

## ALIGNMENT PROCEDURE

The SD-164 UHF Transceiver have broad band covering range, UHF(450~490 MHz) and should require no special alignment, unless repairs are performed on the transceiver portion. Should repairs be necessary, use the "Test Equipment Diagram" and the Alignment Points Diagram", in conjunction with the following procedures:

- An Extender Board is required in order to separate the Digital and RF PCB's to allow access to the alignment points. Installation instructions are provided with the Extender Board Assembly.

### RECEIVER

1. Apply a standard test signal to the receiver antenna terminals.
2. Adjust RV401 for the specific audio output level.

### RX VCO

RX VCO is pre-tuned at factory and no more adjustment is required

To identify existence of defect of RX VCO, check the VCO Control voltage.

1. Set the unit to the highest receive frequency, 490MHz(UHF2), and check the VCO control voltage is below 10.0 volts.
2. Set the unit to the lowest receive frequency, 450MHz(UHF2), and check that the VCO control voltage is above 1.0 volts.

- Note: Use TP1 to measure the voltage.

### TRANSMITTER

Connect the unit to a Service Monitor with the power meter setting to the 10W scale (or auto range).

### TCXO

Set the channel selector to the mid-range frequency 470MHz, adjust TCXO1 for a reading of 470MHz  $\pm$ 200Hz.

### TX VCO

TX VCO is pre-tuned at factory and no more adjustment is required

To identify existence of defect of TX VCO, check the VCO Control voltage.

1. Set the unit to the highest transmit frequency, 490MHz(UHF2), key the transmitter and check the VCO control voltage is below 10.0 volts.
2. Set the unit to the lowest transmit frequency, 450MHz(UHF2), key the transmitter and check that the VCO voltage is above 1.0 volts.

- Note: use TP1 to measure the voltage.

### CTCSS, DCS & TX Deviation and Balance Adjustment

- 1a. Set the unit to a mid-frequency range and a CTCSS of 67Hz. Push PTT and adjust RV402 for desired CTCSS tone deviation.

- 1b. Switch to a channel with the same frequency and CTCSS of 250.3Hz. Push PTT and adjust RV1 to desired

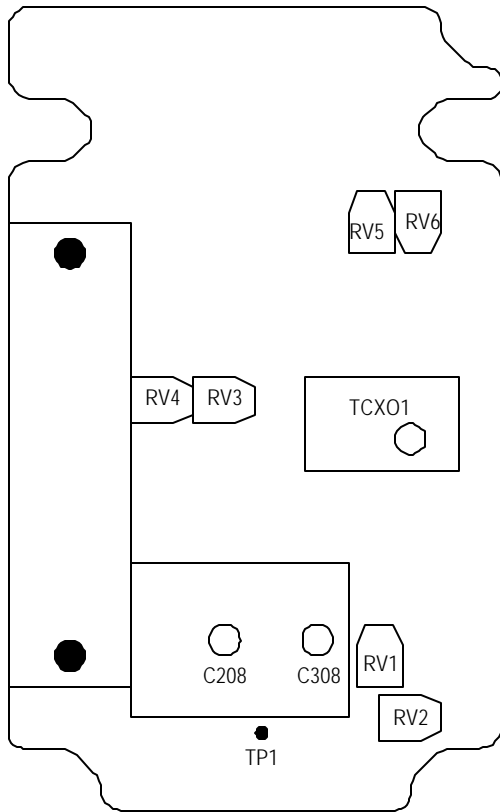
CTCSS tone deviation, same as above step.

- 1c. Switch between the 67Hz channel and the 250.3Hz channel and adjust RV1 until the deviation is the same on both channels. It may be necessary to readjust RV402 to get the desired deviation.
2. Set the unit to a mid-frequency and input the TX data with 400 Hz standard audio level.
3. Increase the signal level to 20dB from standard level.
4. Monitor the demodulated signal from service monitor. Adjust RV1 to make the monitored signal to be a balanced square wave.
5. Reduce input signal to the standard level and adjust RV2 for the standard deviation.

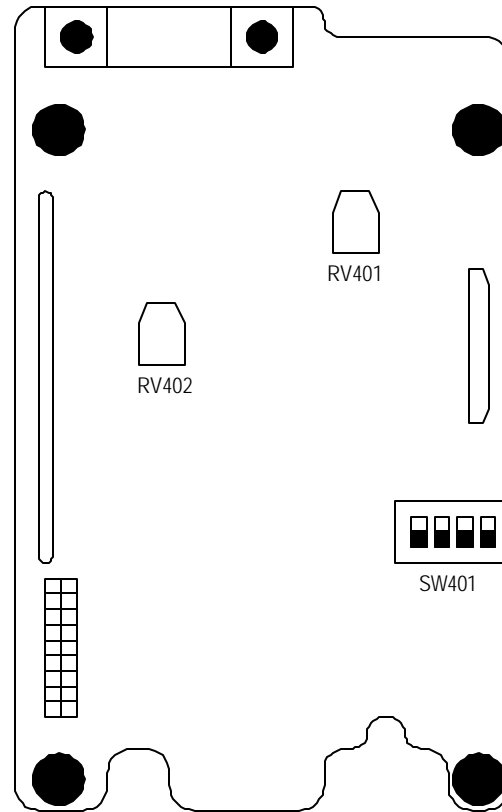
#### **APC**

1. Adjust RV4 for 2W Power
2. This completes the transmitter alignment procedures.

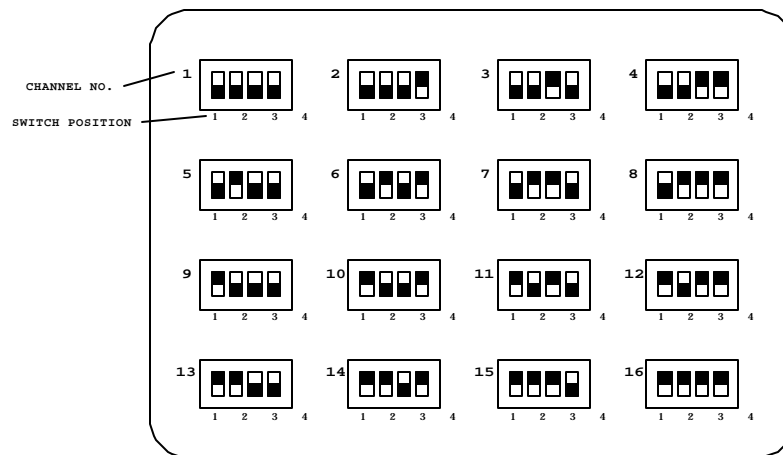
## ALIGNMENT POINTS DIAGRAM



**RF BOARD  
ALIGNMENT POINTS**



**DIGITAL BOARD  
ALIGNMENT POINTS**



**SW401  
CHANNEL SELECT SWITCH**