**T41 V010/V011 Hardware Hacks/ Updates**

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1. **MANDATORY HACKS/ UPDATES.**
   1. Add a wire between the RING connector of the “MIC IN” connector J2 on the MAIN board and pin 7 of the “BANDS” (10-pin) connector. This is so the PTT Switch on the microphone will work.
   2. Replace C201 and C202 (the 0.1uf Caps) with 0 Ohm 1206 SMD resistors. This is so the drive amplitude output from the si5351 on the MAIN board is high enough to drive the downstream components on the QSE and QSD boards.
   3. Add a wire between the 3.3V reference pin of the Teensy 4.1 (between the GND pin and pin 23) and “Tune/Encoders” pins 3 and 4. NOTE that you will need to cut the existing trace from the 3.3V bus and pins 3 and 4. This gives a good (better) reference voltage for the front panel switch matrix.
2. **IMPROVED PERFORMANCE HACKS/ UPDATES.**
   1. Use twisted-pair wires instead of small coax with SMA connectors for oscillator feeds to the QSD and the QSE from the si5351 on the MAIN board.
   2. Remove C100 and C106. Use C101 to jump from the PCM5102 module “LROUT” pin to “TP2”. This modification reduces the gain of the receive preamp. As is, the receive amplification stages have too much gain. You can, instead, replace L100 with a 56 ohm resistor, which also lowers the gain of the preamplifier.
   3. Grounding straps between all boards. Reduces RF noise.
   4. Remove U5, the display buffer/driver from the MAIN board and connect the lines straight through from the display to the Teensy 4.1 (tie 1A to 1Y, 2A to 2Y, 3A to 3Y). This improves the display response and reduces noise on the MAIN board.
   5. Cut the display 3.3V power feed at the 10 pin “Display” connector pins 7 and 8 from the 3.3V power bus at the connector, and, instead run a wire from pins 7 and 8 to pins 7 and/or 8 (5V) of the “Power” connector on the MAIN board. WARNING: Before applying power to the radio, make sure the solder connection on the display 3.3V configuration pads is REMOVED and the 5V solder pad connections is added. In this way, the display now runs on 5V instead of 3.3V, leaving the power supply and the display running much cooler.