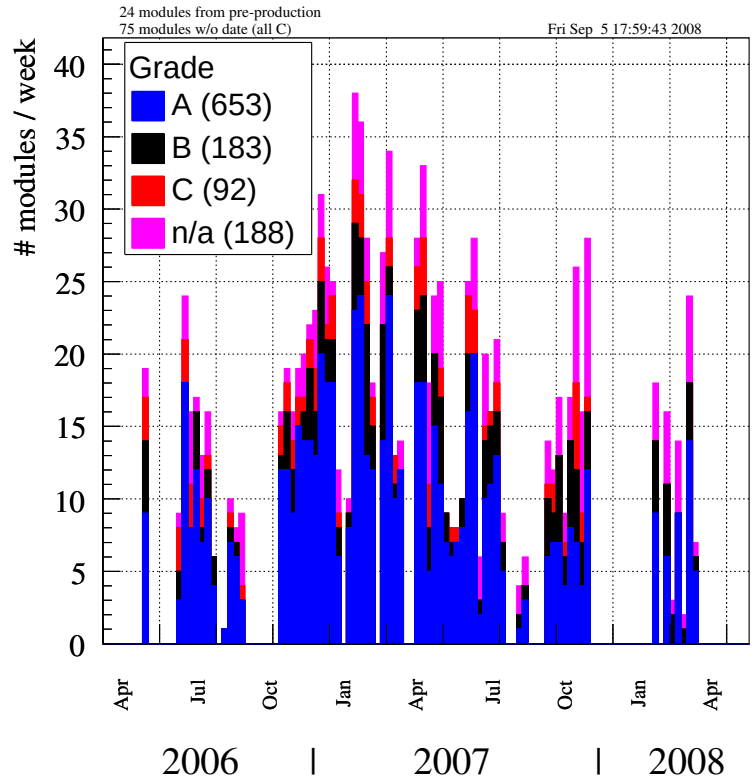
BPIX Module Testing Status - 2008

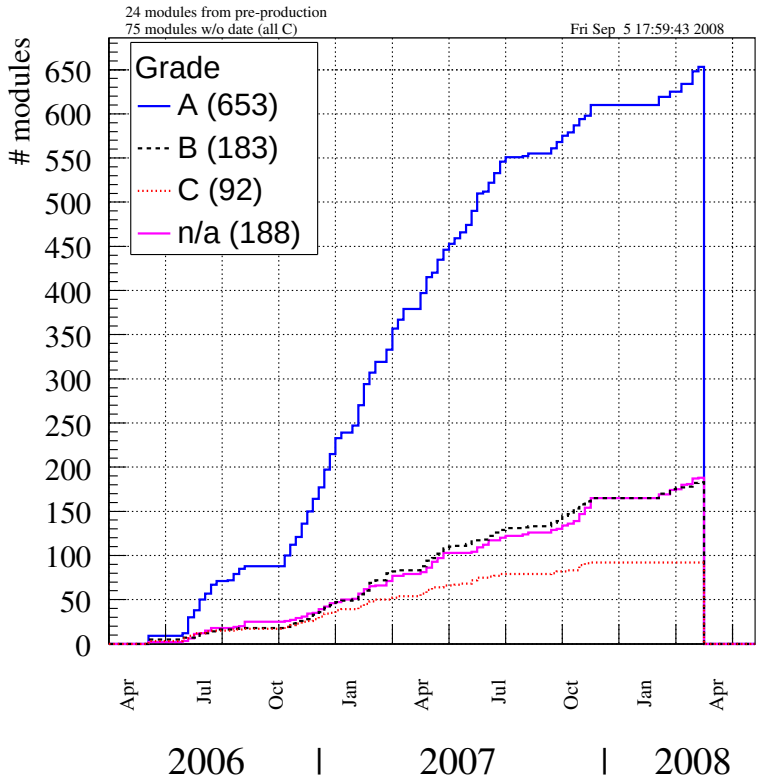
5th September 2008

Production Overview

Tested Modules 2006 - 2008 (incl. half-modules)



Tested Modules 2006 - 2008 (incl. half-modules)



Production overview

Production Status: 929 modules produced (808 full/ 121 half)

- 566/161 graded as A/B → 90% | 87/23 → 91%
- 81 graded as C → 10% | 11 → 9%

Module Testing Report of 2008:

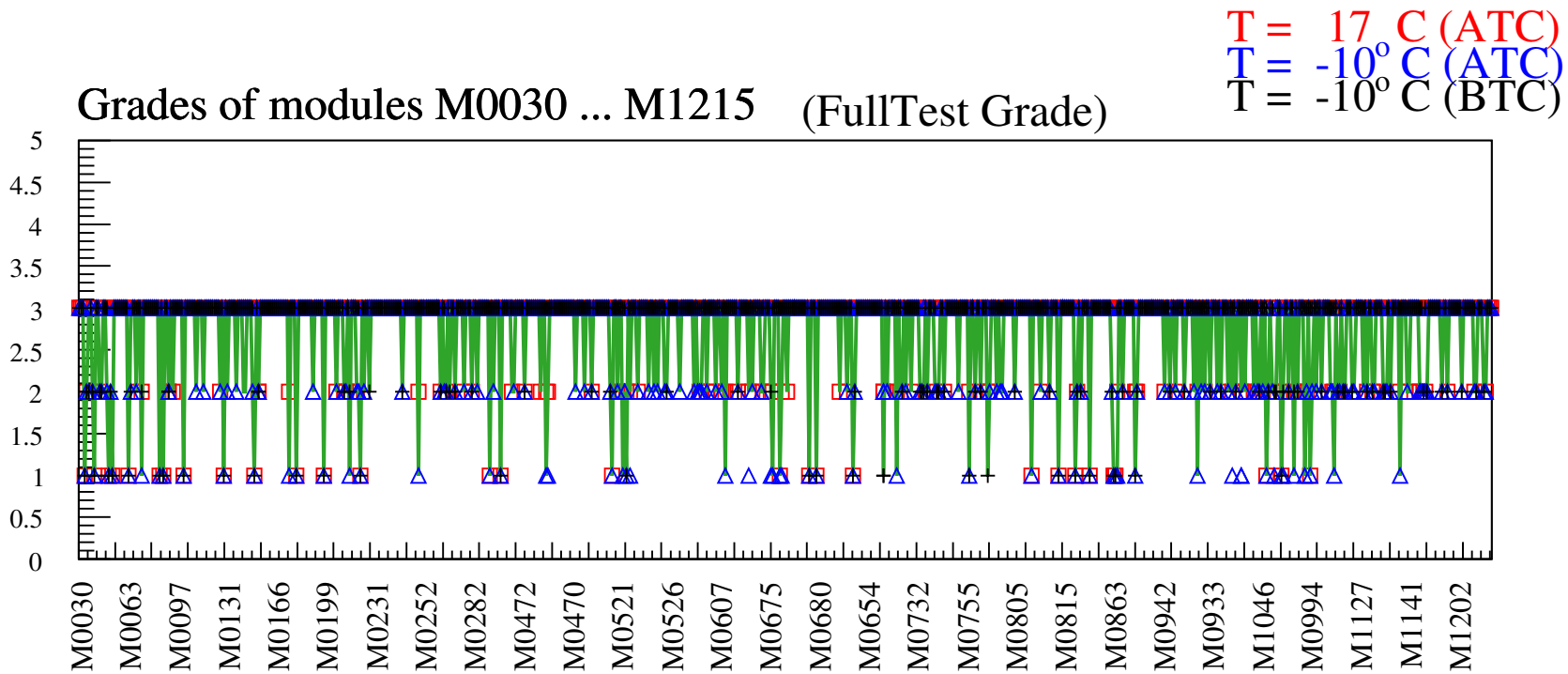
- 775 modules fully tested and therm. cycled (71 retested)

	Modules (775)			*Halfmodules* (119)		
Grade	**A**	**B**	**C**	**A**	**B**	**C**
T = -10^o C, BTC*	674	73	28	108	5	6
T = -10^o C, ATC	579	140	56	94	18	7
T = $+17^o$ C, ATC	654	92	29	98	13	8
Final Grade	565	161	49	87	23	9

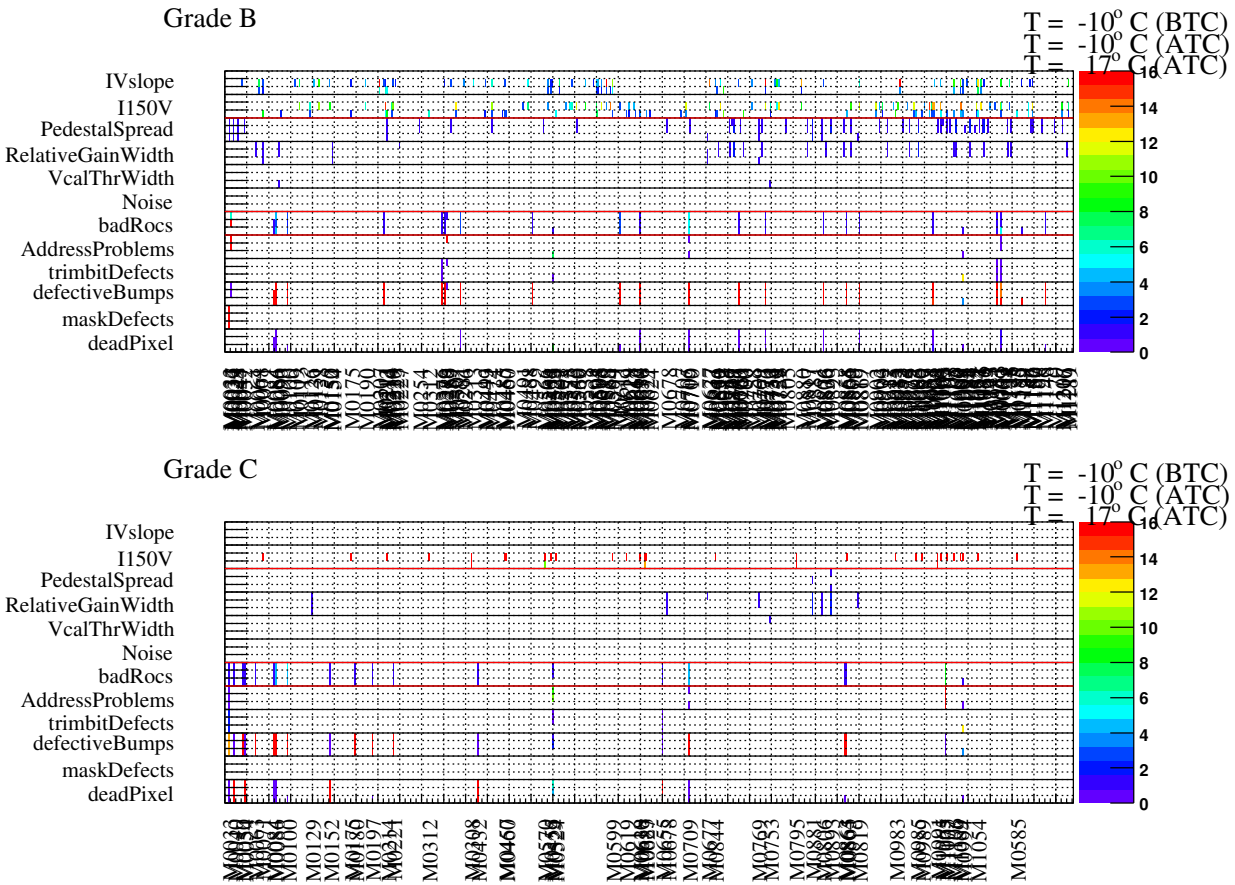
- 101 were retested with new DAC settings (7 change)

- M0037: A -> B –> overall grades - M0064: A -> B –> overall grades + M0067: B -> A –> overall grades + M0070: C -> A –> overall grades + M0072: C -> N –> overall grades + M0143: B -> A –> overall grades + M0145: B -> A –> overall grades

Production summary

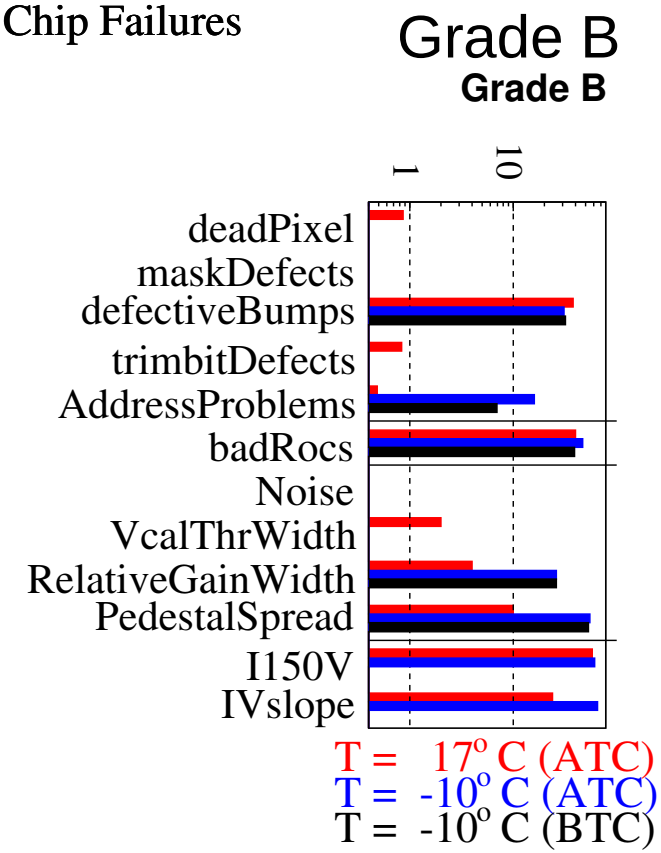


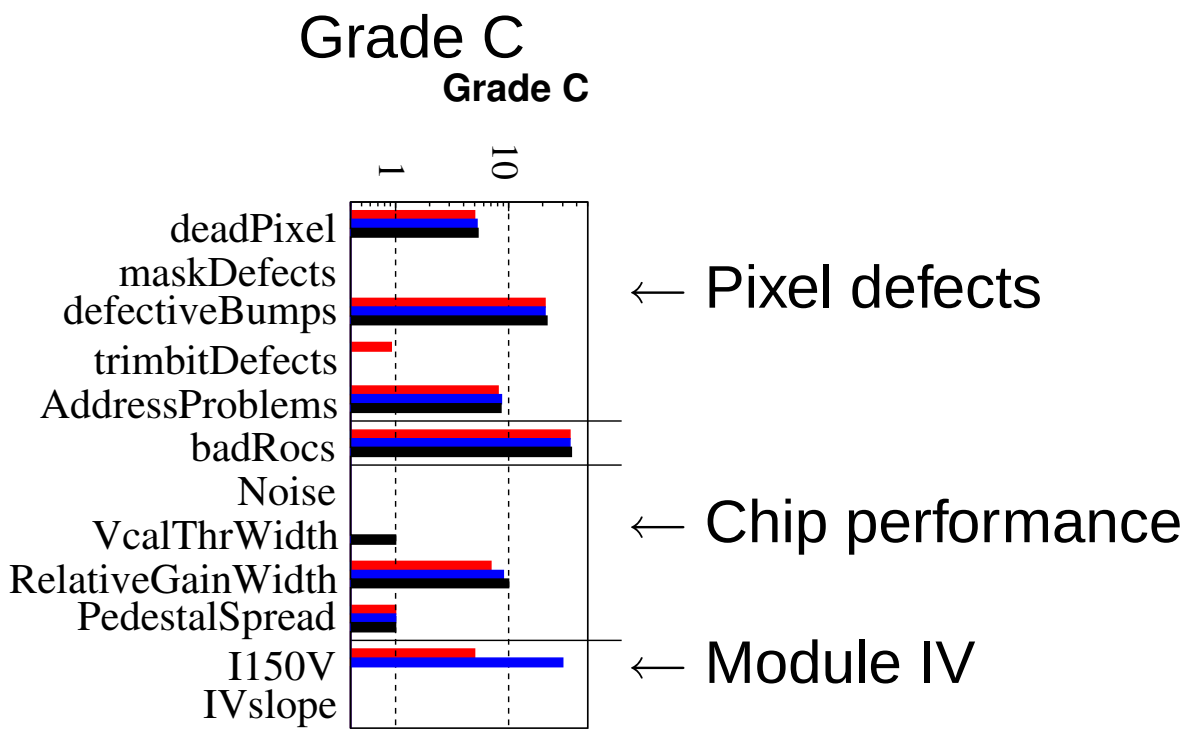
Module Failures Overview



Production quality

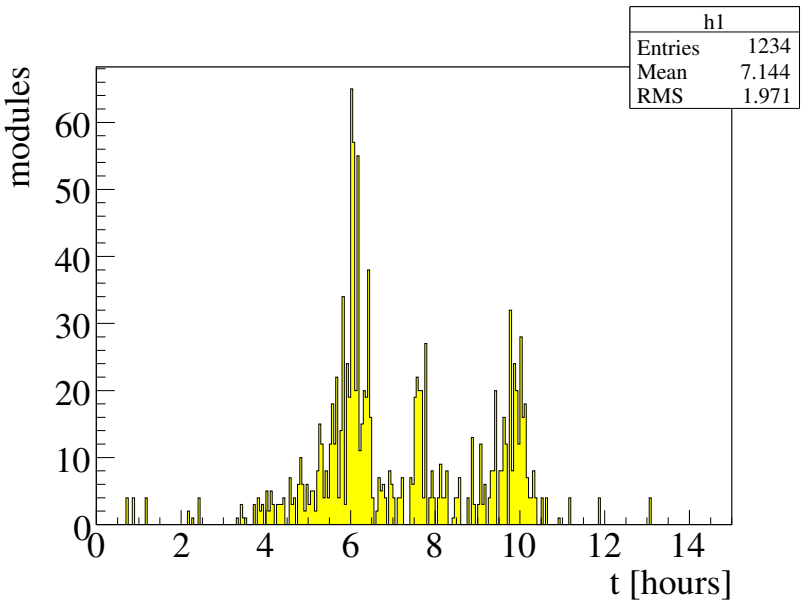
Chip Failures



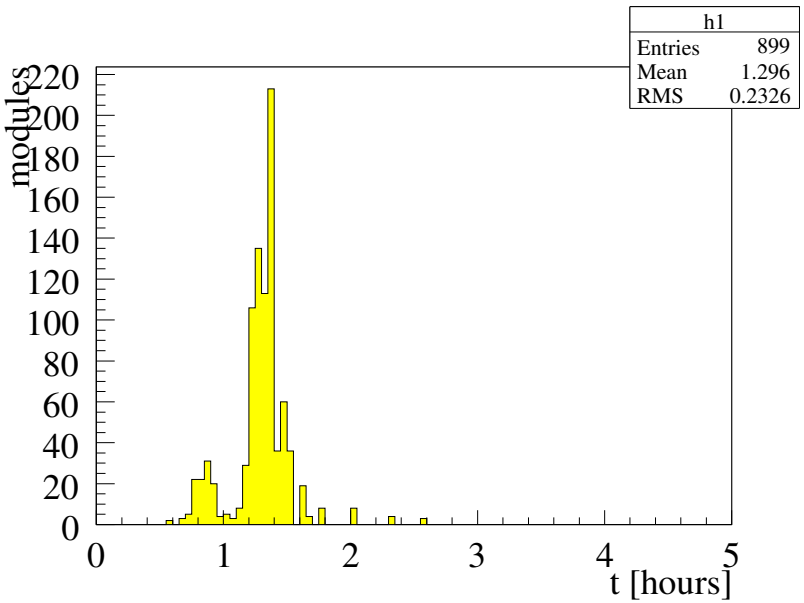


Test duration

Full tests



Short tests (w/o x-ray)



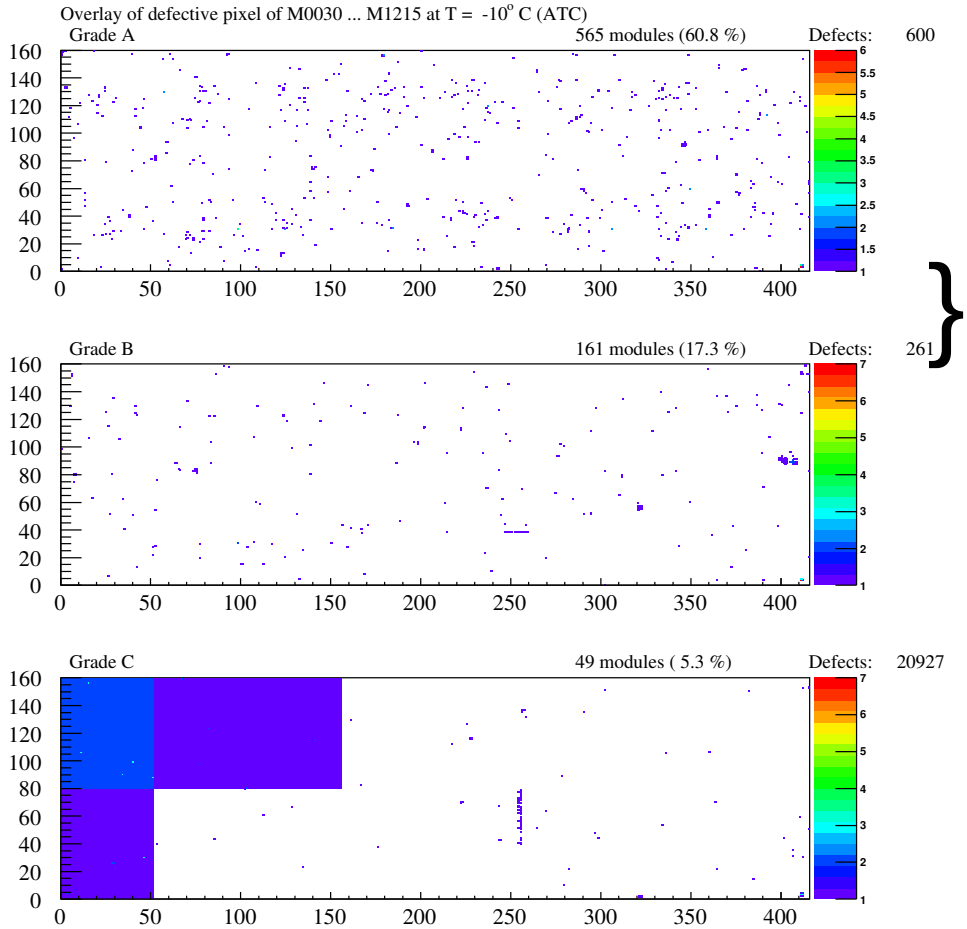
Dead pixel

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

Final Grade A
(565 modules)

Final Grade B
(161 modules)

Final Grade C
(49 modules)



48.3 Mio. Pixel

3.3 Mio. Pixel

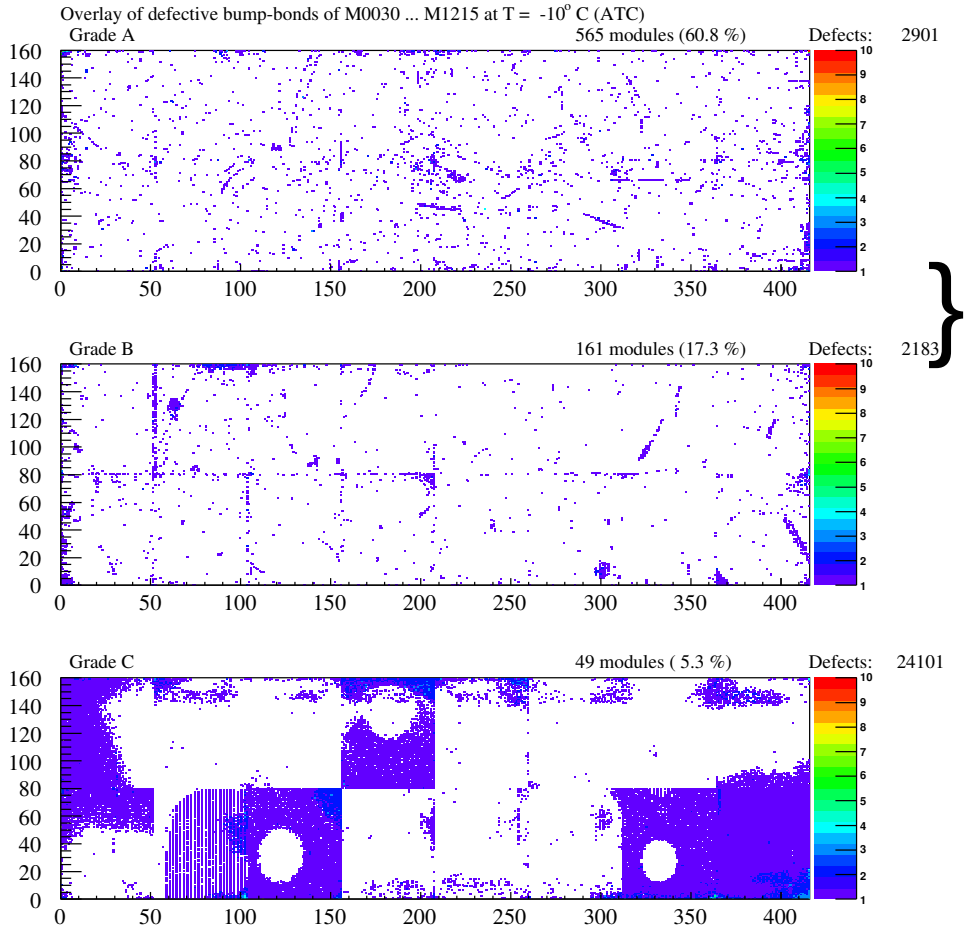
Defective bump-bonds

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

Final Grade A
(565 modules)

Final Grade B
(161 modules)

Final Grade C
(49 modules)

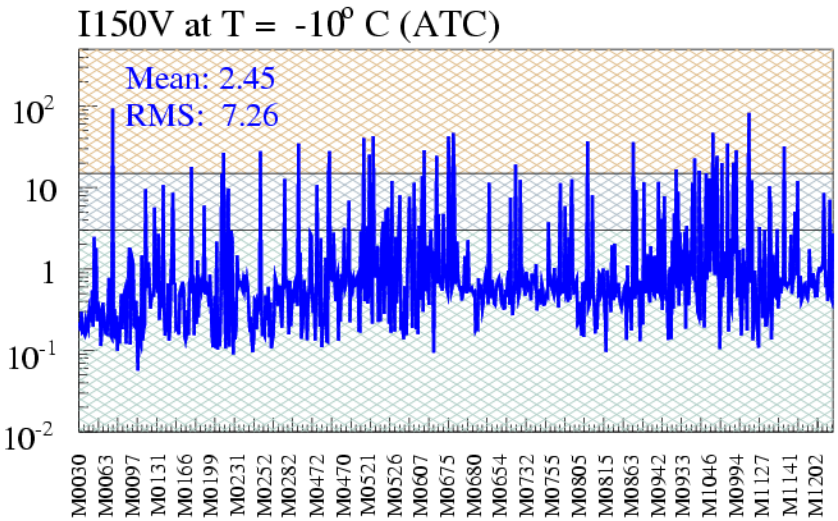


} 48.3 Mio. Pixel

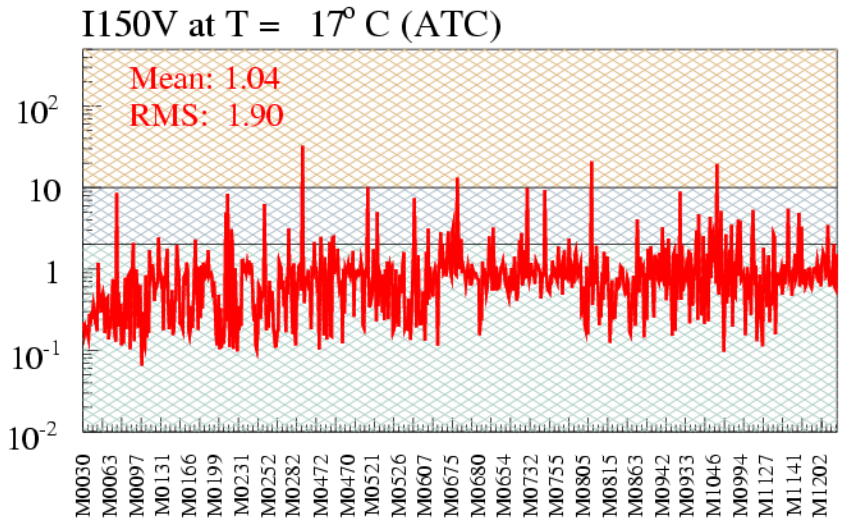
3.3 Mio. Pixel

Current at 150 V

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



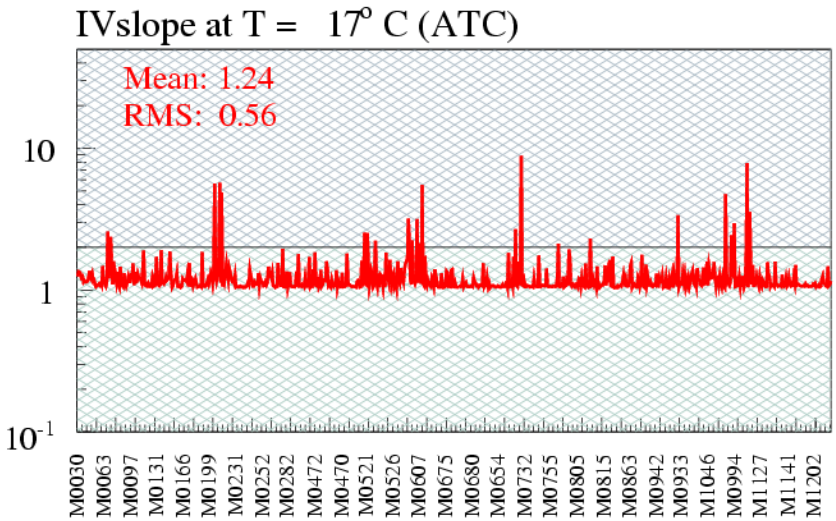
recalculated

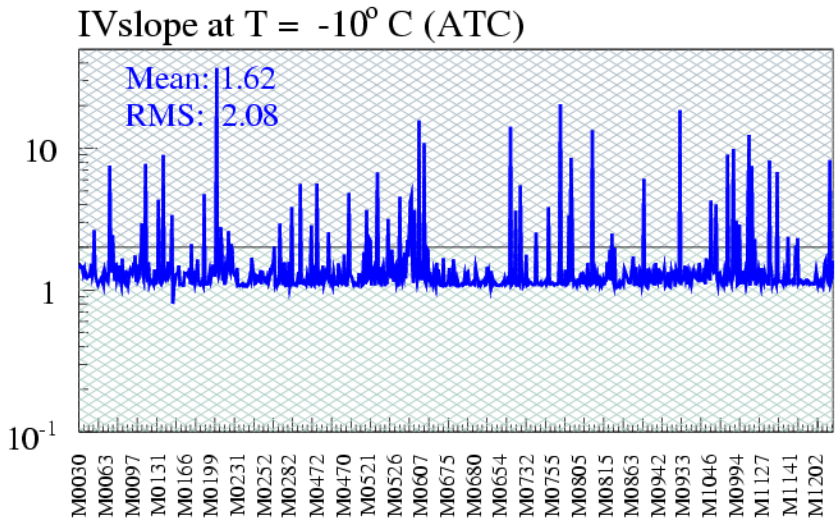


measured

Slope of IV-Curve

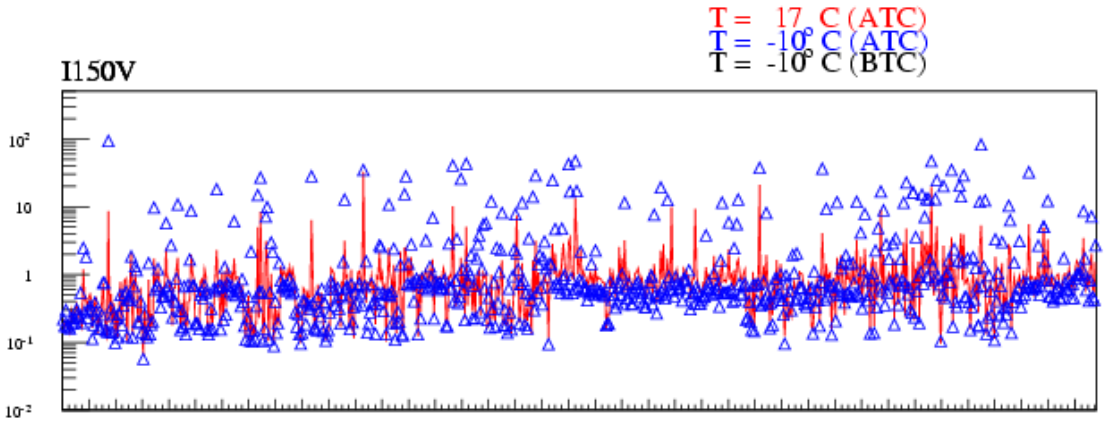
Slope of IV-Curveat $T = 17^oC$ and $T = -10^oC$

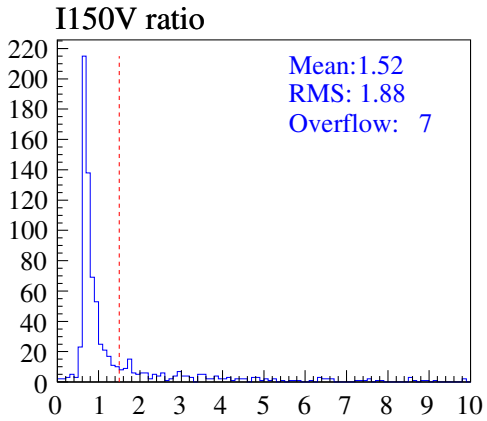


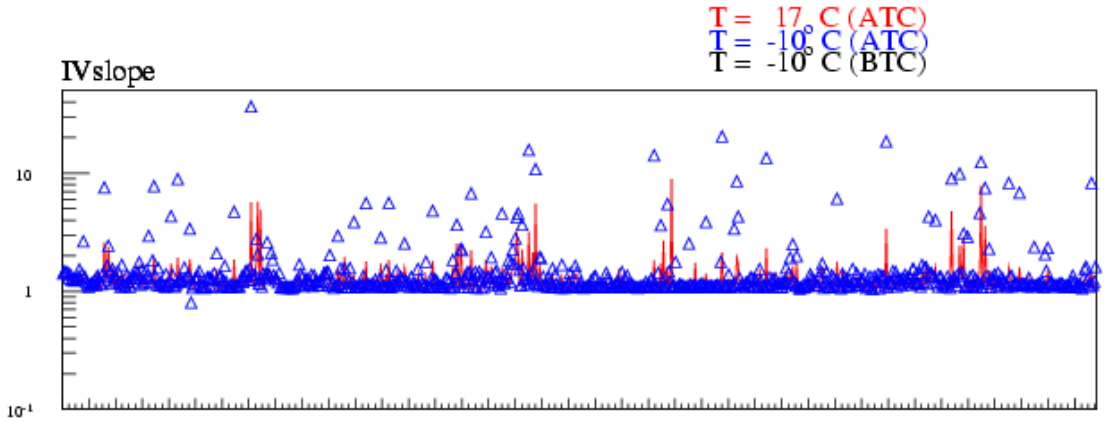


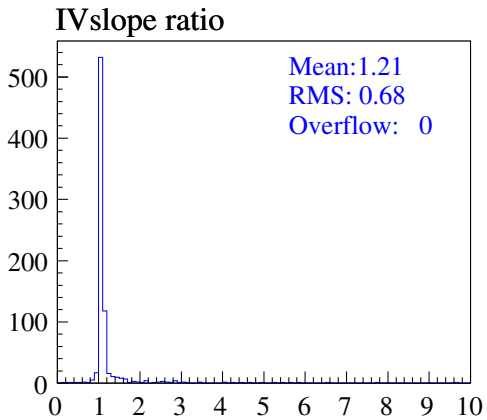
Current recalculation to $T = 17^oC$

Cross check of recalculated values with measured values



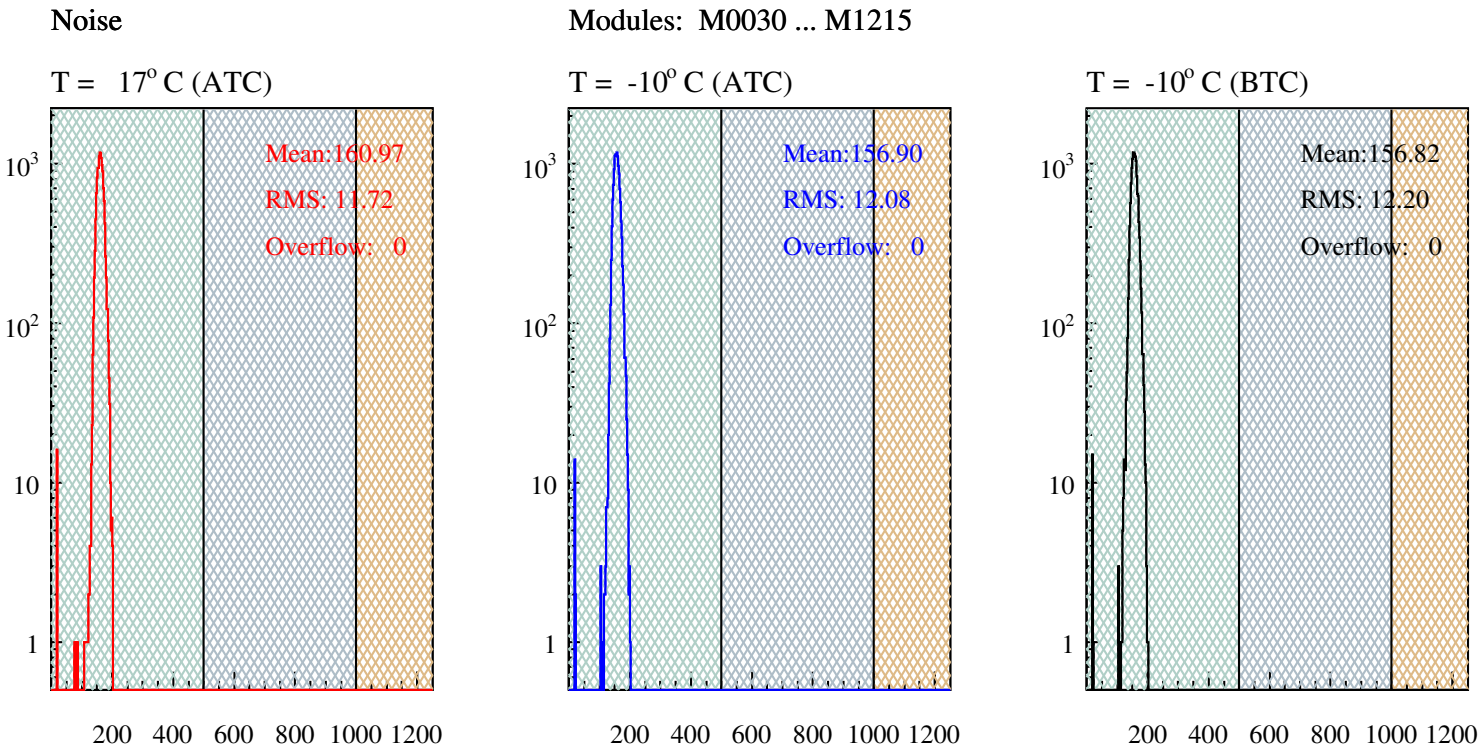






Noise

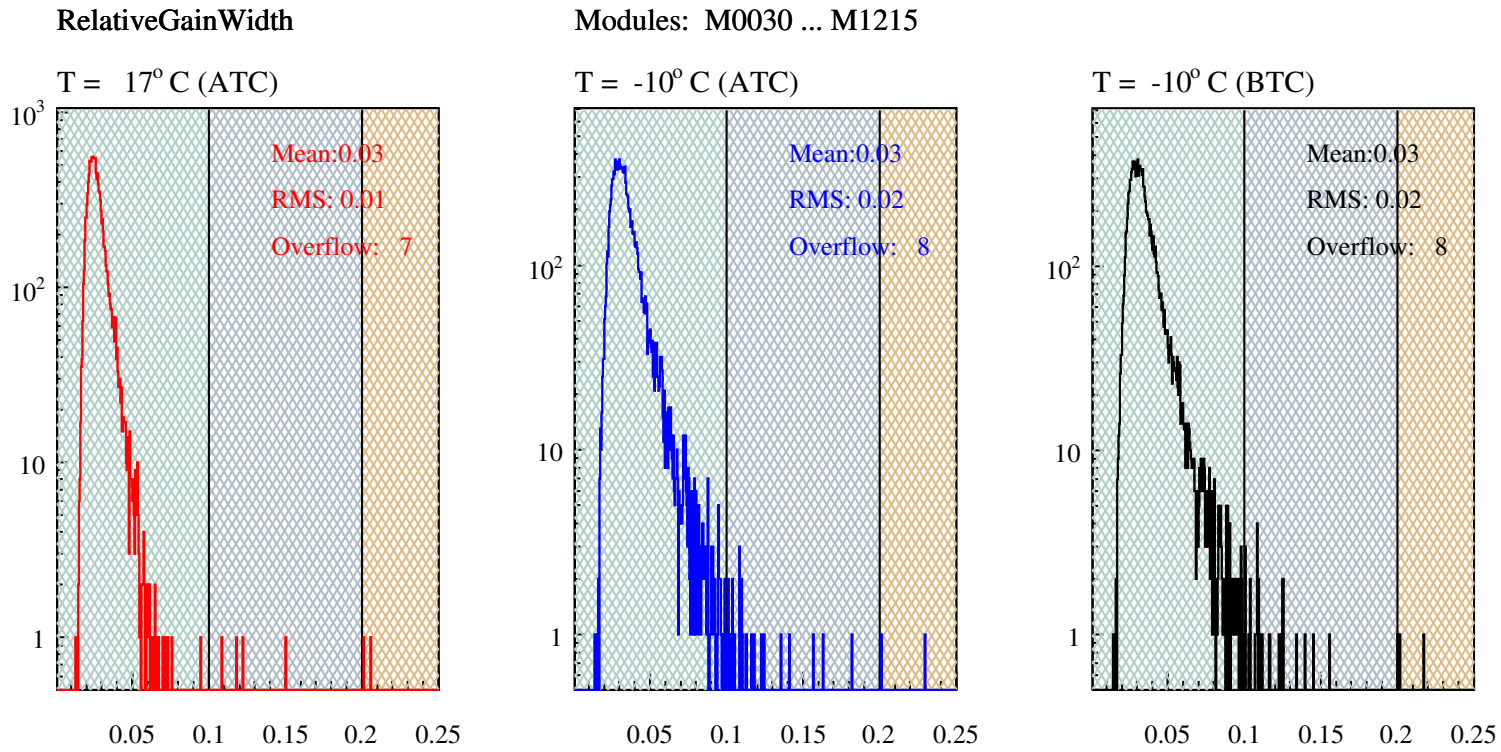
MeanNoise of chips



Noise in e^-

Relative Gain Width

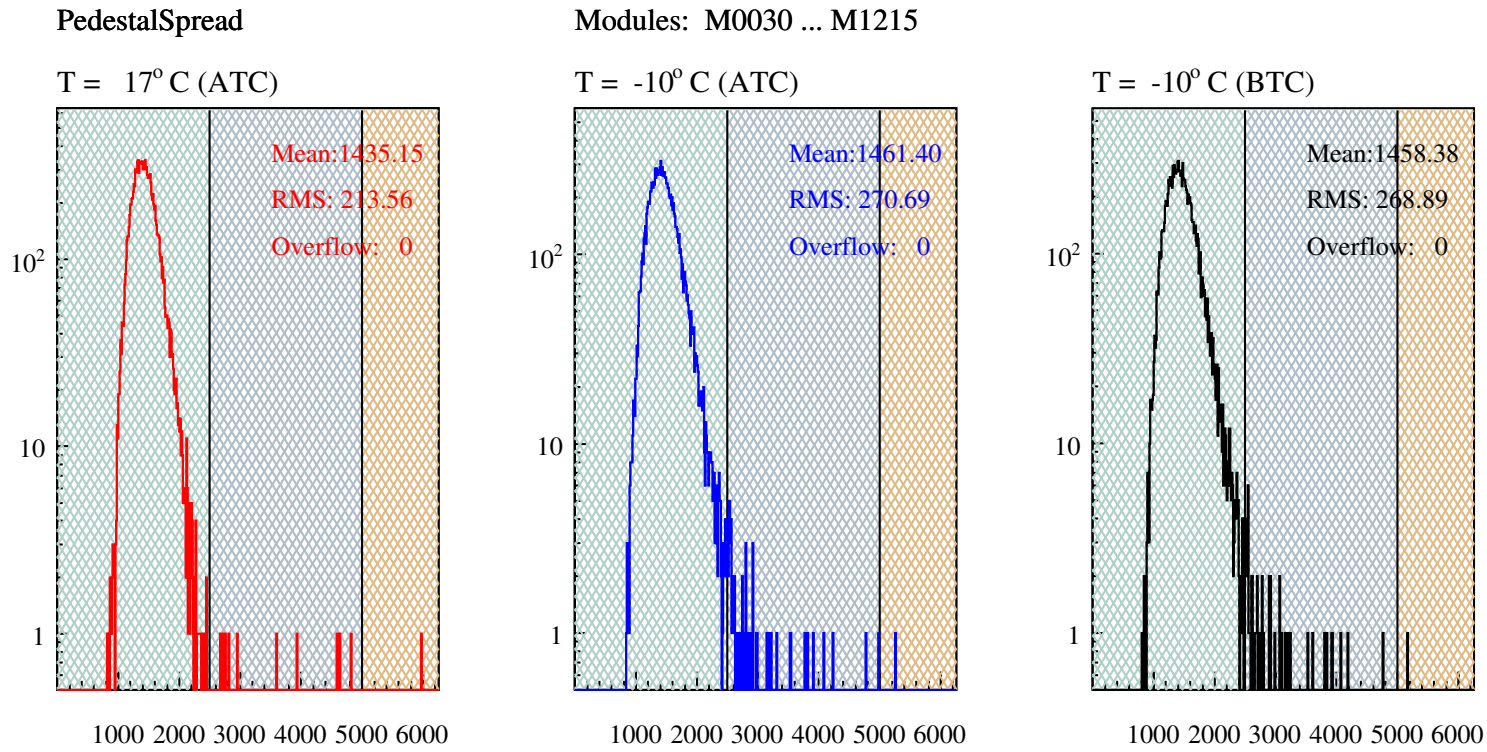
RelativeGainWidth of chips



Rel. Gain Width in %

Pedestal Spread

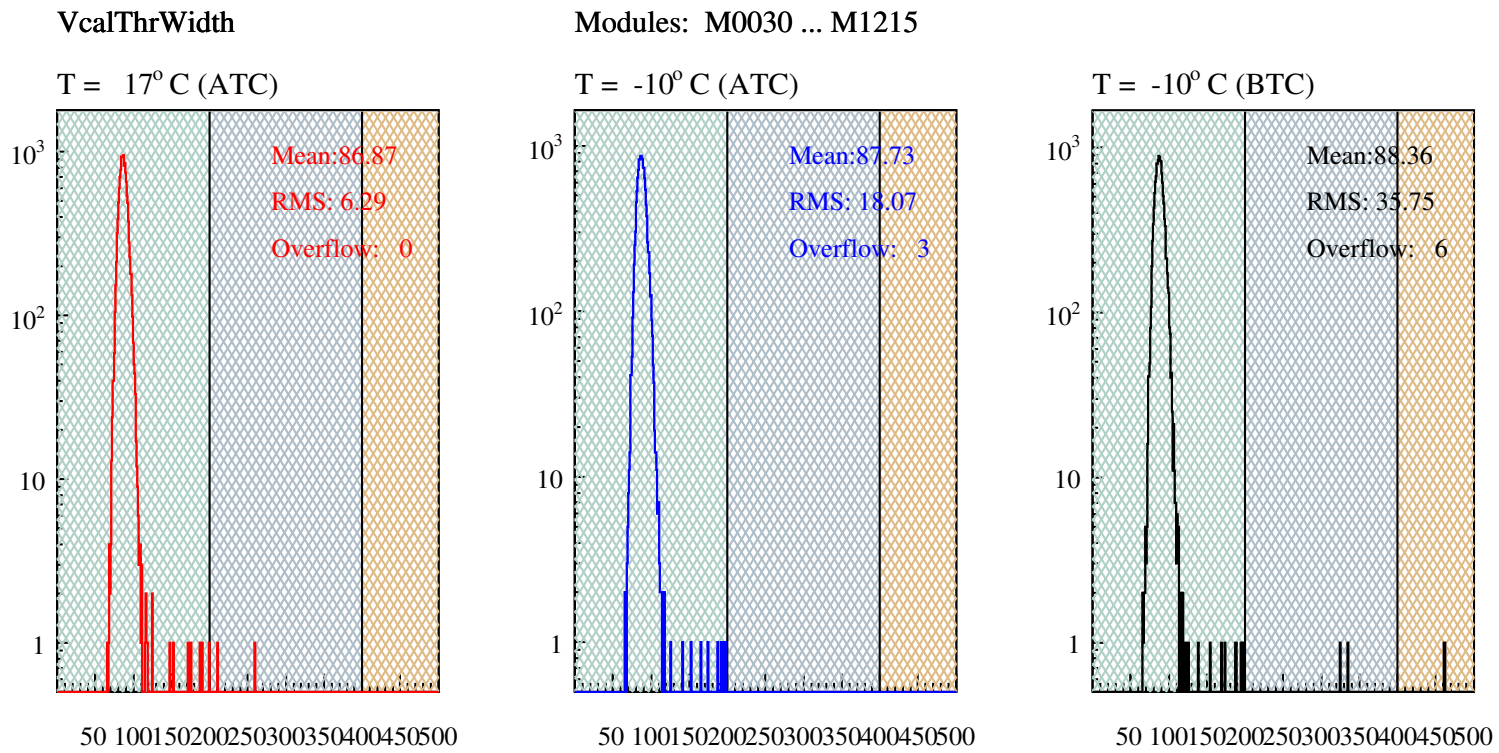
PedestalSpread of chips



Pedestal Spread in e^-

Vcal Threshold Width

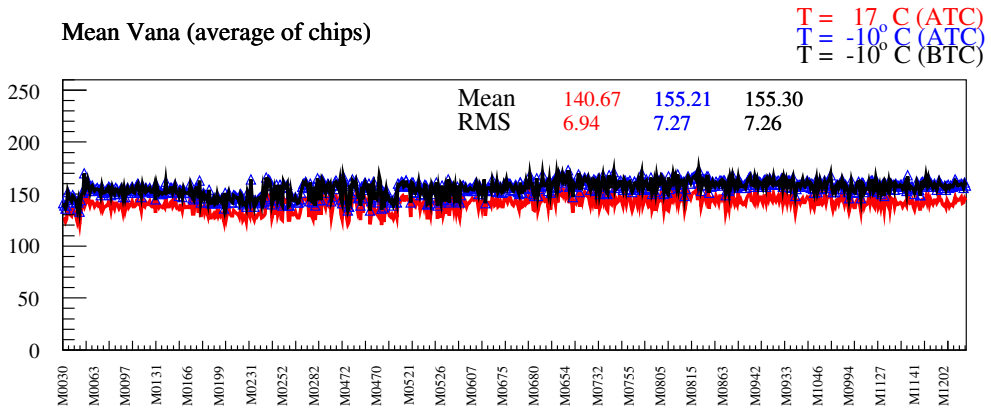
VcalThresholdWidth of chips

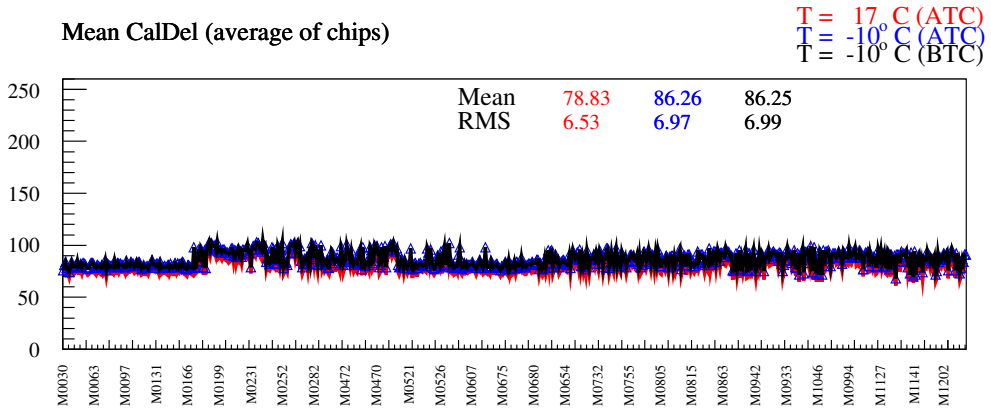


Vcal Thr. Width in e^-

Operational parameters I

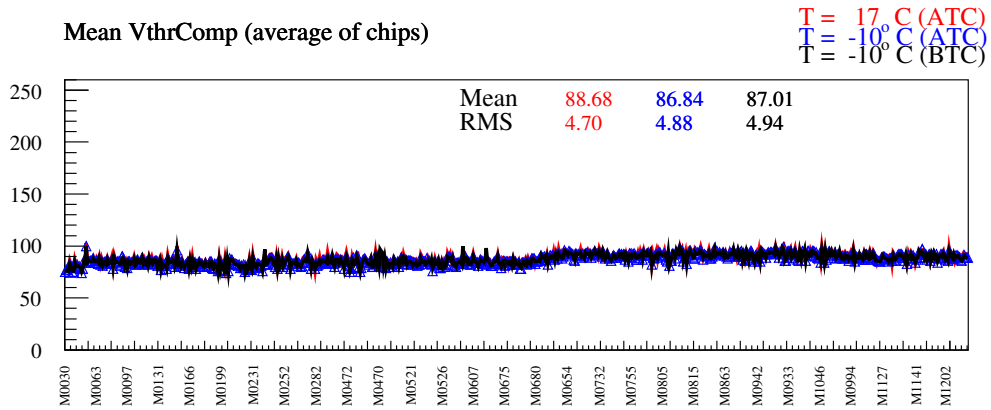
Mean DACs I

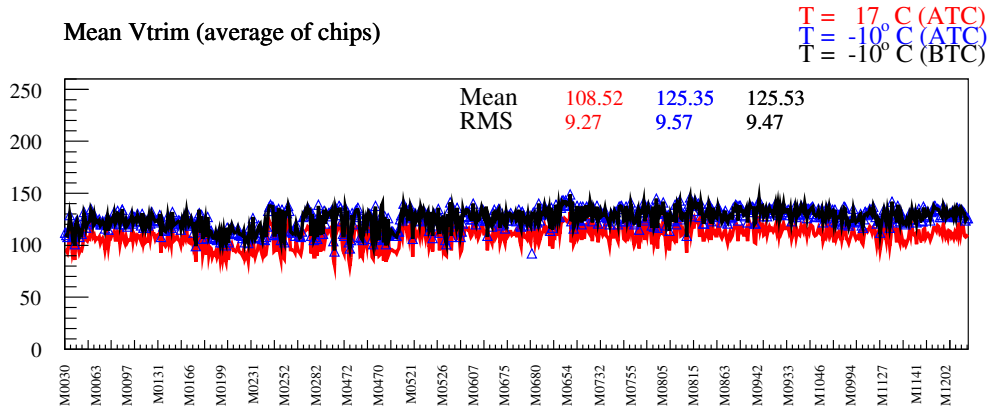




Operational parameters II

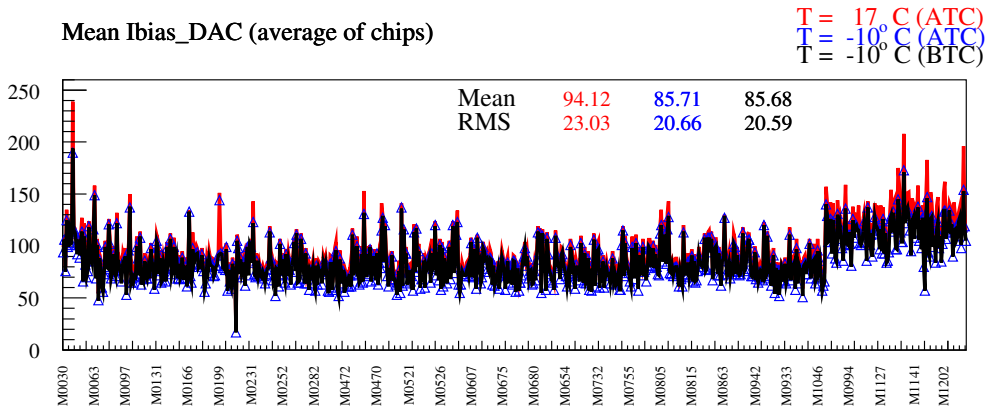
Mean DACs II

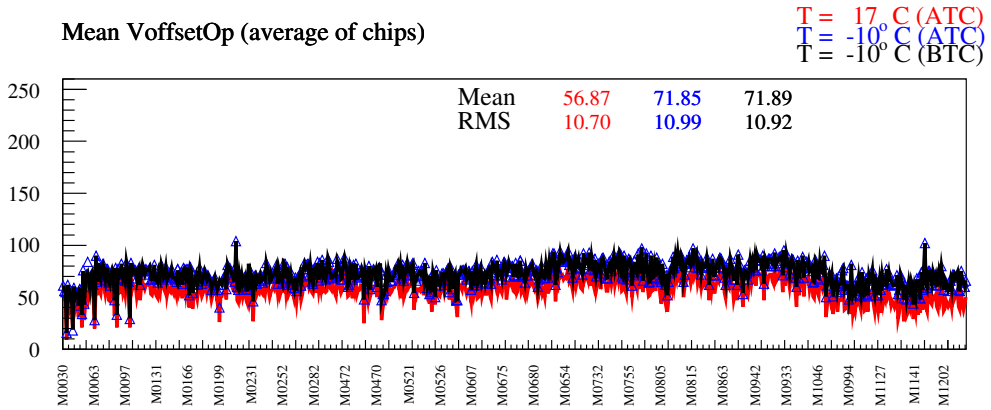




Operational parameters III

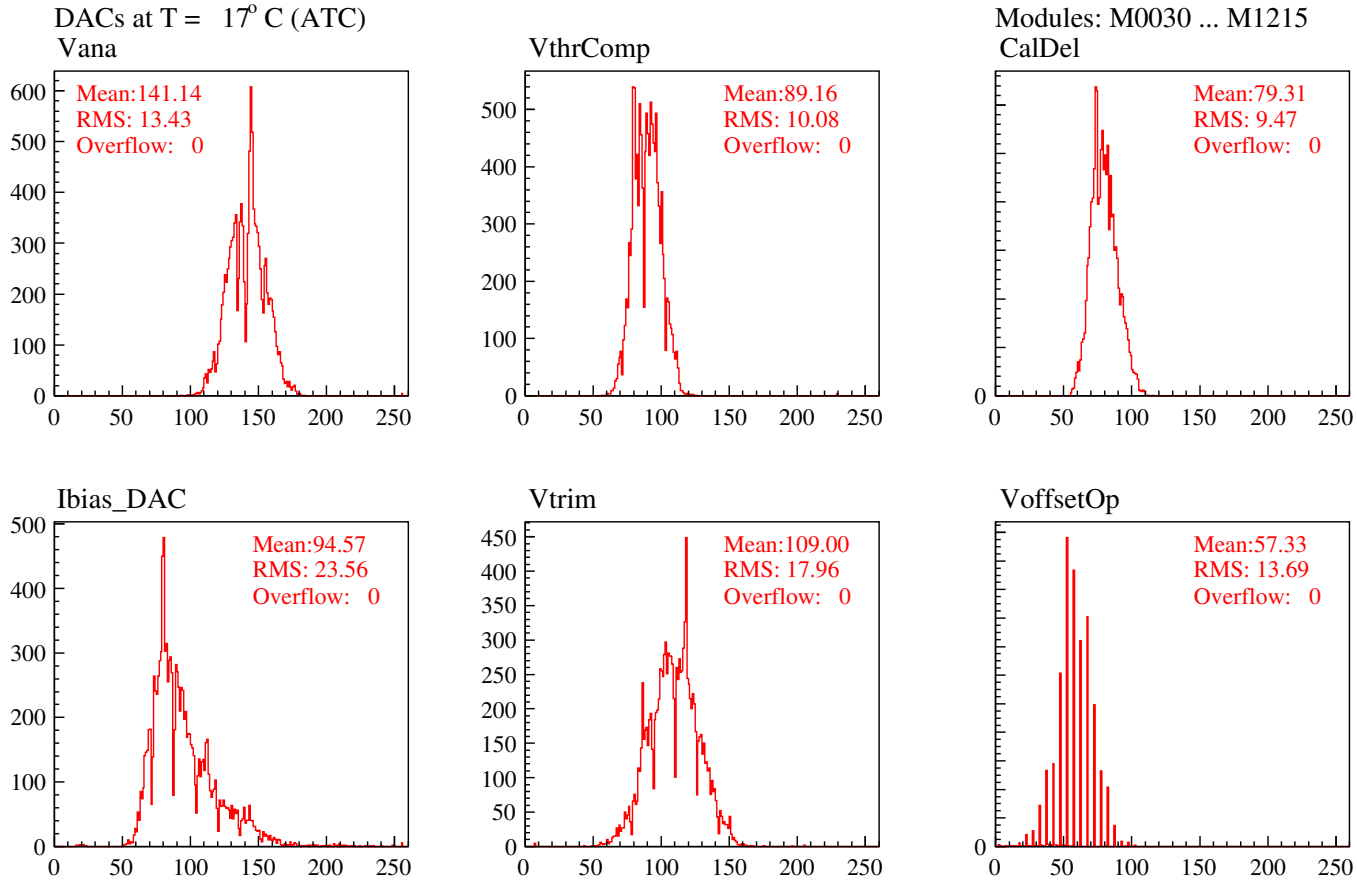
Mean DACs III





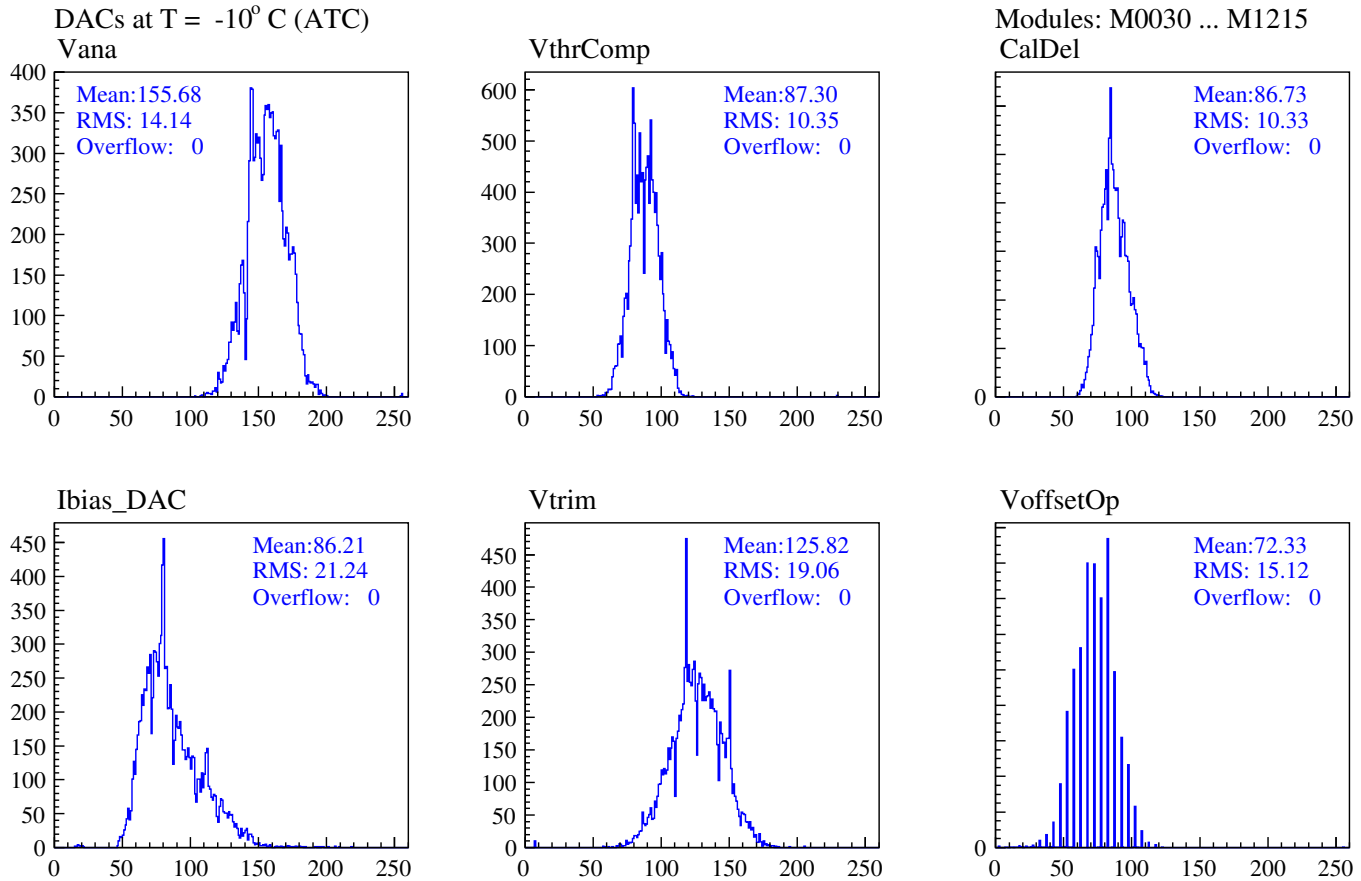
Operational parameters at $T = +17^{o}C$ (ATC)

DAC distribution (of chips)



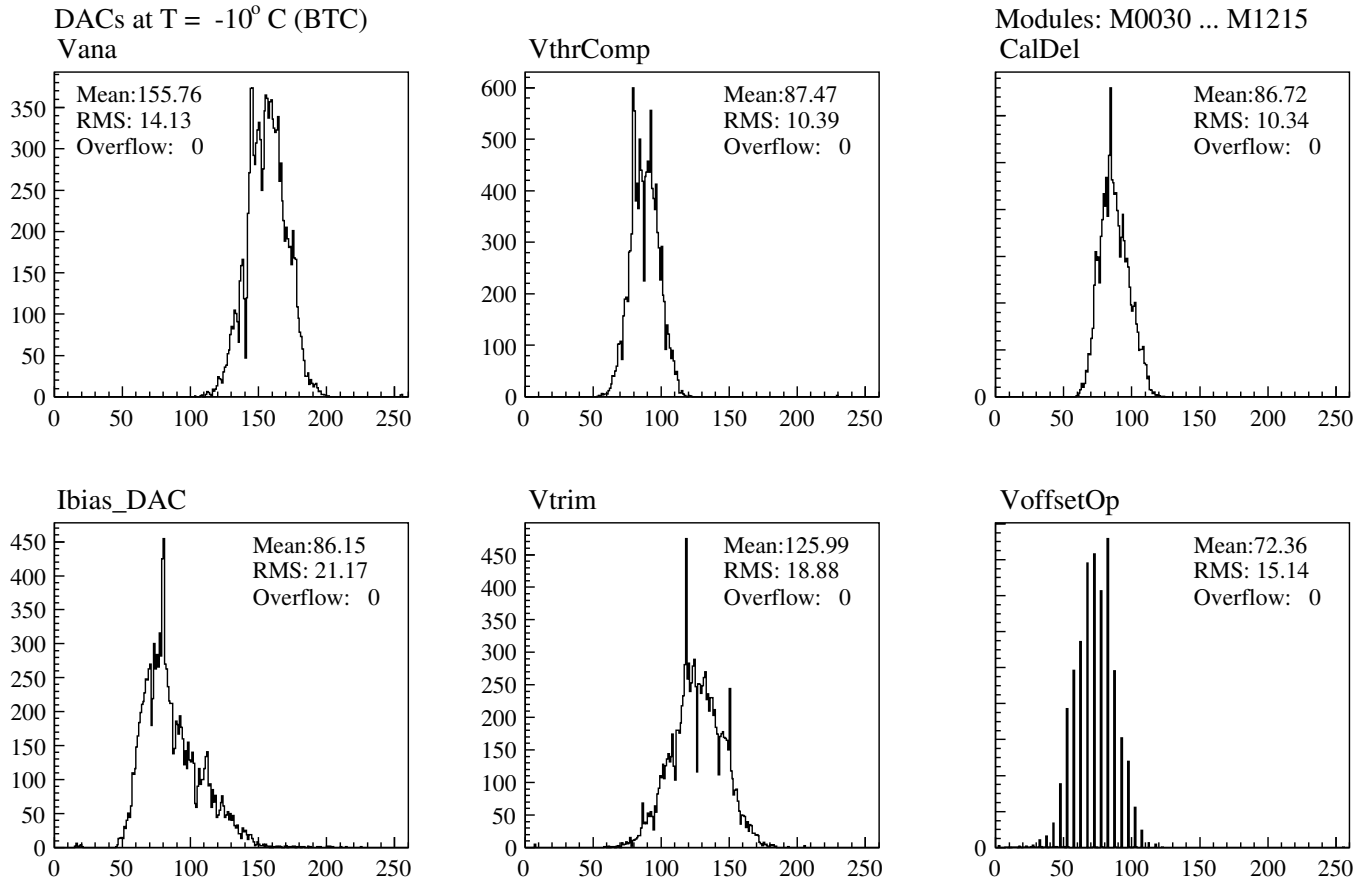
Operational parameters at $T = -10^oC$ (ATC)

DAC distribution (of chips)

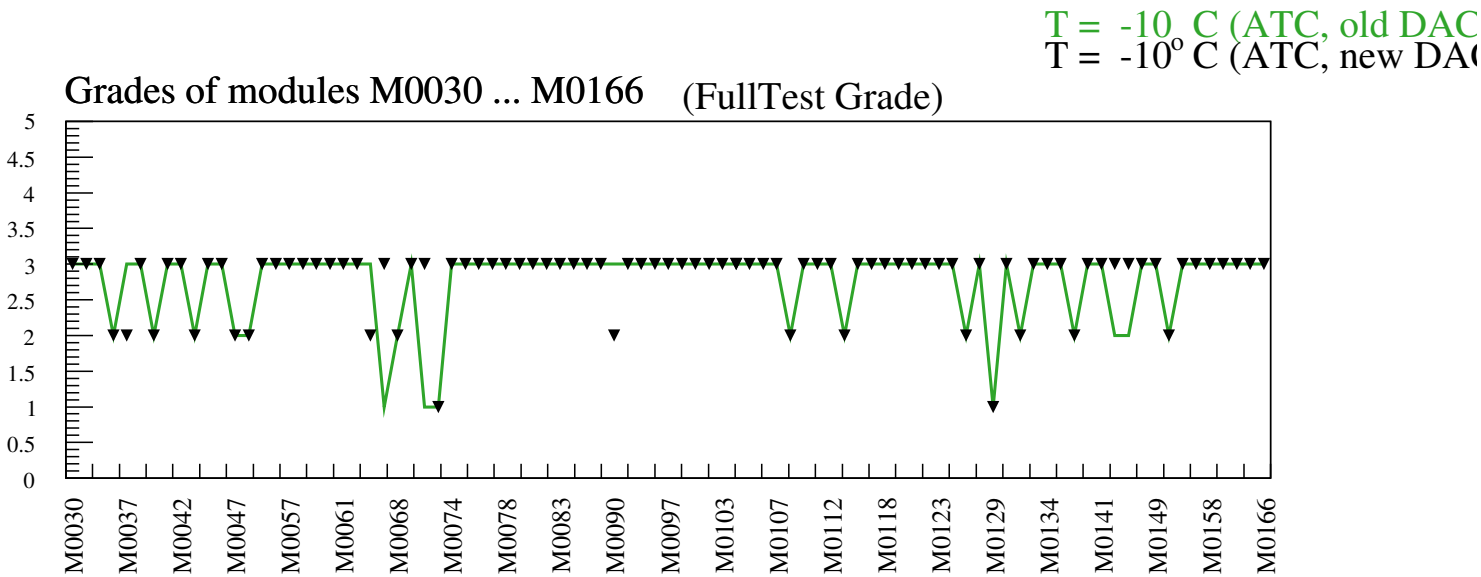


Operational parameters at $T = +17^{o}C$ (BTC)

DAC distribution (of chips)

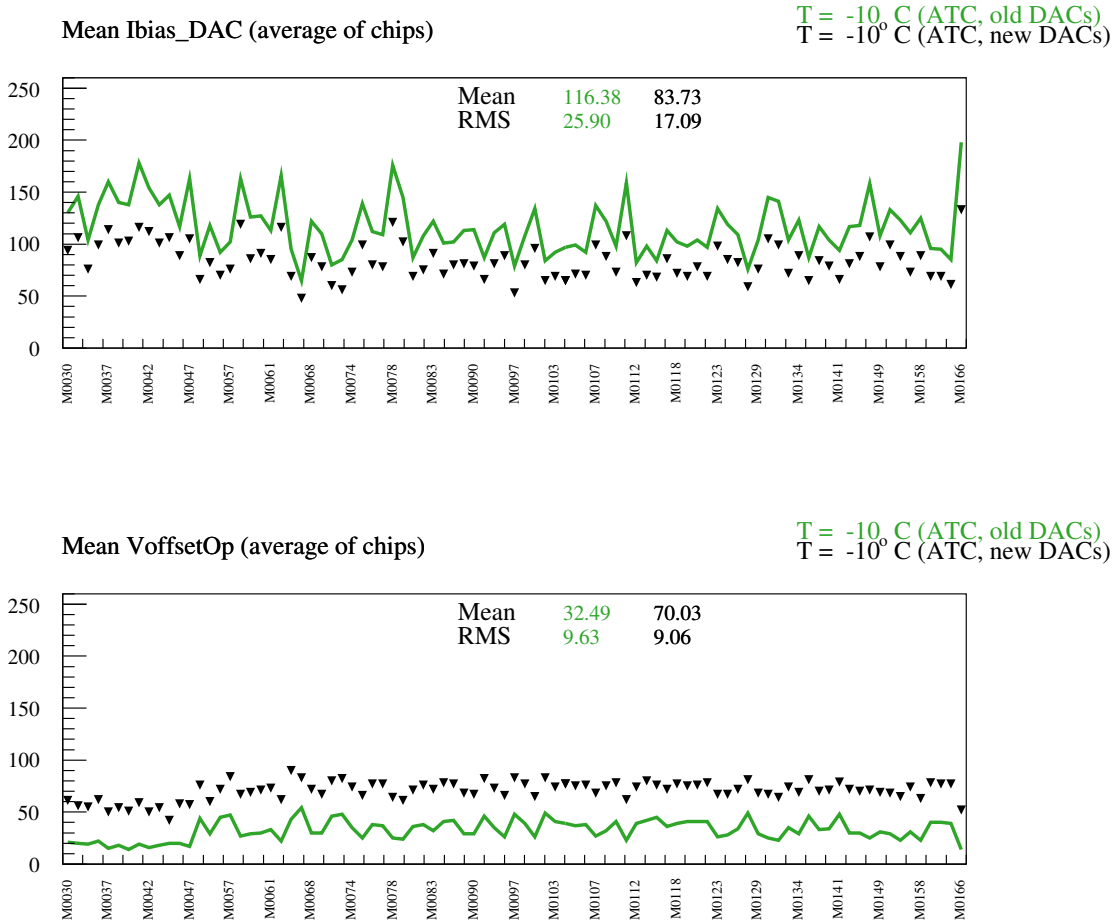


Retest Grades



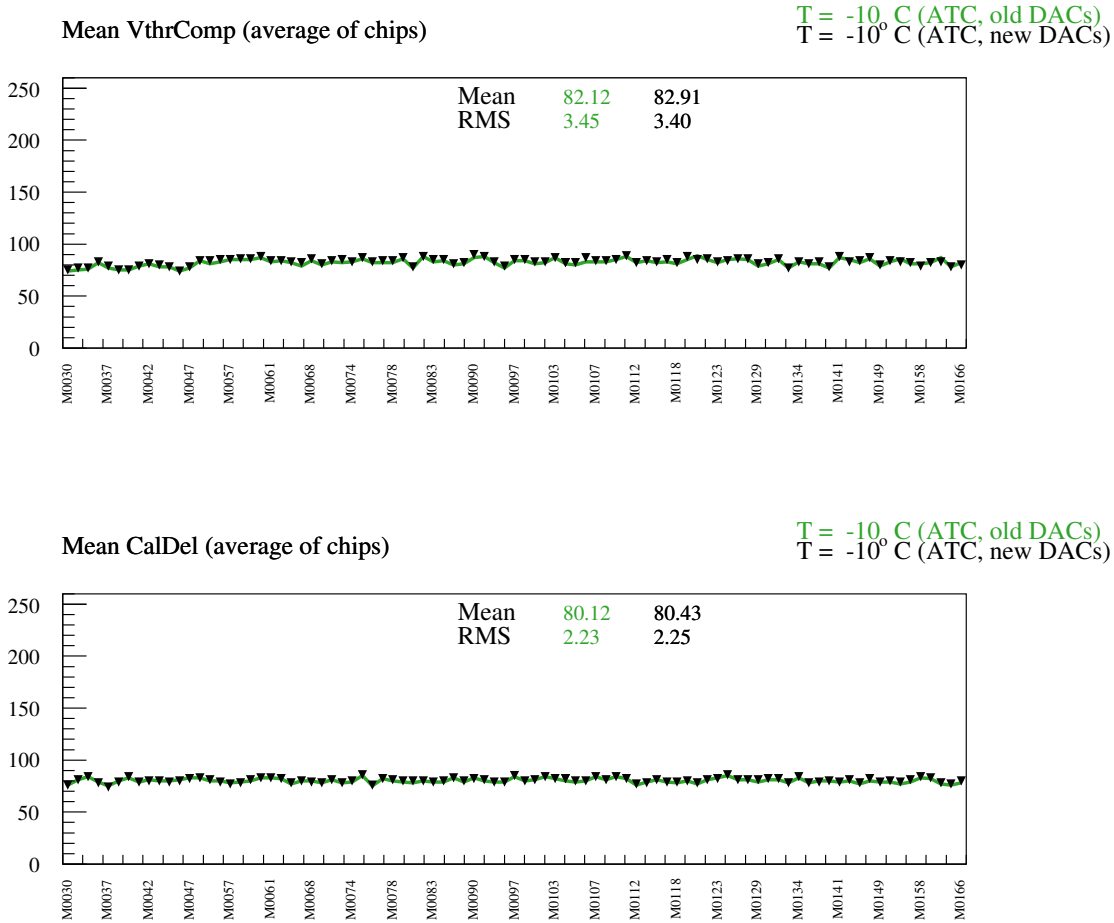
Operational parameters

Mean DACs I



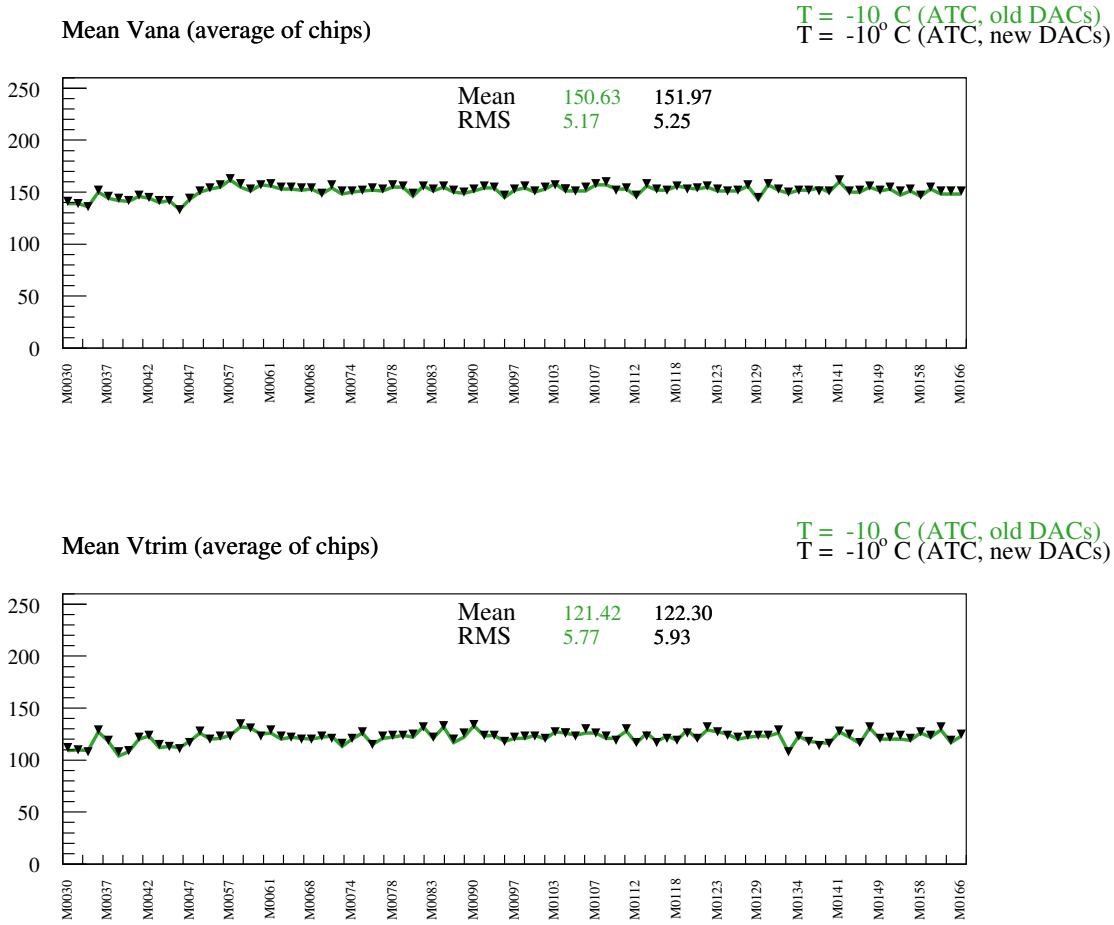
Operational parameters

Mean DACs II



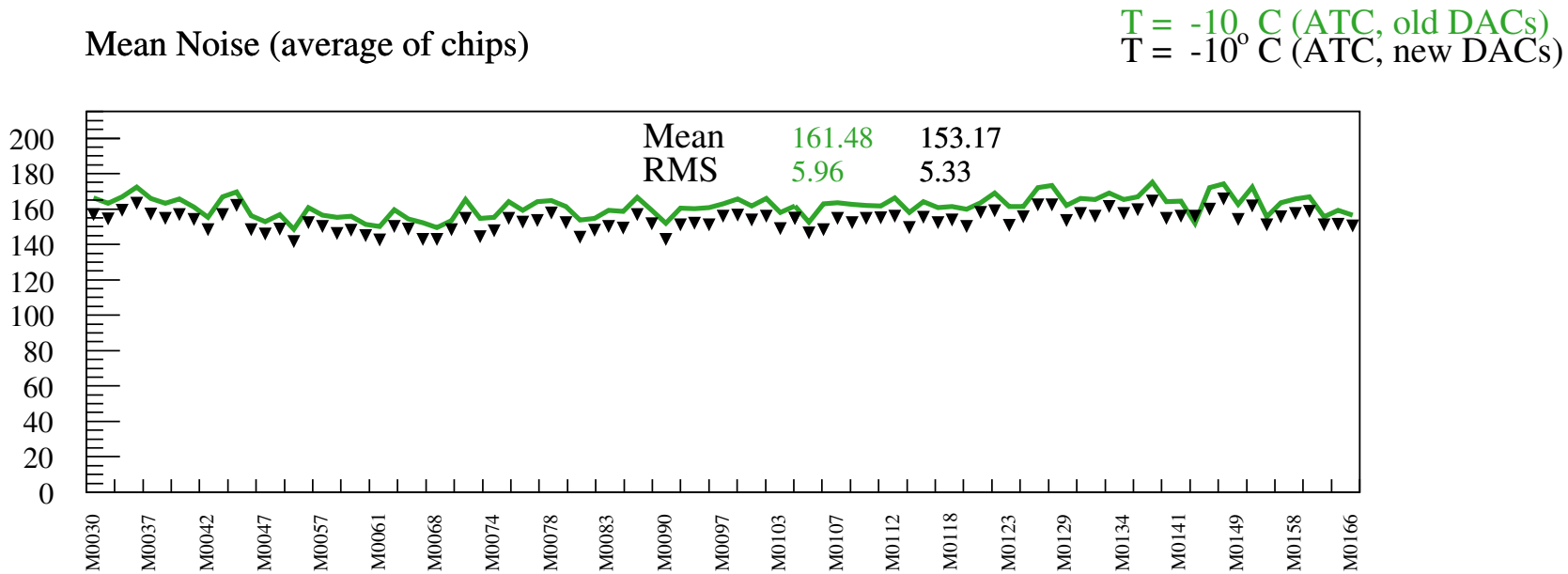
Operational parameters

Mean DACs III



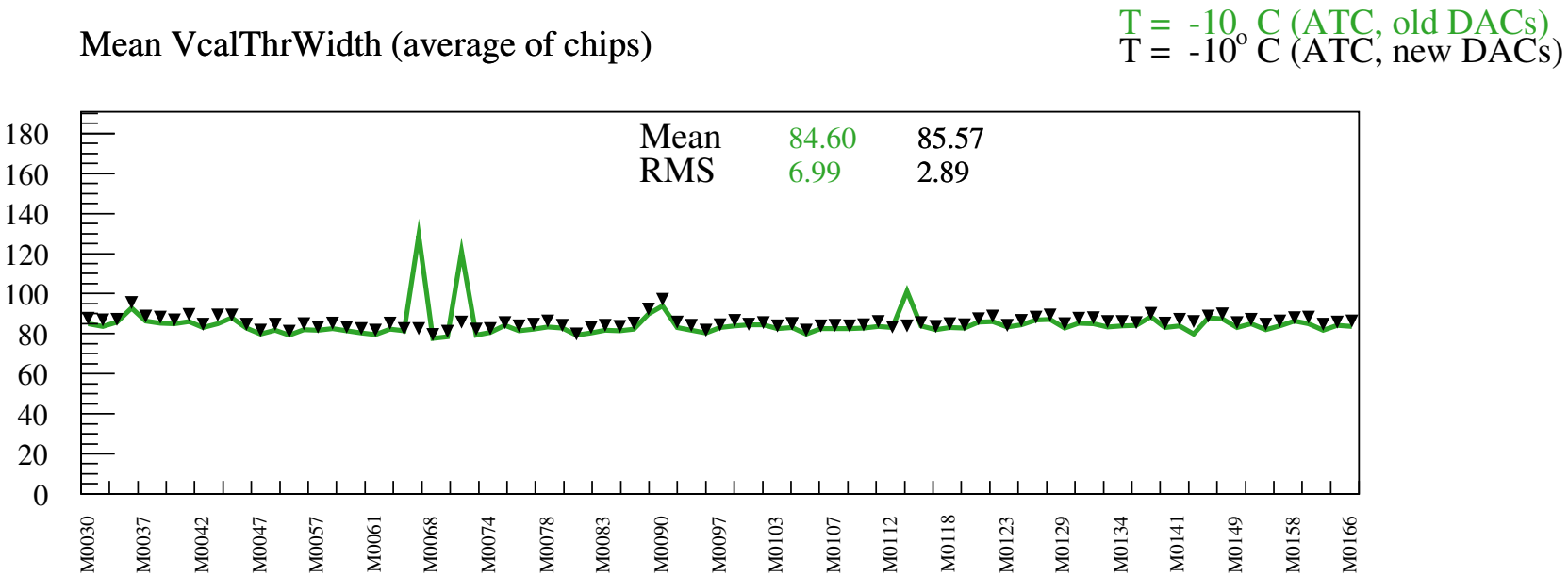
Performance parameters

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



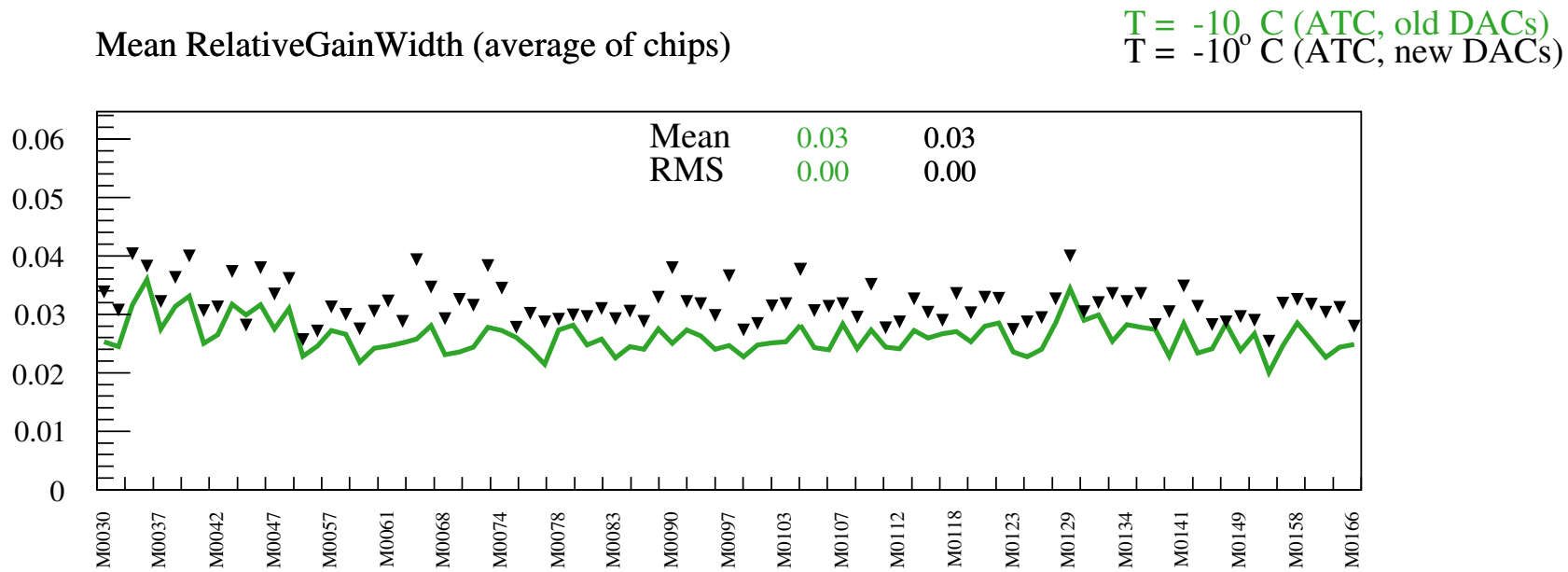
Performance parameters

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



Performance parameters

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



Performance parameters

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