

## 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  $\pm$  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-SI, and adjust the audio generator's output level for  $\pm 3$ kHz 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  $\pm 4.00$ kHz 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  $<0.25$ Hz to  $\geq 15,000$ 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 UI-U2 is minimum on the Oscilloscope.
10. Place the Radio on channel 6 (460.050MHz, RX; 460.000MHz, TX).  
Operate the transmitter using TA-SI, 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

