



## ATLAS Muon TDC (AMT-2) Status

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ATLAS Muon Electronics

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- AMT Status
- New Features in AMT-2
- Test Results (Preliminary)
- Summary





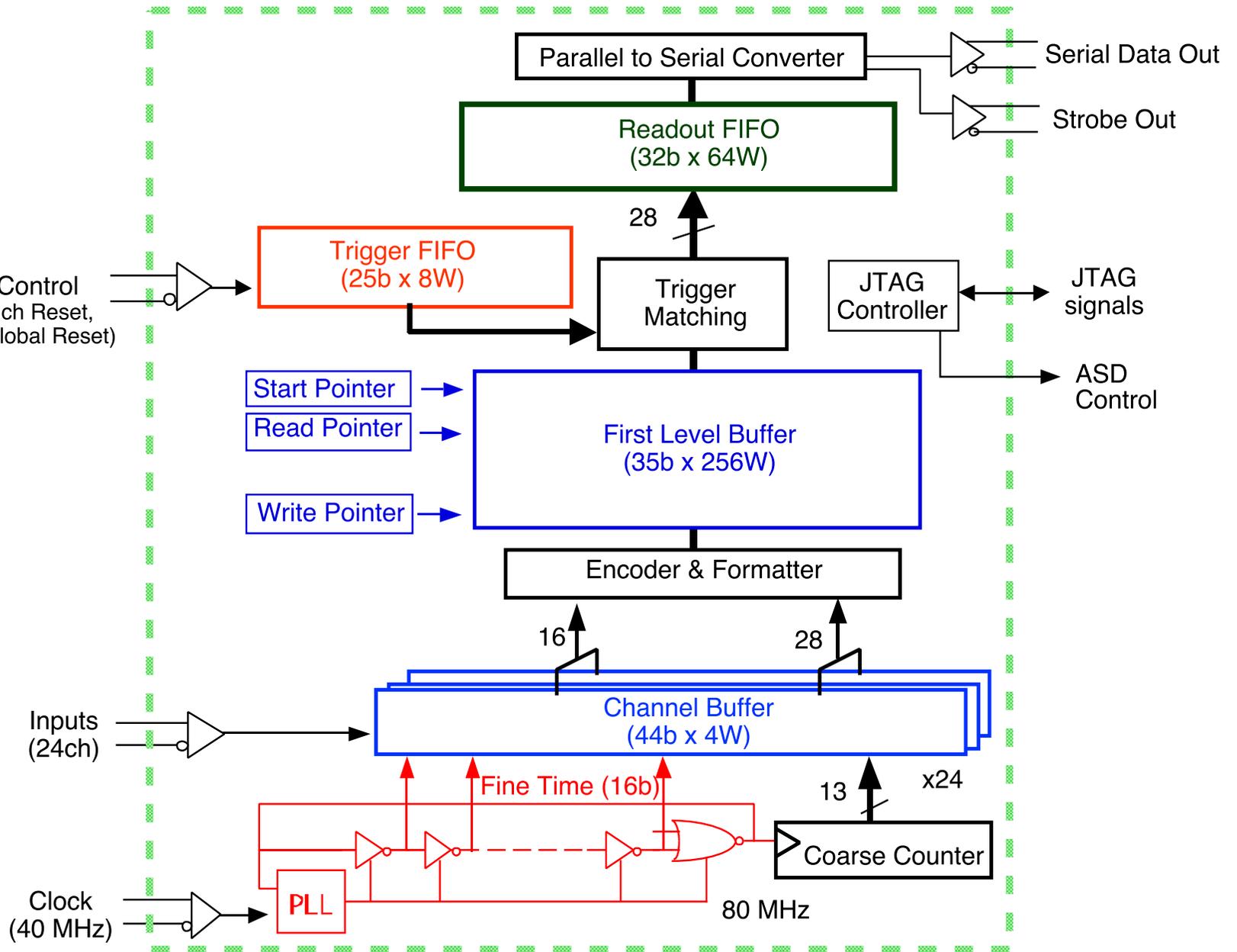
## AMT Status

- AMT-1 chip was developed on March 2000.
- 500 AMT-1 chips were produced and mounted on Mezzanine boards.
- 20 AMT-2 chips (ceramic package) were delivered to KEK on 31 May, 2001.
- 200 AMT-2 chips (plastic package) will be delivered to KEK on 20 July, 2001.
- Preliminary tests was done and Functions of the chip looks good.

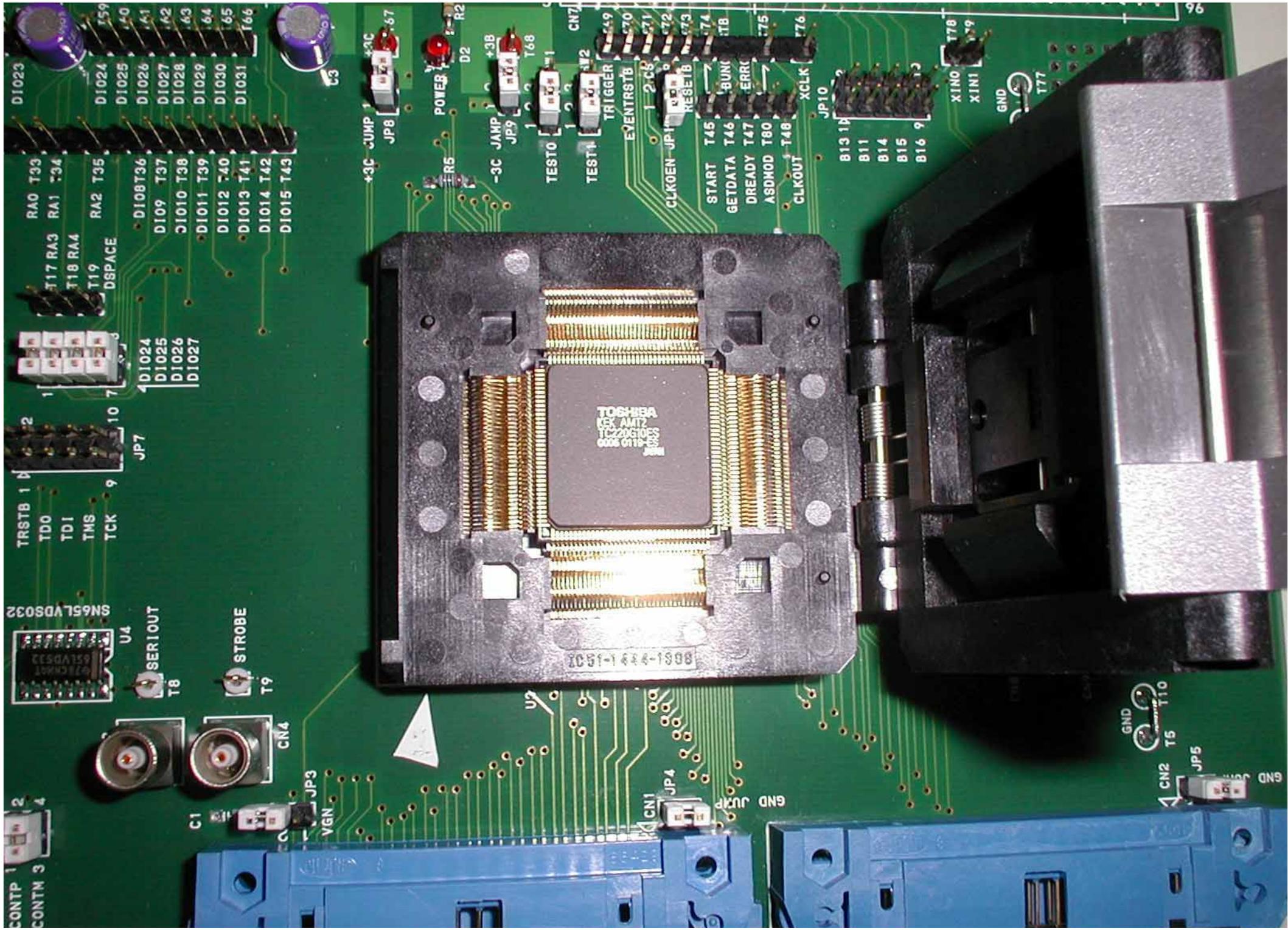


## AMT-2 New Features

- Low Power LVDS Receiver
- Implement ASD control signals
- Extended Error Checking
- Removed unused LVDS receivers
- Implement general I/O pins
- More stable operation in the Serial Interface
- Improve Testability
- Improve PLL stability
- Small bug fix



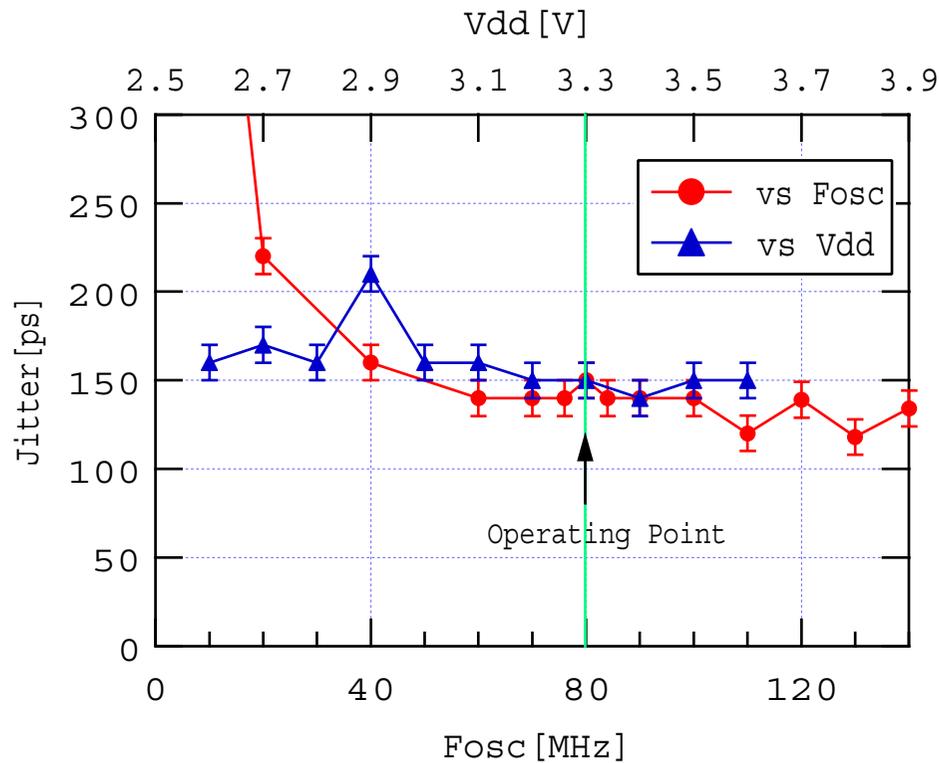
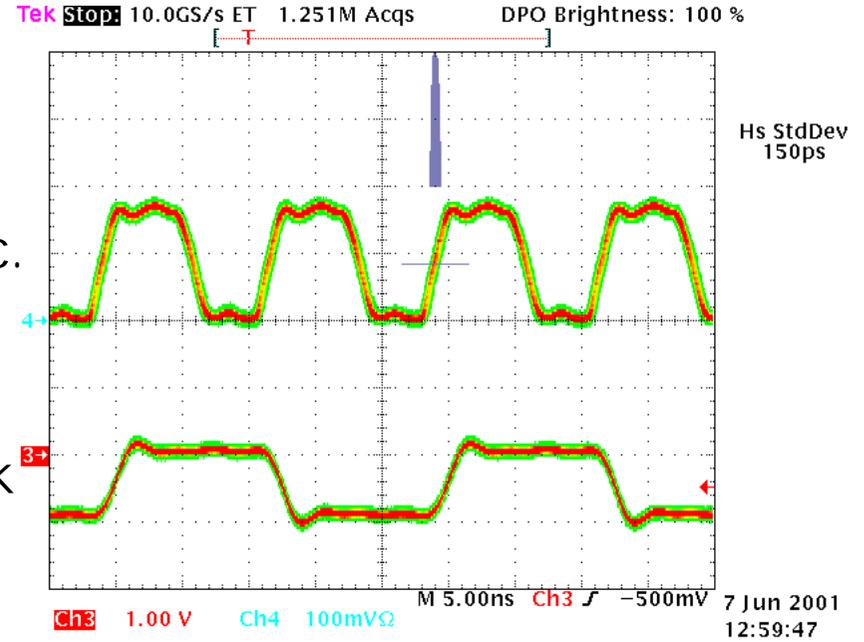
Block Diagram of the AMT-2





# PLL Stability

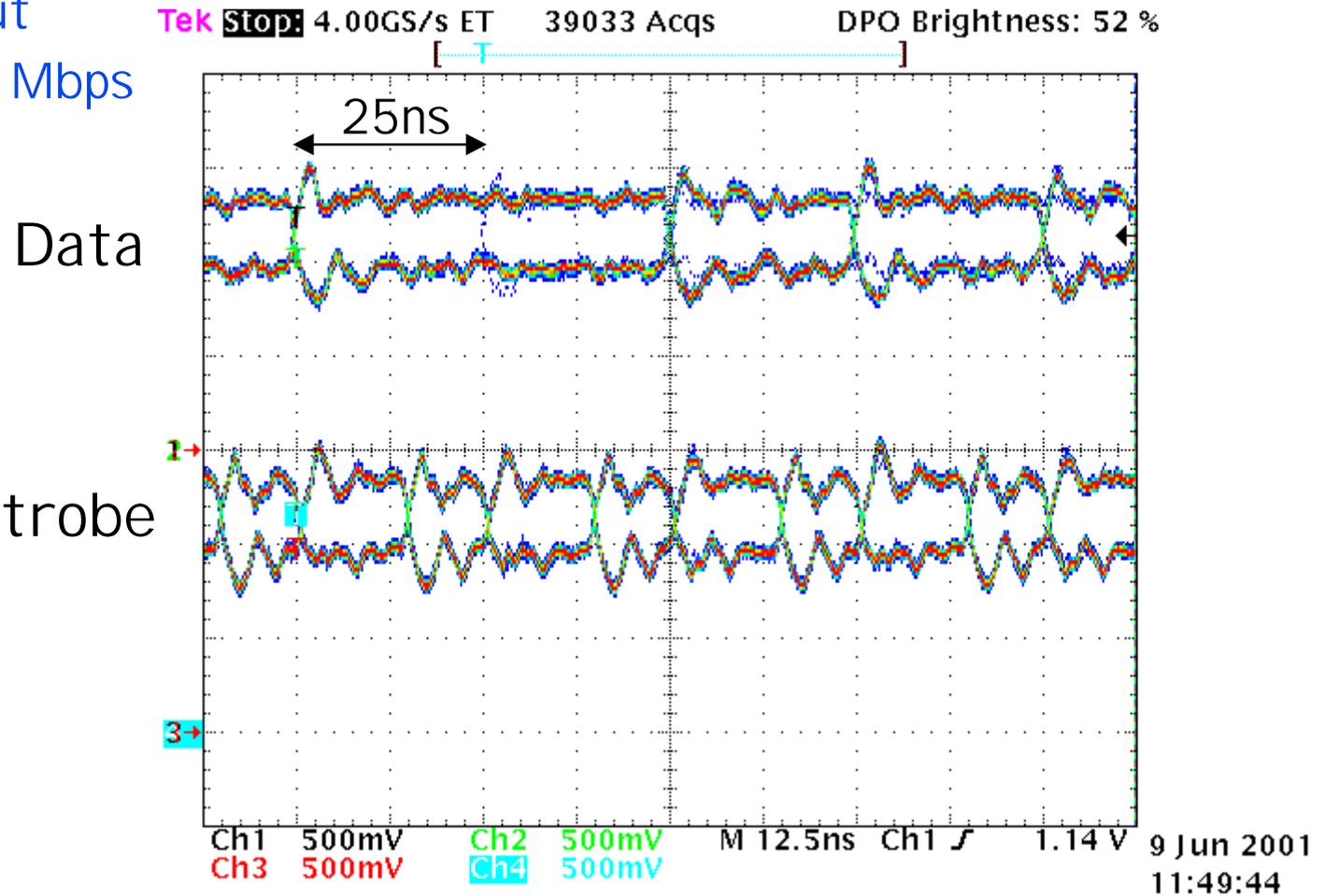
$\sigma = 150 \text{ ps @80MHz}$





# Serial Output

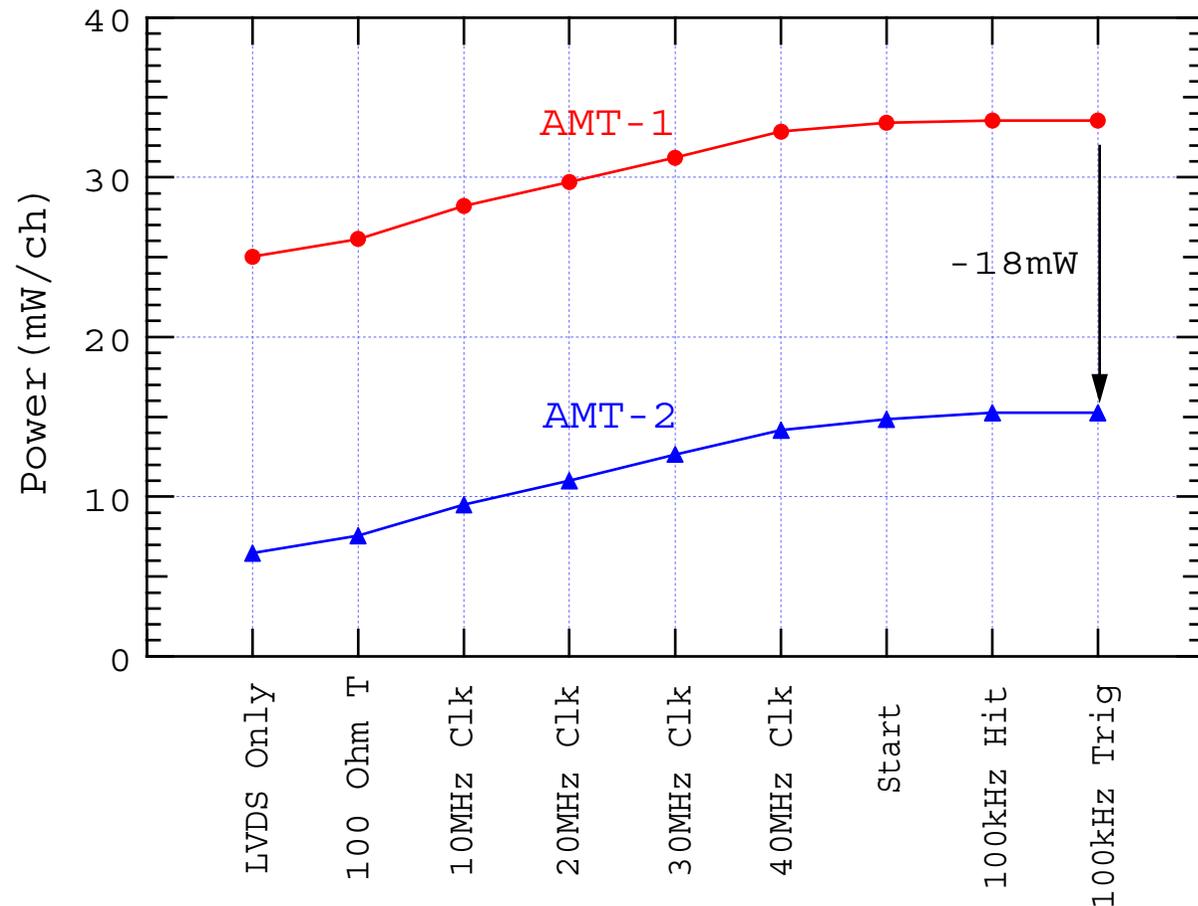
LVDS output  
waveform at 40 Mbps



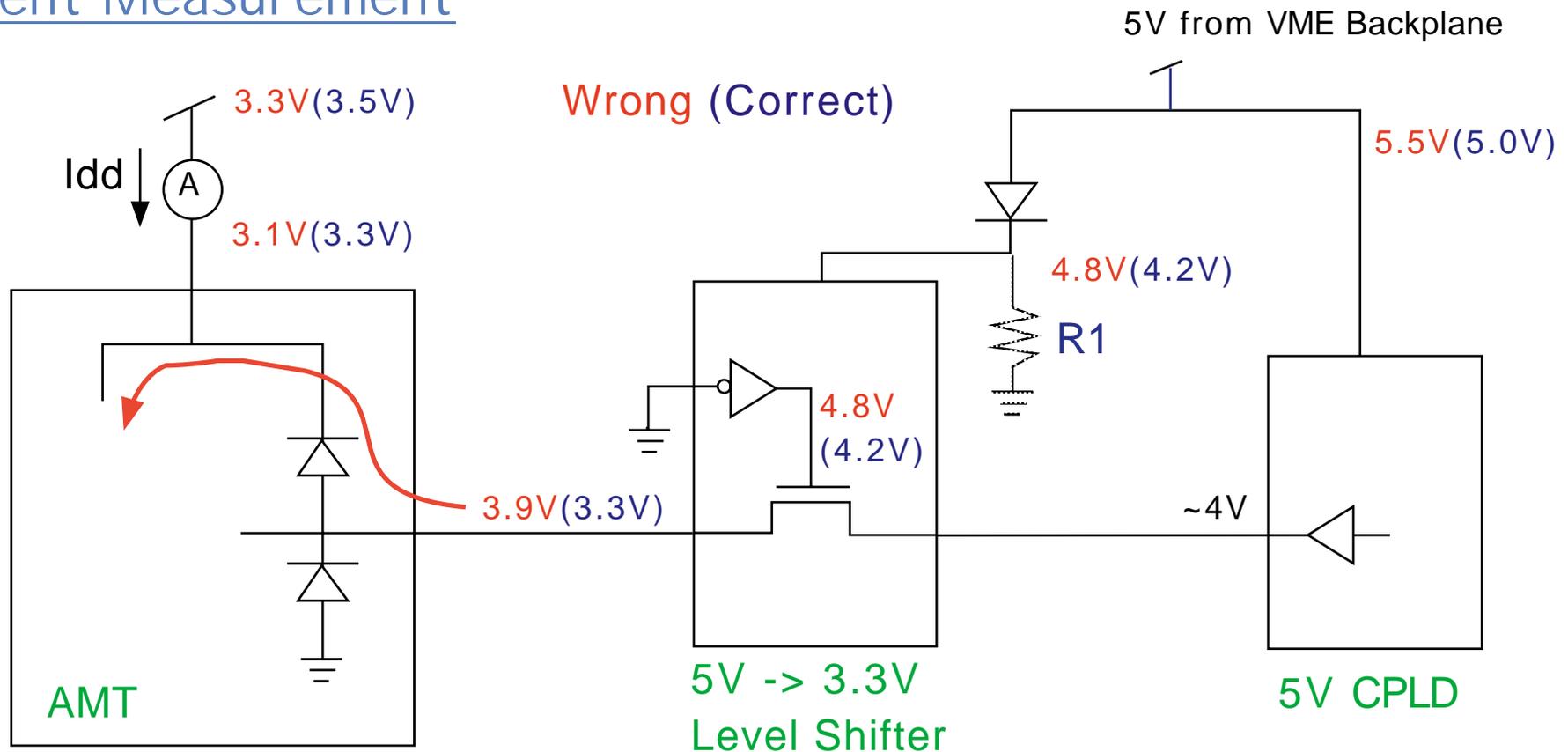


## Power Consumption

- **Bad News:** Measurement of the AMT-1 Power Consumption was wrong! (500 mW/chip -> 800 mW/chip).
- Power Consumption of the AMT-2 is **15 mW/ch**, which is 18 mW less than that of the AMT-1.



# Current Measurement



## Faults of Measurement

- \* VME 5V line was 5.5V
  - \* Diode bias resistor R1 was missing
  - \* Voltage drop in the current meter was not compensated.
- ==> Part of the current was supplied from Input pins.



## Summary

- AMT-2 was designed and ES chip was produced.
- Preliminary test shows no problem in operation.
- Power consumption of the AMT-1 was wrong. It consumes 33 mW/ch.
- Power consumption of the AMT-2 is -18 mW less than that of the AMT-1, but still consumes 15 mW/ch. (TDR value is 10mW/ch)
- 200 plastic packaged chip will be available soon.
- Gamma-ray Irradiation and 90 MeV proton irradiation are being planned.