

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 3177 - L2 Version 5  
Chandra X-Ray Center

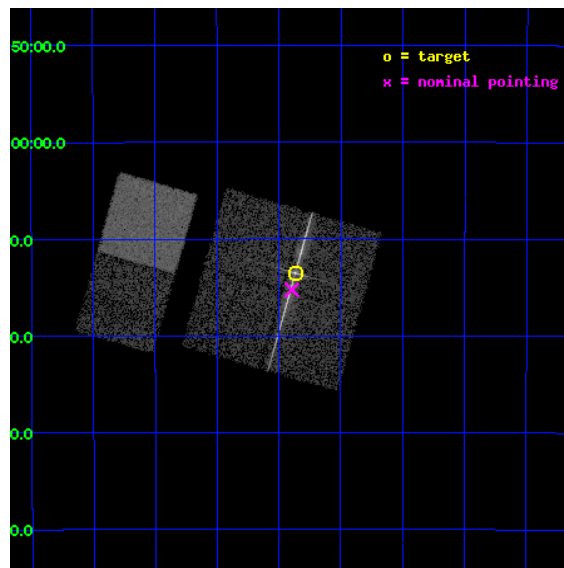
L2 Processing Date : Nov 9 2012

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# 1 Front

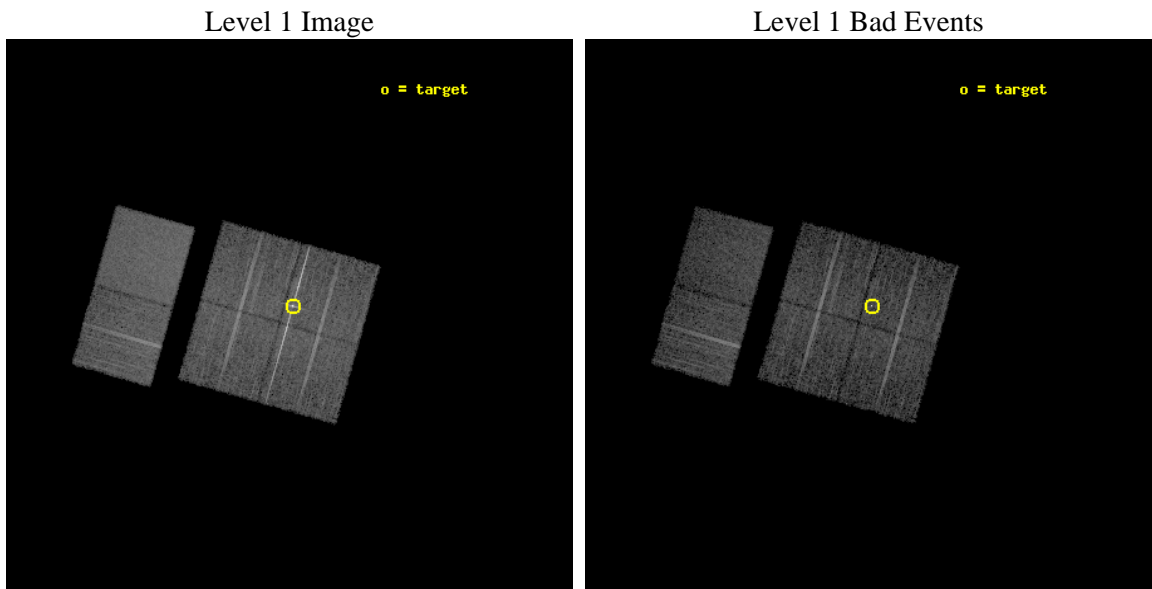
seq_num	790071	Sequence number
obs_id	3177	Observation id
title	AO3 LETG/ACIS-I CALIBRATION OBSERVATIONS OF PKS2155-304	Proposal t
observer	Dr. CXC Calibration	Principal investigator
object	PKS2155-304	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	329.716667	Observer's specified target RA [deg]
dec_targ	-30.225556	Observer's specified target Dec [deg]
ra_nom	329.72386033145	Nominal RA [deg]
dec_nom	-30.254283274481	Nominal Dec [deg]
roll_nom	285.91825850265	Nominal Roll [deg]
revision	5	Processing version of data
ontime	8156.3571844548	Sum of GTIs [s]
livetime	8053.0764786166	Livetime [s]
ontime0	8156.3161444515	Sum of GTIs [s]
ontime1	8156.3571844548	Sum of GTIs [s]
ontime2	8156.3982244581	Sum of GTIs [s]
ontime3	8156.4392644465	Sum of GTIs [s]
ontime6	8156.5213444531	Sum of GTIs [s]
ontime7	8156.4803044498	Sum of GTIs [s]
l2events	80640	Number of level 2 events



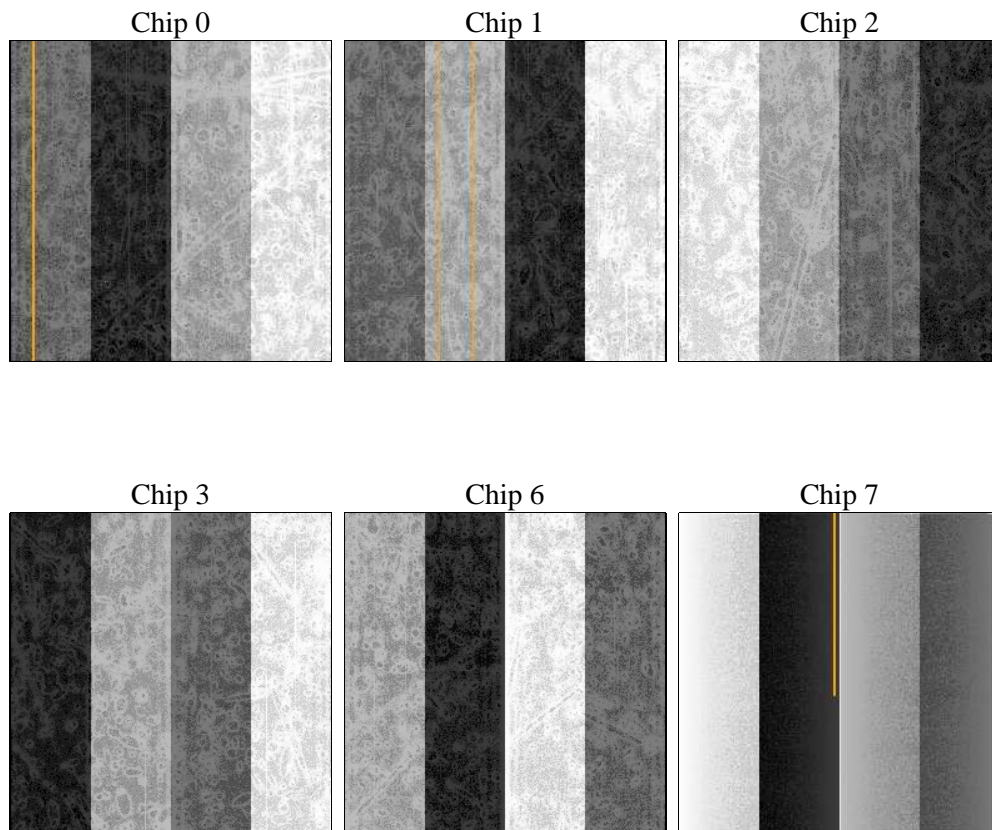
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	8400.688000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	8156.3571844548	Sum of GTIs [s]
caldbver	4.5.2	&#160	ontime0	8156.3161444515	Sum of GTIs [s]
date	2012-09-28T06:29:50	Date and time of file creation	ontime1	8156.3571844548	Sum of GTIs [s]
revision	3	Processing version of data	ontime2	8156.3982244581	Sum of GTIs [s]
			ontime3	8156.4392644465	Sum of GTIs [s]
			ontime6	8156.5213444531	Sum of GTIs [s]
			ontime7	8156.4803044498	Sum of GTIs [s]
			l1events	356925	Number of level 1 events

### 2.1.4 Events

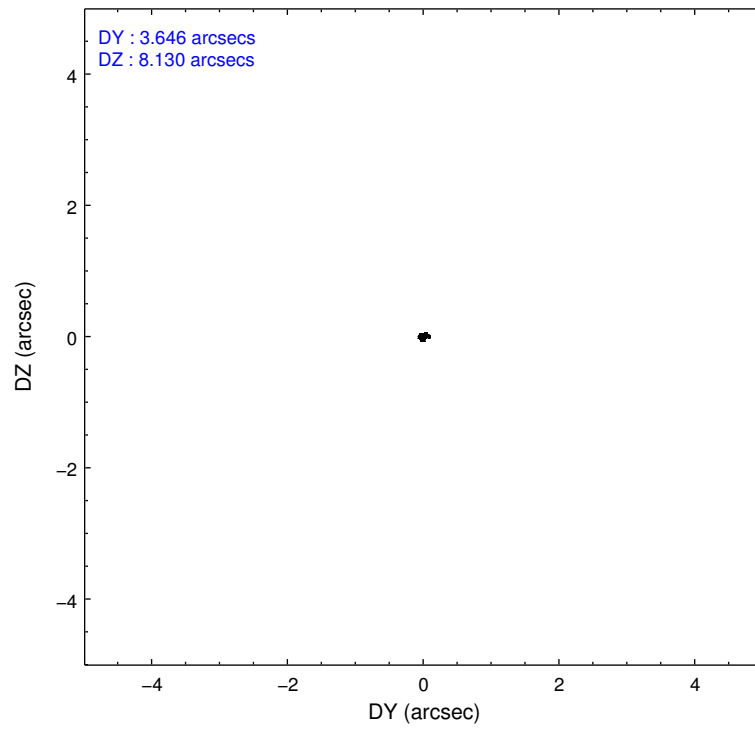
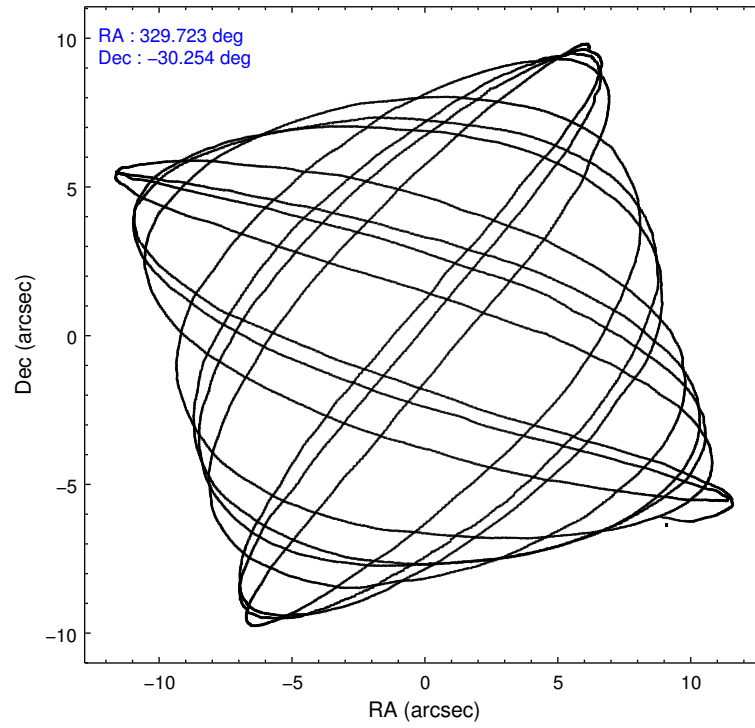
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	58546	70705	50795	52601	56255	68023
rejected events	41507	45439	44799	46227	50281	40248
rejected %	70%	64%	88%	87%	89%	59%

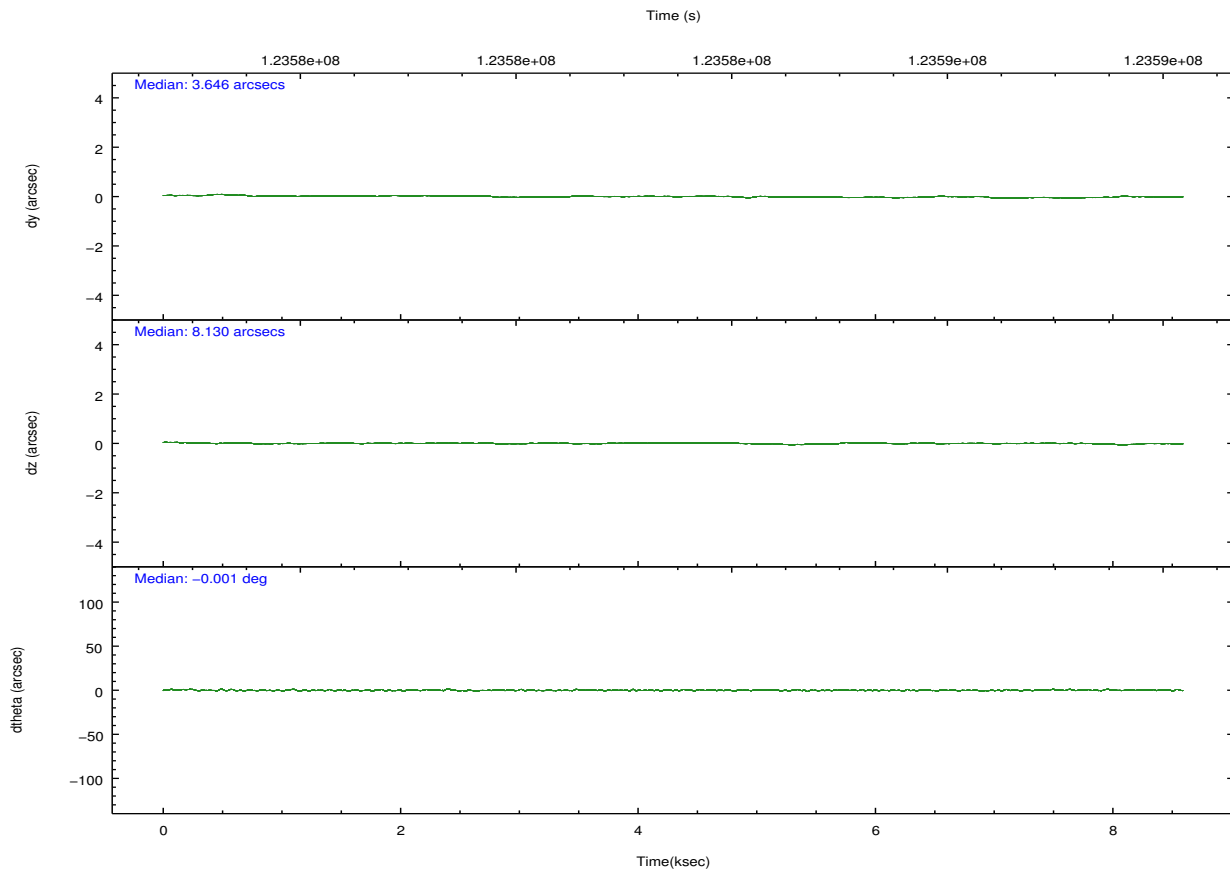
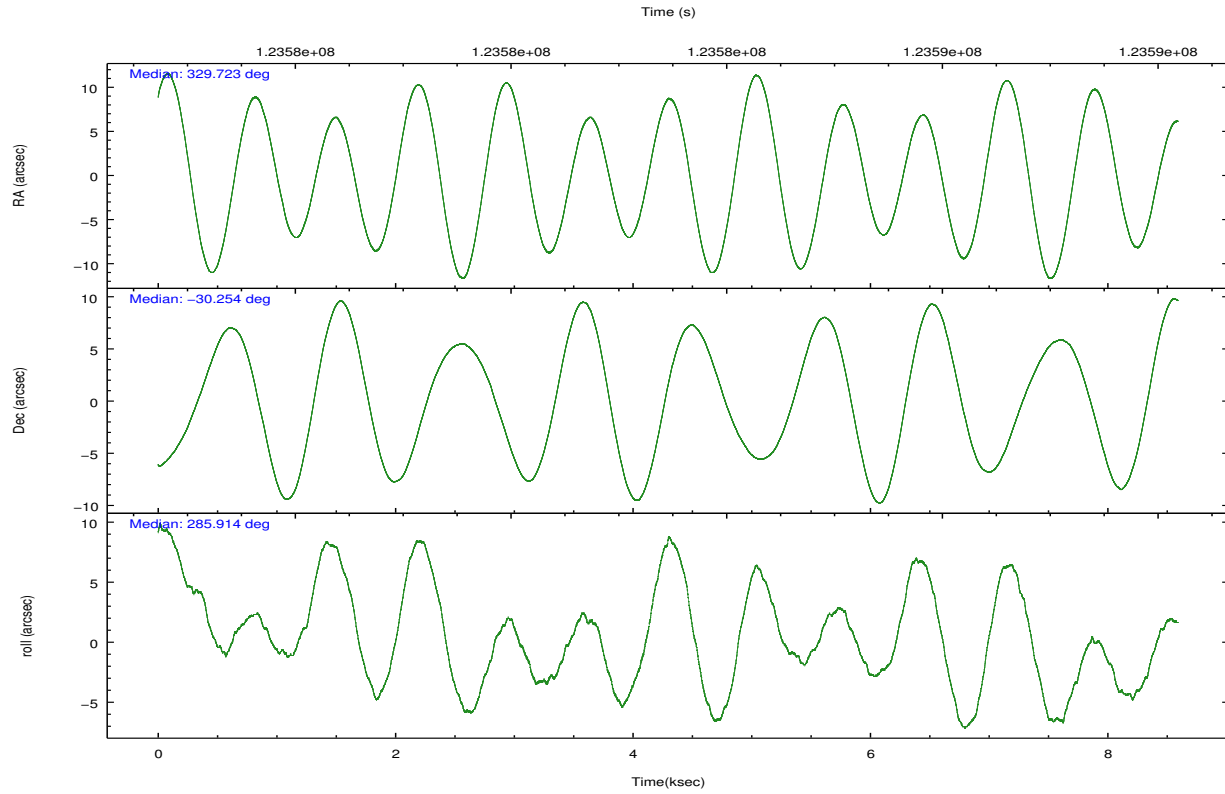
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
grade 0 events	11994	17340	2575	2786	2286	2446
	20%	24%	5%	5%	4%	3%
grade 1 events	93	489	22	28	30	62
	0%	0%	0%	0%	0%	0%
grade 2 events	2193	3270	1293	1330	1196	5529
	3%	4%	2%	2%	2%	8%
grade 3 events	842	1220	512	596	598	2510
	1%	1%	1%	1%	1%	3%
grade 4 events	804	1263	550	540	641	2450
	1%	1%	1%	1%	1%	3%
grade 5 events	1983	2822	1791	2051	2377	6602
	3%	3%	3%	3%	4%	9%
grade 6 events	1209	2185	1067	1122	1253	14856
	2%	3%	2%	2%	2%	21%
grade 7 events	39428	42116	42985	44148	47874	33568
	67%	59%	84%	83%	85%	49%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-012367	ACIS-012367	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	329.700979	329.7238603314451	Subarray requested	NONE	NONE
[deg] Pointing Dec	-30.235252	-30.2542832744806	Alternating exposures requested	N	N
[deg] Pointing Roll	285.698050	285.9182585026518	[s] Primary exposure time	0.000000	3.2
[s] Window start time (MET)	120960064.184000	120960064.184000			
[s] Window stop time (MET)	126144064.184000	126144064.184000			
[mm] SIM focus pos	-0.782348	-0.7809083437167272			
[mm] SIM defocus	0	0.001439871863259334			
[mm] SIM translation stage pos	-238.277263	-238.2741181829365			
[mm] SIM translation stage offset	4.6848	4.681665180006831			
[s] Observation start time (MET)	123579350.184000	123578973.6056			
Observation start date	2001-12-01T07:34:46	2001-12-01T07:29:33			
[s] Observation end time (MET)	123587750.184000	123588065.35596			
Observation end date	2001-12-01T09:54:46	2001-12-01T10:01:05			
Read mode	TIMED	TIMED			

## 2.3 Aspect



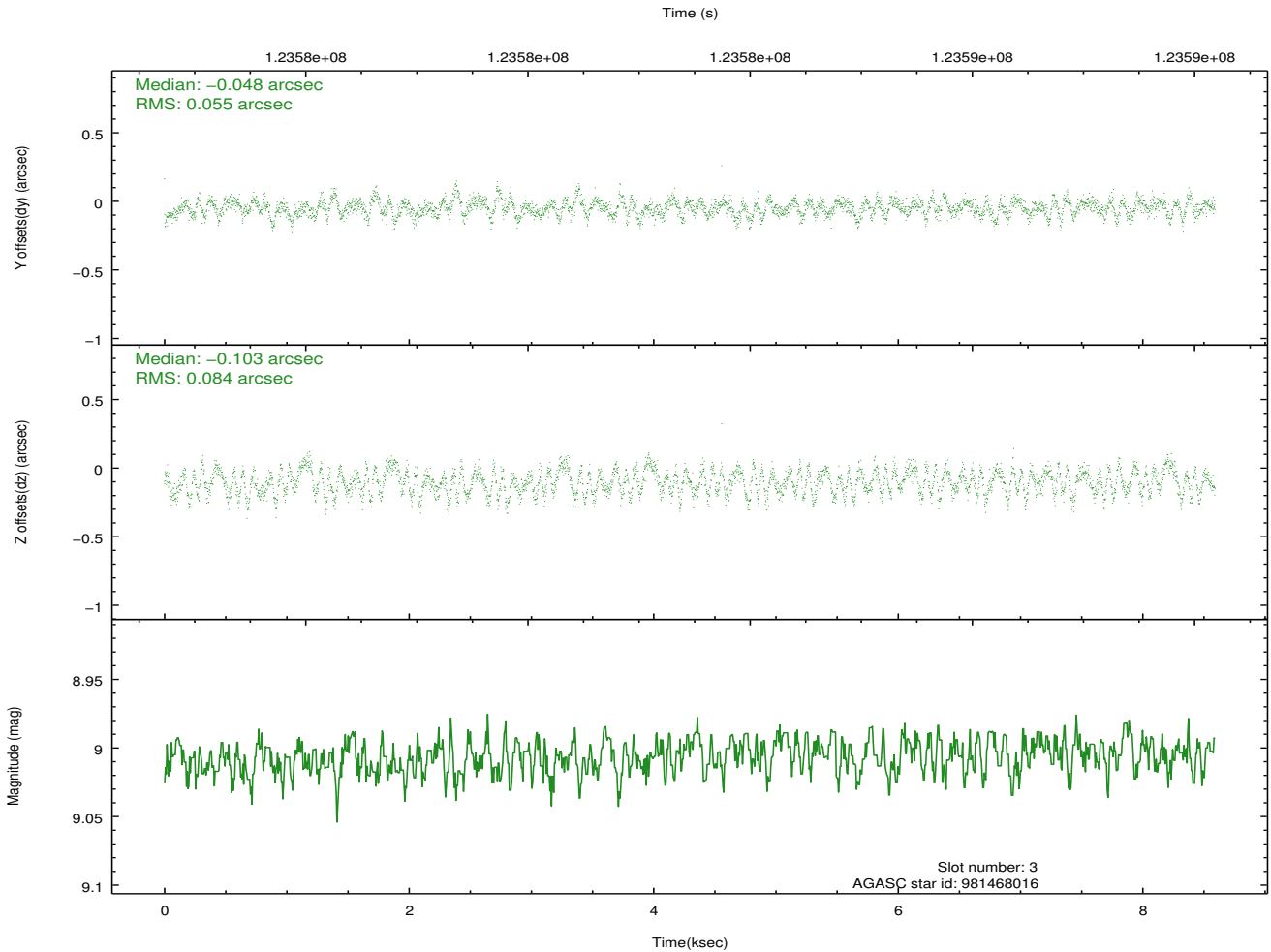
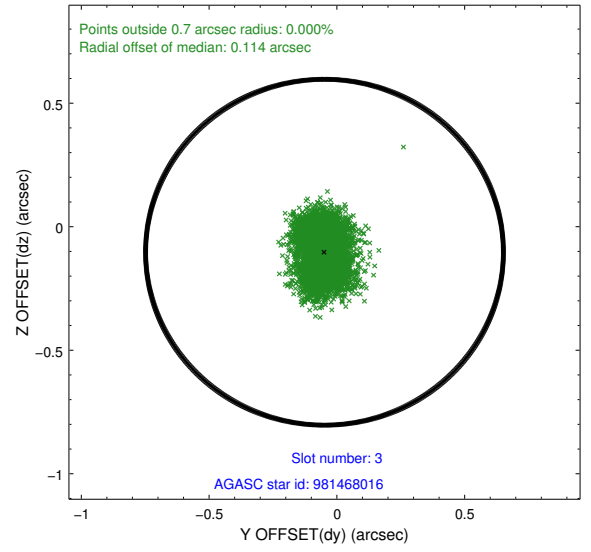
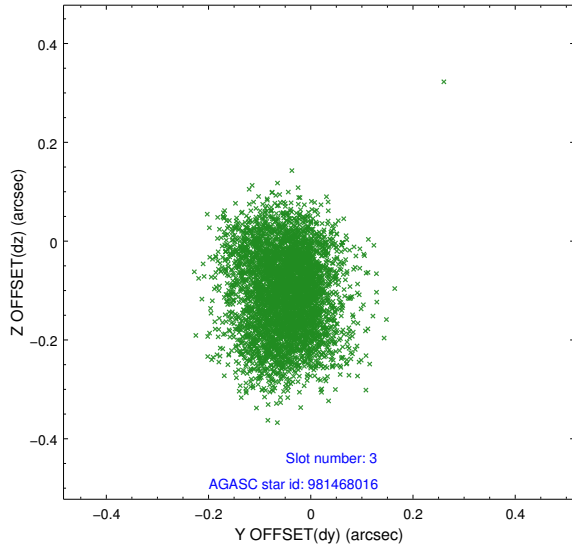


### Slot Statistics

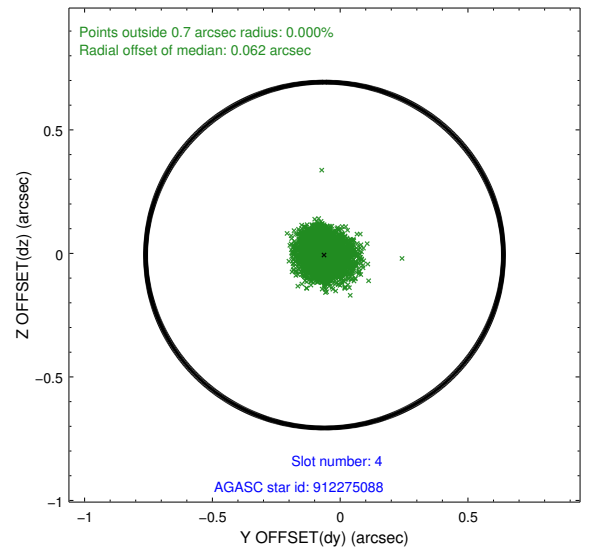
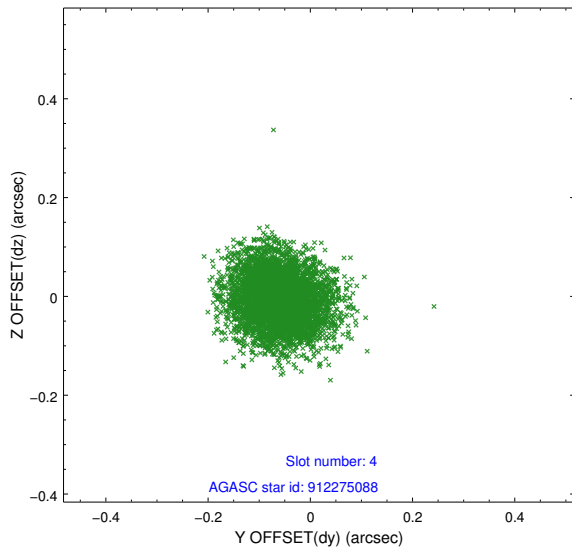
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-I-1	7.25	2096	-0.057	0.077	0.006	0.011	0.000000	0.000000	936.15	-735.21
1	FID	ACIS-I-5	7.24	2095	-0.036	0.006	0.006	0.011	0.000000	0.000000	-1811.55	1161.97
2	FID	ACIS-I-6	7.25	2095	0.002	-0.013	0.007	0.011	0.000000	0.000000	401.09	1807.15
3	GUIDE	981468016	9.01	4188	-0.048	-0.103	0.109	0.171	328.842457	-30.034984	-1406.55	-2382.95
4	GUIDE	912275088	9.05	4189	-0.061	-0.007	0.075	0.119	329.619228	-29.738698	-1788.69	237.71
5	GUIDE	981478152	9.41	4186	-0.009	0.105	0.076	0.125	329.415589	-30.057192	-855.33	-682.07
6	GUIDE	981468128	9.36	4189	0.049	-0.022	0.092	0.149	329.756350	-30.158334	-218.34	241.44
7	GUIDE	981469488	9.61	4190	0.070	0.032	0.085	0.141	329.261199	-30.045155	-1025.31	-1134.12

## 2.4 Star Slots

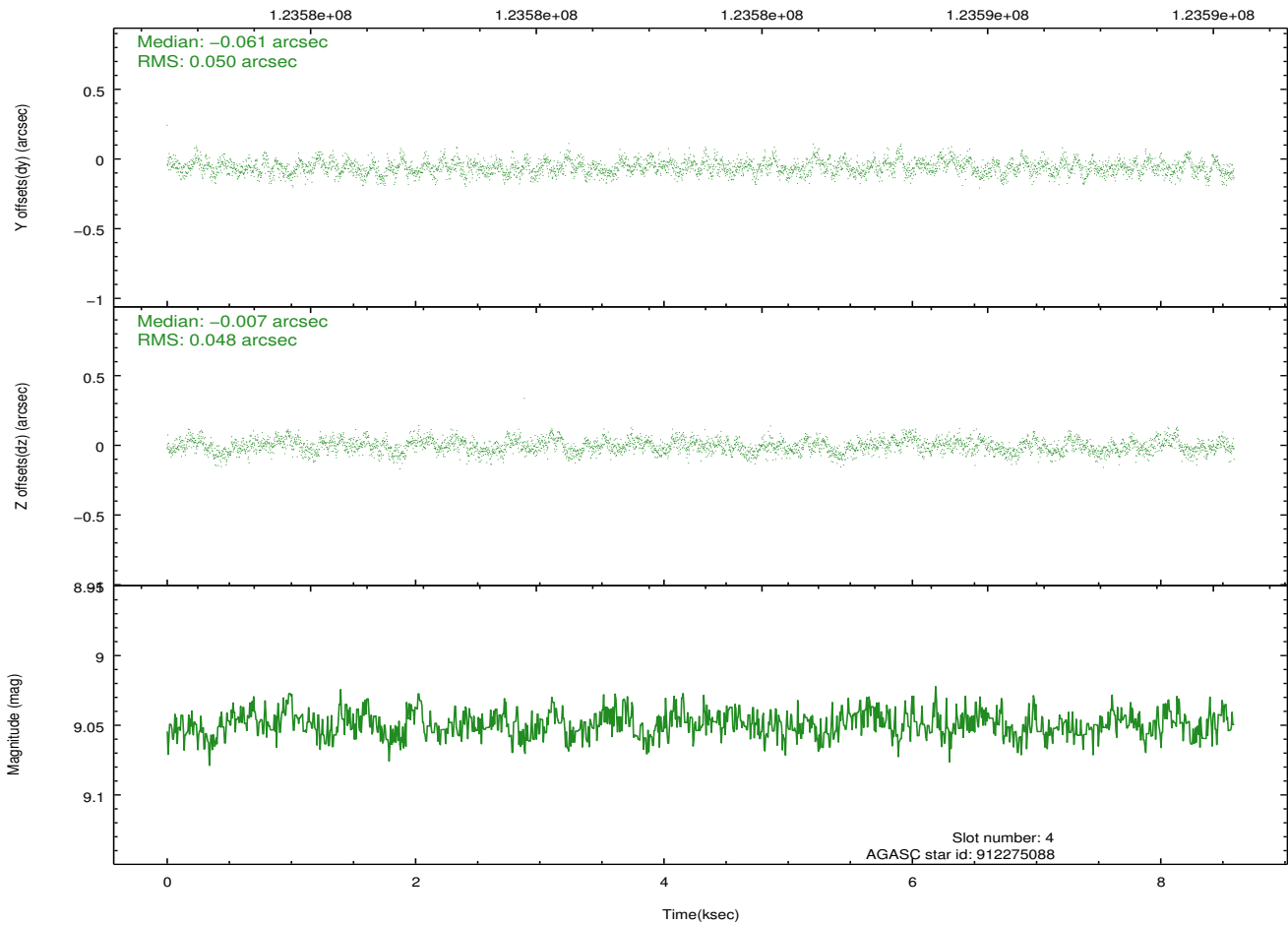
### 2.4.1 Slot 3



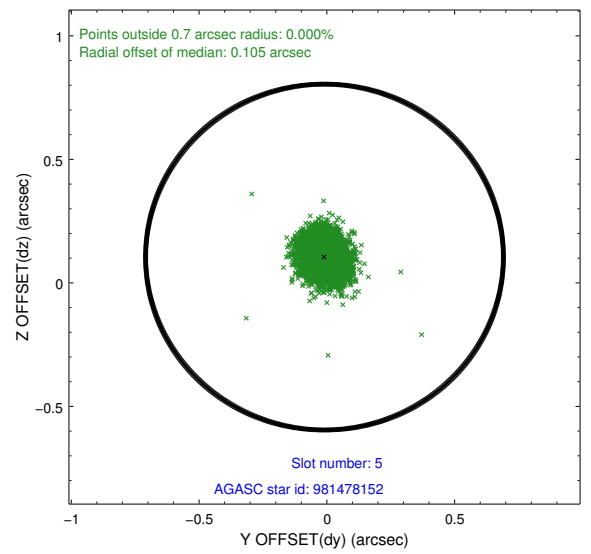
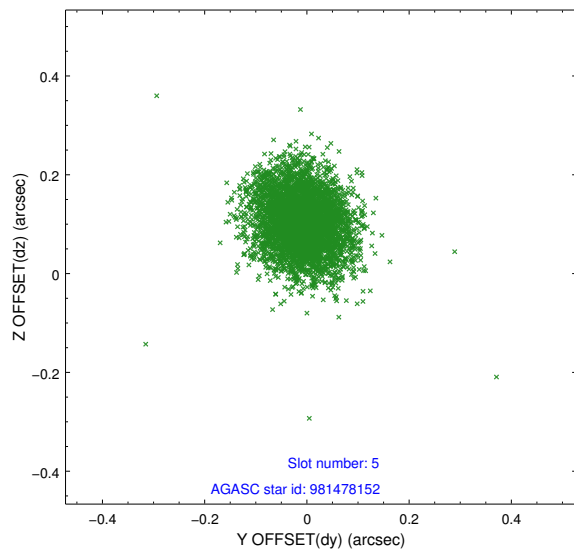
## 2.4.2 Slot 4



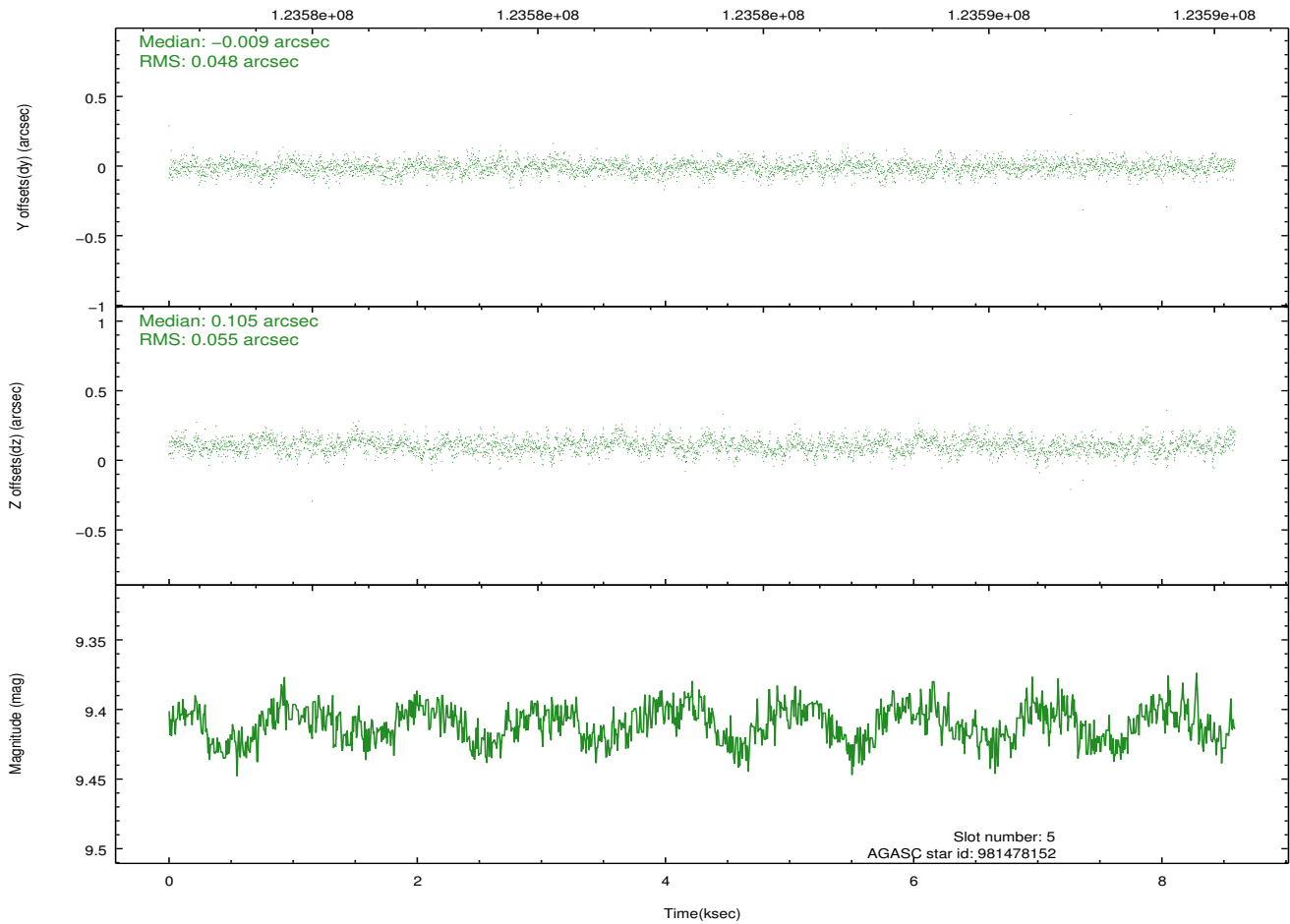
Time (s)



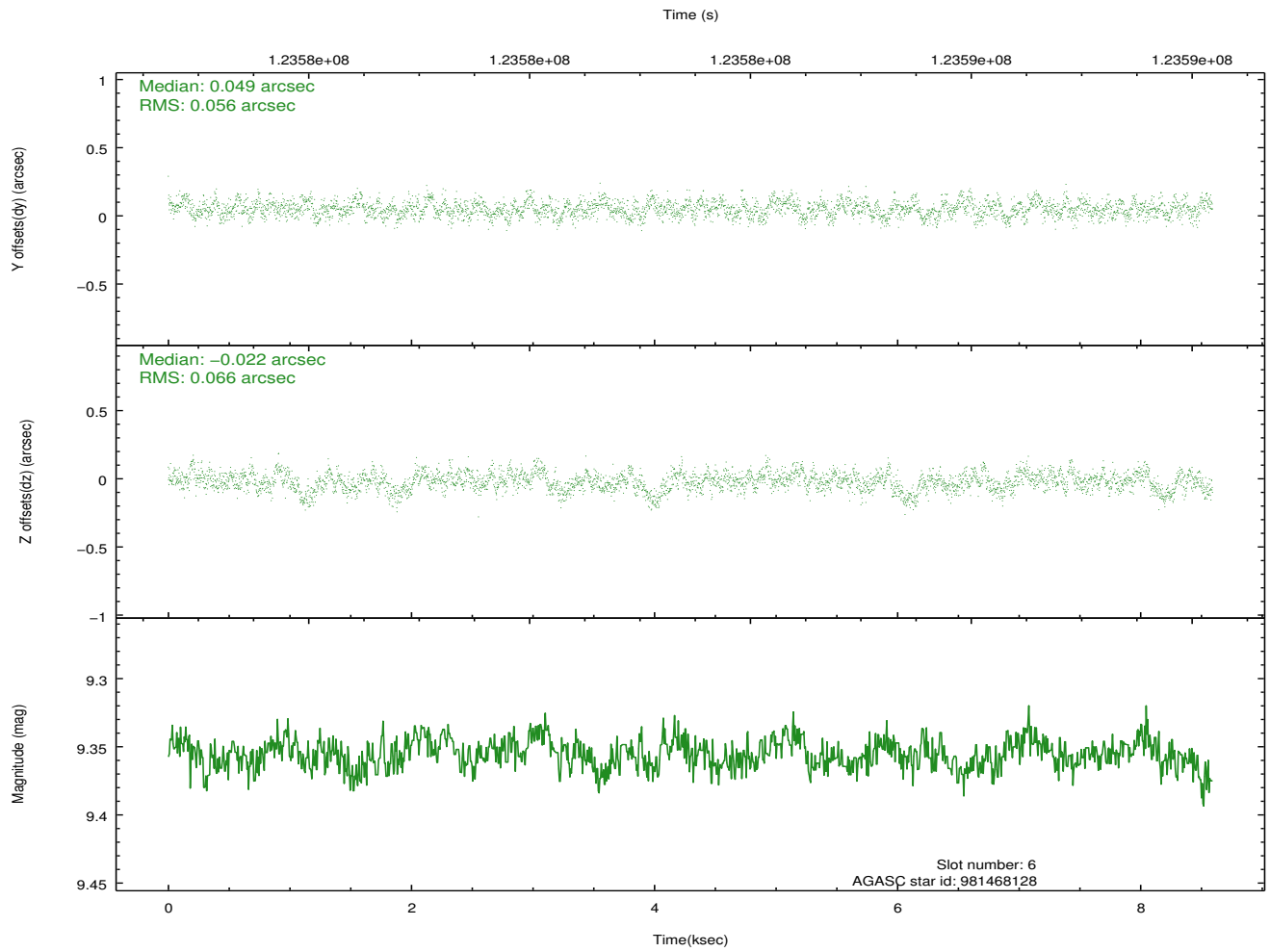
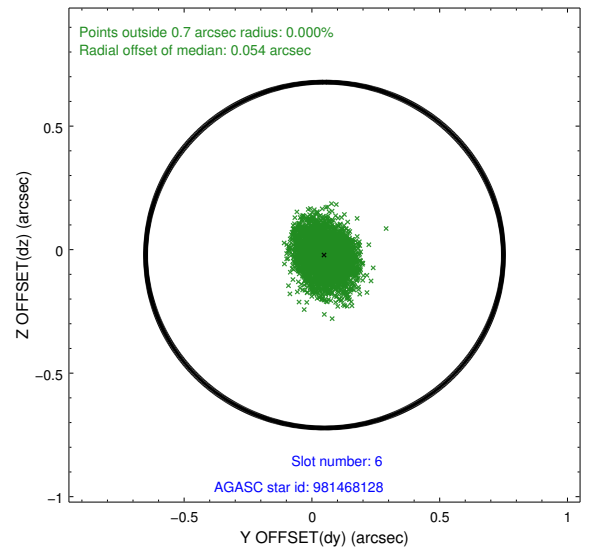
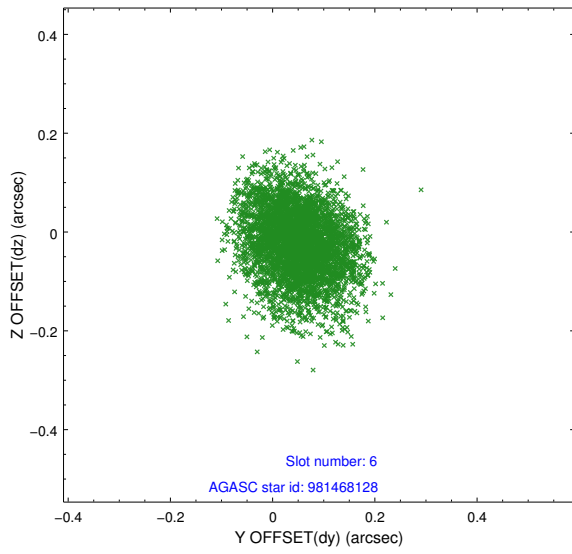
### 2.4.3 Slot 5



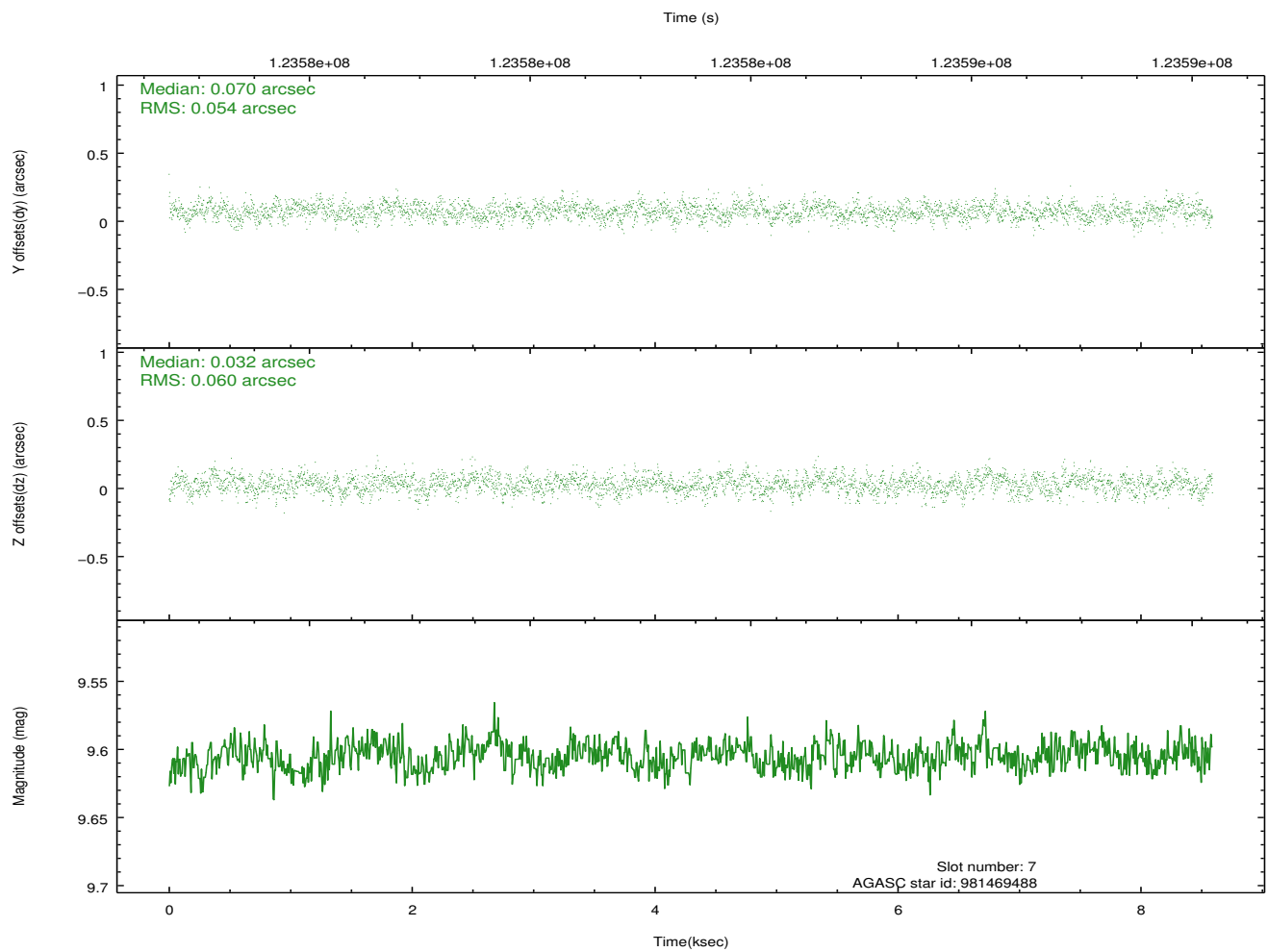
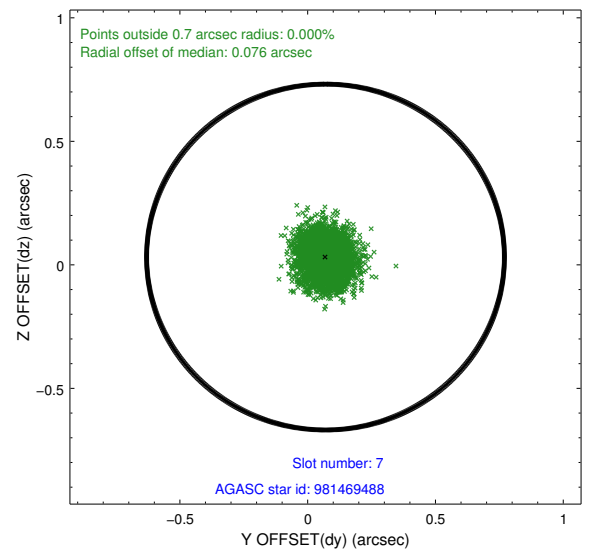
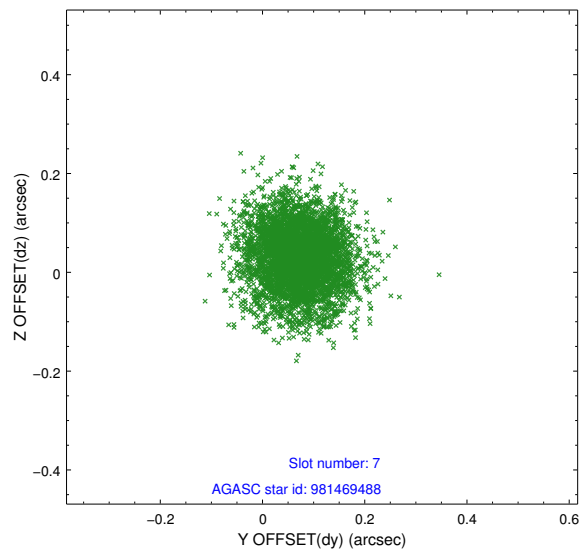
Time (s)



### 2.4.4 Slot 6

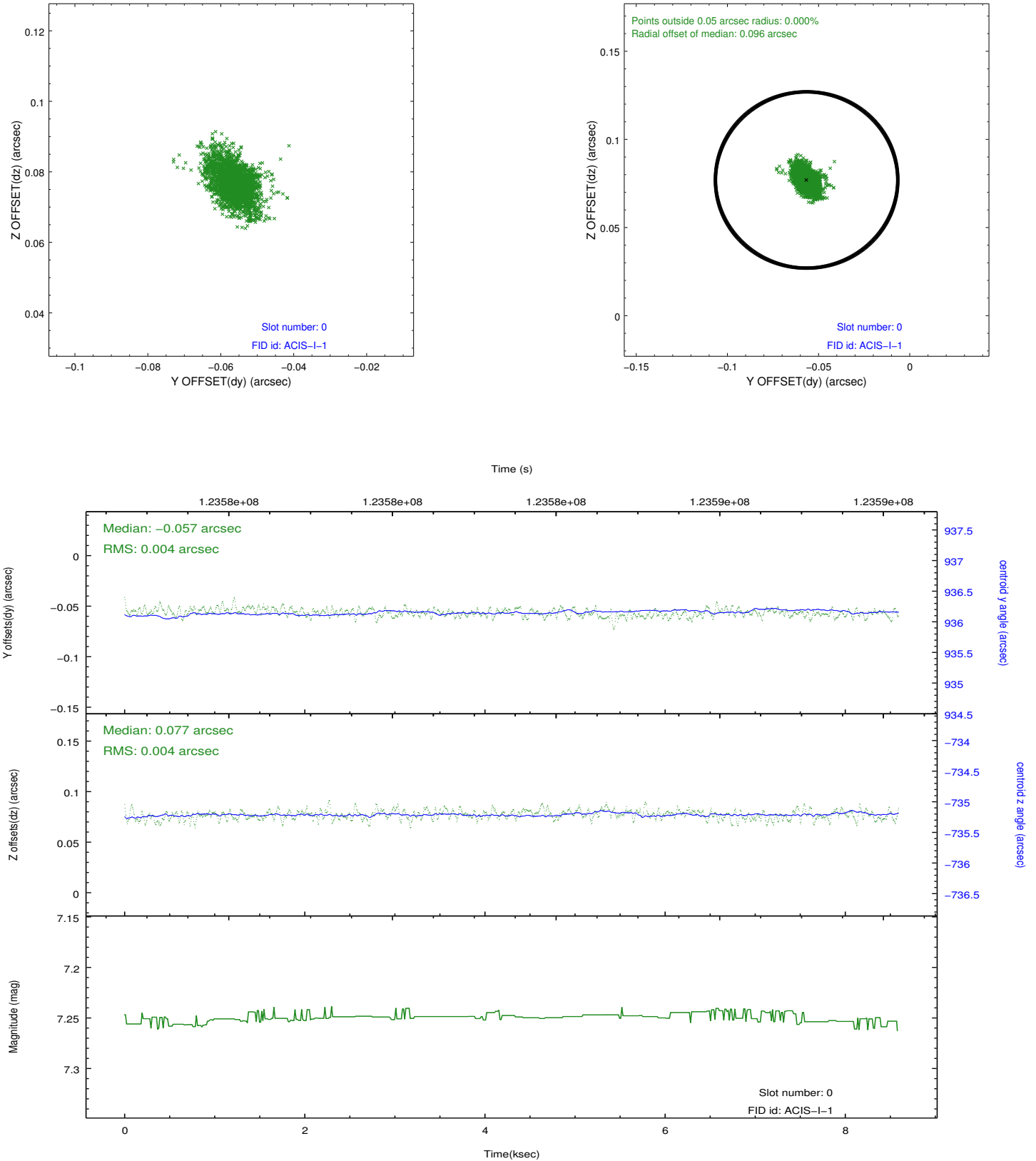


## 2.4.5 Slot 7

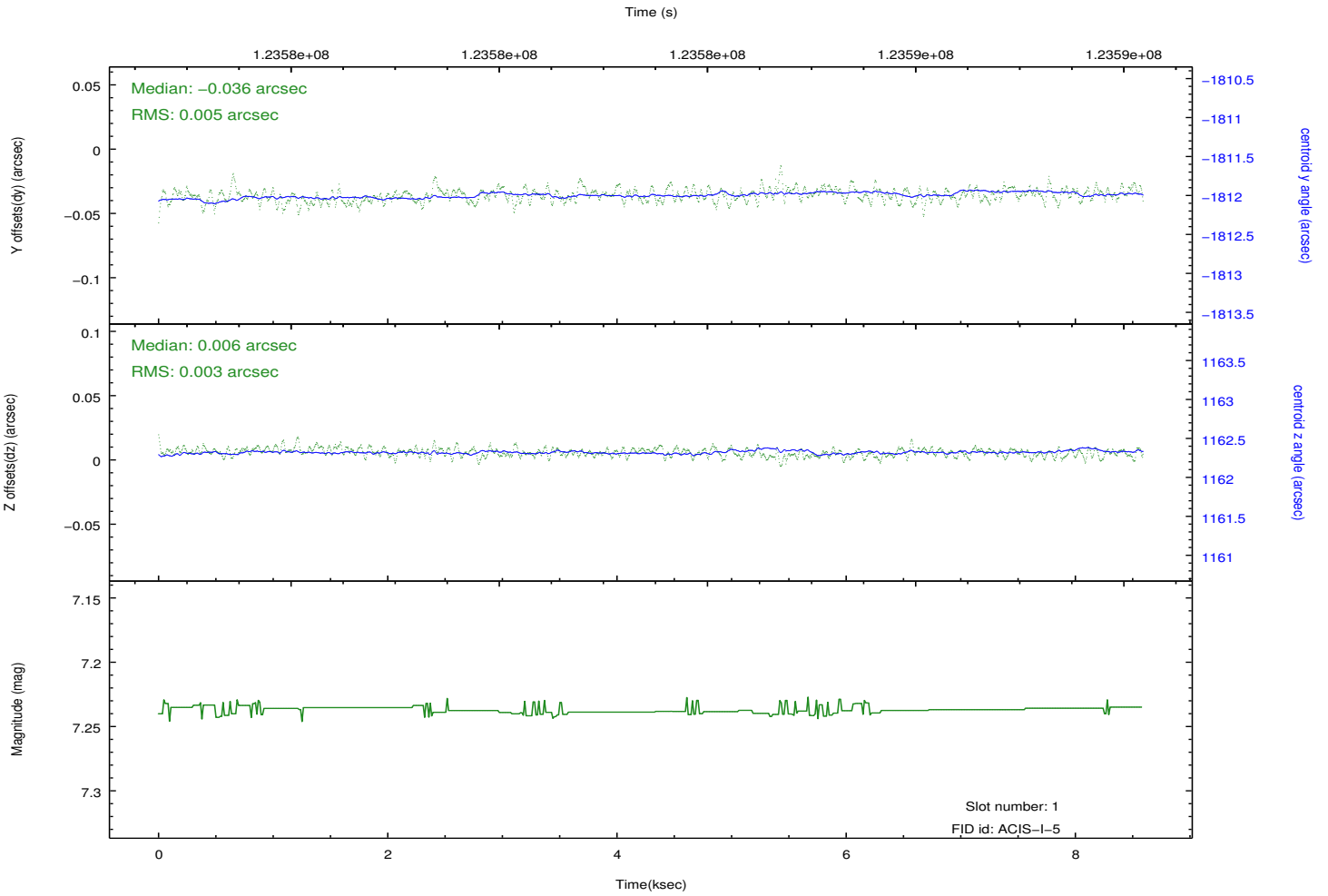
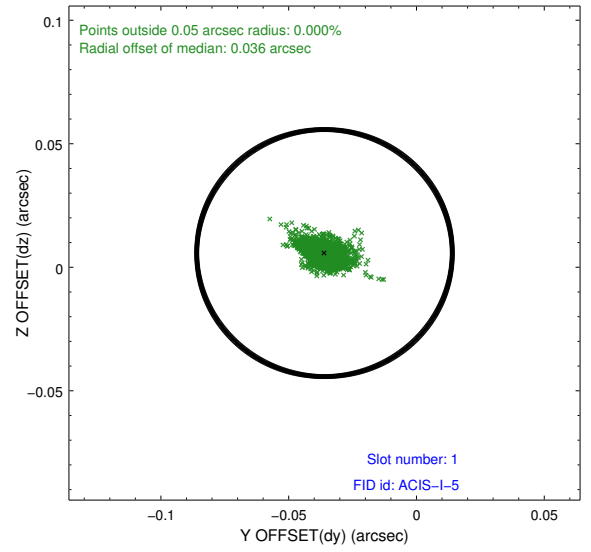
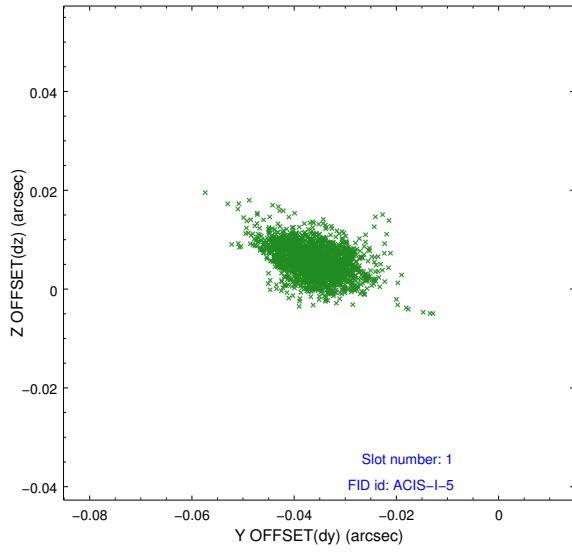


## 2.5 FID Slots

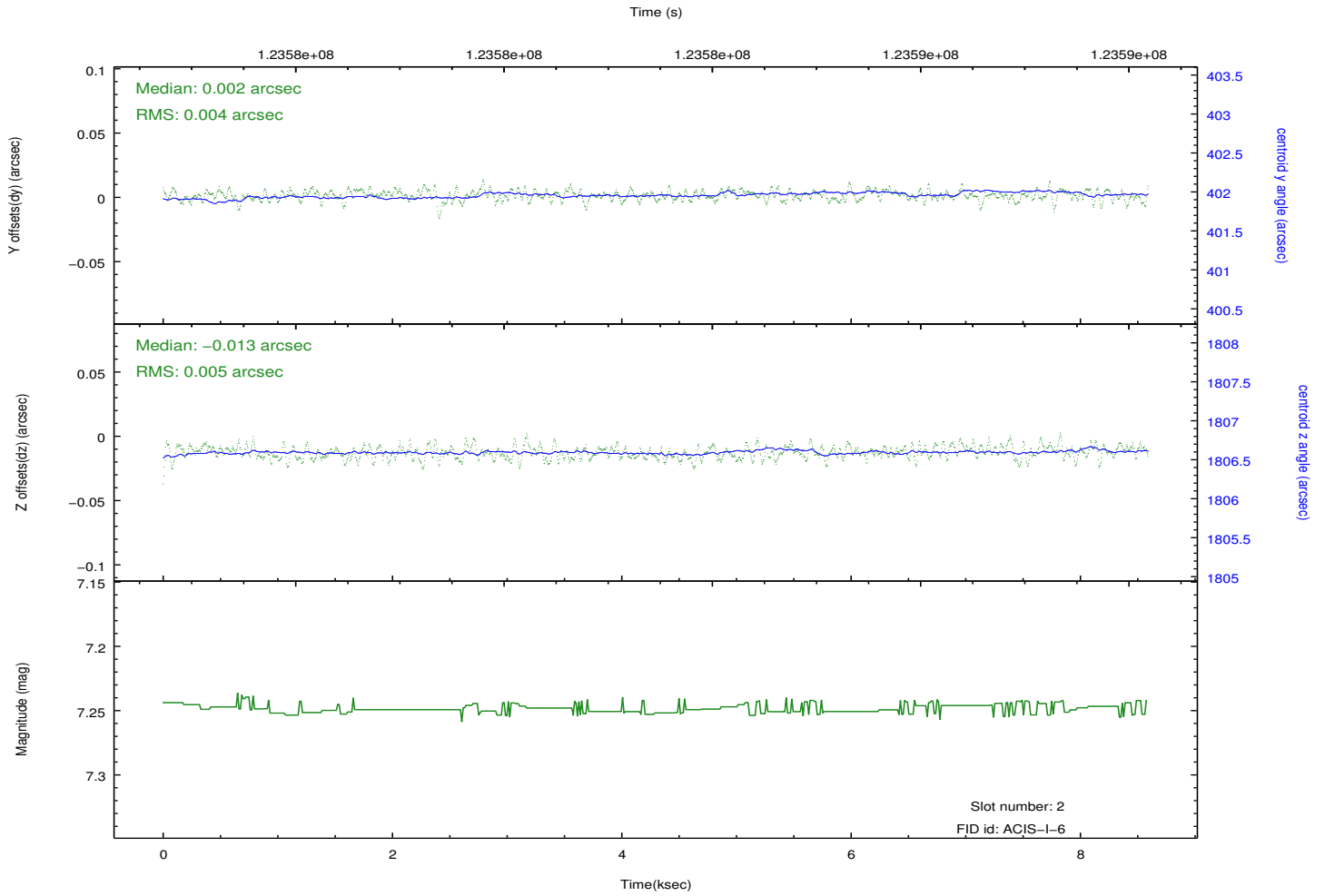
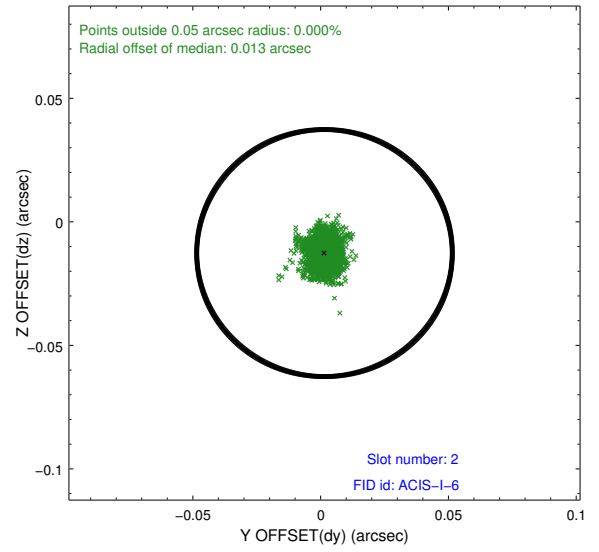
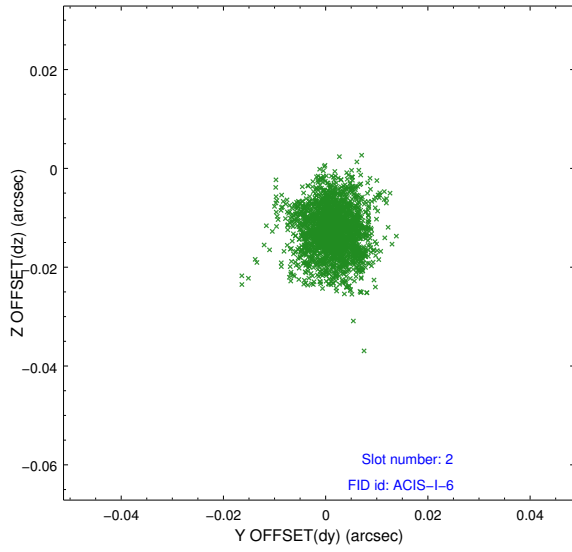
### 2.5.1 Slot 0



## 2.5.2 Slot 1

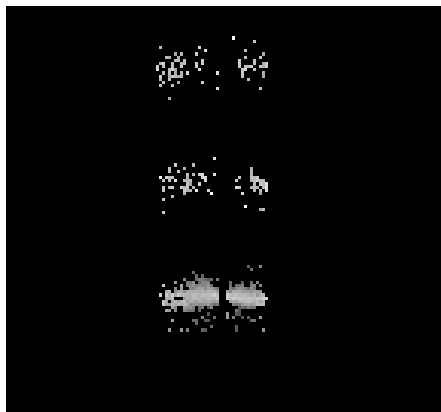


### 2.5.3 Slot 2

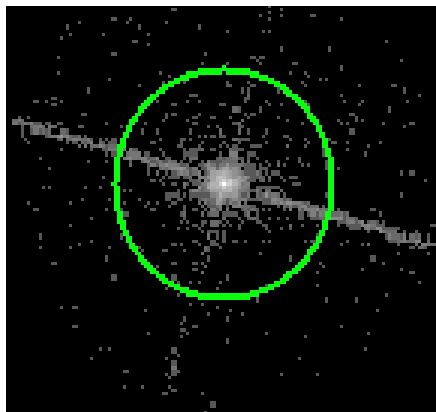


### 3 Gratings

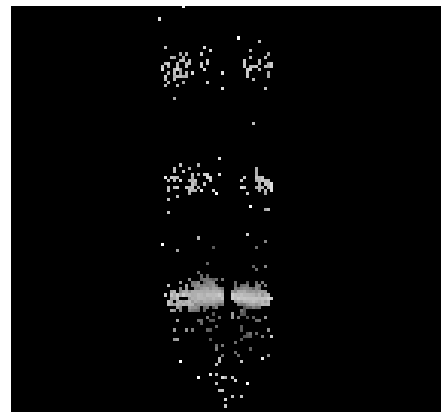
#### 3.1 LETG Arm



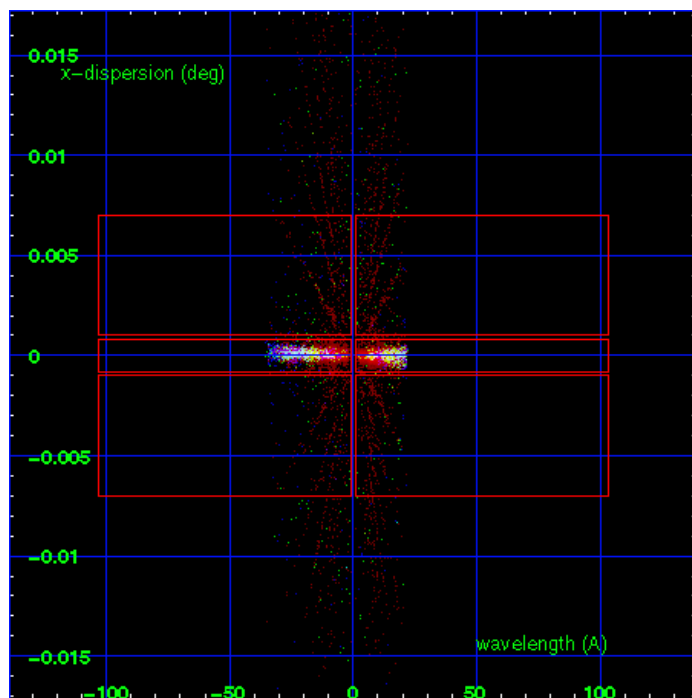
LETG Order Sort 123



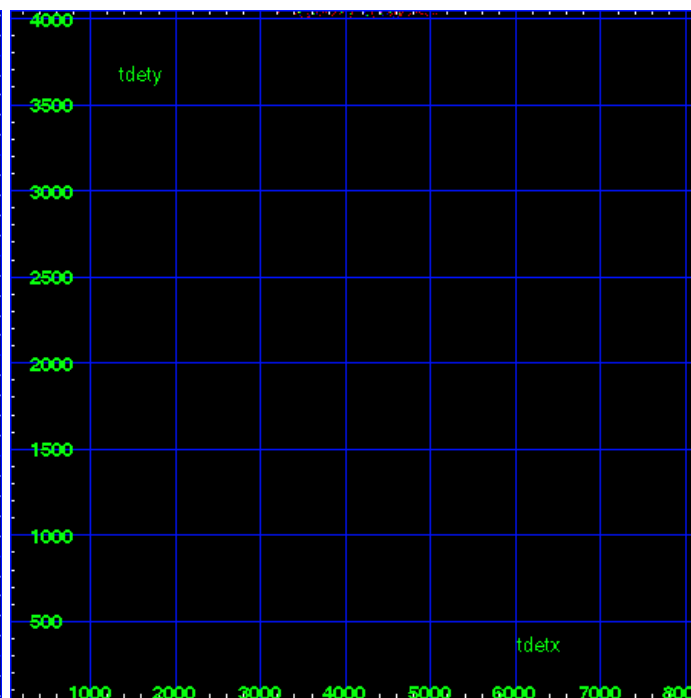
LETG Zero Order



LETG Order Sort ALL

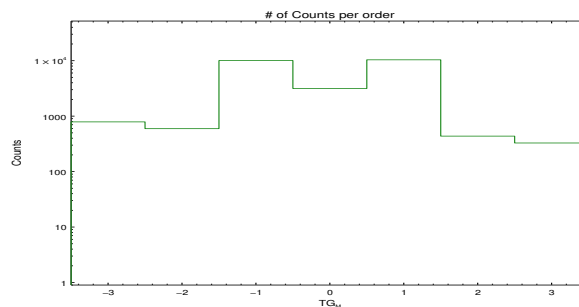


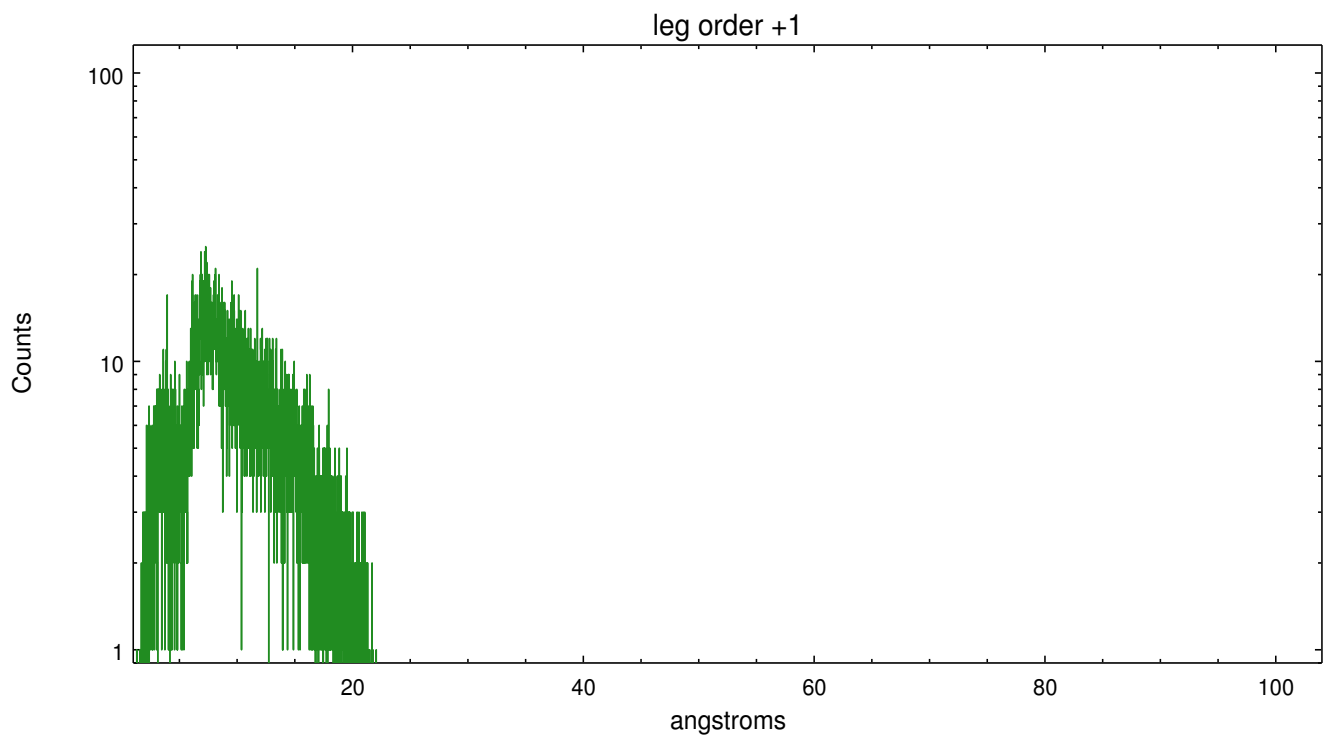
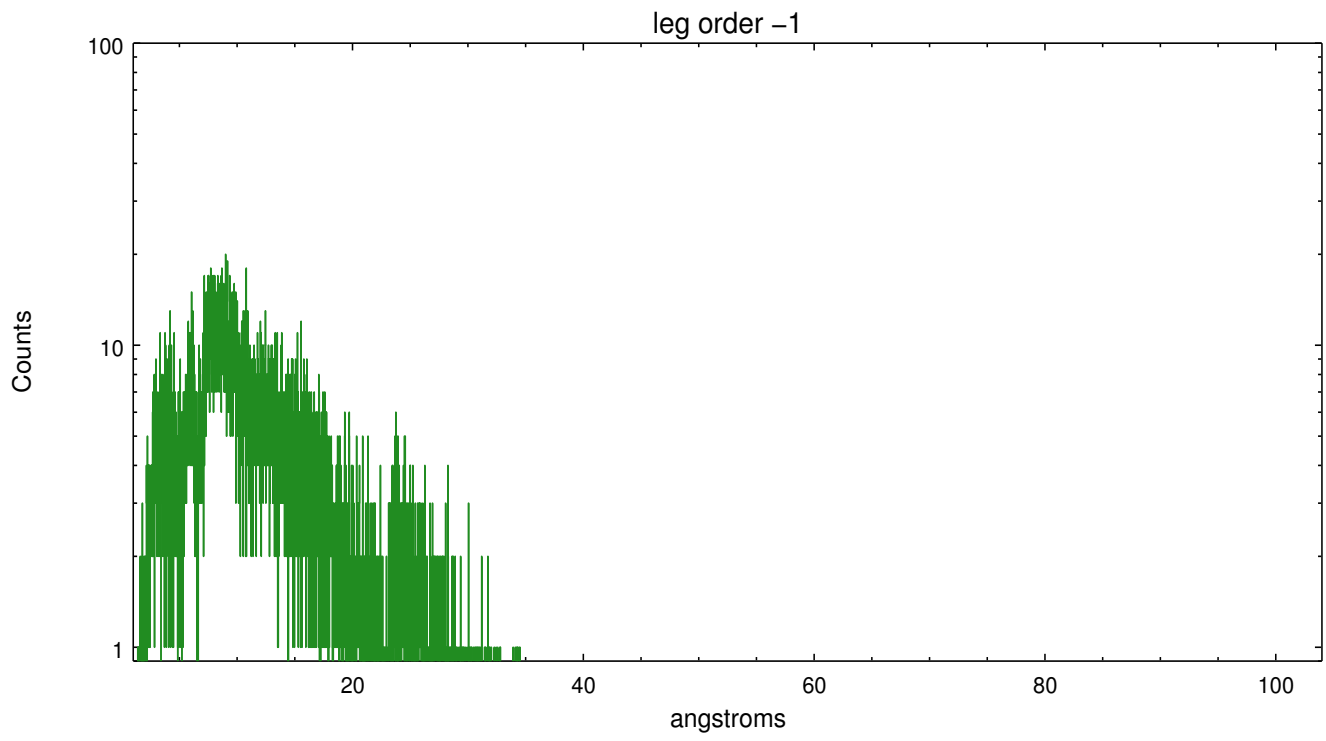
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	788	595	10048	3151	10368	436	328





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.12.18
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	8.156

## A.2 Comments

Non-standard grating/detector combination required custom parameters. Used flat order-sorting in `tg_resolve_events`, since there is no 'osip' table for ACIS-I. `=== pset grt_lev15 osipfile=None=== pset grt_lev15 osort_lo=0.3=== pset grt_lev15 osort_hi=0.3===` 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 ( $x=4140.06$ ,  $y=4307.56$ ) into the `*src1a.fits` file table. These corrected coordinates were determined by eye because neither the pipeline tool `tgdetect` nor the `findzero` tool was successful in identifying the piled up zeroth order so close to a chip boundary. The determination of the position by eye is expected to be in error by up to 1-2 pixels. 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.