

V&V Reference Report

L2 ASCDS Version : 10.7

Observation 21966 - L2 Version 1
Chandra X-Ray Center

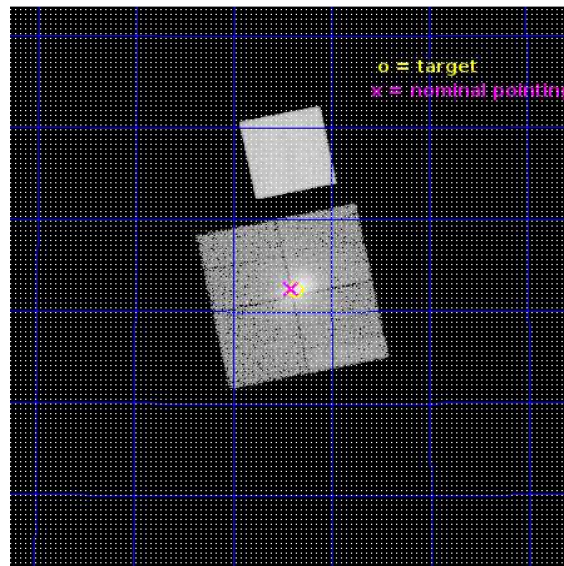
L2 Processing Date : Nov 21 2018

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1 Front

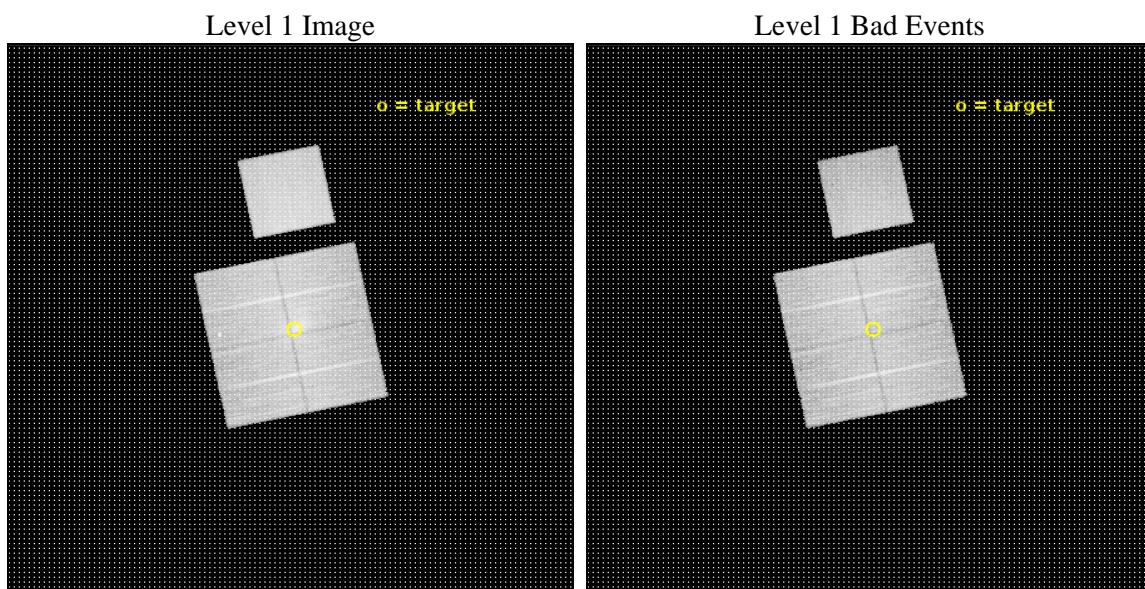
seq_num	801798	Sequence number
obs_id	21966	Observation id
title	Witnessing the formation of a radio halo	Proposal title
observer	Ralph Kraft	Principal investigator
object	Abell 2219	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	250.089167	Observer's specified target RA [deg]
dec_targ	46.705833	Observer's specified target Dec [deg]
ra_nom	250.10189667388	Nominal RA [deg]
dec_nom	46.708273096918	Nominal Dec [deg]
roll_nom	348.19940418959	Nominal Roll [deg]
revision	1	Processing version of data
ontime	20320.500156403	Sum of GTIs [s]
livetime	20054.997862125	Livetime [s]
ontime0	20317.359136224	Sum of GTIs [s]
ontime1	20320.500156403	Sum of GTIs [s]
ontime2	20317.359136224	Sum of GTIs [s]
ontime3	20320.500156403	Sum of GTIs [s]
ontime7	20320.500156403	Sum of GTIs [s]
l2events	163847	Number of level 2 events



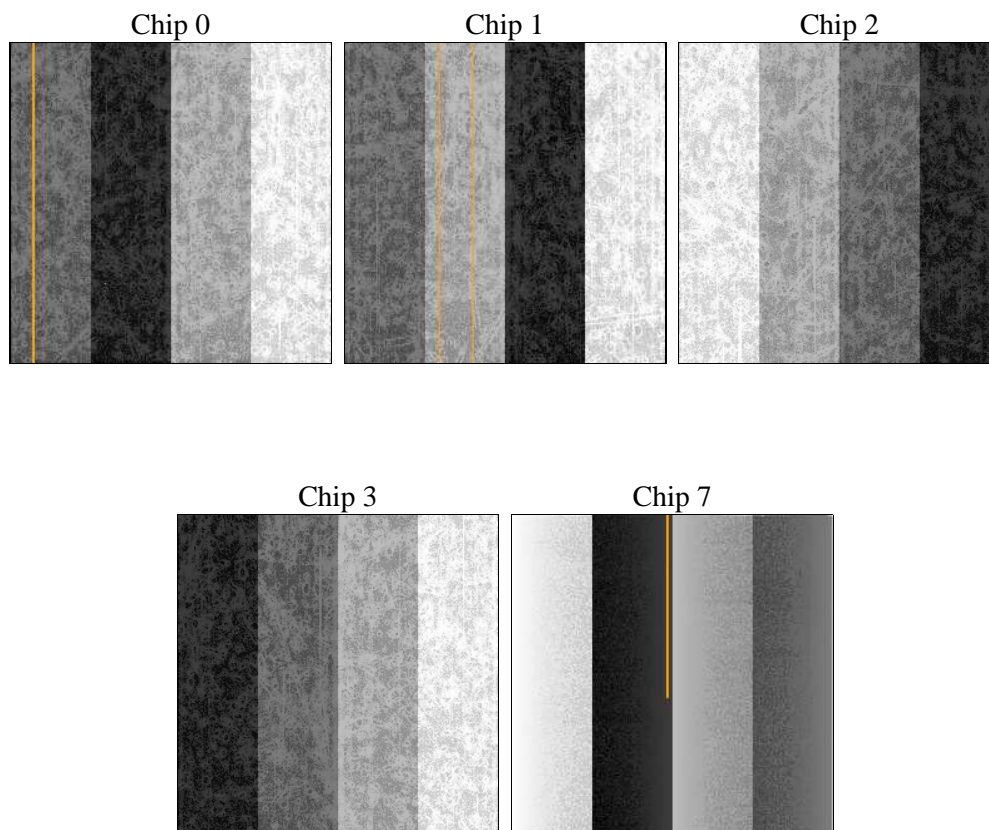
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	20270.384000	[s] Scheduled observation exposure time
ascdsver	10.7	Processing system revision	ontime	20320.500156403	Sum of GTIs [s]
caldsver	4.8.0.1	 	ontime0	20317.359136224	Sum of GTIs [s]
date	2018-11-21T14:52:10	Date and time of file creation	ontime1	20320.500156403	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	20317.359136224	Sum of GTIs [s]
			ontime3	20320.500156403	Sum of GTIs [s]
			ontime7	20320.500156403	Sum of GTIs [s]
			l1events	817306	Number of level 1 events

2.1.4 Events

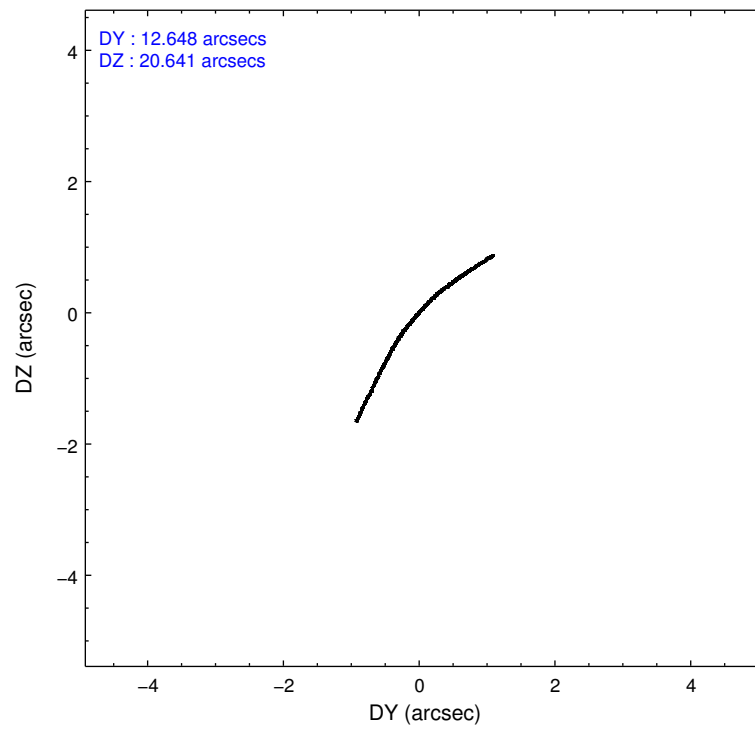
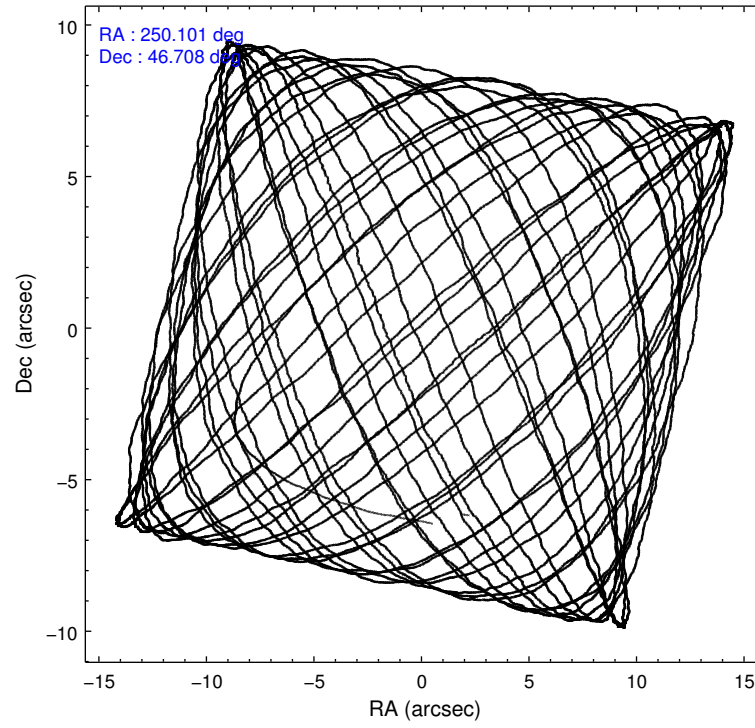
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
level 1 events	144256	149102	160855	166175	196918
rejected events	124973	126136	138918	136032	111756
rejected %	86%	84%	86%	81%	56%

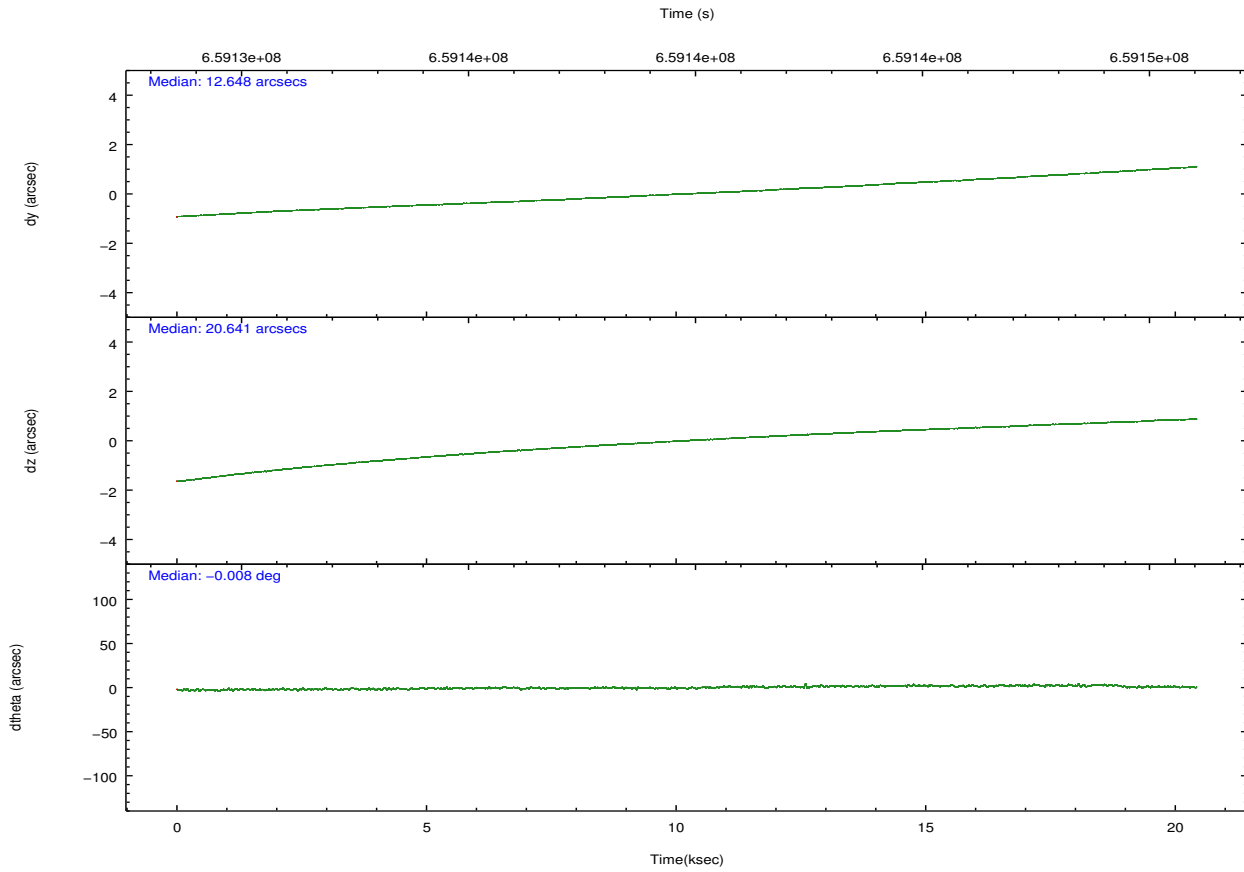
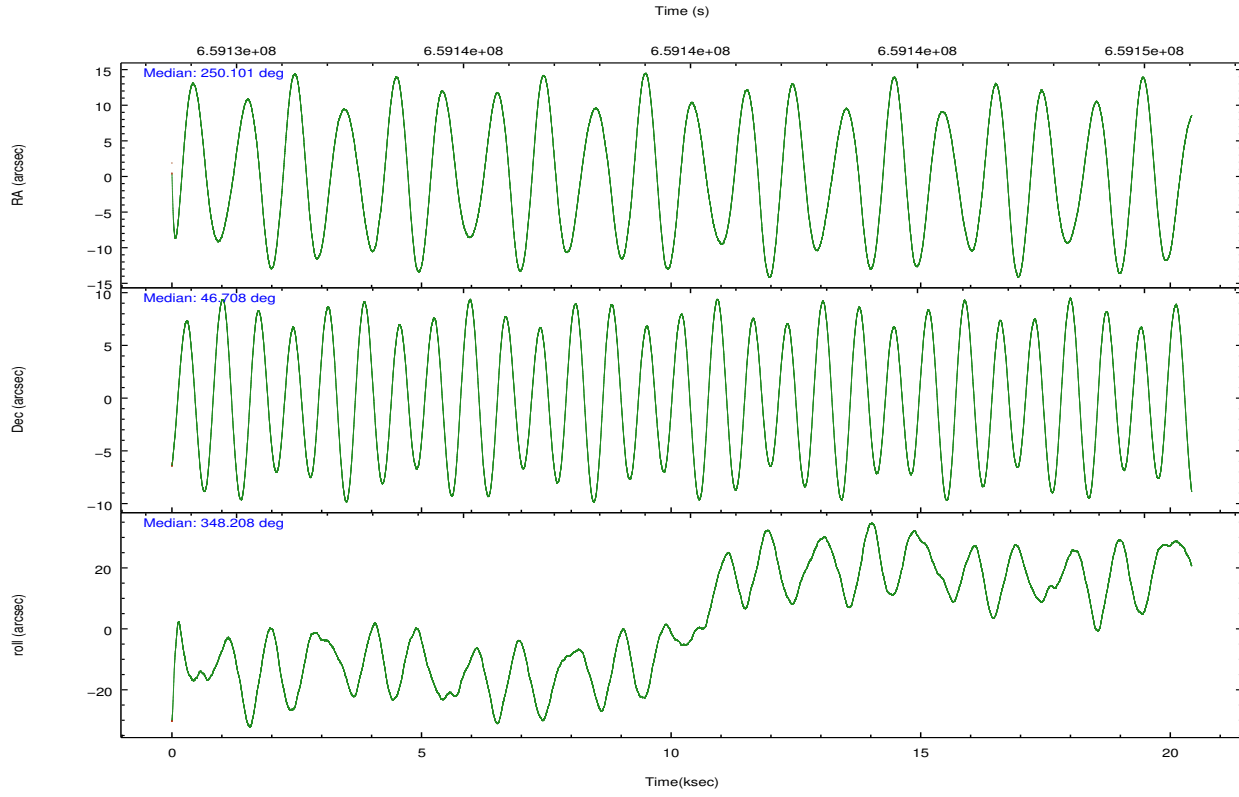
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
grade 0 events	7426	8983	10533	16886	7110
	5%	6%	6%	10%	3%
grade 1 events	91	81	112	159	290
	0%	0%	0%	0%	0%
grade 2 events	4702	5756	4526	4947	18125
	3%	3%	2%	2%	9%
grade 3 events	1795	1928	1799	2180	6603
	1%	1%	1%	1%	3%
grade 4 events	1641	1771	1760	2194	6487
	1%	1%	1%	1%	3%
grade 5 events	6479	6544	5819	7259	19495
	4%	4%	3%	4%	9%
grade 6 events	3724	4534	3319	3941	46846
	2%	3%	2%	2%	23%
grade 7 events	118398	119505	132987	128609	91962
	82%	80%	82%	77%	46%

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	250.063701	250.1018966738819	CCD I2 on	Y	Y
[deg] Pointing Dec	46.699535	46.70827309691794	CCD I3 on	Y	Y
[deg] Pointing Roll	348.018532	348.1994041895939	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	N	N
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	O1	Y
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	659129732.184000	659128310.56247	CCD S5 on	N	N
Observation start date	2018-11-20T19:34:23	2018-11-20T19:11:50	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	659150002.184000	659150991.25131	On-chip summing requested	N	N
Observation end date	2018-11-21T01:12:13	2018-11-21T01:29:51	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



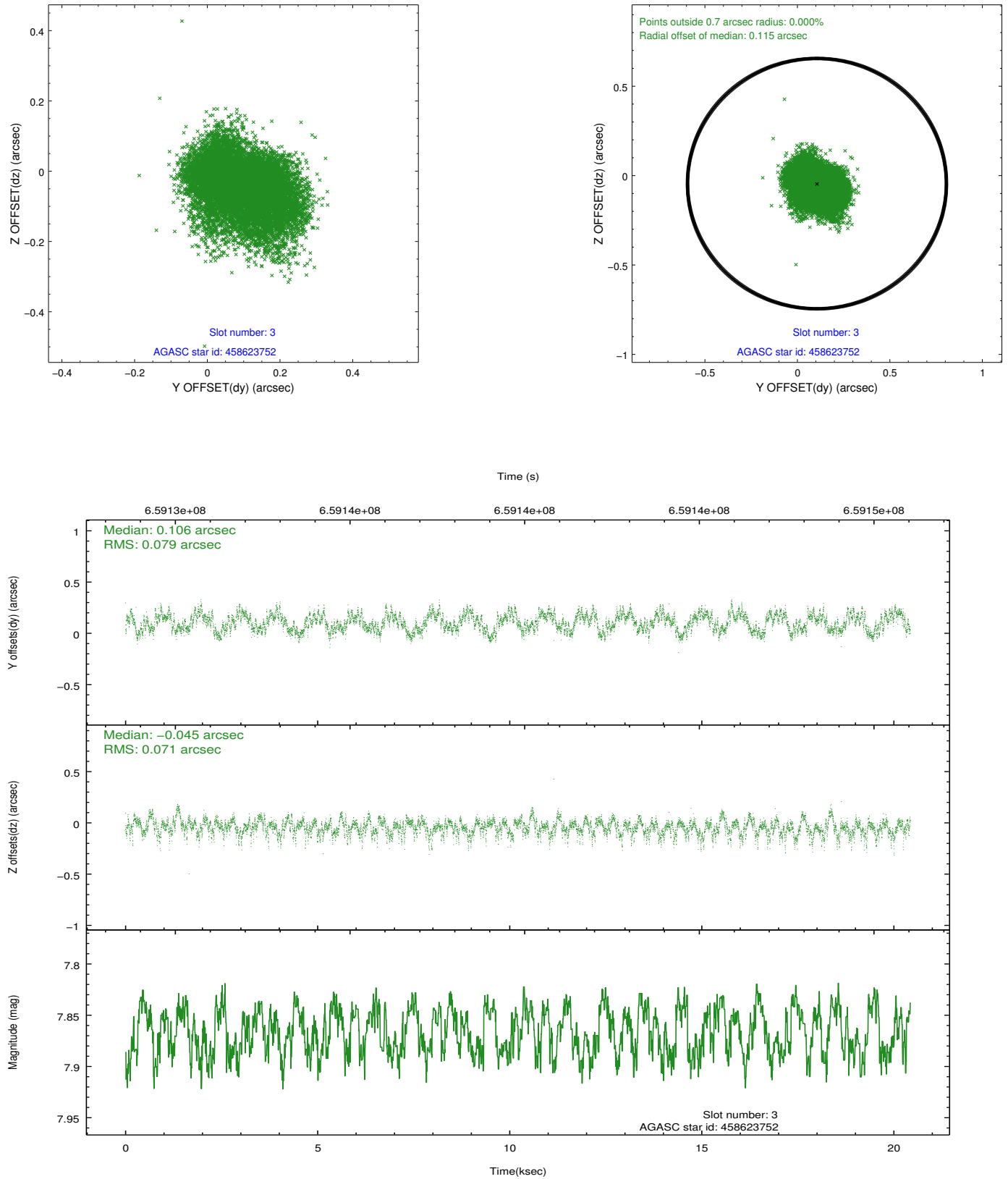


Slot Statistics

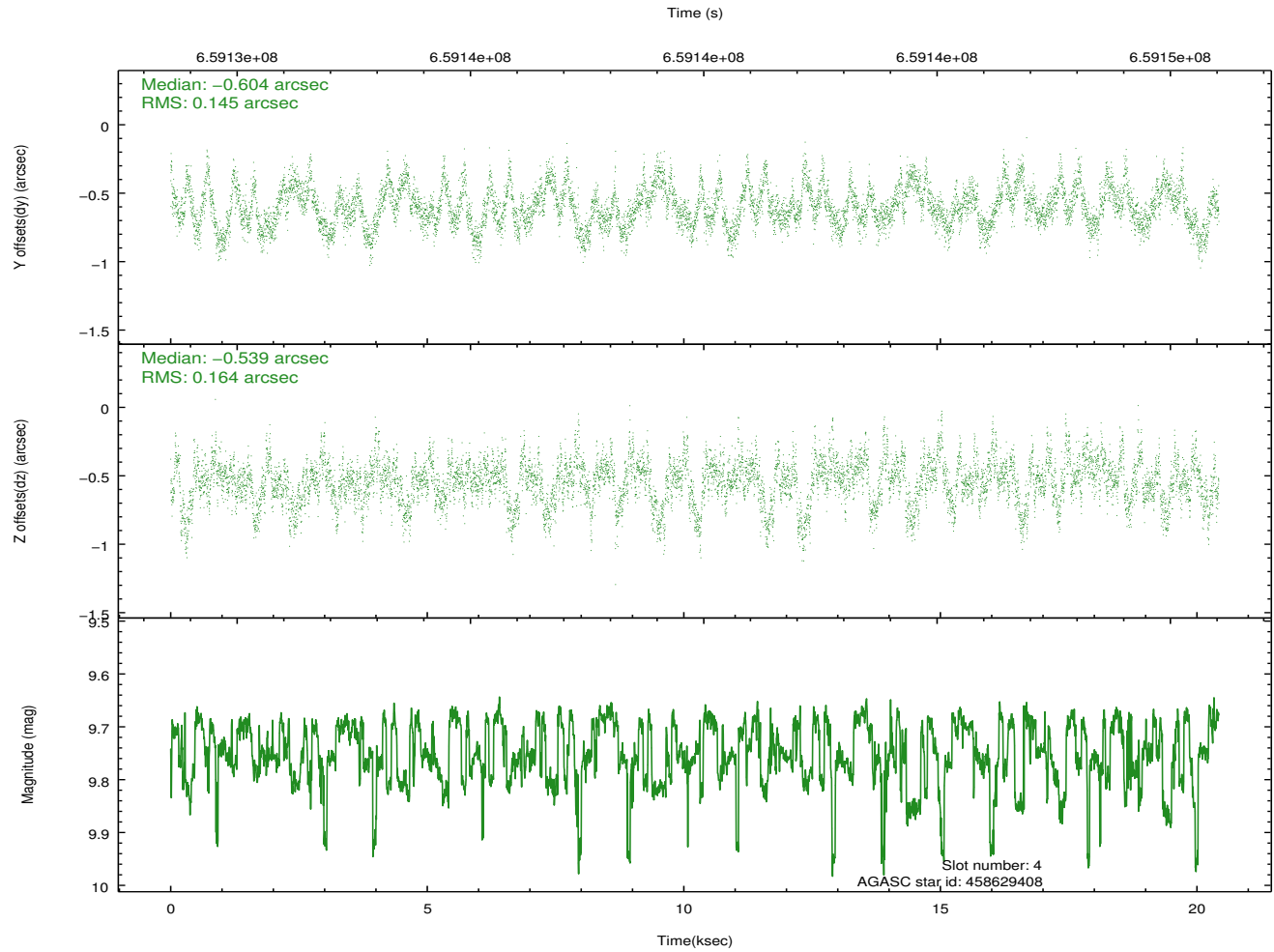
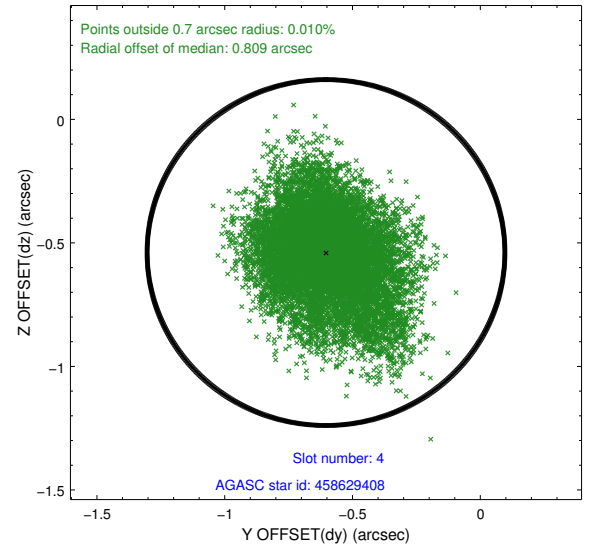
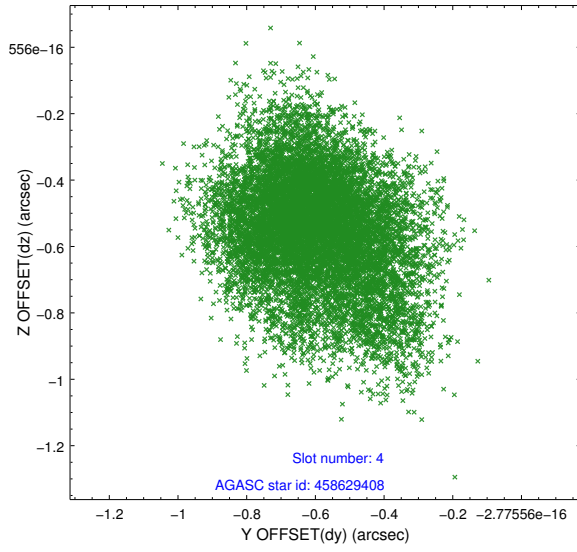
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.23	4982	1.000	-0.081	-0.151	0.027	0.069	0.000000	0.000000	926.84	-844
1	FID		ACIS-I-4	7.18	4981	1.000	0.597	0.167	0.021	0.044	0.000000	0.000000	2147.47	1055
2	FID		ACIS-I-5	7.22	4983	1.000	-0.614	0.054	0.013	0.028	0.000000	0.000000	-1821.65	1053
3	GUIDE	used	458623752	7.87	9962	1.000	0.106	-0.045	0.115	0.176	249.631548	46.393849	-820.82	-1295
4	GUIDE	used	458629408	9.75	9951	1.000	-0.604	-0.539	0.233	0.383	250.557292	47.098807	885.64	1658
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	458630992	8.78	9960	1.000	0.172	0.262	0.145	0.234	249.097154	46.610030	-2274.40	-798
7	GUIDE	used	458622504	7.84	9962	1.000	0.315	0.342	0.092	0.149	249.027856	46.364222	-2269.15	-1698

2.4 Star Slots

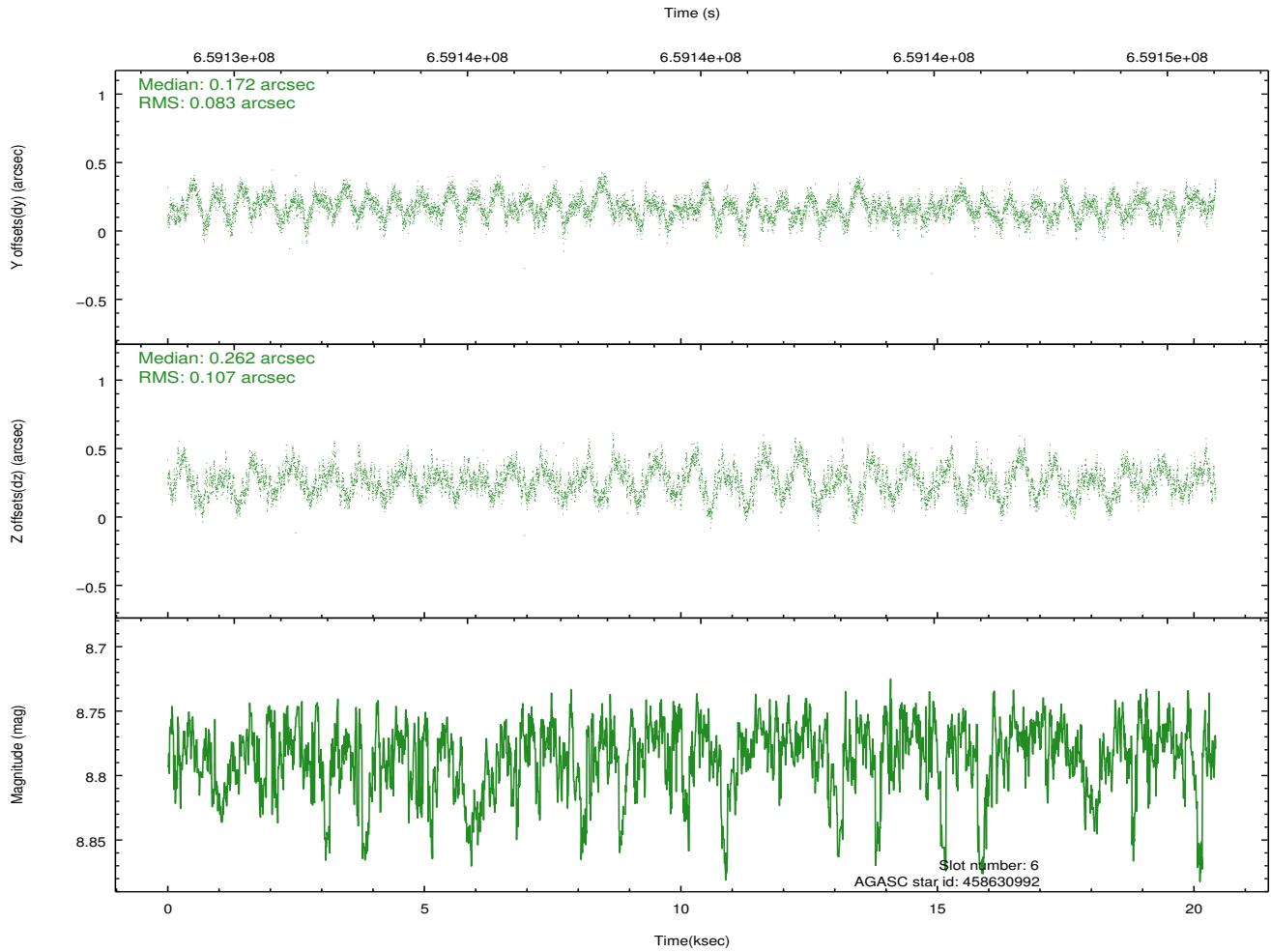
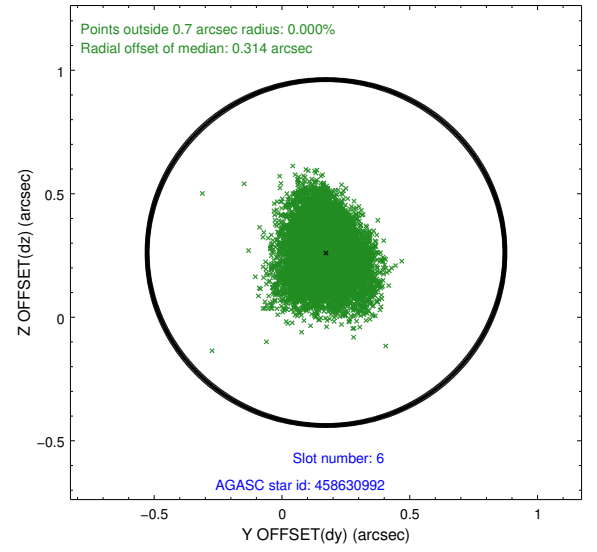
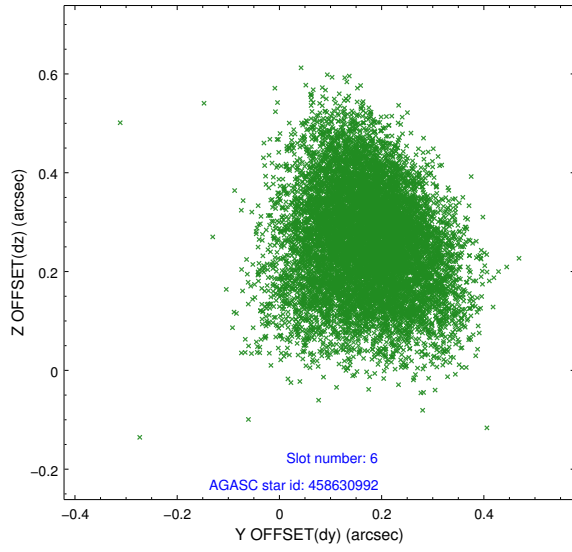
2.4.1 Slot 3



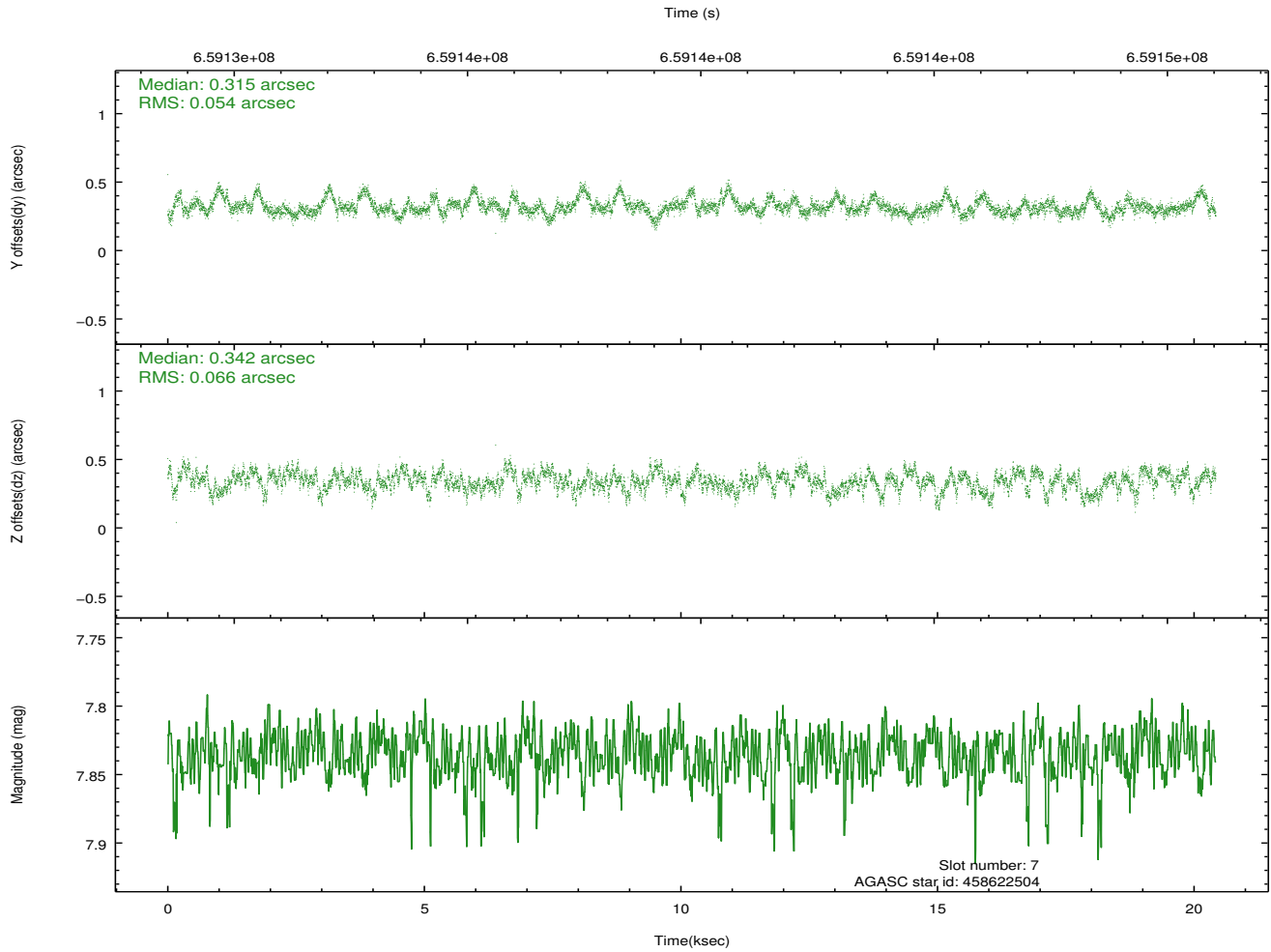
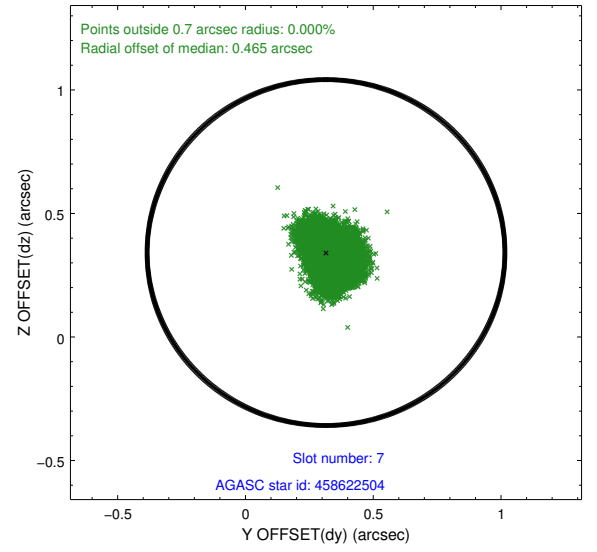
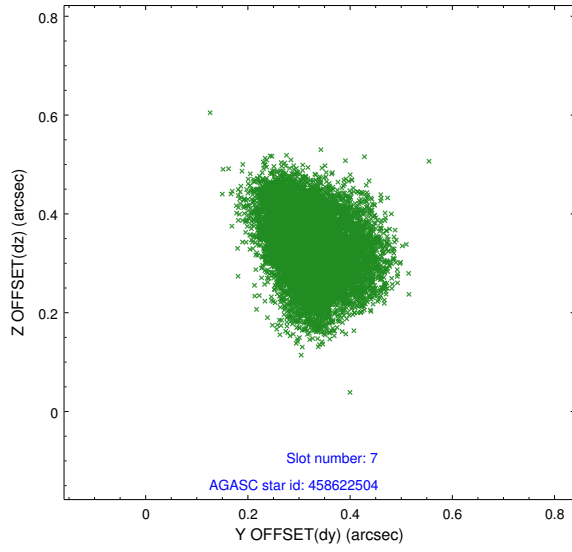
2.4.2 Slot 4



2.4.3 Slot 6

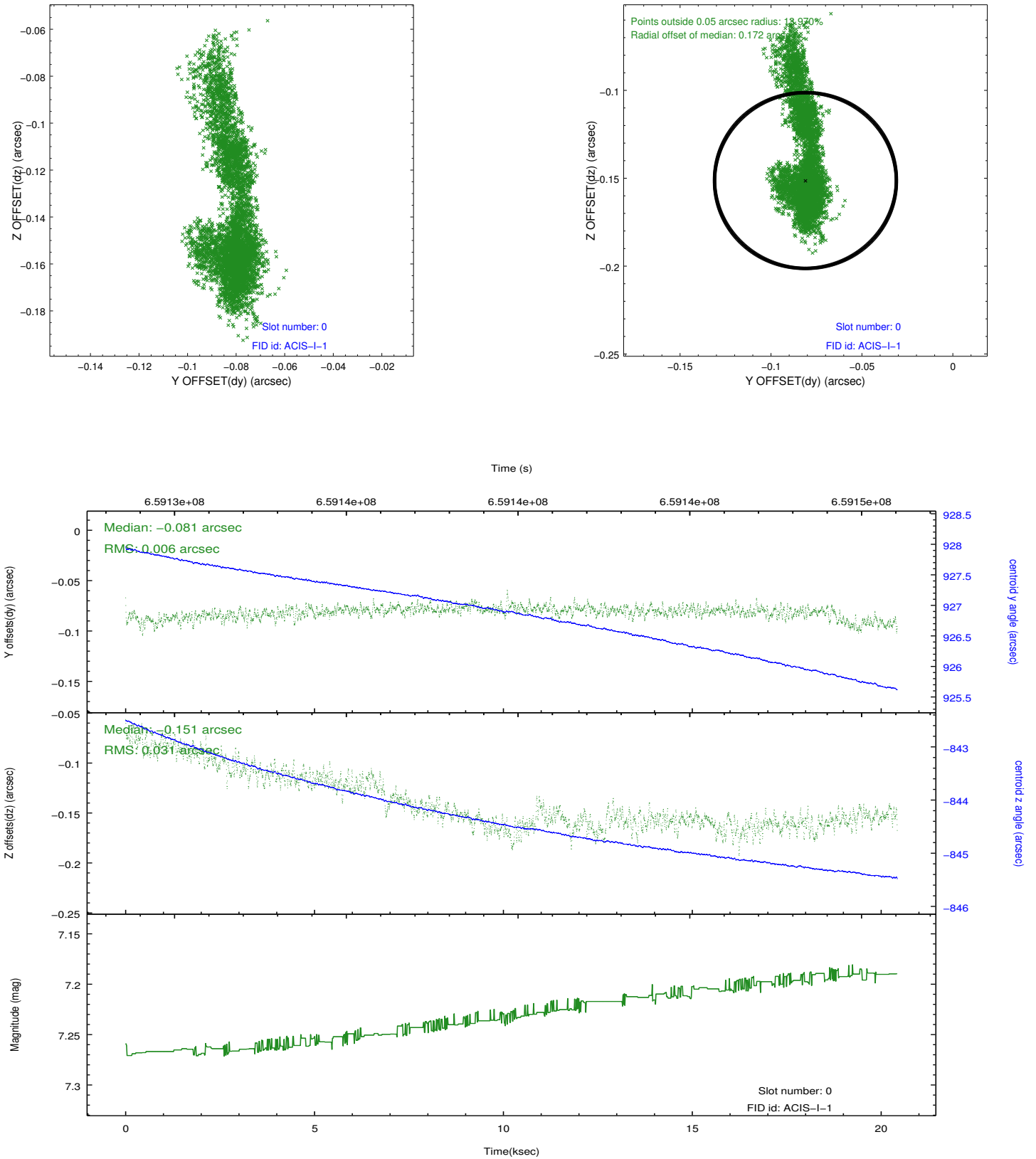


2.4.4 Slot 7

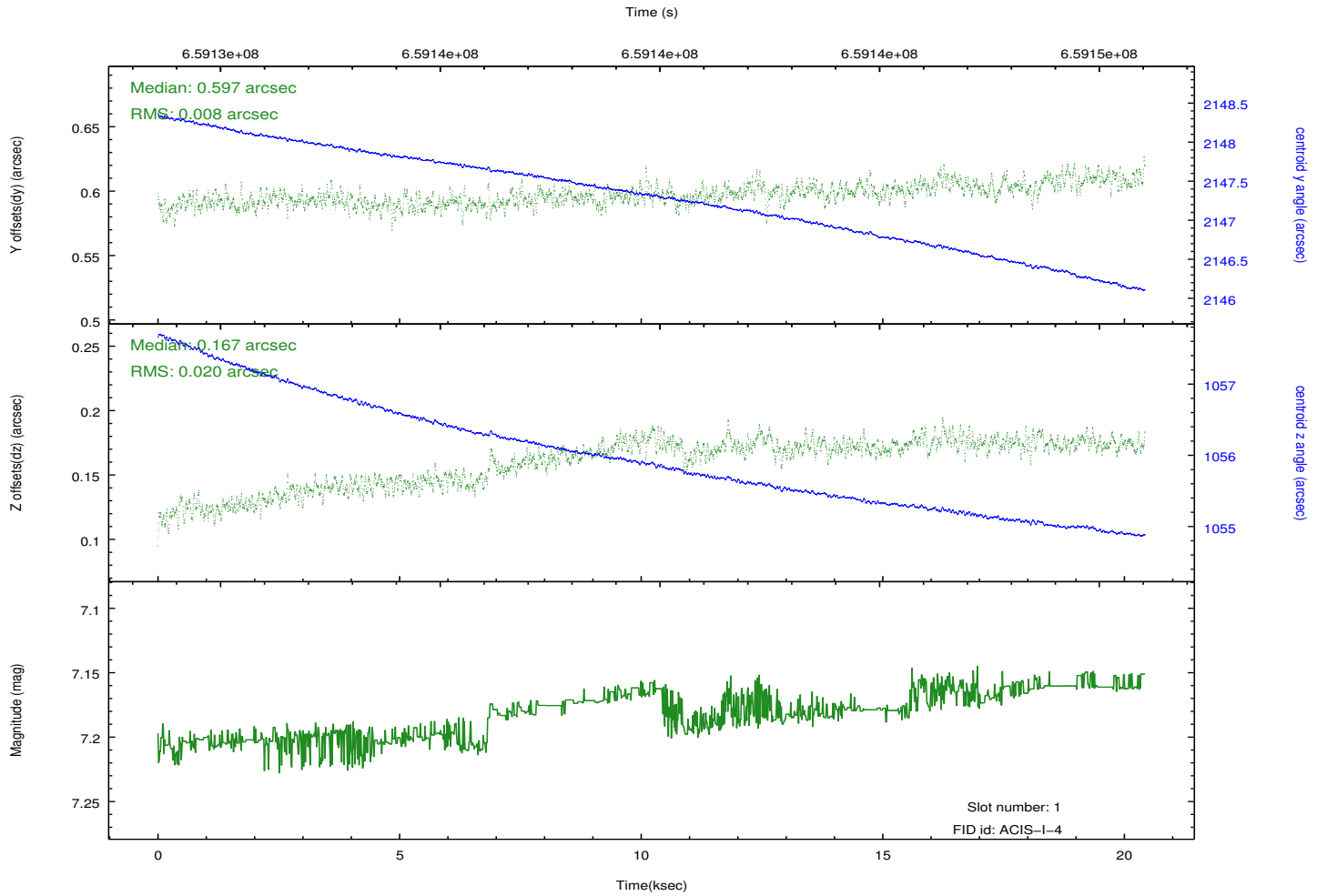
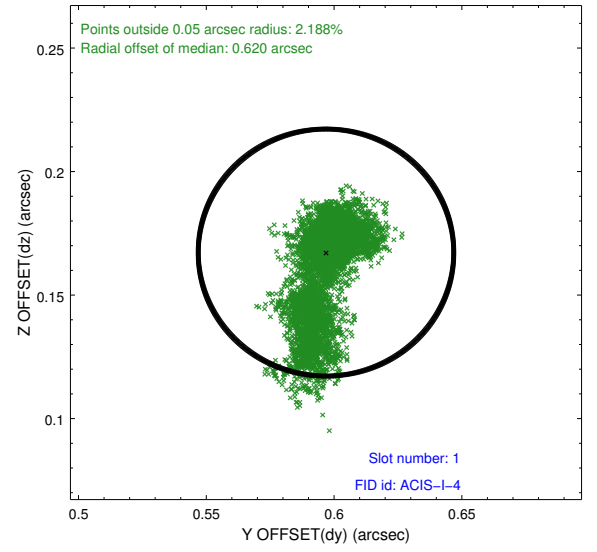
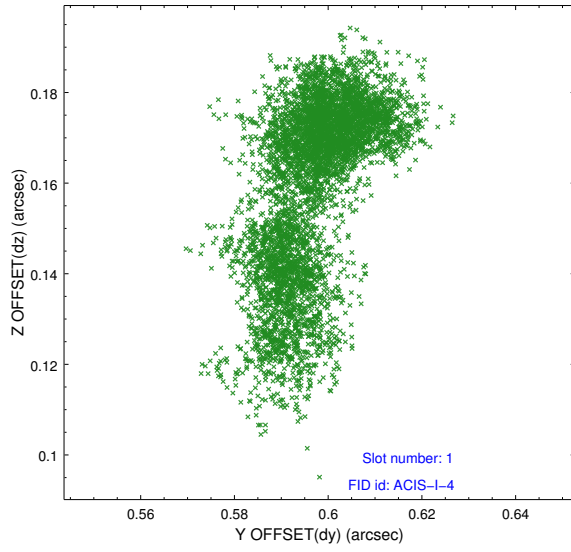


2.5 FID Slots

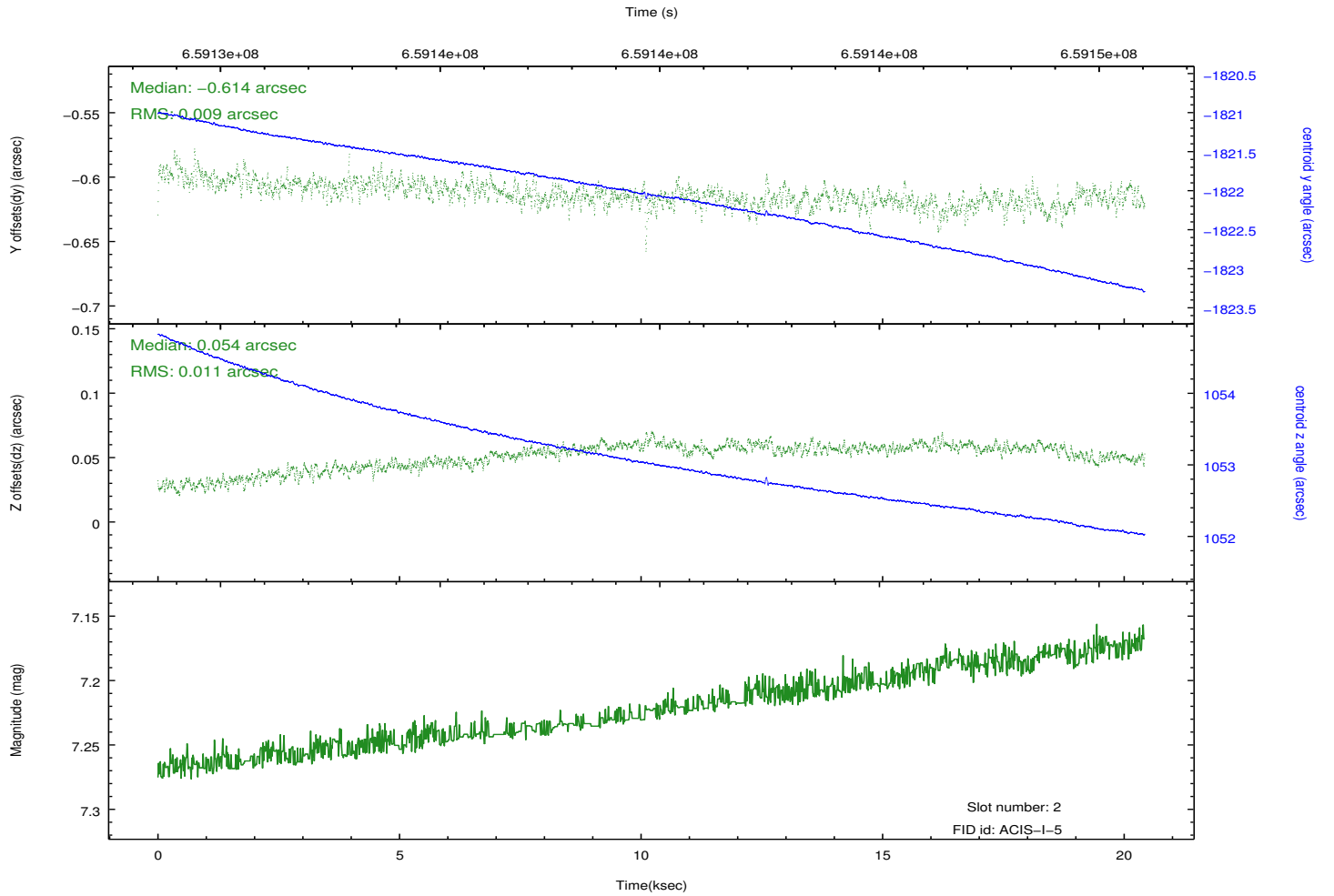
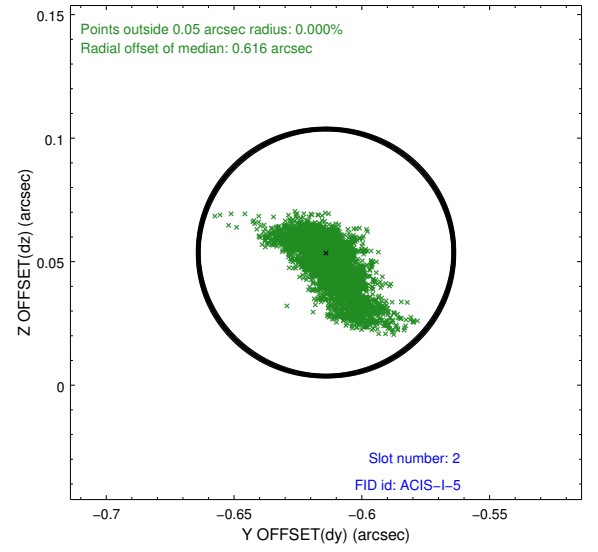
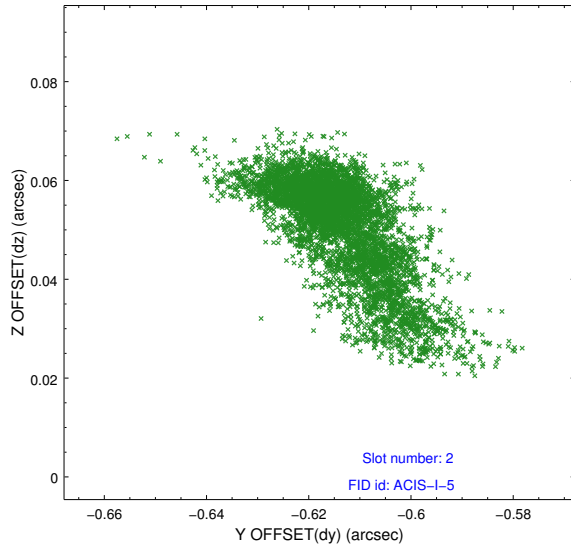
2.5.1 Slot 0



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)	2018.11.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	20.320500156403

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., -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.

