

# V&V Reference Report

## L2 ASCDS Version : 10.2.2

Observation 16237 - L2 Version 2  
Chandra X-Ray Center

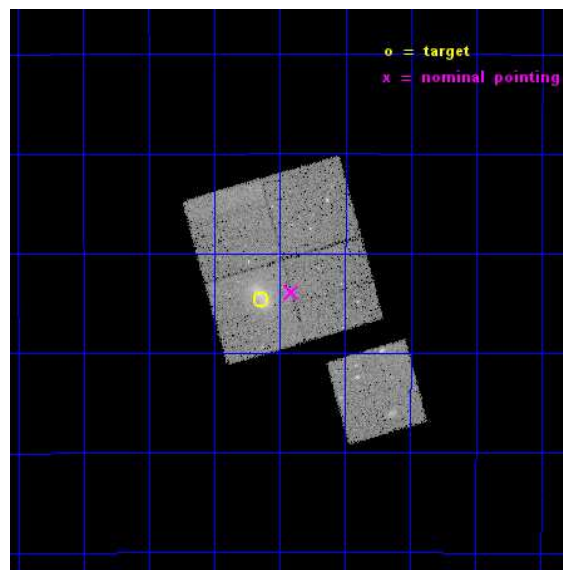
L2 Processing Date : Dec 11 2014

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# 1 Front

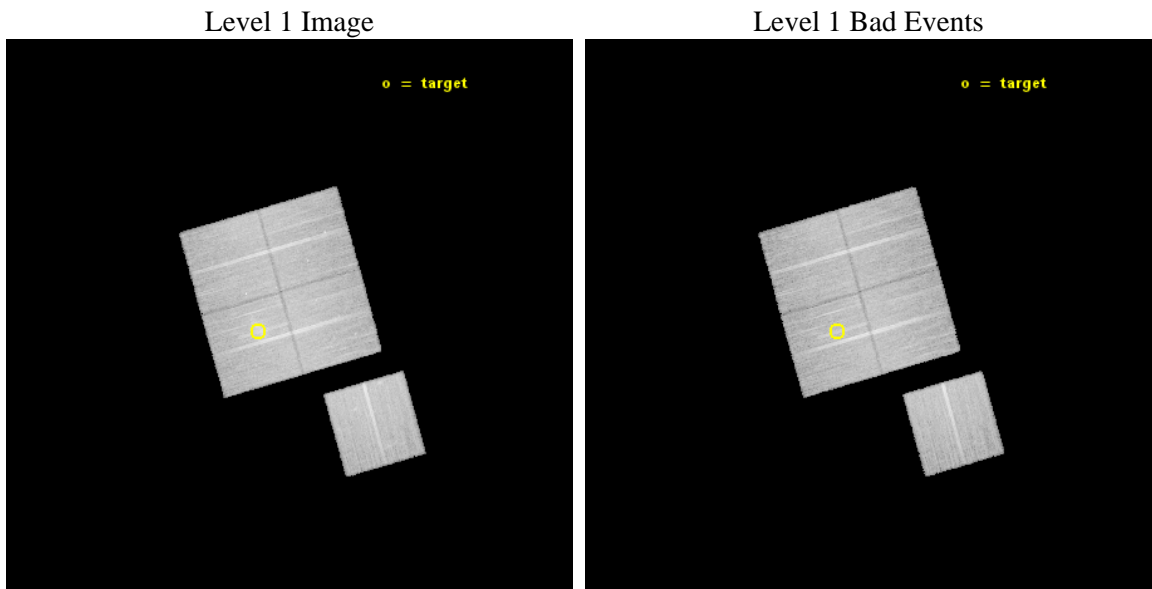
seq_num	801418	Sequence number
obs_id	16237	Observation id
title	Clusters, Galaxies, and AGN in HST Frontier Fields	Proposal title
observer	Dr. Christine Jones	Principal investigator
object	MACSJ0416.1-2403	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	64.035833	Observer's specified target RA [deg]
dec_targ	-24.077944	Observer's specified target Dec [deg]
ra_nom	63.97788644835	Nominal RA [deg]
dec_nom	-24.065181218461	Nominal Dec [deg]
roll_nom	164.06884245007	Nominal Roll [deg]
revision	2	Processing version of data
ontime	37084.303610742	Sum of GTIs [s]
livetime	36599.769883001	Livetime [s]
ontime0	37087.321451128	Sum of GTIs [s]
ontime1	37087.362491131	Sum of GTIs [s]
ontime2	37087.403531134	Sum of GTIs [s]
ontime3	37084.303610742	Sum of GTIs [s]
ontime6	37087.280411124	Sum of GTIs [s]
l2events	100023	Number of level 2 events



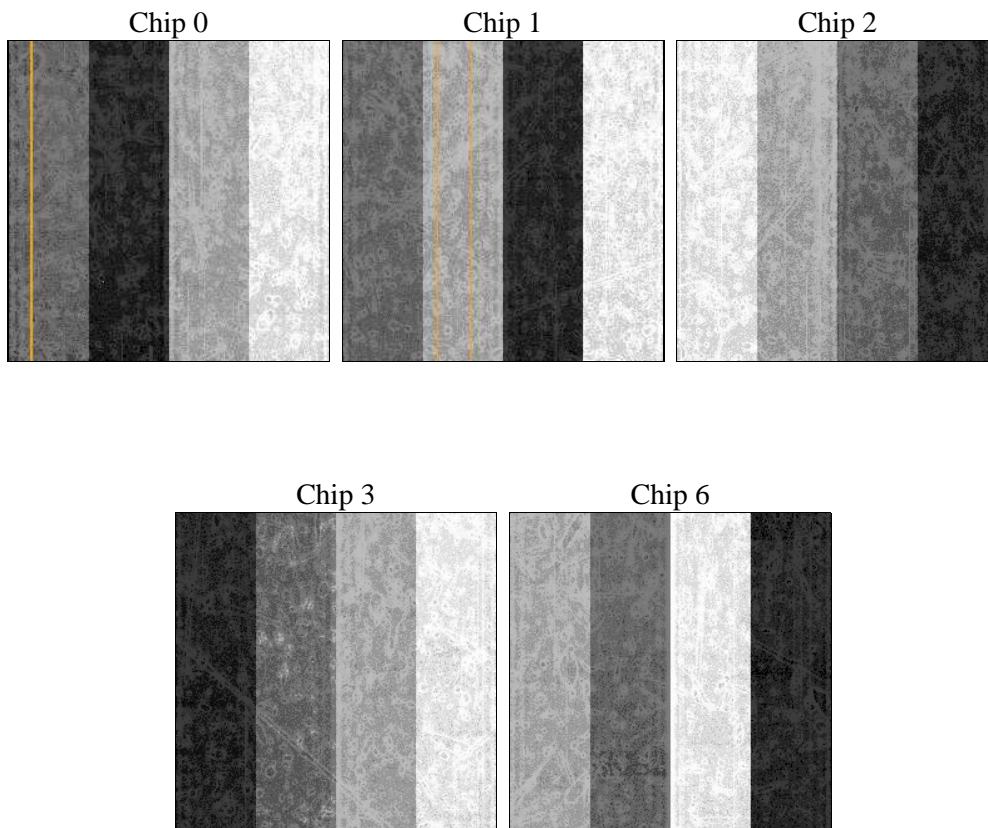
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	37000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	37084.303610742	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime0	37087.321451128	Sum of GTIs [s]
date	2014-12-12T01:41:21	Date and time of file creation	ontime1	37087.362491131	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	37087.403531134	Sum of GTIs [s]
			ontime3	37084.303610742	Sum of GTIs [s]
			ontime6	37087.280411124	Sum of GTIs [s]
			l1events	849556	Number of level 1 events

### 2.1.4 Events

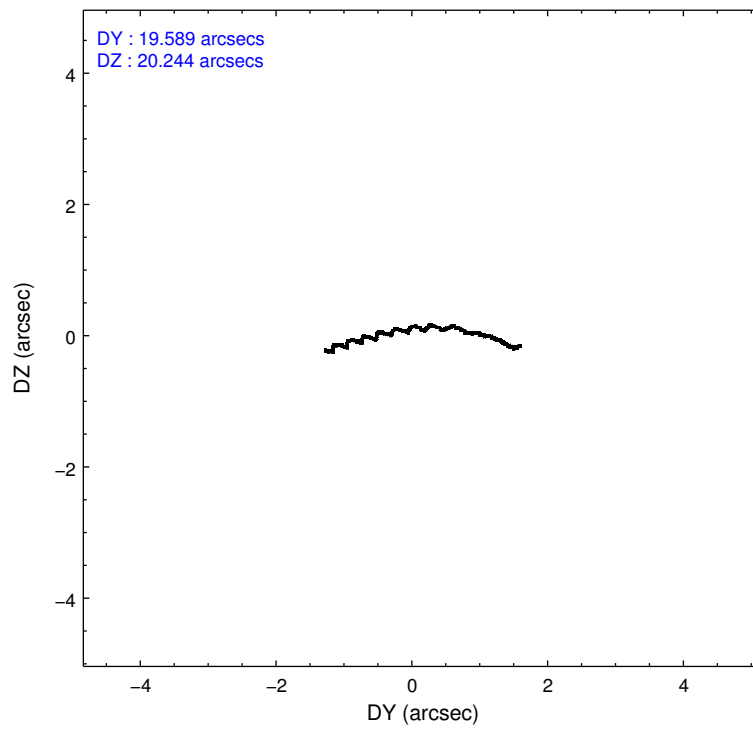
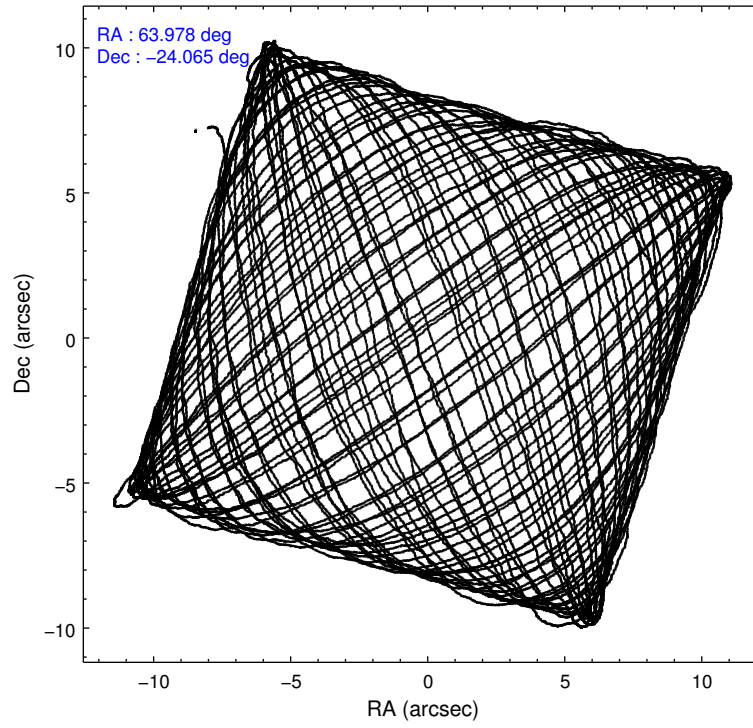
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	156995	163288	173943	178375	176955
rejected events	135622	139512	153182	149830	154585
rejected %	86%	85%	88%	83%	87%

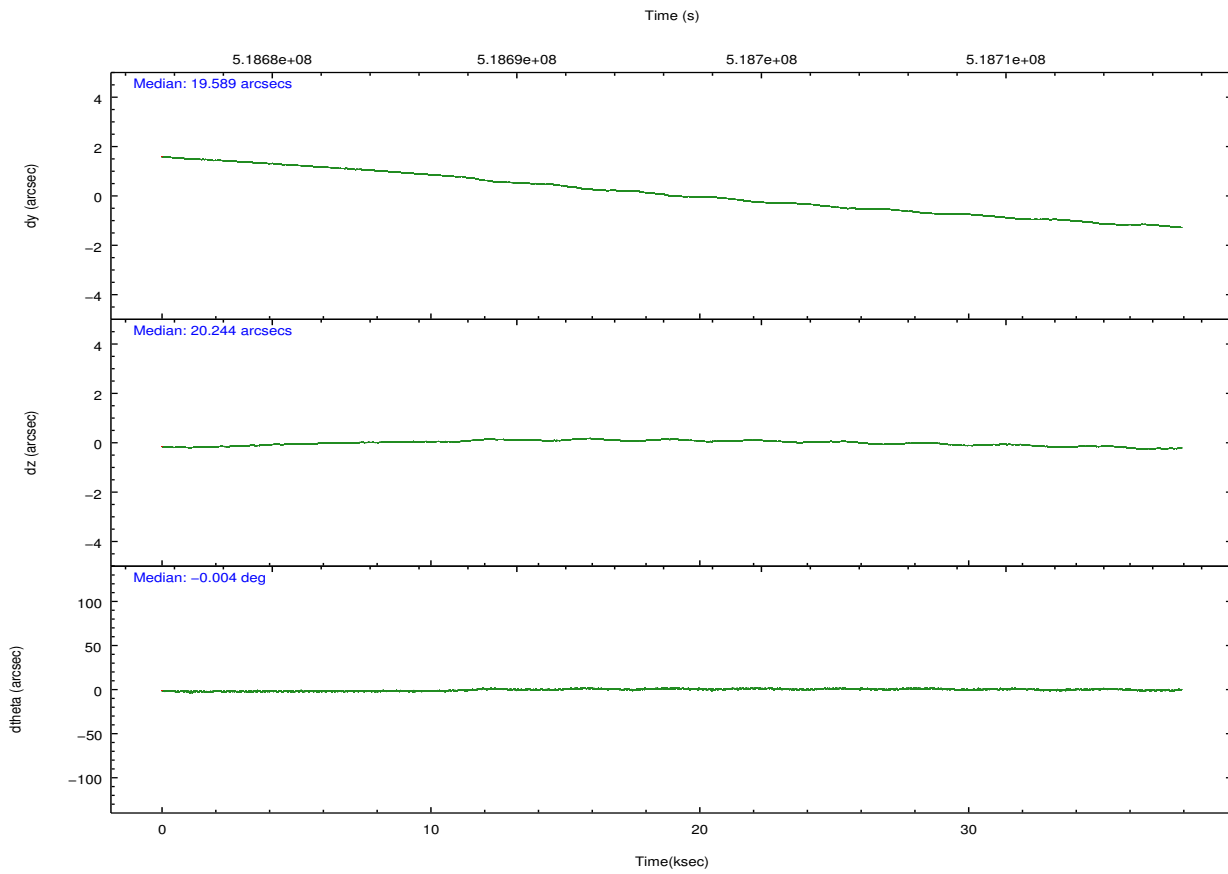
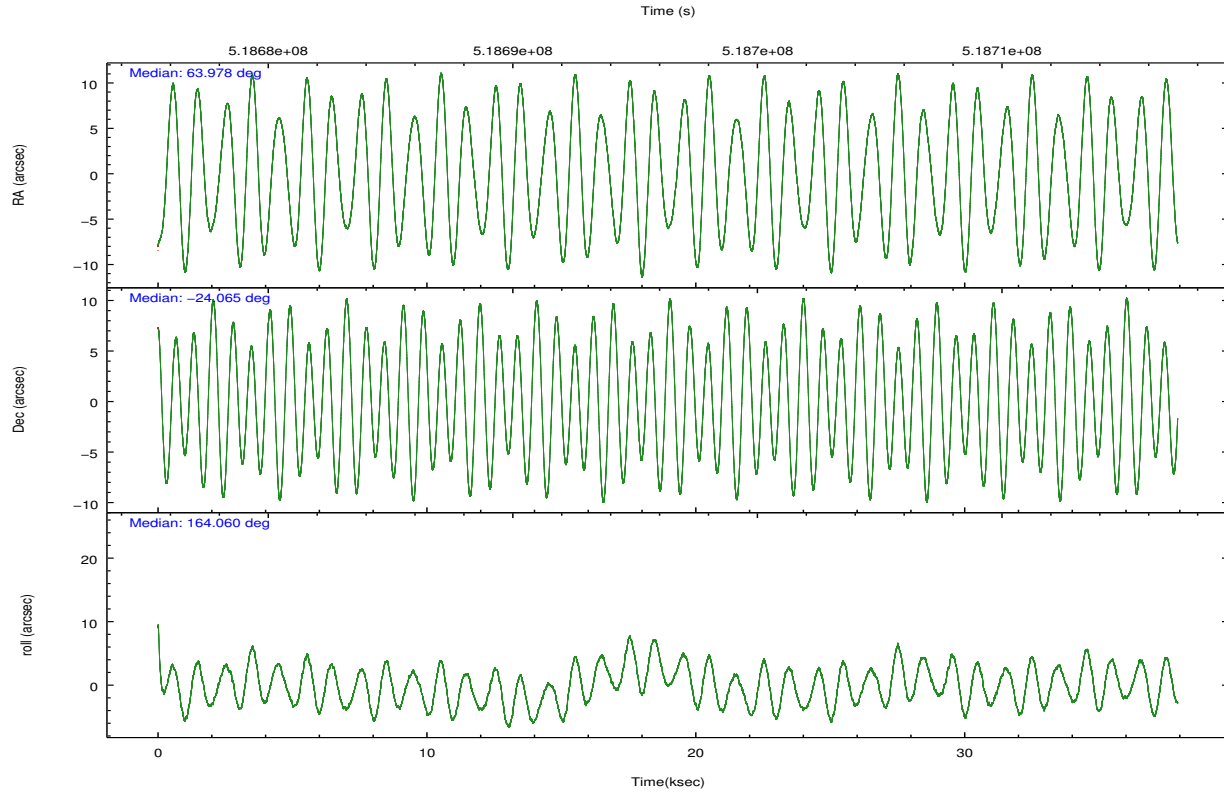
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	7525	8421	7165	13948	8050
	4%	5%	4%	7%	4%
grade 1 events	83	69	112	133	95
	0%	0%	0%	0%	0%
grade 2 events	5313	5808	5293	5280	4870
	3%	3%	3%	2%	2%
grade 3 events	2161	2317	2119	2385	2214
	1%	1%	1%	1%	1%
grade 4 events	2033	2254	2141	2406	2264
	1%	1%	1%	1%	1%
grade 5 events	8186	8998	7830	9350	9031
	5%	5%	4%	5%	5%
grade 6 events	4345	4979	4045	4532	4976
	2%	3%	2%	2%	2%
grade 7 events	127349	130442	145238	140341	145455
	81%	79%	83%	78%	82%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-01236	ACIS-01236	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	64.007070	63.97788644835025	CCD I2 on	Y	Y
[deg] Pointing Dec	-24.058381	-24.0651812184611	CCD I3 on	Y	Y
[deg] Pointing Roll	163.872052	164.0688424500657	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	Y
[mm] SIM translation stage pos	-225.842463	-225.8433433320239	CCD S3 on	N	N
[mm] SIM translation stage offset	-7.75	-7.749109670905796	CCD S4 on	N	N
[s] Observation start time (MET)	518678296.184000	518676989.42709	CCD S5 on	N	N
Observation start date	2014-06-09T05:17:09	2014-06-09T04:56:29	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	518715296.184000	518715720.59173	On-chip summing requested	N	N
Observation end date	2014-06-09T15:33:49	2014-06-09T15:42:00	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect





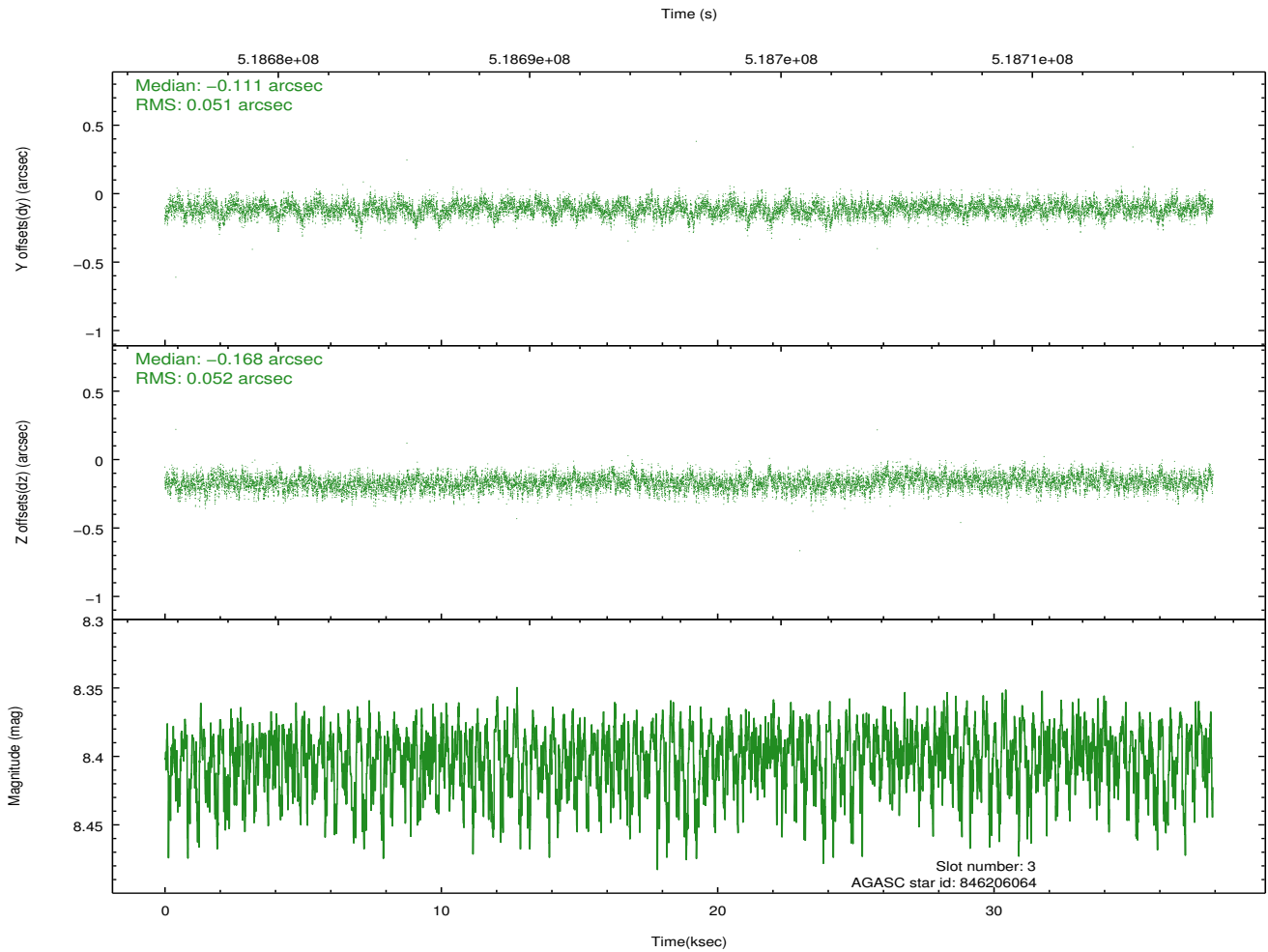
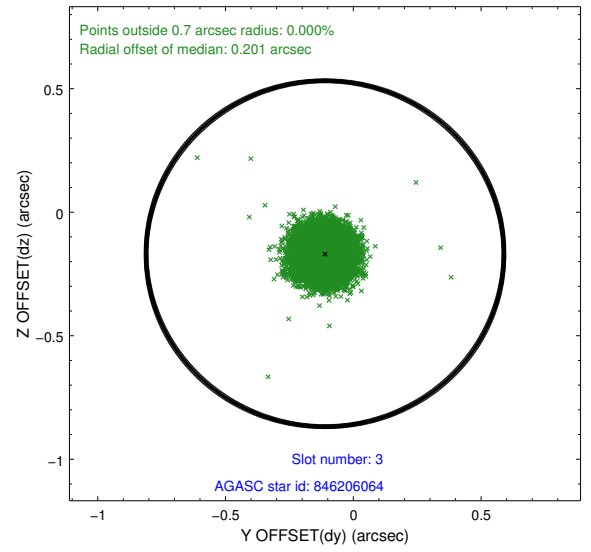
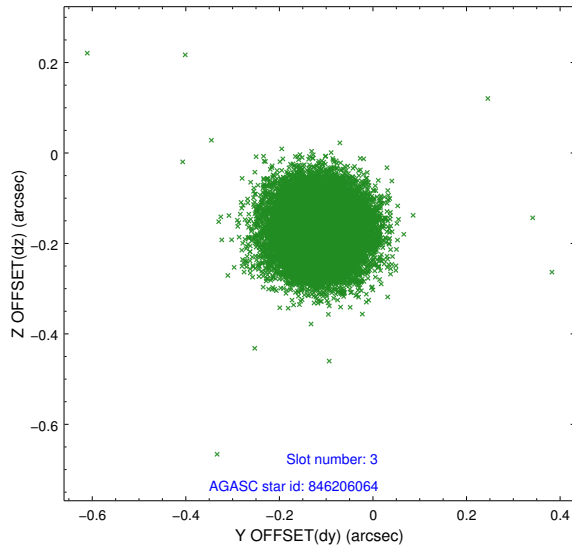
### Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.00	9249	0.130	-0.105	0.010	0.019	0.000000	0.000000	919.66	-1003.12
1	FID		ACIS-I-5	6.99	9251	-0.308	0.098	0.010	0.021	0.000000	0.000000	-1828.94	894.45
2	FID		ACIS-I-6	7.01	9251	0.085	0.078	0.008	0.014	0.000000	0.000000	385.04	1539.04
3	GUIDE	used	846206064	8.40	18492	-0.111	-0.168	0.078	0.125	63.549477	-24.205184	1295.67	927.50
4	GUIDE	used	846207040	8.40	18496	-0.001	-0.154	0.075	0.123	63.992065	-24.505797	-400.73	1559.90
5	GUIDE	used	846209096	7.98	18498	-0.047	0.297	0.086	0.135	64.121972	-23.533882	160.48	-1918.61
6	GUIDE	used	846357784	8.54	18497	0.186	0.331	0.089	0.141	64.526937	-24.060086	-1644.29	-467.07
7	GUIDE	used	846356736	8.38	18495	-0.034	-0.303	0.092	0.148	64.266692	-24.818163	-1575.52	2392.47

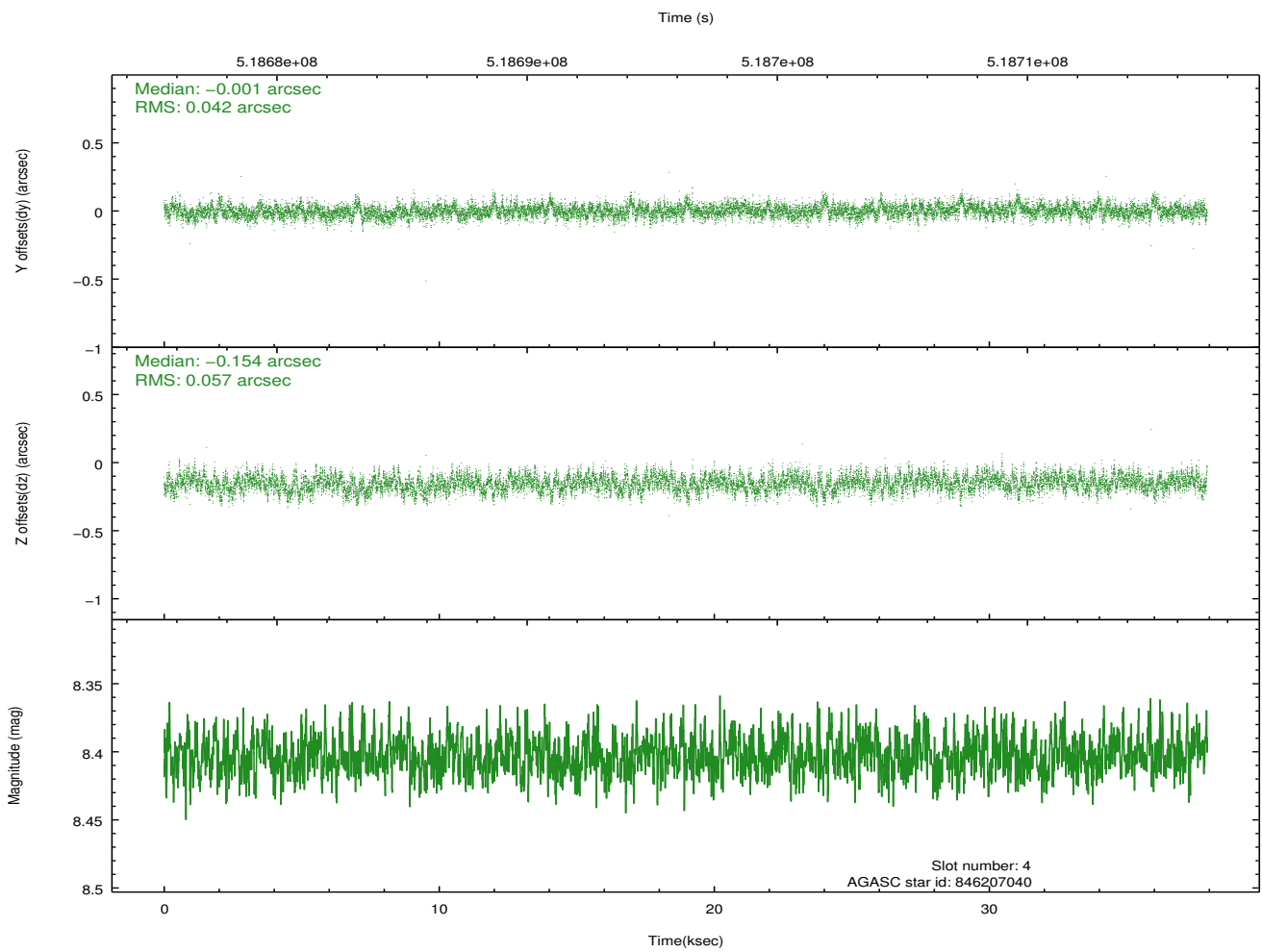
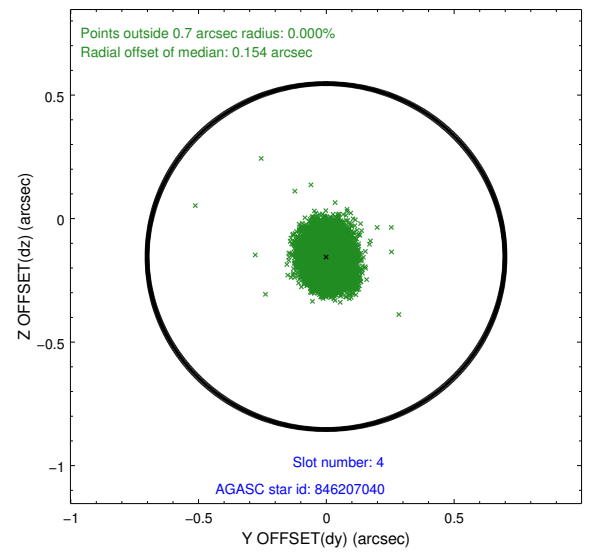
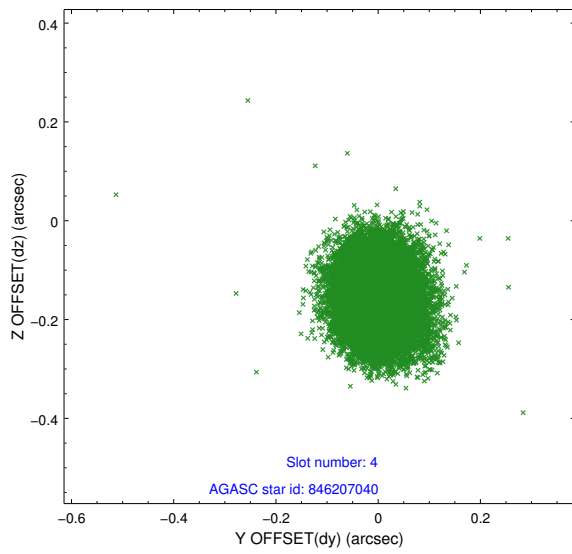
∞

## 2.4 Star Slots

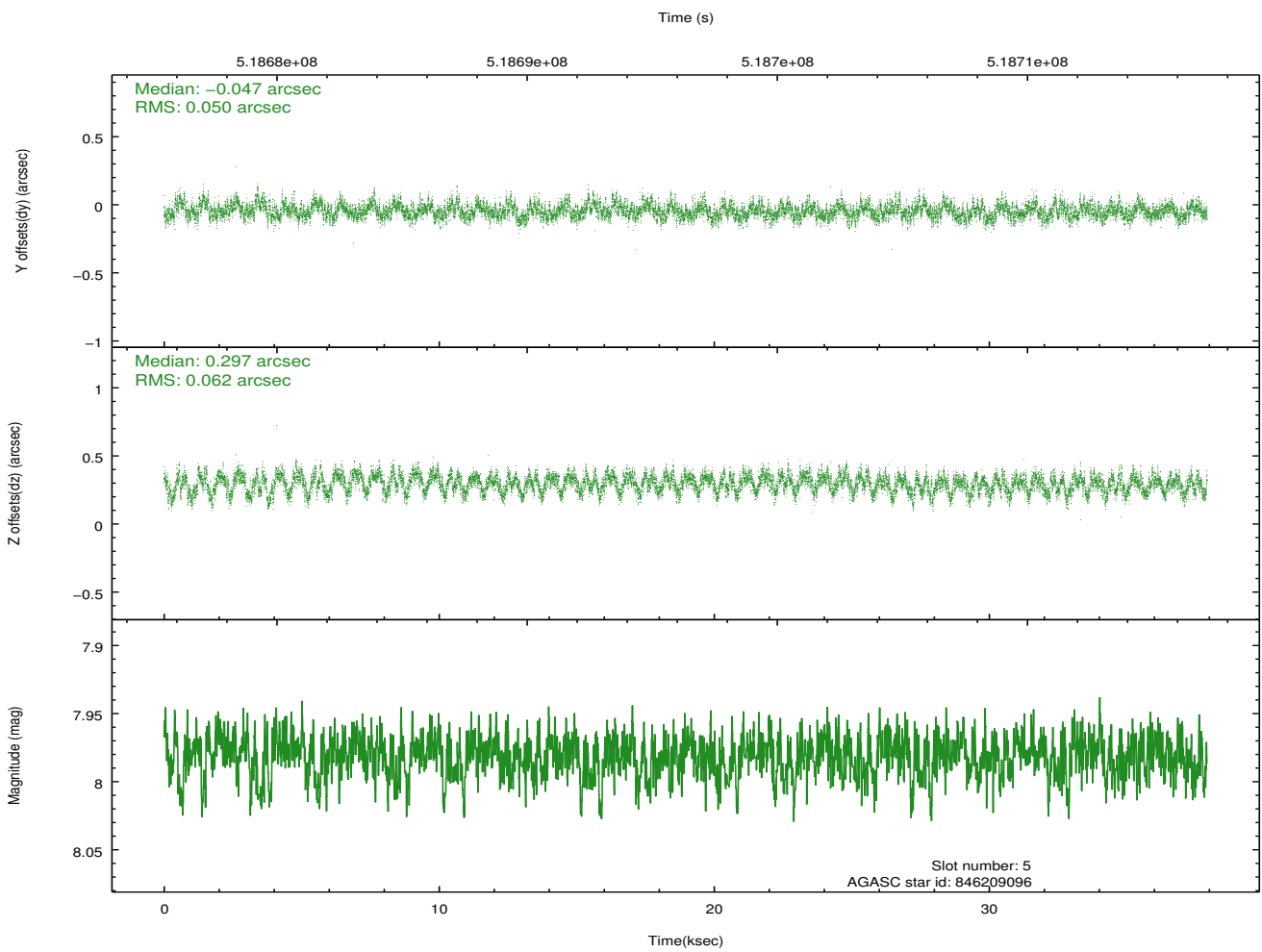
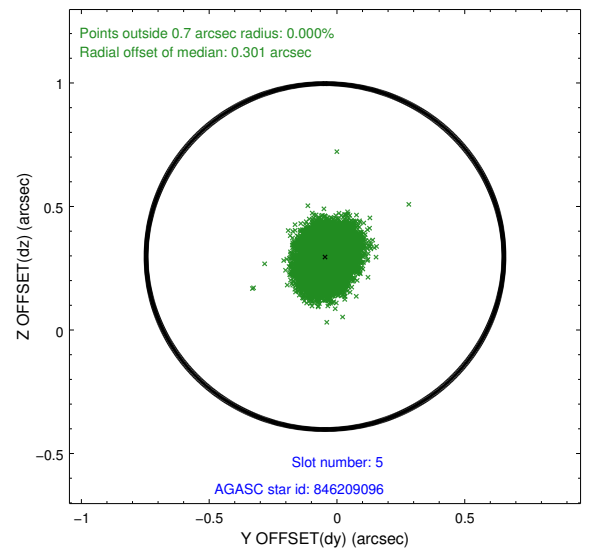
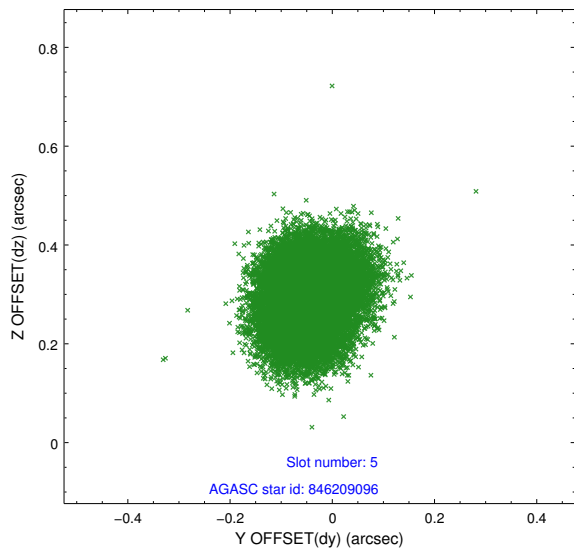
### 2.4.1 Slot 3



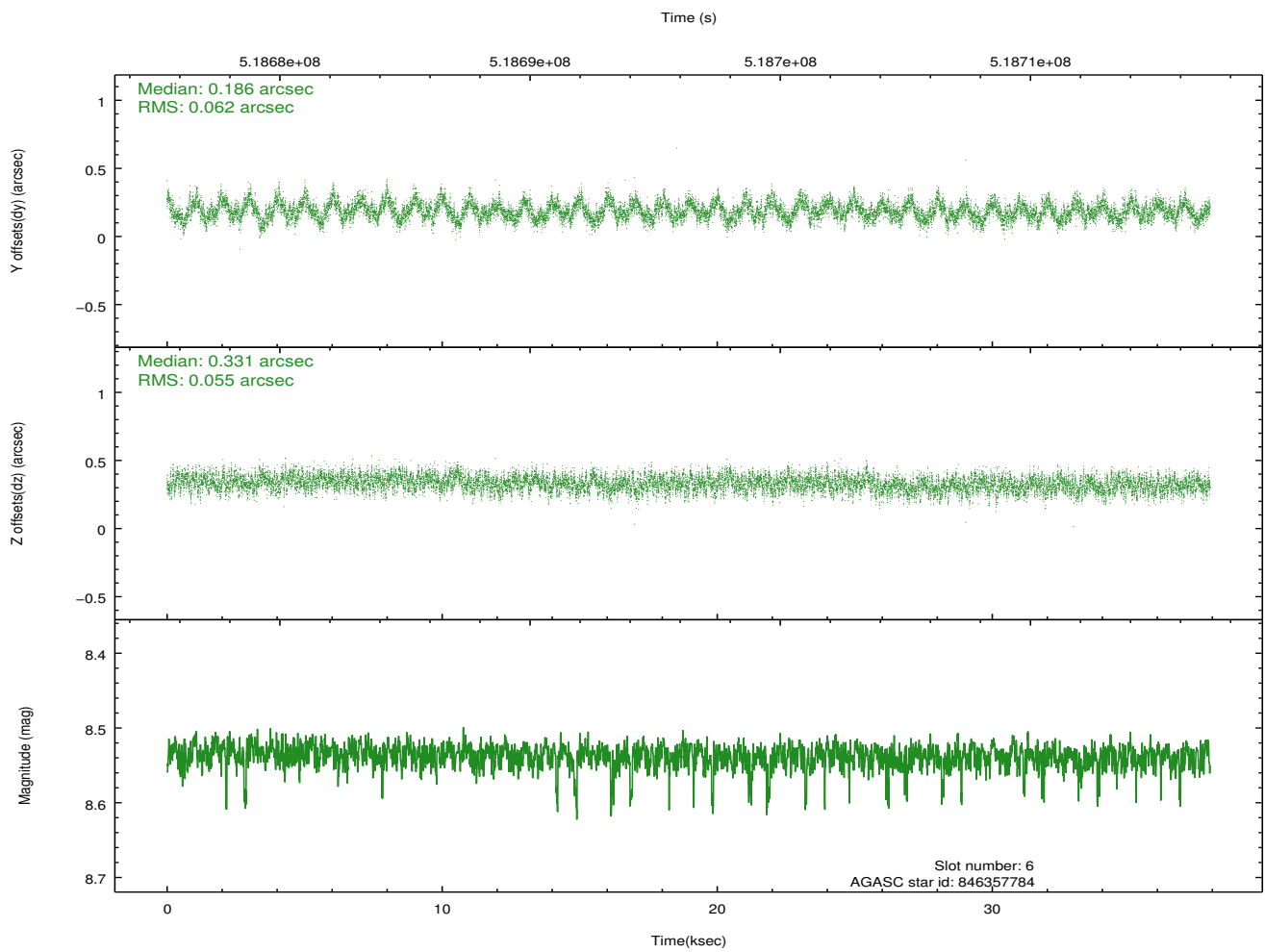
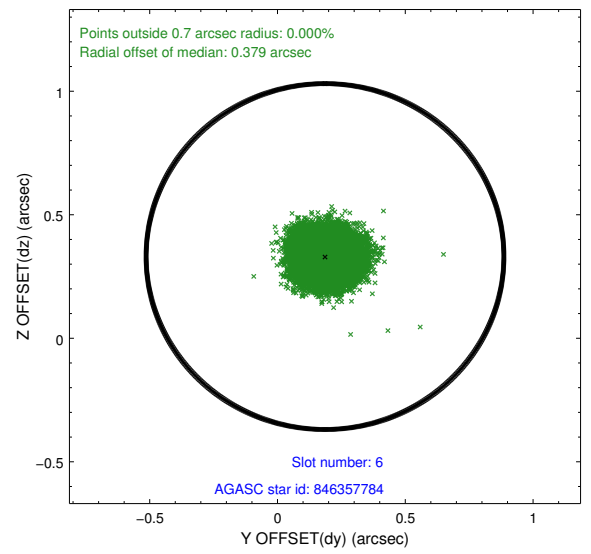
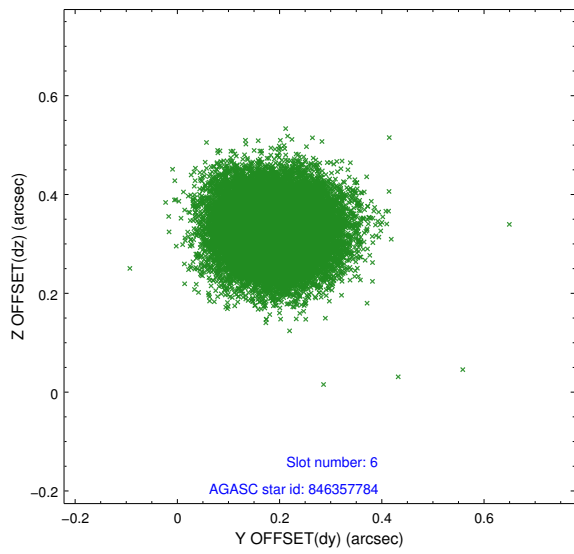
## 2.4.2 Slot 4



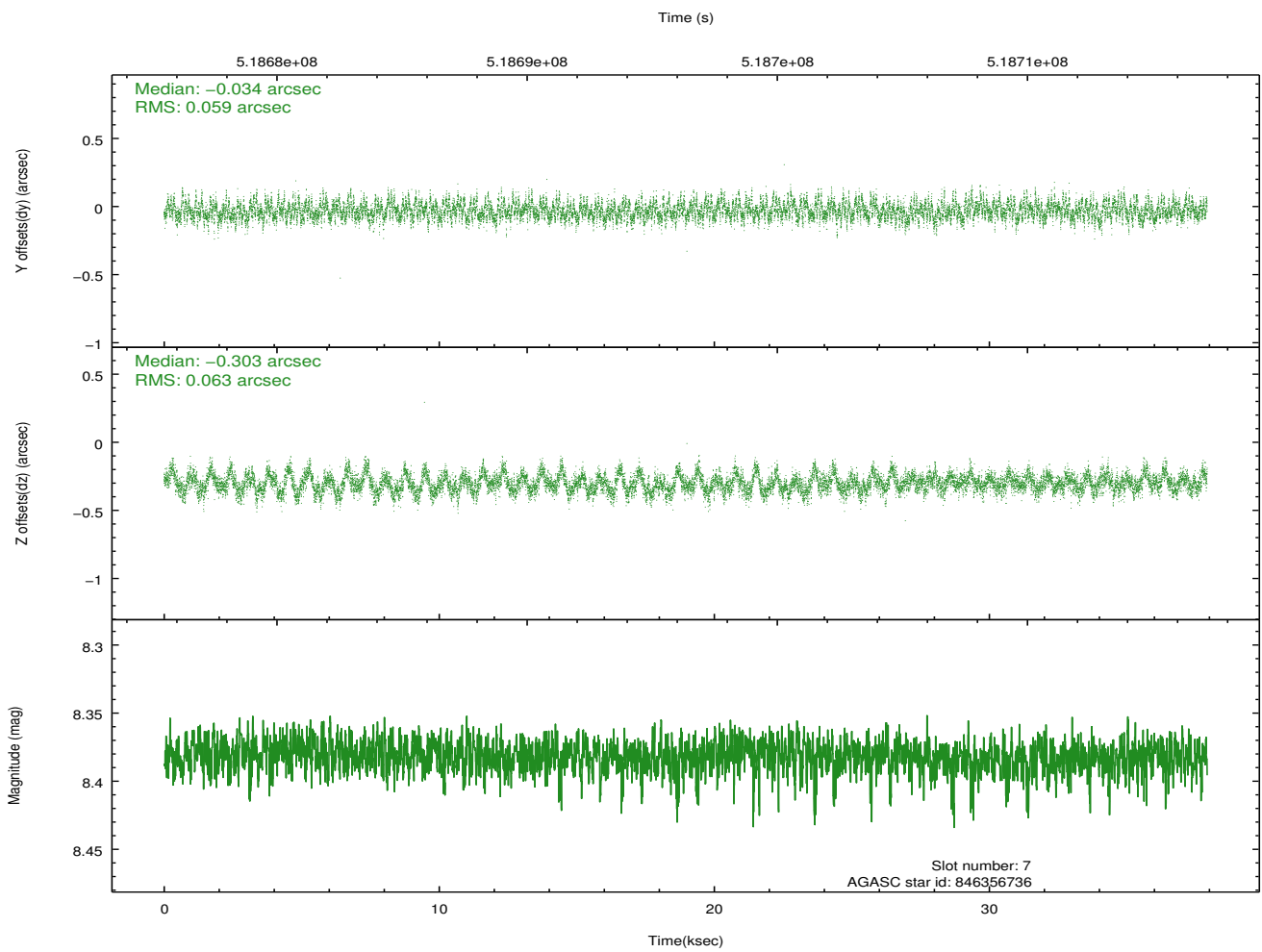
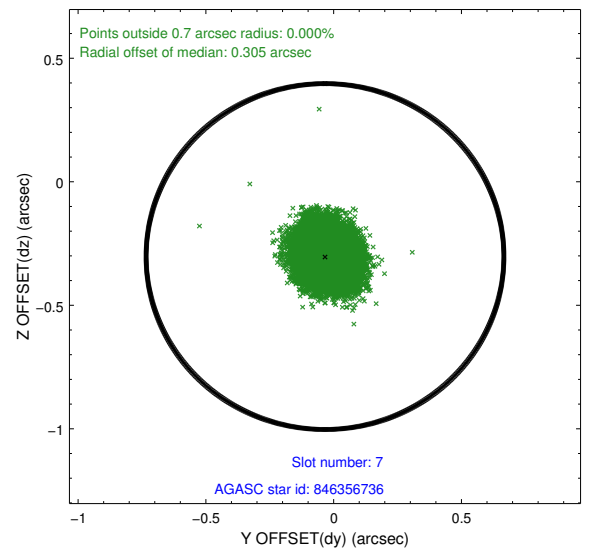
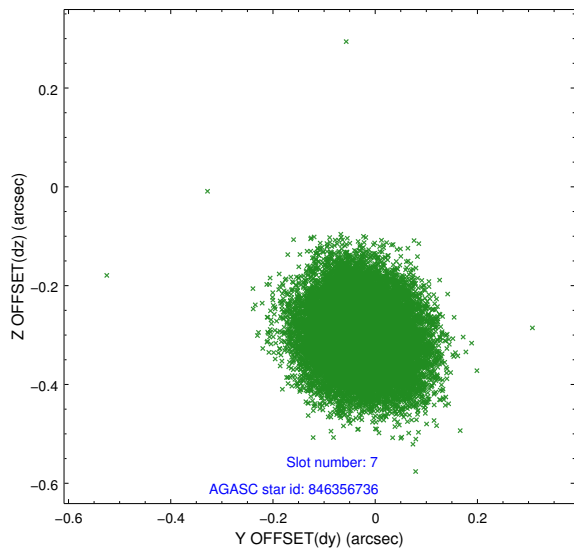
### 2.4.3 Slot 5



## 2.4.4 Slot 6

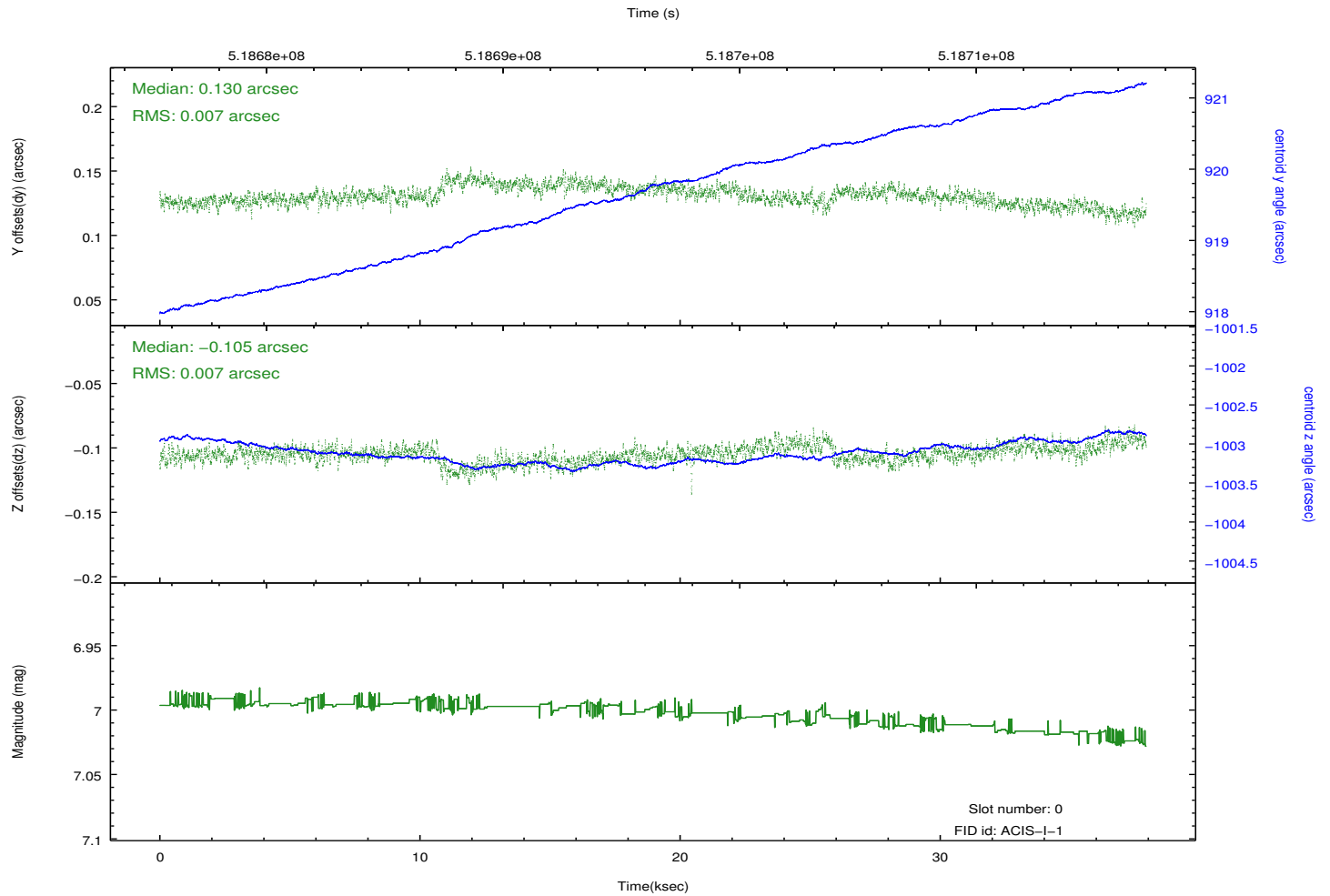
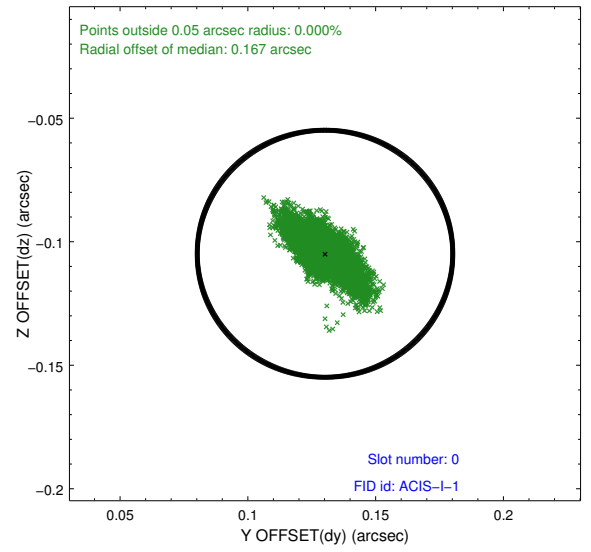
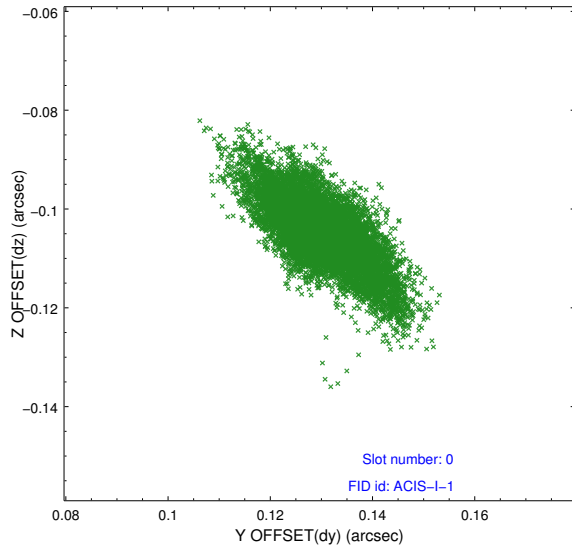


## 2.4.5 Slot 7

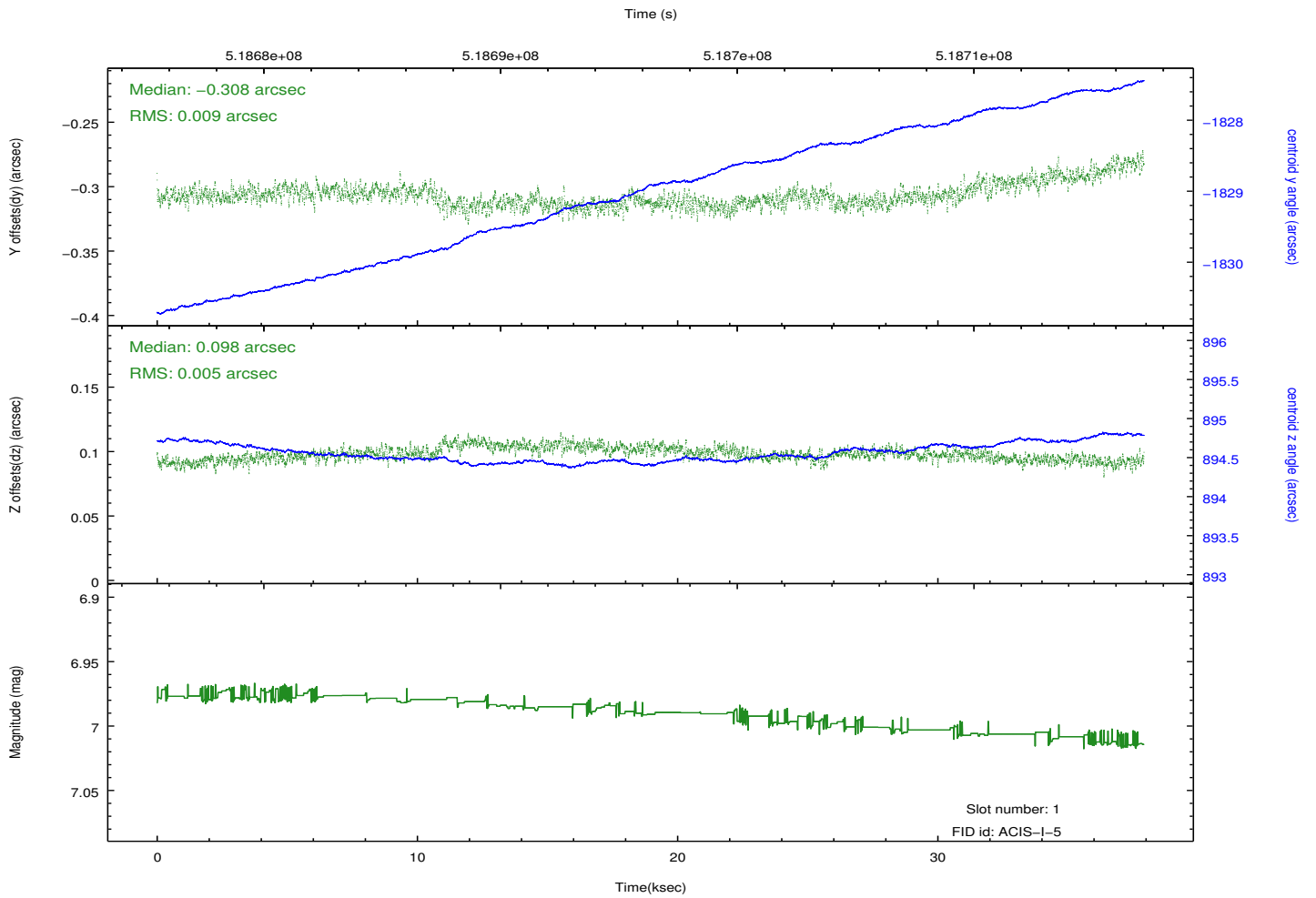
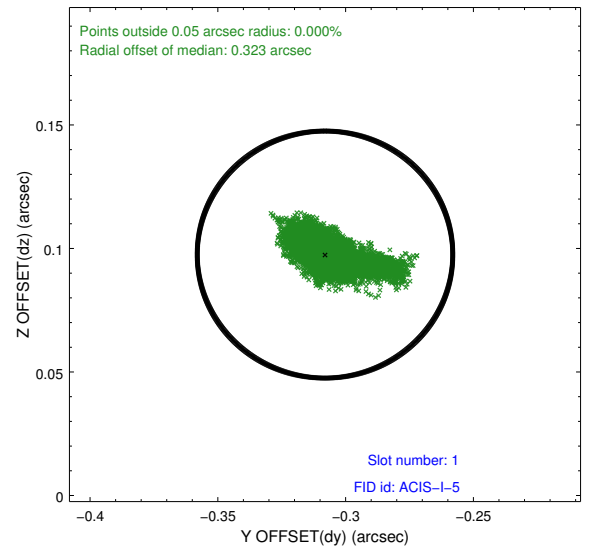
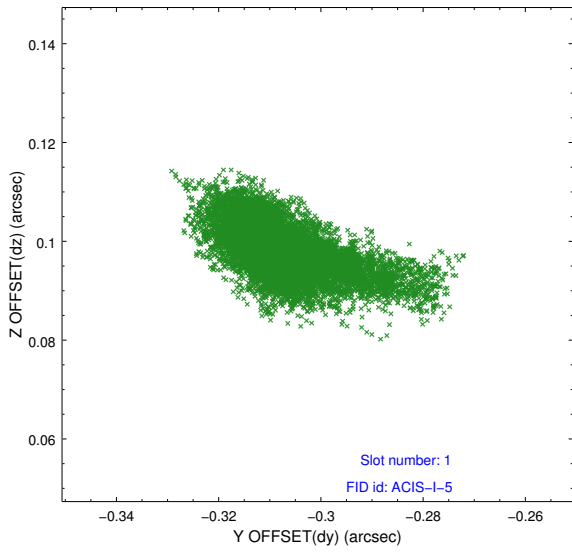


## 2.5 FID Slots

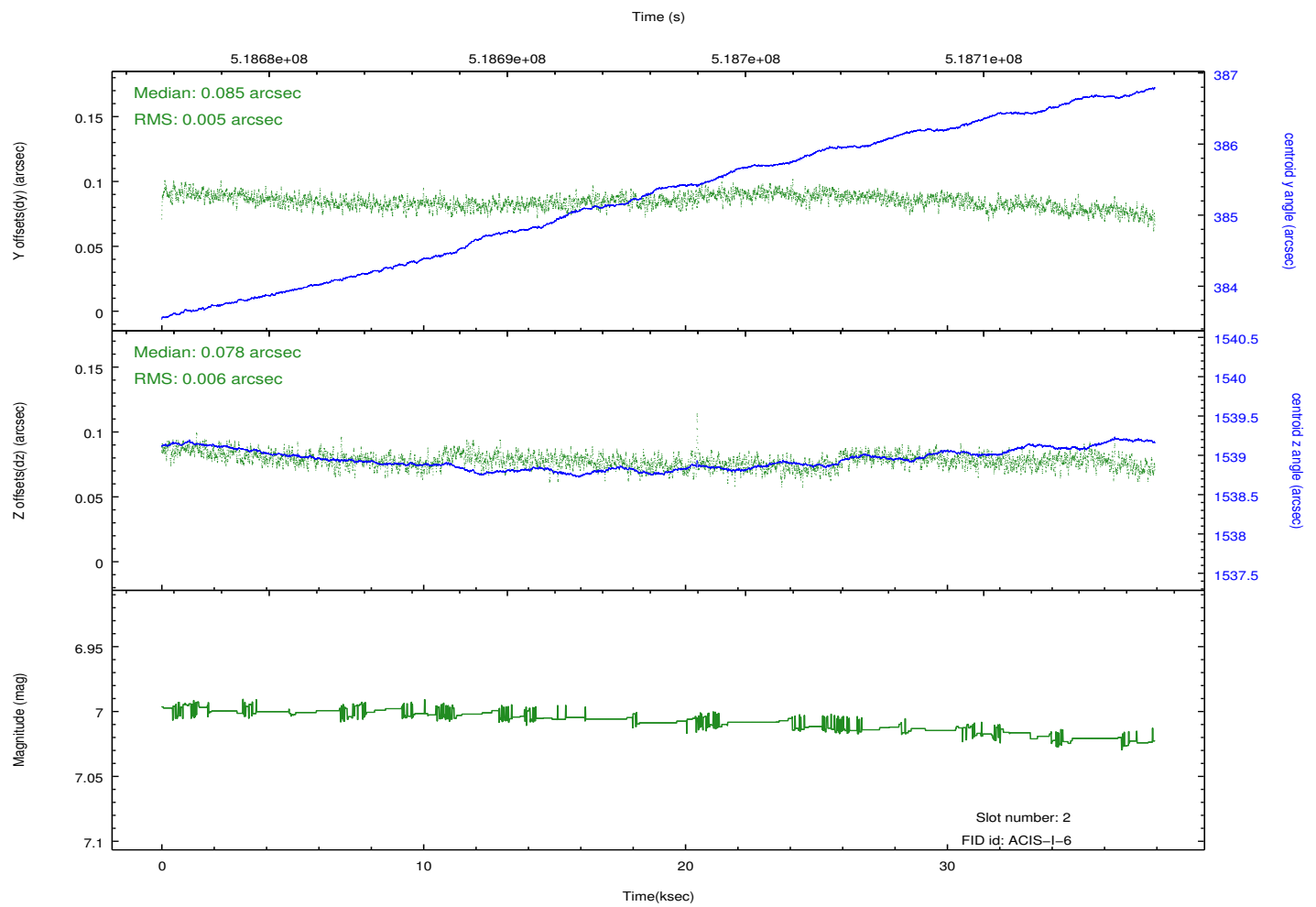
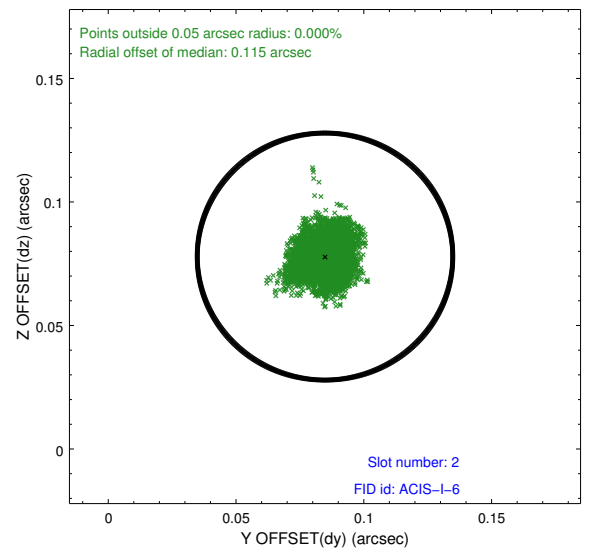
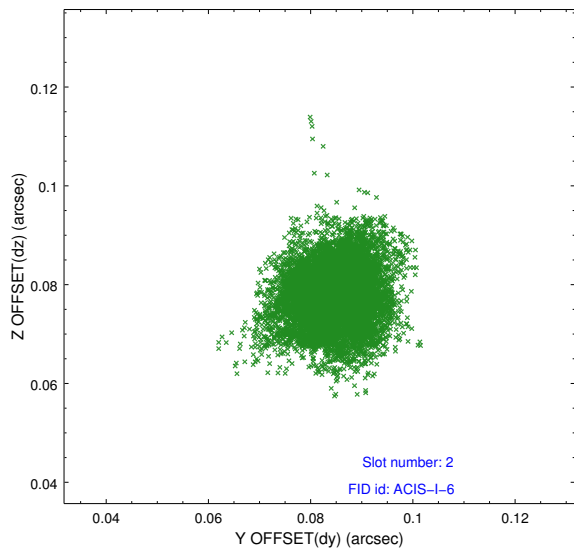
### 2.5.1 Slot 0



## 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)	2014.12.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	37.084303610742

## A.2 Comments

Joint proposal with NRAO.

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.