

EXHIBIT TYPE: Tune Up Procedure
DATE: November 10, 1998

Equipment Required: F.C.C. Part 68 Registered Telephone Set w/Rotary/Pulse Dialing and modular cable.

Radio Frequency Communications Test Set with the following capabilities:

- RF Power Meter
- RF Frequency Error Meter
- FM Modulation Meter
- Oscilloscope Type Modulation Display

Oscilloscope or high impedance Voltmeter (Do not use a low-cost "VOM").

Procedure: Install six (6) fresh AA Alkaline batteries in the RQT-Control Board. Place jumper PJ102 in the shorted position. Set R219 the Voice Deviation Adjustment fully counter-clockwise.

Connect the telephone set to the RQT's modular jack. Connect the RQT antenna connector to the input of the RF Communications Test Set. Use this instrument per its manufacturer's instructions to make the measurements below.

Dial 978 on the telephone to restore factory default programming information.

Dial 12yyyyyy to set the desired transmit frequency where yyyyyy is the transmit frequency (i.e. dialing 12154570 will set the transmit frequency to 154.570 MHz). The test frequency used for RQT-150 VHF units is 153.100 and for RQT-450 units it is 460.100 MHz. Use these frequencies to align the unit to assure proper operation across the standard frequency range.

Dial 411 to activate the RQT transmitter. Measure the voltage with respect to ground on C323 and adjust the shielded variable inductor L303 on the RQT transmitter for a reading of x.xx Volts for VHF units and y.yy for UHF units.

Activate the transmitter and measure the transmitter power output. This should be between 100 and 120 milli-Watts. There are no adjustments provided to change this power output.

Activate the transmitter and adjust C310 on the RQT transmitter module through zero frequency error and then as close as possible to zero frequency error with respect to the programmed transmit frequency.

Dial 22071 and then 411 on the telephone. The RQT transmitter will activate with a 071 code Digital Quiet Call (DQC) sub-audible coded squelch signal applied as modulation. Repeatedly adjust R212 on the RQT Control Board for +/- 1000 Hz deviation and R310 on the RQT transmitter board for the best digital waveshape as viewed on the RF Test Set's oscilloscope display.

Dial 311 and then after the 3 cueing beeps, continuously whistle or speak very loudly into the telephone mouthpiece until the RQT beeps again (after about 8 seconds). Dial 411 to activate the RQT transmitter and playback what you just recorded. Adjust R219 on the RQT Control Board for +/- 5 KHz composite DQC and voice deviation.

Important: For F.C.C. station licenses that require 11K0F3E modulation or systems using +/- 2.5 KHz peak transmitter deviation, remove jumper PJ102. Dial 411 and verify that the peak deviation is within this limit.

Radio tune-up is complete. Enter customer specific information as described in the Owner's Manual.

< end >

EXHIBIT TYPE: Semiconductor Function List
DATE: November 10, 1998

For the RQT Control Board assembly the following list identifies all semiconductors and their functions.

Semiconductor Function List
RITRON RQT Series Audio / Control Board

Schematic Reference Designator	Ritron Part Number	Manufacturer	Manufacturer's Part Number	Function
CR101	04810003	Motorola	1N4001	Reverse Protection
CR102	04810019	Motorola	1N5817	Reverse Protection
CR103	48A1005C	Motorola	MMBD7000	Voltage Drop
CR104	48A1005C	Motorola	MMBD7000	Voltage Drop
CR105	04810003	Motorola	1N4001	Diode Switch, Output Isolation
CR106	04820013	Motorola	1N5240	Voltage Reference
CR601	48A1005C	Motorola	MMBD7000	External Overvoltage Shunt
CR602	48A1005C	Motorola	MMBD7000	External Overvoltage Shunt
Q101	4801001Q	Motorola	MMBT-5088	Power Fail Switch
Q102	4801002A	Motorola	MMBT-3906	Telephone Enable
Q103	4801002A	Motorola	MMBT-3906	Power Supply Switch
Q104	4801001Q	Motorola	MMBT-5088	Telephone Enable Inverter
Q105	4801002A	Motorola	MMBT-3906	Off Hook Switch
Q106	4801001Q	Motorola	MMBT-5088	Off Hook Inverter
Q107	48180003	Motorola	BCP68T1	Series Pass Transistor
IC100	31460002	Motorola	MC68HC705P6CDW	Microcontroller, Programmed
IC101	31040002	Motorola	MC78LC50NTR	5 Volt Regulator, Micropower
IC102	31130002	National	CD4060BCM	Counter / Divider
IC103	31010016	Motorola	MC33202D	Dual Op Amp
IC104	310E0T5C	N/A	N/A	Temperature Sensor
IC105	31210001	Atmel	X24C01A.SC	EEPROM
IC106	31180001	ISD	ISD1420SI	Voice Record / Playback
IC107	31140001	Fairchild	NC7S02M5X	NOR Gate

EXHIBIT TYPE: Semiconductor Function List

FCC PART: 2.983 (d) (6)

DATE: November 10, 1998

For the RQT-450 Transmitter Board assembly the following list identifies all semiconductors and their functions.

Semiconductor Function List - RITRON RQT-450 Transmitter

Schematic Reference Designator	Ritron Part Number	Manufacturer	Manufacturer's Part Number	Function
CR301	04810015	Motorola	MV-2115	Temperature Compensation
CR302	48A1005C	Motorola	MMBD-7000	Temperature Compensation
CR303	48A1005G	Motorola	MMBD-352	Rectifier
CR304	48B1008W	Motorola	MMBZ-5245B	Charge Pump Voltage
CR305	48C1004E	Motorola	MMBV-105G	VCO Modulator
CR307	48C1004E	Motorola	MMBV-105G	VCO Loop Control
CR310	04810001	Motorola	1N4148	Voltage Regulator Feedback
Q301	4841006B	Motorola	MMBT-5484	Voltage Multiplier
Q303	4801002A	Motorola	MMBT-3906	Charge Pump
Q304	4801001Q	Motorola	MMBT-5088	Charge Pump
Q307	4821007Y	Motorola	MMBR-941	VCO Oscillator
Q308	4821007A	Motorola	MMBR-901	VCO Buffer Amplifier
Q309	4821007A	Motorola	MMBR-901	Buffer Amplifier
Q311	48220001	Motorola	MRF-5812	RF Final Amplifier
Q312	4801001Q	Motorola	MMBT-5088	Switched TX Voltage Control
Q313	48180001	Motorola	BCP-69	Switched TX Voltage
Q314	4801001Q	Motorola	MMBT-5088	RX Strobe Voltage Control
Q315	4801002A	Motorola	MMBT-3906	RX Strobe Voltage
IC301	31330001	Fujitsu	MB-1504	UHF Synthesizer
IC302	03131012	Motorola	MC78L05CP	+5VDC Regulator

EXHIBIT TYPE: Operating Voltages Chart
FCC PART: 2.983 (d) (6)

RQT-450 Transmitter Voltage Charts

LEGEND: GND - True Circuit Ground NC - No Connection

(Measurements taken with a 13.5 VDC supply connected to external input pins)

Device	Pin	Measurements		Function
		Transmit	Standby	
Q301	D	9.40	0.00	Voltage Multiplier
	S	0.00	0.00	
	G	GND	GND	
Q303	E	14.40	0.00	Charge Source For VCO
	B	14.40	0.00	
	C	5.20	0.00	
Q304	E	0.00	0.00	Charge Drain For VCO
	B	0.00	0.00	
	C	5.20	0.00	
Q307	E	1.50	0.00	VCO Oscillator
	B	2.00	0.00	
	C	4.40	0.00	
Q308	E	GND	GND	VCO Buffer / Amplifier
	B	0.70	0.00	
	C	4.40	0.00	
Q309	E	GND	GND	VCO Output Buffer
	B	0.70	0.00	
	C	3.80	0.00	
Q311	E	GND	GND	Final Amplifier
	B	0.70	0.00	
	C	5.00	0.00	
Q312	E	3.50	0.00	TX Voltage Switch Driver
	B	4.00	0.00	
	C	8.50	9.50	
Q313	E	9.50	9.50	TX Voltage Switch
	B	8.50	9.50	
	C	9.50	0.00	
Q314	E	4.20	0.00	Power Strobe Switch Driver
	B	5.00	0.00	
	C	8.50	9.50	
Q315	E	9.50	9.50	Power Strobe Switch
	B	8.70	9.50	
	C	9.40	0.00	

EXHIBIT TYPE: Operating Voltages Chart

FCC PART: 2.983 (d) (6)

RQT-450 Transmitter Voltage Charts

LEGEND: GND - True Circuit Ground
NC - No Connection

(Measurements taken with a 13.5 VDC supply connected to external input pins)

Integrated Circuit Voltage Chart

Device	Pin	Measurements		Function
		Transmit	Standby	
IC301	1	1.90	0.00	UHF Synthesizer
	2	1.80	0.00	
	3	NC	NC	
	4	4.40	0.00	
	5	NC	NC	
	6	GND	GND	
	7	4.40	0.00	
	8	3.10	0.00	
	9	0.00	0.00	
	10	0.00	0.00	
	11	0.00	0.00	
	12	NC	NC	
	13	NC	NC	
	14	NC	NC	
	15	14.20	0.00	
	16	0.00	0.00	
IC302	1	5.00	0.00	+5 Volt Regulator
	2	GND	GND	
	3	7.50	0.00	

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