

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22144 - L2 Version 1
Chandra X-Ray Center

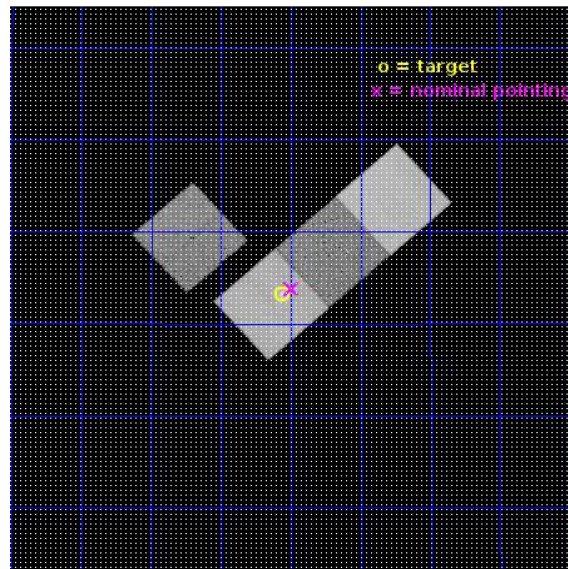
L2 Processing Date : Mar 16 2019

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1 Front

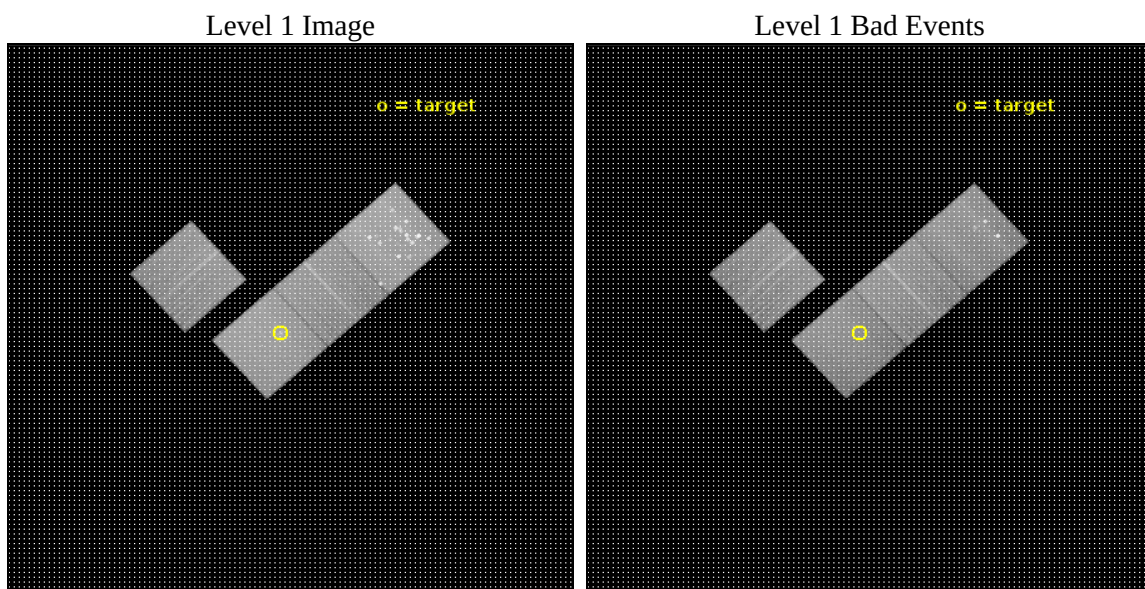
seq_num	801753	Sequence number
obs_id	22144	Observation id
title	Fuelling and self-regulation of AGN feedback at the Bondi radius of M84	Proposal title
observer	Helen Russell	Principal investigator
object	M84	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	186.265833	Observer's specified target RA [deg]
dec_targ	12.886944	Observer's specified target Dec [deg]
ra_nom	186.24889628307	Nominal RA [deg]
dec_nom	12.896847766085	Nominal Dec [deg]
roll_nom	138.16038645903	Nominal Roll [deg]
revision	1	Processing version of data
ontime	32174.900247574	Sum of GTIs [s]
livetime	31754.511489022	Livetime [s]
ontime3	32168.618117094	Sum of GTIs [s]
ontime5	32174.900247574	Sum of GTIs [s]
ontime6	32174.900247574	Sum of GTIs [s]
ontime7	32174.900247574	Sum of GTIs [s]
l2events	378129	Number of level 2 events



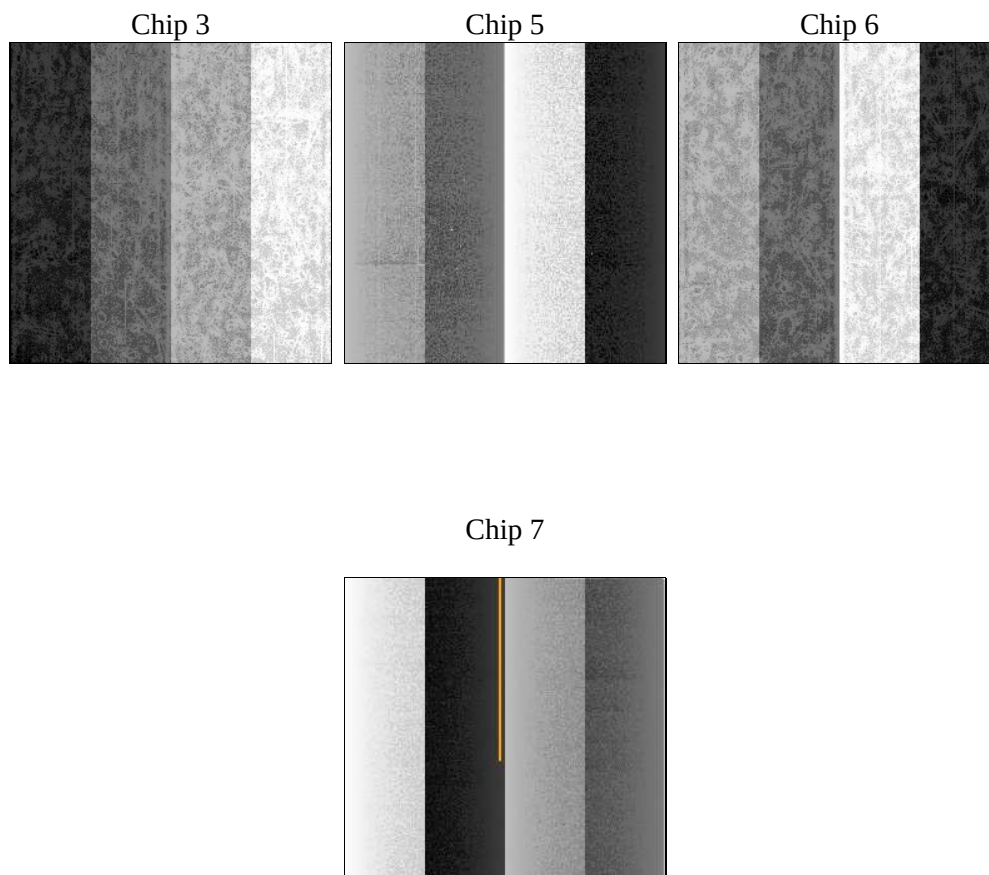
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	32112.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	32174.900247574	Sum of GTIs [s]
caldsver	4.8.2	 	ontime3	32168.618117094	Sum of GTIs [s]
date	2019-03-16T14:54:10	Date and time of file creation	ontime5	32174.900247574	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	32174.900247574	Sum of GTIs [s]
			ontime7	32174.900247574	Sum of GTIs [s]
			l1events	1314032	Number of level 1 events

2.1.4 Events

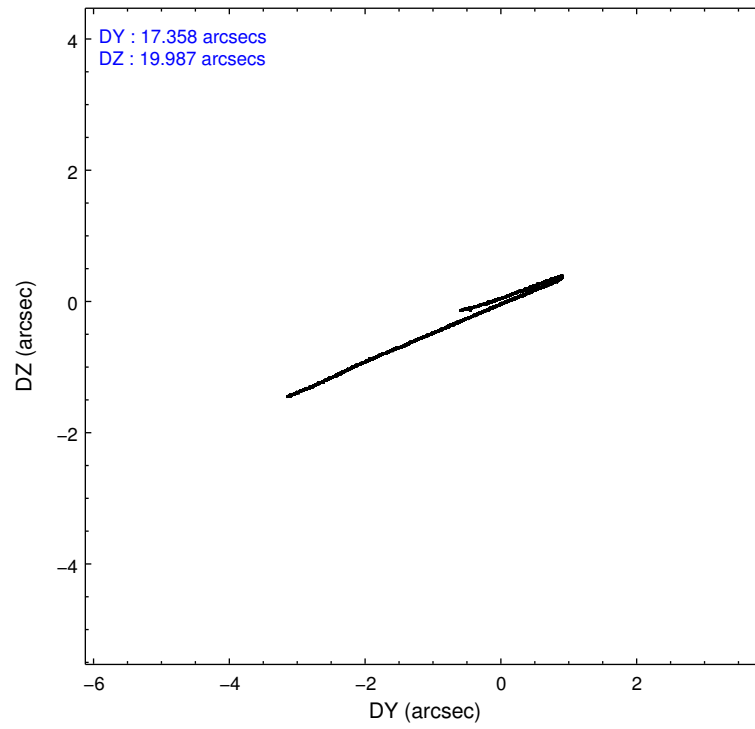
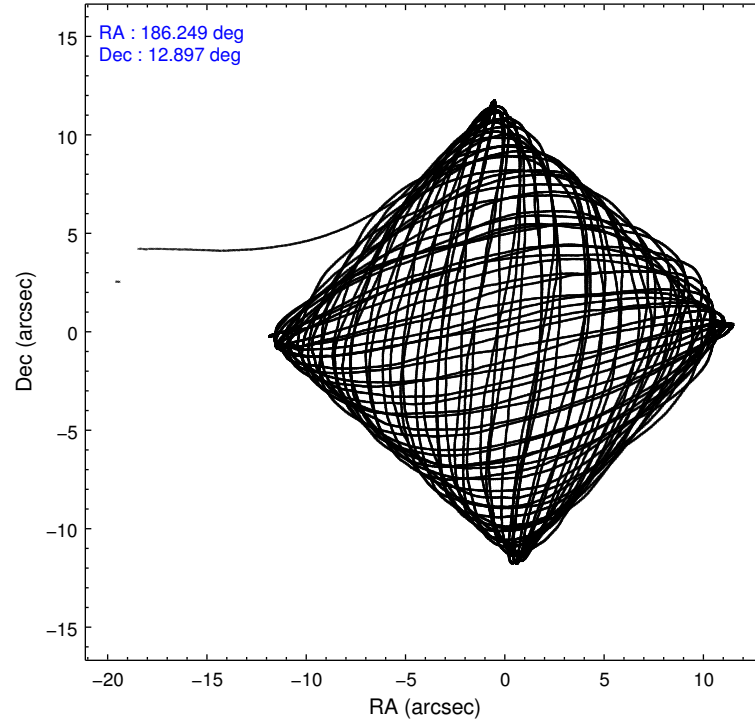
	ccd 3	ccd 5	ccd 6	ccd 7
level 1 events	247919	482382	257069	326662
rejected events	214870	222008	227379	181173
rejected %	86%	46%	88%	55%

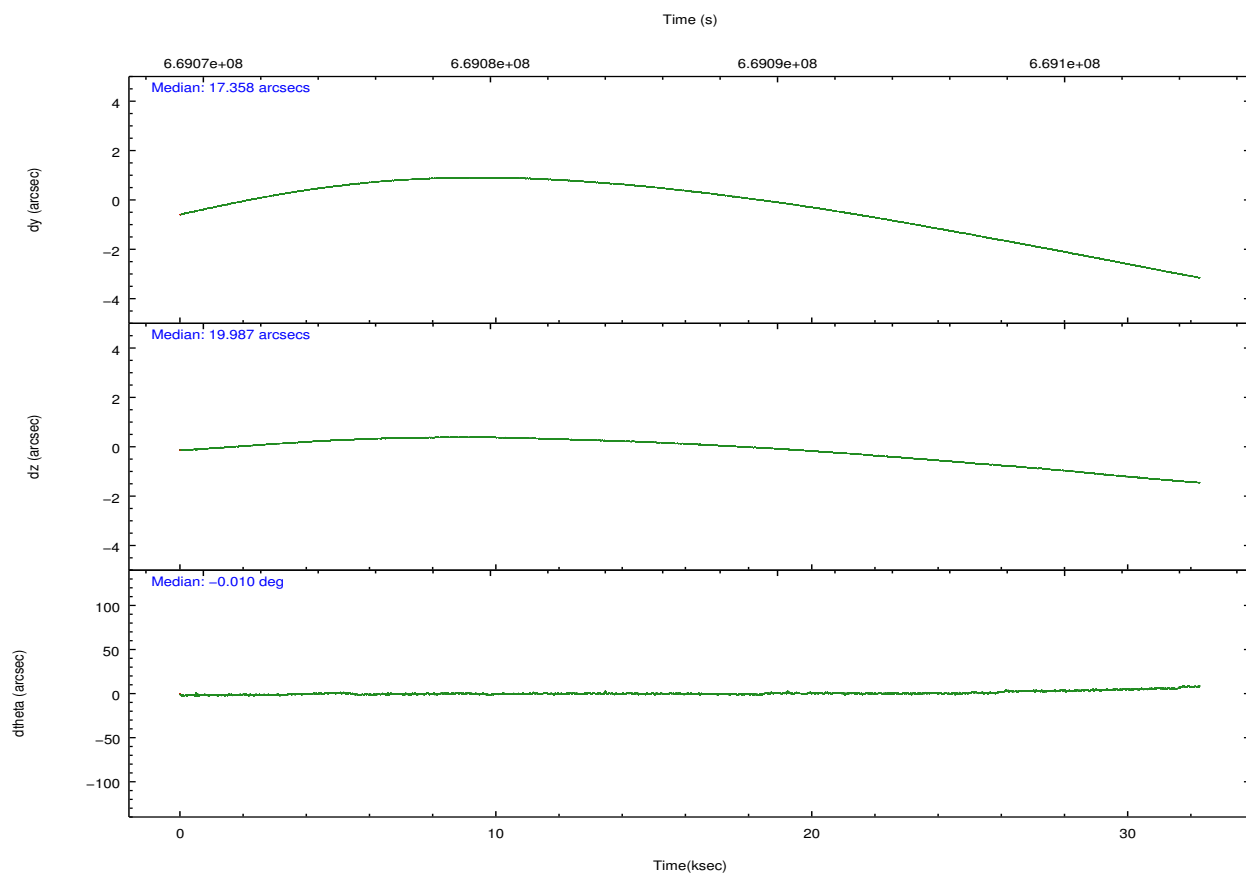
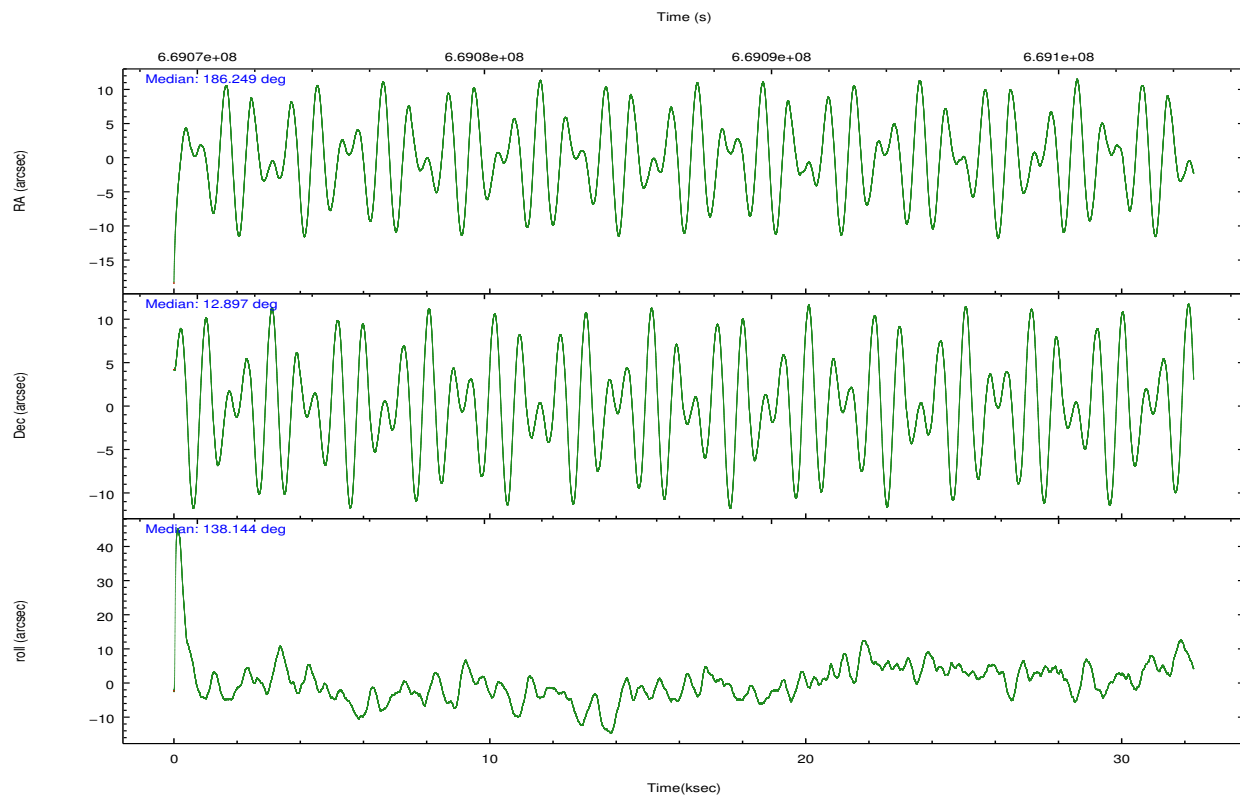
	ccd 3	ccd 5	ccd 6	ccd 7
grade 0 events	15942	66762	10011	14181
	6%	13%	3%	4%
grade 1 events	155	1067	112	477
	0%	0%	0%	0%
grade 2 events	6118	71942	7476	31304
	2%	14%	2%	9%
grade 3 events	2784	6729	2432	11660
	1%	1%	0%	3%
grade 4 events	2774	7915	2421	11452
	1%	1%	0%	3%
grade 5 events	10796	26915	10435	30600
	4%	5%	4%	9%
grade 6 events	5438	107064	7352	76904
	2%	22%	2%	23%
grade 7 events	203912	193988	216830	150084
	82%	40%	84%	45%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-3567	ACIS-3567	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	N	N
Observation mode	POINTING	POINTING	CCD I1 on	N	N
[deg] Pointing RA	186.276536	186.2488962830713	CCD I2 on	O1	N
[deg] Pointing Dec	12.891546	12.89684776608466	CCD I3 on	Y	Y
[deg] Pointing Roll	137.997606	138.1603864590294	CCD S0 on	N	N
[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	-190.132523	-190.1425803651734	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.01005778216563158	CCD S4 on	O2	N
[s] Observation start time (MET)	669070996.184000	669070005.50595	CCD S5 on	N	N
Observation start date	2019-03-15T21:02:07	2019-03-15T20:46:45	Number of optional ACIS chips dropped	2	2
[s] Observation end time (MET)	669103108.184000	669103559.39546	On-chip summing requested	N	N
Observation end date	2019-03-16T05:57:19	2019-03-16T06:05:59	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



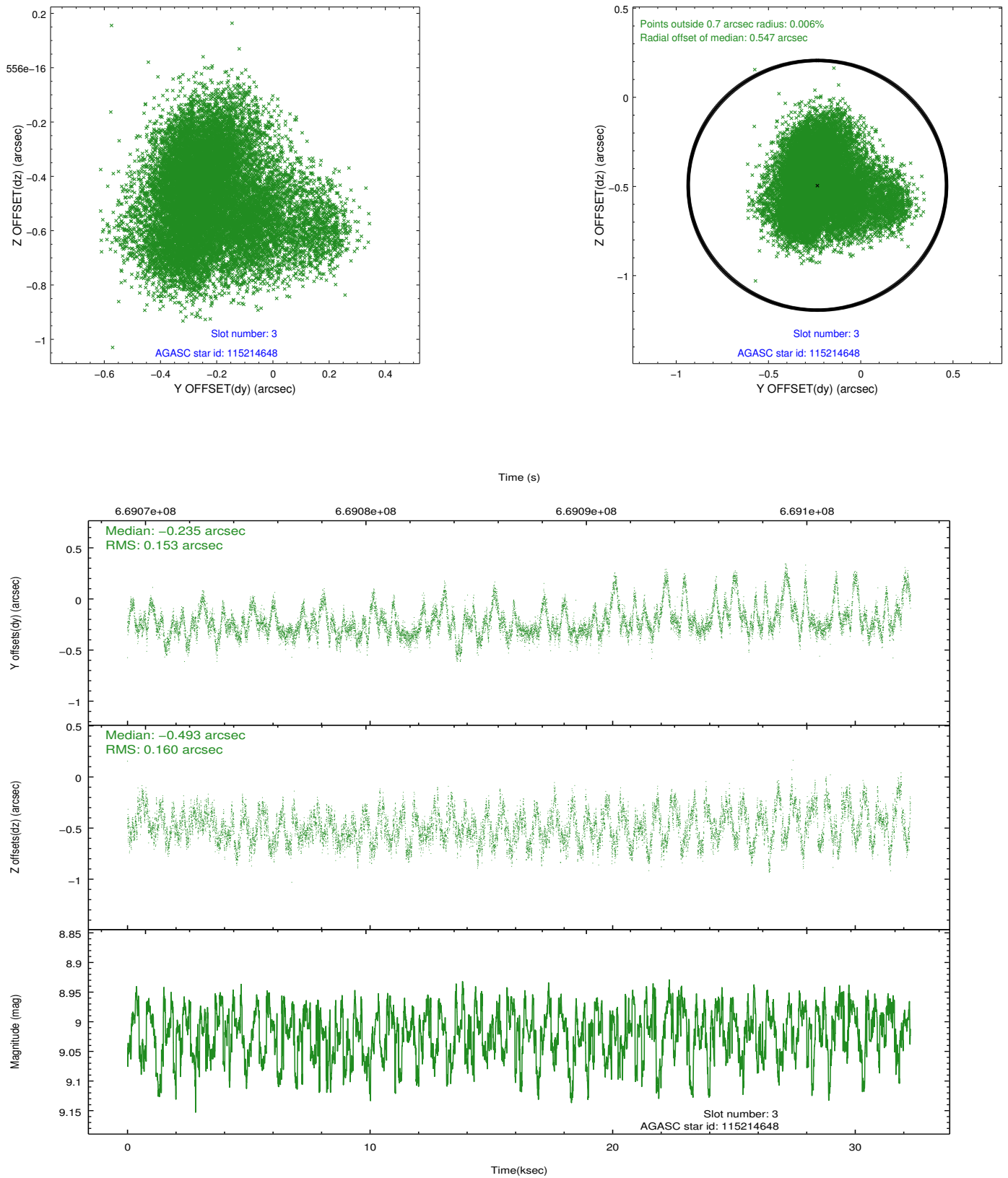


Slot Statistics

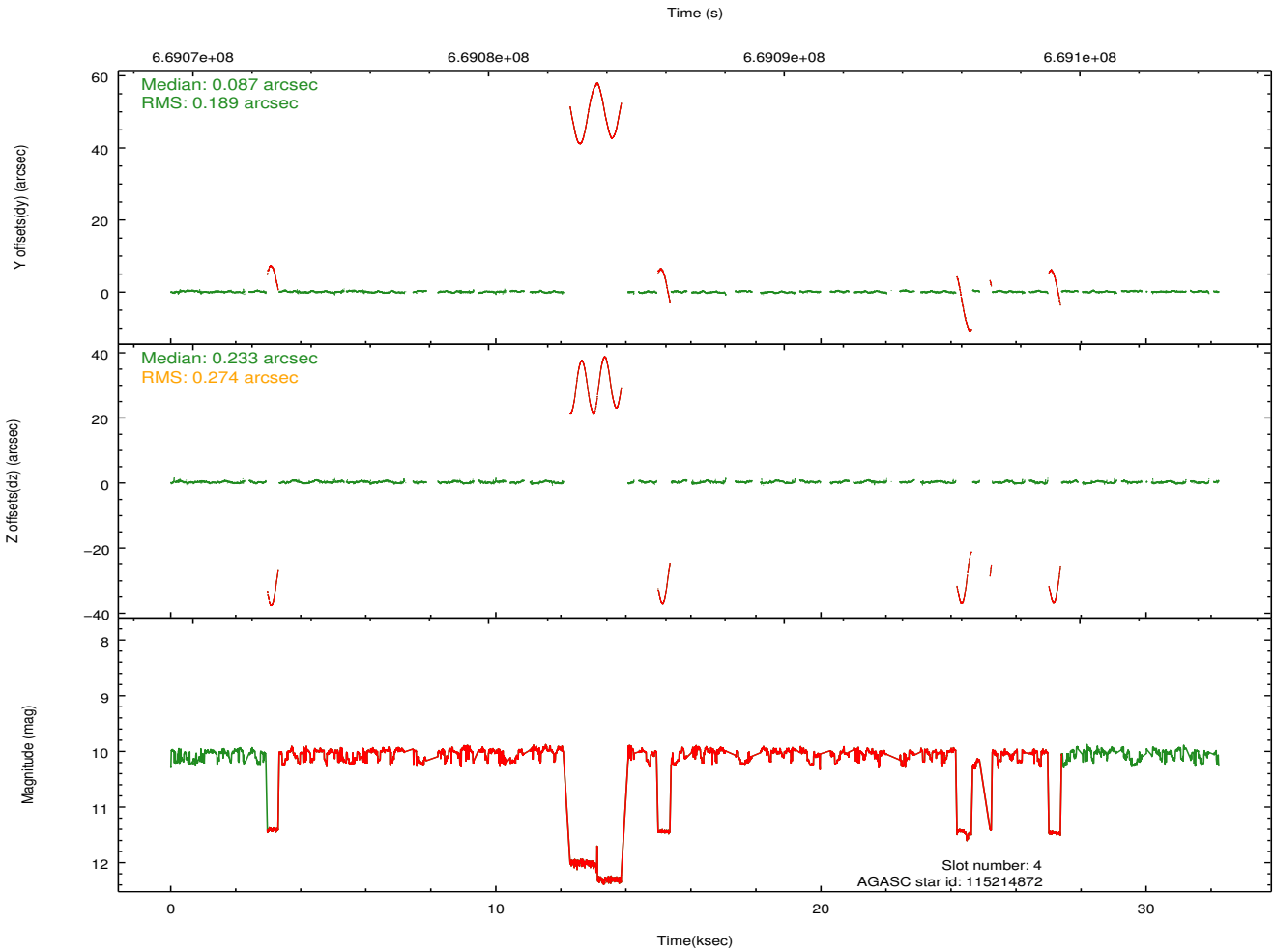
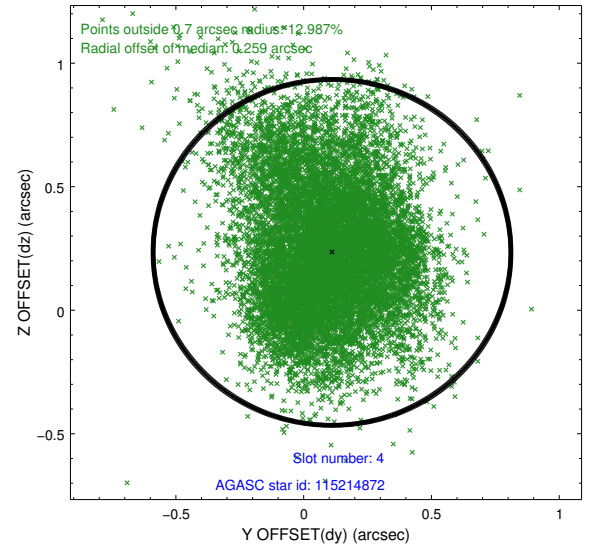
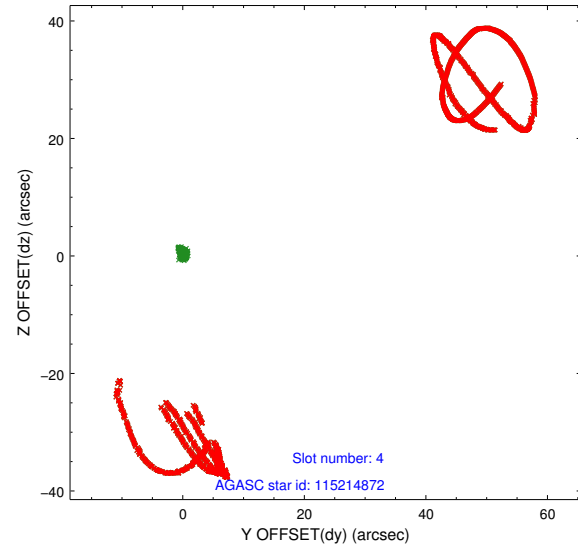
	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	m
	BAD		ACIS-S-2	7.09	4909	1.000	-0.633	-0.228	0.053	0.179	0.000000	0.000000	-771.25	-17
	FID		ACIS-S-4	7.22	7873	1.000	0.664	0.006	0.016	0.028	0.000000	0.000000	2143.89	1
	FID		ACIS-S-5	7.18	7873	1.000	-0.687	0.004	0.016	0.028	0.000000	0.000000	-1823.48	1
	GUIDE	used	115214648	9.02	15728	1.000	-0.235	-0.493	0.235	0.392	185.771147	12.685188	823.39	17
	BAD	used	115214872	10.03	11501	0.885	0.087	0.233	0.389	51.819	185.840719	12.668185	603.81	16
	GUIDE	used	115215984	9.95	15464	1.000	-0.065	-0.098	0.355	0.564	186.134733	12.875031	330.14	3
	BAD	used	115216184	9.73	9274	0.602	0.199	-0.039	68.188	80.190	185.973150	12.580247	17.38	15
	GUIDE	used	115347480	9.17	15713	1.000	0.112	0.455	0.252	0.379	186.668576	13.310410	-9.78	-20

2.4 Star Slots

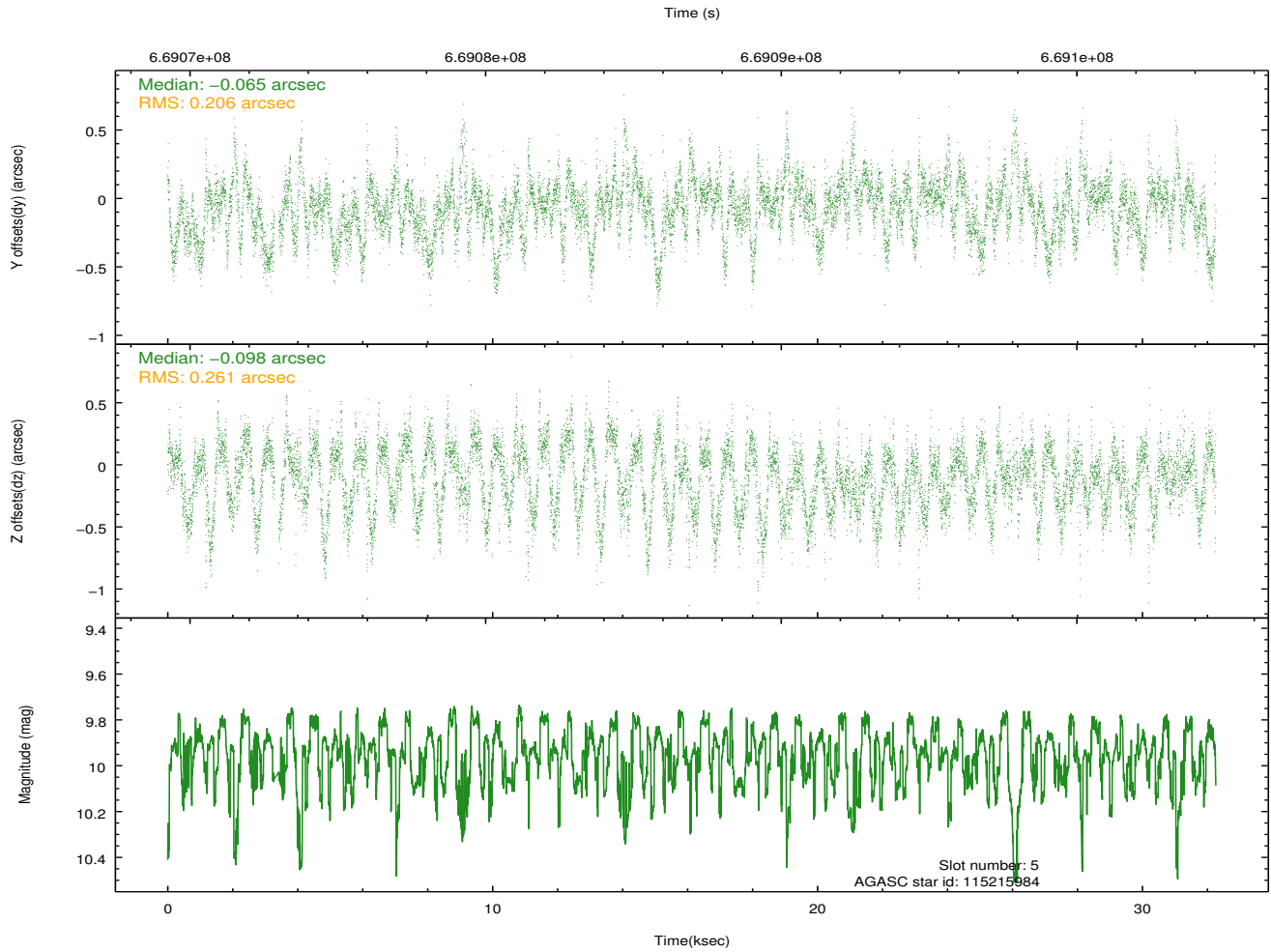
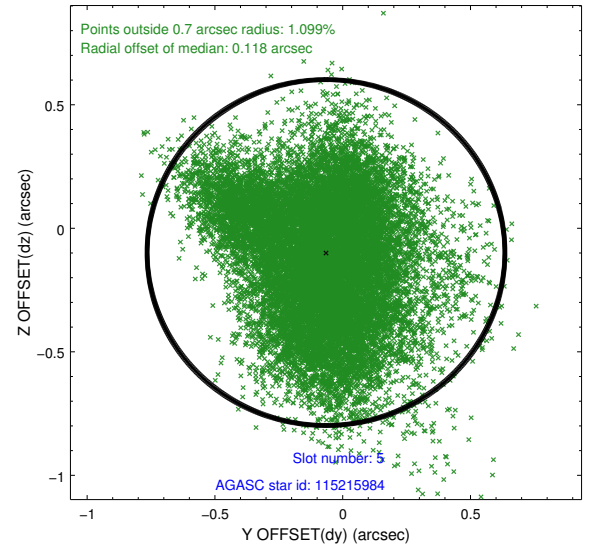
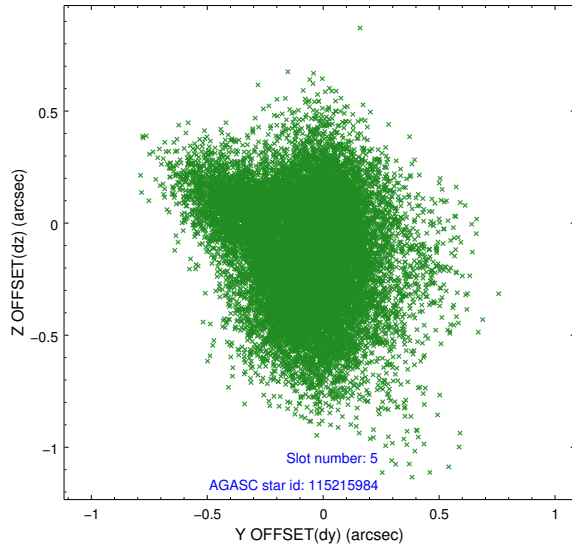
2.4.1 Slot 3



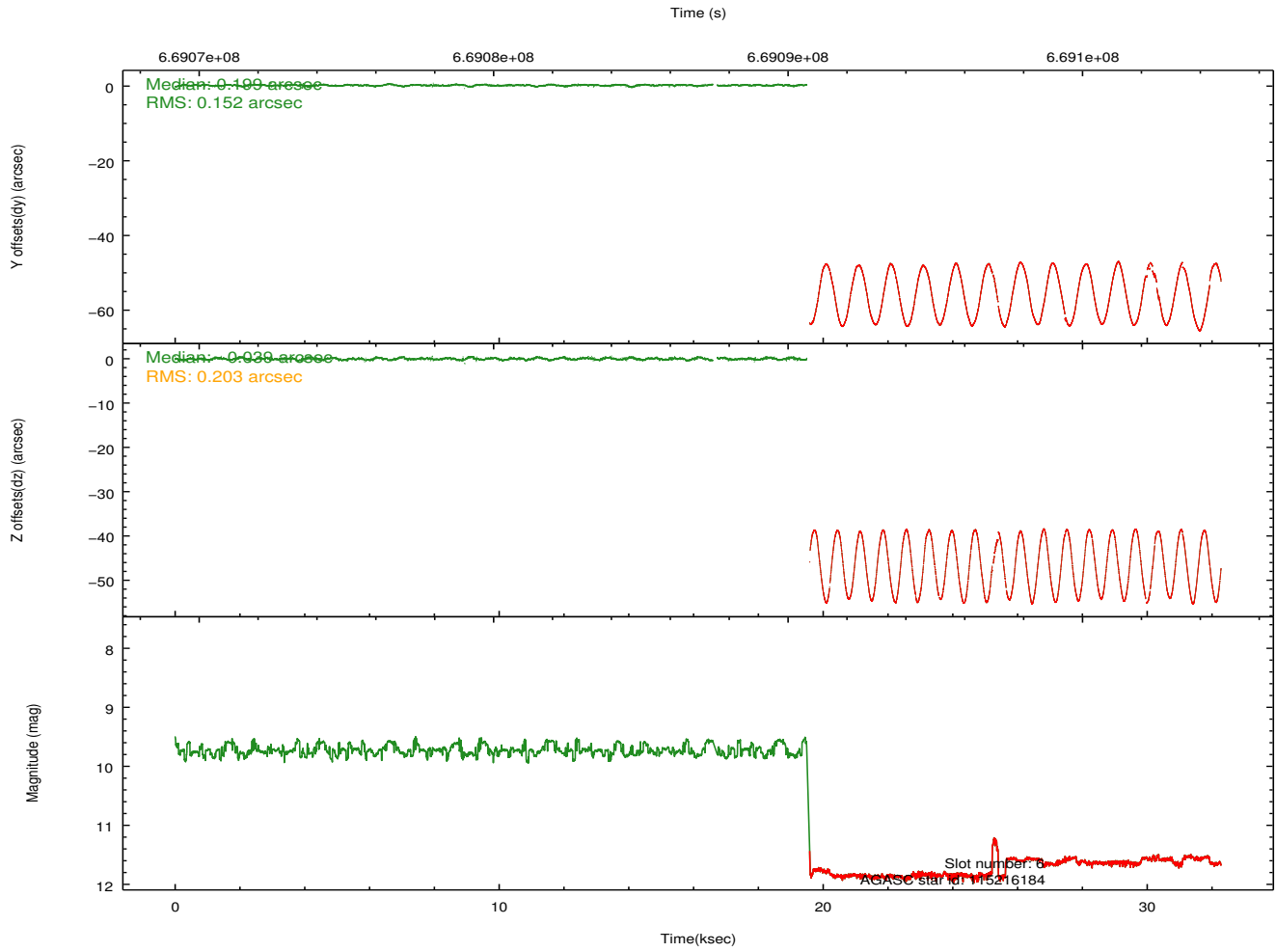
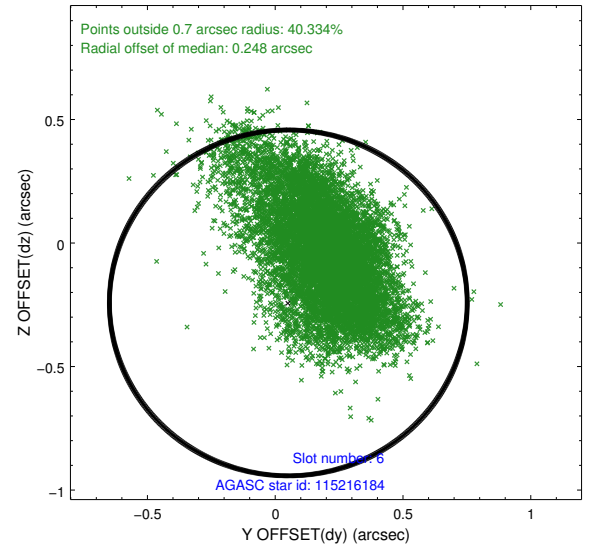
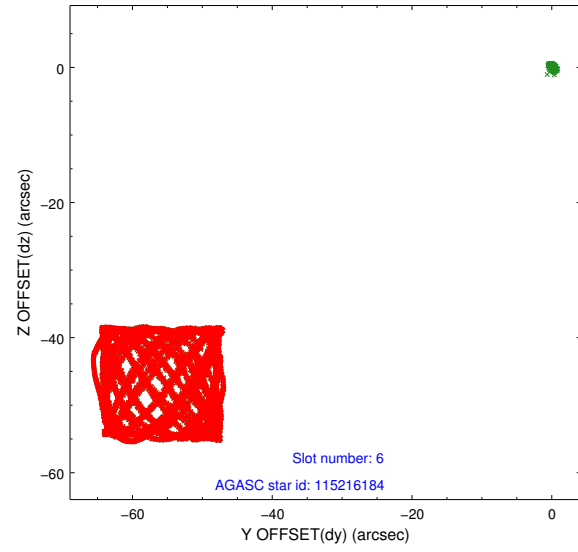
2.4.2 Slot 4



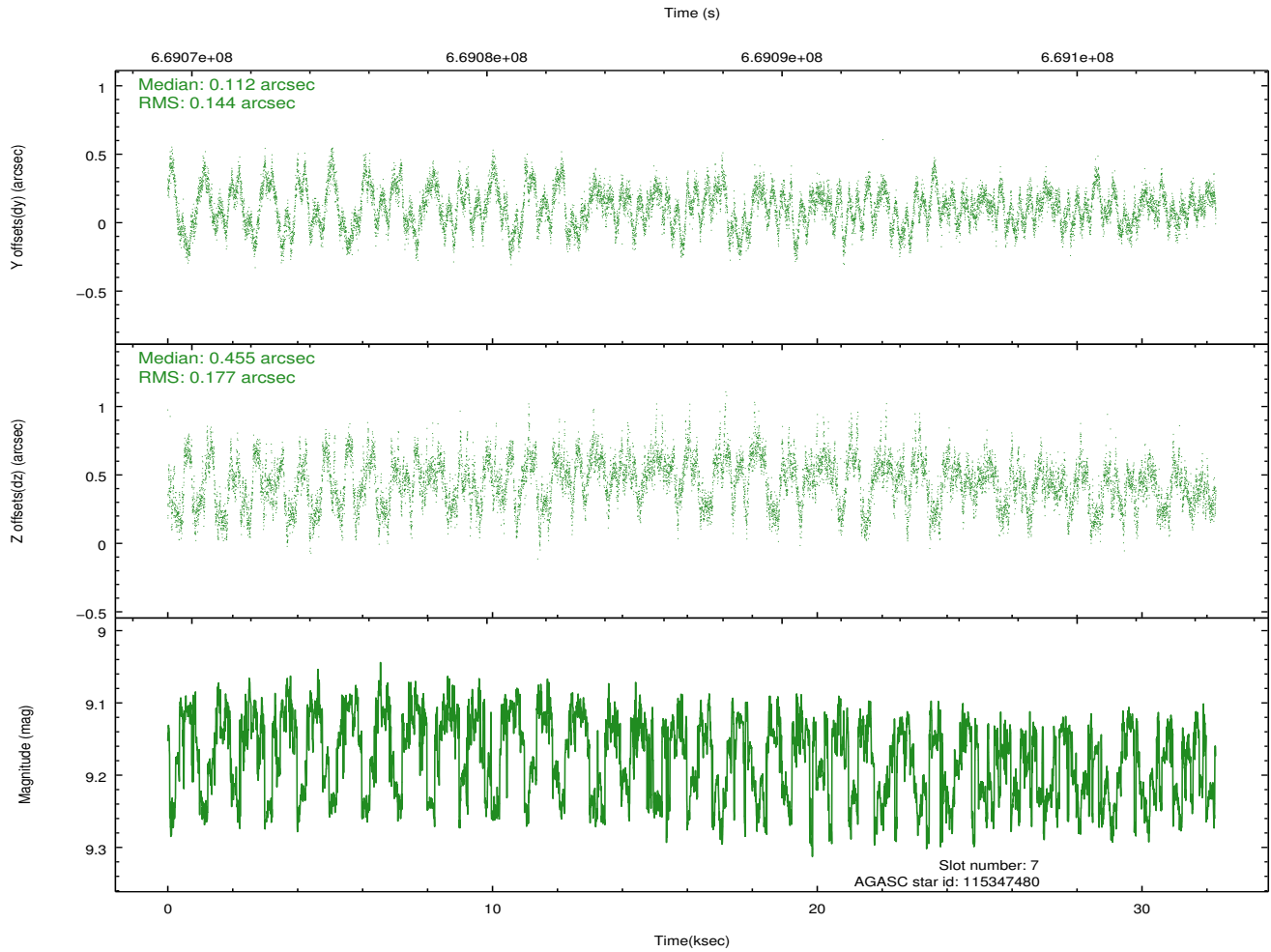
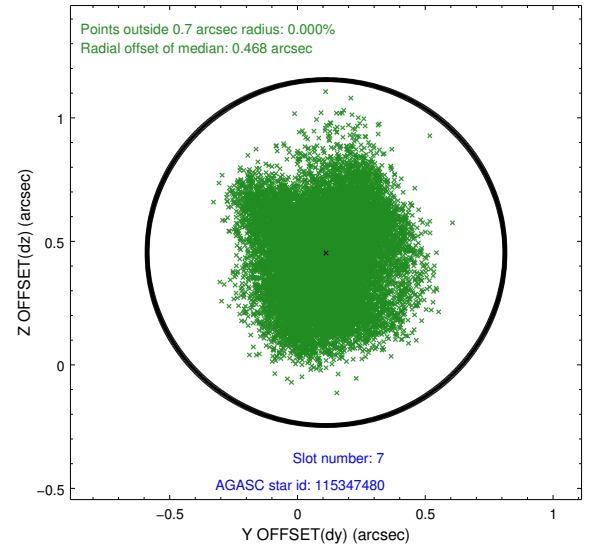
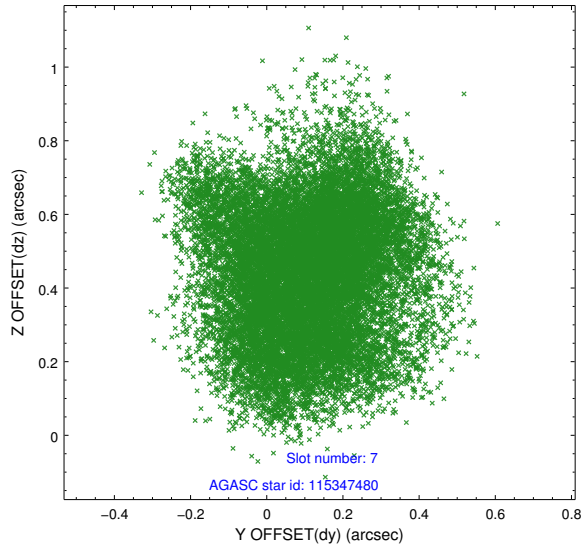
2.4.3 Slot 5



2.4.4 Slot 6

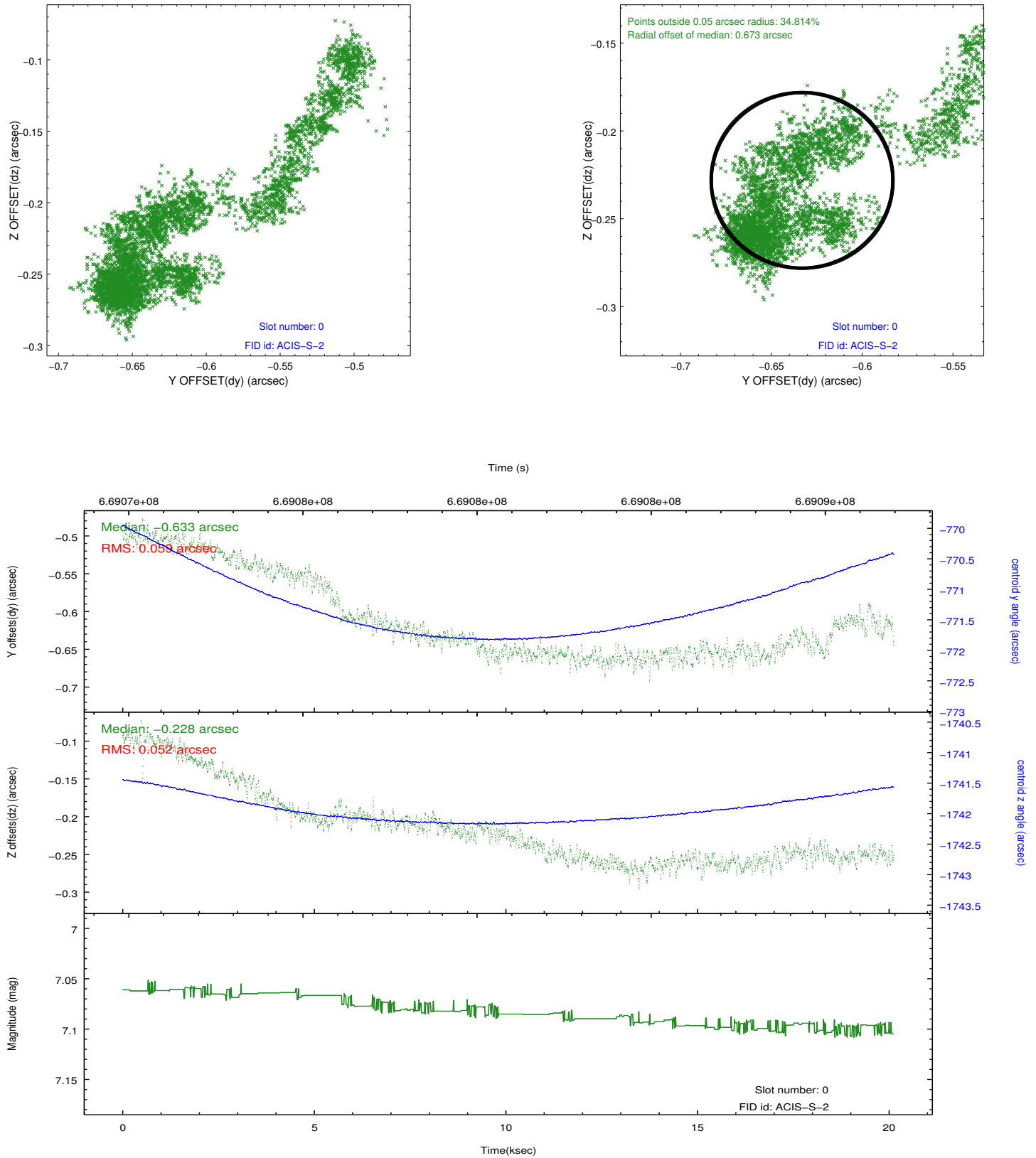


2.4.5 Slot 7

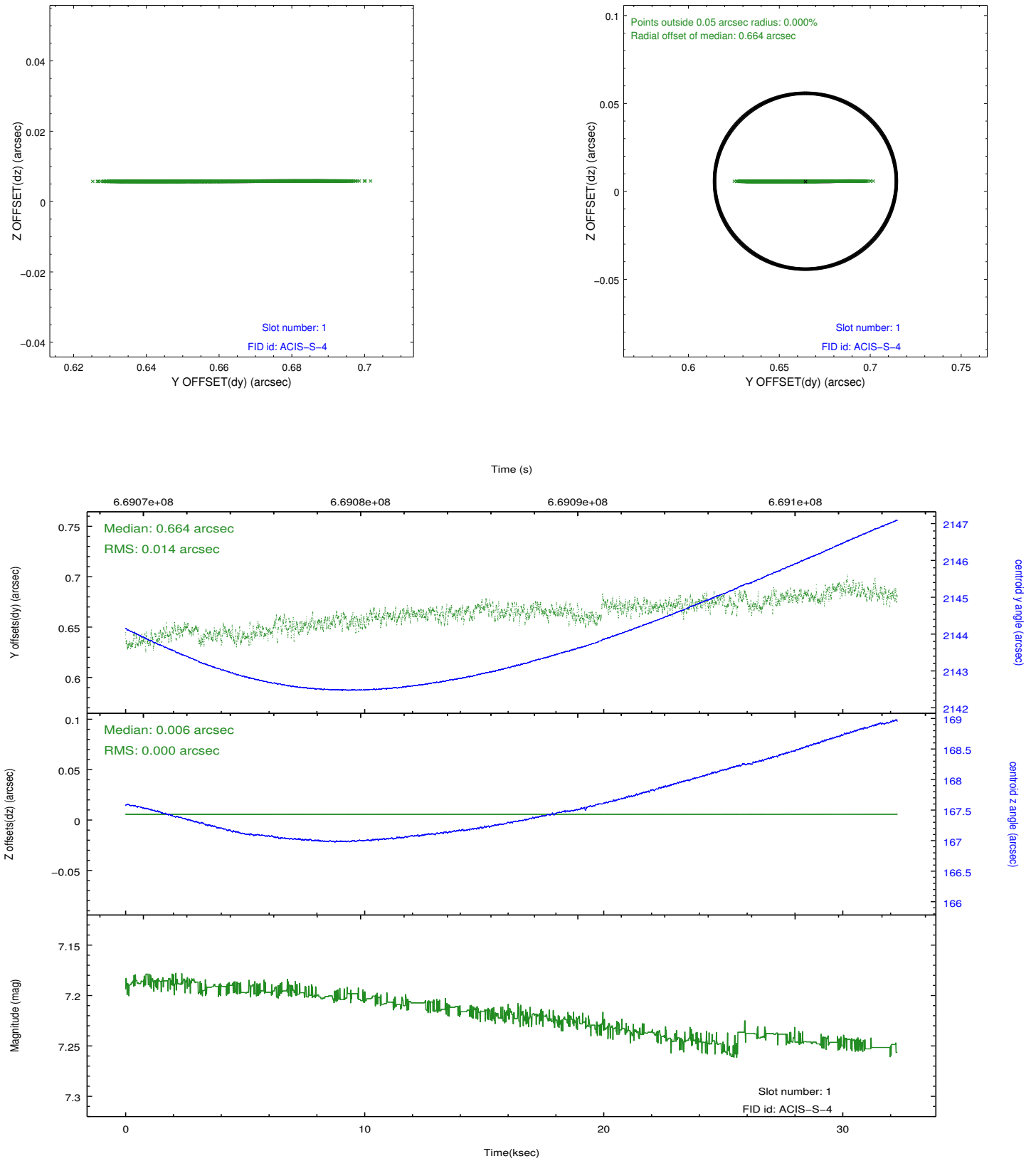


2.5 FID Slots

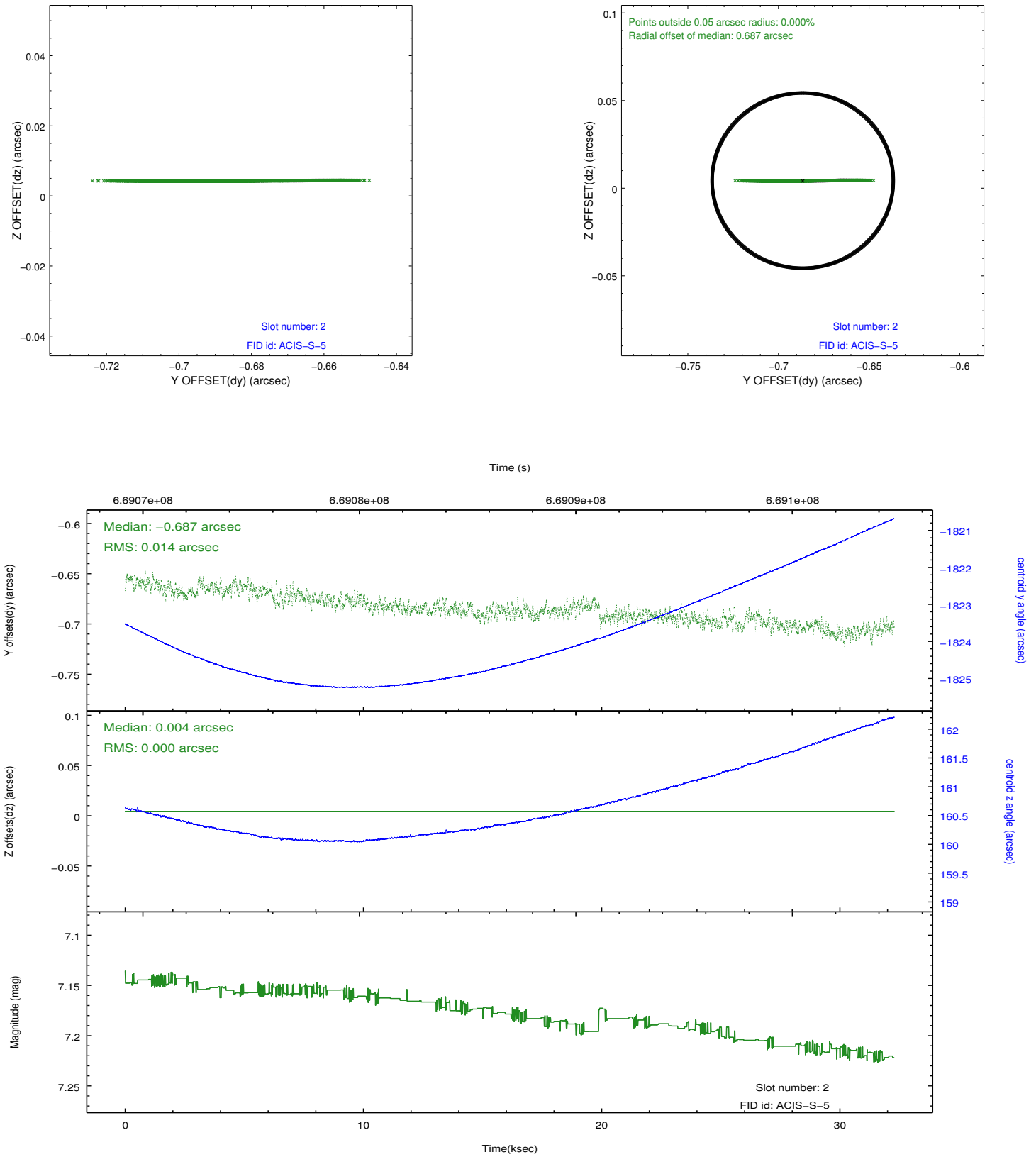
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2019.03.20
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	32.174900247574

A.2 Comments

The fid light in slot 0 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this fid light from the solution.

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Optional chips I2 and S4 not included.

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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.