BPIX Module Testing Status - week 28

5th January 2007

Production overview

Production Status: 308 modules produced

- 213/40 graded as A/B $\rightarrow$ 82%
- 55 graded as C $\rightarrow$ 18%

Testing Status of week 28:

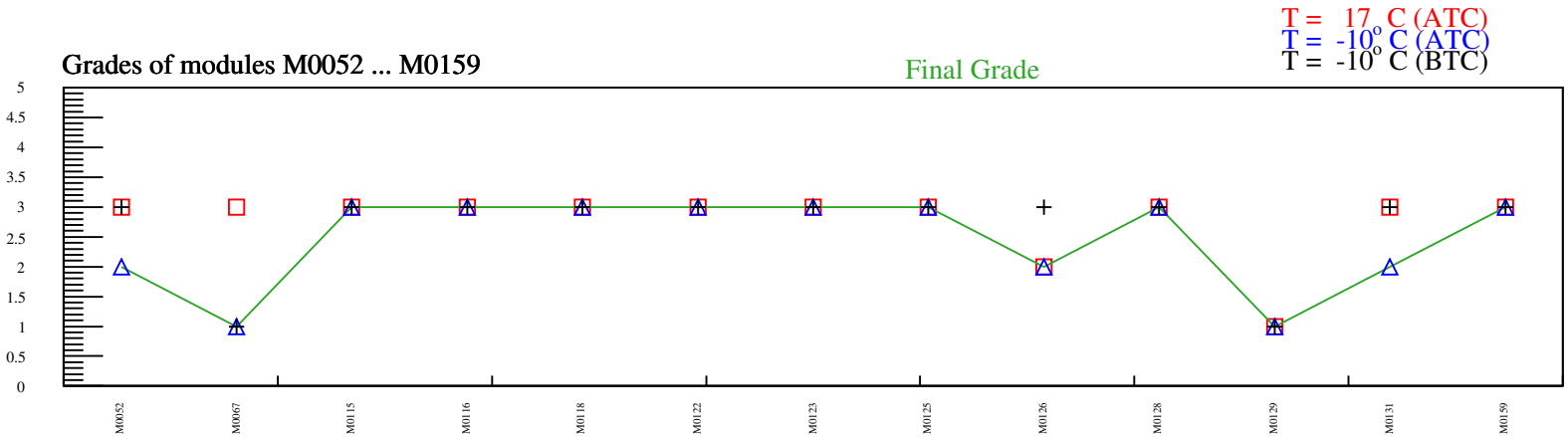
- 13 modules fully tested and therm. cycled

Grade	**A**	**B**	**C**
T = -10^o C, BTC*	11	0	2
T = -10^o C, ATC	8	3	2
T = $+17^o$ C, ATC	11	1	1
Final Grade	8	3	2

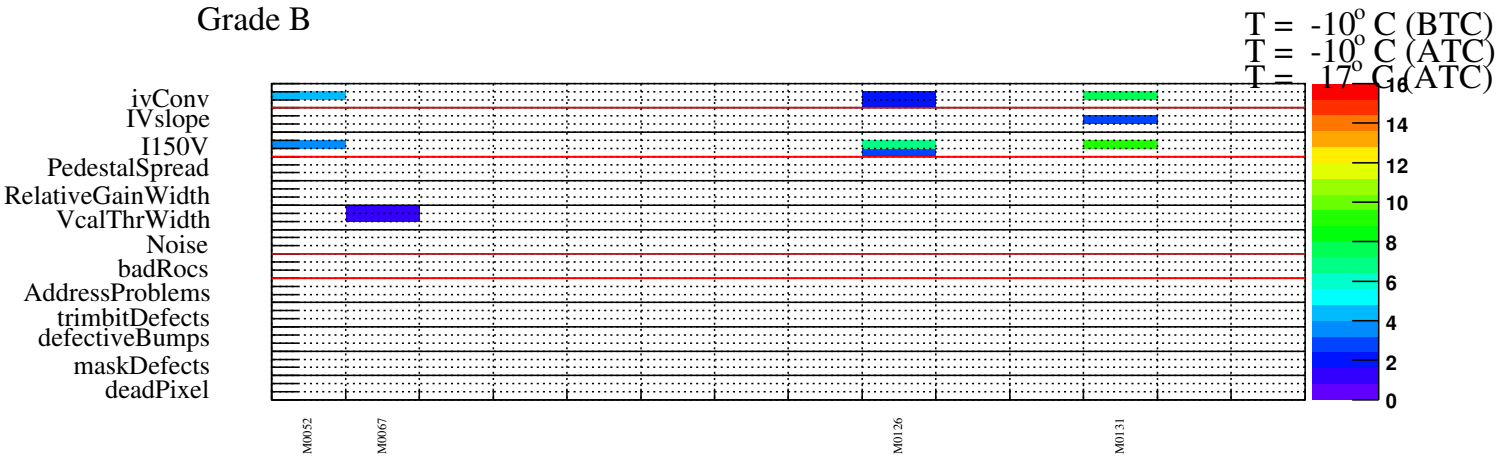
- -12 partially tested / testing failed
- no retests

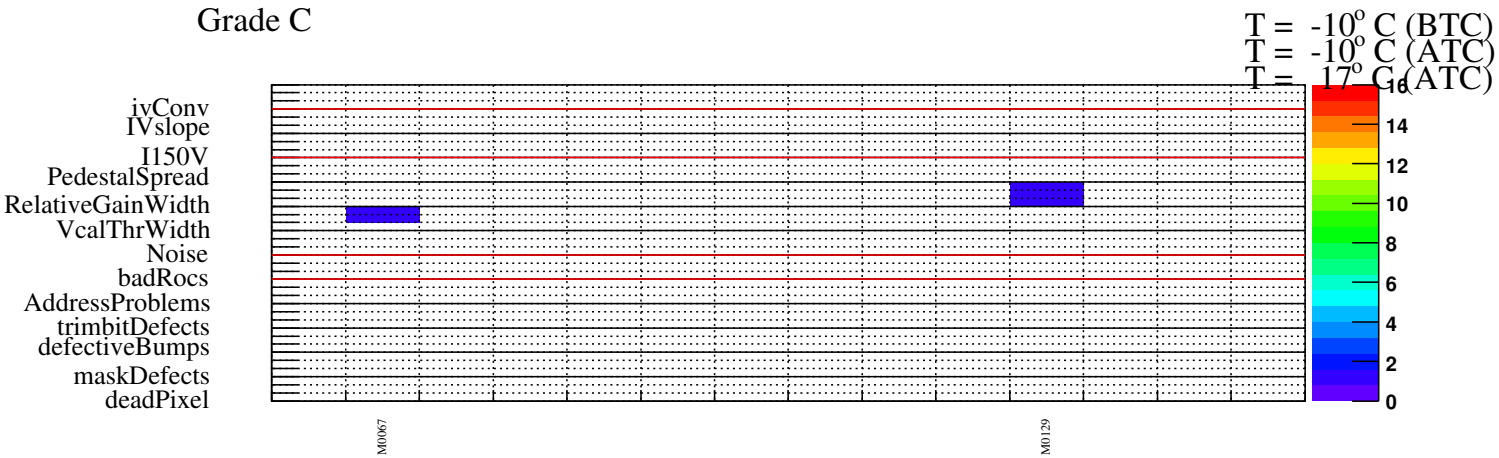
*without IV-criteria

Production summary



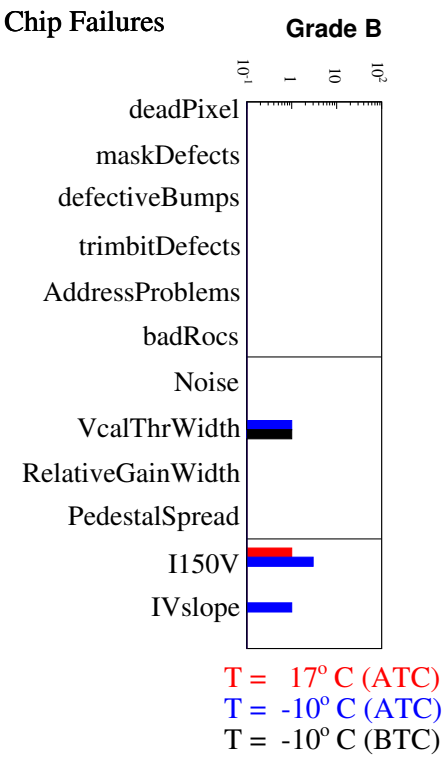
Module Failures Overview



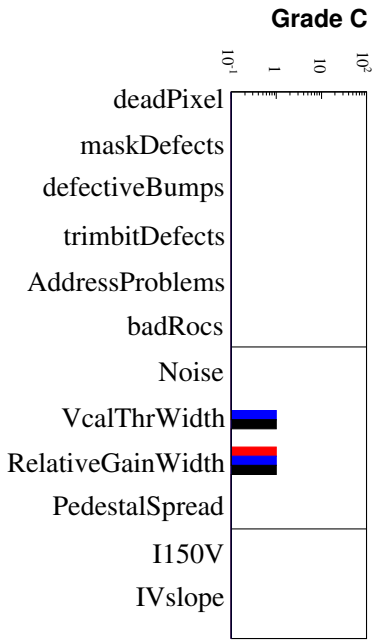


Production quality

Grade B



Grade C Failures



← Pixel defects

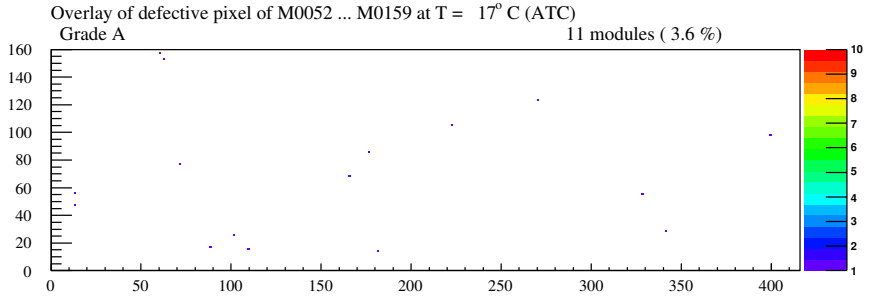
← Chip performance

← Module IV

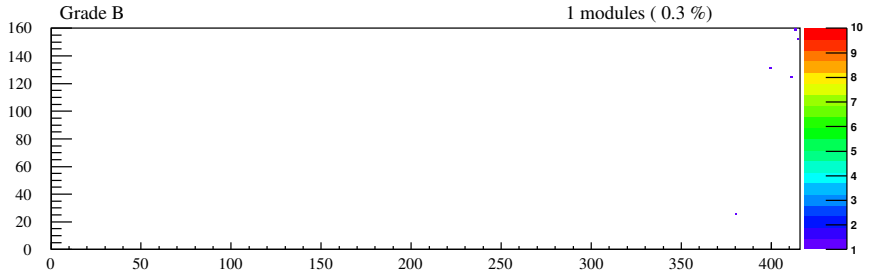
Defective pixel $T = 17^oC$ (ATC)

Overlay of all fully tested modules at T = $+17^o$ C (ATC)

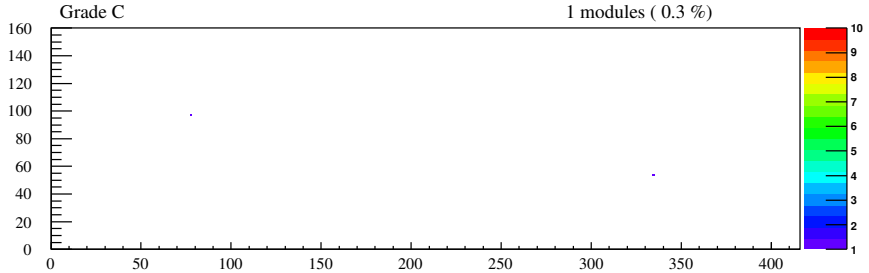
Grade A
(11 modules)



Grade B
(1 modules)



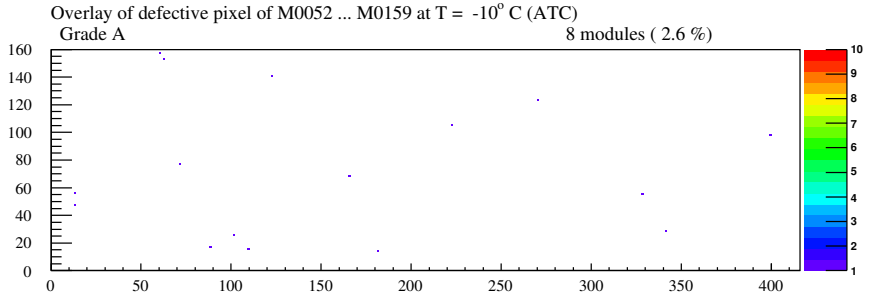
Grade C
(1 modules)



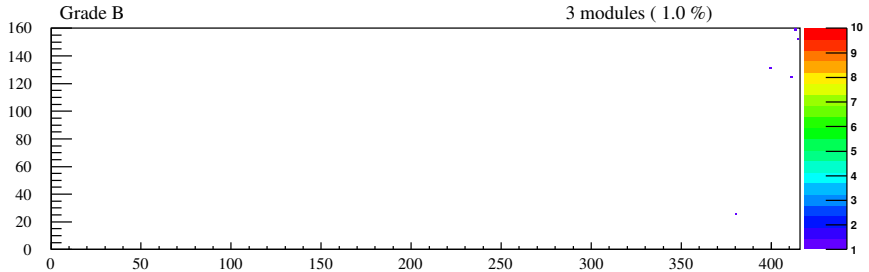
Defective pixel $T = -10^oC$ (ATC)

Overlay of all fully tested modules at T = -10^o C (ATC)

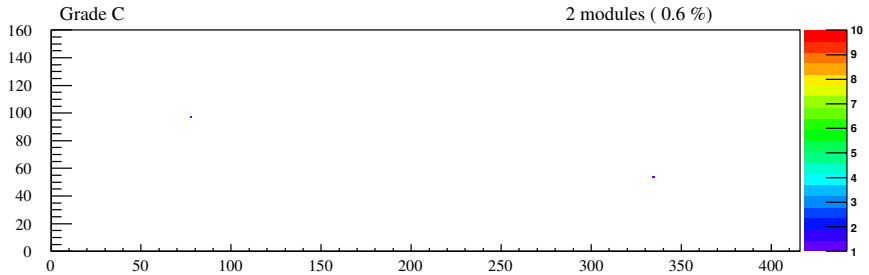
Grade A
(8 modules)



Grade B
(3 modules)



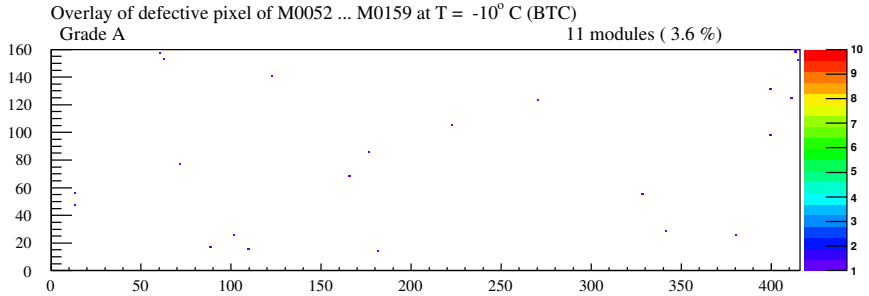
Grade C
(2 modules)



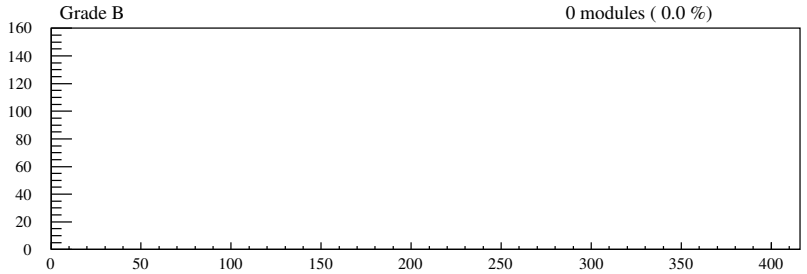
Defective pixel $T = -10^oC$ (BTC)

Overlay of all fully tested modules at T = -10^o C (BTC)

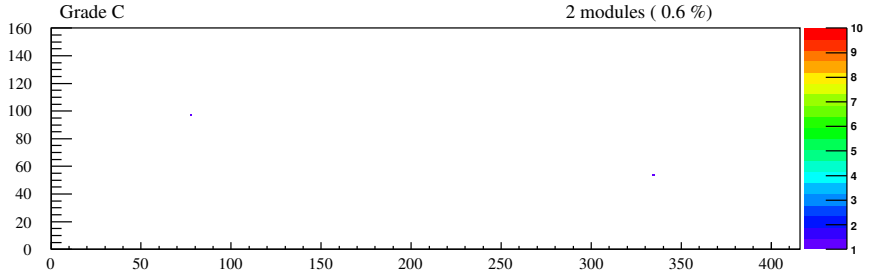
Grade A
(11 modules)



Grade B
(0 modules)



Grade C
(2 modules)



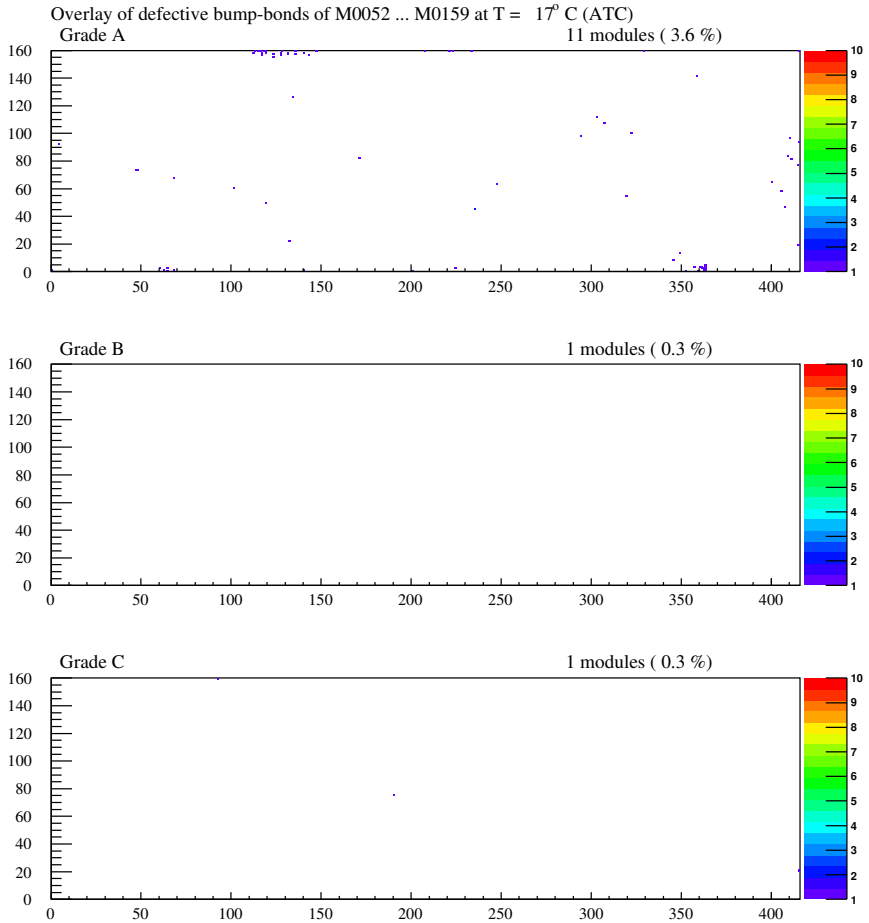
Defective bump-bonds $T = 17^{o}C$ (ATC)

Overlay of all fully tested modules at T = $+17^{o}$ C (ATC)

Grade A
(11 modules)

Grade B
(1 modules)

Grade C
(1 modules)



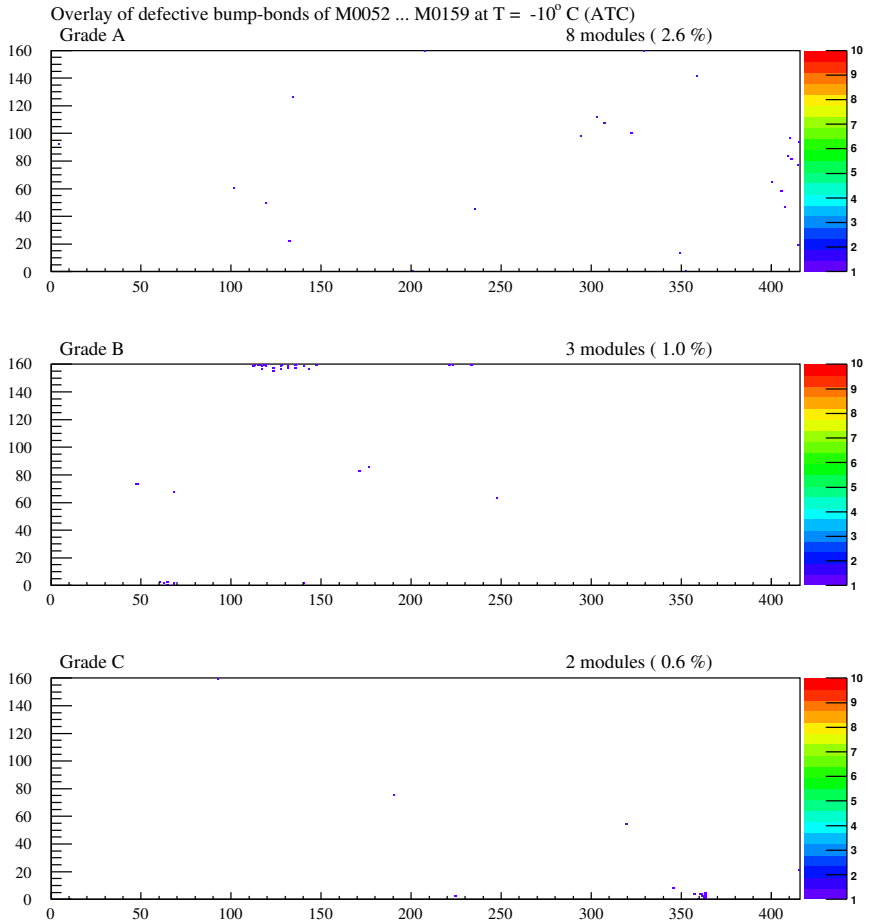
Defective bump-bonds $T = -10^{o}C$ (ATC)

Overlay of all fully tested modules at T = -10^{o} C (ATC)

Grade A
(8 modules)

Grade B
(3 modules)

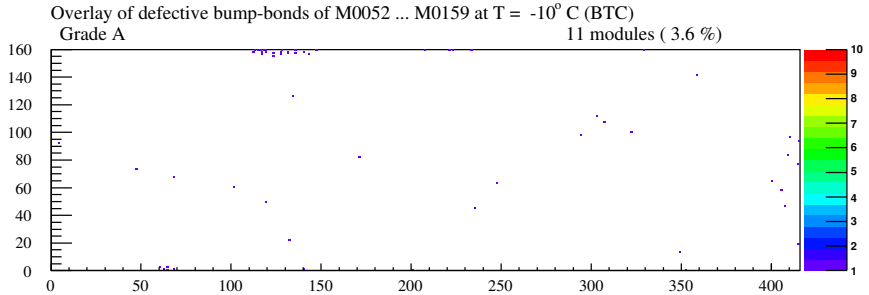
Grade C
(2 modules)



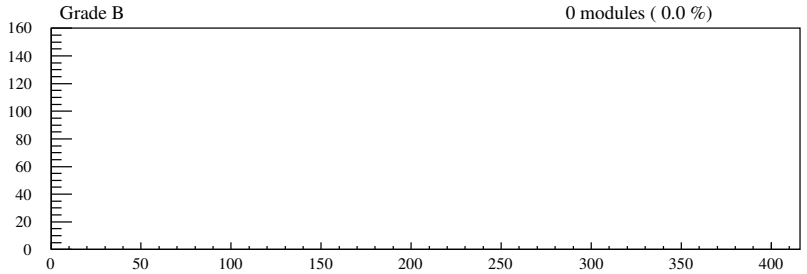
Defective bump-bonds $T = -10^{o}C$ (BTC)

Overlay of all fully tested modules at T = -10^{o} C (BTC)

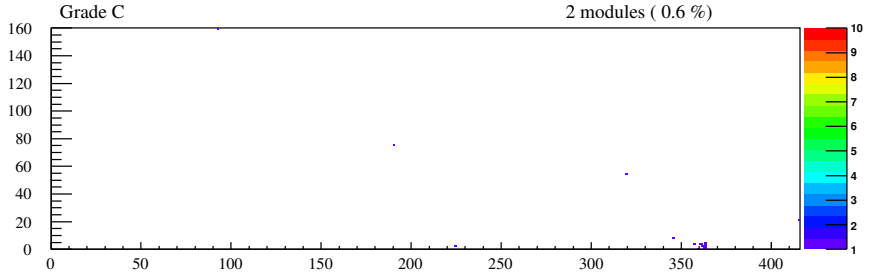
Grade A
(11 modules)



Grade B
(0 modules)

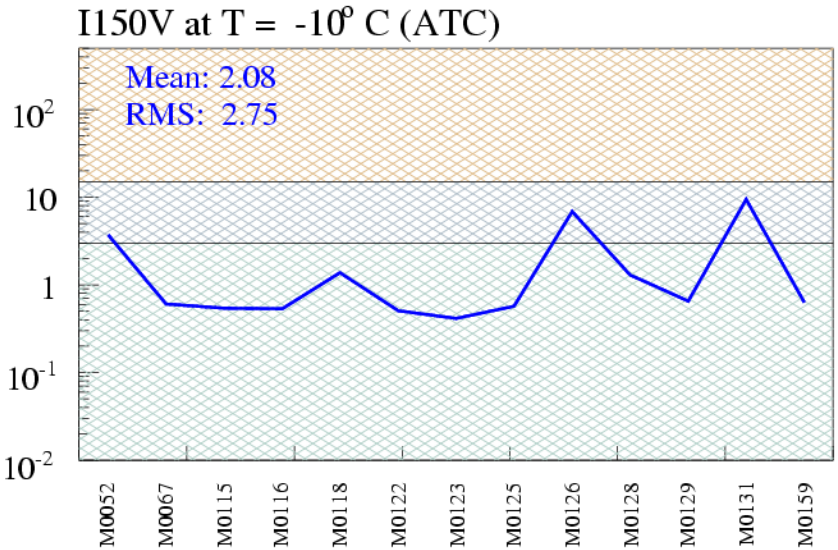


Grade C
(2 modules)

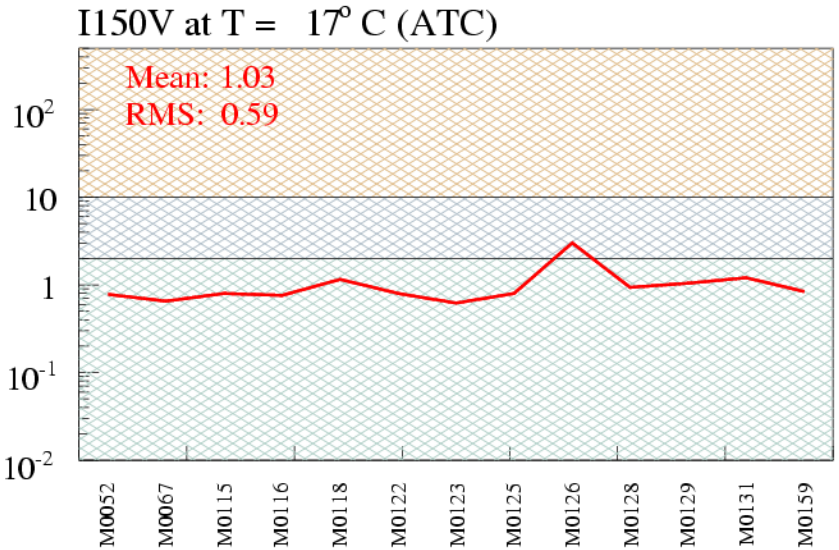


Current at 150 V

Current at 150 V (in μA) at $T = 17^oC$ and $T = -10^oC$



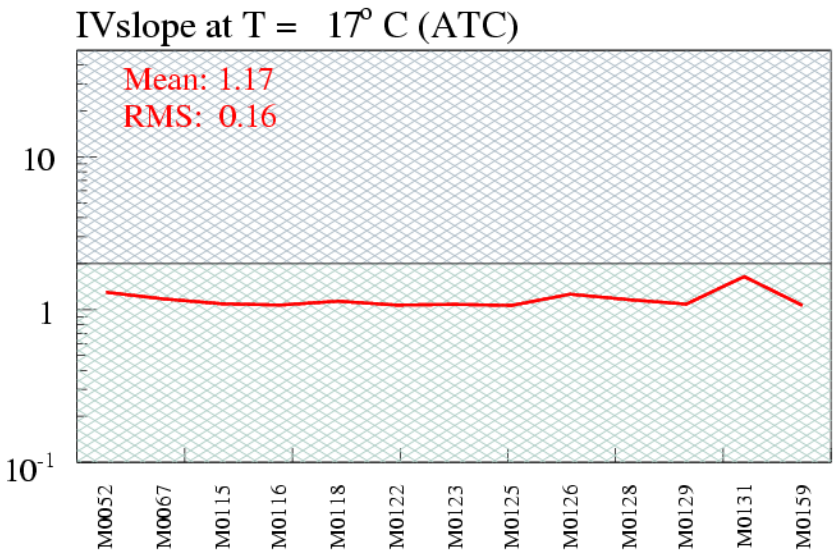
recalculated

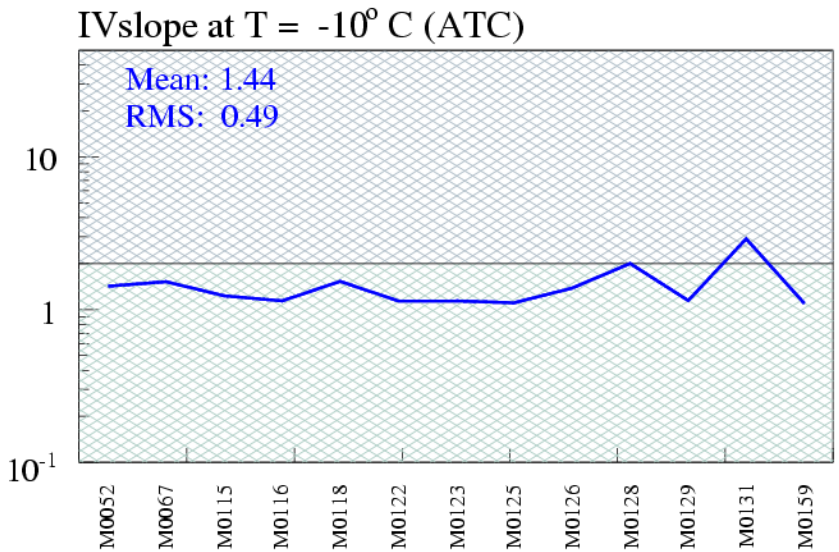


measured

Slope of IV-Curve

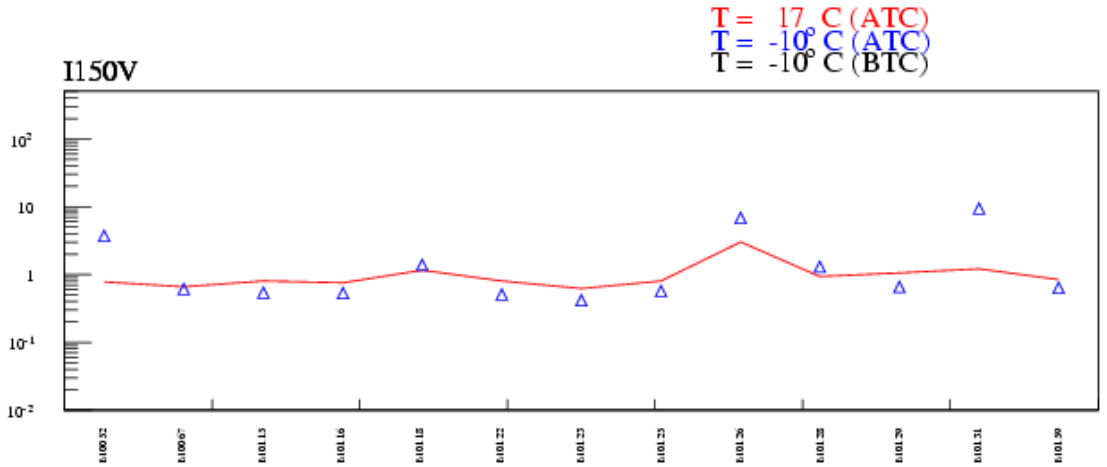
Slope of IV-Curveat $T = 17^oC$ and $T = -10^oC$

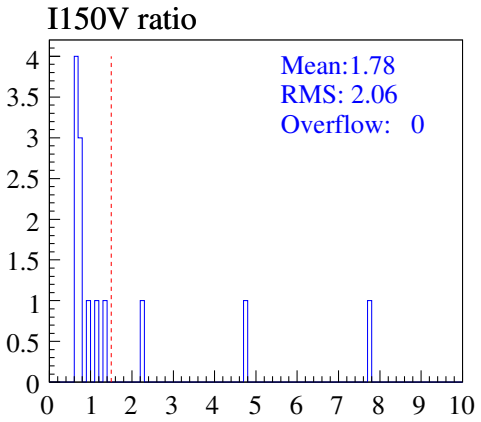


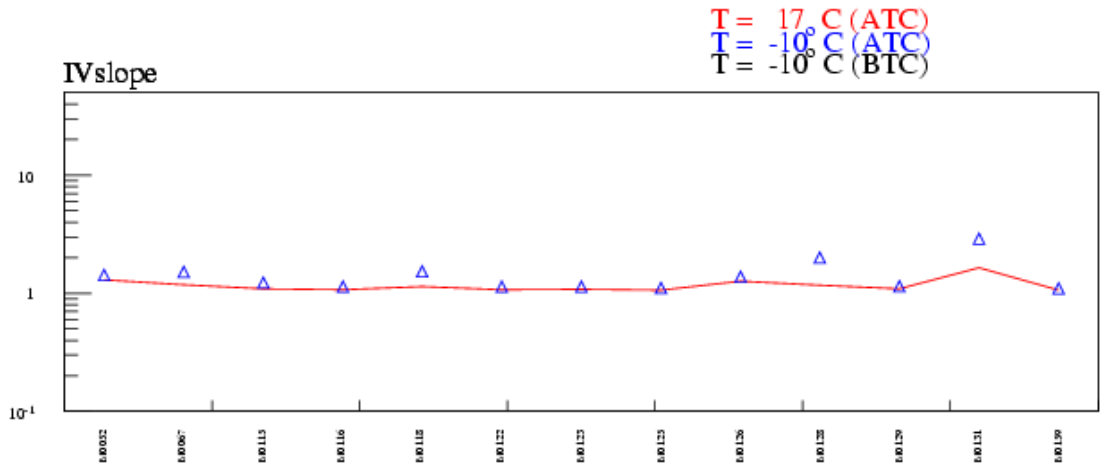


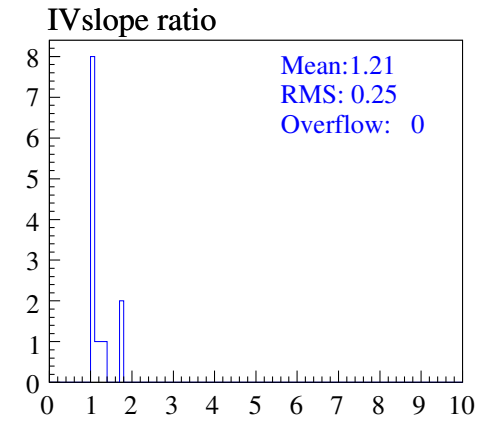
Current recalculation to $T = 17^oC$

Cross check of recalculated values with measured values

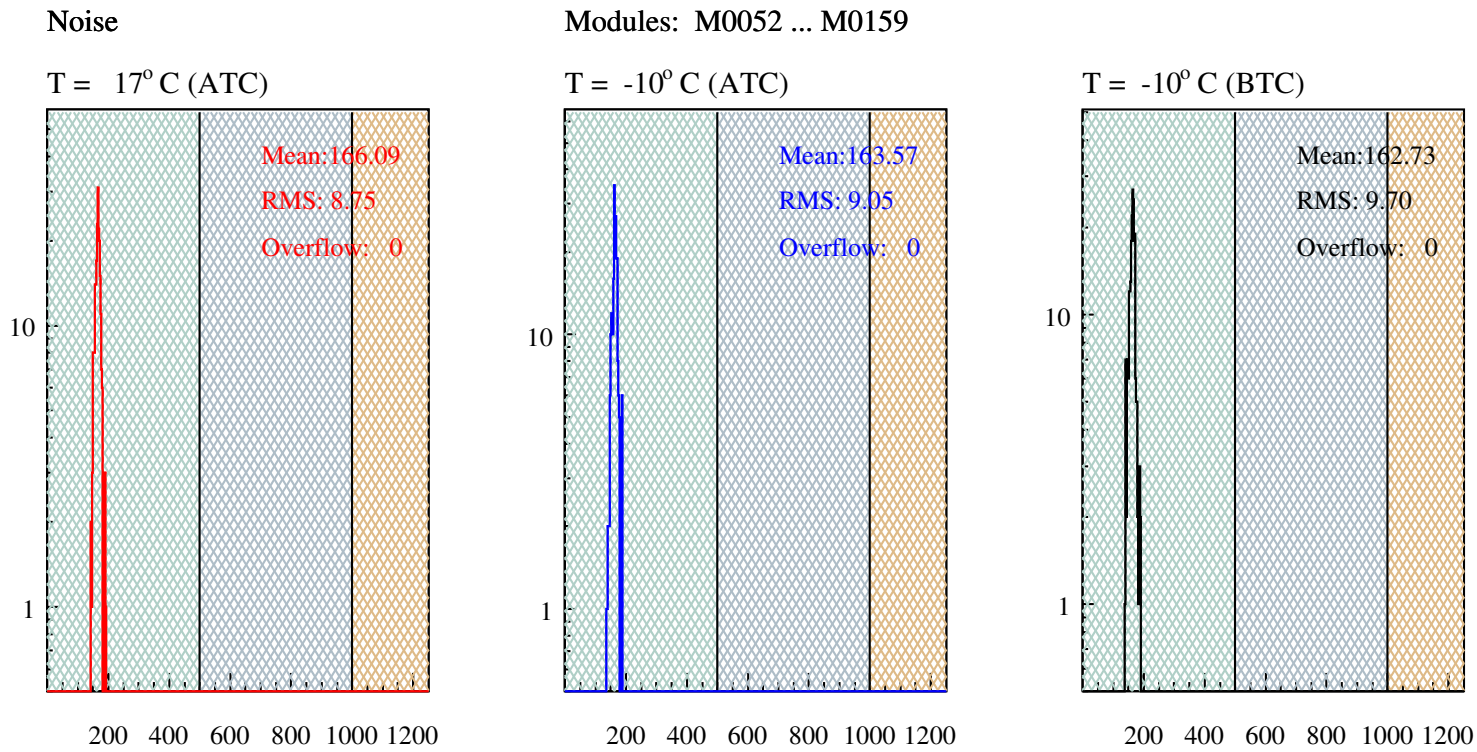








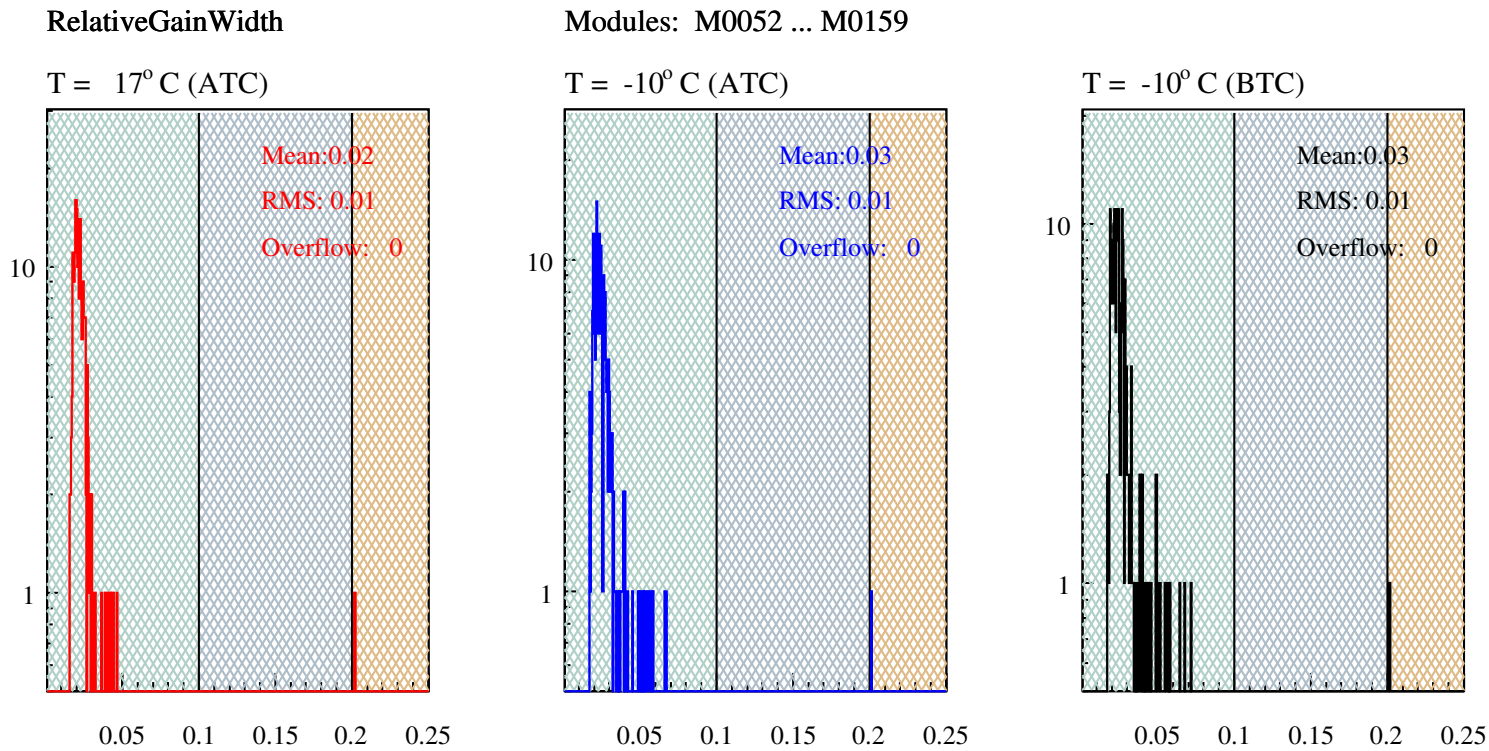
MeanNoise of chips



Noise in e^-

Relative Gain Width

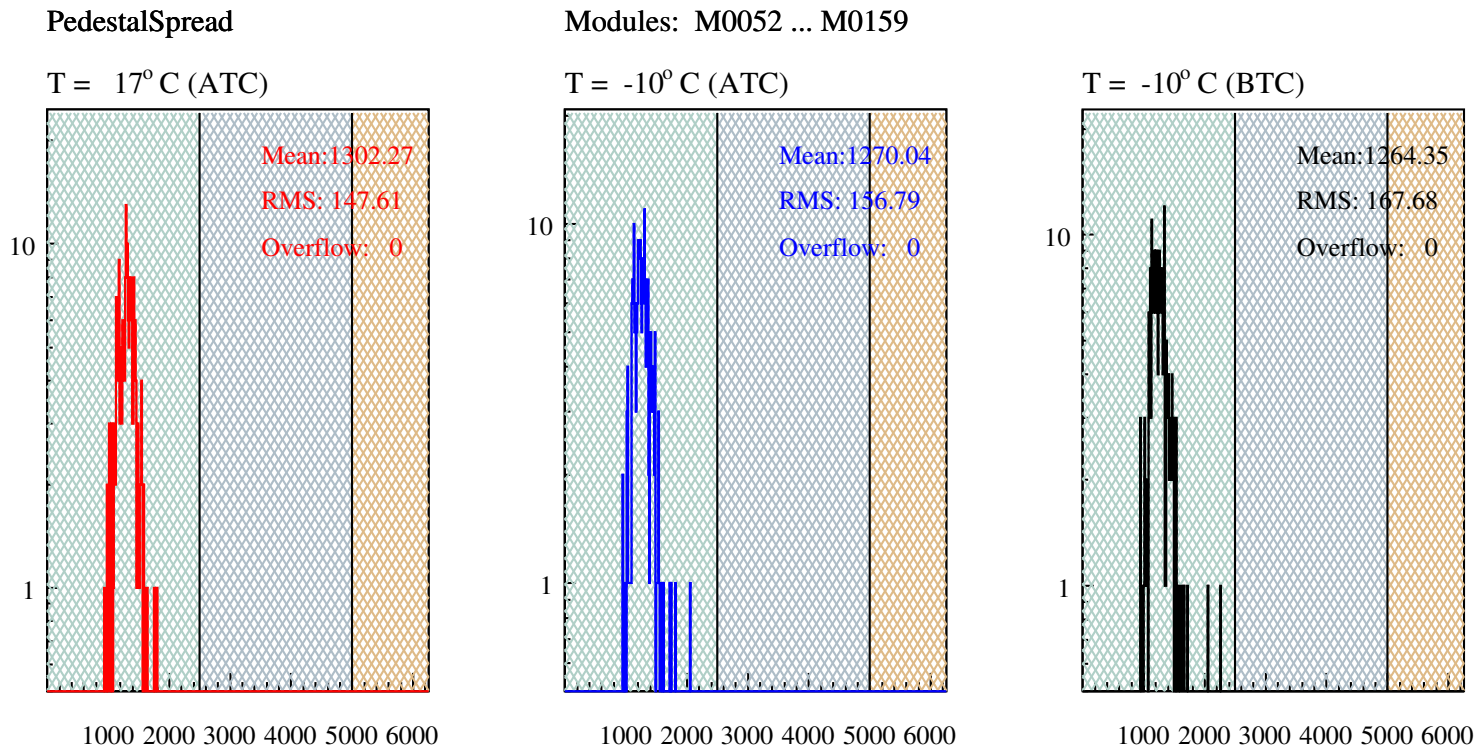
RelativeGainWidth of chips



Rel. Gain Width in %

Pedestal Spread

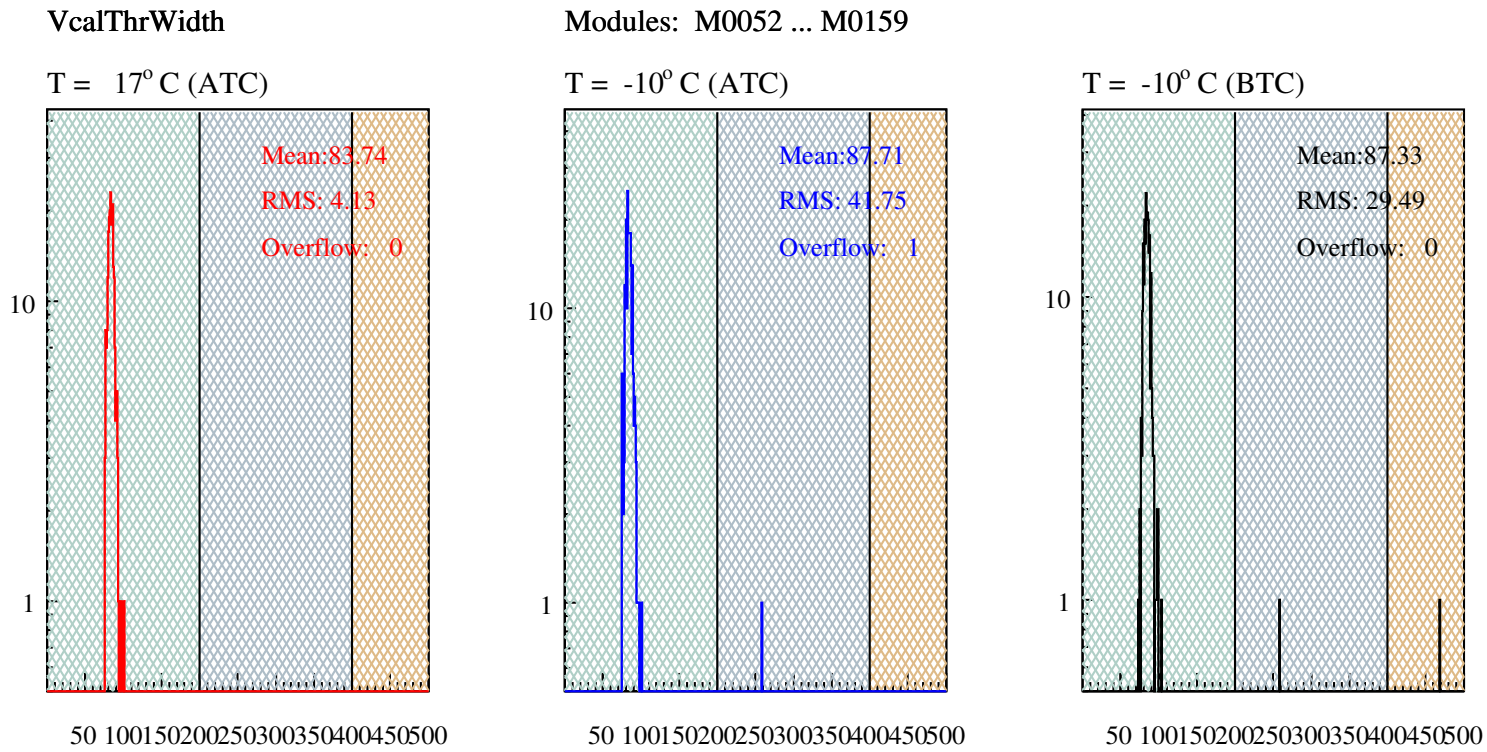
PedestalSpread of chips



Pedestal Spread in e^-

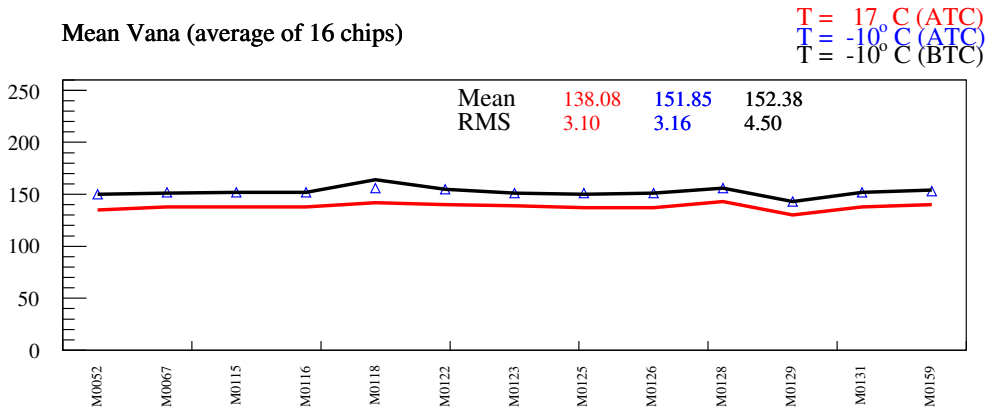
Vcal Threshold Width

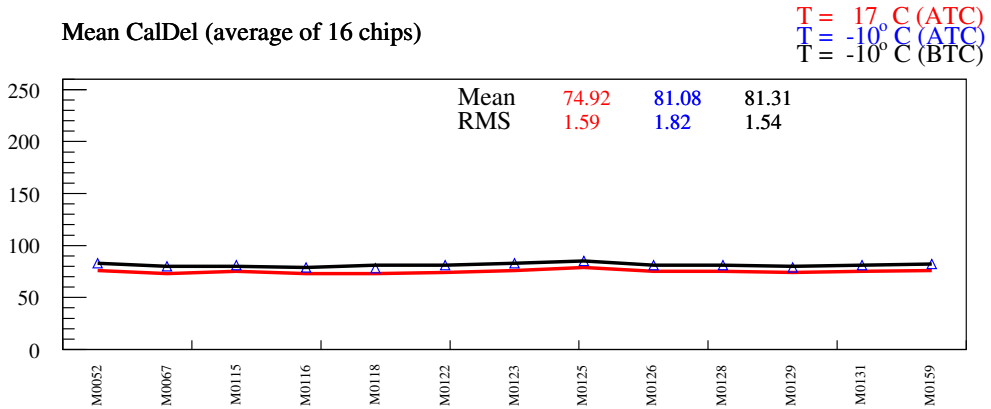
VcalThresholdWidth of chips



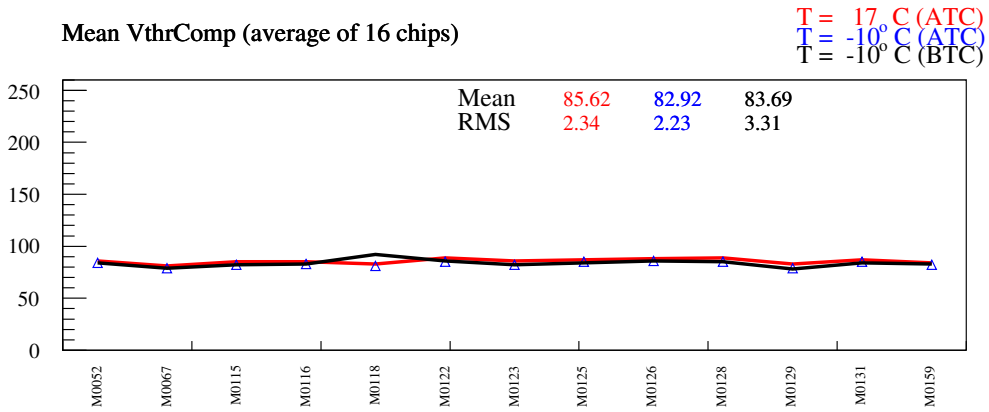
Operational parameters I

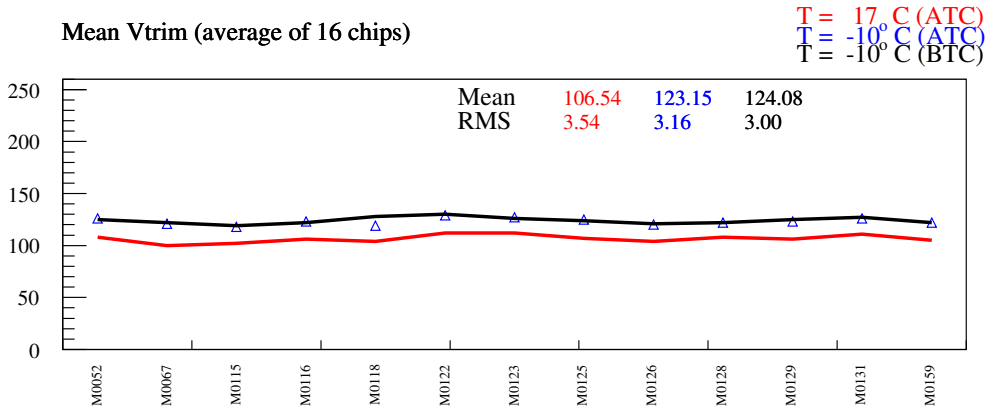
Mean DACs I





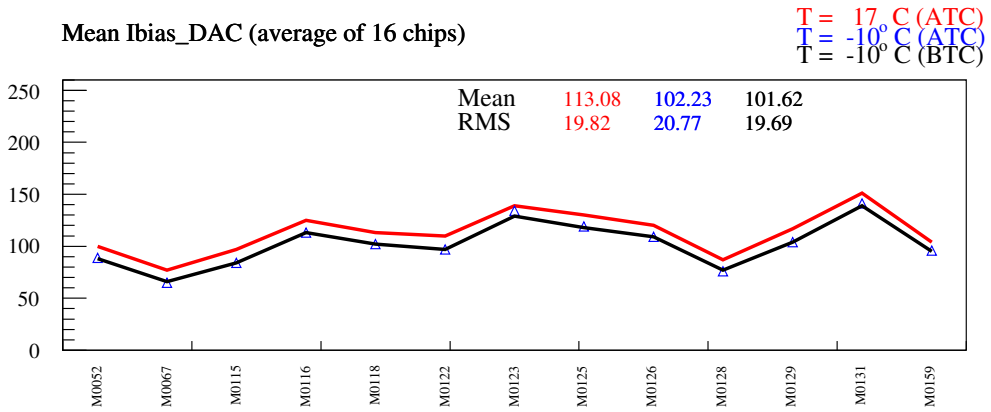
Mean DACs II

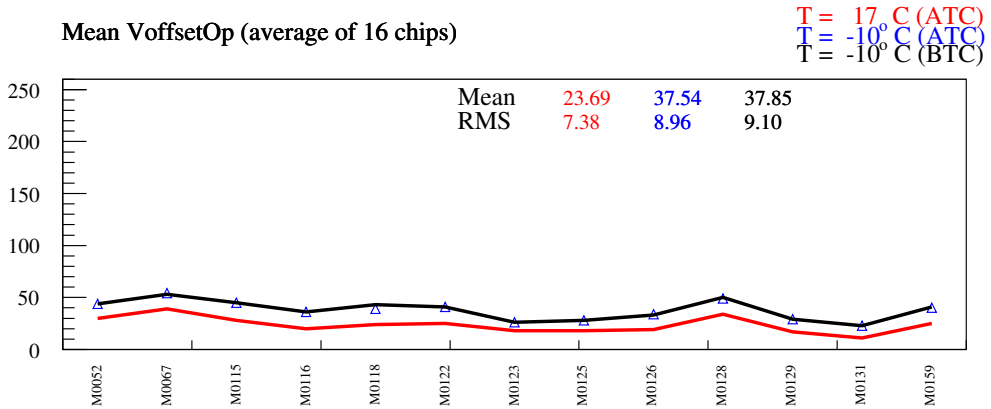

Mean VthrComp (average of 16 chips)
T = 17 C (ATC)
T = -10° C (ATC)
T = -10° C (BTC)
Mean 85.62 82.92 83.69
RMS 2.34 2.23 3.31
250
200
150
100
50
0
M0052
M0067
M0115
M0116
M0118
M0122
M0123
M0125
M0126
M0128
M0129
M0131
M0159


Mean Vtrim (average of 16 chips)
T = 17 C (ATC)
T = -10° C (ATC)
T = -10° C (BTC)
Mean 106.54 123.15 124.08
RMS 3.54 3.16 3.00
250
200
150
100
50
0
M0052
M0067
M0115
M0116
M0118
M0122
M0123
M0125
M0126
M0128
M0129
M0131
M0159

Operational parameters III

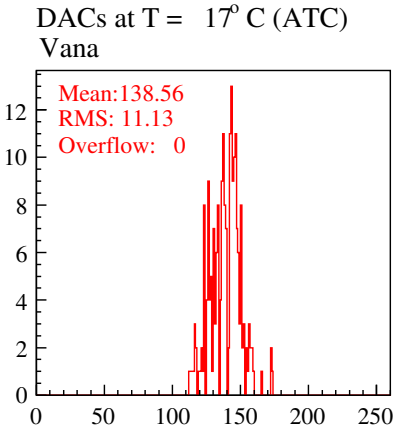
Mean DACs III

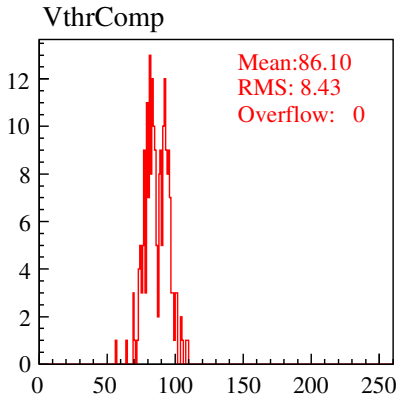


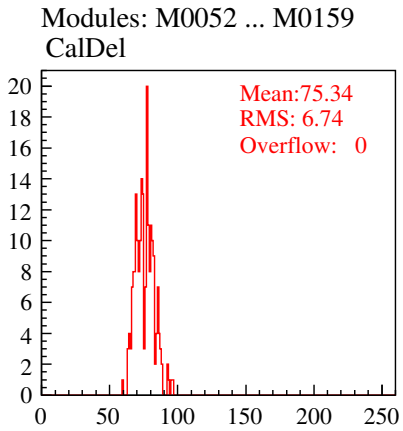


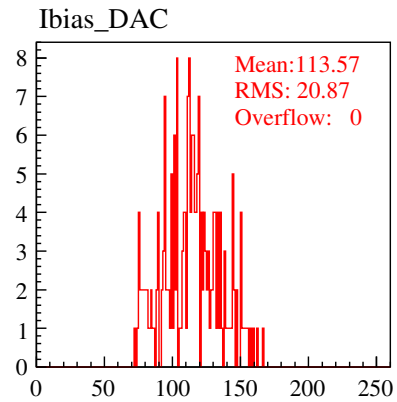
Operational parameters at $T = +17^{o}C$ (ATC)

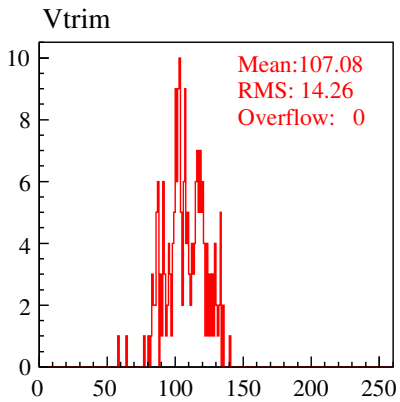
DAC distribution (of chips)

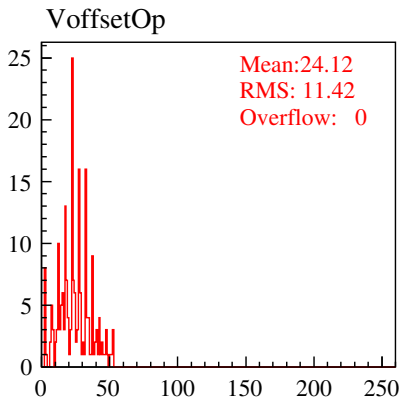






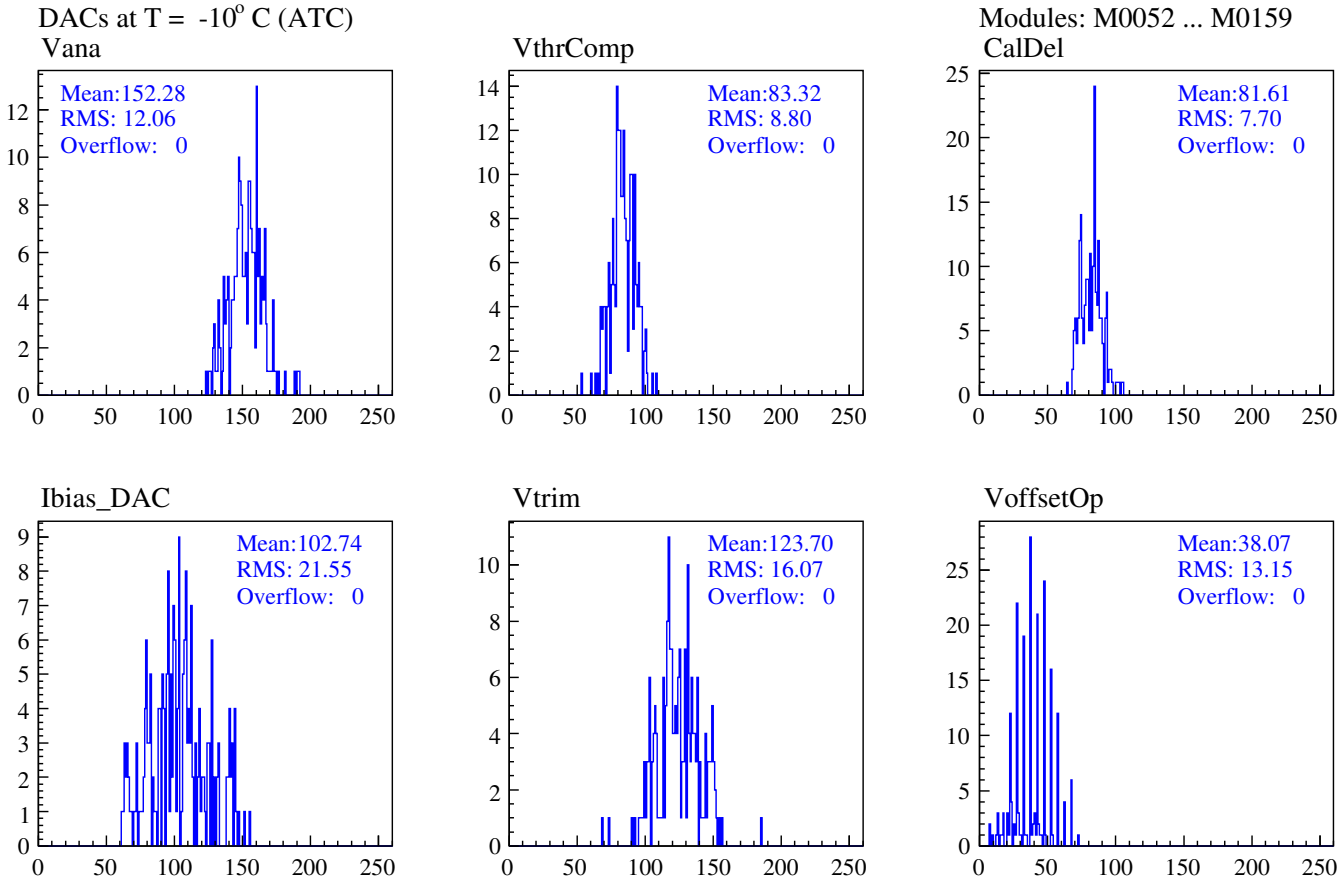






Operational parameters at $T = -10^oC$ (ATC)

DAC distribution (of chips)



Operational parameters at $T = +17^{o}C$ (BTC)

DAC distribution (of chips)