PLL and transmitter adjustment

Required measurement equipment:
30 MHz frequency counter, 50 ohms output power meter,
13.8 V DC power source (minimum 2 A), audio frequency generator, FM deviation meter.

1) Key transmitter on channels 1, 11 and 22, and adjust the PLL by tuning T102, T104, T105, T106 and T107 for maximum output power. (Not that the PLL has been carefully aligned at the factory, and therefore adjustment of these coils should be avoided, if not necessary after repair of the PLL section.)

Modulate the transmitter on channel 11 with 1250 Hz by connecting pin 1 of microphone connector to audio generator (or feed a tone from a speaker into the microphone), and increase the level until maximum deviation is reached. Align T102 for maximum deviation, or, if there are two maximums, adjust to the minimum between them. Check the deviation on channels 1 and 22 to be within 200 Hz from the deviation on channel 11.

2) Adjust frequency to +/− 100 Hz with CT101. Adjust channel 11A frequency to +/− 100 Hz with CT101.

3) Adjust transmitter output with L102, L105 and L106 to maximum on channel 11. If needed, reduce the output power to 4 W by turning the core of L102 clockwise from maximum. Check the output power on channels 1 and 22 to be within 0.2 W compared with channel 11. If not, realign T104 and T105, or the whole PLL as per 1.

4) Adjust the modulation to 90% maximum with RV301. Adjust deviation to maximum 1.8 kHz with RV101.

5) Adjust the power meter of the transceiver by tuning RV102.

Receiver adjustment

Required measurement equipment:
AM/FM signal generator, 13.8 V DC power source (minimum 500 mA).

1) In FM mode on channel 11, adjust to readable audio level with squelch in OFF position: Feed 1000 Hz, 1,2 kHz deviation, and reduce level to 1 uV while aligning T200, T201, T202, T203, T204, T205, T209 and T206 for maximum reading on the RF meter of the transceiver. Adjust T208 for maximum audio power. Adjust T207 so that RF meter reads S2 (if the audio power thereby decreases too much, retune T207 to a higher S-reading).

Check FM sensitivity to be 0.2 uV at 10 dB S + N/N with 1.2 kHz deviation. Re-adjust if sensitivity is more than 0.3 uV. Check AM sensitivity to be 0.5 uV at 10 dB S + N/N with 30% modulation.

2) Check that the audio power is within 4 dB on channels 1, 11 and 22. If not, re-adjust T200, T201, and T202 to get proper balance.

3) Squelch in maximum position: Adjust RV201 so that the squelch is opened by a 100 uV signal from the generator. Squelch in AUTO position: Adjust RV202 so that the squelch opens at 2 uV.

4) Adjust the S-meter to S9 at 100 uV by tuning RV203.

NOTE:
The transceiver has been designed to keep the PTT requirements for harmonics and spurious with above alignment procedure. However, if needed, a spectrum analyser may also be used to check these datas.