

Confidentiality RequestedFunction of RF Semiconductors & Other Active Devices

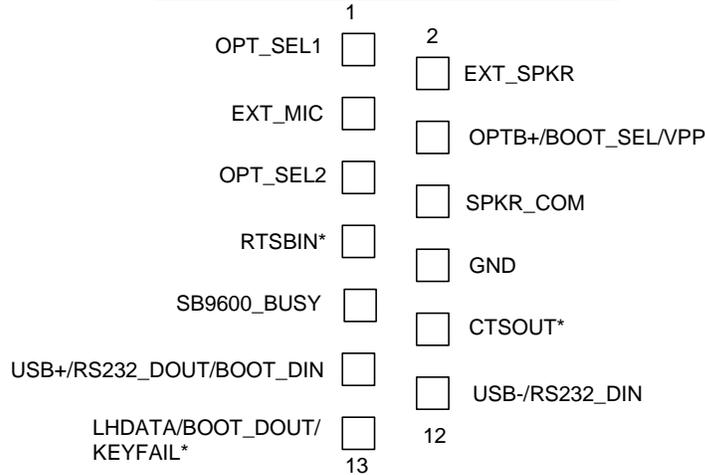
Part Number	Ref. Des.	Application	Description
4802197J83	D101	Tx forward power detector	On Semiconductor MBD330DWT1 dual Schottky diode
4802197J83	D102	Tx reverse power detector	On Semiconductor MBD330DWT1 dual Schottky diode
4802245J68	Y200	Reference oscillator 1.5 PPM	TEW TTS12V2 16.8 MHZ temperature compensated VCXO
4805218N63	Q502	VCO for second LO	Philips BFQ67W RF transistor
4805585Q19	Q401	Receiver LNA	Philips BFS 520 RF transistor
4805656W24	D701	Antennas switch	Microsemi UPP9401 PIN diode
4805656W24	D702	Antennas switch	Microsemi UPP9401 PIN diode
4805793Y01	Q301	VCO, 351.65-396.65 MHz	NEC NE68519 NPN Transistor
4805793Y01	Q302	VCO, 306.65-351.65MHz	NEC NE68519 NPN Transistor
4805793Y01	Q303	VCO, 425-470 MHz	NEC NE68519 NPN Transistor
4805793Y01	Q304	VCO, 380-425 MHz	NEC NE68519 NPN Transistor
5105462G78	U4	Memory	Xicor X25160 Serial EEPROM 16K
5105750U54	U300	VCO buffer amp	Motorola VCO BUFFER IC
5185130C65	U102	TX driver amplifier	Motorola VHF/UHF/800 MHZ LDMOS driver amplifier
5185130C91	U470	RX down converter mixer	Infineon PMB2335 RF MIXER
5185368C19	U105	A to D converter for built-in-test	Texas Instruments TLV1544I QUAD 10 BIT A/D converter IC
5185368C83	U203	TX modulator D to A converter	Analog Devices AD5320BRT 12 BIT DAC
5185633C44	Q107	TX power amplifier	Motorola MODULE 800 MHZ RING
5185765B26	U104	Transmitter ALC	Motorola IC PWR CTRL IN MOS20
5185963A15	U103	Temperature sensor	National Instruments LM50C temperature sensor
5185963A27	U202	Frequency synthesizer	Atmel AT25016 FracN IC
5185963A60	U106	ALC voltage summer	National Instruments LMC7101BIM5X OP AMP
5185963A85	U500	Receiver back-end IC	Analog Devices AD9874 IF digitizing subsystem ABACUS III-LP
5186358E01	U201	Reference oscillator buffer amplifier.	National Instruments CLC450 analog OP-amp
9185130D01	FL200	TX modulation low pass filter	Maxim MAX7414 switched capacitor filter

COMMENTS: The Motorola designators are special code numbers for active devices used in Motorola radios. These devices are either identical or derived from the device family listed under Source, by the manufacturer or are proprietary to Motorola. Service people do not have access to any cross-references or given any information on proprietary devices and are prevented from making unauthorized substitution.

**TUNE-UP PROCEDURE**

The following Tune-up procedure is similar to what will appear in the final service manual enclosed. A universal side connector is required for the following tuning procedure. A list of the universal side connector pins is shown below.

**Universal Side Connector Pins**



**Setup Procedures**

1. Connect radio to the computer using the RS232 or USB cable.
2. Connect radio antenna port to Modulation Analyzer.
3. Power up radio and all equipment.
4. Launch the XTS 5000 radio tuner software and click on the “read device” icon. A window will open with a list of the various parameters that may be tuned on this radio. Double click on the parameter to be tuned and follow the instructions below

**Transmitter Alignment Procedure**

**Reference Oscillator**

1. Click on the “PTT Toggle” button to make the radio transmit.
2. Measure the radio's transmit RF frequency with the service monitor.
3. Adjust the softpot value by manipulating the slider bar, incrementing the “New Softpot Value” spin box, or directly entering the desired value into the “New Softpot Value” spin box until the measured value is as close as possible to the frequency displayed on the screen.
4. Click on the “Program All” button to save to the tuned value to the radio.

### **Transmitter Power**

1. Click on the "PTT Toggle" button to make the radio transmit.
2. Measure the transmit power of the radio with the service monitor.
3. Adjust softpot value by manipulating the slider bar, incrementing the "New Softpot Value" spin box, or directly entering the desired value into the "New Softpot Value" spin box until the required power is indicated on the service monitor.
4. Repeat the above process for all frequencies and power settings (high, mid and low).
5. Click on the "Program All" button to save the tuned values in the radio.

### **Tx Deviation Balance**

1. Click on the "PTT Toggle" button to make the radio transmit.
2. Click on the "PTT Tone: Low" button.
3. Measure the transmitted signal deviation of the radio with a service monitor.
4. Click on the "PTT Tone: High" button.
5. Adjust softpot value by manipulating the slider bar, incrementing the "New Softpot Value" spin box, or directly entering the desired value into the "New Softpot Value" spin box until the measured deviation when using the high tone is as close as possible to that observed when using the low tone.
6. Repeat the above process for all frequencies.
7. Click on the "Program All" button to save the tuned values in the radio.

### **Tx Deviation Limit**

1. Click on the "PTT Toggle" button to make the radio transmit.
2. Measure the transmitted signal deviation of the radio with a service monitor.
3. Adjust softpot value by manipulating the slider bar, incrementing the "New Softpot Value" spin box, or directly entering the desired value into the "New Softpot Value" spin box until the measured deviation is as close as possible to 2.83KHz.
4. Repeat the above process for all frequencies.
5. Click on the "Program All" button to save the tuned values in the radio.

## Receiver Alignments Procedures

### **Front End Filter**

1. Apply an RF signal with no modulation at -95dBm on the current operating frequency.
2. Adjust the softpot value by manipulating the slider bar, incrementing the "New Softpot Value" spin box, or directly entering the desired value into the "New Softpot Value" spin box until the maximum RSSI value is displayed.
3. Repeat the above process for all frequencies.
4. Click on the "Program All" button to save the tuned values in the radio.