

# V&V Reference Report

## L2 ASCDS Version : 8.5.1.1

Observation 351 - L2 Version 7  
Chandra X-Ray Center

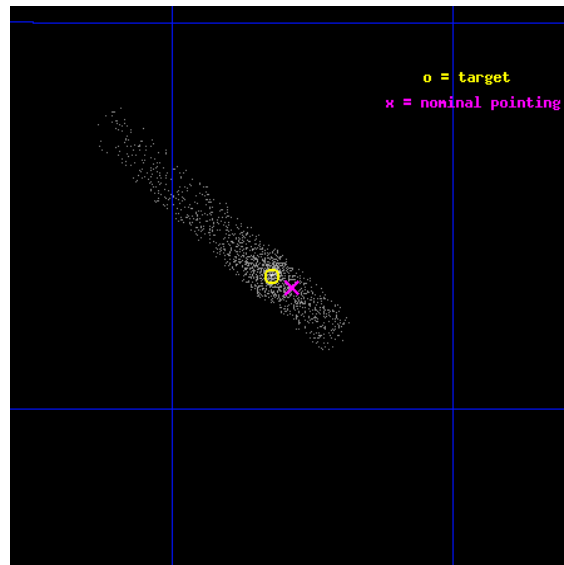
L2 Processing Date : Jan 23 2013

## Contents

<b>1</b>	<b>Front</b>	<b>2</b>
<b>2</b>	<b>OBI Primary</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 4 . . . . .	9
2.4.2	Slot 5 . . . . .	10
2.4.3	Slot 6 . . . . .	11
2.4.4	Slot 7 . . . . .	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>3</b>	<b>OBI Secondary</b>	<b>16</b>
3.1	OBI . . . . .	16
3.1.1	Images . . . . .	16
3.1.2	Bias . . . . .	16
3.1.3	Parameters . . . . .	17
3.1.4	Events . . . . .	17
<b>A</b>	<b>Summary</b>	<b>18</b>
A.1	Status . . . . .	18
A.2	Comments . . . . .	18

# 1 Front

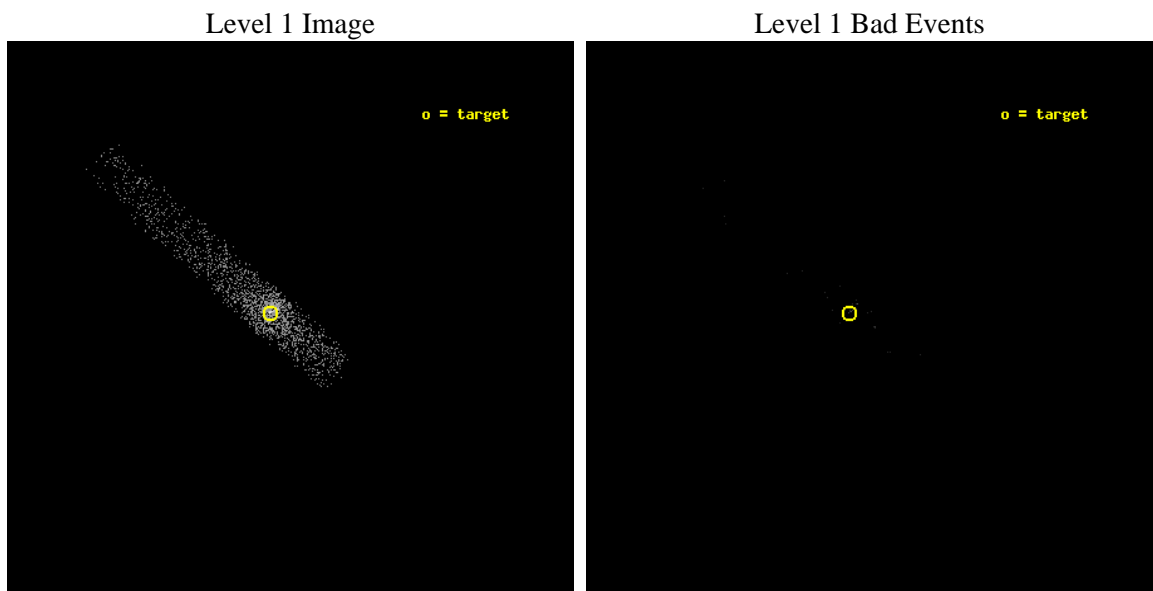
seq_num	700023	Sequence number
obs_id	351	Observation id
title	STUDIES OF RADIO JETS AND THE NARROW LINE REGIONS	Proposal title
observer	Professor Andrew Wilson	Principal investigator
object	M87	Source name
dtcycle	0	&#160
cycle	P	events are from which exps? P[rimary] S[econdar
ra_targ	187.705833	Observer's specified target RA [deg]
dec_targ	12.391083	Observer's specified target Dec [deg]
ra_nom	187.69682912537	Nominal RA [deg]
dec_nom	12.385716767091	Nominal Dec [deg]
roll_nom	221.80223060913	Nominal Roll [deg]
revision	7	Processing version of data
ontime	567.18030139804	Sum of GTIs [s]
liveltime	99.505316034745	Livetime [s]
ontime7	567.18030139804	Sum of GTIs [s]
l2events	1685	Number of level 2 events



## 2 OBI Primary

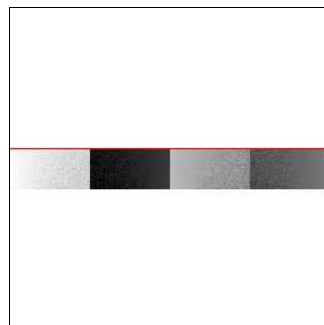
### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias

Chip 7



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	1000.000000	[s] Scheduled observation exposure time
ascdsver	8.5.1.1	Processing system revision	ontime	567.18030139804	Sum of GTIs [s]
caldsver	4.5.5	&#160	ontime7	567.18030139804	Sum of GTIs [s]
date	2013-01-23T17:16:50	Date and time of file creation	l1events	2291	Number of level 1 events
revision	7	Processing version of data			

### 2.1.4 Events

	<b>ccd 7</b>
level 1 events	2291
rejected events	571
rejected %	24%

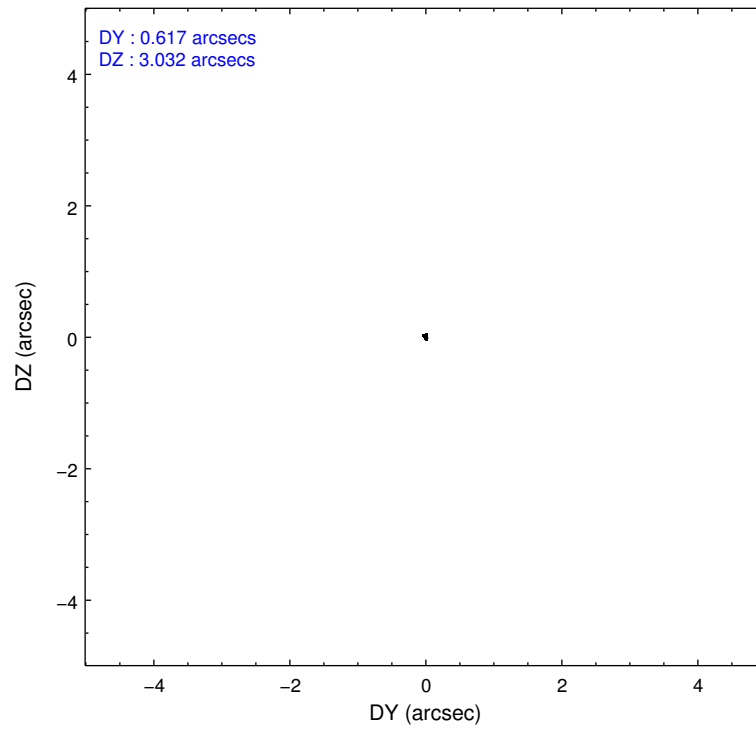
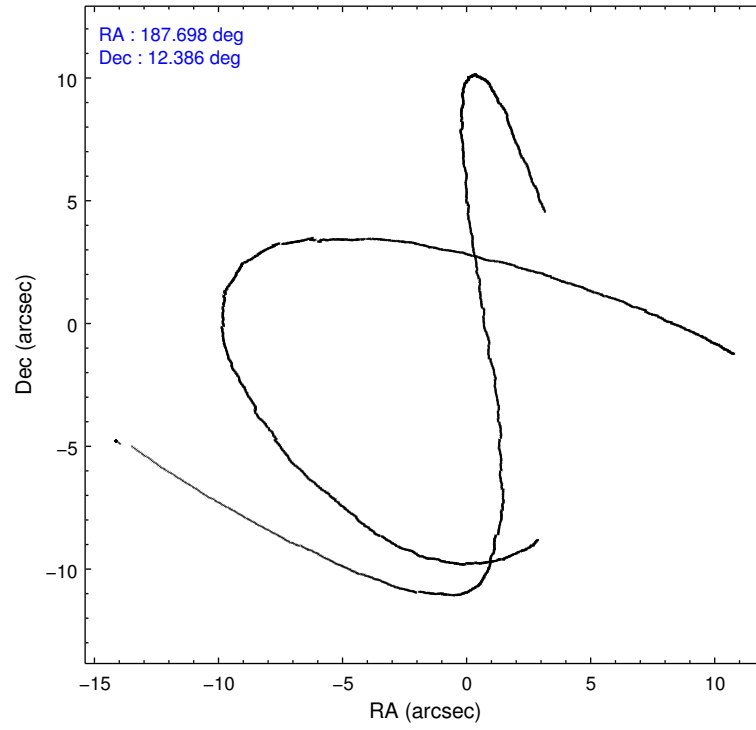
	<b>ccd 7</b>
grade 0 events	686
	29%
grade 1 events	0
	0%
grade 2 events	564
	24%
grade 3 events	255
	11%
grade 4 events	245
	10%
grade 5 events	41
	1%
grade 6 events	351
	15%
grade 7 events	149
	6%

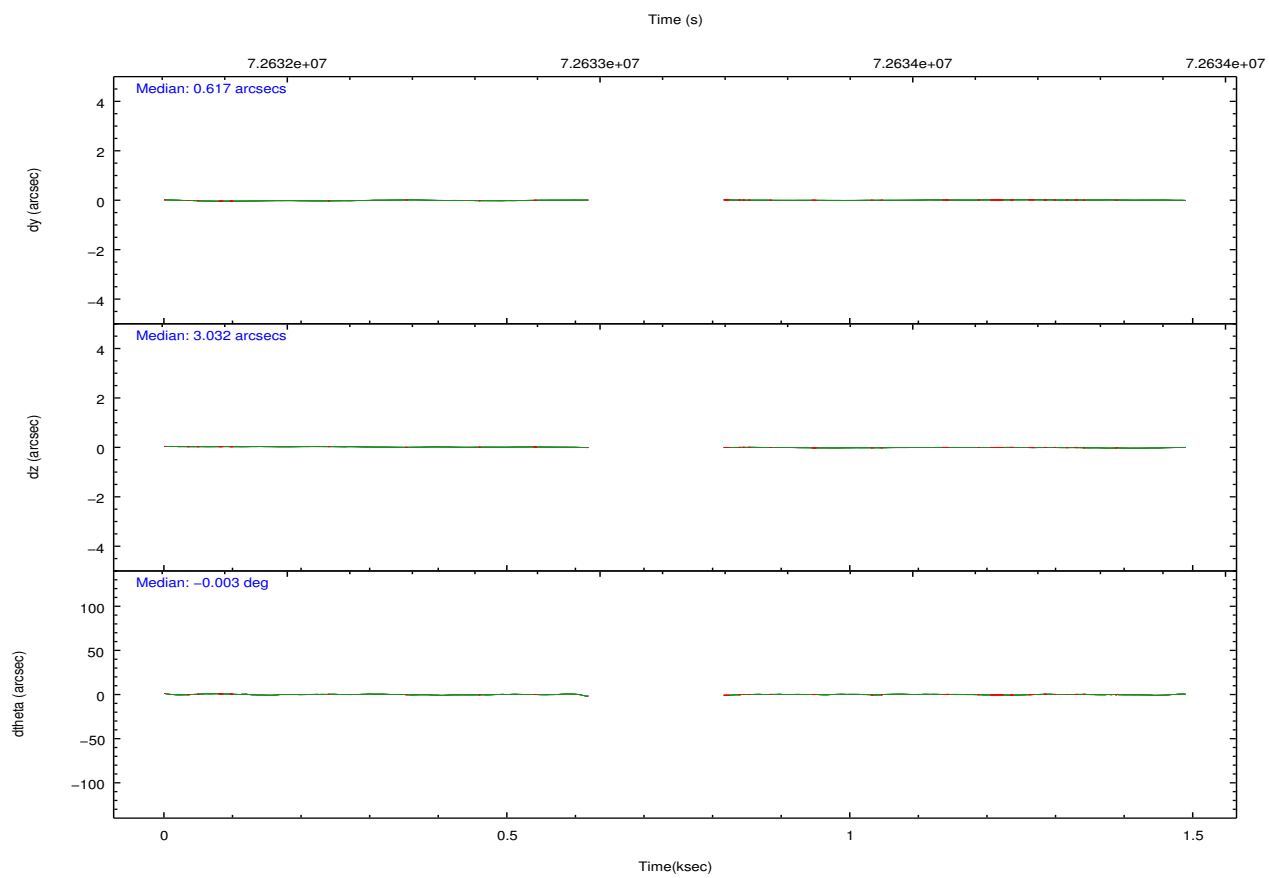
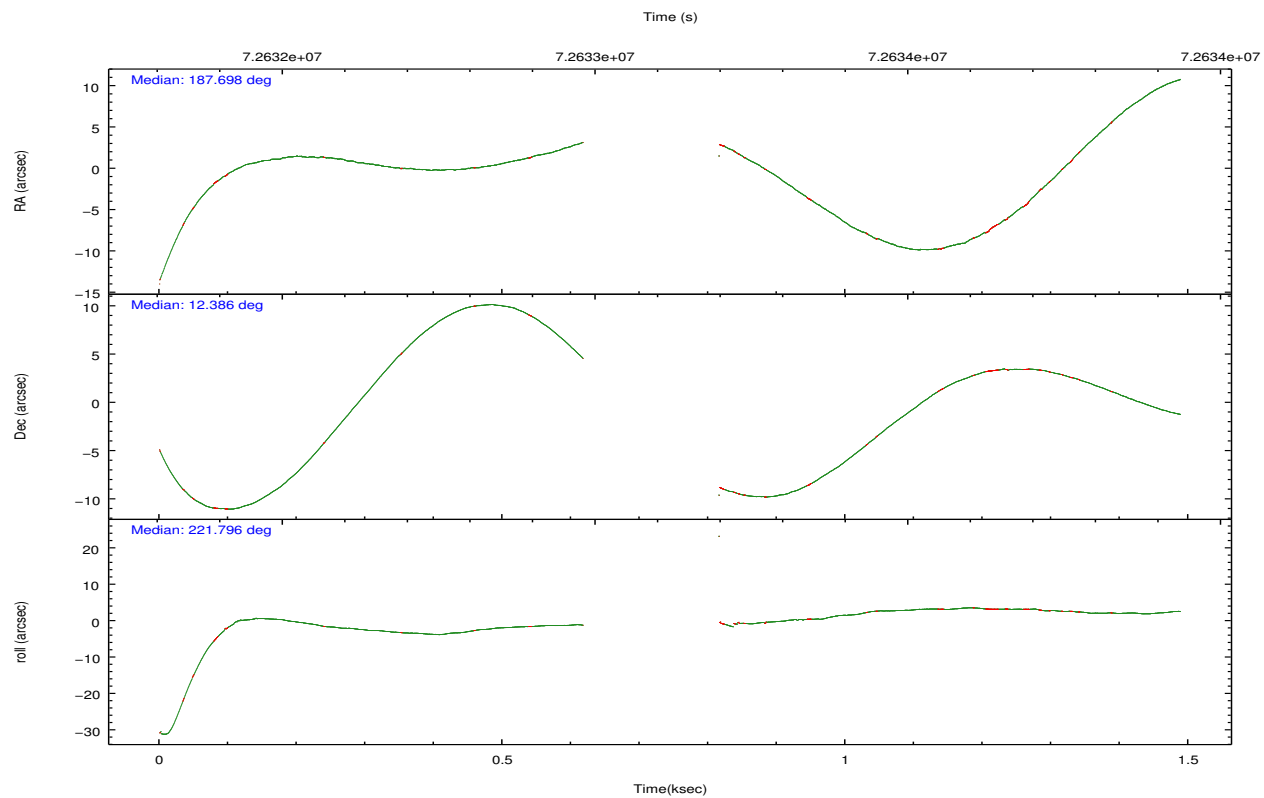
## 2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-7	ACIS-7
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	187.705761	187.6968291253719
[deg] Pointing Dec	12.411991	12.38571676709139
[deg] Pointing Roll	221.644022	221.8022306091285
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	72632865.184000	72631890.41302399
Observation start date	2000-04-20T15:46:41	2000-04-20T15:31:30
[s] Observation end time (MET)	72633865.184000	72634036.25060301
Observation end date	2000-04-20T16:03:21	2000-04-20T16:07:16
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	1/8
Subarray start row	447	447
Subarray row count	128	128
Alternating exposures requested	Y	Y
[s] Primary exposure time	0.100000	0.1
[s] Secondary exposure time	0.400000	0.4
Duty cycle	1	1

## 2.3 Aspect





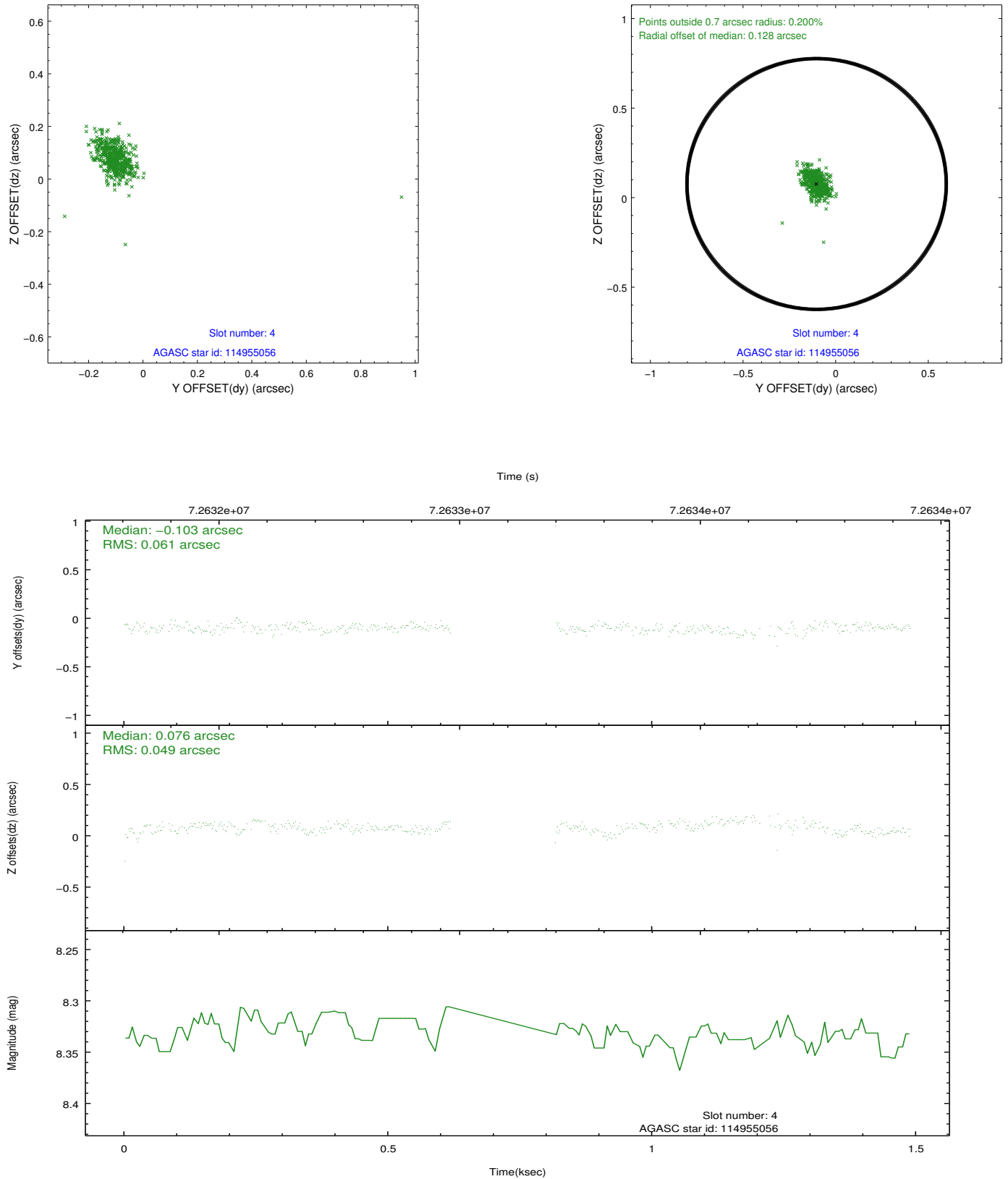
### Slot Statistics

slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	265	-0.002	-0.005	0.007	0.011	0.000000	0.000000	-753.24	-1724.02
1	FID	ACIS-S-4	7.21	192	0.009	0.003	0.006	0.010	0.000000	0.000000	2156.25	175.57
2	FID	ACIS-S-5	6.99	206	-0.038	0.011	0.007	0.010	0.000000	0.000000	-1795.80	179.01
3	OMITTED		0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00
4	GUIDE	114955056	8.33	500	-0.103	0.076	0.062	0.105	187.914001	12.127854	132.55	1251.12
5	GUIDE	114952824	8.57	443	0.014	0.002	0.059	0.100	187.703904	12.486727	-172.46	-202.86
6	GUIDE	114952424	9.34	512	0.062	-0.061	0.077	0.129	187.477948	11.953762	1696.28	698.97
7	GUIDE	114952792	9.51	511	0.037	-0.014	0.090	0.146	187.070263	12.344747	1833.80	-1304.73

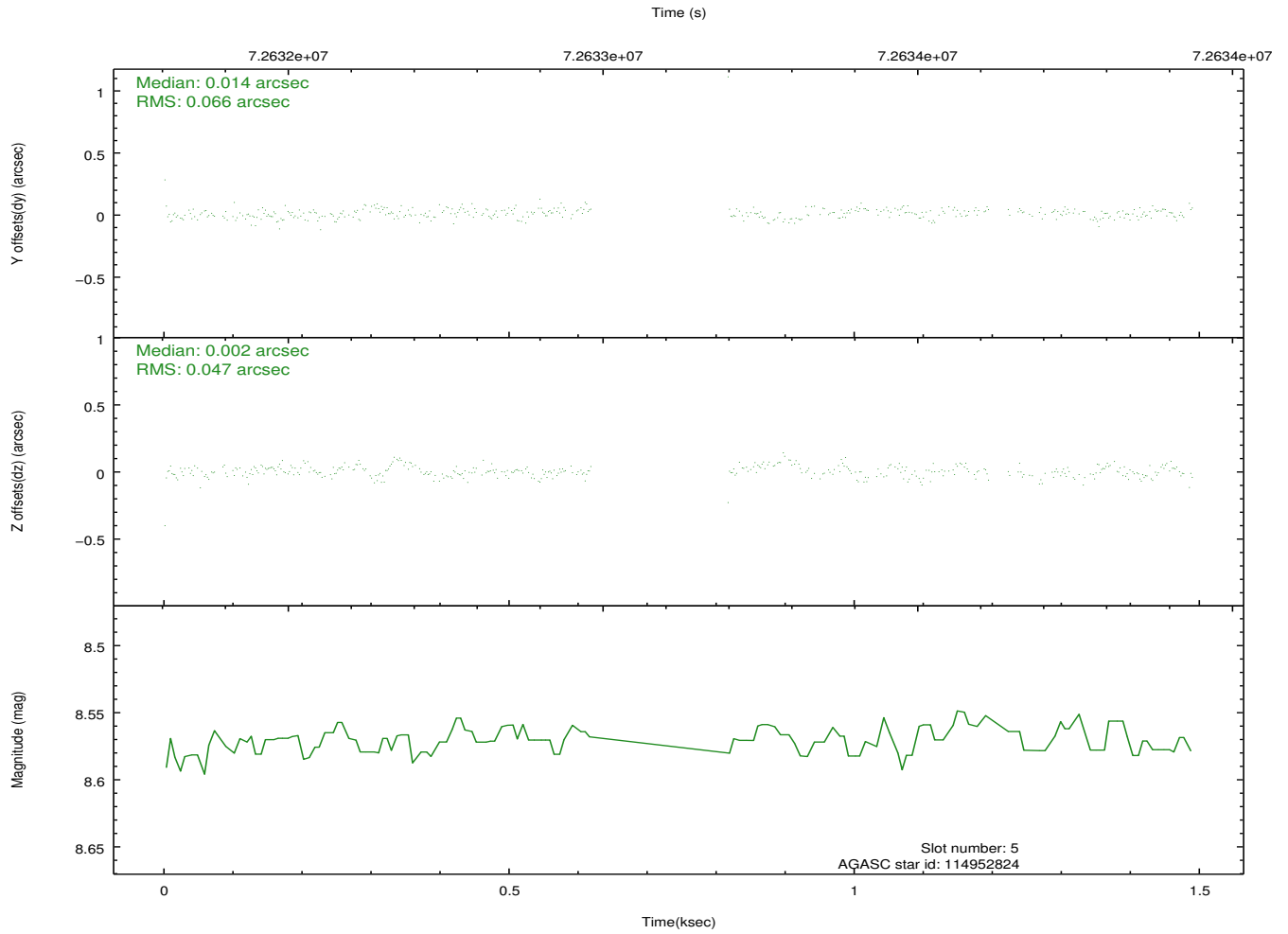
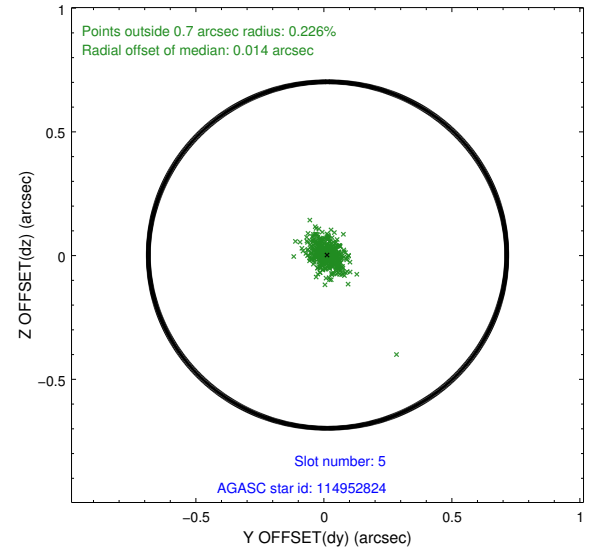
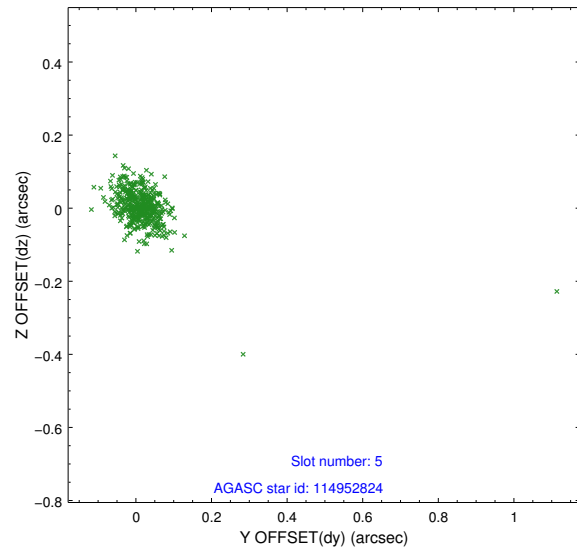


## 2.4 Star Slots

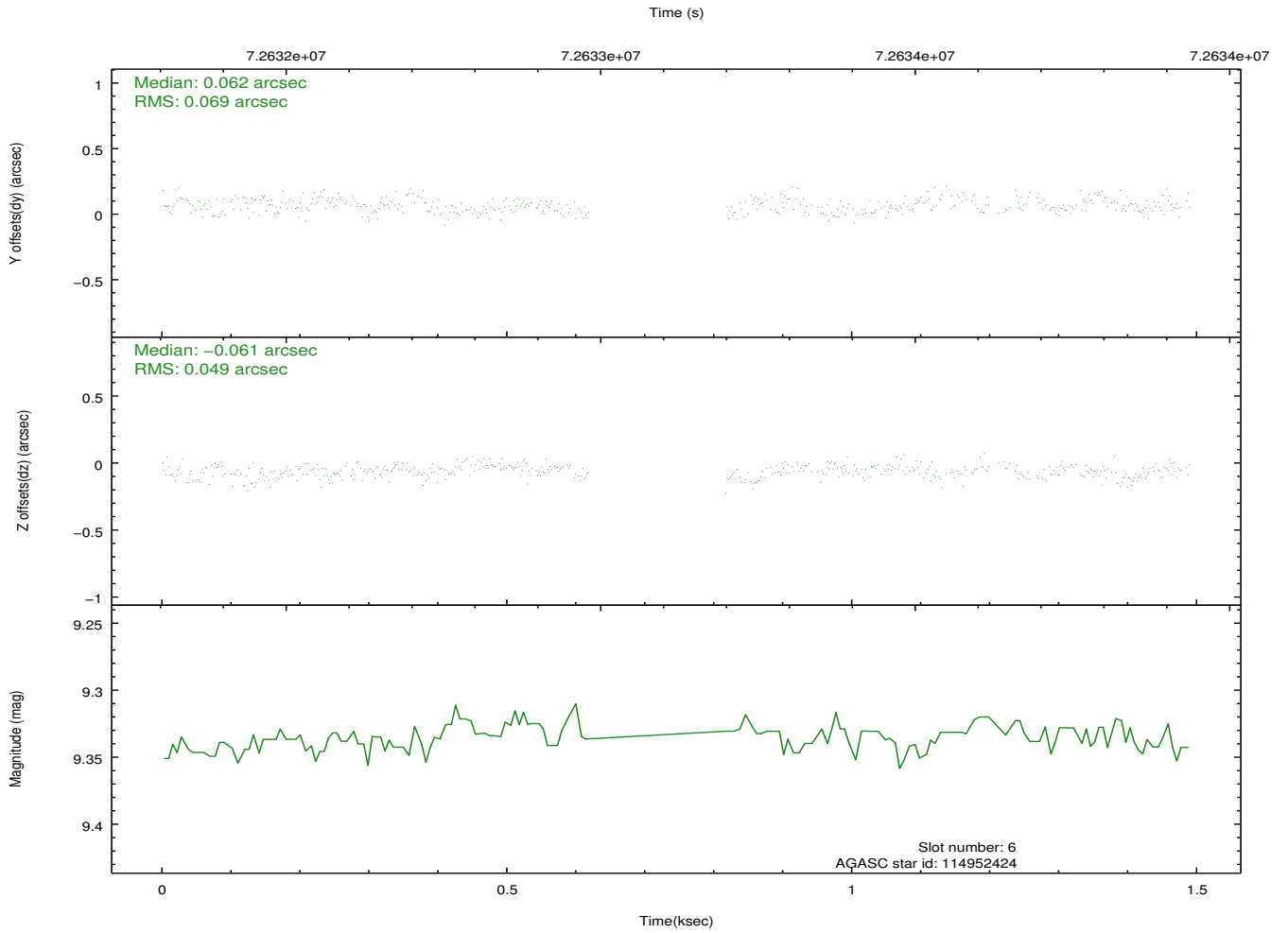
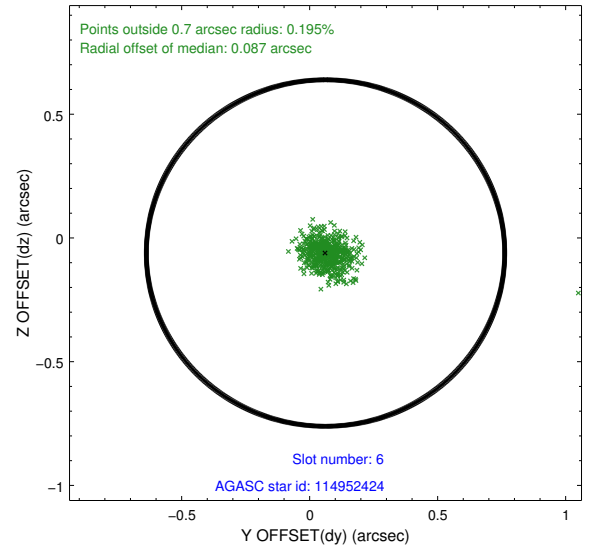
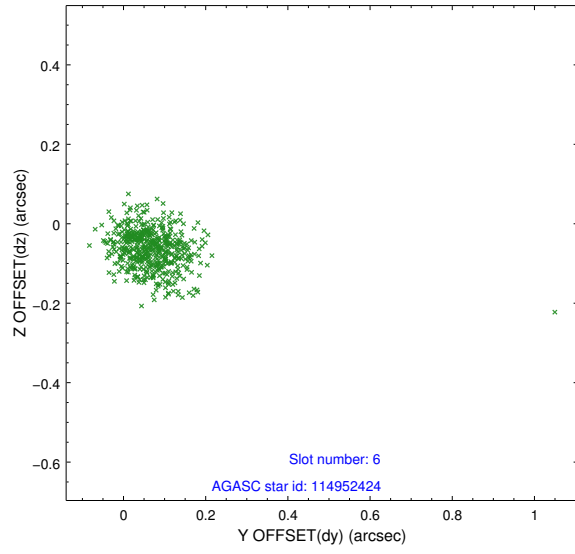
### 2.4.1 Slot 4



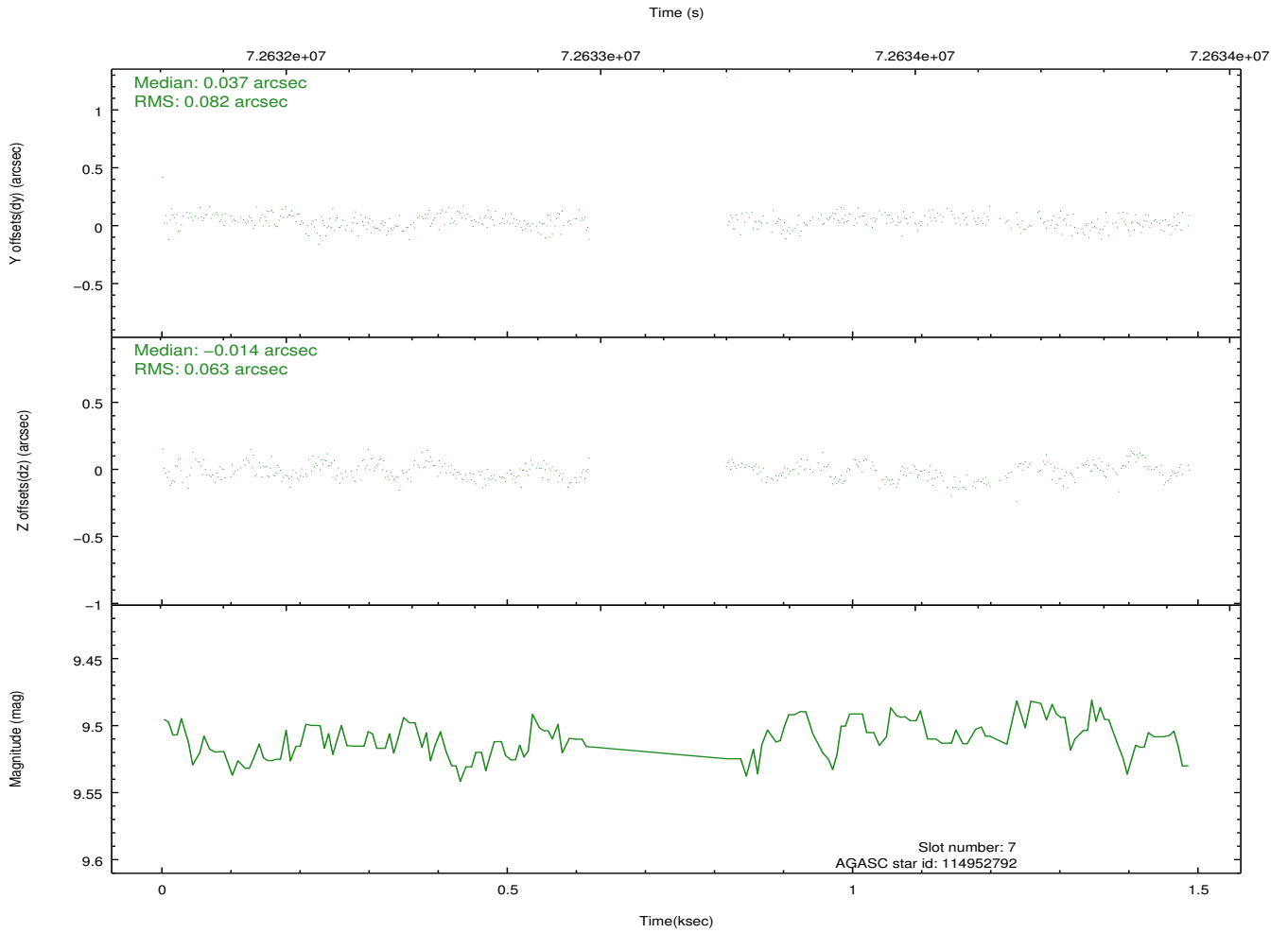
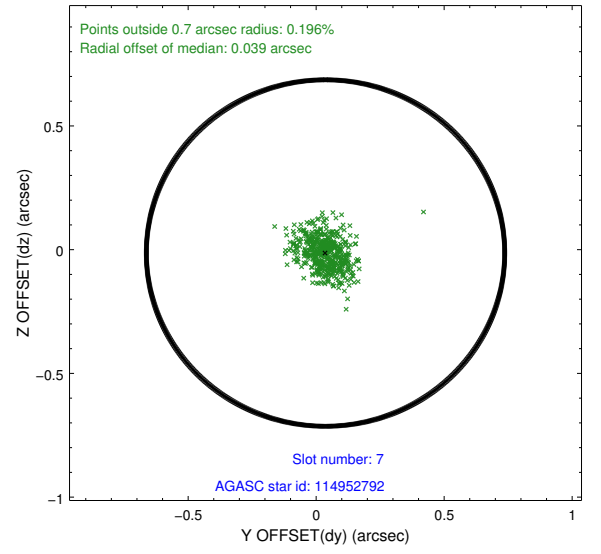
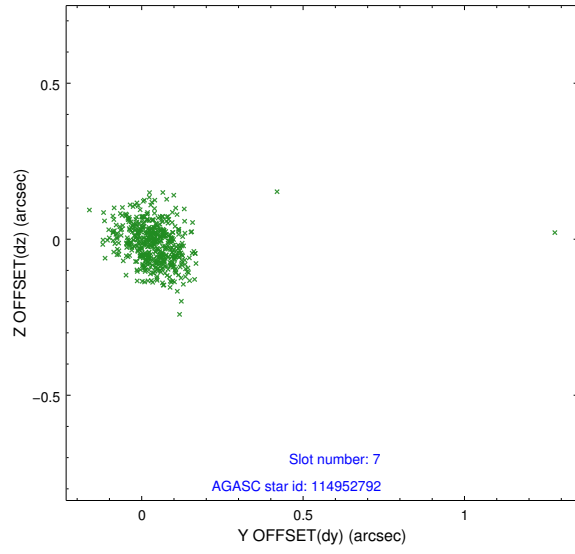
## 2.4.2 Slot 5



### 2.4.3 Slot 6

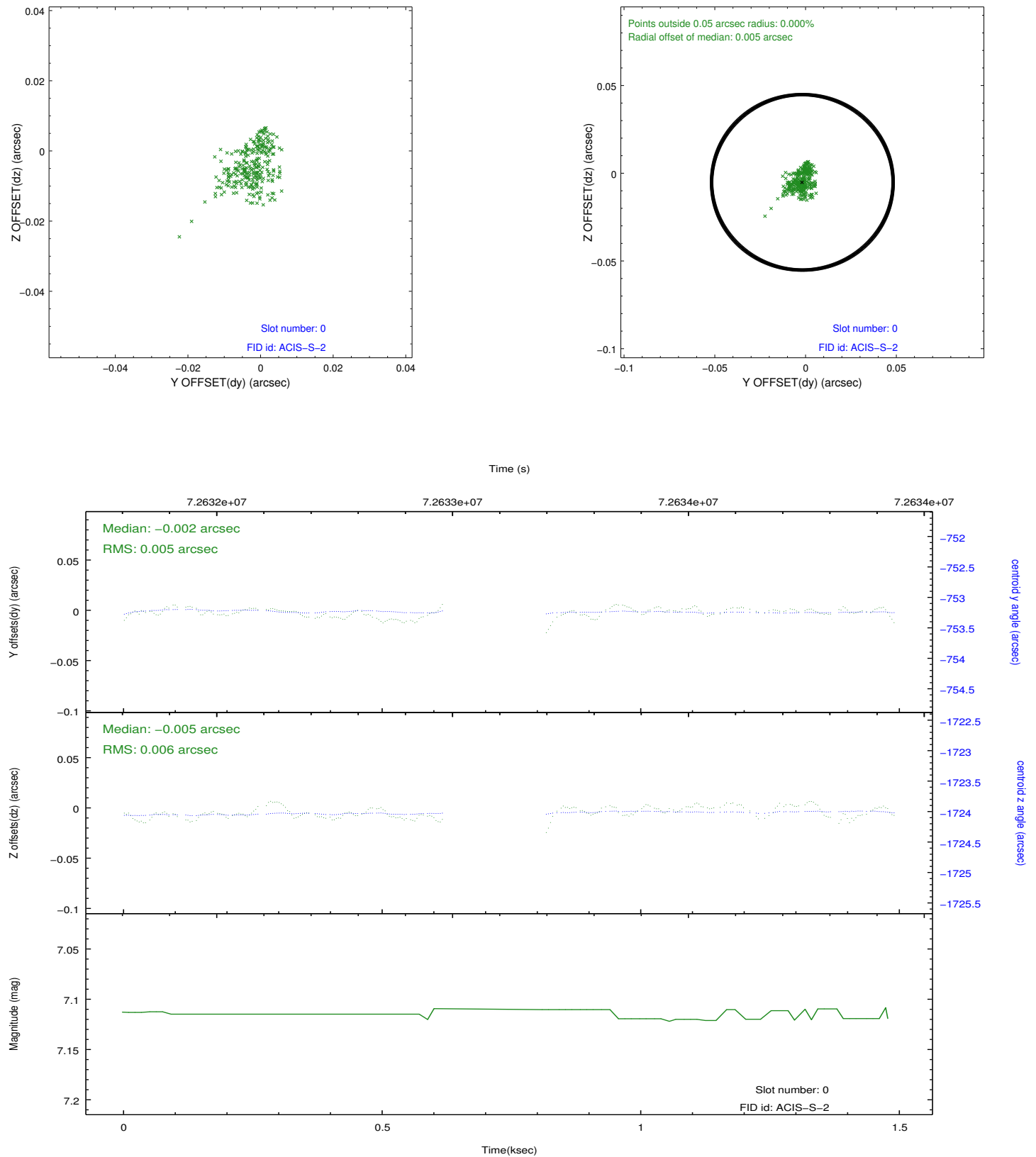


## 2.4.4 Slot 7

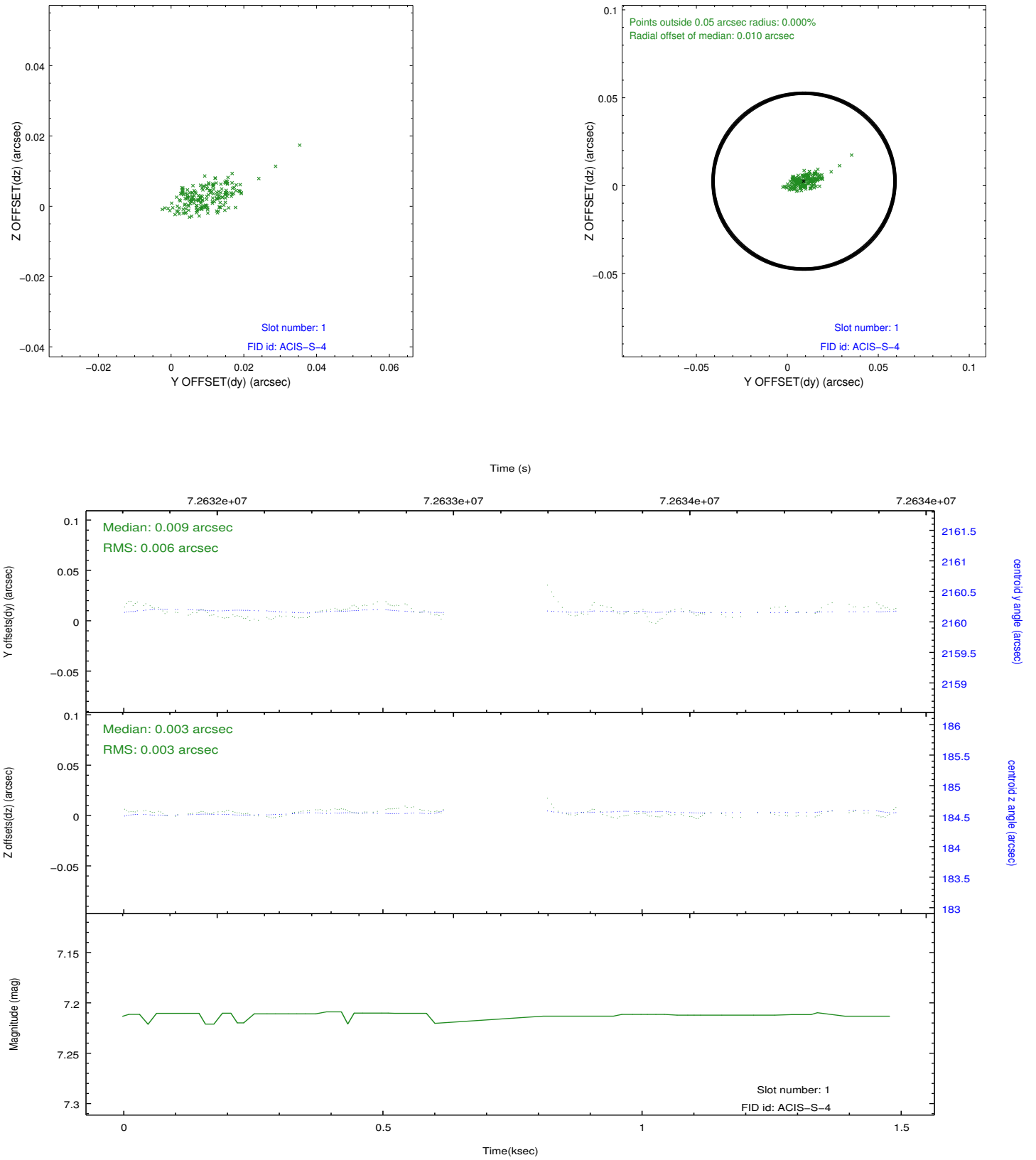


## 2.5 FID Slots

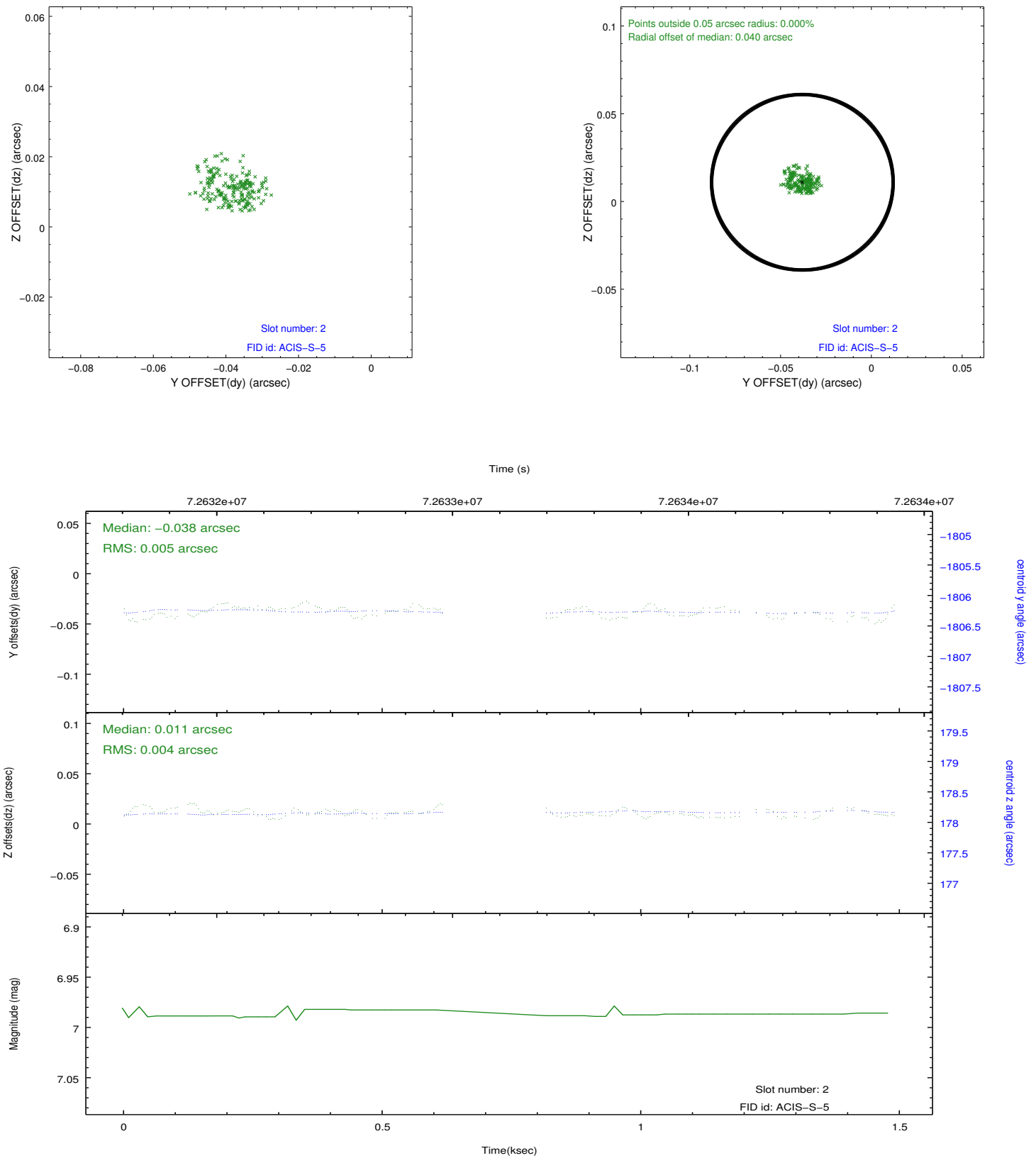
### 2.5.1 Slot 0



## 2.5.2 Slot 1



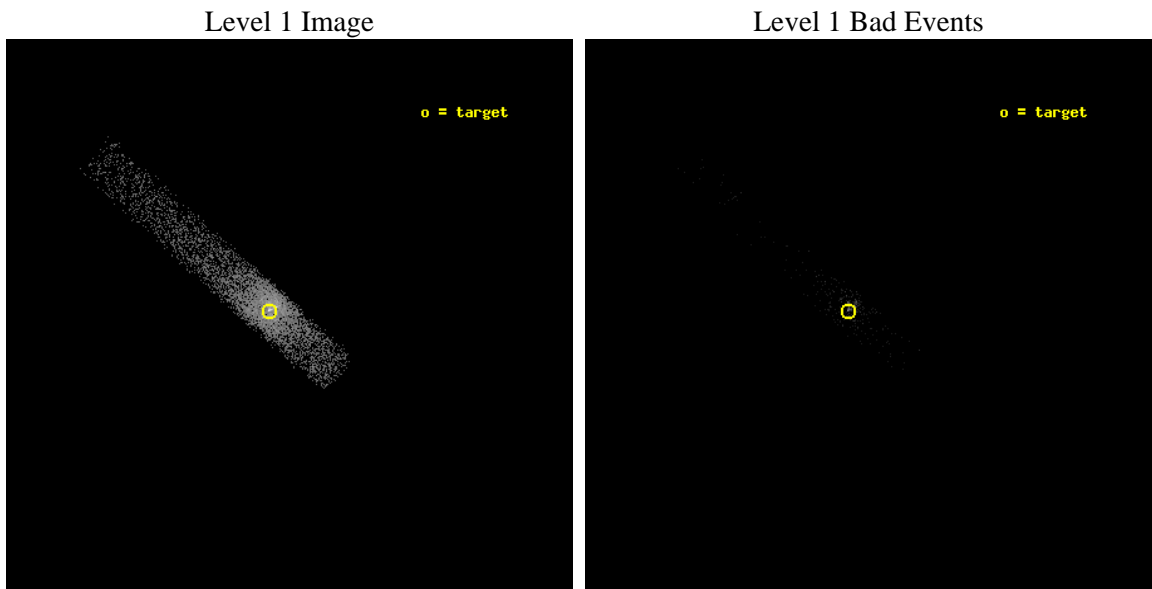
### 2.5.3 Slot 2



## 3 OBI Secondary

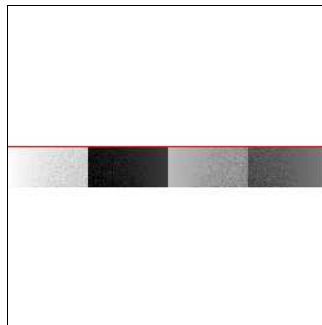
### 3.1 OBI

#### 3.1.1 Images



#### 3.1.2 Bias

Chip 7





### 3.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	1000.000000	[s] Scheduled observation exposure time
ascdsver	8.5.1.1	Processing system revision	ontime	483.53048790991	Sum of GTIs [s]
caldsver	4.5.5	&#160	ontime7	483.53048790991	Sum of GTIs [s]
date	2013-01-23T17:16:50	Date and time of file creation	l1events	8053	Number of level 1 events
revision	7	Processing version of data			

### 3.1.4 Events

	<b>ccd 7</b>
level 1 events	8053
rejected events	1881
rejected %	23%

	<b>ccd 7</b>
grade 0 events	2671
	33%
grade 1 events	10
	0%
grade 2 events	1870
	23%
grade 3 events	909
	11%
grade 4 events	948
	11%
grade 5 events	116
	1%
grade 6 events	1258
	15%
grade 7 events	271
	3%

# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.01.29
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	1.143

## A.2 Comments

This is an interleave mode observation. The secondary observation is 4 times as long as the primary observation. Obsid 351 suffers from frequent data dropouts and patchy telemetry. The parameters that specify the minimum amount of time the aspect camera must be tracking the fid lights and guide stars (95% by default) were manually adjusted for this processing. There are 2 aspect intervals for this obsid. For the first aspect interval, the parameters were changed as follows:

`gs_min_trak=90.0, fid_min_trak=90.0`. For the second aspect interval, the parameters were changed as follows: `gs_min_trak=88.0, fid_min_trak=88.0`. These changes allowed all the fid light data to be used in determining the aspect solution for this observation. =====

The guide star in slot 3 was removed from the aspect solution due to poor data quality. The aspect solution is significantly improved by removing this guide star from the solution.

=====

Charge time for this ObsId remains at original value of 1.143 ksec, although with the current processing the charge time would have been 1.0507 ksec.

====

For the primary exposure (e1), the livetime is about 99.505ms instead of 567.18 s because the use of a 0.1 s frame time for the selection of chips and rows used during the observation is shorter than the time it takes to read out one frame of data. The frame time must be at least 0.7 s to avoid 'flushing' the detector before each frame of data is collected. The time required to flush the detector is specified on p. 120 of the ACIS Science Instrument Software User's Guide:

<http://acis.mit.edu/swuserA/swuser.pdf> Events that occur during such a flush are discarded onboard. The flush time is effectively 'dead time.' For this reason, most of the 567.18 s of the observation was spent flushing the detectors instead of collecting data.