

V&V Reference Report

L2 ASCDS Version : 8.5.1.1

Observation 15476 - L2 Version 3
Chandra X-Ray Center

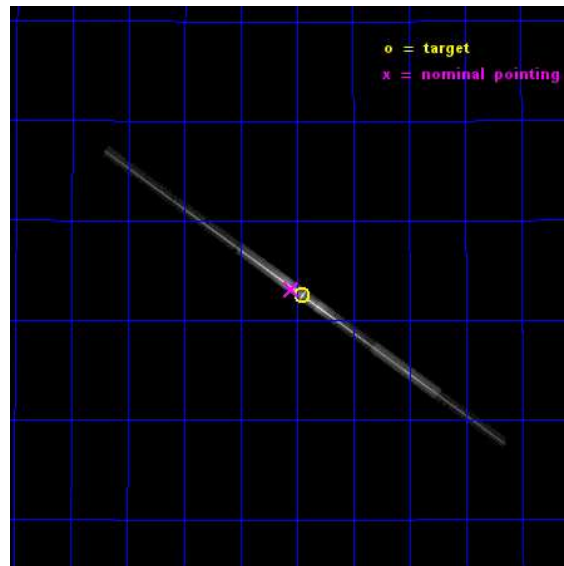
L2 Processing Date : Dec 2 2014

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1 Front

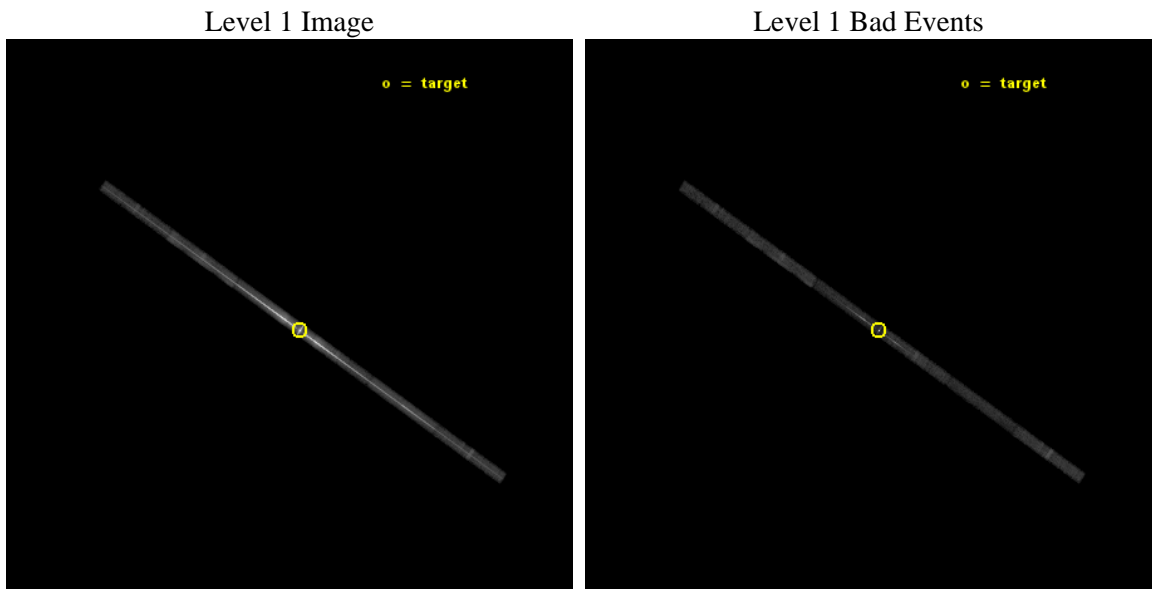
seq_num	790252	Sequence number
obs_id	15476	Observation id
title	AO-14 Calibration Observations of Mkn421	Proposal title
observer	Dr. CXC Calibration	Principal investigator
object	MKN421	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	166.113333	Observer's specified target RA [deg]
dec_targ	38.208806	Observer's specified target Dec [deg]
ra_nom	166.13698540993	Nominal RA [deg]
dec_nom	38.218661135301	Nominal Dec [deg]
roll_nom	215.10219983753	Nominal Roll [deg]
revision	3	Processing version of data
ontime	30050.401194096	Sum of GTIs [s]
livetime	28126.545483055	Livetime [s]
ontime4	30050.401194096	Sum of GTIs [s]
ontime5	30050.401194096	Sum of GTIs [s]
ontime6	30050.401194096	Sum of GTIs [s]
ontime7	30050.401194096	Sum of GTIs [s]
ontime8	30050.401194096	Sum of GTIs [s]
ontime9	30050.38041091	Sum of GTIs [s]
l2events	871368	Number of level 2 events



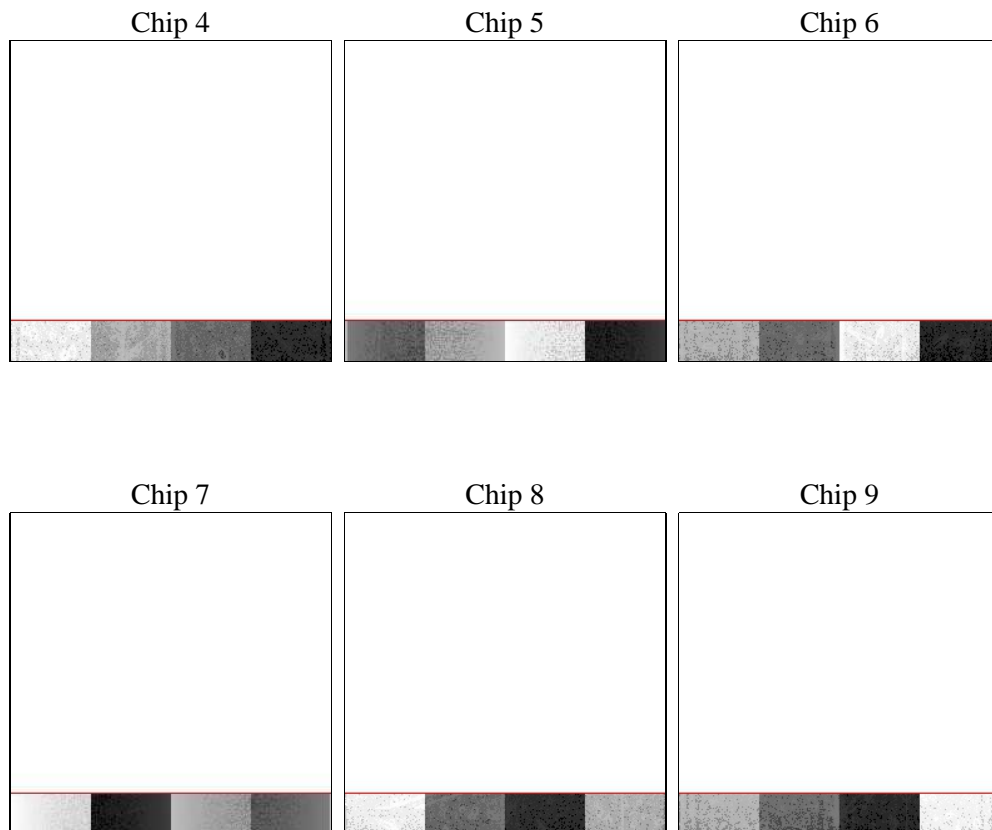
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	30000.000000	[s] Scheduled observation exposure time
ascdsver	10.3	Processing system revision	ontime	30050.401194096	Sum of GTIs [s]
caldsver	4.6.4	 	ontime4	30050.401194096	Sum of GTIs [s]
date	2014-12-02T13:09:10	Date and time of file creation	ontime5	30050.401194096	Sum of GTIs [s]
revision	2	Processing version of data	ontime6	30050.401194096	Sum of GTIs [s]
			ontime7	30050.401194096	Sum of GTIs [s]
			ontime8	30050.401194096	Sum of GTIs [s]
			ontime9	30050.38041091	Sum of GTIs [s]
			l1events	1086346	Number of level 1 events
			tgmethod	FINDZO	Method used to create src1a file
			z0_pos	(4230.12, 4024.06)	src1a sky pixel position

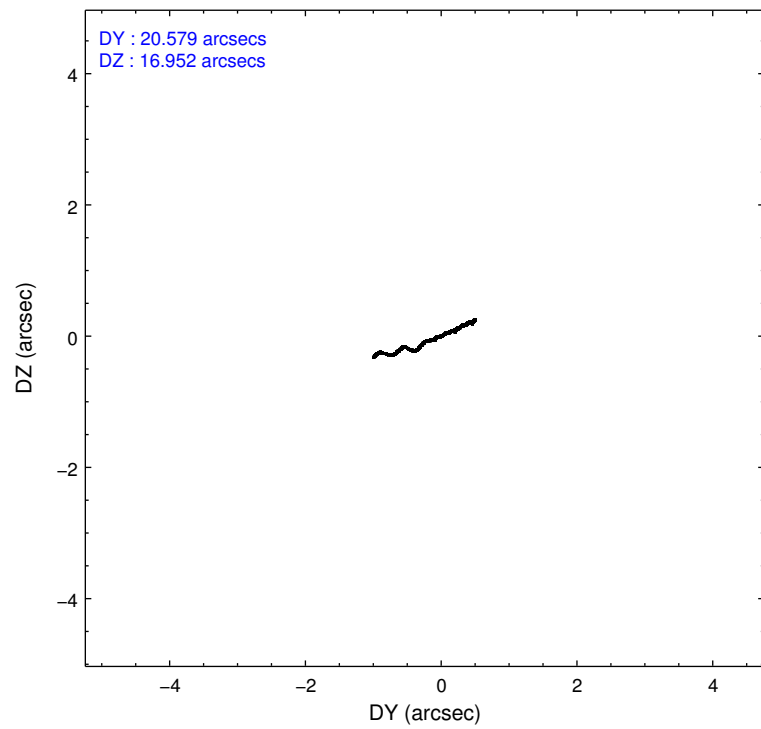
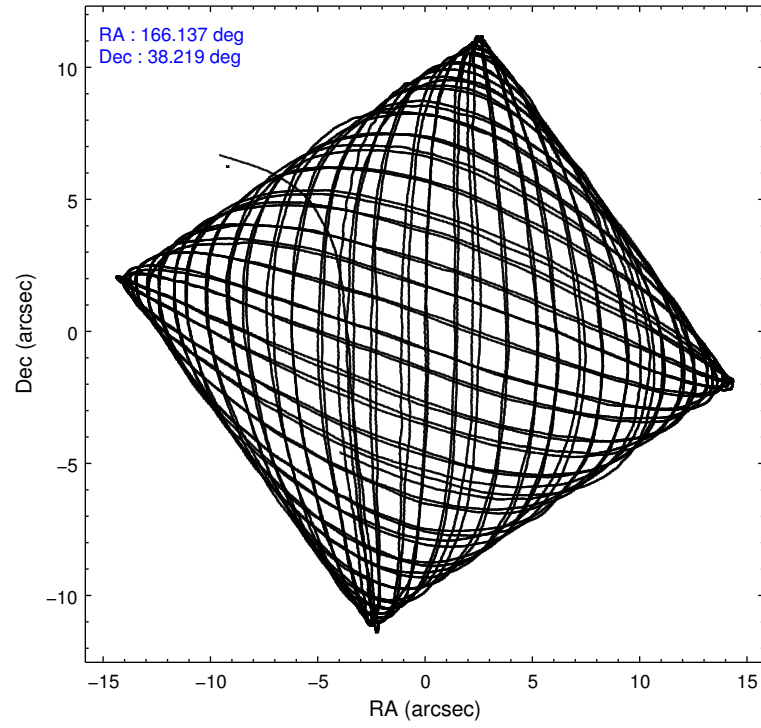
2.1.4 Events

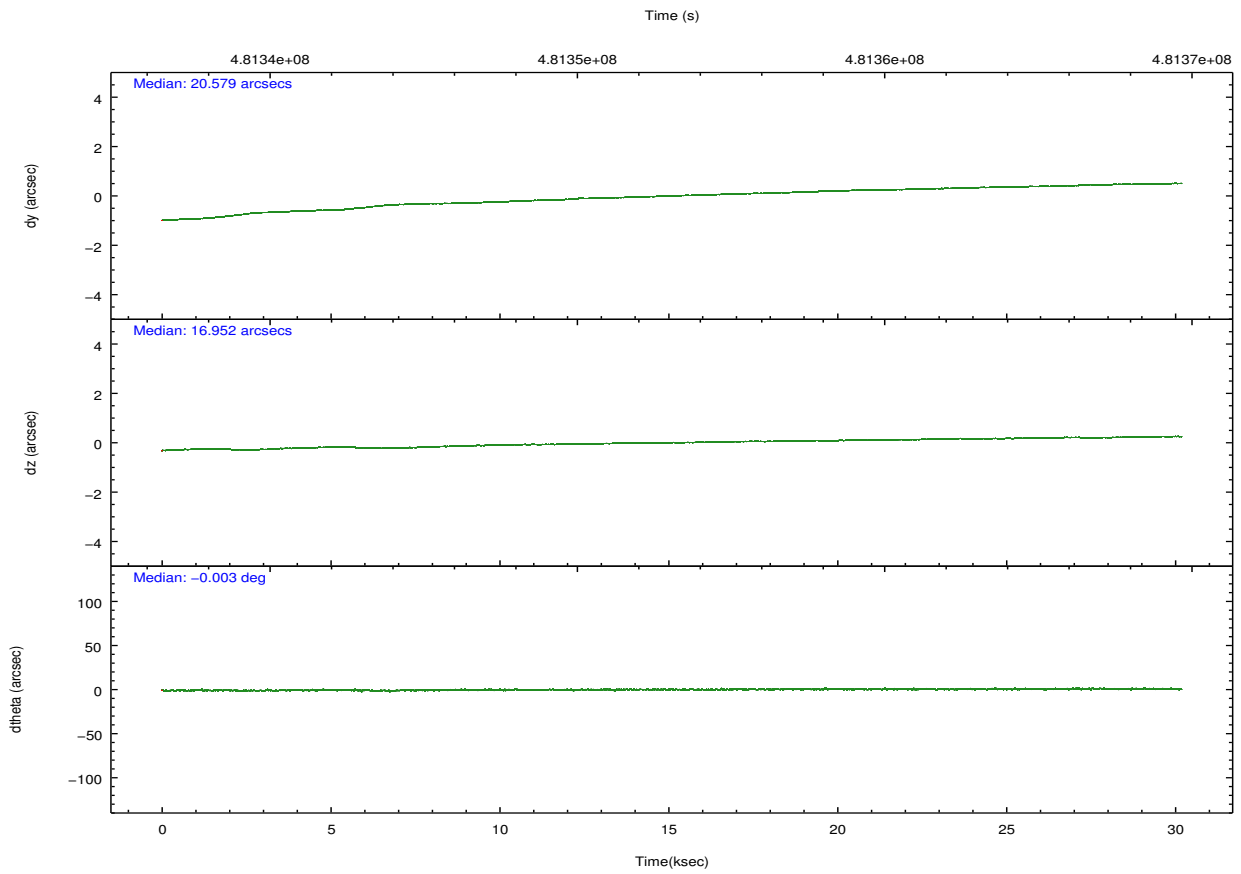
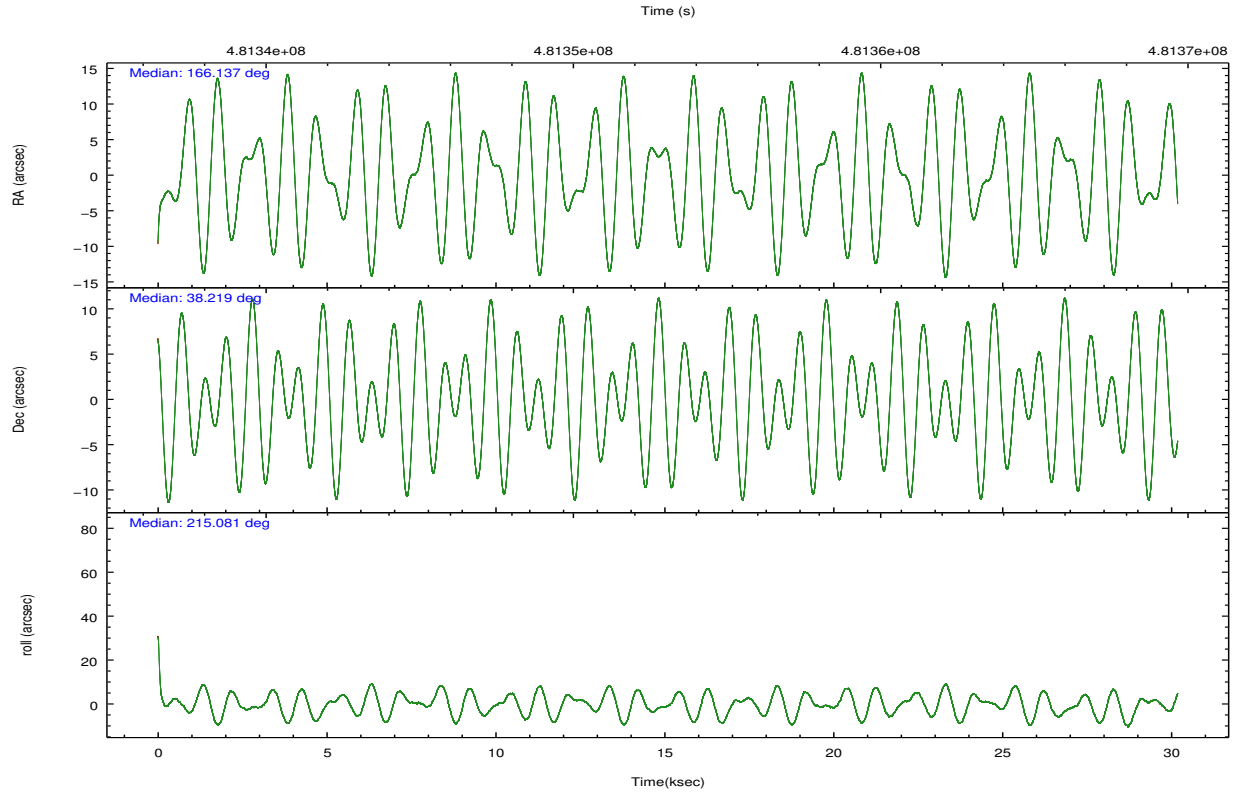
	ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9		ccd 4	ccd 5	ccd 6	ccd 7	ccd 8	ccd 9
level 1 events	39341	79278	338201	534715	61759	33052	grade 0 events	7758	26245	243883	108492	21919	7999
rejected events	27624	17249	27275	64121	29091	21353		19%	33%	72%	20%	35%	24%
rejected %	70%	21%	8%	11%	47%	64%	grade 1 events	14	69	1684	2134	44	15
								0%	0%	0%	0%	0%	0%
							grade 2 events	1606	13466	34001	119048	3967	1439
								4%	16%	10%	22%	6%	4%
							grade 3 events	829	5041	11795	54679	1762	770
								2%	6%	3%	10%	2%	2%
							grade 4 events	778	4885	11673	53573	1811	797
								1%	6%	3%	10%	2%	2%
							grade 5 events	975	3541	2127	12969	1394	1004
								2%	4%	0%	2%	2%	3%
							grade 6 events	746	12392	9585	134817	3209	694
								1%	15%	2%	25%	5%	2%
							grade 7 events	26635	13639	23453	49003	27653	20334
								67%	17%	6%	9%	44%	61%

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	166.151209	166.1369854099323	CCD I2 on	N	N
[deg] Pointing Dec	38.243636	38.2186611353014	CCD I3 on	N	N
[deg] Pointing Roll	214.936759	215.1021998375286	CCD S0 on	O1	Y
[s] Window start time (MET)	481161667.184000	481161667.184000	CCD S1 on	Y	Y
[s] Window stop time (MET)	486345667.184000	486345667.184000	CCD S2 on	Y	Y
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S3 on	Y	Y
[mm] SIM defocus	0	0.001444936568705701	CCD S4 on	Y	Y
[mm] SIM translation stage pos	-179.132523	-179.1399366055469	CCD S5 on	Y	Y
[mm] SIM translation stage offset	-11	-10.99258597746092	Number of optional ACIS chips dropped	0	0
[s] Observation start time (MET)	481338163.184000	481336650.97078	On-chip summing requested	N	N
Observation start date	2013-04-03T01:01:36	2013-04-03T00:37:30	Subarray requested	CUSTOM	1/8
[s] Observation end time (MET)	481368163.184000	481368936.93503	Subarray start row	1	1
Observation end date	2013-04-03T09:21:36	2013-04-03T09:35:36	Subarray row count	128	128
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.6

2.3 Aspect





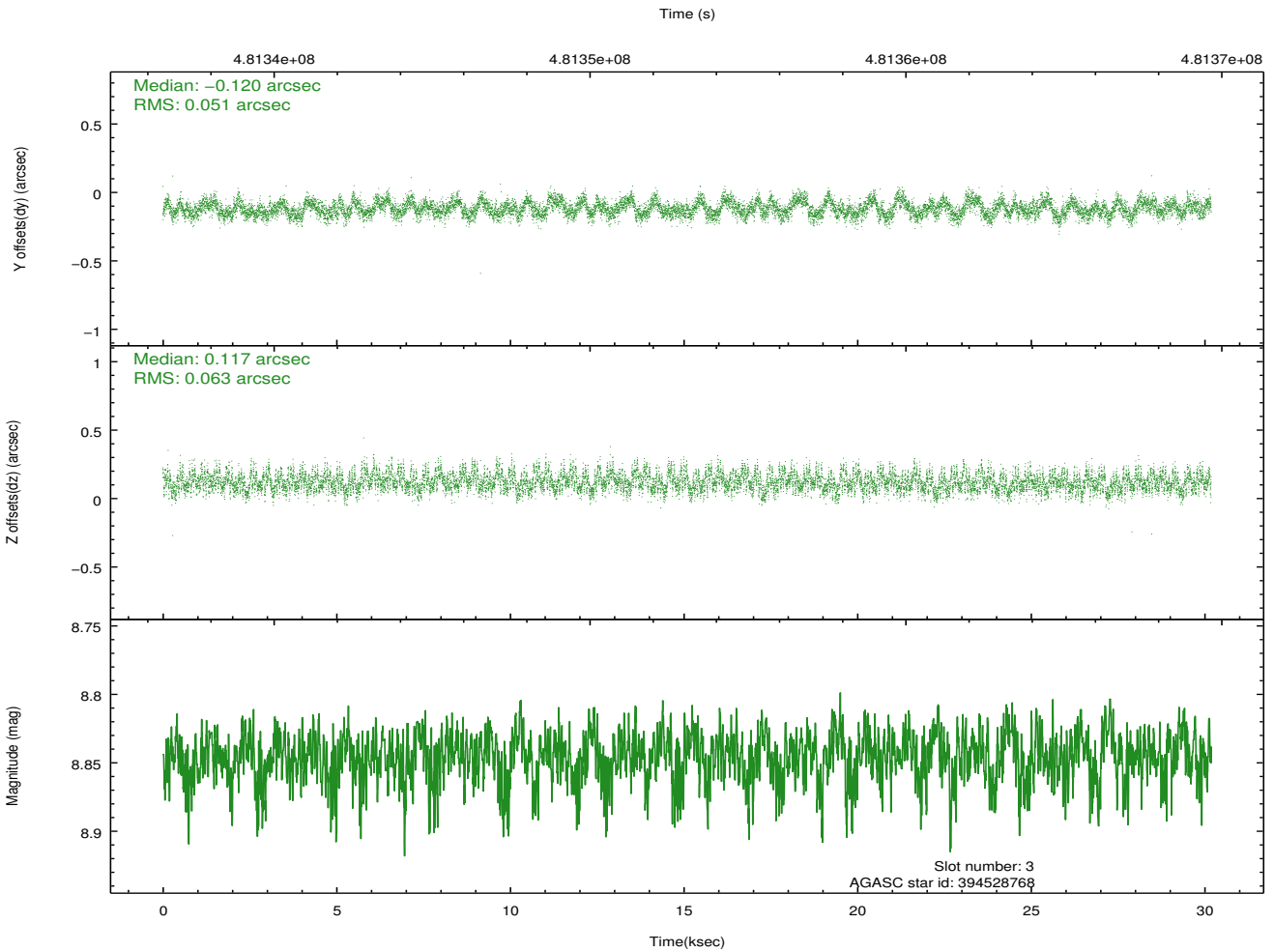
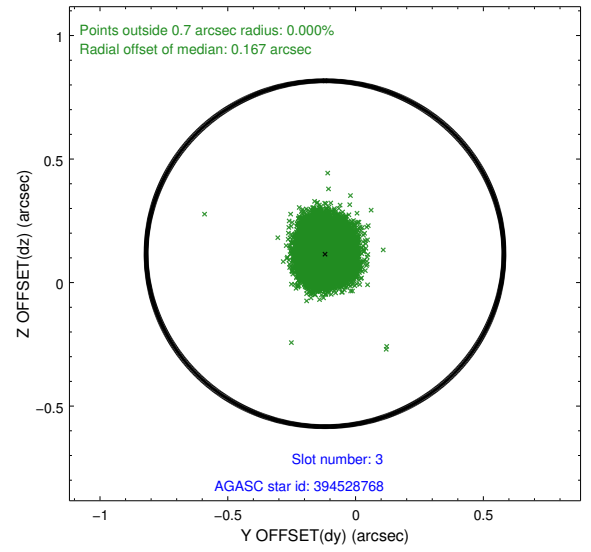
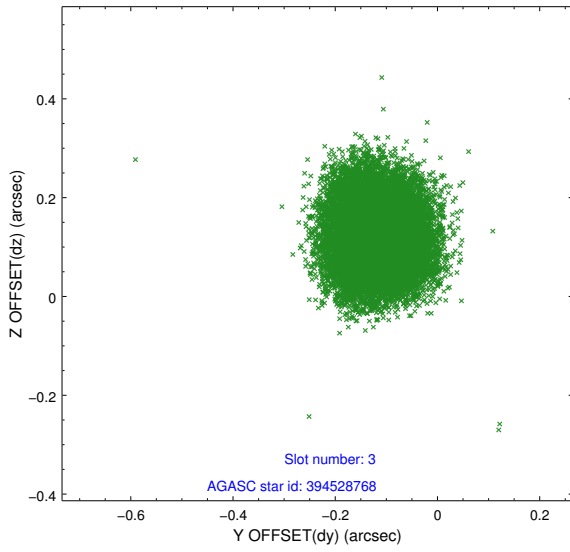
Slot Statistics

slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-1	7.08	7363	0.184	0.056	0.013	0.029	0.000000	0.000000	923.32	-1960.29
1	FID		ACIS-S-5	7.10	7363	-0.271	0.159	0.013	0.022	0.000000	0.000000	-1826.01	-62.63
2	FID		ACIS-S-6	7.28	7363	0.065	-0.204	0.014	0.022	0.000000	0.000000	388.79	580.94
3	GUIDE	used	394528768	8.85	14720	-0.120	0.117	0.087	0.138	166.180365	38.952248	-1527.12	-2044.02
4	GUIDE	used	394530152	7.50	14723	0.266	-0.328	0.069	0.106	166.075805	38.868252	-1113.77	-1964.45
5	GUIDE	used	394533744	8.90	14720	-0.204	0.305	0.085	0.140	167.094985	37.988717	-1678.75	2275.14
6	GUIDE	used	394533848	8.73	14718	0.200	-0.226	0.084	0.131	166.382906	38.276007	-600.97	276.21
7	GUIDE	used	394527560	7.67	14725	-0.144	0.129	0.067	0.106	165.970713	38.960939	-1064.34	-2406.01

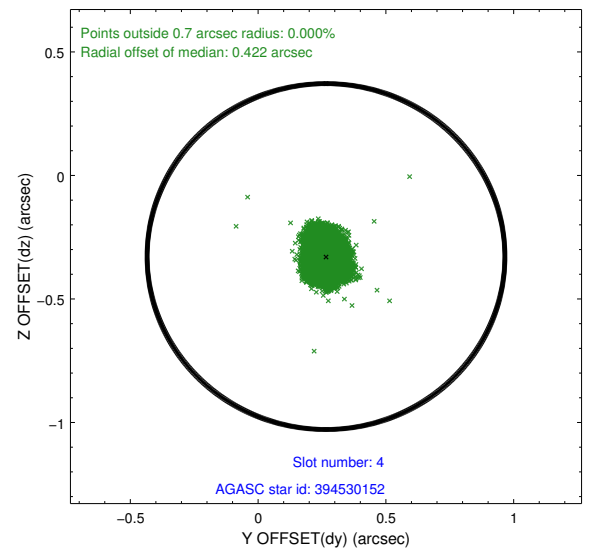
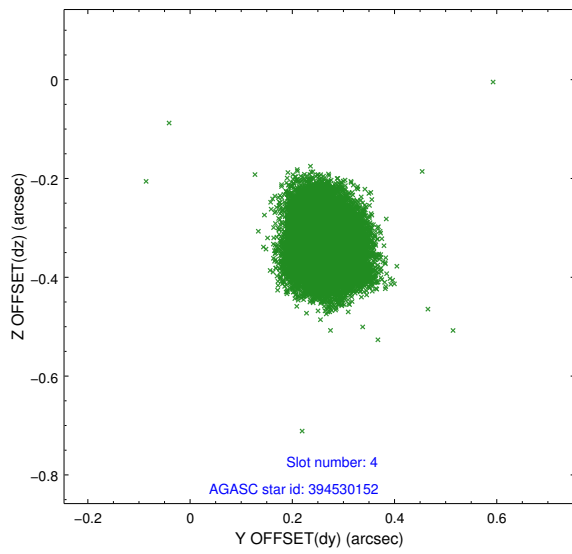
∞

2.4 Star Slots

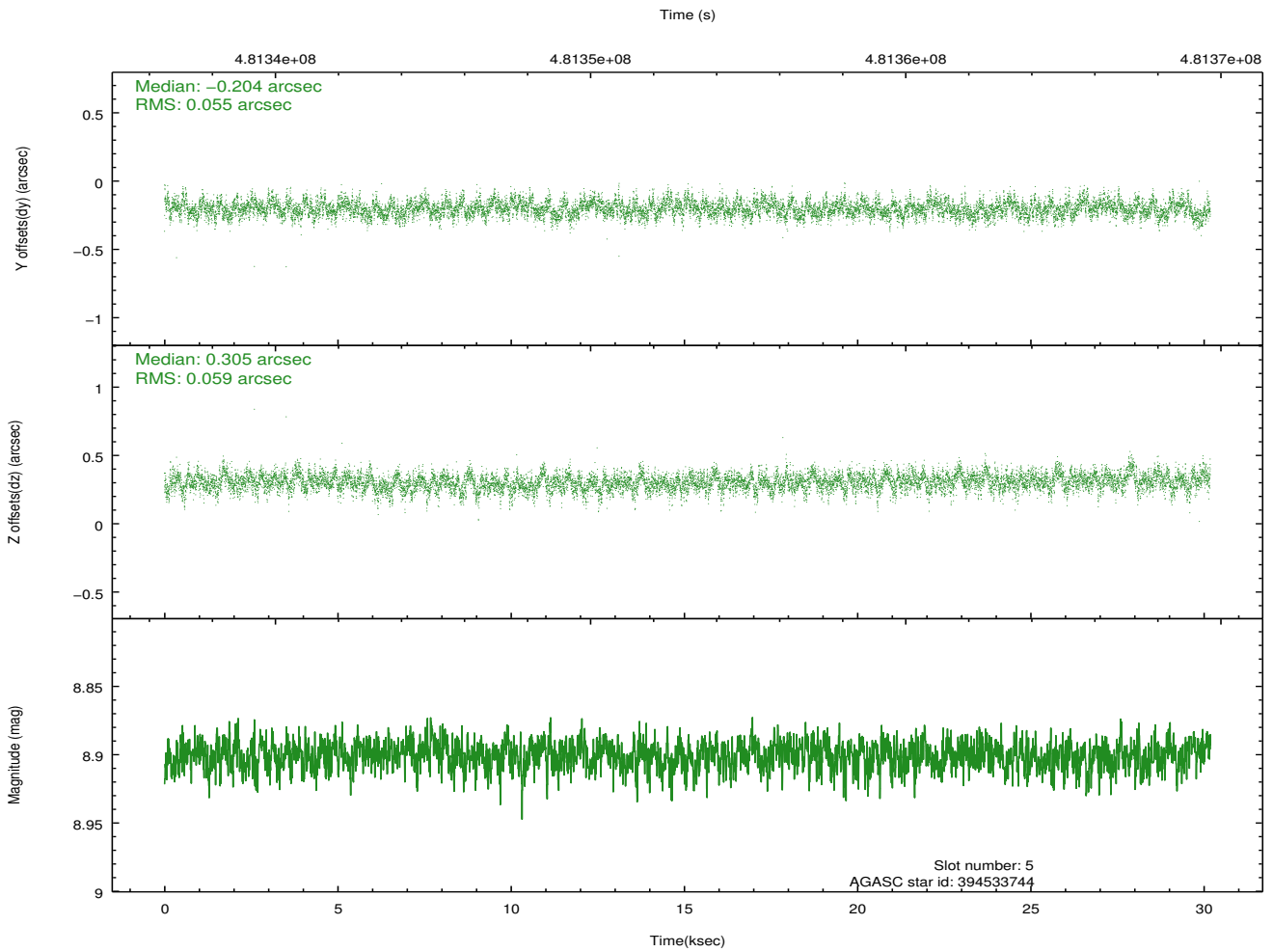
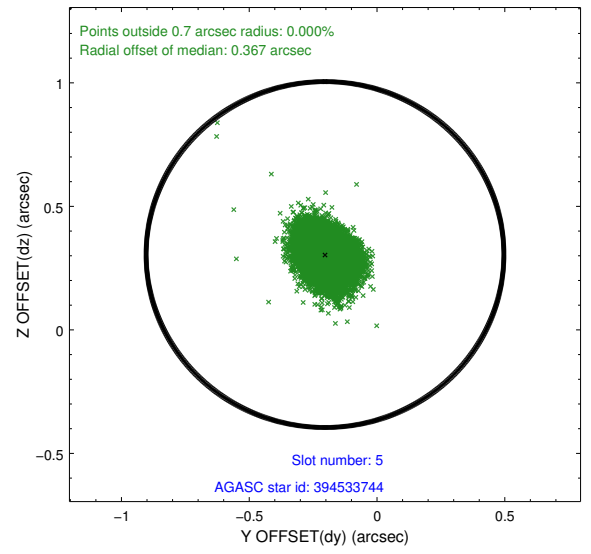
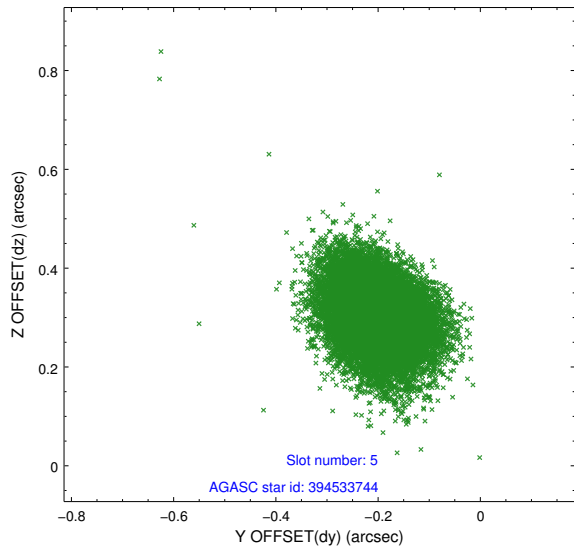
2.4.1 Slot 3



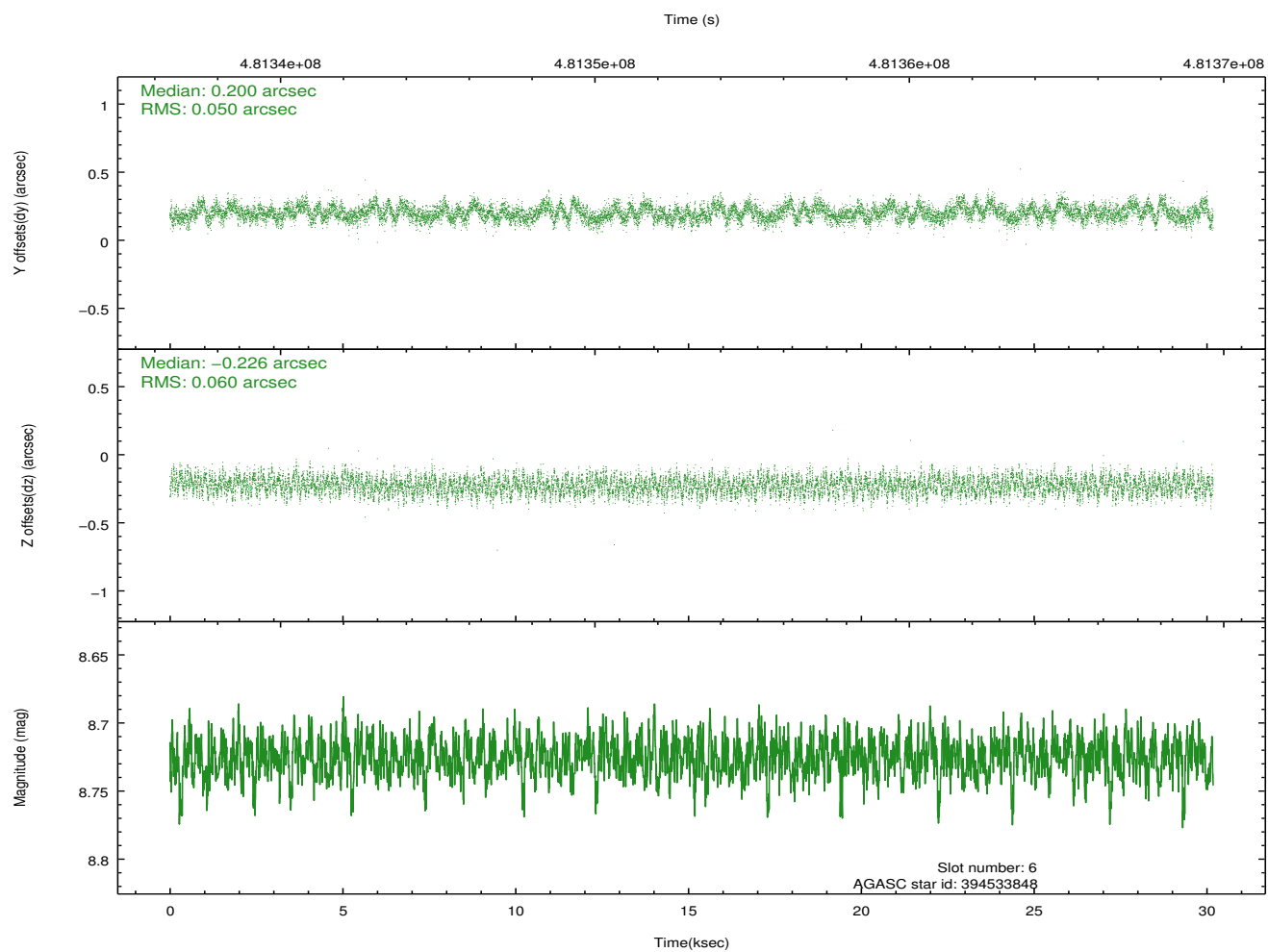
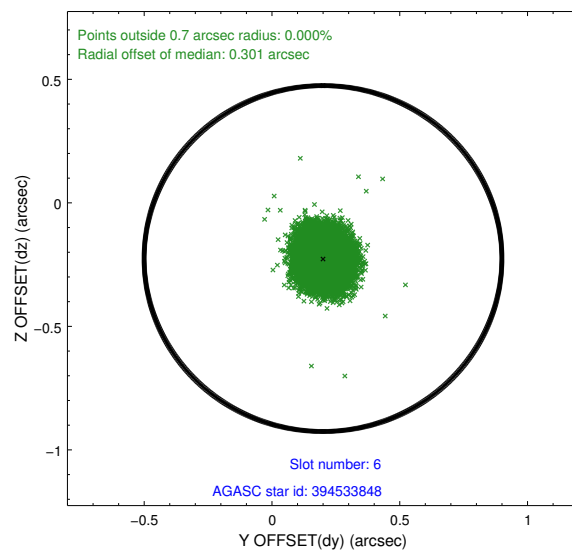
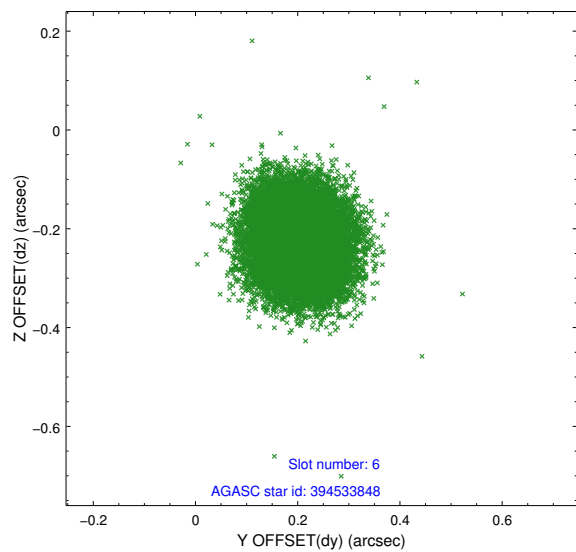
2.4.2 Slot 4



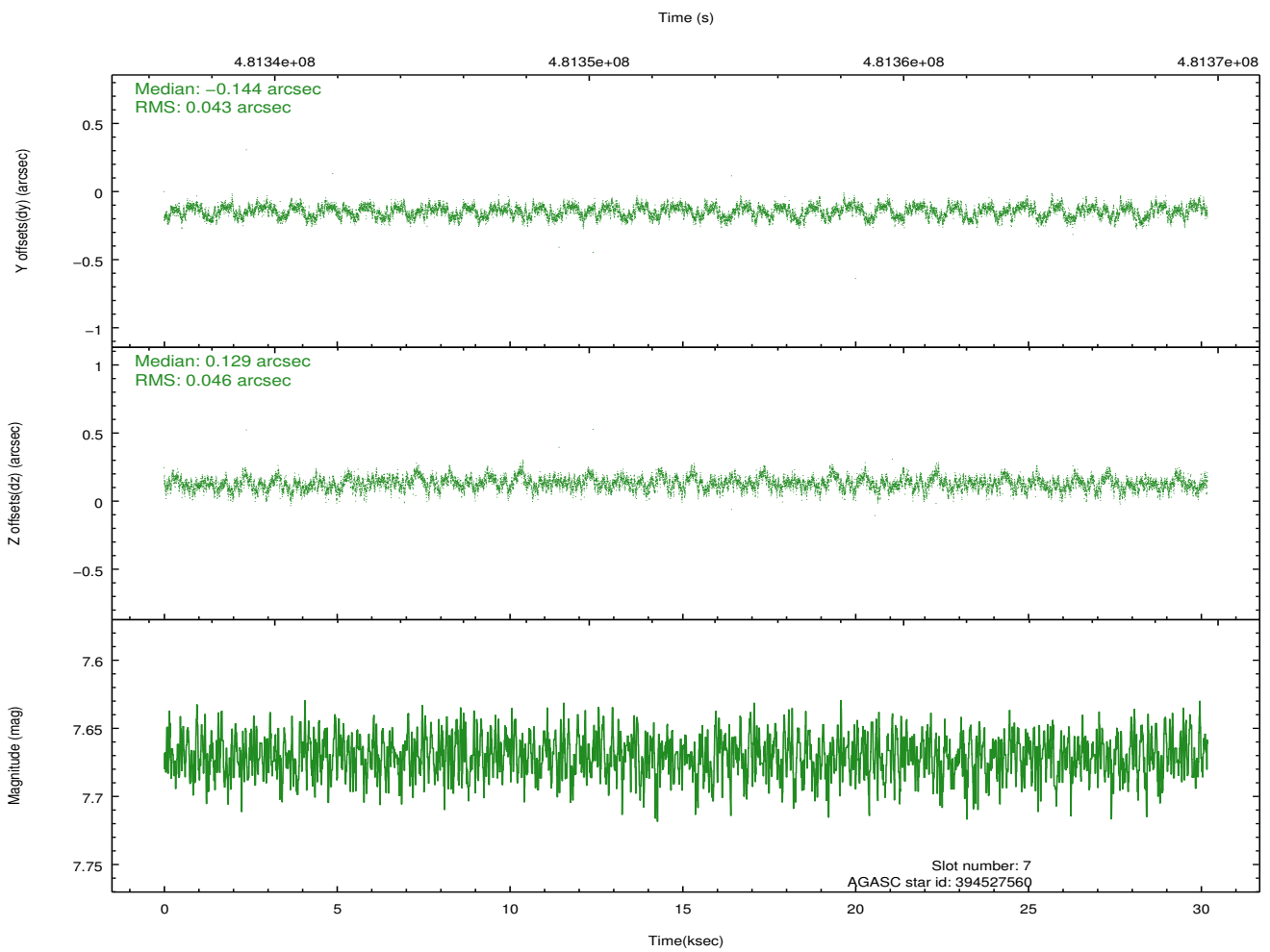
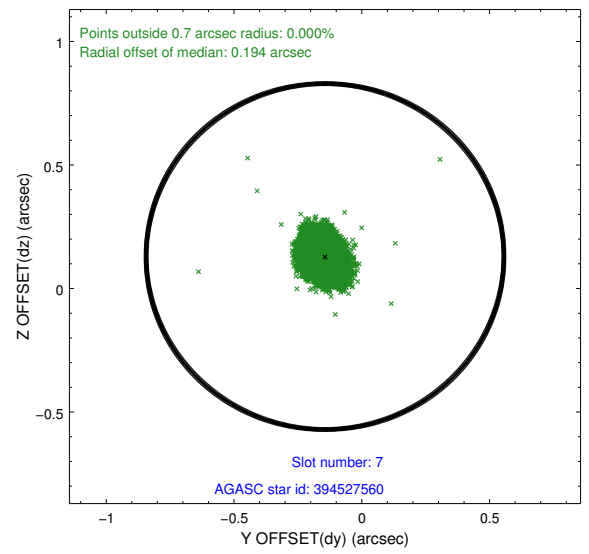
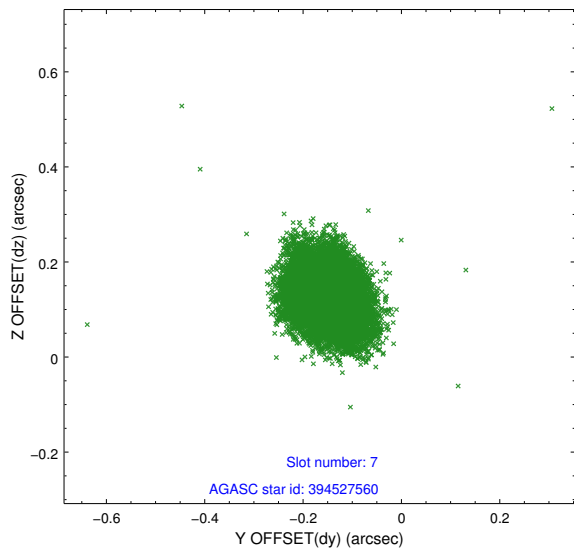
2.4.3 Slot 5



2.4.4 Slot 6

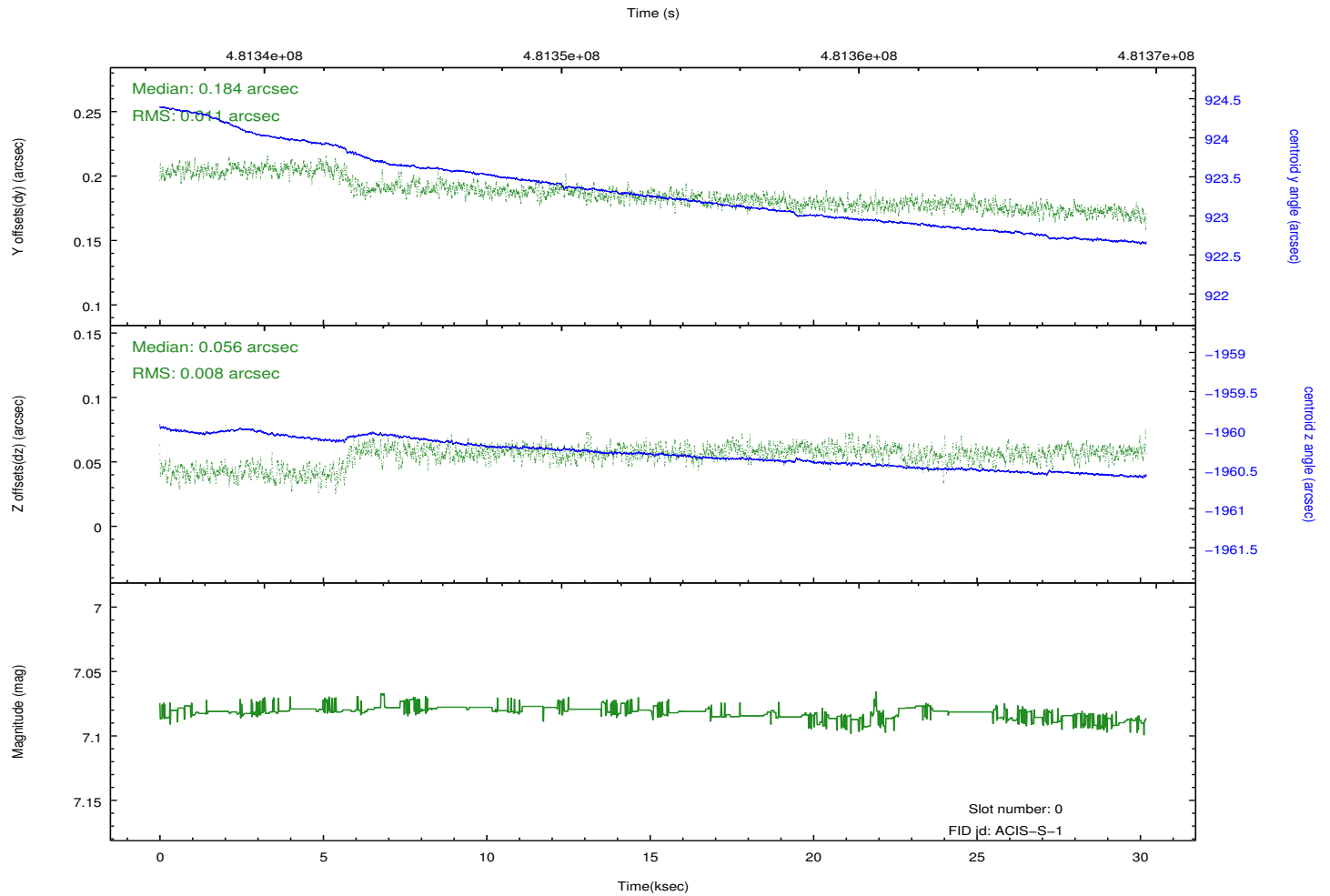
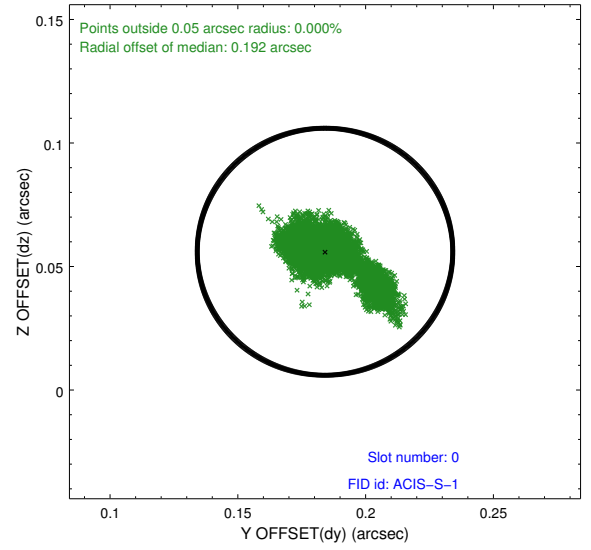
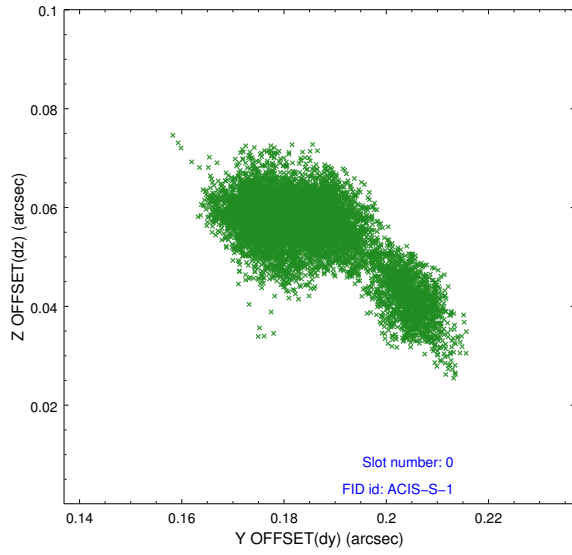


2.4.5 Slot 7

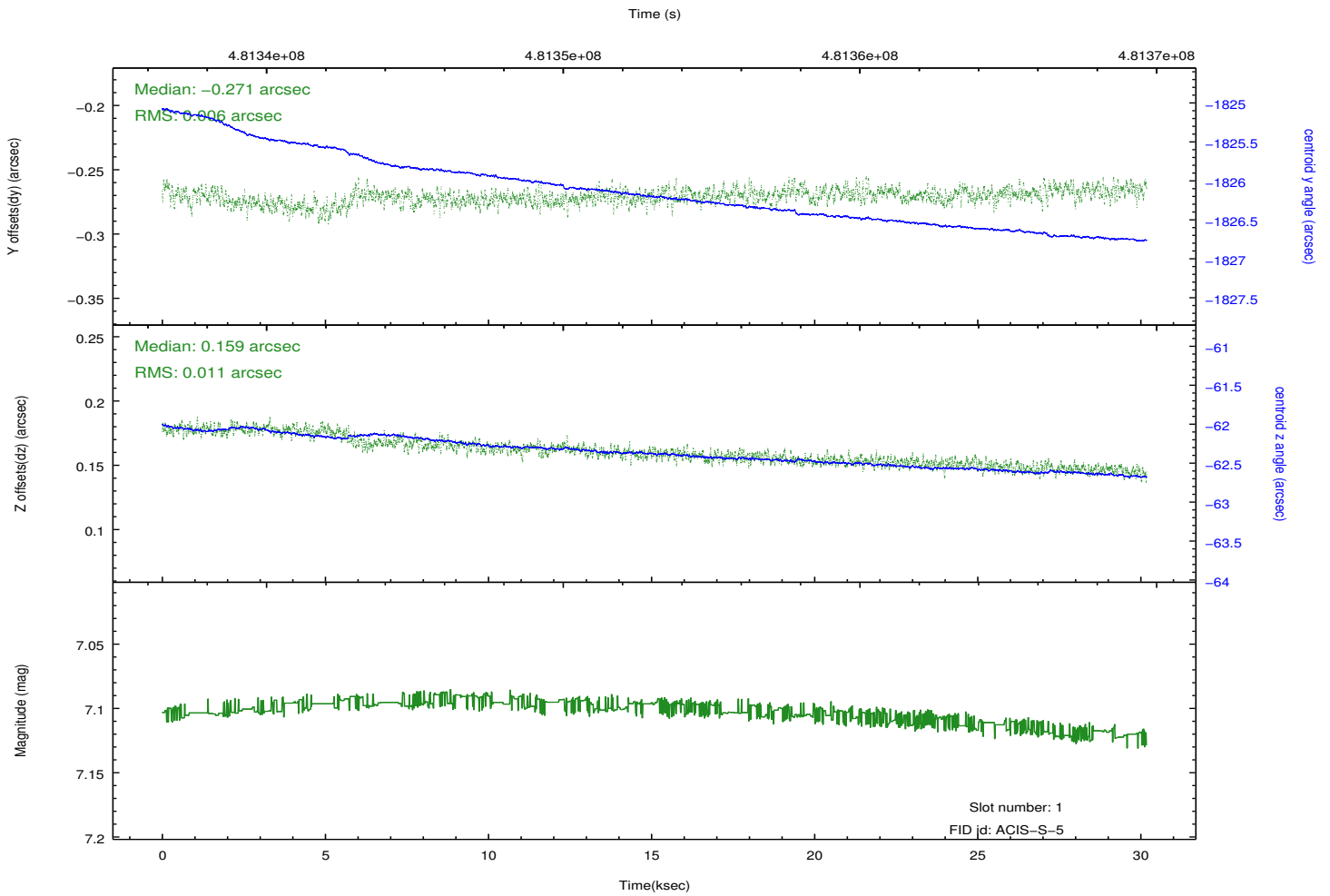
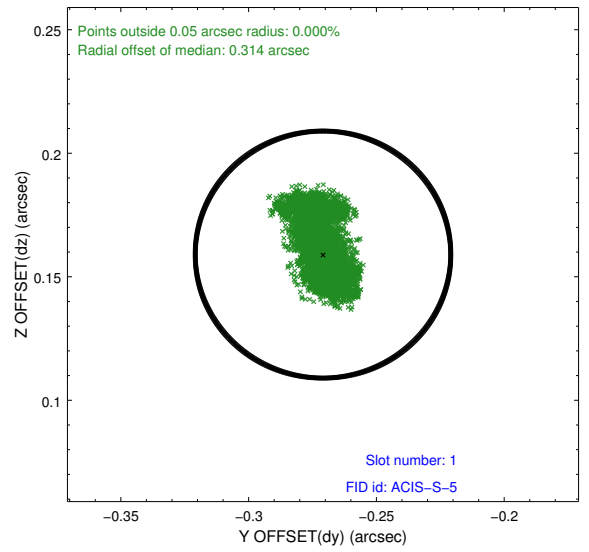
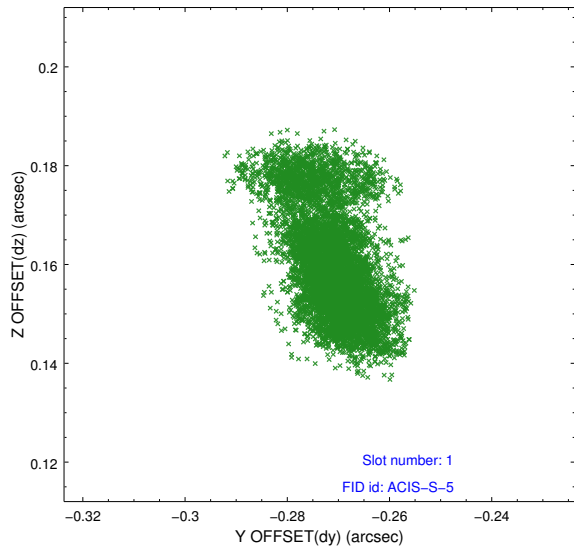


2.5 FID Slots

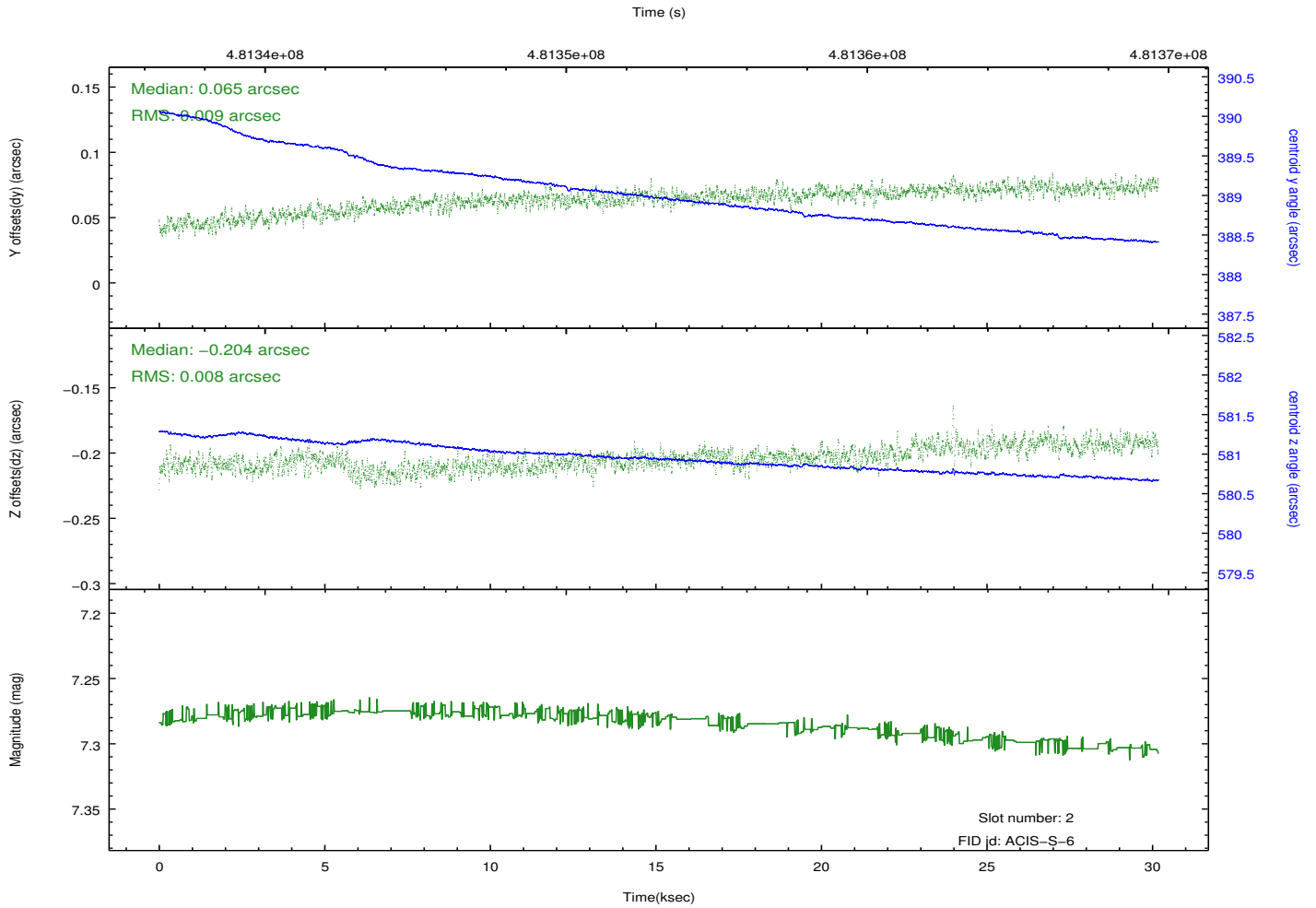
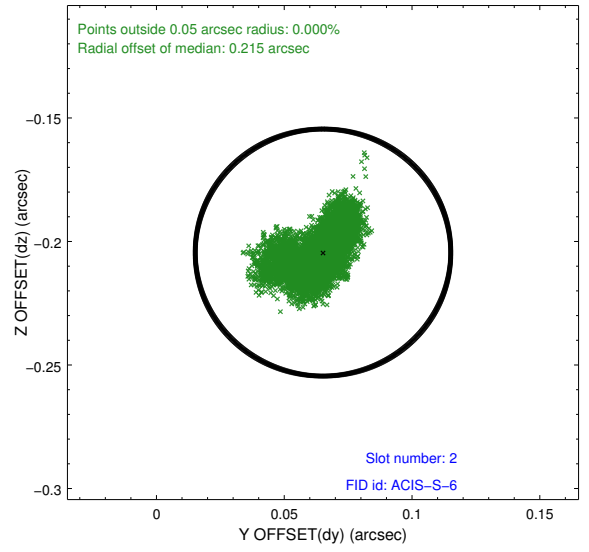
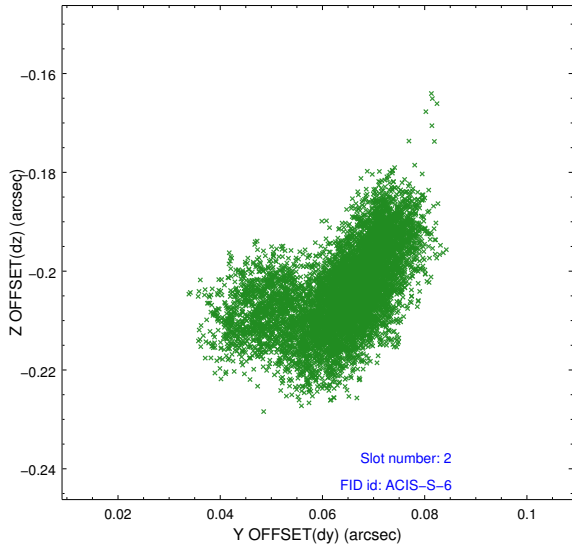
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2

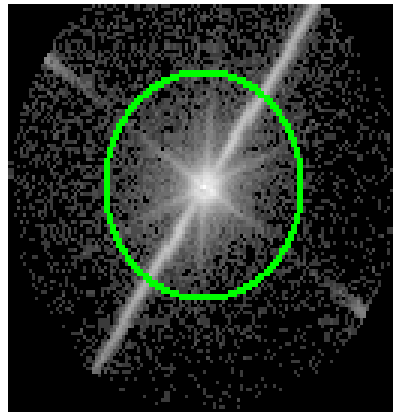


3 Gratings

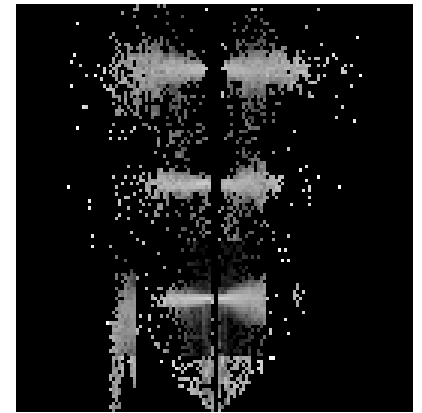
3.1 LETG Arm



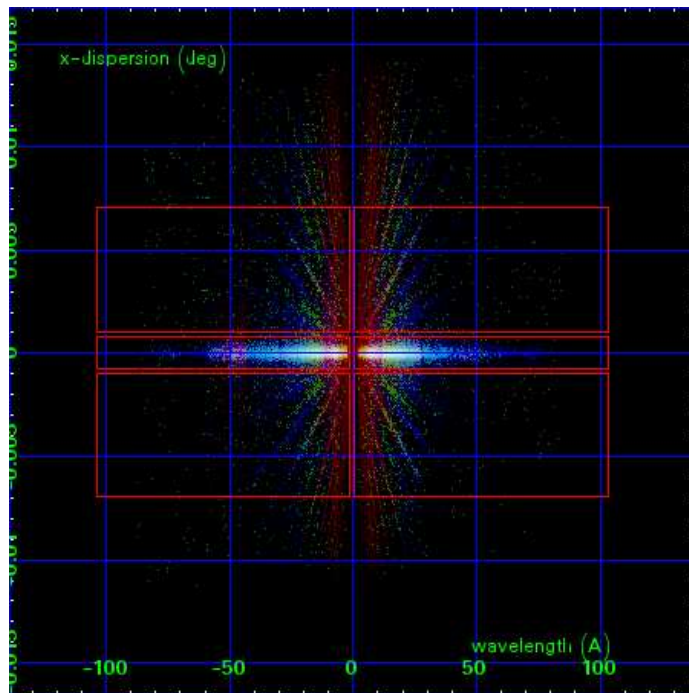
LETG Order Sort 123



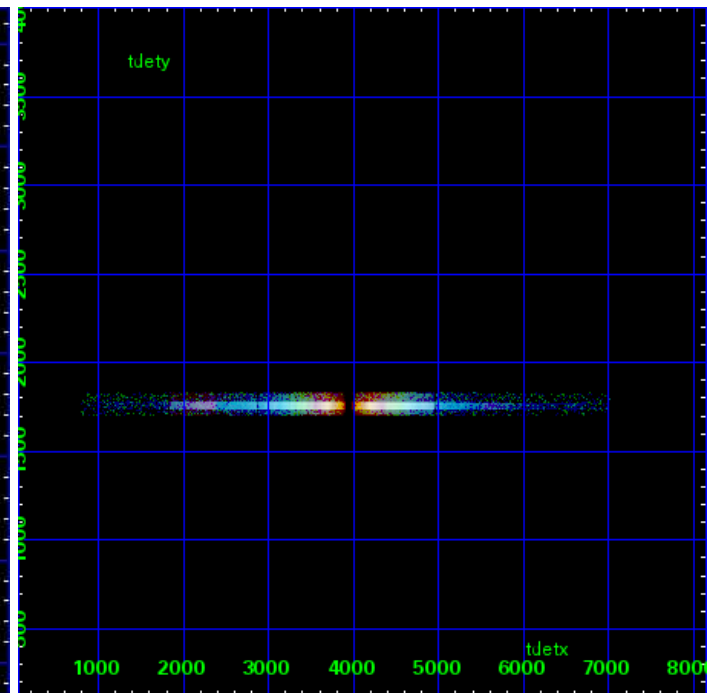
LETG Zero Order



LETG Order Sort ALL

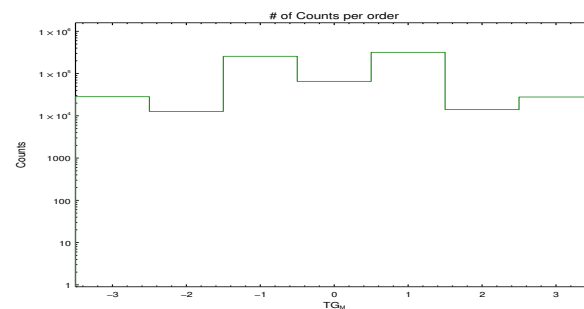


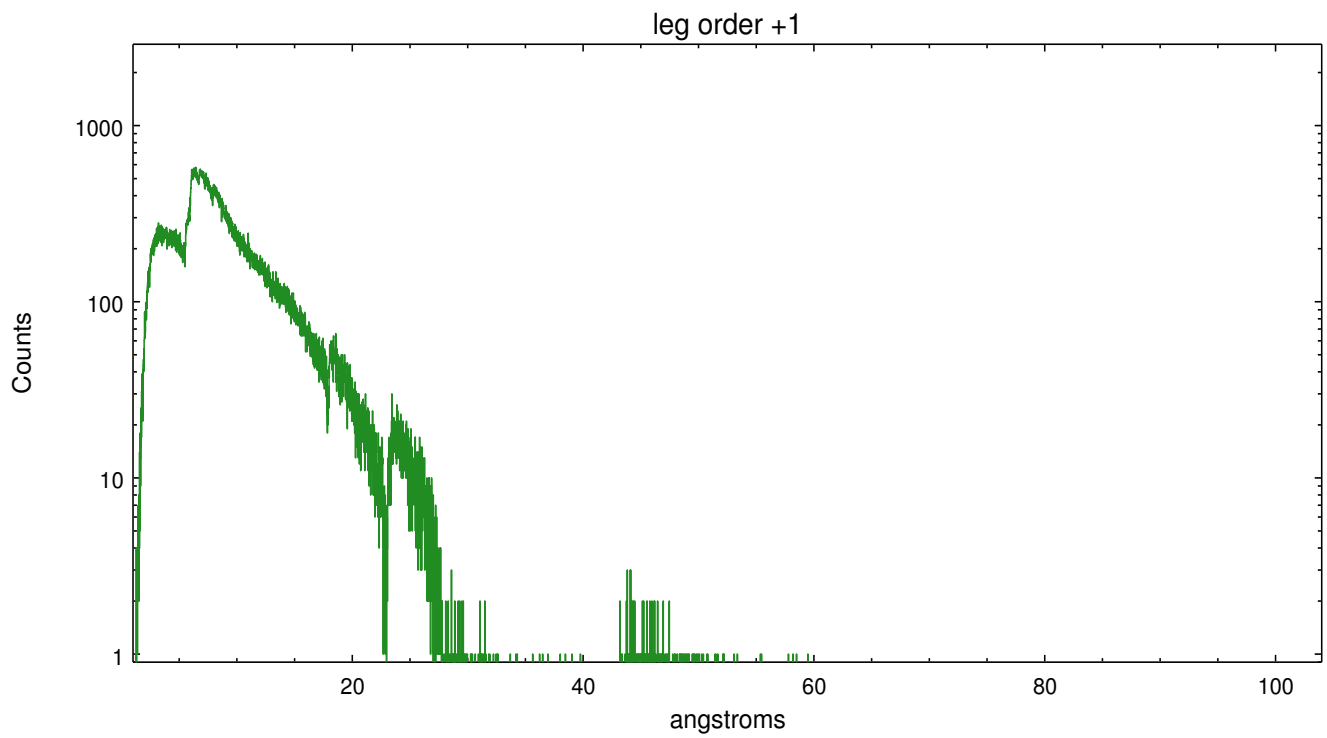
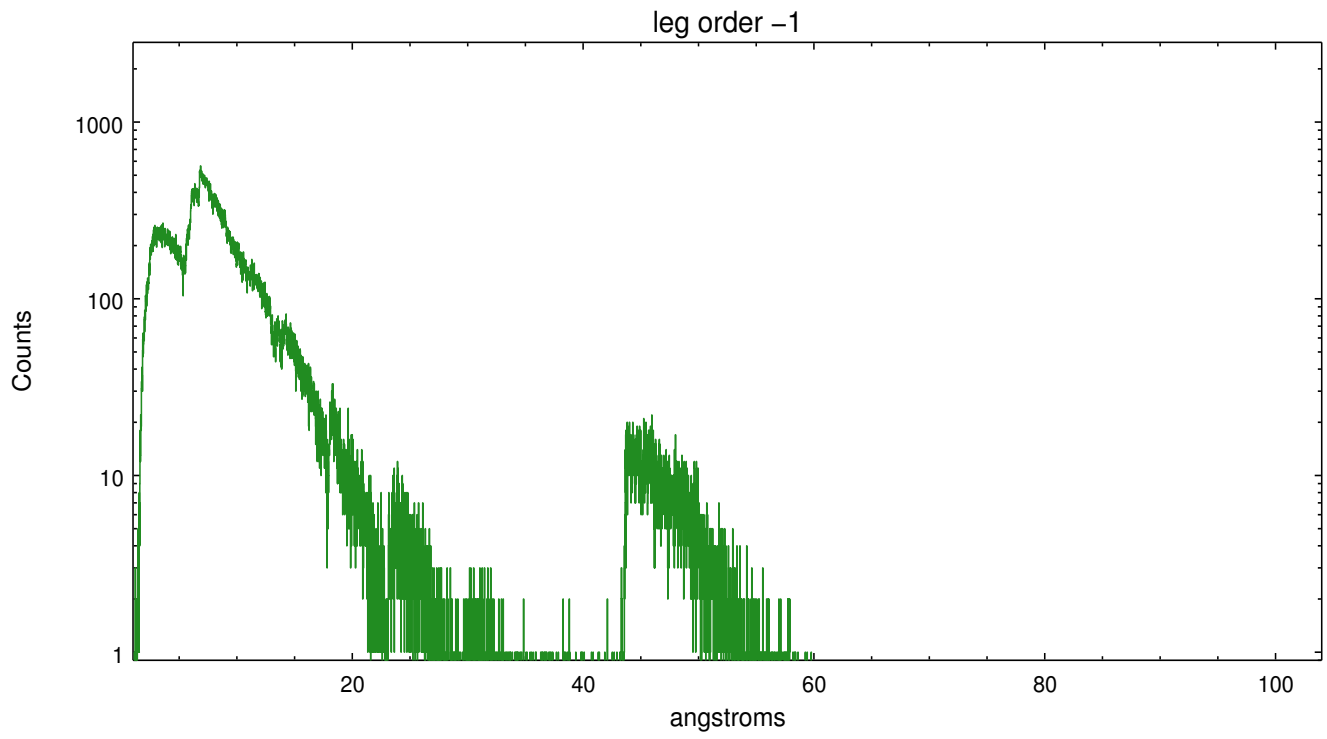
Spot Image LETG



Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	28356	12703	255888	65304	317904	14012	27862





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	30.050401194096

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.

====

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.

====Gain and CTI correction are not well calibrated on CCD_ID 5 (ACIS-S1). Default order sorting can clip some regions, particularly longward of 30A (first order). User-specified custom processing parameters may be required in tg_resolve_events (osipfile=None, osort_lo, osort_hi ~0.5) though this can allow more zeroth order background at short wavelengths.

====This object has several isolated bright pixels in the central region of the PSF. WARNING: Zeroth order selected by pipeline tools is one of these bright pixels in the eastern area of the PSF. 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. The spectral data supplied in this processing are only energy-calibrated for the particular emission knot or object selected.