

# V&V Reference Report

## L2 ASCDS Version : 10.5.4

Observation 18976 - L2 Version 1  
Chandra X-Ray Center

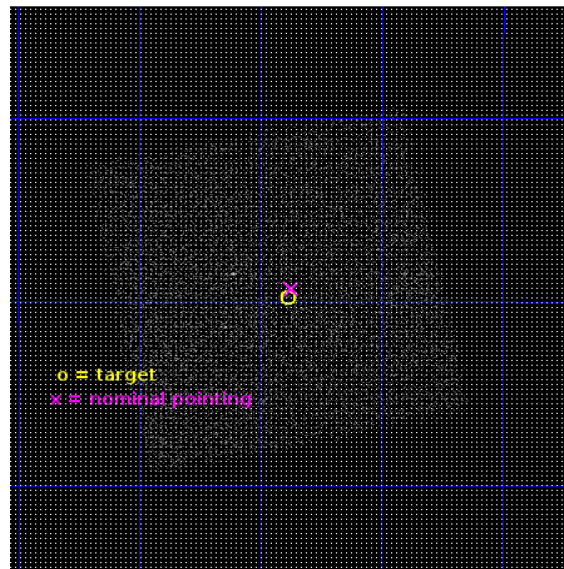
L2 Processing Date : May 9 2017

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# 1 Front

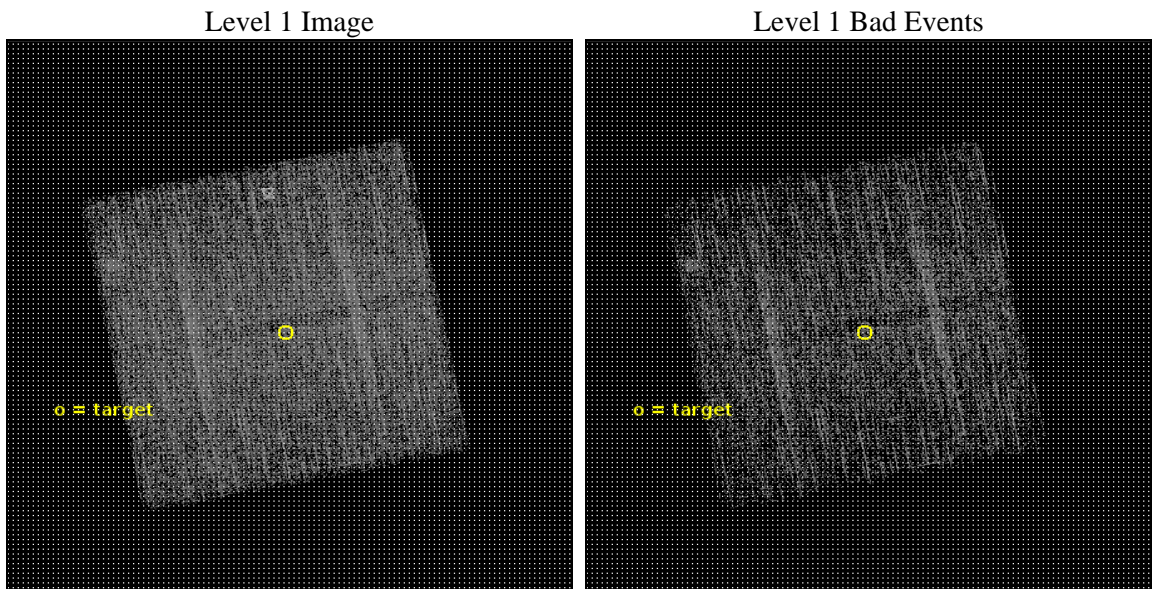
seq_num	401844	Sequence number
obs_id	18976	Observation id
title	The Nature of INTEGRAL Sources in the Galactic Plane	Proposal titl
observer	John Tomsick	Principal investigator
object	IGR J17508-3219	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	267.720833	Observer's specified target RA [deg]
dec_targ	-32.33	Observer's specified target Dec [deg]
ra_nom	267.71800987765	Nominal RA [deg]
dec_nom	-32.321601672202	Nominal Dec [deg]
roll_nom	78.675548781916	Nominal Roll [deg]
revision	1	Processing version of data
ontime	5077.8000391722	Sum of GTIs [s]
livetime	5011.4548434384	Livetime [s]
ontime0	5077.8000391722	Sum of GTIs [s]
ontime1	5077.8000391722	Sum of GTIs [s]
ontime2	5077.8000391722	Sum of GTIs [s]
ontime3	5077.8000391722	Sum of GTIs [s]
l2events	15420	Number of level 2 events



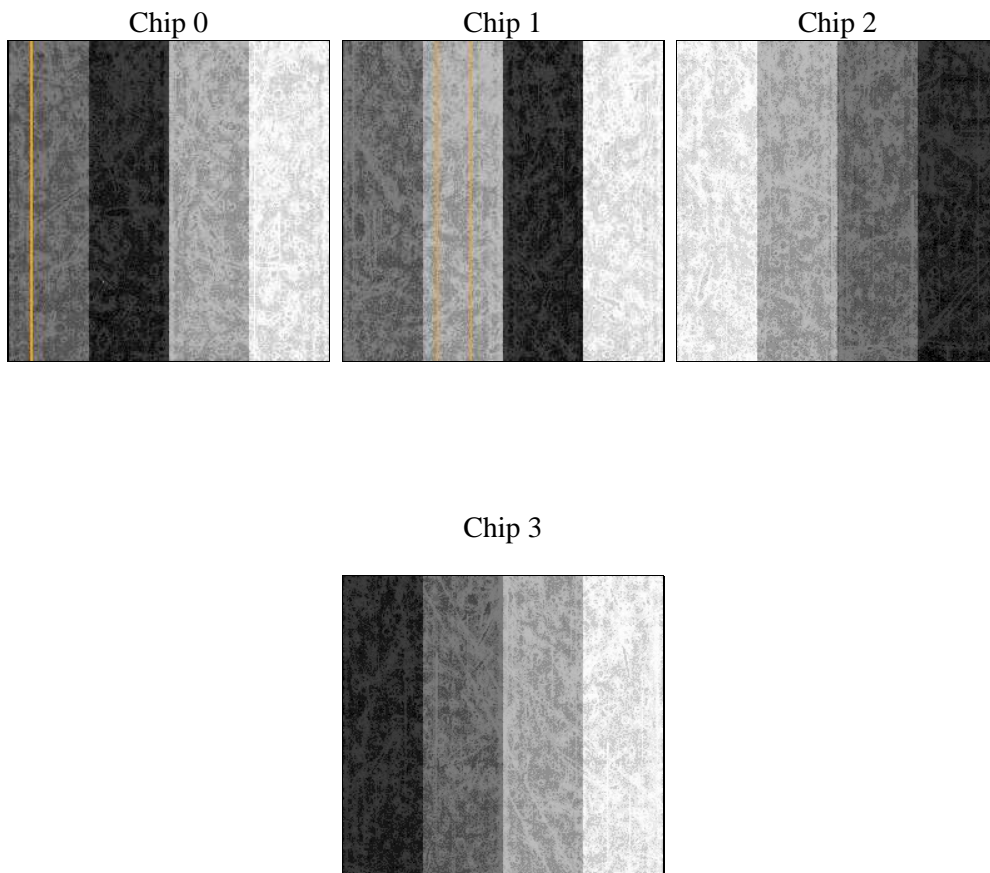
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ascdsver	10.5.4	Processing system revision	ontime	5077.8000391722	Sum of GTIs [s]
caldsver	4.7.4	&#160	ontime0	5077.8000391722	Sum of GTIs [s]
date	2017-05-09T05:28:08	Date and time of file creation	ontime1	5077.8000391722	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	5077.8000391722	Sum of GTIs [s]
			ontime3	5077.8000391722	Sum of GTIs [s]
			l1events	151340	Number of level 1 events

### 2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3
level 1 events	37484	35823	40353	37680
rejected events	32381	30966	34686	33561
rejected %	86%	86%	85%	89%

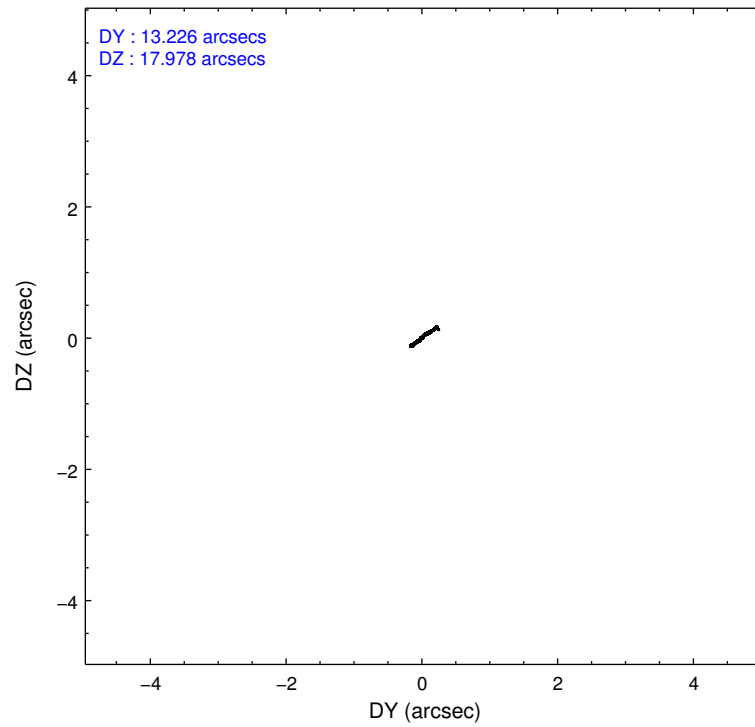
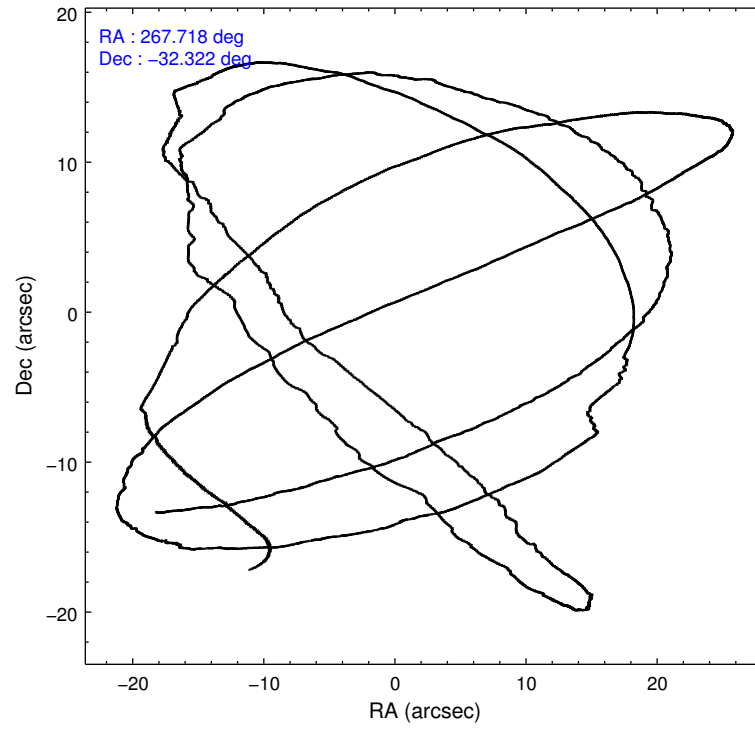
	ccd 0	ccd 1	ccd 2	ccd 3
grade 0 events	2248	1809	3100	1644
	5%	5%	7%	4%
grade 1 events	55	22	27	15
	0%	0%	0%	0%
grade 2 events	1084	1144	933	848
	2%	3%	2%	2%
grade 3 events	451	412	428	421
	1%	1%	1%	1%
grade 4 events	430	405	405	385
	1%	1%	1%	1%
grade 5 events	1458	1520	1342	1676
	3%	4%	3%	4%
grade 6 events	892	1090	803	823
	2%	3%	1%	2%
grade 7 events	30866	29421	33315	31868
	82%	82%	82%	84%

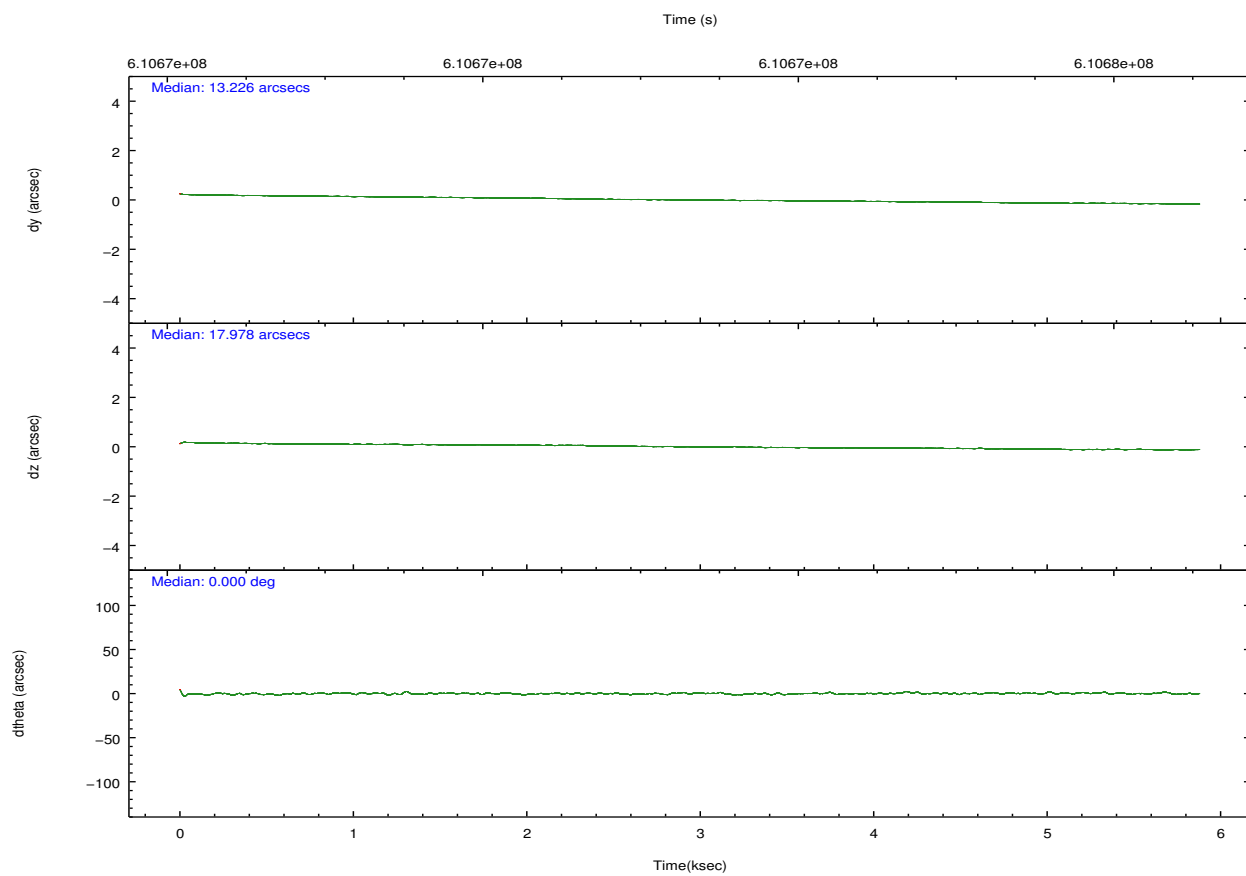
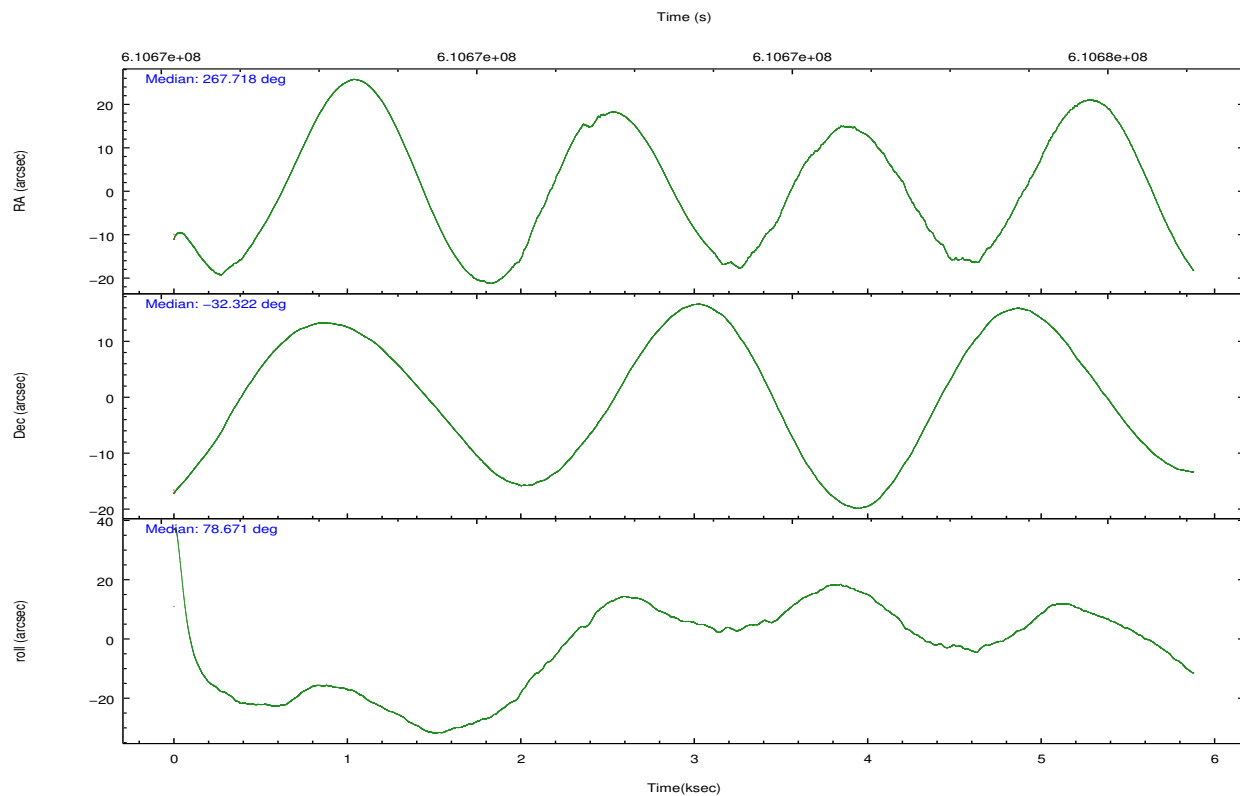


## 2.2 Compared Parameters

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	267.728687	267.7180098776523	CCD I2 on	Y	Y
[deg] Pointing Dec	-32.347826	-32.32160167220227	CCD I3 on	Y	Y
[deg] Pointing Roll	78.472468	78.67554878191568	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	-233.592463	-233.5874344608287	CCD S3 on	O2	N
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	610671252.184000	610670017.61695	CCD S5 on	N	N
Observation start date	2017-05-08T22:53:03	2017-05-08T22:33:37	Number of optional ACIS chips dropped	2	2
[s] Observation end time (MET)	610676252.184000	610677431.95488	On-chip summing requested	N	N
Observation end date	2017-05-09T00:16:23	2017-05-09T00:37:11	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

## 2.3 Aspect



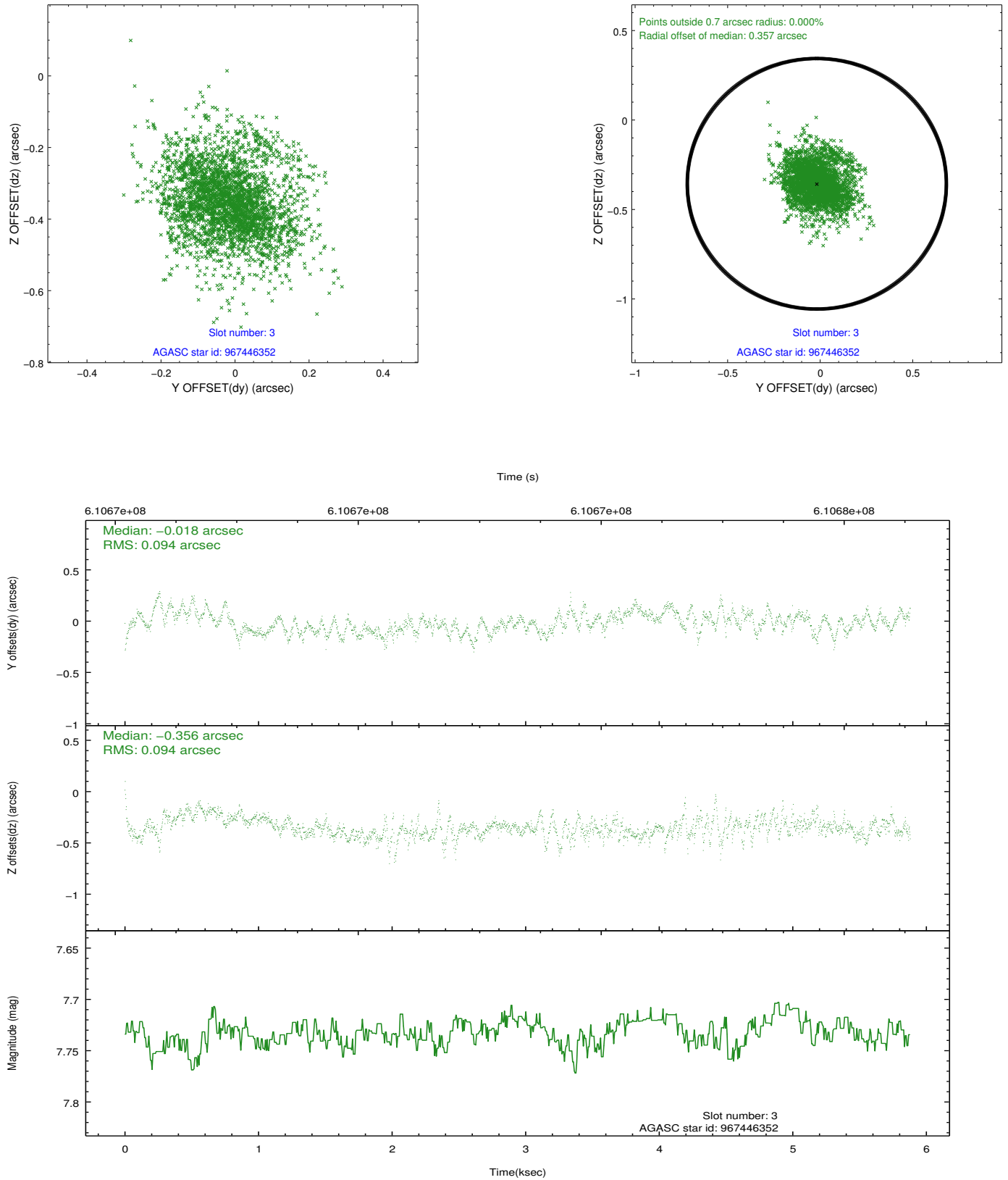


### Slot Statistics

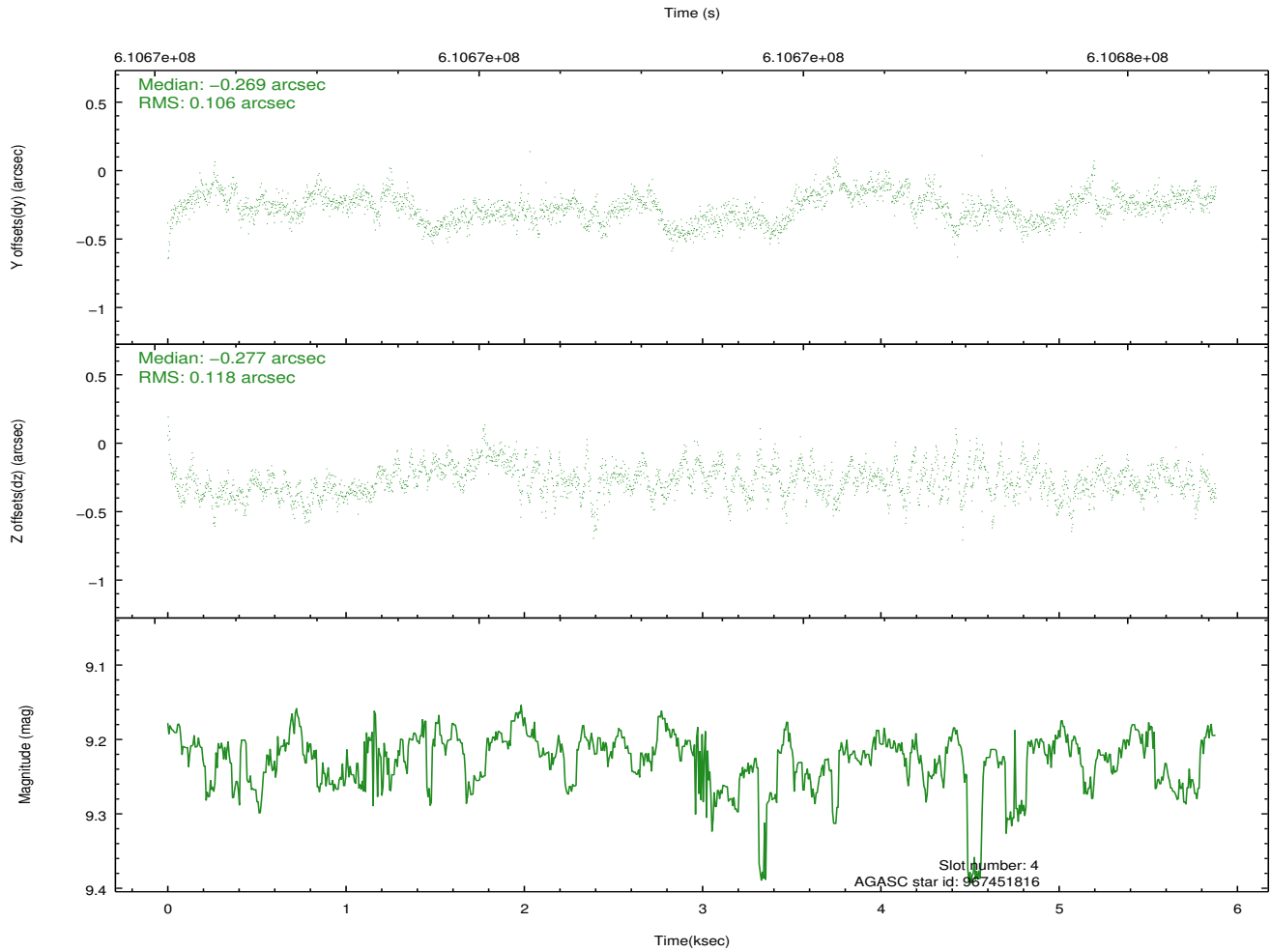
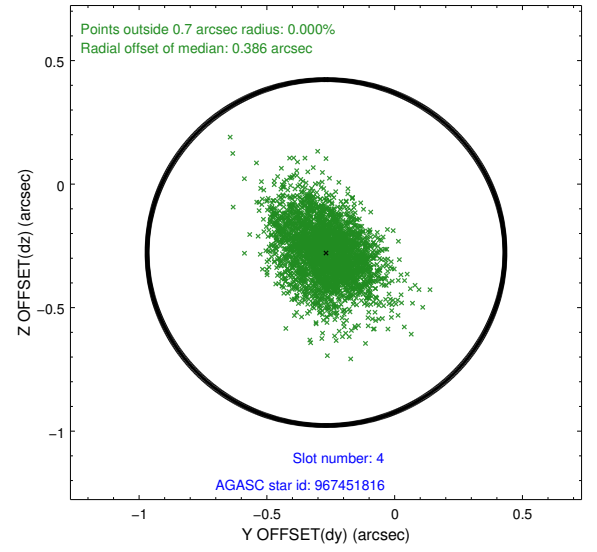
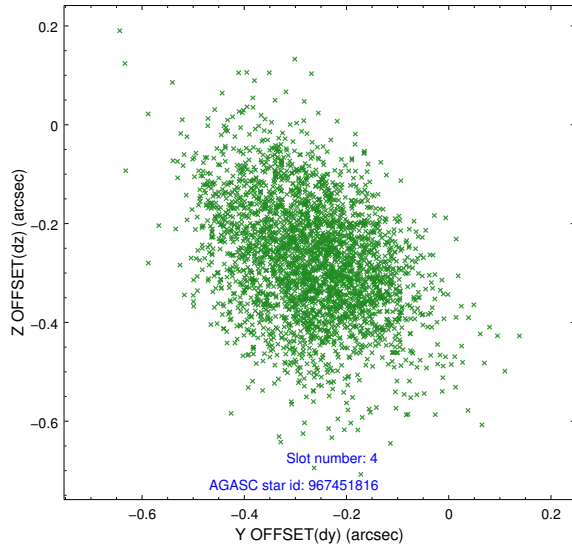
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.30	1435	0.127	0.030	0.009	0.017	0.000000	0.000000	926.37	-841.67
1	FID		ACIS-I-2	7.19	1434	-0.246	-0.104	0.009	0.017	0.000000	0.000000	-767.54	-848.69
2	FID		ACIS-I-6	7.30	1435	0.028	0.140	0.007	0.014	0.000000	0.000000	391.53	1699.76
3	GUIDE	used	967446352	7.73	2869	-0.018	-0.356	0.140	0.231	267.069988	-32.671157	-1546.48	1721.74
4	GUIDE	used	967451816	9.22	2867	-0.269	-0.277	0.167	0.275	267.266669	-31.901374	1287.91	1704.16
5	GUIDE	used	967060832	9.30	2864	-0.228	-0.253	0.170	0.282	267.800373	-31.675183	2416.65	269.14
6	GUIDE	used	967575376	8.37	2867	0.419	0.358	0.134	0.212	267.763436	-32.989502	-2241.23	-564.38
7	GUIDE	used	967577016	8.85	2866	0.104	0.521	0.149	0.239	268.499252	-32.374913	363.88	-2316.50

## 2.4 Star Slots

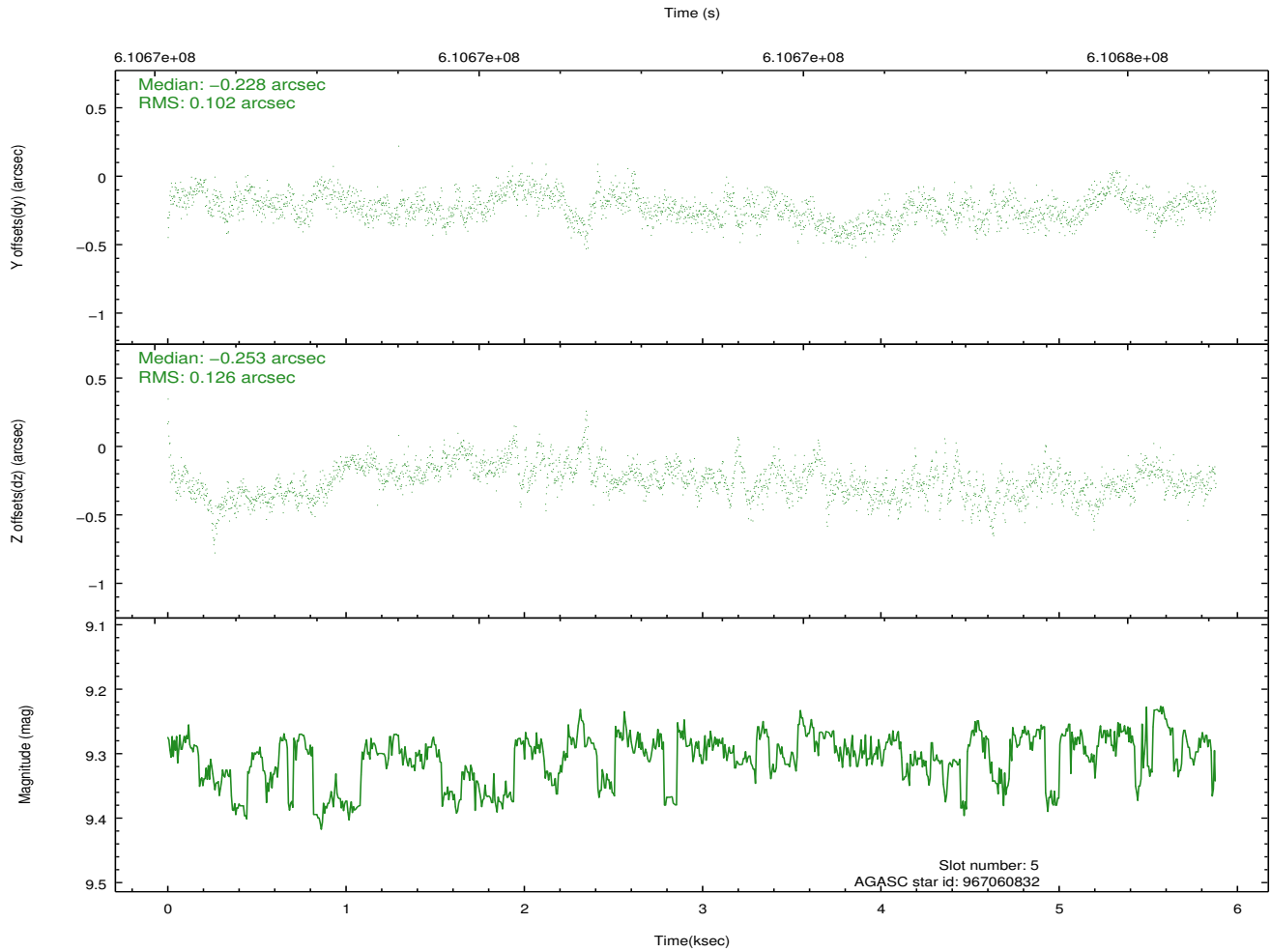
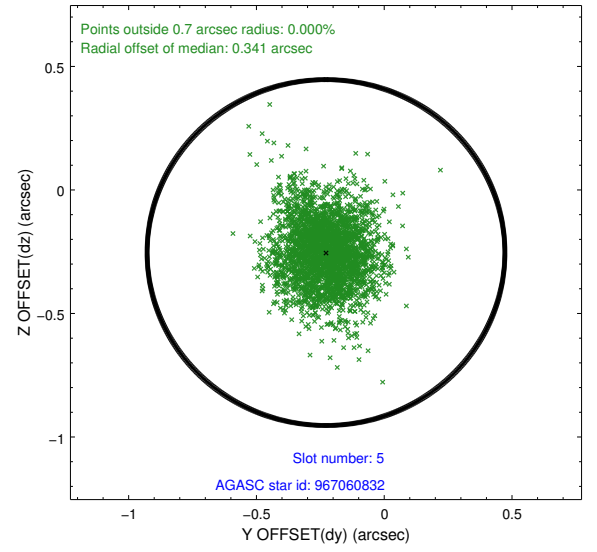
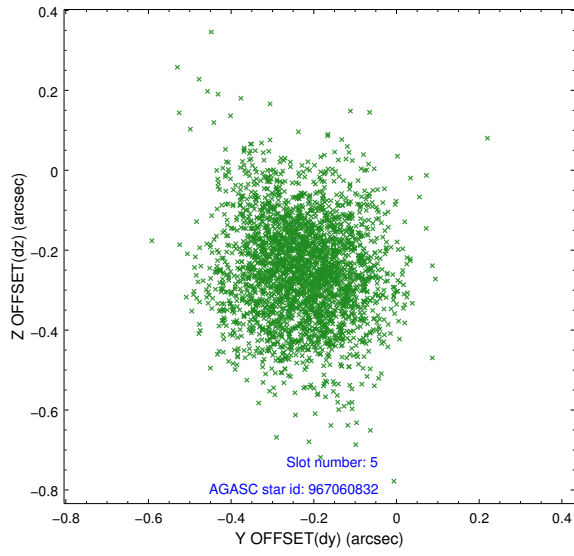
### 2.4.1 Slot 3



## 2.4.2 Slot 4

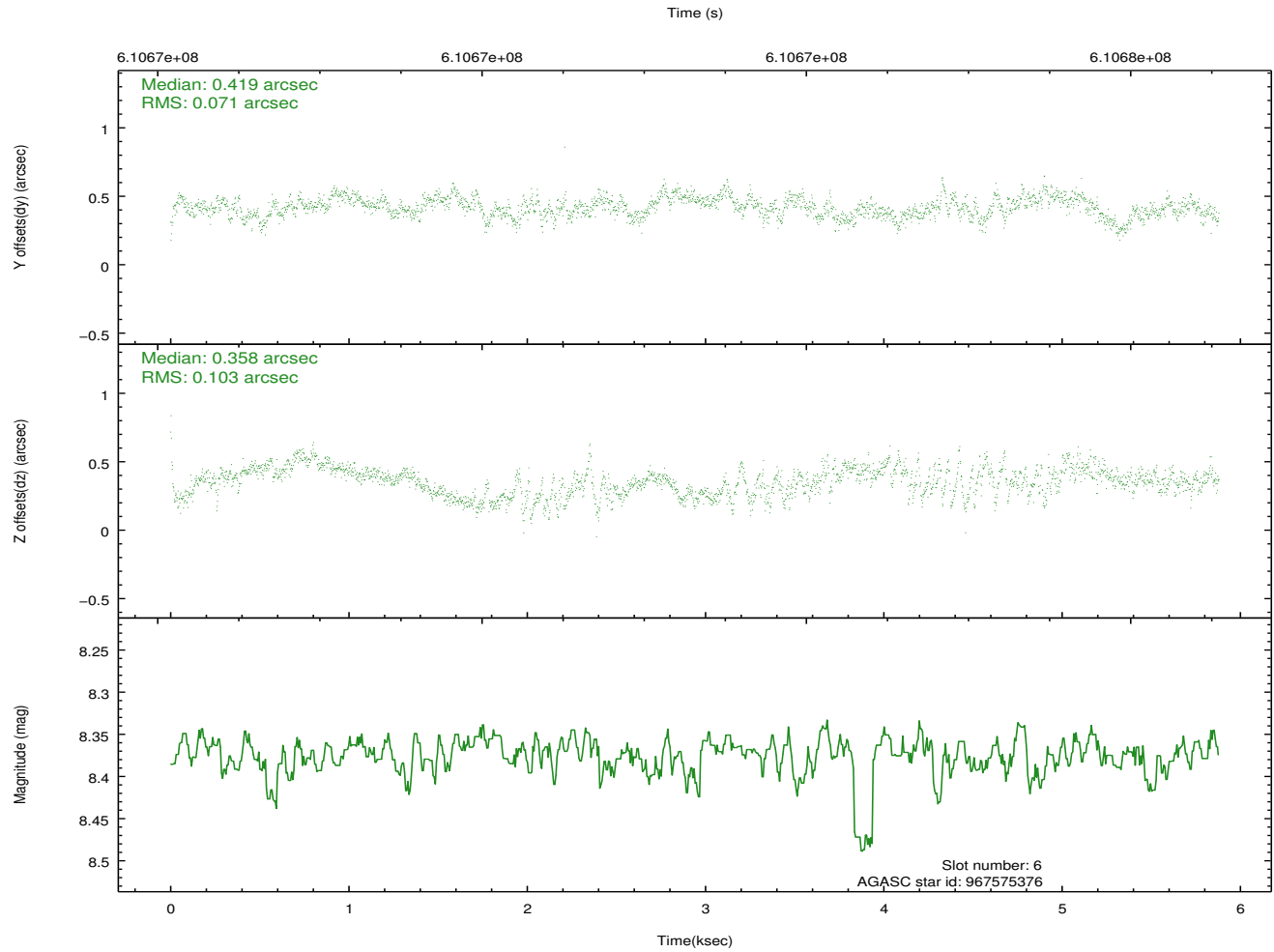
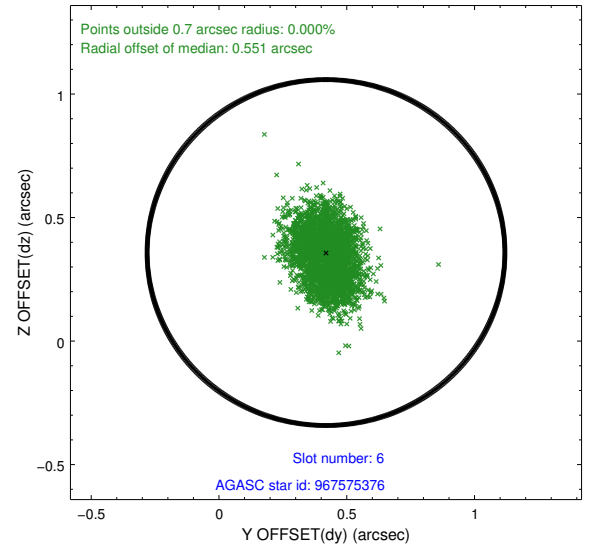
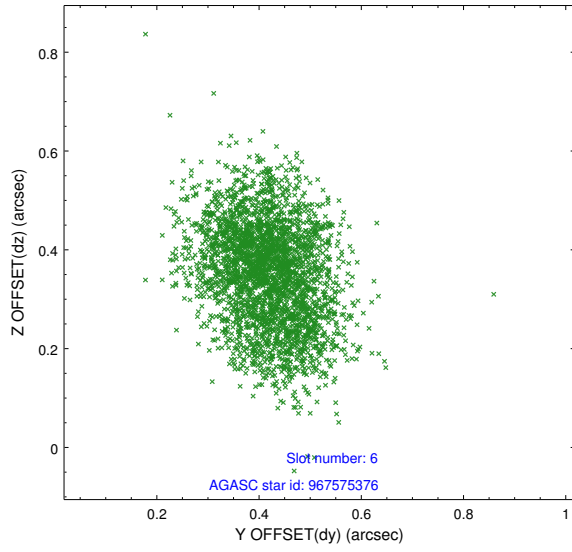


### 2.4.3 Slot 5

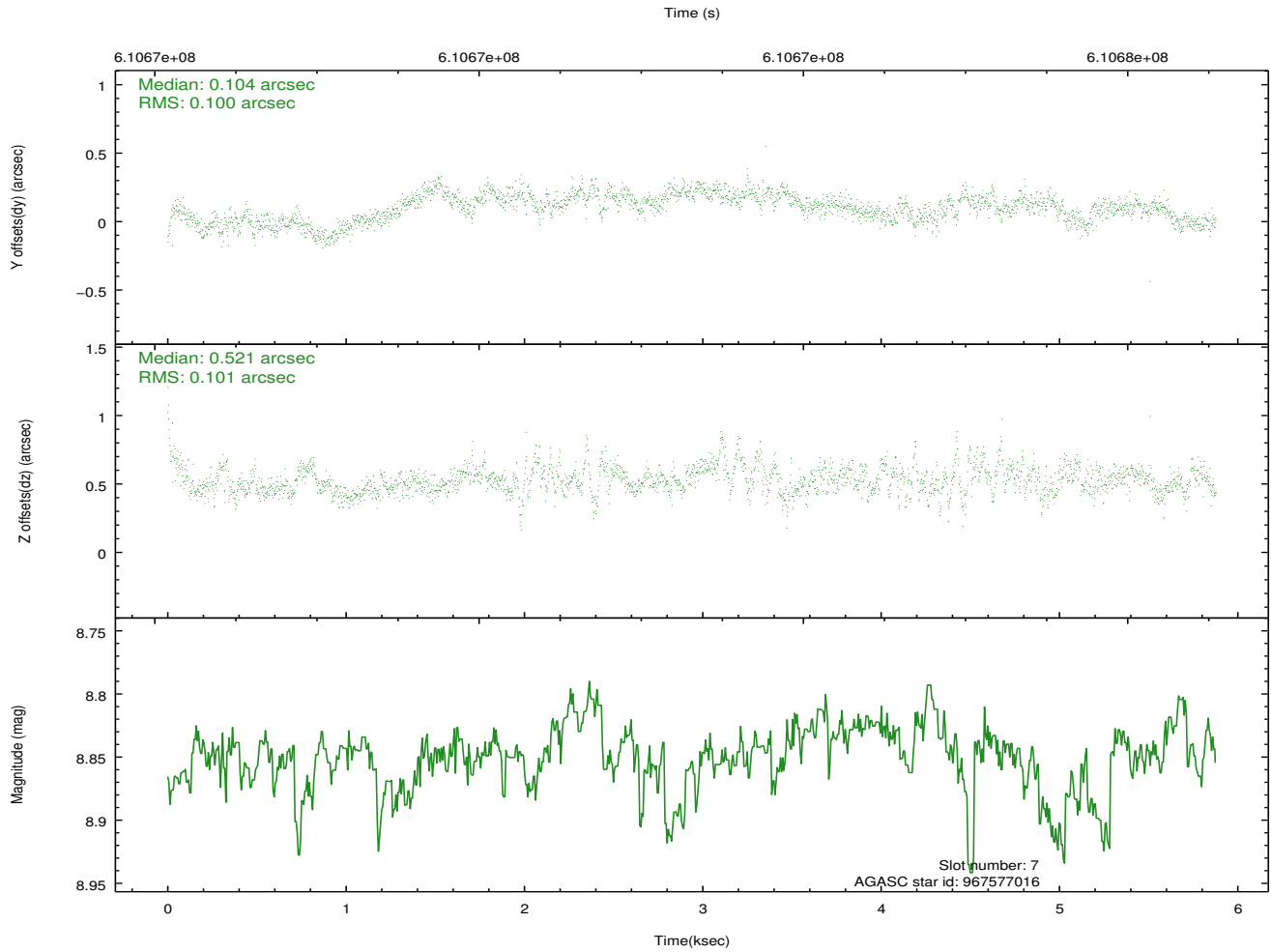
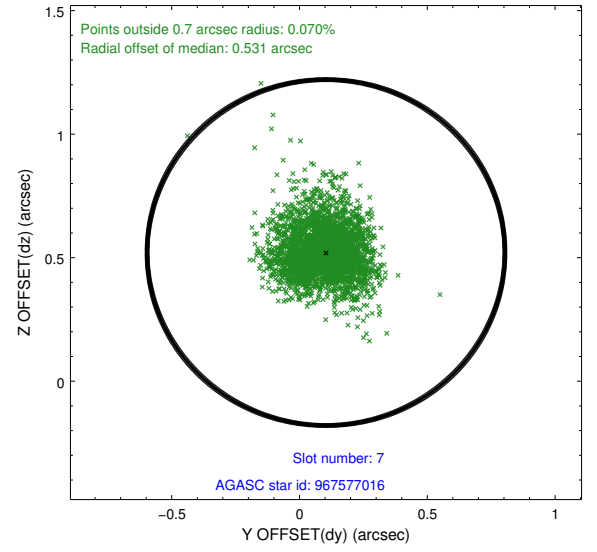
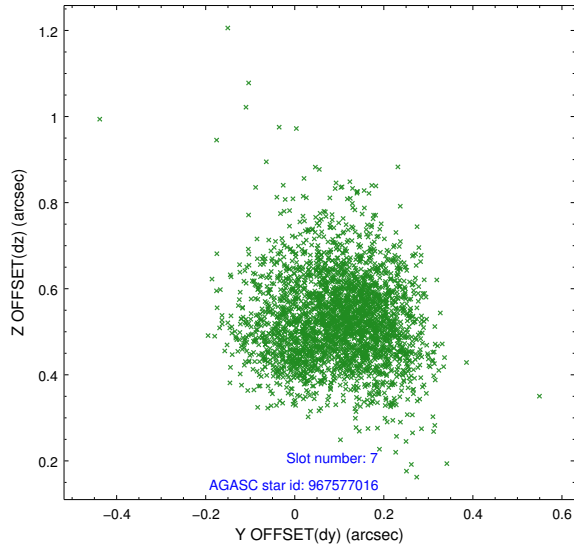




## 2.4.4 Slot 6

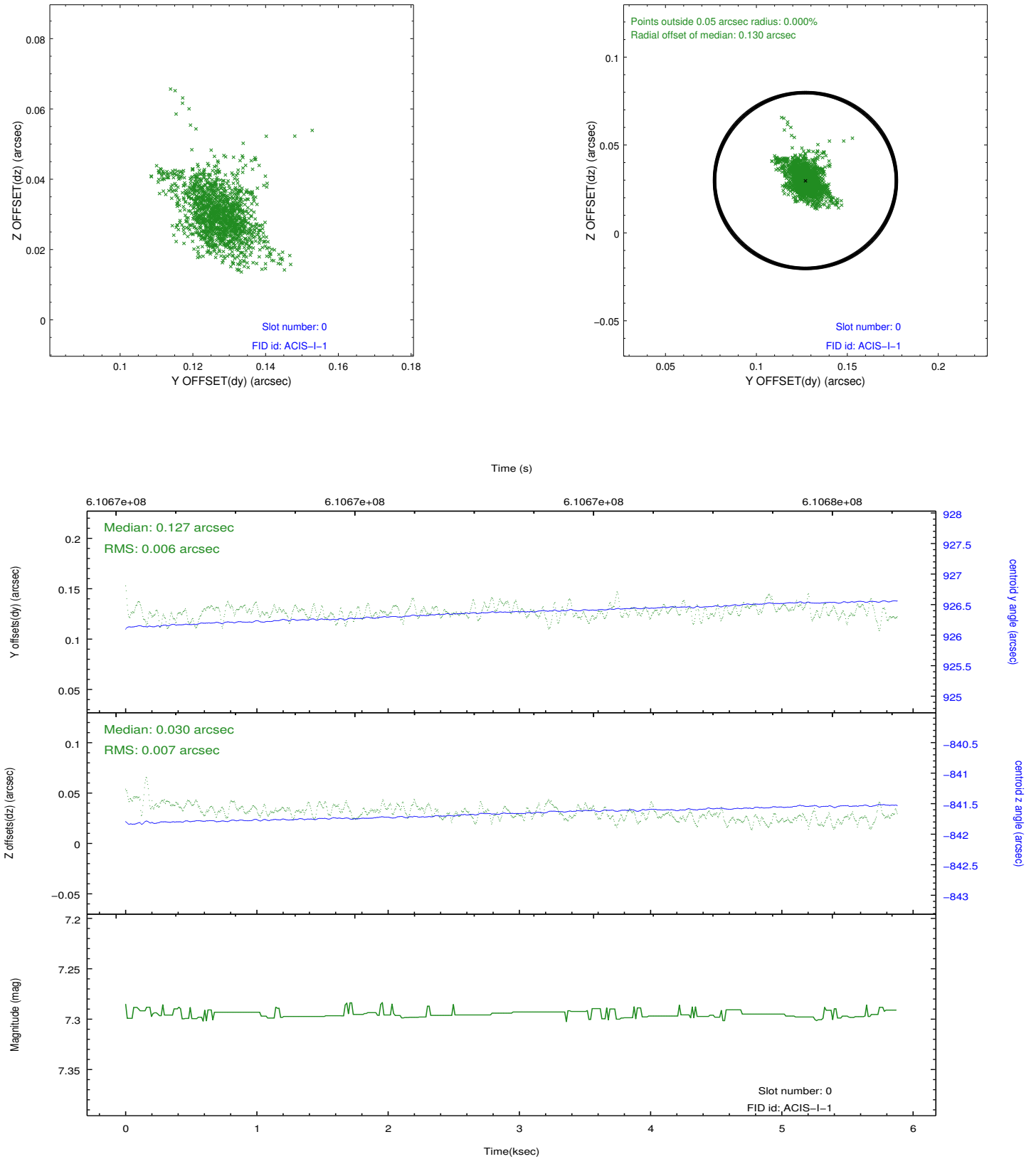


## 2.4.5 Slot 7

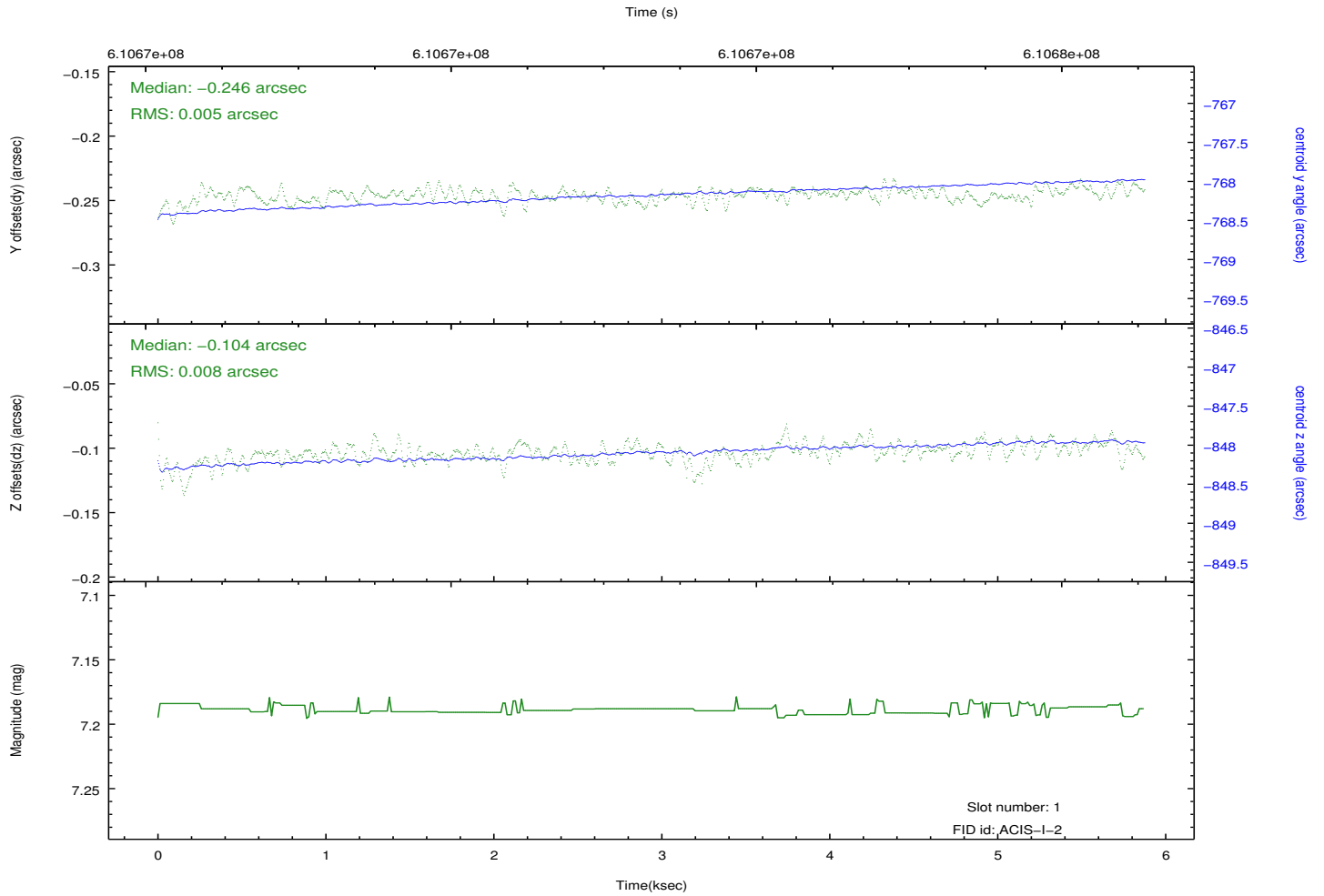
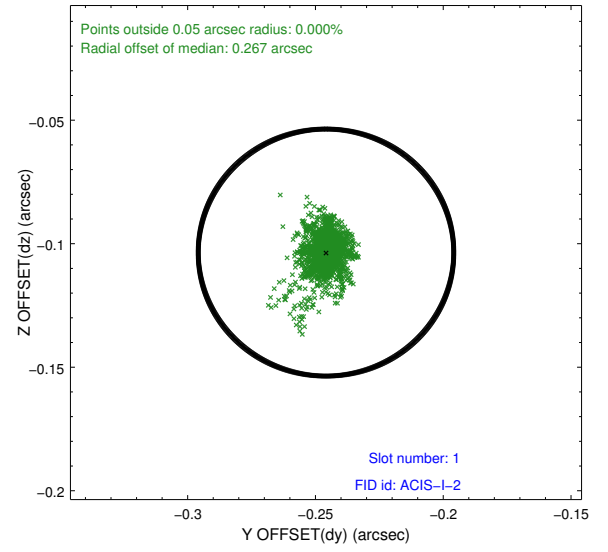
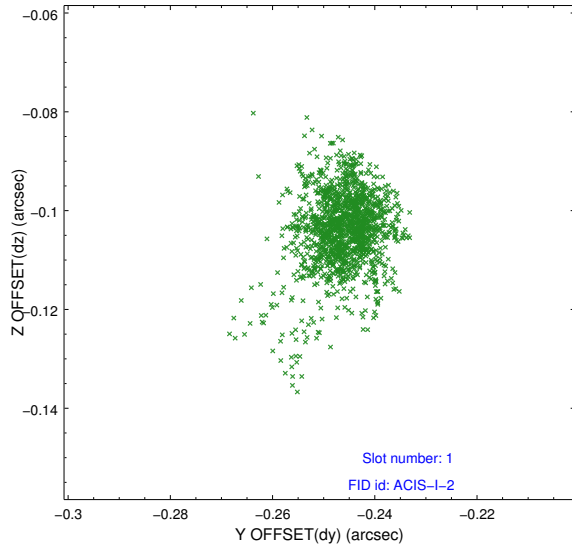


## 2.5 FID Slots

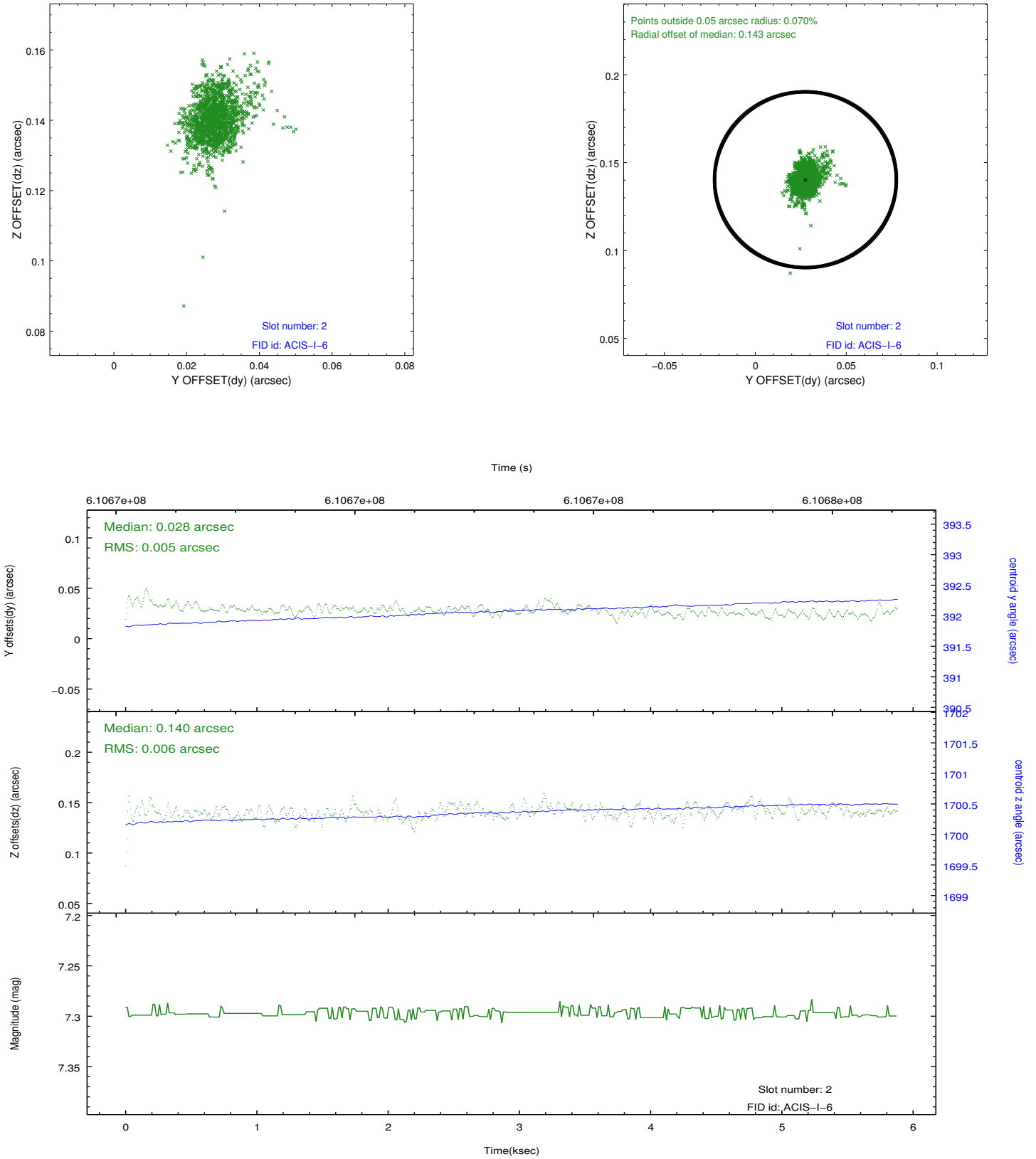
### 2.5.1 Slot 0



## 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	5.0778000391722

## 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](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.