

V&V Reference Report

L2 ASCDS Version : 7.6.9

Observation 4148 - L2 Version 001
Chandra X-Ray Center

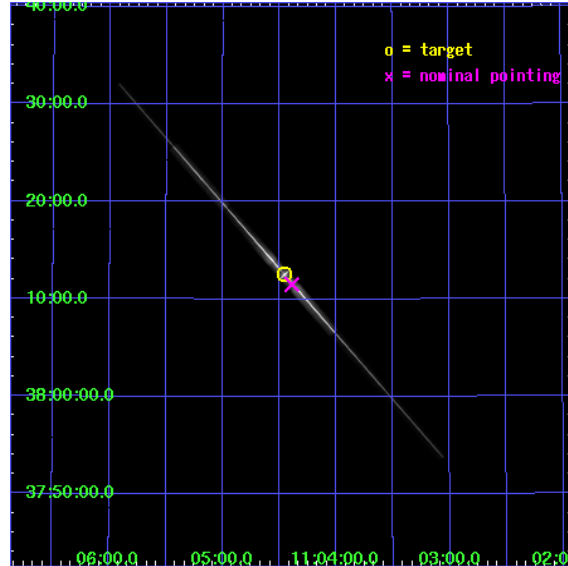
L2 Processing Date : Dec 8 2006

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1 Front

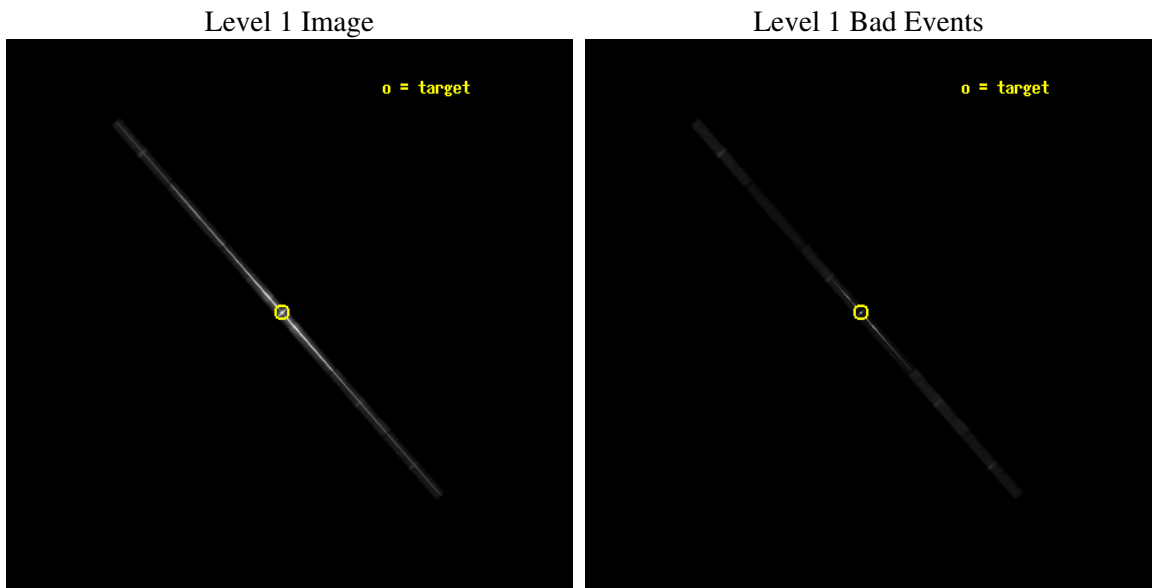
seq_num	700827
obs_id	4148
title	HIGH RESOLUTION SPECTROSCOPY OF A BLAZAR IN OUTBURST: JET ENVIRONMENT AND THE INTERGALACTIC MEDIUM
observer	Dr. Fabrizio Nicastro
object	MRK 421
dtcycle	0
cycle	P
ra_targ	166.11375
dec_targ	38.208833
ra_nom	166.09766991223
dec_nom	38.192017649108
roll_nom	48.657280517336
revision	2
ontime	96844.298350751
livetime	91480.903656383
ontime4	96844.298350751
ontime5	96844.298350751
ontime6	96844.298350751
ontime7	96844.298350751
ontime8	96844.298350751
ontime9	96844.298350751
l2events	6636894



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

obi_num	0
ascdsver	7.6.9
caldbver	3.2.3
date	2006-10-12T00:07:02
revision	2

sched_exp_time	96500.000000
ontime	96903.85400641
ontime4	96903.85400641
ontime5	96903.85400641
ontime6	96903.85400641
ontime7	96903.85400641
ontime8	96903.85400641
ontime9	96903.85400641
l1events	7547512

2.1.3 Events

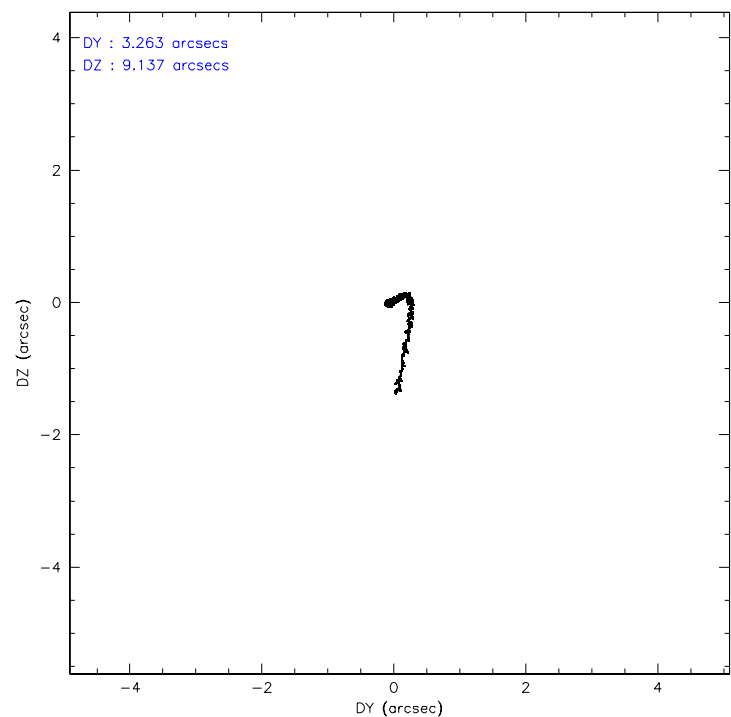
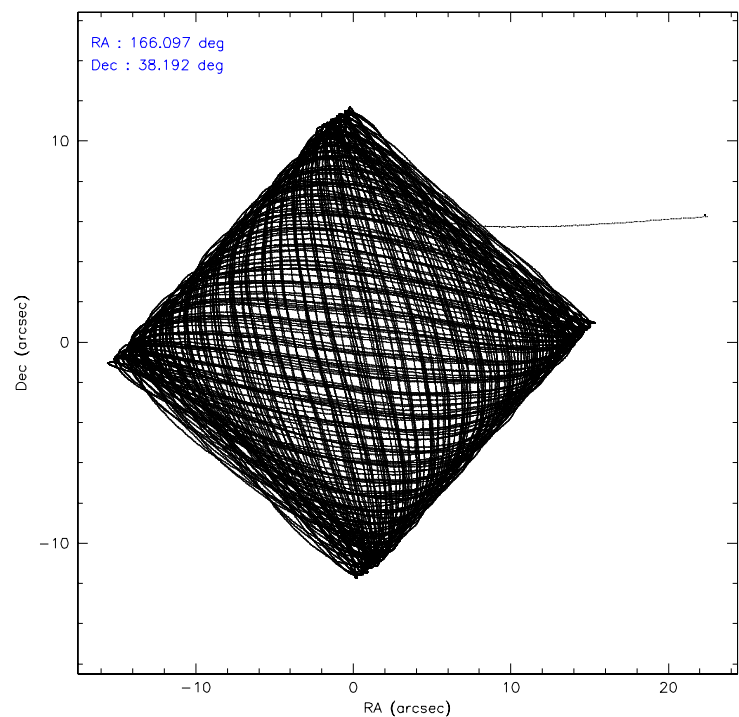
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	179541	532599	2448976	3877892	340848	167656
rejected events	102181	63899	141500	243964	113860	84126
rejected %	56%	11%	5%	6%	33%	50%

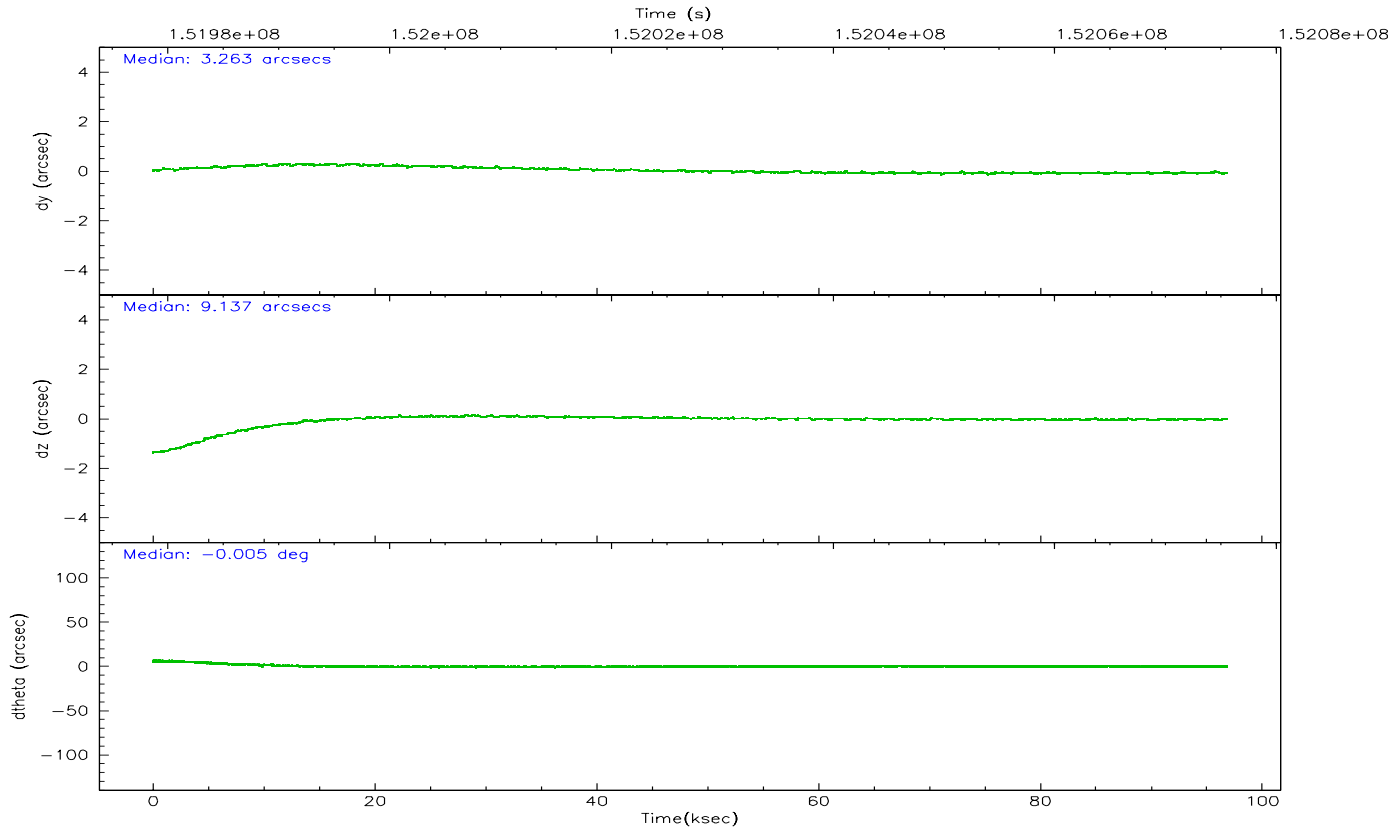
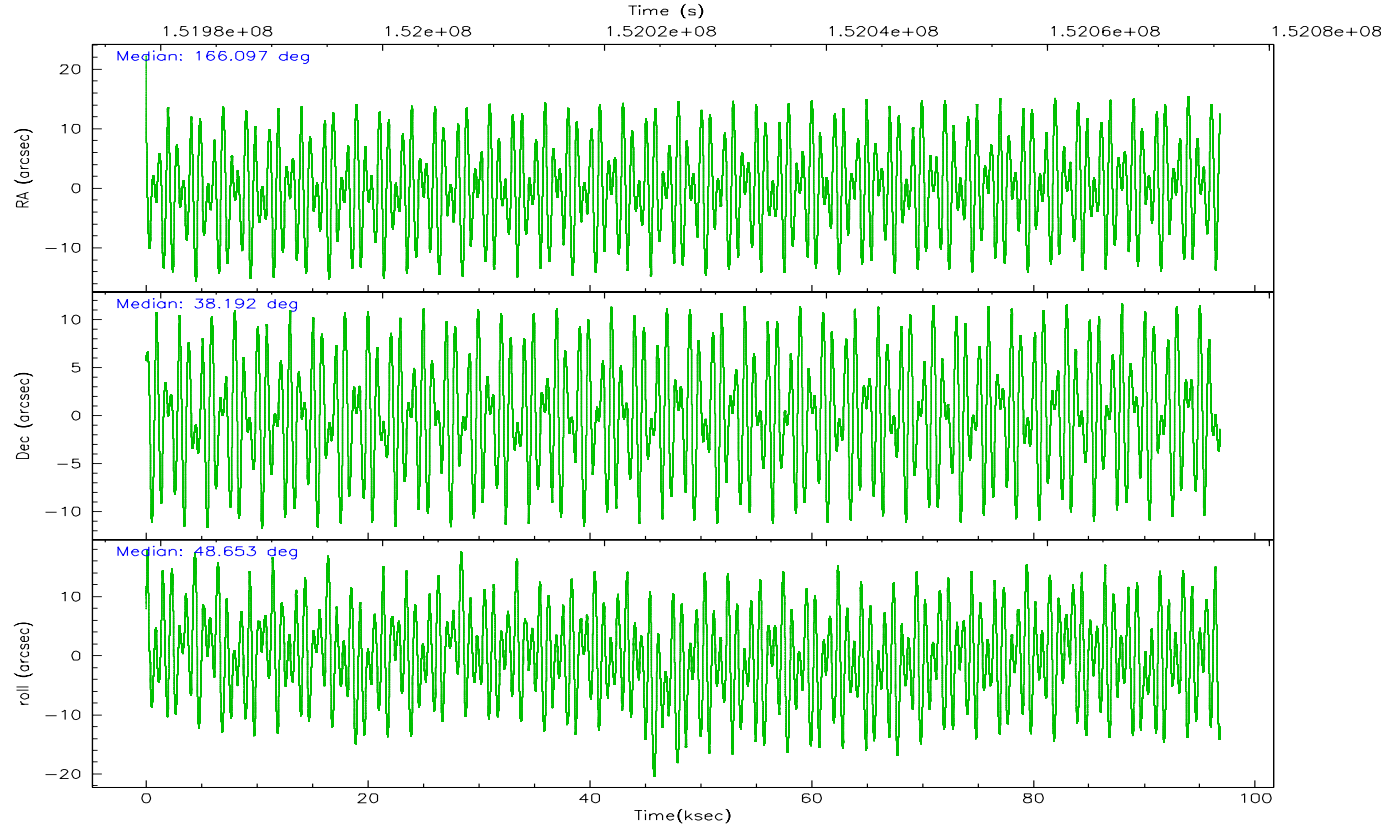
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	59705	240845	1837612	915857	177747	65404
	33%	45%	75%	23%	52%	39%
grade 1 events	85	520	25368	18476	287	77
	0%	0%	1%	0%	0%	0%
grade 2 events	8318	103134	246857	960252	22968	8409
	4%	19%	10%	24%	6%	5%
grade 3 events	3387	33748	81938	416962	8272	3516
	1%	6%	3%	10%	2%	2%
grade 4 events	3194	33033	80887	411784	7952	3415
	1%	6%	3%	10%	2%	2%
grade 5 events	2749	8738	18645	83650	3964	2946
	1%	1%	0%	2%	1%	1%
grade 6 events	2794	58225	61210	930848	10195	2823
	1%	10%	2%	24%	2%	1%
grade 7 events	99309	54356	96459	140063	109463	81066
	55%	10%	3%	3%	32%	48%

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	LETG	LETG	Obspar update status	NONE	UPDATED
Data mode	GRADED	GRADED	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
Pointing RA	166.091299	166.0976699122297	Subarray requested	CUSTOM	1/8
Pointing Dec	38.165250	38.19201764910778	Subarray start row	113	113
Pointing Roll	48.504585	48.65728051733635	Subarray row count	128	128
SIM focus pos (mm)	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
SIM defocus (mm)	0	0.001444936568705701	Primary exposure time	0.000000	0.7
SIM translation stage pos (mm)	-182.132523	-182.1344861297048			
SIM translation stage offset (mm)	-8	-7.998036453302973			
Observation start time	151979029.184000	151977966.60109			
Observation start date	2002-10-26T00:22:45	2002-10-26T00:06:06			
Observation end time	152075529.184000	152076201.06767			
Observation end date	2002-10-27T03:11:05	2002-10-27T03:23:21			
Read mode	TIMED	TIMED			

2.3 Aspect



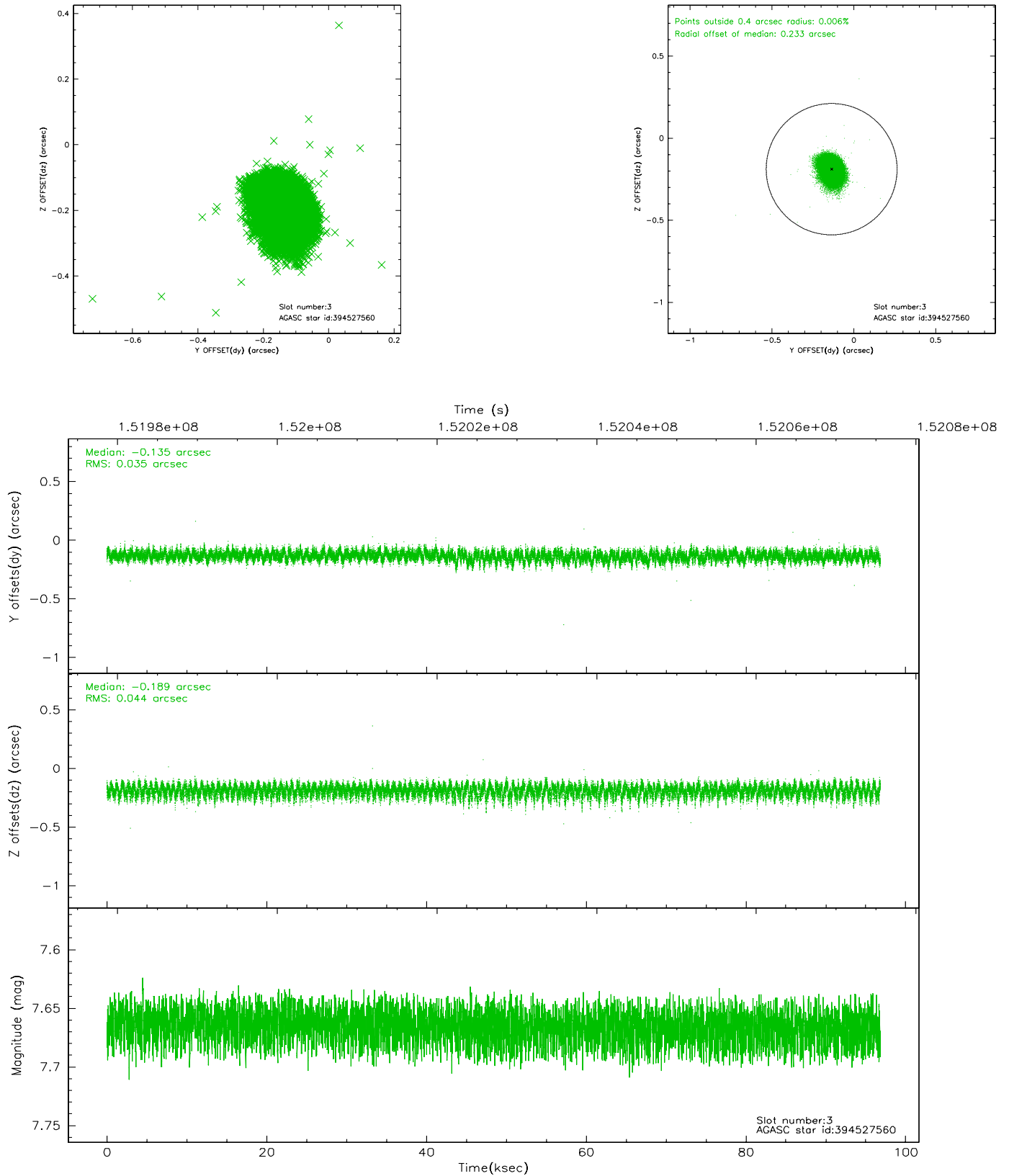


Slot Statistics

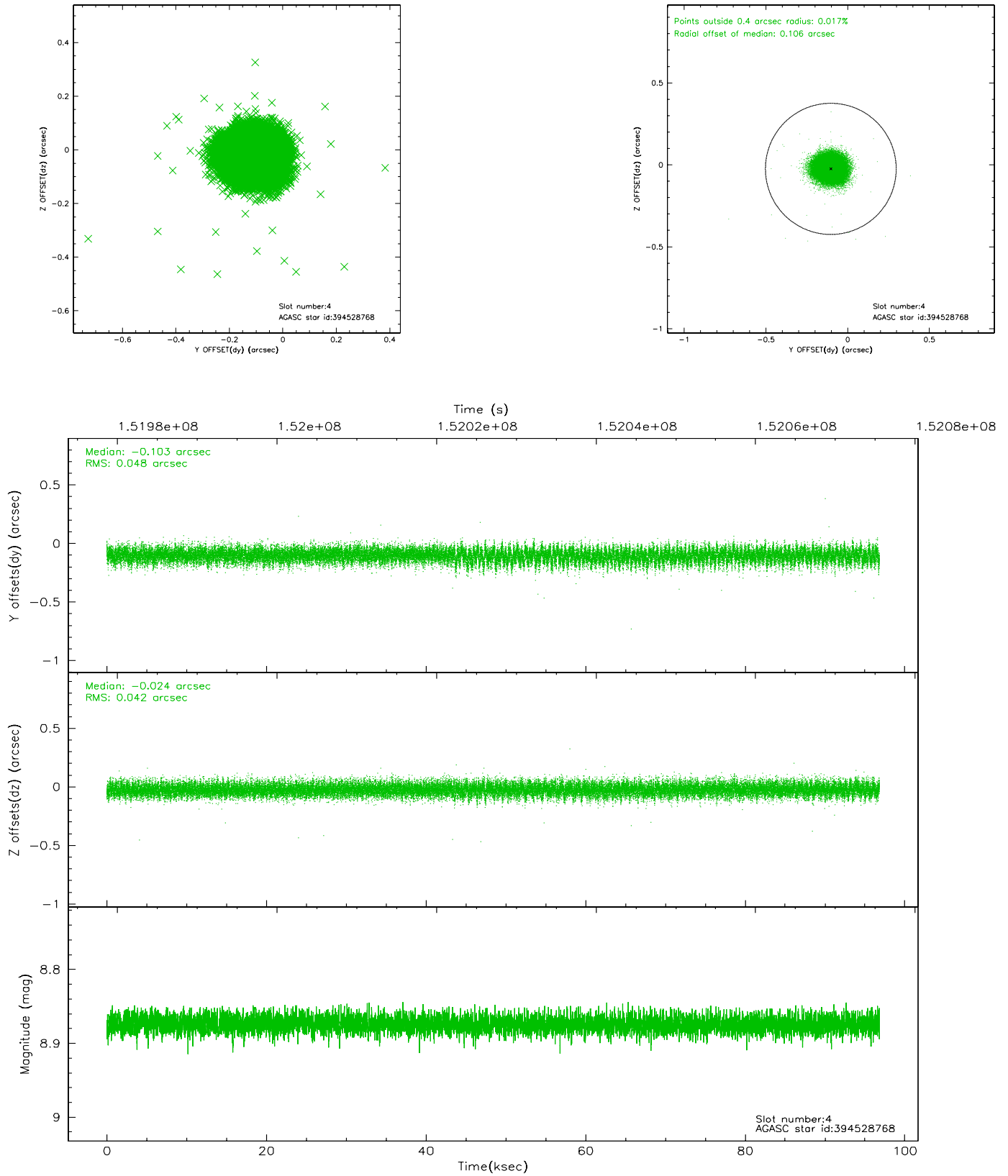
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.09	23620	-0.036	-0.060	0.008	0.047	0.000000	0.000000	-755.39	-1895.12
1	FID	ACIS-S-4	7.17	23620	0.024	0.034	0.007	0.013	0.000000	0.000000	2157.96	13.56
2	FID	ACIS-S-5	7.23	23620	-0.020	0.034	0.009	0.044	0.000000	0.000000	-1808.35	7.09
3	GUIDE	394527560	7.66	47239	-0.135	-0.189	0.059	0.096	165.970713	38.960939	1922.63	2150.61
4	GUIDE	394528768	8.87	47233	-0.103	-0.024	0.067	0.110	166.180365	38.952248	2288.03	1690.45
5	GUIDE	394530152	7.50	47238	-0.142	-0.063	0.052	0.086	166.075805	38.868252	1867.47	1709.22
6	GUIDE	394533848	8.72	47231	0.110	0.062	0.074	0.122	166.382906	38.276007	846.14	-351.52
7	GUIDE	394543960	9.78	47146	0.267	0.217	0.149	0.269	165.802757	37.787371	-1560.76	-285.77

2.4 Star Slots

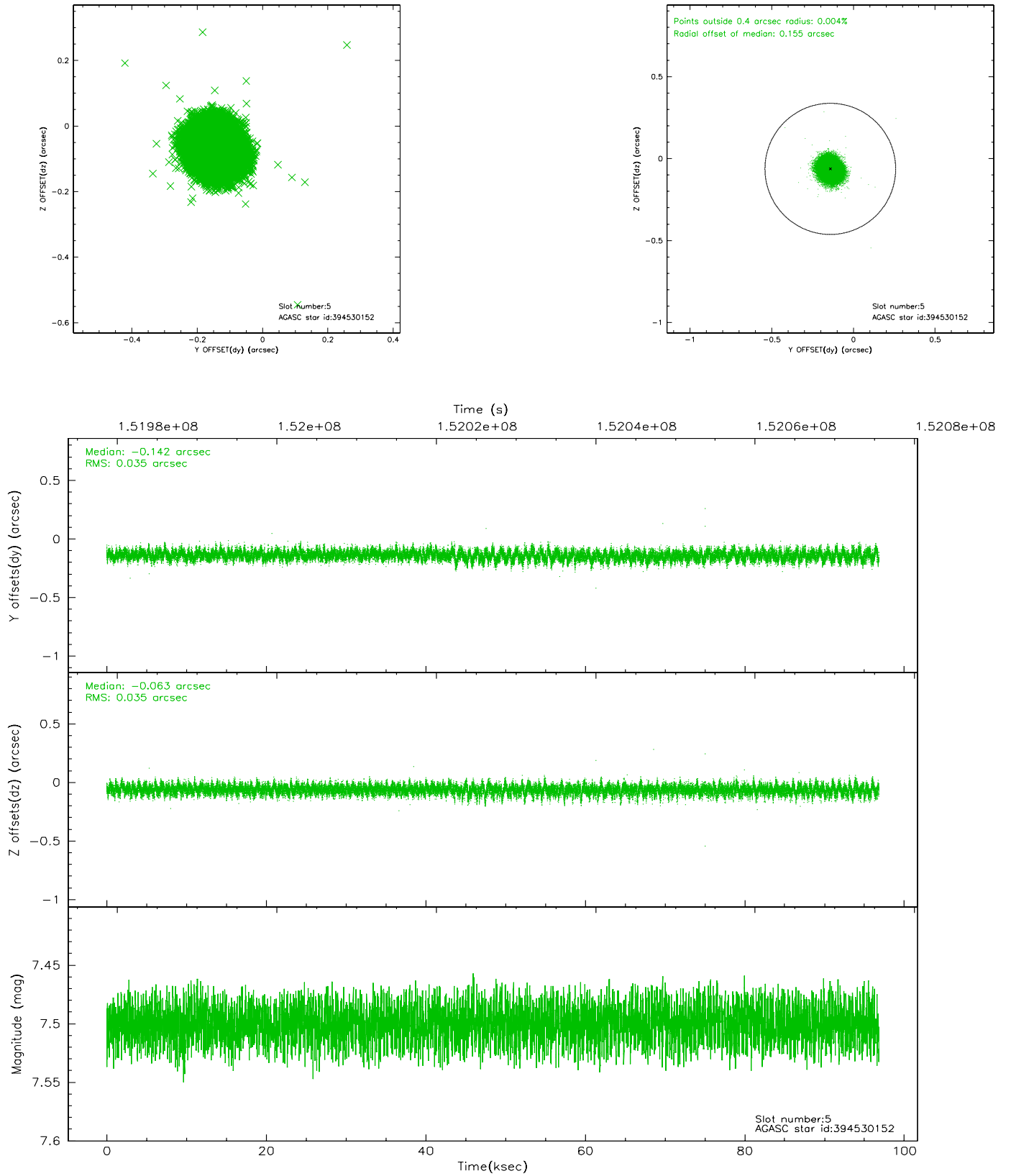
2.4.1 Slot 3



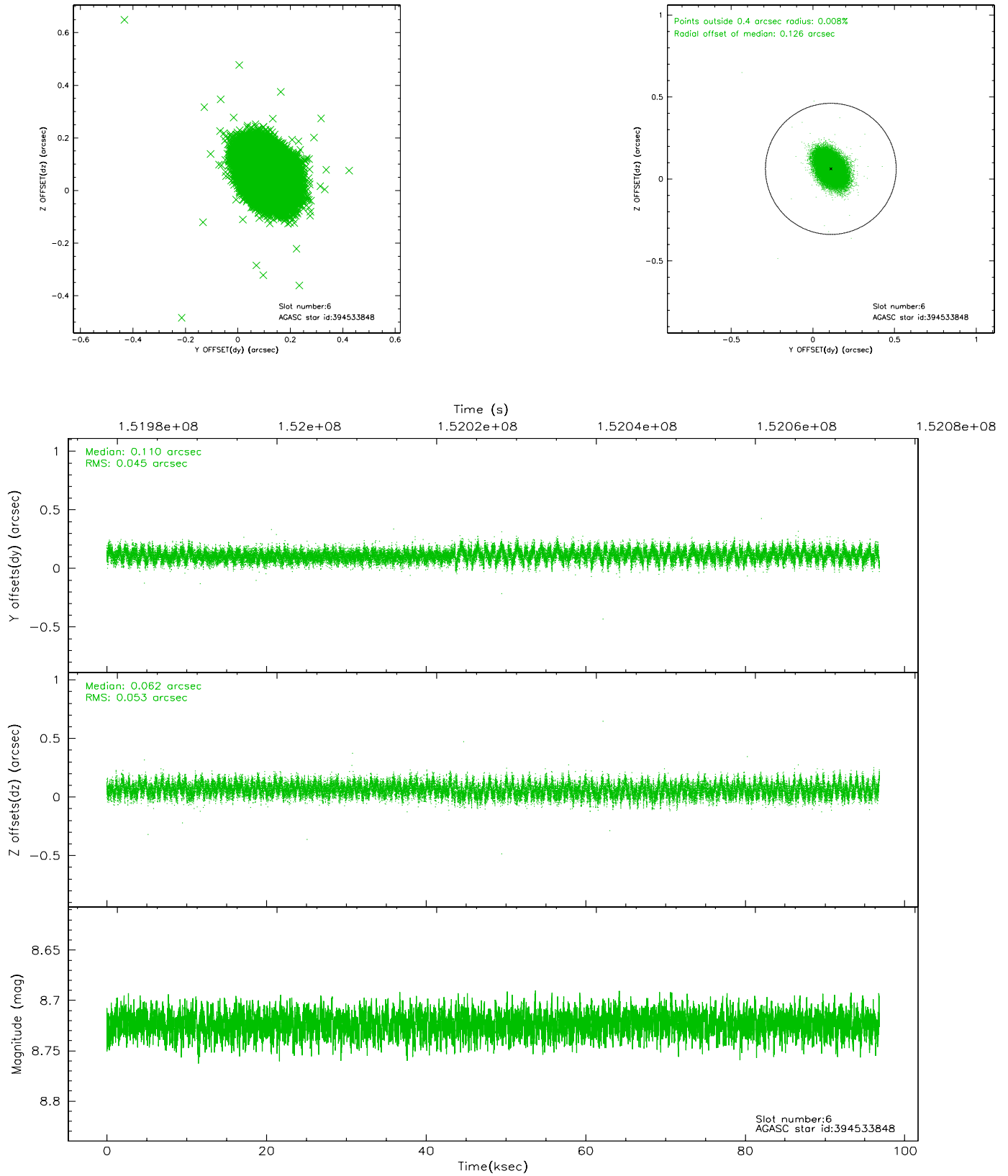
2.4.2 Slot 4



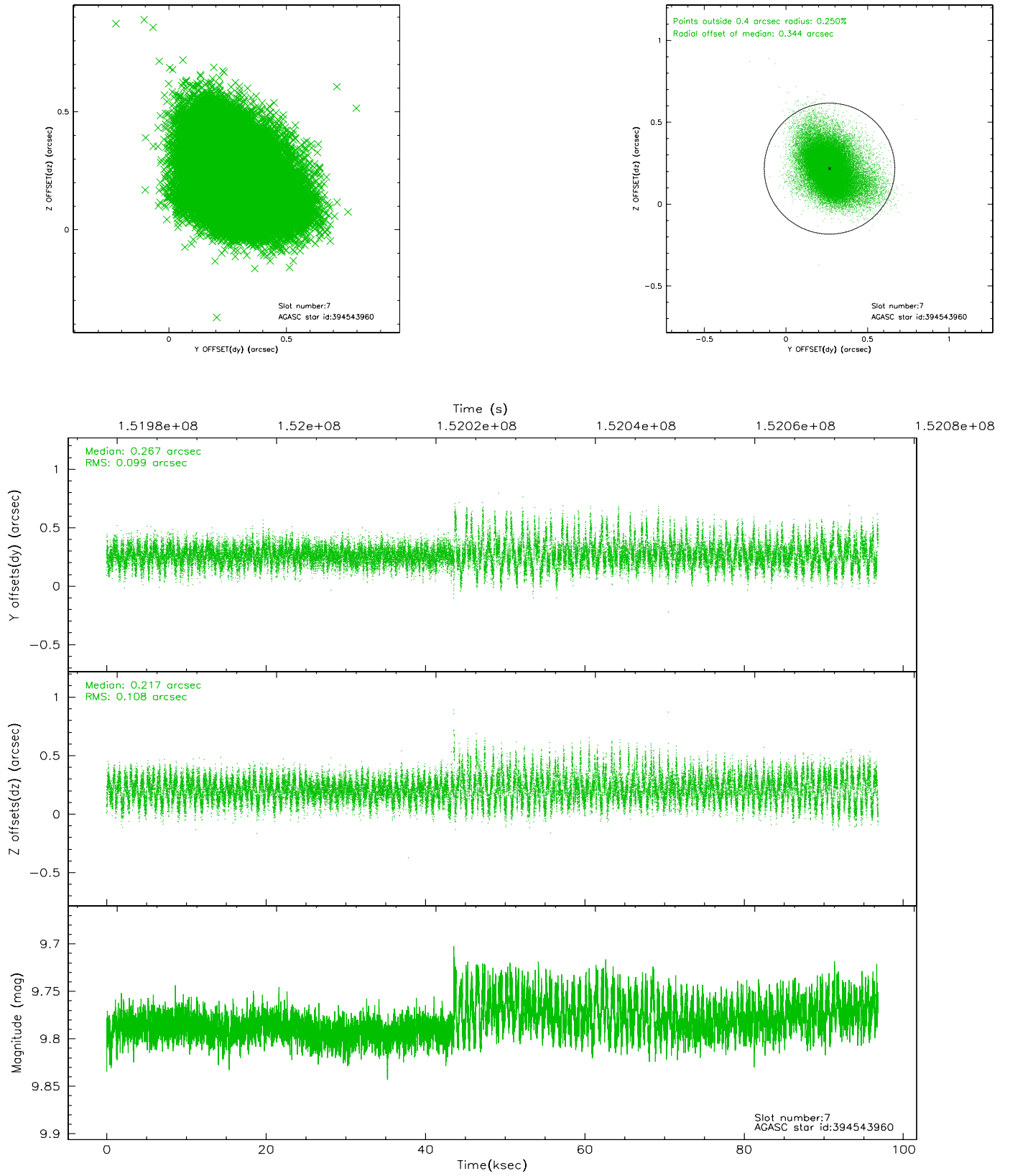
2.4.3 Slot 5



2.4.4 Slot 6

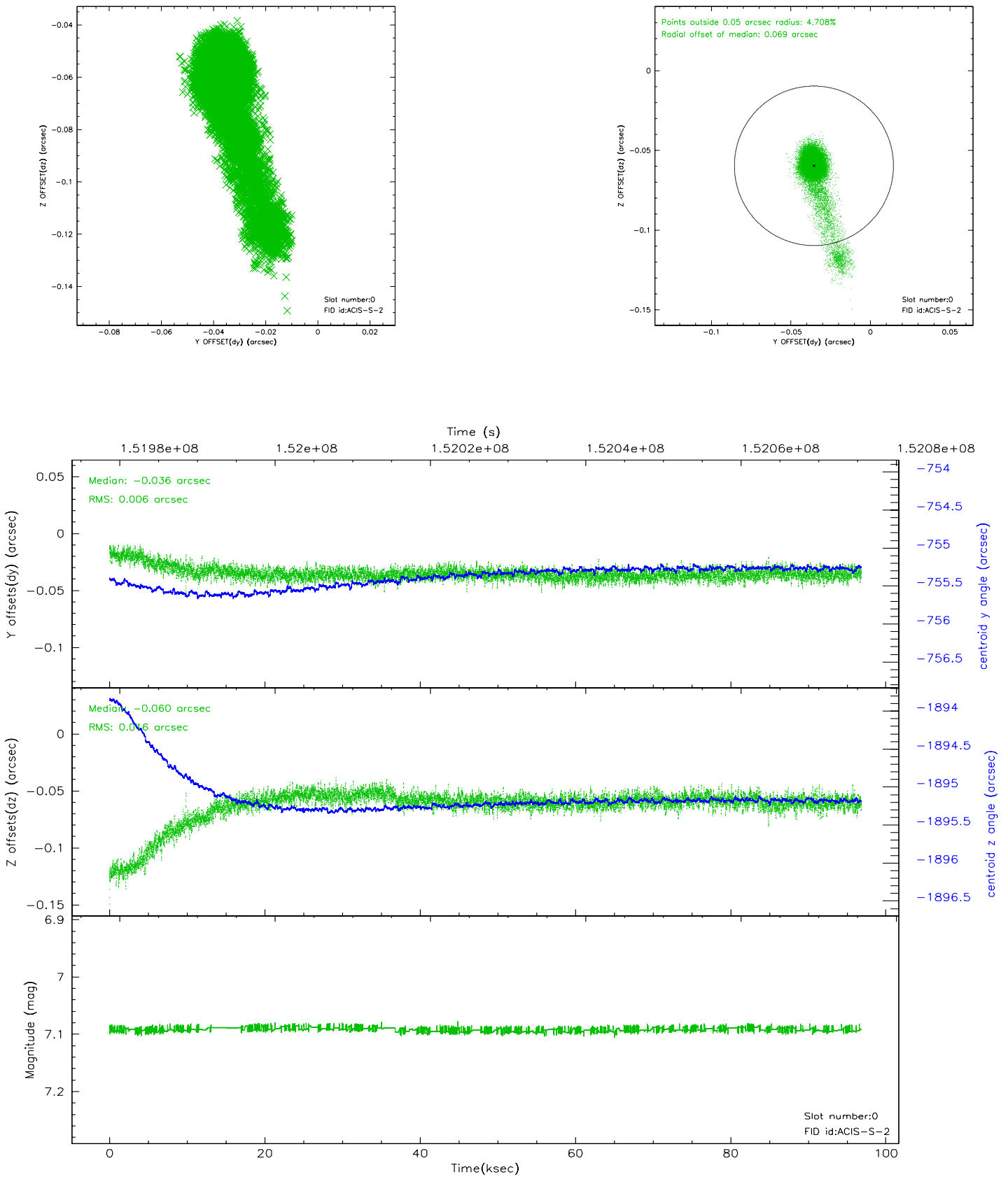


2.4.5 Slot 7

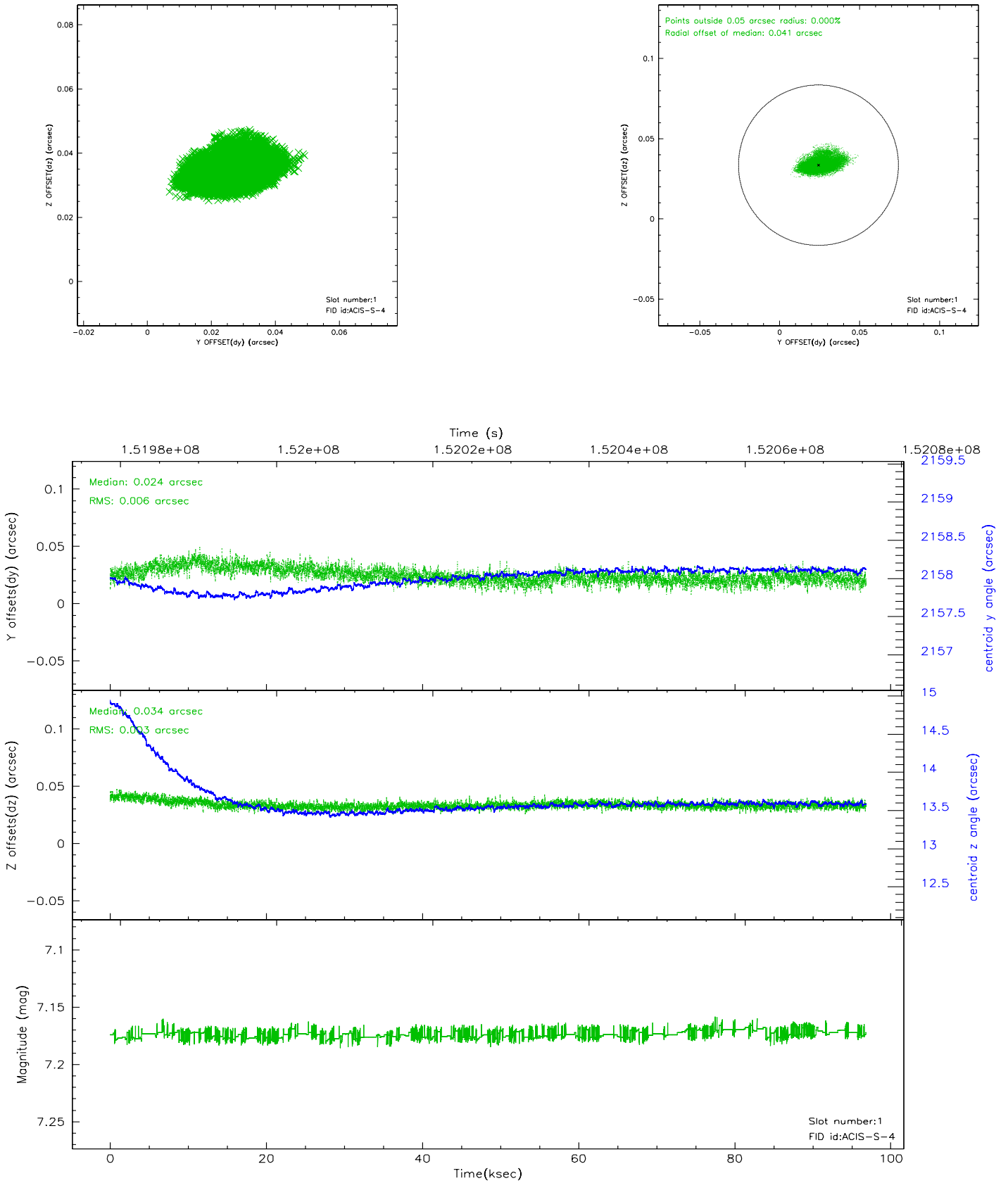


2.5 FID Slots

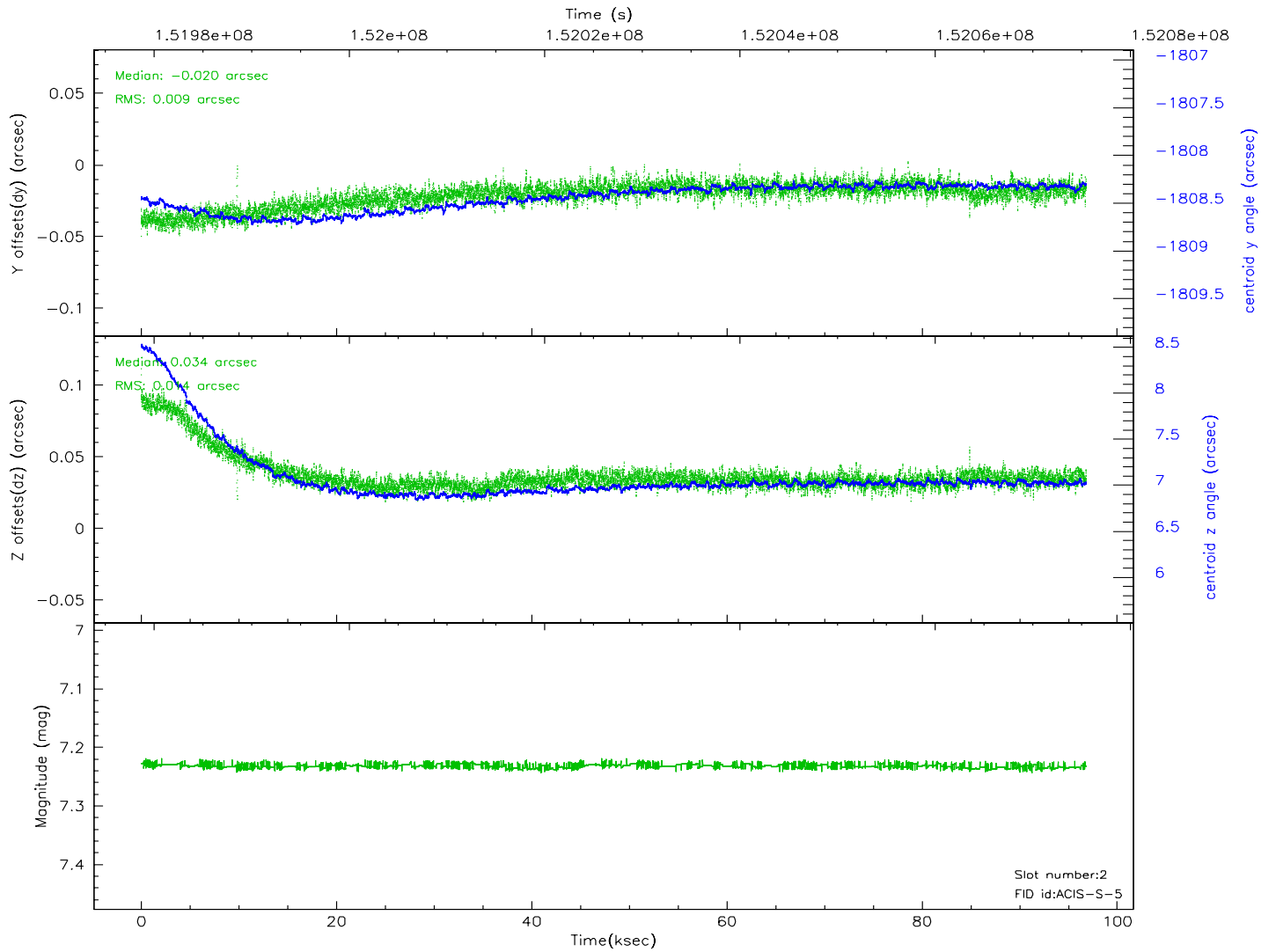
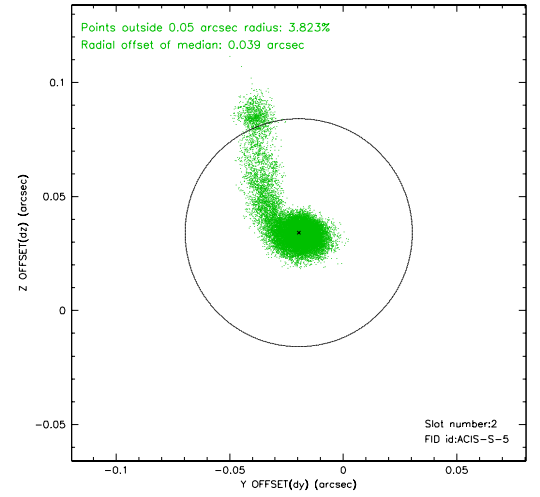
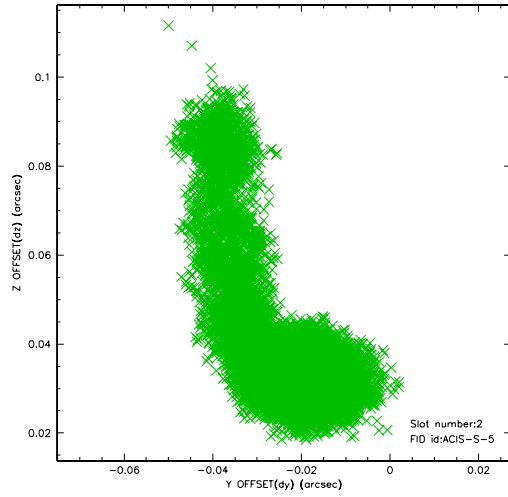
2.5.1 Slot 0



2.5.2 Slot 1

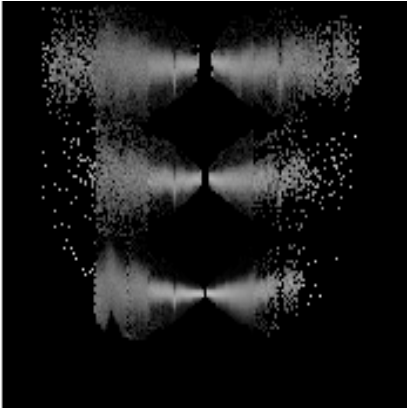


2.5.3 Slot 2

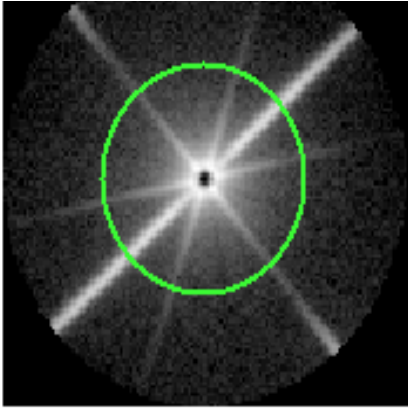


3 Gratings

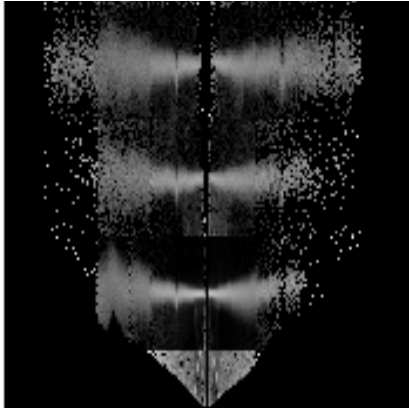
3.1 LETG Arm



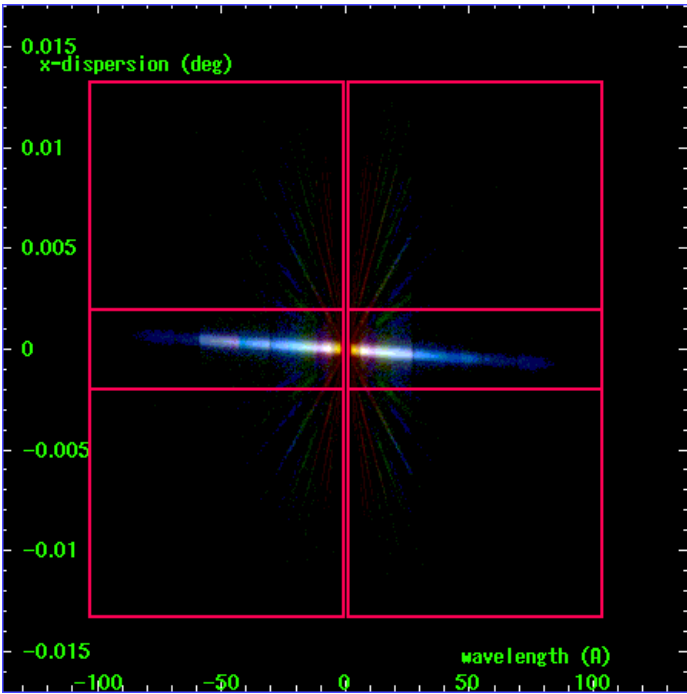
LETG Order Sort 123



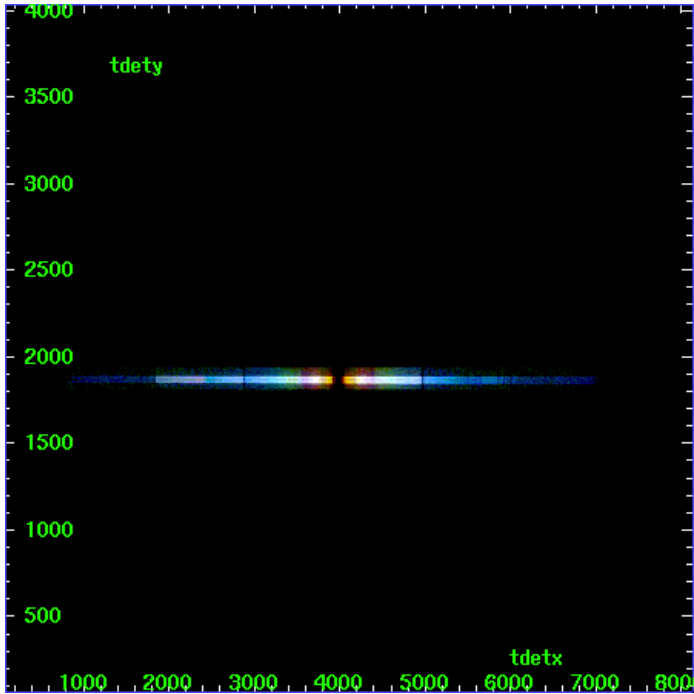
LETG Zero Order



LETG Order Sort ALL

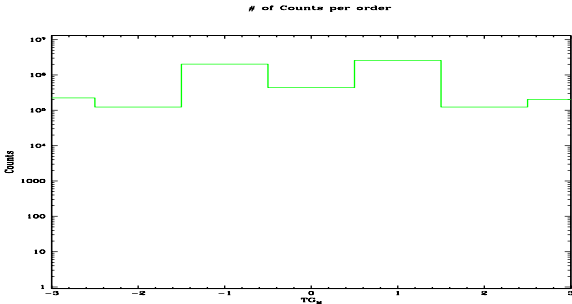


Spot Image LETG

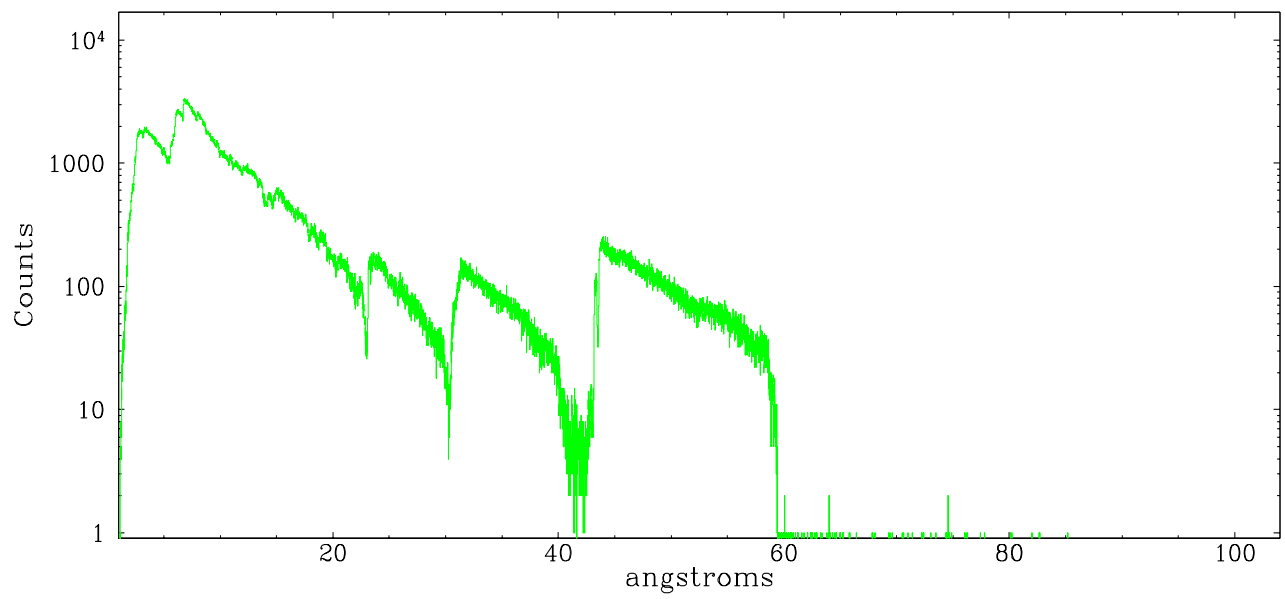


Full Detector LETG

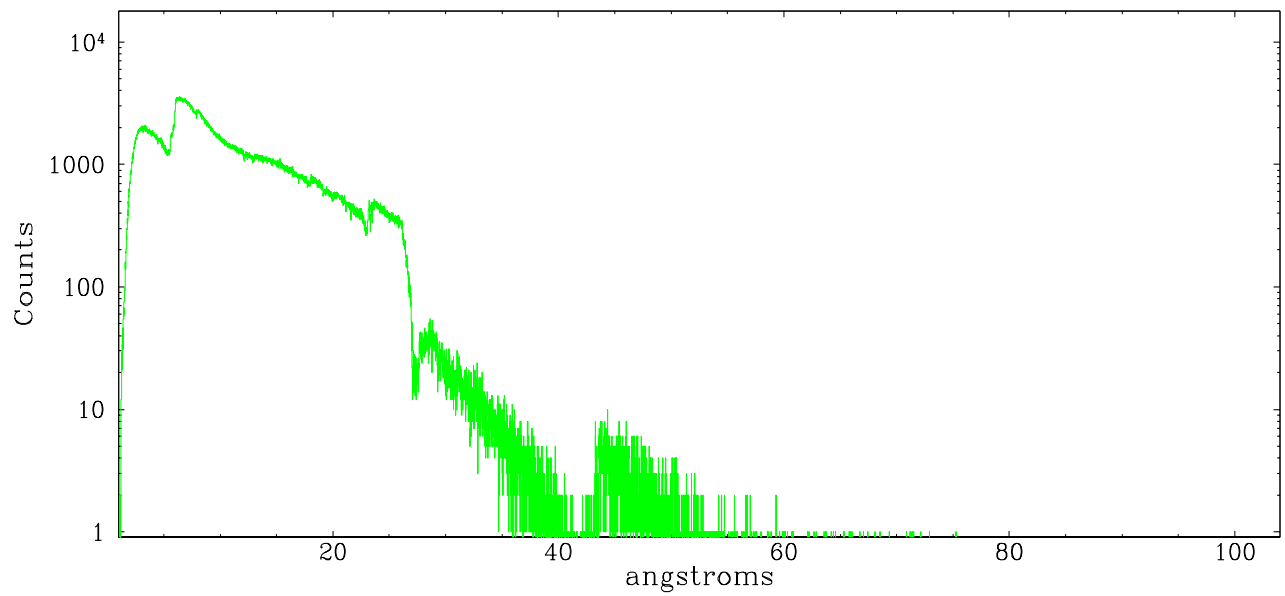
	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	224818	123099	2036471	439561	2586423	123772	203937



leg order -1



leg order +1



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2006.12.13
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	96.844

A.2 Comments

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=4003.59; y=4219.72 in sky coordinates; ra=11:04:27.319, dec=+38:12:31.88) into the *src1a.fits file. These corrected coordinates were determined using the software tool finndzero.sl in ISIS, an MIT software package for data analysis. The tool calculates the angle between the readout streak and the meg arm (preferred position), and the readout streak and the heg arm. The zeroth order source position determined by the standard pipeline processing using the tool tgdetect was not used in the extraction of the spectrum because it found a zeroth order position on the wings of the PSF due to the piled up profile. The *pha2.fits file has the extracted spectral data based on the corrected zeroth order position. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect with the default parameters on the data.

Focal plane temperature is warmer than -118.7 C degrees during the first approximately 1.5 ksec of this observation. The ACIS spectral response calibration for the front-illuminated chips is less accurate at these warmer temperatures than it is at -119.7 C. The back-illuminatd chips are not affected at the focal plane temperatures recorded for this observation. Users whose science objectives depend on the most accurate spectral response (i.e.: fitting line-rich spectra) may notice an effect. Users whose science objectives do not depend on the most accurate spectral response should not notice an effect.

An increase in count rate of about a factor of 2 occurs between 30 and 45 ksec into the observation. No evidence is seen that this increase is instrumental.