

V&V Summary Report

L2 ASCDS Version : 10.6

Observation 20853 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Nov 22 2017

See [axaff20853N002_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	28.178918076515

Comments

One optional chip was dropped.

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A spatial region of the original bias map for CCD = 1 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 1 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:

(72.52260,-3.16235), (72.52386,-3.16477), (72.62477,-3.11296),
(72.62266,-3.11097).

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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:

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	801659	Sequence number
obs_id	20853	Observation id
title	A Violent merger in the cluster PLCKESZ G200.9-28.2: Relic formation caught in action?	Proposal title
observer	Daniel Wik	Principal investigator
object	PLCKESZ G200.9-28.2	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	72.589954	Observer's specified target RA [deg]
dec_targ	-3.004375	Observer's specified target Dec [deg]
ra_nom	72.596175122757	Nominal RA [deg]
dec_nom	-2.995815025867	Nominal Dec [deg]
roll_nom	27.209012347174	Nominal Roll [deg]
revision	2	Processing version of data
ontime	28178.918076515	Sum of GTIs [s]
livetime	27810.739766828	Livetime [s]
ontime0	28185.200216889	Sum of GTIs [s]
ontime1	28178.918076515	Sum of GTIs [s]
ontime2	28182.059156656	Sum of GTIs [s]
ontime3	28178.91802609	Sum of GTIs [s]
l2events	76108	Number of level 2 events

