

Status of Module Production in Valencia

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IFIC Valencia

- Site production status: up to 10th/June/2004

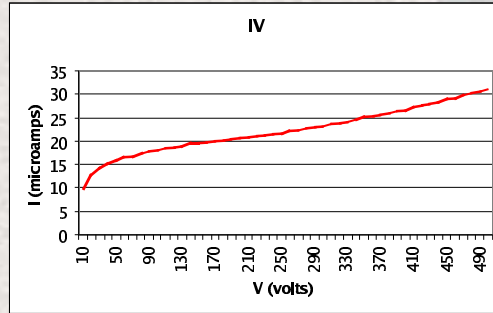
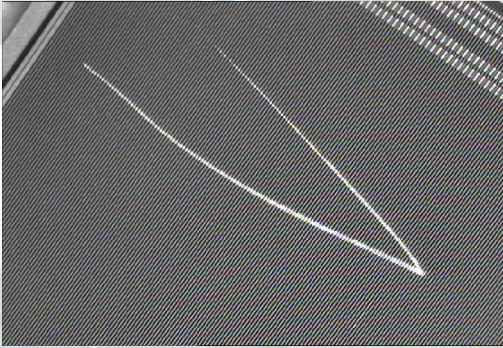
| | | |
|-----------------|----|-------|
| Total assambled | 70 | |
| Under QA test | 9 | |
| Fully tested | 61 | |
| Good | 49 | 80.3% |
| Pass | 6 | 9.8% |
| Fail | 5 | 8.2% |
| Hold | 1 | 1.6% |

| Failure reason | |
|----------------|----------------------------|
| 1 | Broken spine * |
| 1 | W22F broken |
| 1 | Wrong fan-in |
| 1 | Scratch on W21B (large IV) |
| 1 | Out of mechanical specs |

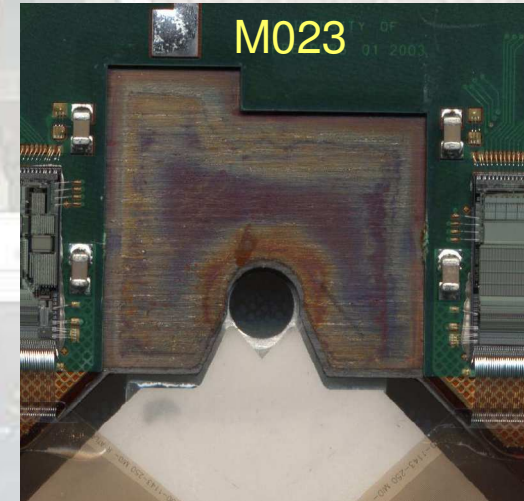
| Components | |
|------------|--------------------------|
| 15 | Spines |
| 15 | Hybrids |
| 22 | Middle frames (from MPI) |
| 26 | Sets of fan-ins |

Defects

M039

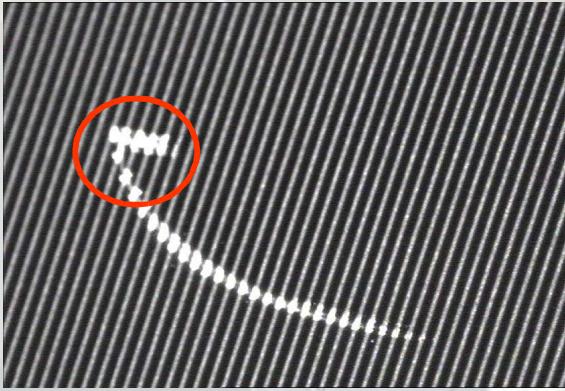


-Stain on hybrids CB

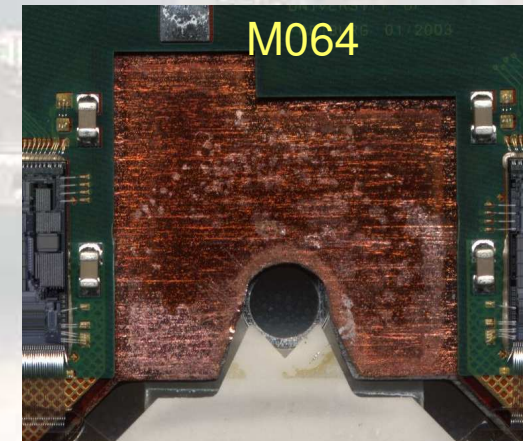
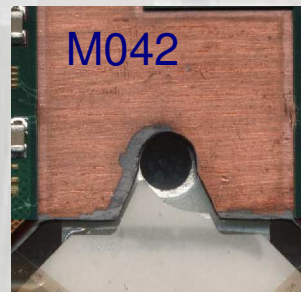


M051: IV

5 conn. Chan.
PASS



-Broken ceramics

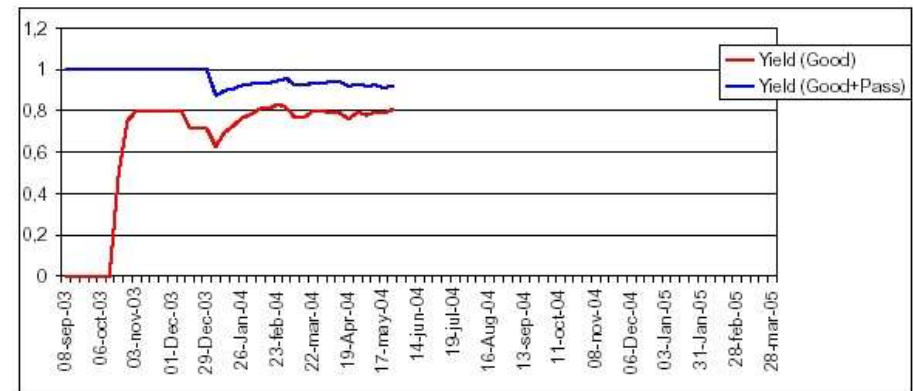
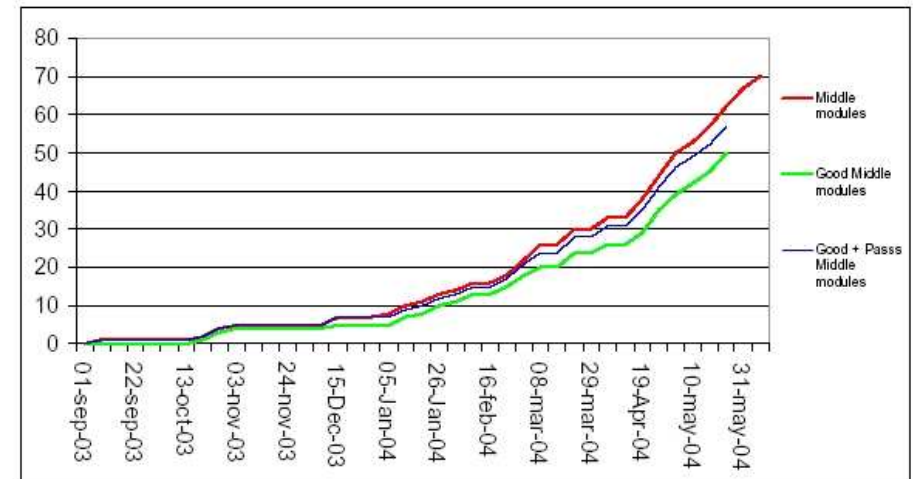


Production Rate

- Current production rate is 5 modules/week
 - Original schedule was 4 modules/week
 - Assembly of middle type modules only
 - Could do 6 modules/week but jig Middle-1 is not working properly
- Bottle neck is QA testing
 - Wafers IV measurement
 - Bonding
 - Metrology: intermediate and final
 - Thermal cycle (30 hours)
 - Electrical tests (28 hours)
 - Visual inspections
 - Components testing

Middle module production

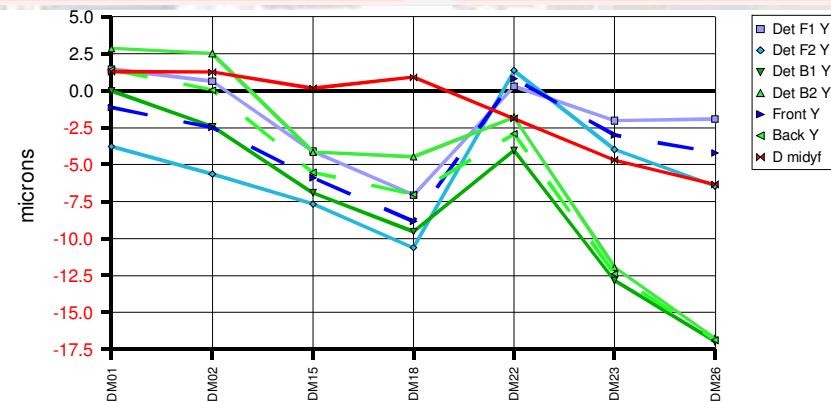
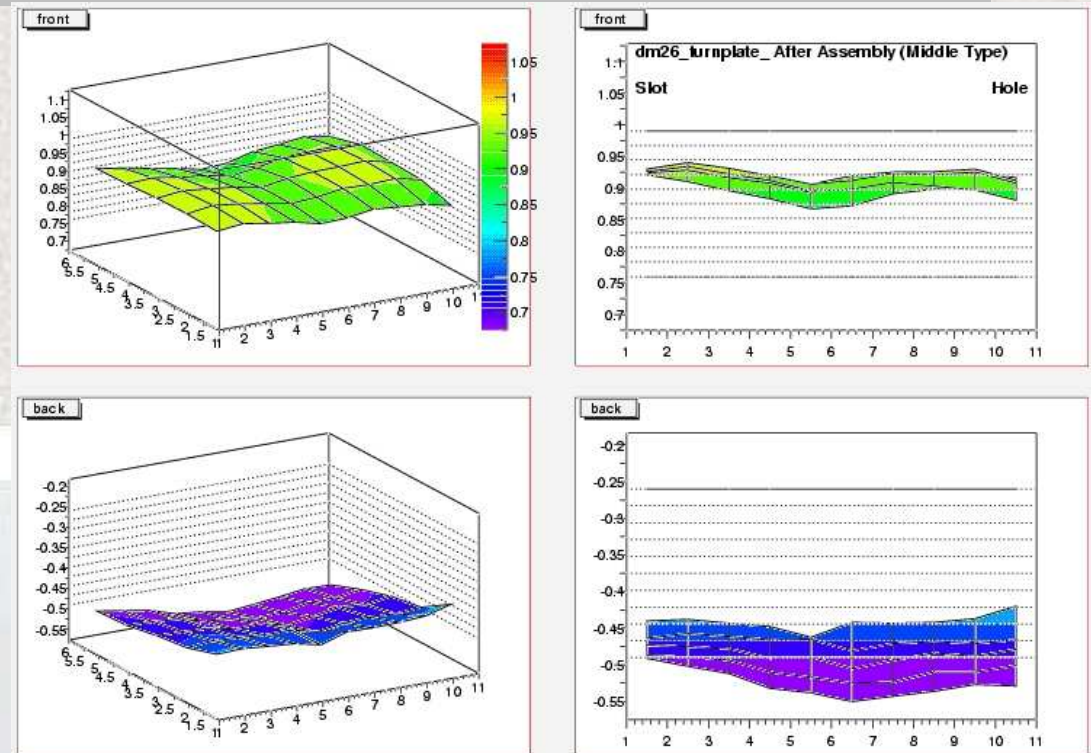
Production 9-6-2004



Assembly jig: Middle-1

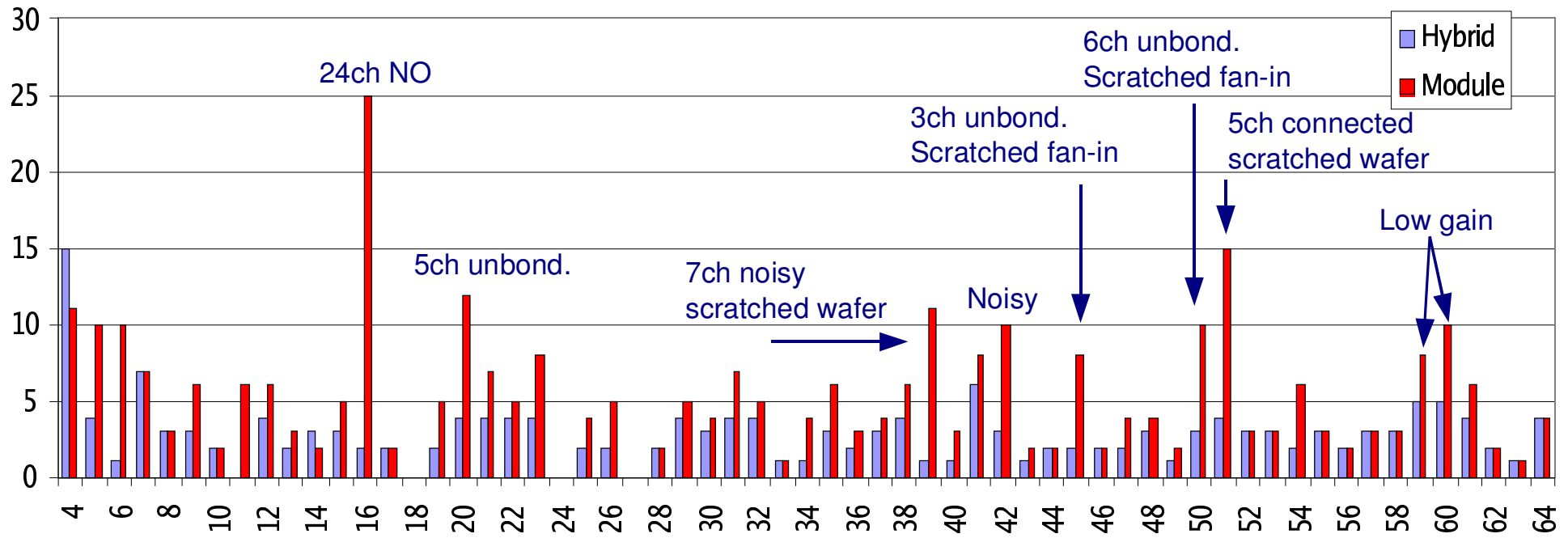
- Modules assembled with jig middle-1 are out of mechanical specs
 - Effects seen in: midyf and Z-profile of back side
- Up to 3 dummy modules assembled with many corrections.
 - Back side wafers do not return to their alignment position

No solution found yet !



Electrical Tests

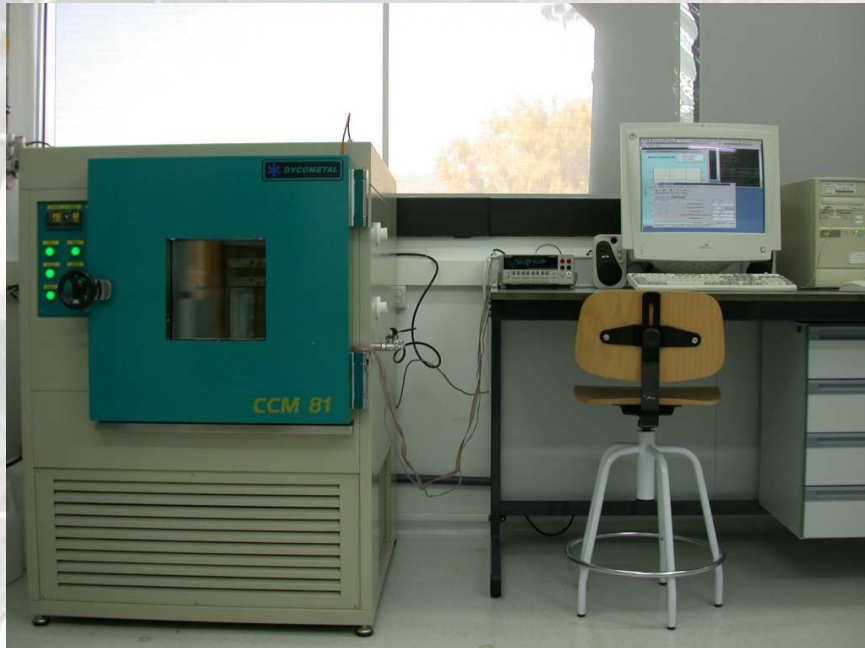
- Defect channels (on bare hybrid and after module completion)



- Hybrids :
 - M042: difficult to establish digital communication. Afterwards a bit noisy
 - M057: E13 strobe delay had do be set by hand to 24

Thermal cycle issues

- Thermal cycle setup in Valencia

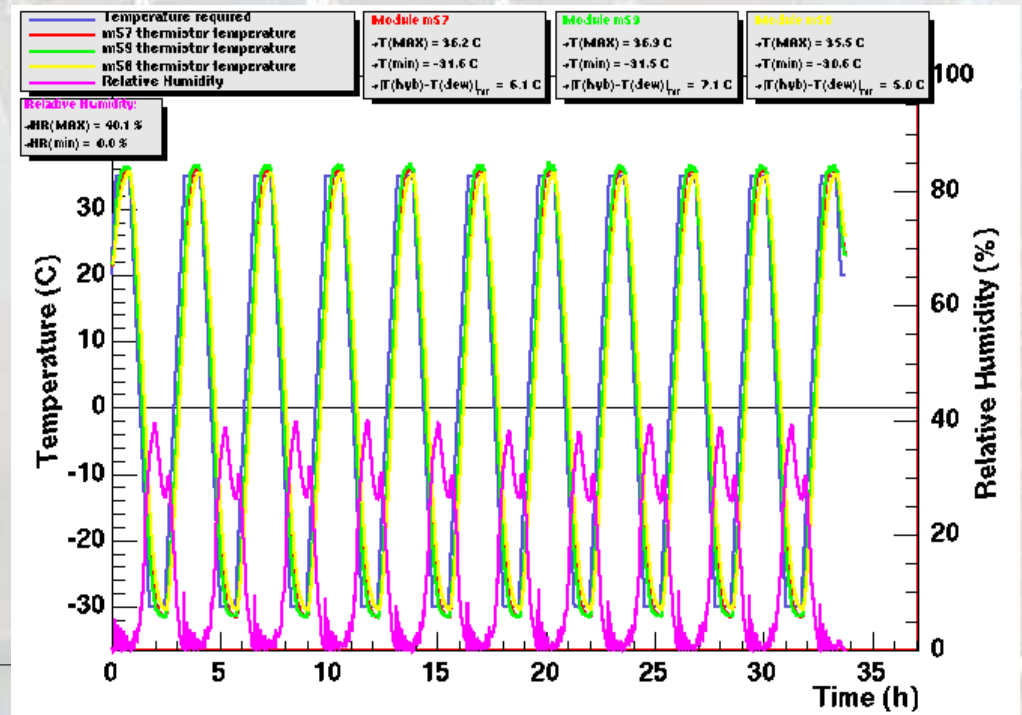


- Temperatures:
 - 30C \Rightarrow +35C
- 10 cycles
- Online
 - a) humidity (dry compressed air flow)
 - b) temperature (used to fix the 30 min dwell time)

- Large statistics allows to perform systematic studies

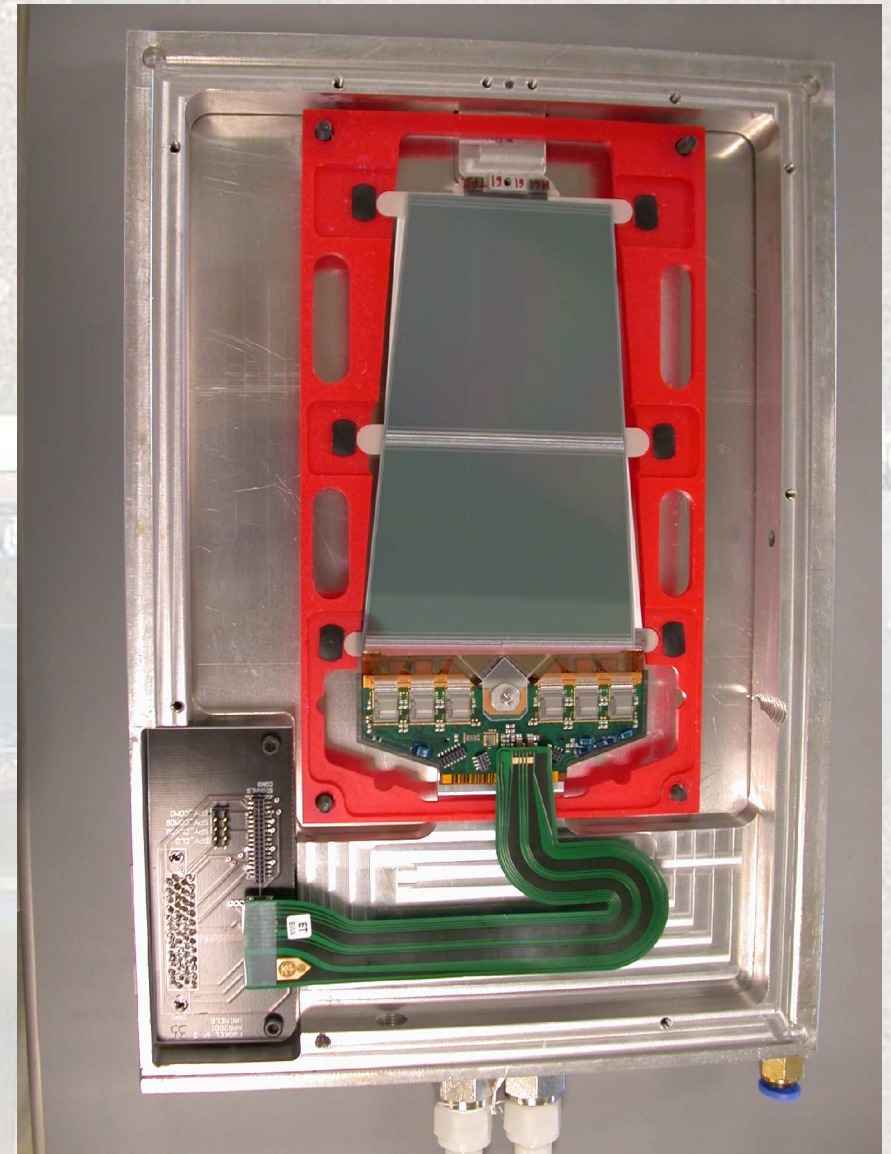
- Thermal cycle data \Rightarrow

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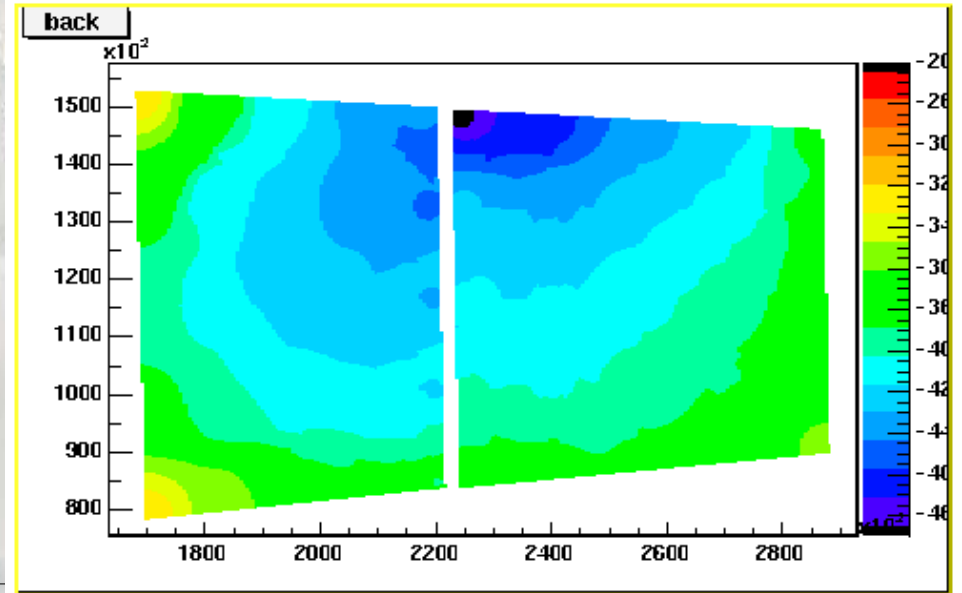
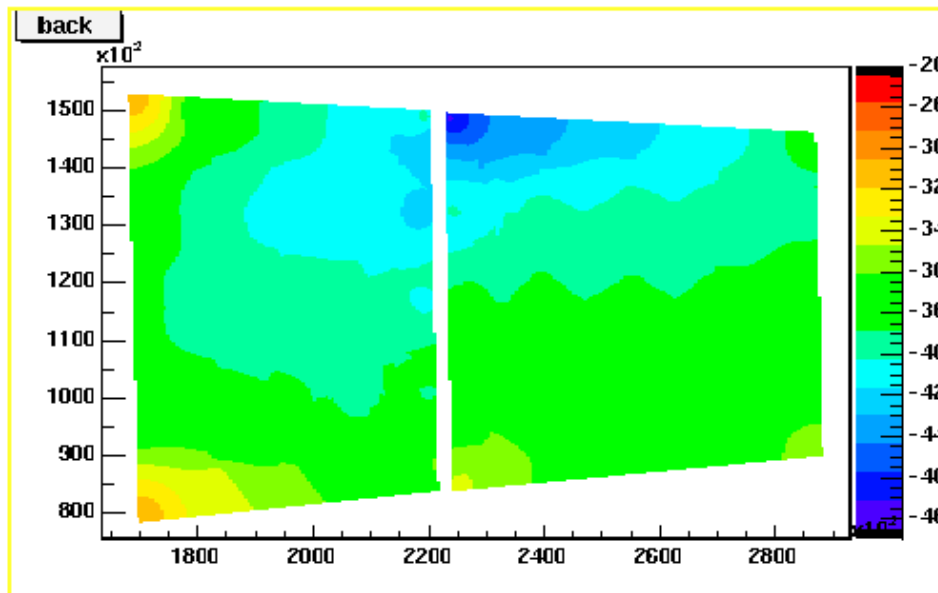
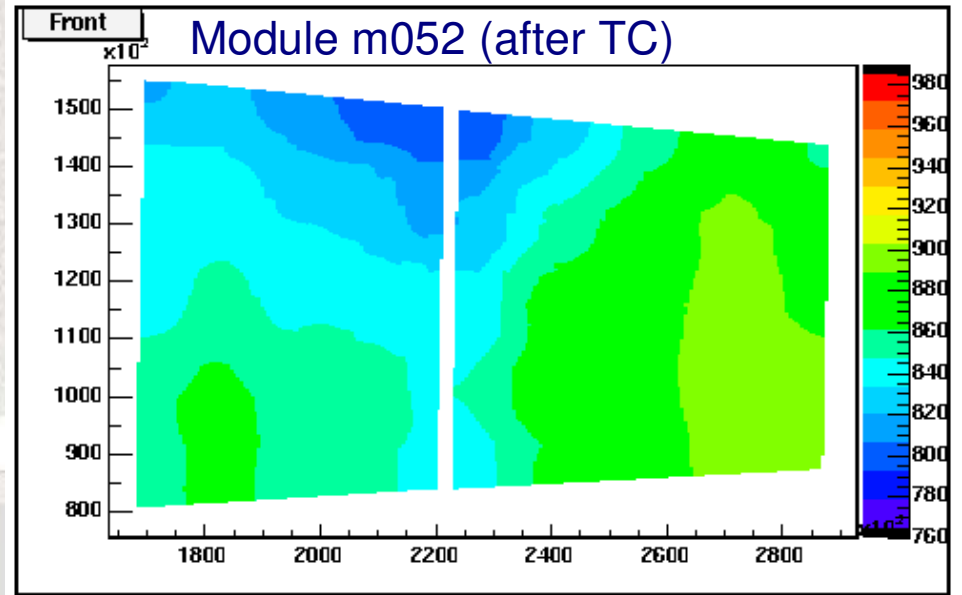
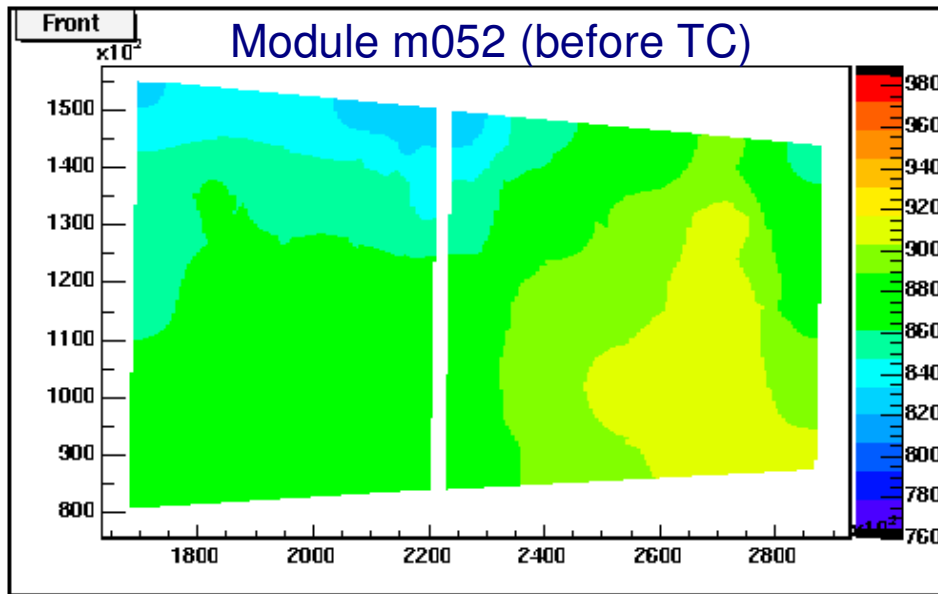


Thermal cycle issues (2)

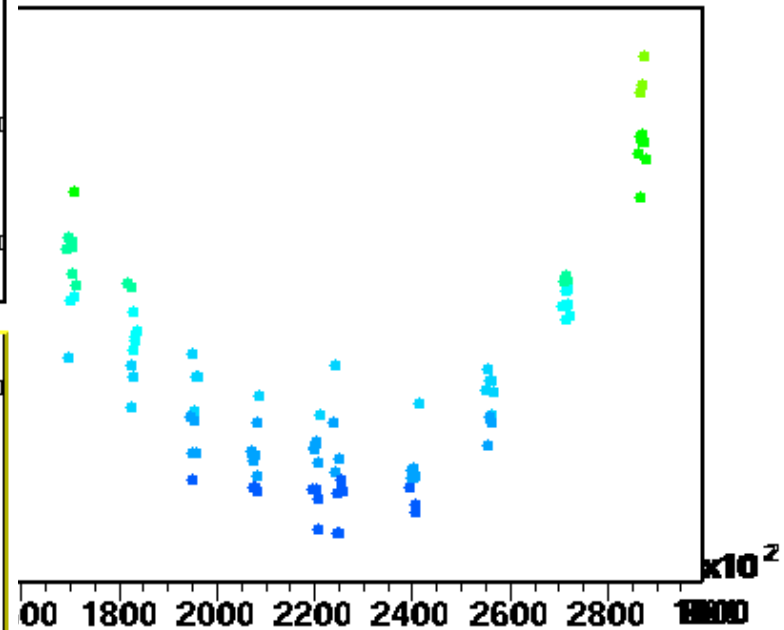
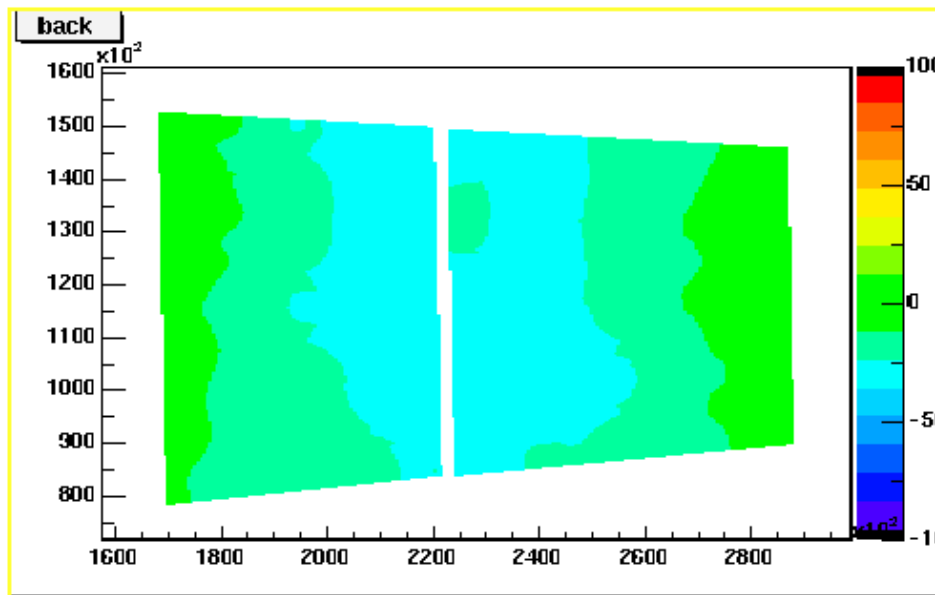
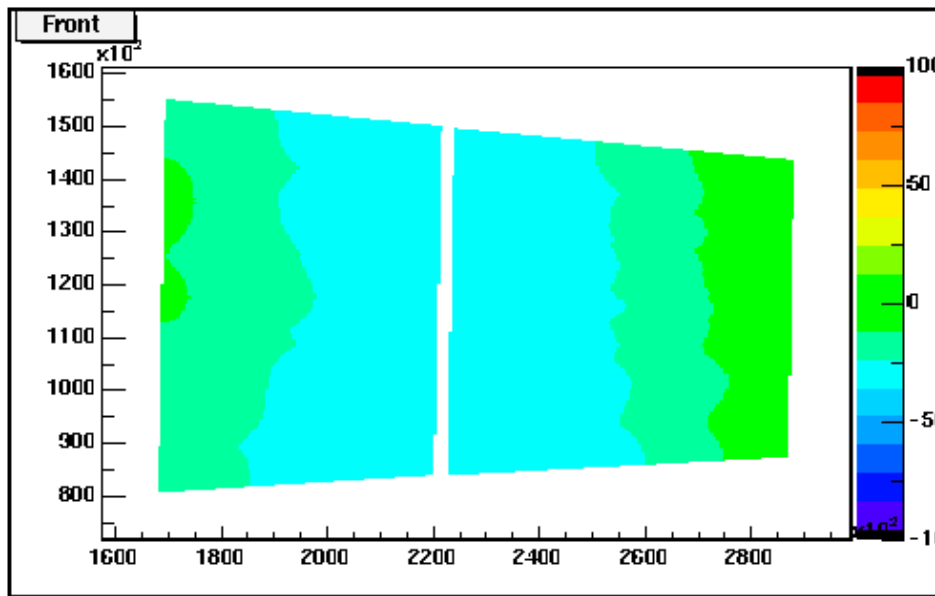
- Module holding during TC:
 - Modules located in a test box
 - Module resting on cooling blocks
 - Hybrid side: without nut
 - Far end: free
 - Spine wings: free



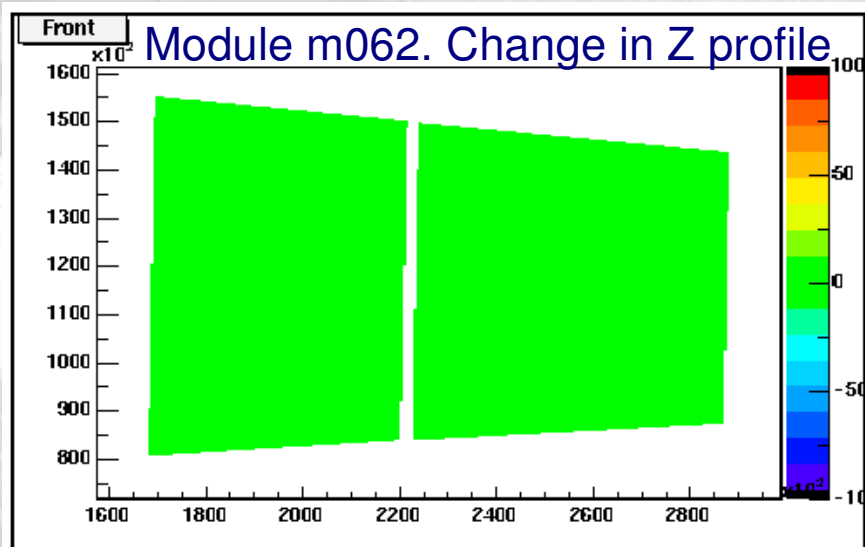
Module's Z profile



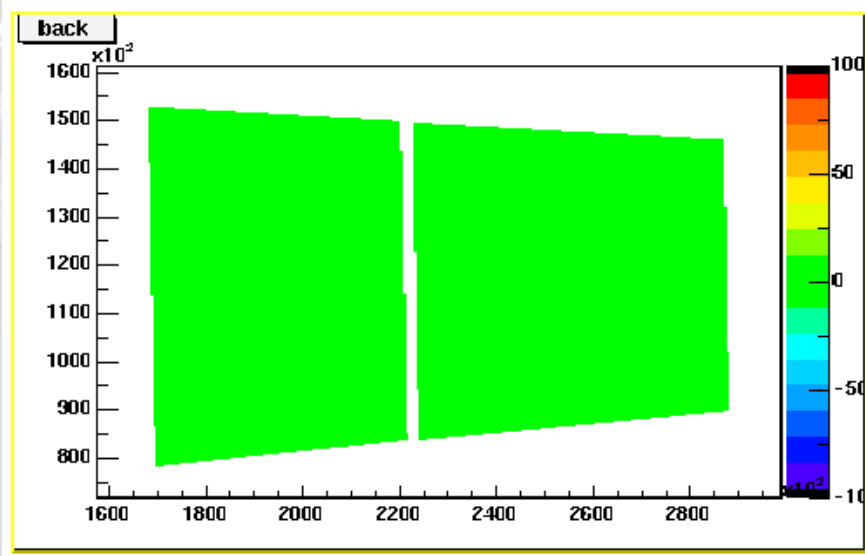
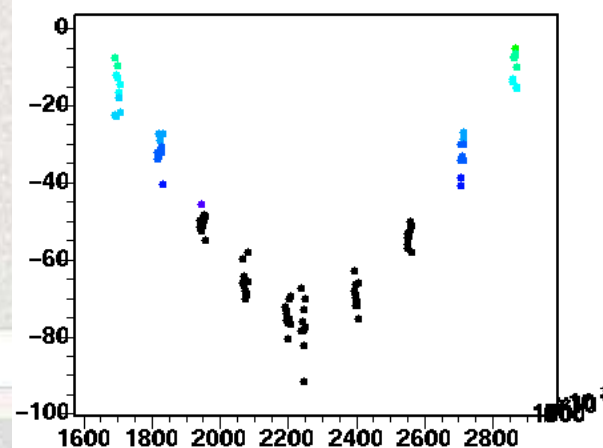
Change to Z profile: module m052



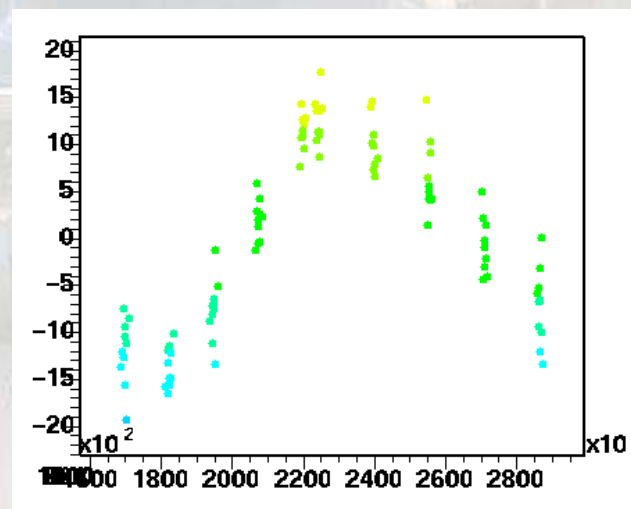
More examples



Module m064. Change in Z profile

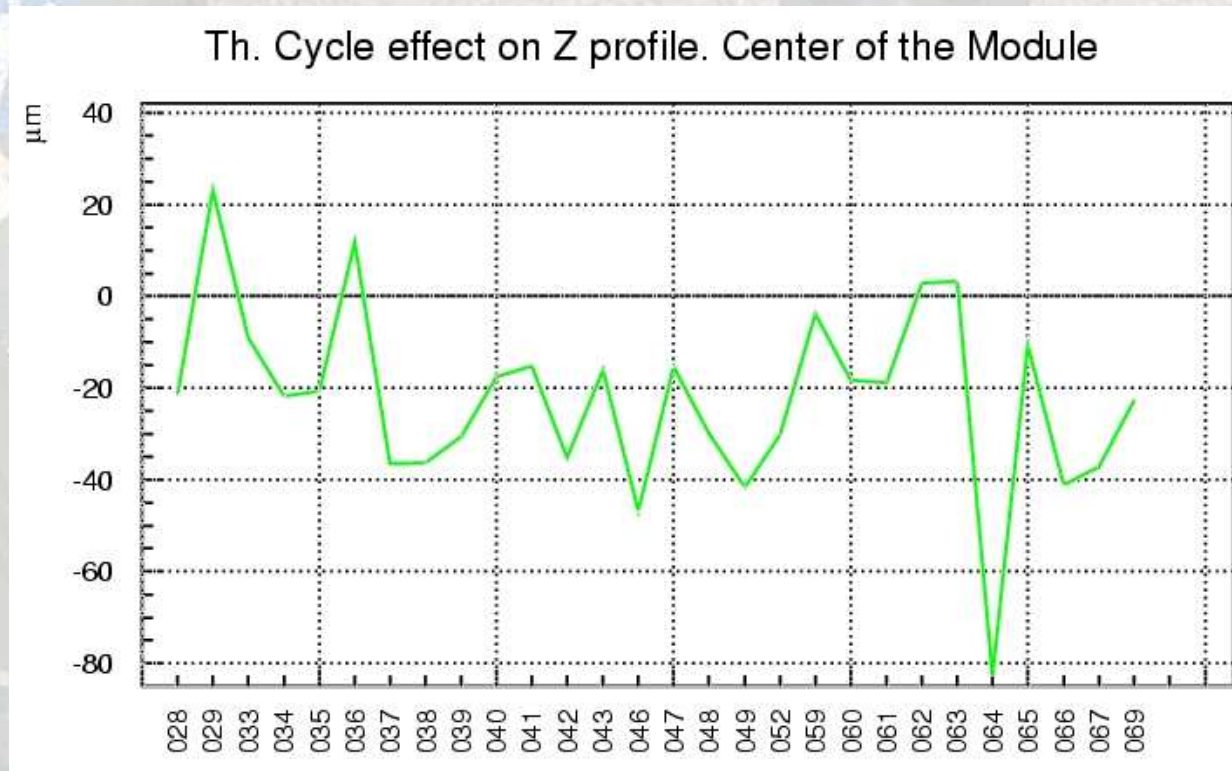


Module m036. Change in Z profile



Z profile summary

- General trend: modules bend during thermal cycle



- A dummy module was cycle back side up. After cycling it exhibits the same behaviour as the rest.

Other effects

- Thermal cycle affects **sepf** and **sepb**
 - Both parameters decrease after the cycle

