

# V&V Reference Report

## L2 ASCDS Version : 10.6

Observation 18981 - L2 Version 2  
Chandra X-Ray Center

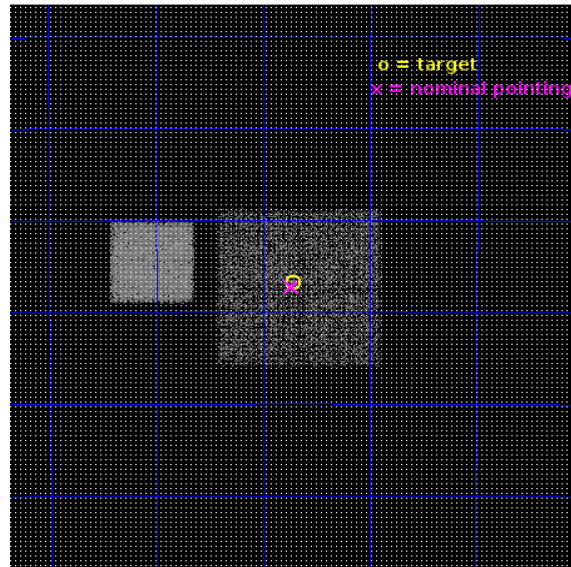
L2 Processing Date : Aug 28 2017

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# 1 Front

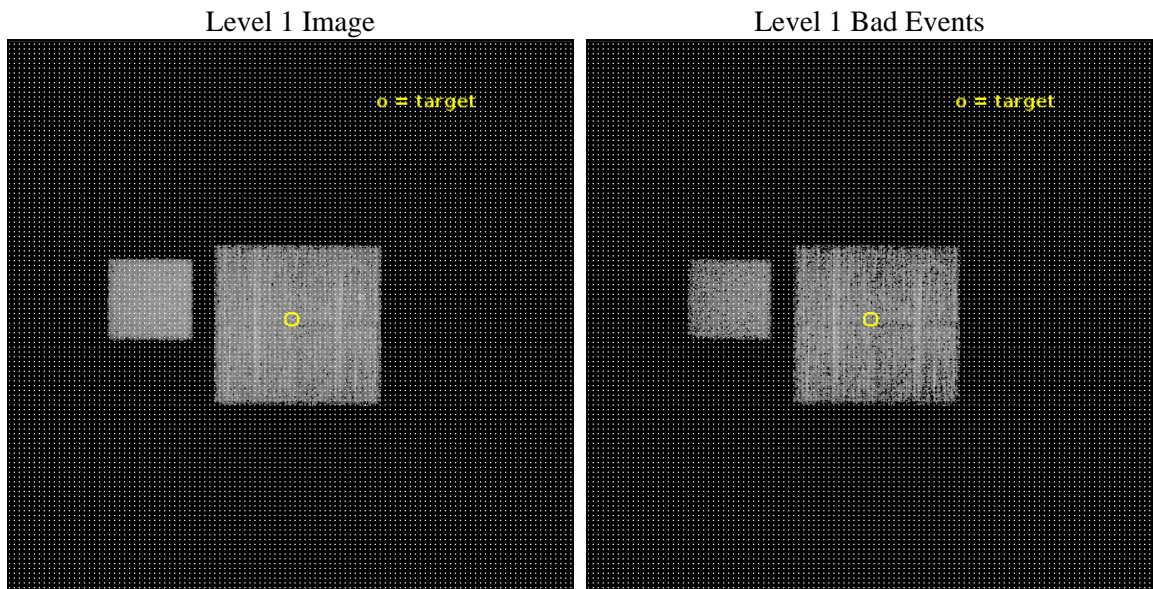
seq_num	401849	Sequence number
obs_id	18981	Observation id
title	The Nature of INTEGRAL Sources in the Galactic Plane	Proposal titl
observer	John Tomsick	Principal investigator
object	IGR J18007-4146	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	270.177917	Observer's specified target RA [deg]
dec_targ	-41.780278	Observer's specified target Dec [deg]
ra_nom	270.18357760652	Nominal RA [deg]
dec_nom	-41.787920911286	Nominal Dec [deg]
roll_nom	270.21260922981	Nominal Roll [deg]
revision	2	Processing version of data
ontime	5059.2000390291	Sum of GTIs [s]
livetime	4993.0978659903	Livetime [s]
ontime0	5059.2000390291	Sum of GTIs [s]
ontime1	5059.2000390291	Sum of GTIs [s]
ontime2	5059.2000390291	Sum of GTIs [s]
ontime3	5059.2000390291	Sum of GTIs [s]
ontime7	5059.2000390291	Sum of GTIs [s]
l2events	31183	Number of level 2 events



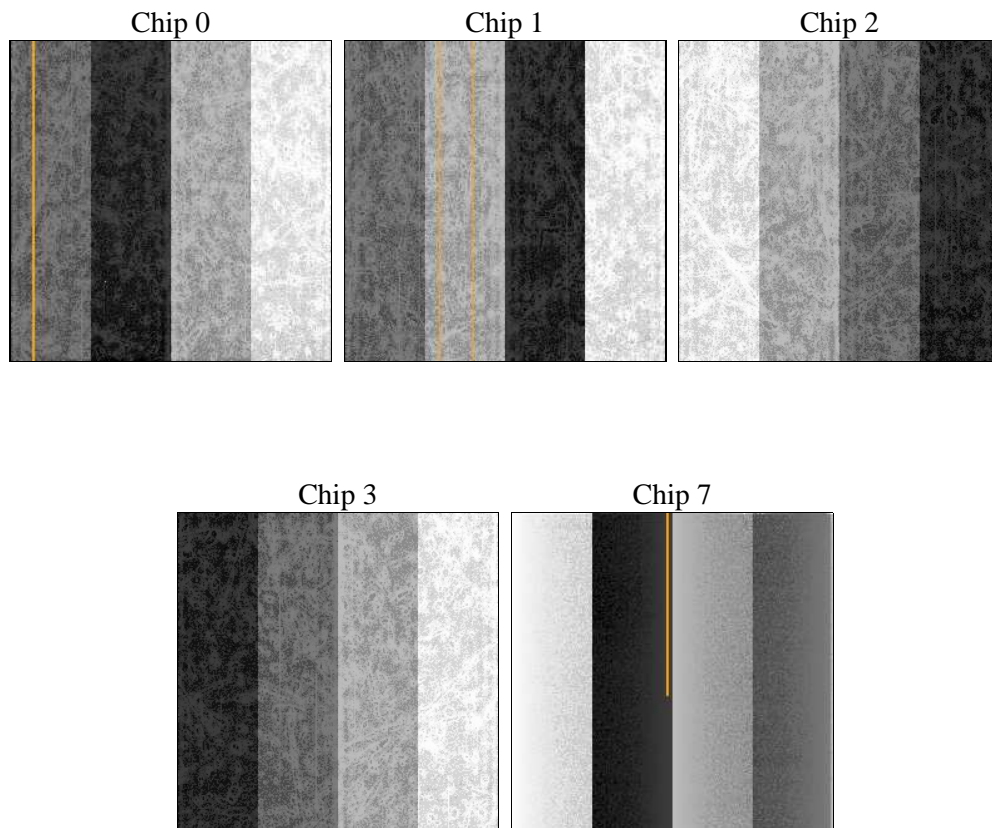
## 2 OBI

### 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	10.6	Processing system revision	ontime	5059.2000390291	Sum of GTIs [s]
caldsver	4.7.6	&#160	ontime0	5059.2000390291	Sum of GTIs [s]
date	2017-08-28T20:25:17	Date and time of file creation	ontime1	5059.2000390291	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	5059.2000390291	Sum of GTIs [s]
			ontime3	5059.2000390291	Sum of GTIs [s]
			ontime7	5059.2000390291	Sum of GTIs [s]
			l1events	176324	Number of level 1 events

### 2.1.4 Events

	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
level 1 events	30310	32099	35133	34657	44125
rejected events	26598	27713	31602	30502	25574
rejected %	87%	86%	89%	88%	57%

	ccd 0	ccd 1	ccd 2	ccd 3	ccd 7
grade 0 events	1282	1715	1300	1679	1533
	4%	5%	3%	4%	3%
grade 1 events	17	12	9	37	76
	0%	0%	0%	0%	0%
grade 2 events	917	984	818	863	3812
	3%	3%	2%	2%	8%
grade 3 events	358	353	355	376	1462
	1%	1%	1%	1%	3%
grade 4 events	360	340	385	394	1452
	1%	1%	1%	1%	3%
grade 5 events	1321	1380	1318	1538	4262
	4%	4%	3%	4%	9%
grade 6 events	797	995	675	843	10303
	2%	3%	1%	2%	23%
grade 7 events	25258	26320	30273	28927	21225
	83%	81%	86%	83%	48%

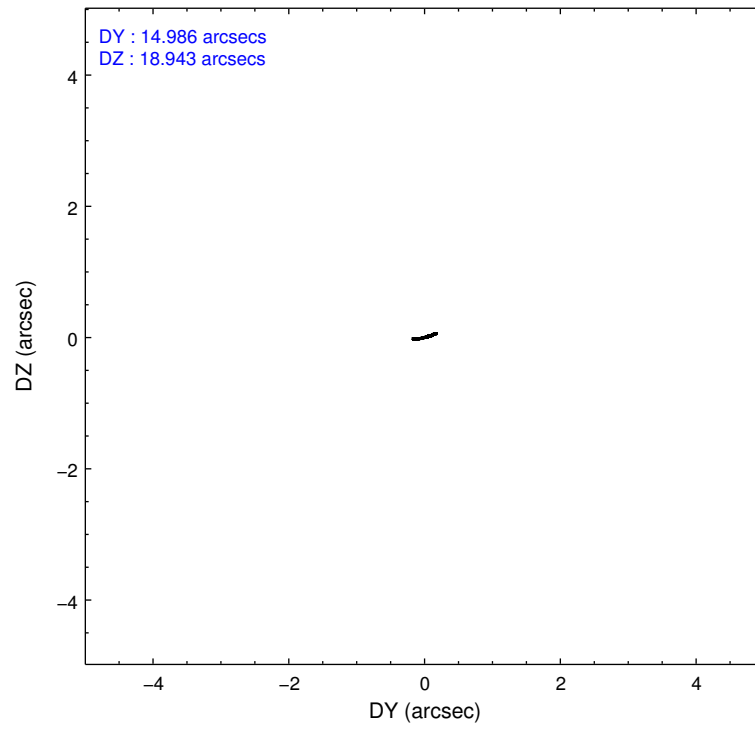
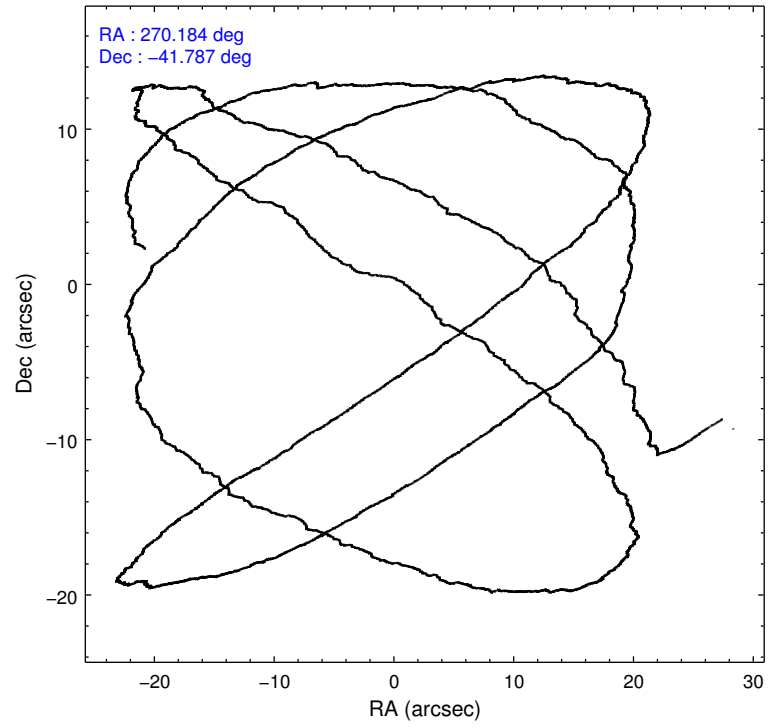


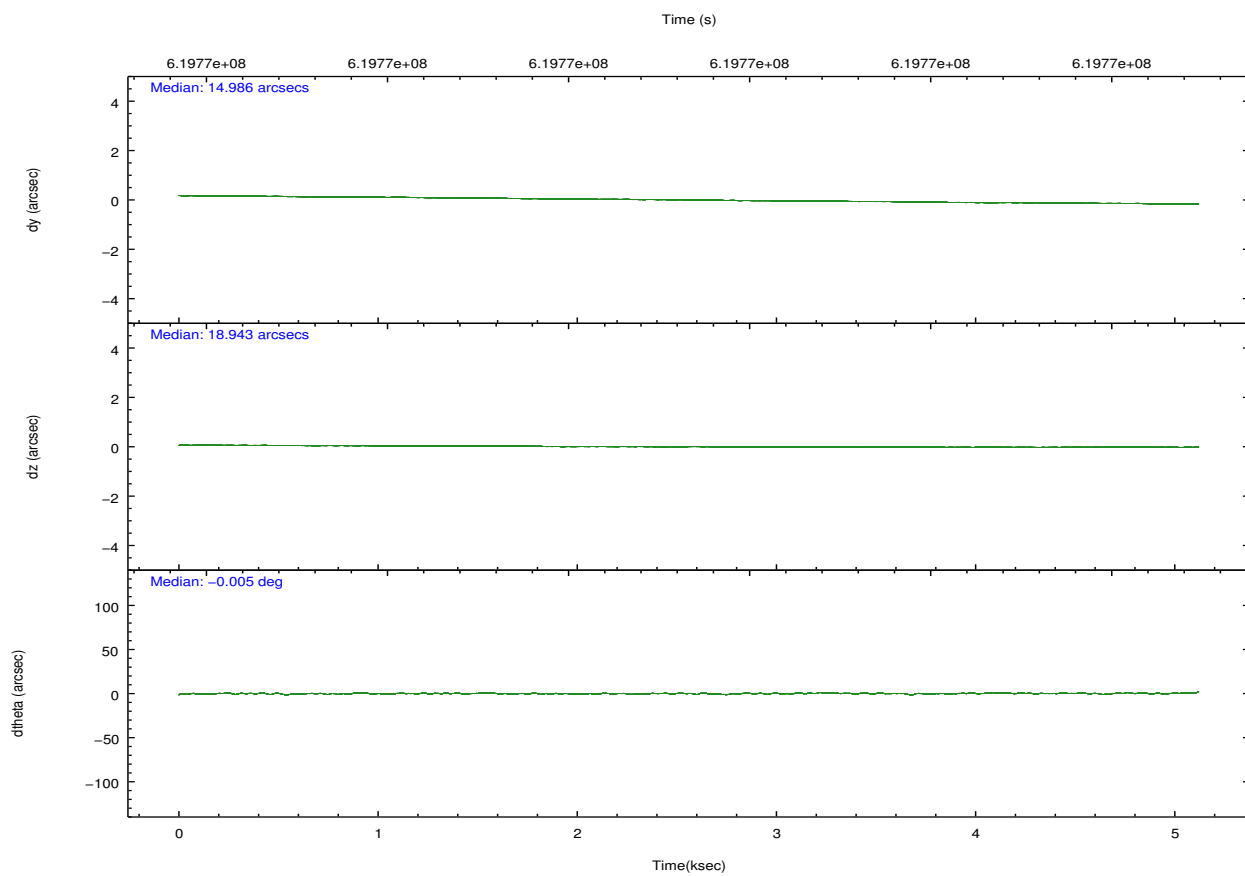
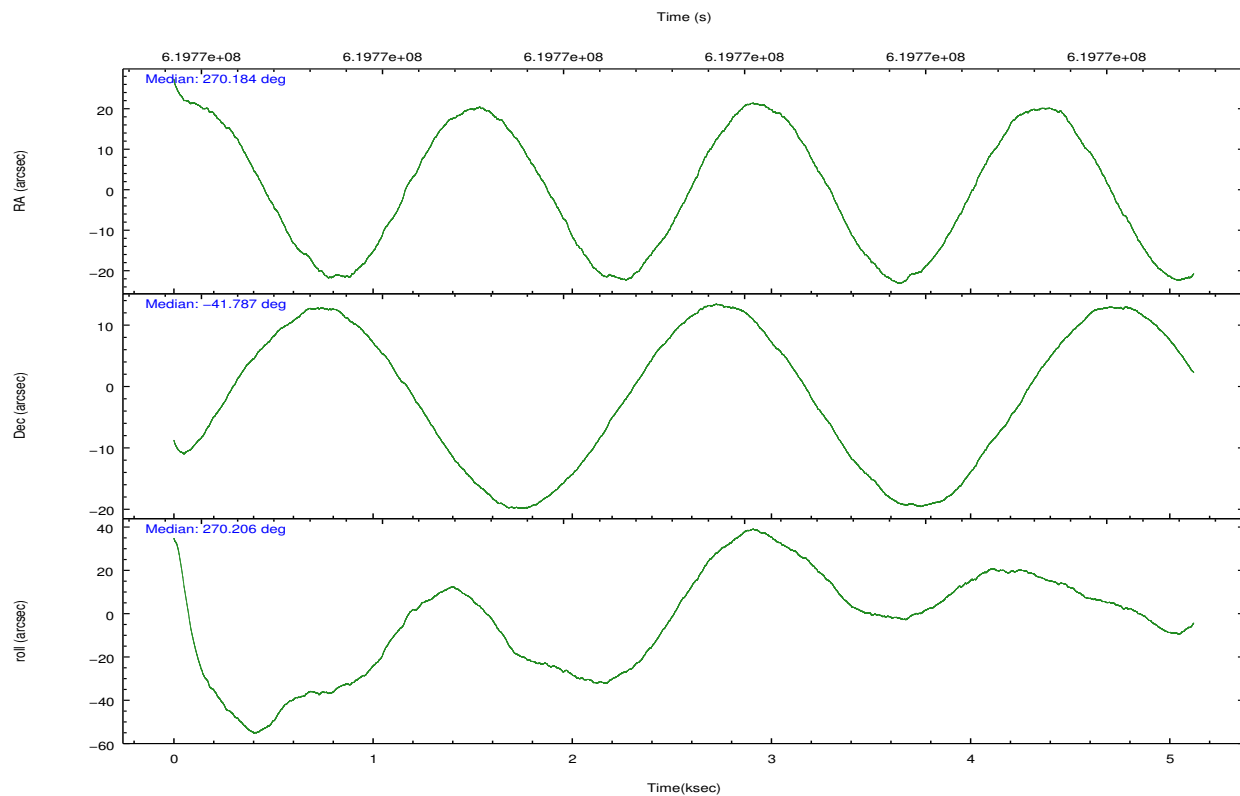
## 2.2 Compared Parameters

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	270.164740	270.1835776065245
[deg] Pointing Dec	-41.764588	-41.78792091128593
[deg] Pointing Roll	269.991224	270.212609229814
[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)	619767239.184000	619766089.5470999
Observation start date	2017-08-22T05:32:50	2017-08-22T05:14:49
[s] Observation end time (MET)	619772239.184000	619773180.49751
Observation end date	2017-08-22T06:56:10	2017-08-22T07:13:00
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	O1	N
CCD S3 on	O2	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	1	1
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



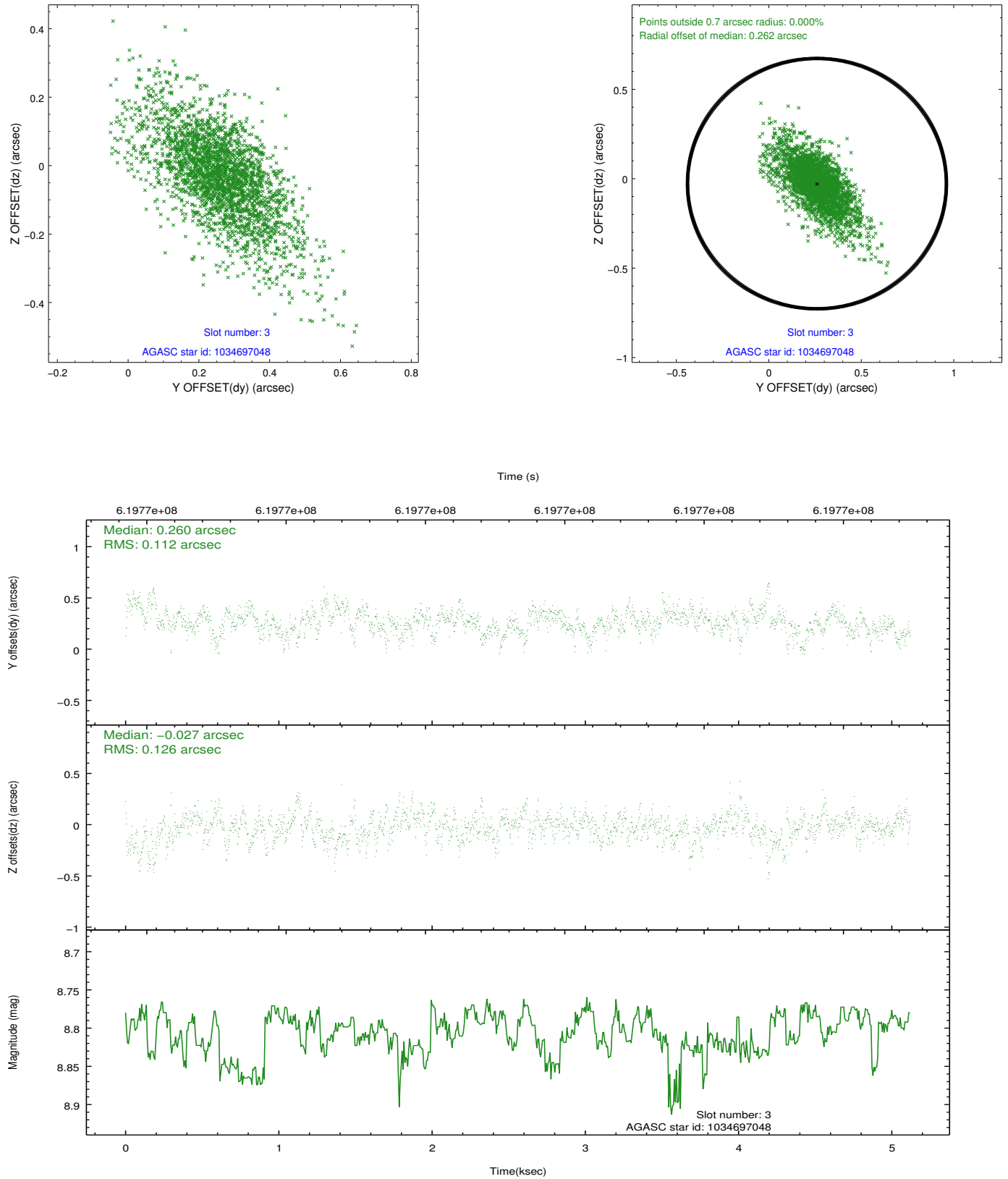


### Slot Statistics

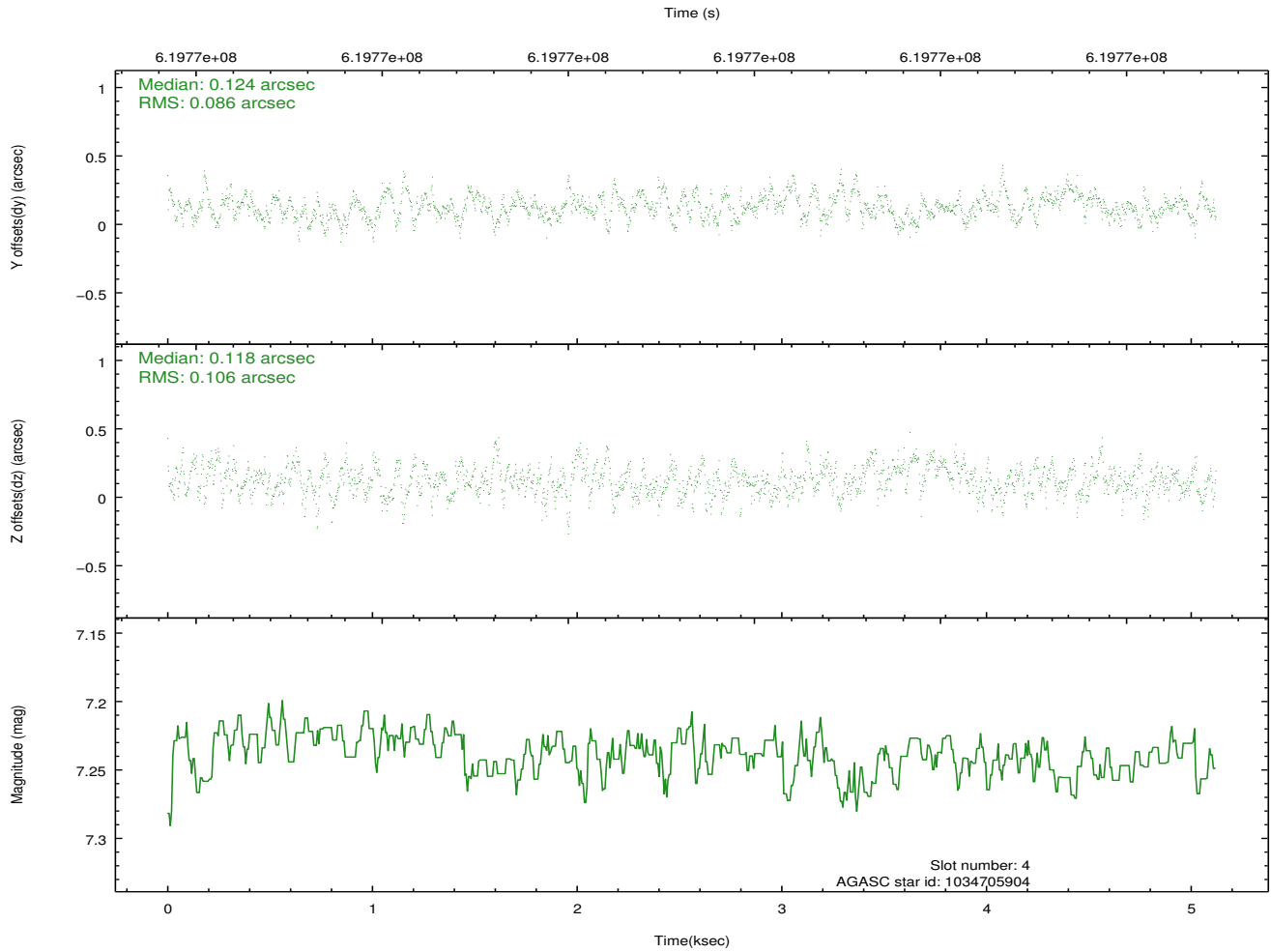
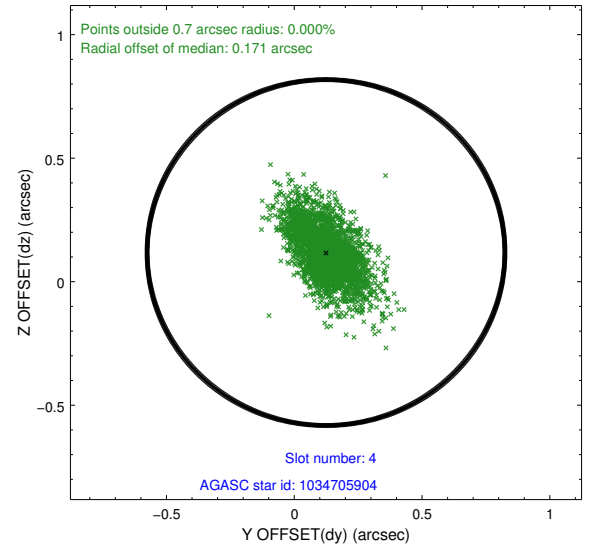
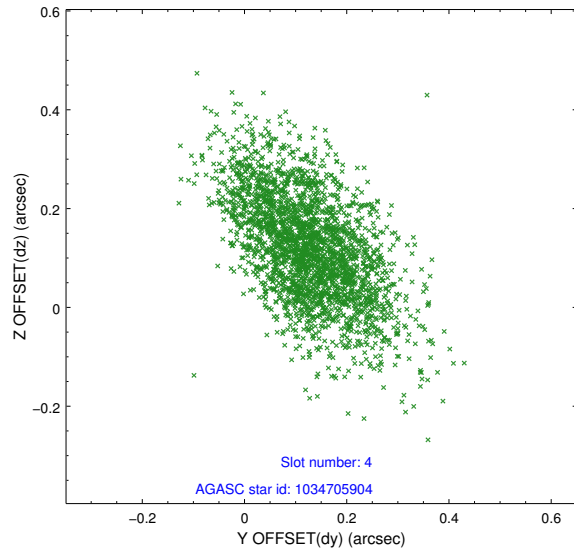
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-I-1	7.30	1249	0.076	-0.040	0.007	0.013	0.000000	0.000000	924.60	-842.65
1	FID		ACIS-I-5	7.31	1249	-0.394	0.026	0.007	0.012	0.000000	0.000000	-1823.43	1054.16
2	FID		ACIS-I-6	7.31	1249	0.226	0.085	0.008	0.016	0.000000	0.000000	388.86	1700.19
3	GUIDE	used	1034697048	8.81	2496	0.260	-0.027	0.163	0.318	269.337468	-42.311184	1981.62	-2201.85
4	GUIDE	used	1034705904	7.24	2497	0.124	0.118	0.141	0.245	269.293373	-41.978422	785.53	-2332.45
5	GUIDE	used	1036407512	8.54	2497	-0.324	-0.325	0.147	0.255	270.185374	-42.012214	893.26	54.04
6	GUIDE	used	1034176880	8.03	2499	-0.062	0.243	0.125	0.222	269.518598	-41.173857	-2116.91	-1751.39
7	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00

## 2.4 Star Slots

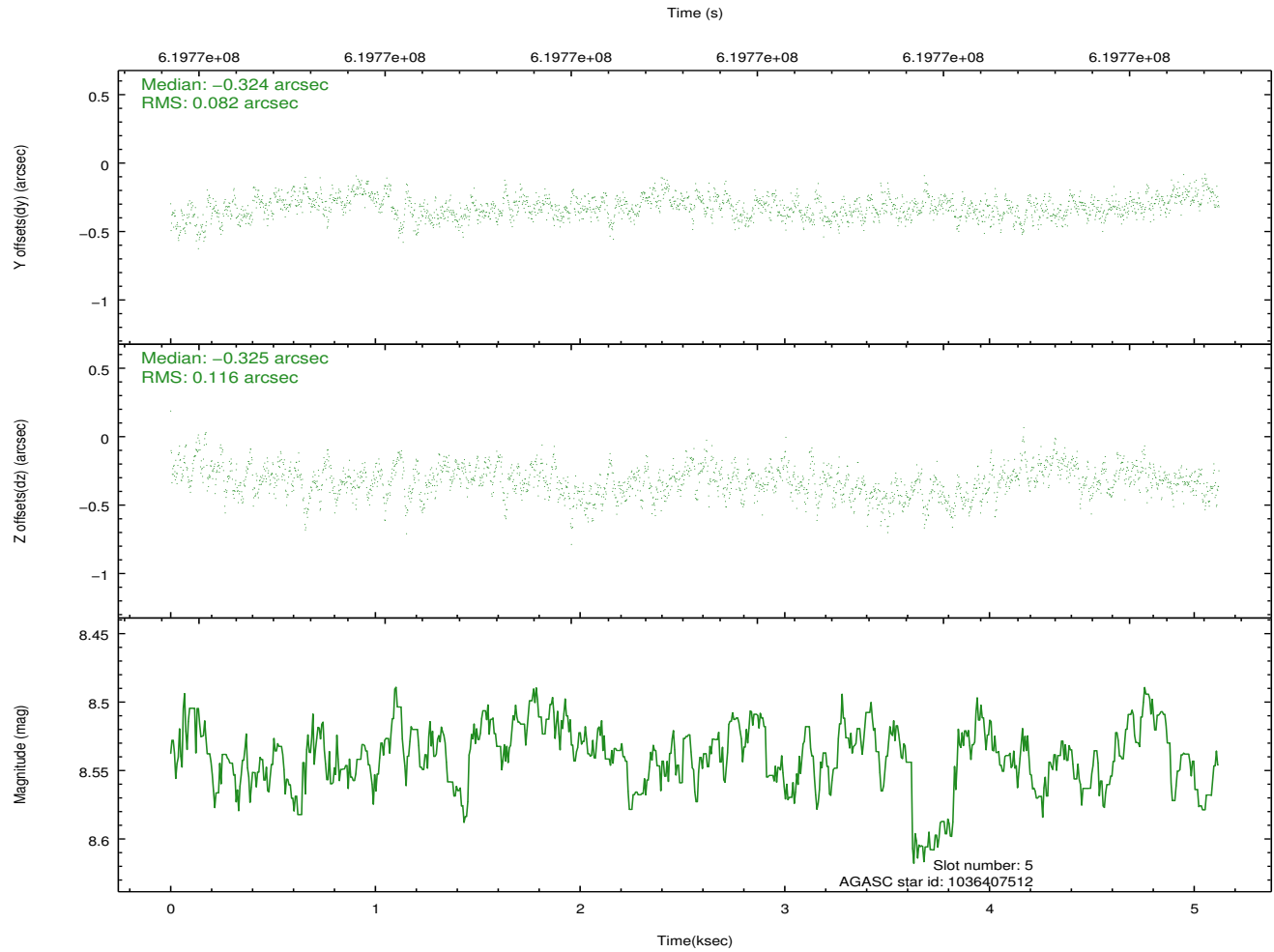
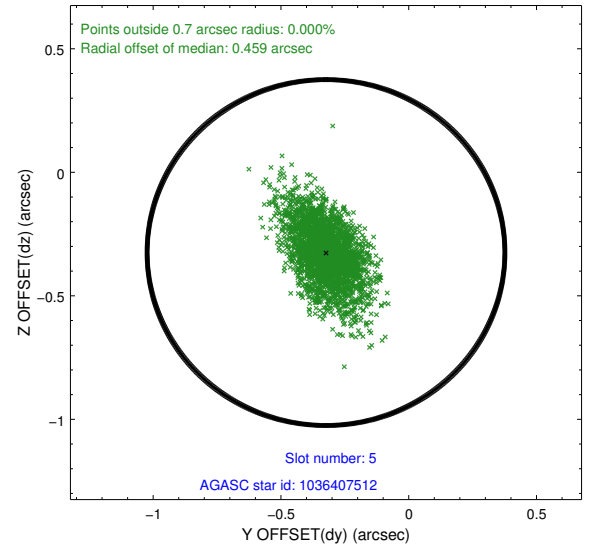
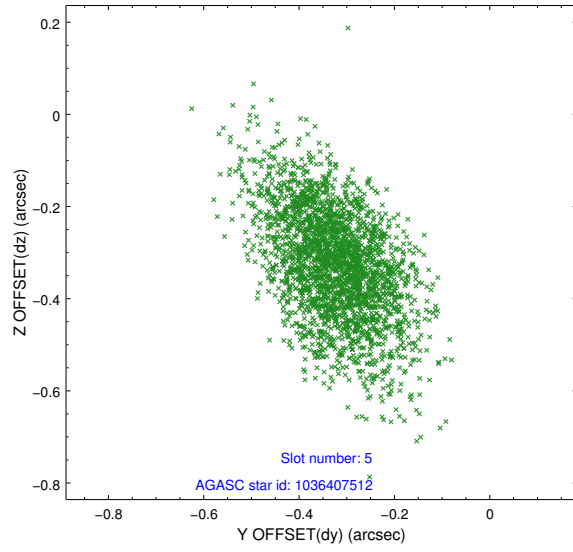
### 2.4.1 Slot 3



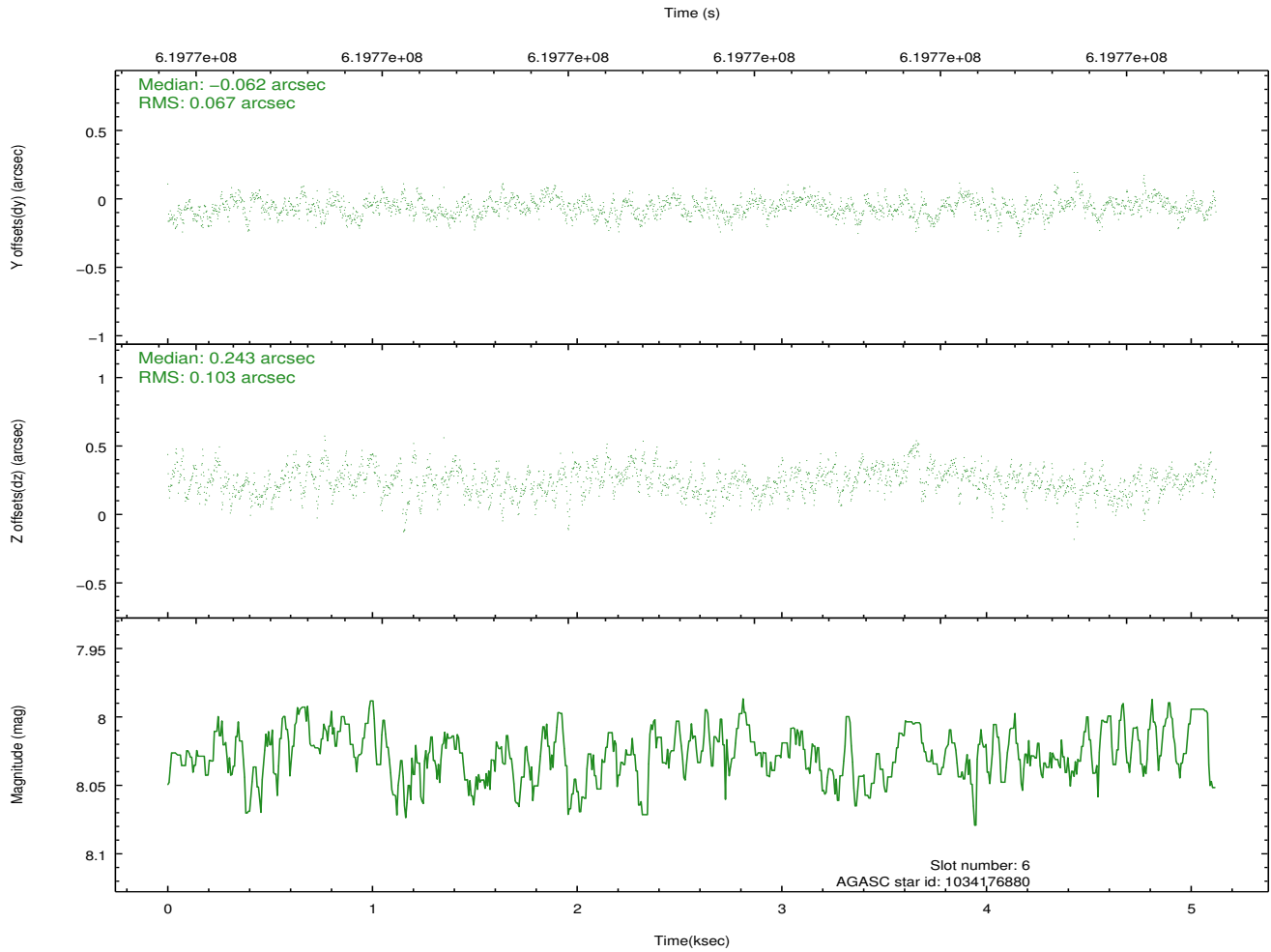
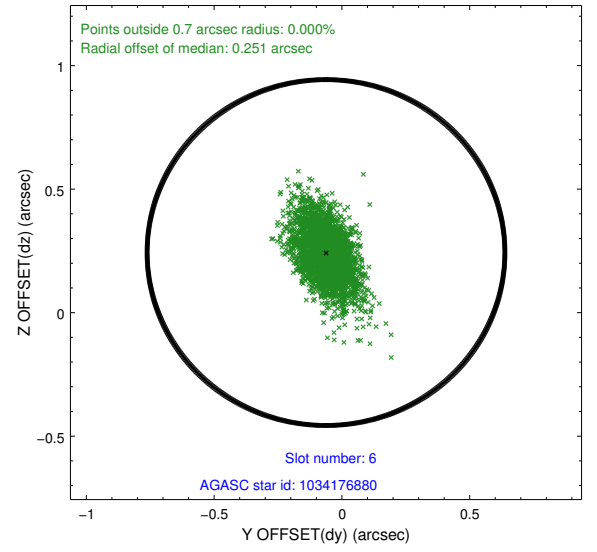
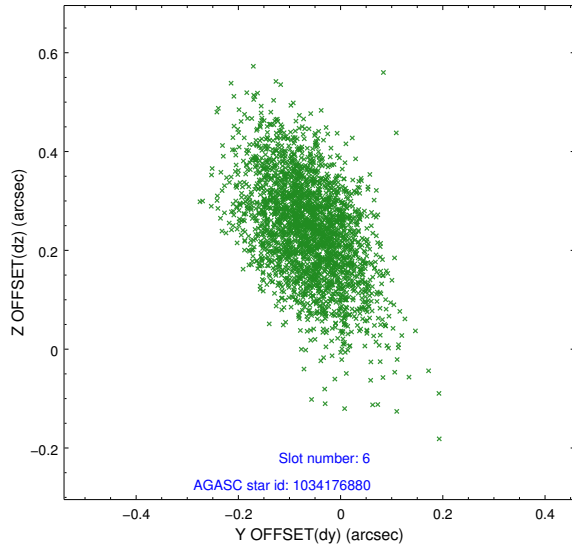
## 2.4.2 Slot 4



### 2.4.3 Slot 5



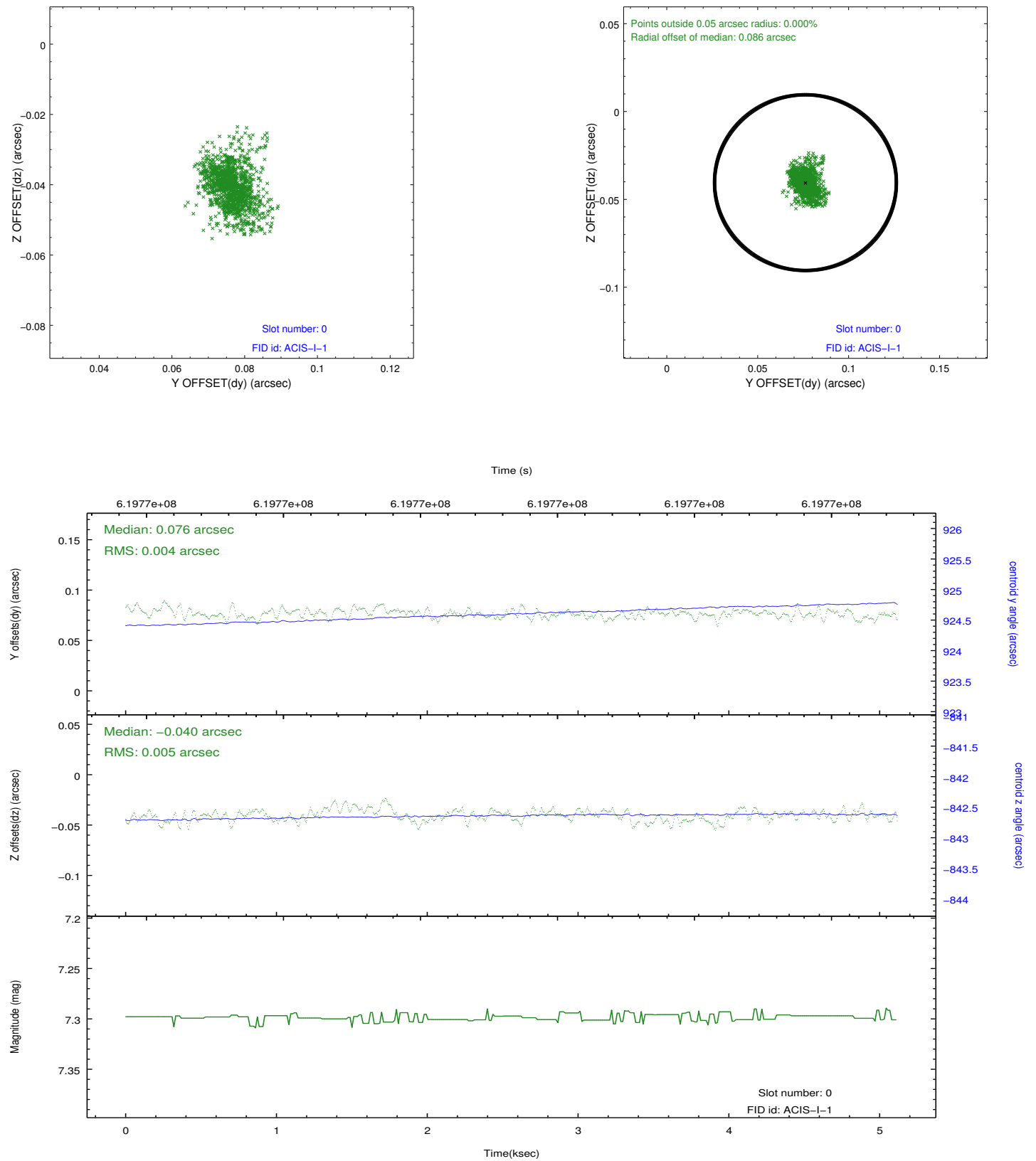
## 2.4.4 Slot 6



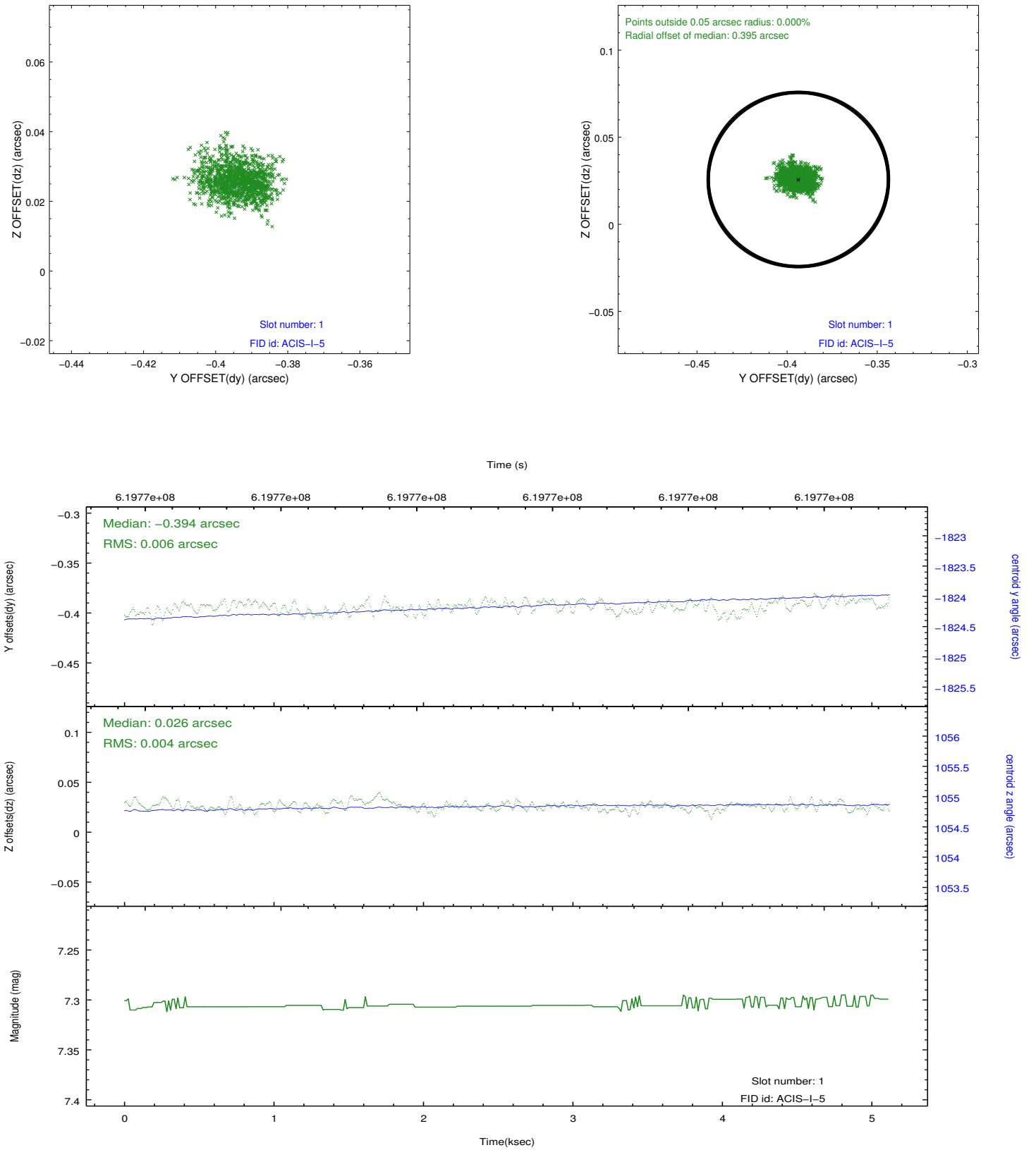


## 2.5 FID Slots

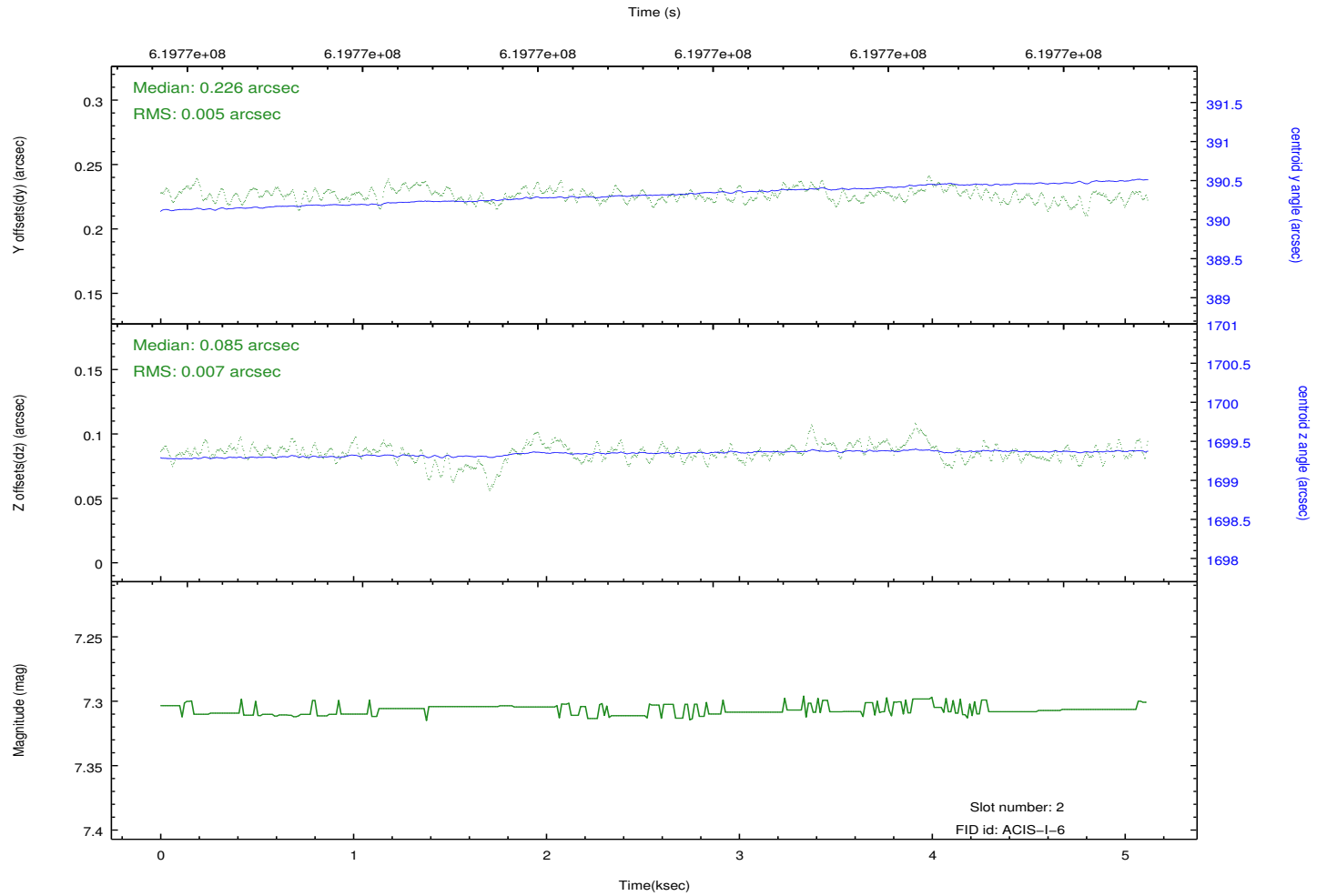
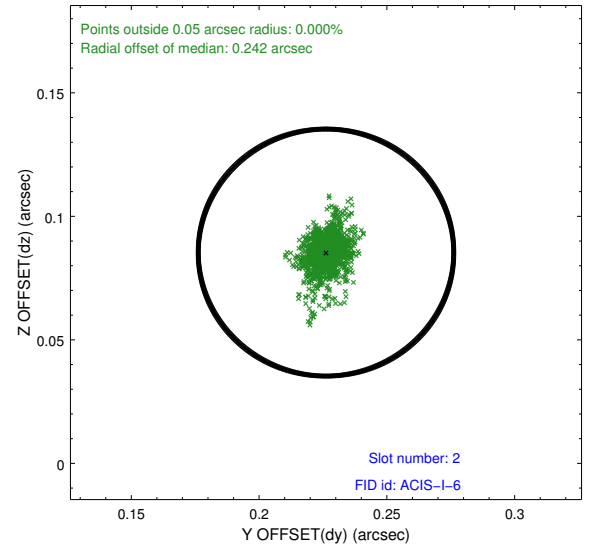
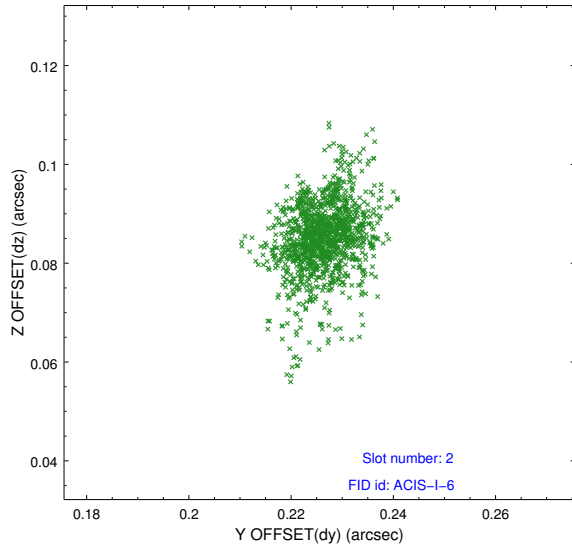
### 2.5.1 Slot 0



## 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	5.0592000390291

## A.2 Comments

One optional chip was dropped.

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The guide star in slot 7 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this star from the solution.

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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](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.