

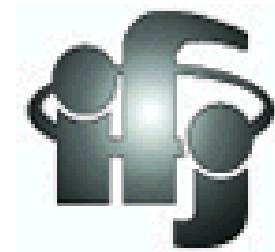
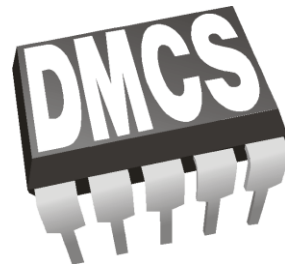


# EuCard

WP10.6 – LLRF at FLASH

## Development of Fast ADC Card for the LLRF System

Samer Bou Habib



# Agenda

- Main goal and applications
- Function in LLRF
- Hardware
- System concept
- Measurement Result
- Future plans

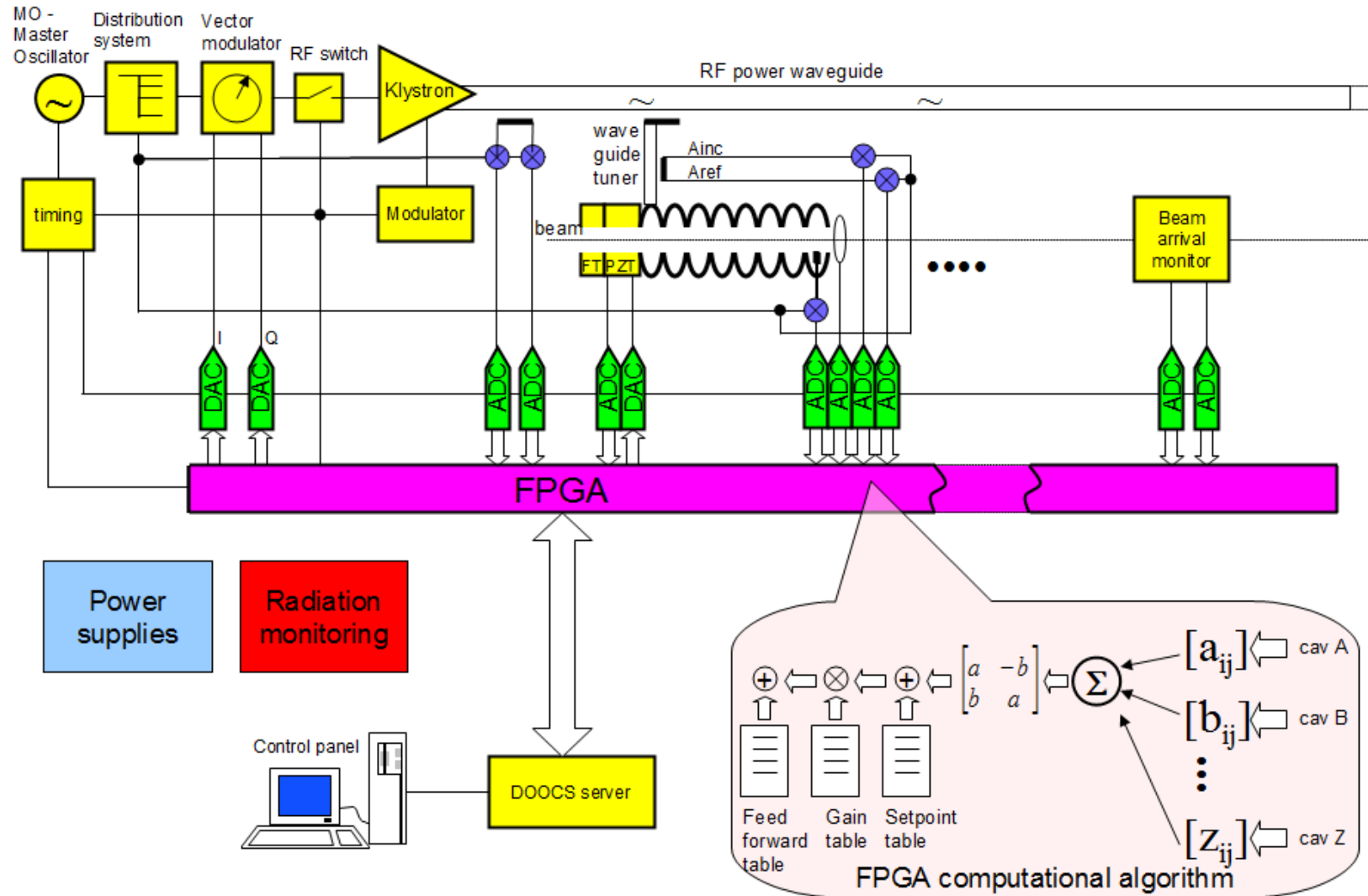


# Main goal and Applications

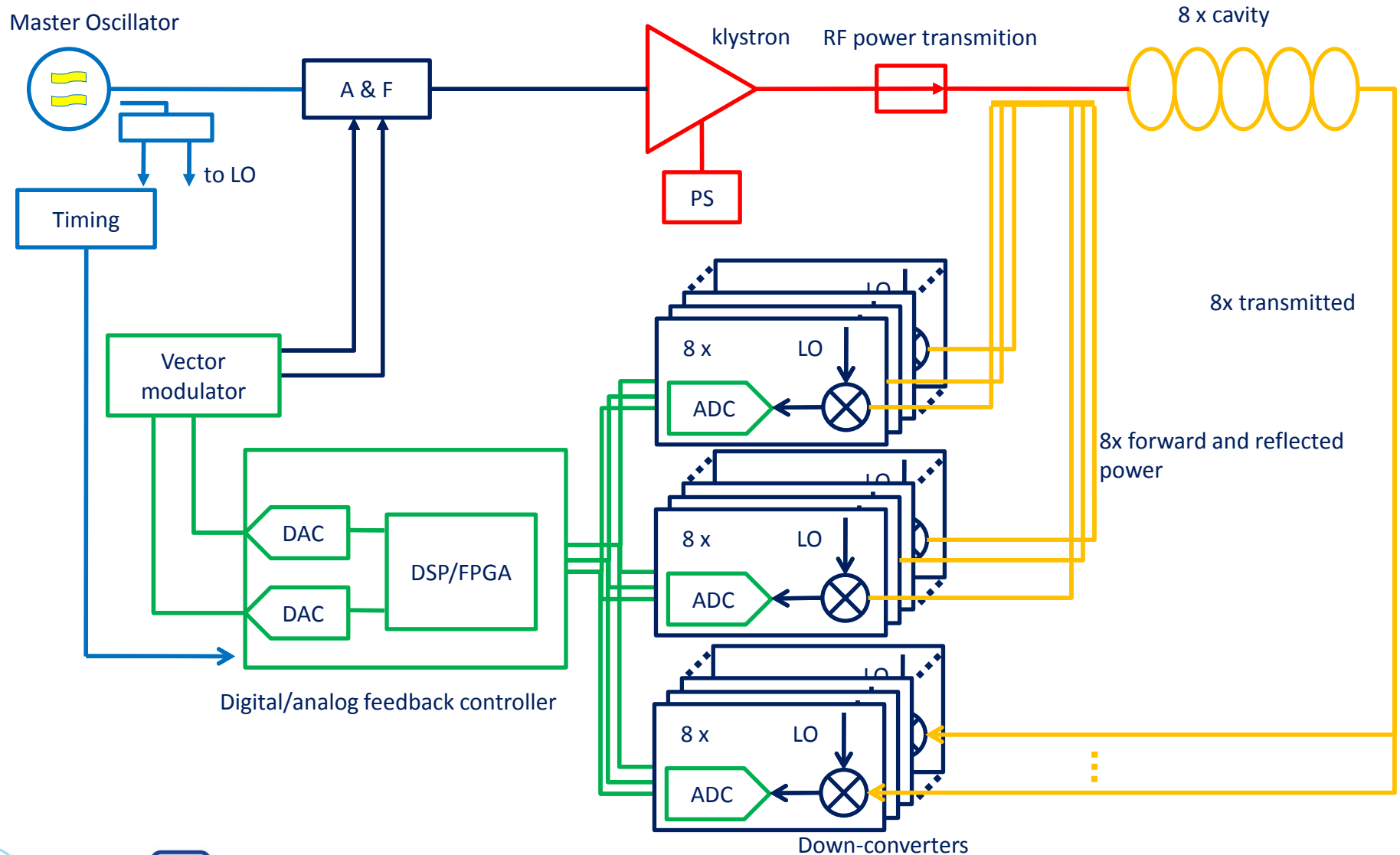
- Fast ADC testing for LLRF
- Applications
  - Direct Sampling (IQ detection)
  - Digital phase detection
  - Amplitude detection



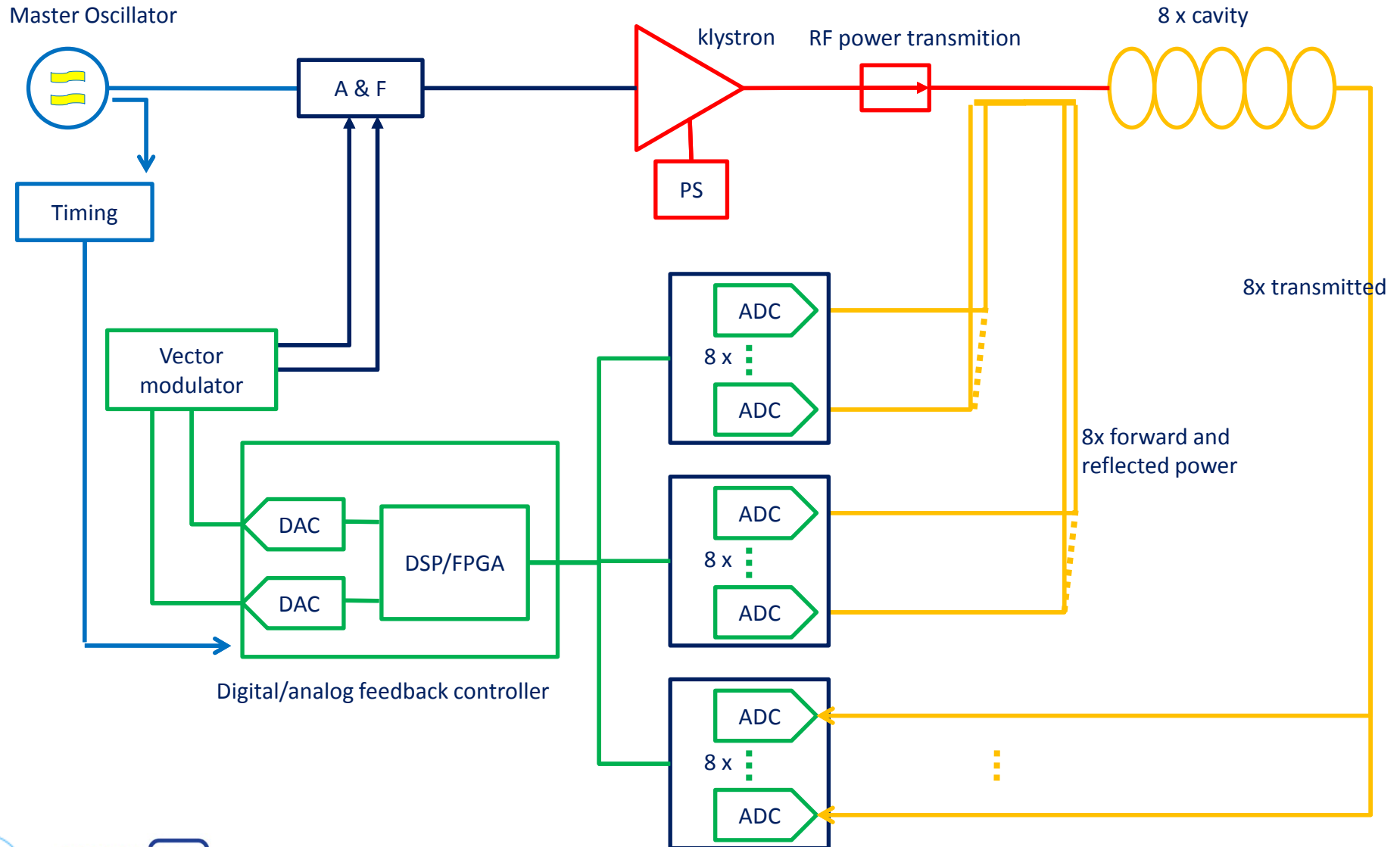
# LLRF at FLASH



# LLRF system with DWCs



# LLRF system with Fast ADCs



# Benefits

- Replacing DWCs and data-analyzing boards with single design
  - Lower cost
  - Removing problems with DWCs (non-linearities and drifts)
- Eliminating complex LO generation



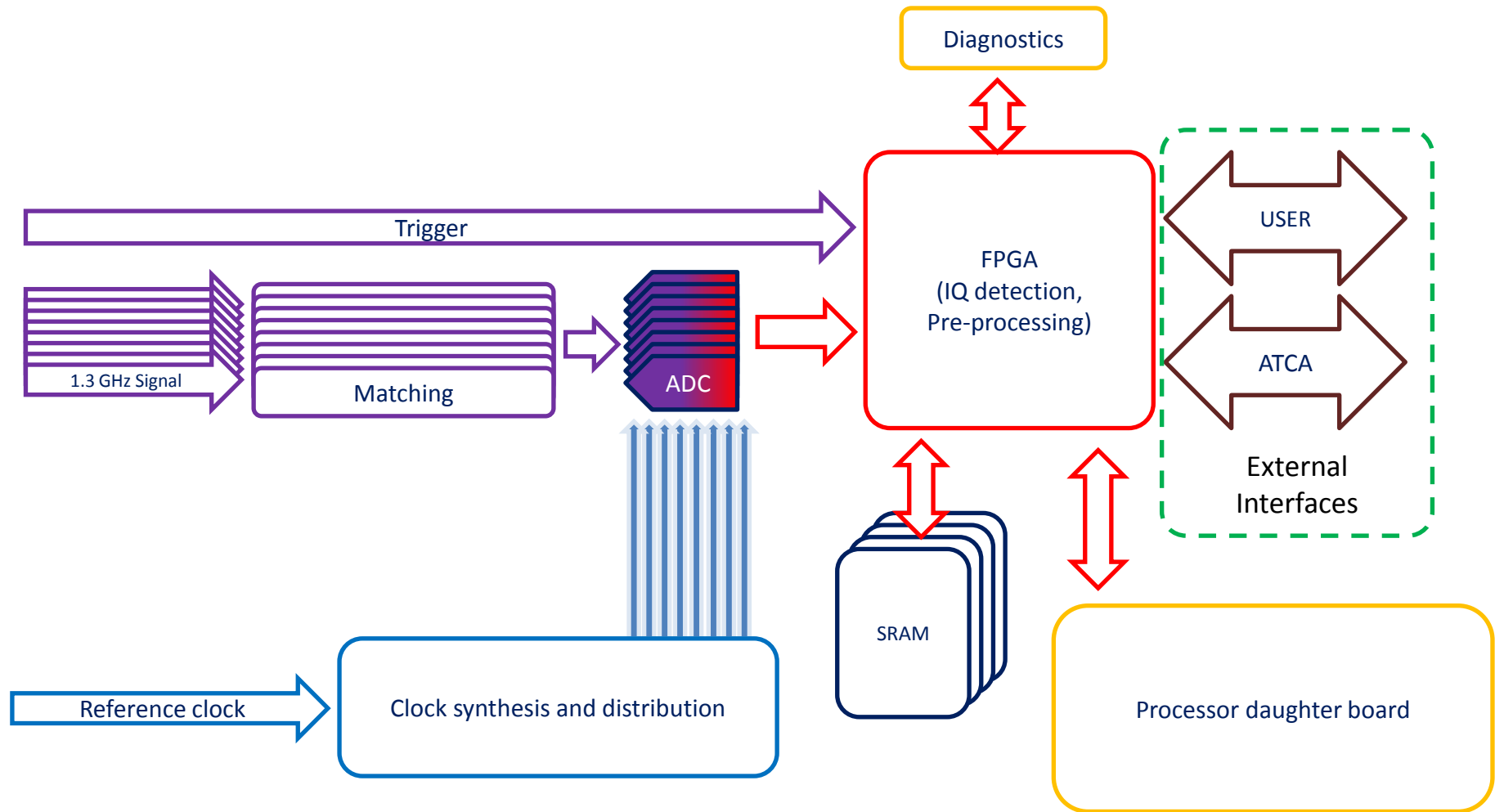
# Hardware

- Actual
  - 2 x ATCA board
    - 12-bit 500 MSPS 2.3 GHz BW
    - 14-bit 400 MSPS 1.4 GHz BW
- Future
  - uTCA Version
  - Amplitude detector for ADCM
  - Optical signals phase measurement

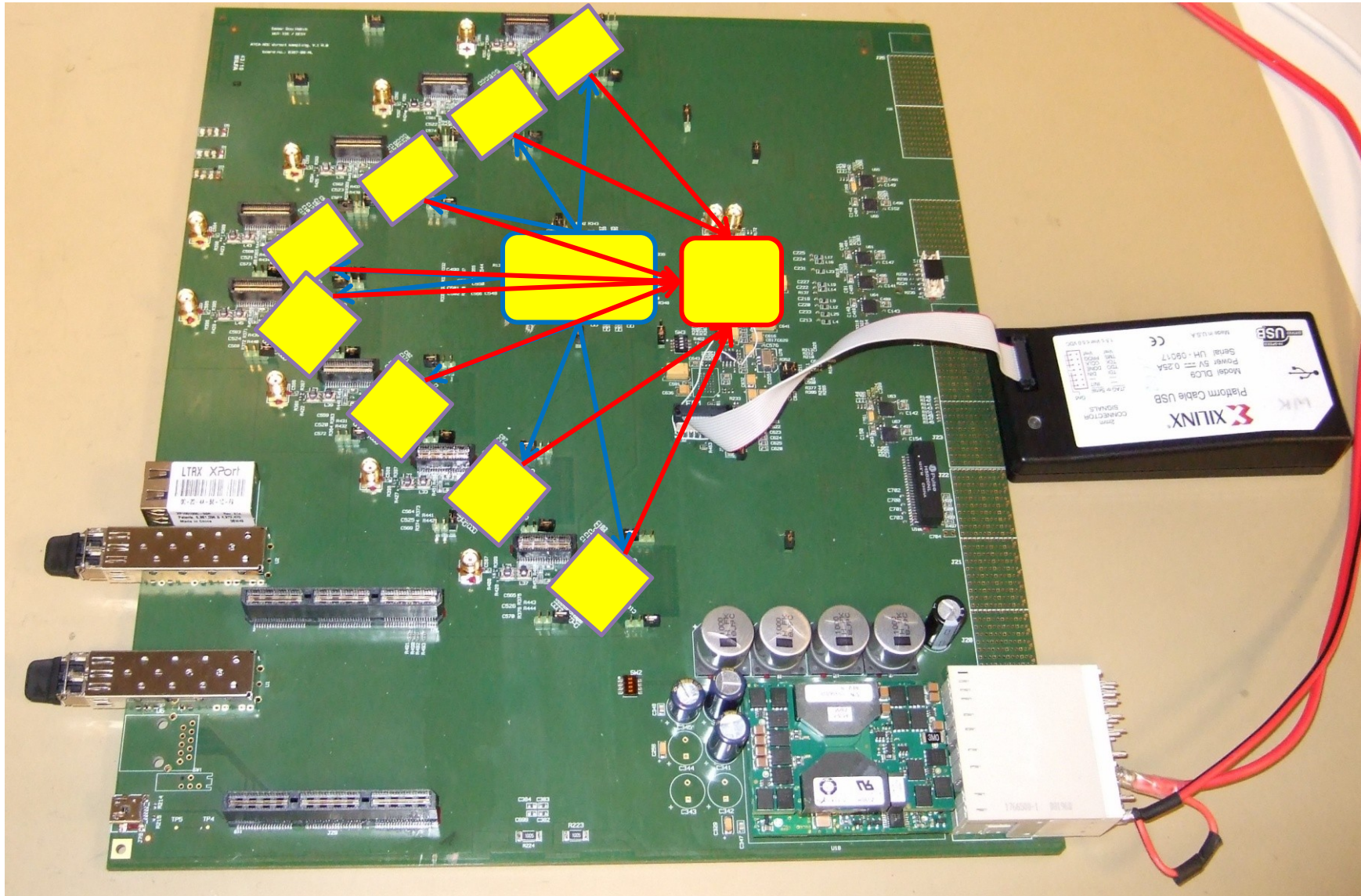




# System Concept for Actual Hardware



# PCB

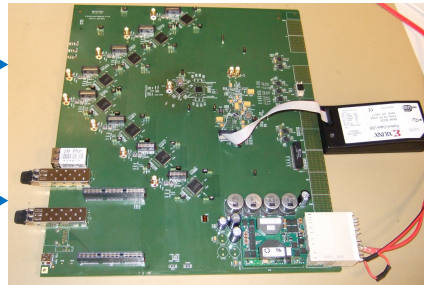


# Measurement Result



RF input

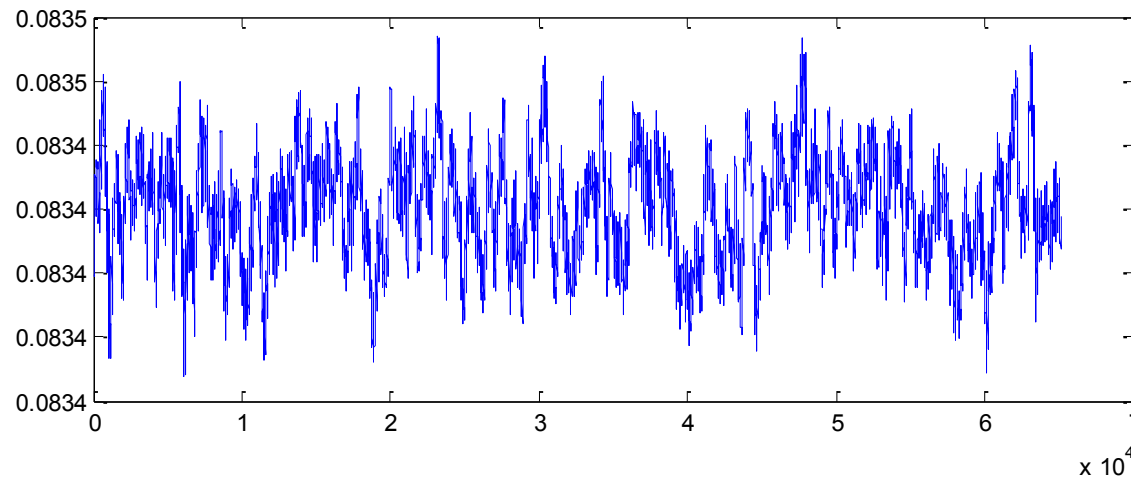
CLK  
reference



To PC



- IQ detection



- Amplitude stability  
~2e-4

# Future Plans

- Finish tests for the ATCA boards
- Test performance and effect on FLASH
- Prepare boards for the new standards (uTCA) / future applications



# Thank you for your attention

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