

V&V Summary Report

L2 ASCDS Version : 10.6

Observation 19564 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Dec 8 2017

See [axaff19564N001_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	20.075140600562

Comments

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/Acis_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	801657	Sequence number
obs_id	19564	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 1	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	50.607917	Observer's specified target RA [deg]
dec_targ	41.458417	Observer's specified target Dec [deg]
ra_nom	50.604897316937	Nominal RA [deg]
dec_nom	41.450776283623	Nominal Dec [deg]
roll_nom	226.21068648023	Nominal Roll [deg]
revision	1	Processing version of data
ontime	20075.140600562	Sum of GTIs [s]
livetime	19812.844109512	Livetime [s]
ontime0	20078.158540845	Sum of GTIs [s]
ontime1	20078.199580789	Sum of GTIs [s]
ontime2	20075.099560618	Sum of GTIs [s]
ontime3	20075.140600562	Sum of GTIs [s]
l2events	86061	Number of level 2 events

