

V&V Reference Report

L2 ASCDS Version : 10.8

Observation 21403 - L2 Version 2
Chandra X-Ray Center

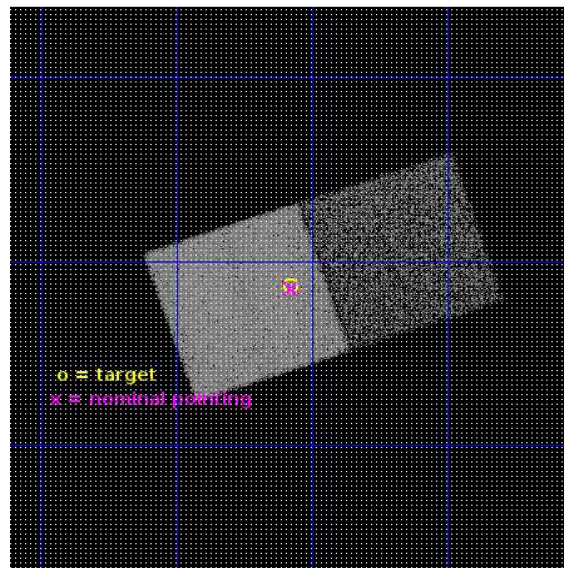
L2 Processing Date : Sep 26 2019

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1 Front

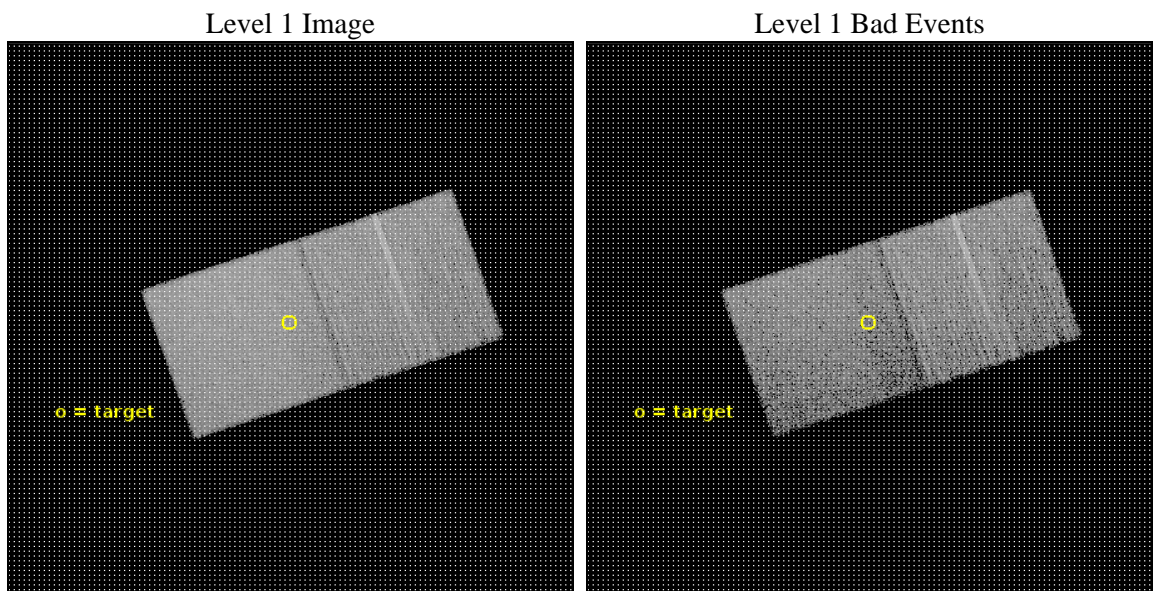
seq_num	703701	Sequence number
obs_id	21403	Observation id
title	COMPLETING THE CHANDRA EXTRAGALACTIC 3CR SURVEY	Proposal title
observer	Francesco Massaro	Principal investigator
object	3CR 454.0	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	342.894583	Observer's specified target RA [deg]
dec_targ	18.811139	Observer's specified target Dec [deg]
ra_nom	342.89411794743	Nominal RA [deg]
dec_nom	18.808618864104	Nominal Dec [deg]
roll_nom	161.15680298658	Nominal Roll [deg]
revision	2	Processing version of data
ontime	18077.277457356	Sum of GTIs [s]
livetime	17833.317671609	Livetime [s]
ontime6	18074.195327044	Sum of GTIs [s]
ontime7	18077.277457356	Sum of GTIs [s]
l2events	89700	Number of level 2 events



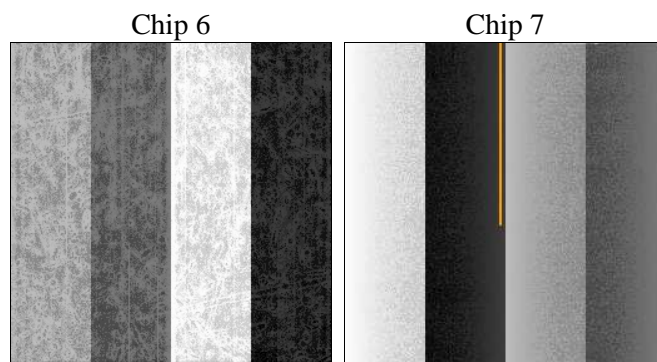
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	18000.000000	[s] Scheduled observation exposure time
ascdsver	10.8	Processing system revision	ontime	18077.277457356	Sum of GTIs [s]
caldsver	4.8.4.1	 	ontime6	18074.195327044	Sum of GTIs [s]
date	2019-09-26T16:28:00	Date and time of file creation	ontime7	18077.277457356	Sum of GTIs [s]
revision	2	Processing version of data	l1events	331504	Number of level 1 events

2.1.4 Events

	ccd 6	ccd 7
level 1 events	151033	180471
rejected events	134874	102775
rejected %	89%	56%

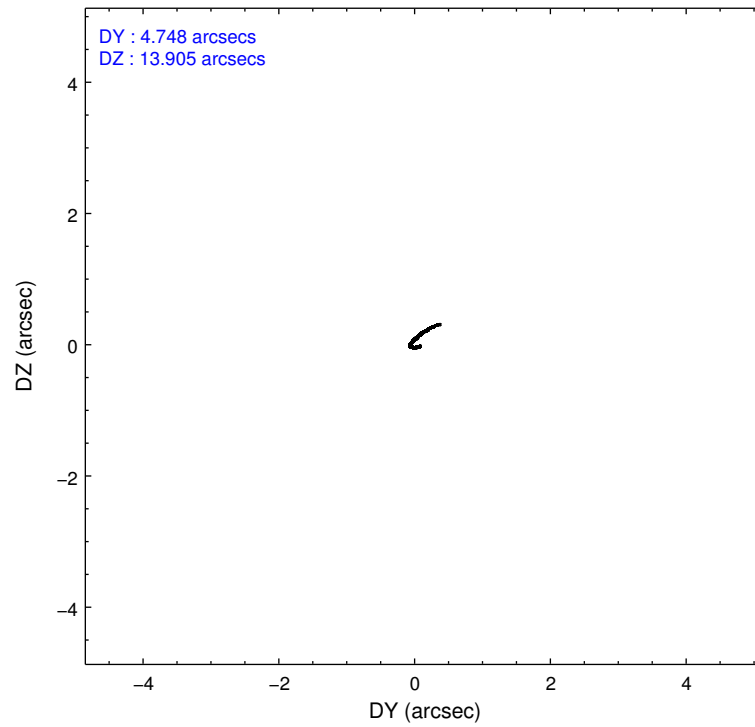
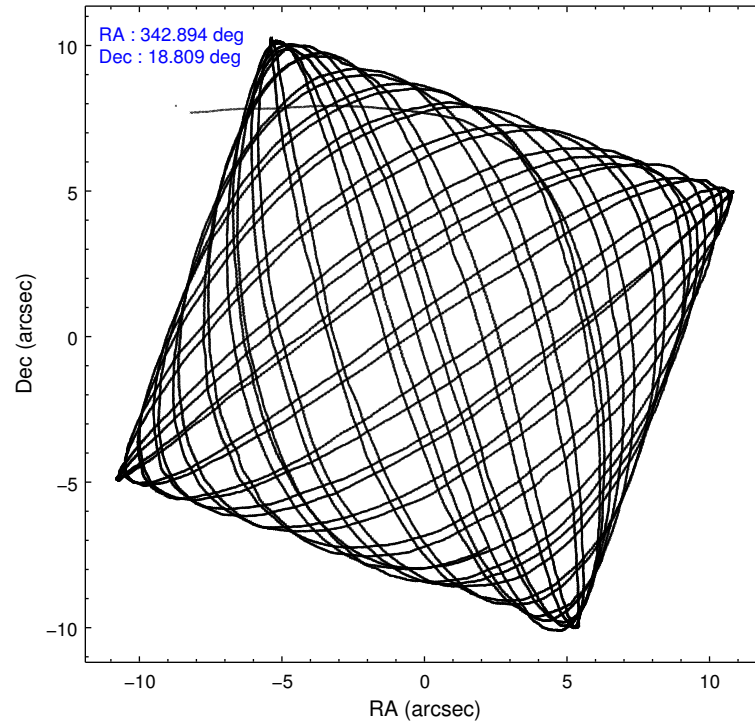
	ccd 6	ccd 7
grade 0 events	3929	6564
	2%	3%
grade 1 events	51	271
	0%	0%
grade 2 events	5049	15828
	3%	8%
grade 3 events	1186	5978
	0%	3%
grade 4 events	1181	6019
	0%	3%
grade 5 events	5259	17017
	3%	9%
grade 6 events	4823	43327
	3%	24%
grade 7 events	129555	85467
	85%	47%

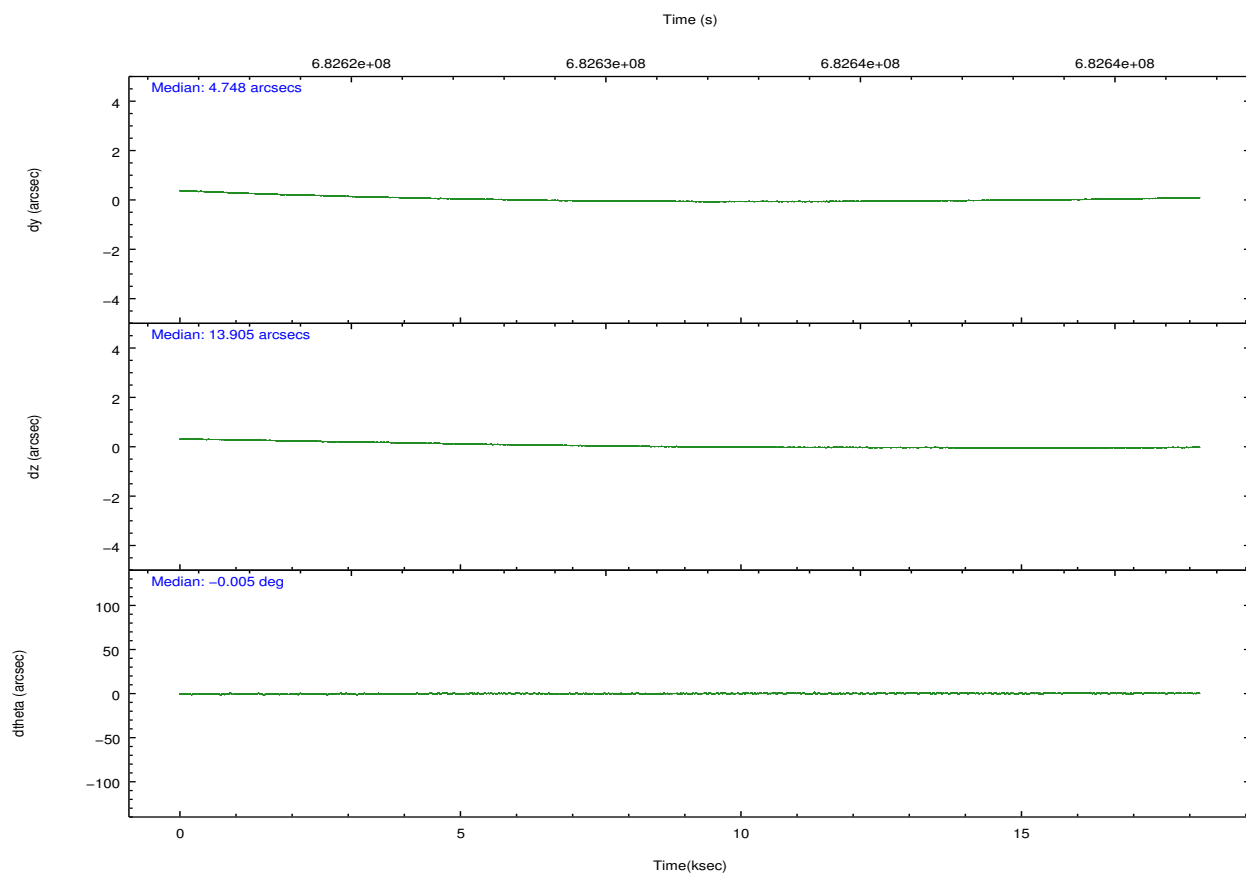
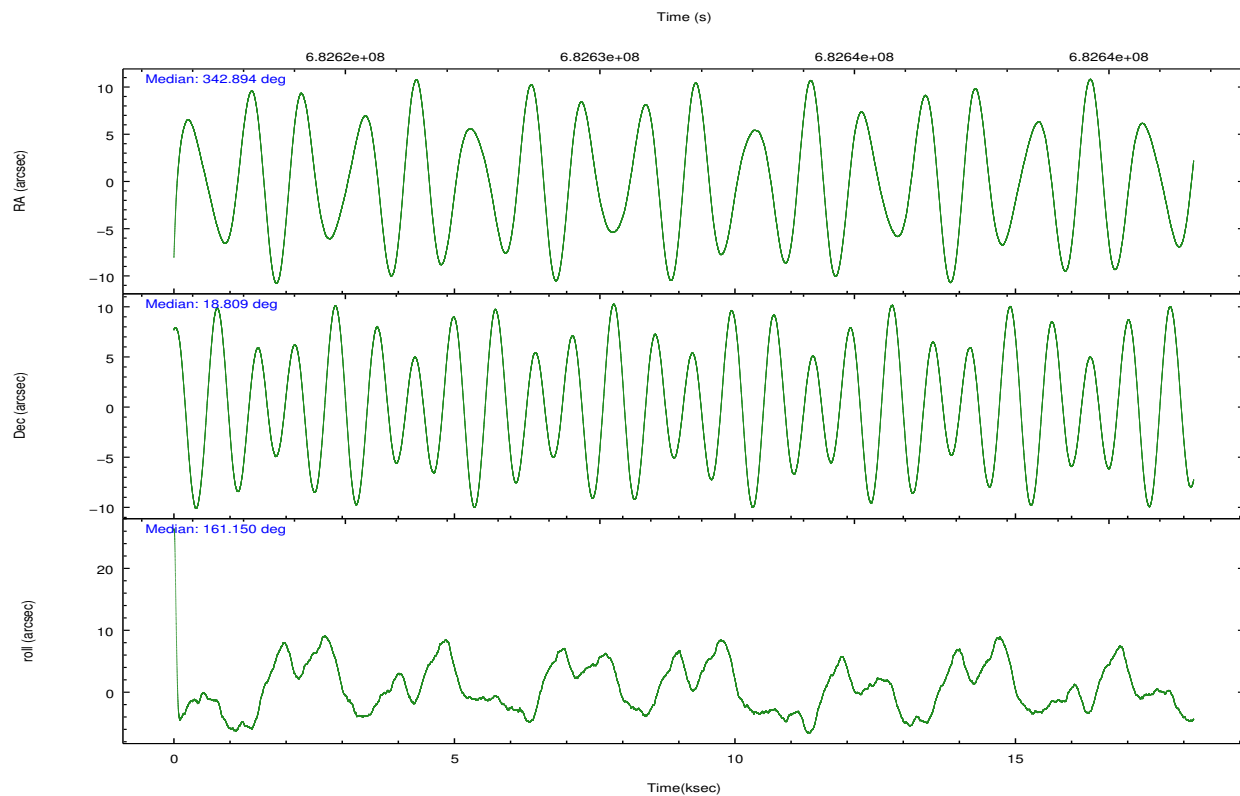
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-67	ACIS-67
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	342.922493	342.8941179474277
[deg] Pointing Dec	18.814285	18.80861886410391
[deg] Pointing Roll	160.991003	161.1568029865778
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	682622740.184000	682621622.0311199
Observation start date	2019-08-19T17:24:31	2019-08-19T17:07:02
[s] Observation end time (MET)	682640740.184000	682642024.14485
Observation end date	2019-08-19T22:24:31	2019-08-19T22:47:04
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O1	N
CCD I3 on	O2	N
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	Y	Y
CCD S3 on	Y	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	2	2
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3

2.3 Aspect



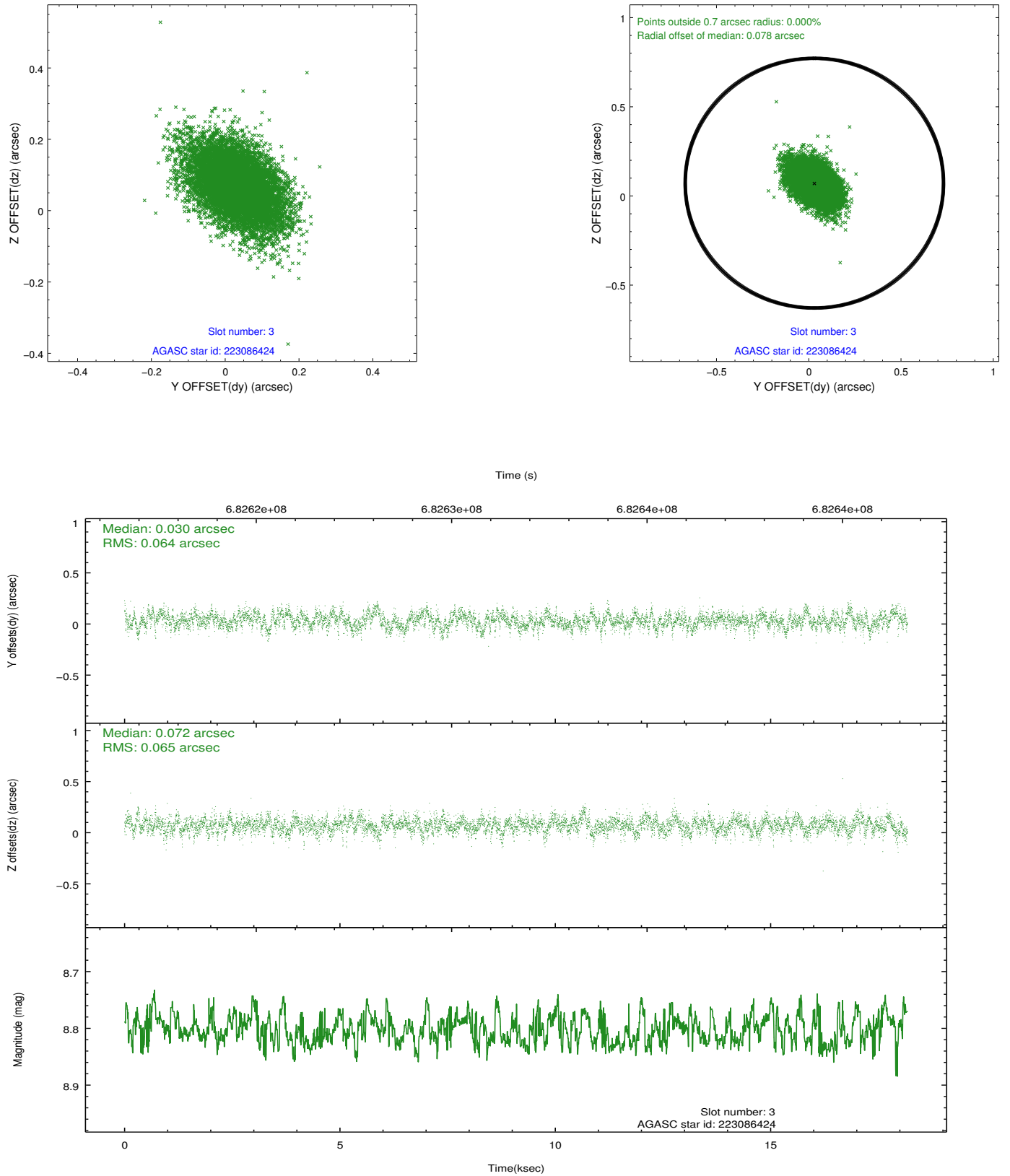


Slot Statistics

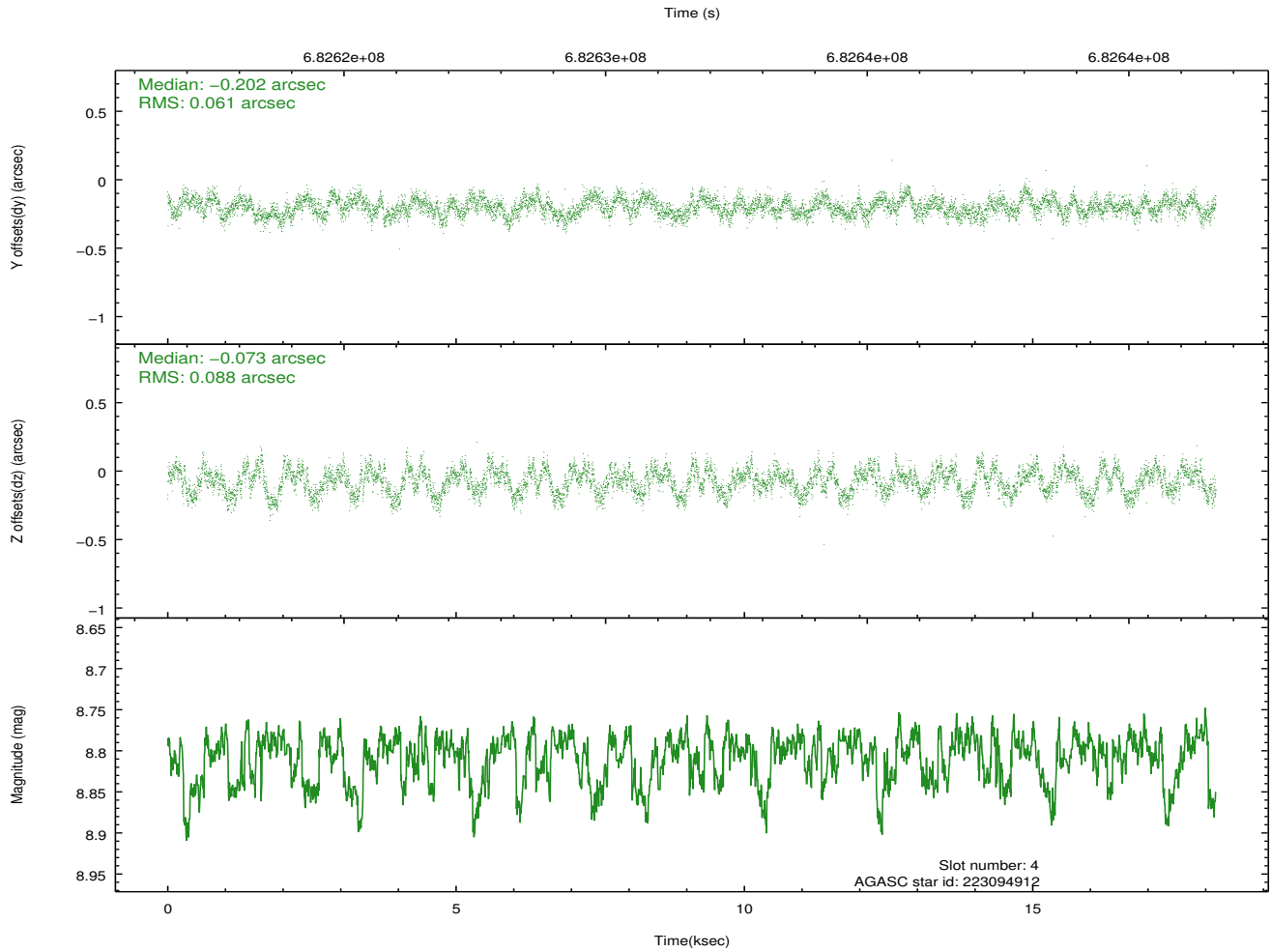
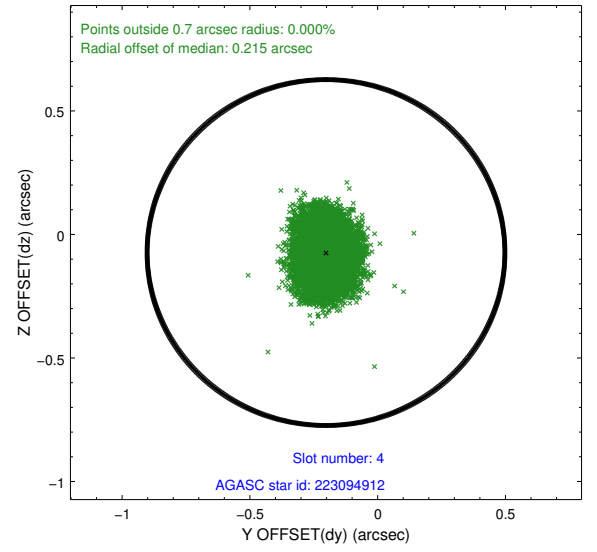
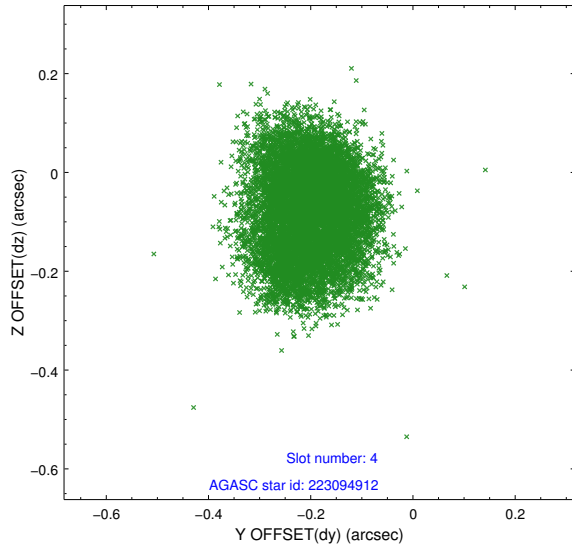
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.18	4432	1.000	-0.260	-0.156	0.011	0.026	0.000000	0.000000	-757.71	-1735
1	FID		ACIS-S-4	7.30	4434	1.000	0.594	0.167	0.008	0.015	0.000000	0.000000	2156.29	173
2	FID		ACIS-S-5	7.31	4433	1.000	-0.364	-0.002	0.011	0.024	0.000000	0.000000	-1810.40	166
3	GUIDE	used	223086424	8.80	8864	1.000	0.030	0.072	0.095	0.164	343.221803	18.197390	-1690.78	1765
4	GUIDE	used	223094912	8.80	8860	1.000	-0.202	-0.073	0.116	0.178	342.409741	18.489731	1275.22	1672
5	GUIDE	used	223611184	6.38	8868	1.000	0.188	0.333	0.074	0.118	342.663068	19.141199	1217.35	-825
6	GUIDE	used	223617680	8.53	8866	1.000	-0.158	-0.213	0.085	0.144	342.217676	18.868986	2335.43	591
7	GUIDE	used	223618256	8.67	8858	1.000	0.139	-0.107	0.113	0.178	342.527721	18.773499	1225.09	576

2.4 Star Slots

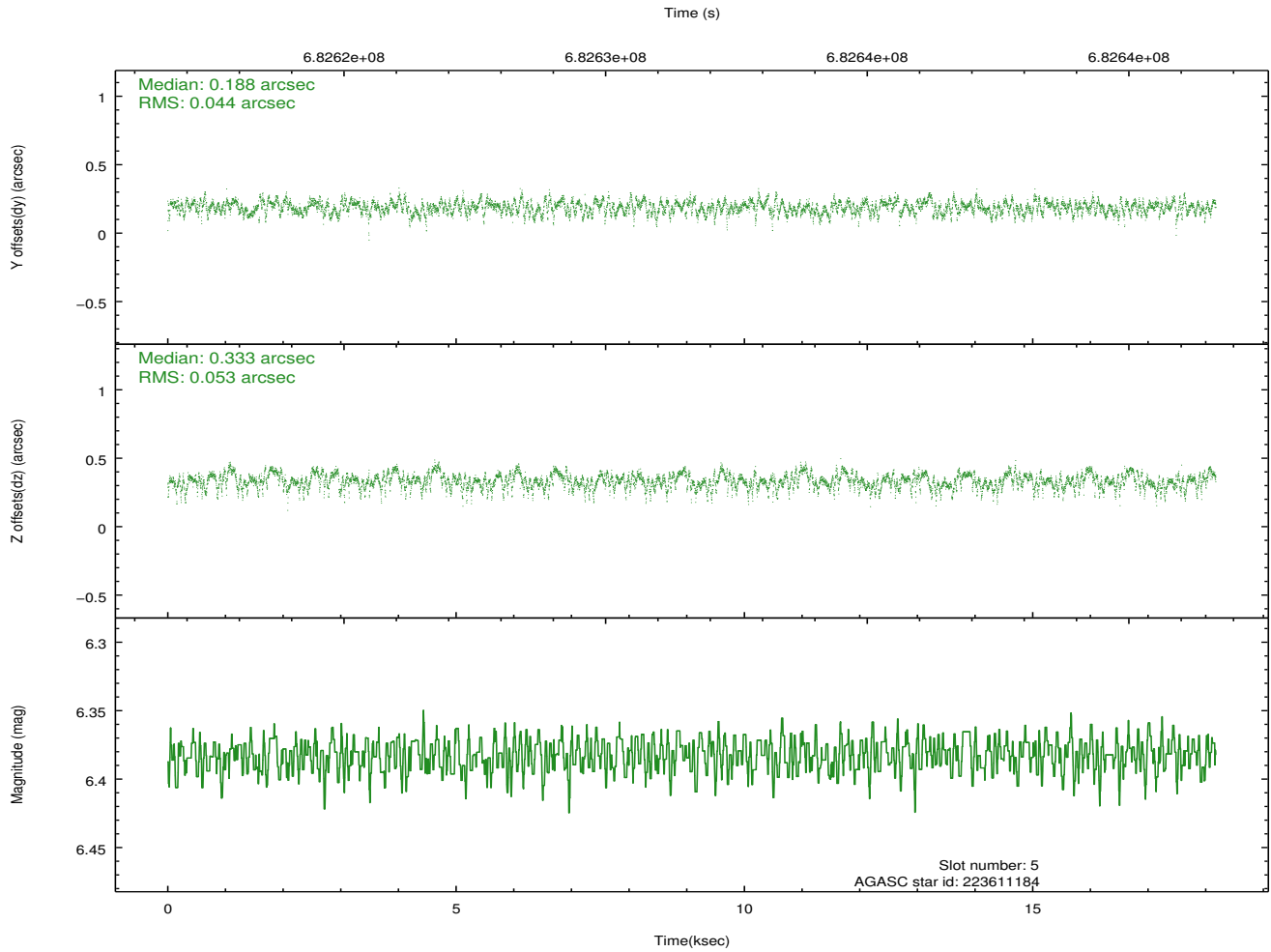
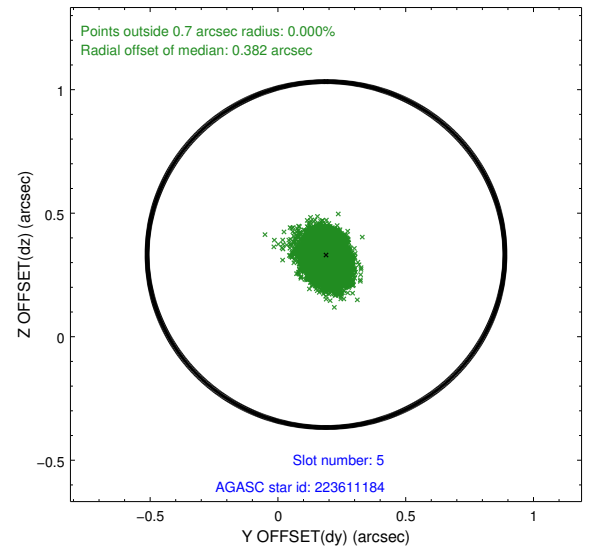
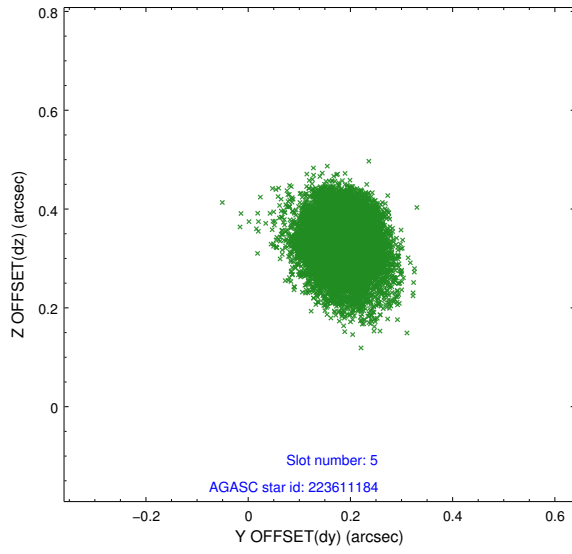
2.4.1 Slot 3



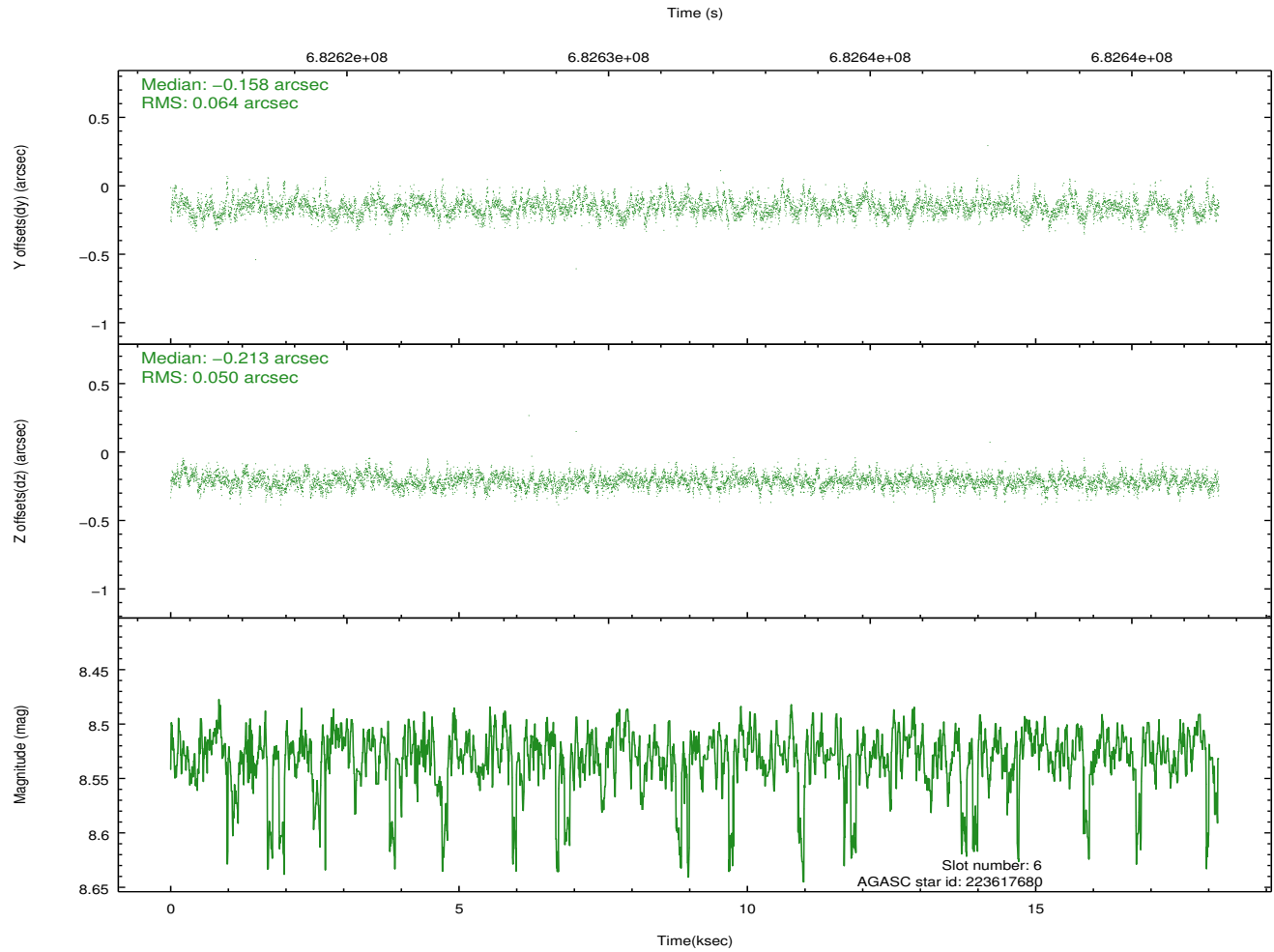
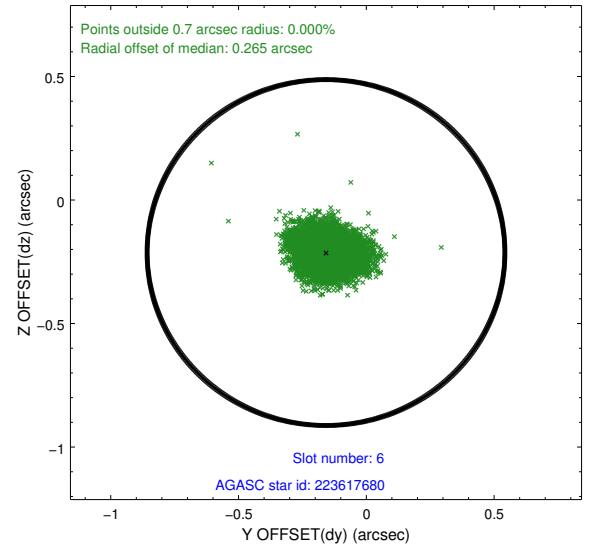
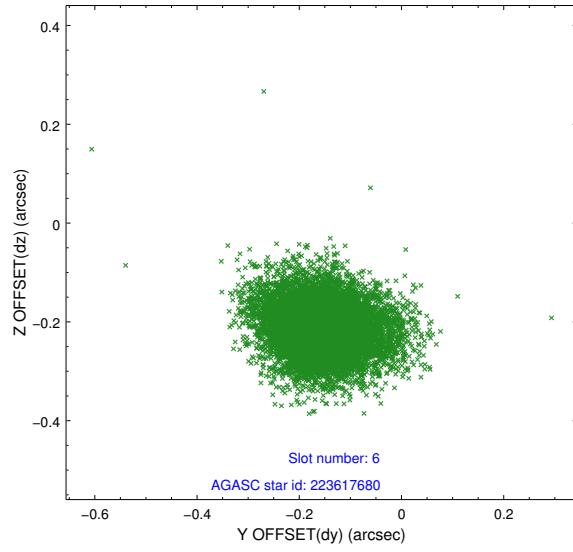
2.4.2 Slot 4



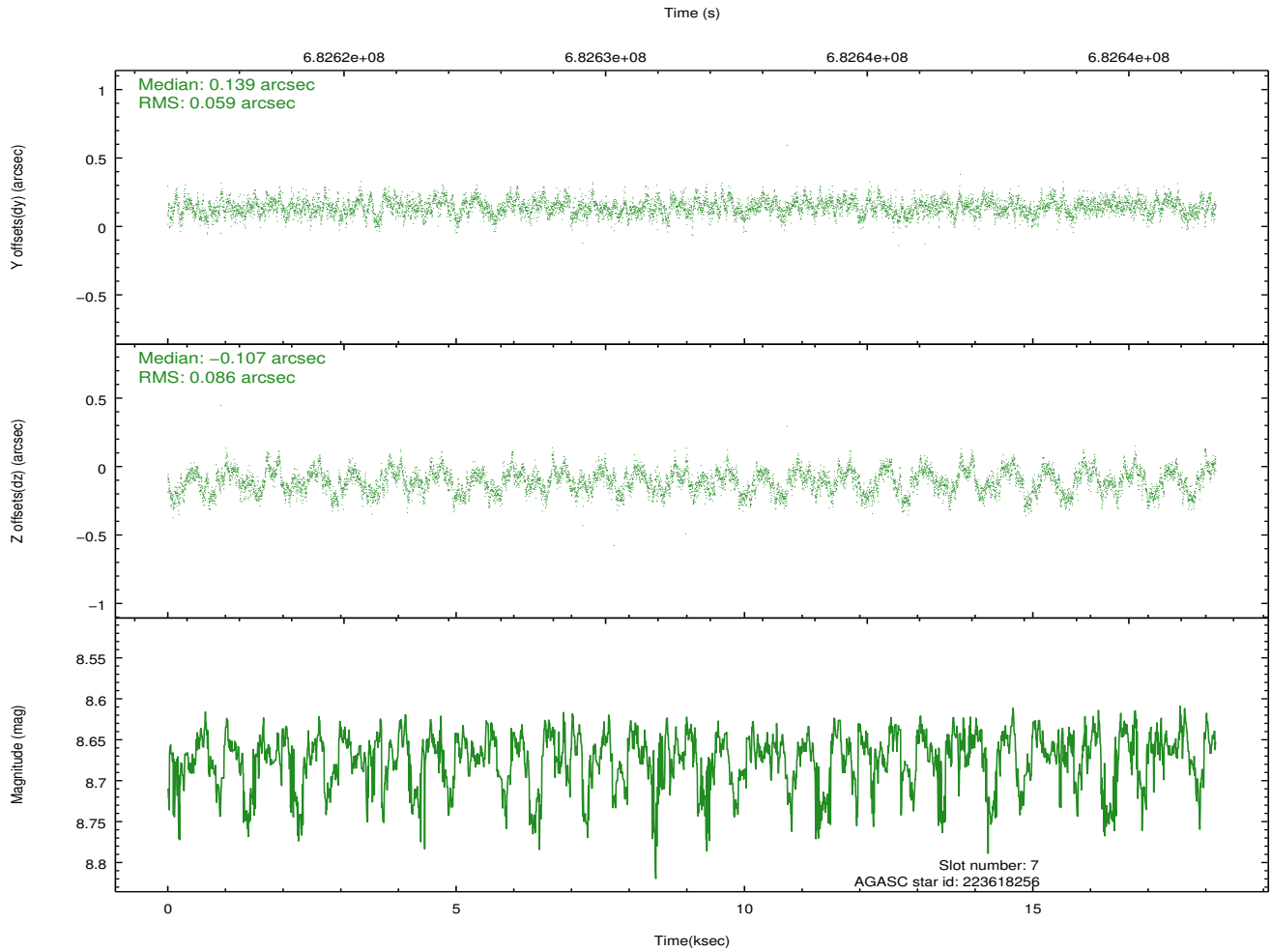
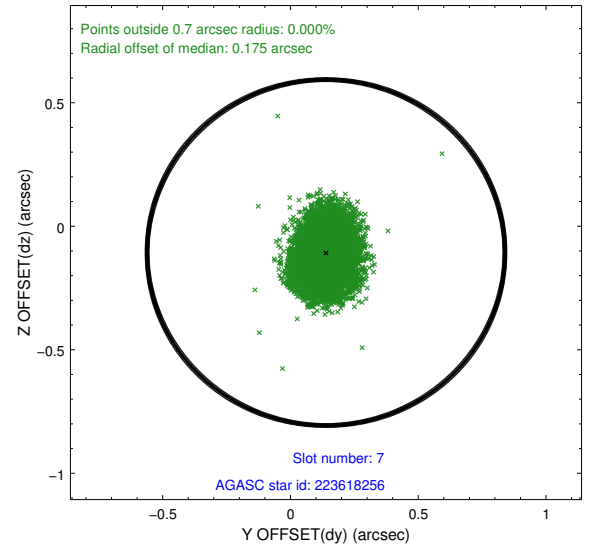
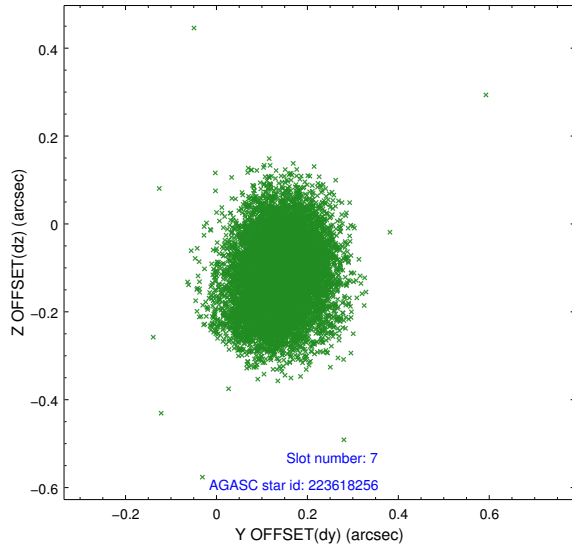
2.4.3 Slot 5



2.4.4 Slot 6

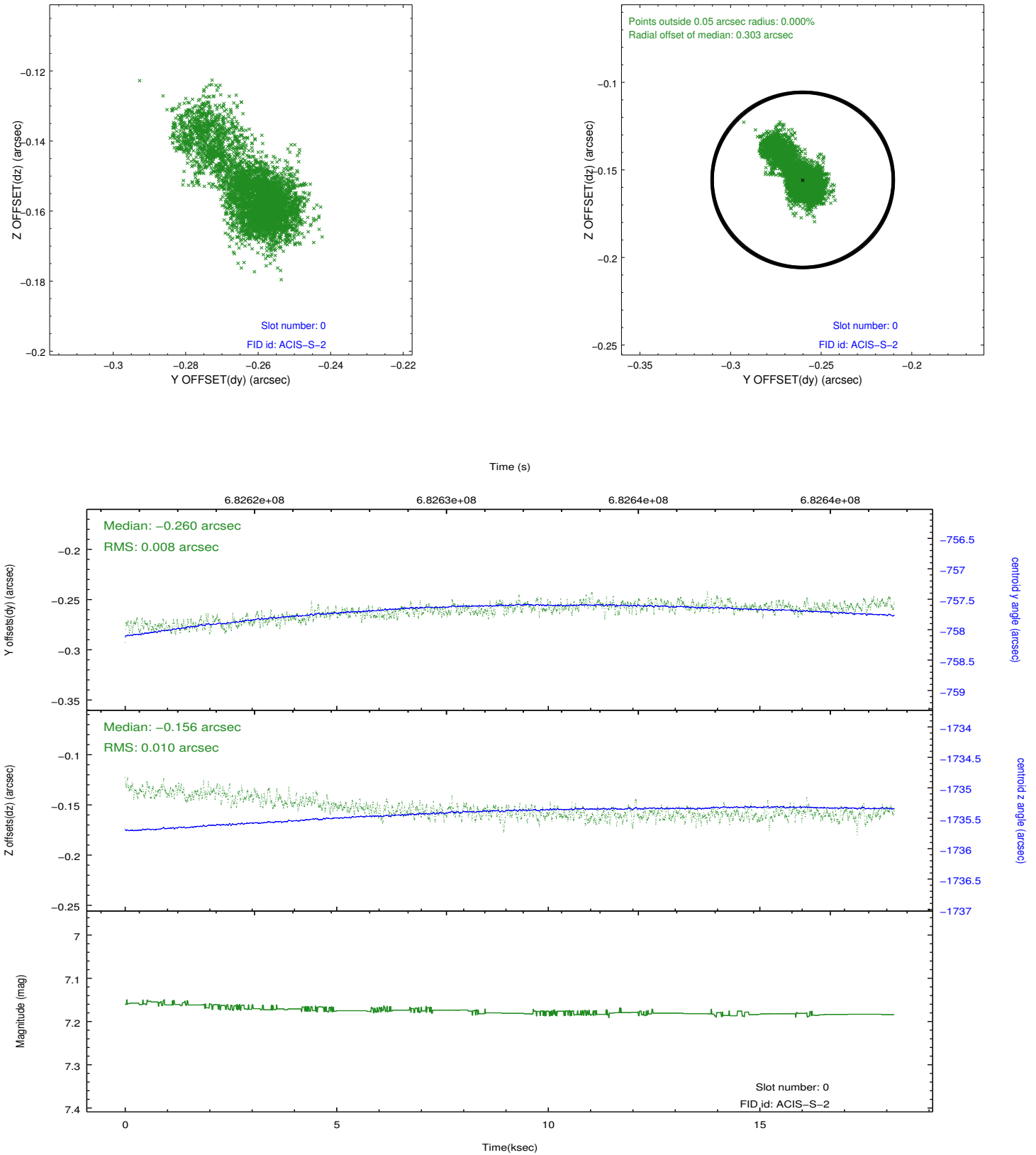


2.4.5 Slot 7

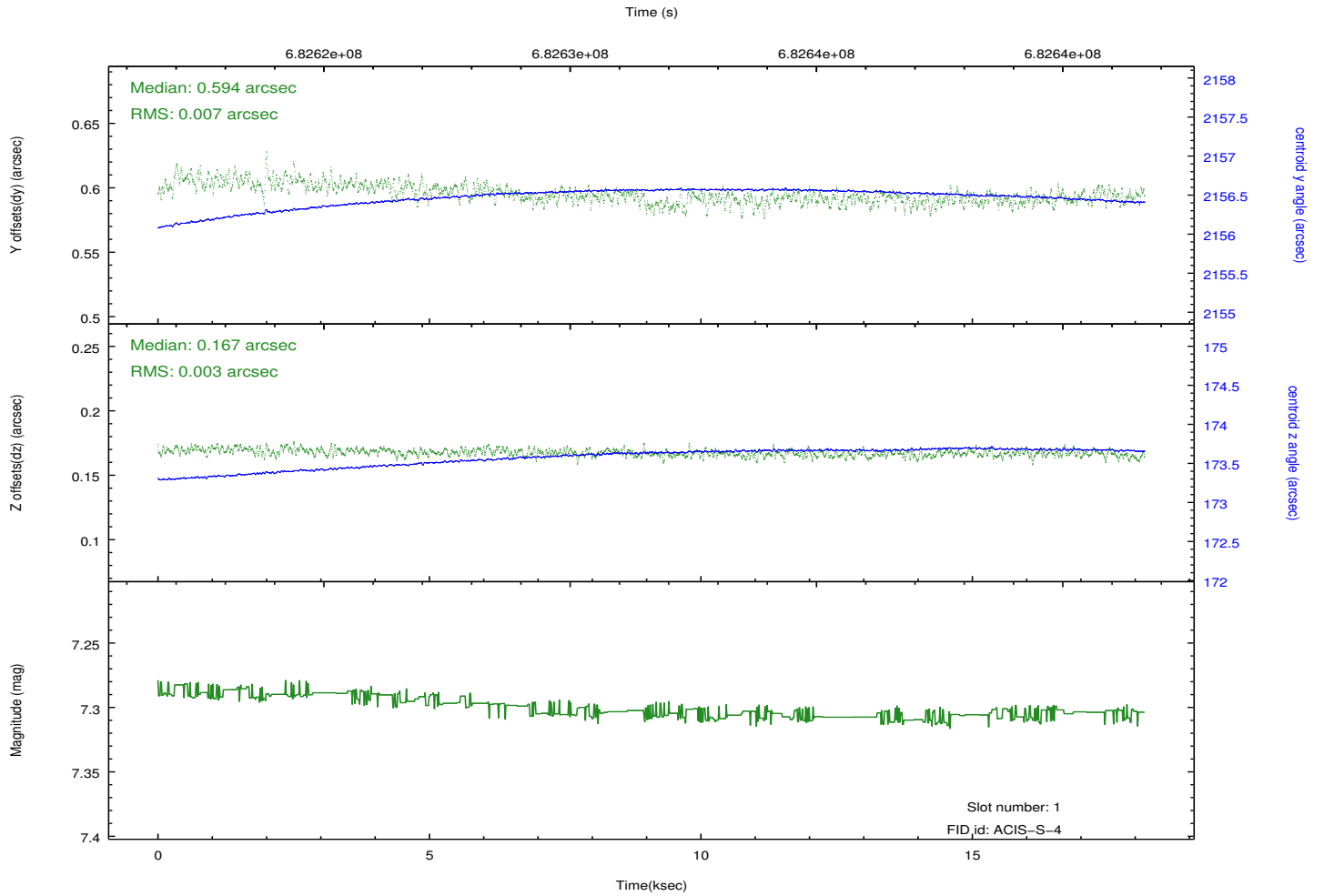
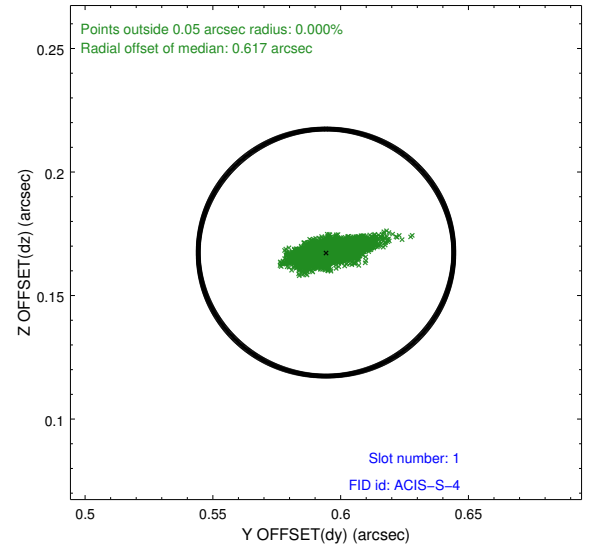
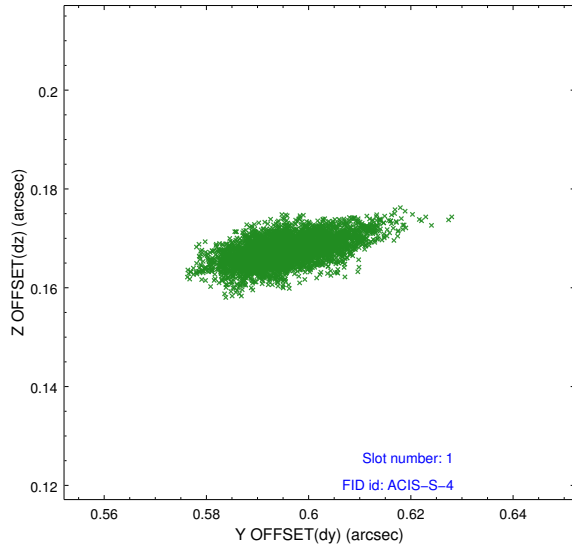


2.5 FID Slots

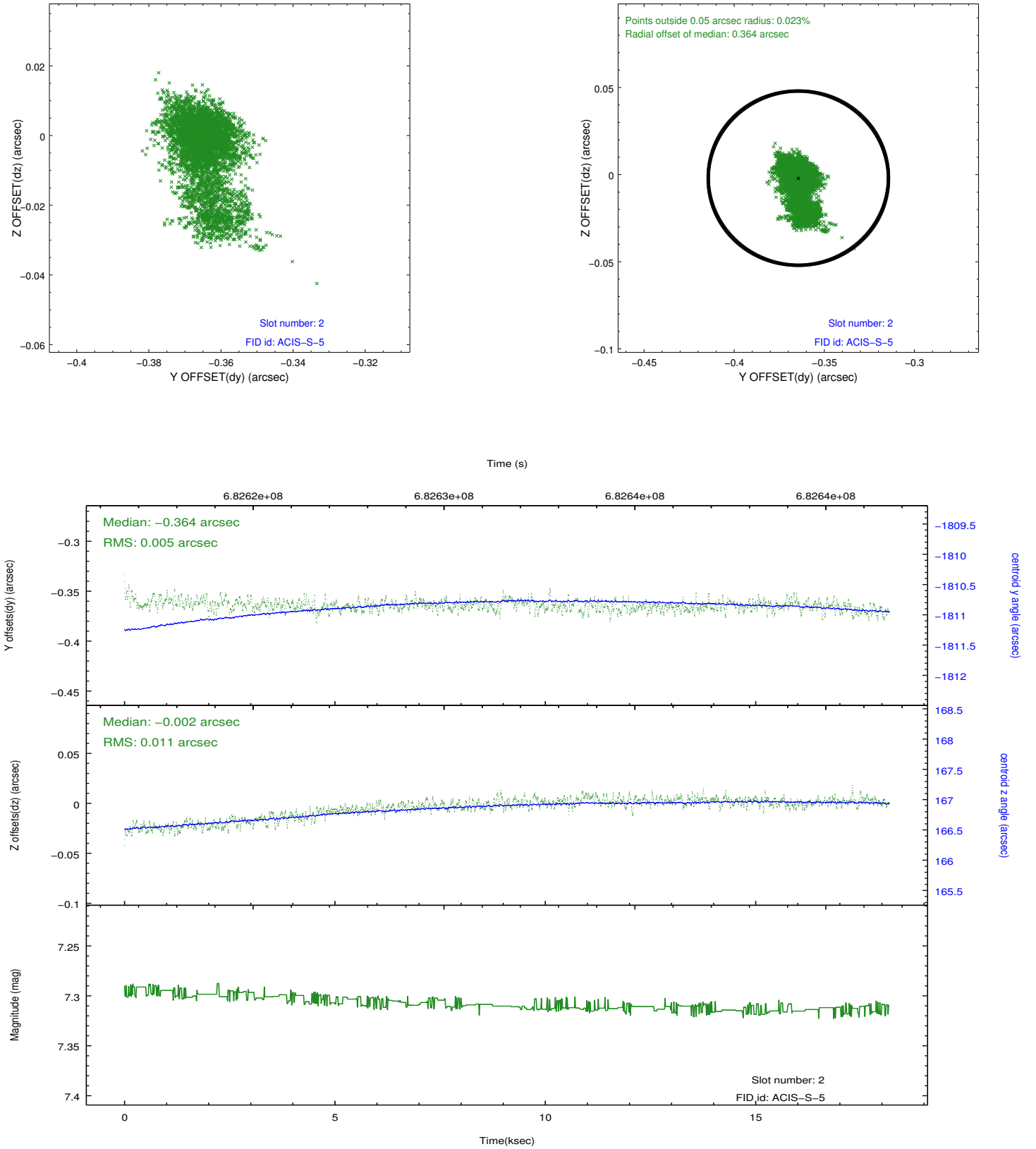
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.09.27
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.077277457356

A.2 Comments

ACIS T_GAIN files released in CalDB 4.8.3 (23 May 2019) and CalDB 4.8.4 (03 September 2019) have errors in the T_GAIN corrections for ACIS-I chips 0, 1, 2, and 3, and ACIS-S chip 6 (S2). All ACIS OBS_IDs including those chips, which were processed (or reprocessed) in SDP between 2019-05-24T01:06:00 and 2019-09-06T17:31:43 with CalDB 4.8.3, 4.8.3.1, or 4.8.4, were affected. The errors in the T_GAINs, which produce a 1%-2% reduction in the PHA and hence the ENERGY column values for dithered observations, result from alternating real value and zero value columns in CHIPX space across FI chips ACIS-0, 1, 2, 3, and 6. The error has been corrected in this version of the data products.

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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., -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_CIS_response_summary

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.