



Model CB-800A is almost similar to the Model CB-750A excepting "Channel Indicator (LED) Circuit". Please refer to the Service Manual of Model CB-750A for TROUBLE SHOOTING GUIDE, CAUTIONS ON HANDLING MOS IC, EQUIVALENT CIRCUIT OF IC etc.

## 23 Channel CB Transceiver **MODEL CB-800A**

**"WARNING"**  
It is unlawful for the user to make any replacement or substitution of parts, adjustments or to service the transmitter by any one other than a person holding a commercial 1st or 2nd class radio operator's license. Any change in the circuitry that would change or violate the technical regulations or type acceptance is prohibited.

### SPECIFICATIONS

#### Transmitter section

Collector power input ..... 5W (maximum)  
Frequency range ..... 27MHz Citizens Band  
Channels ..... 23 chs. P.L.L. (Phase Locked Loop) circuit Synthesizer  
Type of crystal ..... HC-18U  $\pm 0.005\%$  tolerance (at  $-22^{\circ}\text{F} \sim +140^{\circ}\text{F}$ )  
Transmitter modulation... 100% (maximum)  
Modulation limiter..... Yields high average modulation at average voice levels  
Antenna matching ..... Nominal 50 ohms  
Carrier deviation ..... Not greater than  $\pm 800\text{Hz}$  nominal on (exceeds F.C.C., D.O.C., etc. requirements)  
Harmonic suppression ..... Exceeds 50dB

#### Receiver section

Audio power output ..... 3 Watts maximum power output  
Sensitivity .....  $0.7\mu\text{V/m}$  for 10dB S + N/N ratio at 30% at 1000Hz modulation  
Channels ..... 23 chs. P.L.L. (Phase Locked Loop) circuit Synthesizer  
Type of crystal ..... HC-18U  $\pm 0.005\%$  tolerance (at  $-22^{\circ}\text{F} \sim +140^{\circ}\text{F}$ )  
Selectivity ..... 6dB down at  $\pm 3\text{kHz}$ ; 50dB down at  $\pm 10\text{kHz}$ .  
Intermediate frequency.... 1st-IF: 11.275MHz, 2nd-IF: 455kHz

Circuit type..... Dual conversion superheterodyne: P.L.L. circuit frequency synthesizer provides 23 transmit and receive channels. Delta tuning of  $\pm 1.0\text{kHz}$  on each channels plus ceramic filter.  
Auxiliary circuits ..... Automatic noise limiter (ANL), Variable squelch, Public Address System (P.A.)

#### General

Power source ..... DC 12.0V Nominal (DC 10.8 to 15.6V) negative or positive ground  
Antenna ..... 50 ohm external antenna for car or base operation  
Speaker ..... 3-1/8" P.D.S. 8-ohm Imp.  
Microphone ..... Press talk dynamic microphone (500 ohm)  
Accessories ..... Microphone hanger  
Mobile mounting bracket  
Mounting screws  
Microphone with plug and cord.  
Power supply cord with fuse holder and socket.  
Spare fuse (2.3A)  
Dimensions ..... 2-1/4"(H)  $\times$  5-3/4"(W)  $\times$  7-7/8"(D)  
Weight ..... 3.6 lbs. with microphone  
Cabinet..... Metal body with plastic front

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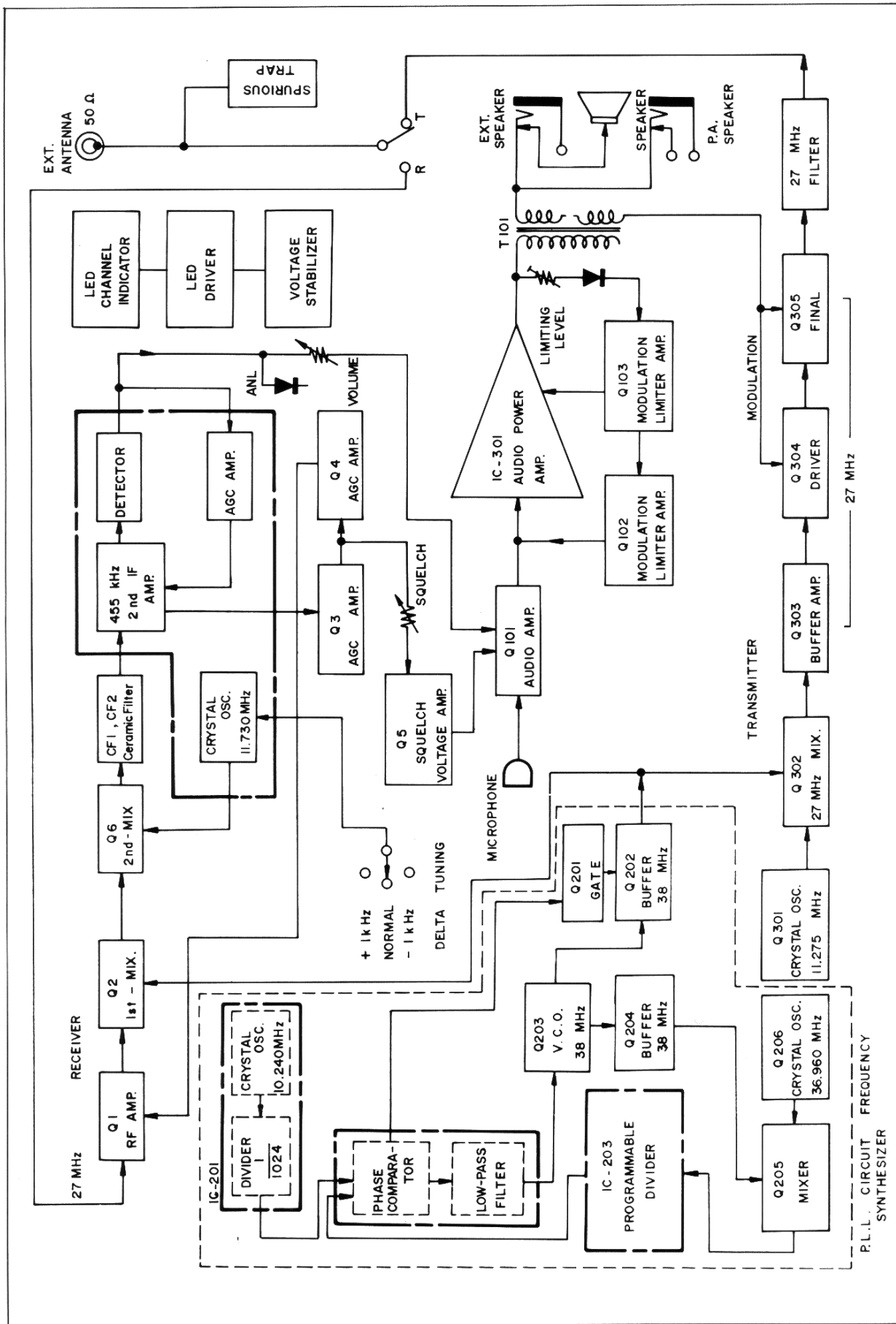


Figure 1 BLOCK DIAGRAM

### GENERAL DESCRIPTION (Refer to Figure 1)

## RECEIVER SECTION

An input signal sent from the antenna is applied to the 1st-mixer of transistor Q2 via the RF amplifier of transistor Q1, and an oscillator signal sent from transistor Q202 is also applied to the 1st-mixer of transistor Q2. In this stage the above-mentioned input signal is converted to 1st-IF signal of 11.275 MHz.

The 1st-IF signal (11.275 MHz) is applied to the 2nd-mixer of transistor Q6 via the transformers T3 and T4 to be converted to 2nd-IF signal of 455 kHz. The 2nd-IF signal is applied to the pin⑦ of IC-1 via the transformer T5 and ceramic filters CF1 and CF2. (The 2nd-IF signal is amplified between the pin⑦ and pin⑧ of IC-1 and it is also detected between the pin ⑫ and pin ⑪).

The detected output signal developed at the pin ⑪ of IC-1 is further applied to IC-301 consisting of drive circuit and power amplifier via audio amplifier of transistor Q101.

## TRANSMITTER SECTION

The audio signal from the microphone is applied through the audio amplifier Q101 and the output of IC-301 to the final stage Q305 and the drive stage Q304.

The carrier signal synthesized in the P.L.L. circuit, the oscillator Q301 and mixer Q302 is supplied to the final amplifier Q305 where it is modulated with the audio signal and applied to the antenna for transmission.

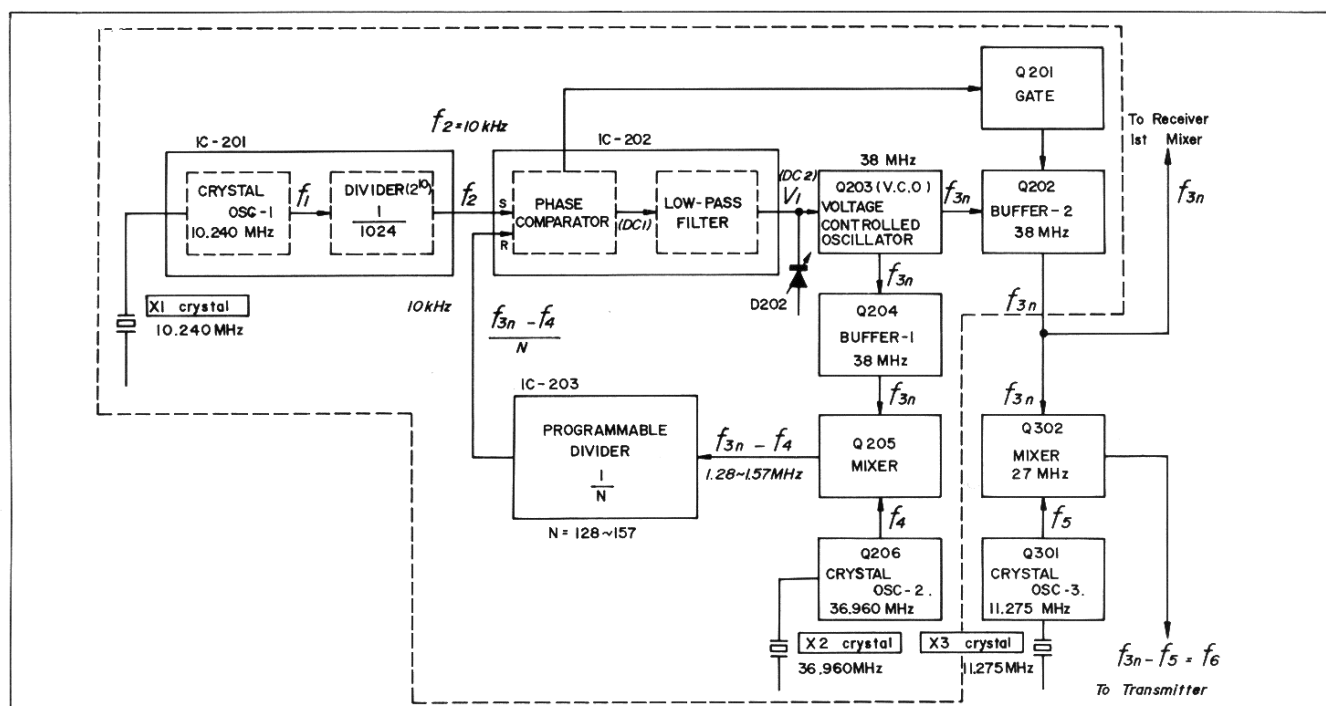
### A DESCRIPTION OF PHASE-LOCKED-LOOP (P.L.L.) CIRCUIT (Figure 2)

1) What is P.L.L. ?

P.L.L. is abbreviation of Phase-Locked-Loop which synchronizes with frequency and phase of the stable standard input (crystal oscillation) given from the outside, namely working not only as automatic frequency control but also as automatic phase control.

The P.L.L. is now used to realize a synthesizer. Consisting of two crystals, the synthesizer serves as an oscillator to oscillate step by step (10 kHz) in the range of 38,240 MHz ~ 38,530 MHz.

Therefore, this synthesizer can be said to be on the same level in the connection with the accuracy and stability of oscillation as the crystal oscillator.



**Figure 2 P.L.L. CIRCUIT FREQUENCY SYNTHESIZER**

## 2) Frequency Synthesizer

The frequencies for both transmitter and receiver are synthesized by three crystal controlled oscillators and the Phase-Locked-Loop (or P.L.L.) consisting of six basic building blocks: the phase detector (phase comparator) IC-202, the low-pass filter

IC-202, the voltage controlled oscillator (or V.C.O.) Q203, the buffer amplifier Q204, the mixer A205 and the programmable divider IC-203 as shown in Figure 2.

### 3) Frequency Determining (Refer to Figure 2 )

- 1 – A crystal oscillator consisting of a crystal  $\times 1$  (10.240MHz) and IC-201 generates a basic frequency  $f_1$  (=10.240MHz) and it is divided down through a fixed divided network (a portion of IC-201) to 10kHz frequency ( $f_2$ ). The frequency 10kHz is applied to the input of a phase comparator IC-202.
- 2 – A second oscillator Q203 is a voltage controlled oscillator (V.C.O.) and its frequency ( $f_{3n}$ ) is determined with a DC voltage ( $V_1$ ) from IC-202. The output frequency ( $f_{3n}$ ) is applied to a mixer (Q205) through a buffer amplifier (Q204).
- 3 – A third oscillator consisting of a crystal  $\times 2$  (36.960MHz) and a transistor Q206 generates a frequency  $f_4$  (=36.960 MHz) and feed its frequency to the mixer Q205 also.
- 4 – Although the mixer Q205 produces two frequency signals  $f_{3n} + f_4$  and  $f_{3n} - f_4$ , the frequency  $f_{3n} - f_4$  only is applied to a programmable divider IC-203 through a low-pass filter consisting of a coil L201 and capacitors C214 and C216.
- 5 – The programmable divider IC-203 divides the frequency  $f_{3n} - f_4$  by the frequency divider number  $N$ , which is programmable by the switch position of the channel selector connected to the terminal pins 1 ~ 5 and 8 of IC-203. The assigned number is shown in Table 1. The output frequency  $(f_{3n} - f_4) / N$  is close to 10kHz and is fed back to the phase comparator of IC-202.
- 6 – The phase comparator of IC-202 compares the frequency  $f_2$  (= 10kHz) and the other frequency  $(f_{3n} - f_4) / N$  from the programmable divider and generates a D.C. voltage  $V_1$  proportional to the phase differences of both frequencies. The voltage  $V_1$  goes back to the V.C.O. Q203 through a low-pass filter.
- 7 – In this method, a closed-loop frequency-feedback system, which is so called P.L.L., is formed and the frequency  $f_{3n}$  of V.C.O. Q203 is locked.
- 8 – When the P.L.L. is in lock, two frequencies to phase comparator input are the same and therefore the frequency  $f_{3n}$  is determined as follows:

$$f_{3n} = Nf_2 + f_4$$

$$\text{Where } f_2 = 10\text{kHz}$$

$$f_4 = 36.960\text{MHz}$$

$$N = 128 \text{ to } 157 \dots \dots \text{Determined by channel selector as shown in Table 1.}$$

For example, the frequency  $f_{3n}$  of channel 1 is calculated as follows:

$$f_{3n} = 128 \times 0.01 + 36.960 \text{ (MHz)}$$

$$= 38.240 \text{ (MHz)}$$

Where “ $N = 128$ ” is assigned for channel 1 by channel selector.

This frequency  $f_{3n}$  is applied to the first mixer of receiver and a mixer Q302 of transmitter through a buffer amplifier Q202 and a filter block T202.

- 9 – DC voltage condition may vary according to the frequencies as tabulated below.

$$\text{Lock frequency condition: } f_2 = \frac{f_{3n} - f_4}{N}$$

$f_{3n}$	$f_{3n} - f_4$	$\frac{f_{3n} - f_4}{N}$	$f_2 \cdot \frac{f_{3n} - f_4}{N}$	Voltage DC <sub>1</sub>	Voltage DC <sub>2</sub>	$f_{3n}$	Final frequency
Rise (↑)	Rise (↑)	Rise (↑)	< .	Rise (↑)	Drop (↓)	Drop (↓)	Lock
Drop (↓)	Drop (↓)	Drop (↓)	>	Drop (↓)	Rise (↑)	Rise (↑)	Lock
Lock	Still	Still	=	Still	Still	Still	Lock

### – 10 – The Transmitter Frequency

The transmitter frequency  $f_6$  is determined by mixing  $f_{3n}$  and  $f_5$  signal which is generated by a crystal oscillator consisting of Q301 and crystal X3. (= 11.275 MHz) and

$$f_6 = f_{3n} - f_5$$

$$= (Nf_2 + f_4) - f_5$$

$$\text{Where } f_5 = 11.275\text{MHz}$$

Consequently, the transmitter frequency  $f_6$  is all crystal controlled. Table 1 shows the synthesized frequencies for each channel.

- 11 – Gate (transistor Q201) shown in the block diagram works to detect a lock condition of the P.L.L. circuit and to take out an output only at the lock condition, controlling the buffer-2 (transistor Q202) amplifier --- it is thus prevented that an unstable signal is emitted when the P.L.L. circuit can not be locked for some reason.

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**FREQUENCY OF SYNTHESIS CHART**

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CHANNEL	$N$	$f_1$ (MHz)	$f_2$ (kHz)	$f_4$ (MHz)	$f_{3n} - f_4$ (MHz)	$f_{3n}$ (MHz)	$f_{3n} - f_5$ (MHz)
1	128	10.240	10	36.960	1.280	38.240	26.965
2	129	10.240	10	36.960	1.290	38.250	26.975
3	130	10.240	10	36.960	1.300	38.260	26.985
4	132	10.240	10	36.960	1.320	38.280	27.005
5	133	10.240	10	36.960	1.330	38.290	27.015
6	134	10.240	10	36.960	1.340	38.300	27.025
7	135	10.240	10	36.960	1.350	38.310	27.035
8	137	10.240	10	36.960	1.370	38.330	27.055
9	138	10.240	10	36.960	1.380	38.340	27.065
10	139	10.240	10	36.960	1.390	38.350	27.075
11	140	10.240	10	36.960	1.400	38.360	27.085
12	142	10.240	10	36.960	1.420	38.380	27.105
13	143	10.240	10	36.960	1.430	38.390	27.115
14	144	10.240	10	36.960	1.440	38.400	27.125
15	145	10.240	10	36.960	1.450	38.410	27.135
16	147	10.240	10	36.960	1.470	38.430	27.155
17	148	10.240	10	36.960	1.480	38.440	27.165
18	149	10.240	10	36.960	1.490	38.450	27.175
19	150	10.240	10	36.960	1.500	38.460	27.185
20	152	10.240	10	36.960	1.520	38.480	27.205
21	153	10.240	10	36.960	1.530	38.490	27.215
22	154	10.240	10	36.960	1.540	38.500	27.225
23	157	10.240	10	36.960	1.570	38.530	27.255

CRYSTAL

X1 crystal 10.240MHz=  $f_1$

X2 crystal 36.960MHz=  $f_4$

X3 crystal 11.275MHz=  $f_5$

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Table 1 FREQUENCY OF SYNTHESIS CHART

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## ALIGNMENT

### EQUIPMENT REQUIRED

Signal Generator:	400kHz to 500kHz and 25MHz to 30MHz band 1000Hz mod. AM
DC Milliammeter:	0 to 500mA DC with $\pi$ -network, RF filter
Audio Outputmeter:	0 to 5000mW, with 8 ohm dummy load
RF V.T.V.M.:	0 to 100MHz, 0 to 800mV
RF Outputmeter:	0 to 5W at 27MHz, 50 ohm
DC Voltmeter:	0 to 3/15V DC
Synchroscope:	0 to 30MHz
Audio Signal Generator:	1kHz (sine wave)
AC V.T.V.M.:	0 to 100mV (1kHz)
Frequency Counter:	0 to 40MHz
Field Strength Meter:	25MHz to 30MHz band, 52MHz to 56MHz band, 79MHz to 83MHz band

### PHASE LOCKED LOOP (P.L.L.) CIRCUIT ALIGNMENT

Adjust the power supply voltage to 13.8 V DC.

1. Crystal Oscillator 1. (Terminal No. ② and ③ of IC201)  $f_1 = 10.240\text{MHz}$ 
  - 1) Connect the frequency counter to the test point 201 (TP201) through the capacitor 5PF.
  - 2) Adjust the trimmer (C202) so that the frequency counter read is within  $10.240\text{MHz} \pm 300\text{Hz}$ .
2. Crystal Oscillator 2. (Q206)  $f_4 = 36.960\text{MHz}$ 
  - 1) Connect the RF V.T.V.M. and the frequency counter to the test point 207 (TP207) through the capacitor 5PF.
  - 2) Adjust the (T203) to get the maximum RF output, then turn the core of (T203) 180 degree counter clockwise.
  - 3) Adjust the trimmer (C222) so that the frequency counter read is within  $36.960\text{MHz} \pm 600\text{Hz}$ .
3. Voltage Controlled Oscillator (V.C.O.) (Q203)
  - 1) Connect the D.C. V.T.V.M. to the terminal number ① of the IC202.
  - 2) Set the channel selector switch to the position of channel 12.
  - 3) Adjust the (T201) so that the read of the D.C. V.T.V.M. is just 3.0V.
4. Check Obtaining the Locked Condition.
  - 1) Connect the D.C. volt meter to the test point 206 (TP206).
  - 2) Set the channel selector switch to the position of channel 12.
  - 3) Check the voltage if it is approximately 2.7V.  
If the voltage is zero, the P.L.L. circuit is not locked.

### RECEIVER ALIGNMENT

Should it become necessary at any time to check the receiver alignment of this set proceed as follows:

- 1) Connect a 50 ohm signal generator to the external antenna socket.
- 2) The power supply should be 13.8V DC.
1. Second Local Oscillator Alignment
  - 1) Connect the frequency counter to the test point 4 (TP4) through the 5PF capacitor.
  - 2) Adjust the second oscillator coil (T6) so that the frequency on TP4 is just 11.730MHz (150 ~ 250mV).
2. First IF and Second IF Alignment
  - 1) Connect the audio output meter across the speaker voice coil lugs.
  - 2) Set the signal generator to 11.275MHz modulated 30% at 1000Hz, and connect it to the base of Q2 1st mixer transistor through the dummy (0.01MFD).
  - 3) The ground lead of the generator should be connected to the ground of external antenna socket.
  - 4) Adjust the 1st IF transformer T4 and T3 and 2nd IF transformer T5 for maximum indication on the audio output meter.
3. RF Alignment
  - 1) Connect the audio output meter across the speaker voice coil lugs.
  - 2) Set the signal generator to 27.105MHz, modulated 30% at 1000Hz, and connect it to the external antenna socket.
  - 3) Set the channel selector switch to the position CHANNEL 12.
  - 4) Adjust RF coil T2 and antenna coil T1 for maximum indication on the audio output meter.
4. After these adjustments repeat steps 1, 2 and 3 until the best results are obtained.

## TRANSMITTER ALIGNMENT

Should it become necessary at any time to check the transmitter alignment of this set, proceed as follows:

- 1) Connect DC milliammeter through RF filter (27MHz) to test point (A) and (B).
- 2) The power supply should be 13.8V DC.
- 3) Connect a 50 ohm RF wattmeter to the external antenna socket.
- 4) Before adjusting the surface of core should be identical with the top of the bobbin.
1. Oscillator (11.275MHz) Alignment
  - 1) Connect the frequency counter to the test point 2 (TP2) through the 5PF capacitor.
  - 2) Adjust the 11.275MHz oscillator coil T301 so that the frequency on the TP2 is just 11.275MHz. (0.8 ~ 1.5V) (then the channel selector switch is blank position.)
  - 3) After adjustment, leave frequency counter and set the channel selector switch "13" position.
2. Mixer Alignment
 

Adjust the 27MHz filter coil (T302) so that the driver current is at maximum.
3. Buffer Amplifier Alignment
 

Adjust the buffer coil (T303) so that the driver current is at maximum.
4. Driver Alignment
 

Adjust the driver coil (T304) so that the driver current is at the dip point.
5. Matching Alignment
 

Adjust the matching coil (L302) so that the collector current should be 370mA.
6.  $\pi$ -Filter Alignment
 

Adjust the  $\pi$ -filter coil (L303) to obtain the maximum RF output.
7. After these adjustments repeat steps 3, 4, 5 and 6 until the best results are obtained.
8. Trap Coil Alignment
  - 1) Set the field strength meter to about 54MHz, and connect it to the external antenna socket through the dummy.
  - 2) Adjust the trap coil L305 so that the 2nd harmonic spurious response (54MHz) is at minimum.
  - 3) Set the field strength meter to about 81MHz, and connect it to the external antenna socket through the dummy.
  - 4) Adjust the trap coil L304 so that the 3rd harmonic spurious response (81MHz) is at minimum.
9. Modulation Alignment
  - 1) Connect a dummy resistor (50 ohm, 5W) across the external antenna socket.
  - 2) Connect a loop (1 ~ 2 turn) across the synchroscope and allow the loop to come near the dummy resistor.
  - 3) Connect the audio signal generator (1000Hz, 6mV) to the microphone socket.
  - 4) Depress the PRESS-TO-TALK switch on the microphone and adjust the variable resistor (R112) so that the wave form on the synchroscope becomes as illustrated in Figure (3).

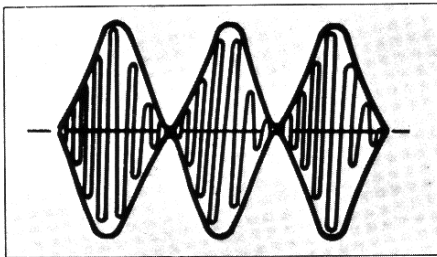


Figure (3)

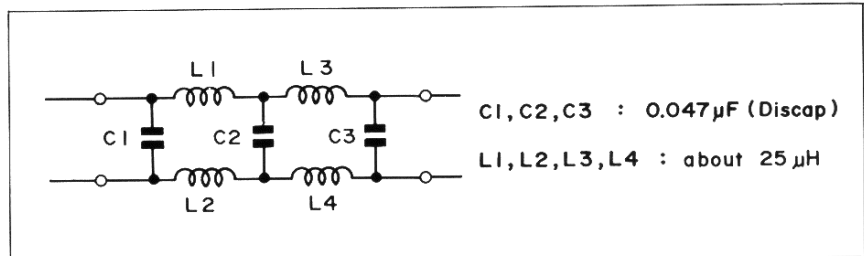


Figure 4 RF FILTER

## SIGNAL/RF POWER METER ADJUSTMENT

1. Signal meter
  - 1) Adjust the channel selector switch of the set to channel 13.
  - 2) Connect the signal generator to external antenna socket directly.
  - 3) Adjust the attenuator of signal generator to approx. 0dB, and oscillation frequency of signal generator to 27.115MHz for tuning to frequency of the set. Next, adjust the attenuator of signal generator to 40dB. In this case rotate volume control counter-clockwise until sound volume reaches appropriate level, if AF output is large.
  - 4) Adjust variable resistor (R19) so that the meter reads S9.
2. RF Power Meter
  - 1) Connect the RF wattmeter (5W, 50 ohms) to external antenna socket.
  - 2) Depress the PRESS-TO-TALK switch of microphone to allow transmission, and make sure transmitted power reaches 3 watts or so.
  - 3) Adjust variable resistor (R27) so that the meter reads 3 in RF graduation.

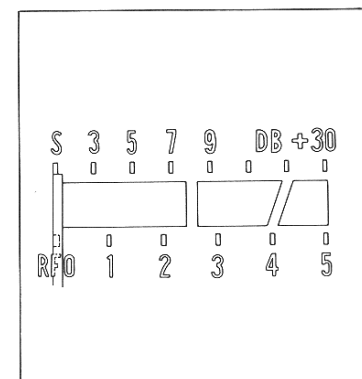
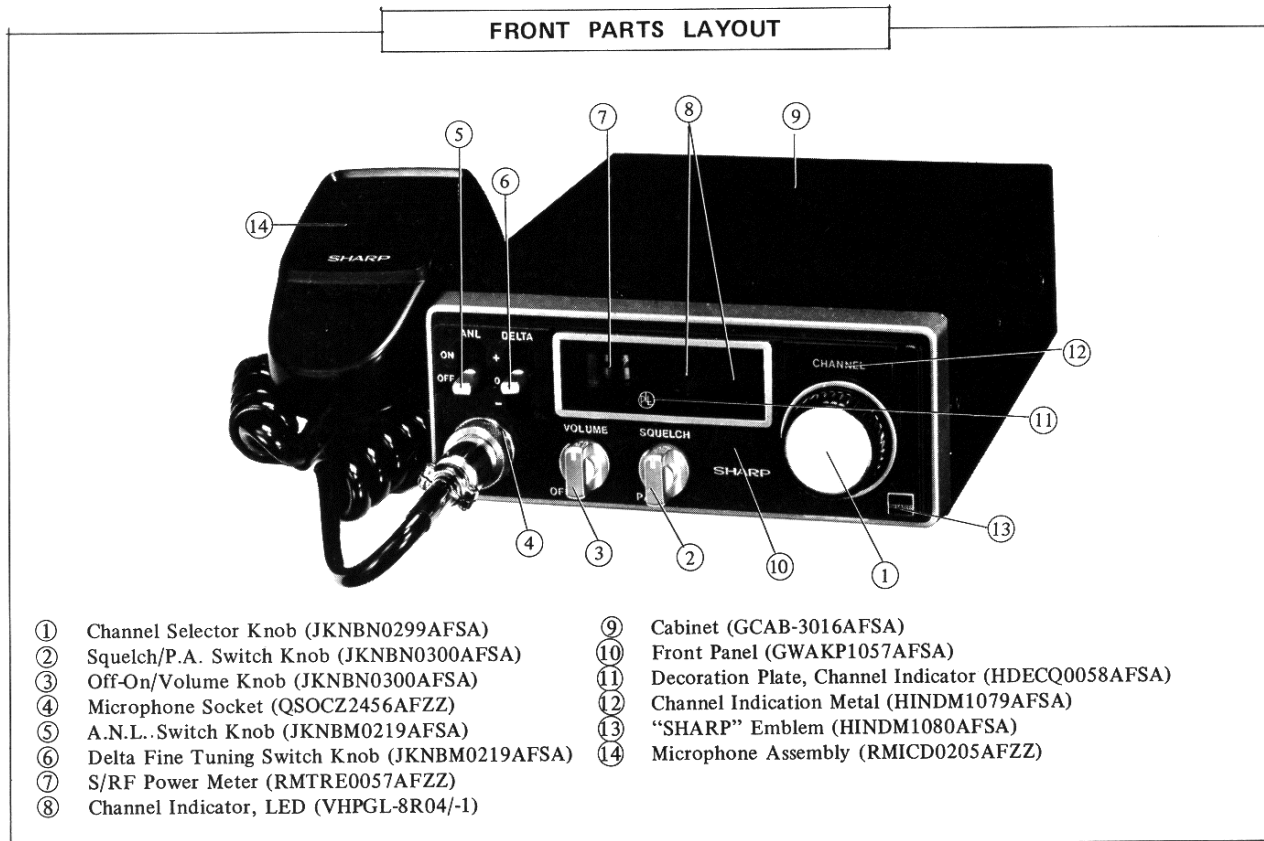
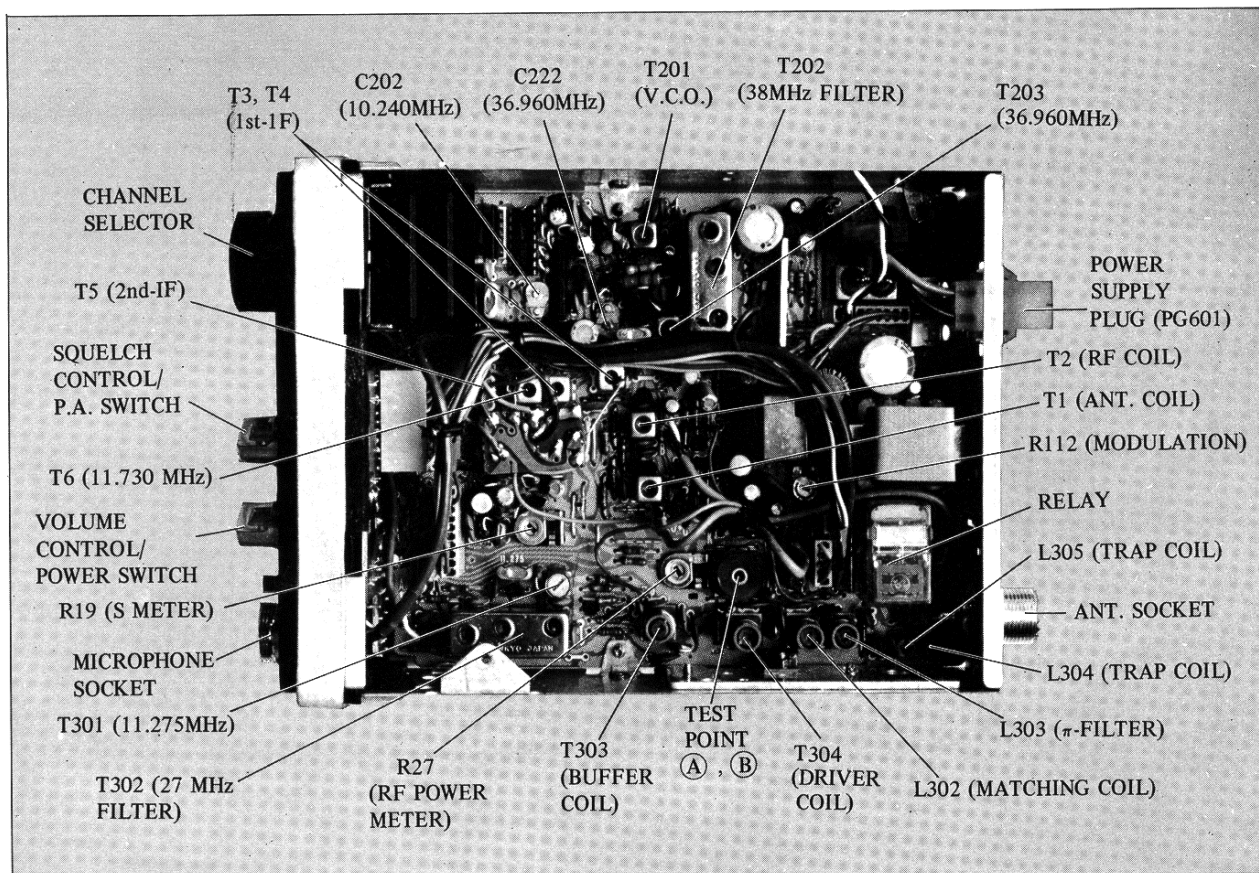


Figure 5 S/RF POWER METER (ME601)



**Figure 6 FRONT PARTS LAYOUT**

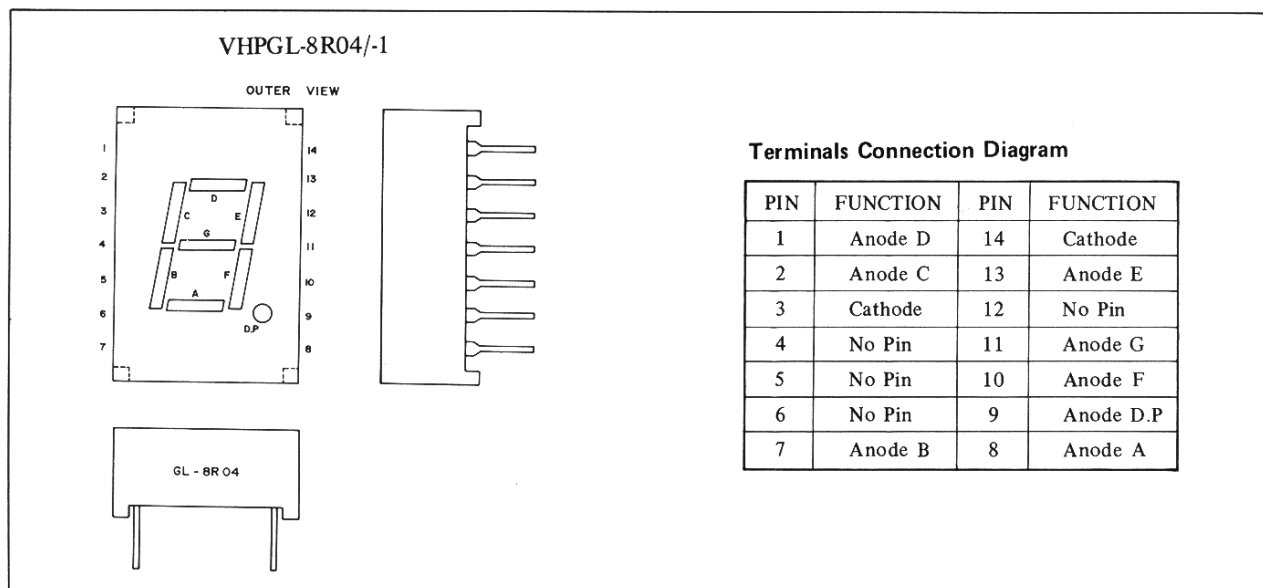
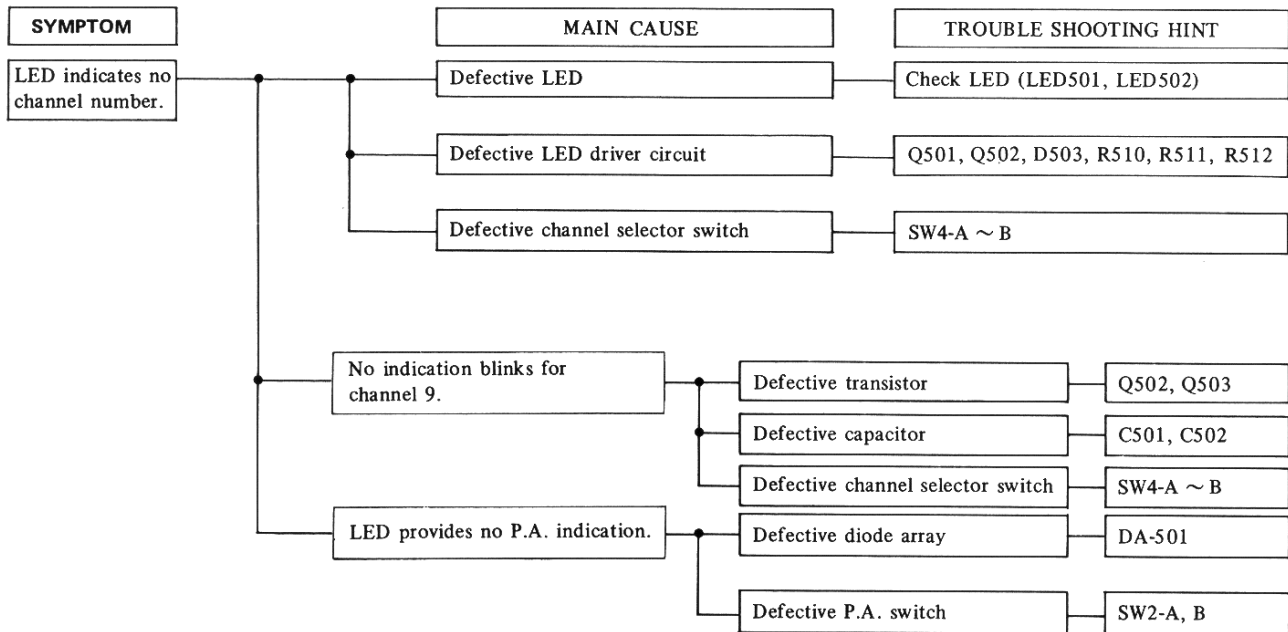


**Figure 7 ALIGNMENT POINTS**



## TROUBLE SHOOTING GUIDE

### CHANNEL INDICATOR



**Figure 8 CHANNEL INDICATOR (LED)**

# CHANNEL SELECTOR SWITCH

A) Connection table of channel selector switch (SW4-A) for each channel.

TERMINAL NO. OF THE SW4-A. CHANNEL	1	2	3	4	5	6	7	8	9	10	N
TERMINAL NO. OF IC-203.	1(1)	2(2)	3(4)	4(8)	5(16)	6(32)	7(64)	8(128)		12	
1								⊙			128
2	○							⊙			129
3		○						⊙			130
4			○					⊙			132
5	○		○					⊙			133
6		○	○					⊙			134
7	○	○	○					⊙			135
8	○			○				⊙			137
9		○		○				⊙			138
10	○	○		○				⊙			139
11			○	○				⊙			140
12		○	○	○				⊙			142
13	○	○	○	○				⊙			143
14					⊙			⊙			144
15	○				⊙			⊙			145
16	○	○			⊙			⊙			147
17			○		⊙			⊙			148
18	○		○		⊙			⊙			149
19		○	○		⊙			⊙			150
20				○	⊙			⊙			152
21	○			○	⊙			⊙			153
22		○		○	⊙			⊙			154
23	○		○	○	⊙			⊙			157
Blank										⊙	

NOTES:

- 1) Terminals marked ○ are connected with the terminal C1.
- 2) Terminals marked ⊙ are connected with the terminal C2.

B) Connection table of channel selector switch (SW4-B) for each channel.

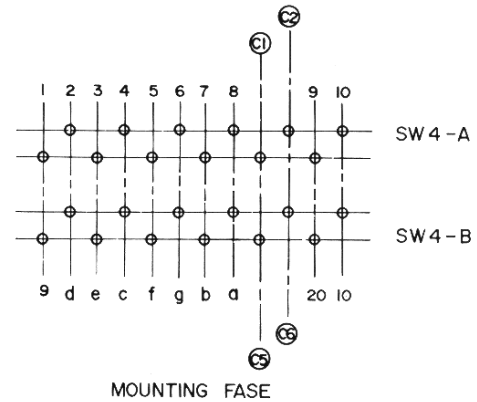
2nd(SW4-B) CHANNEL	a	b	c	d	e	f	g	9	10	20
1		⊙	○							
2	⊙	⊙		○	○		⊙			
3	⊙	⊙	○	○			⊙			
4		⊙	○			⊙	⊙			
5	⊙		○	○		⊙	⊙			
6			○	○	○	⊙	⊙			
7	⊙	⊙	○							
8	⊙	⊙	○	○	○	⊙	⊙			
9	⊙	⊙	○			⊙	⊙	○		
10	⊙	⊙	○	○	○	⊙			○	
11		⊙	○						○	
12	⊙	⊙		○	○		⊙		○	
13	⊙	⊙	○	○			⊙		○	
14		⊙	○			⊙	⊙		○	
15	⊙		○	○		⊙	⊙		○	
16			○	○	○	⊙	⊙		○	
17	⊙	⊙	○						○	
18	⊙	⊙	○	○	○	⊙	⊙		○	
19	⊙	⊙	○			⊙	⊙		○	
20	⊙	⊙	○	○	○	⊙				○
21		⊙	○							○
22	⊙	⊙		○			⊙			○
23	⊙	⊙	○	○			⊙			○
24										

NOTES:

1. Terminal marked ○ connected with terminal C5.
2. Terminal marked ⊙ connected with terminal C6.

QSW-R0131AFZZ

VIEW FROM TERMINAL INSERTION SIDE



MOUNTING BASE

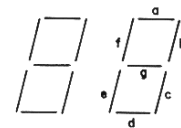


Table 2 CHANNEL SELECTOR SWITCH

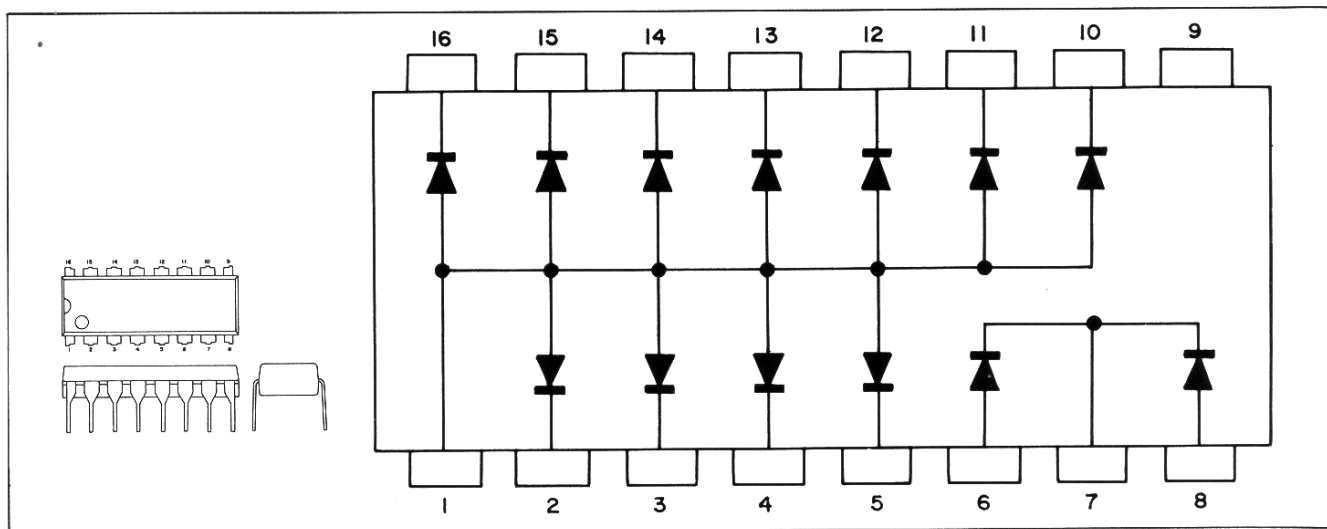


Figure 9 DIODE ARRAY (DA501)

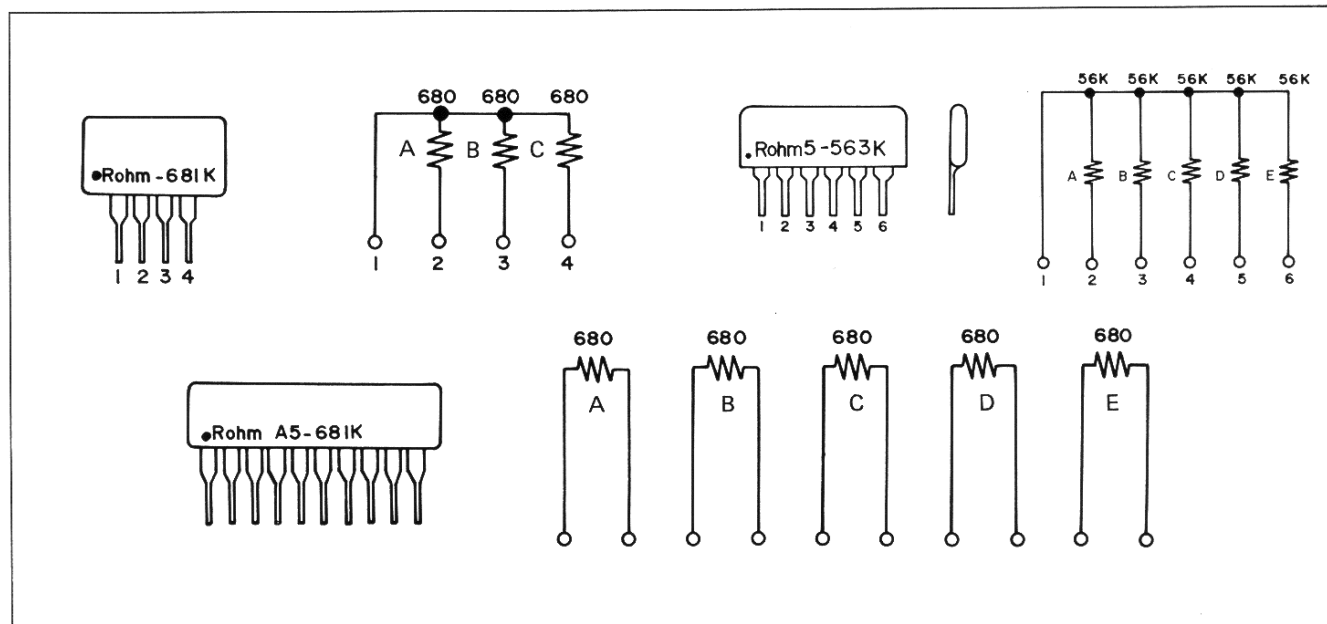


Figure 10 RESISTOR ARRAY

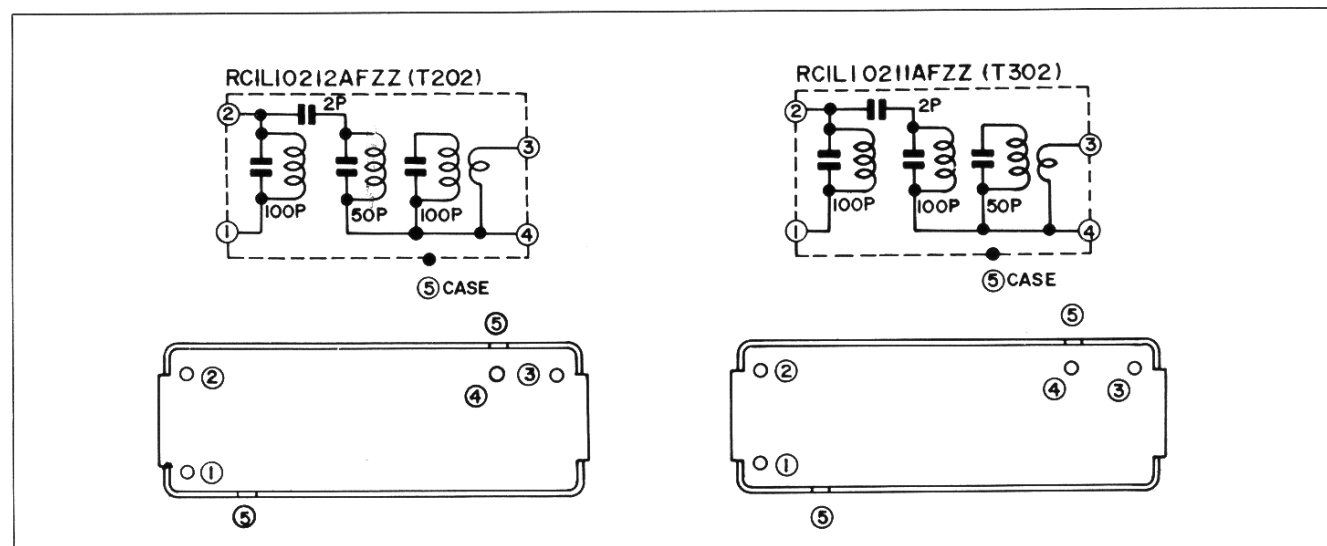
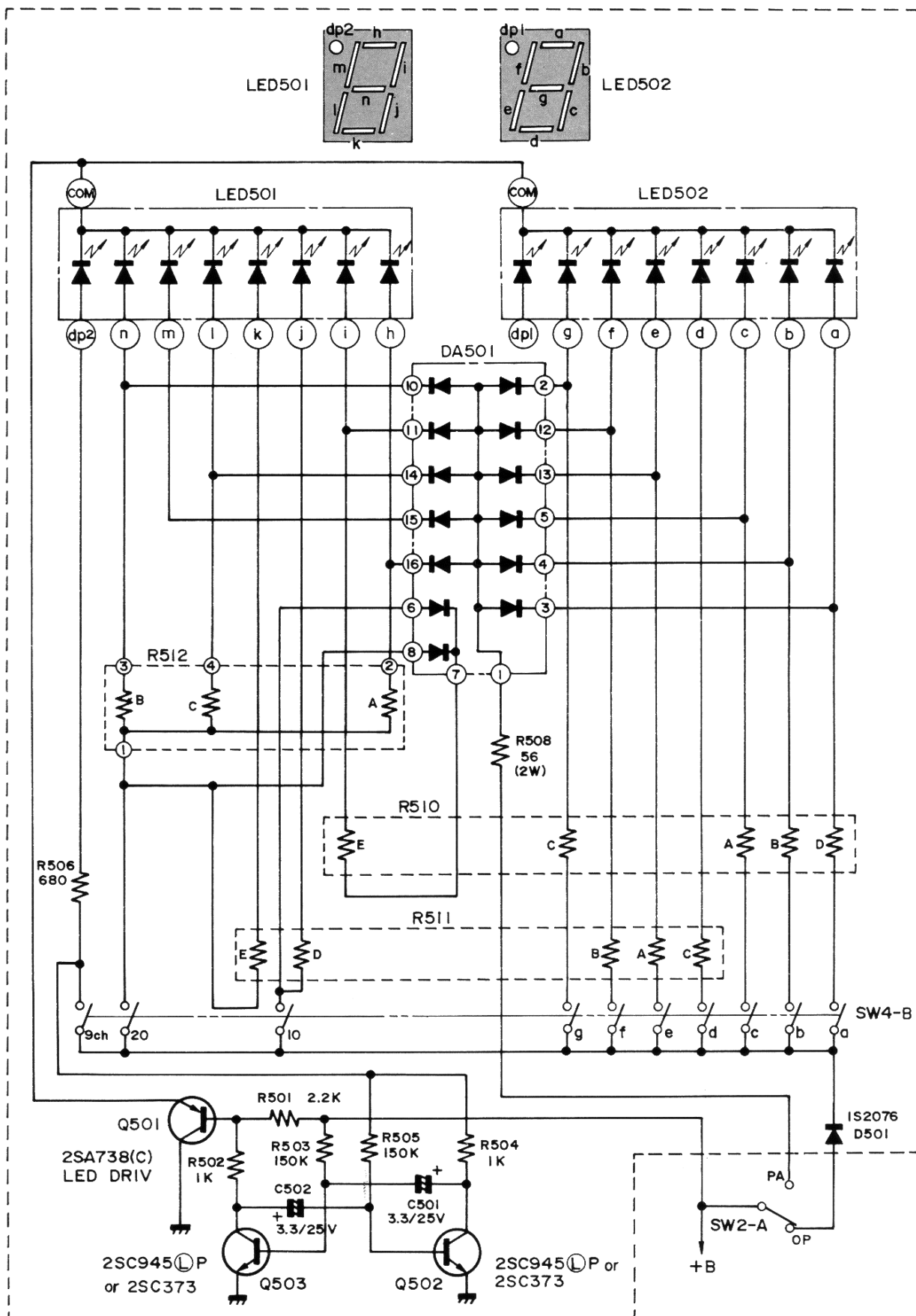


Figure 11 TRANSFORMERS (T202 and T302) BASING





Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.

Figure 18 CHANNEL INDICATOR (LED) CIRCUIT

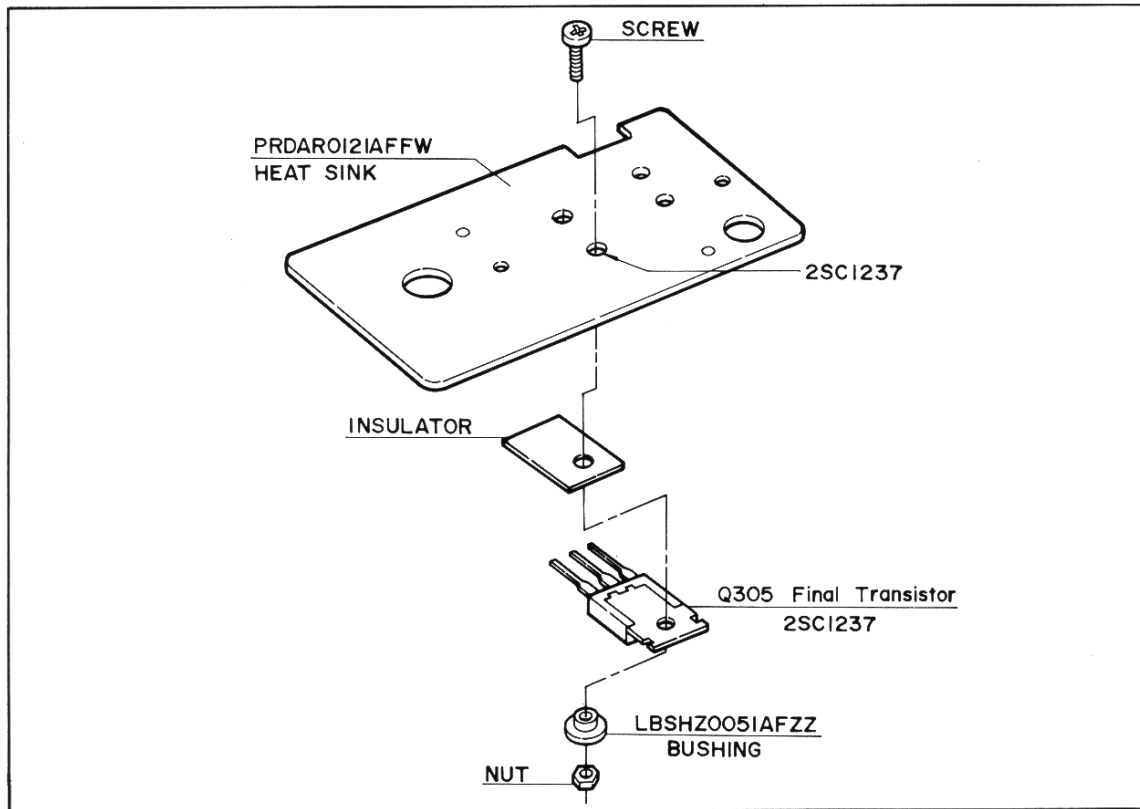


Figure 19 HOW TO SET THE TRANSISTOR Q305

# REPLACEMENT PARTS LIST

## "HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	PRICE	REF. NO.	PART NO.	DESCRIPTION	PRICE
<b>INTEGRATED CIRCUITS</b>							
IC1	RH-IX1030AFZZ	2nd IF Amplifier and Detector		Q303	VS2SC1166-Y/-1 or VS2SC1166-O/-1	Transmitter, Buffer Amplifier (2SC1166 (Y) or (O))	
IC201	RH-IX1039AFZZ	Oscillator and Divider		Q304	VS2SC495-T/-1	Transmitter, Driver (2SC495 (T))	
IC202	RH-IX1038AFZZ	Phase Comparator and Low Pass Filter		Q305	VS2SC1237/-1F	Transmitter, Final (2SC1237)	
IC203	RH-IX1037AFZZ	Programmable Divider		Q501	VS2SA738-C/-1	LED Stabilizer (2SA738 (C))	
IC301	RH-IX1020AFZZ	Driver and Audio Amplifier		Q502	VS2SC945LP/-1 or VS2SC373-G/-1	LED, Multivibrator (2SC945 (L) P or 2SC373)	
				Q503	VS2SC945LP/-1 or VS2SC373-G/-1	LED, Multivibrator (2SC945 (L) P or 2SC373)	
<b>TRANSISTORS</b>							
Q1	VS2SC1675M/-1 or VS2SC784-R/-1	RF Amplifier (2SC1675 (M) or 2SC784 (R))		<b>DIODES</b>			
Q2	VS2SC1675M/-1 or VS2SC394-Y/-1	1st-Mixer (2SC1675 (M) or 2SC394 (Y))		D1	VHD1S2076//-1	Static Protector (1S2076)	
Q3	VS2SC945LK/-1 or VS2SC373-G/-1	AGC Amplifier (2SC945 (L) K or 2SC373)		D2	VHD1S2076//-1	Static Protector (1S2076)	
Q4	VS2SC945LP/-1 or VS2SC373-G/-1	AGC Amplifier (2SC945 (L) P or 2SC373)		D3	VHEWZ-100//1F	Zener Diode, Voltage Regulator (10V±0.5V)	
Q5	VS2SC900-U/-1 or VS2SC733-B/-1	Squelch Voltage Amplifier (2SC900 (U) or 2SC733 (BL))		D4	VHD1N60///-1	A.N.L. (Automatic Noise Limiter) (1N60)	
Q6	VS2SC460-B/-1	2nd-Mixer (2SC460 (B))		D5	VHD1N60///-1	AGC Detector (1N60)	
Q101	VS2SC945LP/-1	AF Amplifier (2SC945 (L) P)		D6	VHD1N60///-1	AGC Detector (1N60)	
Q102	VS2SD227-V/-1 or VS2SC735-Y/-1	Modulation Limiter Amplifier (2SD227 (V) or 2SC735 (Y))		D7	VHD1S2076//-1	Static Protector (1S2076)	
Q103	VS2SC945LP/-1 or VS2SC373-G/-1	Modulation Limiter Amplifier (2SC945 (L) P or 2SC373)		D8	VHD1N60///-1	S (Signal) Meter (1N60)	
Q201	VS2SC945LP/-1 or VS2SC373-G/-1	P.L.L. Synthesizer, Gate (2SC945 (L) P or 2SC373)		D9	VHD1N60///-1	Overload (1N60)	
Q202	VS2SC945LP/-1 or VS2SC394-Y/-1	P.L.L. Synthesizer, Buffer (2SC945 (L) P or 2SC394 (Y))		D101	VHD1N60///-1	Modulation Detector (1N60)	
Q203	VS2SK49-F//1	P.L.L. Synthesizer, FET, V.C.O. (Voltage Controlled Oscillator) (2SK49 (F))		D102	VHD1S1885//-1	Circuit Protector	
Q204	VS2SC945LP/-1 or VS2SC373-G/-1	P.L.L. Synthesizer, Buffer (2SC945 (L) P or 2SC373)		D201	VHEXZ-090//1	Zener Diode, Voltage Regulator (9V±0.25V)	
Q205	VS2SC945LP/-1 or VS2SC373-G/-1	P.L.L. Synthesizer, Mixer (2SC945 (L) P or 2SC373)		D202	VHCB109G//1	Varicap, V.C.O.	
Q206	VS2SK49-F//1	P.L.L. Synthesizer, FET, 36.960MHz Oscillator (2SK49 (F))		D301	VHD1S2076//-1	RF Power Meter (1S2076)	
Q207	VS2SD471-S/-1 or VS2SC1741/-1	P.L.L. Synthesizer, Voltage Regulator (2SD471 (S) or 2SC1741)		D501	VHD1S2076//-1	Detector, LED Indication (1S2076)	
Q301	VS2SK49-F//1	Transmitter, FET, Crystal (11.275MHz) Oscillator (2SK49 (F))		DA501	RH-IX1031AFZZ	Diode Array, LED Indication	
Q302	VS2SC945LP/-1 or VS2SC735-Y/-1	Transmitter, 27MHz Mixer (2SC945 (L) P or 2SC735 (Y))		**LED501	VHPGL-8R04/-1	Light Emitting Diode, Channel Indicator	
				**LED502	VHPGL-8R04/-1	Light Emitting Diode, Channel Indicator	
				<b>CRYSTALS</b>			
				X3	RRCRB0015AFZZ	11.275MHz	
				X4	RRCRB0016AFZZ	11.730MHz	
				1	RRCRB0051AFZZ	10.240MHz	
				X2	RRCRB0052AFZZ	36.960MHz	
				<b>CERAMIC FILTER</b>			
				CF1	RFILA0050AFZZ	455kHz, 2nd-IF	
				CF2	RFILA0050AFZZ	455kHz, 2nd-IF	
				CF3	RFILA0001AFZZ	455kHz	

\*\*Replace only with matched pairs.

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PRICE	REF. NO.	PART NO.	DESCRIPTION	PRICE
<b>COILS</b>							
L1	RCILZ0014AGZZ	2nd-IF, 1mH		C32	VCKZPU1HF103Z	.01MFD	
L101	RCILC0023AFZZ	AF Choke		C33	VCQYKU1HM333M	.033MFD, 50V, ±20%, Mylar	
L201	RCILC0024AFZZ	Low Pass Filter		C35	VCCSPU1HL120J	12PF, 50V, ±5%, Ceramic	
L301	RCILC0011AFZZ	RF Choke		C36	VCCSPU1HL330J	33PF, 50V, ±5%, Ceramic	
L302	RCILR0135AFZZ	Transmitter, Matching (Loading)		C37	VCCSPU1HL681J	680PF, 50V, ±5%, Ceramic	
L303	RCILR0055AFZZ	Transmitter, π-Filter		C101	VCQYKU1HM333M	.033MFD, 50V, ±20%, Mylar	
L304	RCILC0055AFZZ	Trap, 81MHz		C102	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	
L305	RCILC0055AFZZ	Trap, 54MHz		C104	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	
<b>TRANSFORMERS</b>							
T1	RCILA0377AFZZ	Antenna		C106	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	
T2	RCILR0304AFZZ	RF		C107	VCQYKU1HM222M	.0022MFD, 50V, ±20%, Mylar	
T3	RCILI0210AFZZ	1st-IF (11.275MHz)		C108	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	
T4	RCILI0210AFZZ	1st-IF (11.275MHz)		C109	VCQYKU1HM222M	.0022MFD, 50V, ±20%, Mylar	
T5	RCILI0154AFZZ	2nd-IF (455kHz)		C119	VCKZPU1HF104Z	.1MFD	
T6	RCILI0210AFZZ	2nd Local Oscillator (11.730MHz)		C122	VCKZPU1HF104Z	.1MFD	
T101	RTRNM0050AFZZ	Output and Modulation		C123	VCKZPU1HF103Z	.01MFD	
T102	RTRNC0003AFZZ	Power Choke		C124	VCKZPU1HF103Z	.01MFD	
T201	RCILB0384AFZZ	Voltage Controlled Oscillator		C125	VCQYKU1HM222M	.0022MFD, 50V, ±20%, Mylar	
T202	RCILI0212AFZZ	38MHz Filter		C126	VCQYKU1HM333M	.033MFD, 50V, ±20%, Mylar	
T203	RCILB0383AFZZ	36.960MHz Oscillator		C127	VCKZPU1HF103Z	.01MFD	
T301	RCILB0378AFZZ	Transmitter, 11.275MHz Oscillator		C128	VCKZPU1HF223Z	.022MFD	
T302	RCILI0211AFZZ	Transmitter, 27MHz Filter		C201	VCCSPU1HL470J	47PF, 50V, ±5%, Ceramic	
T303	RCILB0221AFZZ	Transmitter, Buffer		C202	RTO-H1009AFZZ	Trimmer Capacitor, 10.240MHz Oscillator	
T304	RCILR0037AFZZ	Transmitter, Driver		C203	VCCSPU1HL470J	47PF, 50V, ±5%, Ceramic	
<b>CAPACITORS</b>							
(Unless otherwise specified capacitors are 50V, +80 –20%, Ceramic Type) (IS2076)							
C1	VCKZPU1HF103Z	.01MFD		C205	VCKZPU1HF103Z	.01MFD	
C2	VCKZPU1HF103Z	.01MFD		C206	VCKZPU1HF103Z	.01MFD	
C3	VCKZPU1HF103Z	.01MFD		C207	VCKZPU1HF103Z	.01MFD	
C4	VCKZPU1HF103Z	.01MFD		C208	VCCCPU1HH180J	18PF (CH), 50V, ±5%, Ceramic	
C5	VCKZPU1HF223Z	.022MFD		C209	VCCCPU1HH100F	10PF (CH), 50V, ±1PF, Ceramic	
C6	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic		C210	VCKZPU1HF103Z	.01MFD	
C7	VCKZPU1HF223Z	.022MFD		C211	VCCUPU1HJ150J	15PF (UJ), 50V, ±5%, Ceramic	
C8	VCKZPU1HF103Z	.01MFD		C213	VCCCPU1HH220J	22PF (CH), 50V, ±5%, Ceramic	
C9	VCCSPU1HL2R0C	2PF, 50V, ±0.25PF, Ceramic		C214	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic	
C10	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic		C215	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	
C11	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic		C216	VCCSBU1HL181J	180PF, 50V, ±5%, Ceramic	
C12	VCCSPU1HL330J	33PF, 50V, ±5%, Ceramic		C218	VCCCPU1HH5R0C	5PF (CH), 50V, ±0.25PF, Ceramic	
C13	VCKZPU1HF103Z	.01MFD		C219	VCKZPU1HF103Z	.01MFD	
C15	VCKZPU1HF103Z	.01MFD		C220	VCCCPU1HH5R0C	5PF (CH), 50V, ±0.25PF, Ceramic	
C16	VCKZPU1HF103Z	.01MFD		C221	VCCUPU1HJ100J	10PF (UJ), 50V, ±5%, Ceramic	
C17	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar		C222	RTO-H1009AFZZ	Trimmer Capacitor, 36.960MHz Oscillator	
C19	VCQYKU1HM153M	.015MFD, 50V, ±20%, Mylar		C223	VCKZPU1HF103Z	.01MFD	
C20	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar		C224	VCKZPU1HF103Z	.01MFD	
C21	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic		C226	VCCSPU1HL390J	39PF, 50V, ± 5%, Ceramic	
C22	VCCSPU1HL121J	120PF, 50V, ±5%, Ceramic		C227	VCKYPU1HB102M	.001MFD, 50V, ±20%, Ceramic	
C22	VCCSPU1HL131J	130PF, 50V, ±5%, Ceramic		C228	VCCCPU1HH5R0C	5PF (CH), 50V, ±0.25PF, Ceramic	
C23	VCKYPU1HB102M	.001MFD, 50V, ±20%, Ceramic		C230	VCCUPU1HJ180J	18PF (UJ), 50V, ±5%, Ceramic	
C24	VCCSPU1HL101J	100PF, 50V, ± 5%, Ceramic		C232	VCKZPU1HF103Z	.01MFD	
C25	VCKZPU1HF103Z	.01MFD		C233	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	
C26	VCKZPU1HF103Z	.01MFD		C301	VCCSPU1HL560J	56PF, 50V, ±5%, Ceramic	
C30	VCCSPU1HL270J	27PF, 50V, ±5%, Ceramic		C302	VCKZPU1HF103Z	.01MFD	
C31	VCCSPU1HL470J	47PF, 50V, ±5%, Ceramic		C304	VCCSPU1HL330J	33PF, 50V, ±5%, Ceramic	
				C305	VCCSPU1HL101J	100PF, 50V, ±5%, Ceramic	
				C308	VCKZPU1HF103Z	.01MFD	



# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
C309	VCKZPU1HF103Z	.01MFD
C310	VCKZPU1HF103Z	.01MFD
C311	VCCSPU1HL180J	18PF, 50V, $\pm 5\%$ , Ceramic
C312	VCKZPU1HF103Z	.01MFD
C313	VCKZPU1HF103Z	.01MFD
C314	VCCSPU1HL221J	220PF, 50V, $\pm 5\%$ , Ceramic
C315	VCCSPU1HL471J	470PF, 50V, $\pm 5\%$ , Ceramic
C316	VCCSPU1HL390J	39PF, 50V, $\pm 5\%$ , Ceramic
C317	VCKYPU1SD103Z	.01MFD (Z5T), 30V, +80 -20%, Ceramic
C318	VCCSPU1HL511J	510PF, 50V, $\pm 5\%$ , Ceramic
C319	VCKYPU1SD103Z	.01MFD (Z5T), 30V, +80 -20%, Ceramic
C320	VCKYPU1SD103Z	.01MFD (Z5T), 30V, +80 -20%, Ceramic
C321	VCCSPU1HL221J	180PF, 50V, $\pm 5\%$ , Ceramic
C321	VCCSPU1HL221J	220PF, 50V, $\pm 5\%$ , Ceramic
C322	VCCSPU1HL680J	68PF, 50V, $\pm 5\%$ , Ceramic
C324	VCCSPU1HL220J	22PF, 50V, $\pm 5\%$ , Ceramic
C325	VCCSPU1HL680J	68PF, 50V, $\pm 5\%$ , Ceramic
C326	VCKZPU1HF103Z	.01MFD
C328	VCCSPU1HL100F	10PF, 50V, $\pm 1\%$ , Ceramic
C401	VCKZPU1HF103Z	.01MFD
C402	VCKYPU1SD103Z	.01MFD (Z5T), 30V, +80 -20%, Ceramic
C404	VCKZPU1HF103Z	.01MFD
C405	VCKZPU1HF103Z	.01MFD
C406	VCKZPU1HF103Z	.01MFD
C407	VCKZPU1HF103Z	.01MFD
C408	VCKZPU1HF103Z	.01MFD
C409	VCKZPU1HF103Z	.01MFD
C410	VCKYPU1HB103M	.01MFD, 50V, $\pm 20\%$ , Ceramic
C411	VCKYPU1SD103Z	.01MFD (Z5T), 30V, +80 -20%, Ceramic
C412	VCKZPU1HF103Z	.01MFD
C415	VCKZPU1HF103Z	.01MFD

## ELECTROLYTIC CAPACITORS

C14	VCEAAU1AW107Y	100MFD, 10V, +50 -10%
C18	VCEAAU1EW335Y	3.3MFD, 25V, +50 -10%
C27	VCEAAU1HW105Y	1MFD, 50V, +50 -10%
C28	VCEAAU1EW475Y	4.7MFD, 25V, +50 -10%
C29	VCEAAU1CW106Y	10MFD, 16V, +50 -10%
C34	VCEAAU1CW106Y	10MFD, 16V, +50 -10%
C103	VCEAAU1EW475Y	4.7MFD, 25V, +50 -10%
C105	VCEAAU1CW106Y	10MFD, 16V, +50 -10%
C110	VCEAAU1CW476Y	47MFD, 16V, +50 -10%
C111	VCEAAU1AW336Y	33MFD, 10V, +50 -10%
C112	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$
C113	VCEAAU1CW476Y	47MFD, 16V, +50 -10%
C114	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$
C115	VCEAAU1AW477Y	470MFD, 10V, +50 -10%
C116	VCEAAU1CW108Y	1000MFD, 16V, +50 -10%
C117	VCEAAU1EW335Y	3.3MFD, 25V, +50 -10%
C118	VCEAAU1CW106Y	10MFD, 16V, +50 -10%
C128	VCEAAU1HW105Y	1MFD, 50V, +50 -10%
C204	VCEAAU1HW105Y	1MFD, 50V, +50 -10%
C212	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$
C217	VCEAAU1CW106Y	10MFD, 16V, +50 -10%

PRICE	REF. NO.	PART NO.	DESCRIPTION	PRIC
	C225	VCEAAU1AW107Y	100MFD, 10V, +50 -10%	
	C229	VCEAAU1AW477Y	470MFD, 10V, +50 -10%	
	C323	VCAAKU0XA474M	.47MFD, 6.3V, $\pm 20\%$ , Aluminum	
	C501	VCEAAU1EW335Y	3.3MFD, 25V, +50 -10%	
	C502	VCEAAU1EW335Y	3.3MFD, 25V, +50 -10%	
	<b>RESISTORS</b>			
	(Unless otherwise specified resistors are 1/4W, $\pm 5\%$ , Carbon Type)			
	R1	VRD-ST2EE562J	5.6K ohm	
	R2	VRD-ST2EE152J	1.5K ohm	
	R3	VRD-ST2EE102J	1K ohm	
	R5	VRD-ST2EE333J	33K ohm	
	R6	VRD-ST2EE472J	4.7K ohm	
	R7	VRD-ST2EE102J	1K ohm	
	R9	VRD-SU2EY153K	15K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R9	VRD-SU2EY273K	27K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R10	VRD-ST2EE102J	1K ohm	
	R12	VRD-SU2EY151K	150 ohm, 1/4W, $\pm 10\%$ , Carbon	
	R13	VRD-SU2EY472K	4.7K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R14	VRD-SU2EY333K	33K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R15	VRD-SU2EY153K	15K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R16	VRD-SU2EY223K	22K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R17	VRD-SU2EY124K	120K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R19	RVR-M0119AFZZ	5K (B) ohm, Pot., S (Signal) Meter Adjust	
	R20	VRD-ST2EE224J	220K ohm	
	R21	VRD-ST2EE223J	22K ohm	
	R22	VRD-ST2EE272J	2.7K ohm	
	R23	VRD-ST2EE471J	470 ohm	
	R24	VRD-ST2EE224J	220K ohm	
	R25	VRD-ST2EE333J	33K ohm	
	R27	RVR-M0010AFZZ	30K (B) ohm, Pot., RF Power Meter Adjust	
	R28/SW2	RVR-B0131AFZZ	10K (B) ohm, Squelch/P.A. Switch	
	-A, B			
	R29	VRD-ST2EE103J	10K ohm	
	R30	VRD-ST2EE472J	4.7K ohm	
	R31	VRD-ST2EE473J	47K ohm	
	R32	VRD-SU2EY103K	10K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R35	VRD-SU2EY333K	33K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R36	VRD-SU2EY472K	4.7K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R37	VRD-SU2EY222K	2.2K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R38	VRD-ST2EE222J	2.2K ohm	
	R39	VRD-ST2EY473K	47K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R40	VRD-ST2EY100K	10 ohm, 1/4W, $\pm 10\%$ , Carbon	
	R41	VRD-ST2EY683K	68K ohm, 1/4W, $\pm 10\%$ , Carbon	
	R98	VRD-ST2HA470K	47 ohm, 1/2W, $\pm 10\%$ , Carbon	
	R101/	RVR-D0103AFZZ	5K (D) ohm, Off-On/Volume Control	
	SW1			
	R102	VRD-ST2EE331J	330 ohm	

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PRICE	REF. NO.	PART NO.	DESCRIPTION	PRICE		
R104	VRD-ST2EE154J	150K ohm		R314	VRD-ST2HA471J	470 ohm, 1/2W, $\pm 5\%$ , Carbon			
R105	VRD-ST2EE153J	15K ohm		R315	VRD-ST2EE332J	3.3K ohm			
R106	VRD-ST2EE102J	1K ohm		R316	VRD-ST2EE682J	6.8K ohm			
R107	VRD-ST2EE103J	10Kohm		R318	VRD-ST2HA470K	47 ohm, 1/2W, $\pm 10\%$ , Carbon			
R108	VRD-ST2EE331J	330 ohm		R501	VRD-ST2EE222J	2.2K ohm			
R109	VRD-ST2EE222J	2.2K ohm		R502	VRD-ST2EE102J	1K ohm			
R110	VRD-ST2EE333J	33K ohm		R503	VRD-ST2EE154J	150K ohm			
R111	VRD-ST2EE2R2J	2.2 ohm		R504	VRD-ST2EE102J	1K ohm			
R112	RVR-M0116AFZZ	1K (B) ohm, Modulation Level Adjust		R505	VRD-ST2EE154J	150K ohm			
R113	VRD-ST2EE103J	10K ohm		R506	VRD-ST2EE681J	680 ohm			
R114	VRD-SU2EY222K	2.2K ohm, 1/4W, $\pm 10\%$ , Carbon		R508	VRS-PT3DB560K	56 ohm, 2W, $\pm 10\%$ , Oxide Film			
R115	VRD-ST2EE220J	22 ohm		R510- A ~ E	RMPTC0001AFZZ	Resistor Array, 680 ohm $\times$ 5			
R201	VRD-SU2EY103K	10K ohm, 1/4W, $\pm 10\%$ , Carbon		R511- A ~ E			RMPTC0001AFZZ	Resistor Array, 680 ohm $\times$ 5	
R202	VRD-ST2EY563K	56K ohm, 1/4W, $\pm 10\%$ , Carbon		R512- A ~ C					RMPTC0002AFZZ
R203	VRD-SU2EY103K	10K ohm, 1/4W, $\pm 10\%$ , Carbon		<b>MISCELLANEOUS</b>					
R204	VRD-SU2EY182K	1.8K ohm, 1/4W, $\pm 10\%$ , Carbon		GCAB-3016AFSA	Cabinet				
R205	VRD-SU2EY224K	220K ohm, 1/4W, $\pm 10\%$ , Carbon		GWAKP1057AFSA	Front Panel				
R206	VRD-ST2EY151K	150 ohm, 1/4W, $\pm 10\%$ , Carbon		HDECQ0058AFSA	Decoration Plate, Channel Indicator, PLL				
R207	VRD-ST2EE102J	1K ohm		HINDM1079AFSA	Indication Metal, Channel Emblem, SHARP				
R208	VRD-ST2EY823K	82K ohm, 1/4W, $\pm 10\%$ , Carbon		HINDM1080AFSA	Emblem, SHARP				
R209	VRD-SU2EY331K	330 ohm, 1/4W, $\pm 10\%$ , Carbon		JKNBN0299AFSA	Knob, Channel Selector				
R210	VRD-SU2EY105K	1Meg ohm, 1/4W, $\pm 10\%$ , Carbon		JKNBN0300AFSA	Knob, Off-On/Volume and Squelch/P.A. Switch				
R216	VRD-SU2EY104K	100K ohm, 1/4W, $\pm 10\%$ , Carbon		JKNBM0219AFSA	Knob, A.N.L. Switch and Delta Fine Tuning Switch				
R217	VRD-ST2EY104K	100K ohm, 1/4W, $\pm 10\%$ , Carbon		JHNDM1052AFFW	Mobile Mounting Bracket				
R218	VRD-SU2EY122K	1.2K ohm, 1/4W, $\pm 10\%$ , Carbon		LANGK0060AFFW	Heat Sink, Transistor Q501				
R219	VRD-SU2EY124K	120K ohm, 1/4W, $\pm 10\%$ , Carbon		LX-WZ3017CEFN	Washer, P.W. Board				
R220	VRD-SU2EY102K	1K ohm, 1/4W, $\pm 10\%$ , Carbon		LBSHZ0051AFZZ	Bushing, Transistor Q305				
R221	VRD-SU2EY274K	270K ohm, 1/4W, $\pm 10\%$ , Carbon		LCHSM0236AFFW	Chassis, Main				
R222	VRD-ST2EY105K	1 Meg ohm, 1/4W, $\pm 10\%$ , Carbon		LCHSZ0050AFZZ	Chassis, Front				
R223	VRD-ST2EE470J	47 ohm		LX-NZ0052AFFD	Nut, Front Chassis				
R224	VRD-SU2EY182K	1.8K ohm, 1/4W, $\pm 10\%$ , Carbon		LANGS0053AFFW	Bracket, Speaker				
R225- A ~ E	RMPTC0003AFZZ	Resistor Array, 56K ohm $\times$ 5		LX-BZ0021AGFD	Bolt (5 $\phi$ $\times$ 8 mm)				
R301			VRD-ST2EE105J	1 Meg ohm	LX-BZ0053AFFD	Bolt (5 $\phi$ $\times$ 10 mm)			
R302			VRD-SU2EY102K	1K ohm, 1/4W, $\pm 10\%$ , Carbon	PGUMM0002AF00	Rubber Washer, Mounting Bracket			
R304	VRD-ST2EE223J	22K ohm		PHAG-8001AFFC	Hanger, Microphone				
R305	VRD-ST2EE102J	1K ohm		PMLT-0114AFZZ	Sponge, Speaker				
R306	VRD-ST2EE101J	100 ohm		PCOVP8151AF00	Cover, A.N.L. and Delta Fine Tuning Switches, Rubber				
R307	VRD-ST2EE470J	47 ohm		PCOVM3050AFFW	Hole Cover, Rear Chassis				
R308	VRD-ST2EE223J	22K ohm		PFLT-0132AF00	Felt, Front Panel				
R309	VRD-ST2EE332J	3.3K ohm		PRDAR0121AFFW	Heat Sink, Transistor Q305				
R310	VRD-ST2EE101J	100 ohm		PRDAR0129AFFW	Heat Sink, Transistor Q304				
R311	VRD-ST2EE101J	100 ohm		PRDAR0122AFFW	Heat Sink, IC301				
R312	VRD-SU2EY680K	68 ohm, 1/4W, $\pm 10\%$ , Carbon		PGUMM0028AG00	Spacer, Meter Lamp, Rubber				
				PCAPH0001AGZZ	Cap, A.N.L. Switch				
				PZETF0121AFZZ	Insulator, Speaker Bracket				
			J601-A, B	QJAKB0050AFZZ	Jack, External Speaker (J601-A) and P.A. Speaker (J601-B)				
				QPWBF0495AFZZ	Printed Wiring Board, Main (OLD)				
				QPWBF0553AFZZ	Printed Wiring Board, Main (NEW)				
				QPWBE0066AFZZ	Printed Wiring Board, Channel Indication (LED)				
				QPWBF0542AFZZ	Printed Wiring Board, Sub				
				QPWBF0487AFZZ	Printed Wiring Board, Volume Control				

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PRICE	REF. NO.	PART NO.	DESCRIPTION	PRICE
CNS601 } -A ~E }	QCNW-0138AFZZ	Connection Cord with Socket Assembly		SW2-A, } B/R28 }	RVR-B0131AFZZ	P.A. Switch/Squelch (10K ohm)	
CNS602	QCNW-0143AFZZ	Connection Cord with Socket, Speaker		SW3	QSW-B0028AGZZ	Switch, ANL	
CNS603	QCNW-0140AFZZ	Connection Cord with Socket, Microphone		SW4- } A, B }	QSW-R0131AFZZ	Switch, Channel Selector	
CNP601	QCNCM0806SGZZ	Plug, 8 Pin		SW5	QSW-B0003AFZZ	Switch, Delta Fine Tuning	
CNP602	QCNCM0806SGZZ	Plug, 8 Pin		SW6-A } ~D/ }	RRLYZ0007AFZZ	Relay with Receiver/Transmitter Switch	
CNP603	QCNCM0902AGZZ	Plug, 9 Pin		RY101			
CNP604	QCNCM097HAFZZ	Plug, 8 Pin		C120, } C121 }	RC-KZ1009AFZZ	Feed Through Capacitors with Bracket	
CNP605	QCNCM098KAFZZ	Plug, 10 Pin		PL1	RLMPM0058AFZZ	Lamp, Meter Illumination (14V, 80mA)	
SO601	QSOCZ2453AFZZ	Socket, External Antenna (50 ohms)		ME601	RMTRE0057AFZZ	Meter, S/RF Power	
SO602	QSOCZ2456AFZZ	Socket, Microphone			RMICD0205AFZZ	Microphone Assembly (with Press-to-talk Switch)	
PG601	QSOCZ2454AFZZ	Plug, Power Supply			XBBSC30W08000	Screw (3φ × 8 mm), Plus and Minus	
PG602	QPLGZ1250AFZZ	Plug, Connecting, P.W. Board (LED)			XNESD50-40000	Nut (5φ)	
(A), (B)	QSOCE0401AFZZ	Socket, Test Point			XWHSD30-05000	Washer (3φ)	
	QPLGE0403AGZZ	Plug, Test Point			XWHSD50-05000	Washer (5φ)	
	QFSHJ9052AFZZ	Power Supply Cord with Fuse Holder and Socket			XWSSJ50-13000	Spring Washer (5φ)	
F1	QFS-A232AAFNA	Fuse, 2.3A		SP601	VSP0080P-208A	Speaker, 8 ohms	
SW1/ } R101 }	RVR-D0103AFZZ	Off-On/Volume (5K ohm) Control					