



Service Manual
RCA Model 14T276
Concealed Chassis CB

RCA Model 14T276 Concealed Chassis CB



Model 14T276

40-Channel
Concealed Chassis
Citizens Band Transceiver

RCA Citizens Band
Transceiver

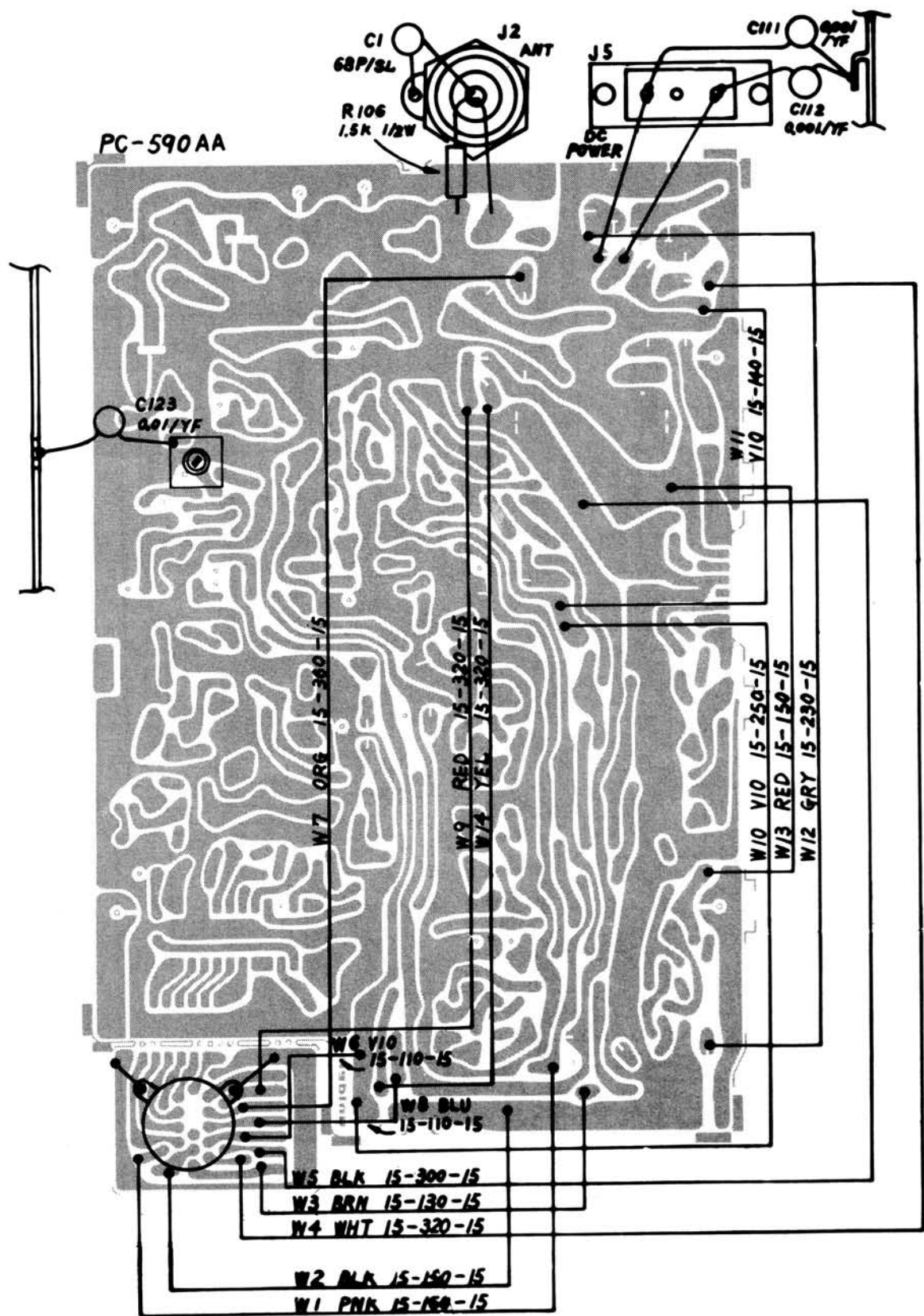
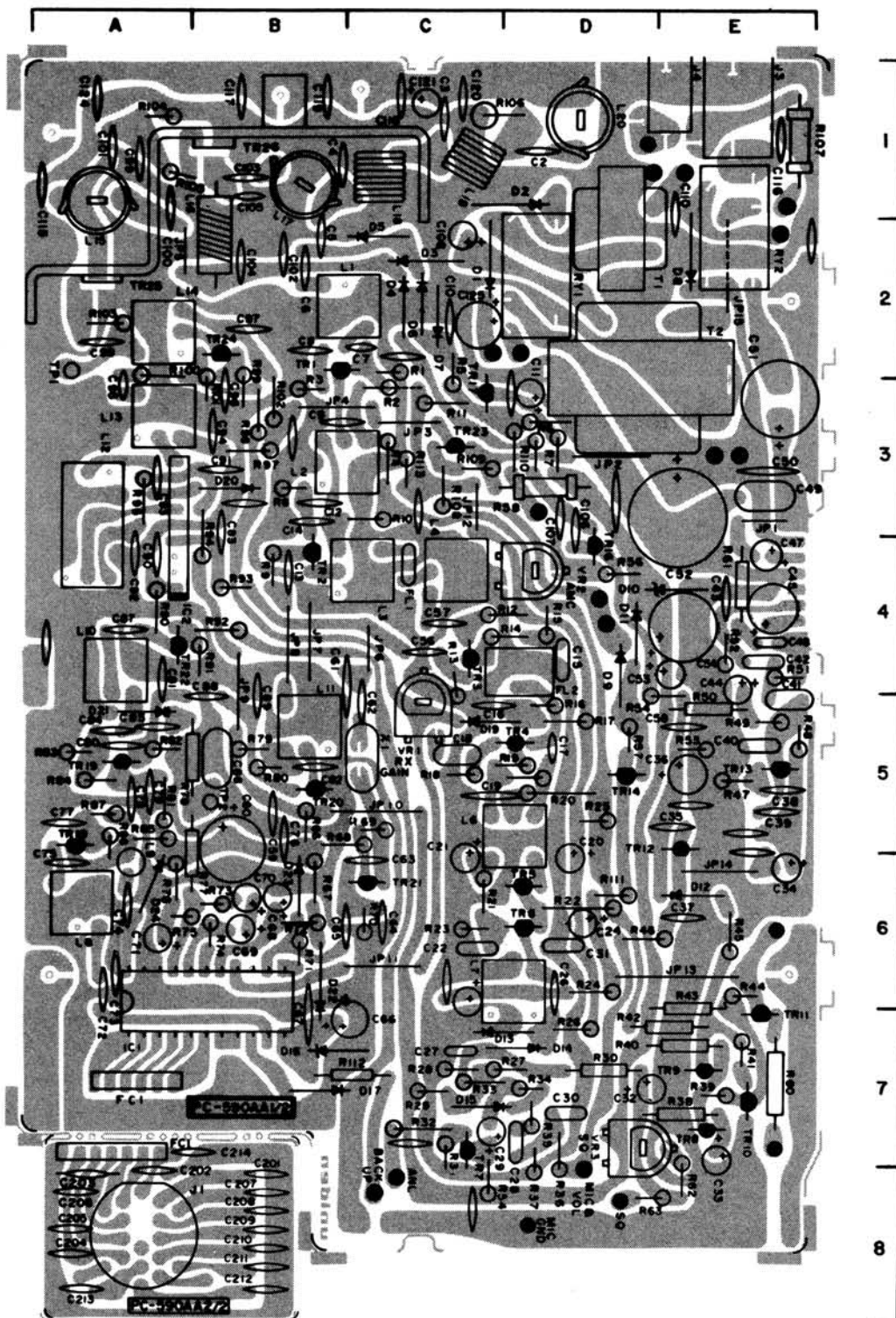


Figure 8 – Wiring Diagram – Main Board Assembly

COMPONENT
LOCATION GUIDE

C2	D1	C120	C1	R36	D8
C3	C1	C121	C1	R37	D8
C4	B1	C124	A1	R38	E7
C5	B2	C125	C2	R39	E7
C6	B2	C201	B8	R40	E7
C7	C2	C202	A8	R41	E7
C8	B2	C203	A8	R42	D7
C9	B3	C204	A8	R43	E6
C10	C2	C205	A8	R44	E6
C11	D3	C206	A8	R45	E6
C12	B3	C207	B8	R46	D6
C13	B4	C208	B8	R47	E5
C14	B3	C209	B8	R48	E5
C15	D4	C210	B8	R49	E5
C16	C5	C211	B8	R50	E5
C17	D5	C212	B8	R51	E4
C18	C5	C213	A8	R52	E4
C19	C5	C214	B7	R53	E5
C20	D5			R54	D5
C21	C5	D1	C2	R56	D4
C22	C6	D2	D1	R57	D3
C24	D6	D3	C2	R58	D5
C26	D6	D4	C2	R60	E7
C27	C7	D5	C2	R61	E4
C28	D7	D6	C2	R62	E7
C29	D7	D7	C2	R63	D8
C30	D7	D8	E2	R64	
C31	D6	D9	D4	R66	B5
C32	D7	D10	D4	R67	B6
C33	E7	D11	D4	R68	C5
C34	E6	D12	E6	R69	C5
C35	D5	D13	D7	R70	C5
C36	E5	D14	D7	R71	B6
C37	E6	D15	D7	R72	B6
C38	E5	D16	B7	R73	B6
C39	E5	D17	C7	R74	B6
C40	E5	D19	C5	R75	B6
C41	E5	D20	B3	R76	B6
C42	E4	D21	A5	R77	B5
C43	E4	D22	B6	R78	A5
C44	E4	D23	B6	R79	B5
C45	E4	D24	A6	R80	
C47	E4			R81	A5
C48	E4	FC1	A7	R82	A5
C49	E3			R83	A5
C50	E3	FL1	C4	R84	A5
C51	E3			R85	B5
C52	D3	IC1	B6	R86	A5
C53	D4	IC2	B4	R87	A5
C54	E4			R90	A4
C56	C4	J1	A8	R91	B4
C57	C4	J3	E1	R92	B4
C58	E5	J4	E1	R93	B4
C59	B5			R94	B4
C60	B5	L1	C2	R95	A3
C61	C4	L2	C3	R97	B3
C62	C5	L3	C4	R98	B3
C63	C6	L4	C4	R99	B2
C64	C6	L6	D5	R100	A2
C65	C6	L7	D6	R101	B2
C66	C7	L8	A6	R102	B3
C67	B7	L9	A6	R103	A2
C68	B6	L10	A4	R104	A1
C69	B6	L11	B5	R105	A1
C70	B6	L12	A3	R106	C1
C71	A6	L13	A3	R107	E1
C72	A6	L14	A2	R108	C3
C73	A6	L15	A1	R109	C3
C74	A6	L16	B2	R110	D3
C75	A6	L17	B1	R111	D6
C76	B5	L18	C1	R112	C7
C77	A5	L19	C1	R113	C3
C78	A5	L20	D1	RY1	D2
C80	A5	R1	C2	RY2	E2
C81	A4	R2	C3		
C82	B5	R3	B3	T1	D2
C83	B3	R4	C3	T2	D2
C84	A5	R5	C2		
C85	A5	R6	D3	TR1	B2
C86	B5	R7	D3	TR2	B4
C87	A4	R8	B3	TR3	D5
C88	B5	R9	B4	TR4	D5
C89	B5	R10	C3	TR5	D6
C90	A4	R11	C3	TR6	D6
C91	B3	R12	C4	TR7	C7
C92	A4	R13	C5	TR8	E7
C93	A3	R14	D4	TR9	E7
C94	B3	R15	D4	TR10	E7
C95	A2	R16	D5	TR11	E7
C96	B3	R17	D5	TR12	E5
C97	B2	R18	C5	TR13	E5
C98	A2	R19	D5	TR14	D6
C99	A1	R20	D5	TR16	D4
C100	A1	R21	C6	TR17	C3
C101	A1	R22	D6	TR18	A6
C102	B2	R23	C6	TR19	A6
C103	B1	R24	D6	TR20	B5
C104	B2	R25	D5	TR21	C6
C105	B1	R26	D7	TR22	B4
C106	D3	R27	D7	TR23	C3
C107	D3	R28	C7	TR24	B2
C108	C2	R29	C7	TR25	A2
C110	D1	R30	D7	TR26	B1
C115	A1	R31	C7	VR1	C6
C116	E1	R32	C7	VR2	D4
C117	B1	R33	C7	VR3	D7
C118	C1	R34	D7		
C119	B1	R35	D7	X1	C5



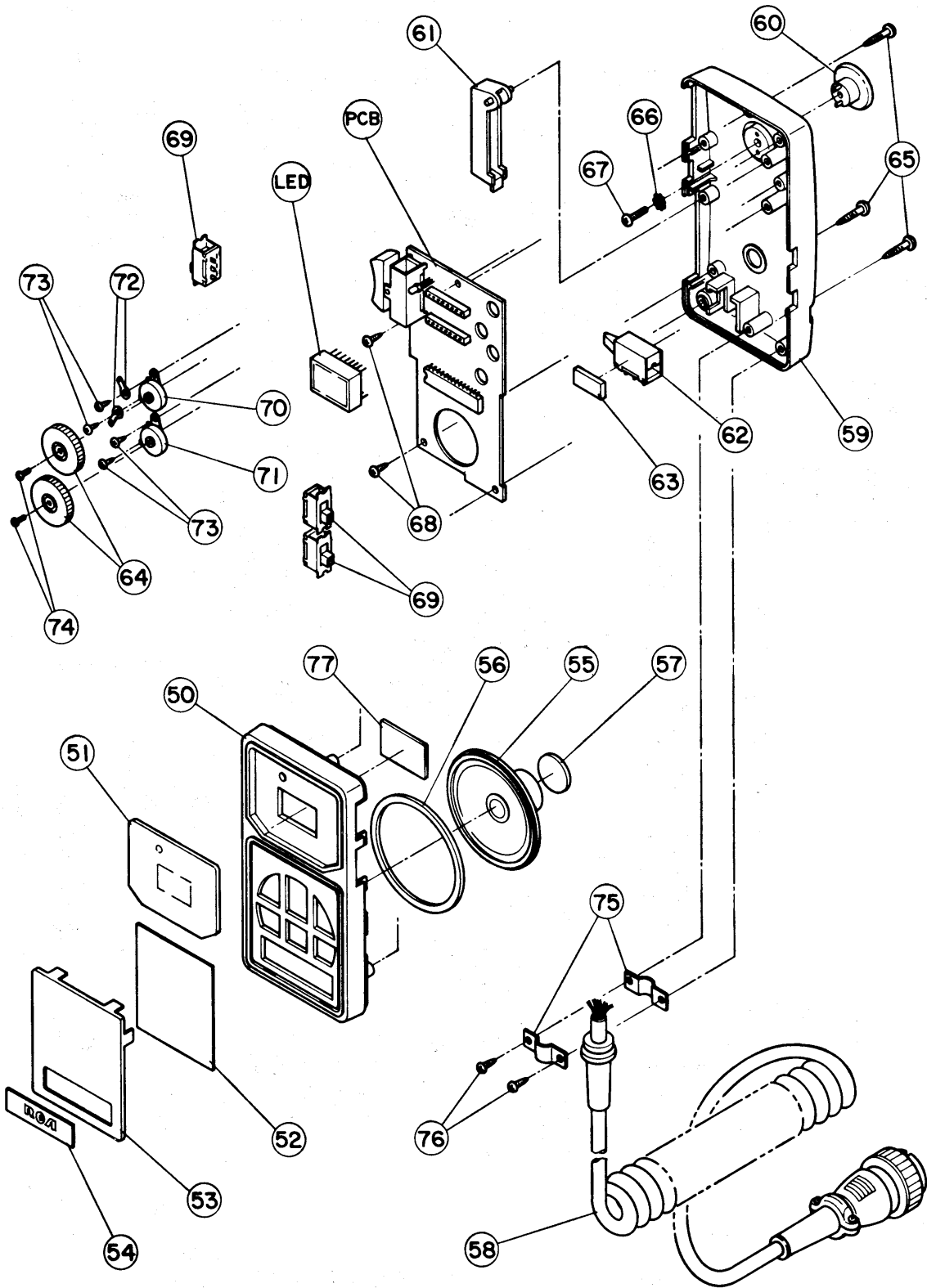


Figure 10 – Exploded View – Microphone/Speaker Assembly

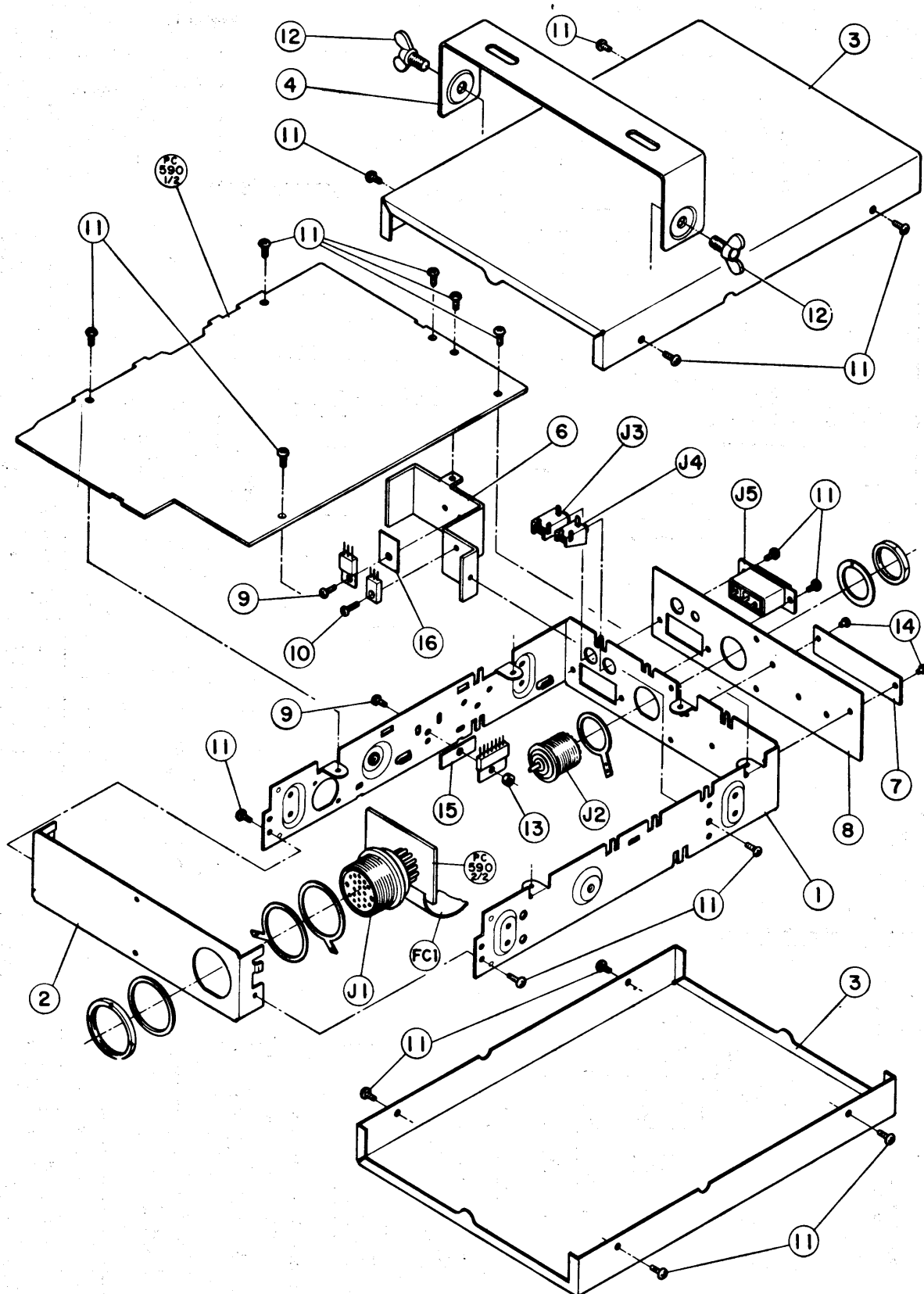


Figure 11 — Exploded View — Main Chassis Assembly

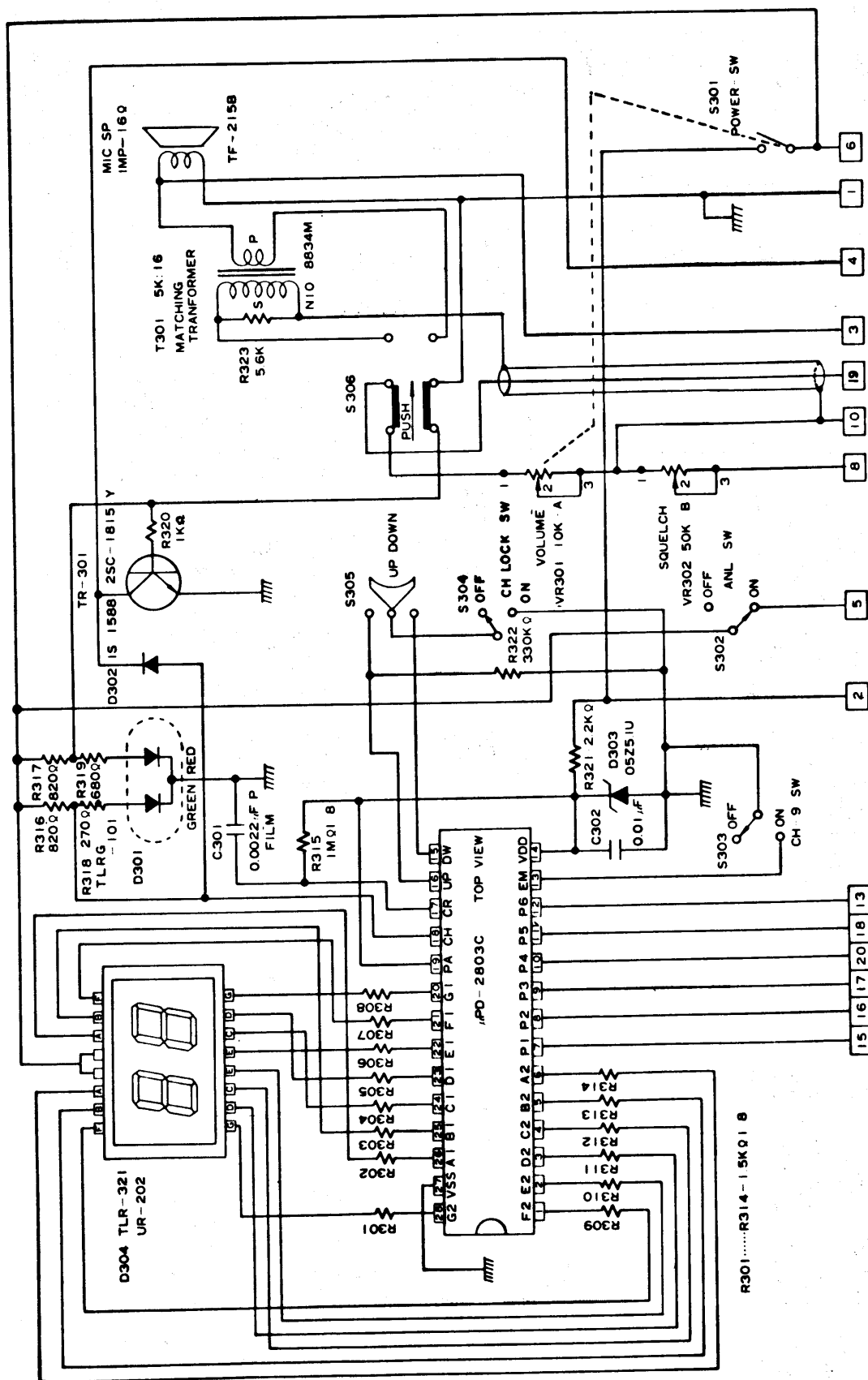


Figure 12 — Schematic Diagram — Microphone/Speaker Assembly

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
14T276 CITIZENS BAND TRANSCEIVER					
CAPACITORS					
C1	423291	68PF 50V Ceramic	C57	249943	0.01UF 50V Ceramic
C2	111839	56PF 50V Ceramic	C58	432847	0.039UF 25V Ceramic
C3	146764	330PF 50V Ceramic	C59	442260	0.047UF 25V Ceramic
C4	146764	330PF 50V Ceramic	C60	740924	330UF 10V Elect.
C5	740987	22PF 50V Ceramic	C61	437367	220PF 50V Ceramic
C6	421641	0.001UF 50V Ceramic	C62	743886	47PF 50V Ceramic
C7	421641	0.001UF 50V Ceramic	C63	442299	560PF 50V Ceramic
C8	249943	0.01UF 50V Ceramic	C64	743889	180PF 50V Ceramic
C9	249943	0.01UF 50V Ceramic	C65	437380	12PF 50V Ceramic
C10	249943	0.01UF 50V Ceramic	C66	443258	47UF 16V Elect.
C11	435877	4.7UF 25V Elect.	C67	432847	0.039UF 25V Ceramic
C12	421641	0.001UF 50V Ceramic	C68	146439	0.47UF 50V Elect.
C13	421641	0.001UF 50V Ceramic	C69	437356	2.2UF 25V Elect.
C14	249943	0.01UF 50V Ceramic	C70	437356	2.2UF 25V Elect.
C15	437364	0.039UF 50V Film	C71	129298	10UF 16V Elect.
C16	432847	0.039UF 25V Ceramic	C72	740961	5.0PF 50V Ceramic
C17	445205	1.0PF 50V Ceramic	C73	423283	100PF 50V Ceramic
C18	437364	0.039UF 50V Film	C74	249943	0.01UF 50V Ceramic
C19	442260	0.047UF 25V Ceramic	C75	743888	47PF 50V Ceramic
C20	129298	10UF 16V Elect.	C76	249943	0.01UF 50V Ceramic
C21	435877	4.7UF 25V Elect.	C77	437367	220PF 50V Ceramic
C22	437364	0.039UF 50V Film	C78	249943	0.01UF 50V Ceramic
C24	435877	4.7UF 25V Elect.	C79	743888	47PF 50V Ceramic
C26	427797	390PF 50V Ceramic	C80	437367	220PF 50V Ceramic
C27	442311	0.001UF 50V Film	C81	423291	68PF 50V Ceramic
C28	229499	0.022UF 50V Film	C82	249943	0.01UF 50V Ceramic
C29	418382	1.0UF 50V Elect.	C83	425332	270PF 50V Ceramic
C30	442325	0.0047UF 50V Film	C84	437390	27PF 50V Ceramic
C31	437364	0.039UF 50V Film	C85	423291	68PF 50V Ceramic
C32	129298	10UF 16V Elect.	C86	437365	0.068UF 50V Film
C33	435877	4.7UF 25V Elect.	C87	740838	39PF 50V Ceramic
C34	418382	1.0UF 50V Elect.	C88	437380	12PF 50V Ceramic
C35	146764	330PF 50V Ceramic	C89	743887	33PF 50V Ceramic
C36	418383	100UF 6.3V Elect.	C91	249943	0.01UF 50V Ceramic
C37	421641	0.001UF 50V Ceramic	C92	249943	0.01UF 50V Ceramic
C38	146764	330PF 50V Ceramic	C93	421641	0.001UF 50V Ceramic
C39	442299	560PF 50V Ceramic	C94	249943	0.01UF 50V Ceramic
C40	429696	0.01UF 50V Film	C95	421641	0.001UF 50V Ceramic
C41	442337	0.047UF 50V Film	C96	249943	0.01UF 50V Ceramic
C42	123876	0.015UF 50V Film	C97	249943	0.01UF 50V Ceramic
C43	442299	560PF 50V Ceramic	C98	146764	330PF 50V Ceramic
C44	435877	4.7UF 25V Elect.	C99	423283	100PF 50V Ceramic
C45	442272	100UF 10V Elect.	C100	249943	0.01UF 50V Ceramic
C47	740840	47UF 10V Elect.	C101	437367	220PF 50V Ceramic
C48	442311	0.001UF 50V Film	C102	249943	0.01UF 50V Ceramic
C49	437379	0.1UF 50V Film	C103	249943	0.01UF 50V Ceramic
C50	432847	0.039UF 25V Ceramic	C104	432847	0.039UF 25V Ceramic
C51	740925	470UF 16V Elect.	C105	111839	56PF 50V Ceramic
C52	740844	1000UF 16V Elect.	C106	421641	0.001UF 50V Ceramic
C53	146439	0.47UF 50V Elect.	C107	421641	0.001UF 50V Ceramic
C54	740653	220UF 10V Elect.	C108	146439	0.47UF 50V Elect.
C56	421641	0.001UF 50V Ceramic	C110	432847	0.039UF 25V Ceramic
			C111	421641	0.001UF 50V Ceramic
			C112	421641	0.001UF 50V Ceramic
			C115	249943	0.01UF 50V Ceramic
			C116	249943	0.01UF 50V Ceramic
			C117	249943	0.01UF 50V Ceramic
			C118	432847	0.039UF 25V Ceramic

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
C119	432847	0.039UF 25V Ceramic	L18	743880	COIL
C120	432847	0.039UF 25V Ceramic	L19	743881	COIL
C121	435875	10UF 25V Elect.	L20	743878	COIL
C122	249943	0.01UF 50V Ceramic			RESISTORS
C123	249943	0.01UF 50V Ceramic	R1	428612	1000 Ohm 5% 1/8W Carbon
C124	432847	0.039UF 25V Ceramic	R2	430554	3900 Ohm 5% 1/8W Carbon
C125	443258	47UF 16V Elect.	R3	428612	1000 Ohm 5% 1/8W Carbon
C201			R4	433122	220 Ohm 5% 1/8W Carbon
TO			R5	427816	33000 Ohm 5% 1/8W Carbon
C214	249943	0.01UF 50V Ceramic	R6	433263	68000 Ohm 5% 1/8W Carbon
CF1	743864	FILTER - Ceramic	R7	425266	3300 Ohm 5% 1/8W Comp
CF2	743865	FILTER - Ceramic	R8	425266	3300 Ohm 5% 1/8W Carbon
D1			R9	427815	1500 Ohm 5% 1/8W Film
TO			R10	433122	220 Ohm 5% 1/8W Carbon
D9	445276	DIODE - Type 1S2075K	R11	429828	10000 Ohm 5% 1/8W Carbon
D10	743859	DIODE - Type RD9.1EB1	R12	429828	10000 Ohm 5% 1/8W Carbon
D11			R13	428612	1000 Ohm 5% 1/8W Carbon
TO			R14	429824	2200 Ohm 5% 1/8W Carbon
D15	445276	DIODE - Type 1S2075K	R15	428612	1000 Ohm 5% 1/8W Carbon
D16	743858	DIODE - Type RD5.1EB2	R16	429824	2200 Ohm 5% 1/8W Carbon
D17	445276	DIODE - Type 1S2075K	R17	428612	1000 Ohm 5% 1/8W Carbon
D19	445276	DIODE - Type 1S2075K	R18	428612	1000 Ohm 5% 1/8W Carbon
D20	445276	DIODE - Type 1S2075K	R19	428612	1000 Ohm 5% 1/8W Carbon
D21	743860	DIODE - Type 1S2688EA	R20	433122	220 Ohm 5% 1/8W Carbon
D22	445276	DIODE - Type 1S2075K	R21	425261	15000 Ohm 5% 1/8W Carbon
D23	445276	DIODE - Type 1S2075K	R22	429824	2200 Ohm 5% 1/8W Carbon
D24	445276	DIODE - Type 1S2075K	R23	433122	220 Ohm 5% 1/8W Carbon
F1	743895	FUSE - 2 Amp	R24	741844	56 Ohm 5% 1/8W Film
IC1	743853	I.C. - Type UPD2814C	R25	427816	33000 Ohm 5% 1/8W Carbon
IC2	742510	I.C. - Type TA7310P	R26	429830	22000 Ohm 5% 1/8W Carbon
IC3	743854	I.C. - Type MB3712	R27	427816	33000 Ohm 5% 1/8W Carbon
J1	743891	JACK - Mike Control	R28	429831	27000 Ohm 5% 1/8W Carbon
J2	743890	JACK - Antenna	R29	423244	270000 Ohm 5% 1/8W Carbon
J3	743892	JACK - External Speaker	R30	433263	68000 Ohm 5% 1/8W Film
J4	743893	JACK - Relay Control	R31	429826	4700 Ohm 5% 1/8W Carbon
J5	743894	JACK - DC Input	R32	429826	4700 Ohm 5% 1/8W Carbon
L1	743867	COIL	R33	429833	56000 Ohm 5% 1/8W Carbon
L2	743869	COIL	R34	429833	56000 Ohm 5% 1/8W Carbon
L3	743871	COIL	R35	429834	100000 Ohm 5% 1/8W Carbon
L4	743871	COIL	R36	429833	56000 Ohm 5% 1/8W Carbon
L6	743874	COIL	R37	429833	56000 Ohm 5% 1/8W Carbon
L7	743876	COIL	R38	429830	22000 Ohm 5% 1/8W Film
L8	743877	COIL	R39	429834	100000 Ohm 5% 1/8W Carbon
L9	743882	COIL	R40	429828	10000 Ohm 5% 1/8W Film
L10	743870	COIL	R41	429826	4700 Ohm 5% 1/8W Carbon
L11	743873	COIL	R42	428612	1000 Ohm 5% 1/8W Film
L12	743872	COIL	R43	429826	4700 Ohm 5% 1/8W Film
L13	743868	COIL	R44	429826	4700 Ohm 5% 1/8W Carbon
L14	743875	COIL	R45	429826	4700 Ohm 5% 1/8W Carbon
L15	743878	COIL	R46	430554	3900 Ohm 5% 1/8W Carbon
L16	743879	COIL	R47	429822	820 Ohm 5% 1/8W Carbon
L17	743878	COIL	R48	433323	82000 Ohm 5% 1/8W Carbon
			R49	422021	6800 Ohm 5% 1/8W Carbon
			R54	429824	2200 Ohm 5% 1/8W Carbon
			R50	428612	1000 Ohm 5% 1/8W Film
			R51	429828	10000 Ohm 5% 1/8W Carbon
			R52	425261	15000 Ohm 5% 1/8W Carbon

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
R53	429828	10000 Ohm 5% 1/8W Carbon	T1	743883	TRANSFORMER — AF Choke
R56	428612	1000 Ohm 5% 1/8W Carbon	T2	743884	TRANSFORMER — Output
R57	428612	1000 Ohm 5% 1/8W Carbon			
R58	740809	56 Ohm 5% 1W Film	TR1	742710	TRANSISTOR — Type 2SC763-C
R60	502010	10 Ohm 5% 1/2W Film	TR2	743855	TRANSISTOR — Type 2SK19-BL
R61	429827	8200 Ohm 5% 1/8W Film	TR3	741726	TRANSISTOR — Type 2SC710-D
R62	429828	10000 Ohm 5% 1/8W Carbon	TR4	741726	TRANSISTOR — Type 2SC710-D
R63	428612	1000 Ohm 5% 1/8W Carbon	TR5	741726	TRANSISTOR — Type 2SC710-D
R64	429833	56000 Ohm 5% 1/8W Carbon	TR6	741726	TRANSISTOR — Type 2SC710-D
R66	429815	22 Ohm 5% 1/8W Film	TR7	171554	TRANSISTOR — Type 2SC711-D
R67	443463	150 Ohm 5% 1/8W Carbon	TR8	171554	TRANSISTOR — Type 2SC711-D
R68	246910	100 Ohm 5% 1/8W Carbon	TR9	171554	TRANSISTOR — Type 2SC711-D
R69	433323	82000 Ohm 5% 1/8W Carbon	TR10	171554	TRANSISTOR — Type 2SC711-D
R70	429825	2700 Ohm 5% 1/8W Comp	TR11	443333	TRANSISTOR — Type 2SD355-D
R71	425261	15000 Ohm 5% 1/8W Carbon	TR12	171554	TRANSISTOR — Type 2SC711-D
R72	429828	10000 Ohm 5% 1/8W Carbon	TR13	171554	TRANSISTOR — Type 2SC711-D
R73	429825	2700 Ohm 5% 1/8W Carbon	TR14	171554	TRANSISTOR — Type 2SC711-D
R74	422021	6800 Ohm 5% 1/8W Carbon	TR16	171555	TRANSISTOR — Type 2SA628-F
R75	431026	1200 Ohm 5% 1/8W Carbon	TR17	171554	TRANSISTOR — Type 2SC711-D
R76	433122	220 Ohm 5% 1/8W Carbon	TR18	741726	TRANSISTOR — Type 2SC710-D
R77	429828	10000 Ohm 5% 1/8W Film	TR19	741726	TRANSISTOR — Type 2SC710-D
R78	429828	10000 Ohm 5% 1/8W Film	TR20	741726	TRANSISTOR — Type 2SC710-D
R79	429824	2200 Ohm 5% 1/8W Carbon	TR21	741726	TRANSISTOR — Type 2SC710-D
R80	429833	56000 Ohm 5% 1/8W Carbon	TR22	741726	TRANSISTOR — Type 2SC710-D
R81	246910	100 Ohm 5% 1/8W Carbon	TR23	171555	TRANSISTOR — Type 2SA628-F
R82	428612	1000 Ohm 5% 1/8W Comp	TR24	741726	TRANSISTOR — Type 2SC710-D
R83	429828	10000 Ohm 5% 1/8W Carbon	TR25	743856	TRANSISTOR — Type 2SC2028 B/20
R84	429832	39000 Ohm 5% 1/8W Carbon	TR26	743857	TRANSISTOR — Type 2SC2029 B/10
R85	428612	1000 Ohm 5% 1/8W Carbon			
R86	429834	100000 Ohm 5% 1/8W Carbon	VR1	743861	RESISTOR 500 Ohm Variable
R87	429816	120 Ohm 5% 1/8W Film	VR2	743862	1000 Ohm Variable
R90	433123	560 Ohm 5% 1/8W Carbon	VR3	743863	100000 Ohm Variable
R91	428612	1000 Ohm 5% 1/8W Carbon			
R92	429826	4700 Ohm 5% 1/8W Carbon	X1	743896	CRYSTAL — 10.24 MHZ
R93	440613	330 Ohm 5% 1/8W Carbon			
R94	443463	150 Ohm 5% 1/8W Carbon	4	743897	BRACKET — Mounting
R95	429815	22 Ohm 5% 1/8W Film	9	743899	SCREW — Pan HD Plastic (5/Pkg)
R97	429819	390 Ohm 5% 1/8W Carbon	10	743900	SCREW — Pan HD Plastic (5/Pkg)
R98	430554	3900 Ohm 5% 1/8W Carbon	11	743901	SCREW — Binder HD (5/Pkg)
R99	741844	56 Ohm 5% 1/8W Film	12	743902	BOLT — Wing (2/Pkg)
R101	427815	1500 Ohm 5% 1/8W Carbon	13	743903	NUT — Hex (5/Pkg)
R102	425255	47 Ohm 5% 1/8W Film			
R103	429815	22 Ohm 5% 1/8W Film			
R104	425255	47 Ohm 5% 1/8W Film			
R106	743885	1.0 Ohm 5% 1/8W Film		743904	CABLE — DC Power
R108	502215	1500 Ohm 5% 1/2W Film		743898	HOLDER — Microphone
R107	740930	22 Ohm 5% 1W Film			
R108	429826	4700 Ohm 5% 1/8W Comp			
R109	428612	1000 Ohm 5% 1/8W Carbon			
R110	429828	10000 Ohm 5% 1/8W Carbon			
R111	246910	100 Ohm 5% 1/8W Carbon	C301	437375	CAPACITORS 0.0022 UF 10% 50V Film
R112	429826	4700 Ohm 5% 1/8W Film	C302	249943	0.01 UF 10% 100V Cer
R113	427816	33000 Ohm 5% 1/8W Carbon	D301	744593	DIODE — L.E.D. Type TLRG101
R114	429831	27000 Ohm 5% 1/8W Carbon	D302	741051	DIODE — Type 1S1588
R115	43315	1800 Ohm 5% 1/8W Carbon	D303	744594	DIODE — Type 0.5Z5.1U
			D304	744594	DISPLAY — Channel L.E.D. Type UR202
RY1	743866	RELAY — Power XMIT/Recv.			
RY2	743866	RELAY — Audio XMIT/Recv.	IC301	744596	I.C. — Type KS-2056-808
			J301		CONNECTOR — 20 Pin (Part of IT No. 58)

SYMB. NO.	STOCK NO.	DESCRIPTION	SYMB. NO.	STOCK NO.	DESCRIPTION
R301 TO		RESISTORS	VR302	744588	CONTROL — 50000 Ohm Variable Squelch (Same as IT No. 71)
R314	427815	1500 Ohm 5% 1/8W Film	XIC301	744599	SOCKET — I.C. (For IC301)
R315	433342	1000000 Ohm 5% 1/8W Film	50	744575	COVER — Front (Incls Items No. 51,52)
R316	429822	820 Ohm 5% 1/8W Film	55	744576	SPEAKER — (Includes Items No. 56,57)
R317	429822	820 Ohm 5% 1/8W Film	58	744577	CABLE — Microphone (Includes J301)
R318	741883	270 Ohm 5% 1/8W Film	59	744578	COVER — Back
R319	429821	270 Ohm 5% 1/8W Film	60	744579	HANGER — Knob
R320	428612	1000 Ohm 5% 1/8W Film	61	744580	KNOB — Push to Talk
R321	429824	2200 Ohm 5% 1/8W Film	62	744581	SWITCH — Push (Same as S306)
R322	436537	330000 Ohm 5% 1/8W Film	64	744582	KNOB — Volume/Squelch On/Off
R323	422020	5600 Ohm 5% 1/8W Film	65	744583	SCREW — 3.1X16MM (5/Pkg)
S301		SWITCH — On/Off (Part of VR301)	67	744584	SCREW — M3X8MM (5/Pkg)
S302	744586	SWITCH — Slide On/Off Ant (Same)	68	744585	SCREW — M2.6X6MM (5/Pkg)
S303	744586	SWITCH — Slide On/Off Ch 9 As Item	69	744586	SWITCH — Slide (Same as S302, S303, S304)
S304	744586	SWITCH — Slide On/Off Ch Lock No. 69)	70	744587	RESISTOR — 10000 Ohm Variable Incls S301 (Same as VR301)
S305	744597	SWITCH — Channel Up/Down	71	744588	RESISTOR — 50000 Ohm Variable (Same as VR302)
S306	744581	SWITCH — Push to Talk (Same as No. 62)	73	744589	SCREW — M2X6MM (5/Pkg)
T301	744598	TRANSFORMER — Matching	74	744590	SCREW — M1.7X4MM (5/Pkg)
TR301	147499	TRANSISTOR — Type 2SC1815Y	75	744591	RETAINER — Mike Cable (5/Pkg)
VR301	744587	CONTROL Ohm Variable Volume (Incl S301 Same as IT No. 70)	76	744592	SCREW — M2.6X10MM (5/Pkg)

Contents

	Page
Specifications	3
General Description	3
Circuit Description	4
CB Channel Frequencies	5
Servicing	6
Test Equipment	6
PLL Alignment	6
Receiver Alignment	8
Transmitter Alignment	10
Replacement Parts	23

List of Illustrations

Figure 1 – PLL Alignment Points	7
Figure 2 – Receiver Alignment Test Equipment Set-Up	8
Figure 3 – Receiver Alignment Points	9
Figure 4 – Transmitter Alignment Test Equipment Set-Up	10
Figure 5 – Transmitter Alignment Points	11
Figure 6 – Transceiver Signal Paths	12
Figure 7 – Printed Board – Microphone/Speaker Assembly	13
Figure 8 – Wiring Diagram – Main Board Assembly	14
Figure 9 – Printed Board – Main Board Assembly	15
Figure 10 – Exploded View – Microphone/Speaker Assembly	16
Figure 11 – Exploded Biew – Main Chassis Assembly	17
Figure 12 – Schematic Diagram – Microphone/Speaker Assembly	18
Figure 13 – Schematic Diagram – 14T276 Transceiver	19 – 20

Specifications

General

Frequency Range 26.965 – 27.405 MHz
Channels 40 (PLL synthesized)
Antenna Input Impedance 50 Ohms
Power Source 12 – 15 VDC (13.8V nom.)
Size (W x D x H) 5-1/2" x 7-13/16" x 1-5/8"
Weight 3 lbs

Transmitter

Emission Type 6A3
RF Power Output 4 Watts
Modulation AM
Modulation Level Up to 100% Max (FCC specs)
Attenuation of Spurious and
Harmonic Radiation Better than -70 dB

Hum and Noise Better than -60 dB
Frequency Tolerance 0.002%

Receiver

Sensitivity at 10 dB S + N/N 0.5 μ V
Sensitivity at 500 mW audio output 0.5 μ V
Squelch Threshold 0.5 μ V
Squelch Tight 1000 μ V
Audio Power Output (Max) 5 Watts
Audio Power Output (10% Dist.) 4 Watts
Selectivity (@ 6 dB down) 7 kHz
Adjacent Channel Rejection -60 dB
Image Rejection -70 dB
Speaker Impedance 16 Ohms

Important Notice

FCC Regulations stipulate that the transmitter portion of the transceiver described in this manual must be serviced by (or only under the direct supervision of) a technician holding a First Class or Second Class FCC Radiotelephone License.

Servicing is defined as any internal adjustments or replacement of crystals, transistors and/or any other components which affect proper transmitter performance.

Information furnished by RCA is believed to be accurate and reliable. However, no responsibility is assumed by RCA for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent right of RCA. RCA retains the right to make changes in this product at its discretion as may be periodically required.

General Description

Model 14T276 Citizens Band Transceiver is a solid state, 40 channel, concealed chassis, AM radio transmitter/receiver designed for two-way communication in the 27 MHz citizens band. All controls are contained on a specially designed hand-held microphone/speaker unit.

The main chassis unit is intended for a concealed mounting location in cars or trucks, such as behind vehicle dash on firewall, under front seat or (with optional extension cable) in the trunk or under rear seat.

The 14T276 features include electronic channel selection, channel lock switch, channel 9 (emergency channel) switch,

digital channel readout, ANL on/off switch and a transmit/receive indicator light. The hand-held microphone/control unit incorporates all controls and includes the unit speaker. A separate speaker may be connected to an external speaker jack provided on the main chassis.

The unit may be used in any car, truck, boat or recreational vehicle that uses a 12 volt (nominal) DC positive or negative ground system. Components comprising the 14T276 package include: — the microphone/control unit with coiled cord; the main chassis unit; under-dash microphone bracket; power cord, and a 6-foot cable for connection from the concealed chassis location to the microphone bracket.

Circuit Description

The 14T276 transceiver employs electronic channel selection and digital channel readout. Both functions are contained in the microphone/speaker unit, which incorporates all controls. An external speaker jack is provided on the main chassis for use of an external speaker.

Phase Lock Loop Circuitry

Model 14T276 uses a phase-lock loop (PLL) system for synthesis of the highly precise carrier and control oscillator signals developed for use by the transmitter and receiver sections of the transceiver unit.

A free-running voltage controlled oscillator (VCO) TR19 derives its control from IC1 which contains a programmable divider, buffer and phase detector. These in turn are controlled by the 10.24 MHz oscillator TR21.

The VCO generates signals of 16.27 MHz to 16.71 MHz in the "RECEIVE" mode, and 16.725 MHz to 17.165 MHz in the "TRANSMIT" mode. (See Table Page 5.) Control voltages for receive and transmit are furnished by IC1, which changes output to the VCO depending on whether the mode is receive or transmit.

The crystal-controlled reference oscillator TR21 operates at 10.24 MHz and feeds a buffer in IC1. A 1/1024 divider in IC1 produces a highly precise 10 kHz signal for VCO control, via the phase detector in IC1. The phase detector develops a DC voltage in proportion to the phase difference between the divided down reference oscillator signal and the signal developed in the channel selection circuit. Any difference alters the VCO frequency shifting the VCO until it locks with the reference oscillator, resulting in a VCO frequency 10.695 MHz below the channel frequency in the RECEIVE mode, or 10.24 MHz in the TRANSMIT mode.

Electronic Channel Selection

With the operating controls in the microphone/speaker unit, channel selection is made by an UP/DOWN switch on the hand-held unit, rather than the familiar rotary channel switch or pushbutton selection. Channel selection is actually performed as a function of IC301 in the microphone/speaker unit. This IC performs two basic functions; channel selection and digital channel readout. A read-only memory (ROM) in the IC is programmed with the channel digital code, see chart Page 5. When the UP/DOWN switch is actuated, an UP/DOWN counter in the IC shifts the operating channel at a preset rate causing

an LED in the IC to switch sections in the LED display to change the indicated channel. Simultaneously this code feeds to IC1 in the main chassis unit programming the PLL for the corresponding channel selection. During channel selection the receiver and transmitter are temporarily rendered inoperative.

Transmitter RF System

Carrier frequency for transmission is generated in IC2 by beating a 10.24 MHz signal from the reference oscillator TR21 with the VCO signal developed through IC1 by the channel selection programmed in IC301. This VCO signal is always 10.24 MHz below the selected channel frequency, therefore the output of IC2 will be the carrier frequency of the channel selected. For example: the channel frequency for channel 19 is 27.185 MHz. By selecting channel 19 on the hand unit, the proper code is fed to pins 1 – 6 in IC1 (see Table page 5) creating an output signal to produce a frequency of 16.945 MHz by the VCO. This signal beat with a signal from the 10.24 MHz reference oscillator in IC2, produces an output which is the sum of these two frequencies, namely 27.185 MHz, the carrier frequency for channel 19. This signal is then passed through L13 to predriver T24, then to Driver TR26 and Power Amplifier TR26, and on to the antenna.

Audio and Modulator System

The voice signal in the transmit mode feeds from the speaker/microphone in the hand-held unit to TR12, then on to Modulator TR16. The output feeds to the collectors of TR25 and TR26 to modulate the amplifiers in the RF chain. TR13 is an ALC transistor whose circuitry acts to prevent overmodulation by controlling the audio gain from the microphone.

Receiver System

The receiver comprises a double conversion system with a two-stage 455 kHz IF amplifier circuit. In the 1st Mixer TR2, the RF channel signal from TR1, RF Amplifier, is beat with the 16 MHz "RECEIVE" signal from the VCO TR19. This results in a 10.695 MHz signal out of the 1st Mixer. This signal is fed to the Second Mixer TR3 through filter CF1. This signal is beat in the 2nd Mixer with a 10.24 MHz signal from reference oscillator TR21. The resultant difference frequency of 455 kHz becomes the receiver intermediate frequency.

The second mixer output at 455 kHz is passed through filter CF2 (for amplifier selectivity) and on to IF amplifier TR4. Cascaded grounded emitter amplifiers TR5 and TR6 amplify the IF signal fed to the detector circuit.

Squelch voltage is developed in TR8 to determine the squelch level of the receiver. At low level, TR8 conducts

heavily and the output blocks the audio amplifier. If the incoming signal level is of a higher order, TR8 is unsaturated and the audio amplifier is allowed to operate and pass on the audio signal. The setting of the SQUELCH control determines the point at which the squelch circuit opens, passing the audio signal.

CHAN. NO.	CHAN. FREQ. MHz	VCO FREQ. (RECEIVE)	VCO FREQ. (TRANSMIT)	CHANNEL CODE FROM IC301 OUTPUT TO IC1 INPUT					
				*P1	P2	P3	P4	P5	P6
1	26.965	16.27	16.725	1	0	0	0	0	0
2	26.975	16.28	16.735	0	1	0	0	0	0
3	26.985	16.29	16.745	1	1	0	0	0	0
4	27.005	16.31	16.765	0	0	1	0	0	0
5	27.015	16.32	16.775	1	0	1	0	0	0
6	27.025	16.33	16.785	0	1	1	0	0	0
7	27.035	16.34	16.795	1	1	1	0	0	0
8	27.055	16.36	16.815	0	0	0	1	0	0
9	27.065	16.37	16.825	1	0	0	1	0	0
10	27.075	16.38	16.835	0	0	0	0	1	0
11	27.085	16.39	16.845	1	0	0	0	1	0
12	27.105	16.41	16.865	0	1	0	0	1	0
13	27.115	16.42	16.875	1	1	0	0	1	0
14	27.125	16.43	16.885	0	0	1	0	1	0
15	27.135	16.44	16.895	1	0	1	0	1	0
16	27.155	16.46	16.915	0	1	1	0	1	0
17	27.165	16.47	16.925	1	1	1	0	1	0
18	27.175	16.48	16.935	0	0	0	1	1	0
19	27.185	16.49	16.945	1	0	0	1	1	0
20	27.205	16.51	16.965	0	0	0	0	0	1
21	27.215	16.52	16.975	1	0	0	0	0	1
22	27.225	16.53	16.985	0	1	0	0	0	1
23	27.255	16.56	17.015	1	1	0	0	0	1
24	27.235	16.54	16.995	0	0	1	0	0	1
25	27.245	16.55	17.005	1	0	1	0	0	1
26	27.265	16.57	17.025	0	1	1	0	0	1
27	27.275	16.58	17.035	1	1	1	0	0	1
28	27.285	16.59	17.045	0	0	0	1	0	1
29	27.295	16.60	17.055	1	0	0	1	0	1
30	27.305	16.61	17.065	0	0	0	0	1	1
31	27.315	16.62	17.075	1	0	0	0	1	1
32	27.325	16.63	17.085	0	1	0	0	1	1
33	27.335	16.64	17.095	1	1	0	0	1	1
34	27.345	16.65	17.105	0	0	1	0	1	1
35	27.355	16.66	17.115	1	0	1	0	1	1
36	27.365	16.67	17.125	0	1	1	0	1	1
37	27.375	16.68	17.135	1	1	1	0	1	1
38	27.385	16.69	17.145	0	0	0	1	1	1
39	27.395	16.70	17.155	1	0	0	1	1	1
40	27.405	16.71	17.165	0	0	0	0	0	0

*P1 to P6 indicate pin numbers on IC1

Channel Frequency Table

Servicing

Model 14T276 Citizens Band Transceiver performance depends upon the high quality of components used and upon proper servicing techniques. Servicing must be performed by FCC licensed, fully qualified technical personnel. Only use of the replacement parts given in the parts list of this booklet should be employed in repair of this unit.

Illustrations to aid in servicing and adjustment, such as top views, superimposed printed board views, wiring diagrams and exploded views, are provided to assist in proper and competent servicing. An overall schematic diagram is included on pages 19 – 20. The main printed board shows map grid coordinates which are keyed to the component location guide for fast location of component locations on the board. Exploded views of the main chassis unit and microphone/speaker unit identify mechanical parts by balloon callouts. These balloons correspond to identical numbers in the mechanical parts at the end of the parts list.

Test Equipment

The following test equipment is required for servicing the 14T276 Transceiver.

1. A 50 ohm resistive antenna load with a power capability of 5 watts or more, such as Bird Model 43 "thru line" wattmeter with a 5A Element and a Model 8053 RF Coaxial Load Resistor, or equivalent.
2. A frequency counter operable in the required CB range, such as Hewlett-Packard Model HP 5283A or suitable equivalent.
3. A HF Signal Generator which operates in the 50 kHz to 65 MHz frequency range with +1% accuracy, such as Hewlett-Packard HP-606B, Wavetek Model 3000 or equivalent.
4. An oscilloscope capable of accurate monitoring of DC to 50 MHz.
5. High Input impedance Electronic Voltmeter such as a WV-500B or equivalent.
6. A 4 ohm 5 watt resistive dummy speaker load.
7. An Audio Signal Generator, 10 Hz to 20 kHz range.
8. An RF Voltmeter. (WV-500B with WG-301A Probe)
9. A regulated bench DC power supply capable of supplying 0 – 20 VDC at least 2 amperes.
10. DC Voltmeter with 20k ohms/V rating.
11. A VTVM such as RCA Volt Ohmyst.

Caution

The operating controls being in the hand-held mic./speaker unit, means that operation of the transceiver with the hand-held unit disconnected is impossible. As a result, a dummy mic. connector cannot be used. This presents a serious danger to test equipment used in troubleshooting receiver circuitry in that inadvertent keying of the transmitter could damage the test gear. *As a result, we recommend that you disable the push-to-talk switch while troubleshooting and/or aligning receiver circuits.* The easiest way is to remove, temporarily, the push-to-talk lever from the hand-held unit. See page 16 for assembly drawing of hand-held unit.

PLL Alignment

1. Connect the DC Voltmeter to test point TP2 as shown in Figure 1. Set receiver to Channel 40. Adjust L10 for a reading of 4.0 VDC on meter.
2. Set receiver to Channel 1 and with DC Voltmeter still connected to TP2, check that the DC voltage reading on the meter is more than 2 VDC.
3. Connect the oscilloscope to the PLL test point, see Figure 1, reset the receiver to Channel 40 and adjust coil L8 for maximum indication on the oscilloscope.

Figure 1 – PLL Alignment Points

Receiver Alignment

Connect test equipment to transceiver unit as shown in block diagram Figure 2. Preset the transceiver to Receive Channel 19, with SQUELCH control fully counter-clockwise and ANL switch to OFF.

1. Adjust signal generator for a 1 μ V signal input to the antenna.
2. Adjust L1, L2, L3, L4, L11, L6 and L7, in this order for maximum reading on the AF V.T.V.M. Refer to Figure 3.
3. Reduce signal output from generator for 0.7 μ V input to the antenna. Adjust VR1, see Figure 3, for 1.4 volts RMS on the AF VTVM.
4. Turn SQUELCH control clockwise. Introduce a 1 mV signal from the generator into the antenna jack. Adjust VR3, see Figure 3, so that the AF signal just begins to appear on the oscilloscope.

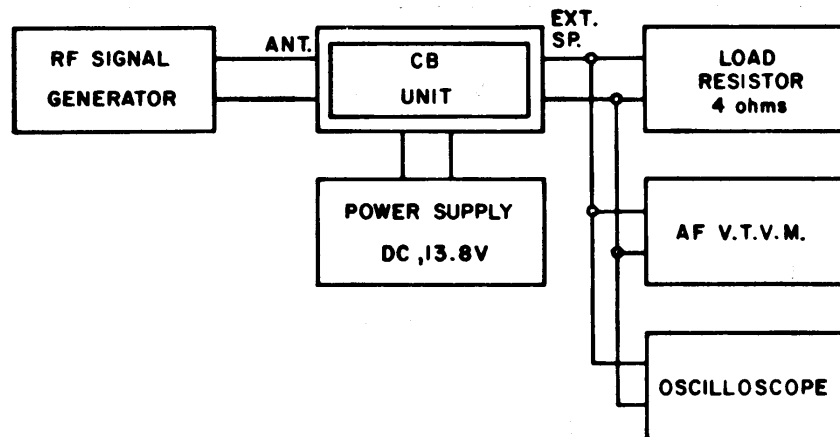


Figure 2 — Receiver Alignment Test Equipment Set-Up

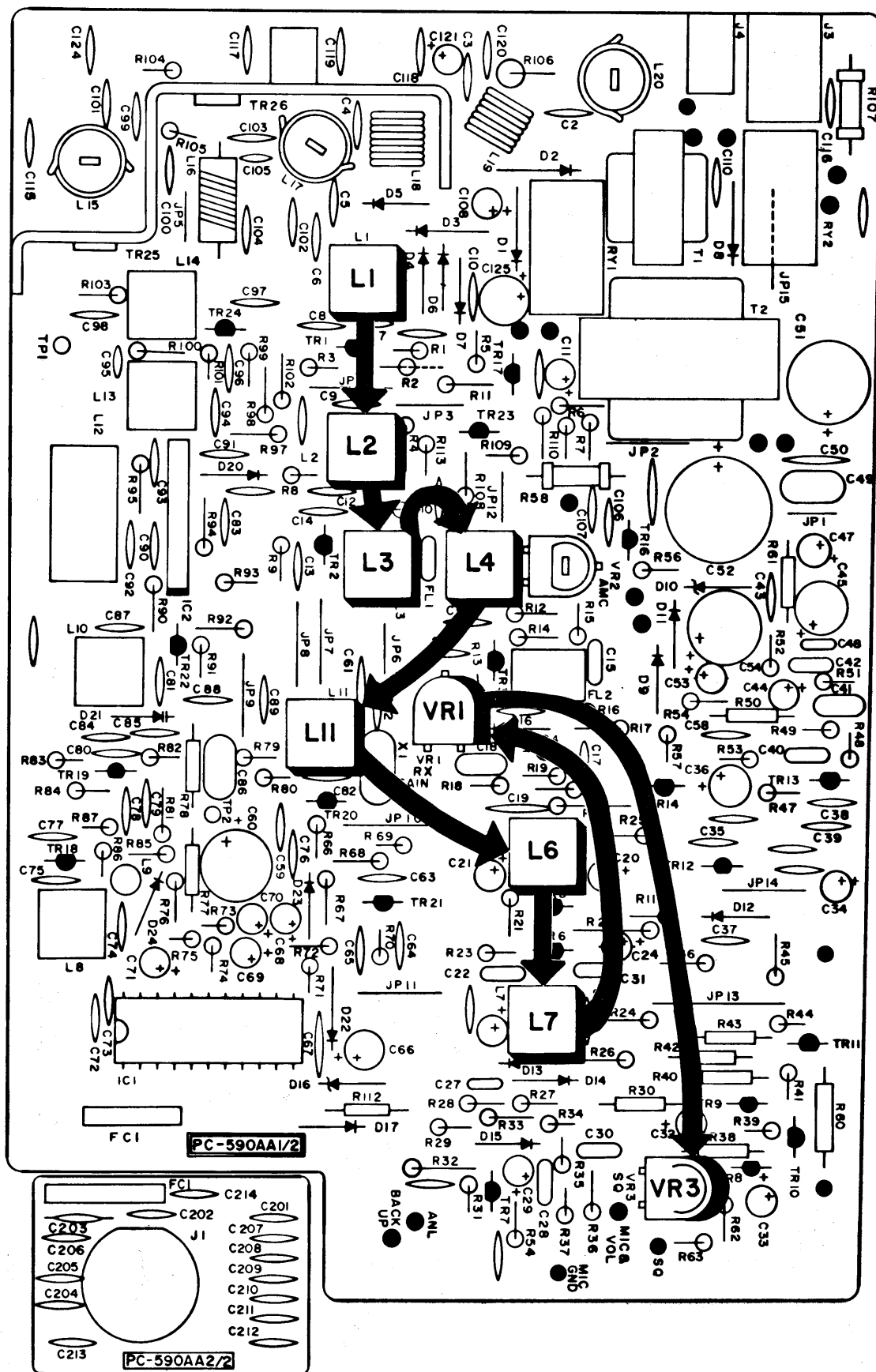


Figure 3 – Receiver Alignment Points

Transmitter Alignment

Connect the test equipment as indicated in the block diagram Figure 4. Preset the transceiver to Channel 40. Disconnect one end of the lead between pin 19 of the microphone jack (usually pink wire) and the main PC board at the PC board end. This is physically located between R36 and VR3 at the junction of R36 and R46. (see Figure 5). Connect the AF Oscillator to the junction of R46 and R36 at point shown in Figure 5. The push-to-talk switch is depressed for each of the following steps.

1. Connect the oscilloscope to TP1 on the Main PC board, see Figure 5. Activate the transmitter and adjust L12, L13 then L14, in this order, for maximum indication on the oscilloscope.
2. Set the transceiver to Channel 19. Activate the transmitter and adjust L14, L15 and L17 for maximum reading on the Wattmeter.
3. Set the transceiver to Channel 40 and adjust L20 for minimum harmonic output.
4. Set the AF Oscillator output for a 150 mV signal on the AF VTVM.
5. Set the transceiver to Channel 19 and adjust VR2, see Figure 5, for 100% modulation on the oscilloscope.

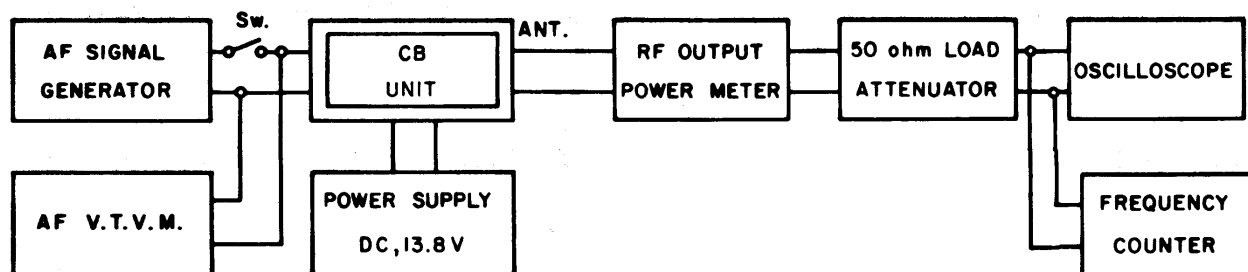


Figure 4 – Transmitter Alignment Test Equipment Set-Up

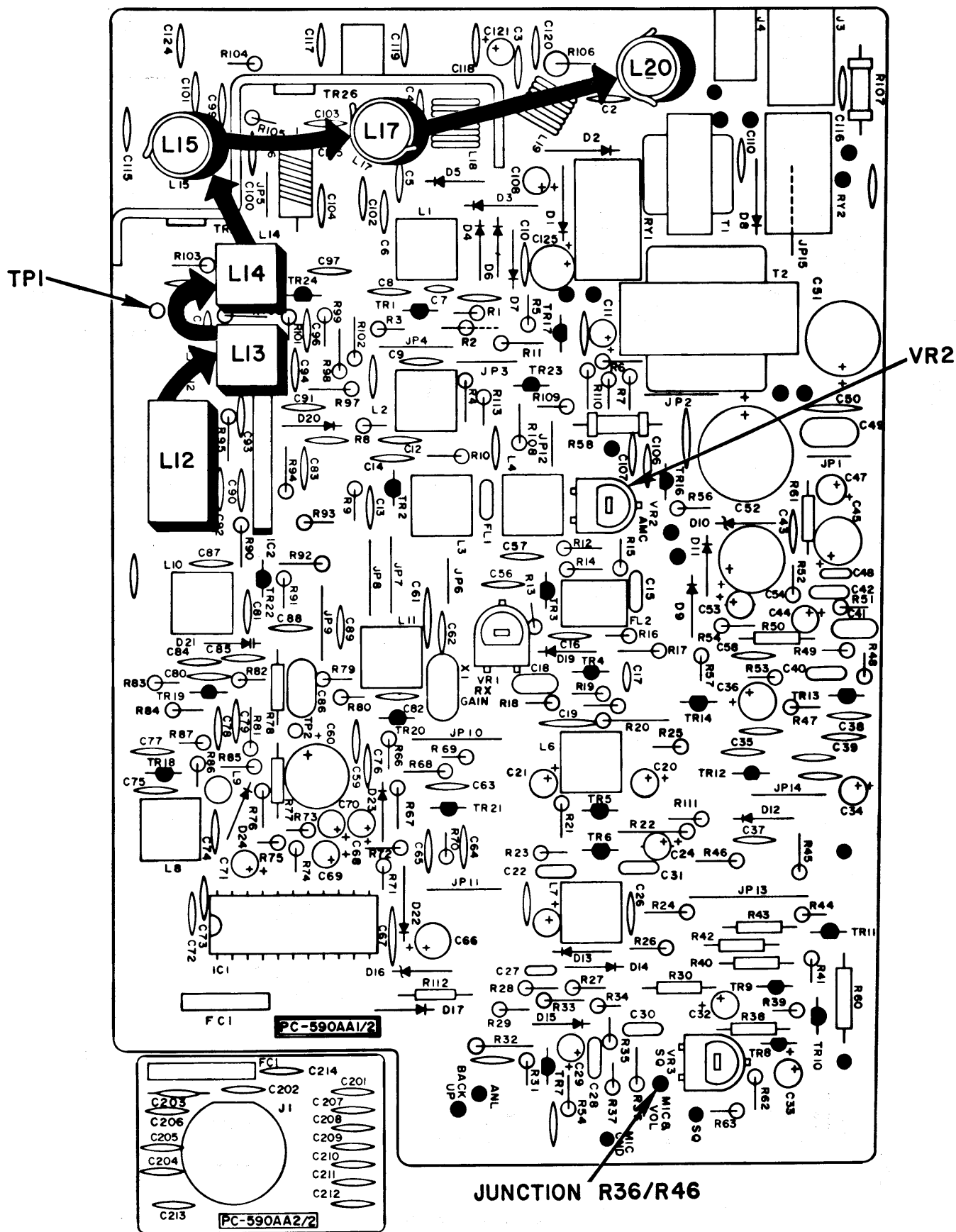


Figure 5 – Transmitter Alignment Points

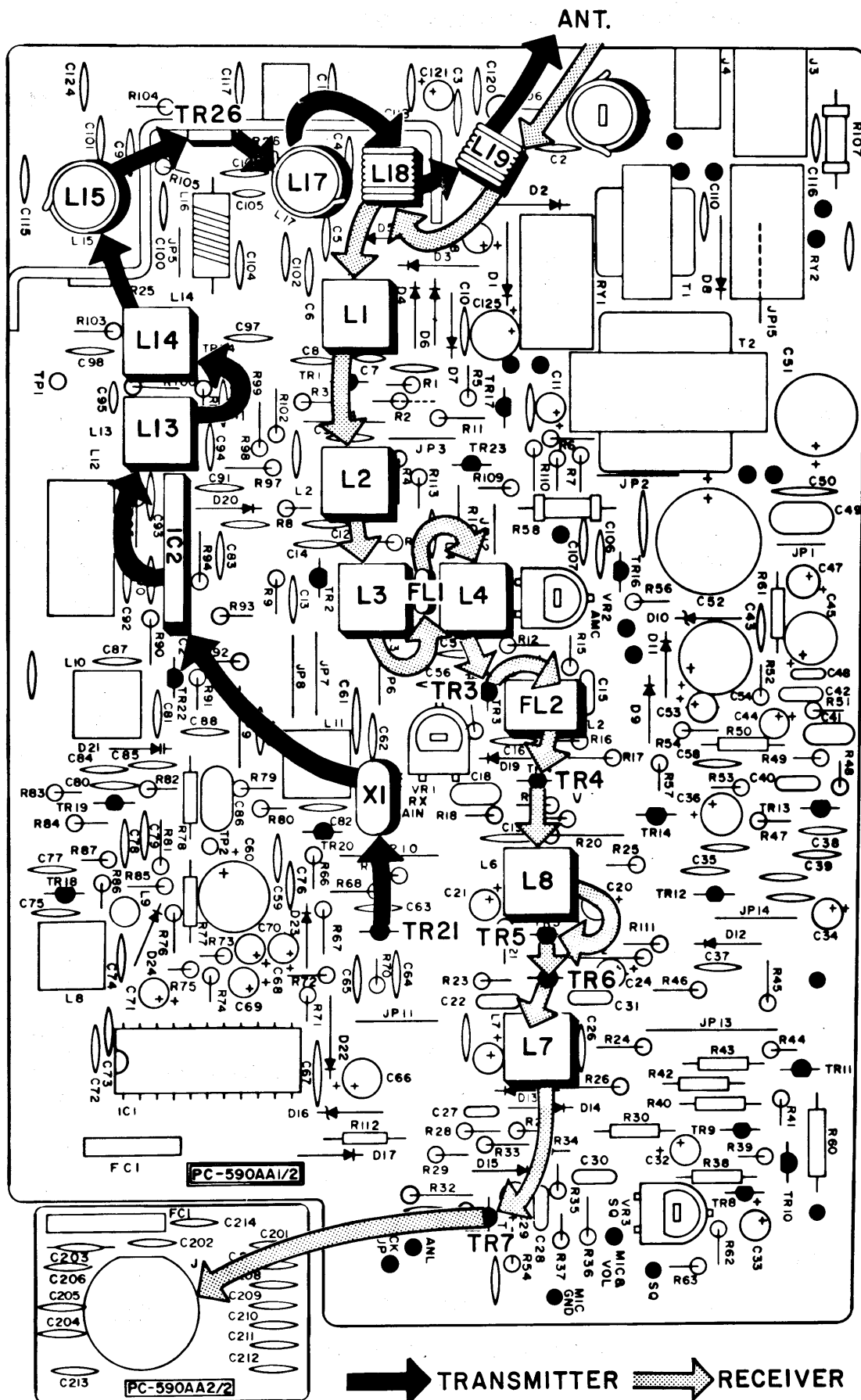


Figure 6 – Transceiver Signal Paths

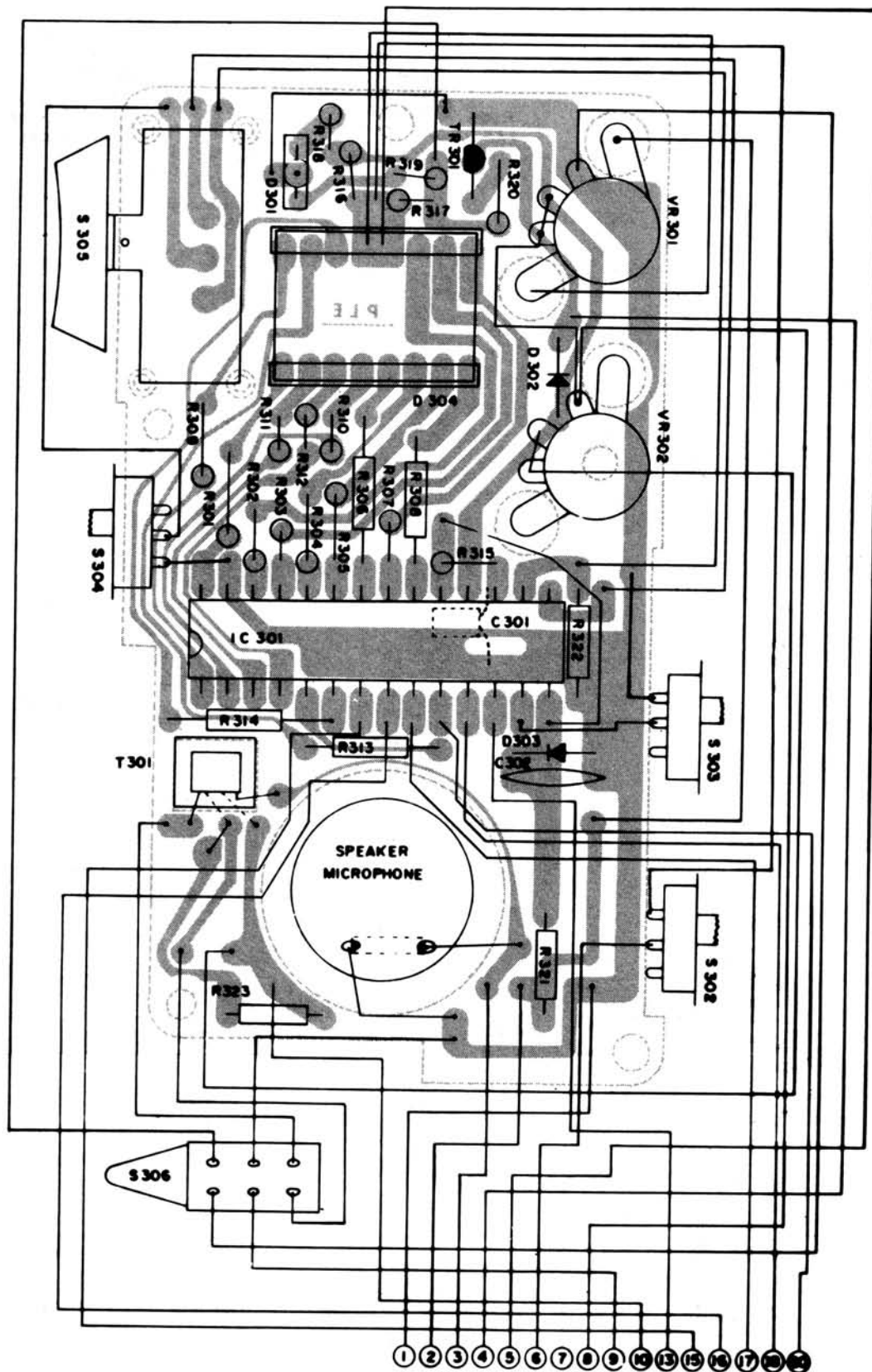


Figure 7 — Printed Board — Microphone/Speaker Assembly