

V&V Summary Report

L2 ASCDS Version : 10.7.1

Observation 22172 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Apr 14 2019

See [axaff22172N001_VV001_vvref2.pdf](#) for the full report

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.04.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	45.05098837173

Comments

The focal plane temperature is warmer than -112.0 C during the interval 671601923.26 - 671608919.96 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the back-illuminated chips. 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.

seq_num	502997	Sequence number
obs_id	22172	Observation id
title	PSR J2030+4415: A Breakthrough Target for Bowshock Studies	Proposa
observer	Roger Romani	Principal investigator
object	PSR J2030+4415	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	307.714167	Observer's specified target RA [deg]
dec_targ	44.260861	Observer's specified target Dec [deg]
ra_nom	307.71001289054	Nominal RA [deg]
dec_nom	44.26218856699	Nominal Dec [deg]
roll_nom	83.159542515002	Nominal Roll [deg]
revision	1	Processing version of data
ontime	45050.98837173	Sum of GTIs [s]
livetime	44462.364042598	Livetime [s]
ontime2	45044.542211533	Sum of GTIs [s]
ontime3	45041.483381033	Sum of GTIs [s]
ontime6	45047.806361318	Sum of GTIs [s]
ontime7	45050.98837173	Sum of GTIs [s]
ontime8	45050.86525178	Sum of GTIs [s]
l2events	324612	Number of level 2 events

