T41 V12 2nd Receiver Adapter Board - Assembly Manual

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WJ Schmidt - K9HZ

INTRODUCTION

The T41 V12 radio allows you to add a second receiver. This amounts to building a second RF board only populating the receive section and using a si5351 with a different I2C address than the si5351 on the primary RF board. The 2nd receiver generates its own I&Q signals that must be resolved into baseband audio. To do this, a second 1808 ADC must be added to digitize the signal. The second receiver adapter board has the second 1808 on it along with an RF splitter so that RF from the antenna can be split into two 50-ohm paths and fed to the BPF in front each of the receivers.

INVENTORY AND PREWORK

Before you begin, inventory your parts against the latest V012 2nd Receiver Adapter board BOM to make sure you have everything you need to complete the adapter board. The BOM is available on the GITHUB at: [T41/T41_V012_Files_01-15-24/T41_V012_BOMs at main · DRWJSCHMIDT/T41 · GitHub]

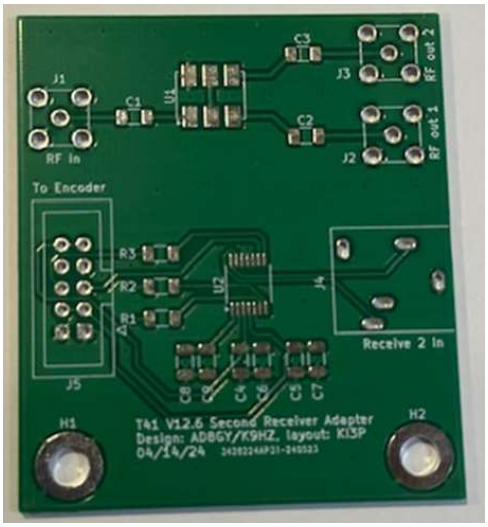
Quantity	Part Decription	Part Designator
6	0.1uF 50V SMD 1206 Ceramic Capacitor	C1, C2, C3, C4, C5, C8
3	10uF 16V SMD 1206 Capacitor	C6, C7, C9
3	SMA Female PCB Mount	J1, J2, J3
1	1/8" Female Stereo Jack, PCB Mount	J4
3	100 Ohm SMD 1206 Resistor	R1, R2, R3
1	ADP-2-1W+	U1
1	PCM1808PWR Stereo ADC TSSOP-14	U6
1	IDC 2x5 Keyed Male PCB Socket	J5

BUILDING THE BOARD

1. Find a place where you can spread out your work, including printouts of the schematic and BOM. Your workstation should be such that you can leave it overnight without having to

"clean up". The workspace should also be kid- and cat-proof. If you get tired, stop. Come back to it tomorrow. Rushing the assembly rarely works out saving time.

2. Start by cleaning the bord with IPA (Iso-propyl or “rubbing” alcohol) to make sure it’s clean:



3. Next, place the hardest part on the board… U2, the PCM1808PWR. It's hard to see the pin 1 mark on some of the ICs. In the picture above, its at the lower left-hand corner of U2.

4. Do the "low-lying" SMDs next (e.g., caps and resistors). Place and solder C1-C9 and R1-R3.

5. Add U1, the transformer to the board. Make sure the orientation is correct (the print on the part should read normally when placed on the board above in its current orientation. If the print is upside-down, it’s the wrong way).

6. Finally add the five connectors to the board J1-J5.

7. The board is now complete. Use IPA again to clean the flux off the board.

USING THE BOARD

First, this adapter can only be used when the K9HZ front panel boards are used. This is because the 10-pin "Encoders" connector on the main board is connected to the 10-pin "Encoders" connector on the adapter. The RF-in connector is connected to the receiver antenna output on the LPF board. This signal is split into two channels, one for each receiver. These signals go to the input of the RX and second RX's BPFs. Finally, the second Rx's I/Q stream input is plugged into the 1/8" phono jack J4. See this diagram: