

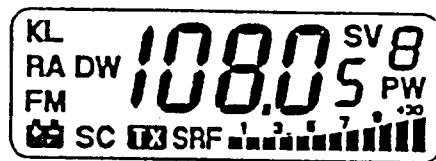
**PRESIDENT GLENN**

**SERVICE MANUAL**

# MULTI PURPOSE CB SOFTWARE OPERATION

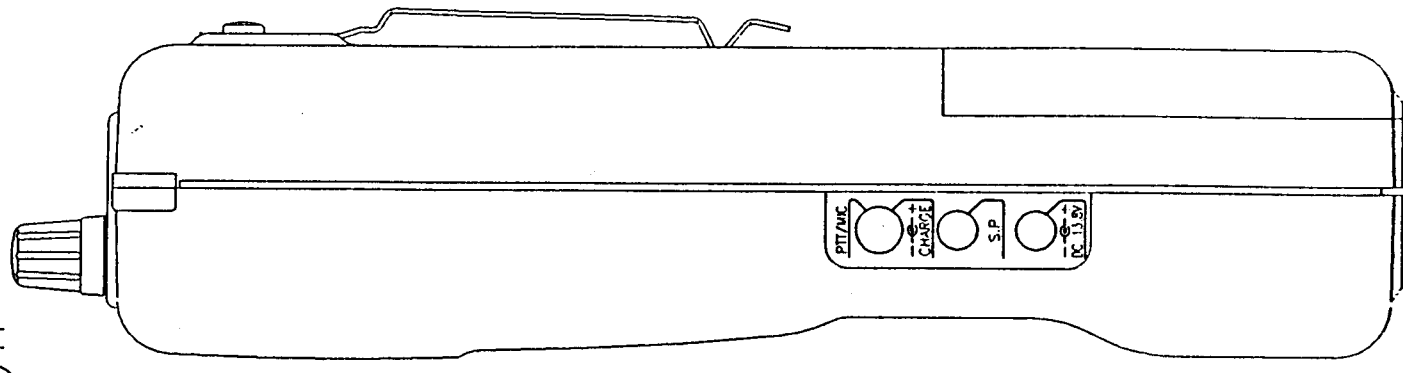
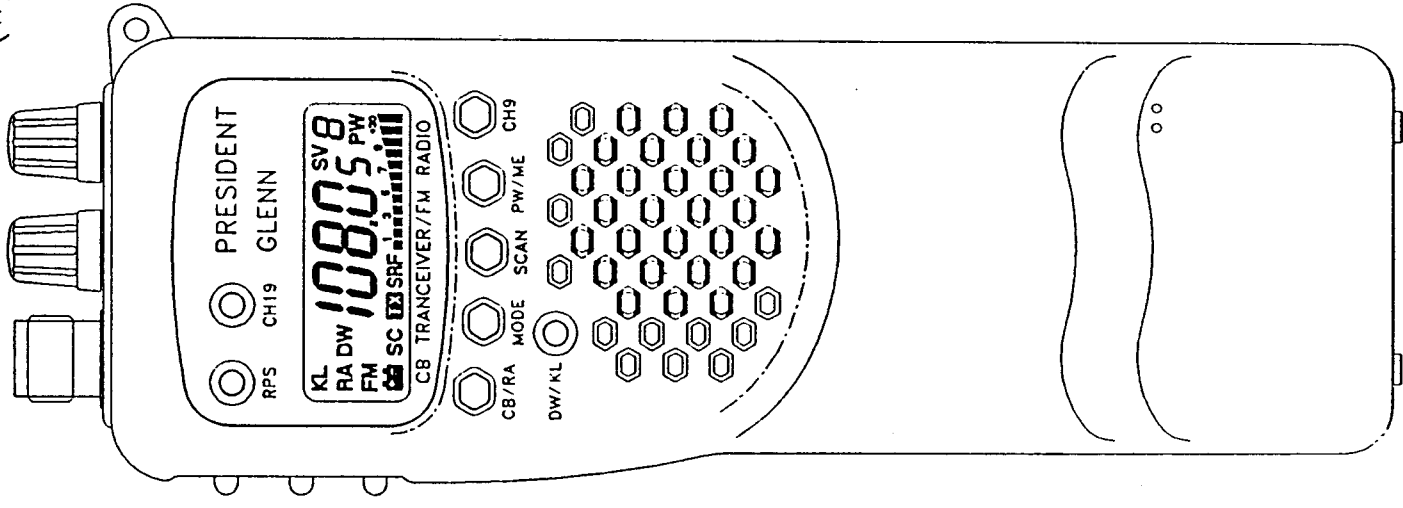
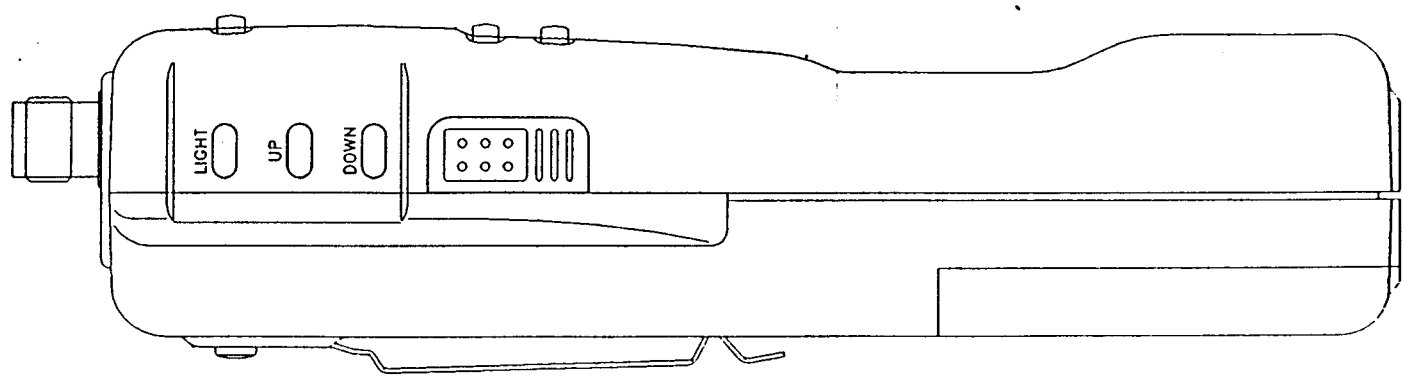
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## 1. LCD DISPLAY



- |                     |   |
|---------------------|---|
| Ⓐ POWER HIGH        | : DISPLAY IS PWR HI                         |
| LOW                 | : DISPLAY IS NO POSITION                    |
| Ⓑ B. SCAN           | : BUSY CHANNEL SCAN MODE                    |
| Ⓒ SRF METER         | : RECRIVER (1, 3, 5, 7, 9, ±30)<br>TRANSMIT |
| Ⓓ 5 DIGIT 7 SEGMENT | : USING CHANNEL                             |
| Ⓔ AM/FM             | : AM/FM MODE                                |
| Ⓕ EMG               | : CHANNEK 9 MODE                            |
| Ⓖ BATT LOW          | : LOW BATTERY MODE                          |
| Ⓗ DW                | : DUAL WATCH MODE                           |
| Ⓘ KL                | : KEY LOCK MODE                             |
| Ⓙ CB/RA             | : USING MODE CB and RADIO                   |
| Ⓚ RA 8 MEMORY       | : USING MODE RADIO 1 and 8 MEMORY           |
| ① TX                | : TRANSMIT MODE                             |
| Ⓜ SAVE              | : BATTERY AUTO SAVE MODE                    |

DESCRIPTION OF FEATURES    PRESIDENT GLENN  
(W)58x(H)165x(D)41



# PRESIDENT GLENN MOBILE

## CB Trnsnsceiver : Technical Specifications.

### GENERAL INSTRUCTION

1. Frequency range : 26.965MHZ - 27.405MHZ
2. Frequency space : 10KHZ
3. Mode of operation : AM/FM
4. Antenna impedance : 50 ohm
5. Controls : Volume Control with power on-off switch variable squelch with channel UP/DOWN switch with push LCD, AM/FM, SCAN, power HI/LOW, CH 9 switch, RPS switch, CB/RA switch PWR/RME switch, DW/KL switch, LIGHT on/off switch,
6. Speaker : 1.4 inches 8 ohm-
7. Microphone : Condenser microphone
8. Power supply : 10.8VOLT - 15.6VOLT(13.8 VOLT STANDARD)
9. Dimensions : 58(W) x 41(D) x165(H)m/m

### TRANSMITTER SPECIFICATIONS

1. Rf output power : 4.0WATTS
2. Frequency tolerance : 0.005%
3. Harmonic spurious : More than 70dB
4. Current drain at no mode : 900 mA(mod 1300mA)
5. Modulation : MOD - 90%./DEV - 1.8 KHz.

### RECEIVER SPECIFICATIONS

1. Sensitivity at s/n 10dB : AM-0.8uV / FM-0.5 uV.
2. Sensitivity at (10KHZ) : 70dB
3. Squelch range : 0.5uV - 1000uV
4. Agc figure of range : 80dB
5. Audio output power : 0.6 WATTS/ 8 ohm
6. Distortion at inpot 1000uV : 3 %.
7. Audio frequency response : 400 - 2400 Hz
8. If frequency : CB 1st 10.695 MHz  
2nd 455 KHz  
RA 1st 10.7 MHz  
2ND 460 KHz
9. Spurious response : more than 70
10. Current drain signal : 90mA(SAVE 45mA)

## OPERATING INSTRUCTIONS

Step 1 : Turn the channel switch to the "9CH" position.  
with the PWR-HI position.

Note : Turn Left is channel UP  
Turn Right is channel DOWN

Step 2 : Make sure SCAN, CH9.  
button is in the "OFF" position.

Step 3 : Make sure the LCD button is in the "OFF" position.

Step 4 : Make sure the LCD button is in the AM position.

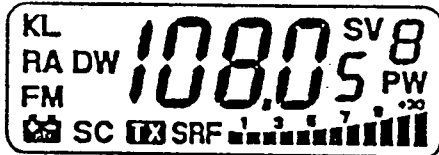
Step 5 : Make sure the LCR button is in the "OFF" position.

## DC POWER UP MITIAL FOR DEFAUIT SET-UP

NO	FUCTION	DEFAULT SET-UP	DISPLAY	DESCRIPTION
1	PLL CH	9CH	9	Not emergency channel Receiver state
2				
3	SAVE	OFF		
4	AM/FM	AM		
5	TX/RX	RX	RX	
6	SCAN	OFF		
7	PWR HI/LOW	PWR HI	PWR HI	

## OPERATIONG CONTROLS

Ⓐ LCD DISPLAY



Ⓑ SRF METER

A LCD Display Channel indicator.

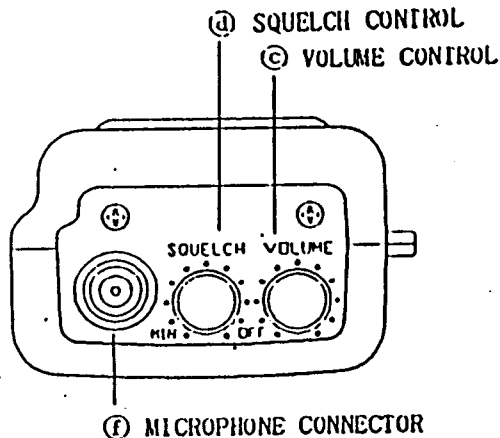
Clealy display the channel selected by use of the UP/DOWN selector switch just below the channel dsplay.

Select your desired channel by selection the UP or DWON switch.

B SRF Meter. our GLENN has a graph multicolor metor system. On receive, the graph will light ba- based on the level of the incoming signal.

The stronger the sigal-the more the meter will li- ght. On transmit-the meter shows you relative tran- output power.

C OFF/Volume Control. Turn your CB on and adjust ste the sound level for comfortable reception.



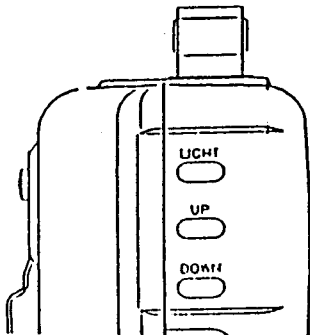
D Squelch Control. Turn ciokwise, it quiets the receiver when signais are not being received and allows a quiet standby operation.

The Squelch control functions only in the receive mode and does not affect receiver volme when si- gnals are being received.

To adjust, when no signals are present, rotate t- he squelch control clockwise until the recelver is quieted. Incoming signals will automatically re- lease the squelch action.

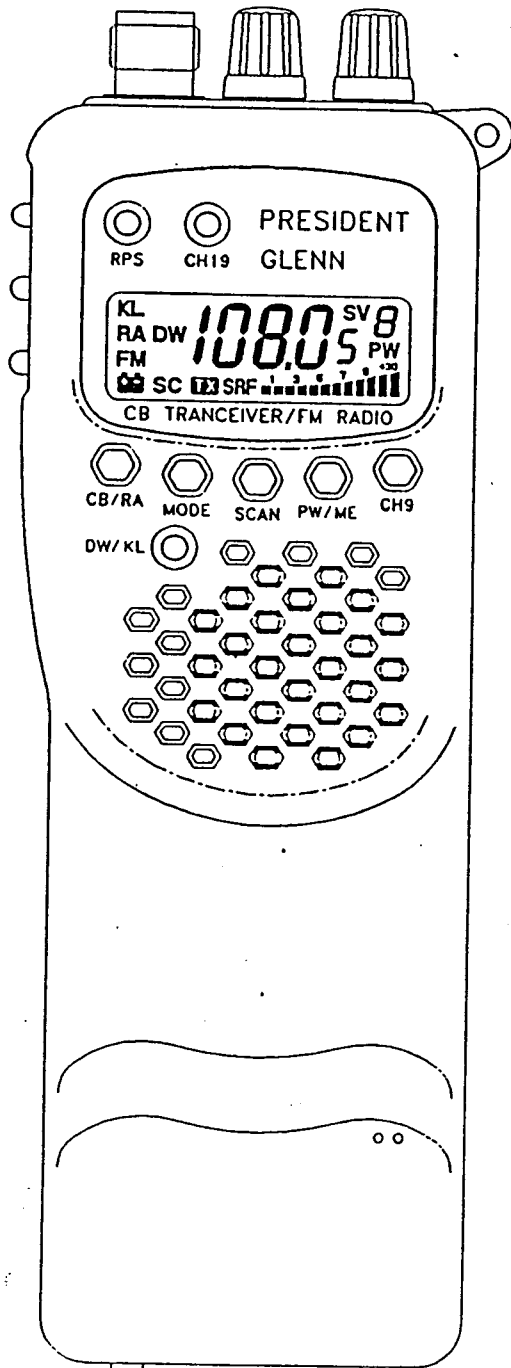
Careful adjustment is necessary as a setting too far clockwise will not allow weaker signals to r- elease the squelch actiøn.

E UP/DOWN Channel Swith. Select your disired ch- annel by selection the UP or DOWN channel switch.



F Microphone Connector. Securely links your EXT JAC screw on microphone to the main unit during use, yet allows quick disconnection when out of service.

## OPERATING CONTROLS



### G AM/FM Control.

The selected operating mode will be displayed here. If you press AM/FM button first, it is mode and press once mode, radio becomes AM mode.

### H POWER Control

There are two levels of power available on your GLENN, "PWR-H" for long range and no indication for short range. The "POWER" switch is on the front of the unit.

To the left of the channel display the letters "PWR-H" will indicate the unit is in the high power mode.

### I Scan Control.

You GLENN incorporates a scanning feature. The GLENN will scan through all 40 channels. It will stop at any BUSY channel.

It will stay on that channel until three seconds after conversation has ceased and then it will resume scanning.

To activate this feature, turn on the power and adjust the volume. Adjust the "SQUELCH". Depress the SCAN button to start scanning.

The word SCAN will appear in the LCD display window and the unit will start scanning. If you want to stop scanning you can push the scan button again or touch the push to talk switch.

If the unit is scanning and stops on a channel that you want to talk to the other party, simply depress the push to talk switch. This will shut off the scanning function and transmit on that channel.

### J CH 9 Control.

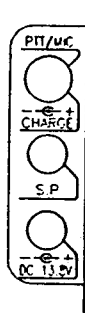
Operates identical to preprogrammed channel 9 above but provides access to channel 9.

K Microphone Push-To-Talk Bar. Simply push this bar in to transmit; release when receiving.

### L External Speaker Jack.

Allows You to attach an external speaker that will override the unit's internal speaker. Connection is made through the External Speaker Jack on the side panel.





**M Power Connector**

Plug-in the power cord to the receptacle provided on the back of the transceiver. (DC 13.8 Volt input)

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT FOR CB TRANSCEIVER

#### 1. Test Voltage

DC 13.8V  $\pm$ 5%, unless otherwise specified.

#### 2. Test Equipment Required.

All test equipment should be properly calibrated.

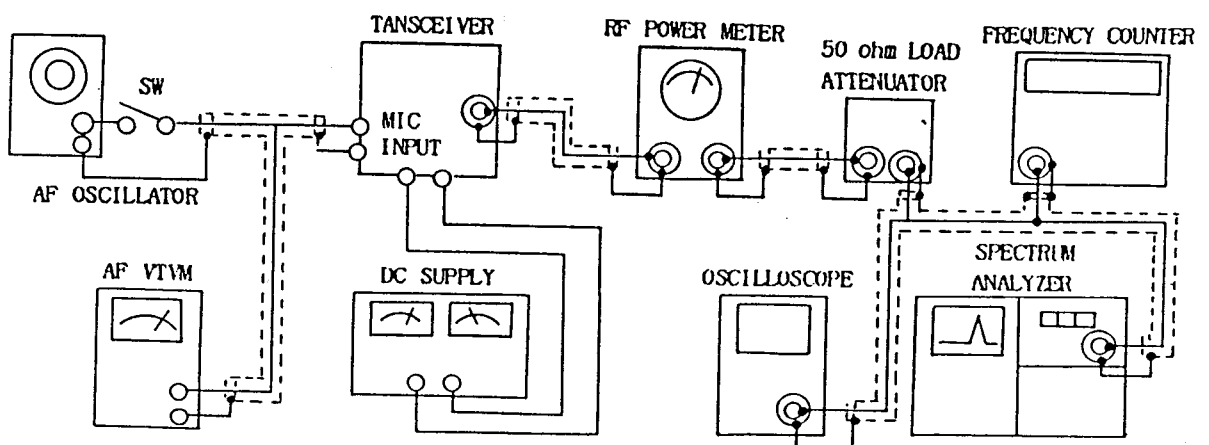
1. Audio signal generator, 10Hz - 20KHz.
2. VTVM 1mV measurable.
3. DC ampere meter, 2A
4. Regulated power supply, DC 0-20V, 2A or higher.
5. Frequency counter, 0-150 MHz, high input impedance type.
6. RF VTVM probe.
7. Oscilloscope, 30 MHz, high input impedance.
8. RF watt meter, thermo-couple type, 50ohm, 5W.
9. Standard signal generator, 100KHz - 50MHz, -10/ 100 dB, 50ohm unbalanced.
10. Speaker dummy resistor, 8ohm, 0.5Watt.
11. Voltmeter, DC, 20K ohm/V.

#### 3. Transmitter Alignment

##### 3-1 Test Setup

Connect all test equipment as shown below:

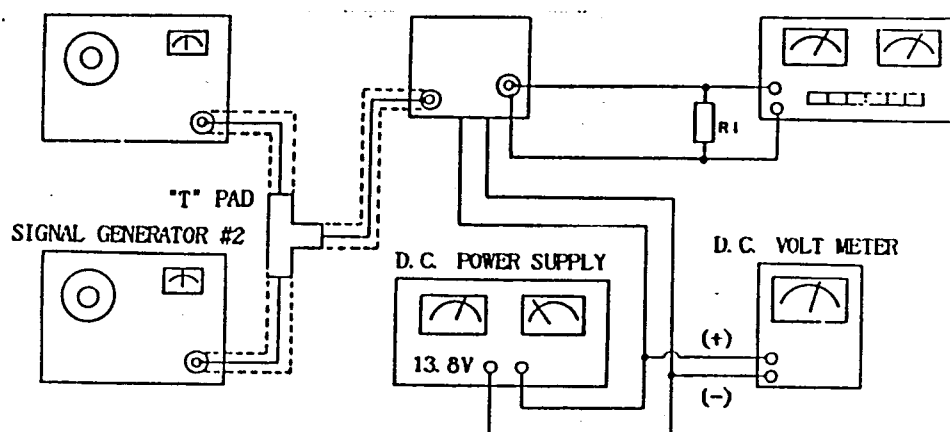
##### TRANSMITTER SECTION



## ALIGNMENT INSTRUCTIONS

### 3-2 Test Setup PLL Section

#### PLL AND CARRIER SECTION



#### 3-2. 1 4.5 MHz

Connect frequency counter to pin 1 of IC 1 and verify 4.5 MHz  $\pm$  100 Hz. When a defective crystal is replaced and the frequency varies 100 Hz higher or lower.

#### 2 VCO Alignment

1. Set radio to channel 1 in receive mode.
2. Connect voltmeter between c 93a and ground.
3. Adjust T 7 to obtain 3.5V DC. (channel 19)
4. Set the radio to channel 40 and in transmit mode.  
(Make certain 50 ohm dummy load or wattmeter is connected to antenna terminal.)
5. Verify DC voltage drops to a level of 3.0 to 4.0V DC.

As long as the DC level stays between 3.5V DC for receive at channel 1 and 3.0 to 4.0V DC for transmit at channel 40 the VCO is set properly

#### 3-3 RF Driver Stage Alignment

1. Select channel "19".
2. Connect an oscilloscope to the base of Q45 and ground.
3. Adjust T8, T9 & T10 for maximum amplitude of scope display (27.185MHz signal)
4. Connect scope to Q29 collector.

## ALIGNMENT INSTRUCTIONS

### 3-4 RF Power Amplifier Alignment

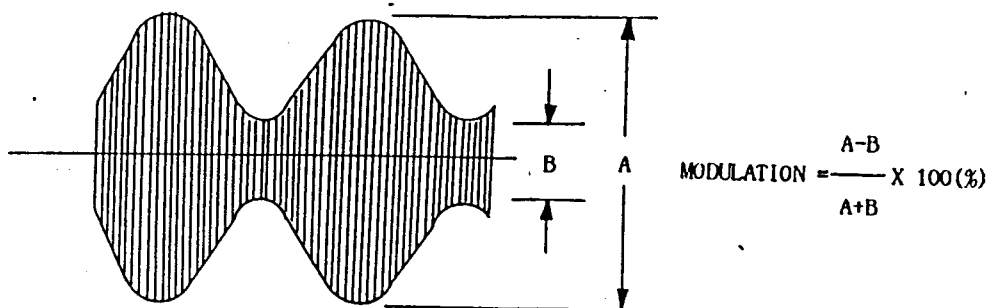
1. Set power supply voltage to 13.8V and set the radio to channel 19.
2. Connect watt meter to the antenna connector.
3. Adjust L2 for maximum power indication.  
Also again adjust T8, T9, T10, L1 for peak power.
4. When all coils are peaked, the power should indicate above 4.0 watts.
5. Adjust L1 for 4 watts.

### 3-5 Transmit frequency Check

1. Set the radio in the transmit mode with no modulation.
2. Connect the frequency counter to the antenna load.
3. The frequency should be within  $\pm 400$  Hz from each channel center frequency.

### 3-6 Modulation Sensitivity Alignment

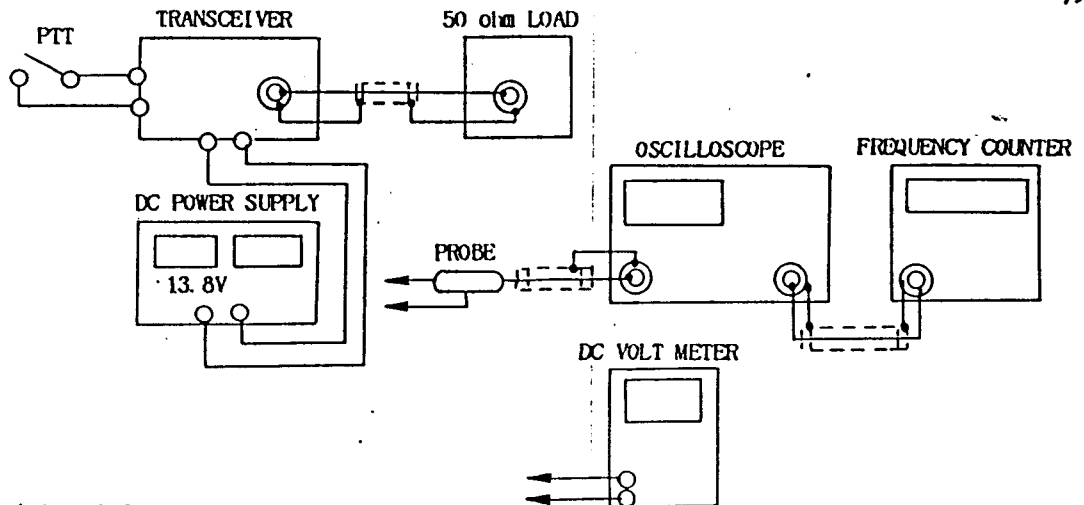
1. Set the unit into transmit mode and apply 10mV, 1KHz signal to the mic input circuit.



2. Obtain 90% modulation in this position.
3. Next decrease signal input to 3mV and observe that the modulation ratio is keeping the value higher than 50%.

## ALIGNMENT INSTRUCTIONS

### 4. ALIGNMENT OF RECEIVER CIRCUITRY RECEIVER SECTION



#### 4-1 10.24MHZ FREQUENCY ADJUSTMENT

1. Connect frequency counter to emitter of ic-1 and verify 10.24MHz-200Hz. When a defective crystal is replaced and the frequency varies 200HZ higher or lower.

#### 4-2 RECEIVER SENSITIVITY ALIGNMENT

1. Set signal generator to 27.1850MHz, 1KHz and 30% modulation. Set the radio to channel 19. Adjust signal generator output and level which yields 10-20 db of signal to noise ratio.
2. Adjust radio volume control for 2V rms audio output across the 8ohm audio load. Adjust T2, T3, T4, T5 for maximum output.

#### 4-3 SQUELCH CIRCUIT ADJUSTMENT

1. Set the signal generator to provide RF input signal of 1mV(1KHz, 30% modulation).
2. Rotate the squelch control in full clockwise direction.
3. Temporarily adjust RV1 for maximum audio output, and note the audio output level. Slowly turn RV1 until audio just cuts off. This completes the tight squelch adjustment.

#### 4-4 SIGNAL LEVEL METER ALIGNMENT

1. Set signal generator to provide RF input signal of 100mV (1KHz, 30% modulation).
2. Adjust RV2 for SRF 9 position level.

LIST OF GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

General information in accordance to the AM/FM according to PTT approval.

- (A) Name of Applicant :  
Address of Applicant :
- Name of Manufacturer : HWA YUNG INDUSTRIAL CO., LTD
- Address of Manufacturer : 139-20, Gamjun-Dong, Buk-ku, Pusan, KOREA
- (B) Equipment Identification  
Commodity : Citizens Band Transceiver Operating  
( ) and 40 channel set.
- Brand Name :  
Model No. :
- (C) Quantity : Production serial number is metal stamped  
permanently at rear cabinet with number  
beginning 0000001.
- (D) Technical Description
- 1) Type of Emission : F3E / A3E
  - 2) Frequency Range : 26.965MHz to 27.405MHz
  - 3) Power Rating : FM output 4 watts, AM output 4 watts.
  - 4) Maximum power Rating : 4.00 watts
  - 5) RF final amplifier stage voltage and current at nominal operating voltage.  
1. V DC Power Supply.
- |                   |                                |
|-------------------|--------------------------------|
| RF Power output   | 4.00 watts                     |
| Collector voltage | 12.6 volts                     |
| Collector current | 700 mA<br>(without modulation) |
- Final Radio frequency amplifier device 2SK2078.  
has a maximum dissipation of 12 watts with a temperature derating to 50°C.  
This device is made by KOREA Electric Company of Korea (and 2SK2078 by KEC)  
See Figure I for manufacturer's test data.
- 6) Function of solid state devices
- (E) FM Radio Technical Description
- 1) Frequency (MHz) : 87.5 ~ 108 MHz.
  - 2) Equipment Class : Communication Receiver

REMARKS

KEC : KOREA Electronics Co., Ltd  
NEC : NIPPON Electronice Co., Ltd  
SANYO : TOKYO SANYO electronics Co., Ltd  
NPC : NIPPON Precision Circuits Co., Ltd  
SAMSUNG : SAMSUNG electronics Co., Ltd

7) Circuit Diagram :

A Block Diagram is enclosed in attachment Figure 2.  
A Circuit Diagram is enclosed in attachment Figure 3.  
A Parts layout Diagram is enclosed in attachment

8) Instruction Manual :

A preliminary copy of the instruction manual for the equipment is found in attachment of this report.

9) Tune-up Procedure for transmitter section :

Set. DC power supply voltage at 13.2 Volt DC. connect wattmeter(50 ohm) to the antenna connector.

Set transceiver to channel 9 (27.065MHz). Refer to interior parts location drawing control distribution attached for the following adjustments.

- (1) Depress talk (PTT) button and adjust core of T8, T9, T10 for maximum on the wattmeter.
- (2) Check output power on all channels. If not equal, readjust L2.

PLL circuit alignment procedure :

- (1) Set transceiver to channel 9.
- (2) While in transmitt mode, connect oscilloscope DC probe to T.P.
- (3) Adjust T7 and observe the DC level swing between 0 to 8.0 volt DC. Then set the DC level to 3.0 volt.
- (4) When switched to channel 1. the DC level should drop to about 3.5 volt.

NOTE : The 4.5MHz crystal oscillator frequency measured at pin 1 of CPU IC should be accurate within  $\pm 50$  Hz with frequency counter please refer to front PCB pattern layout.

10) A description of all circuits and devices provided for determining and stabilizing frequency :

All 40 Channels of transmitting, as well as receiving, frequencies are provided by PLL(Phase Locked Loop) circuitry.

The Purpose of the PLL is to provide a multiple number of frequencies from VCO(Voltage Controlled Oscillator) with quartz crystal accuracy and stability from on crystal oscillator reference frequency.

Therefore the VCO frequencies are as accurate and stable as the crystal oscillator itself. The reference crystal oscillator frequency is 4.5 MHz. 27 MHz band transmit frequencies is obtained when VCO frequencies.

Therefore the TX frequencies are as stable and accurate as the 4.5 MHz crystal oscillator.

## CIRCUIT FOR DETERMINING FREQUENCY

### Output Frequency of The Transmitter

Transmitting frequency,  $F_t$  is twice output frequency of 2nd local oscillator Q17 by doubler Q45. The sum of these frequencies makes the transmitting frequency as follows :

$$F_t = F_{vco} \times 2$$

### P.L.L Local Oscillator

The output frequency of Q45 is designated as  $F_{vco}$  in case of channel 1  $F_{vco}$  is divided by 5393 at LC 72322 and the divided frequency will be  $F_1$ .

$$\text{Therefore : } F_1 = F_{vco} + 5393$$

LC 72322 also divides 4.5 MHz by 1800 and the divided frequency is designated as  $F_2$ .

$$F_2 = 4.5\text{MHz} + 1800 = 2.5\text{KHz}$$

$F_1$  is compared with  $F_2$  at LC 72322 and if they are equal in frequencies, the phase locked loop is under the locked condition. Therefore,  $F_{vco}$  is determined by the following formula.

$$F_{vco} = 5393 \times F_2 = 5393 \times 2.5\text{KHz}$$

$F_{vco}$  is changeable at the increment of 10KHz by varying the program divide ratio  $N$ . For example, the divide ratio,  $N$  is programmed to 1800 at the channel NO. 1, the  $F_{vco}$  is calculated as follows :

$$F_{vco} = 5393 \times 2.5\text{KHz} = 13.4825\text{MHz}$$

In the same manner,  $F_{vco}$  for channel NO. 1 through NO. 80 is determined as shown in table A.



Since the 4.5MHz crystal is guaranteed by the manufacturer to be stable and accurate within 25PPM over the temperature range between -20°C and 50°C, the transmitted frequencies are also stable within 20PPM over the same temperature range. See table below and PLL and microcontroller LC72322 as attached.

#### Description of frequency determining PLL circuit

To eliminate frequency drift due to power supply variation, a regulated supply is provided for PLL operation. The regulator consists of a IC-101

The regulated voltage at IC output is 5.0 volt DC.

The VCO circuit consists of followings :

Varactor (DC voltage dependent variable capacitor) diode D13, VCO coil T7, Q17, and doubler Q45.

The resulting 27MHz output frequency is filtered by T8, T9, T10, Q46 is a pre-amplifier.

The logic circuit determining the illegal frequencies is located inside the LC 72322

Q47 is a driver circuit for RF output, and Q48 is the final power amplifier.

The class C type amplifier output signal is filtered by low pass filter consisting of C162, 163, 164, 165, 167 and TK2, L4, L5, L6 and C81 make up a series resonant circuit and the remaining L/Cs represents band pass filter.

#### 11) CIRCUIT FOR SUPPRESSION OF SPURIOUS EMISSION (Refer to Schematic Diagram)

##### 1) Doubler

A doubler Q45 is used for reducing a spurious product by transmitter.

##### 2) Band pass filter

A band-pass filter which consists of T10, L1 reduces spurious emission produced by the transmitter.

##### 3) Low-pass Filter

A low-pass filter which consists of three stage pie-matched circuit (C163, C163, C164, C165, C167, L5, L6, L7)

Will eliminates harmonics of transmitter output frequency.

#### 12) CIRCUIT FOR LIMITING DEVIATION (Refer to Schematic Diagram)

##### 1) Audio signal from microphone is amplified by IC-1

2) The peak of the output of IC which may cause the deviation in excess of 1.8K Dev activates the A.L.C. (or Automatic Level Control) IC 202 and RV-3 to prevent deviation in excess of 2.4K Dev.

## OPERATING THEORY OF P.L.L FREQUENCY SYNTHESIZER

### 1. FUNDAMENTAL THEORY OF PLL CIRCUITRY

A description of all circuits and devices provided for determining and stabilizing frequency :

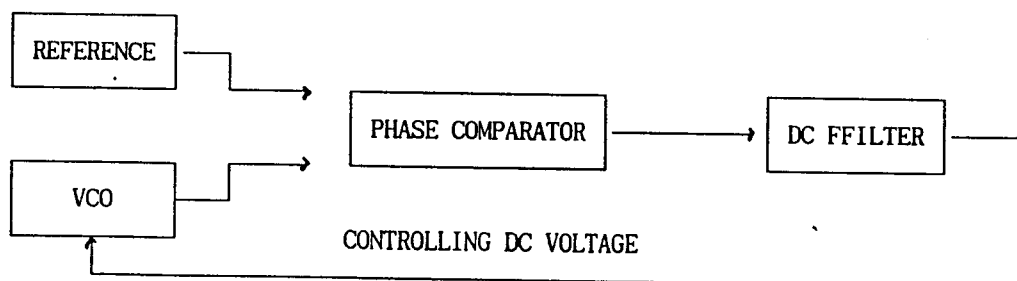
All 40 Channels of transmitting, as well as receiving, frequencies are provided by PLL(Phase Locked Loop) circuitry.

The purpose of the PLL is to provide a multiple number of frequencies from VCO (Voltage Controlled Oscillator) with quartz crystal accuracy and stability form on crystal oscillator reference frequency.

Therefore the VCO frequencies are as accurate and stable as the crystal oscillator itself. The reference crystal oscillator frequency is 4.5MHz.

27MHz band transmit frequencies is obtained when VCO frequencies. Therefore the TX frequencies are as stable and accurate as the 4.5MHz crystal oscillator.

Since the CB radios adjacent channel spacing is 10KHz(or multiple of 2.5KHz), our purpose-should be to produce multiple of programable frequencies that are spaced apart by 10KHz.



To eliminate frequency drift due to power supply variation, a regulated supply is provided for PLL operation. The regulator consists of a 0K.

The regulated voltage at IC5 output is 6.0 volt DC.

The 4.5MHz crystal oscillator active part is included in the PLL IC1.

The VCO circuit consists of followings :

Varactor(DC voltage dependent variable capacitor) diode D9, VCO coil T7 and Q10

### 2. TRANSMITTER CIRCUIT

The resulting 27MHz output frequency is filter by T10, Q45 is a pre-amplifier.

The logic circuit determining the illegal frequencies is located inside the PLL IC101, Q47 is a driver circuit for RF output, and OK is the final power amplifier.

The class C type amplifier output signal is filtered by low pass filter consisting of C162, C163, C164, C165, C167 and TK2, L4, L5, L6 and C162 make up a series resonant circuit and the remaining L/Cs represents Hi-Low pass filter.

## CIRCUIT DESCRIPTION

### (1) CIRCUIT FOR STABILIZING FREQUENCY

Transmitter output frequency of this mode is determined in the following formula :

$$\begin{aligned}F_t &= F_{vco} \times 2 = N \times F_2 \times 2 \\ &= N \times \frac{4.5\text{MHz}}{1800} \times 2 \\ &= N \times 2.5\text{KHz} \times 2\end{aligned}$$

$F_t$  : Transmitter output frequency

$F_{vco}$  : 2nd local frequency

#### 1) 2nd Local Frequency $F_{vco}$ and 4.5MHz Oscillator Frequency

2nd local frequency  $F_{vco}$  is determined as follows :

$$F_{vco} = N \times F_2 = N \times \frac{4.5\text{MHz}}{1800} = N \times 2.5\text{KHz}$$

$$F_2 : \frac{4.5\text{MHz}}{1800} = 2.5\text{KHz}$$

$N$  : To for transmitter

At the temperature of 20°C frequency tolerance of 4.5MHz crystal oscillator frequency can be adjusted within ±25PPM,  $F_2(2.5\text{KHz})$  become within ±25PPM.

Therefore,  $F_{vco}$  become within ±25PPM.

4.5MHz crystal oscillator circuits is kept within ±25PPM in the range of -20°C to 50°C

#### 2) Frequency Tolerance and Drift on Transmitter Output

As the result mentioned in 1) maximum frequency tolerance on transmitter output is kept within 10PPM at 25°C.

Frequency drift caused by temperature change is maintained within ±20PPM over the temperature range of -20°C to 50°C.

From the above, total frequency tolerance over the temperature range of -20°C to +50°C, and at the supply voltage of 13.8V ±15% is as follows :

$$\pm 10\text{PPM} \pm 20\text{PPM} = \pm 30\text{PPM}$$

Therefore, the transmitter output frequency tolerance is maintained within ±30PPM = ±30/1,000,000 or ±822.15Hz.

## (2) CIRCUIT FOR DETERMINING FREQUENCY

### 1) Output Frequency of the Transmitter

Transmitting frequency,  $F_t$  is twice output frequency of 2nd local oscillator Q17 by doubler Q48. The sum of these frequencies makes the transmitting frequency as follows :

$$F_t = F_{vco} \times 2$$

### 2) P.L.L Local Oscillator

The output frequency of Q17 is designated as  $F_{vco}$ .

$F_{vco}$  is divided by  $N$  at IC101 and the divided frequency will be  $F_1$ .

$$\text{Therefore : } F_1 = F_{vco} / N$$

IC1 also divides 4.5MHz by 1800 and the divided frequency is designated as  $F_2$ .

$$F_2 = 4.5\text{MHz} / 1800 = 2.5\text{KHz}$$

$F_1$  is compared with  $F_2$  at IC101 and if they are equal in frequencies, the phase locked loop is under the locked condition. Therefore,  $F_{vco}$  is determined by the following formula.

$$F_{vco} = N \times F_2 = N \times 2.5\text{KHz}$$

$F_{vco}$  is changeable at the increment of 10KHz by varying the program divide ratio  $N$ . For example, the divide ratio,  $N$  is programmed to 5393 at the channel NO. 1, the  $F_{vco}$  is calculated as follows :

$$F_{vco} = 5393 \times 2.5\text{KHz} = 13.4825\text{MHz}$$

In the same manner,  $F_{vco}$  for channel No. 1 through No. 40 is determined as shown in table A.

### 3) Spurious Radiation

27MHz band transmit frequencies is obtained when VCO frequencies is directly. Therefore the adjacent spurious problem can be eliminated.

Following steps are taken to eliminated level to well below 94dB.

- (1) Directly frequency of VCO applicable as transmitting frequencies.
- (2) Ground path of the printed circuit board is carefully lated out.
- (3) VCO waveform is optimized by C93A

### 4) Limiting Deviation

The circuit employed here fully satisfies the requirements of ETS 300 135.

Since the nominal microphone output level is about 6mV, the overall gain of the audio amplifier is set so that 3mV(at 1.25KHz) will deviation RF signal to 1KHz Dev. Then a very effective ALC(Automatic Level Control) circuit is used to limit audio gain so as not to over deviation beyond 2.4 KHz Dev.

The dynamic range of the ALC circuit for this purpose is effective over 50dB input increase.

The output audio level is sensed by IC 1 and set by diode D203.

A negative going signal just below the grond level will trigger open the IC202. To eliminate deviation level variation due to power supply voltage change, a supply voltage sensor circuit is incorporated into the ALC system.

RV201 Variable resistor set down the level of the supply voltage.

So when the supply voltage drops, the deviation audio signal output will also has to drop so that it's negative going signal will just trigger the IC202. This lowering of the deviation signal will prevent over deviation when supply voltage drops from nominal level. When supply voltage goes up, a larger deviation signal will result.

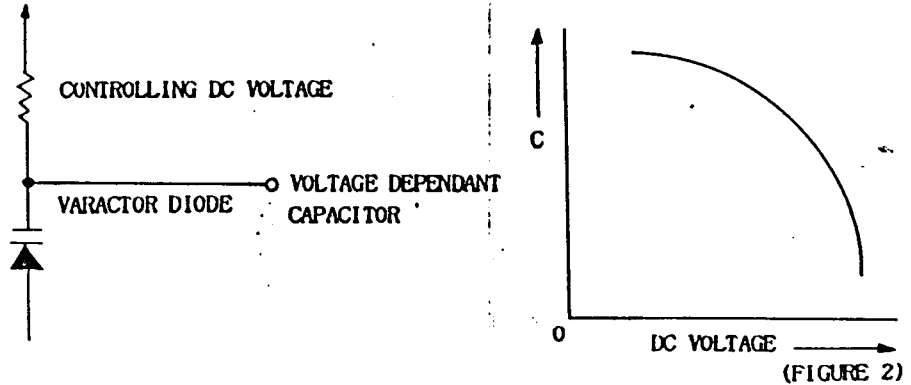
The resulting deviation level compensation circuit against the supply voltage variation is effective between 10Volt, DC to 16Volt DC.

### 5) Limiting Power

When all the coils T8, T9, T10, L1 are adjusted for peak, the RF power output will not exceed 4 watts.

C162 which is a coupling capacitor to final RF power amplifier is selected at the factory not to exceed 4.00 watts output at 13.2 volt DC supply voltage.

The most important part of VCO circuitry is a voltage controlled variable capacitor called vari-cap or varactor diode whose capacitance depends on DC voltage applied to it's cathode.



The varactor diode is responsible for setting VCO frequency, and once set it regulates the VCO frequency against the reference.

The VCO frequencies are chosen in 13 to 16MHz range as shown on table A.

To obtain transmit signal the VCO is doubled. As an example for channel 1 :  
 $13.4825 \times 2 = 26.965\text{MHz}$

For receiver mode the VCO is used as a first local oscillator. For channel 1:  
 $26.965 - 16.27 = 10.695\text{ MHz}$

The above first IF of 10.695 MHz is mixed again with 10.24MHz (X-1) crystal oscillator frequency which serves as the second local oscillator.

$10.695 - 10.24 = 0.455\text{ MHz}$

As can be seen above the VCO frequency shifts from 13.4825 to 16.27MHz when changed from transmit to receive for the same channel 1.

The shift is accomplished by "read only memory" incorporated inside the PLL IC1 between the selector switch and the VCO divider (programmable).

When transmit logic signal is applied to the IC101, the programmable divider will divide incoming VCO frequency by 5393 to produce 2.5KHz sampling signal.  $13.4825 \div 5393 = 2.5\text{KHz}$

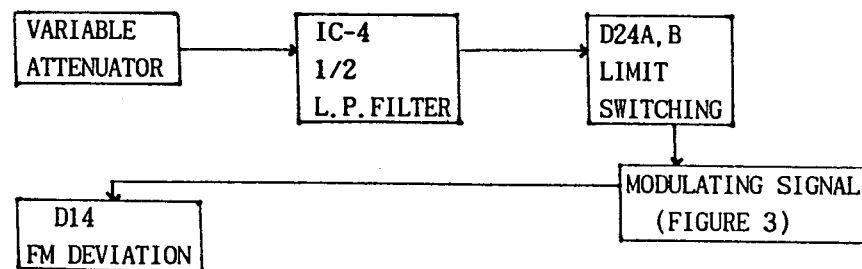
For the receiver mode the programmable divider will automatically change to divide the VCO frequency by 3254.

$16.27 \div 3254 = 5\text{KHz}$

The audio signal(mic input) amplifier by a single power IC-1.  
 The deviation limiting is accomplished by a automatic level control circuit switch is as follow :

MIC INPUT

IC-4



RF output power level to within the CEPT limit of 4 watts.

#### 6) Limiting Modulation

The circuit employed here fully satisfies the requirements. Since the nominal microphone output level is about 6mV, the overall gain of the audio amplifier is set so that 3mV(at 1KHz) will modulate RF signal to 50%. Then a very effective ALC(Automatic Level Control) circuit is used to limit audio gain so as not to over modulate beyond 90%. The dynamic range of the ALC circuit for this purpose is effective over 50dB input increase. The output audio level is sensed by Q43 and set by resistor D15. A negative going signal just below the ground level will trigger open the Q44. To eliminate modulation percentage variation due to power supply voltage change a supply voltage sensor circuit is incorporated into the ALC system.

R107 both resistors set down the level of the supply voltage.

So when the supply voltage drops, the modulating audio signal output will also has to drop so that it's negative going signal will just trigger the Q43 base. This lowering of the modulating signal will prevent over modulation when supply voltage drops from nominal level. When supply voltage goes up, a larger modulating signal will result.

The resulting modulating level compensation circuit against the supply voltage variation is effective between 10Volt, DC to 16Volt DC.

## VOLTAGE TABLE

RX/TX/RA VOLT DC

PIN	TR	Q1	Q2	Q3	Q4	Q5	Q6	Q7
E		0/0/0	0.8/0/0.8	0/0/0	0.8/0/0.8	0/0/0	0.2/0/0.2	1.3/0/1.3
C		0/0/0	6.0/0/6.0	0/0/0	7.0/0/7.0	0/0/0	2.0/0/2.0	12/0/12
B		0/0.7/0	1.5/0/1.5	0/0/0.7	1.6/0/1.6	FM 0.7/0/0	0.8/0/0.8	2.0/0/2.0

PIN	TR	Q8	Q9	Q11	Q12	Q13	Q14	Q15
E		0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	13/0/13	0/0/0
C		0/0/0	0/0/0	0.7/0/0.7	3.0/0/3.0	12/0/12	12/0/12	0/0/0
B		0/0/0	0.7/0/0.7	0/0/0	0/0/0	3.0/0/3.0	3.2/0	0/0.7/0

PIN	TR	Q16	Q17	Q18	Q19	Q21	Q22	Q23
E		0/0/0	2/2/0	0/0/1.0	0/0/0	0/0	0/0/0	0/0/0
C		3.5/3.5/0	4.5/4.5/0	0/0/6.0	0/0/0	0/0	0/0/6.0	0/0/4.0
B		0.7/0.7/0	2.6/2.6/0	0/0/1.6	0/0/0.7	0/0/0.7	0/0/0.6	0/0/0.6

PIN	TR	Q24	Q25	Q26	Q27	Q28	Q29	Q31
E		0/0/0	0/0/0	0.6/0.6/0	0/0/0	0/0/0	0/0/0.6	0/0/0
C		0/0/4.0	0/0/4.0	3.5/3.5/0	3.5/3.5/0	0/0/4.0	0/0/1.0	0/0/1.0
B		0/0/0.6	0/0/0.6	1.2/1.2/0	0.6/0.6/0	0/0/0.6	0/0/1.2	0/0/0.6

PIN	TR	Q32	Q33	Q34	Q35	Q36	Q36A	Q37
E		0/0/0	0/0/2.0	0/0/0	0/12/0	0/0/0	0/0/0	8.0/8.0/0
C		0/0/0	0/0/6.0	0/0/0	0/11/0	0/0/0	8.0/8.0/0	0/0/0
B		0/0/0.7	0/0/2.6	0./0.7/0	0/11/0	3.0/3.0/0	0/0/0	8.0/8.0/0

PIN	TR	Q37A	Q38	Q39	Q41	Q42	Q43	Q44
E		7.7/7.7/7.7	7.7/7.7/7.7	7.7/7.7/7.7	13/13/13	0/0/0	0/5.0/0	0/0/0
C		0/0/0	0/7.7/0	12/12/12	12/12/12	0/0/0	0/4.0/0	0/0/0
B		7.7/7.7/7.7	7.7/0.7/7.7	8.2/8.2/8.2	0/0/0	2.5/2.5/2.5	0/5.0/0	0/0/0

PIN	TR	Q45	Q46	Q47	Q48	Q49	Q51	Q52
E		0/2.0/0	0/0.6/0	0/0/0	0/0/0	13/13/13	13/12/13	0/5.0/0
C		0/6.0/0	0/12/0	0/12/0	0/12/0	0/12/0	0/8.0/0	13/7.0/13
B		0/2.6/0	0/1.2/0	0/0/0	0/0/0	13/12/13	13/7.0/13	0/5.6/0

PIN	TR	Q53	Q54					
E		13/6.0/13	0/0/0					
C		0/5.6/0	13/0/13					
B		13/0/13	0/3.0/0					

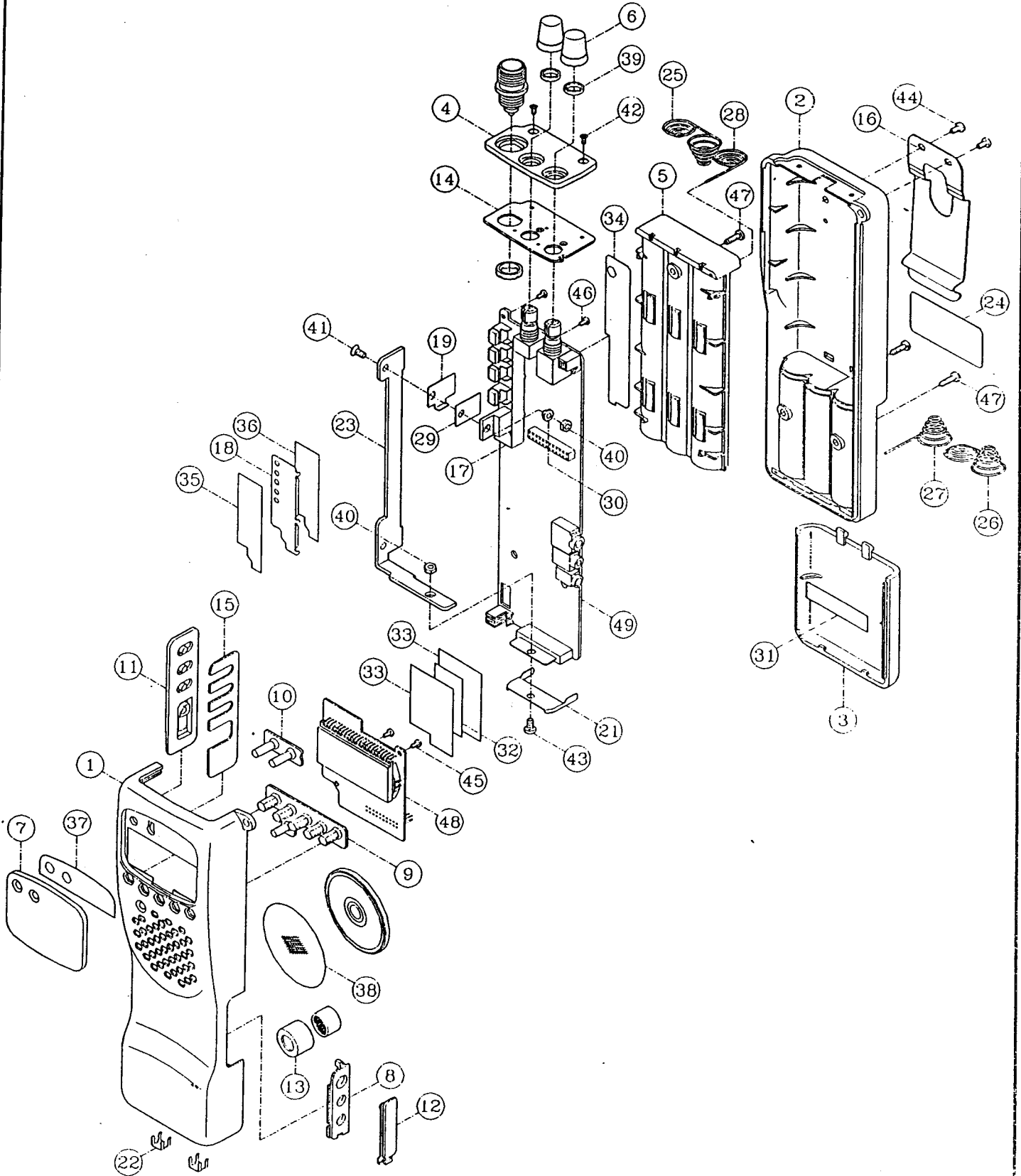


TRANSISTOR COMPLEMENT

<u>Part No.</u>	<u>Type No.</u>	<u>Manufacture</u>	<u>Function</u>
Q1	KTC3199	KEC	RX/TX Switching.
Q2	KTC3195	KEC	27MHz RF Amp.
Q3	KTC3195	KEC	1st. MIXER
Q4	KTC3195	KEC	2nd. MIXER
Q5	KTC3199	KEC	IF Amp.
Q6	KTC3199	KEC	IF Amp.
Q7	KTC3199	KEC	Squelch Control
Q9	KTC3199	KEC	VCO RX/TX Switching
Q10	KTC3195	KEC	VCO
Q11	KTC3195	KEC	RX OSC
Q12	KTA614	SAMSUNG	Regulator
Q13	KTC1267	KEC	Regulator
Q14	KTC3199	KEC	Regulator
Q15	KTA102	KEC	TX Switching
Q16, 17	KTC3199	KEC	Low pass comparison filter
Q18	KTC110M	KEC	SAVE Switching
Q19	KTC110M	KEC	RX Switching
Q20	KTC3199	KEC	Regulator
Q21	KTC110M	KEC	Power LO/HI Switching
Q22	KTC1241	KEC	Voltage Switching
Q25, 26	KTC3199	KEC	Low Batt comparison
Q27	KTC3195	KEC	TX 27MHz Doubler
Q28	KTC3195	KEC	TX Pre Amp.
Q29	2SC2314 or KTC1006	SANYO or KEC	TX RF Driver Amp.
Q30	2SC2078 or KTC2075	SANYO or KEC	TX RF Final Amp.
<u>IC Complement</u>			
IC101	LC72322	SANYO	CPU
IC3	KIA7217AP	KEC	AF Power Amp.
IC5	78L05	KEC	Voltage stabilizer
IC1	BA3361	ROM	FM DET.
IC4	KIA4558	KEC	Low pass filter/Deviation Amp
IC2	LM386	SAMSUNG	
<u>Diode Complement</u>			
D2	1N4148	KEC	Level Rect.
D3	1N60	KEC	RX Dector / AGE
D5	1N4148	KEC	SQ Mute
D7	1N60	KEC	SQ Level stabilizer
D9, 203	ITT310 or SVC251Y	ITT SANYO	PLL Varicap, DEV Varicap
5.6 B	KEC		Voitage stabilizer
D11	UZ 8.2 B	KEC	Voitage stabilizer
D12	1N4148	KEC	RF Attenuator
D13	1N4148	KEC	RX/TX Switching
D14	1N4001	KEC	Moduiation Feeder
D17	1N4148	KEC	Moduiation Rect.
D18	1N4148	KEC	Voltage Feeder
D19	1N4001	KEC	-Reverse Polarity Protector
D204, 205	1N4148	KEC	LIMIT Switching

# EXPLODED VIEW

GLENN



# PARTS LIST

GLENN MECHANICAL

PAGE 1

REF NO.	DESCRIPTION	PART NO	Q'TY
1	FRONT COVER	555M2018A	1
2	BACK COVER	CBM10019A	1
3	BATT DOOR	CBM30046A	1
4	TOP COVER	CBM30047A	1
5	BATT HOUSING	CBM20015A	1
6	VR KNOB	CBM30044A	2
7	WINDOW	555M4024A	1
8	JACK HOLDER	525M4017B	1
9	FUNCTION BUTTON	555S3007	1
10	TWIN BUTTON	555S4024	1
11	PTT BUTTON	525S3004	1
12	JACK CAP	525S4016	1
13	MIC HOLDER	55-S4023	1
14	TOP CHASSIS	55-P4008	1
15	KNOB BRACKET	525P4010	1
16	HANGER	55-P3001	1
17	COIL SHIELD CASE	55-P4006	1
18	COIL SHIELD COVER	55-P4007	1
19	TR SHIELD PLATE	CBP40069A	1
20	SHIELD PLATE	525P4019	1
21	IC SHIELD PLATE	525P4033	1
22	CHARGER TERMINAL	555P4017	2
23	HEAT SINK	CBP30030A	1
24	RATING LABEL	555S4037A	1
25	BATT SPRING-A	CBR40011A	1
26	BATT SPRING-B	CBR40012A	1
27	BATT SPRING-C	CBR40013A	1
28	BATT SPRING-D	CBR40014A	1
29	TR MICA SHEET	CBS40067A	2
30	TR BUSHING	77-157315	2

# PARTS LIST

GLENN MECHANICAL

PAGE 2

REF NO.	DESCRIPTION	PART NO	Q' TY
31	FELT SPACER	55-S4006A	1
32	CPU Cu PLATE	525S4025	1
33	FPCB INSULATOR	525S4027D	2
34	RF SHIELD PLATE	525S4042	1
35	COIL CVR INSULATOR-A	55-S4006B	1
36	COIL CVR INSULATOR-B	55-S4006C	1
37	WINDOW TAPE	555S4036	1
38	SPEAKER NET	55S4002B	1
39	VR NUT	CBR40010A	2
40	HEXAGON NUT M3	NUTM03S2	2
41	SCREW MACHINE FH 3x8M	FH0308MMH	1
42	SCREW MACHINE FH 2x5M BK	FH0205MBK	2
43	SCREW MACHINE BH 3x6M	BH0306MMH	1
44	SCREW TAP-TIGHT BH 2.6x5TT BK	BH2605TTB	2
45	SCREW TAPPING BH 2x6T	BH0206TWH	2
46	SCREW TAPPING BH 2x8T	BH0208TWH	2
47	SCREW TAPPING PH 2.6x10T NI	PH2610TNI	3
48	FRONT PCB ASS'Y	AFPBY555	1
49	MAIN PCB ASS'Y	AMPBY555	1
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			

# PARTS LIST

## GLENN IC & MISCELLANEOUS

REF NO.	DESCRIPTION	PART NO
IC1	IC CHIP PARTS LM3361D	
IC2	IC CHIP PARTS IC LM 386D	
IC3	IC TYPE KIA 7217 AP	
IC4	IC CHIP PARTS KIA 4558F	
IC5	IC TYPE L78S06	
IC200P515	IC LC72322	
IC201	CHIP-IC KIA7042F	
CON1	CONNECTOR 2.5m/m 2PIN	
CON2	CONNECTOR 2.5m/m 2PIN	
CON3	CONNECTOR 2.0m/m 24PIN (+,-)	
CON4	CONNECTOR 24PIN 2m/m 24PIN	
CON5	CONNECTOR 24PIN 2m/m 24PIN	
C-MIC	CONDENSER MIC 64dB 10DIA	
J1	S.P JACK M/O 2.5PI HY-55	
J2	MIC JACK S/T 3.5PI HY-55	
J3	POWER JACK 3.5PI HY-55	
J5	TNC ANT CONNECTOR HY-55	
VR1	VR 50KA/SW RK0971111A0253A	
VR2	VR 10KB RK0971110A0213B	
	CONNECTOR (WIRE) 2P(2.5m/m)PIN-8-3.0	
	CONNECTOR (WIRE) 2P(WIRE)7.0-6-3.0	
S1	TACT SHITCH (H) (IT-1102VA)	
S2	TACT SHITCH (H) (IT-1102VA)	
S3	TACT SHITCH (H) (IT-1102VA)	
S4	TACT SHITCH (H) (IT-1102VA)	
	CPU IC NEW	



# PARTS LIST

## GLENN DIODES

REF NO.	DESCRIPTION	PART NO
D1A, 1B	DIODE CHIP PARTS S226	
D3	DIODE CHIP PARTS S193	
D4	DIODE CHIP PARTS S193	
D5	DIODE CHIP PARTS S193	
D6	DIODE CHIP PARTS S184	
D7	DIODE CHIP PARTS S184	
D8	ZENER DIODE CHIP BZ 7.5V	
D9	DIODE CHIP PARTS S184	
D10	DIODE CHIP PARTS S184	
D11	DIODE CHIP PARTS S193	
D11A	DIODE IN60	
D12	DIODE CHIP PARTS S193	
D13	VARICAP DIODE CHIP KDV251S	
D14	VARICAP DIODE CHIP KDV251S	
D15	DIODE CHIP PARTS S226	
D16	VARICAP DIODE CHIP KDV251S	
D17	DIODE CHIP PARTS S193	
D18	DIODE IN4001	
D19	DIODE CHIP PARTS S184	
D21	DIODE CHIP PARTS S193	
D22	DIODE CHIP PARTS S193	
D23	ZENER DIODE CHIP BZ 8.2V	
D24	DIODE CHIP PARTS S181	
D25	DIODE CHIP PARTS S193	
D26	ZENER DIODE CHIP BZ 5.6V	
D27	DIODE IN4001	
D28A	DIODE CHIP PARTS S184	
D200	DIODE CHIP S187	
D202A	DIODE CHIP S181	
D202B	DIODE CHIP S184	





# PARTS LIST

## GLENN TRANSISTORS

PAGE 1

REF NO.	DESCRIPTION	PART NO
Q2	TR CHIP PARTS C3880 Y	
Q3	TR CHIP PARTS C3875 Y	
Q4	TR CHIP PARTS C3880 Y	
Q5	TR CHIP PARTS C102S	
Q6	TR CHIP PARTS C3875 Y	
Q7	TR CHIP PARTS C3875 Y	
Q8	TR CHIP PARTS C110S	
Q9	TR CHIP PARTS C3875 Y	
Q10	TR CHIP PARTS C112S	
Q11	TR CHIP PARTS C3875 Y	
Q12	TR CHIP PARTS C102S	
Q13	TR CHIP PARTS C110S	
Q14	TR CHIP PARTS A110S	
Q15	TR CHIP PARTS C3875 Y	
Q16	TR CHIP PARTS C3880 Y	
Q17	TR CHIP PARTS C3880 Y	
Q18	TR CHIP PARTS C3880 Y	
Q20	TR CHIP PARTS C102S	
Q22	TR CHIP PARTS C3880 Y	
Q23	TR CHIP PARTS C3880 Y	
Q24	TR CHIP PARTS C3880 Y	
Q25	TR CHIP PARTS C3880 Y	
Q26	TR CHIP PARTS C3875 Y	
Q27	TR CHIP PARTS C3875 Y	
Q28	TR CHIP PARTS C3880 Y	
Q29	TR CHIP PARTS C3875 Y	
Q31	TR CHIP PARTS C3875 Y	
Q33	TR CHIP PARTS C3880 Y	
Q34	TR CHIP PARTS C110S	
Q35	DISK TYPE TR A1242	



# PARTS LIST

## GLENN RESISTORS

PAGE 1

REF NO.	DESCRIPTION	PART NO
R2	CHIP RESISTOR 82K ohm	
R3	CHIP RESISTOR 680 ohm	
R4	CHIP RESISTOR 1K ohm	
R5	CHIP RESISTOR 1K ohm	
R6	CHIP RESISTOR 100 ohm	
R7	CHIP RESISTOR 2.7K ohm	
R8	CHIP RESISTOR 220 ohm	
R8A	CHIP RESISTOR 4.7K ohm	
R9	CHIP RESISTOR 68 ohm	
R10A	CHIP RESISTOR 10K ohm	
R11	CHIP RESISTOR 10K ohm	
R13	CHIP RESISTOR 10K ohm	
R13A	CHIP RESISTOR 100K ohm	
R14	CHIP RESISTOR 10K ohm	
R15	CHIP RESISTOR 10K ohm	
R16	CHIP RESISTOR 2.2K ohm	
R16A	CHIP RESISTOR 2.2K ohm	
R17	CHIP RESISTOR 22K ohm	
R19	CHIP RESISTOR 4.7K ohm	
R21	CHIP RESISTOR 1K ohm	
R22	CHIP RESISTOR 2.2K ohm	
R23	CHIP RESISTOR 270K ohm	
R24	CHIP RESISTOR 150K ohm	
R25	CHIP RESISTOR 10K ohm	
R26	CHIP RESISTOR 3.3K ohm	
R26A	CHIP RESISTOR 10K ohm	
R27	CHIP RESISTOR 150K ohm	
R29	CHIP RESISTOR 2.2K ohm	
R31	CHIP RESISTOR 10K ohm	
R32	CHIP RESISTOR 470 ohm	

# PARTS LIST

## GLENN RESISTORS

PAGE 2

REF NO.	DESCRIPTION	PART NO
R32A	CHIP RESISTOR 100 ohm	
R33	CHIP RESISTOR 27K ohm	
R34	CHIP RESISTOR 100K ohm	
R35	CHIP RESISTOR 47K ohm	
R36	CHIP RESISTOR 47 ohm	
R37	CHIP RESISTOR 22K ohm	
R38	CHIP RESISTOR 330 ohm	
R39	CHIP RESISTOR 47K ohm	
R40	CHIP RESISTOR 27K ohm	
R41	CHIP RESISTOR 150K ohm	
R42	CHIP RESISTOR 47K ohm	
R43	CHIP RESISTOR 33K ohm	
R44	CHIP RESISTOR 22K ohm	
R46	CHIP RESISTOR 27K ohm	
R47	CHIP RESISTOR 47K ohm	
R48	CHIP RESISTOR 2.2K ohm	
R49	CHIP RESISTOR 2.2K ohm	
R50	CHIP RESISTOR 10K ohm	
R51	CHIP RESISTOR 10K ohm	
R53	CHIP RESISTOR 1.8K ohm	
R54	CHIP RESISTOR 1M ohm	
R55	CHIP RESISTOR 18K ohm	
R56	CHIP RESISTOR 10K ohm	
R57	CHIP RESISTOR 22 ohm	
R58	CHIP RESISTOR 5.6K ohm	
R59	CHIP RESISTOR 5.6K ohm	
R60	CHIP RESISTOR 100K ohm	
R61	CHIP RESISTOR 2.2K ohm	
R62	CHIP RESISTOR 1K ohm	
R62A	CHIP RESISTOR 220K ohm	

# PARTS LIST

## GLENN RESISTORS

PAGE 3

REF NO.	DESCRIPTION	PART NO
R64	CHIP RESISTOR 22K ohm	
R65	CHIP RESISTOR 22K ohm	
R66	CHIP RESISTOR 220K ohm	
R67	CHIP RESISTOR 1K ohm	
R69	CHIP RESISTOR 56 ohm	
R71	CHIP RESISTOR 100K ohm	
R72	CHIP RESISTOR 1K ohm	
R75	CHIP RESISTOR 820K ohm	
R76	CHIP RESISTOR 2.2K ohm	
R77	CHIP RESISTOR 820K ohm	
R78	CHIP RESISTOR 2.2K ohm	
R79	CHIP RESISTOR 820K ohm	
R81	CHIP RESISTOR 2.2K ohm	
R82	CHIP RESISTOR 2.2K ohm	
R83	CHIP RESISTOR 27K ohm	
R84	CHIP RESISTOR 82K ohm	
R85	CHIP RESISTOR 10K ohm	
R86	CHIP RESISTOR 2.2K ohm	
R87	CHIP RESISTOR 220K ohm	
R88	CHIP RESISTOR 560 ohm	
R89	CHIP RESISTOR 4.7K ohm	
R91	CHIP RESISTOR 82K ohm	
R92	CHIP RESISTOR 10K ohm	
R93	CHIP RESISTOR 1.5K ohm	
R93A	CHIP RESISTOR 22K ohm	
R95	CHIP RESISTOR 220K ohm	
R96	CHIP RESISTOR 220K ohm	
R97	CHIP RESISTOR 1K ohm	
R98	CHIP RESISTOR 100 ohm	
R99	CHIP RESISTOR 22K ohm	

# PARTS LIST

## GLENN RESISTORS

PAGE 4

REF NO.	DESCRIPTION	PART NO
R99A	CHIP RESISTOR 220 ohm	
R100	CHIP RESISTOR 10K ohm	
R101	CHIP RESISTOR 22K ohm	
R102	CHIP RESISTOR 5.6K ohm	
R103	CHIP RESISTOR 2.2K ohm	
R103A	CHIP RESISTOR 10K ohm	
R104	CHIP RESISTOR 68 ohm	
R105	CHIP RESISTOR 2.2K ohm	
R106	CHIP RESISTOR 820 ohm	
R107	CHIP RESISTOR 10K ohm	
R108	CHIP RESISTOR 22K ohm	
R109	CHIP RESISTOR 22 ohm	
R111	CHIP RESISTOR 1.5K ohm	
R112	CHIP RESISTOR 1.5K ohm	
R113	CHIP RESISTOR 10 ohm	
R114	CHIP RESISTOR 1.5K ohm	
R115	CHIP RESISTOR 10K ohm	
R116	CHIP RESISTOR 100 ohm	
R117	CHIP RESISTOR 10K ohm	
R118	CHIP RESISTOR 10K ohm	
R119	CHIP RESISTOR 47K ohm	
R121	CHIP RESISTOR 47K ohm	
R122	CHIP RESISTOR 2.2K ohm	
R123	CHIP RESISTOR 2.2K ohm	
R124	CHIP RESISTOR 120K ohm	
R125	CHIP RESISTOR 270K ohm	
R126	CHIP RESISTOR 27K ohm	
R127	CHIP RESISTOR 33K ohm	
R128	CHIP RESISTOR 820 ohm	
R129	CHIP RESISTOR 330 ohm	

# PARTS LIST

## GLENN RESISTORS

PAGE 5

REF NO.	DESCRIPTION	PART NO
R131	CHIP RESISTOR 2.2K ohm	
R132	CHIP RESISTOR 1K ohm	
R133	CHIP RESISTOR 2.2K ohm	
R134	CHIP RESISTOR 2.2K ohm	
R135	CHIP RESISTOR 2.7K ohm	
R136	CHIP RESISTOR 15K ohm	
R137	CHIP RESISTOR 2.2K ohm	
R138	CHIP RESISTOR 100K ohm	
R141	CHIP RESISTOR 390 ohm	
R142	CHIP RESISTOR 100 ohm	
R143	CHIP RESISTOR 4.7K ohm	
R144	CHIP RESISTOR 4.7K ohm	
R145	CHIP RESISTOR 68 ohm	
R146	CHIP RESISTOR 68 ohm	
R147	CHIP RESISTOR 68 ohm	
R148	CHIP RESISTOR 1 ohm	
R149	CHIP RESISTOR 1K ohm	
R151	CHIP RESISTOR 5.6K ohm	
R152	CHIP RESISTOR 390 ohm	
R153	CHIP RESISTOR 470 ohm	
R154	CHIP RESISTOR 10K ohm	
R155	CHIP RESISTOR 330 ohm	
R156	CHIP RESISTOR 680 ohm	
R157	CHIP RESISTOR 100 ohm	
R158	CHIP RESISTOR 100 ohm	
R159	CHIP RESISTOR 100 ohm	
R166	CHIP RESISTOR 10K ohm	
R200	CHIP RESISTOR 680ohm	
R201	CHIP RESISTOR 680ohm	
R202	CHIP RESISTOR 100K ohm	





# PARTS LIST

## GLENN CAPACITORS

PAGE 1

REF NO.	DESCRIPTION	PART NO
C2	CHIP CAPACITOR 473PF F	
C2A	CHIP CAPACITOR 103PF F	
C3	ELEC CAPACITOR 33uF/6.3V 4x5	
C4	CHIP CAPACITOR 33PF CH	
C4A	CHIP CAPACITOR 102PF B	
C5	CHIP CAPACITOR 103PF F	
C6	CHIP CAPACITOR 47PF CH	
C7	CHIP CAPACITOR 103PF F	
C8	CHIP CAPACITOR 103PF F	
C9	CHIP CAPACITOR 103PF F	
C10	CHIP CAPACITOR 473PF F	
C11	CHIP CAPACITOR 47PF CH	
C12	CHIP CAPACITOR 7PF CH	
C13	CHIP CAPACITOR 223PF F	
C14	CHIP CAPACITOR 223PF F	
C15	CHIP CAPACITOR 103PF F	
C16	ELEC CAPACITOR 10uF/6.3V 3x5	
C17	CHIP CAPACITOR 103PF F	
C19	CHIP CAPACITOR 103PF F	
C20	CHIP CAPACITOR 104PF F	
C21	CHIP CAPACITOR 104PF F	
C22	CHIP CAPACITOR 120PF CH	
C23	CHIP CAPACITOR 68PF CH	
C25	CHIP CAPACITOR 103PF F	
C26	CHIP CAPACITOR 103PF F	
C27	CHIP CAPACITOR 103PF F	
C28	CHIP CAPACITOR 103PF F	
C29	CHIP CAPACITOR 220PF CH	
C30	CHIP CAPACITOR 102PF B	
C31	CHIP CAPACITOR 102PF B	

# PARTS LIST

## GLENN CAPACITORS

PAGE 2

REF NO.	DESCRIPTION	PART NO
C32	CHIP CAPACITOR 223PF B	
C33	CHIP CAPACITOR 104PF F	
C33A	CHIP CAPACITOR 104PF B	
C34	CHIP CAPACITOR 103PF F	
C36	CHIP CAPACITOR 104PF F	
C37	ELEC CAPACITOR 10uF/6.3V 3x5	
C38	ELEC CAPACITOR 0.1uF/16V(50V) 3x5	
C40	CHIP CAPACITOR 473PF F	
C41	CHIP CAPACITOR 103PF F	
C42	CHIP CAPACITOR 100PF CH	
C42A	ELEC CAPACITOR 22uF/6.3V 4x5	
C43	ELEC CAPACITOR 1uF/16V(50V) 3x5	
C44	CHIP CAPACITOR 103PF F	
C45	CHIP CAPACITOR 103PF F	
C45A	CHIP CAPACITOR 223PF F	
C46	CHIP CAPACITOR 103PF F	
C48	CHIP CAPACITOR 47PF CH	
C49	CHIP CAPACITOR 330PF CH	
C50	CHIP CAPACITOR 223PF F	
C51	CHIP CAPACITOR 33PF CH	
C52	CHIP CAPACITOR 10PF CH	
C53	CHIP CAPACITOR 33PF CH	
C54	CHIP CAPACITOR 330PF CH	
C55	CHIP CAPACITOR 5PF CH	
C56	CHIP CAPACITOR 220PF CH	
C57	CHIP CAPACITOR 103PF F	
C58	ELEC CAPACITOR 22uF/6.3V 4x5	
C59	CHIP CAPACITOR 33PF CH	
C60	CHIP CAPACITOR 102PF B	
C61	CHIP CAPACITOR 102PF B	

# PARTS LIST

## GLENN CAPACITORS

PAGE 3

REF NO.	DESCRIPTION	PART NO
C62	CHIP CAPACITOR 472PF B	
C64	CHIP CAPACITOR 39PF CH	
C64A	CHIP CAPACITOR 223PF F	
C67	CHIP CAPACITOR 103PF F	
C68	CHIP CAPACITOR 10PF CH	
C70	ELEC CAPACITOR 10uF/6.3V 3x5	
C71	CHIP CAPACITOR 223PF F	
C72	CHIP CAPACITOR 103PF F	
C73	CHIP CAPACITOR 10PF CH	
C74	CHIP CAPACITOR 22PF CH	
C76	CHIP CAPACITOR 100PF CH	
C78	ELEC CAPACITOR 0.47uF/16V(50V)3x5	
C79	CHIP CAPACITOR 220PF CH	
C80	CHIP CAPACITOR 68PF CH	
C81	CHIP CAPACITOR 102PF B	
C82	CHIP CAPACITOR 5PF CH	
C83	CHIP CAPACITOR 120PF CH	
C85	CHIP CAPACITOR 22PF CH	
C86	CHIP CAPACITOR 10PF CH	
C87	CHIP CAPACITOR 47PF CH	
C88	CHIP CAPACITOR 39PF CH	
C89	CHIP CAPACITOR 5PF CH	
C92	CHIP CAPACITOR 472PF B	
C93	CHIP CAPACITOR 223PF B	
C93A	CHIP CAPACITOR 104PF B	
C93B	ELEC CAPACITOR 1uF/16V(50V) 3x5	
C94	CHIP CAPACITOR 220PF CH	
C94A	CHIP CAPACITOR 103PF F	
C94B	CHIP CAPACITOR 473PF F	
C95	CHIP CAPACITOR 104PF F	

# PARTS LIST

## GLENN CAPACITORS

PAGE 4

REF NO.	DESCRIPTION	PART NO
C95A	CHIP CAPACITOR 10PF CH	
C95B	CHIP CAPACITOR 104PF B	
C95C	ELEC CAPACITOR 100uF/16V 6.3x7	
C96	ELEC CAPACITOR 10uF/6.3V 3x5	
C97	CHIP CAPACITOR 104PF F	
C97A	CHIP CAPACITOR 104PF F	
C98	ELEC CAPACITOR 47uF/16V 3x5	
C99	ELEC CAPACITOR 10uF/6.3V 3x5	
C100	ELEC CAPACITOR 10uF/10V(16V) 3x5	
C101	CHIP CAPACITOR 104PF F	
C102	ELEC CAPACITOR 33uF/16V 5x7	
C103	CHIP CAPACITOR 103PF F	
C104	CHIP CAPACITOR 473PF F	
C105	TANTAL CAPACITOR T10uF/6.3V(10v)	
C106	CHIP CAPACITOR 220PF CH	
C107	CHIP CAPACITOR 104PF F	
C107A	ELEC CAPACITOR 470uF/16V 8x11.5	
C108	ELEC CAPACITOR 47uF/16V 3x5	
C109	ELEC CAPACITOR 0.47uF/6.3V(50v)3x5	
C110	CHIP CAPACITOR 222PF B	
C111	ELEC CAPACITOR 1000uF/10V 10x11.5	
C112	CHIP CAPACITOR 220PF CH	
C114	ELEC CAPACITOR 10uF/6.3V 3x5	
C115	CHIP CAPACITOR 33PF CH	
C116	ELEC CAPACITOR 100uF/6.3V 6.3x7	
C117	ELEC CAPACITOR 22uF/16V 5x5	
C118	ELEC CAPACITOR 220uF/16V 6.3x11	
C119	CHIP CAPACITOR 223PF F	
C120	CHIP CAPACITOR 223PF F	
C121	ELEC CAPACITOR 33uF/6.3V 4x5	

# PARTS LIST

## GLENN CAPACITORS

PAGE 5

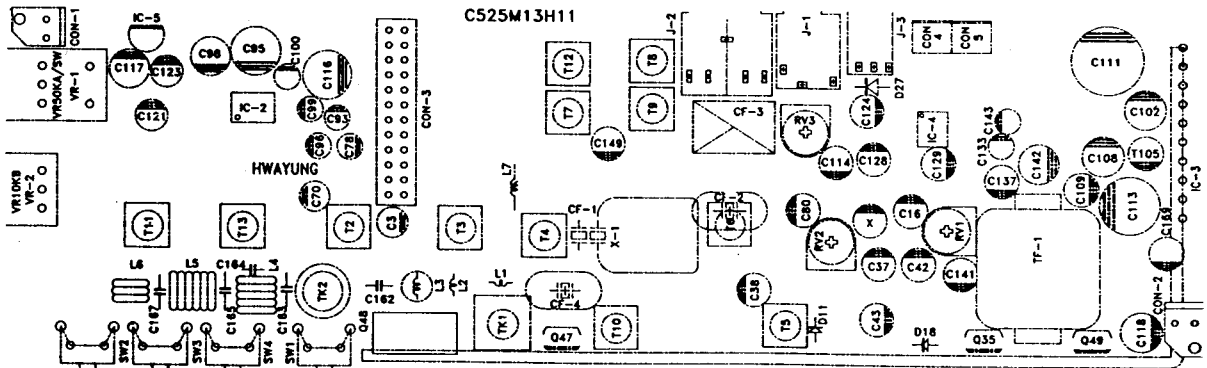
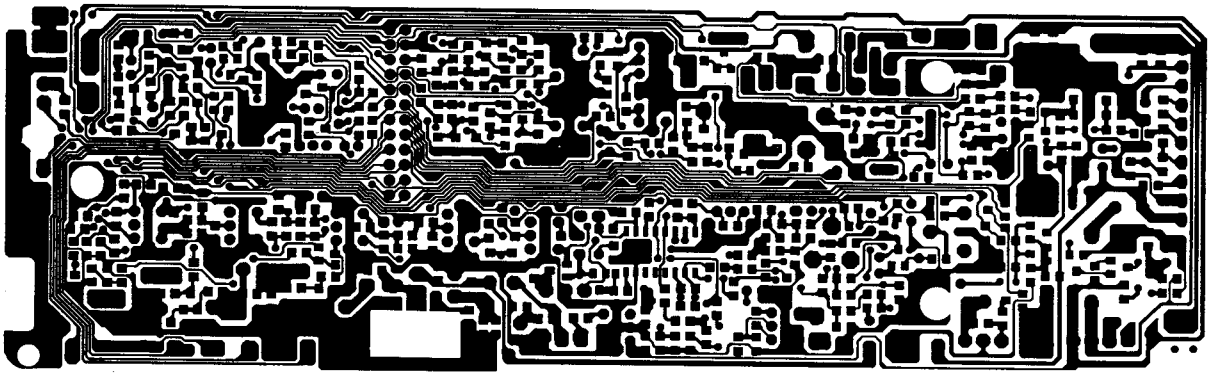
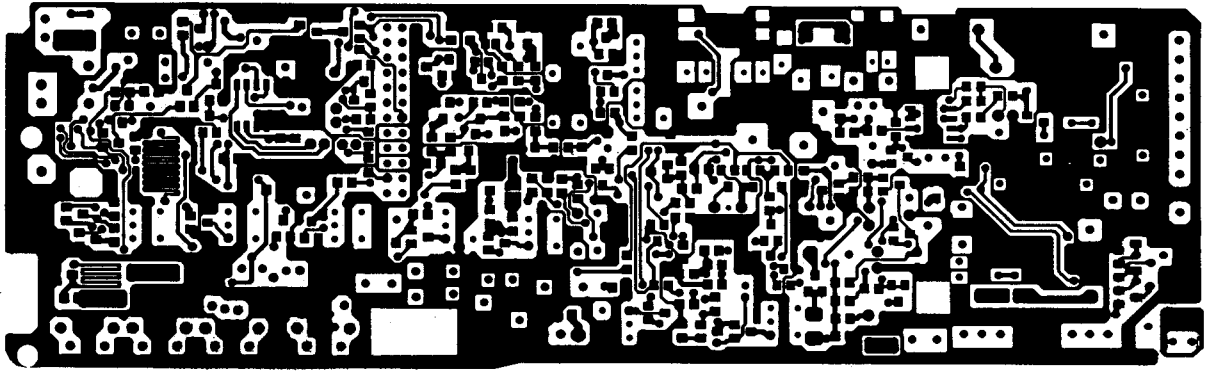
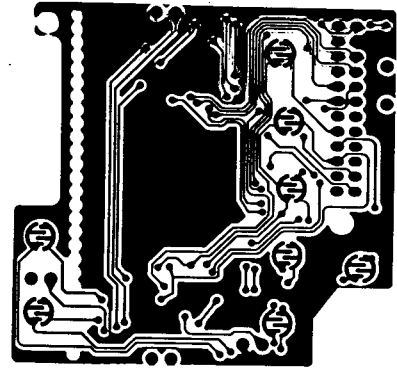
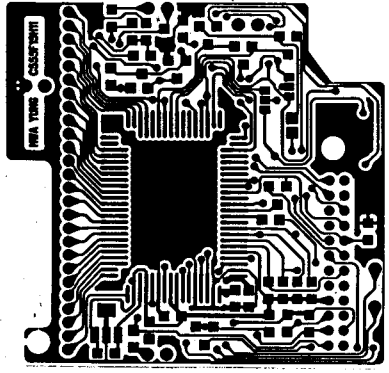
REF NO.	DESCRIPTION	PART NO
C123	ELEC CAPACITOR 33uF/6.3V 4x5	
C124	ELEC CAPACITOR 1uF/16V(50V) 3x5	
C125	CHIP CAPACITOR 473PF B	
C126	CHIP CAPACITOR 102PF B	
C127	CHIP CAPACITOR 103PF F	
C128	ELEC CAPACITOR 4.7uF/6.3V 3x5	
C129	ELEC CAPACITOR 4.7uF/6.3V 3x5	
C131	CHIP CAPACITOR 473PF F	
C132	CHIP CAPACITOR 150PF CH	
C133	ELEC CAPACITOR 10uF/6.3V 3x5	
C136	CHIP CAPACITOR 473PF F	
C137	CHIP CAPACITOR 103PF F	
C137A	ELEC CAPACITOR 22uF/6.3V 4x5	
C138	CHIP CAPACITOR 104PF F	
C139	CHIP CAPACITOR 473PF F	
C141	ELEC CAPACITOR 10uF/6.3V 3x5	
C142	ELEC CAPACITOR 33uF/6.3V 4x5	
C143	ELEC CAPACITOR 2.2uF/6.3V 3x5	
C144	CHIP CAPACITOR 223PF F	
C145	CHIP CAPACITOR 330PF CH	
C146	CHIP CAPACITOR 223PF F	
C147	CHIP CAPACITOR 5PF CH	
C148	CHIP CAPACITOR 103PF F	
C149	ELEC CAPACITOR 22uF/16V 5x5	
C151	CHIP CAPACITOR 220PF CH	
C152	CHIP CAPACITOR 103PF F	
C153	CHIP CAPACITOR 103PF F	
C154	CHIP CAPACITOR 102PF B	
C155	CHIP CAPACITOR 100PF CH	
C156	CHIP CAPACITOR 103PF F	

# PARTS LIST

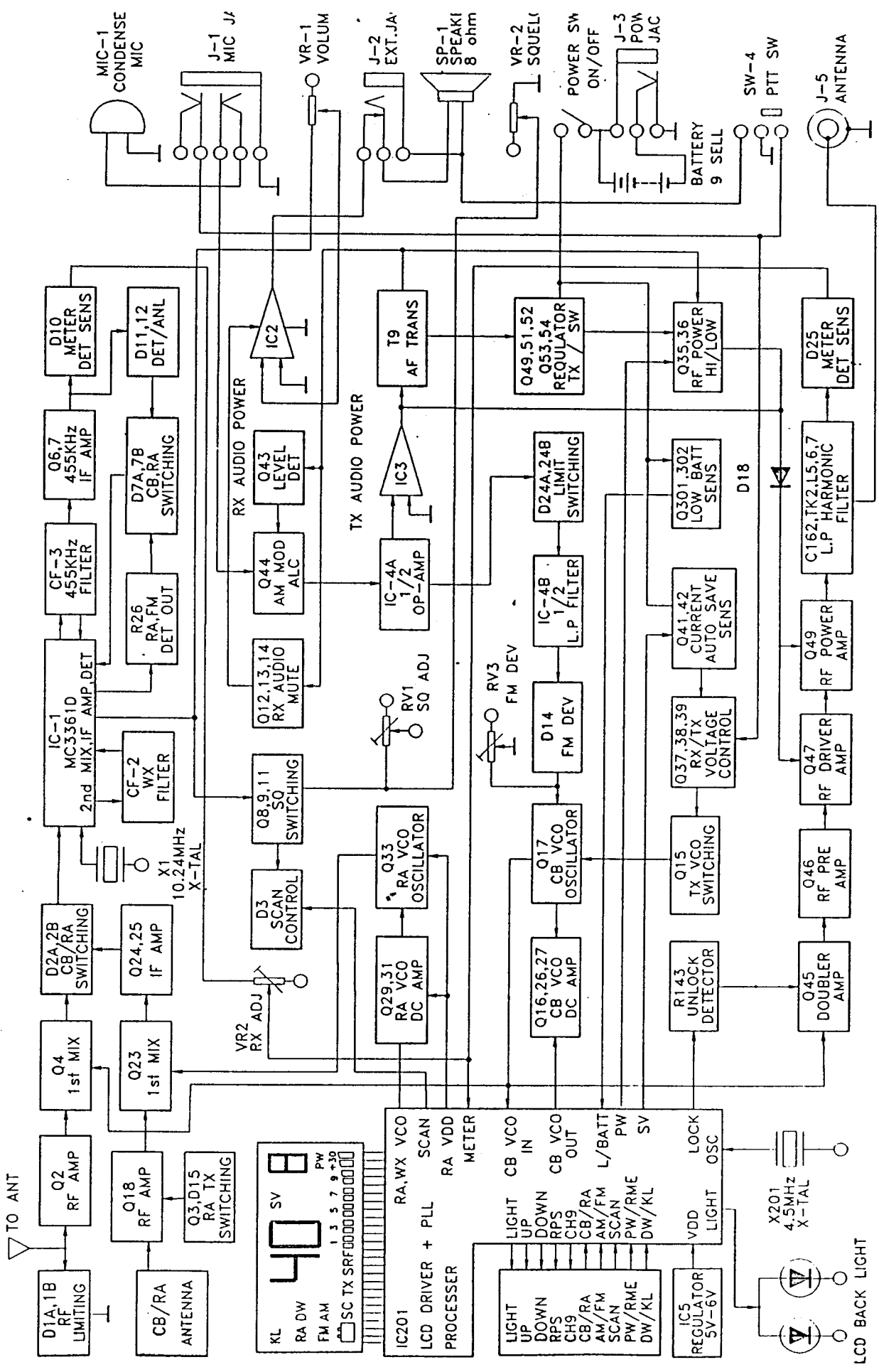
## GLENN CAPACITORS

PAGE 6

REF NO.	DESCRIPTION	PART NO
C157	CHIP CAPACITOR 330PF CH	
C158	CHIP CAPACITOR 470PF CH	
C159	CHIP CAPACITOR 100PF CH	
C161	CHIP CAPACITOR 223PF F	
C161A	CHIP CAPACITOR 103PF F	
C162	DISK CAPACITOR 150PF CH	
C163	DISK CAPACITOR 220PF SL (6-7P)	
C164	DISK CAPACITOR 39PF CH (3-4P)	
C165	DISK CAPACITOR 270P SL (7-8P)	
C166	CHIP CAPACITOR 3PF CH	
C166A	CHIP CAPACITOR 102PF B	
C167	DISK CAPACITOR 180PF SL (6-7P)	
C167A	CHIP CAPACITOR 103PF F	
C169	ELEC CAPACITOR 33uF/6.3V 4x5	
C170	CHIP CAPACITOR 103PF F	
C172	CHIP CAPACITOR 473PF F	
C173	CHIP CAPACITOR 103PF F	
C174	CHIP CAPACITOR 104PF F	
C175	CHIP CAPACITOR 473PF F	
C176	CHIP CAPACITOR 103PF F	
C177	CHIP CAPACITOR 473PF F	
C200	CERAMIC CAPACITOR 0.1uF F	
C201	CERAMIC CAPACITOR 24PF	
C202	CERAMIC CAPACITOR 27PF	
C204	CHIP CAPACITOR 0.047uF F	
C205	CHIP CAPACITOR 0.047uF F	
C206	CHIP CAPACITOR 0.047uF F	
C207	ELEC CAPACITOR 22uF/6.3V	



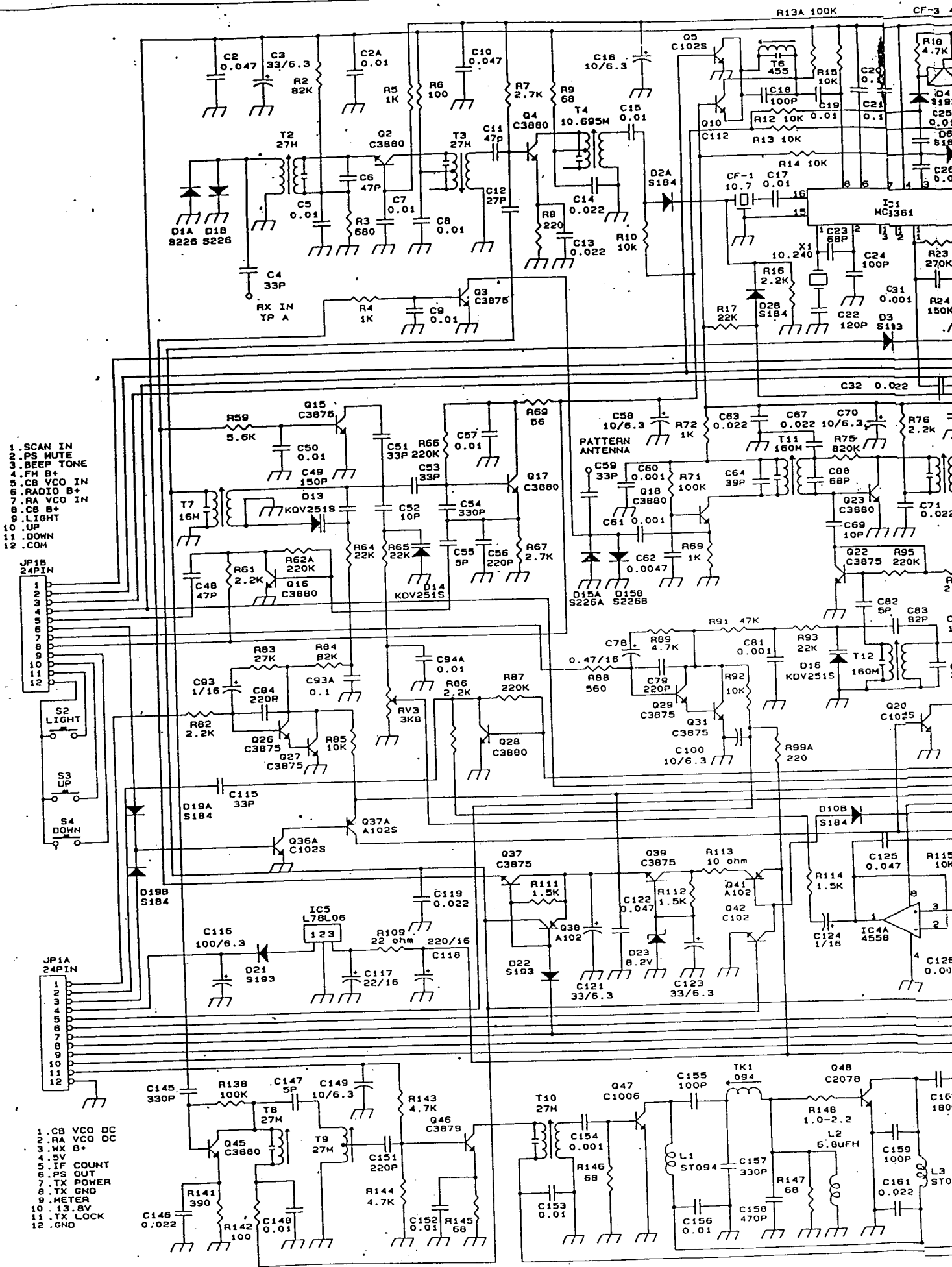
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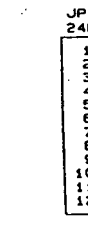
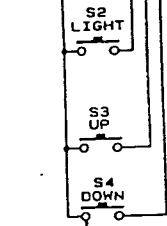
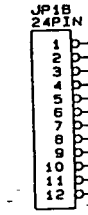
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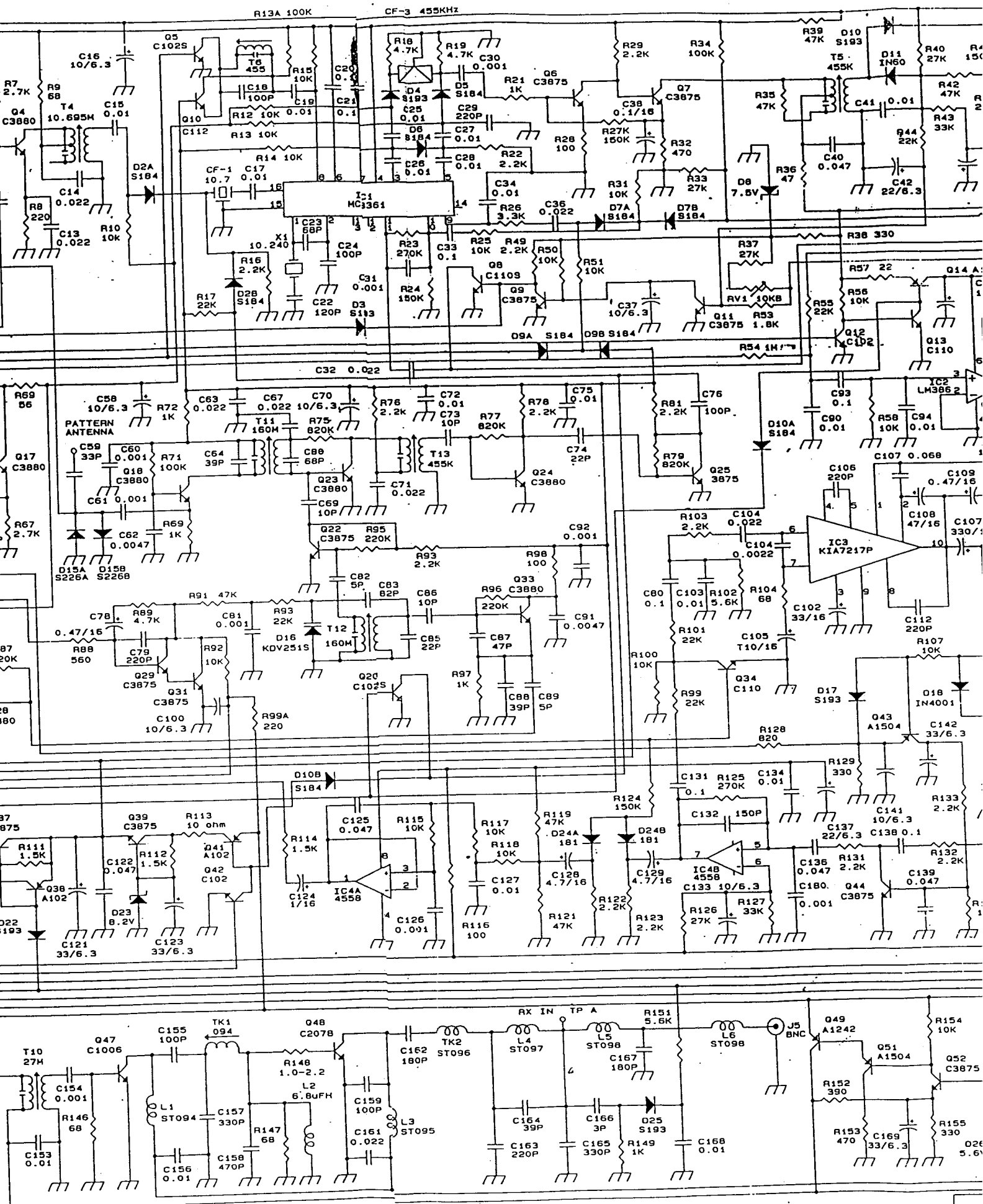


- 1. SCAN IN
- 2. PS MUTE
- 3. BEEP TONE
- 4. FM B+
- 5. CB VCO IN
- 6. RADIO B+
- 7. RA VCO IN
- 8. CB B+
- 9. LIGHT
- 10. UP
- 11. DOWN
- 12. COM



- 1. CB VCO DC
- 2. RA VCO DC
- 3. WX B+
- 4. 5V
- 5. IF COUNT
- 6. PS OUT
- 7. TX POWER
- 8. TX GND
- 9. METER
- 10. 13.8V
- 11. TX LOCK
- 12. GND

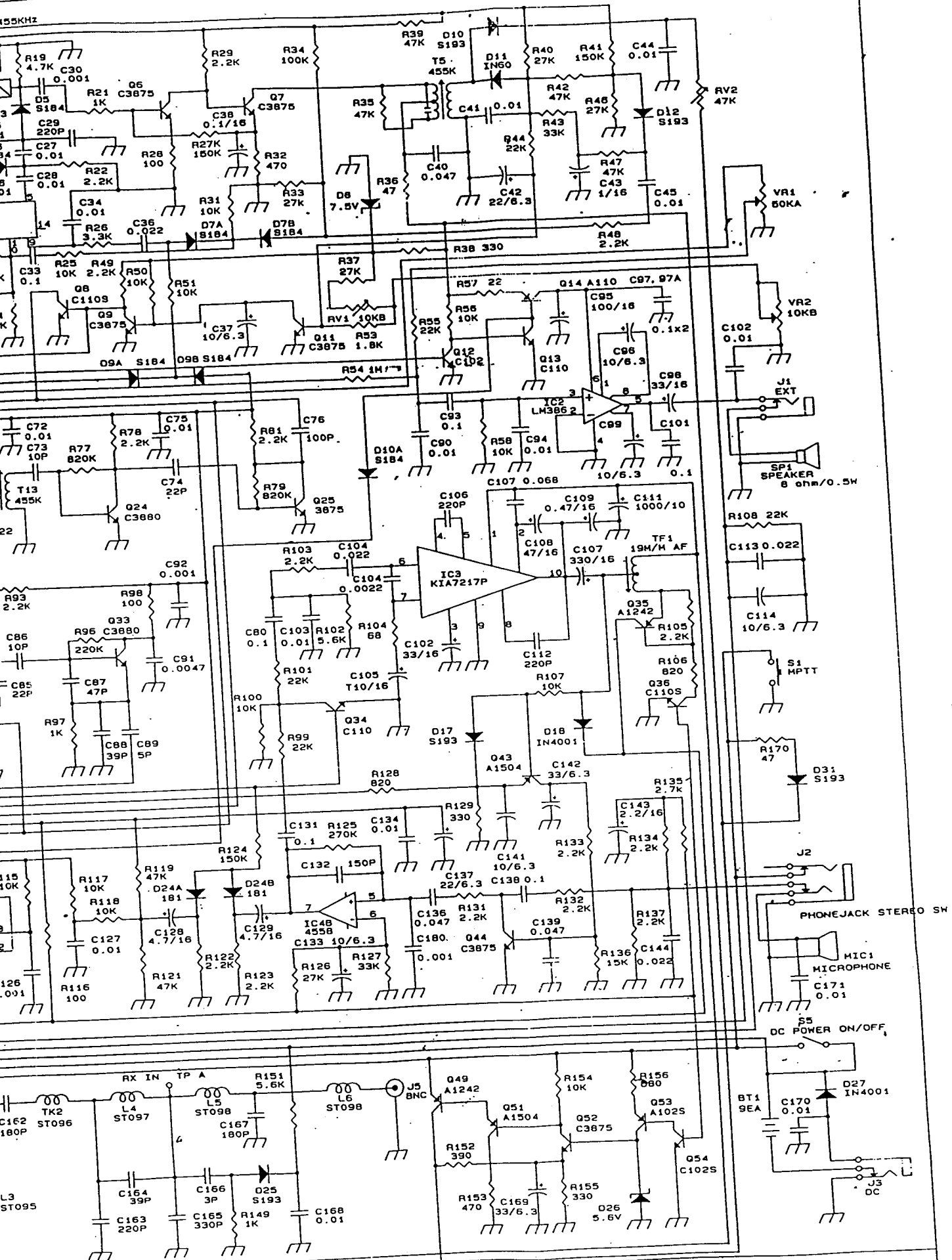
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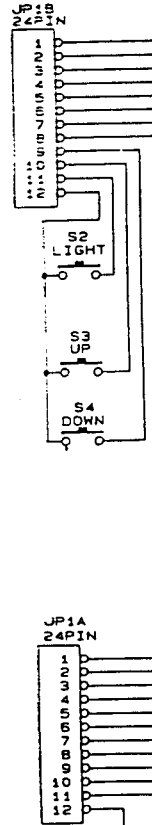
Size  
C  
Dot C

1C

155KHZ

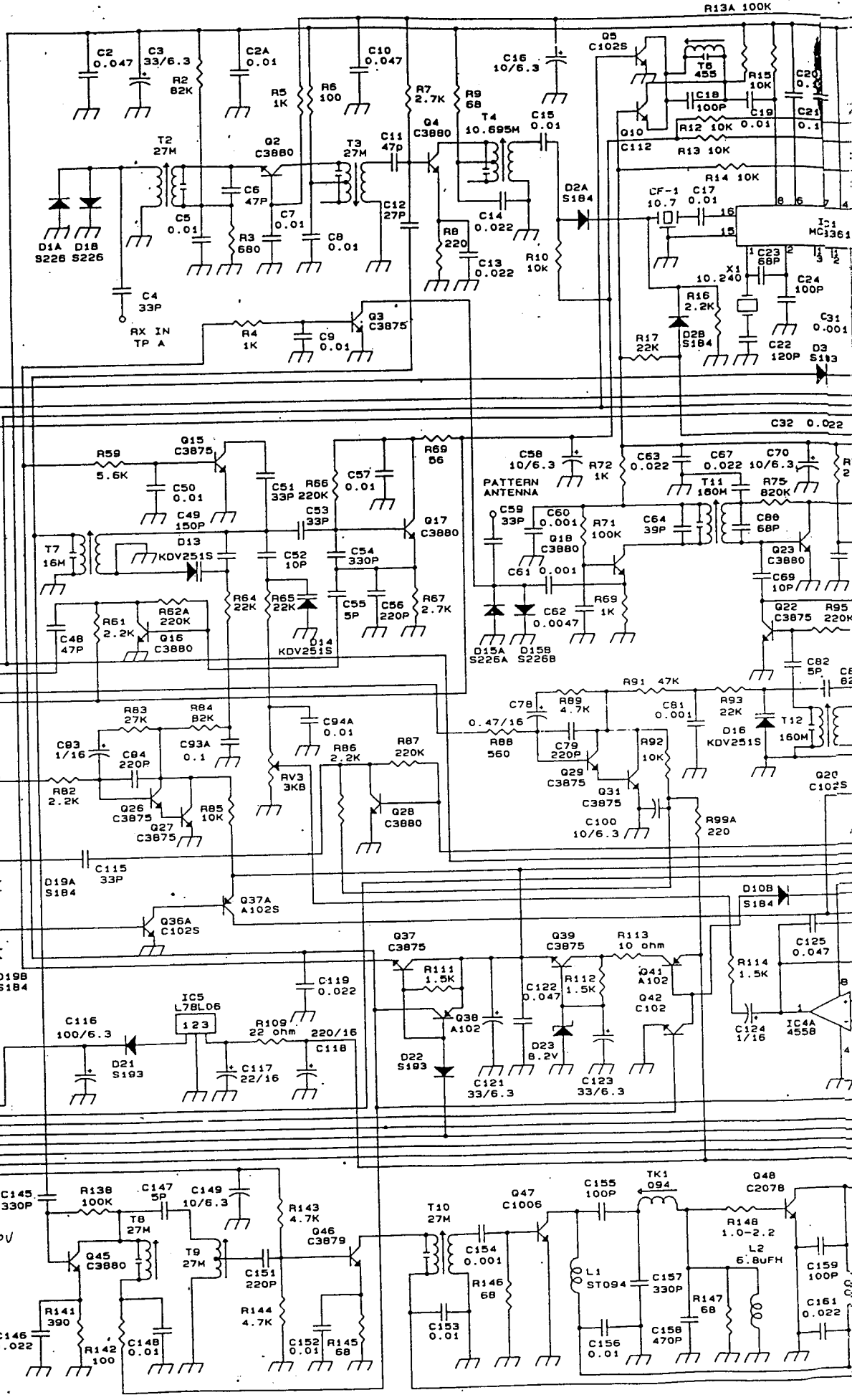


- 7.3
- 1. SCAN IN
- 2. PS MUTE
- 3. BEEP TONE
- 4. FM B+
- 5. CB VCO IN
- 6. RA VCO IN
- 7. CB B+
- 8. CS B+
- 9. LIGHT
- 10. US
- 11. DOWN
- 12. COM

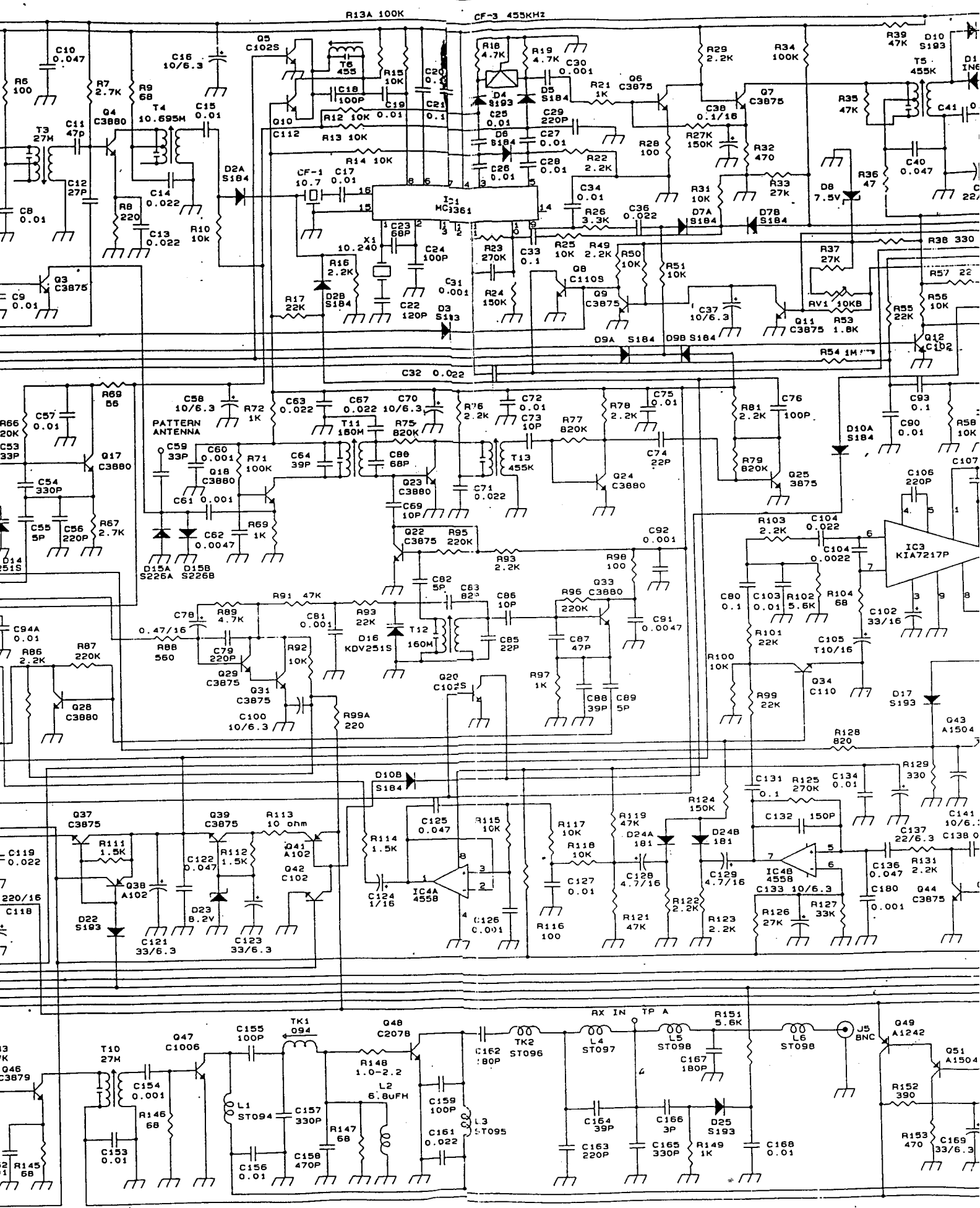


- 1. CB VCO DC 13.10V
- 2. RA VCO DC 13.10V
- 3. RX B+
- 4. 1.3V
- 5. IF COUNT
- 6. PS OUT
- 7. TX POWER
- 8. TX GND
- 9. METER
- 10. 13.8V
- 11. TX LOCK 11K
- 12. GND 2.6

*Handwritten notes:*  
 2R  
 2.6  
 100 Ω

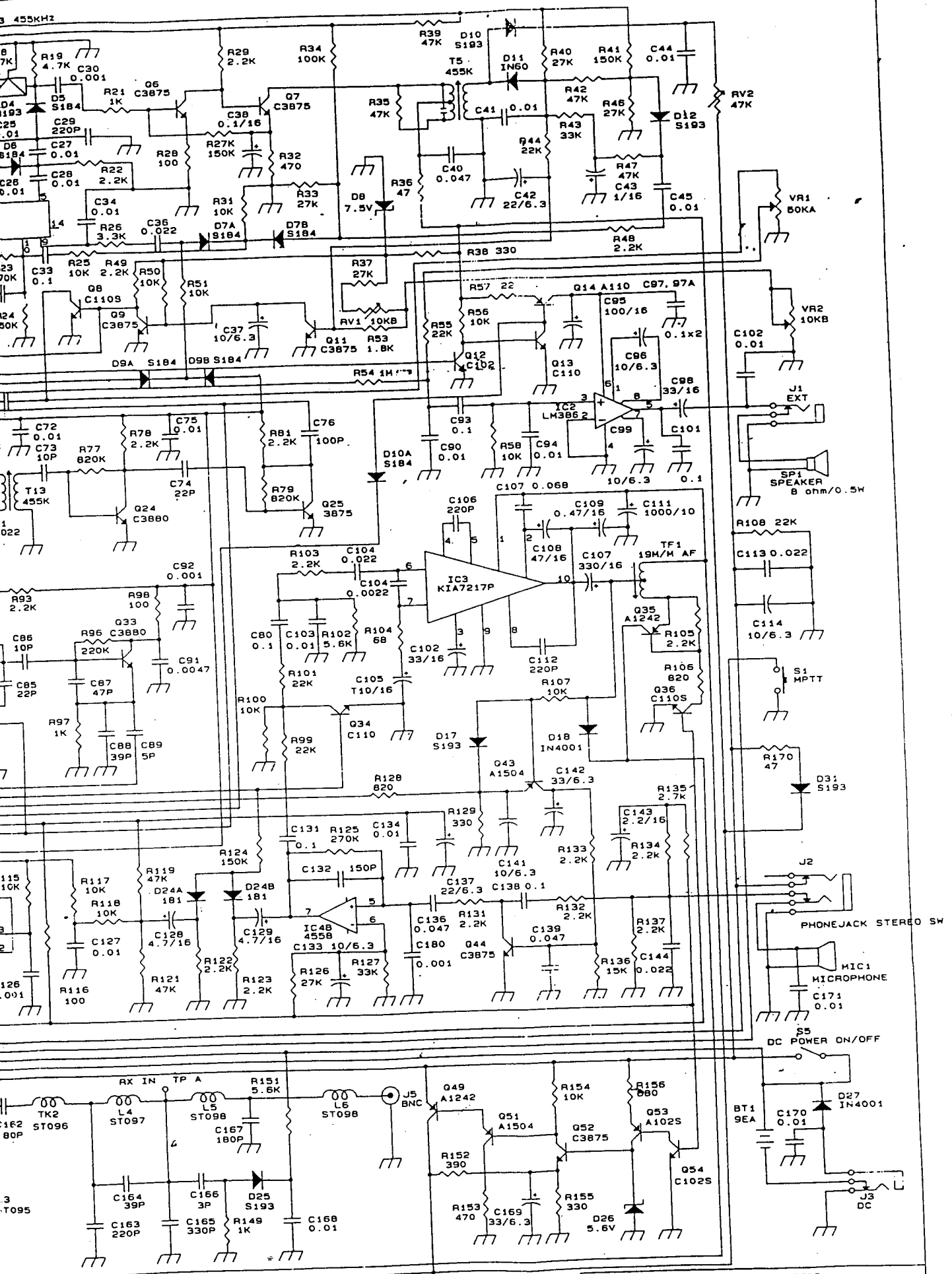


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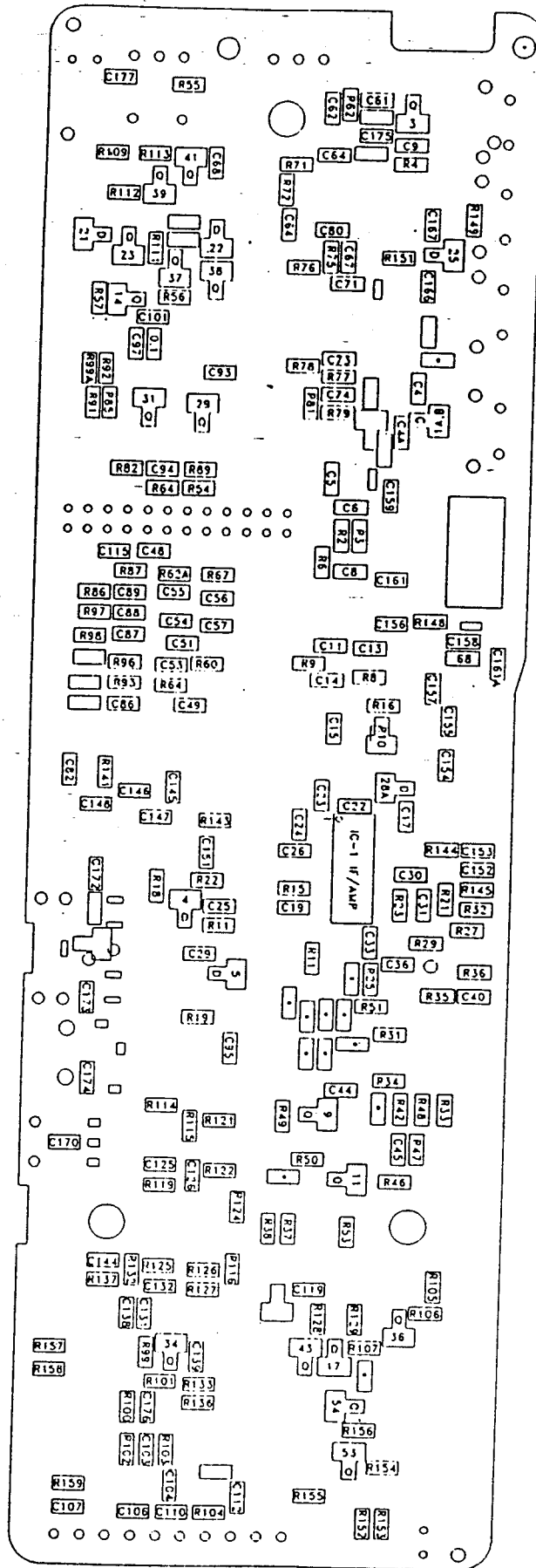


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20



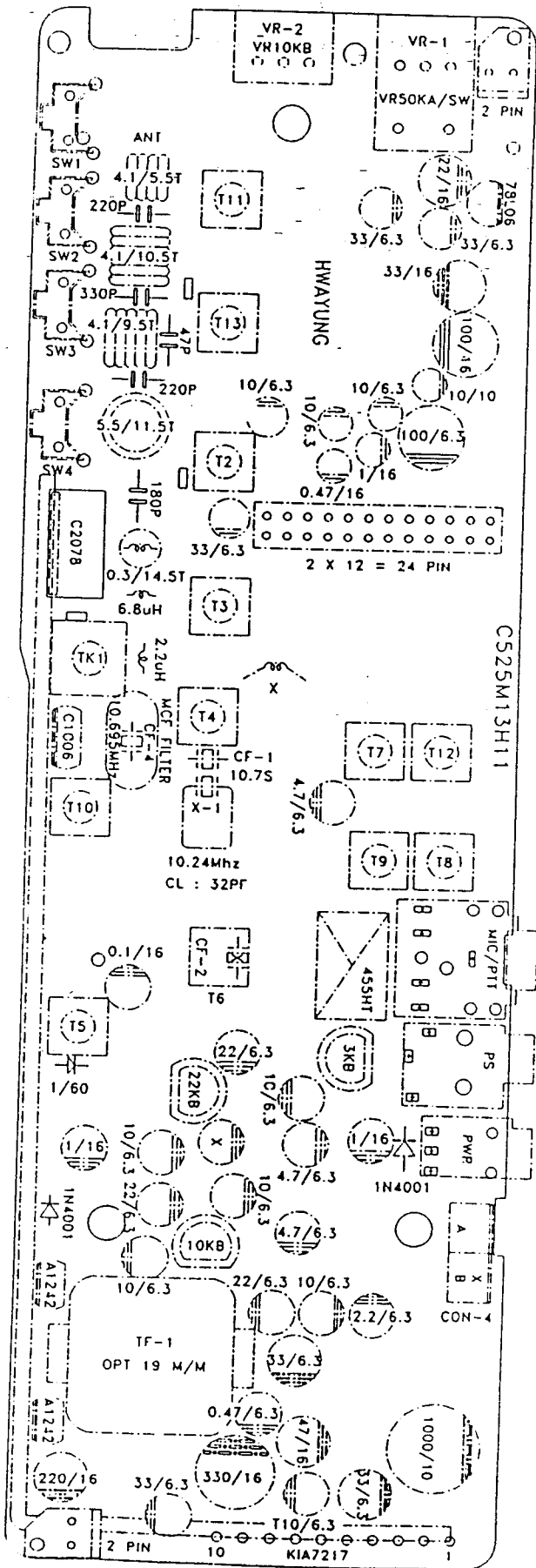
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HWA YUNG INDUSTRIAL CO.,LTD

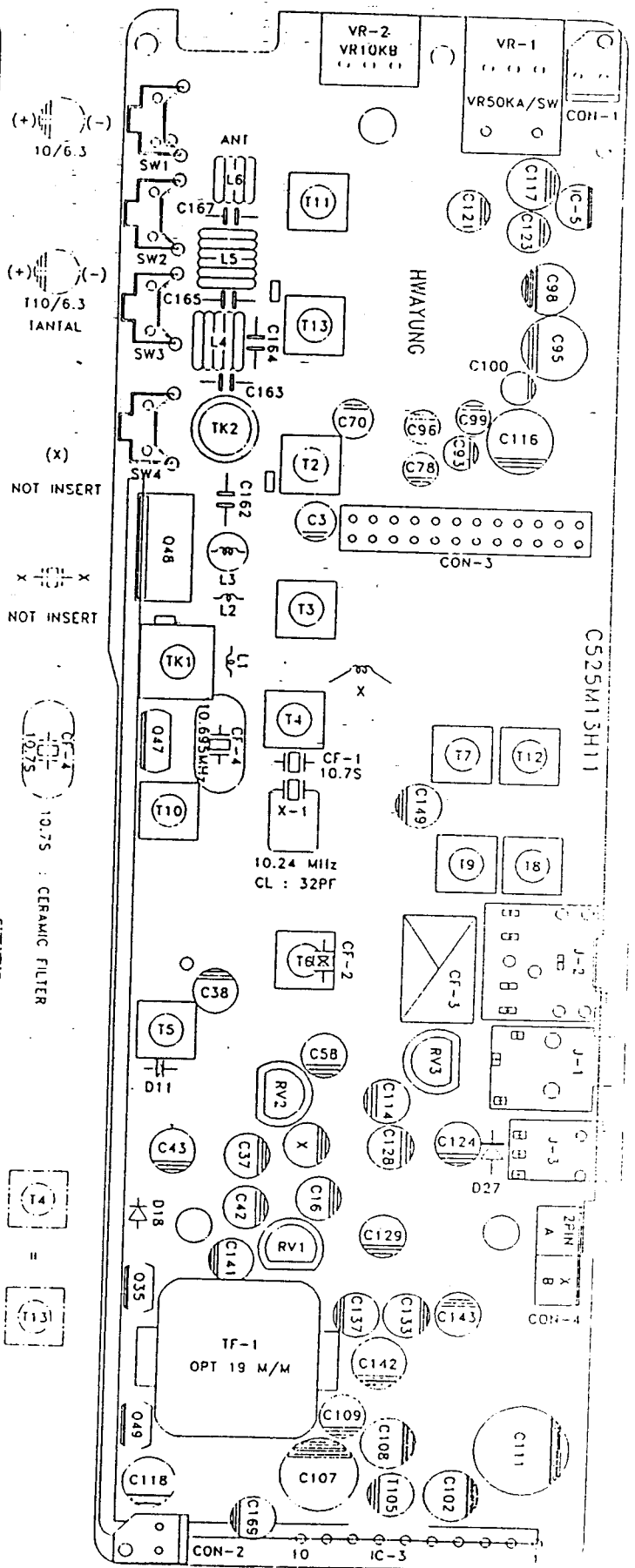


NORMAL PARTS LAYOUT (TOP)



HWA YUNG INDUSTRIAL CO.,LTD

NORMAL PARTS LAYOUT (TOP)



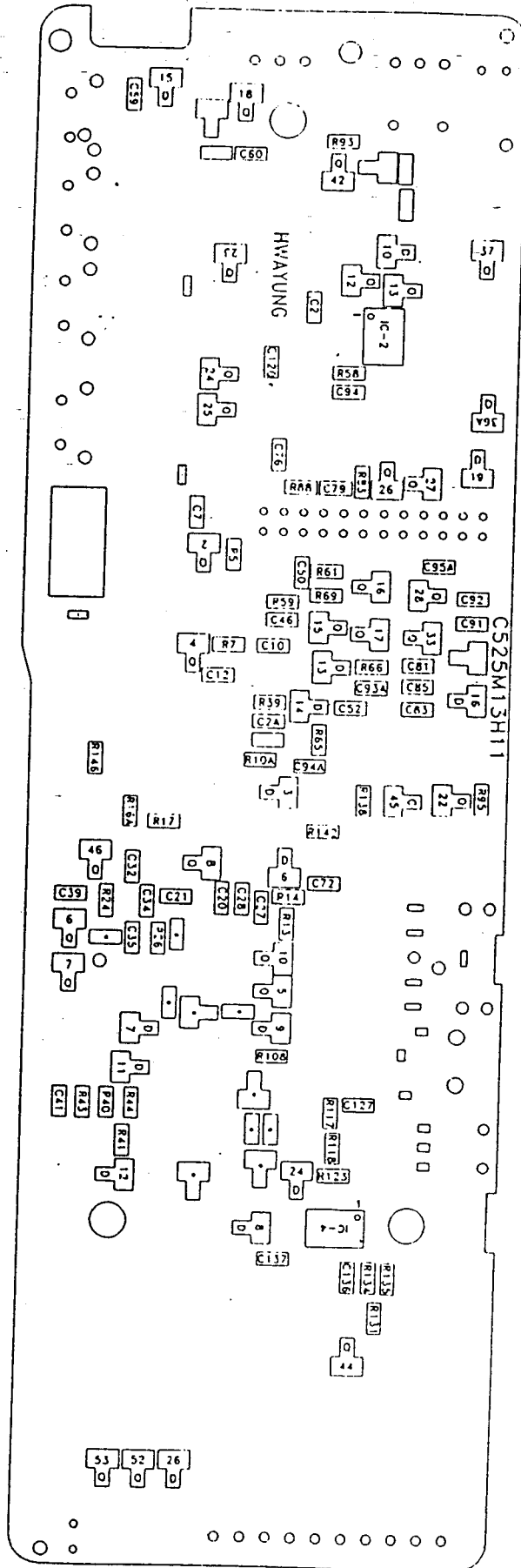
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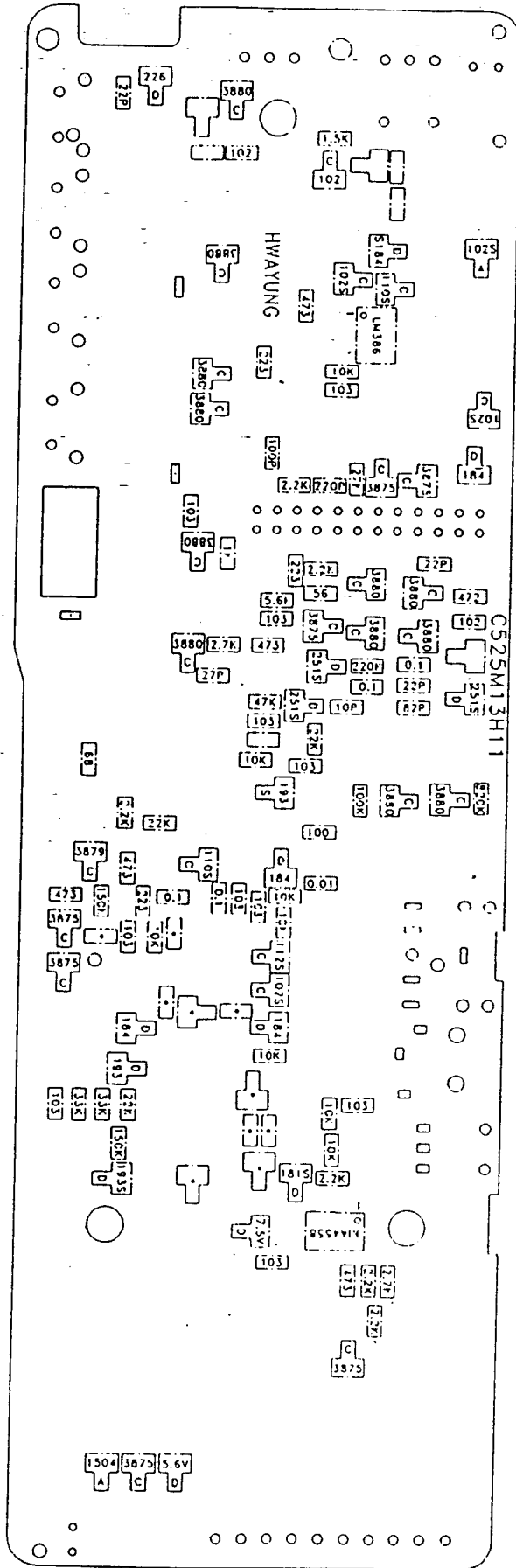
composant  
à fabriquer

TOP VIEW CHIP PARTS LAYOUT



HWA YUNG INDUSTRIAL CO.,LTD.

TOP VIEW CHIP PARTS LAYOUT



HWA YUNG INDUSTRIAL CO.,LTD.



## OPERATION INFORMATION

(HY-525, HY535, 75-805)

### 1. LIGHT SWITCH

IF YOU SWITCH VOLUME ON THERE COMES NO LIGHT ON THE LCD ONLY WHEN YOU PRESS LIGHT SWITCH, THE UNIT IS LIT ON THE LCD WINDOW.

### 2. UP AND DOWN SWITCH

YOU CAN ACQUIRE YOUR DESIRED CB CHANNEL, WEATHER CHANNEL OR FM RADIO FREQUENCIES (FROM 87.5MHz THROUGH 108 MHz) BY ADJUSTING THIS SWITCH.

### 3. CB/RA SWITCH

YOU CAN SELECT CB OR RADIO MODE ALTERNATIVELY USING THIS SWITCH.

### 4. AM/FM SWITCH

THIS SWITCH IS USED ONLY FOR CB MODE, NOT FM RADIO.

### 5. SCAN SWITCH

PRESS THIS BUTTON, THE UNIT WILL AUTOMATICALLY SCAN TO A BUSY CHANNEL WHEN A BUSY CHANNEL IS ENCOUNTERED.

IF THIS BUTTON IS NOT PRESSED AGAIN AFTER 5 SECONDS, THE UNIT WILL SCAN ON THE ANOTHER CHANNEL.

### 6. PWR/RME SWITCH (POWER/RADIO MEMORY)

#### PWR(POWER)

THERE ARE TWO LEVELS OF POWER AVAILABLE ON THIS UNIT IN CB MODE : POWER HIGH IS FOR LONG RANGE WHILE POWER LOW FOR SHORT RANGE TO SAVE POWER CONSUMPTION.

IN POWER HIGH THERE SHOWS "PW" AND NO INDICATION IS POWER LOW.

#### RME (RADIO MEMORY)

IF YOU PRESS THIS BUTTON IN RADIO MODE THERE SHOWS A DIGIT (FROM 1 THROUGH 8) ON THE UP-RIGHT SIDE ON THE LCD WITH FLASHING. PRESS ONCE AGAIN, FLASHING STOPS AND THE FREQUENCY ON THE LCD IS MEMORIZED WITH THE NUMBER FLASHED.

**7. RPS (RADIO PRE SCAN)**

YOU CAN SELECT ANY ONE OF 8 MEMORY STATION WHICH YOU WANT TO MONITOR.

PRESS THIS BUTTON REPEATEDLY, THEN THE DIGIT FROM 1 THROUGH 8 WILL APPEARS CONSECUTIVELY.

**8. DW/KL (DUAL WATCH / KEY LOCK)**

**DUAL WATCH**

THIS FEATURE IS LIKE HAVING TWO RECEIVERS IN THIS MODEL. IT GIVES YOU THE ABILITY TO MONITOR ANY TWO DIFFERENT CHANNELS IN THE GIVEN CHANNELS.

DECIDE TWO CHANNELS WHICH YOU WANT TO MONITOR (SAY 10CH AND 20CH).

WHEN 10CH APPEARS ON THE LCD, PRESS DW SWITCH.

THERE APPEAS "DW" SYMBOL ON THE LCD.

NEXT, PLEASE ADJUST CH20 WITH UP/DOWN SWITCH AND ADJUST SQUELCH VOLUME SO AS NOT COME OUT NOISE.

THEN 10CH OR 20CH WILL APPEAR ALTENATIVELY BY 0.5 SECOND INTERVAL.

IF ANY CHANNEL STOPS AND IS FIXED YOU CAN COMMUNICATE WITH YOUR PARTNER OF THE FIXED CHANNEL.

WHEN COMMUNICATION IS FINISHED 10CH AND 20CH IS REPEATED AS BEFORE.

PRESSING ONCE MORE DUAL WATCH IS RELEASED.

**KEY LOCK**

TO PREVENT ACCIDENTAL CHANGE OR ACTIVATION OF FRONT PANEL KEYS, IN CB MODE PRESS DW/KL SWITCH AND HOLD DOWN FOR 3 SECONDS. YOU WILL HEAR TWO BEEPS WHEN KEYS ARE LOCKED.

TO UNLOCK, PRESS DW/KL AGAIN FOR 3 SECONDS.

**9. CH9**

THIS IS FOR EMERGENCY CHANNELS.

**10. WX (WEATHER BAND)**

10 STATIONS ON WEATHER BROADCAST CAN BE MONITORED WITH THIS UNIT.

SELECT A CHANNEL WHICH YOU WANT TO MONITOR WITH UP AND DOWN SWITCH AFTER PRESSING WX BUTTON AND PRESS ALARM SWITCH.

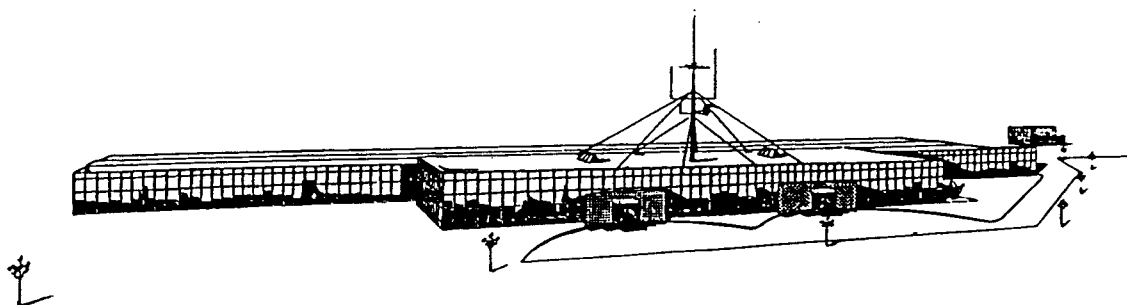


SYMBOL OF "WX" AND "DW" WILL SHOW ON THE LCD. CB MODE  
AND WEATHER MODE WILL SHOW ALTERNATIVELY ON THE LCD.  
YOU CAN MONITOR EITHER CB OR WEATHER MODE BY THIS OPERATION.  
IF IT STOPS WEATHER MODE YOU CAN HEAR WEATHER BROADCAST  
AND VICE-VERSA.  
EVEN WHEN THIS UNIT IS CB MODE YOU CAN HEAR ALARM OF WEATHER  
BROADCAST.  
TO RELEASE DUAL WATCH, PLEASE PRESS ALARM SWITCH ONCE  
AGAIN.

----- THE END -----

# **PRESIDENT**

**ELECTRONICS**



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