

# V&V Reference Report

## L2 ASCDS Version : 10.2.1

Observation 15660 - L2 Version 2  
Chandra X-Ray Center

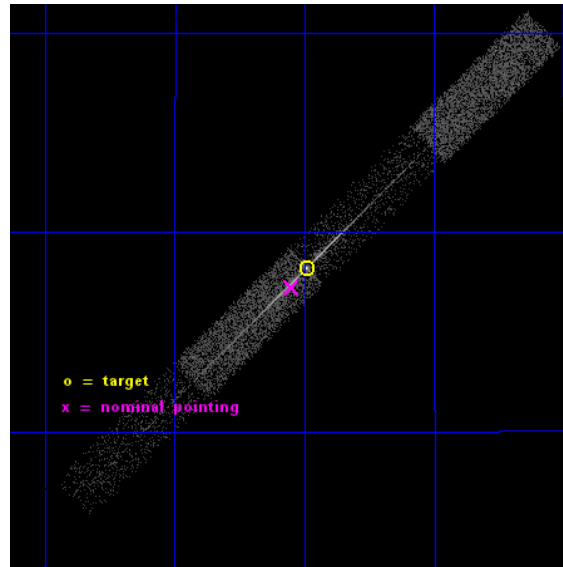
L2 Processing Date : Dec 10 2014

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# 1 Front

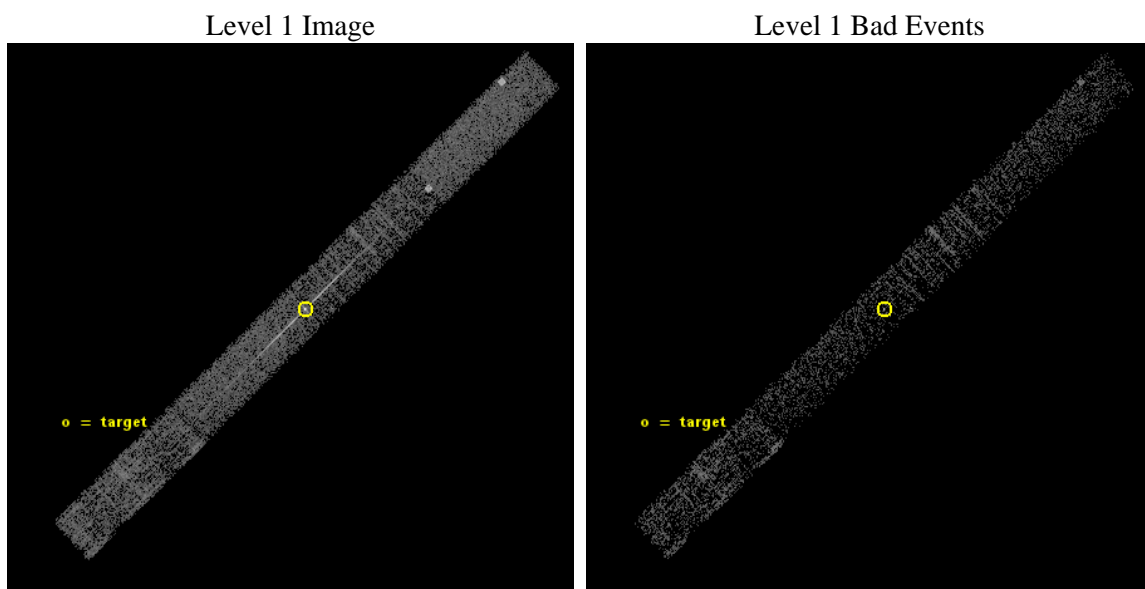
seq_num	702925	Sequence number
obs_id	15660	Observation id
title	Mapping the AGN Broad Line Region by Reverberation	Proposal title
observer	Prof. Bradley Peterson	Principal investigator
object	NGC 5548	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	214.497917	Observer's specified target RA [deg]
dec_targ	25.136778	Observer's specified target Dec [deg]
ra_nom	214.51251112709	Nominal RA [deg]
dec_nom	25.120455750158	Nominal Dec [deg]
roll_nom	136.18869041816	Nominal Roll [deg]
revision	2	Processing version of data
ontime	5064.0	Sum of GTIs [s]
livetime	4864.366402828	Livetime [s]
ontime5	5064.0	Sum of GTIs [s]
ontime6	5064.0	Sum of GTIs [s]
ontime7	5064.0	Sum of GTIs [s]
ontime8	5064.0	Sum of GTIs [s]
l2events	18377	Number of level 2 events



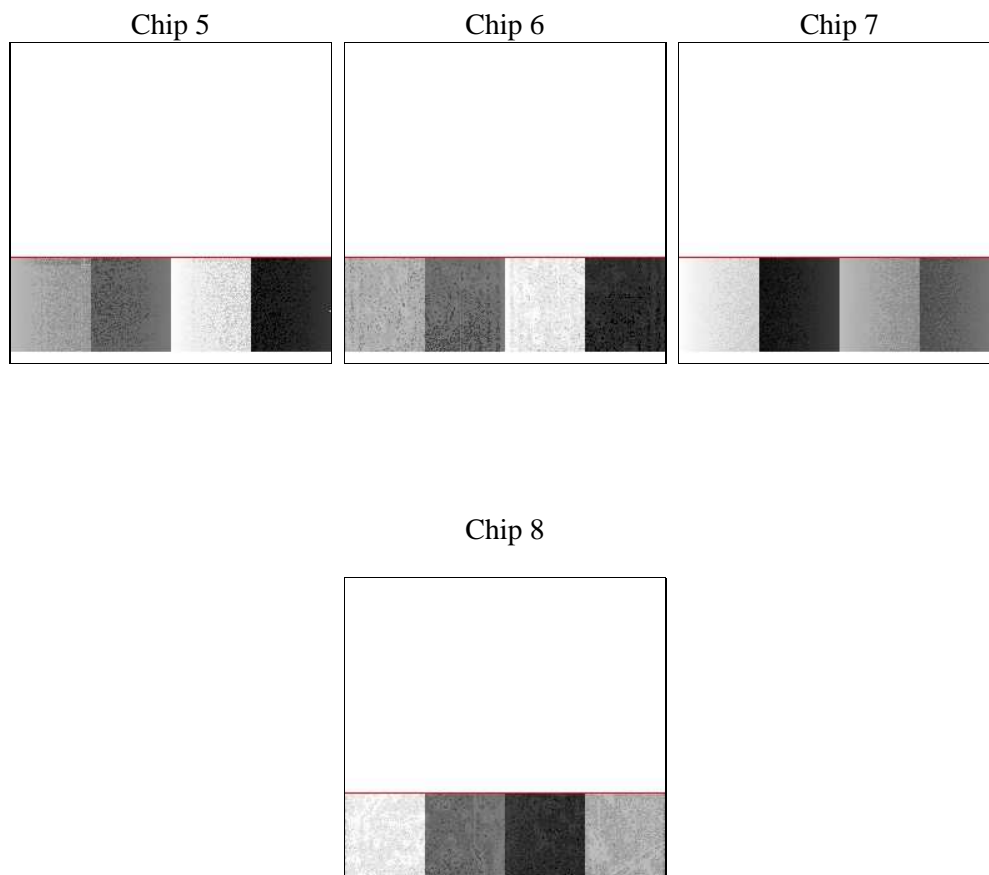
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ascdsver	10.3.1	Processing system revision	ontime	5064.0	Sum of GTIs [s]
caldsver	4.6.4	&#160	ontime5	5064.0	Sum of GTIs [s]
date	2014-12-10T19:22:17	Date and time of file creation	ontime6	5064.0	Sum of GTIs [s]
revision	2	Processing version of data	ontime7	5064.0	Sum of GTIs [s]
			ontime8	5064.0	Sum of GTIs [s]
			l1events	50271	Number of level 1 events
			tgmeth	TGDETECT	Method used to create src1a file
			zo_pos	(4190.74, 4216.27)	src1a sky pixel position

### 2.1.4 Events

	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	14319	10158	14449	11345
rejected events	6374	7019	5624	8603
rejected %	44%	69%	38%	75%

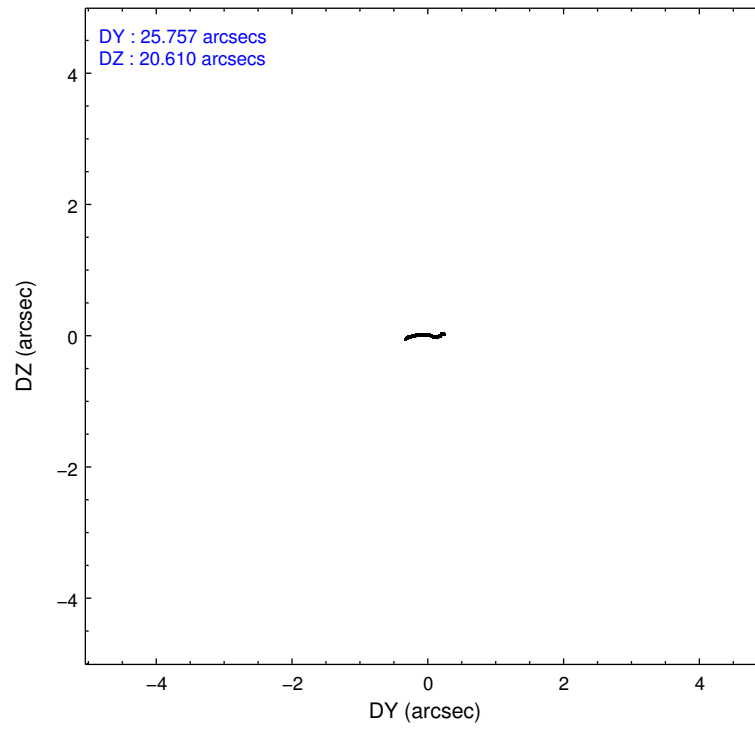
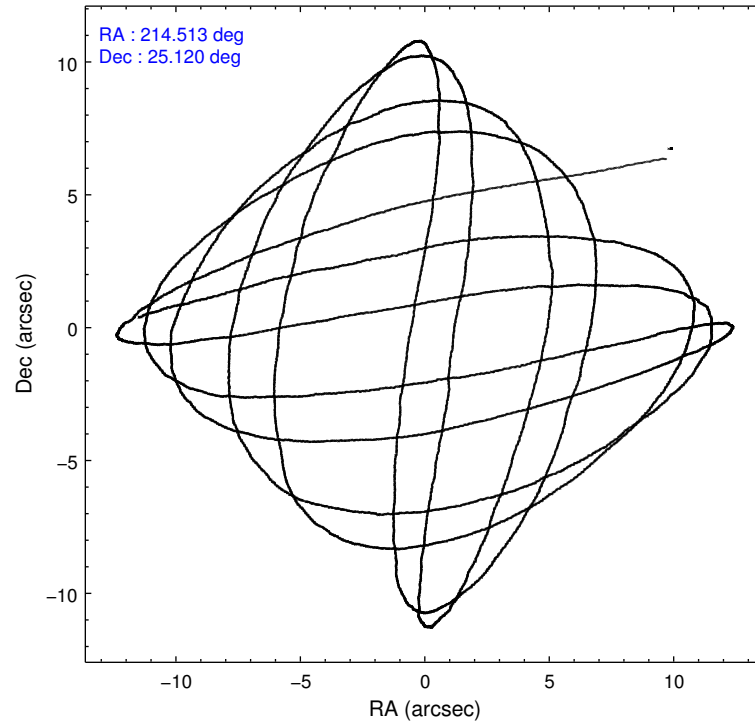
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	2244	1886	1245	748
	15%	18%	8%	6%
grade 1 events	148	6	23	3
	1%	0%	0%	0%
grade 2 events	1663	474	1856	570
	11%	4%	12%	5%
grade 3 events	474	228	978	330
	3%	2%	6%	2%
grade 4 events	458	211	865	337
	3%	2%	5%	2%
grade 5 events	1088	340	1158	496
	7%	3%	8%	4%
grade 6 events	3107	343	3885	761
	21%	3%	26%	6%
grade 7 events	5137	6670	4439	8100
	35%	65%	30%	71%

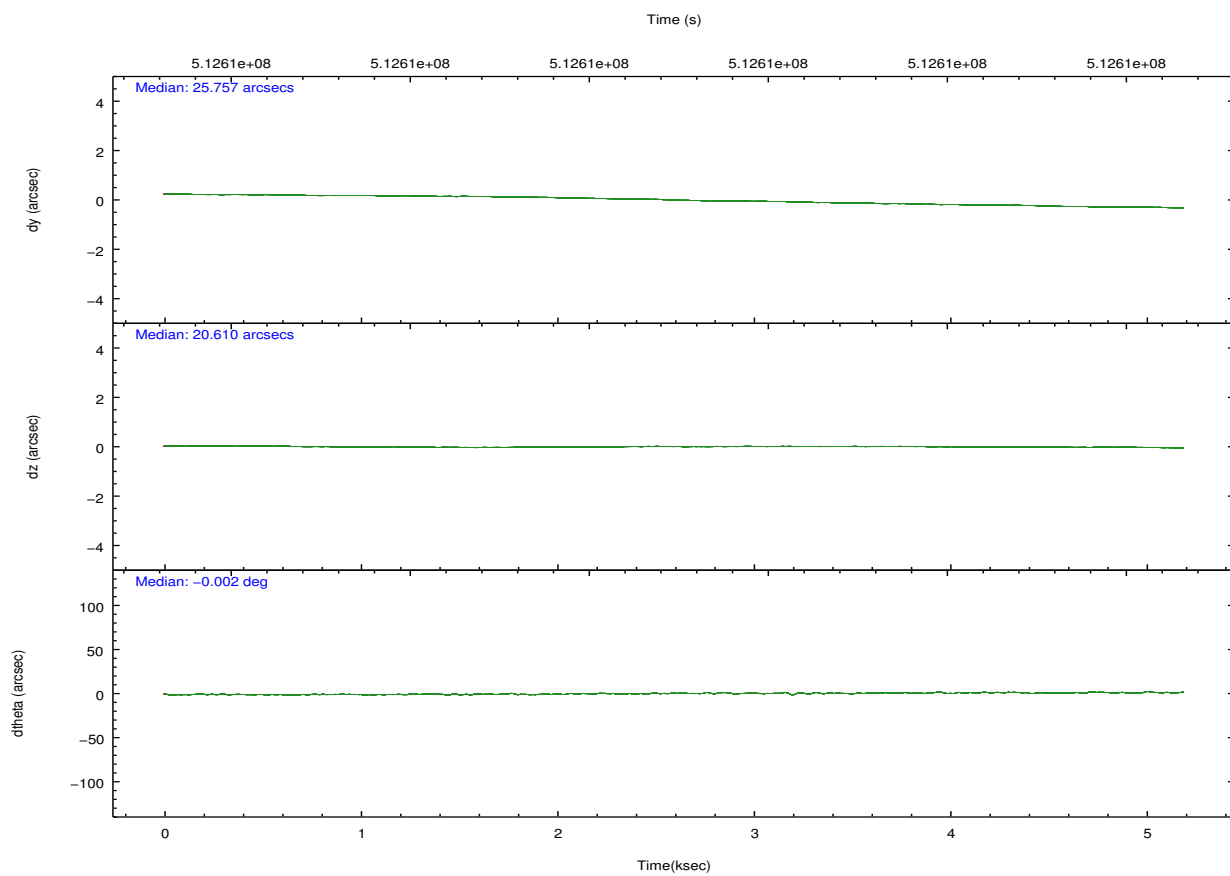
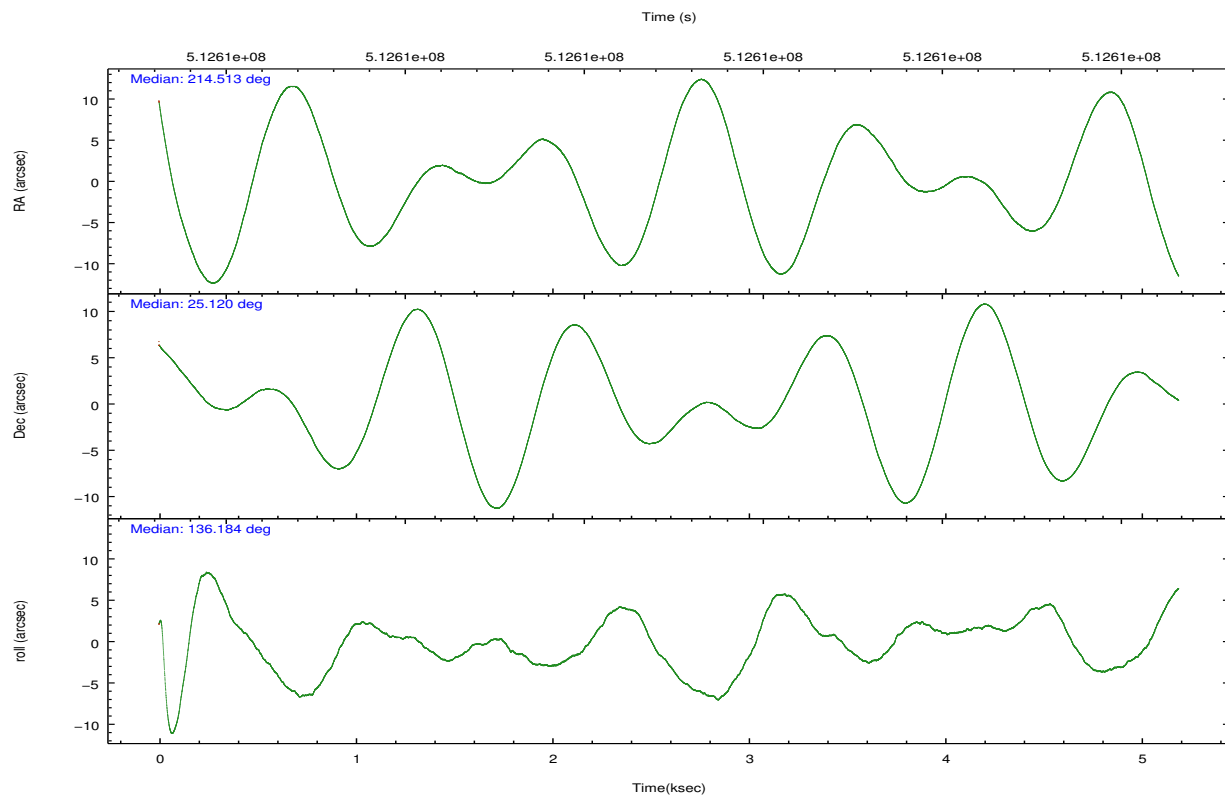


## 2.2 Compared Parameters

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	LETG	LETG	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	214.541983	214.512511127095	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	25.114278	25.12045575015796	Subarray start row	37	37
[deg] Pointing Roll	136.019503	136.1886904181607	Subarray row count	302	302
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	1
[mm] SIM translation stage pos	-182.132523	-182.1344861297048			
[mm] SIM translation stage offset	-8	-7.998036453302973			
[s] Observation start time (MET)	512607065.184000	512606345.61692			
Observation start date	2014-03-30T22:49:58	2014-03-30T22:39:05			
[s] Observation end time (MET)	512612065.184000	512612989.66728			
Observation end date	2014-03-31T00:13:18	2014-03-31T00:29:49			
Read mode	TIMED	TIMED			

## 2.3 Aspect



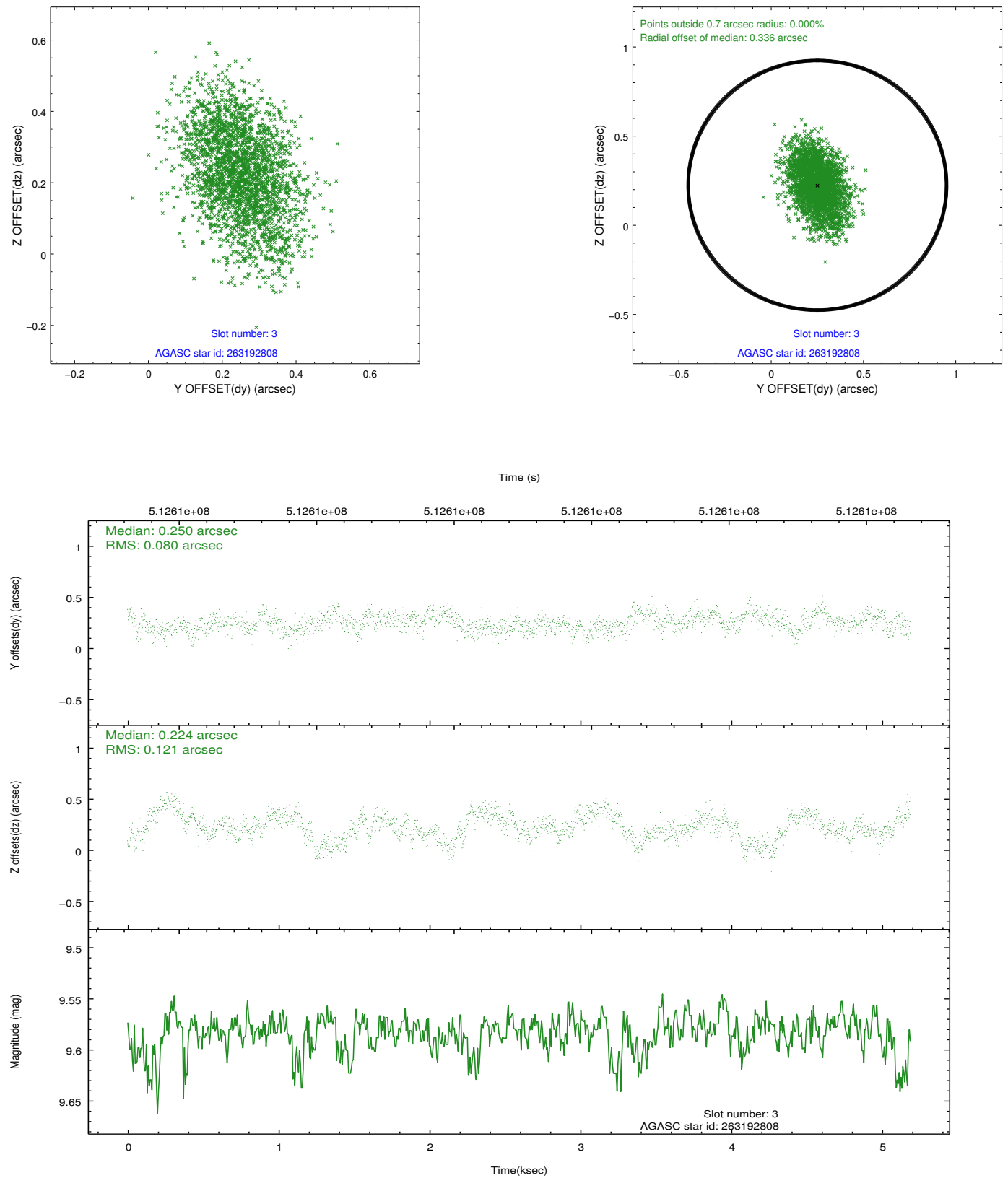


### Slot Statistics

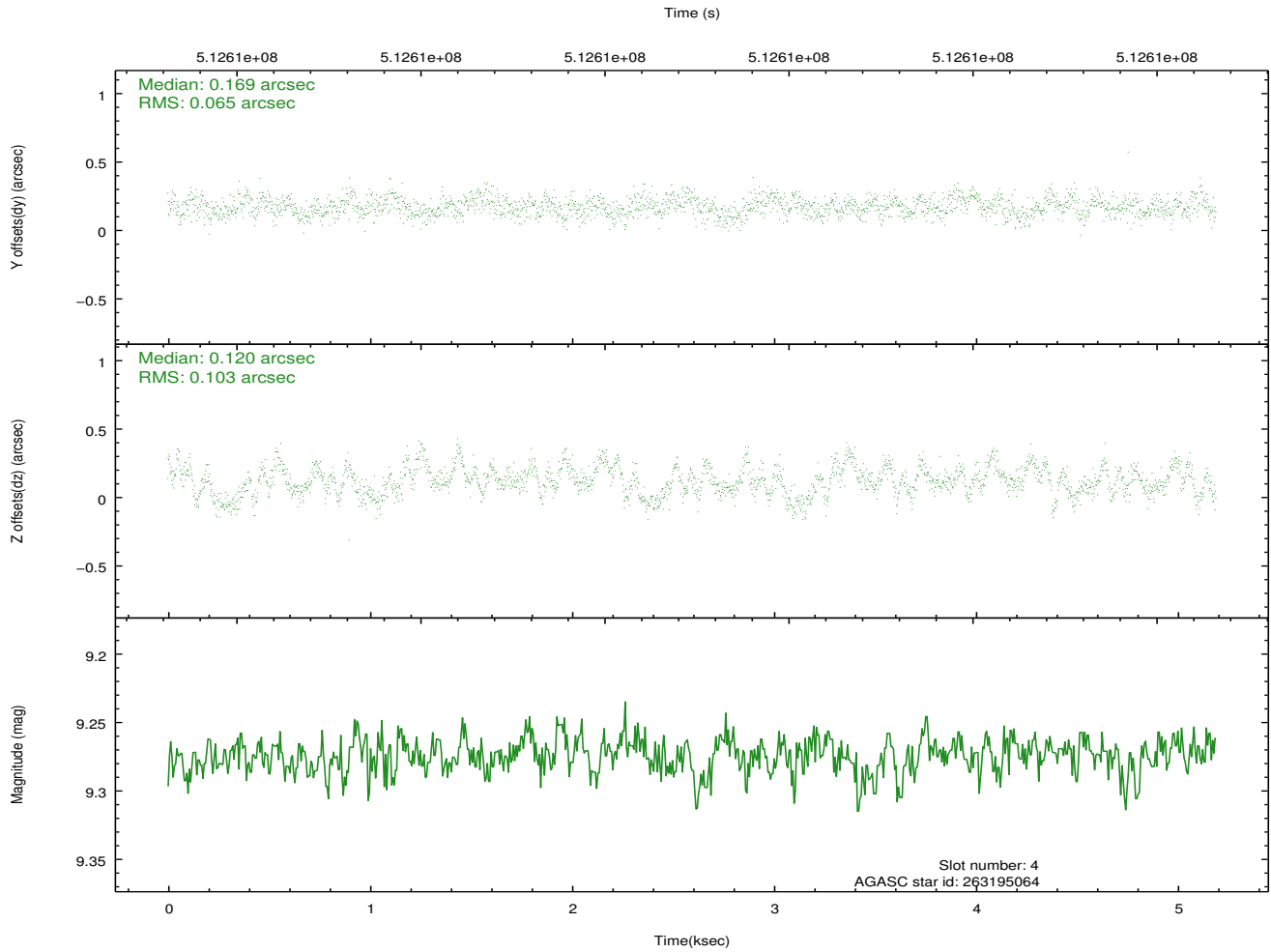
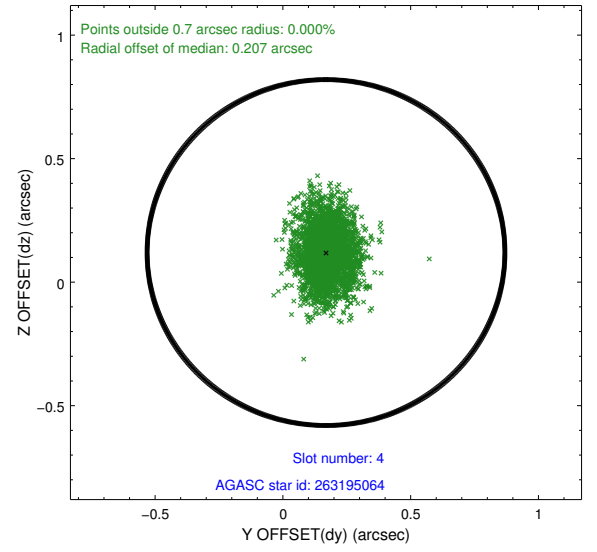
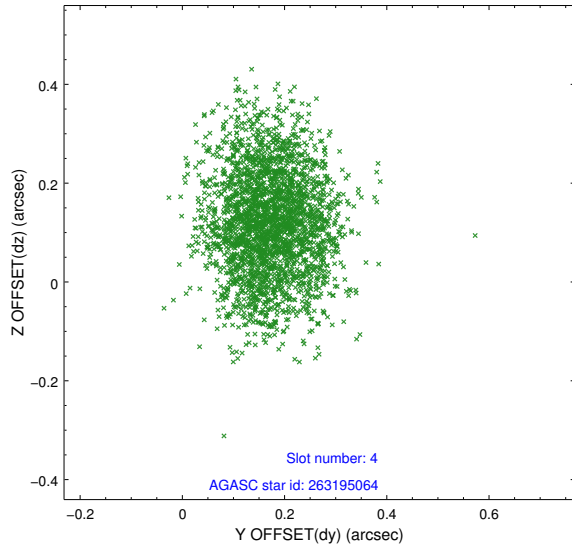
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.97	1266	-0.262	-0.163	0.006	0.012	0.000000	0.000000	-778.76	-1907.04
1	FID		ACIS-S-4	7.06	1267	0.253	0.170	0.006	0.011	0.000000	0.000000	2134.55	0.32
2	FID		ACIS-S-6	7.28	1267	-0.018	-0.001	0.007	0.012	0.000000	0.000000	385.04	638.94
3	GUIDE	used	263192808	9.58	2529	0.250	0.224	0.153	0.256	215.197131	24.910235	-2045.58	-960.46
4	GUIDE	used	263195064	9.27	2533	0.169	0.120	0.131	0.213	215.129983	24.745063	-2303.47	-381.58
5	GUIDE	used	263464240	9.52	2532	-0.473	-0.487	0.130	0.215	213.729943	25.011897	1655.09	2098.82
6	GUIDE	used	263464688	9.18	2528	-0.036	-0.048	0.126	0.201	214.654702	25.305283	214.55	-748.43
7	GUIDE	used	263595296	9.81	2525	0.084	0.181	0.170	0.275	214.929889	25.645337	423.20	-2251.10

## 2.4 Star Slots

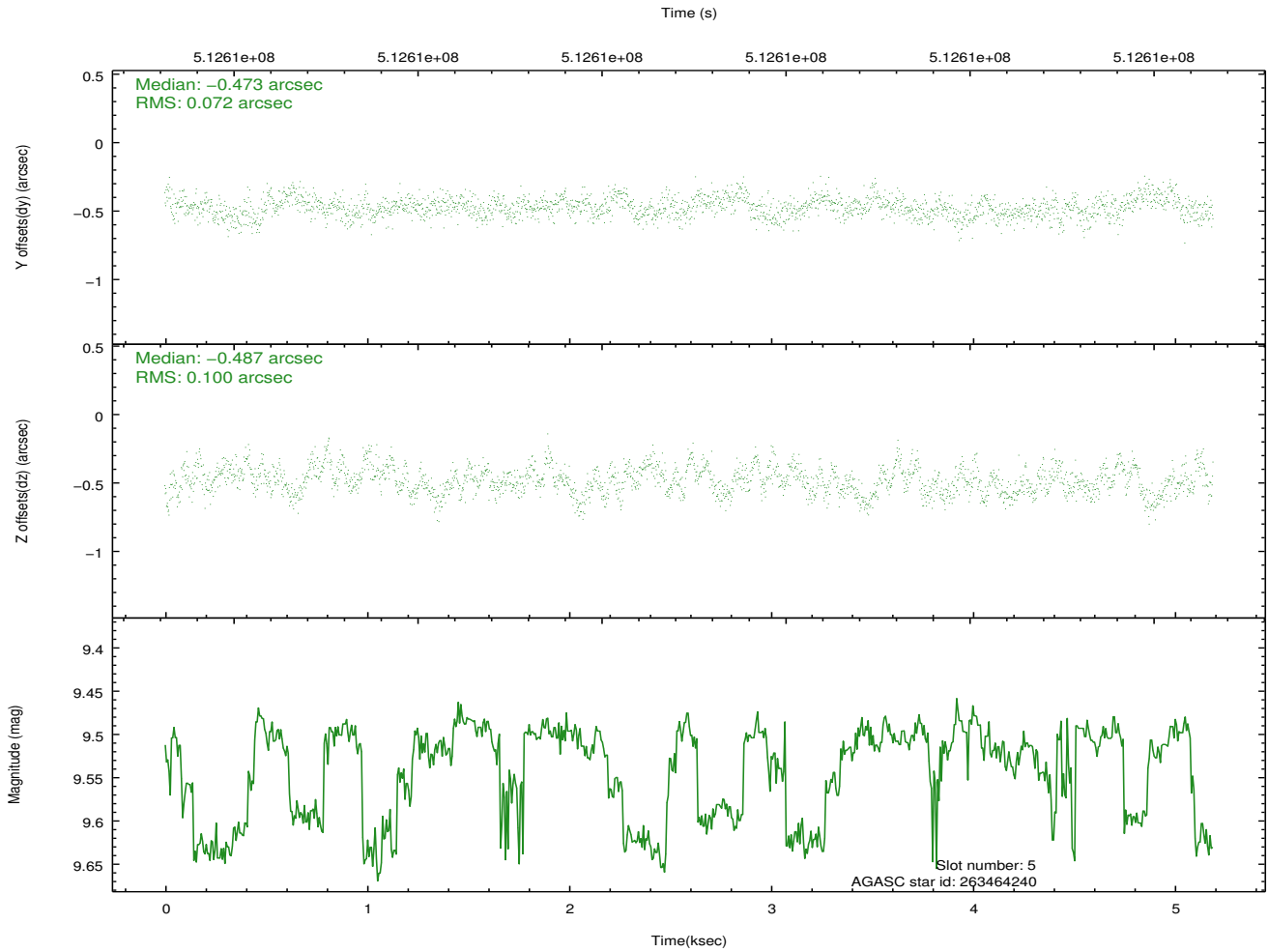
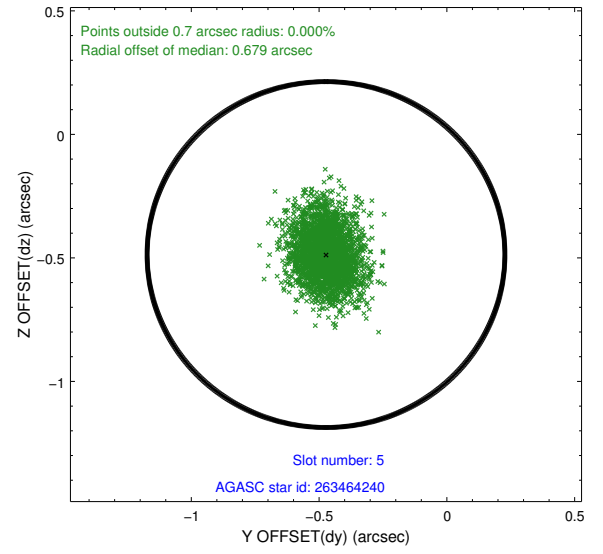
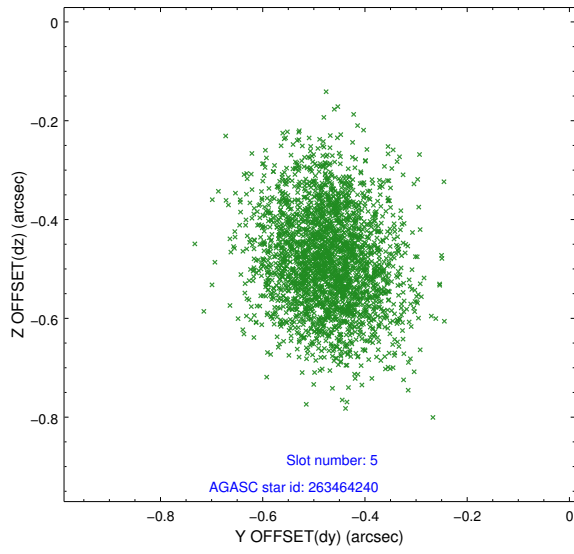
### 2.4.1 Slot 3



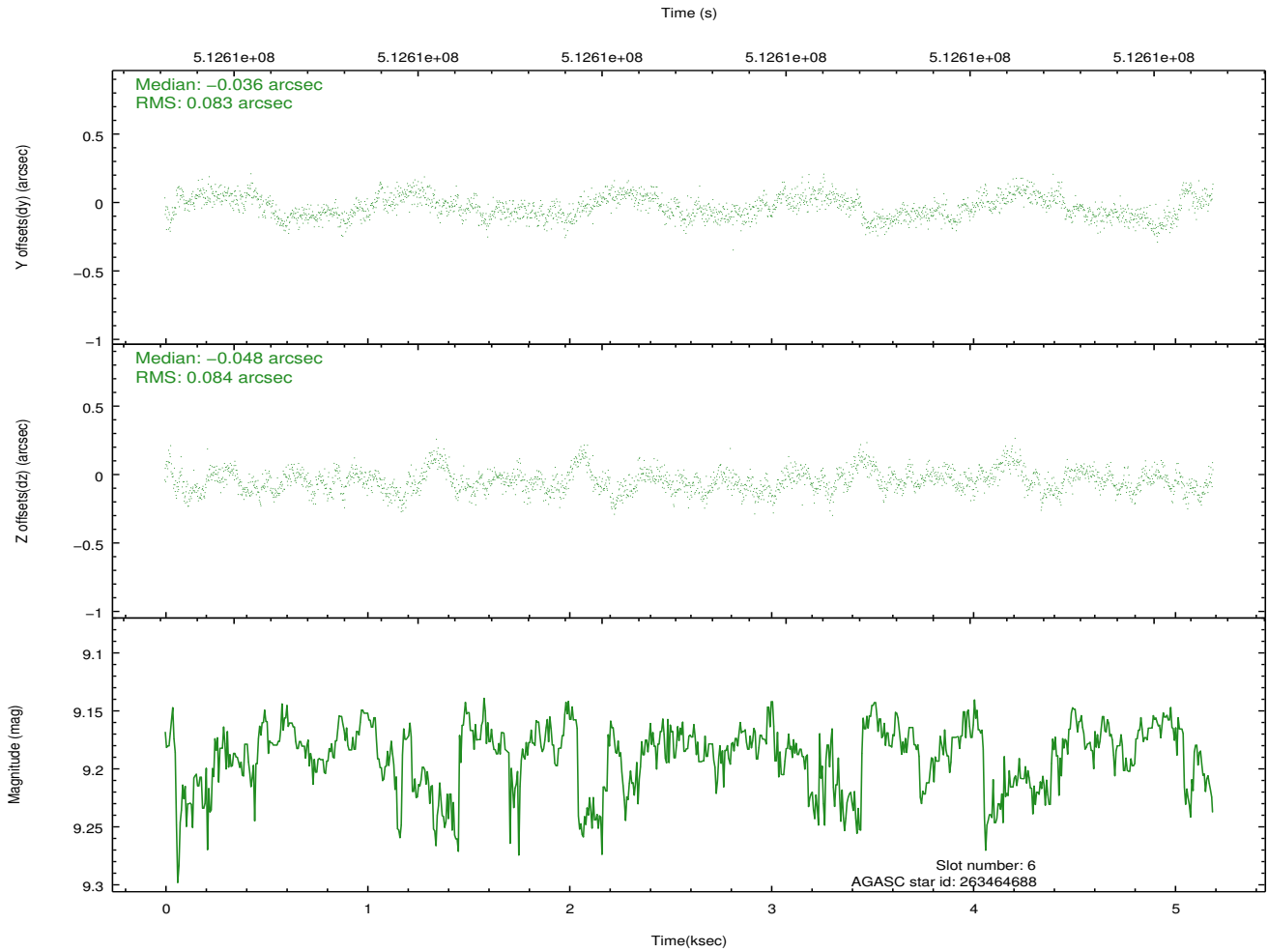
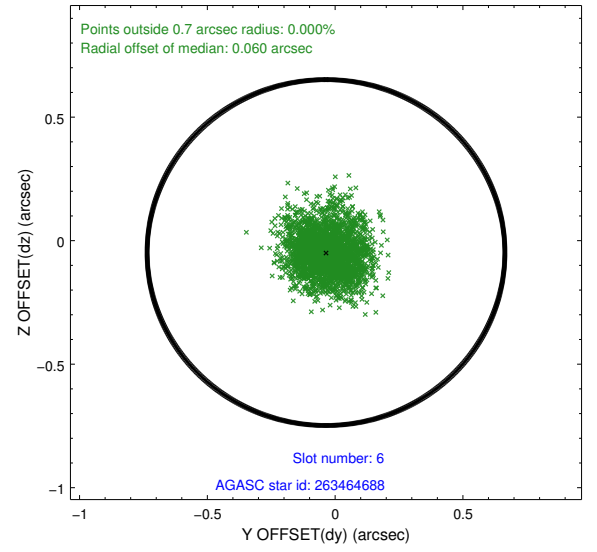
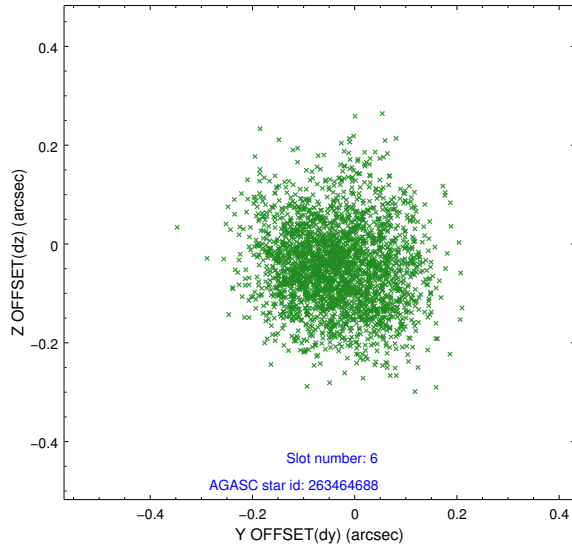
## 2.4.2 Slot 4



### 2.4.3 Slot 5

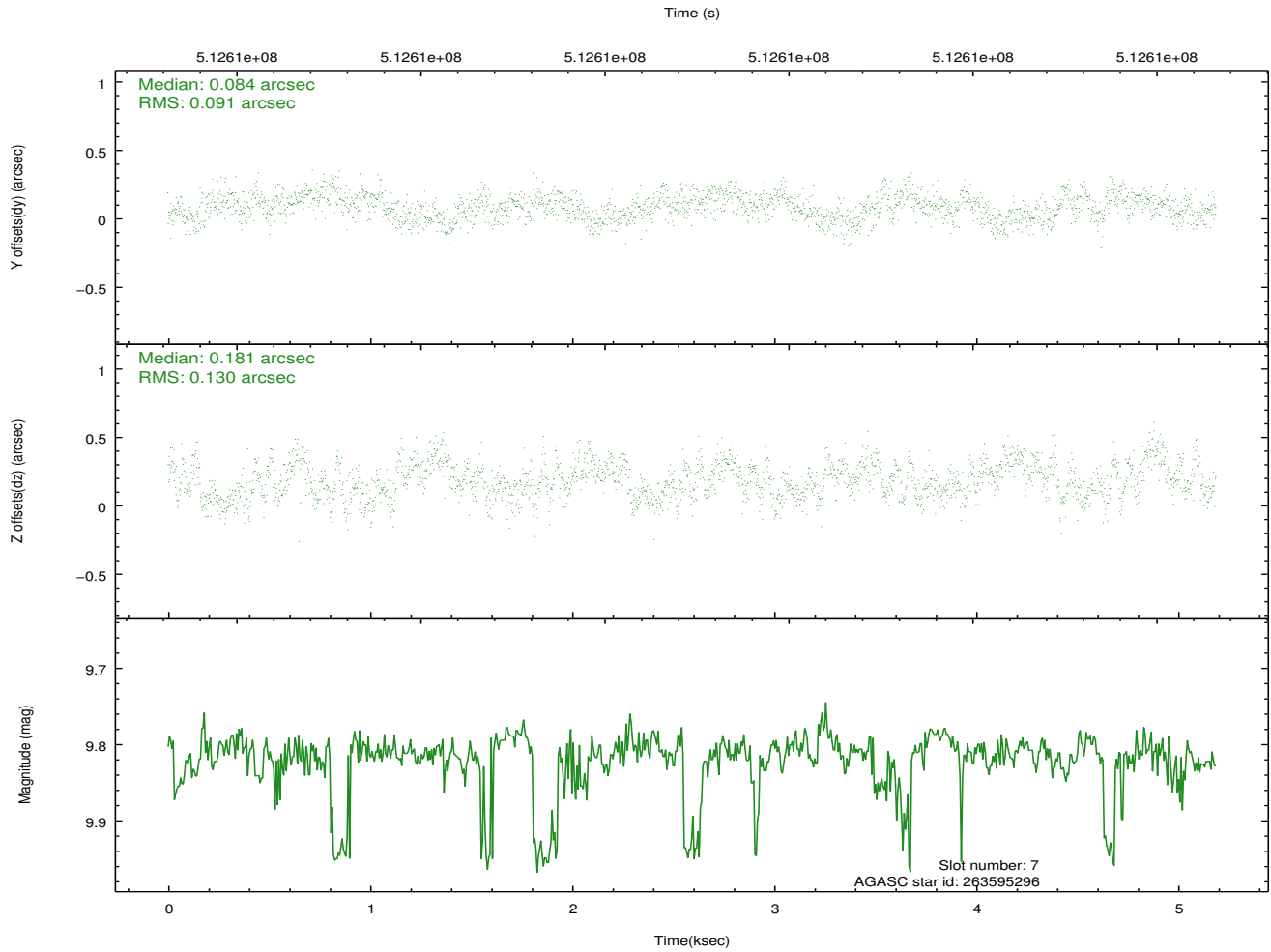
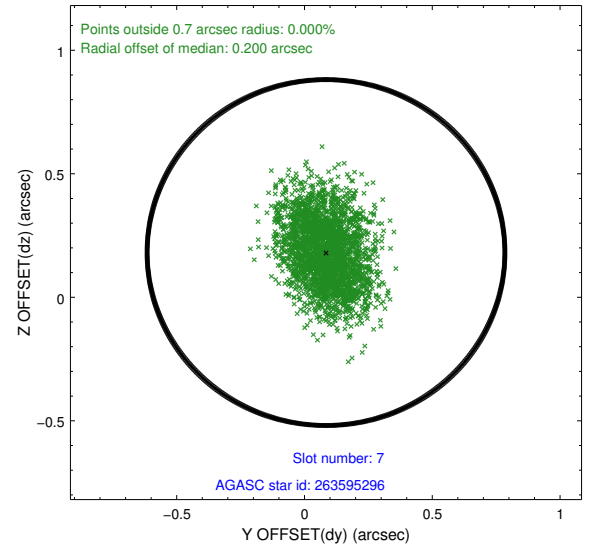
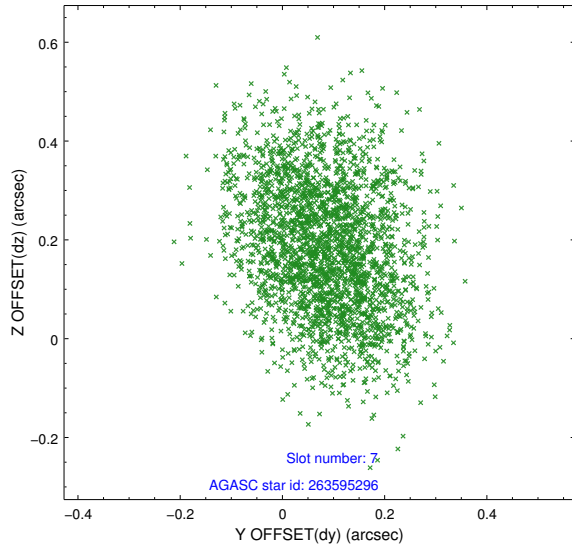


## 2.4.4 Slot 6



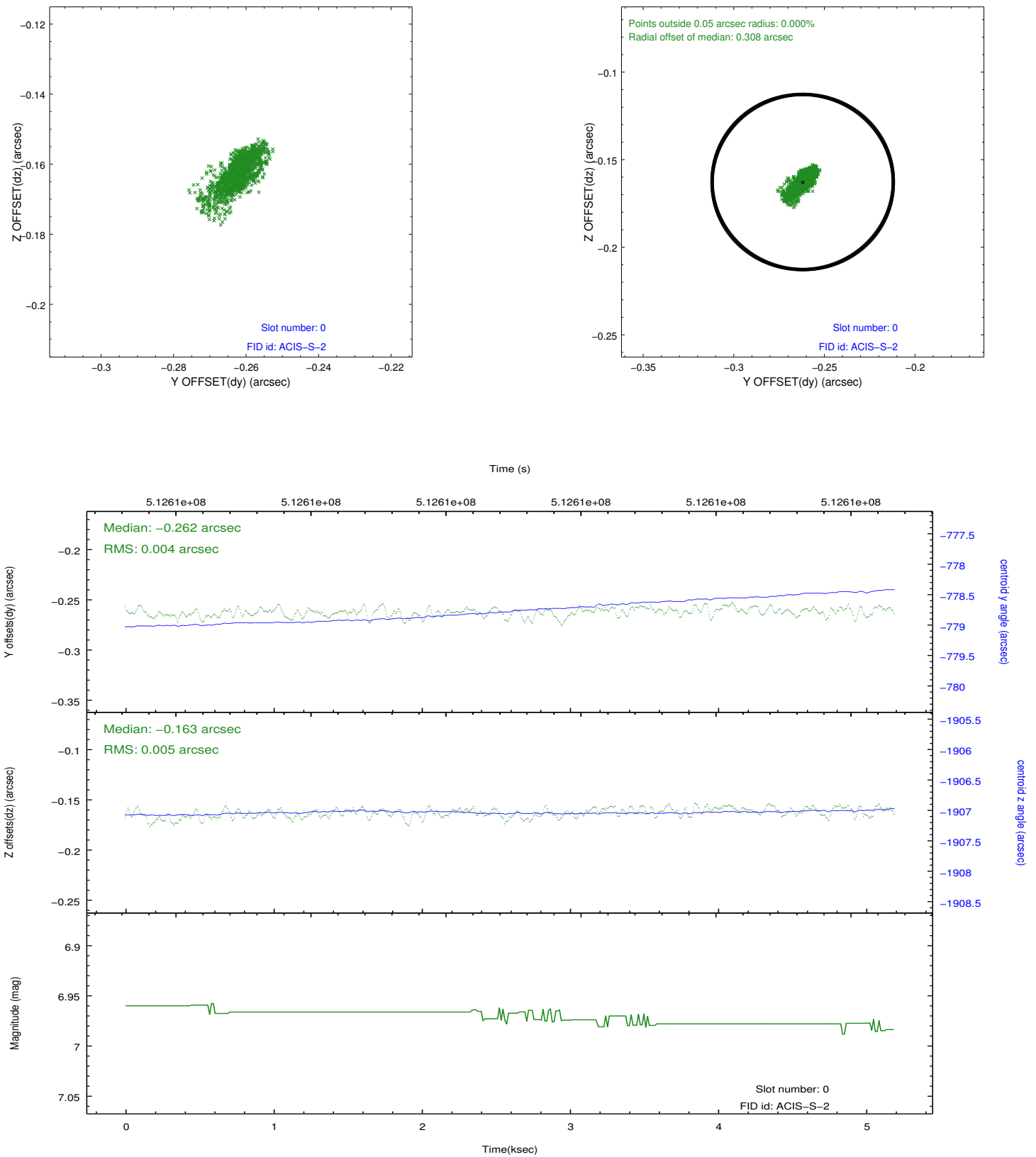


## 2.4.5 Slot 7

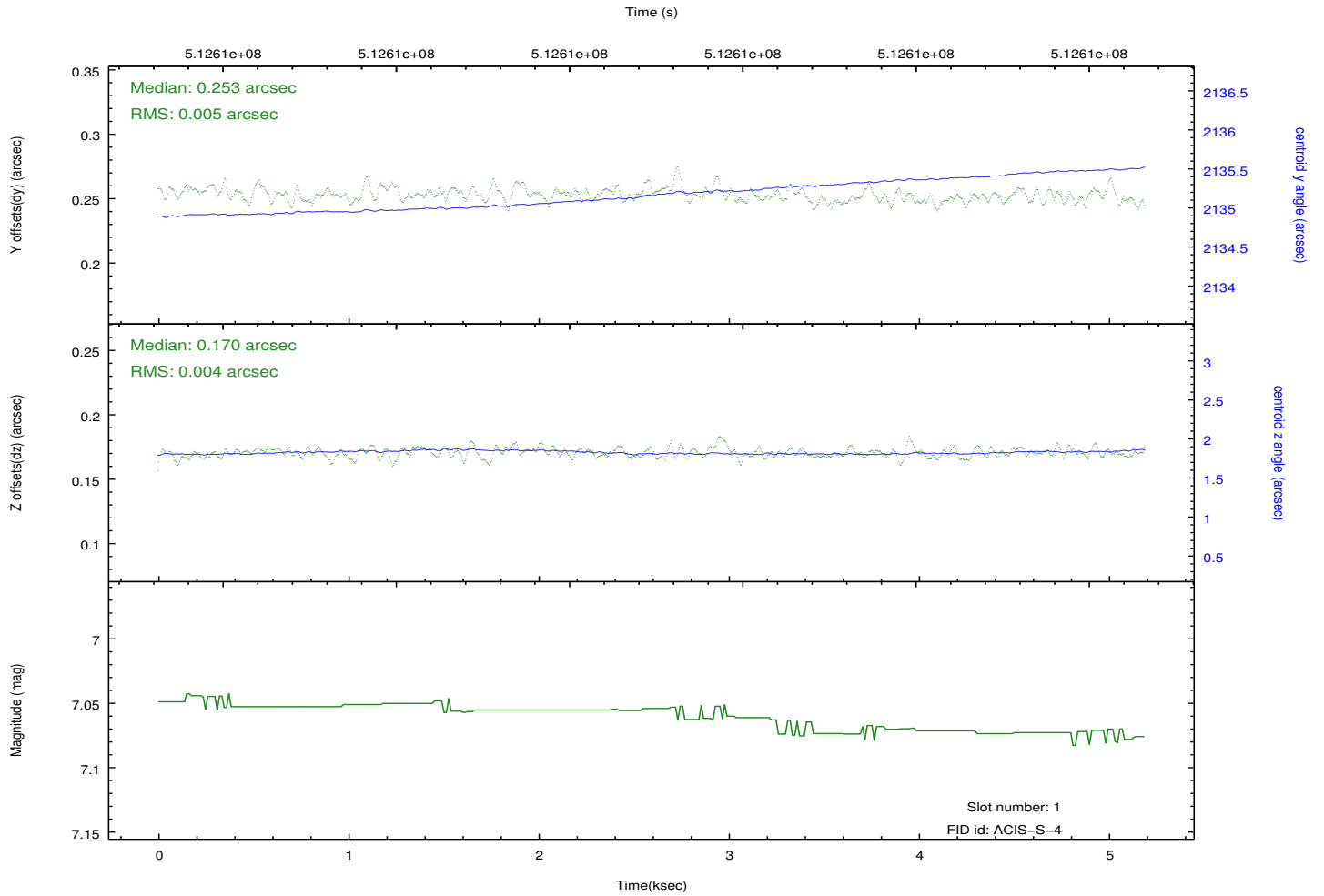
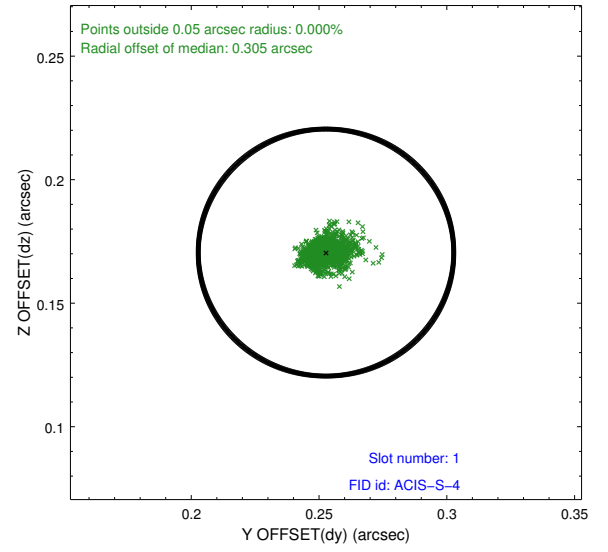
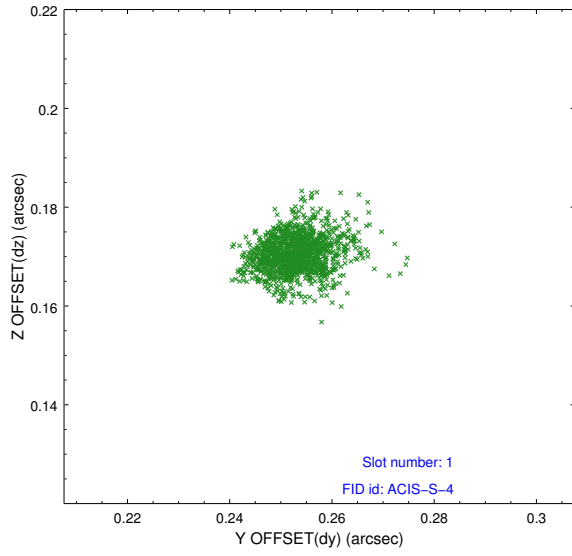


## 2.5 FID Slots

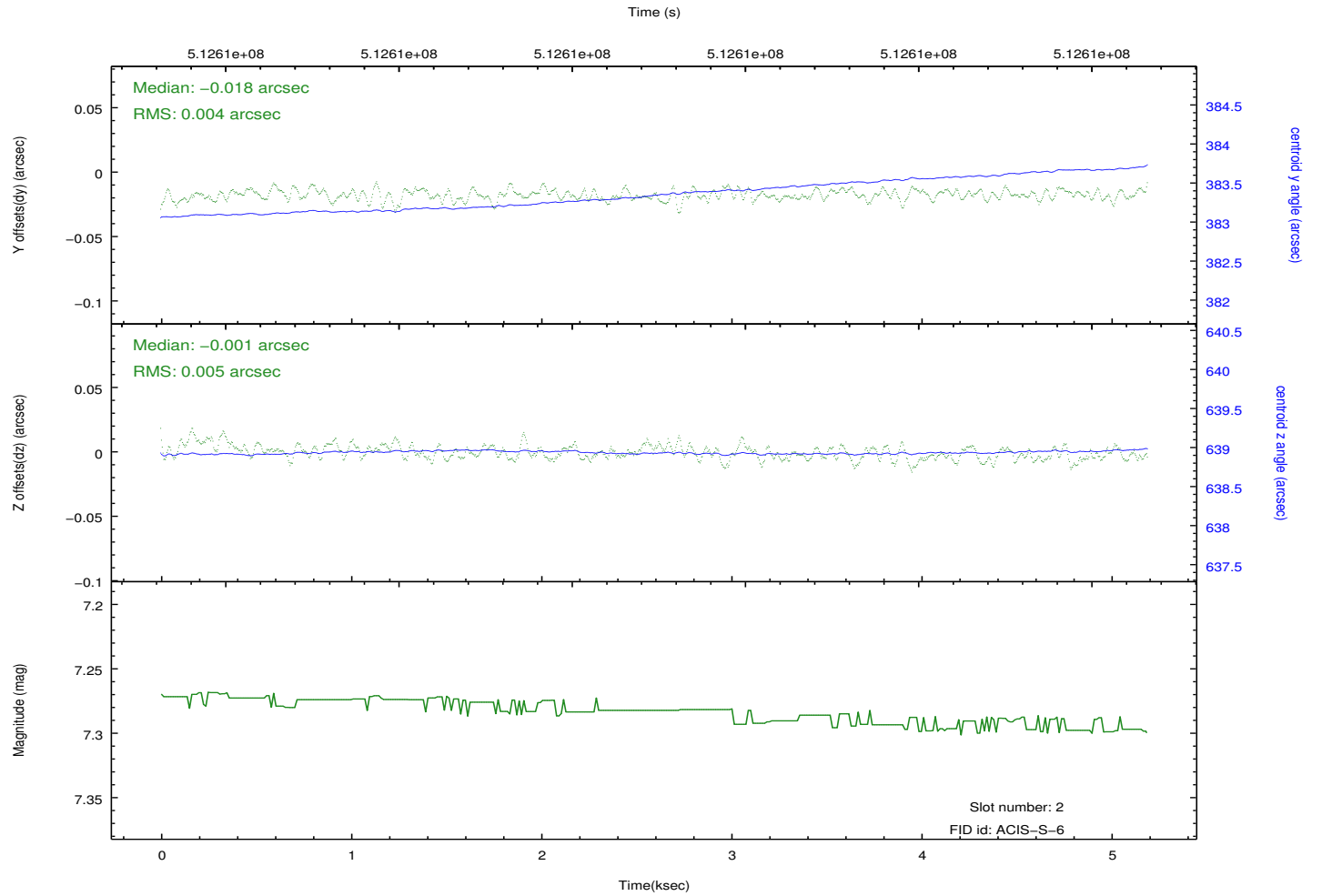
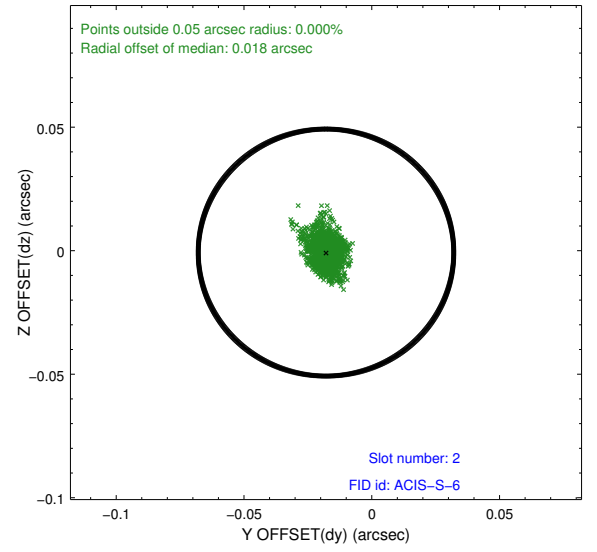
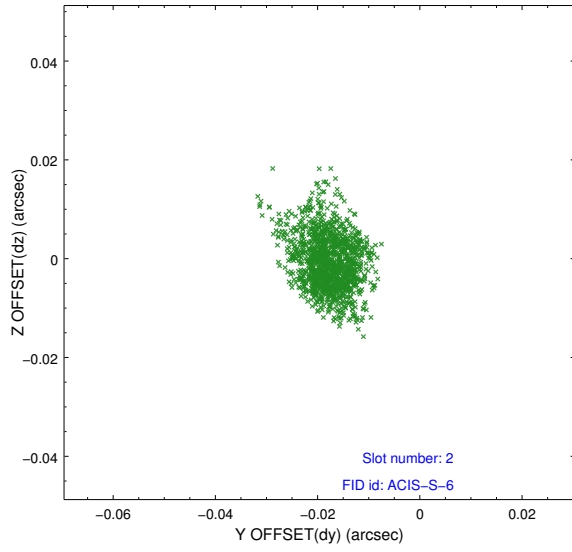
### 2.5.1 Slot 0



## 2.5.2 Slot 1

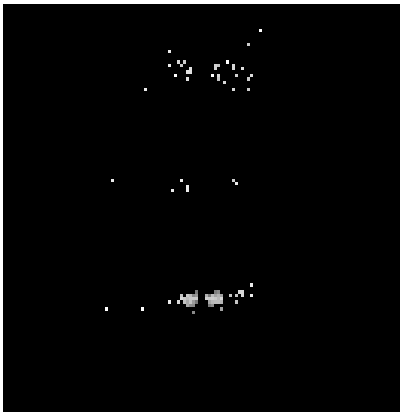


### 2.5.3 Slot 2

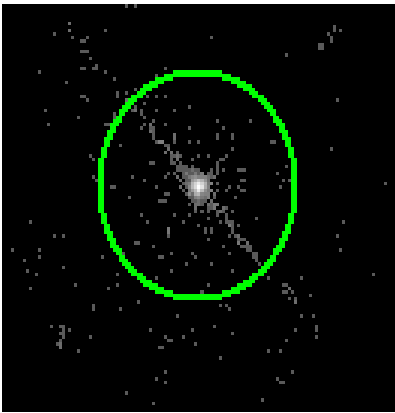


# 3 Gratings

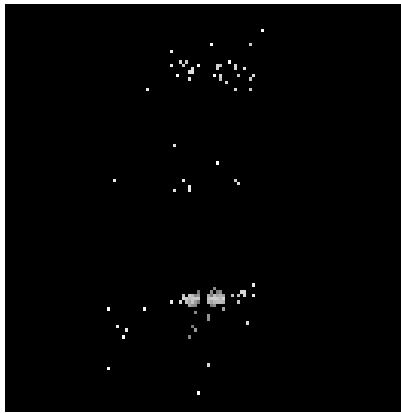
## 3.1 LETG Arm



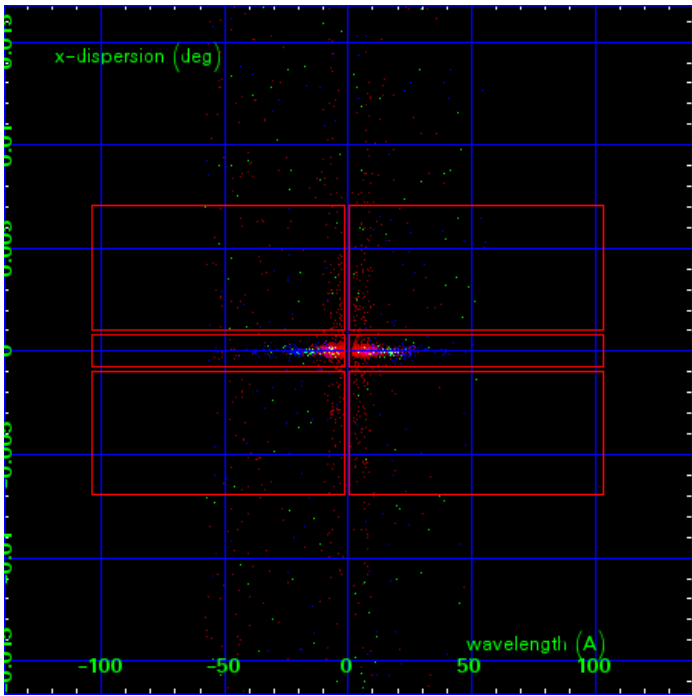
LETG Order Sort 123



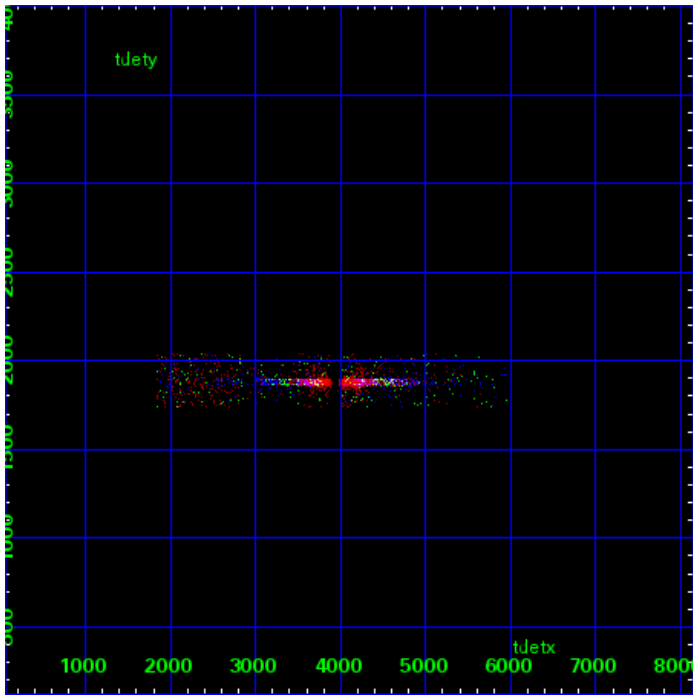
LETG Zero Order



LETG Order Sort ALL

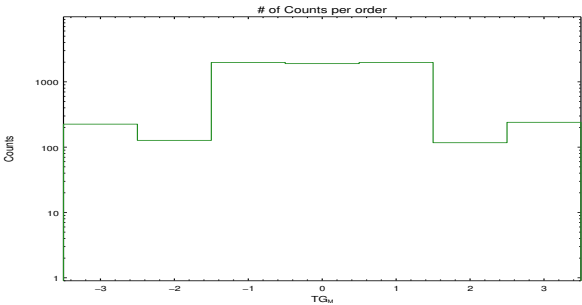


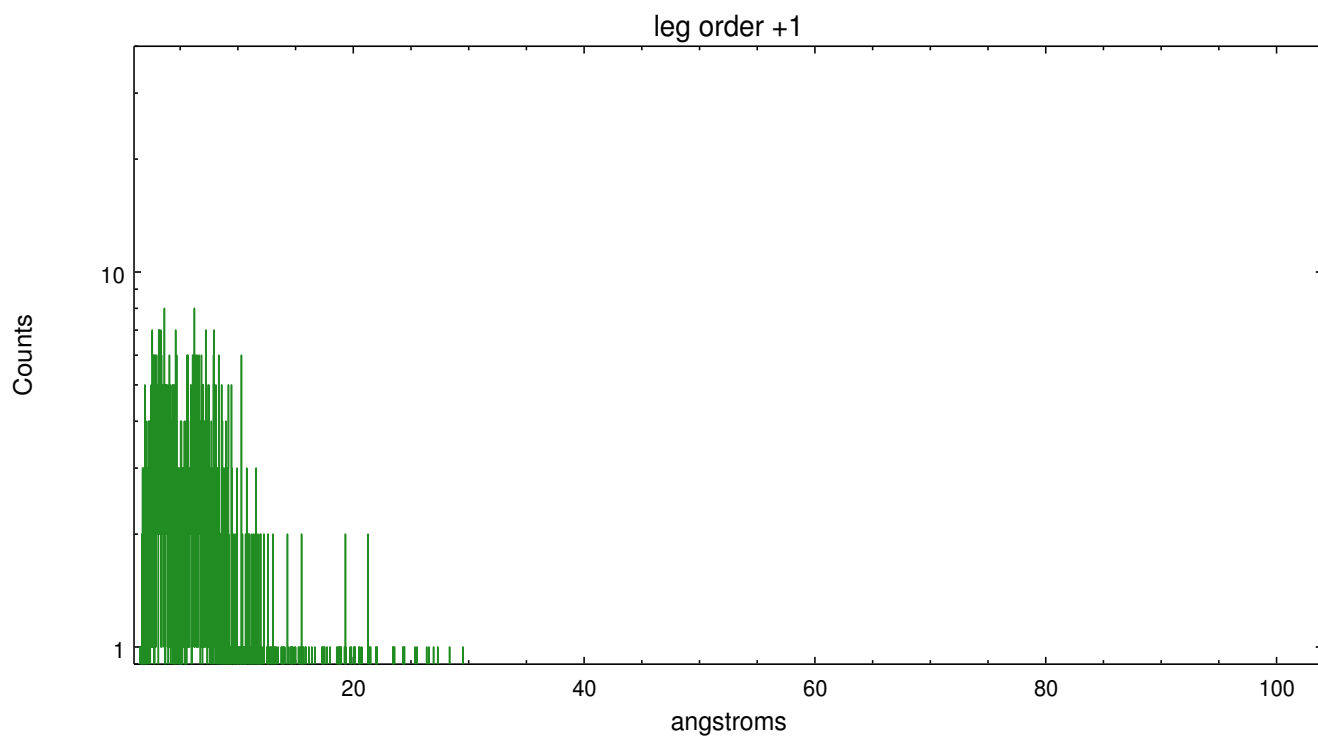
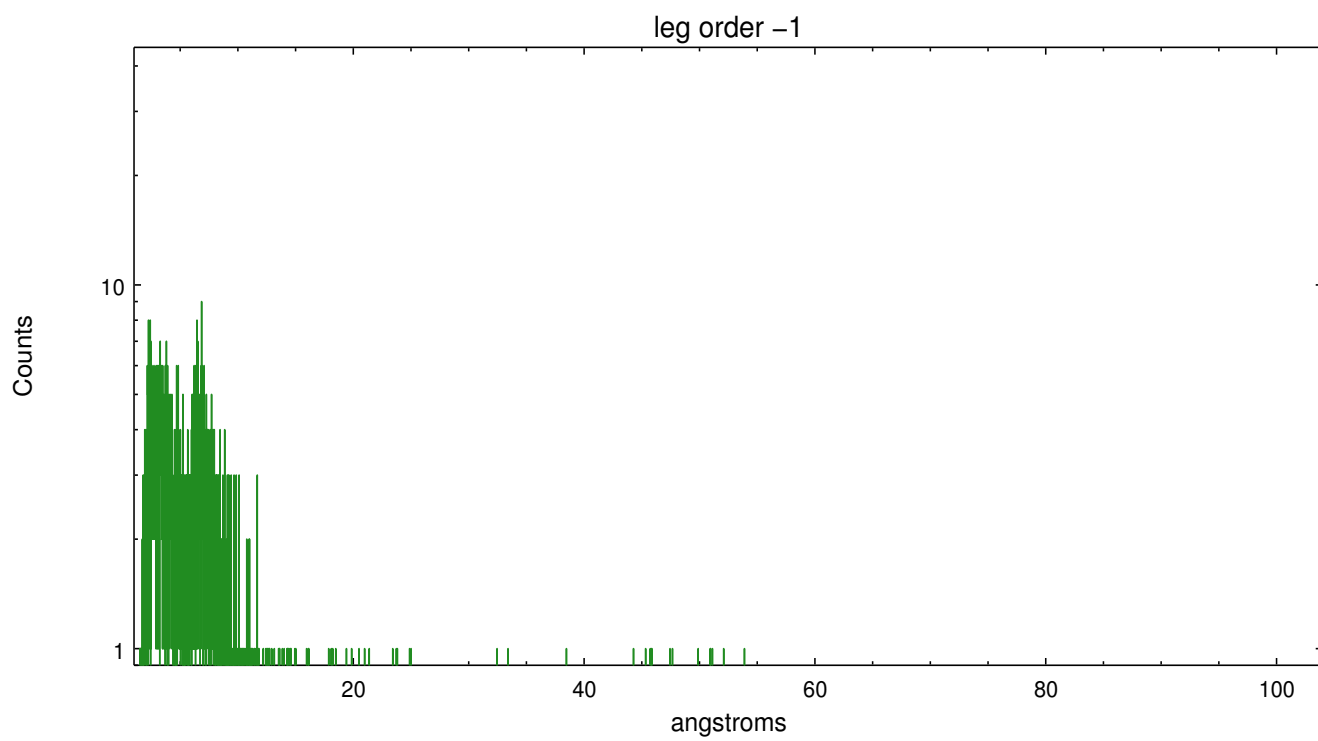
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	225	127	1979	1901	1981	117	240





# A Summary

## A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2015.11.05
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	5.064

## 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.

=====

Joint Proposal: CXO-HST

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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.