

V&V Reference Report

L2 ASCDS Version : 10.6

Observation 20517 - L2 Version 1
Chandra X-Ray Center

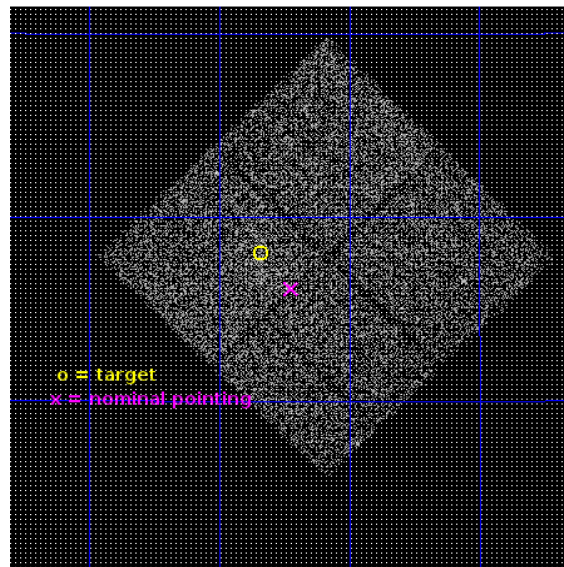
L2 Processing Date : Oct 2 2017

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1 Front

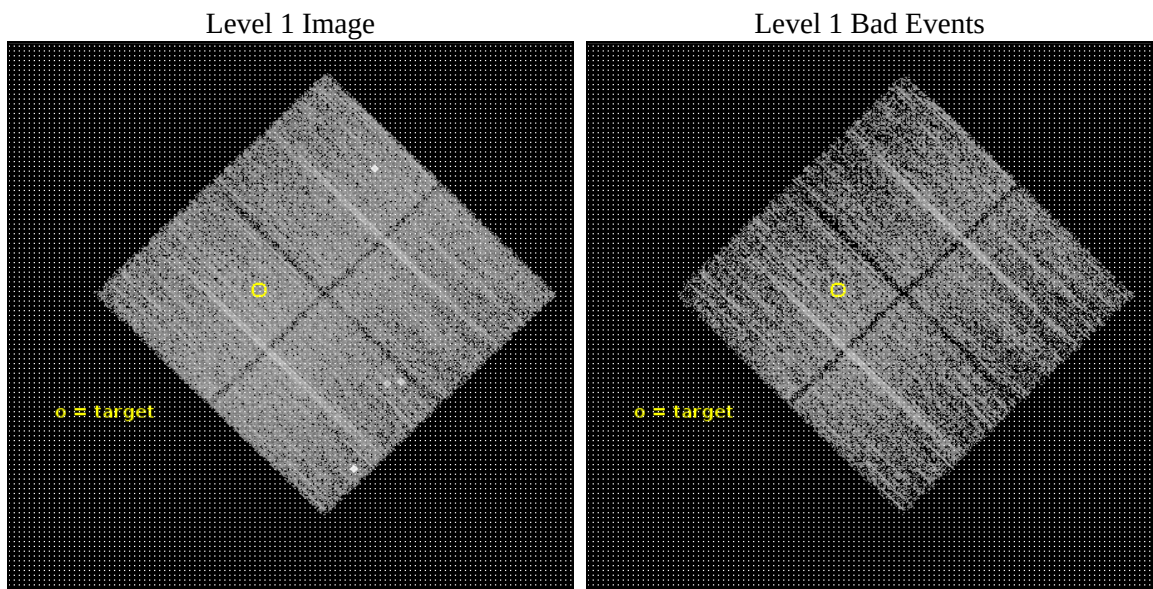
seq_num	801731	Sequence number
obs_id	20517	Observation id
title	Enabling precision cosmology with optically selected galaxy clusters	
observer	Roger Morris	Principal investigator
object	CIG J225656+244547	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	344.209583	Observer's specified target RA [deg]
dec_targ	24.800944	Observer's specified target Dec [deg]
ra_nom	344.18050530457	Nominal RA [deg]
dec_nom	24.768456460177	Nominal Dec [deg]
roll_nom	225.2209108236	Nominal Roll [deg]
revision	1	Processing version of data
ontime	10077.768400192	Sum of GTIs [s]
livetime	9946.0949368986	Livetime [s]
ontime0	10080.786350489	Sum of GTIs [s]
ontime1	10077.686310172	Sum of GTIs [s]
ontime2	10077.727340221	Sum of GTIs [s]
ontime3	10077.768400192	Sum of GTIs [s]
l2events	24611	Number of level 2 events



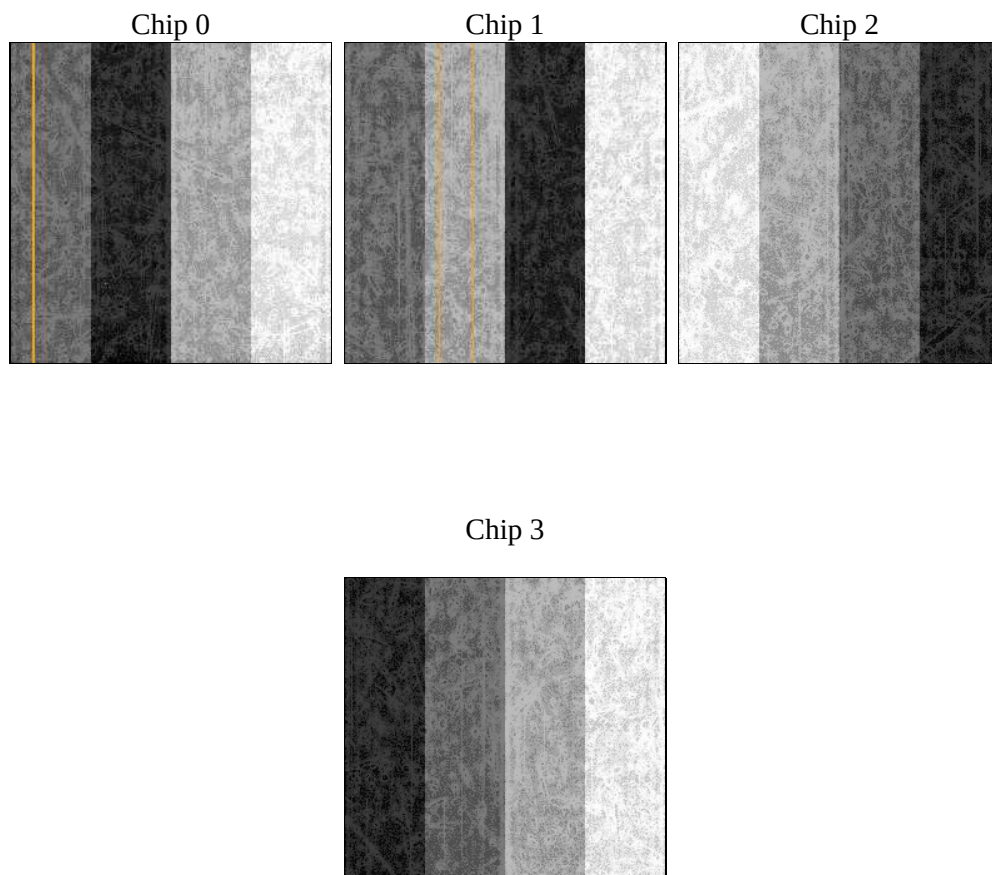
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	10.6	Processing system revision	ontime	10077.768400192	Sum of GTIs [s]
caldbver	4.7.6	 	ontime0	10080.786350489	Sum of GTIs [s]
date	2017-10-02T04:59:06	Date and time of file creation	ontime1	10077.686310172	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	10077.727340221	Sum of GTIs [s]
			ontime3	10077.768400192	Sum of GTIs [s]
			l1events	262066	Number of level 1 events

2.1.4 Events

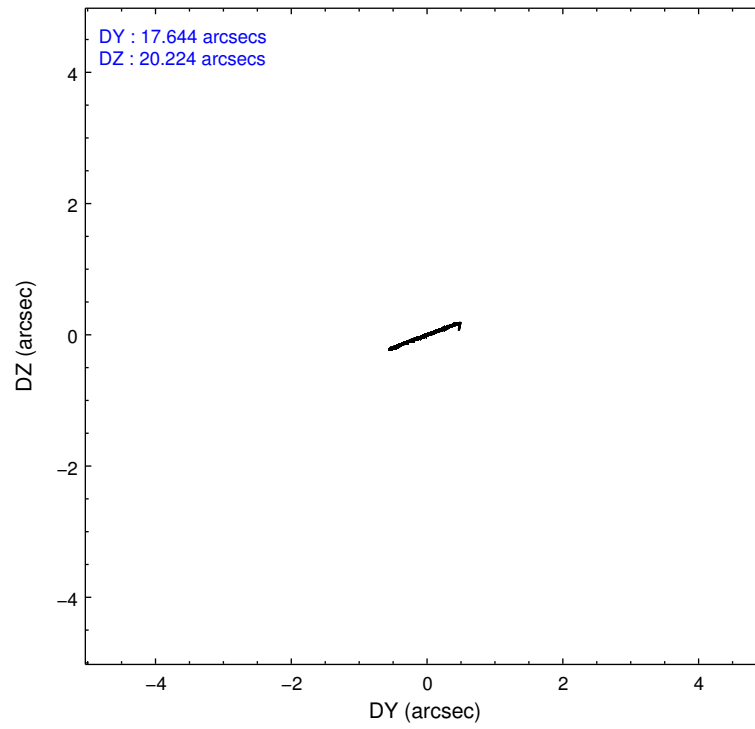
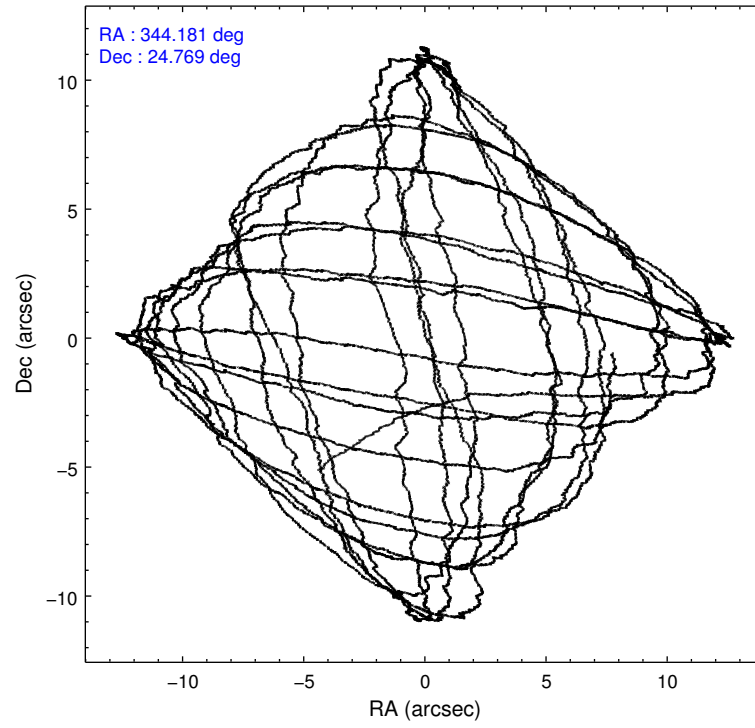
	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	60603	63379	71050	67034
rejected events	53546	53412	59767	59611
rejected %	88%	84%	84%	88%

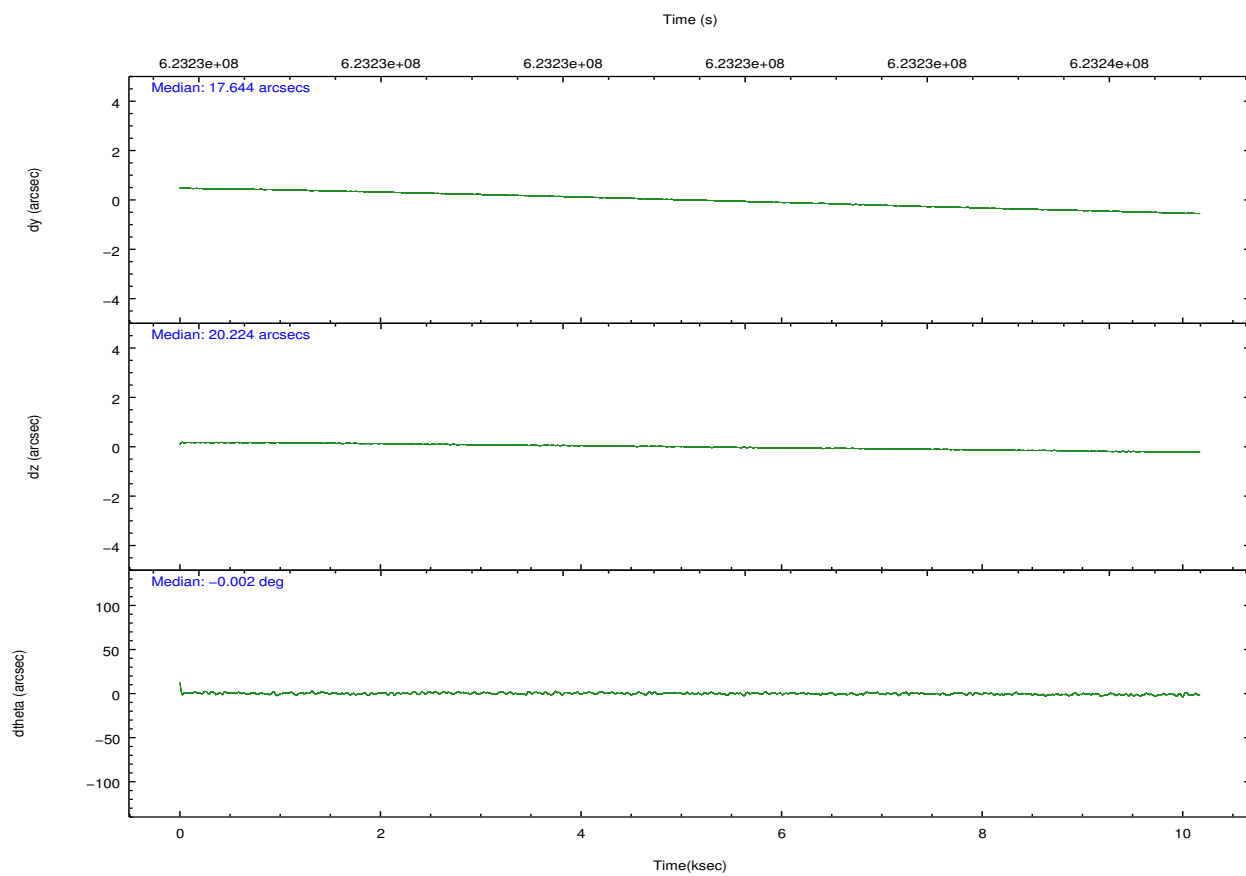
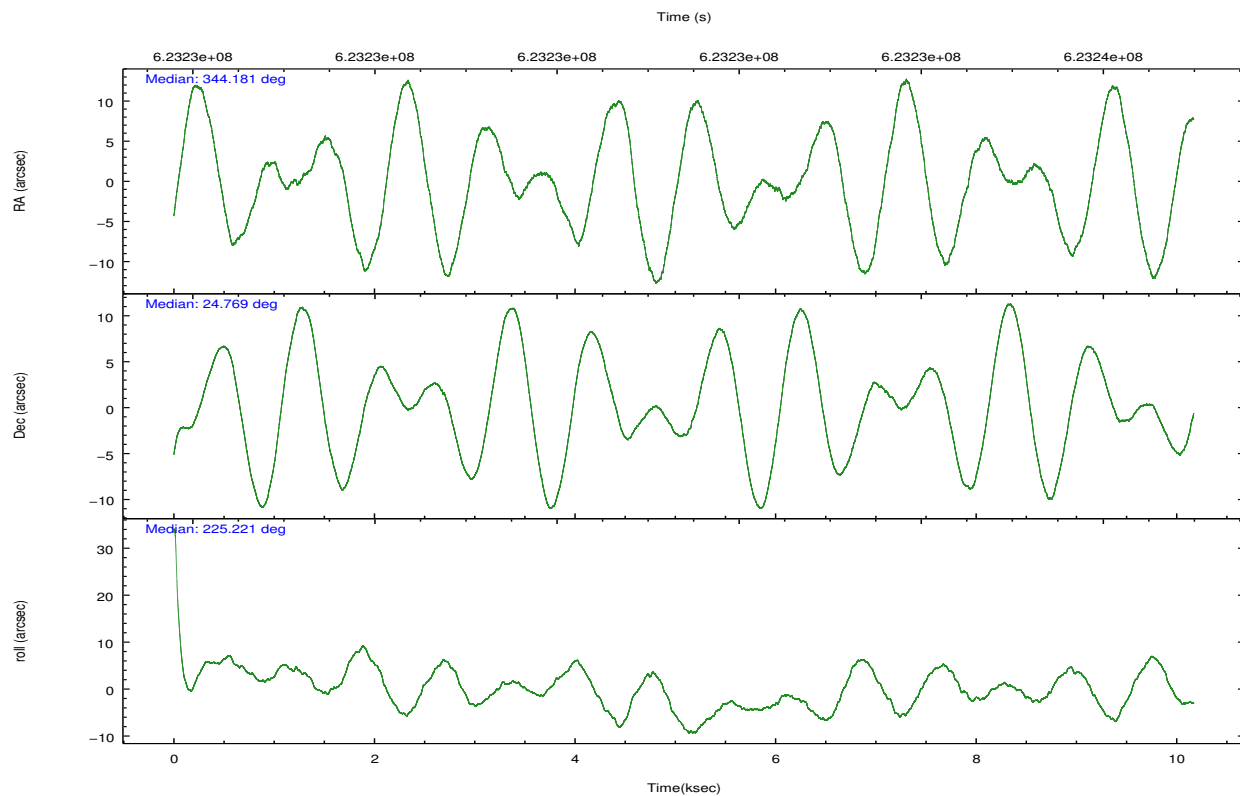
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	2289	4533	2857	2797
	3%	7%	4%	4%
grade 1 events	33	55	42	41
	0%	0%	0%	0%
grade 2 events	1771	1963	5622	1569
	2%	3%	7%	2%
grade 3 events	759	725	686	740
	1%	1%	0%	1%
grade 4 events	658	690	700	729
	1%	1%	0%	1%
grade 5 events	2615	2834	2572	3108
	4%	4%	3%	4%
grade 6 events	1584	2065	1424	1595
	2%	3%	2%	2%
grade 7 events	50894	50514	57147	56455
	83%	79%	80%	84%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-0123	ACIS-0123	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	344.188114	344.1805053045665	CCD I2 on	Y	Y
[deg] Pointing Dec	24.795204	24.76845646017687	CCD I3 on	Y	Y
[deg] Pointing Roll	225.008992	225.2209108236017	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	-228.472463	-228.4783457680588	CCD S3 on	N	N
[mm] SIM translation stage offset	-5.12	-5.114107234870914	CCD S4 on	N	N
[s] Observation start time (MET)	623226487.184000	623225534.96197	CCD S5 on	N	N
Observation start date	2017-10-01T06:26:58	2017-10-01T06:12:14	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	623236487.184000	623237596.65018	On-chip summing requested	N	N
Observation end date	2017-10-01T09:13:38	2017-10-01T09:33:16	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



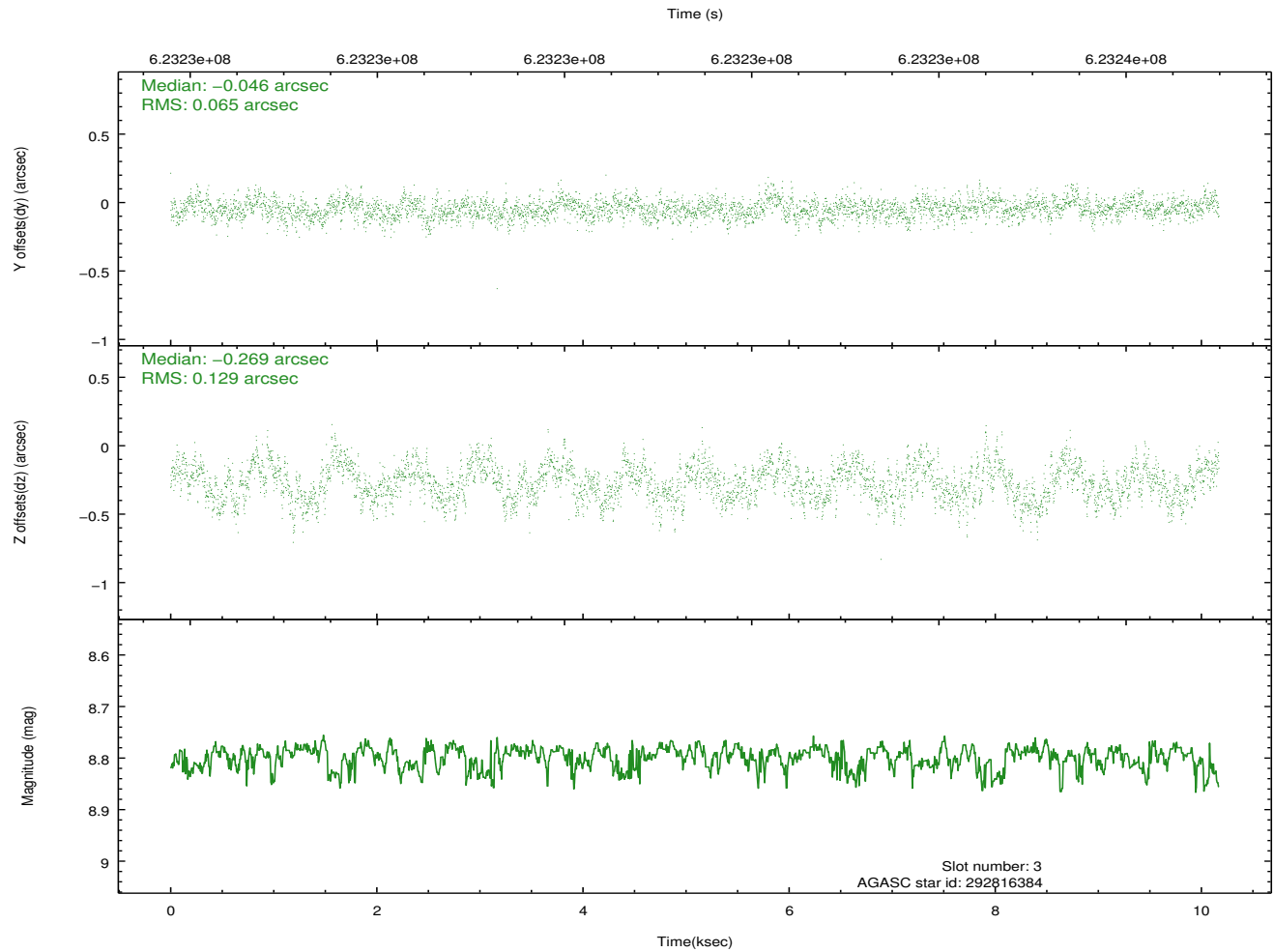
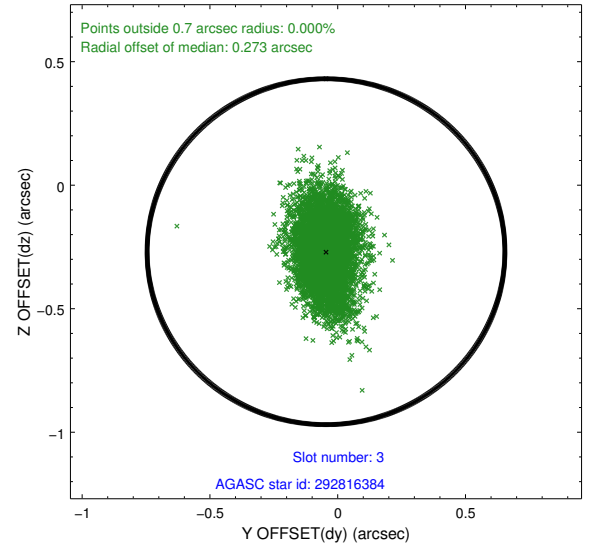
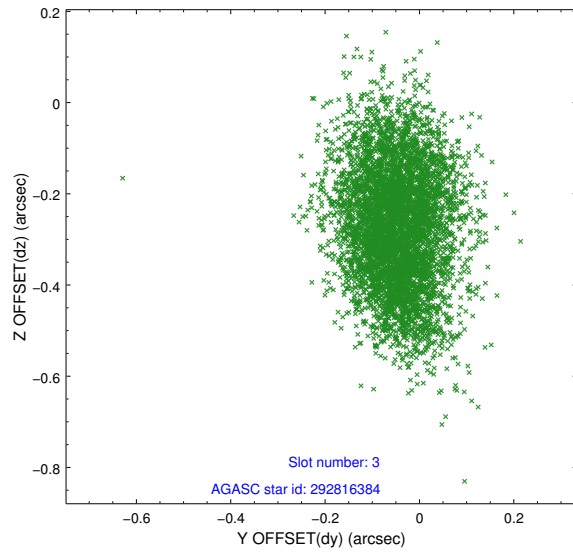


Slot Statistics

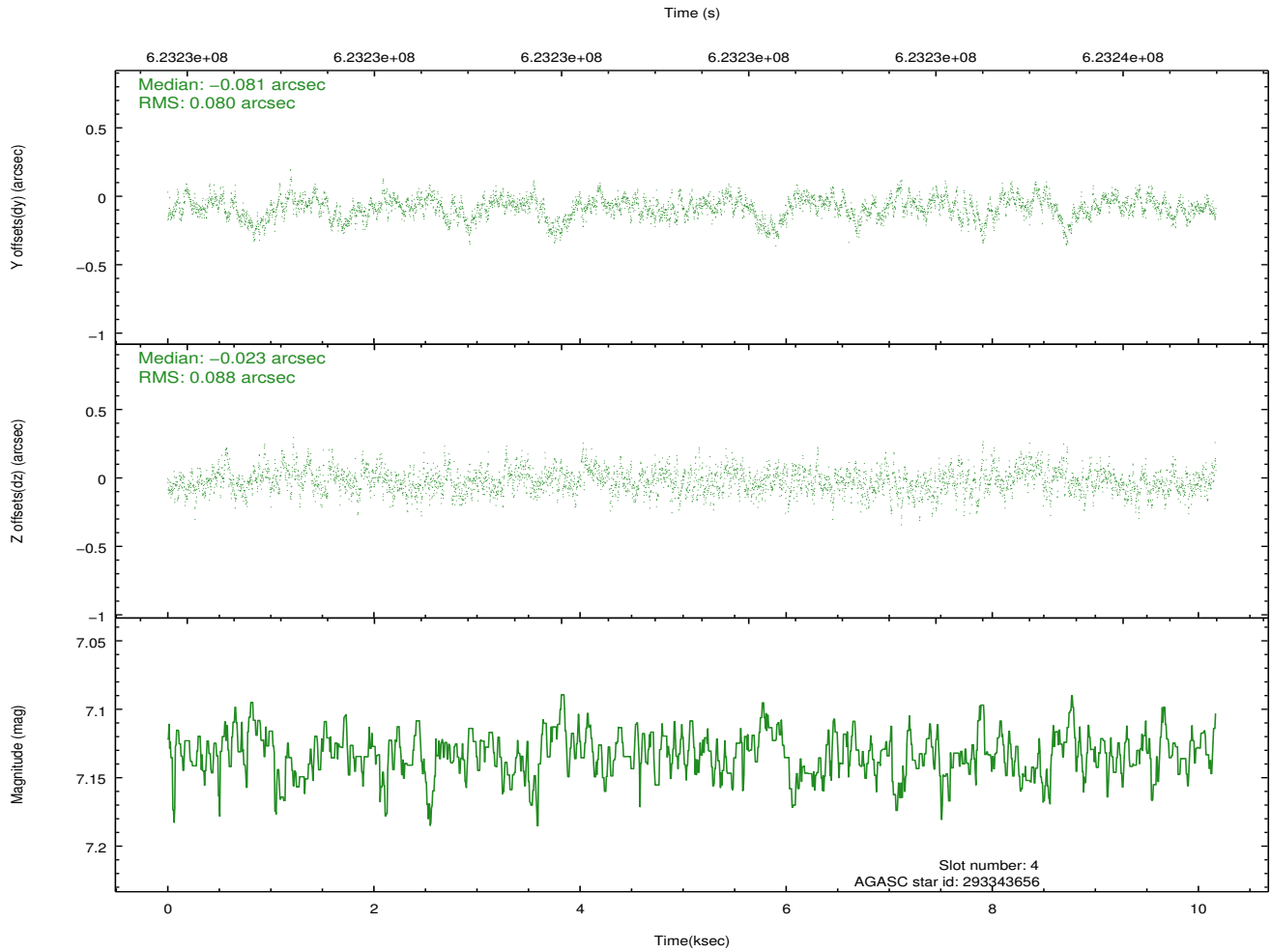
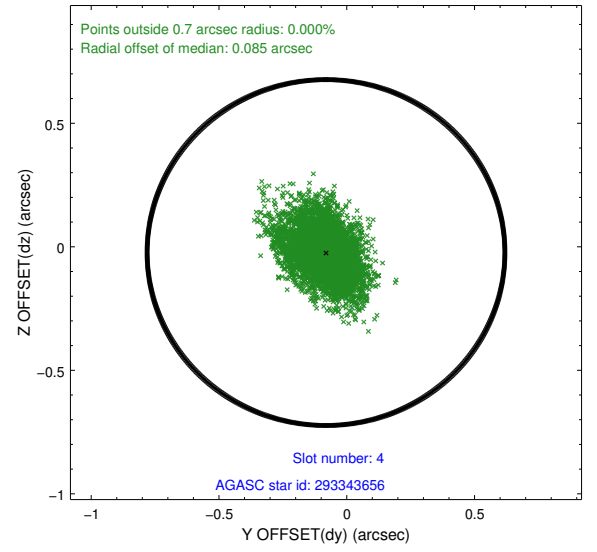
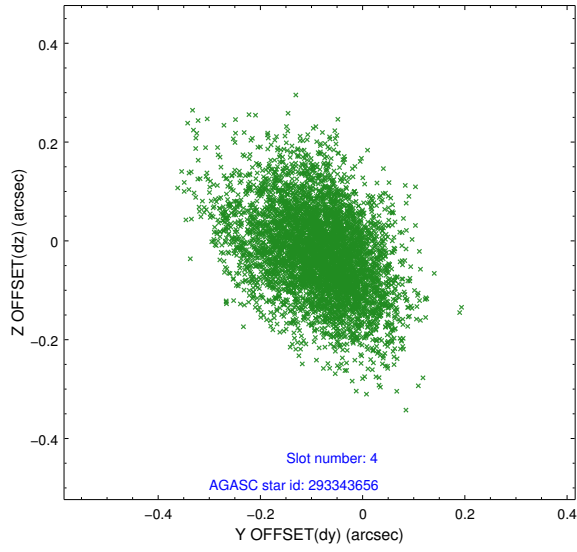
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.29	2481	0.090	-0.142	0.009	0.015	0.000000	0.000000	921.75	-949.04
1	FID		ACIS-I-2	7.22	2479	-0.497	-0.135	0.008	0.013	0.000000	0.000000	-772.91	-955.11
2	FID		ACIS-I-4	7.17	2481	0.308	0.344	0.009	0.015	0.000000	0.000000	2141.32	951.59
3	GUIDE	used	292816384	8.80	4962	-0.046	-0.269	0.152	0.253	344.286842	24.263781	1124.25	1582.22
4	GUIDE	used	293343656	7.13	4962	-0.081	-0.023	0.124	0.211	344.749017	24.922239	-1620.48	969.45
5	GUIDE	used	293343688	9.41	4959	0.353	0.325	0.172	0.320	344.359282	25.165155	-1336.28	-546.85
6	GUIDE	used	293349448	6.07	4962	-0.031	0.203	0.105	0.195	343.668196	24.387137	2241.50	-169.14
7	GUIDE	used	292824384	8.10	4961	-0.191	-0.222	0.142	0.232	344.174053	23.867512	2394.53	2329.06

2.4 Star Slots

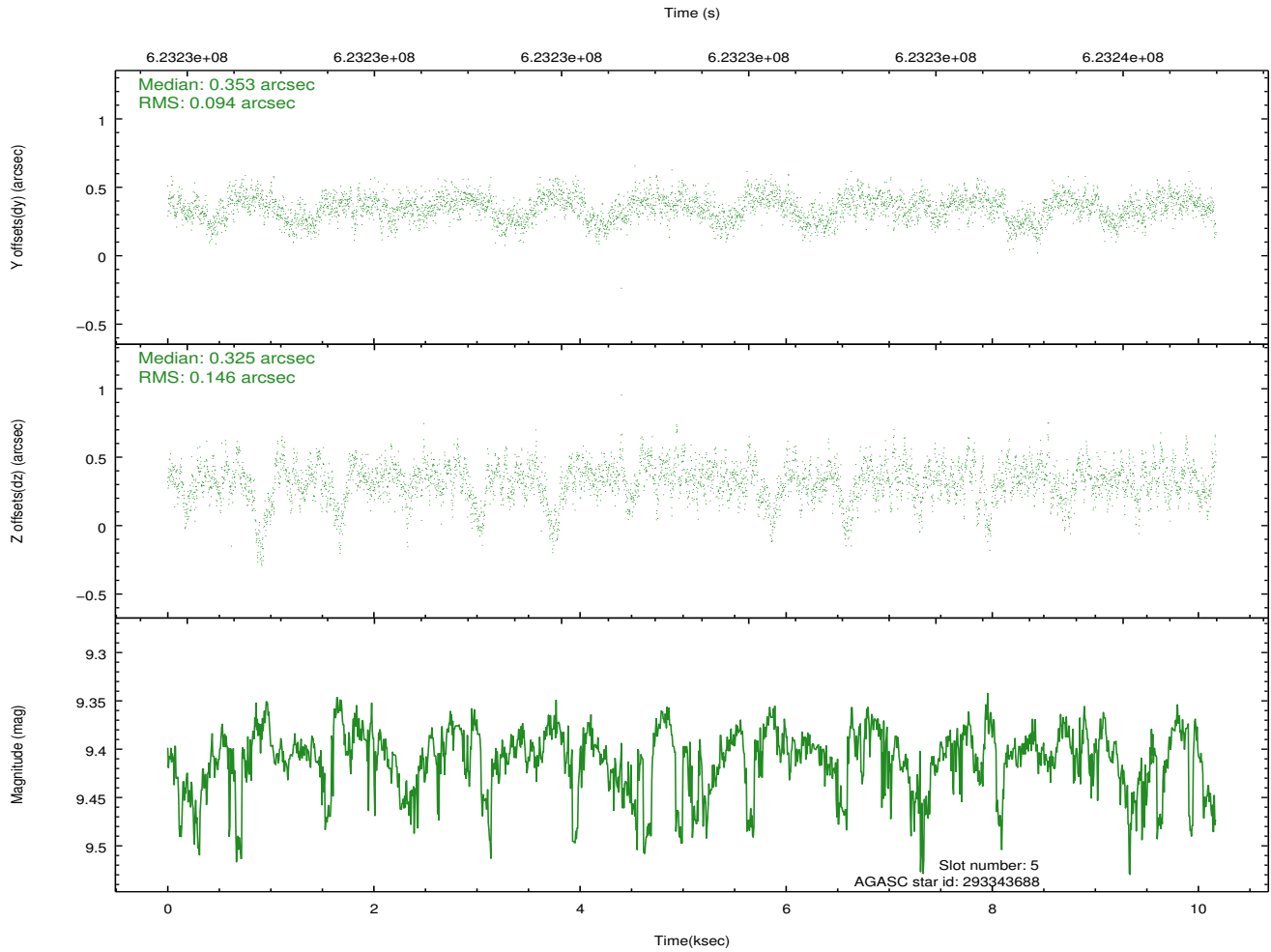
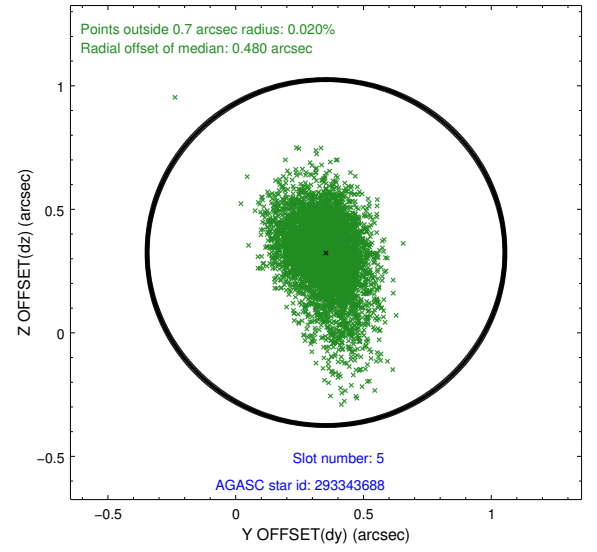
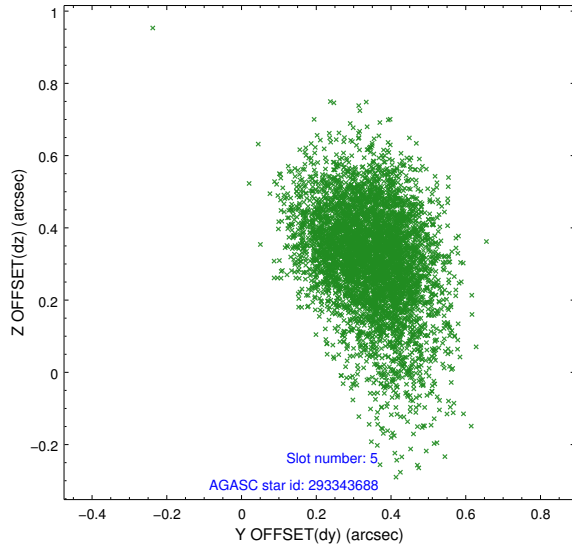
2.4.1 Slot 3



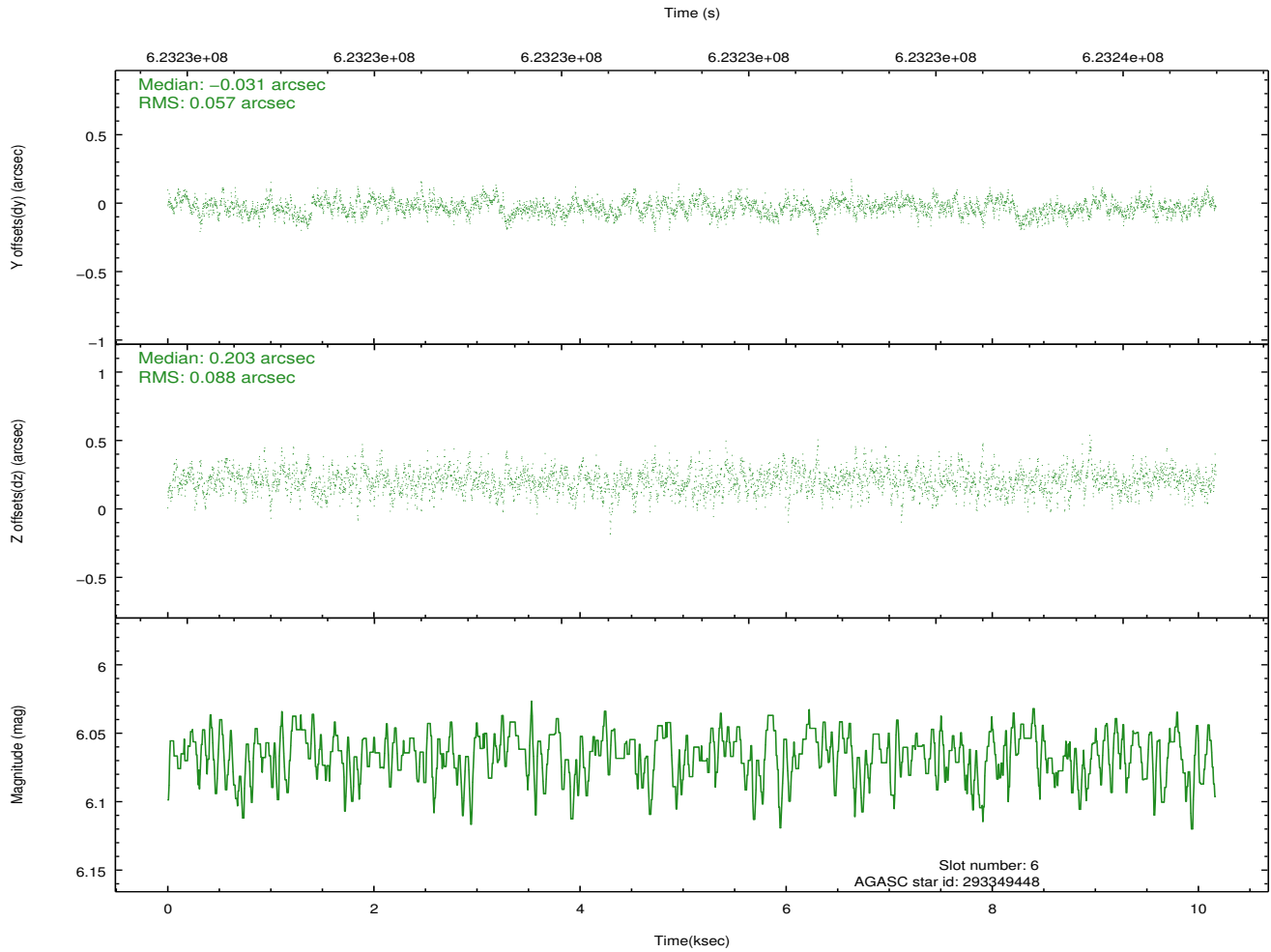
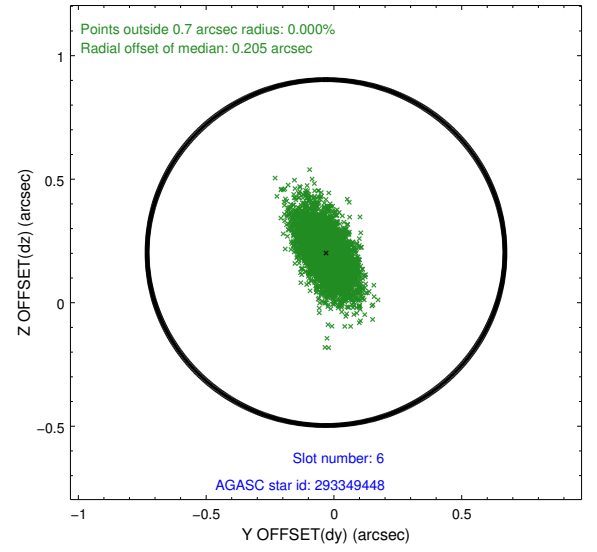
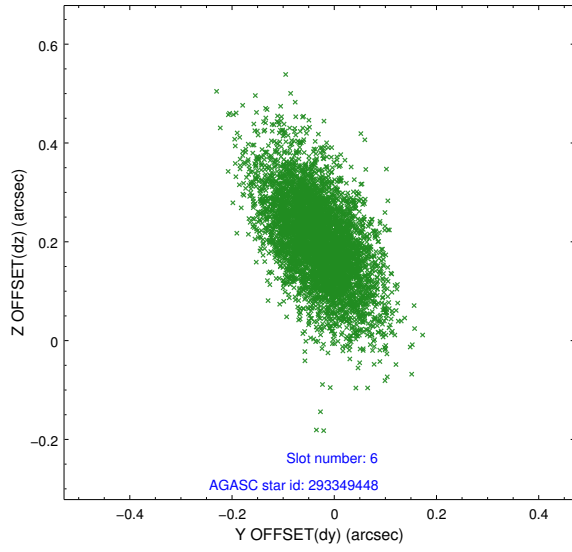
2.4.2 Slot 4



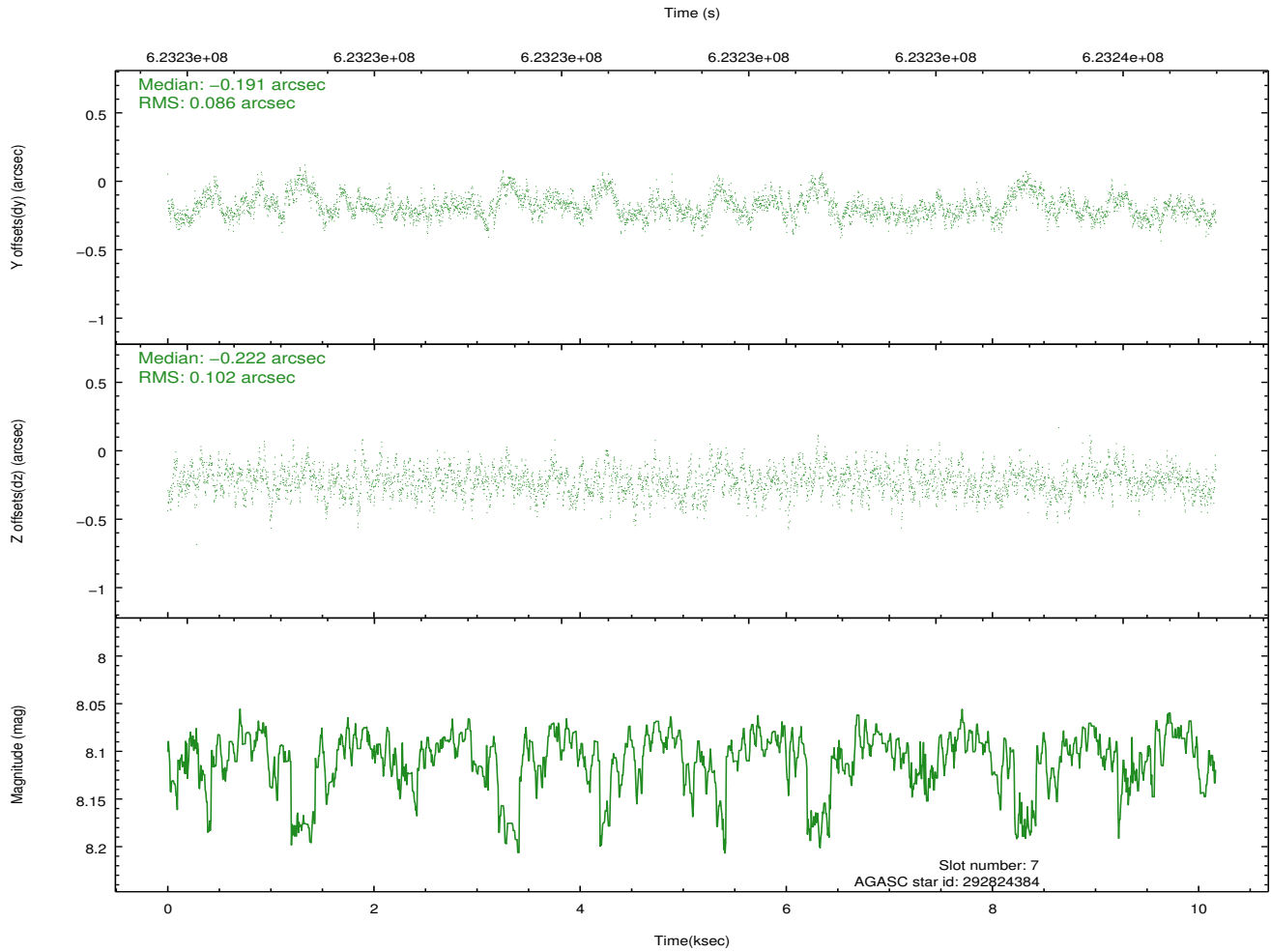
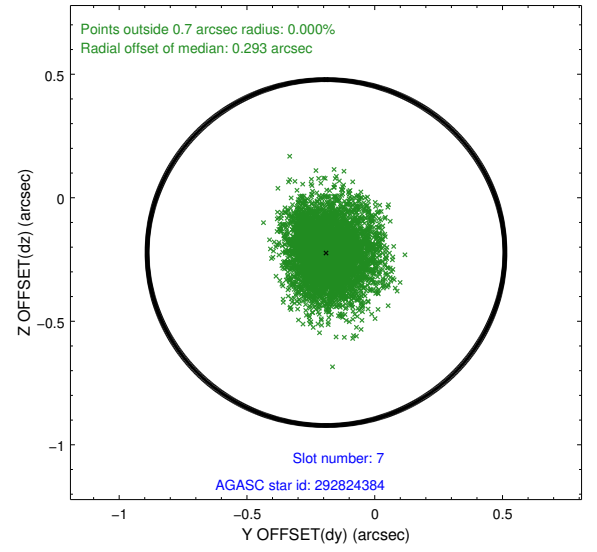
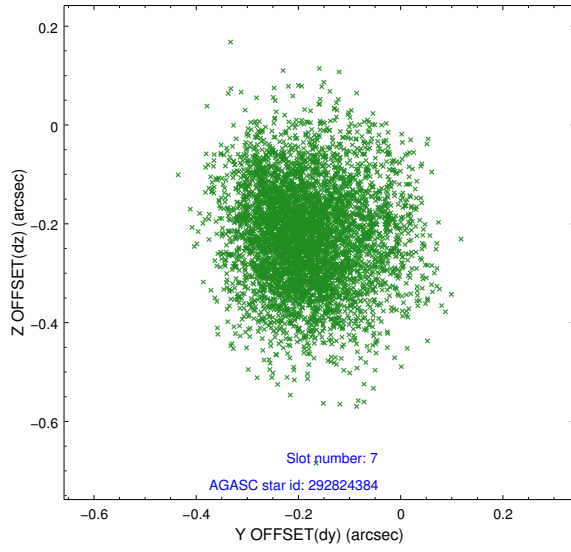
2.4.3 Slot 5



2.4.4 Slot 6

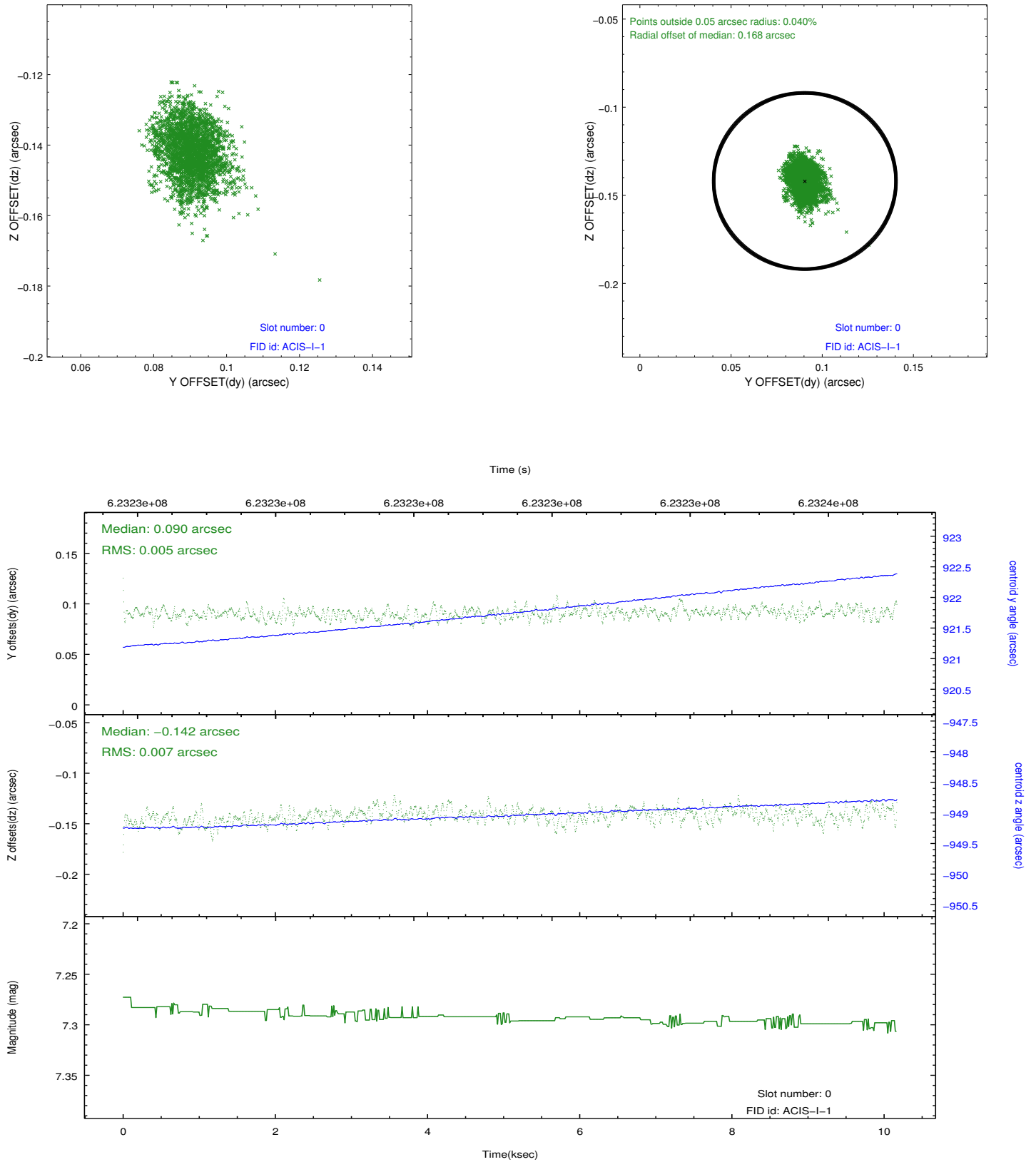


2.4.5 Slot 7

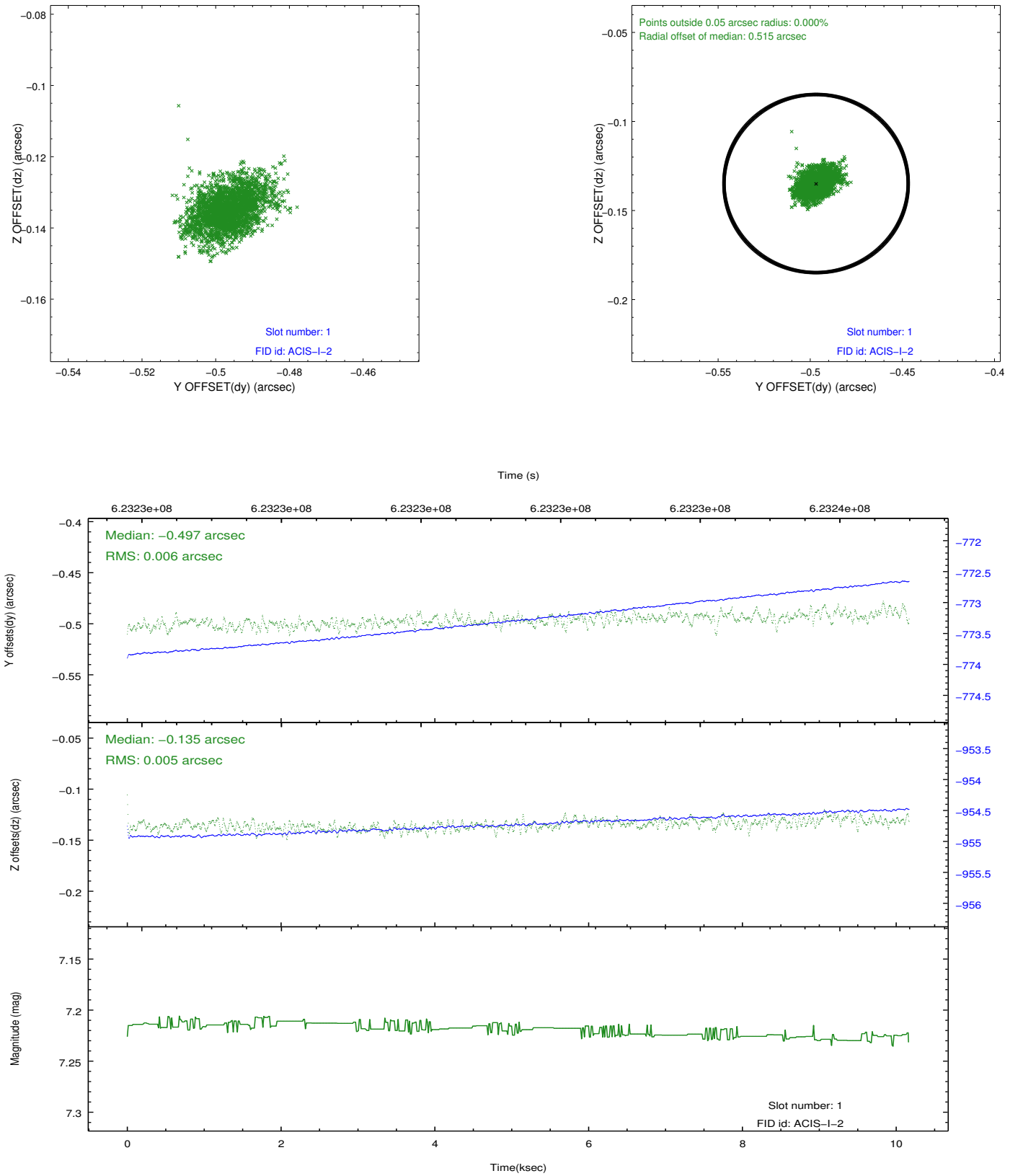


2.5 FID Slots

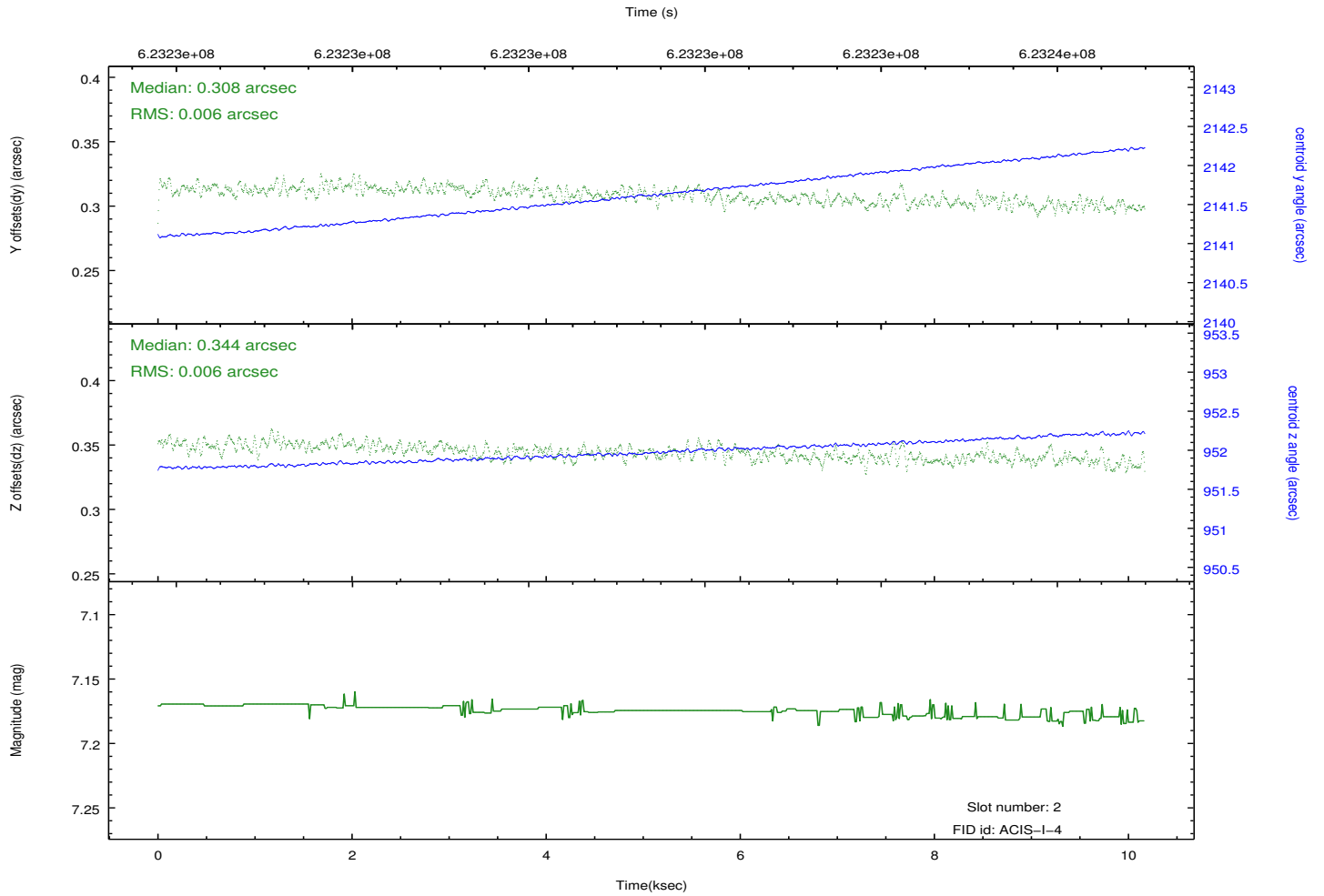
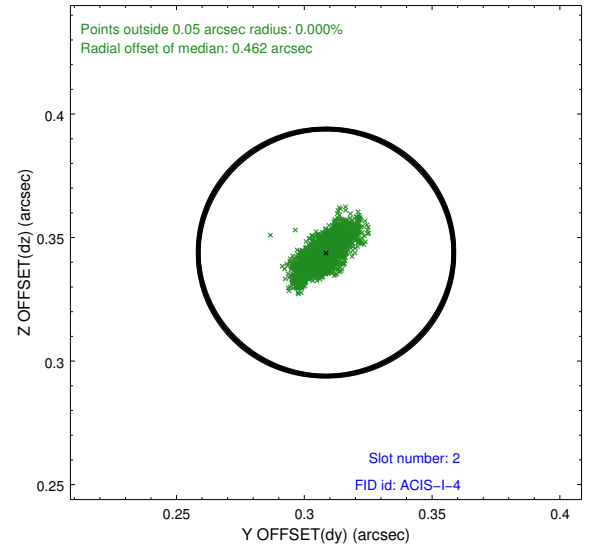
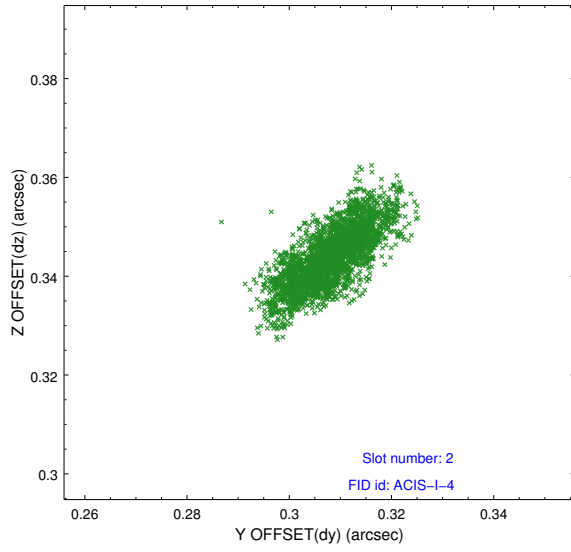
2.5.1 Slot 0



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)	2018.03.07
V&V Edition	2
V&V Disposition and Status	OK
V&V Charge Time	10.077768400192

A.2 Comments

Optional chip S2 not included.

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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.