

MAINTENANCE AND SERVICE

INTRODUCTION

This Maintenance and Service Section will help you maintain the CB42 within the published specifications and assure years of useful application.

This section covers general maintenance and complete recalibration instructions. The schematic and parts list as well as board legends are included on separate sheets. The schematics use Sencore's "Circuit Trace" color coding to aid in circuit tracing if service ever becomes necessary.

Complete warranty information is included in the Quality Assurance Tag attached to the CB42. The QA tag also includes general warnings applying to your CB42 and in-

WARNING

These servicing instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

formation on factory service. If you should find it necessary to return your CB42 for service, enclose the QA tag with the final tester's signature.

FUNCTIONAL DESCRIPTION AND BLOCK DIAGRAM

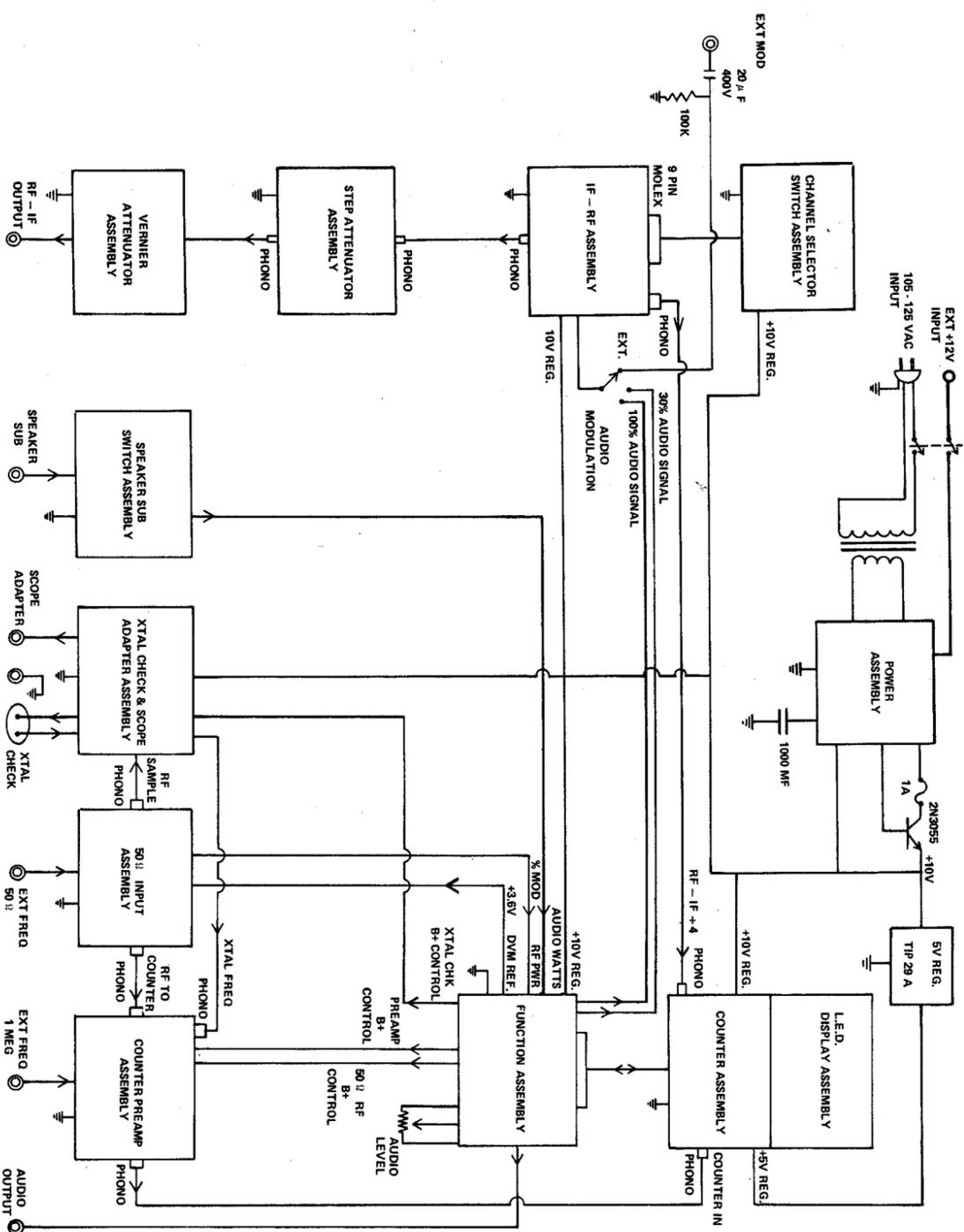


Fig. 61—Block diagram of CB42.

The Block Diagram of the CB42 is shown in Fig. 61. Each of the sections in the block diagram is isolated from the other sections with power supply filtering and electrical shielding. This results in very little interference.

COMPLETE CIRCUIT DESCRIPTION

The complete circuit description for the CB42, with simplified circuit diagrams, is available for \$5.00 handling charge from the Sencore Field Engineering Department, 3200 Sencore Drive, Sioux Falls, S.D. 57107.

ACCESS/DISASSEMBLY

To gain access to the interior of the CB42 for maintenance or calibration, follow this procedure:

1. Remove AC power from the CB42 by disconnecting it from the AC line.
2. Remove the six screws in the bottom panel and slide the panel towards the rear of the unit to remove it.
3. Remove the two screws on either side of the case,

and the two screws on the top of the case. Remove the case by sliding it towards the rear of the unit. As the case is removed, feed the AC cord through the hole in the case until the case is clear of the unit.

Complete access is available for calibrating the CB42 without further disassembly.

4. Complete access is available for calibrating the CB42 without further disassembly.
5. To reassemble, simply reverse the steps above.

CALIBRATION PROCEDURE

The calibration of the CB42 should be checked at regular intervals to make sure it is within original accuracy specifications. It is recommended that any unit requiring recalibration be returned to one of the Sencore Sales and Service Offices listed in the inside back cover of the manual. If field calibration is desired, follow the steps listed below:

EQUIPMENT REQUIREMENTS:

EQUIPMENT	SPECIFICATIONS
Frequency counter	.0001% (1ppm)
or	Frequency standard
RF Voltmeter	10% accuracy, 10uV-.1V RF at 30 MHz
DC Voltage Source	1%, 25 mV-10 VDC
AC Voltmeter	1%, 0.2 VAC RMS at 1000 Hz.
AC Signal Source	.500 VRMS ± 1% at 1000 Hz.
RF Power Source	3.00 WRF ± 5% at 27 MHz.

POWER SUPPLY

1. Measure ripple on 10 volt output of power supply PC board. Should indicate less than 30 mV.
2. Measure ripple on 5 volt output of power supply PC board. Should indicate less than 30 mV.
3. Monitor DC voltage of 10 volt output of power supply PC board. Set 10 Volt Adjust (R104) for 10.00 V ± 0.1 VDC.

SCOPE ADAPTER

1. Feed 26.965 MHz (CB channel 1) into 50 ohm input.
2. Connect scope to Scope Adapter output.
3. Set Scope Adapter Frequency Adjust for zero-beat on scope.
4. Readjust L701 for 40 KHz output on scope.
5. Switch RF input to 26.975 MHz (CB channel 2). Frequency on scope should increase. If Channel 2 frequency is lower than channel 1 frequency, repeat step 4 for 40 KHz signal on opposite side of zero-beat.

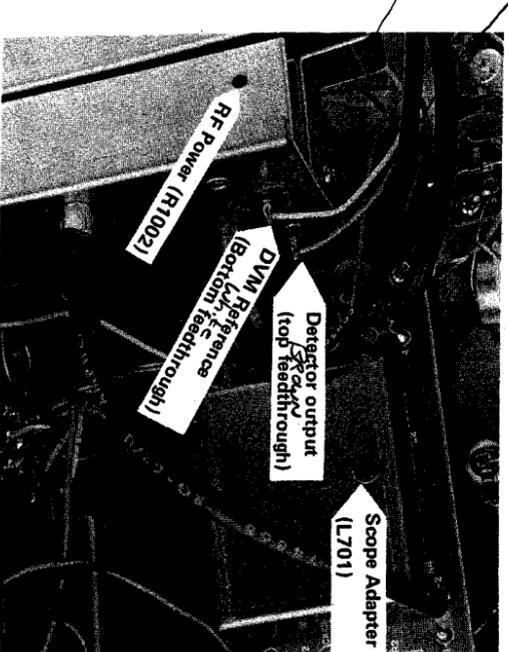


Fig. 62—Test-points and controls on bottom of chassis.

DVM

1. Switch DIGITAL READOUT SELECTOR to RF WATTS.
2. Connect frequency counter to pin 8 of IC5. Set DVM Clock Cal (R923) for frequency of 8000 Hz, ± 20 Hz.
3. Connect negative lead of external ungrounded adjustable DC power supply to DVM Reference (side of C904), and positive lead to DVM Input (side of C904).
4. Monitoring the adjustable supply with a .1% DVM such as the Sencore DVM38, set the output to approximately 1.4 VDC. Set DVM Cal (R913) for same reading on reference meter and CB42 Digital Readout (ignoring decimal).
5. Reset external supply for about 25 mV, and set DVM Lin (R916) for same reading on reference meter and CB42 Digital Readout.
6. Repeat steps 4 and 5 until both limits of the Digital Readout agree with the external meter.

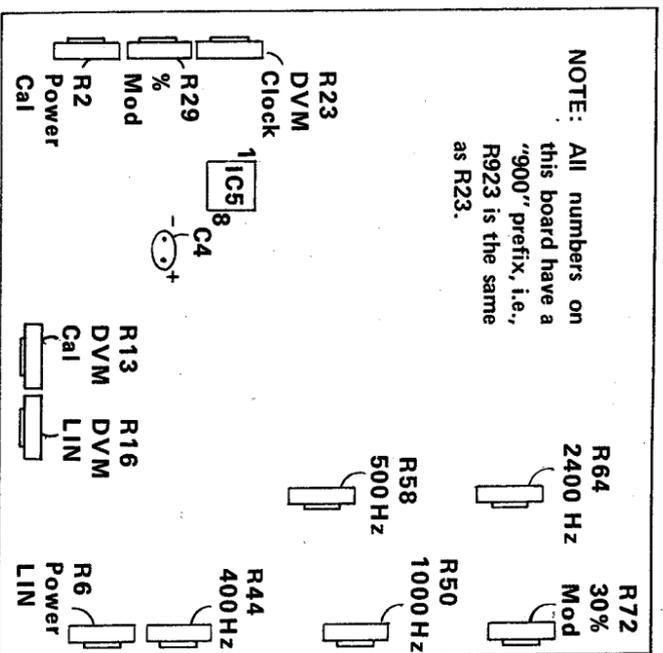


Fig. 63—Calibration points of function board.

AUDIO AND RF WATTS

1. Set the DIGITAL READOUT SELECTOR to the AUDIO WATTS position.
2. Set SPEAKER LOAD switch to the SPEAKER position.
3. Feed $8\sqrt{2}$ VRMS into the SPEAKER SUB jack. Adjust the Power Cal control (R902) for a reading of 1.00 Watts on the DIGITAL READOUT.
4. Feed 2.82 VRMS into the SPEAKER SUB jack. Adjust Power Lin control (R906) for a reading of 1.00 Watts on the DIGITAL READOUT.
5. Repeat Steps 3 and 4 until power function reads correctly at both calibration points.
6. Feed 2.82 VRMS into the SPEAKER SUB jack. Press S/N CHECK button. DIGITAL READOUT should read 10.00 Watts ($\pm .5$ Watts).
7. Feed 3.00 Watts RF into the 50 Ohm input. Select RF POWER on the DIGITAL READOUT SELECTOR. Adjust RF power Cal (R1002) through small hole in bottom of 50 Ohm Load shield for a power reading of 3.00 Watts.

PERCENT MODULATION NOTE: Signal source / DC Bias affect MUST BE FLATTING - CANNOT SHAK

1. Feed 500 VRMS 1 KHz with a -1.414 VDC offset between the top and bottom feed-through capacitors on the 50 Ohm load shield. The top feed-through is -1.414 VDC and the bottom feed-through DVM reference.
2. Set DIGITAL READOUT SELECTOR to POSITIVE MODULATION position.
3. Adjust % MOD Cal (R929) for 50% readout. Set DIGITAL READOUT SELECTOR to NEGATIVE MODULATION position. Reading should be $50\% \pm 2\%$.

RF-IF OUTPUT

1. Connect RF voltmeter terminated in 50 Ohms to RF-IF OUTPUT.
2. Set MICROVOLTS OUTPUT controls for 100K uV output.
3. With RF-IF FUNCTION Switch set to AM, adjust 27 MHz control (R212) for 100K uV on RF Voltmeter.
4. Set RF-IF FUNCTION switch to 6-12 MHz position, and adjust IF Level control (R211) for 100K uV on RF Voltmeter.
5. Repeat steps 3 and 4 until the same reading is obtained in both positions.
6. Set the IF TUNING control for maximum frequency on the 6-12 MHz position of the RF-IF FUNCTION switch.
7. Connect a 50 Ohm terminated frequency counter to

the RF-IF OUTPUT, or set the DIGITAL READOUT SELECTOR to the RF-IF GEN position.

8. Set the IF High Freq. Adjust (L201) for a reading of 12.1 MHz.
9. Set the IF TUNING control fully counter-clockwise.
10. Check each IF band for proper operation throughout the tuning range of the IF TUNING control.

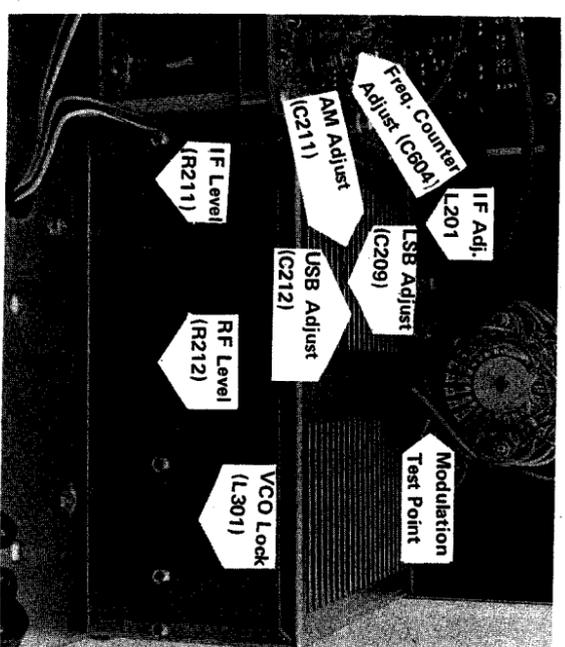


Fig. 64—Calibration points of RF-IF board.

RF-IF MODULATION

1. Connect AC Voltmeter to Audio Feed-through Capacitor on RF-IF shield.
2. Set AUDIO SELECTOR switch to 1000 Hz, and MODULATION switch to 100%.
3. Adjust 1000 Hz level control (R950) for 1.414 VRMS reading on AC Voltmeter.
4. Change AUDIO SELECTOR switch to 400 Hz, and adjust 400 Hz Cal (R944) for 1.414 VRMS.
5. Change MODULATION SWITCH to 30%. Set 30% Modulation Cal (R972) for .424 VRMS.

AUDIO TWO-TONE

1. Connect one channel of a dual-trace scope to pin 8 and the other channel to pin 8 of IC909.
2. Adjust the 500 Hz (R958) and 2400Hz (R964) controls for equal outputs.

FREQUENCY COUNTER

1. Feed in a signal of known frequency with an accuracy of .5 ppm or better to the 1 MEG FREQUENCY COUNTER INPUT.
2. Adjust Crystal Trimmer capacitor (C604) for a frequency reading the same as the reference frequency.

PERCENT OFF CHANNEL SENSITIVITY

1. Feed a CB transmitter set to channel 23 into the 50 Ohm input.
2. Set the CB RF TUNER to channel 1, and the DIGITAL READOUT SELECTOR TO THE % OFF CHANNEL SENSITIVITY position.
3. Adjust the % Off Channel Sensitivity Control (R671) until the DIGITAL READOUT gives a solid reading.

CB RF TUNER PLL

1. Select the RF-IF GEN position of the DIGITAL READOUT SELECTOR switch, and the AM position of the RF-IF CONTROL switch.
2. If the frequency is changing more than ± 2 counts (20 Hz), adjust the VCO Lock control (L301) until the VCO is stable. Check channels 1-40 to be sure the VCO locks on each channel and readjust L301 if necessary.
3. Set the CB RF TUNER to channel 1. Set the RF-IF SELECTOR switch to the USB position, and set the USB trimmer (C212) for a reading of 26.966 MHz.
4. Set the RF-IF SELECTOR switch to the AM position, and set the AM trimmer (C211) for a reading of 26.965 MHz.
5. Set the RF-IF SELECTOR switch to the LSB position, and set the LSB trimmer (C209) for a reading of 26.964 MHz.