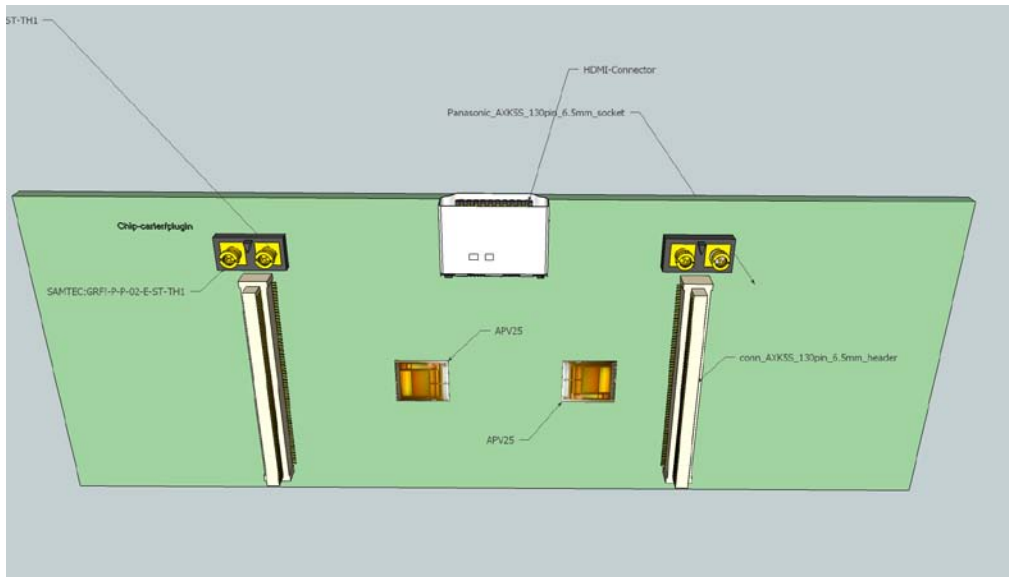


Analog Chip Adapter for SRS

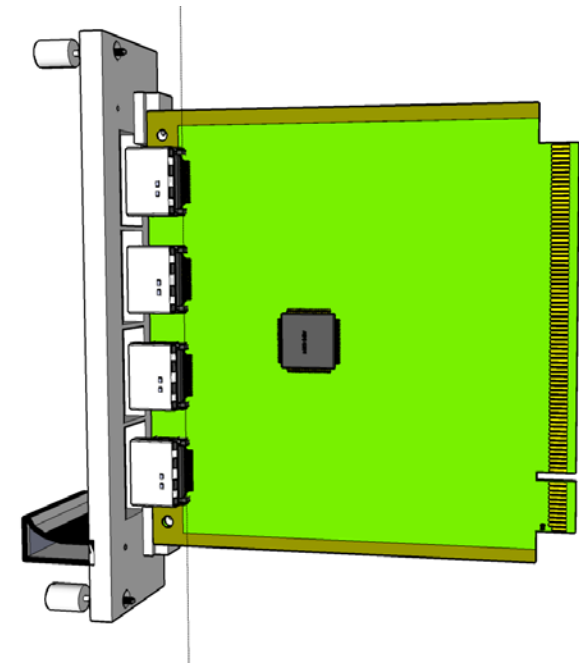
Sorin Martoiu, CERN PH/DT

Components



Chip Adapter card

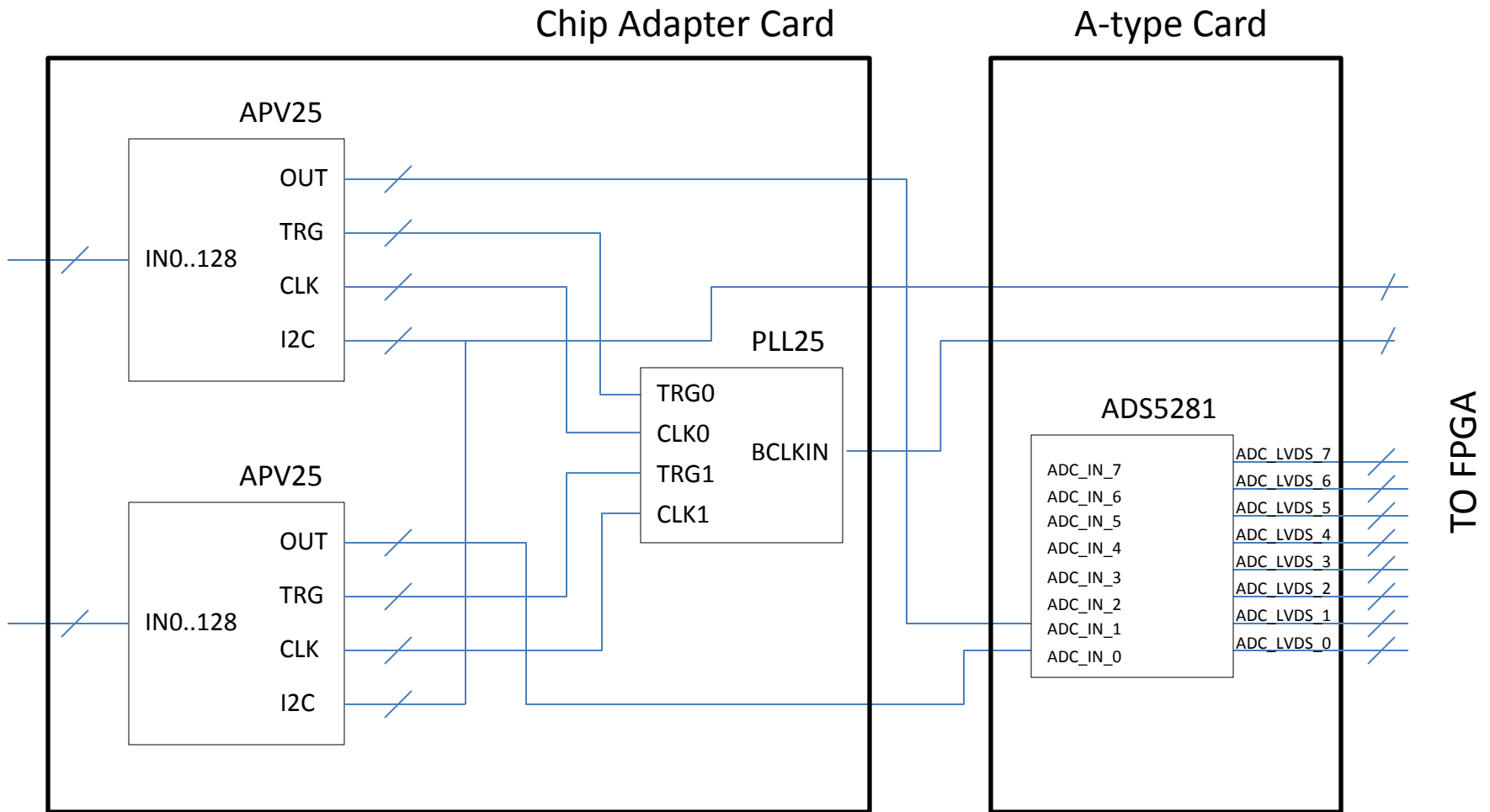
- 2 x APV25/BEETLE chips (256 readout channels)
- 1 x PLL25 CERN chip
- 2 Philips connectors for the MMega chamber
- 2 coax bundle connectors for redundant ground connection and pickup strips



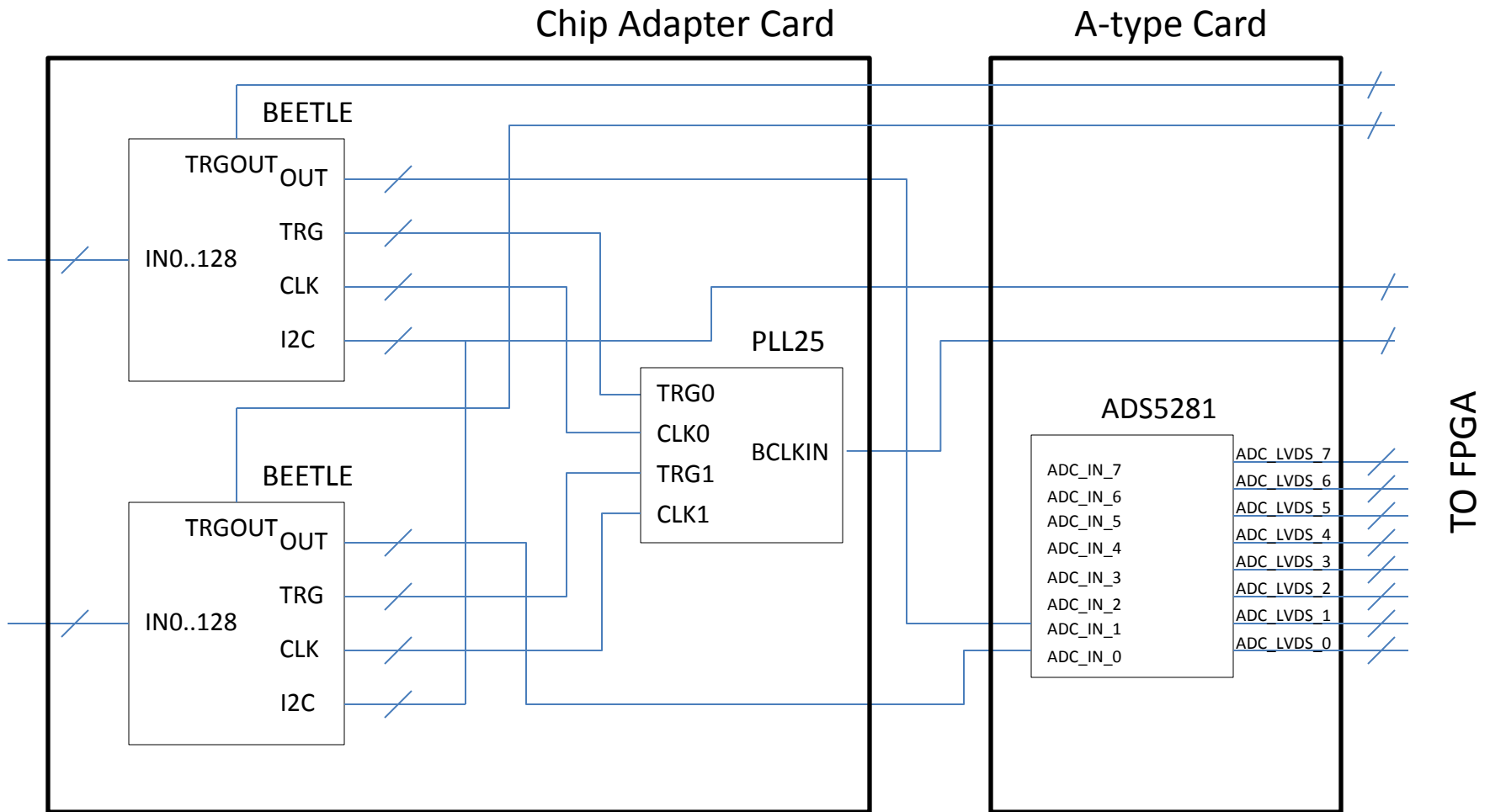
A-type Card

- 1 x ADS5281 (65MSPS, 12bit ADC with serial LVDS outputs)
- buffers, power, etc.

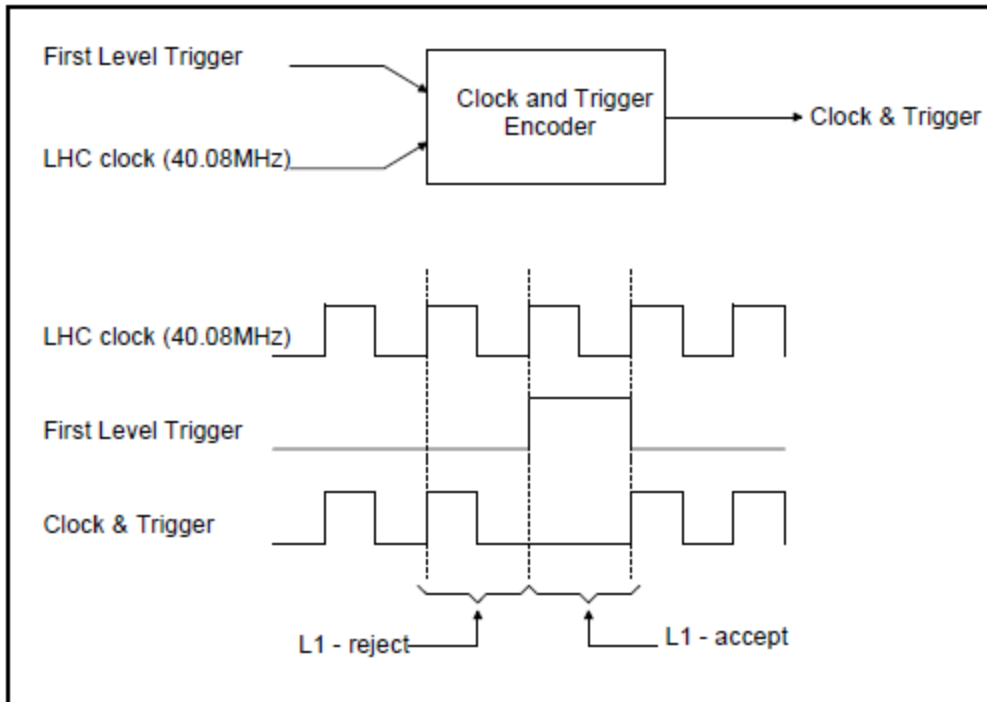
APV25 Chip Adapter



Beetle Chip Adapter



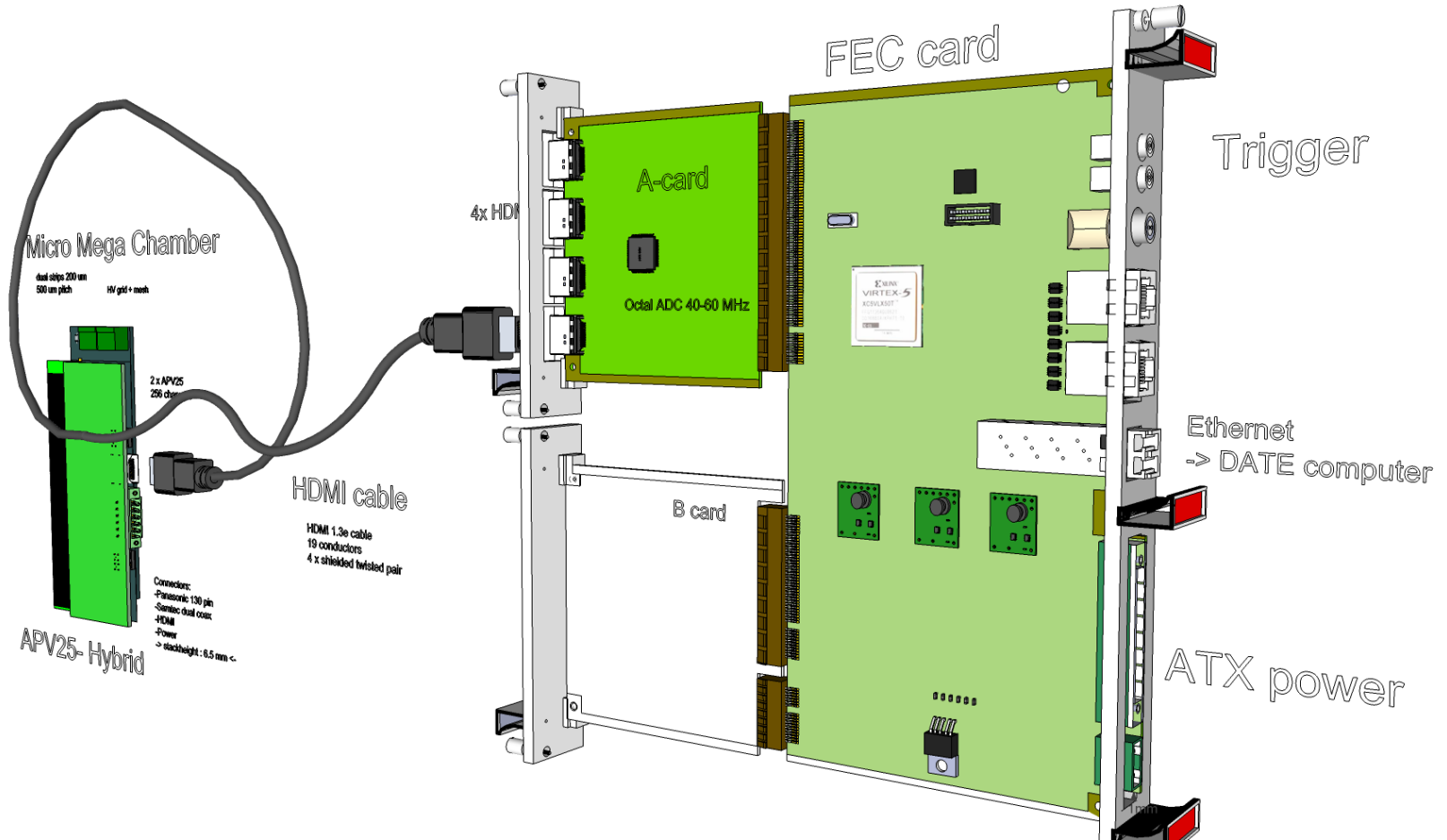
PLL25 CERN Chip



CMS Tracker PLL (TPLL)
designed for *clock and trigger* distribution in the CMS central tracker.

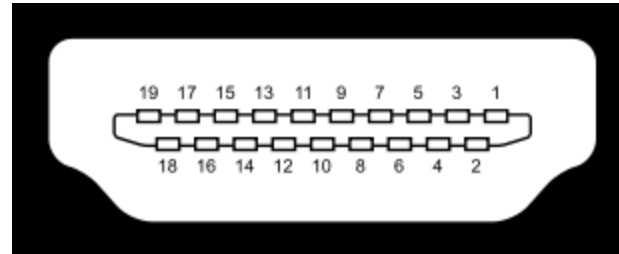
- CMOS 0.25 μm
- Radiation tolerant
- SEU tolerant
- Configurable trigger delay

Analog Chip Adapter for SRS



HDMI

Position	Signal
Pin 1	TMDS Data2+
Pin 2	TMDS Data2 Shield
Pin 3	TMDS Data2-
Pin 4	TMDS Data1+
Pin 5	TMDS Data1 Shield
Pin 6	TMDS Data1-
Pin 7	TMDS Data0+
Pin 8	TMDS Data0 Shield
Pin 9	TMDS Data0-
Pin 10	TMDS Clock+
Pin 11	TMDS Clock Shield
Pin 12	TMDS Clock-



Position	Signal
Pin 13	CEC
Pin 14	Reserved (N.C. on device)
Pin 15	SCL (I²C Serial Clock for DDC)
Pin 16	SDA (I²C Serial Data Line for DDC)
Pin 17	DDC/CEC Ground
Pin 18	+5 V Power (max 50 mA)
Pin 19	Hot Plug Detect

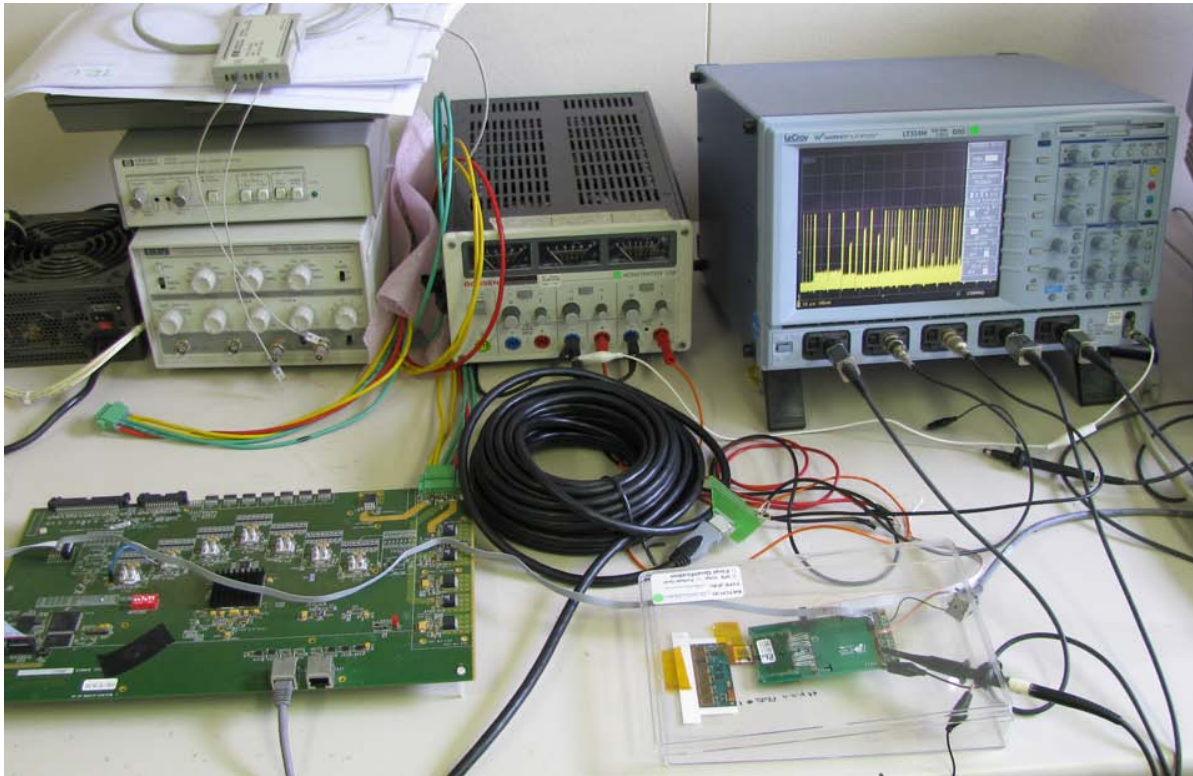
HDMI Specifications

HDMI version	1.0–1.2a	1.3	1.4
Year	2002	2006	2008
Maximum signal bandwidth (MHz)	165 MHz	340 MHz	340 MHz
Maximum TMDS bandwidth (Gbit/s)	4.95 Gbit/s	10.2 Gbit/s	10.2 Gbit/s
Cable length	< 5m	< 15m	< 15m
Attenuation			
300kHz - 825MHz	< 8dB	< 5dB	< 5dB
825MHz - 2.475GHz	< 21dB	< 5dB...< 12dB	< 5dB...< 12dB
2.475GHz - 4.125GHz	< 30dB	< 12dB...< 20dB	< 12dB...< 20dB
4.125GHz – 5.1GHz	- -	< 20dB...< 25dB	< 20dB...< 25dB
Differential Impedance	100 ohm ± 10%	100 ohm ± 10%	100 ohm ± 10%

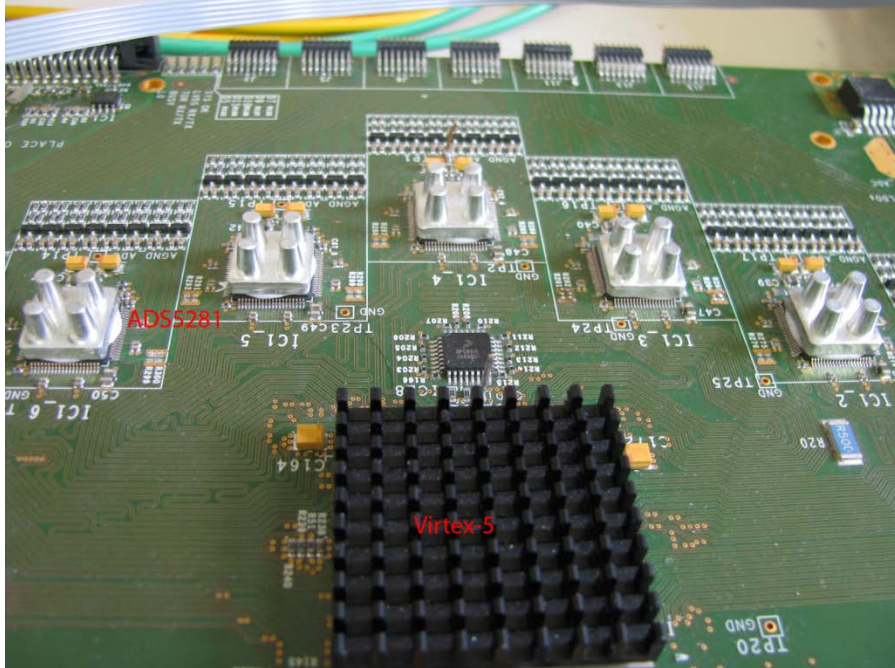
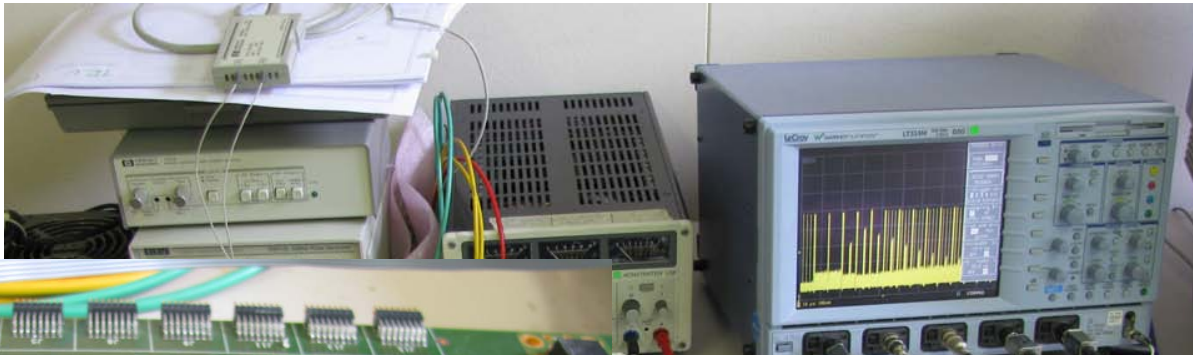
Pinout

Position	HDMI Signal	APV25 Card	Beetle Card
Pin 1	TMDS Data2+	OUT 1+	OUT 1+
Pin 3	TMDS Data2-	OUT1-	OUT1-
Pin 4	TMDS Data1+	OUT2+	OUT2+
Pin 6	TMDS Data1-	OUT2-	OUT2-
Pin 7	TMDS Data0+	-	TRGOUT+
Pin 9	TMDS Data0-	-	TRGOUT-
Pin 10	TMDS Clock+	BCLK+	BCLK+
Pin 12	TMDS Clock-	BCLK-	BCLK-
Pin 13	CEC	RST_N	RESET
Pin 15	SCL (I²C Serial Clock)	SCL	SCL
Pin 16	SDA (I²C Serial Data)	SDA	SDA
Pin 19	Hot Plug Detect	-	Test Pulse

TestBench



TestBench



CMS TOB APV25 hybrid