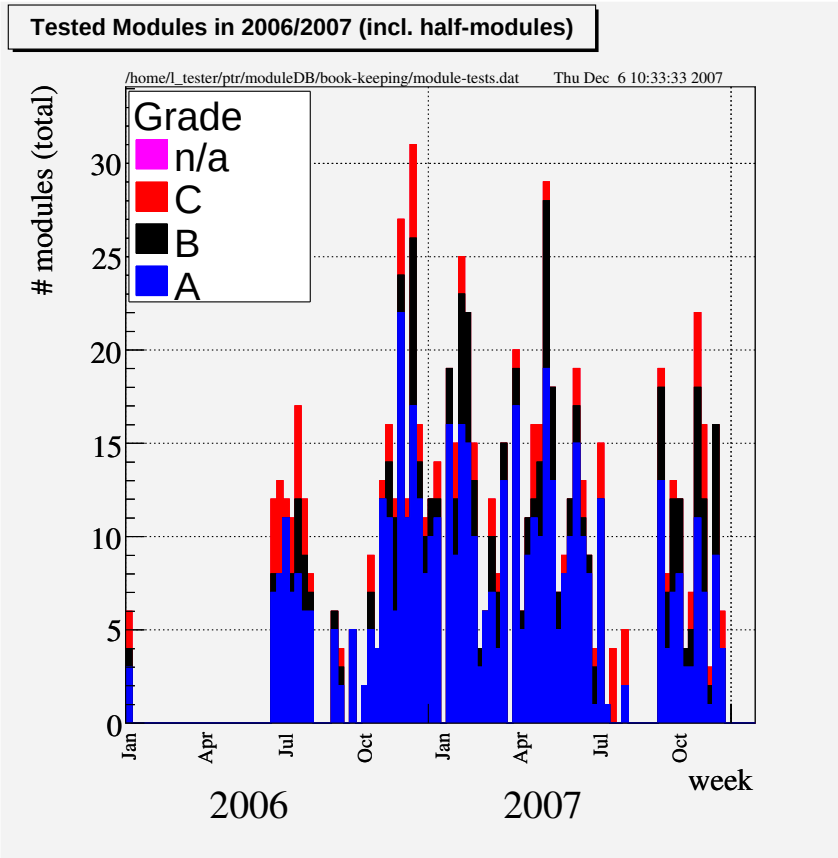
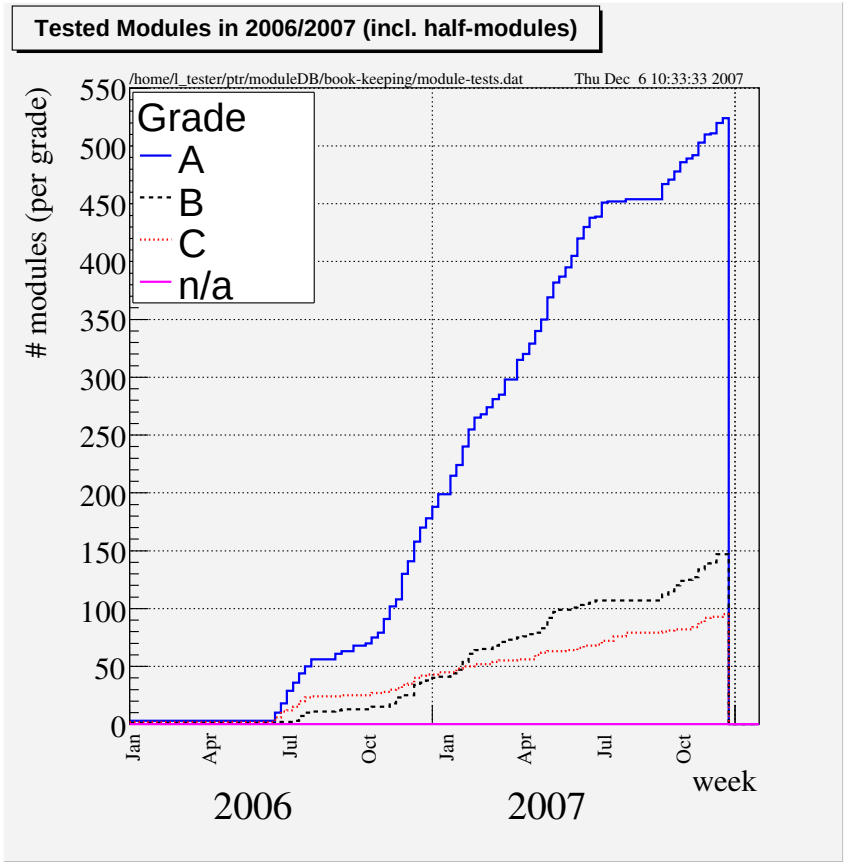
BPIX Module Testing Status - 2007

6th December 2007

Production Overview





Production overview

Production Status: 883 modules produced (762 full/ 121 half)

- 523/145 graded as A/B → 88% | 87/23 → 91%
- 94 graded as C → 12% | 11 → 9%

Module Testing Report of 2007:

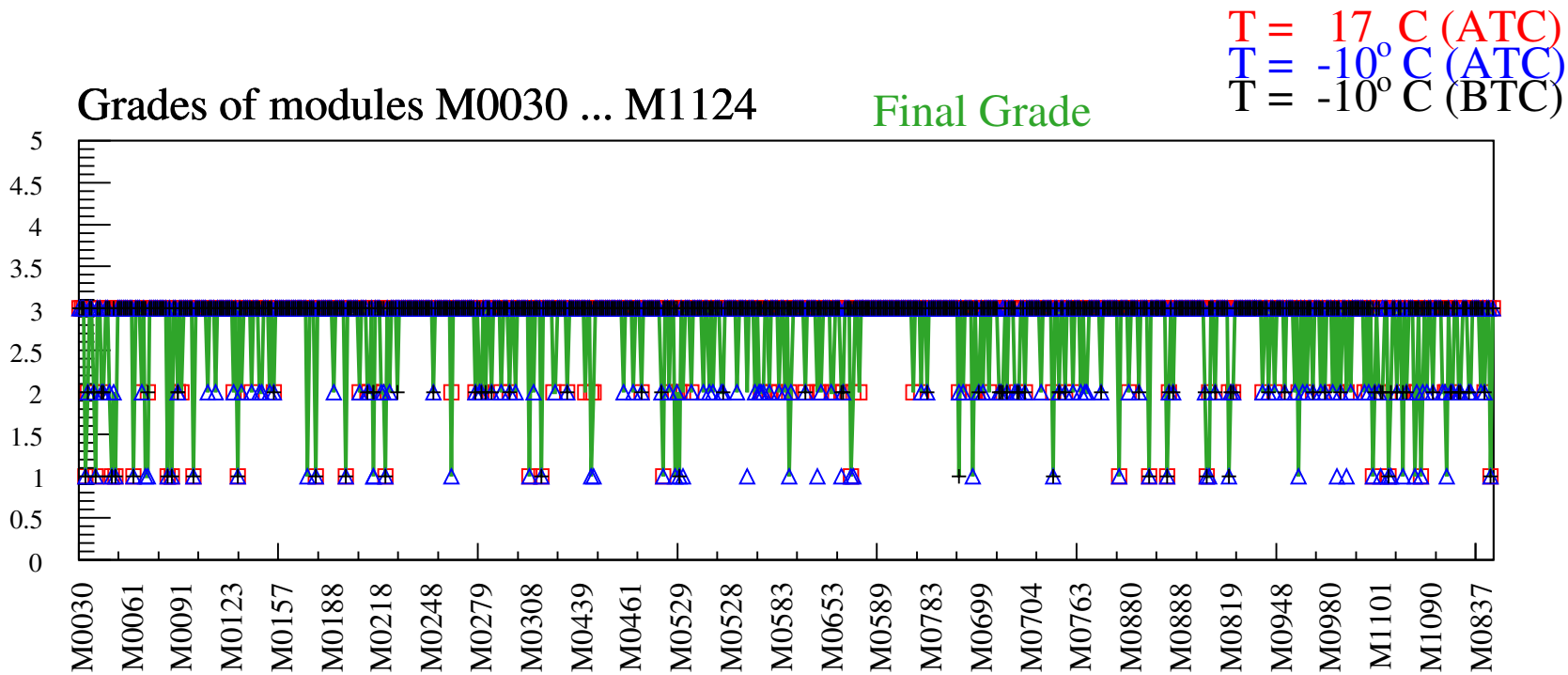
- 708 modules fully tested and therm. cycled (62 retested)

	Modules (708)			*Halfmodules* (119)		
Grade	**A**	**B**	**C**	**A**	**B**	**C**
T = -10^o C, BTC*	626	60	22	108	5	8
T = -10^o C, ATC	535	122	51	94	18	9
T = $+17^o$ C, ATC	605	79	24	98	13	10
Final Grade	523	143	42	87	23	9

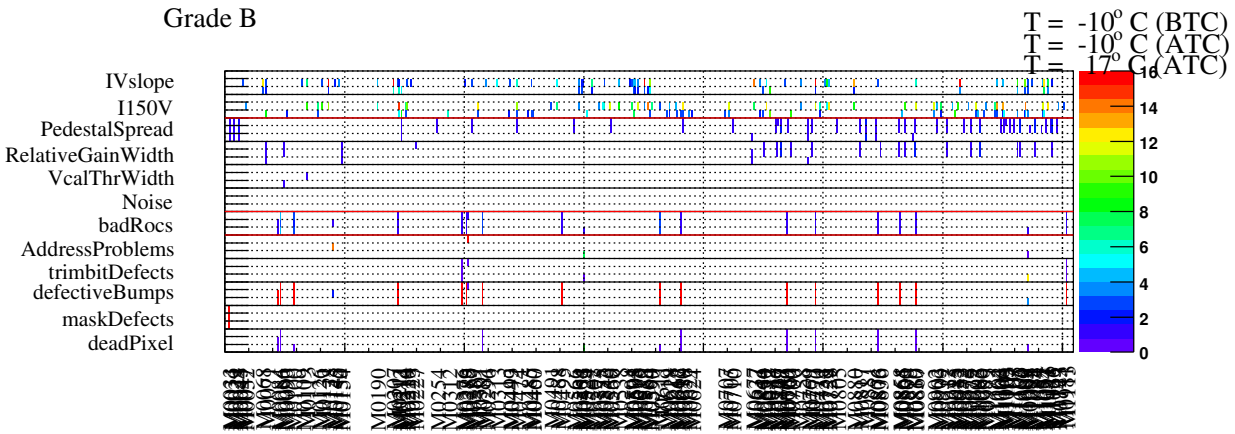
- 90 were retested with new DAC settings (7 change)

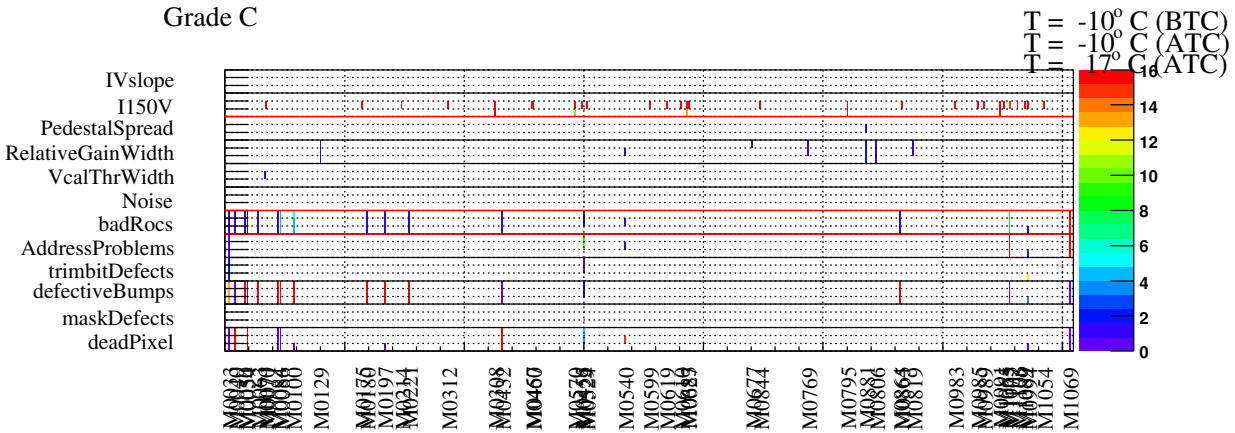
+ M0037: B -> A –> overall grades + M0043: C -> B –> overall grades + M0064: B -> A –> overall grades - M0070: A -> C –> overall grades - M0143: A -> B –> overall grades + M0067: B -> A –> overall grades - M0145: A -> B –> overall grades

Production summary



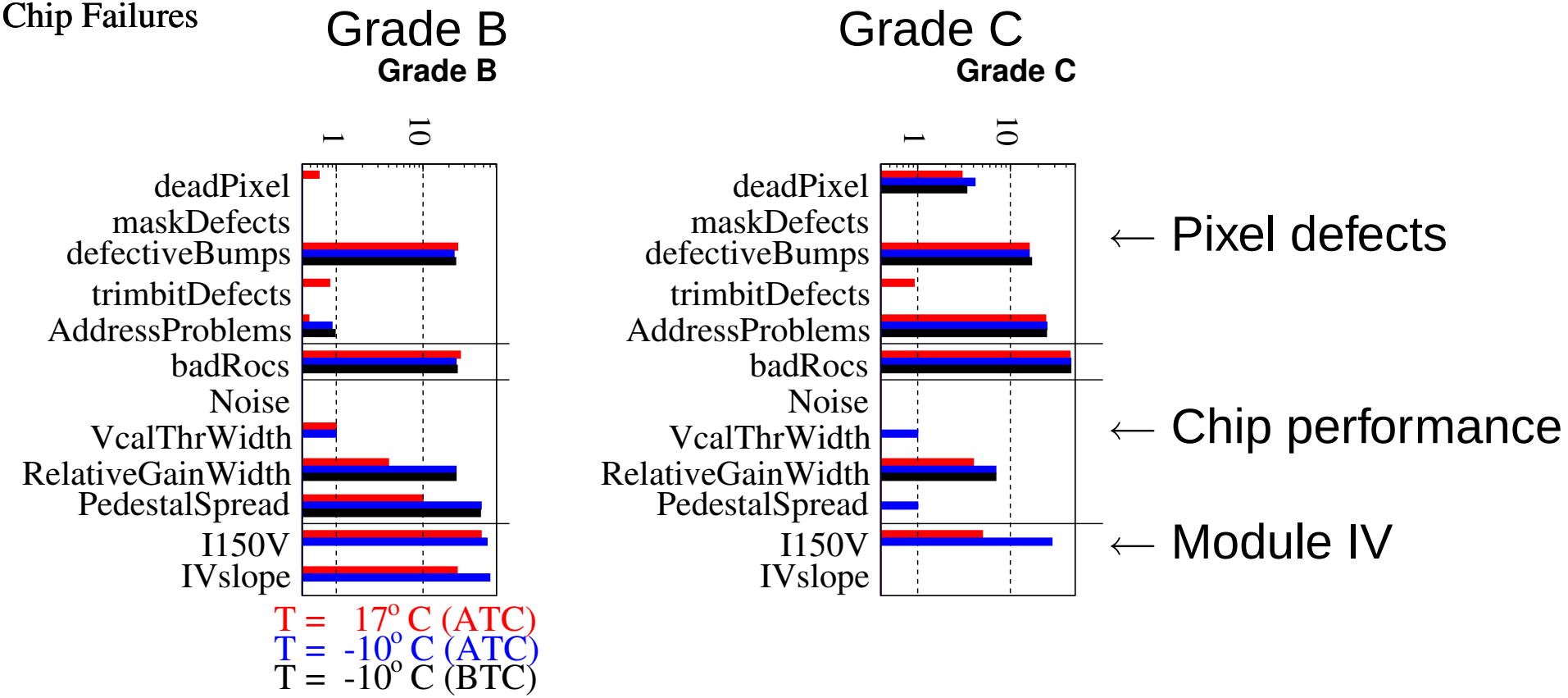
Module Failures Overview



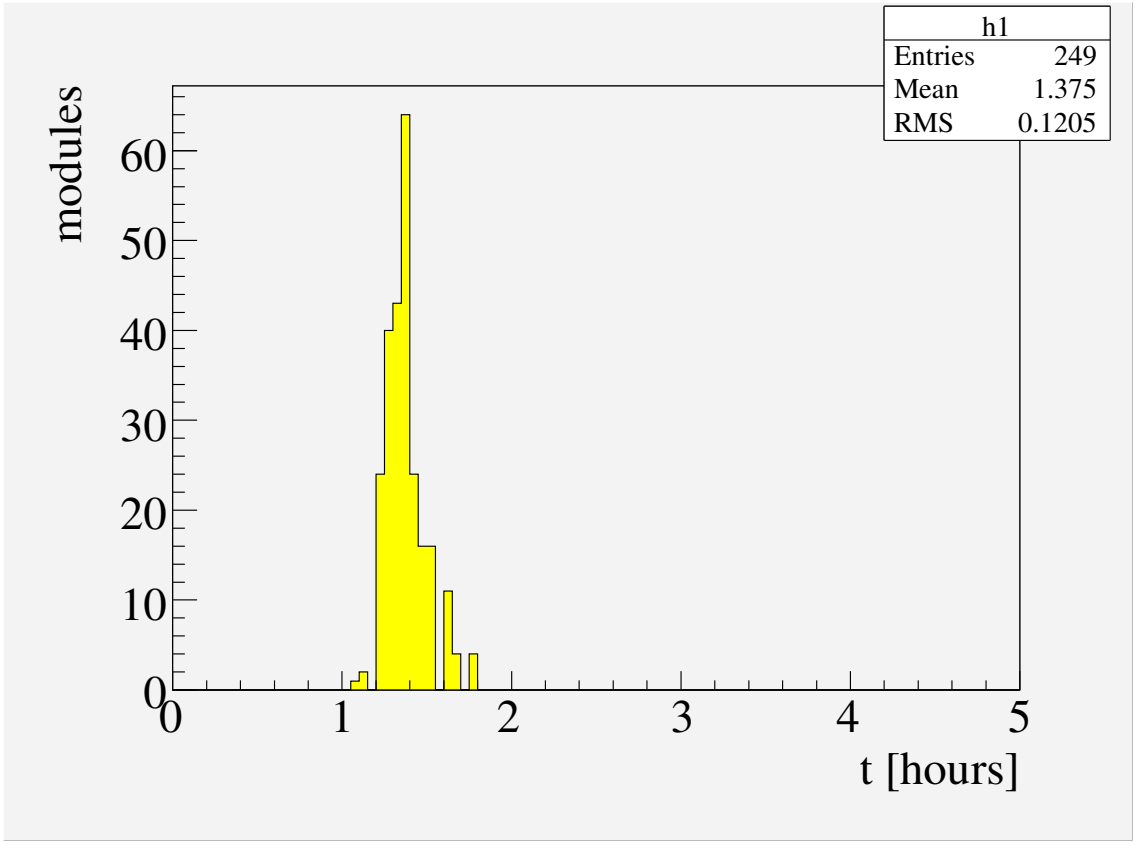


Production quality

Chip Failures



Test duration



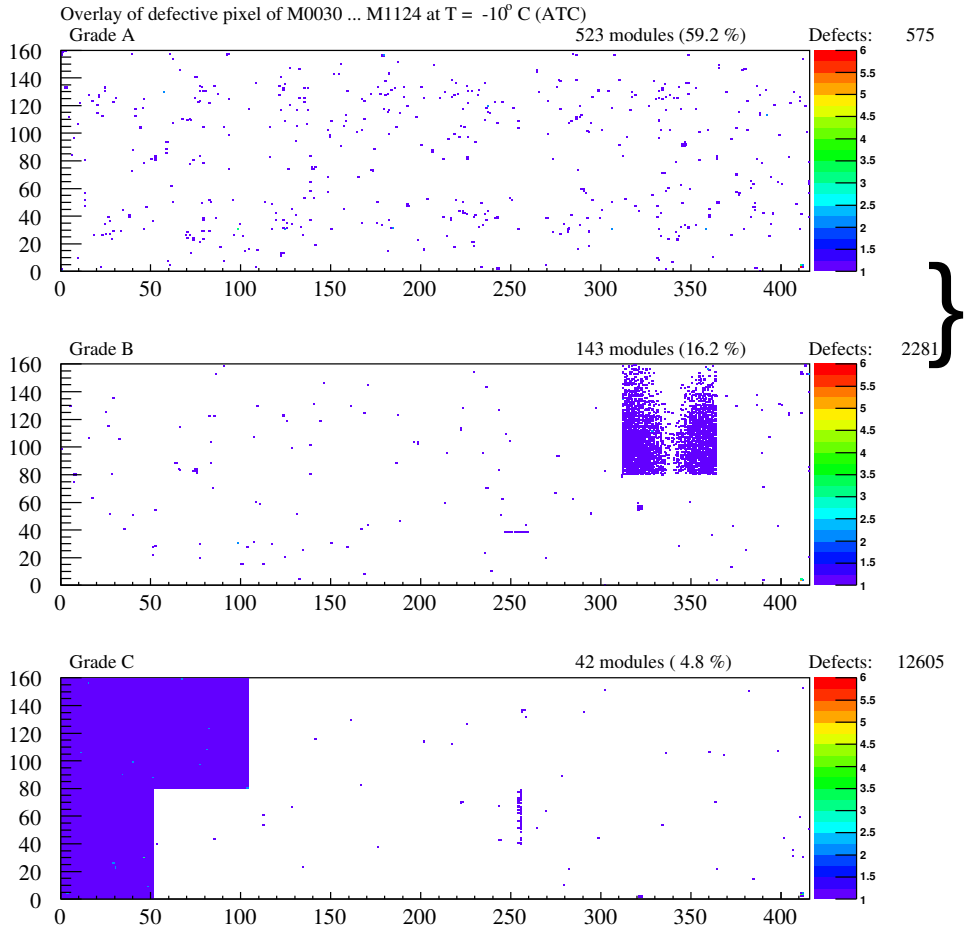
Dead pixel

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

Final Grade A
(523 modules)

Final Grade B
(143 modules)

Final Grade C
(42 modules)



} 44.3 Mio. Pixel

2.8 Mio. Pixel

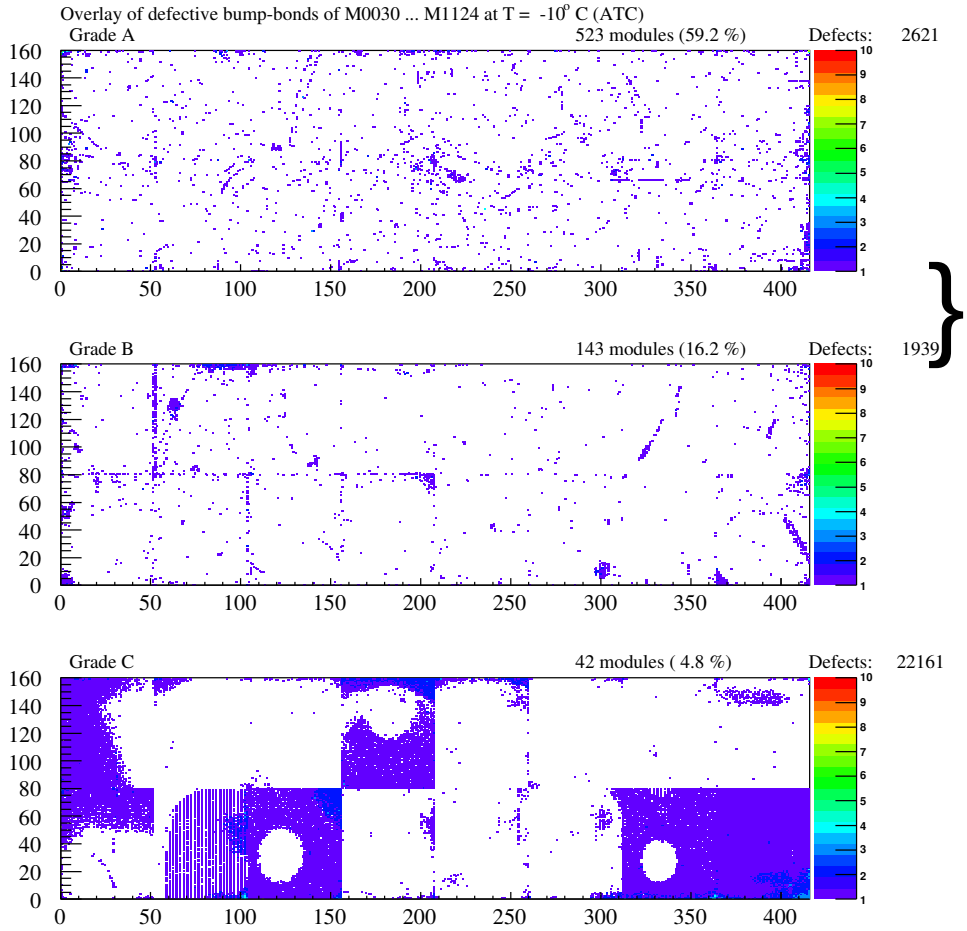
Defective bump-bonds

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

Final Grade A
(523 modules)

Final Grade B
(143 modules)

Final Grade C
(42 modules)

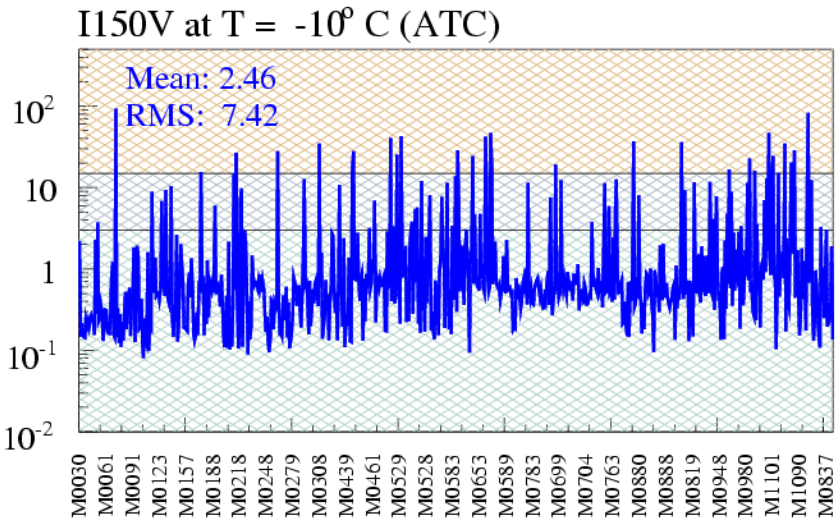


} 44.3 Mio. Pixel

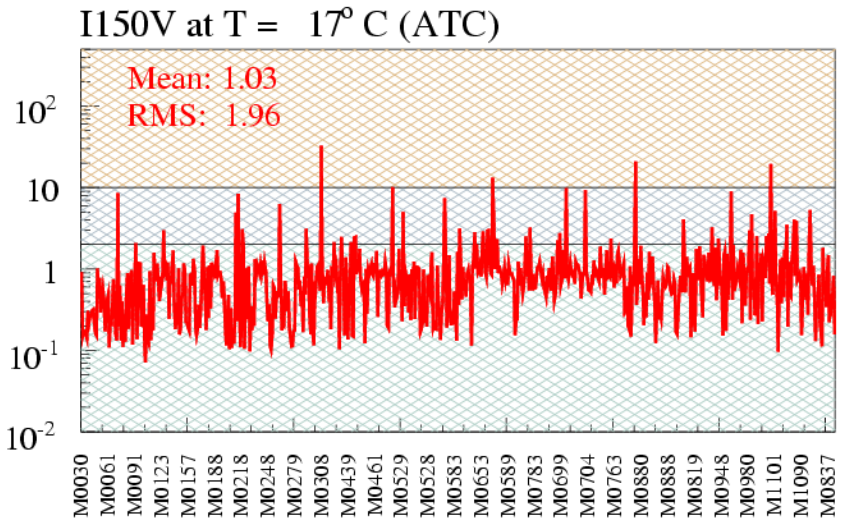
2.8 Mio. Pixel

Current at 150 V

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



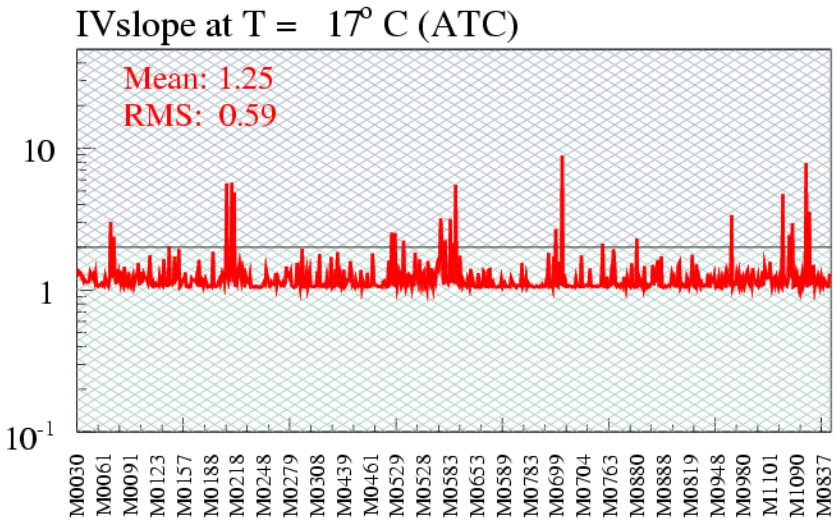
recalculated

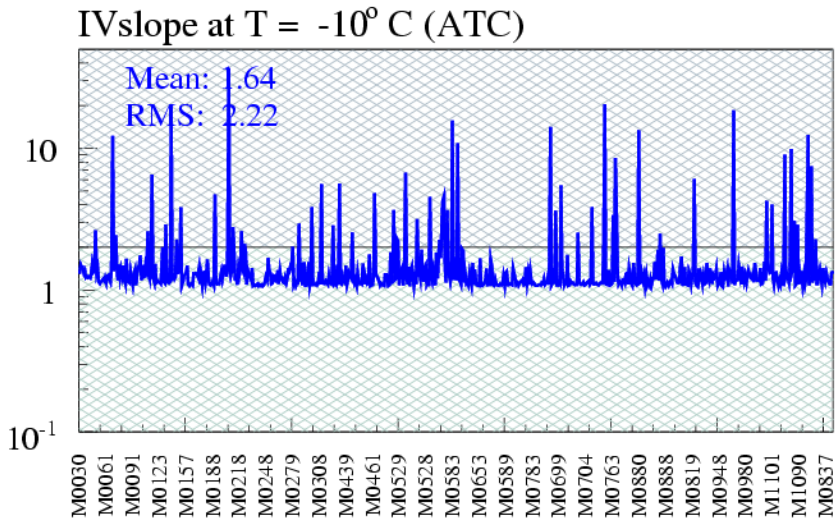


measured

Slope of IV-Curve

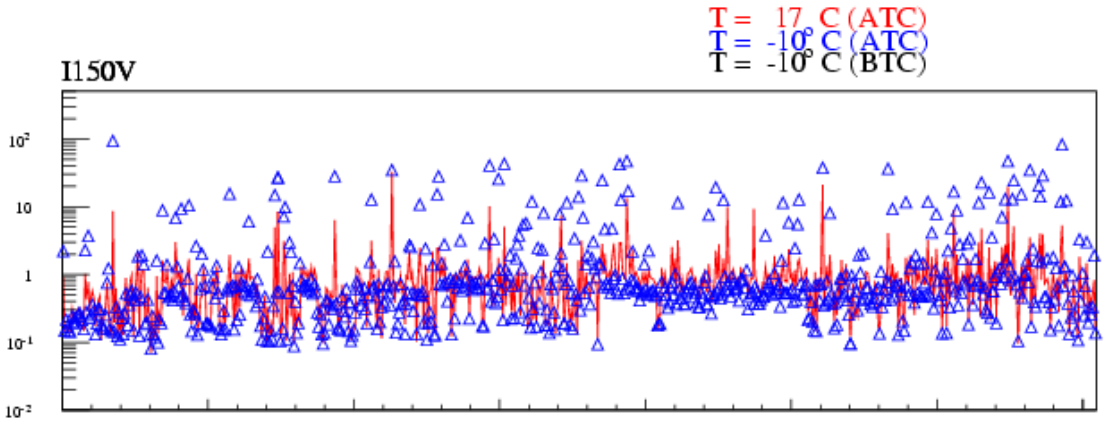
Slope of IV-Curveat $T = 17^oC$ and $T = -10^oC$

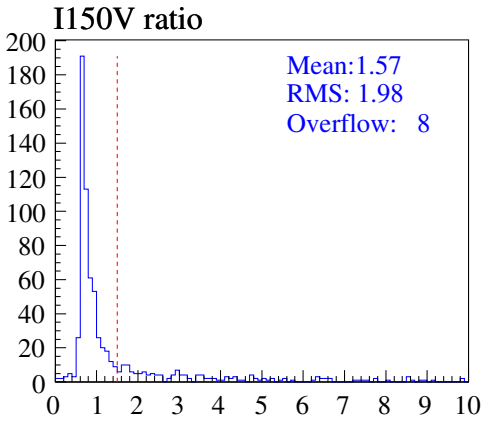


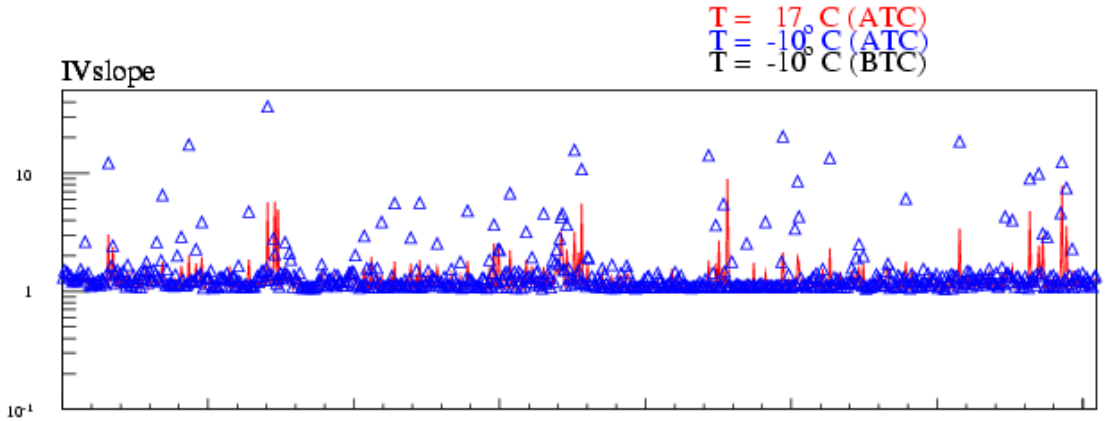


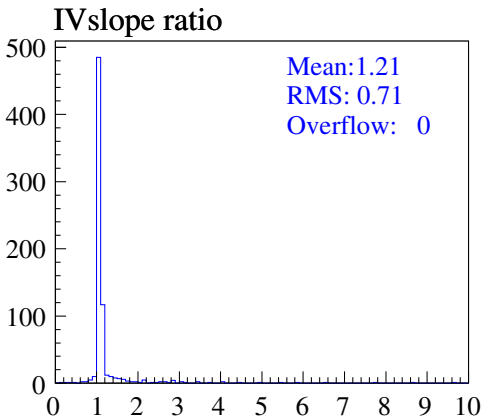
Current recalculation to $T = 17^oC$

Cross check of recalculated values with measured values



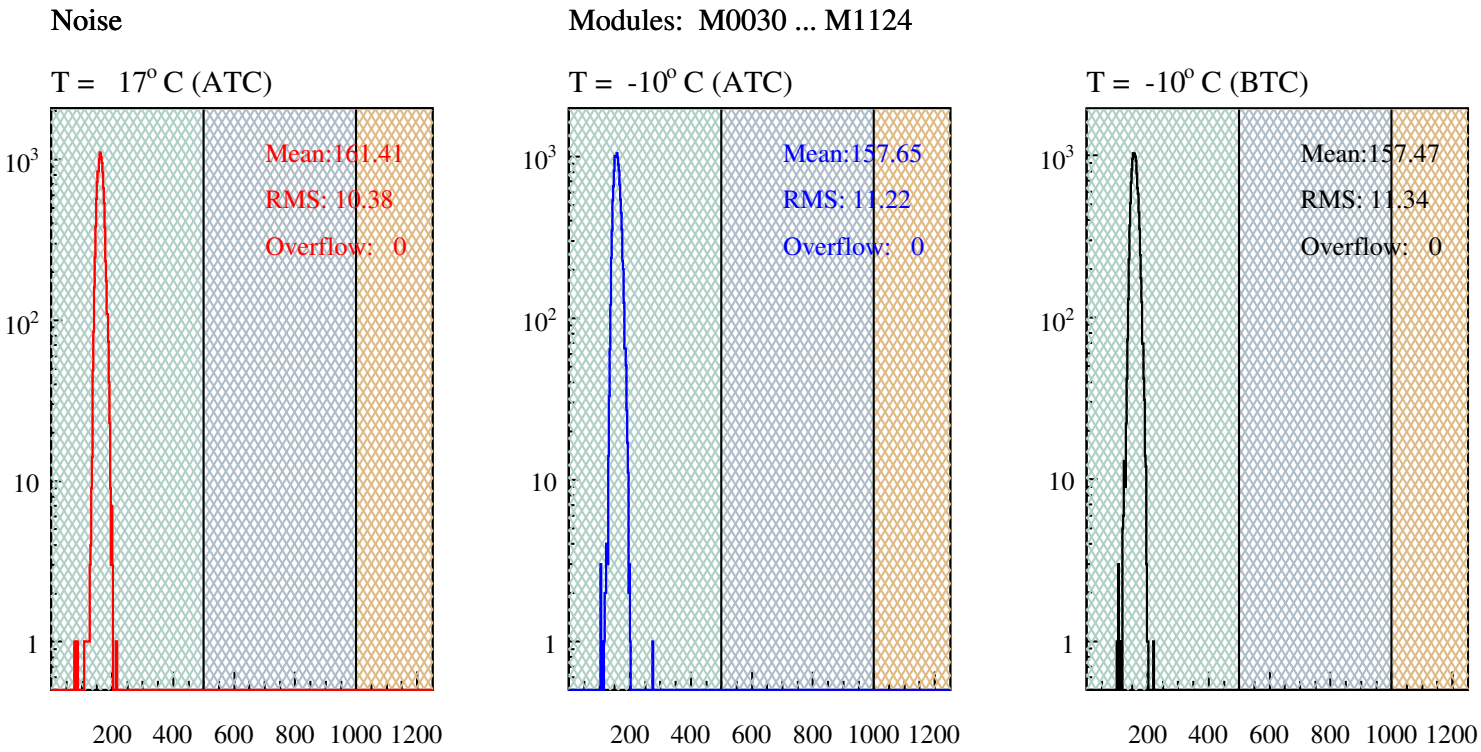






Noise

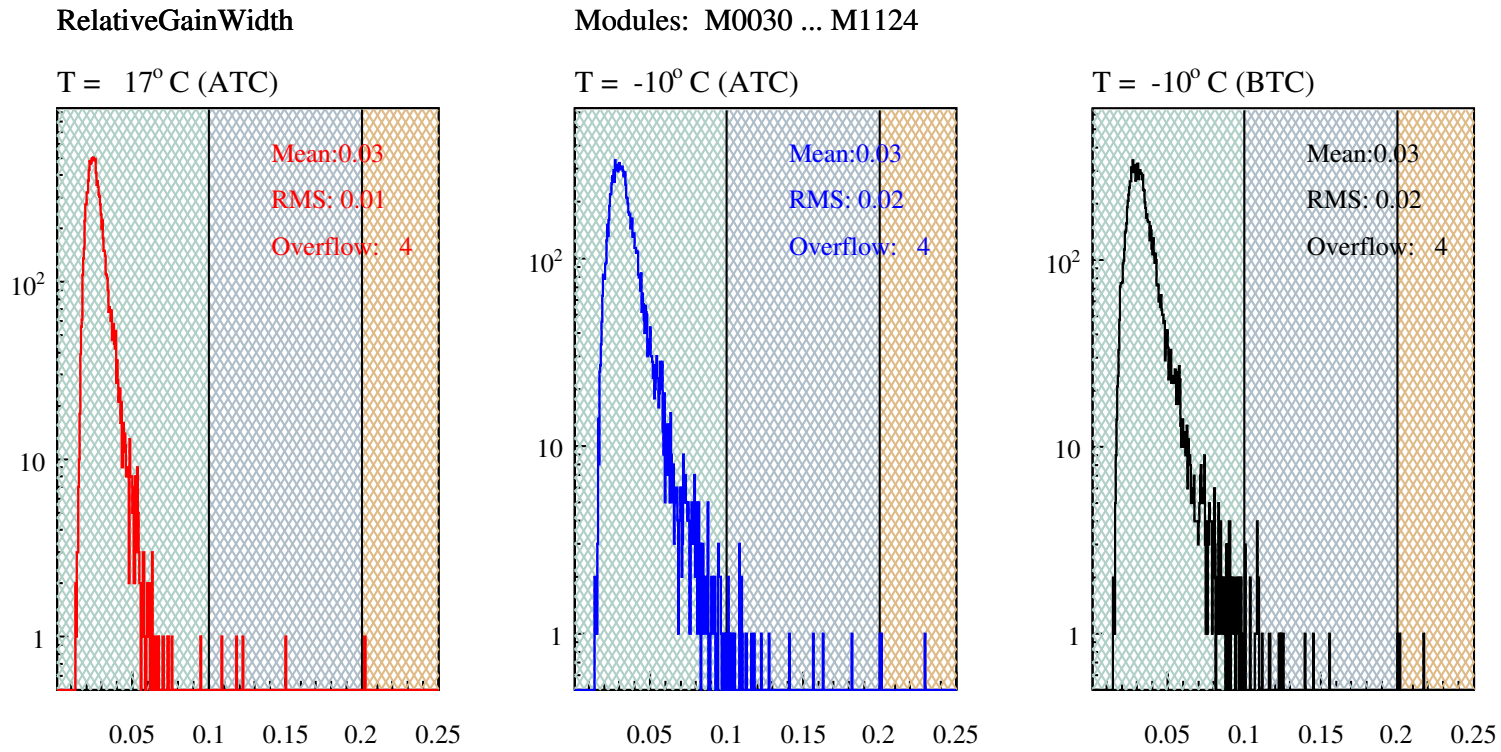
MeanNoise of chips



Noise in e^-

Relative Gain Width

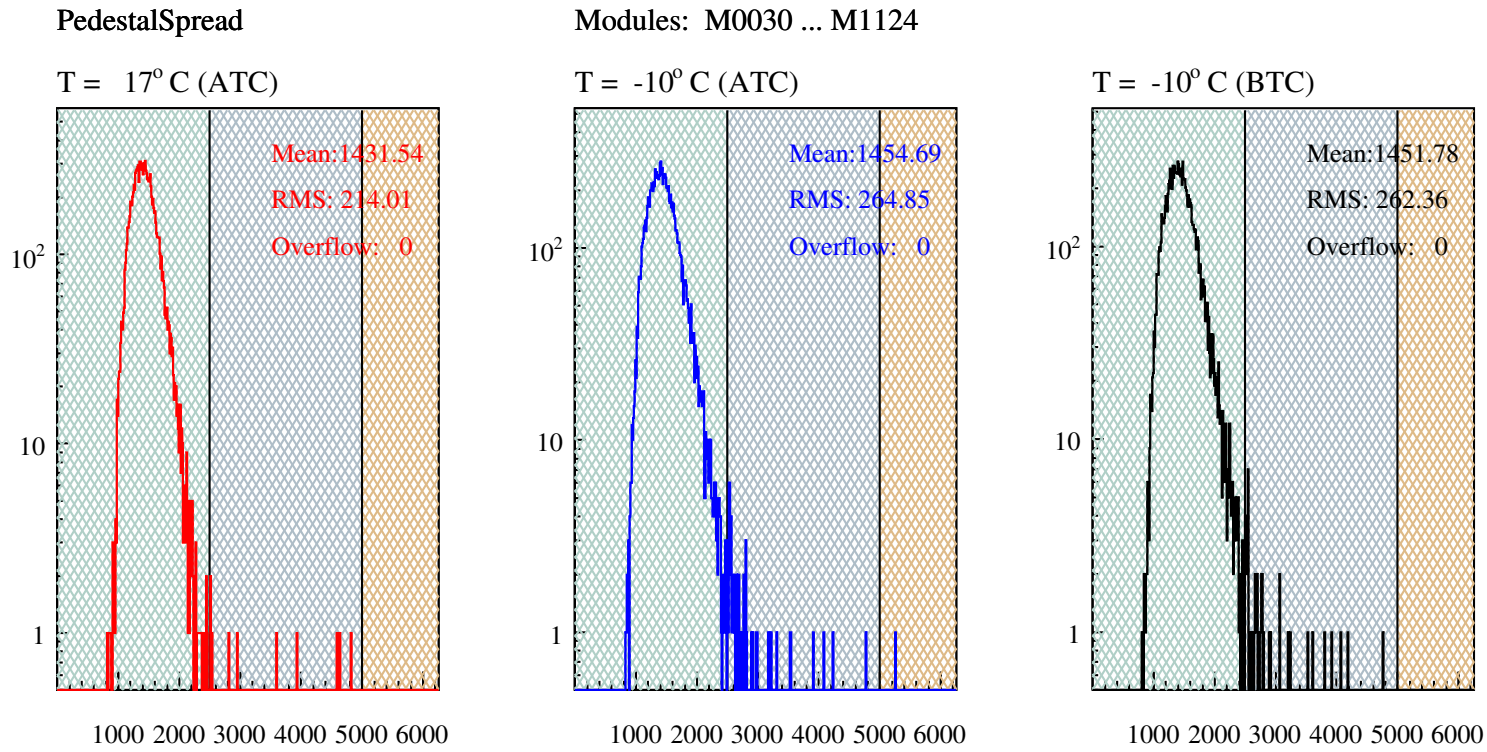
RelativeGainWidth of chips



Rel. Gain Width in %

Pedestal Spread

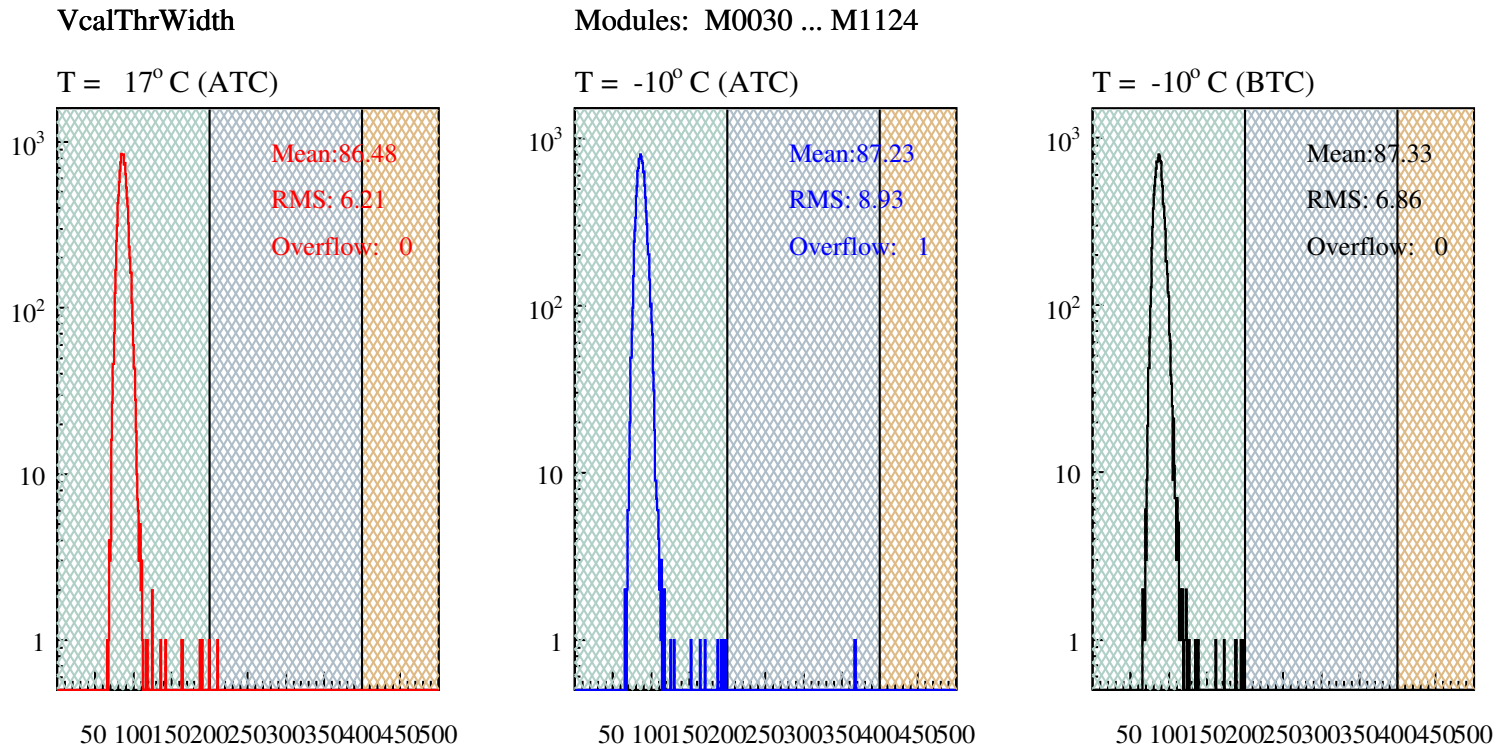
PedestalSpread of chips



Pedestal Spread in e^-

Vcal Threshold Width

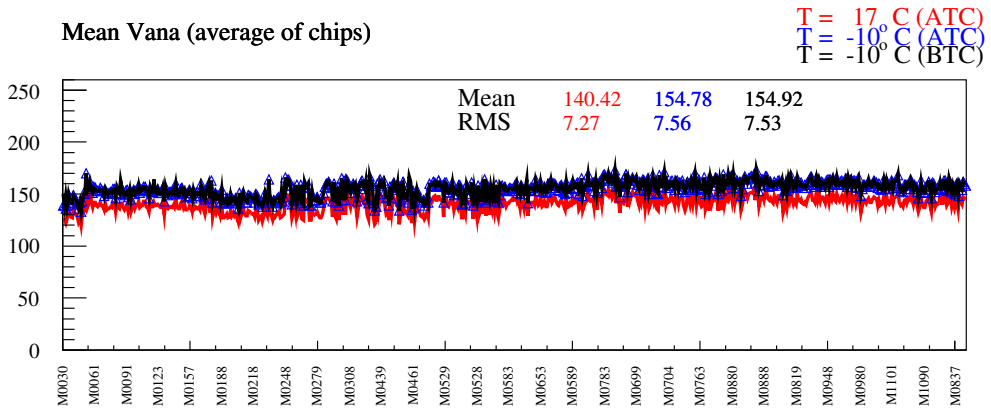
VcalThresholdWidth of chips

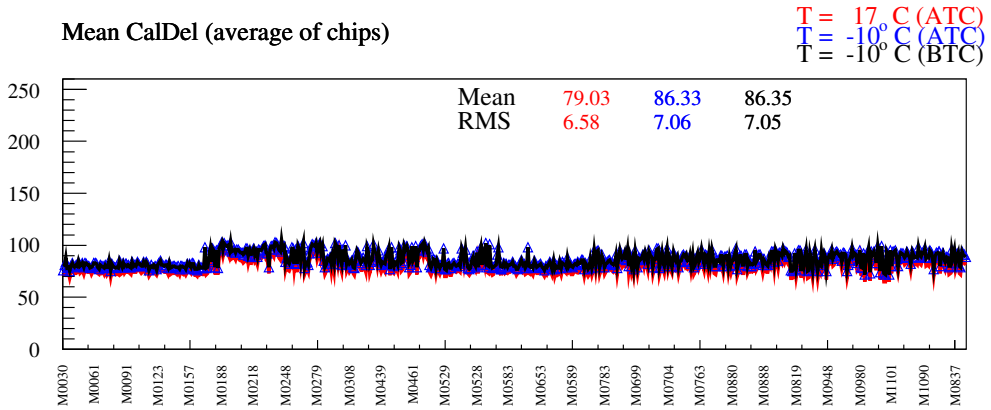


Vcal Thr. Width in e^-

Operational parameters I

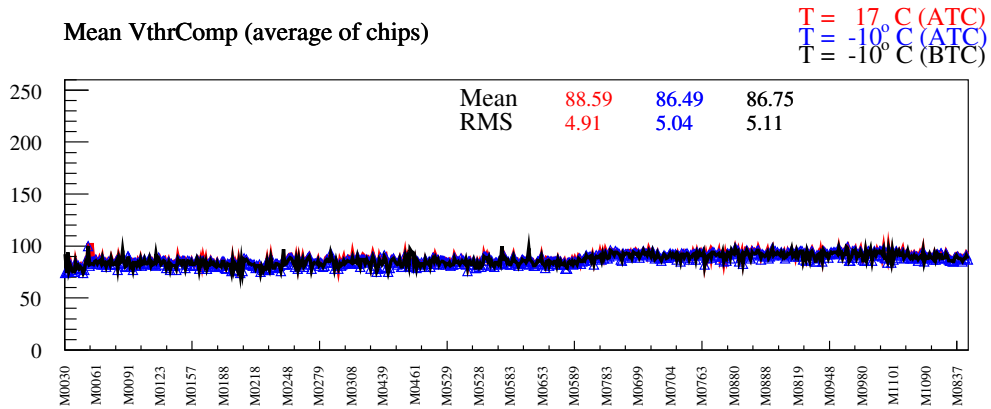
Mean DACs I

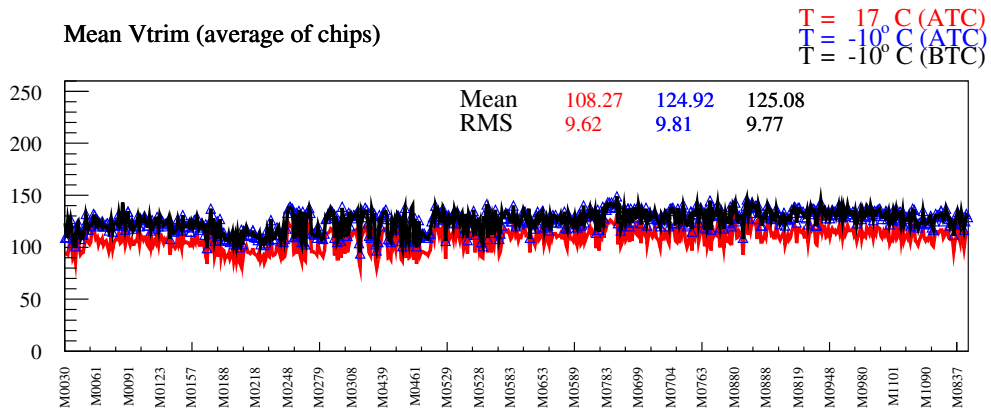




Operational parameters II

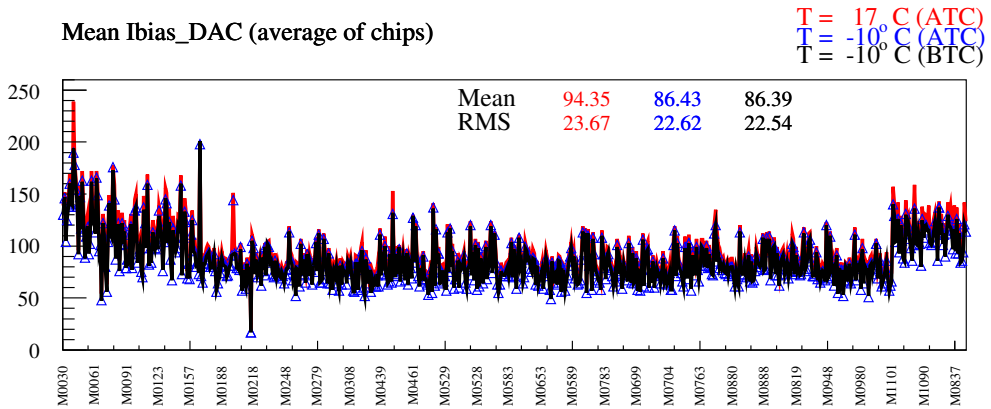
Mean DACs II

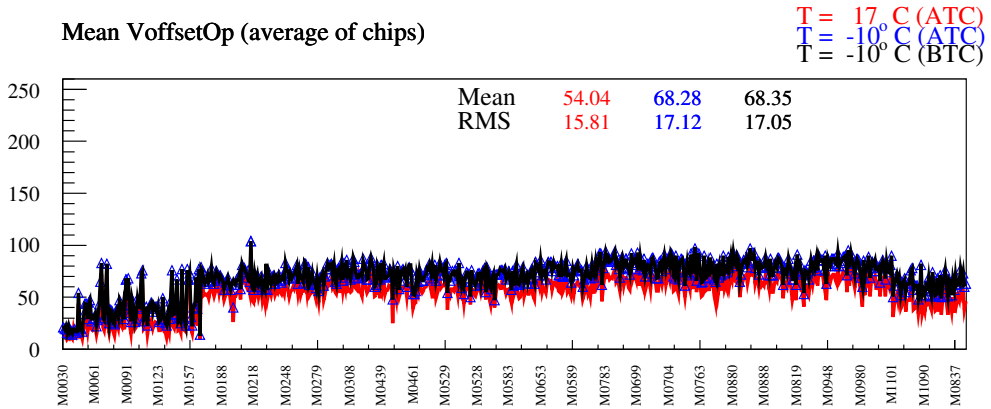




Operational parameters III

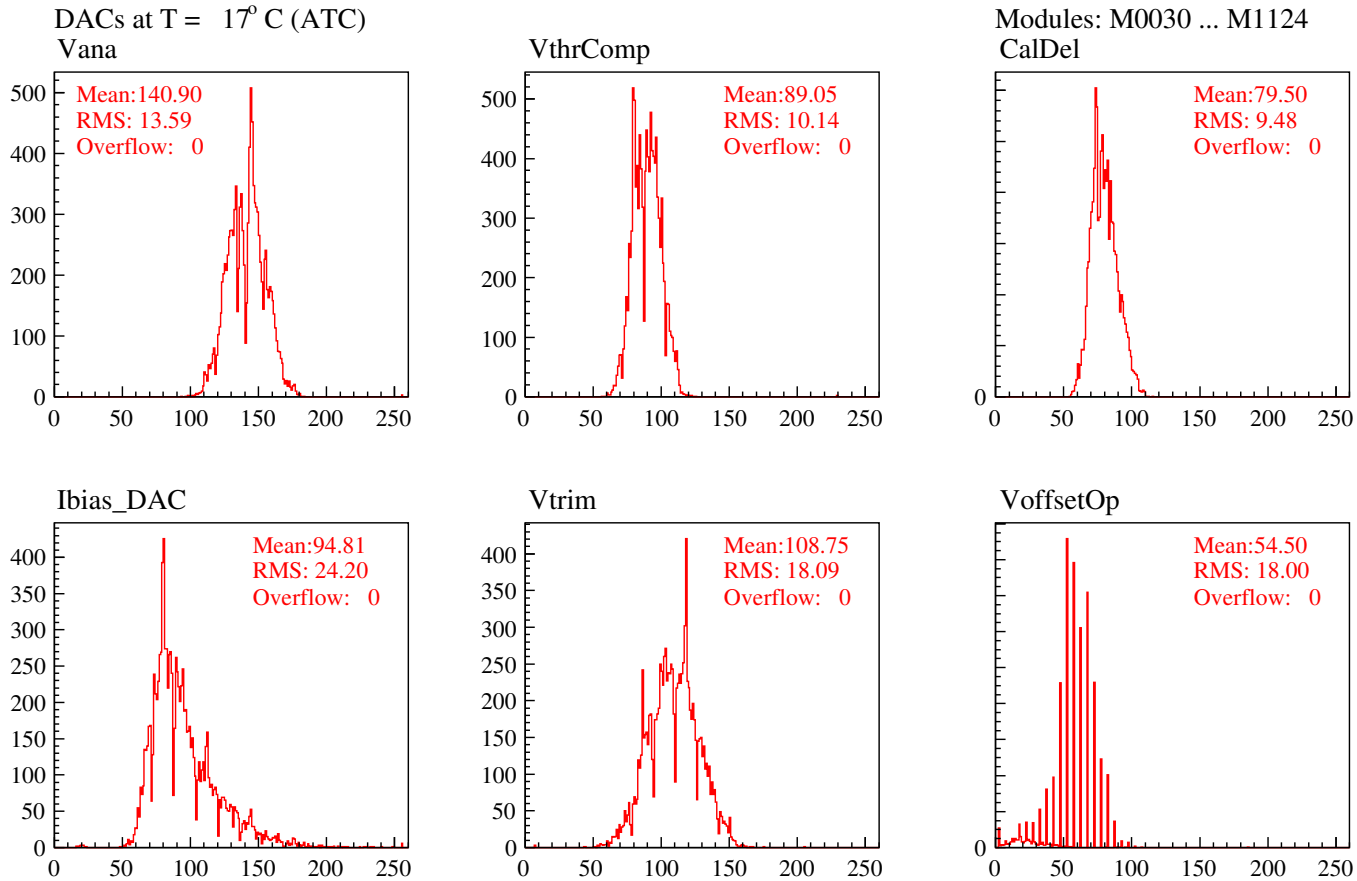
Mean DACs III





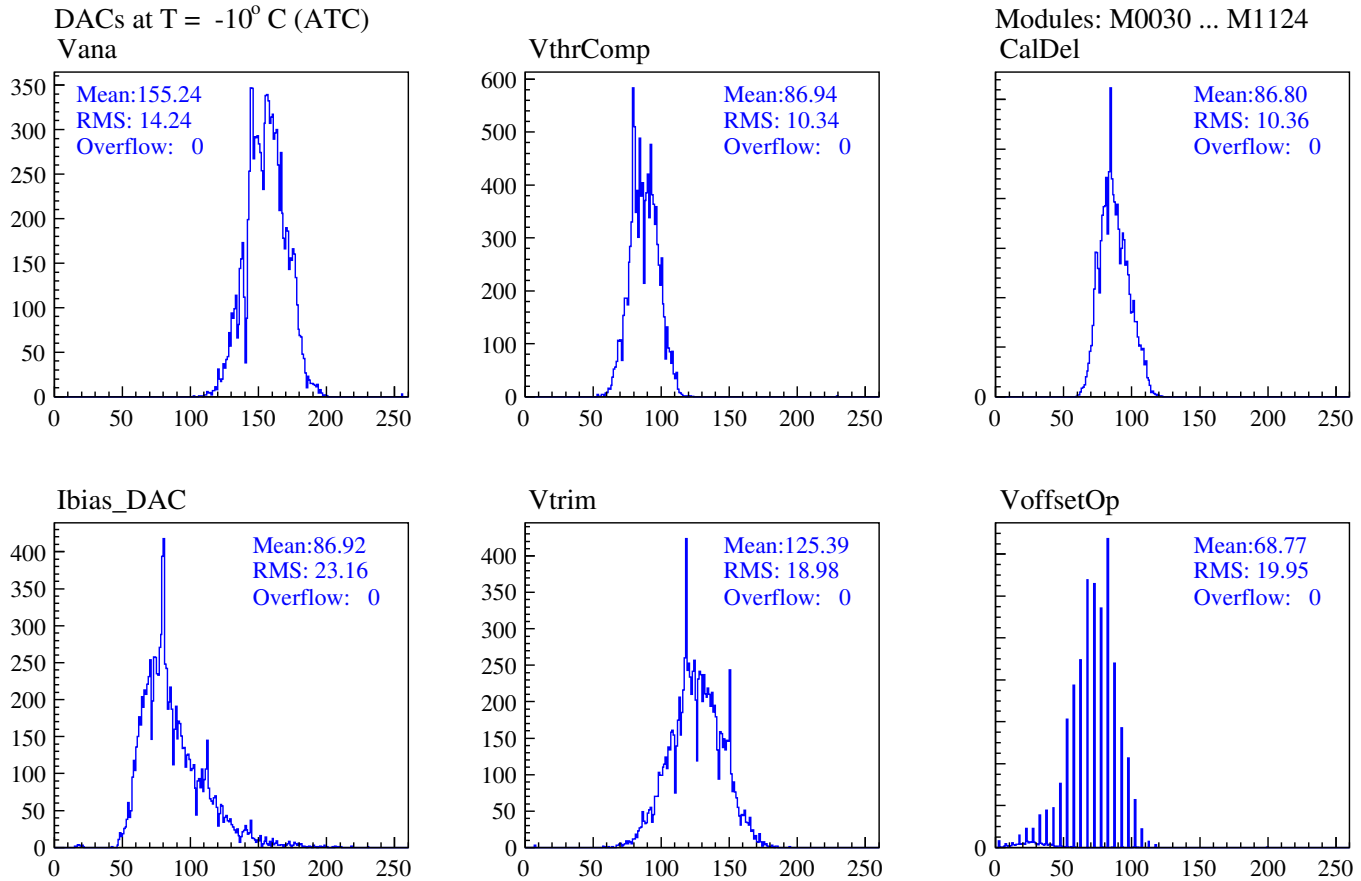
Operational parameters at $T = +17^oC$ (ATC)

DAC distribution (of chips)



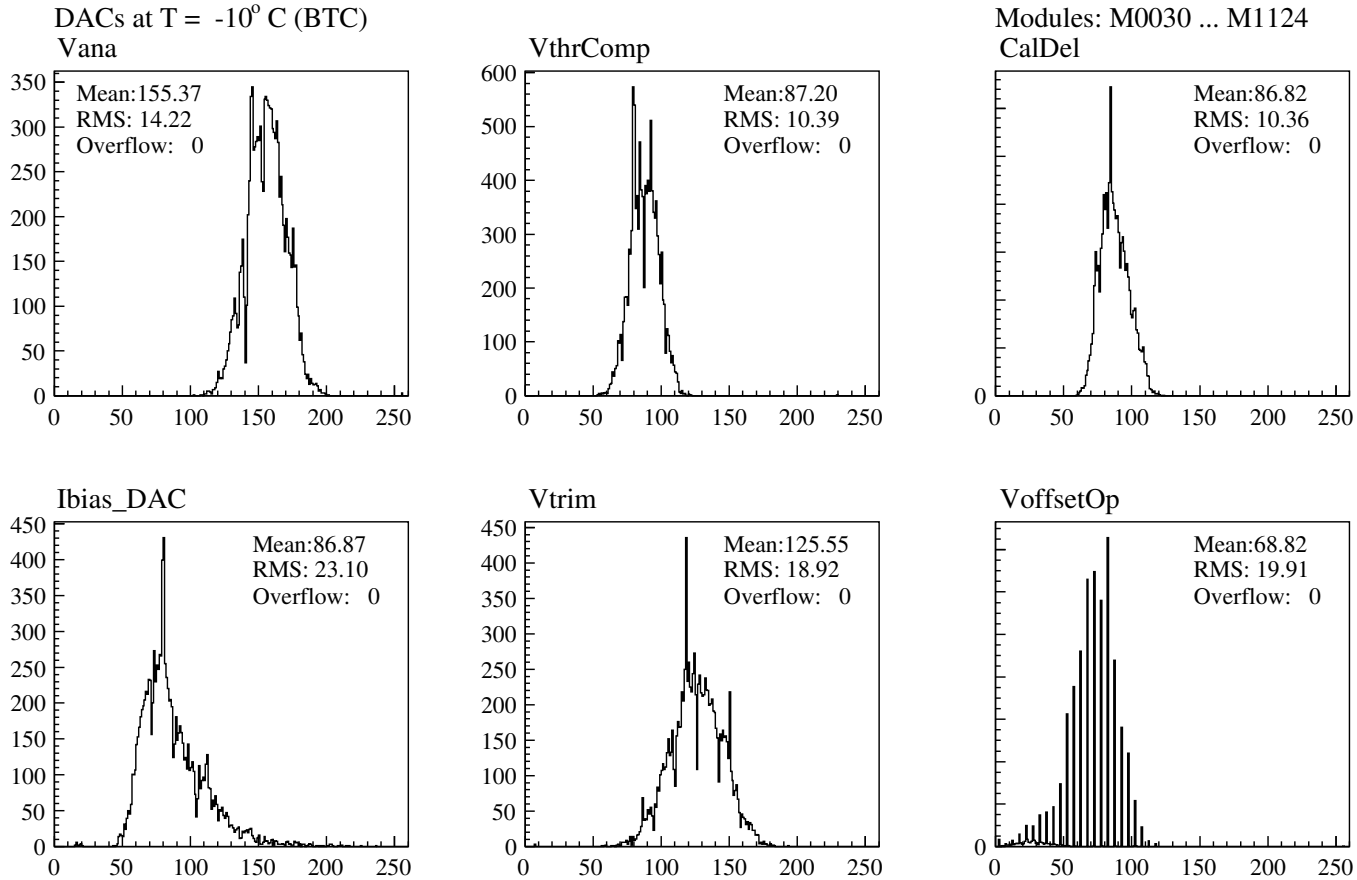
Operational parameters at $T = -10^oC$ (ATC)

DAC distribution (of chips)

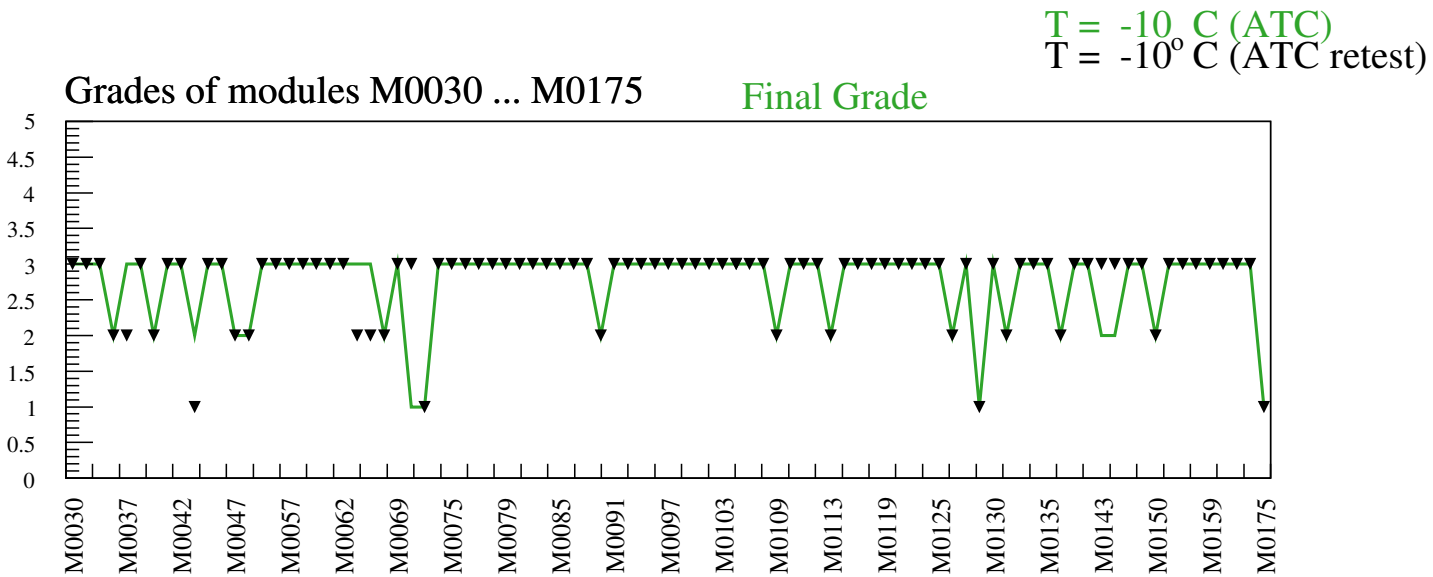


Operational parameters at $T = +17^oC$ (BTC)

DAC distribution (of chips)

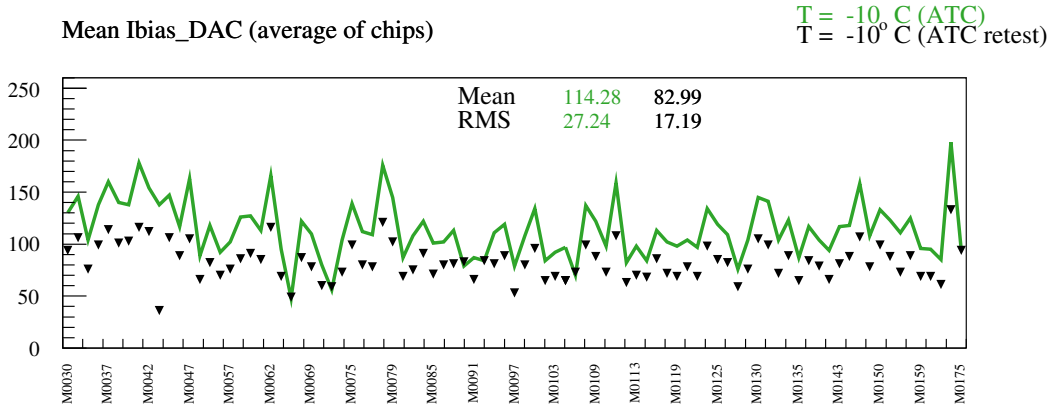


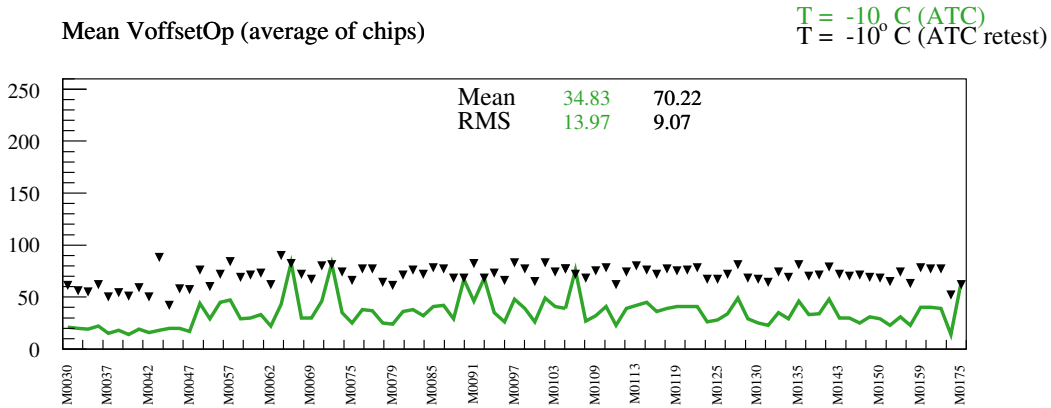
Retest Grades



Operational parameters

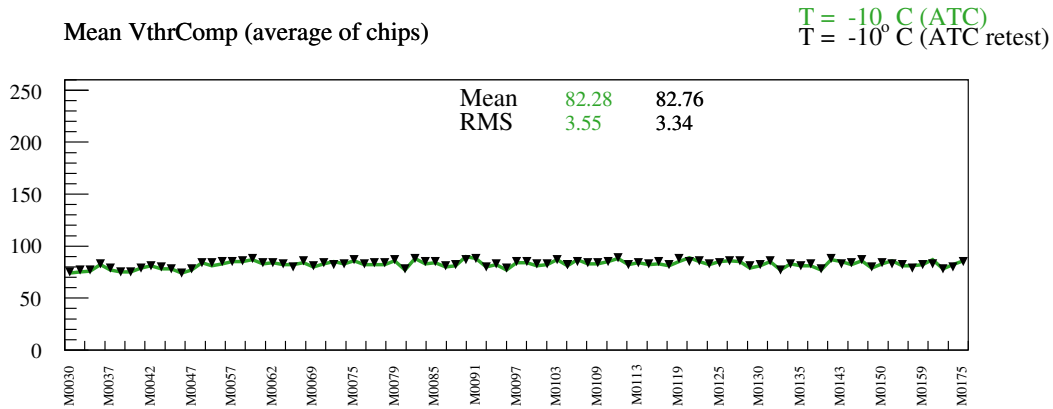
Mean DACs I

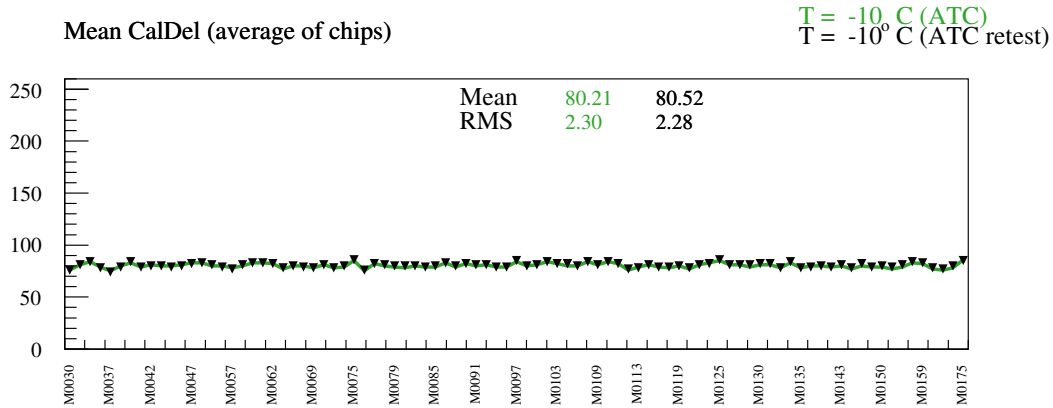




Operational parameters

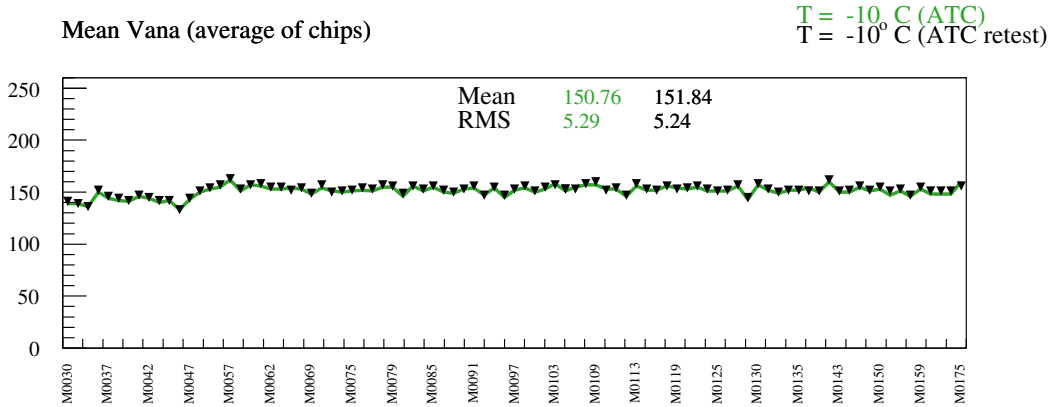
Mean DACs II

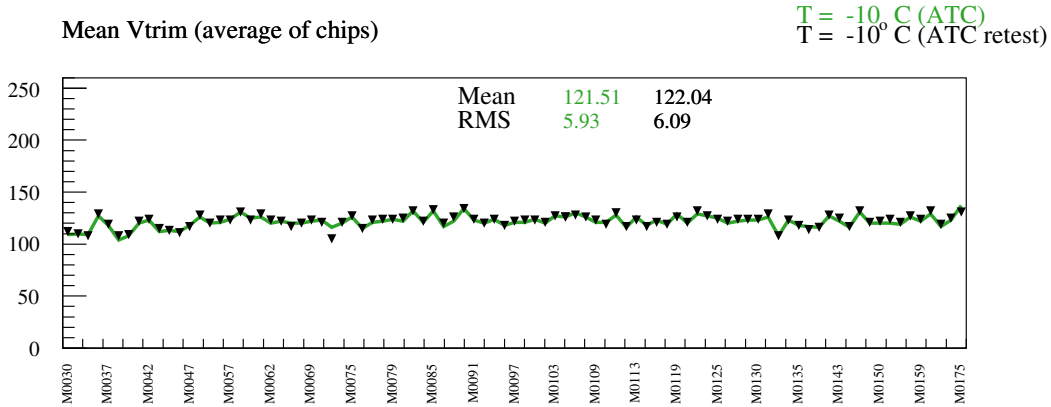




Operational parameters

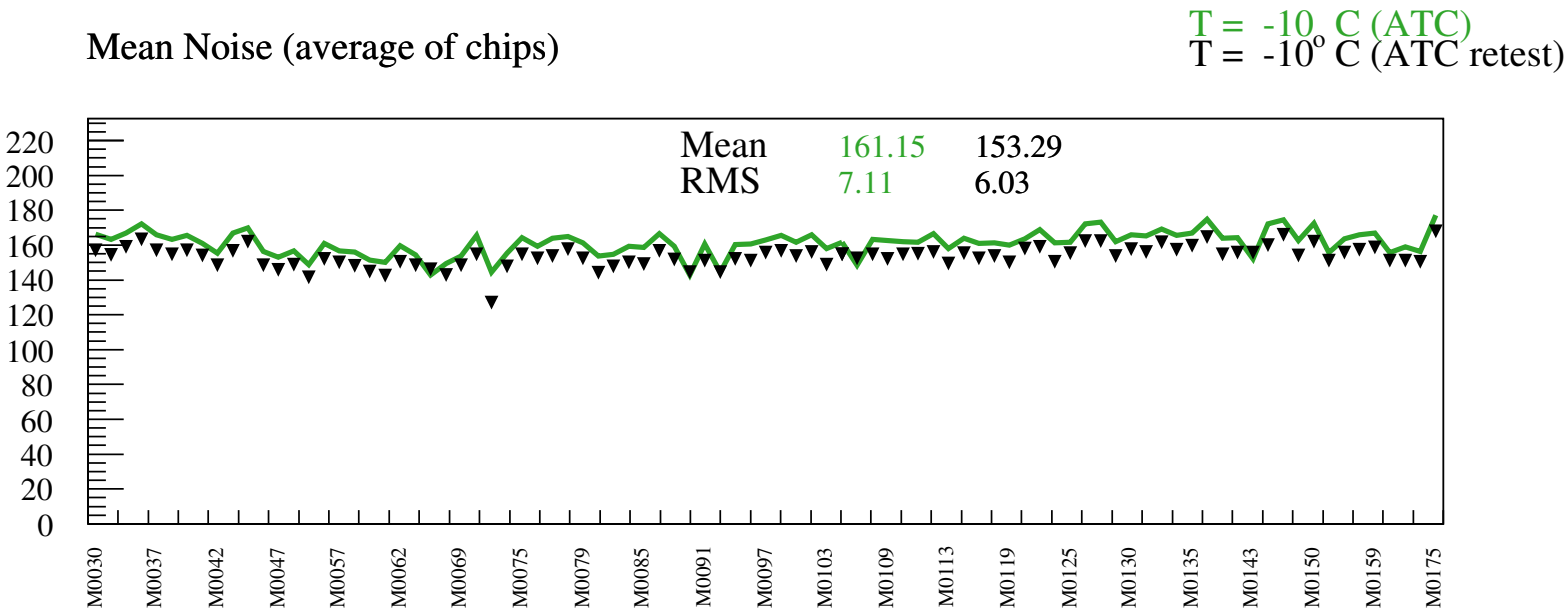
Mean DACs III





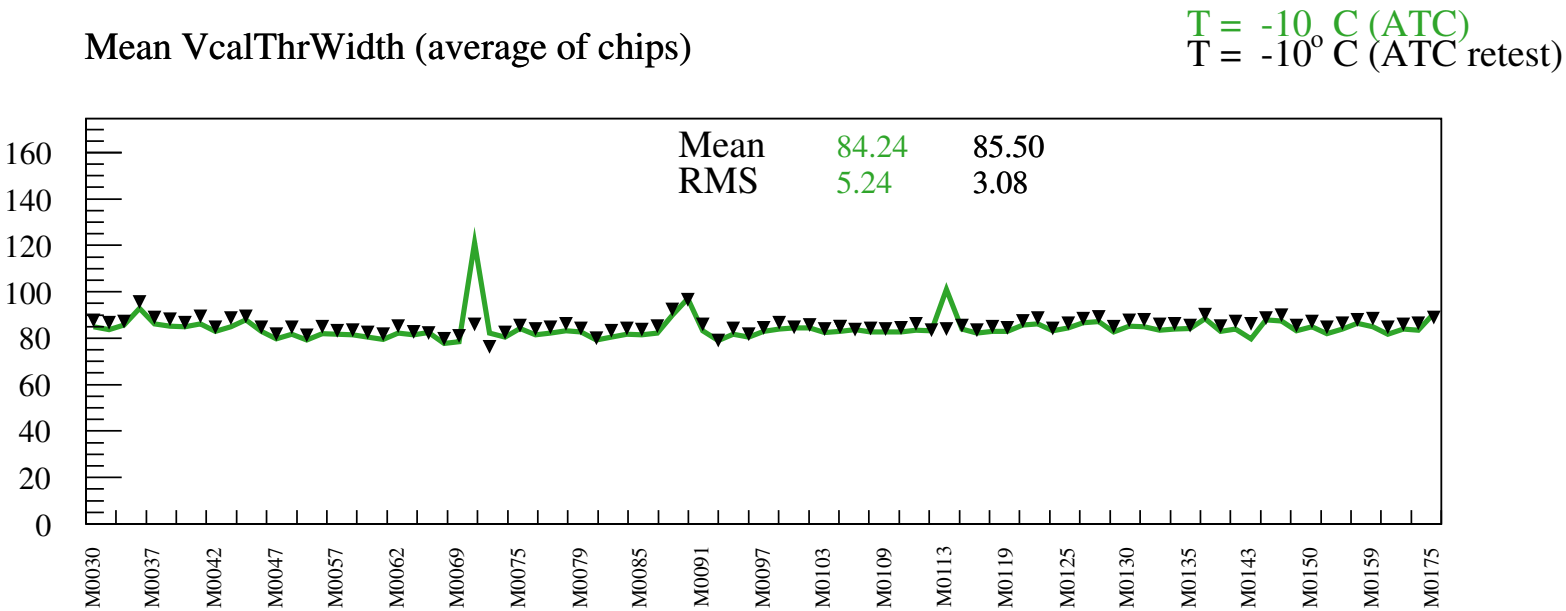
Performance parameters

Mean **Noise** [e^-] vs. Module Nr.



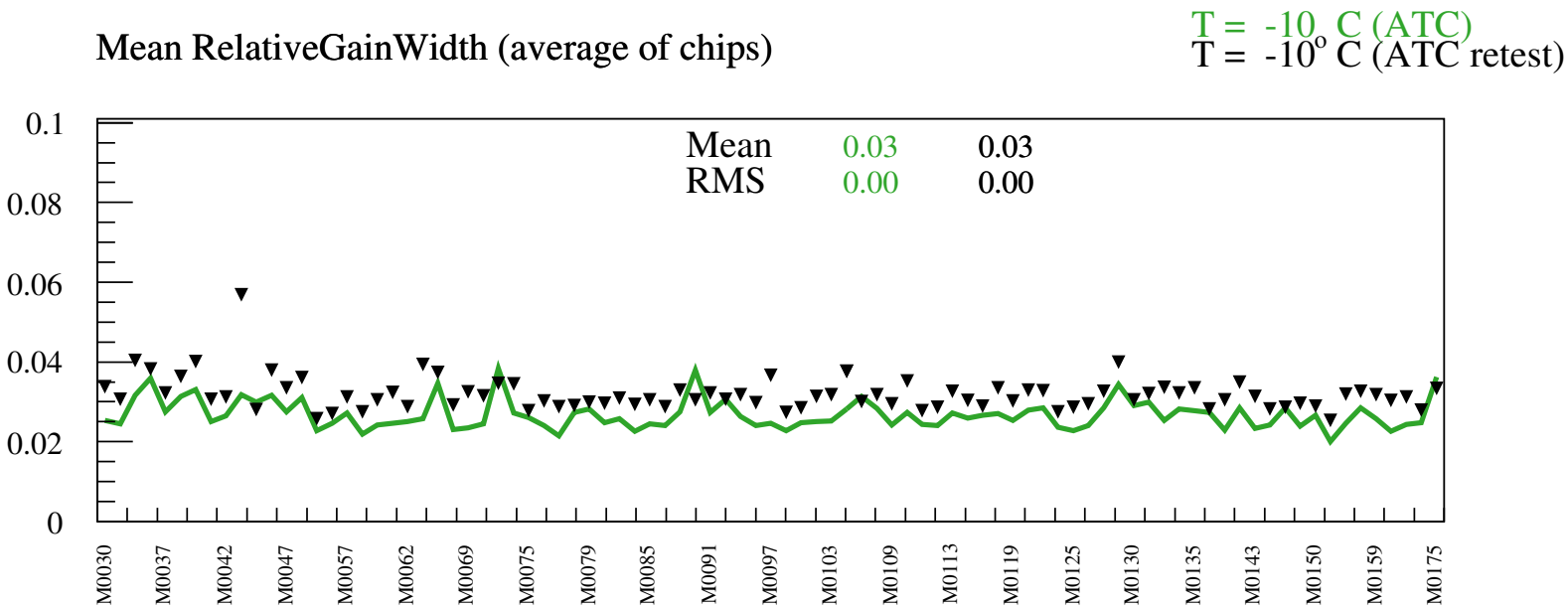
Performance parameters

Mean **VcalThresholdWidth** [e^-] vs. Module Nr.



Performance parameters

Mean **RelativeGainWidth** [%] vs. Module Nr.



Performance parameters

Mean **PedestalSpread** in [e^-] vs. Module Nr.