

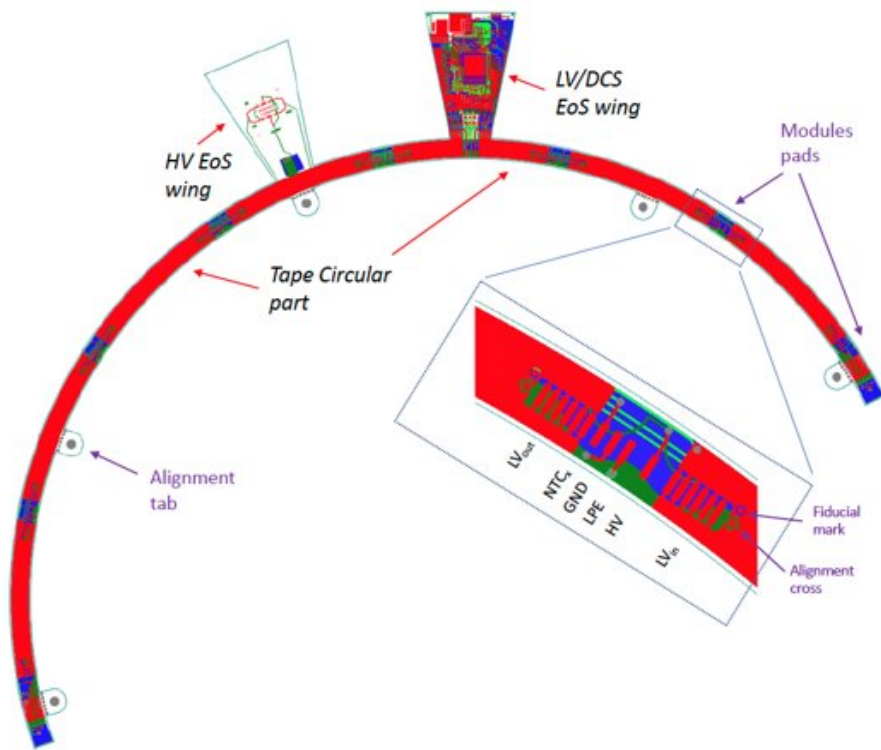
Flex Tape V7 Soldering (and few other news)

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V7 in one slide

Details at the on-detector FDR



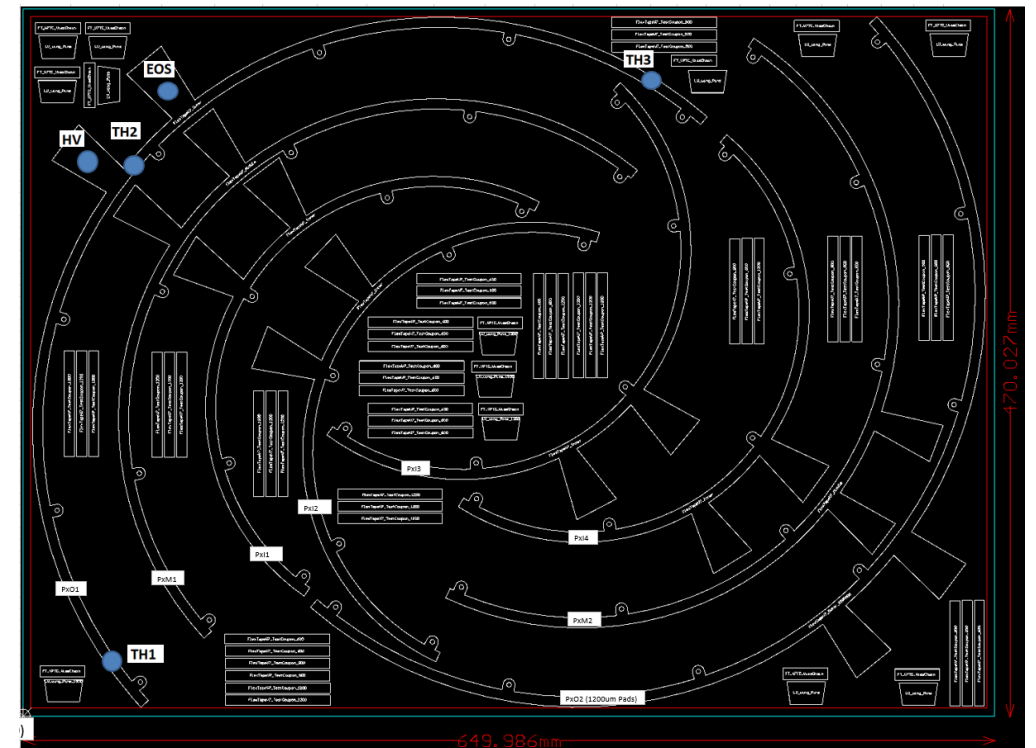
FDR link: <https://indico.cern.ch/event/1213069/>

Stack Up		Layer Stack (CURVED Part)			
Layer	Board Layer Stack	Name	Material	Thickness (mm)	Constant
1		Top OVERLAY			
2		Coverlay	UPISEL-N	0.025	3.2
3		Coverlay Adhesive	EPOXY GLUE	0.06	4.8
4	■ ■ ■ ■ ■	Top Layer	Copper	0.05	
5		Dielectric 1	UPISEL-N	0.05	3.2
6		Dielectric 2	EPOXY GLUE	0.02	4.8
7	■ ■ ■ ■ ■	Layer 1	Copper	0.018	
8		Dielectric 3	UPISEL-N	0.025	3.2
9	■ ■ ■ ■ ■	Layer 2	Copper	0.018	
10		Dielectric 4	EPOXY GLUE	0.02	4.8
11		Dielectric 5	UPISEL-N	0.05	3.2
12	■ ■ ■ ■ ■	Bottom Layer	Copper	0.05	
13		Coverlay Adhesive	EPOXY GLUE	0.06	4.8
14		Coverlay	UPISEL-N	0.025	3.2
		Bottom Overlay			
				0.471	

Main change presented at the FDR since prototype V6 was the LV layer thickness, reduced from 70 to 50 μm .

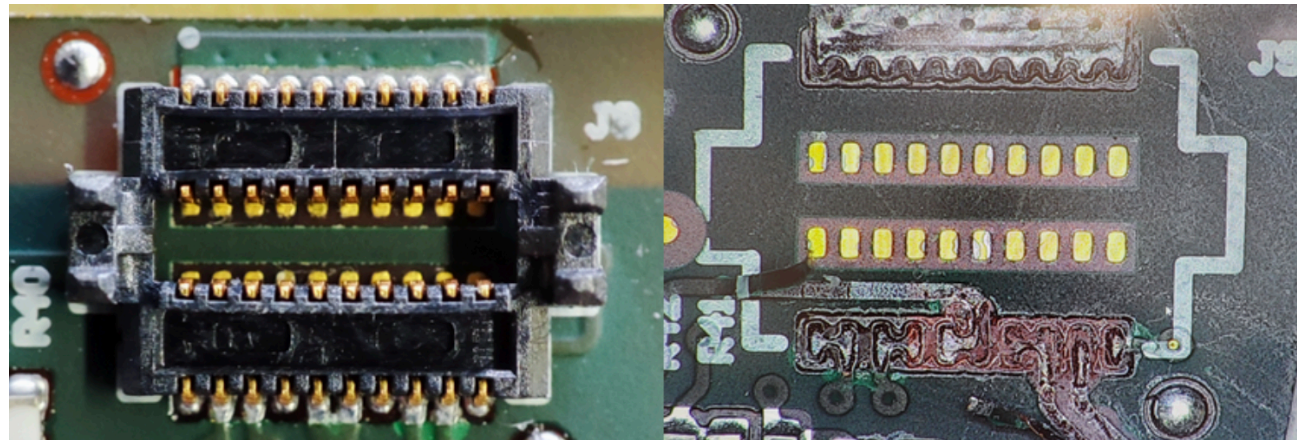
Preproduction status

- Four panels preproduction delivered in early February
 - In each panel there are 4 Inner, 2 Middle, 1 Outer, 1 Outer-Large pads (i.e. with 1200 um pads, while all the other tapes have standard 600 um large soldering pads)
 - Two panels with low/null yield due to a Problem related to the **blind hole plating**.
 - 7 bad mechanical tapes from one panel sent to UK-Manchester for mechanical applications
 - Total of 25 tapes from other three panels to Genova for quick checks
 - **17 tapes for SMD and MOPS loading**



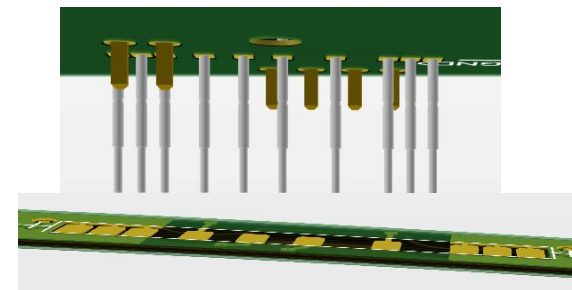
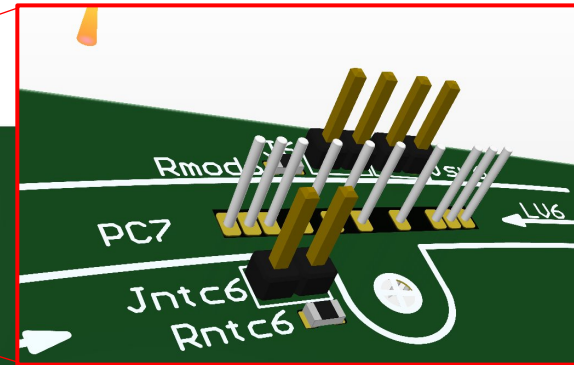
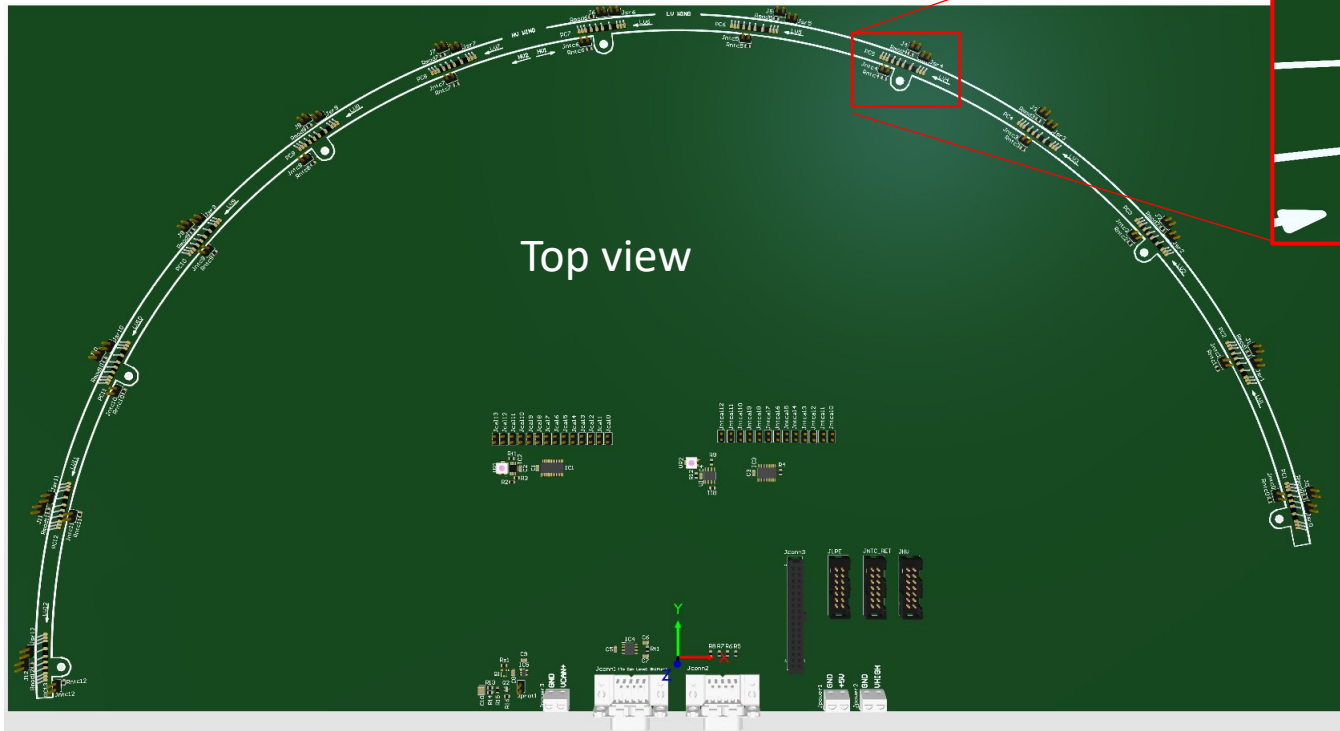
Preproduction status

- Loading arranged at CERN (Sylvain), after market survey and tests done for V6
 - 3 tapes (Inner, Middle, Outer) assembled in late March → **MOPS are working!**
 - Main concern is that the MOPS SLH connector (and LV?) may be easily detached from the tape when unplugging the small adapter board. Discussed with Stephan and Bojan and Sylvain: currently mitigation may be adding some glue after the soldering.
 - Stephan and Bojan currently testing the insertion/removal with mini samples from the tape panels (exactly same stack up as the real tape)
 - 3 more tapes (Inner, Middle, Outer) to be assembled now, with mitigation (glue) discussed above.
 - Pins for strain relief of type-1 cables still to be tested.
 - New production (v8) foreseen after PRR. Presumably starting in September, indeed we discussed at the last ITk week that we need to start the production soon!

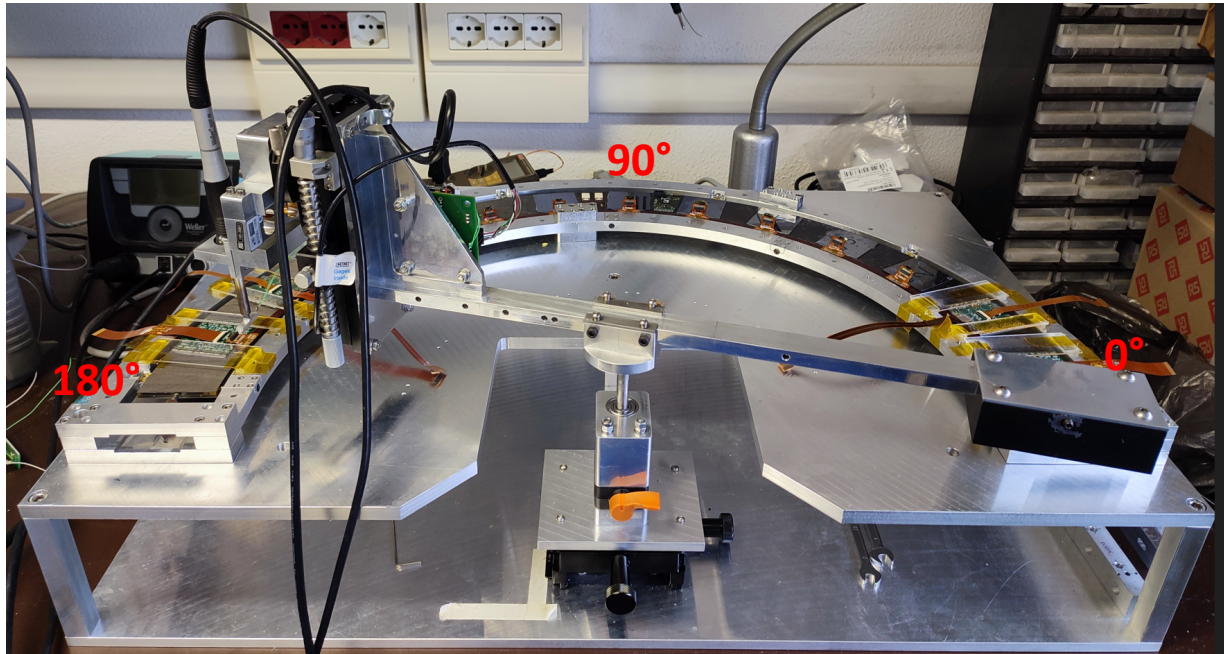


Tape testing

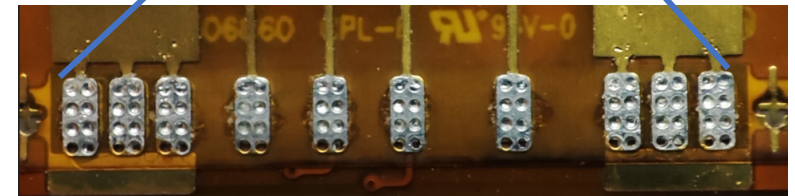
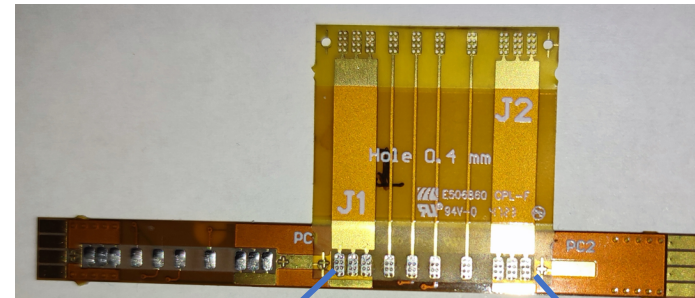
- Probe card designed to automatically test the bus tape and check MOPS full functionality
 - Outer tape card just received!
 - Old version for inner tape in house
 - Working on software to automate the testing



FlexTape-Pigtail pads solder system



- New arm usable for L2, L3 and L4 HR +HF systems
- System tested in position 0°-90°-180° for all flavours
- **Pretinned** minitape pads + **not pretinned** pigtail pads successfully tested --> **proposed baseline**, with minitapes pretinned at a vendor (Sylvain, CERN).
- **System SIGNED-OFF**



FlexTape-Pigtail pads solder system



- System is composed by (see link): <https://indico.cern.ch/event/1331942/>
 - Head and arm, and electronics **provided by Genova:**
 - Machining for 3 arms and soldering heads parts started, ready by late May, then assembly and testing and calibration → Planning to ship them **by June** together with **pre-tinned samples** to practice.
 - Large Aluminium plates: drawings soon on EDMS (HH just provided the link!thanks) --> **Le/Oxford/RAL should procure them**, as well as few other parts:
 - Welder solder station, stylus and other stuff (computer, USB cables, Tip adapter)

























Weller WX 2 RS code: 730-0717						597
Stylus WXP 80 RS code: 909-8157						263
Serial RS232 to USB converter that works on Windows 10 (Ewent EW1116 works : https://www.amazon.it/Ewent-EW1116-Convertitore-Adattatore-Seriale/dp/B002F2BE70)						
Tips Adapter	Weller T0054444999 Screw M4 External Thread 8.0mm (https://www.rapidonline.com/weller-t0054444999-screw-m4-external-thread-8-0mm-85-5497)					
Aluminium Plates	To build on each loading site					

- Software to control the soldering : available, will be shared on EDMS

Tapes: Database implementation

Two objects implemented in PDB

- **Bare Bus Tape – Before SMD & MOPS loading**
 - Structures already implemented in PDB
 - **All the pre-production bus tapes registered in the PDB**
- **Bus Tape – After SMD & MOPS loading**
 - Structure is in PDB
 - Waiting to receive SMD loaded tapes to finalize the structure

<input type="checkbox"/> Component	Serial Number	Current stage	Current location
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P5_O2	20UPENB1400052	QC by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P5_O1	20UPENB1400051	QC by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P4_O2	20UPENB1400042	QC at ITk Institute	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P4_O1	20UPENB1400041	Rejected by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P3_O2	20UPENB1400032	QC by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L4 V7_P3_O1	20UPENB1400031	Rejected by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L3 V7_P5_M2	20UPENB1300052	QC by the vendor	 INFN Genoa
<input type="checkbox"/>   OEC Bare Bus Tape - BBT_L3 V7_P5_M1	20UPENB1300051	QC by the vendor	 INFN Genoa

NEW: MOPS added in the database → waiting to receive calibration files