

# V&V Reference Report

## L2 ASCDS Version : 10

Observation 16265 - L2 Version 2  
Chandra X-Ray Center

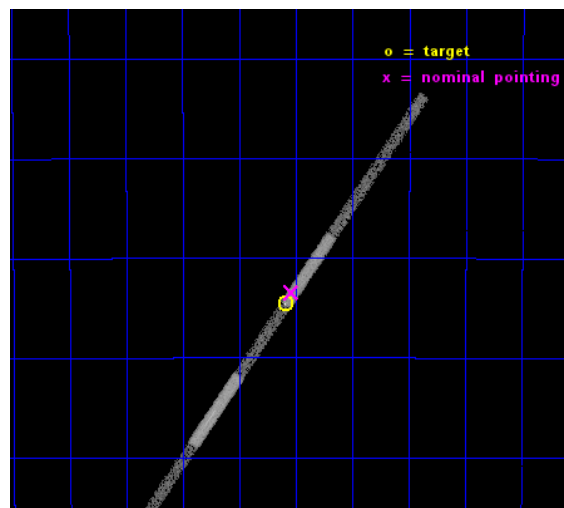
L2 Processing Date : Dec 6 2014

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# 1 Front

seq_num	790250	Sequence number
obs_id	16265	Observation id
title	AO-14 LETG/ACIS-S Calibration Observations of RXJ 1856	Proposal ti
observer	Dr. CXC Calibration	Principal investigator
object	RXJ 1856.5-3754	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	284.147083	Observer's specified target RA [deg]
dec_targ	-37.909611	Observer's specified target Dec [deg]
ra_nom	284.13480454387	Nominal RA [deg]
dec_nom	-37.89095087091	Nominal Dec [deg]
roll_nom	304.56912070067	Nominal Roll [deg]
revision	2	Processing version of data
ontime	17053.988101482	Sum of GTIs [s]
livetime	16109.510513653	Livetime [s]
ontime4	17054.029141486	Sum of GTIs [s]
ontime5	17053.947061479	Sum of GTIs [s]
ontime6	17053.906021476	Sum of GTIs [s]
ontime7	17053.988101482	Sum of GTIs [s]
ontime8	17053.864981472	Sum of GTIs [s]
ontime9	17053.823941469	Sum of GTIs [s]
l2events	21257	Number of level 2 events

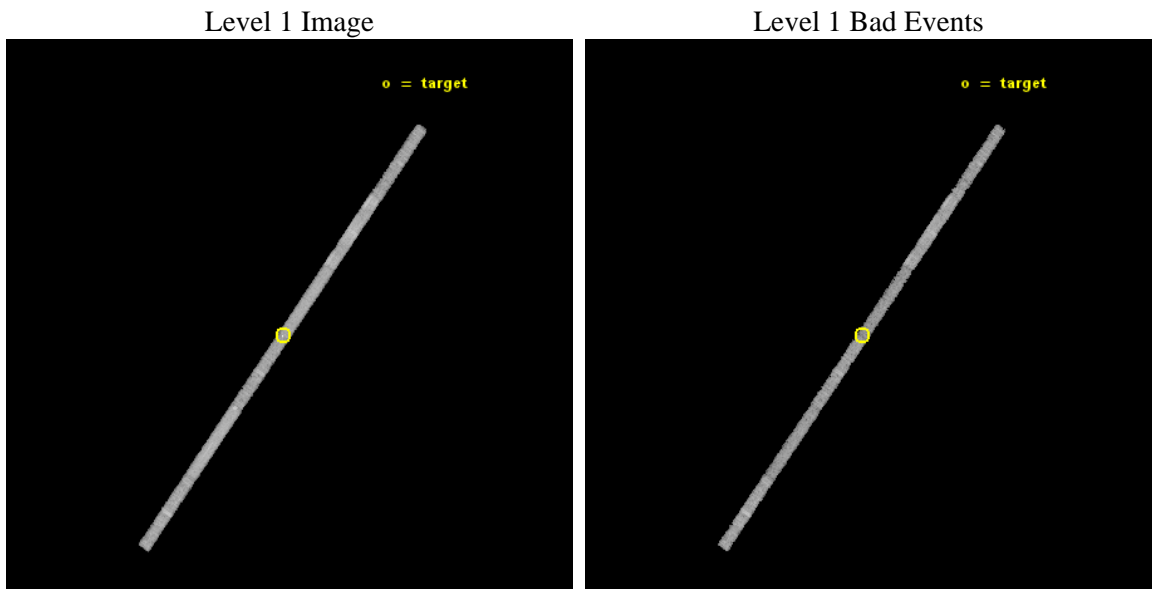




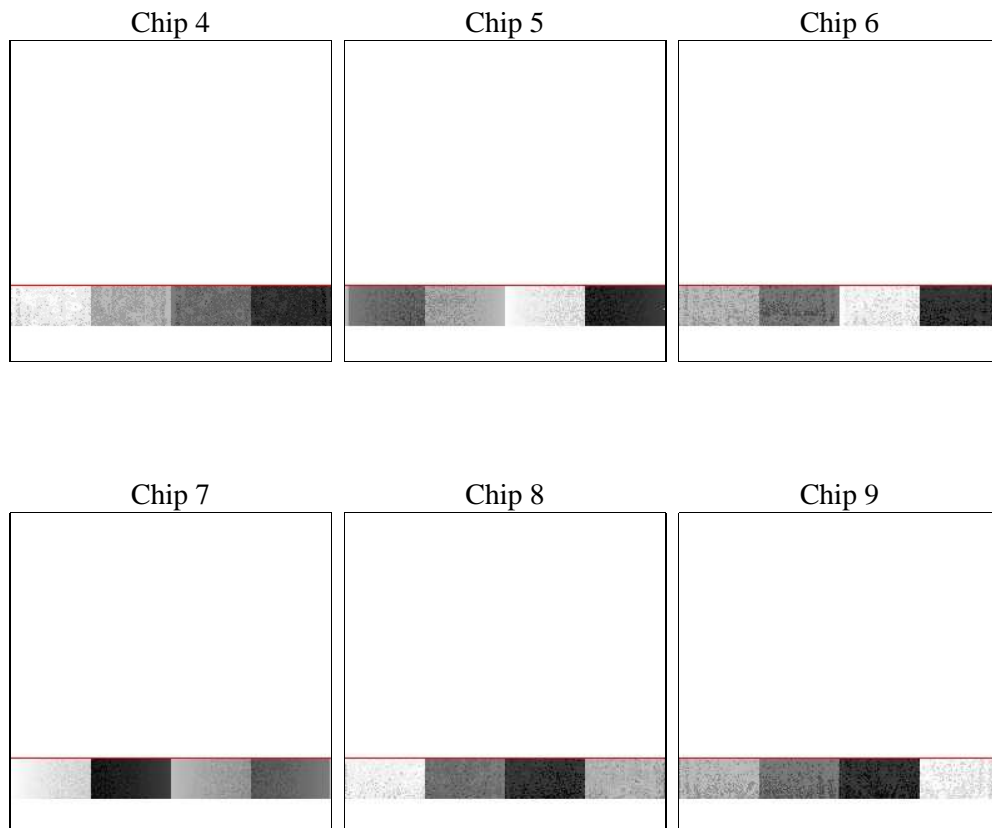
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	17000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	17053.988101482	Sum of GTIs [s]
caldsver	4.6.4	&#160	ontime4	17054.029141486	Sum of GTIs [s]
date	2014-12-06T05:25:52	Date and time of file creation	ontime5	17053.947061479	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	17053.906021476	Sum of GTIs [s]
			ontime7	17053.988101482	Sum of GTIs [s]
			ontime8	17053.864981472	Sum of GTIs [s]
			ontime9	17053.823941469	Sum of GTIs [s]
			l1events	90658	Number of level 1 events
			tgmetho	TGDETECT	Method used to create src1a file
			ra_pos	(4000.80, 3054.70)	grade sky pixel position

### 2.1.4 Events

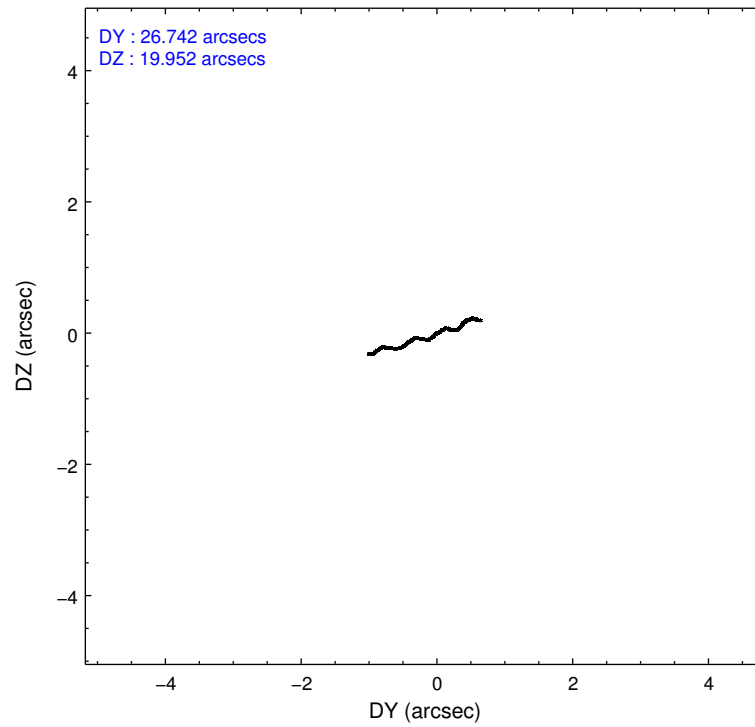
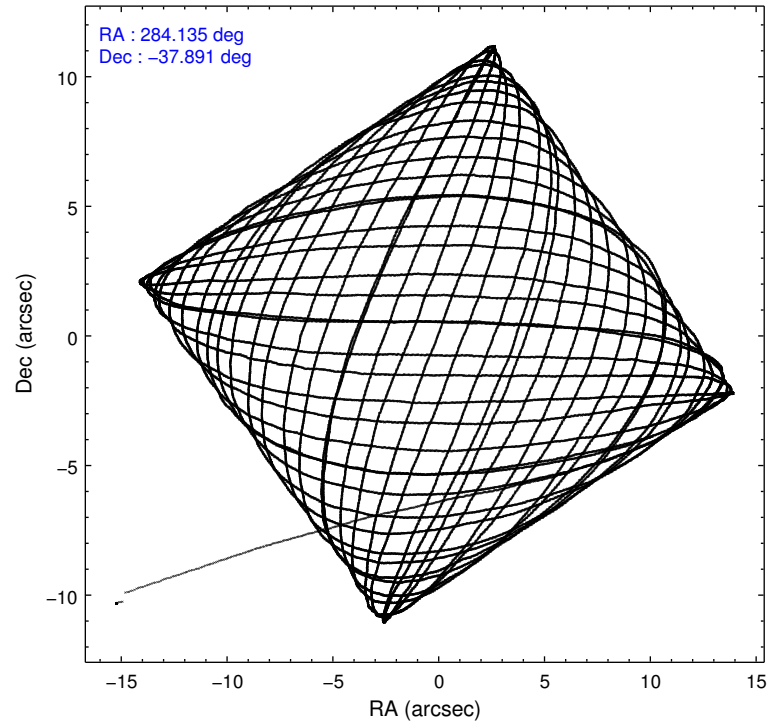
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	14169	18173	12462	15158	19680	11016
rejected events	12595	8471	10932	7720	14676	9448
rejected %	88%	46%	87%	50%	74%	85%

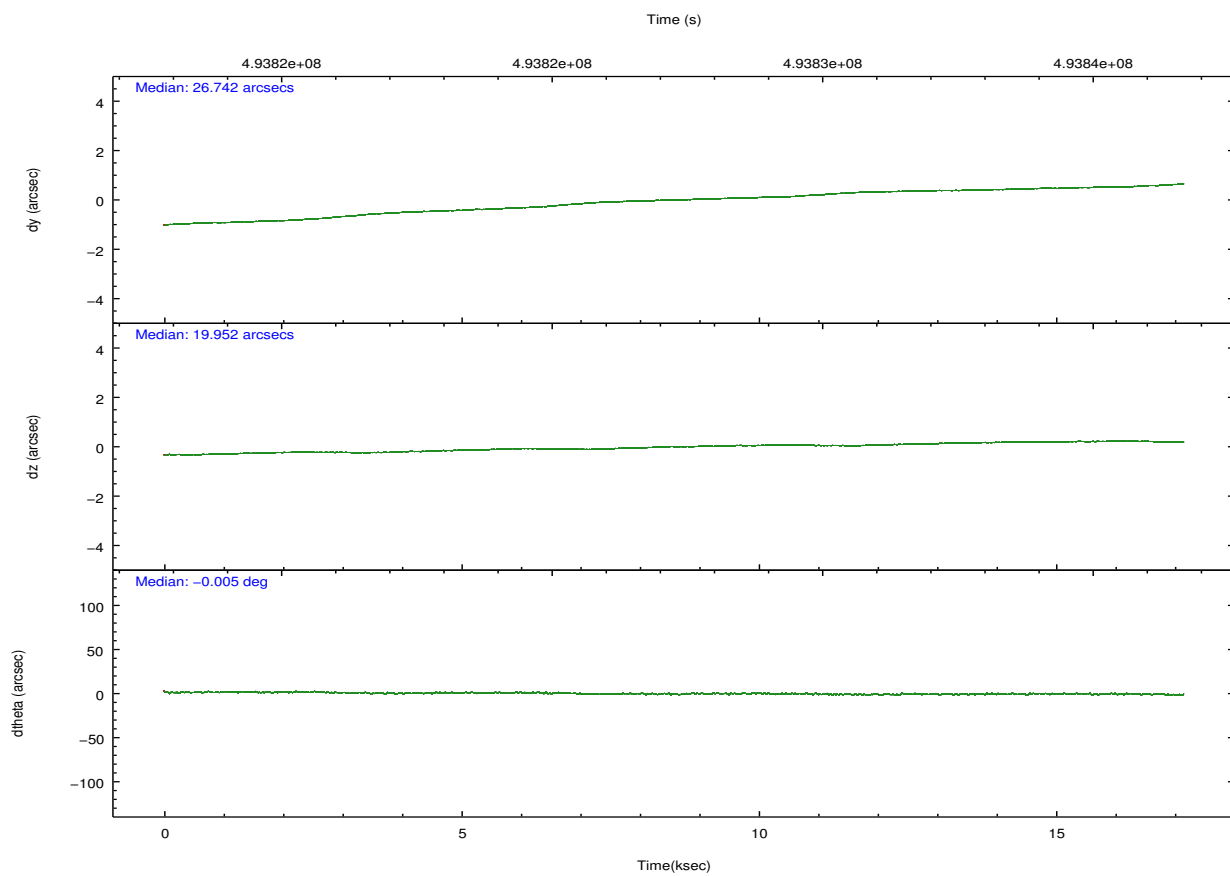
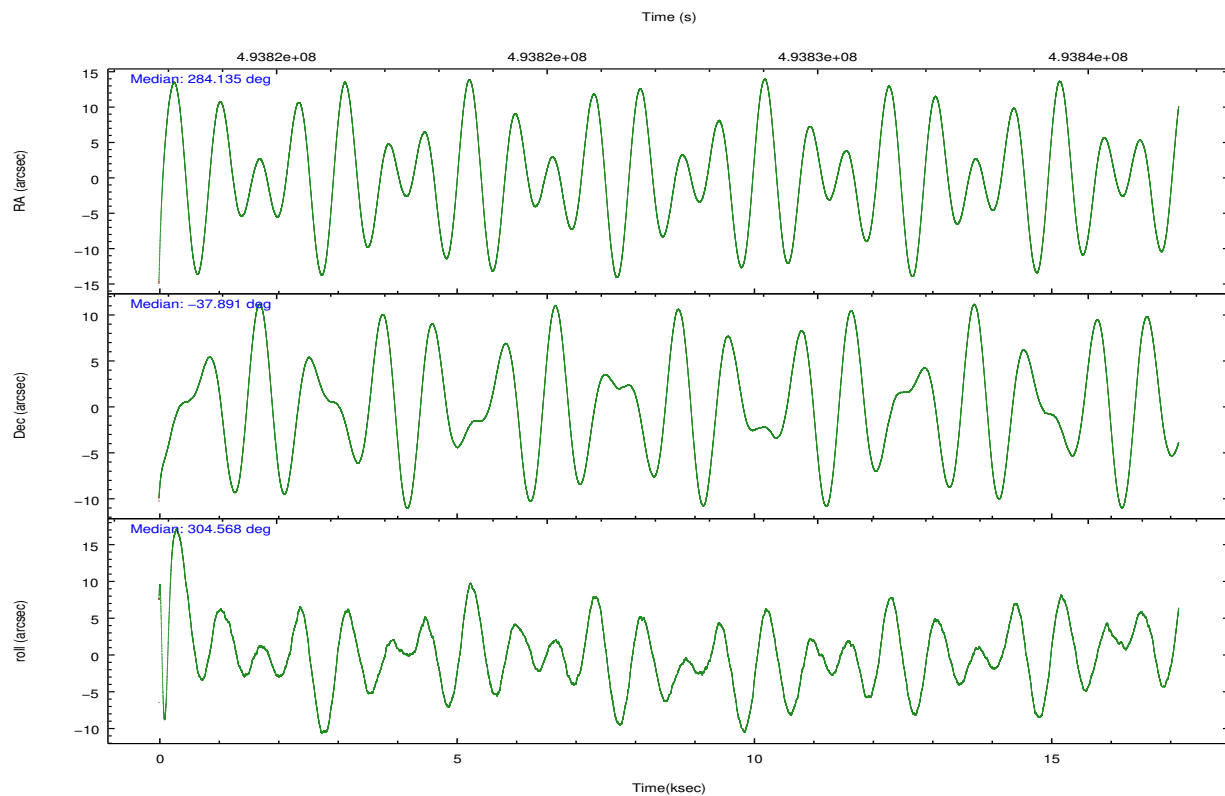
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	442	1613	439	1112	1108	451
	3%	8%	3%	7%	5%	4%
grade 1 events	7	55	4	19	6	2
	0%	0%	0%	0%	0%	0%
grade 2 events	359	2438	298	1532	1077	303
	2%	13%	2%	10%	5%	2%
grade 3 events	252	749	232	832	556	262
	1%	4%	1%	5%	2%	2%
grade 4 events	232	731	249	783	546	262
	1%	4%	1%	5%	2%	2%
grade 5 events	502	1663	478	1531	705	508
	3%	9%	3%	10%	3%	4%
grade 6 events	289	4171	312	3180	1717	290
	2%	22%	2%	20%	8%	2%
grade 7 events	12086	6753	10450	6169	13965	8938
	85%	37%	83%	40%	70%	81%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-456789	ACIS-456789	Obspar file type	PREDICTED	ACTUAL
Grating	LETG	LETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	284.103311	284.1348045438707	CCD I2 on	N	N
[deg] Pointing Dec	-37.879530	-37.89095087090952	CCD I3 on	N	N
[deg] Pointing Roll	304.393121	304.5691207006747	CCD S0 on	O1	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-182.132523	-182.1370004450064	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-8	-7.995522138001405	CCD S4 on	Y	Y
[s] Observation start time (MET)	493818822.184000	493817851.14869	CCD S5 on	Y	Y
Observation start date	2013-08-25T11:52:35	2013-08-25T11:37:31	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	493835822.184000	493836658.36222	On-chip summing requested	N	N
Observation end date	2013-08-25T16:35:55	2013-08-25T16:50:58	Subarray requested	CUSTOM	1/8
Read mode	TIMED	TIMED	Subarray start row	113	113
			Subarray row count	128	128
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.7

## 2.3 Aspect



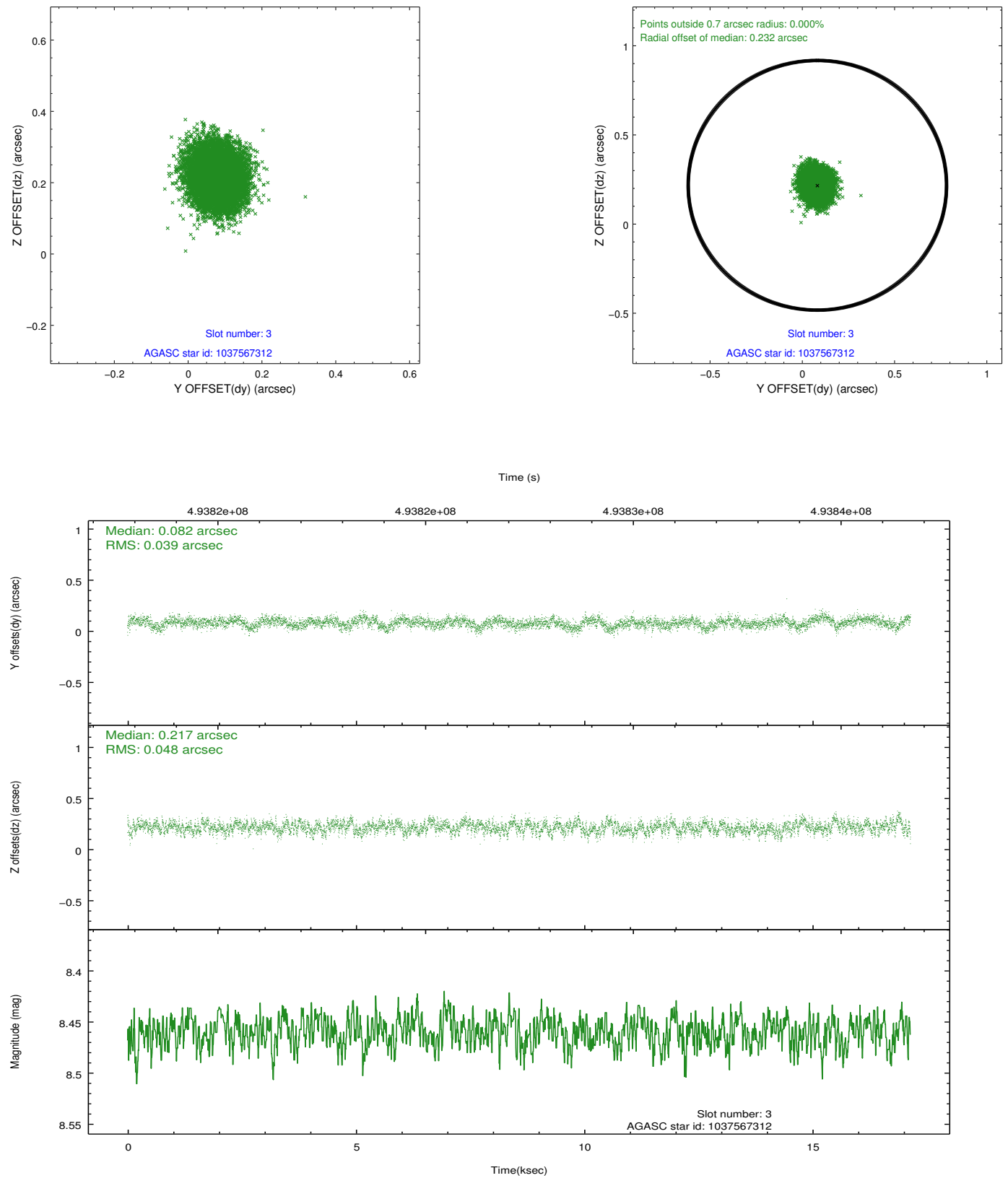


### Slot Statistics

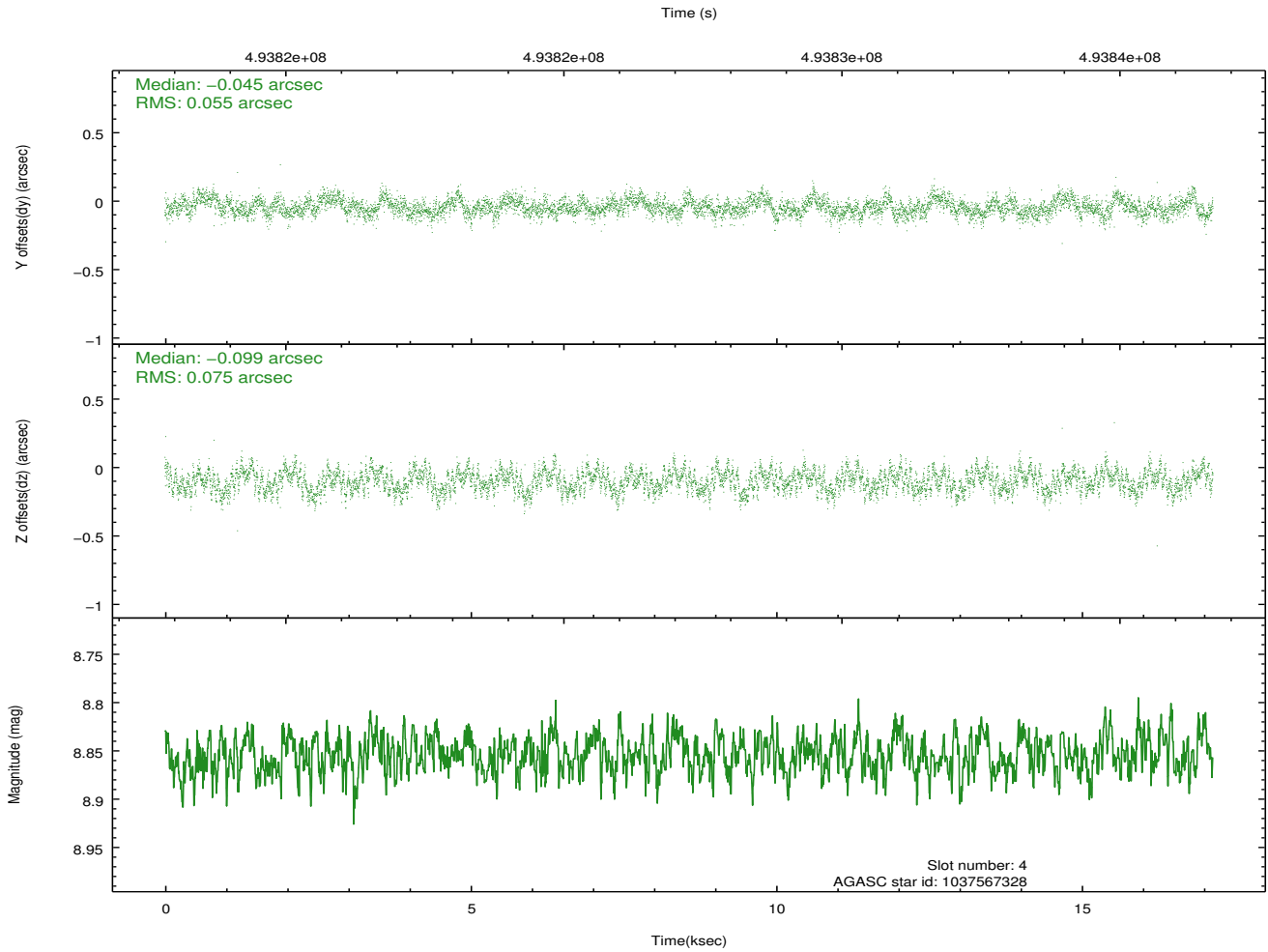
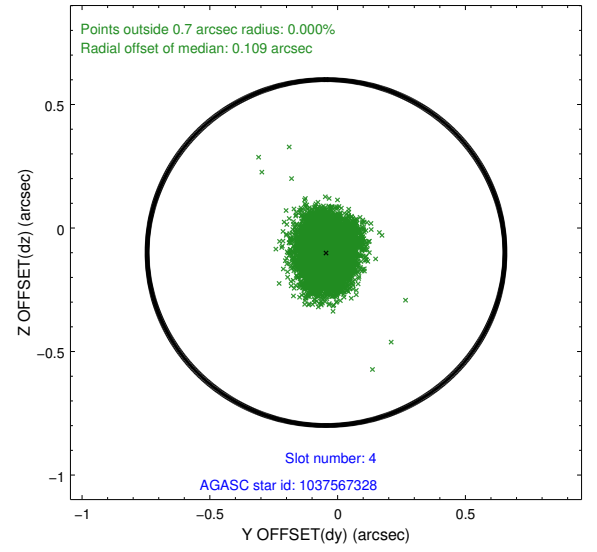
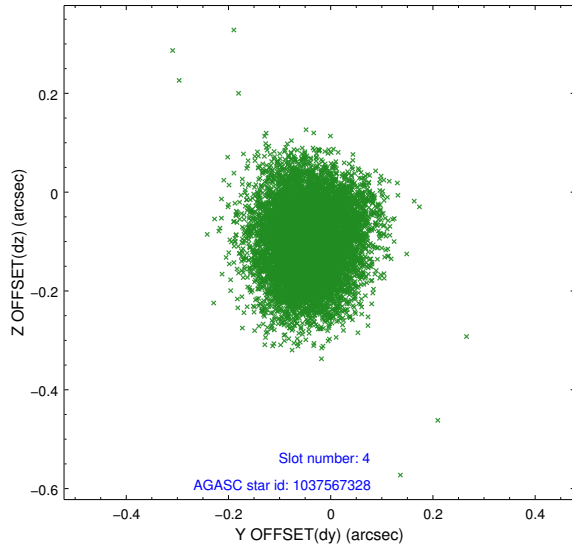
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	7.05	4184	-0.053	0.117	0.008	0.013	0.000000	0.000000	916.62	-1901.66
1	FID		ACIS-S-4	7.02	4184	0.141	-0.015	0.007	0.011	0.000000	0.000000	2134.34	2.06
2	FID		ACIS-S-6	7.25	4181	-0.110	-0.091	0.008	0.014	0.000000	0.000000	382.80	639.62
3	GUIDE	used	1037567312	8.46	8358	0.082	0.217	0.066	0.106	283.456056	-37.976515	-743.70	-1716.02
4	GUIDE	used	1037567328	8.85	8362	-0.045	-0.099	0.099	0.156	284.052016	-37.647288	-772.25	351.51
5	GUIDE	used	1037568192	8.68	8358	-0.089	-0.092	0.082	0.129	284.446060	-38.037443	1019.70	480.01
6	GUIDE	used	1037576824	8.72	8362	0.038	0.114	0.078	0.124	284.177029	-38.323536	1437.19	-730.72
7	GUIDE	used	1037578168	8.11	8364	0.015	-0.141	0.063	0.099	284.493659	-38.169059	1488.61	319.79

## 2.4 Star Slots

### 2.4.1 Slot 3

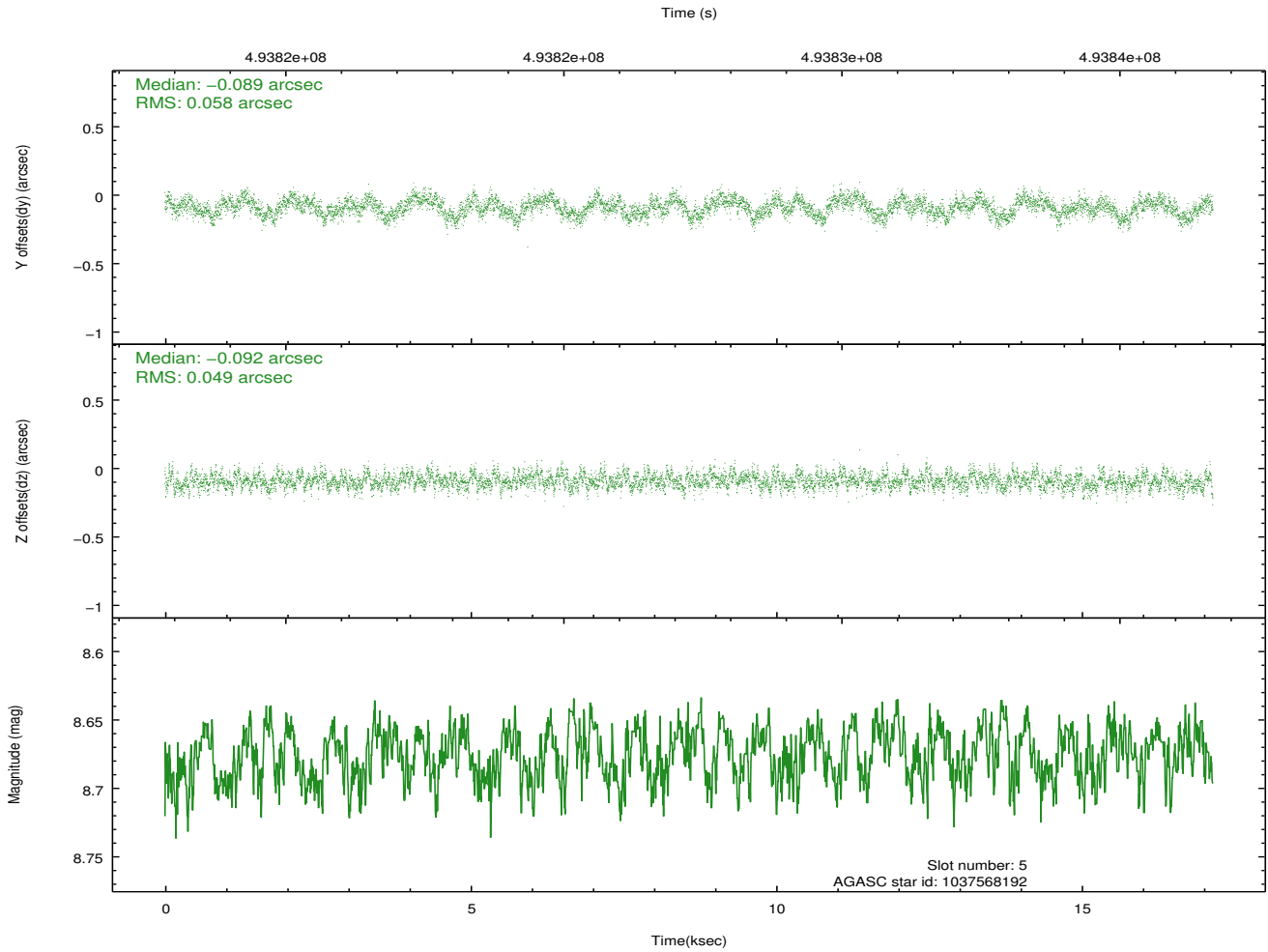
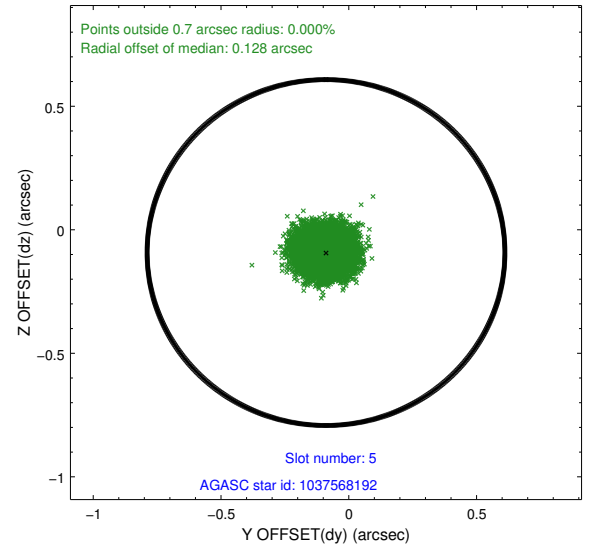
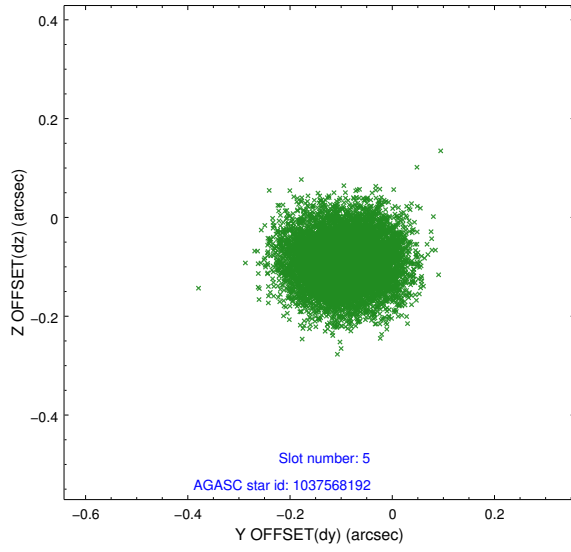


## 2.4.2 Slot 4

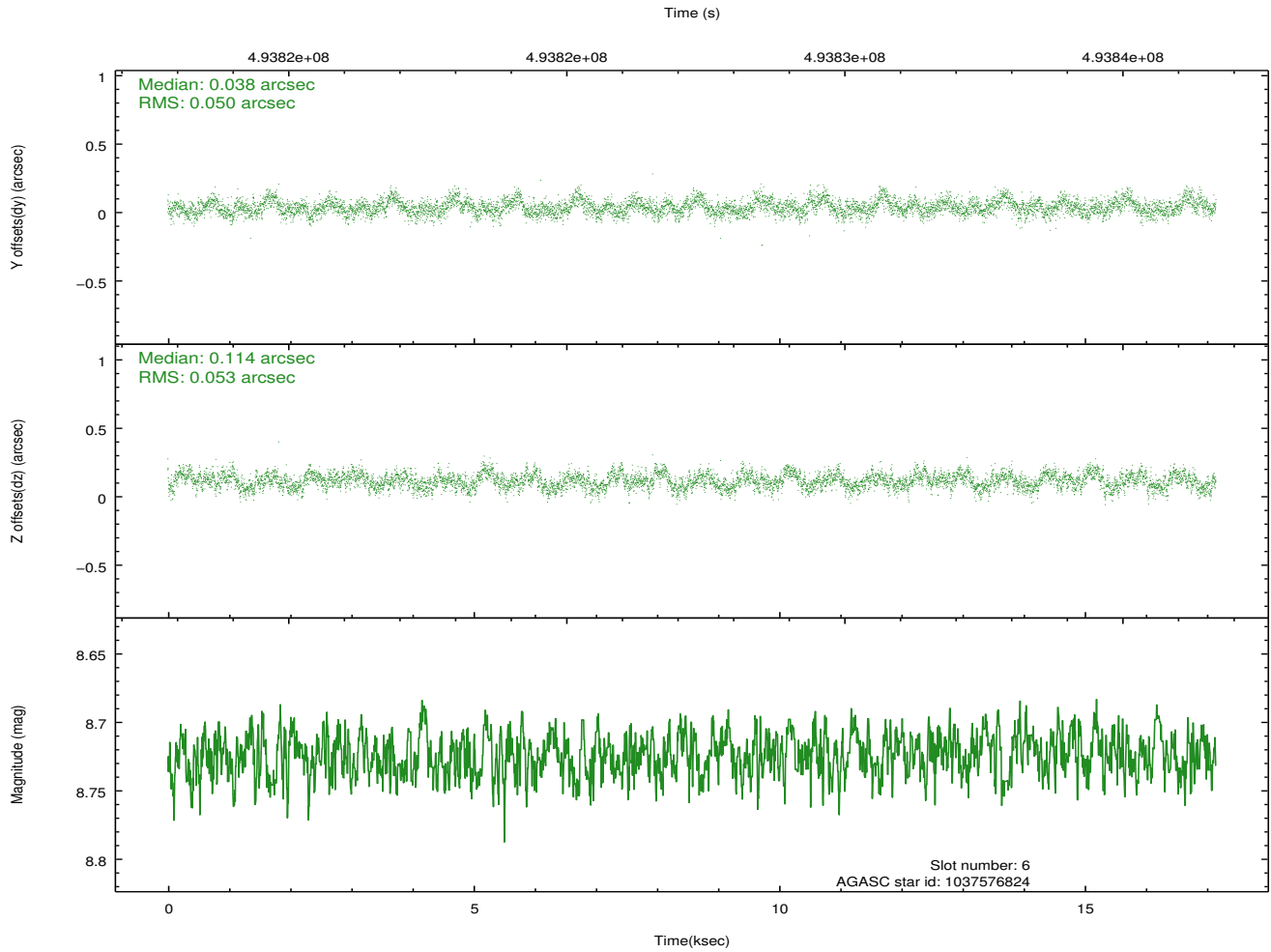
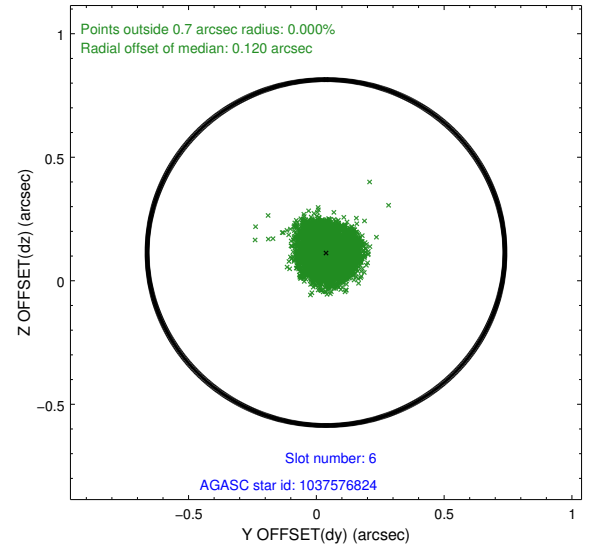
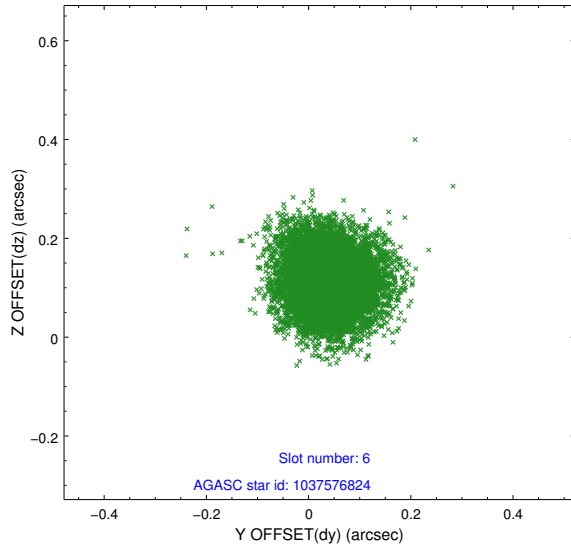




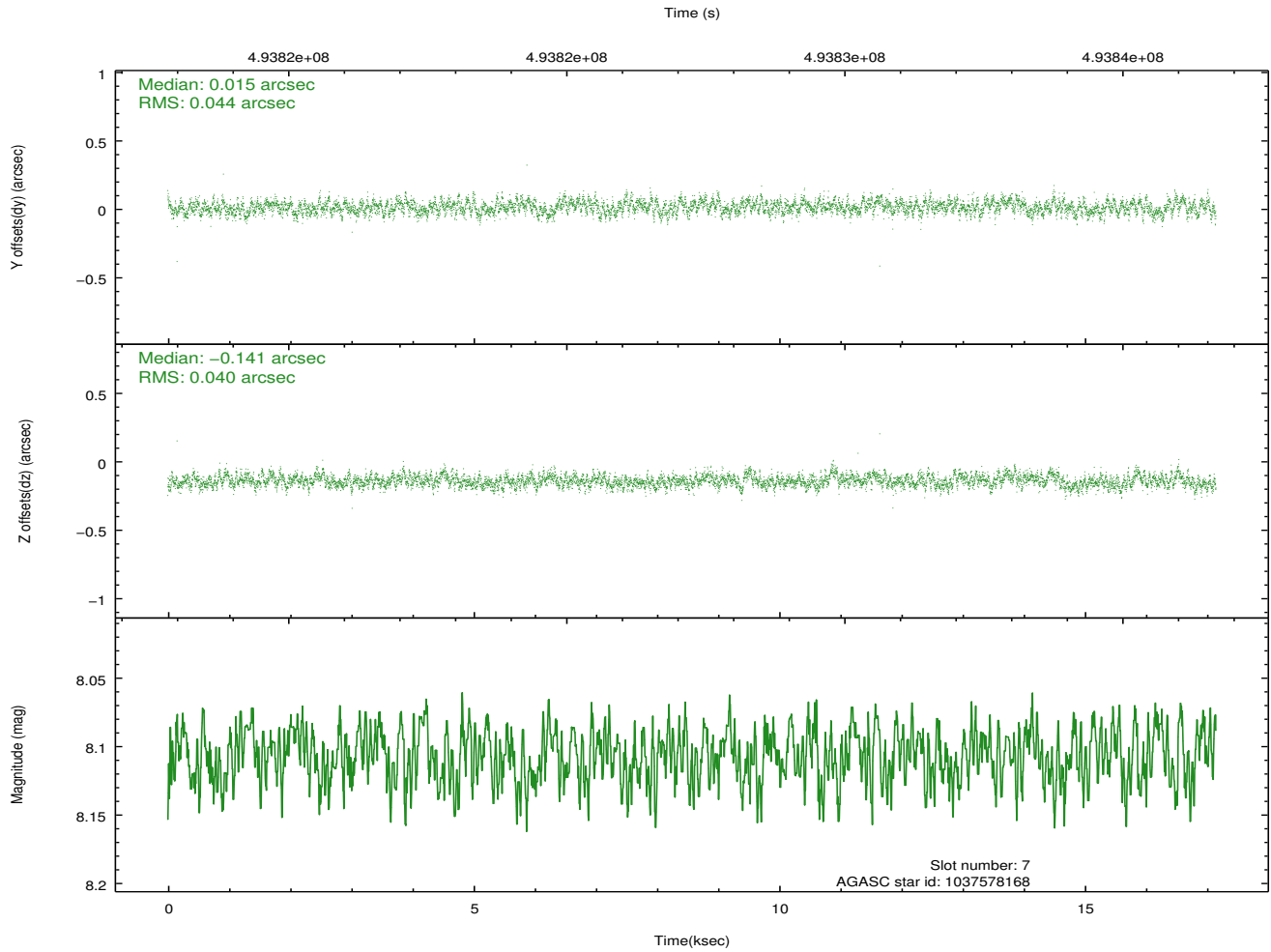
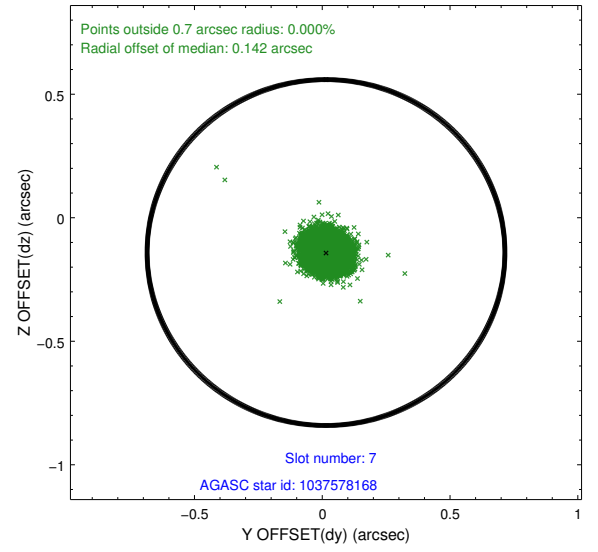
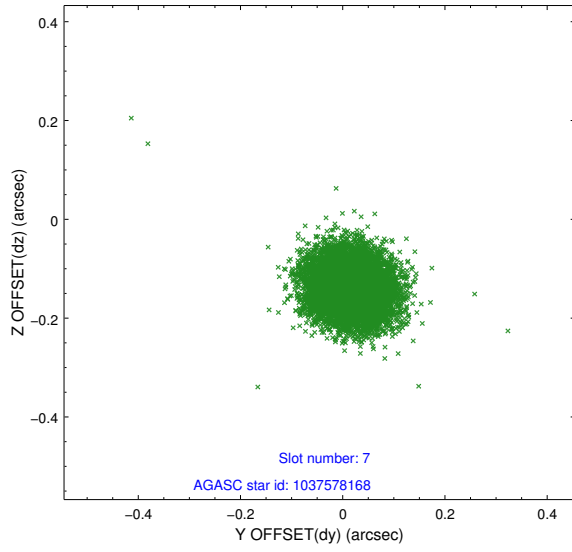
### 2.4.3 Slot 5



## 2.4.4 Slot 6

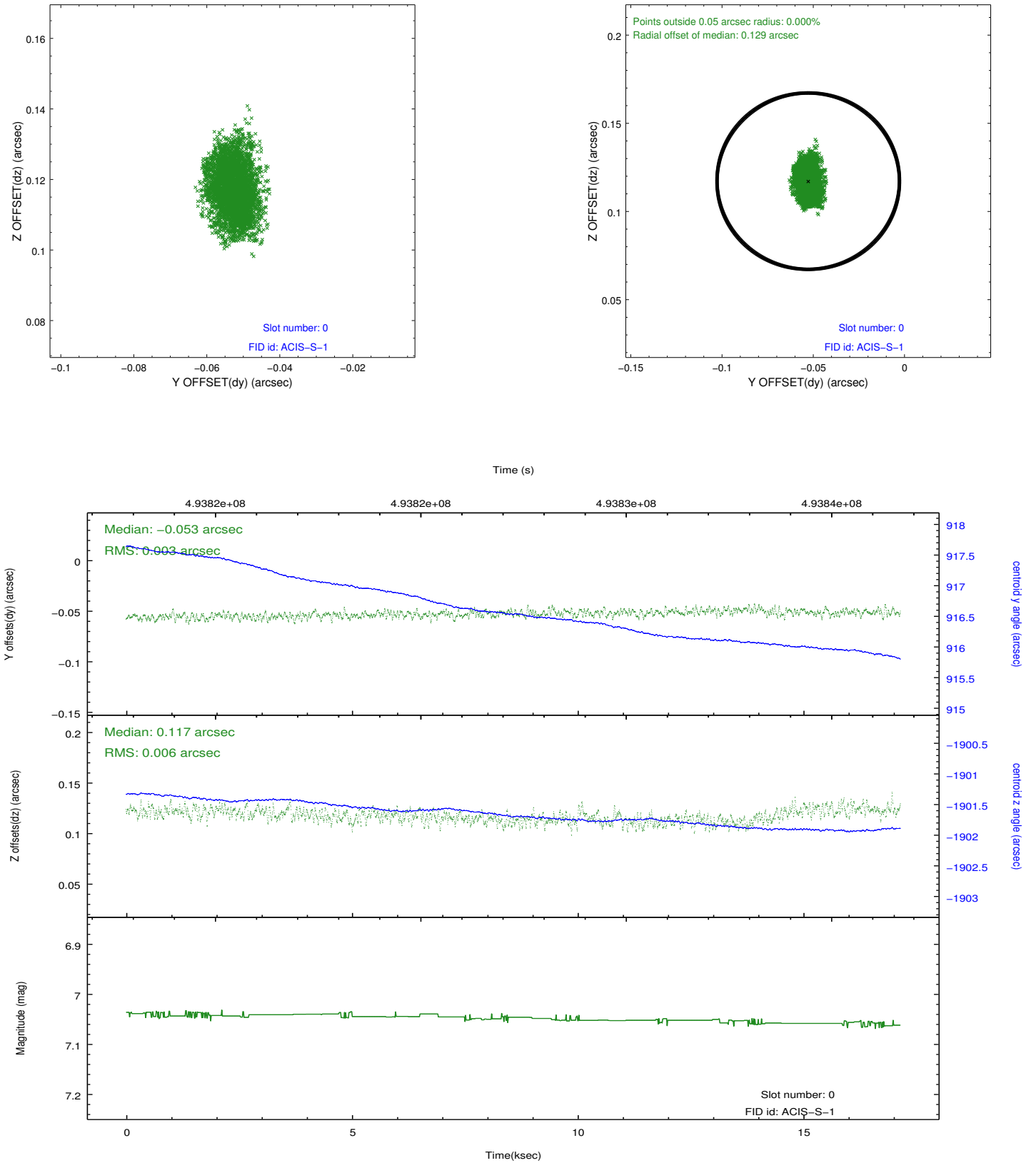


## 2.4.5 Slot 7

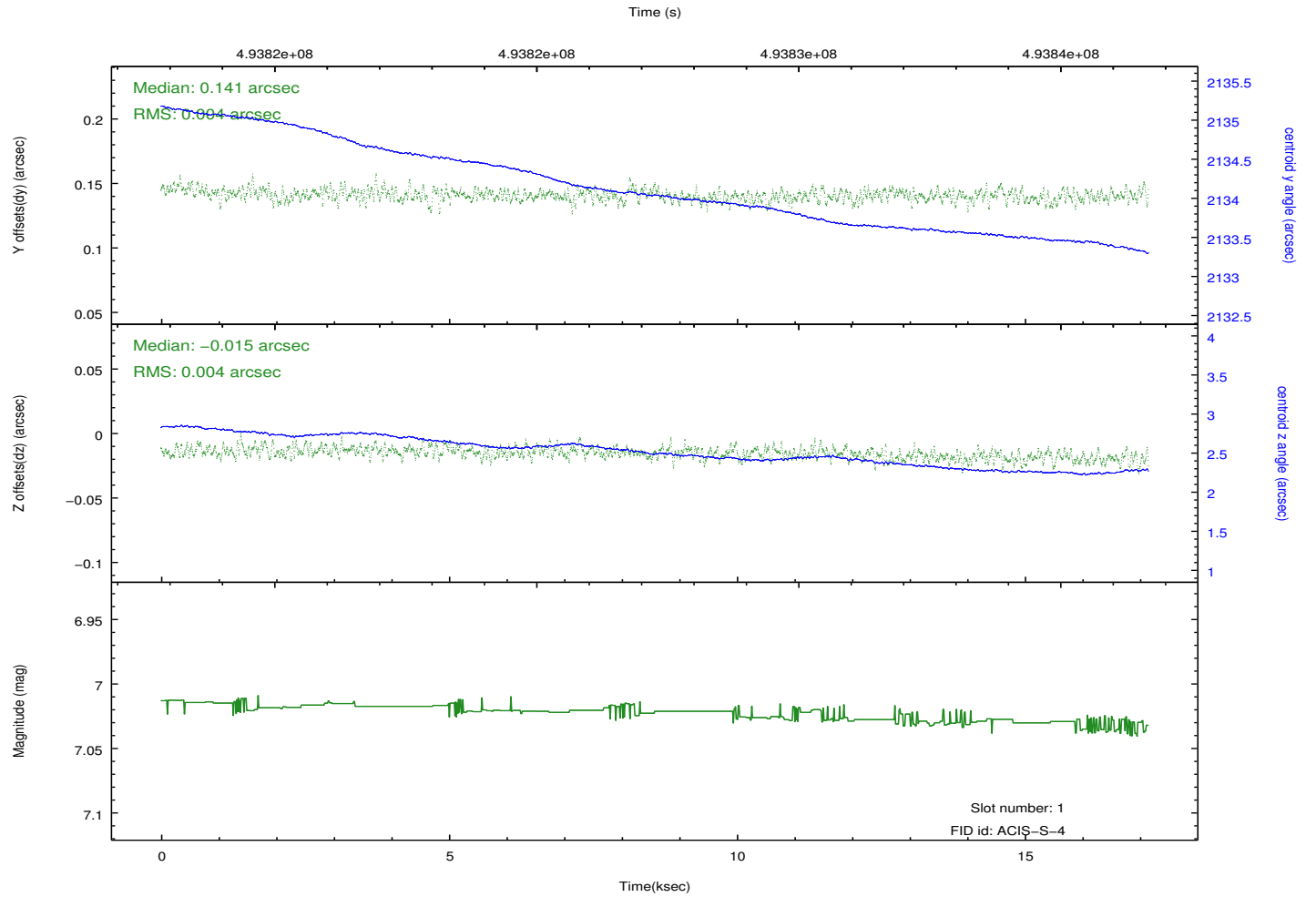
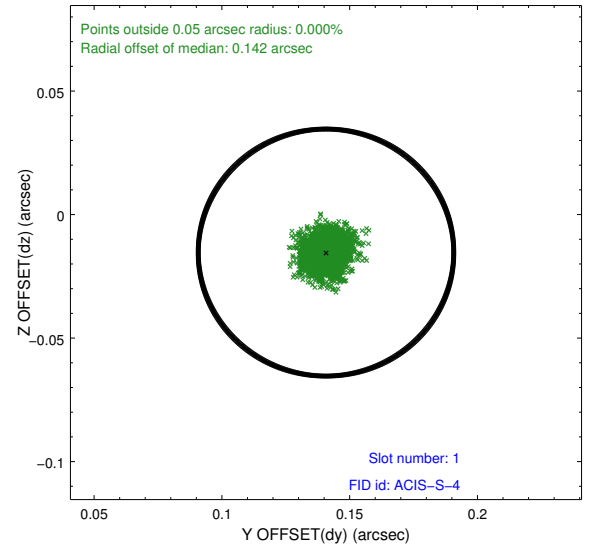
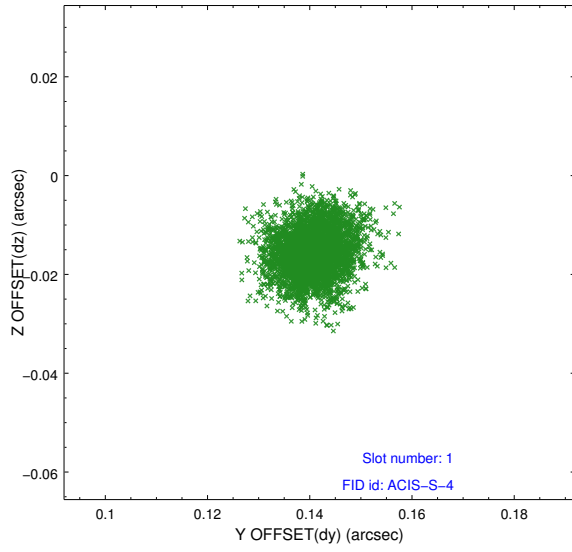


## 2.5 FID Slots

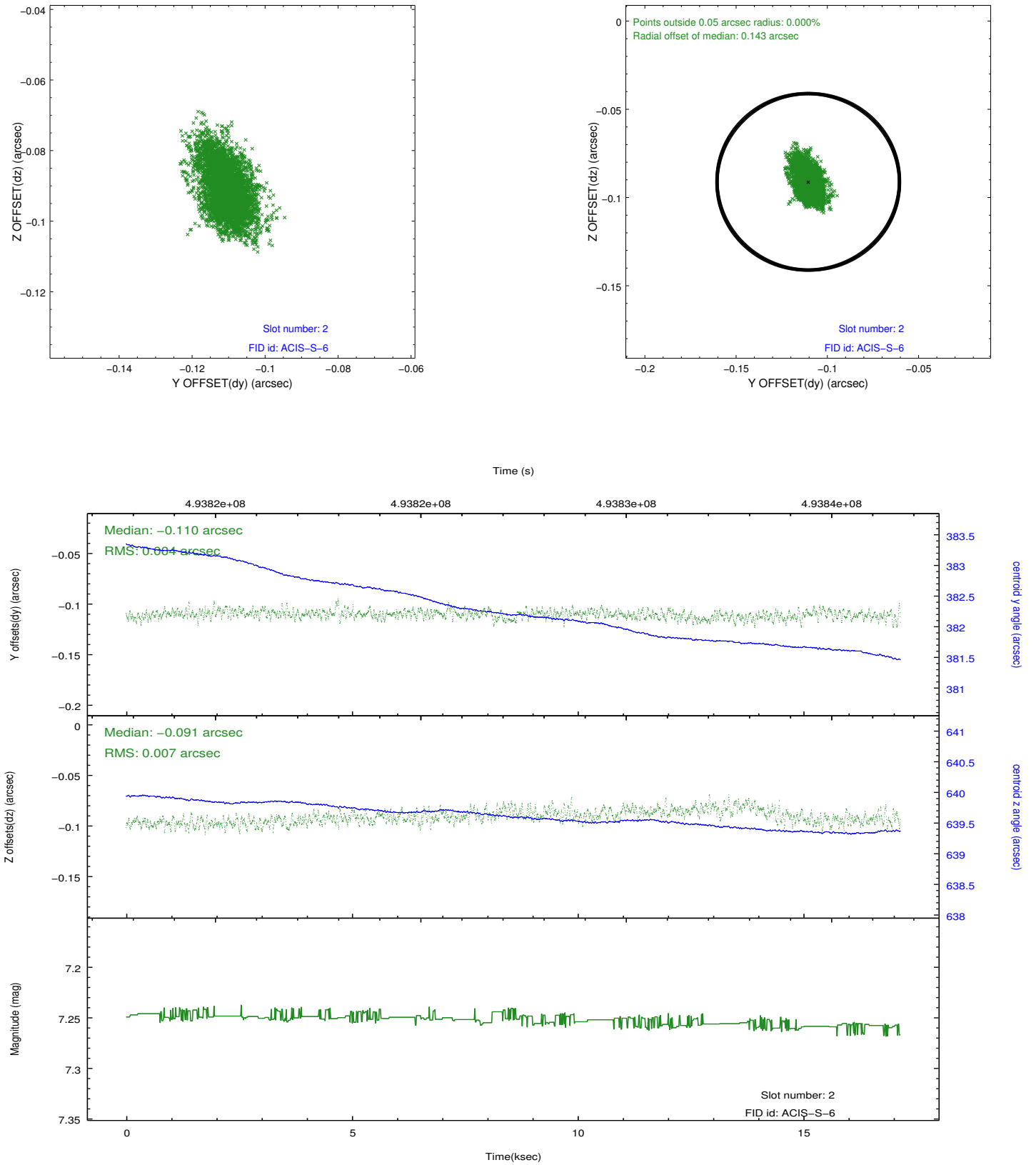
### 2.5.1 Slot 0



## 2.5.2 Slot 1

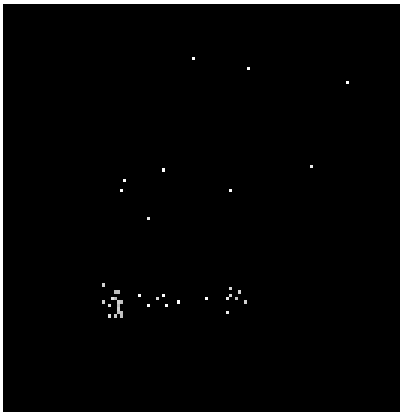


### 2.5.3 Slot 2

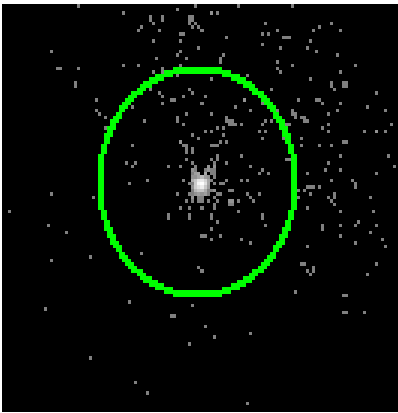


# 3 Gratings

## 3.1 LETG Arm



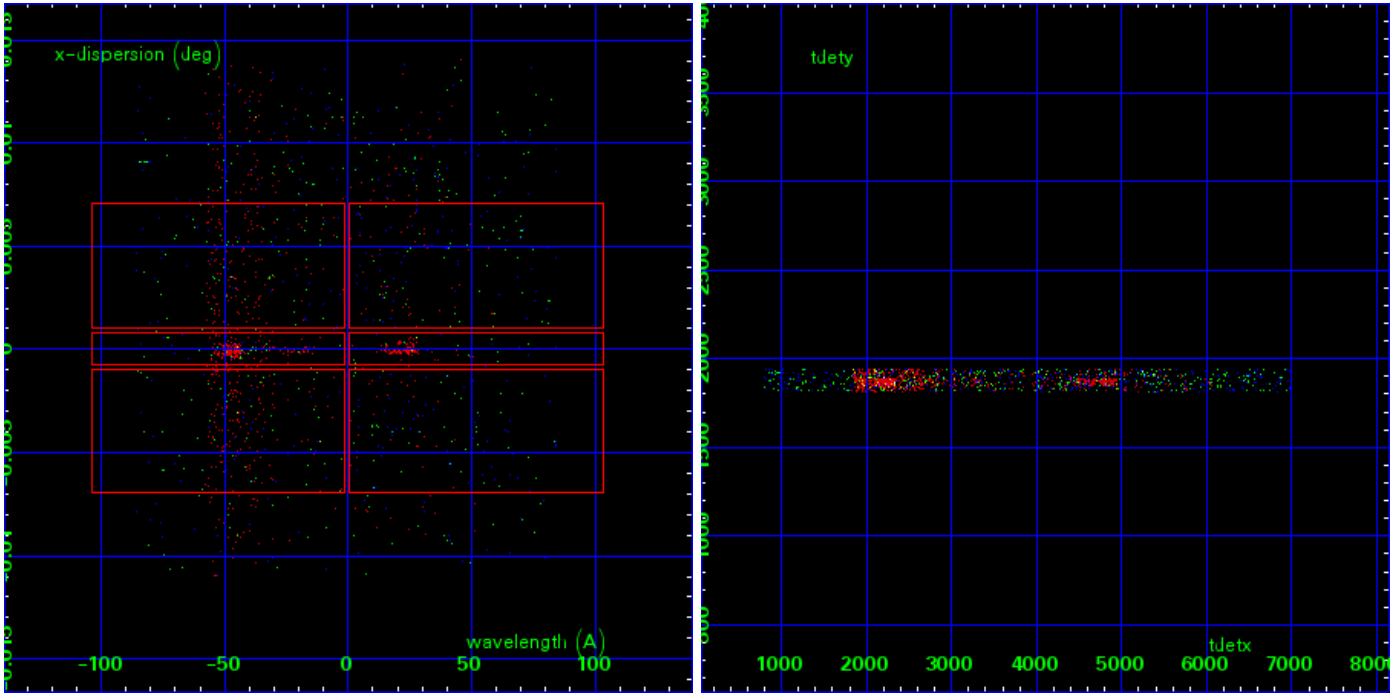
LETG Order Sort 123



LETG Zero Order



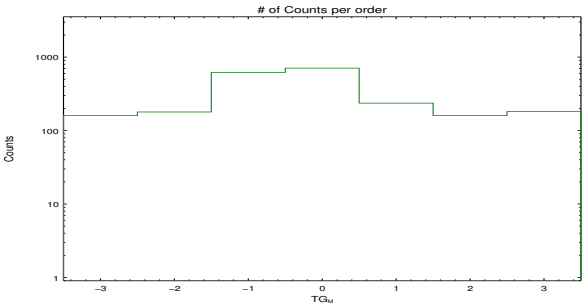
LETG Order Sort ALL

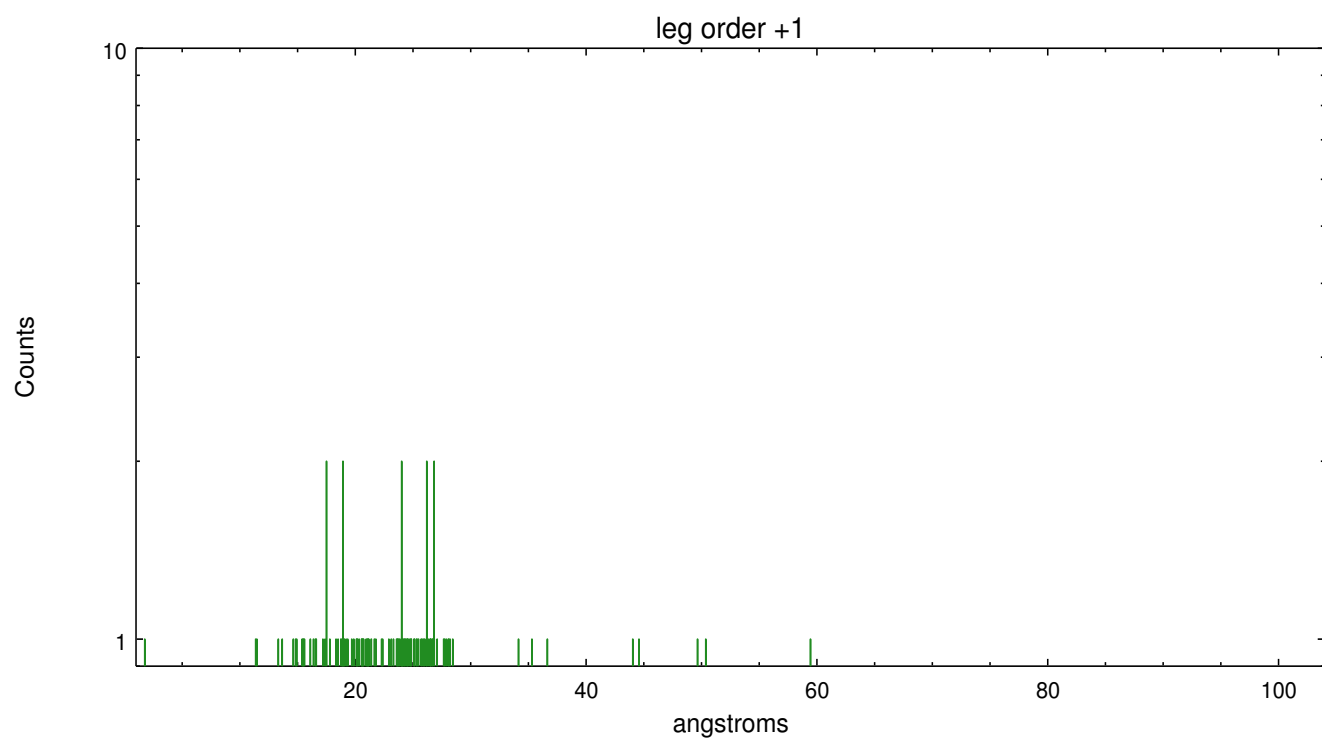
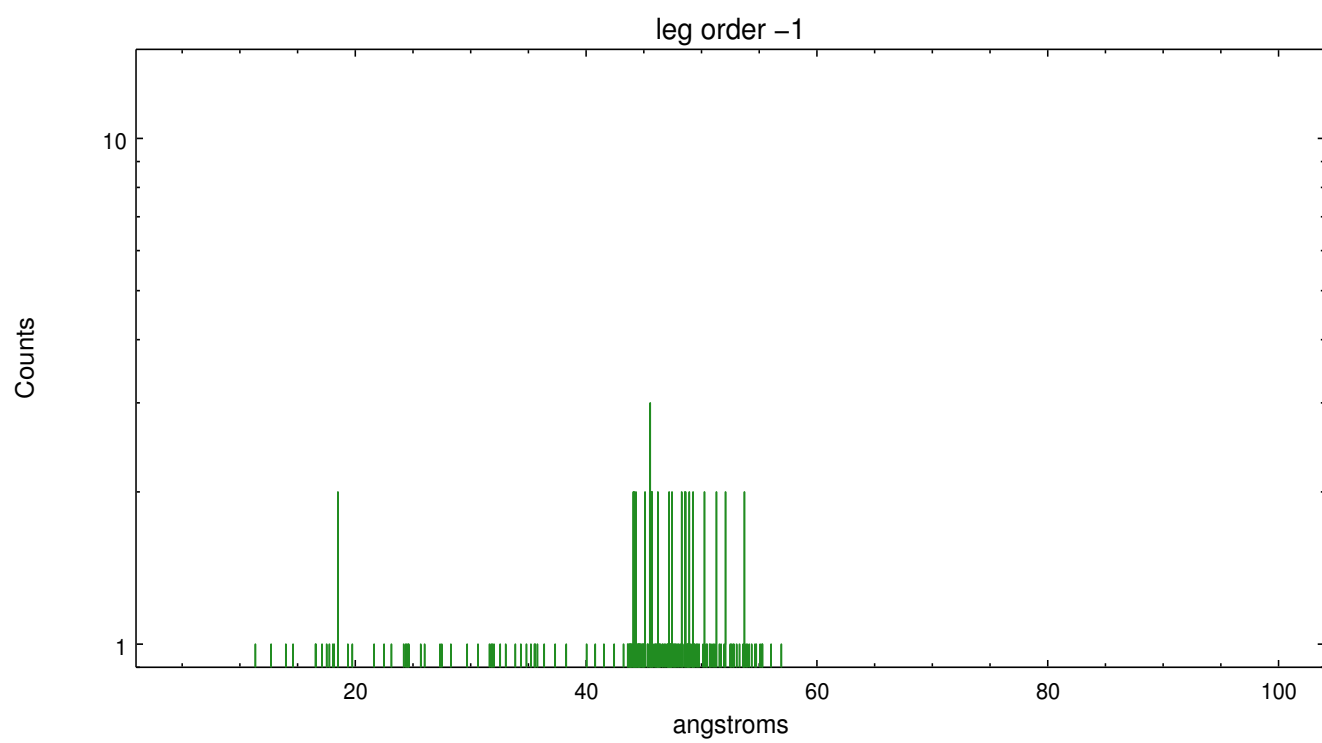


Spot Image LETG

Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	160	179	617	708	236	160	182







# A Summary

## A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2015.11.06
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	17.053988101482

## A.2 Comments

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.

=====

Gain and CTI correction are not well calibrated on CCD\_ID 5 (ACIS-S1). Default order sorting can clip some regions, particularly longward of 30A (first order). User-specified custom processing parameters may be required in `tg_resolve_events` (`osipfile=None`, `osort_lo`, `osort_hi ~0.5`) though this can allow more zeroth order background at short wavelengths.

=====

The source's zeroth order falls very close to the gap between the CCD chips. Any suggestion of source variability should consider this possibility. Dithering over the chip boundary can give a false indication of variability.

=====

Faint grating spectra can be seen in an image of bad events. This should be considered in analysis.