

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 5318 - L2 Version 3  
Chandra X-Ray Center

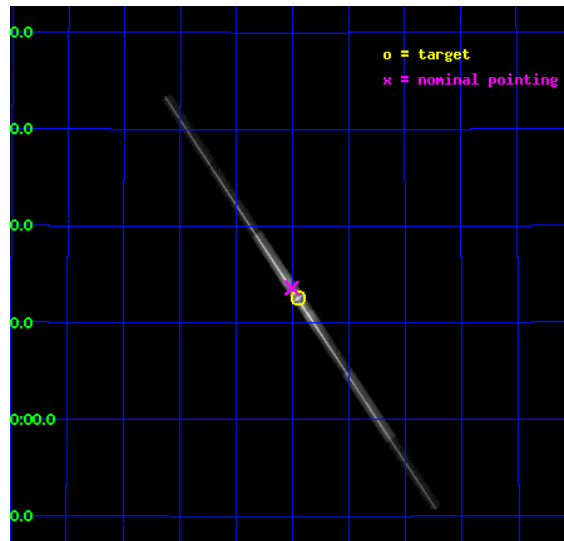
L2 Processing Date : Dec 8 2012

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# 1 Front

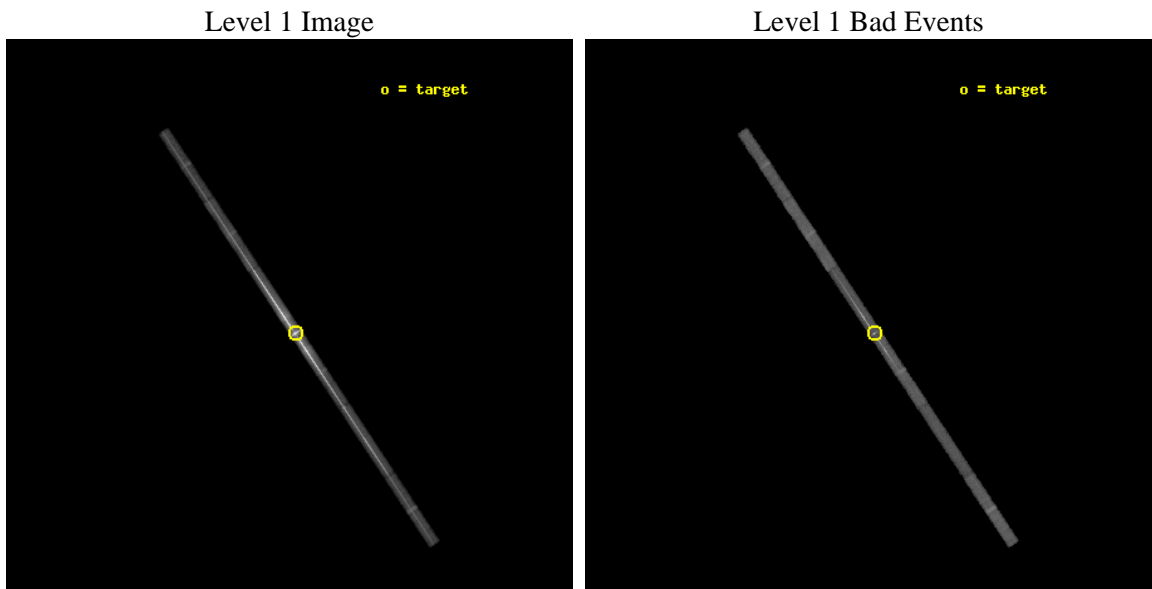
seq_num	790094	Sequence number
obs_id	5318	Observation id
title	Measuring the depth of the contaminant on ACIS with a LETG/ACIS-S observation of Mkn 421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	Mkn 421	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.12640172121	Nominal RA [deg]
dec_nom	38.227146460567	Nominal Dec [deg]
roll_nom	236.38122765441	Nominal Roll [deg]
revision	3	Processing version of data
ontime	30160.899486363	Sum of GTIs [s]
livetime	28490.539836519	Livetime [s]
ontime4	30160.899486363	Sum of GTIs [s]
ontime5	30160.899486363	Sum of GTIs [s]
ontime6	30160.899486363	Sum of GTIs [s]
ontime7	30160.899486363	Sum of GTIs [s]
ontime8	30160.899486363	Sum of GTIs [s]
ontime9	30160.899486363	Sum of GTIs [s]
l2events	1735226	Number of level 2 events



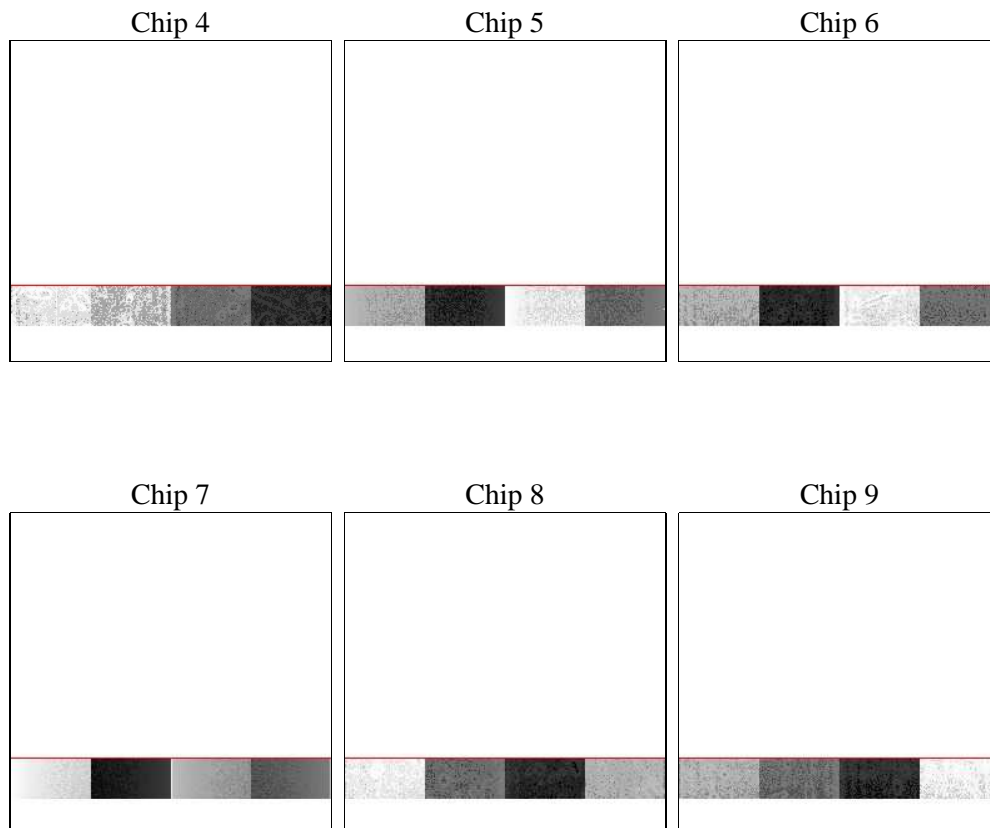
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	30160.899486363	Sum of GTIs [s]
caldbver	4.5.2	&#160	ontime4	30160.899486363	Sum of GTIs [s]
date	2012-12-01T01:57:15	Date and time of file creation	ontime5	30160.899486363	Sum of GTIs [s]
revision	3	Processing version of data	ontime6	30160.899486363	Sum of GTIs [s]
			ontime7	30160.899486363	Sum of GTIs [s]
			ontime8	30160.899486363	Sum of GTIs [s]
			ontime9	30160.899486363	Sum of GTIs [s]
			l1events	2030790	Number of level 1 events

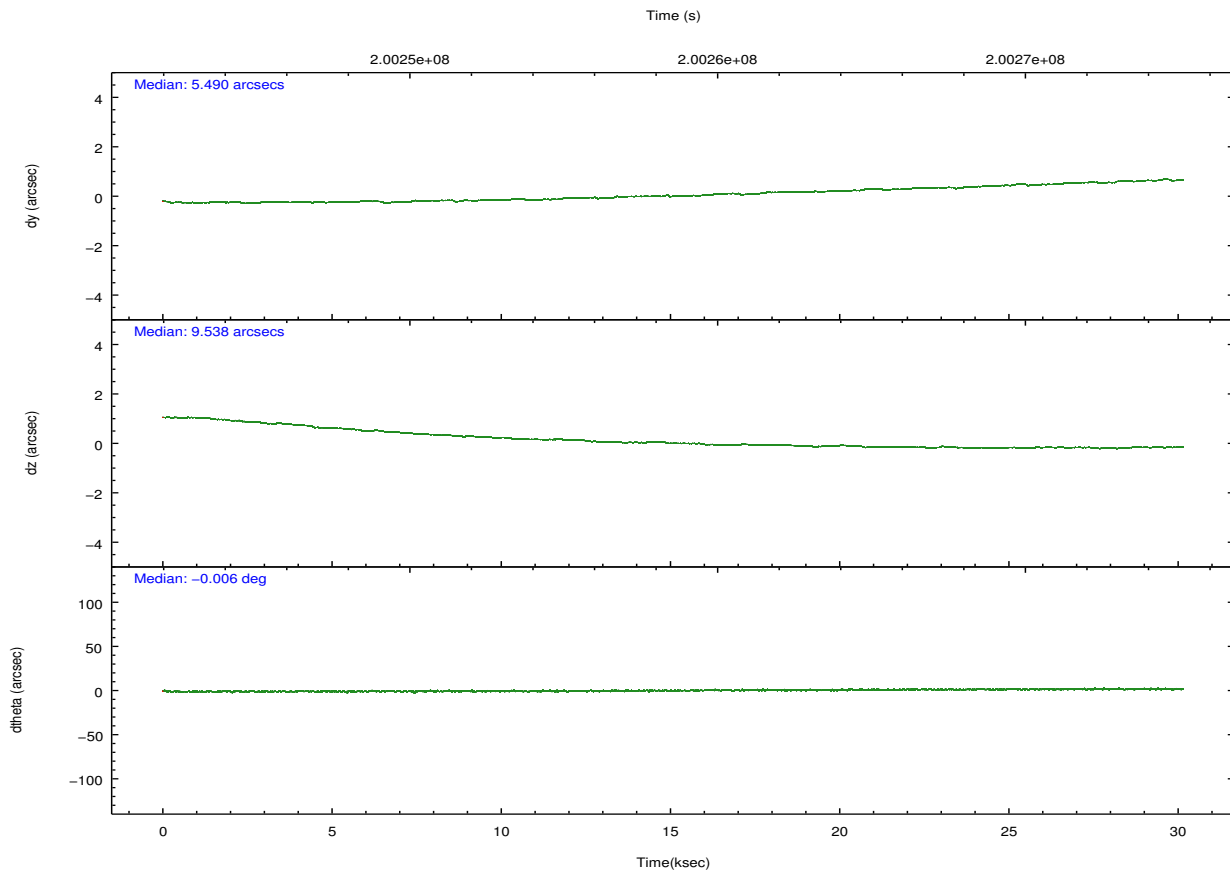
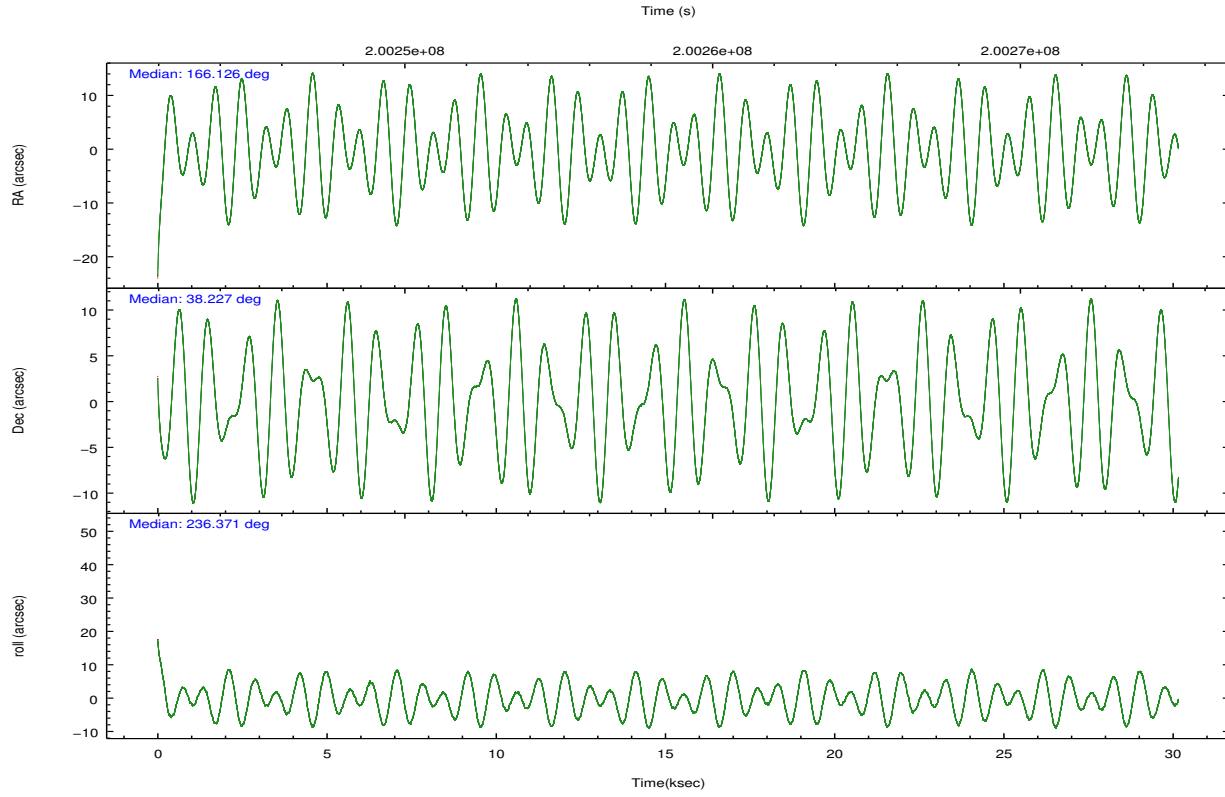
### 2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	58014	140207	659150	1022708	99171	51540	grade 0 events	15248	59717	484068	247882	43806	16379
rejected events	37562	23519	46317	69327	41076	29930		26%	42%	73%	24%	44%	31%
rejected %	64%	16%	7%	6%	41%	58%	grade 1 events	25	171	6188	5015	78	19
								0%	0%	0%	0%	0%	0%
							grade 2 events	2229	23954	66635	243927	6339	2226
								3%	17%	10%	23%	6%	4%
							grade 3 events	1109	8789	22542	112096	2475	1089
								1%	6%	3%	10%	2%	2%
							grade 4 events	1056	8853	22520	110370	2353	1133
								1%	6%	3%	10%	2%	2%
							grade 5 events	1208	4149	5143	22540	1633	1189
								2%	2%	0%	2%	1%	2%
							grade 6 events	930	16450	18121	240687	3387	905
								1%	11%	2%	23%	3%	1%
							grade 7 events	36209	18124	33933	40191	39100	28600
								62%	12%	5%	3%	39%	55%

## 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	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	166.128135	166.1264017212103	Subarray requested	CUSTOM	1/8
[deg] Pointing Dec	38.254366	38.22714646056694	Subarray start row	113	113
[deg] Pointing Roll	236.223525	236.3812276544078	Subarray row count	128	128
[s] Window start time (MET)	199324864.184000	199324864.184000	Alternating exposures requested	N	N
[s] Window stop time (MET)	201139204.184000	201139204.184000	[s] Primary exposure time	0.000000	0.7
[mm] SIM focus pos	-0.684267	-0.6828225247311905			
[mm] SIM defocus	0	0.001444936568705701			
[mm] SIM translation stage pos	-182.132523	-182.1370004450064			
[mm] SIM translation stage offset	-8	-7.995522138001405			
[s] Observation start time (MET)	200243630.184000	200242484.47741			
Observation start date	2004-05-06T15:12:46	2004-05-06T14:54:44			
[s] Observation end time (MET)	200273630.184000	200274330.20382			
Observation end date	2004-05-06T23:32:46	2004-05-06T23:45:30			
Read mode	TIMED	TIMED			

## 2.3 Aspect

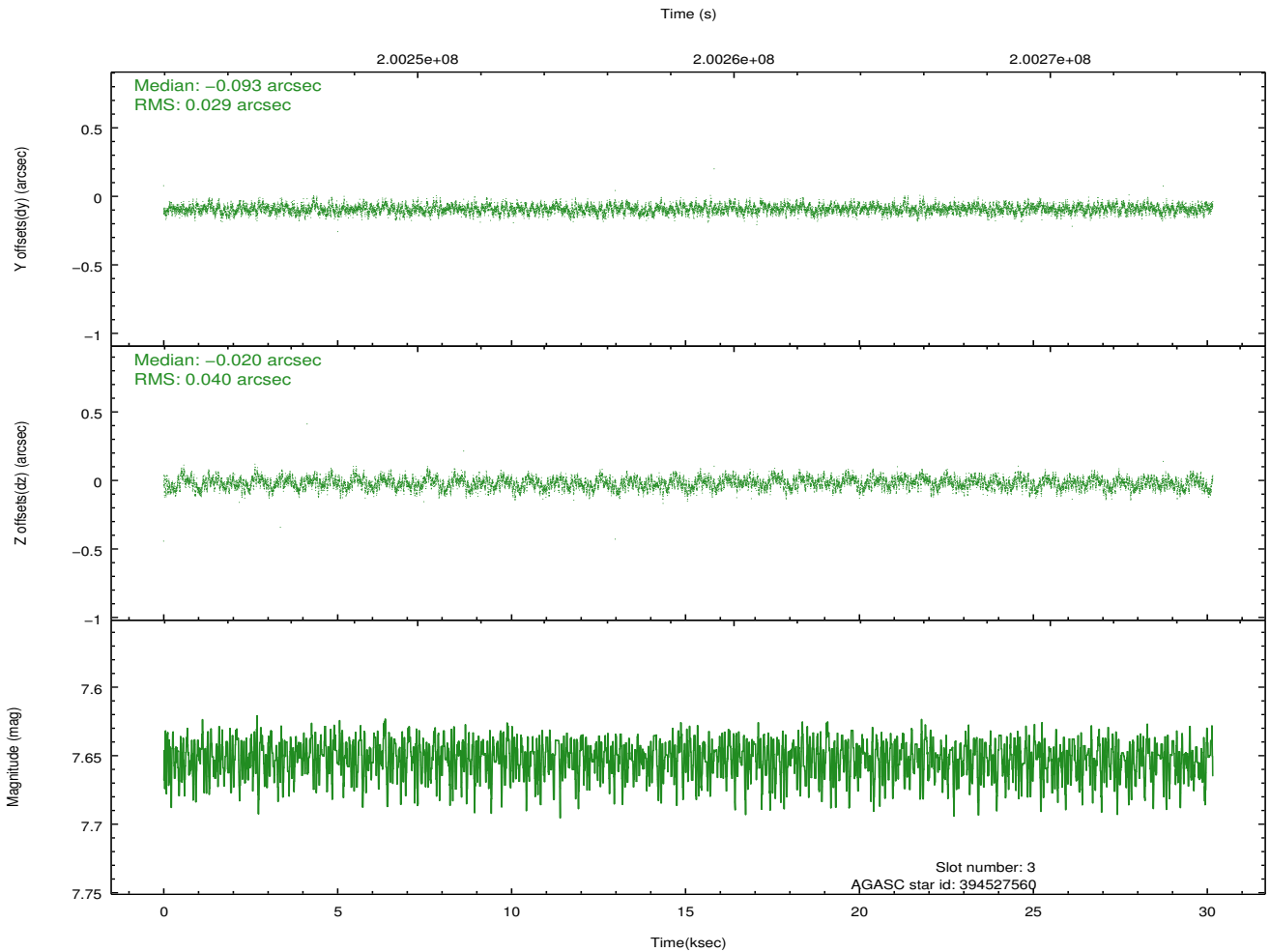
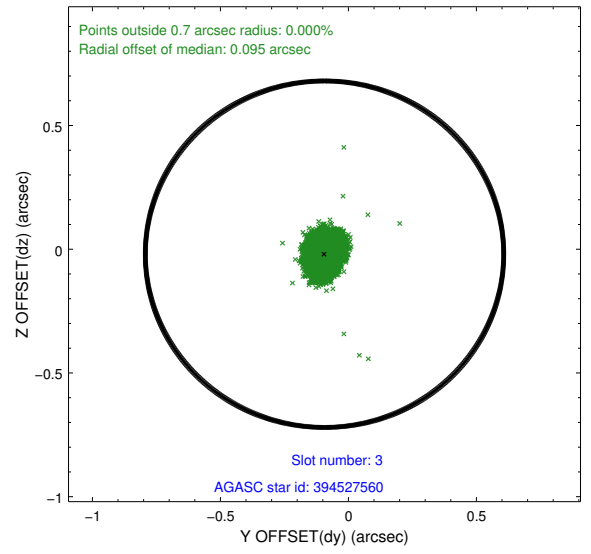
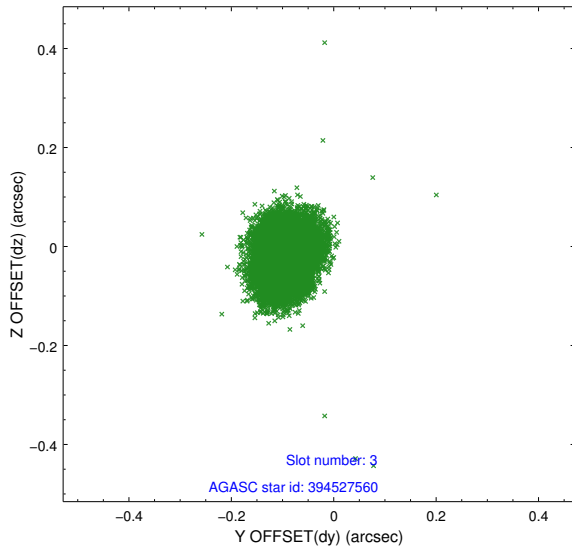


### Slot Statistics

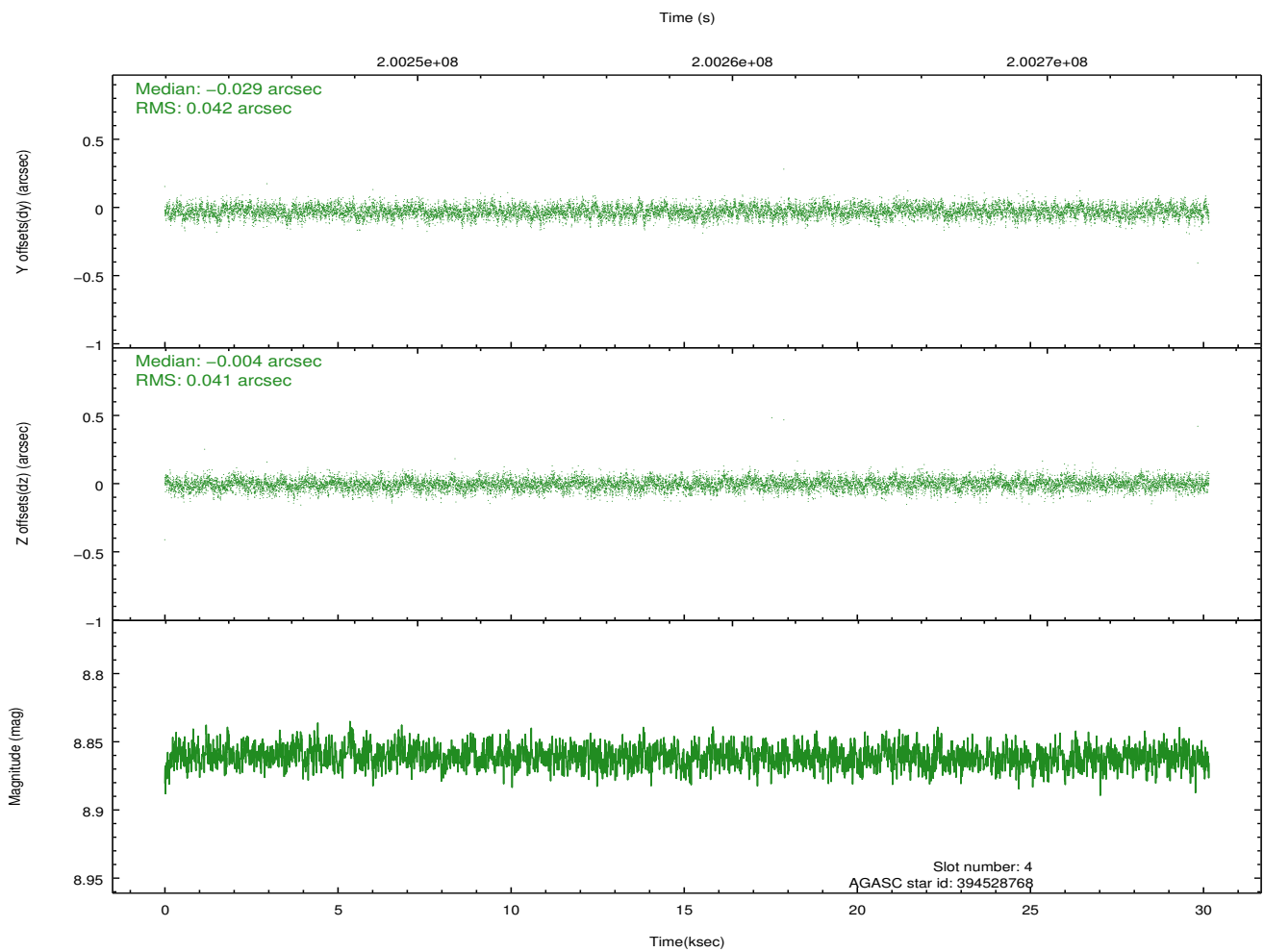
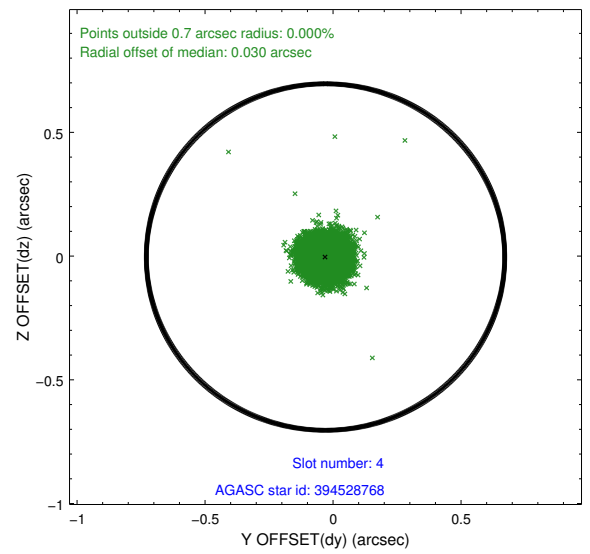
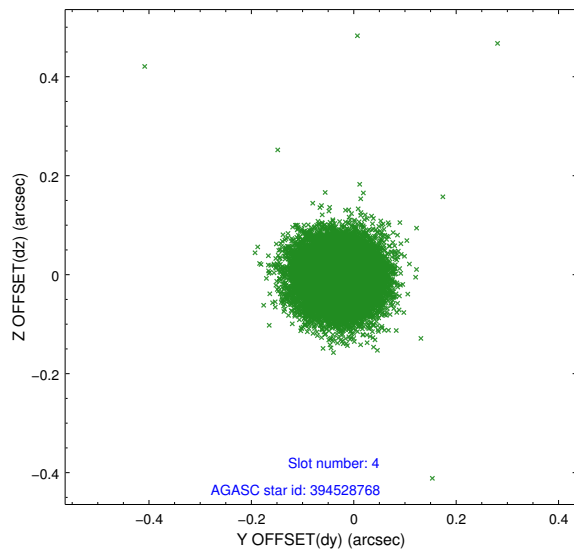
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-1	7.18	7356	0.036	0.090	0.025	0.034	0.000000	0.000000	938.40	-1891.18
1	FID	ACIS-S-5	7.23	7355	-0.116	0.041	0.014	0.021	0.000000	0.000000	-1810.73	6.18
2	FID	ACIS-S-6	7.41	7357	0.059	-0.122	0.018	0.029	0.000000	0.000000	403.86	650.09
3	GUIDE	394527560	7.65	14711	-0.093	-0.020	0.052	0.084	165.970713	38.960939	-1869.38	-1780.56
4	GUIDE	394528768	8.86	14706	-0.029	-0.004	0.061	0.099	166.180365	38.952248	-2169.45	-1275.30
5	GUIDE	394530152	7.48	14714	0.030	-0.148	0.053	0.088	166.075805	38.868252	-1755.28	-1350.67
6	GUIDE	394533848	8.72	14711	0.169	0.153	0.070	0.112	166.382906	38.276007	-465.26	553.75
7	GUIDE	394546712	6.59	14713	-0.075	0.023	0.058	0.089	166.451462	38.394357	-927.29	477.40

## 2.4 Star Slots

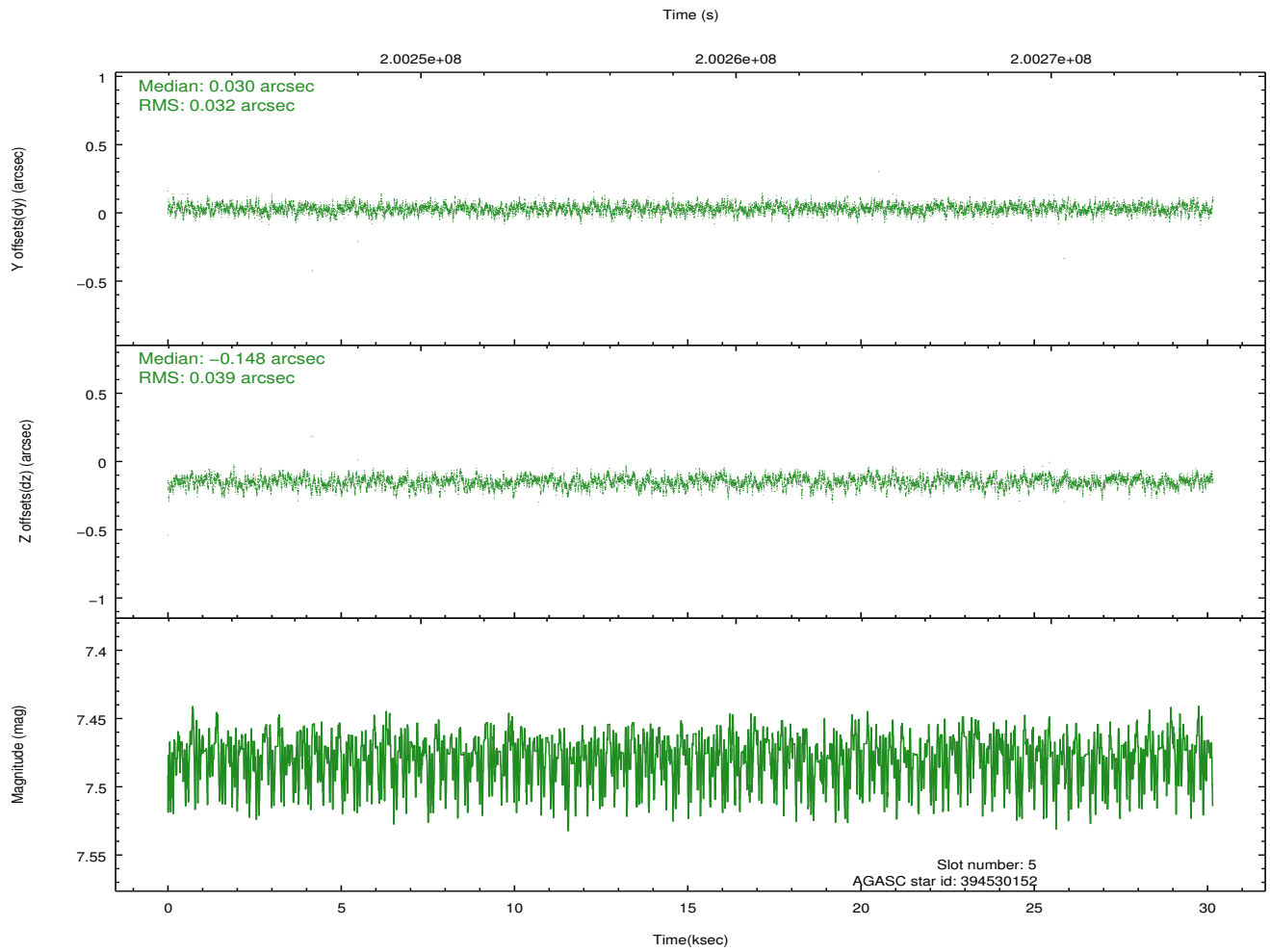
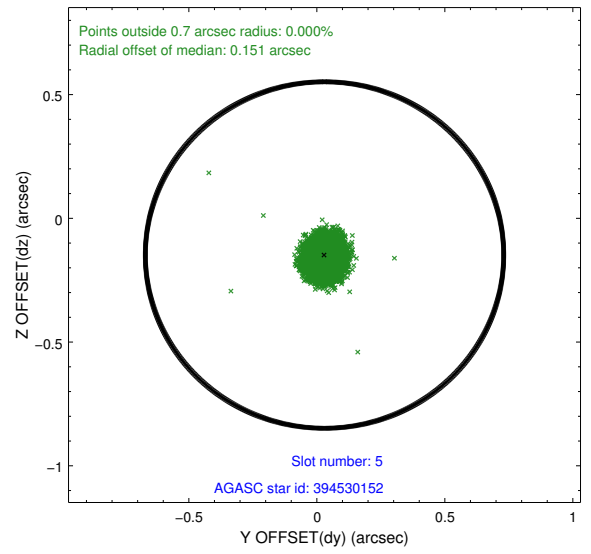
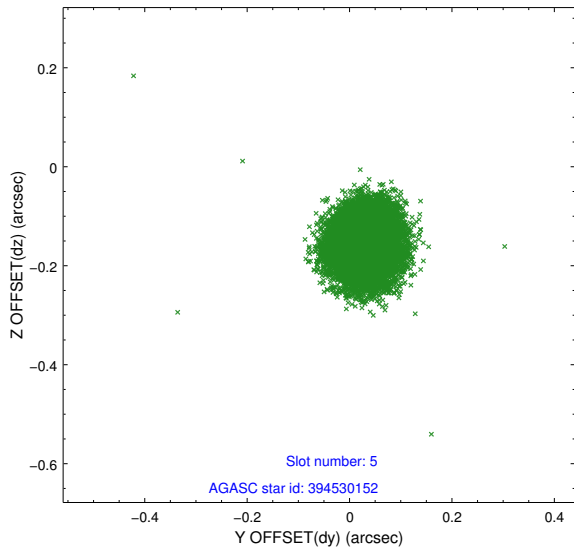
### 2.4.1 Slot 3



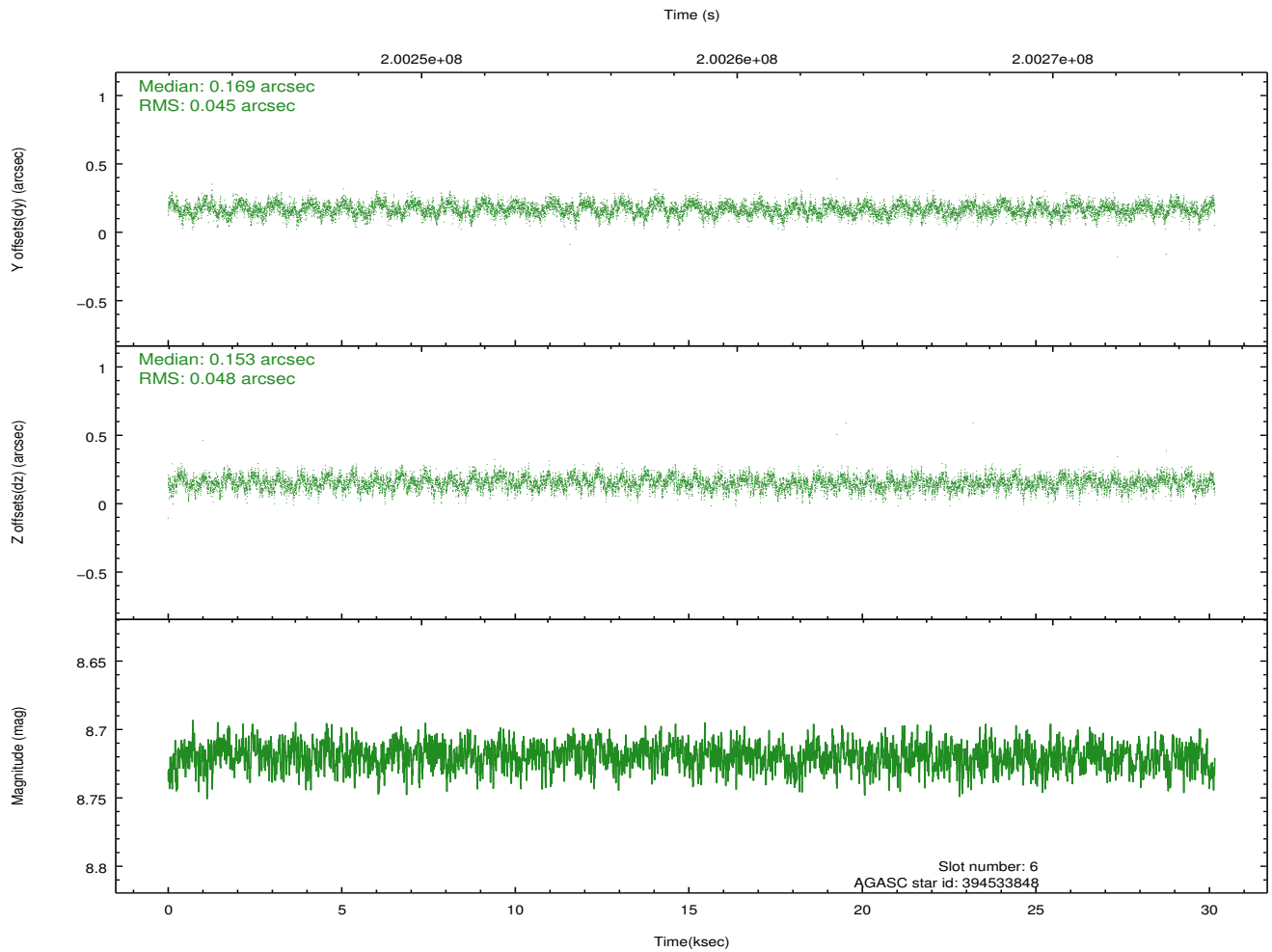
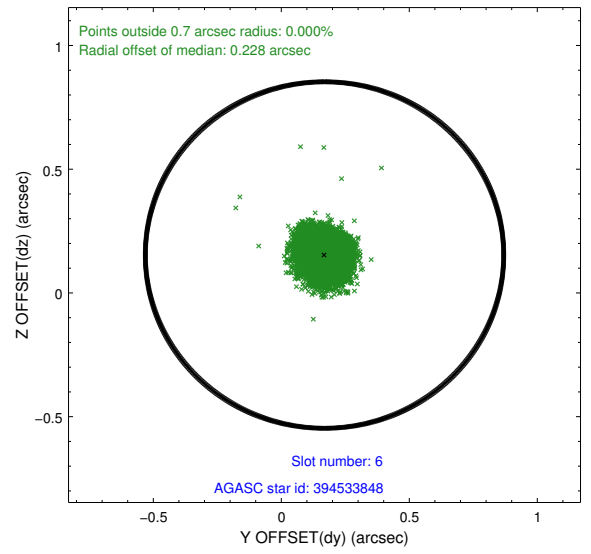
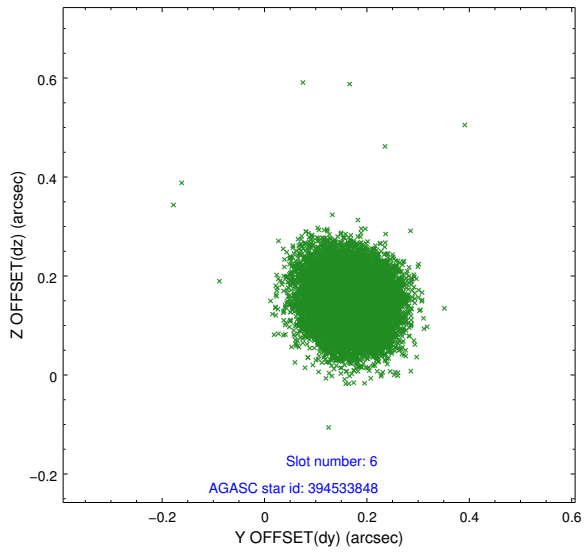
## 2.4.2 Slot 4



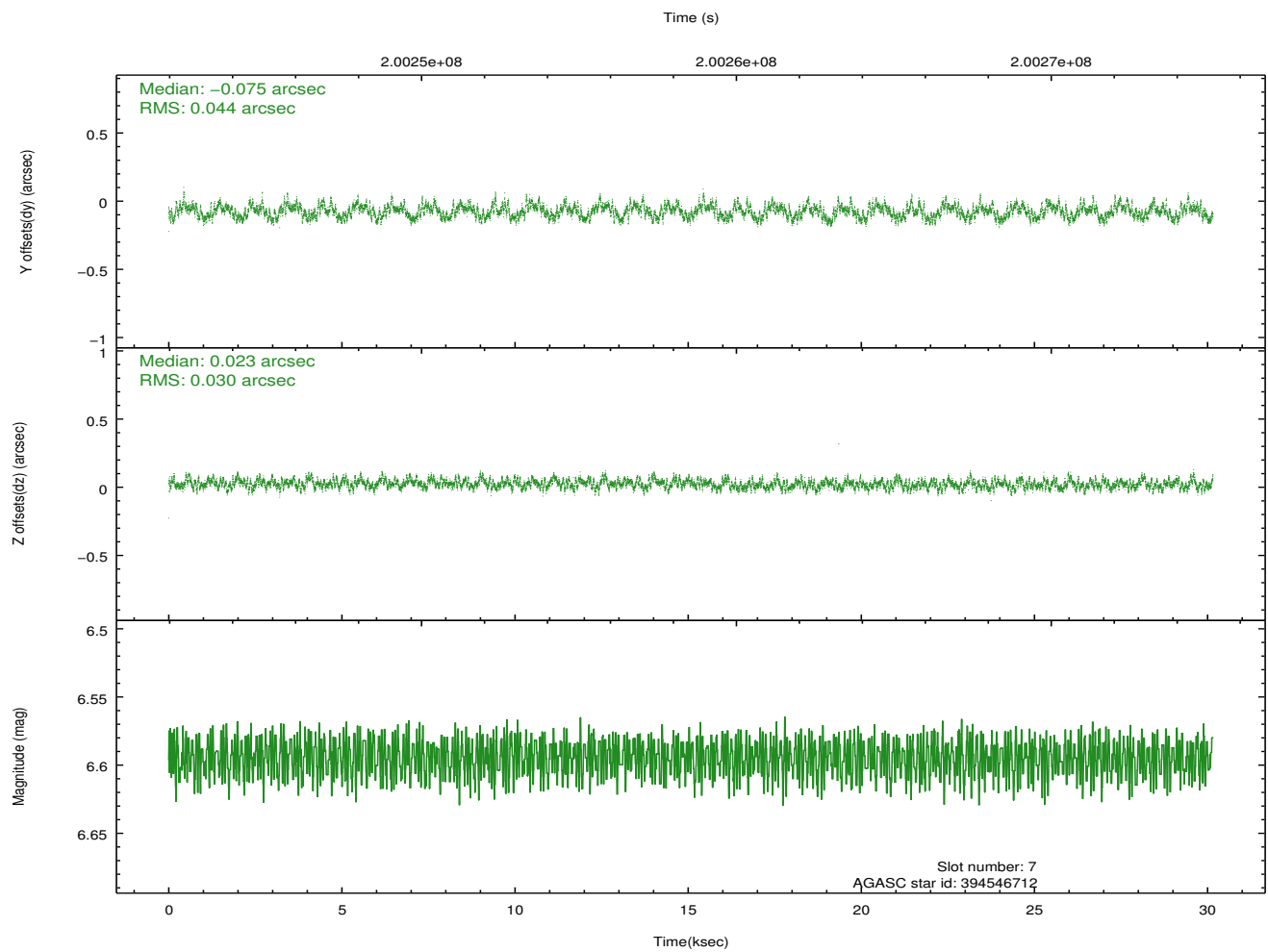
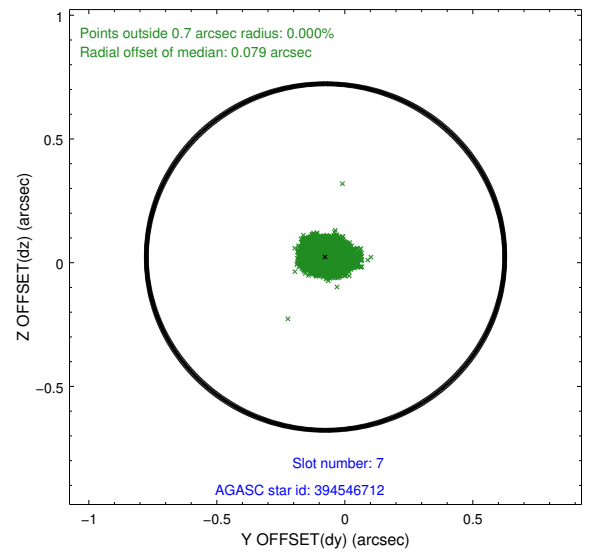
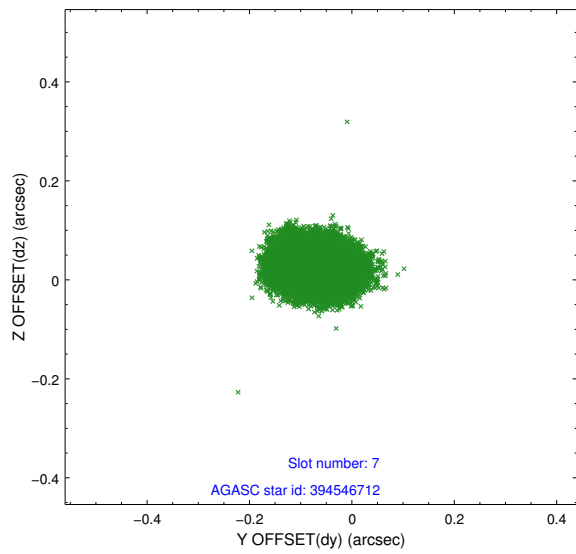
### 2.4.3 Slot 5



### 2.4.4 Slot 6

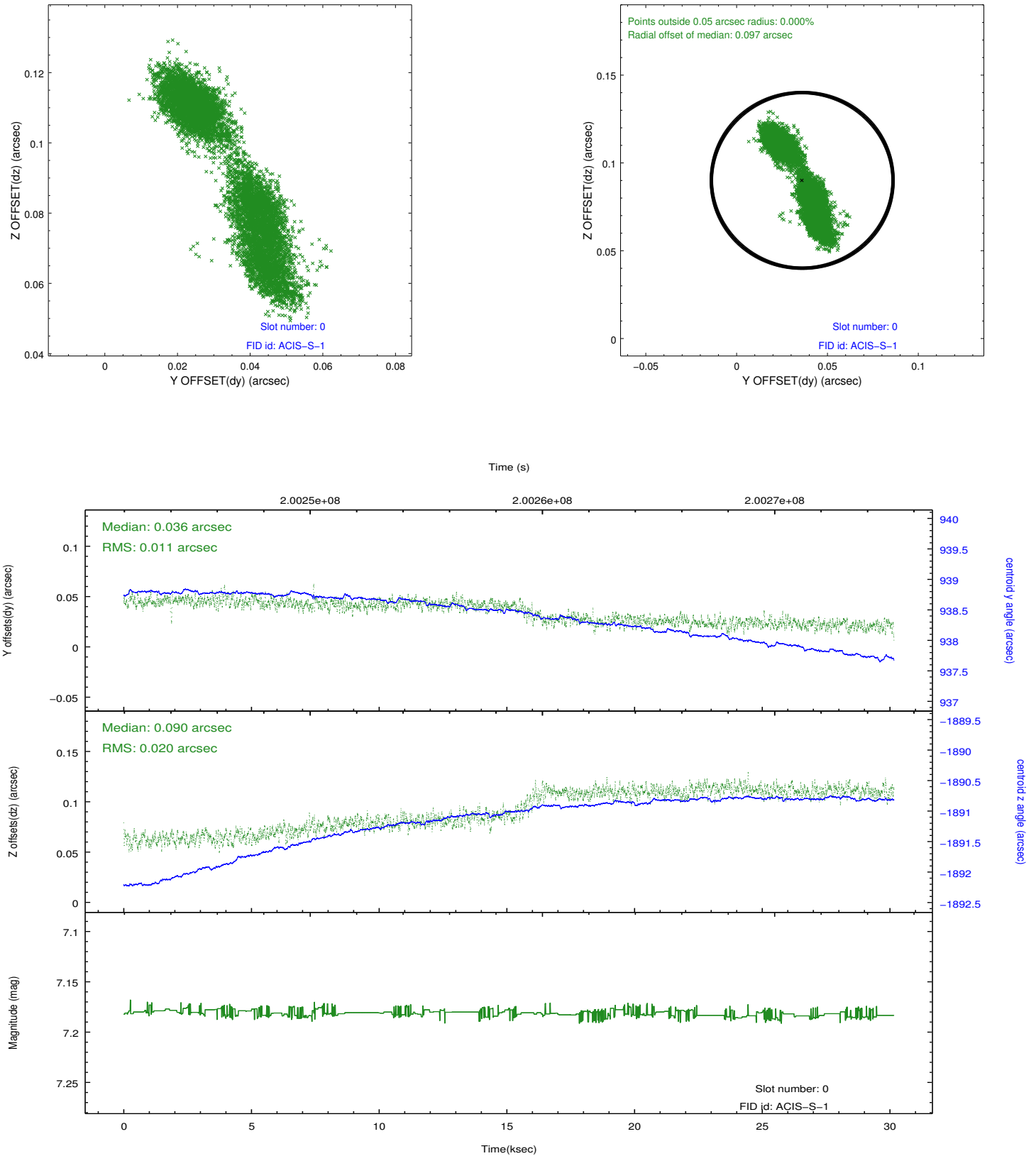


## 2.4.5 Slot 7

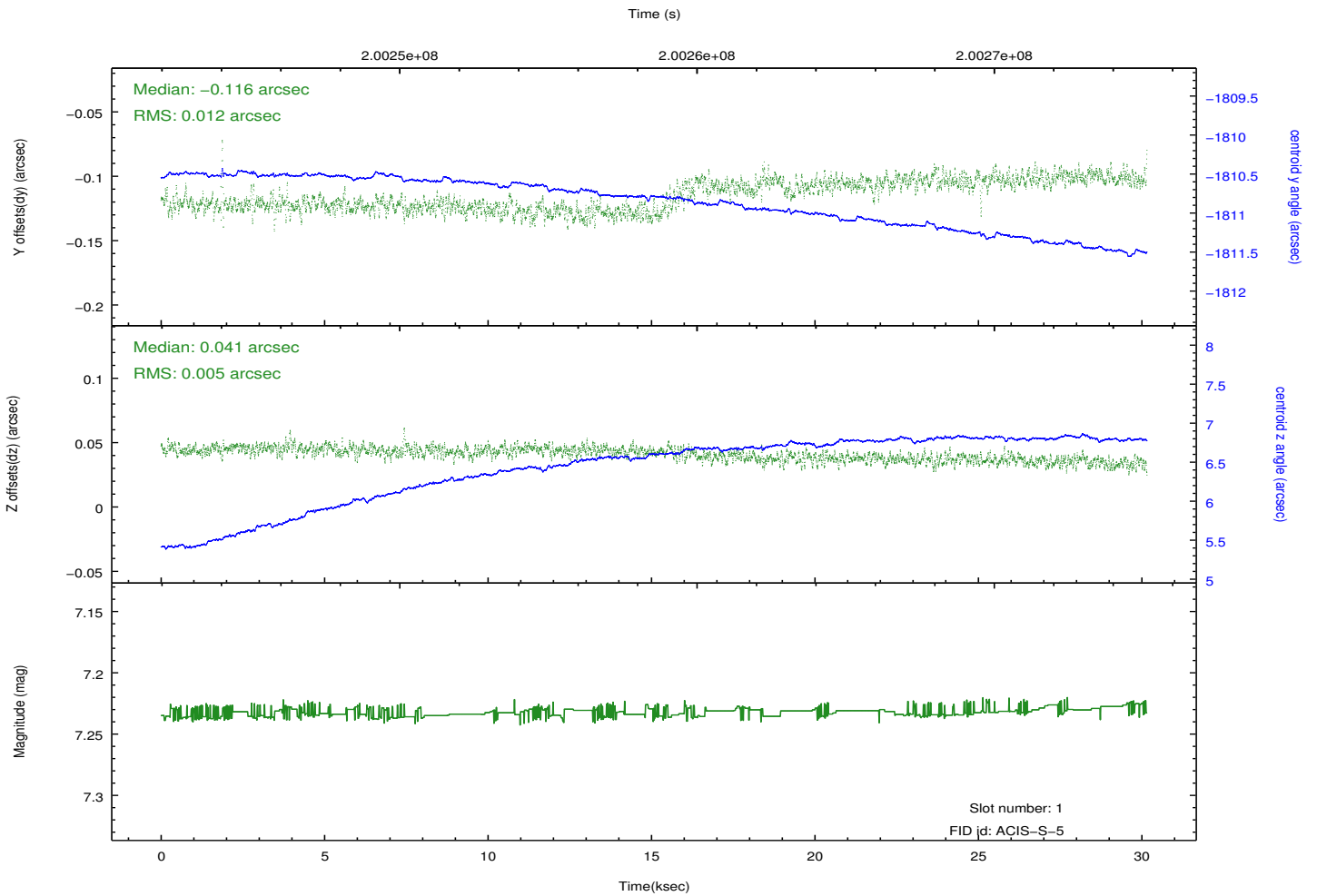
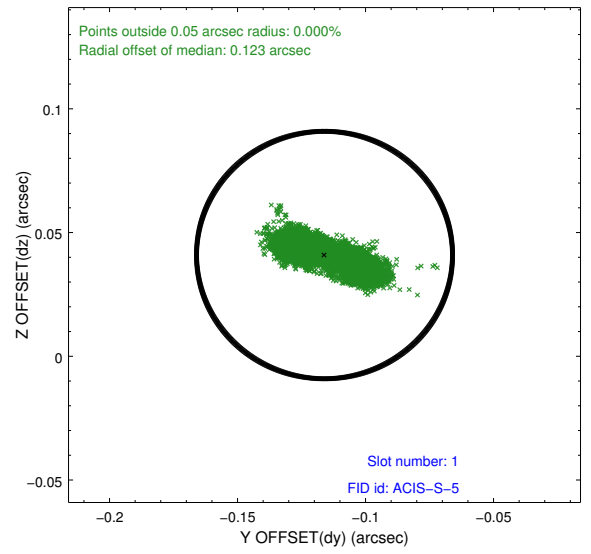
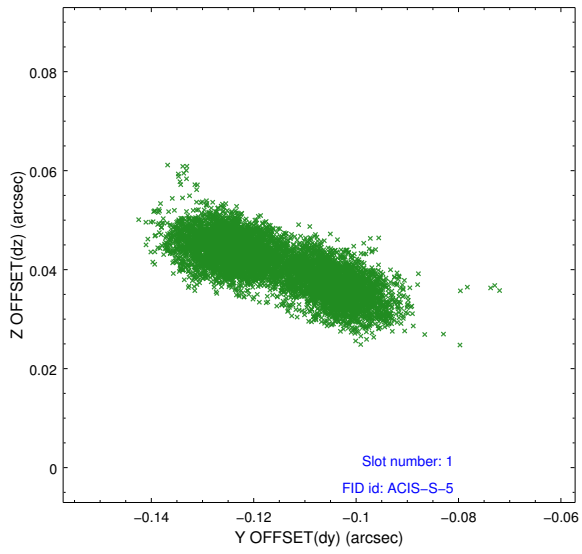


## 2.5 FID Slots

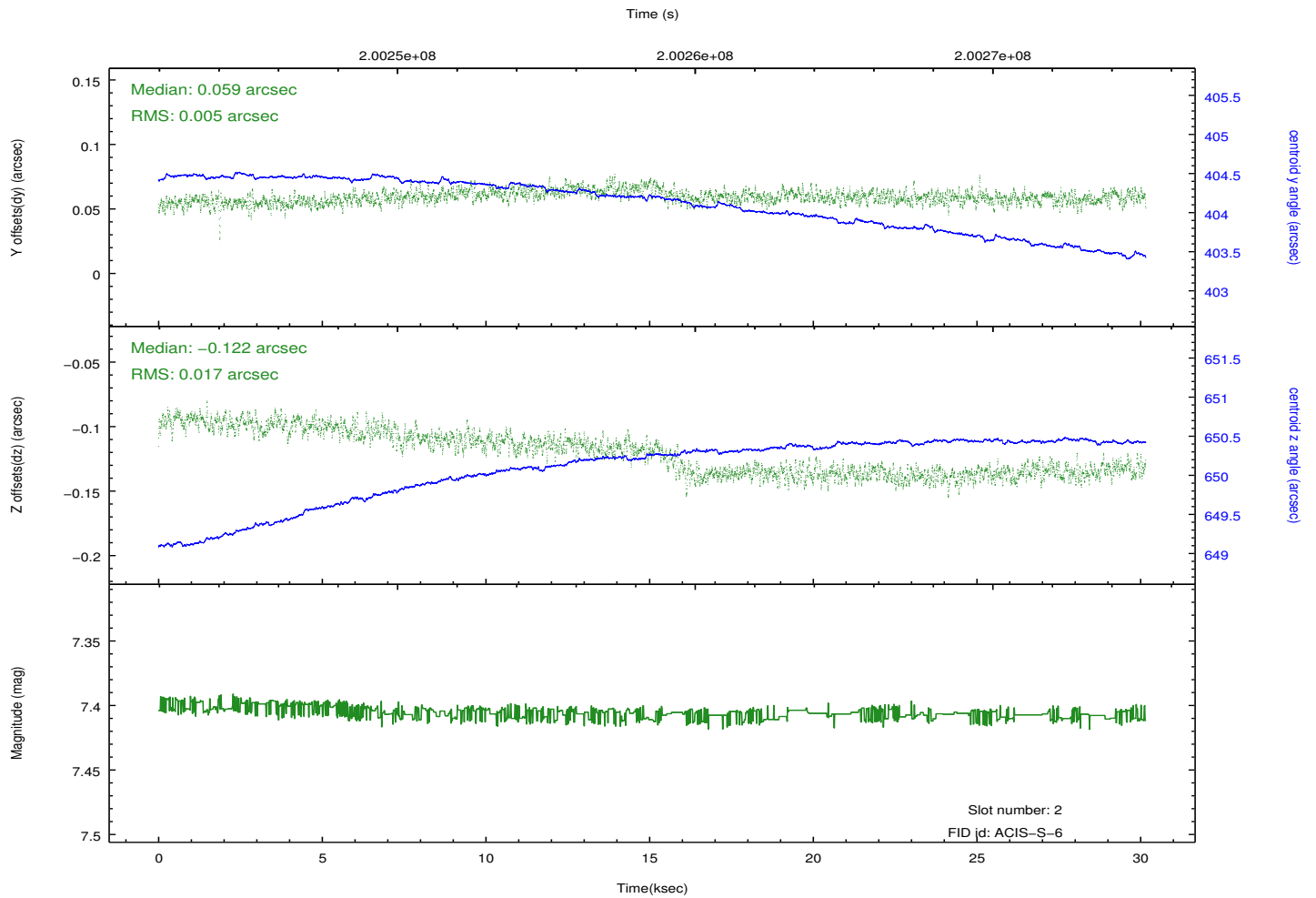
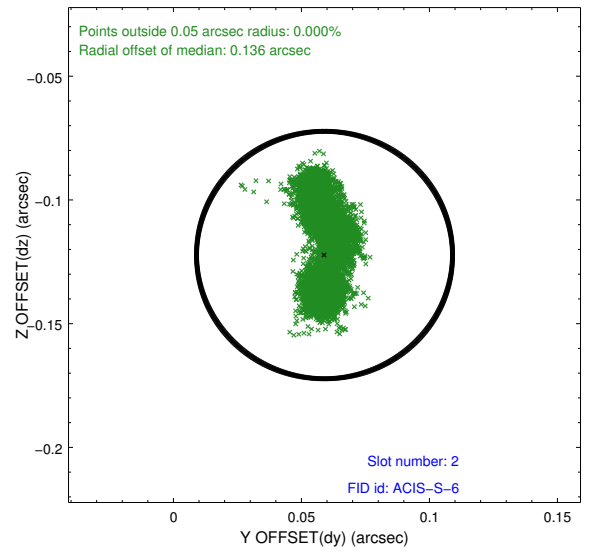
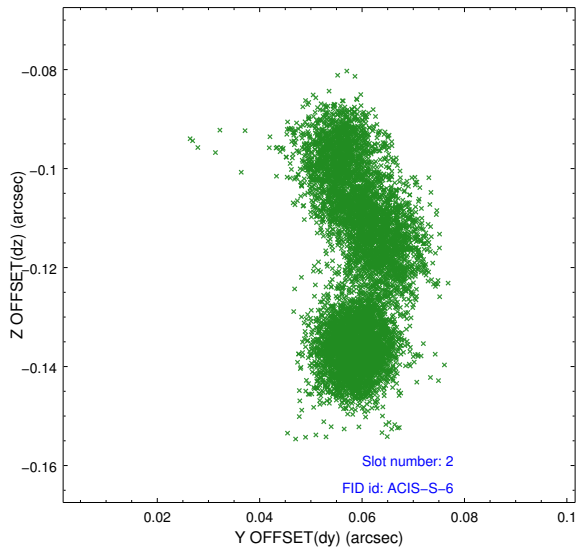
### 2.5.1 Slot 0



## 2.5.2 Slot 1

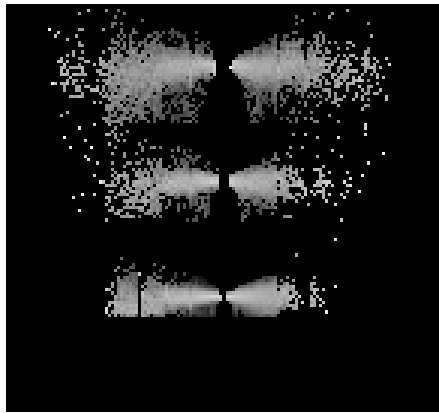


### 2.5.3 Slot 2

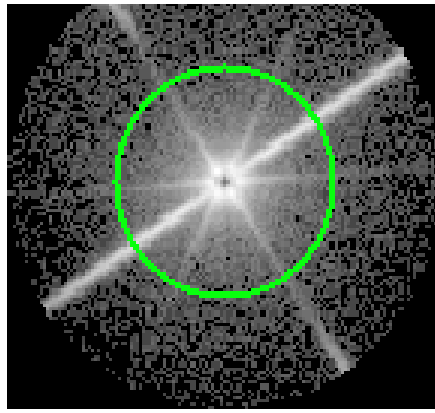


# 3 Gratings

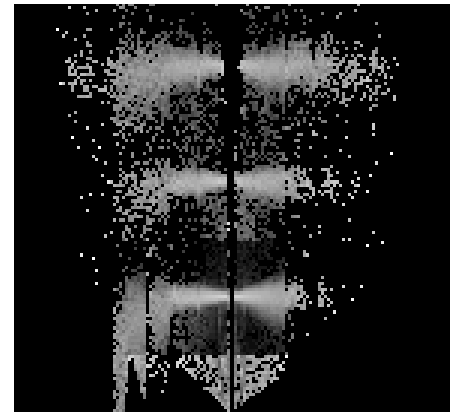
## 3.1 LETG Arm



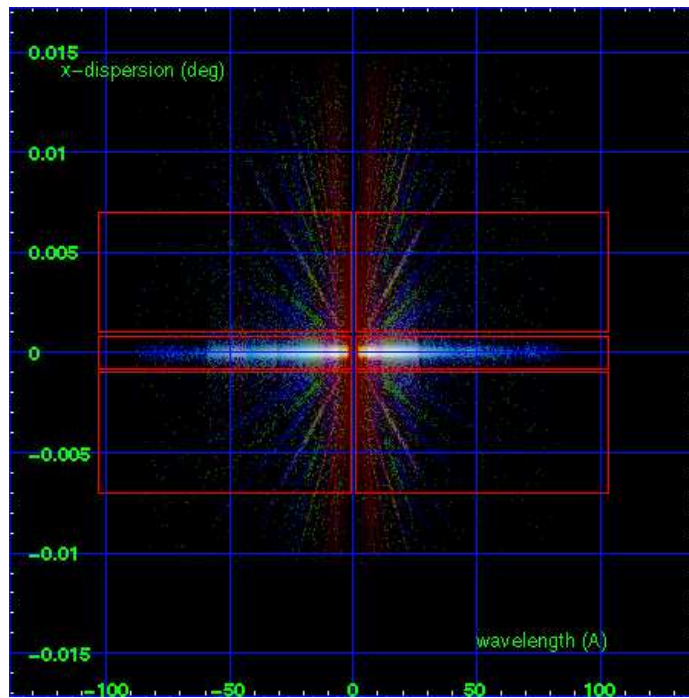
LETG Order Sort 123



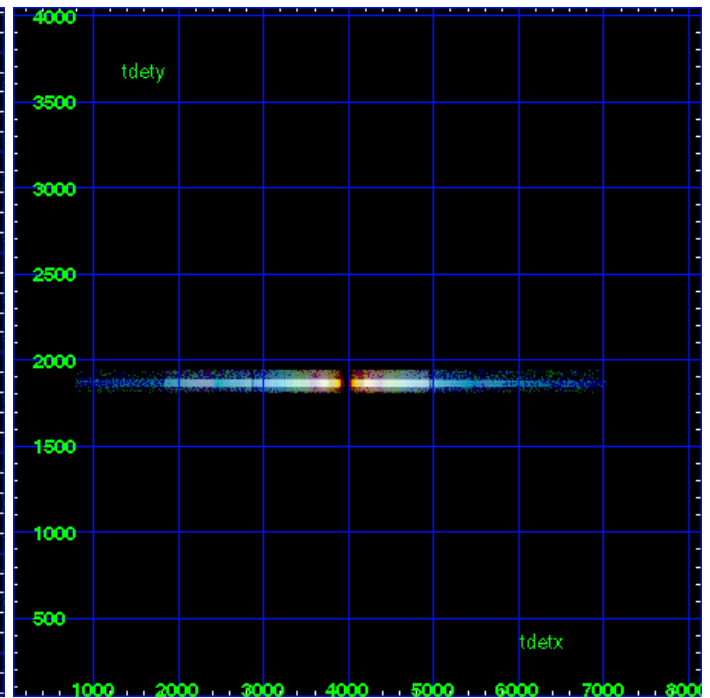
LETG Zero Order



LETG Order Sort ALL

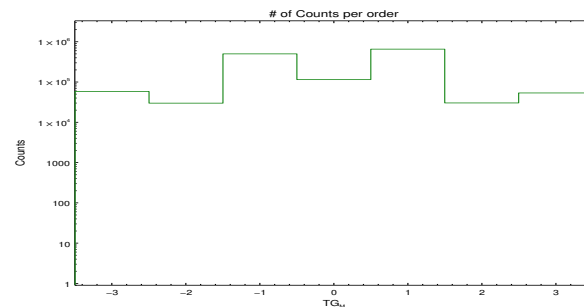


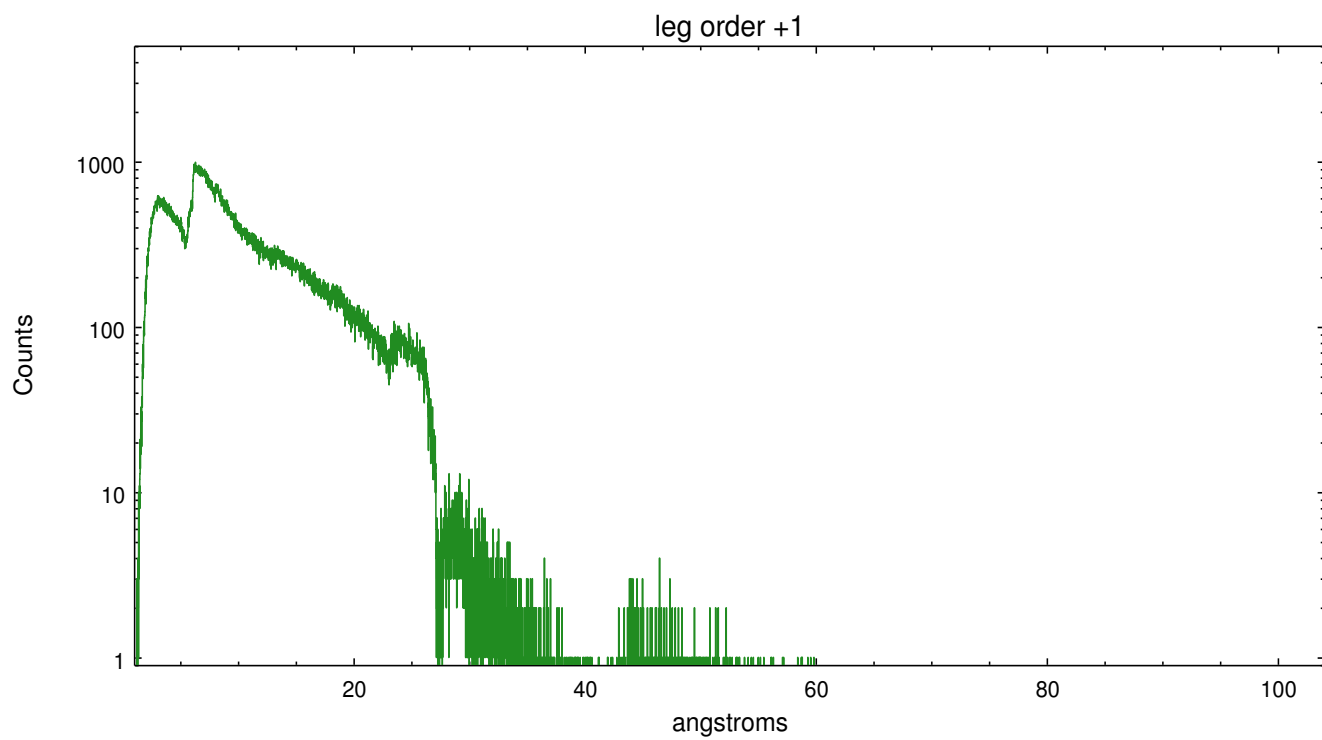
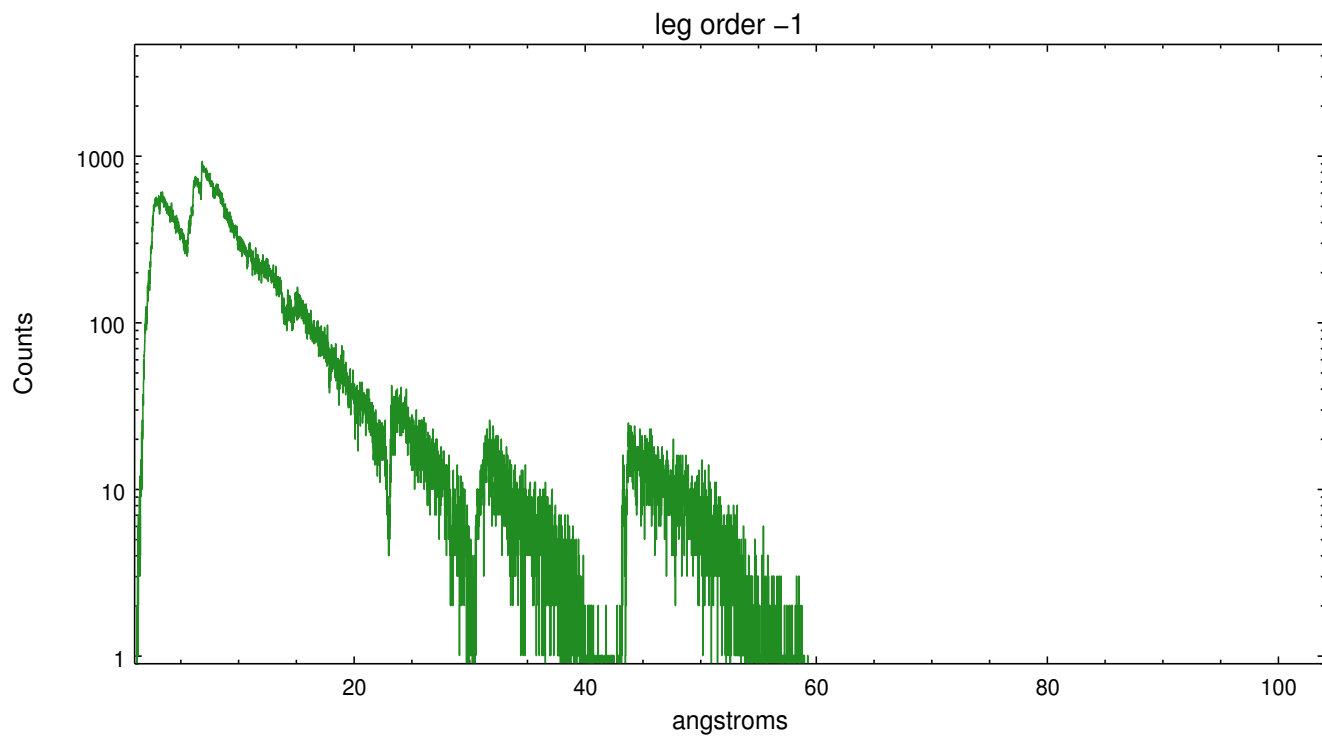
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	58676	30014	505385	115745	661794	30422	53904





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.01.11
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	30.16

## A.2 Comments

Zeroth order piled up. Standard data processing software did not correctly locate the zeroth order due to pileup. Manual intervention was used to input the correct sky coordinates (x=4168.94, y=3962.02) into the \*src1a.fits file table. These corrected coordinates were determined using a software tool developed by CXC called tg\_findzoavailable in CIAO. The tool calculates the point of intersection of the readout streak and the leg arm. The zeroth order source position determined by the standard pipeline processing using the tool tgdetect was not used in this processing. The newly determined zeroth order coordinates have been placed in the \*src1a.fits file, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect on the data.

===

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.