

**openQRP Transceiver Parts List By Functional Section – 1/11/2014  
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 (104)

**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  
Ceramic Capacitor (104)

C52	___ [F1]	.001uF	Ceramic Disc Capacitor (102)
C54	___ [D3]	" "	
C86	___ [F10]	" "	
C87	___ [F10]	" "	
U2S1	___ [E2]	28 pin DIP socket	Socket for CPU (In IC package)
Y2	___ [E4]	16.00 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 1/4W
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]	" "
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 Blue)
Ceramic Capacitor (10)
Ceramic Capacitor (103)
Polystyrene Capacitor
Polystyrene Capacitor
Ceramic Capacitor (221)
Ceramic Capacitor (151)
Varactor Diode
6.0 uH 37 turns #28 (large yellow)

#### 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
C44	___ [E6]	10pF
Q10	___ [E7]	2N4401

#### Schematic Page 5

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

### 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

### 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] 9-90pF  
L1 \_\_\_ [A3] 47uH  
U1 \_\_\_ [B3] NE602A  
Q1 \_\_\_ [A6] 2N2222A  
Y1 \_\_\_ [B2] 4.9152 MHz  
T1 \_\_\_ [B4] 42IF123  
T2 \_\_\_ [B5] “ “

### Section 13 - PSoC Controller

R45 \_\_\_ [G4] 22K 1/8W  
C49 \_\_\_ [F3] .1uF  
C48 \_\_\_ [F5] .1uF  
U3 \_\_\_ [G4] CY8C27143

### 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)

### Schematic Page 6

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

### 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 (560)  
  
Ceramic Disk Capacitor (121)  
Multilayer Ceramic (221)  
Ceramic Disk Capacitor (681)  
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)

### Schematic Page 3

Resistor (Red Red Orange)  
Ceramic Capacitor (104)  
Mylar Capacitor (104) Brown, .2"  
PSoC (DIP8) (In IC package)

U3S     \_\_\_ [G4]        8 pin socket                    DIP8 (In IC package)

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

R23     \_\_\_ [C9]        22k 1/8W  
C21     \_\_\_ [A10]      220pF  
C27     \_\_\_ [B11]      " "  
C20     \_\_\_ [A10]      680pF  
C23     \_\_\_ [A10]      " "  
C26     \_\_\_ [B10]      " "  
C24     \_\_\_ [B11]      " "  
C25     \_\_\_ [B10]      .001uF  
C29     \_\_\_ [C9]        " "  
L2      \_\_\_ [A10]      T37-6  
L3      \_\_\_ [B11]      " "  
Q7      \_\_\_ [C10]      2N7000  
Q8      \_\_\_ [C10]      " "  
Q6      \_\_\_ [B10]      ZVNL110A  
J2      \_\_\_ [C11]      BNC RF Connector  
RP3     \_\_\_ [na]        5K (RF Gain)

**Schematic Page 7**

Resistor (Red Red Orange)  
Multilayer Ceramic 200V (221)  
  
Multilayer Ceramic 200V (681)  
  
  
Ceramic Disc Capacitor (102)  
  
1.2uH 17 turns #24  
  
MOSFET transistor (TO-92)  
  
MOSFET transistor (TO-92E)  
PCB Mount (Control Pack)  
5K Potentiometer (Control Pack)

**Section 15 - Audio Amplifier**

C94     \_\_\_ [H10]      .01uF  
C81     \_\_\_ [J10]      1uF  
C82     \_\_\_ [I9]        .1uF  
C83     \_\_\_ [H9]        .1uF  
C84     \_\_\_ [G10]      100uF  
R33     \_\_\_ [G10]      2.2Ω 1/4W  
R34     \_\_\_ [H9]        27K 1/8W  
RX3     \_\_\_ [J10]      5K  
J5      \_\_\_ [H11]      Stereo 1/8  
U8      \_\_\_ [H10]      TDA7052A

**Schematic Page 3**

Ceramic Disk Capacitor (103)  
Tantalum Capacitor (105)  
Ceramic Capacitor (104)  
Ceramic Capacitor (104)  
Electrolytic Capacitor  
Resistor (Red Red Gold)  
Resistor (Red Violet Orange)  
Trimmer Potentiometer (AF Gain)  
Speaker connector  
Audio Amp (DIP8) (In IC package)

**Section 16 - Active Filter**

U7      \_\_\_ [I8]        TS922A  
R36     \_\_\_ [H8]        66.5K 1/8W  
R42     \_\_\_ [G7]        16.5K 1/8W  
R35     \_\_\_ [H8]        8.26K 1/8W  
R46     \_\_\_ [F4]        1M 1/8W  
C89     \_\_\_ [H8]        .012uF  
C90     \_\_\_ [G8]        " "

**Schematic Page 2**

Dual Op Amp (DIP8) (In IC package)  
1% Resistor  
1% Resistor  
1% Resistor  
Resistor (Brown Black Green)  
Mylar Capacitor

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

Part 1

C60     \_\_\_ [H3]        .1uF  
C61     \_\_\_ [H4]        47pF  
C57     \_\_\_ [I2]        56pF  
C59     \_\_\_ [H3]        " "  
C58     \_\_\_ [I3]        2.2pF  
C66     \_\_\_ [H5]        39pF  
C67     \_\_\_ [I4]        220pF  
C69     \_\_\_ [J5]        " "

**Schematic Page 1**

Ceramic Capacitor (104)  
Ceramic Disk Capacitor (470)  
Ceramic Capacitor (560)  
  
Ceramic Capacitor (2.1)  
Ceramic Capacitor (390)  
Ceramic Capacitor (221)

C71	___ [I5]	“ “	
C68	___ [J4]	150pF	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]	9-90pF
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]	“ “
C22	___ [A10]	.1uF
C28	___ [B9]	“ “

### 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 (221)
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 (Red Red Red)
Resistor (Brown Black Red)
Resistor (Red Red Black)
Resistor (Brown Black Black)
Ceramic Disk Capacitor (103)
Ceramic Capacitor (560)
Ceramic Capacitor (104)
Ceramic Capacitor (104)

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

**Control Pack**

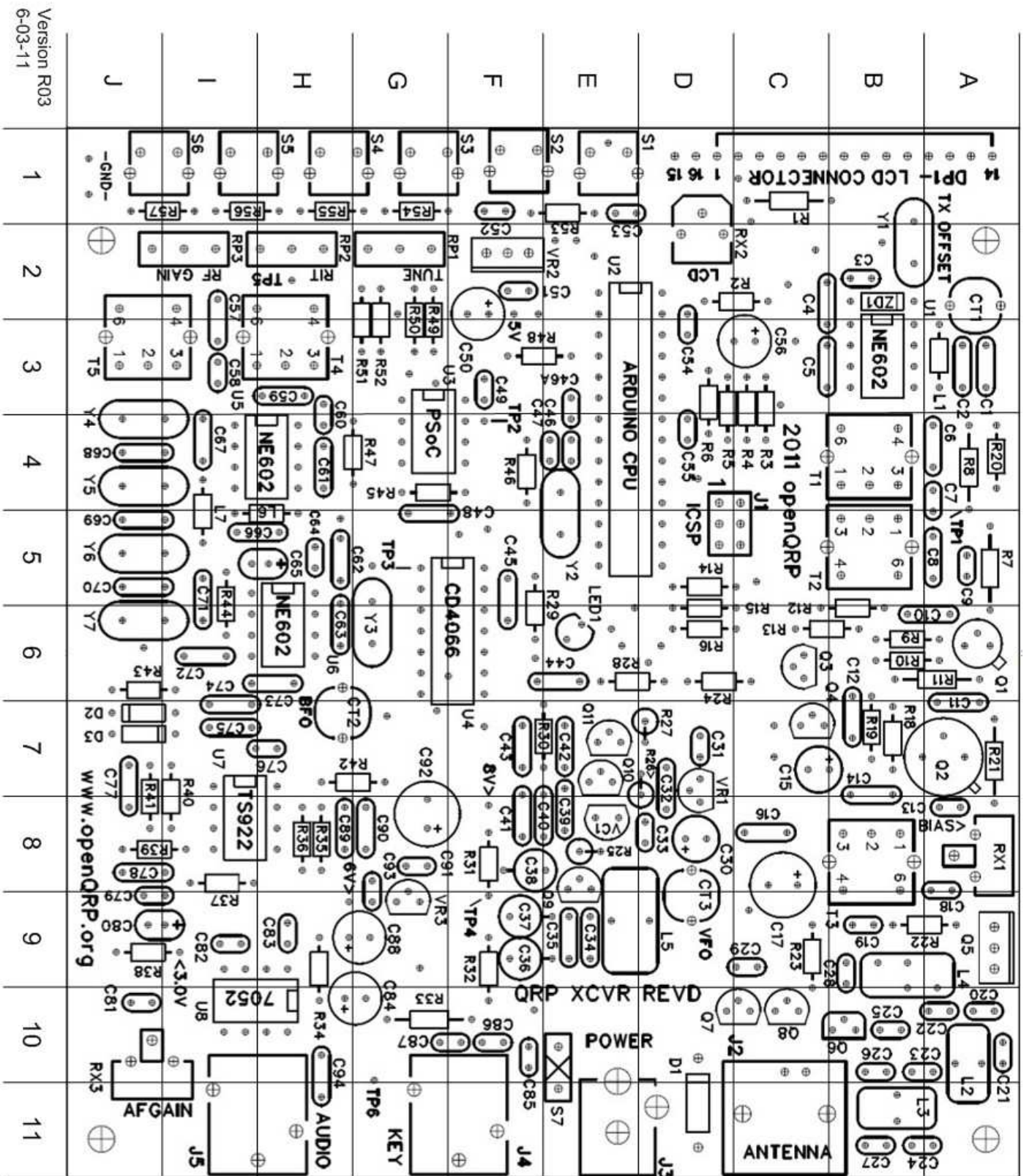
Knob	___	Qty 3 - Tuning, RIT, RF Gain
Potentiometer	___	Qty 1 - Single turn 5K Pot
Potentiometer	___	Qty 1 - Single turn 10K Pot
Potentiometer	___	Qty 1 - 10 turn 10K Pot
BNC	___	Qty 1 - BNC Connector PCB mount

**Miscellaneous**

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

**IC Pack**

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
Atmega168	___	Qty 1 28 pin DIP
CY8C27143 (PsoC)	___	Qty 1 8 pin DIP
14 pin socket	___	Qty 2
8 pin socket	___	Qty 1



Parts Placement Guide