

V&V Reference Report

L2 ASCDS Version : 8.4.5

Observation 92 - L2 Version 5
Chandra X-Ray Center

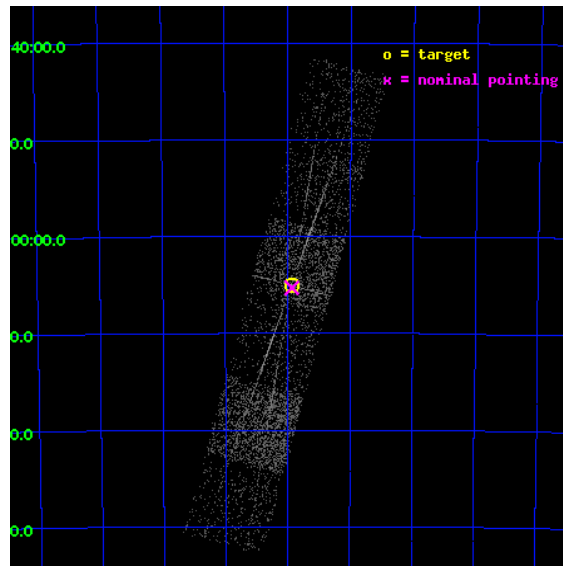
L2 Processing Date : Aug 24 2012

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1 Front

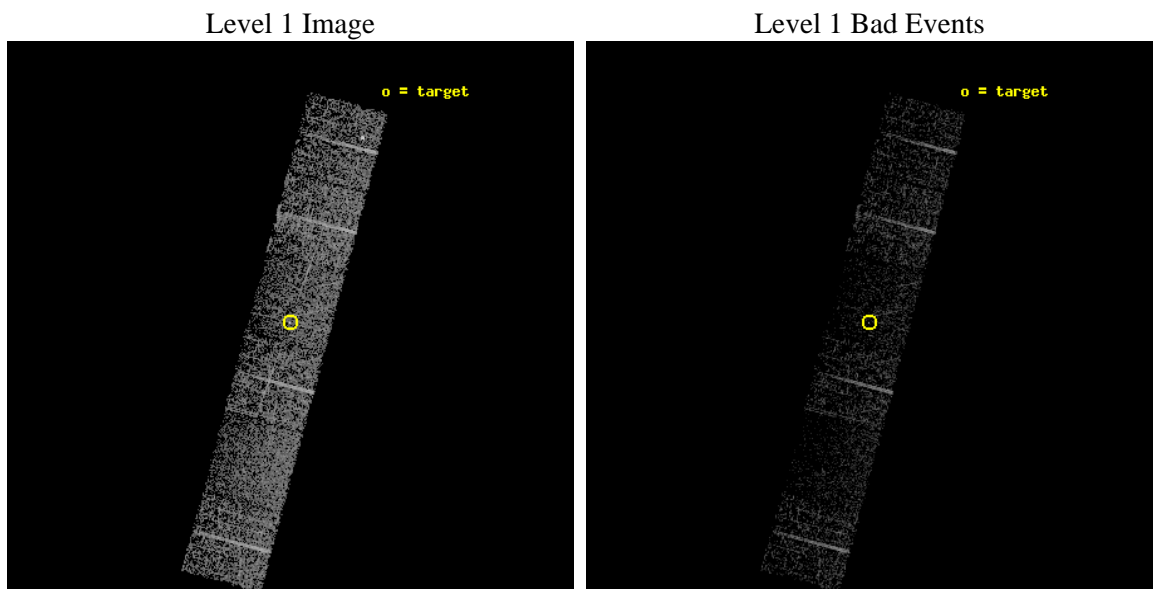
seq_num	400005	Sequence number
obs_id	92	Observation id
title	MEASURING BLACK HOLE SPIN	Proposal title
observer	Professor Gordon Garmire	Principal investigator
object	LMC X-3	Source name
dtcycle	0	
cycle	P	events are from which exps? P[rimary] S[econdar
ra_targ	84.735	Observer's specified target RA [deg]
dec_targ	-64.08375	Observer's specified target Dec [deg]
ra_nom	84.733478633685	Nominal RA [deg]
dec_nom	-64.088504207842	Nominal Dec [deg]
roll_nom	285.0066414259	Nominal Roll [deg]
revision	5	Processing version of data
ontime	2226.1941867322	Sum of GTIs [s]
livetime	190.1993119531	Livetime [s]
ontime4	2226.1941567957	Sum of GTIs [s]
ontime5	2226.1941867322	Sum of GTIs [s]
ontime6	2226.1941867322	Sum of GTIs [s]
ontime7	2226.1941867322	Sum of GTIs [s]
ontime8	2226.1941567957	Sum of GTIs [s]
ontime9	2226.1941867322	Sum of GTIs [s]
l2events	6941	Number of level 2 events



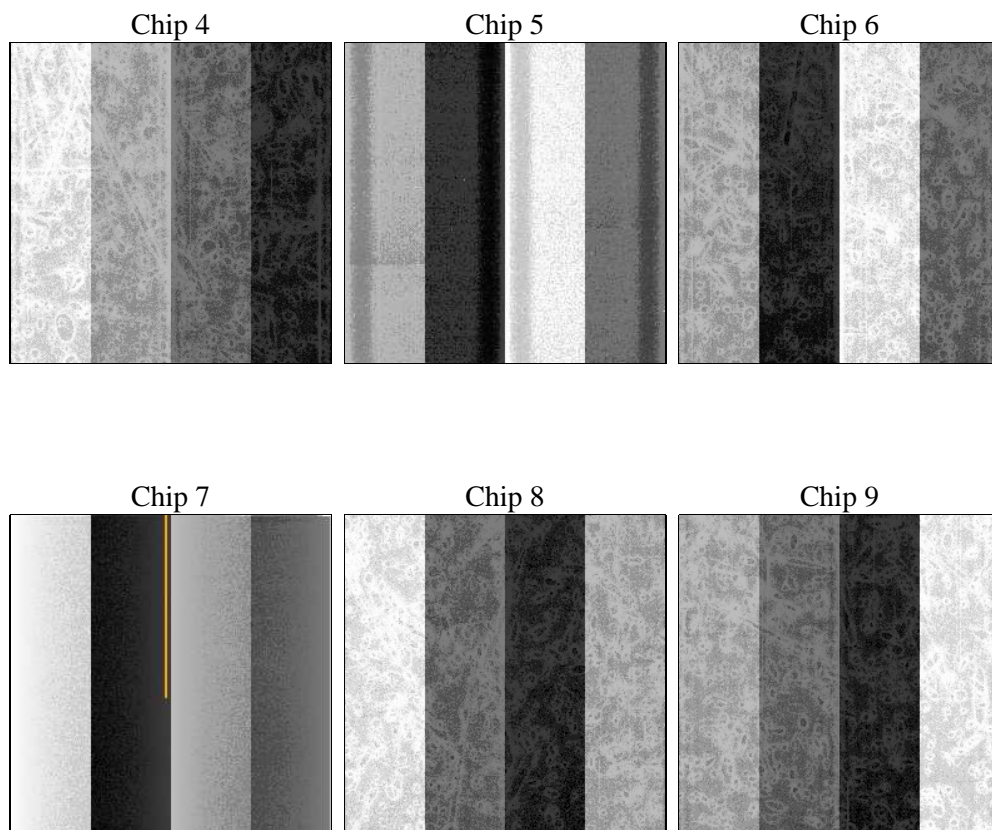
2 OBI Primary

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	19700.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	2226.1941867322	Sum of GTIs [s]
caldsver	4.5.1.1	 	ontime4	2226.1941567957	Sum of GTIs [s]
date	2012-08-23T19:04:40	Date and time of file creation	ontime5	2226.1941867322	Sum of GTIs [s]
revision	5	Processing version of data	ontime6	2226.1941867322	Sum of GTIs [s]
			ontime7	2226.1941867322	Sum of GTIs [s]
			ontime8	2226.1941567957	Sum of GTIs [s]
			ontime9	2226.1941867322	Sum of GTIs [s]
			l1events	53468	Number of level 1 events

2.1.4 Events

	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	9542	6830	9656	7369	11342	8729
rejected events	8934	4497	8647	4985	9929	7579
rejected %	93%	65%	89%	67%	87%	86%

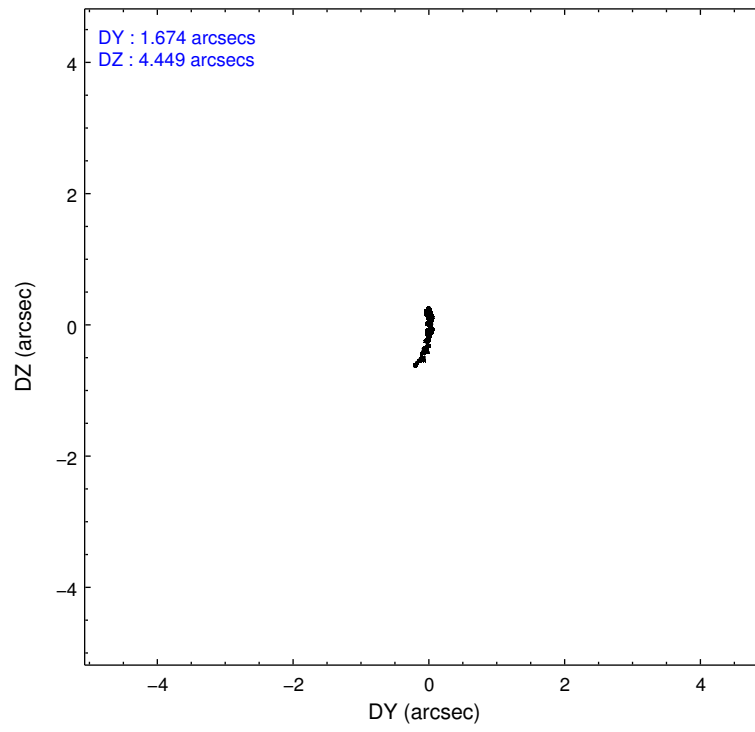
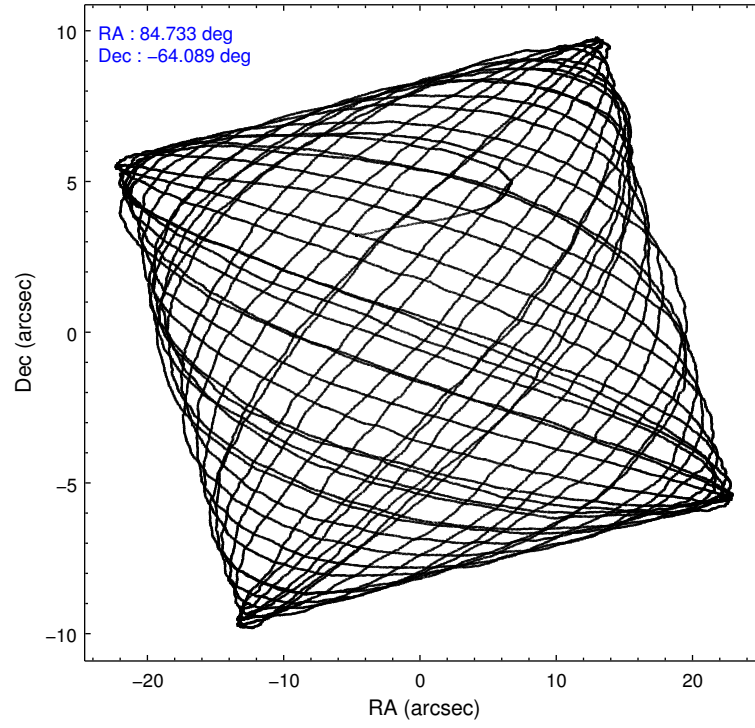
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	179	213	534	324	498	796
	1%	3%	5%	4%	4%	9%
grade 1 events	2	7	4	11	5	2
	0%	0%	0%	0%	0%	0%
grade 2 events	140	623	175	587	277	108
	1%	9%	1%	7%	2%	1%
grade 3 events	99	151	87	221	174	88
	1%	2%	0%	2%	1%	1%
grade 4 events	87	117	107	230	170	68
	0%	1%	1%	3%	1%	0%
grade 5 events	193	507	188	516	262	188
	2%	7%	1%	7%	2%	2%
grade 6 events	103	1233	109	1030	297	93
	1%	18%	1%	13%	2%	1%
grade 7 events	8739	3979	8452	4450	9659	7386
	91%	58%	87%	60%	85%	84%

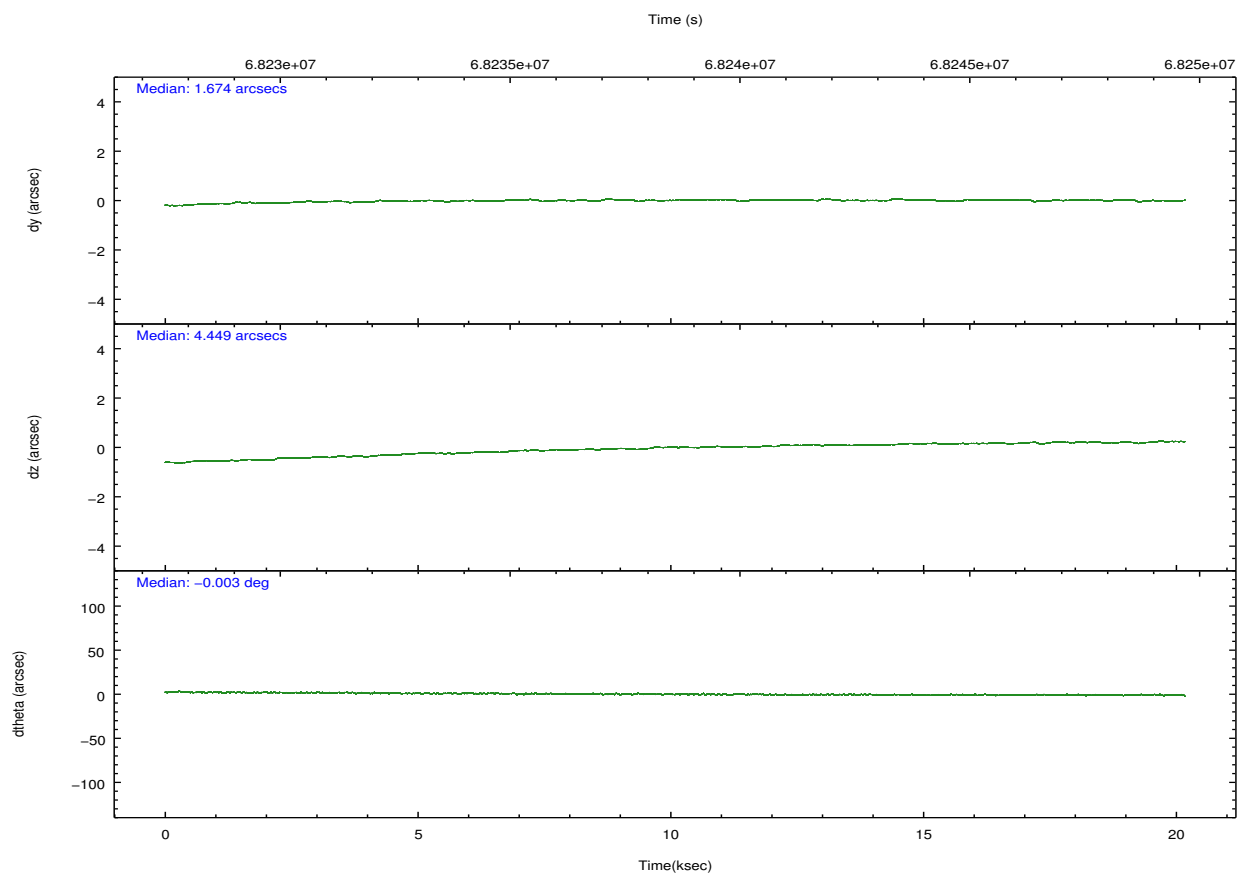
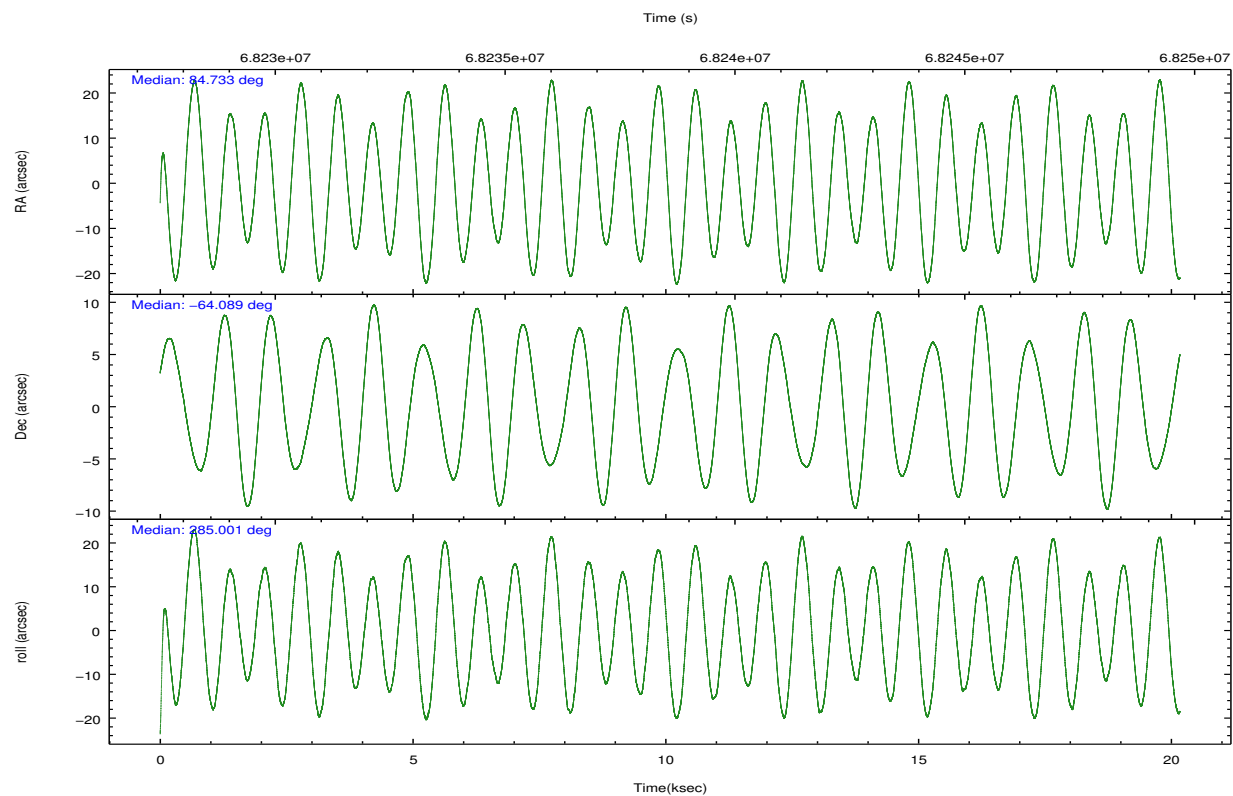
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-456789	ACIS-456789
Grating	HETG	HETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	84.689038	84.73347863368539
[deg] Pointing Dec	-64.069066	-64.08850420784232
[deg] Pointing Roll	284.810059	285.0066414259001
[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
Phase constraints	Y	Y
[d] Phase period	198.000000	198.000000
[d] Phase epoch (MJD)	50409.500000	50409.500000
Phase start	0.000000	0.000000
Phase end	0.100000	0.100000
Phase start error	0.100000	0.100000
Phase end error	0.010000	0.010000
[s] Observation start time (MET)	68228973.184000	68227661.539391
Observation start date	2000-02-29T16:28:29	2000-02-29T16:07:41
[s] Observation end time (MET)	68248673.184000	68249390.515184
Observation end date	2000-02-29T21:56:49	2000-02-29T22:09:50
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	Y	Y
[s] Primary exposure time	0.300000	0.3
[s] Secondary exposure time	3.200000	3.2
Duty cycle	8	8

2.3 Aspect



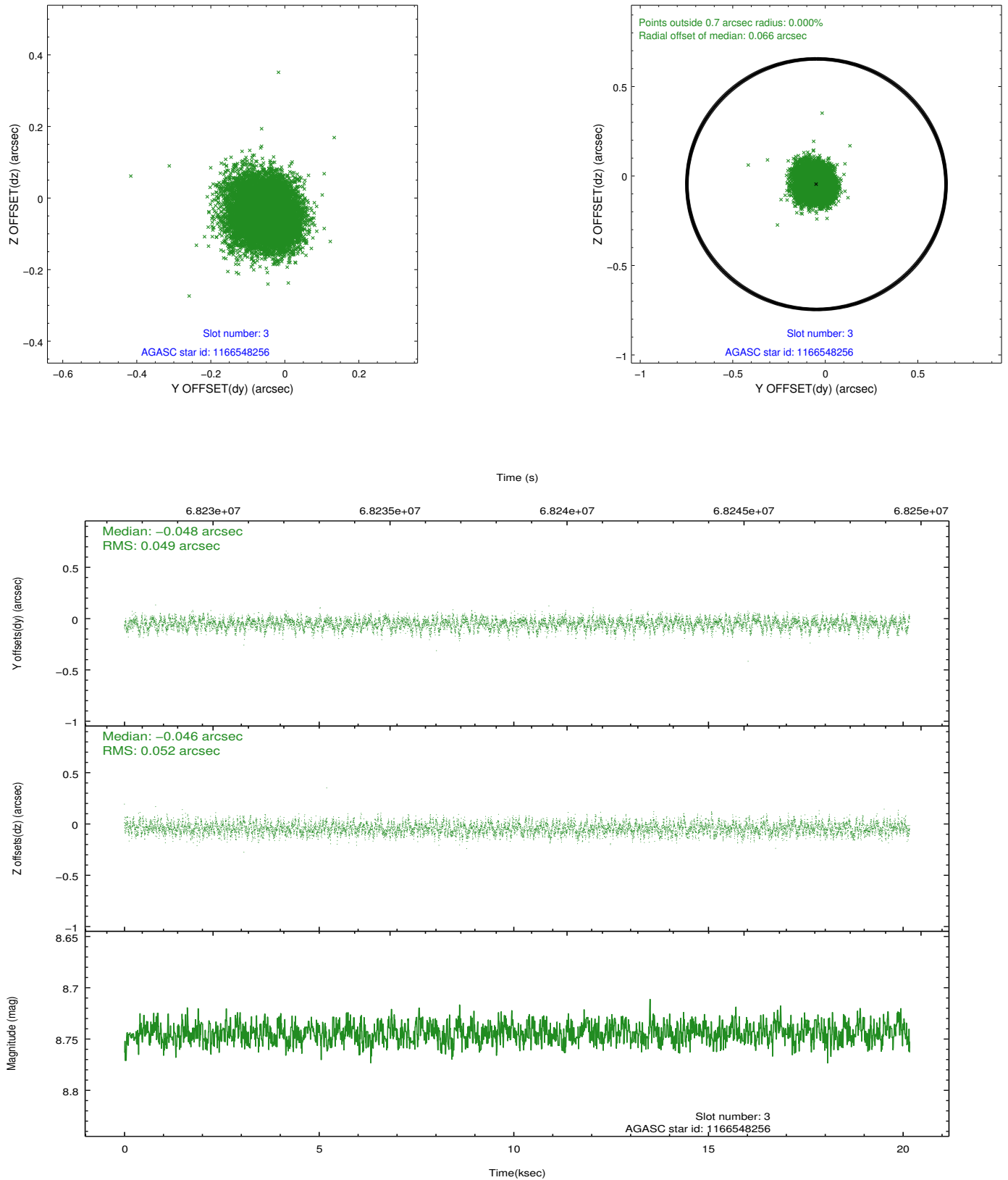


Slot Statistics

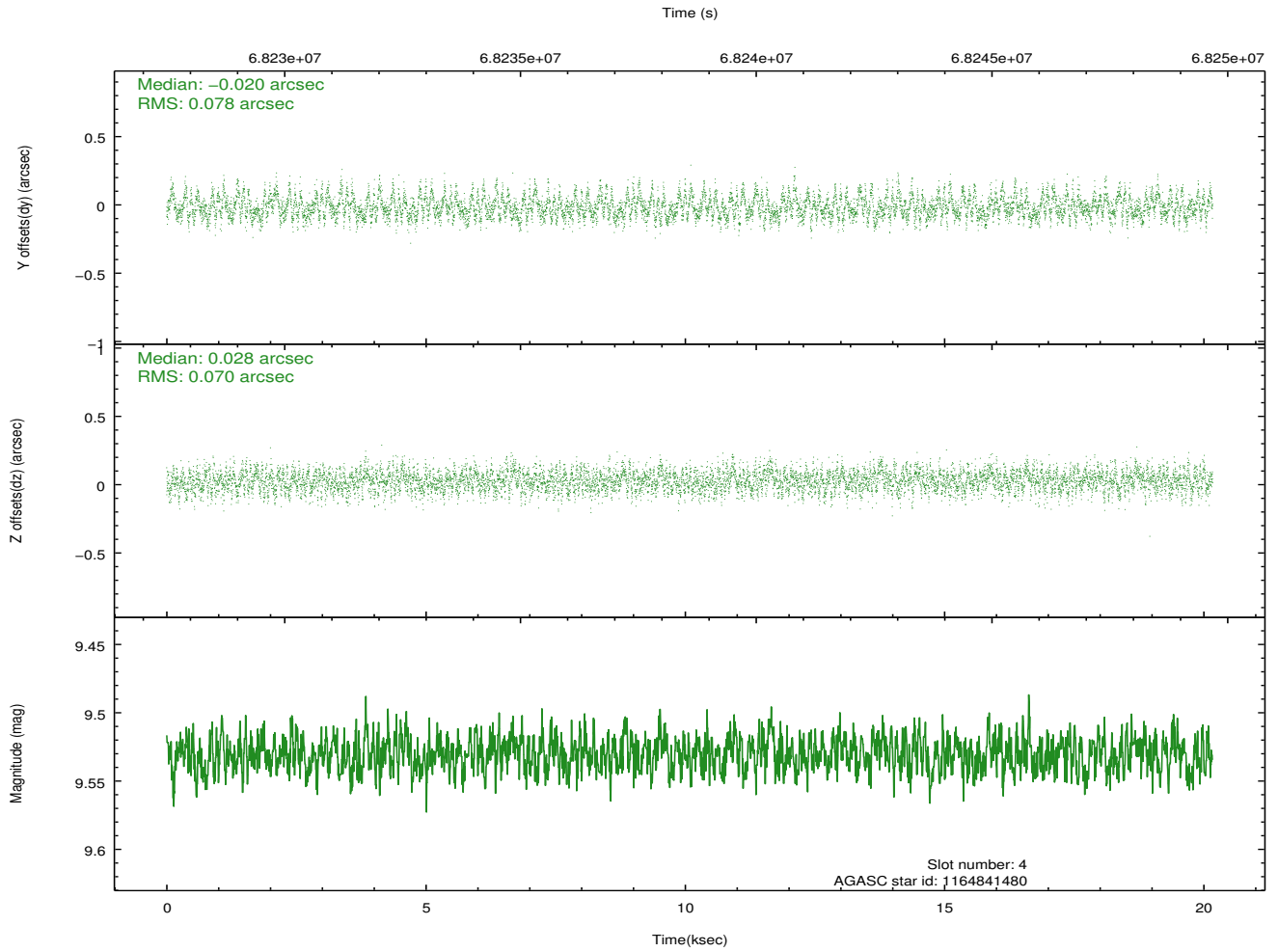
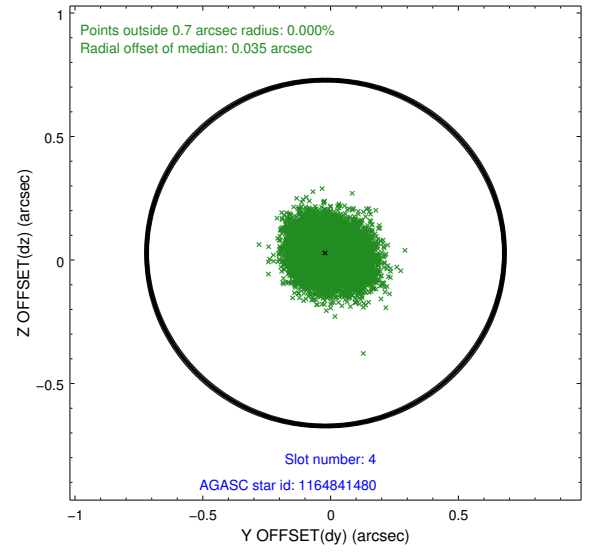
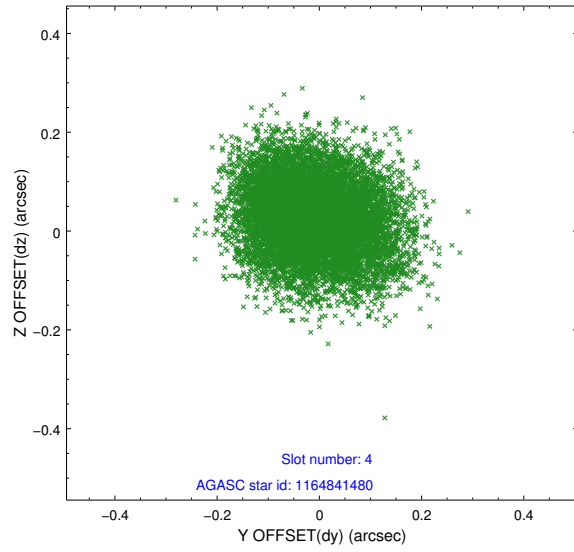
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	4920	-0.021	-0.018	0.009	0.015	0.000000	0.000000	-754.31	-1725.42
1	FID	ACIS-S-4	7.21	4920	0.011	0.015	0.007	0.012	0.000000	0.000000	2158.94	182.87
2	FID	ACIS-S-5	7.23	4921	-0.022	0.012	0.008	0.014	0.000000	0.000000	-1806.89	176.80
3	GUIDE	1166548256	8.74	9838	-0.048	-0.046	0.076	0.121	85.738698	-64.074093	452.74	1589.08
4	GUIDE	1164841480	9.53	9834	-0.020	0.028	0.113	0.181	83.365322	-64.418333	710.61	-2315.78
5	GUIDE	1166544016	9.67	9829	-0.002	-0.029	0.100	0.160	86.089673	-64.349585	1557.35	1845.70
6	GUIDE	1164321928	9.65	9833	0.022	-0.008	0.096	0.157	84.484274	-63.463117	-2192.46	239.10
7	GUIDE	1164838928	10.12	9833	0.046	0.054	0.110	0.178	84.147245	-63.840751	-1011.03	-622.14

2.4 Star Slots

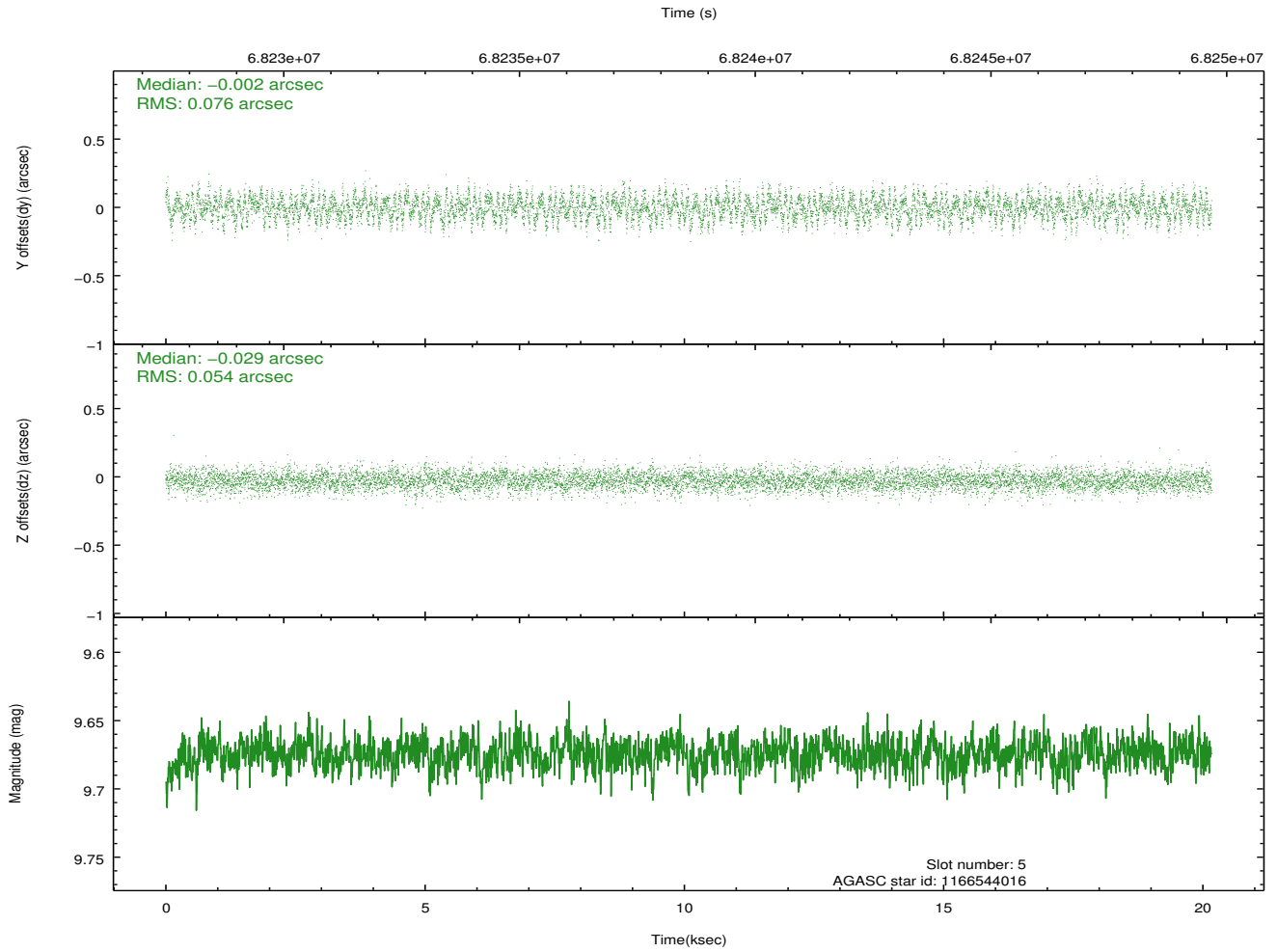
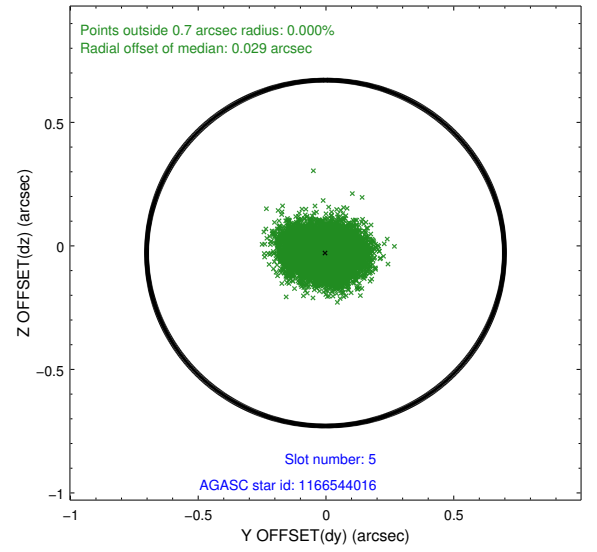
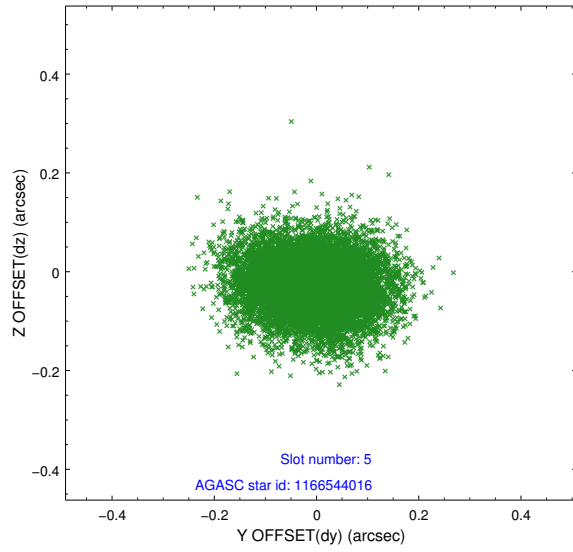
2.4.1 Slot 3



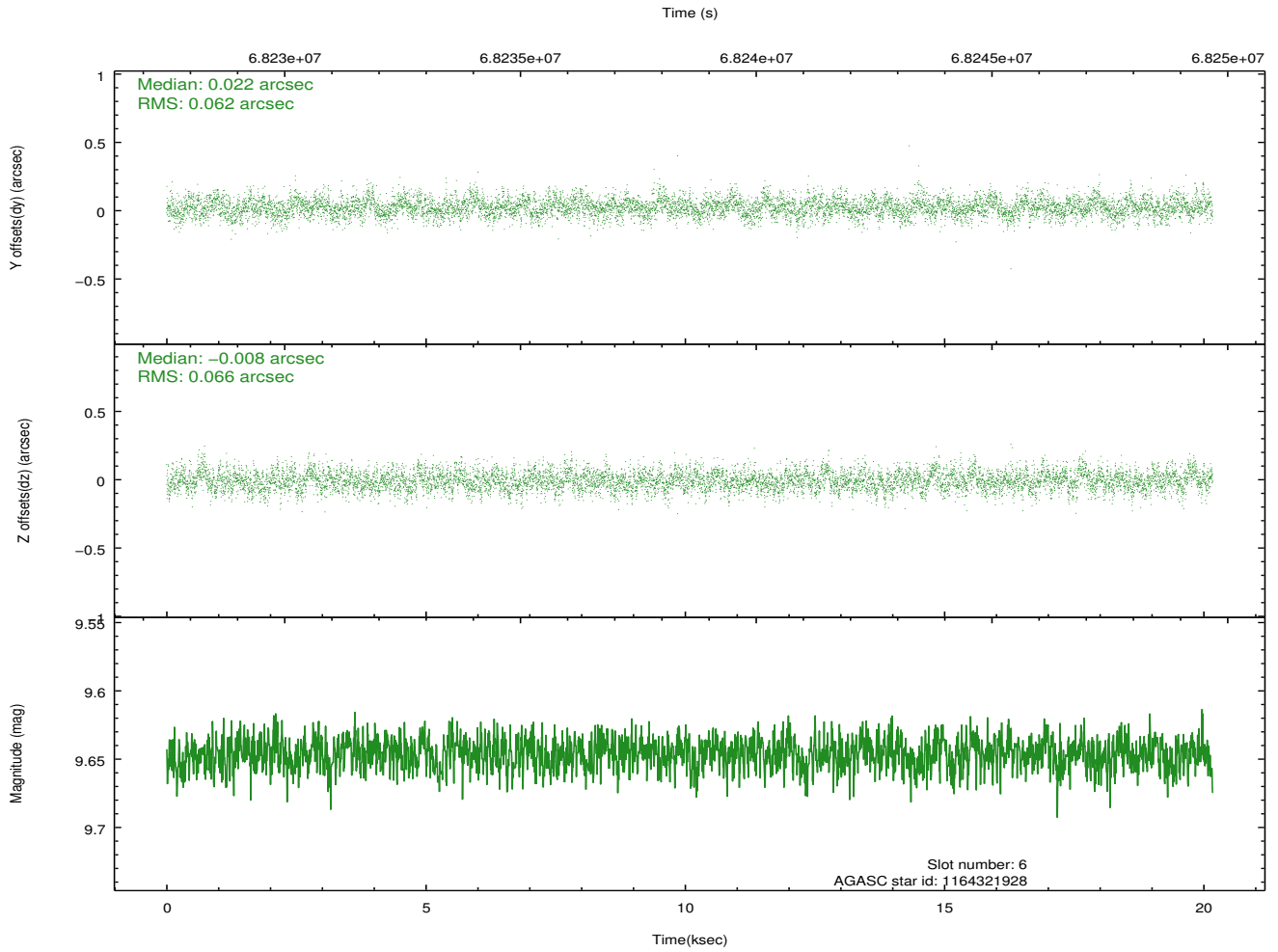
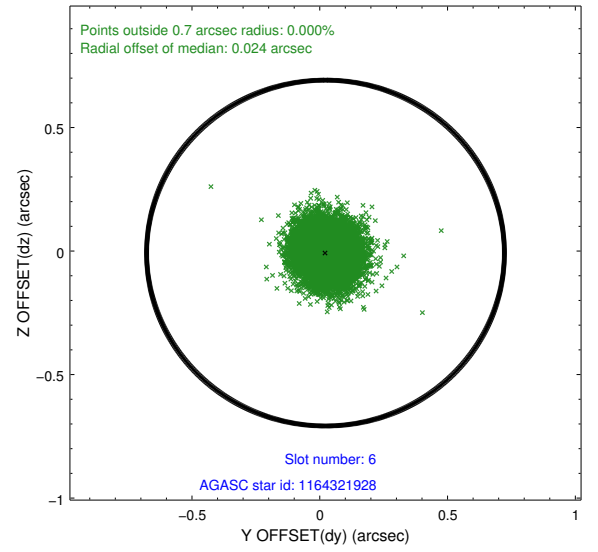
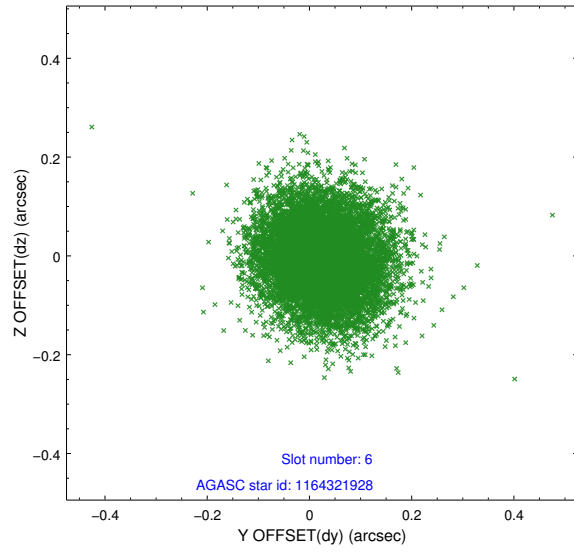
2.4.2 Slot 4



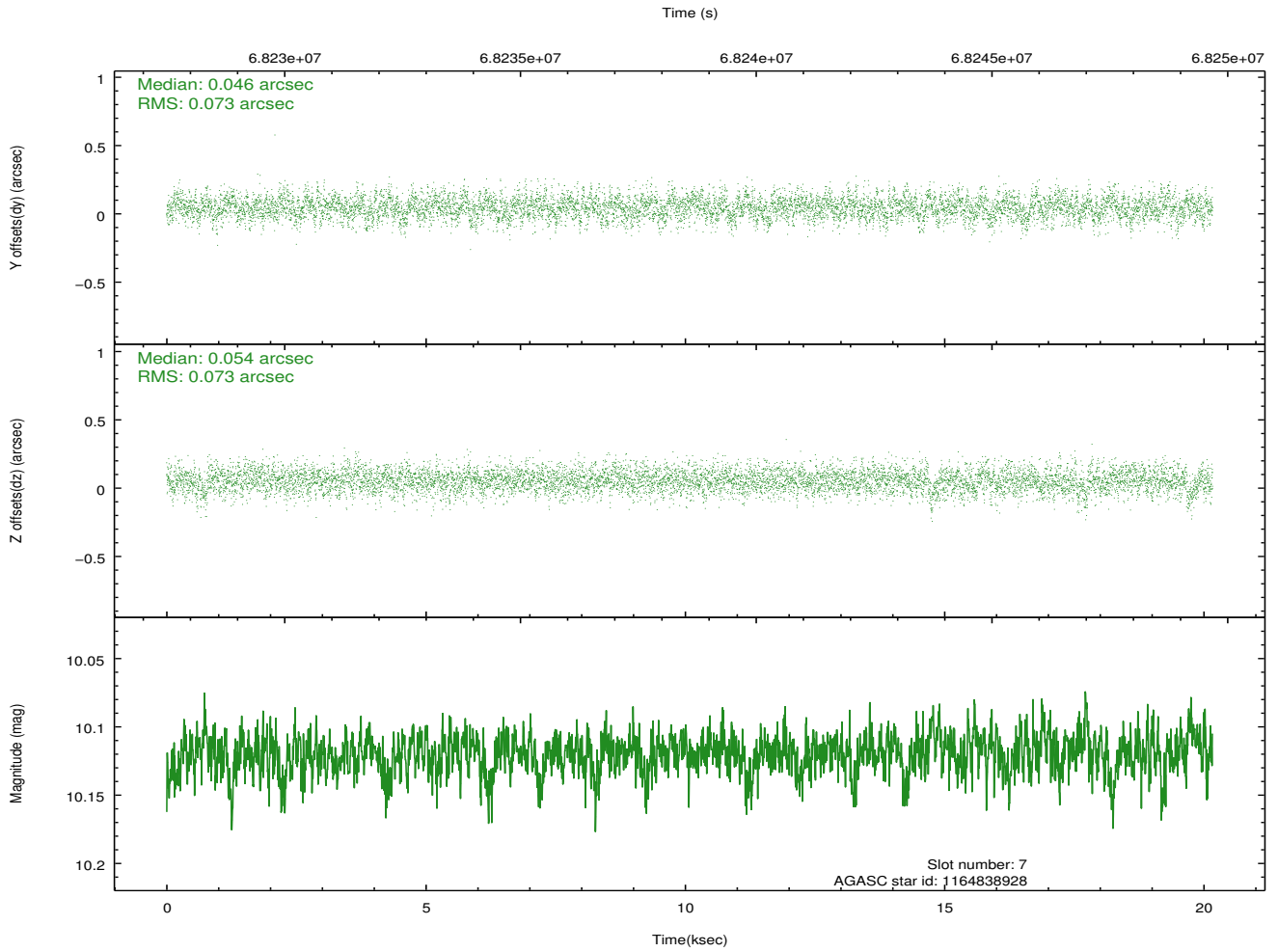
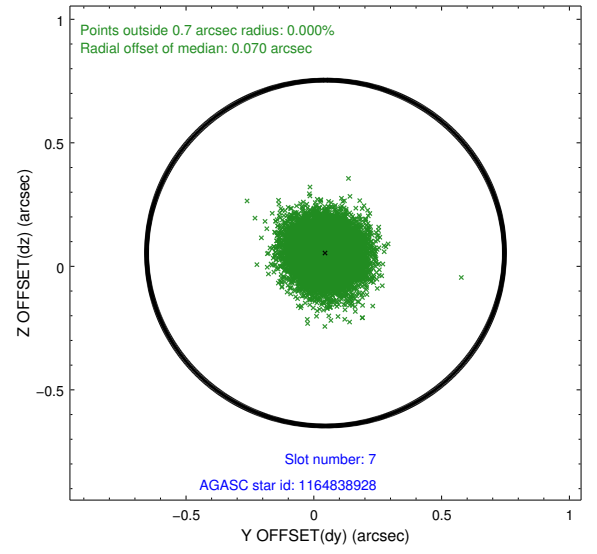
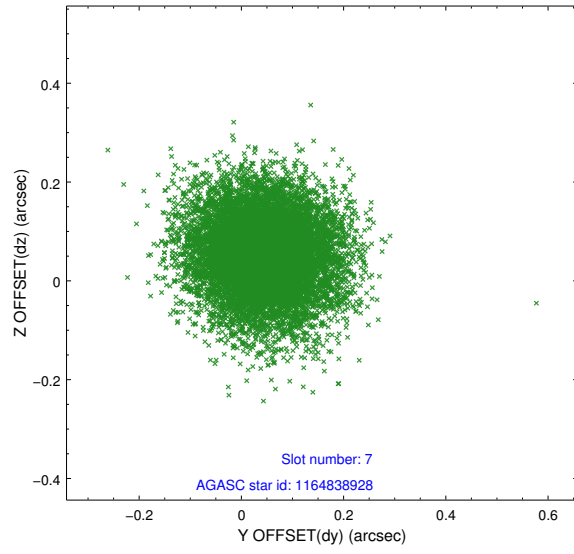
2.4.3 Slot 5



2.4.4 Slot 6

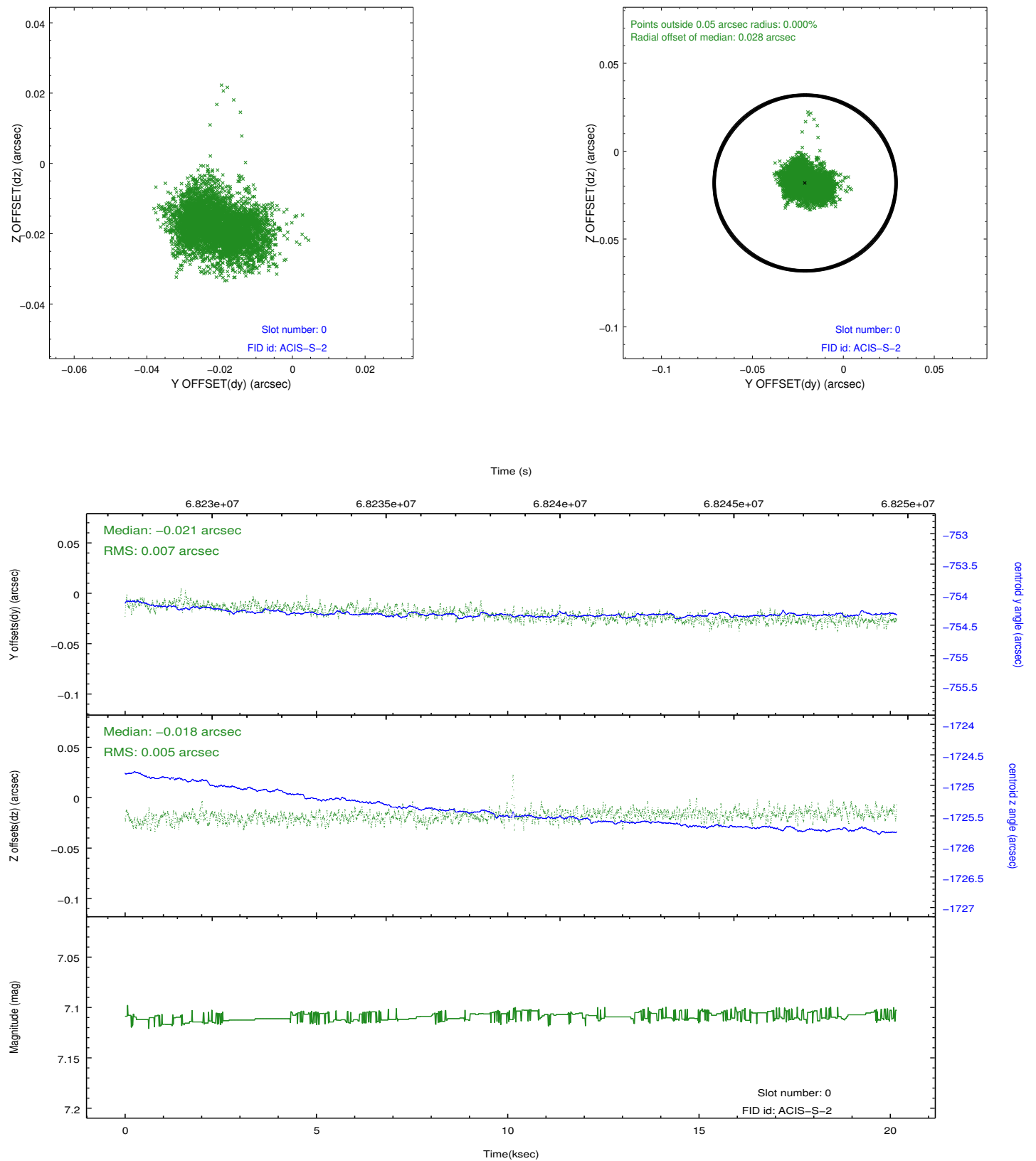


2.4.5 Slot 7

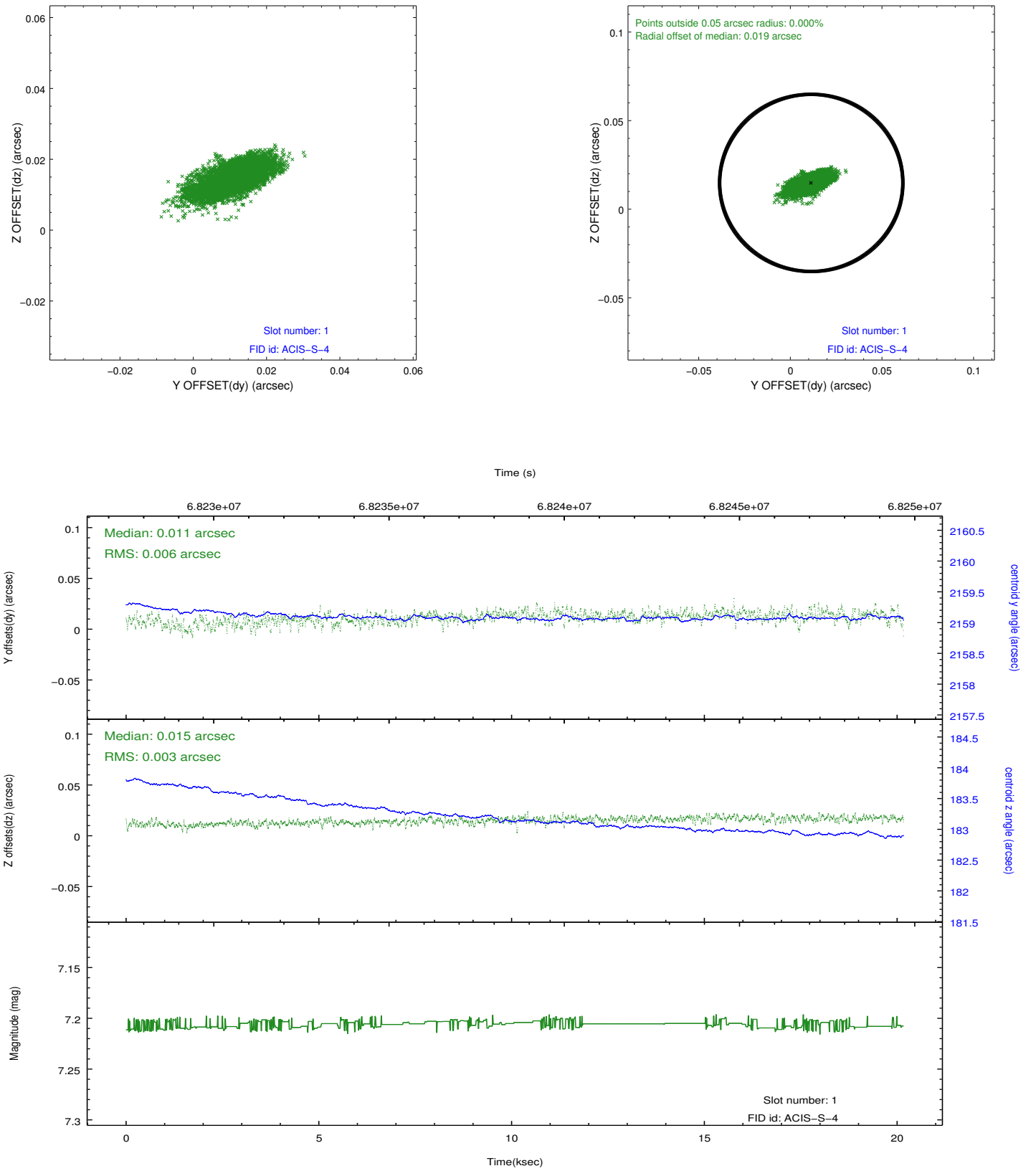


2.5 FID Slots

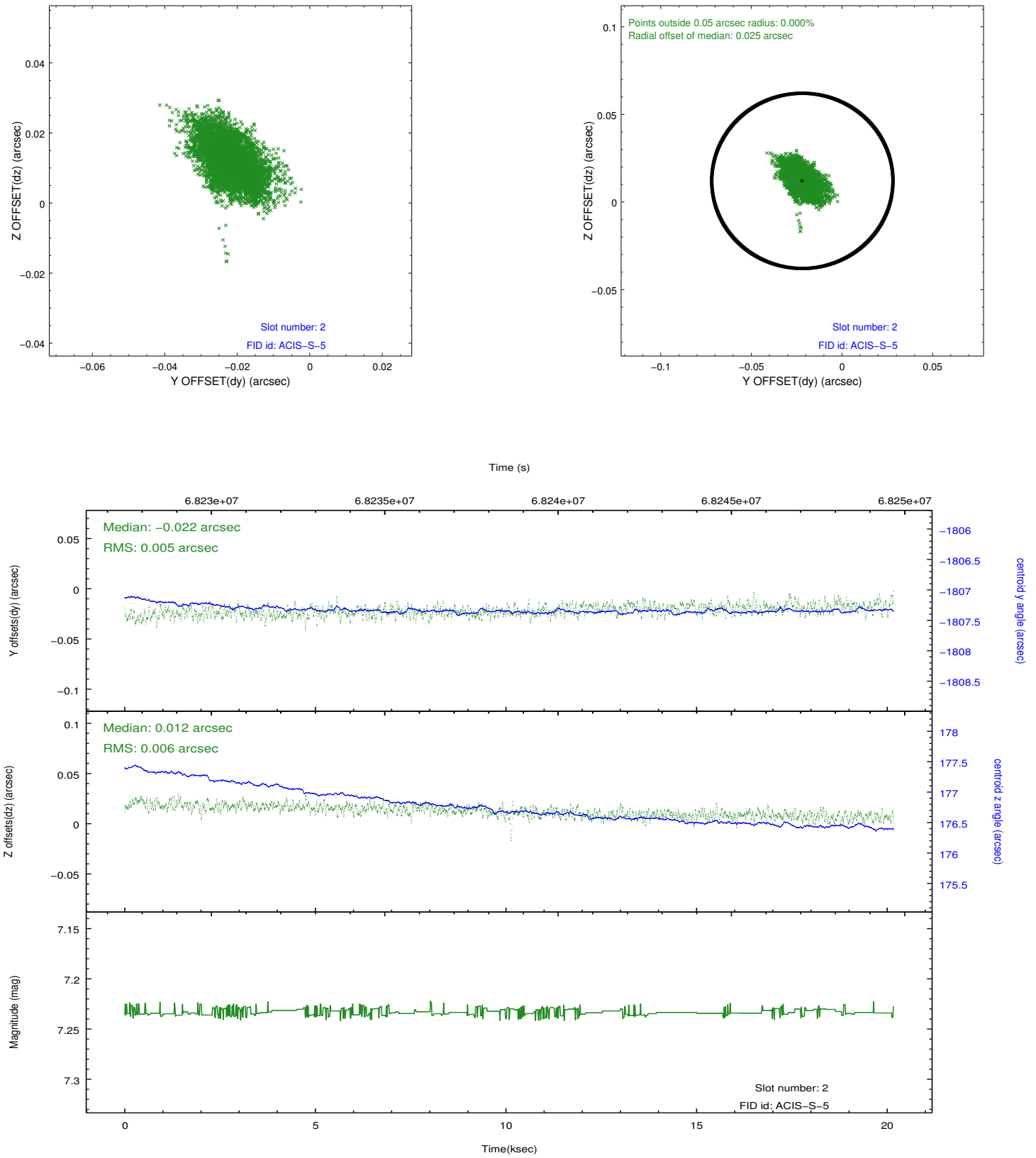
2.5.1 Slot 0



2.5.2 Slot 1



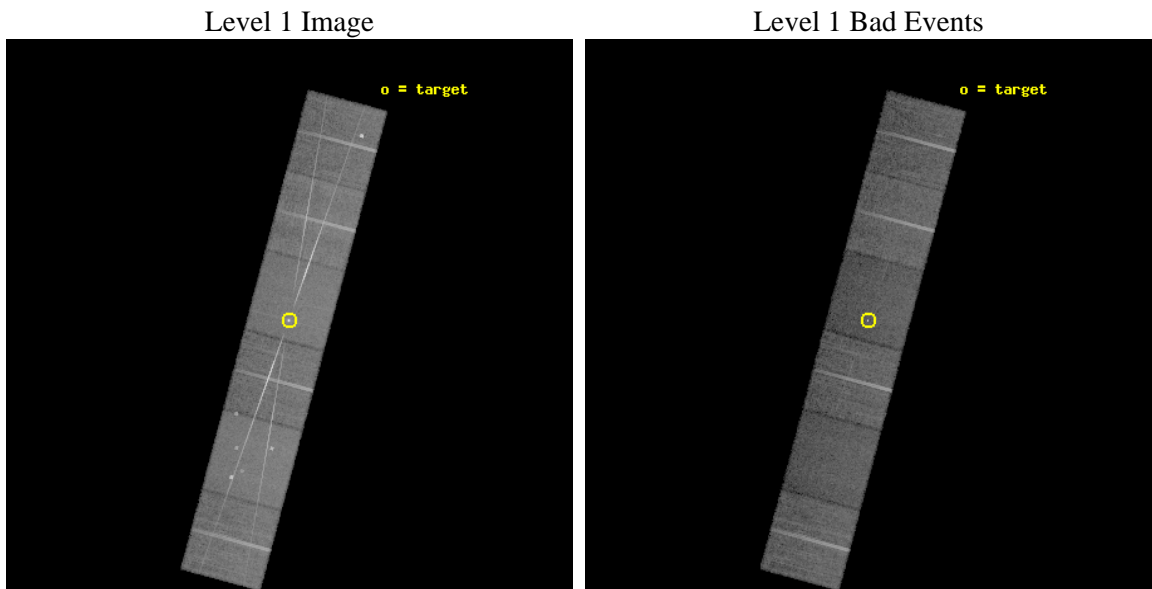
2.5.3 Slot 2



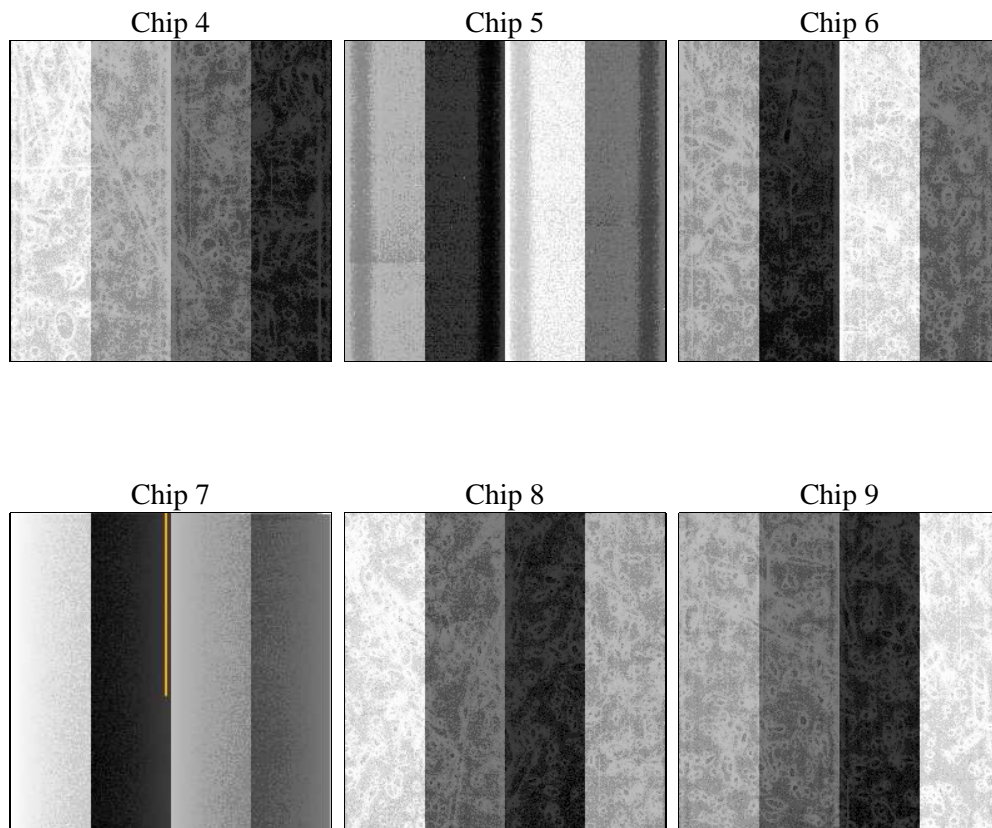
3 OBI Secondary

3.1 OBI

3.1.1 Images



3.1.2 Bias



3.1.3 Parameters

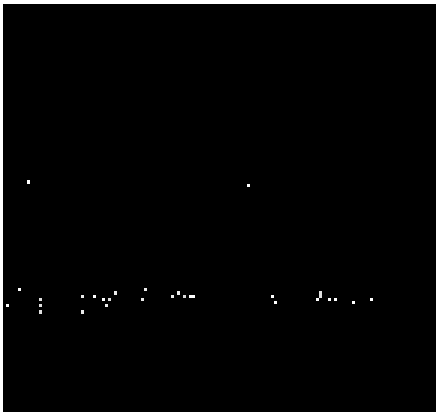
obi_num	0	Obi number	sched_exp_time	19700.000000	[s] Scheduled observation exposure time
ascdsver	8.4.5	Processing system revision	ontime	16483.831892624	Sum of GTIs [s]
caldsver	4.5.1.1	 	ontime4	16483.832311377	Sum of GTIs [s]
date	2012-08-23T19:12:13	Date and time of file creation	ontime5	16483.832400769	Sum of GTIs [s]
revision	5	Processing version of data	ontime6	16483.832022309	Sum of GTIs [s]
			ontime7	16483.831892624	Sum of GTIs [s]
			ontime8	16483.831713215	Sum of GTIs [s]
			ontime9	16483.8323019	Sum of GTIs [s]
			l1events	941626	Number of level 1 events

3.1.4 Events

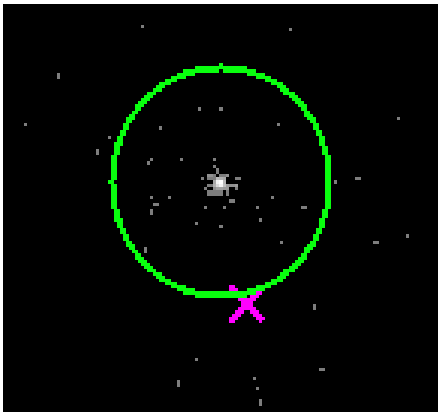
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	138119	172820	159487	169726	176470	125004	grade 0 events	8194	16848	33684	12660	28891	14361
rejected events	121640	82910	111856	83180	124368	102330		5%	9%	21%	7%	16%	11%
rejected %	88%	47%	70%	49%	70%	81%	grade 1 events	62	251	269	269	205	93
								0%	0%	0%	0%	0%	0%
							grade 2 events	3346	25868	6174	18670	8129	3017
								2%	14%	3%	11%	4%	2%
							grade 3 events	1371	4566	2407	8569	3676	1424
								0%	2%	1%	5%	2%	1%
							grade 4 events	1373	4560	2347	8742	3479	1345
								0%	2%	1%	5%	1%	1%
							grade 5 events	3689	12233	4558	14008	5698	4402
								2%	7%	2%	8%	3%	3%
							grade 6 events	2206	38103	3038	37938	7941	2533
								1%	22%	1%	22%	4%	2%
							grade 7 events	117878	70391	107010	68870	118451	97829
								85%	40%	67%	40%	67%	78%

4 Gratings

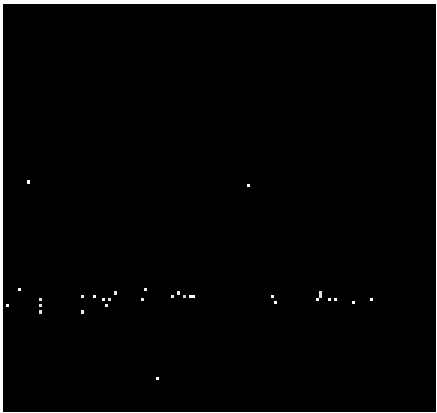
4.1 HEG Arm



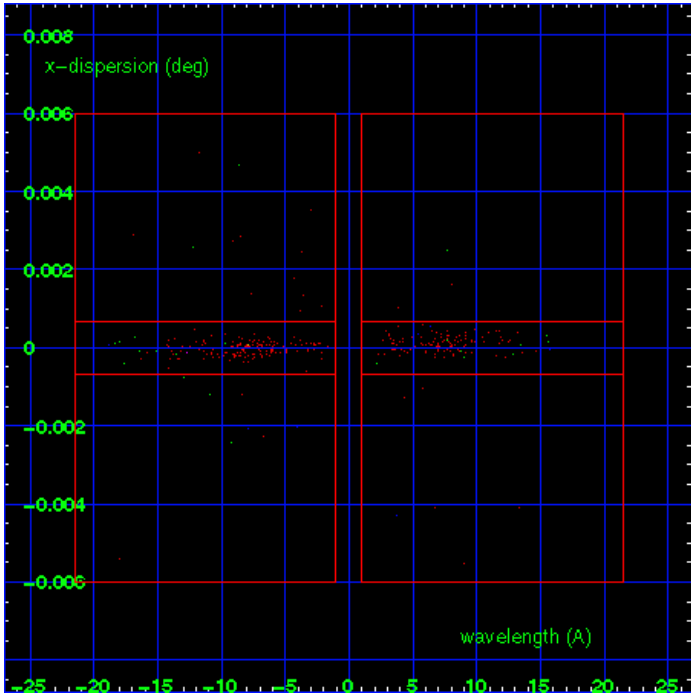
HEG Order Sort 123



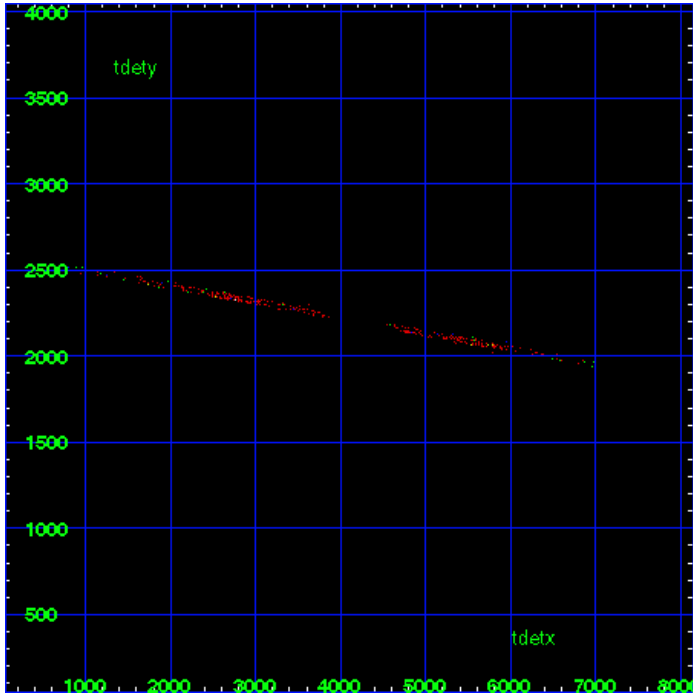
HEG Zero Order



HEG Order Sort ALL

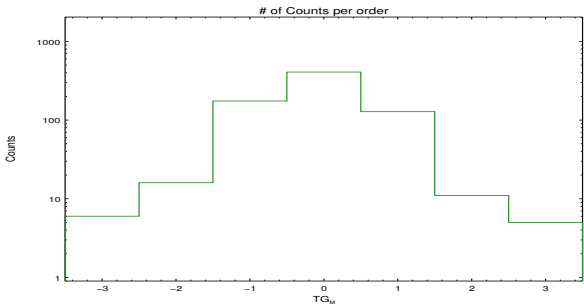


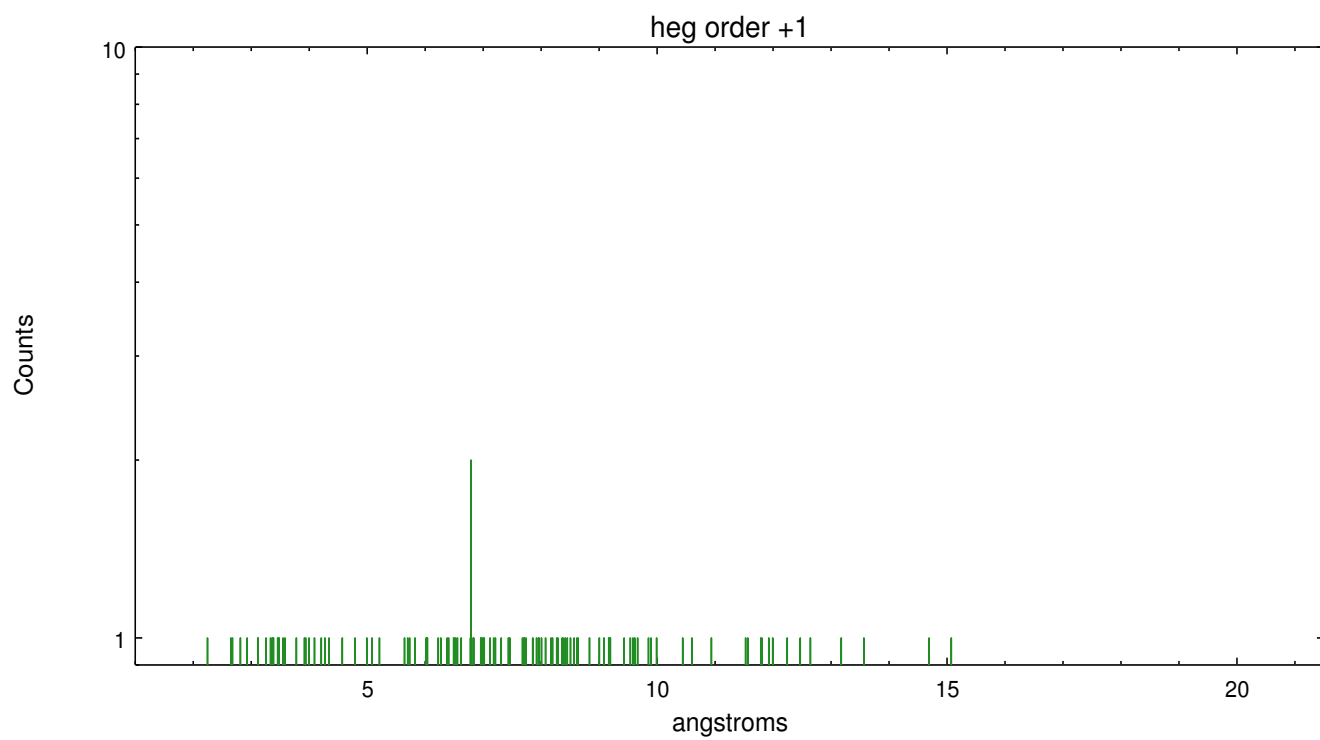
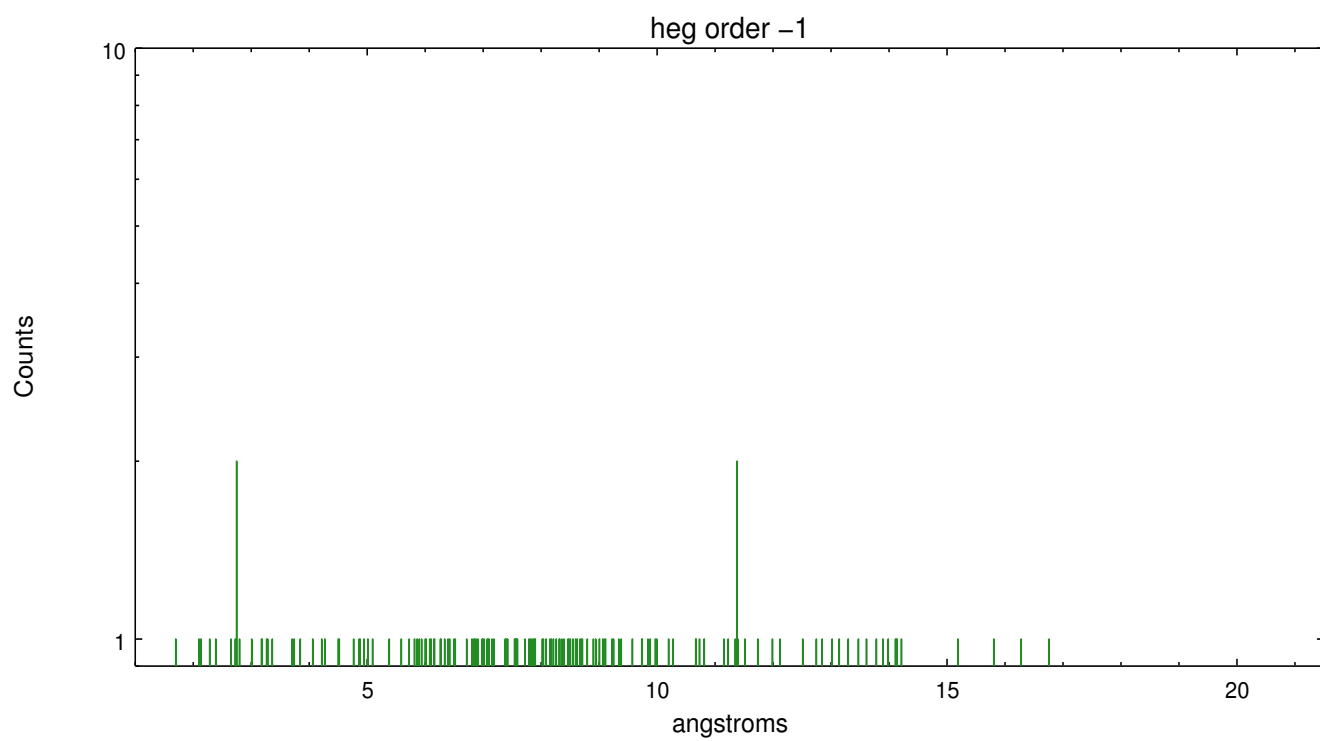
Spot Image HEG



Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	6	16	175	408	128	11	5

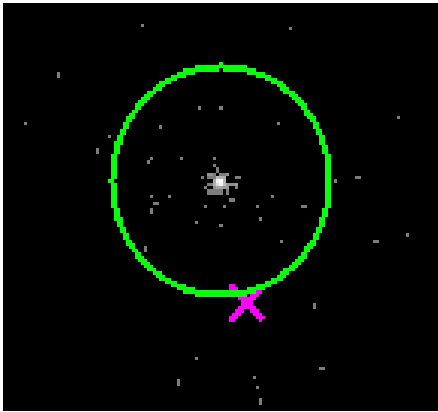




4.2 MEG Arm



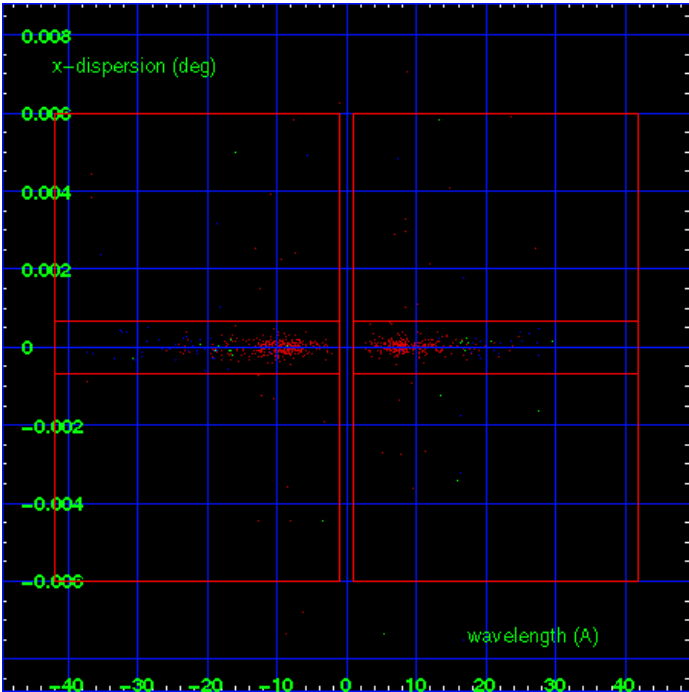
MEG Order Sort 123



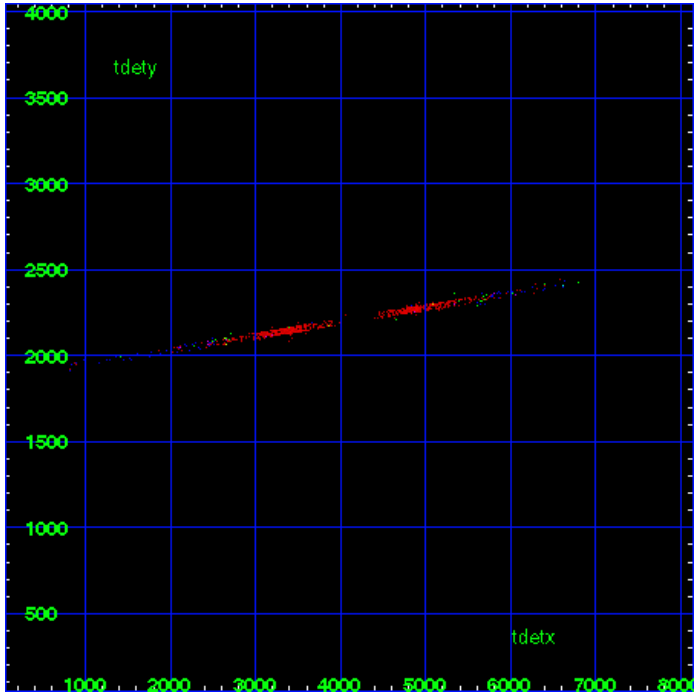
MEG Zero Order



MEG Order Sort ALL

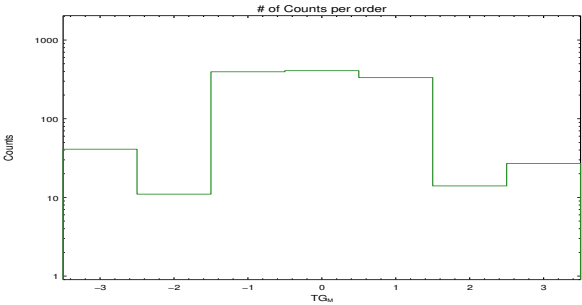


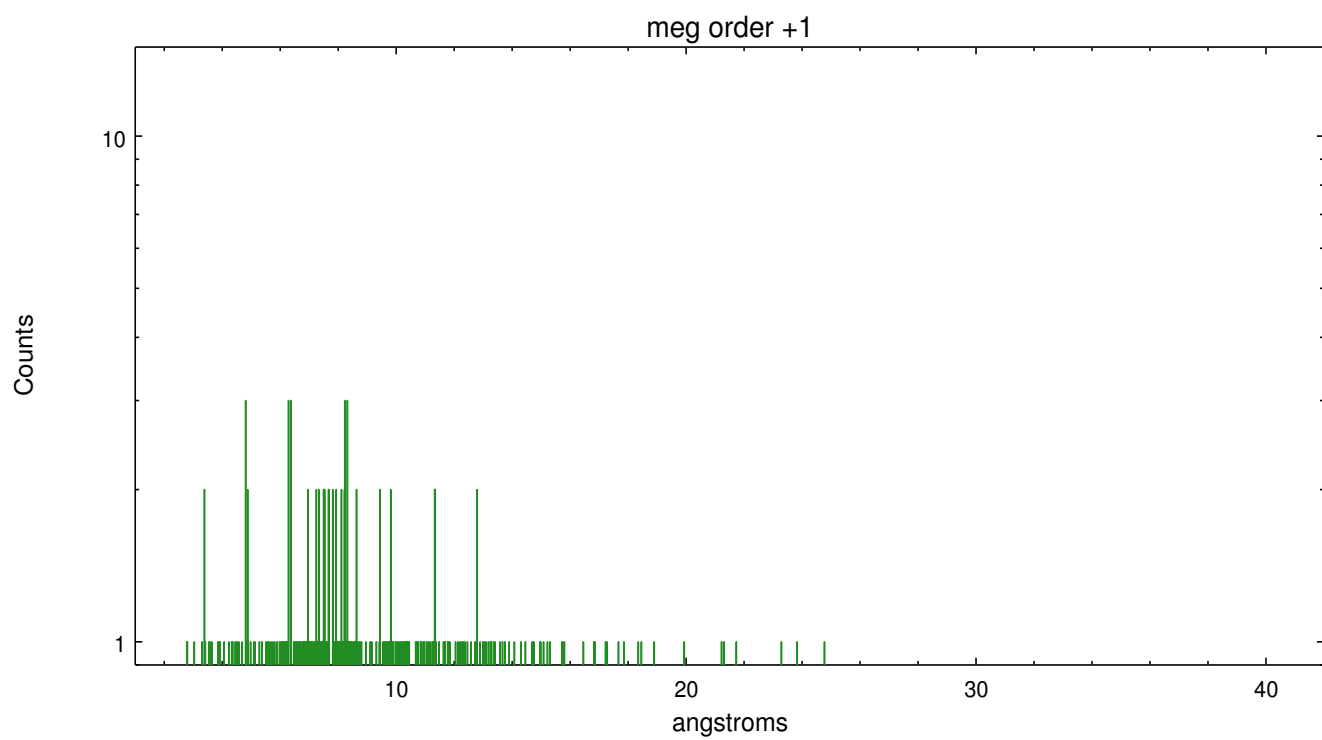
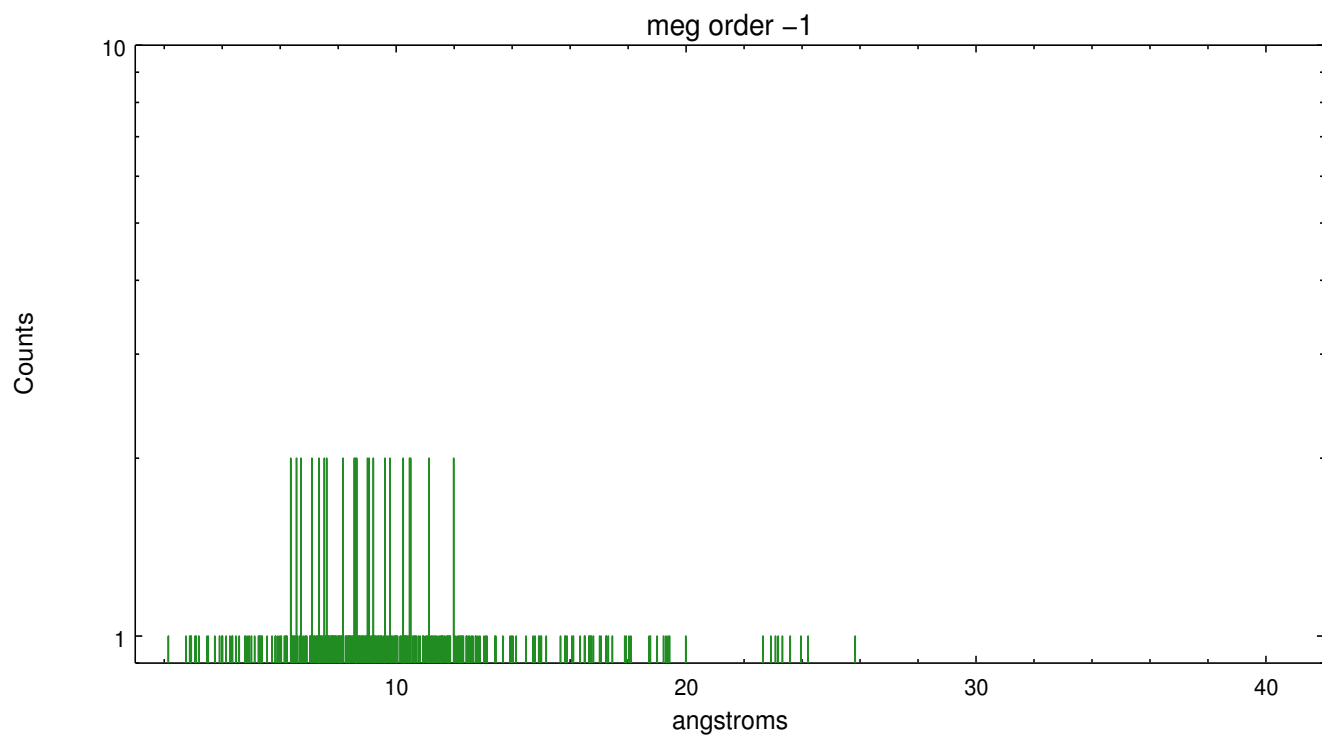
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	41	11	395	408	333	14	27





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2012.08.29
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	18.713

A.2 Comments

Phase constraint met.

===

This is an interleaved-mode observation. The primary exposure (e1) is shorter than the secondary exposure (e2). Therefore the longer exposure was used to determine the zeroth order position, then that position was applied to both exposures.

===

Zeroth order in the e2 exposure was 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=4088.61, y=4127.42) into the *src1a.fits file tables for both e1 and e2 exposures. These corrected coordinates were determined using a software tool developed by CXC called findzero, which is expected to be released in CIAO as tg_findzo (currently in ISIS as findzo). The tool calculates the point of intersection of the readout streak and the meg 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 files for both e1 and e2 exposures, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect on the data.