

# Adc-isr-test

The image shows two windows from a development environment. The top window is UniFlash, which is configured for a Texas Instruments XDS110 USB Debug Probe connected to a TIVA TM4C1294KCPDT. The 'Flash Image(s)' section shows 'adc-isr-test.out' (174.75 KB) selected. The 'Run Actions' section has 'Run Target After Program Load/Flash' checked. The bottom window is RealTerm: Serial Capture Program 3.0.1.42, showing a list of captured data in hexadecimal and ASCII. The status bar at the bottom indicates 'Chars:9631 CPS:0 Port: 10 115200 8N1 None'.

UniFlash

Session About

Configured Device : Texas Instruments XDS110 USB Debug Probe > TIVA TM4C1294KCPDT [more info] [download cxxmi] CORTEX\_M4\_0 Running Free

Program

Select and Load Images

Flash Image(s)

adc-isr-test.out Size: 174.75 KB | Binary: ☐

Available Action(s) - 1 Image Selected

Load Image Verify Image

Reset Actions

[Click here to query available reset options]

Run Actions

☒ Run Target After Program Load/Flash

Quick Settings

Console

[27.4.2020 11:08:36] [INFO] CORTEX\_M4\_0: Programmed value was committed to U

[27.4.2020 11:08:36] [SUCCESS] CORTEX\_M4\_0: Operation completed successfully.

[27.4.2020 11:08:40] [INFO] CORTEX\_M4\_0: User Register operation...

[27.4.2020 11:08:40] [INFO] CORTEX\_M4\_0: MAC address value: 70-ff-76-1d-6a-2f

[27.4.2020 11:08:40] [SUCCESS] CORTEX\_M4\_0: Operation completed successfully.

[27.4.2020 11:09:02] [SUCCESS] Program Load completed successfully.

[27.4.2020 11:29:01] [SUCCESS] Program Load completed successfully.

RealTerm: Serial Capture Program 3.0.1.42

188 96 0 0

183 96 0 0

192 96 0 0

192 96 0 0

185 96 5 0

183 96 0 0

185 95 0 0

193 95 0 0

186 95 0 0

183 95 0 0

194 96 0 0

186 96 7 0

186 95 2 0

188 96 0 0

185 95 1 0

113 96 1 1

199 96 0 0

186 96 0 0

194 96 0 0

190 96 0 0

Display Port Capture Pins Send Echo Port I2C I2C-2 I2CMem I2CMisc Misc

Baud 115200 Port 10 Open ☒ Spy ☒ Change ☒

Parity ☒ None ☐ Odd ☐ Even ☐ Mark ☐ Space

Data Bits ☒ 8 bits ☐ 7 bits ☐ 6 bits ☐ 5 bits

Stop Bits ☒ 1 bit ☐ 2 bits

Hardware Flow Control ☒ None ☐ RTS/CTS ☐ DTR/DSR ☐ RS485-rts

Software Flow Control ☐ Receive Xon Char: 17 ☐ Transmit Xoff Char: 19

Winsock is: ☐ Raw ☒ Telnet

USB

Status

☐ Disconnect

☐ RXD (2)

☐ TXD (3)

☐ CTS (8)

☐ DCD (1)

☐ DSR (6)

☐ Ring (9)

☐ BREAK

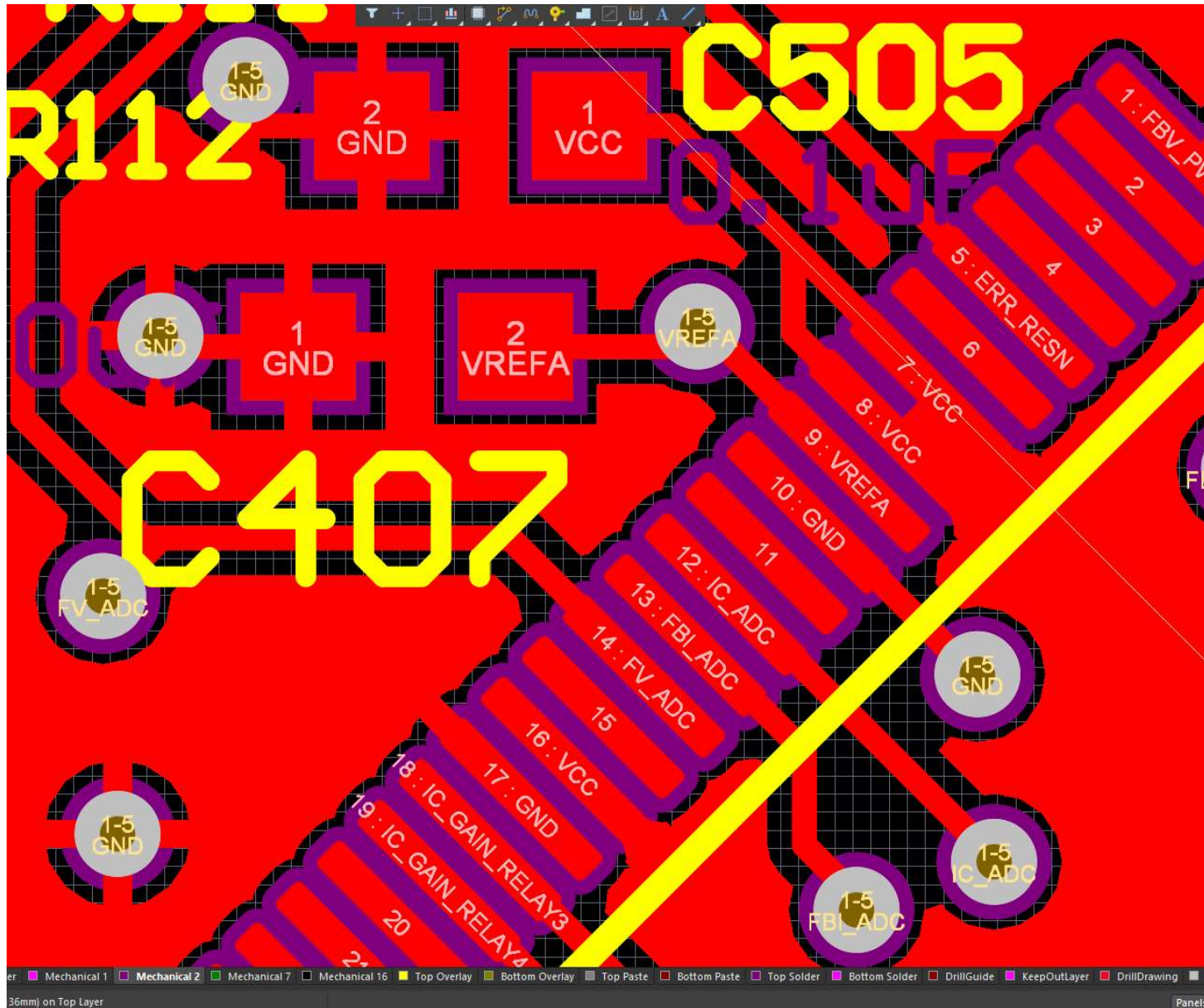
☐ Error USB

The world is built by its Contributors

Chars:9631 CPS:0 Port: 10 115200 8N1 None

ADC channels of the IonPak board work fine. It's important to make this test with UART converter connected to the PCB.

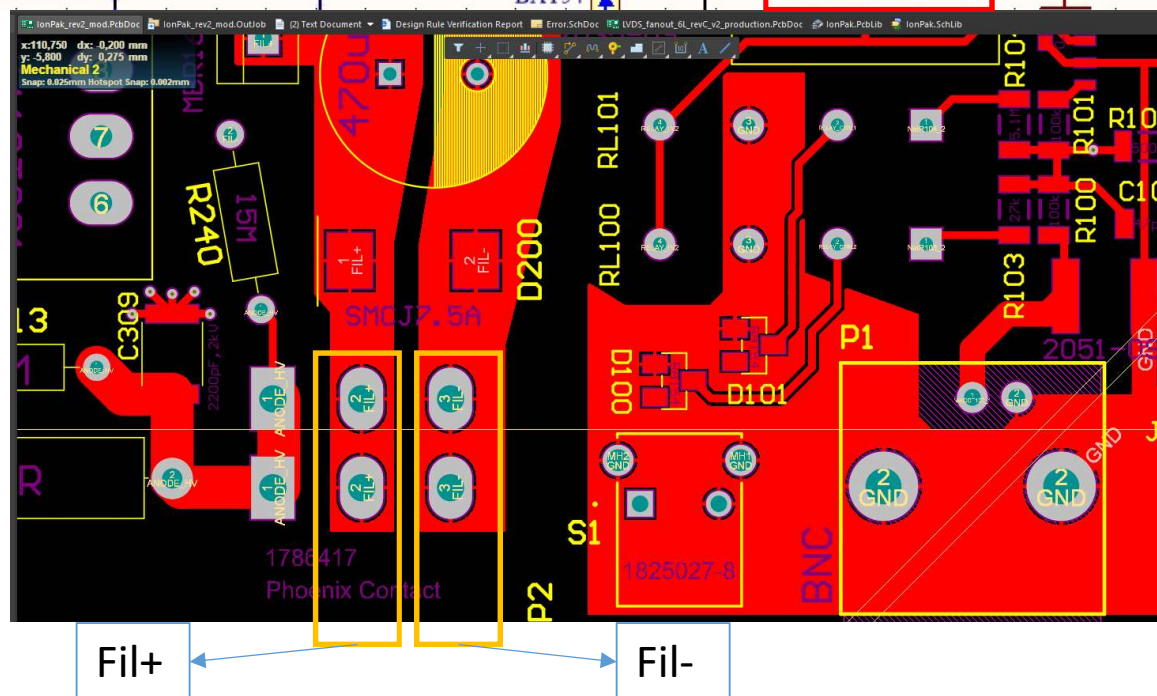
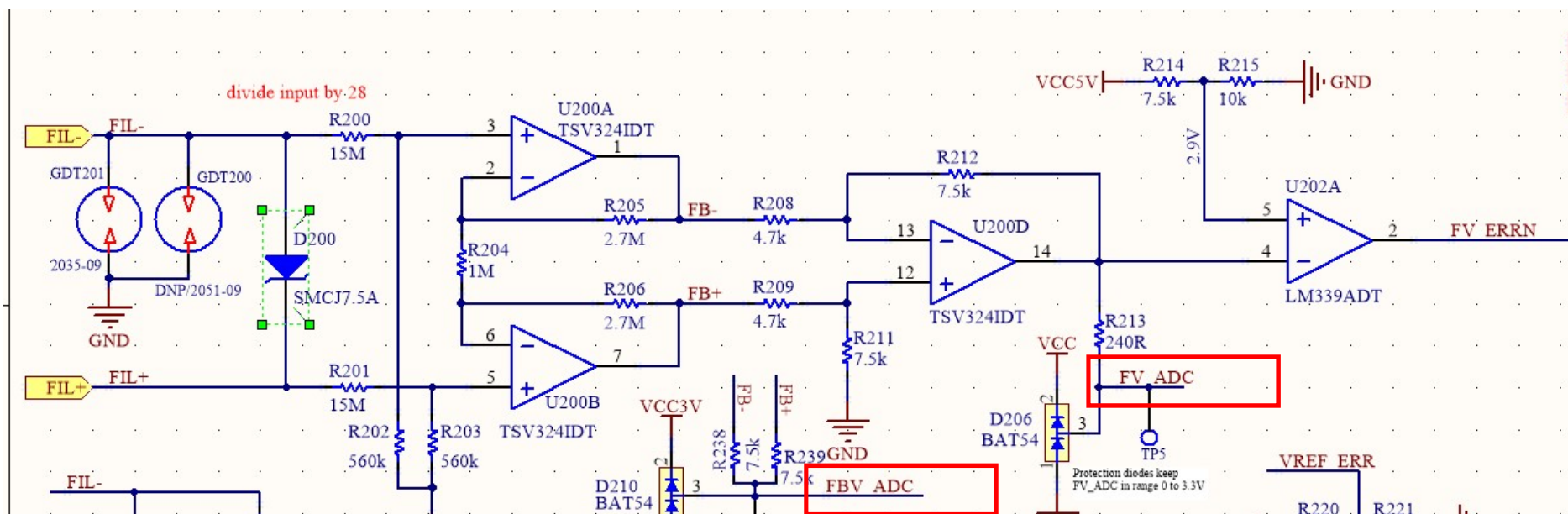
ADC pins, FV\_ADC, FBI\_ADC, IC\_ADC



ADC pins, FV\_ADC, FBI\_ADC, IC\_ADC

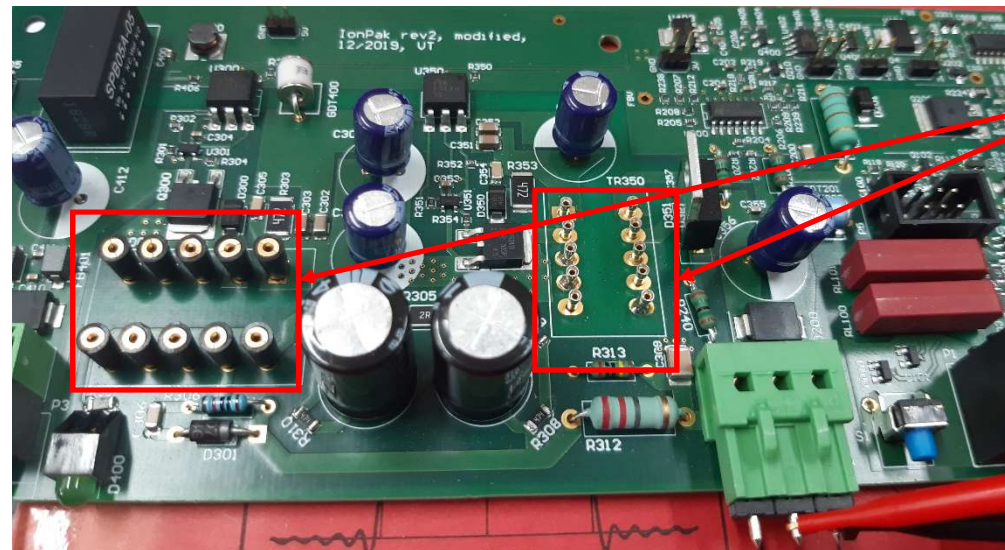
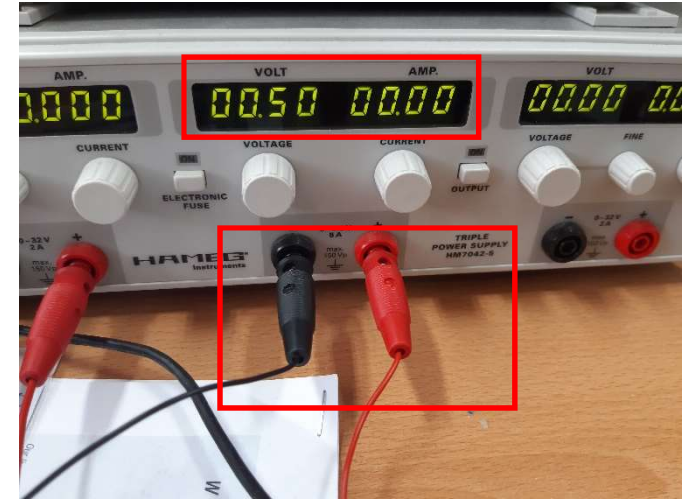
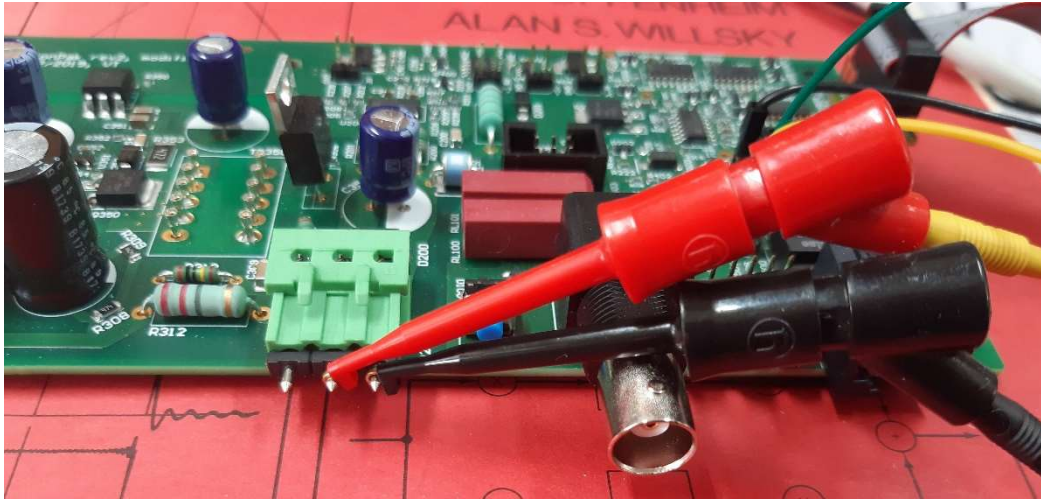
- Optical inspection using a microscope has shown that the pins have solder underneath, i.e., they are connected to the pads via solder (absence of connection was the problem with ethernet)

## FV ADC/FBV ADC



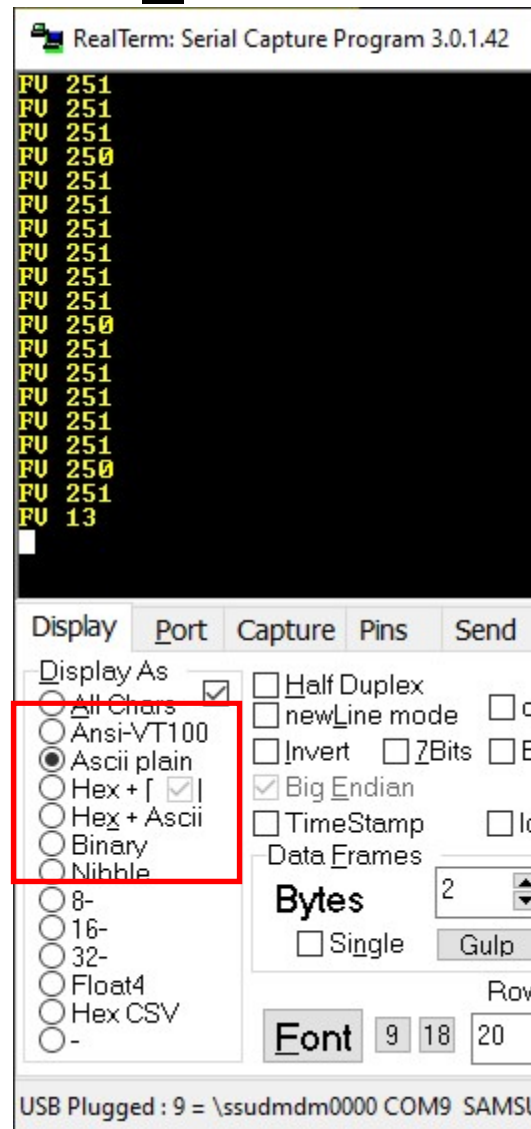
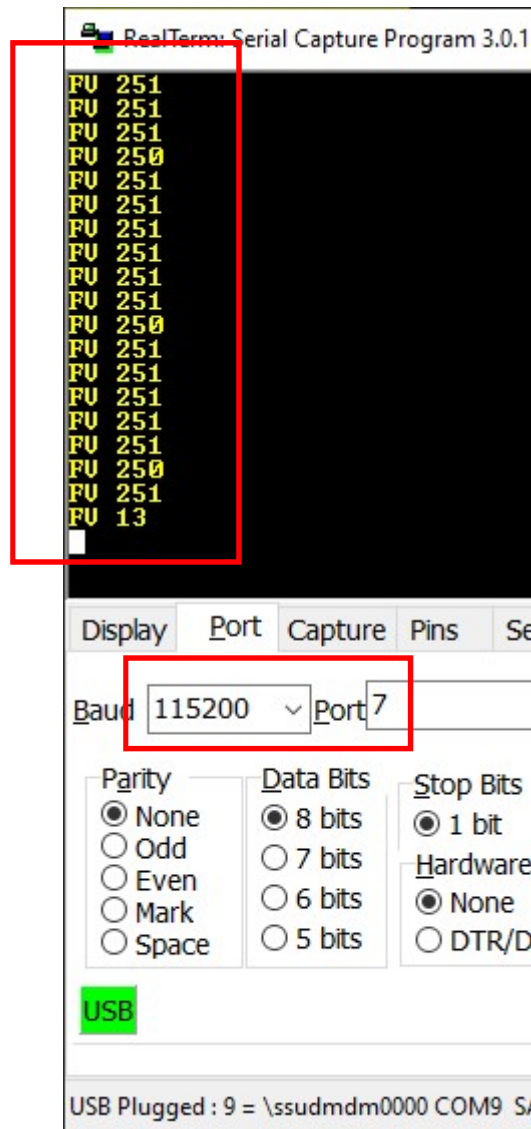


## FV\_ADC/ connections



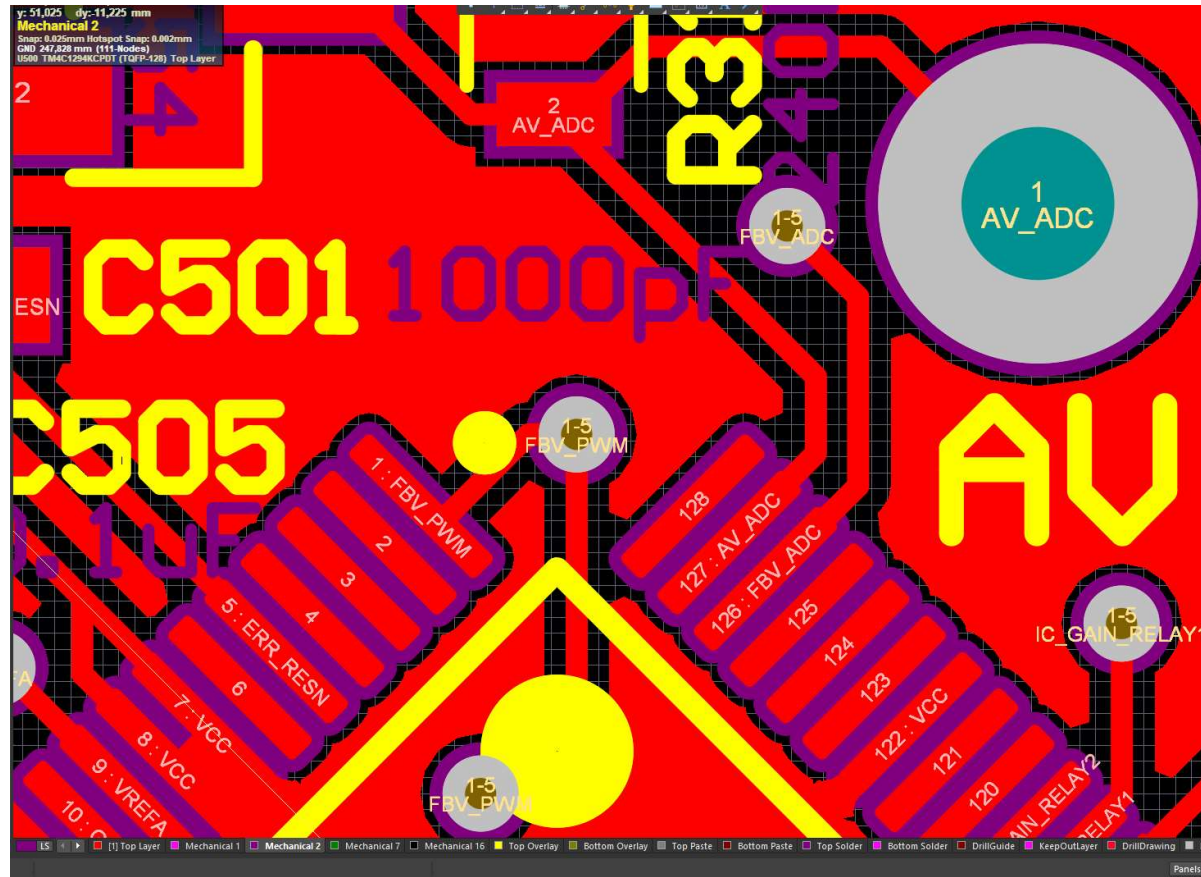
No coil

## FV\_ADC/ results



The FV\_ADC works fine, even though the ADC channel shows 0 without any connections, the channel works properly with externally applied voltage of 0.5V

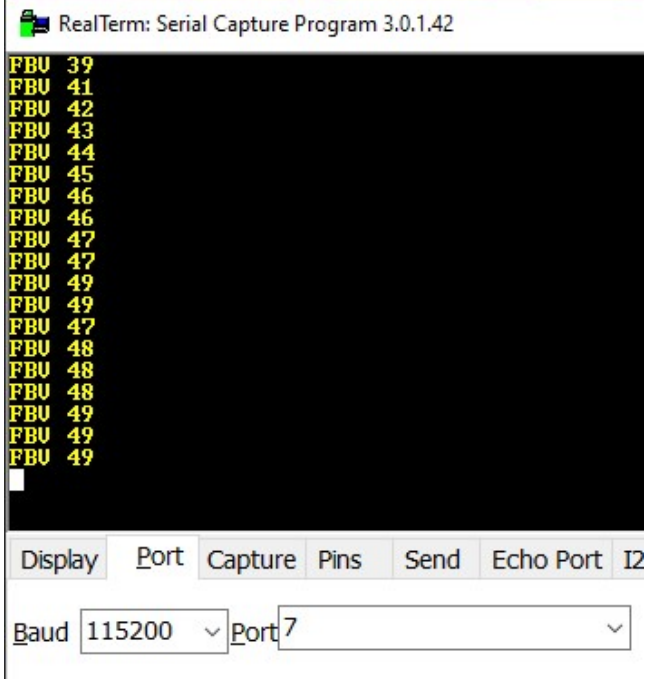
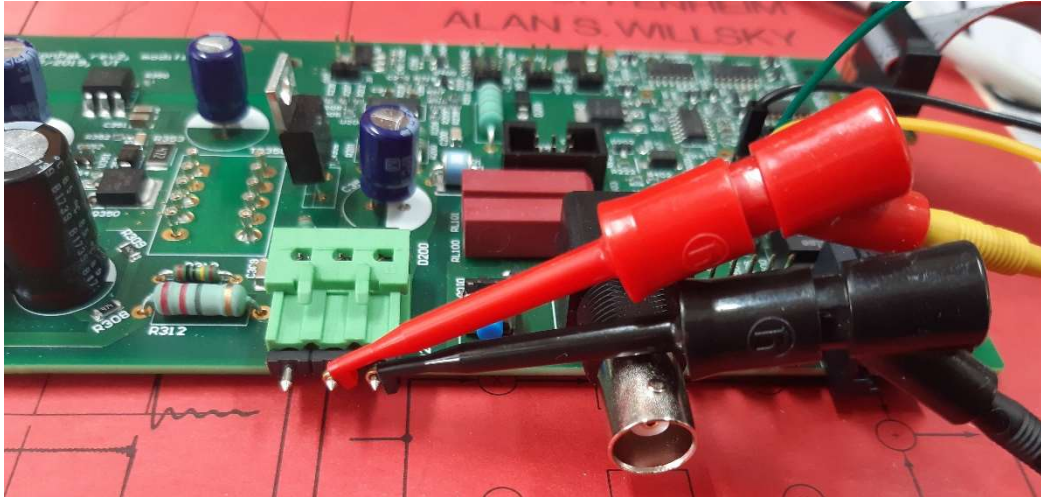
# FBV\_ADC



Check the mechanical connection of the FBV\_ADC. Optical inspection passed!



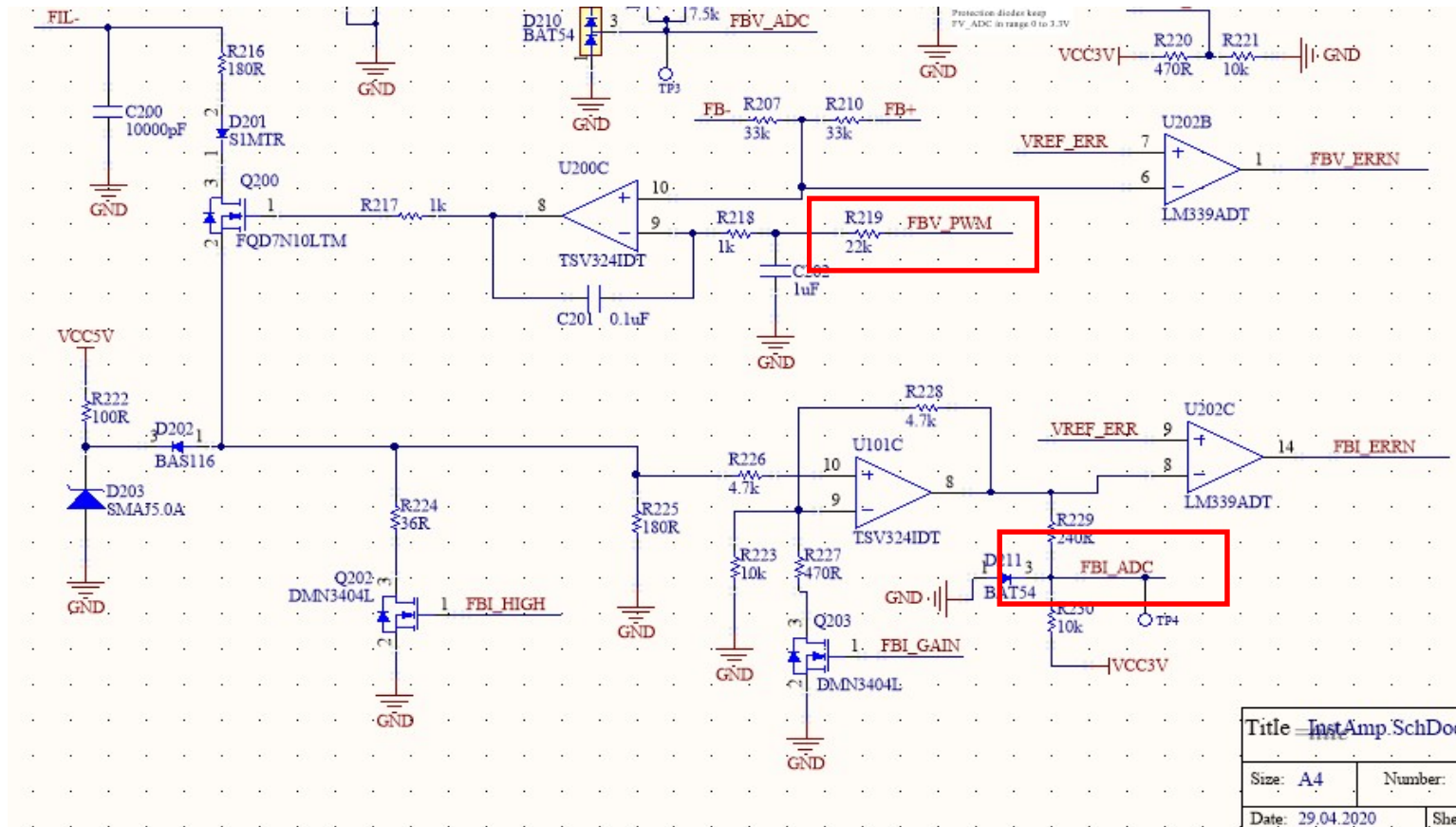
# FBV\_ADC/ results



The FBV\_ADC works fine, however in order to have sufficient differential voltage, one has to apply quite a high test potential



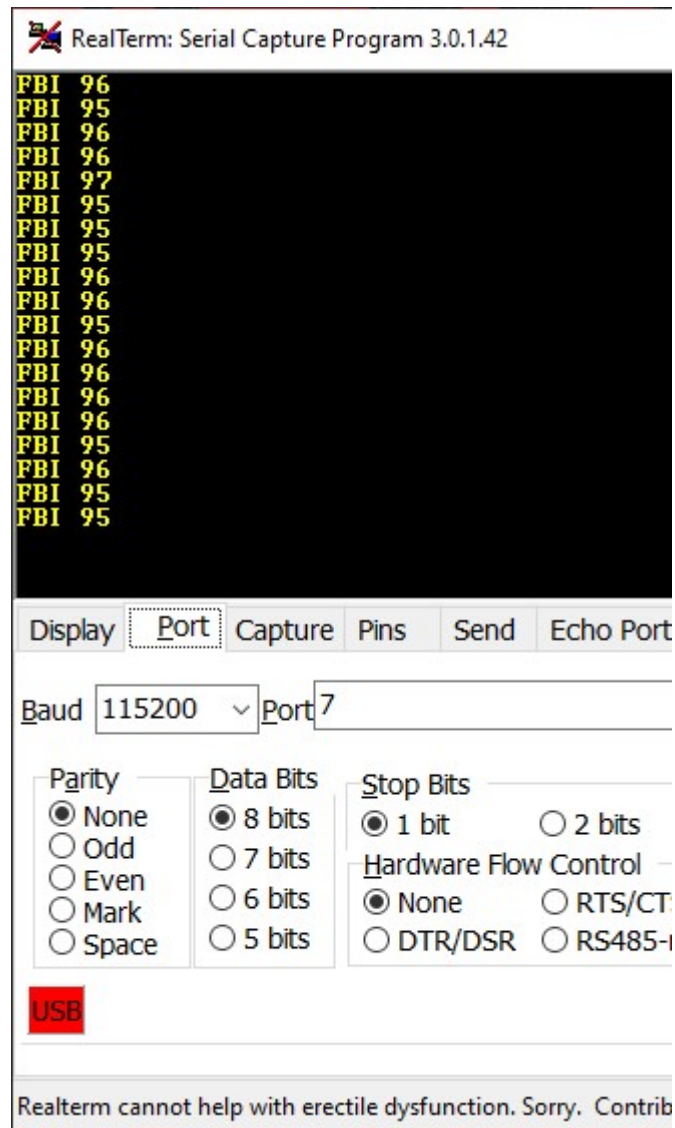
# FBI\_ADC



In order to test properly FBI\_ADC, one needs to program also FBV\_PWM that opens BJT and lets current flow in the amplifier.

Optical inspection – fine, there is mechanical connection between pin and pad

# FBI\_ADC/results



There is some bit value read out by the ADC, so it is assumed that this ADC channel works properly

# AV\_ADC (without coil)

We would like to find out the AV\_ADC\_GAIN value.

1. Make an assembly like on the picture:

1. No transformers installed
2. Connect external voltage to the anode output and board GND
3. Calculate  $AV\_ADC\_GAIN = AV \text{ bit value} / V_{anode} = 6.82$
4. See excel file for the details in calculations

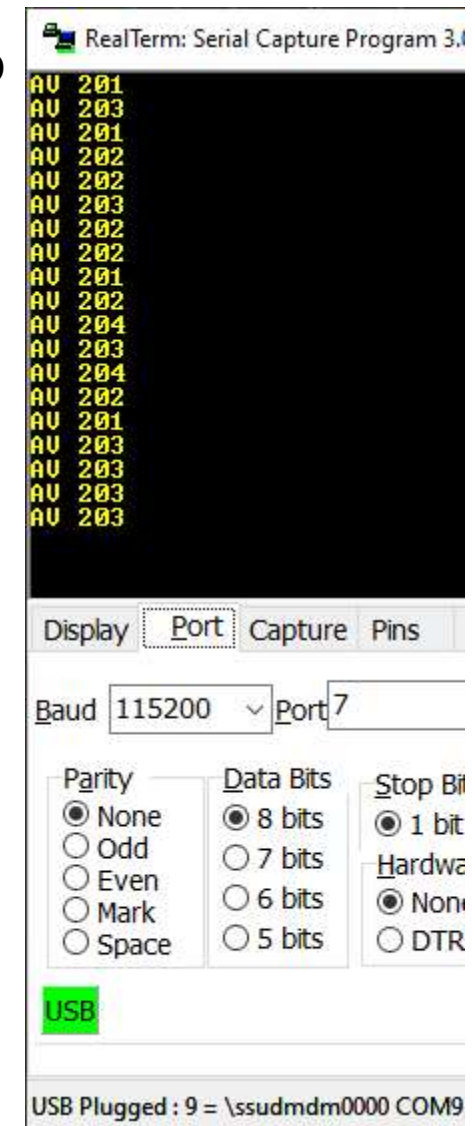


Flash Image(s)

adc-isr-test-ch-AV.out

Available Action(s) - 1 Image Selected

Load Image Verify Image





# FBV\_PWM test

FBV\_PWM via

