GOL-Aux-Board

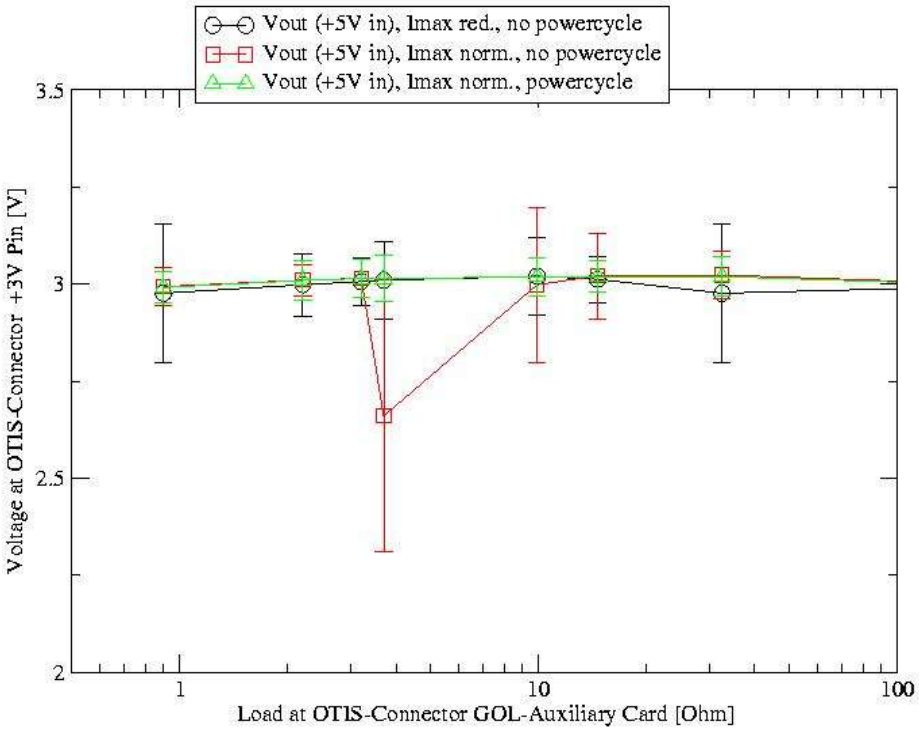
Dirk Wiedner, Physikalisches Institut der Universität Heidelberg

I. Tests with GOL-AUX-Board IF13-0

- Power Regulators
- Data Transmission
- QPLL
- Bit Error Test
- LVDS distribution

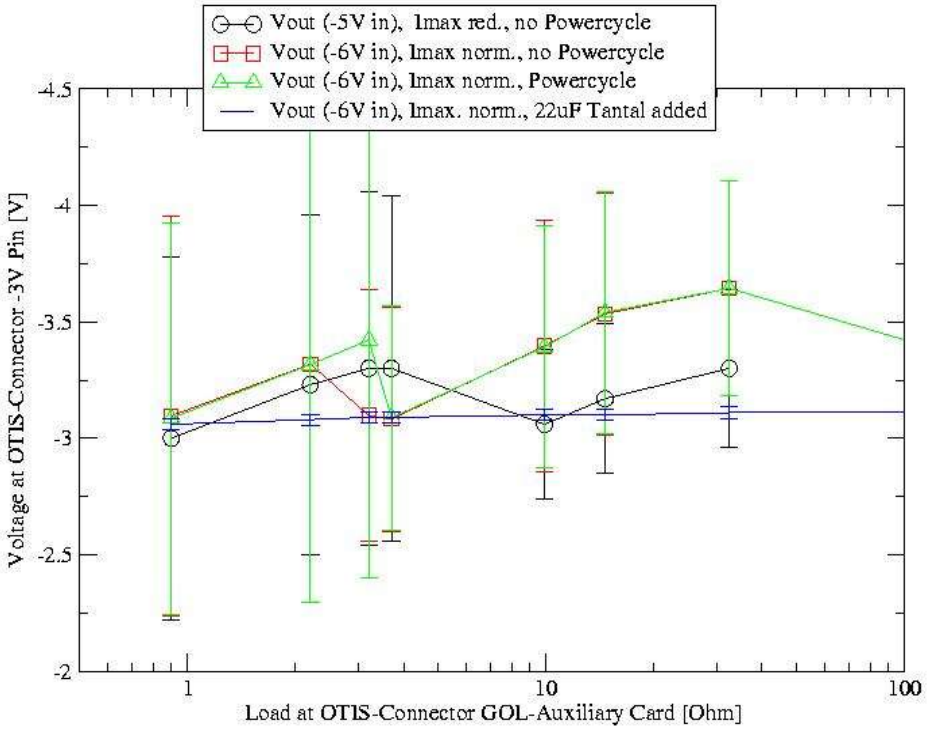
Power Regulators (1/2)

- +2.5V, +3V, -3V
- load 32.4 -0.9 Ohm
- positive regulators
  - 300 mV oscillations
  - 100 mV osc. after powercycle



Power Regulators (2/2)

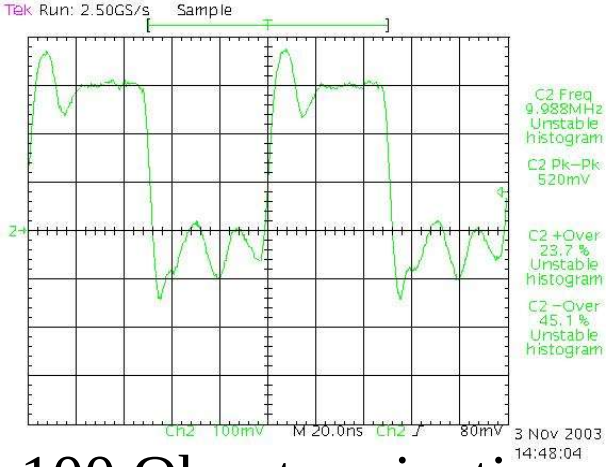
- negative regulators
  - up to 2V oscillations @ 6 to 25 kHz
  - three types tested
  - 22 uF Tantal added: 24mV oscillations



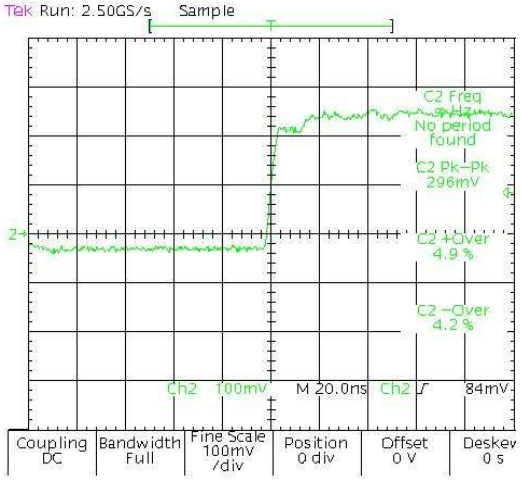
Data Transmission OTIS-Connector - VCSEL

- static and counter Datatransmitted
- 100 Ohm termination at OTIS connector needed
- 16.2 mA VCSEL Bias

no termination



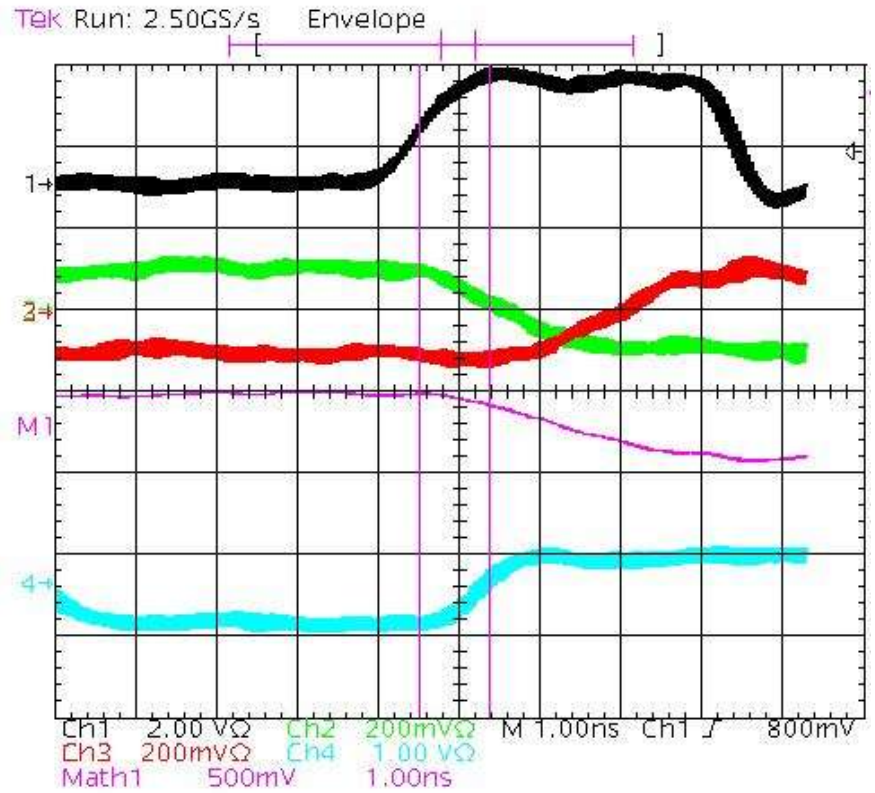
100 Ohm termination



QPLL

- QPLL locks on 2. QPLL
- Lockrange on Frequency Generator 40.97775 Mhz ±2.25 kHz
- TFC clock distribution works

Clock distribution eye diagram

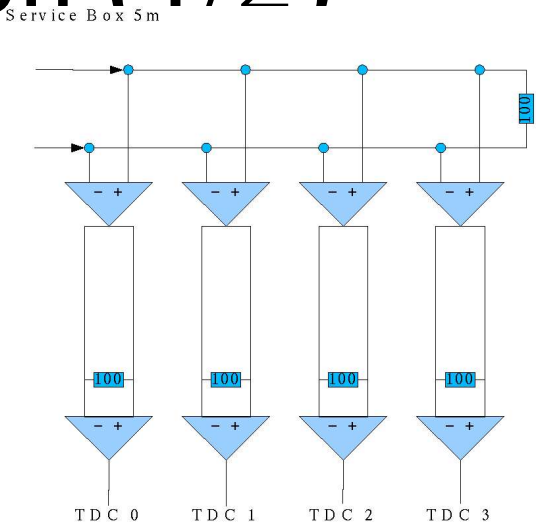


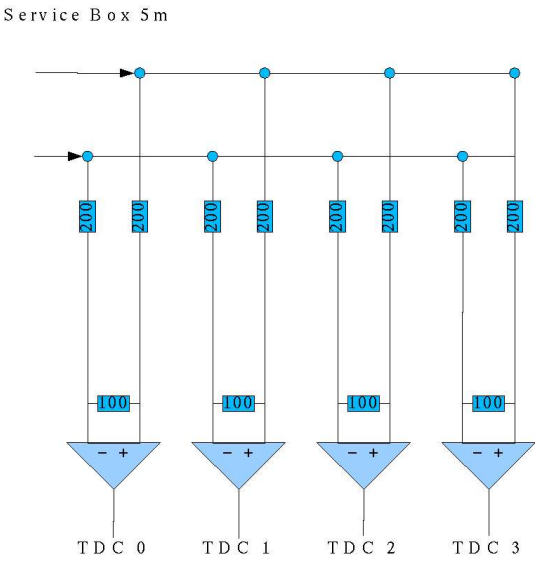
Bit Error Rate Test

- BERT sends counter data
- synchronization on Lsb = 1 MSB = 0
- 409 errors in 67 min. = $8*10^{-11}$ Errors/Bit

LVDS distribution (1/2)

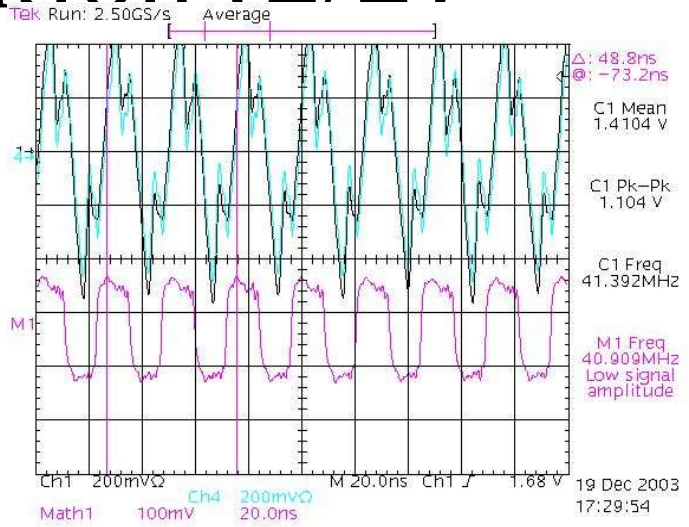
- active or passiv LVDS distribution mandatory
- active distribution:
  - Fast LVDS buffers
  - radhard?
- passive distribution:
  - current division

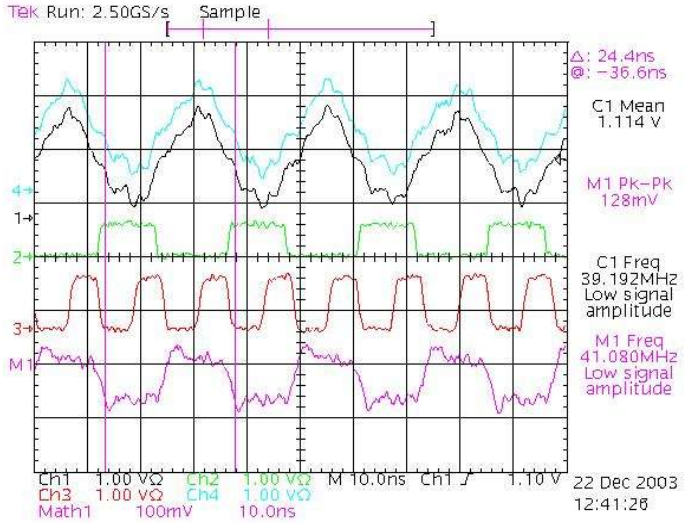




LVDS distribution (2/2)

- passive LVDS distribution tested
- good results with LVDS converter
- good results with QPLL/OTISfor:
  - clock
  - BxCntReset
  - L0Accept





II Changes for GOL-AUX Board IF13-1(1/2)

- ULM Photonics VCSEL with SMA connector
- Negative Regulator
  - corrected pinout
  - extra capacitor (100uF Tantal)
- GOL DataValid-Signal from OTIS
- 100 Ohm termination for OTIS Data and DV
- 10 Bit location address for GOL-AUX Board

Changes for GOL-AUX Board IF13-1(2/2)

- passive LVDS distribution
  - 200-250 Ohm serial Termination
  - Clock, L0-Accept, L0-Reset, Bx-CntReset, Ev-CntReset, Testpulse even/odd
- I2C decoupling (tbd)
  - optocouplers or
  - LVDS
- new connector for TFC input
  - SCSI (50 pins) or FCI 5x6

Summary

- First Prototype IF13-0 works with minor modifications
- Second Prototype IF13-1 in layout, I2C decoupling to be discussed