

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 21190 - L2 Version 1  
Chandra X-Ray Center

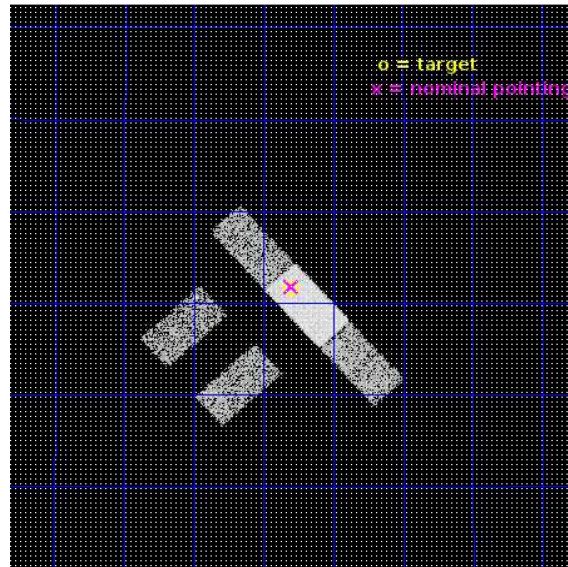
L2 Processing Date : Jan 3 2019

## 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
2.5	FID Slots . . . . .	13
2.5.1	Slot 0 . . . . .	13
2.5.2	Slot 1 . . . . .	14
2.5.3	Slot 2 . . . . .	15
<b>A</b>	<b>Summary</b>	<b>16</b>
A.1	Status . . . . .	16
A.2	Comments . . . . .	16

# 1 Front

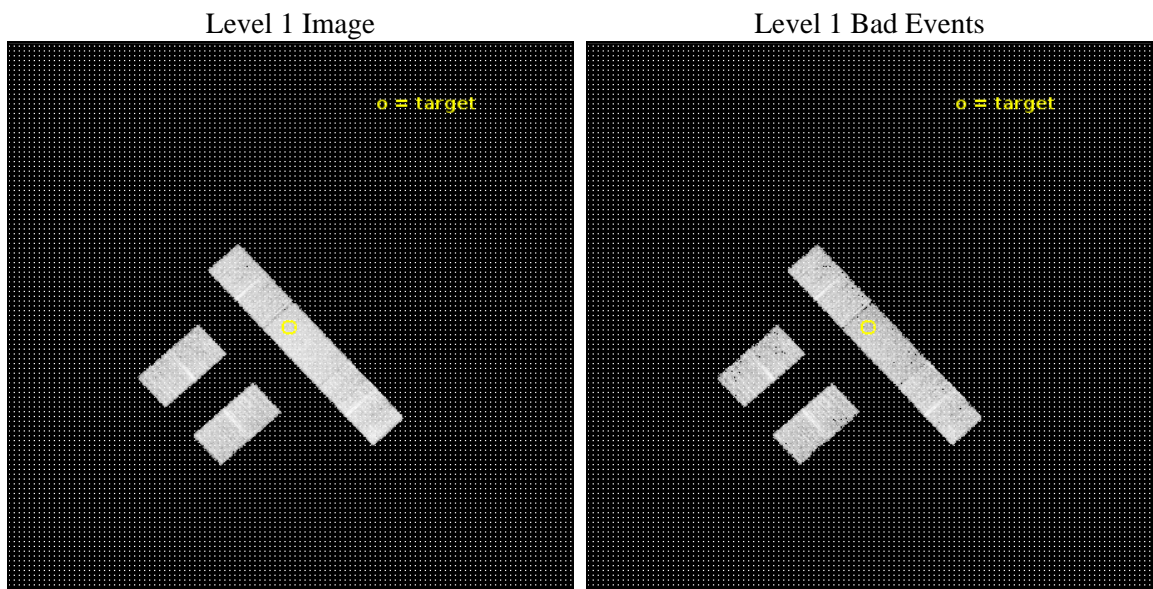
seq_num	201244	Sequence number
obs_id	21190	Observation id
title	Testing X-ray activity as an age indicator	Proposal title
observer	Christian Schneider	Principal investigator
object	49 Ser	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	243.327083	Observer's specified target RA [deg]
dec_targ	13.526917	Observer's specified target Dec [deg]
ra_nom	243.3254570379	Nominal RA [deg]
dec_nom	13.529856590531	Nominal Dec [deg]
roll_nom	47.69097497053	Nominal Roll [deg]
revision	1	Processing version of data
ontime	7024.4001970291	Sum of GTIs [s]
livetime	6858.8202080076	Livetime [s]
ontime2	7024.4001970291	Sum of GTIs [s]
ontime3	7024.4001970291	Sum of GTIs [s]
ontime6	7024.4001970291	Sum of GTIs [s]
ontime7	7024.4001970291	Sum of GTIs [s]
ontime8	7024.4001970291	Sum of GTIs [s]
l2events	27495	Number of level 2 events



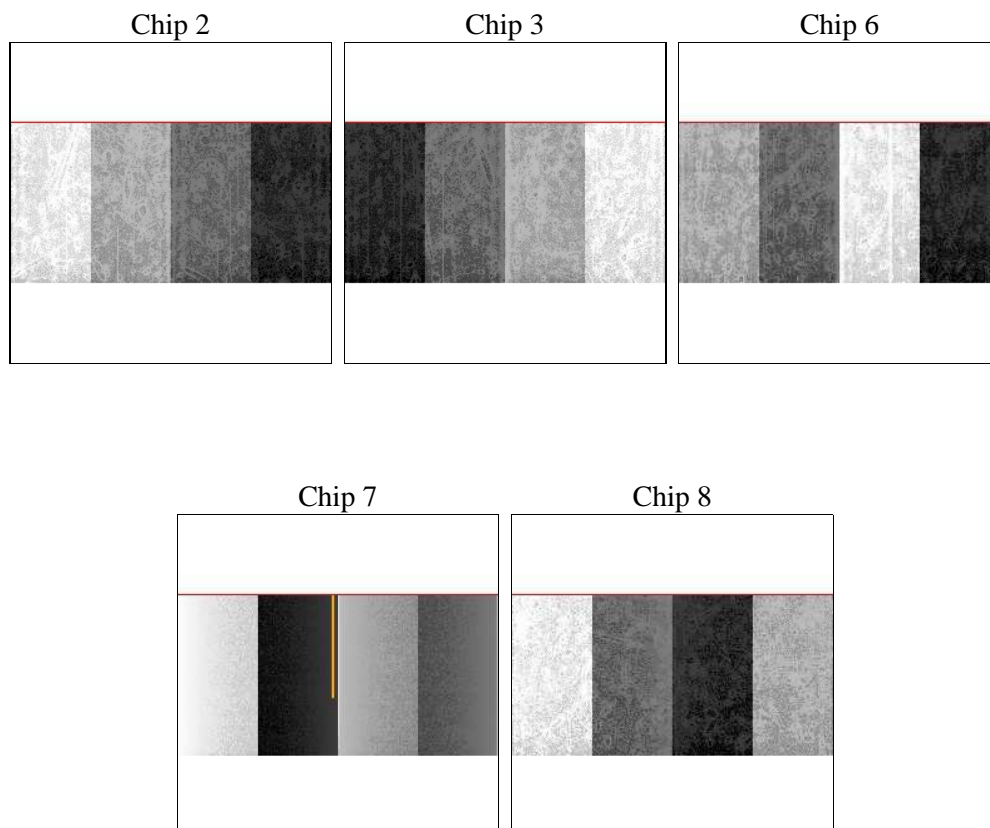
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	7000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	7024.4001970291	Sum of GTIs [s]
caldsver	4.8.2	&#160	ontime2	7024.4001970291	Sum of GTIs [s]
date	2019-01-03T15:10:55	Date and time of file creation	ontime3	7024.4001970291	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	7024.4001970291	Sum of GTIs [s]
			ontime7	7024.4001970291	Sum of GTIs [s]
			ontime8	7024.4001970291	Sum of GTIs [s]
			l1events	162411	Number of level 1 events

### 2.1.4 Events

	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	27754	28345	29715	36737	39860
rejected events	24634	25163	26349	20479	29600
rejected %	88%	88%	88%	55%	74%

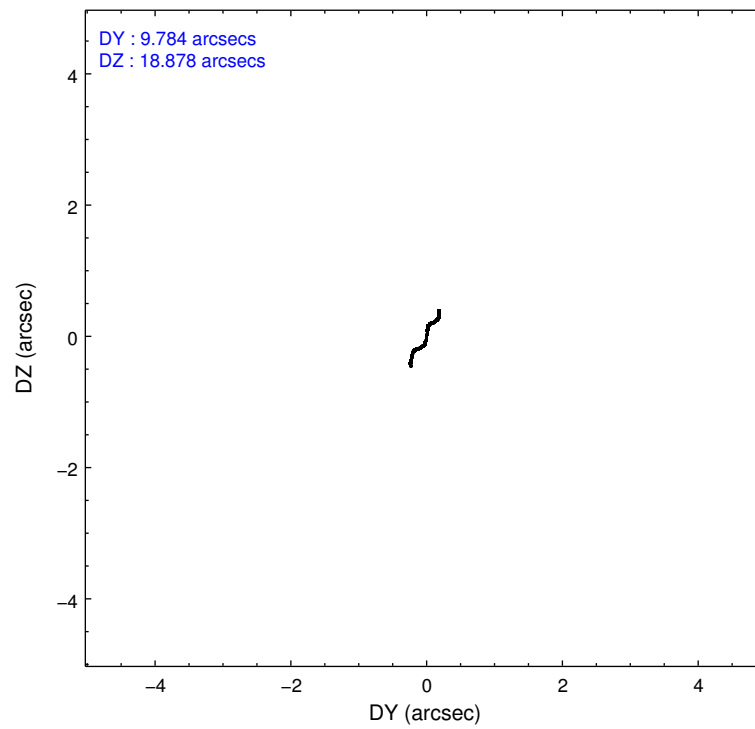
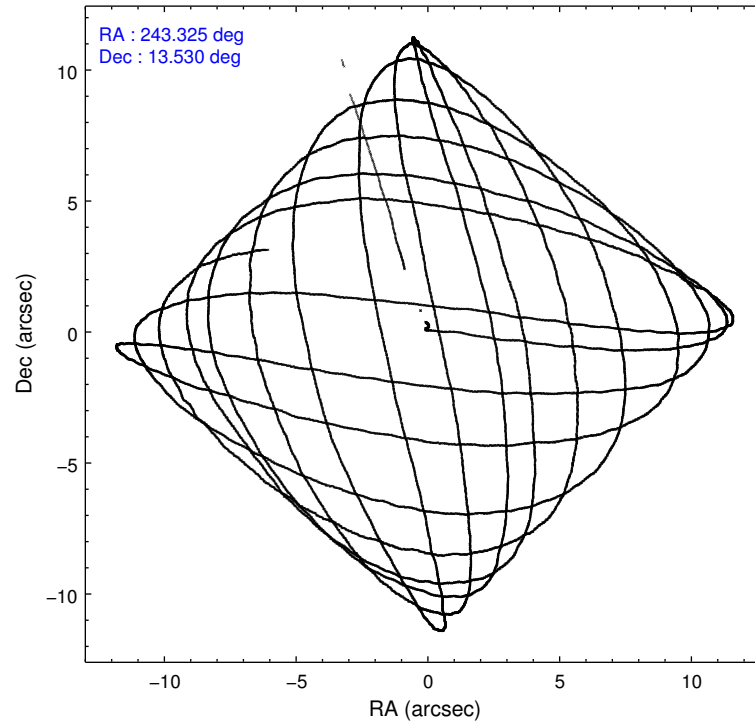
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	1116	1141	1088	1588	2979
	4%	4%	3%	4%	7%
grade 1 events	14	14	10	57	27
	0%	0%	0%	0%	0%
grade 2 events	782	711	787	3510	2551
	2%	2%	2%	9%	6%
grade 3 events	358	380	381	1511	1090
	1%	1%	1%	4%	2%
grade 4 events	360	392	419	1487	1054
	1%	1%	1%	4%	2%
grade 5 events	1128	1355	1445	3773	2042
	4%	4%	4%	10%	5%
grade 6 events	574	626	762	8519	2837
	2%	2%	2%	23%	7%
grade 7 events	23422	23726	24823	16292	27280
	84%	83%	83%	44%	68%

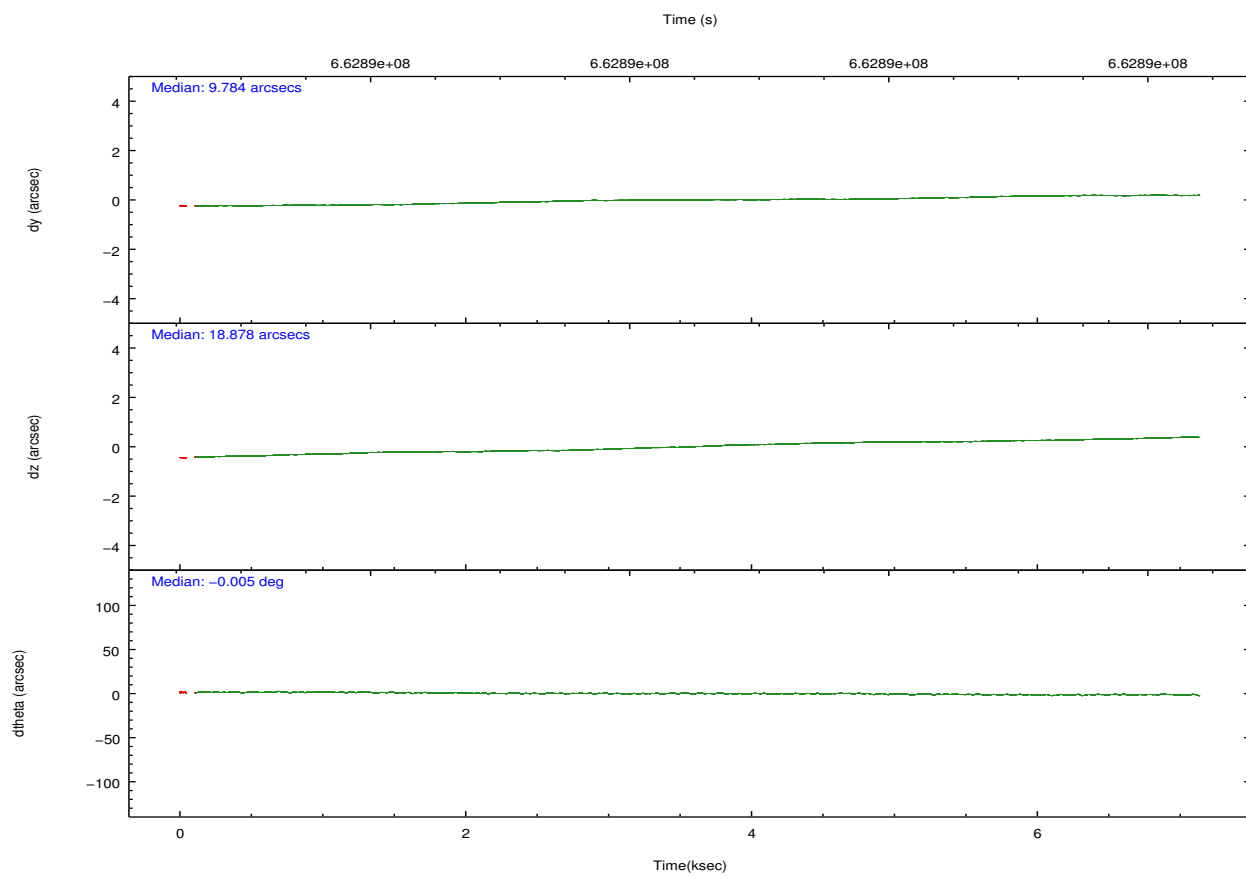
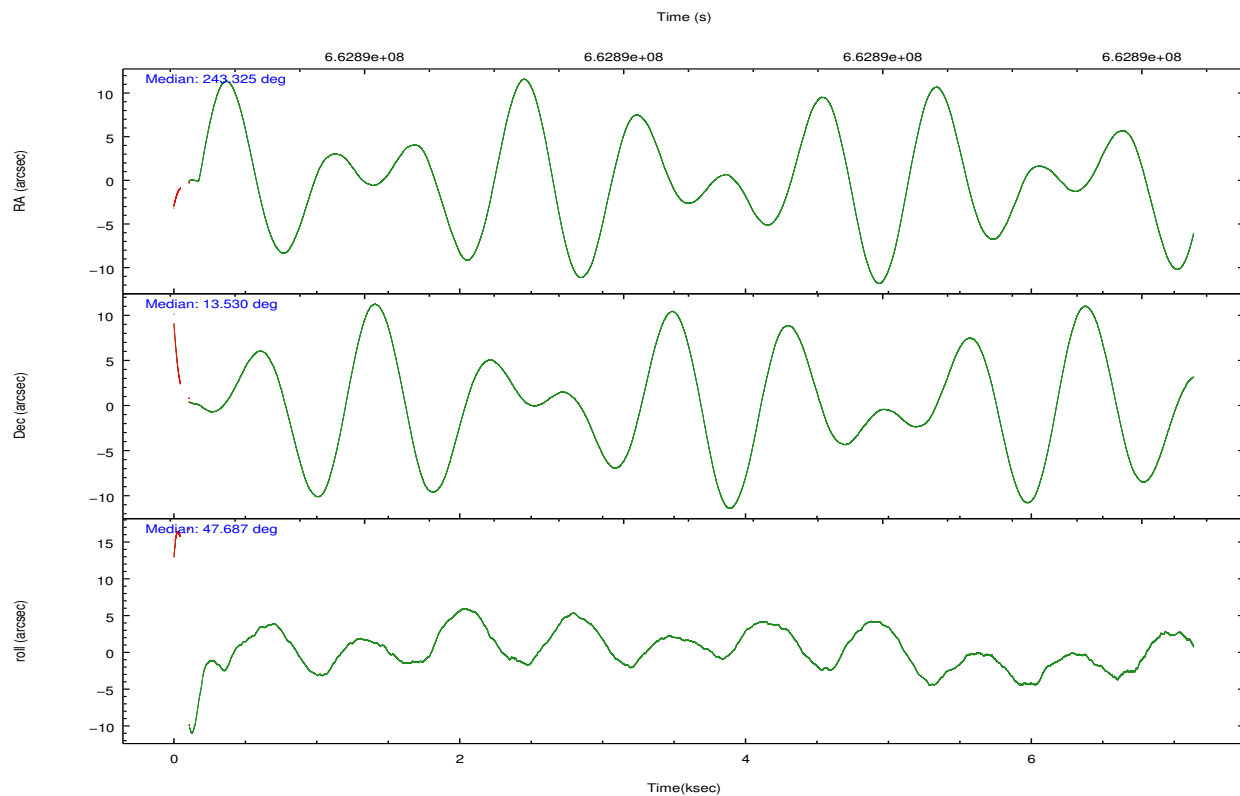


## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-23678	ACIS-23678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	243.319796	243.3254570378953	CCD I2 on	O1	Y
[deg] Pointing Dec	13.502965	13.52985659053147	CCD I3 on	Y	Y
[deg] Pointing Roll	47.535655	47.69097497053026	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	N	N
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-190.132523	-190.1400660498719	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.00754346686406393	CCD S4 on	Y	Y
[s] Observation start time (MET)	662887021.184000	662885709.66145	CCD S5 on	N	N
Observation start date	2019-01-03T07:15:52	2019-01-03T06:55:09	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	662894021.184000	662895053.56201	On-chip summing requested	N	N
Observation end date	2019-01-03T09:12:32	2019-01-03T09:30:53	Subarray requested	CUSTOM	1/2
Read mode	TIMED	TIMED	Subarray start row	257	257
			Subarray row count	512	512
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	1.7

## 2.3 Aspect



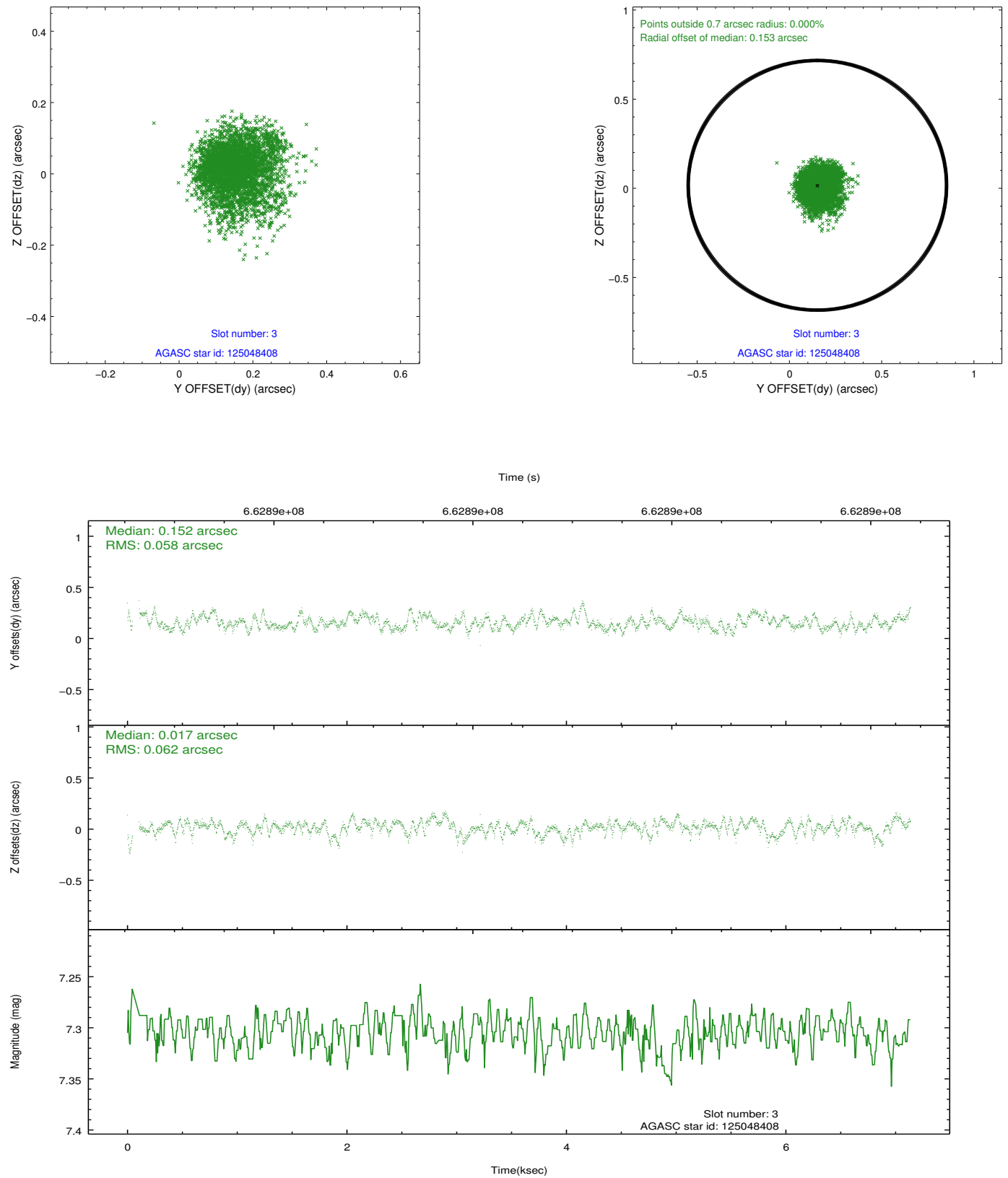


Slot Statistics

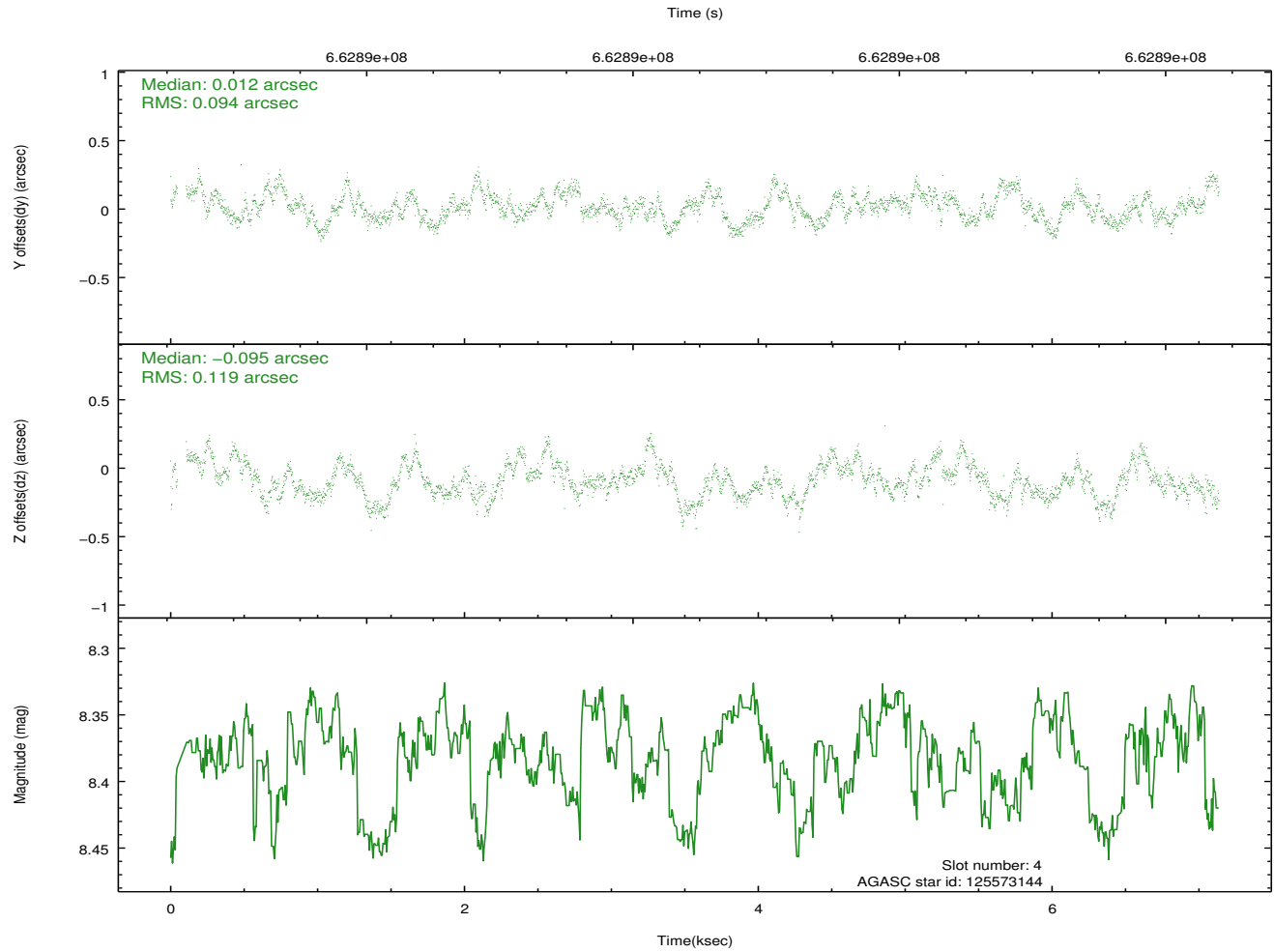
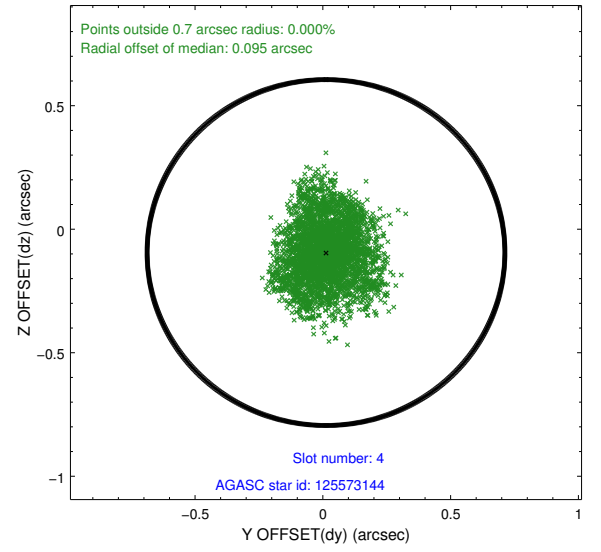
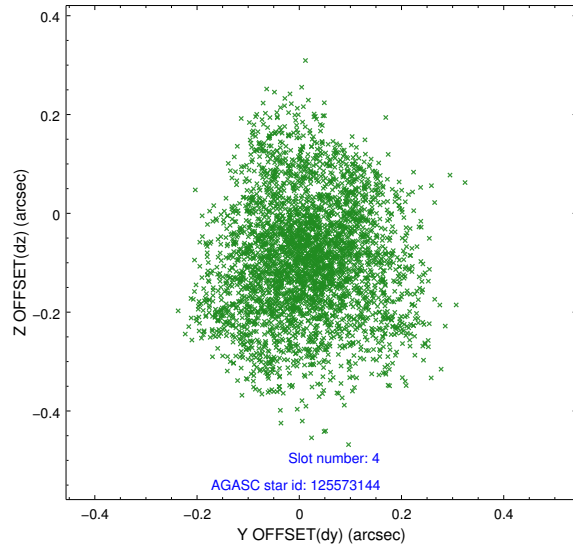
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.03	1727	1.000	-0.282	-0.165	0.014	0.021	0.000000	0.000000	-762.84	-1740
1	FID		ACIS-S-4	7.15	1726	1.000	0.670	0.180	0.006	0.012	0.000000	0.000000	2150.98	167
2	FID		ACIS-S-5	7.14	1727	1.000	-0.421	-0.006	0.015	0.022	0.000000	0.000000	-1814.81	161
3	GUIDE	used	125048408	7.30	3452	1.000	0.152	0.017	0.090	0.148	243.240681	12.800700	-2051.29	-1501
4	GUIDE	used	125573144	8.38	3451	1.000	0.012	-0.095	0.168	0.254	243.291183	13.239468	-767.35	-566
5	GUIDE	used	125576256	9.06	3451	1.000	-0.227	-0.028	0.158	0.256	244.072134	13.587703	2005.67	-1733
6	GUIDE	used	125576760	9.24	3451	1.000	0.054	0.143	0.277	0.412	243.888291	13.151021	413.35	-2323
7	MONITOR	unused		0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

## 2.4 Star Slots

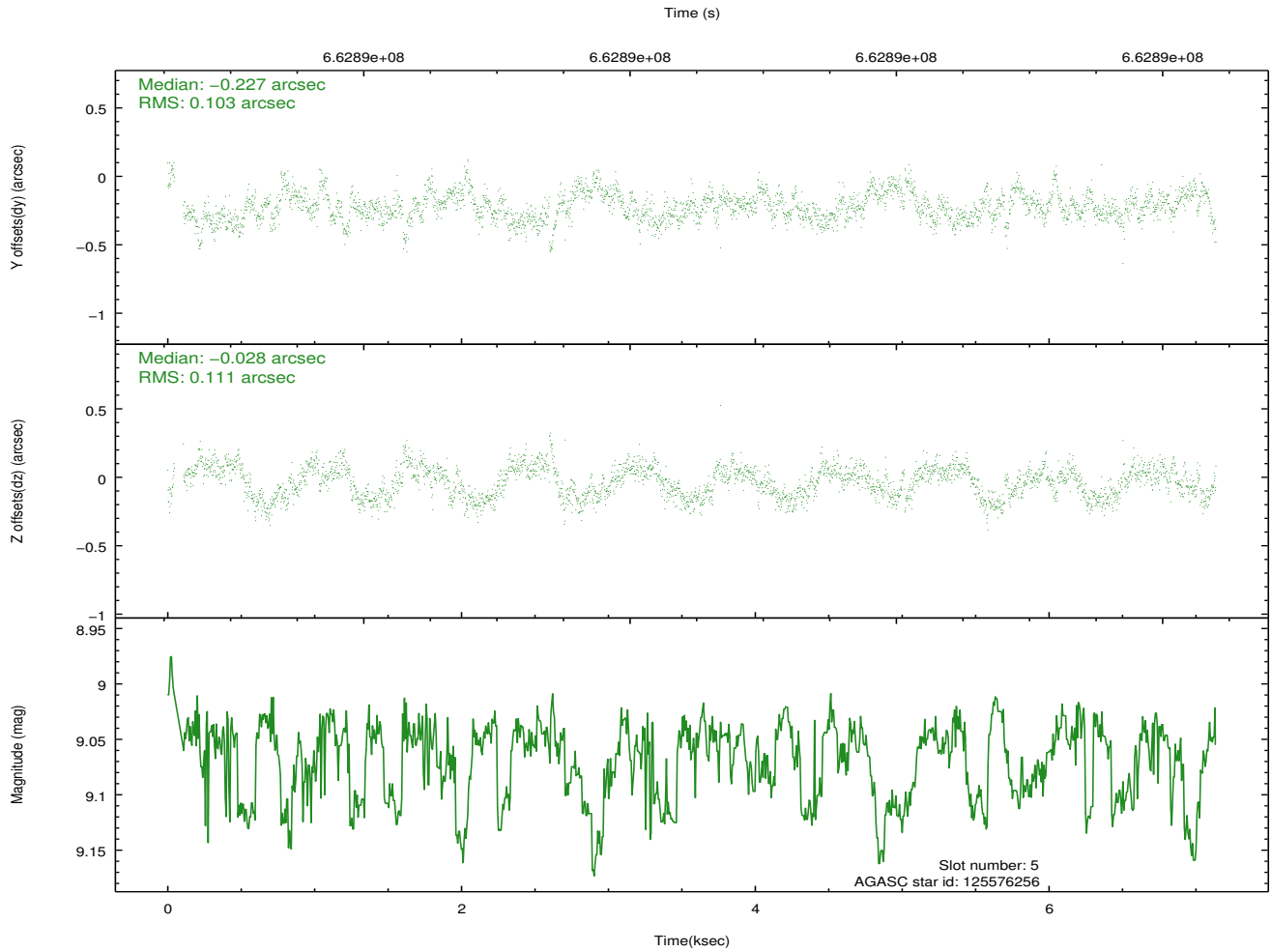
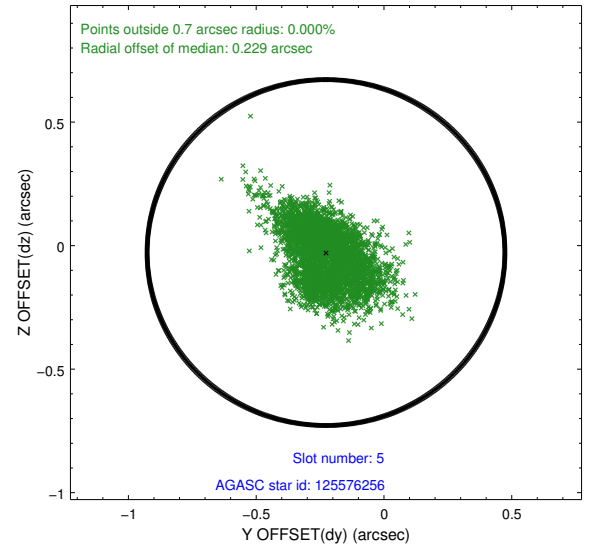
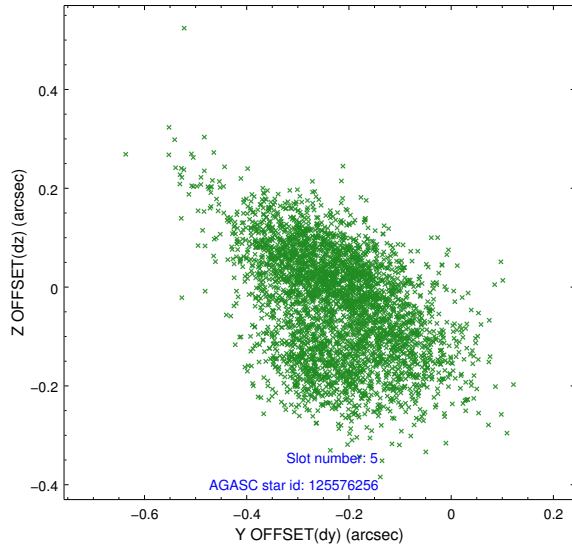
### 2.4.1 Slot 3



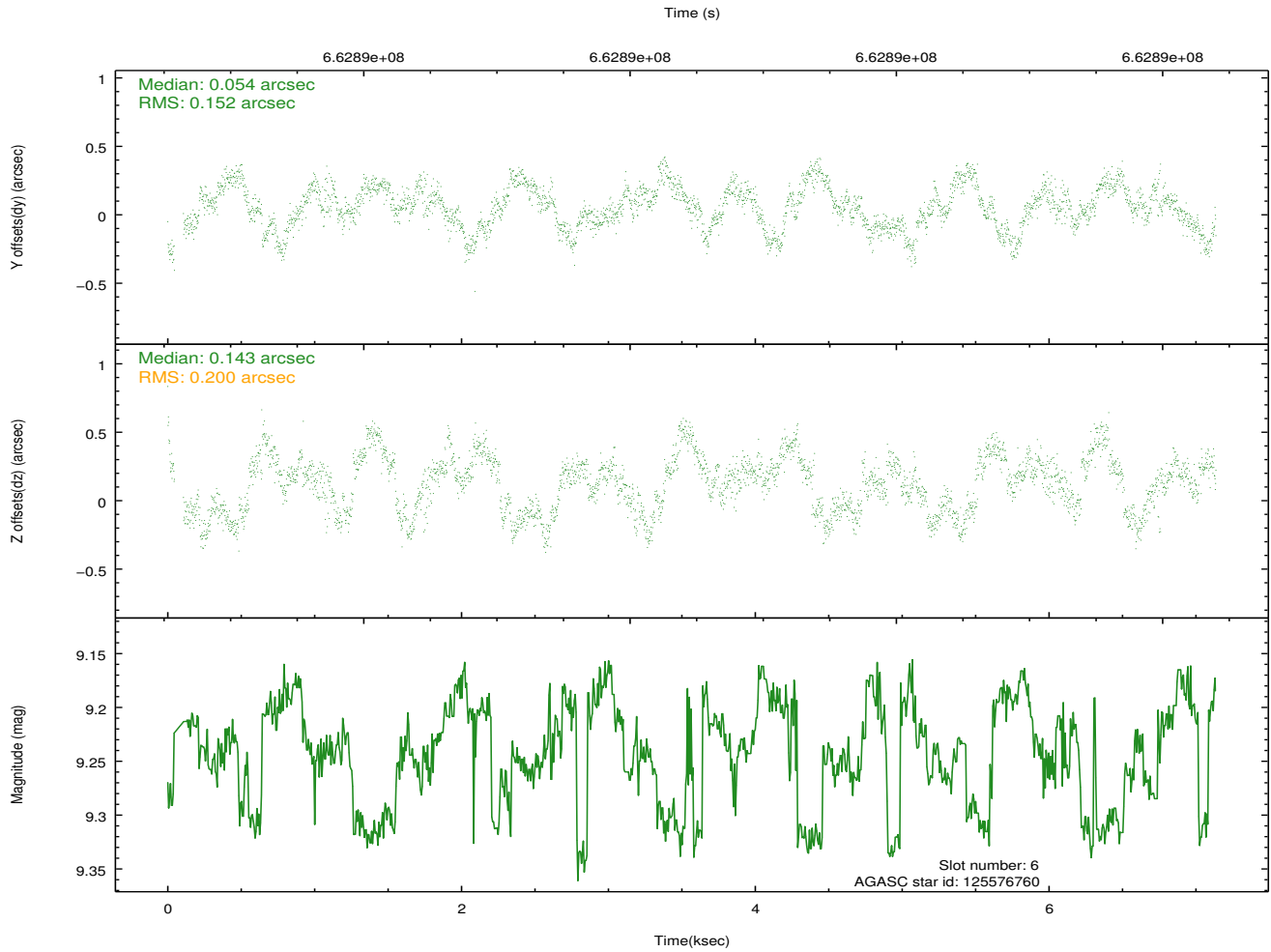
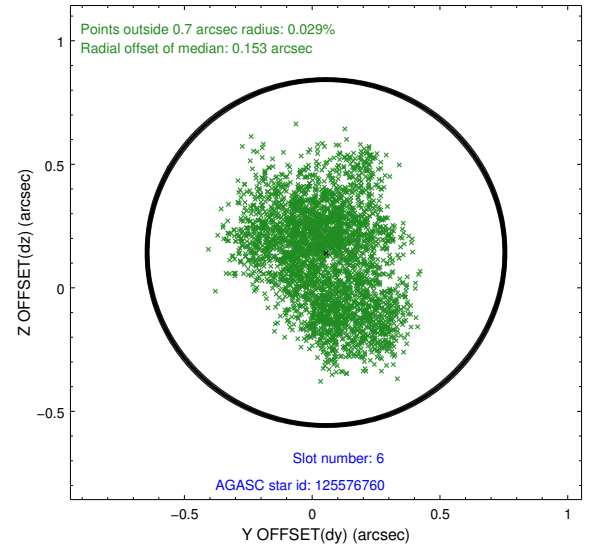
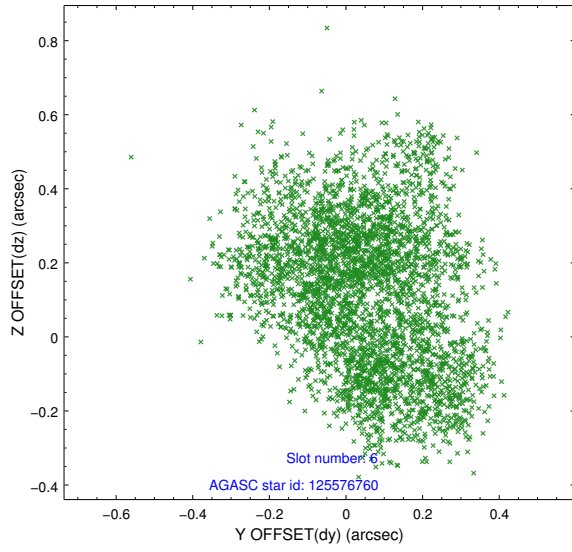
## 2.4.2 Slot 4



### 2.4.3 Slot 5



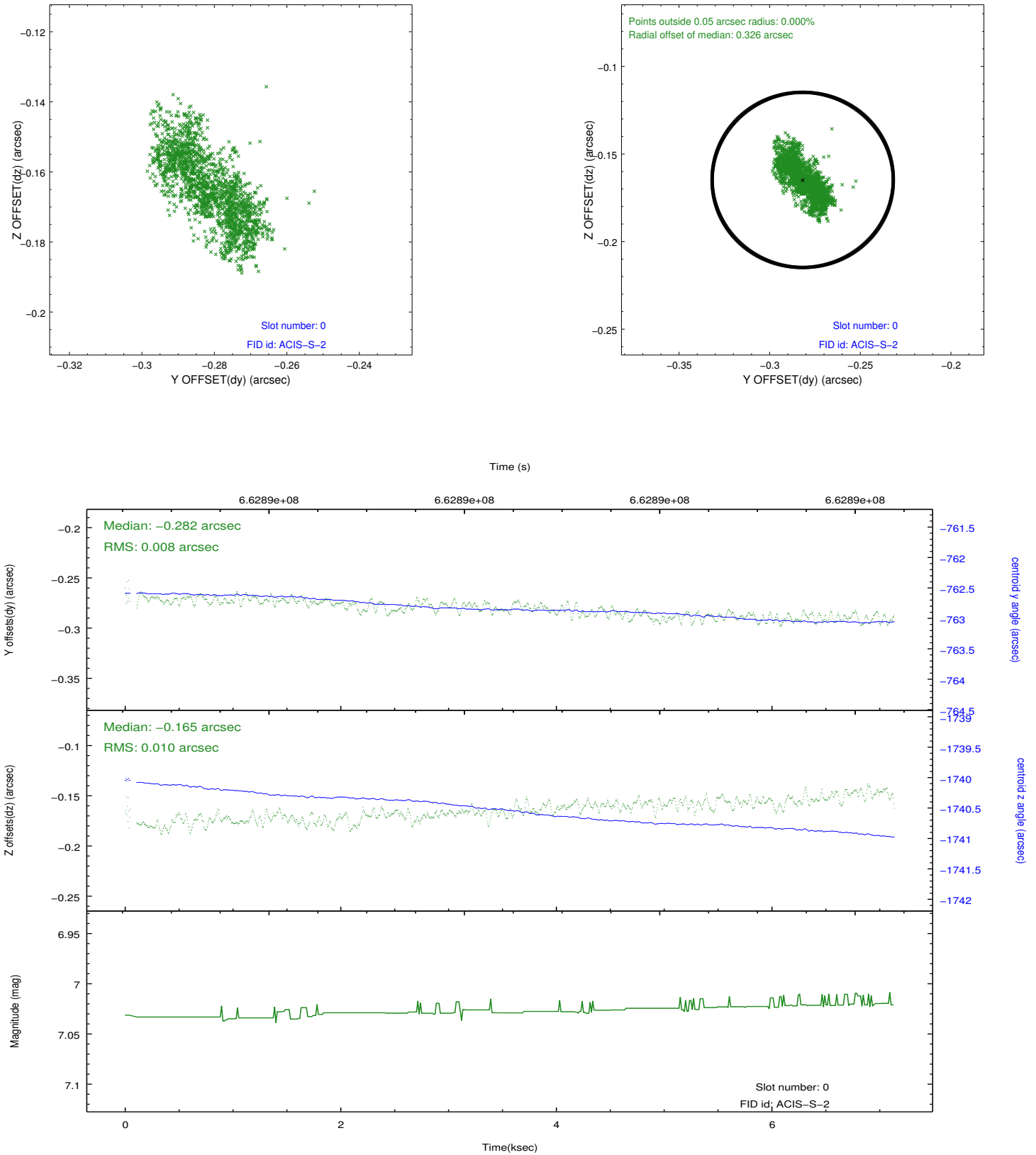
## 2.4.4 Slot 6



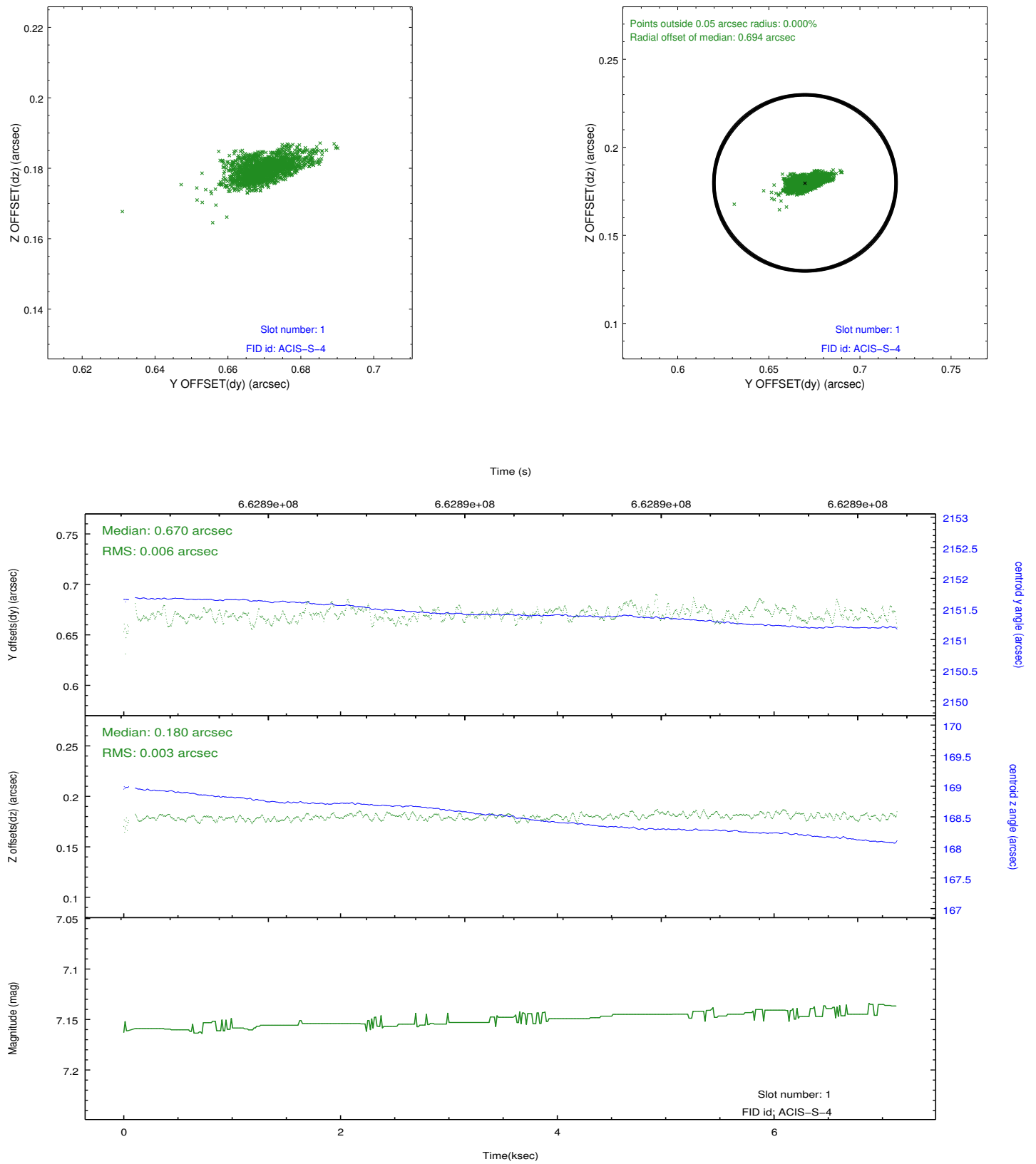


## 2.5 FID Slots

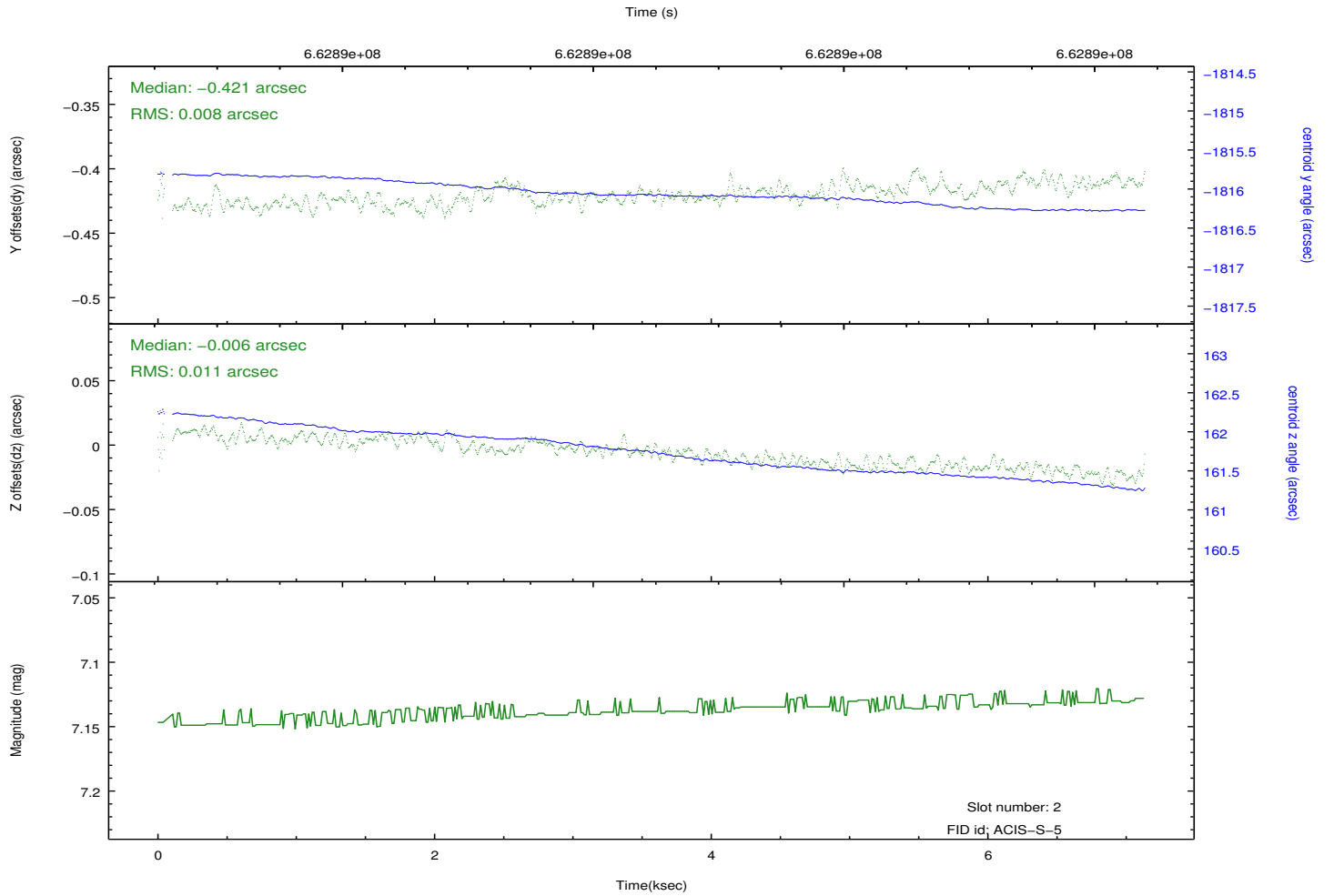
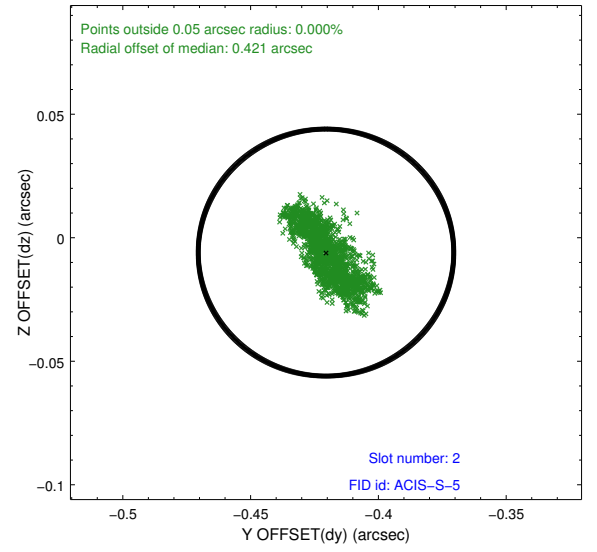
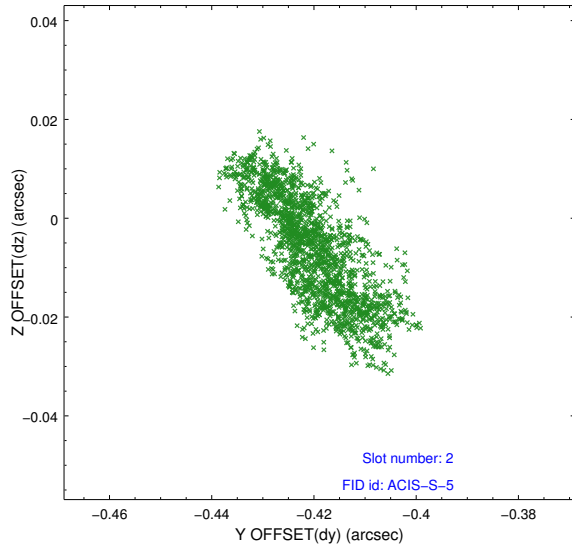
### 2.5.1 Slot 0



## 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)	2019.01.03
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	7.0244001970291

## A.2 Comments

The ACA has the capability to devote one or more of the eight image slots to "monitor" particular sky locations. This allows simultaneous optical photometry of one or more targets in the ACA field of view. These optical sources can be slightly fainter than the ACA guide star limit of  $m_{ACA} = 10.2$  mag. The bright-end limit for monitor star photometry is  $m_{ACA}=6.2$  mag. However, since there are a fixed number of image slots, devoting a slot to photometry instead of tracking a guide star results in a degradation of the image reconstruction and celestial location accuracy (Section 5.4). Using one monitor slot represents a 15 - 25% increase in the aspect image reconstruction RMS diameter, depending on the particular guide star configuration. Two monitor slots would increase the diameter by about 50 - 60%, but this configuration is not operationally allowed under normal circumstances. The photometric accuracy which can be achieved depends primarily on the star magnitude, integration time, CCD dark current, CCD read noise, sky background, and the CCD dark current uncertainty.