HF BPF 05_Band 2: 4-8 MHz

Band 2: 4-8 MHz Introduction

General

The latest design of the HF-BPF kit now permits of two options:

- Option 1: the original design covering 1.8 MHz - 30 mHz, in 4 bands, and
- Option 2: a board covering 3.5 MHz - 30 MHz plus 6m, in 4 bands

These builders notes describe 4 "bands" and the board layout permits filters for four bands. However, depending upon the option (1 or 2), the bands named "band 1" and "band 2" will be built and installed differently. The changes for Band 2 are as follows (and will be implmented somewhat more elegantly in these note, time and resources permitting):

- Band 2 is changed between option 1 (4-8 MHz) and option 2 (3.5-8MHz):
  - C10: option 1=100 pF; option 2 = 120 pF
  - C11: option 1=390 pF ; option 2 = 270 pF
  - C12: option 1=100 pF ; option 2 = 120 pF
  - L4: unchanged
  - L5: option 1= 2.1 uH ; option 2 = 3.5 uH
  - L6: unchanged

Theory of Operation

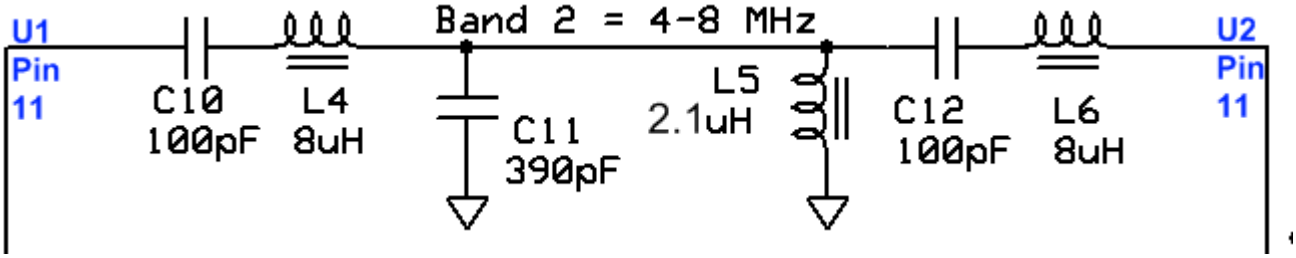
This stage builds and installs the filter "chain" for Band 2. Refer to Jan G0BBL's Design Plots to see the performance characteristics of this chain.

Remember, when winding toroidal inductors, a single pass through the core counts as 1 turn. You might want to review Leonard KC0WOX's excellent 10-minute video on winding toroidal coils.

Band 2: 4-8 MHz Schematic

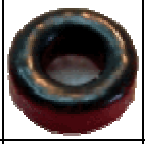
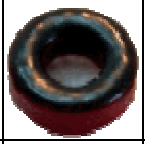
(Resistor testpoints (hairpin, top, or left-hand lead), as physically installed on the board, are marked in the schematic with red dots)

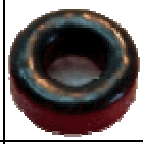
(Click for Full Schematic)



Band 2: 4-8 MHz Bill of Materials

Detailed Bill of Materials

Check	Designation	Component	Marking	Category	Orientation	Notes	Circuit
❑	C10	100 pF 5%	101	Ceramic			Band 2: 4-8 MHz
❑	C11	390 pF 5%	391	Ceramic			Band 2: 4-8 MHz
❑	C12	100 pF 5%	101	Ceramic			Band 2: 4-8 MHz
❑	L4	8 uH 49T #30 on T25-2 (22")	red	coil			Band 2: 4-8 MHz
❑	L4-core	T25-2 toroid core	red 	toroid			Band 2: 4-8 MHz
❑	L5	2.1 uH 24T #30 0n T25-2 (14")	red	coil			Band 2: 4-8 MHz
❑	L5-core	T25-2 toroid core	red 	toroid			Band 2: 4-8 MHz
❑	L6	8 uH 49T #30 on T25-2 (22")	red	coil			Band 2: 4-8 MHz

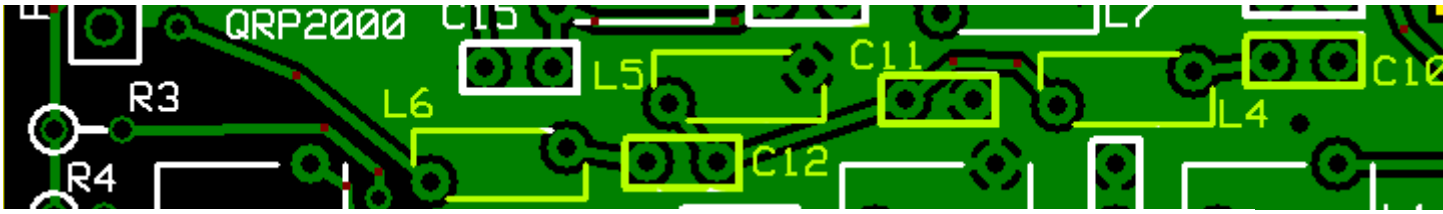
❑	L6-core	T25-2 toroid core	red 	toroid			Band 2: 4-8 MHz
❑	wire 2	#30enameled magnetic wire		misc			Band 2: 4-8 MHz

Band 2: 4-8 MHz Summary Build Notes

- Install the Capacitors
- Wind and Install the Coils
- Test the Stage

Band 2: 4-8 MHz Detailed Build Notes

Top of the Board



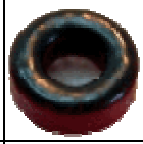
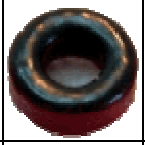
Install the Capacitors

Per Jan, G0BBL, solder the Ceramic Capacitors with a clearance of 1/16" to 1/8" (2mm to 3mm) away from the PCB surface.

Check	Designation	Component	Marking	Category	Orientation	Notes
❑	C10	100 pF 5%	101	Ceramic		
❑	C12	100 pF 5%	101	Ceramic		
❑	C11	390 pF 5%	391	Ceramic		

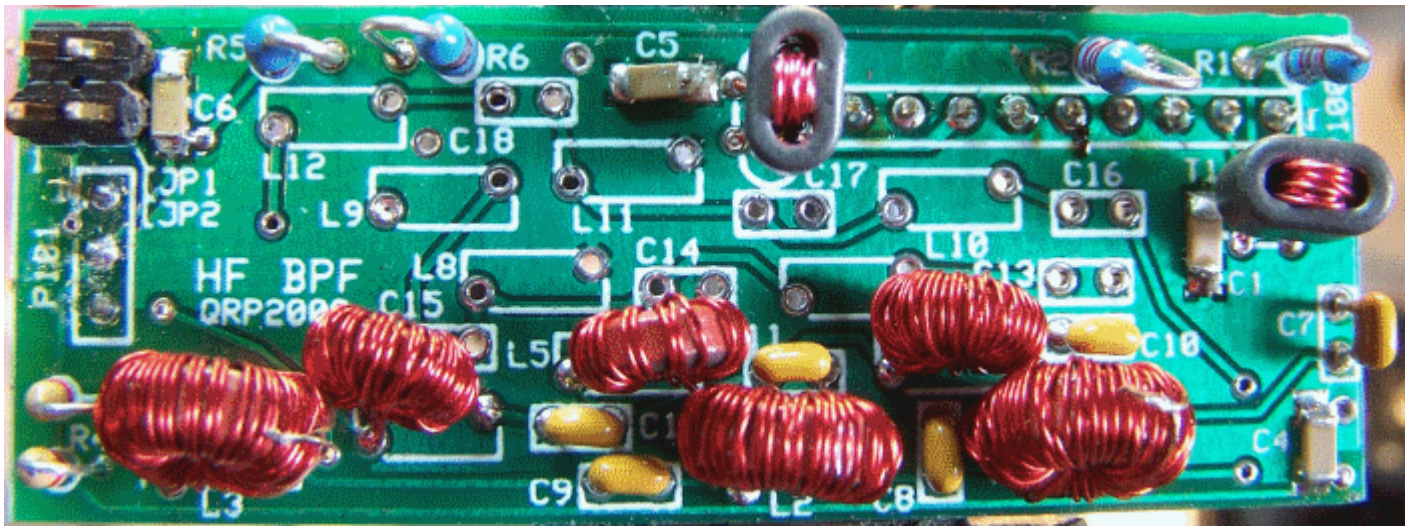
Wind and Install the Coils

Check	Designation	Component	Marking	Category	Orientation	Notes
❑	wire 2	#30enameled magnetic wire		misc		

❑	L6-core	T25-2 toroid core	red 	toroid		
❑	L5-core	T25-2 toroid core	red 	toroid		
❑	L4-core	T25-2 toroid core	red 	toroid		
❑	L5	2.1 uH 24T #30 0n T25-2 (14")	red	coil		
❑	L6	8 uH 49T #30 on T25-2 (22")	red	coil		
❑	L4	8 uH 49T #30 on T25-2 (22")	red	coil		

Band 2: 4-8 MHz Completed Stage

Top of the Board



Band 2: 4-8 MHz Testing

Visual Check

Test Setup

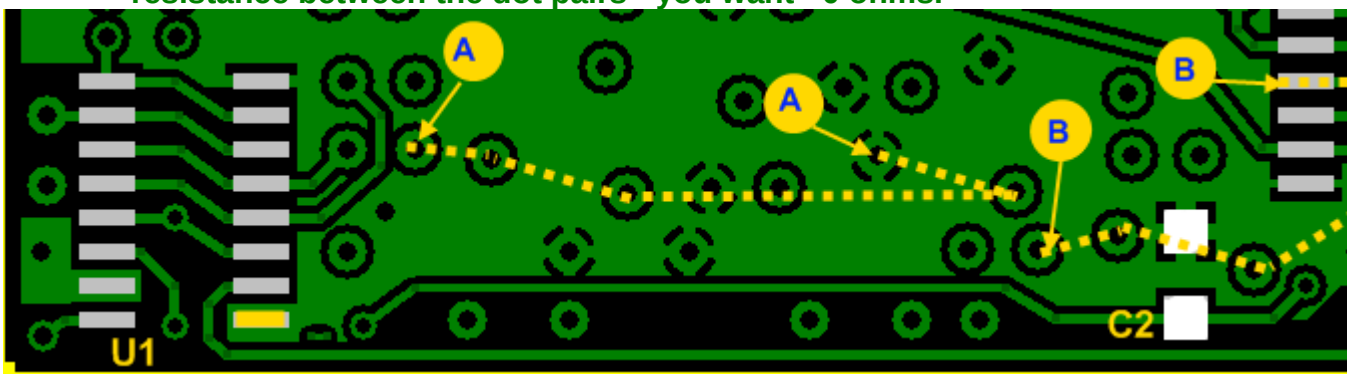
Using very good lighting and magnification, carefully inspect the solder joints to identify bridges, cold joints, or poor contacts.

Pay especial attention to the joints on the inductors. If necessary, touch up the joints with your iron and/or some flux.

Continuity Tests

Test Setup

- **This tests for continuity in the "chain" of inductors for this band**
- **The graphic below shows two continuity chains and their associated test points on the bottom of the board.**
- **The "A and B chains"are shown using lettered dots and lines. :**
- **For each of the two segments (A-A and B-B), measure the resistance between the dot pairs - you want ~0 ohms.**



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Test Measurements

Testpoint	Units	Nominal Value	Author's	Yours
Point A to Point A	ohms	0	0	_____
Point B to Point B	ohms	0	0	_____

Home Bill of Materials Busses and Rails Switches Transformers Band 1: 1.8-4 MHz Band 2: 4-8 MHz Band 3: 8-16 MHz Band 4: 16-30 MHz Band1a 6m Band2a 3.5-8 MHz Comments Revisions as of 1/16/2009 WB5RVZ Main Homepage