

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22067 - L2 Version 1
Chandra X-Ray Center

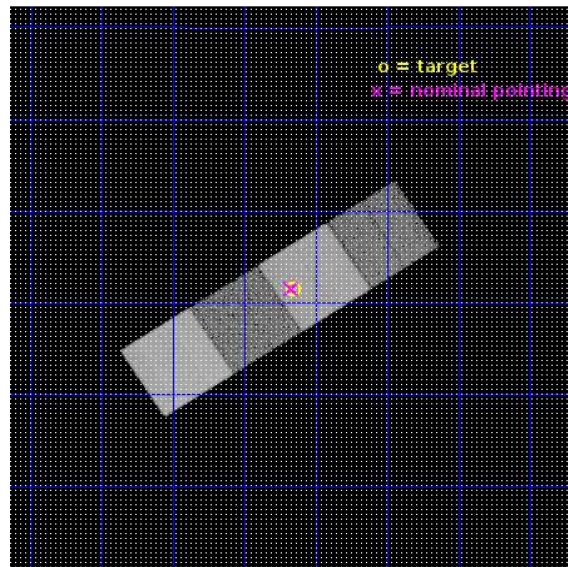
L2 Processing Date : Feb 1 2019

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1 Front

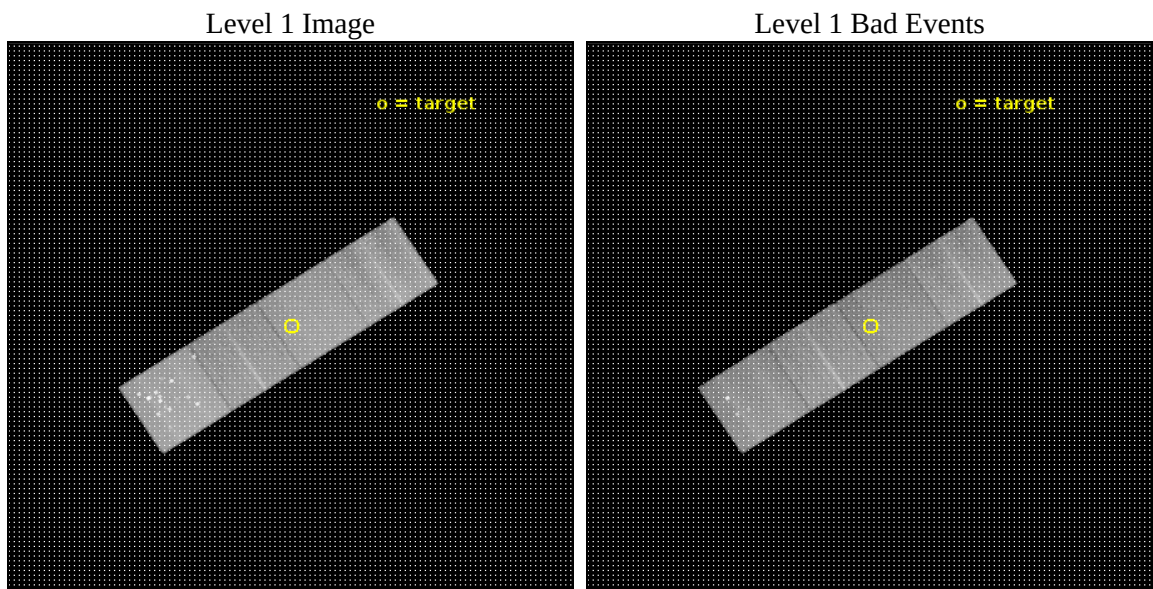
seq_num	703856	Sequence number
obs_id	22067	Observation id
title	Calibration of the quasar Hubble diagram with z	Proposal title
observer	Francesca Civano	Principal investigator
object	SDSSJ084339.24+053125.2	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	130.913528	Observer's specified target RA [deg]
dec_targ	5.52369	Observer's specified target Dec [deg]
ra_nom	130.91772560377	Nominal RA [deg]
dec_nom	5.5255337912864	Nominal Dec [deg]
roll_nom	327.1562257719	Nominal Roll [deg]
revision	1	Processing version of data
ontime	25060.400192857	Sum of GTIs [s]
livetime	24732.967615139	Livetime [s]
ontime5	25060.400192857	Sum of GTIs [s]
ontime6	25057.259122491	Sum of GTIs [s]
ontime7	25060.400192857	Sum of GTIs [s]
ontime8	25054.117861032	Sum of GTIs [s]
l2events	278008	Number of level 2 events



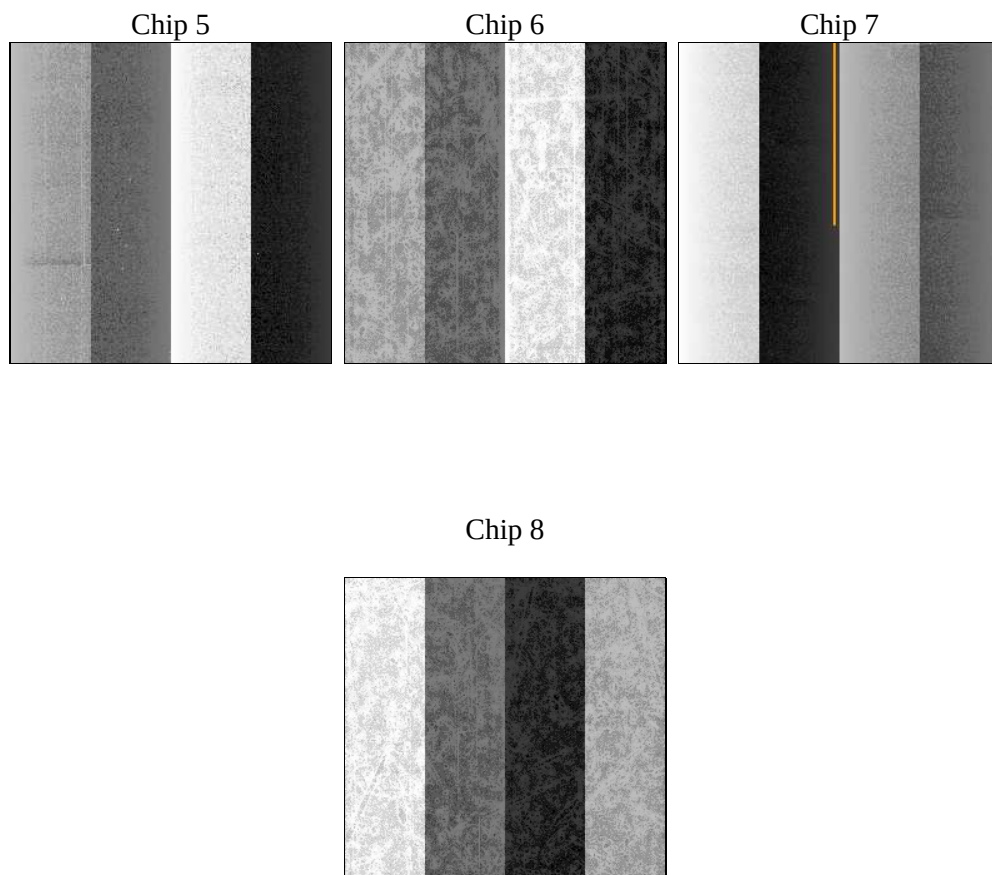
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	25000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	25060.400192857	Sum of GTIs [s]
caldbver	4.8.2	 	ontime5	25060.400192857	Sum of GTIs [s]
date	2019-02-01T20:43:05	Date and time of file creation	ontime6	25057.259122491	Sum of GTIs [s]
revision	1	Processing version of data	ontime7	25060.400192857	Sum of GTIs [s]
			ontime8	25054.117861032	Sum of GTIs [s]
			l1events	1048373	Number of level 1 events

2.1.4 Events

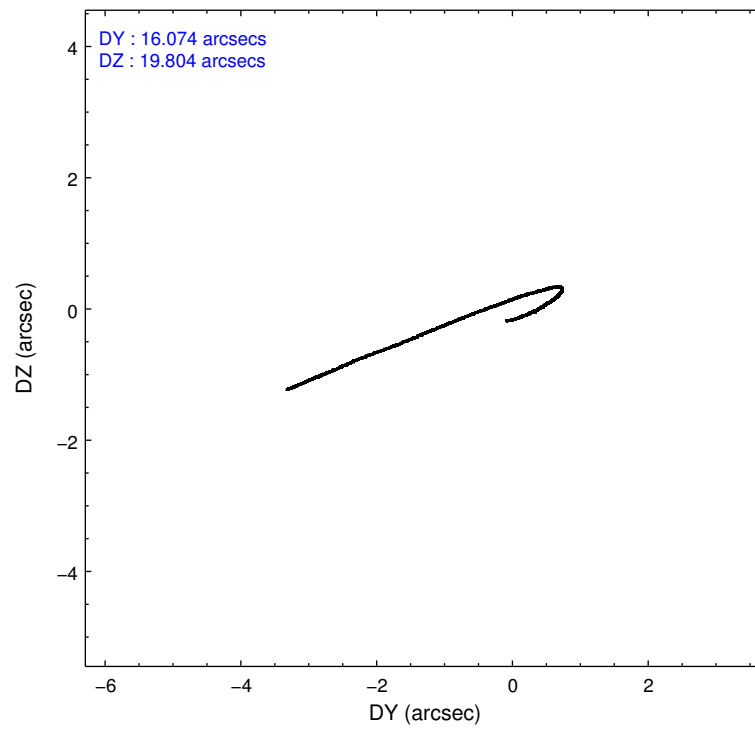
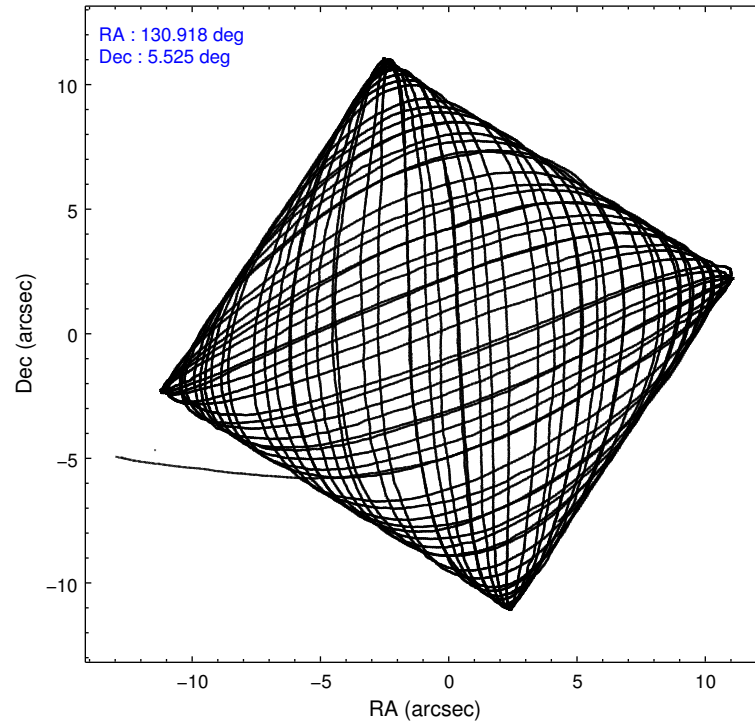
	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	361349	197868	244232	244924
rejected events	168432	176400	139223	183041
rejected %	46%	89%	57%	74%

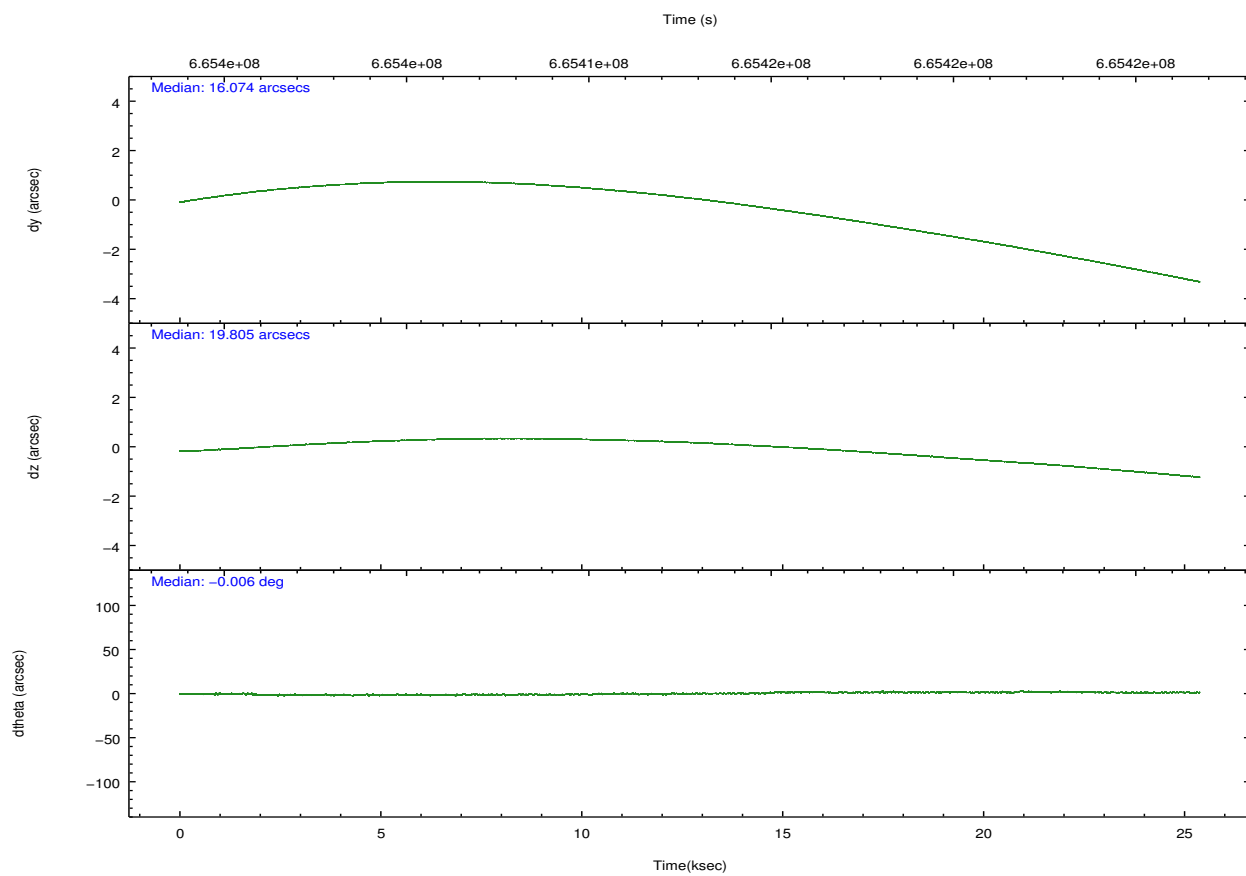
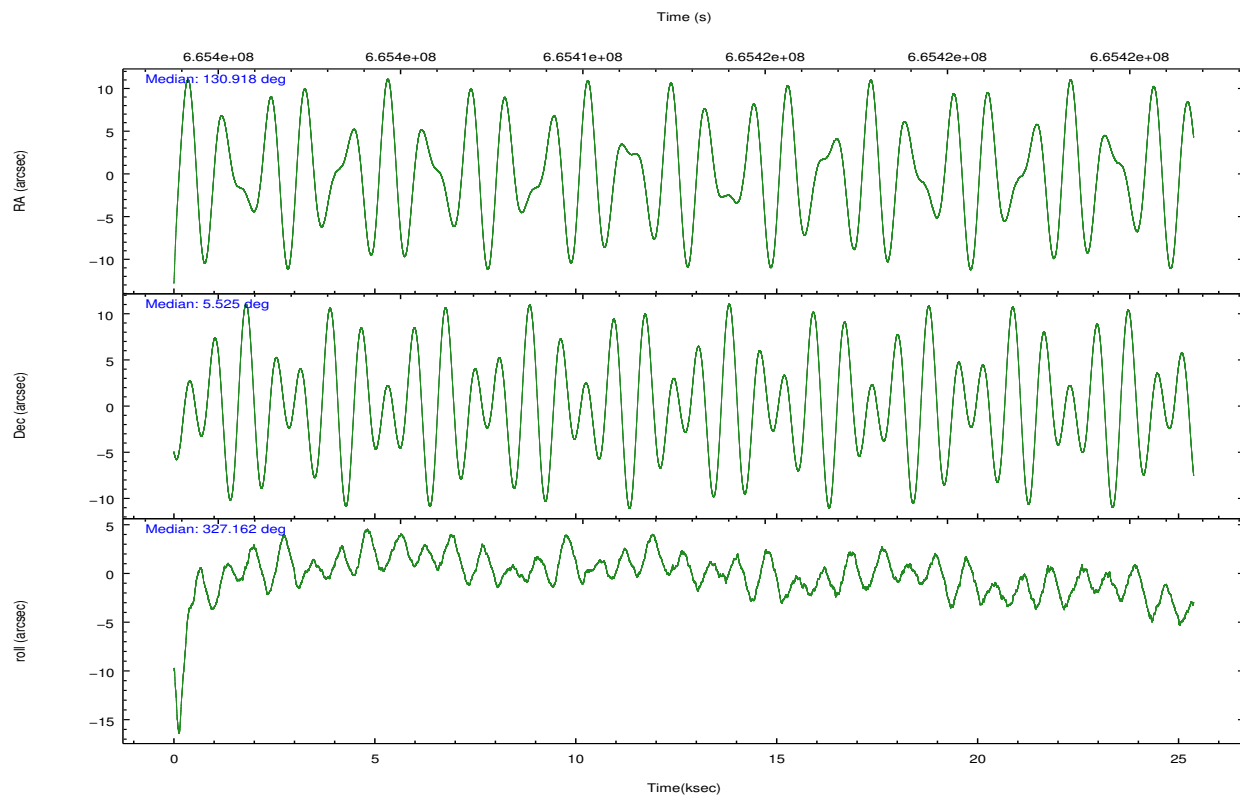
	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	46722	6158	8770	17070
	12%	3%	3%	6%
grade 1 events	812	78	368	179
	0%	0%	0%	0%
grade 2 events	54048	5809	21502	15121
	14%	2%	8%	6%
grade 3 events	5169	1856	8254	6458
	1%	0%	3%	2%
grade 4 events	5749	1789	7964	5923
	1%	0%	3%	2%
grade 5 events	20687	7751	23619	12753
	5%	3%	9%	5%
grade 6 events	81280	5861	58550	17319
	22%	2%	23%	7%
grade 7 events	146882	168566	115205	170101
	40%	85%	47%	69%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-5678	ACIS-5678	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	130.890150	130.9177256037674	Subarray requested	NONE	NONE
[deg] Pointing Dec	5.526529	5.52553379128642	Alternating exposures requested	N	N
[deg] Pointing Roll	327.002252	327.1562257718998	[s] Primary exposure time	0.000000	3.1
[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)	665400456.184000	665399331.6615601			
Observation start date	2019-02-01T09:26:27	2019-02-01T09:08:51			
[s] Observation end time (MET)	665425456.184000	665426557.20069			
Observation end date	2019-02-01T16:23:07	2019-02-01T16:42:37			
Read mode	TIMED	TIMED			

2.3 Aspect



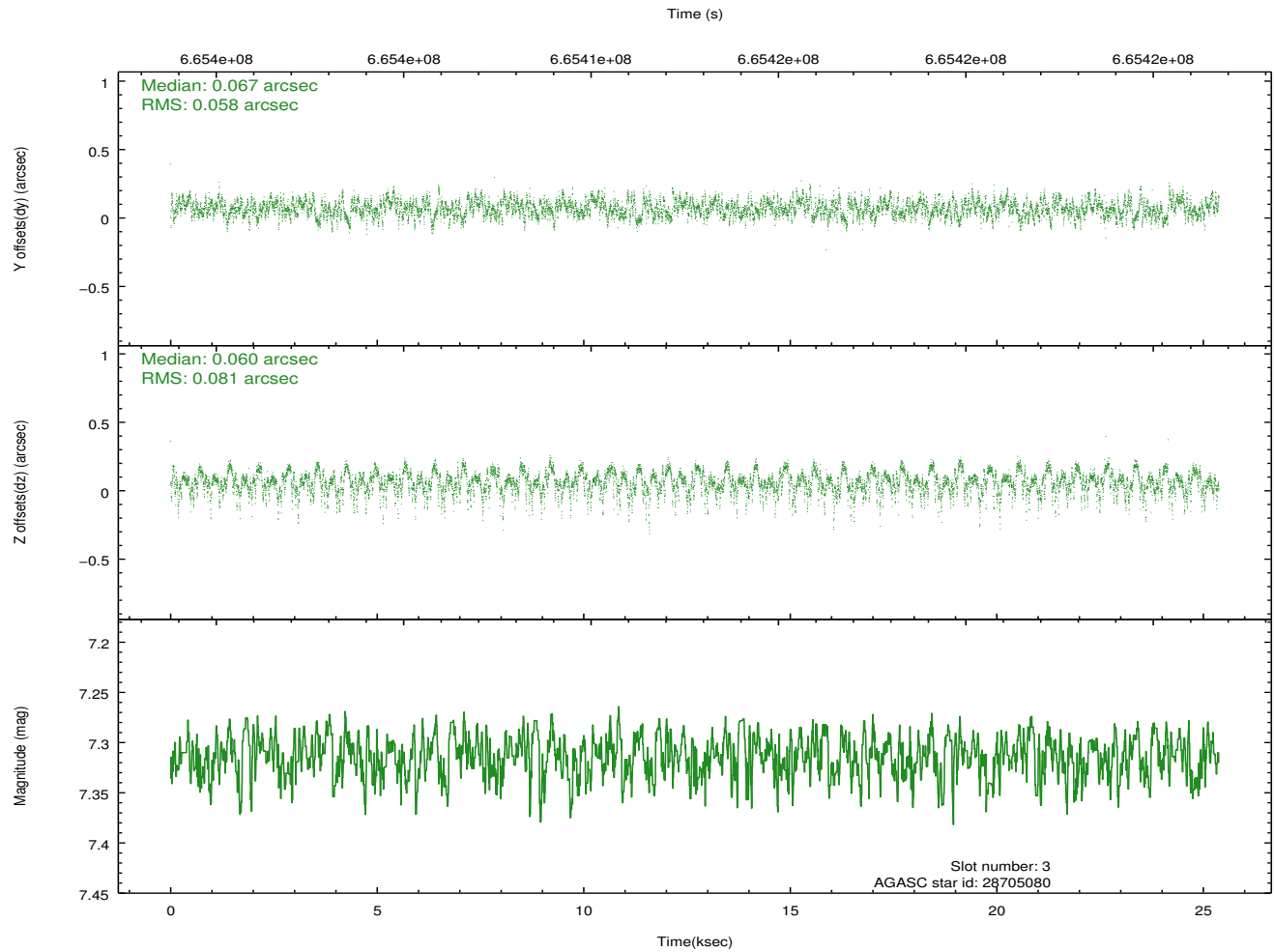
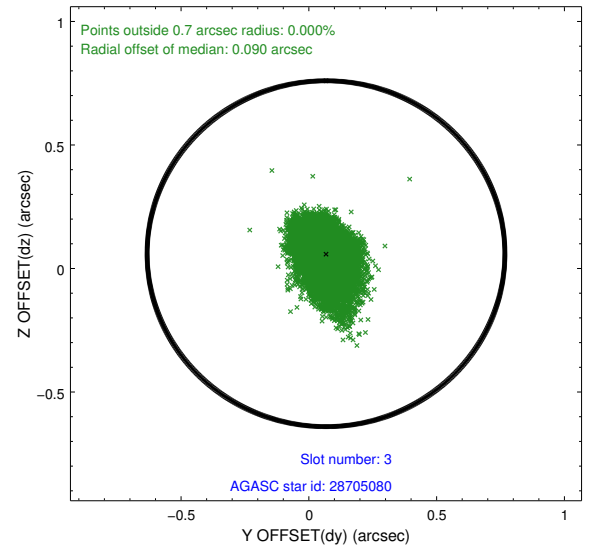
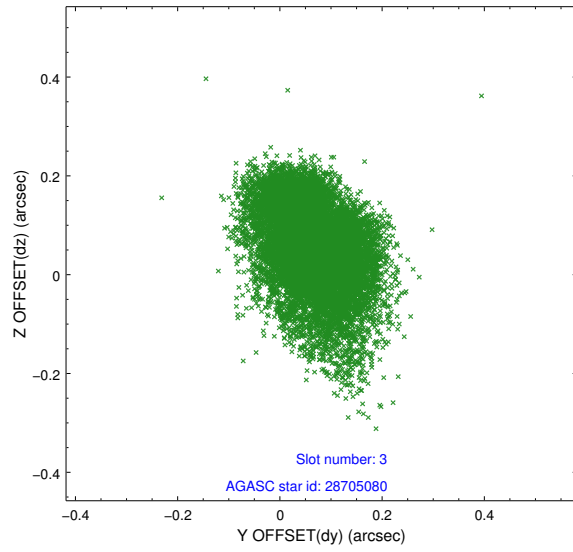


Slot Statistics

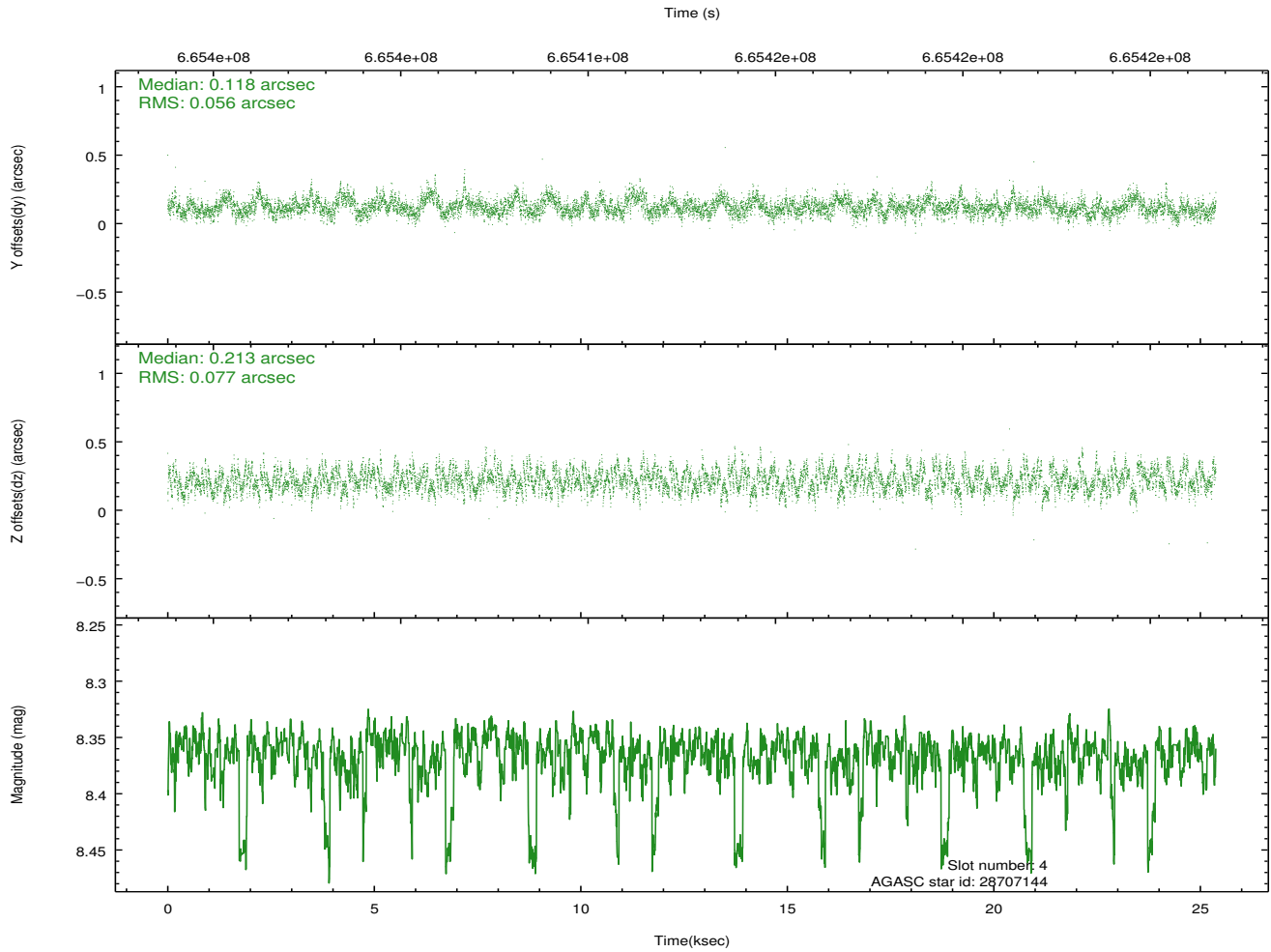
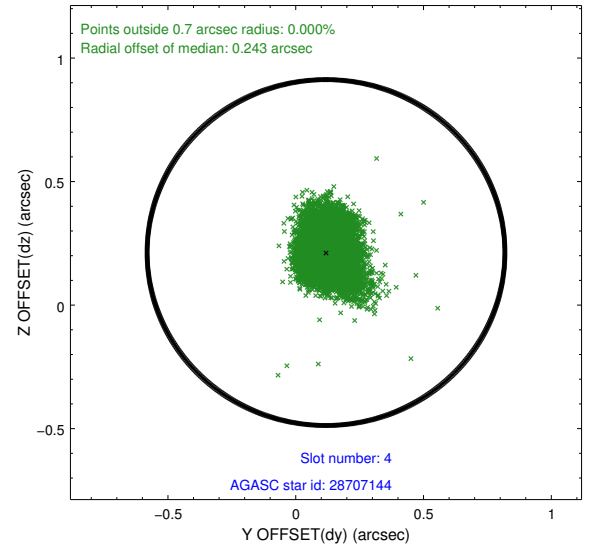
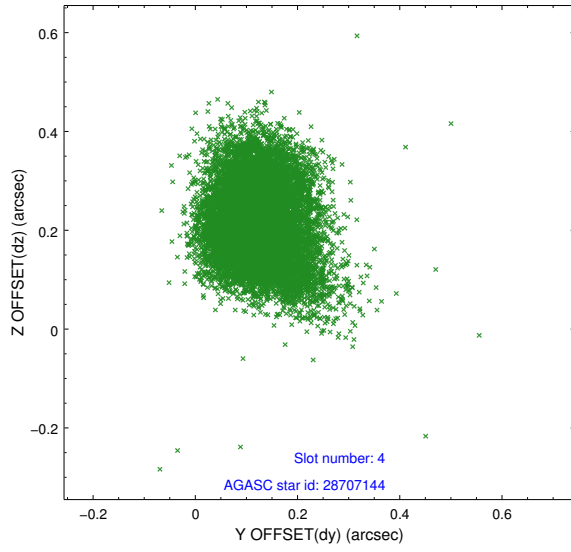
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.13	6189	1.000	-0.356	-0.237	0.018	0.074	0.000000	0.000000	-768.83	-1741
1	FID		ACIS-S-4	7.26	6189	1.000	0.837	0.235	0.026	0.055	0.000000	0.000000	2145.50	167
2	FID		ACIS-S-5	7.21	6186	1.000	-0.521	0.013	0.019	0.044	0.000000	0.000000	-1821.78	160
3	GUIDE	used	28705080	7.31	12378	1.000	0.067	0.060	0.105	0.173	131.129887	5.285853	1191.74	-258
4	GUIDE	used	28707144	8.37	12371	1.000	0.118	0.213	0.099	0.164	130.816588	5.265959	289.61	-930
5	GUIDE	used	28709880	8.59	12369	1.000	0.594	0.446	0.116	0.184	130.329217	5.384000	-1407.14	-1523
6	GUIDE	used	29361256	6.53	12379	1.000	-0.312	-0.352	0.112	0.179	131.255333	5.680586	794.66	1177
7	GUIDE	used	28836080	8.28	12373	1.000	-0.470	-0.363	0.125	0.189	131.551996	5.286863	2458.65	569

2.4 Star Slots

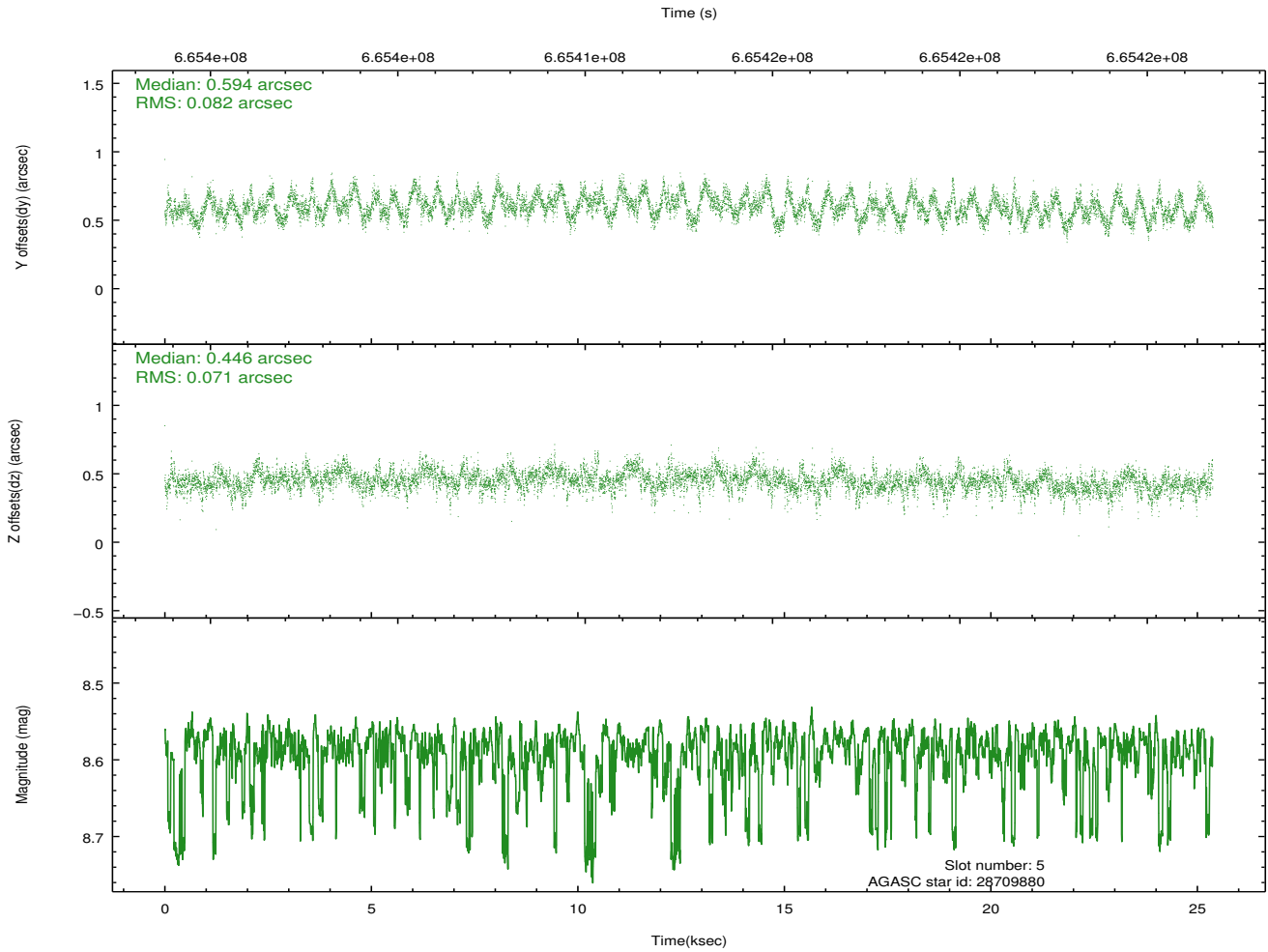
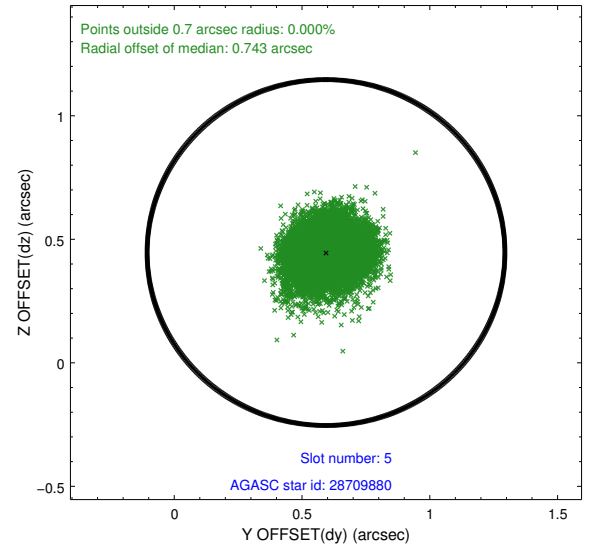
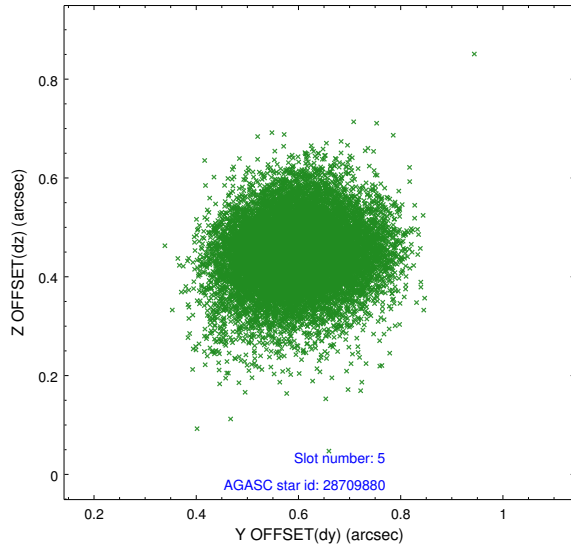
2.4.1 Slot 3



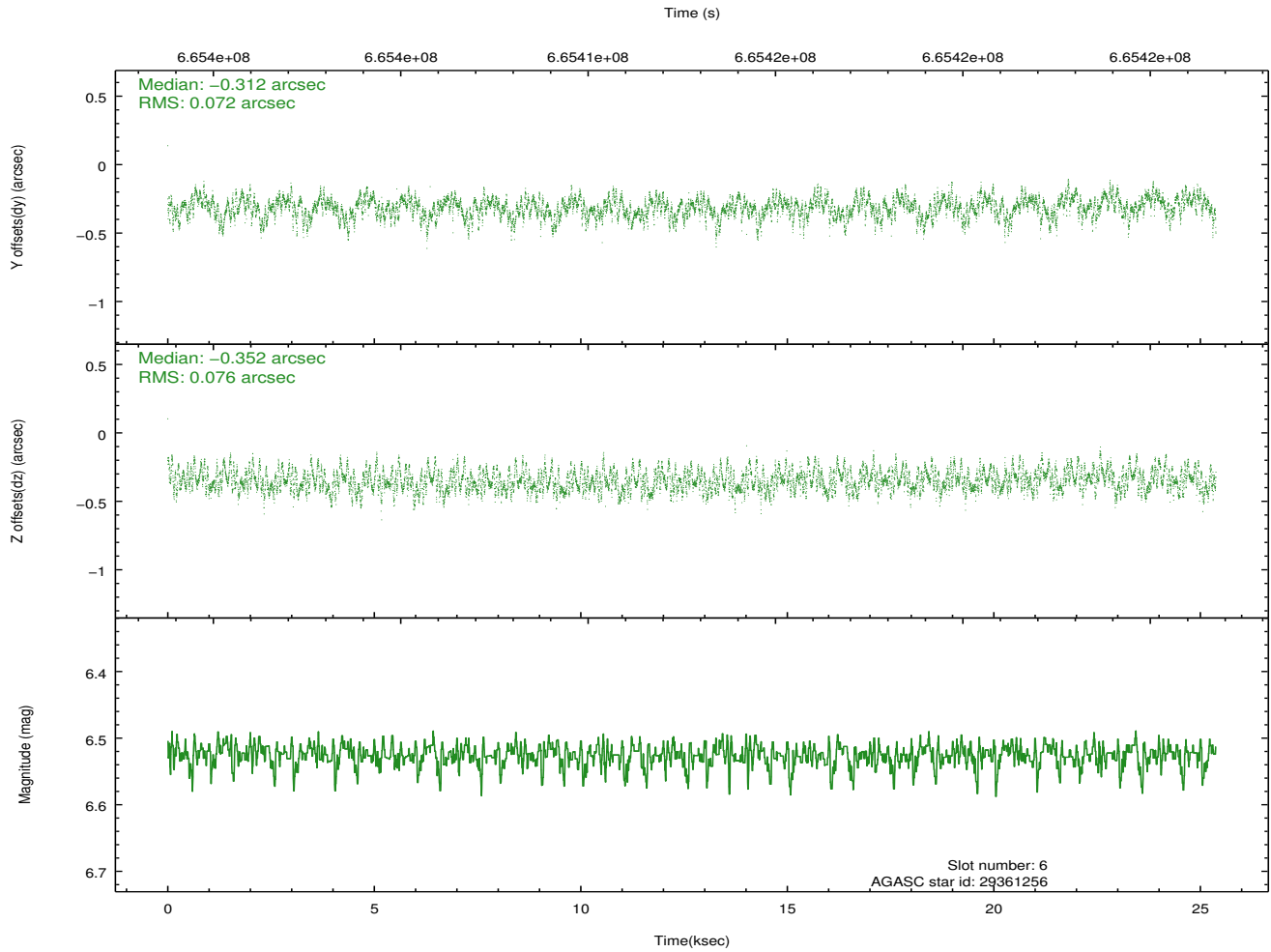
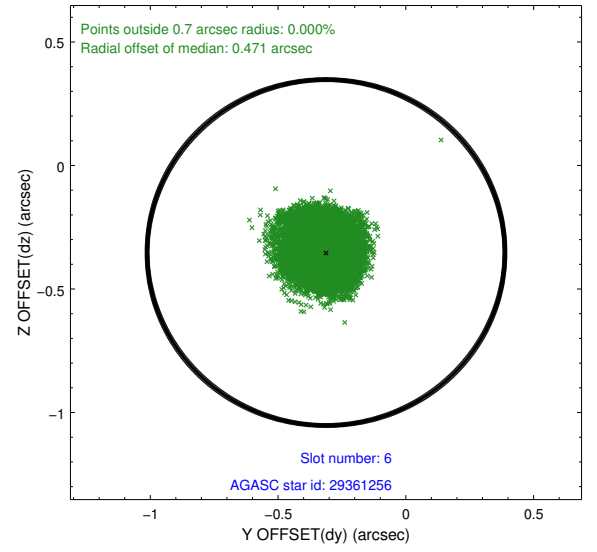
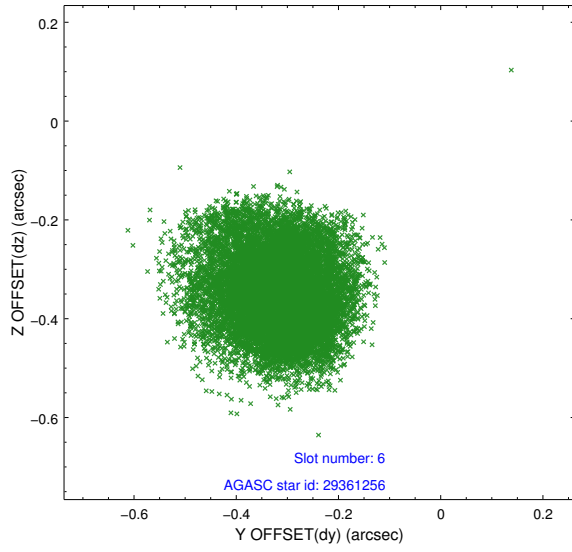
2.4.2 Slot 4



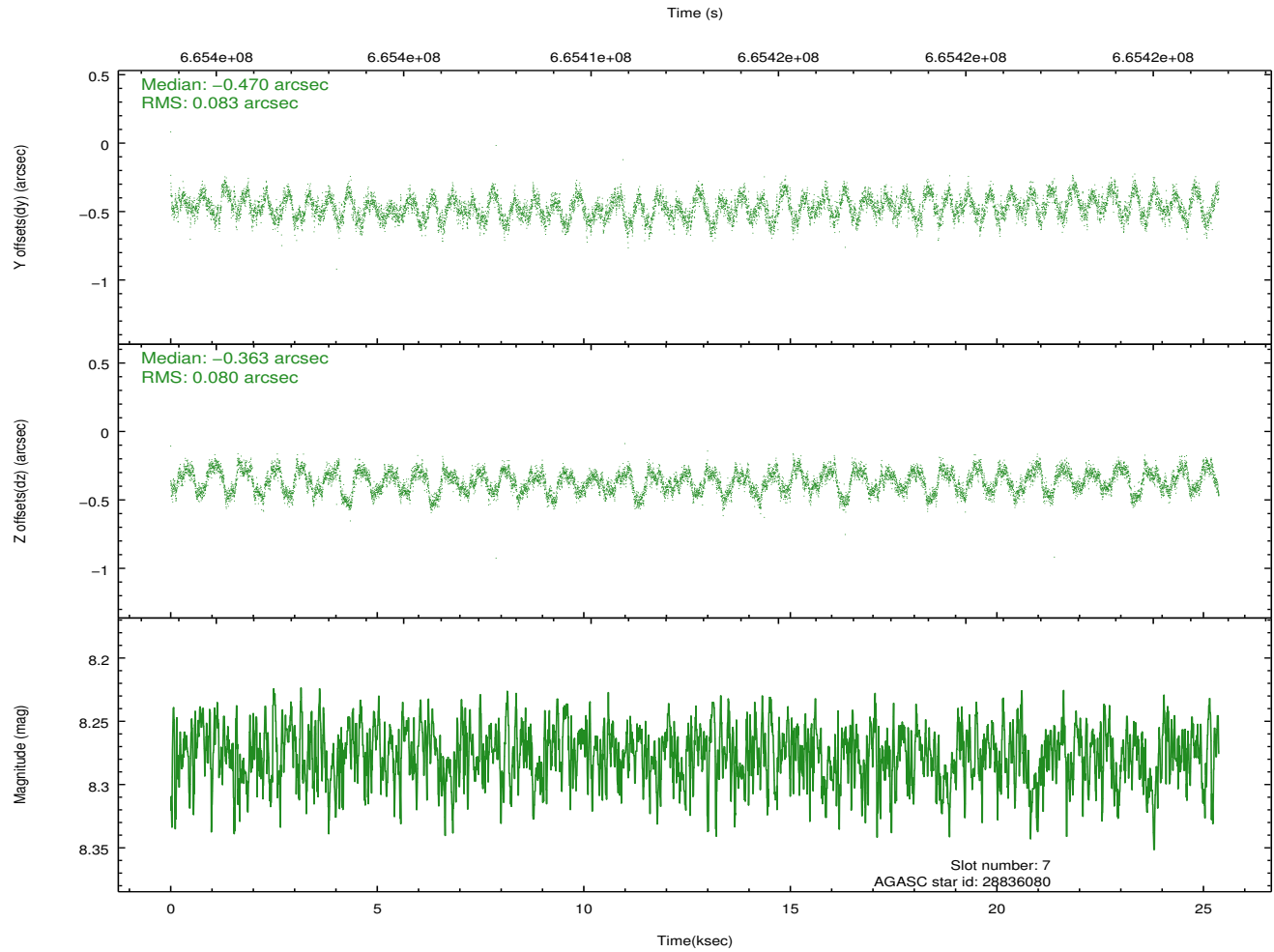
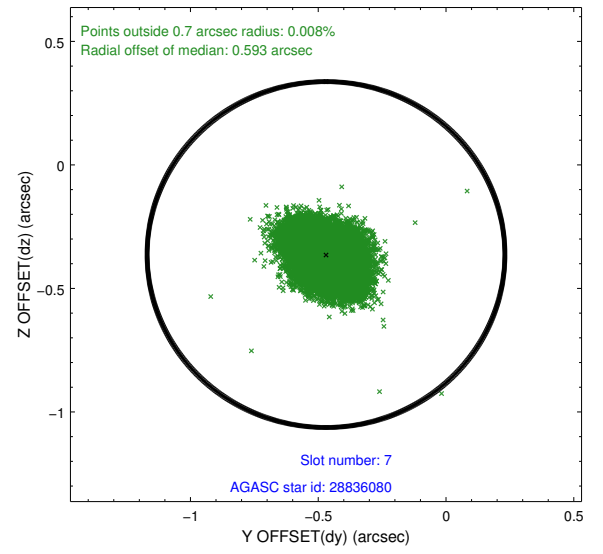
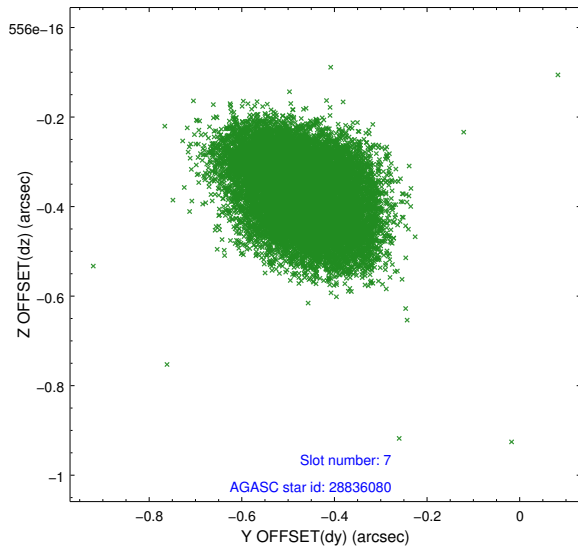
2.4.3 Slot 5



2.4.4 Slot 6

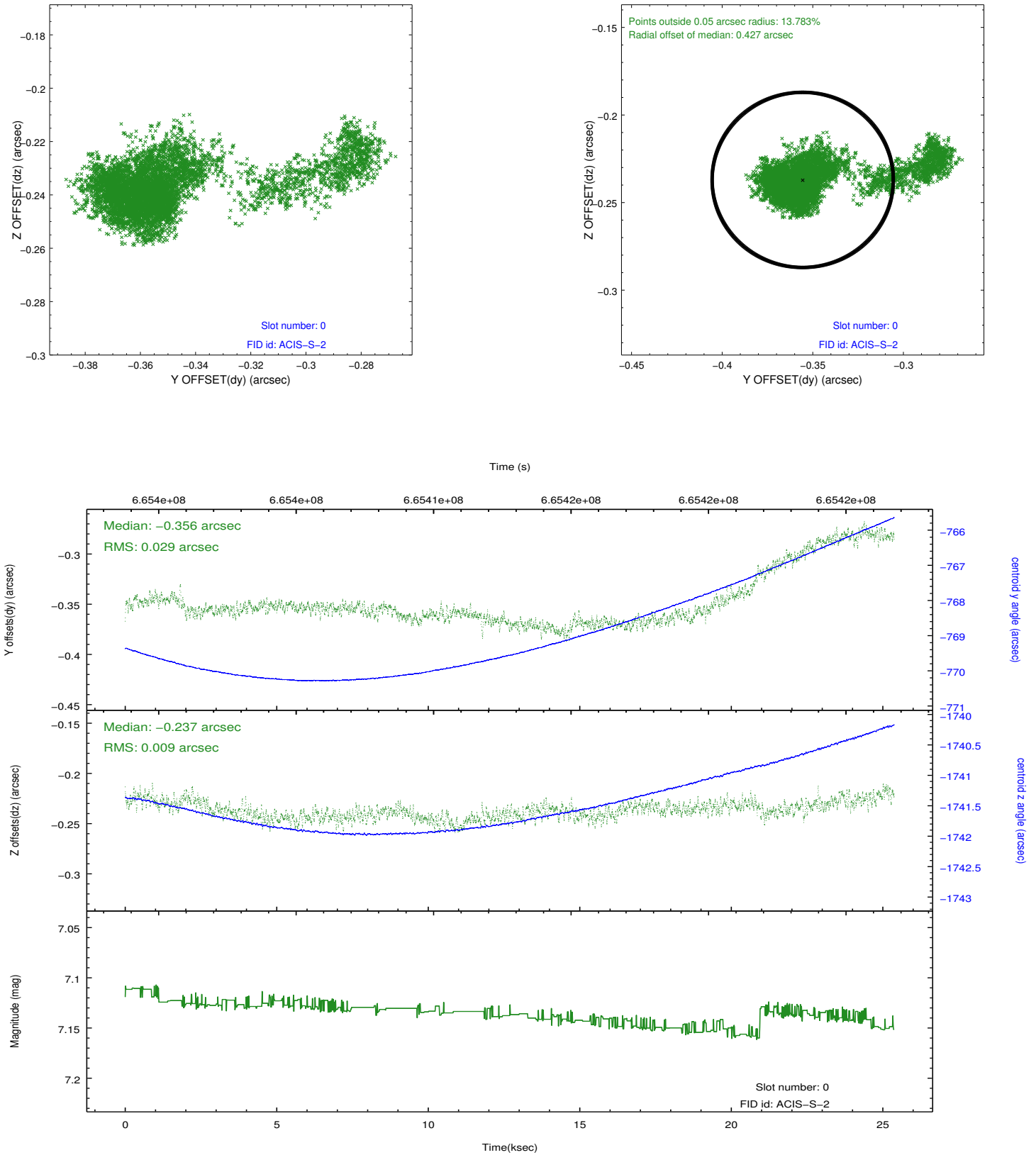


2.4.5 Slot 7

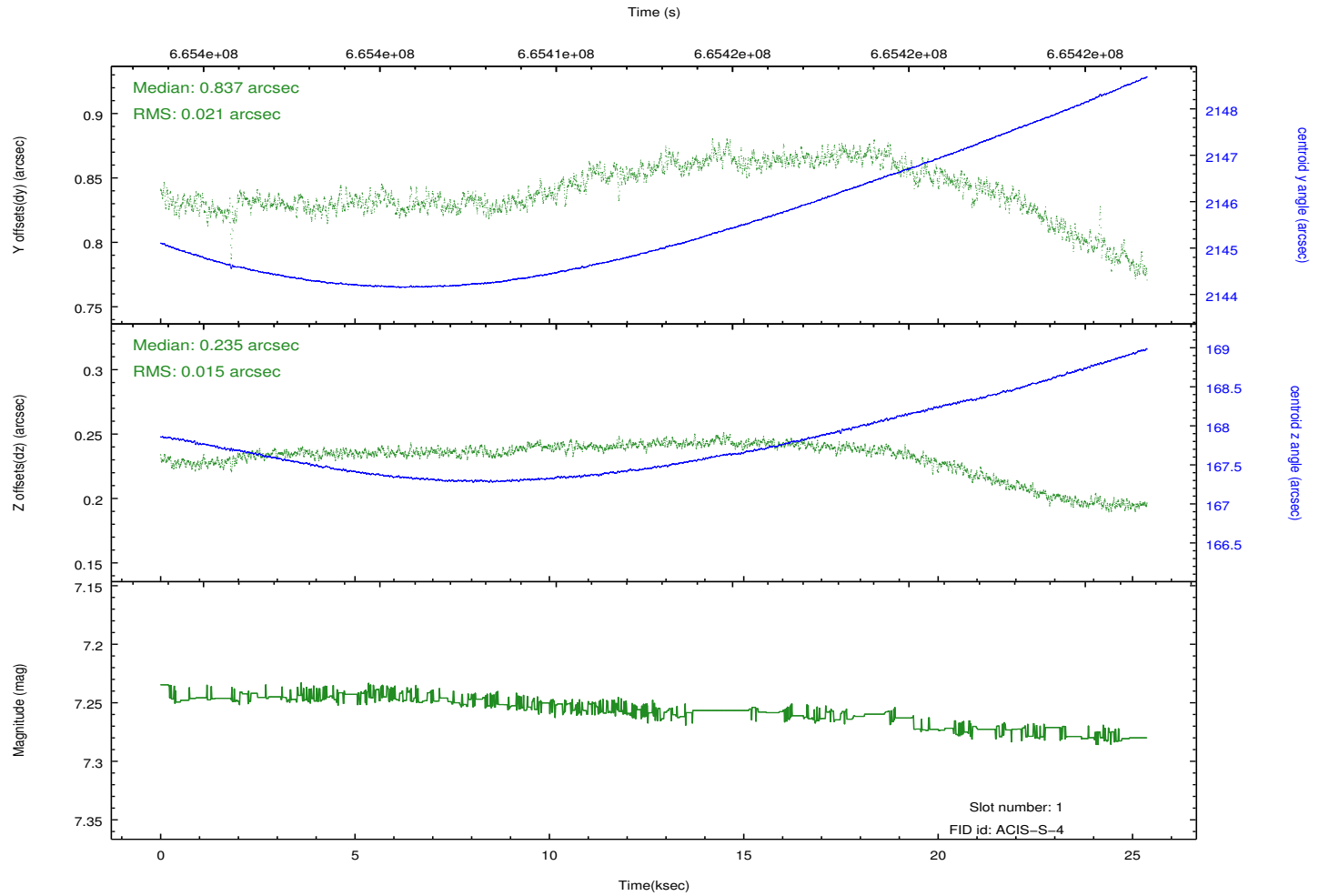
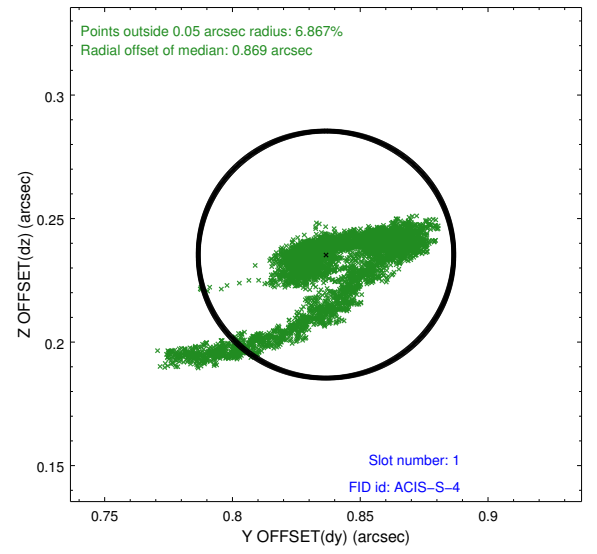
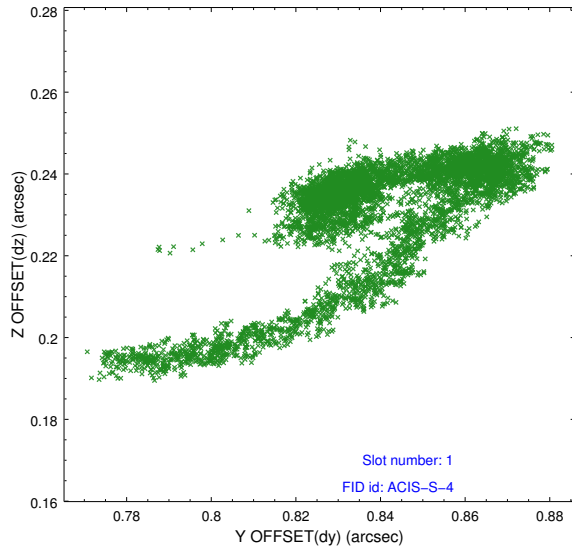


2.5 FID Slots

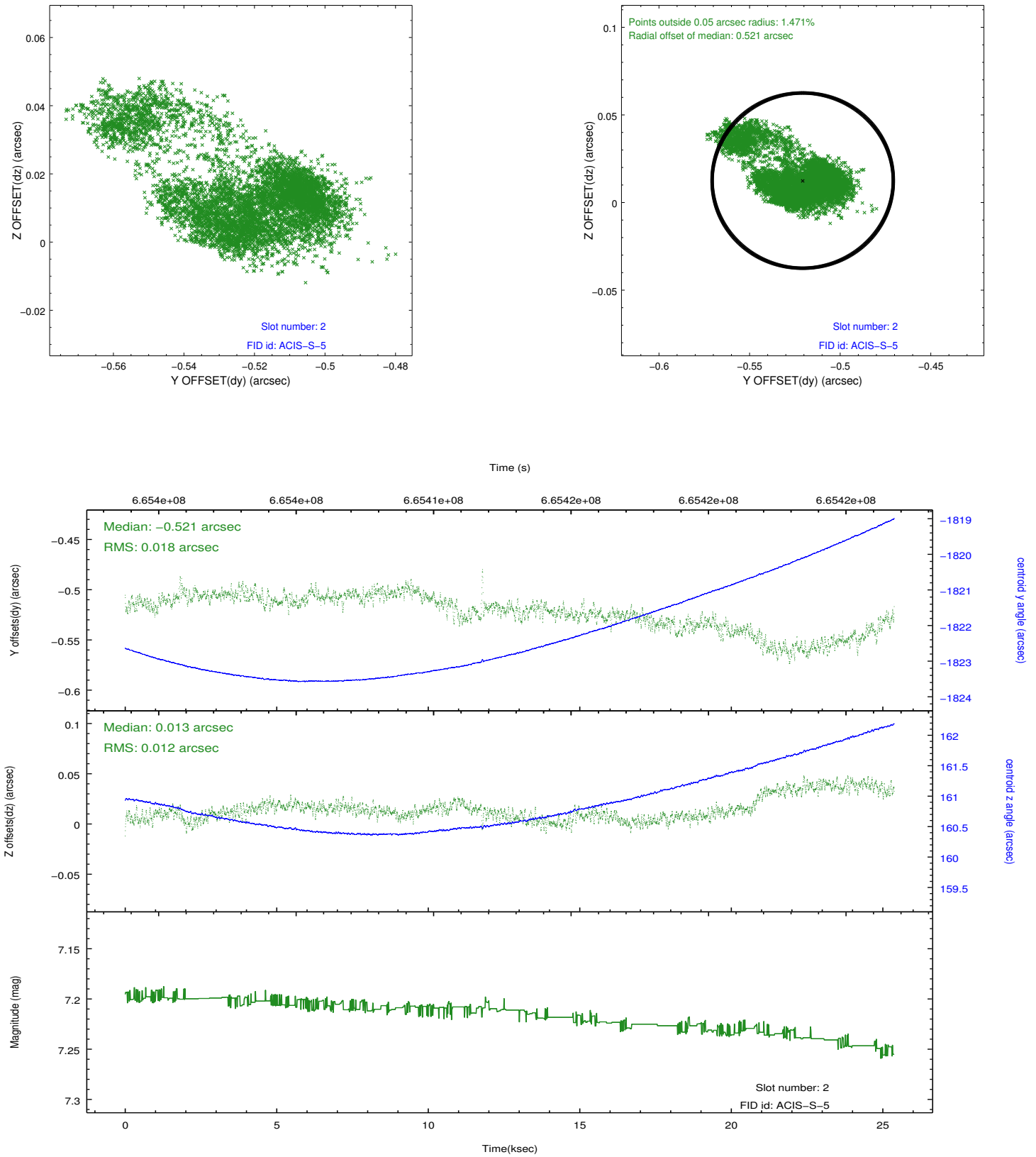
2.5.1 Slot 0



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)	2019.02.04
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	25.060400192857

A.2 Comments

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.