

# V&V Reference Report

## L2 ASCDS Version : 7.6.10

Observation 49896 - L2 Version 3  
Chandra X-Ray Center

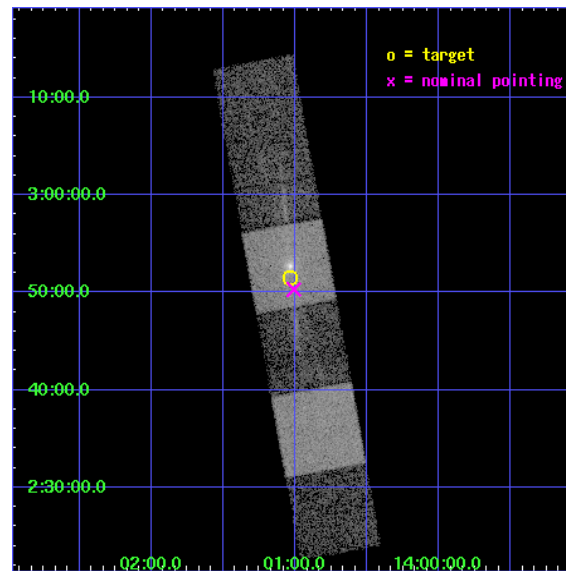
L2 Processing Date : Sep 24 2007

## Contents

<b>1</b>	<b>Front</b>	<b>2</b>
<b>2</b>	<b>OBI</b>	<b>3</b>
2.1	OBI . . . . .	3
2.1.1	Images . . . . .	3
2.1.2	Bias . . . . .	3
2.1.3	Parameters . . . . .	4
2.1.4	Events . . . . .	4
2.2	Compared Parameters . . . . .	5
2.3	Aspect . . . . .	6
2.4	Star Slots . . . . .	9
2.4.1	Slot 3 . . . . .	9
2.4.2	Slot 4 . . . . .	10
2.4.3	Slot 5 . . . . .	11
2.4.4	Slot 6 . . . . .	12
2.4.5	Slot 7 . . . . .	13
2.5	FID Slots . . . . .	14
2.5.1	Slot 0 . . . . .	14
2.5.2	Slot 1 . . . . .	15
2.5.3	Slot 2 . . . . .	16
<b>3</b>	<b>Gratings</b>	<b>17</b>
3.1	HEG Arm . . . . .	17
3.2	MEG Arm . . . . .	19
<b>A</b>	<b>Summary</b>	<b>21</b>
A.1	Status . . . . .	21
A.2	Comments . . . . .	21

# 1 Front

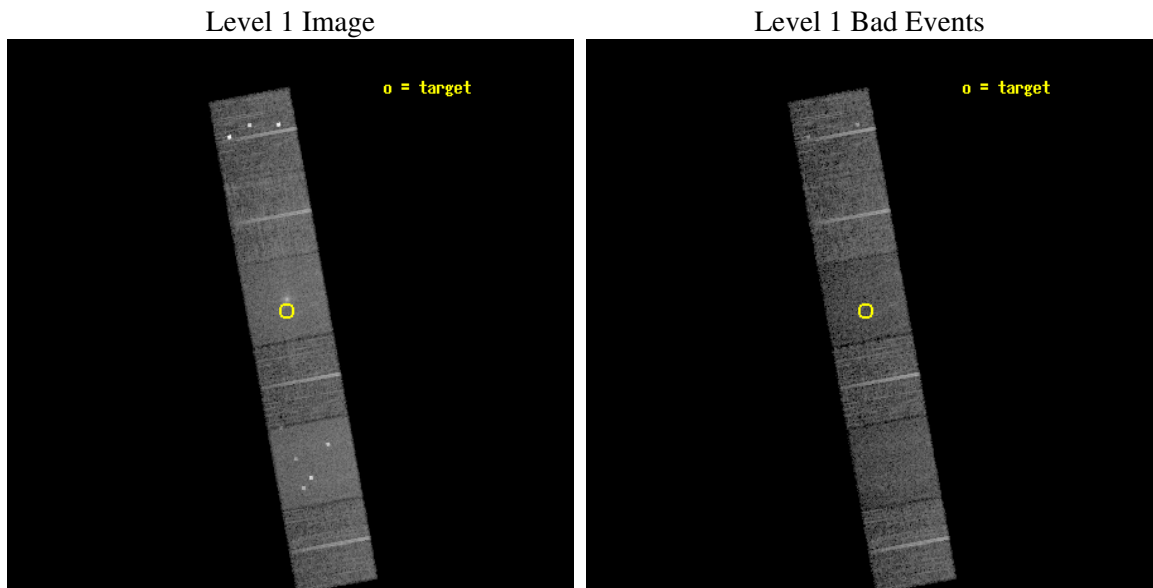
seq_num	800019
obs_id	49896
title	HIGH RESOLUTION X-RAY SPECTRA OF CLUSTER COOLING FLOWS
observer	Prof. Claude Canizares
object	ABELL 1835
dtcycle	0
cycle	P
ra_targ	210.257917
dec_targ	2.858889
ra_nom	210.25236237067
dec_nom	2.8386223379598
roll_nom	259.6358531986
revision	3
ontime	9785.5590488762
livetime	9661.648408043
ontime4	9788.8000091165
ontime5	9785.5590488762
ontime6	9785.5591885
ontime7	9785.5590488762
ontime8	9785.5590488762
ontime9	9788.8000091165
l2events	94002



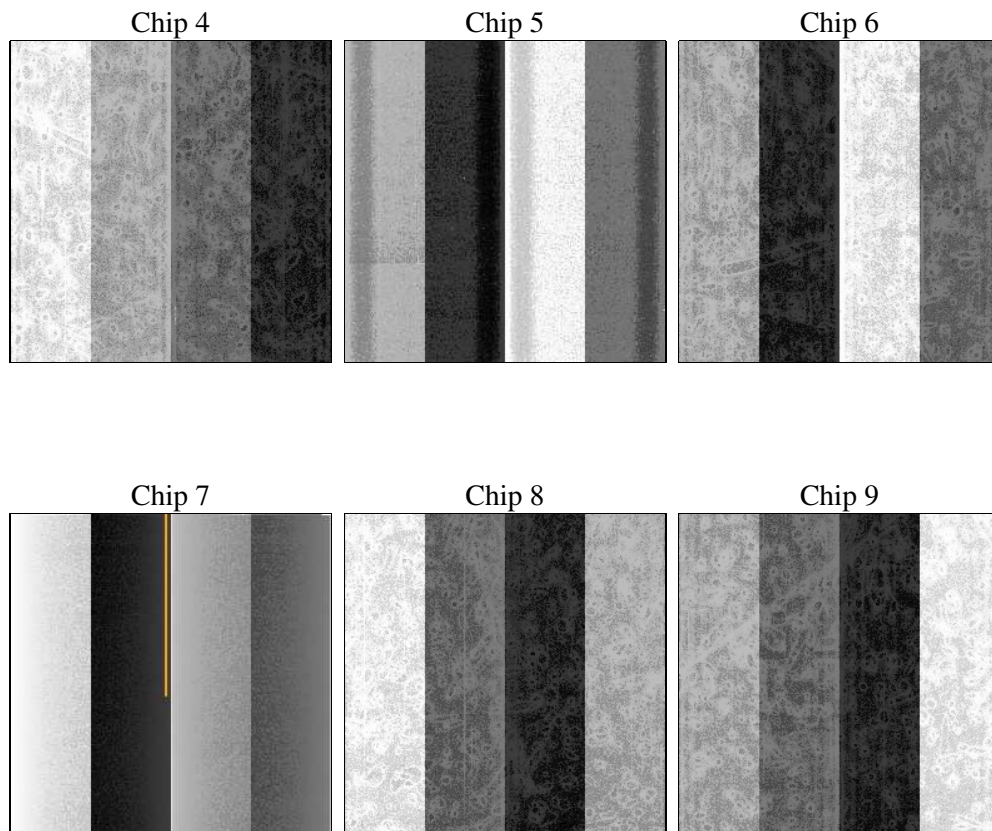
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0
ascdsver	7.6.10
caldbver	3.4.0
date	2007-06-05T08:07:11
revision	2

sched_exp_time	9661.193000
ontime	9785.5590488762
ontime4	9788.8000091165
ontime5	9785.5590488762
ontime6	9785.5591885
ontime7	9785.5590488762
ontime8	9785.5590488762
ontime9	9788.8000091165
l1events	456181

### 2.1.4 Events

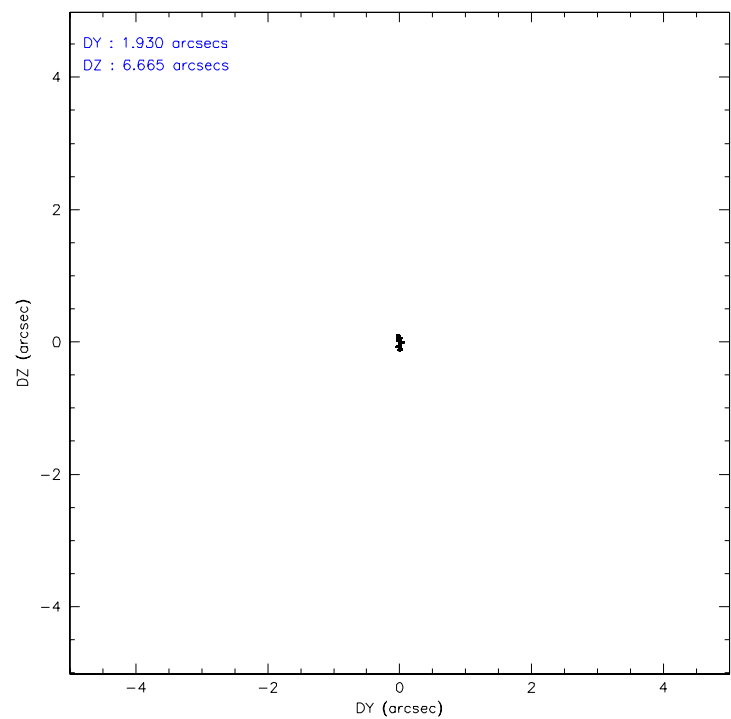
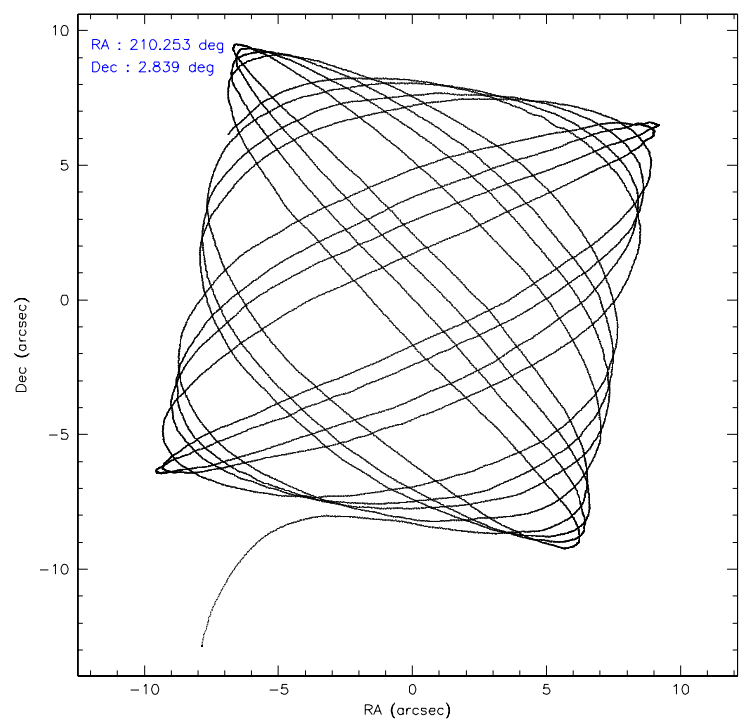
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	67515	87572	63592	79664	79401	78437
rejected events	60709	46727	55820	45316	64180	57357
rejected %	89%	53%	87%	56%	80%	73%

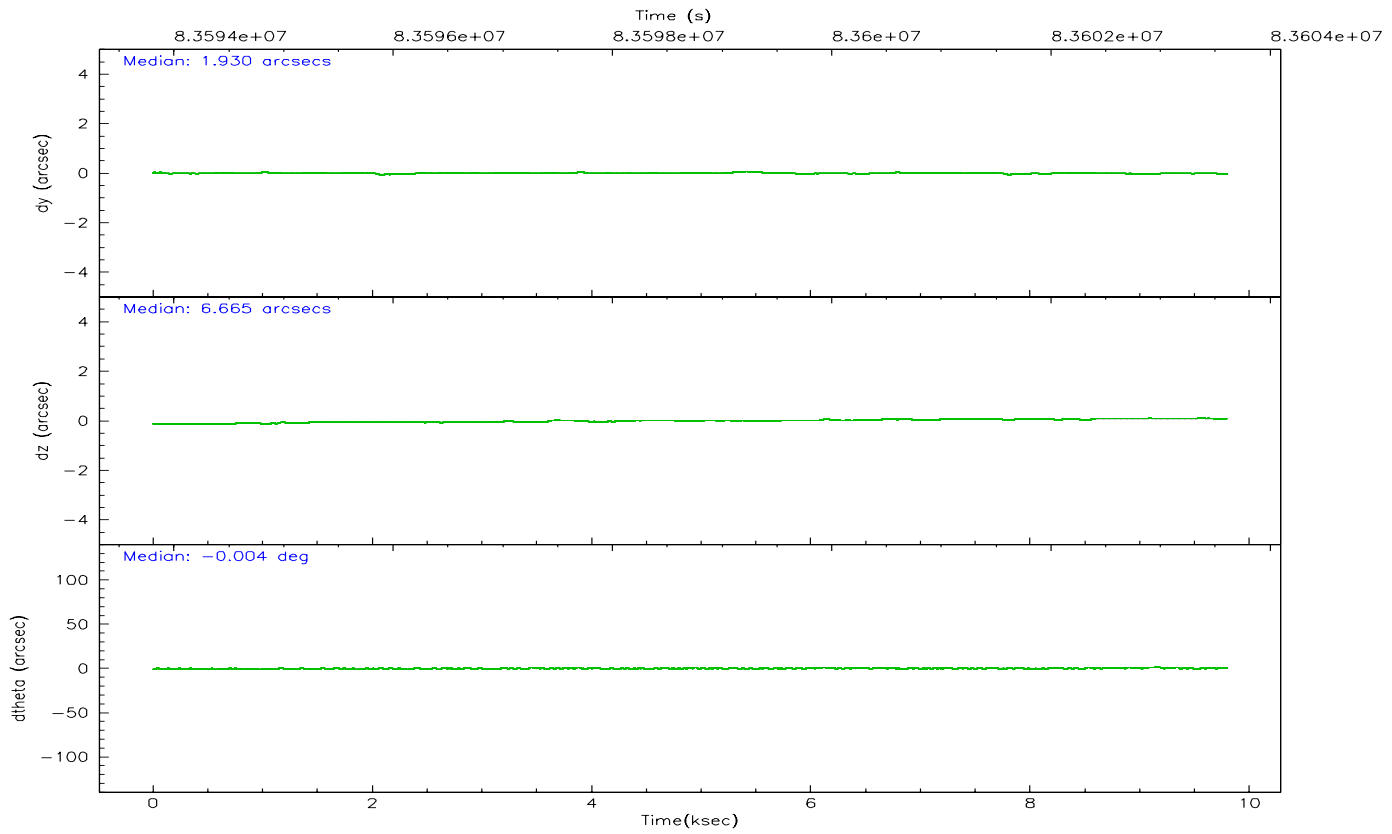
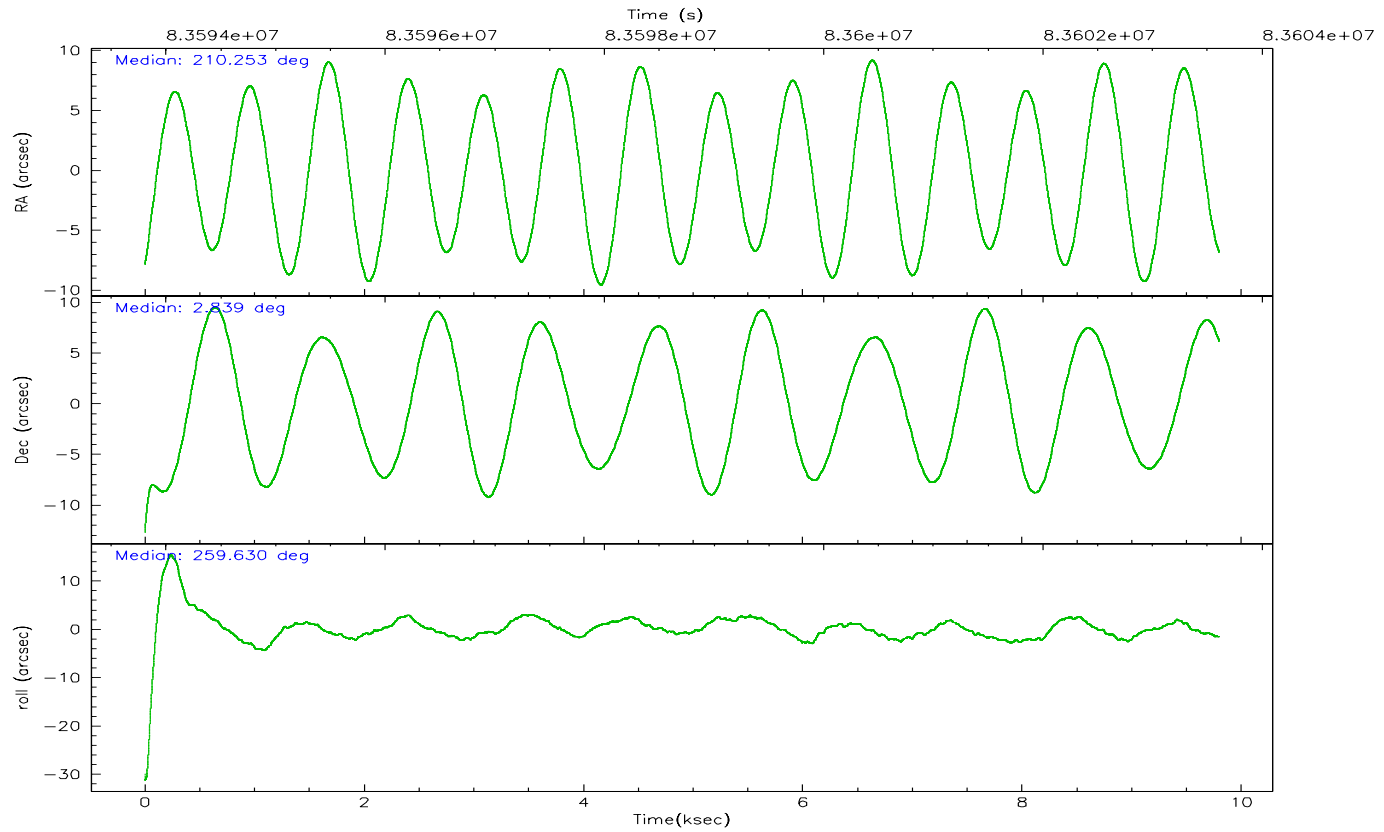
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	2817	8605	3934	3986	5622	5636
	4%	9%	6%	5%	7%	7%
grade 1 events	36	169	20	89	51	427
	0%	0%	0%	0%	0%	0%
grade 2 events	1724	11247	1478	7288	3360	10845
	2%	12%	2%	9%	4%	13%
grade 3 events	667	1729	753	3433	1644	804
	0%	1%	1%	4%	2%	1%
grade 4 events	713	1616	694	3343	1488	761
	1%	1%	1%	4%	1%	0%
grade 5 events	2076	6526	2528	7418	3141	2892
	3%	7%	3%	9%	3%	3%
grade 6 events	1202	19634	1233	17782	3849	3944
	1%	22%	1%	22%	4%	5%
grade 7 events	58280	38046	52952	36325	60246	53128
	86%	43%	83%	45%	75%	67%

## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	6	6
Detector	ACIS-456789	ACIS-456789	Obspar file type	PREDICTED	ACTUAL
Grating	HETG	HETG	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
Pointing RA	210.242979	210.2523623706709	Subarray requested	NONE	NONE
Pointing Dec	2.864372	2.838622337959837	Alternating exposures requested	N	N
Pointing Roll	259.479740	259.6358531986005	Primary exposure time	3.200000	3.2
SIM focus pos (mm)	-0.684267	-0.6828225247311905			
SIM defocus (mm)	0	0.001444936568705701			
SIM translation stage pos (mm)	-190.132523	-190.1400660498719			
SIM translation stage offset (mm)	0	0.00754346686406393			
Observation start time	83593945.184000	83592676.555538			
Observation start date	2000-08-25T12:31:21	2000-08-25T12:11:16			
Observation end time	83603606.184000	83603920.80596			
Observation end date	2000-08-25T15:12:22	2000-08-25T15:18:40			
Read mode	TIMED	TIMED			

2.3 Aspect





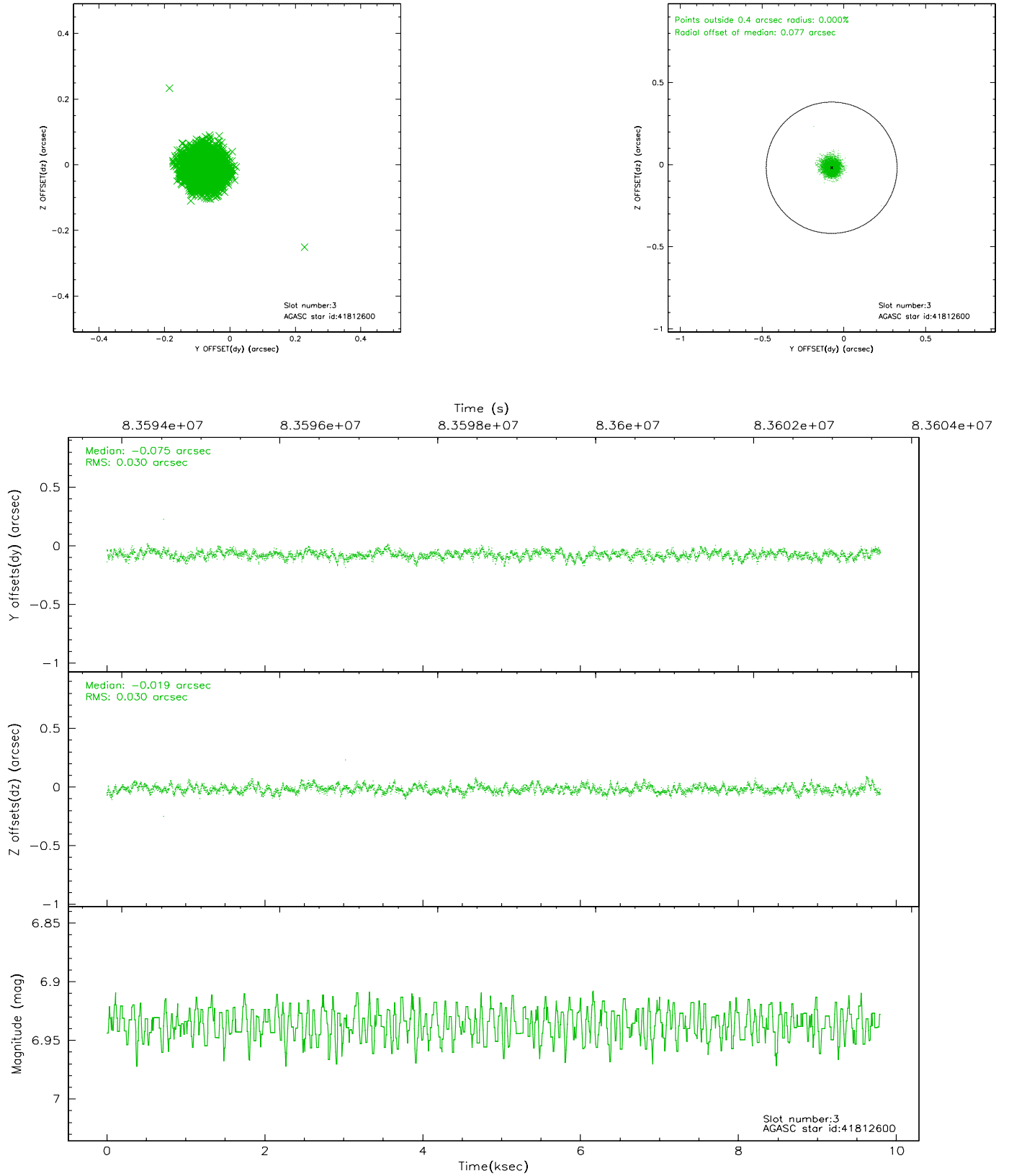
### Slot Statistics

slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	2389	-0.012	0.031	0.007	0.011	0.000000	0.000000	-754.56	-1727.78
1	FID	ACIS-S-4	7.21	2389	-0.075	-0.003	0.005	0.009	0.000000	0.000000	2158.42	180.09
2	FID	ACIS-S-5	7.24	2389	0.056	-0.020	0.006	0.010	0.000000	0.000000	-1806.62	174.39
3	GUIDE	41812600	6.94	4779	-0.075	-0.019	0.045	0.072	210.084142	2.674576	777.10	-437.76
4	GUIDE	41421328	8.84	4779	0.016	-0.013	0.059	0.098	210.405722	2.285281	1943.90	955.34
5	GUIDE	41812672	9.18	4779	-0.014	0.024	0.073	0.117	210.433277	2.688495	499.00	787.72
6	GUIDE	41423376	9.45	4776	0.047	0.109	0.092	0.147	210.567769	2.137823	2359.21	1625.98
7	GUIDE	41812184	9.38	4776	0.029	-0.102	0.077	0.125	210.003940	2.531299	1337.45	-626.95

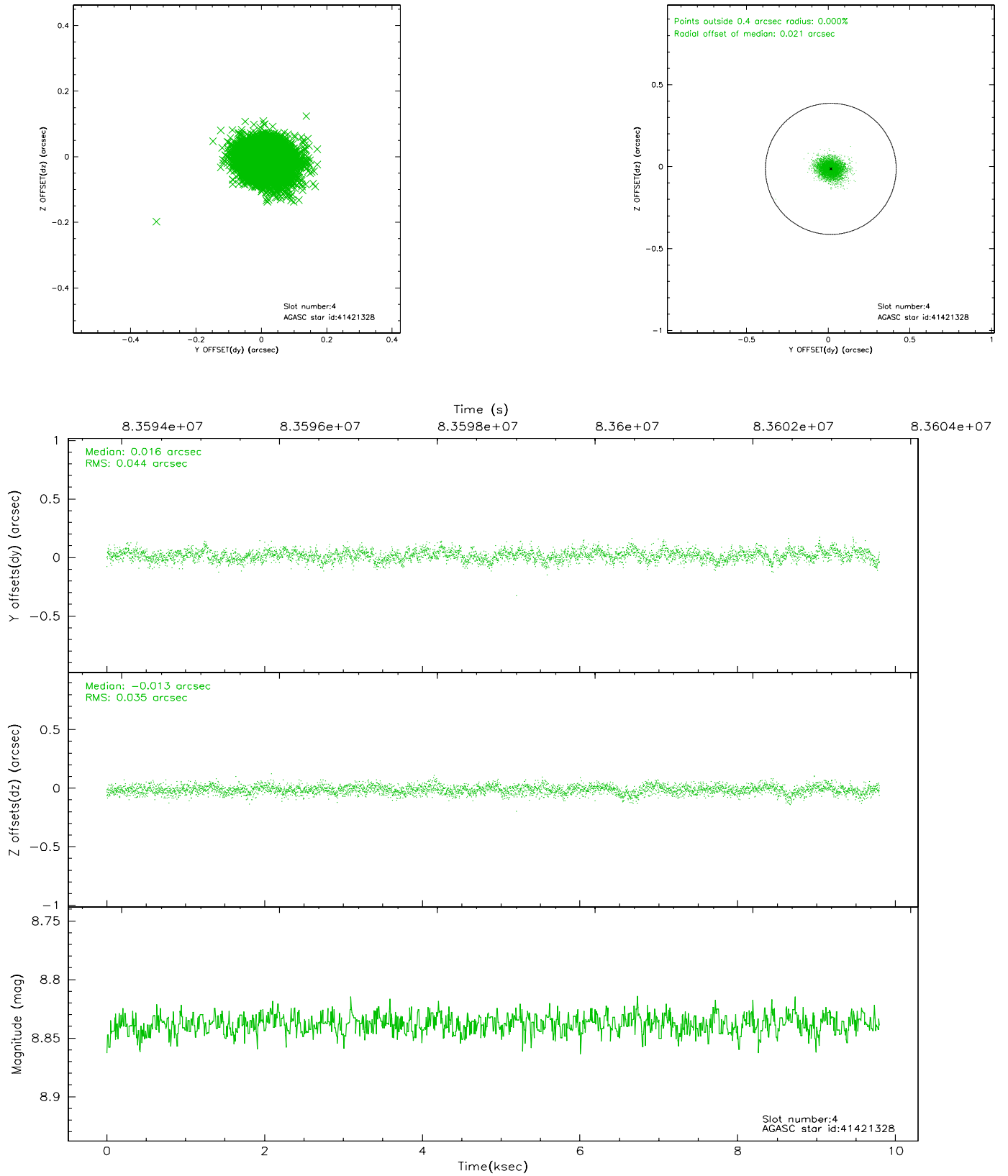


## 2.4 Star Slots

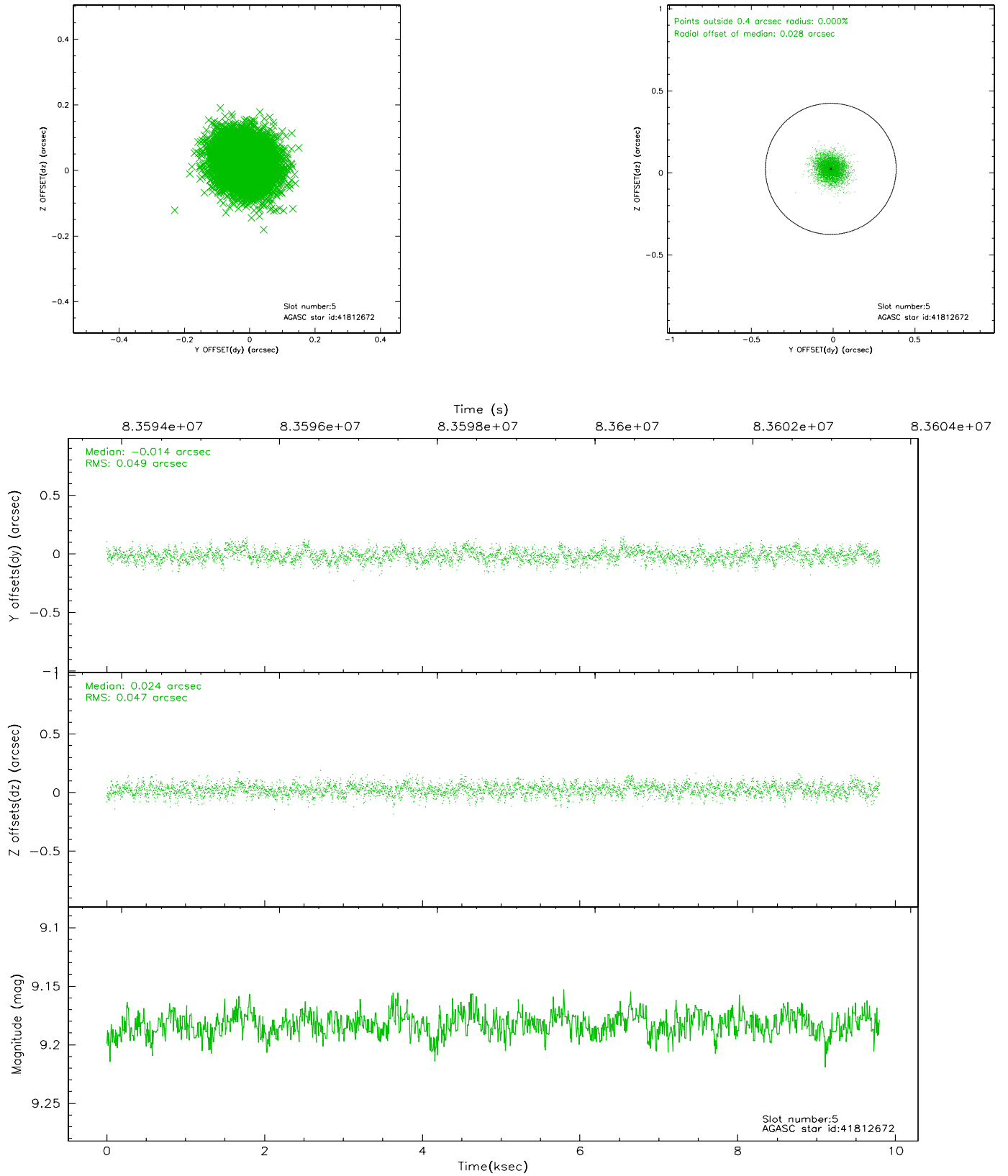
### 2.4.1 Slot 3



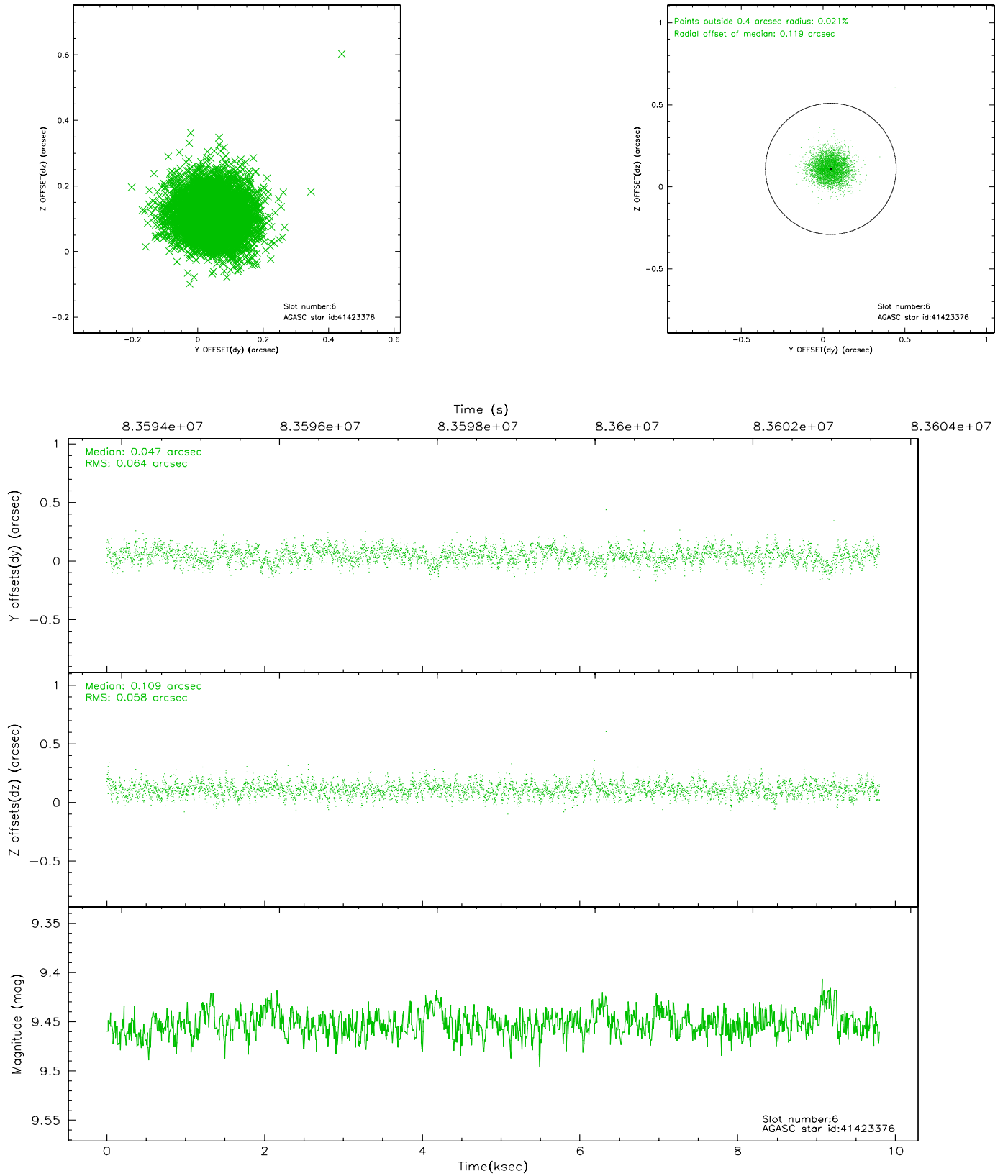
## 2.4.2 Slot 4



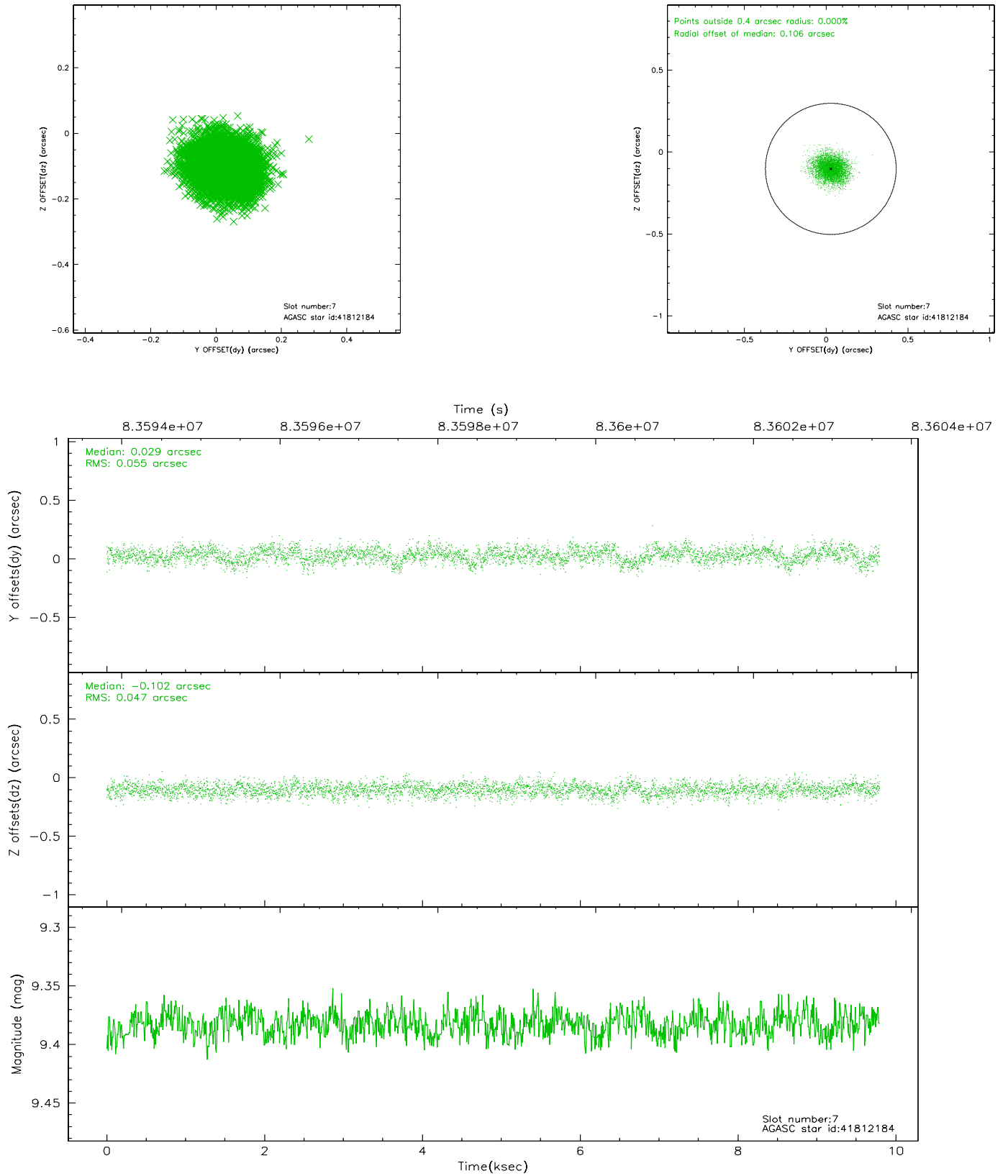
### 2.4.3 Slot 5



## 2.4.4 Slot 6

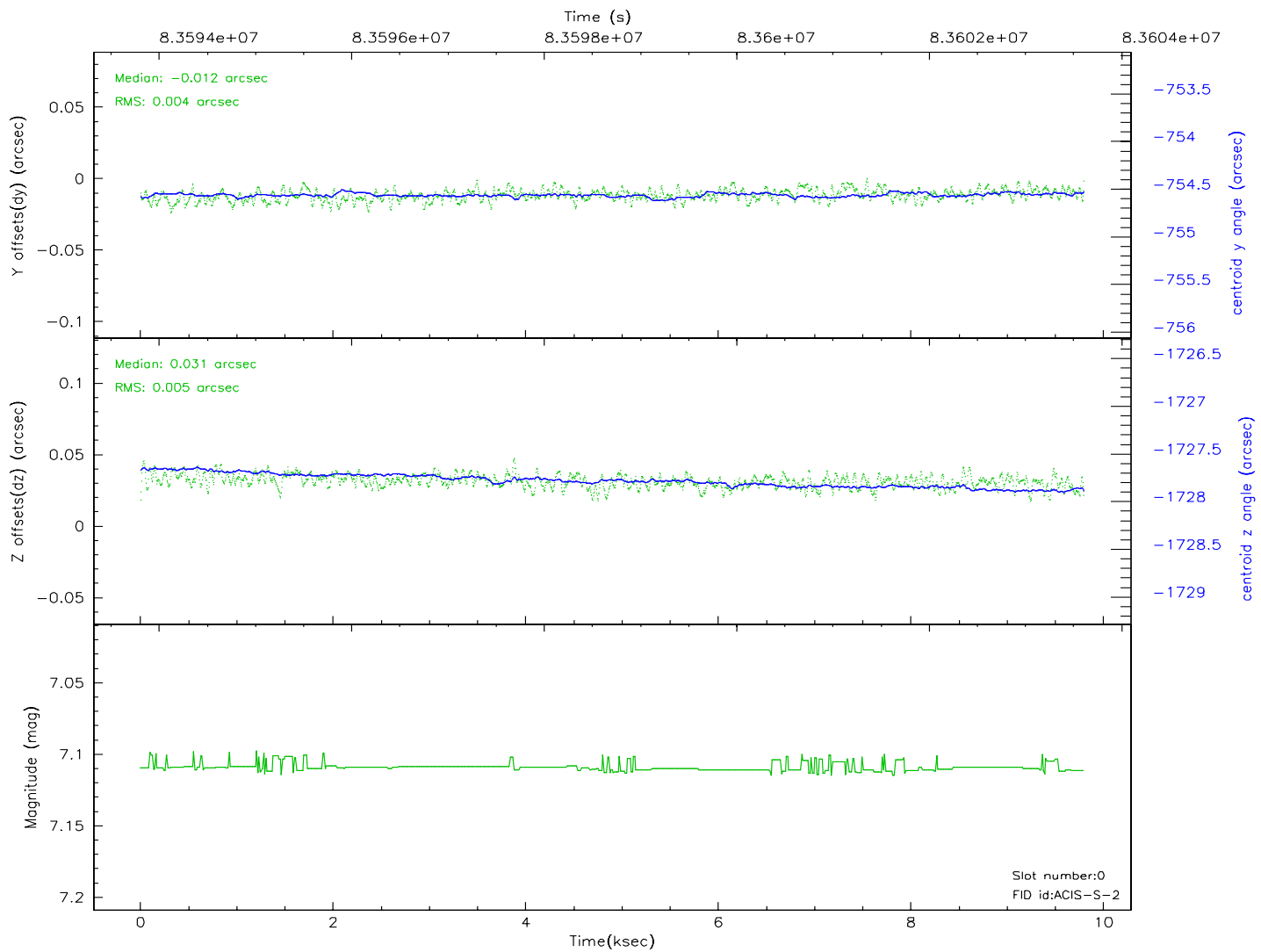
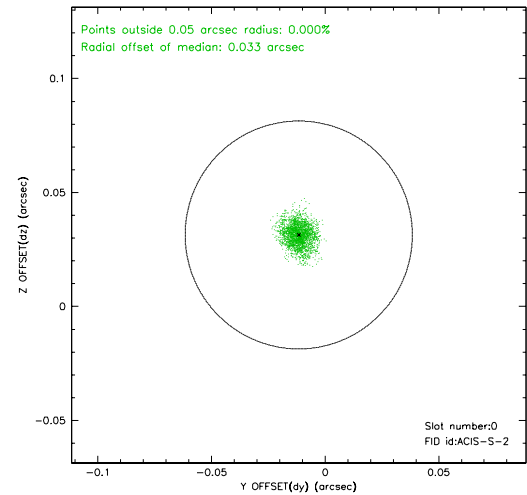
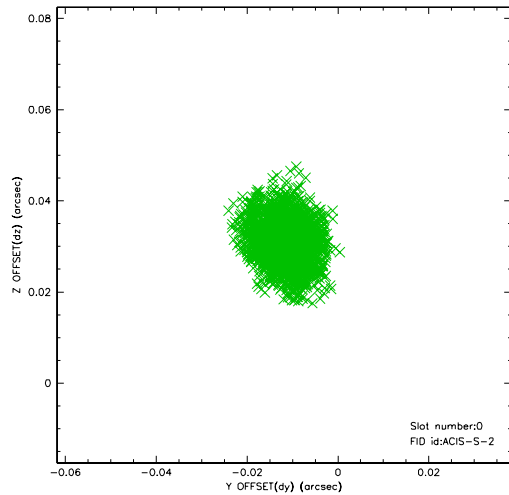


## 2.4.5 Slot 7

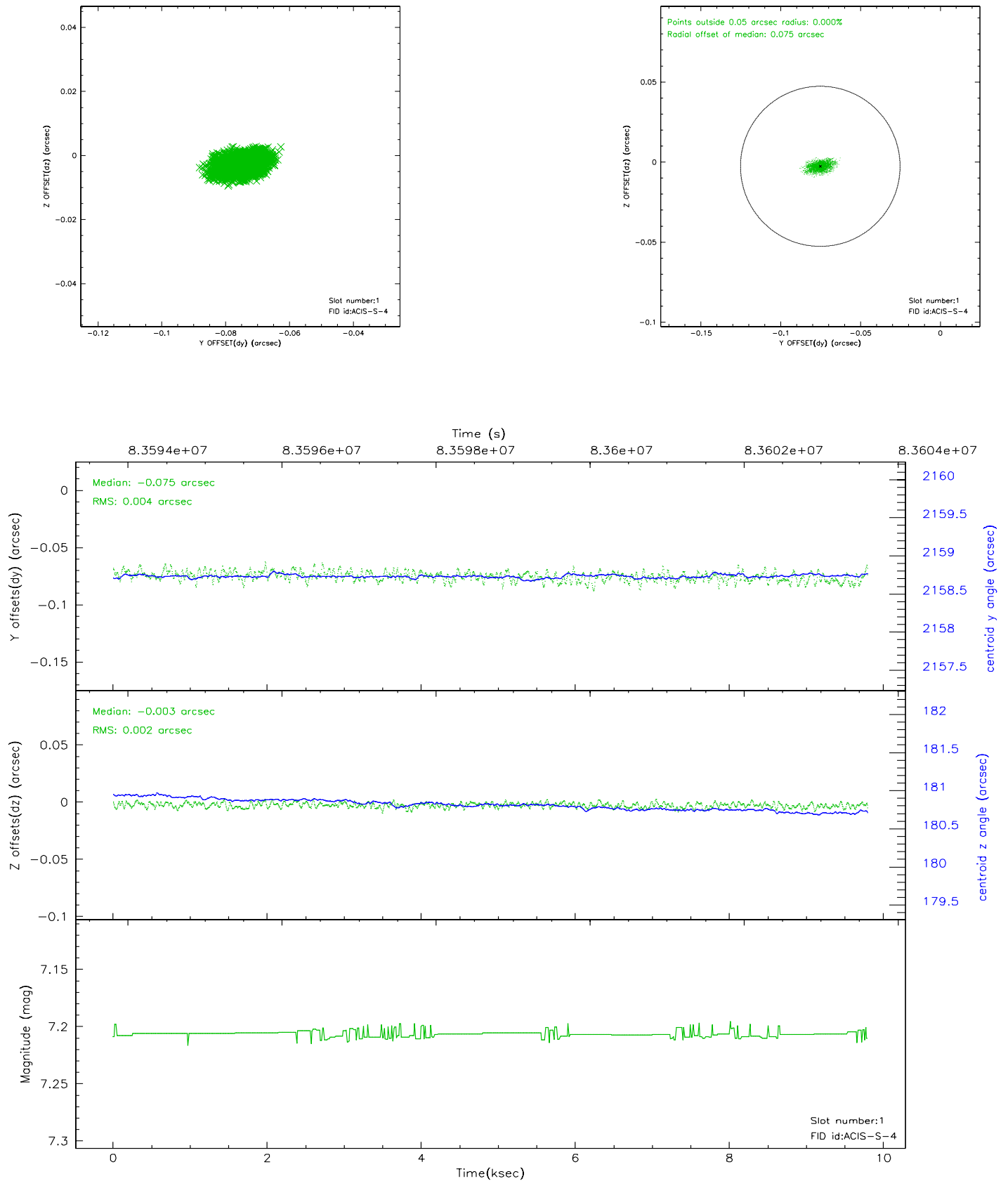


## 2.5 FID Slots

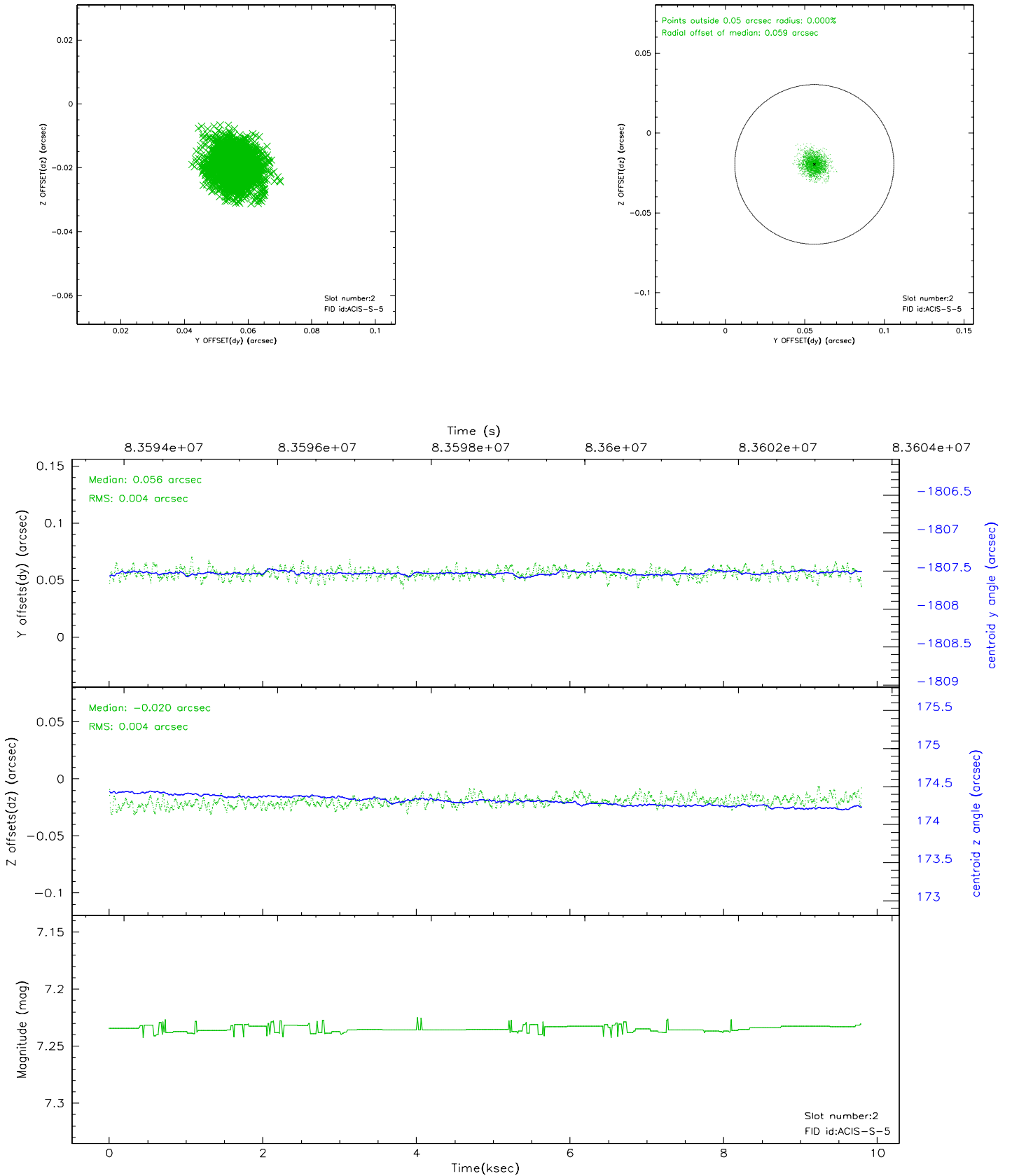
### 2.5.1 Slot 0



## 2.5.2 Slot 1



## 2.5.3 Slot 2



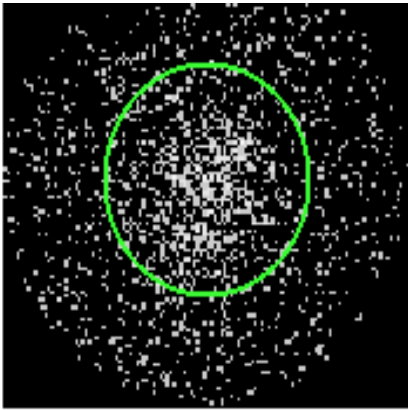


# 3 Gratings

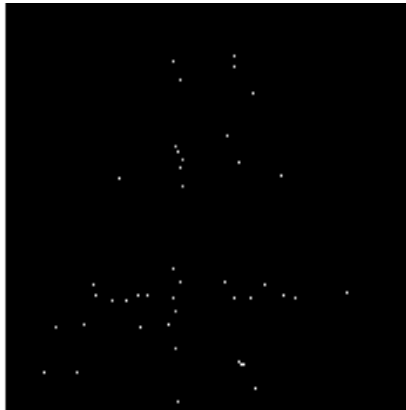
## 3.1 HEG Arm



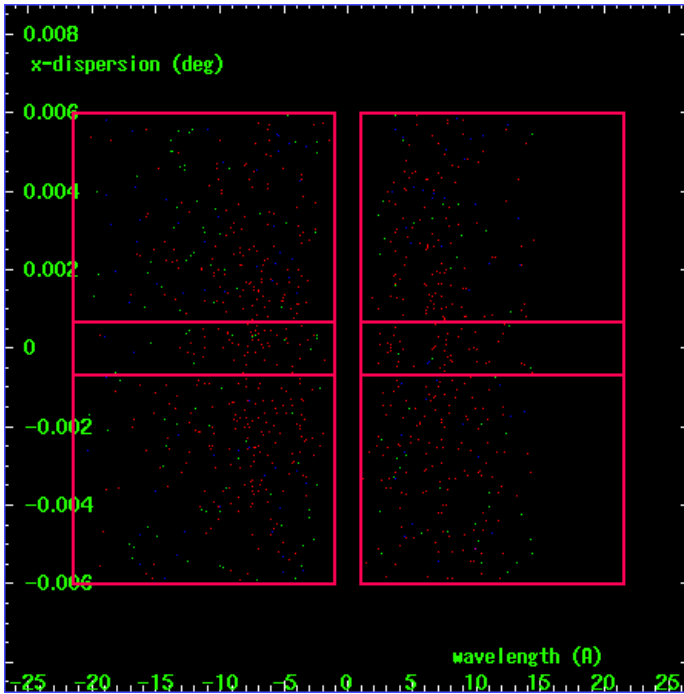
HEG Order Sort 123



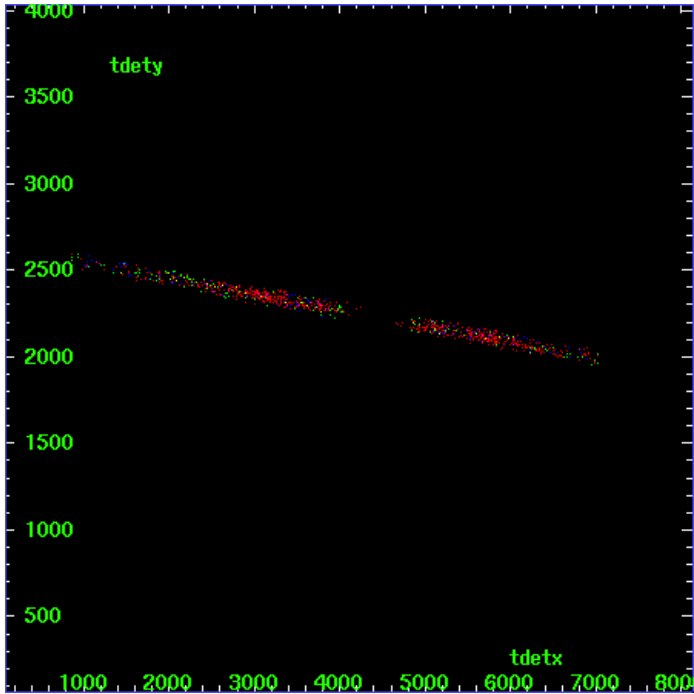
HEG Zero Order



HEG Order Sort ALL

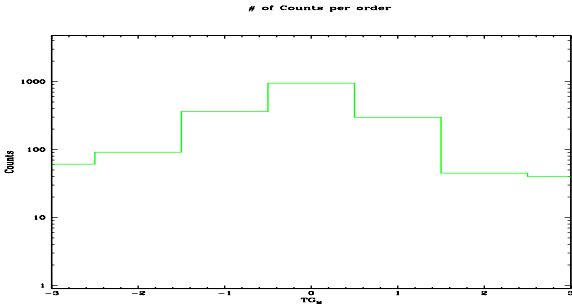


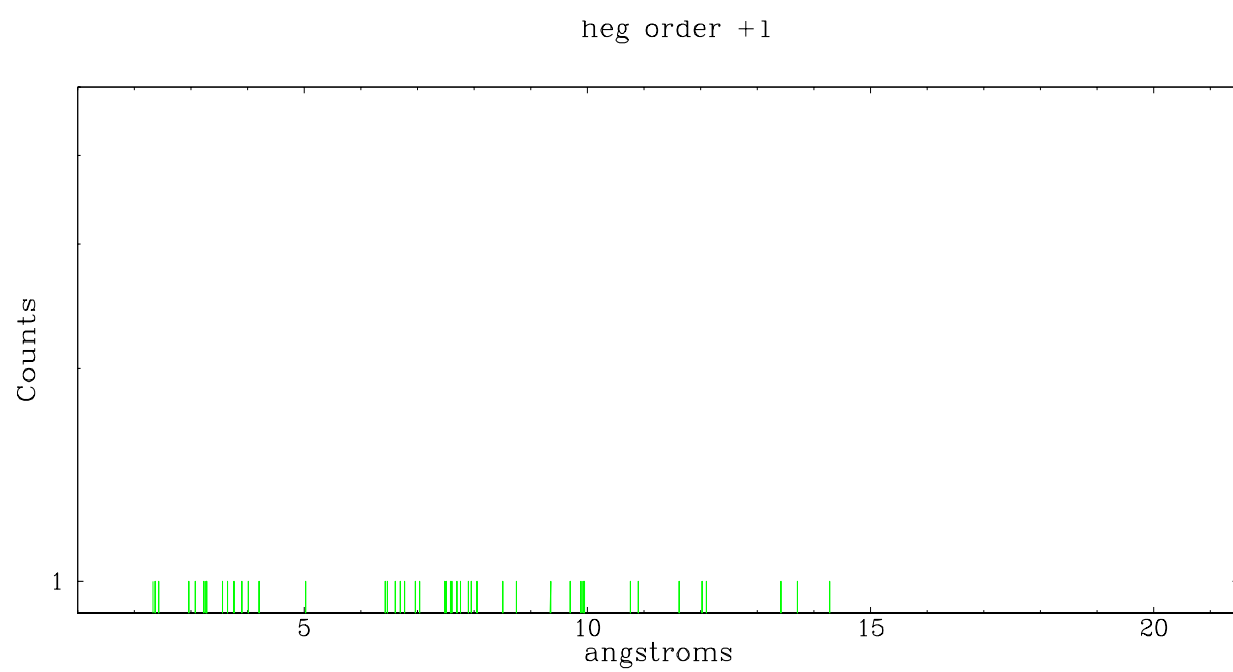
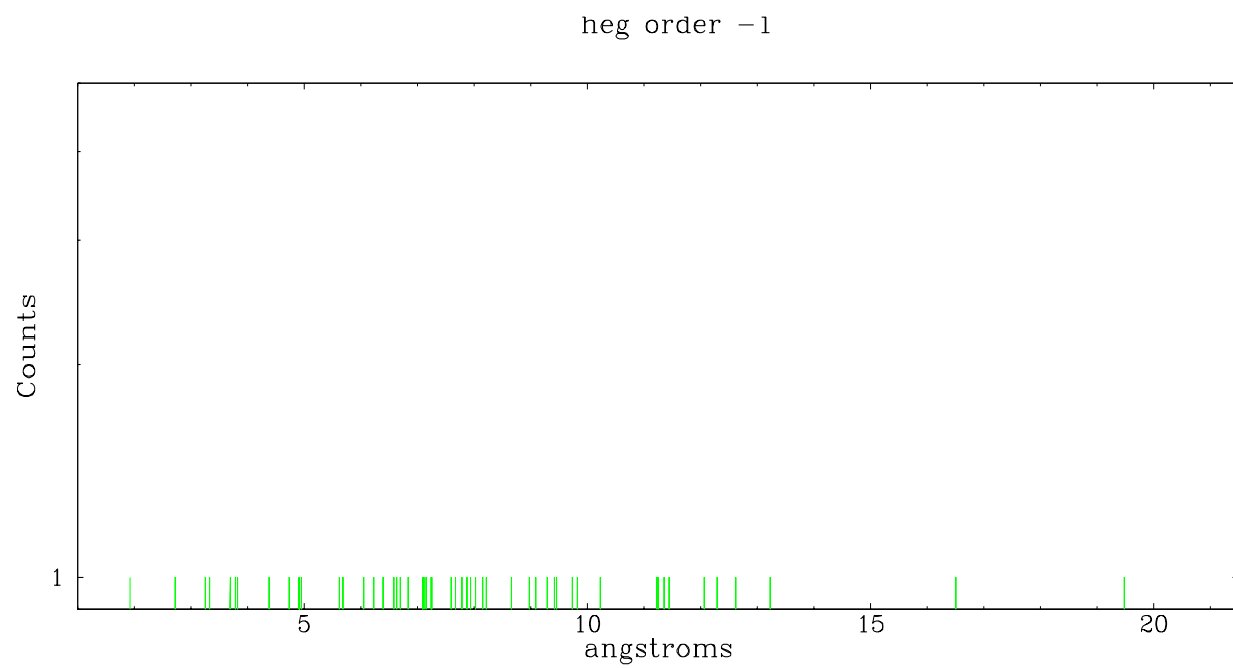
Spot Image HEG



Full Detector HEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	61	91	361	946	298	45	40

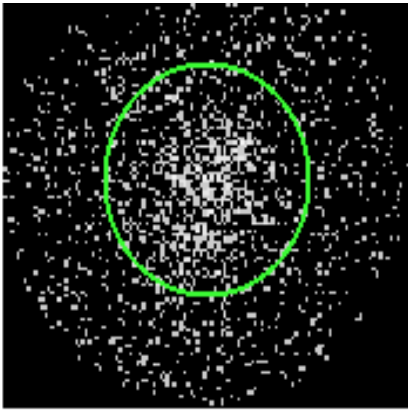




3.2 MEG Arm



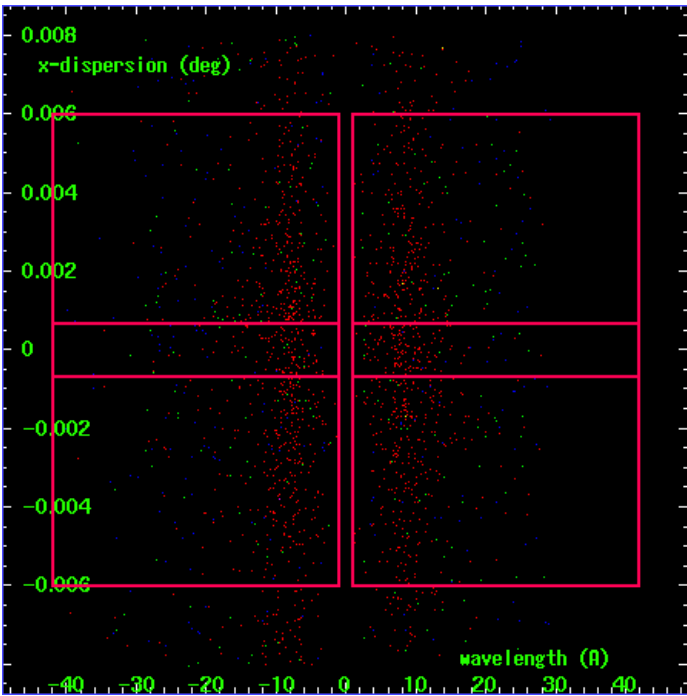
MEG Order Sort 123



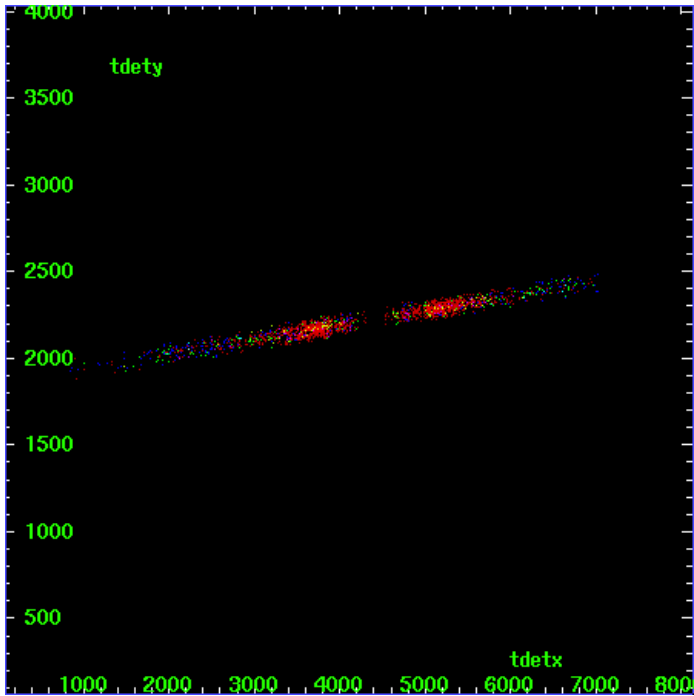
MEG Zero Order



MEG Order Sort ALL

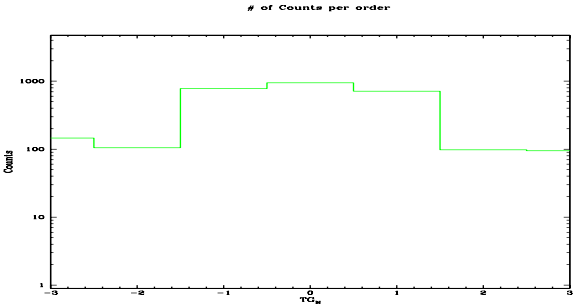


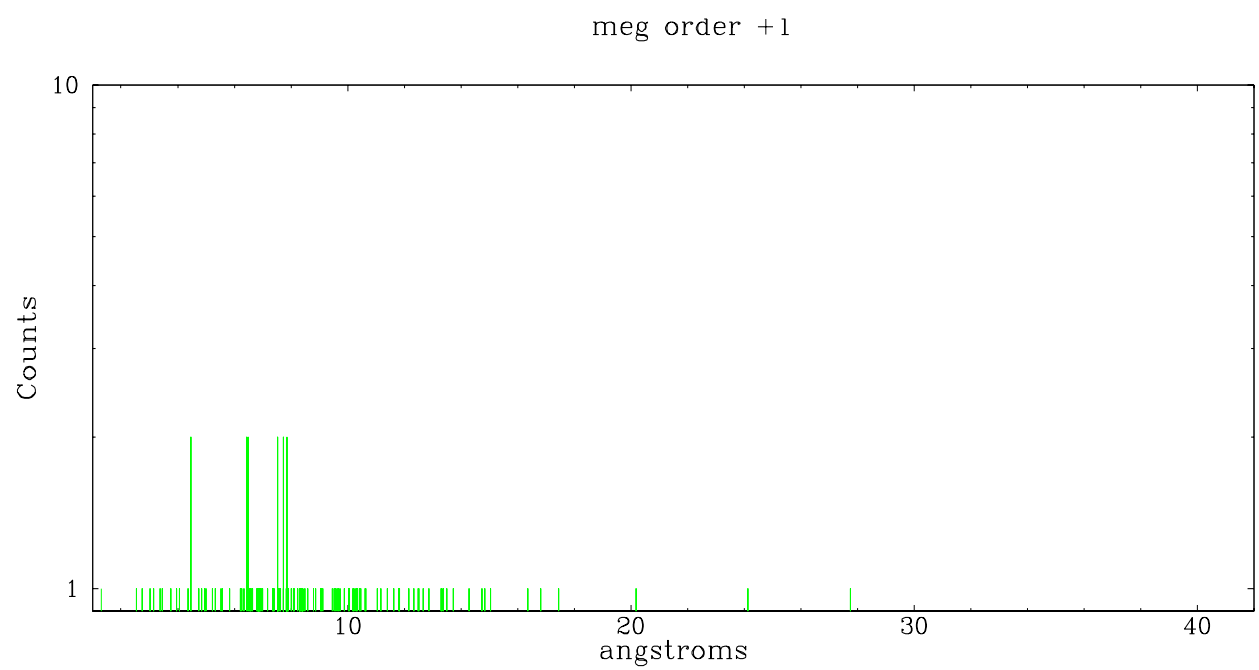
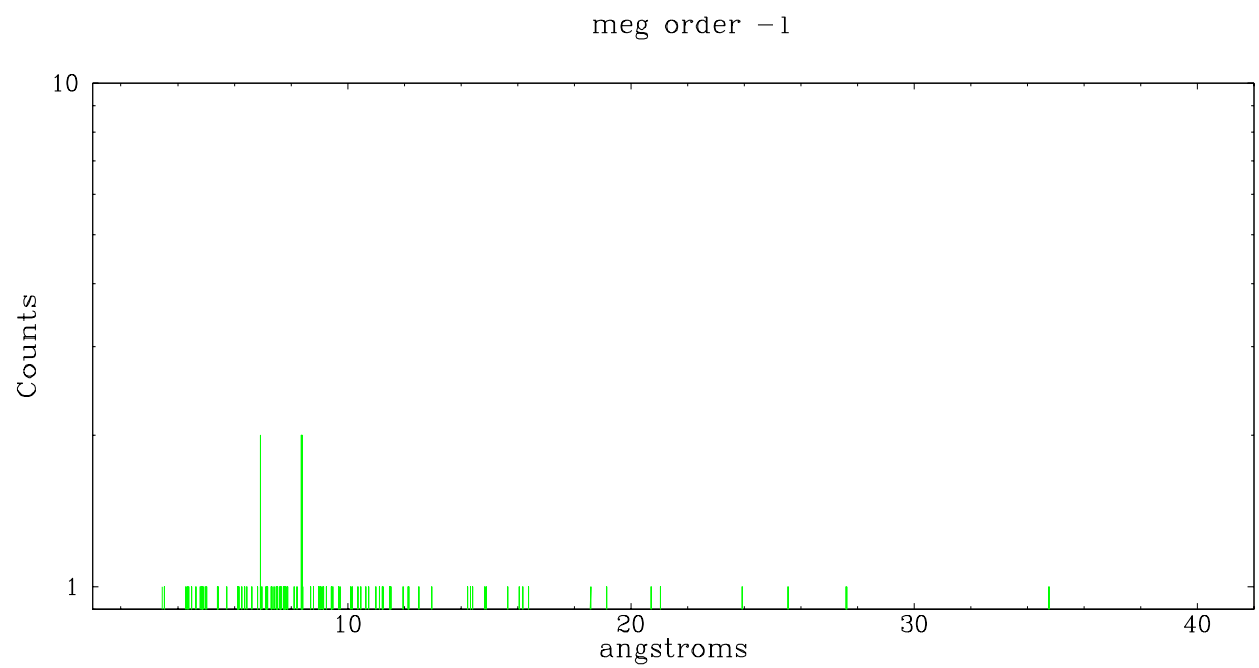
Spot Image MEG



Full Detector MEG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	146	105	779	946	713	98	95





# A Summary

## A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2007.10.03
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.785

## A.2 Comments

WARNING: there are no standard ciao tools for analysis of grating spectra from extended sources. The shape of an emission 'line' will be the shape of the zero order spatial structure convolved with the instrumental LSF. Grating extractions can be used, but need to be combined with custom spatial-spectral analysis, since wavelength is multi-valued at any particular diffraction angle. The user will need to select a region or source of interest, then use software tools such as CIAO to specify the coordinates of the zeroth order source of interest before running the tools to resolve the dispersed events.

=====

Standard software processing technique using the tool tgdetect failed to determine a position for the zeroth order for this observation. The source is extended. The coordinates supplied by the user for the position of the zeroth order could not be used in the processing because they are the coordinates for the optical position of Abell 1835, not the coordinates of the X-ray source. For this processing, the zeroth order position was determined with an eyeball estimate. For grating analysis of localized X-ray emission within the extended emission, the investigator will need to extract one or more dispersed spectra using user-defined zeroth order positions for all positions of interest.