

ADX-MINI Tuner Build Manual

for tuner board version 1.1

March 30, 2023

Intro

This tuner was inspired by this YouTube video:

<https://www.youtube.com/watch?v=JwVuvu-C30c>

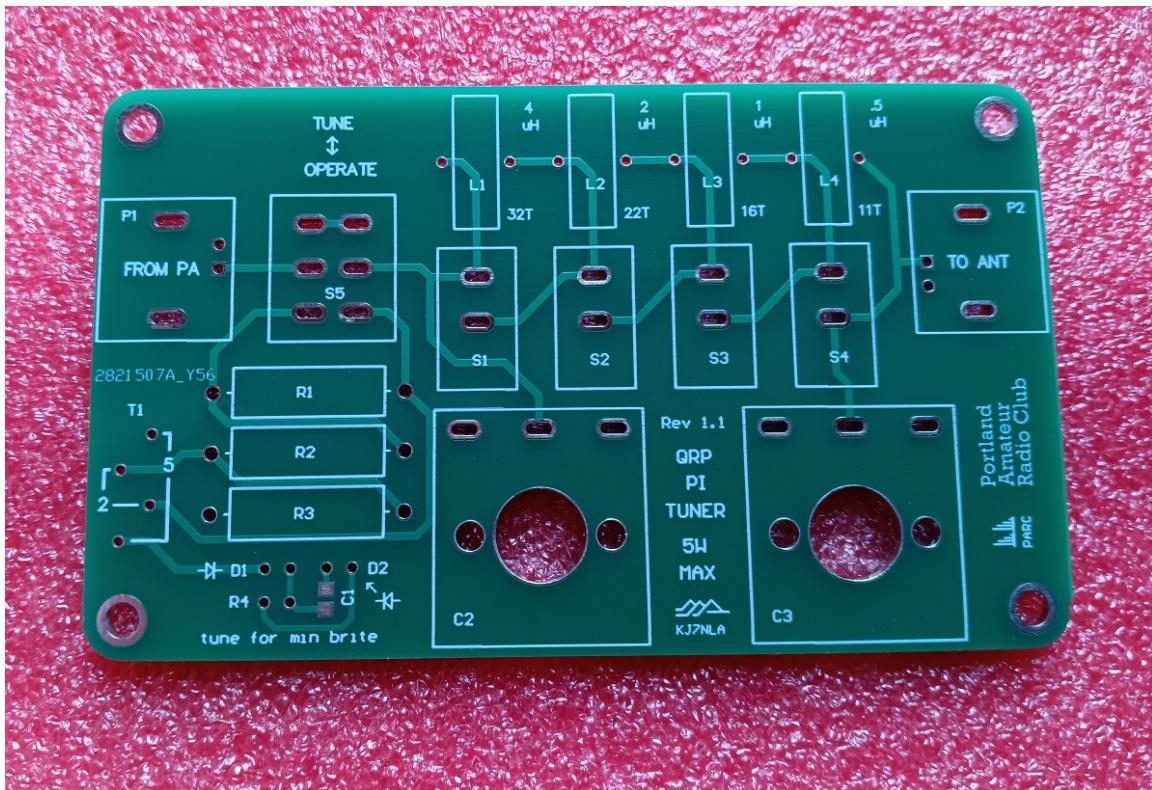
I modified the design by adding a second variable cap to make a Pi-network rather than the simpler L-network.

Table of Contents

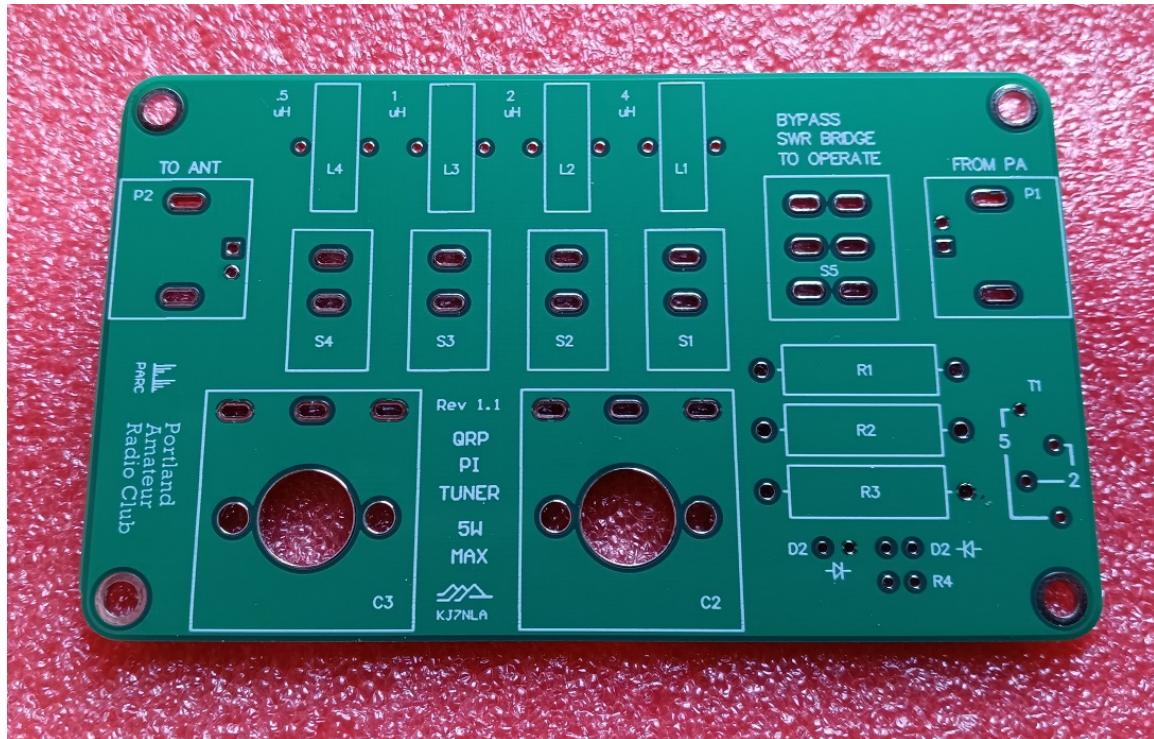
Step 1: Inspect the board	3
Step 3: Install the Variable Caps.....	6
Step 4: Install the Switches	7
Step 5: Install the BNC Connectors	8
Step 6: Install D2 (LED)	9
Step 7: Install R4 and D1	10
Step 8: Wind T1	11
Step 9: Install T1	12
Step 10: Install R1,R2, and R3	13
Step 11: Wind and Install L1, L2, L3, and L4	14
Step 12: Put the main board in the case	15
Step 13: Install the Top Plate and Tuning Knobs	16
Schematic	17
BOM.....	18

Step 1: Inspect the board

Here's what it looks like when it arrives from JLCPCB

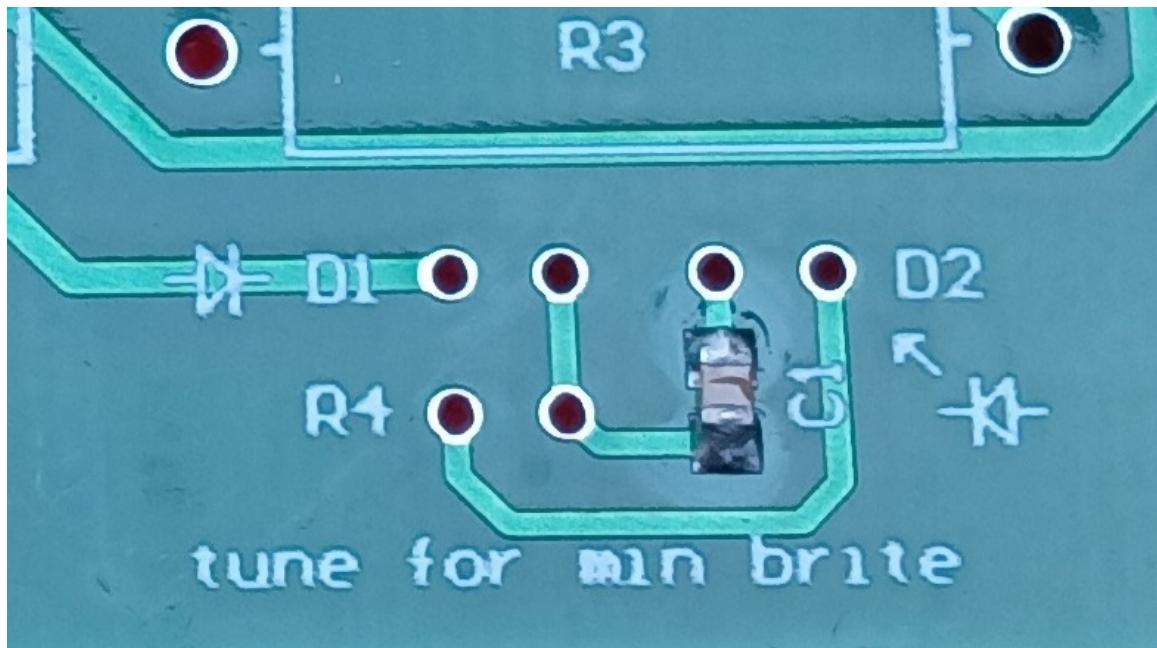


Step 1: Inspect the board (back side)



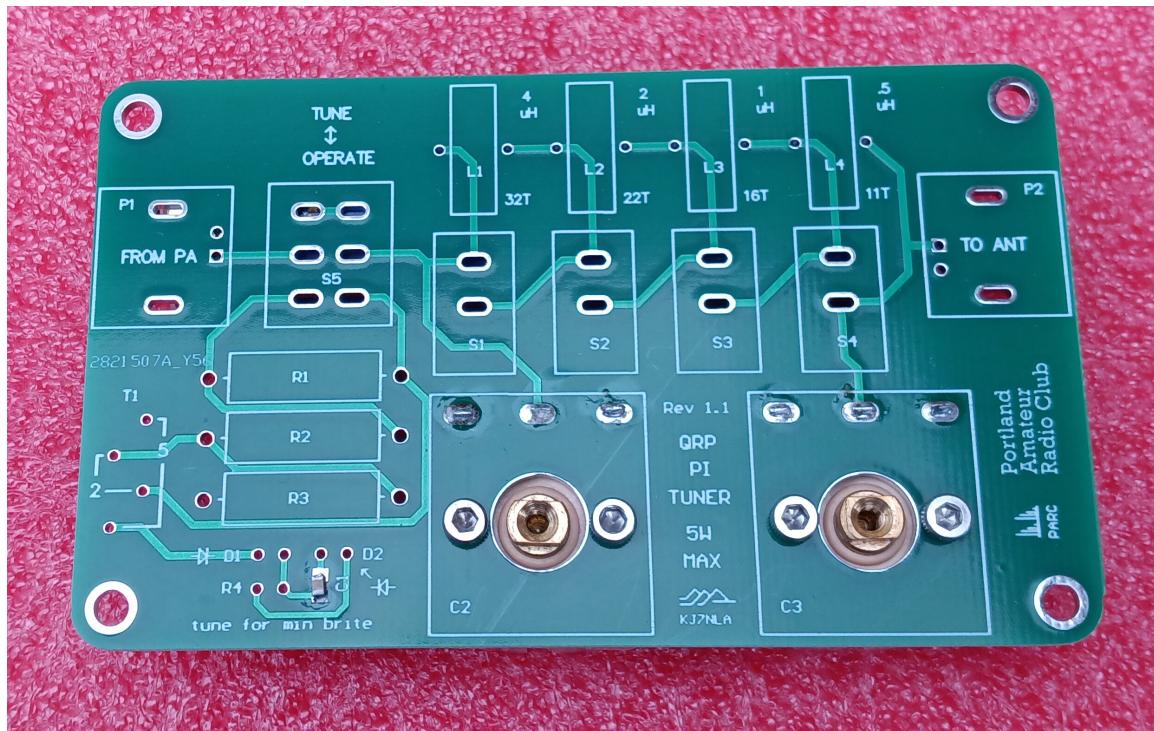
Step 2: Install SMT cap C1

C1 is the only SMT part on this board. It's in an 0805 package, so soldering with a fine-tipped soldering iron is no problem. Put a little solder on one pad first and use tweezers to hold the cap in place while soldering the first pad.



Step 3: Install the Variable Caps

- Use four m2.5x6mm screw to secure the variable caps C2 and C3
- Solder C2 and C3



Step 4: Install the Switches

While solder the five switches. It is helpful to use the tuner case top plate to keep things aligned.



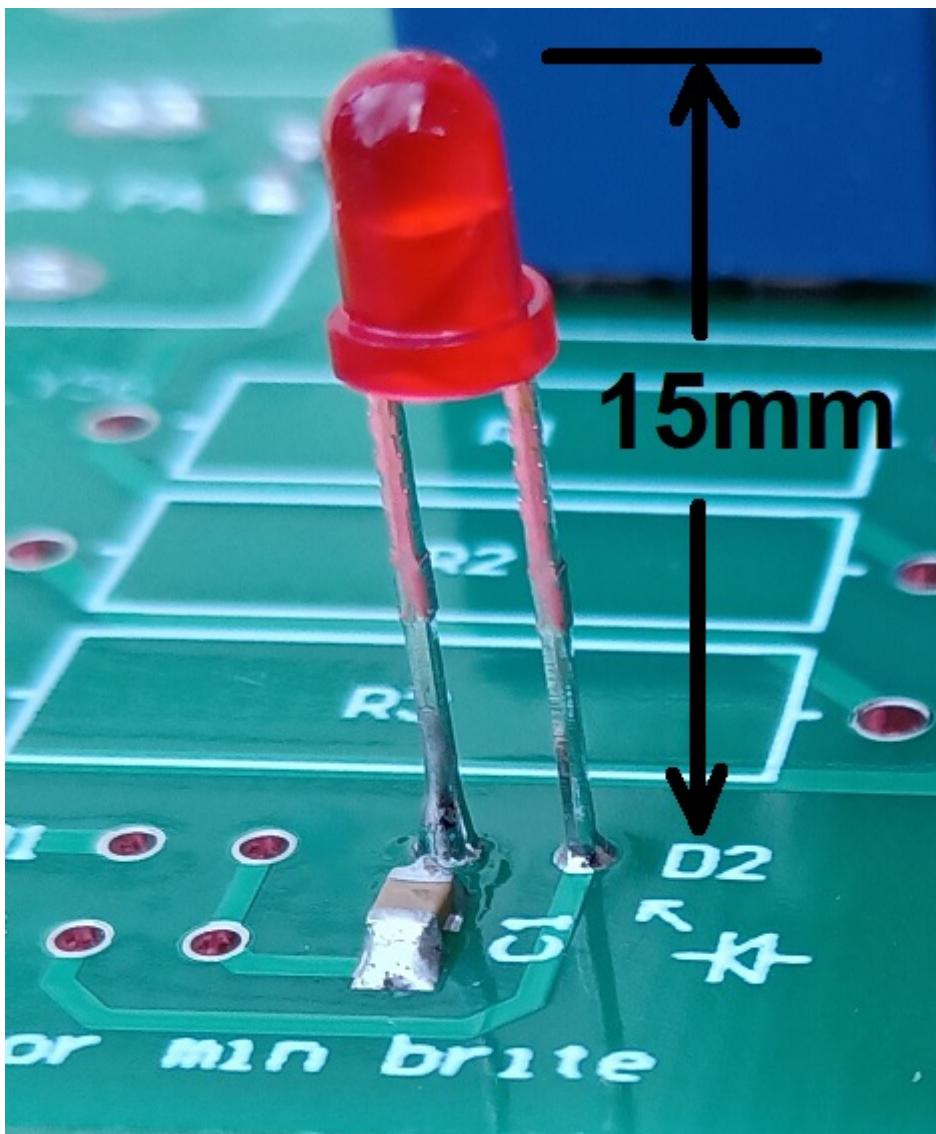
Step 5: Install the BNC Connectors

Use a small (rubber jaw) hobby vice to hold P1 and P2 BNC in place while soldering them.



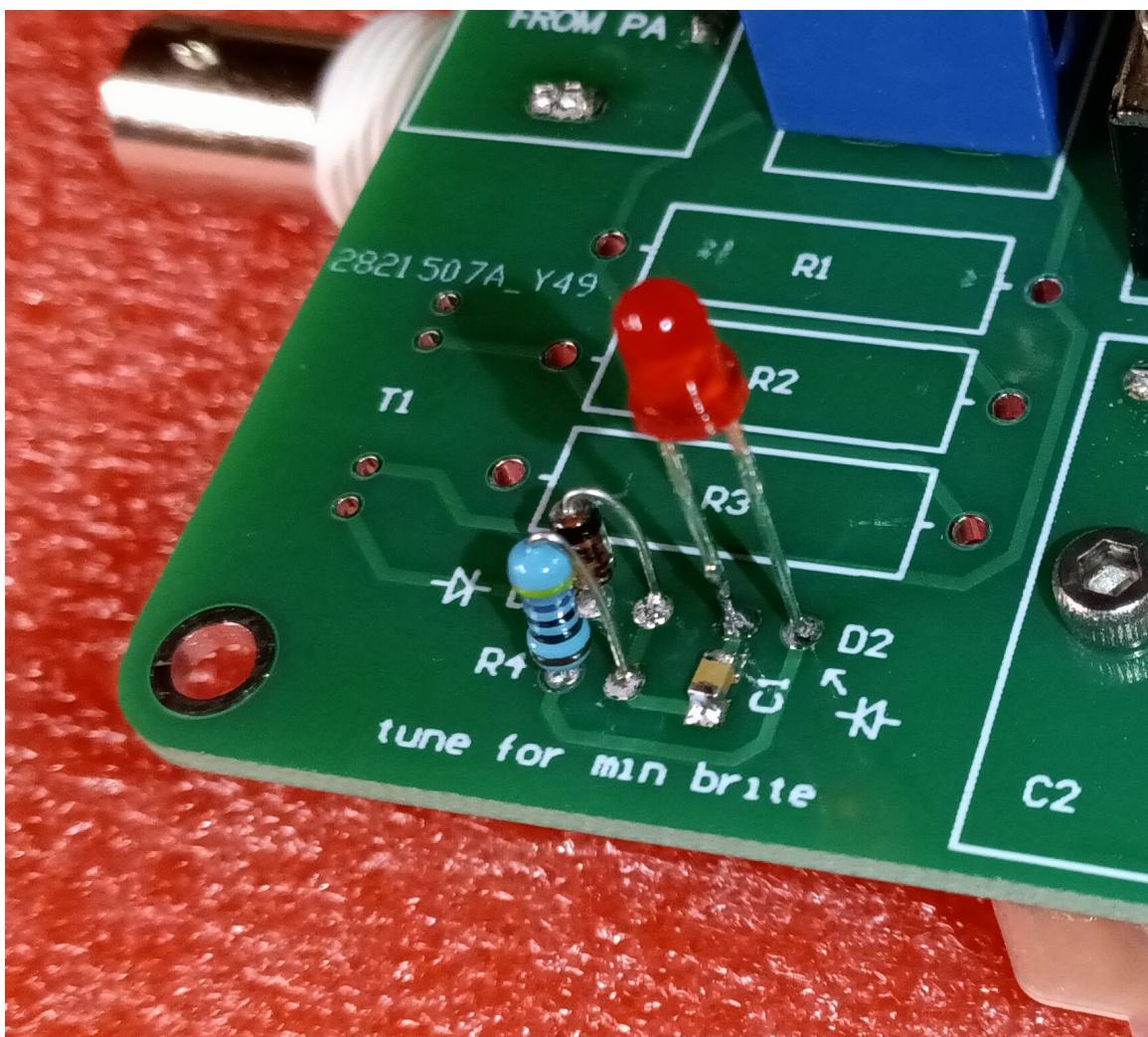
Step 6: Install D2 (LED)

In order to align with the tuner case top plate, the LED height needs to be approximately 15mm as shown here:



Step 7: Install R4 and D1

R4 and D1 are installed as shown. Mind the polarity of D1.



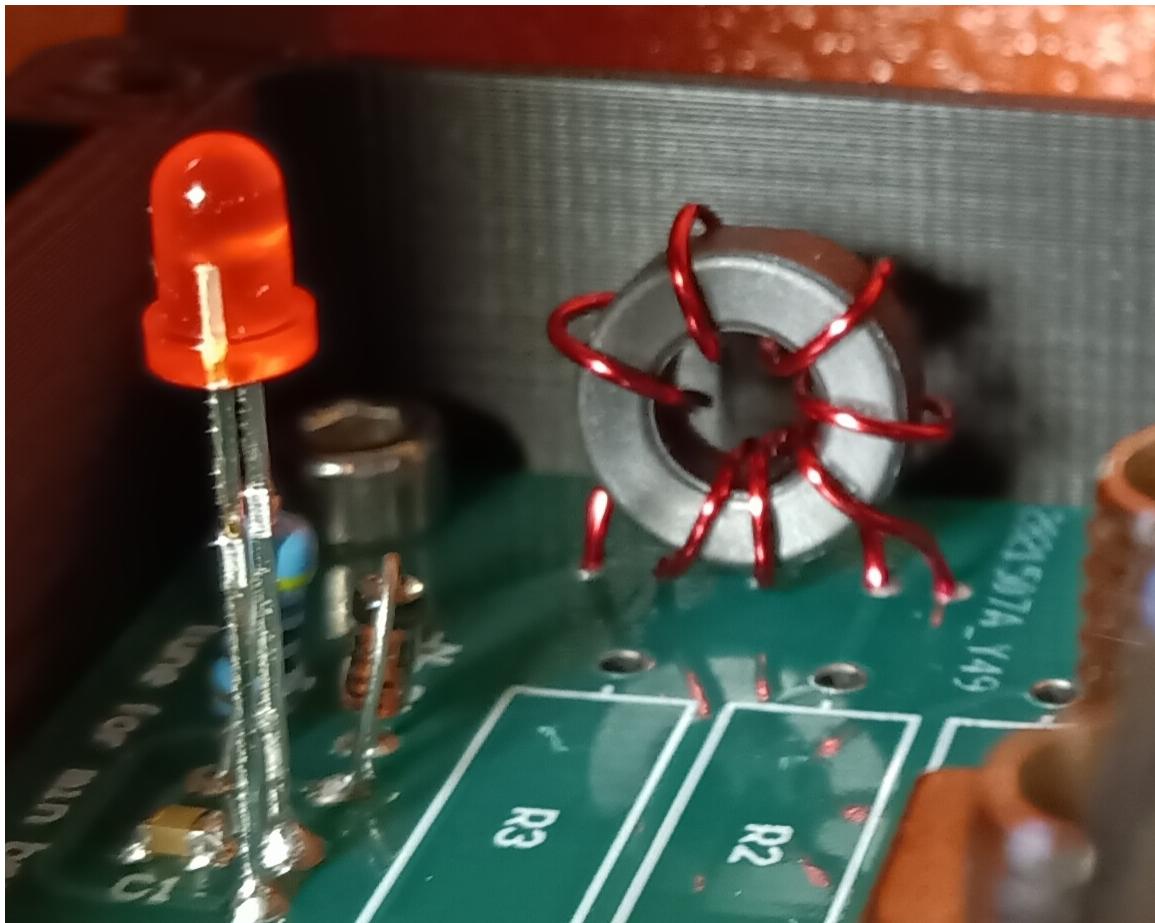
Step 8: Wind T1

T1 is a transformer with 2 turns on the primary and 5 turns on the secondary.
1.5 inches of 24 AWG wire is needed for the primary and 3.5 inches of 24 AWG
wire is needed for the secondary

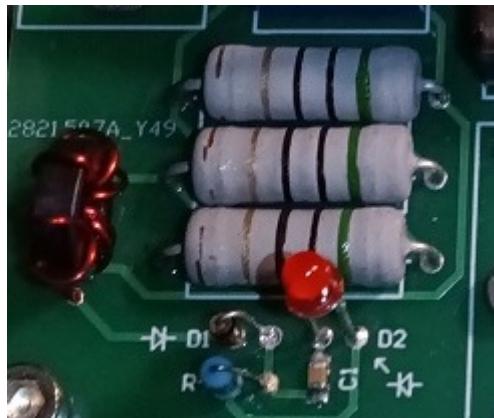


Step 9: Install T1

The primary windings are inserted in the inner pair of through holes and the secondary windings are inserted in the outer pair of through holes as shown. The primary windings are marked with a “2” in the silkscreen and the secondary windings are marked with a “5”



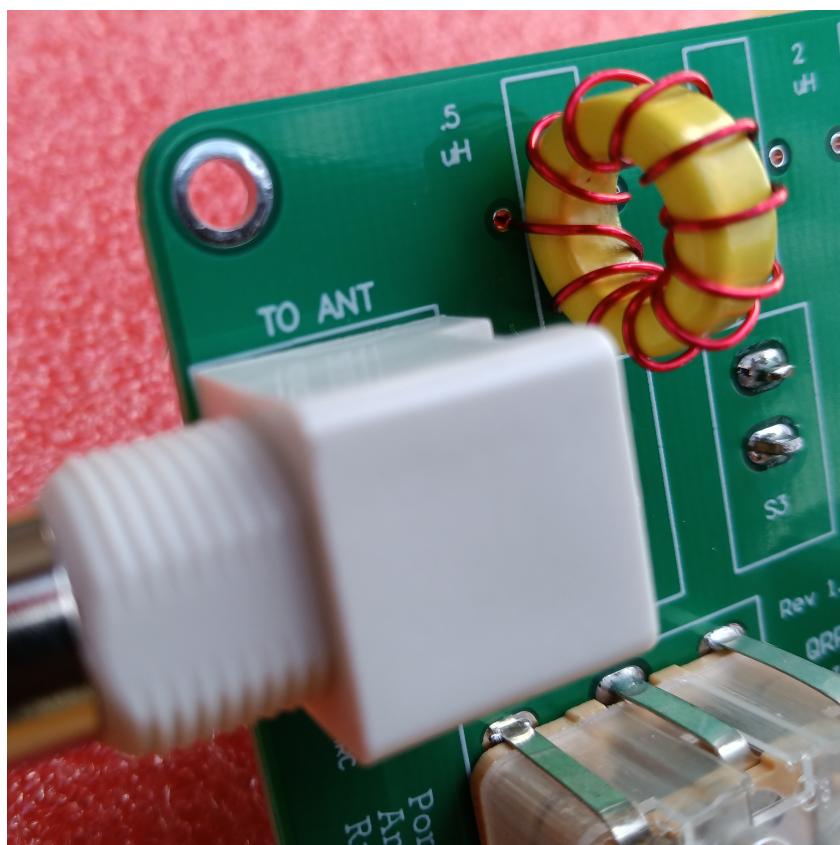
Step 10: Install R1,R2, and R3



Step 11: Wind and Install L1, L2, L3, and L4

Use 24 AWG enameled copper wire for winding the tuning toroids. These toroids must be placed on the back side of the main board. The approximate wire lengths are:

- L4 11T = 8"
- L3 16T = 11"
- L2 22T = 14"
- L1 32T = 21"



Step 12: Put the main board in the case

Use four m3x6mm screws to install the board in the case.
The .stl files for printing this 3D printed case are on the GitHub page.

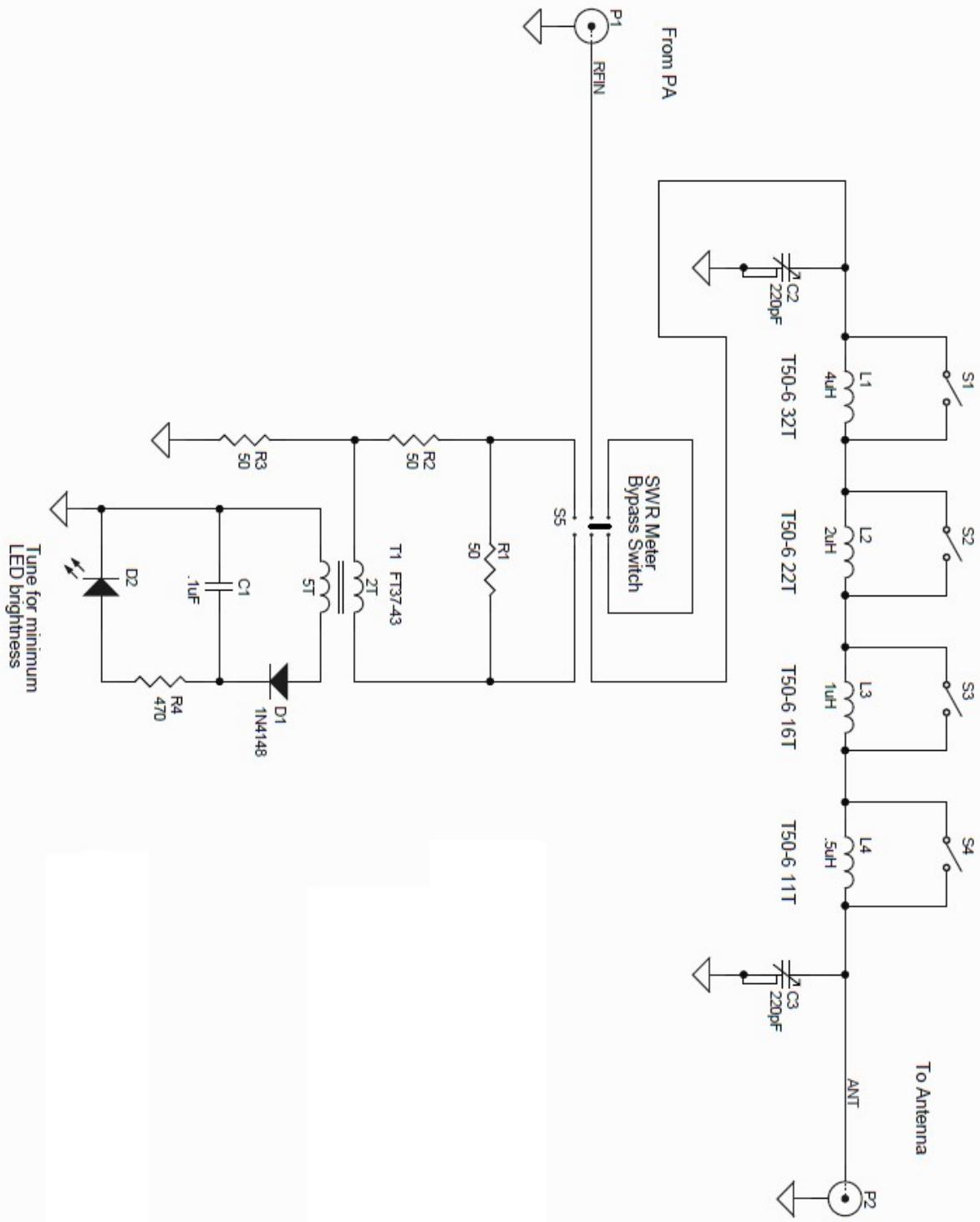


Step 13: Install the Top Plate and Tuning Knobs

Use four m3x10mm screws to install the top plate. And use two m2.5x6mm screws to install the tuning knobs. Here's a picture of the completed tuner:



Schematic



BOM

Comment	Designator	Quan	Supplier	Part Number
.1uF	C1	1	LCSC	C1711
1N4148	D1	1	LCSC	C14516
LED	D2	1	LCSC	C99771
50	R1, R2, R3	3	LCSC	C348878
470	R4	1	LCSC	C119317
Switch SPST	S1, S2, S3, S4	4	Amazon	NA
Switch DPDT	S5	1	Amazon	NA
Cap Var	C2, C3	2	Amazon	PolyVaricon
Toroid	T1	1	Amazon	T37-43
Toroid	L1, L2, L3, L4	4	Amazon	T50-6
BNC	P1, P2	2	Amphenol	031-5431-10RFX