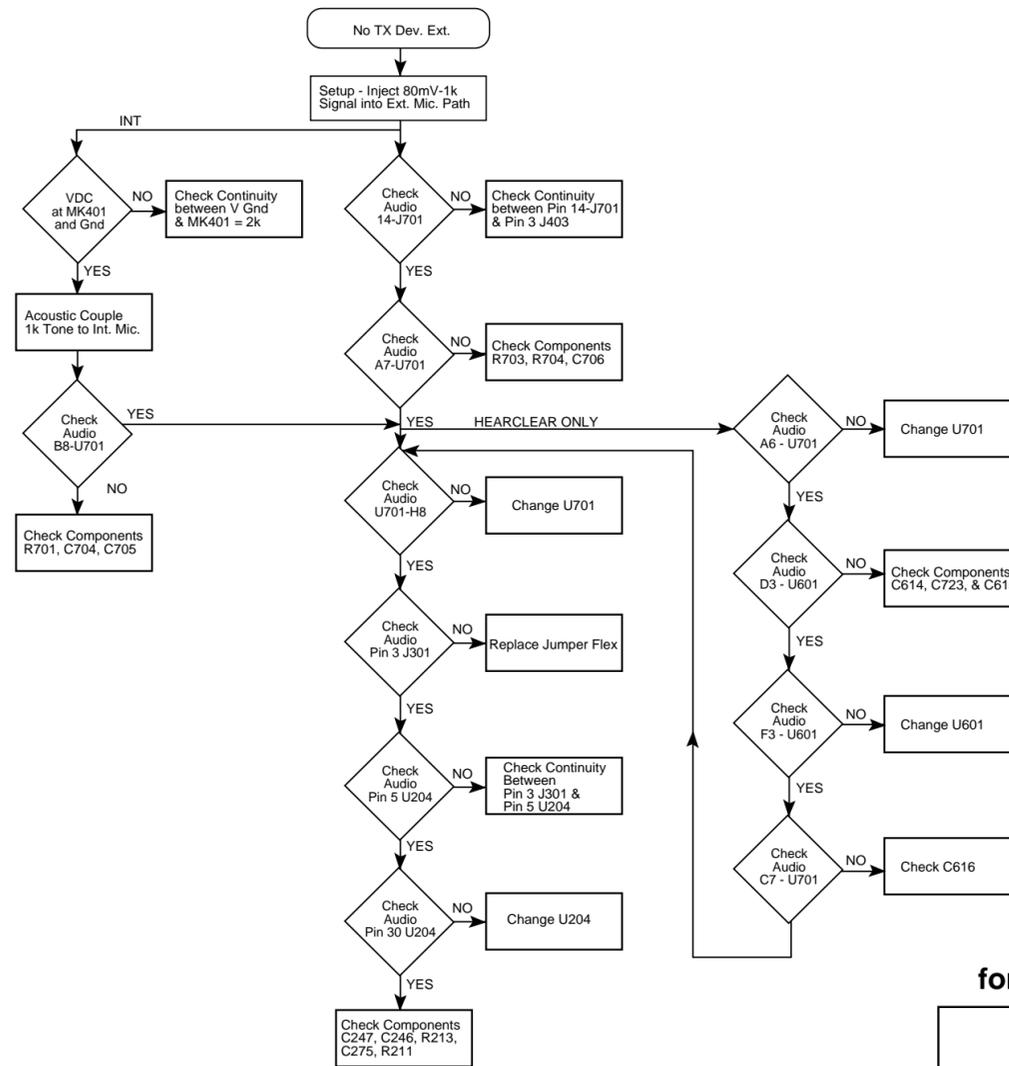


Over-Molded Pad Array Carriers (Ompacs) Details for Current Radios Only



MAEPF-24575-O

Figure 11-18. Troubleshooting Flow Chart (800/900MHz No Transmit Deviation)

Notes for All Schematics and Circuit Boards

* Component is frequency sensitive. Refer to the electrical parts list for value and usage.

- Unless otherwise stated, resistances are in ohms (k = 1000), and capacitances are in picofarads (pF) or microfarads (uF).
- DC voltages are measured from point indicated to chassis ground using a Motorola DC multimeter or equivalent. Transmitter measurements should be made with a 1.2 uF choke in series with the voltage probe to prevent circuit loading.

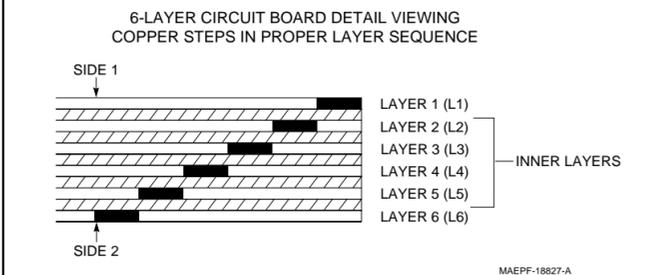
- Reference designators are assigned in the following manner:

Units series	=	Receiver
100 Series	=	Transmitter
200 Series	=	Frequency Generation
300 Series	=	Miscellaneous
400 Series	=	Housing/Escutcheon
500 Series	=	Display
600 Series	=	Hear Clear Option
700 Series	=	Controller

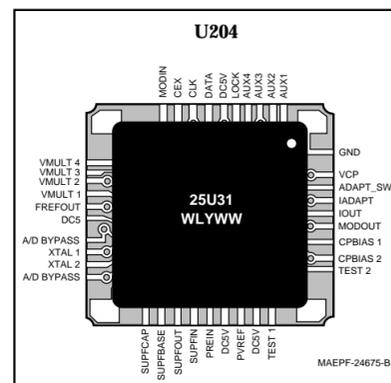
- Interconnect tie point legend:

5V REG	=	Regulated five volts
B+	=	Battery voltage (7.5V)
R5	=	Receiver five volts
T5	=	Transmitter five volts
CLK	=	Clock
D	=	Data
DAC	=	Digital to Analog Converter
DAC RST	=	DAC Reset
LCK	=	Lock
NC	=	No Connection
SYN	=	Synthesizer
VR	=	Voltage Regulator

- Circuit board cross-sectional detail

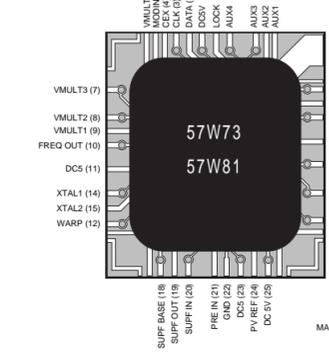


Ompac Detail for Older Radios Only



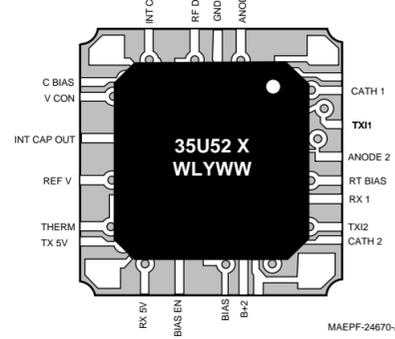
Transceiver Boards OMPAC

U204

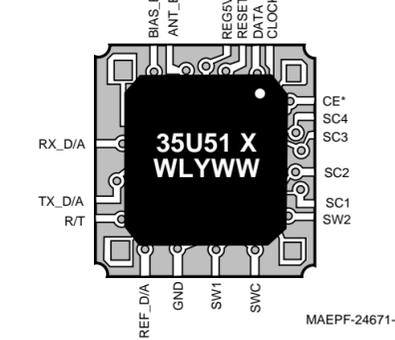


Transceiver Boards OMPACs

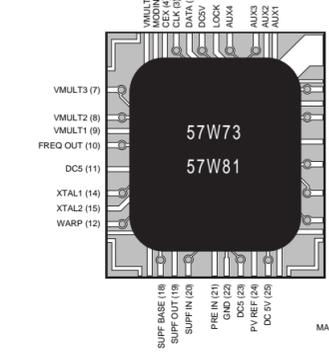
U101



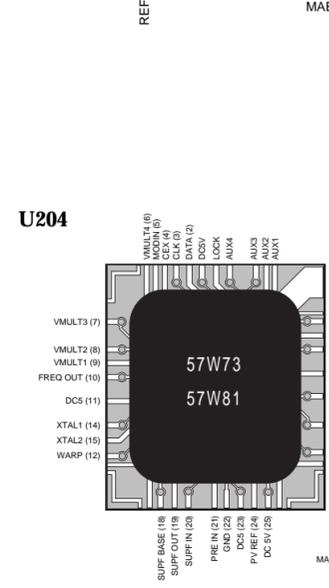
U102



U701



U705



Controller Board OMPACs

Troubleshooting Flow Chart (800/900MHz No Transmit Deviation); Ompac Details; Schematic and Circuit Board Notes

Parts List

NUD7093B VHF Transceiver Board

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C4	2113741F13	CAPACITOR, Fixed: pF ±5%; 50V unless stated
C6	2113740F22	330
C7	2113740F13	6.2 ±.025pF
C8	2113740F32	2.7 ±.025pF
C9	-----	Not placed
C11, C13	2113741F49	.01µF
C14	2311049A66	22µF; 4V
C15	2113741F49	.01µF
C16	2113740F20	5.1 ±.025pF
C31	2113741F49	.01µF
C33	2113740F26	9.1
C34, C35	2113740F43	47
C36	2113740F18	4.3 ±.025pF
C38	2113740F13	2.7 ±.025pF
C39	0662057B47	0
C40	2113740F51	100 ±.025pF
C41	2113743A19	0.1µF
C42 thru C46	2113743A23	0.22µF
C47	2109720D14	0.1µF
C48	2113741F16	430
C49	2311049A04	0.33µF
C50	2113743K15	0.1µF
C52	2113741A51	.018µF
C53	2113743B17	0.15µF
C54	2113741F13	330
C55	2113740F37	27
C56, C57	2113740F42	43
C58	2113740F11	2.2
C60	2113743K15	0.1µF
C61	2109720D14	0.1µF
C63	2113743K15	0.1µF
C65	2113741F49	.01µF
C70	2113741F49	.01µF
C71, C72	2113741F13	330
C77	2113743K15	0.1µF
C80	2113740F39	33
C82, C83, C84	2113741F49	.01µF
C85	2311049A60	10µF; 4V
C86	2113740F22	6.2 ±.025pF
C87	2113740F32	16
C88	2113740F25	8.2
C90	2113740F18	4.3 ±.025pF
C95	2113740F33	18
C96	2113741F49	.01µF
C97	2113740A32	13
C98	2113741F13	330
C99	2113740F39	33
C101	2113743K15	0.1µF
C102	2113741F13	330
C103	2311049J26	10µF; 16V
C104	2311049A54	3.3µF; 16V
C105	2113741F13	330
C106	2311049J26	10µF; 16V
C107, C108	2113741F13	330
C109	2311049A07	1µF; 16V
C111	2113741F13	330
C112	-----	Not placed
C113	2113741F13	330
C115	2113743K03	.033µF
C116	2113740F03	1 ±.01pF
C118	2113743K15	0.1µF
C121	2113741F13	330
C123	2113743K15	0.1µF
C125, C126	2311049A54	3.3µF; 16V
C128	2311049A07	1µF; 16V
C129	2113740F03	1 ±.01pF

C130	2113740F28	11
C132	2113740F23	6.8
C133	2113740F09	1.8
C135	2113741F13	330
C139	-----	Not placed
C140, C141, C146	2113741F13	330
C147	2113743E07	.022µF
C148	2113740F20	5.1 ±.025pF
C149, C150	2113740F34	20
C151	2113740F27	10
C152, C153, C154	2113741F13	330
C161	2113743K15	0.1µF
C162	2113741F13	330
C163	2113740F44	51
C164	2113740F51	100 ±.025pF
C165	2311049A86	1µF
C202	2113740F27	10
C203	2113740F20	5.1 ±.025pF
C204	2113741F13	330
C205	2113740F14	3.0 ±.025pF
C206	2113740F20	5.1 ±.025pF
C207	2113740F03	1 ±.01pF
C208	2113740F22	6.2 ±.025pF
C209	2113743K15	0.1µF
C210	2113743E07	.022µF
C211	2113741F13	330
C212	-----	Not placed
C213	2113740F21	5.6 ±.025pF
C214	-----	Not placed
C219	2113740F27	10
C220	2113740F22	330
C221	2113741F13	330
C222	2113740F24	7.5 ±.025pF
C223	2113906C02	ATC, 4pF
C225	2113740F08	1.6 ±.01pF
C226	2113740F46	62
C227, C228	2113741F13	330
C230	2113740F29	12
C231	2311049A60	10µF; 4V
C233	2113741F13	330
C235	2113740F31	15
C236	2113740F28	11
C237	2113740F30	13
C238	2113741F25	.001µF
C240	2113906C02	ATC, 4pF
C241	2113740F38	30
C243	2113740F36	24
C244	2109720D09	.022µF
C245	2113741F25	.001µF
C246	2109720D09	.022µF
C247	2311049A07	1µF; 16V
C248	2113743K15	0.1µF
C250	2113741F25	.001µF
C251	2113741F13	330
C252	2113741F49	.01µF
C253	2311049J26	10µF; 16V
C254	2113743G26	4.7µF; 16V
C255	2113741F25	.001µF
C256, C257	2113741F49	.01µF
C258	2311049J11	4.7µF; 16V
C259	2311049A33	0.22µF
C260	2113743K05	.039µF
C266, C267	2113741F49	.01µF
C270	2113741F25	.001µF
C271	2385688A01	4.7µF; 10V
C274	-----	Not placed

C277	2113741F13	330
C280	2113740F51	100 ±.025pF
C284	2113741F49	.01µF
C285, C286	2113741F13	330
C287	2113740F14	3.0 ±.025pF
C288	2113741F13	330
C289	2109720D09	.022µF
C291, C292	2113743E07	.022µF
C293	-----	Not placed
C294	2113741F13	330
C303	2113743E07	.022µF
C304	2113741F13	330
C305 thru C308	2113740F51	100
C309	2113741F37	3300
C310	2113741F13	330
C311	2113741F37	3300
C314	-----	Not placed
C315	2113741F13	330
CR1 thru CR9	4862824C01	Varactor
CR11	4805129M96	PIN
CR12	4805218N57	Dual
CR102, CR103	4805129M67	Dual
CR108, CR109	4802482J02	Pin
CR201	4802245J29	Varactor
CR202, CR203	4862824C03	Varactor
CR204, CR205	4802233J09	Triple
CR206	4805129M06	Dual
CR207	-----	Not placed
CR208	4802245J29	Varactor
EI01	2484657R01	Bead, Ferrite
F1	6505757V01	FUSE: 1-Amp.
FL1	4802655J05	FILTER: Crystal; 44.85MHz
J301	0902619J01	JACK: 20-pin connector; to P301 on jumper flex
J401	3905912Y01	Contact, Antenna
L3	2462587T42	.047µH
L4	2462587T41	.039µH
L5	2462587T42	.047µH
L6	2462587T13	.068µH
L7	2462587T16	0.12µH
L8	2462587T17	0.15µH
L9	2462587T15	0.1µH
L10	2462587T12	.056µH
L11	2460591M12	4 turns; airwound
L12	2462587T23	0.47µH
L13, L14	2460591N36	5 turns; airwound
L16	2460591M12	4 turns; airwound
L19	2462587T20	0.27µH
L20	2462587N69	1.2µH
L22	2462587T30	1µH
L23	2462587Q50	1.8µH
L24	2462587T23	0.47µH
L25	2462587Q20	2.2µH
L30	2462575A21	.047µH
L32, L33	2462587Q20	2.2µH
L101	2462587T30	1µH
L105	2462587T30	1µH
L121, L122	2462587T30	1µH
L126	2460591K40	12 turns; airwound
L127	2460591G24	9 turns; airwound
L128	2460591K40	12 turns; airwound

L130, L131	2462587T30	1µH
L201	2462587T40	.033µH
L204	2462587T30	1µH
L205	2462587V28	.033µH
L138, L209	2462587T30	1µH
L210	2462587T39	.027µH
L211	2462587T12	.056µH
L212	2462587T14	.082µH
L213	2462587T30	1µH
L215	2462587T30	1µH
L216	2462587T41	.039µH
L217, L218	2462587T30	1µH
L219	2462587T38	.022µH
L220	2462587T17	0.15µH
L221, L222	2462587Q42	0.39µH
L223	2462587T18	0.18µH
L224	2462587Q40	0.27µH
L225	2462587Q20	2.2µH
L301, L302	2462587Q47	1µH
P404	3905861X02	Connector, Battery; 3-pin
Q1, Q4	4805218N63	NPN
Q5	4880048M04	PNP
Q101	4805128M16	PNP
Q104, Q105, Q107	4805921T02	PNP NPN
Q108	4802245J10	NPN Dual
Q110	4813822A10	PNP
Q201	4802245J15	JFET
Q202	4805218N55	NPN
R1	0662057A01	10
R2	0662057A91	56k
R4, R5	0662057A73	10k
R7	0662057A25	100
R8	0662057A41	470
R16	0662057A59	2.7k
R17	0662057A80	20k
R32, R33	0662057A59	2.7k
R34, R35	0662057A89	47k
R40	0662057A35	270
R41	0662057A09	22
R42	0662057A35	270
R43	0662057A42	510
R44	0662057A77	15k
R45	0662057A90	51k
R46	0662057A89	47k
R47	0662057A09	22
R49	0662057A53	1.5k
R50	0662057A63	3.9k
R51	0662057B05	200k
R70	0662057A53	1.5k
R72	0662057A25	100
R73	0662057A73	10k
R101	0662057C01	0 ±.05
R102	0662057A65	4.7k
R106	0662057A61	3.3k
R110	0662057A57	2.2k
R111	0662057A67	5.6k
R112	0662057B22	1M
R113	0662057A73	10k
R114	0662057A77	15k
R115	0660078L28	180k
R116	0662057G19	130k

R117	0662057A89	47k
R126	0662057A18	51
R127	0662057A15	39
R130	0662057A65	4.7k
R131, R132	0662057A97	100k
R199	0662057B47	0 ±.05
R203	0662057A09	22
R204	0662057A80	20k
R205	0662057A84	30k
R206, R207	0662057A80	20k
R208	0662057A65	4.7k
R209, R210	0662057A42	510
R211	0662057A20	62
R212	0662057A44	620
R213	0662057A35	270
R214	0662057A88	43k
R215	0662057A84	30k
R217	0662057A84	30k
R218	0662057A97	100k
R219	0662057A09	22
R220	0662057A56	2k
R221	-----	Not placed
R222	0662057A51	1.2k
R223	0662057A89	47k
S101	-----	SWITCH: Not placed
RT101	0605621T03	Thermistor, 50k
T1	2505515V08	Balun; 4:1
T2	2505515V11	Balun; 16:1
U1	5105457W50	RF Amp
U2	5105457W52	Mixer
U3	518629	

Parts List

NUE7269B UHF (403 — 470MHz) Transceiver Board

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C1	2113740F20	CAPACITOR, Fixed: pF ±5%; 50V unless stated
C2	2113740F22	5.1 ±0.25pF
C3	2113740F18	6.2 ±0.25pF
C4	2113740F26	4.3 ±0.25pF
C5	2113740F24	9.1
C6	2113740F21	7.5
C7	2113740F21	5.6 ±0.25pF
C9	2113740F31	15
C10	2113740F27	10
C11	2113740F45	56
C12	2113741F49	.01µF
C13	2113740F51	100 ±0.25pF
C15	2311049A66	22µF; 4V
C16	2113740F51	100 ±0.25pF
C17	2113740F38	10
C18	2113740F27	10
C19	2113740F23	6.8
C31	2113741F49	.01µF
C35	-----	Not placed
C36	2113740F20	5.1 ±0.25pF
C38	2113740F27	10
C39	2113740F09	1.8
C40	2113740F51	100 ±0.25pF
C41	2113743A19	0.1µF
C42 thru C46	2113743A23	0.22µF
C47	210920D14	0.1µF
C48	2113741F16	430
C49	2113743A19	0.1µF
C50	2113741F49	.01µF
C51	2113743K15	0.1µF
C52	2113741A51	.018µF
C53	2113743B17	0.15µF
C54	2113740F41	39
C55	2113740F39	33
C56, C57	2113740F42	43
C58	2113740F11	2.2 ±0.25pF
C59	2113741F49	.01µF
C60	2113743K15	0.1µF
C61	210920D14	0.1µF
C63, C64	2113743K15	0.1µF
C65	2113741F41	4.7
C72	2113740F51	100 ±0.25pF
C82	2113741F49	.01µF
C083	2113740F51	100 ±0.25pF
C84	2113741F49	.01µF
C85	2311049J23	10µF; 6V
C86, C87, C88	2113740F51	100 ±0.25pF
C89	2113740A24	6.8 ±0.25pF
C90	2113740F31	15
C91	2113740F27	10
C92	2113740F20	5.1 ±0.25pF
C93	2113740F18	4.3 ±0.25pF
C94	2113740F32	16
C95	2113740F25	8.2 ±0.25pF
C96	2113741F49	.01µF
C98	2113740F34	20
C99	2113740F30	13
C101	2113743E07	.022µF
C102	2113740F51	100 ±0.25pF
C103	2311049J26	10µF; 16V
C104, C105	2113740F51	100 ±0.25pF
C106	2311049A56	4.7µF; 10V
C107, C108	2113740F51	100 ±0.25pF
C109	2311049A07	1µF; 16V
C110, C111	2113740F51	100 ±0.25pF
C113, C114	2113740F51	100 ±0.25pF

C115	2113743K03	.033µF
C116	-----	Not placed
C117	2113740F51	100 ±0.25pF
C118	2113743K15	0.1µF
C119	2113740F51	100 ±0.25pF
C120	2311049A54	3.3µF; 16V
C121	2113740F51	100 ±0.25pF
C123	2113743K15	0.1µF
C125, C126	2311049A54	3.3µF; 16V
C127, C128	2113740A07	1µF; 16V
C132	2113740F25	8.2 ±0.25pF
C133	2113740F09	1.8
C135	2113740F51	100 ±0.25pF
C137, C138	2113740F51	100 ±0.25pF
C139	-----	Not placed
C140	2113741F41	4.7
C141	2113740F51	100 ±0.25pF
C145	2113740F51	100 ±0.25pF
C147	2113740F51	100 ±0.25pF
C148	2113740F18	4.3 ±0.25pF
C149	2113740F34	20
C150	2113740F31	15
C151	2113740F14	3
C153, C154, C155	2113740F51	100 ±0.25pF
C156	2311049A07	1µF; 16V
C157	-----	Not placed
C201	2113740F03	1 ±0.1pF
C202	-----	Not placed
C203	2113740F07	1.5 ±0.1pF
C204	2113740F51	100 ±0.25pF
C205	-----	Not placed
C206	2113741F37	3300
C208	2113740F51	100 ±0.25pF
C209	2113741F49	.01µF
C210	2113743E07	.022µF
C211	2113740F51	100 ±0.25pF
C214	-----	Not placed
C216	2113741F37	3300
C217	2113740F51	100 ±0.25pF
C219	2113740F17	3.9 ±0.25pF
C220	2113740F20	5.1 ±0.25pF
C221	2113741F49	.01µF
C222	2113740F17	3.9 ±0.25pF
C223	2113906C02	ATC, 4.0pF
C225	2113740F03	1 ±0.1pF
C226	2113740F28	11
C227, C228	2113740F51	100 ±0.25pF
C230	-----	Not placed
C231	2311049A60	10µF; 4V
C233	2113740F51	100 ±0.25pF
C235	2113740F18	4.3 ±0.25pF
C236	2113740F20	5.1 ±0.25pF
C237	2113740F15	3.3 ±0.25pF
C238	2113740F51	100 ±0.25pF
C239	2113740F27	10
C240	2113906C02	ATC, 4.0pF
C243	2113740F25	8.2 ±0.25pF
C244	210920D09	.022µF
C245	2113741F25	.001µF
C246	210920D09	.022µF
C247	2311049A05	0.47µF; 16V
C250	2113741F25	.001µF
C253	2311049J23	10µF; 6V
C254	2113743G26	4.7µF; 16V
C255	2113743K15	0.1µF
C256, C257	2113741F49	.01µF
C258	2311049J11	4.7µF; 16V
C260	2113743K07	.047µF
C266, C267	2113741F49	.01µF
C270	2113741F25	.001µF
C271	2385688A01	4.7µF; 10V
C274	-----	Not placed
C275	2113743K15	0.1µF
C279	2113740F51	100 ±0.25pF

C280	2113743K15	0.1µF
C282	2113743K15	0.1µF
C284	2462587V26	0.22µF
C287	210920D09	.022µF
C288	2113741F49	.01µF
C289, C290	2113740F51	100 ±0.25pF
C292	2113740F03	1 ±0.1pF
C294	2113740F51	100 ±0.25pF
C303	2113743E07	.022µF
C304 thru C308	2113740F51	100 ±0.25pF
C309	2113741F37	3300
C310	2113740F51	100 ±0.25pF
C311	2113741F37	3300
C313, C314	-----	Not placed
C315	2113740F51	100 ±0.25pF
CR5 thru CR9	4862824C01	Varactor
CR11	4805129M96	PIN
CR12	4805218N57	Dual
CR101	4805129M67	Dual
CR103	4805129M67	Dual
CR108, CR109	4802482U20	PIN
CR201	4802245J29	Varactor
CR202	4862824C01	Varactor
CR203	4862824C03	Varactor
CR204, CR205	4802233J09	Triple
CR206	4805129M06	Dual
CR207 thru CR209	4802245J29	Varactor
E101, E104	-----	Bead, ferrite
F1	6505757V01	1-Amp.
FL1	4802655J03	Crystal, 73.35MHz
J301	0902619J01	20-pin connector; to P301 on Jumper Flex
J401	3905912Y01 and 3905643V01	Contact, Antenna Contact, Antenna ground
L6	2462587V30	.047µH
L7	2462587V38	0.22µH
L8	2462587T23	0.47µH
L9	2462587V29	0.39µH
L10	2462587V25	0.18µH
L11	2460591B04	4 turns, airwound
L12	2460591M32	4 turns, airwound
L13	2460591B80	4 turns, airwound
L14, L15	2460591B04	4 turns, airwound
L16	2462587T23	0.47µH
L20	2462587N61	0.47µH
L22	2462587T23	0.47µH
L23	2462587Q44	0.56µH
L24	2462587V37	0.18µH
L25	2462587Q20	2.2µH
L30, L31	2460591A01	4 turns, airwound
L32	2460591B04	4 turns, airwound
L34, L35	2460591A01	4 turns, airwound
L36	2462587V36	0.15µH
L37	2462587V23	0.12µH
L101 thru L103	2462587T20	0.27µH
L105	2462587Q20	0.27µH
L107, L108	2462587T17	0.15µH
L121, L122	2462587T20	0.27µH
L123	2462587V38	0.22µH
L126, L127, L128	2460591B04	4 turns, airwound
L201	2462587T38	.022µH
L202	2462587Q20	2.2µH
L204	0662057A42	0.39µH
L205	2462587V27	.027µH
L207	2462587V38	0.22µH
L208, L209	2462587T22	0.39µH

L210	2405619V01	.0181µH, molded coil
L211	2405619V05	.012µH, molded coil
L212	2462587V26	.022µH
L213	2462587T15	0.1µH
L215	2462587T22	0.39µH
L216	2462587T05	.015µH
L218	2462587T22	0.39µH
L219	2462587T37	.018µH
L220	2462587T39	.027µH
L221	2462587T22	0.39µH
L222	2462587Q40	0.27µH
L223	2462587Q42	0.39µH
L224	2462587T40	.033µH
L301, L302	2462587Q42	0.39µH
P404	3905861X02	PLUG: Connector, Battery; 3-pin
Q1, Q4	4805218N63	PNP
Q5	4880048M04	PNP
Q101	-----	Not placed
Q104, Q105, Q107	4805921T02	PNP/NPN
Q108	4802245J10	NPN Dual
Q110	4802245J12	PNP
Q201	4802245J15	JFET
Q202	4805218N55	NPN
R7	0662057A25	100
R16	0662057A59	2.7k
R17	0662057A80	20k
R18	0662057B05	200k
R22, R23	0662057A73	10k
R26	-----	Not placed
R27	0662057A01	10
R32, R33	0662057A59	2.7k
R34, R35	0662057A89	47k
R36	-----	Not placed
R40	0662057A41	470
R41	0662057A09	22
R42	0662057A41	470
R43	-----	Not placed
R44	0662057A45	680
R45	0662057A90	51k
R46	0662057A89	47k
R47	0662057B47	0
R48	-----	Not placed
R49	0662057A77	15k
R50	0662057A53	1.5k
R51	0662057A51	1.2k
R52	0662057A25	100
R53	0662057A73	10k
R102	0662057A65	4.7k
R106	0662057A61	3.3k
R107	-----	Not placed
R110	0662057A57	2.2k
R111	0662057A67	5.6k
R113	0662057A85	33k
R114	0662057A73	10k
R115	0660078L28	180k
R116	0662057G19	130k ±1%; 0.1W
R119	0662057B22	1M
R126	0662057A18	51
R127	0662057A12	30
R128	0662057A89	47k
R129	0662057A65	4.7k
R130	0662057B47	0
R139	0662057A97	100k
R199	0662057B47	0
R203	0662057A09	22
R204	0662057A73	10k
R205	0662057A77	15k
R206	0662057A73	10k
R207	0662057A91	56k
R208	0662057A56	2k

R209	0662057A41	470
R210	0662057A37	330
R211	0662057A29	150
R212	0662057A46	