

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21322 - L2 Version 1
Chandra X-Ray Center

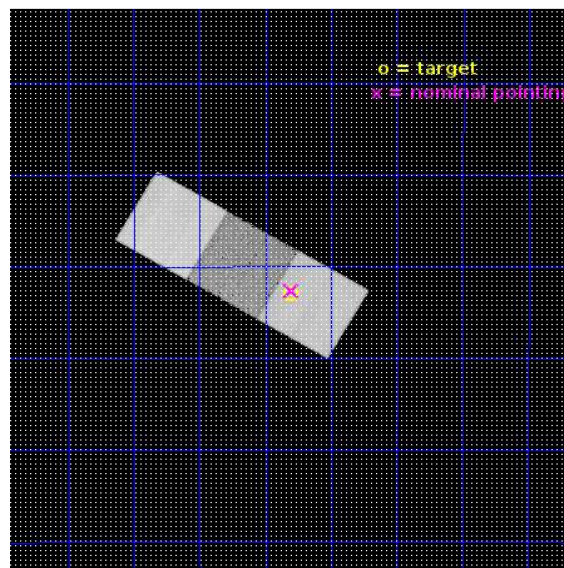
L2 Processing Date : Mar 22 2019

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1 Front

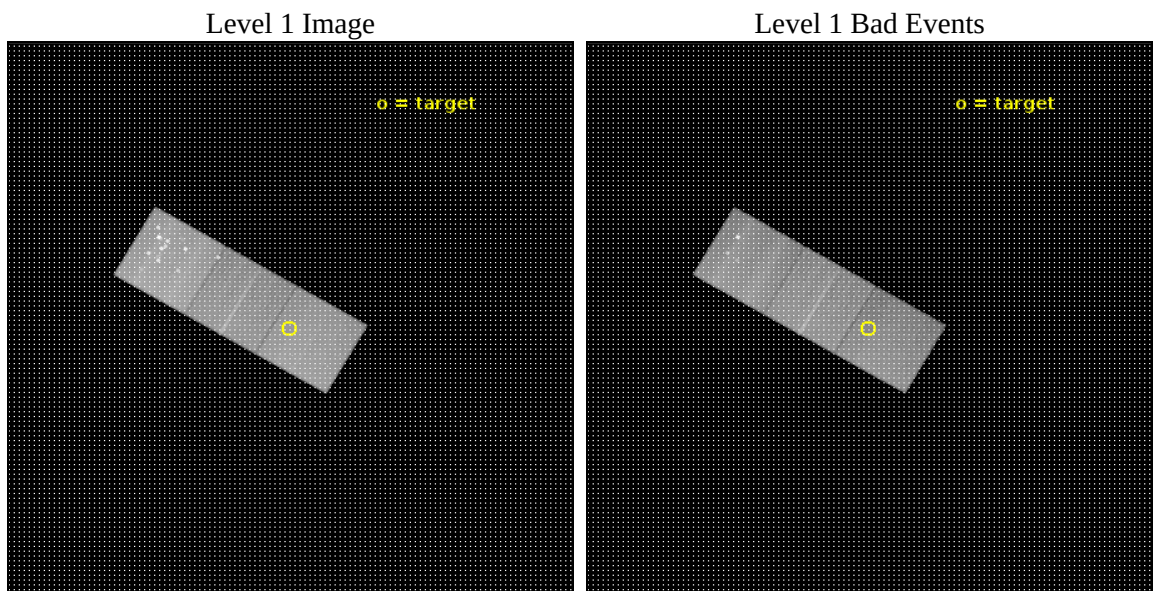
seq_num	503094	Sequence number
obs_id	21322	Observation id
title	Late-time monitoring of GW170817 across the electromagnetic spectrum	
observer	Raffaella Margutti	Principal investigator
object	GW170817	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	197.450417	Observer's specified target RA [deg]
dec_targ	-23.381472	Observer's specified target Dec [deg]
ra_nom	197.45048837564	Nominal RA [deg]
dec_nom	-23.377142969801	Nominal Dec [deg]
roll_nom	30.156673682983	Nominal Roll [deg]
revision	1	Processing version of data
ontime	36108.183650494	Sum of GTIs [s]
livetime	35636.403648642	Livetime [s]
ontime5	36108.14261055	Sum of GTIs [s]
ontime6	36104.960480213	Sum of GTIs [s]
ontime7	36108.183650494	Sum of GTIs [s]
l2events	379436	Number of level 2 events



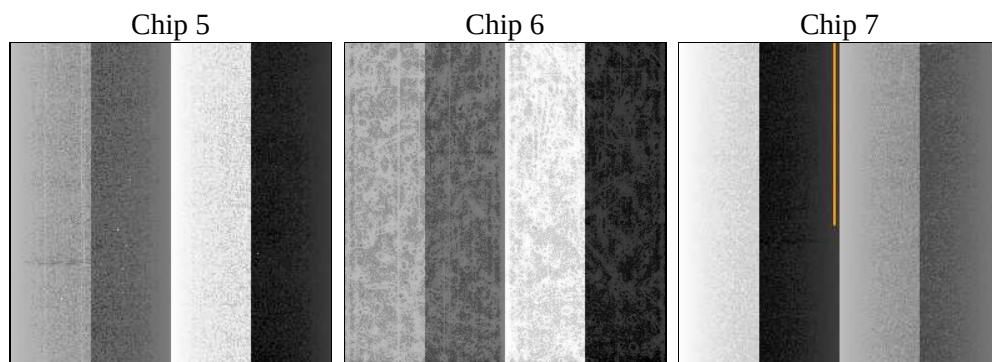
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	36000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	36108.183650494	Sum of GTIs [s]
caldsver	4.8.2	 	ontime5	36108.14261055	Sum of GTIs [s]
date	2019-03-22T05:31:43	Date and time of file creation	ontime6	36104.960480213	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	36108.183650494	Sum of GTIs [s]
			l1events	1190650	Number of level 1 events

2.1.4 Events

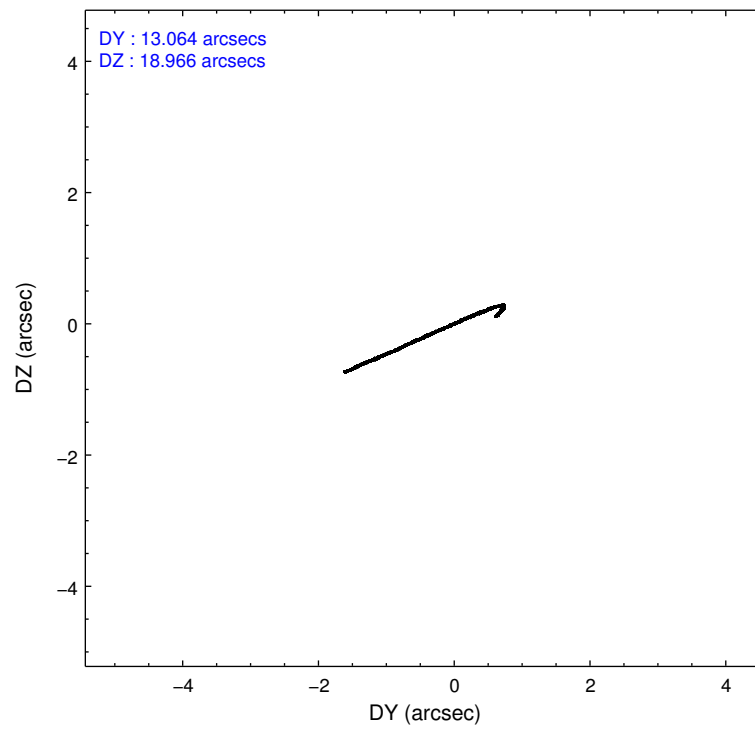
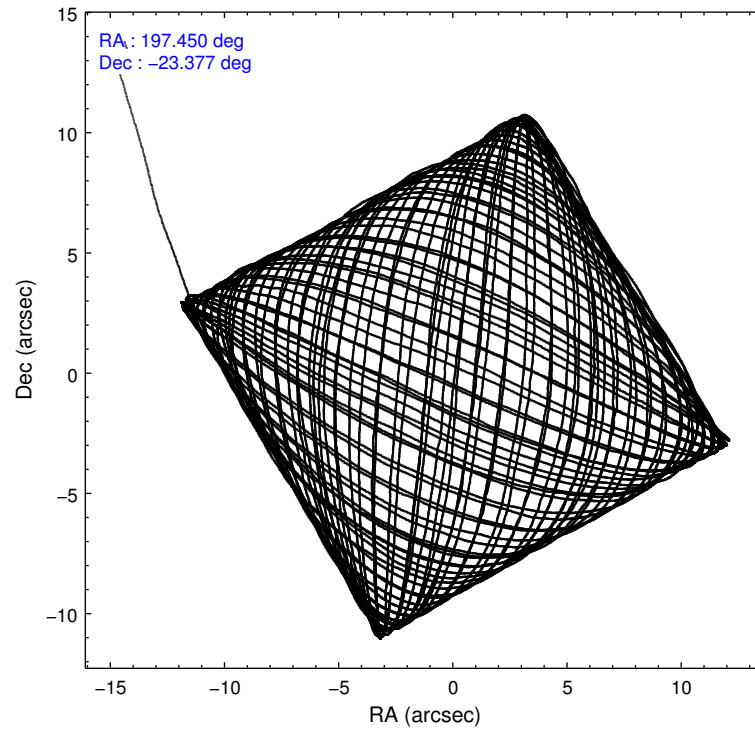
	ccd 5	ccd 6	ccd 7
level 1 events	538970	293375	358305
rejected events	253699	262076	203772
rejected %	47%	89%	56%

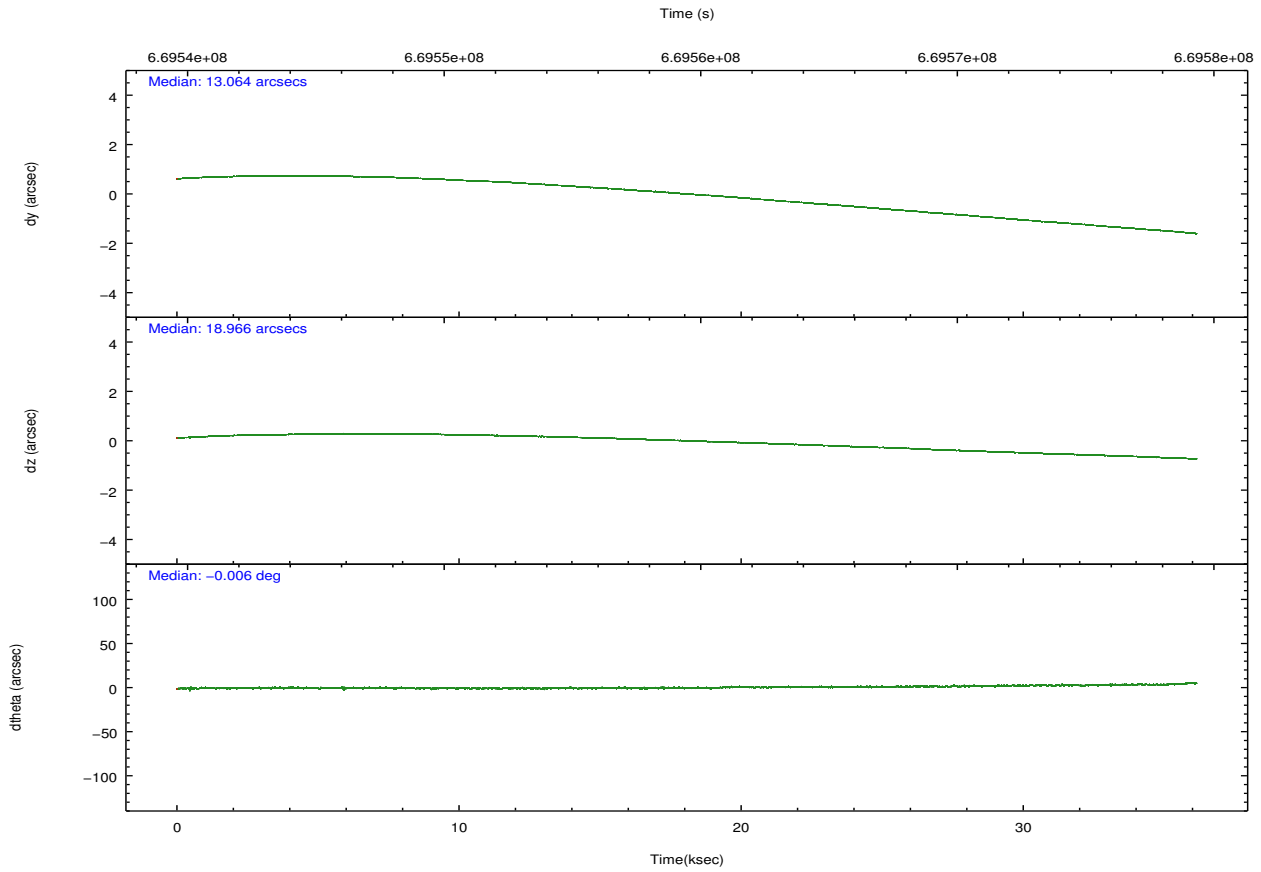
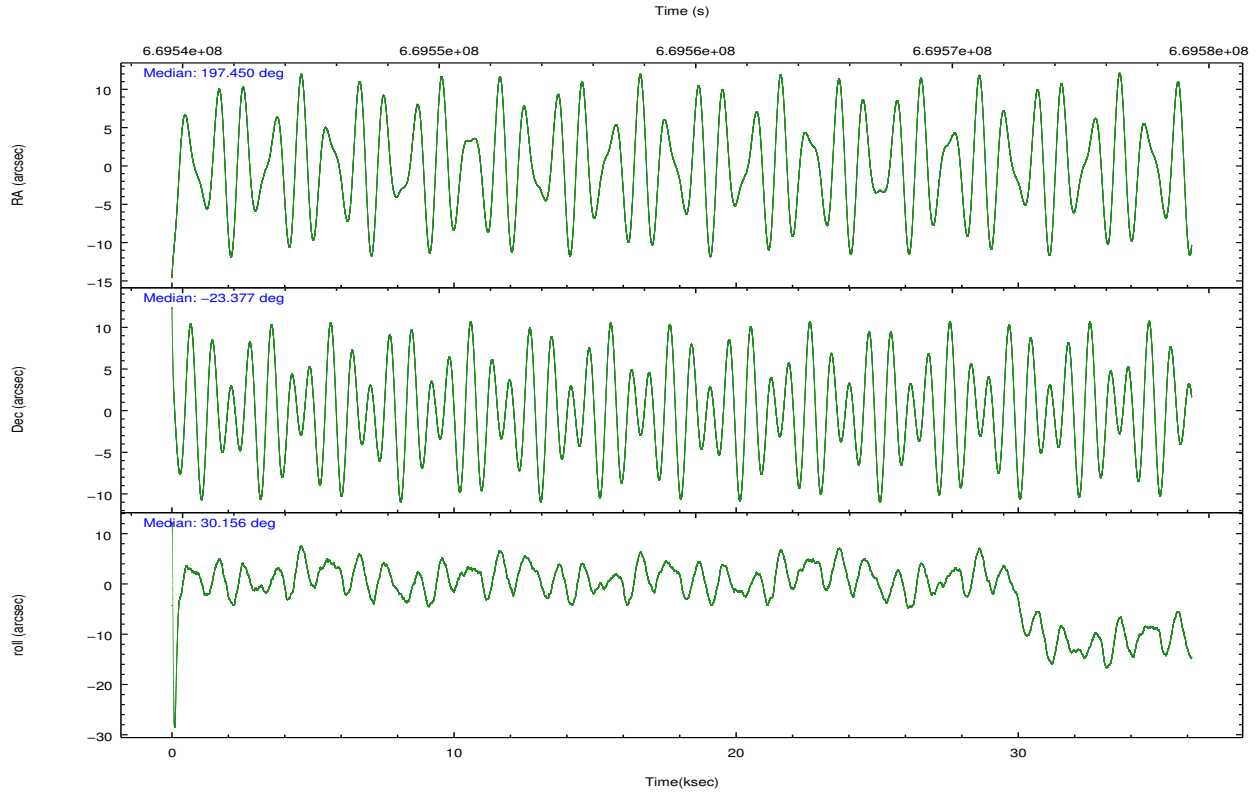
	ccd 5	ccd 6	ccd 7
grade 0 events	66170	8180	12760
	12%	2%	3%
grade 1 events	1691	114	507
	0%	0%	0%
grade 2 events	79427	9065	32042
	14%	3%	8%
grade 3 events	9582	2489	12080
	1%	0%	3%
grade 4 events	8282	2431	11630
	1%	0%	3%
grade 5 events	29683	10808	34372
	5%	3%	9%
grade 6 events	121835	9134	86032
	22%	3%	24%
grade 7 events	222300	251154	168882
	41%	85%	47%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-567	ACIS-567	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	197.435962	197.4504883756356	CCD I2 on	N	N
[deg] Pointing Dec	-23.401125	-23.37714296980121	CCD I3 on	N	N
[deg] Pointing Roll	29.994266	30.15667368298315	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	-190.1400660498719	CCD S3 on	Y	Y
[mm] SIM translation stage offset	0	0.00754346686406393	CCD S4 on	O1	N
[s] Observation start time (MET)	669541542.184000	669540629.6716	CCD S5 on	N	N
Observation start date	2019-03-21T07:44:33	2019-03-21T07:30:29	Number of optional ACIS chips dropped	1	1
[s] Observation end time (MET)	669577542.184000	669578212.32384	On-chip summing requested	N	N
Observation end date	2019-03-21T17:44:33	2019-03-21T17:56:52	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.1

2.3 Aspect



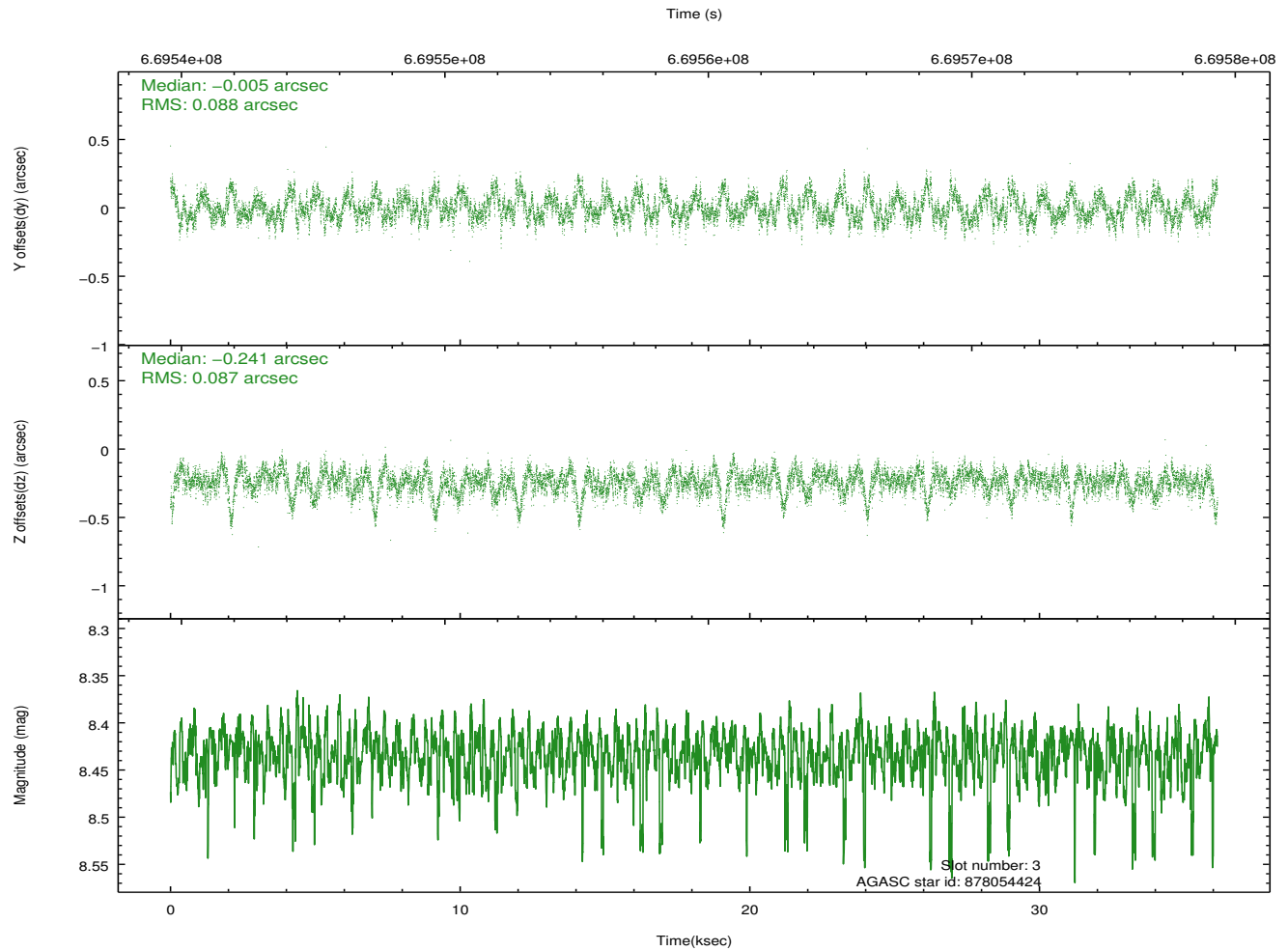
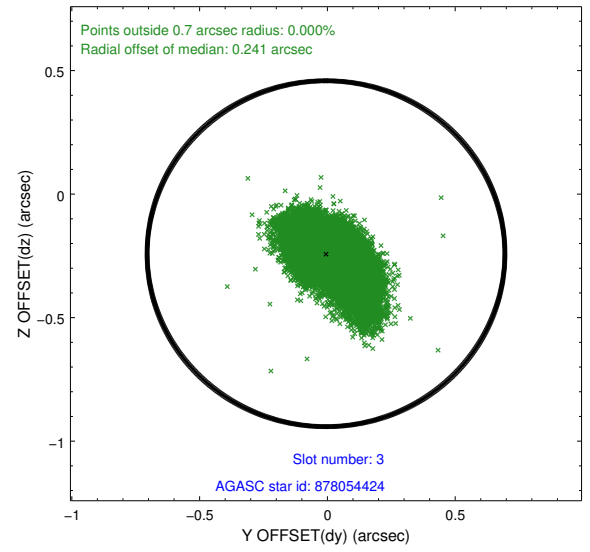
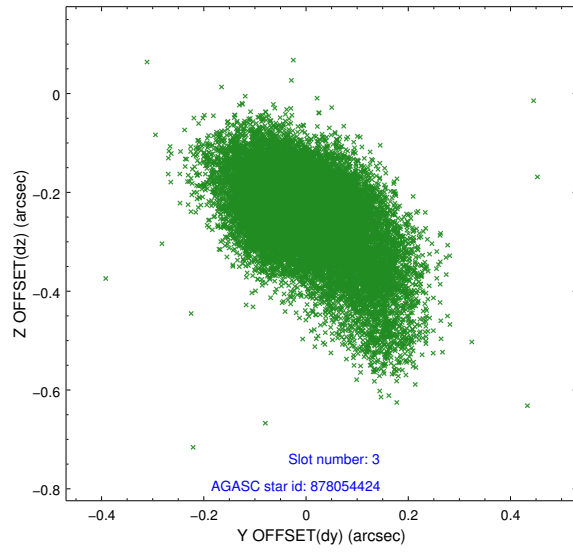


Slot Statistics

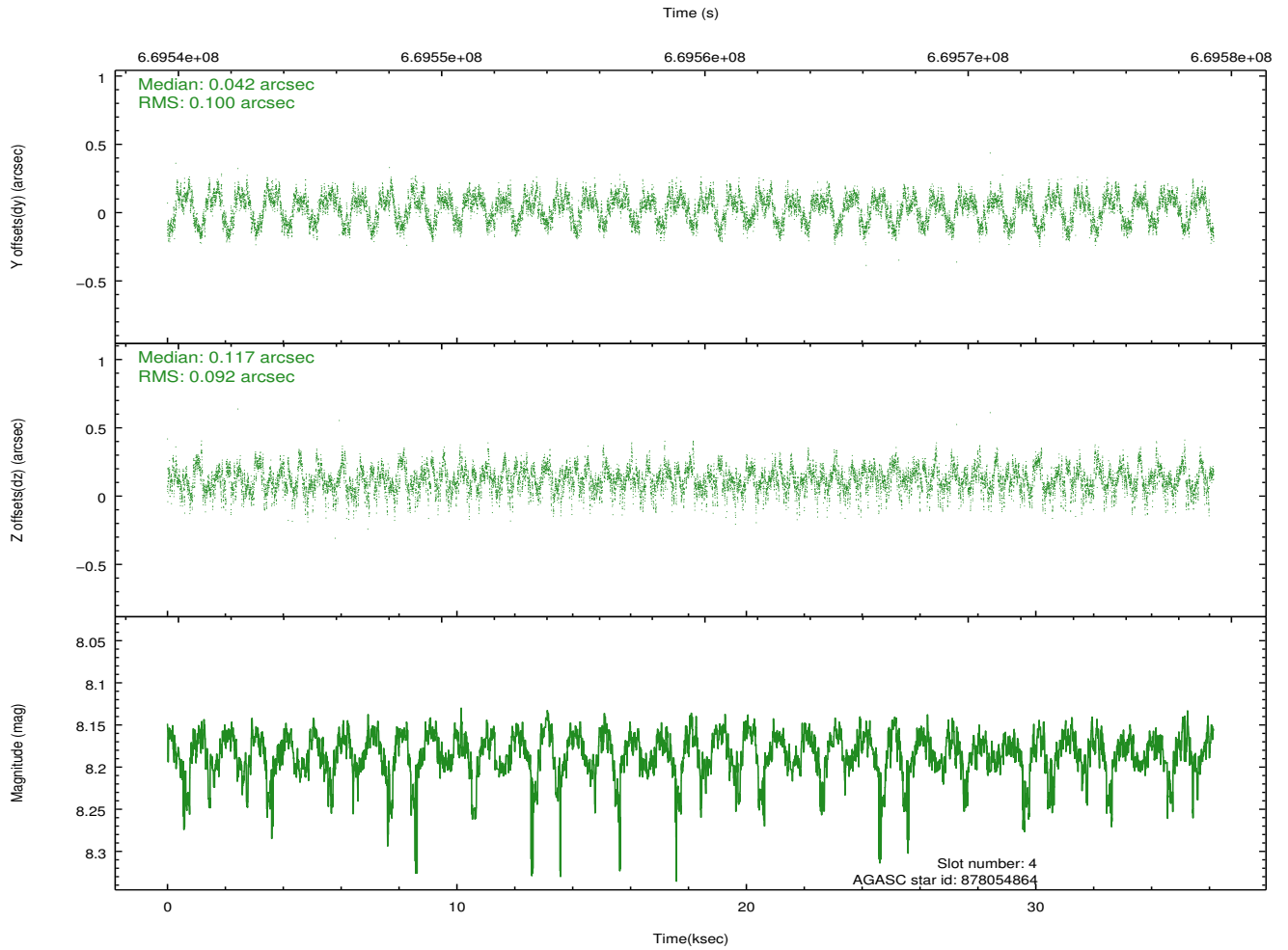
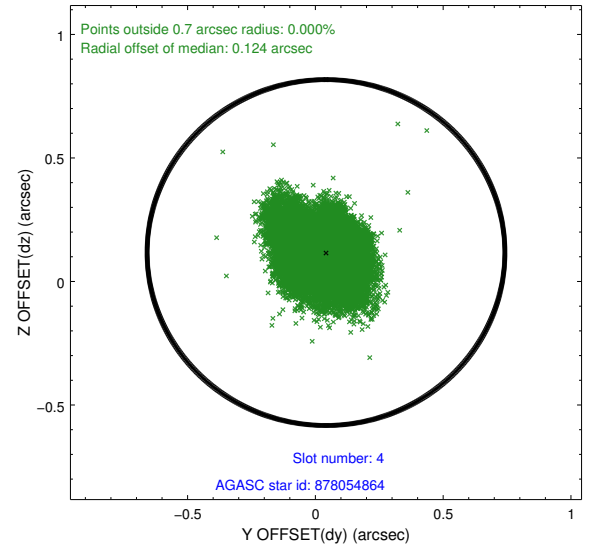
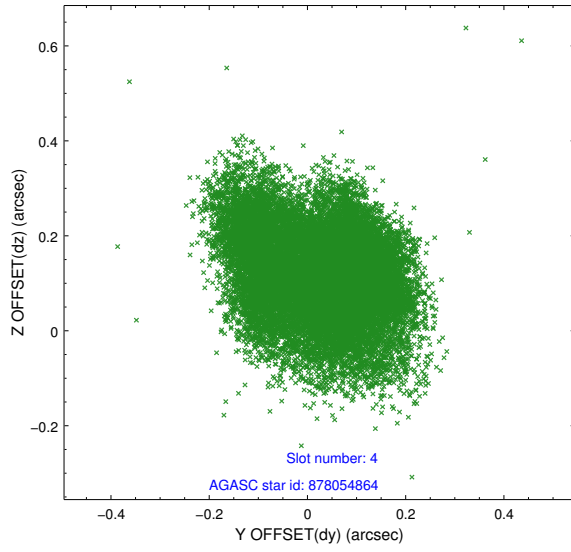
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.14	8816	1.000	-0.278	-0.209	0.021	0.029	0.000000	0.000000	-766.05	-1740
1	FID		ACIS-S-4	7.27	8817	1.000	0.768	0.190	0.027	0.046	0.000000	0.000000	2148.18	168
2	FID		ACIS-S-5	7.25	8815	1.000	-0.516	0.026	0.018	0.033	0.000000	0.000000	-1819.15	161
3	GUIDE	used	878054424	8.43	17615	1.000	-0.005	-0.241	0.122	0.230	197.311680	-23.210058	-11.85	800
4	GUIDE	used	878054864	8.18	17626	1.000	0.042	0.117	0.147	0.229	197.588589	-23.624647	34.41	-948
5	GUIDE	used	878055920	7.70	17625	1.000	0.233	0.623	0.112	0.175	197.166113	-23.822063	-1528.83	-866
6	GUIDE	used	878056592	8.76	17618	1.000	0.267	0.281	0.134	0.216	197.586702	-23.861101	-398.34	-1681
7	GUIDE	used	878061480	7.94	17624	1.000	-0.525	-0.773	0.128	0.188	197.360027	-22.852260	768.58	1836

2.4 Star Slots

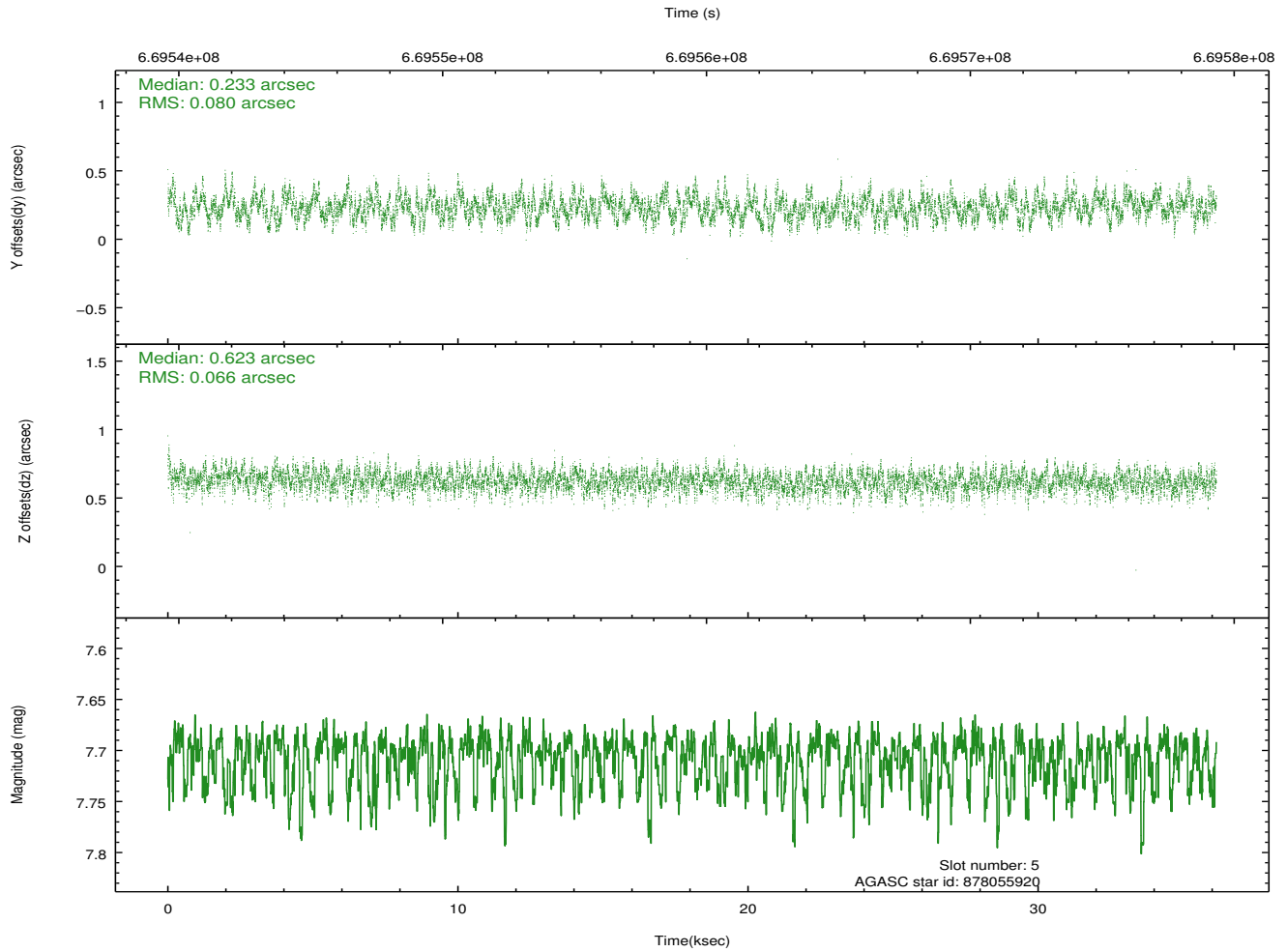
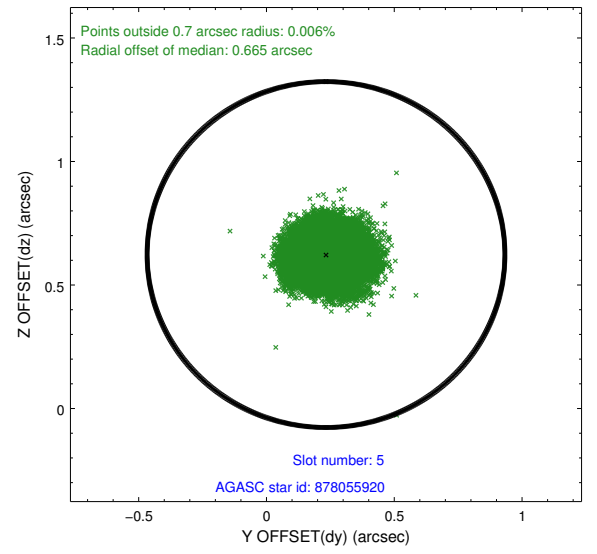
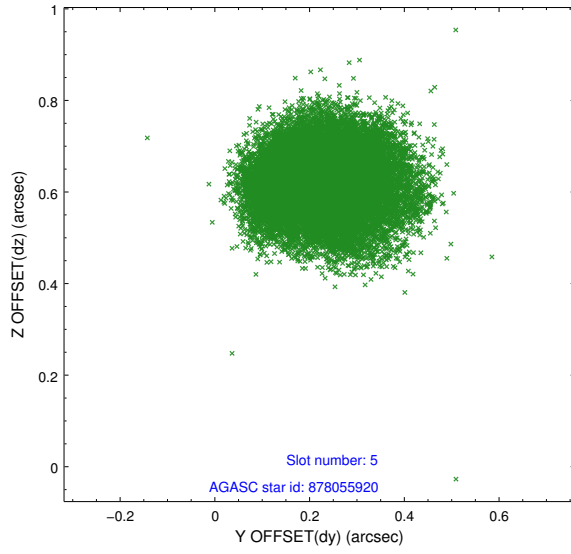
2.4.1 Slot 3



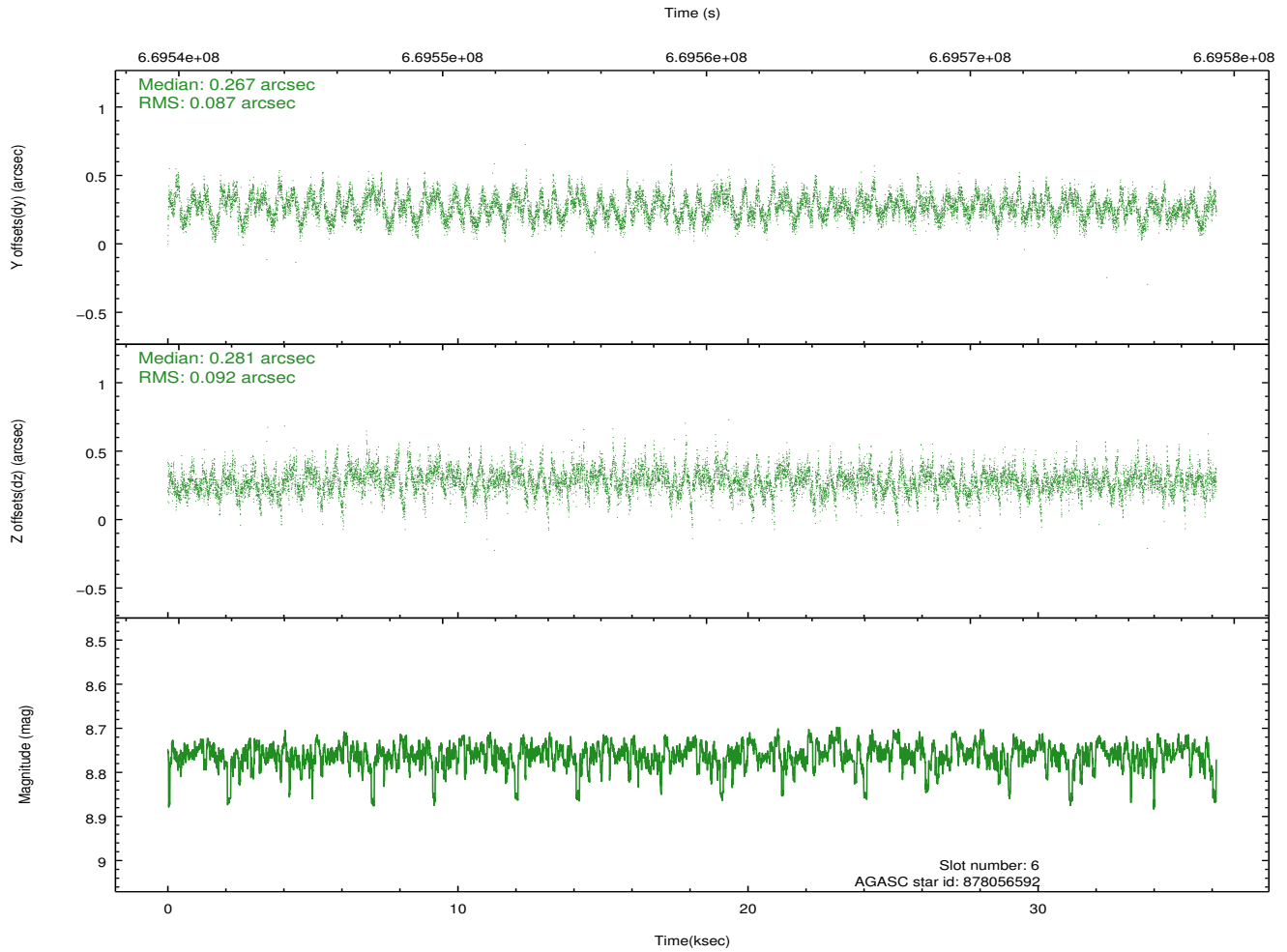
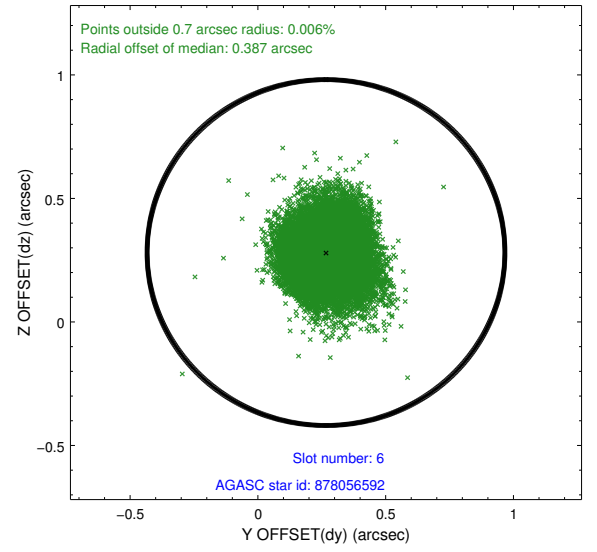
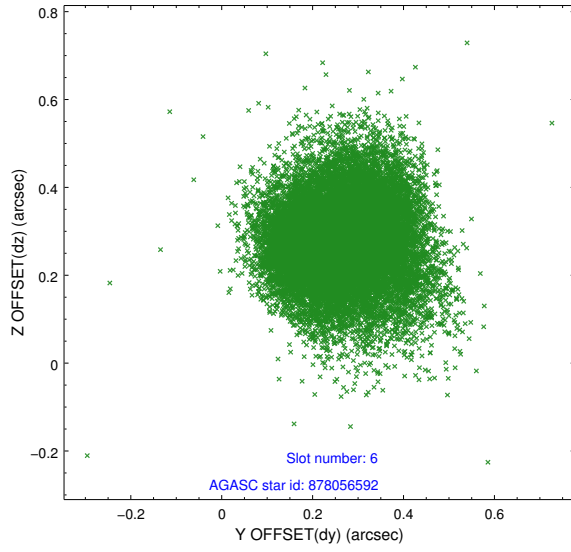
2.4.2 Slot 4



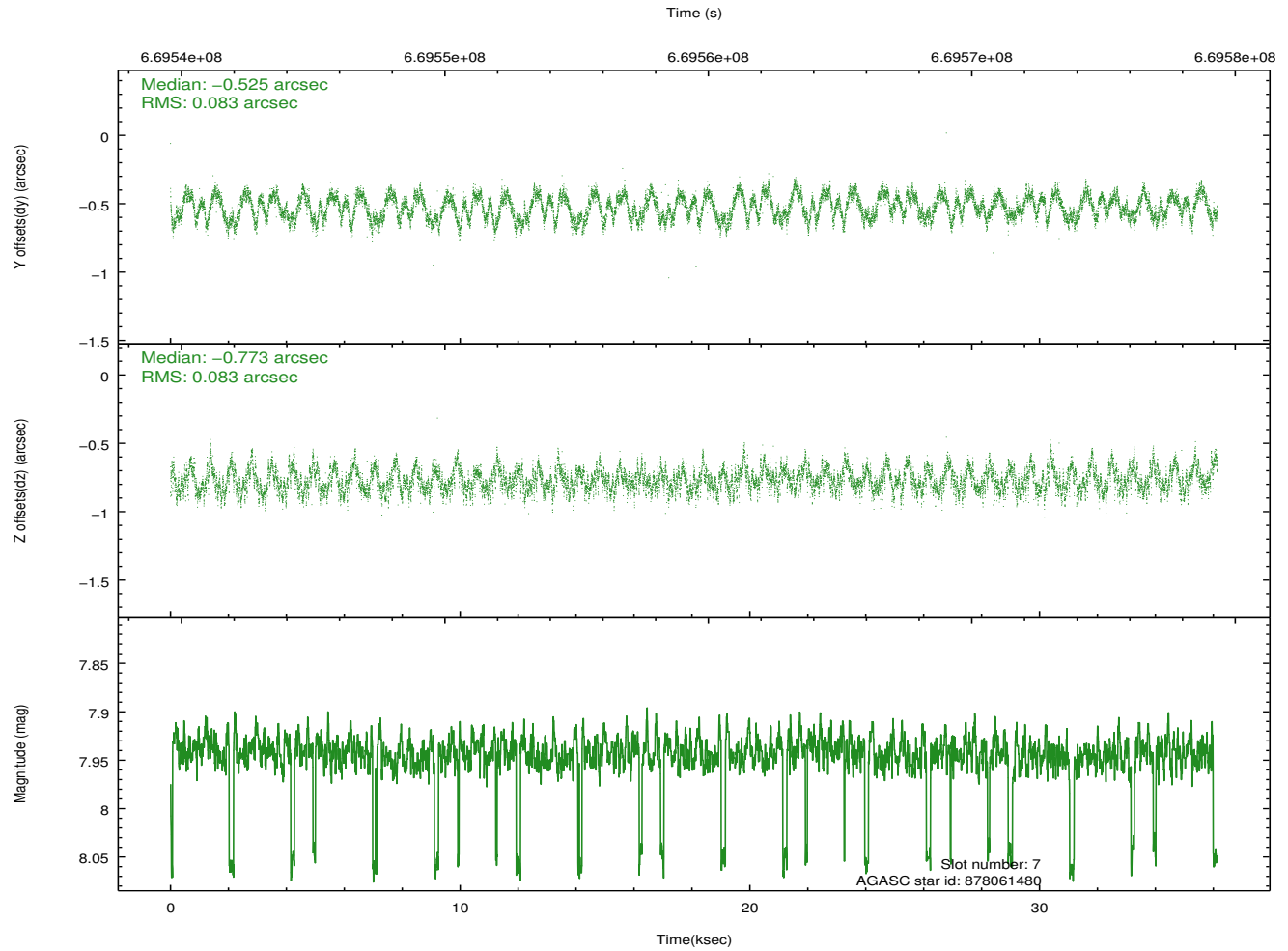
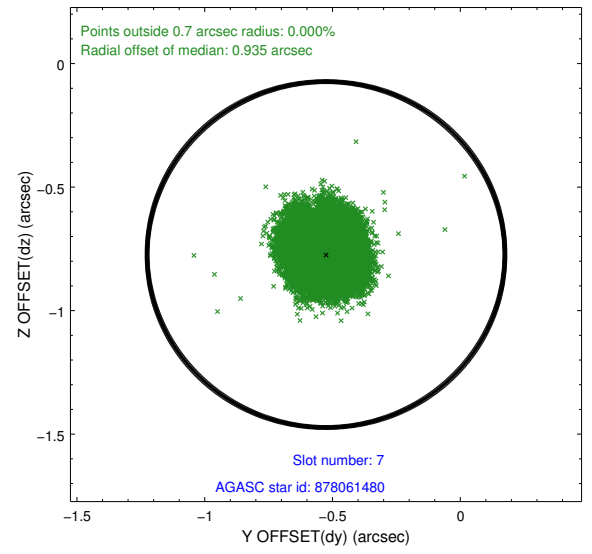
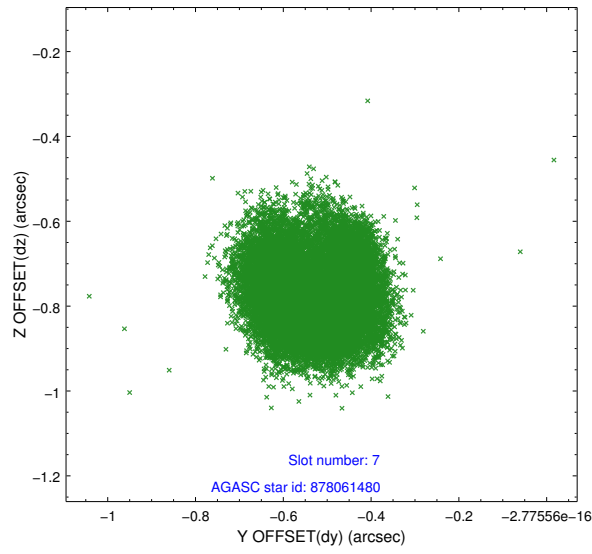
2.4.3 Slot 5



2.4.4 Slot 6

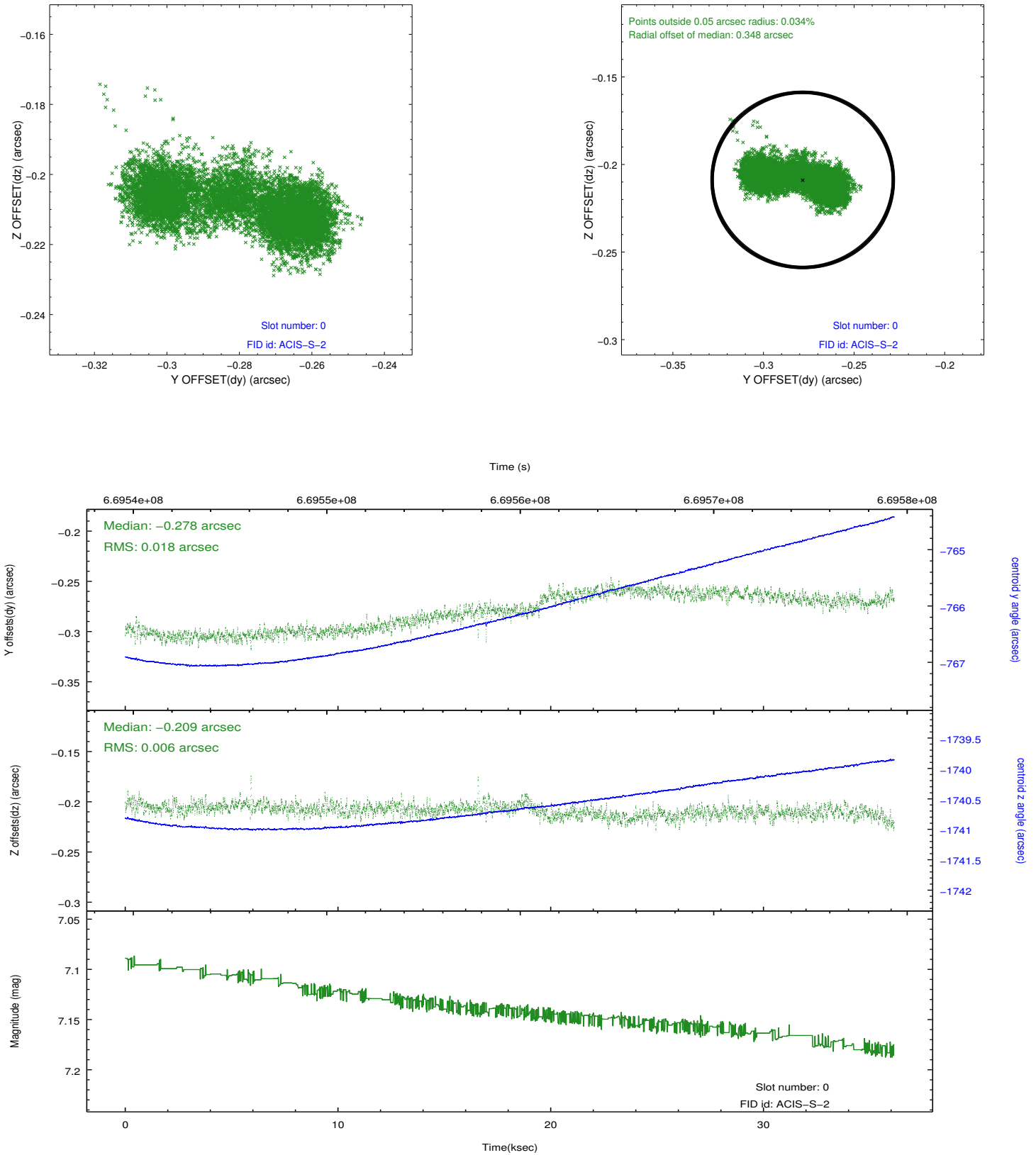


2.4.5 Slot 7

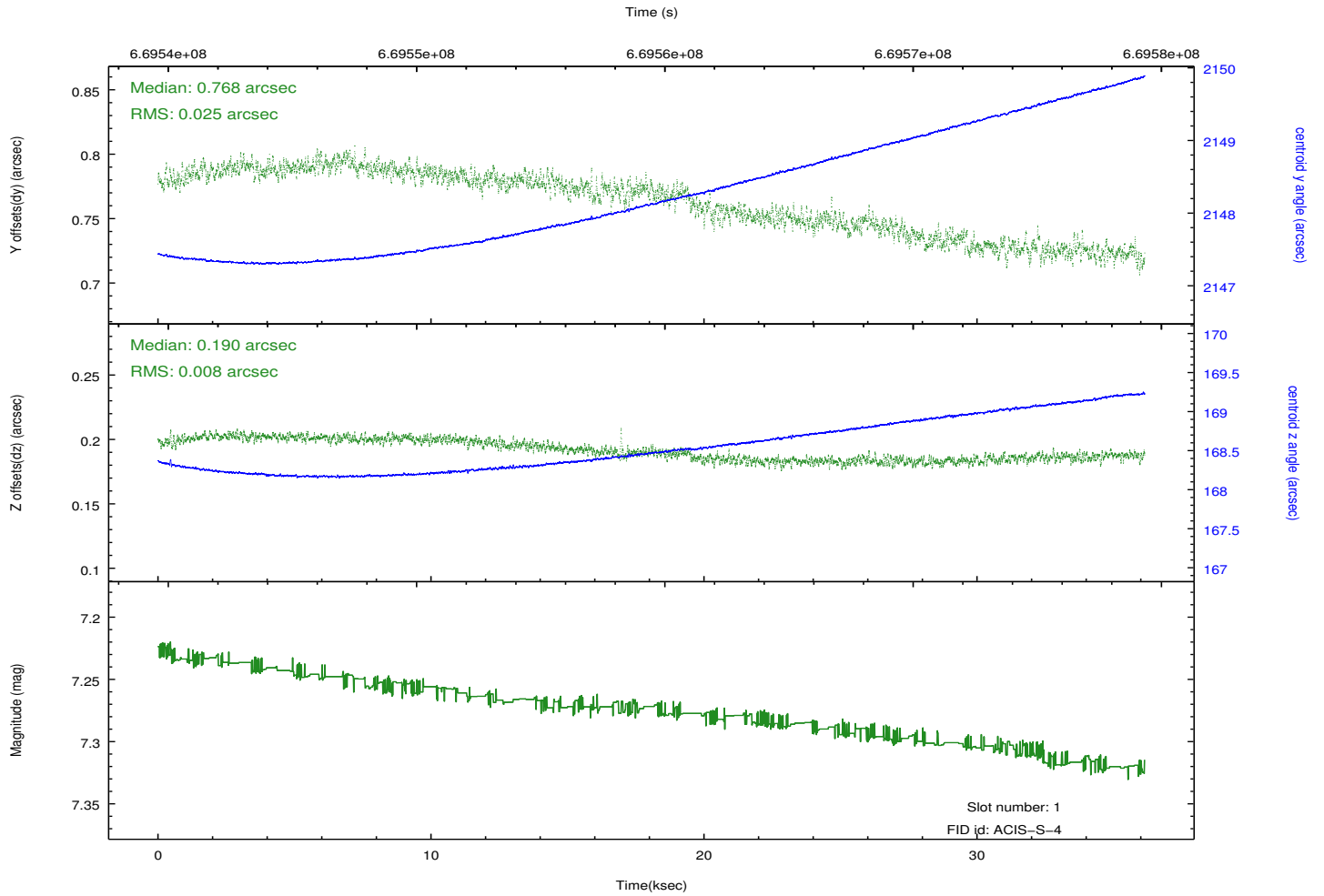
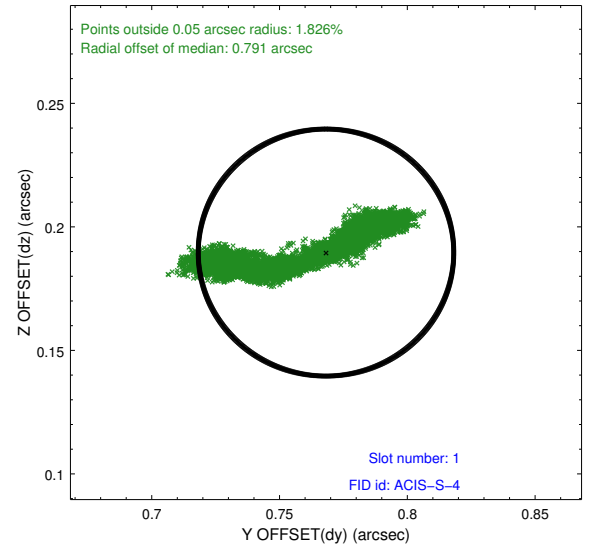
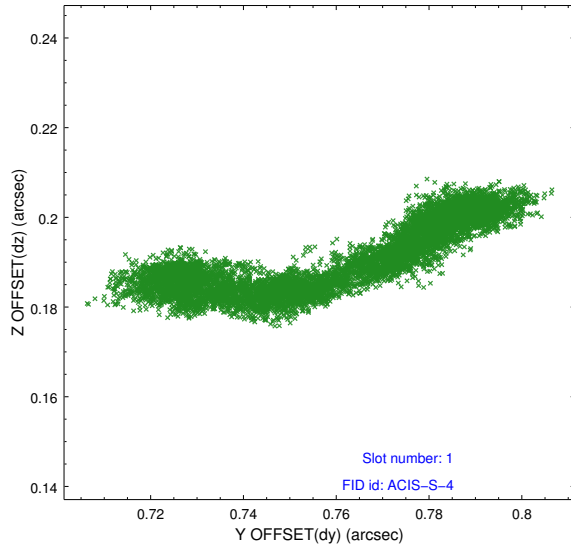


2.5 FID Slots

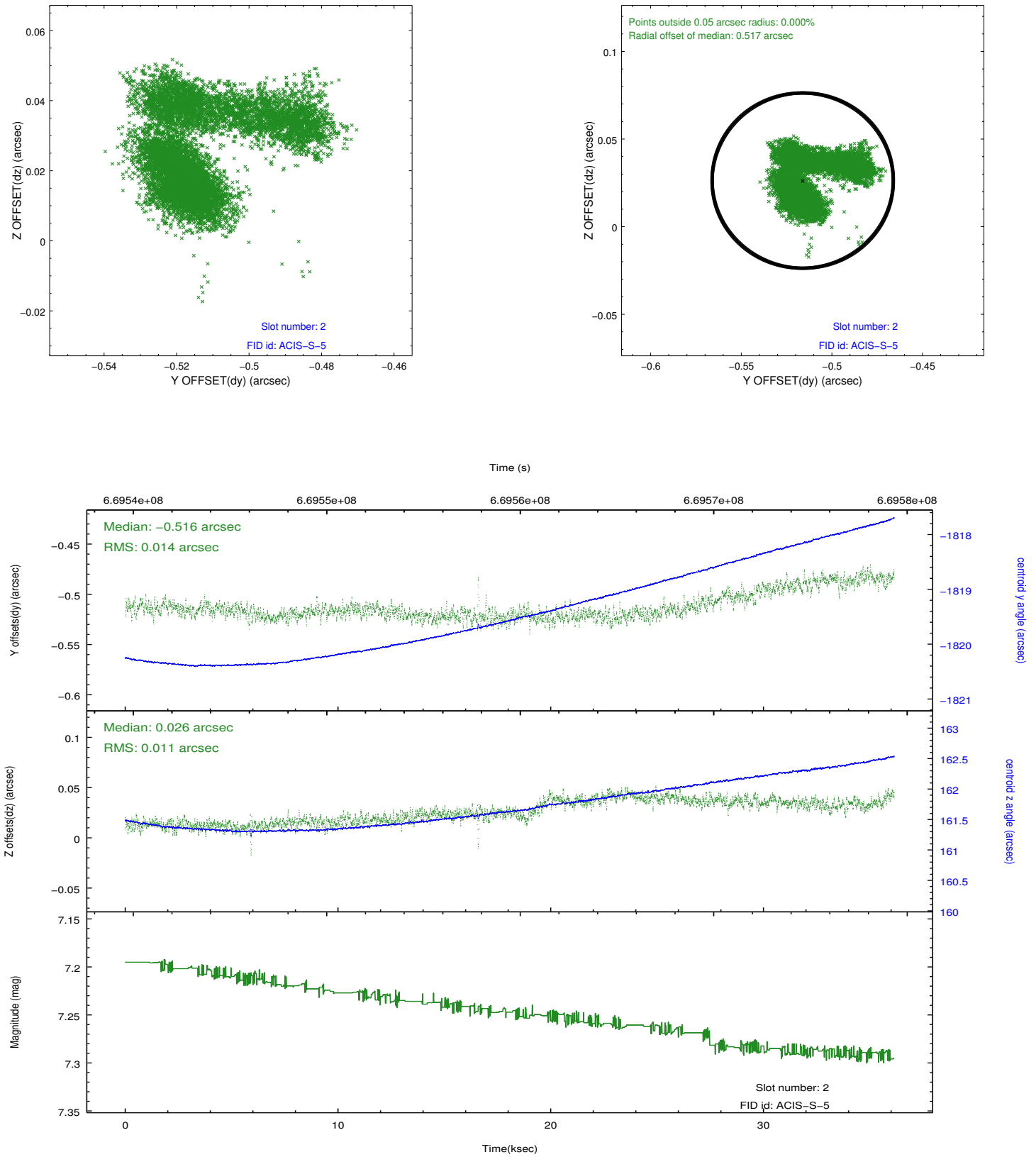
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.03.22
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	36.108183650494

A.2 Comments

Joint proposal with HST and NRAO.

One optional chip was dropped.

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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/A_CIS_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.