

# V&V Summary Report

## L2 ASCDS Version : 10.5.2

Observation 19938 - L2 Version 1  
Chandra X-Ray Center

L2 Processing Date : Nov 12 2016

See [axaff19938N001\\_VV002\\_vvref2.pdf](#) for the full report

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	53.564859341741

## Comments

Optional chip S2 was dropped.

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The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

[http://asc.harvard.edu/cal/Acis/Cal\\_prods/Gain\\_and\\_Spectral\\_Resolution/A\\_CIS\\_response\\_summary.html](http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/A_CIS_response_summary.html)

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
- 2) The gain on FI chips remains within 0.3% below row 600 at all

measured temperatures.

3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.

4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.

5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.

In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.

seq_num	801658	Sequence number
obs_id	19938	Observation id
title	A detailed study of the colossal 700 kpc radius cold front in the Perseus cluster	Proposal title
observer	Stephen Walker	Principal investigator
object	Perseus cold front 2	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	50.495833	Observer's specified target RA [deg]
dec_targ	41.691972	Observer's specified target Dec [deg]
ra_nom	50.487760697208	Nominal RA [deg]
dec_nom	41.690270705183	Nominal Dec [deg]
roll_nom	168.91406167452	Nominal Roll [deg]
revision	1	Processing version of data
ontime	53564.859341741	Sum of GTIs [s]
livetime	52864.995020565	Livetime [s]
ontime0	53552.280917645	Sum of GTIs [s]
ontime1	53568.000412107	Sum of GTIs [s]
ontime2	53561.718251705	Sum of GTIs [s]
ontime3	53564.859341741	Sum of GTIs [s]
l2events	242727	Number of level 2 events

