

# V&V Reference Report

## L2 ASCDS Version : 10.5.2

Observation 18992 - L2 Version 1  
Chandra X-Ray Center

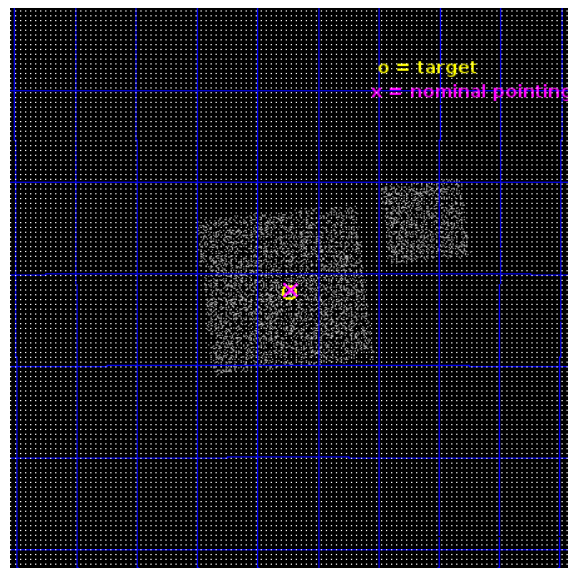
L2 Processing Date : Apr 5 2017

## Contents

<b>1</b>	<b>Front</b>	<b>2</b>
<b>2</b>	<b>OBI</b>	<b>3</b>
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
<b>A</b>	<b>Summary</b>	<b>17</b>
A.1	Status . . . . .	17
A.2	Comments . . . . .	17

# 1 Front

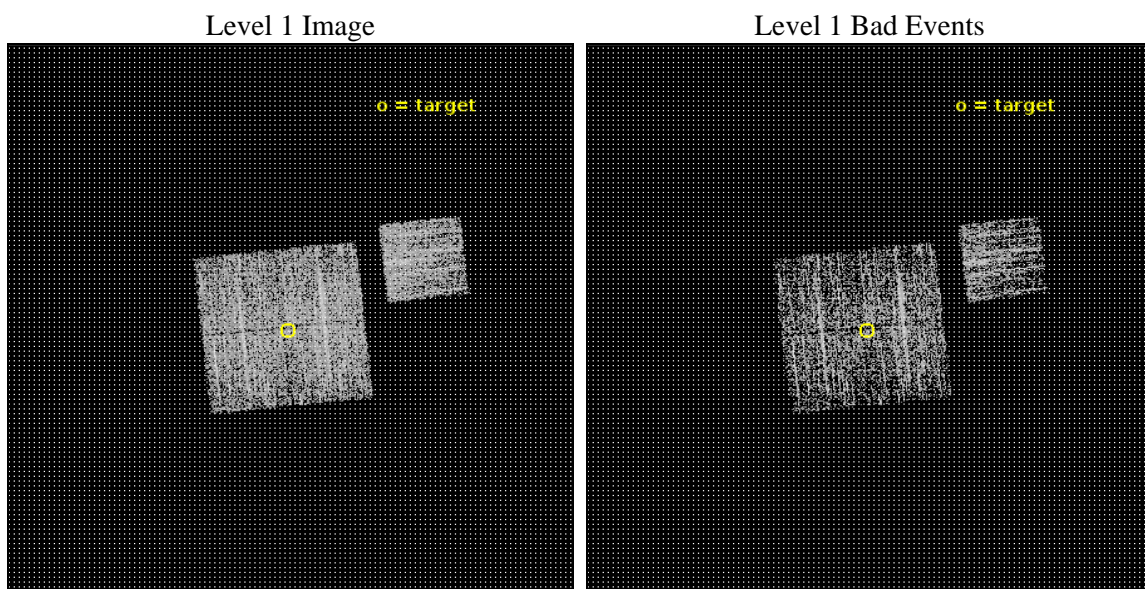
seq_num	401860	Sequence number
obs_id	18992	Observation id
title	Accurate localization of hard X-ray sources in the Galactic Center region. Search for HMXBs in the bulge	Proposal title
observer	Alexander Lutovinov	Principal investigator
object	IGR J17315-3221	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	262.8075	Observer's specified target RA [deg]
dec_targ	-32.368972	Observer's specified target Dec [deg]
ra_nom	262.80473488393	Nominal RA [deg]
dec_nom	-32.362804235704	Nominal Dec [deg]
roll_nom	83.774335971594	Nominal Roll [deg]
revision	1	Processing version of data
ontime	1555.643756628	Sum of GTIs [s]
livetime	1535.3181256994	Livetime [s]
ontime0	1555.5206366777	Sum of GTIs [s]
ontime1	1555.5616766214	Sum of GTIs [s]
ontime2	1555.6027166843	Sum of GTIs [s]
ontime3	1555.643756628	Sum of GTIs [s]
ontime6	1555.4795966148	Sum of GTIs [s]
l2events	5484	Number of level 2 events



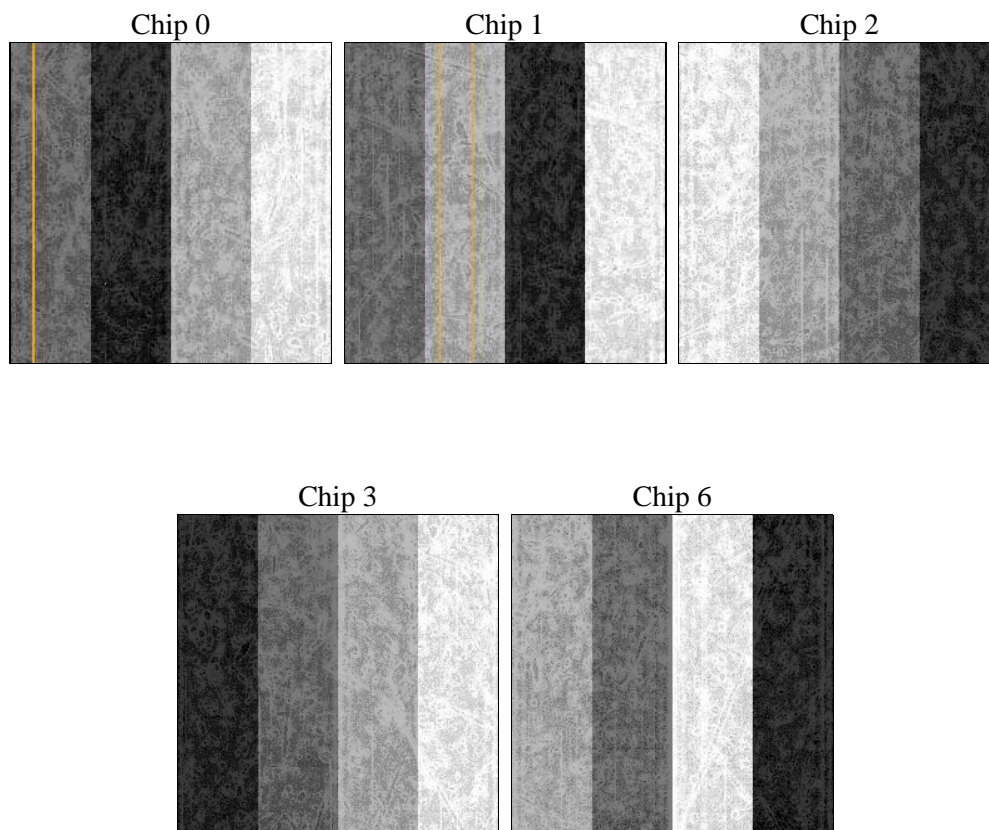
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	1500.124000	[s] Scheduled observation exposure time
ascdsver	10.5.2	Processing system revision	ontime	1555.643756628	Sum of GTIs [s]
caldsver	4.7.3	&#160	ontime0	1555.5206366777	Sum of GTIs [s]
date	2017-04-05T06:19:57	Date and time of file creation	ontime1	1555.5616766214	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	1555.6027166843	Sum of GTIs [s]
			ontime3	1555.643756628	Sum of GTIs [s]
			ontime6	1555.4795966148	Sum of GTIs [s]
			l1events	55659	Number of level 1 events

### 2.1.4 Events

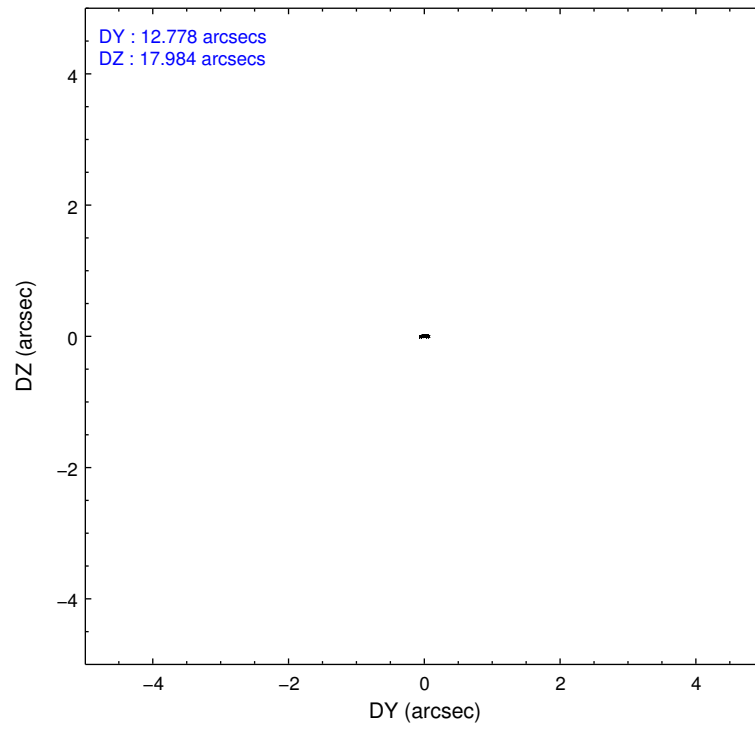
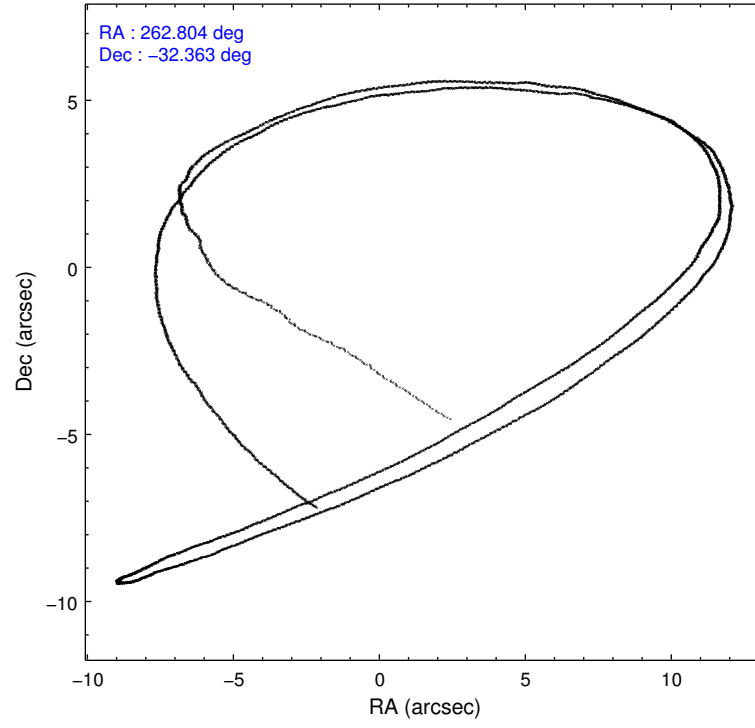
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
level 1 events	10164	10774	11703	11212	11806
rejected events	8942	9389	10497	9950	10530
rejected %	87%	87%	89%	88%	89%

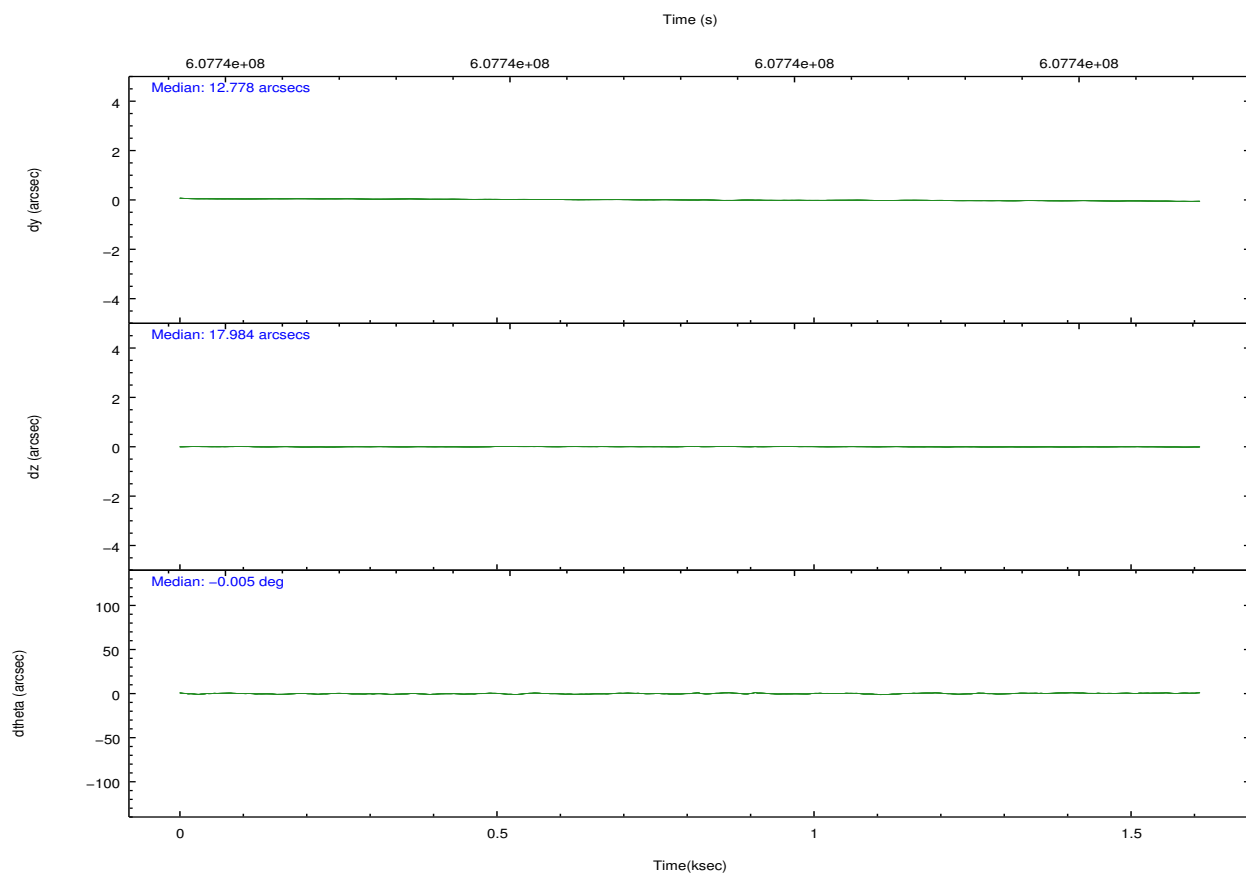
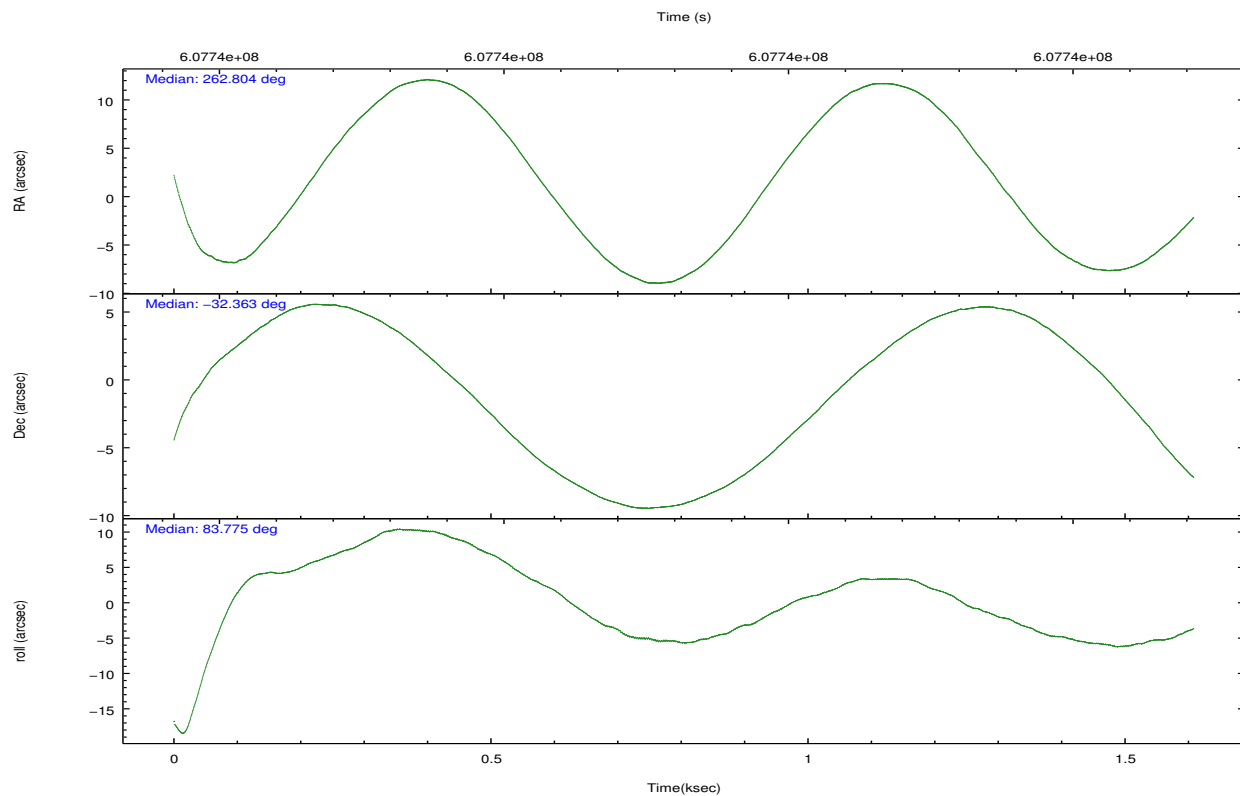
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6
grade 0 events	422	449	453	515	417
	4%	4%	3%	4%	3%
grade 1 events	8	5	8	6	5
	0%	0%	0%	0%	0%
grade 2 events	299	324	269	269	345
	2%	3%	2%	2%	2%
grade 3 events	116	112	113	121	119
	1%	1%	0%	1%	1%
grade 4 events	112	135	132	109	118
	1%	1%	1%	0%	0%
grade 5 events	458	447	431	496	412
	4%	4%	3%	4%	3%
grade 6 events	276	370	244	254	282
	2%	3%	2%	2%	2%
grade 7 events	8473	8932	10053	9442	10108
	83%	82%	85%	84%	85%

## 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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	262.818193	262.8047348839311	Subarray requested	NONE	NONE
[deg] Pointing Dec	-32.388447	-32.36280423570447	Alternating exposures requested	N	N
[deg] Pointing Roll	83.573123	83.77433597159416	[s] Primary exposure time	0.000000	3.1
[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)	607738131.184000	607737013.2590801			
Observation start date	2017-04-05T00:07:42	2017-04-04T23:50:13			
[s] Observation end time (MET)	607739631.184000	607739867.88425			
Observation end date	2017-04-05T00:32:42	2017-04-05T00:37:47			
Read mode	TIMED	TIMED			

## 2.3 Aspect





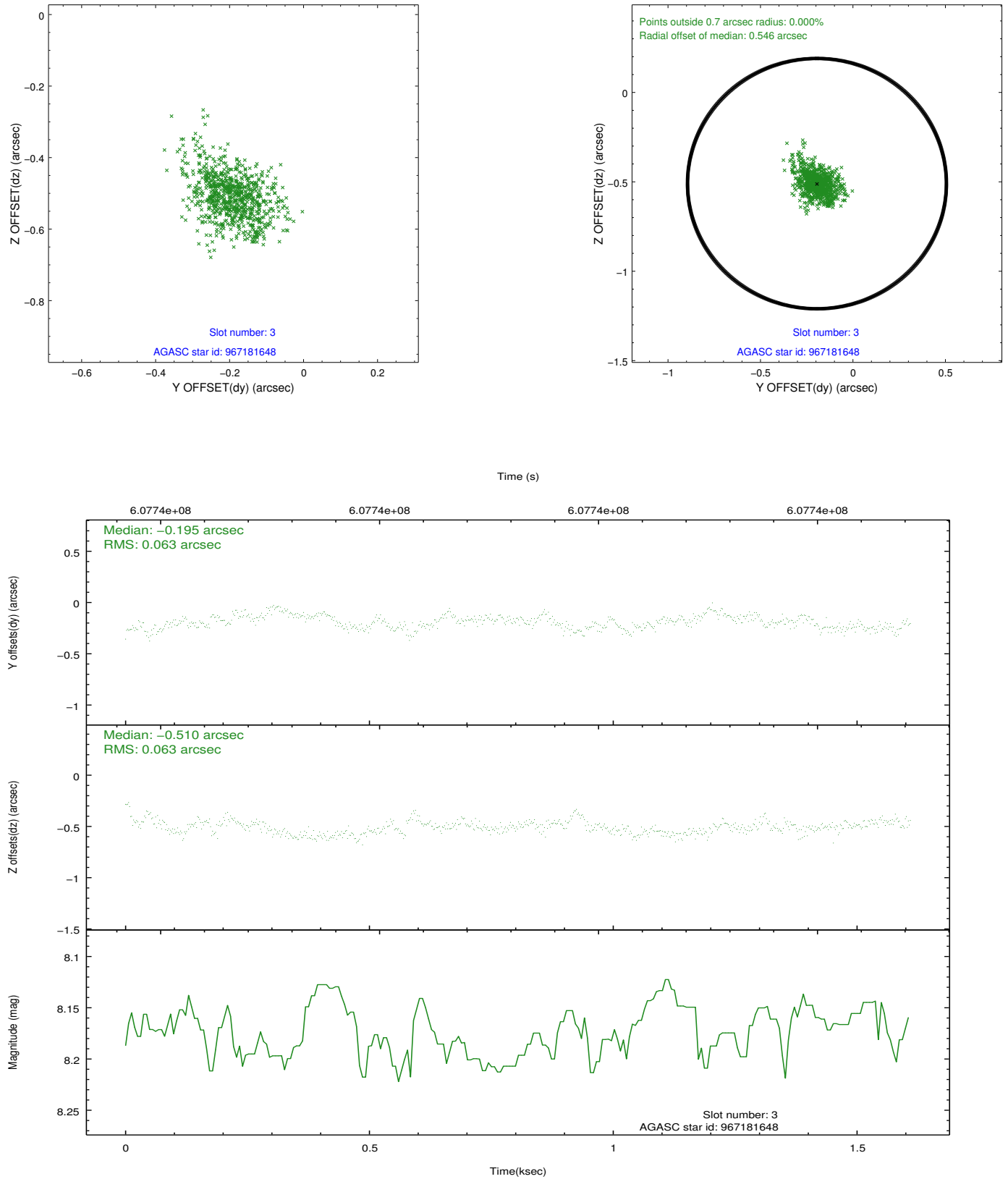
### Slot Statistics

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	393	0.071	-0.031	0.006	0.011	0.000000	0.000000	926.85	-841.65
1	FID		ACIS-I-5	7.31	393	-0.342	0.037	0.006	0.010	0.000000	0.000000	-1819.49	1053.71
2	FID		ACIS-I-6	7.30	393	0.180	0.065	0.006	0.012	0.000000	0.000000	387.92	1702.99
3	GUIDE	used	967181648	8.17	786	-0.195	-0.510	0.093	0.157	262.667514	-32.061716	1115.62	587.36
4	GUIDE	used	967183704	8.08	786	0.233	-0.200	0.200	0.276	262.631346	-32.929139	-1997.54	343.12
5	GUIDE	used	967313720	7.61	786	0.465	0.539	0.067	0.113	263.275073	-33.057791	-2246.50	-1639.60
6	GUIDE	used	967314424	8.98	785	0.013	0.428	0.093	0.164	263.423015	-31.957273	1740.03	-1664.89
7	GUIDE	used	966662640	8.82	783	-0.514	-0.301	0.146	0.235	262.547667	-31.698400	2375.23	1098.43

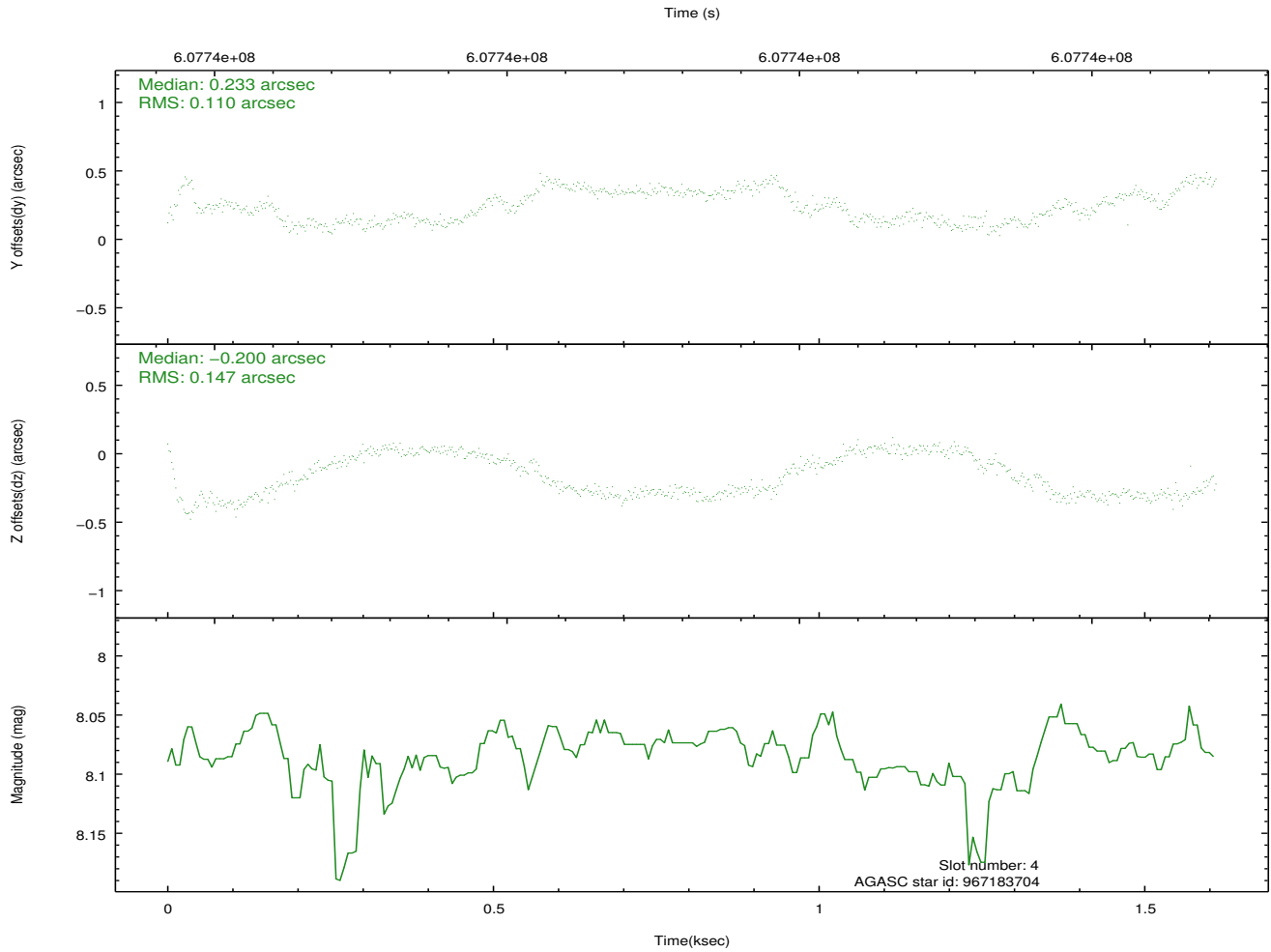
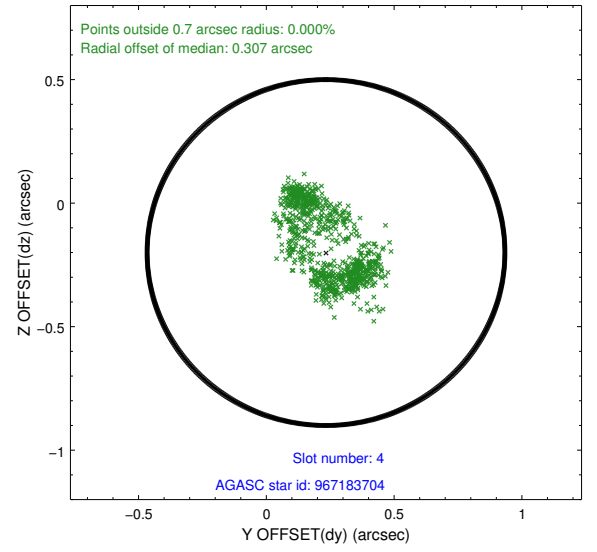
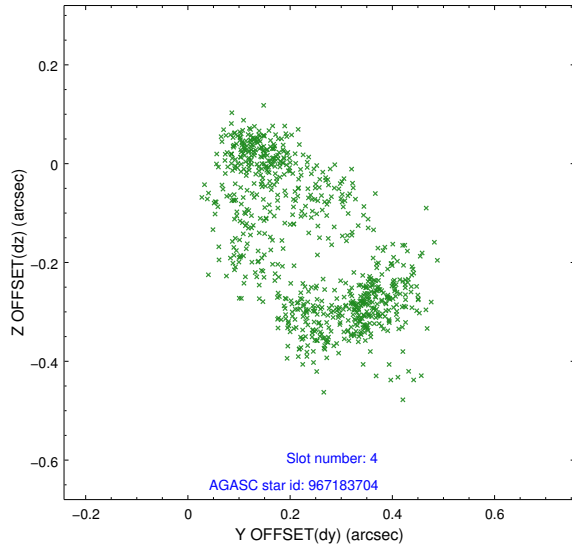


## 2.4 Star Slots

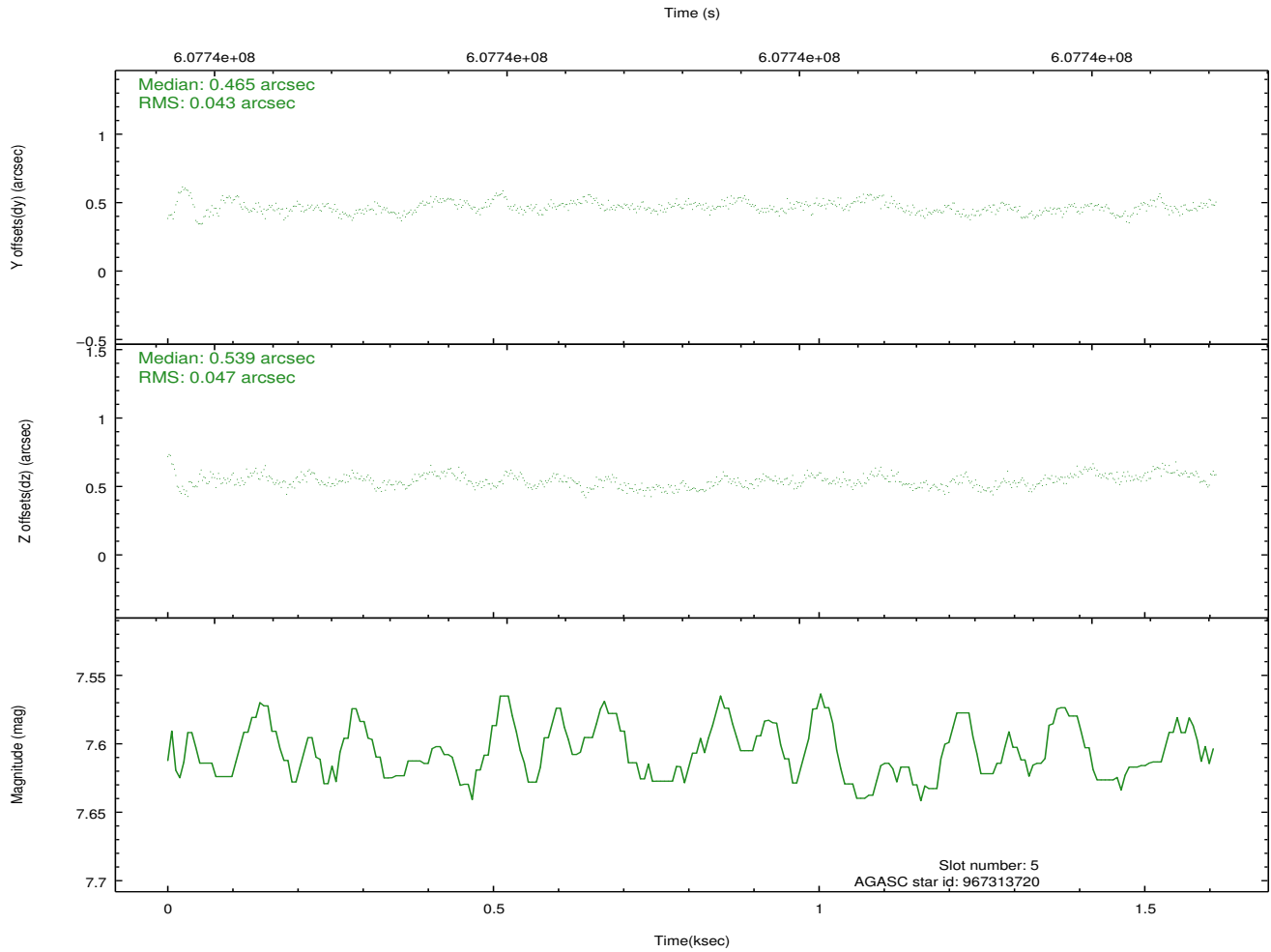
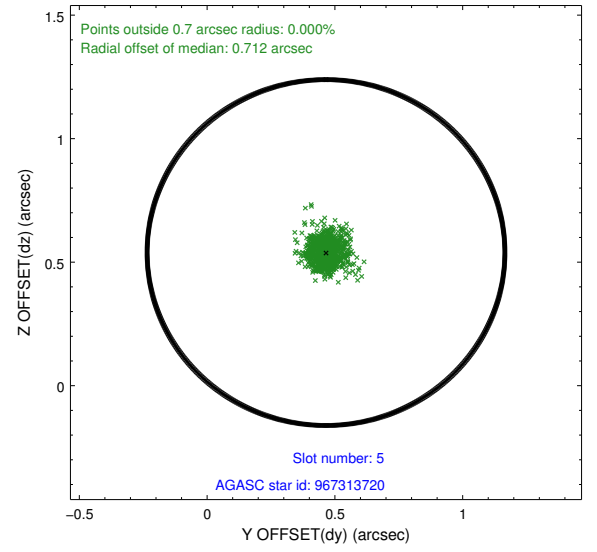
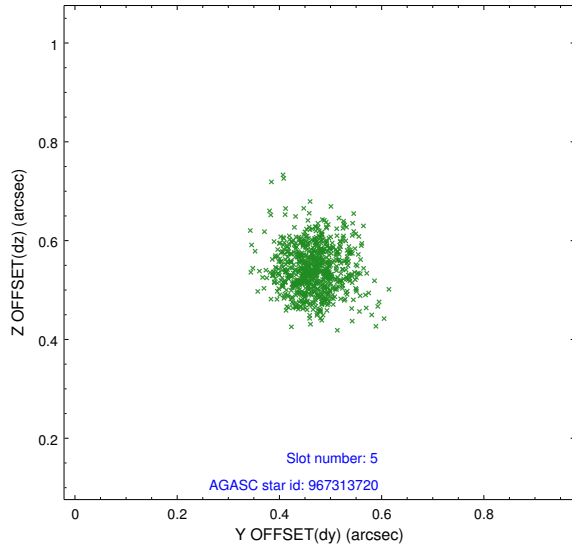
### 2.4.1 Slot 3



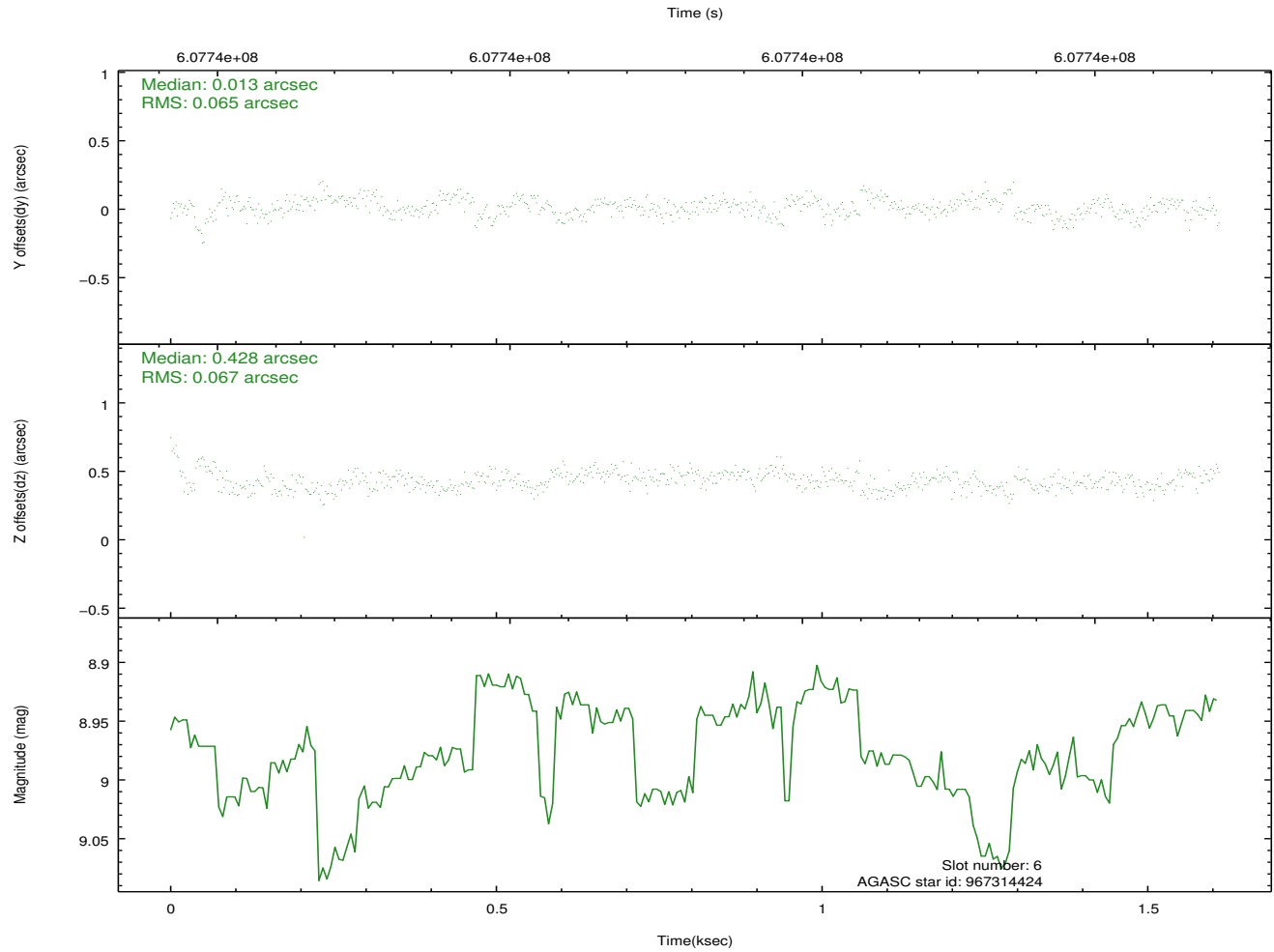
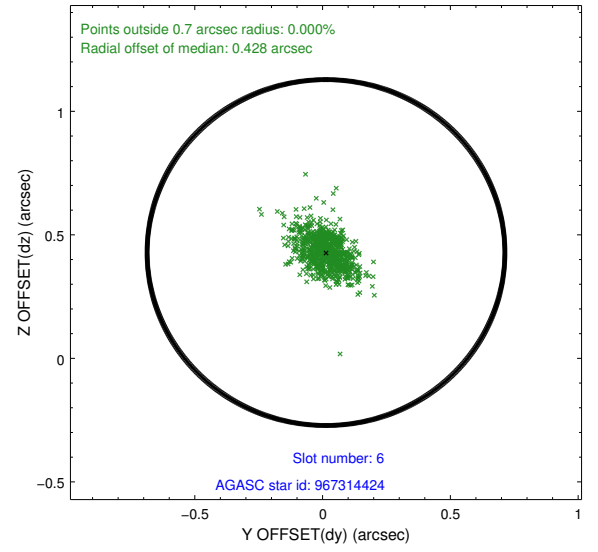
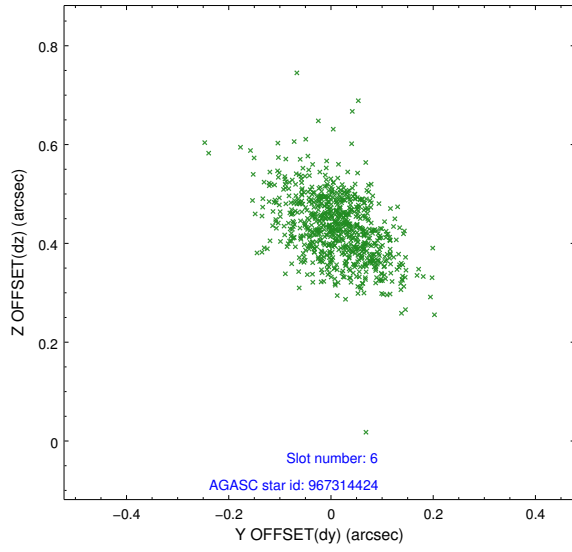
## 2.4.2 Slot 4



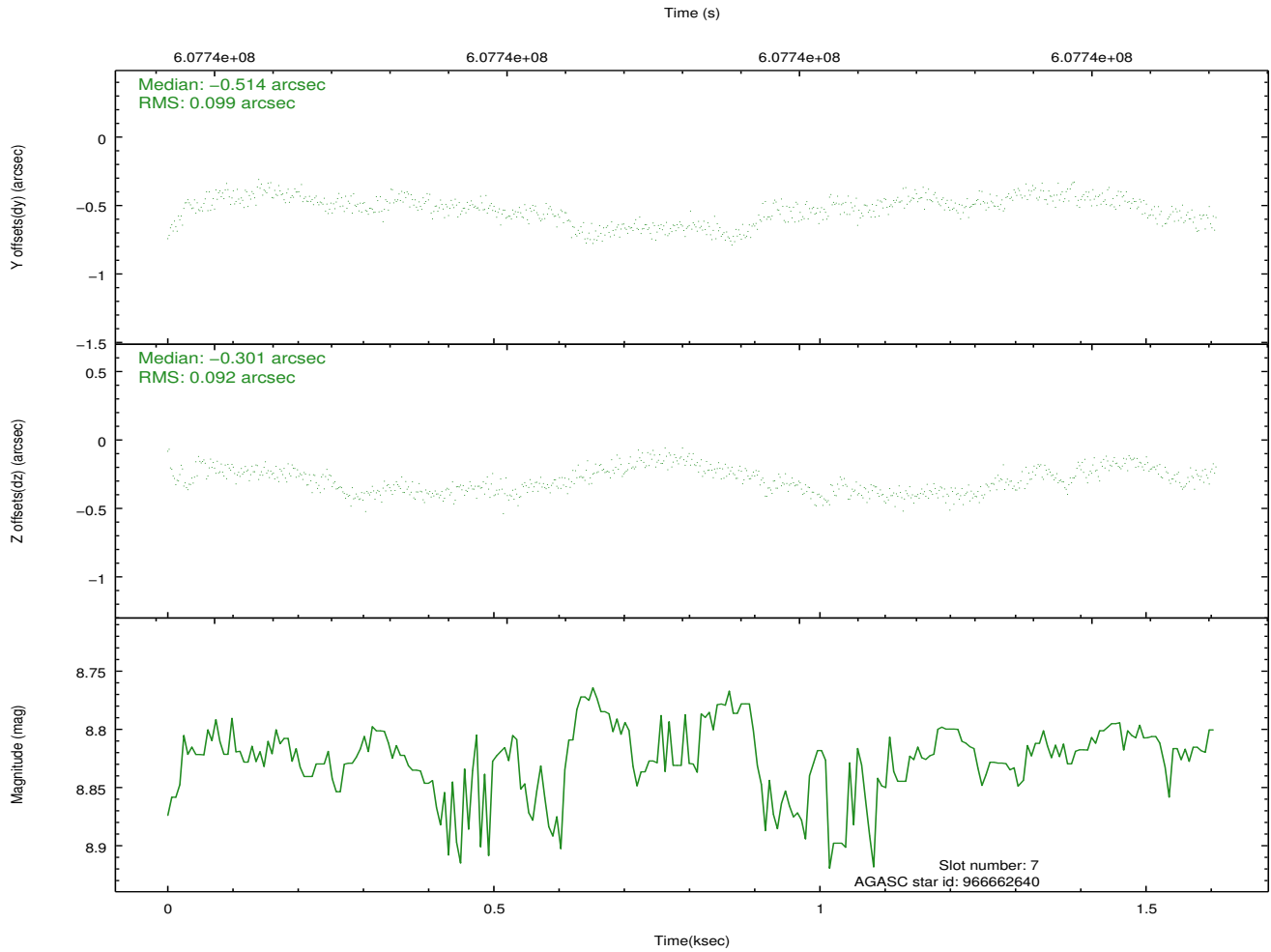
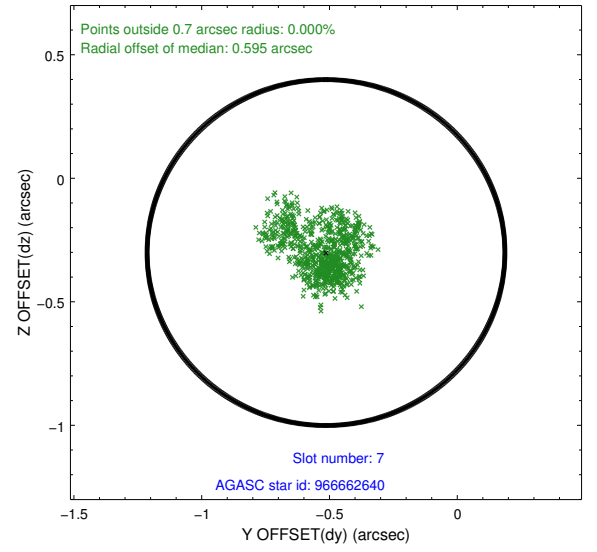
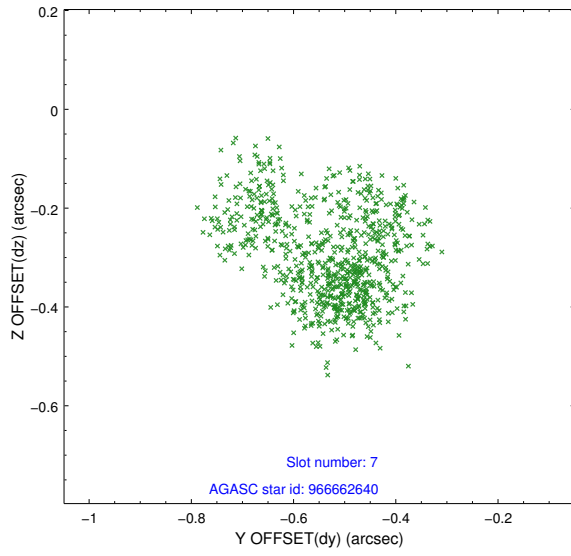
### 2.4.3 Slot 5



## 2.4.4 Slot 6

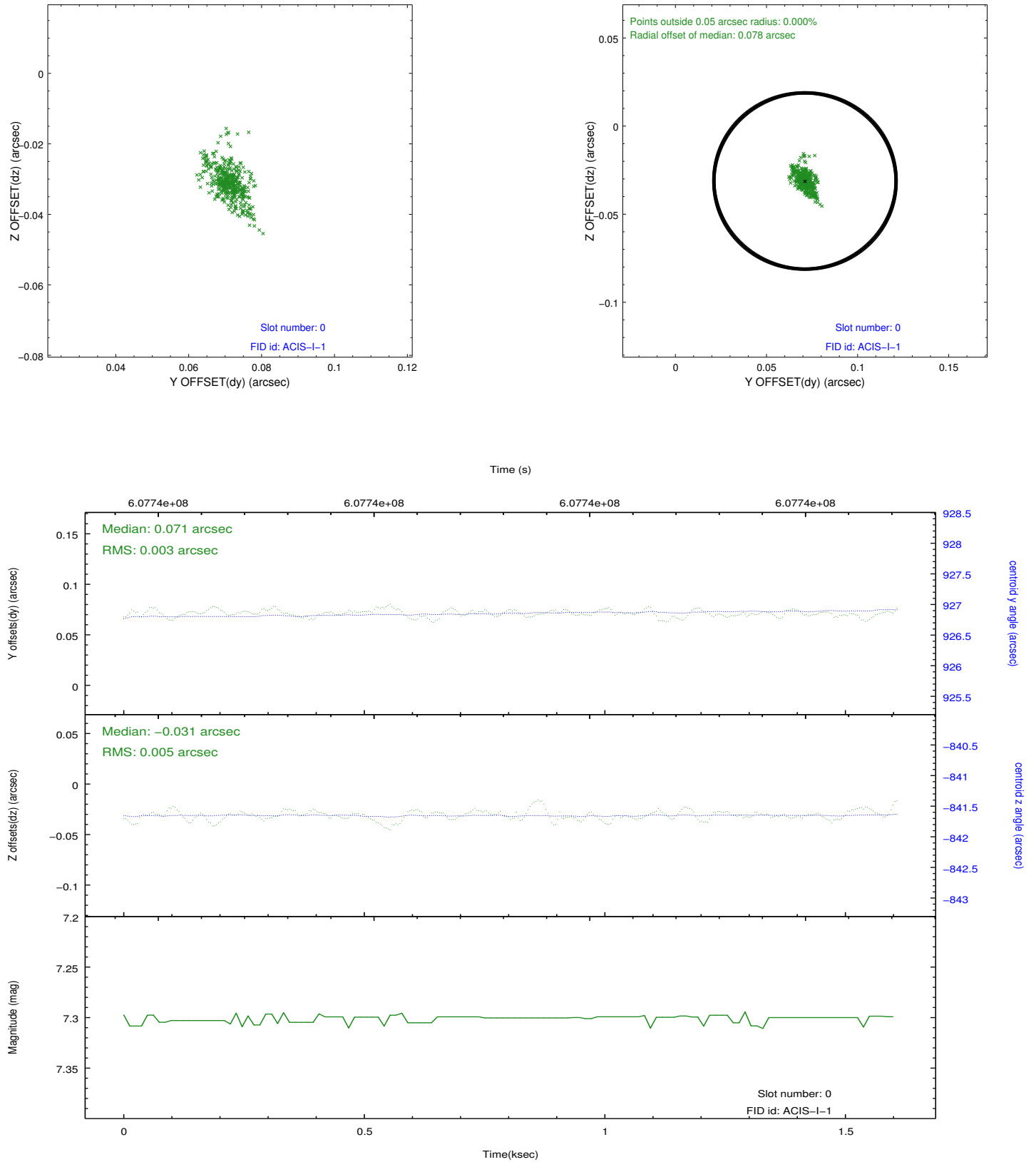


## 2.4.5 Slot 7

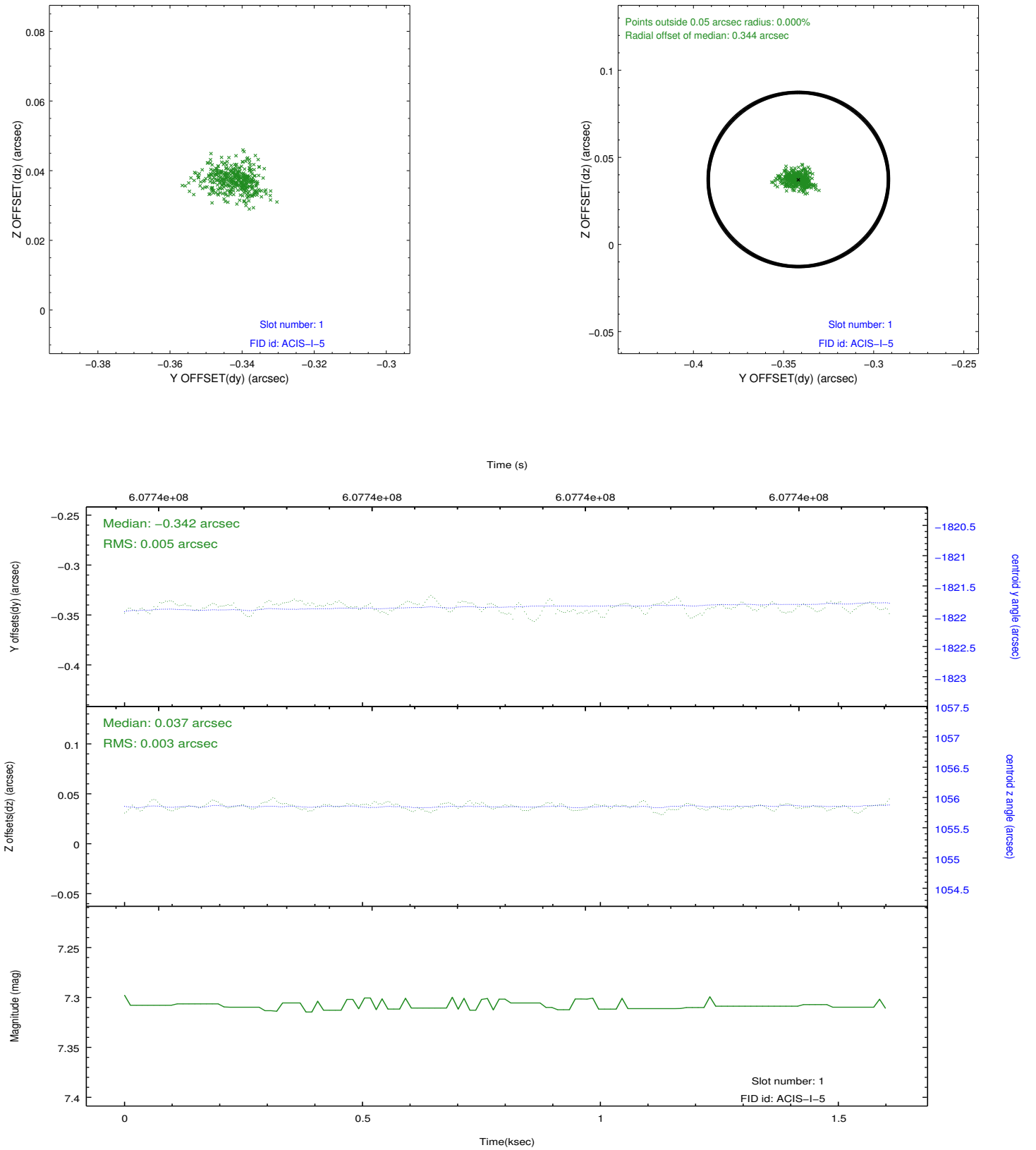


## 2.5 FID Slots

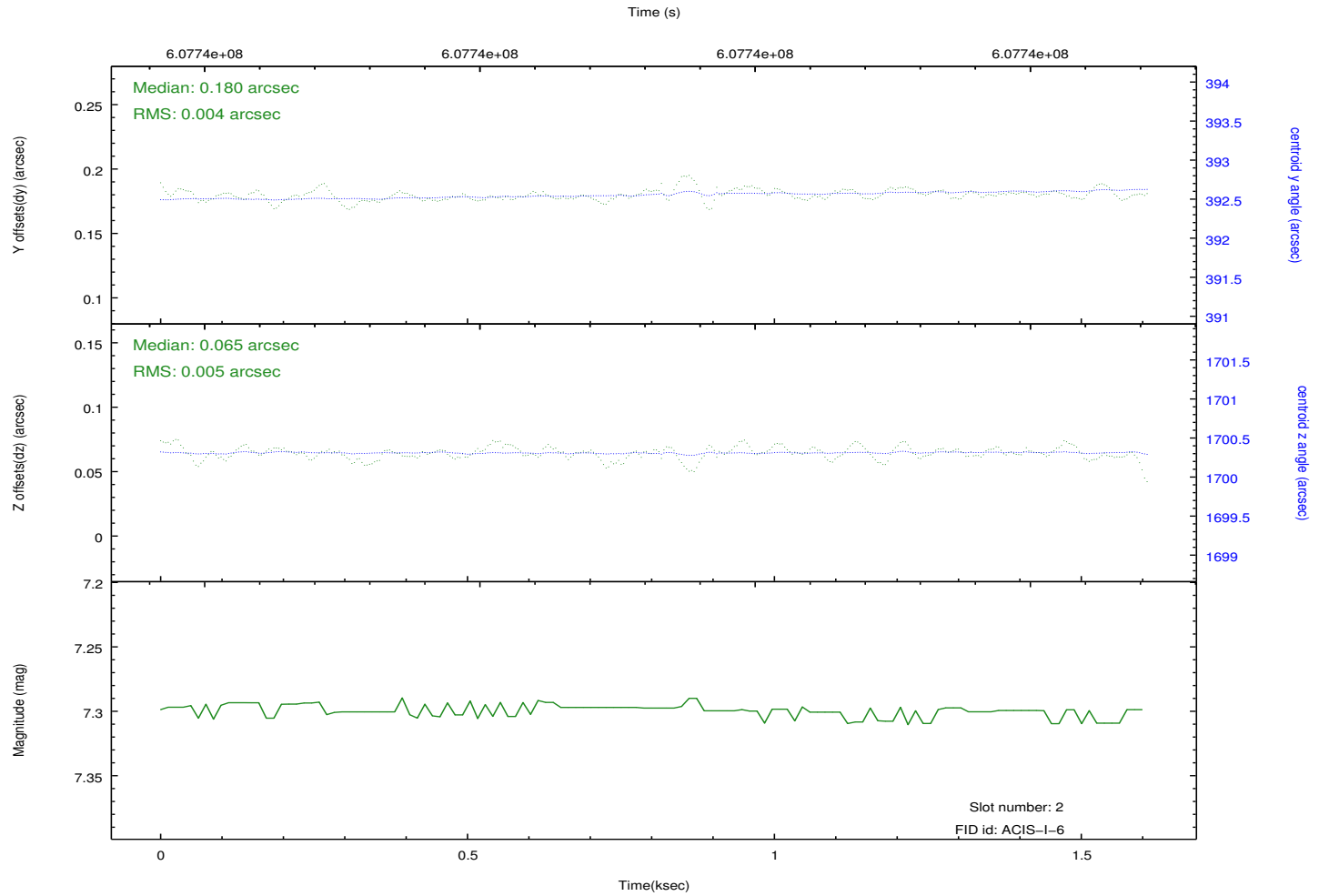
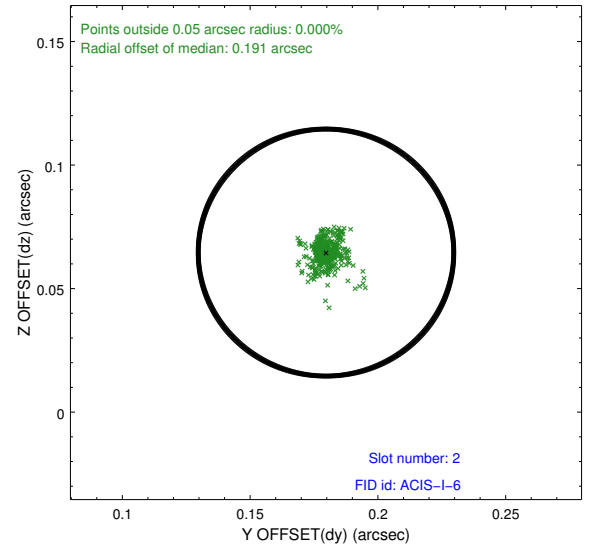
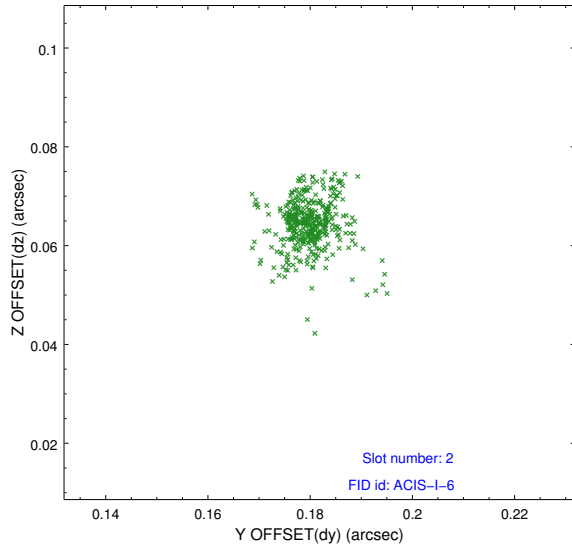
### 2.5.1 Slot 0



## 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	1.555643756628

## 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.