

If R16 is open or if C24 is open or shorted, severe noise will be generated.

SQUELCH AMPLIFIER STAGE

When signals (signal injector, etc.) are supplied to the base of TR6, the signals will be produced in the output.

The squelch amplifier stage is functioning properly if the signals from the output are reduced to zero when squelch control is turned clock wise. If this stage does not function check the voltage of various points of TR6 and TR7.

1. Voltage of various points in squelch-off

ITEM OF CHECK	Normal voltage	Abnormal voltage	Causes of trouble	Signs of trouble
TR6 collector to ground.	-0.3V	Less than -0.22V	Defective R29 or TR6.	No sound
		Zero or too low	C31 shorted, R29 disconnected defective TR6 and TR7.	No sound
TR6 base to ground.	0 V	-0.2V	Defective squelch volume R28.	No sound
TR7 collector.	0.05V	Too high	Defective R28, R30 shorted, defective TR7.	No sound

2. Voltage of various points in squelch-on

ITEM OF CHECK	Normal voltage	Abnormal voltage	Causes of trouble	Signs of trouble
TR6 collector and TR7 base to ground.	-0.1V	Too high	R29 short-circuited, defective TR6 and TR7 or squelch volume.	Sound
TR6 base to ground.	-0.25V	0 V	C30 short-circuited	Sound
TR7 collector to ground.	-3.0V	Zero or too low	Disconnected R30, defective R28, TR6 or TR7.	Sound
		Too high	R30 shorted.	No sound (even when squelch-off)

3. Trouble at the normal voltage

ITEM OF CHECK	CAUSES OF TROUBLE	SIGNS OF TROUBLE
TR7 collector side.	Defective CD3.(shorted).	No sound (even when squelch-OFF)
	Disconnected CD3.	Sound (even when squelch-ON)

A.F. AMPLIFIER STAGE (1ST, 2ND, PA AMP)

1. Voltage of various points

ITEM OF CHECK	Normal voltage	Abnormal voltage	Causes of trouble	Signs of trouble
TR13, 14 collector to ground.	-12V	0	Primary side of the output transformer T15 disconnected or open.	No sound
TR13, 14 base to ground.	-0.14V	0	Secondary side of the input transformer T14 open, R70 open, or short-circuited or <u>too low thermistor.</u> (R67)	Tone quality abnormal
		Too high	Resistance of thermistor R67 and R69 too high*.	Tone quality and volume abnormal
TR13, 14 emitter to ground.	-0.01V	0	Defective TR13, TR14 R71 or R72 resistance too low.	Tone quality and volume abnormal
		Too high	Defective TR13, TR14, R71 or R72 resistance too large	
TR12 collector to ground.	-10.8V	0	T14 disconnected.	No sound
TR12 base to ground.	-1.4V	Zero or too low	R63 or R66 disconnected, R64 short-circuited.	No sound
		Too high	R64 disconnected, defective TR12.	Tone quality and volume abnormal or no sound
TR12 emitter to ground.	-1.2V	Zero or too low	C61 short-circuited, the resistance of R65 too low.	No sound or Tone quality abnormal
		Too high	Defective TR12, R65 resistance too large.	Tone quality and volume abnormal

ITEM OF CHECK	Normal voltage	Abnormal voltage	Causes of trouble	Signs of trouble
TR11 collector to ground.	-6.0V	Zero or too low	R59 or R60 disconnected, C59 short-circuited.	No sound or tone quality abnormal
TR11 base to ground.	-1V	Zero or too low	R57 disconnected, C55, C56 short-circuited.	No sound
		Too high	Defective TR11, R54 or R55 disconnected.	No sound or tone quality and volume abnormal
TR11 emitter to ground.	-0.9V	Zero or too low	C57 short-circuited, the resistance of R58 too low.	No sound or tone quality abnormal
		Too high	Defective TR11, resistance of R58 too large, SQUELCH circuit abnormal.	Tone quality and volume abnormal

NOTE: * Thermistor R67 should have a resistance value of 80 to 110 ohms at 25° C.

2. Trouble at the normal voltage

T14, T15 short-circuited No sound or tone quality abnormal.

LONG RANGE STAGE

1. Voltage of various points

ITEM OF CHECK	Normal voltage	Abnormal voltage	Causes of trouble	Signs of trouble
Diode CD4 (between CD4 and ground.)	-0.8V	Zero or too low	Break down of CD4.	Modulation low
			Disconnected R73 or R74.	Over modulation
		Too high	C65 short-circuited.	Low modulation or modulated wave abnormal

2. Trouble at the normal voltage

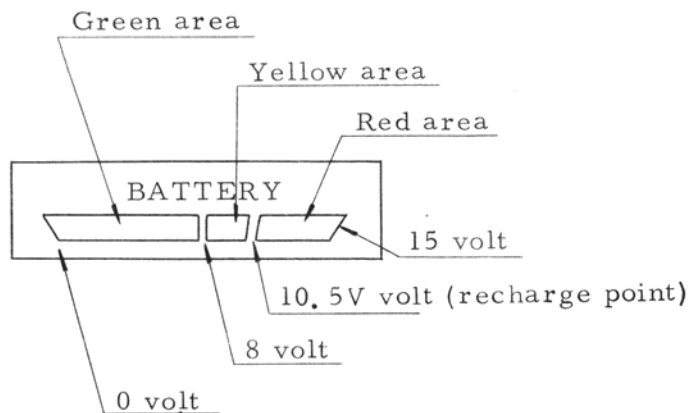
C65 disconnected Over modulation

CALL STAGE

ITEM OF CHECK	CAUSES OF TROUBLE	SIGNS OF TROUBLE
CALL circuit.	CALL switch S2-5a, S2-5b. disconnected, C51 ~ 54 or R51 ~ 53 disconnected.	No oscillation

BATTERY INDICATOR STAGE

1. Normal indication



2. State of trouble

ITEM OF CHECK	CAUSES OF TROUBLE	SIGNS OF TROUBLE
Battery indicator.	Disconnected R76, R78 or defective M1.	No indication
	Insufficient indication.	R76, R78 too large or defective M1
	Excessive indication.	R76, R78 too small or defective M1

ALIGNMENT INSTRUCTIONS

This transceiver meets all requirements of F.C.C. Rules & Regulation, Part 95. This requires a simple licensing procedure and permits operation. However, only those persons properly licenced by the F.C.C. are permitted to repair or adjust any malfunctioning unit found to be transmitting illegally. (Refer to F.C.C. Reles & Regulations, Part 19, Subpart "D", Section 19.71)

PRECAUTIONS

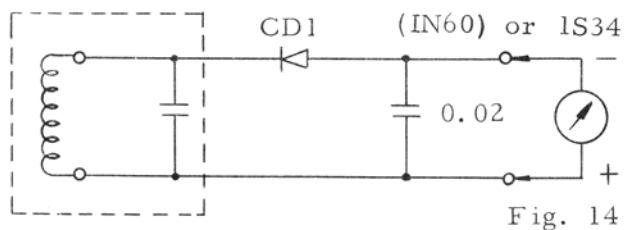
1. Use new batteries
2. When an external power source is to be utilized, care must be taken to observe the proper voltage and polarity.
3. The power supply circuit of the unit is designed for positive and negative ground system.
A red wire attached to the battery snap is positive and the black one is negative.
4. Special care should be taken to avoid damaging the various coil cores while making adjustment since the core material is easily shattered.

TRANSMITTER ALIGNMENT

Equipment Required

1. Power meter (27MHz 2 Watt 50 ohm)
2. Indicating wave meter (see diagram)

27MHz tuning circuit



DC Microammeter or
0-1 Milliammeter

Fig. 14

Align as follows:

1. Connect the power meter to the EXT. ANT. jack.

2. Remove back cover from set.
3. Switch set on.
4. Observe power meter and tune T8 (transmitter oscillator coil) to obtain maximum reading.

Turn the core 1 turn farther into the bobbin than where the maximum reading was obtained.

NOTE: T10 is adjusted at the factory and should not require field adjustment, unless oscillator components are replaced.

5. Tune the T9, T11 (Transmitter tank coil) to obtain maximum reading on the power meter.

NOTE: When the power meter indicates a power more than 3/4 watts at 12 volt DC, transmitter stage is normal. (measurement circuit as shown Fig. 15.)

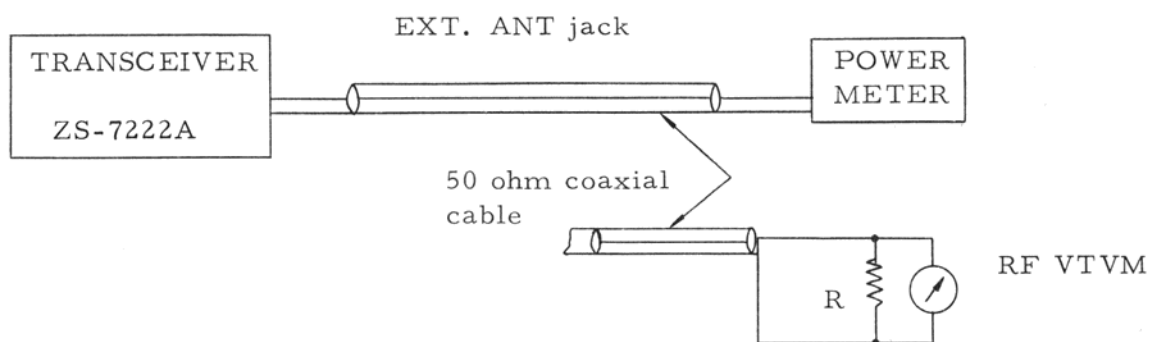


Fig. 15

R:RF resistor 50 ohm 1 WATT

NOTE: In cases where an RF resistor and VTVM are used instead of a power meter, RF power is calculated as follows:

$$\text{RF Power} = \frac{e^2}{R}$$

"e" is the reading on the VTVM.

When the meter indicates a voltage greater than 6 volts, the transmitter stage is normal.

6. Remove the power meter from the EXT. ANT jack and extend the antenna to it full length, place the indicating wave meter, near the transceiver antenna.
7. Observe indicating wave meter (see diagram above) and tune T1 (loading coil) to obtain maximum.

RECEIVER ALIGNMENT

Equipment Required

1. RF VTVM
2. Multipurpose Signal Generator (S.S.G.)
3. Oscilloscope
4. 0.01 mfd. capacitor

Align as follows:

1. Remove cabinet back and switch unit on.
2. Inject a 455 kHz 30% modulated signal at TP1 (base of TR2) using a 0.01 mfd. capacitor in series with the signal generator cable.
Connect the signal cable ground terminal to chassis ground.

NOTE: Input signal should be kept to a minimum to avoid receiver limiting action.

3. Connect an oscilloscope and VTVM to EAR jack 8 ohm dummy load (as shown in Fig. 16)
4. Adjust S.S.G to 455 kHz, keep the output as small as possible and keep the volume setting at maximum.
Then, adjust IF transformer T4, T5 and T6 a few times repeatedly for maximum deflection of the VTVM.
5. Connect a signal generator to the EXT.ANT on the unit and inject a 27 MHz 30% modulated signal.

NOTE: Maintain signal setting at the lowest usable level to avoid receiver limiting action.

6. Adjust T2 (receiver antenna coil) T3 (receiver tank coil) and T7 (receiver oscillator coil) for a maximum indication on the oscilloscope or VTVM. Tune the T7 core 1 turn farther into the bobbin than when the maximum reading was obtained.
7. Connect dummy load (R=8 ohm) and VTVM to the EAR jack as shown in Fig.16. Turn the Squelch control to minimum and turn the volume control to maximum.

If the VTVM indicates a voltage greater than 0.63 volt at $1 \mu\text{V}$ signal input level at the receiver antenna, the receiver sensitivity is normal.

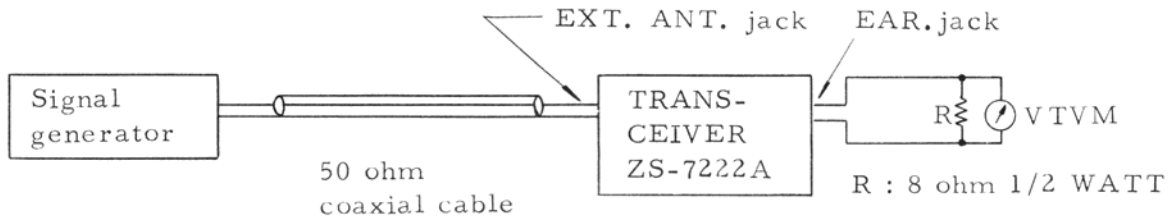
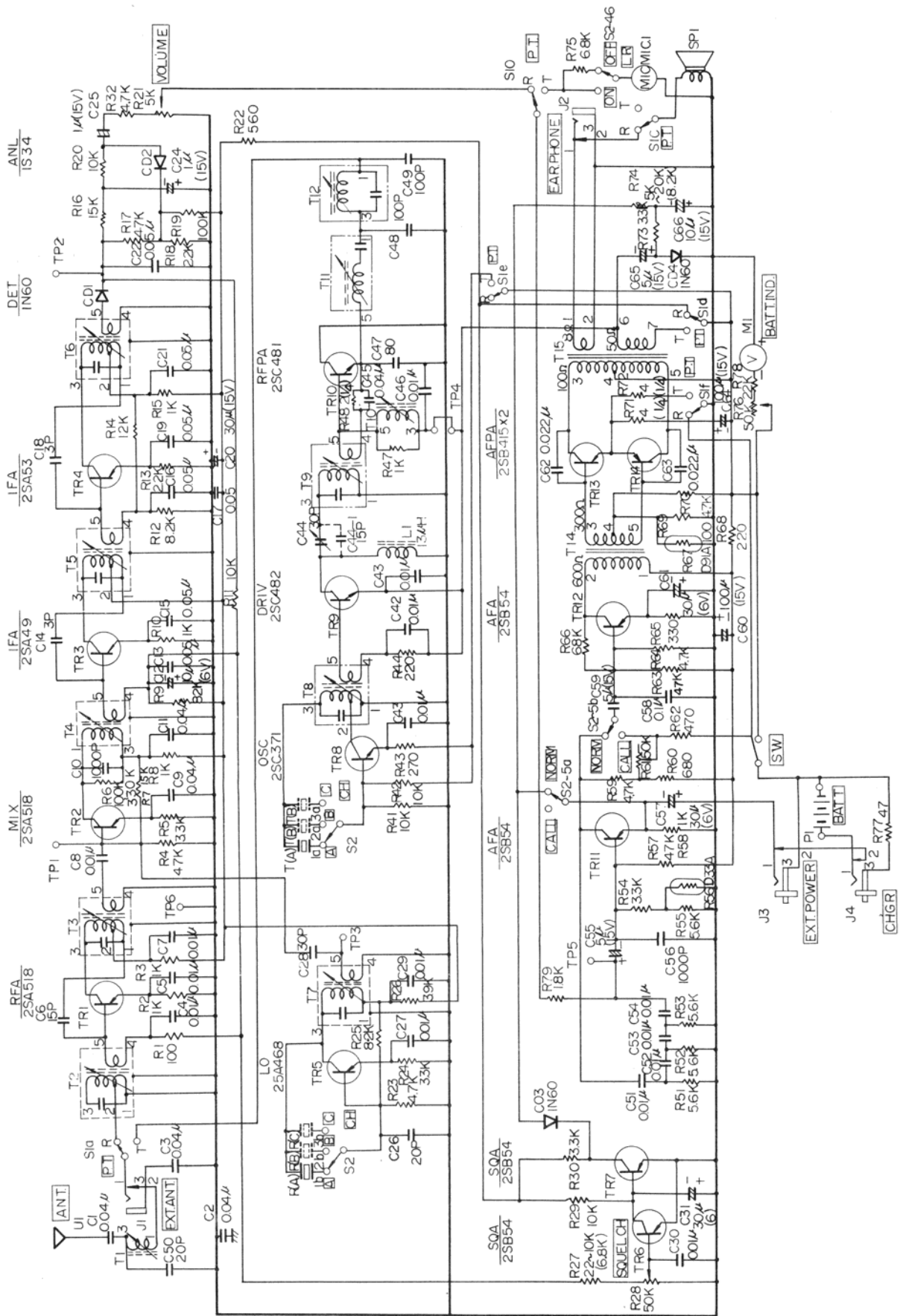


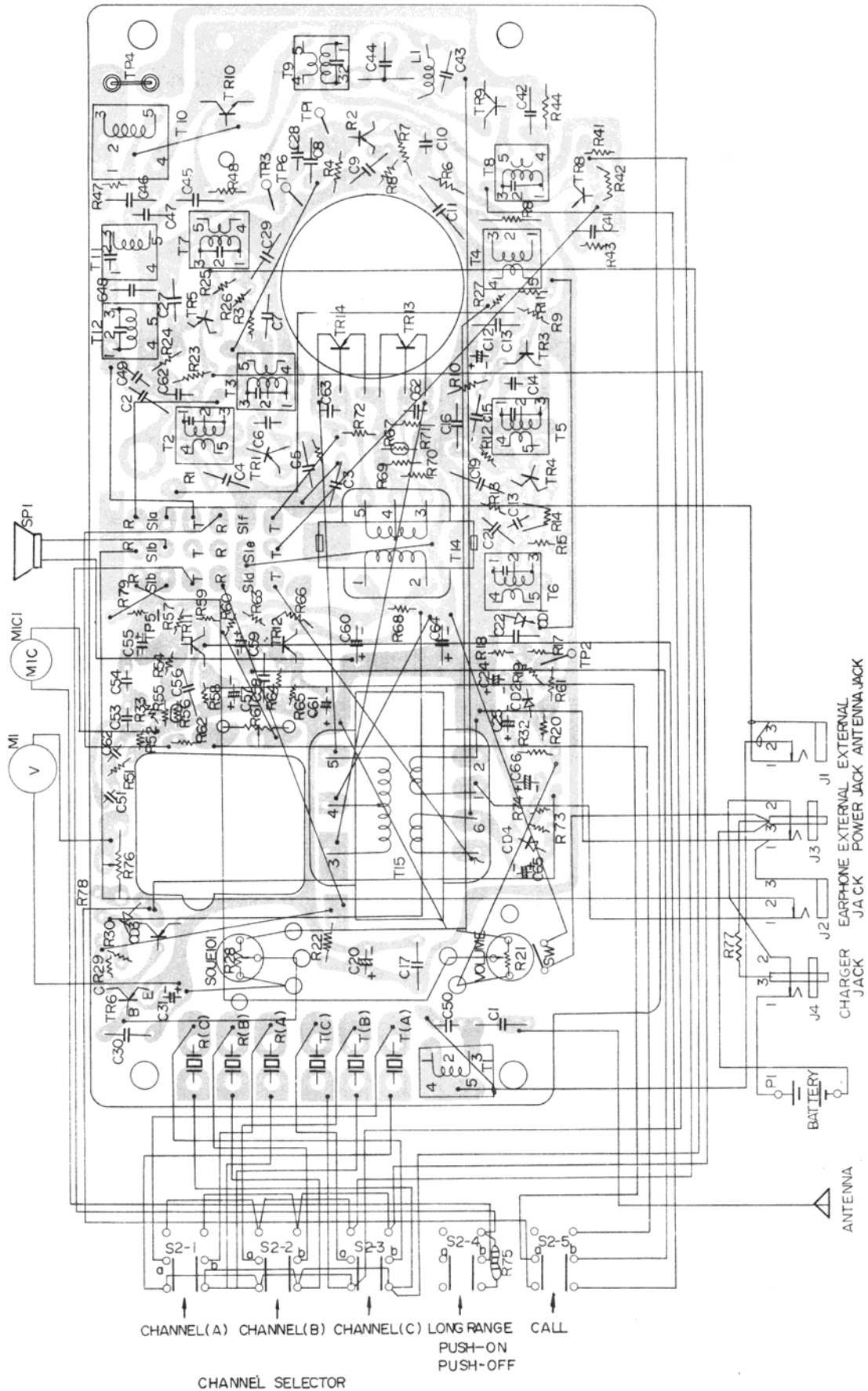
Fig. 16

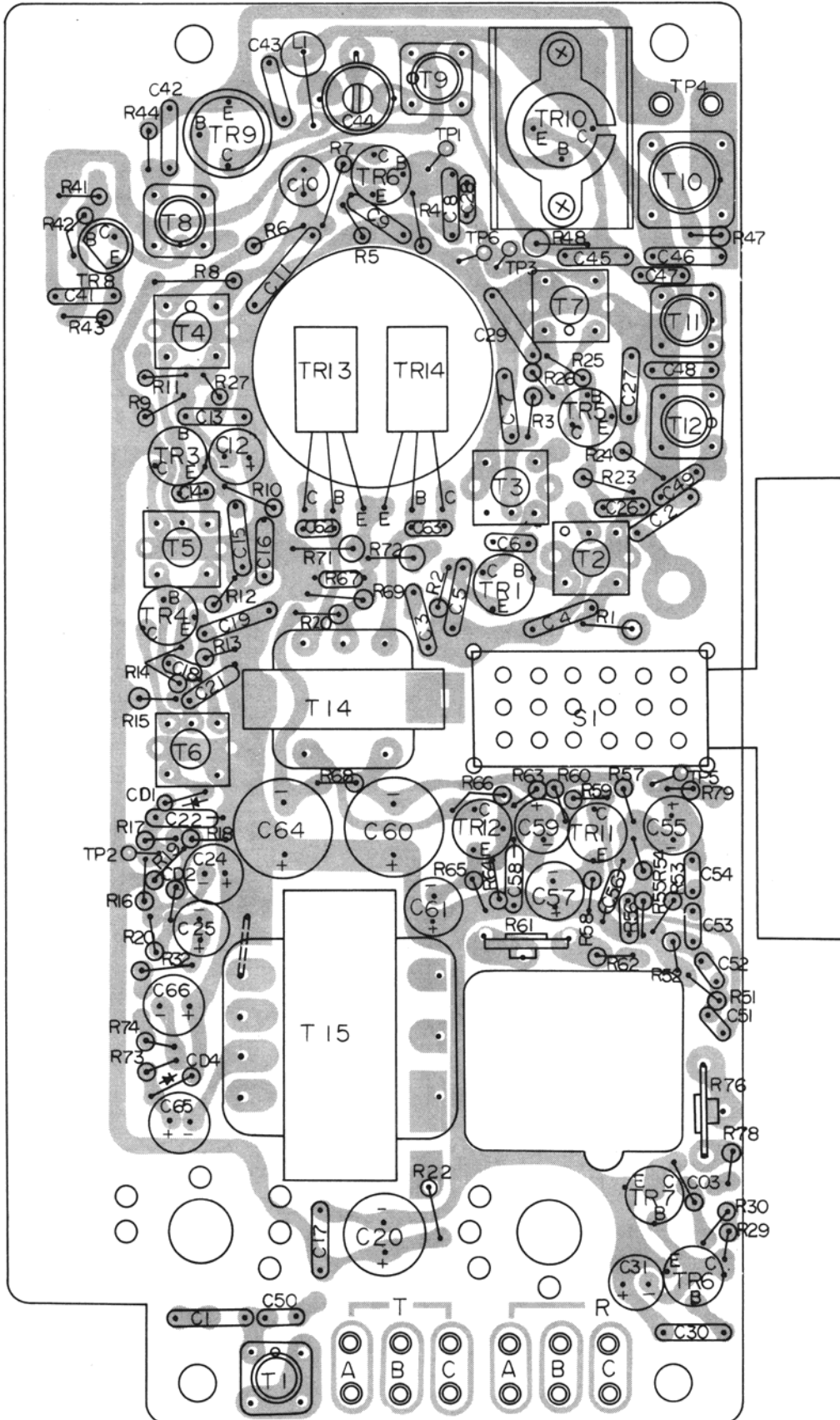
NOTE; The input level is the voltage at the 50 ohm antenna terminal on the test meter.

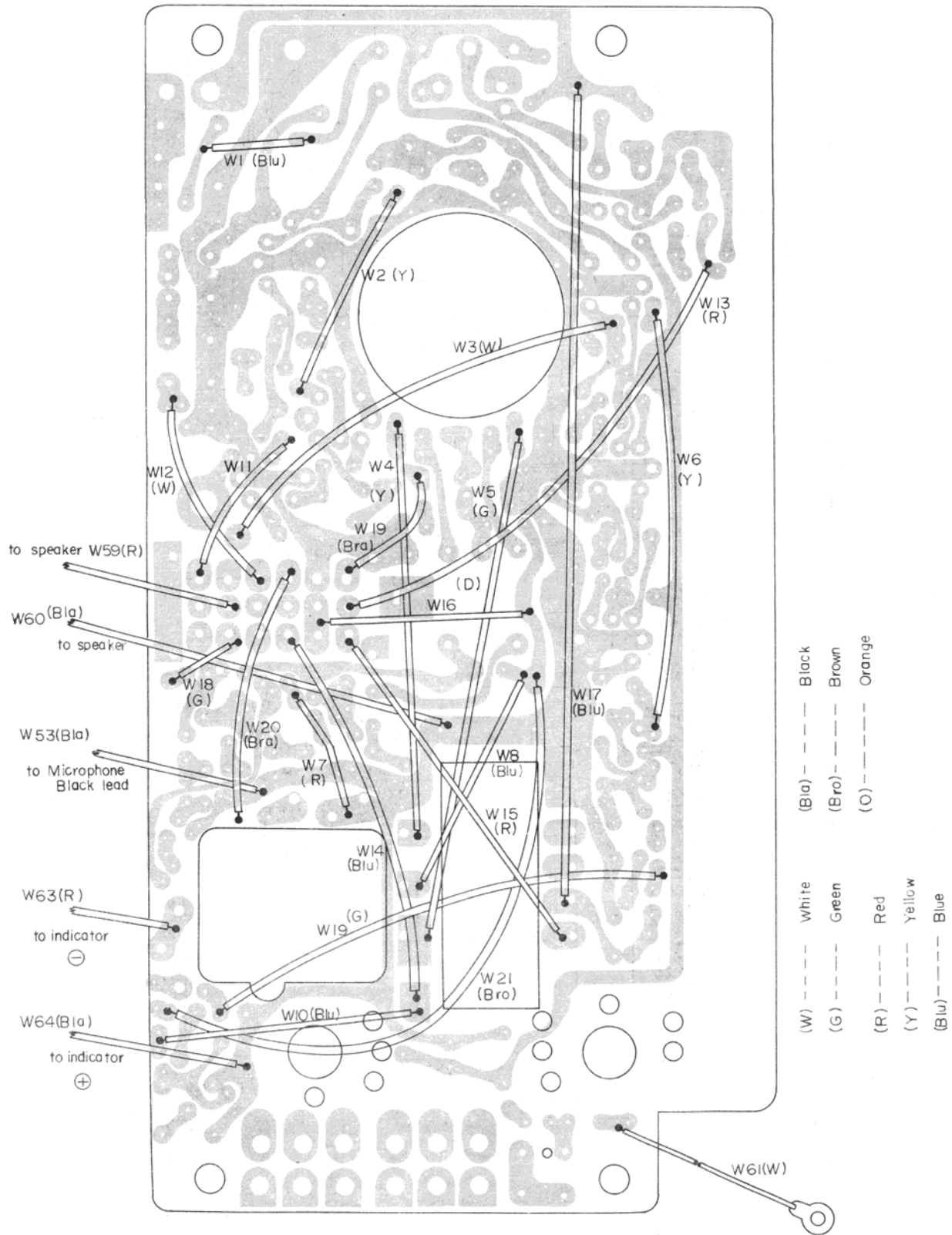
8. Disconnect test equipment and reassemble the transceiver.

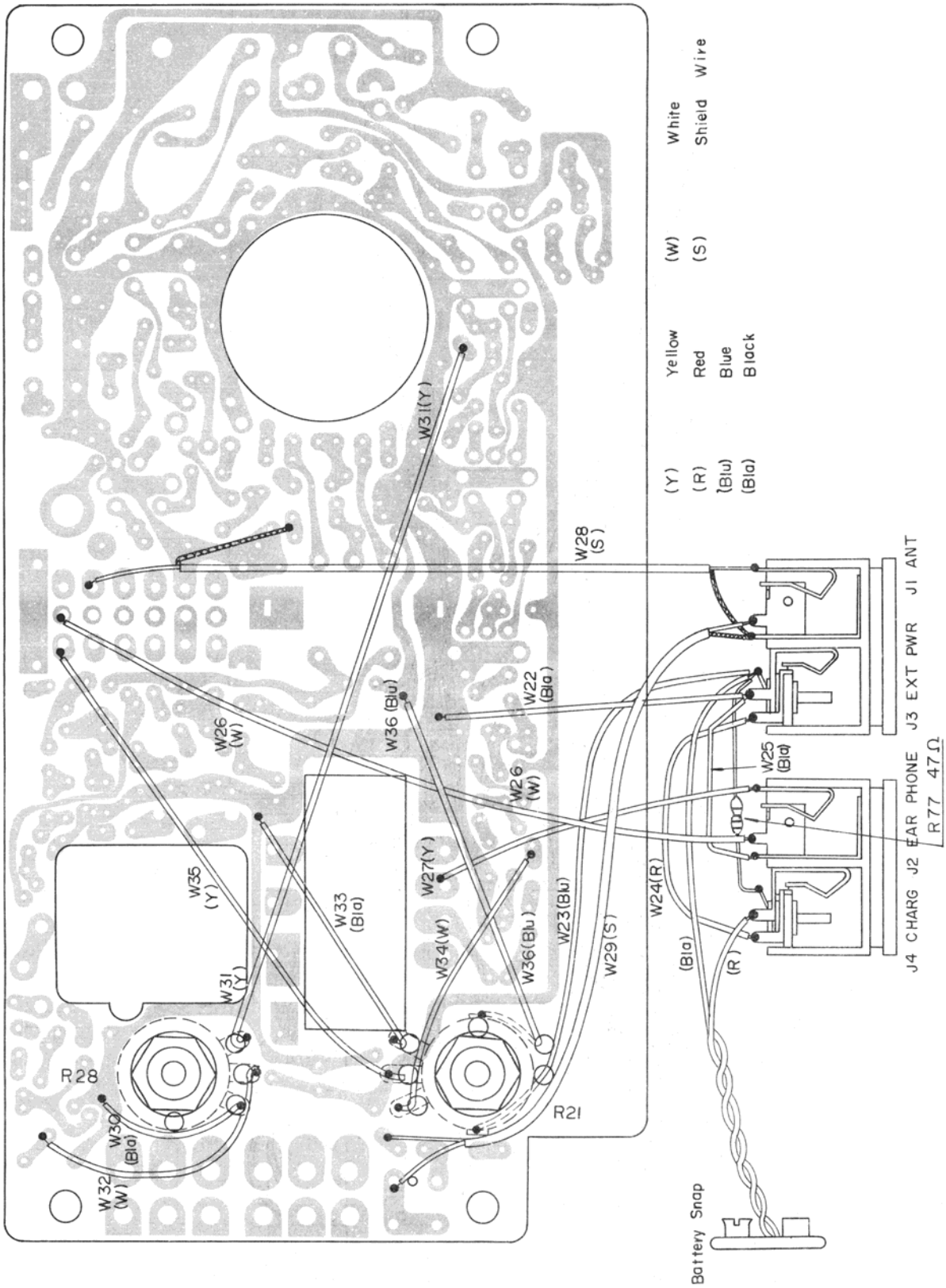
NOTE: Since T1 are correctly adjusted for the transmitter they will not require readjustment for the receiver and therefore, their cores should not be moved.

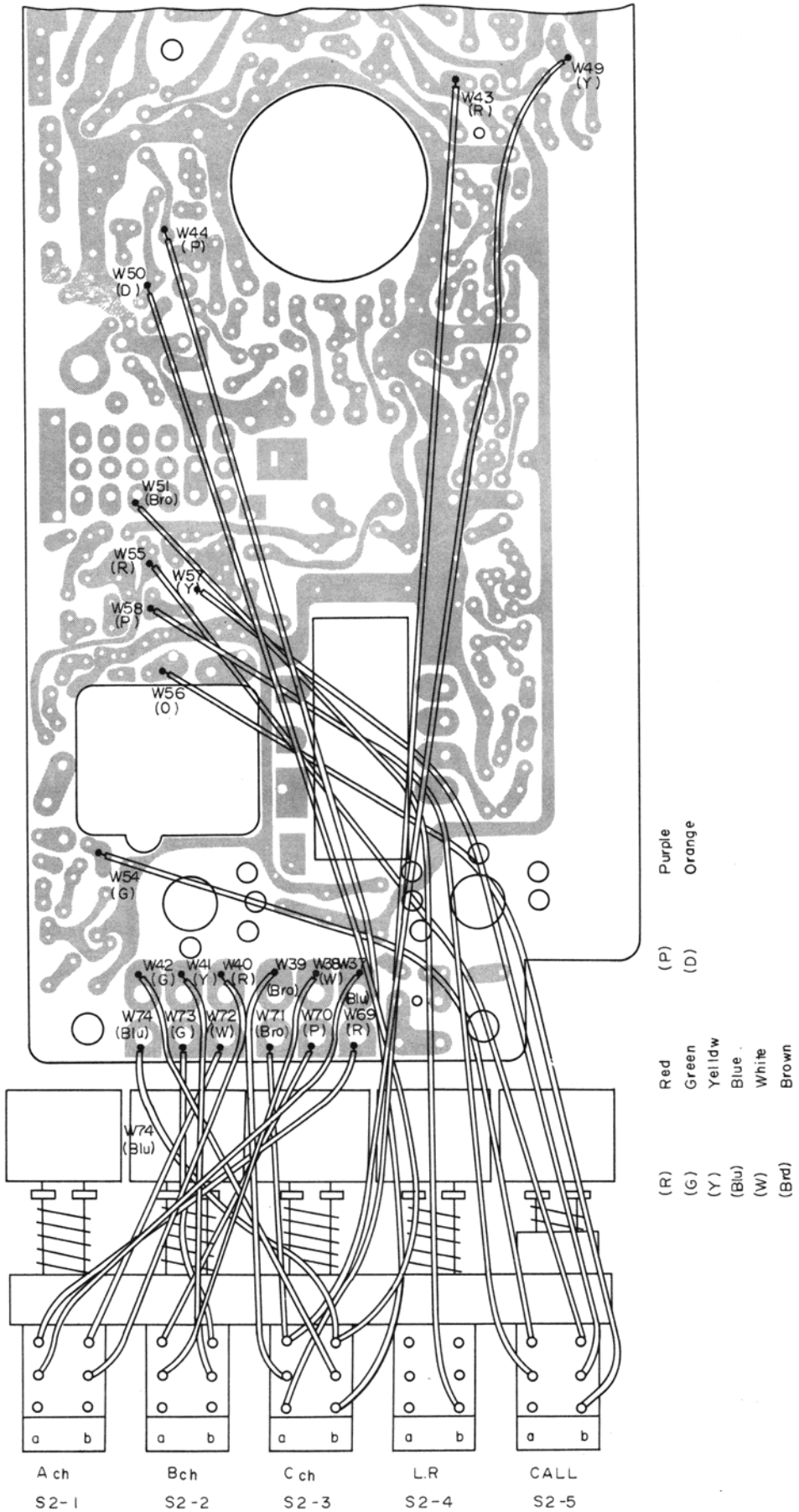












TOSHIBA 2 WATTS TRANSCEIVER

ZS-7222A

REPLACEMENT PARTS LIST

Sym- bol	Stock No.	Name of part	Description	Q'ty
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TRANSISTORS & DIODES

TR1		Transistor	Toshiba 2SA518	1
TR2		Transistor	Toshiba 2SA518	1
TR3		Transistor	Toshiba 2SA 49	1
TR4		Transistor	Toshiba 2SA 53	1
TR5		Transistor	Toshiba 2SA468	1
TR6		Transistor	Toshiba 2SB 54	1
TR7		Transistor	Toshiba 2SB 54	1
TR8		Transistor	Toshiba 2SC371	1
TR9		Transistor	Toshiba 2SC482	1
TR10		Transistor	Toshiba 2SC481	1
TR11		Transistor	Toshiba 2SB 54	1
TR12		Transistor	Toshiba 2SB 54	1
TR13		Transistor	Toshiba 2SB415	1
TR14		Transistor	Toshiba 2SB415	1
CD1		Diode	Toshiba 1N60	1
CD2		Diode	Toshiba 1S34	1
CD3		Diode	Toshiba 1N60	1
CD4		Diode	Toshiba 1N60	1

COILS & TRANSFORMERS

T1	20084	RF transformer	Antenna matching	Mark : 1	1
T2	20053	RF transformer	Receive antenna	Mark : 2	1
T3	20054	RF transformer	Receive tank	Mark : 3	1
T4	20017	IF transformer	455 KHz	Mark : 0743	1
T5	20018	IF transformer	455 KHz	Mark : 07B1	1
T6	20019	IF transformer	455 KHz	Mark : 07C1	1
T7	20055	RF transformer	Receive oscillator	Mark : 7	1
T8	20056	RF transformer	Transmit oscillator	Mark : 8	1
T9	20085	RF transformer	Transmit driver	Mark : 9	1
T10	20086	RF coil	Neutralization	Mark : 10	1
T11	20059	RF transformer	Transmit PA tank	Mark : 11	1
T12	20060	RF transformer	Transmit 2f trap	Mark : 12	1
T14	20024	AF transformer	Input transformer	Mark : 14	1
T15	20061	AF transformer	Output transformer	Mark : 15	1
L1	20026	RF choke coil	13 μ H		1

Sym- bol	Stock No.	Name of part	Description	Q'ty
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CAPACITORS

C1	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C2	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C3	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C4	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C5	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C6	30044	Ceramic capacitor	15 mmfd ±10% 50V	1
C7	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C8	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C9	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C10	30045	Polysterene capacitor	1000 mmfd ±5% 50V	1
C11	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C12	30067	Electrolytic capacitor	10 mfd +100, -10% 6V	1
C13	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C14	30002	Ceramic capacitor	3 mmfd ±0.5mmfd 50V	1
C15	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C16	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C17	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C18	30002	Ceramic capacitor	3 mmfd ±0.5mmfd 50V	1
C19	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C20	30069	Electrolytic capacitor	30 mfd +100, -10% 15V	1
C21	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C22	30046	Ceramic capacitor	0.05 mfd +80, -20% 12V	1
C24	30070	Electrolytic capacitor	1 mfd +150, -0% 15V	1
C25	30070	Electrolytic capacitor	1 mfd +150, -0% 15V	1
C26	30016	Ceramic capacitor	20 mmfd ±10% 50V	1
C27	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C28	30003	Ceramic capacitor	30 mmfd ±10% 50V	1
C29	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C30	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C31	30060	Electrolytic capacitor	30 mfd +100, -0% 6V	1
C41	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C42	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C43	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C44	30074	Semi-fixed capacitor	8.5 ~ 30 mmfd	1
C45	30006	Ceramic capacitor	0.04 mfd +100, -0% 50V	1
C46	30005	Ceramic capacitor	0.01 mfd +100, -0% 50V	1
C47	30029	Ceramic capacitor	80 mmfd ±10% 50V	1
C48	30018	Ceramic capacitor	100 mmfd ±10% 50V	1
C49	30018	Ceramic capacitor	100 mmfd ±10% 50V	1
C50	30016	Ceramic capacitor	20 mmfd ±10% 50V	1
C51	30007	Mylarfilm capacitor	0.01 mfd ±20% 50V	1
C52	30007	Mylarfilm capacitor	0.01 mfd ±20% 50V	1
C53	30007	Mylarfilm capacitor	0.01 mfd ±20% 50V	1
C54	30007	Mylarfilm capacitor	0.01 mfd ±20% 50V	1
C55	30071	Electrolytic capacitor	5 mfd +100, -0% 15V	1
C56	30030	Ceramic capacitor	1000 mmfd +100, -0% 50V	1

Sym- bol	Stock No.	Name of part	Description	Q'ty
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CAPACITORS

C57	30068	Electrolytic capacitor	30 mfd +100, -0% 6V	1
C58	30047	Ceramic capacitor	0.1 mfd ±20% 12V	1
C59	30071	Electrolytic capacitor	5 mfd +100, -0% 15V	1
C60	30073	Electrolytic capacitor	100 mfd +100, -0% 15V	1
C61	30068	Electrolytic capacitor	30 mfd +100, -0% 6V	1
C62	30075	Mylarfilm capacitor	0.022 mfd ±20% 50V	1
C63	30075	Mylarfilm capacitor	0.022 mfd ±20% 50V	1
C64	30073	Electrolytic capacitor	100 mfd +100, -0% 15V	1
C65	30071	Electrolytic capacitor	5 mfd +100, -0% 15V	1
C66	30072	Electrolytic capacitor	10 mfd +100, -0% 15V	1

RESISTORS

R1	40141	Carbon fixed resistor	100 ohm ±10% 1/8W	1
R2	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R3	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R4	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R5	40151	Carbon fixed resistor	3.3 Kohm ±10% 1/8W	1
R6	40165	Carbon fixed resistor	100 Kohm ±10% 1/8W	1
R7	40159	Carbon fixed resistor	15 Kohm ±10% 1/8W	1
R8	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R9	40164	Carbon fixed resistor	82 Kohm ±10% 1/8W	1
R10	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R11	40157	Carbon fixed resistor	10 Kohm ±10% 1/8W	1
R12	40156	Carbon fixed resistor	8.2 Kohm ±10% 1/8W	1
R13	40150	Carbon fixed resistor	2.2 Kohm ±10% 1/8W	1
R14	40158	Carbon fixed resistor	12 Kohm ±10% 1/8W	1
R15	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R16	40159	Carbon fixed resistor	15 Kohm ±10% 1/8W	1
R17	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R18	40150	Carbon fixed resistor	2.2 Kohm ±10% 1/8W	1
R19	40165	Carbon fixed resistor	100 Kohm ±10% 1/8W	1
R20	40157	Carbon fixed resistor	10 Kohm ±10% 1/8W	1
R21	40136	Variable resistor	5 Kohm ±20% 4/100W w/switch	1
R22	40146	Carbon fixed resistor	560 ohm ±10% 1/8W	1
R23	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R24	40151	Carbon fixed resistor	3.3 Kohm ±10% 1/8W	1
R25	40156	Carbon fixed resistor	8.2 Kohm ±10% 1/8W	1
R26	40152	Carbon fixed resistor	3.9 Kohm ±10% 1/8W	1
R27	40155	Carbon fixed resistor	6.8 Kohm ±10% 1/8W	1
R28	40137	Variable resistor	50 Kohm ±20% 4/100W	1
R29	40157	Carbon fixed resistor	10 Kohm ±10% 1/8W	1
R30	40151	Carbon fixed resistor	3.3 Kohm ±10% 1/8W	1
R32	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1

Symbol	Stock No.	Name of part	Description	Q'ty
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RESISTORS

R41	40157	Carbon fixed resistor	10 Kohm ±10% 1/8W	1
R42	40157	Carbon fixed resistor	10 Kohm ±10% 1/8W	1
R43	40143	Carbon fixed resistor	270 ohm ±10% 1/8W	1
R44	40142	Carbon fixed resistor	220 ohm ±10% 1/8W	1
R47	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R48	40139	Carbon fixed resistor	2 ohm ±10% 1/4W	1
R51	40154	Carbon fixed resistor	5.6 Kohm ±10% 1/8W	1
R52	40154	Carbon fixed resistor	5.6 Kohm ±10% 1/8W	1
R53	40154	Carbon fixed resistor	5.6 Kohm ±10% 1/8W	1
R54	40151	Carbon fixed resistor	3.3 Kohm ±10% 1/8W	1
R55	40154	Carbon fixed resistor	5.6 Kohm ±10% 1/8W	1
R56	40037	Thermistor	D33A	
R57	40162	Carbon fixed resistor	47 Kohm ±10% 1/8W	1
R58	40148	Carbon fixed resistor	1 Kohm ±10% 1/8W	1
R59	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R60	40147	Carbon fixed resistor	680 ohm ±10% 1/8W	1
R61	40167	Semi-fixed resistor	50 Kohm ±20% 4/100W	1
R62	40145	Carbon fixed resistor	470 ohm ±10% 1/8W	1
R63	40162	Carbon fixed resistor	47 Kohm ±10% 1/8W	1
R64	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R65	40144	Carbon fixed resistor	330 ohm ±10% 1/8W	1
R66	40163	Carbon fixed resistor	68 Kohm ±10% 1/8W	1
R67	40035	Thermistor	D91A	1
R68	40142	Carbon fixed resistor	220 ohm ±10% 1/8W	1
R69	40141	Carbon fixed resistor	100 ohm ±10% 1/8W	1
R70	40153	Carbon fixed resistor	4.7 Kohm ±10% 1/8W	1
R71	40138	Carbon fixed resistor	4 ohm ±10% 1/4W	1
R72	40138	Carbon fixed resistor	4 ohm ±10% 1/4W	1
R73	40151	Carbon fixed resistor	3.3 Kohm ±10% 1/8W	1
R74	40156	Carbon fixed resistor	8.2 Kohm ±10% 1/8W	1
R72	40155	Carbon fixed resistor	6.8 Kohm ±10% 1/8W	1
R76	40167	Semi-fixed resistor	50 Kohm ±20% 4/100W	1
R77	40140	Carbon fixed resistor	47 ohm ±10% 1/8W	1
R78	40160	Carbon fixed resistor	22 Kohm ±10% 1/8W	1
R79	40149	Carbon fixed resistor	1.8 Kohm ±10% 1/8W	1

SWITCH

S1	60047	Push-to-Talk switch	6 circuit- 2 positions	1
S2	60048	Push switch	5 blocks	1

Sym- bol	Stock No.	Name of part	Description	Q'ty
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SPEAKER, MICROPHONE & EARPHONE

SP1	50009	Speaker	2-1/4" 8 ohm	1
MIC1	50010	Dynamic microphone	200 ohm	1
	50002	Earphone	8 ohm	1

CRYSTAL

T(A)	70011	Transmit crystal HC-25/u	Specify channel No. and frequency	1
T(B)	70011	Transmit crystal HC-25/u		1
T(C)	70011	Transmit crystal HC-25/u		1
R(A)	70012	Receive crystal HC-25/u	Specify channel No. and frequency	1
R(B)	70012	Receive crystal HC-25/u		1
R(C)	70012	Receive crystal HC-25/u		1

MISCELLANEOUS

U1	60046	Antenna	11 sections 49" center loaded	1
M1	89021	Battery meter	DC 400 μ A	1
J1, 3	60031	Jack	External Antenna & Power	1
J2, 4	60031	Jack	Earphone & Charger	1
	60033	Crystal pin	For HC-25/u	14
P1	60009	Battery snap	Battery	1
	91015	Battery compartment		1
	93027	Label	Battery compartment	1
	92053	Printed circuit board	QBA-7222A	1
	91044	Antenna bracket		1
	91005	Antenna bushing		1
	94001	Antenna lug	ET-3	1
	90016	Radiator	For TR13, 14 (2SB415)	1
	90017	Radiator	For TR10 (2SC481)	1
	92054	Radiator holder	For TR10 (2SC481)	1
	92023	Speaker clamp		3
	92052	Switch holder	With sub P. C. board	1
	92051	Battery meter clamp		1
	92050	Microphone clamp		1
	92030	Jack holder		1
	92049	Battery compartment holder		1
	91042	Microphone protector		1
	91042	Bushing	For knob	2
	95044	Screw	For P. C. board & cover	2
	95045	Screw	For P. C. board & rear cover	2
	95030	Screw	PP2 x 12 for radiator	2

Sym- bol	Stock No.	Name of part	Description	Q'ty
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MISCELLANEOUS

	95003	Screw	PP2.6 x 4 for speaker clamp & battery meter clamp	4
	95004	Screw	PP2.6 x 6 for P.C. board, rear cover, microphone clamp, jack holder, battery compartment holder & switch holder	14
	95028	Screw	PP2.6 x 12 for radiator	1
	95029	Screw	PP2.6 x 16 for radiator	1
	95047	Screw	PP3 x 0.5 x 8 for antenna	2
	95046	Nut	LN2 for radiator	2
	95021	Nut	N2 for radiator	2
	95006	Spring washer	SW2.6 for speaker clamp, battery meter clamp, microphone clamp & switch holder, jack holder	11
	95007	Spring washer	SW3 for antenna	2
	95008	Washer	2W2.6 for rear cover & jack holder	6

CABINET

	90027	Front cabinet complete		1
	90028	Rear cover complete		1
	90029	Volume knob		2
	96029	Name plate		1
	85010	Identification card		1
	82028	Instruction book		1
	85019	Regulation book		1
	84050	Gift box		1
	84051	Unit package		1/10