

V&V Reference Report

L2 ASCDS Version : 10.8

Observation 22513 - L2 Version 1
Chandra X-Ray Center

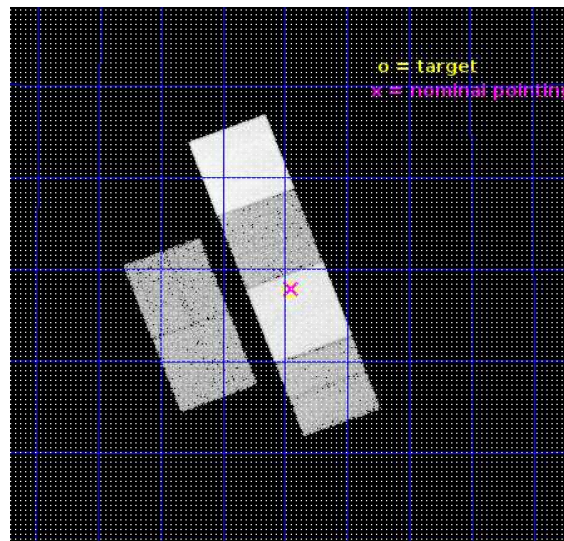
L2 Processing Date : Sep 21 2019

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1 Front

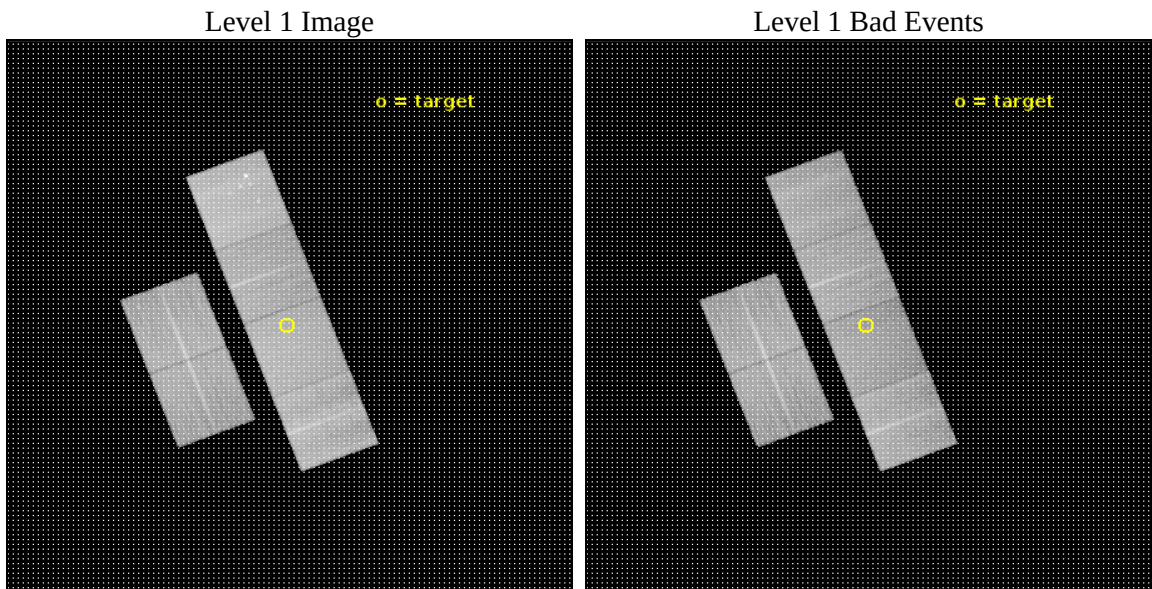
seq_num	601490	Sequence number
obs_id	22513	Observation id
title	A LOCAL CHARACTERIZATION OF THE z 10 X-RAY RADIATION FIELD AND ITS EFFECTS ON EARLY IGM HEATING	Proposal title
observer	Bret Lehmer	Principal investigator
object	J082527.7+295739.3	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	126.36523	Observer's specified target RA [deg]
dec_targ	29.96091	Observer's specified target Dec [deg]
ra_nom	126.36205236428	Nominal RA [deg]
dec_nom	29.964850785708	Nominal Dec [deg]
roll_nom	69.299543583565	Nominal Roll [deg]
revision	1	Processing version of data
ontime	23942.40035677	Sum of GTIs [s]
livetime	23639.227267069	Livetime [s]
ontime2	23935.918385983	Sum of GTIs [s]
ontime3	23939.132411718	Sum of GTIs [s]
ontime5	23942.40035677	Sum of GTIs [s]
ontime6	23935.91835618	Sum of GTIs [s]
ontime7	23942.40035677	Sum of GTIs [s]
ontime8	23942.332442284	Sum of GTIs [s]
l2events	307073	Number of level 2 events



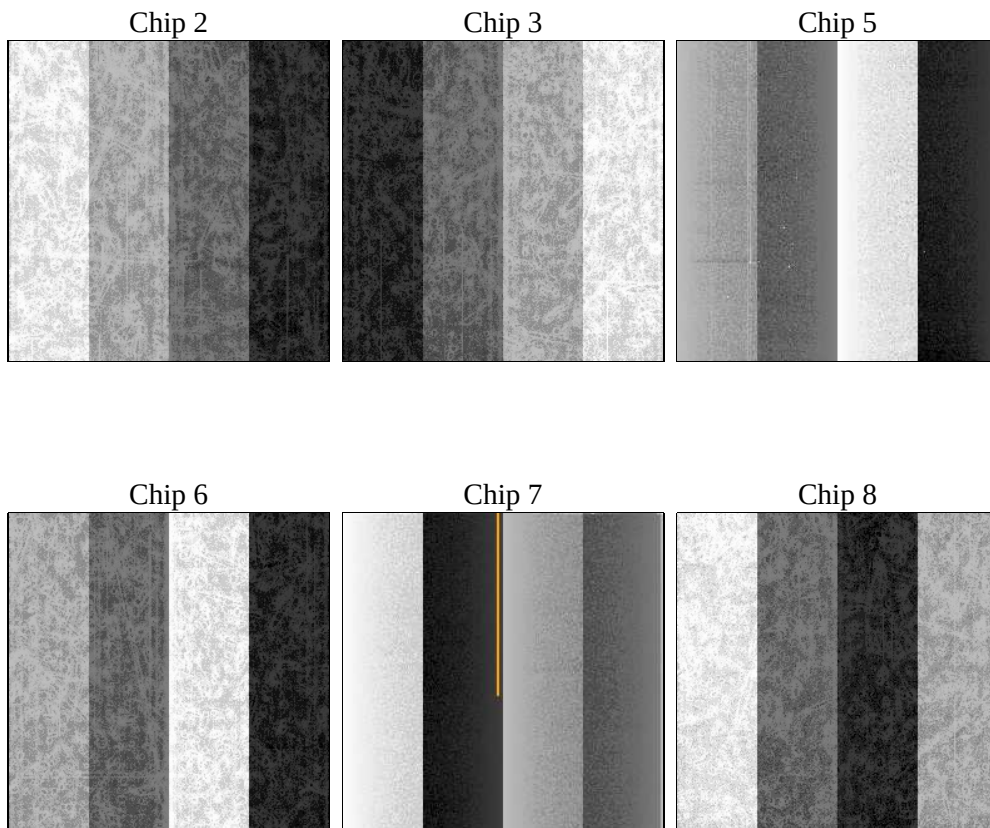
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	24000.367000	[s] Scheduled observation exposure time
ascdsver	10.8	Processing system revision	ontime	23942.40035677	Sum of GTIs [s]
caldsver	4.8.4.1	 	ontime2	23935.918385983	Sum of GTIs [s]
date	2019-09-21T14:29:56	Date and time of file creation	ontime3	23939.132411718	Sum of GTIs [s]
revision	1	Processing version of data	ontime5	23942.40035677	Sum of GTIs [s]
			ontime6	23935.91835618	Sum of GTIs [s]
			ontime7	23942.40035677	Sum of GTIs [s]
			ontime8	23942.332442284	Sum of GTIs [s]
			l1events	1370003	Number of level 1 events

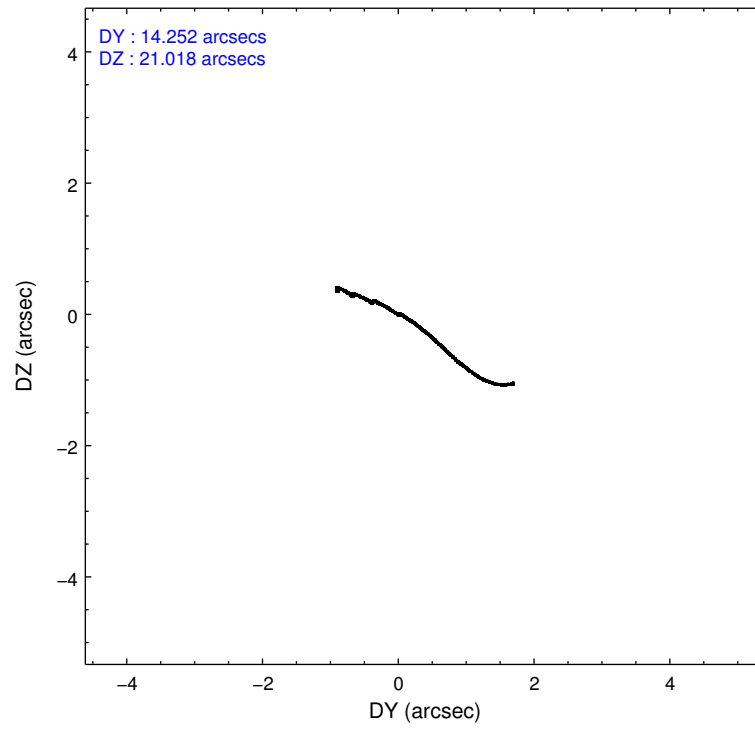
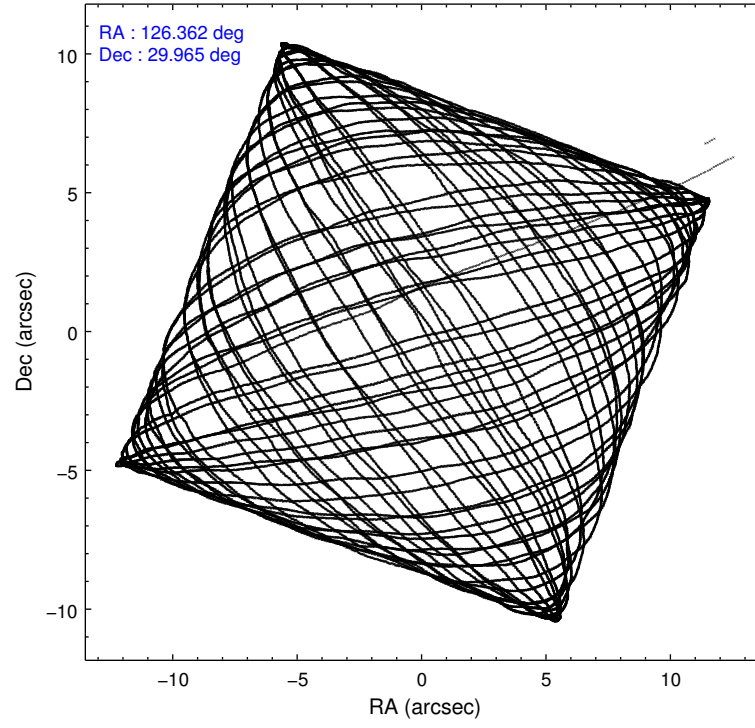
2.1.4 Events

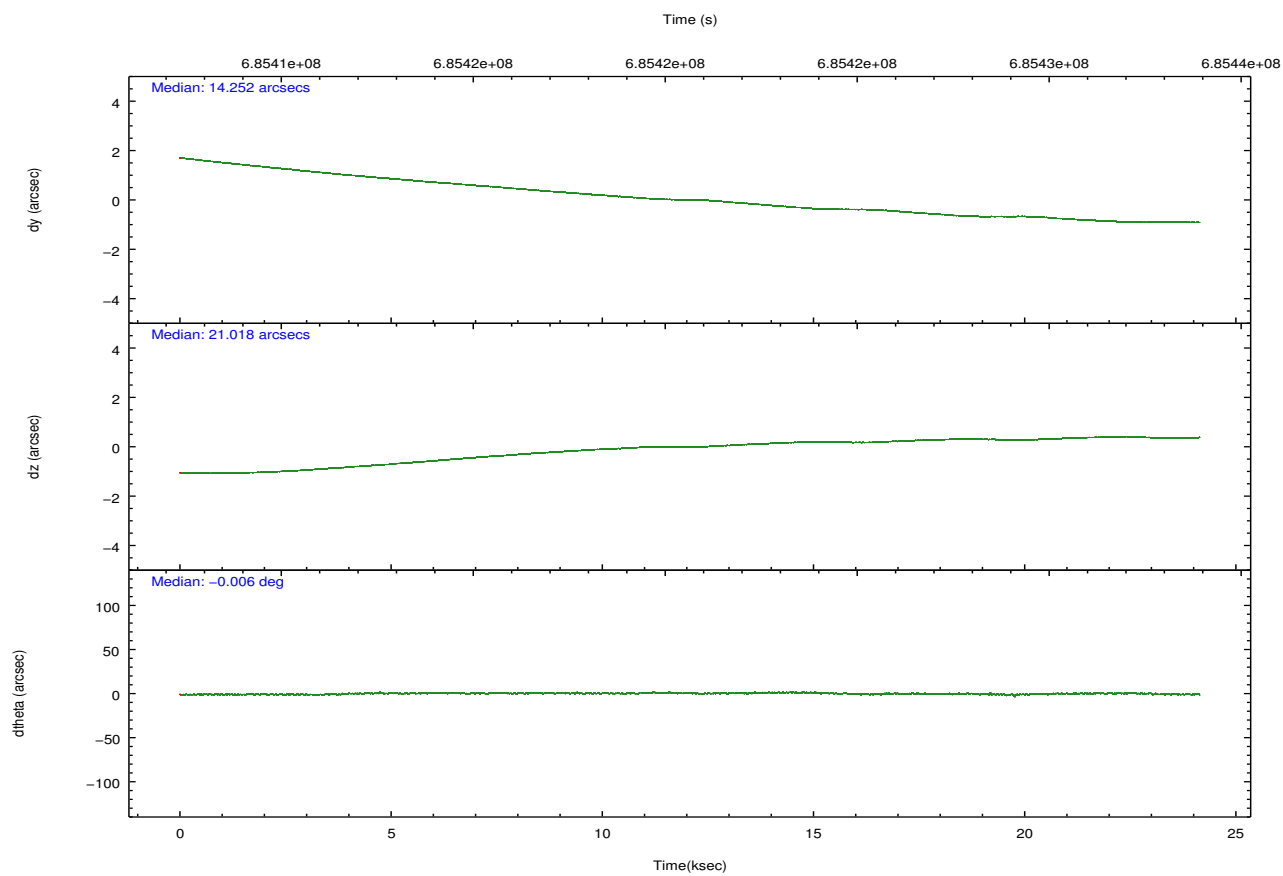
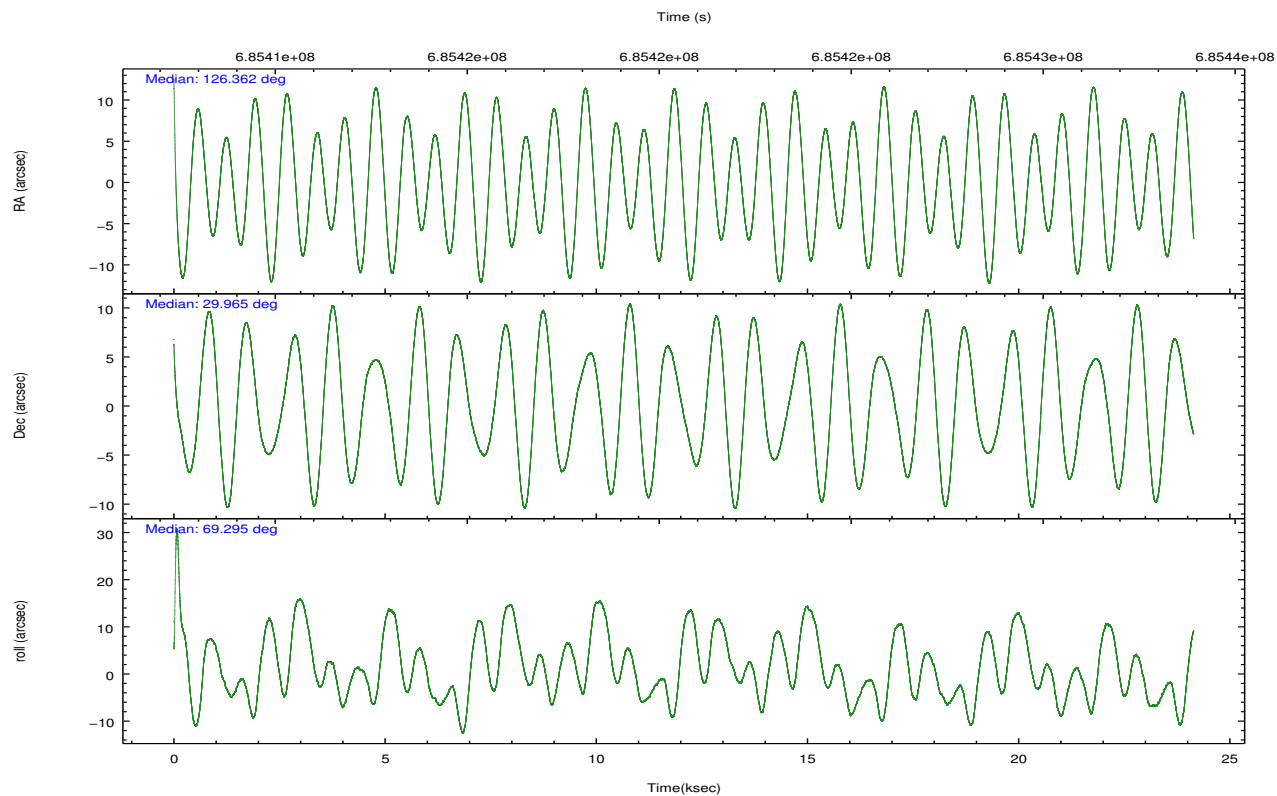
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8		ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	202114	181661	305600	195629	239479	245520	grade 0 events	6619	6383	12580	5704	8674	17161
rejected events	182744	163327	158975	174642	136398	183044		3%	3%	4%	2%	3%	6%
rejected %	90%	89%	52%	89%	56%	74%	grade 1 events	121	75	948	77	353	153
								0%	0%	0%	0%	0%	0%
							grade 2 events	4862	4234	44297	5997	21313	15369
								2%	2%	14%	3%	8%	6%
							grade 3 events	1879	1788	4501	1733	7940	6169
								0%	0%	1%	0%	3%	2%
							grade 4 events	1844	1778	4407	1657	7733	5857
								0%	0%	1%	0%	3%	2%
							grade 5 events	6674	7715	18868	7534	22991	12102
								3%	4%	6%	3%	9%	4%
							grade 6 events	4174	4160	80873	5901	57445	17959
								2%	2%	26%	3%	23%	7%
							grade 7 events	175941	155528	139126	167026	113030	170750
								87%	85%	45%	85%	47%	69%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-235678	ACIS-235678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	126.367582	126.3620523642785	CCD I2 on	O2	Y
[deg] Pointing Dec	29.937837	29.96485078570806	CCD I3 on	O3	Y
[deg] Pointing Roll	69.140170	69.2995435835652	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	O1	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	Y	Y
[s] Observation start time (MET)	685408698.184000	685407386.67373	CCD S5 on	N	N
Observation start date	2019-09-20T23:17:09	2019-09-20T22:56:26	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	685432698.184000	685433434.4878	On-chip summing requested	N	N
Observation end date	2019-09-21T05:57:09	2019-09-21T06:10:34	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.2

2.3 Aspect



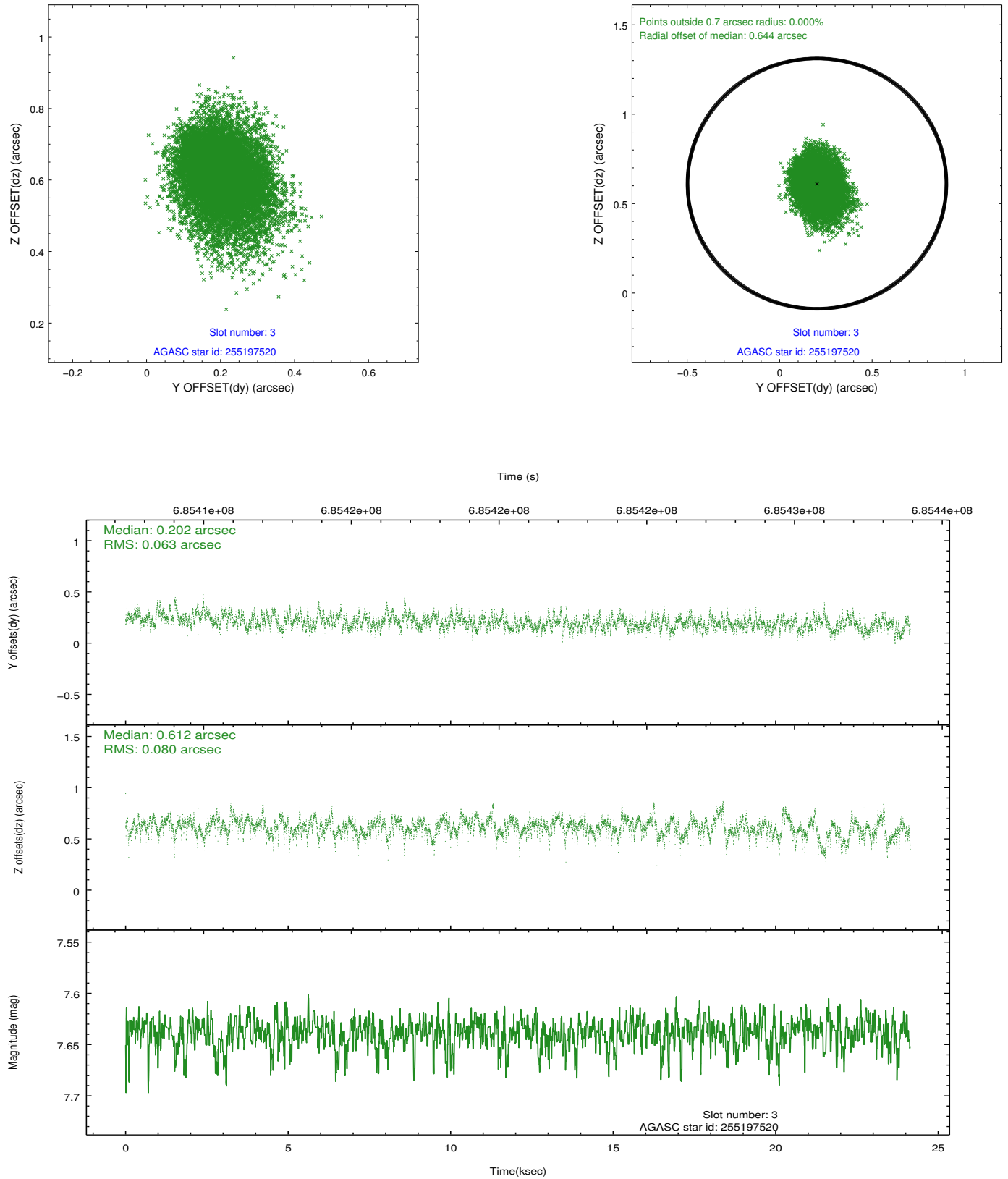


Slot Statistics

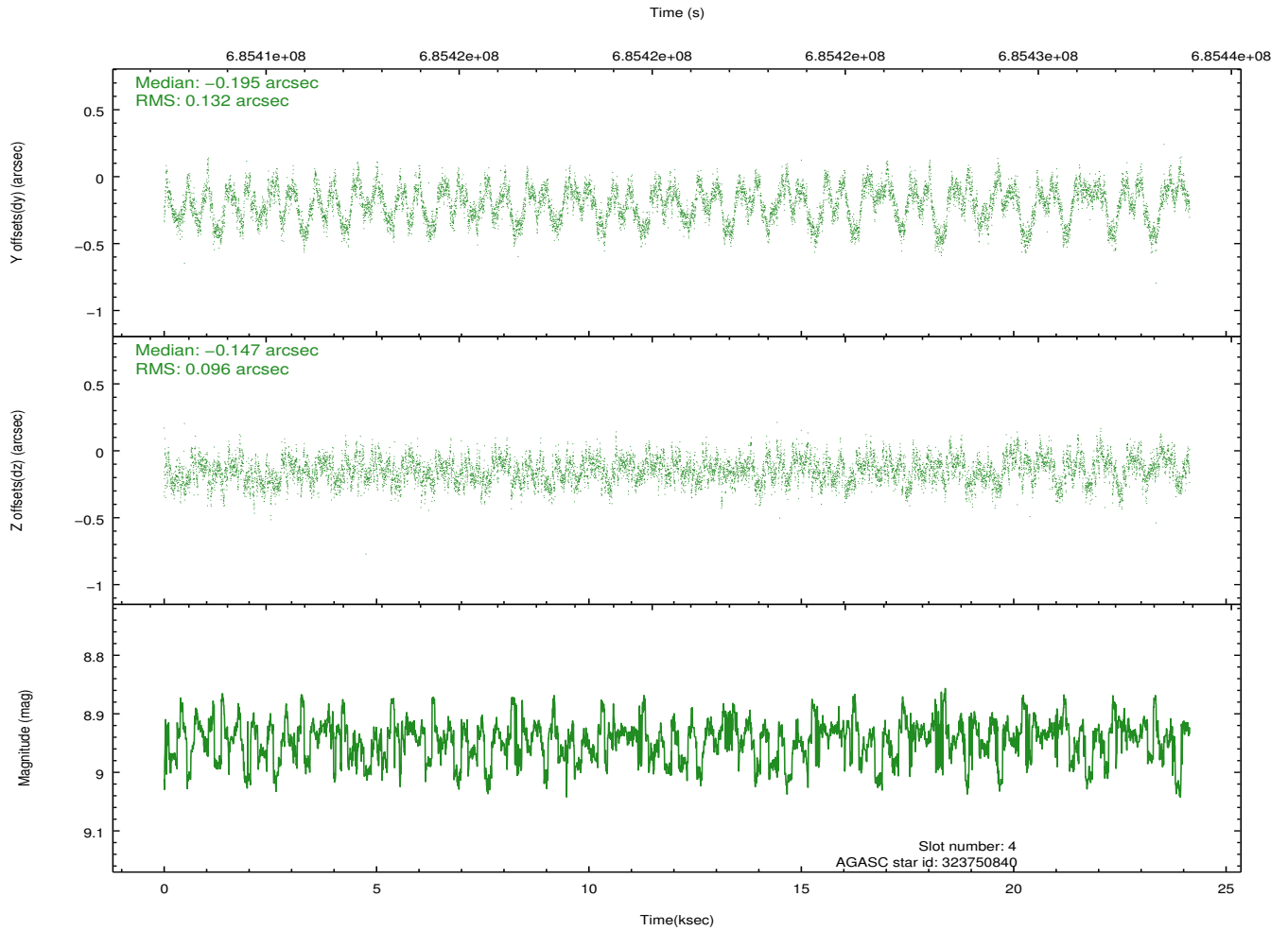
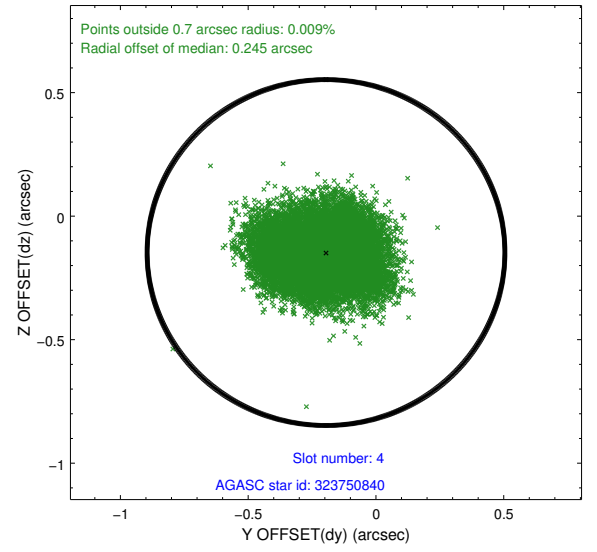
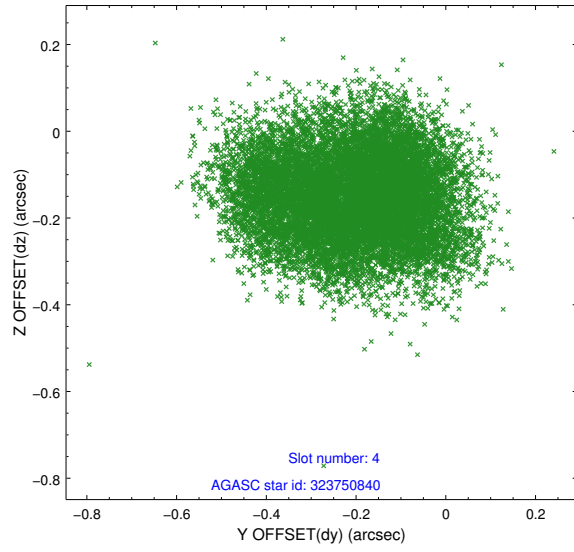
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.18	5889	1.000	-0.302	-0.229	0.039	0.057	0.000000	0.000000	-767.55	-1742
1	FID		ACIS-S-4	7.30	5889	1.000	0.807	0.208	0.051	0.093	0.000000	0.000000	2146.70	166
2	FID		ACIS-S-5	7.26	5889	1.000	-0.532	0.027	0.019	0.040	0.000000	0.000000	-1820.51	159
3	GUIDE	used	255197520	7.64	11776	1.000	0.202	0.612	0.106	0.182	126.331195	29.651749	-1003.41	-259
4	GUIDE	used	323750840	8.94	11760	1.000	-0.195	-0.147	0.178	0.271	125.868276	30.176059	249.92	1758
5	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0
6	GUIDE	used	325461104	9.53	11748	1.000	0.328	0.096	0.248	0.442	127.289700	30.210567	1949.58	-2326
7	GUIDE	used	325463352	8.64	11769	1.000	-0.319	-0.563	0.125	0.206	126.052273	30.740756	2354.31	1940

2.4 Star Slots

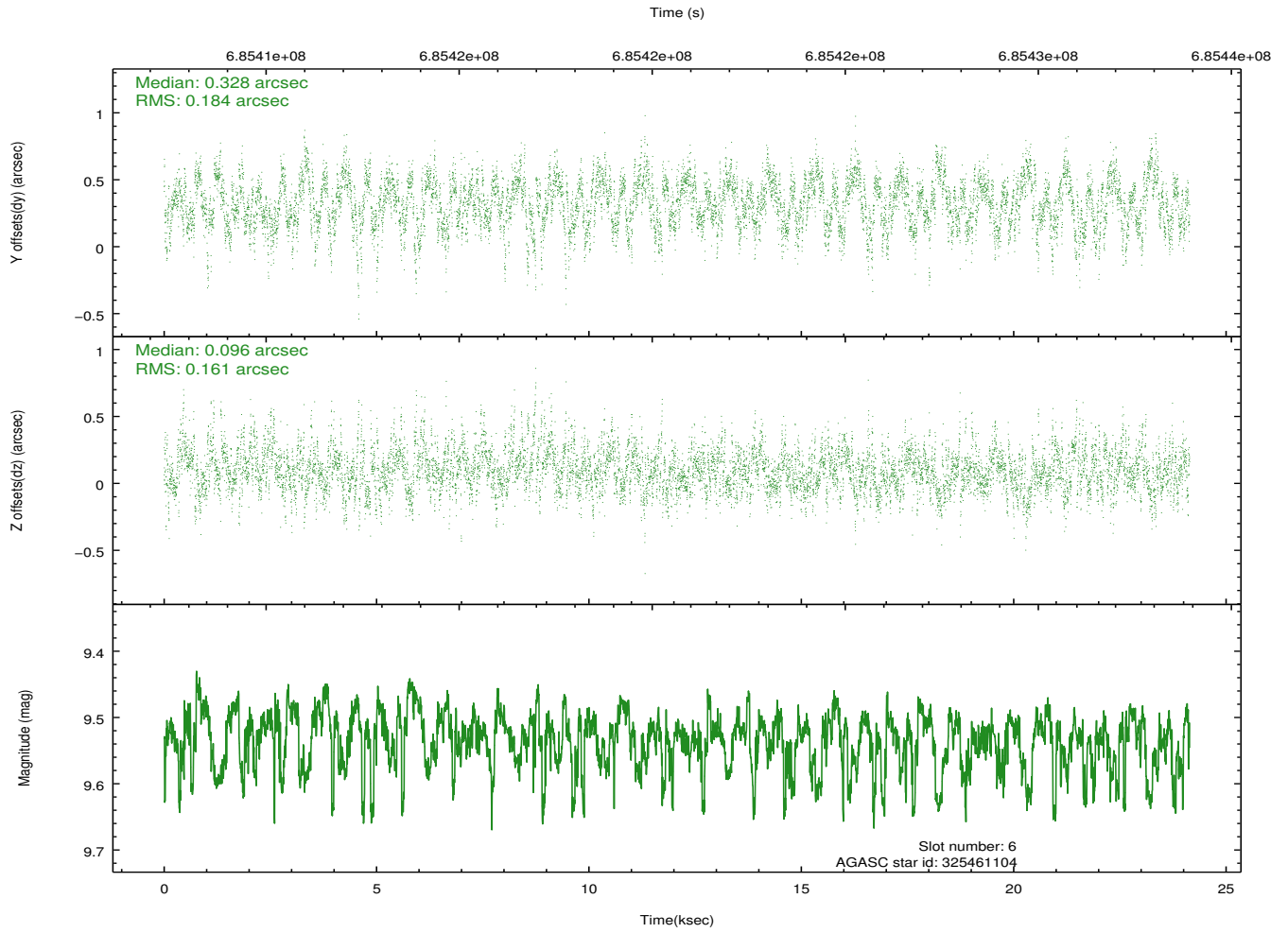
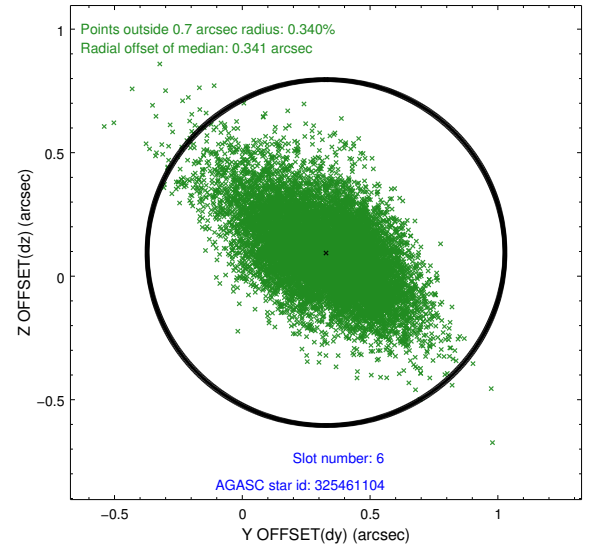
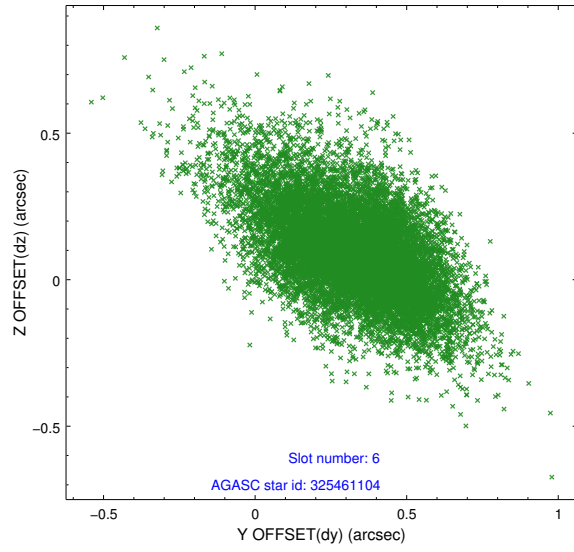
2.4.1 Slot 3



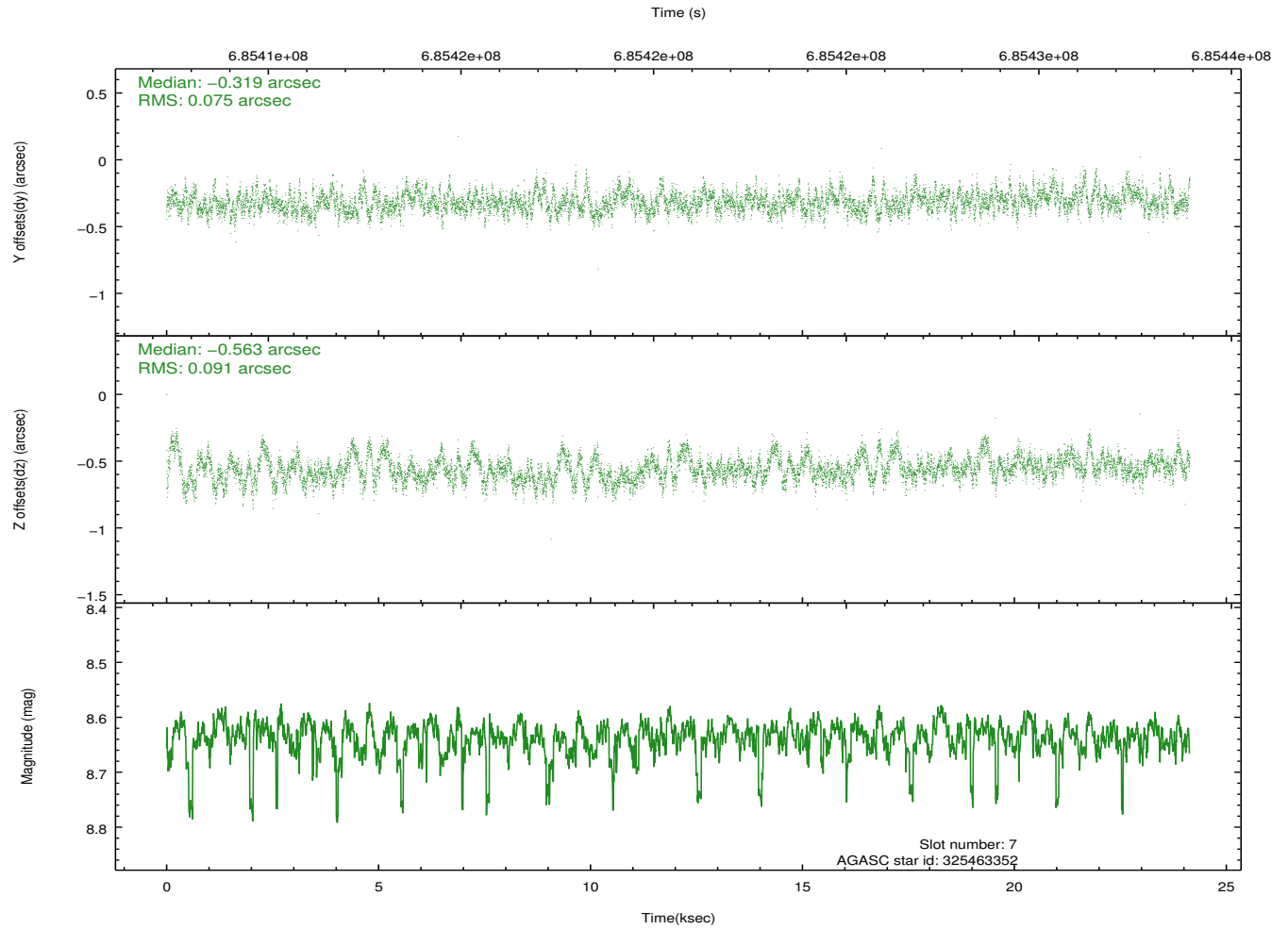
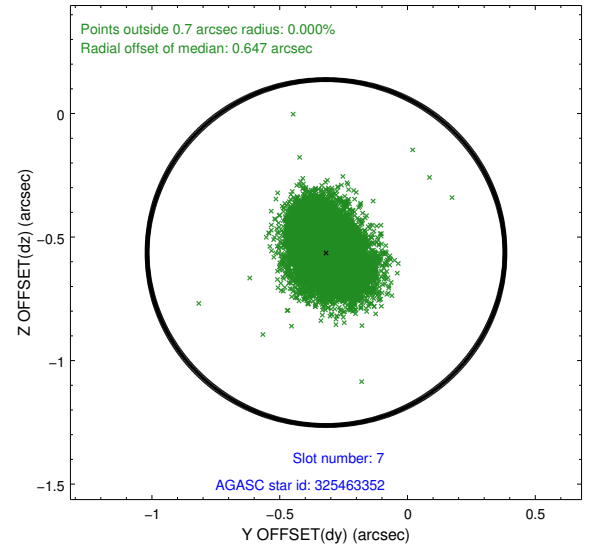
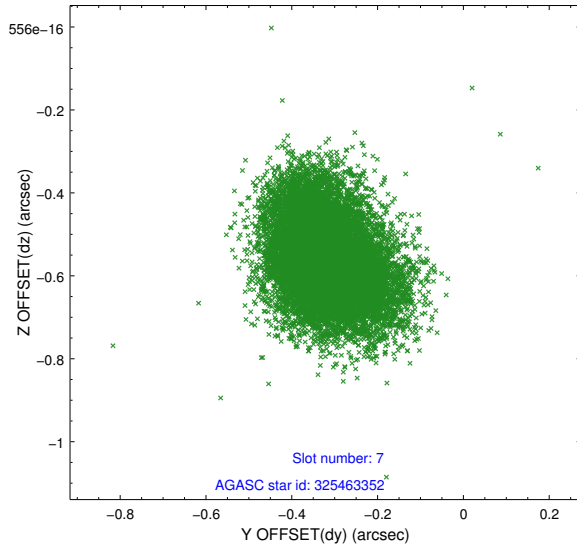
2.4.2 Slot 4



2.4.3 Slot 6

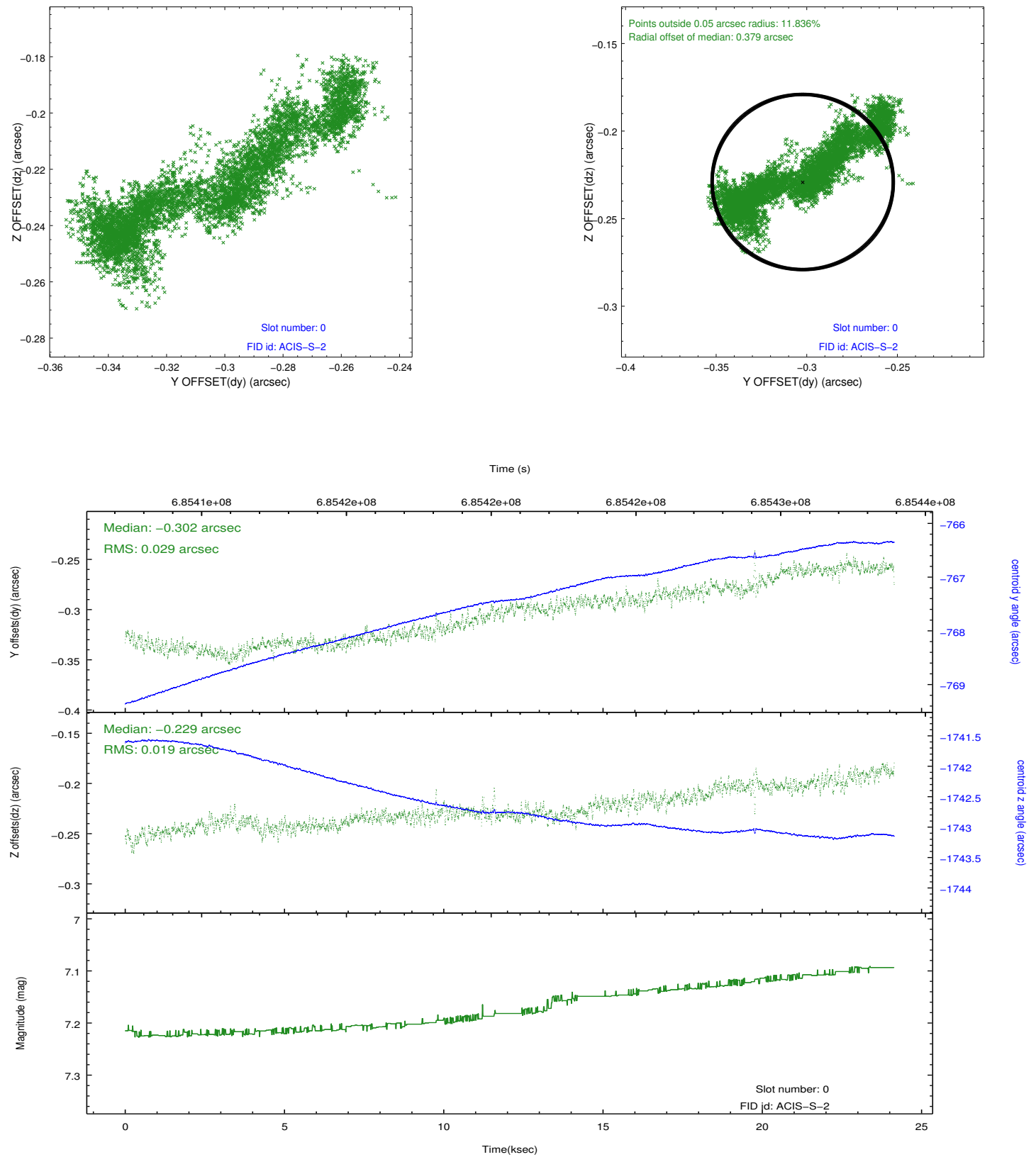


2.4.4 Slot 7

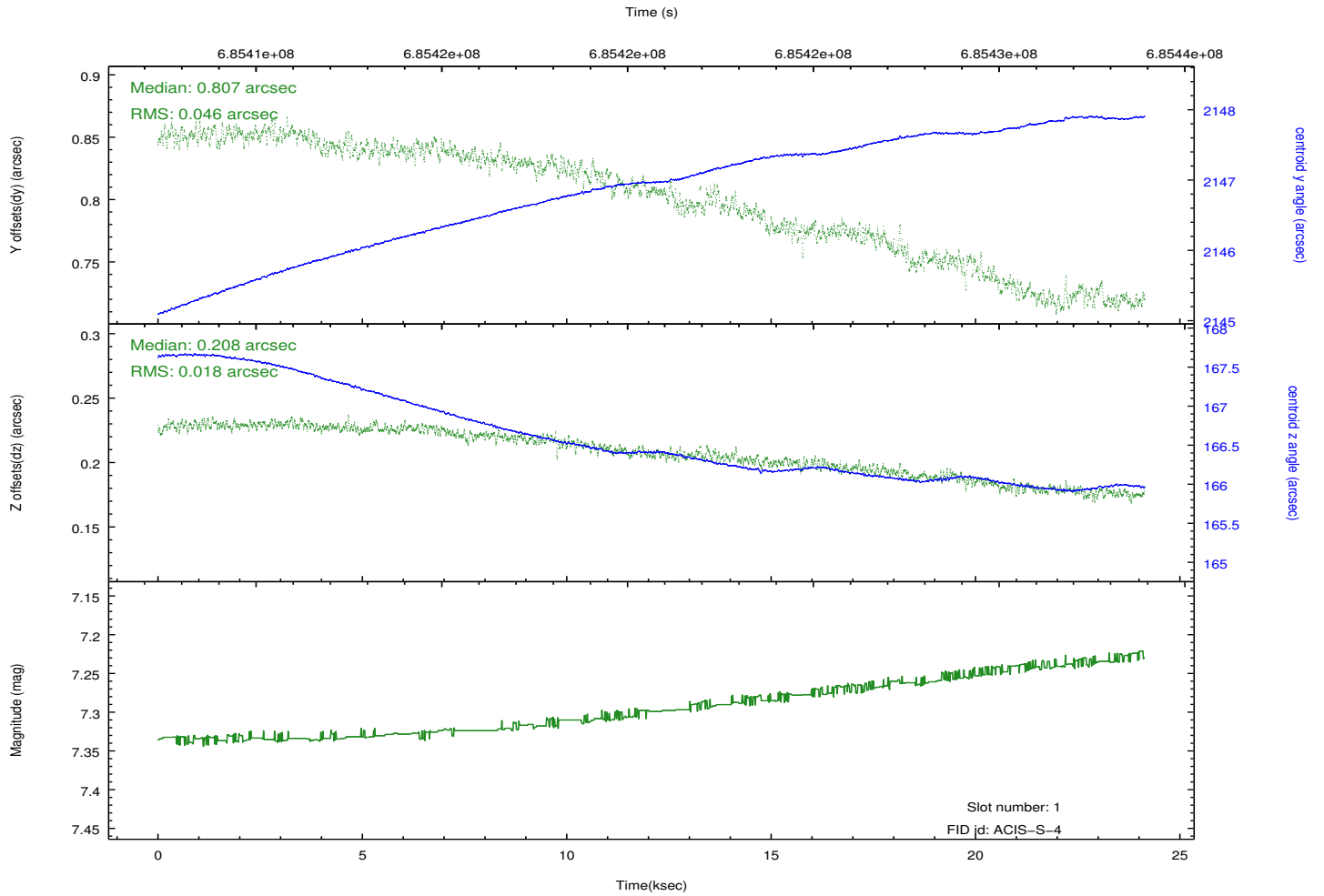
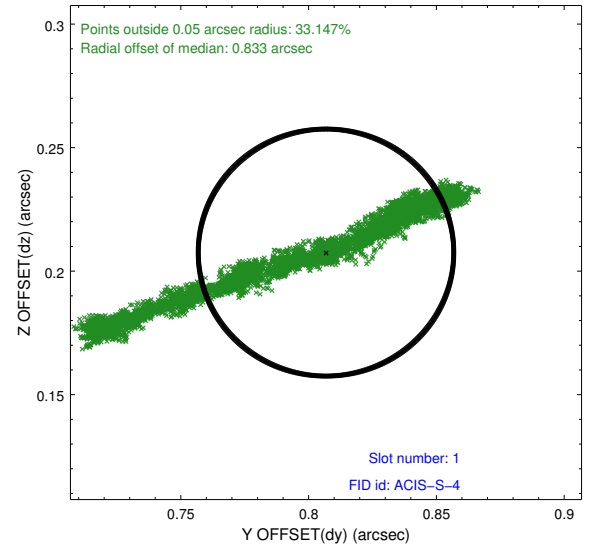
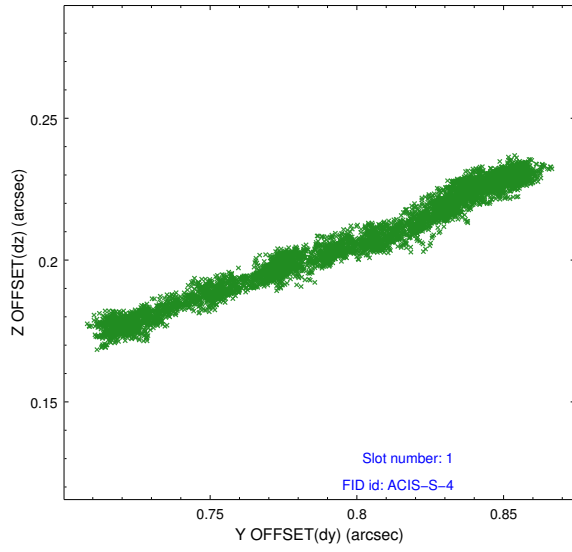


2.5 FID Slots

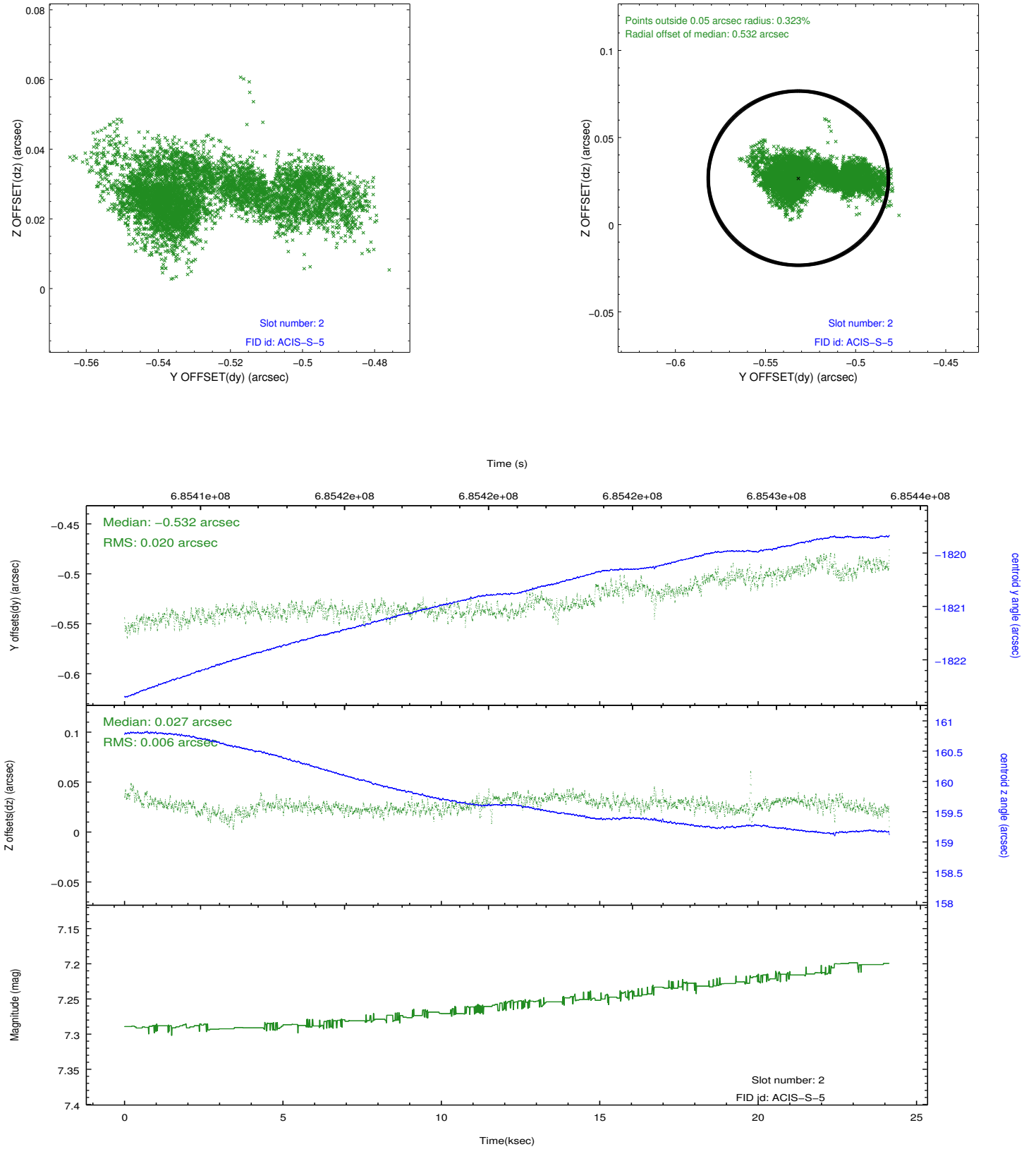
2.5.1 Slot 0



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)	2019.09.22
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	23.94240035677

A.2 Comments

The guide star in slot 5 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

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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.