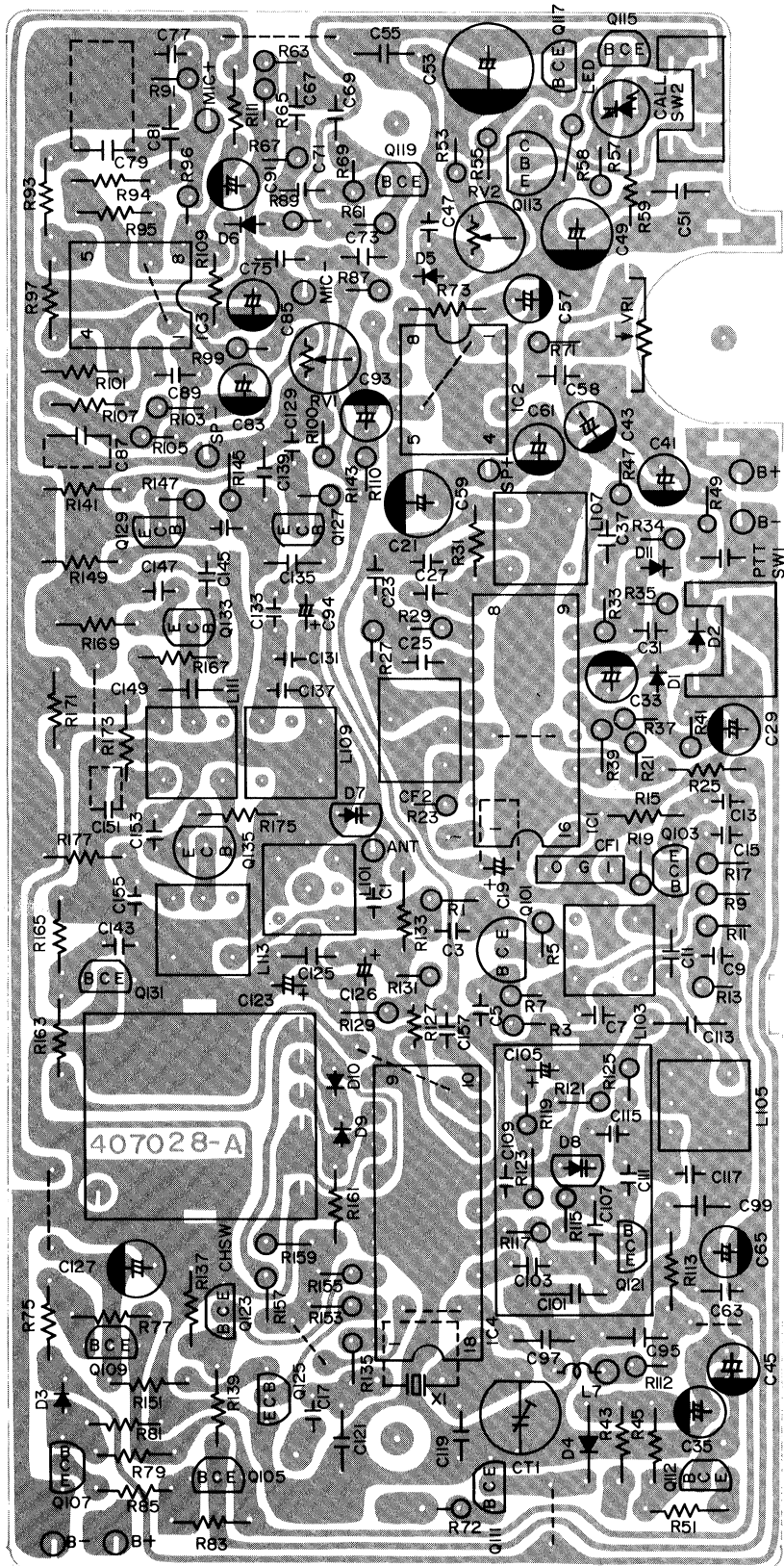
Symptom	Defective Circuit Probable	Cause	Remedy
No TX	Power supply	Discharged battery Defective battery snap Defective Q109/Q113/Q115/Q117	Replace Replace Check the voltages/Replace if defective
	TX oscillation	Defective Q127 Unlocked PLL Defective Q129/Q133/Q135	Check the voltages/Replace if defective Check the PLL circuit and readjust Check the voltages/Replace if defective
	MIC AMP	Misconnected MIC connection Defective IC3 Incorrectly adjusted RV1	Soldering/Reconnect Check the voltages/Replace if defective Readjust
Weak TX	RF-AMP	Incorrectly adjusted TX circuit Defective Q133/Q135	Readjust L111/L113 Check the voltages/Replace if defective
No RX	Power supply	Discharged battery Defective Q105/Q107	Replace Check the voltages/Replace if defective
	RX oscillation	Incorrectly adjusted PLL	Readjust PLL alignment
Weak RX	Mixer, Detector	Defective IC1 Defective Q101/Q103 Incorrectly adjusted RX alignment	Check the voltages/Replace if defective Check the voltages/Replace if defective Readjust L103/L107
No LED lighting	Low battery indicator	Discharged battery Defective Q117/Q115	Replace Check the voltages/Replace if defective

PRINTED CIRCUIT BOARD (TOP AND BOTTOM VIEWS)

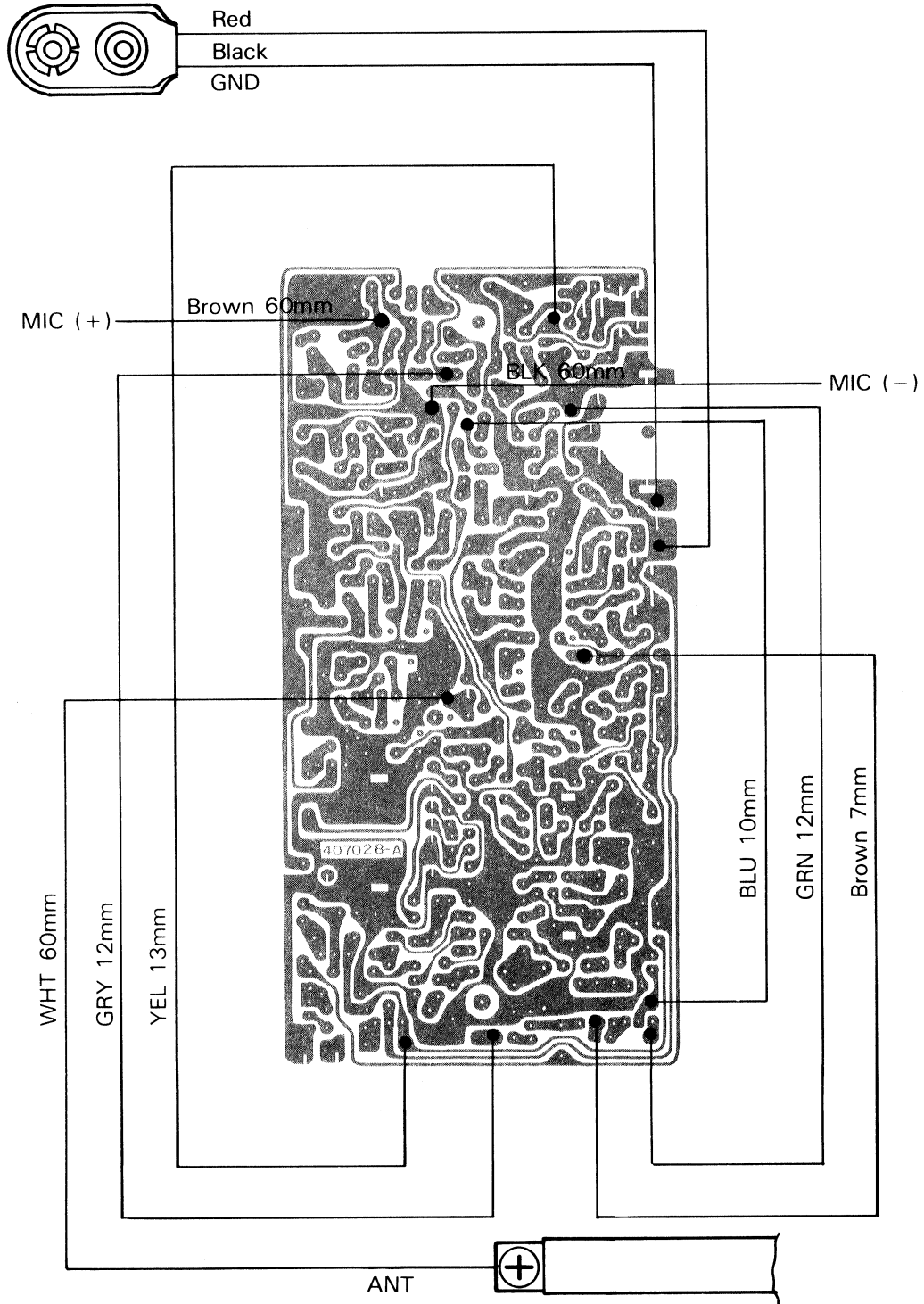
Top View



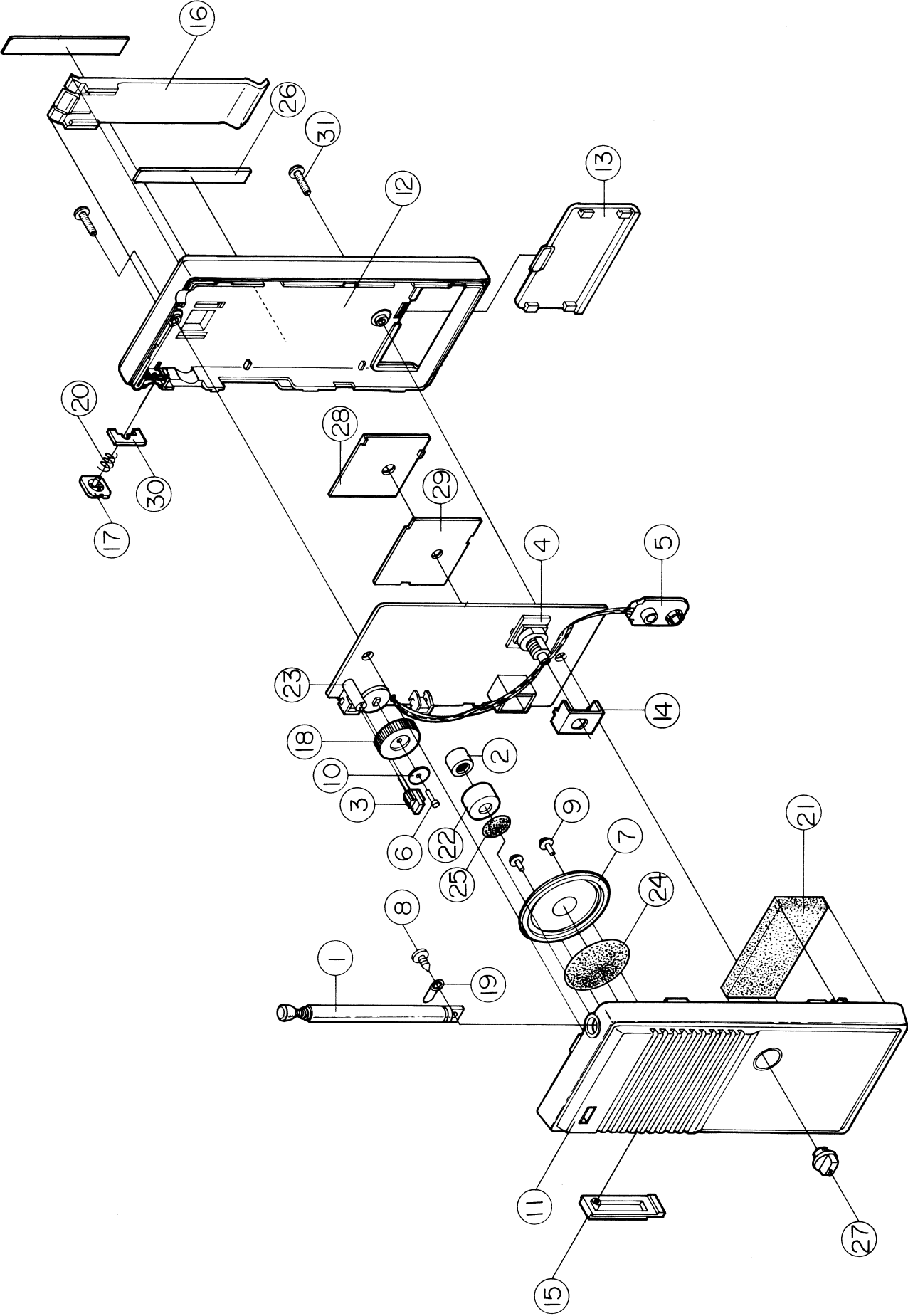
Bottom View



WIRING DIAGRAM



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Description	RS Part No.	MFR. Part No.
1	Ant, TY-8602		420-423-9
2	Condenser MIC		420-229-2
3	Lamp LED (SLB26UR3HL), Red		251-016-7
4	Switch Rotary, 15MM Shaft, "CH-Selector"		430-032-2
5	Snap Jack-Battery, 140MM		420-744-9
6	Machine Screw RH 1.7×6 Zn-Plate		610-090
7	Speaker, 16 ohm, 0.5W		420-198-6
8	Tapping Screw BH 3×10 2S BLK		623-405
9	Tapping Washer TW 2.6×4 2S Zn-Plate		633-190
10	Washer, Flat SPCC, 2×8.5×0.4 Zn-Plate		660-780
11	Cover-Upper, ABS 94HB, BLK Stamping Silk		717-480
12	Cover-Bottom, ABS 94HB, BLK		717-485
13	Cover-Battery, ABS 94HB, BLK		717-490
14	Bracket (ESD Plate), SPTE T0.3		723-110
15	Lever-PTT, ABS 94HB, Gray		740-520
16	Belt-Clip, ABS, BLK		751-130
17	Knob-Call, ABS 94HB, Orange		825-265
18	Knob-Volume, ABS 94HB, Gray		825-275
19	Terminal-Ground, SPTE		862-033
20	Spring Coiled-Call Knob, SWP0.25		881-315
21	Cushion-Batt, Sponge, GRY 24×57×t10		890-500
22	Rubber Holder-Mic Mounting, BLK 13×8		890-908
23	Rubber Holder-LED, BLK 5×14		892-400
24	Felt-Speaker, 38×T0.3		901-314
25	Felt-Mic, 13×T0.3		904-690
26	Plate-Name, (49.830-49.890), ALP3, 60×9×T0.4		794-384
27	Knob-CH Select, ABS 94HB, BLK		825-270
28	Plate Shield, SPTE T0.3		771-535
29	Plate Insulation, Fiber T0.5		905-720
30	Spacer, PVC T1.0		905-725
31	Tapping Screw BH 3×16-2S BLK		623-850

ELECTRICAL PARTS LIST

Ref. No.	Description	RS Part No.	MFR. Part No.
Main PCB Ass'y		57139-MP	
Capacitors			
C1	Ceramic 2pF 50WV +80% - 20%		132-003-3
C3	Ceramic 0.001 μ F 50WV +80% - 20%		130-101-8
C5	Ceramic 0.0047 μ F 50WV +80% - 20%		130-402-0
C7	Ceramic 0.0047 μ F 50WV +80% - 20%		130-402-0
C9	Ceramic 0.0047 μ F 50WV +80% - 20%		130-402-0
C11	Ceramic 18pF 50WV +80% - 20%		131-801-2
C13	Ceramic(AX) 0.01 μ F 50WV +80% - 20%		130-188-8
C15	Ceramic 22pF 50WV +80% - 20%		132-201-5
C17	Ceramic 3pF 50WV +80% - 20%		133-001-6
C19	Elect 22 μ F 10WV \pm 20%		102-217-7
C21	Ceramic 0.001 μ F 50WV +80% - 20%		130-101-8
C23	Multilayer Ceramic 50WV +80% - 20%		130-164-6
C25	Multilayer Ceramic 50WV +80% - 20%		130-164-6
C27	Ceramic 10pF 50WV +80% - 20%		131-002-7
C29	Elect 2.2 μ F 50WV (5Dia \times 11) \pm 20%		102-207-2
C31	Ceramic 56pF 50WV +80% - 20%		135-601-8
C33	Elect 0.1 μ F 50WV (4Dia \times 7) \pm 20%		100-102-0
C35	Elect 1.0 μ F 50WV (4Dia \times 7) \pm 20%		101-007-3
C37	*Mylar 0.001 μ F 50WV "S" \pm 5%		111-002-1
C39	Mylar 0.0047 μ F 50WV "S" \pm 5%		111-709-2
C41	Elect 0.1 μ F 50WV (4Dia \times 7) \pm 20%		100-102-0
C43	Elect 1.0 μ F 50WV (4Dia \times 7) \pm 20%		101-007-3
C45	Elect 3.3 μ F 50WV (5Dia \times 11) \pm 20%		103-308-5
C47	Ceramic(AX) 0.01 μ F 50WV +80% - 20%		130-188-8
C49	Elect 100 μ F 16WV (8Dia \times 11.5) \pm 20%		101-022-6
C51	Ceramic 0.022 μ F 50WV +80% - 20%		130-207-1
C53	Elect 220 μ F 10WV (8Dia \times 11) \pm 20%		102-221-4
C55	Ceramic 0.022 μ F 50WV +80% - 20%		130-207-1
C57	Elect 10 μ F 16WV (5Dia \times 11) \pm 20%		101-012-7
C58	Mylar 0.001 μ F 50WV "S" \pm 5%		111-002-1
C59	Elect 47 μ F 16WV (6Dia \times 11) \pm 20%		104-712-1
C61	Elect 1.0 μ F 50WV (4Dia \times 7) \pm 20%		101-007-3
C63	Ceramic(AX) 0.01 μ F 50WV +80% - 20%		130-188-8
C65	Elect 10 μ F 16WV (5Dia \times 11) \pm 20%		101-012-7
C67	Mylar 0.0047 μ F 50WV "S" \pm 5%		111-709-2
C69	Mylar 0.0047 μ F 50WV "S" \pm 5%		111-709-2
C71	Mylar 0.0047 μ F 50WV "S" \pm 5%		111-709-2
C73	Mylar 0.001 μ F 50WV "S" \pm 5%		111-002-1
C75	Ceramic 180pF 50WV +80% - 20%		131-805-6
C77	Ceramic 0.001 μ F 50WV +80% - 20%		130-101-8
C79	Mylar 0.0033 μ F 50WV "S" \pm 5%		113-302-2

Note: *Mylar is a registered trademark of E.I. Du Point de Nemours and Company

Ref. No.	Description	RS Part No.	MFR. Part No.
C81	Mylar 0.033 μ F 50WV "S" \pm 5%		113-306-6
C83	Elect 4.7 μ F 50WV (4Dia \times 7) \pm 20%		104-738-5
C85	Elect 10 μ F 16WV (5Dia \times 11) \pm 20%		101-012-7
C87	Mylar 0.033 μ F 50WV "S" \pm 5%		113-306-6
C89	Mylar 0.001 μ F 50WV "S" \pm 5%		111-002-1
C91	Elect 10 μ F 16WV (5Dia \times 11) \pm 20%		101-012-7
C93	Elect 0.1 μ F 50WV (4Dia \times 7) \pm 20%		100-102-0
C94	Tantalum 0.1 μ F 16WV \pm 10%		149-101-1
C95	Ceramic 0.047 μ F 50WV +80% -20%		130-405-3
C97	Ceramic 0.047 μ F 50WV +80% -20%		130-405-3
C99	Ceramic 0.047 μ F 50WV +80% -20%		130-405-3
C101	Ceramic 150pF 50WV (NPO) \pm 10%		131-510-9
C103	Ceramic 10pF 50WV +80% -20%		131-002-7
C105	Tantalum 1 μ F 16WV \pm 10%		141-008-6
C107	Ceramic 120pF 50WV (NPO) \pm 10%		131-207-6
C109	Ceramic 10pF 50WV +80% -20%		131-002-7
C111	Ceramic 27pF 50WV (NPO) \pm 10%		132-702-1
C113	Mylar 0.047 μ F 50WV "S" \pm 5%		114-708-1
C115	Ceramic 10pF 50WV (NPO) \pm 0.5pF		131-003-8
C117	Ceramic 15pF 50WV (NPO) ϕ 4D \pm 10%		131-508-8
C119	Ceramic 47pF 50WV (NPO) ϕ 4D \pm 10%		134-708-7
C121	Ceramic 56pF 50WV (NPO) \pm 10%		135-605-2
C123	Tantalum 1 μ F 16WV \pm 10%		141-008-6
C125	Ceramic 0.047 μ F 50WV +80% -20%		130-405-3
C126	Tantalum 0.1 μ F 16WV \pm 10%		140-101-1
C127	Elect 10 μ F 16WV (5Dia \times 11) \pm 20%		101-012-7
C129	Ceramic 0.047 μ F 50WV +80% -20%		130-405-3
C131	Ceramic 39pF 50WV (NPO) ϕ 5D \pm 10%		133-905-3
C133	Ceramic 27pF 50WV (NPO) \pm 10%		132-702-1
C135	Ceramic 100pF 50WV (NPO) ϕ 8D \pm 10%		131-020-3
C137	Ceramic 39pF 50WV (NPO) ϕ 5D \pm 10%		133-905-3
C139	Ceramic 100pF 50WV (NPO) ϕ 8D \pm 10%		131-020-3
C141	Ceramic 15pF 50WV \pm 10%		131-501-1
C143	Ceramic 0.001 μ F 50WV +80% -20%		130-101-8
C145	Ceramic 47pF 50WV +80% -20%		134-701-0
C147	Ceramic 0.0047 μ F 50WV +80% -20%		130-402-0
C149	Ceramic (AX) 0.01 μ F 50WV +80% -20%		130-188-8
C151	Ceramic 0.0047 μ F 50WV +80% -20%		130-402-0
C153	Ceramic 0.0047 μ F 50WV +80% -20%		130-402-0
C155	Ceramic 0.0047 μ F 50WV +80% -20%		130-402-0
C157	Ceramic 10pF 50WV +80% -20%		131-002-7
CT1	Trimmer 20pF \pm 20%		172-002-4
Coils			

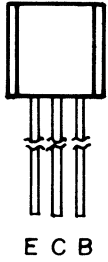
Ref. No.	Description	RS Part No.	MFR. Part No.
L101	Ant Loading 46/49MHz		320-338-5
L103	RX RF 50MHz		320-359-4
L105	RX VCO 39MHz		320-395-6
L107	DET 455kHz		320-301-1
L109	TX VCO 24MHz		320-396-7
L111	TX Tripler 50MHz		320-362-6
L113	TX Power 48MHz		320-439-3
Crystal			
X1	Unit 10.240MHz HC-18/U		260-003-3
Ceramic Filters			
CF-1	SFE 10.7MS		270-002-5
CF-2	CFU 455E2 or LF-B15 or LFC-455F or KBF-455P-15A		270-022-3 270-033-3 270-042-1 270-017-9
Diodes			
D1	1S2473 "F"		243-014-2
D2	1S2473 "F"		243-014-2
D3	1S2473 "F"		243-014-2
D4	1S2473 "F"		243-014-2
D5	0A90(GE)		244-003-7
D6	1S2473 "F"		243-014-2
D7-D8	Varicap SVC251Y		242-001-5
D9	1S2473 "F"		243-014-2
D10	1S2473 "F"		243-014-2
D11	0A90(GE)		244-003-7
Integrated Circuits			
IC1	MC3357, IF System		223-008-1
IC2	LM386, Audio Amp		231-008-4
IC3	LM358, Mic Amp		223-114-3
IC4	LC7150, PLL Synthesizer		224-039-4
Resistors			
Note: Unless otherwise specified, all the resistors are carbonfilm, 1/16W, ± 5%			
R1	470 ohm "F"		001-471-7
R3	27k ohm "F"		001-273-5
R5	220 ohm "F"		001-221-8
R7	56k ohm "F"		001-563-7
R9	56 ohm "F"		001-560-4
R11	56k ohm "F"		001-563-7

Ref. No.	Description	RS Part No.	MFR. Part No.
R13	27k ohm "F"		001-273-5
R15	470 ohm "F"		001-471-7
R17	470 ohm "F"		001-471-7
R19	100 ohm "F"		001-101-3
R21	33k ohm "F"		001-333-6
R23	2.2k ohm "F"		001-222-9
R25	100 ohm "F"		001-101-3
R27	2.2k ohm "F"		001-222-9
R29	47k ohm "F"		001-473-9
R31	47k ohm "F"		001-473-9
R33	12k ohm "F"		001-123-3
R34	1k ohm "F"		001-102-4
R35	68k ohm "F"		001-683-2
R37	8.2k ohm "F"		001-822-1
R39	82k ohm "F"		001-823-2
R41	5.6k ohm "F"		001-562-6
R43	1k ohm "F"		001-102-4
R45	22k ohm "F"		001-223-0
R47	5.6k ohm "F"		001-562-6
R49	10k ohm "F"		001-103-5
R51	3.9k ohm "F"		001-392-9
R53	6.8k ohm "F"		001-682-1
R55	1k ohm "F"		001-102-4
R57	1k ohm "F"		001-102-4
R58	27k ohm "F"		001-273-5
R59	470 ohm "F"		001-471-7
R61	4.7k ohm "F"		001-472-8
R63	10k ohm "F"		001-103-5
R65	5.6k ohm "F"		001-562-6
R67	10k ohm "F"		001-103-5
R69	1M ohm "F"		001-105-7
R71	10k ohm "F"		001-103-5
R72	100k ohm "F"		001-104-6
R73	220 ohm "F"		001-221-8
R75	6.8k ohm "F"		001-682-1
R77	5.6k ohm "F"		001-562-6
R79	100k ohm "F"		001-104-6
R81	68k ohm "F"		001-683-2
R83	6.8k ohm "F"		001-682-1
R85	5.6k ohm "F"		001-562-6
R87	2.2M ohm "F"		001-225-1
R89	100k ohm "F"		001-104-6
R91	4.7k ohm "F"		001-472-8
R93	12k ohm "F"		001-123-3
R94	7.5k ohm "F"		001-752-1
R95	560k ohm "F"		001-564-8

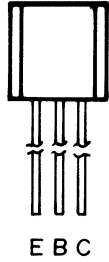
Ref. No.	Description	RS Part No.	MFR. Part No.
R96	2.2k ohm "F"		001-222-9
R97	100k ohm "F"		001-104-6
R99	4.7k ohm "F"		001-472-8
R100	10k ohm "F"		001-103-5
R101	8.2k ohm "F"		001-822-1
R103	10k ohm "F"		001-103-5
R105	10k ohm "F"		001-103-5
R107	10k ohm "F"		001-103-5
R109	10k ohm "F"		001-103-5
R110	820k ohm "F"		001-824-3
R111	100 ohm "F"		001-101-3
R112	220 ohm "F"		001-221-8
R113	22 ohm "F"		001-220-7
R115	150k ohm "F"		001-154-1
R117	1k ohm "F"		001-102-4
R119	33k ohm "F"		001-333-6
R121	82k ohm "F"		001-823-2
R123	2.2k ohm "F"		001-222-9
R125	22k ohm "F"		001-223-0
R127	330 ohm "F"		001-331-4
R129	10k ohm "F"		001-103-5
R131	330 ohm "F"		001-331-4
R133	10k ohm "F"		001-103-5
R135	100 ohm "F"		001-101-3
R137	100k ohm "F"		001-104-6
R139	100k ohm "F"		001-104-6
R141	22 ohm "F"		001-220-7
R143	220k ohm "F"		001-224-1
R145	1.5k ohm "F"		001-152-9
R147	100k ohm "F"		001-104-6
R149	1k ohm "F"		001-102-4
R151	100k ohm "F"		001-104-6
R153	10k ohm "F"		001-103-5
R155	10k ohm "F"		001-103-5
R157	10k ohm "F"		001-103-5
R159	10k ohm "F"		001-103-5
R161	10k ohm "F"		001-103-5
R163	10k ohm "F"		001-103-5
R165	10k ohm "F"		001-103-5
R167	150k ohm "F"		001-154-1
R169	100 ohm "F"		001-101-3
R171	1k ohm "F"		001-102-4
R173	47k ohm "F"		001-473-9
R175	56 ohm "F"		001-560-4
R177	22 ohm "F"		001-220-7

Ref. No.	Description	RS Part No.	MFR. Part No.
RV1 RV2	Resistor-Semifixed 10kB 6Dia, H Resistor-Semifixed 1kB 6Dia, H		071-103-6 071-102-5
Transistors			
Q101 Q103 Q105 Q107 Q109 Q111 Q112 Q113 Q115 Q117 Q119 Q121 Q123 Q125 Q127 Q129 Q131 Q133 Q135	2SC941(Y), NPN, Silicon 2SC3195(O), NPN, Silicon 2SA1267(GR), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SA1267(GR), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SA1267(GR), NPN, Silicon MPS9468(T), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3195(O), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3195(O), NPN, Silicon 2SC3195(O), NPN, Silicon 2SC3199(GR), NPN, Silicon 2SC3193(Y), NPN, Silicon 2SC380(Y), NPN, Silicon		201-023-8 202-050-8 202-042-0 202-049-7 202-042-0 202-049-7 202-042-0 203-018-4 202-049-7 202-049-7 202-049-7 202-050-8 202-049-7 202-050-8 202-050-8 202-049-7 202-051-9 202-043-1
Miscellaneous			
VR1 SW1-SW2	Variable Resistor, 10kA, Volume Tack Switch (SKHHLN0002), PTT, Call		450-412-8 436-010-2

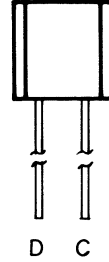
SEMICONDUCTOR LEAD IDENTIFICATION AND IC INTERNAL CONNECTIONS



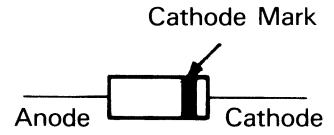
- 2SC941 (Y)
- 2SC3195 (O)
- 2SC3193TM (Y)
- 2SC3199 (GR)
- 2SA1267 (GR)



MPS9468(T)

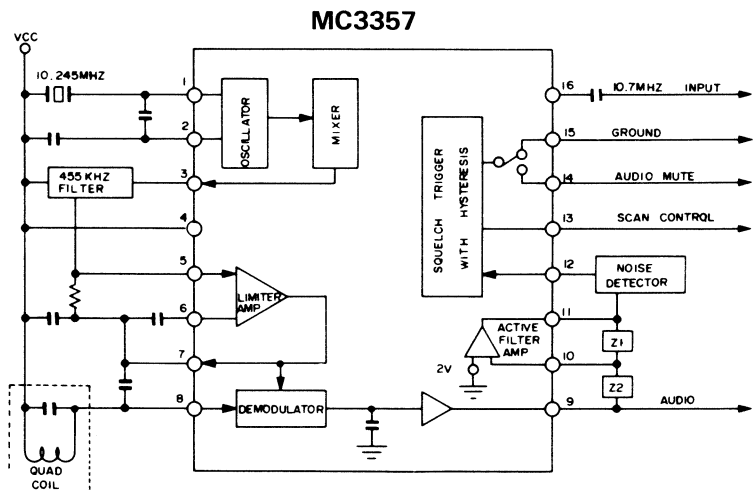
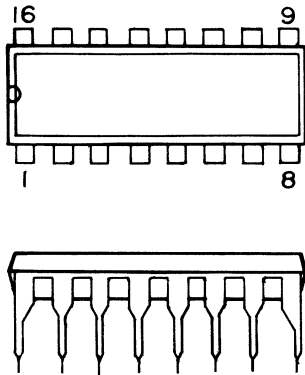


SVC251(Y)

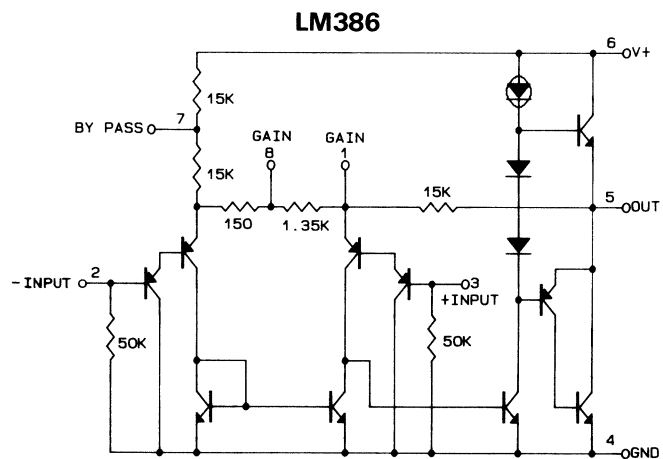
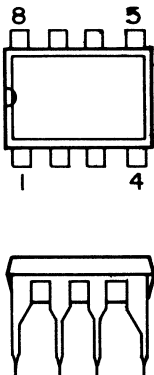


1S2473

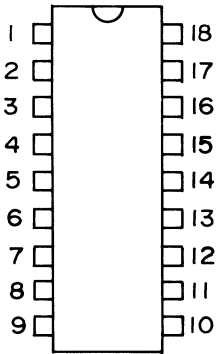
MC3357



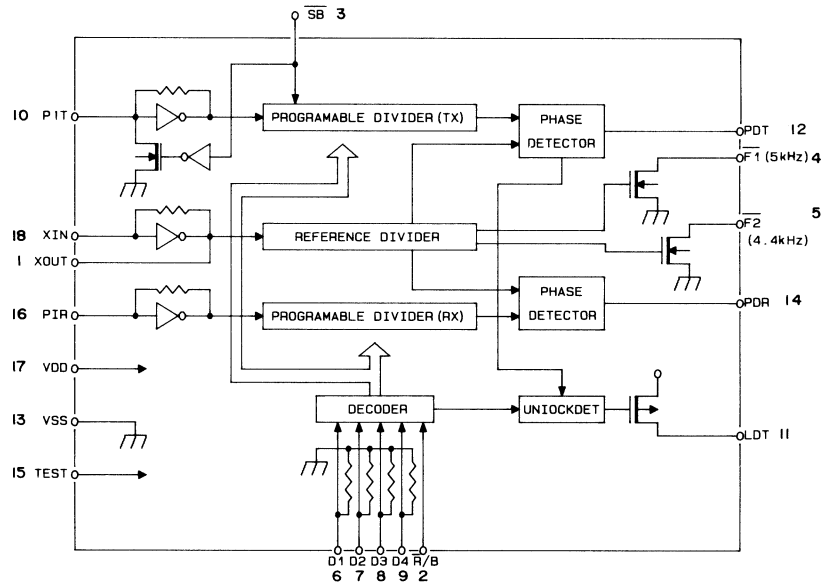
LM386



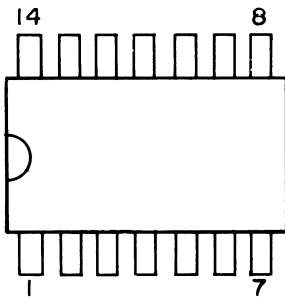
LC7150



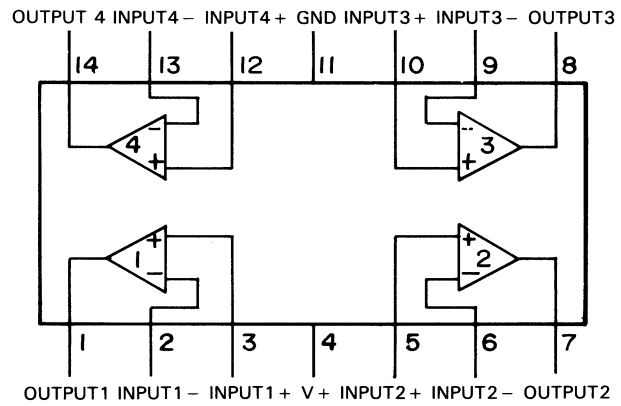
LC7150



LM358



LM358



TRANSISTOR AND IC VOLTAGE CHART

1. Transistor Voltage Chart

At; No Signal Unit; V

Transistor	Emitter		Base		Collector	
	Receiver	Transmitter	Receiver	Transmitter	Receiver	Transmitter
Q101	0.88	0	1.54	0	5.13	0
Q103	0.8	0	1.53	0	4.89	0
Q105	5.71	5.6	4.97	5.6	5.67	0
Q107	0	0	0.63	5.67	0.76	0.40
Q109	5.71	5.70	5.70	4.95	0	5.61
Q111	0	0	0	0.04	5.69	0
Q112	9.0	9.0	8.34	0.7	8.99	8.99
Q113	9.0	9.0	8.36	8.36	5.6 (Adjustable)	
Q115	0	0	0.56	0.56	8.29	8.29
Q117	0	0	0.61	0.61	0.56	0.56
Q119	0	0	0	0.59	0	3.15
Q121	1.88	1.88	2.46	2.46	5.69	5.69
Q123	0	0	0.63	0	0.04	4.14
Q125	0	0	0	0	4.5	0
Q127	0	2.44	0	5.59	0	1.81
Q129	0	0	0	0.61	0	3.30
Q131	0	0	0	0	0	3.07
Q133	0	0.52	0	0.26	0	3.07
Q135	0	0.62	0	1.31	0	5.42

2. IC Voltage Chart

N.C = Non Connection

Pin No.	IC1 (MC3357)		IC2 (LM386)		IC3 (LM358)		IC4 (LC7150)	
	Receiver	Transmitter	Receiver	Transmitter	Receiver	Transmitter	Receiver	Transmitter
1	5		1.2			2.72	2.2	2.2
2	5		0			2.61	4.4	4.4
3	5		0			2.40	0	0
4	5		0			0	0	0
5	1		1.2			2.39	0	0
6	1		9			2.76	See table 3	
7	1		N.C			2.38		
8	5		1.4			5.35		
9	3.8						0	0
10	1.8						0	0
11	1.8						0	0
12	N.C						0	0
13	N.C						0	0
14	0						2	2
15	2						0	0
16	N.C						2	2
17							4.4	4.4
18							1.2	1.2

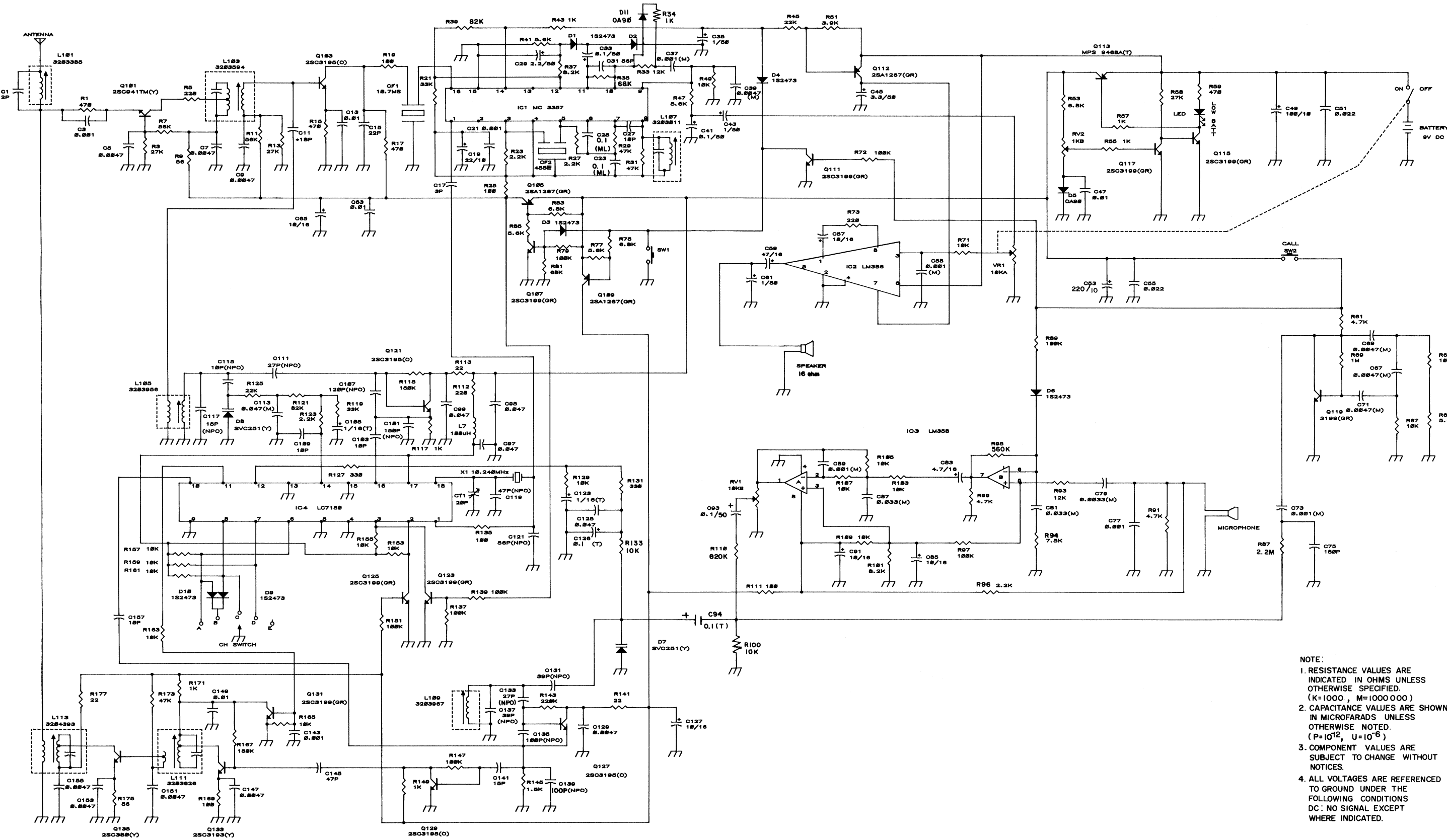
Unit; V

Pin No CH	6	7	8
CH-A	0	2.9	0
CH-B	0	2.9	2.9
CH-C	2.9	2.9	0
CH-D	2.9	0	2.9
CH-E	2.9	2.9	2.9

Table 3

SCHEMATIC DIAGRAM

21-402



NOTE:
1. RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED. (K=1000, M=1000000)
2. CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISE NOTED. (P=10⁻¹², U=10⁻⁶)
3. COMPONENT VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICES.
4. ALL VOLTAGES ARE REFERENCED TO GROUND UNDER THE FOLLOWING CONDITIONS DC: NO SIGNAL EXCEPT WHERE INDICATED.

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AUSTRALIA

INTERTAN AUSTRALIA LIMITED (INC. IN N.S.W.)
91 KURRAJONG AVE., MT. DRUITT, 2770