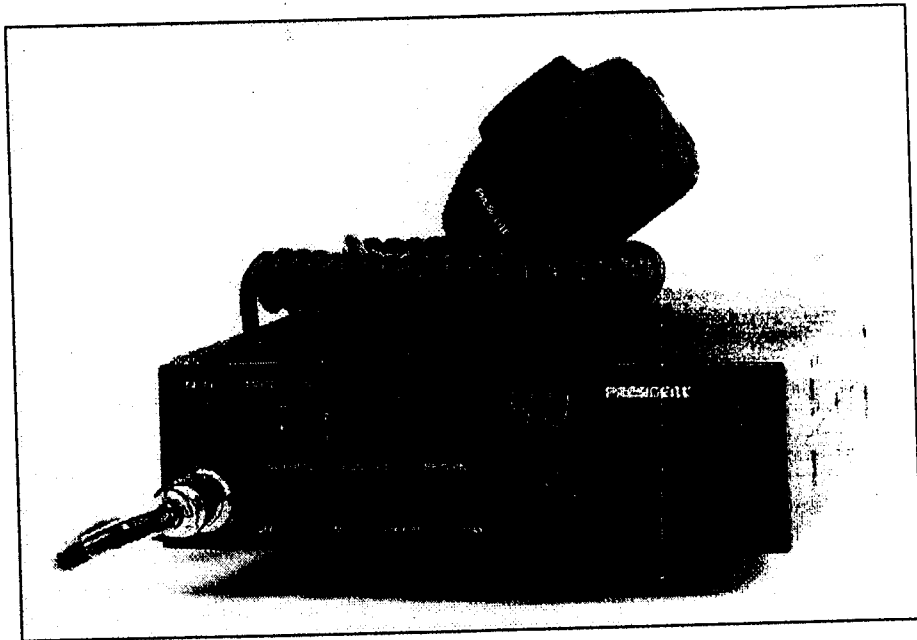


PRESIDENT JOHNSON FM

www.cbradio.nl

thanks Homer

for sharing this file



MANUAL SERVICE

TECHNICAL CHARACTERISTICS

GÉNÉRAL :

Channels	:	40
Modulation modes	:	FM
Frequency ranges	:	from 26.945 MHz to 27.405 MHz
Antenna impedance	:	50 Ohms
Power supply	:	13.2 V
Dimensions (in mm)	:	174 (L) x 211 (H) x 52 (D)
Weight	:	1.1 Kg
Accessories supplied	:	UP/DOWN microphone with support, mounting cradle, screws.

TRANSMISSION :

Frequency allowance	:	+/- 300 Hz
Carrier power	:	4 watts FM CW
Transmission interference:	:	inferior to 4 nW (-50 dBm)
Audio reponse	:	300 Hz à 3 KHz in FM
Emitted power in the adj.channel:	:	inferior to 20 μ W
Microphone sensitivity	:	0.8 mV
Drain	:	1.7 A (with modulation)
Modulated signal distortion:	:	1.8%

RÉCEPTION :

Maxi.sensitivity at 20 dB sinad:	:	0.4 μ V - 115 dBm FM
Frequency response	:	300 Hz à 3 KHz FM
Adjacent channel selectivity:	:	70 dB
Maximum audio power	:	5 W
Squelch sensitivity	:	minimum 0.2 μ V - 120 dBm maximum 1 mV - 47 dBm
Frequency image rejection rate:	:	60 dB
Intermediate frequency rej.rate:	:	70 dB
Drain	:	500 mA nominal 800 mA maximum

ALIGNMENT PROCEDURE

* P.L.L.

* TRANSMISSION

* RECEPTION

EQUIPMENT FROM DIFFERENT ALIGNMENTS

Frequency counter
DC Voltmeter
AC Voltmeter
Stabilized DC Power supply

Synthesized signal generator
Oscilloscope
RF Power Meter
Linear detector

Conditions of measures

In reception

Input signal -107 dBm (1 μ V)

1,2 KHz modulation FM Frequency 1 KHz.

In transmission

Modulation Input 30mV Fréquency 1KHz.

ALIGNMENT PLL PORTION

1. Alignment Procedure

STEP	CONDITION OF THE DEVICE	ADJUSTMENT	PROCEDURE
1	RX 19 CH	L 302	DC VOLT METER TO TP301 (R323) Adjust L302 for 3.0 + 0. 1V reading on DC voltmeter.
2	TX 19 CH	L 303	DITTO (1) Adjust L 303 for 3.0 + 0. 1V reading on DC voltmeter.
3	RX 19 CH	L 11	OSCILLOSCOPE to TP 2 (R47) Adjust L 11 for maximum reading.
4	TX 19 CH	CT 301	FREQUENCY COUNTER to TP 2 Adjust CT 301 for 27.185 MHz + 100 Hz on Frequency counter
5	TX / RX 1 40 CH		DITTO (4) Check all CH frequencies should be same as frequency chart.
6	Ditto (5)		Same as STEP 1 Check DC voltage of all CH' s for reading within 0.9 5. 1V.

* Apply sealing wax to L 302, L 303 after checking.

**ALIGNMENT PROCEDURE
P.L.L.**

P L L

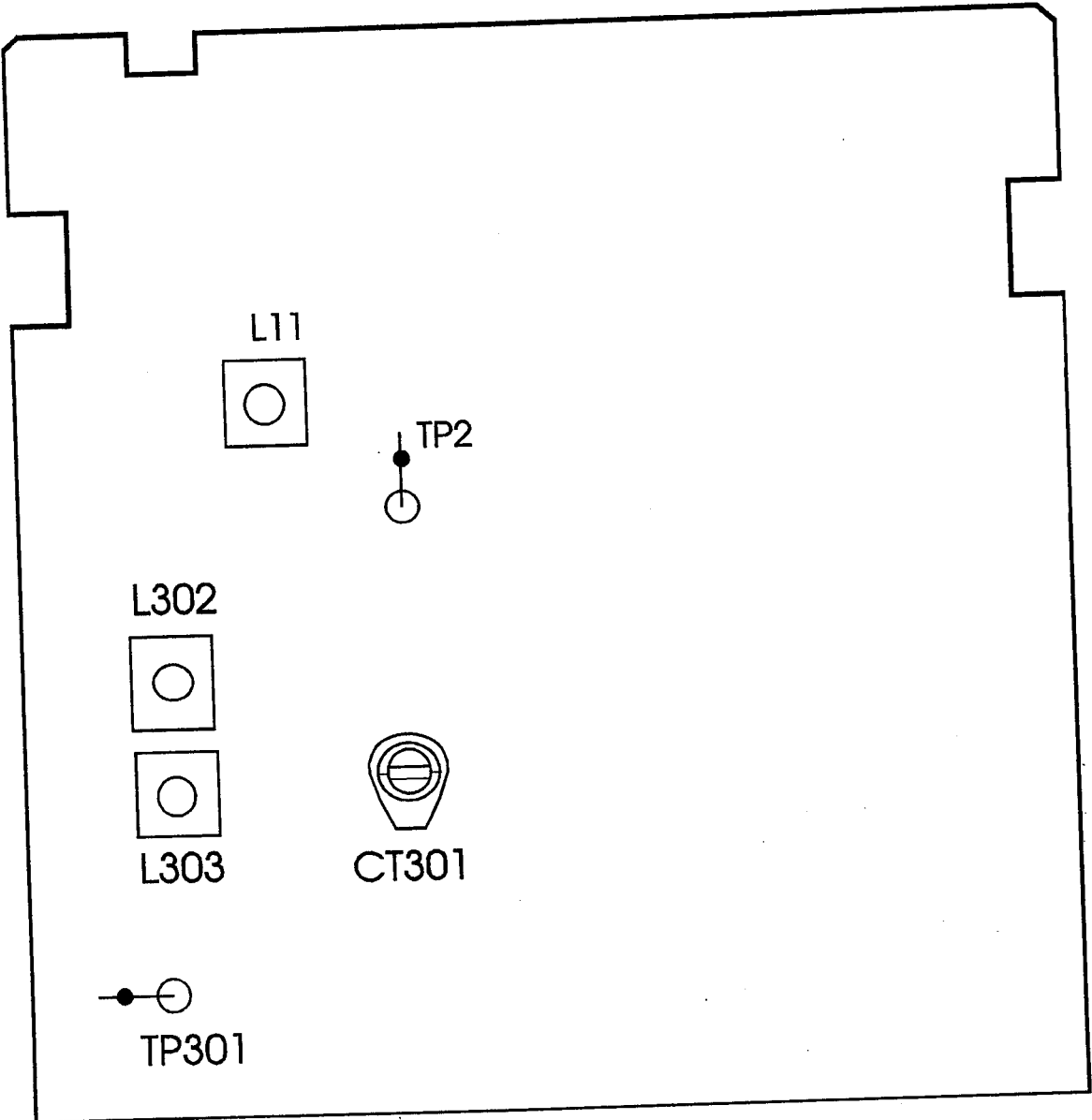


TABLE 1 CHANNEL FREQUENCY AND DIVIDE RATIO OF PLL SYNTHESIZER

CHANNEL NUMBER	ANTENNA FREQUENCY (MHz)	FOR TRANSMIT (R/T = H) DIVIDE RATIO (N)	VCO FREQUENCY (MHz) TX	FOR RECEIVE (R/T = L) DIVIDE RATIO (N)	VCO FREQUENCY (MHz) RX
1	26.965	2696	26.965	3765	37.66
2	26.975	2697	26.975	3766	37.67
3	26.985	2698	26.985	3767	37.68
4	27.005	2700	27.005	3769	37.70
5	27.015	2701	27.015	3770	37.71
6	27.025	2702	27.025	3771	37.72
7	27.035	2703	27.035	3772	37.73
8	27.055	2705	27.055	3774	37.75
9	27.065	2706	27.065	3775	37.76
10	27.075	2707	27.075	3776	37.77
11	27.085	2708	27.085	3777	37.78
12	27.105	2710	27.105	3779	37.80
13	27.115	2711	27.115	3780	37.81
14	27.125	2712	27.125	3781	37.82
15	27.135	2713	27.135	3782	37.83
16	27.155	2715	27.155	3784	37.85
17	27.165	2716	27.165	3785	37.86
18	27.175	2717	27.175	3786	37.87
19	27.185	2718	27.185	3787	37.88
20	27.205	2720	27.205	3789	37.90
21	27.215	2721	27.215	3790	37.91
22	27.225	2722	27.225	3791	37.92
23	27.255	2725	27.255	3794	37.95
24	27.235	2723	27.235	3792	37.93
25	27.245	2724	27.245	3793	37.94
26	27.265	2726	27.265	3795	37.96
27	27.275	2727	27.275	3796	37.97
28	27.285	2728	27.285	3797	37.98
29	27.295	2729	27.295	3798	37.99
30	27.305	2730	27.305	3799	38.00
31	27.315	2731	27.315	3800	38.01
32	27.325	2732	27.325	3801	38.02
33	27.335	2733	27.335	3802	38.03
34	27.345	2734	27.345	3803	38.04
35	27.355	2735	27.355	3804	38.05
36	27.365	2736	27.365	3805	38.06
37	27.375	2737	27.375	3806	38.07
38	27.385	2738	27.385	3807	38.08
39	27.395	2739	27.395	3808	38.09
40	27.405	2740	27.405	3809	38.10

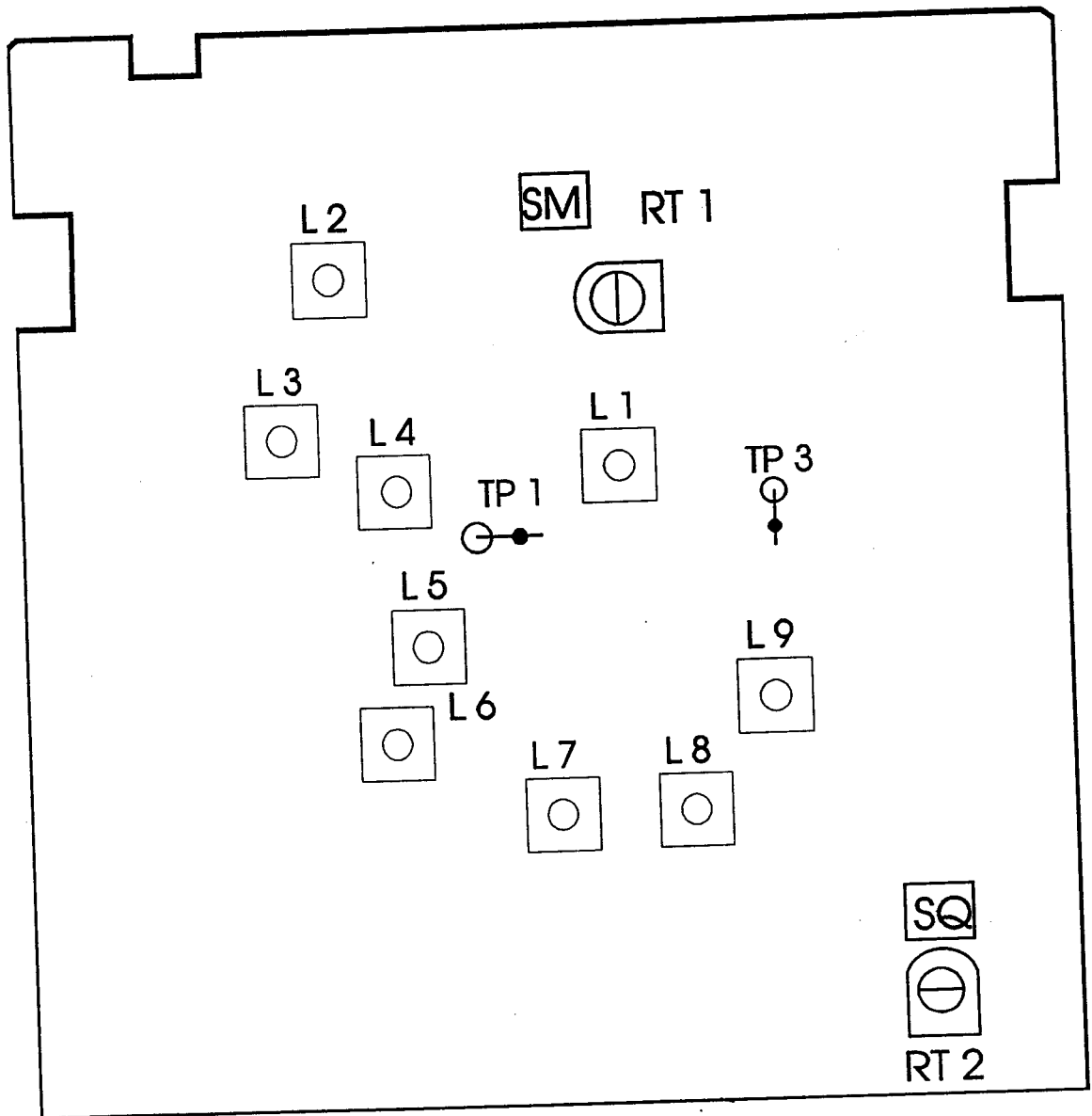
ALIGNMENT RECEIVER PORTION

1. Alignment Procedure

STEP	CONDITION OF THE DEVICE	ADJUSTMENT	PROCEDURE
1	19 CH Vol. MAX (Fully CW)	L 2 - L 3 L 4 - L 5 L 6 - L 7 L 8	SSG to ANT JACK (J 501) AC volt meter to EXT. SP JACK (J3) Set SSG output level to 46 dB at first and adjust coils to maximum reading on the AC voltmeter. Keep appropriate SSG output level so that receiver under adjust will not overload. Final SSG output must be 0dB.
2	18 CH	L 1	SSG to ANT JACK (J501) OSCILLOSCOPE to TP 1 (R3) Adjust L 1 for maximum indication on the scope using no modulated 46 dB carrier level.
3	19 CH no mod	RT 1	SSG to ANT JACK (J501) Set SSG to 40 dB and adjust RT 1 for S9 LED just light up.
4	19 CH Vol. Maxi Squelch Maxi (Fully CW)	RT 2	SSG to ANT JACK (J501) AC volt meter to EXT.SP JACK (J3) Set SSG to 66 dB and adjust RT 2 for just open squelch.
5	19 CH no Mod	L 9	SSG to ANT JACK (J501) DC volt meter to TP 3 (R 51) Set SSG output level to 66 dB and adjust L 9 for 3.8 + 0.1V reading on DC volt meter.

ALIGNMENT POINTS RECEIVER PORTION

RECEIVER



ALIGNMENT TRANSMITTER PORTION

Alignment Procedure

STEP	CONDITION OF THE DEVICE	ADJUSTMENT	PROCEDURE
1	MODE. B no Mod	RT 203 L 204	RF PWR METER to ANT JACK (J.501). Rotate RT 203 Full CW. Adjust L 204 for maximum reading After above alignment, rotate RT 203 until 3.8 W RF out put is obtained.
2	MODE: B	RT 201	DITTO Adjust RT 201 for RED LED of RF METER just right up.
3	MODE: B Mic Input 1 KHz 30 mV	RT 205	FM LINEAR DETECTOR to ANT JACK with RF ATT (J 501). Adjust RT 205 to read + 1.7 KHz deviation on the meter.

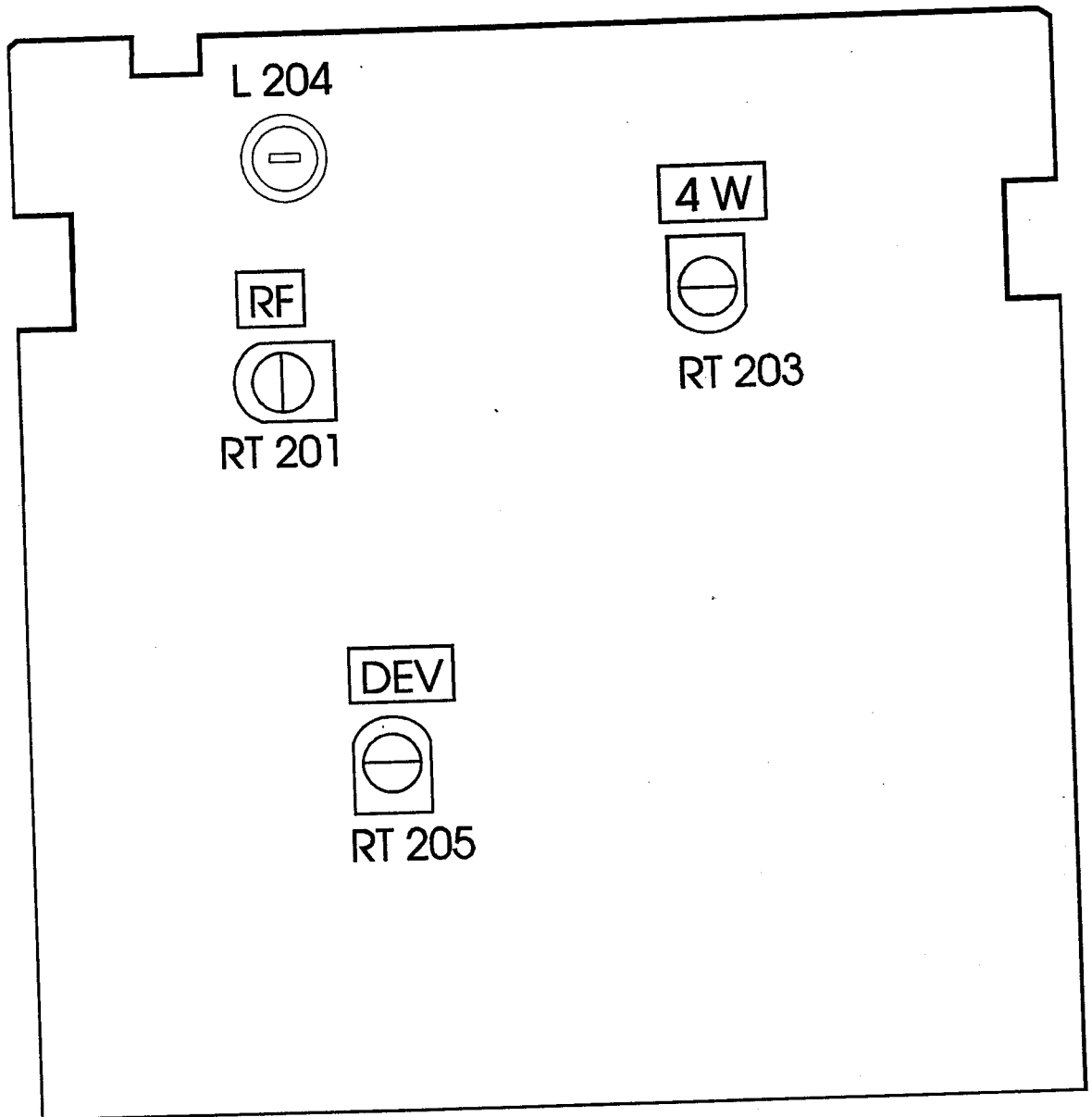
* Apply sealing wax to L 204.

* Check frequencies in all channels.

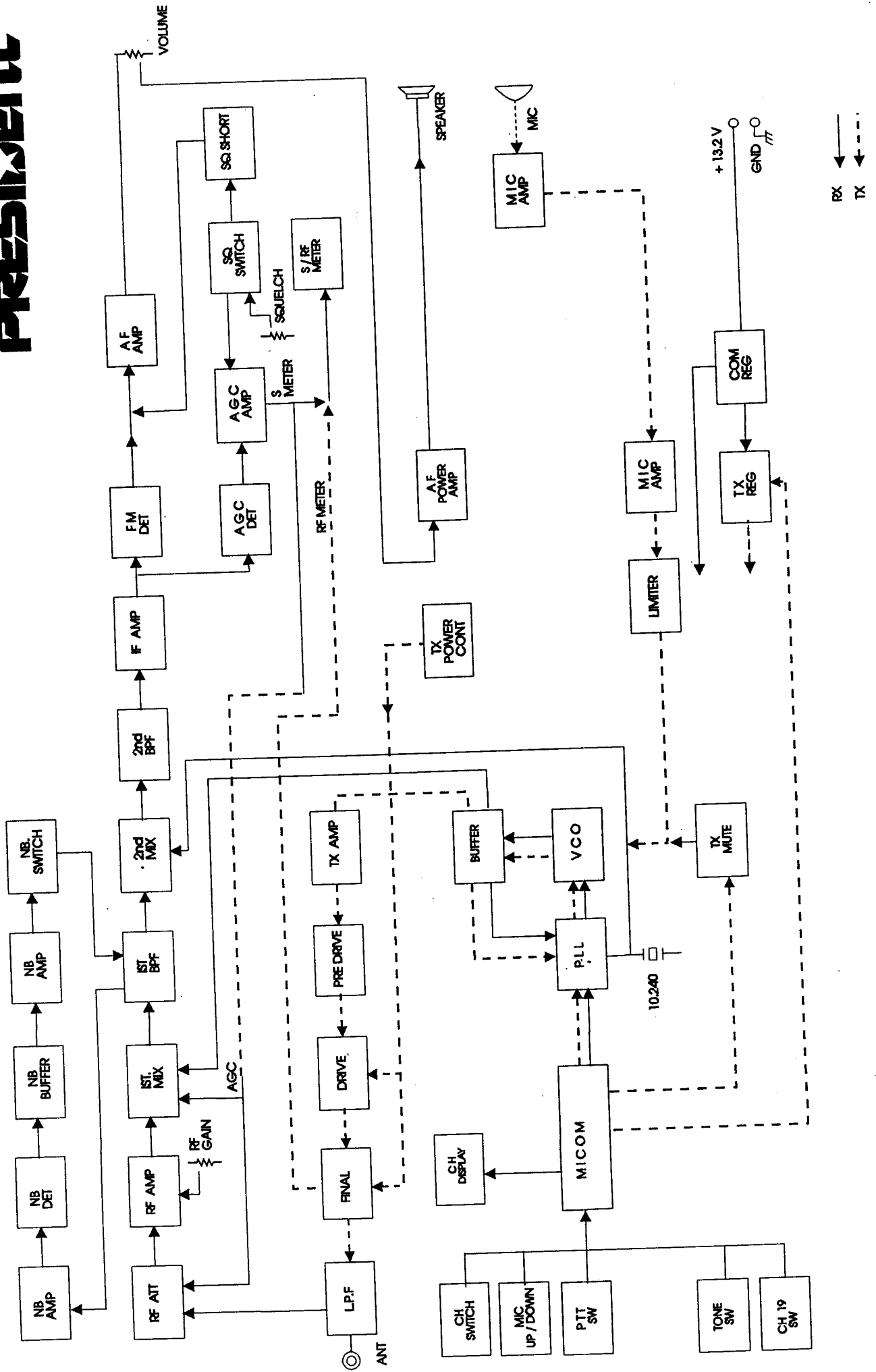
* There must not be parasitic oscillation at the condition of 100 mV or less modulation input.

ALIGNMENT POINTS TRANSMITTER PORTION

TRANSMITTER



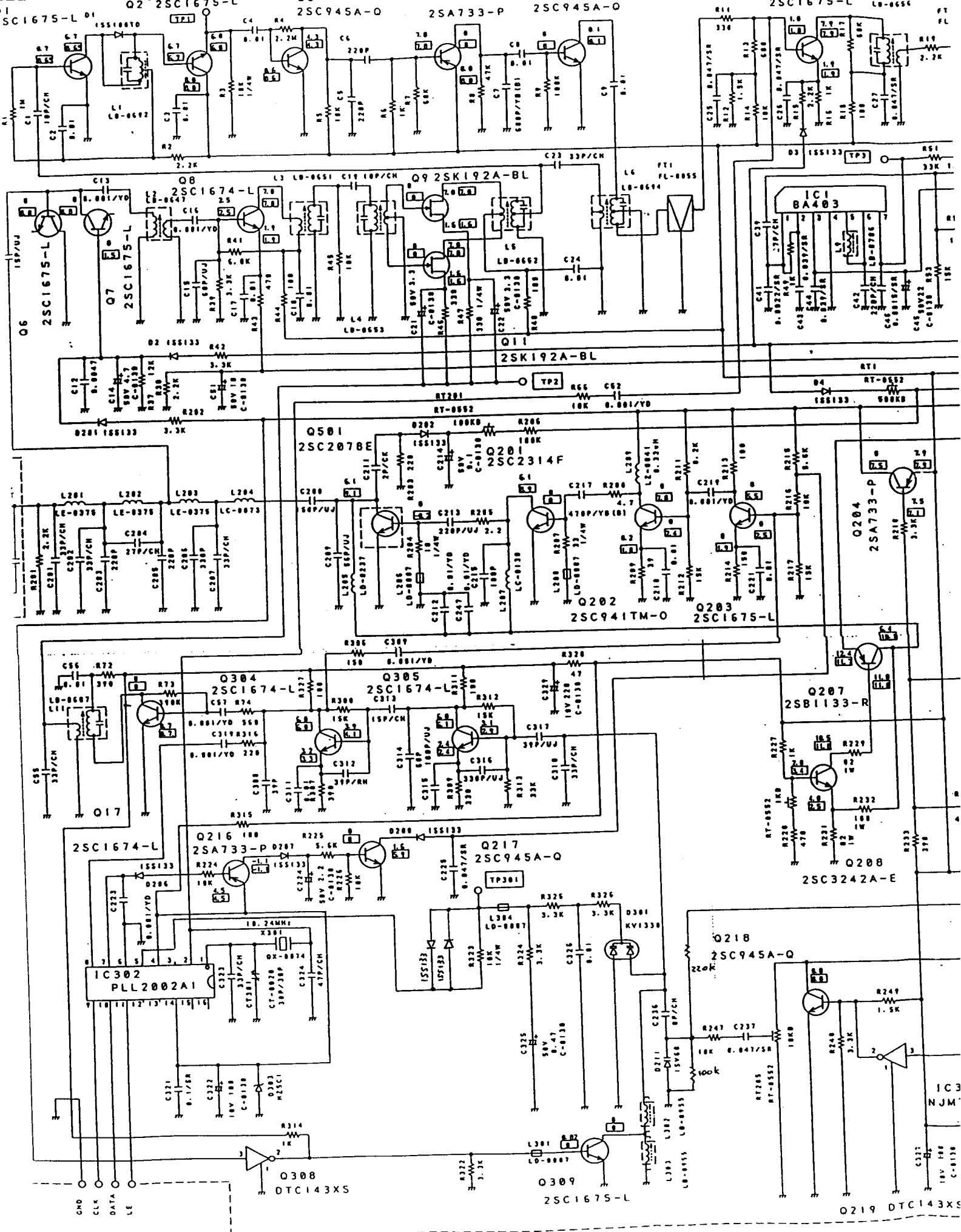
PRESIDENT



SYNOPTIC JOHNSON FM

(A)

(1)



GND
CLK
DATA
LE

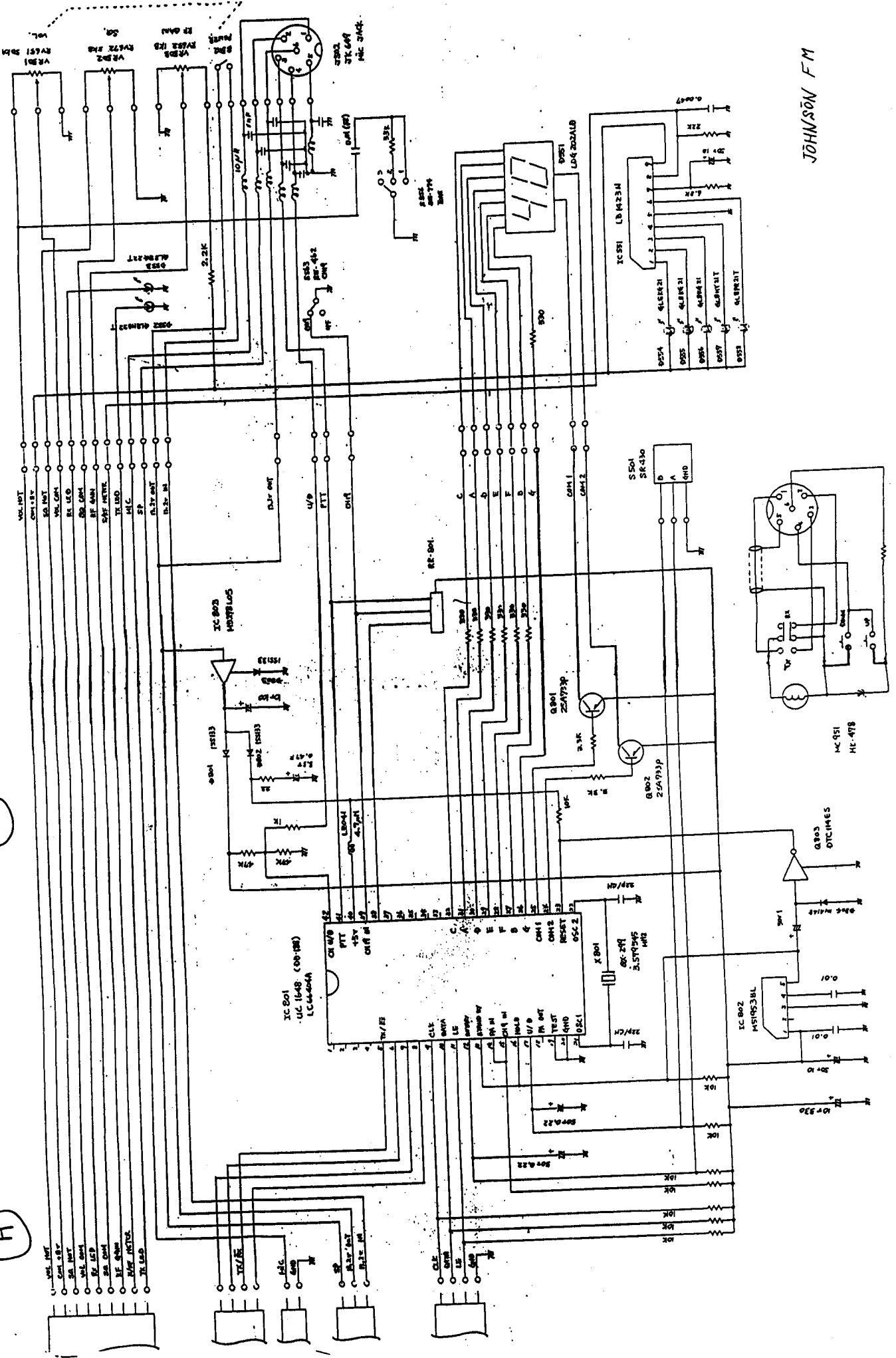
Q308
DTC143XS

Q309
2SC1675-L

Q219
DTC143XS

IC3
NJM

JOHNSON FM



(B)

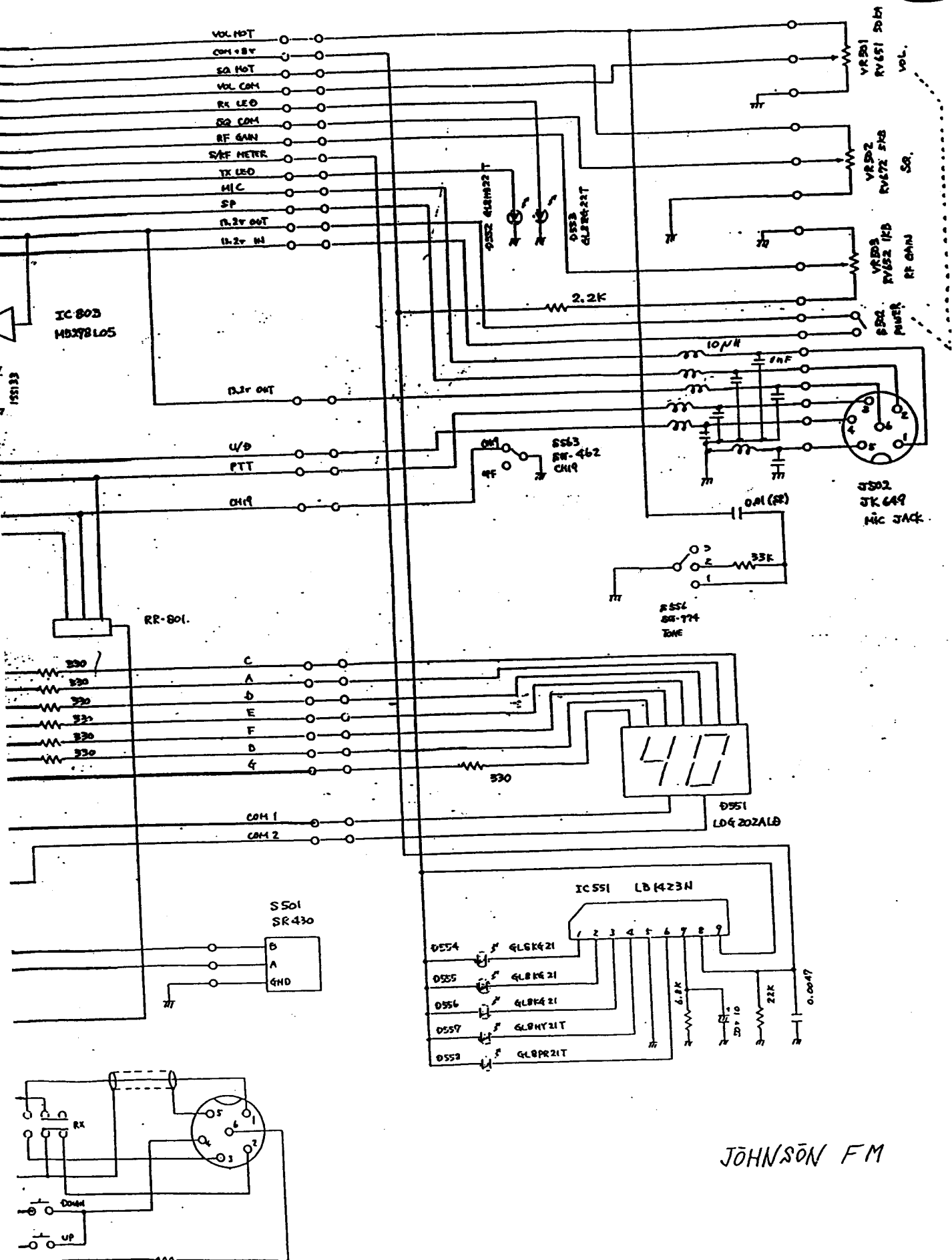
(2)

(2)

(A)

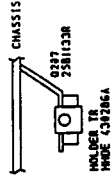
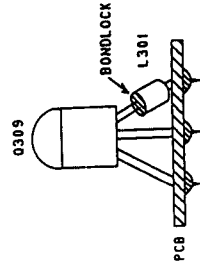
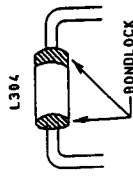
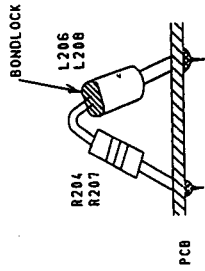
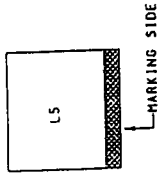
2

B



JOHNSON FM

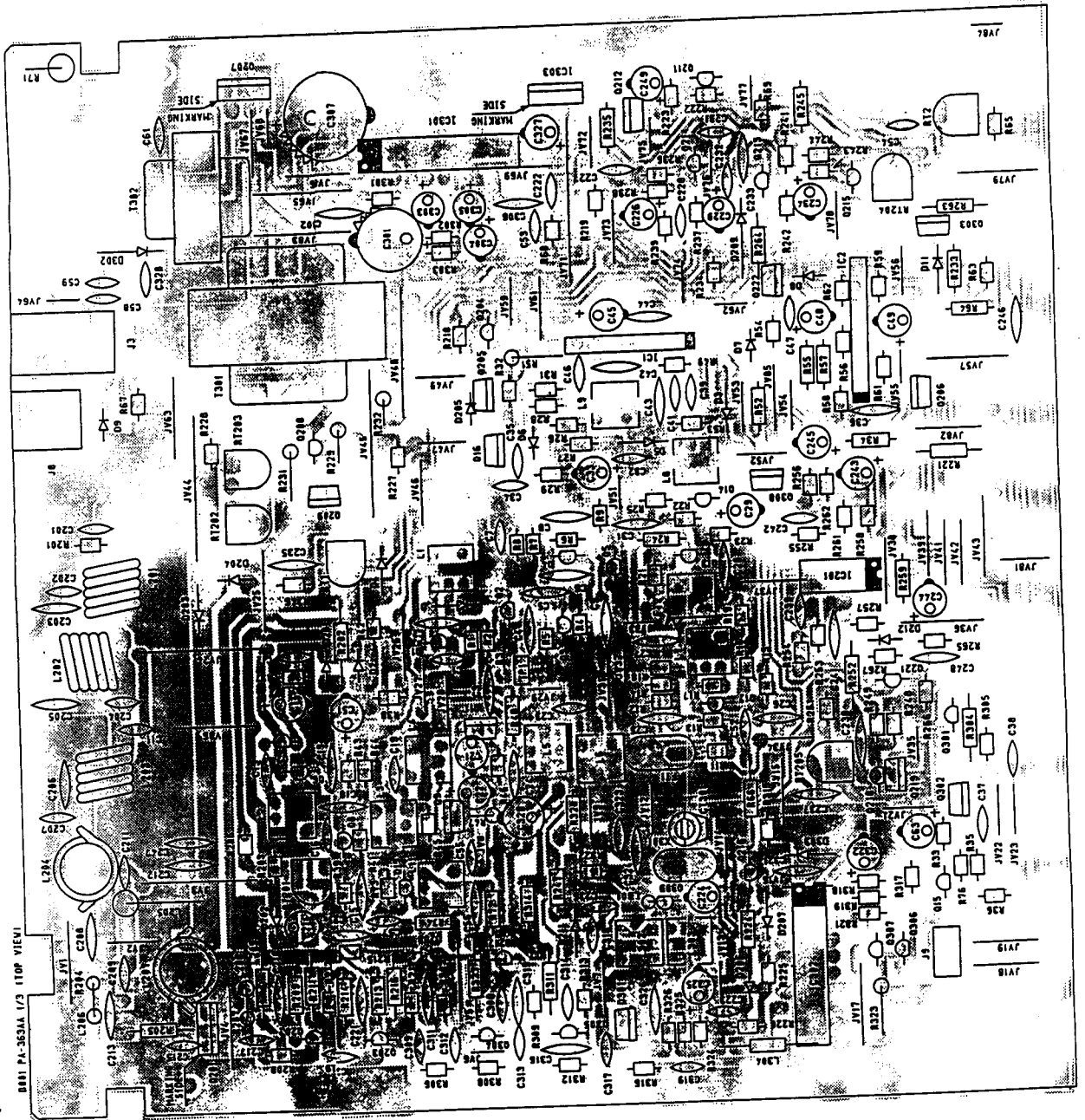
(B)



JOHNSON

(3)

(3)

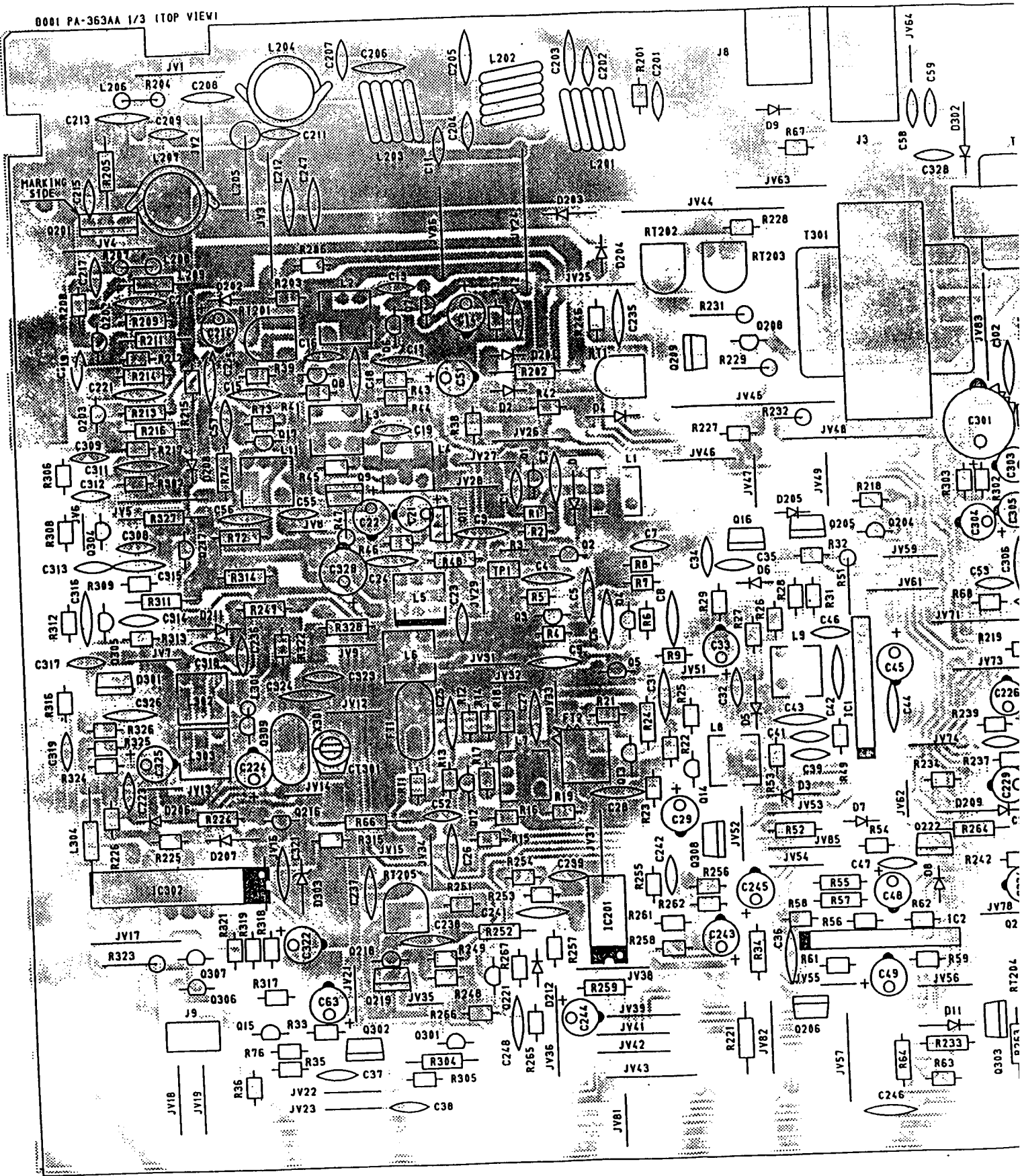


(A)

(A)

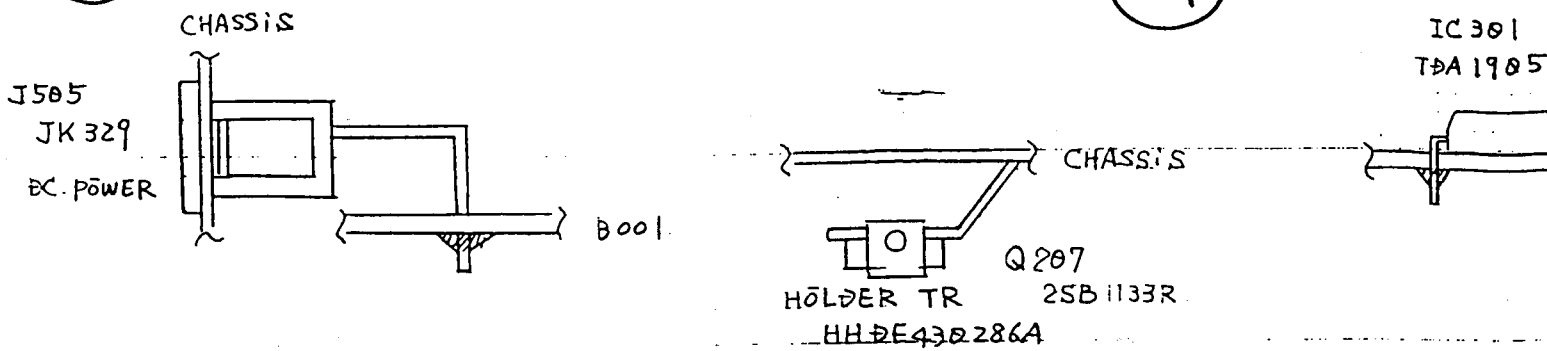
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0001 PA-363AA 1/3 (TOP VIEW)

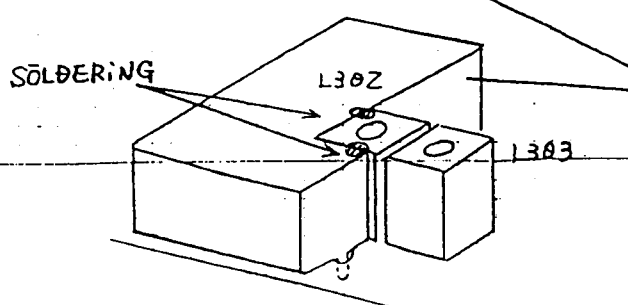
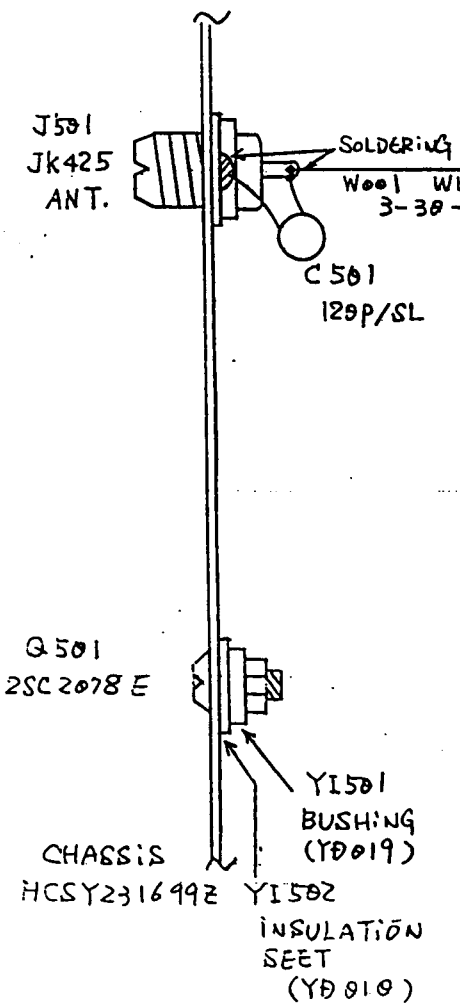
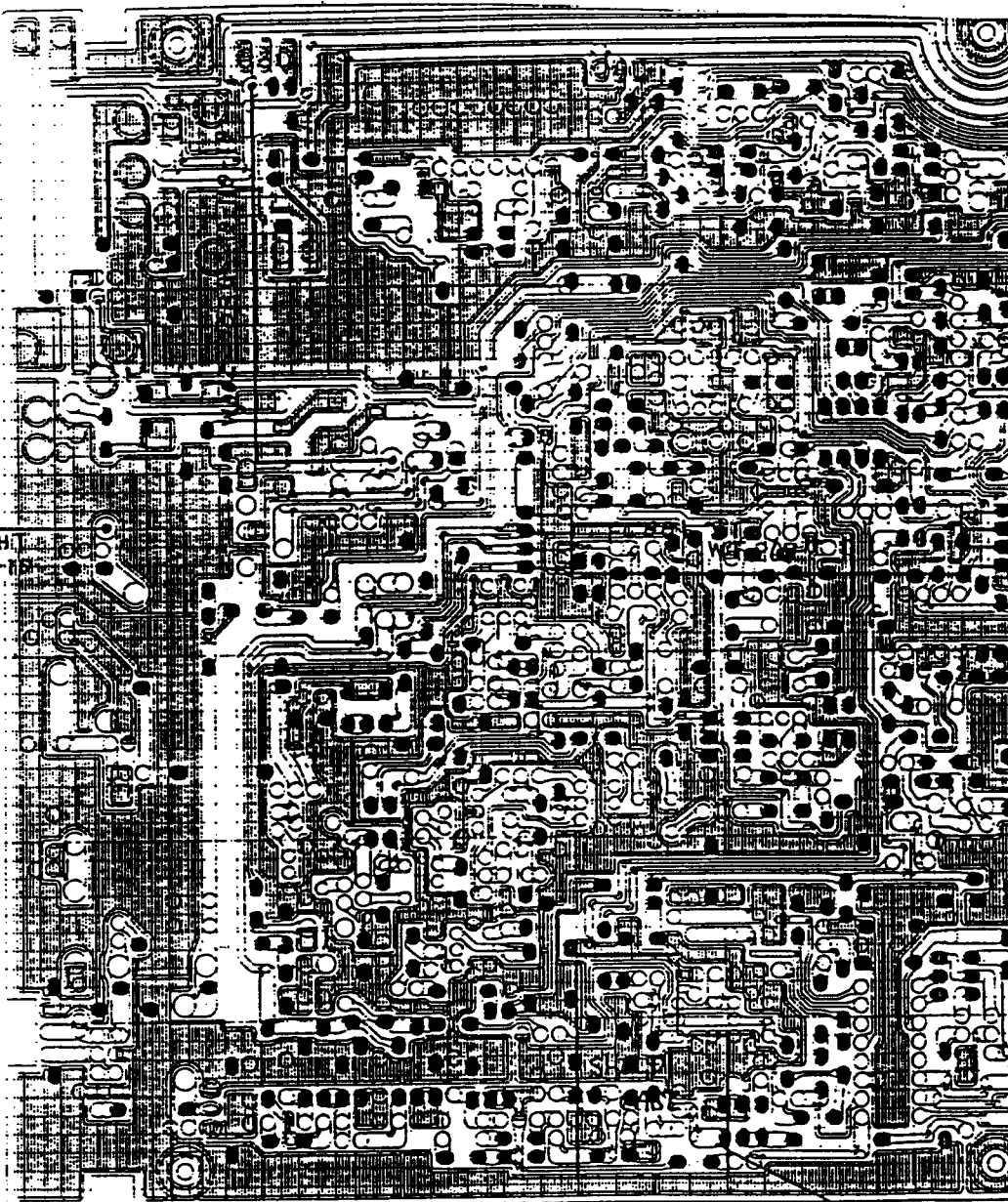


(A)

(4)



B001 PA 363AA 1/3 MAIN PCB (TOP VIEW)



4

B

01
905

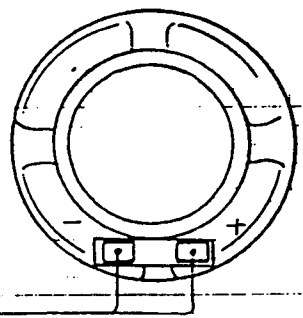
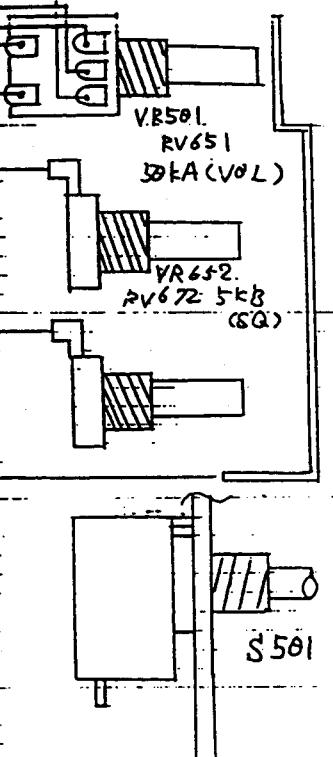
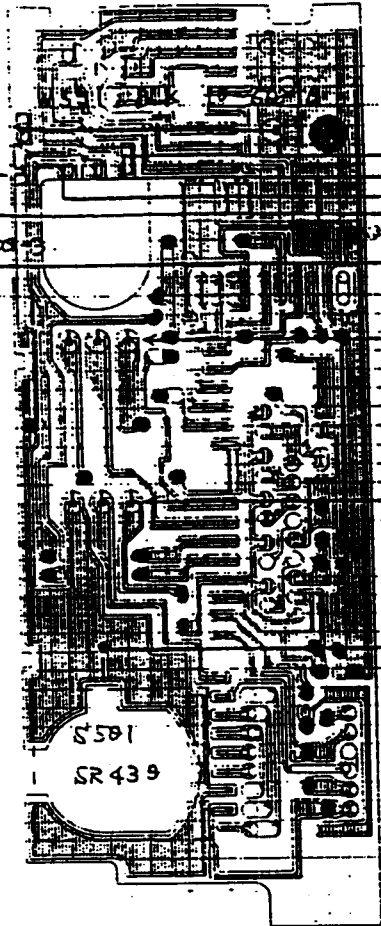
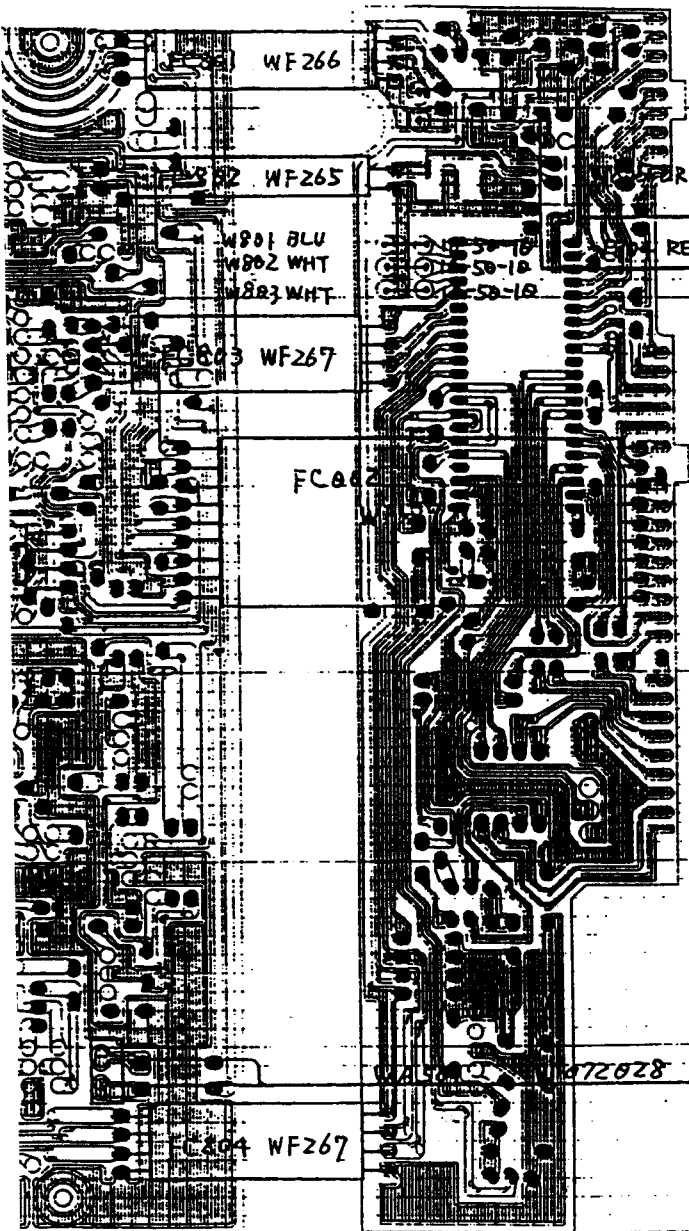
HEAT SINK
HHSK418924B

B001

B801 PA363AA 3/3
MICOM PCB (TOP VIEW)

B551 PA363AA 7/3
FRONT PCB (TOP VIEW)

SHIELD PLATE
HSDP493281A



B551

SP501
SP337

SHIELD CASE
HSDC432003Z

Jensen

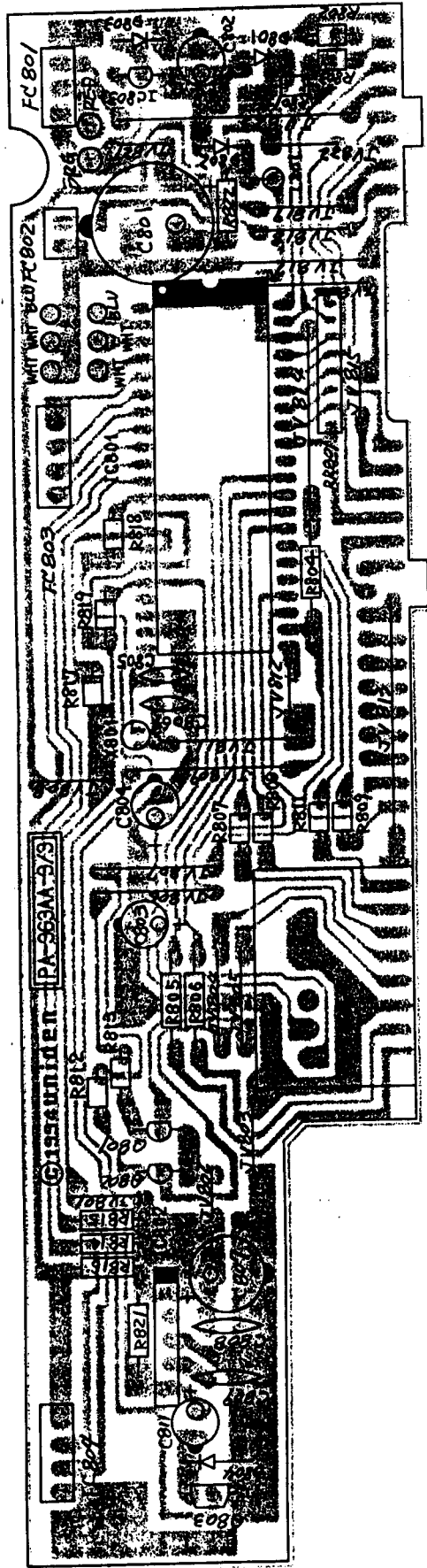
WIRING DIAGRAM 1/2

(F)

(S)

(S)

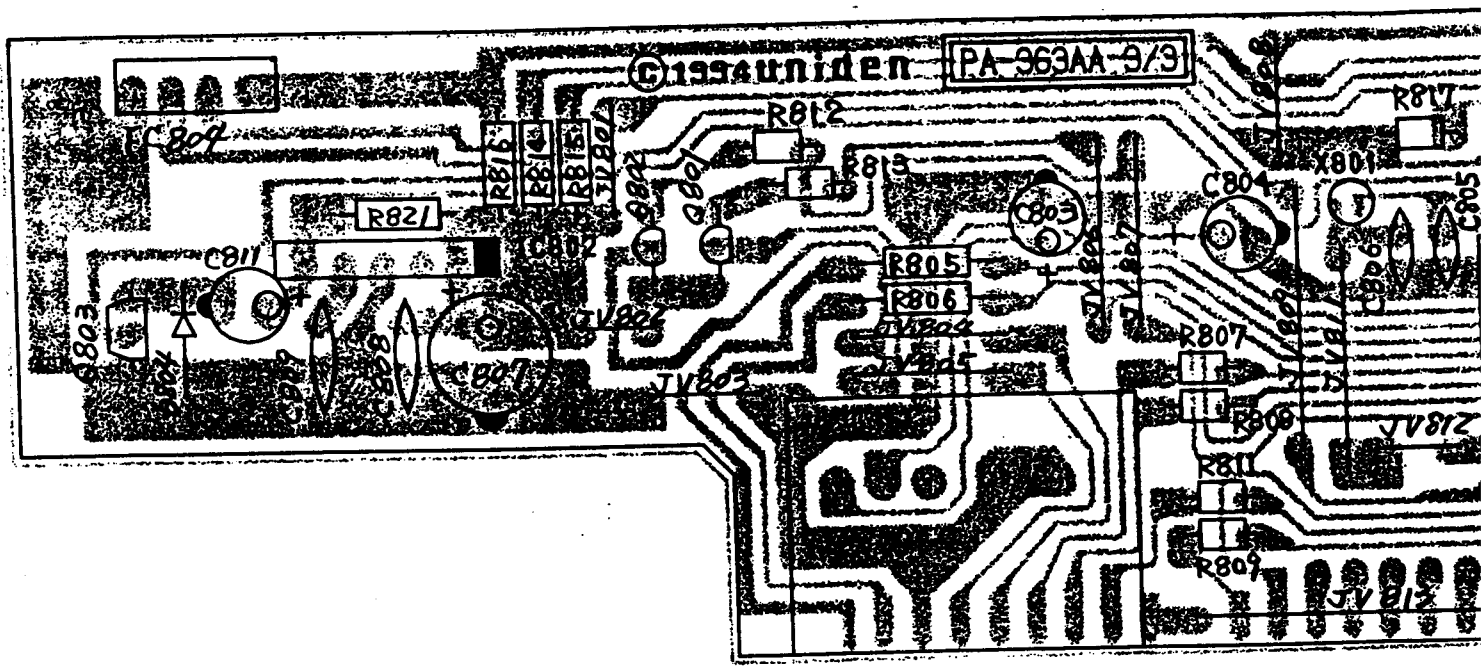
(A)



DESIGN	DRAWN BY	MODEL NO.
		JOHNSON
CHECK BY	APPROV. BY	TITLE
		MICOM PCB
		PARTS ASS'Y (TOP VIEW)
		DRAWING NO.
REV. NO.		

5

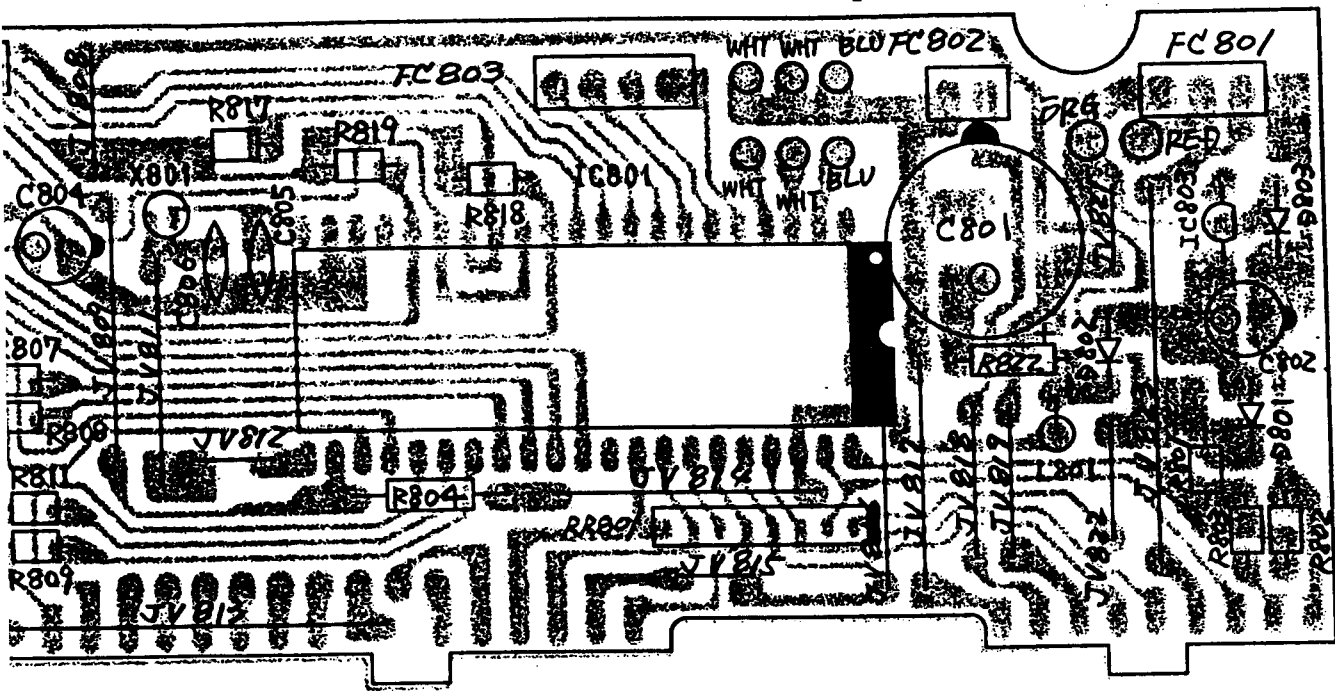
A



DESIGN	DRAWN BY		MODE
			JC
CHECK BY	APPRO BY	TITLE MICOM PC PARTS ASS'Y IT	
		DRAWING NO.	
REV. NO.			

5

B



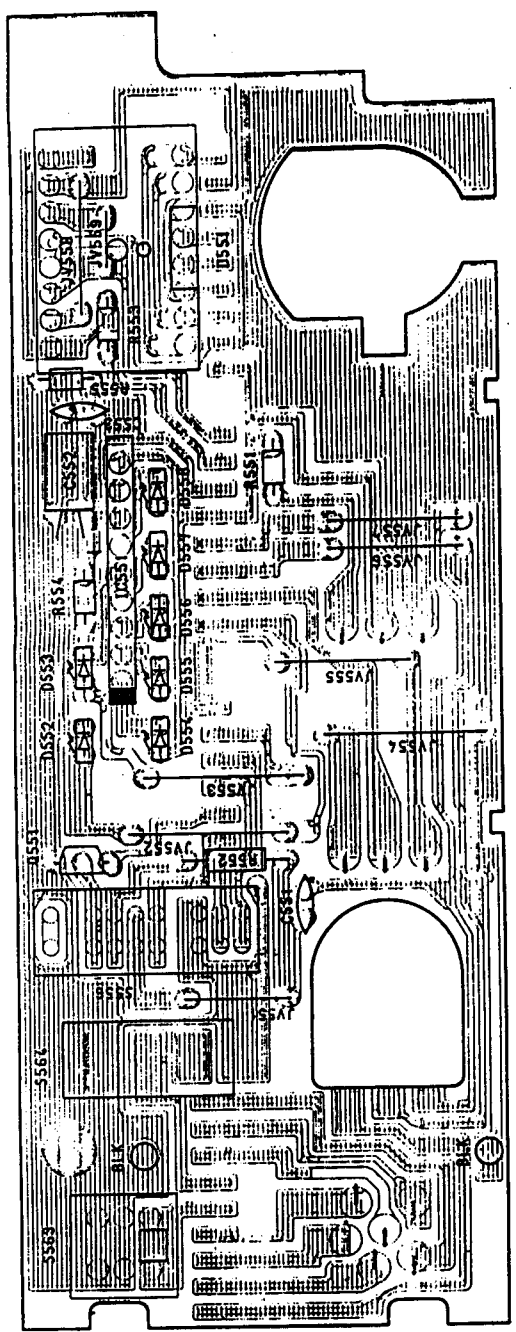
Y	MODEL NO. JOHNSON
Y	TITLE MICOM PCB PARTS ASS'Y (TOP VIEW)
	DRAWING NO.

(A)

(6)

(6)

(A)

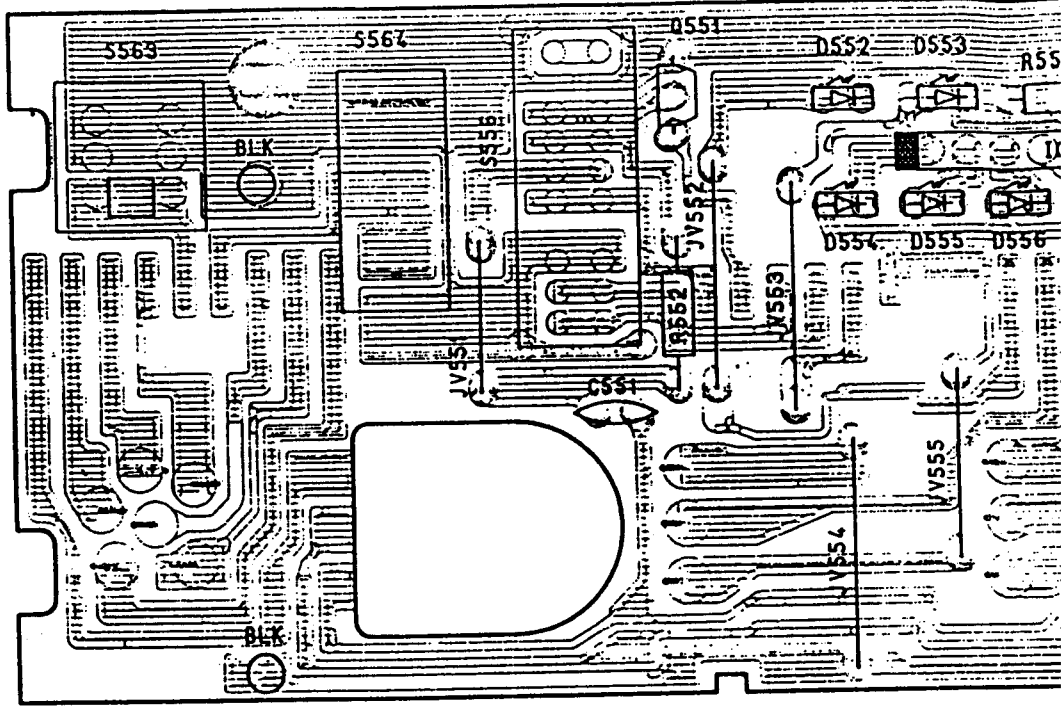


- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM, M=MEG OHM.)
 2. RESISTOR TOLERANCES ARE 1/6K UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=PICO-MICRO FARAD)
 4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE ZF UNLESS OTHERWISE NOTED.

DESIGN	DRAWN BY	MODEL NO.	JOHNSON
CHECK BY	APPROV BY	TITLE	FRONT PCB
		PARTS ASS'Y (TOP VIEW)	
		DRAWING NO.	
REV. NO.			

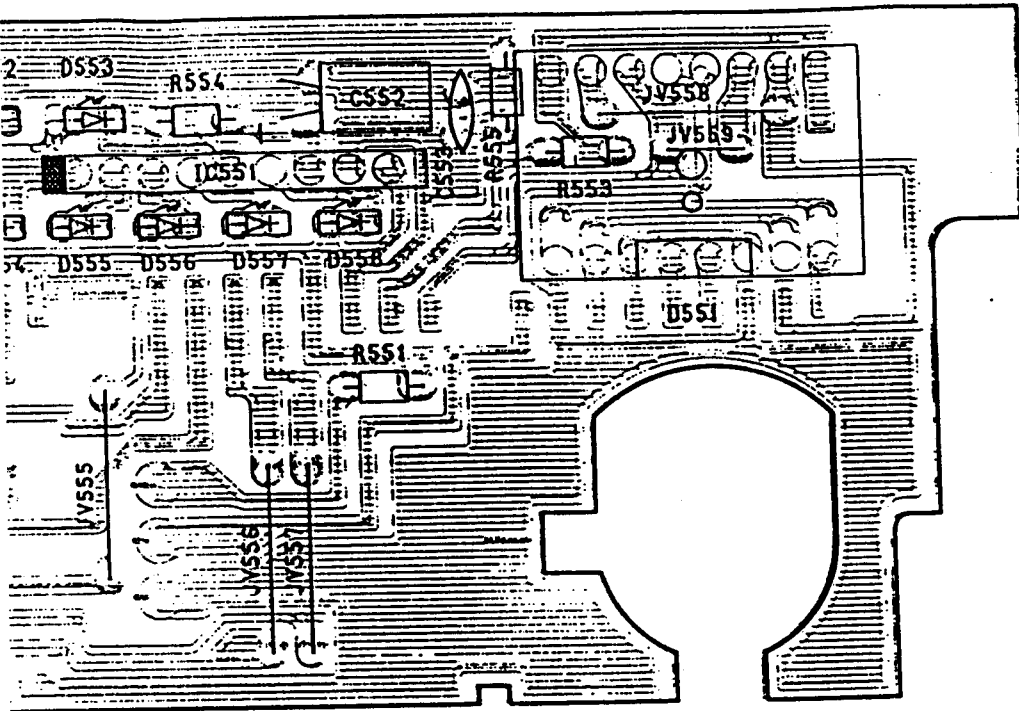
(A)

(6)



6

4



NOTES:

1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM, M=MEG OHM.)
2. RESISTOR WATTAGES ARE 1/6W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE ZF UNLESS OTHERWISE NOTED.

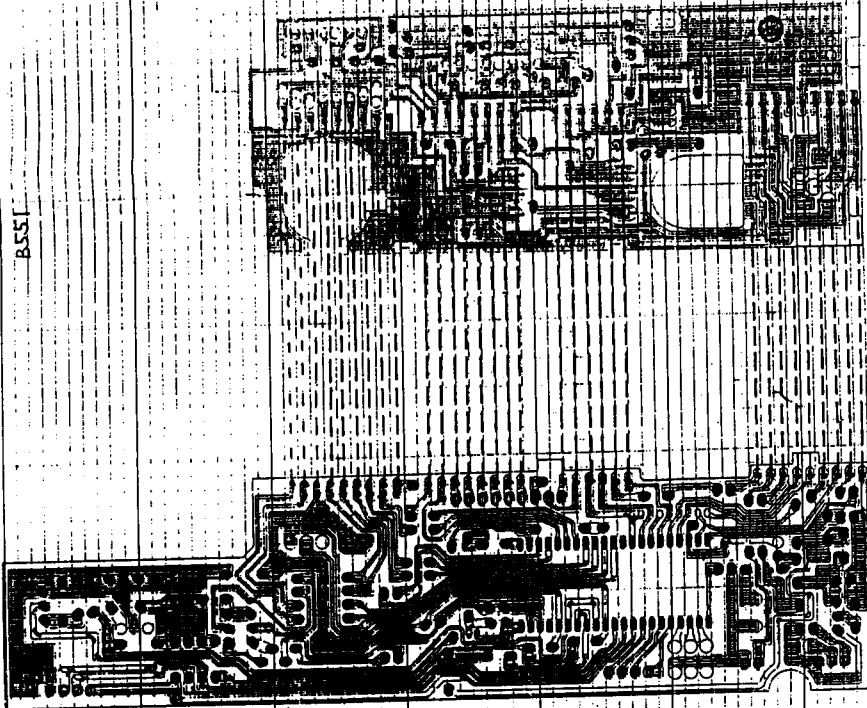
DESIGN	DRAWN BY	MODEL NO.
		JOHNSON
CHECK BY	APPRO BY	TITLE FRONT PCB PARTS ASS'Y (TOP VIEW)
		DRAWING NO.
REV. NO.		

(B)

BR01

BS01

(7)

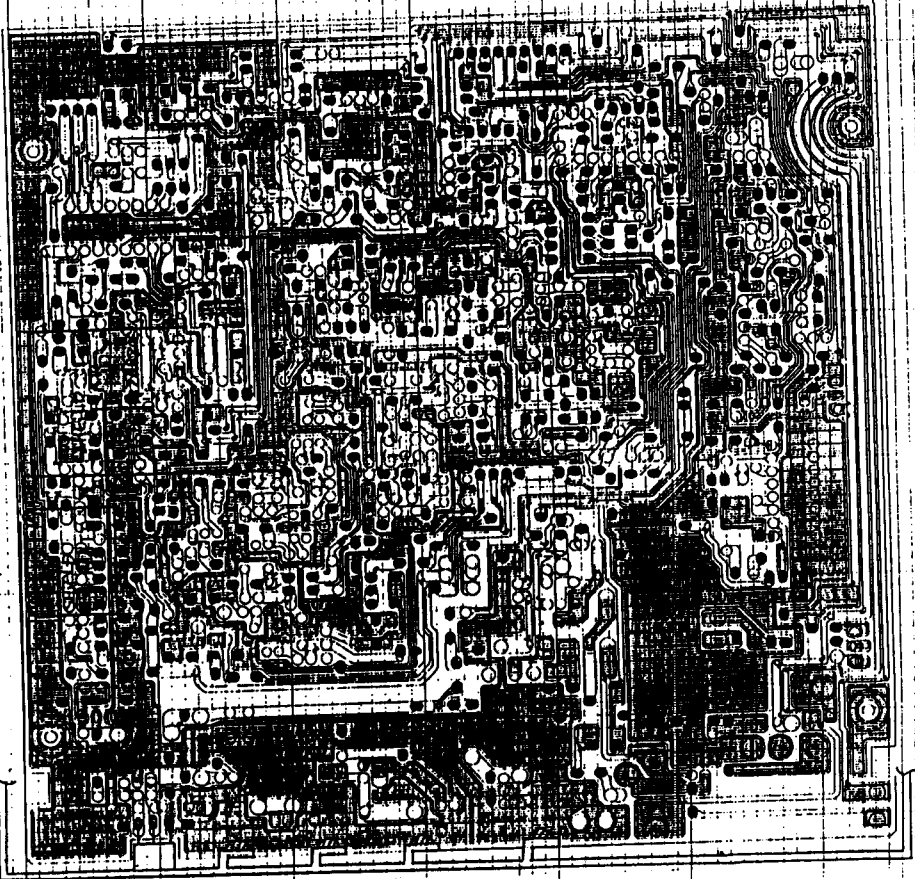


(7)

HSBP411387A

(A)

Q.591



(REVISED P.T.)

Johnson

WIRING DIAGRAM 7/2

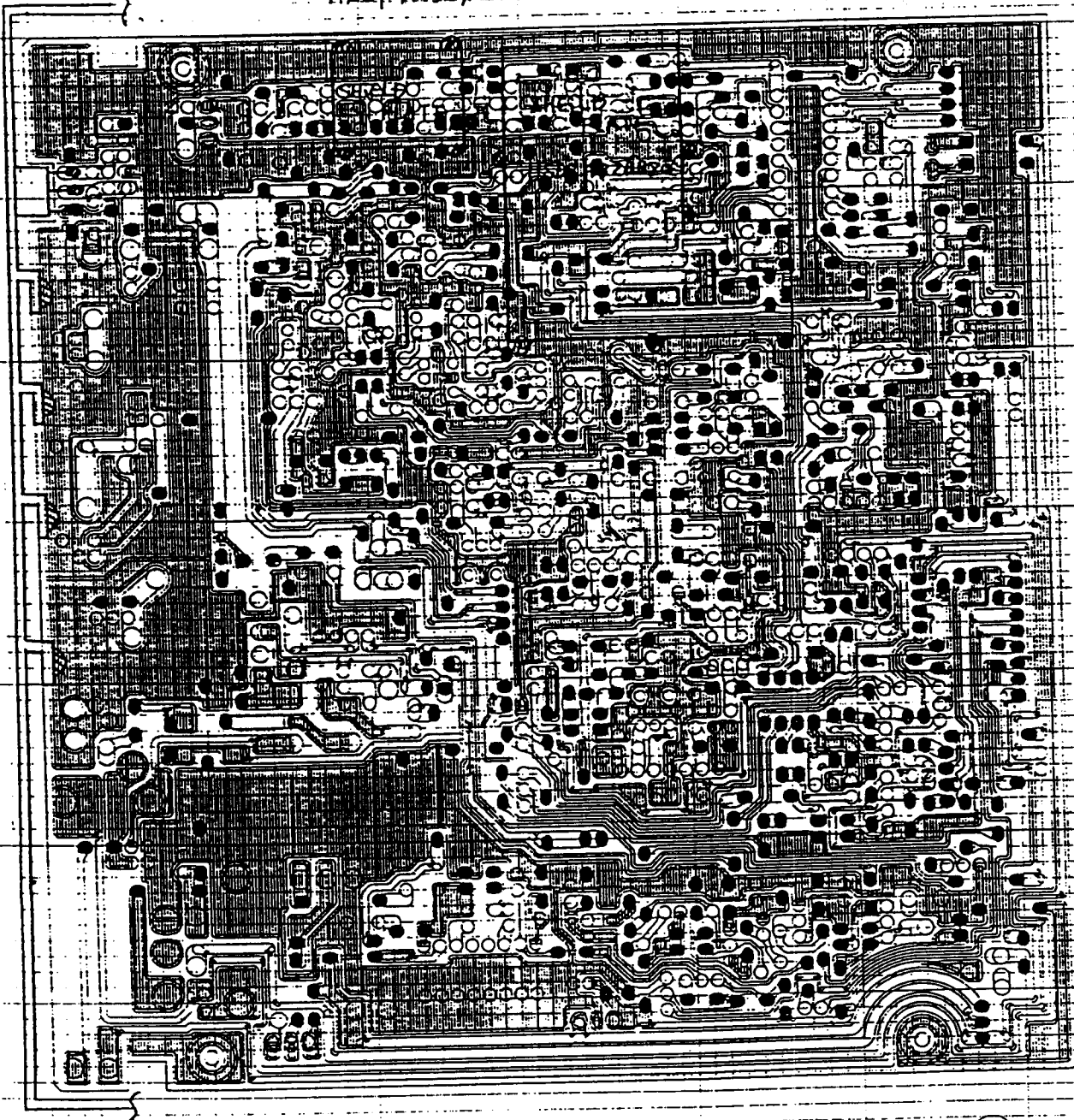
SOBERING

A

7

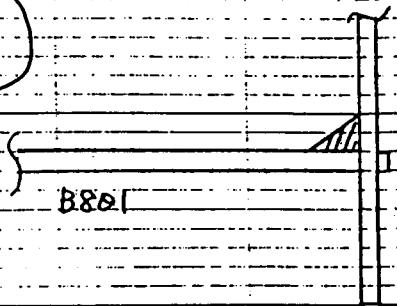
HSDP411387B

Q501

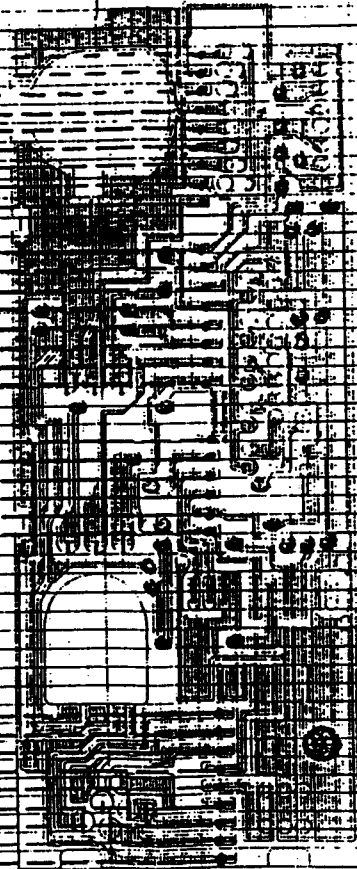
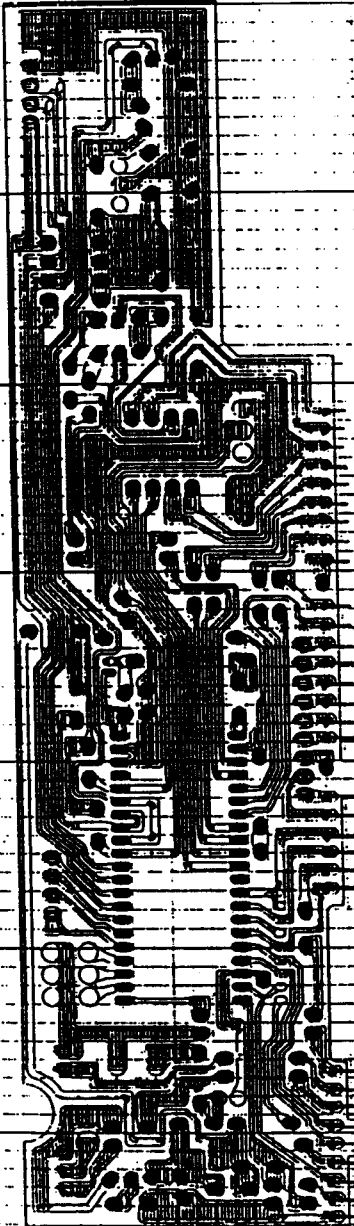


⊗ SÖLDERING

7



B



(特号書式(一))

Johnson

WIRING DIAGRAM 3/2

REF No	DESCRIPTION	SPEC
C501	C:CERAMIC TS2.5S	120PF 50V J SL
J501	JACK:ANT	JK-425 M-RM-L 102
J502	JACK	JK-649 6S-L113-02A
J505	JACK	JK-329
Q501	TRANSISTOR	DB-791 2SC2078E
S501	SWITCH:ROTARY	SR-0430 PSS23(24)1-1-24
SP501	SPEAKER	SP-337
VR501	RESISTOR:VARIABLE	RV-651 RK1211111014-50KA
VR502	RESISTER:VARIABLE	RV-672 5KB
VR503	RESISTOR:VARIABLE	RV-652 VB12L PVB20F B1K
WA501	WIRE:ASSEMBLE	W-072028
YI501	BUSHING:TRANSISTOR	YD-019 B312D-11-A
YI502	INSULATION SHEET	YD-041 AC223
B801	PCB:MICOM	PA-0363AA 3/3
C801	C:ELECTRIC DOUBLE LAYER	0.047F 5.5V Z C-266
C802	C:ELECTROLYTIC	100UF 10V M C-130
C803	C:ELECTROLYTIC	0.22UF 50V M C-130
C804	C:ELECTROLYTIC	0.22UF 50V M C-130
C805	C:CERAMIC TS2.5S	22PF 50V J CH
C806	C:CERAMIC TS2.5S	22PF 50V J CH
C807	C:ELECTROLYTIC	330UF 10V M C-130
C808	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C809	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C811	C:ELECTROLYTIC	1UF 50V M C-130
D801	DIODE	1SS133 TAPING
D802	DIODE	1SS133 TAPING
D803	DIODE	1SS133 TAPING
D804	DIODE	1SS133 TAPING
FC801	FLAT CABLE	WF-0267 3.5- 90-3.5
FC802	FLAT CABLE	WF-0265 3.5- 40-3.5
FC803	FLAT CABLE	WF-267 3.5-40-3.5 4P
FC804	FLAT CABLE	WF-267 3.5-40-3.5 4P
IC801	INTEGRATED CIRCUIT:UC1648	LC66404A-4E67
IC802	INTEGRATED CIRCUIT	M51953BL
IC803	INTEGRATED CIRCUIT	M5278L05
L801	INDUCTOR:MOLDED	LZ-041 4.7UH K
Q801	TRANSISTOR	DB-003 2SA733-P
Q802	TRANSISTOR	DB-003 2SA733-P
Q803	TRANSISTOR	DB-548 DTC143XS
R801	R:CARBON AXIAL LEAD (26)	47K 1/6W J TAPE
R802	R:CARBON AXIAL LEAD (26)	47K 1/6W J TAPE
R803	R:CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R804	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R805	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R806	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R807	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R808	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R809	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R811	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R812	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R813	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R814	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R815	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R816	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE

R817	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R818	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R819	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R821	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R822	R:CARBON AXIAL LEAD (26)	22 1/6W J TAPE
RR801	R:ARRAY	HA-0150 RYLS7J103
W801	WIRE	UL1430 #24 10-50-10 BLU
W802	WIRE	UL1430 #24 10-50-10 WHT
W803	WIRE	UL1430 #24 10-50-10 WHT
W804	WIRE	UL1430 #24 10-50-3 RED
W805	WIRE	UL1430 #24 10-50-3 ORG
X801	CRYSTAL	QX-299 3.579545M
B551	PCB:FRONT	PA-0363AA 2/3
C551	C:SEMI-CONDUCTOR(SR) TS2.5	0.01UF 25V K SR
C552	C:ELECTROLYTIC	10UF 50V M C-125
C553	C:CERAMIC TS2.5S	0.0047UF 50V Z YF
D551	DIODE	LTD-482GC-01
D552	DIODE:LED	GL8HD22T
D553	DIODE:LED	GL8EG22T
D554	DIODE:LED	GL8KG21
D555	DIODE:LED	GL8KG21
D556	DIODE:LED	GL8KG21
D557	DIODE:LED	GL8HY21T
D558	DIODE:LED	GL8PR21T(B)
IC551	INTEGRATED CIRCUIT	LB1423N
Q551	TRANSISTOR	DB-548 DTC143XS
R551	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R552	R:CARBON AXIAL LEAD (26)	33K 1/6W J TAPE
R553	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R554	R:CARBON AXIAL LEAD (26)	6.8K 1/6W J TAPE
R555	R:CARBON AXIAL LEAD (26)	22K 1/6W J TAPE
S556	SWITCH:SLIDE	SW-0774 SLW43-12KB
S563	SWITCH:PUSH	SW-462 SPH121AA8
S564	SWITCH:SLIDE	SW-0773 SSFYP22-16KB
W551	WIRE	UL1430 #24 10-60-10 BLK
B1	PCB:MAIN	PA-0363AA 1/3
C1	C:CERAMIC TS2.5S	10PF 50V D CH
C2	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C3	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C4	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C5	C:CERAMIC TS5.0S	220PF 50V J SL
C6	C:CERAMIC TS5.0S	220PF 50V J SL
C7	C:CERAMIC TS2.5S	680PF 50V K YB
C8	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C9	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C11	C:CERAMIC TS2.5S	15PF 50V J UJ
C12	C:CERAMIC TS2.5S	0.0047UF 50V Z YF
C13	C:CERAMIC TS2.5S	0.001UF 50V M YD
C14	C:ELECTROLYTIC	4.7UF 50V M C-130
C15	C:CERAMIC TS5.0S	68PF 50V J UJ
C16	C:CERAMIC TS2.5S	0.001UF 50V M YD
C17	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C18	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C19	C:CERAMIC TS2.5S	18PF 50V J CH
C21	C:ELECTROLYTIC	3.3UF 50V M C-130

C22	C:ELECTROLYTIC	3.3UF 50V M C-130
C23	C:CERAMIC TS2.5S	33PF 50V J CH
C24	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C25	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C26	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C27	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C28	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C29	C:ELECTROLYTIC	10UF 50V M C-130
C31	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C32	C:CERAMIC TS2.5S	0.001UF 50V M YD
C33	C:ELECTROLYTIC	1UF 50V M C-130
C34	C:SEMI-CONDUCTOR(SR) TS2.5	0.001UF 25V K SR
C35	C:SEMI-CONDUCTOR(SR) TS2.5	0.022UF 25V K SR
C36	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C37	C:SEMI-CONDUCTOR(SR) TS2.5	0.0015UF 25V K SR
C38	C:SEMI-CONDUCTOR(SR) TS2.5	0.022UF 25V K SR
C39	C:CERAMIC TS2.5S	27PF 50V J CH
C41	C:SEMI-CONDUCTOR(SR) TS2.5	0.0022UF 25V K SR
C42	C:CERAMIC TS5.0S	220PF 50V J CH
C43	C:SEMI-CONDUCTOR(SR) TS5.0	0.039UF 25V K SR
C44	C:SEMI-CONDUCTOR(SR) TS5.0	0.039UF 25V K SR
C45	C:ELECTROLYTIC	22UF 50V M C-130
C46	C:SEMI-CONDUCTOR(SR) TS2.5	0.0015UF 25V K SR
C47	C:CERAMIC TS2.5S	0.001UF 50V M YD
C48	C:ELECTROLYTIC	0.22UF 50V M C-130
C49	C:ELECTROLYTIC	0.22UF 50V M C-130
C51	C:ELECTROLYTIC	10UF 50V M C-130
C52	C:CERAMIC TS2.5S	0.001UF 50V M YD
C53	C:SEMI-CONDUCTOR(SR) TS2.5	0.0047UF 25V K SR
C54	C:SEMI-CONDUCTOR(SR) TS2.5	0.0047UF 25V K SR
C55	C:CERAMIC TS2.5S	33PF 50V J CH
C56	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C57	C:CERAMIC TS2.5S	0.001UF 50V M YD
C58	C:CERAMIC TS2.5S	0.001UF 50V M YD
C59	C:CERAMIC TS2.5S	0.001UF 50V M YD
C61	C:CERAMIC TS2.5S	0.001UF 50V M YD
C63	C:ELECTROLYTIC	47UF 25V M C-130
C201	C:CERAMIC TS2.5S	33PF 50V J CH
C202	C:CERAMIC TS2.5S	33PF 50V J CH
C203	C:CERAMIC TS5.0S	220PF 50V J SL
C204	C:CERAMIC TS2.5S	27PF 50V J CH
C205	C:CERAMIC TS5.0S	220PF 50V J SL
C206	C:CERAMIC TS5.0S	330PF 50V J SL
C207	C:CERAMIC TS2.5S	33PF 50V J CH
C208	C:CERAMIC TS5.0S	150PF 50V J UJ
C209	C:CERAMIC TS2.5S	56PF 50V J UJ
C211	C:CERAMIC TS2.5S	2PF 50V C CK
C212	C:CERAMIC TS5.0S	0.01UF 50V M YD
C213	C:CERAMIC TS5.0S	220PF 50V J UJ
C214	C:ELECTROLYTIC	0.1UF 50V M C-130
C215	C:CERAMIC TS2.5S	100PF 50V J SL
C217	C:CERAMIC TS2.5S	470PF 50V K YB
C218	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C219	C:CERAMIC TS2.5S	0.001UF 50V M YD
C221	C:CERAMIC TS5.0S	0.01UF 50V Z YF

C222	C:SEMI-CONDUCTOR(SR) TS2.5	0.0015UF 25V K SR
C223	C:CERAMIC TS2.5S	0.001UF 50V M YD
C224	C:ELECTROLYTIC	2.2UF 50V M C-130
C225	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C226	C:ELECTROLYTIC	100UF 10V M C-130
C227	C:CERAMIC TS2.5S	0.001UF 50V M YD
C228	C:CERAMIC TS2.5S	0.001UF 50V M YD
C229	C:ELECTROLYTIC	22UF 50V M C-130
C231	C:CERAMIC TS2.5S	470PF 50V K YB
C232	C:CERAMIC TS2.5S	0.0047UF 50V Z YF
C233	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C234	C:ELECTROLYTIC	220UF 10V M C-130
C235	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C236	C:CERAMIC TS2.5S	8PF 50V D CH
C237	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C238	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C239	C:SEMI-CONDUCTOR(SR) TS2.5	0.001UF 25V K SR
C241	C:SEMI-CONDUCTOR(SR) TS5.0	0.068UF 25V K SR
C242	C:SEMI-CONDUCTOR(SR) TS2.5	0.022UF 25V K SR
C243	C:ELECTROLYTIC	4.7UF 50V M C-130
C244	C:ELECTROLYTIC	47UF 25V M C-130
C245	C:ELECTROLYTIC	1UF 50V M C-130
C246	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C247	C:CERAMIC TS5.0S	0.01UF 50V M YD
C248	C:SEMI-CONDUCTOR(SR) TS5.0	0.047UF 25V K SR
C249	C:ELECTROLYTIC	47UF 25V M C-130
C301	C:ELECTROLYTIC	470UF 25V M C-130
C302	C:SEMI-CONDUCTOR(SR) TS5.0	0.1UF 25V K SR
C303	C:ELECTROLYTIC	220UF 10V M C-130
C304	C:ELECTROLYTIC	0.47UF 50V M C-130
C305	C:ELECTROLYTIC	1UF 50V M C-130
C306	C:SEMI-CONDUCTOR(SR) TS5.0	0.1UF 25V K SR
C307	C:ELECTROLYTIC	1000UF 25V M C-130
C308	C:CERAMIC TS2.5S	39PF 50V J SL
C309	C:CERAMIC TS2.5S	0.001UF 50V M YD
C311	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C312	C:CERAMIC TS2.5S	39PF 50V J RH
C313	C:CERAMIC TS2.5S	15PF 50V J CH
C314	C:CERAMIC TS2.5S	68PF 50V J SL
C315	C:CERAMIC TS5.0S	100PF 50V J UJ
C316	C:CERAMIC TS5.0S	330PF 50V J UJ
C317	C:CERAMIC TS2.5S	39PF 50V J UJ
C318	C:CERAMIC TS2.5S	33PF 50V J CH
C319	C:CERAMIC TS2.5S	0.001UF 50V M YD
C321	C:SEMI-CONDUCTOR(SR) TS5.0	0.1UF 25V K SR
C322	C:ELECTROLYTIC	100UF 10V M C-130
C323	C:CERAMIC TS2.5S	33PF 50V J CH
C324	C:CERAMIC TS5.0S	47PF 50V J CH
C325	C:ELECTROLYTIC	0.47UF 50V M C-130
C326	C:CERAMIC TS5.0S	0.01UF 50V Z YF
C327	C:ELECTROLYTIC	100UF 10V M C-130
C328	C:CERAMIC TS2.5S	0.001UF 50V M YD
C329	C:ELECTROLYTIC	220UF 10V M C-130
CT301	C:TRIMMER	CT-020 30PF
D1	DIODE AX TS 26+	1SS108TD

D2	DIODE	1SS133	TAPING
D3	DIODE	1SS133	TAPING
D4	DIODE	1SS133	TAPING
D5	DIODE	1SS133	TAPING
D6	DIODE	1SS133	TAPING
D7	DIODE	1SS133	TAPING
D8	DIODE	1SS133	TAPING
D9	DIODE	1SS133	TAPING
D11	DIODE	1SS133	TAPING
D201	DIODE	1SS133	TAPING
D202	DIODE	1SS133	TAPING
D203	DIODE	1N4003	
D204	DIODE	1SS133	TAPING
D205	DIODE	1SS133	TAPING
D206	DIODE	1SS133	TAPING
D207	DIODE	1SS133	TAPING
D208	DIODE	1SS133	TAPING
D209	DIODE	1SS133	TAPING
D211	DIODE:VARICAP	1SV68	
D212	DIODE	1SS133	TAPING
D301	DIODE	KV1330	
D302	DIODE	1N5059	TAPE
D303	DIODE:ZENER AX TS 26 +	HZ5C1	TD
FC1	FLAT CABLE	WF-0267	3.5- 90-3.5
FC2	FLAT CABLE	WF-0272	3.5- 80-3.5
FT1	FILTER:CRYSTAL	FL-055	10M-7A1
FT2	FILTER:CERAMIC	FL-009	CF -455
IC1	INTEGRATED CIRCUIT	BA403	
IC2	INTEGRATED CIRCUIT	M5223L	
IC201	INTEGRATED CIRCUIT	NJM4558D	
IC301	INTEGRATED CIRCUIT	TDA1905	
IC302	INTEGRATED CIRCUIT	PLL2002A1	
IC303	INTEGRATED CIRCUIT	NJM7808FA	
J3	JACK	JK-089	HSJ0615
J8	JACK:MIC	JK-423	HSJ0838-01-500
J9	JACK	JK-571	M60-02-30-114P-6
L1	COIL	LB-0692	41M7-M(R12-K069A)
L2	COIL	LB-647	M7M/33303(R12K969)
L3	COIL	LB-651	M7M/33333(R12K317)
L4	COIL	LB-653	M7M/33333(R12K340)
L5	COIL	LB-652	M7M/33334(R12K339)
L6	COIL	LB-0694	41M7-M
L7	COIL	LB-656	21K7-T(R12H473A)
L8	COIL	LB-650	21K7-M(R12H468A)
L9	COIL	LB-706	
L11	COIL	LB-0687	51M7-S(R12H879A)
L201	COIL	LE-375	D6 7 1/2T
L202	COIL	LE-375	D6 7 1/2T
L203	COIL	LE-375	D6 7 1/2T
L204	COIL	LC-0073	
L205	COIL	LD-237	L-2R4W(R22-E563)
L206	COIL	LD-087	BF04-3*5*1
L207	COIL	LC-0130	
L208	COIL	LD-087	BF04-3*5*1
L209	INDUCTOR:MOLDED	LZ-041	0.33UH K

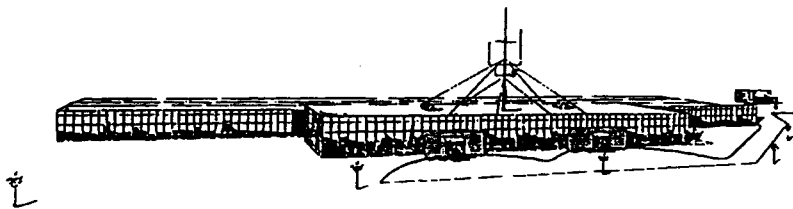
L301	COIL	LD-087 BF04-3*5*1
L302	COIL	LB-955 499GNAS-0125Z
L303	COIL	LB-955 499GNAS-0125Z
L304	COIL	LD-087 BF04-3*5*1
Q1	TRANSISTOR	DB-259 2SC1675-L
Q2	TRANSISTOR	DB-259 2SC1675-L
Q3	TRANSISTOR	DB-224 2SC945A-Q
Q4	TRANSISTOR	DB-003 2SA733-P
Q5	TRANSISTOR	DB-224 2SC945A-Q
Q6	TRANSISTOR	DB-259 2SC1675-L
Q7	TRANSISTOR	DB-259 2SC1675-L
Q8	TRANSISTOR	DB-295 2SC1674-L
Q9	FIELD EFFECT TRANSISTOR	DC-019 2SK192A-BL
Q11	FIELD EFFECT TRANSISTOR	DC-019 2SK192A-BL
Q12	TRANSISTOR	DB-259 2SC1675-L
Q13	TRANSISTOR	DB-259 2SC1675-L
Q14	TRANSISTOR	DB-301 2SC941TM-0
Q15	TRANSISTOR	DB-224 2SC945A-Q
Q17	TRANSISTOR	DB-295 2SC1674-L
Q201	TRANSISTOR	DB-792 2SC2314F
Q202	TRANSISTOR	DB-301 2SC941TM-0
Q203	TRANSISTOR	DB-259 2SC1675-L
Q204	TRANSISTOR	DB-003 2SA733-P
Q205	TRANSISTOR	DB-548 DTC143XS
Q206	TRANSISTOR	DB-548 DTC143XS
Q207	TRANSISTOR	DB-123 2SB1133-R
Q208	TRANSISTOR	DB-383 2SC3242A-E
Q209	TRANSISTOR	DB-548 DTC143XS
Q211	TRANSISTOR	DB-003 2SA733-P
Q212	TRANSISTOR	DB-548 DTC143XS
Q213	TRANSISTOR	DB-309 2SC2001-L
Q214	TRANSISTOR	DB-224 2SC945A-Q
Q215	TRANSISTOR	DB-003 2SA733-P
Q216	TRANSISTOR	DB-003 2SA733-P
Q217	TRANSISTOR	DB-224 2SC945A-Q
Q218	TRANSISTOR	DB-224 2SC945A-Q
Q219	TRANSISTOR	DB-548 DTC143XS
Q221	TRANSISTOR	DB-003 2SA733-P
Q222	TRANSISTOR	DB-548 DTC143XS
Q303	TRANSISTOR	DB-548 DTC143XS
Q304	TRANSISTOR	DB-295 2SC1674-L
Q305	TRANSISTOR	DB-295 2SC1674-L
Q308	TRANSISTOR	DB-548 DTC143XS
Q309	TRANSISTOR	DB-259 2SC1675-L
R1	R: CARBON AXIAL LEAD (26)	1M 1/6W J TAPE
R2	R: CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R3	R: CARBON AXIAL LEAD (52)	10K 1/4W J TAPE
R4	R: CARBON AXIAL LEAD (26)	2.2M 1/6W J TAPE
R5	R: CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R6	R: CARBON AXIAL LEAD (26)	1K 1/6W J TAPE

R7	R:CARBON AXIAL LEAD (26)	68K 1/6W J TAPE
R8	R:CARBON AXIAL LEAD (26)	47K 1/6W J TAPE
R9	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R11	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R12	R:CARBON AXIAL LEAD (26)	1.5K 1/6W J TAPE
R13	R:CARBON AXIAL LEAD (26)	680 1/6W J TAPE
R14	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R15	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R16	R:CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R17	R:CARBON AXIAL LEAD (26)	68K 1/6W J TAPE
R18	R:CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R19	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R21	R:CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R22	R:CARBON AXIAL LEAD (26)	47K 1/6W J TAPE
R23	R:CARBON AXIAL LEAD (26)	220 1/6W J TAPE
R24	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R25	R:CARBON AXIAL LEAD (26)	47 1/6W J TAPE
R26	R:CARBON AXIAL LEAD (26)	1.5M 1/6W J TAPE
R27	R:CARBON AXIAL LEAD (26)	56K 1/6W J TAPE
R28	R:CARBON AXIAL LEAD (26)	56K 1/6W J TAPE
R29	R:CARBON AXIAL LEAD (26)	56K 1/6W J TAPE
R31	R:CARBON AXIAL LEAD (26)	22K 1/6W J TAPE
R32	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R33	R:CARBON AXIAL LEAD (26)	1.5K 1/6W J TAPE
R34	R:CARBON AXIAL LEAD (26)	12K 1/6W J TAPE
R35	R:CARBON AXIAL LEAD (26)	820K 1/6W J TAPE
R36	R:CARBON AXIAL LEAD (26)	680 1/6W J TAPE
R37	R:CARBON AXIAL LEAD (26)	12K 1/6W J TAPE
R38	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R39	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R41	R:CARBON AXIAL LEAD (26)	6.8K 1/6W J TAPE
R42	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R43	R:CARBON AXIAL LEAD (26)	470 1/6W J TAPE
R44	R:CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R45	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R46	R:CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R47	R:CARBON AXIAL LEAD (52)	330 1/4W J TAPE
R48	R:CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R49	R:CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R51	R:CARBON AXIAL LEAD (52)	33K 1/4W J TAPE
R52	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R53	R:CARBON AXIAL LEAD (26)	15K 1/6W J TAPE
R54	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R55	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R56	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R57	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R58	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R59	R:CARBON AXIAL LEAD (26)	1.5M 1/6W J TAPE
R61	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R62	R:CARBON AXIAL LEAD (26)	680K 1/6W J TAPE
R63	R:CARBON AXIAL LEAD (26)	5.6K 1/6W J TAPE
R64	R:CARBON AXIAL LEAD (26)	560 1/6W J TAPE
R65	R:CARBON AXIAL LEAD (26)	5.6K 1/6W J TAPE
R66	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R67	R:CARBON AXIAL LEAD (26)	4.7K 1/6W J TAPE

R68	R:CARBON AXIAL LEAD (26)	56K 1/6W J TAPE
R69	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R71	R:METAL OXIDE BULK	6.8 2W J
R72	R:CARBON AXIAL LEAD (26)	390 1/6W J TAPE
R73	R:CARBON AXIAL LEAD (26)	390K 1/6W J TAPE
R74	R:CARBON AXIAL LEAD (26)	560 1/6W J TAPE
R76	R:CARBON AXIAL LEAD (26)	1.5K 1/6W J TAPE
R201	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R202	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R203	R:CARBON AXIAL LEAD (26)	220 1/6W J TAPE
R204	R:CARBON AXIAL LEAD (52)	18 1/4W J TAPE
R205	R:CARBON AXIAL LEAD (26)	2.2 1/6W J TAPE
R206	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R207	R:CARBON AXIAL LEAD (52)	33 1/4W J TAPE
R208	R:CARBON AXIAL LEAD (26)	4.7 1/6W J TAPE
R209	R:CARBON AXIAL LEAD (26)	39 1/6W J TAPE
R211	R:CARBON AXIAL LEAD (26)	8.2K 1/6W J TAPE
R212	R:CARBON AXIAL LEAD (26)	15K 1/6W J TAPE
R213	R:CARBON AXIAL LEAD (26)	180 1/6W J TAPE
R214	R:CARBON AXIAL LEAD (26)	150 1/6W J TAPE
R215	R:CARBON AXIAL LEAD (26)	5.6K 1/6W J TAPE
R216	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R217	R:CARBON AXIAL LEAD (26)	15K 1/6W J TAPE
R218	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R219	R:CARBON AXIAL LEAD (26)	22K 1/6W J TAPE
R221	R:CARBON AXIAL LEAD (26)	1.8K 1/6W J TAPE
R222	R:CARBON AXIAL LEAD (26)	560 1/6W J TAPE
R223	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R224	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R225	R:CARBON AXIAL LEAD (26)	5.6K 1/6W J TAPE
R226	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R227	R:CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R228	R:CARBON AXIAL LEAD (26)	470 1/6W J TAPE
R229	R:METAL OXIDE BULK	82 1W J
R231	R:METAL OXIDE BULK	82 1W J
R232	R:METAL OXIDE BULK	180 1W J
R233	R:CARBON AXIAL LEAD (26)	390 1/6W J TAPE
R234	R:CARBON AXIAL LEAD (26)	4.7K 1/6W J TAPE
R235	R:CARBON AXIAL LEAD (26)	1.5K 1/6W J TAPE
R236	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R237	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R238	R:CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R239	R:CARBON AXIAL LEAD (26)	47K 1/6W J TAPE
R241	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R242	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R243	R:CARBON AXIAL LEAD (26)	2.7K 1/6W J TAPE
R244	R:CARBON AXIAL LEAD (26)	39K 1/6W J TAPE
R245	R:CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R246	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R247	R:CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R248	R:CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R249	R:CARBON AXIAL LEAD (26)	1.5K 1/6W J TAPE
R251	R:CARBON AXIAL LEAD (26)	680 1/6W J TAPE
R252	R:CARBON AXIAL LEAD (26)	4.7K 1/6W J TAPE
R253	R:CARBON AXIAL LEAD (26)	3.9K 1/6W J TAPE

R254	R: CARBON AXIAL LEAD (26)	10K 1/6W J TAPE
R255	R: CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R256	R: CARBON AXIAL LEAD (26)	22K 1/6W J TAPE
R257	R: CARBON AXIAL LEAD (26)	100K 1/6W J TAPE
R258	R: CARBON AXIAL LEAD (26)	220K 1/6W J TAPE
R259	R: CARBON AXIAL LEAD (26)	27K 1/6W J TAPE
R261	R: CARBON AXIAL LEAD (26)	33K 1/6W J TAPE
R262	R: CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R263	R: CARBON AXIAL LEAD (26)	68K 1/6W J TAPE
R264	R: CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R265	R: CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R266	R: CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R267	R: CARBON AXIAL LEAD (26)	2.2K 1/6W J TAPE
R301	R: CARBON AXIAL LEAD (26)	1 1/6W J TAPE
R302	R: CARBON AXIAL LEAD (26)	68K 1/6W J TAPE
R303	R: CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R304	R: CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R305	R: CARBON AXIAL LEAD (26)	560 1/6W J TAPE
R306	R: CARBON AXIAL LEAD (26)	150 1/6W J TAPE
R307	R: CARBON AXIAL LEAD (26)	390 1/6W J TAPE
R308	R: CARBON AXIAL LEAD (26)	15K 1/6W J TAPE
R309	R: CARBON AXIAL LEAD (26)	330 1/6W J TAPE
R311	R: CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R312	R: CARBON AXIAL LEAD (26)	15K 1/6W J TAPE
R313	R: CARBON AXIAL LEAD (26)	33K 1/6W J TAPE
R314	R: CARBON AXIAL LEAD (26)	1K 1/6W J TAPE
R315	R: CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R316	R: CARBON AXIAL LEAD (26)	220 1/6W J TAPE
R317	R: CARBON AXIAL LEAD (26)	10 1/6W J TAPE
R318	R: CARBON AXIAL LEAD (26)	470K 1/6W J TAPE
R319	R: CARBON AXIAL LEAD (26)	4.7K 1/6W J TAPE
R321	R: CARBON AXIAL LEAD (26)	4.7K 1/6W J TAPE
R322	R: CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R323	R: CARBON AXIAL LEAD (52)	10K 1/4W J TAPE
R324	R: CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R325	R: CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R326	R: CARBON AXIAL LEAD (26)	3.3K 1/6W J TAPE
R327	R: CARBON AXIAL LEAD (26)	100 1/6W J TAPE
R328	R: CARBON AXIAL LEAD (26)	47 1/6W J TAPE
RT1	RESISTOR: SEMI-FIXED	RT-0552 500KB
RT2	RESISTOR: SEMI-FIXED (TAPE)	RT-552 10KB
RT201	RESISTOR: SEMI-FIXED (TAPE)	RT-552 100KB
RT202	RESISTOR: SEMI-FIXED (TAPE)	RT-552 2KB
RT203	RESISTOR: SEMI-FIXED (TAPE)	RT-552 1KB
RT204	RESISTOR: SEMI-FIXED (TAPE)	RT-552 3KB
RT205	RESISTOR: SEMI-FIXED (TAPE)	RT-552 10KB
T301	TRANSFORMER	TF-177
T302	TRANSFORMER	TF-374 CT-19E-B(R29-1097
W1	WIRE	UL1430 #24 10-30-3 WHT
W2	WIRE	UL1430 #24 10-110-10 ORG
X301	CRYSTAL	QX-074 10.240MHZ

REF No	DESCRIPTION	SPEC
MC951	MICROPHONE	MK-478
WA951	CORD:DC	WZ-517 1515 W/P



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