

V&V Summary Report

L2 ASCDS Version : 10.7.1

Observation 21205 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : Jun 12 2019

See [axaff21205N001_VV001_vvref2.pdf](#) for the full report

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.06.12
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	70.104002785802

Comments

The ACIS focal plane temperature is warmer than -114.0 C degrees during the interval 676647142.68 - 676676584.09 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the front-illuminated chips. The focal plane temperature is warmer than -112.0 C during the interval 676665599.88 - 676676584.09 (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/A_CIS_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	402038	Sequence number
obs_id	21205	Observation id
title	Following a black hole X-ray transient through the transition into quiescence	Proposal title
observer	Elena Gallo	Principal investigator
object	MAXI J1820+070	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	275.09125	Observer's specified target RA [deg]
dec_targ	7.185361	Observer's specified target Dec [deg]
ra_nom	275.08691695446	Nominal RA [deg]
dec_nom	7.1831053011405	Nominal Dec [deg]
roll_nom	152.66203648548	Nominal Roll [deg]
revision	1	Processing version of data
ontime	70104.002785802	Sum of GTIs [s]
livetime	65615.87681187	Livetime [s]
ontime6	70104.002785802	Sum of GTIs [s]
ontime7	70104.002785802	Sum of GTIs [s]
ontime8	70103.340456843	Sum of GTIs [s]
l2events	62402	Number of level 2 events

