

V&V Summary Report

L2 ASCDS Version : 10.8.1

Observation 23008 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Jan 3 2020

See axaff23008N002_VV001_vvref2.pdf for the full report

V&V Scientist	Melania Nynka
V&V Date (YYYY-MM-DD)	2020.01.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	48.062400369763

Comments

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 the interval 691291383.63 - 691292939.83 (MET s) of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -111.0 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/A

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	201298	Sequence number
obs_id	23008	Observation id
title	THE TRUE NATURE OF X-RAYS FROM THE ORION TRAPEZIUM	Proposal title
observer	Norbert Schulz	Principal investigator
object	Orion Nebula Cluster	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.81875	Observer's specified target RA [deg]
dec_targ	-5.38975	Observer's specified target Dec [deg]
ra_nom	83.81780361563	Nominal RA [deg]
dec_nom	-5.386200141124	Nominal Dec [deg]
roll_nom	37.498835495663	Nominal Roll [deg]
revision	2	Processing version of data
ontime	48062.400369763	Sum of GTIs [s]
livetime	47434.429725908	Livetime [s]
ontime5	48062.400369763	Sum of GTIs [s]
ontime6	48062.400369763	Sum of GTIs [s]
ontime7	48062.400369763	Sum of GTIs [s]
ontime8	48059.259269476	Sum of GTIs [s]
l2events	694169	Number of level 2 events

