

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 22160 - L2 Version 1  
Chandra X-Ray Center

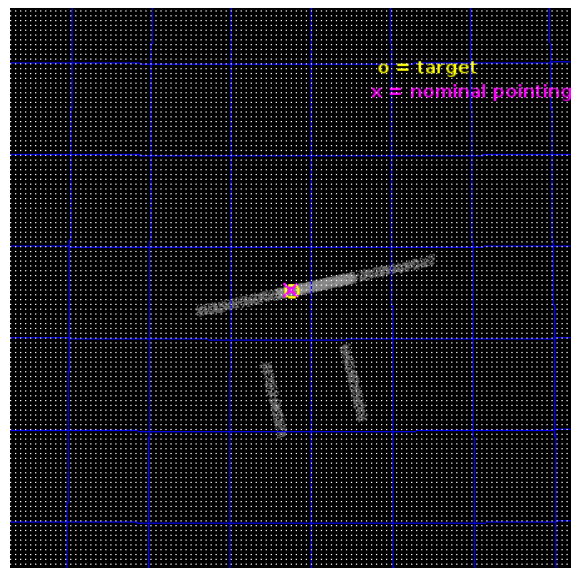
L2 Processing Date : Mar 30 2019

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# 1 Front

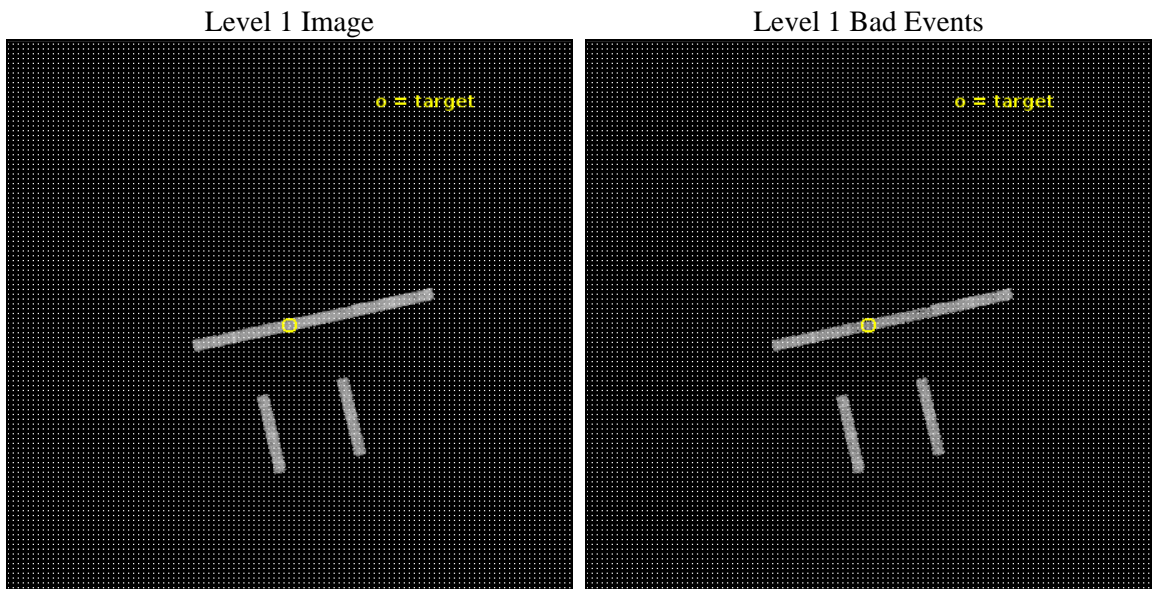
seq_num	703706	Sequence number
obs_id	22160	Observation id
title	Chandra Observations of the Young Gamma-Ray AGN TXS 0128+554	Propo
observer	Matthew Lister	Principal investigator
object	TXS 0128+554	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	22.8075	Observer's specified target RA [deg]
dec_targ	55.753611	Observer's specified target Dec [deg]
ra_nom	22.810388076357	Nominal RA [deg]
dec_nom	55.756432211593	Nominal Dec [deg]
roll_nom	347.15426043649	Nominal Roll [deg]
revision	1	Processing version of data
ontime	7070.0004816055	Sum of GTIs [s]
livetime	6678.4523603636	Livetime [s]
ontime2	7070.0004816055	Sum of GTIs [s]
ontime3	7070.0004816055	Sum of GTIs [s]
ontime6	7070.0004816055	Sum of GTIs [s]
ontime7	7070.0004816055	Sum of GTIs [s]
ontime8	7070.0004816055	Sum of GTIs [s]
l2events	7721	Number of level 2 events



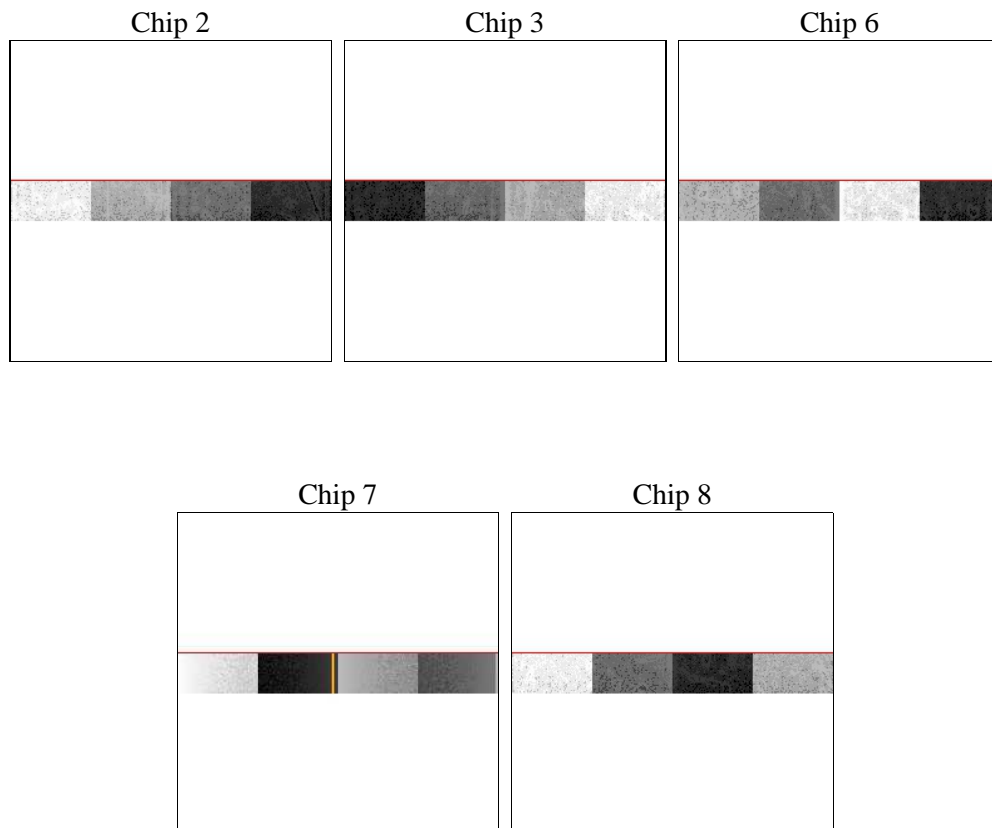
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	7000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	7070.0004816055	Sum of GTIs [s]
caldsver	4.8.2	&#160	ontime2	7070.0004816055	Sum of GTIs [s]
date	2019-03-30T13:16:43	Date and time of file creation	ontime3	7070.0004816055	Sum of GTIs [s]
revision	1	Processing version of data	ontime6	7070.0004816055	Sum of GTIs [s]
			ontime7	7070.0004816055	Sum of GTIs [s]
			ontime8	7070.0004816055	Sum of GTIs [s]
			l1events	47978	Number of level 1 events

### 2.1.4 Events

	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
level 1 events	8744	8179	9334	9974	11747
rejected events	7847	7281	8344	5188	9093
rejected %	89%	89%	89%	52%	77%

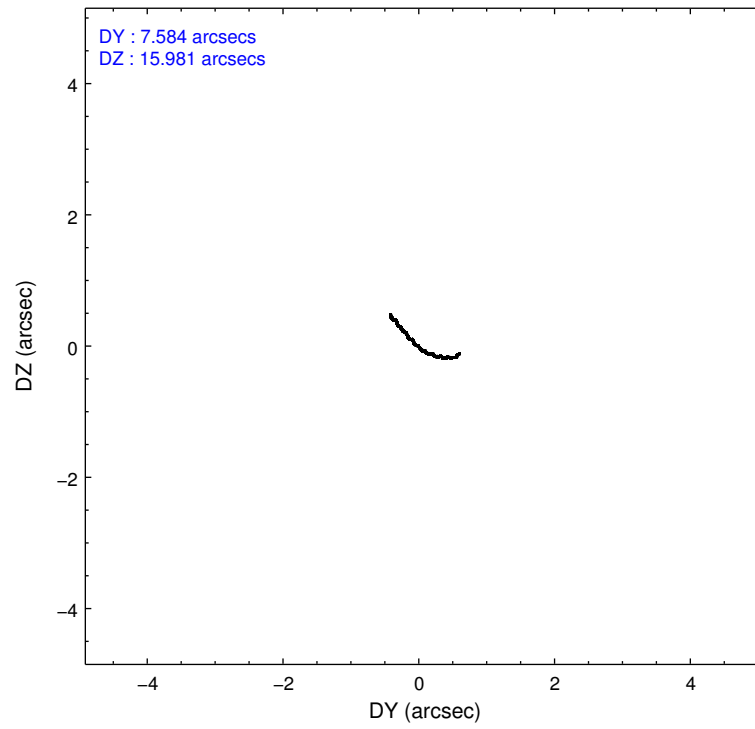
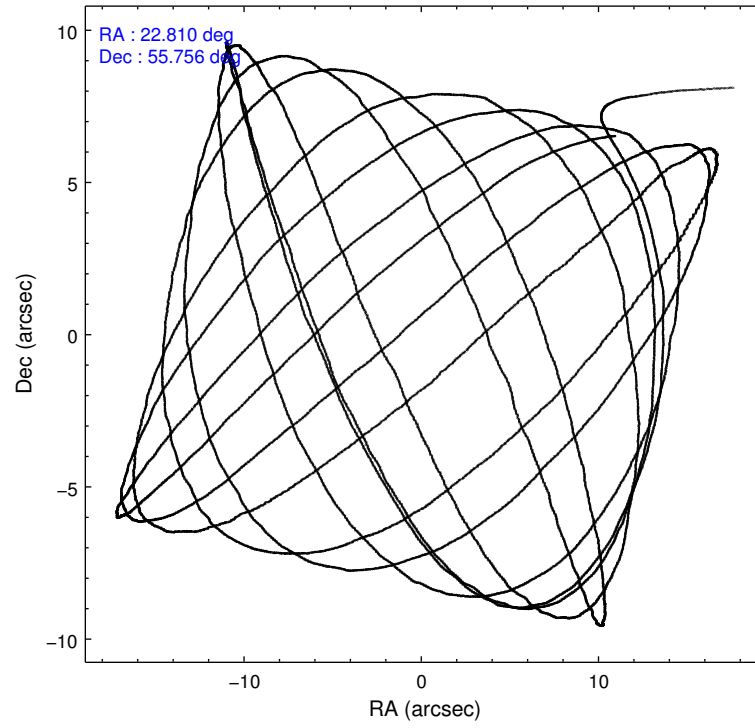
	ccd 2	ccd 3	ccd 6	ccd 7	ccd 8
grade 0 events	271	213	262	553	642
	3%	2%	2%	5%	5%
grade 1 events	3	2	0	16	5
	0%	0%	0%	0%	0%
grade 2 events	154	163	198	920	580
	1%	1%	2%	9%	4%
grade 3 events	153	181	157	541	322
	1%	2%	1%	5%	2%
grade 4 events	155	147	150	544	313
	1%	1%	1%	5%	2%
grade 5 events	230	288	305	952	461
	2%	3%	3%	9%	3%
grade 6 events	164	195	223	2228	797
	1%	2%	2%	22%	6%
grade 7 events	7614	6990	8039	4220	8627
	87%	85%	86%	42%	73%

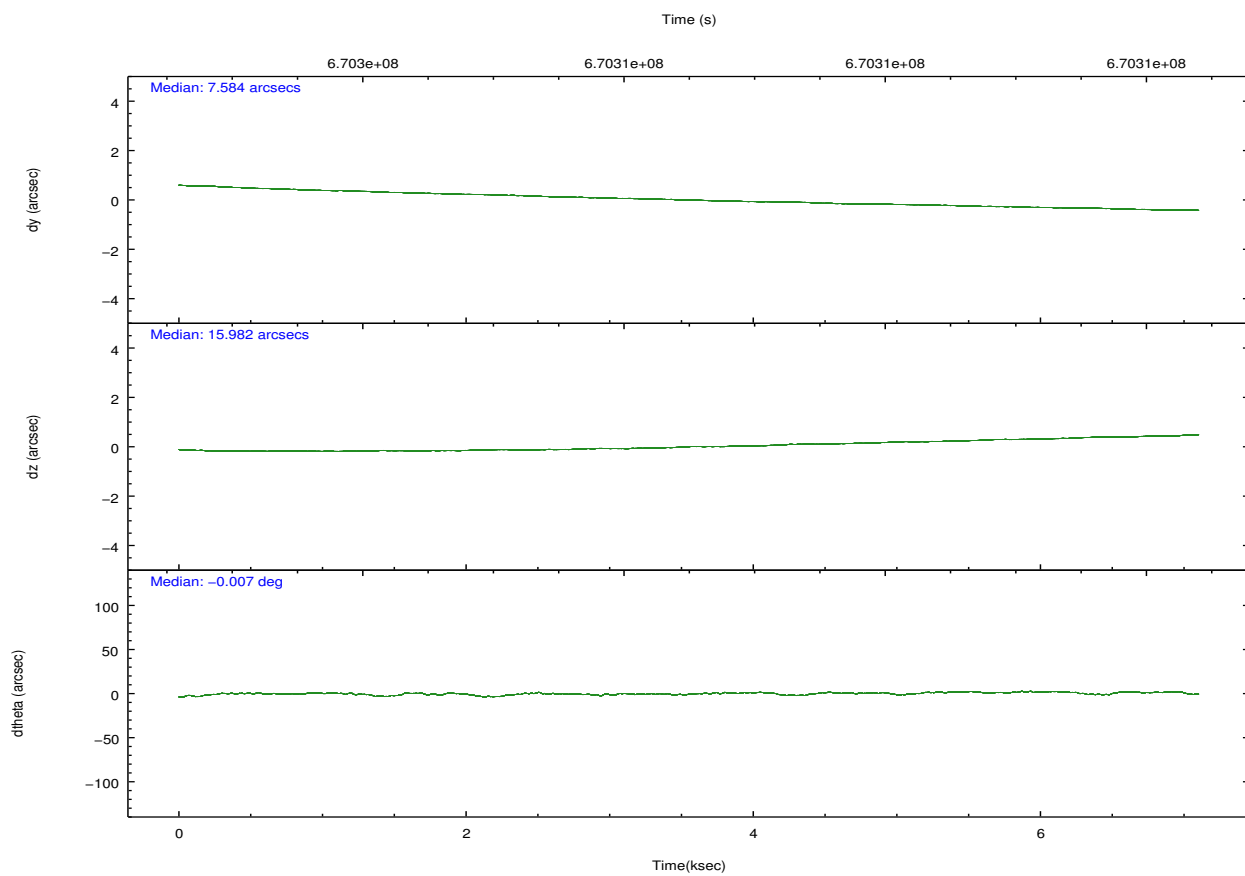
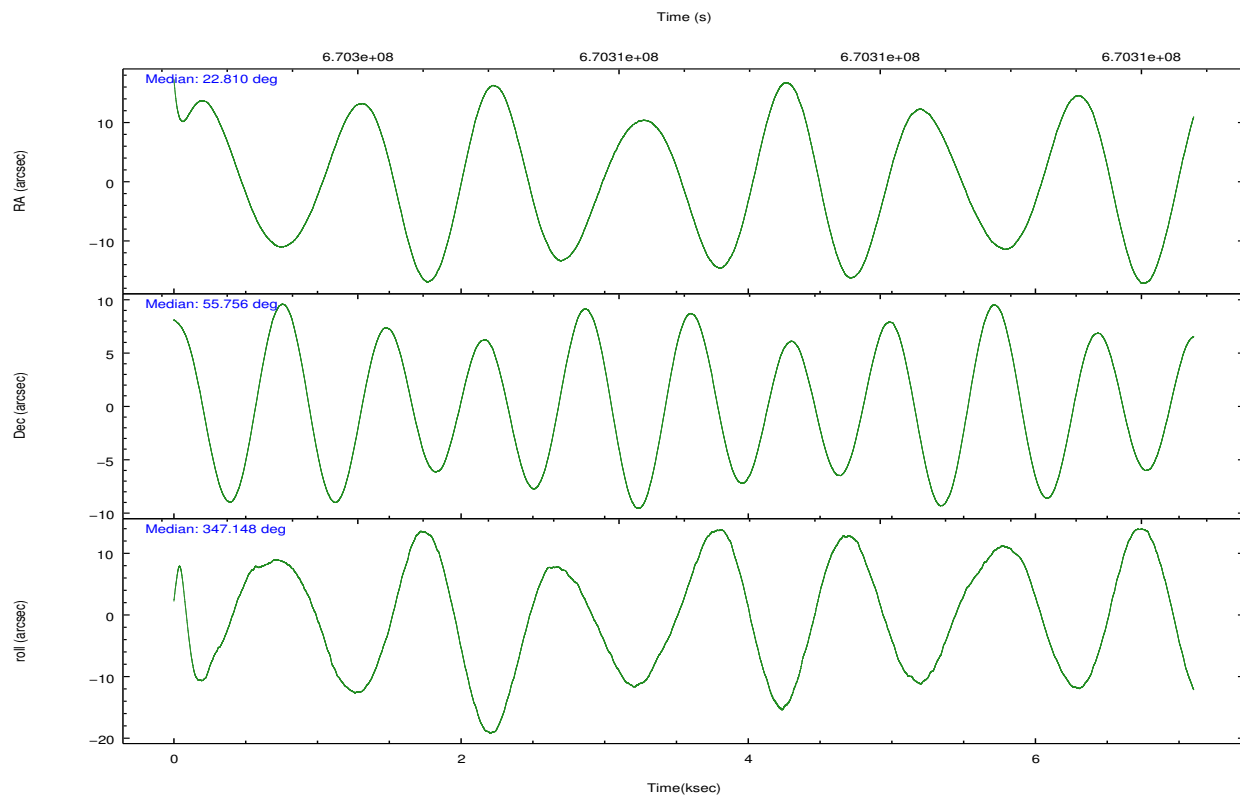


## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-23678	ACIS-23678	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	22.763947	22.81038807635716	CCD I2 on	O1	Y
[deg] Pointing Dec	55.747972	55.756432211593	CCD I3 on	O2	Y
[deg] Pointing Roll	347.036000	347.1542604364934	CCD S0 on	N	N
[mm] SIM focus pos	-0.684267	-0.6828225247311905	CCD S1 on	N	N
[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	Y	Y
[s] Observation start time (MET)	670303046.184000	670301722.4546	CCD S5 on	N	N
Observation start date	2019-03-30T03:16:17	2019-03-30T02:55:22	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	670310046.184000	670311283.65517	On-chip summing requested	N	N
Observation end date	2019-03-30T05:12:57	2019-03-30T05:34:43	Subarray requested	CUSTOM	1/8
Read mode	TIMED	TIMED	Subarray start row	449	449
			Subarray row count	128	128
			Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	0.7

## 2.3 Aspect



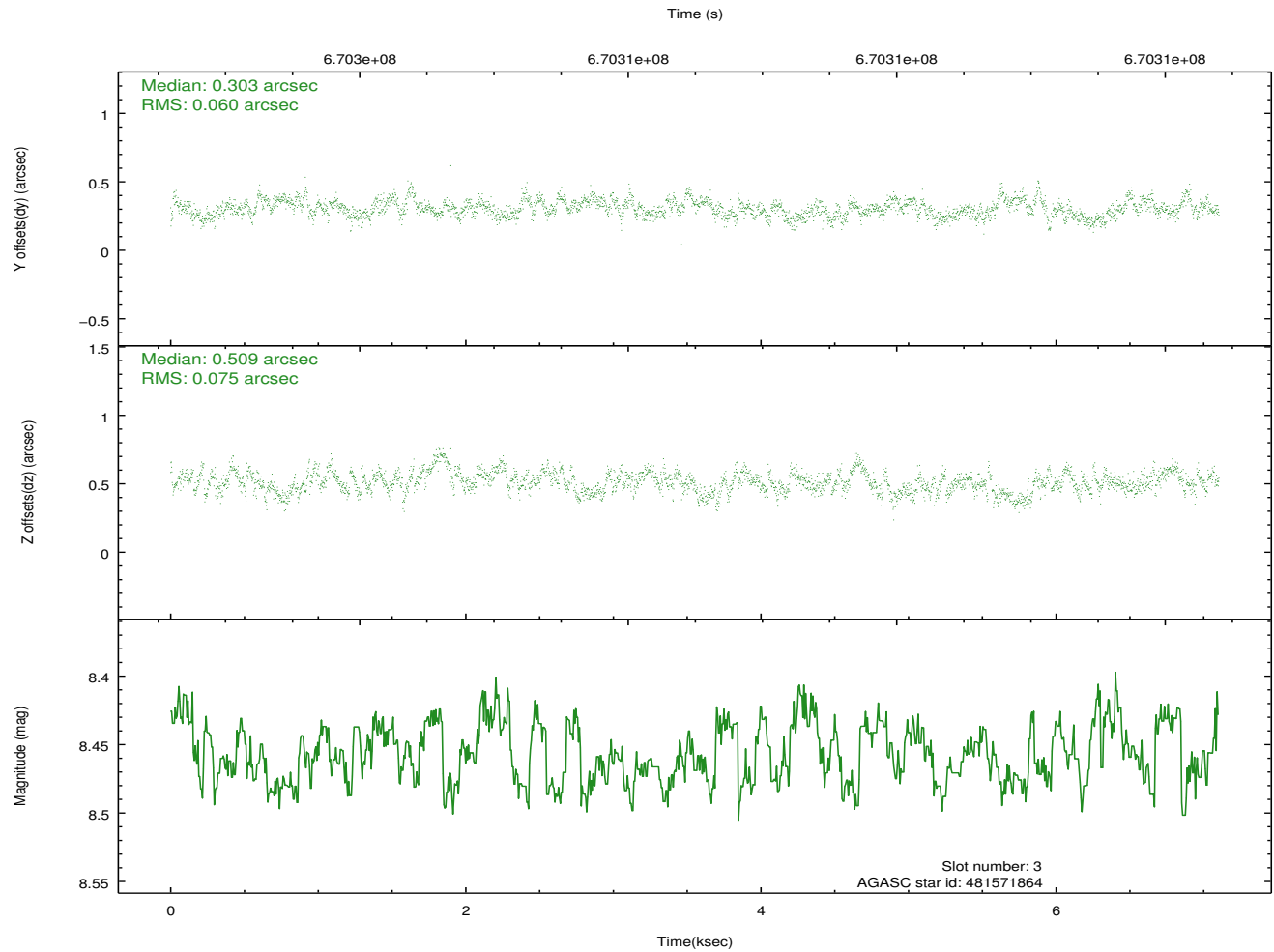
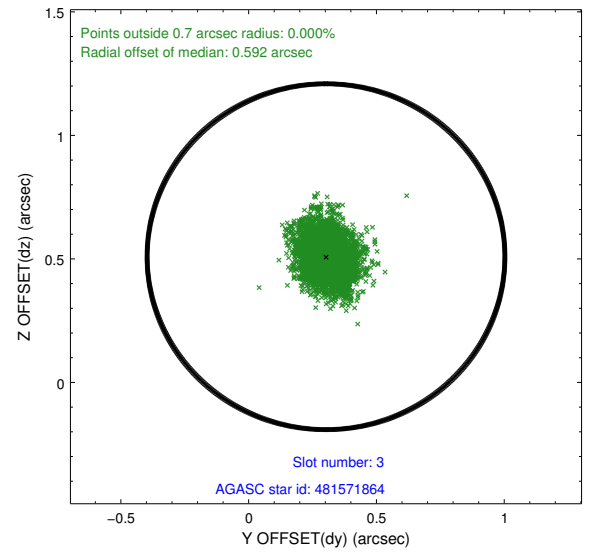
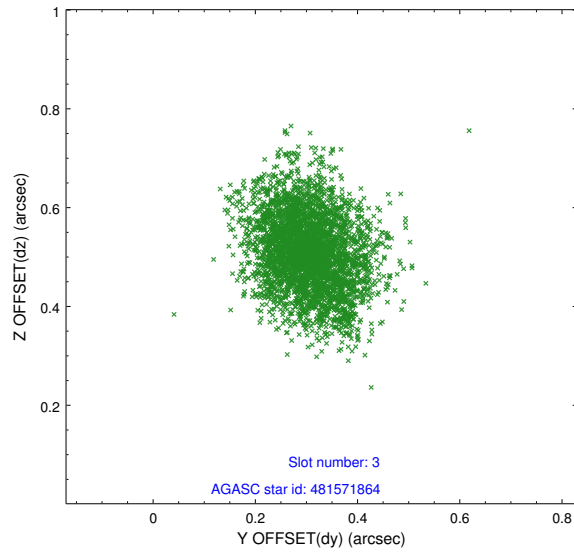


Slot Statistics

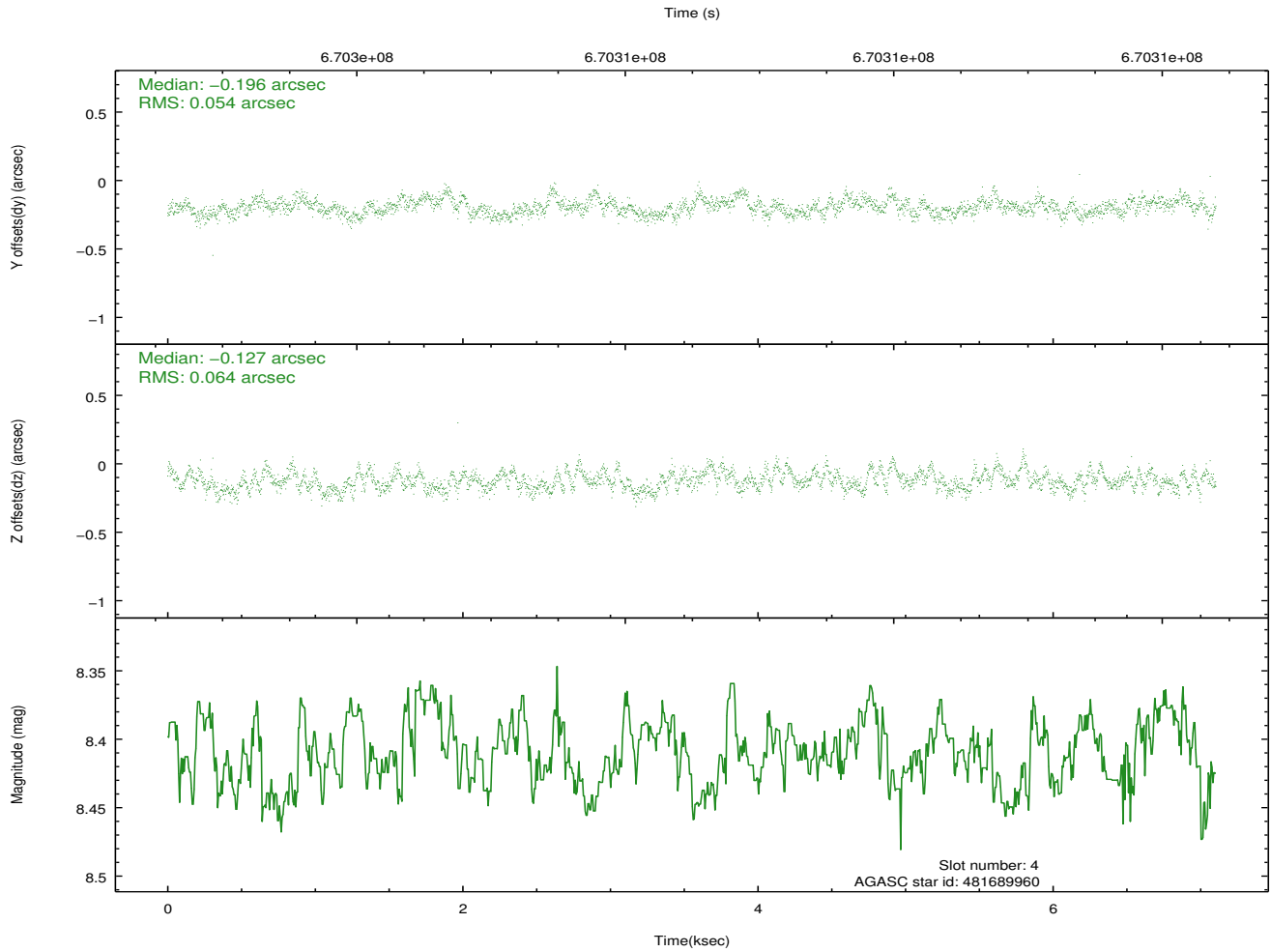
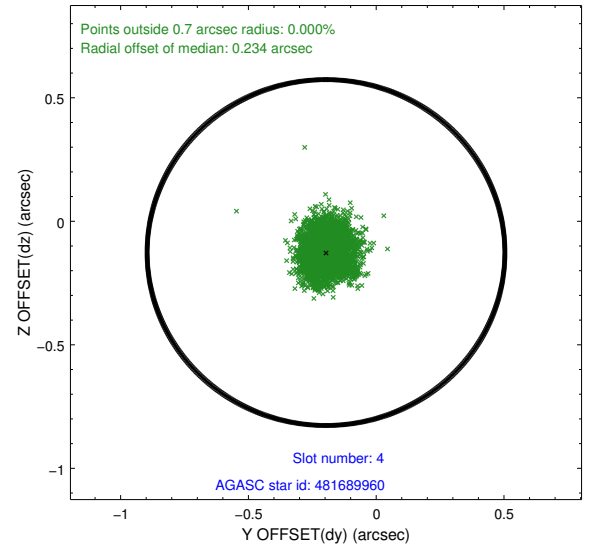
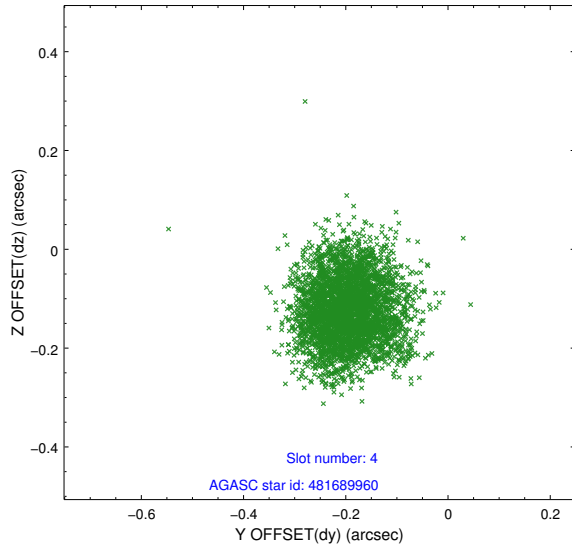
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-1	7.23	1733	1.000	0.131	-0.091	0.019	0.034	0.000000	0.000000	935.85	-1733
1	FID		ACIS-S-5	7.23	1733	1.000	-0.342	0.042	0.030	0.056	0.000000	0.000000	-1813.23	163
2	FID		ACIS-S-6	7.40	1732	1.000	0.190	0.060	0.021	0.030	0.000000	0.000000	400.50	808
3	GUIDE	used	481571864	8.46	3463	1.000	0.303	0.509	0.103	0.167	22.222732	55.278977	-702.99	-1889
4	GUIDE	used	481689960	8.41	3464	1.000	-0.196	-0.127	0.090	0.143	23.818984	56.189894	1698.62	2039
5	GUIDE	used	481691096	7.42	3466	1.000	-0.100	-0.169	0.087	0.142	23.857922	56.043730	1901.12	1548
6	GUIDE	used	481698904	6.83	3466	1.000	-0.041	-0.145	0.094	0.147	23.338629	55.817696	1075.82	510
7	GUIDE	used	481709512	8.67	3464	1.000	0.023	-0.074	0.106	0.162	23.411712	55.662405	1350.12	0

## 2.4 Star Slots

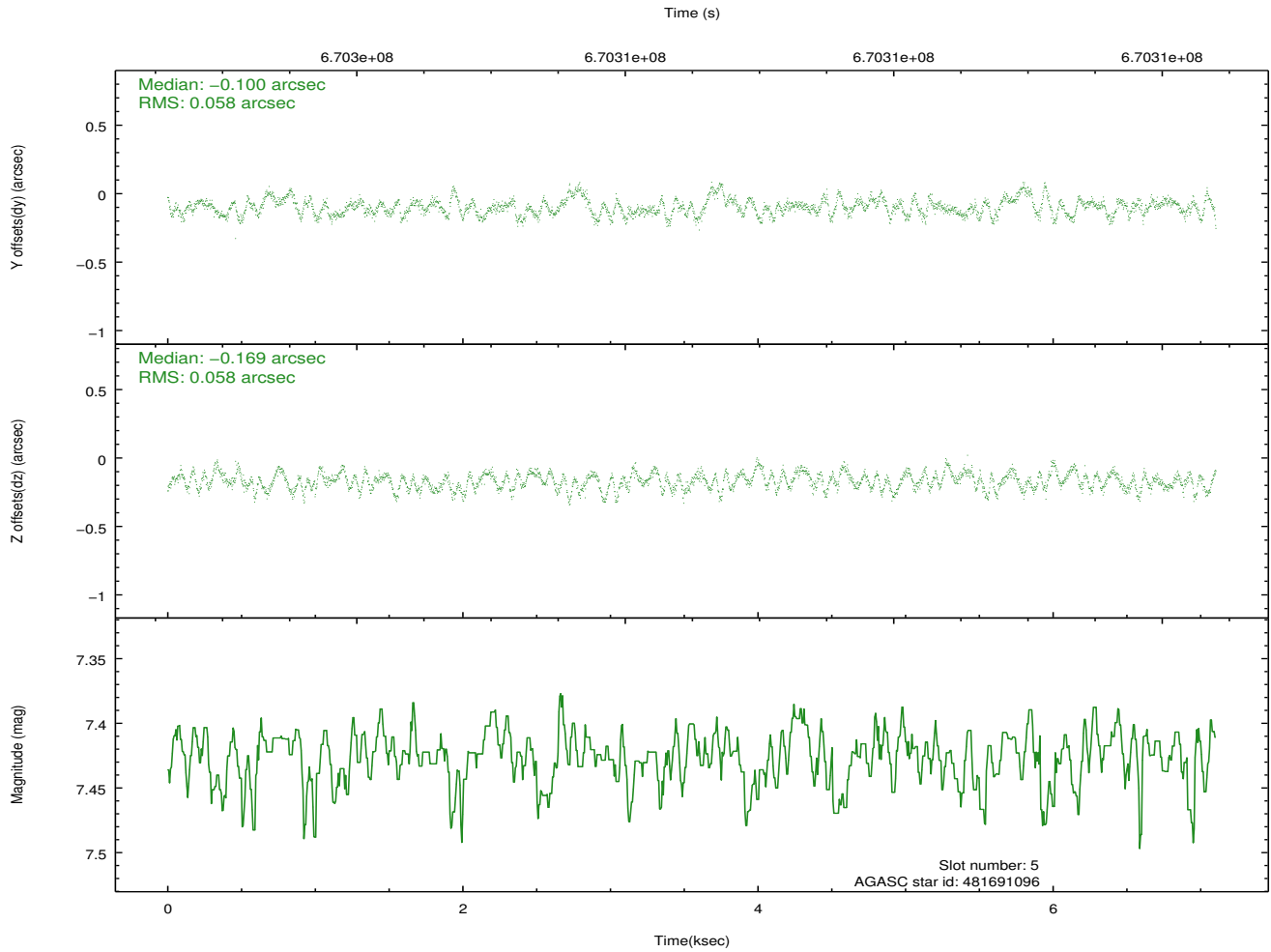
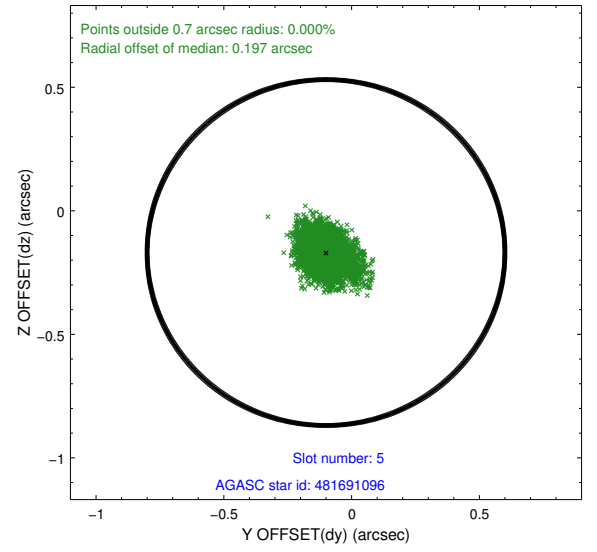
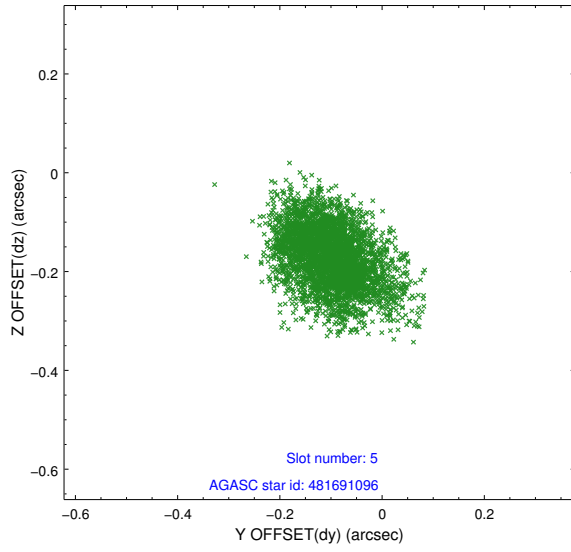
### 2.4.1 Slot 3



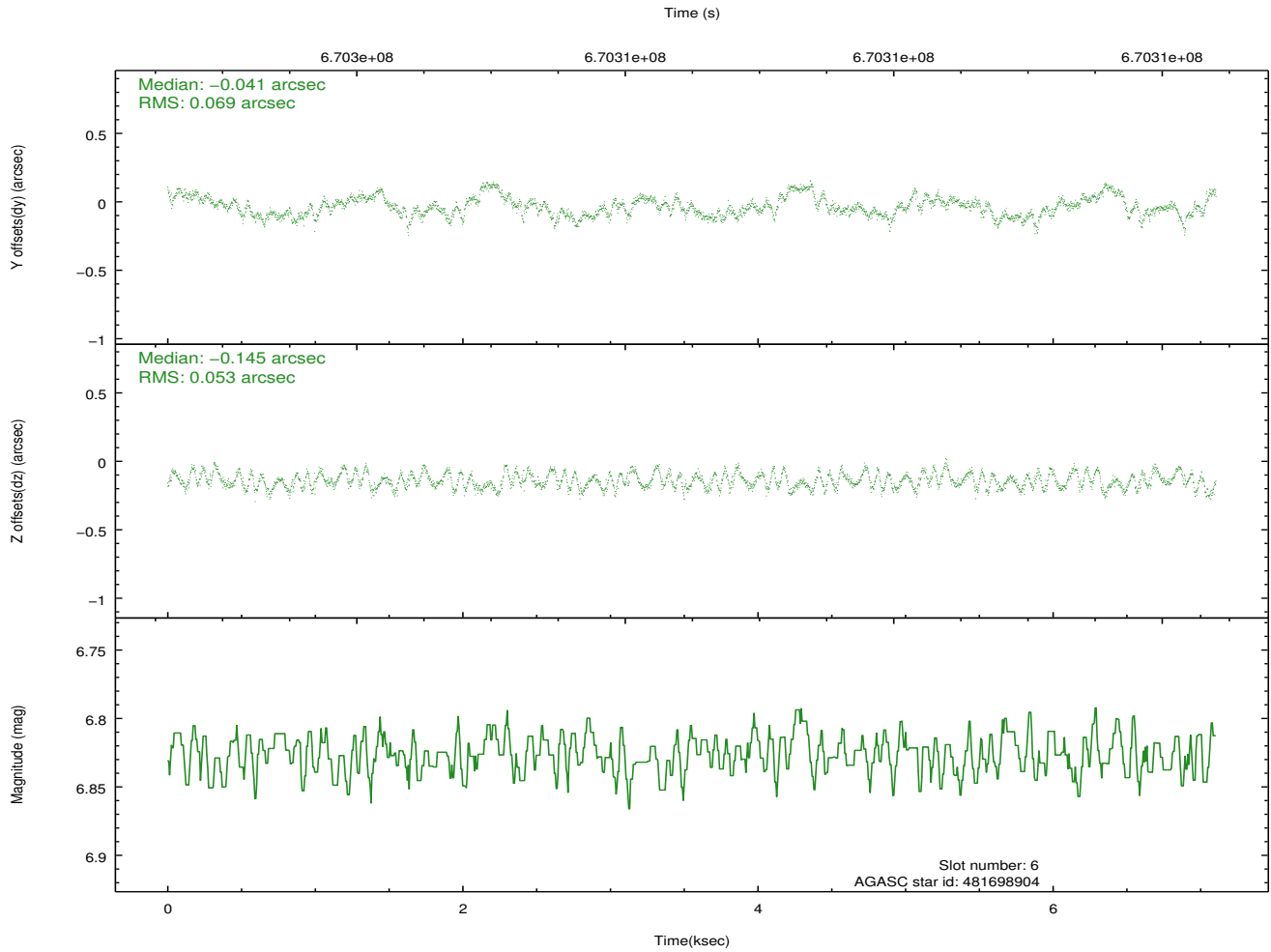
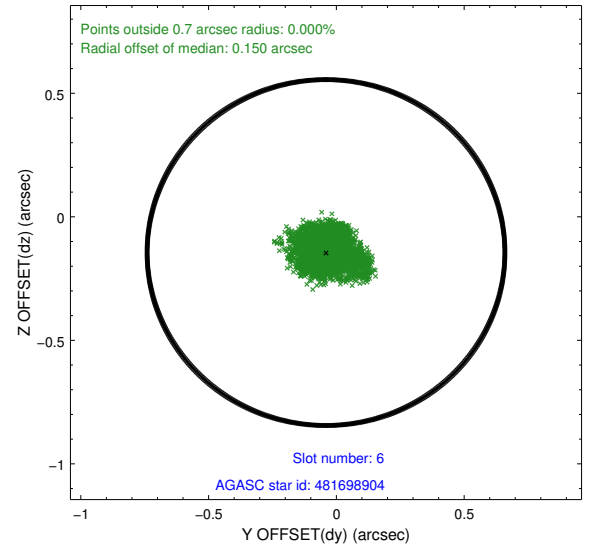
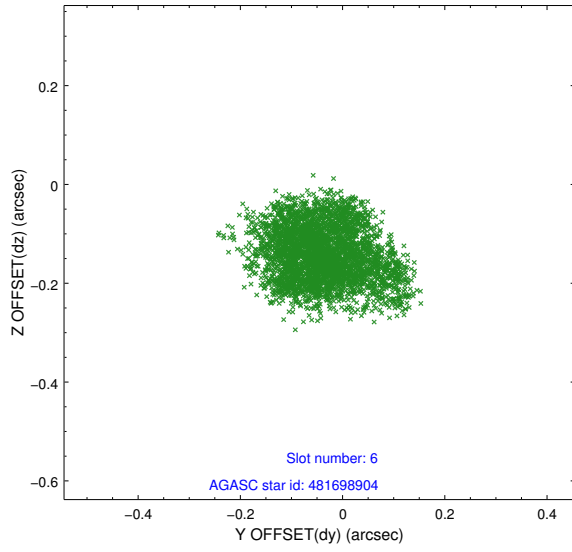
## 2.4.2 Slot 4



### 2.4.3 Slot 5

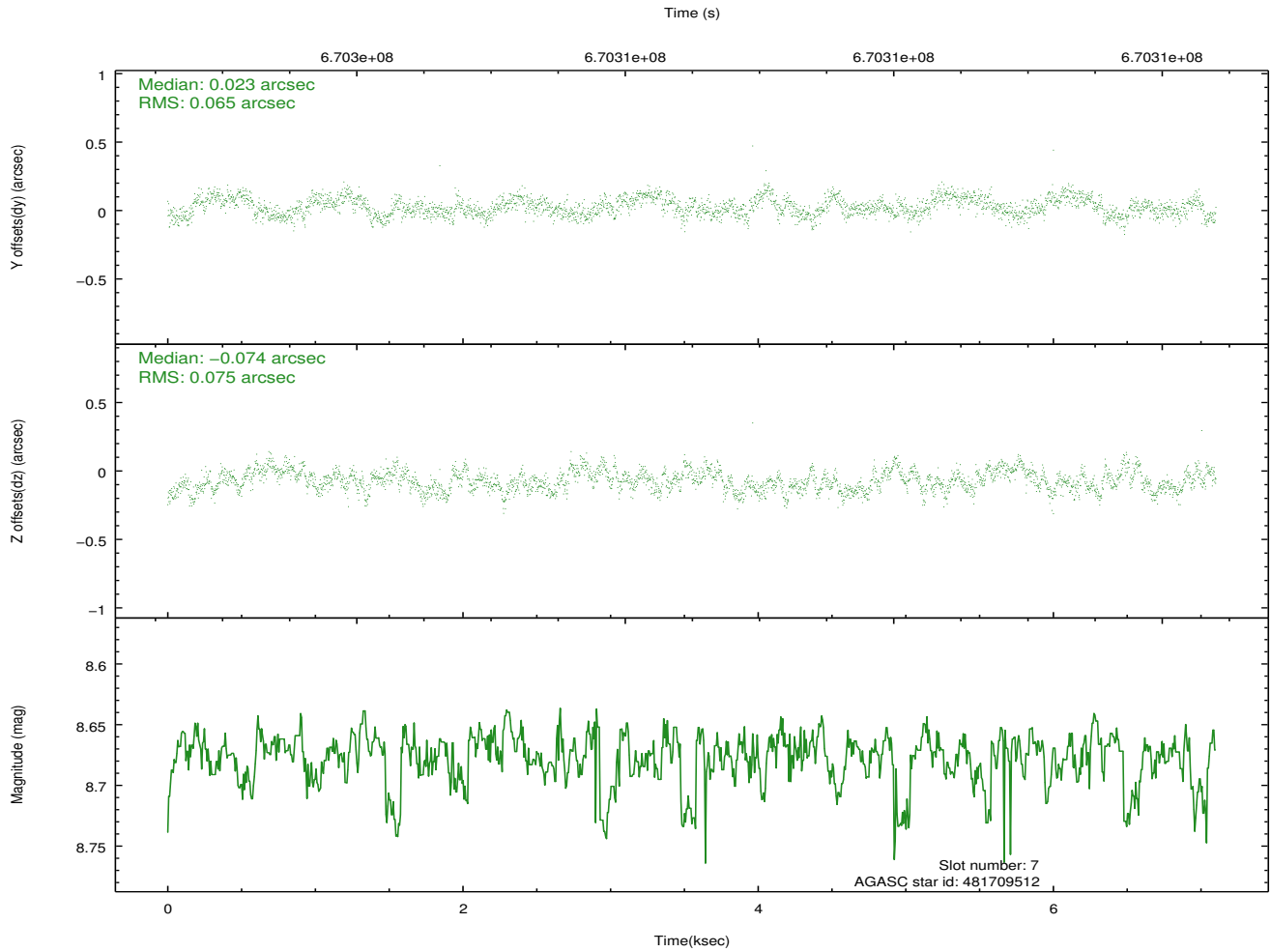
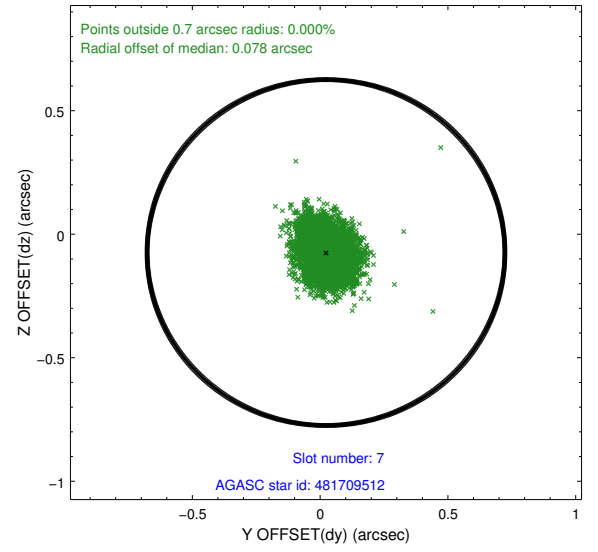
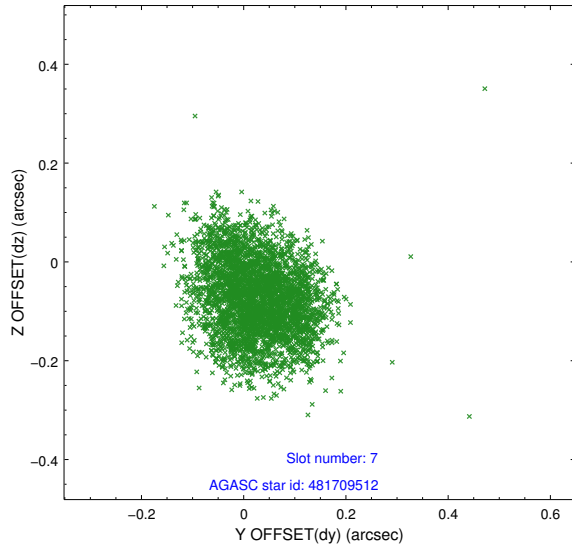


## 2.4.4 Slot 6



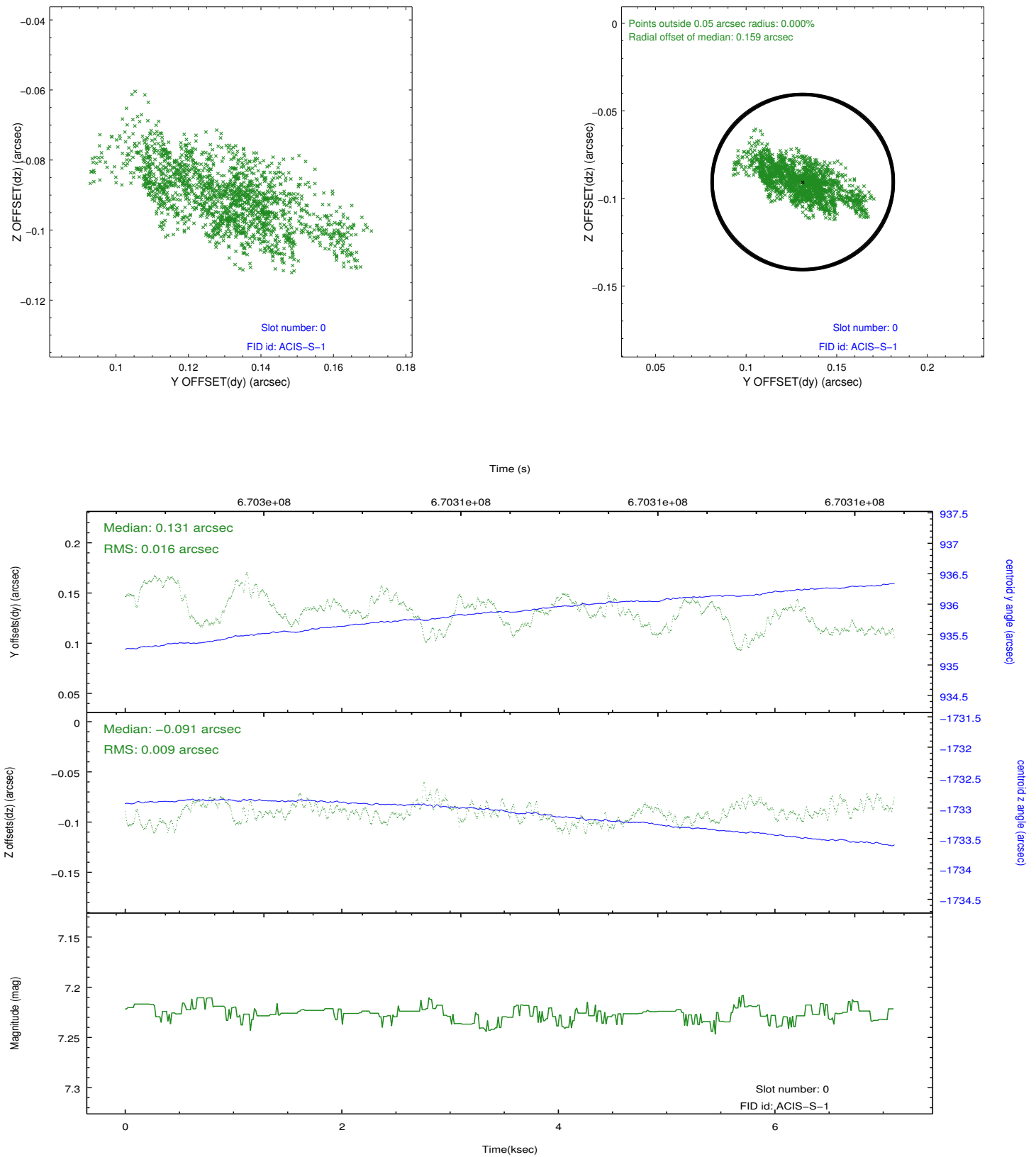


## 2.4.5 Slot 7

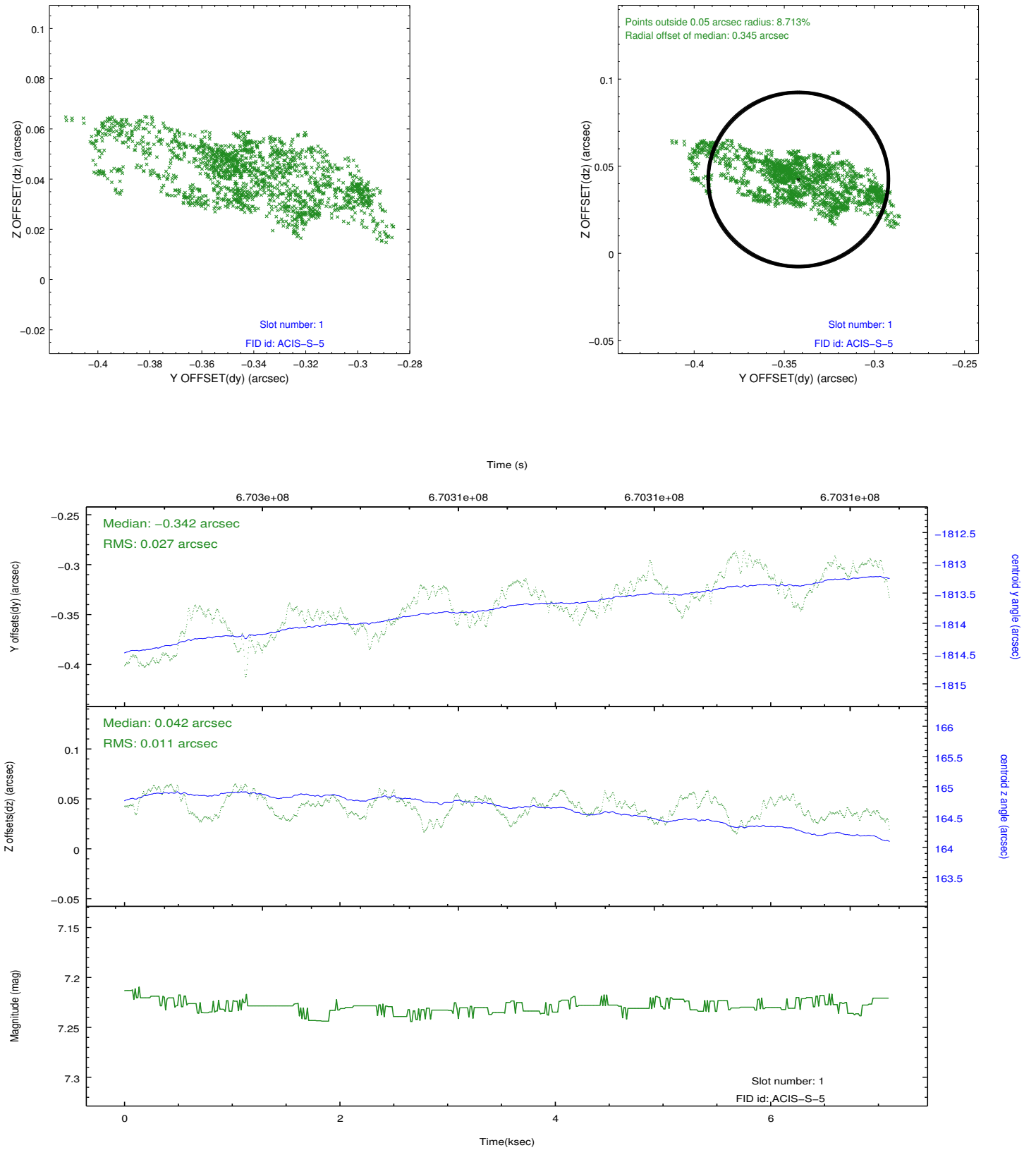


## 2.5 FID Slots

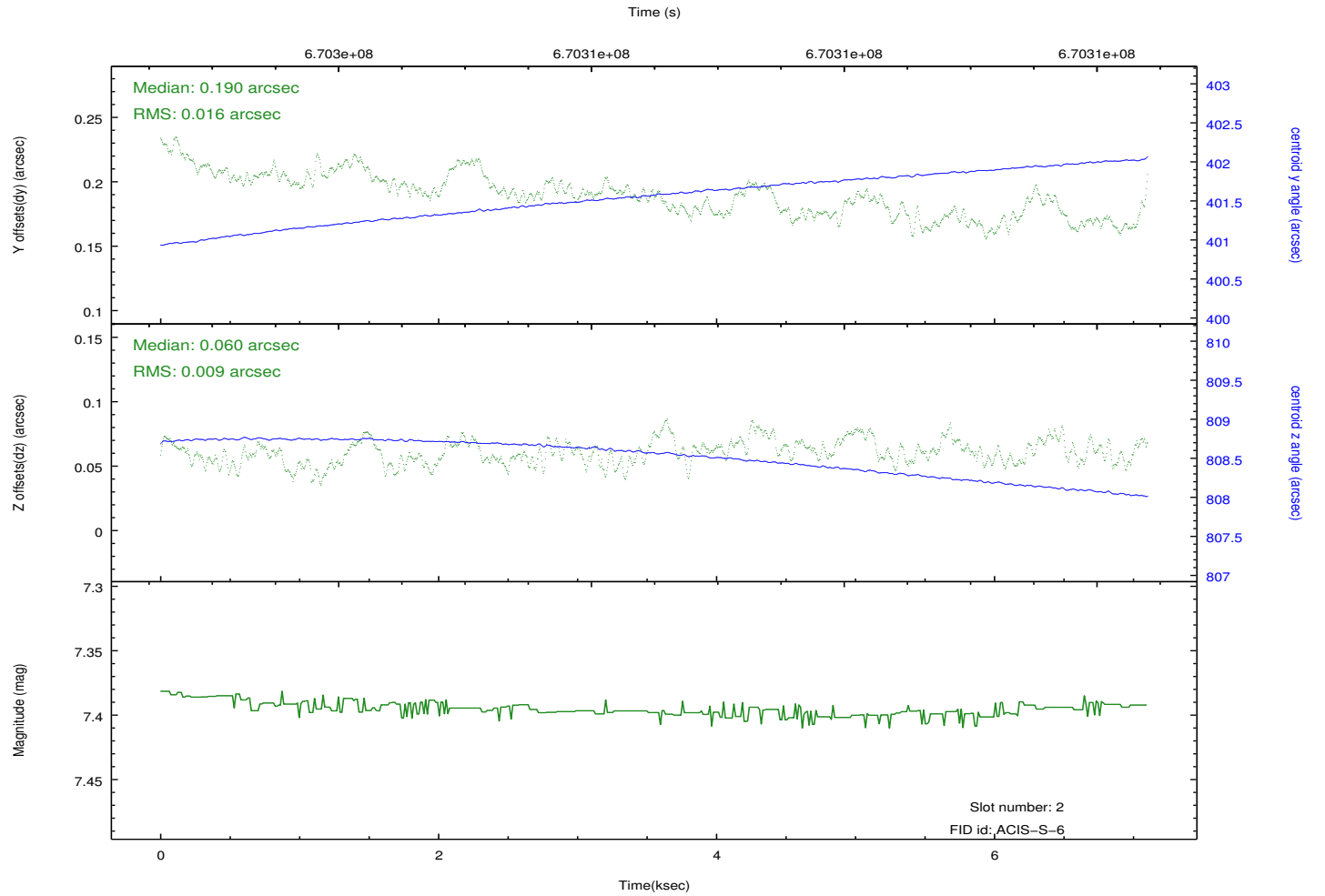
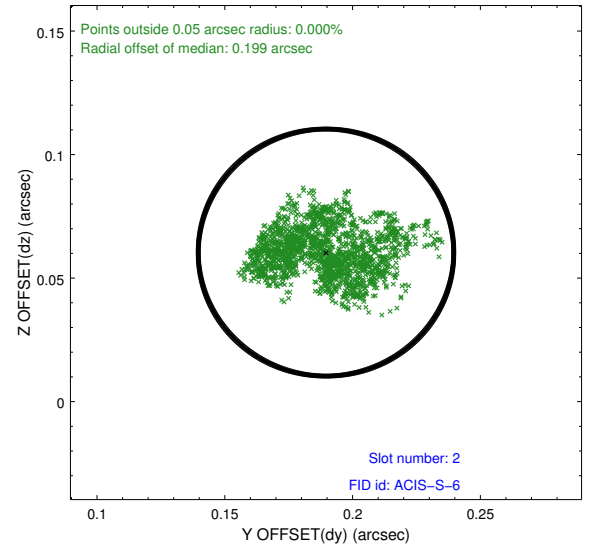
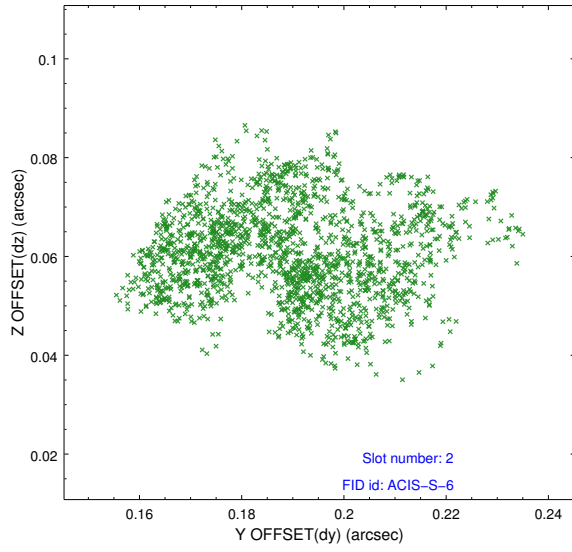
### 2.5.1 Slot 0



## 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)	2019.04.01
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	7.0700004816055

## A.2 Comments

The focal plane temperature is warmer than -112.0 C during the interval 670302975.10 - 670306574.50 (MET s) of this observation. This temperature is the upper limit of the verified ACIS calibration for the back-illuminated chips.

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](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.