

# V&V Summary Report

## L2 ASCDS Version : 10.5.2

Observation 19982 - L2 Version 1  
Chandra X-Ray Center

L2 Processing Date : Jan 13 2017

See axaff19982N001\_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	68.382736235261

## Comments

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](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	601236	Sequence number
obs_id	19982	Observation id
title	To the Edge and Beyond: A Legacy Survey of the Grand Design Spiral M81	Proposal title
observer	Douglas Swartz	Principal investigator
object	M81 W	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	148.552917	Observer's specified target RA [deg]
dec_targ	69.026889	Observer's specified target Dec [deg]
ra_nom	148.53250513075	Nominal RA [deg]
dec_nom	69.029511350672	Nominal Dec [deg]
roll_nom	137.22775156626	Nominal Roll [deg]
revision	1	Processing version of data
ontime	68382.736235261	Sum of GTIs [s]
livetime	67489.265443709	Livetime [s]
ontime0	68379.595244884	Sum of GTIs [s]
ontime1	68385.877355456	Sum of GTIs [s]
ontime2	68389.018375158	Sum of GTIs [s]
ontime3	68382.736235261	Sum of GTIs [s]
l2events	250854	Number of level 2 events

