

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 15496 - L2 Version 2  
Chandra X-Ray Center

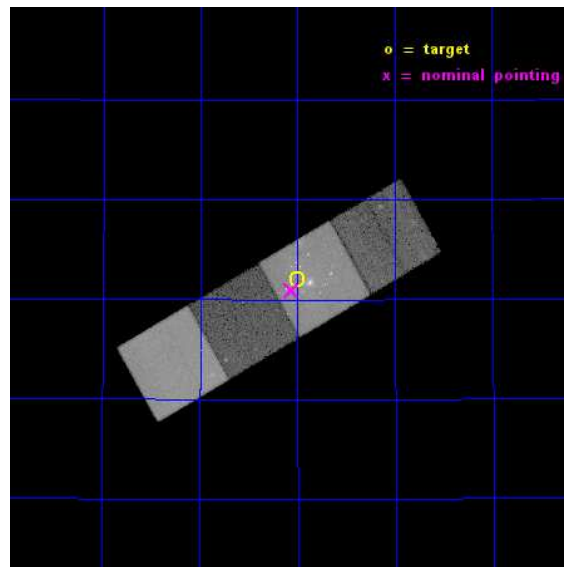
L2 Processing Date : Nov 27 2014

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# 1 Front

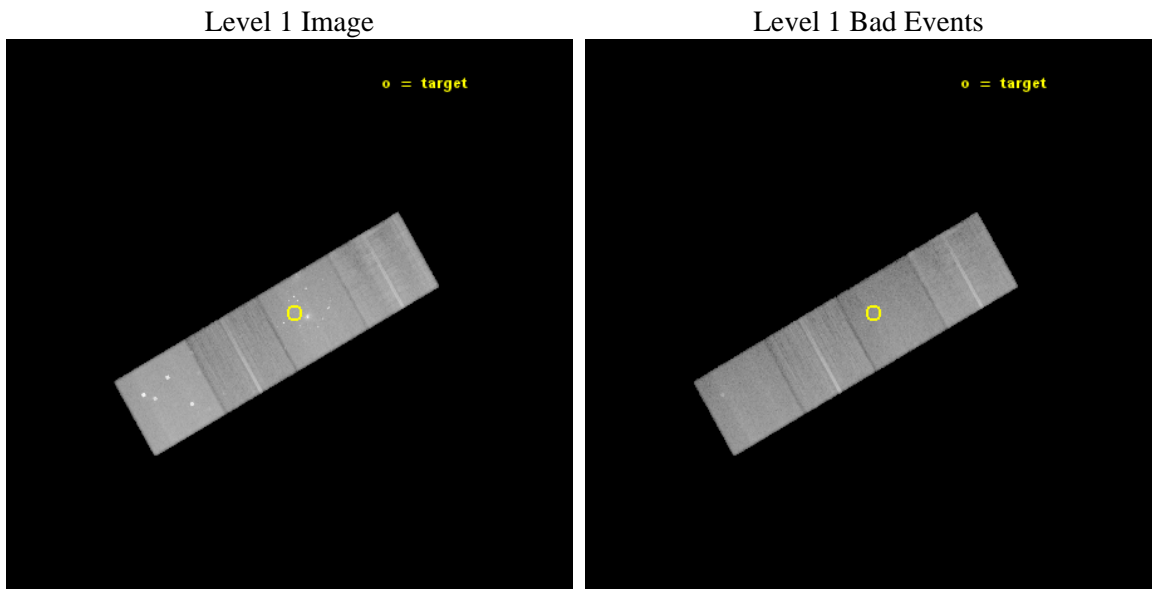
seq_num	600995	Sequence number
obs_id	15496	Observation id
title	M51: Using the Kinematics of a Grand-Design Spiral to Understand the Physics of the Hot ISM, SNRs, and XRBs	Proposal title
observer	Dr. K.D. Kuntz	Principal investigator
object	M51	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	202.5	Observer's specified target RA [deg]
dec_targ	47.2	Observer's specified target Dec [deg]
ra_nom	202.51599185916	Nominal RA [deg]
dec_nom	47.18223053285	Nominal Dec [deg]
roll_nom	330.14490161434	Nominal Roll [deg]
revision	2	Processing version of data
ontime	41507.852523327	Sum of GTIs [s]
livetime	40965.521872473	Livetime [s]
ontime5	41507.811483324	Sum of GTIs [s]
ontime6	41504.629482985	Sum of GTIs [s]
ontime7	41507.852523327	Sum of GTIs [s]
ontime8	41507.729403317	Sum of GTIs [s]
l2events	363515	Number of level 2 events



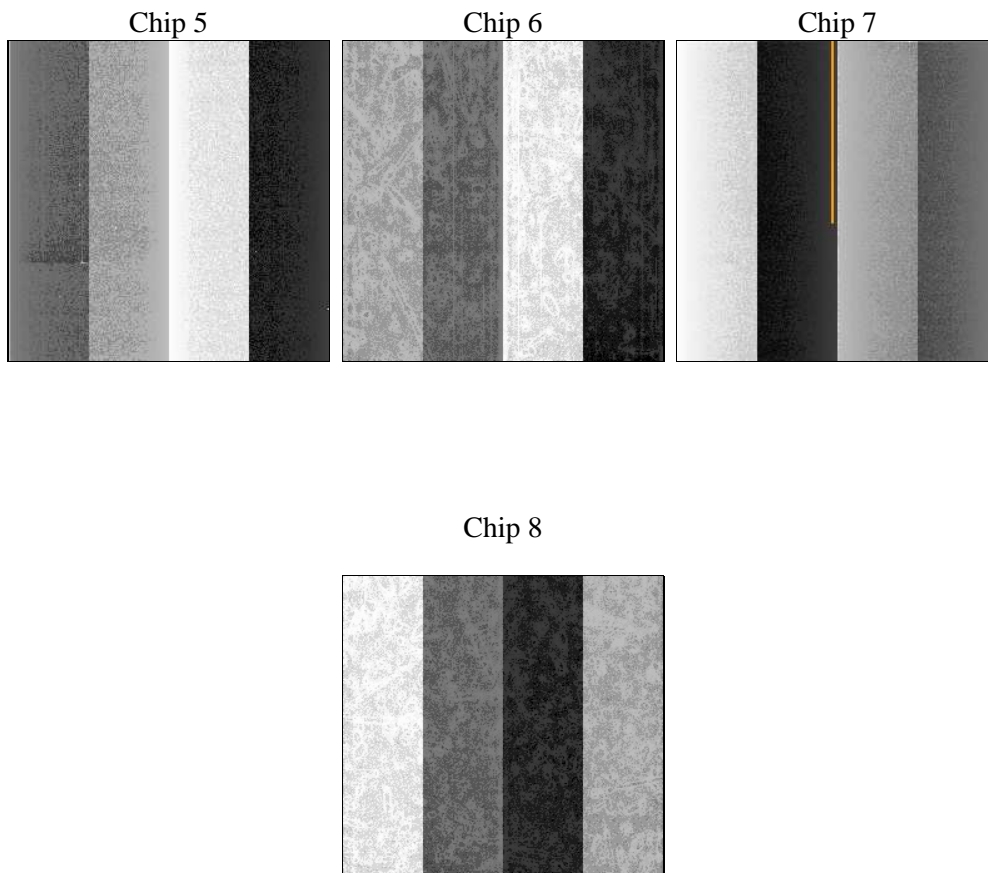
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	41434.400000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	41507.852523327	Sum of GTIs [s]
caldbver	4.6.4	&#160	ontime5	41507.811483324	Sum of GTIs [s]
date	2014-11-27T04:49:08	Date and time of file creation	ontime6	41504.629482985	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	41507.852523327	Sum of GTIs [s]
			ontime8	41507.729403317	Sum of GTIs [s]
			l1events	1201637	Number of level 1 events

### 2.1.4 Events

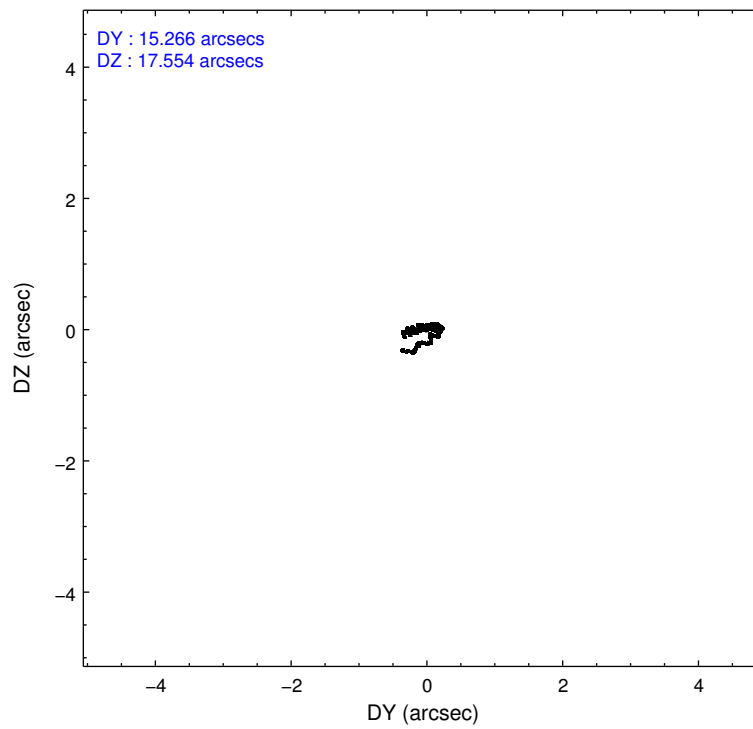
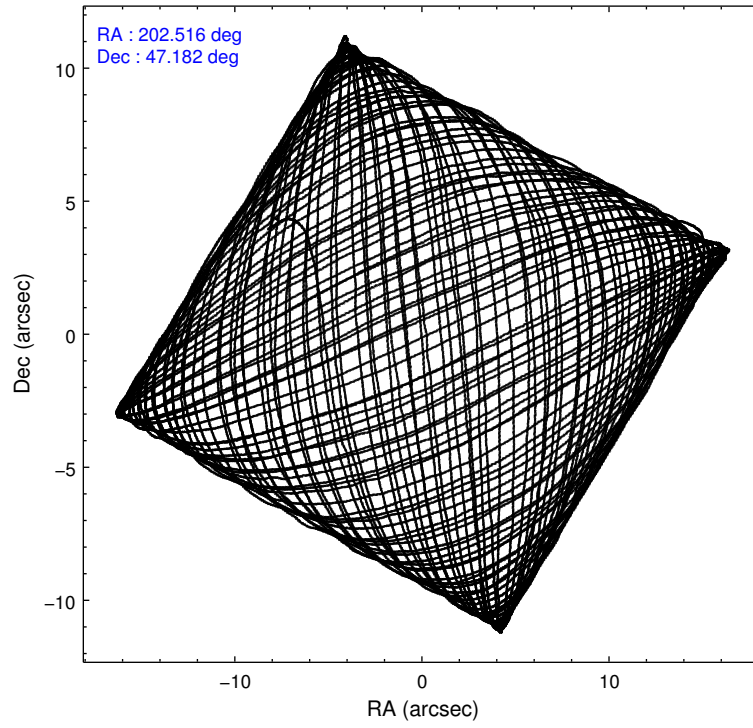
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	376883	220076	314595	290083
rejected events	183499	193590	161988	210716
rejected %	48%	87%	51%	72%

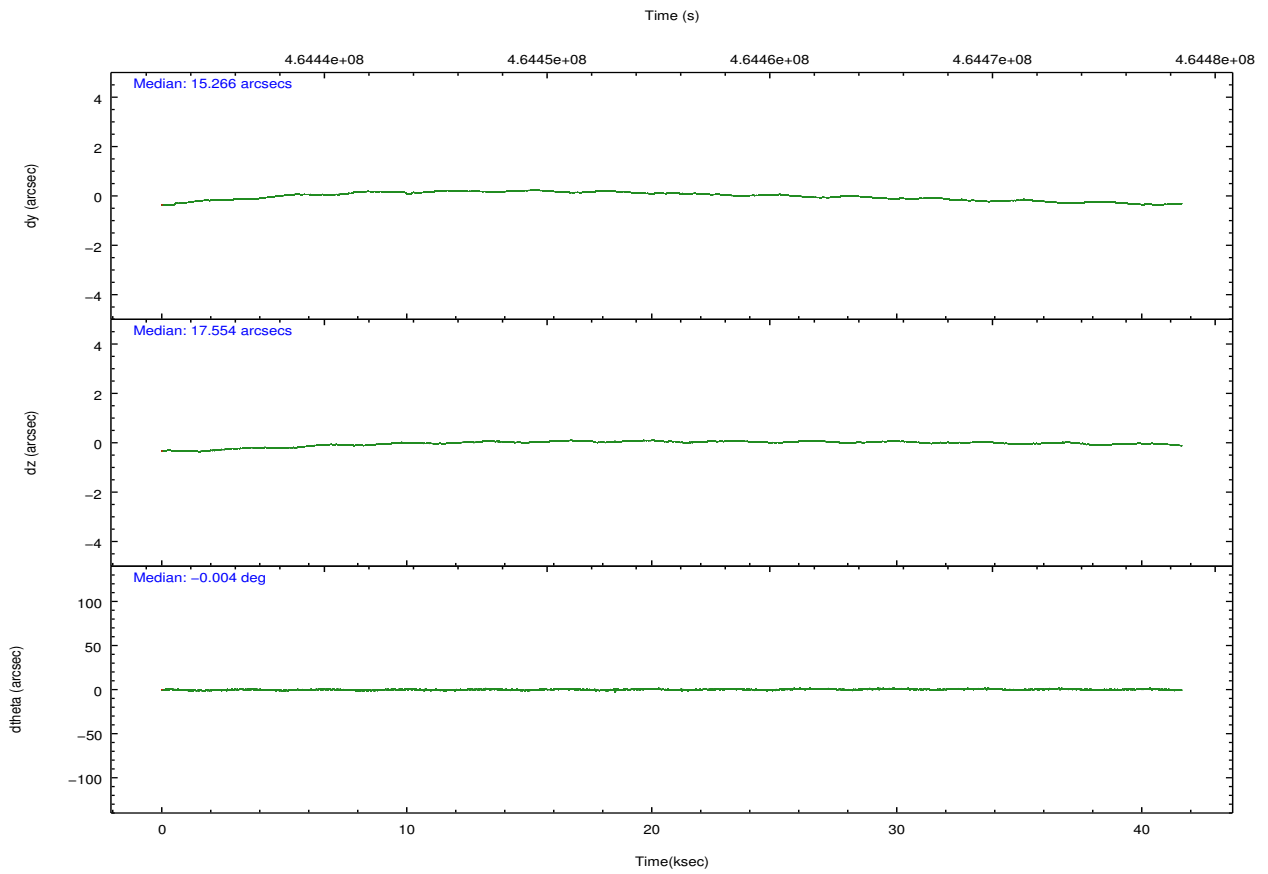
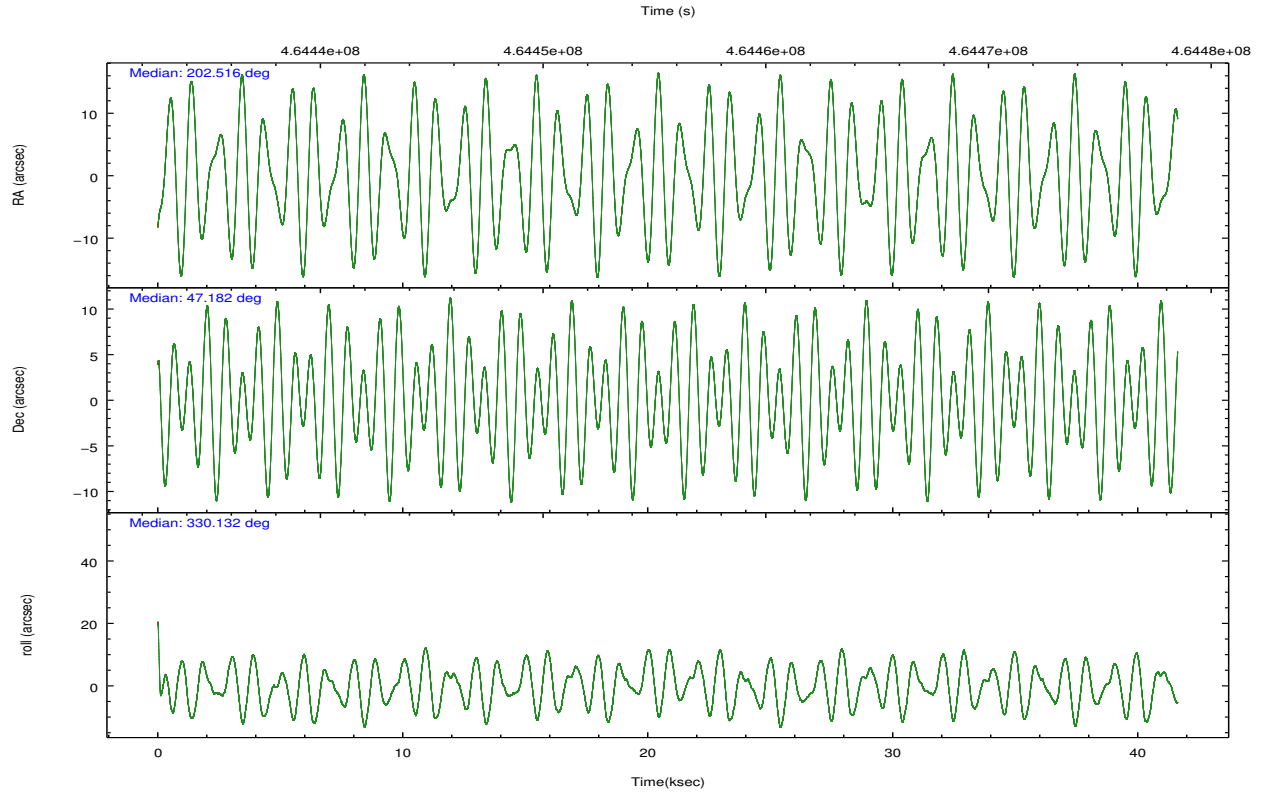
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	34587	9101	20151	24138
	9%	4%	6%	8%
grade 1 events	999	106	351	211
	0%	0%	0%	0%
grade 2 events	53709	5962	32406	18545
	14%	2%	10%	6%
grade 3 events	6143	2728	13735	8329
	1%	1%	4%	2%
grade 4 events	5998	2700	13629	7699
	1%	1%	4%	2%
grade 5 events	27024	11086	30570	16414
	7%	5%	9%	5%
grade 6 events	92967	5998	72703	20677
	24%	2%	23%	7%
grade 7 events	155456	182395	131050	194070
	41%	82%	41%	66%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	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	202.475765	202.5159918591563	Subarray requested	NONE	NONE
[deg] Pointing Dec	47.181794	47.18223053285021	Alternating exposures requested	N	N
[deg] Pointing Roll	330.017773	330.1449016143436	[s] Primary exposure time	0.000000	3.1
[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)	464434981.184000	464433701.52261			
Observation start date	2012-09-19T09:41:54	2012-09-19T09:21:41			
[s] Observation end time (MET)	464476415.184000	464476640.82492			
Observation end date	2012-09-19T21:12:28	2012-09-19T21:17:20			
Read mode	TIMED	TIMED			

## 2.3 Aspect



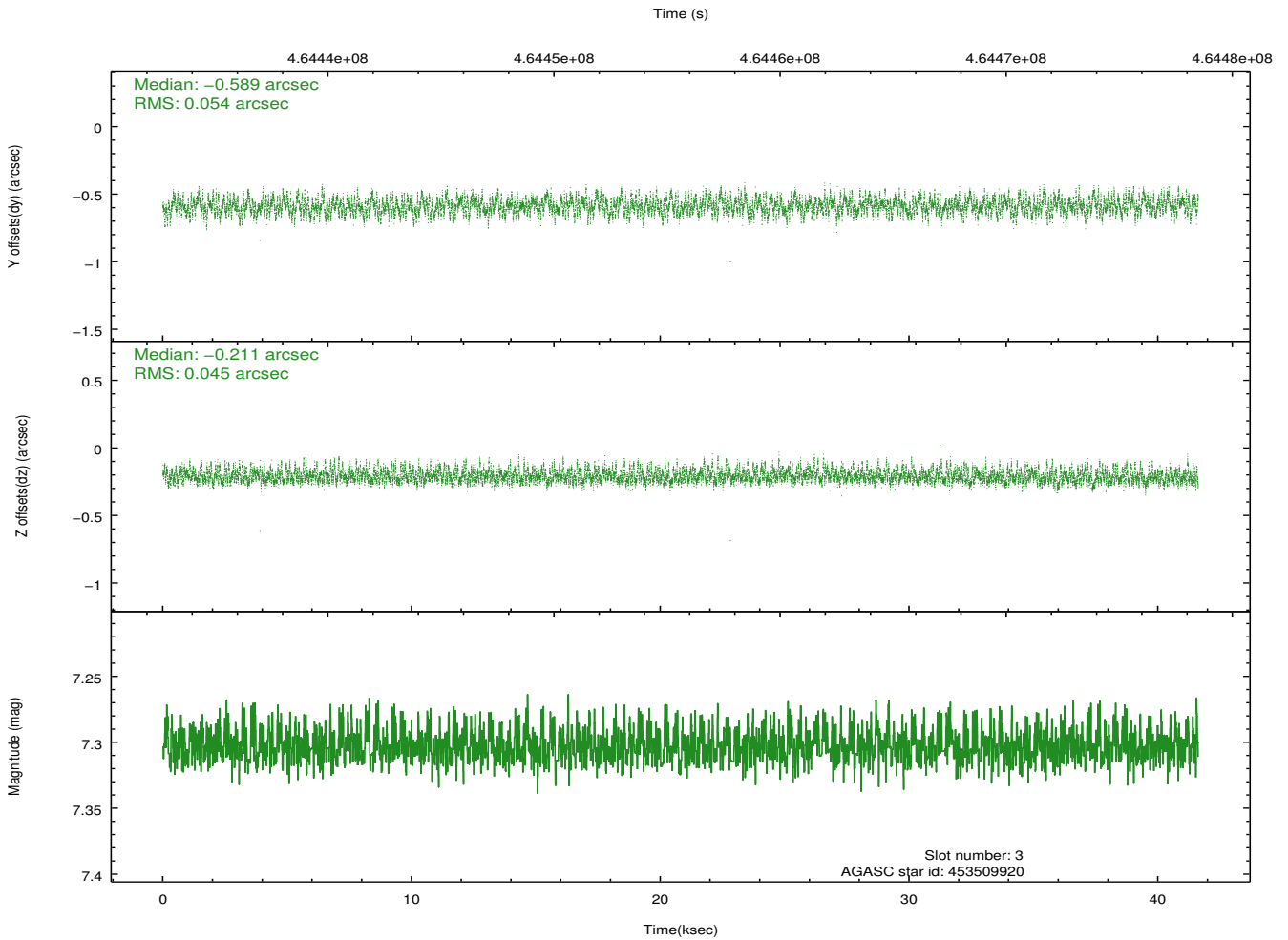
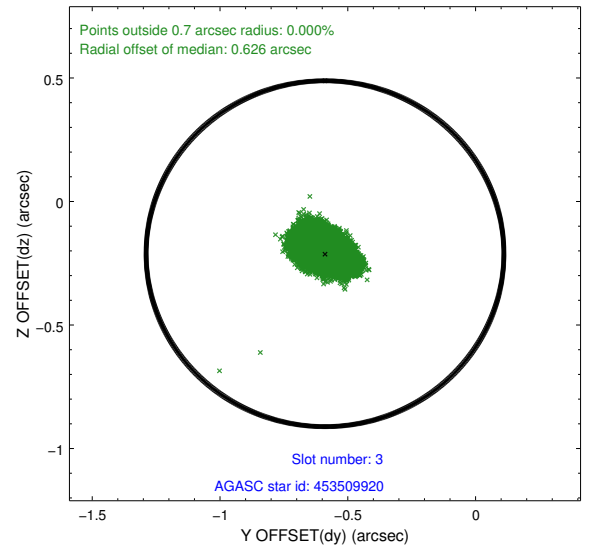
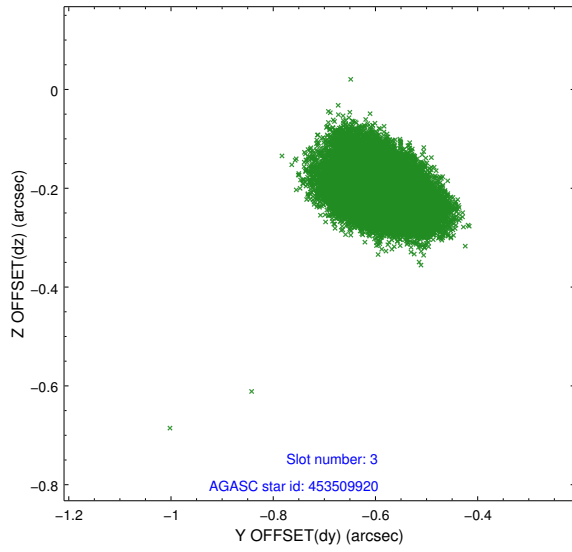


### Slot Statistics

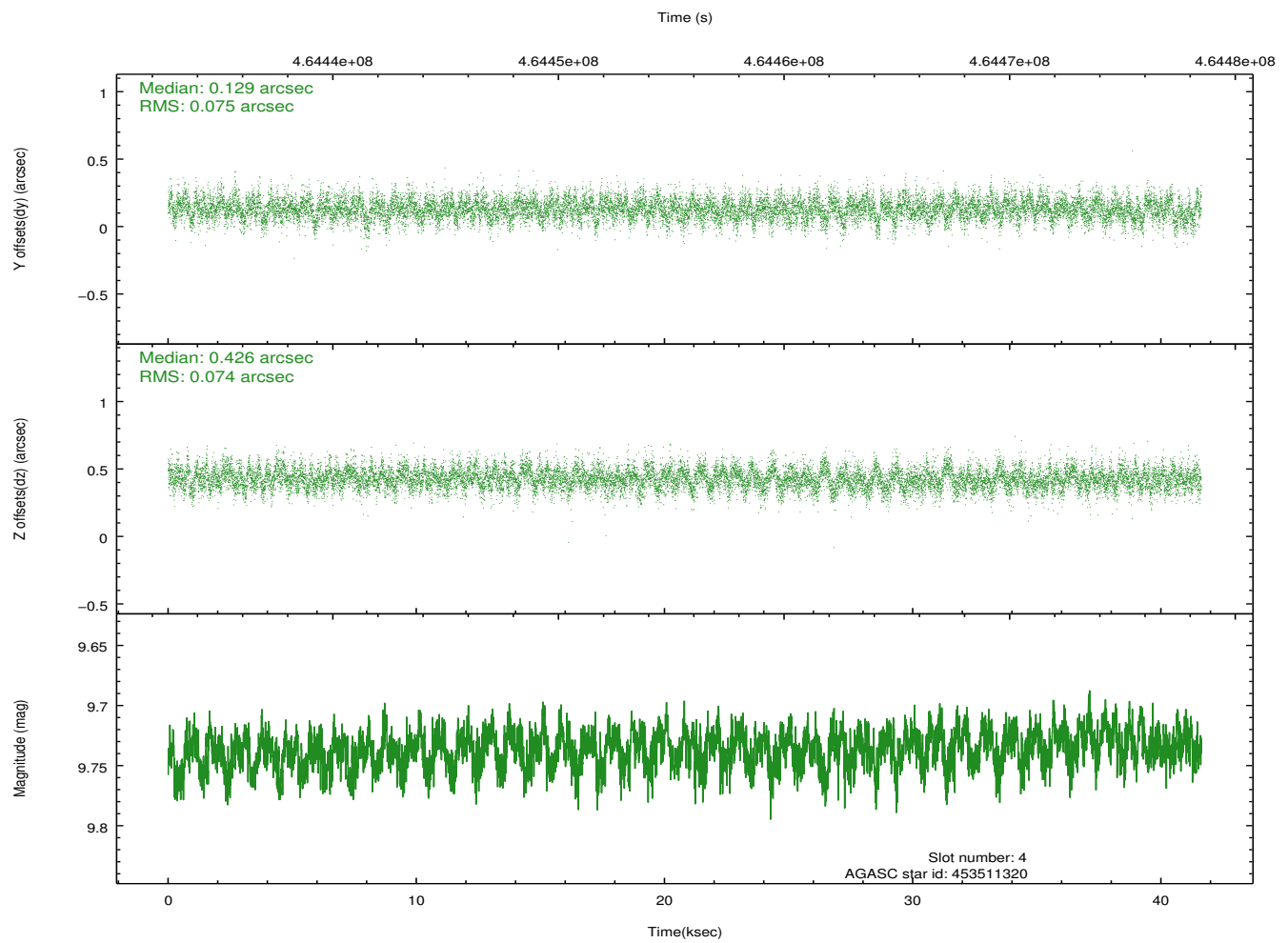
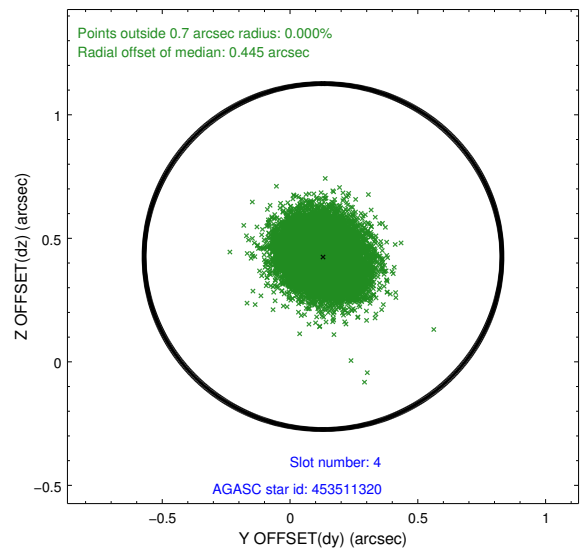
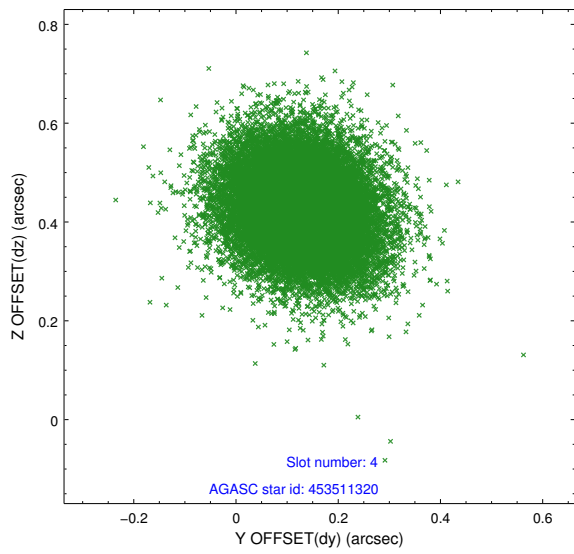
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	6.99	10153	0.060	-0.038	0.007	0.012	0.000000	0.000000	927.83	-1734.61
1	FID		ACIS-S-4	7.01	10152	0.136	0.002	0.009	0.014	0.000000	0.000000	2145.36	169.56
2	FID		ACIS-S-5	7.03	10152	-0.223	0.049	0.008	0.015	0.000000	0.000000	-1821.27	163.29
3	GUIDE	used	453509920	7.30	20304	-0.589	-0.211	0.075	0.121	202.256826	47.847140	-1656.30	1810.83
4	GUIDE	used	453511320	9.74	20288	0.129	0.426	0.111	0.184	201.652270	47.423457	-2176.52	-239.59
5	GUIDE	used	453511800	9.21	20246	-0.018	-0.054	0.183	0.284	201.825327	46.820165	-740.98	-1922.53
6	GUIDE	used	453904608	7.38	20300	0.273	-0.064	0.090	0.135	202.983748	47.234418	979.19	788.54
7	GUIDE	used	454303504	9.71	20264	0.176	-0.102	0.155	0.248	202.757470	47.708424	-357.13	1984.13

## 2.4 Star Slots

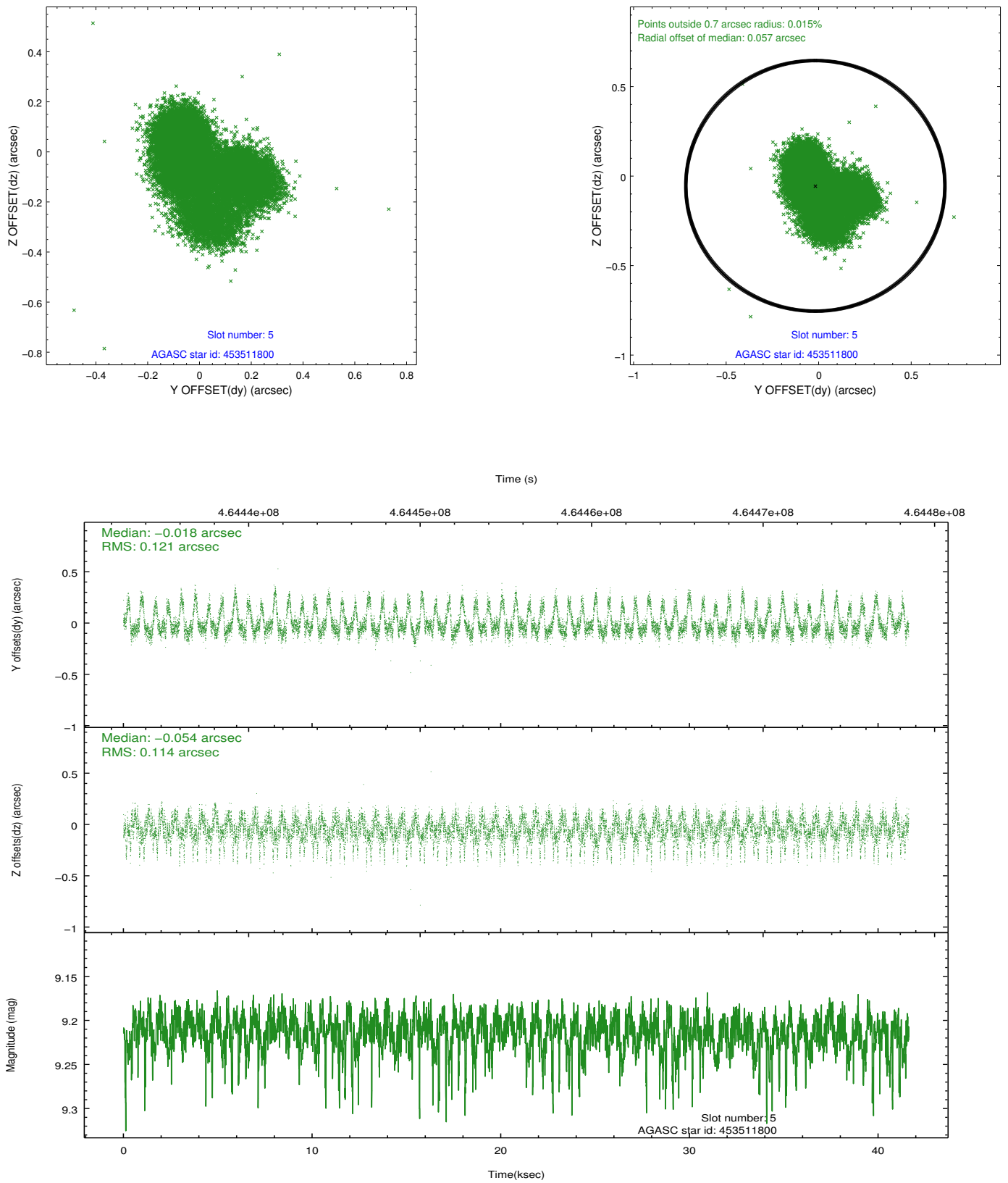
### 2.4.1 Slot 3



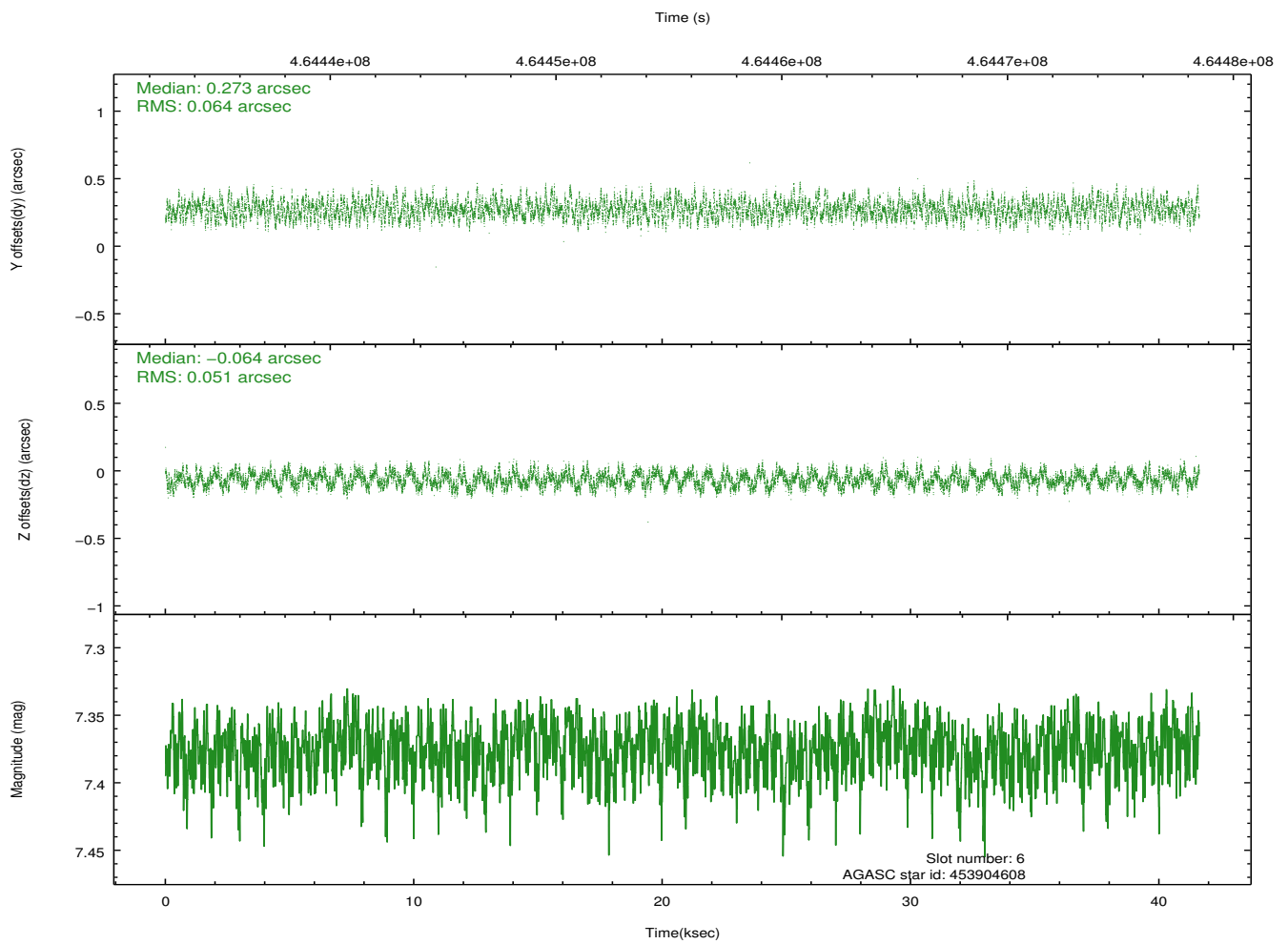
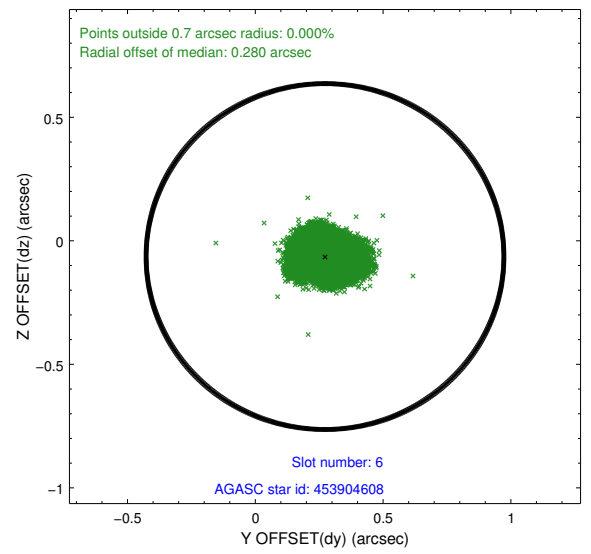
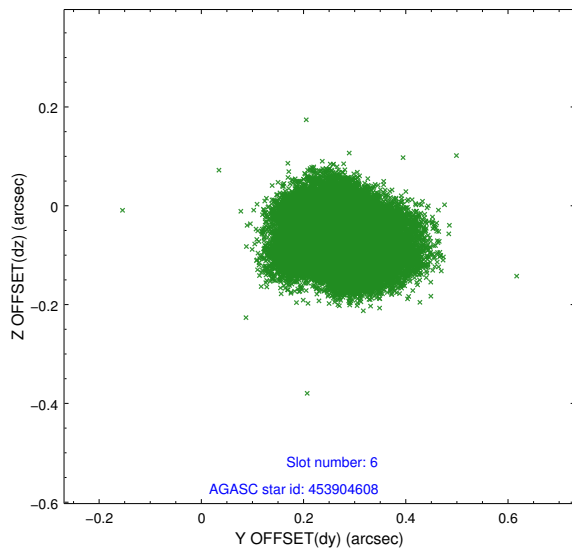
## 2.4.2 Slot 4



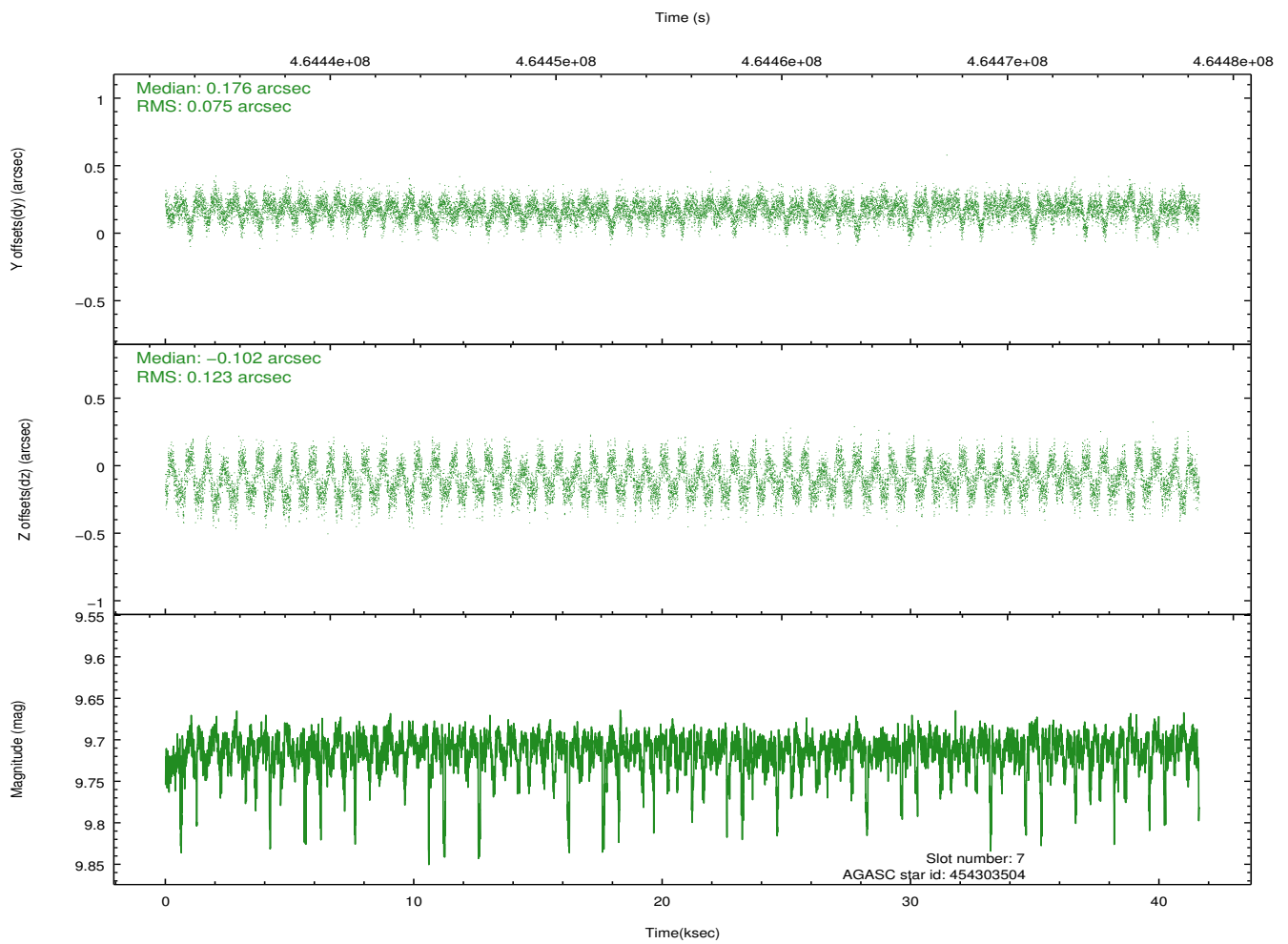
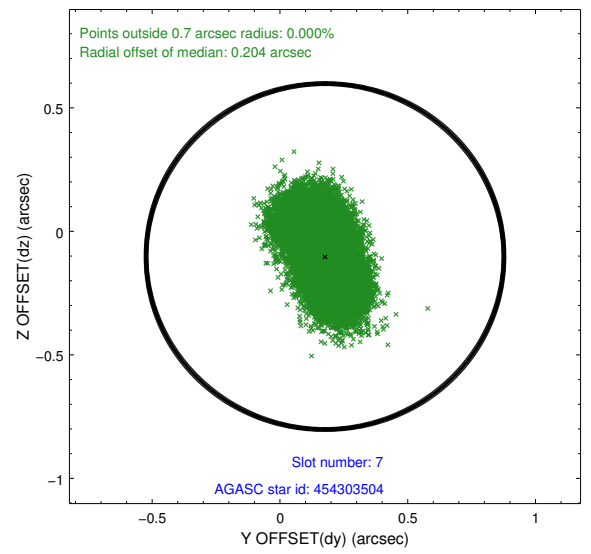
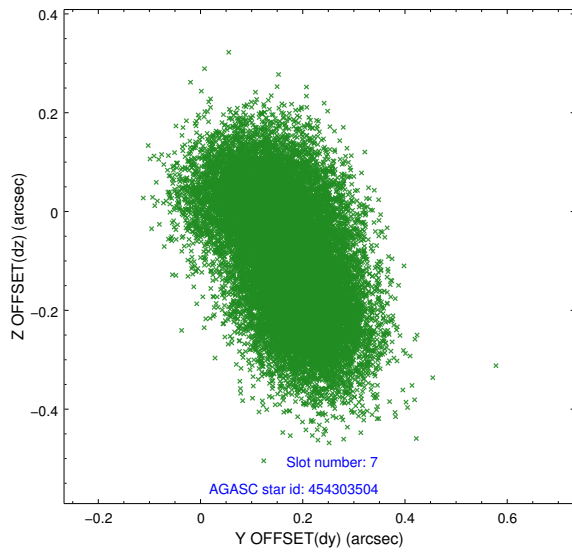
### 2.4.3 Slot 5



## 2.4.4 Slot 6

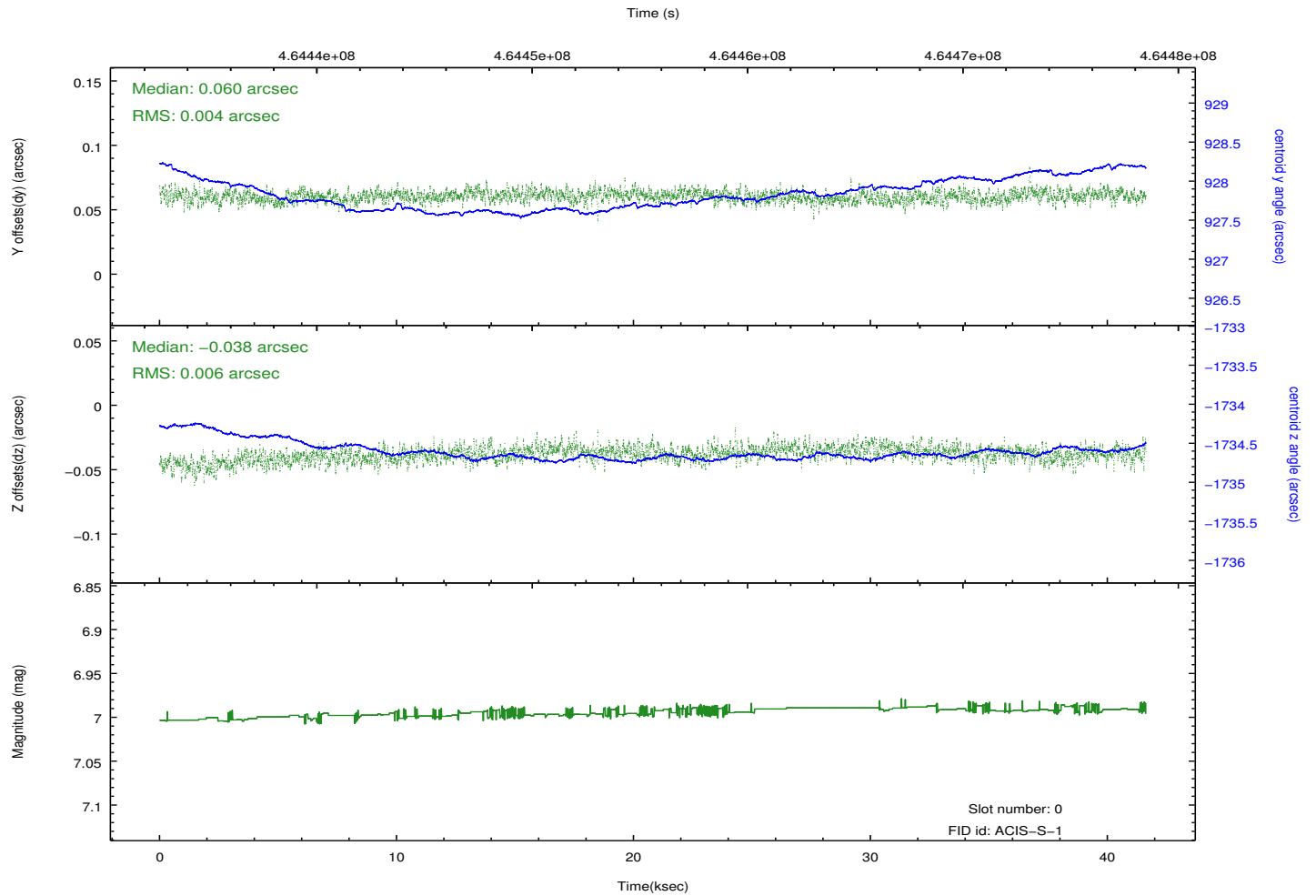
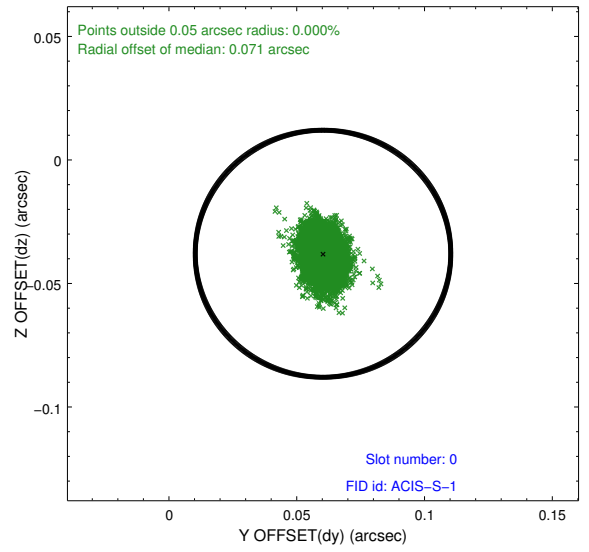
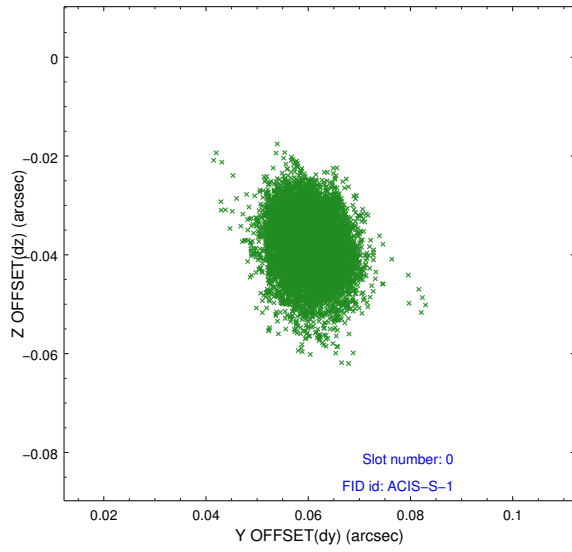


## 2.4.5 Slot 7

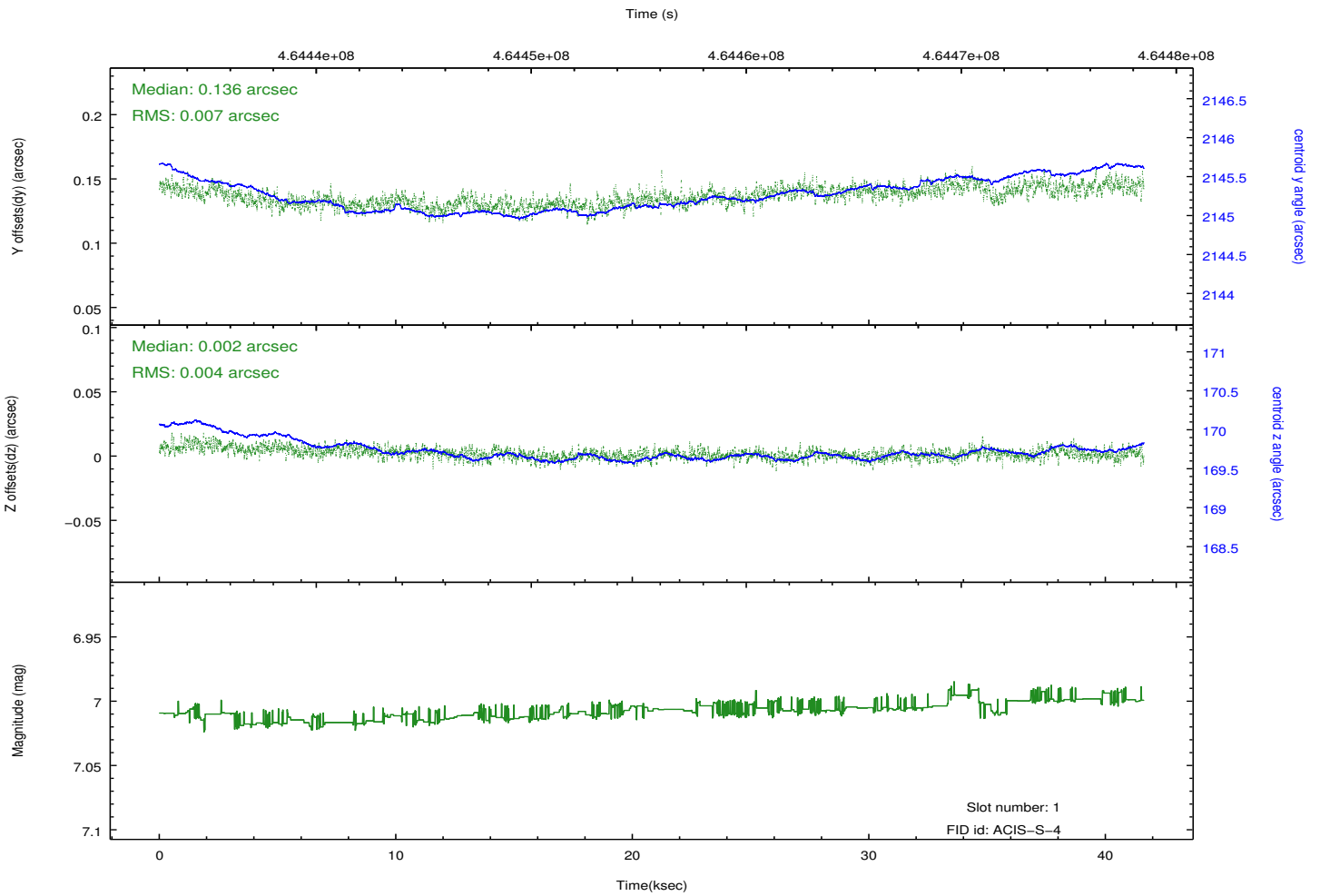
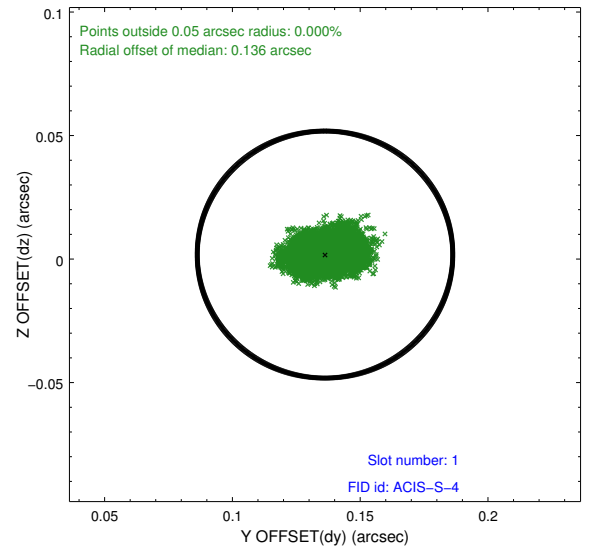
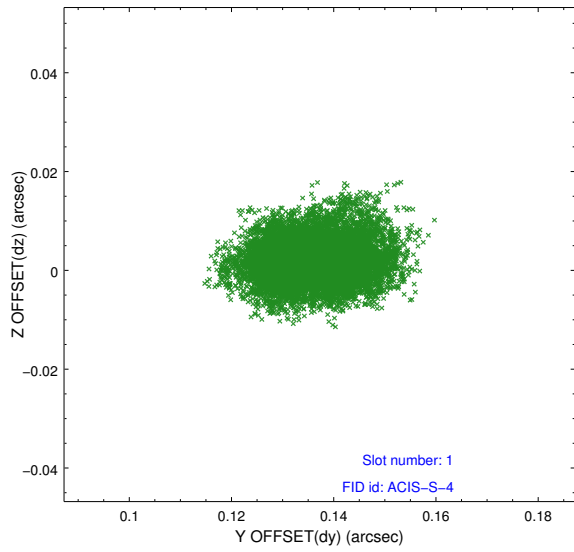


## 2.5 FID Slots

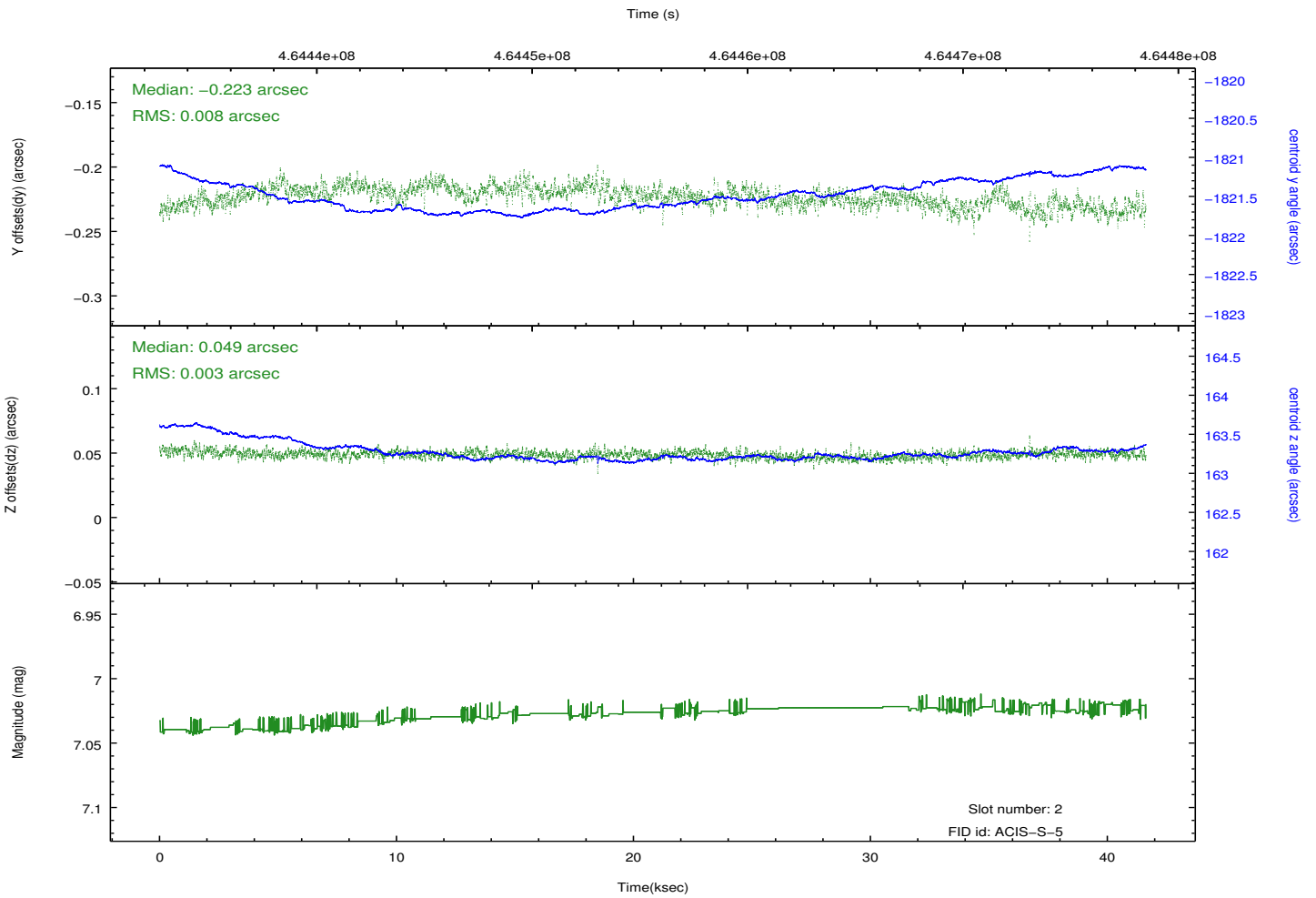
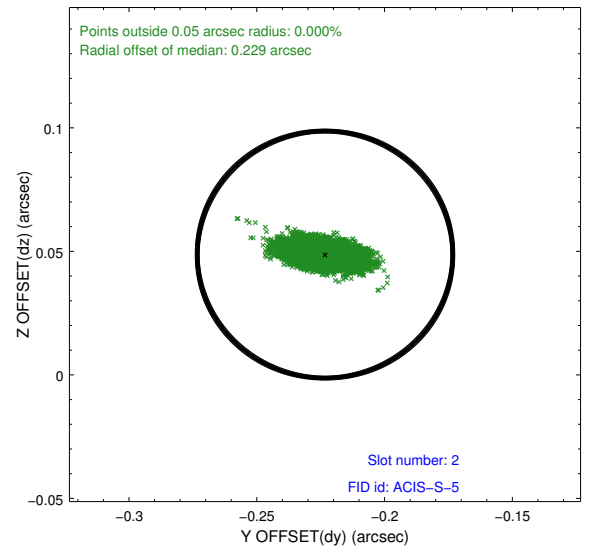
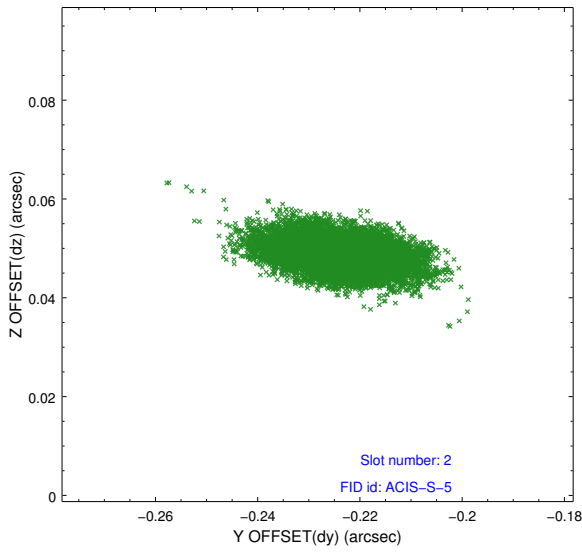
### 2.5.1 Slot 0



## 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)	2014.12.02
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	41.507852523327

## A.2 Comments

Joint proposal with HST.

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.