

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22172 - L2 Version 1
Chandra X-Ray Center

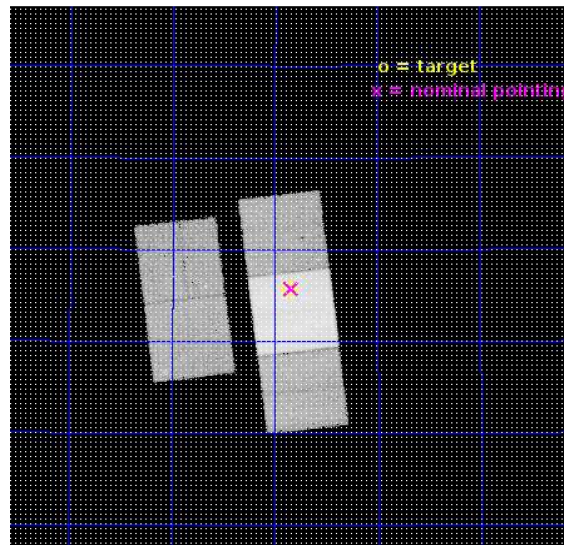
L2 Processing Date : Apr 14 2019

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1 Front

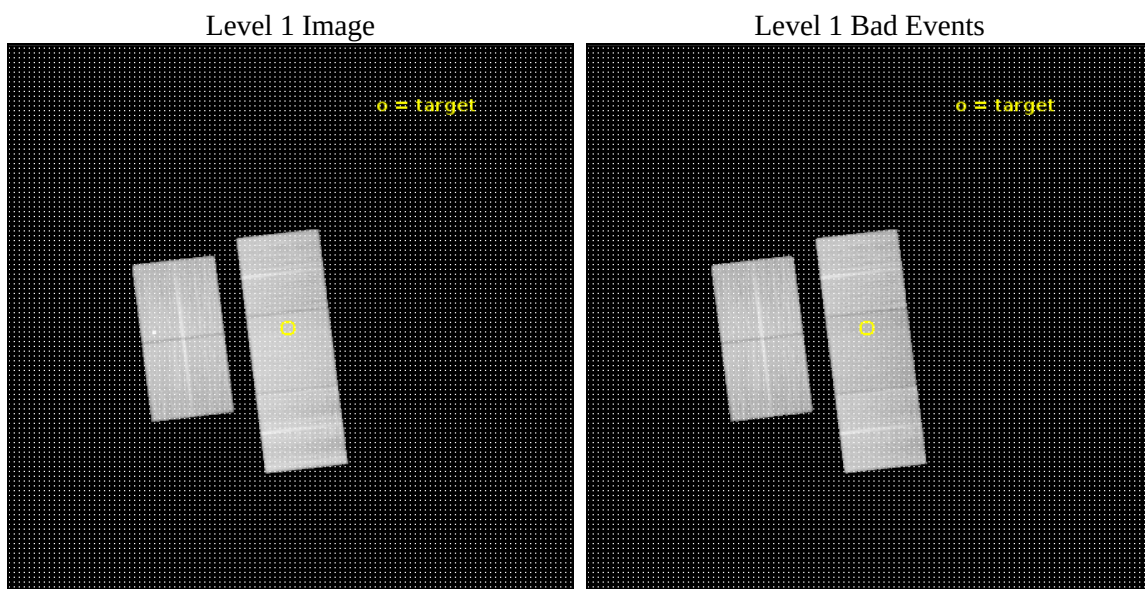
seq_num	502997	Sequence number
obs_id	22172	Observation id
title	PSR J2030+4415: A Breakthrough Target for Bowshock Studies	Proposa
observer	Roger Romani	Principal investigator
object	PSR J2030+4415	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	307.714167	Observer's specified target RA [deg]
dec_targ	44.260861	Observer's specified target Dec [deg]
ra_nom	307.71001289054	Nominal RA [deg]
dec_nom	44.26218856699	Nominal Dec [deg]
roll_nom	83.159542515002	Nominal Roll [deg]
revision	1	Processing version of data
ontime	45050.98837173	Sum of GTIs [s]
livetime	44462.364042598	Livetime [s]
ontime2	45044.542211533	Sum of GTIs [s]
ontime3	45041.483381033	Sum of GTIs [s]
ontime6	45047.806361318	Sum of GTIs [s]
ontime7	45050.98837173	Sum of GTIs [s]
ontime8	45050.86525178	Sum of GTIs [s]
l2events	324612	Number of level 2 events



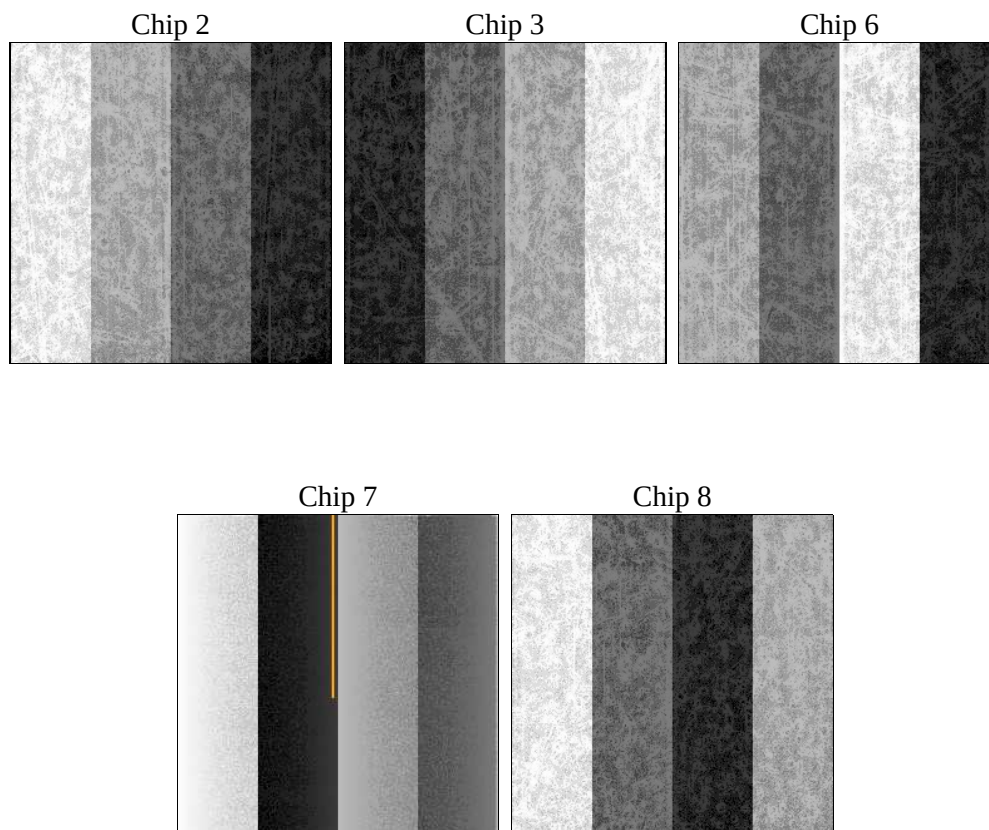
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	45000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	45050.98837173	Sum of GTIs [s]
caldsver	4.8.2	 	ontime2	45044.542211533	Sum of GTIs [s]
date	2019-04-14T22:33:04	Date and time of file creation	ontime3	45041.483381033	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	45047.806361318	Sum of GTIs [s]
			ontime7	45050.98837173	Sum of GTIs [s]
			ontime8	45050.86525178	Sum of GTIs [s]
			l1events	1967457	Number of level 1 events

2.1.4 Events

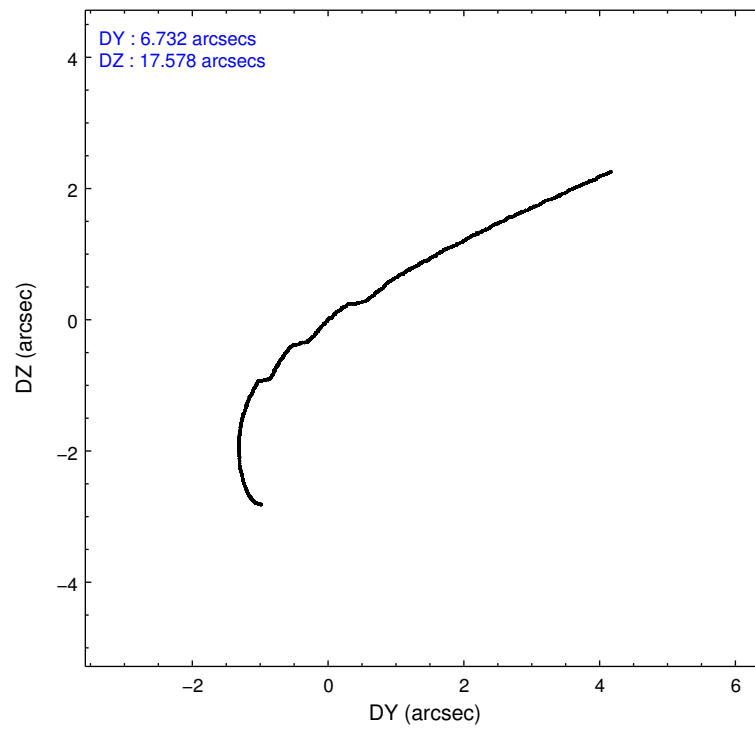
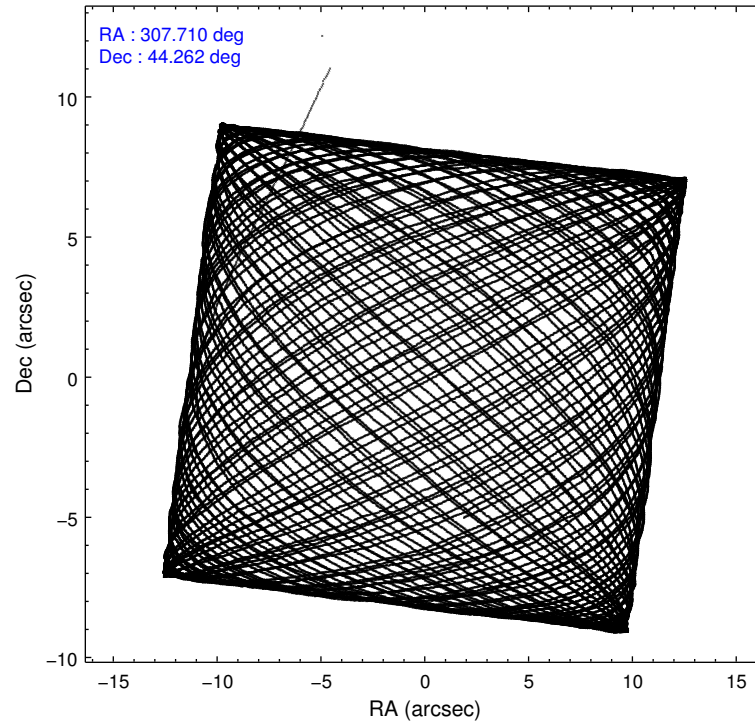
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8		ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	356927	339999	365052	445057	460422	grade 0 events	12899	13621	12399	15913	35063
rejected events	316440	303476	325380	252583	337321		3%	4%	3%	3%	7%
rejected %	88%	89%	89%	56%	73%	grade 1 events	163	196	168	711	361
							0%	0%	0%	0%	0%
						grade 2 events	12933	7940	10196	41250	29681
							3%	2%	2%	9%	6%
						grade 3 events	3575	3597	3463	14824	12539
							1%	1%	0%	3%	2%
						grade 4 events	3687	3703	3616	14666	11917
							1%	1%	0%	3%	2%
						grade 5 events	12830	15290	15351	43054	23964
							3%	4%	4%	9%	5%
						grade 6 events	7395	7664	10000	105842	33935
							2%	2%	2%	23%	7%
						grade 7 events	303445	287988	309859	208797	312962
							85%	84%	84%	46%	67%

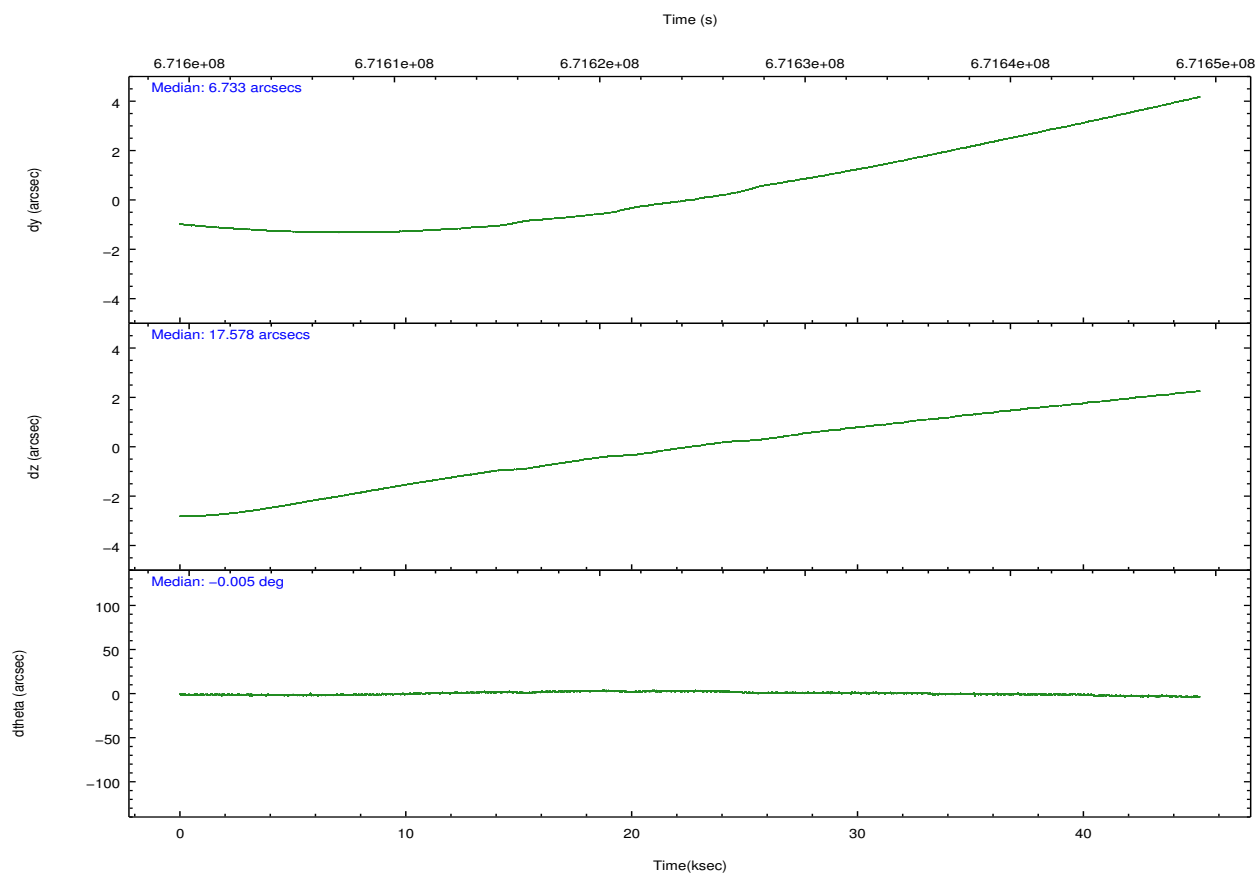
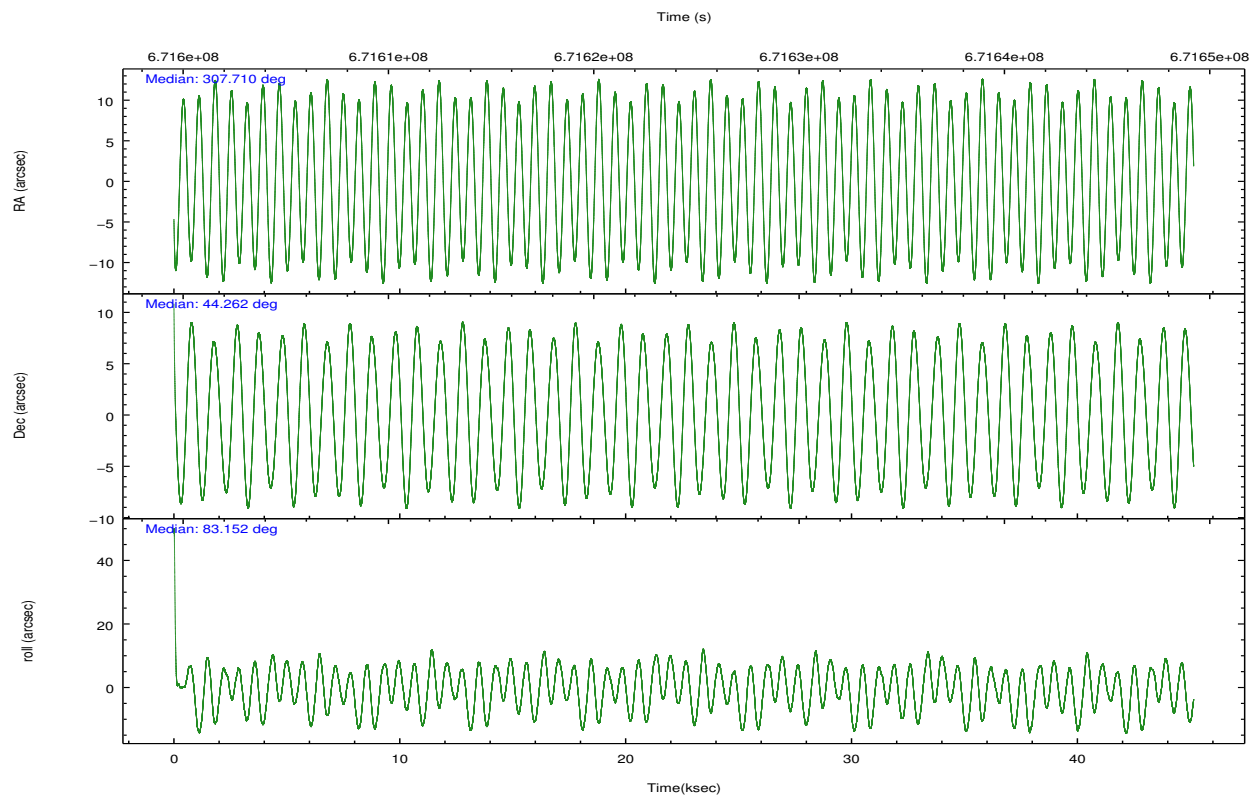
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-23678	ACIS-23678
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	307.725539	307.7100128905441
[deg] Pointing Dec	44.237092	44.26218856698963
[deg] Pointing Roll	82.992067	83.15954251500185
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1400660498719
[mm] SIM translation stage offset	0	0.00754346686406393
[s] Observation start time (MET)	671601981.184000	671600777.8073699
Observation start date	2019-04-14T04:05:12	2019-04-14T03:46:17
[s] Observation end time (MET)	671646981.184000	671647950.36019
Observation end date	2019-04-14T16:35:12	2019-04-14T16:52:30
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O1	Y
CCD I3 on	O2	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O4	Y
CCD S3 on	Y	Y
CCD S4 on	O3	Y
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect



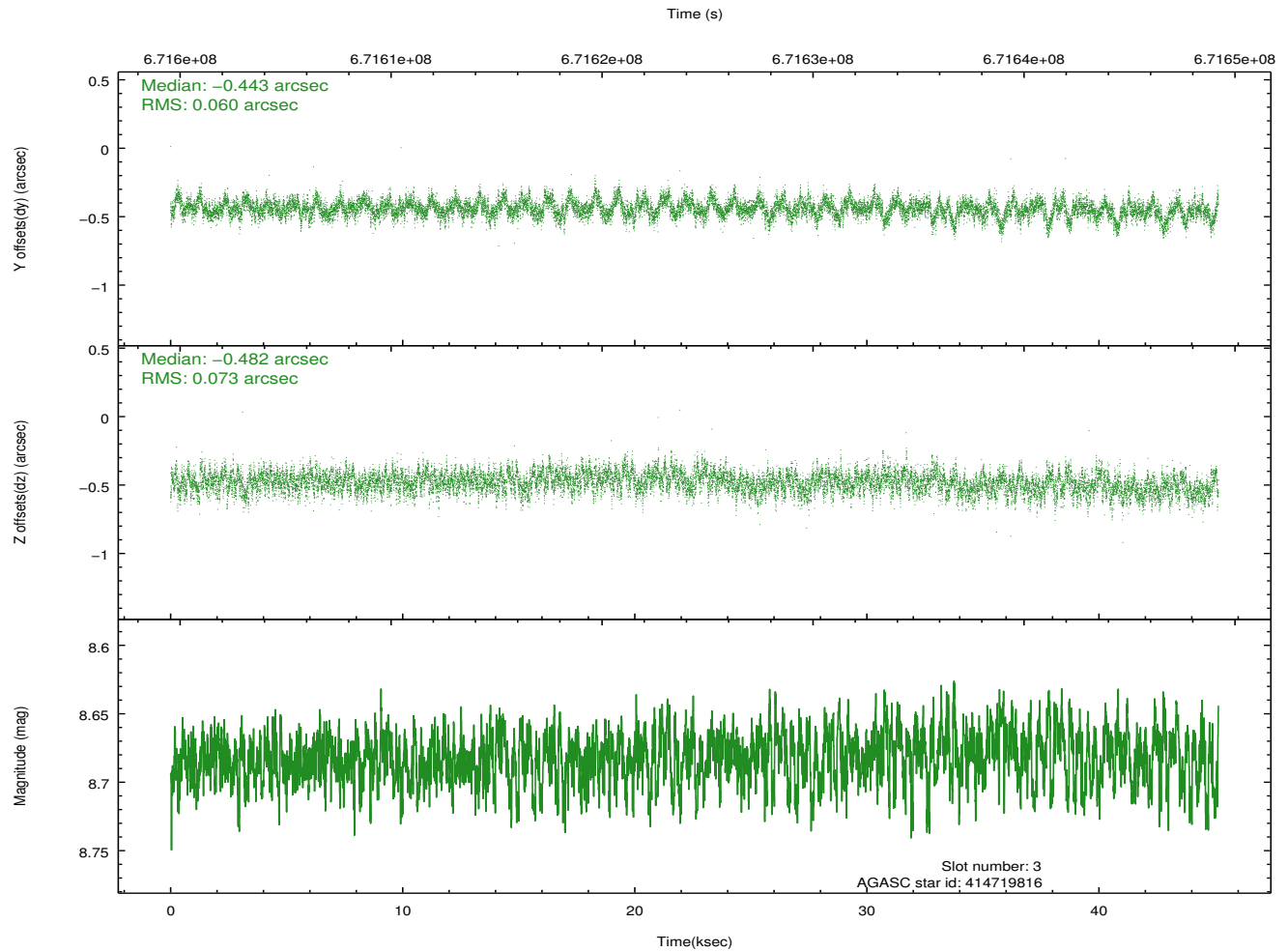
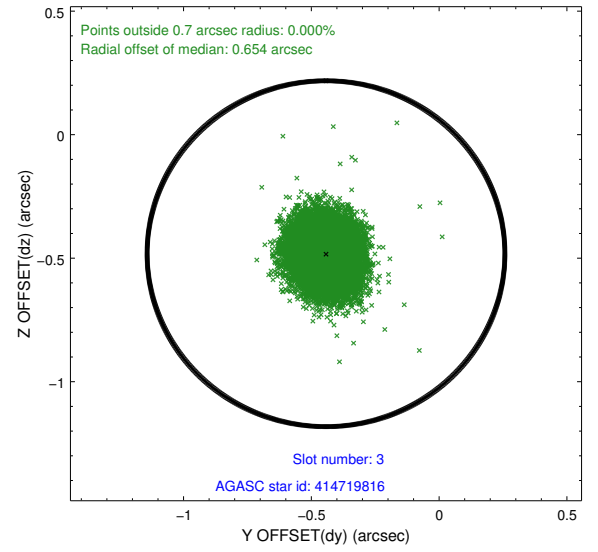
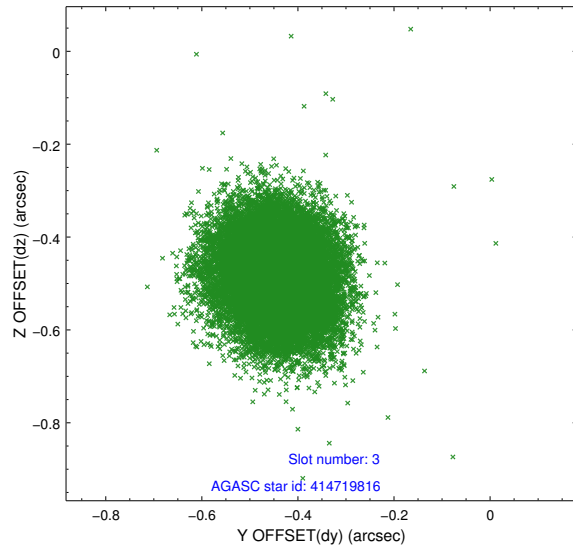


Slot Statistics

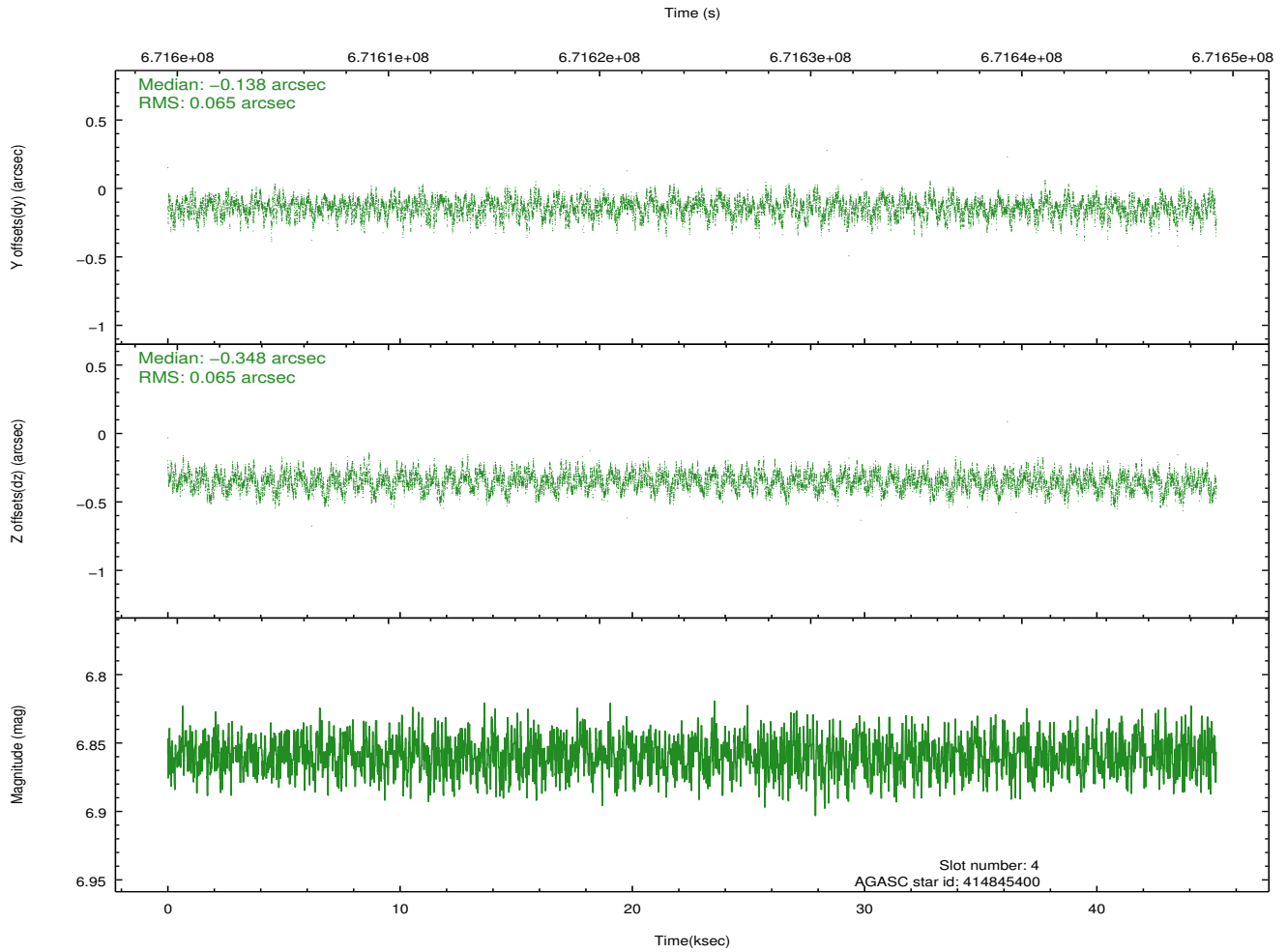
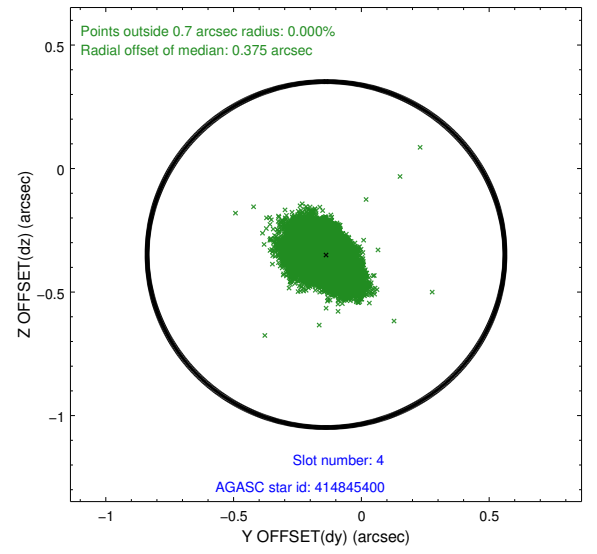
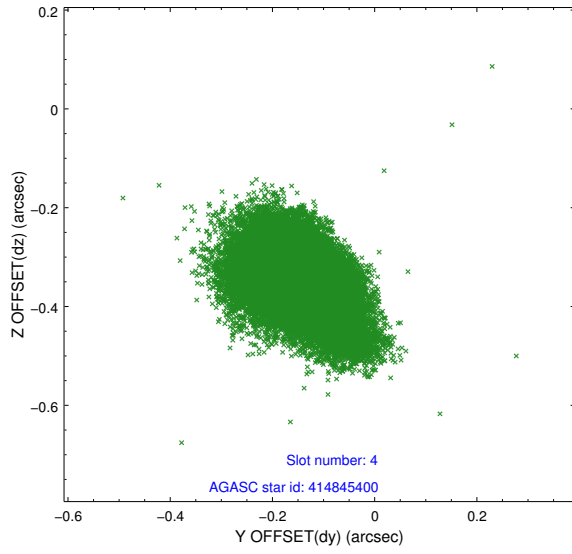
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.08	11012	1.000	-0.282	-0.139	0.036	0.051	0.000000	0.000000	-760.25	-1739
1	FID		ACIS-S-4	7.21	11012	1.000	0.592	0.172	0.053	0.073	0.000000	0.000000	2153.86	169
2	FID		ACIS-S-5	7.21	11011	1.000	-0.331	-0.026	0.048	0.072	0.000000	0.000000	-1813.20	163
3	GUIDE	used	414719816	8.68	22008	1.000	-0.443	-0.482	0.100	0.165	306.965041	44.477406	629.24	2045
4	GUIDE	used	414845400	6.86	22023	1.000	-0.138	-0.348	0.098	0.159	307.645708	44.315241	254.29	238
5	GUIDE	used	414850000	8.38	22007	1.000	0.310	0.281	0.098	0.156	307.967222	44.111985	-369.26	-674
6	GUIDE	used	414844656	8.34	22016	1.000	0.350	0.799	0.101	0.174	308.466261	43.520199	-2316.35	-2232
7	GUIDE	used	414721960	8.52	22008	1.000	-0.077	-0.242	0.096	0.154	306.992291	43.980466	-1140.54	1773

2.4 Star Slots

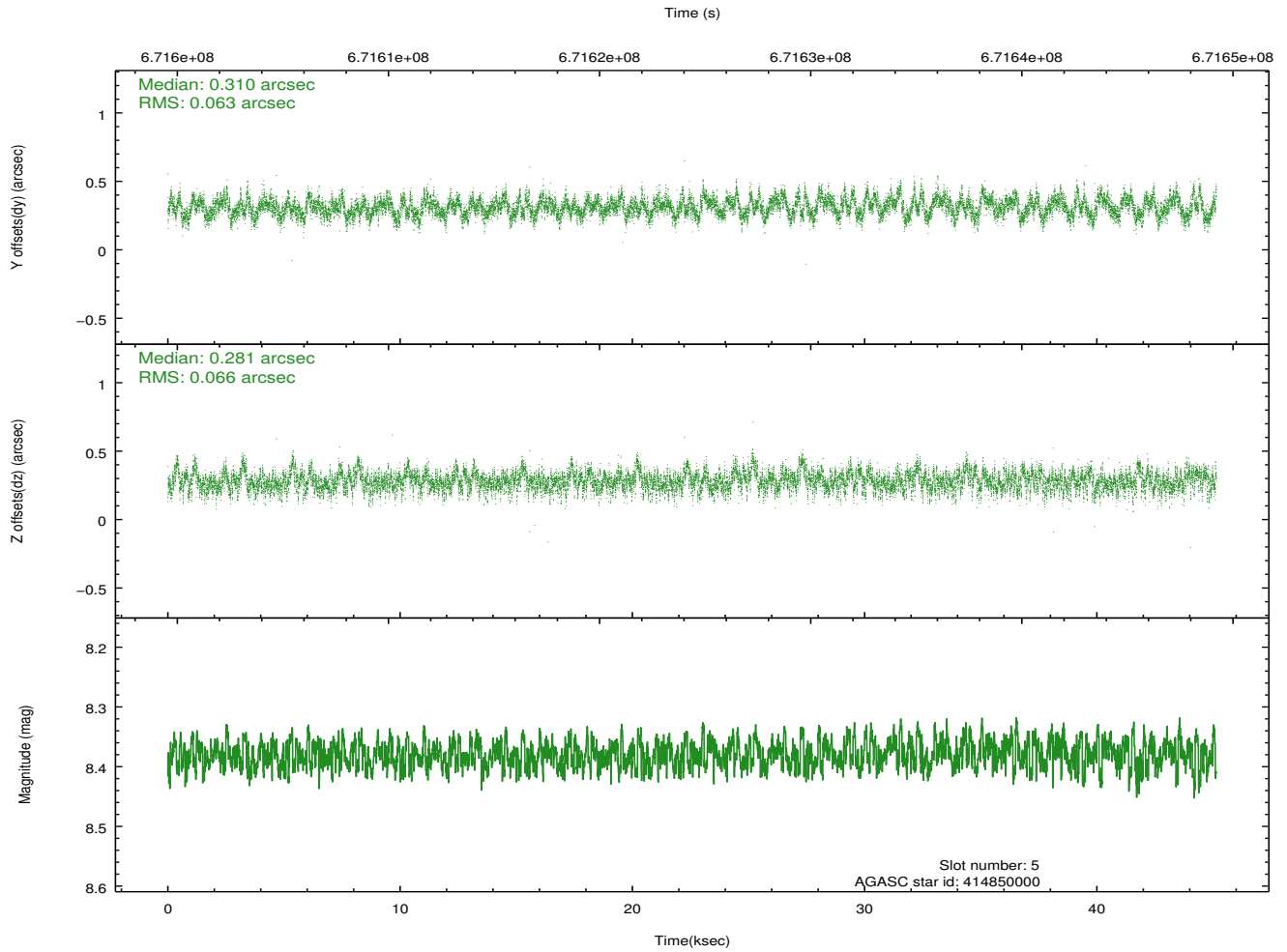
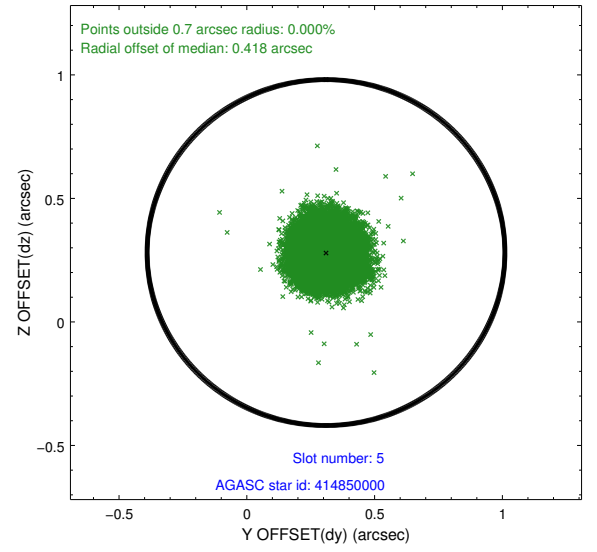
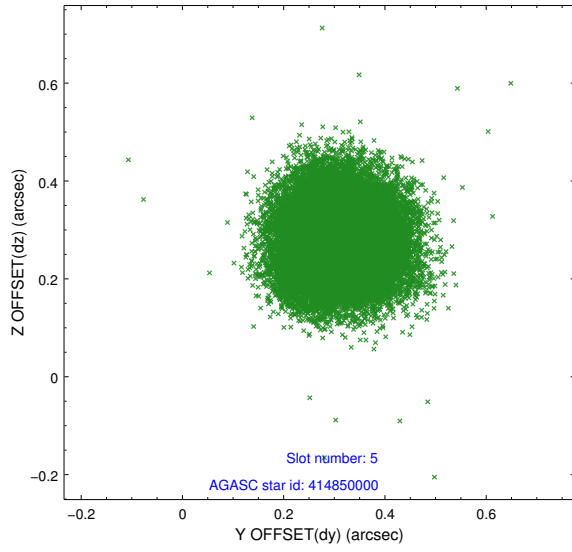
2.4.1 Slot 3



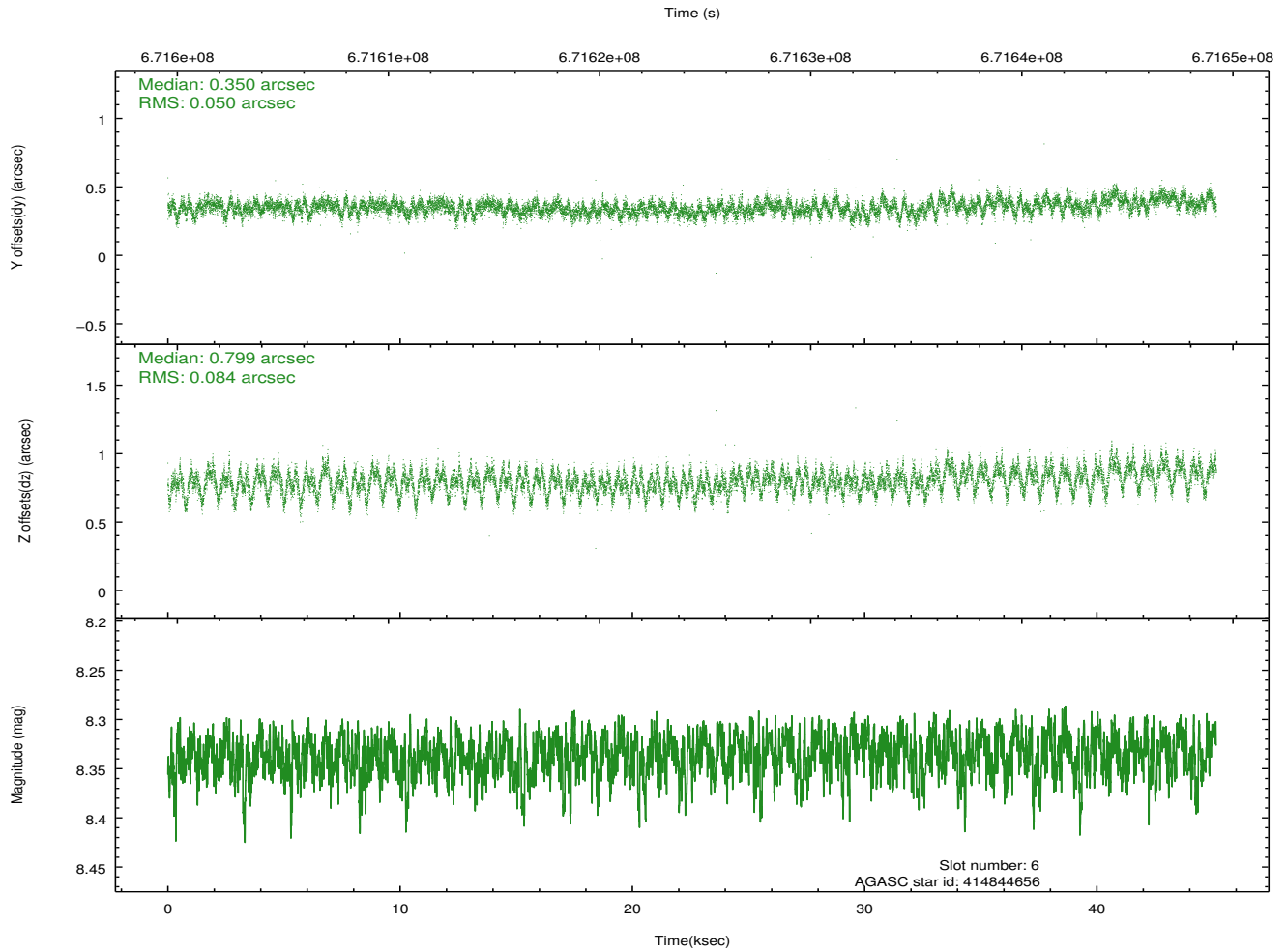
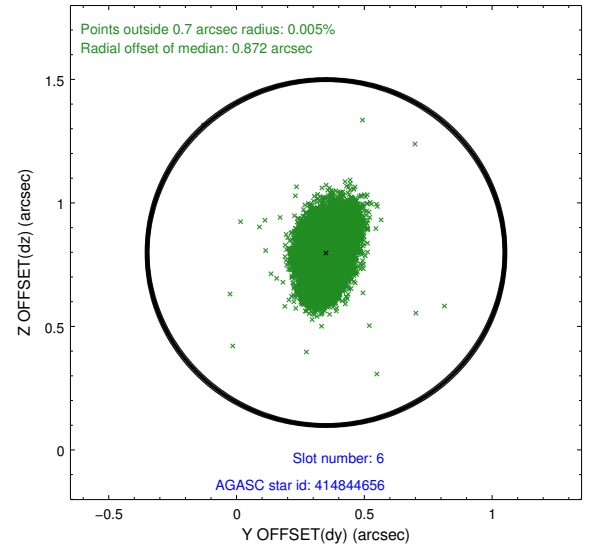
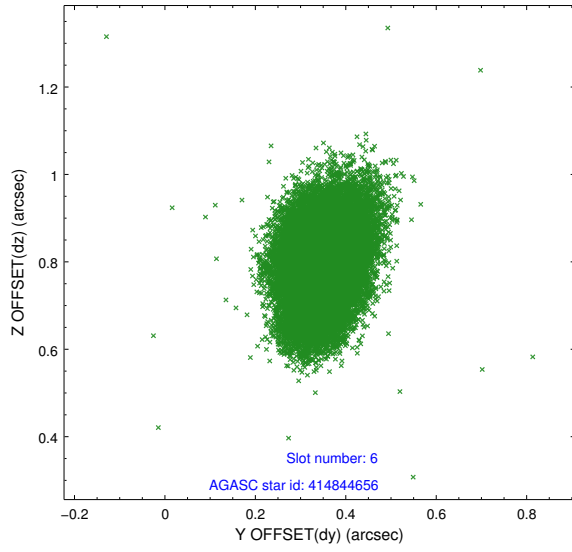
2.4.2 Slot 4



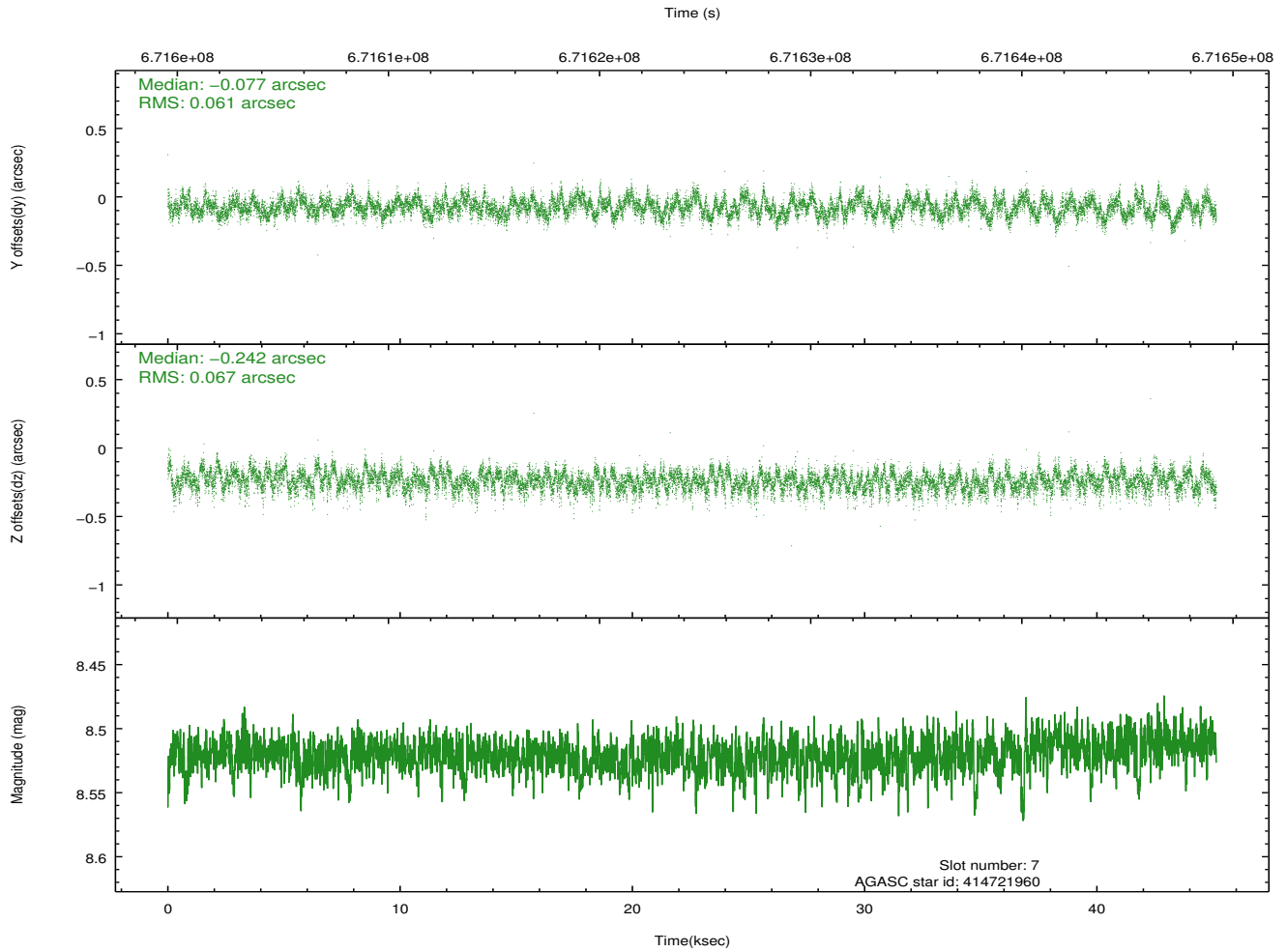
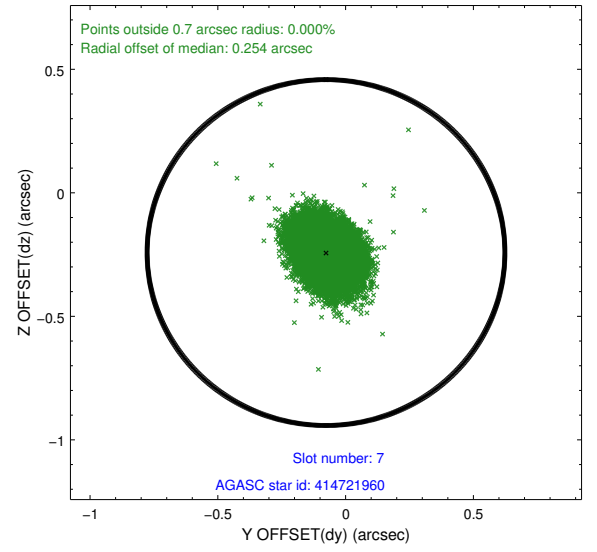
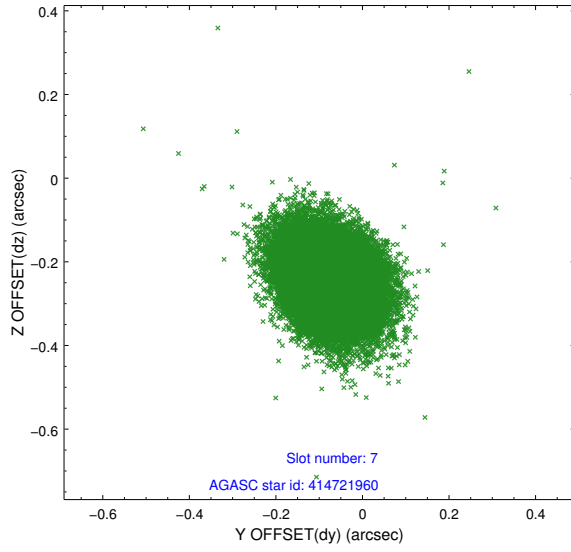
2.4.3 Slot 5



2.4.4 Slot 6

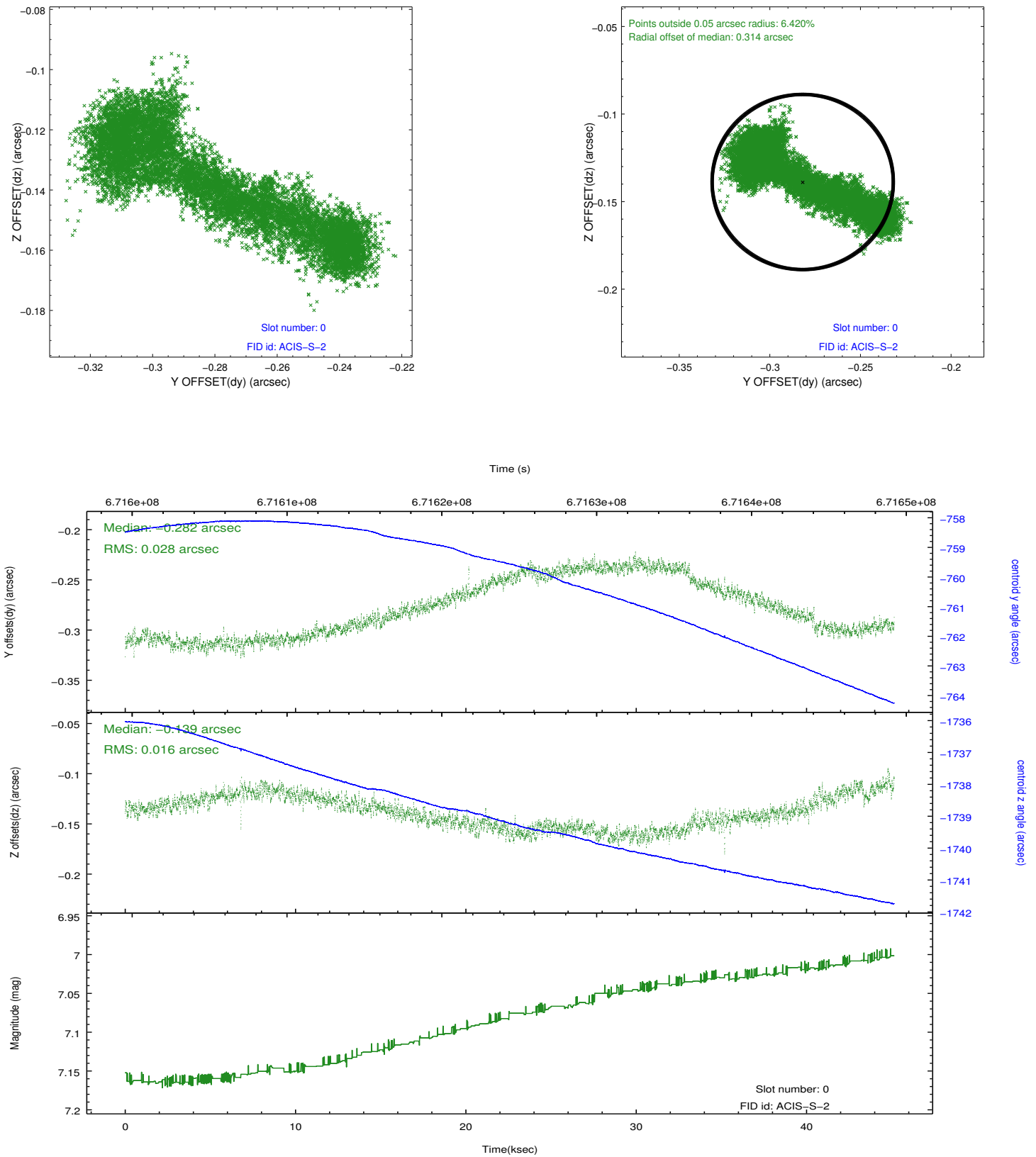


2.4.5 Slot 7

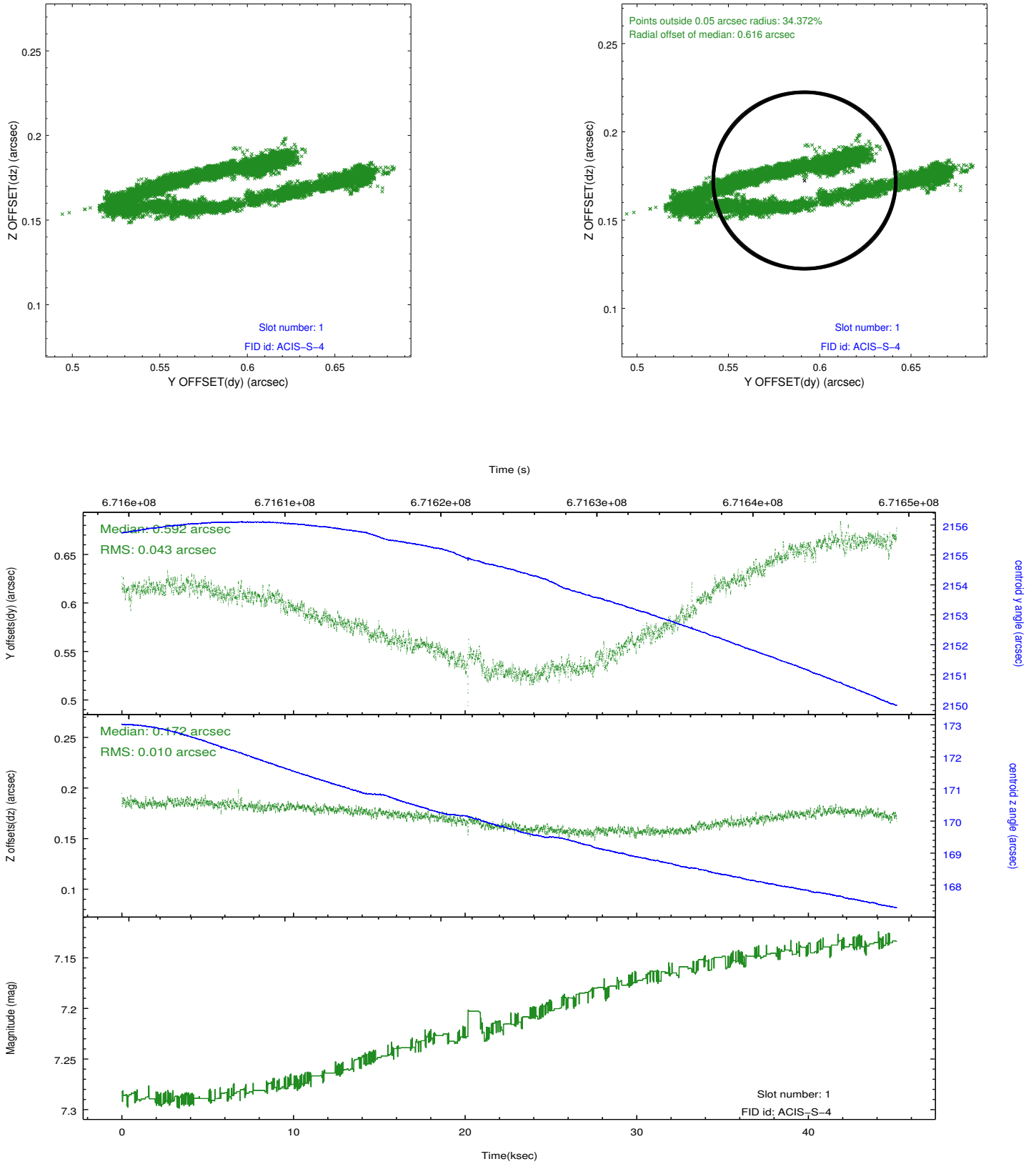


2.5 FID Slots

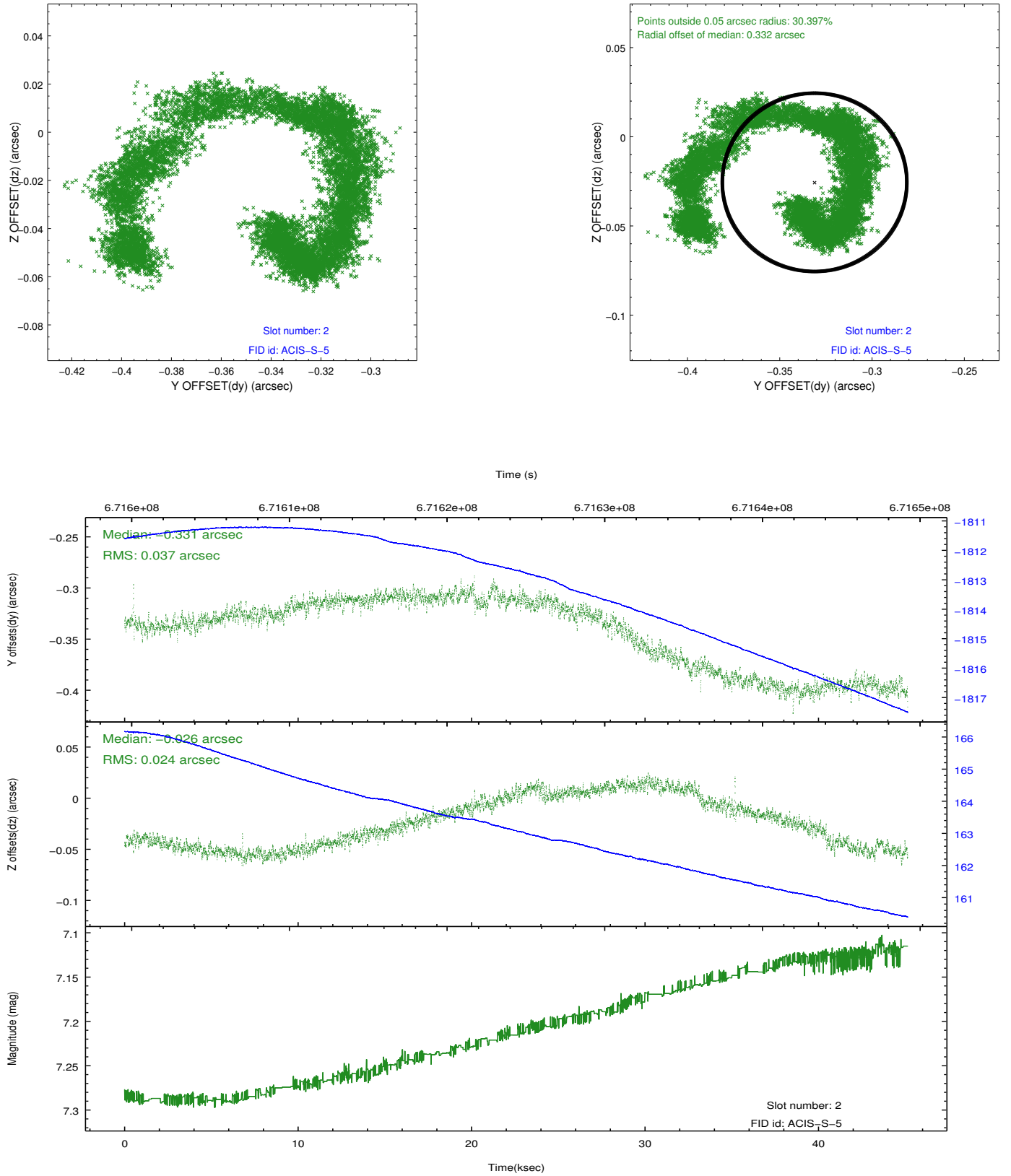
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2019.04.15
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	45.05098837173

A.2 Comments

The focal plane temperature is warmer than -112.0 C during the interval 671601923.26 - 671608919.96 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the back-illuminated chips. The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
- 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
- 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
- 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
- 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.

In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.