

V&V Summary Report

L2 ASCDS Version : 8.5.1.1

Observation 13402 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 1 2014

See axaff13402N002_VV002_vvref2.pdf for the full report

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2018.03.06
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	15.081500115991

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.

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These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.

seq_num	801089	Sequence number
obs_id	13402	Observation id
title	Chandra Observation of the Most Massive Galaxy Clusters Detected in the South Pole Telescope Survey	Proposal title
observer	Professor Gordon Garmire	Principal investigator
object	SPT-CLJ0304-4401	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	46.064167	Observer's specified target RA [deg]
dec_targ	-44.031194	Observer's specified target Dec [deg]
ra_nom	46.092768358201	Nominal RA [deg]
dec_nom	-44.081571588219	Nominal Dec [deg]
roll_nom	294.26378693136	Nominal Roll [deg]
revision	2	Processing version of data
ontime	15081.500115991	Sum of GTIs [s]
livetime	14884.449214136	Livetime [s]
ontime0	15081.500115991	Sum of GTIs [s]
ontime1	15081.500115991	Sum of GTIs [s]
ontime2	15078.359135628	Sum of GTIs [s]
ontime3	15081.500115991	Sum of GTIs [s]
ontime6	15078.359135628	Sum of GTIs [s]
l2events	42440	Number of level 2 events

