IMPORTANT NOTICE

The transmitter section of this transceiver may only be serviced by, or under the direct supervision of a qualified technician having a valid First or Second Class FCC Radiotelephone license. This includes internal adjustments or replacement of crystals, transistors, or any other components which can affect the performance of the transmitter. Servicing should only be done by a licensed, capable technician using suitable equipment and having complete knowledge of proper CB servicing techniques.

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List of Illustrations

Typical Specifications

General

Power Supply Voltage:	DC 12 V (11 ~ 15V), Negative ground (13.8 V nom)
Power Consumption:	
RADIO	Approx. 8.3 W (0.6 A at 0.5 W output, DC 13.8 V)
CB TRANSCEIVER:	Approx. 11 W (0.8 A at non-modulation, DC 13.8 V)

(All performance specifications measured with 13.8 volts power input.)

Power Output:	
Continuous:	2 x 3.5 W (at 10 % THD)
Maximum:	2 x 4.0 W (Volume Control at max. and Tone Control at treble.)

(Conditions: 400 Hz input signal, 4 Ω load, 13.8 V DC)

Speaker Impedance:	4 ~ 8 Ω
Transistors:	30
Diodes:	23
ICs:	4

Transmitter

Channels:	23
Frequency Range:	26.965 ~ 27.255 MHz
Frequency Tolerance:	±0.005 %
RF Output Power:	3.5 W
Modulation Capability:	80 ~ 100 %
Harmonic and Spurious Suppression:	-50 dB

For use with 50 Ω antenna

Receivers

CB RECEIVER

Channels:	23
Frequency Range:	26.965 ~ 27.255 MHz
Intermediate Frequency:	1st 10.595 ~ 10.635 MHz 2nd 455 kHz
Sensitivity:	-6 dB/uV for S/N 10 dB (at 0.5 W output, DC 13.8 V 400 Hz, 30 % Mod.)
Selectivity:	5 kHz (at 6 dB down)
Adjacent Channel Rejection:	45 dB
Squelch Sensitivity:	3 dB/uV
AGC:	60 dB
Delta Tuning	± Approximately 1 kHz

AM/FM STEREO RADIO

Frequency Range:	AM 535 ~ 1605 kHz FM 88 ~ 108 MHz
Intermediate Frequency:	AM 450 kHz FM 10.7 MHz
Sensitivity:	AM 26 dB/uV FM 18 dB/uV for S/N 10 dB 28 dB/uV for S/N 30 dB (at 0.5 W output, DC 13.8 V, 22.5 kHz Dev.)
Stereo Separation:	25 dB (at 400 Hz)

Mechanical

Dimensions:	Width: 7-3/8" (188 mm) Height: 2-3/4" (70 mm) Depth: 4-7/8" (124 mm)
Weight:	Approx. 4.4 lbs (2 kg)

General Description

The RCA CB Co-Pilot Citizen's Band Transceiver with AM/FM/FM-Stereo, Model 14T400, is a fully transistorized 23 channel citizen's band transceiver and an AM/FM/FM-Stereo radio receiver. Front panel controls and indicators are provided for selection of AM, FM/FM-Stereo, or CB operation. The unit is designed for mobile use and is powered by 11-16 volts DC (13.8V nominal), negative ground only. The unit is especially made for in-dash installation on any car, truck, boat or recreational vehicle.

The AM/FM/FM-Stereo radio has five presettable pushbuttons for selection of five AM and or FM broadcast stations. A manual tuning control is also provided for continuous tuning for both AM and FM stations. Automatic frequency control (AFC) is utilized in the FM receiver for drift-free reception. A front panel balance control provides adjustment of left and right speaker outputs for optimum stereo listening. A front panel fader control permits audio output adjustment between the front and rear stereo speakers if rear speakers are being used.

The CB transceiver provides mobile two-way, AM radio communications in the 26.965 to 27.255 Mhz, Class D citizen's band. Operation on all 23 CB channels is provided through use of 14 built-in crystals which generate crystal-controlled, synthesized signals for transmission and reception on all 23 channels. A rotary channel selector switch provides for rapid channel selection.

The transmitter circuit is amplitude modulated and is designed to prevent spurious and harmonic radiation of RF frequencies in conformance with FCC regulations. An over-modulation (ALC) circuit prevents over-modulation of the RF carrier. An RF output meter, located on the front panel, monitors the relative output of the transmitter. A dynamic, push-to-talk microphone connects to a jack on the face of the unit. The receiver portion of the CB transceiver will operate with the microphone disconnected.

The CB receiver circuit consists of a dual conversion, superheterodyne circuit, an automatic noise limiter (ANL), automatic gain control (AGC) circuit, a squelch circuit, and a delta tune circuit. The squelch and delta tune circuits are controlled from the front panel. An illuminated signal strength (S) meter indicates the relative strength of the received signal. A front panel mounted push switch permits listening to AM/FM broadcasts while monitoring a selected CB channel. The CB transmitter cannot be used when listening in this mode. An additional push switch activates the unit for full CB operation and disables the AM/FM radio receiver.

Circuit Description

Figure 1 shows a block diagram of the overall unit. In general, the unit consists of an AM radio, an FM/FM-Stereo radio, and a citizen's band transceiver. The audio power amplifier and the speakers are common to the AM/FM/FM-Stereo and citizen's band transceiver. All functions are selected by front panel mounted switches.

CB/Radio Selector Switching

Figure 2 shows the CB/RADIO selector switch (SW803) in the RADIO position. In this position the switch (SW803) allows power to be applied to the radio block (AM/FM/FM-Stereo radio). Audio output from the radio block is also switched to the right speaker through the Power Amp/Mod Amp circuit for audio amplification. The left speaker is never switched and always remains in the circuit. MONITOR switch (SW904) is shown in the OFF position. When this switch is depressed, power is applied to the CB receiver section through the voltage stabilizer (voltage regulator), allowing reception of CB signals while listening to the AM/FM/FM-Stereo radio.

When CB/RADIO selector switch (SW803) is set to the CB position, MONITOR switch (SW904) will have no effect on CB operation. Power is removed from the circuits previously described. Power is now applied to the CB receiver/transmitter sections, through the voltage stabilizer, from CB/RADIO switch (SW803). Microphone audio from the modulator preamp section is switched to the power amplifier/modulation amplifier section after which the amplified audio signal is switched to the input of the modulation transformer (T701). Operating the press-to-talk switch (SW902) at the microphone applies power to

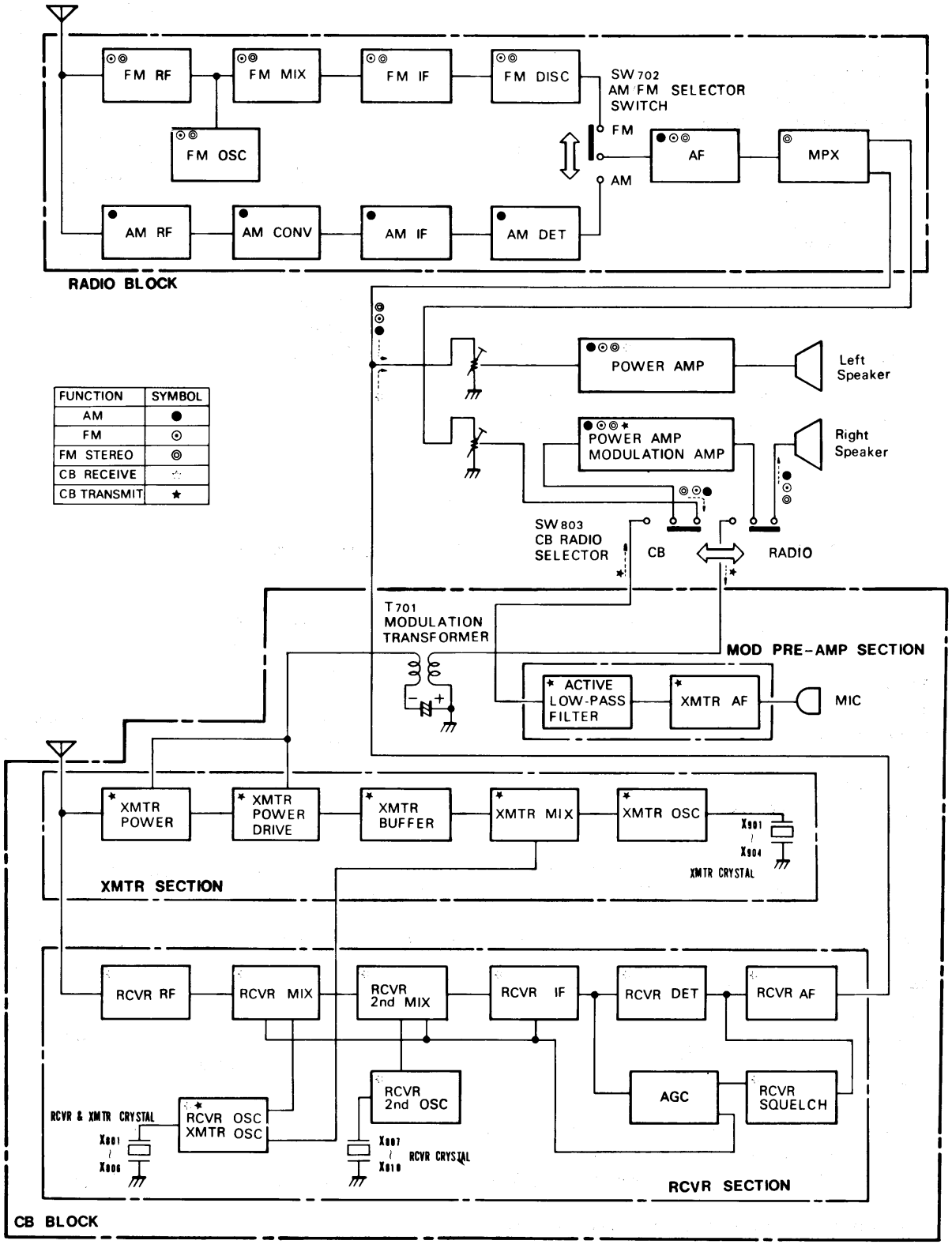


Figure 1. Citizen's Band Transceiver with AM/FM/FM-Stereo Radio, Overall Block Diagram

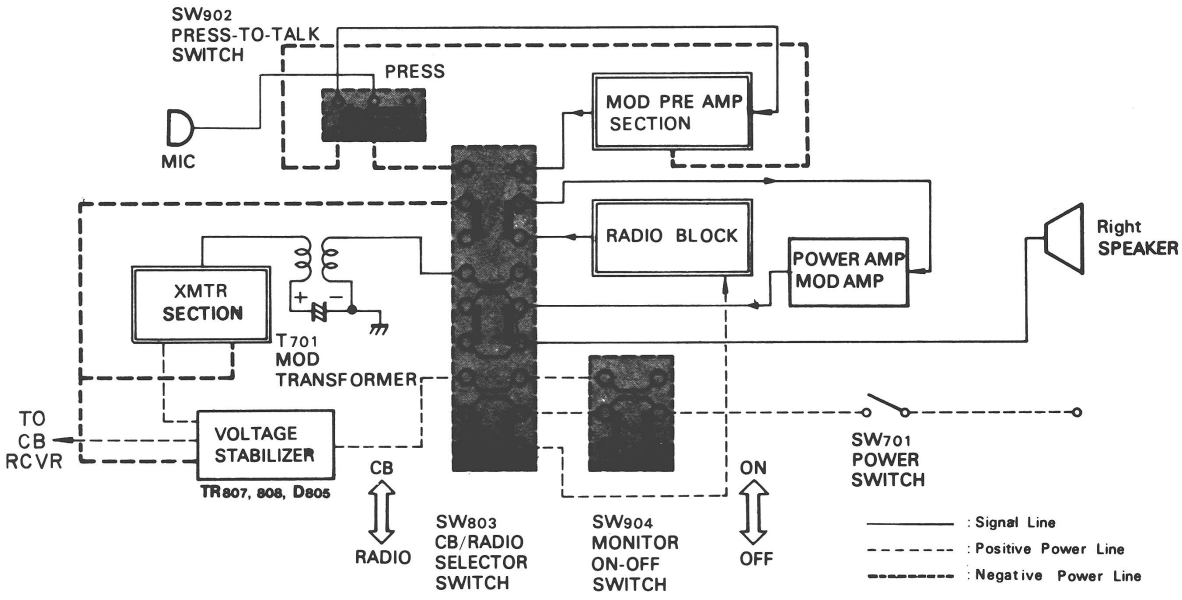


Figure 2. CB/Radio Selector Switching

the modulator preamp section and also completes the microphone audio circuit to the modulator preamp section.

CB Receiver

The RF signal, at a frequency between 26.965 and 27.255 is applied from the antenna, through the receiver amplifier TR801 to receiver mixer TR802. Refer the Figure 3. A heterodyne signal, at a frequency between 10.95 and 10.365 MHz, is also applied to receiver mixer TR802. This frequency is determined by the channel crystal frequency selected. The output frequency from mixer TR802 is applied to receiver second mixer TR803, along with a signal from the receiver second oscillator. The frequency of this signal has a difference of 455 KHz from that of mixer TR802. The output from mixer TR803 (455 KHz) is fed through ceramic filter CF801 where the overall receiver selectivity is established. The IF output of the ceramic filter is applied to two stages of receiver IF amplification (TR804 and TR805). Output from the two IF amplifiers is applied to the receiver diode detector D802. The audio component from the diode detector is applied to the automatic noise limiter circuit D803.

Noise limiting is accomplished by clipping (diode D803) the noise spikes which are greater in amplitude than the audio peaks. Refer to Figure 4 for the simplified schematic diagram. The level at which the clipping occurs is controlled by the bias applied to diode D803 through resistor R831. Output from the noise limiter is applied to receiver audio amplifier circuit TR812 along with a squelch control signal from squelch control circuit TR811.

The squelch circuit operates in conjunction with the automatic gain control circuit (AGC TR810). Refer to Figure 5 for the simplified schematic diagram. The detected signal to be heard must pass through audio frequency amplifier TR812. TR812 conducts when it is forward biased. Sufficient forward bias to TR812 is available when squelch control TR811 is cut off. TR811 is cut off when an incoming signal generates enough AGC voltage, developed by the AGC amplifier, to overcome the forward bias level set up by squelch control VR801. Squelch control VR801 can be adjusted to increase or decrease the bias on TR811 to set the squelch threshold at the desired level.

Output from the receiver audio amplifier is applied to power amplifier IC301 and the amplified output applied to the left loudspeaker. All power for receiver operation is supplied by voltage stabilizer TR807, TR808 and D805.

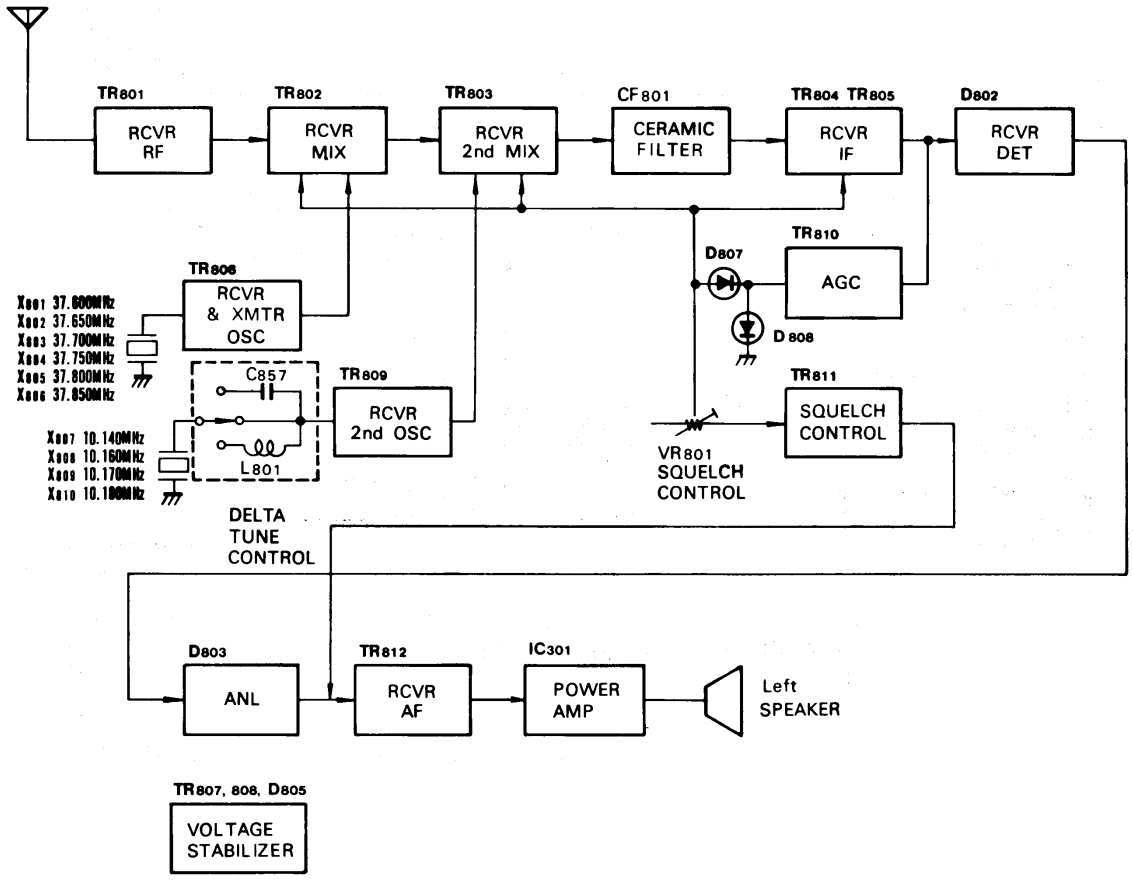


Figure 3. CB Receiver, Simplified Block Diagram

A delta tune circuit is provided for shifting receiver tuning to accommodate a received signal which is off frequency by approximately 1 to 2 KHz. Refer to Figure 6, the simplified schematic diagram. A delta tune switch inserts either a capacitor (C857) or an inductor (L801) in series with the second oscillator crystal in use, and the base of transistor TR809. Inserting the capacitor raises the crystal oscillator frequency. Inserting the inductor lowers the crystal oscillator frequency.

CB Transmitter

The transmitter RF carrier frequency is generated by heterodyning the frequencies of a 10 MHz crystal oscillator with the frequency of a 37 MHz crystal oscillator. The exact frequencies are determined by the crystals selected by the channel selector switch. Heterodyning takes place in transmitter mixer TR904. The output difference frequency of 27 MHz is ampli-

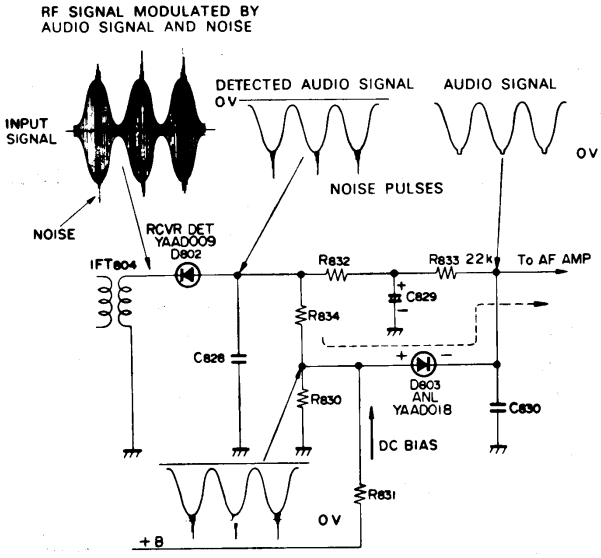


Figure 4. Automatic Noise Limiter Circuit (ANL), Simplified Schematic Diagram

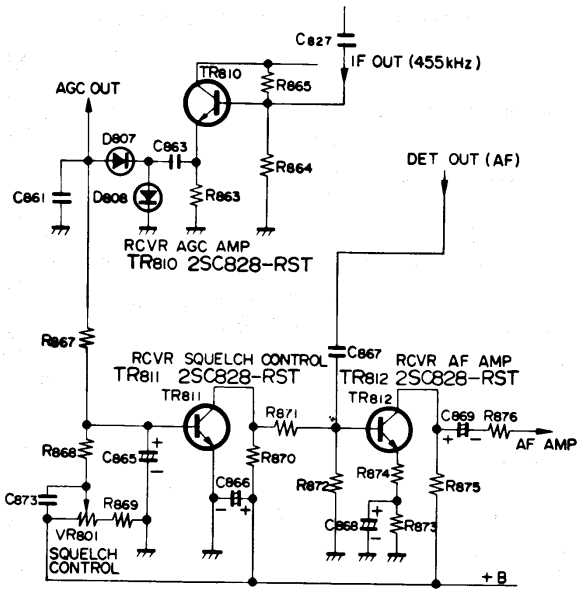


Figure 5. Automatic Gain Control (AGC) and Squelch Circuit, Simplified Schematic Diagram

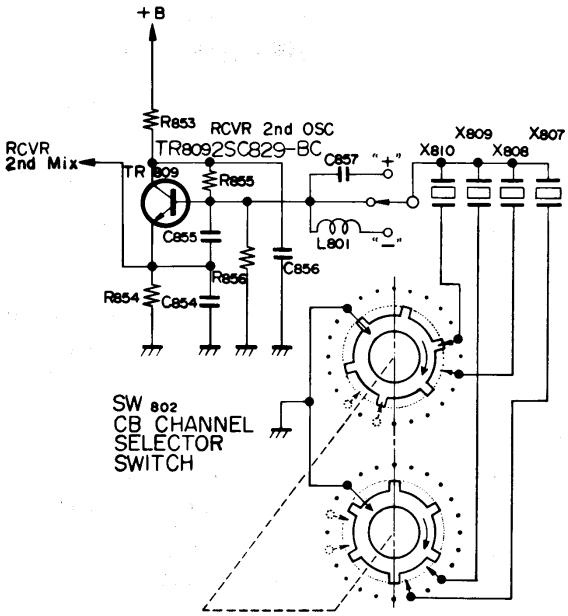


Figure 6. Delta Tune Circuit, Simplified Schematic Diagram

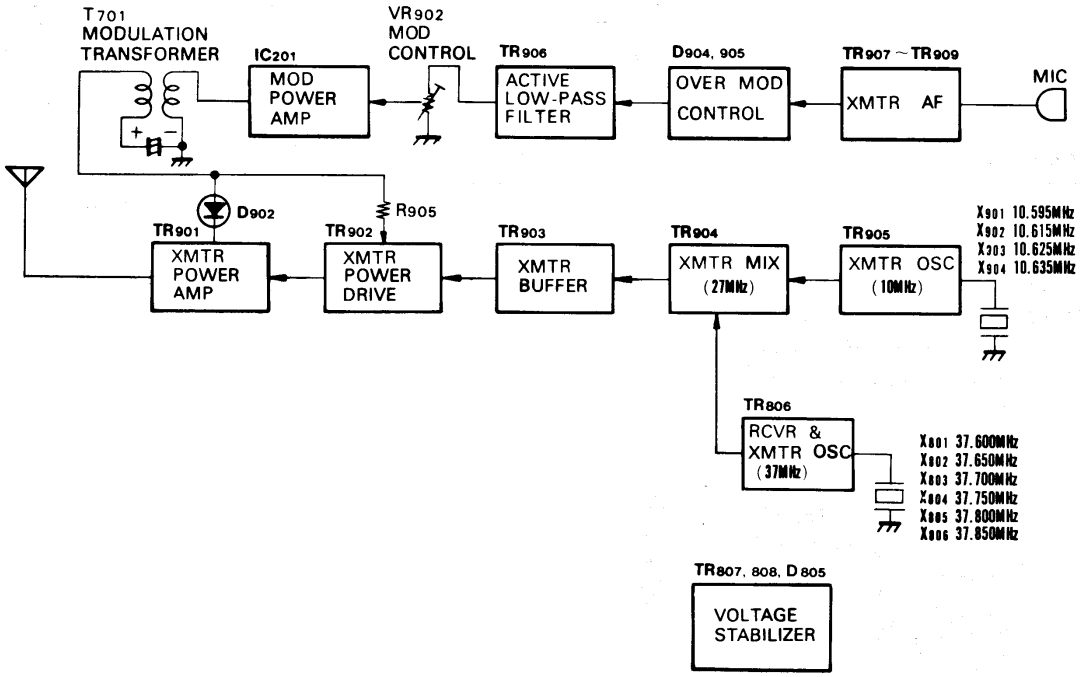


Figure 7. CB Transmitter, Simplified Block Diagram

fied by buffer stage TR903 and power drive TR902. This signal is then applied to power amplifier TR901 for final amplification.

Audio from the microphone is amplified to the desired level by speech amplifiers TR907, TR908 and TR909. To avoid overmodulation, this amplified audio is applied to an overmodulation control circuit consisting of diodes DS904 and DS905. The diodes are biased to clip excessive audio positive and negative peaks. This allows a higher average audio power to be maintained while maintaining 100% amplitude modulation.

Audio from the overmodulation control circuit is processed by active low pass filter TR906 which allows only the effective audio voice frequencies to be amplified. The processed audio is applied to modulator power amplifier IC201. Modulation of the last two RF transmitter output stages (TR901 and TR902) is accomplished by modulation transformer T701. Internally mounted modulation control VR902 sets the modulation level.

AM/FM/FM-Stereo Radio

The radio portion of this unit is shown in Figure 8. AM/FM selector switch, SW702, determines which function is in operation. A stereo LED indicator (D154) on the front panel lights when a stereo transmission is being received. Front panel controls are provided for balancing of the left and right speakers and also for setting the level of the rear speakers if they are used.

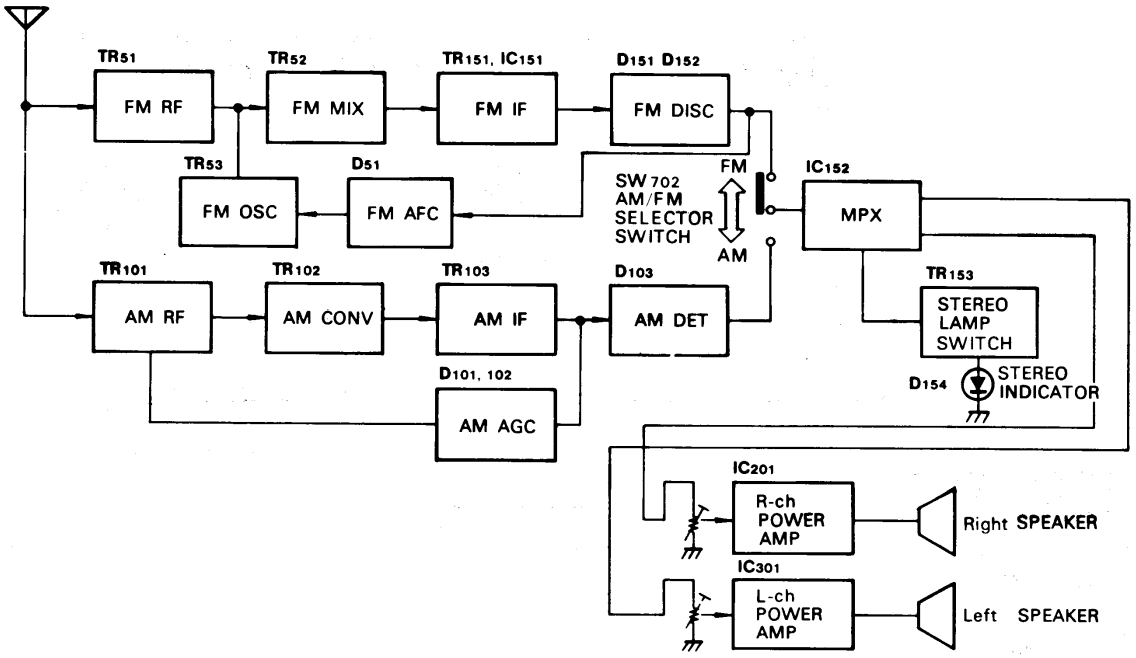


Figure 8. AM/FM/FM-Stereo Radio Simplified Block Diagram

Test Equipment

The following test equipment is required and recommended for servicing the 14T400 Transceiver with AM/FM/FM-Stereo radio.

1. A 50 ohm resistive antenna load with a power capability of 5 watts or more, such as Bird Model 43 "thru line" wattmeter with a 5A Element and a Model 8053 RF Coaxial Load Resistor, or equivalent.
2. A frequency counter operable in the required CB range, such as Hewlett-Packard Model HP 5283A or suitable equivalent.
3. A HF Signal Generator which operates in the 50 kHz to 65 MHz frequency range with + 1% accuracy, such as Hewlett-Packard HP-606B, Wavetek Model 3000 or equivalent.
4. An oscilloscope capable of accurate monitoring of 27 MHz range AM signals.
5. High Input impedance Electronic Voltmeter such as a WV-500B or equivalent.
6. An 4 ohm 5 watt resistive dummy speaker load.
7. An Audio Signal Generator.
8. An RF Voltmeter. (WV-500B with WG-301A Probe)
9. A bench DC power supply capable of supplying a regulated 13.8 V DC @ at least 2 amperes.
10. A VHF radio receiver capable of tuning in the 54.3 MHz range, or a TV set if available (for adjustment of the TV interference trap L465).
11. An FM signal generator operating at 10.7 MHz and between 86 – 110 MHz, capable of being modulated 30% (± 22.5 kHz).
12. A stereo signal generator.
13. A sweep generator operating at frequencies of 450 kHz and 10.7 MHz.

Servicing

General

Performance of the RCA 14T400 Co-Pilot Citizen's Band Transceiver with AM/FM/FM-Stereo Radio depends upon the high quality of components employed and proper servicing techniques performed by licensed and fully qualified technical personnel. Use only replacement parts as listed in the parts list at the end of this service manual.

Illustrations to aid in servicing and adjustment, including exploded views, are provided to assist in locating and identifying components, test points and adjustment points. Wiring diagrams are shown in Figures 14 and 15 and schematic diagrams are shown in Figures 16 and 17. Major mechanical components are illustrated in the exploded view, Figure 19.

When servicing the transmitter section of the unit, always have a five watt dummy load connected to the antenna terminal to avoid damage to transistors. When servicing the receiver, remove the microphone to avoid possible damage to test equipment that may be attached to the antenna terminal.

ALIGNMENT INSTRUCTIONS

AM/FM/FM Radio Receiver Alignment

Figure 9 shows connections required for performing the alignment procedures that follow. Figure 10 shows the locations of all test points and adjustments.

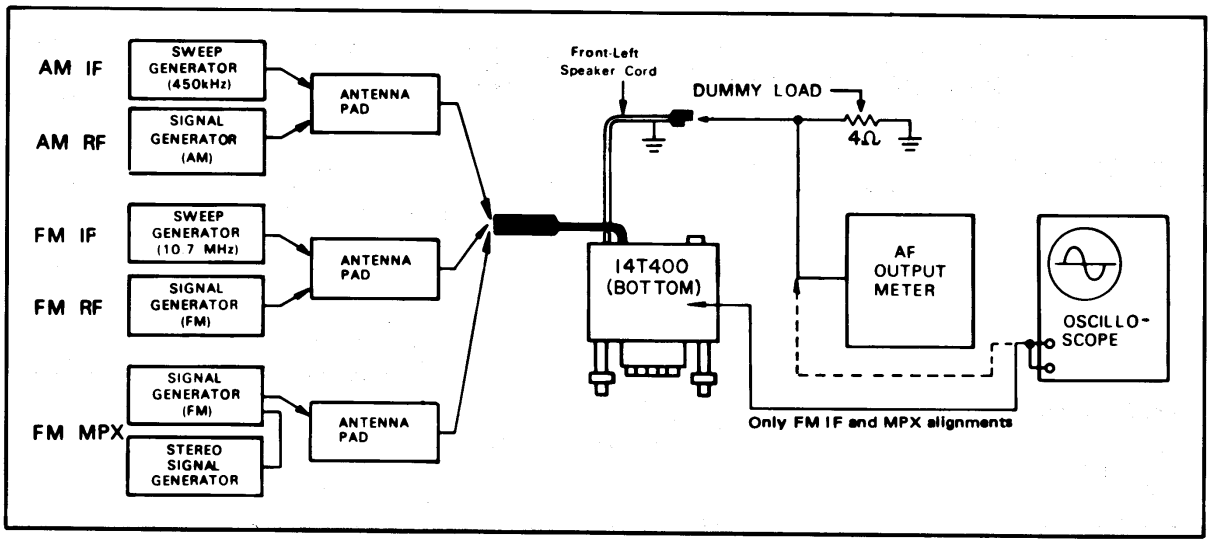


Figure 9. Test Connections for Alignment of the AM/FM/FM Radio

AM (I-F & RF) ALIGNMENT

- Set Volume Control at maximum, and Tone Control in the treble position.
- Set Band Selector Switch in AM.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 1)
- Keep the signal generator output low enough to prevent overloading the circuit.

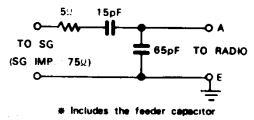


Fig. 1 Antenna Pad

		STEP	GENERATOR FREQUENCY	BAND SELECTOR SETTING	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
AM	IF	●~●	450 kHz [Unmodulated or 400 Hz Mod.]	AM	Point of non-interference (on/about 600 kHz)	Through pad (Fig.1) to Antenna receptacle	Between Point Ⓐ and ground or speaker terminals	IFT102 IFT101	Adjust for maximum
	RF	❶	505 kHz [400 Hz Mod.]	"	Low freq. end stop.	"	Output meter across speaker terminals	L104 (OSC)	"
		❷	1650 kHz [400 Hz Mod.]	"	High freq. end stop.	"	"	C114 (OSC)	"
		❶~❷	1400 kHz [400 Hz Mod.]	"	Tune to signal	"	"	C108 (RF) C102 (ANT)	"

- When radio is installed in car, antenna fully extended, tune in a weak station near 1400 kHz and adjust C102 for maximum output.
- Refer to ANTENNA TRIMMER ALIGNMENT, page 1.
- Repeat steps, two or three times.

FM (I-F & RF) ALIGNMENT

• FM I-F ALIGNMENT USING FM SIGNAL GENERATOR AND SWEEP GENERATOR

- Volume, Tone and Balance Control may be left in any position.
- Set Band Selector Switch in FM.
- Keep the signal generator output low enough to prevent overloading the circuit.

	STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
FM IF	●	10.7 MHz	Point of non-interference	Through pad (Fig.3) to Antenna receptacle	Vert. amp. of scope to point Ⓐ, low side to ground	IFT51	Adjust for maximum amplitude and proper linearity between 100 kHz markers.
	●~●	"	"	"	"	IFT151 IFT152	

★ Repeat steps ❼ ❽ & ❿ two or three times.

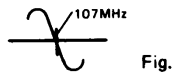


Fig. 2

• FM RF ALIGNMENT

- Set Volume Control at maximum and the Tone Control in the treble position.
- Set Band Selector Switch in FM.
- Set Balance Control in center.
- Keep the signal generator output low enough to prevent overloading the circuits.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)

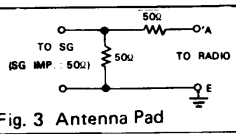


Fig. 3 Antenna Pad

	STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST (FM Tuner Ass'y)	REMARKS
FM RF	●	86.0 MHz [400 Hz Mod.]	Low freq. end stop.	Through pad (Fig.3) to Antenna receptacle.	Output meter across speaker terminals.	C73 (OSC)	★ Adjust for maximum ★ Repeat steps two or three times.
	●~●	98.0 MHz [400 Hz Mod.]	Tune to signal	"	"	C63 (RF) C55 (ANT)	

★ In step ●, adjust lower frequency at 86.0 MHz. The upper frequency will be within 108 ~ 110 MHz, because of design characteristics. It is nonadjustable.

NOTE: Test Point Ⓐ is the AM/FM Selector Switch in the base circuit of transistor TR152.

MULTIPLEX ALIGNMENT USING FM SIGNAL GENERATOR AND STEREO SIGNAL GENERATOR

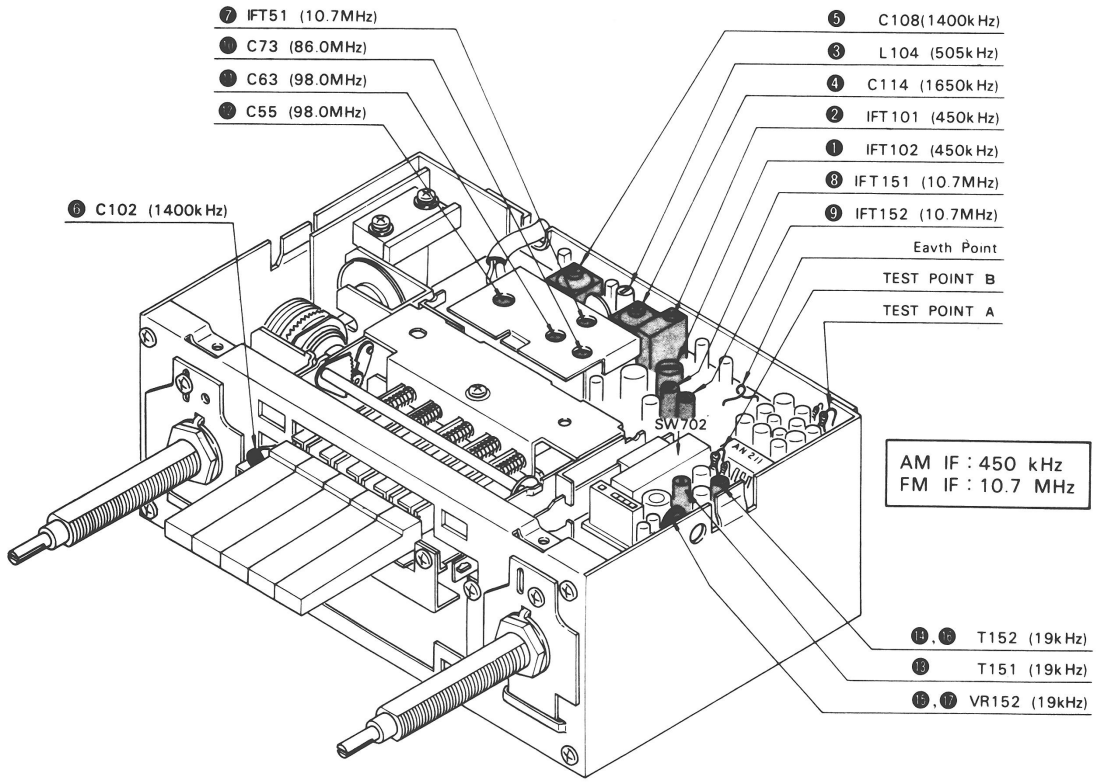
- Set Volume Control at maximum, and Tone Control in the treble position.
- Set Band Selector Switch in FM.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent overloading the circuits.
- FM Signal Generator should be modulated by Stereo Signal Generator.

Modulation level: 19 kHz 10%, 400 Hz 30%
FM Signal Generator output level: 1 mV
FM Signal Generator frequency: 98 MHz

	STEP	MODULATION FREQUENCY	INDICATOR	ADJUST	REMARKS
FM	⑬	19 kHz	Vert. Amp. of scope to Test Point Ⓑ, Low side to ground	T151	Adjust for maximum Set semi-fixed resistor (VR152) to middle position.
MPX	⑭ ~ ⑯	19 kHz 400 Hz (Right channel)	VTVM to Left speaker terminals	T152 VR152	Adjust for minimum.
MPX	⑮ ~ ⑰	19 kHz 400 Hz (Left channel)	VTVM to Right speaker terminals	T152 VR152	Adjust for minimum

★ Repeat steps ⑭ ~ ⑰ two or three times.

NOTE: 1) In step ⑬, input impedance of oscilloscope should be more than 1MΩ and less than 40 pF, including the scope probe's resistance and capacitance.
2) Test Point Ⓑ is shown in the Schematic and Wiring Diagrams. It is terminal No.1 on IC152.



Numbers in ● are indicated ALIGNMENT STEPS.

Figure 10. AM/FM/FM-Stereo Radio, Location of Test Points and Adjustments (Bottom panel removed)

CB Transmitter Alignment

Figure 11 shows connections required for performing the alignment procedures for the CB transmitter section. Figure 12 shows the locations of all test points and adjustments.

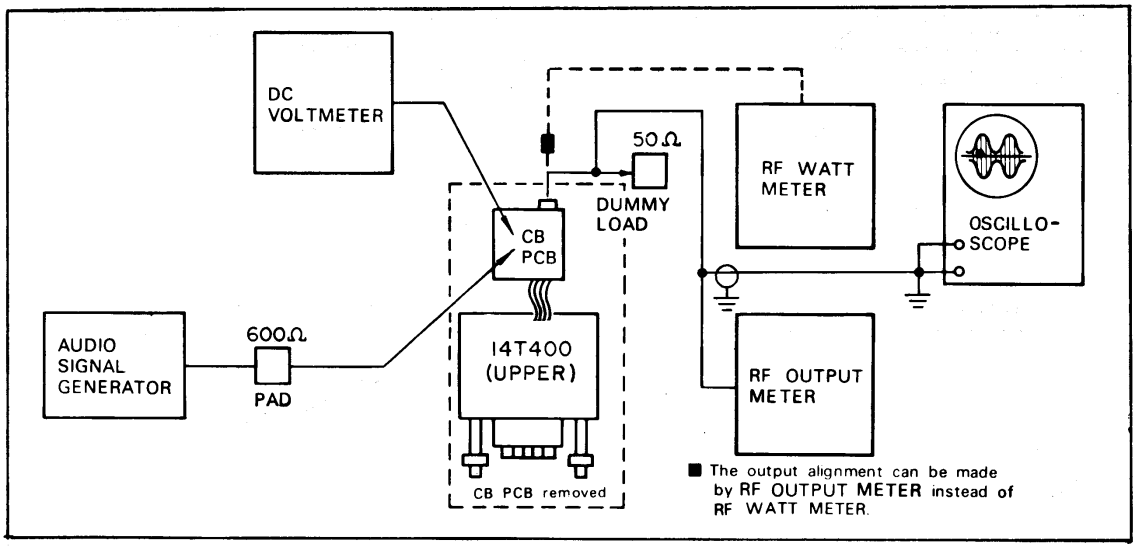


Figure 11. Test Connections for Alignment of the CB Transmitter Section

• OSCILLATOR ALIGNMENT

- Set CB Channel Selector Switch to Channel 13.
- Insert the shorting wire into the DIN connector terminals No. 2 & 5. (Fig. 4)

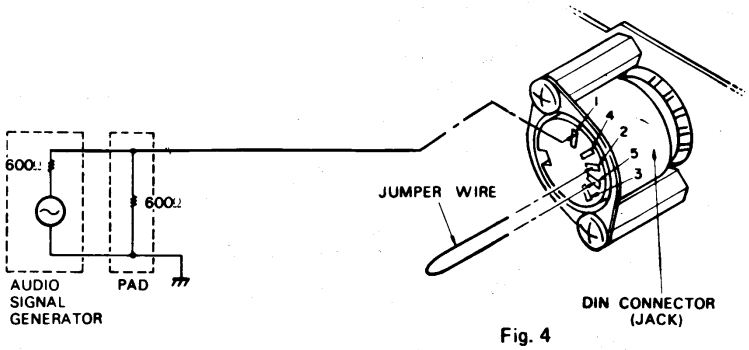


Fig. 4

STEP	ADJUST	INDICATOR CONNECTION	REMARKS
●	T803	DC voltmeter between Point Ⓒ and ground.	Adjust to 60% position of maximum level. (1.5V)

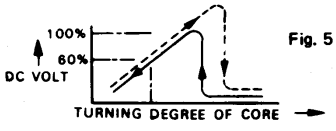


Fig. 5

• OUTPUT ALIGNMENT

- Set CB Channel Selector Switch to Channel 13.
- Connect the dummy load to the CB antenna connector. (Fig. 6)
- Insert the shorting wire into the DIN connector terminals No. 2 & 5. (Fig. 4)

Fig. 6 Dummy Load for RF Output

STEP	ADJUST	INDICATOR CONNECTION	REMARKS
❷	T903	RF output meter across dummy load (Fig. 6) or watt meter to CB antenna connector directly.	Adjust for maximum.
❸	T904		
❹	T902		
❺	L905		
❻	L903		

★ Repeat steps ❷ & ❸ two or three times.

• MODULATION ALIGNMENT

- Set CB channel Selector Switch to Channel 13.
- Connect the audio signal generator to the DIN connector terminal No. 1 (Fig. 4) through the 600-ohm pad (Fig. 7).
- Insert the jumper wire into the DIN connector terminals No. 2 & 5. (Fig. 5)

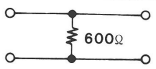


Fig. 7 Pad for Mod

STEP	GENERATOR FREQUENCY	ADJUST	INDICATION CONNECTION	REMARKS	MOD (%) = $\frac{A-B}{A+B}$ x 100
❼	1 kHz, −52 dBm (2 mV)	RV902	Oscilloscope across CB antenna connector through dummy load (Fig. 6).	Adjust for 100% modulation as follows.	

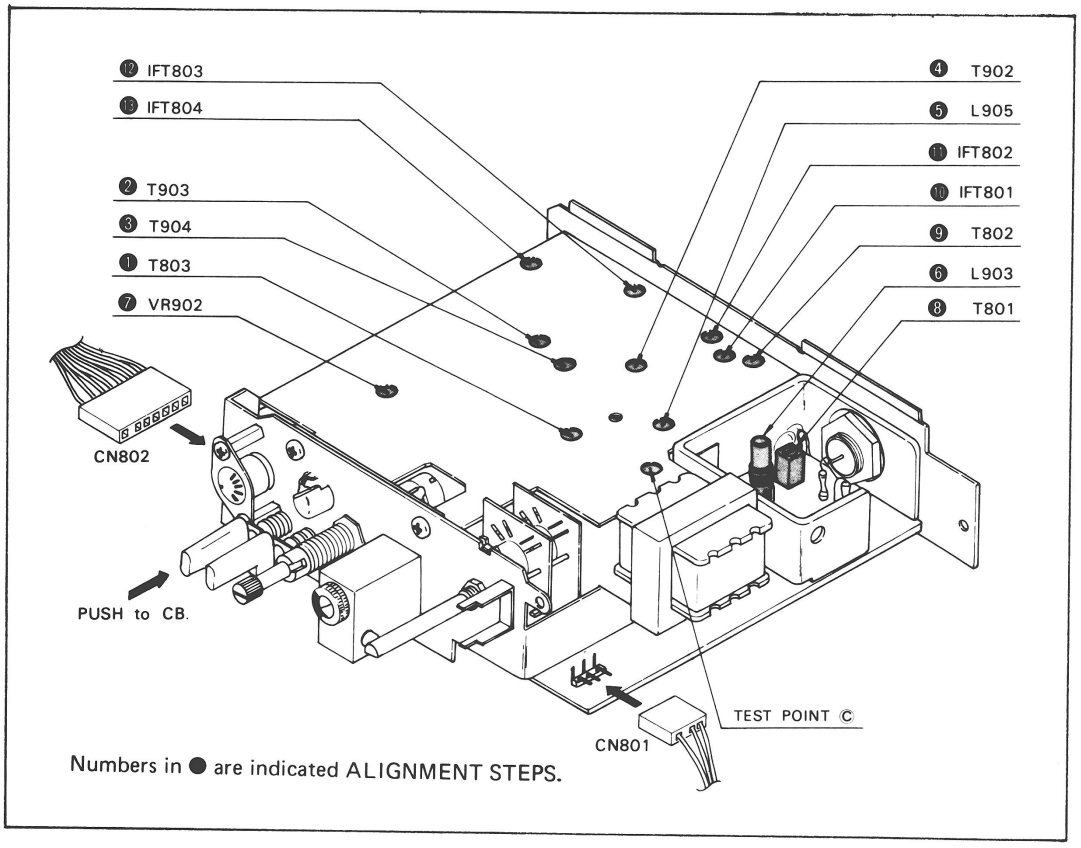


Figure 12. CB Transceiver, Locations of all Test Points and Adjustments

CB Receiver Alignment

Figure 13 shows connections required for performing the alignment procedures for the CB receiver section.

Figure 12 shows the locations of all test points and adjustments.

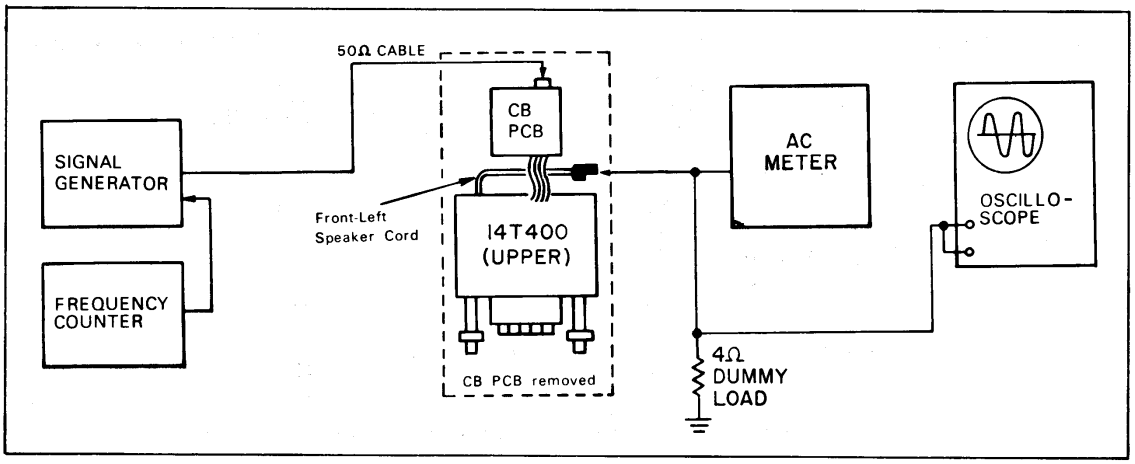


Figure 13. Test Connections for Alignment of the CB Receiver Section

- Set the CB Channel Selector Switch to Channel 13.
- Set the Delta Tune Control in its center position.
- Set the Squelch Control in the full-counterclockwise position.
- Set the Tone Control in the treble position (clockwise).
- Set the Balance Control in its center position.
- Signal Generator should be modulated as follows.
  Modulation level 1 kHz, 30%
  Signal generator output level 5 uV approx.
- Set the Volume Control for a 1 volt ac output across the 4 ohm dummy load.

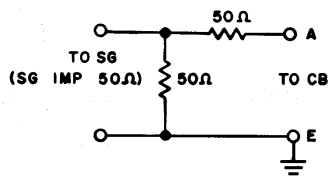


Fig. 8 Antenna Pad

STEP	GENERATOR FREQUENCY	SIGNAL FEED POINT	ADJUST	INDICATOR CONNECTION	REMARKS
8	Ch 13 (27.115 MHz)	CB antenna connector through 50 cable	T801	Output meter across speaker terminals.	Adjust for maximum. Reduce signal generator level after each adjustment to maintain a 1 volt output indication across the 4 ohm dummy load.
9			T802		
10			IFT801		
11			IFT802		
12			IFT803		
13			IFT804		
* Repeat steps two or three times.					

NOTE: 1) Should be connected to the RF wattmeter on transmitter alignment.
2) Use the insulated screwdriver for VR902 alignment (Step 2).
3) Use the nontallic screwdriver for alignment of L903 & L905 (steps 5 & 6).
4) To be connected to CN801 and CN802 during CB alignment.
5) Test Point C is shown in the Schematic and Wiring Diagrams. It is next to R845. (Refer to the OSCILLATOR ALIGNMENT.)

CB CHANNELS AND FREQUENCIES

CB CHANNEL	FREQUENCY
1	26.965 MHz
2	26.975 MHz
3	26.985 MHz
4	27.005 MHz
5	27.015 MHz
6	27.025 MHz
7	27.035 MHz
8	27.055 MHz
9	27.065 MHz
10	27.075 MHz
11	27.085 MHz
12	27.105 MHz

CB CHANNEL	FREQUENCY
13	27.115 MHz
14	27.125 MHz
15	27.135 MHz
16	27.155 MHz
17	27.165 MHz
18	27.175 MHz
19	27.185 MHz
20	27.205 MHz
21	27.215 MHz
22	27.225 MHz
23	27.255 MHz

TRANSMIT CRYSTAL COMBINATIONS FOR CHANNELS 1 TO 23

TRANSMIT CRYSTAL \ COMMON CRYSTAL	37.6 MHz (X801)	37.65 MHz (X802)	37.7 MHz (X803)	37.75 MHz (X804)	37.8 MHz (X805)	37.85 MHz (X806)
10.635 MHz (X904)	1	5	9	13	17	21
10.625 MHz (X903)	2	6	10	14	18	22
10.615 MHz (X902)	3	7	11	15	19	–
10.595 MHz (X901)	4	8	12	16	20	23

RECEIVE CRYSTAL COMBINATIONS FOR CHANNELS 1 TO 23

RECEIVE CRYSTAL \ COMMON CRYSTAL	37.6 MHz (X801)	37.65 MHz (X802)	37.7 MHz (X803)	37.75 MHz (X804)	37.8 MHz (X805)	37.85 MHz (X806)
10.18 MHz (X810)	1	5	9	13	17	21
10.17 MHz (X809)	2	6	10	14	18	22
10.16 MHz (X808)	3	7	11	15	19	—
10.14 MHz (X807)	4	8	12	16	20	23

FIRST OSC (X801 ~ X806) − INCOMING SIGNAL (1ch ~ 23ch) − SECOND OSC (X810 ~ X807) = 455 kHz (SECOND IF)