

ALIGNMENT/ADJUSTMENTS-SVU32BL/459B/458B

A.GENERAL

For proper alignment, the unit should be programmed with the following channel and frequency information

Channel	RX Frequency MHz	TX Frequency MHz	RX/TX Tone	DTMF
1	450.050	450.000	No Tone	None
2	460.050	460.000	No Tone	None
3	470.050	470.000	No Tone	None
4	479.950	479.990	No Tone	None
5	460.050	460.000	67 Hz	None
6	460.050	460.000	100 Hz	None
7	460.050	460.000	250.3 Hz	None
8	460.050	460.000	141 DCS	None
9 *	465.050	465.050	No Tone	None
10*	467.050	467.050	100 Hz	None
11*	460.050	469.900	None	1234

Not available on SVU458B 8 channel units.

Make connections to the Unit per Figure 5 (Equipment Test Set-up) below and Figure 6 (Test Adapter). For the location of the components called out in these procedures, refer to RF Board and SUB Board.

B.SYNTHESIZER/TRANSMITTER VCO Check

Note: VCO check must be accomplished before proceeding with the Transmitter and/or Receiver Alignment.

1. Connect the radio in accordance with Figure 5.
2. Place the Unit on channel 4 (479.950MHz, RX; 479.990MHz, TX).
3. Connect the voltmeter to TPI. Check to make sure that the voltmeter reading is between 5.10 V and 5.40 V when the unit is in the receive mode.
4. Operate the transmitter to make sure that the voltmeter reading at TPI is between 5.10 V and 5.40 V.

Approximate Tracking Voltage

CH	RX	TX
1	1.30V	1.40V
2	2.20V	2.40V
3	3.40V	3.60V
4	4.90V	5.00V

FREQUENCY ADJUSTMENT

1. Connect the Radio in accordance with Figure 5.
2. Place the Unit on channel 3 (470.050 MHz, RX; 470.000 MHz, TX).
3. Operate the transmitter and adjust C407 for a Frequency Counter reading within ± 100 HZ of the programmed transmit frequency.

Transmitter Alignment

NOTE: In order to obtain proper transmission output power, connect the Radio to the power supply with a cable that is rated to withstand a current of 2 amperes or greater.

POWER ADJUSTMENT

1. Connect the Radio in accordance with Figure 5.
2. Place the Radio on the channel 2 (460.050MHz, RX; 460.000MHz, TX).
3. Place the Unit in HIGH POWER mode.
4. Turn R289 and R288 fully clockwise.
5. Operate the transmitter, using TA-SI, to make sure that the maximum RF output power reading on the wattmeter is 4.5 W or greater.
6. Place the Radio on the channel 1 (450.050MHz, RX; 450.000MHz, TX).
7. Adjust R484 (HI PWR ADJ) for a reading of 4.2 W \pm 0.1 W.
8. Place the Radio on the channel 2 (460.050MHz, RX; 460.000MHz, TX).
9. Adjust R289 (HI PWR ADJ) for a reading of 4.0 W \pm 0.1 W. Check to make sure that the transmit current is within 1000 - 1400 mA after the adjustment has been made.
10. Place the Unit in the LOW POWER mode.
11. Adjust R288 (LO PWR ADJ) for a reading of 1.0 W \pm 0.1 W. Check to make sure that the transmit current is within 500 - 700 mA after the adjustment has been made.
12. Operate the transmitter, using TA-SL, to make sure that the difference between the maximum and minimum transmitter output power reading is within 0.1 W 450.000 MHz - 480.000MHz range.
13. Place the Unit in HIGH POWER mode.
14. Operate the transmitter, using TA-SI, to make sure that the difference between the maximum and minimum transmitter output power reading is within 0.5 W in the 450.000MHz - 480.000MHz range.

MODULATION ADJUST

1. Connect the Radio in accordance with Figure 5.
2. Place the Radio on channel 2 (460.060MHz, RX; 460.000 MHz, TX).
3. Apply a 1 kHz tone signal to Test Adapter's AF Input (Figure 6), which is the microphone impedance matching network.
4. Plug the Test Adapter into the external speaker/microphone jack.
 5. Operate the transmitter, using TA-S1, and adjust the audio generator's output level for \pm 3kHz deviation on the Modulation Analyzer. Turn OFF the transmitter and note the audio generator's output level (TA-TP2). The level should be between 20 and 30 mV.
6. Increase the audio generator's output level by 20 dB.
7. Operate the transmitter, using TA-SI, and adjust the master deviation control R266 for \pm 4.00kHz deviation on the Modulation Analyzer, if CTCSS or DCS is not to be employed.
8. To adjust CTCSS and DCS Deviation, perform step 1 through 7 above. Then set the FM liner detector audio bandwidth of $<0.25\text{Hz}$ to $\geq 15,000\text{Hz}$. Turn the de-emphasis function off.
9. Place the Radio on channel 8 (460.050MHz, RX; 460.000MHz, TX).

Set the audio generator output to 0V operate the transmitter, using TA-SI and adjust the DCS balance control R291 to U1-U2 is minimum on the Oscilloscope.
10. Place the Radio on channel 6 (460.050MHz, RX; 460.000MHz, TX).

Operate the transmitter using TA-S1, and adjust R705 to \pm 800 Hz deviation on Modulation Analyzer.
11. Place the Radio on channel 2 (460.050MHz, RX; 460.000MHz, TX)
12. To adjust DTMF deviation, perform steps 1 through 7 above. Set the audio generator output to 0 V.

Operate the transmitter, using TA-SL, and press the '8' key. Adjust the DTMF deviation on control R714 for \pm 3.0 kHz deviation on the Modulation Analyzer.

Figure 5. Equipment Test Set-Up

