

# V&V Summary Report

## L2 ASCDS Version : 10.8

Observation 22732 - L2 Version 1  
Chandra X-Ray Center

L2 Processing Date : Aug 23 2019

See [axaff22732N001\\_VV002\\_vvref2.pdf](#) for the full report

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2020.04.02
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	29.062459233522

## Comments

The guide star in slot 5 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

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

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	801762	Sequence number
obs_id	22732	Observation id
title	Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146	Proposal title
observer	Helen Russell	Principal investigator
object	Abell 2146	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	239.06125	Observer's specified target RA [deg]
dec_targ	66.346917	Observer's specified target Dec [deg]
ra_nom	238.94479073789	Nominal RA [deg]
dec_nom	66.32781812343	Nominal Dec [deg]
roll_nom	255.31538014923	Nominal Roll [deg]
revision	1	Processing version of data
ontime	29062.459233522	Sum of GTIs [s]
livetime	28682.736808165	Livetime [s]
ontime0	29056.177222967	Sum of GTIs [s]
ontime1	29059.318263412	Sum of GTIs [s]
ontime2	29062.459223628	Sum of GTIs [s]
ontime3	29062.459233522	Sum of GTIs [s]
ontime6	29062.459233642	Sum of GTIs [s]
l2events	119986	Number of level 2 events

