

V&V Reference Report

L2 ASCDS Version : 10.7

Observation 20785 - L2 Version 1
Chandra X-Ray Center

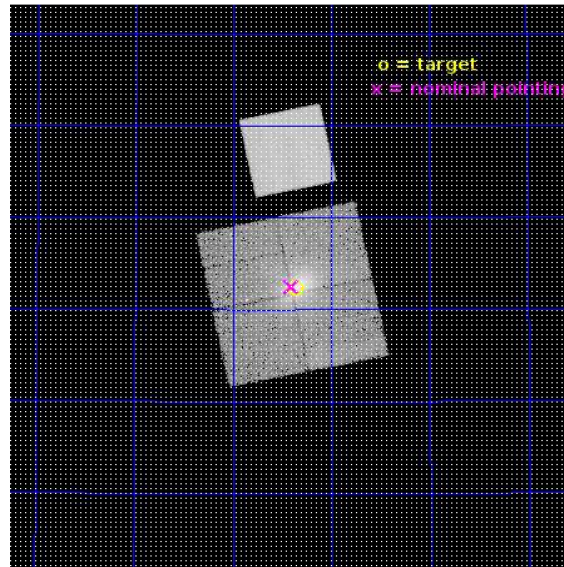
L2 Processing Date : Nov 23 2018

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.4.5	Slot 7	13
2.5	FID Slots	14
2.5.1	Slot 0	14
2.5.2	Slot 1	15
2.5.3	Slot 2	16
A	Summary	17
A.1	Status	17
A.2	Comments	17

1 Front

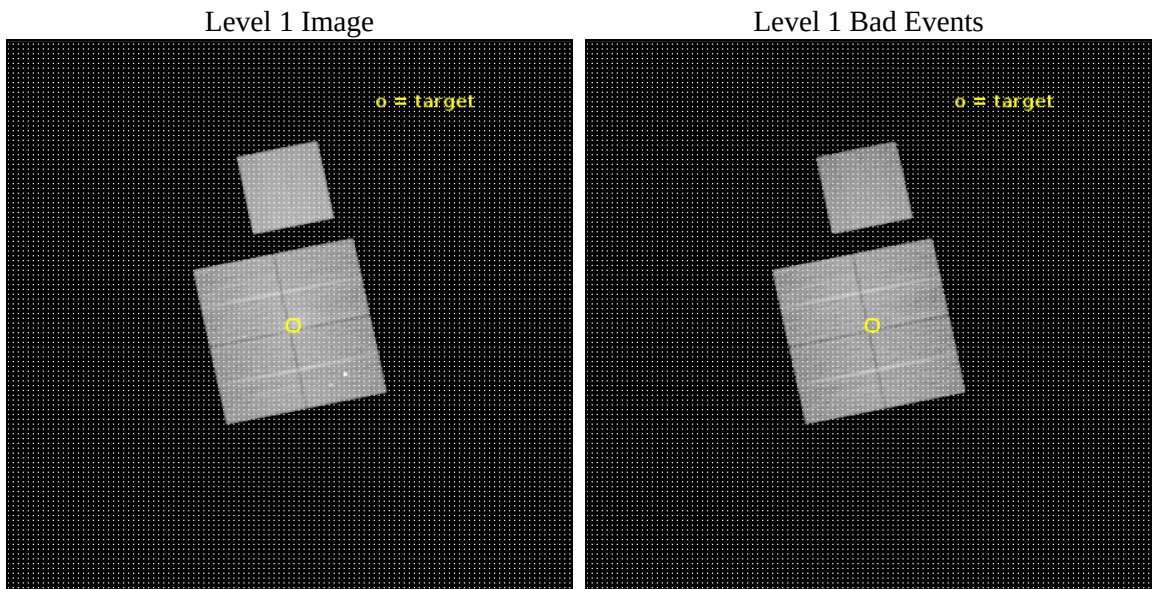
seq_num	801798	Sequence number
obs_id	20785	Observation id
title	Witnessing the formation of a radio halo	Proposal title
observer	Ralph Kraft	Principal investigator
object	Abell 2219	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	250.089167	Observer's specified target RA [deg]
dec_targ	46.705833	Observer's specified target Dec [deg]
ra_nom	250.10166868668	Nominal RA [deg]
dec_nom	46.708243930487	Nominal Dec [deg]
roll_nom	348.19956117083	Nominal Roll [deg]
revision	1	Processing version of data
ontime	25295.196360826	Sum of GTIs [s]
livetime	24964.69599832	Livetime [s]
ontime0	25282.509239197	Sum of GTIs [s]
ontime1	25291.973280787	Sum of GTIs [s]
ontime2	25285.732329845	Sum of GTIs [s]
ontime3	25295.196360826	Sum of GTIs [s]
ontime7	25295.23740077	Sum of GTIs [s]
l2events	203876	Number of level 2 events



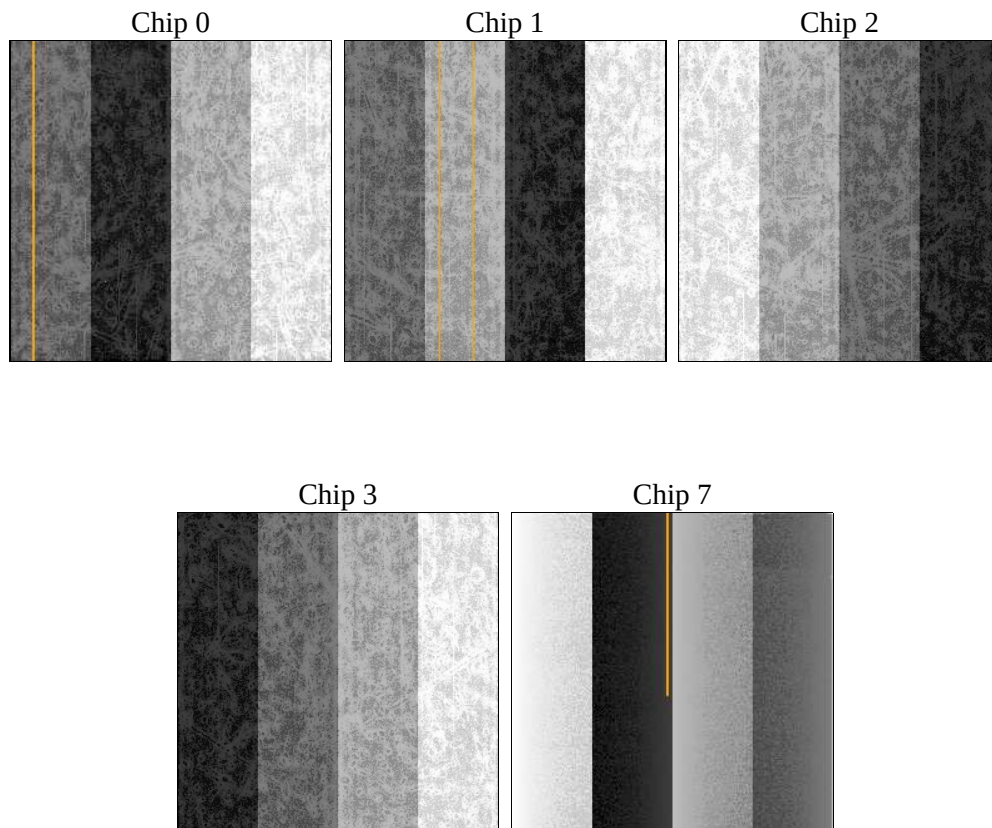
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	25246.311000	[s] Scheduled observation exposure time
ascdsver	10.7	Processing system revision	ontime	25295.196360826	Sum of GTIs [s]
caldbver	4.8.0.1	 	ontime0	25282.509239197	Sum of GTIs [s]
date	2018-11-24T00:23:33	Date and time of file creation	ontime1	25291.973280787	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	25285.732329845	Sum of GTIs [s]
			ontime3	25295.196360826	Sum of GTIs [s]
			ontime7	25295.23740077	Sum of GTIs [s]
			l1events	1039928	Number of level 1 events

2.1.4 Events

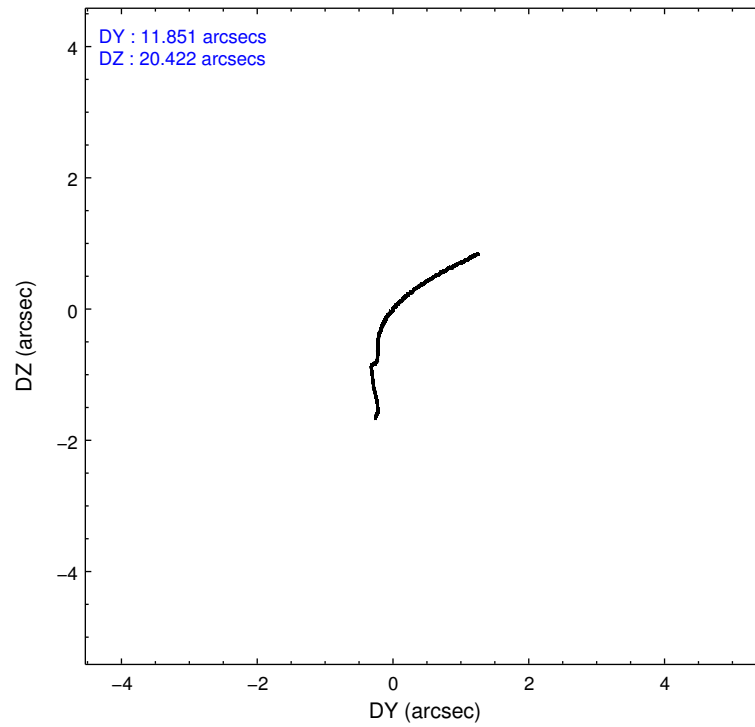
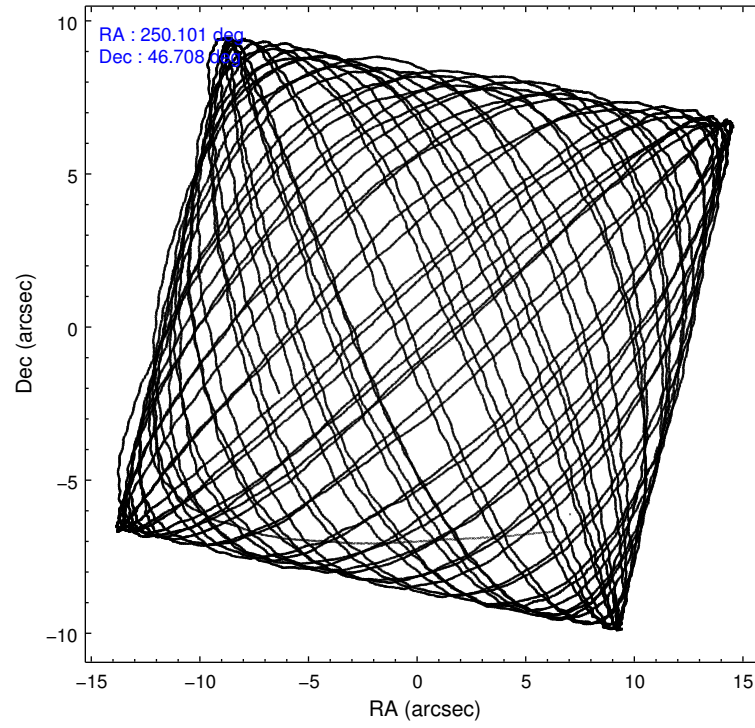
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7		ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
level 1 events	184353	193777	208135	208073	245590	grade 0 events	9631	11943	11969	21215	8652
rejected events	159787	156669	181819	170622	140171		5%	6%	5%	10%	3%
rejected %	86%	80%	87%	82%	57%	grade 1 events	96	112	144	200	389
							0%	0%	0%	0%	0%
						grade 2 events	5890	14967	5763	6169	22206
							3%	7%	2%	2%	9%
						grade 3 events	2204	2240	2103	2649	8336
							1%	1%	1%	1%	3%
						grade 4 events	2146	2274	2263	2633	8083
							1%	1%	1%	1%	3%
						grade 5 events	8174	8420	7385	8877	24139
							4%	4%	3%	4%	9%
						grade 6 events	4702	5696	4223	4788	58171
							2%	2%	2%	2%	23%
						grade 7 events	151510	148125	174285	161542	115614
							82%	76%	83%	77%	47%

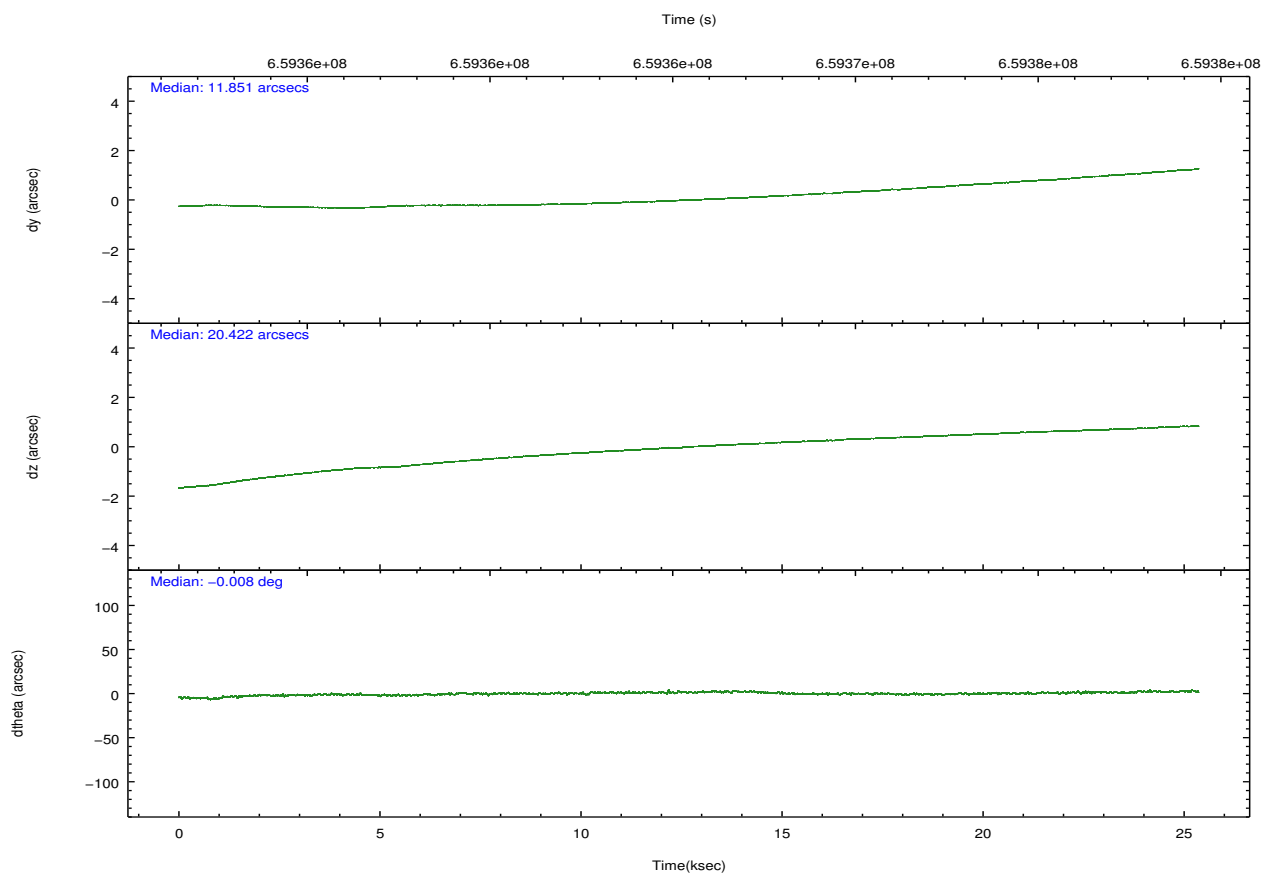
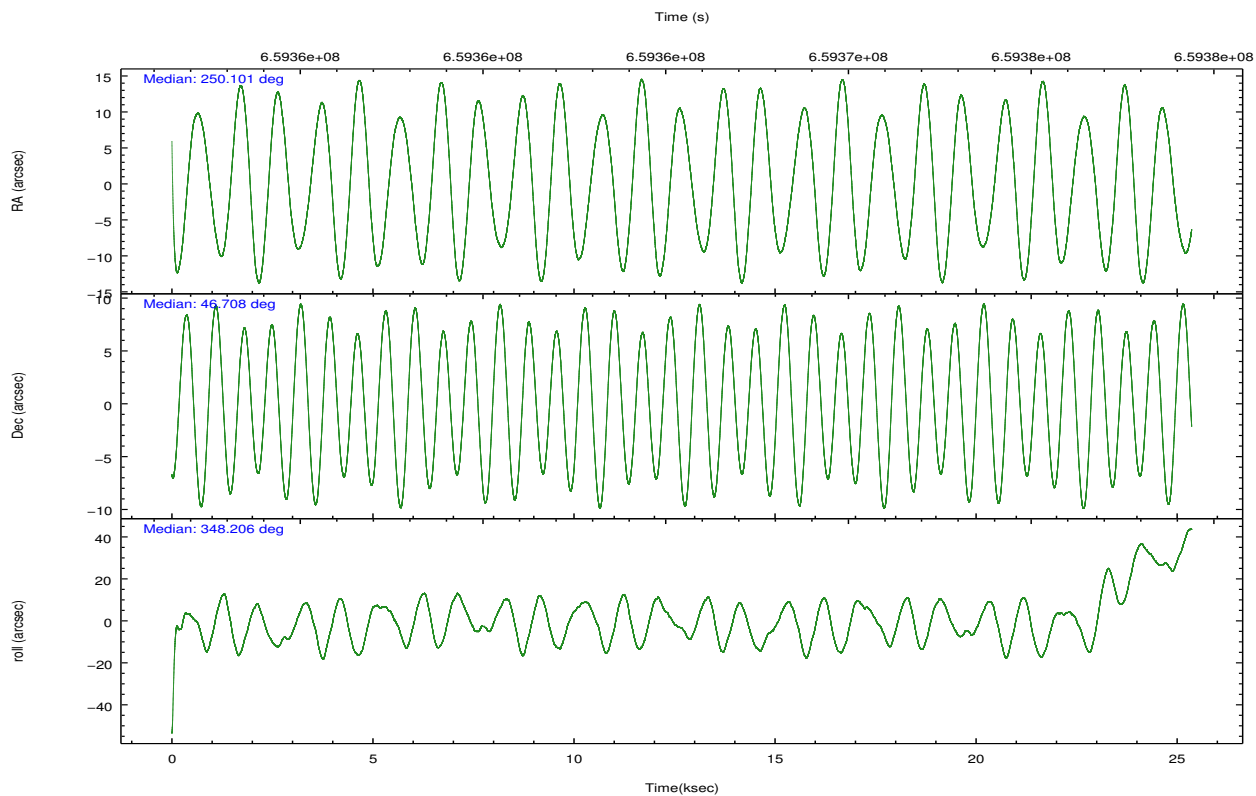
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-01237	ACIS-01237
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	250.063516	250.1016686866828
[deg] Pointing Dec	46.699514	46.70824393048673
[deg] Pointing Roll	348.018670	348.1995611708289
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-233.592463	-233.5874344608287
[mm] SIM translation stage offset	0	-0.005018542100998502
[s] Observation start time (MET)	659352858.184000	659351223.98823
Observation start date	2018-11-23T09:33:09	2018-11-23T09:07:03
[s] Observation end time (MET)	659378104.184000	659379095.7898901
Observation end date	2018-11-23T16:33:55	2018-11-23T16:51:35
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	Y	Y
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	N	N
CCD S3 on	O1	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect



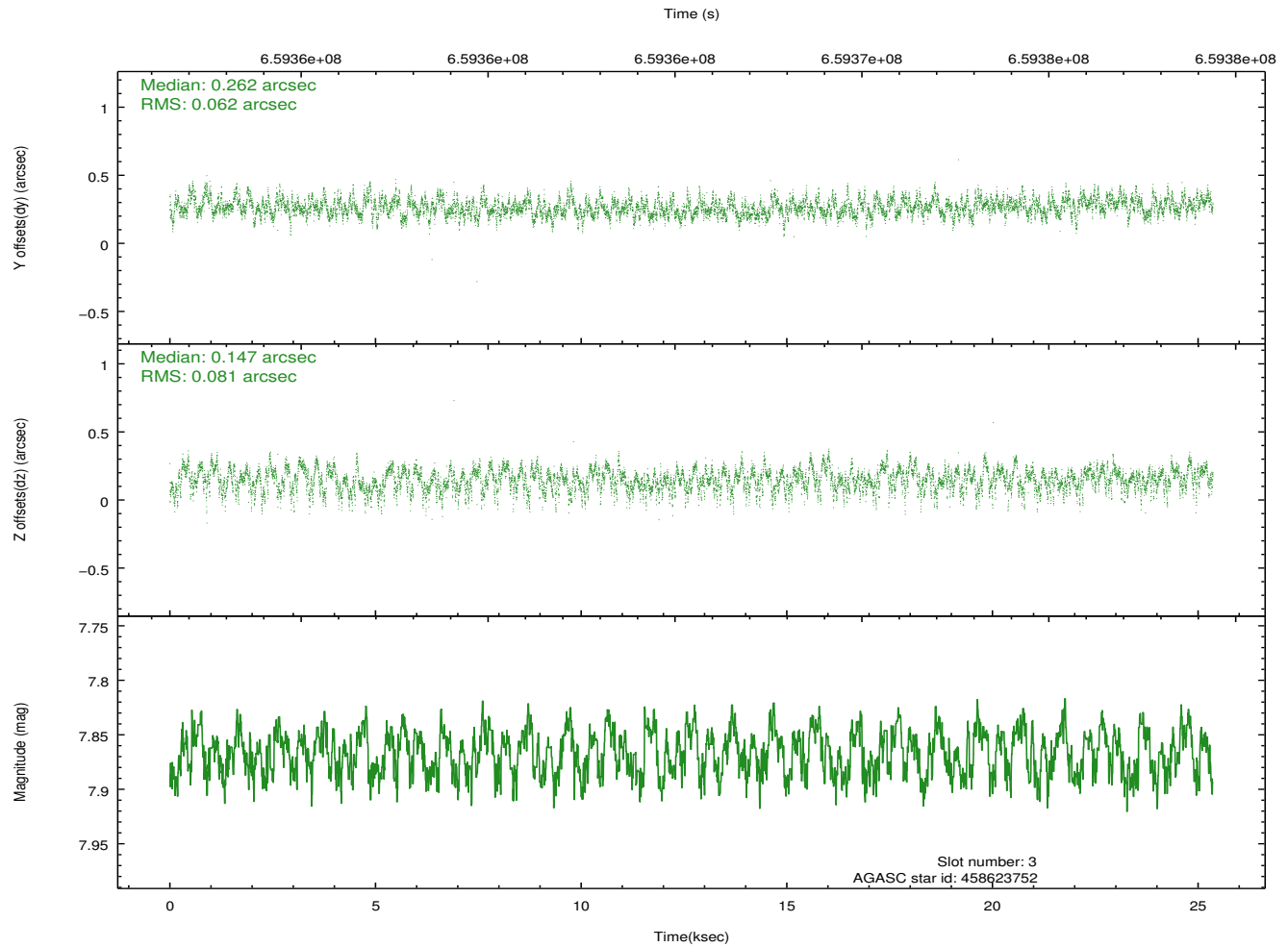
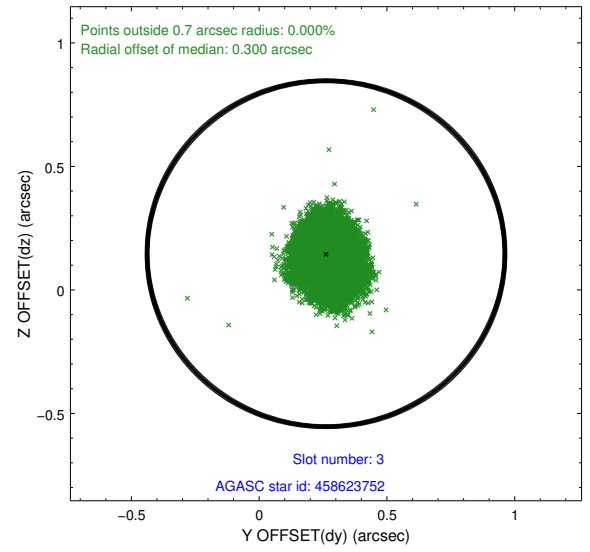
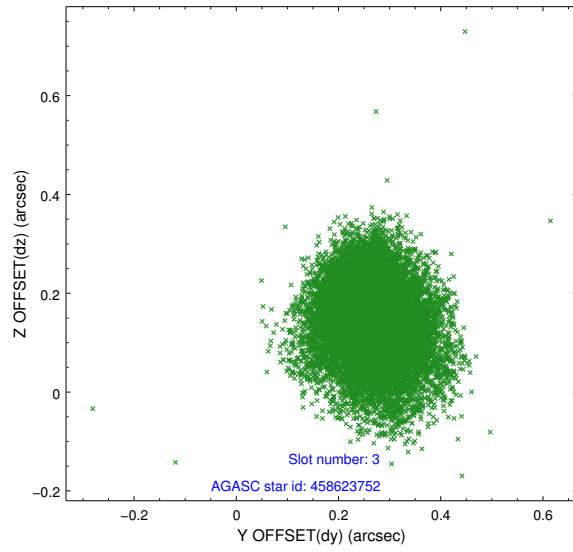


Slot Statistics

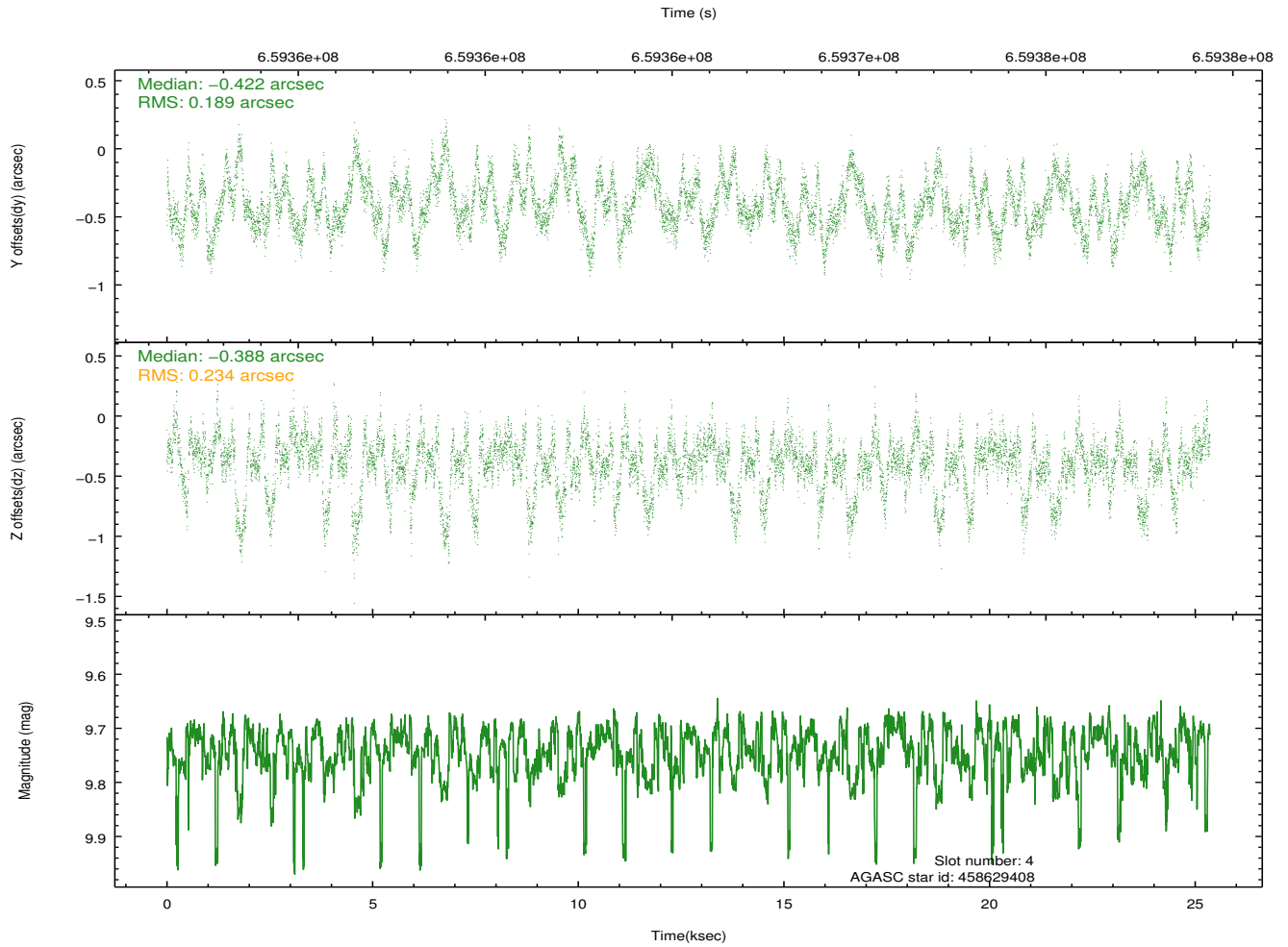
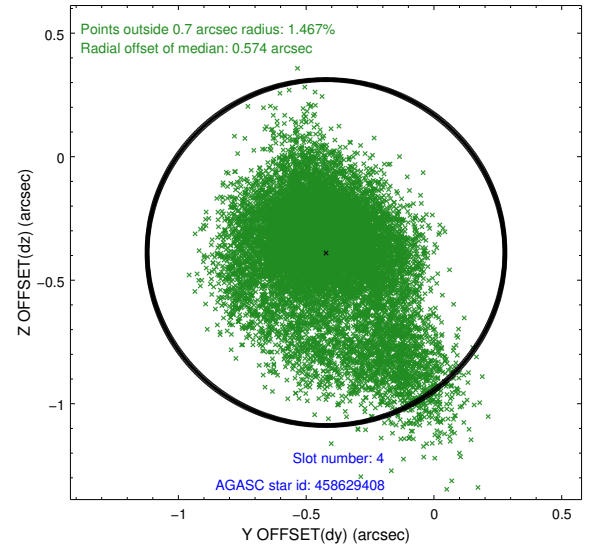
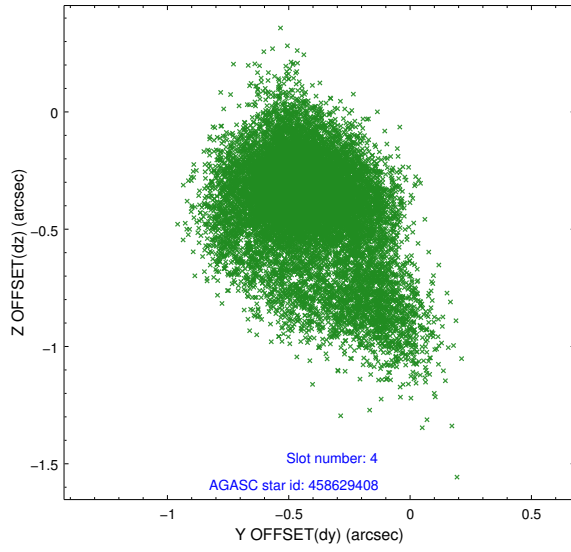
ot	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.22	6185	1.000	-0.076	-0.132	0.034	0.048	0.000000	0.000000	927.52	-844
1	FID		ACIS-I-4	7.17	6184	1.000	0.573	0.148	0.029	0.044	0.000000	0.000000	2148.08	1056
2	FID		ACIS-I-5	7.21	6185	1.000	-0.595	0.055	0.014	0.021	0.000000	0.000000	-1821.04	1053
3	GUIDE	used	458623752	7.87	12370	1.000	0.262	0.147	0.108	0.174	249.631548	46.393849	-820.36	-1295
4	GUIDE	used	458629408	9.74	12342	1.000	-0.422	-0.388	0.303	0.563	250.557292	47.098807	886.03	1658
5	GUIDE	used	458631744	9.85	12325	1.000	-0.672	-0.630	0.300	0.507	250.988598	47.188526	1845.74	2204
6	GUIDE	used	458630992	8.79	12364	1.000	0.345	0.416	0.120	0.196	249.097154	46.610030	-2273.89	-798
7	GUIDE	used	458622504	7.87	12366	1.000	0.486	0.479	0.110	0.178	249.027856	46.364222	-2268.64	-1698

2.4 Star Slots

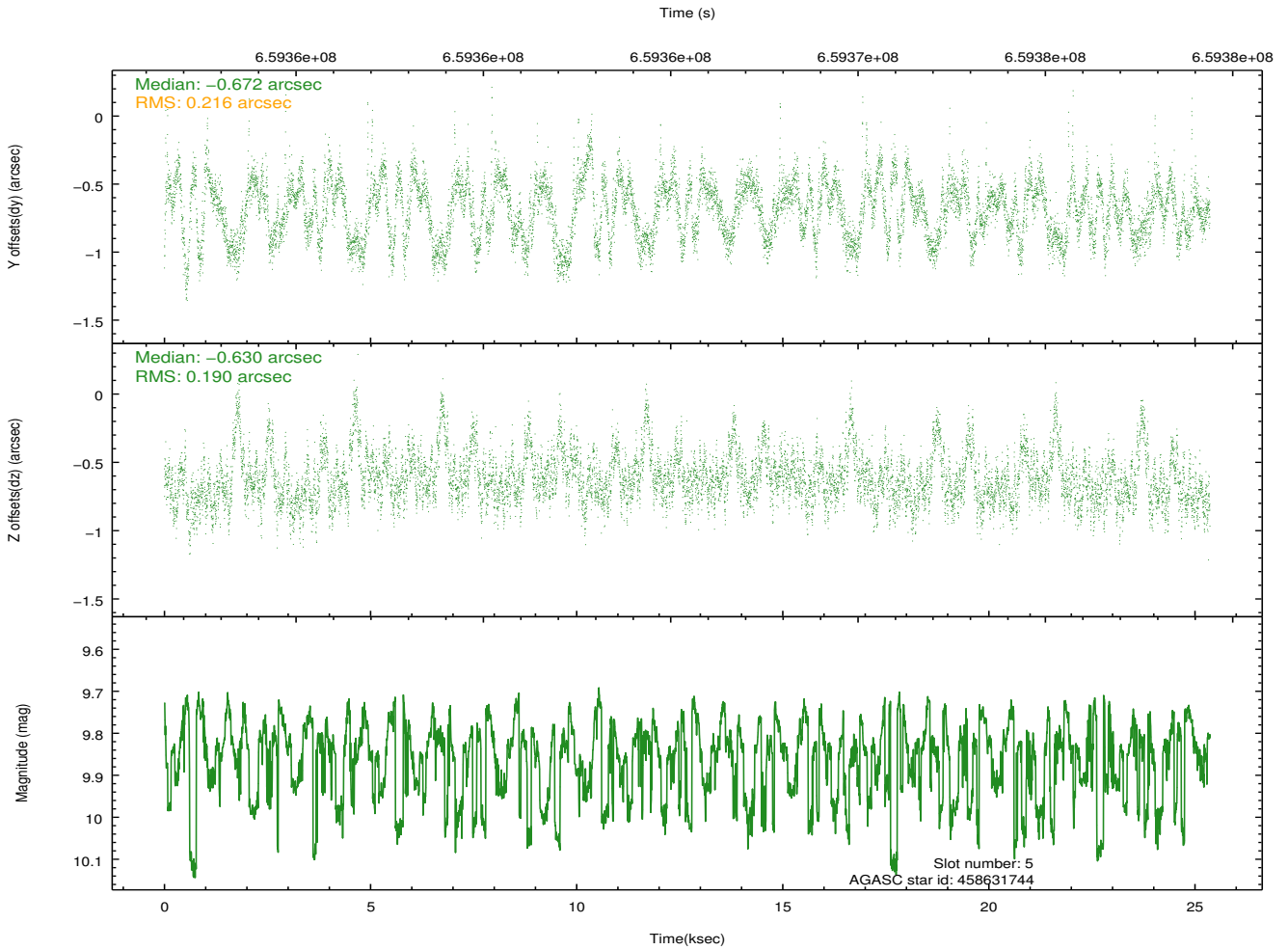
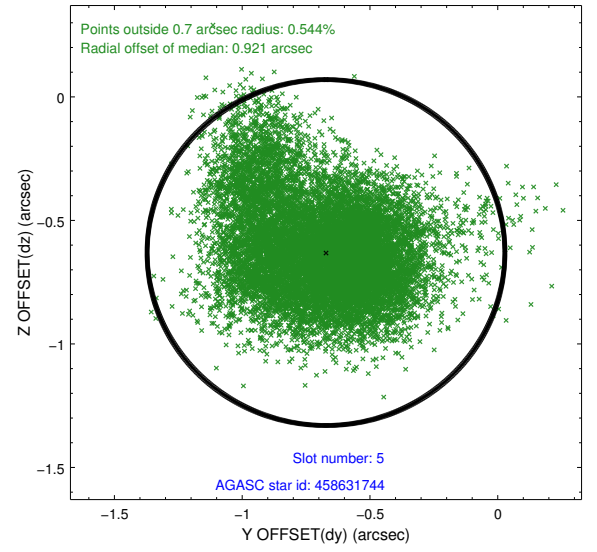
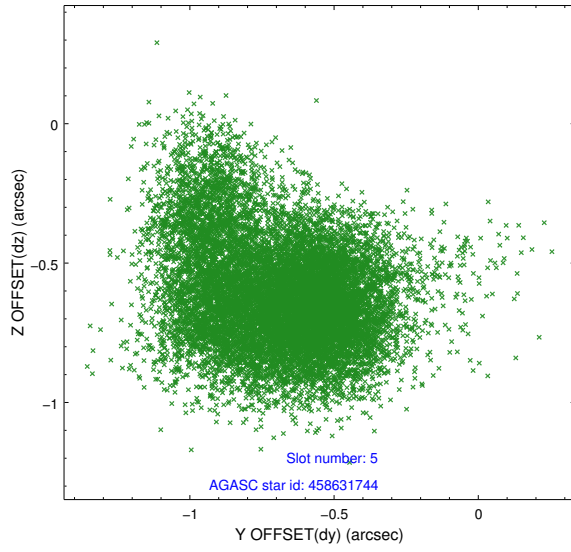
2.4.1 Slot 3



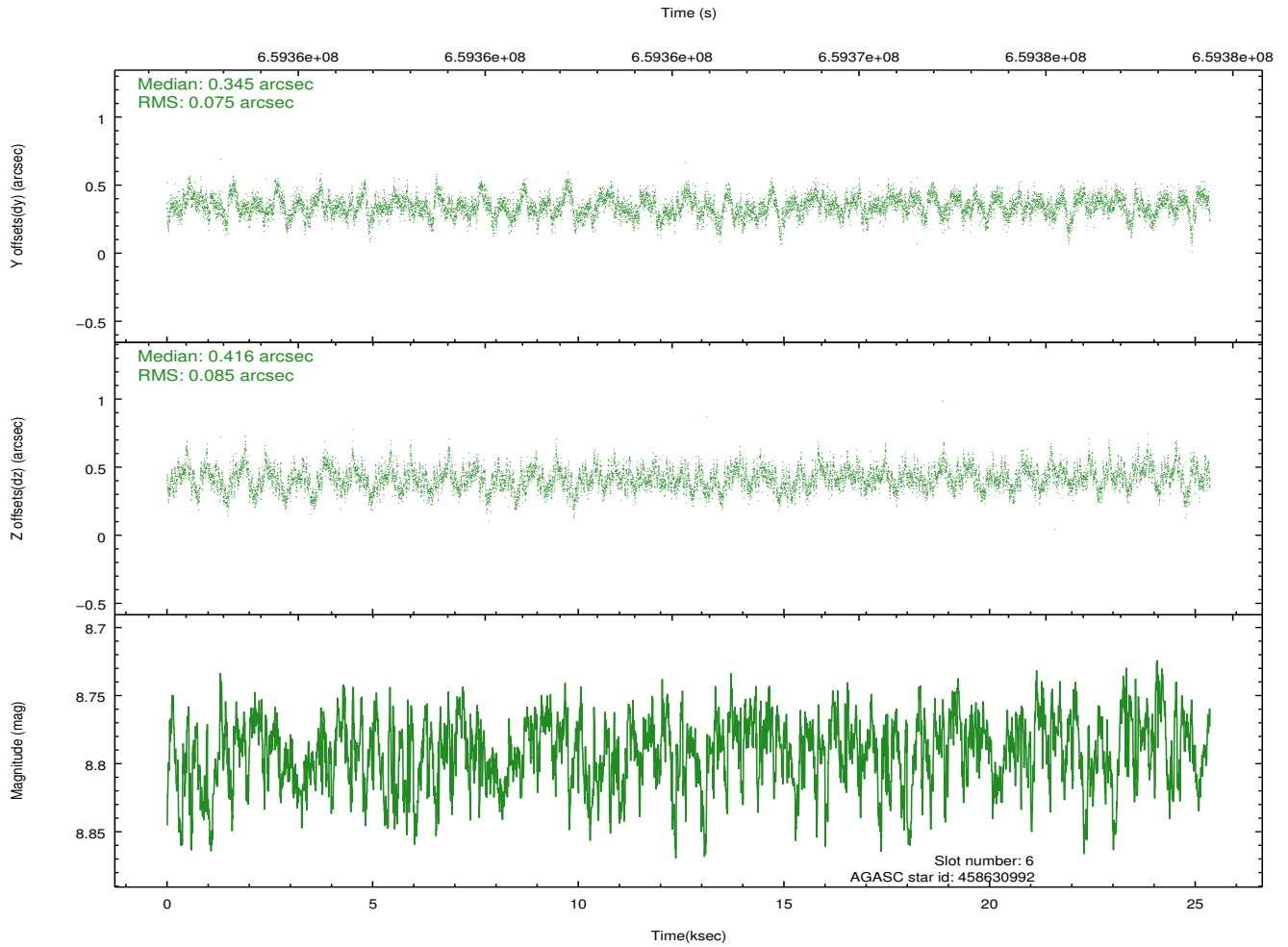
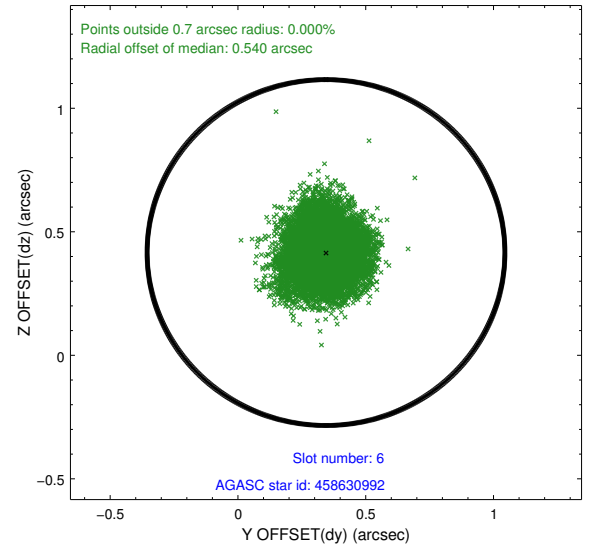
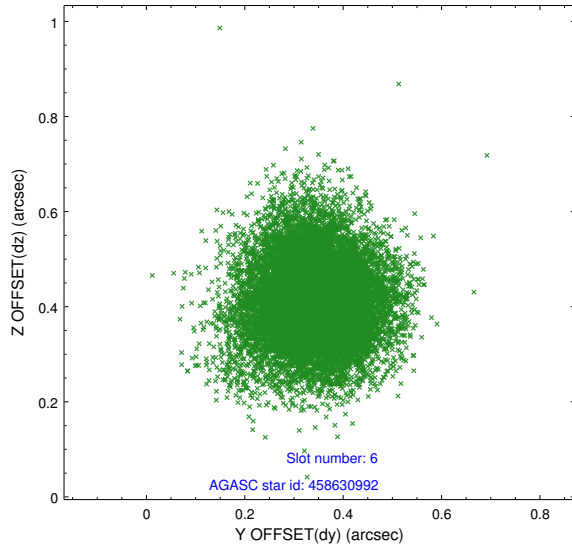
2.4.2 Slot 4



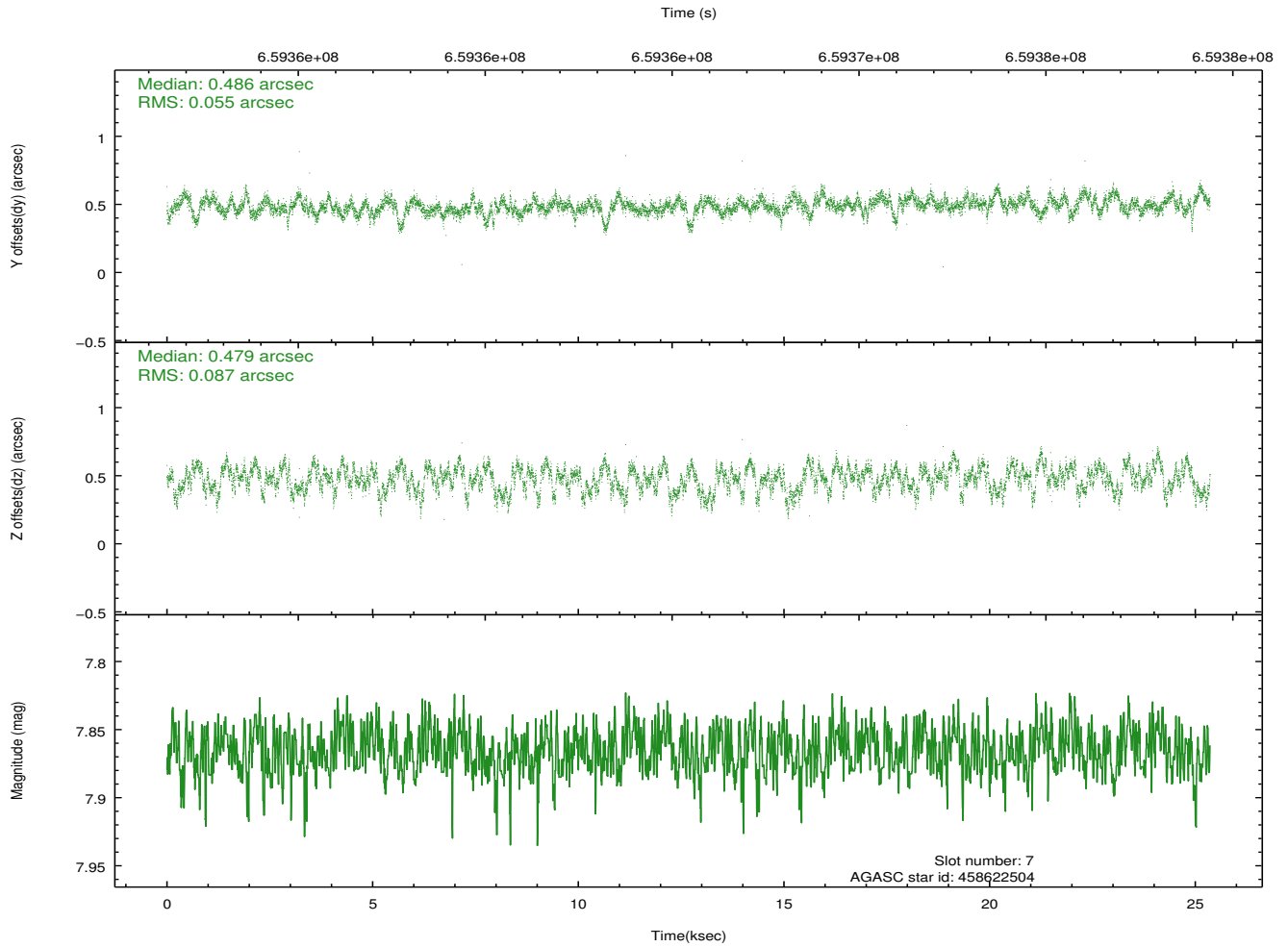
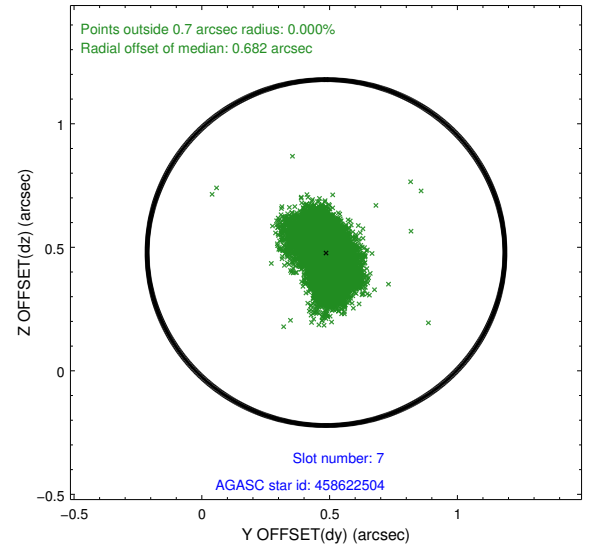
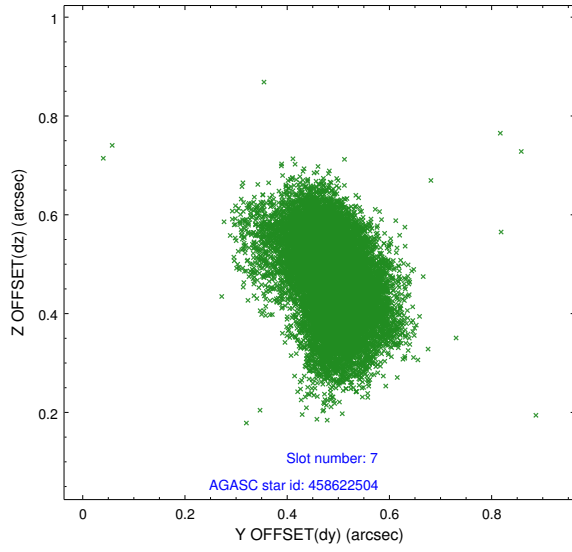
2.4.3 Slot 5



2.4.4 Slot 6

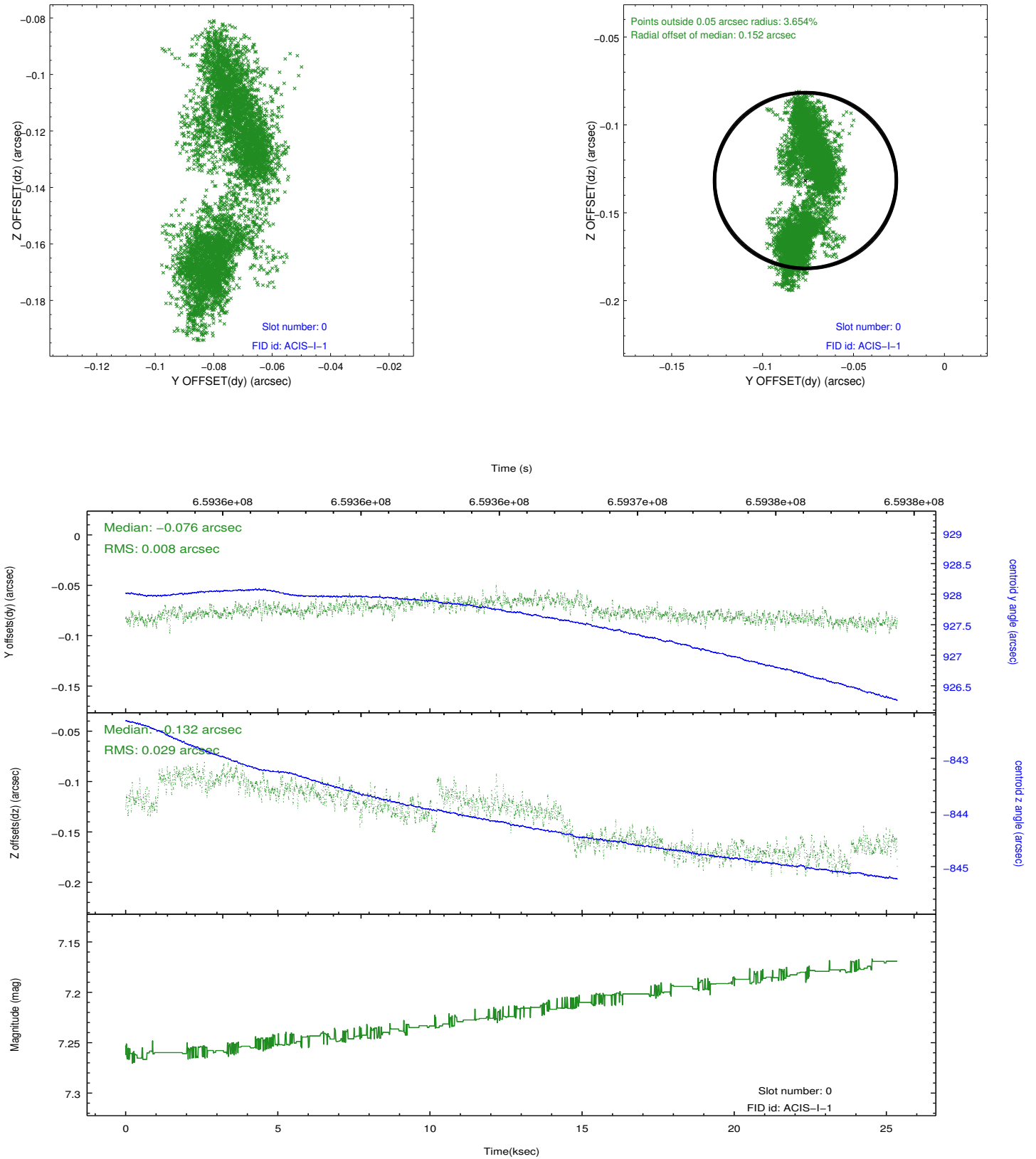


2.4.5 Slot 7

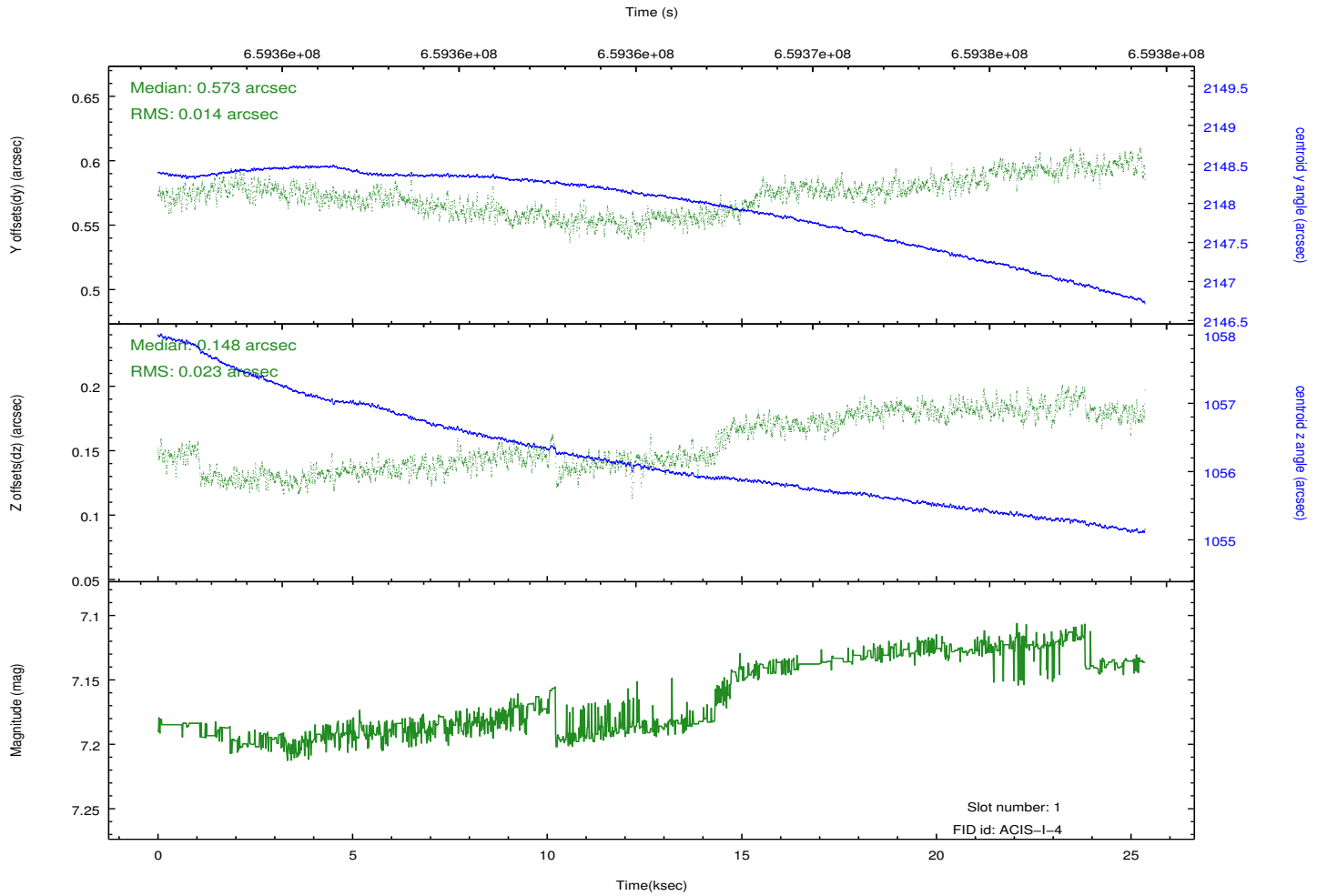
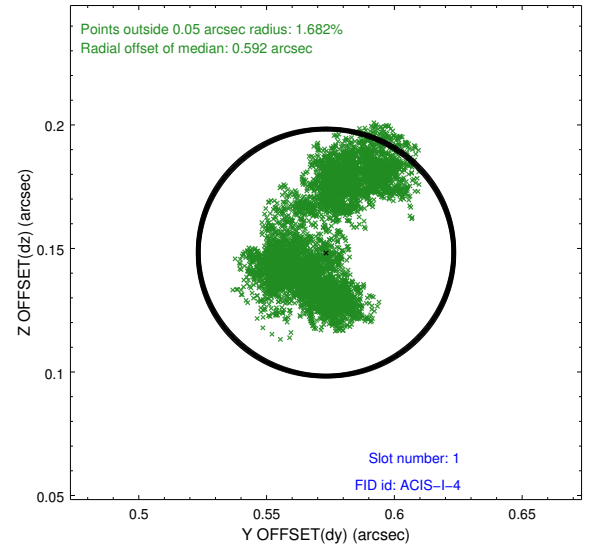
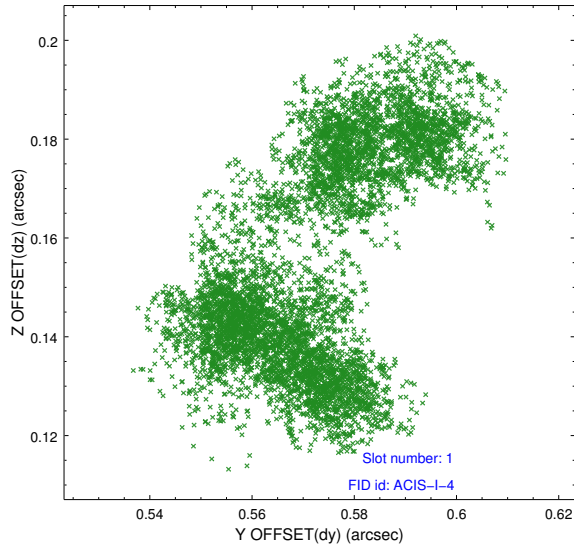


2.5 FID Slots

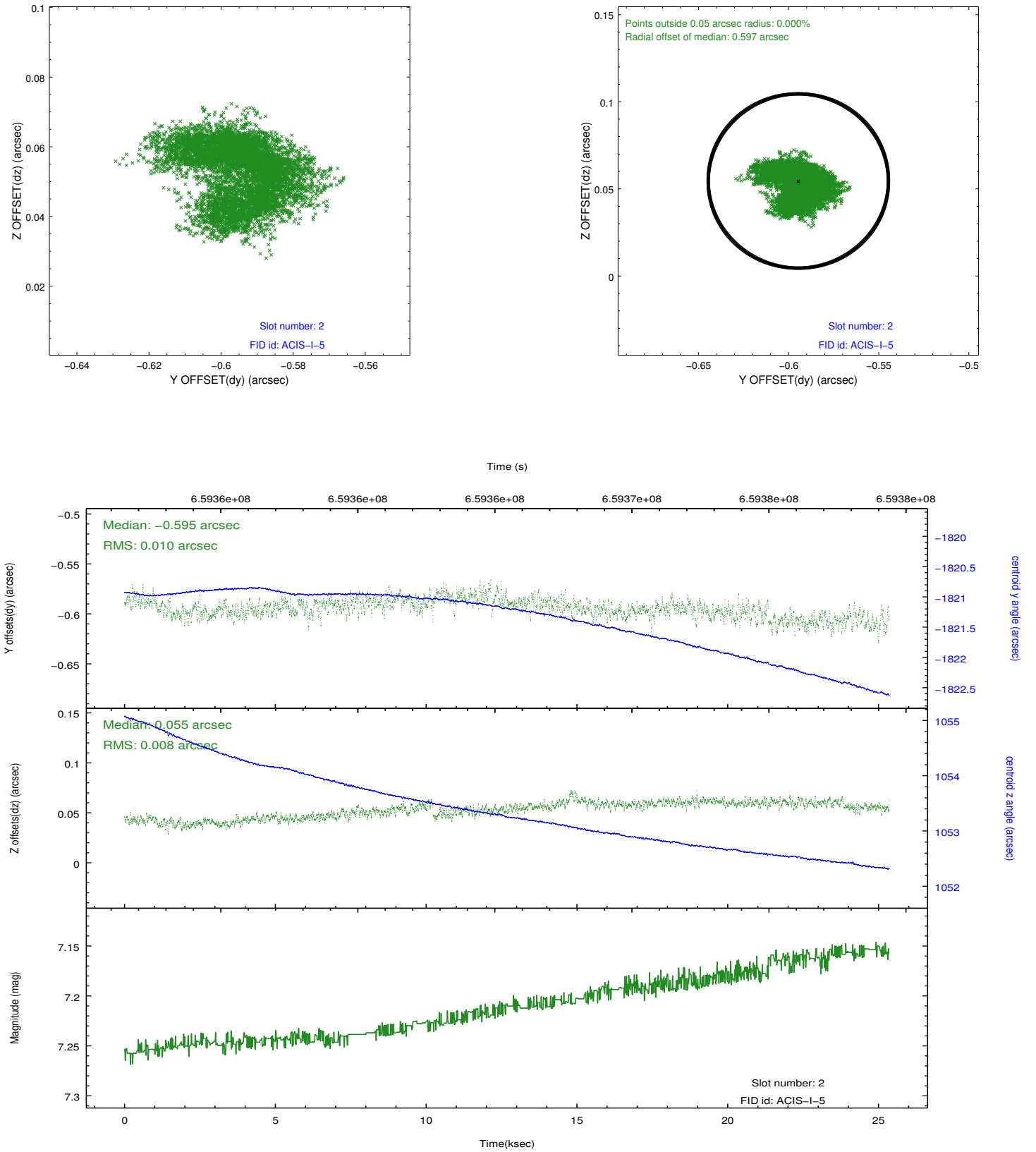
2.5.1 Slot 0



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)	2018.11.26
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	25.295196360826

A.2 Comments

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.