

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21255 - L2 Version 1
Chandra X-Ray Center

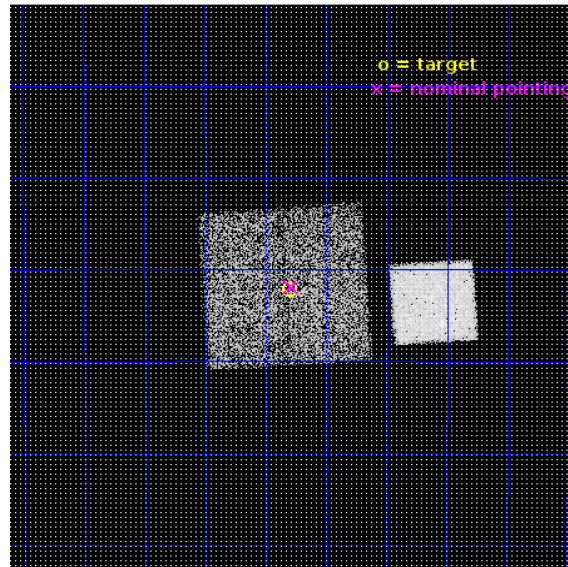
L2 Processing Date : May 13 2019

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1 Front

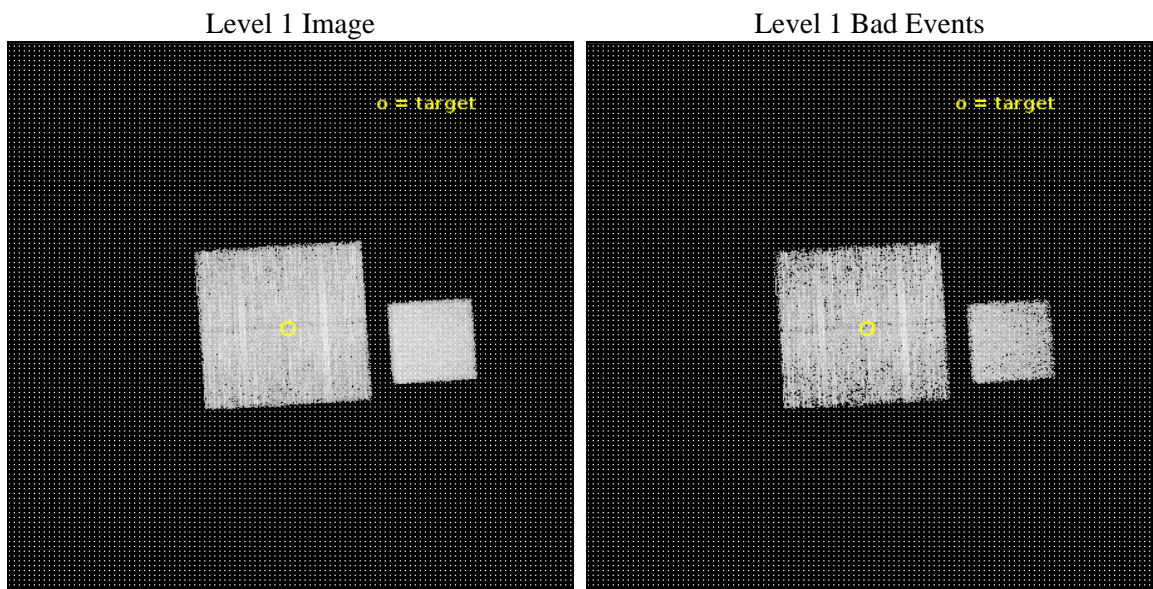
seq_num	402087	Sequence number
obs_id	21255	Observation id
title	The Nature of INTEGRAL Sources in the Galactic Plane	Proposal titl
observer	John Tomsick	Principal investigator
object	IGR J18013-3222	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	270.325833	Observer's specified target RA [deg]
dec_targ	-32.371	Observer's specified target Dec [deg]
ra_nom	270.32199734083	Nominal RA [deg]
dec_nom	-32.364689371977	Nominal Dec [deg]
roll_nom	86.206572559162	Nominal Roll [deg]
revision	1	Processing version of data
ontime	5056.1000390053	Sum of GTIs [s]
livetime	4990.038369749	Livetime [s]
ontime0	5056.1000390053	Sum of GTIs [s]
ontime1	5056.1000390053	Sum of GTIs [s]
ontime2	5056.1000390053	Sum of GTIs [s]
ontime3	5056.1000390053	Sum of GTIs [s]
ontime7	5056.1000390053	Sum of GTIs [s]
l2events	34669	Number of level 2 events



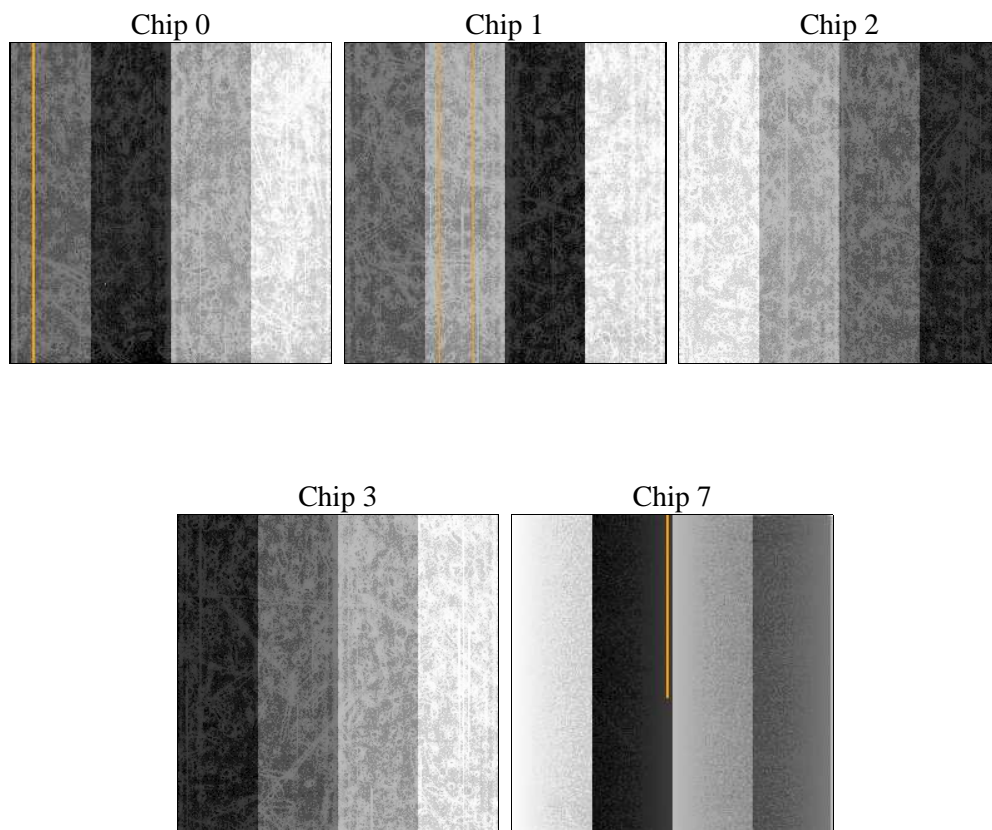
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	5056.1000390053	Sum of GTIs [s]
caldsver	4.8.2	 	ontime0	5056.1000390053	Sum of GTIs [s]
date	2019-05-14T01:02:30	Date and time of file creation	ontime1	5056.1000390053	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	5056.1000390053	Sum of GTIs [s]
			ontime3	5056.1000390053	Sum of GTIs [s]
			ontime7	5056.1000390053	Sum of GTIs [s]
			l1events	194377	Number of level 1 events

2.1.4 Events

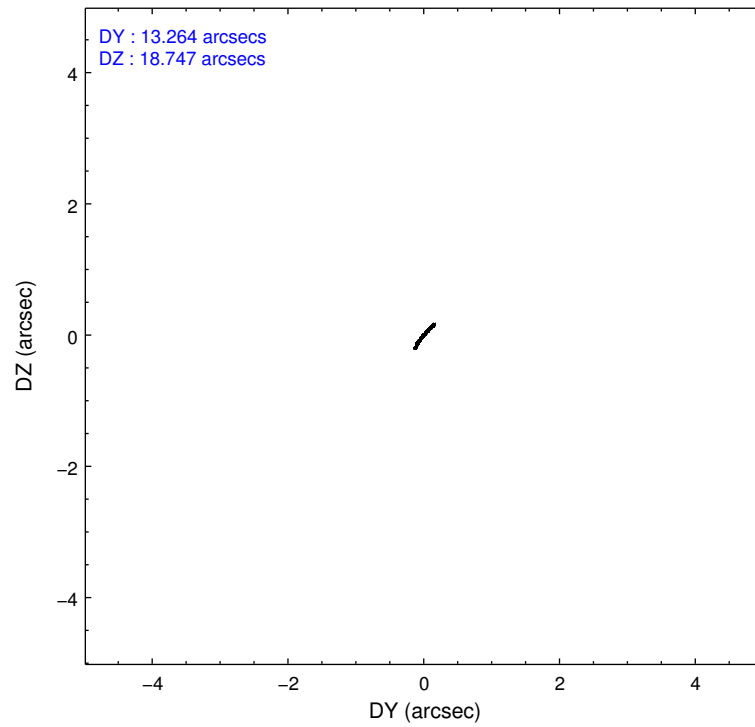
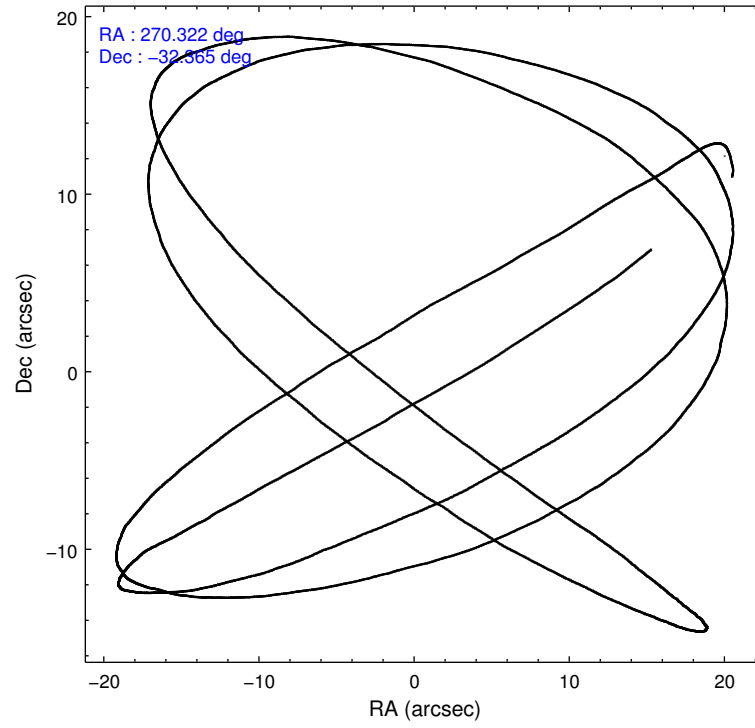
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
level 1 events	34366	34704	38869	37021	49417
rejected events	30176	30253	34877	32856	28233
rejected %	87%	87%	89%	88%	57%

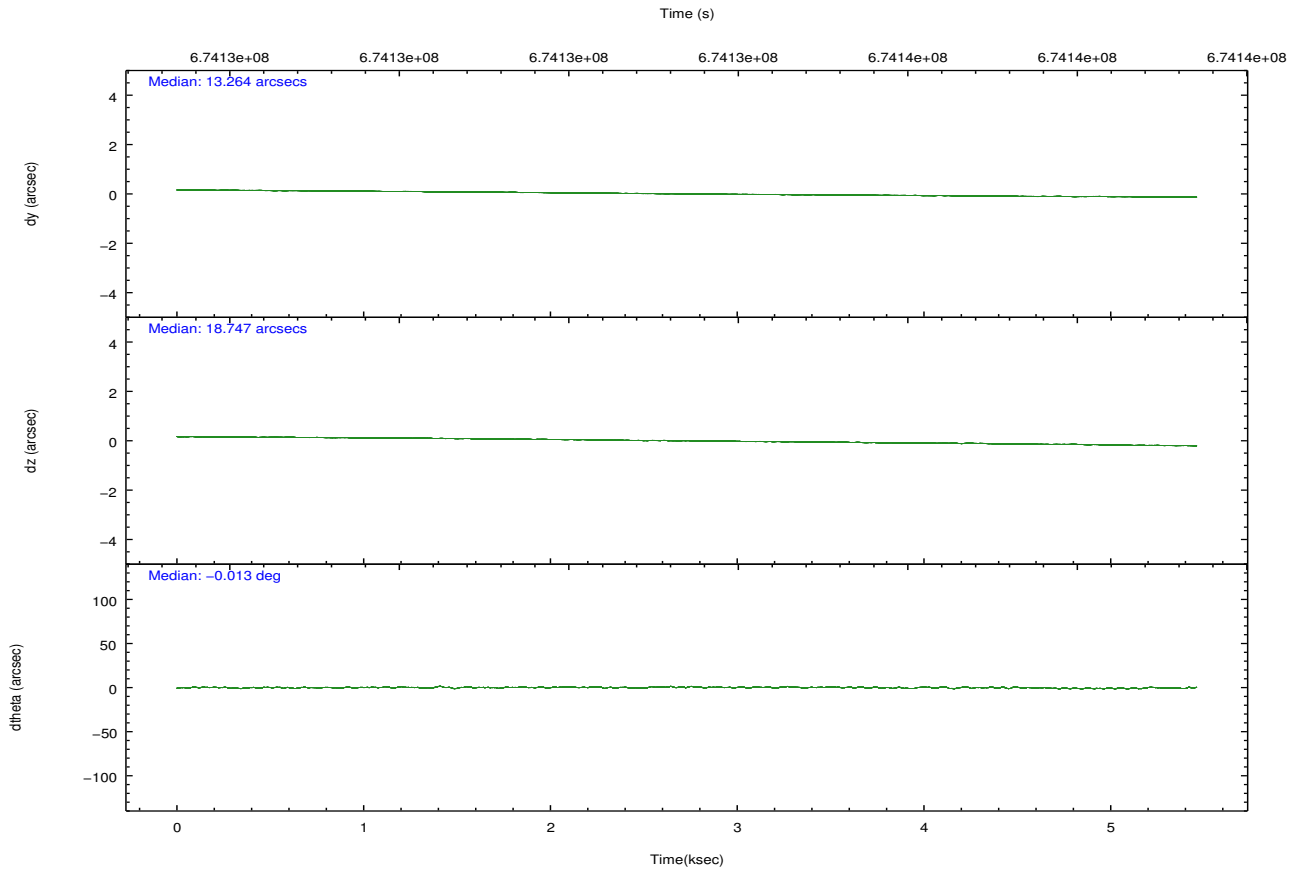
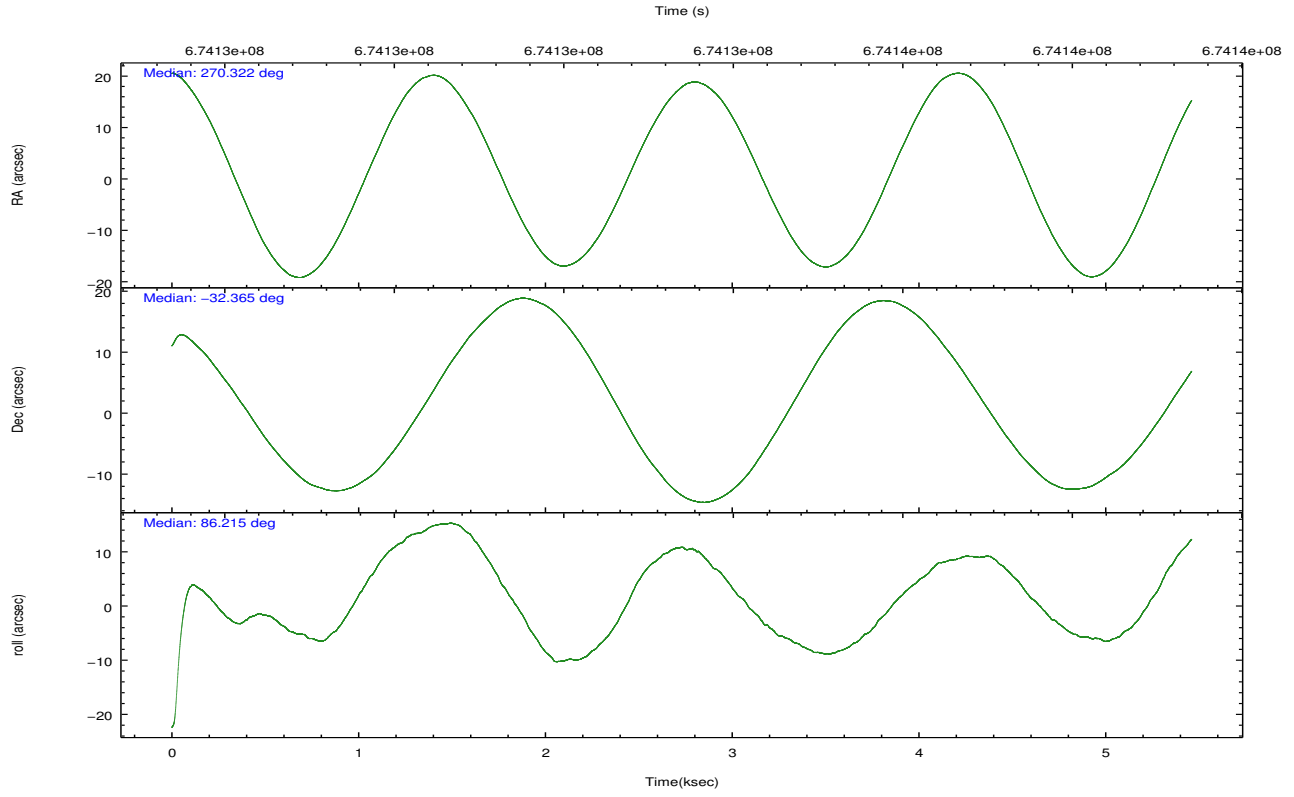
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
grade 0 events	1408	1521	1464	1558	1754
	4%	4%	3%	4%	3%
grade 1 events	20	18	31	20	70
	0%	0%	0%	0%	0%
grade 2 events	1039	1142	939	862	4591
	3%	3%	2%	2%	9%
grade 3 events	409	364	383	444	1695
	1%	1%	0%	1%	3%
grade 4 events	373	338	381	419	1640
	1%	0%	0%	1%	3%
grade 5 events	1480	1590	1462	1692	4662
	4%	4%	3%	4%	9%
grade 6 events	963	1090	828	886	11516
	2%	3%	2%	2%	23%
grade 7 events	28674	28641	33381	31140	23489
	83%	82%	85%	84%	47%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01237	ACIS-01237	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	270.336772	270.3219973408309	CCD I2 on	Y	Y
[deg] Pointing Dec	-32.389050	-32.36468937197741	CCD I3 on	Y	Y
[deg] Pointing Roll	86.005863	86.20657255916183	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	N
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	O2	Y
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	674131429.184000	674130201.72138	CCD S5 on	N	N
Observation start date	2019-05-13T10:42:40	2019-05-13T10:23:21	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	674136429.184000	674137532.00932	On-chip summing requested	N	N
Observation end date	2019-05-13T12:06:00	2019-05-13T12:25:32	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



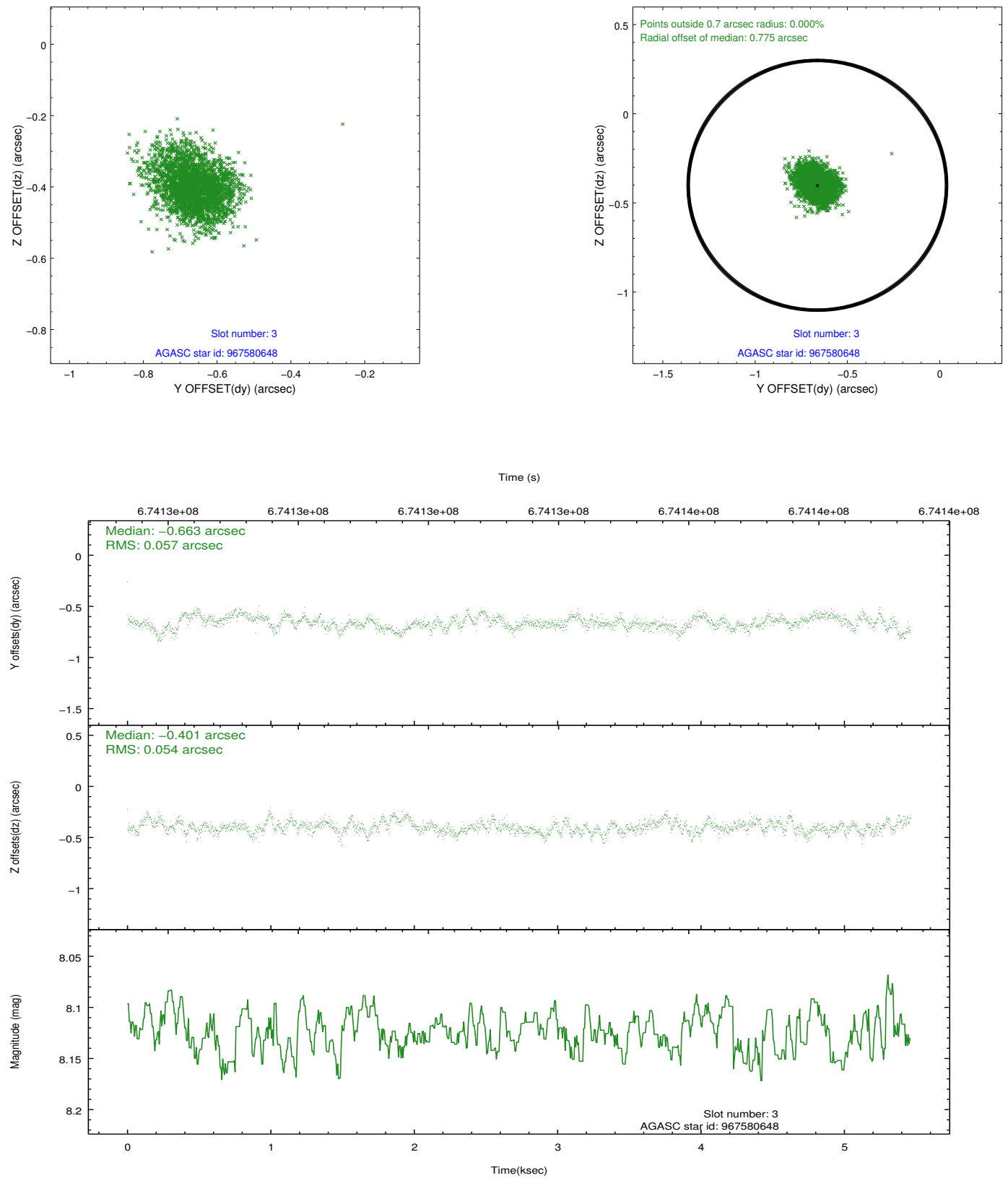


Slot Statistics

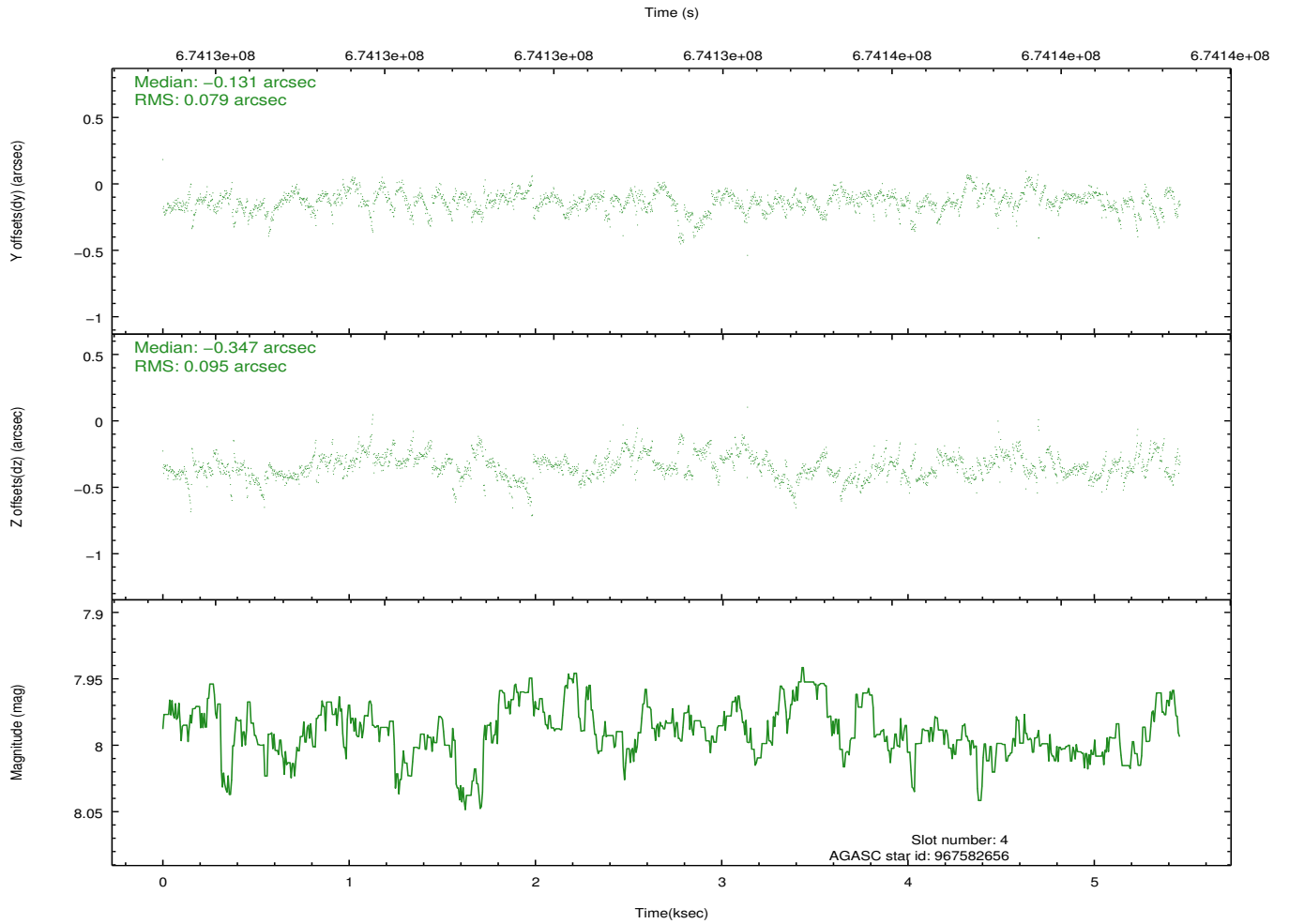
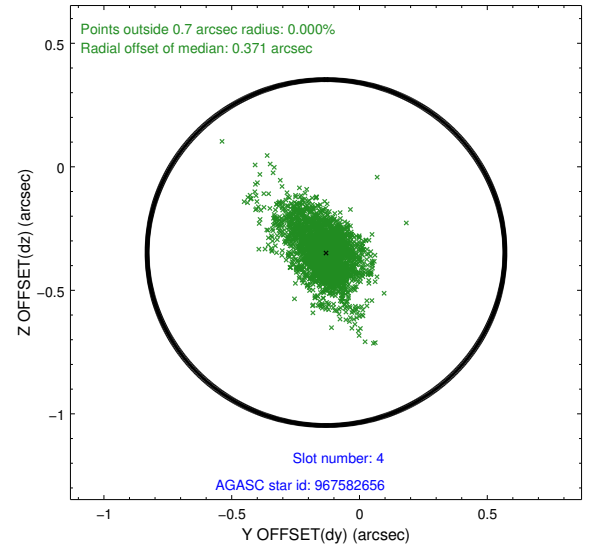
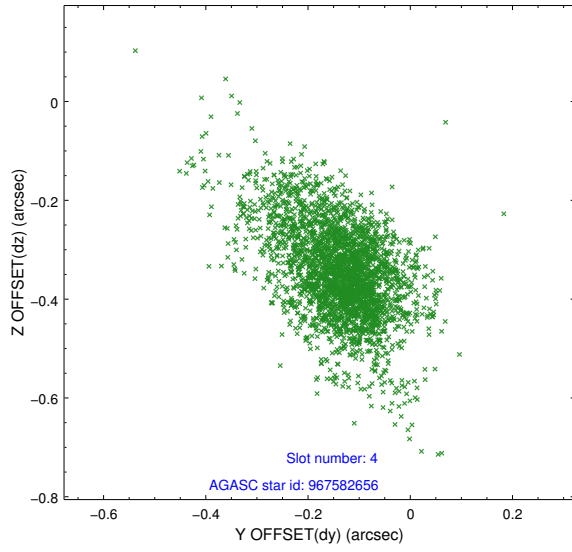
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.24	1332	1.000	0.210	-0.203	0.008	0.013	0.000000	0.000000	926.61	-842
1	FID		ACIS-I-3	7.47	1332	1.000	-0.102	0.193	0.010	0.018	0.000000	0.000000	44.43	-976
2	FID		ACIS-I-5	7.24	1332	1.000	-0.199	0.083	0.007	0.013	0.000000	0.000000	-1822.32	1054
3	GUIDE	used	967580648	8.12	2664	1.000	-0.663	-0.401	0.084	0.135	269.786251	-31.943928	1478.00	1787
4	GUIDE	used	967582656	7.99	2664	1.000	-0.131	-0.347	0.120	0.228	269.593497	-32.909675	-2031.83	2109
5	GUIDE	used	968761168	8.52	2664	1.000	-0.193	-0.198	0.128	0.206	270.346706	-31.748397	2303.02	129
6	GUIDE	used	969277688	8.81	2662	1.000	0.454	0.349	0.161	0.261	270.429780	-32.715329	-1149.48	-363
7	GUIDE	used	969281008	8.64	2663	1.000	0.547	0.597	0.103	0.171	270.408503	-32.921666	-1896.37	-350

2.4 Star Slots

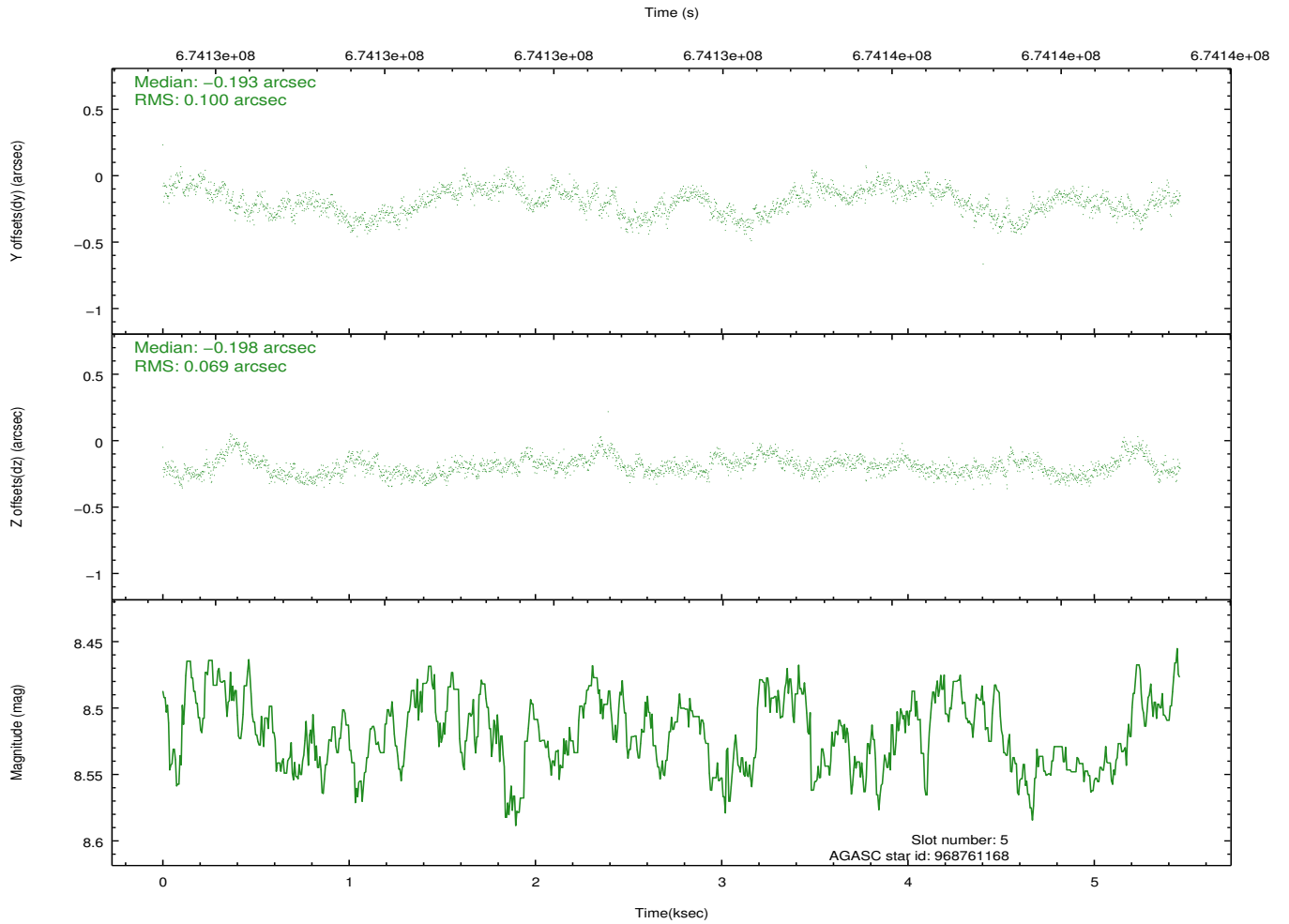
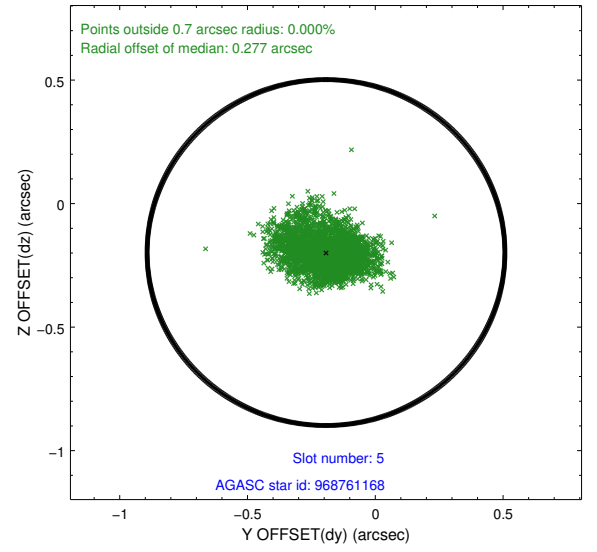
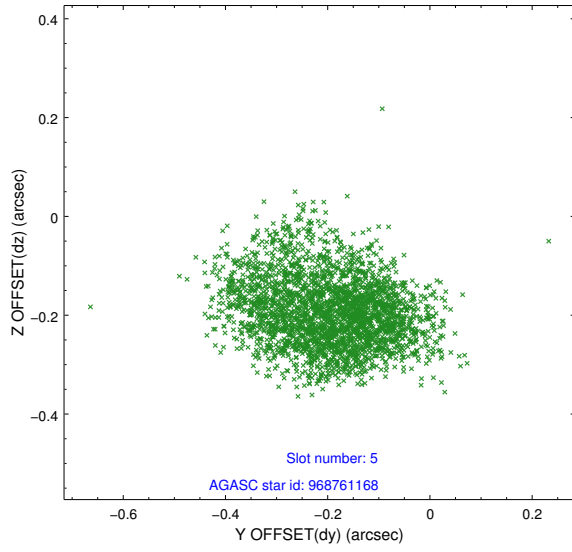
2.4.1 Slot 3



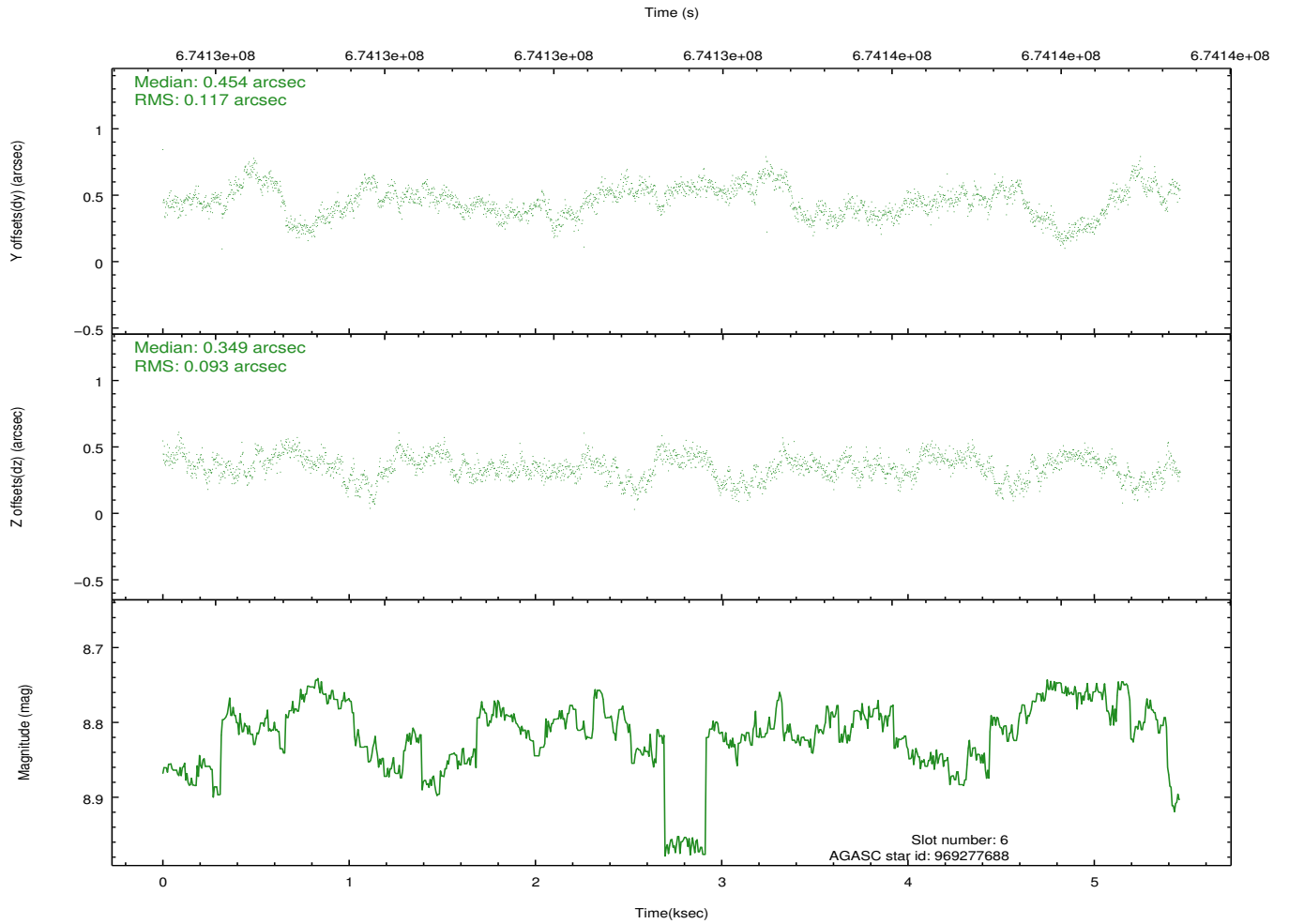
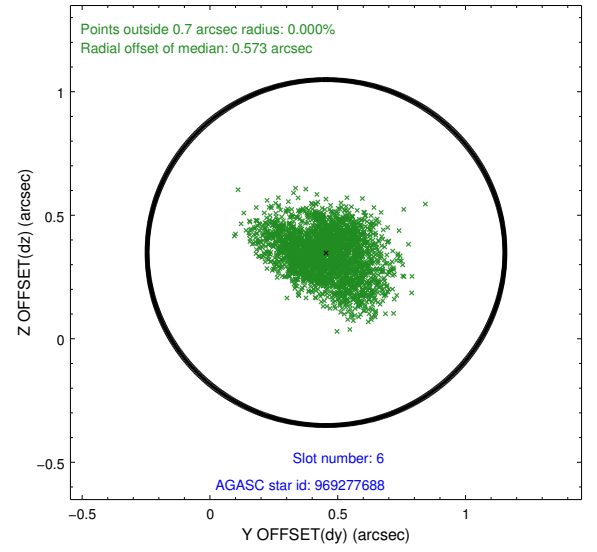
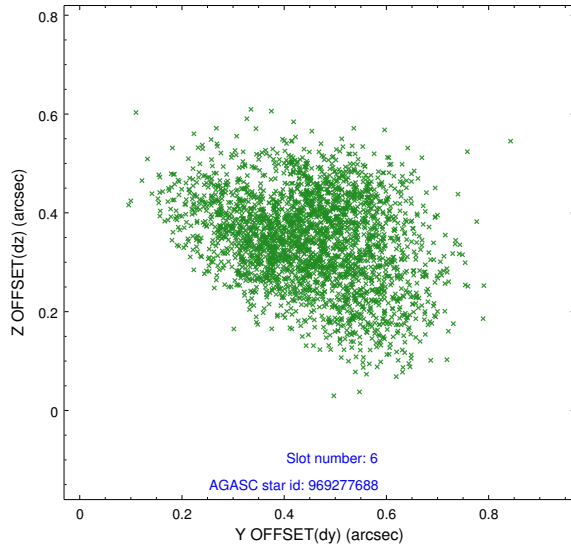
2.4.2 Slot 4



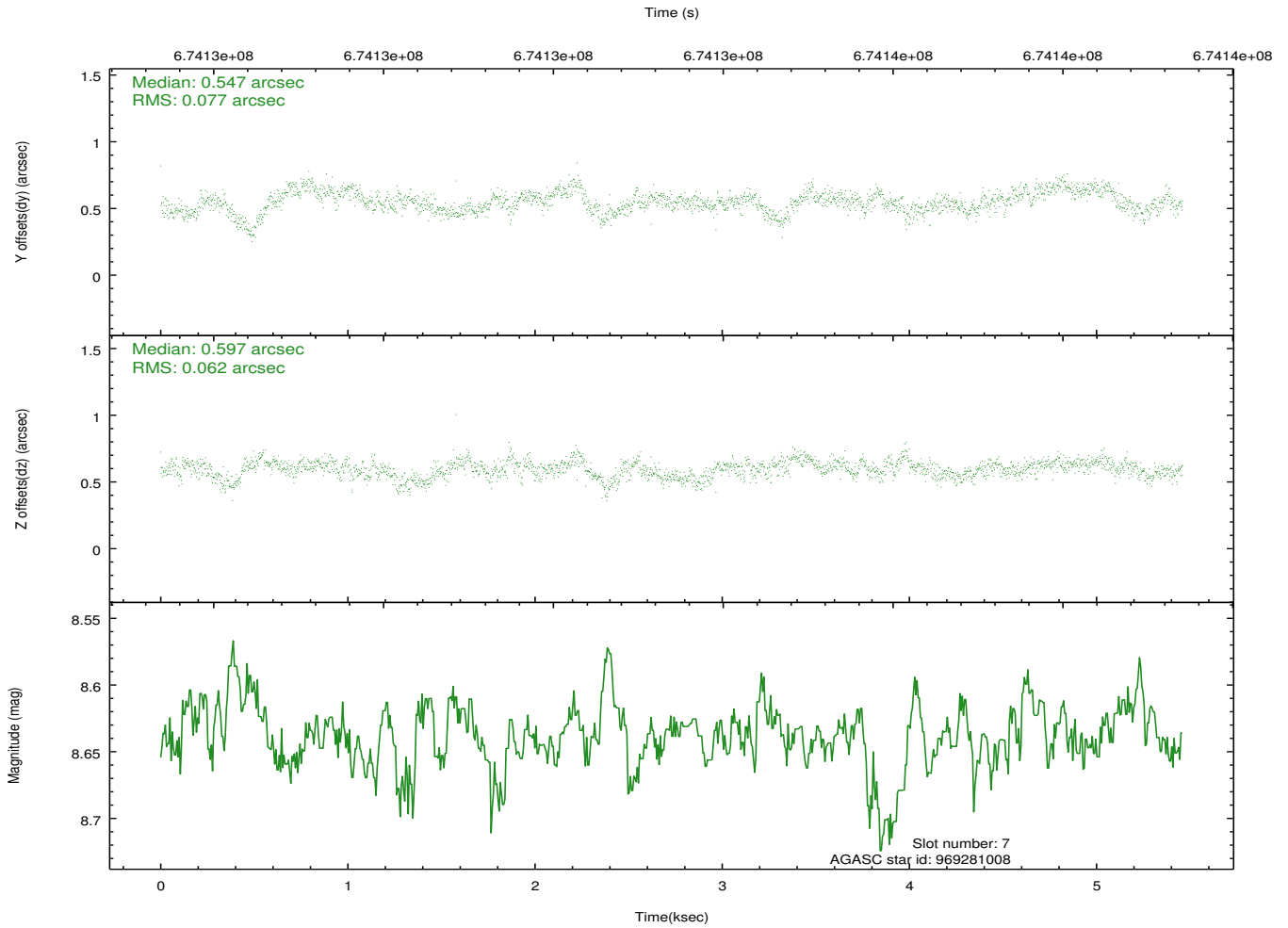
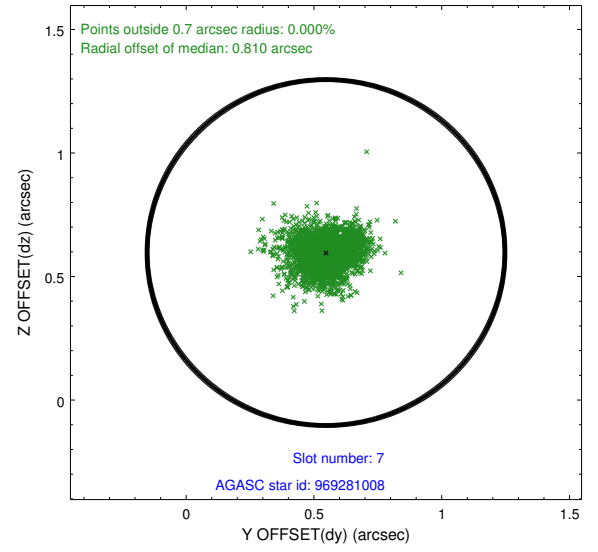
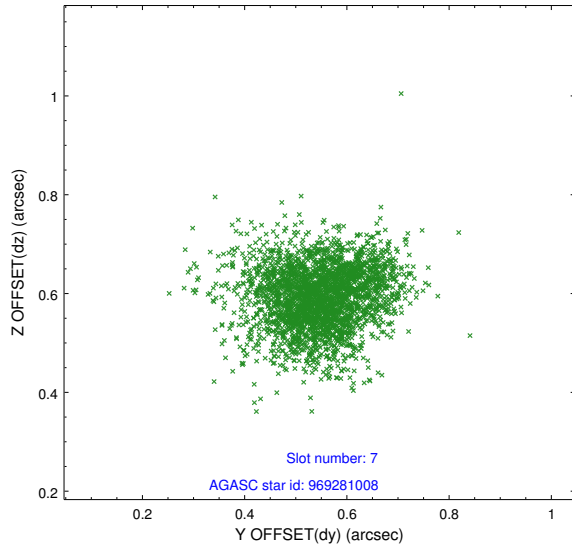
2.4.3 Slot 5



2.4.4 Slot 6

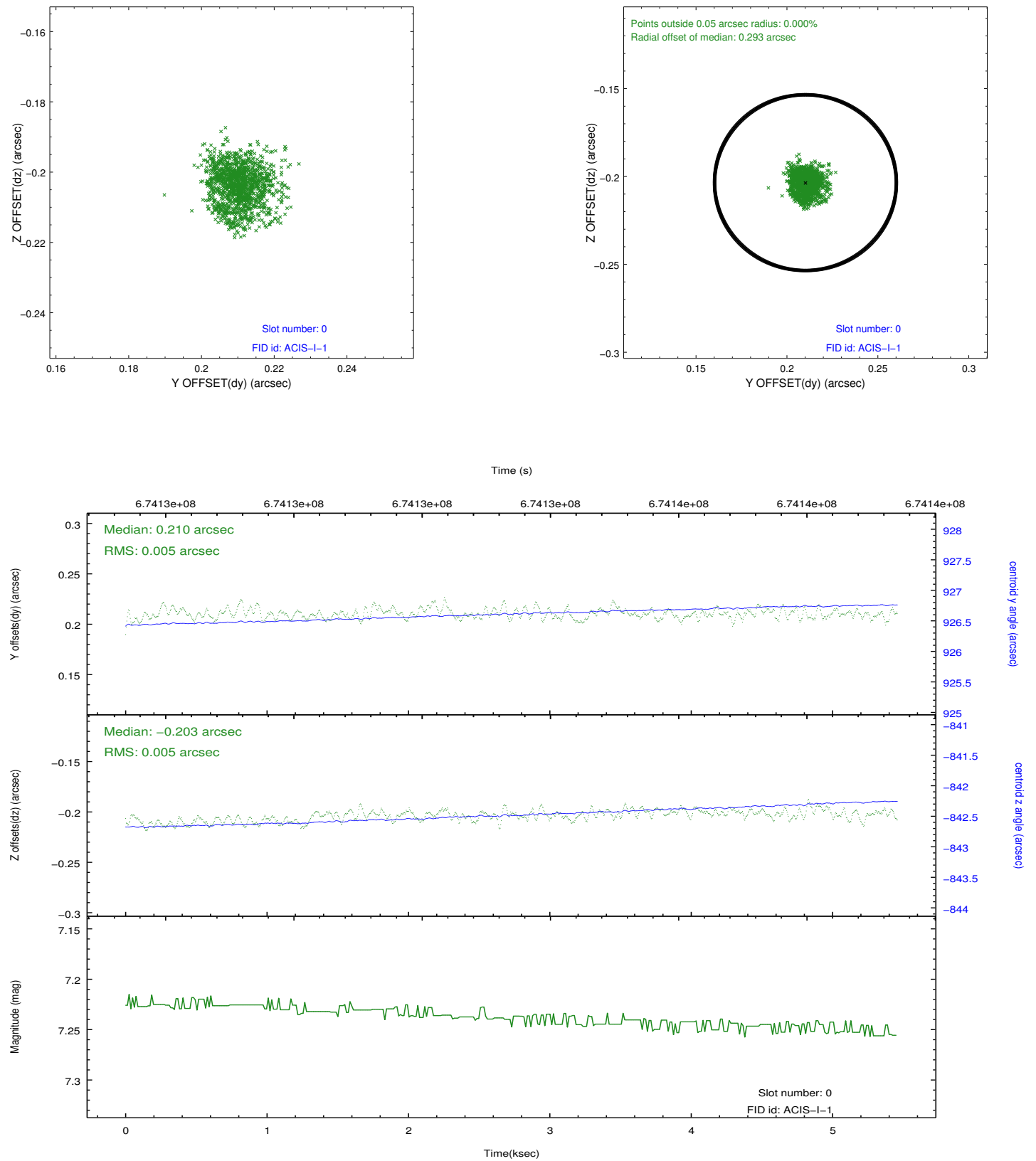


2.4.5 Slot 7

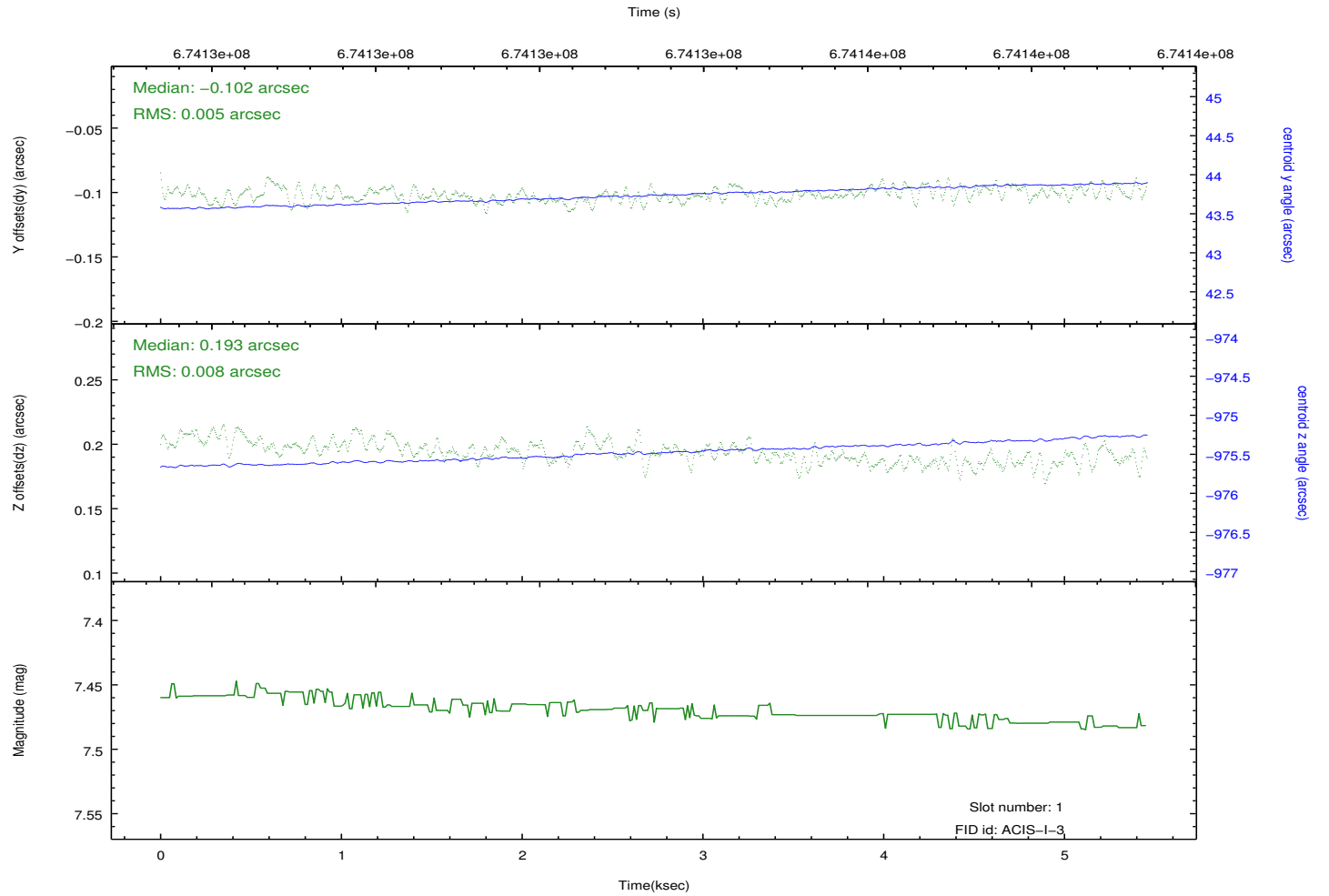
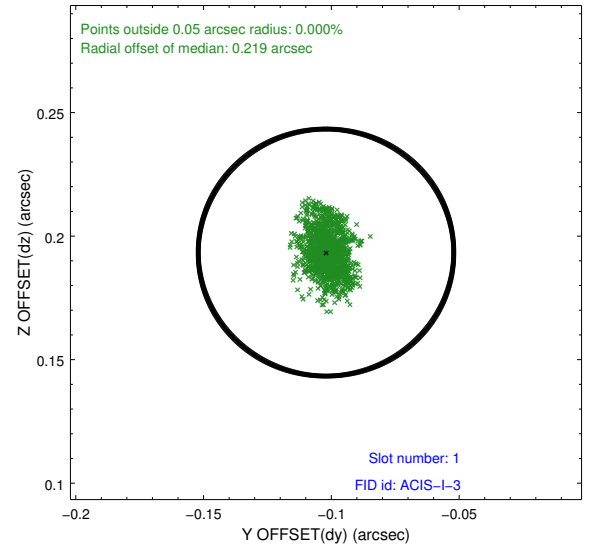
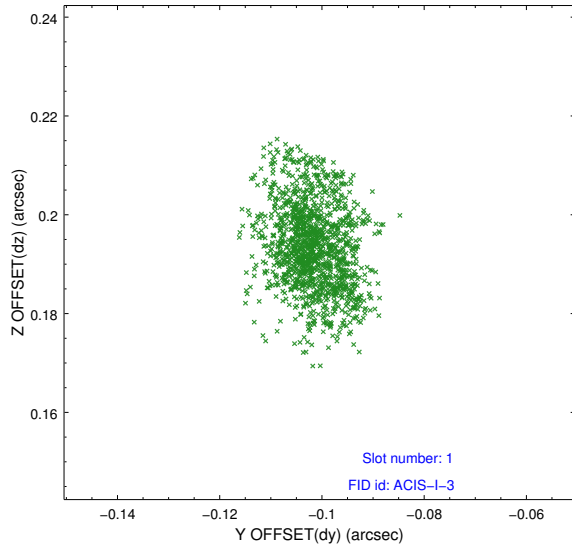


2.5 FID Slots

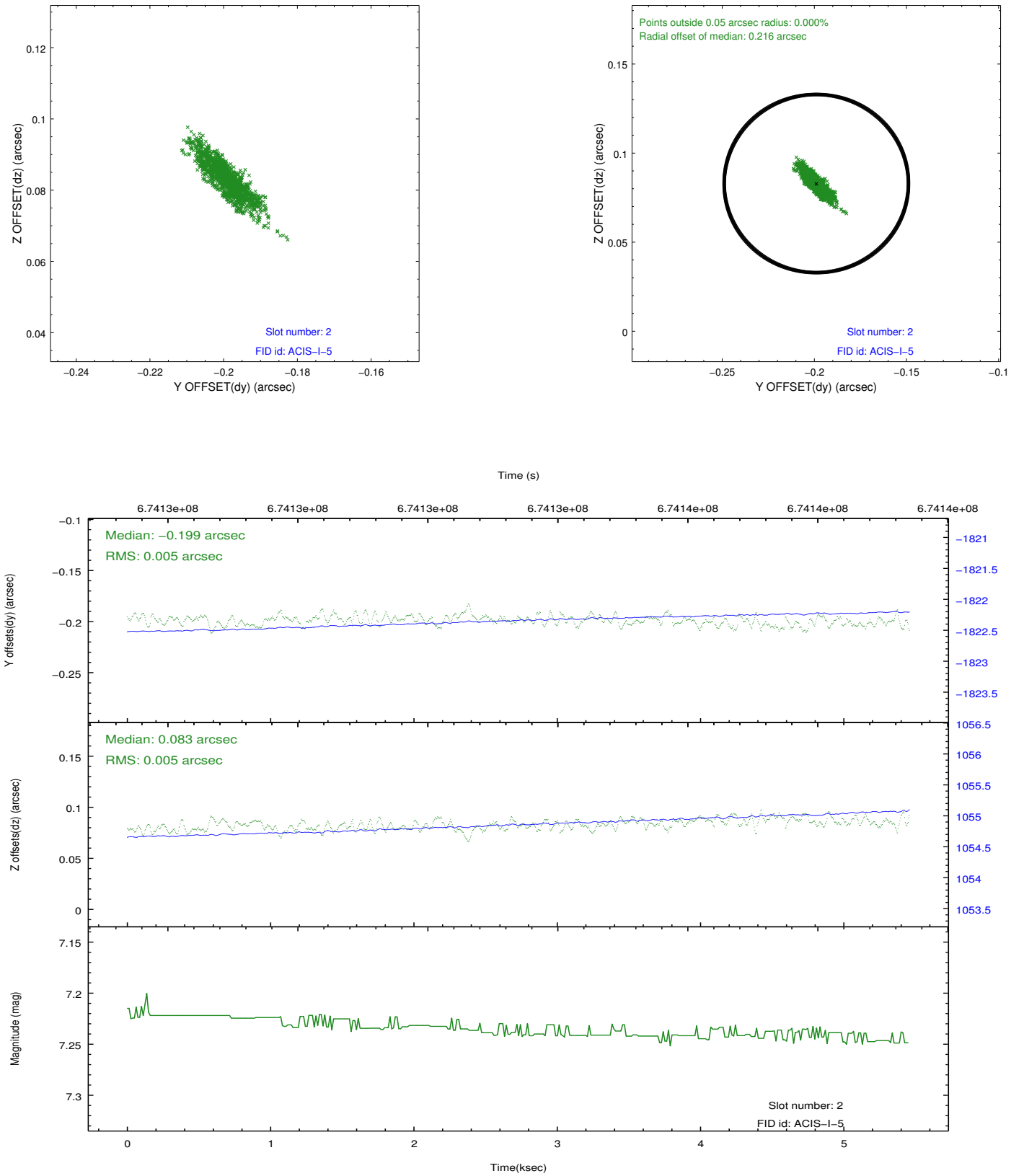
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.05.14
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	5.0561000390053

A.2 Comments

The ACIS focal plane temperature is warmer than -114.0 C degrees during the interval 674134648.67 - 674136421.87 (MET s) of this observation. The ACIS spectral response calibration for the front-illuminated chips is less accurate at these warmer temperatures than it is at -115.0 C. 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.

