Fox Delta

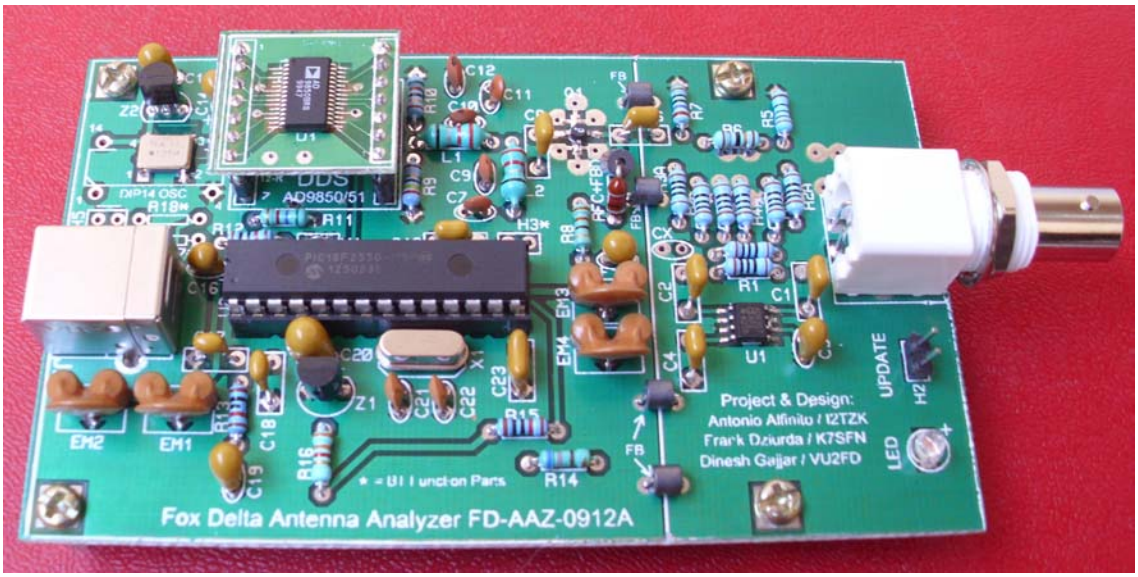
Amateur Radio Projects & Kits

FD- AAZ-0912A

AAZ-0912A Assembly Note: HF PIC18F4550/4553 USB Antenna Analyzer

USB Only

AAZ- 0912A KIT: ASSEMBLY NOTES



Read following notes carefully before you start assembly of AAZ-0912A kits.

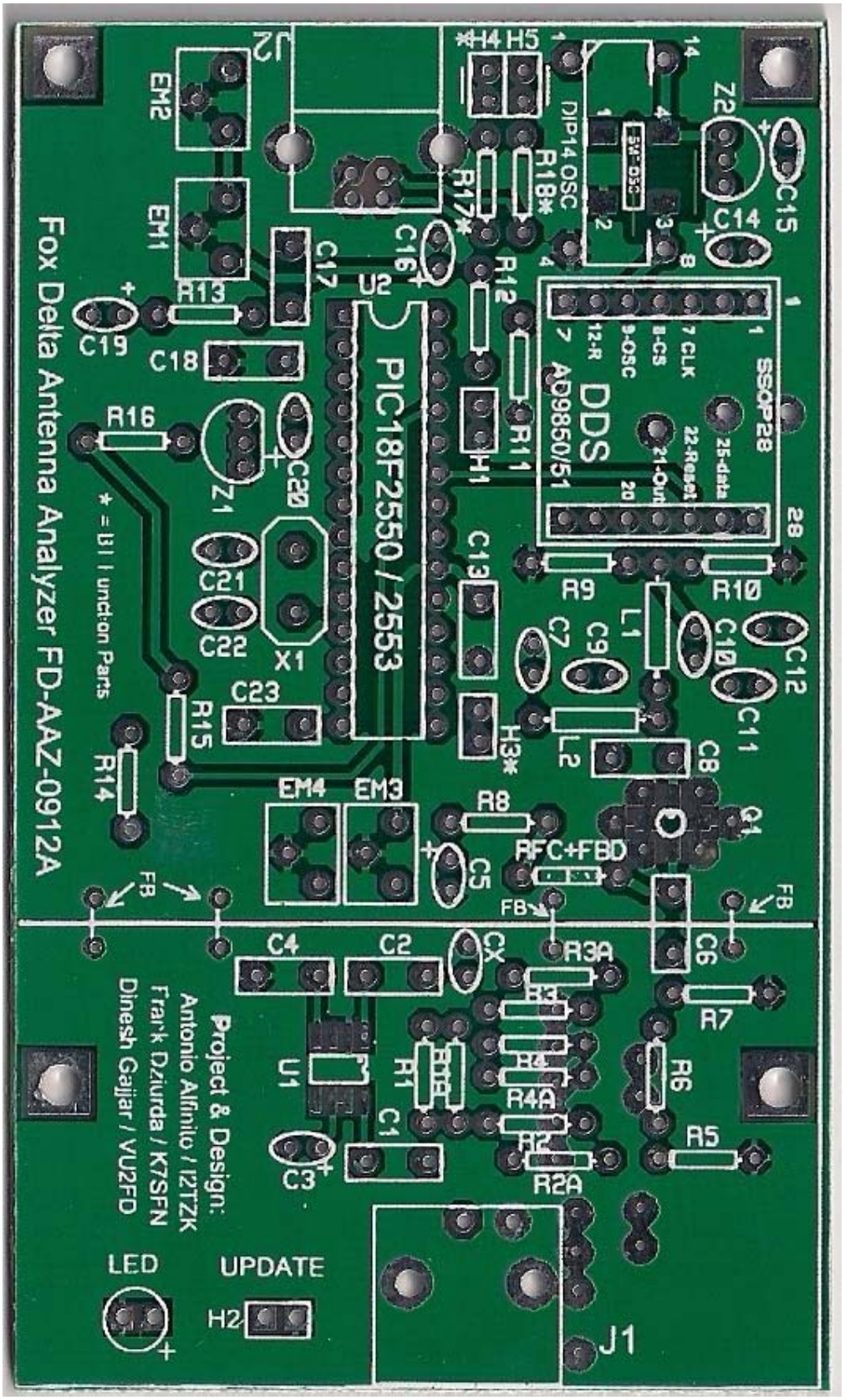
PCB Views:

It is very important that you have a sharp observation of supplied PCB with kits. In following pages I have provided two high-Z images of both the sides of PCB.

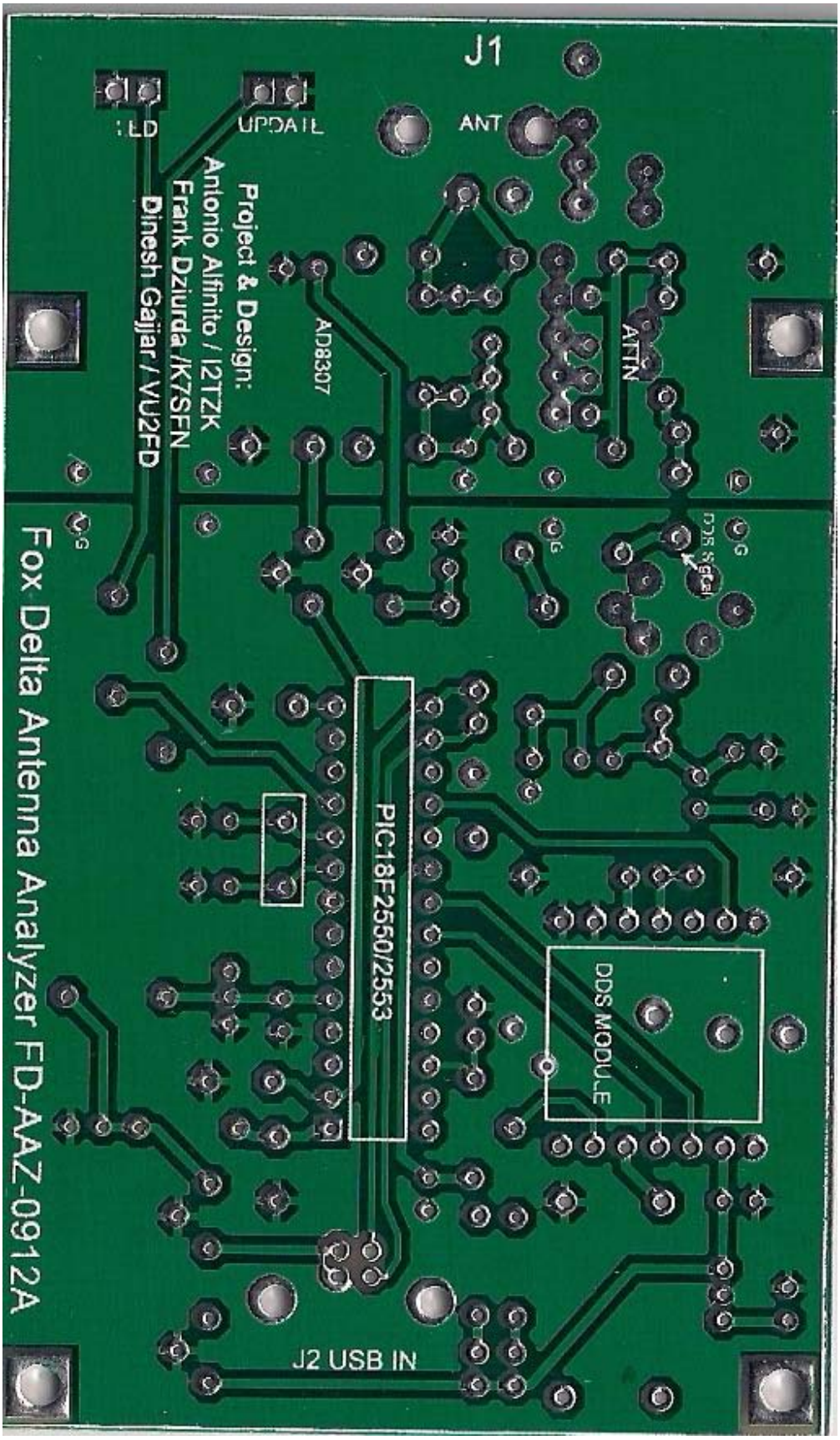
Boards are not thoroughly checked or tested for kits. They are supplied as received from factory. Please look for:

1. **Any track shorts**
2. **Any Pad shorts: Pads are isolated on one side, shorted on other side?**
3. **With a knife, cut any copper if found on two top copper polygons.**

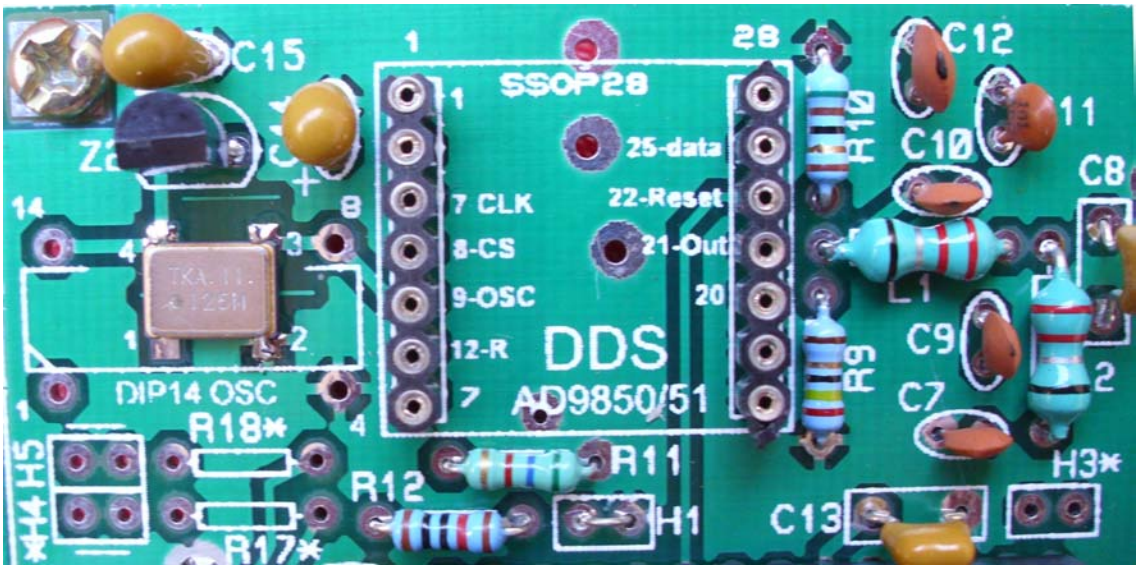
View of the AAZ-0912A PCB: Component Side



AAZ-0912A Solder Side:



2. OSC and DDS area:



AAZ-0912A Kits are supplied with SMT 125MHZ Oscillator Pre-Soldered.

125MHZ SMT OSC requires 3.3V, which is created by Z2 regulator.

Voltage test: Check at "14" if 3.3V is available.

AD9850 DDS Module:

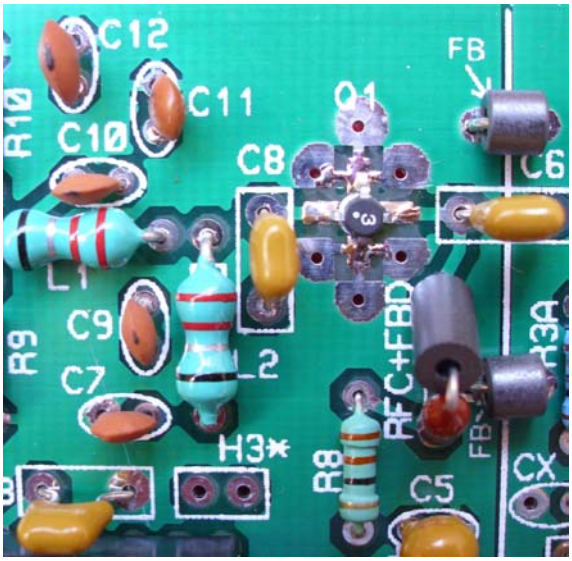
DDS module is supplied pre-soldered and pre-tested on HF bands.
Cut and Solder two 7 PIN SIL female strips to mount DDS module.
Voltage test: Check if +5V is available at PIN2 (second from top, left SIL)

AD9850 / AD9851 Selection:

Header H1 is required to be grounded for AD9850.

For AAZ-0912A Kits, do not forget to use a jumper wire at this point as DDS module supplied with kits contain AD9850.

ERA-3SM RF Amplifier and RFC + Bead:

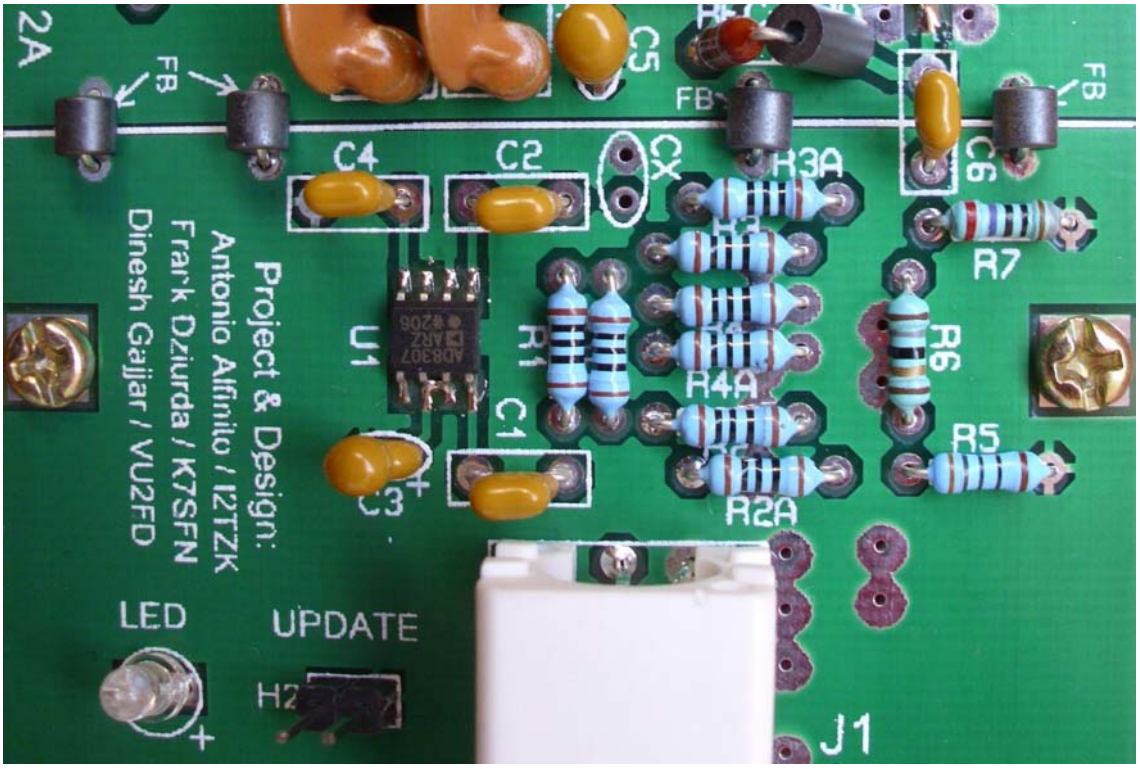


Q1, RF Amplifier is SMT part and is Pre-Soldered on board for Kits.

Install 82uH inductor with Ferrite Bead supplied at the location: "RFC+FB"
Ensure that Ferrite bead is towards ERA3SM Amplifier.

Voltage Test: Check if Voltages at RFC top side is around 3.3 to3.5V

AD8307, RL Bridge and Ferrite Beads:



8 numbers of 100 ohms 1% resistors are supplied for R1, 2, 3 and 4. It makes four 50 ohms resistors for the Return Loss Bridge.

R5, 6 and 7 are part of an Attenuator.

Before soldering 4 Ferrite Beads, ensure that two copper layers on Top and Bottom Side are isolated.

If not, then look at edges of the PCB if they are shorted. Use a knife to remove edge copper, if any.

Use thick wires (remains from DSS EMI filters!) to place 4 beads in place.

Voltage Test: Measure between Ground and Pins 6 & 7 of AD8307.
It should be around 5V

CX is not used and not to be used unless assembly is complete and AAZ is tested using PC software and calibrated.

Preliminary Tests:

Without PC18F2550 or DDS module installed, please measure voltages at:

1. **PIN2 of Left Side SIL Header for DDS Module: 5V**
2. **PIN20 of IC1 Socket (Near C13) : 5V**
3. **PIN5 of IC1 socket: 2.50V**
4. **PIN14 of DIP14 OSC pad: 3.3V (With Z2 installed)**
5. **RFC+FB: 3.3 to 3.5V**

Install PIC18F2550:

Carry out same voltage test as above.
Check if LED light up.

Install DDS Module:

Ensure that PIN Marked on DDS module as "1" matched that on main board Silk.

Connect PC using an USB Cable:

AAZ Firmware uses HID drivers of Windows. No special drivers are required.
PC will recognize board straight away.

Run PC Software:

Running PC Software will result in opening of a logo+message that AAZ is found.
Go thru Tony / I2TZK's document and calibrate your AAZ.

Update Header:

This header will be useful for future updates of PIC firmware.

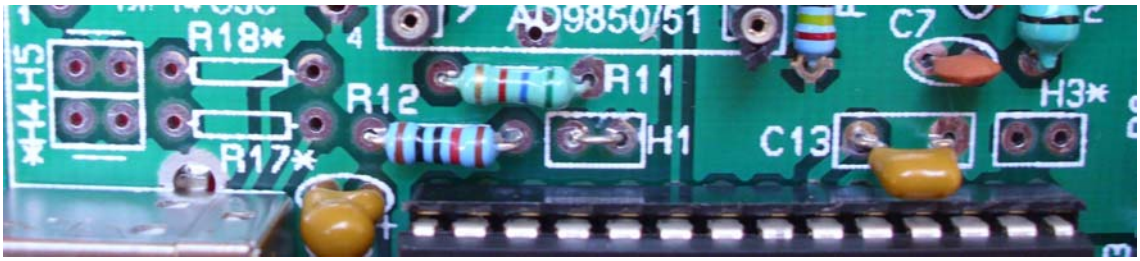
As and when Tony / I2TZK updates Firmware and Software, you may place a short on this header to download latest firmware into AAZ.
No programmer will be required as present firmware includes a bootloader.

Development Parts / Options: Optional

AAZ-0912A is basically designed for USB/PC use.

Following parts (for experiment / future use) are located on PCB which are not used and not part of the kit:

1. **R17 and R18**
2. **H3: Keep Open, no connections.**
3. **H4 and H5: Keep Open, no connections.**



Firmware Updates:

Follow "Update" manual by Tony / I2TZK when published.

Visit I2TZK Website at: http://www.i2tzk.com or

Fox Delta AAZ Web Page at: http://www.foxdelta.com/products/aaz.htm

We hope you had a good time building this kit.

73s
Dinesh Gajjar
1st November 2013

For more details, please visit Project Page: http://www.foxdelta.com