

# V&V Summary Report

## L2 ASCDS Version : 10.6

Observation 19581 - L2 Version 1  
Chandra X-Ray Center

L2 Processing Date : Aug 25 2017

See [axaff19581N001\\_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	90.067195261359

## 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](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	801673	Sequence number
obs_id	19581	Observation id
title	A Deep, High-Resolution X-ray Analysis of the Phoenix Cluster	Prop
observer	Michael McDonald	Principal investigator
object	SPT-CLJ2344-4242	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	356.175	Observer's specified target RA [deg]
dec_targ	-42.714611	Observer's specified target Dec [deg]
ra_nom	356.23513375628	Nominal RA [deg]
dec_nom	-42.677790385401	Nominal Dec [deg]
roll_nom	36.249463195574	Nominal Roll [deg]
revision	1	Processing version of data
ontime	90067.195261359	Sum of GTIs [s]
livetime	88890.401048765	Livetime [s]
ontime0	90070.312820315	Sum of GTIs [s]
ontime1	90060.913180947	Sum of GTIs [s]
ontime2	90079.759612679	Sum of GTIs [s]
ontime3	90067.195261359	Sum of GTIs [s]
l2events	274684	Number of level 2 events

