

LMU München - Excellence Cluster Universe

PS & Services

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10^h VXD Workshop

14.09.16-16.09.16

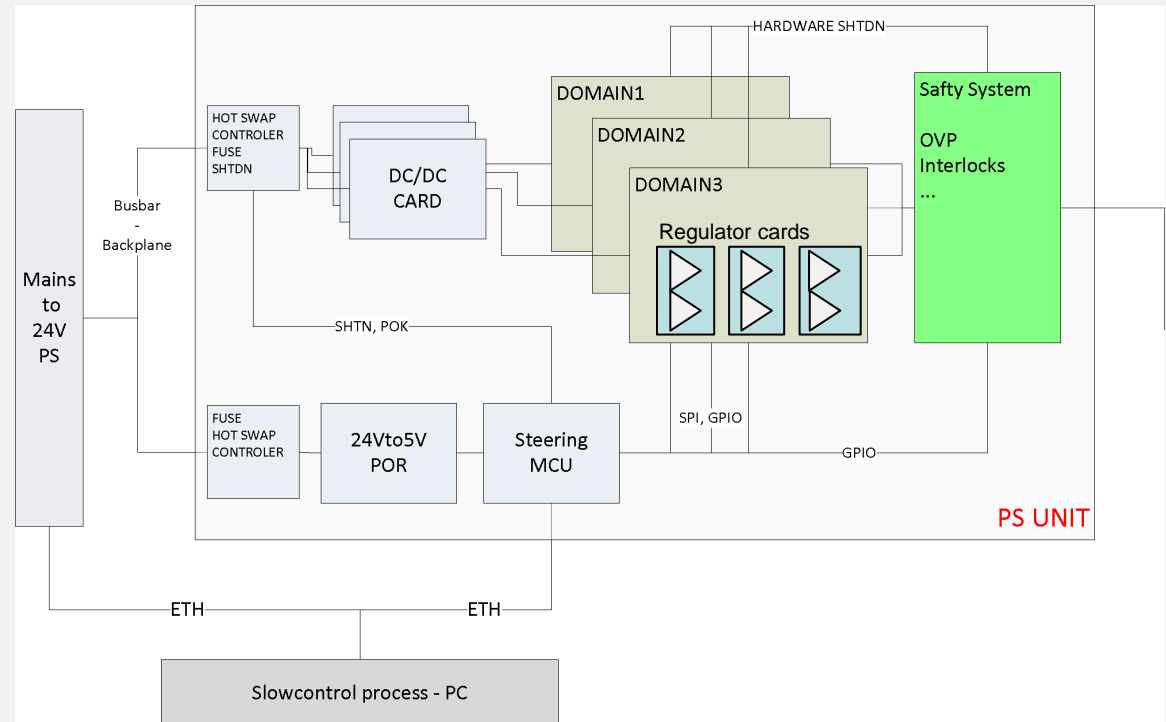
Santander





- Main Production
- Services
- Kapton development

- PS is a modular design consisting out of 12 different modules
 - MCU-Card Steering
 - 5 flavors of regulator cards
 - 2 DC/DC converter cards with Step-Down converter
 - OVP card
 - Front- and Back card for interconnections and external interfaces



- Main production aims for 70 units 20 for KEK-PF and 50 for PXD operation
- All parts for 20 units available including HV cards and precision monitoring for CCG's
- Cards are configured and a basic functionality test has been performed



- Unipolar cards full set, 140 boards available and pre tested
- Bipolar cards full set available, configured, 40 pre tested



HV – Card's & CCG Channels:

- Received new feature request just before Christmas
- Monitoring with 20nA resolution for various channels (CCG's, Bulk, HV, Drift)
- New circuitry for measurement necessary
- *Cards have been delivered in early August*
- *New features are tested successfully*
- Configuration and pre- testing done



Main production – DC/DC converter cards



- PCB design has been finalized
- Additional feature:
 - Voltage supervisor as additional safety measure
 - Failure at DC/DC converter level can be mitigated before it has impact on output voltages
- First batch available
- 15 tested and commissioned
- Stepdown converter configured to our needs for operation with long cables



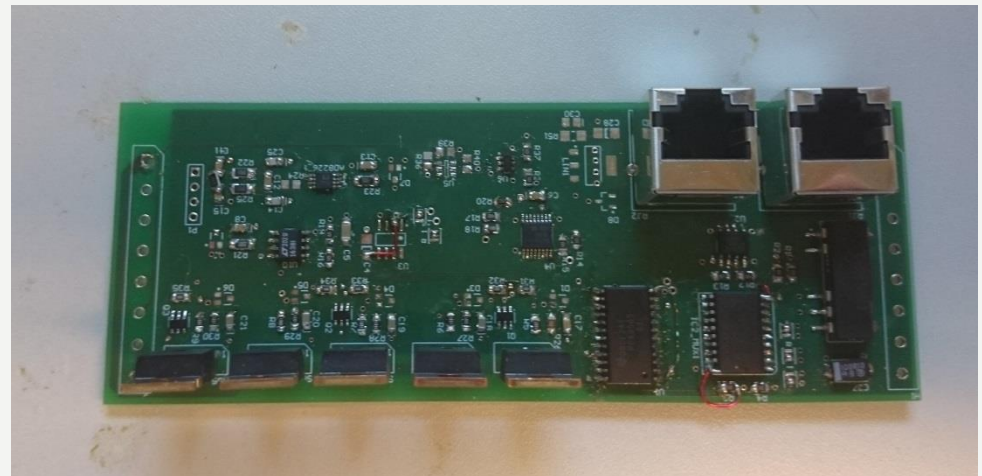
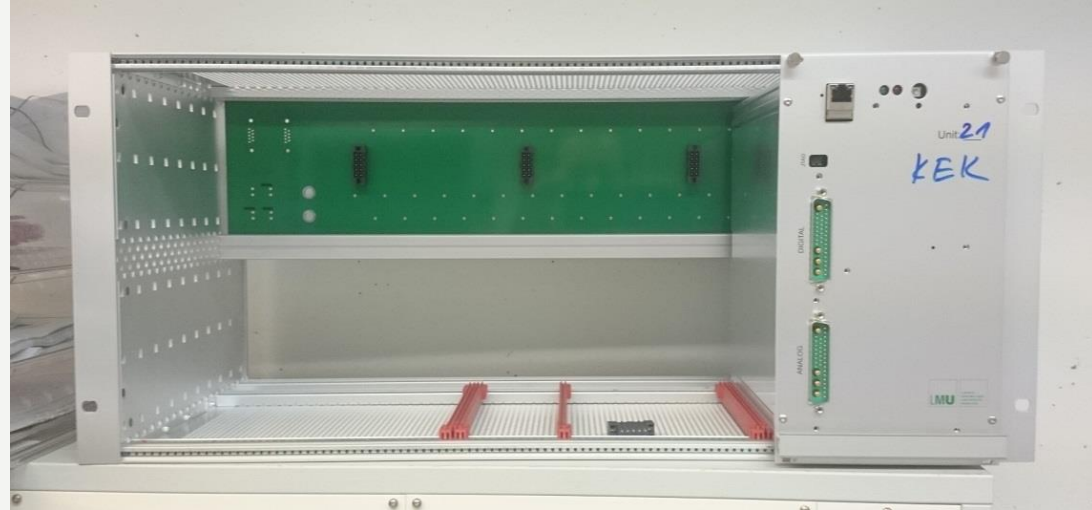
- Bugs from previous designs fixed
 - MCU watchdog
 - Various smaller issues which were fixed with wires
- Design finished, PCB's available
- First batch of 20 ready
- 15 are successfully commissioned



- Assembly of units under way
 - Upload of firmware to MCU
 - Sanity check of full box (current consumption, control, monitoring system...)
 - Calibration
 - Check of calibration
 - Full power test with load
- 6 in queue
- 4 available
- 20 till end of Sept.

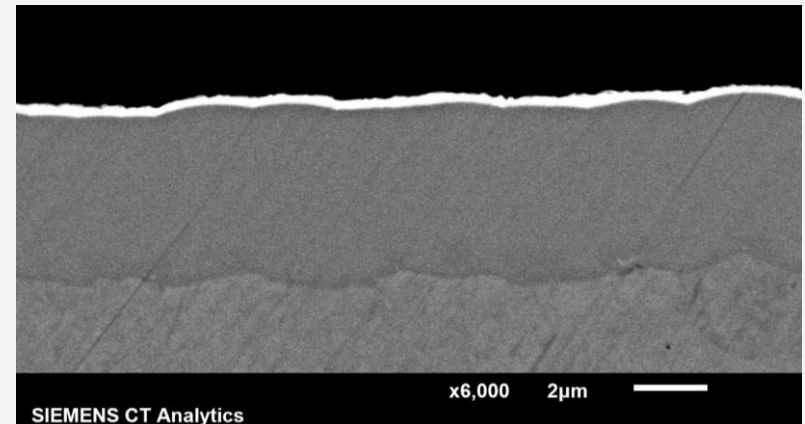
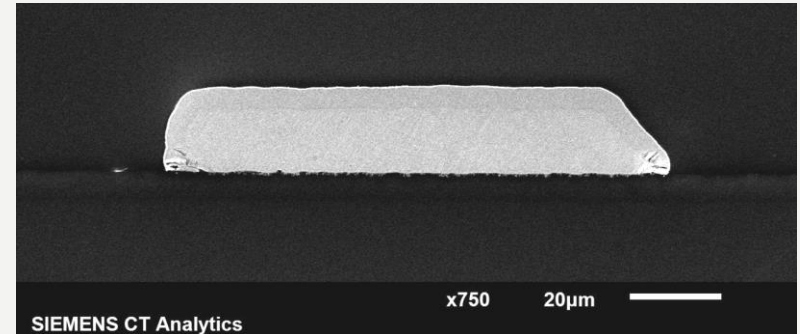


- PS are operated in crates offering power, interlocks and individual reset connections
- Piggy back card to control individual PS has been developed
 - Switch on/off inc. fans
 - Reset
 - Current monitoring
- Control software in under development



Services

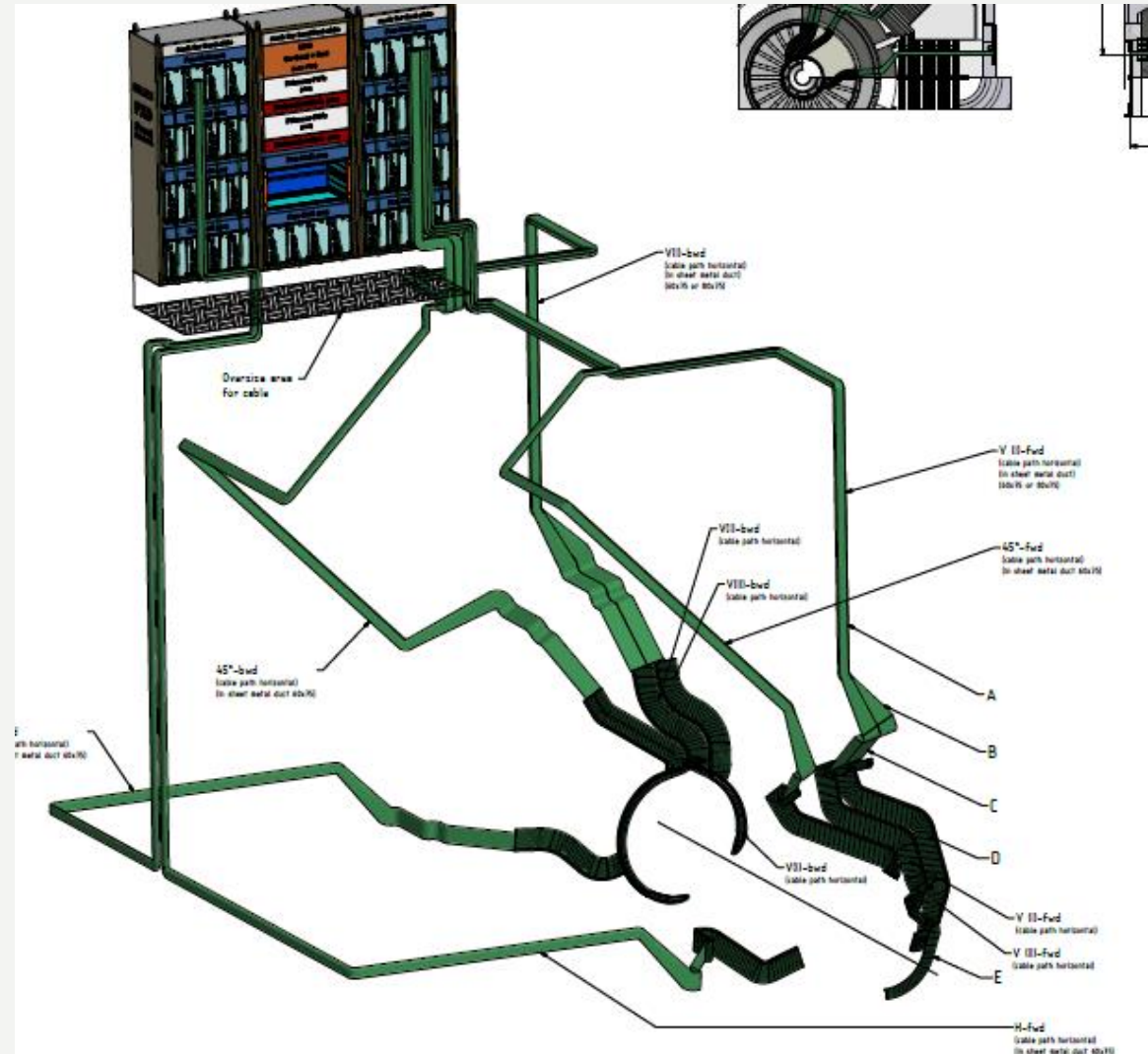
- Baseline for Kapton production: Kaupke
 - Superior bond strength / surface quality
 - Pricing
 - Easy communication
 - 4 x 5 sets ordered and delivered in August
 - Offer to purchase further batch from overproduction
 - Tests ongoing at MPI – bonding, impedance
- First Kaptons for module assembly available



- Significant quality issues at previous cable production
- New vendor has been identified
- Throughout quality control using:
 - Visual inspection
 - Electric testing
 - Documentation
- Better internal organization of production process:
„Die erforderlichen Parameter, z. B. Abmantel- und Abisolierlängen werden in unseren Arbeitspapieren hinterlegt. Bei der Erst- bzw. Musterfertigung werden diese Parameter an die Rohmaterialien, z. B. Sub-D-Leisten, Hauben, angepasst und festgeschrieben.“
- Two batches of cables have been produced since July and cross checked
 - Rework of previous production
 - 4 pairs with 14m, another batch in in work

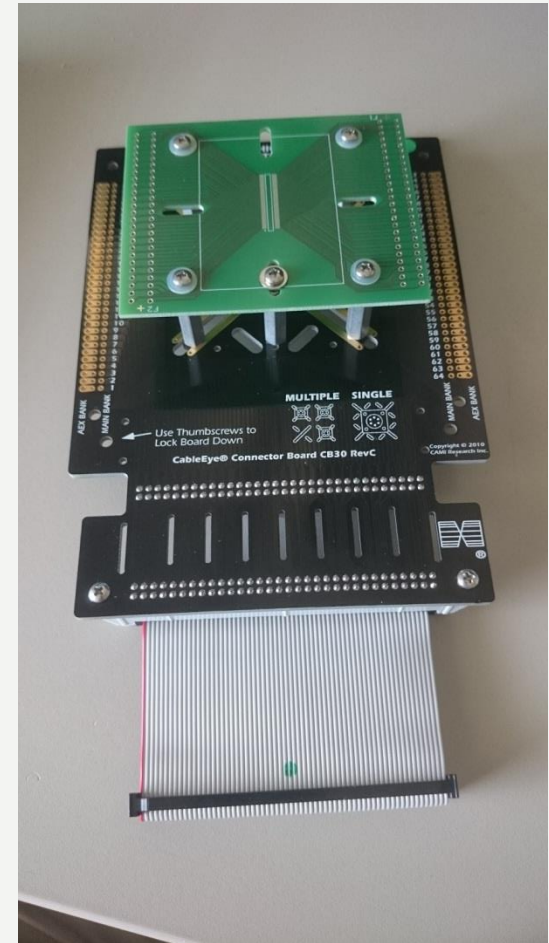


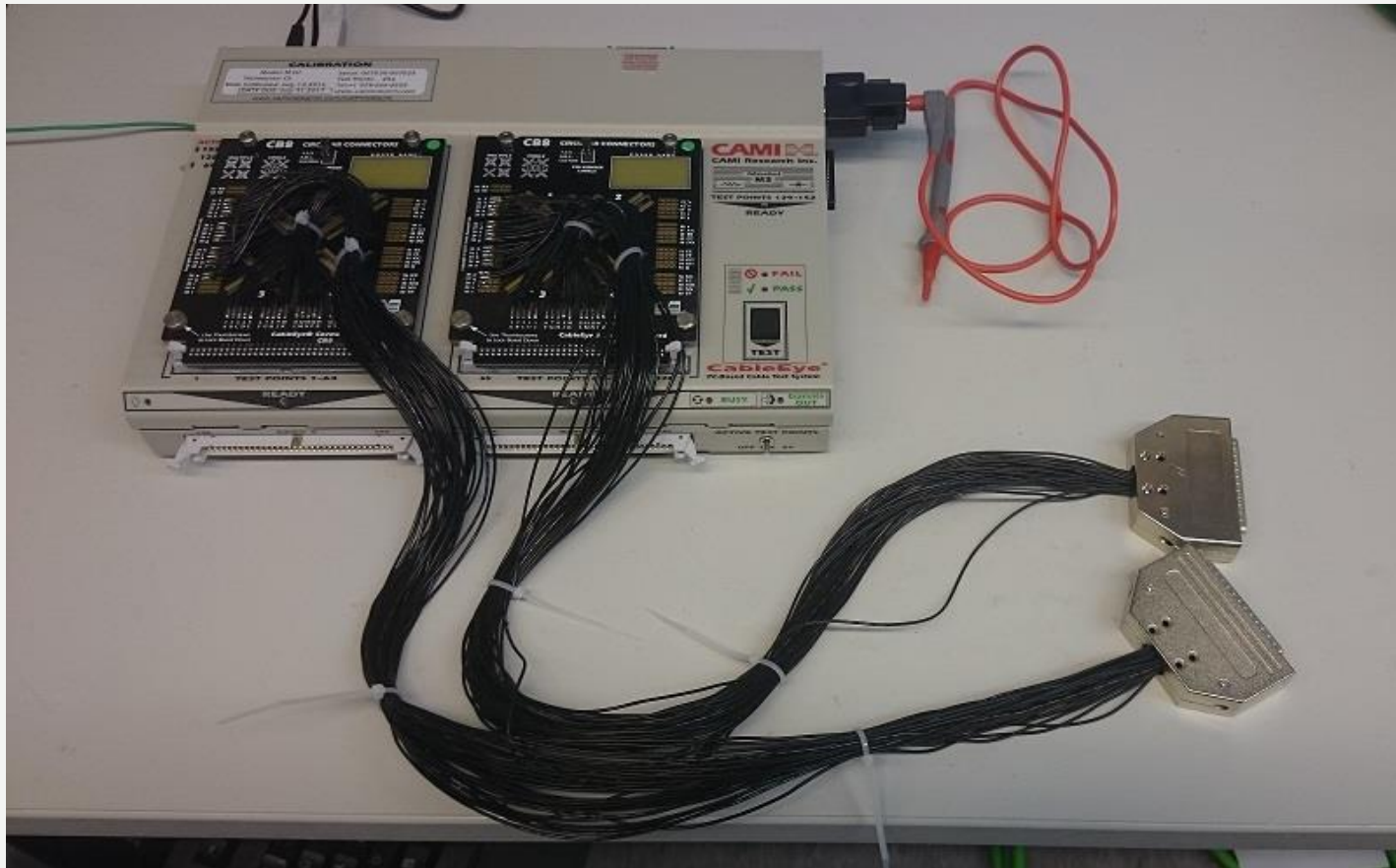
- Power cable routing has been finalized
- Worst case length including some safety length of 40cm/100cm is 14.5m
- Connecting the longest cables in the first row of the rack will allow to go for 14m



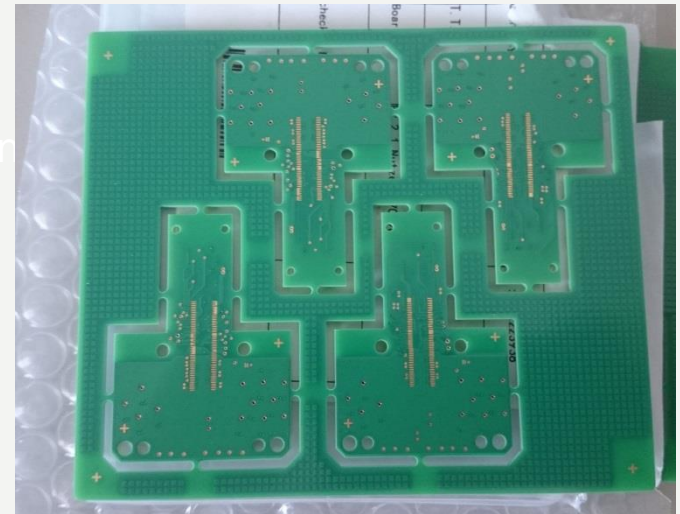
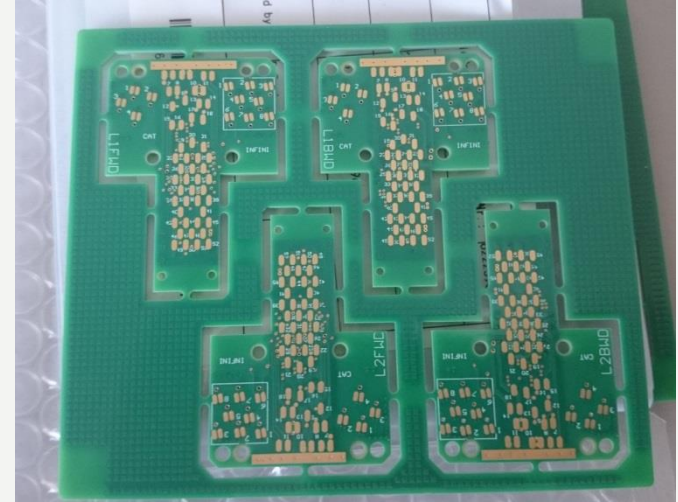
PXD - cable lenght for power								date:	28.07.2016	oversize cable lenght by 14.500
lenght is rounded to 100 mm	A (outside+KLM)	B (unorganized)	C (slot area)	D (CDCwall-DR)	E (dock area)	F (DR-plug)	safety lenght (cable reserve)	cable (quantity)	total lenght	
H-fwd	11100	600	1000	1200	0	200	400	10	14.500	4.000
45°-fwd	8100	500	1000	1600	0	200	1000	10	12.400	31.000
V (I)-fwd	8000	500	1000	1800	1700	200	1000	10	14.200	13.000
V (II)-fwd	8000	500	1000	2100	0	200	1000	10	12.800	27.000
H-bwd	10000	600	1100	900	0	200	1000	10	13.800	17.000
45°-bwd	7500	800	1100	900	1500	200	1000	10	13.000	25.000
V (I)-bwd	7000	500	1100	900	700	200	1000	10	11.400	41.000
V (II)-bwd	7000	500	1100	1000	0	200	1000	10	10.800	47.000
								cable stock in oversize area		205.000

- Possibility to check cables/services (PP) after handling, installation
- Test for open, short, resistance
- Test cases:
 - PP harness : Samtec - MicroDsub, RJ45, Infiniband
 - Power cables
- Cable Tester has been purchased
 - Easy to use
 - Checks assignment, resistance, isolation
- Individual connector harness to test power cables has been produced
- Harness / adapter card for PP's is under way



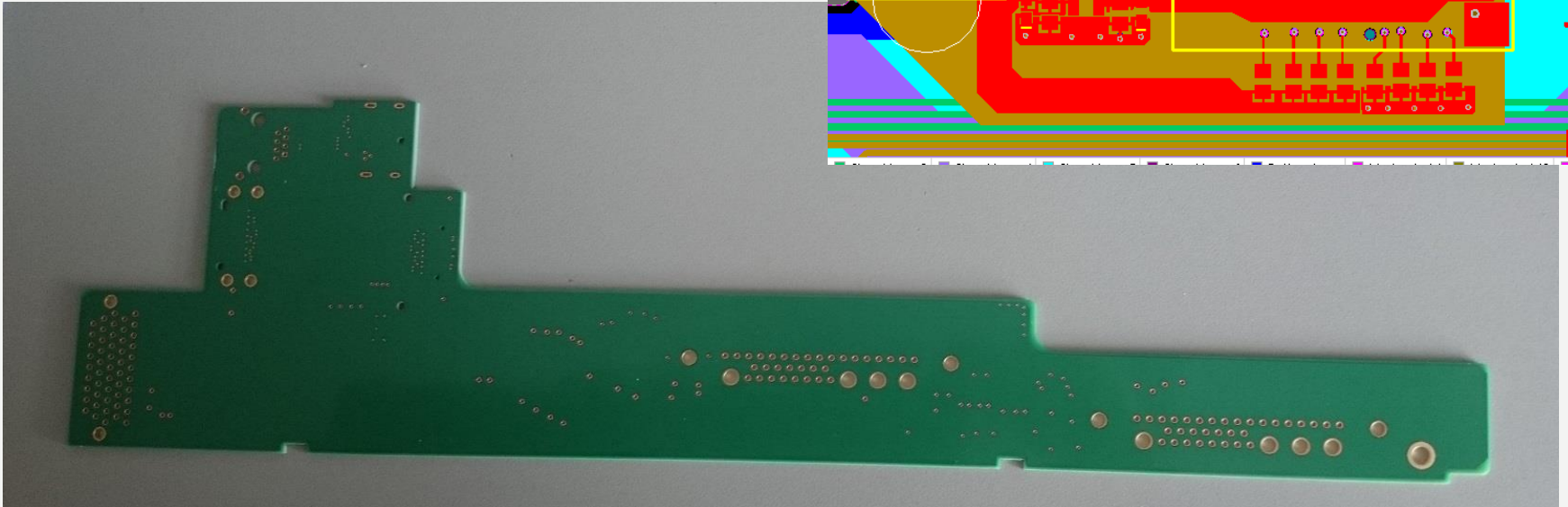
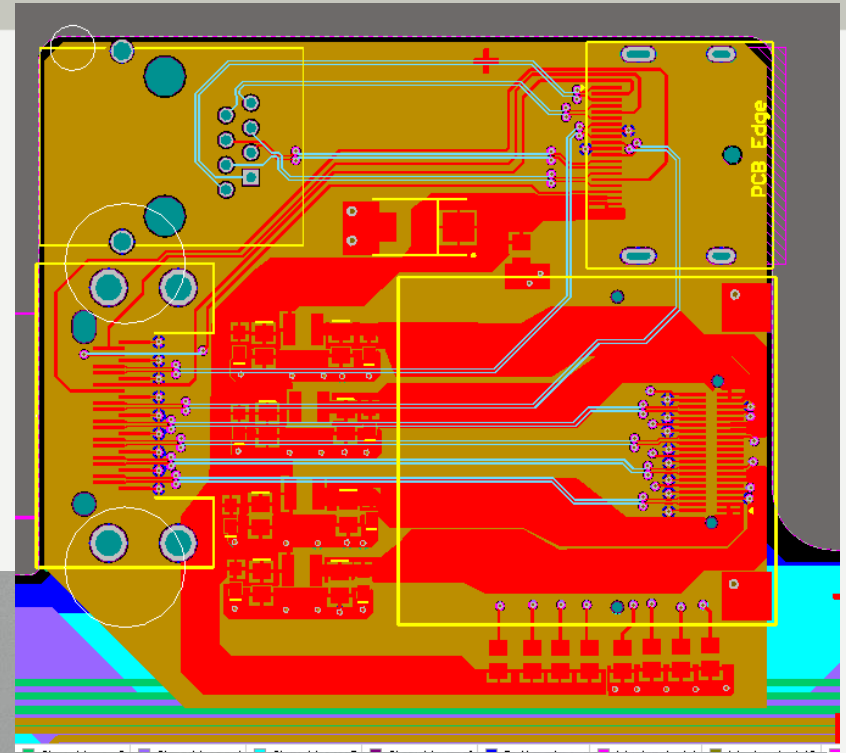


- Latest PP with single connector has been designed
- PCB is available
- Necessary cables – Glenair, Infiniband, CAT6 available
- Delivery of 4 units within this week



Trans

- Mechanical interfaces finalized
 - “thick” DP cable incorporated
- Crosscheck with Igor / Charlie done
- New feature display port cable
 - No additional cables for power of transmitter
- PCB and components available
- Assembly ongoing, first batch within September





- First PS units from Main production available
- Set of final length power cables available for MPI / DESY
- Dockbox, PP's available soon
- Test setup for in house cable testing available

Backup