MaPSA testing at DESY

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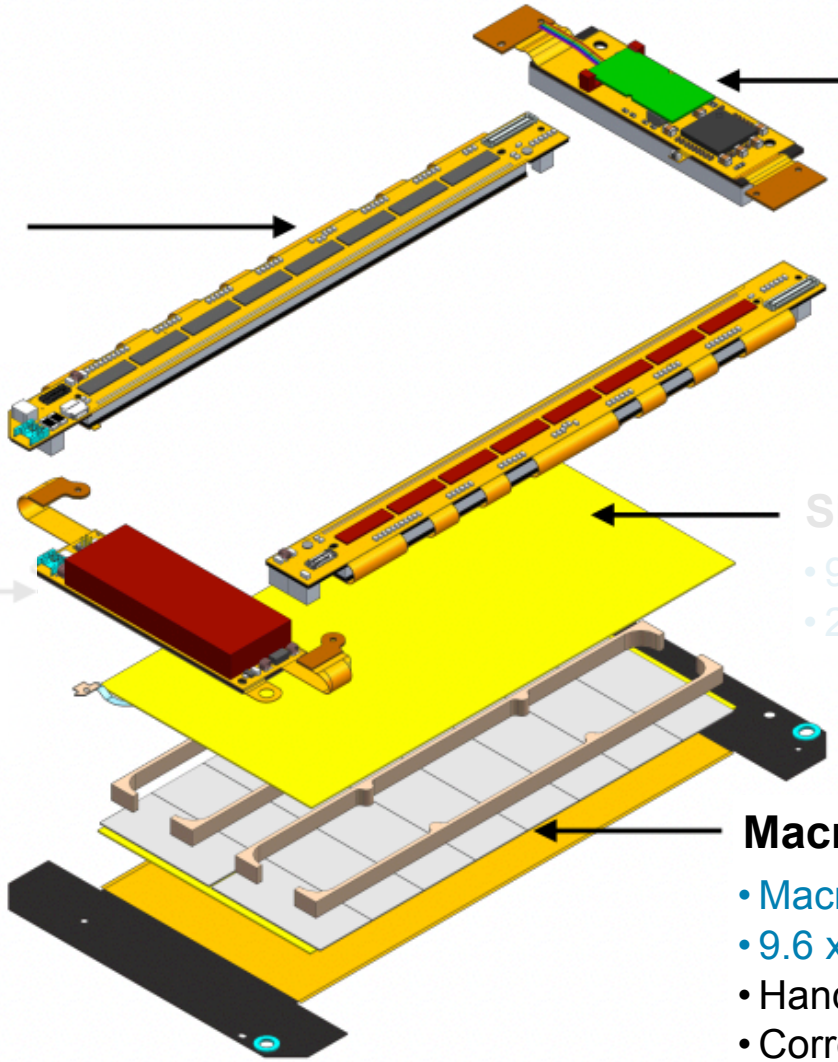
Pixel-Strip Silicon Module Design



Read-Out Hybrid
- Low-power Gigabit Transceiver Chip
- VTRx+ optical module
- Transmits data over optical fiber

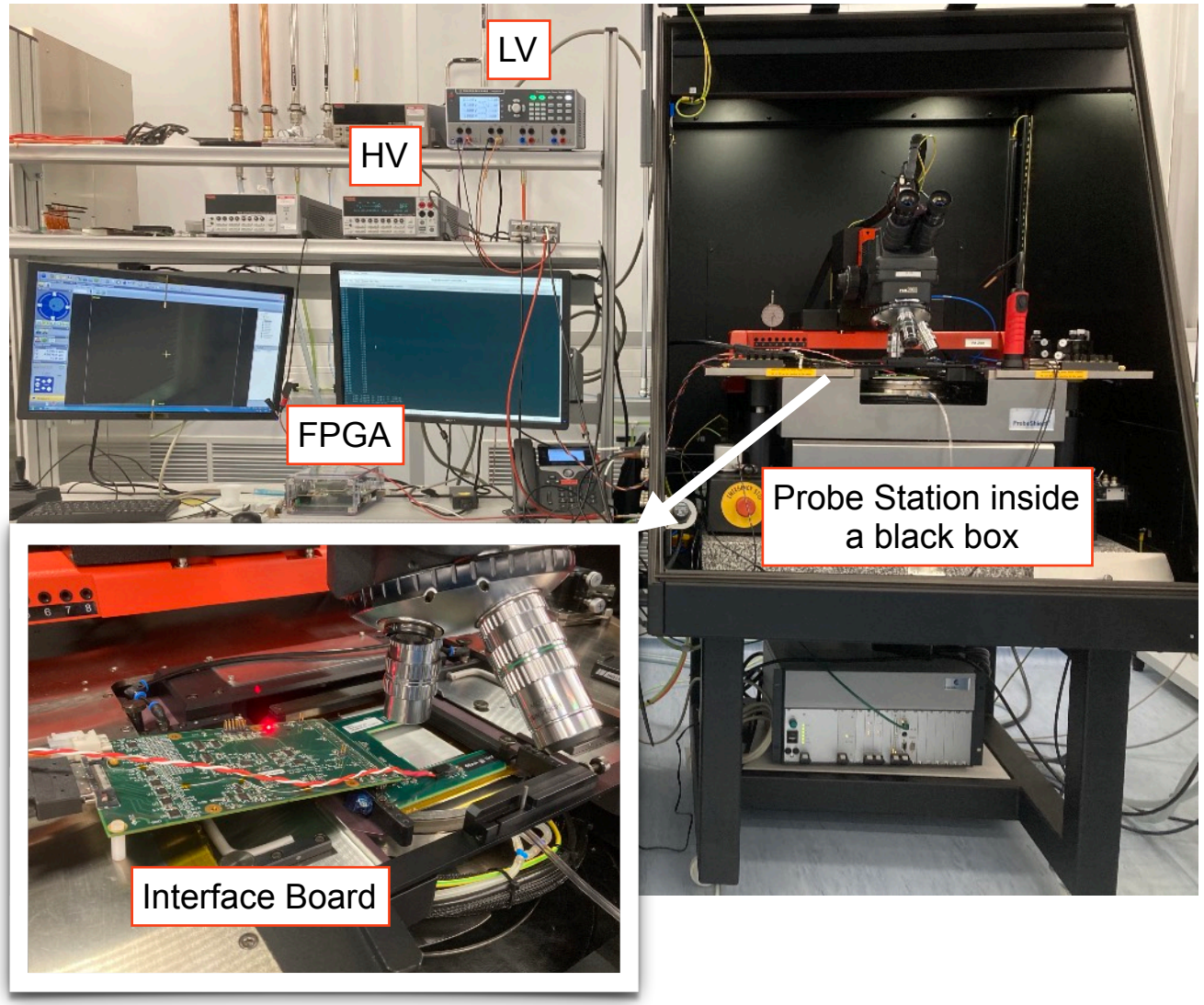
Front-End Hybrid
- Short-Strip ASIC (SSA)
- Handles signal from strip sensor
- Transfers data to pixel chip
- Concentrator Integrated Circuit (CIC)
- Passes MPA output to the ROH

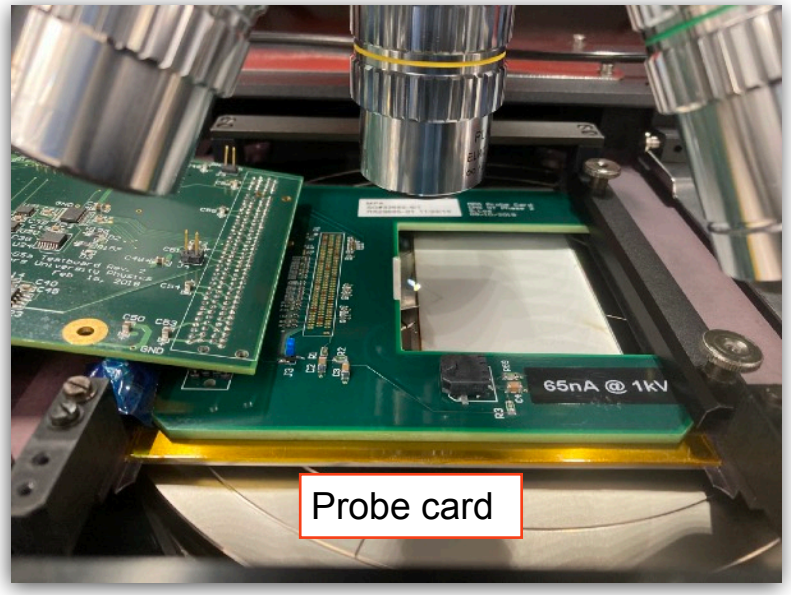
Silicon Strip Sensor
- 9.6 x 4.7 cm Silicon Strip Sensor
- 2.5 cm long strips, 100 µm pitch

Power Hybrid
- DC-DC Converter
- Used for module power

Macro Pixel Sub Assembly (MaPSA)
- Macro Pixel ASIC (MPA)
- 9.6 x 4.7 cm Macro Pixel Silicon Sensor
- Handles signal from pixel sensor
- Correlates Signal from both sensors

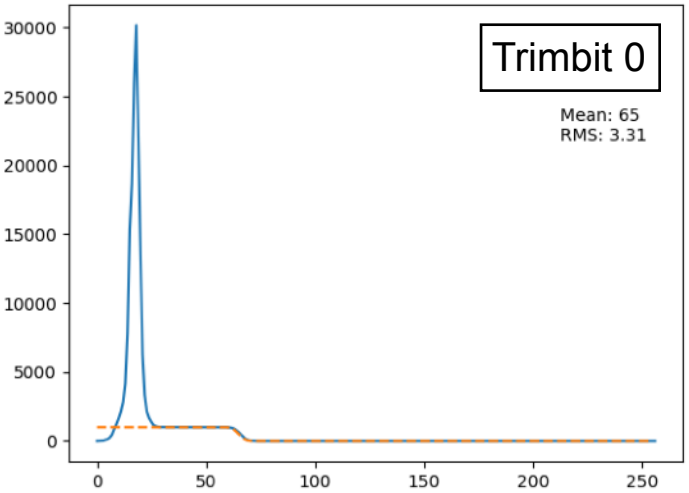
MaPSA Test Setup at DESY

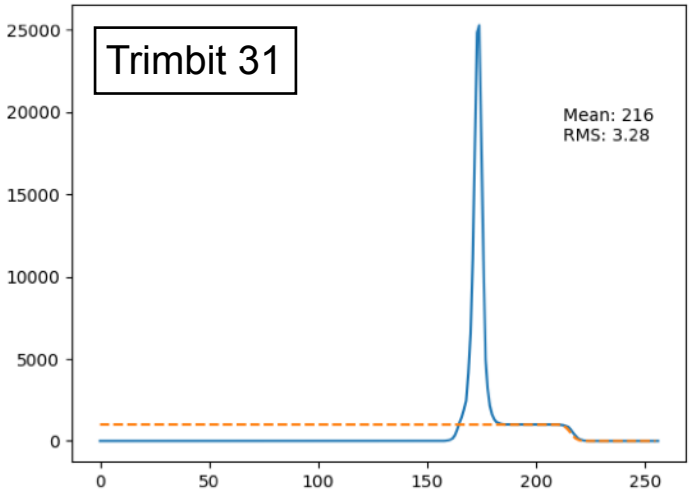


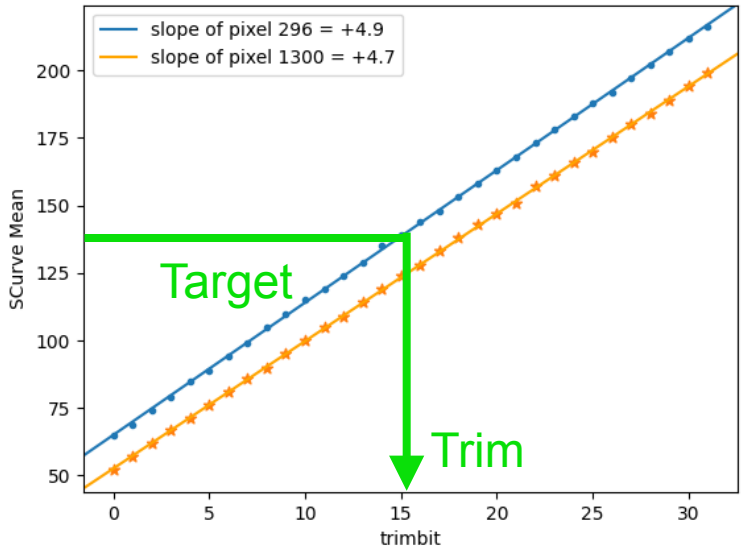


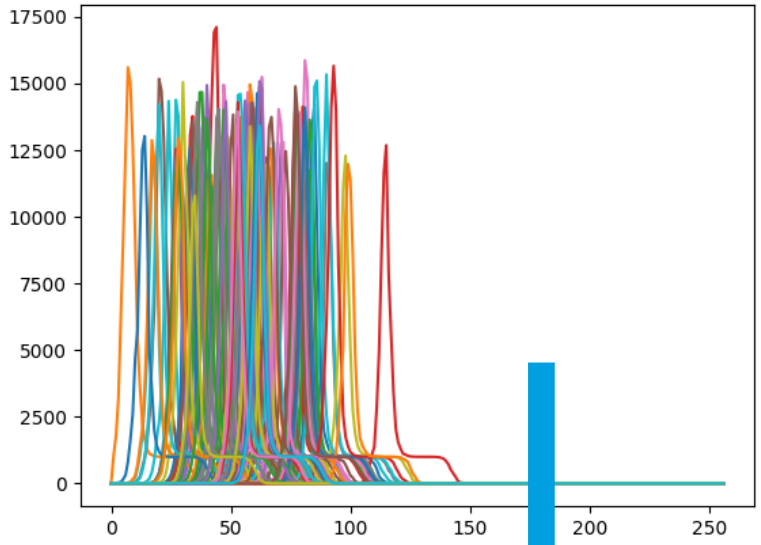
- Probe card contains 119 probe needles
  - 118 for probing MPA pads and 1 for HV
  - Test one chip at a time
- Automated stepping from chip to chip

Threshold Equalization - Trimming

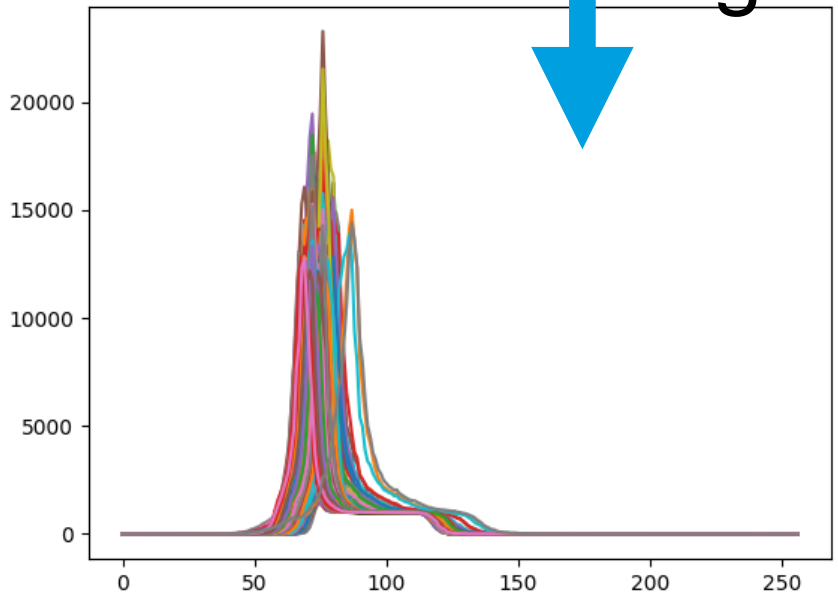




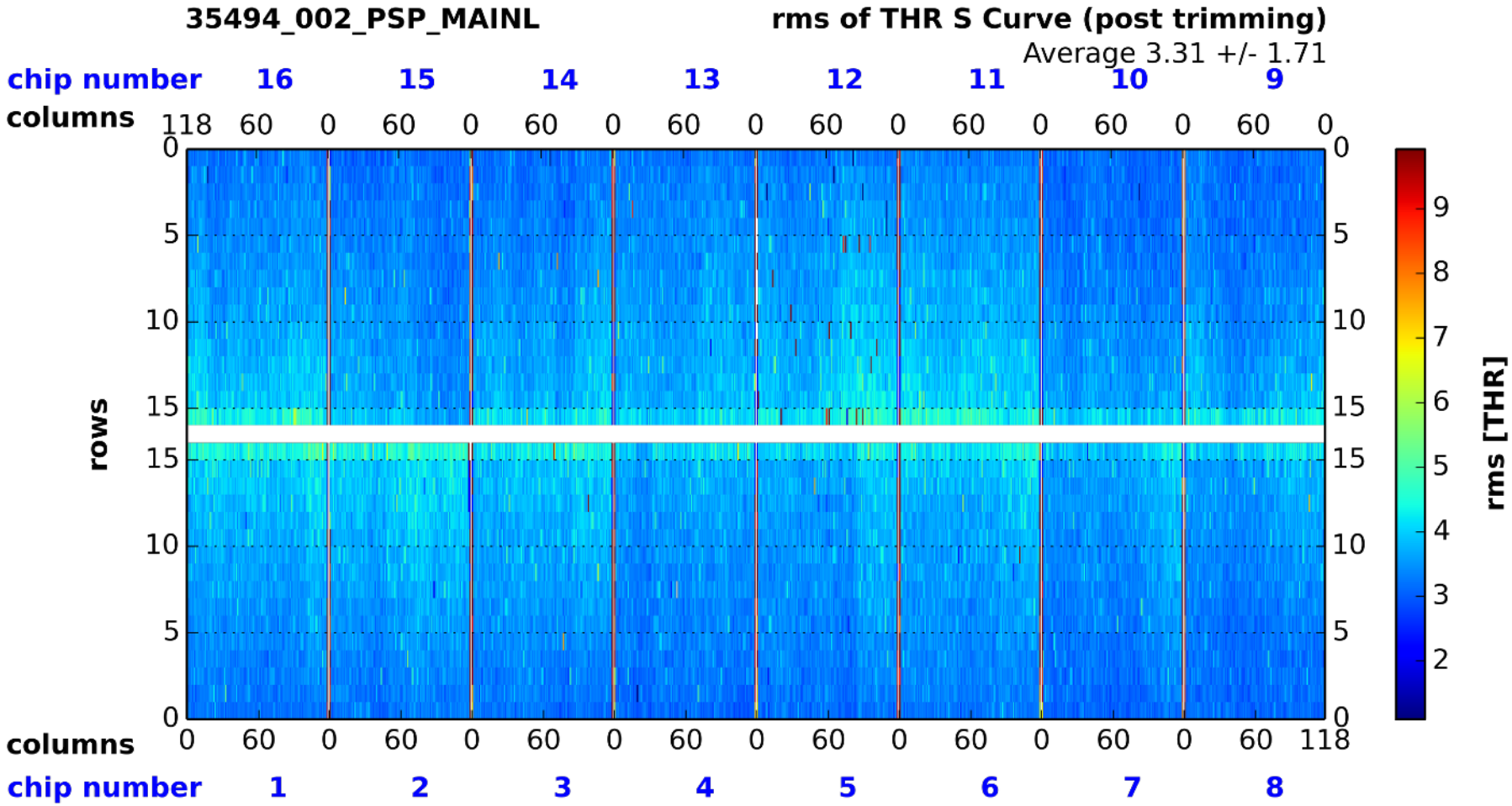




Trimming



Noise



- Homogeneous noise over all 16 chips
- This MaPSA got recently assembled into a PS module