

SMD/Testing/Rework at VLC

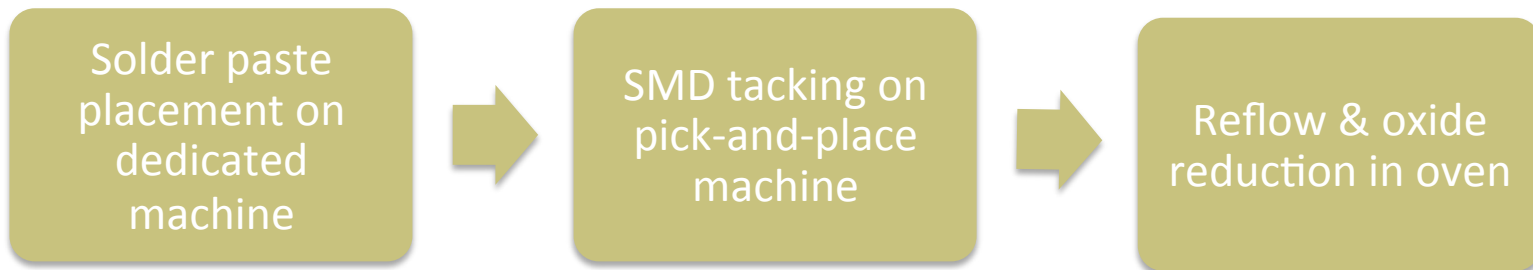
M. Boronat, C. Lacasta, F. Gonzalez @ IFIC

J.A. Ayucar, M. Llopis, G. Preve @ NTC

1. SMD placement
2. Rework
3. Testing: probe needle card

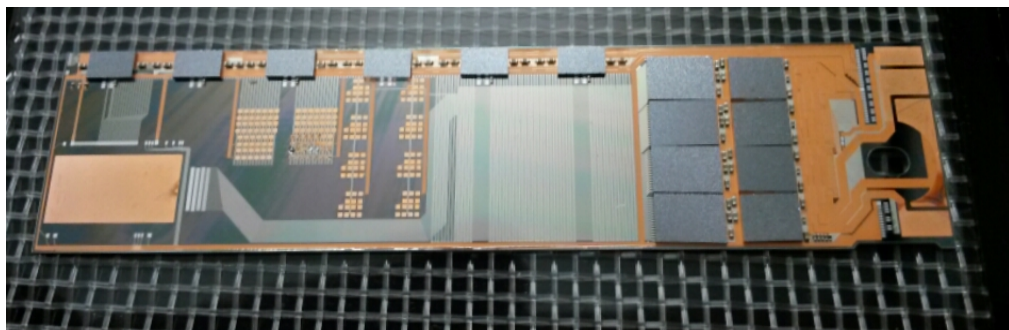
Status at DESY meeting:

- 1) Procedure agreed
- 2) Two options for automatic solder paste placement.
 - Contact Martin to make tests on EMCM
 - Repair Pactech's head at NTC and start developing the process



PacTech @ NTC Martin's Dotliner

E-MCM module sent to Martin in Germany to see if they can do it.
The module has silicon slabs with the dimensions of the chips glued



DOTLINER Product Family



DOTLINER 06.6
Precise dispensing on large PCBs

DOTLINER 06.5
Precise dispensing on mid-size PCBs

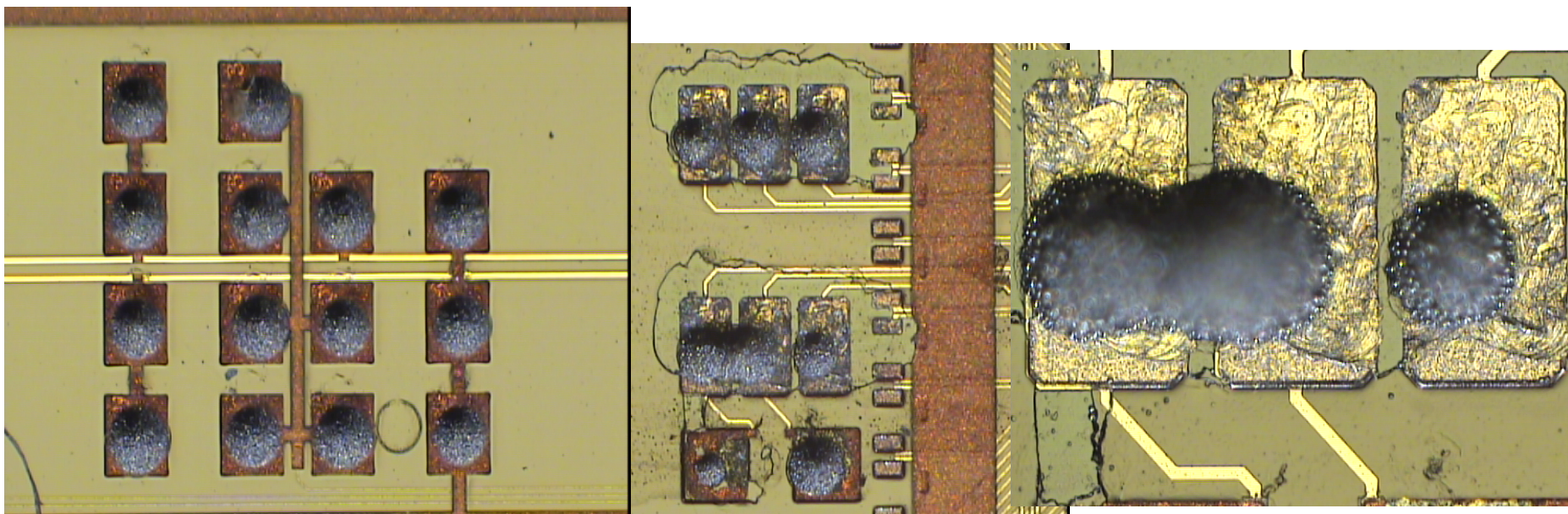
DOTLINER 06.6

Vision supported dispense robot with ATP-technology and PC software Easy-Dispense. Perfectly to use in low volume production and R&D. Optimized for solder paste, flux or glue dispensing.

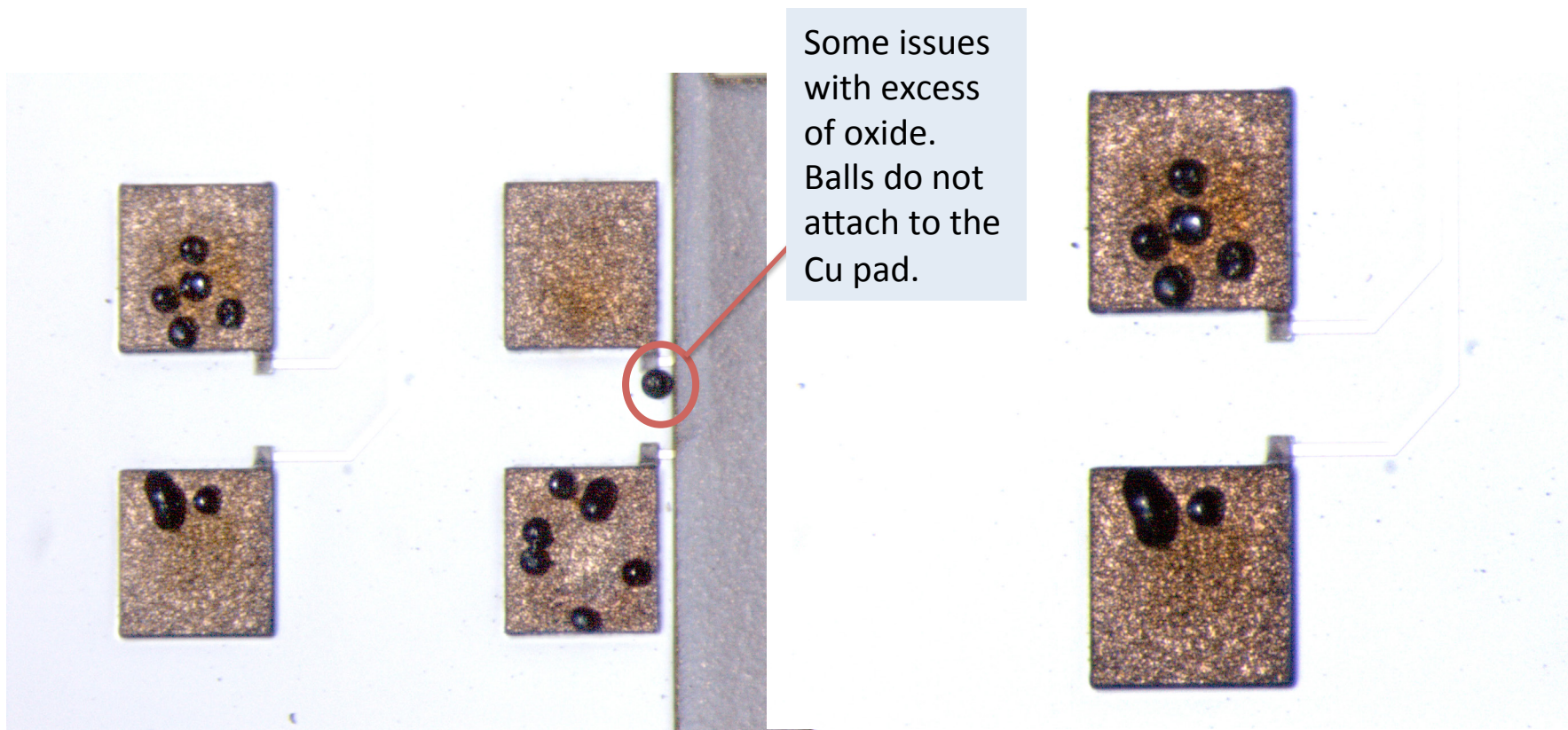
Dotsize:	0.15mm (min)
Axis resolution:	25µm
Working area:	325 mm x 495 mm
Foot print:	700 mm x 900 mm



The test failed: they did not succeed with the smallest pads



Pactech head repaired but ball size ($40\text{ }\mu\text{m}$) turned out to be too small
A $150\text{ }\mu\text{m}$ ball size head was order



New header for 150 μm balls arrived on end of April

Quite some troubles with the new hardware. Got replacement beginning of last week.

Now everything is ready to start developing the process

First trials made, no optimization yet.

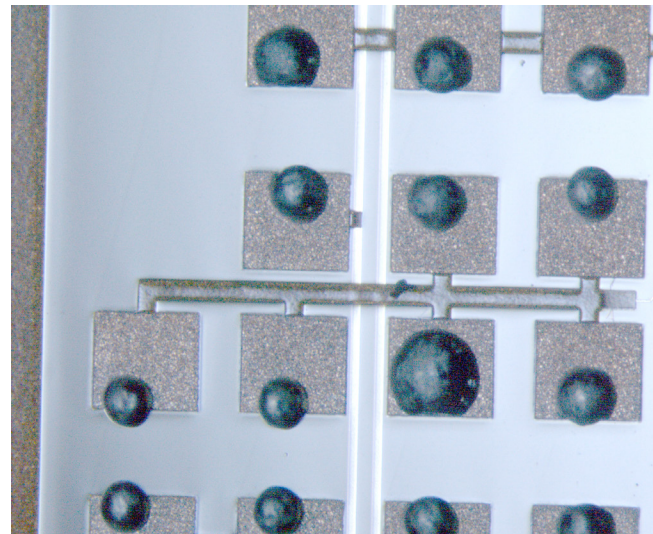
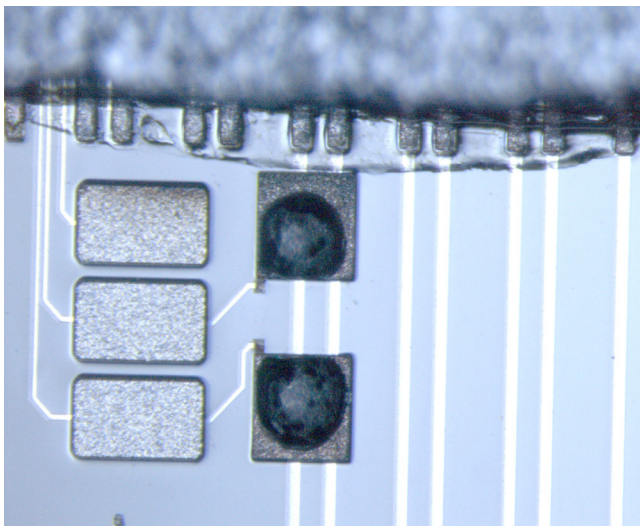
a) However, issues with oxide persist.

1. Oxidized samples. Need to improve on oxide reduction before starting

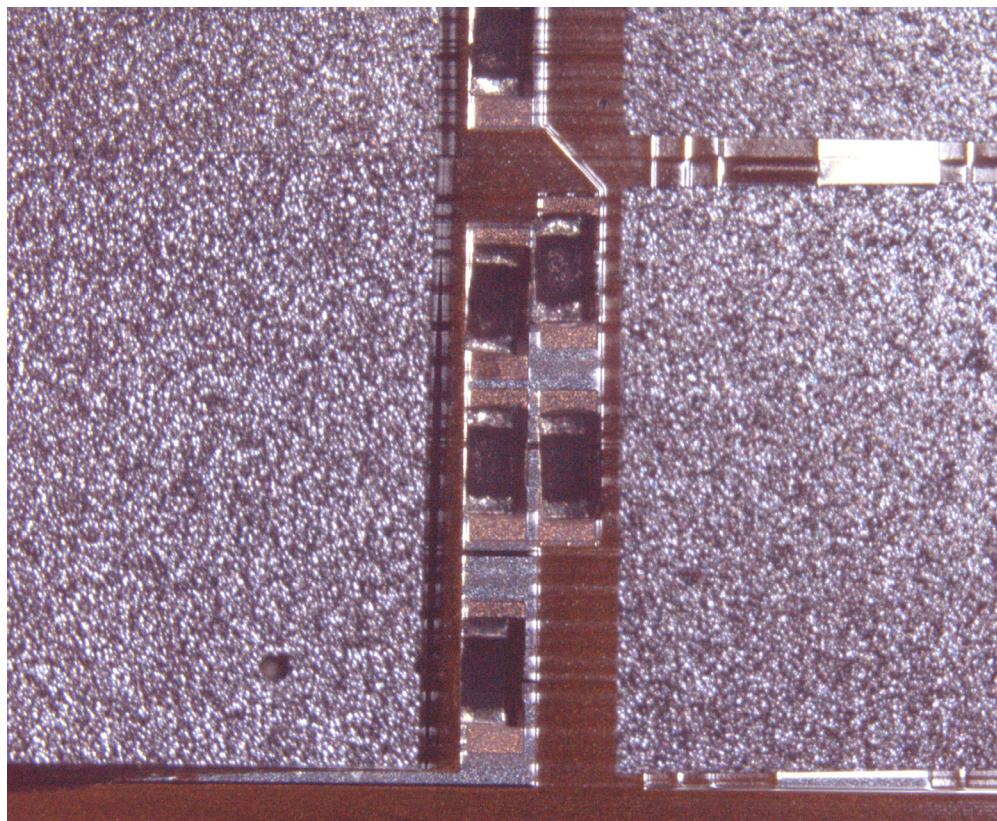
2. Some balls not soldered in Cu pads with Pactech's laser. Fine tune the process parameters

- Cannot calibrate the machine and, therefore, balls are not always in the center of the pad.

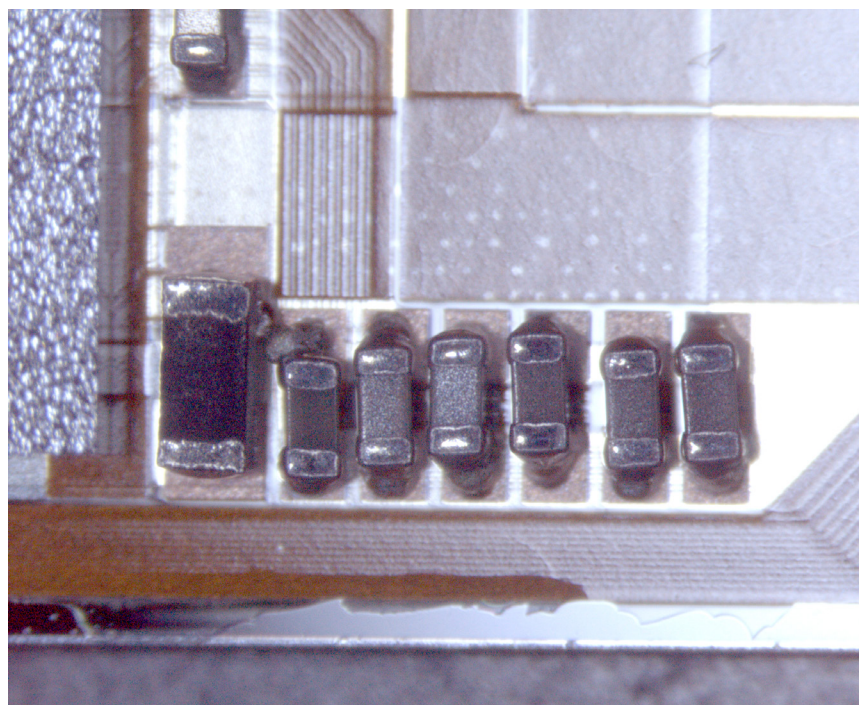
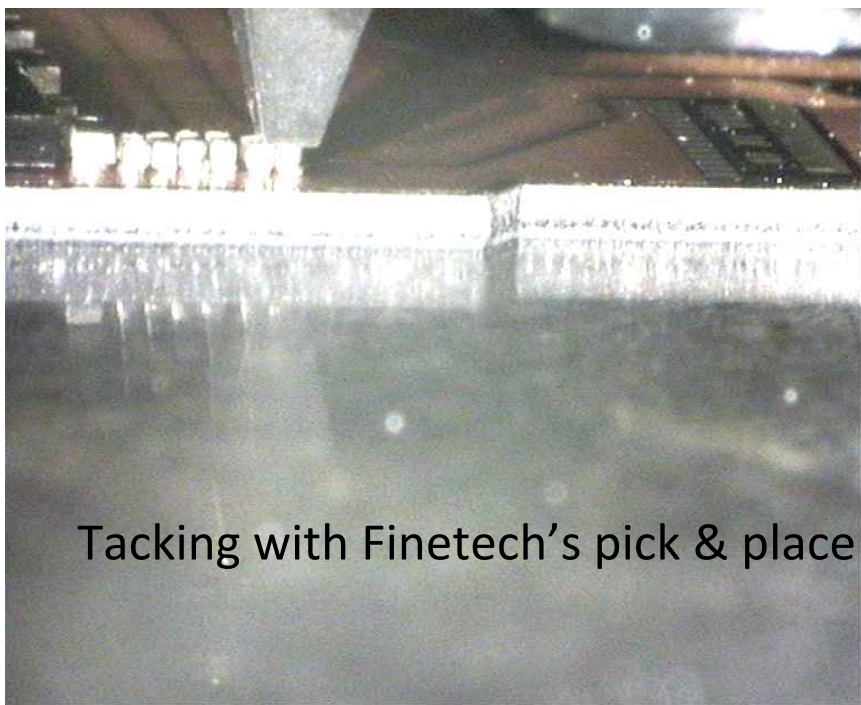
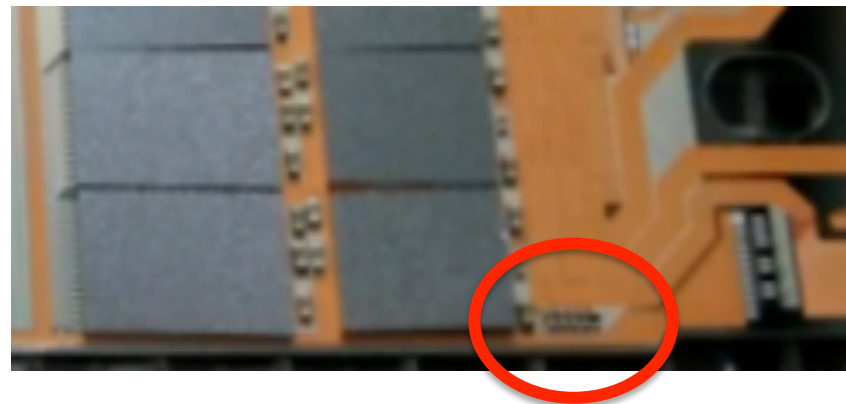
- Work on ball size uniformity: has to do with differences in adhesion properties of the pads

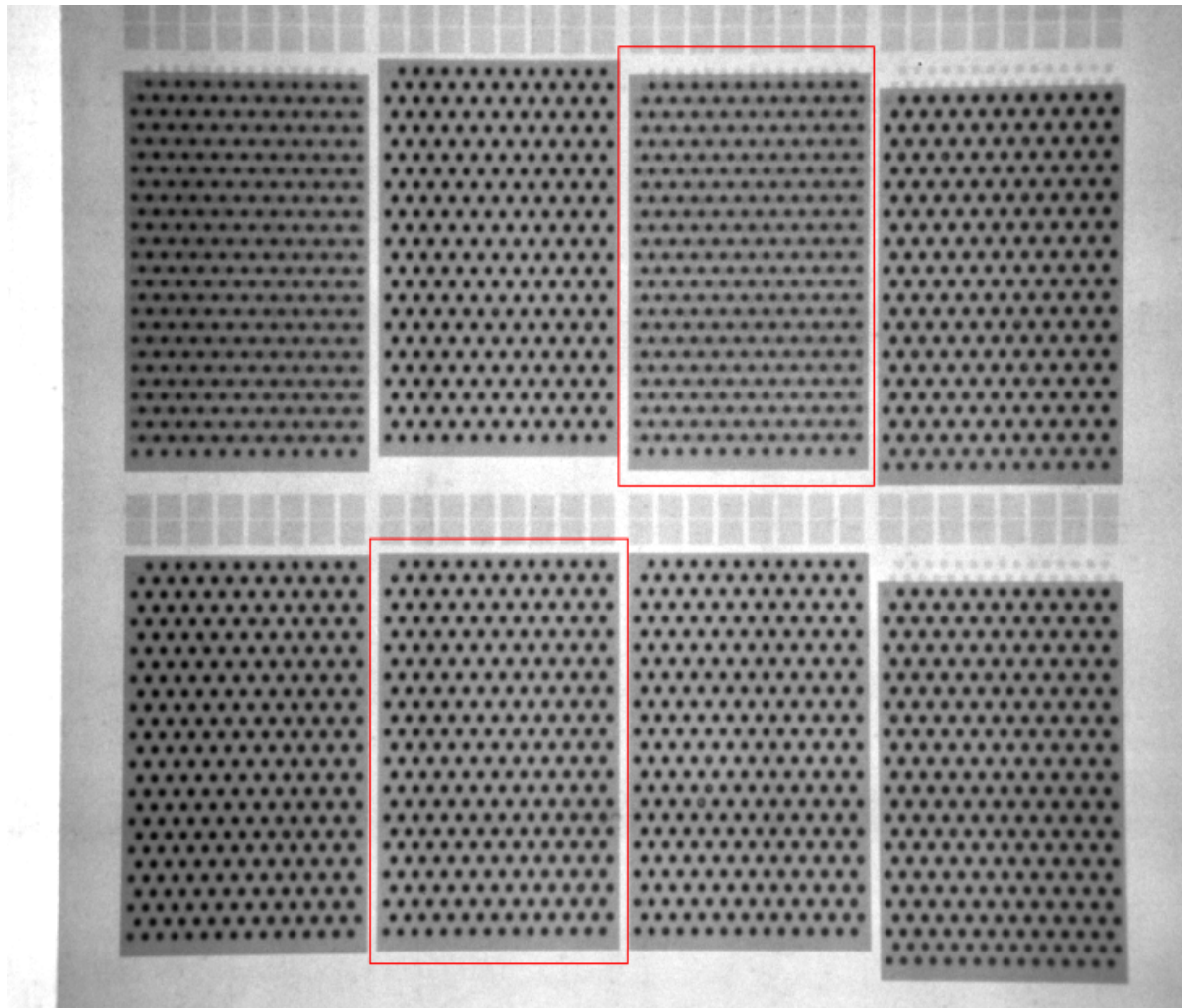


No problems in the gap between DCD and DHP chips rows



The most delicate step in the rows of small SMDs.
If required, new tooling will be acquired.

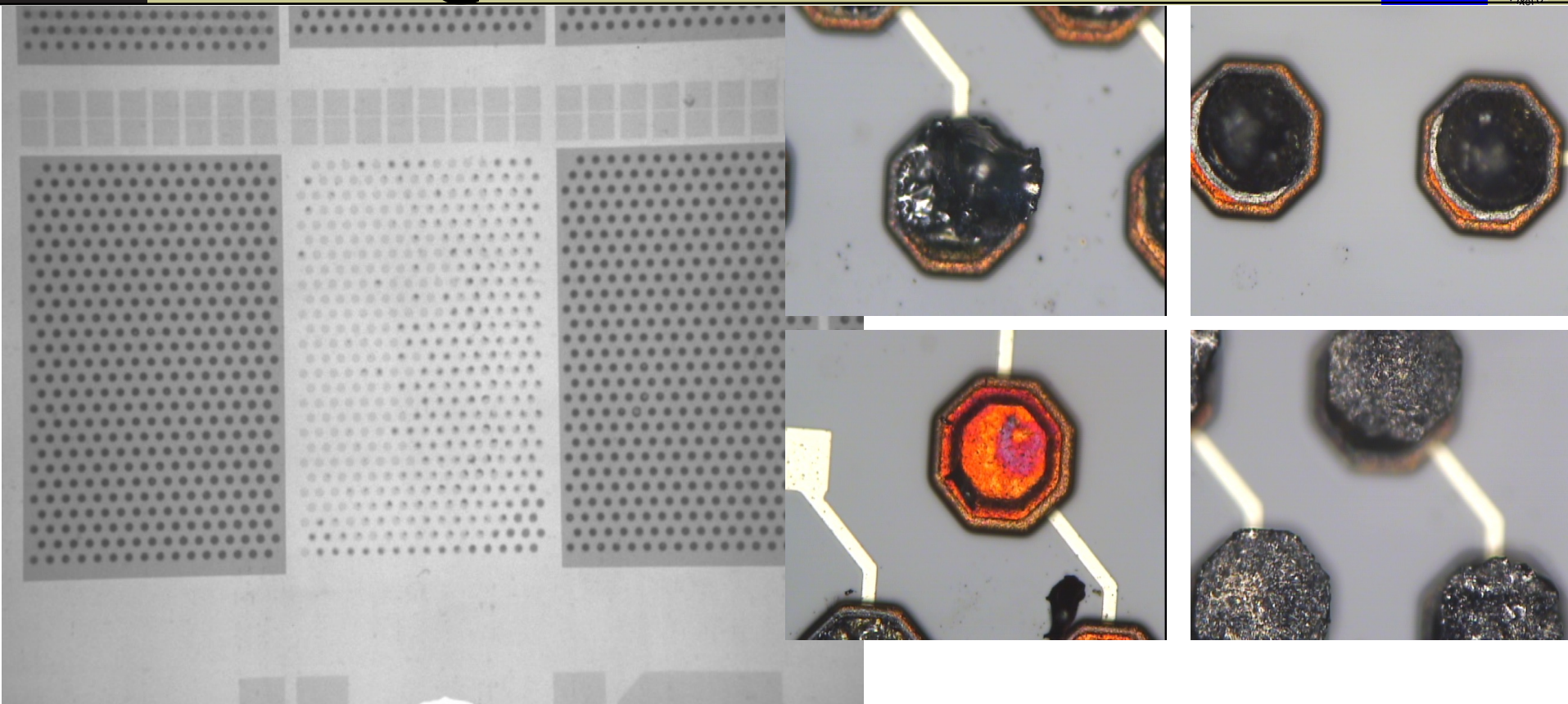




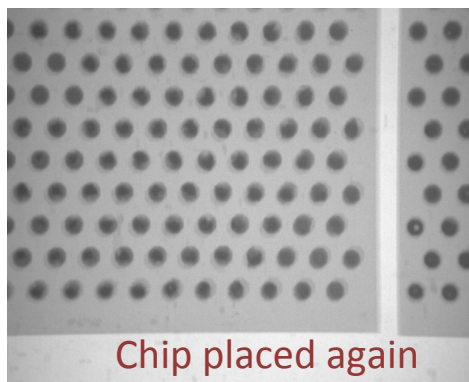
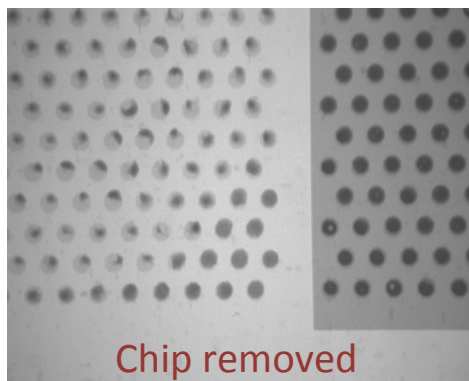
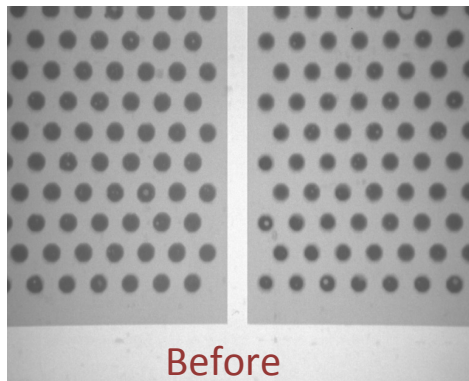
We have 1 end of module with 8 chips.

Exercise chip replacement.

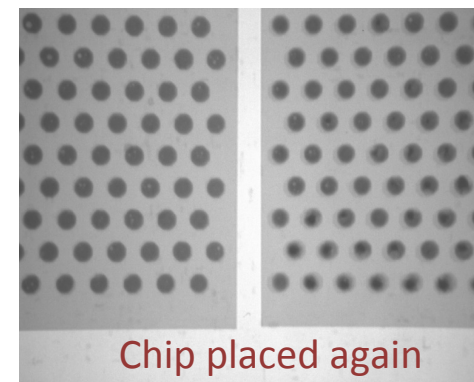
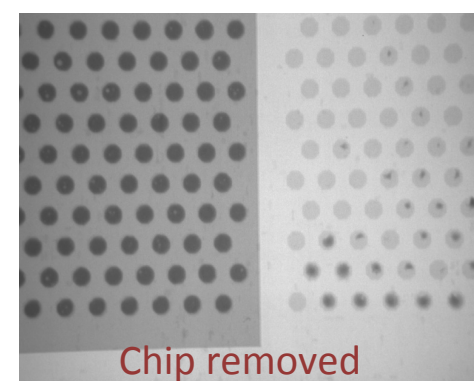
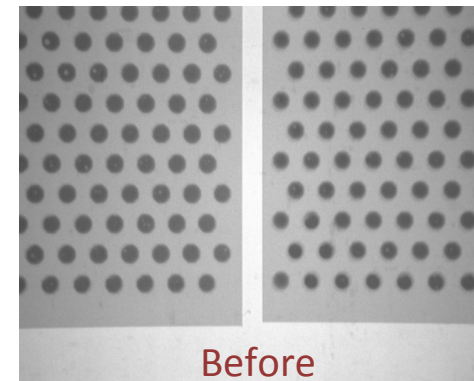
1. Check there is no solder paste spread all over the place
2. Place a new chip assuming that some solder paste remains on pad and Cu is not exposed.



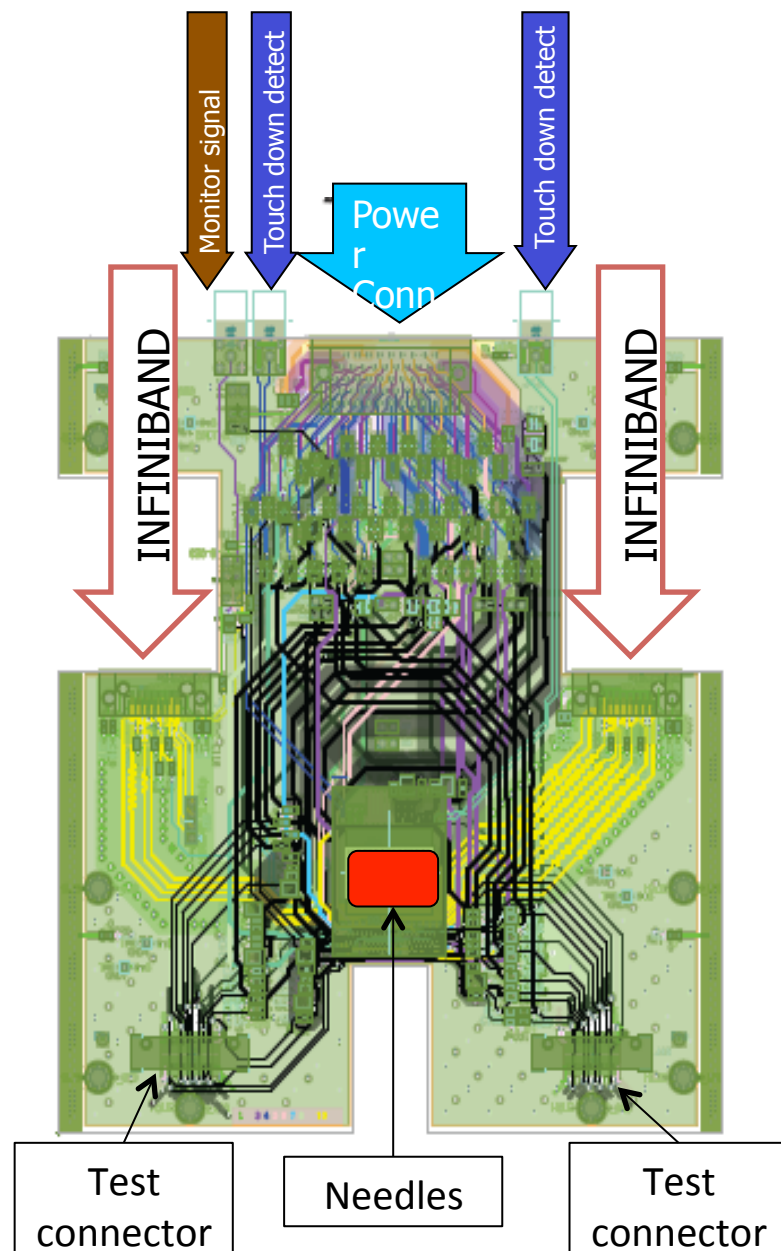
Not all the balls were properly soldered on substrate pads.
Nevertheless, no solder paste spread out during chip removal in any of the chips we removed



1. Chip removal does not affect neighbors.
2. Chip placement neither.
3. Need to check with “electrical” dummies to check if replacement affects impedance (leaves unconnected balls)



- ✓ Board design finished
- ✓ 3 boards produced.
- ✓ They will be populated and tested in Munich in the coming weeks
 - See talk in end of January for details on design
- ✓ Once the boards are electrically tested needles will be assembled at HTT.
- ✓ Start tests on EMCM



- ✓ SMD placement
 - Martin's dotliner could not do the job.
 - NTC has equipment ready.
 - ↳ Start setting up the process.
- ✓ Rework: setting up the procedure
 - "Easy" unless chip removal messes up the module surface
- ✓ Probe needle card
 - Design finished and 2 boards produced. Will be tested in the coming weeks
 - HTT has to put the needles
 - Test with e-mcm