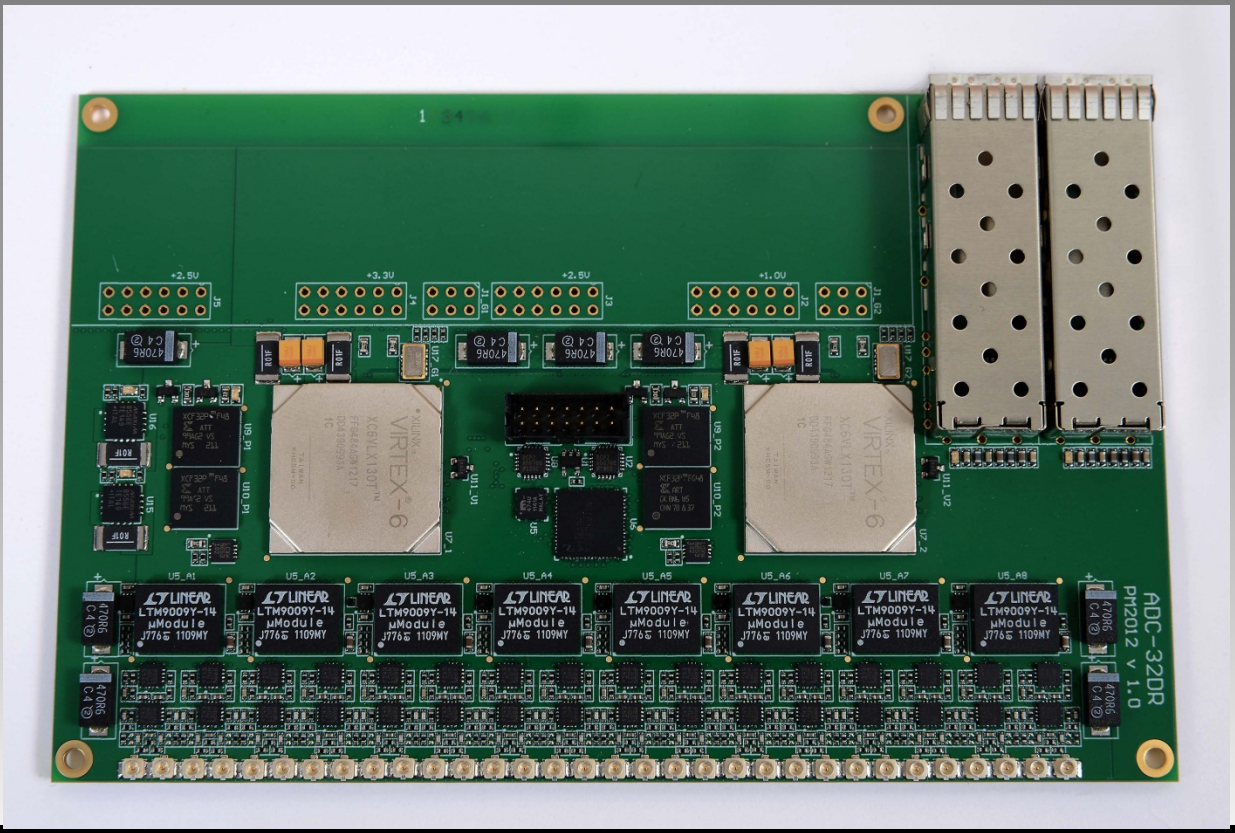
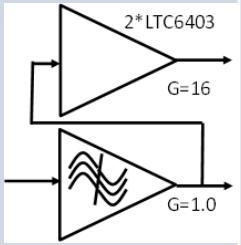
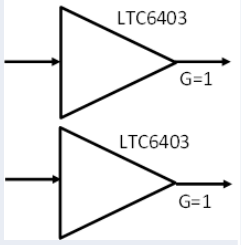
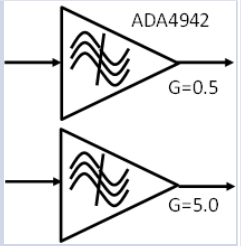
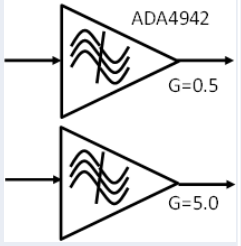
A 64-channel, 14-bit, 80-125 MSPS ADC for the EMC-Endcap

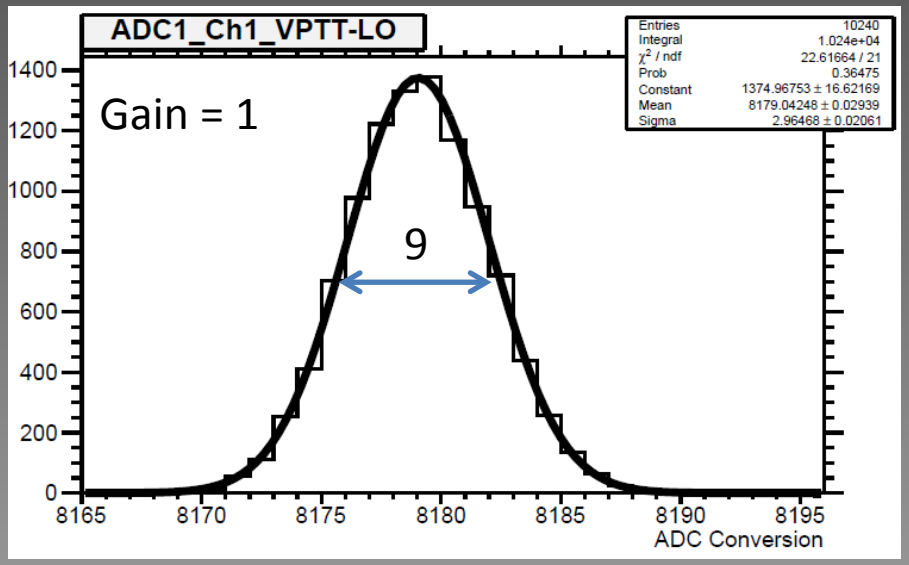


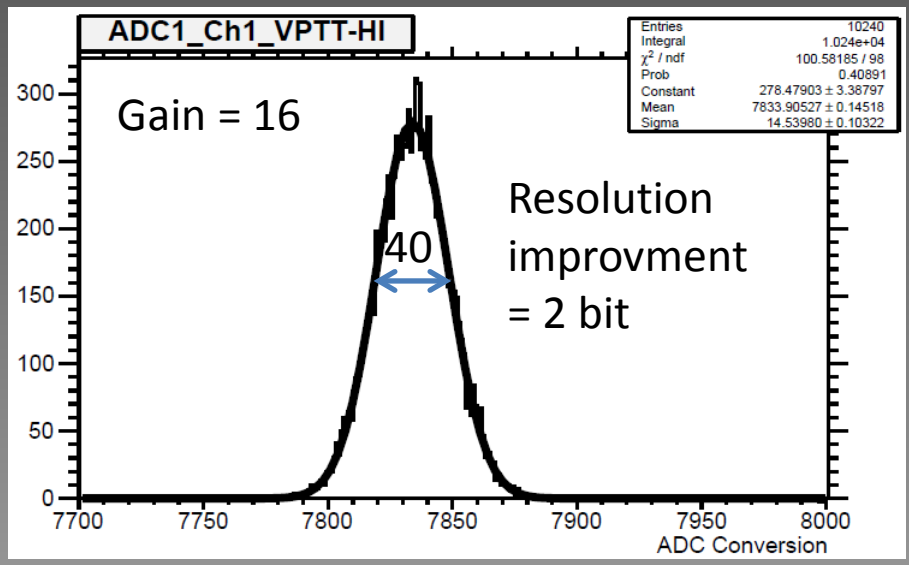
ADC for EMC-Endcap

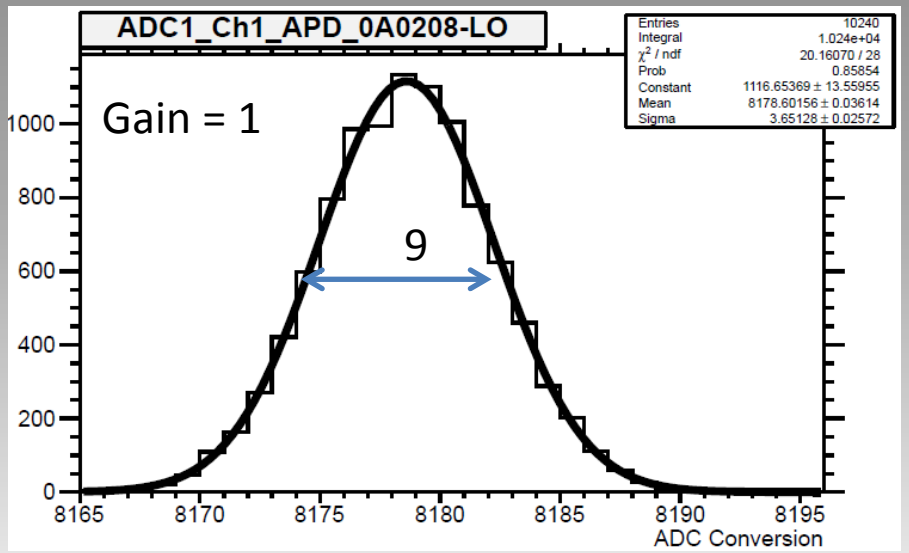
	Input Connector	Input Amp Config		Full SODA	FPGA	Comment	Status
ADC32DR (V1.0)	**64 x uFL**	**32 ch. Dual Range** Filtered, gain x1 followed by 16x LTC6403		**No**	**Virtex-6**	First prototype	**Manufactured and tested Operational**
ADC64 (V1.1)	**Samtec**	**64 ch. independent,** No filter, Gain 1.0 LTC6403		**Yes**	**Virtex-6**	Bug fixed ADC32DR with input modification	**Design ready.**
ADC64A (V1.2)	**Samtec**	**64 ch. Independent** 32 Filtered, Gain 0.5 32 Filtered, Gain 5.0 ADA4940-2		**Yes**	**Virtex-6**	Bug fixed ADC32DR with input modification	**Design ready.** Purchase interest expressed by KVI
ADC64K (V2.0)	**Samtec**	**64 ch. Independent** 32 Filtered, Gain 0.5 32 Filtered, Gain 5.0 ADA4940-2		**Yes**	**Kintex-7**	Bug fixed ADC32DR with input modification Major FPGA change	**Design in progress.** Expected ready by 30.09

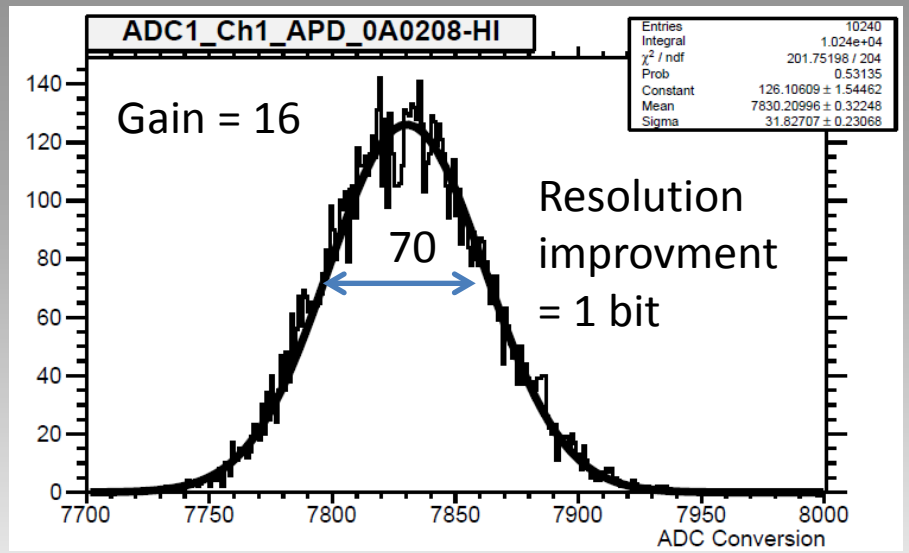
ADC for EMC-Endcap

Improving resolution using dual-range by a 16x follower





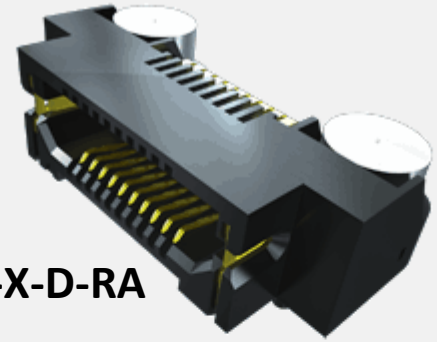




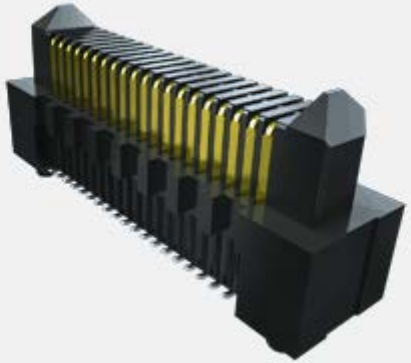
Courtesy Malte Albrecht

Board Connector

Backplane solution



ERF8-049-XX-X-D-RA



ERM8

Direct cable connection solution

ERDP

0,80 mm Edge Rate™
High Speed
Twinax Cable Assembly

ERCD

0,80 mm Edge Rate™
High Speed
Coax Cable Assembly

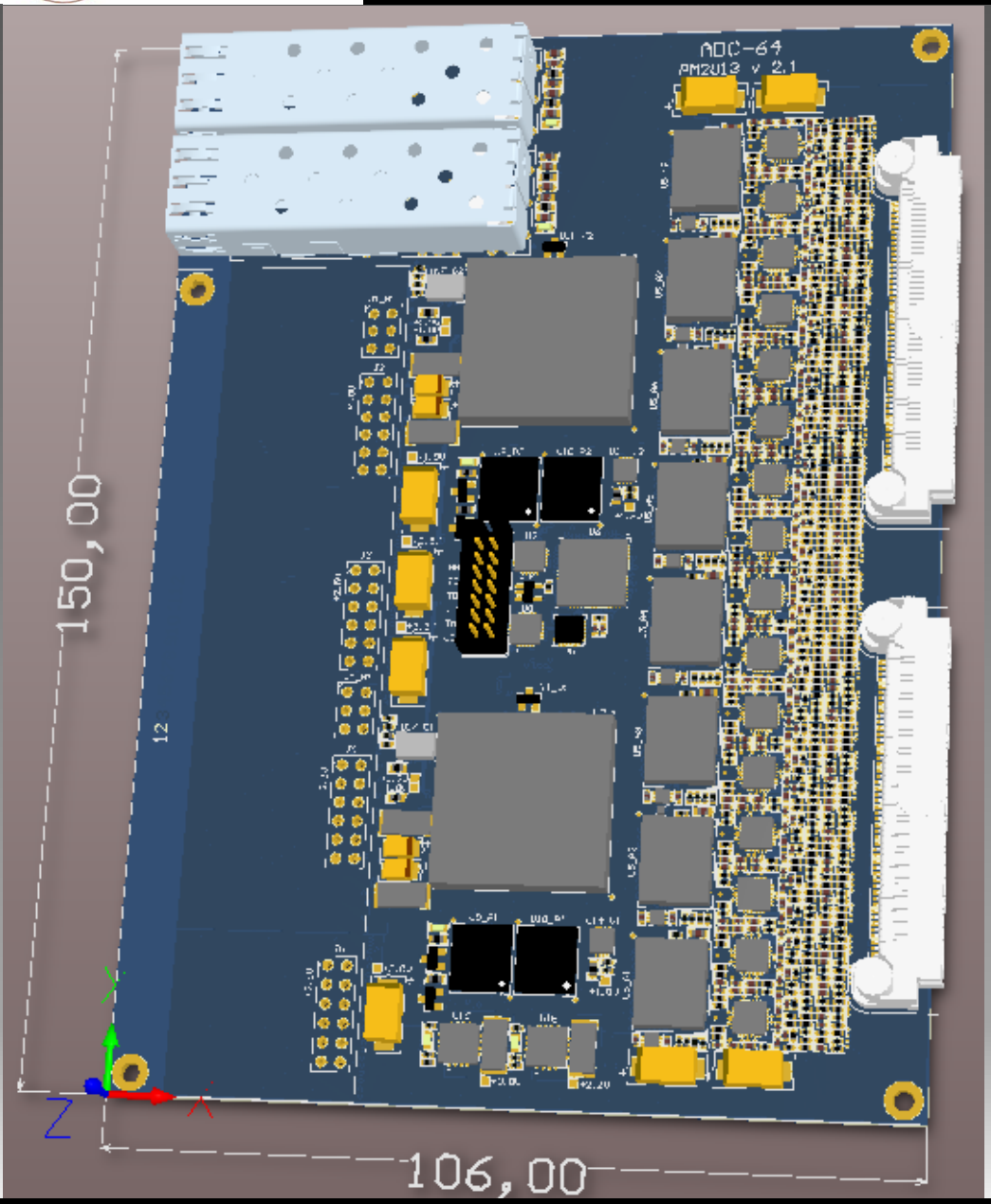
ADC for EMC-Endcap

- Power requirements

Analog (LDO filtered)	**V1.0**	**V2.0**
+2.2V (1.8V) – 3.2A (ADC)	7.0 W	7.0W
+2.9V (2.5V) – 1A (AMP)	2.9 W	0.4W
Digital		
+1.0V – 6A (FPGA)	6.0W	4.0W
+1.2V – 1.2A (FPGA)	1.5W	1.0W
+1.8V - 0.8A (ADC)	1.5W	1.5W
+2.5V – 3.0A (FPGA)	7.5W	4.5W
+3.3V – 0.4A (PLL), 0.5A(SFP)	1.3W	1.3W
TOTAL NETTO POWER	**28 W**	**20W**

ADC for EMC-Endcap

- Development - Time plan



V1.1 – June 2013

* Design clean-up
* Block connectors –
  Samtec ERF8-049-XX-X-D-RA
* 64 – channels with individual gain,
  no filter

V1.2 – August 2013

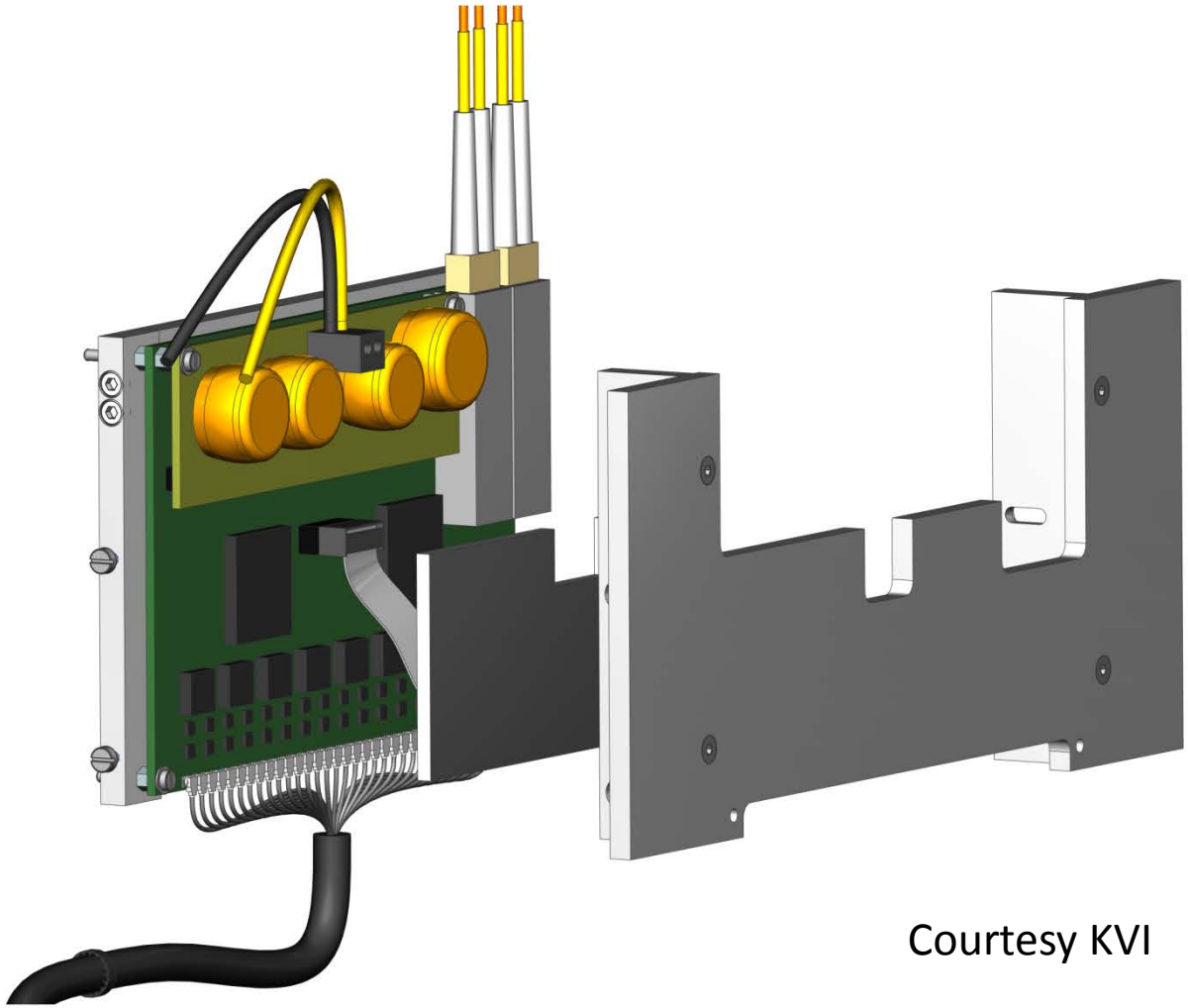
* Block connectors
* Low power op-amp ADA4940-2
* 32-ch. with gain G = 0.5, filtered
  32-ch. with gain G = 5.0, filtered

V1.2 – October 2013

* Kintex-7

ADC for EMC-Endcap

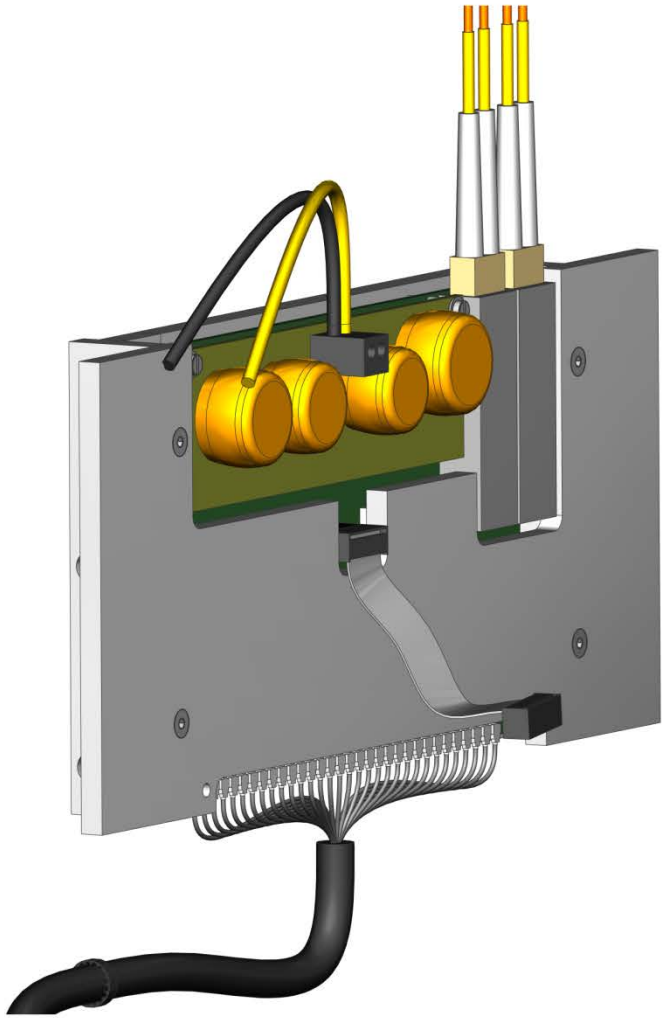
- Encapsulation and Cooling



Courtesy KVI

ADC for EMC-Endcap

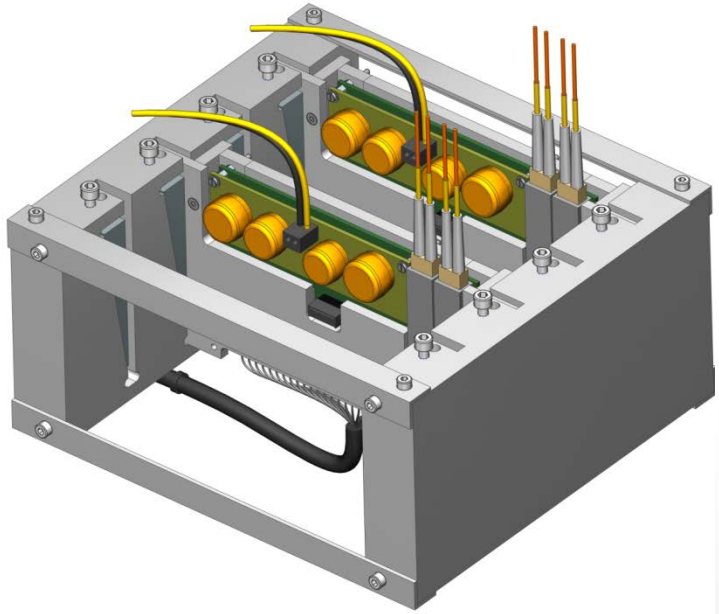
- Encapsulation and Cooling

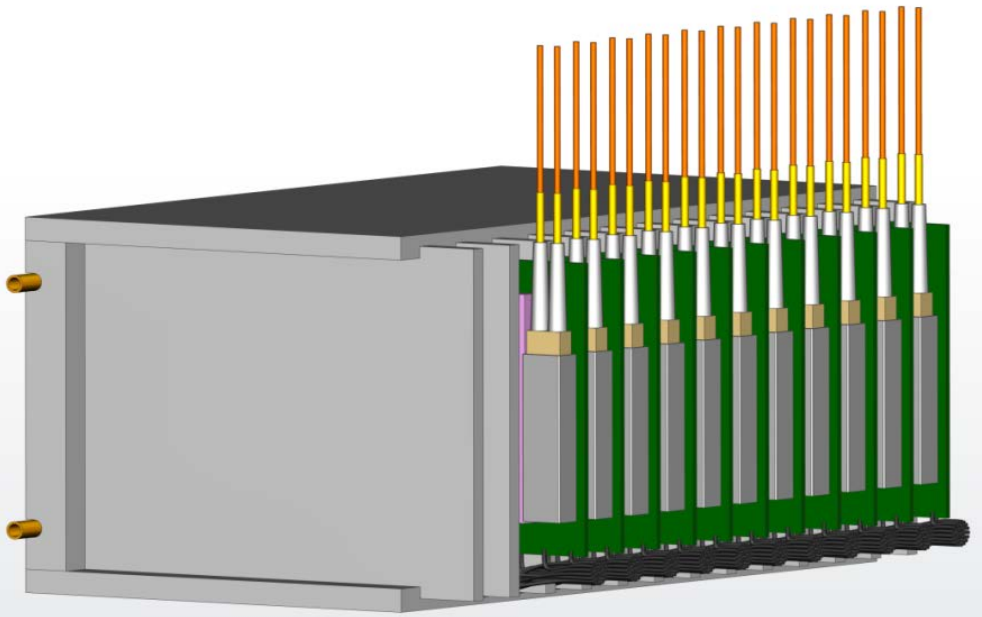


Courtesy KVI

ADC for EMC-Endcap

- Encapsulation and Cooling





Courtesy KVI

Thank You !