

# V&V Summary Report

## L2 ASCDS Version : 10.7.1

Observation 22121 - L2 Version 2  
Chandra X-Ray Center

L2 Processing Date : Mar 7 2019

See axaff22121N002\_VV001\_vvref2.pdf for the full report

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2019.03.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	40.56350031209

## Comments

Joint Proposal: XMM. Roll preference met. Optional chips I2 and I3 not included.

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To compensate for a few bad pixels not marked as bad that were not removed in the Level 2 processing, a custom bad pixel file with additional bad pixels at (chipx, chipy) = (232:234,322:339) in S1 was added in this processing. As a result, the user will NOT find a relatively bright square of pixels on the S1 chip for level 2 data caused by the application of the dither algorithm to the bad pixels in question, as opposed to previous processing(s).

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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:

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	801782	Sequence number
obs_id	22121	Observation id
title	Galaxy collisions and shocks in compact groups	Proposal title
observer	Ewan O'Sullivan	Principal investigator
object	HCG57	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	174.475	Observer's specified target RA [deg]
dec_targ	21.981389	Observer's specified target Dec [deg]
ra_nom	174.47013304379	Nominal RA [deg]
dec_nom	21.982098961135	Nominal Dec [deg]
roll_nom	114.15845944274	Nominal Roll [deg]
revision	2	Processing version of data
ontime	40563.50031209	Sum of GTIs [s]
livetime	40033.508318098	Livetime [s]
ontime5	40563.50031209	Sum of GTIs [s]
ontime6	40563.50031209	Sum of GTIs [s]
ontime7	40563.50031209	Sum of GTIs [s]
ontime8	40560.35926199	Sum of GTIs [s]
l2events	464809	Number of level 2 events

