ALIGNMENT/ADJUSTMENTS-SCV99L/32L/08

A.GENERAL

For proper alignment, the unit should **be** programmed with the following channel and frequencies.

Channel	RX Frequency MHz	TX Frequency MHz	RX/TX Tone Hz	DTMF
1	154.050	154.050	No Tone	None
2	161.0475	161.0475	No Tone	None
3	168.950	168.950	No Tone	None
4	148.0475	148.0025	No Tone	None
5	173.9925	173.9575	No Tone	None
6	161.050	161.000	67 Hz	None
7	161.050	161.000	100 Hz	None
8	161.050	161.000	250 Hz	None
9	161.050	161.000	141 DCS	None
10	162.050	162.050	012 DCS	None
11	161.050	169.900	None	1234

Make connection to the unit per Figure 5 (Equipment Test Set-Up) Below and Figure 6 (Test Adapter). For the location of the components in these procedures refer to RF and Sub board parts placement.

B.SYNTHESIZER/TRANSMITTER VCO Check

Note: VCO must be checked prior to transmitter and receiver alignment.

1. Connect the radio in accordance with Figure 5.
2. Place the Unit on channel 3 (168.95OMHz, RX; 168.99OMHz, TX).
3. Connect the voltmeter to TPI. Check to make sure that the voltmeter reading is between 3.90 V and 4.30 V when the unit is in the receive mode.
4. Operate the transmitter to make sure that the voltmeter reading at TPI is between 3.90 V and 4.30 V.

NOTE: Refer to the following for typical values at TP1

Channel	Receive V	Transmit V
1	2.10V	2.30V
2	2.90V	3.00V
3	3.95V	4.00V
4	1.55V	1.70V
5	4.70V	4.70V

Frequency Adjustment

1. Connect the Radio in accordance with Figure 5.
2. Place the Unit on channel 3 (168.95OMHz, RX; 168.99OMHz, TX).

3. Operate the transmitter and adjust C407 for a Frequency Counter reading within ± 5OHz of the programmed transmit frequency.
4. Place the Unit on channel 2 (161.0475MHz, RX; 161.0025MHz, TX).
5. Operate the transmitter and adjust C320 for a Frequency Counter reading 161.0025MHz ± 5Ohz

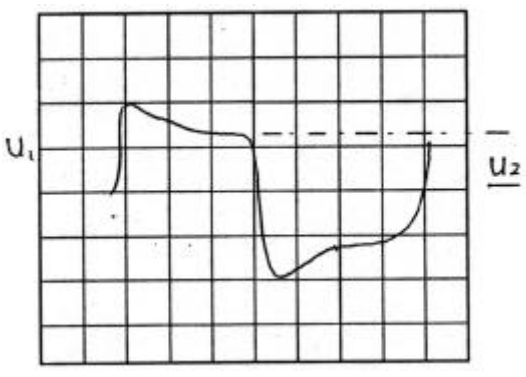
TRANSMITTER ALIGNMENT

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

1. Connect the Radio in accordance with Figure 6.
2. Place the Radio on the channel 2 (161.0475MHz, RX; 161.0025MHz, 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 5.5 W or greater.
6. Adjust R289 (HI PWR ADJ) for a reading of 5.0 W ±0.1 W. Check to make sure that the transmit current is within 1000 - 1400 mA after the adjustment has been made.
7. Place the Unit in the LOW POWER mode.
8. Adjust R288 (LO PWR ADJ) for a reading of 1.0 W ±0.1 W. Check to make sure that the transmit current is within 500 - 700 mA after the adjustment has been made.
9. Operate the transmitter, using TA-SI, to make sure that the difference between the maximum and minimum transmitter output power reading is within 0.1 W 154.OOOMHz - 168.99OMHz range.
10, Place the Unit in HIGH POWER mode.
11. 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 154.OOOMHz - 168.99OMHz range.

MODULATION ADJUST

1. Connect the Radio in accordance with Figure 5.
2. Place the Radio on channel 2 (161.0475MHz, RX; 161.0025MHz, 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 ±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 ±4.OOkHz deviation on the Modulation Analyzer, if CTCSS or DCS is not to be employed.
8. To adjust CTCSS and DCS Deviation, perform step 1 though 7 above. Then set the FM liner detector audio bandwidth of <0.25Hz to >15,00OHz. Turn the de-emphasis function off.
9. Place the Radio on channel 9 (161.05OMHz, RX; 161.OOOMHz, TX).



Set the audio generator output to OV operate the transmitter, using TA-SI and adjust the DCS balance control R291 to Ul-U2 is minimum on the Oscilloscope.

10. Place the Radio on channel 7 (161.05OMHz, RX; 161.OOOMHz, TX).
Operate the transmitter using TA-SI, and adjust R705 to ±800 Hz deviation on Modulation Analyzer.
11. Place the Radio on channel 2 (161.0475MHz, RX; 161.0025MHz, TX)
12. To adjust DTMF deviation, perform steps I through 7 above. Set the audio generator output to 0V. Operate the transmitter, using TA-SI, and press the '8' key. Adjust the DTMF deviation on control R714 for ±3.0 kHz deviation on the Modulation Analyzer.

RECEIVER

1. Connect the Radio in accordance with Figure 6.
2. Adjust the Squelch Control S299(SOL) to the fully counter-clockwise position (unit unsquelched) until the BUSY LED (Green) turns ON.
3. Place the Radio on the channel I (164.06OMHz, RX; 154.OOOMHz, TX).
4. Apply the RF generator signal with I kHz tone at 3 KHz deviation and adjust its RF output level to approximately -77 dBm.
5. Adjust L201 for the maximum audio level on the AC voltmeter (TA-TPI).
6. Connect the digital voltmeter to TP4; see Figure 9.
7. Preset the cores of L405 to the BOTTOM of the coil form and L406, L407, L408, L409 to the TOP of the coil form.
8. Adjust L405, L406, L407, L409, and L408 in this order to obtain the maximum voltmeter at TP4. Reduce the RF generator's level as necessary to maintain a mid scale reading on the voltmeter as the coils are adjusted.
9. Repeat step 8 until no further improvement can be made.
10. Check the 12dB SINAD sensitivity reading at both ends of the operating range of the Unit. The specification is 0.26 gV maximum.