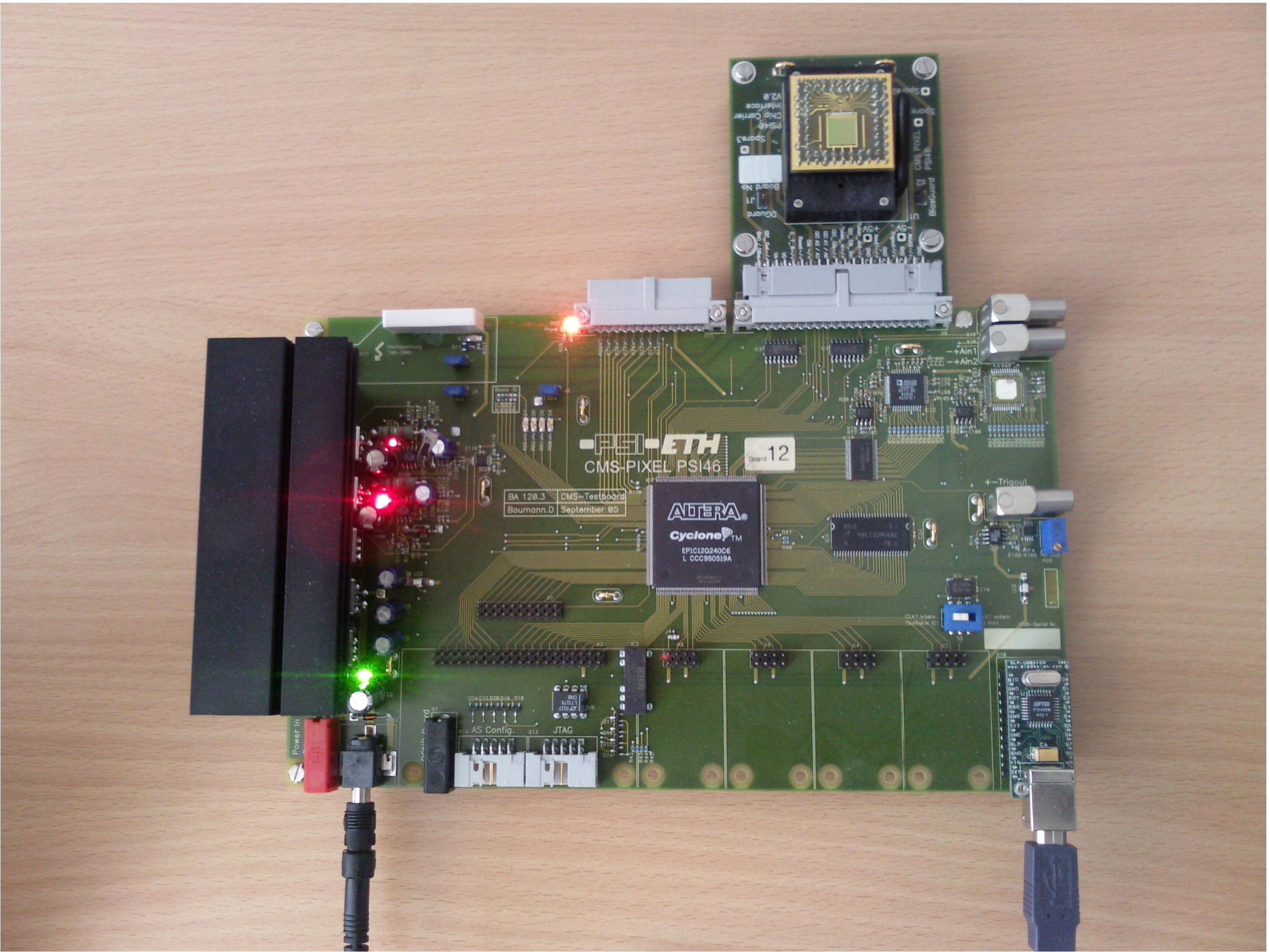
New CMS Pixel Test Board Adapter

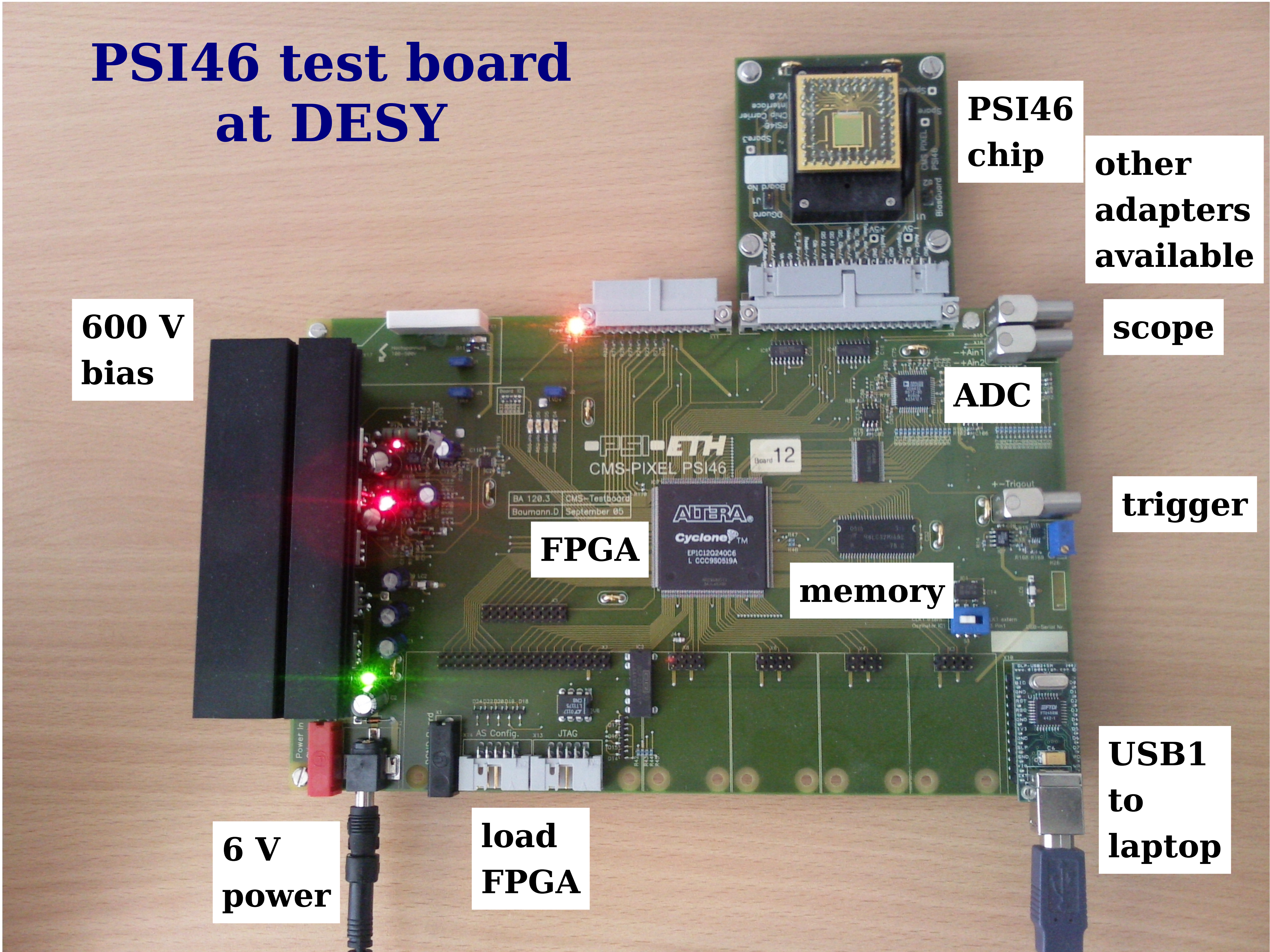
Daniel Pitzl, DESY

Pixel upgrade, 1.11.2011



- Test board
- New adapter

PSI46 test board at DESY



PSI46 chip

other adapters available

600 V bias

scope

ADC

trigger

FPGA

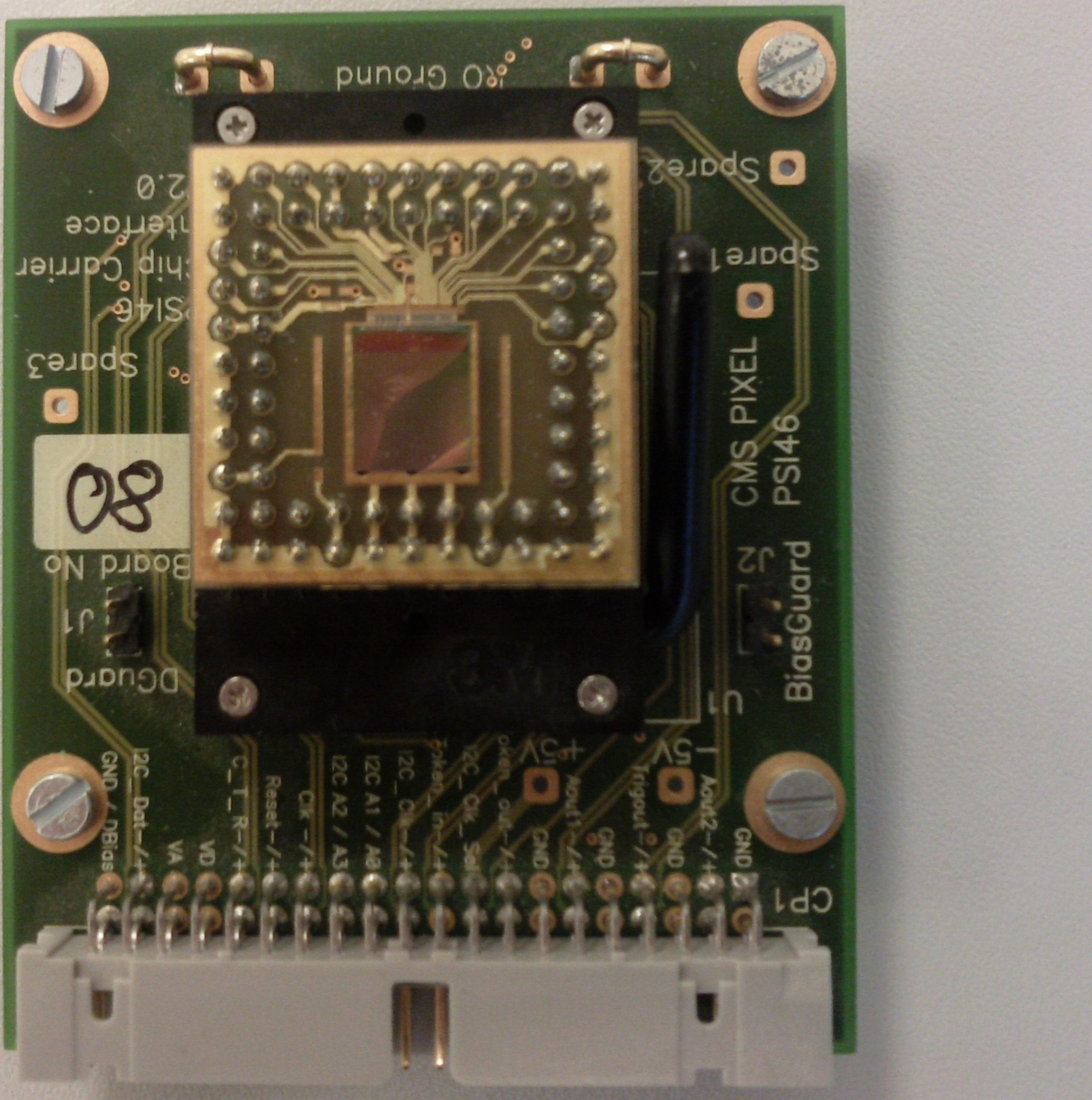
memory

USB1 to laptop

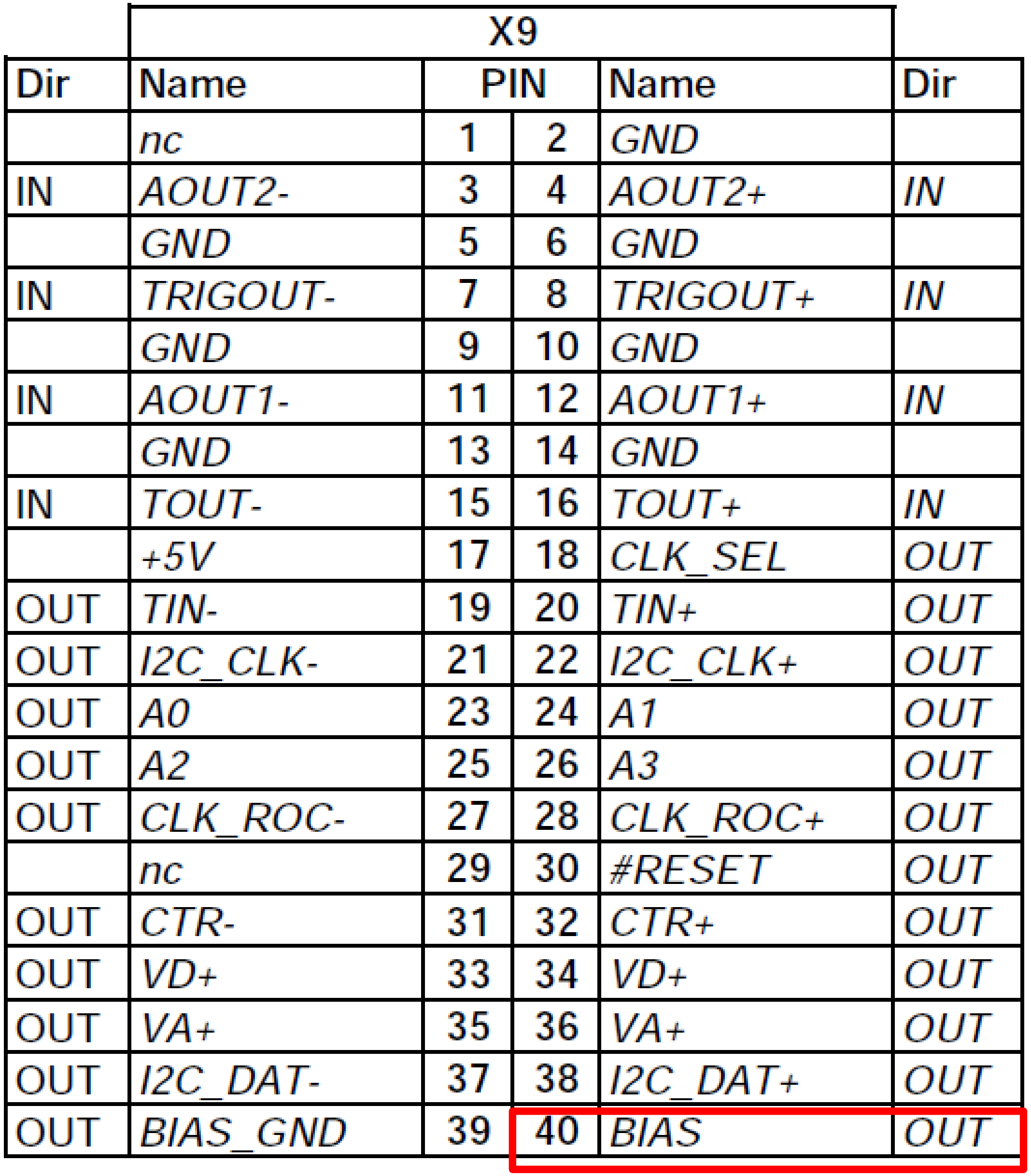
6 V power

load FPGA

Present ROC adapter



Test board connector



	X9				
Dir	Name	PIN		Name	Dir
	nc	1	2	*GND*	
IN	*AOUT2-*	3	4	*AOUT2+*	*IN*
	GND	5	6	*GND*	
IN	*TRIGOUT-*	7	8	*TRIGOUT+*	*IN*
	GND	9	10	*GND*	
IN	*AOUT1-*	11	12	*AOUT1+*	*IN*
	GND	13	14	*GND*	
IN	*TOUT-*	15	16	*TOUT+*	*IN*
	+5V	17	18	*CLK_SEL*	*OUT*
OUT	*TIN-*	19	20	*TIN+*	*OUT*
OUT	*I2C_CLK-*	21	22	*I2C_CLK+*	*OUT*
OUT	*A0*	23	24	*A1*	*OUT*
OUT	*A2*	25	26	*A3*	*OUT*
OUT	*CLK_ROC-*	27	28	*CLK_ROC+*	*OUT*
	nc	29	30	*#RESET*	*OUT*
OUT	*CTR-*	31	32	*CTR+*	*OUT*
OUT	*VD+*	33	34	*VD+*	*OUT*
OUT	*VA+*	35	36	*VA+*	*OUT*
OUT	*I2C_DAT-*	37	38	*I2C_DAT+*	*OUT*
OUT	*BIAS_GND*	39	40	*BIAS*	*OUT*

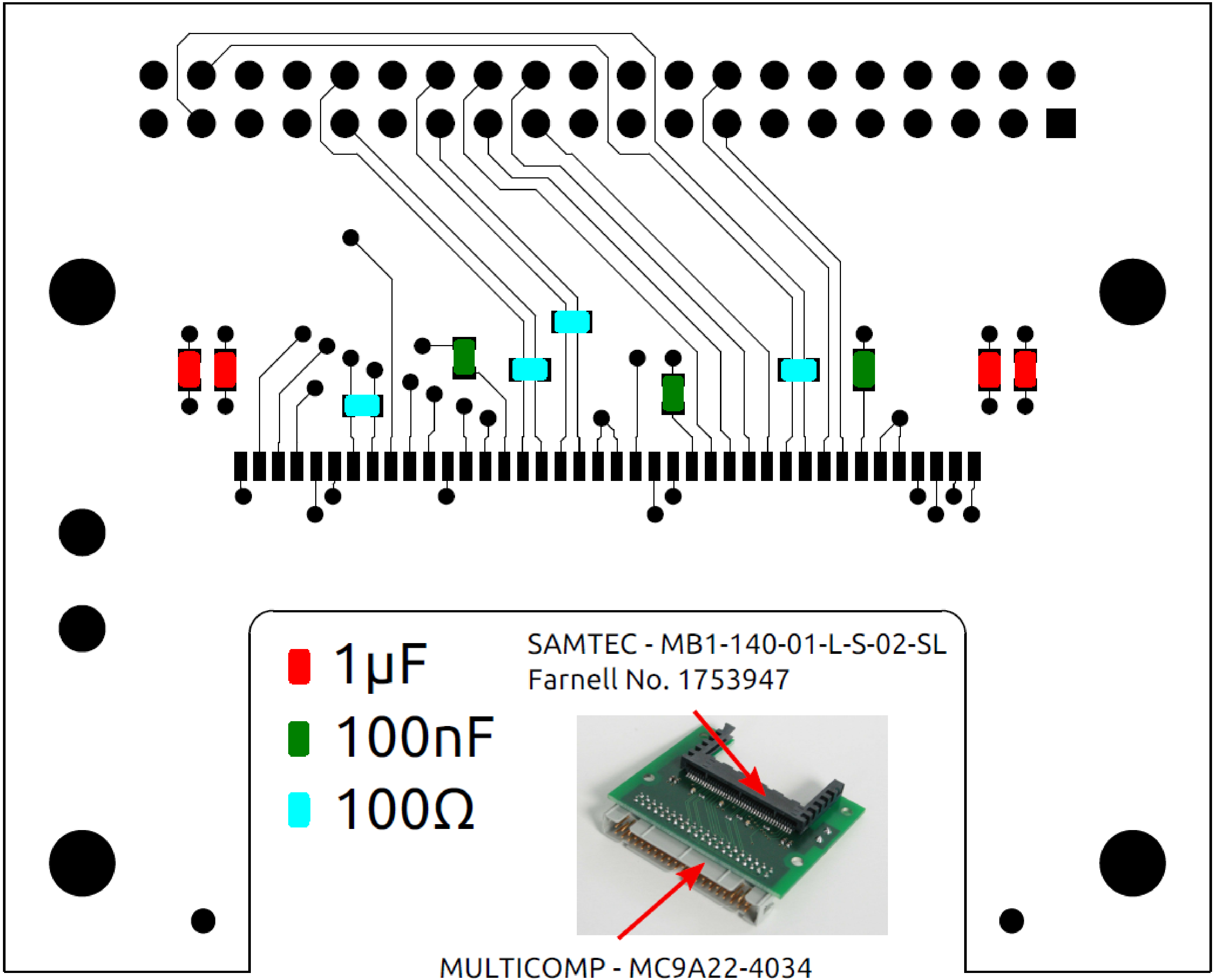
Beat Meier
2007

New chip adapter cards needed

- DESY will receive new chips from PSI
- They need to be mounted:
  - glue to a carrier, wire bond, attach to a test board.
- old zif sockets:
  - expensive, labor-intensive to assemble,
  - lots of dead material in a test beam.
- New edge connector design from PSI:
  - Chip glued directly to simple PCB (no SMD components)
  - Need to add Vbias line
  - Produce many
- Requires one interface card per test board
  - with SMD components
  - add Vbias line

New interface cards

add Vbias line



🟥 1µF

🟩 100nF

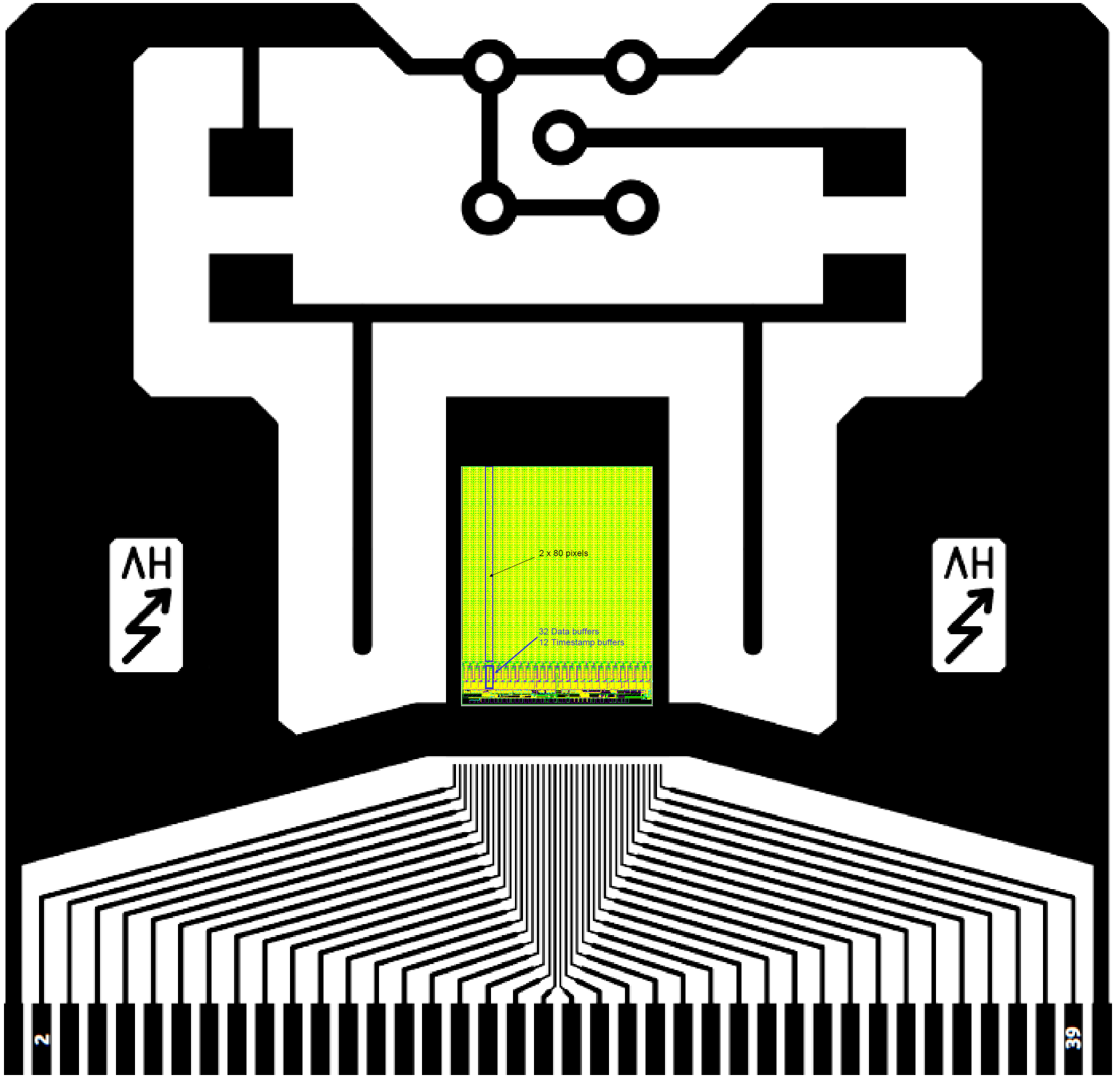
🟦 100Ω

SAMTEC - MB1-140-01-L-S-02-SL
Farnell No. 1753947

MULTICOMP - MC9A22-4034
Farnell No. 1099251

Silvan Streuli PSI 2011

New adapter cards



**sensor Vbias
on Lemo
connector**

**ROC:
glue and
wire bond.**

**add Vbias
line to
test board**

**into edge connector
on new interface card**

**Silvan
Streuli
PSI
2011**

Wire bond plan

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add
Vbias
line