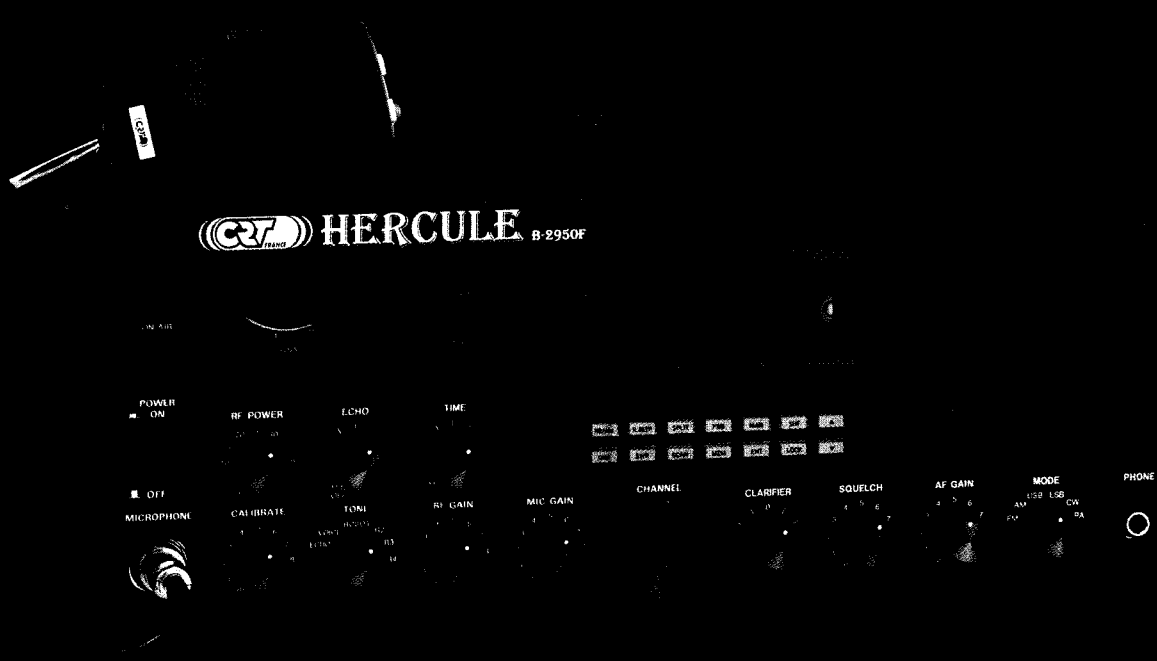




SUPERSTAR®



HERCULE

Found on Roger78 great website: 78roger.free.fr
Downloaded from www.cbradio.nl

CRT HERCULE B2950 F

GÉNÉRALITÉS :

Fréquences couvertes	:	28 0000 à 29 6999 Mhz	EXPORT 26.32 MHZ
Fonction Split	:	Semi duplex activé	
Pas d'incrémentation	:	100 Hz, 1 KHz, 10 KHz, 100 KHz, 1 Mhz	
Classes d'émission	:	USB, LSB (J3E) CW (A1A) AM (A3E) FM (F3E)	
Fréquence control	:	PLL synthétisé	
Fréquence tolérance	:	0,005 %	
Fréquence stabilité	:	0,001 %	
Température de fonctionnement	:	0°C à 40°C	
Antenne impédance	:	50 Ohms	
Haut parleur impédance	:	8 Ohms, 2 Watts	
Micro impédance	:	400 Ohms, pastille dynamique	
Affichage	:	Digital LCD	
Alimentation	:	220 V AC	

ÉMETTEUR :

Puissance de sortie antenne	:	AM/FM : 12 W - USB/LSB/CW : 25 W
Fréquences parasites	:	- 50 Db
Suppression de la porteuse	:	- 50 Db
Connecteur antenne	:	UHF 50 (SO239)
Modes de transmission	:	USB, LSB, CW, AM, FM

RÉCEPTEUR :

Réception pour 10 Db de signal/bruit AM	:	0,5 Microvolts USB/LSB/CW : 0,3 Microvolts FM : 1 Microvolt
Rejection image	:	65 Db
AGC Figure	:	SSB/CW/AM : 80 Db pour 50 Microvolts pour 10 Db change en BF sortie
Puissance BF à 10 % de distorsion	:	2,5 Watts
Principe de réception	:	Double changement de fréquence (10 695 Mhz et 455 KHz)

AGRÈMENT PTT : 910021 AMA 1



DISTRIBUTEUR AGRÉÉ :

SECTION SUBJECT :

SPECTIFICATION	2
1. OPERATION	
1.0 Introduction	3
1.1 Control & Connections	3
1.2 Rear Panel Connectors	5
1.3 Microphone	5
1.4 Operation	5
2. PROGRAMMING	
2.0 Introduction	7
2.1 Frequency Selection	7
2.2 Frequency Scanning	8
2.3 Offset Frequency Operation	9
3. ALIGNMENT	
4.0 Test Equipment	10
4.1 PLL Synthesizer & Oscillator Frequency Alignment	10
4.2 Receiver Alignment	11
4.3 Transmitter Alignment	12
4. BLOCK DIAGRAM	13
5. SCHEMATICS & PCB LAUOUT	14
.....	

CRT HERCULE B2950F

SPECIFICATIONS

GENERAL

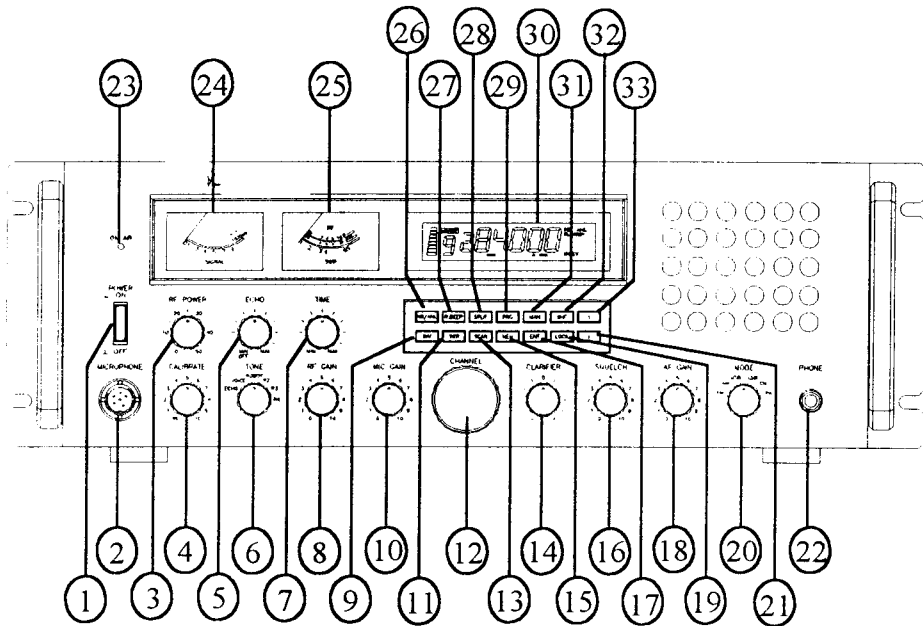
Model	CRT HERCULE B2950F
Frequency	28.000 -- 29.699MHz
Emission Steps	AM, FM, CW, USB, LSB
Frequency Control	Phase - Locked - Loop Synthesizer
Frequency Tolerance	0.005%
Frequency Stability	0.005%
Temperature Ranger	- 30°C to + 55°C
Antenna Impedance	50 Ohms
Meter Function	RF Output, RX Receive Signal Strength Modulation, SWR Calibration, SWR
Input Voltage	AC 110V,60Hz (AC 220V,50Hz)

TRANSMITTER

RF Power Output	25W : USB, LSB 12W : CW 8W : AM/FM
RF Transmit Modes	AM, FM, CW, USB, LSB
Antenna Connector	UHF Type, 50 Ohms
Modulation	16F3
Spurious Emissions	-60dB
Carrier Suppression	-60dB

RECEIVER

Sensitivity for 10dB S/N	AM 1.0uV
Sensitivity for 10dB S/N	USB/LSB/CW 0.2uV
Sensitivity for 20dB S/N	FM 1.0uV
Image Rejection Ratio	-65dB
AGC Figure of Merit	SSB/CW/AM : 80dB for 50mV for 10dB Change in Audio Output
Audio Output Power @ 10% THD	2.5W



1.0 INTRODUCTION

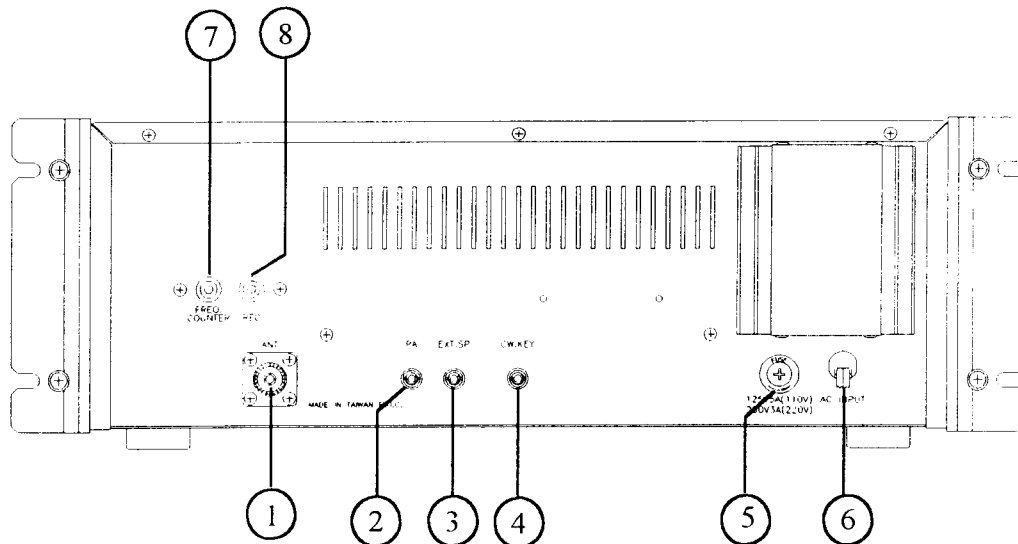
This section explains the basic operating procedures for the **HERCULE B2950F** Citizen's Band 11 meter mobile transceiver.

sound and voice change to change your tone.

1.1 CONTROL & CONNECTIONS

- | | |
|---|--|
| <p>1. POWER ON/OFF CONTROL : Push on to apply power to the unit.</p> <p>2. MICROPHONE JACK : Used to connect microphone for voice source.</p> <p>3. RF POWER CONTROL : This control that to adjust the RF power output level you want in AM or FM transmission.</p> <p>4. CALIBRATE CONTROL : This control allows the user to calibrate the SWR meter.</p> <p>5. ECHO : This control is used to ECHO effect.</p> <p>6. ECHO/VOICE/ROBOT SWITCH : This SW is used to select special sound effect, you can transmit your message in a echo, robot</p> | <p>7. TIME : Set this control to your desired echo delay .</p> <p>8. RF GAIN CONTROL : This control is used to reduce the gain of the RF amplifier under strong signal conditions.</p> <p>9. DIM SWITCH : This switch adjust the display backlighting in four different steps to best match environment.</p> <p>10. MIC GAIN CONTROL : This control adjusts the microphone gain in the transmit mode. This feature is designed for use in a high-ambient noise environment or to maximize talk power.</p> <p>11. SWR SWITCH : This switch is used to check SWR.</p> <p>12. CHANNEL SELECTOR : This control is used to select a desired channel or frequency.</p> |
|---|--|

13. **SCAN SWITCH** : This switch is used to scan frequencies in each band segment. The operation section of this manual provides detailed information on using this scan control.
14. **CLARIFIER CONTROL** : Allows variation of the receiver operating frequency above and below the assigned frequency. Although this control is intended primarily to tune in SSB signal, it may be used to optimize AM/FM signals as described in the operating procedure paragraphs.
15. **MEMORY SWITCH** : This is used program memory channels.
16. **SQUELCH CONTROL** : This control is used to control or eliminate receiver background noise in the absence of incoming signal. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise is eliminated. Turn fully counterclockwise, then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signal will be heard at a maximum clockwise setting.
17. **ENTER SWITCH** : This is used program frequencies in memory.
18. **AF GAIN** : Permits you to adjust the listening level when receiving.
19. **LOCK SWITCH** : This switch is used to lock a selected frequency.
20. **MODE CONTROL** : This control allows you to select one of six flowing operating modes : CW/FM/AM/LSB/USB/PA.
21. **▲ UP SWITCH** : This switch is used to move frequency upward to select a desired frequency.
22. **PHONE JACK** : Used to connect earphone to listening.
23. **POWER LED** : The RED LED indicate the unit is power on.
24. **SIGNAL METER** : The left hand meter provide indication of the signal strength of a received signal in S units during reception.
25. **RF/SWR METER** : Used for two purpose, to indicate relative transmitter power when transmitting and to indicate antenna SWR.
26. **NB/ANL SWITCH** : The noise blacker is very effective in eliminating repetitive impulse noise such as ignition interference. In the ANL position the automatic noise limiter in the audio circuits is activate.
27. **ROGER BEEP SWITCH** : When this switch is placed in the ROGER BEEP position, you radio automatically transmit the audio sign at the end of you transmission. The listener can note easily your transmission is over through the sign.
28. **SPLIT SWITCH** : This switch enables you to split and operating frequency for FM repeater operation.
29. **PROGRAM SWITCH** : This switch is used to program operating or scanning frequency into memory.
30. **FREQUENCY COUNTER** : The frequency counter indicates the frequency of the selected channel you wish to operate on.
31. **MANUAL SWITCH** : This is used to return to the manual mode.
32. **SHIFT SWITCH** : This is used to select 100 Hz, 1KHz, 10KHz, 100KHz or 1MHz frequency steps.
33. **▼ UP SWITCH** : This switch is used to move frequency down ward to select a desired frequency.



1.2 REAR PANEL CONNECTOR

1. **ANTENNA** : This jack accepts 50 ohm coaxial cable with a PL-259 type plug.
2. **PA SP** : Used to connect a PA speaker (8 ohm 4w) for PA operation. Before operating PA you must first connect a PA speaker to this jack.
3. **EXTERNAL SPEAKER** : This jack accepts 4 to 8 ohm, 5 watt external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.
4. **CW KEY** : This is used for Morse Code operation. To operate this mode, connect a CW key to this jack and place the mode switch in the CW position.
5. **FUSE** : Accommodates a fuse for AC input circuit protection. Use 125V 7A or 250V 4A fuse for replacement.
6. **AC POWER CORD** : Connects to AC power outlet for AC mains supply.
7. **FREQUENCY COUNTER JACK** : The RCA-type jack is used to connect an optional frequency counter so that you can watch channel frequency digitally. The frequency counter readout will be possible on transmit only.

8. **RECORDING OUTPUT JACK** : The RCA-type jack provides output for connection to a tape recorder to permit recording of receiver signals or you modulating voice.

1.3 MICROPHONE

The receiver and transmitter are controlled by the push-to-talk switch on the microphone. Press the switch and the transmitter is activated, release switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal "voice". The radios come complete with low-impedance dynamic microphone.

1.4 OPERATION

A. PROCEDURE TO RECEIVE

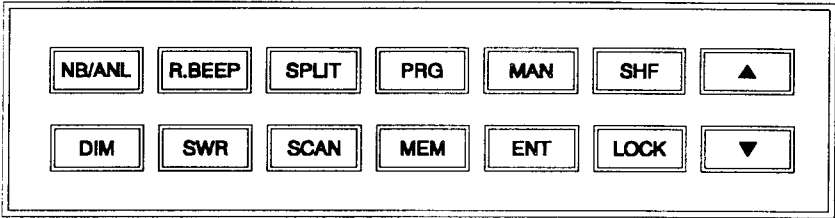
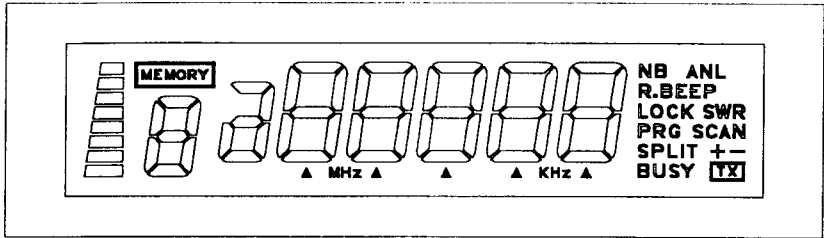
1. Be sure that power source, microphone and antenna are connected to the proper connectors before going to the next step.
2. Turn unit on by running **VOL** knob clockwise on transceiver.
3. Set the **VOL** for a comfortable listening level.
4. Set the **MODE** switch to the desired mode.
5. Listen to the background noise from the speaker. Turn the **SQ** knob slowly clock-

wise until the noise just disappear. Level the control at this setting. This **SQ** is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of weaker signals will not be heard.

6. Set the **CHANNEL** select or switch to the desired channel or frequency.
7. Set the **RF** gain control fully clockwise for maximum **RF** gain.
8. Adjust **CLARIFIER** control to clarify the SSB/CW signals or to optimize AM / FM signals.

B. PROCEDURE TO TRANSMIT

1. Select the desired channel of transmission.
2. Set the **MIC GAIN** control fully clockwise.
3. If the channel is clear, depress the push-to talk switch on the microphone and speak in a normal voice.



2.0 INTRODUCTION

This section explains the basic programming procedures for the **HERCULE B2950F** III amateur 10 meter mobile transceiver.

2.1 FREQUENCY SELECTION

Frequency selection in the radio can be accomplished using three of the following methods :

1. The first method of frequency selection is through the use of the **SHF** key and the **UP** and **DOWN** arrows. To accomplish this, press the **SHF** button until the cursor arrow is position under the digit of the frequency that is to be changed. Then use the **UP** arrow to increase the number. If a decrease in frequency is desired, press the **DOWN** arrow. Perform the steps described above for each digit of the frequency until the desired frequency is displayed in the **LCD** display windows.
2. The second method of frequency selection is accomplished using the **SHF** button and

the channel select knob located above the front panel. Use the **SHF** button in the manner described above to select the digit to be changed. Then proceed to rotate the channel select knob clockwise to increase the frequency. Rotate the channel select knob counterclockwise to decrease the frequency.

3. The third method of selecting the operating frequency of the radio is through the use of the **SHF** button and the channel **UP** and **DOWN** button located on the microphone. Frequency selection by this method is accomplished in the same manner as with the **UP** and **DOWN** arrows on the key pad. The only difference is that the channel **UP** and **DOWN** buttons on the microphone are used.

While in receive mode, once a signal has been detected on a particular frequency, It may be necessary to slightly change the frequency to provide the best audio through the speaker. This can be accomplished by rotating the clarifier control to

the unit to the manual mode of operation by pressing the **MAN** key.

6. To initiate memory scanning, press **MEM** and then press **SCAN**. As previously discussed, the display will show "**SCAN +**" or "**SCAN -**" to indicate whether the radio is scanning from the lowest the highest memory location or vice versa.
7. To return the radio to normal (non-scanning) operation, press the **MAN** key.

2.3 OFFSET FREQ. OPERATION

The **GX-SATURN III** has an offset or split frequency feature that will permit the radio to be operated in a half-duplex mode. This will allow the user to talk on FM repeaters operating in the 10 meter band. This split frequency function offsets the transmitter frequency either above or below the receive frequency by a user programmable amount. In the following example, programming of a 100KHz offset will be described. Before attempting to program the offset frequency, ensure that the radio is operating in the manual mode by pressing the **MAN** key.

1. Press the **PRG** key.
2. Press the **SPLIT** key. The **LCD** display window will display "**00000**" with "**PRG**" and "**SPLIT**" being displayed in the lower left-hand corner.
3. Using the **SHF** key and the **UP** and **DOWN** arrows as described earlier, program the display to read "**01000**".
4. Press **ENT**. A 100KHz offset has now been programmed into the radio.
5. Return the radio to manual operation by pressing the **MAN** key.
6. Using the **SHF** key and the **UP** and **DOWN** arrows as described previously,

set the radio for the desired receive frequency.

7. Press **SPLIT**. In the lower right corner of the display, either "**SPLIT +**" or "**SPLIT -**" will be displayed. If **SPLIT +** is display, the transmitter will be offset 100KHz above the receive frequency when keyed. If **SPLIT -** is displayed, the transmitter will be offset 100KHz below the receive frequency.

NOTE : When the transmitter is keyed, the frequency display will change to show the frequency being transmitted.

8. To return the radio simplex operation (i.e, same transmit and receive frequency), press the **MAN** key.

<p>SECTION 3 ALIGNMENT</p>

4.0 TEST EQUIPMENT

- | | |
|-----------------------------------|---------------------------------|
| 1. RF Power Meter (100MHz, 50W). | 6. Frequency Counter (100MHz). |
| 2. Multimeter. | 7. Distortion Meter. |
| 3. Deviation Meter. | 8. Oscilloscope (50MHz). |
| 4. Audio Signal Generator. | 9. Spectrum Analyzer. |
| 5. RF Signal Generator (100MHz). | |

4.1 PLL SYNTHESIZER / OSCILLATOR FREQUENCY ALIGNMENT

ITEM	CONNECTS & SETTING	ADJUST	MEASUREMENT
VCO & OSC	Disconnect the "short PCB" from test point TP1,2 and TP3. Set radio to 28.000MHz, AM mode CLARIFIER Setting in 12 O'clock Connect Frequency Counter to L61	VC1	10.240MHz ± 10Hz
	Connect Oscilloscope to L61	L4	Maximum Output
	Connect Frequency Counter to pin3 of IC14	VC2	10.240MHz ± 10Hz
	Connect Volt Meter to R203,202	L21	2.0VDC
	Connect Frequency Counter to C169	L21	Lock on 11.10MHz
	Connect Frequency Counter to L26	L23	Lock on 1.135MHz
	Connect Frequency Counter to C188	L24,25	Lock on 11.375MHz
	Connect volt meter to JP13 and ground	L17	2.2VDC ± 0.1
	Connect Frequency Counter to J86	L17	Lock on 17.305MHz
	Connect Oscilloscope to L62	L19	Maximum Output
AM OSC	Connect Frequency Counter to L62, Then Key Transmitter	VR21	TX & RX same Frequency
	Set radio to 28.000MHz, AM mode Connect freq counter to D45 cathode	L27	10.695MHz ± 10Hz

ITEM	CONNECTS & SETTING	ADJUST	MEASUREMENT
USB OSC	Set radio to 28.000MHz, USB mode Connect freq counter to D45 cathode and short Q30 (collector, emitter).	L29	10.6925MHz ± 10Hz
LSB OSC	Set radio to 28.000MHz, LSB mode Connect freq counter to D45 cathode and short Q30 (collector, emitter).	L28	10.6975MHz ± 10Hz

4.2 RECEIVER ALIGNMENT

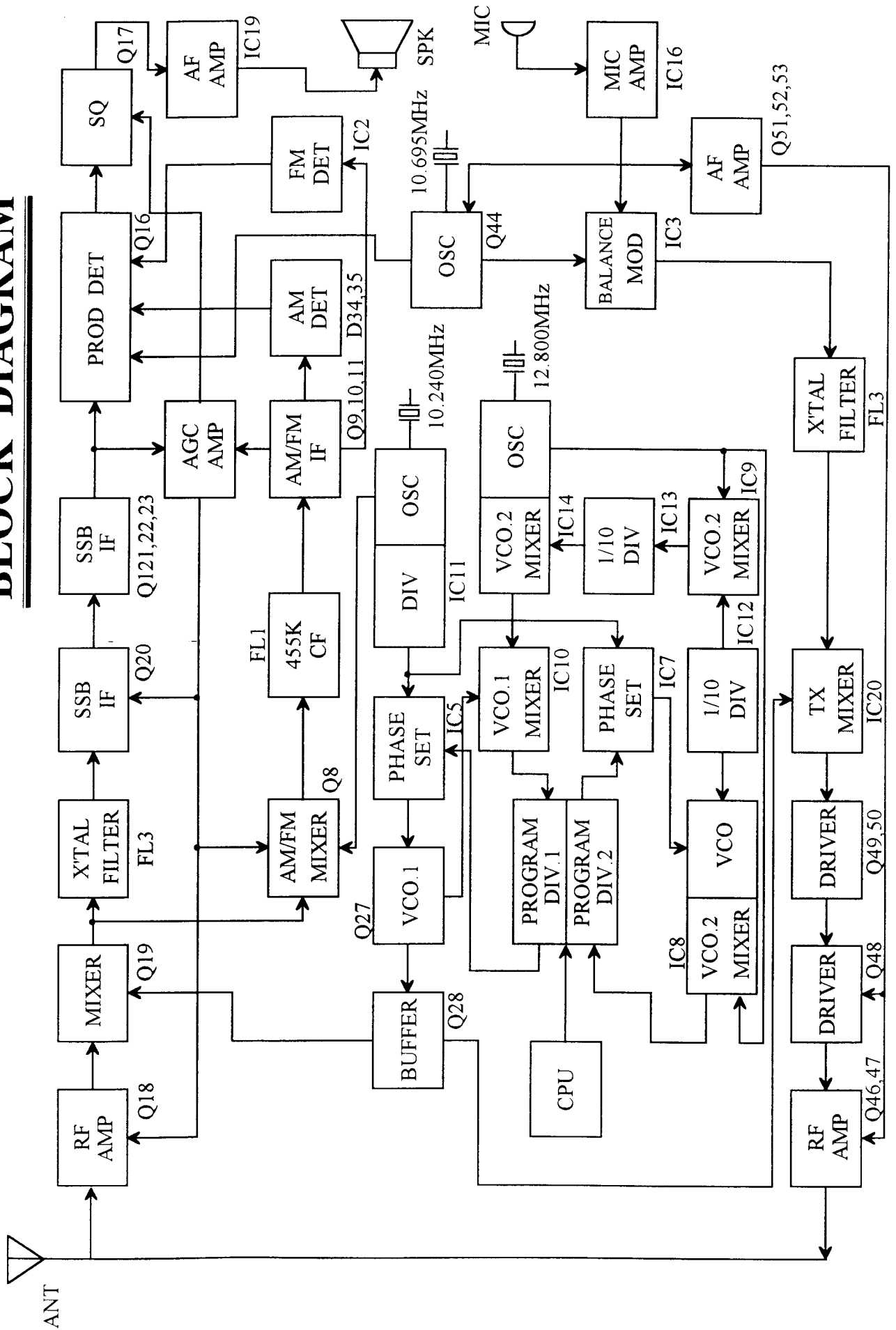
ITEM	CONNECTS & SETTING	ADJUST	MEASUREMENT
AM SENSITIVITY	Set radio to 28.000MHz, AM mode CLARIFIER Setting in 12 O'clock RF Gain fully clockwise, SQ at mini- mum, VOL control at 2 O'clock. Connect RF SG to ANT jack and set- ting 28.000MHz, MOD 30%, 1.0uV Connect distortion meter to EXT SP jack	L8,9,11,12 13,14,3,4, 5,6	Audio output > 2V S/N 10dB
AM AF OUTPUT	Set radio to 28.000MHz, AM mode VOL control at fully clockwise. RF SG setting 28.000MHz, MOD 30%, 1mV	L5,6	Audio output > 5V Bast at distortion.
FM DISTORTION	Set radio to 28.000MHz, FM mode VOL control at fully clockwise. RF SG setting 28.000MHz, MOD 3KHz, 1mV	L7	Audio output > 5V Bast at distortion.
USB SENSITIVITY	Set radio to 28.000MHz, USB mode VOL control at fully clockwise. RF SG setting 28.001MHz, MOD off, 0.5uV	L15,16	Audio output > 3V S/N 10dB.
LSB SENSITIVITY	Set radio to 28.100MHz, LSB mode VOL control at fully clockwise. RF SG setting 28.099MHz, MOD off, 0.5uV	L15,16	Audio output > 3V S/N 10dB.
NB ADJUST	Set radio to 28.000MHz, AM mode RF SG setting 28.010MHz, MOD 30%, 1mV, NB/ANL switch on. Connect volt meter to D2 cathode.	L1,2	DC voltage to MAX (About > 2.5V)
AM SQUELCH	Set radio to 28.000MHz, AM mode SQ control at fully clockwise. RF SG setting 28.000MHz, MOD 30%, 1mV	VR4 Slowly	Adjust very slowly until squelch just open.

ITEM	CONNECTS & SETTING	ADJUST	MEASUREMENT
SSB SQUELCH	Set radio to 28.000MHz, USB mode SQ control at fully clockwise. RF SG setting 28.001MHz, MOD off, 1mV	VR3 Slowly	Adjust very slowly until squelch just open.
AM S/RF METER	Set radio to 28.000MHz, AM mode Meter switch at S/RF position. RF SG setting 28.000MHz, MOD 30%, 100uV	VR1	Meter needle to S9 on the S scale.
SSB S/RF METER	Set radio to 28.000MHz, USB mode S/RF switch at S/RF position. RF SG setting 28.001MHz, MOD off, 100uV	VR2	Meter needle to S9 on the S scale.

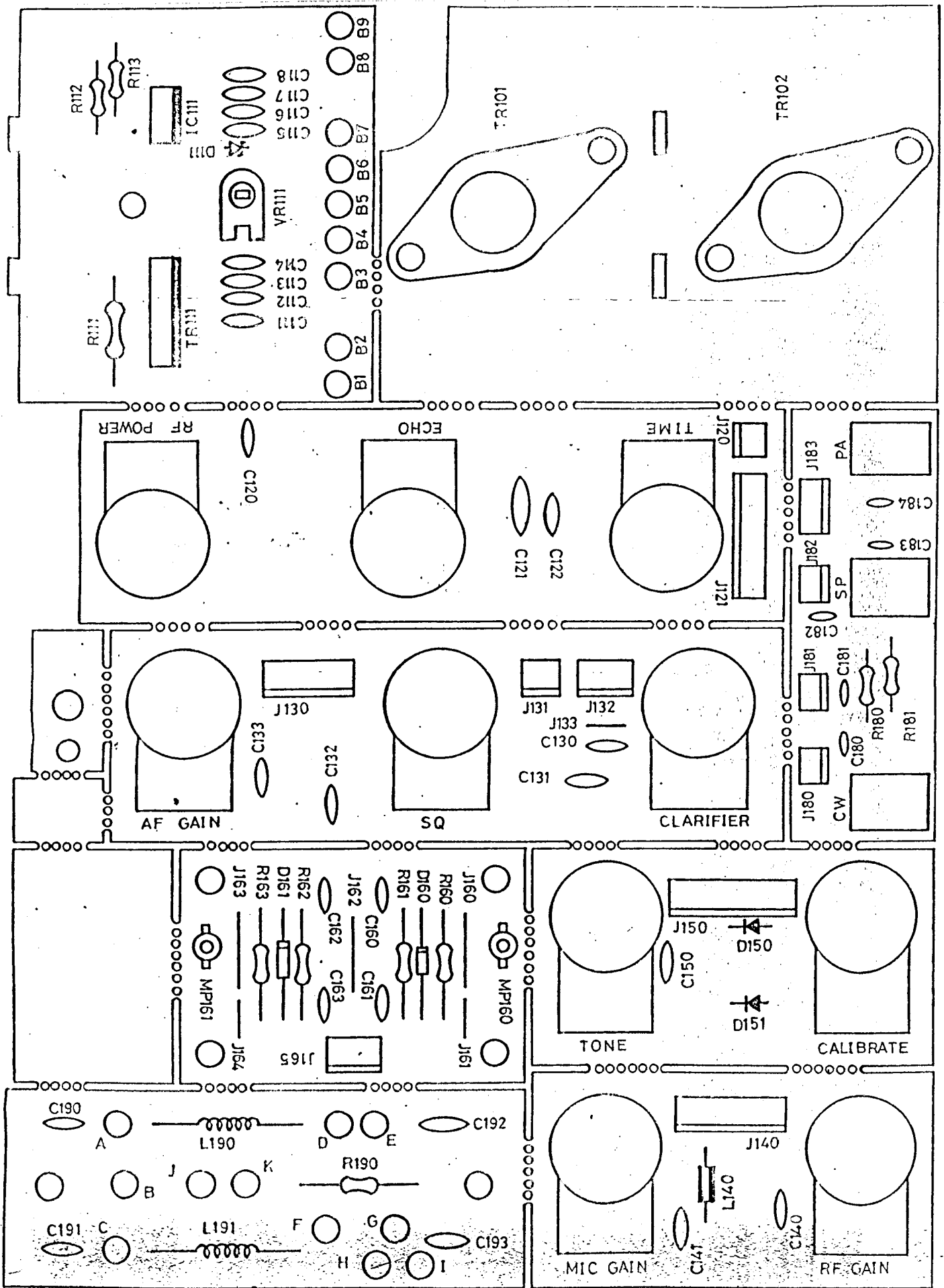
4.3 TRANSMITTER ALIGNMENT

ITEM	CONNECTS & SETTING	ADJUST	MEASUREMENT
SSB TX POWER	Set radio to 28.000MHz, AM mode MIC, RF POWER Gain fully clockwise, Connect "short PCB" to TP1,2 and 3 Connect RF power meter to ANT jack Audio signal 30mV, 1KHz to MIC. Adjust VR12 fully clockwise. Connect Volt Meter to TP1.	VR13	DC6V
	Set radio to USB mode	L43,46,47, 48	Maximum output
	Set radio to 29.699MHz, USB mode	L19,43 L34	Maximum output Same as 28MHz power
	Set radio to 28.000MHz, USB mode	VR12	22 ~ 28W
	RF POWER Gain Counterclockwise	VR16	9 ~ 12W
AM TX POWER	Set radio to 28.000MHz, AM mode RF Gain fully clockwise, No MOD	VR13	7 ~ 11W
	RF POWER Gain Counterclockwise	VR15	0.7 ~ 1.3W
AM MODULATION	Set radio to 28.000MHz, AM mode Audio signal 30mV, 1KHz to MIC.	VR14	70 ~ 90%
TX S/RF METER	Set radio to 28.000MHz, AM mode MIC Gain at minimum position.	VR8	Meter needle to the same scale of the power meter readed.

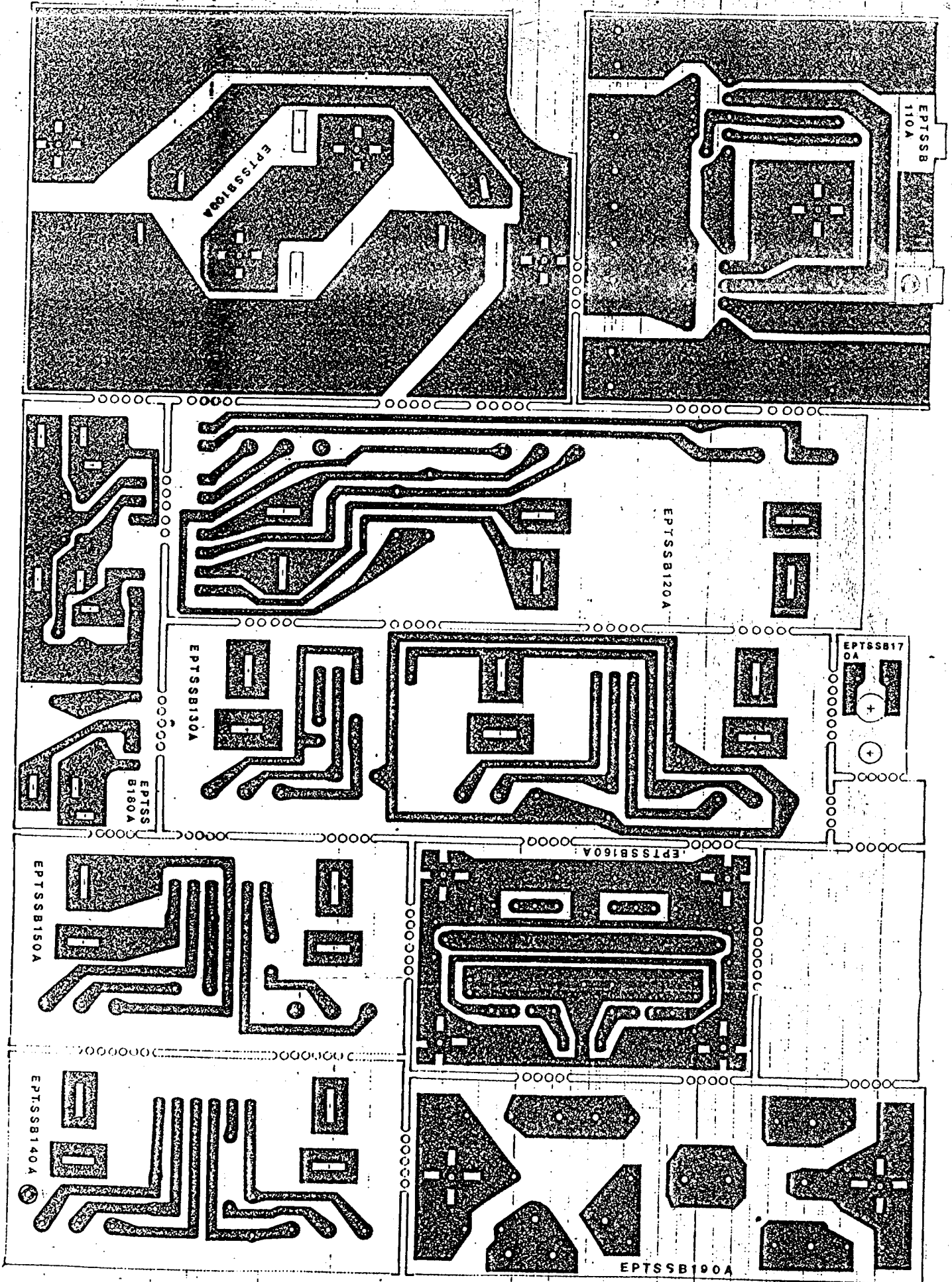
BLOCK DIAGRAM



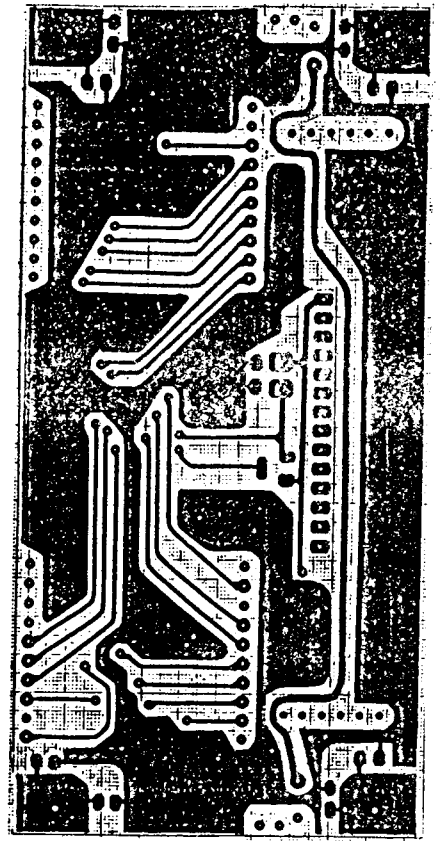
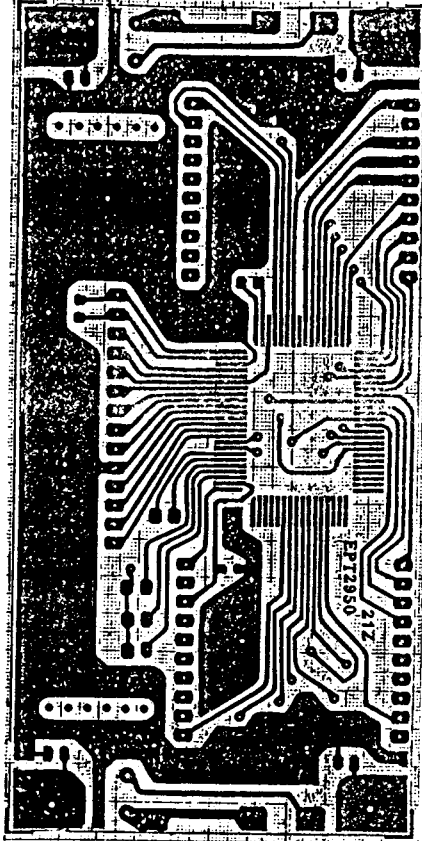
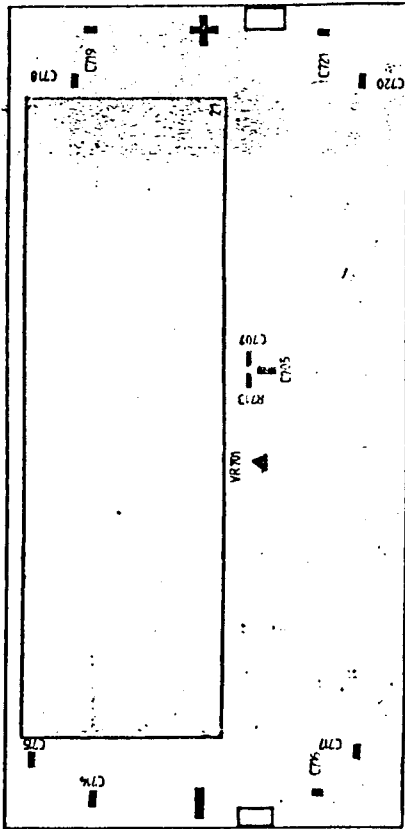
POWER & FUNCTION PCB LAYOUT



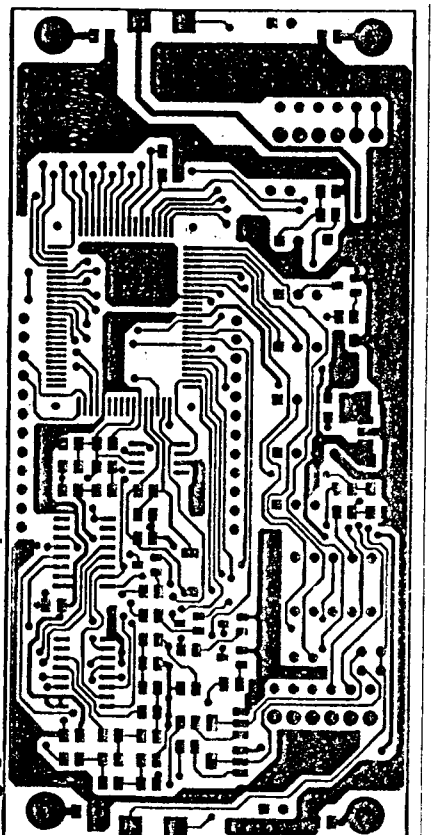
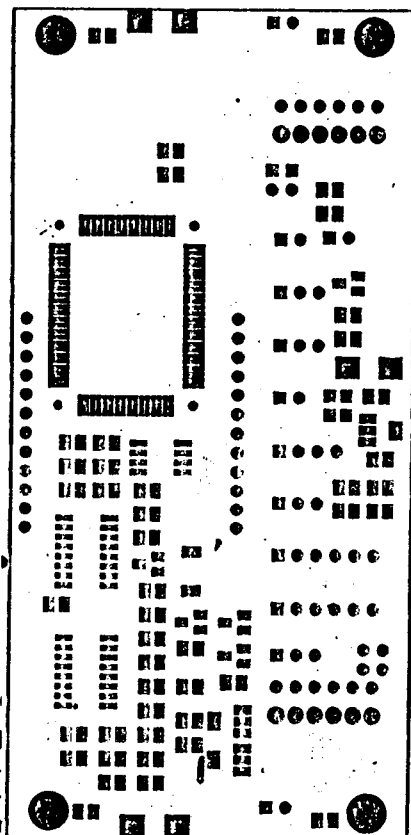
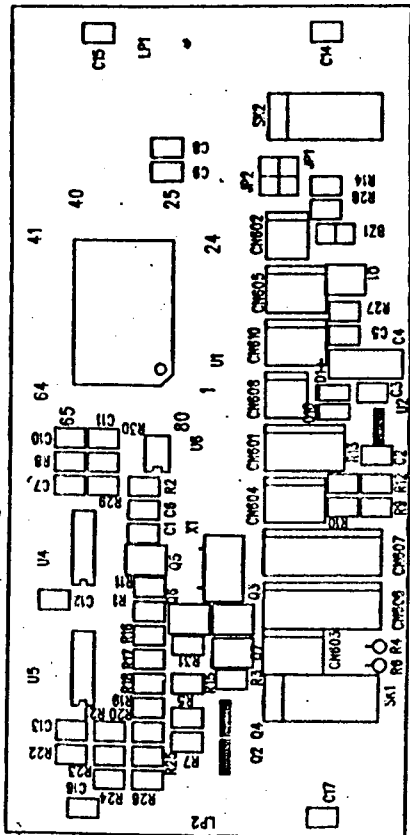
POWER & FUNCTION PCB LAYOUT

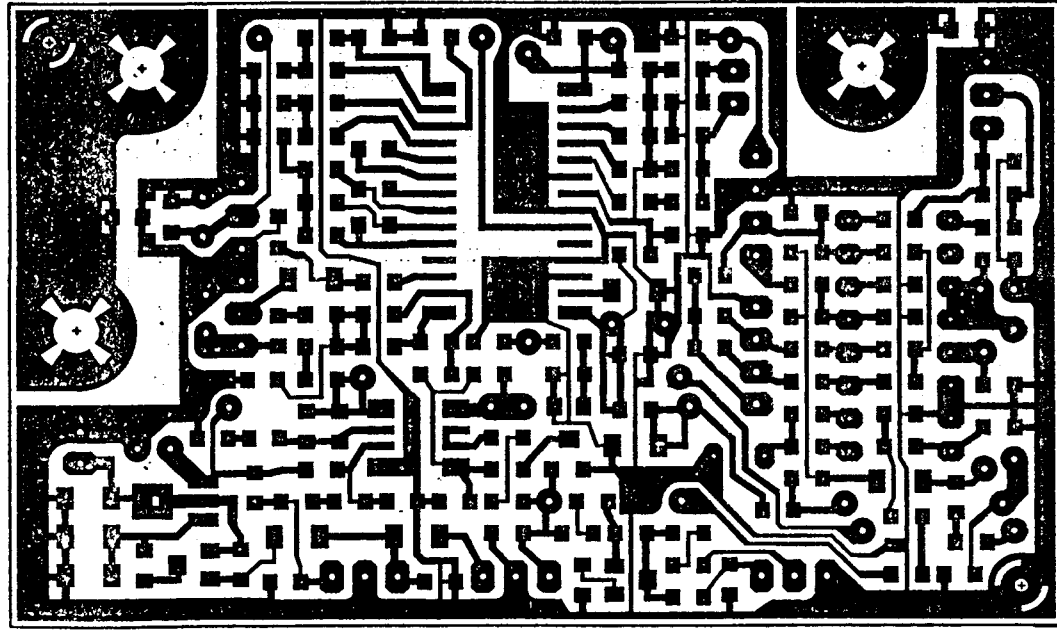
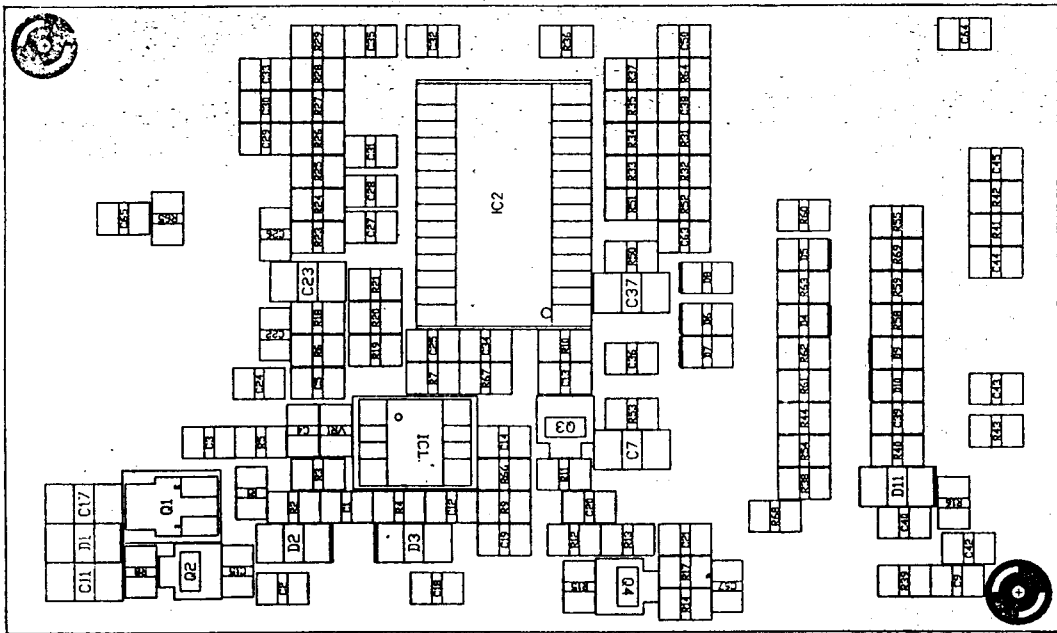
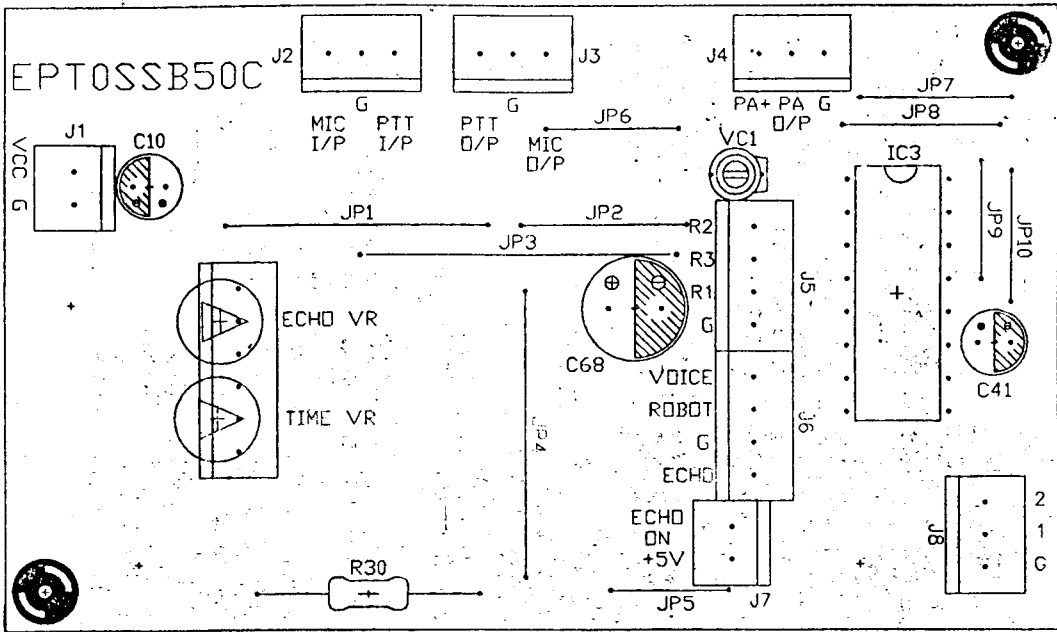


LCD PCB LAYOUT

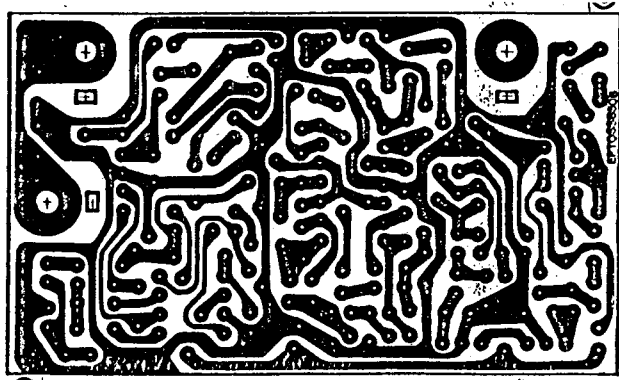
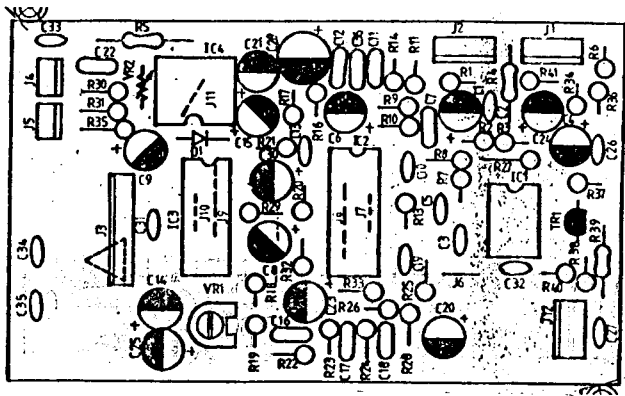


CPU PCB LAYOUT

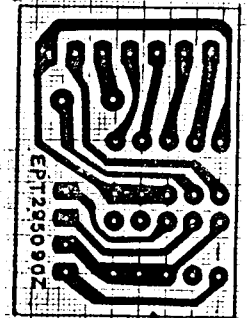
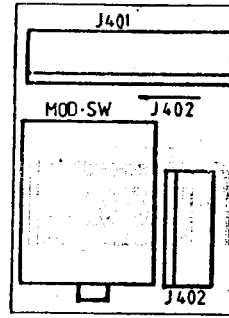




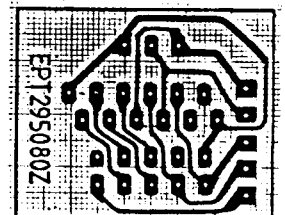
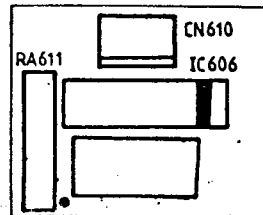
ECHO PCB LAYOUT



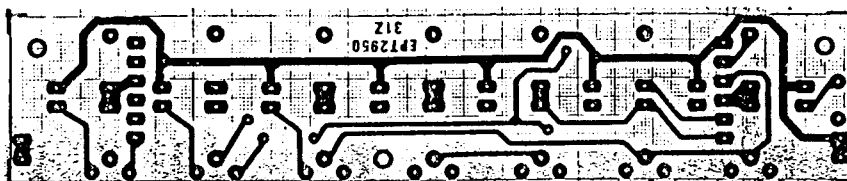
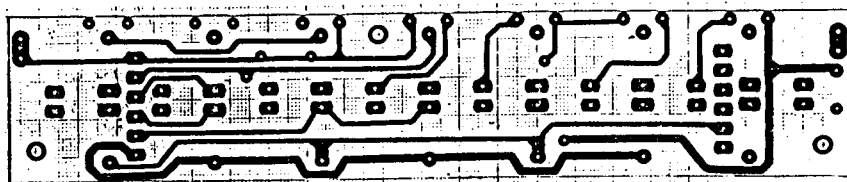
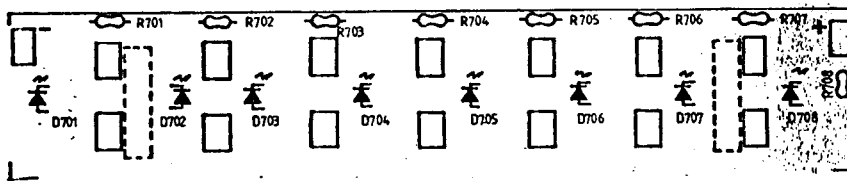
BAND PCB LAYOUT

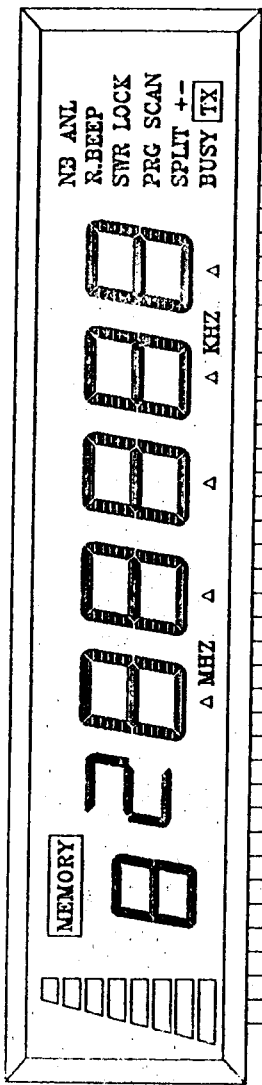


MIC PCB LAYOUT

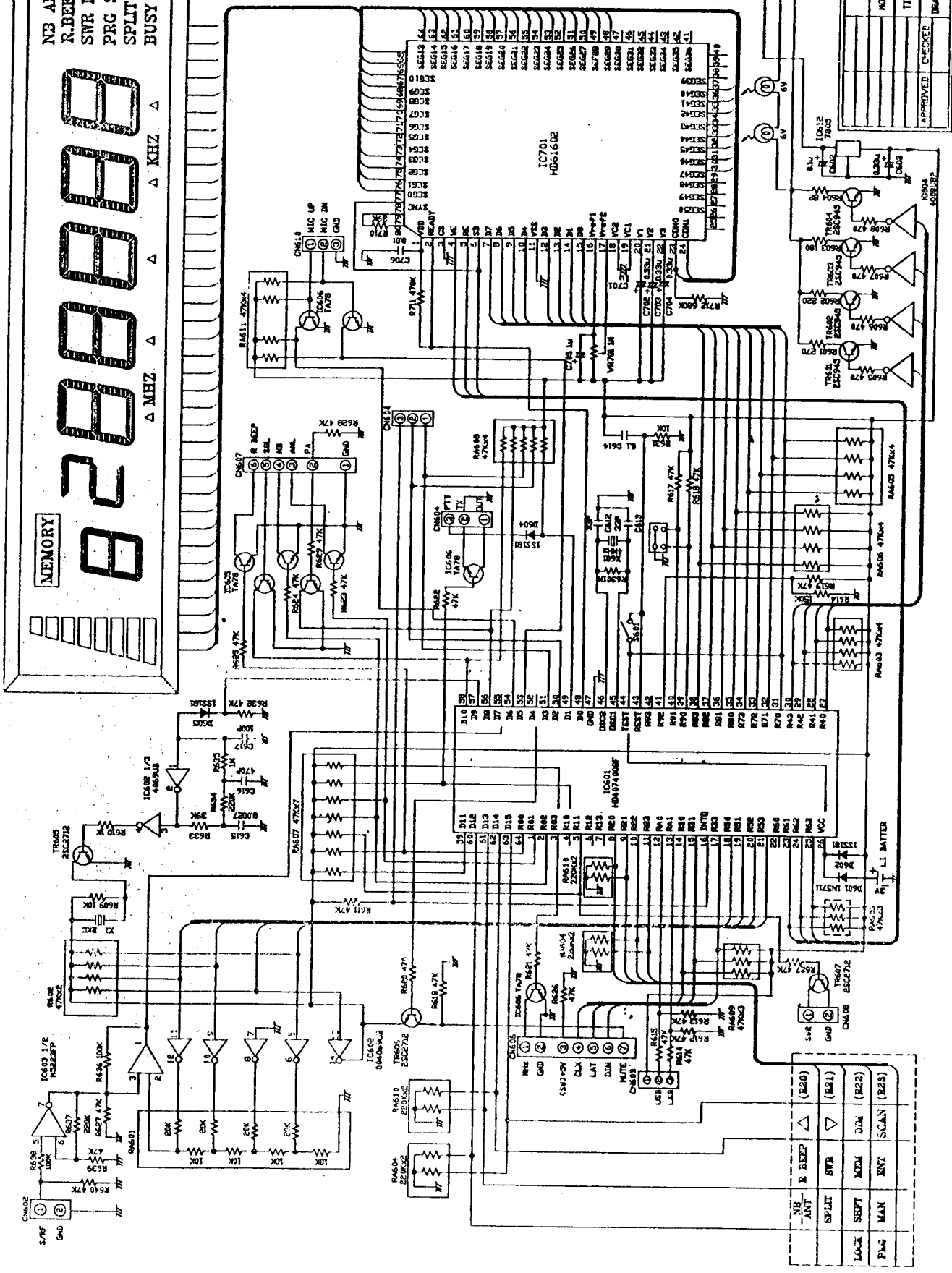


KEY BOARD LAYOUT





NO	COIL	CON1
1	7C	7A
2	MEMORY	7B
3	7D	7E
4	7F	7G
5	7H	7I
6	7J	7K
7	7L	7M
8	7N	7O
9	7P	7Q
10	7R	7S
11	7T	7U
12	7V	7W
13	7X	7Y
14	7Z	7AA
15	7AB	7AC
16	7AD	7AE
17	7AF	7AG
18	7AH	7AI
19	7AJ	7AK
20	7AL	7AM
21	7AN	7AO
22	7AP	7AQ
23	7AR	7AS
24	7AT	7AU
25	7AV	7AW
26	7AX	7AY
27	7AZ	7BA
28	7BB	7BC
29	7BD	7BE
30	7BF	7BG
31	7BH	7BI
32	7BJ	7BK
33	7BL	7BM
34	7BN	7BO
35	7BP	7BQ
36	7BR	7BS
37	7BT	7BU
38	7BV	7BW
39	7BX	7BY
40	7BZ	7CA
41	7CB	7CC
42	7CD	7CD
43	7CE	7CE
44	7CF	7CF
45	7CG	7CG
46	7CH	7CH
47	7CI	7CI
48	7CJ	7CJ
49	7CK	7CK
50	7CL	7CL
51	7CM	7CM
52	7CN	7CN
53	7CO	7CO
54	7CP	7CP
55	7CQ	7CQ
56	7CR	7CR
57	7CS	7CS
58	7CT	7CT
59	7CU	7CU
60	7CV	7CV
61	7CW	7CW
62	7CX	7CX
63	7CY	7CY
64	7CZ	7CZ
65	7DA	7DA
66	7DB	7DB
67	7DC	7DC
68	7DD	7DD
69	7DE	7DE
70	7DF	7DF
71	7DG	7DG
72	7DH	7DH
73	7DI	7DI
74	7DJ	7DJ
75	7DK	7DK
76	7DL	7DL
77	7DM	7DM
78	7DN	7DN
79	7DO	7DO
80	7DP	7DP
81	7DQ	7DQ
82	7DR	7DR
83	7DS	7DS
84	7DT	7DT
85	7DU	7DU
86	7DV	7DV
87	7DW	7DW
88	7DX	7DX
89	7DY	7DY
90	7DZ	7DZ
91	7EA	7EA
92	7EB	7EB
93	7EC	7EC
94	7ED	7ED
95	7EE	7EE
96	7EF	7EF
97	7EG	7EG
98	7EH	7EH
99	7EI	7EI
100	7EJ	7EJ

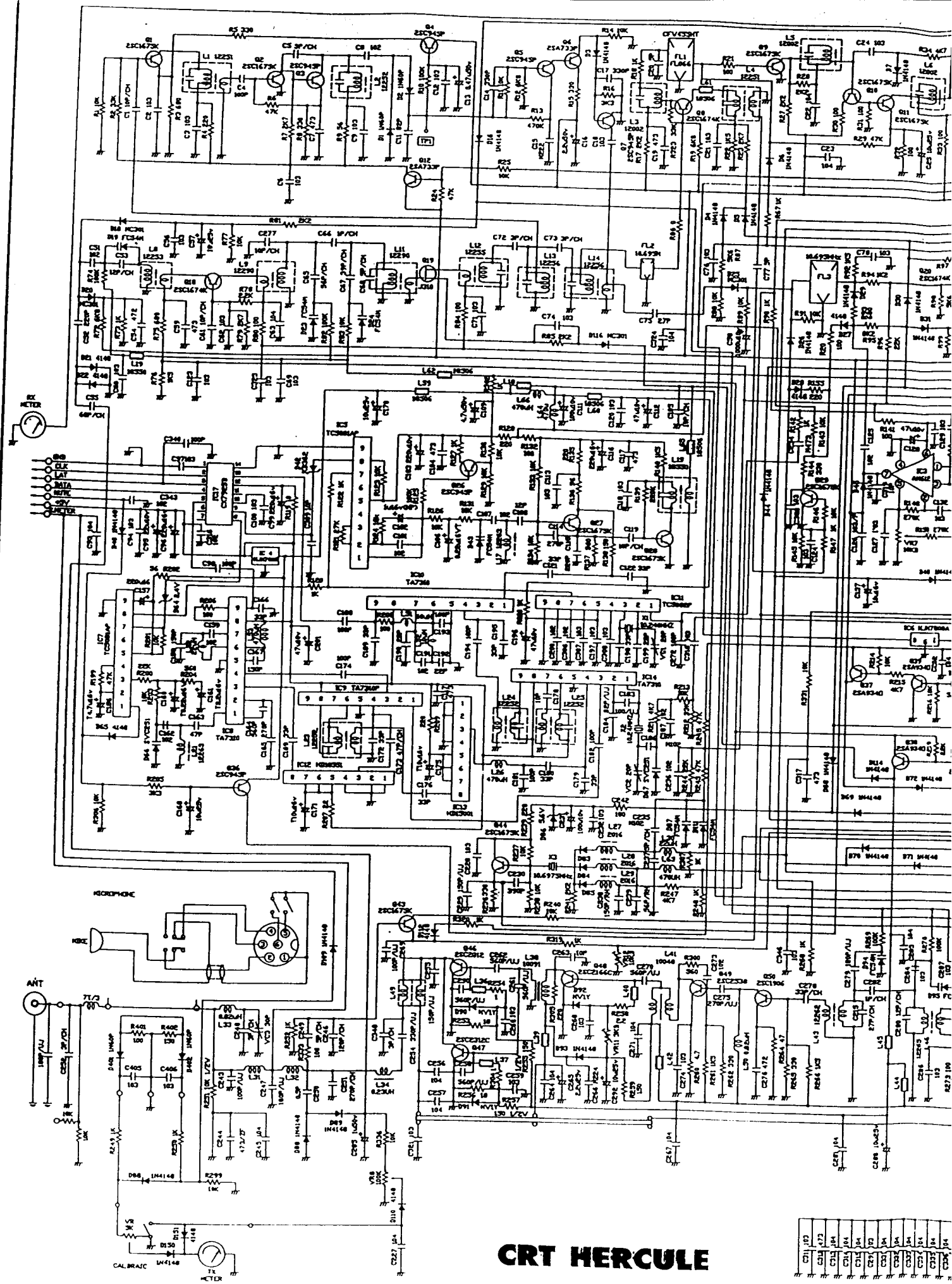


CN101	①	6V
CN102	②	12.6V
CN103	③	13.6V
CN104	④	21N

MODEL	BCT-2660 (CONTROL)
TITLE	SCHEMATIC DIAGRAM
APPROVED	_____ DRAWER
CHECKED	_____ ITEM NO
DATE	_____ REV

①	NE ANT	△	(R20)
②	SPLIT	▽	(R11)
③	LOCK SEPT	□	(R22)
④	PRG MAN	ENT	SCAN (R23)

SCHEMA ELECTRONIQUE CRT HERCULE

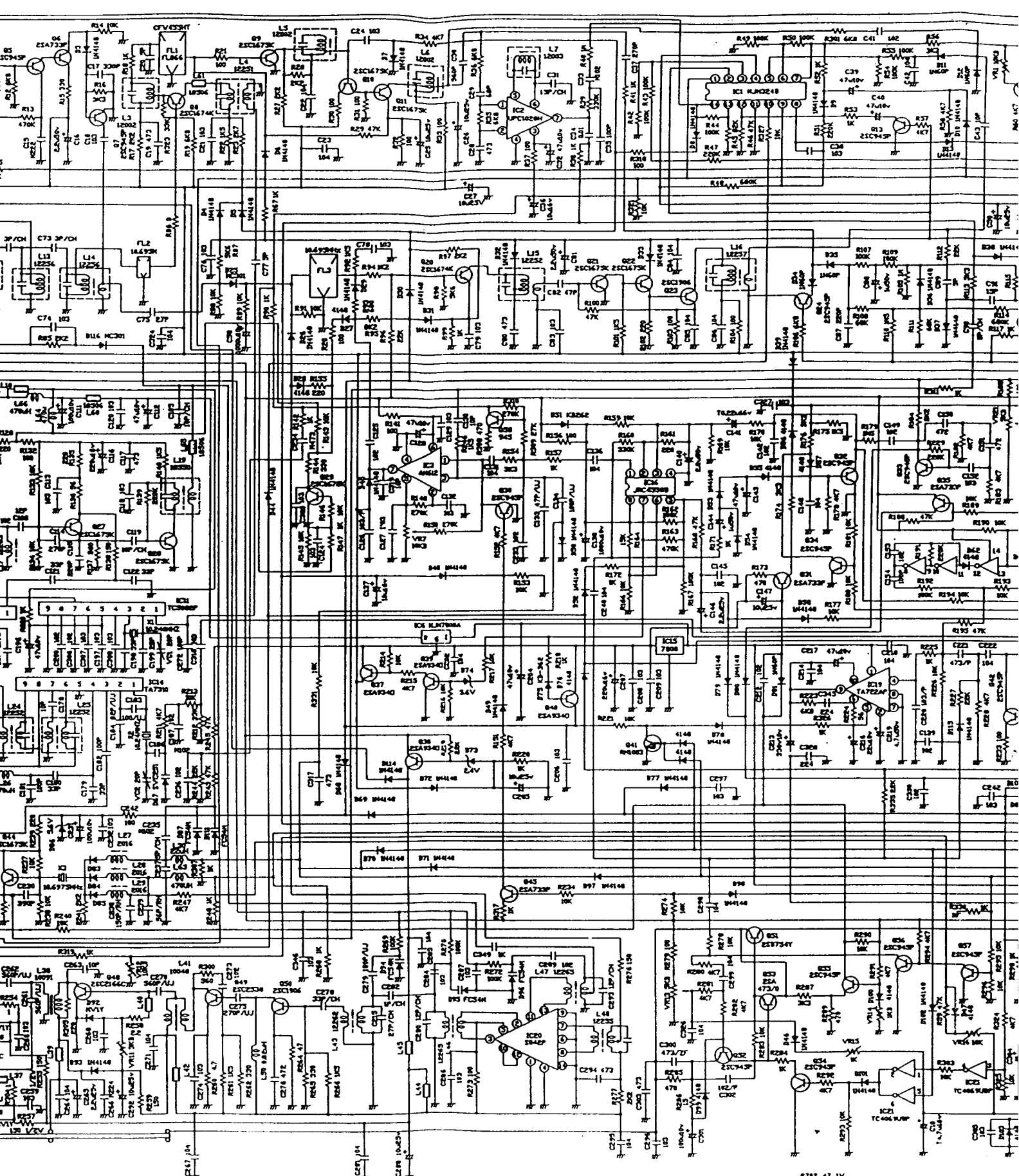


CRT HERCULE

C11	100
C12	472
C13	104
C14	104
C15	104
C16	104
C17	104
C18	104
C19	104
C20	104
C21	104
C22	104
C23	104
C24	104
C25	104
C26	104
C27	104
C28	104
C29	104
C30	104
C31	104
C32	104
C33	104
C34	104
C35	104
C36	104
C37	104
C38	104
C39	104
C40	104
C41	104
C42	104
C43	104
C44	104
C45	104
C46	104
C47	104
C48	104
C49	104
C50	104
C51	104
C52	104
C53	104
C54	104
C55	104
C56	104
C57	104
C58	104
C59	104
C60	104
C61	104
C62	104
C63	104
C64	104
C65	104
C66	104
C67	104
C68	104
C69	104
C70	104
C71	104
C72	104
C73	104
C74	104
C75	104
C76	104
C77	104
C78	104
C79	104
C80	104
C81	104
C82	104
C83	104
C84	104
C85	104
C86	104
C87	104
C88	104
C89	104
C90	104
C91	104
C92	104
C93	104
C94	104
C95	104
C96	104
C97	104
C98	104
C99	104
C100	104

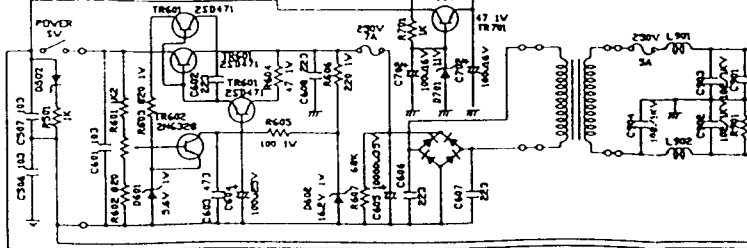
1A

1B



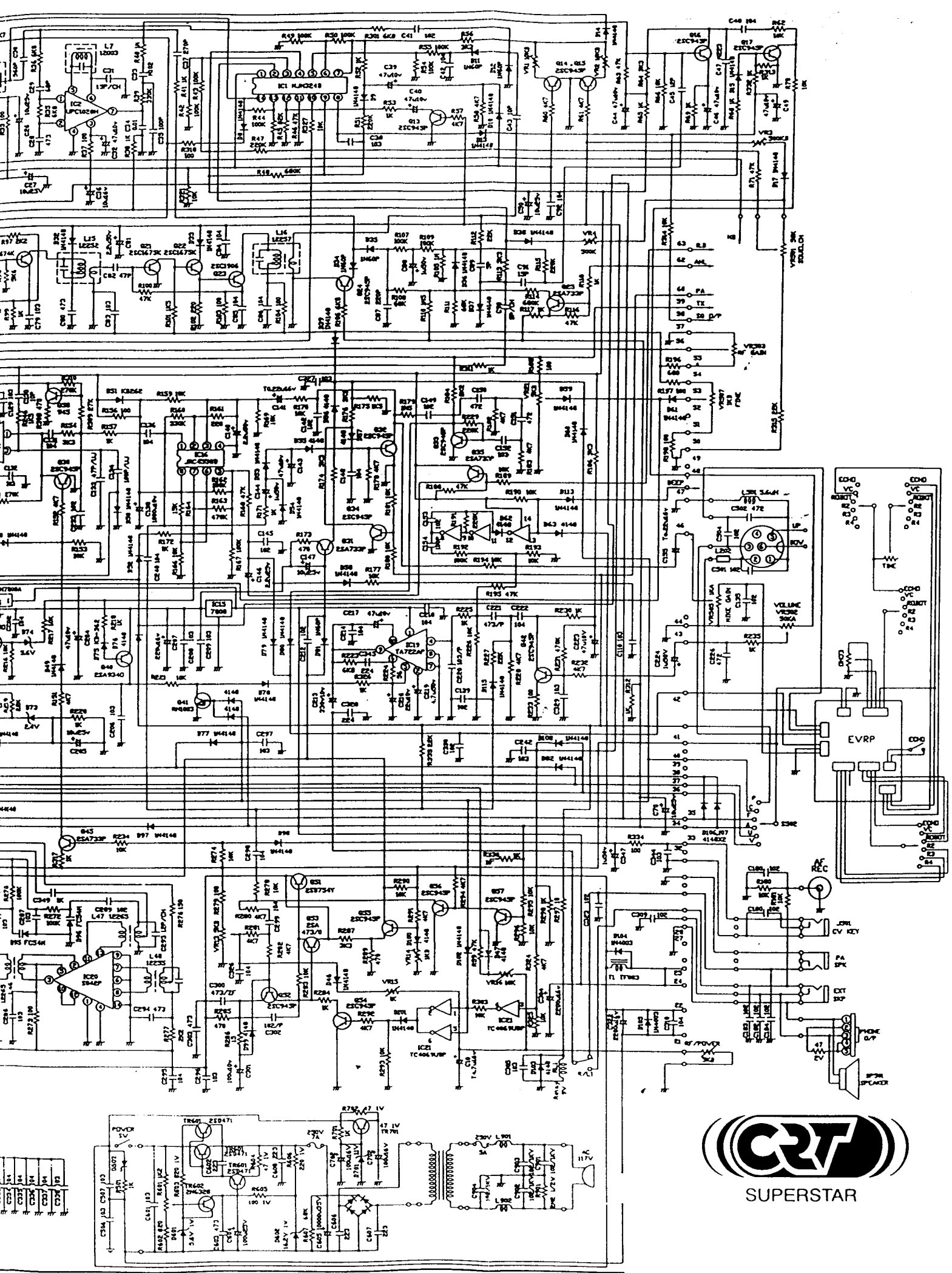
CRT HERCULE

C101	10K
C102	10K
C103	10K
C104	10K
C105	10K
C106	10K
C107	10K
C108	10K
C109	10K
C110	10K
C111	10K
C112	10K
C113	10K
C114	10K
C115	10K
C116	10K
C117	10K
C118	10K
C119	10K
C120	10K
C121	10K
C122	10K
C123	10K
C124	10K
C125	10K
C126	10K
C127	10K
C128	10K
C129	10K
C130	10K
C131	10K
C132	10K
C133	10K
C134	10K
C135	10K
C136	10K
C137	10K
C138	10K
C139	10K
C140	10K
C141	10K
C142	10K
C143	10K
C144	10K
C145	10K
C146	10K
C147	10K
C148	10K
C149	10K
C150	10K
C151	10K
C152	10K
C153	10K
C154	10K
C155	10K
C156	10K
C157	10K
C158	10K
C159	10K
C160	10K
C161	10K
C162	10K
C163	10K
C164	10K
C165	10K
C166	10K
C167	10K
C168	10K
C169	10K
C170	10K
C171	10K
C172	10K
C173	10K
C174	10K
C175	10K
C176	10K
C177	10K
C178	10K
C179	10K
C180	10K
C181	10K
C182	10K
C183	10K
C184	10K
C185	10K
C186	10K
C187	10K
C188	10K
C189	10K
C190	10K
C191	10K
C192	10K
C193	10K
C194	10K
C195	10K
C196	10K
C197	10K
C198	10K
C199	10K
C200	10K



13

1C

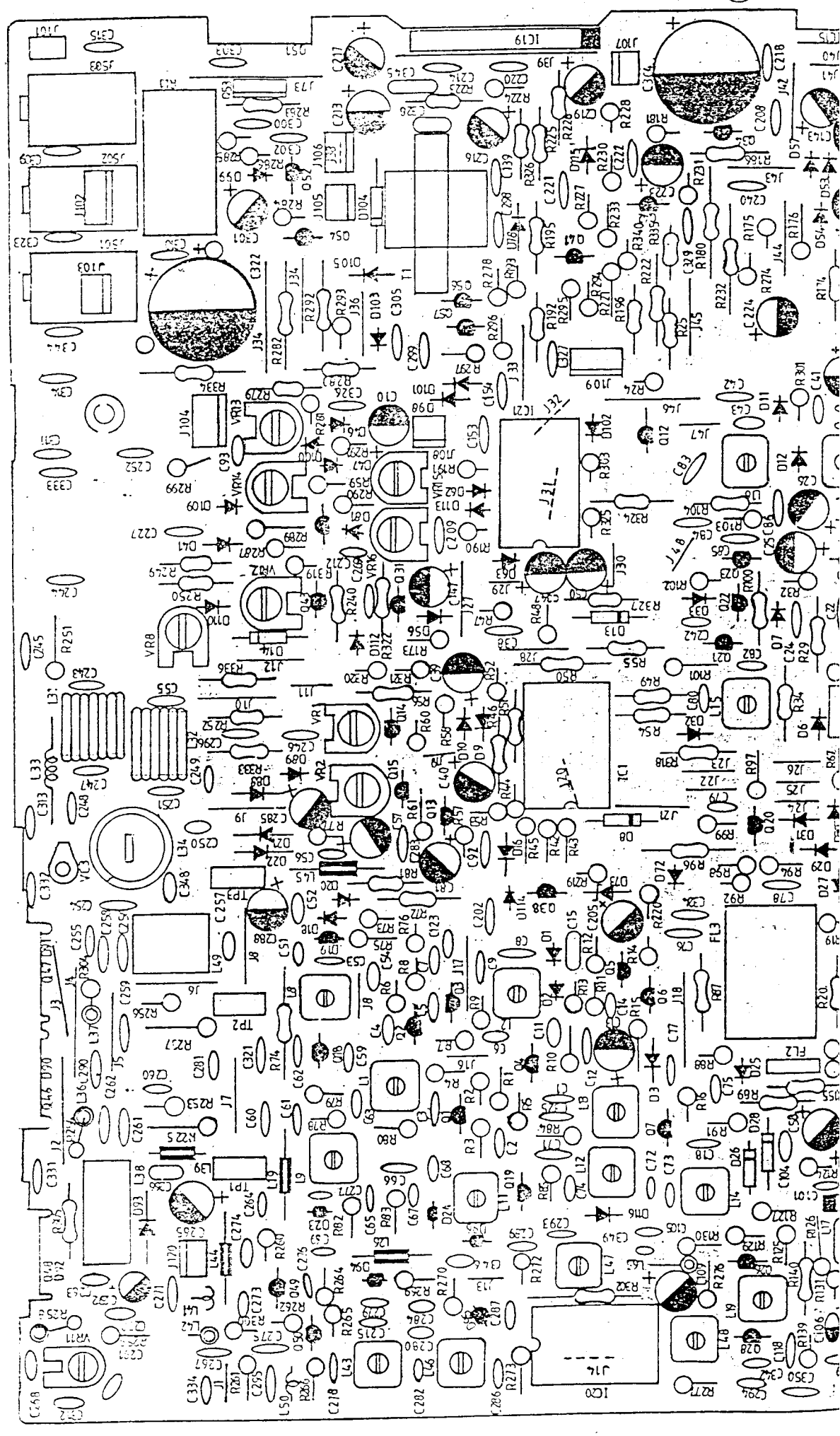


10

10

2A

2B



2B

2C

