

**openQRP Transceiver Parts List By Functional Section – 10-5-2011**  
**Using openQRP PC Board Rev D, 40M Version**

**Section 1 – AGND**

R37 \_\_\_ [I8] 10K 1/8W  
 R38 \_\_\_ [J9] “ “  
 C80 \_\_\_ [J9] 22uF  
 C79 \_\_\_ [J9] .1uF

**Schematic Page 2**

Resistor (Brown Black Orange)  
  
 Tantalum Capacitor  
 Ceramic Capacitor

**Section 2 - 12 V Input**

J3 \_\_\_ [E11] Power Connector  
 D1 \_\_\_ [D11] 1N4001  
 C92 \_\_\_ [G8] 220uF  
 C85 \_\_\_ [F10] .1uF  
 C56 \_\_\_ [C3] 100uF

**Schematic Page 3**

Power Diode  
 Electrolytic Capacitor  
 Ceramic Capacitor (104)  
 Electrolytic Capacitor

**Section 3 - Digital 5V**

VR2 \_\_\_ [F2] LM78L05  
 C51 \_\_\_ [F2] .1uF  
 C50 \_\_\_ [F3] 100uF

**Schematic Page 3**

5 volt Regulator (TO-220)  
 Ceramic Capacitor (104)  
 Electrolytic Capacitor

**Section 4 - Analog 6V**

VR3 \_\_\_ [G9] LM78L06  
 C91 \_\_\_ [G8] .1uF  
 C93 \_\_\_ [A1] “ “  
 C88 \_\_\_ [G9] 100uF

**Schematic Page 2**

6 volt Regulator (TO-92)  
 Ceramic Capacitor (104)  
  
 Electrolytic Capacitor

**Section 5 - Analog 8V**

VR1 \_\_\_ [D7] LM78L08  
 C31 \_\_\_ [D7] .1uF  
 C33 \_\_\_ [D8] “ “  
 C30 \_\_\_ [D8] 33uF

**Schematic Page 4**

TO92 8 volt Regulator (TO-92)  
 Ceramic Capacitor (104)  
  
 Electrolytic Capacitor

**Section 6 - Arduino CPU**

R3 \_\_\_ [C4] 4.7K 1/8W  
 R5 \_\_\_ [D4] “ “  
 R14 \_\_\_ [D5] “ “  
 R24 \_\_\_ [D6] “ “  
 R53 \_\_\_ [E1] “ “  
 R48 \_\_\_ [E3] “ “  
 R16 \_\_\_ [D6] 10K 1/8W  
 R6 \_\_\_ [D4] “ “  
 R29 \_\_\_ [F5] 1K 1/8W  
 R54 \_\_\_ [G1] 2.2K 1/8W  
 R55 \_\_\_ [H1] “ “  
 R56 \_\_\_ [I1] “ “  
 R57 \_\_\_ [J1] “ “  
 R2 \_\_\_ [C2] 22K 1/8W  
 C46 \_\_\_ [E4] 22pF  
 C47 \_\_\_ [E4] “ “  
 C46A \_\_\_ [E3] .1uF  
 C55 \_\_\_ [D4] “ “

**Schematic Page 8 & 9**

Resistor (Yellow Violet Red)  
  
  
  
  
 Resistor (Brown Black Orange)  
  
 Resistor (Brown Black Red)  
 Resistor (Red Red Red)  
  
 Resistor (Red Red Orange)  
 Ceramic capacitor (blue)  
  
 Ceramic Capacitor (104)

C52	___ [F1]	.001uF	Ceramic Disc Capacitor (102)
C54	___ [D3]	" "	
C86	___ [F10]	" "	
C87	___ [F10]	" "	
U2S1	___ [E2]	14 pin DIP sockets	Socket for CPU (In IC package)
U2S2	___ [E4]	" "	
Y2	___ [E4]	16.384 MHz	Crystal
LED1	___ [E6]	LED	Red LED
J1	___ [C4]	2x3 Header	ICSP Connector 6 pin dual header
J4	___ [F11]	Stereo 1/8	Paddle connector
S1	___ [E1]	SPST	Pushbutton Switch
S2	___ [F1]	" "	
S3	___ [F1]	" "	
S4	___ [G1]	" "	
S5	___ [H1]	" "	
S6	___ [I1]	" "	
U2	___ [E2]	ATmega168 CPU	28 pin DIP (In IC package)

### Section 7 - LCD Display

C53	___ [E1]	.1uF
RX2	___ [D2]	10K
R1	___ [C1]	47Ω 1/2W
DP1	___ [A1]	LCD Display

### Schematic Page 7

Ceramic Capacitor (104)
Trimmer Potentiometer (Contrast)
Resistor (Red Violet Black)
Sunlike 1602SD

### Section 8 - VFO

Q9	___ [E8]	2N4401
R25	___ [E8]	47K 1/8W
R31	___ [F8]	22K 1/8W
R32	___ [F9]	2.2K 1/8W
R30	___ [E7]	1M 1/8W
C16	___ [C8]	10pF
C43	___ [F7]	.01uF
C36	___ [F9]	1000pF
C38	___ [F8]	" "
C37	___ [F9]	2700pF
C34	___ [E9]	220pF
C41	___ [F8]	" "
C35	___ [E9]	150pF
C40	___ [F8]	" "
CT3	___ [D8]	5-25pF
VC1	___ [E8]	MVAM109
L5	___ [E9]	T50-6 Toroid Core

### Schematic Page 4

NPN Transistor (TO-92)
Resistor (Yellow Violet Orange)
Resistor (Red Red Orange)
Resistor (Red Red Red)
Resistor (Brown Black Green)
Multilayer Ceramic Capacitor
Ceramic Capacitor (103)
Polystyrene Capacitor
Polystyrene Capacitor
Multilayer Ceramic Capacitor
Multilayer Ceramic Capacitor
Johanson 9615 Trimmer Capacitor
Varactor Diode
6.0 uH 37 turns #28

### Section 9 - VFO Buffer

R26	___ [D7]	100K 1/8W
R27	___ [D7]	" "
R15	___ [D6]	2.2K 1/8W
R28	___ [D6]	1K 1/8W
C32	___ [D7]	.01uF
C39	___ [E8]	22pF
C42	___ [E7]	10pF

### Schematic Page 5

Resistor (Brown Black Yellow)
Resistor (Red Red Red)
Resistor (Brown Black Red)
Ceramic Disk Capacitor (103)
Ceramic Capacitor (Blue)
Ceramic Disk Capacitor (10)

C44	___ [E6]	10pF	Ceramic Disk Capacitor (10)
Q10	___ [E7]	2N4401	NPN Transistor (TO-92)
Q11	___ [E7]	" "	

### Section 10 - Tune/RIT Controls

R52	___ [G3]	1.5K 1/8W
R47	___ [G4]	2.2K 1/8W
R49	___ [G3]	3.9K 1/8W
R50	___ [G2]	7.5K 1/8W
R51	___ [G3]	33K 1/8W
RP1	___ [na]	10K (TUNE)
RP2	___ [na]	10K (RIT)
C45	___ [F5]	.01uF
U4	___ [G5]	CD4066

### Schematic Page 5

Resistor (Brown Green Red)
Resistor (Red Red Red)
Resistor (Orange White Red)
Resistor (Violet Green Red)
Resistor (Orange Orange Orange)
10 Turn 10K Potentiometer (Control Pack)
10K Potentiometer (Control Pack)
Ceramic Disk Cap (103) .2" spacing
14 pin DIP (In IC Package)

### Section 11 - TX Keyed 12V

R4	___ [C4]	4.7K 1/8W
R12	___ [C6]	" "
R13	___ [C6]	10K 1/8W
C3	___ [B2]	.1uF
C15	___ [C7]	2.2uF
Q3	___ [C6]	2N7000
Q4	___ [C7]	2N4403
R8	___ [A4]	150Ω 1/4W
ZD1	___ [B2]	7.5V

### Schematic Page 6

Resistor (Yellow Violet Red)
Resistor (Brown Black Orange)
Ceramic Capacitor (104)
Tantalum Capacitor
MOSFET transistor (TO-92)
PNP transistor (TO-92)
Resistor (Brown Green Brown)
1N5236 Zener Diode

### Section 12 - TX Mixer/1st Driver

R11	___ [A6]	100Ω 1/4W
R7	___ [A5]	150Ω 1/4W
R10	___ [B6]	5.6K 1/8W
R9	___ [B6]	10K 1/8W
C7	___ [A4]	2.2pF
C1	___ [A3]	150pF
C2	___ [A3]	47pF
C6	___ [A4]	56pF COG
C8	___ [A5]	" "
C10	___ [A6]	120pf NPO
C11	___ [A6]	220pF
C4	___ [C2]	680pF
C5	___ [C3]	.01uF
C9	___ [A5]	.1uF
CT1	___ [A2]	8-70pF
L1	___ [A3]	47uH
U1	___ [B3]	NE602A
Q1	___ [A6]	2N2222A
Y1	___ [B2]	4.9152 MHz
T1	___ [B4]	42IF123
T2	___ [B5]	" "

### Schematic Page 6

Resistor (Brown Black Brown)
Resistor (Brown Green Brown)
Resistor (Green Blue Red)
Resistor (Brown Black Orange)
Ceramic Disk Capacitor (2.2)
Ceramic Disk Capacitor (151)
Ceramic Disk Capacitor (470)
Multilayer Ceramic Capacitor
Ceramic Disk Capacitor (121)
Multilayer Ceramic
Ceramic Disk Capacitor (NPO)
Ceramic Disk Capacitor (103)
Ceramic Capacitor (104)
Trimmer Capacitor
Inductor
Mixer (DIP8) (In IC package)
NPN Transistor (TO-18)
Crystal
IF Transformer (10.7 MHz)

### Section 13 - PSoC Controller

R45	___ [G4]	22K 1/8W
C49	___ [F3]	.1uF

### Schematic Page 3

Resistor (Red Red Orange)
Ceramic Capacitor (104)

C48	___ [F5]	.1uF	Mylar Capacitor (104) Brown
U3	___ [G4]	CY8C27143	PSoC (DIP8) (IC packaging)
U3S	___ [G4]	8 pin socket	DIP8 (In IC package)

#### Section 14 - Low Pass Filter / Rx Antenna Switch

R23	___ [C9]	22k 1/8W	Resistor (Red Red Orange)
C21	___ [A10]	220pF	Multilayer Ceramic 200V (221)
C27	___ [B11]	" "	
C20	___ [A10]	680pF	Multilayer Ceramic 200V (681)
C23	___ [A10]	" "	
C26	___ [B10]	" "	
C24	___ [B11]	" "	
C25	___ [B10]	.001uF	Ceramic Disc Capacitor (102)
C29	___ [C9]	" "	
L2	___ [A10]	T37-6	1.2uH 17 turns #24
L3	___ [B11]	" "	
Q7	___ [C10]	2N7000	MOSFET transistor (TO-92)
Q8	___ [C10]	" "	
Q6	___ [B10]	ZVNL110A	MOSFET transistor (TO-92E)
J2	___ [C11]	BNC RF Connector	PCB Mount (Control Pack)
RP3	___ [na]	5K (RF Gain)	5K Potentiometer (Control Pack)

#### Schematic Page 7

#### Section 15 - Audio Amplifier

C94	___ [H10]	.01uF	Ceramic Disk Capacitor (103)
C81	___ [J10]	1uF	Tantalum Capacitor (105)
C82	___ [I9]	.1uF	Ceramic Capacitor (104)
C83	___ [H9]	.1uF	Ceramic Capacitor (104)
C84	___ [G10]	100uF	Electrolytic Capacitor
R33	___ [G10]	2.2Ω 1/4W	Resistor (Red Red Black)
R34	___ [H9]	27K 1/4W	Resistor (Red Violet Orange)
RX3	___ [J10]	5K	Trimmer Potentiometer (AF Gain)
J5	___ [H11]	Stereo 1/8	Speaker connector
U8	___ [H10]	TDA7052A	Audio Amp (DIP8) (In IC package)

#### Schematic Page 3

#### Section 16 - Active Filter

U7	___ [I8]	TS922A	Dual Op Amp (DIP8) (In IC package)
R36	___ [H8]	66.5K 1/8W	1% Resistor
R42	___ [G7]	16.5K 1/8W	1% Resistor
R35	___ [H8]	8.26K 1/8W	1% Resistor
R46	___ [F4]	1M 1/8W	Resistor (Brown Black Blue)
C89	___ [H8]	.012uF	Mylar Capacitor (Yellow Box)
C90	___ [G8]	" "	

#### Schematic Page 2

#### Section 17 - Receiver Input Filter, 1st Rx Mixer, and Crystal Filter

Part 1			
C60	___ [H3]	.1uF	Ceramic Capacitor (104)
C61	___ [H4]	47pF	Ceramic Disk Capacitor (470)
C57	___ [I2]	56pF	Multilayer Ceramic Capacitor (560)
C59	___ [H3]	" "	
C58	___ [I3]	2.2pF	Multilayer Ceramic Capacitor (2.5)
C66	___ [H5]	39pF	Multilayer Ceramic Capacitor (390)

#### Schematic Page 1

C67	___ [I4]	220pF	Multilayer Ceramic Capacitor (221)
C69	___ [J5]	" "	
C71	___ [I5]	" "	
C68	___ [J4]	150pF	Multilayer Ceramic Capacitor (151)
C70	___ [J5]	" "	
L6	___ [H5]	10uH	Inductor
L7	___ [I5]	" "	
U5	___ [H4]	NE602A	Mixer (DIP8) (In IC package)
<b>Part 2</b>			
Y4	___ [J4]	4.9152 MHz	Crystal
Y5	___ [J4]	" "	
Y6	___ [J5]	" "	
Y7	___ [J6]	" "	
T4	___ [H3]	42IF123	IF Transformer (10.7 MHz)
T5	___ [J3]	" "	
Cxx	___ [H3]	.001uF	Ceramic Disc Capacitor (102)

**Section 18 - 2nd Rx Mixer and Diff Amp**

R44	___ [I5]	470Ω 1/8W
R40	___ [I7]	4.7K 1/8W
R43	___ [J6]	" "
R39	___ [J8]	470K 1/8W
R41	___ [J7]	" "
C72	___ [I6]	.01uF
C73	___ [H6]	.01uF
C74	___ [I6]	.1uF
C75	___ [I7]	" "
C62	___ [H5]	47pF
C63	___ [H6]	220pF
C78	___ [J8]	150pF
C77	___ [J7]	" "
C64	___ [H5]	.1uF
C76	___ [H7]	" "
C65	___ [H5]	22uF
CT2	___ [H7]	8-70pF
D2	___ [J7]	1N4148
D3	___ [J7]	" "
U6	___ [H6]	NE602A
Y3	___ [G6]	4.9152 MHz

**Section 19 - Tx 2nd Driver/Final**

Q5	___ [A9]	IRF510
R19	___ [B7]	4.7K 1/8W
R20	___ [A4]	2.2K 1/8W
R18	___ [B7]	1K 1/8W
R21	___ [A7]	22Ω 1/4W
R22	___ [A9]	10Ω 1/8W
C12	___ [B6]	.01uF
C14	___ [B7]	56pF NPO
C13	___ [A8]	.1uF
C18	___ [A9]	" "

**Schematic Page 1**

Resistor (Yellow Violet Brown)
Resistor (Yellow Violet Red)
Resistor (Yellow Violet Yellow)
Ceramic Disk Capacitor (103)
Mylar Capacitor (103) Brown
Mylar Capacitor (104) Brown
Ceramic Disk Capacitor (470)
Ceramic Disk Capacitor (101)
Multilayer Ceramic Capacitor (151)
Ceramic Capacitor (104)
Tantalum Capacitor
Trimmer Capacitor
Silicon Diode
Mixer (DIP8) (In IC package)
Crystal

**Schematic Page 7**

Power MOSFET (TO-220)
Resistor (Yellow Violet Red)
Resistor (Brown Black Orange)
Resistor (Brown Black Red)
Resistor (Red Red Black)
Resistor (Brown Black Black)
Ceramic Disk Capacitor (103)
Multilayer Ceramic Capacitor
Ceramic Capacitor (104)

C22	___ [A10]	.1uF	Ceramic Capacitor (104)
C28	___ [B9]	" "	
C19	___ [B9]	.001uF	Ceramic Capacitor (102)
C17	___ [C9]	220uF	Electrolytic Capacitor
Q2	___ [A7]	2N2219A	NPN Transistor (TO-39)
T3	___ [B8]	42IF123	IF Transformer (10.7 MHz)
RX1	___ [A8]	5K	Trimmer Pot (Transmit Bias)
L4	___ [A9]	FT50-43	7 turns bifilar winding #24
<b>Control Pack</b>			
Knob	___		Qty 3 - Tuning, RIT, RF Gain
Potentiometer	___		Qty 1 - Single turn 5K Pot
Potentiometer	___		Qty 1 - Single turn 10K Pot
Potentiometer	___		Qty 1 - 10 turn 10K Pot
BNC	___		Qty 1 - BNC Connector PCB mount
<b>Miscellaneous</b>			
Copper Wire #24	___		33 inches Low pass filter and final toroids
Copper Wire #28	___		21 inches VFO toroid
Enclosure	___		Qty 1
Heat Sink Bracket	___		Qty 1
Rubber Feet	___		Qty 4
4-40 x 1/4 Screws Black	___		Qty 4 For enclosure cover
4-40 x 3/8 Screws	___		Qty 4 For PCB mounting
TO220 Insulator	___		Qty 1 For heat sink
TO220 Shoulder Washer	___		Qty 1 For heat sink
4-40 x 1/4 Screw	___		Qty 2 For heat sink bracket
4-40 Nut w/Lock Washer	___		Qty 1 For heat sink bracket
Insulated Wire	___		20 inches Control Wiring
<b>IC Pack</b>			
NE602/610	___		Qty 3 8 pin DIP
TS922A	___		Qty 1 8 pin DIP
CD4066	___		Qty 1 14 pin DIP
TD7052A	___		Qty 1 8 pin DIP
Atmega68	___		Qty 1 28 pin DIP
CY8C27143 (PsoC)	___		Qty 1 8 pin DIP
14 pin socket	___		Qty 2
8 pin socket	___		Qty 1

