

V&V Reference Report

L2 ASCDS Version : 10

Observation 15482 - L2 Version 3
Chandra X-Ray Center

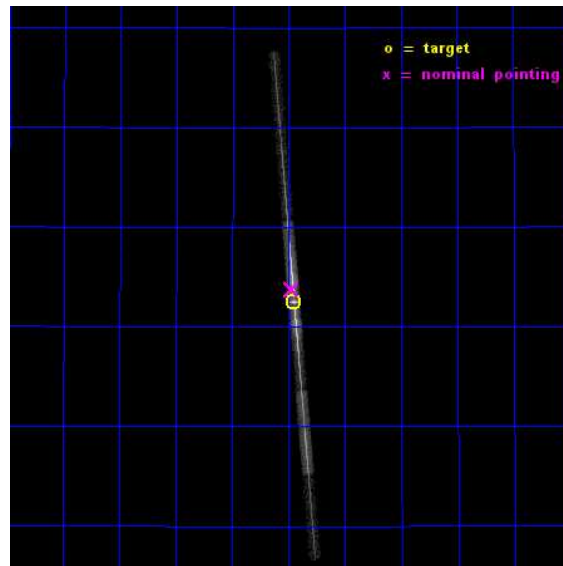
L2 Processing Date : Dec 3 2014

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1 Front

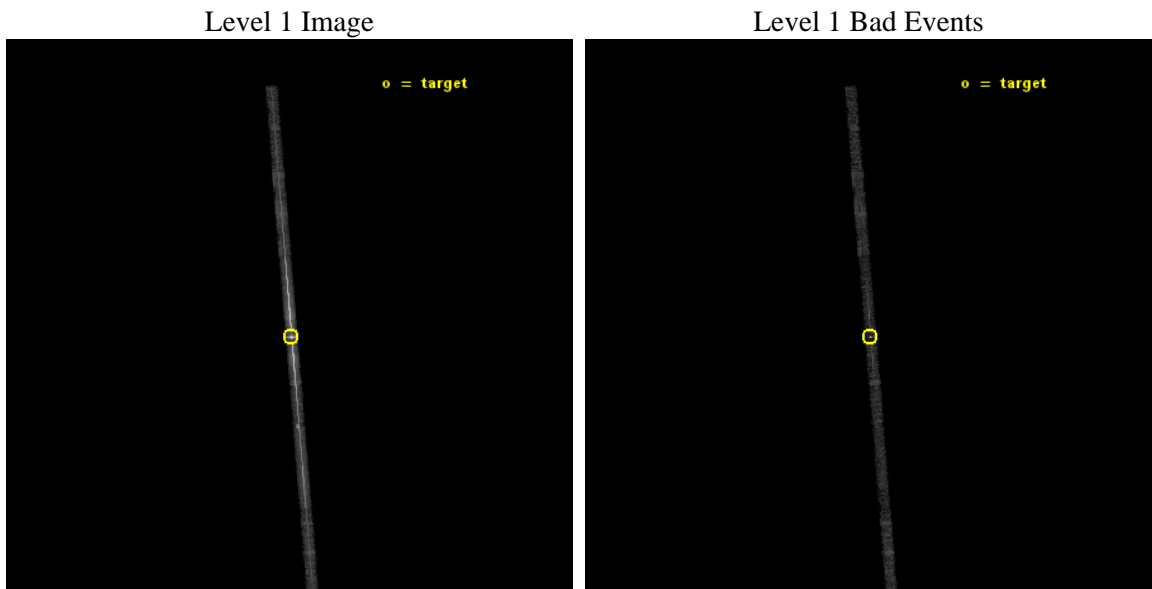
seq_num	790258	Sequence number
obs_id	15482	Observation id
title	AO-14 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.11893734632	Nominal RA [deg]
dec_nom	38.229411001951	Nominal Dec [deg]
roll_nom	265.13088559408	Nominal Roll [deg]
revision	3	Processing version of data
ontime	9768.3771232367	Sum of GTIs [s]
liveltime	9227.388516498	Livetime [s]
ontime4	9768.41816324	Sum of GTIs [s]
ontime5	9768.3360832334	Sum of GTIs [s]
ontime6	9768.2950432301	Sum of GTIs [s]
ontime7	9768.3771232367	Sum of GTIs [s]
ontime8	9768.2540032268	Sum of GTIs [s]
ontime9	9768.2129632235	Sum of GTIs [s]
l2events	209438	Number of level 2 events



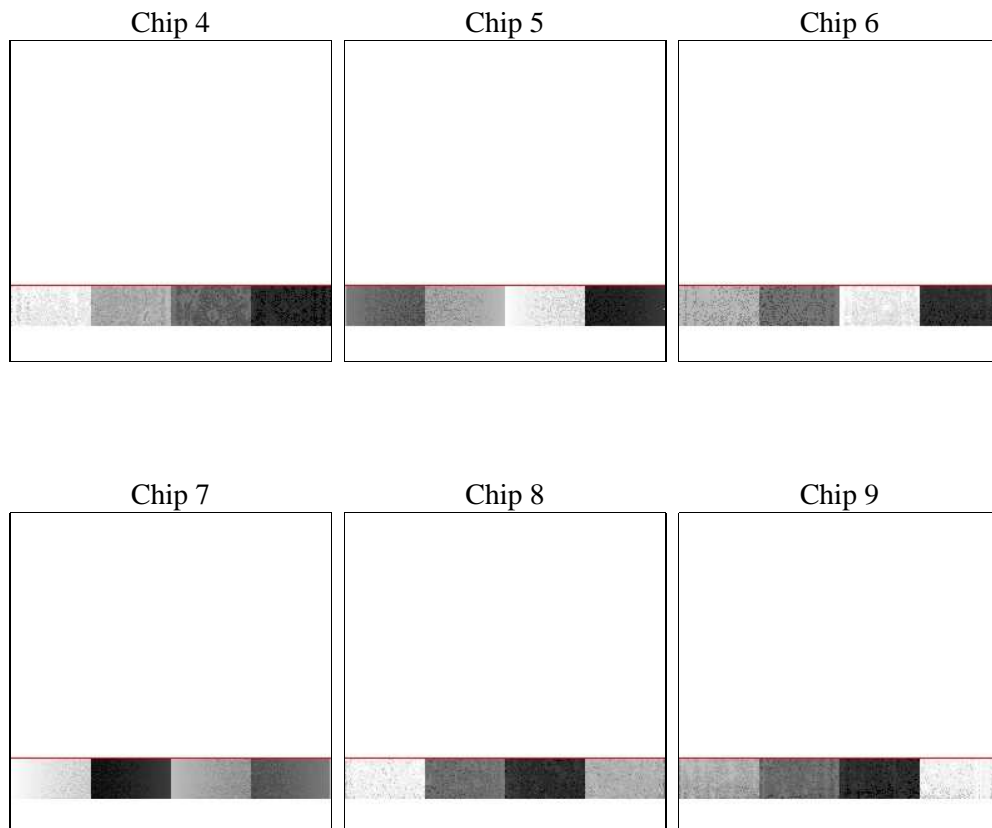
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	9768.3771232367	Sum of GTIs [s]
caldsver	4.6.4	 	ontime4	9768.41816324	Sum of GTIs [s]
date	2014-12-04T01:51:14	Date and time of file creation	ontime5	9768.3360832334	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	9768.2950432301	Sum of GTIs [s]
			ontime7	9768.3771232367	Sum of GTIs [s]
			ontime8	9768.2540032268	Sum of GTIs [s]
			ontime9	9768.2129632235	Sum of GTIs [s]
			l1events	271940	Number of level 1 events
			tgmetho	FINDZO	Method used to create src1a file
			ra_pos	(4126.17, 3045.47)	grade sky pixel position

2.1.4 Events

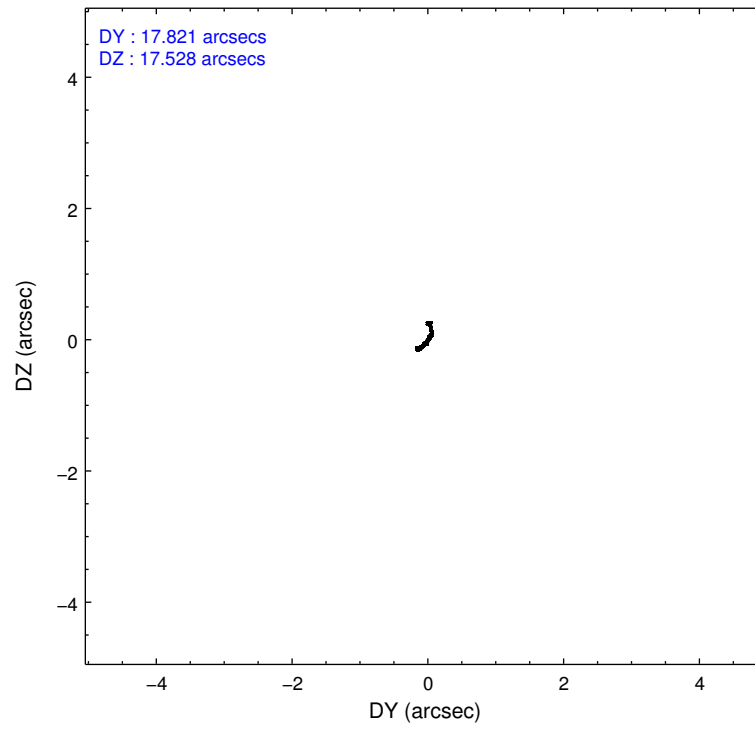
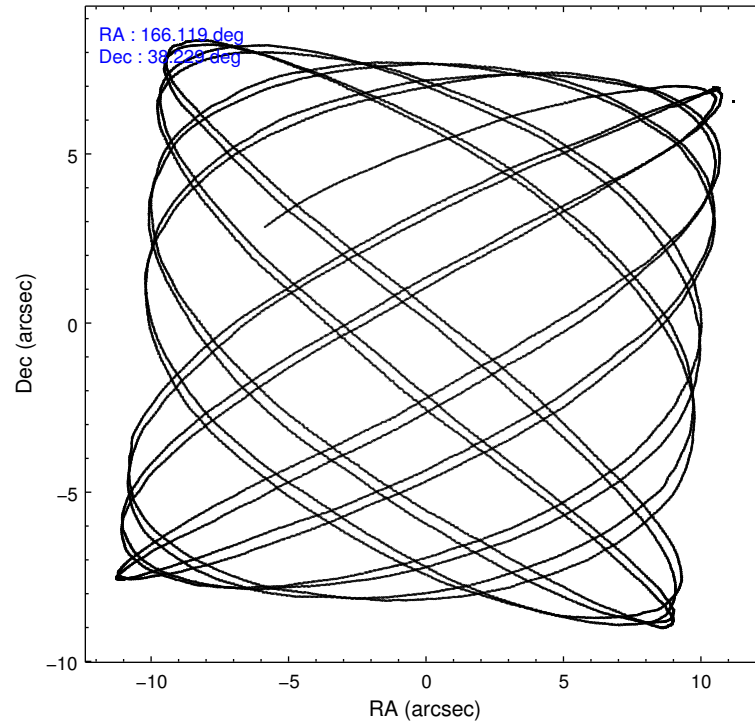
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	10370	25251	75793	135331	16398	8797
rejected events	7407	5107	7095	20184	7999	5801
rejected %	71%	20%	9%	14%	48%	65%

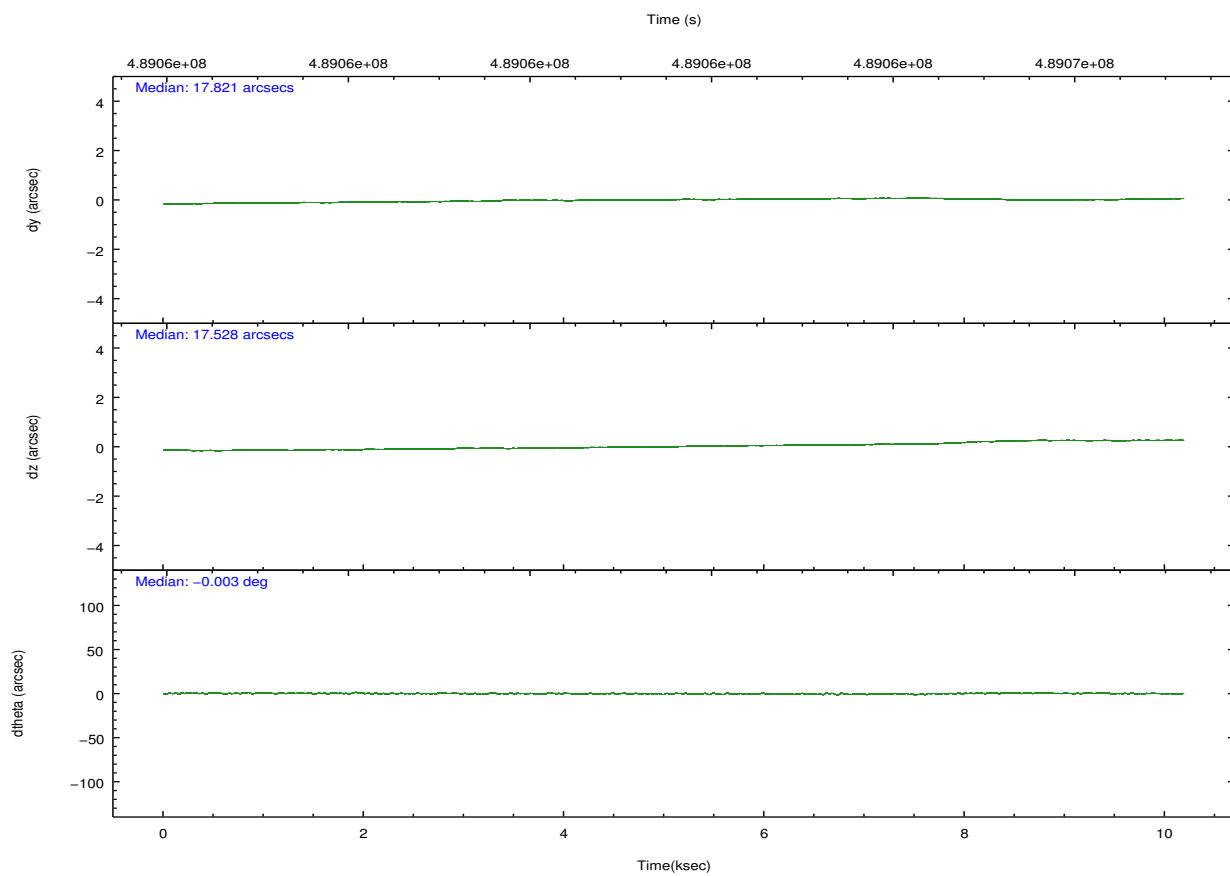
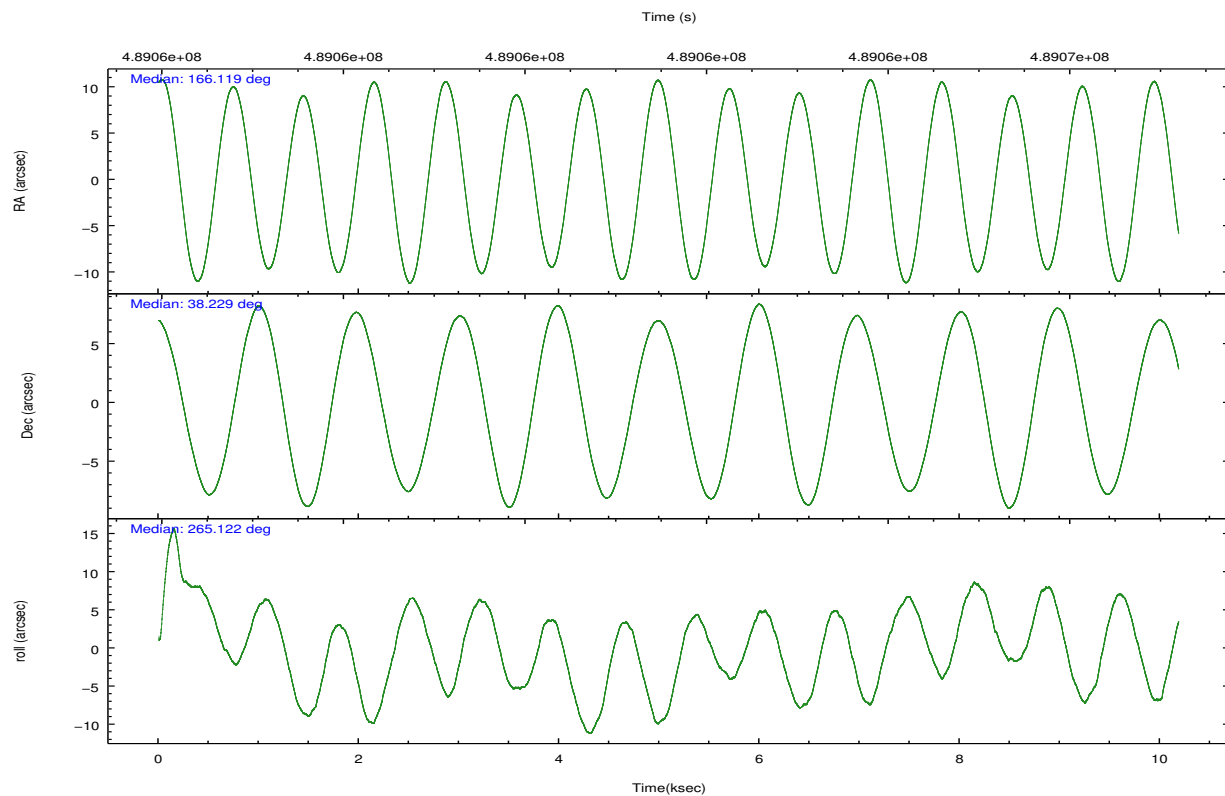
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
grade 0 events	2035	9912	55111	31926	5411	2046
	19%	39%	72%	23%	32%	23%
grade 1 events	4	64	266	721	7	4
	0%	0%	0%	0%	0%	0%
grade 2 events	374	3789	7289	29178	1084	392
	3%	15%	9%	21%	6%	4%
grade 3 events	191	1484	2269	13274	440	198
	1%	5%	2%	9%	2%	2%
grade 4 events	189	1566	2319	13042	432	153
	1%	6%	3%	9%	2%	1%
grade 5 events	287	1067	469	3647	408	304
	2%	4%	0%	2%	2%	3%
grade 6 events	174	3395	1719	27750	1034	207
	1%	13%	2%	20%	6%	2%
grade 7 events	7116	3974	6351	15793	7582	5493
	68%	15%	8%	11%	46%	62%

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	LETG	LETG	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	166.103686	166.1189373463208	CCD I2 on	N	N
[deg] Pointing Dec	38.253977	38.22941100195129	CCD I3 on	N	N
[deg] Pointing Roll	264.983702	265.1308855940783	CCD S0 on	O1	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S2 on	Y	Y
[mm] SIM translation stage pos	-182.132523	-182.1344861297048	CCD S3 on	Y	Y
[mm] SIM translation stage offset	-8	-7.998036453302973	CCD S4 on	Y	Y
[s] Observation start time (MET)	489056672.184000	489056167.77687	CCD S5 on	Y	Y
Observation start date	2013-07-01T09:03:25	2013-07-01T08:56:07	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	489066672.184000	489066895.93995	On-chip summing requested	N	N
Observation end date	2013-07-01T11:50:05	2013-07-01T11:54:55	Subarray requested	CUSTOM	1/8
Read mode	TIMED	TIMED	Subarray start row	113	113
			Subarray row count	128	128
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.7

2.3 Aspect



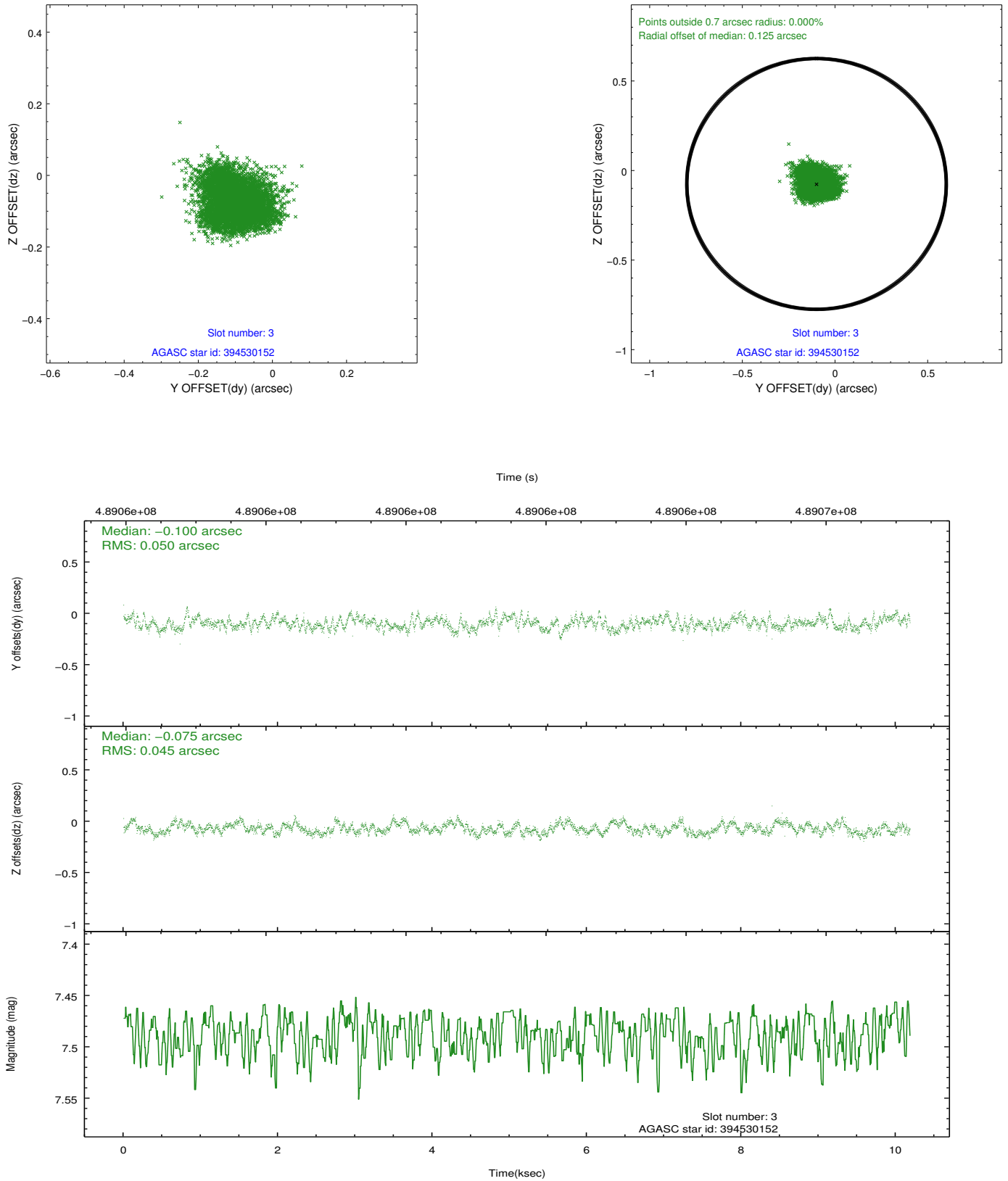


Slot Statistics

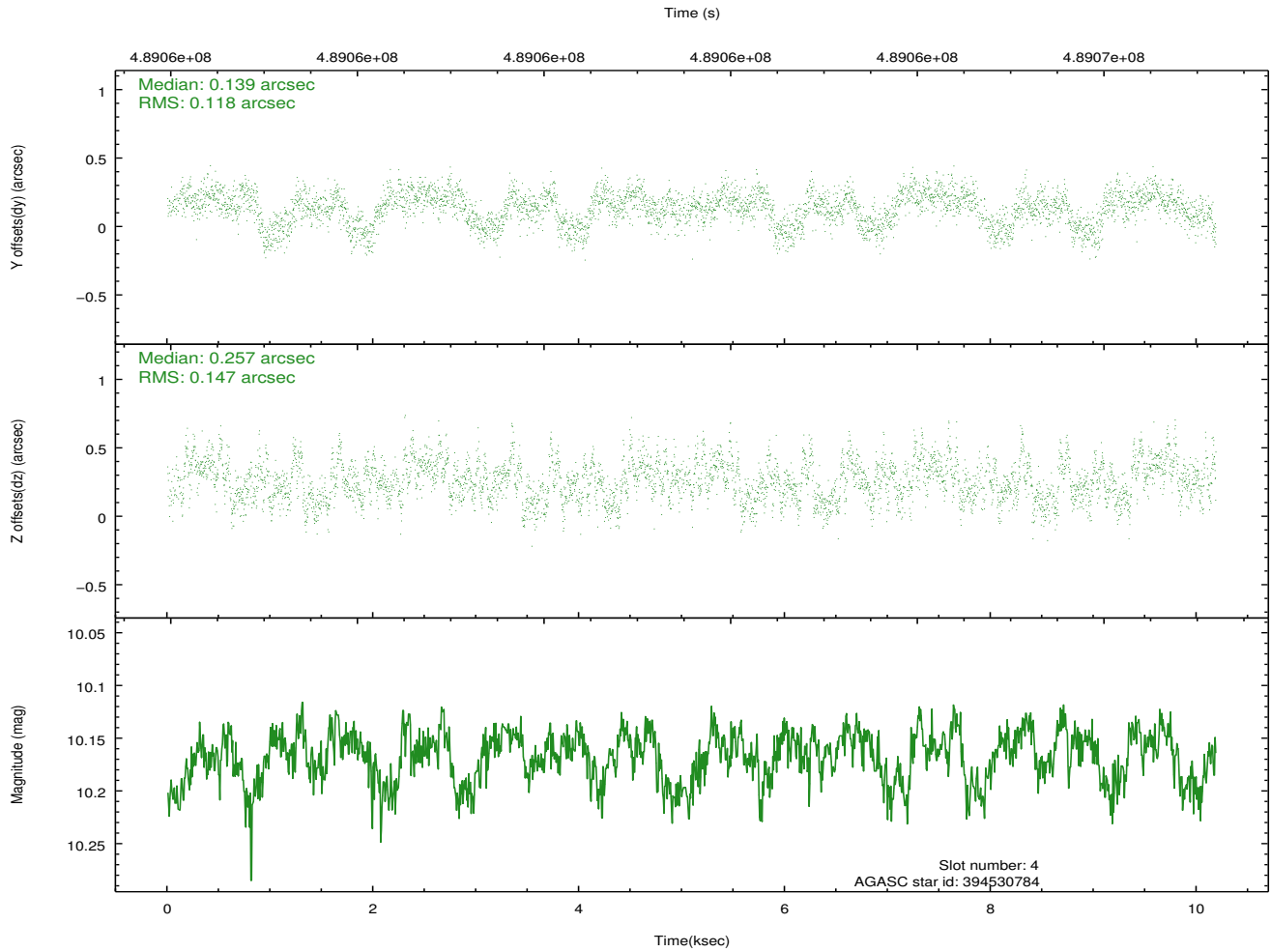
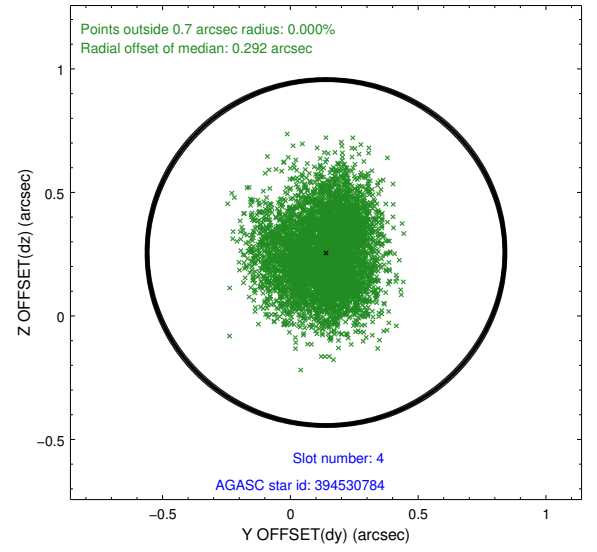
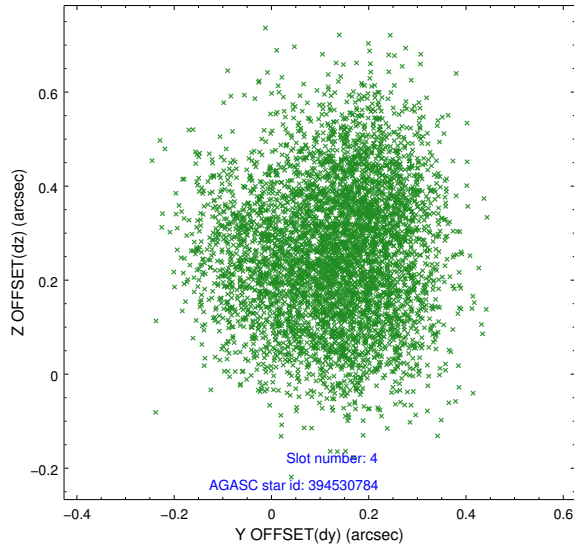
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.86	2483	-0.145	-0.107	0.006	0.011	0.000000	0.000000	-770.46	-1903.86
1	FID		ACIS-S-4	6.94	2484	0.131	0.082	0.006	0.010	0.000000	0.000000	2142.90	4.13
2	FID		ACIS-S-6	7.15	2484	-0.013	0.032	0.008	0.014	0.000000	0.000000	392.37	642.11
3	GUIDE	used	394530152	7.49	4968	-0.100	-0.075	0.073	0.115	166.075805	38.868252	-2195.72	-271.26
4	GUIDE	used	394530784	10.17	4851	0.139	0.257	0.205	0.317	165.569172	38.418674	-462.90	-1553.43
5	GUIDE	used	394533848	8.72	4964	0.115	0.041	0.124	0.192	166.382906	38.276007	-149.28	774.52
6	GUIDE	used	394543960	9.79	4934	0.078	-0.221	0.155	0.248	165.802757	37.787371	1747.43	-705.52
7	GUIDE	used	394546712	6.60	4968	-0.213	-0.005	0.073	0.117	166.451462	38.394357	-590.33	932.28

2.4 Star Slots

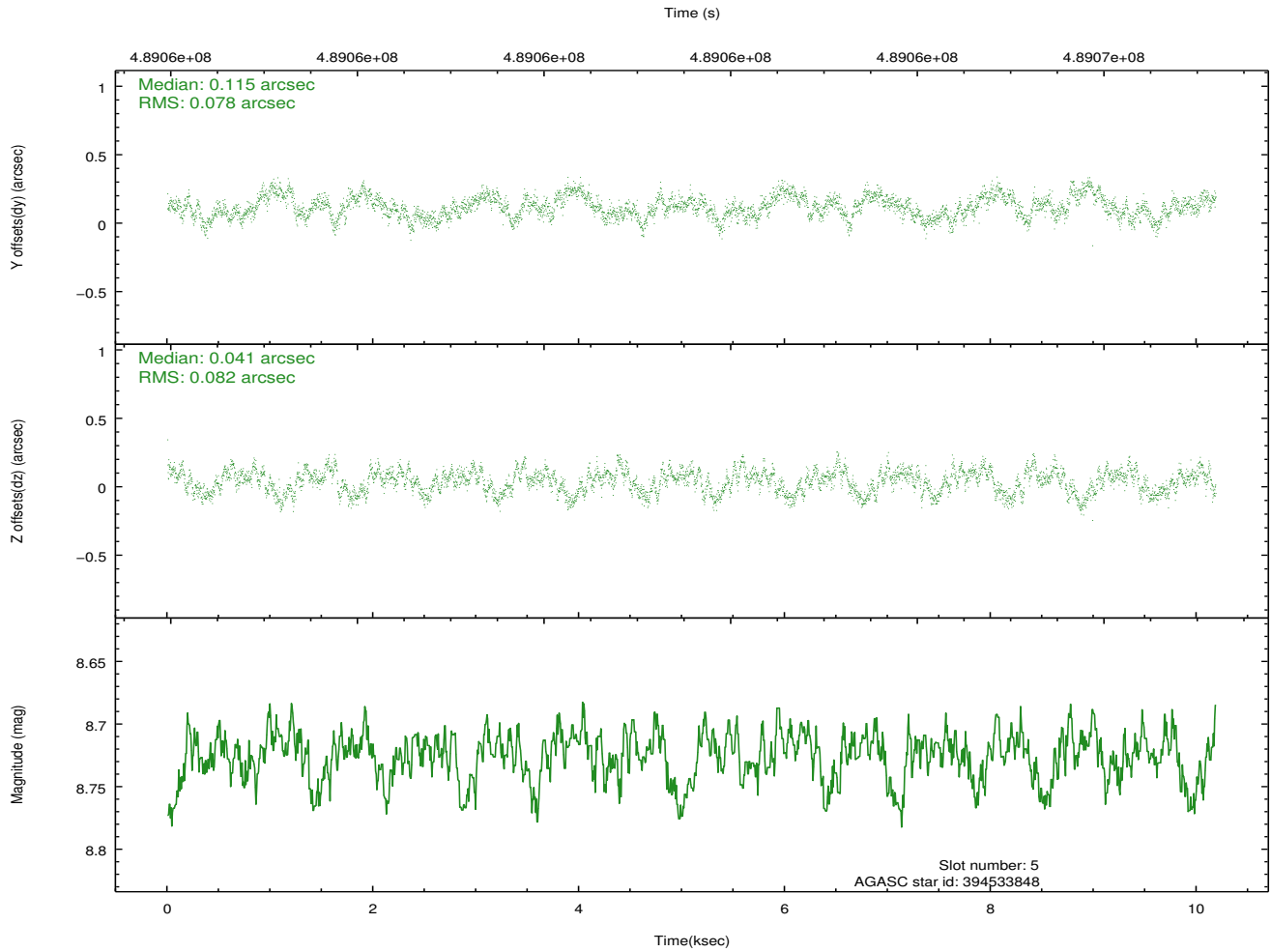
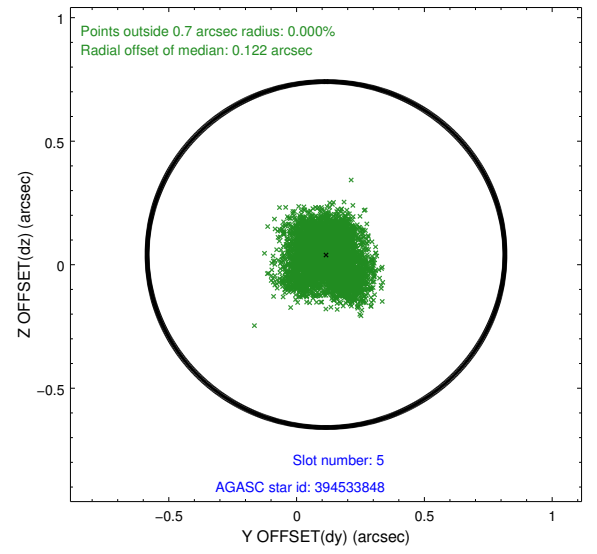
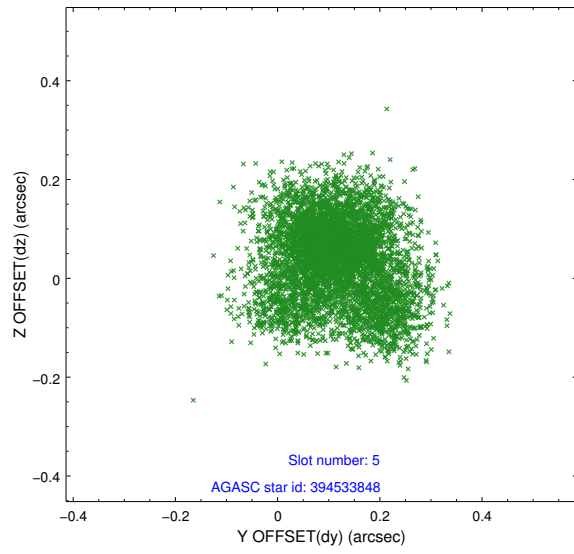
2.4.1 Slot 3



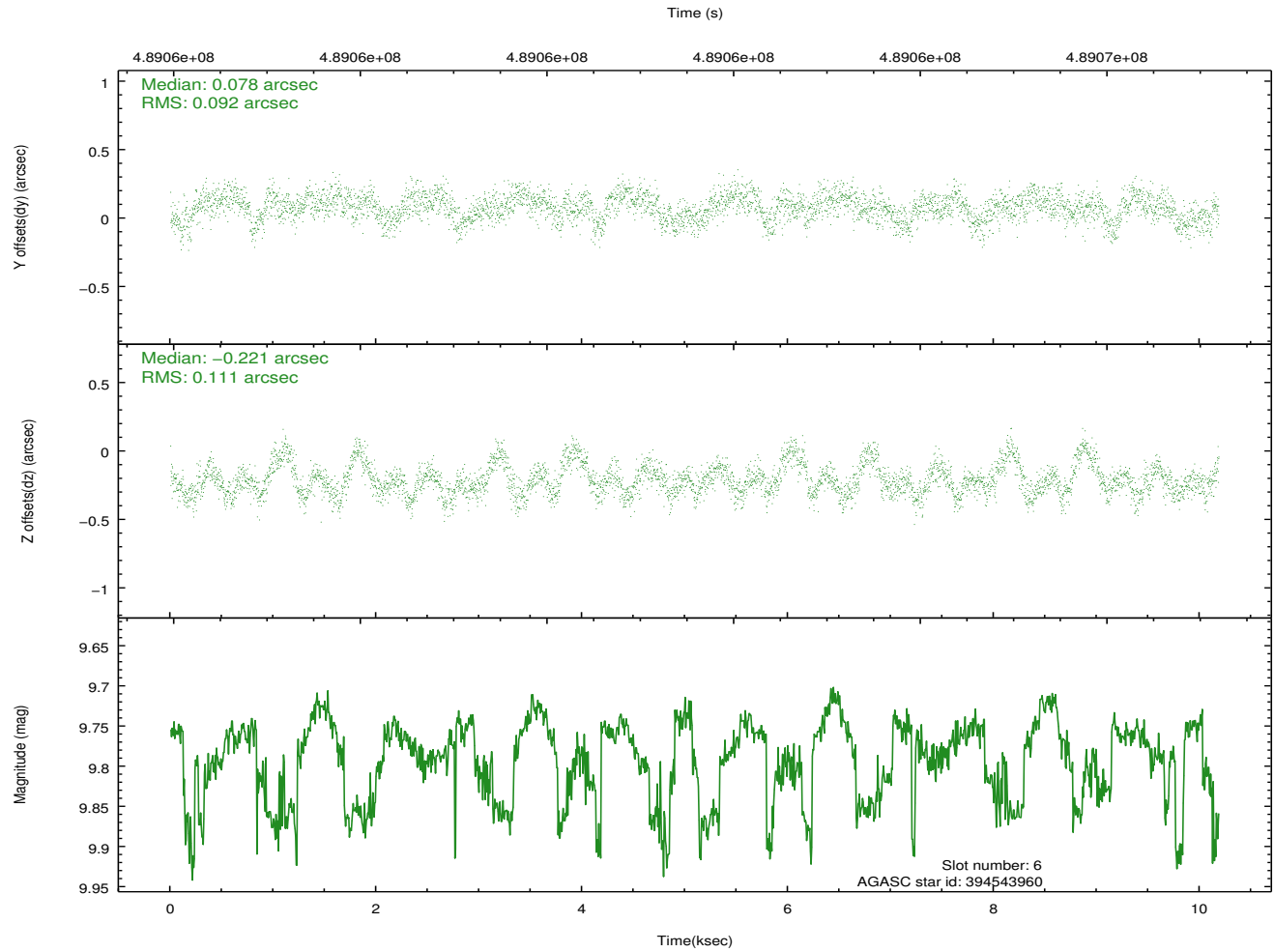
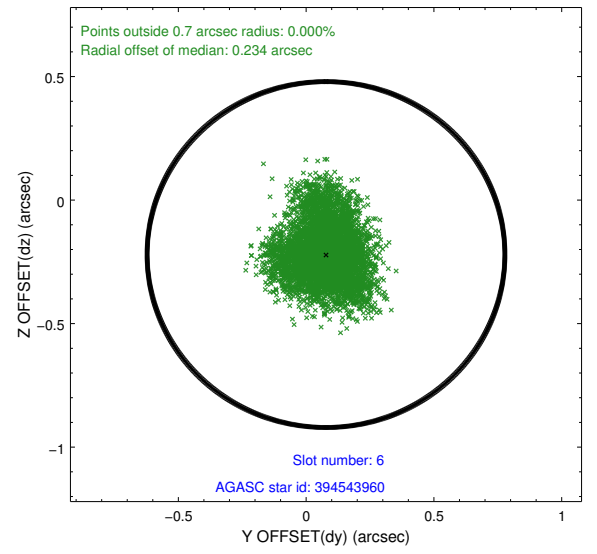
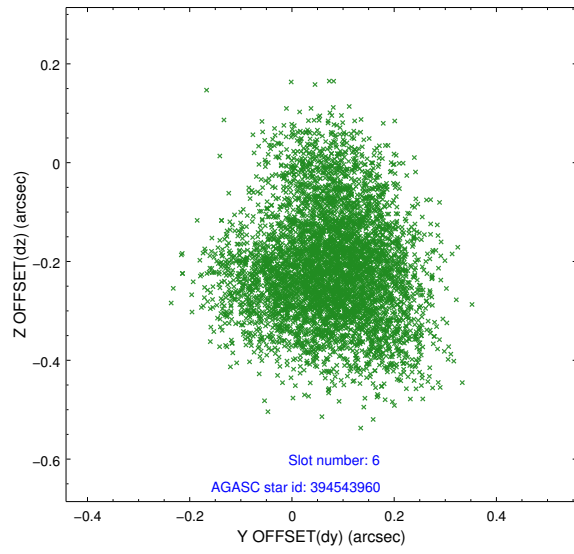
2.4.2 Slot 4



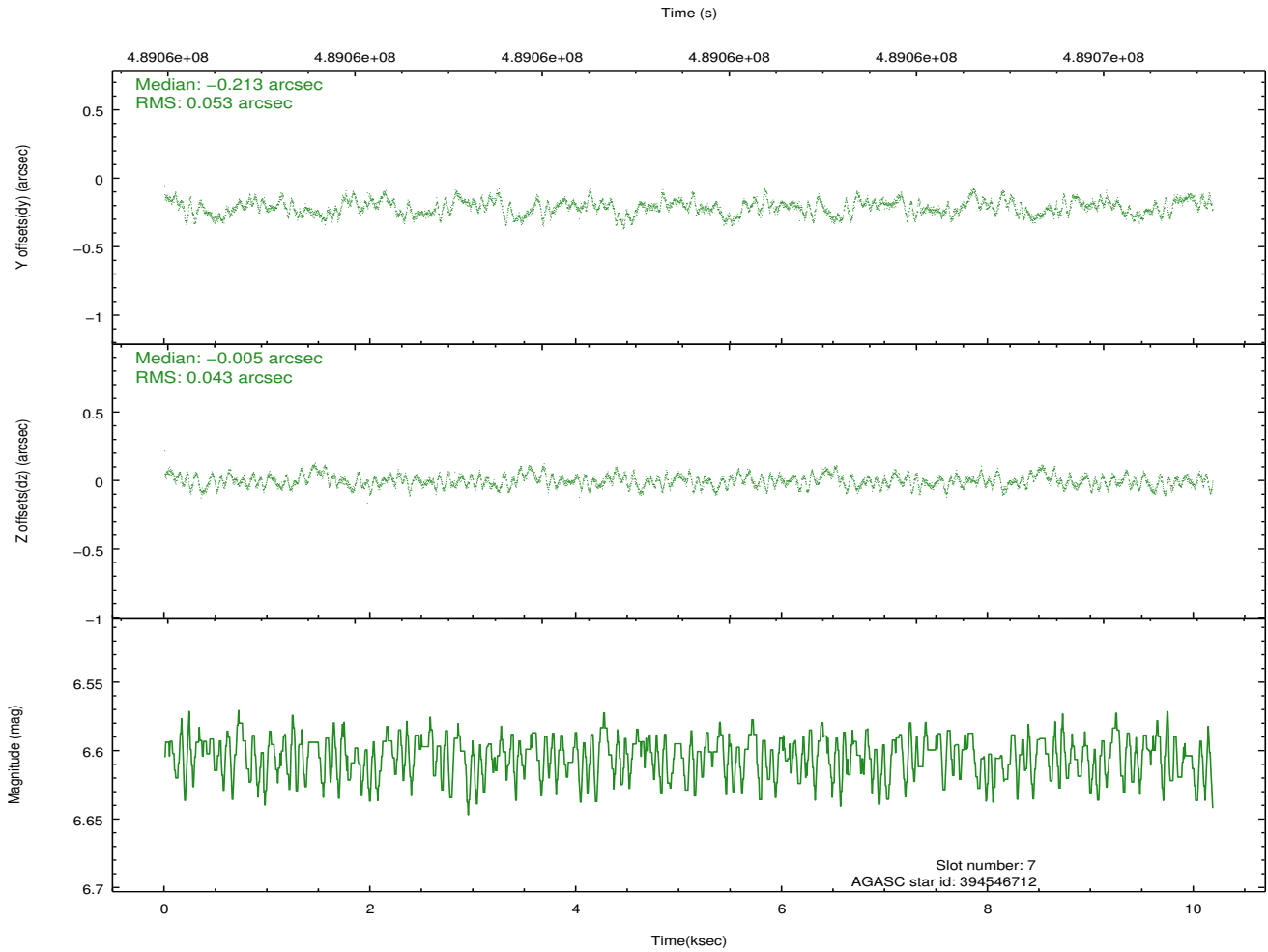
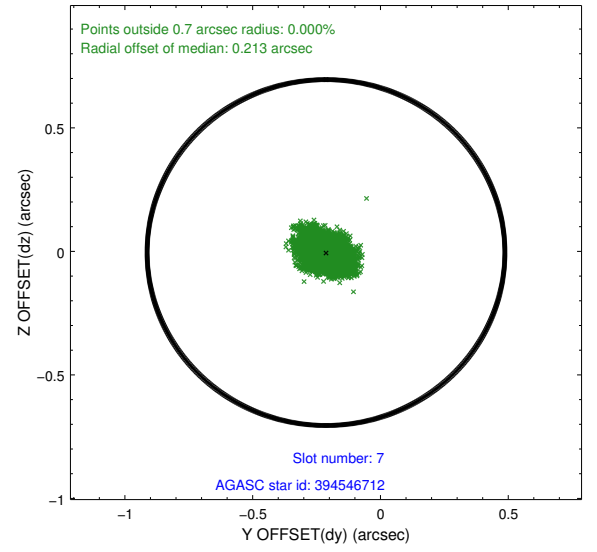
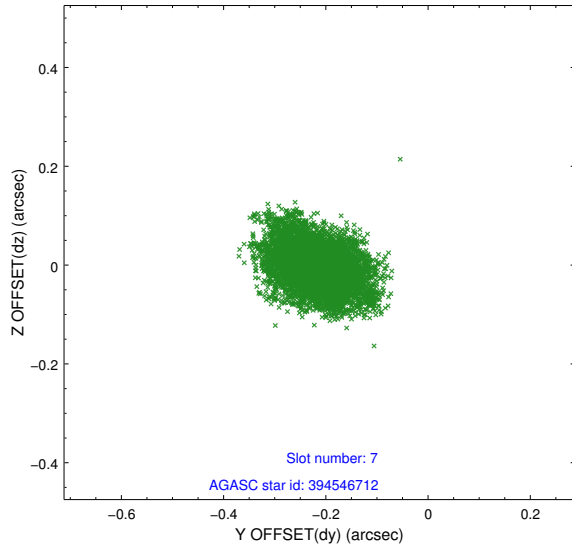
2.4.3 Slot 5



2.4.4 Slot 6

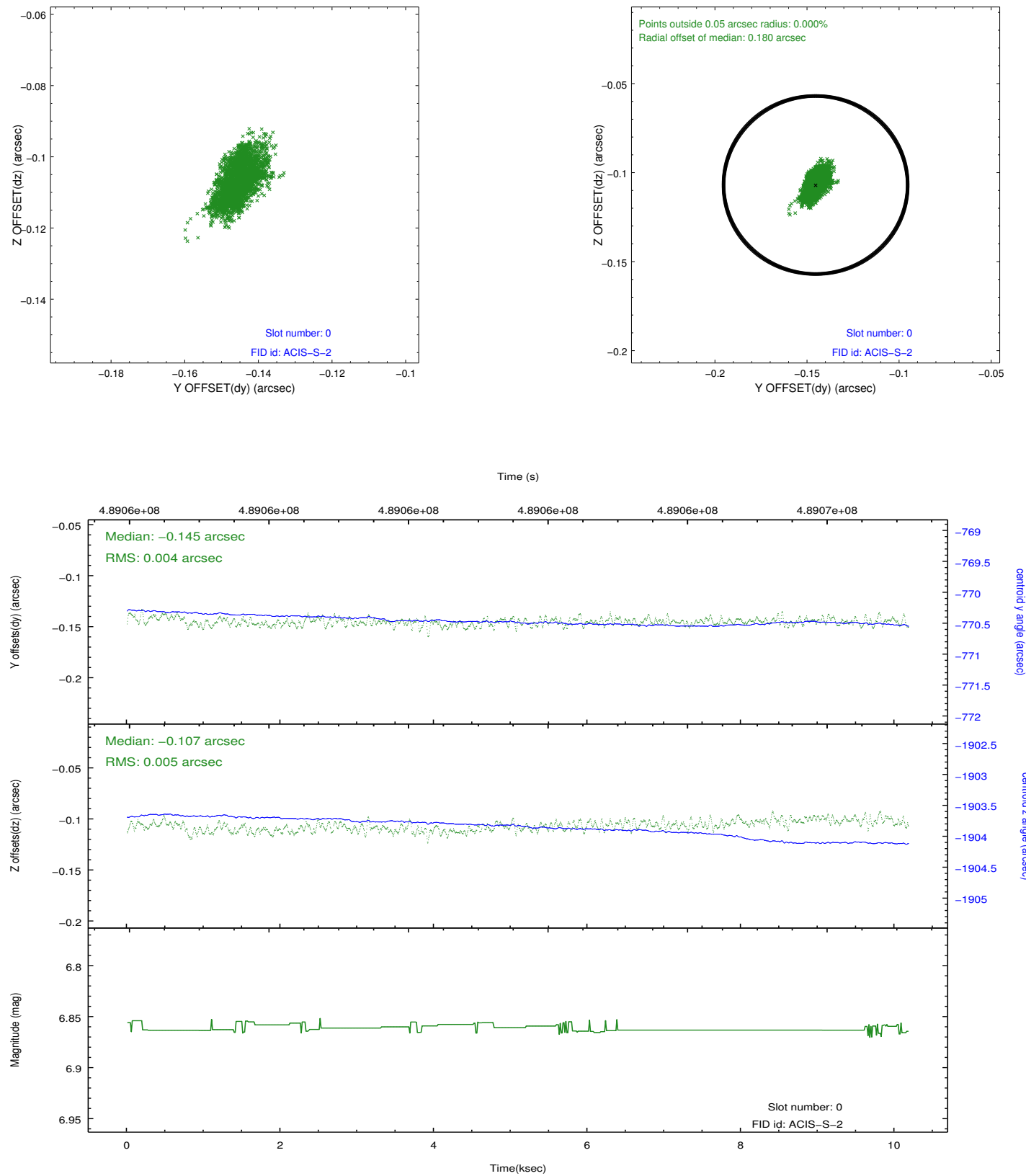


2.4.5 Slot 7

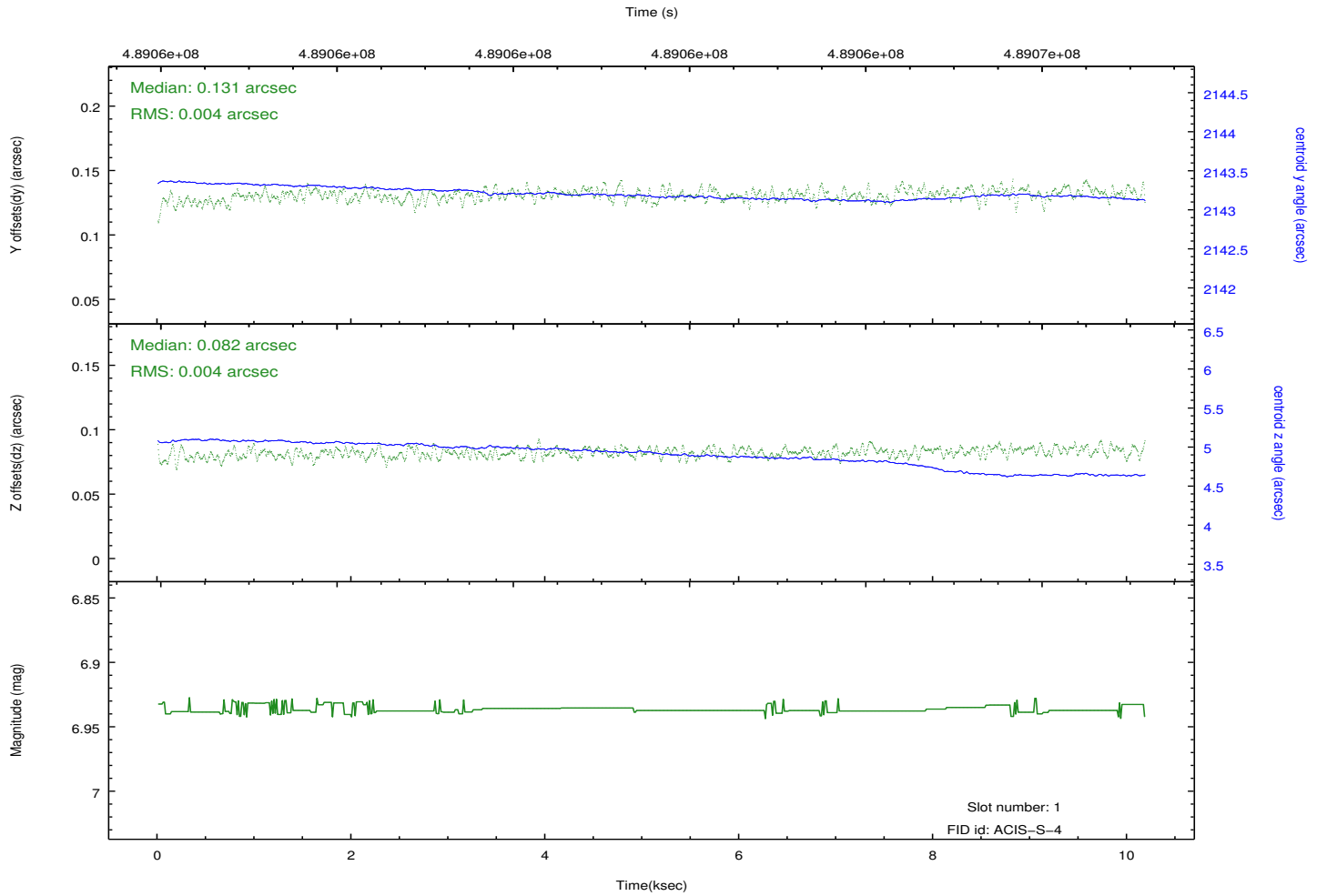
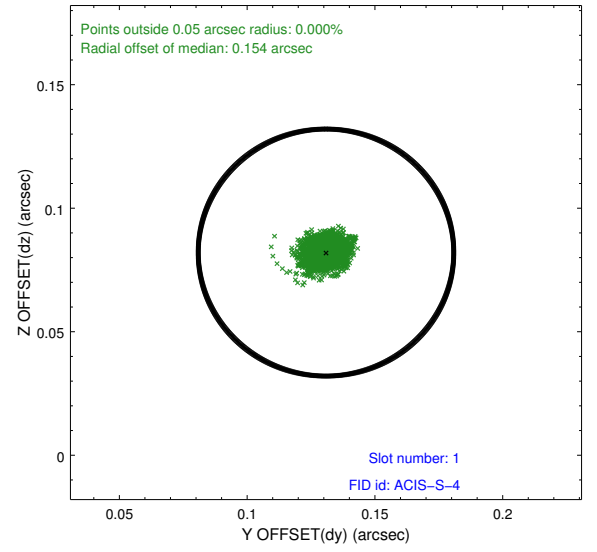
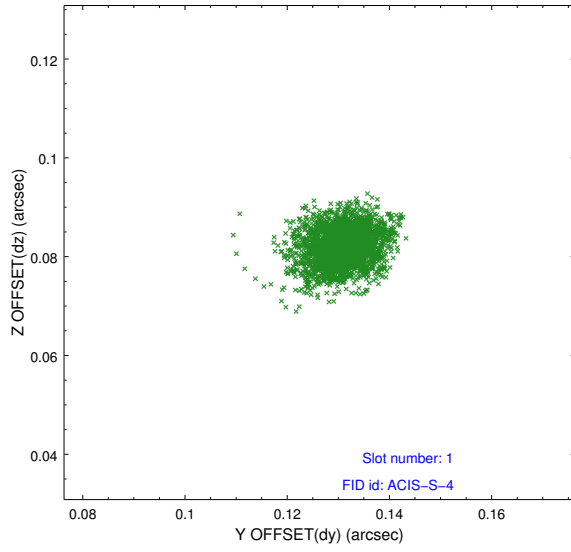


2.5 FID Slots

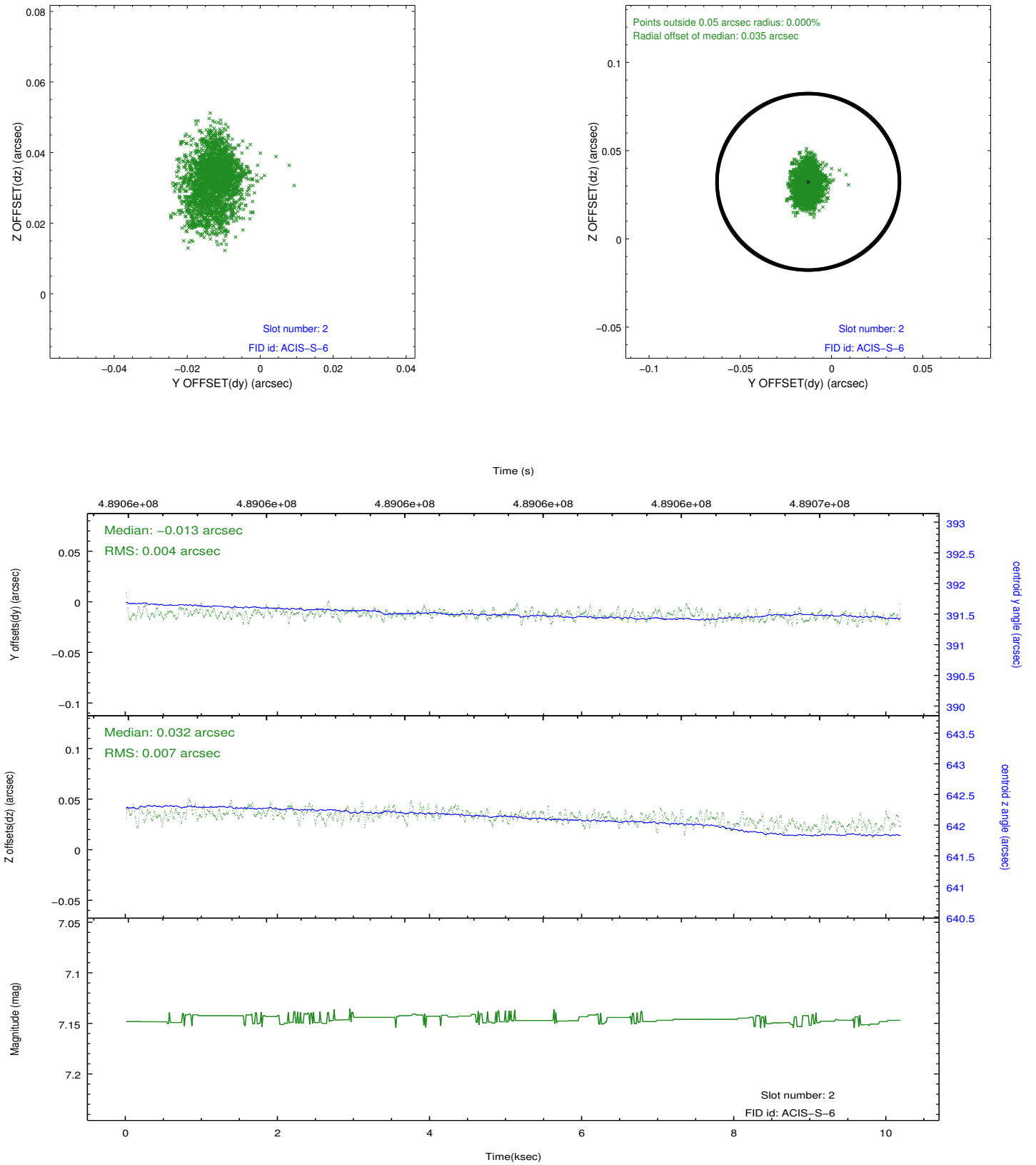
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2

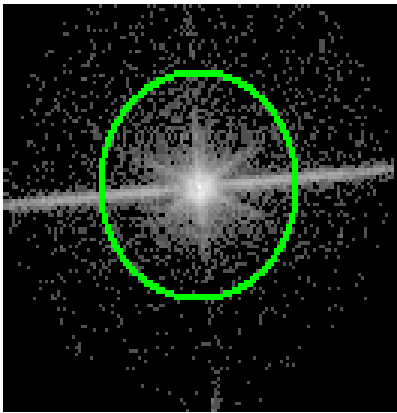


3 Gratings

3.1 LETG Arm



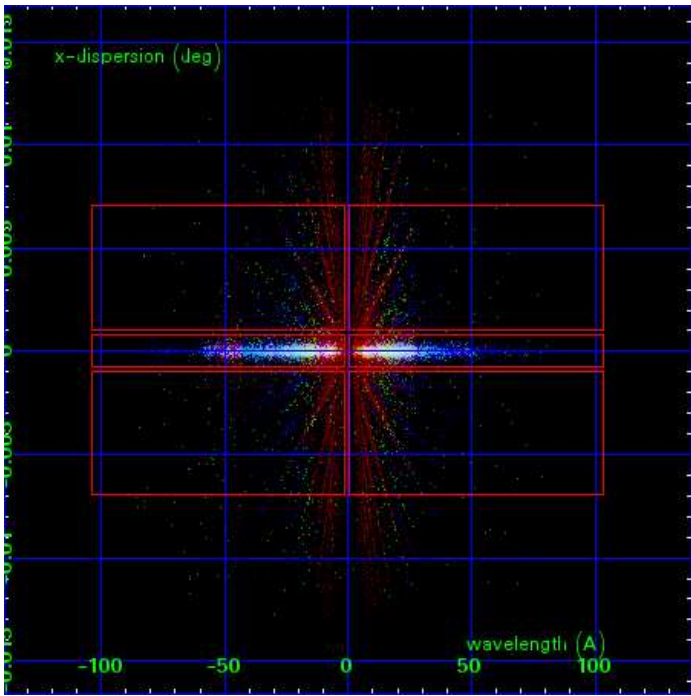
LETG Order Sort 123



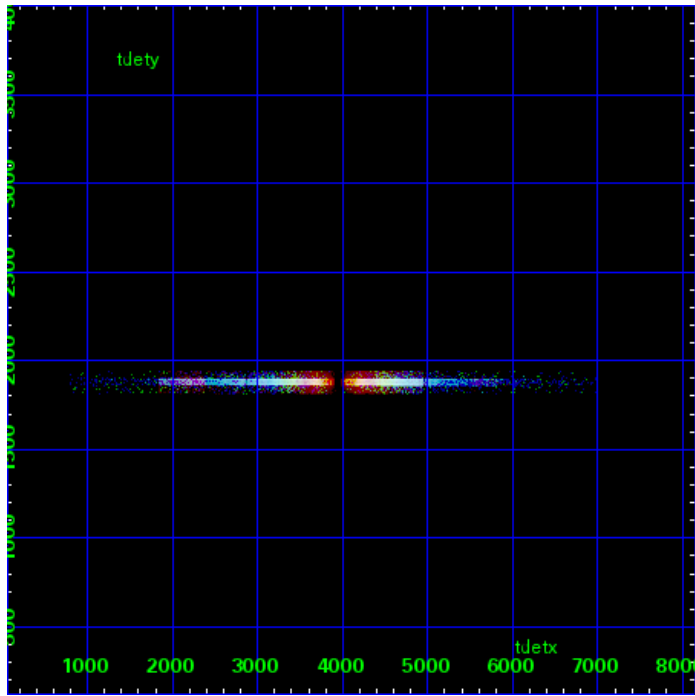
LETG Zero Order



LETG Order Sort ALL

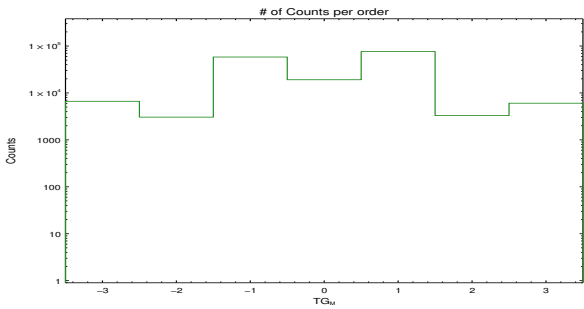


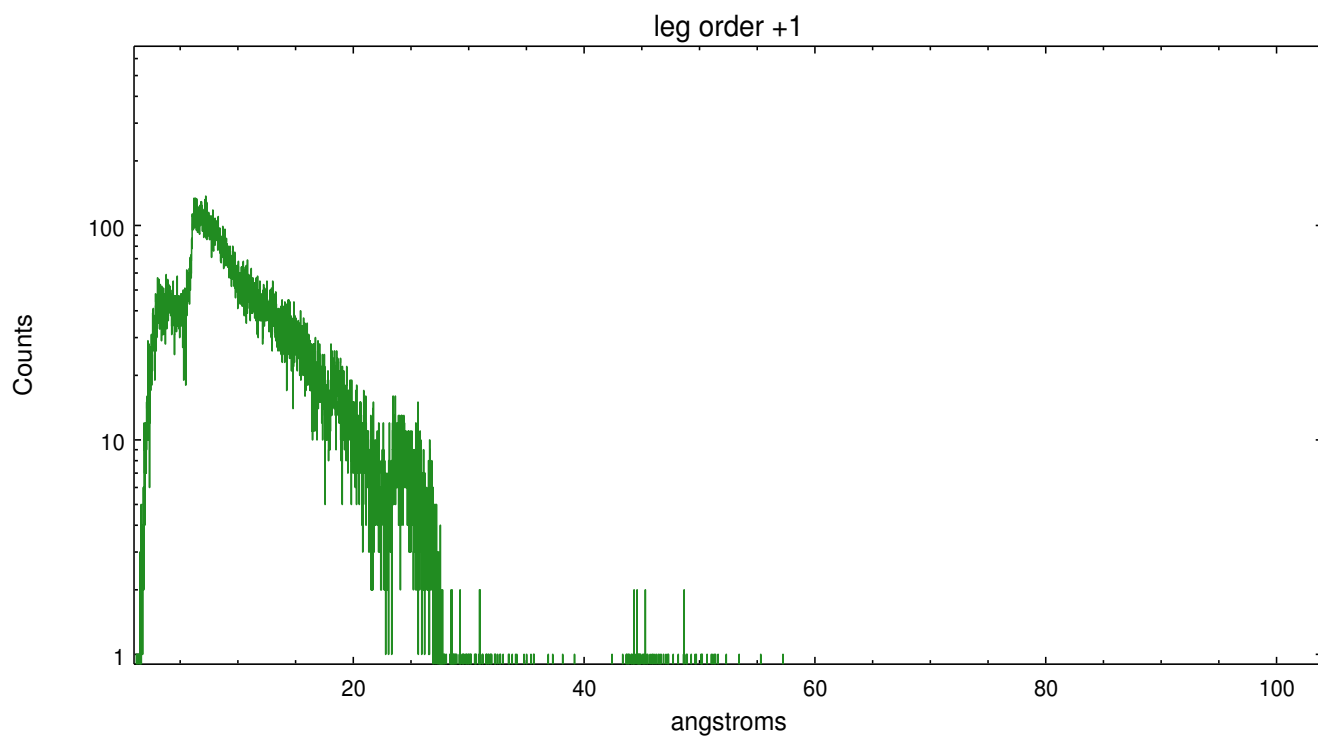
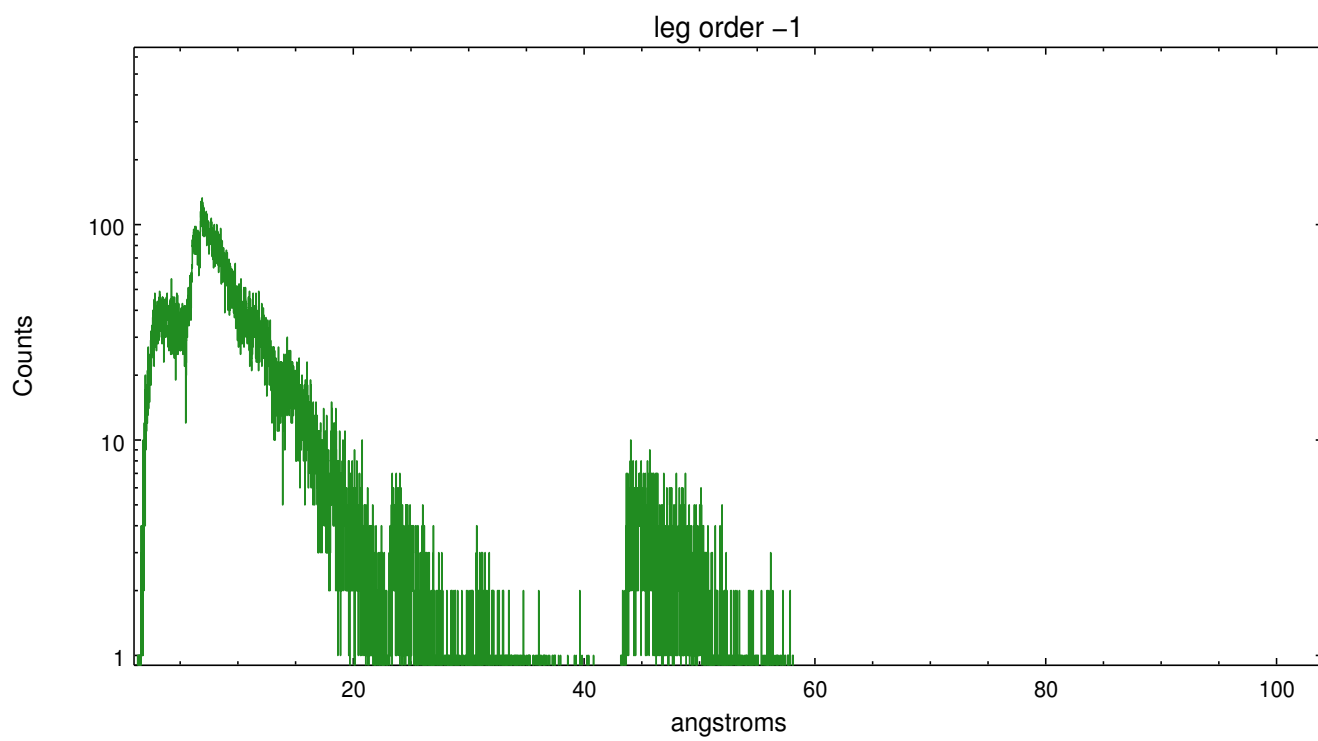
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	6634	3050	58294	19128	76109	3294	6042





A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2015.11.03
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.7683771232367

A.2 Comments

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.

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Zeroth order piled up. The zeroth order sky position was determined using a software tool developed by CXC called findzero, which is available in CIAO as part of the tgdetect2 tool. The tool calculates the point of intersection of the readout streak on the ACIS CCD and the meg dispersed spectral arm, rather than using a centroid position of the source. The findzero results are more accurate than source centroid in this case.

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Faint grating spectra can be seen in an image of bad events. This is probably due to pileup in the spectrum, causing migration to bad grades. This should be considered in analysis.