V&V Summary Report
L2 ASCDS Version : 10.7.1

Observation 22129 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Mar 3 2019

See axaff22129N001_VV001_vvref2.pdf for the full report

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2019.03.04
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.05679306519

Comments

The focal plane temperature during the interval 667933224.98 - 667935615.08 (MET s) 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.

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The guide star in slot 6 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this guide star from the solution.

seq_num	801762	Sequence number
obs_id	22129	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
dtycycle	0	
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	239.06900069044	Nominal RA [deg]
dec_nom	66.405121350255	Nominal Dec [deg]
roll_nom	109.20161131319	Nominal Roll [deg]
revision	1	Processing version of data
ontime	30056.79306519	Sum of GTIs [s]
livetime	29664.078936304	Livetime [s]
ontime0	30056.669865727	Sum of GTIs [s]
ontime1	30059.851995707	Sum of GTIs [s]
ontime2	30063.034066081	Sum of GTIs [s]
ontime3	30056.79306519	Sum of GTIs [s]
ontime6	30059.769895792	Sum of GTIs [s]
l2events	119398	Number of level 2 events