

# Malargüe Staff Activities on UUB V2 issues

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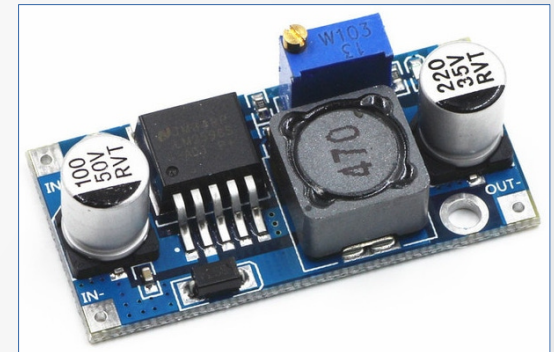
Dec/18

Payunia

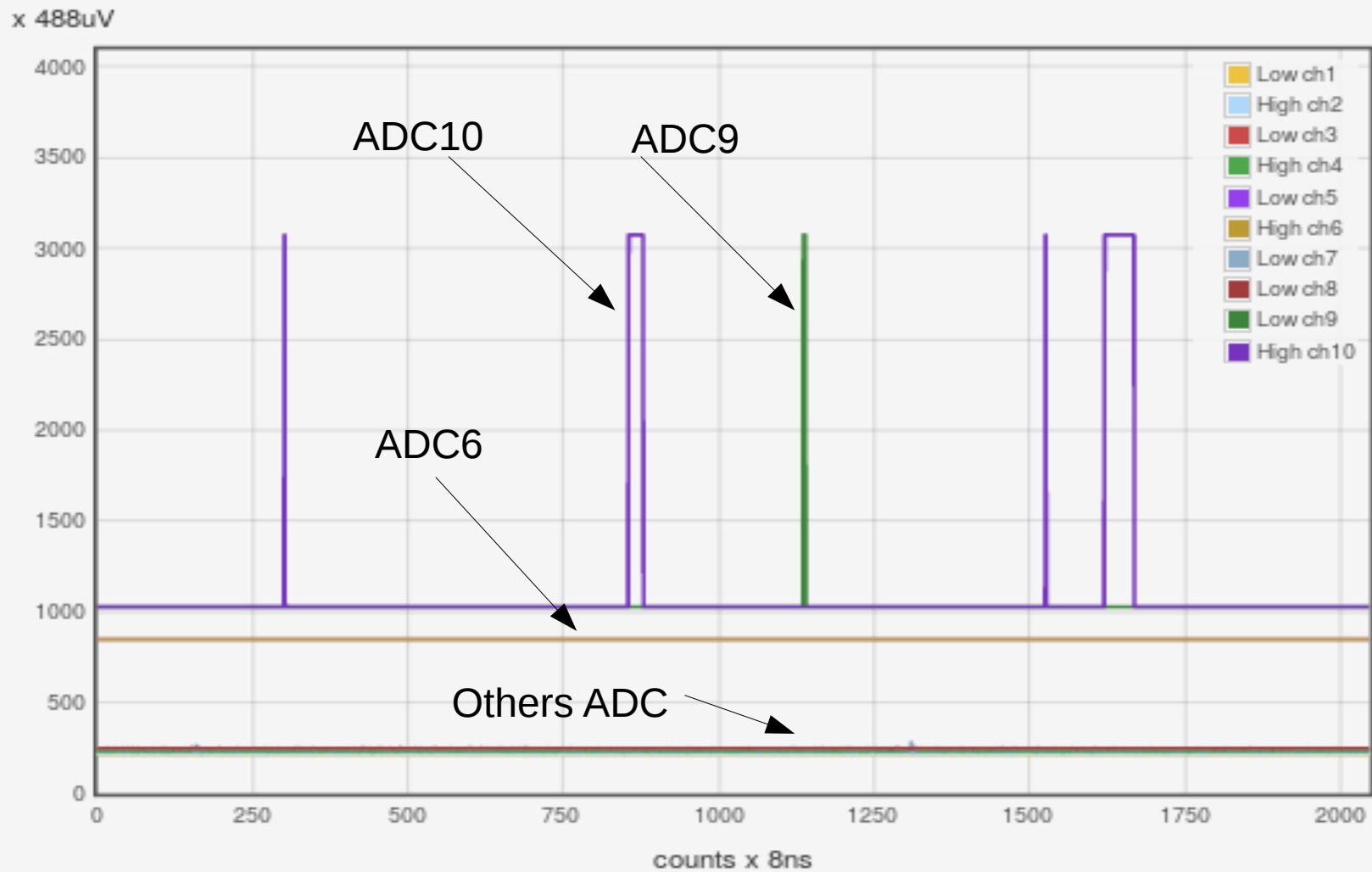


# ADC initialization

- ADC#4 (CH9 and 10) gets stuck in UUB\_V2 from Lecce a lot of times.
  - Problem with power supply.
- Possible solutions.
  - Put a separate SMPS
    - No time constrains as it seems.
  - Put a single SMPS
    - but feed AVDD and DVDD delayed one with respect to the other.

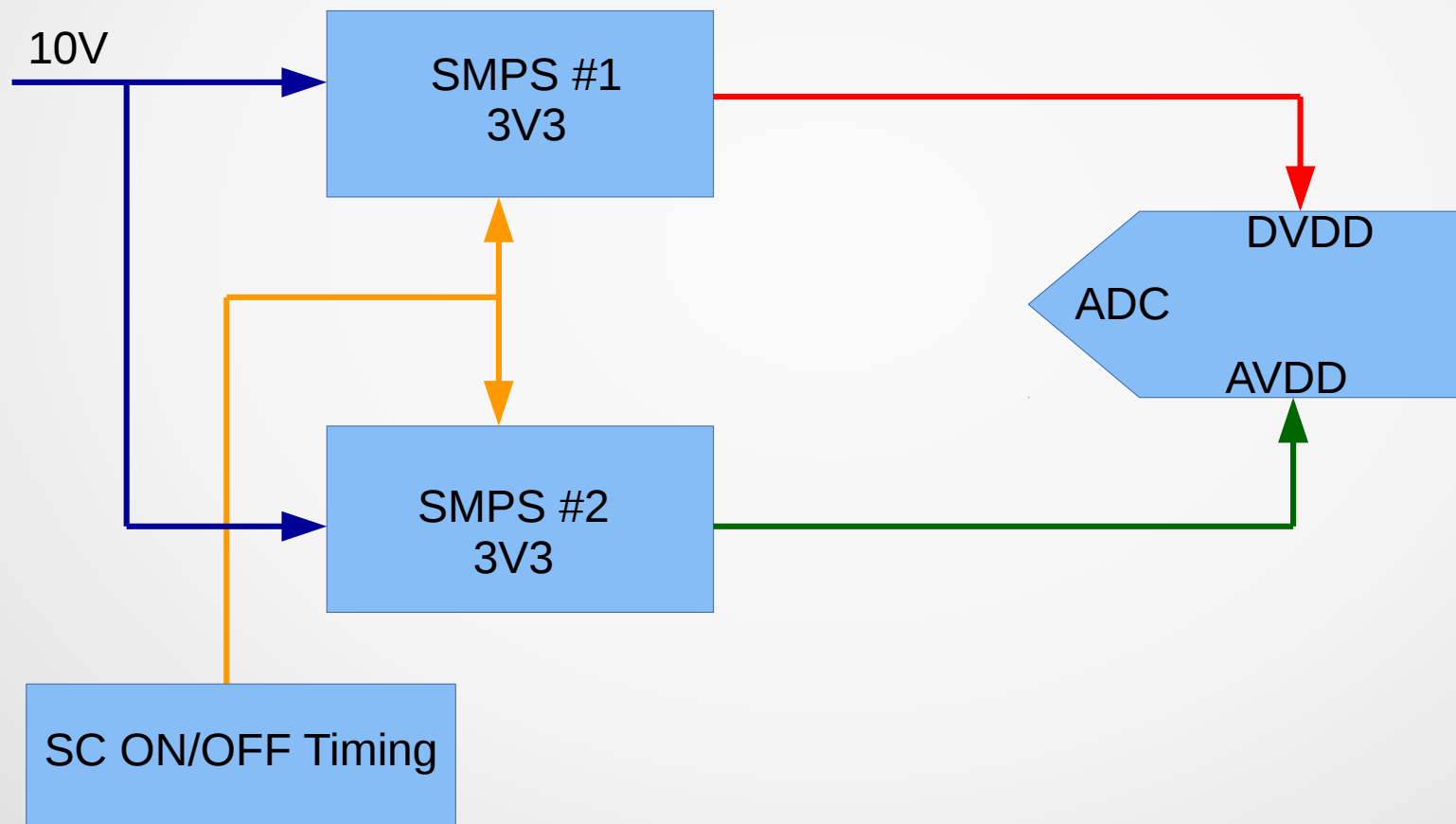


# ADC initialization

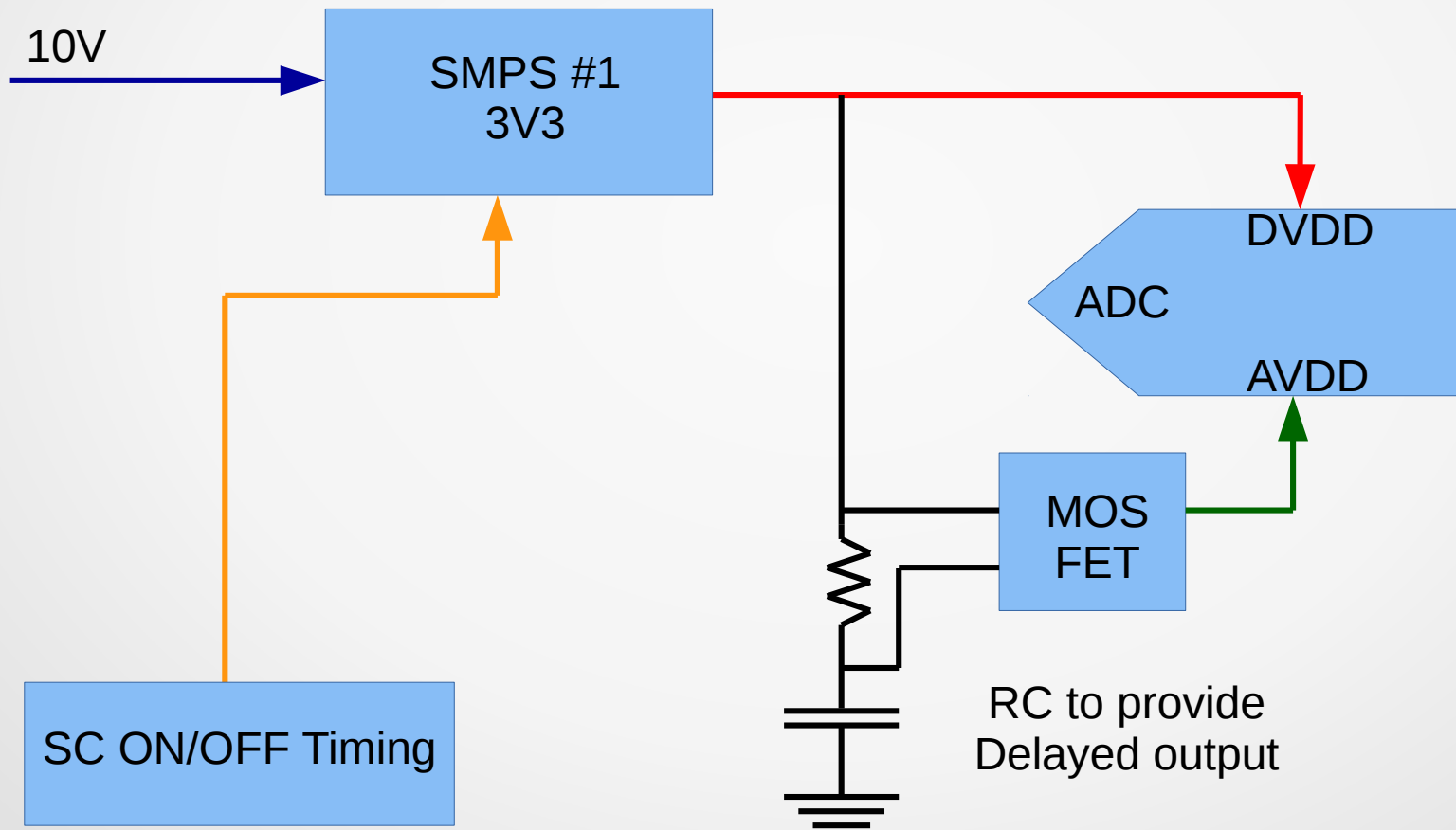


UUB scope ver. 1.2

# ADC – Separate power supplies



# ADC – Same power supply



# USB connection issues

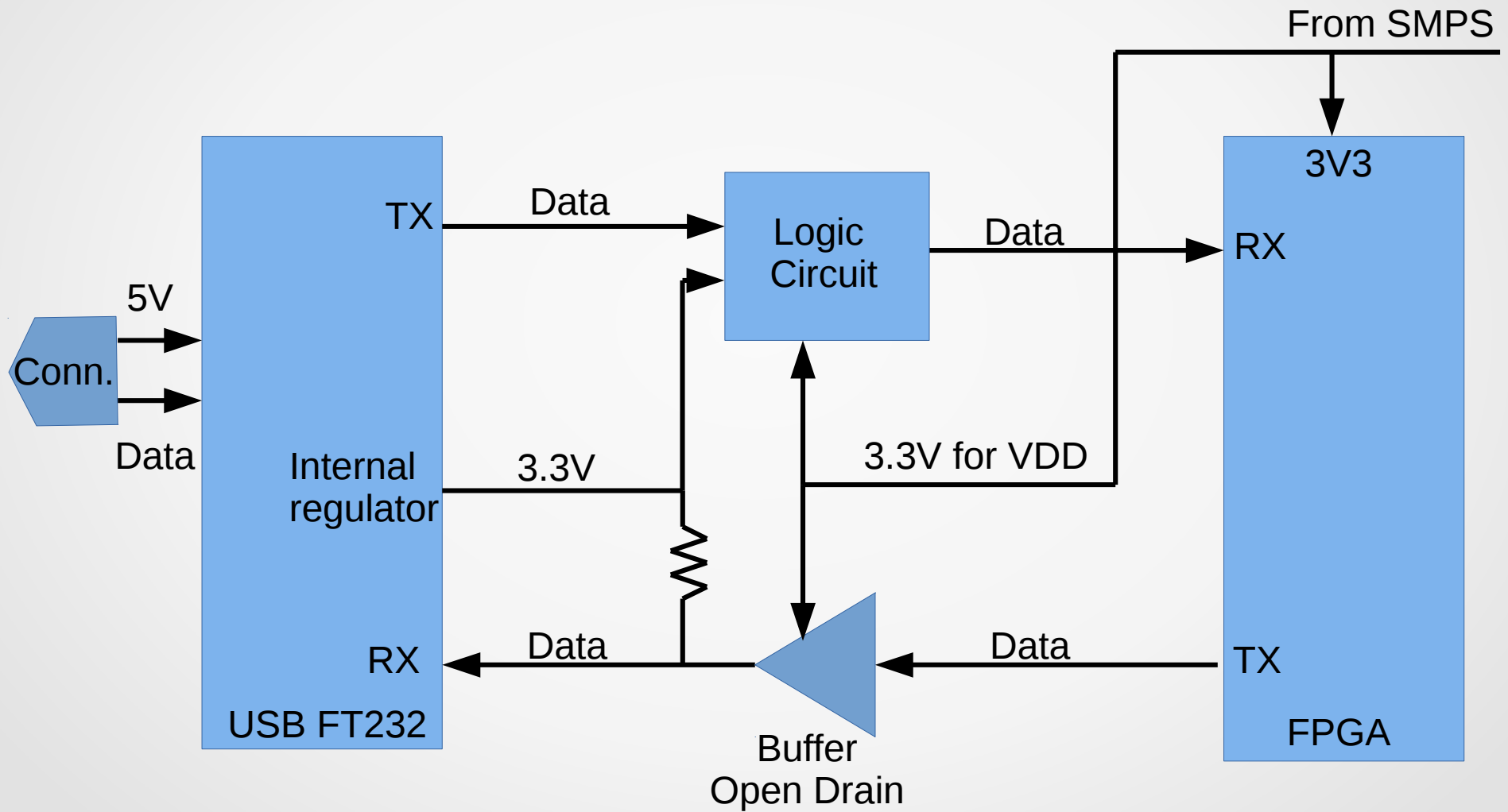
- UUB gets stuck if UART RX pin receives a logical one during UBOOT.
  - Very inconvenient for final field use, we should go to reset by hand the station.
- Also some (dangerous?) voltage injected in RX pin if UUB is off and USB cable is connected.



# UUB connection possible solution

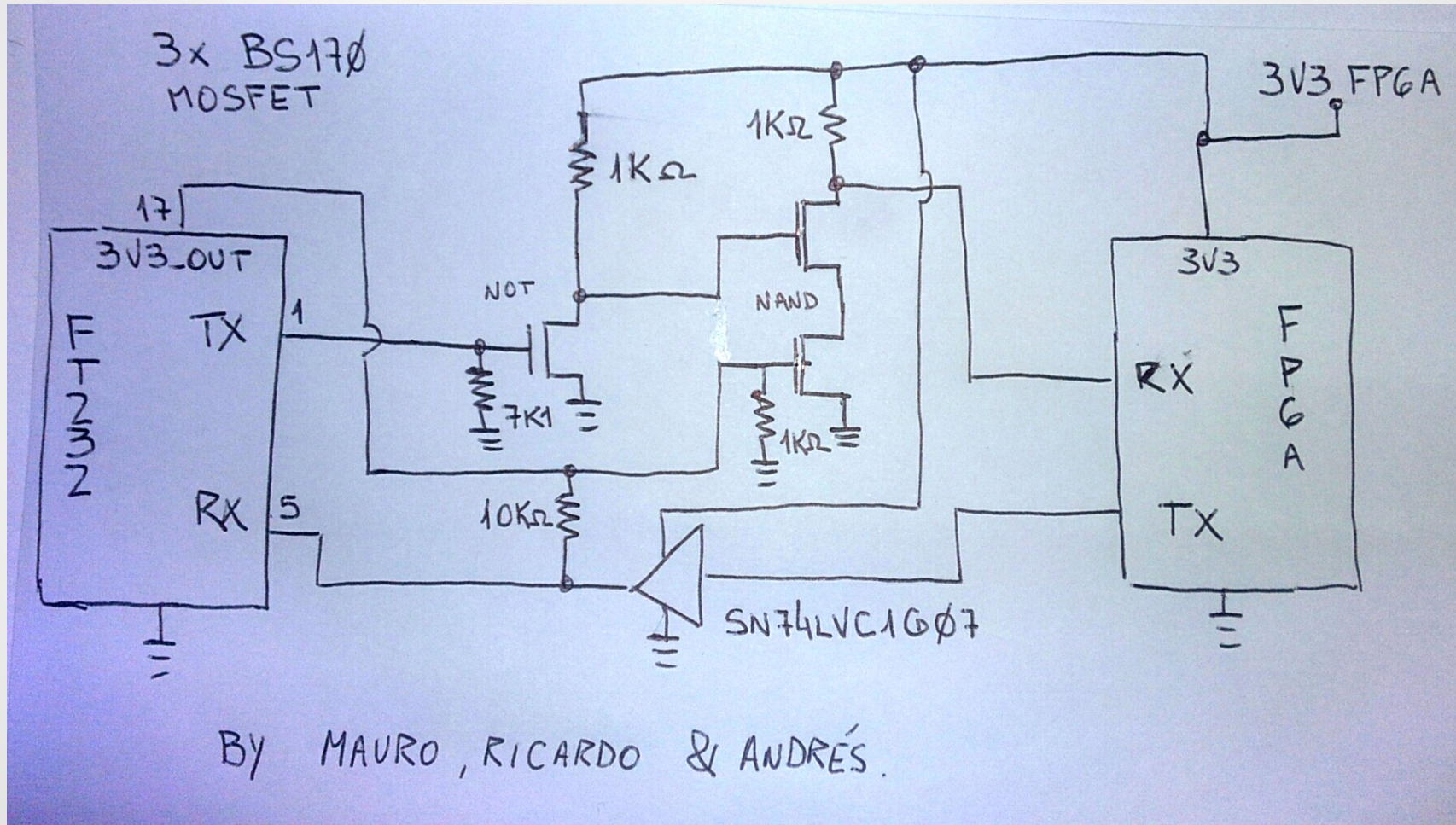
- Two main points:
  - Avoid voltages in RX pin while UUB off.
  - Assure a logical zero during UBOOT.
  - Simple logical function.
- IC solution didn't work
  - Because of internal clamping diodes.
  - Discrete solution tested in LAB.
  - But we will try again IC solution.

# General idea of one proposed solution





# Tested circuit in UUB #64

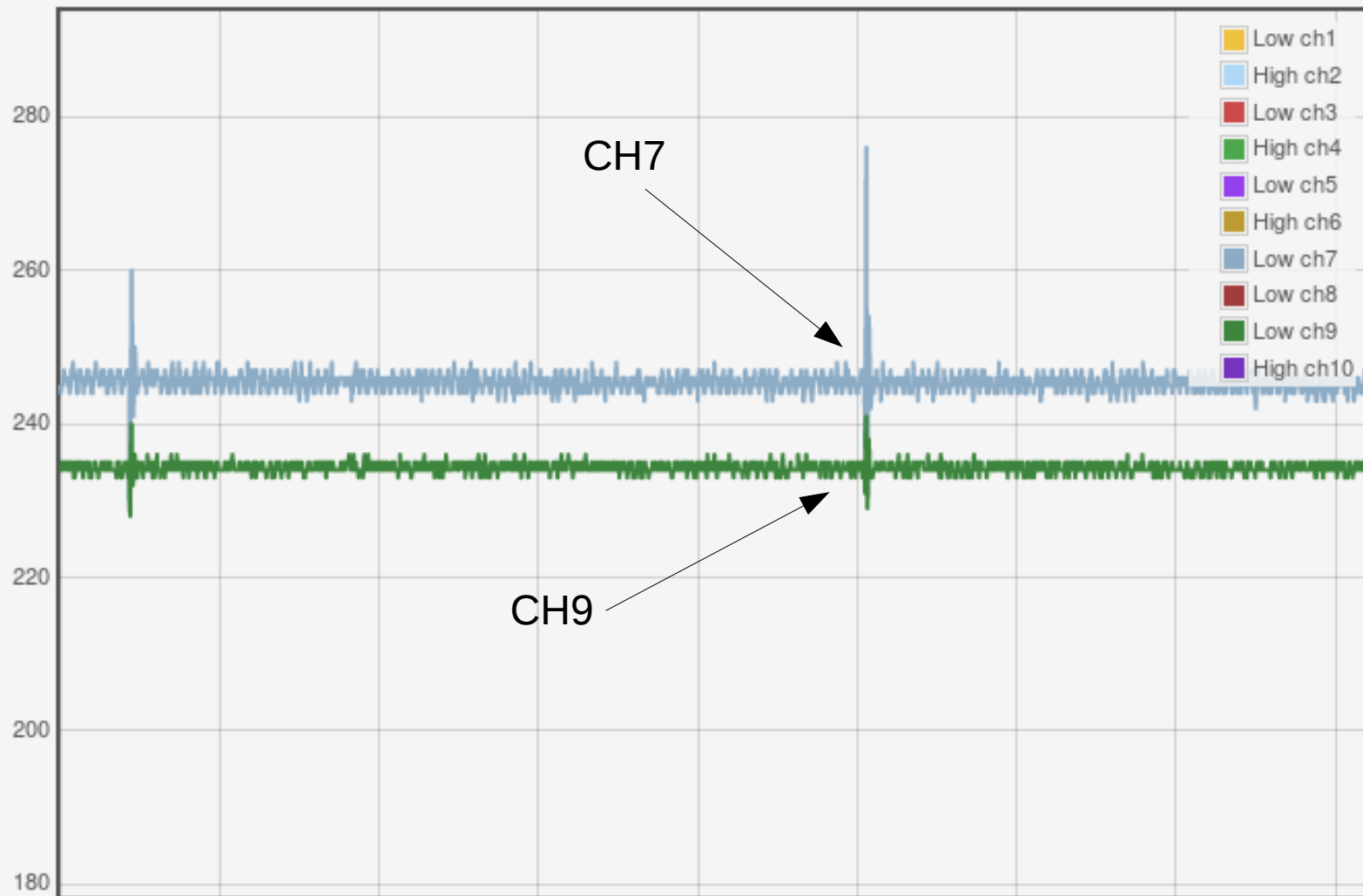


# ADC #7 & #9 spikes

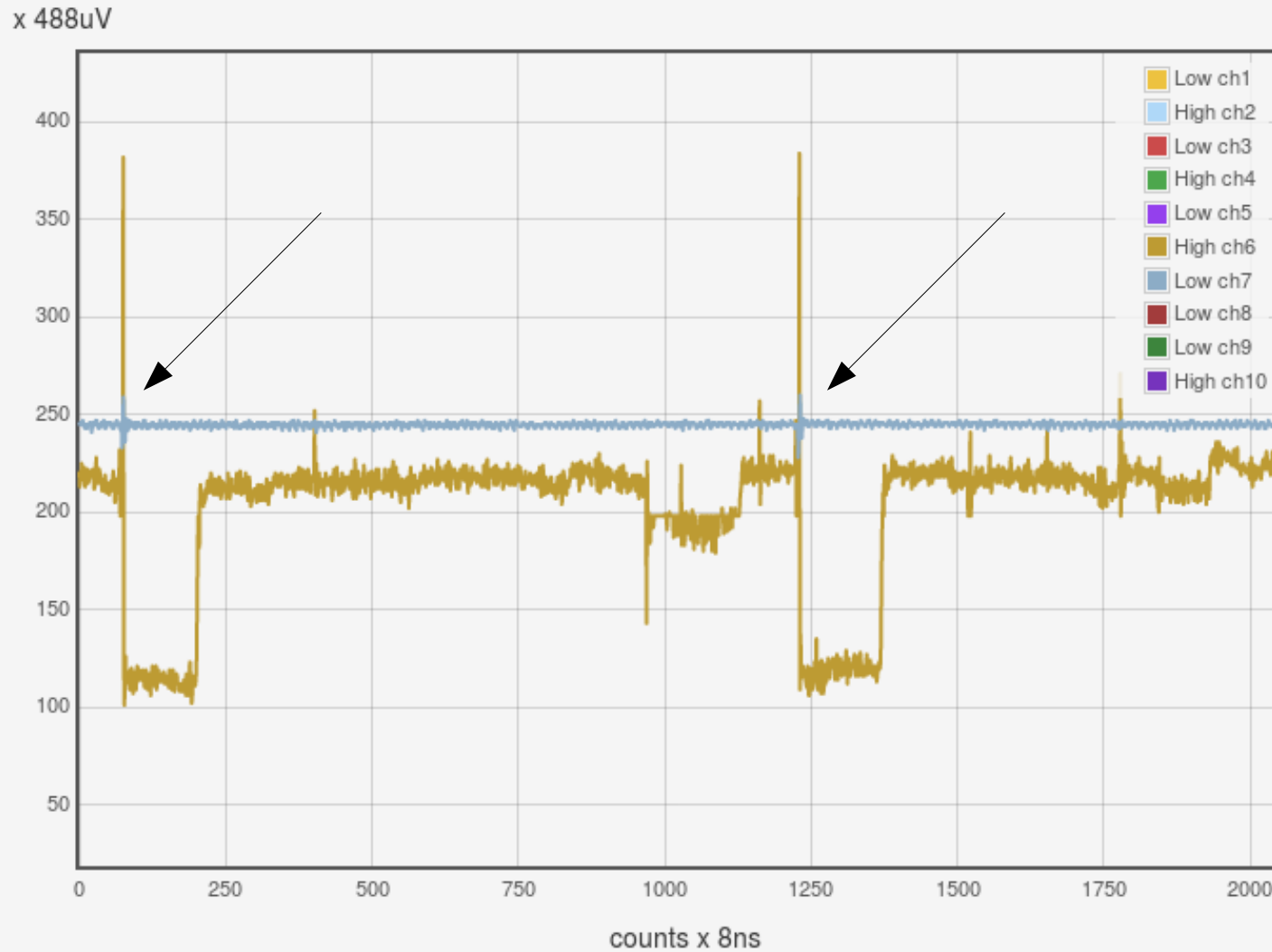
- Spikes identified to be
  - generated by 1V0 SMPS or some load.
  - Not a concern right now, but could be solved.
  - With a little wire loop you test every SMPS searching RFI (Sato).
- Needs investigation
  - PCB routing.
  - Filtering, decoupling.
  - Used by Ethernet and FPGA.

# ADC #7 & #9 spikes

x 488uV

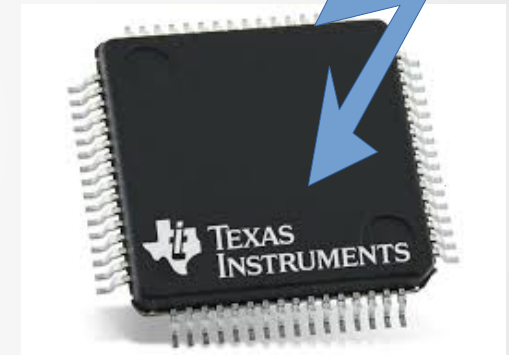


# ADC spikes due to 1V0 SMPS/load



# Slow Control IC shortcircuit

- MSP430F2618.
- **Two boards** in Malargüe suddenly stopped to work.
  - V1: #49. Used for software testing.
    - In diagnostic. IC bad.
  - V2: #64. Lecce, brought by Giovanni.
    - IC changed, working OK.
- IC generates a shortcircuit on 3V3\_SC line.
- Will this become a problem in the future???



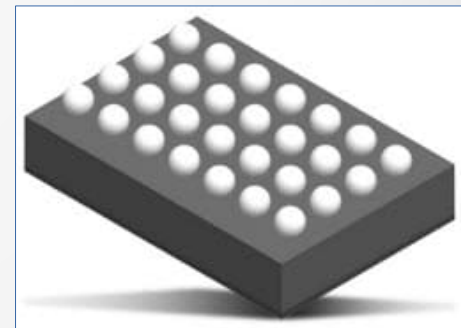



# Other thoughts

- Add individual PMT Short-circuit protection.
  - If one PMT gets in SC, you loose all the detector.
  - Maybe a resettable fuse.



- Sorry but have to say it again...
  - SMPS, some are very small.
    - e.g. LMR24220 is BGA 0.5mm.
- If we keep it, we need good machines and well trained staff.





Thanks for your attention!