

TYPE OF EXHIBIT:	TUNE UP PROCEDURE AND PARTS LIST
FCC PART:	2.1033 (c)(8, 9)
MANUFACTURER:	RITRON, INC. 505 West Carmel Drive Carmel, IN 46032
MODEL:	JMX-141
TYPE OF UNIT:	VHF-FM Handheld Transceiver
FCC ID:	AIERIT14-141
DATE:	July 5, 2000

Included is an excerpt from the draft of the Maintenance and Operating Manual for RITRON Model JMX-141 VHF-FM Handheld Transceiver.

Specifically, this manual includes a technical description of the JMX-141 sufficient to establish compliance with the technical standards of the applicable rule part(s).

This includes, but is not limited to, the following items required under FCC Part 2.1033 (c):

- (2) FCC Identifier
- (8) DC voltages
- (9) Tune up procedure - no transmitter RF power tuning needed.

JMX-141 ALIGNMENT PROCEDURE

An authorized RF service technician must perform test and alignment of the JMX-141. Do not attempt service of the JMX-141 if not completely familiar with frequency synthesized radio operation. The JMX-141 can operate in either Narrow Band (2.5 KHz deviation) or Wide Band (5 KHz deviation) systems. No receiver or transmitter alignment is necessary. Only four manual adjustments are possible.

RECOMMENDED TEST EQUIPMENT

- | | |
|--|--|
| 1) 0 to +15 VDC, 2A current-limited power supply | 3) Oscilloscope (to 20 MHz) |
| 2) RF Communications Test Set (to 470 MHz) with:
- FM Deviation Meter
- RF Wattmeter
- Frequency Counter (to 470 MHz)
- SINAD Measuring Device | 4) VTVM or DMM
5) RITRON PC Programming Kit
6) RITRON 141-SRVBD Test Module |

RADIO PREPARATION

- 1) Remove the JMX-141 from the case. See assembly diagram for assistance.
- 2) Install the RITRON **141-SRVBD** test assembly and serial programming cable as follows:
 - a) Remove the JMX-141 antenna from the radio.
 - b) Plug the **141-SRVBD** into the 2.5 mm and 3.5 mm jacks on top of the radio.
 - c) Screw the **141-SRVBD** antenna nut fully into the JMX-141 antenna connector.
 - d) Set the jumper on the **141-SRVBD** assembly to the "VHF" position.
 - e) Connect the serial programming cable from the PC computer (with the RITRON PC programming kit software installed) to the **141-SRVBD** test assembly
- 3) Connect the FM communications test set to the BNC connector on the **141-SRVBD** test assembly.
- 4) Apply power (7.5 VDC) and turn on the radio to place it in operating mode.

JMX-141 ALIGNMENT PROCEDURE

REFERENCE FREQUENCY

- 1) Make sure that the unit has been switched on and is at room temperature (approximately +25° C)
- 2) Set the RF communications test set to the transmit mode.
- 3) Press the PTT button to transmit
- 4) Transmitter frequency error should be less than +/- 200 Hz.
- 5) Adjust the trimmer cap in the rectangular reference frequency oscillator YF301 if not within 4).

JMX-141 ALIGNMENT PROCEDURE

TRANSMITTER VOICE DEVIATION

Transmitter voice deviation has been set at the factory and should not require adjustment. If adjustment is needed perform the following.

- 1) Set the RF communications test set to the transmit mode.
- 2) Set audio filtering from <20 Hz to 3kHz.
- 3) Set to FM demod with +/- peak deviation.
- 4) Select channel with no CTCSS tone programmed.
- 5) Connect audio source to 2.5 mm microphone input set to 1 kHz and 100 mV RMS .
- 6) The JMX-141 should start transmitting when a 2.5 mm microphone cable plug is connected to the audio generator with a DC path to ground. An attenuator pad can be inserted if a DC path to ground is not present in the generator. Adjust generator accordingly.
- 7) Adjust R237 for peak deviation of 2000+/-50 Hz on narrow band channels or +/-4000+/-100 Hz on wide band.
- 8) Stop transmitting by disconnecting cable.
- 9) Check other channels as needed.

NOTE: CTCSS tone deviation is automatically set to be within 500 to 1000 Hz after this adjustment on wide band tone enabled channels. Maximum voice and tone deviation on CTCSS wide band channels will then be 4500 to 5000 Hz. Narrow band tone deviation will be 250 to 500 Hz with overall deviation of 2250 to 2500 Hz.

RECEIVER SQUELCH LEVEL

The JMX-141 receiver is factory tuned for a frequency range of 148-161 or 161-174 MHz. The JMX-141 receiver is configured from the factory for narrow band operation. The 43.650 MHz first IF has a +/-6.0 kHz bandwidth. The 450 kHz second IF has a minimum +/- 4.5 kHz 6 dB bandwidth. With a +/-1.5 ppm reference oscillator the first LO frequency error will be less than 300 Hz. Acceptable wideband deviation (+/-5 kHz) demodulation occurs provided the transmitter has a comparable stability. When a channel is set to narrow band the hardware in the receiver stays the same but the CTCSS decode algorithm compensates for the lower deviation.

- 1) Select a channel.
- 2) Adjust squelch pot R131 fully clockwise.
- 3) Set communications test set generator to yield 12 dB SINAD with +/-1.5 kHz deviation with a 1 kHz tone on desired frequency.
- 4) Adjust squelch pot R131 fully counter clockwise.
- 5) Turn R131 slowly clockwise until squelch opens.
- 6) Reduce generator level until radio squelches.
- 7) Increase generator level until audio opens. Confirm squelch hysteresis is 2- 4 dB.

NOTE: Under +/-3.0 kHz deviation the squelch opening level will be around 2 dB higher. The squelch will open at lower levels in very cold temperatures. If squelch opens with no signal under extremely cold temperatures place JMX-141 inside your coat and warm it up a bit. If continued use in very cold temperatures will be happening adjust squelch slightly higher.

SST-444 VOLTAGE CHART

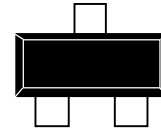
Measurement Conditions

Supply voltage at 7.5 VDC, radio in operating mode, volume control at minimum, power strobe enabled, transmitter set for full power.

IMPORTANT: Because the JMX-141 portable is constructed with grounding sub-planes, use a system ground in the same proximity as the circuit being measured. All readings indicated as GND are true system ground.

KEY: All measurements are in VDC unless indicated otherwise.

NC = No connection
GND = Ground
* = Voltage is strobed in Power Saver mode
→ = See note in right column



SOT-

JMX-141 VOLTAGES

DEVICE	PIN	Transmit	Receive	Standby	DESCRIPTION
CR101	1	0.1	0.9	0.65	squelch noise rectifier
	2	GND	GND	GND	
	3	0.15	0.45	0.3	
CR102	C	7.5	7.5	7.5	Voltage clamp
	A	0.0	0.0	0.0	
CR301	C	7.5	7.5	7.5	Over voltage protection
	A	GND	GND	GND	
CR302	C	7.5	7.5	7.5	Charging rectification
	A	1.4	4.65	4.65	
CR303	1	0.7	4.65	4.65	PTT switching
	2	1.4	4.65	4.65	
	3	0.79	4.9	4.9	
CR304	1	NC	NC	NC	VolUp voltage clamp
	2	6.7	6.7	6.7	
	3	4.9	4.9	4.9	
CR305	1	0	0	0	Serial port Voltage clamp
	2	5.0	5.0	5.0	
	3	0.25	0.25	0.25	

JMX-141 VOLTAGE CHART

DEVICE	PIN	Transmit	Receive	Standby	DESCRIPTION
CR401	C	2.2	2.2	2.2	Mod Biasing
	A	GND	GND	GND	
CR402	C	4.9	4.9	4.9	Mod compensation biasing → 1.0 – 4.5 VDC TX VCO tuning voltage
	A	→	→	→	
CR403	C	→	→	→	→ 1.0 – 4.5 VDC TX VCO tuning voltage
	A	0	0	0	
CR404	C	→	→	→	→ 1.0 – 4.5 VDC TX VCO tuning voltage
	A	GND	GND	GND	
CR405	C	→	→	→	→ 1.0 – 4.5 VDC RX VCO tuning voltage
	A	0	0	0	
CR406	C	→	→	→	→ 1.0 – 4.5 VDC RX VCO tuning voltage
	A	GND	GND	GND	
IC101	1	0.0	4.7	*	RX FM-IF subsystem
	2	NC	4.2	NC	
	3	0.0	4.4	*	
	4	0.0	4.7	*	
	5	0.0	4.3	*	
	6	0.0	4.3	*	
	7	0.0	4.3	*	
	8	0.0	4.7	*	
	9	0.0	2.1	*	
	10	0.0	0.75	*	
	11	0.0	1.0	*	
	12	0.0	0.9	*	
	13	NC	0	*	
	14	0.0	4.9	*	
	15	GND	GND	GND	
	16	0.0	1.7	*	
IC102	1	*	2	*	RX audio filter
	2	*	2	*	
	3	*	1.9	*	
	4	*	4.75	*	
	5	*	2	*	
	6	*	2	*	
	7	*	2	*	
	8	*	2	*	
	9	*	2	*	
	10	*	2	*	
	11	GND	GND	GND	
	12	*	2	*	
	13	*	2	*	
	14	*	2	*	
IC103	1	*	2	*	audio gain controller
	2	*	2	*	
	3	*	2	*	
	4	*	2	*	
	5	*	→	*	
	6	*	→	*	
	7	*	2	*	
					→ 0 to set gain weight, 5=off
					→ 0 to set gain weight, 5=off

	8	GND	GND	GND	
	9	*	2	*	
	10	*	2	*	
	11	*	2	*	
	12	*	→	*	→ 0 to set gain weight, 5=off
	13	*	→	*	→ 0 to set gain weight, 5=off
	14	*	2	*	
	15	*	2	*	
	16	*	4.8	*	
IC104	1	*	1.3	*	audio power amp
	2	*	0	*	
	3	*	0	*	
	4	*	GND	*	
	5	*	3.7	*	
	6	*	7.5	*	
	7	*	3.7	*	
	8	*	1.3	*	
IC201	1	2	2	*	TX audio filter
	2	2	2	*	
	3	2	2	*	
	4	4.9	4.9	*	
	5	2	2	*	
	6	2	2	*	
	7	2	2	*	
	8	2	2	*	
	9	2	2	*	
	10	2	2	*	
	11	GND	GND	GND	
	12	2	2	*	
	13	2	2	*	
	14	2	2	*	
IC301	1	7.5	7.5	*	5 V regulator
	2	GND	GND	*	
	3	7.5	7.5	*	
	4	NC	NC	*	
	5	5.0	5.0	*	
IC302	1	5.0	0.0	0.0	Microcontroller
	2	5.0	5.0	5.0	
	3	NC	NC	NC	
	4	5.0	5.0	5.0	
	5	GND	GND	GND	
	6	NC	NC	NC	
	7	2.1	2.2	2.1	
	8	NC	NC	NC	
	9	5	5	5	
	10	5	5	5	
	11	0	5	*	
	12	5	0	0	
	13	*	*	*	
	14	0	5	0	
	15	*	*	*	
	16	→	→	→	
	17	*	*	*	
	18	5	5	5	
	19	NC	NC	NC	
	20	5.0	5.0	5.0	
	21	GND	GND	GND	

→ 0 when gain bit is set, 5=off

	22	NC	NC	NC	
	23	5	5	5	
	24	→	→	→	→ 0 when gain bit is set, 5=off
	25	→	→	→	→ 0 when gain bit is set, 5=off
	26	→	→	→	→ 0 when gain bit is set, 5=off
	27	2	2	2	
	28	→	→	→	→ 3v nominal, 40% of VBATT
	29	5	5	5	
	30	0.2	0.2	0.2	
	31	0.2	0.2	0.2	
	32	4.6	0	*	
IC401	1	→	→	→	→ 3.6 MHz clock signal
	2	5.0	5.0	*	Frequency synthesizer
	3	NC	NC	NC	
	4	NC	NC	NC	
	5	5.0	5.0	5.0	
	6	→	→	*	→ 1.0 – 4.5 VDC VCO tuning voltage
	7	GND	GND	GND	
	8	2.2	2.2	*	
	9	NC	NC	NC	
	10	2.4	2.4	*	
	11	2.4	2.4	*	
	12	5.0	5.0	*	
	13	NC	NC	NC	
	14	5.0	5.0	5.0	
	15	0.0	0.0	*	
	16	NC	NC	NC	
	17	5.0	5.0	5.0	
	18	*	*	*	
	19	*	*	*	
	20	2.2 →	2.2 →	*	→ 14.4 MHz reference signal

JMX-141 VOLTAGE CHART

DEVICE	PIN	Transmit	Receive	Standby	DESCRIPTION
Q 101	1	0	.7	*	RX RF amplifier
	2	GND	GND	GND	
	3	0.0	2.7	*	
Q 102	1	0.0	4.7	*	RX mixer
	2	0.0	2.1	*	
	3	0.0	0	*	
Q 103	1	0.0	0.7	*	RX IF amplifier
	2	0.0	0.0	*	
	3	0.0	3.9	*	
Q 104	1	5	4.2	*	RX pass switch
	2	5	5.0	*	
	3	2	4.8	*	
Q 105	1	0.0	5	*	RX switch
	2	GND	GND	GND	
	3	5	0	*	
Q 106	1	0.0	1.4	*	RX 2 nd LO multiplier/amp
	2	0	1.1	*	
	3	2	4.3	*	
Q 107	1	0	6.8	*	audio amp pass switch
	2	0	7.5	*	
	3	0	7.5	*	
Q 108	1	0.0	5	*	audio amp switch
	2	GND	GND	GND	
	3	0	0	*	
Q 109	1	0	0.7	*	1 st LO buffer amp
	2	0	0.0	*	
	3	0	3.2	*	
Q 201	1	0	0.65	0	TX buffer 1
	2	0	GND	0	
	3	0	5.9	0	
Q 202	E	GND	0.0	0.0	TX buffer 2
	B	.4	0.0	0.0	
	C	6.9	0	0	
Q 203	E	-0.1	0.0	0.0	TX RF final amplifier
	B	GND	GND	GND	
	C	7.5	7.5	7.5	

SST-444 VOLTAGE CHART

DEVICE	PIN	Transmit	Receive	Standby	DESCRIPTION
Q 301	1	4.3	5	*	PTT buffer
	2	5	5	*	
	3	5	0	*	
Q 302	1	4.3	4.3	4.3	ON pass switch
	2	5.0	5.0	5.0	
	3	5.0	5	5	
Q 303	1	5.0	5.0	5.0	ON buffer amp
	2	GND	GND	GND	
	3	0	0	0	
Q 304	1	5.0	0	0	TX ON buffer amp
	2	GND	GND	GND	
	3	0	7.5	7.5	
Q 305	1	6.8	7.5	7.5	TX strobe
	2	7.5	7.5	7.5	
	3	7.3	0	0	
Q 401	1	1	1	*	VCO buffer amplifier
	2	0.25	0.25	*	
	3	4.1	4.1	*	
Q 402	1	0.7	0.7	*	VCO buffer amplifier switch
	2	GND	GND	GND	
	3	0.1	0.1	*	
Q 403	1	4.9	4.9	4.9	super filter
	2	4.1	4.1	4.1	
	3	5	5	5	
Q 404	1	4.1	4.1	*	TX oscillator
	2	1.3	3.3	*	
	3	GND	GND	GND	
Q 405	1	0.7	0	*	TX oscillator ON
	2	GND	GND	GND	
	3	0.1	3.2	*	
Q 406	1	4.1	4.1	*	RX oscillator
	2	3.3	1.3	*	
	3	GND	GND	GND	
Q 407	1	0	0.7	*	RX oscillator ON
	2	GND	GND	GND	
	3	3.2	0.1	*	
Q 408	1	5	5	*	RX oscillator ON
	2	5	5	*	
	3	→	→	*	

→40% of battery voltage

JMX-141 SCHEMATIC REFERENCE PARTS LIST

NOTE: This parts list reflects the most current component values. If a component value given in the schematic differs from this list, the parts list should be considered the most current.

Last Update: July 27, 2000

Ref	Ritron PN	Description	X	Y	Theta	Loc
CAPACITORS						
C101	15110470	47PF NPO 0805 50V CHIP	588	-569	0	Bottom
C102	15110560	56PF NPO 0805 50V CHIP CAPACITOR	527	-489	0	Bottom
C103	15110101	100PF NPO 0805 50V CHIP CAP	408	-547	270	Bottom
C104	15110560	56PF NPO 0805 50V CHIP CAPACITOR	447	-413	0	Bottom
C105	15110470	47PF NPO 0805 50V CHIP	225	-366	90	Top
C106	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	364	-583	0	Top
C107	15110330	33PF NPO 0805 50V CHIP	127	-458	180	Bottom
C108	15110680	68PF NPO 0805 50V CHIP CAPACITOR	272	-659	0	Top
C109	15110101	100PF NPO 0805 50V CHIP CAP	420	-659	0	Top
C110	15110220	22PF NPO 0805 50V CHIP CAP	380	-765	270	Top
C111	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	530	-129	270	Top
C112	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	184	-135	0	Bottom
C113	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	211	-114	270	Bottom
C114	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	441	-101	0	Bottom
C115	15180470	47pF CAPACITOR, CHIP, 0402, COG, 5%	186	-114	270	Top
C116	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	286	-171	180	Top
C118	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	243	-215	270	Bottom
C119	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	432	-185	270	Top
C120	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	30	-301	90	Bottom
C121	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	193	-313	270	Bottom
C122	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	84	-287	180	Bottom
C123	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	628	-227	270	Top
C124	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	226	-262	90	Bottom
C125	15180470	47pF CAPACITOR, CHIP, 0402, COG, 5%	171	-275	270	Bottom
C126	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	299	-279	270	Bottom
C127	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	380	-279	270	Bottom
C128	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	151	-297	180	Top
C129	152B6106	10uF 10V 3.4 X 2.8 CHIP TANTALUM	91	-309	0	Top
C130	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	374	-240	90	Top
C131	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	417	-227	180	Top
C132	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	288	-227	90	Top
C133	152B6106	10uF 10V 3.4 X 2.8 CHIP TANTALUM	182	-241	0	Top
C134	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	514	-252	0	Top
C136	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	391	-249	0	Bottom
C137	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	445	-207	90	Top
C138	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	548	-229	270	Top
C139	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	585	-197	270	Top
C140	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	976	-236	270	Top
C141	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1033	-249	270	Top
C142	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	812	-249	270	Top
C143	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	521	-252	180	Bottom
C144	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1084	-236	0	Top
C145	152BD226	CAP,22 UF, 10V, 3.4X2.8 B TANT	695	-233	270	Bottom
C146	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	495	-218	90	Bottom
C147	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	507	-174	90	Bottom
C148	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	609	-177	180	Bottom
C149	152B6106	10uF 10V 3.4 X 2.8 CHIP TANTALUM	780	-131	270	Bottom
C150	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	689	-103	90	Bottom
C151	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1091	-102	90	Bottom
C152	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	891	-140	270	Bottom
C153	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	994	-907	90	Bottom
C154	1503212	220MF 10V ELT CAPACITOR, 5mm HEIGHT	855	-896	180	Top
C155	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	729	-179	90	Bottom
C156	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	299	-253	90	Bottom
C157	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	444	-121	0	Bottom

C158	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	240	-144	0	Bottom
C201	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1700	-144	90	Top
C202	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1626	-145	90	Top
C203	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1499	-150	0	Bottom
C204	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1767	-142	270	Top
C206	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1251	-124	90	Bottom
C207	15180390	39pF CAPACITOR, CHIP, 0402, COG, 5%	1251	-115	90	Bottom
C208	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1328	-114	0	Top
C209	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1234	-104	90	Bottom
C210	151102A2	2.2PF NPO 0805 50V CHIP CAP	-193	-891	0	Top
C211	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1130	-639	90	Top
C212	15110471	470PF NPO 0805 50V CHIP	1781	-610	180	Top
C213	15110220	22PF NPO 0805 50V CHIP CAP	1208	-783	270	Bottom
C214	15110471	470PF NPO 0805 50V CHIP	1155	20.1618		Top
C216	15110471	470PF NPO 0805 50V CHIP	994	-700	90	Bottom
C217	151106A8	6.8PF NPO 0805 50V CHIP	1041	-474	0	Bottom
C218	15110470	47PF NPO 0805 50V CHIP	1075	-700	270	Bottom
C219	15110470	47PF NPO 0805 50V CHIP	823	-647	270	Bottom
C220	15110150	15PF 0805 NPO 50V CHIP CAP	1074	-320	270	Bottom
C221	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	533	-410	180	Bottom
C222	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	1059	-399	270	Bottom
C223	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1092	-411	0	Bottom
C224	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	990	-411	270	Bottom
C225	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	1139	-430	0	Bottom
C227	152BD226	CAP,22 UF, 10V, 3.4X2.8 B TANT	1650	-428	90	Top
C228	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1465	-432	90	Bottom
C229	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1664	-429	270	Bottom
C230	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1593	-405	0	Bottom
C231	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1447	-410	270	Bottom
C232	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1503	-387	0	Bottom
C233	152BD226	CAP,22 UF, 10V, 3.4X2.8 B TANT	1379	-430	180	Top
C234	151804A7	4.7pF CAPACITOR, CHIP, 0402, COG, 5%	1623	-135	0	Bottom
C235	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1593	-411	180	Bottom
C236	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%				
C237	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%				
C301	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	904	-392	0	Top
C302	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1284	-195	90	Bottom
C303	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	520	-283	270	Top
C304	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	165	-266	0	Top
C305	152A8105	1MFD 16V ~3.2 X 1.6~ CHIP TANTALUM	1315	-157	270	Bottom
C306	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1764	-157	180	Bottom
C307	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1437	-180	90	Top
C308	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1569	-186	90	Top
C309	152B6106	10uF 10V 3.4 X 2.8 CHIP TANTALUM	701	-154	270	Bottom
C310	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	839	-154	90	Bottom
C311	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1466	-204	90	Bottom
C312	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1414	-204	90	Bottom
C313	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1365	-204	90	Bottom
C314	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1319	-204	90	Bottom
C315	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1351	-211	0	Bottom
C316	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1351	-215	0	Bottom
C317	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	193	-170	90	Top
C318	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1360	-222	180	Bottom
C319	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1190	-229	180	Bottom
C320	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1351	-229	0	Bottom
C321	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	577	-356	0	Bottom
C322	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	736	-266	0	Top
C323	152BD226	CAP,22 UF, 10V, 3.4X2.8 B TANT	953	-126	180	Bottom
C324	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	963	-129	270	Top
C325	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1521	-205	90	Bottom
C326	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1576	-204	90	Bottom
C327	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1618	-204	90	Bottom
C328	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1632	-212	180	Bottom
C329	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1643	-239	270	Bottom
C330	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1685	-239	270	Bottom
C331	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1632	-216	180	Bottom
C332	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1602	-239	270	Bottom
C333	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1314	-237	270	Bottom
C334	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1517	-239	270	Bottom

C335	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1372	-237	270	Bottom
C336	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1427	-238	90	Bottom
C337	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1476	-239	270	Bottom
C338	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1559	-239	270	Bottom
C339	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1803	-218	270	Bottom
C340	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1798	-489	90	Bottom
C341	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1648	-220	0	Bottom
C342	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1655	-248	270	Top
C343	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1217	-238	90	Bottom
C344	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1794	-352	0	Bottom
C345	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1760	-191	270	Top
C346	15110471	470PF NPO 0805 50V CHIP	1766	-168	0	Bottom
C347	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1792	-128	0	Bottom
C401	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1636	-297	0	Top
C402	15110100	10PF NPO 0805 50V CHIP CAP	1700	-306	270	Top
C403	15110220	22PF NPO 0805 50V CHIP CAP	1616	-306	270	Top
C404	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1350	-320	270	Top
C406	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1454	-346	270	Top
C408	152BD226	CAP,22 UF, 10V, 3.4X2.8 B TANT	799	-369	180	Top
C409	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	842	-276	0	Top
C410	15180150	15pF CAPACITOR, CHIP, 0402, COG, 5%	1377	-381	270	Top
C411	151801A0	1.0pF CAPACITOR, CHIP, 0402, COG, 5%	1420	-372	0	Top
C412	15110560	56PF NPO 0805 50V CHIP CAPACITOR	1277	-375	180	Top
C413	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	958	-375	180	Top
C414	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1756	-349	270	Top
C415	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1729	-333	270	Top
C416	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1566	-361	270	Top
C417	151804A7	4.7pF CAPACITOR, CHIP, 0402, COG, 5%	1678	-350	270	Top
C418	15110220	22PF NPO 0805 50V CHIP CAP	1634	-377	270	Top
C419	15110220	22PF NPO 0805 50V CHIP CAP	1309	-350	180	Top
C420	15111333	.033MFD X7R 0805 50V CHIP CAP	976	-361	270	Top
C421	15111333	.033MFD X7R 0805 50V CHIP CAP	867	-340	0	Top
C422	152AB334	.33MF 35V ~3.2X1.6~ CHIP TANTALUM	884	-327	90	Top
C423	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1183	-302	0	Top
C424	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1190	-280	90	Top
C425	15179103	.01UF X7R 0603 25V CHIP CAPACITOR	1668	-291	0	Top
C426	15119104	.1uF X7R 0805 25V CERAMIC CHIP CAP	1624	-268	0	Top
C427	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	956	-276	180	Top
C428	151801A0	1.0pF CAPACITOR, CHIP, 0402, COG, 5%	1270	-313	180	Top
C429	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	1050	-342	90	Top
C430	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1339	70.1518	0	Top
C431	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	759	-296	0	Top
C432	151804A7	4.7pF CAPACITOR, CHIP, 0402, COG, 5%	1162	-319	270	Top
C433	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1256	-317	0	Top
C434	15180100	10pF CAPACITOR, CHIP, 0402, COG, 5%	1162	-311	90	Top
C435	15181102	.001uF CAPACITOR, CHIP, 0402, X7R, 5/10%	736	-287	270	Top
C436	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	917	-311	0	Top
C437	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	1718	-269	90	Top
C438	151801A0	1.0pF CAPACITOR, CHIP, 0402, COG, 5%	1256	-323	0	Top
C439	15181331	330pF CAPACITOR, CHIP, 0402, X7R, 5/10%	321	-361	180	Bottom

DIODES:

CR101	48A1005C	MMBD7000, DUAL DIODES IN SERIES, SOT-23	329	-212	270	Top
CR102	48AA01SA	DIODE, 1A, 50V, SMT, D0214AC CASE	818	-113	180	Top
CR202	48DB0003	PIN DIODE, SOD-323, BA782S or BA591	1005	-775	270	Top
CR203	48DB0003	PIN DIODE, SOD-323, BA782S or BA591	540	-651	180	Bottom
CR301	48B61012	1N4742A ZENER DIODE, 12V 1W DL-41 MELF	1105	-415	90	Top
CR302	48AA01SA	DIODE, 1A, 50V, SMT, D0214AC CASE	673	-410	90	Top
CR303	48A100A3	MMBD2835, DUAL DIODES, COM ANODE, SOT-23	356	-408	90	Bottom
CR304	48A1005C	MMBD7000, DUAL DIODES IN SERIES, SOT-23	1232	-172	0	Bottom
CR305	48A1005C	MMBD7000, DUAL DIODES IN SERIES, SOT-23	1345	-176	90	Top
CR401	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1521	-377	90	Top
CR402	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1093	-375	180	Top
CR403	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1162	-358	0	Top
CR404	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1162	-366	0	Top
CR405	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1314	-338	90	Top
CR406	48CB0001	VARACTOR DIODE, SOD-323, BB729S, BB153	1404	5	9.929	Top

WIRE JUMPER:

F301	6000040	WIRE; #40AWG TINNED BUS (INCHES)	866	-412	270	Bottom
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INTEGRATED CIRCUITS:

IC101	31030001	MC3361BD SO-16 IF SUBSYSTEMS	211	-268	90	Top
IC102	310K0004	LMV324MT RAIL TO RAIL QUAD OP AMP	859	-219	0	Top
IC103	31124066	MC14066 QUAD ANALOG SWITCH SO-14	835	-204	0	Bottom
IC104	31010004	LM386MX-1 AUDIO AMP SO-8	887	-108	180	Bottom
IC201	310K0004	LMV324MT RAIL TO RAIL QUAD OP AMP	1372	-409	0	Top
IC301	31040003	REGULATOR, 50ma LDO, TPS76050DBVR	1109	-158	180	Bottom
IC302	314L0001	MCU, AT90S2333-4AC FLASH 32 PIN TQFP	1492	-224	0	Top

JACKS:

J301	2100001	2.5MM PC-MT JACK; ANT-CHGR	1190	-61	0	Top
J302	2100053	3.5MM STEREO JACK; PANEL MOUNT	1572	-83	0	Top

INDUCTORS:

L101	1870954	4.5T AIRFCW COIL .09 a L	687	-47	3590	Top
L102	1870954	4.5T AIRFCW COIL .09 a L	407	-338	180	Top
L103	1870955	5.5T AIRFCW COIL .1 a L	26	-563	270	Top
L104	1870954	4.5T AIRFCW COIL .09 a L	231	-126	0	Top
L105	18110102	CHIP INDUCTOR 1.0uhy	512	-115	270	Top
L106	1870954	4.5T AIRFCW COIL .09 a L	280	-133	270	Top
L107	18110102	CHIP INDUCTOR 1.0uhy	72	-276	90	Bottom
L201	18110101	CHIP INDUCTOR 0.1uhy	1661	-159	90	Top
L202	18110101	CHIP INDUCTOR 0.1uhy	1167	-124	90	Top
L203	1870953	3.5T AIRFCW COIL .07 a L	1366	-120	6.519	Top
L205	1870955	5.5T AIRFCW COIL .1 a L	1712	-817	9.036	Top
L206	1870953	3.5T AIRFCW COIL .07 a L	1349	-882	8.047	Top
L208	1870955	5.5T AIRFCW COIL .1 a L	732	-711	45	Top
L209	1870954	4.5T AIRFCW COIL .09 a L	1045	-578	135	Top
L210	1870804	COIL, 4.5T, 0.150 ID, #26AWG, LHH CW	903	-468	0	Top
L401	18110101	CHIP INDUCTOR 0.1uhy	1452	-318	180	Top
L402	18112470	INDUCTOR, CHIP, 47NH, 2%	1564	-348	90	Top
L403	18110102	CHIP INDUCTOR 1.0uhy	1463	8	3.46	Top
L404	18112470	INDUCTOR, CHIP, 47NH, 2%	1162	-333	270	Top
L405	18110102	CHIP INDUCTOR 1.0uhy	1043	-309	0	Top

MICROPHONE:

M301	5500037	MICROPHONE; ELECTRET, MINIATURE	0	0	0	Bottom
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PLUGS:

P201	25500700	CONTACT, PCB MNT, ANTENNA, SST	956	-105	90	Top
P301	21310021	HEADER, 2 PIN SIDE ENTRY SHROUDED	866	-399	0	Top

TRANSISTORS:

Q101	48210E2P	BFS17A, VHF, SOT-23 LOW NOISE	113	-482	90	Top
Q102	4841006U	MMBFJ309LT1, N-CHAN, RF, SOT23	431	-111	180	Bottom
Q103	4821003B	MMBT918LT1 VHF SOT23 (3B)	393	-161	180	Top
Q104	4801002A	MMBT3906 PNP, SOT23	345	-199	0	Bottom
Q105	48010R02	MUN2211T1, NPN, INT 10K/10K BIAS, 8A,	86	-198	0	Bottom
Q106	4821003B	MMBT918LT1 VHF SOT23 (3B)	133	-300	270	Bottom
Q107	480100DH	BCW68GLT1 .8AMP PNP SOT-23	1031	-141	0	Bottom
Q108	48010R02	MUN2211T1, NPN, INT 10K/10K BIAS, 8A,	1226	-139	180	Bottom
Q109	4821003B	MMBT918LT1 VHF SOT23 (3B)	478	-136	180	Bottom
Q201	4821003B	MMBT918LT1 VHF SOT23 (3B)	1615	-150	180	Bottom
Q202	482300FA	BFQ17, VHF, SOT89 RF DRIVER	1315	-146	90	Top
Q203	4801032	MRF-553 VHF RF PWR TRANSISTOR	1538	-104	0	Top
Q204	4801002A	MMBT3906 PNP, SOT23	1153	-124	90	Bottom
Q301	4801002A	MMBT3906 PNP, SOT23	531	-389	270	Bottom
Q302	480100DH	BCW68GLT1 .8AMP PNP SOT-23	1481	-162	270	Bottom
Q303	4801001Q	MMBT5088 NPN, SOT-23	1624	-166	270	Bottom
Q304	48010R02	MUN2211T1, NPN, INT 10K/10K BIAS, 8A,	1353	-253	180	Bottom
Q305	480100DH	BCW68GLT1 .8AMP PNP SOT-23	853	-128	180	Top

Q401	4821003B	MMBT918LT1 VHF SOT23 (3B)	1611	-332	270	Top
Q402	4801001Q	MMBT5088 NPN, SOT-23	1048	-286	90	Top
Q403	4801001Q	MMBT5088 NPN, SOT-23	725	-348	0	Top
Q404	4841006T	MMBFJ310T1 NFET GP SOT-23	1662	-363	180	Top
Q405	4801001Q	MMBT5088 NPN, SOT-23	701	-306	90	Top
Q406	4841006T	MMBFJ310T1 NFET GP SOT-23	1020	-325	0	Top
Q407	4801001Q	MMBT5088 NPN, SOT-23	875	-289	180	Top
Q408	4801002A	MMBT3906 PNP, SOT23	1707	-281	180	Top

RESISTORS:

R101	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	223	-502	270	Top
R102	47180102	1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	121	-379	0	Top
R103	47180271	270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	280	-553	270	Top
R104	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	280	-613	270	Bottom
R106	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	473	-129	270	Top
R107	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	530	-119	90	Bottom
R108	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	573	-119	270	Bottom
R109	47180100	10 OHM RESISTOR, CHIP, 0402, 1/16W 5%	270	-152	0	Top
R110	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	383	-150	0	Top
R111	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	291	-160	90	Top
R112	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	374	-185	270	Top
R113	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	403	-176	180	Top
R114	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	243	-199	90	Bottom
R115	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	188	-199	270	Bottom
R116	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	84	-313	90	Bottom
R117	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	30	-313	90	Bottom
R118	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	226	-275	90	Bottom
R119	47180391	390 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	297	-269	180	Bottom
R120	47180100	10 OHM RESISTOR, CHIP, 0402, 1/16W 5%	463	-266	270	Top
R121	47180473	47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	215	-306	90	Top
R122	47180154	150K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	332	-240	270	Top
R123	47180224	220K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	320	-248	180	Top
R124	47180391	390 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	230	-229	270	Top
R125	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	418	-240	270	Top
R126	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	416	-231	0	Top
R127	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	406	-248	0	Top
R128	47180394	390K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	85	-229	270	Top
R129	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	163	-225	180	Top
R130	47180104	100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	42	-229	270	Top
R131	47270103	VARIABLE RESISTOR 10K SEALED	159	-209	270	Top
R132	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	35	-202	270	Top
R133	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	487	-231	90	Top
R134	47180394	390K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	516	-214	270	Top
R135	47180153	15K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	496	-221	0	Top
R136	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	564	-210	90	Top
R137	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	628	-211	90	Top
R138	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	505	-196	90	Top
R139	47180102	1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	936	-246	0	Top
R140	47180473	47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1062	-221	180	Top
R141	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	704	-248	270	Top
R142	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	935	-252	180	Top
R143	47180473	47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1051	-206	180	Top
R144	47180104	100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	1099	-201	270	Bottom
R145	47180473	47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1033	-201	90	Bottom
R146	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	624	-217	90	Bottom
R147	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	569	-210	90	Bottom
R148	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	789	-236	90	Top
R149	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	833	-236	90	Top
R150	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	570	-199	90	Bottom
R151	47180104	100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	495	-199	90	Bottom
R152	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	569	-187	90	Bottom
R153	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	800	-144	0	Bottom
R154	47180100	10 OHM RESISTOR, CHIP, 0402, 1/16W 5%	1068	-898	90	Bottom
R155	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1131	-139	90	Bottom
R156	47180103	10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%	442	-126	0	Bottom
R157	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	538	-126	180	Bottom
R158	47180271	270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	240	-140	180	Bottom
R159	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1062	-225	0	Top

R201	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1154	-116	0	Bottom
R202	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1512	-152	270	Top
R204	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1623	-140	0	Bottom
R205	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1746	-145	0	Bottom
R206	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	1499	-146	0	Bottom
R207	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%	1344	-130	180	Top
R208	47180391	390 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1828	-217	270	Top
R209	47180100	10 OHM RESISTOR, CHIP,0402, 1/16W 5%	1264	-110	90	Top
R210	47180100	10 OHM RESISTOR, CHIP,0402, 1/16W 5%	1213	-110	90	Top
R211	47180100	10 OHM RESISTOR, CHIP,0402, 1/16W 5%	1743	-123	270	Top
R212	47100221	220 ohm 0805 CHIP RESISTOR	1811	-718	90	Top
R213	47100471	470 OHM 0805 CHIP RES.	1115	-868	270	Top
R214	47180271	270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1004	-943	270	Top
R215	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%	831	-363	270	Bottom
R216	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	662	-412	180	Bottom
R217	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1271	-419	180	Bottom
R218	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1133	-421	180	Bottom
R219	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1133	-417	180	Bottom
R220	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1111	-399	270	Bottom
R222	47180391	390 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1139	-425	180	Bottom
R223	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1245	-432	270	Bottom
R225	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1300	-432	90	Bottom
R226	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	715	-262	180	Bottom
R227	47180103	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1395	-424	90	Bottom
R228	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1343	-424	270	Bottom
R229	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1392	-433	180	Bottom
R230	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1609	-429	90	Bottom
R232	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1502	-420	90	Bottom
R233	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1502	-410	90	Bottom
R235	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1607	-397	90	Bottom
R236	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1663	-397	90	Bottom
R237	47270103	VARIABLE RESISTOR 10K SEALED	1628	-403	90	Top
R238	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1509	-393	270	Top
R239	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	1269	30.9418		Top
R240	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1154	-112	180	Bottom
R241	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1455	-393	90	Top
R301	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	425	-388	90	Bottom
R302	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	513	-399	0	Bottom
R303	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	513	-403	0	Bottom
R304	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1383	-171	90	Bottom
R305	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1328	-171	270	Bottom
R306	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	236	-850	180	Top
R307	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%	1526	-173	90	Bottom
R308	47180153	15K OHM RESISTOR, CHIP, 0402, 1/16W,5%	1725	-173	270	Top
R309	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1780	-173	270	Top
R310	47180473	47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1730	-175	180	Bottom
R311	47180271	270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1705	-486	270	Bottom
R312	47180102	1K OHM RESISTOR, CHIP,0402, 1/16W,5%	1410	-200	0	Top
R313	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1496	-187	90	Top
R314	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	329	-374	270	Bottom
R315	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	321	-366	0	Bottom
R316	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	1648	-225	180	Bottom
R317	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1229	-246	0	Bottom
R318	47180332	3.3K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	756	-129	270	Top
R319	47100000	ZERO OHM 0805 CHIP RES.	1357	-141	90	Bottom
R320	47100000	ZERO OHM 0805 CHIP RES.	969	-230	90	Bottom
R321	47100000	ZERO OHM 0805 CHIP RES.	858	-251	90	Bottom
R322	47100000	ZERO OHM 0805 CHIP RES.	1024	-251	90	Bottom
R323	47100000	ZERO OHM 0805 CHIP RES.	504	-230.5218		Top
R325	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1251	-214	0	Top
R326	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1250	-240	180	Top
R327	47180470	47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1385	-247	180	Top
R328	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1779	-244	90	Bottom
R330	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%				
R401	47180391	390 OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1612	-321	90	Top
R402	47180102	1K OHM RESISTOR, CHIP,0402, 1/16W,5%	720	-359	180	Top
R403	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1429	-381	270	Top
R404	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	958	-380	180	Top
R405	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1735	-376	90	Top

R406	47180104	100K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1045	-364	90	Top
R407	47180100	10 OHM RESISTOR, CHIP,0402, 1/16W 5%	1729	-321	270	Top
R408	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	1497	-334	90	Top
R409	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1676	-321	270	Top
R410	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1269	-360	90	Top
R411	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%	1114	-349	90	Top
R412	47100472	4.7K OHM 0805 CHIP RES.	976	-348	90	Top
R413	47180103	10K OHM, RESISTOR, CHIP, 0402,1/16W,5%	984	-335	180	Top
R414	47100000	ZERO OHM 0805 CHIP RES.	993	-297	0	Top
R415	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1183	-297	0	Top
R416	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	1170	-289	180	Top
R417	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1446	2	6.59	Top
R418	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1598	-279	270	Top
R419	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1122	20.0427		Top
R420	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1017	80.0227		Top
R421	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	1359	40.6527		Top
R422	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	670	-288	270	Top
R423	47180472	4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	1296	-327	180	Top
R424	47180152	1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%	1194	-347	180	Top
R425	47180151	150 OHM RESISTOR, CHIP, 0402, 1/16W,5%	917	-306	0	Top
R426	47180223	22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%	691	-278	270	Top

SPEAKER:

SP301	5500045	SPEAKER, 45MM, 1W, LOW PROFILE SST/RTX	1191	-551	3.371	Top
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SWITCHES:

SW301	5100046	SWITCH, TACT LO PROFILE RT ANGLE 160gf	97	-784	270	Top
SW302	5100042	SWITCH SPST MOMENTARY MINI PC 260GM	280	-142	180	Top
SW303	5100046	SWITCH, TACT LO PROFILE RT ANGLE 160gf	97	-163	270	Top
SW304	5100042	SWITCH SPST MOMENTARY MINI PC 260GM	800	-140	180	Top

TRANSFORMER:

T101	5600018	455KHZ IF TRANSFORMER (5MM)	370	-304	0	Top
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OSCILLATOR & FILTERS:

Y301	23050003	TCVCXO, 14.400 MHz, 1.5 PPM, VC=30 PPM/V	498	-361	270	Top
YF101	2301403	43.650 MHz Crystal Filter +/-6.0KHz UM-1	84	-120	270	Top
YF102	2301022	FILTER,CERAMIC, 450KHZ,+/-4.5KHZ,6 POLE	237	-334	180	Top

FERRITE BEADS:

Z201	18360001	BEAD; FERRITE SURFACE MOUNT	1067	-108	180	Top
Z202	18360001	BEAD; FERRITE SURFACE MOUNT	1472	-654	180	Top

HARDWARE

1350380D	PCB, DFSR4, 5UPM, .060 MIX, JMX-141
25602500	CRYSTAL SUPPORT, RUBBER PAD, SMALL/UM-1
06001021	#28 AWG STRANDED WIRE; RED (INCHES)
06001023	#28 AWG STRANDED WIRE;GREEN INCHES
06001026	#28 AWG STRANDED WIRE; BLACK INCHES
06001029	#28 AWG STRANDED WIRE; BLUE INCHES
25105500	SHIELD, JMX-141 SYNTHESIZER
25603000	FOAM, MOUNTING, SPEAKER
25603900	SPACER, MIC FOAM
25605700	MICROPHONE HOLDER
25900700	ADHESIVE, MTG, MIC HOLDER
2811H401	SCREW #4-40 X .25 LG TRIM HEAD PHILLIPS

JMX-141 CASE ASSEMBLY PARTS LIST

<u>Ref</u>	<u>Ritron PN</u>	<u>Description</u>
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MAIN CASE ASSEMBLY

13250000	CASE W/INSERT, PLASTIC, SST BLACK
13578000	DOOR, BATTERY, PLASTIC, SST 2-PC
13588000	LATCH, BATTERY DOOR, PLASTIC SST 2-PC
25106400	BATTERY DOOR HINGE RETAINER
25201500	RETAINER, PLASTIC, PTT, SST
25400600	BUSHING, THREADED, PLATED, ANTENNA SS
25603300	GRILLE CLOTH, SPEAKER, SST
25603400	DUAL JACK PLUG, RUBBER,SST
25606200	HINGE, BATTERY DOOR, SST
25800500	ACTUATOR, RUBBER,PTT,SST
25800600	ACTUATOR, RUBBER, TACT, SST
02802026	NUT; KNURLED; M4PO.5;/2.5MM JACK
02802027	NUT; KNURLED; M6PO.5/3.5MM JACK
28112401	SCREW 4-40 X 1/4" PHFLST
28233G03	KNURLED NUT, ANTENNA, JMX

CASE BOTTOM ASSEMBLY

13564000	CASE, BOTTOM, PLASTIC, SST 2-PC
2142D021	CONNECTOR, CABLE ASSEMBLY, 2-POS, SST+
25400800	SPRING CONTACT, BATTERY, SST W/O TABSC
25400900	CONTACT BATTERY SST-PLUS (POLARIZED)
25604800	SPACER, PCB, FOAM, SST 2-PC

CASE LABELS

14220001	LABEL, CONTROLS, SST
14222029	LABEL, NAMEPLATE, SST
14290002	BLANK LABEL, .75" X .25" GLOSSY WHITE +
14200037	LABEL SST/JMX MFG DATE CODE
14200095	LABEL FCC SERIAL JMX-141

BELT CLIP

25201600	BELT CLIP, PLASTIC, SST BLACK
2811B600	SCREW 6-32 X 1/4" PHTRST

BATTERY PACK AND INSULATOR

BPJS-6N	BATTERY, RECHG, 7.2V NiCd, YELLOW , SST
14230088	LABEL, BATTERY, BPS-6N-SC, SST
25300600	INSULATOR, BATTERY, FIBRE, SST
25606000	FOAM SUPPORT, BATTERY JMX SERIES
25601600	BATTERY SHIM; ASSEMBLY ~X~ SERIES

ANTENNA

AFS-150	ANTENNA VHF MOLDED, 150-160 REG LEN SST
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PACKING MATERIALS

14210004	LOW BATTERY NOTICE LABEL
14312006	SHIPPING CARTON, CARDBOARD,SST
14321002	FOAM INSERT, PACKING, SST/MINI
14500008	MANUAL, OWNERS, JMX/SST
14500016	USER MANUAL JMX-141
14540006	WARRANTY REGISTRATION CARD