Alignment VHF

Before aligning the SVR-200, ensure that the mobile radio is aligned per the manufacturer's service procedure; Ensure that the SVR-200 is properly programmed and the jumpers are set per the previous section. In order to properly align the SVR-200, you will need two service monitors and the mobile radio that the repeater will be installed with. Refer to figure 1 for alignment points.

Dis-assemble the repeater by removing the two cap screws on the rear panel and the phillips screw on the bottom. Slide the main circuit board out of the housing with the rear panel attached. Connect one service monitor to the SVR-200 BNC jack and the other to the mobile antenna jack. Connect the cable from the mobile radio to the SVR-200; turn on the mobile and activate the SVR-200.

Adjust the repeater squelch control (RV9) so that the repeater COR led is off. Adjust the mobile so that the audio is squelched.

SVR-200 VHF T ransmitter

1. ***Transmitter Output*** : Short J3 and adjust RV10 for maximum. Adjust C60, C61 and C56 on the RF board for maximum RF power output and minimum spurious output. Adjust RV10 250 mW. The SVR-200 case is integral to the voltage regulator heat sink and the unit should not transmit at full power when removed from the case for extended periods.

2. ***Transmitter frequency*** : Adjust the TCXO on the RF board for the transmit frequency.

3. ***Maximum deviation/lock tone deviation*** : Adjust RV7 (lock tone deviation) for maximum. If the SVR-200 is programmed for sub-audible encode, adjust RV6 (CTCSS) for minimum. Adjust RV8 (repeater deviation) for 95% deviation. Adjust RV7 for 60% deviation. Remove J3.

4. ***Mobile COR*** : Measure the voltage at pin 7 of SVR-200 main connector P1 and record. Set the mobile service monitor for the mobile receive frequency, 1mV RF output and CTCSS modulation of 15%. Measure the voltage again at pin 7 and record. Turn the mobile service monitor off and adjust RV1 on the SVR-200 main board for the halfway point between the two voltage readings as read at pin 3 of U1.

5. ***RX audio sensitivity/CTCSS deviation*** : Set the service monitor connected to the mobile for the mobile receive frequency and 1mV RF output. Modulate the signal generator with a 1kHz tone at 60% deviation and CTCSS tone at 15% deviation. Ensure that the SVR-200 mobile COR and repeater PTT LED's are on. Adjust RV5 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the SVR-200. If programmed for sub-audible encode, remove the 1kHz tone deviation from the mobile service monitor and adjust RV6 on the SVR-200 main board for 15% deviation. Turn the RF output from the mobile service monitor off and ensure that the SVR-200 mobile COR and repeater PTT LEDs are off.

6. ***Local mic repeat*** : If the SVR-200 is programmed for local mic repeat, key the mobile local mic and inject an audio signal into the local mic to produce 60% deviation on the service monitor connected to the mobile. Confirm that the SVR-200 repeater PTT LED is on; adjust RV2 for 60% deviation as read on the service monitor connected to the SVR-200. Unkey the mobile radio.

7. ***RF power out*** : Short J3 and adjust RV10 for the operating power output. Open J3.

VHF Receiver

1. ***Receiver front end*** : Connect a DC voltmeter to TP1 on the SVR-200 main board. Set the service monitor connected to the SVR-200 to the generate mode, receive frequency with a 1kHz tone and 60% deviation. Adjust the RF output of the monitor for a 1VDC reading at TP1. Adjust L1-L4 on the RF board for a maximum reading at TP1.

2. ***Repeater squelch*** : Adjust the service monitor RF output for .5µV. Adjust RV9 on the SVR-200 main board so the repeater COR LED is just on. Decrease the service monitor RF output to .3µV and ensure that the repeater COR LED is off.

3. ***Transmit audio output*** : Adjust the service monitor RF output for 1mV. Turn the CTCSS modulation on and set for 15% deviation. Confirm that the repeater COR, CTCSS and mobile PTT LED's are on. Adjust RV3 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the mobile radio.

4. ***Local Rx audio*** : Connect an 8 ohm speaker to P4 and set RV4 for the desired listening level. Turn off the CTCSS modulation of the service monitor connected to the SVR-200. Confirm that the repeater CTCSS and mobile PTT LED's are off.

5. ***Lock Tone Decode*** : Change the 1kHz tone modulation to the lock tone frequency. Confirm that the PRI LED goes off after approximately .5 seconds.

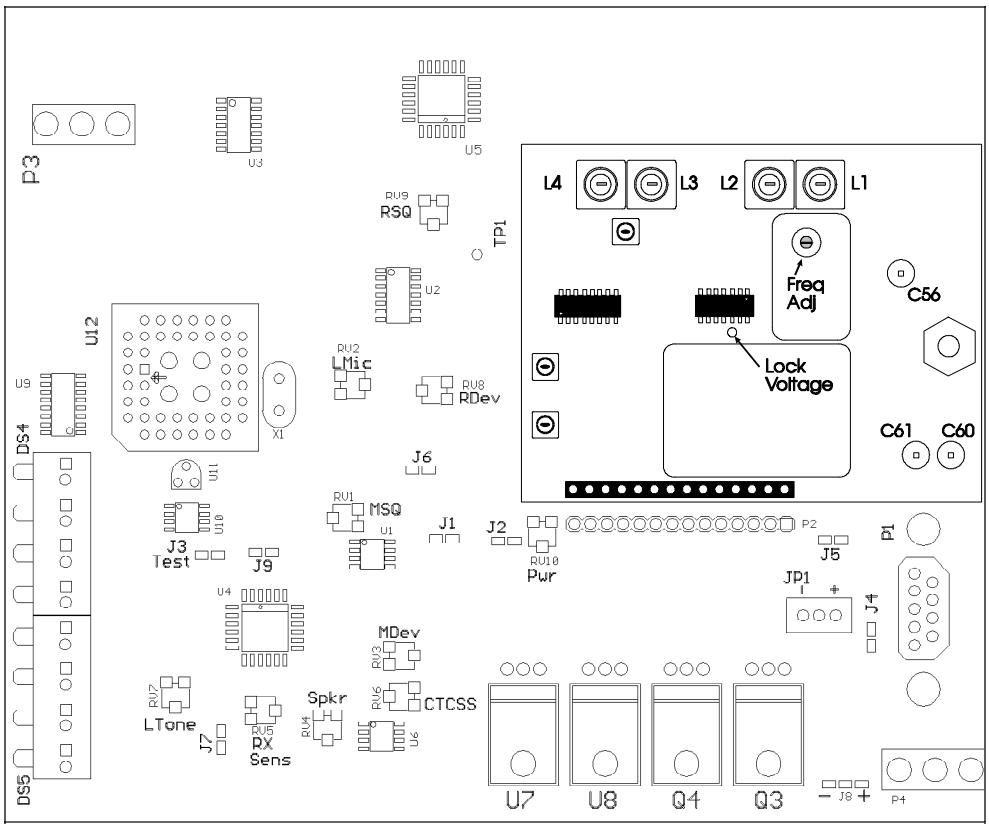

Figure 1

Alignment UHF

Before aligning the SVR-200, ensure that the mobile radio is aligned per the manufacturer's service procedure; Ensure that the SVR-200 is properly programmed and the jumpers are set per the previous section. In order to properly align the SVR-200, you will need two service monitors and the mobile radio that the repeater will be installed with. Refer to figure 2 for alignment points.

Dis-assemble the repeater by removing the two cap screws on the rear panel and the phillips screw on the bottom. Slide the main circuit board out of the housing with the rear panel attached. Connect one service monitor to the SVR-200 BNC jack and the other to the mobile antenna jack. Connect the cable from the mobile radio to the SVR-200; turn on the mobile and activate the SVR-200.

Adjust the repeater squelch control (RV9) so that the repeater COR led is off. Adjust the mobile so that the audio is squelched.

SVR-200 UHF T ransmitter

1. ***Transmitter Output*** : Short J3 and adjust RV10 for 250 mW. The SVR-200 case is integral to the voltage regulator heat sink and the unit should not transmit at full power when removed from the case for extended periods.

2. ***Transmitter frequency*** : Adjust the TCXO on the RF board for the transmit frequency.

3. ***Maximum deviation/lock tone deviation*** : Adjust RV7 (lock tone deviation) for maximum. If the SVR-200 is programmed for sub-audible encode, adjust RV6 (CTCSS) for minimum. Adjust RV8 (repeater deviation) for 95% deviation. Adjust RV7 for 60% deviation. Remove J3.

4. ***Mobile COR*** : Measure the voltage at pin 7 of SVR-200 main connector P1 and record. Set the mobile service monitor for the mobile receive frequency, 1mV RF output and CTCSS modulation of 15%. Measure the voltage again at pin 7 and record. Turn the mobile service monitor off and adjust RV1 on the SVR-200 main board for the halfway point between the two voltage readings as read at pin 3 of U1.

5. ***RX audio sensitivity/CTCSS deviation*** : Set the service monitor connected to the mobile for the mobile receive frequency and 1mV RF output. Modulate the signal generator with a 1kHz tone at 60% deviation and CTCSS tone at 15% deviation. Ensure that the SVR-200 mobile COR and repeater PTT LED's are on. Adjust RV5 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the SVR-200. If programmed for sub-audible encode, remove the 1kHz tone deviation from the mobile service monitor and adjust RV6 on the SVR-200 main board for 15% deviation. Turn the RF output from the mobile service monitor off and ensure that the SVR-200 mobile COR and repeater PTT LEDs are off.

6. ***Local mic repeat*** : If the SVR-200 is programmed for local mic repeat, key the mobile local mic and inject an audio signal into the local mic to produce 60% deviation on the service monitor connected to the mobile. Confirm that the SVR-200 repeater PTT LED is on; adjust RV2 for 60% deviation as read on the service monitor connected to the SVR-200. Unkey the mobile radio.

7. ***RF power out*** : Short J3 and adjust RV10 for the operating power output. Open J3.

8. ***PLL Lock Voltage:*** Measure the voltage at the PLL test point adjacent to the VCO in the receive mode. ensure the voltage is between 0.5VDC and 4.5VDC. Short J3; ensure the voltage is between 0.5VDC and 4.5VDC. Open J3

UHF Receiver

1. ***Receiver front end*** : Connect a DC voltmeter to TP1 on the SVR-200 main board. Set the service monitor connected to the SVR-200 to the generate mode, receive frequency with a 1kHz tone and 60% deviation. Adjust the RF output of the monitor for a 1VDC reading at TP1. Adjust BPF1 and BPF2 on the RF board for a maximum reading at TP1.

2. ***Repeater squelch*** : Adjust the service monitor RF output for .5µV. Adjust RV9 on the SVR-200 main board so the repeater COR LED is just on. Decrease the service monitor RF output to .35µV and ensure that the repeater COR LED is off.

3. ***Transmit audio output*** : Adjust the service monitor RF output for 1mV. Turn the CTCSS modulation on and set for 15% deviation. Confirm that the repeater COR, CTCSS and mobile PTT LED's are on. Adjust RV3 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the mobile radio.

4. ***Local Rx audio*** : Connect an 8 ohm speaker to P4 and set RV4 for the desired listening level. Turn off the CTCSS modulation of the service monitor connected to the SVR-200. Confirm that the repeater CTCSS and mobile PTT LED's are off.

5. ***Lock Tone Decode*** : Change the 1kHz tone modulation to the lock tone frequency. Confirm that the PRI LED goes off after approximately .5 seconds.

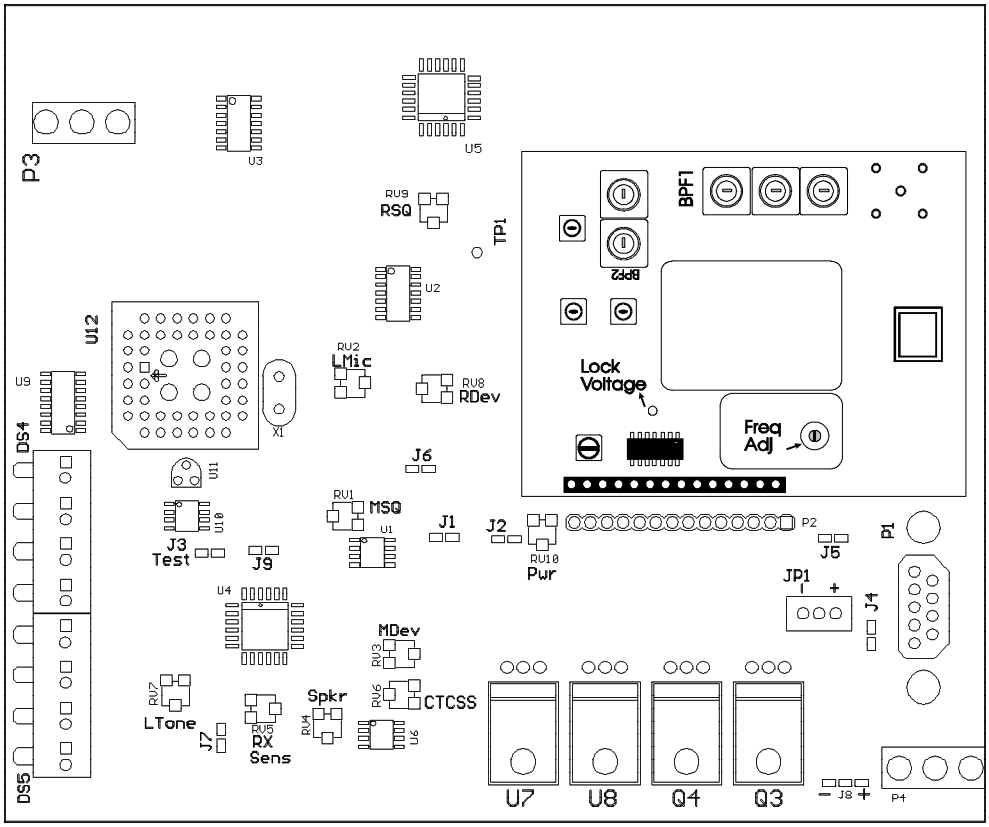

Figure 2

Alignment 800 MHz

Before aligning the SVR-200, ensure that the mobile radio is aligned per the manufacturer's service procedure; Ensure that the SVR-200 is properly programmed and the jumpers are set per the previous section. In order to properly align the SVR-200, you will need two service monitors and the mobile radio that the repeater will be installed with. Refer to figure 3 for alignment points.

Dis-assemble the repeater by removing the two cap screws on the rear panel and the phillips screw on the bottom. Slide the main circuit board out of the housing with the rear panel attached. Connect one service monitor to the SVR-200 BNC jack and the other to the mobile antenna jack. Connect the cable from the mobile radio to the SVR-200; turn on the mobile and activate the SVR-200.

Adjust the repeater squelch control (RV9) so that the repeater COR led is off. Adjust the mobile so that the audio is squelched.

SVR-200 800 MHz T ransmitter

1. ***Transmitter Output*** : Short J3 and adjust RV10 for maximum. Confirm the power out is 1W ±100mW. Adjust RV10 for 100 mW. The SVR-200 case is integral to the voltage regulator heat sink and the unit should not transmit at full power when removed from the case for extended periods.

2. ***Transmitter frequency*** : Adjust the TCXO on the RF board for the transmit frequency ±100 Hz.

3. ***Maximum deviation/lock tone deviation*** : Adjust RV7 (lock tone deviation) for maximum. If the SVR-200 is programmed for sub-audible encode, adjust RV6 (CTCSS) for minimum. Adjust RV8 (repeater deviation) for 95% deviation. Adjust RV7 for 60% deviation. Remove J3.

4. ***Mobile COR*** : Measure the voltage at pin 7 of SVR-200 main connector P1 and record. Set the mobile service monitor for the mobile receive frequency, 1mV RF output and CTCSS modulation of 15%. Measure the voltage again at pin 7 and record. Turn the mobile service monitor off and adjust RV1 on the SVR-200 main board for the halfway point between the two voltage readings as read at pin 3 of U1.

5. ***RX audio sensitivity/CTCSS deviation*** : Set the service monitor connected to the mobile for the mobile receive frequency and 1mV RF output. Modulate the signal generator with a 1kHz tone at 60% deviation and CTCSS tone at 15% deviation. Ensure that the SVR-200 mobile COR and repeater PTT LED's are on. Adjust RV5 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the SVR-200. If programmed for sub-audible encode, remove the 1kHz tone deviation from the mobile service monitor and adjust RV6 on the SVR-200 main board for 15% deviation. Turn the RF output from the mobile service monitor off and ensure that the SVR-200 mobile COR and repeater PTT LEDs are off.

6. ***Local mic repeat*** : If the SVR-200 is programmed for local mic repeat, key the mobile local mic and inject an audio signal into the local mic to produce 60% deviation on the service monitor connected to the mobile. Confirm that the SVR-200 repeater PTT LED is on; adjust RV2 for 60% deviation as read on the service monitor connected to the SVR-200. Unkey the mobile radio.

7. ***RF power out*** : Short J3 and adjust RV10 for the operating power output. Open J3.

800 MHz Receiver

1. ***Receiver front end*** : Connect a DC voltmeter to TP1 on the SVR-200 main board. Set the service monitor connected to the SVR-200 to the generate mode, receive frequency at .5µV RF output with a 1kHz tone and 60% deviation. Confirm a reading of 1VDC ±.2VDC at TP1.

2. ***Repeater squelch*** : Adjust the service monitor RF output for .5µV. Adjust RV9 on the SVR-200 main board so the repeater COR LED is just on. Decrease the service monitor RF output to .25µV and ensure that the repeater COR LED is off.

3. ***Transmit audio output*** : Adjust the service monitor RF output for 1mV. Turn the CTCSS modulation on and set for 15% deviation. Confirm that the repeater COR, CTCSS and mobile PTT LED's are on. Adjust RV3 on the SVR-200 main board for 60% deviation as read on the service monitor connected to the mobile radio.

4. ***Local Rx audio*** : Connect an 8 ohm speaker to P4 and set RV4 for the desired listening level. Turn off the CTCSS modulation of the service monitor connected to the SVR-200. Confirm that the repeater CTCSS and mobile PTT LED's are off.

5. ***Lock Tone Decode*** : Change the 1kHz tone modulation to the lock tone frequency. Confirm that the PRI LED goes off after approximately .5 seconds.

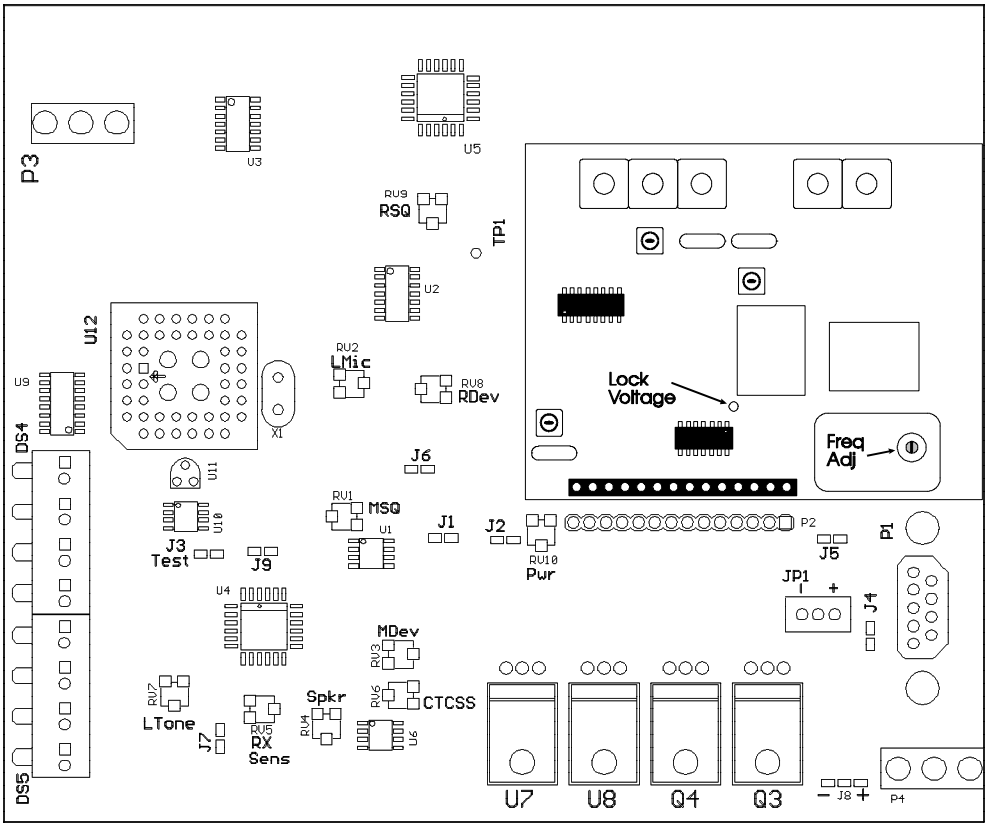

Figure 3