

# V&V Reference Report

## L2 ASCDS Version : 8.5.1.1

Observation 4820 - L2 Version 4  
Chandra X-Ray Center

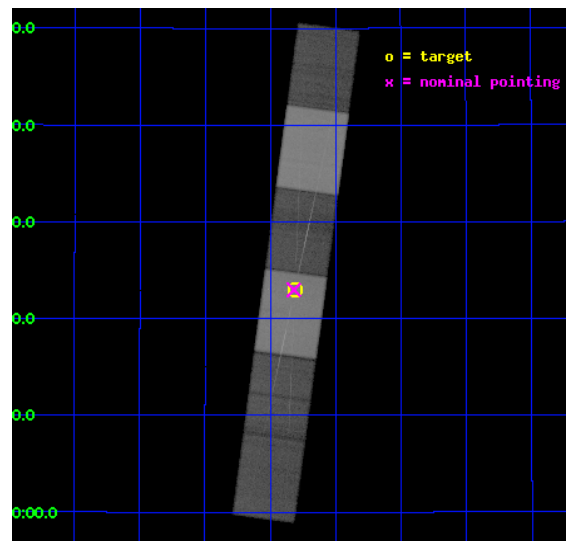
L2 Processing Date : Mar 29 2013

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# 1 Front

seq_num	700902	Sequence number
obs_id	4820	Observation id
title	A Chandra HETGS & HST view of the Warm and Lukewarm absorbers in IRAS 13349+2438	Proposal title
observer	Prof. Julia Lee	Principal investigator
object	IRAS 13349+2438	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	204.327917	Observer's specified target RA [deg]
dec_targ	24.384167	Observer's specified target Dec [deg]
ra_nom	204.32993922541	Nominal RA [deg]
dec_nom	24.38293282869	Nominal Dec [deg]
roll_nom	97.651279761579	Nominal Roll [deg]
revision	4	Processing version of data
ontime	137447.5	Sum of GTIs [s]
livetime	135227.60365834	Livetime [s]
ontime4	137447.5	Sum of GTIs [s]
ontime5	137447.5	Sum of GTIs [s]
ontime6	137442.41800958	Sum of GTIs [s]
ontime7	137447.5	Sum of GTIs [s]
ontime8	137444.95899984	Sum of GTIs [s]
ontime9	137447.5	Sum of GTIs [s]
l2events	1136295	Number of level 2 events

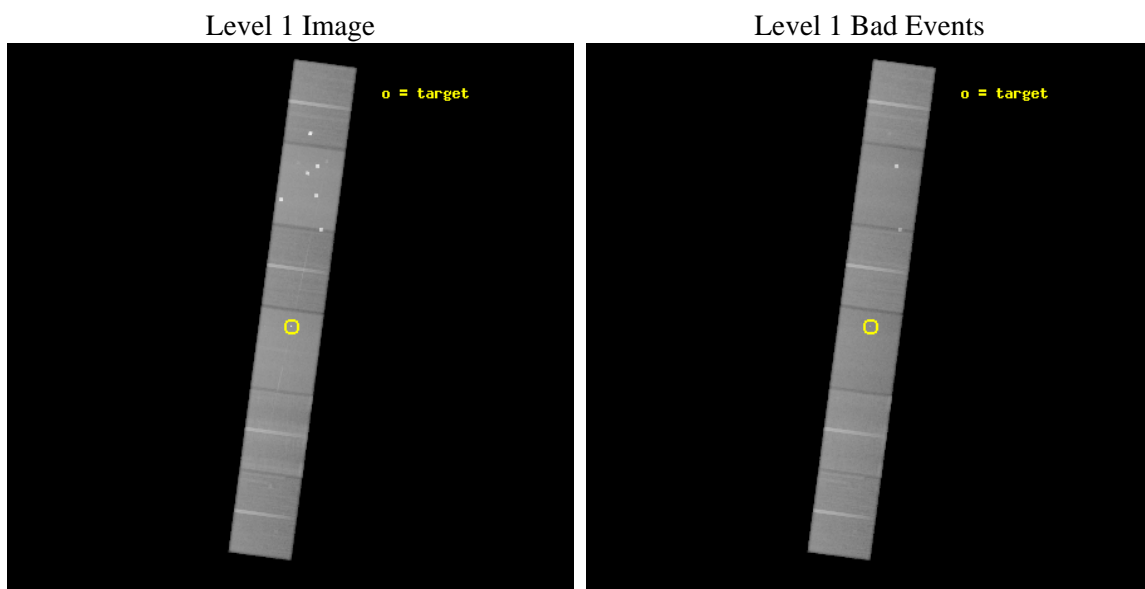




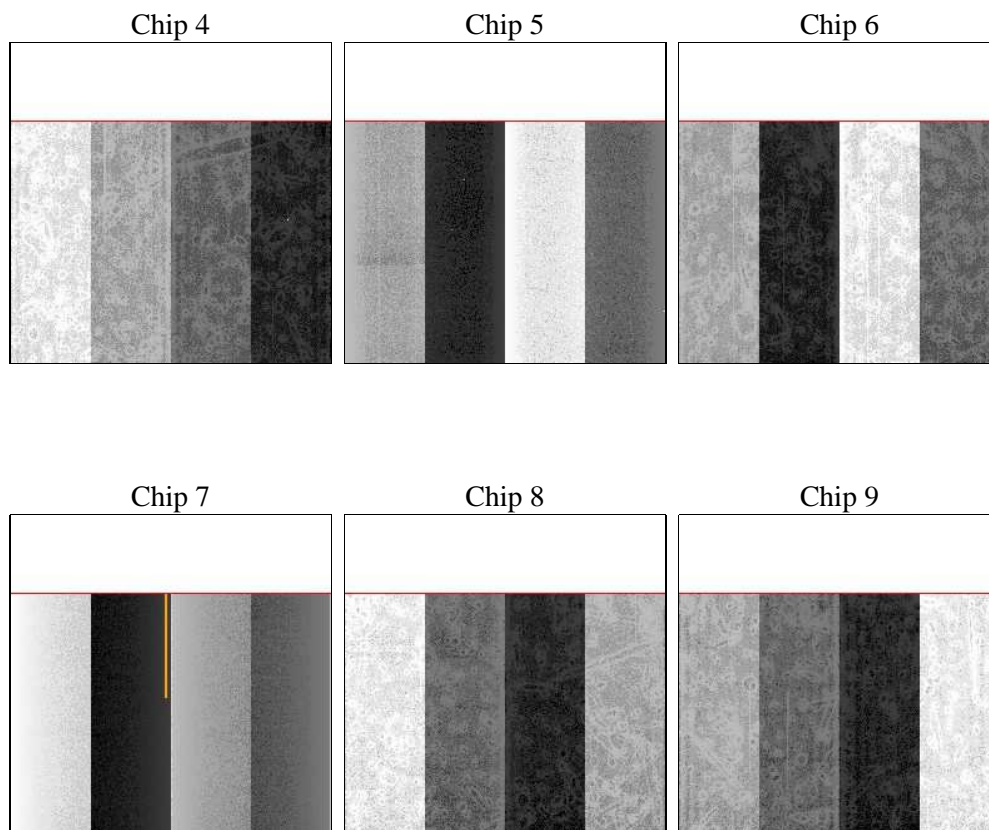
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	1	Obi number	sched_exp_time	137286.237000	[s] Scheduled observation exposure time
ascdsver	8.5.1.1	Processing system revision	ontime	137447.5	Sum of GTIs [s]
caldsver	4.5.6	&#160	ontime4	137447.5	Sum of GTIs [s]
date	2013-03-29T11:52:25	Date and time of file creation	ontime5	137447.5	Sum of GTIs [s]
revision	4	Processing version of data	ontime6	137442.41800958	Sum of GTIs [s]
			ontime7	137447.5	Sum of GTIs [s]
			ontime8	137444.95899984	Sum of GTIs [s]
			ontime9	137447.5	Sum of GTIs [s]
			l1events	5258274	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	821435	1170869	716599	956319	894916	698136	grade 0 events	87306	136286	35010	38357	59375	34522
rejected events	683764	585510	629910	555267	705756	612436		10%	11%	4%	4%	6%	4%
rejected %	83%	50%	87%	58%	78%	87%	grade 1 events	647	2358	285	901	511	346
								0%	0%	0%	0%	0%	0%
							grade 2 events	18493	146522	17602	80329	40341	16582
								2%	12%	2%	8%	4%	2%
							grade 3 events	9324	24986	8902	36692	20679	9193
								1%	2%	1%	3%	2%	1%
							grade 4 events	8840	22766	8739	36695	19263	8803
								1%	1%	1%	3%	2%	1%
							grade 5 events	30189	87468	31321	89853	41672	33747
								3%	7%	4%	9%	4%	4%
							grade 6 events	14017	256498	16668	210344	49917	16835
								1%	21%	2%	21%	5%	2%
							grade 7 events	652619	493985	598072	463148	663158	578108
								79%	42%	83%	48%	74%	82%

## 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	HETG	HETG	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	204.348523	204.3299392254093	Subarray requested	CUSTOM	CUSTOM
[deg] Pointing Dec	24.361588	24.38293282868972	Subarray start row	1	1
[deg] Pointing Roll	97.486986	97.65127976157933	Subarray row count	774	774
[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	2.5
[mm] SIM translation stage pos	-187.132523	-187.1254020033014			
[mm] SIM translation stage offset	-3	-3.007120579706367			
[s] Observation start time (MET)	193820515.184000	193819326.82012			
Observation start date	2004-02-22T07:00:51	2004-02-22T06:42:06			
[s] Observation end time (MET)	193957801.184000	193958115.92619			
Observation end date	2004-02-23T21:08:57	2004-02-23T21:15:15			
Read mode	TIMED	TIMED			

## 2.3 Aspect

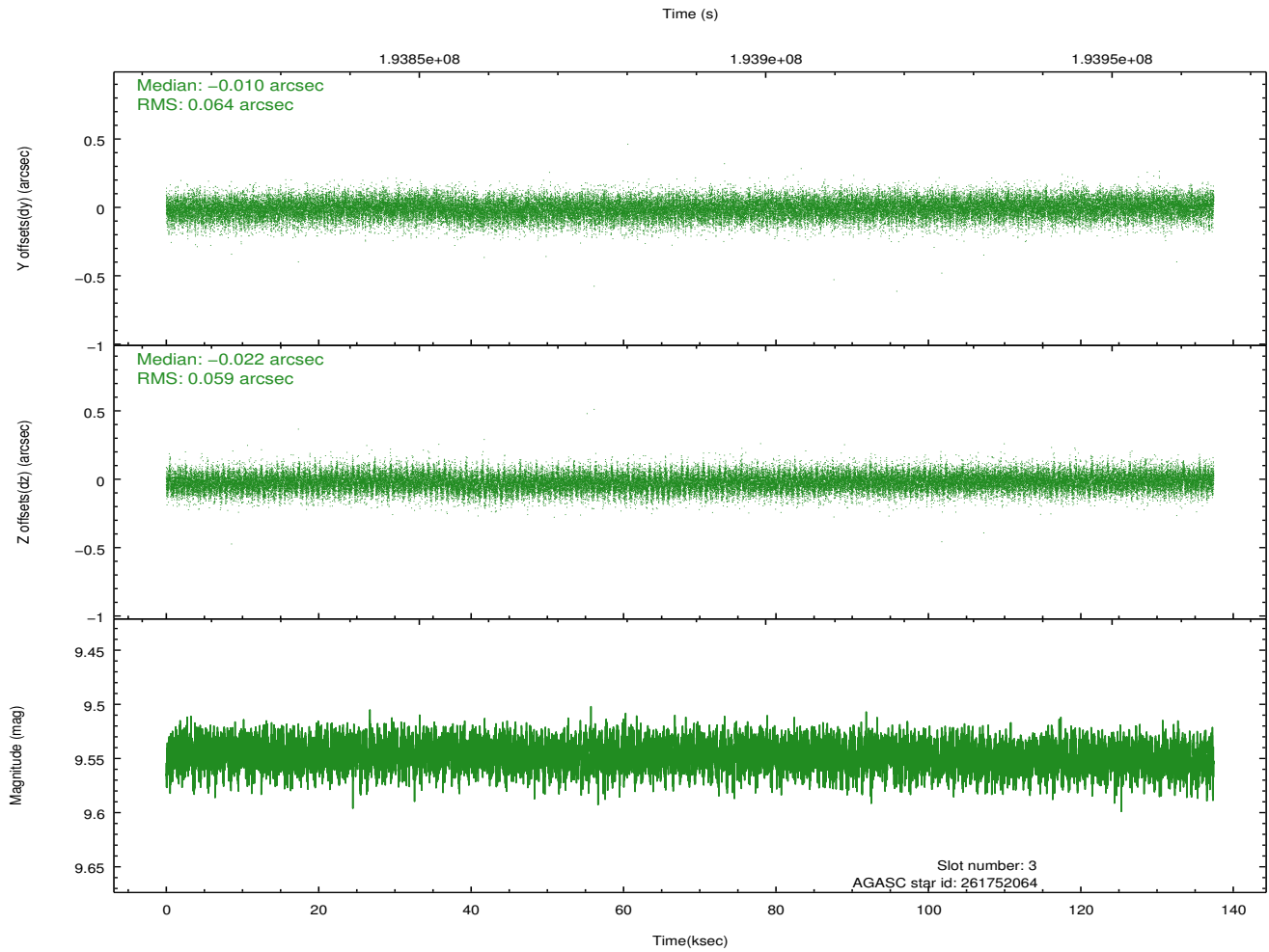


Slot Statistics

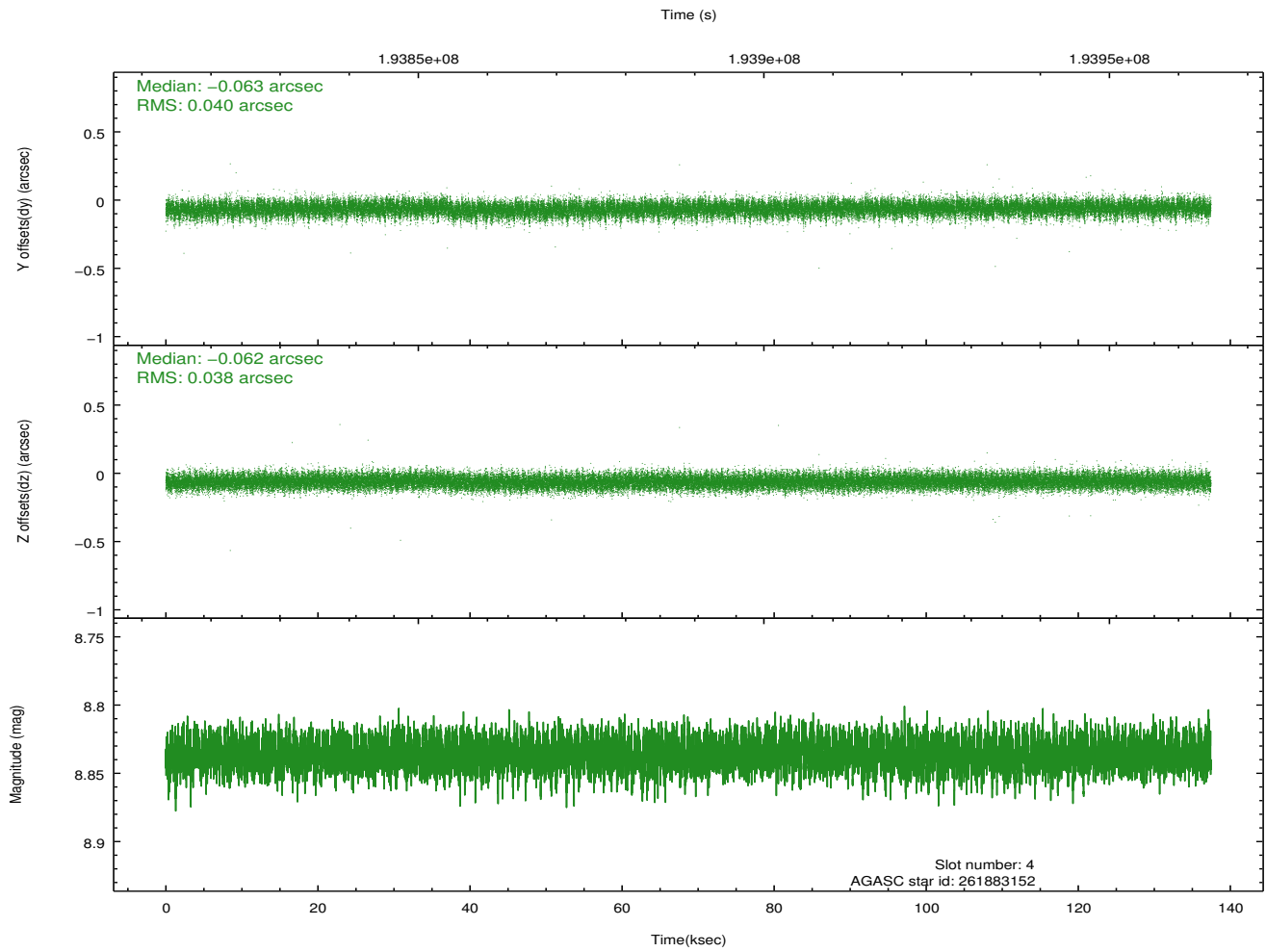
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	33523	-0.064	-0.050	0.013	0.021	0.000000	0.000000	-759.81	-1792.56
1	FID	ACIS-S-4	7.20	33523	0.095	0.044	0.011	0.018	0.000000	0.000000	2153.67	116.12
2	FID	ACIS-S-5	7.23	33521	-0.060	0.013	0.011	0.020	0.000000	0.000000	-1812.78	109.64
3	GUIDE	261752064	9.55	67008	-0.010	-0.022	0.092	0.151	203.623563	24.917606	2299.12	2085.55
4	GUIDE	261883152	8.84	67030	-0.063	-0.062	0.058	0.095	203.788287	24.806639	1830.88	1606.30
5	GUIDE	261883880	7.97	67043	0.010	-0.062	0.059	0.097	204.025503	23.933947	-1386.66	1254.26
6	GUIDE	261884240	8.08	67045	-0.011	0.098	0.055	0.090	204.721443	24.250625	-553.70	-1161.55
7	GUIDE	261885848	7.98	67040	0.071	0.049	0.057	0.092	204.737886	24.131748	-985.12	-1160.72

## 2.4 Star Slots

### 2.4.1 Slot 3

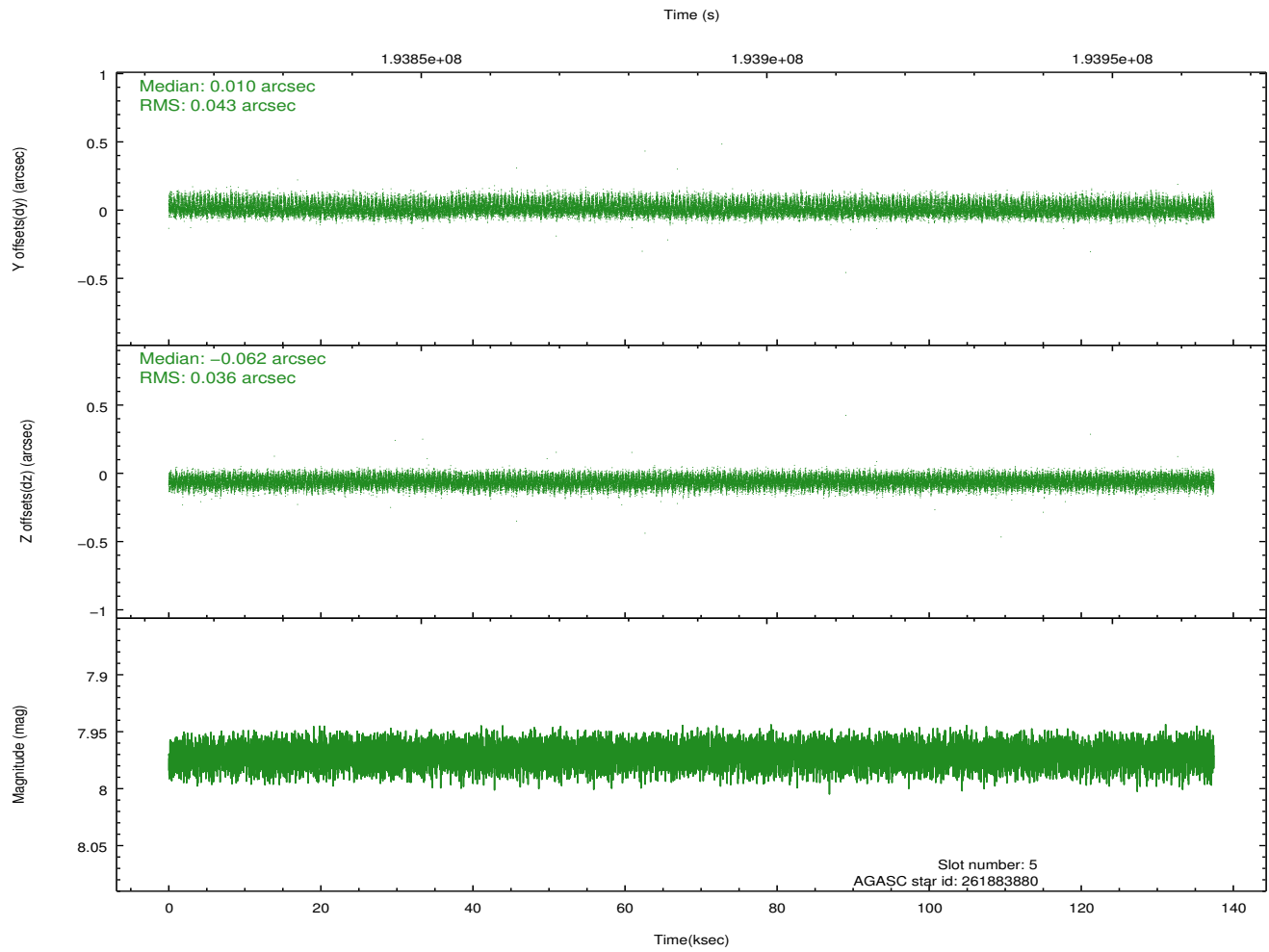


## 2.4.2 Slot 4

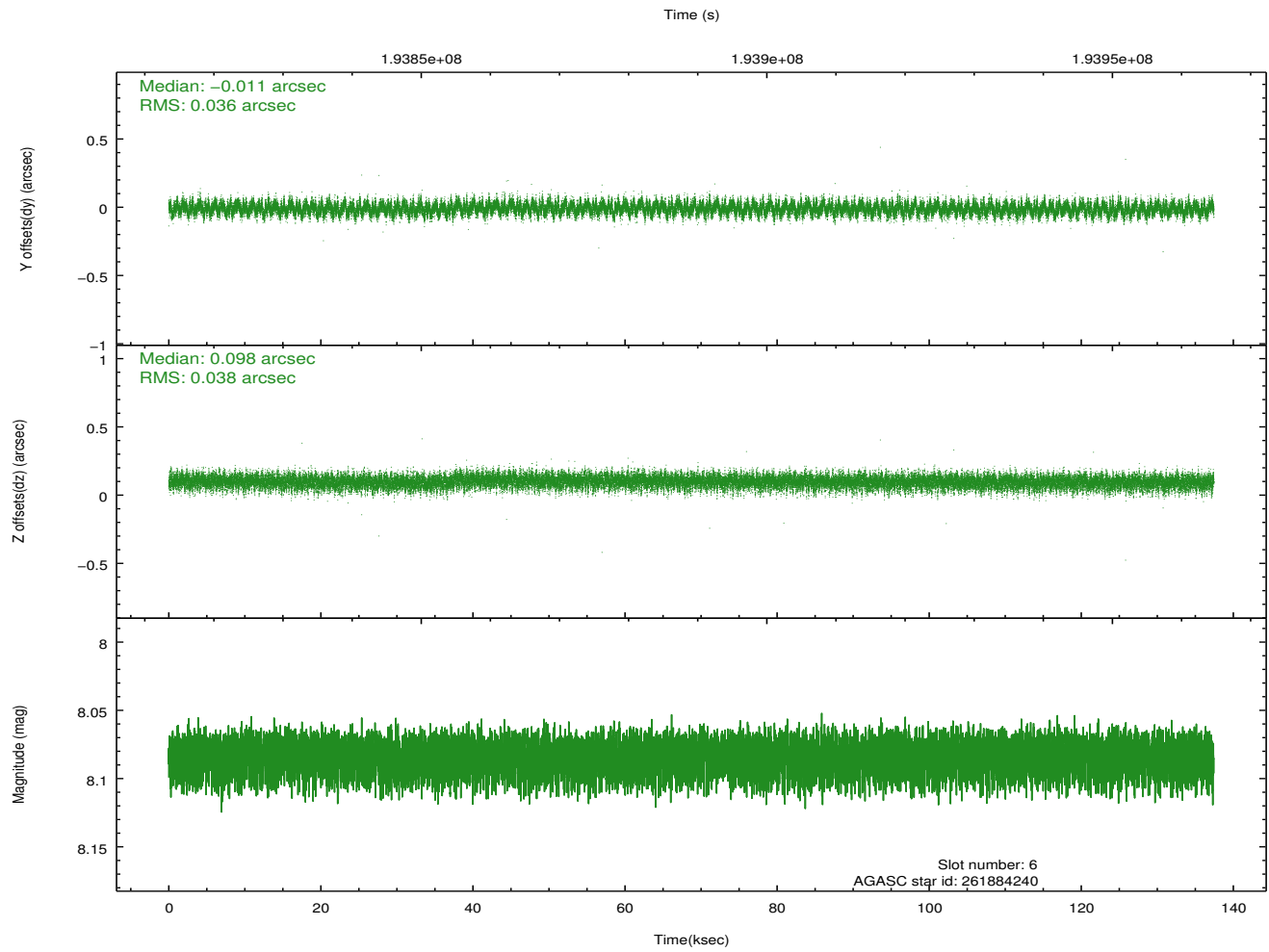




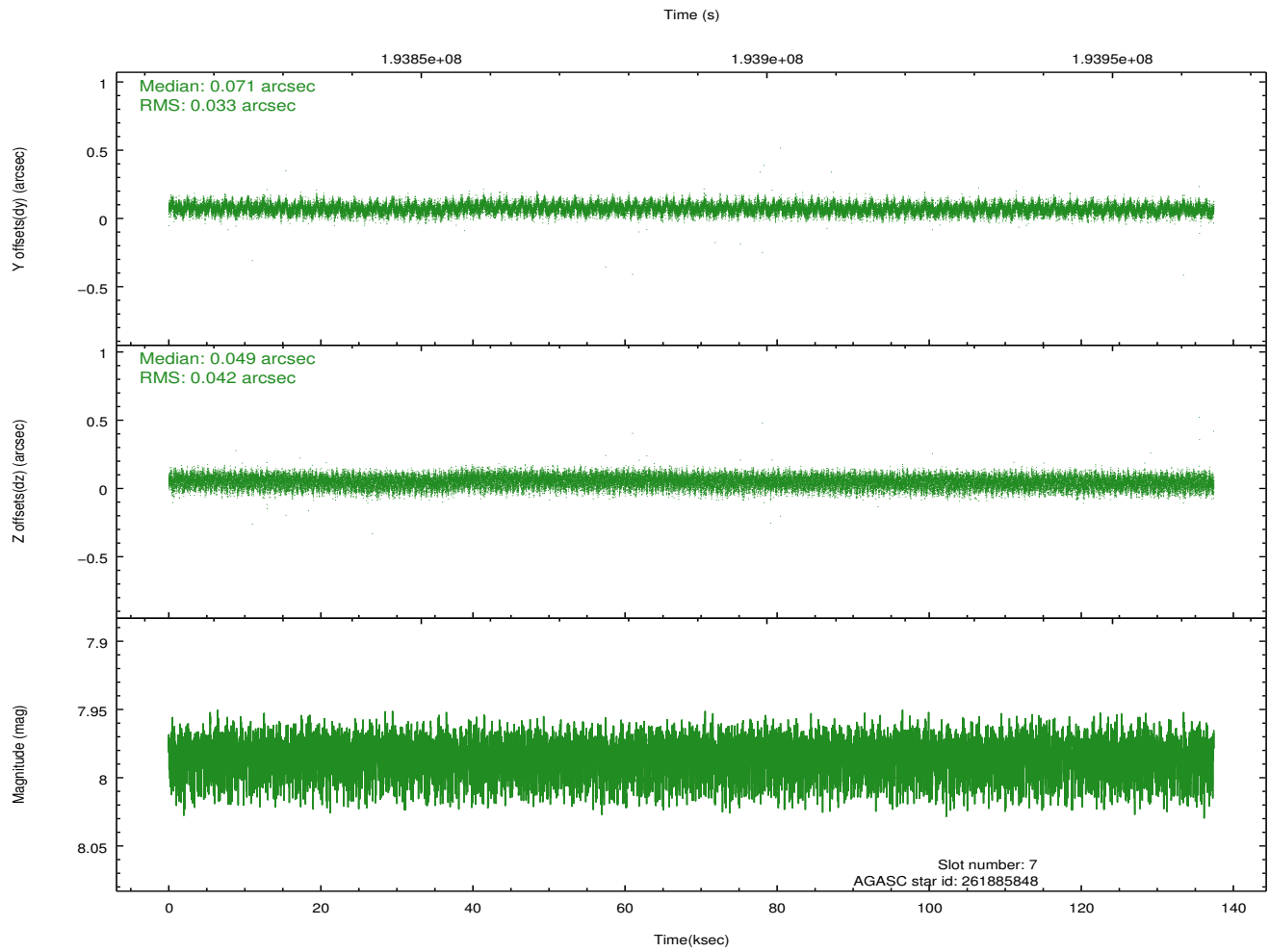
### 2.4.3 Slot 5



## 2.4.4 Slot 6

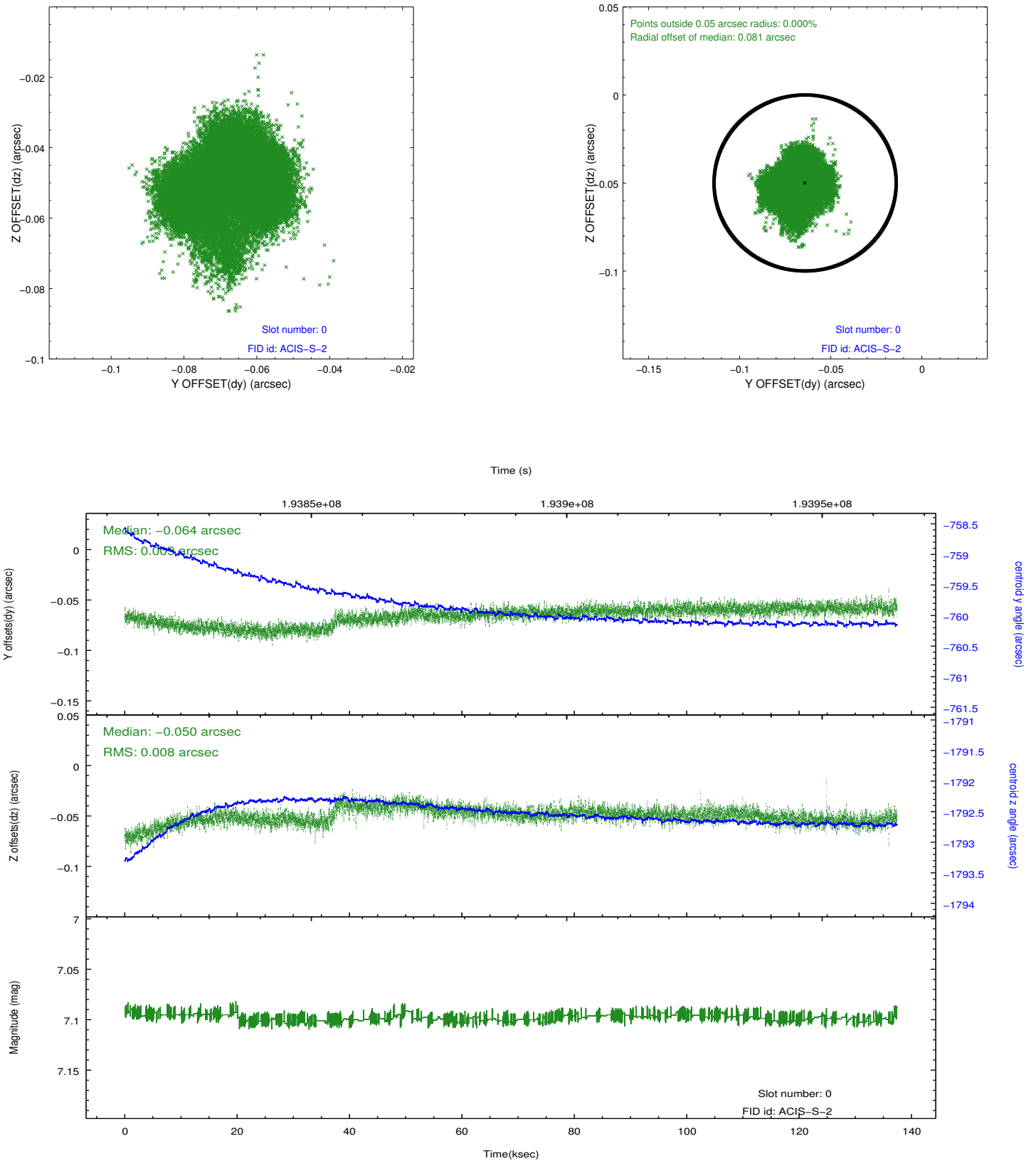


### 2.4.5 Slot 7

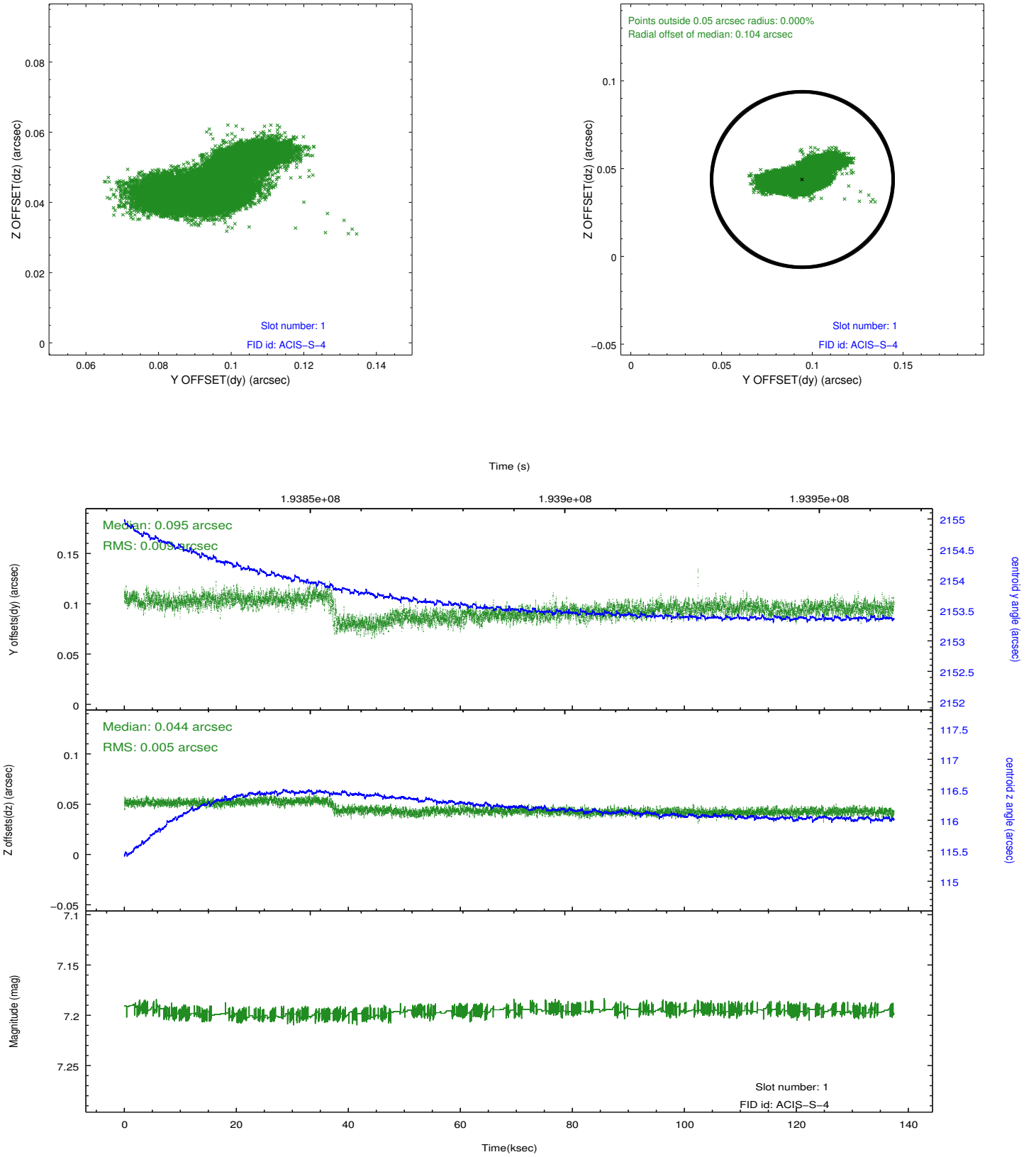


## 2.5 FID Slots

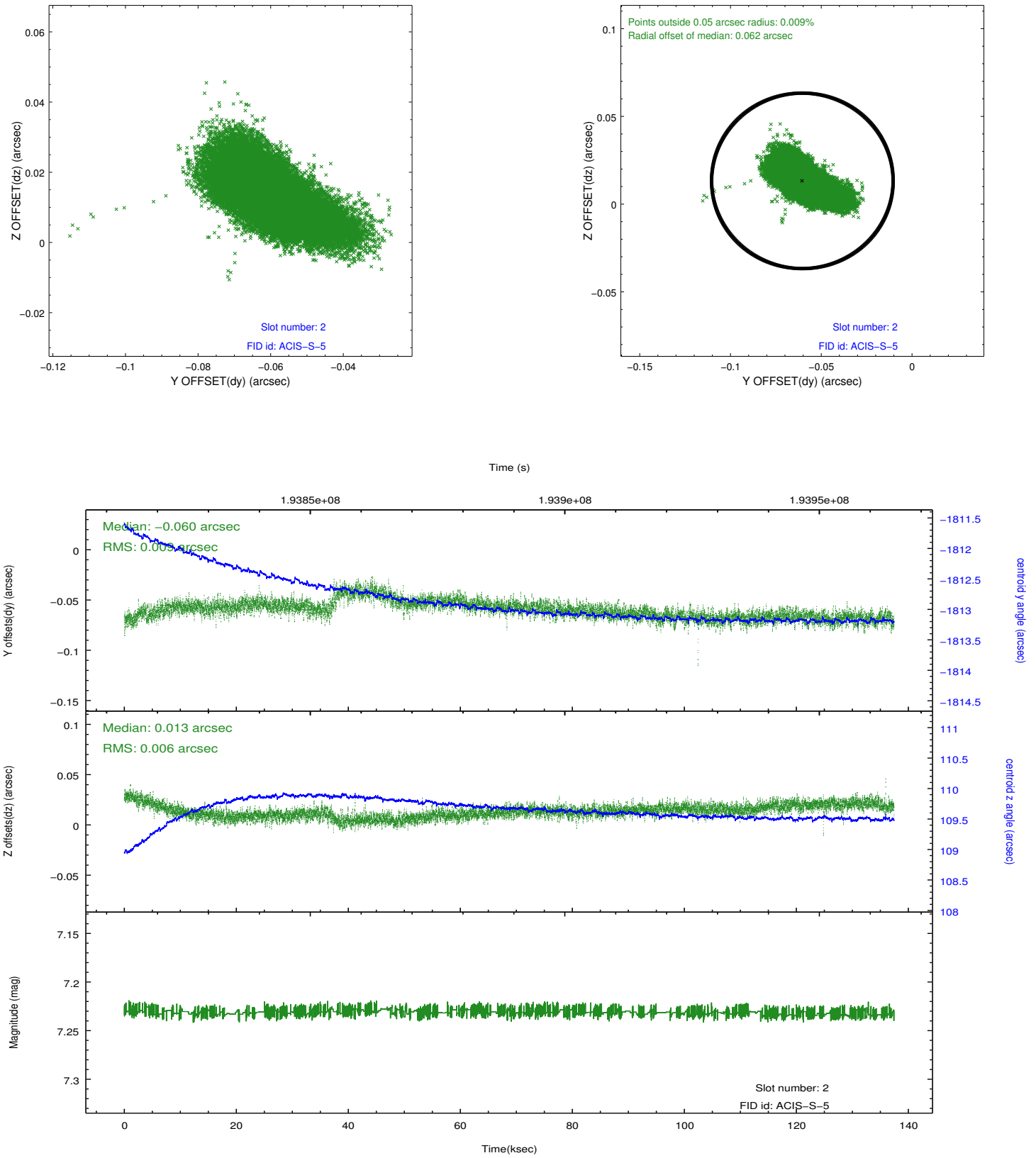
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

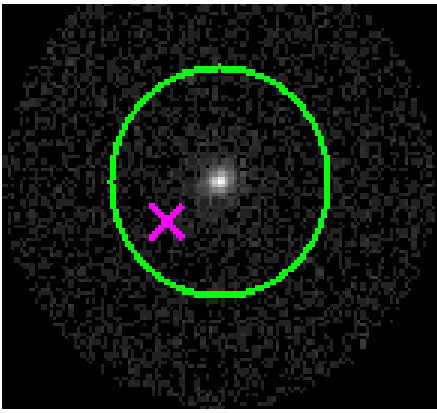


# 3 Gratings

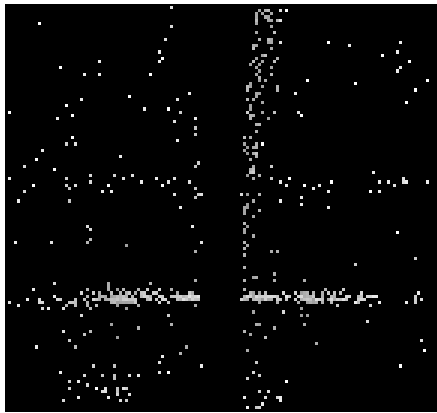
## 3.1 HEG Arm



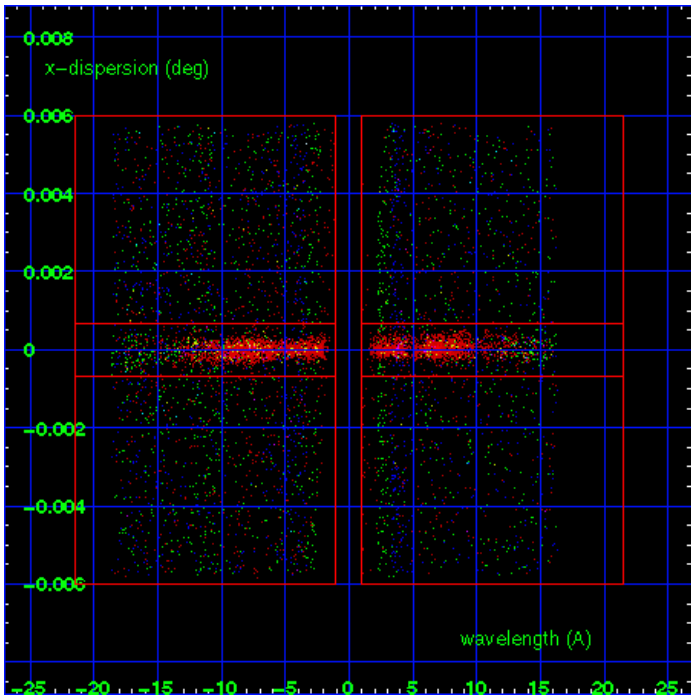
HEG Order Sort 123



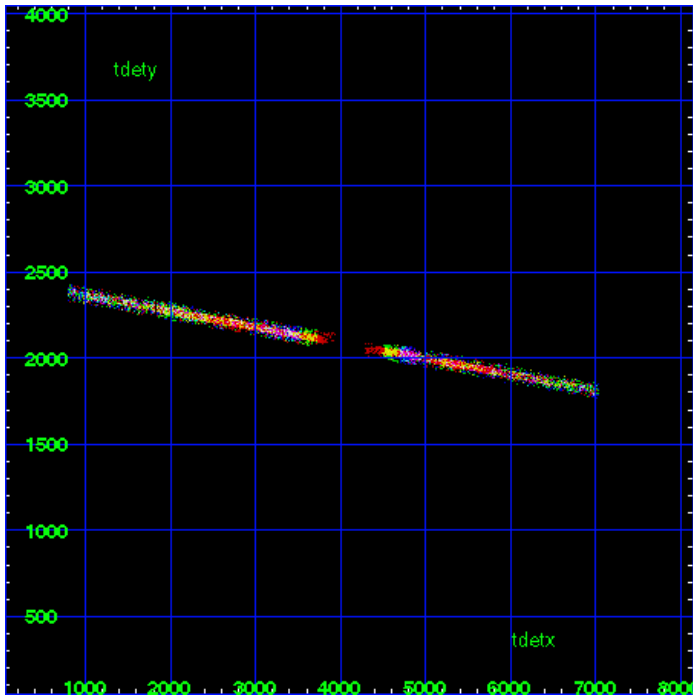
HEG Zero Order



HEG Order Sort ALL

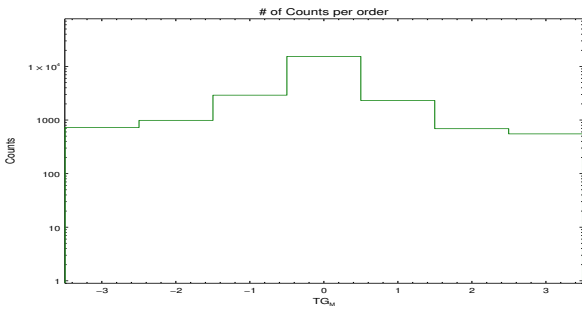


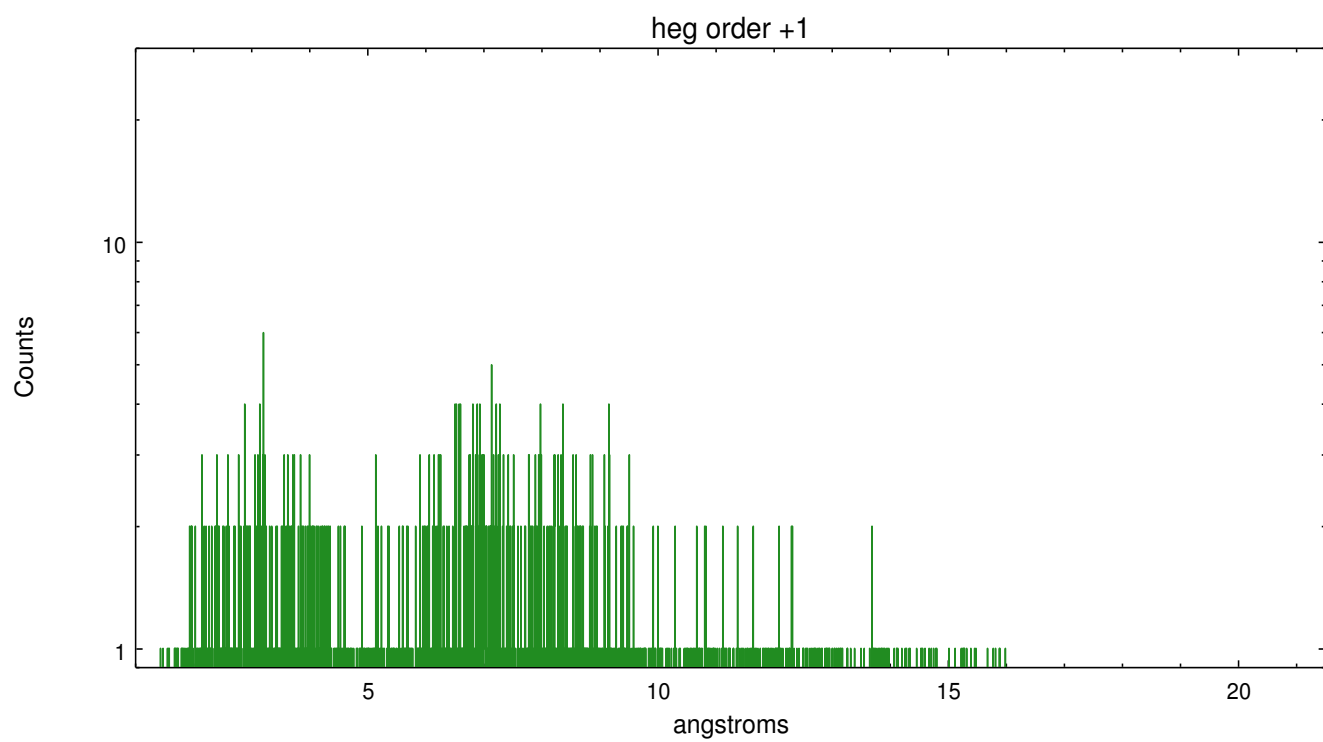
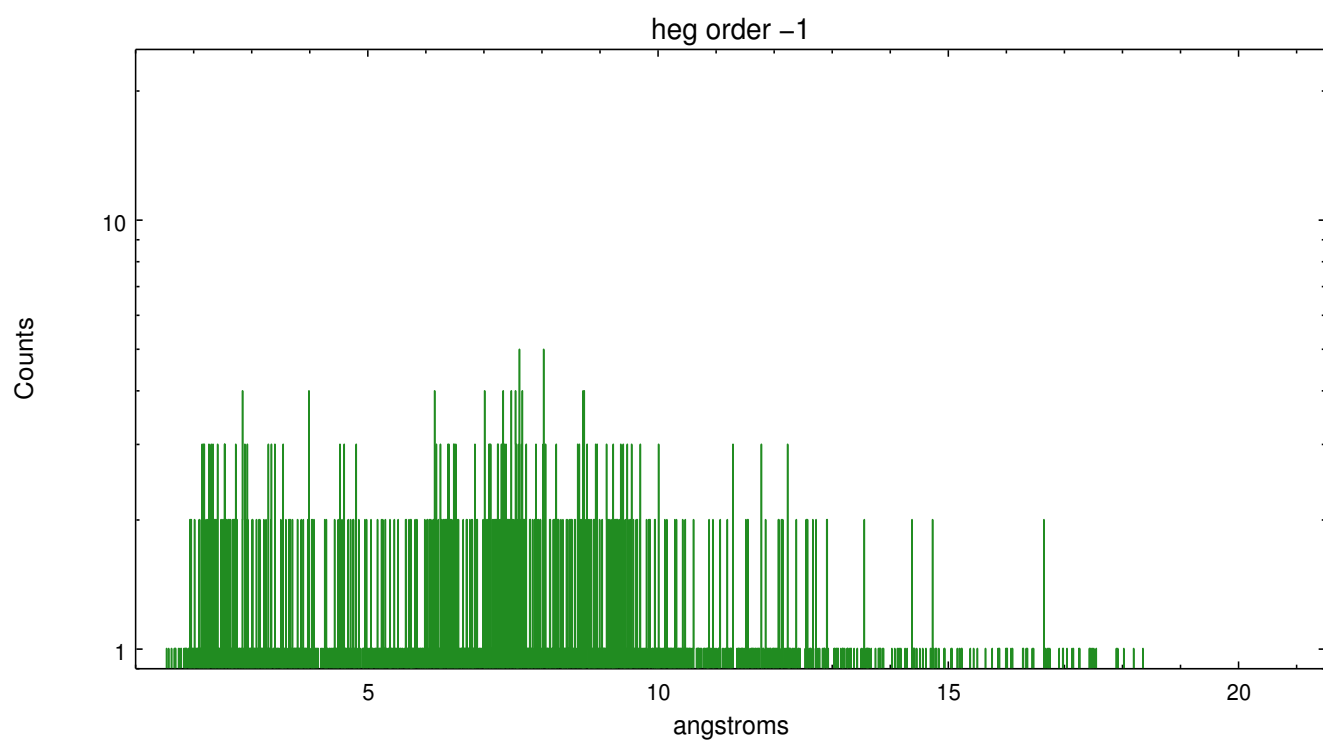
Spot Image HEG



Full Detector HEG

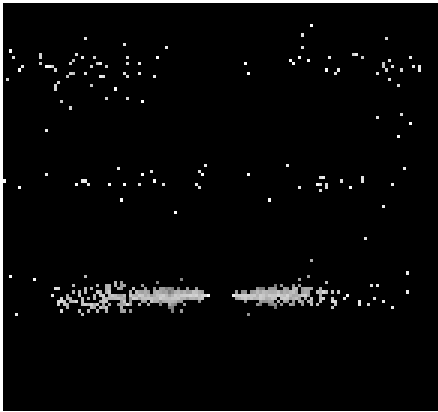
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	727	988	2923	15491	2327	692	553



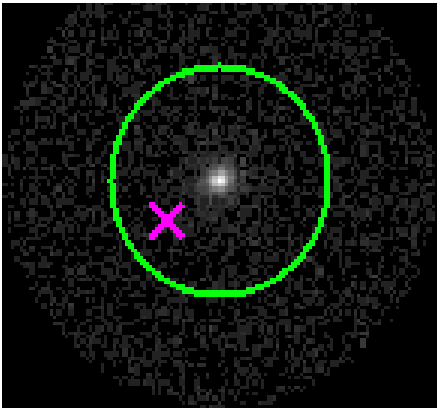




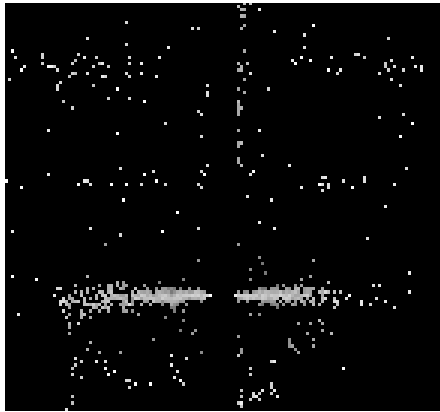
3.2 MEG Arm



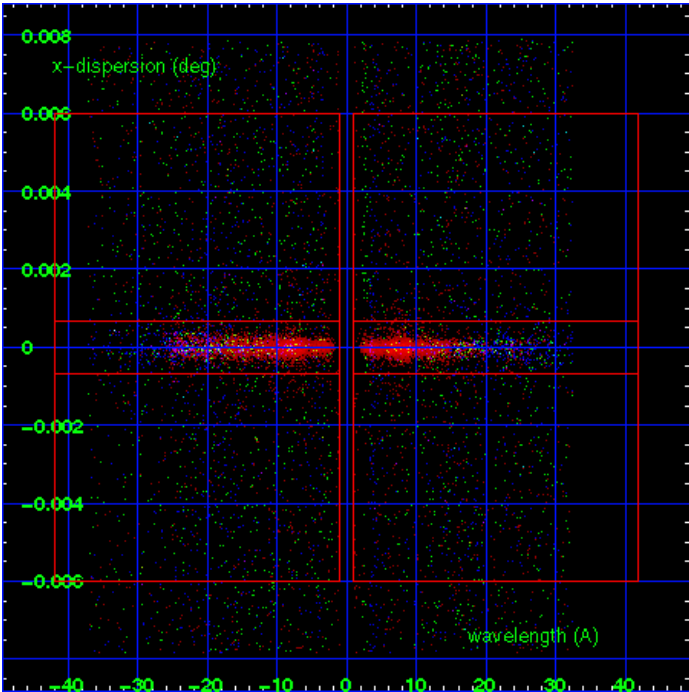
MEG Order Sort 123



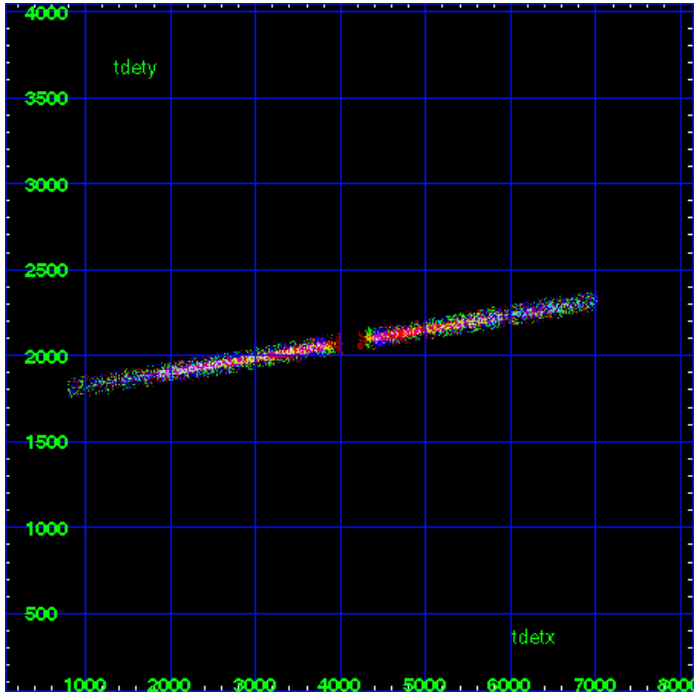
MEG Zero Order



MEG Order Sort ALL

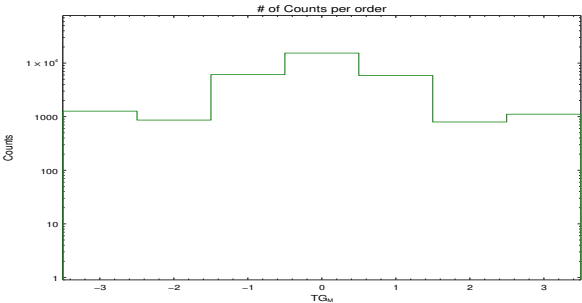


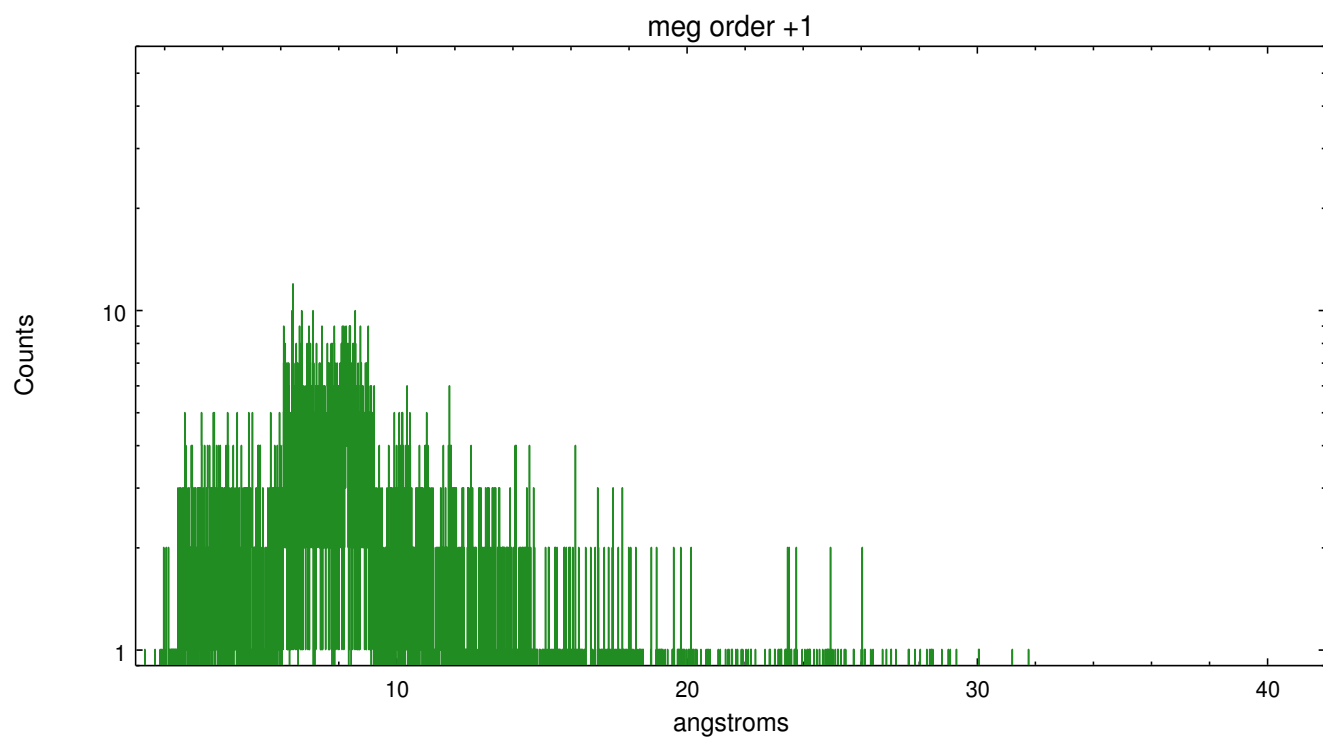
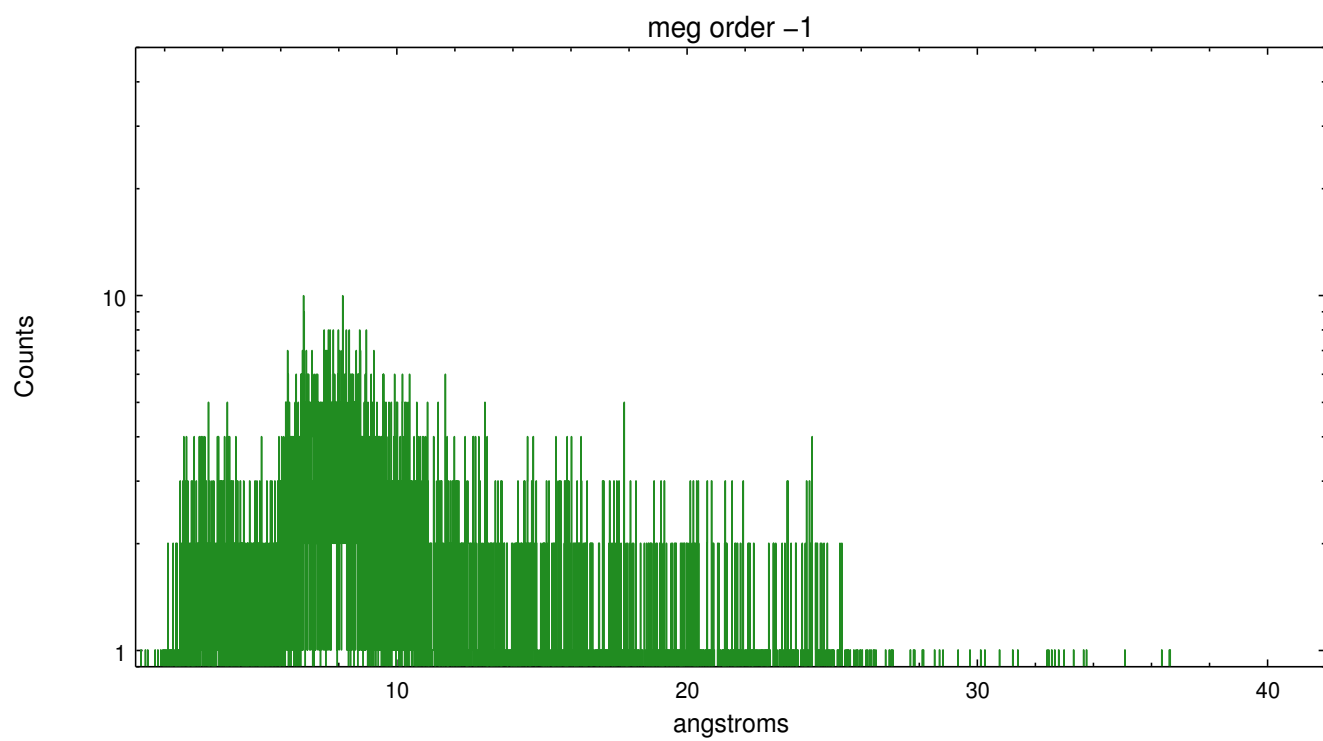
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1272	866	6132	15491	5907	798	1116





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2013.04.08
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	137.447

## A.2 Comments

A spatial region of the original bias map for CCD = 4 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small ( $\sim 20$  eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 4 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:  
(204.25133,24.77778), (204.25191,24.77386), (204.32908,24.78333), (204.32849,24.78725)