

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21248 - L2 Version 1
Chandra X-Ray Center

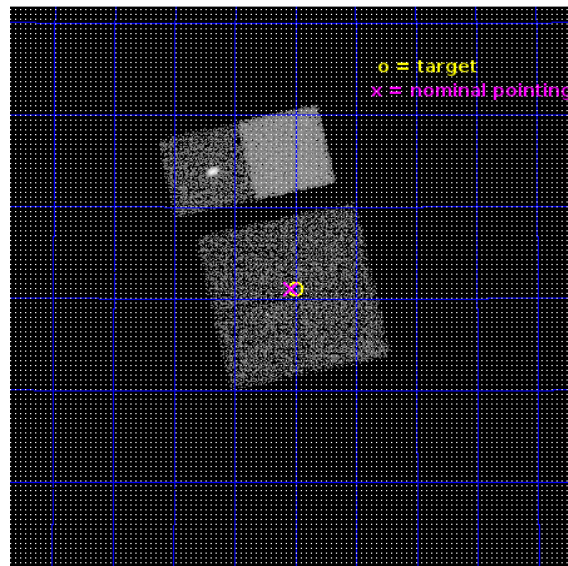
L2 Processing Date : Jan 9 2019

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1 Front

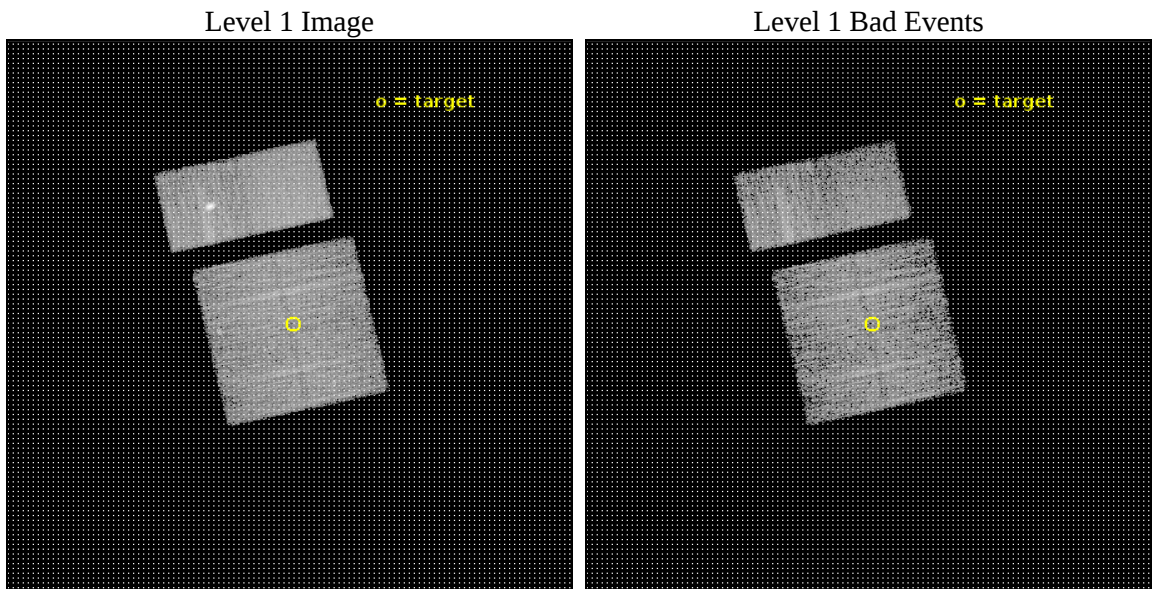
seq_num	402080	Sequence number
obs_id	21248	Observation id
title	The Nature of INTEGRAL Sources in the Galactic Plane	Proposal titl
observer	John Tomsick	Principal investigator
object	IGR J20084+3221	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	302.124167	Observer's specified target RA [deg]
dec_targ	32.35	Observer's specified target Dec [deg]
ra_nom	302.13280497649	Nominal RA [deg]
dec_nom	32.351511338156	Nominal Dec [deg]
roll_nom	347.20042746173	Nominal Roll [deg]
revision	1	Processing version of data
ontime	4946.6519153118	Sum of GTIs [s]
livetime	4884.0144302439	Livetime [s]
ontime0	4946.5287953615	Sum of GTIs [s]
ontime1	4946.5698353052	Sum of GTIs [s]
ontime2	4946.6108753681	Sum of GTIs [s]
ontime3	4946.6519153118	Sum of GTIs [s]
ontime6	4946.7339953184	Sum of GTIs [s]
ontime7	4946.6929553747	Sum of GTIs [s]
l2events	41476	Number of level 2 events



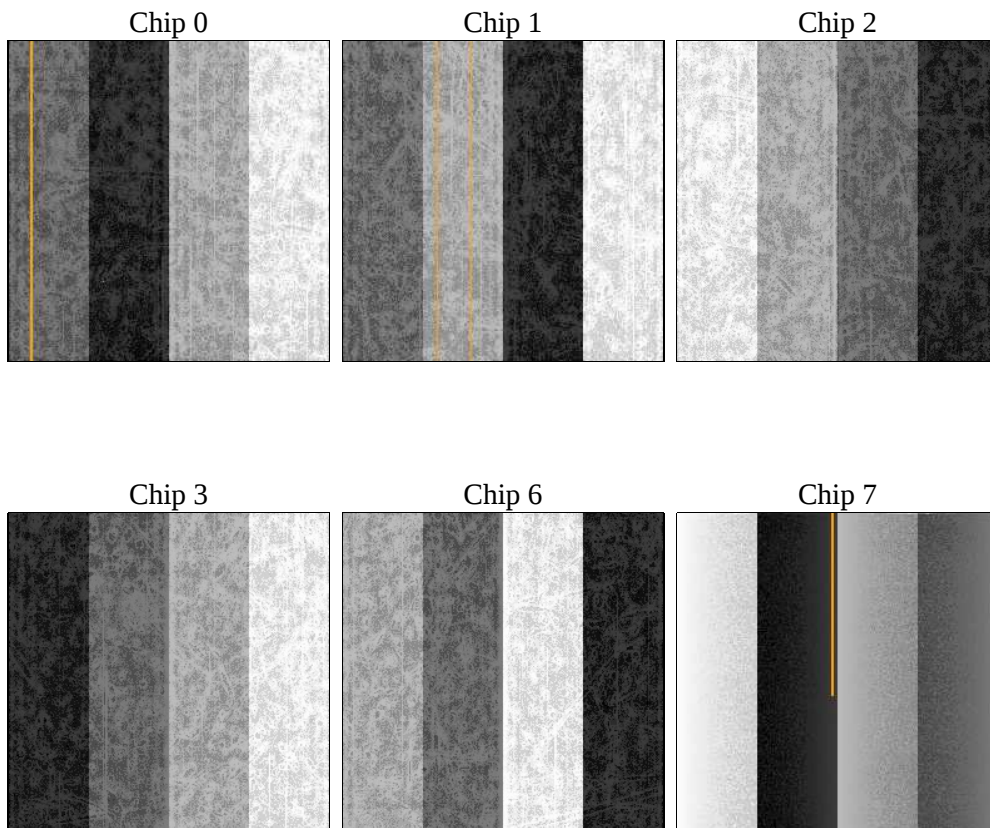
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	4946.6519153118	Sum of GTIs [s]
caldbver	4.8.2	 	ontime0	4946.5287953615	Sum of GTIs [s]
date	2019-01-10T04:26:30	Date and time of file creation	ontime1	4946.5698353052	Sum of GTIs [s]
revision	1	Processing version of data	ontime2	4946.6108753681	Sum of GTIs [s]
			ontime3	4946.6519153118	Sum of GTIs [s]
			ontime6	4946.7339953184	Sum of GTIs [s]
			ontime7	4946.6929553747	Sum of GTIs [s]
			l1events	235927	Number of level 1 events

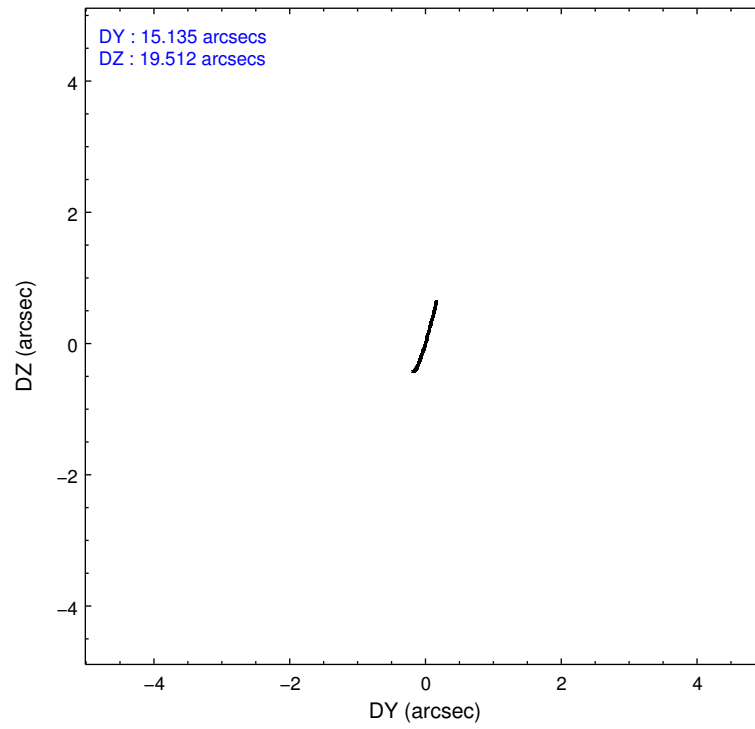
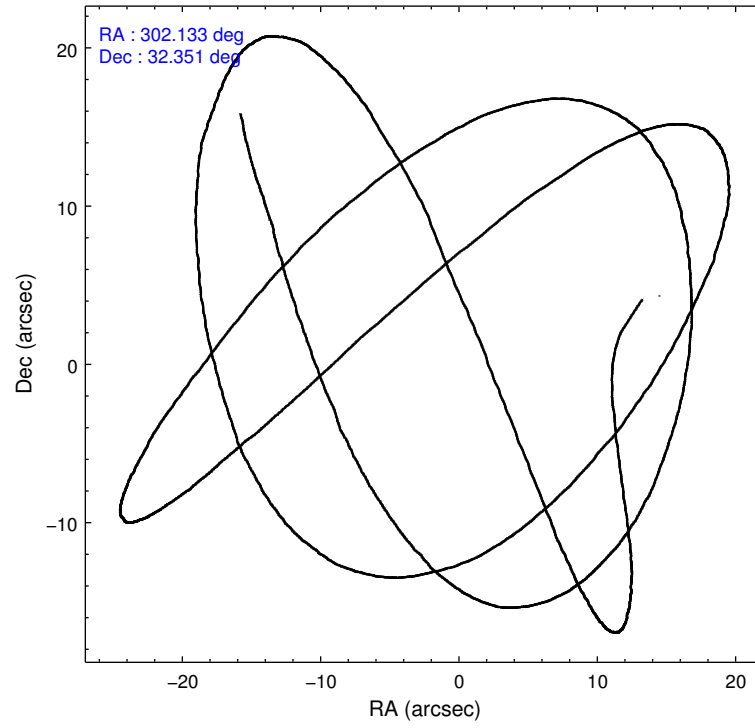
2.1.4 Events

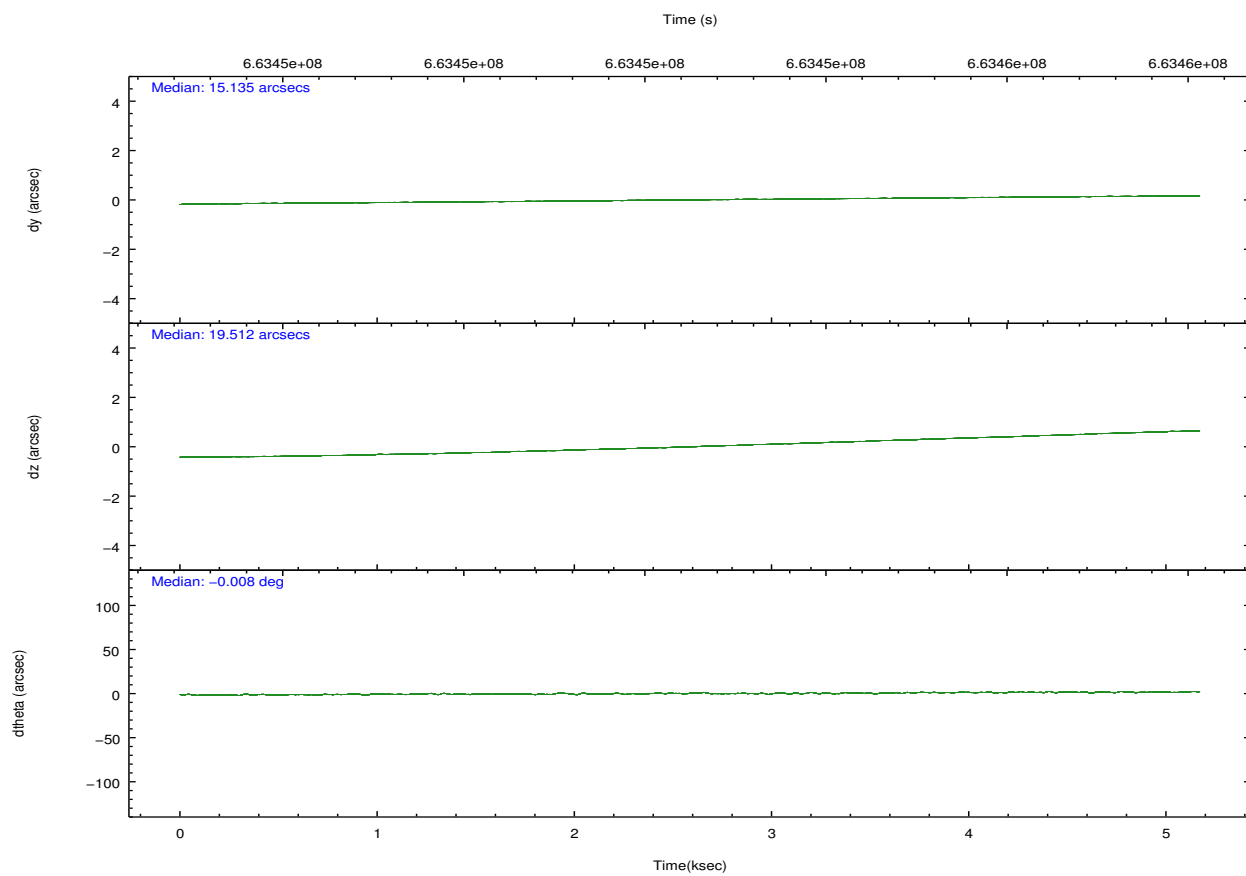
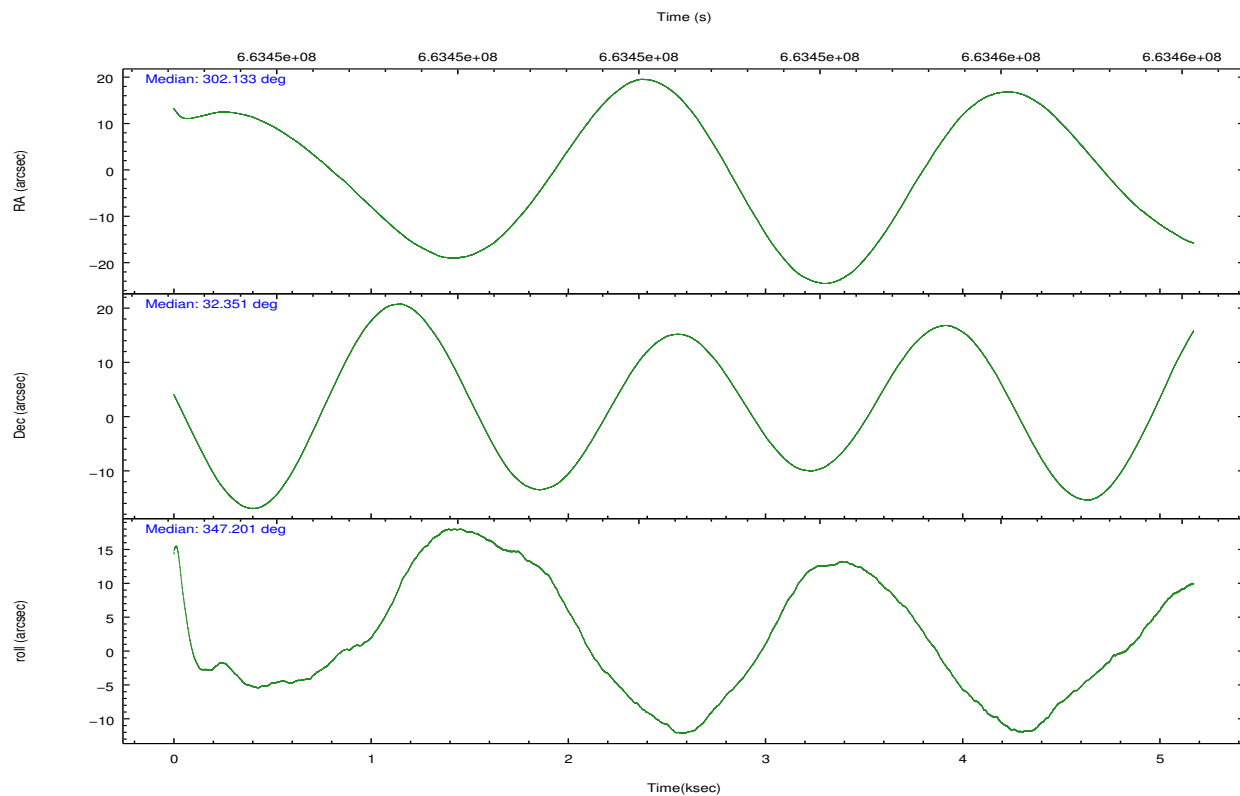
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7		ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	33762	35882	38347	35991	44148	47797	grade 0 events	1564	1576	1744	1340	4130	1708
rejected events	29340	31243	34235	32202	35646	27209		4%	4%	4%	3%	9%	3%
rejected %	86%	87%	89%	89%	80%	56%	grade 1 events	22	20	27	22	39	61
								0%	0%	0%	0%	0%	0%
							grade 2 events	1095	1243	857	880	2011	4319
								3%	3%	2%	2%	4%	9%
							grade 3 events	431	391	352	360	469	1629
								1%	1%	0%	1%	1%	3%
							grade 4 events	375	395	390	380	453	1566
								1%	1%	1%	1%	1%	3%
							grade 5 events	1400	1455	1326	1641	1580	4611
								4%	4%	3%	4%	3%	9%
							grade 6 events	962	1041	772	838	1447	11389
								2%	2%	2%	2%	3%	23%
							grade 7 events	27913	29761	32879	30530	34019	22514
								82%	82%	85%	84%	77%	47%

2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar format version number	7	7
Detector	ACIS-012367	ACIS-012367	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	VFAINT	VFAINT	CCD I0 on	Y	Y
Observation mode	POINTING	POINTING	CCD I1 on	Y	Y
[deg] Pointing RA	302.101292	302.1328049764917	CCD I2 on	Y	Y
[deg] Pointing Dec	32.343652	32.35151133815639	CCD I3 on	Y	Y
[deg] Pointing Roll	347.008587	347.2004274617282	CCD S0 on	N	N
[mm] SIM focus pos	-0.782348	-0.7809083437167272	CCD S1 on	N	N
[mm] SIM defocus	0	0.001439871863259334	CCD S2 on	O1	Y
[mm] SIM translation stage pos	-233.592463	-233.5874344608287	CCD S3 on	O2	Y
[mm] SIM translation stage offset	0	-0.005018542100998502	CCD S4 on	N	N
[s] Observation start time (MET)	663450835.184000	663449618.57011	CCD S5 on	N	N
Observation start date	2019-01-09T19:52:46	2019-01-09T19:33:38	Number of optional ACIS chips dropped	0	0
[s] Observation end time (MET)	663455835.184000	663456774.09554	On-chip summing requested	N	N
Observation end date	2019-01-09T21:16:06	2019-01-09T21:32:54	Subarray requested	NONE	NONE
Read mode	TIMED	TIMED	Alternating exposures requested	N	N
			[s] Primary exposure time	0.000000	3.2

2.3 Aspect



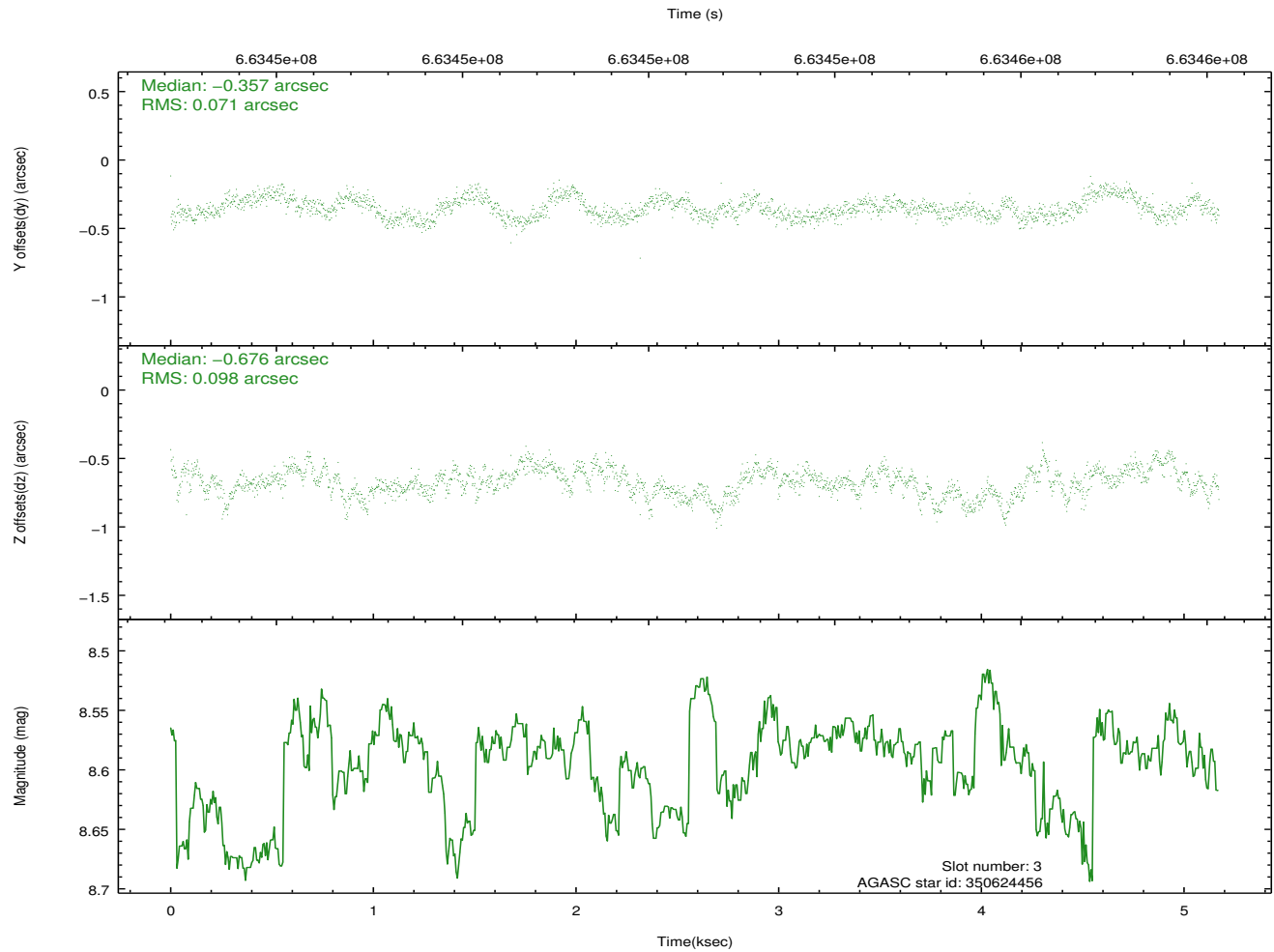
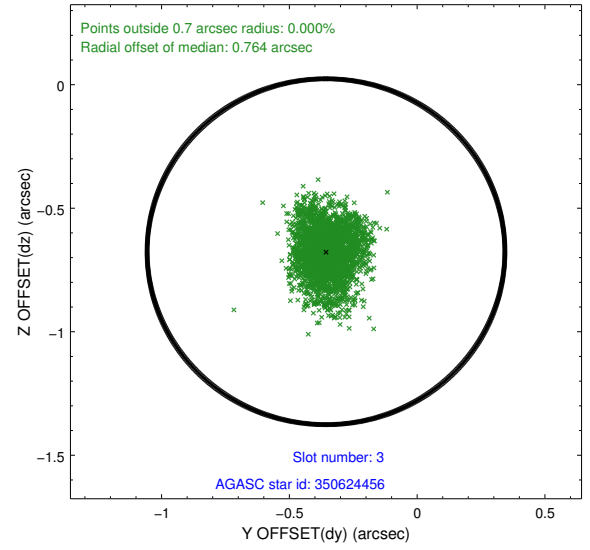
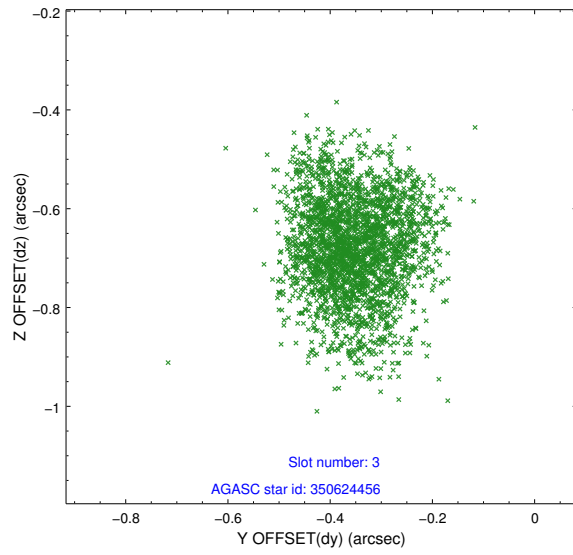


Slot Statistics

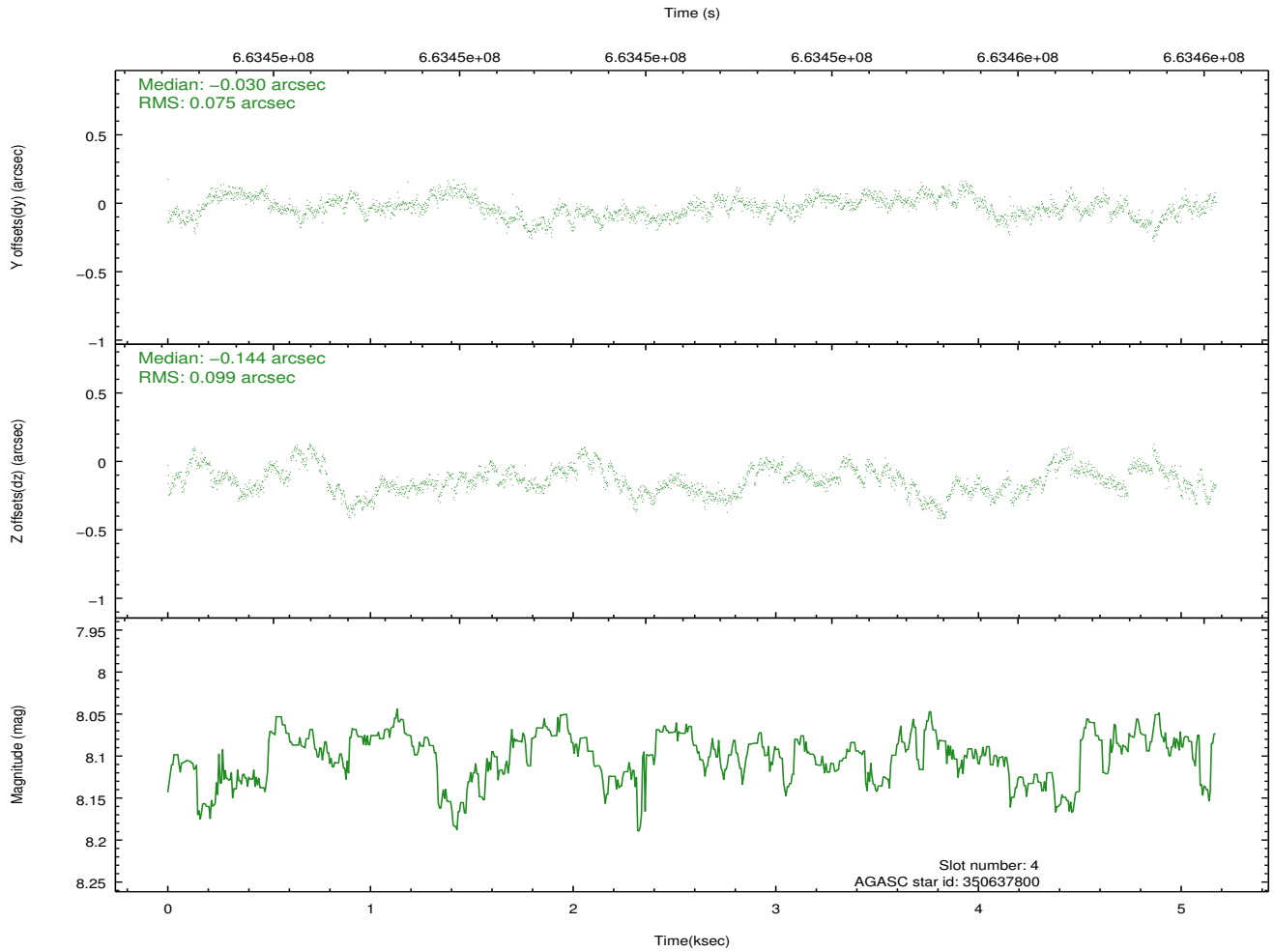
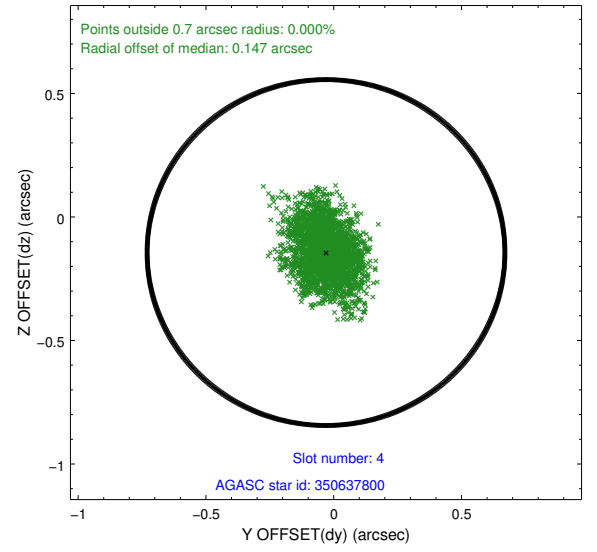
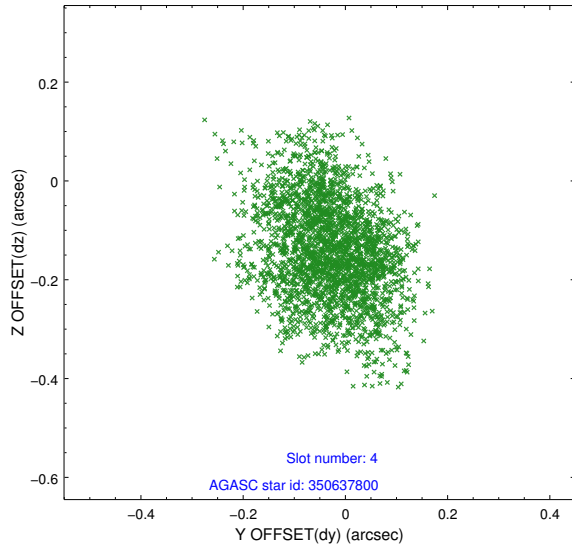
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.29	1262	1.000	0.089	-0.078	0.020	0.039	0.000000	0.000000	924.50	-843
1	FID		ACIS-I-5	7.28	1262	1.000	-0.531	-0.007	0.010	0.022	0.000000	0.000000	-1823.78	1053
2	FID		ACIS-I-6	7.30	1262	1.000	0.349	0.157	0.017	0.029	0.000000	0.000000	388.76	1699
3	GUIDE	used	350624456	8.59	2522	1.000	-0.357	-0.676	0.127	0.209	302.527176	32.732167	941.10	1655
4	GUIDE	used	350637800	8.10	2523	1.000	-0.030	-0.144	0.134	0.213	302.469226	32.136377	1260.14	-471
5	GUIDE	used	350498152	9.02	2518	1.000	0.305	0.642	0.237	0.366	301.230253	31.988700	-2304.93	-1830
6	GUIDE	used	350492416	8.83	2522	1.000	0.391	0.422	0.119	0.187	301.365370	31.971702	-1891.50	-1801
7	GUIDE	used	350631648	8.51	2522	1.000	-0.294	-0.237	0.145	0.295	301.531392	33.132002	-2314.54	2384

2.4 Star Slots

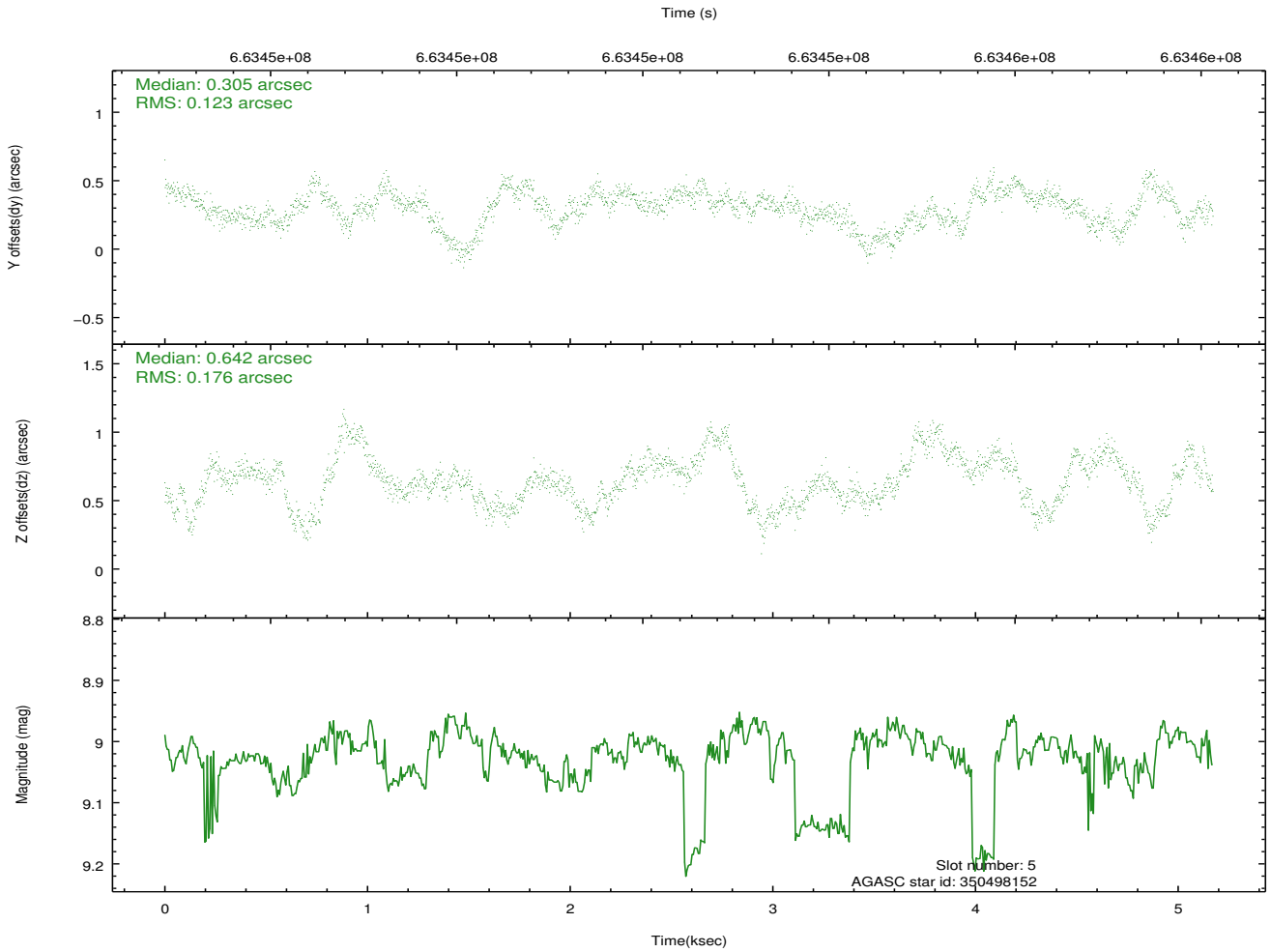
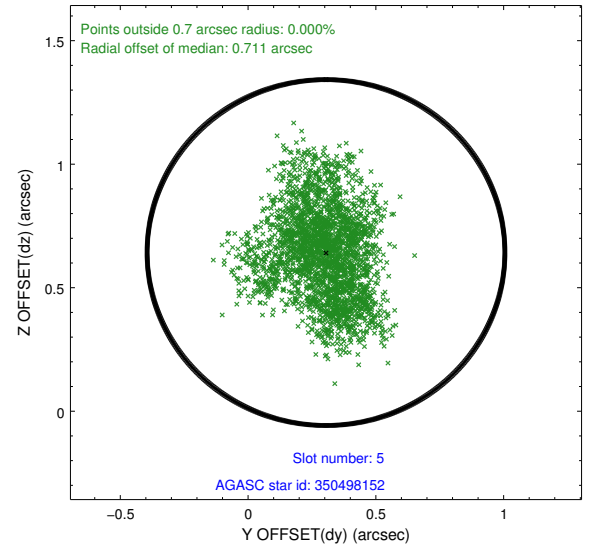
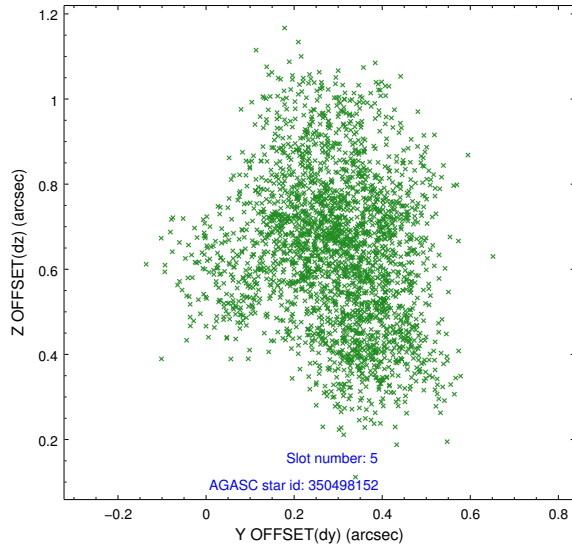
2.4.1 Slot 3



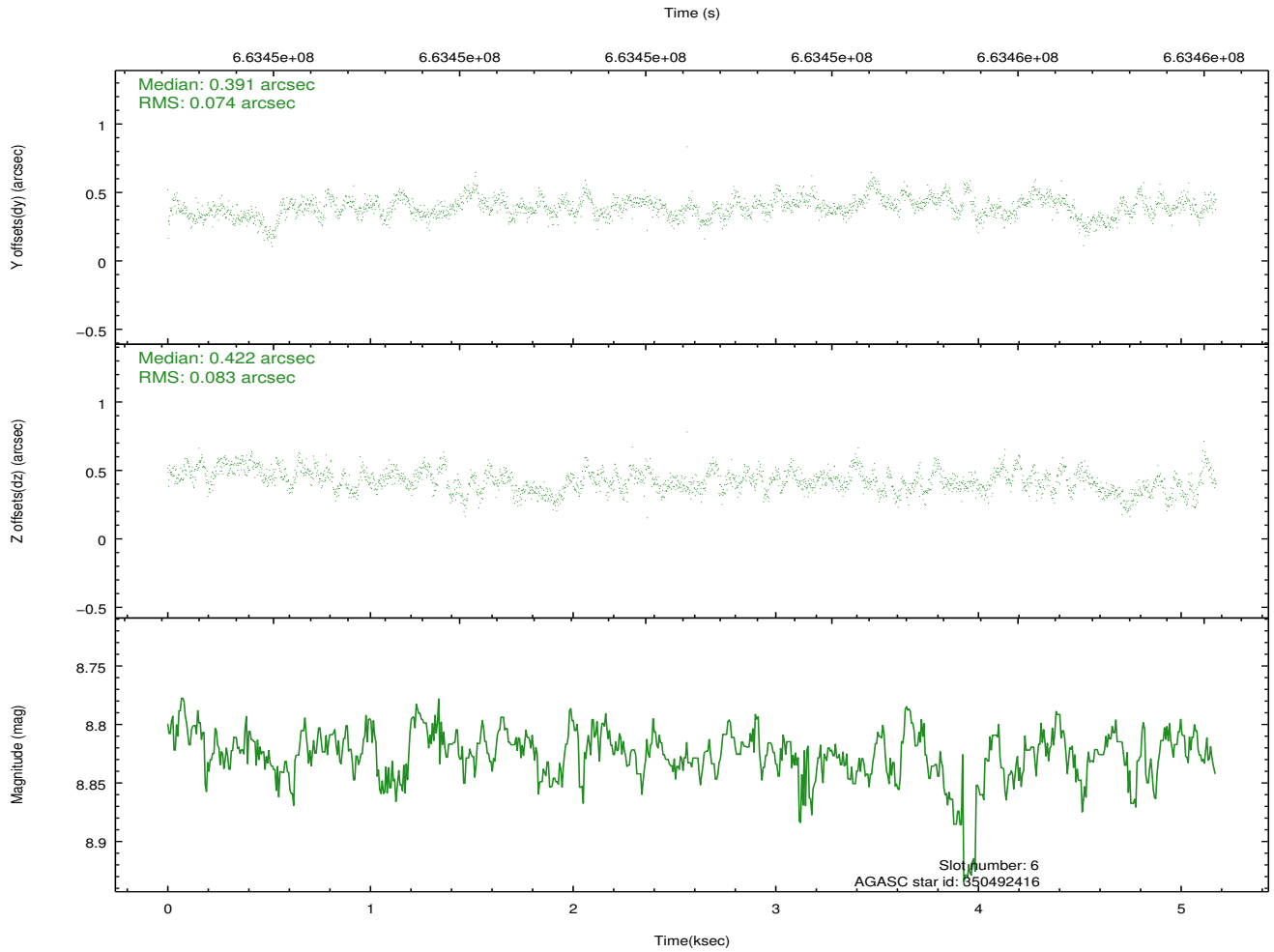
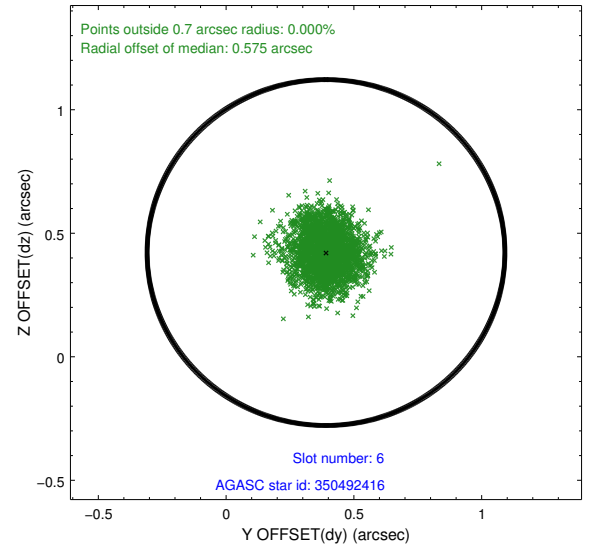
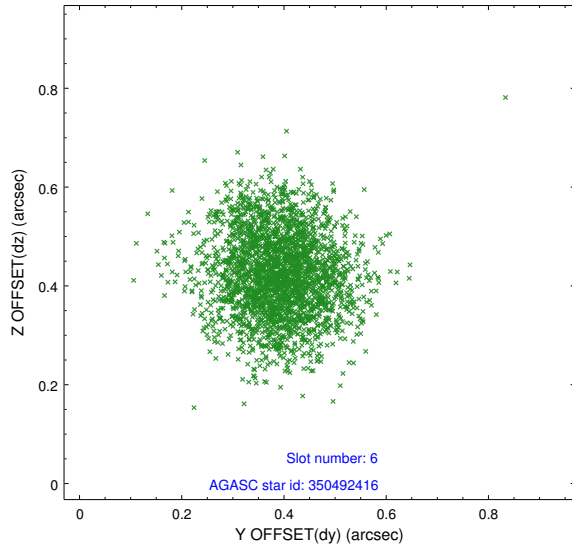
2.4.2 Slot 4



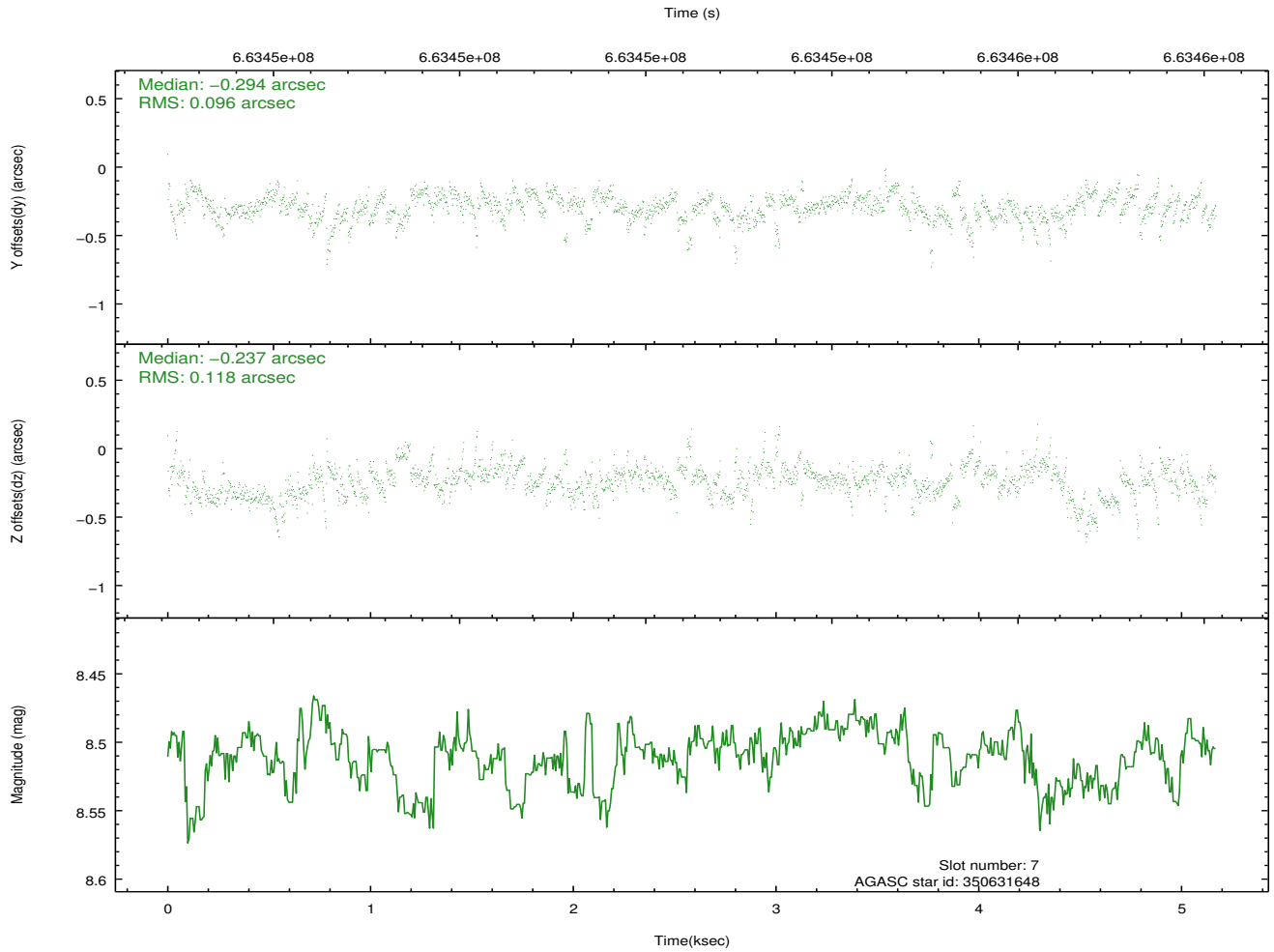
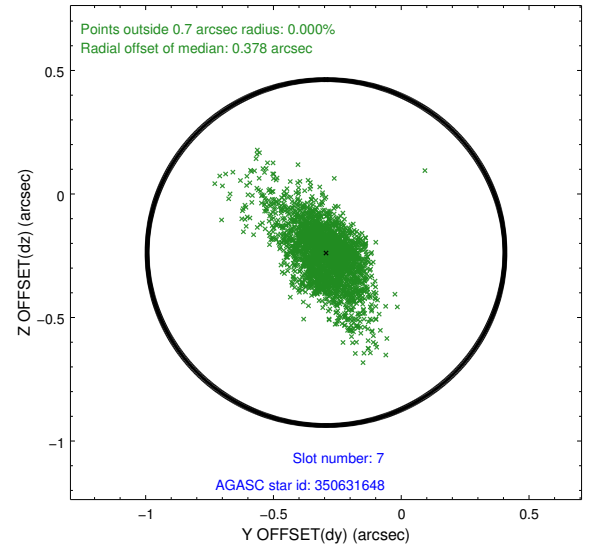
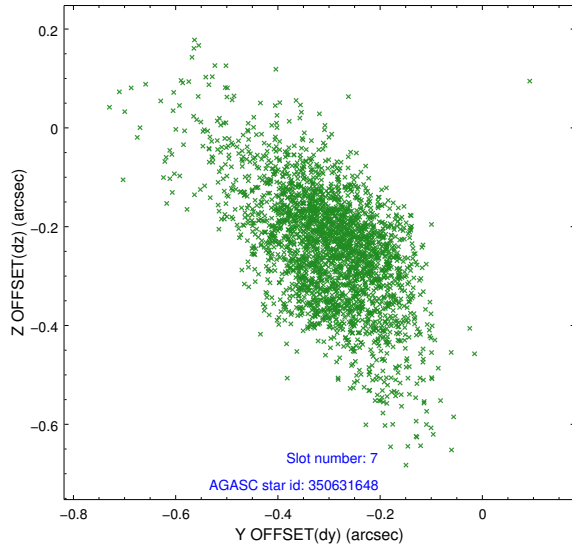
2.4.3 Slot 5



2.4.4 Slot 6

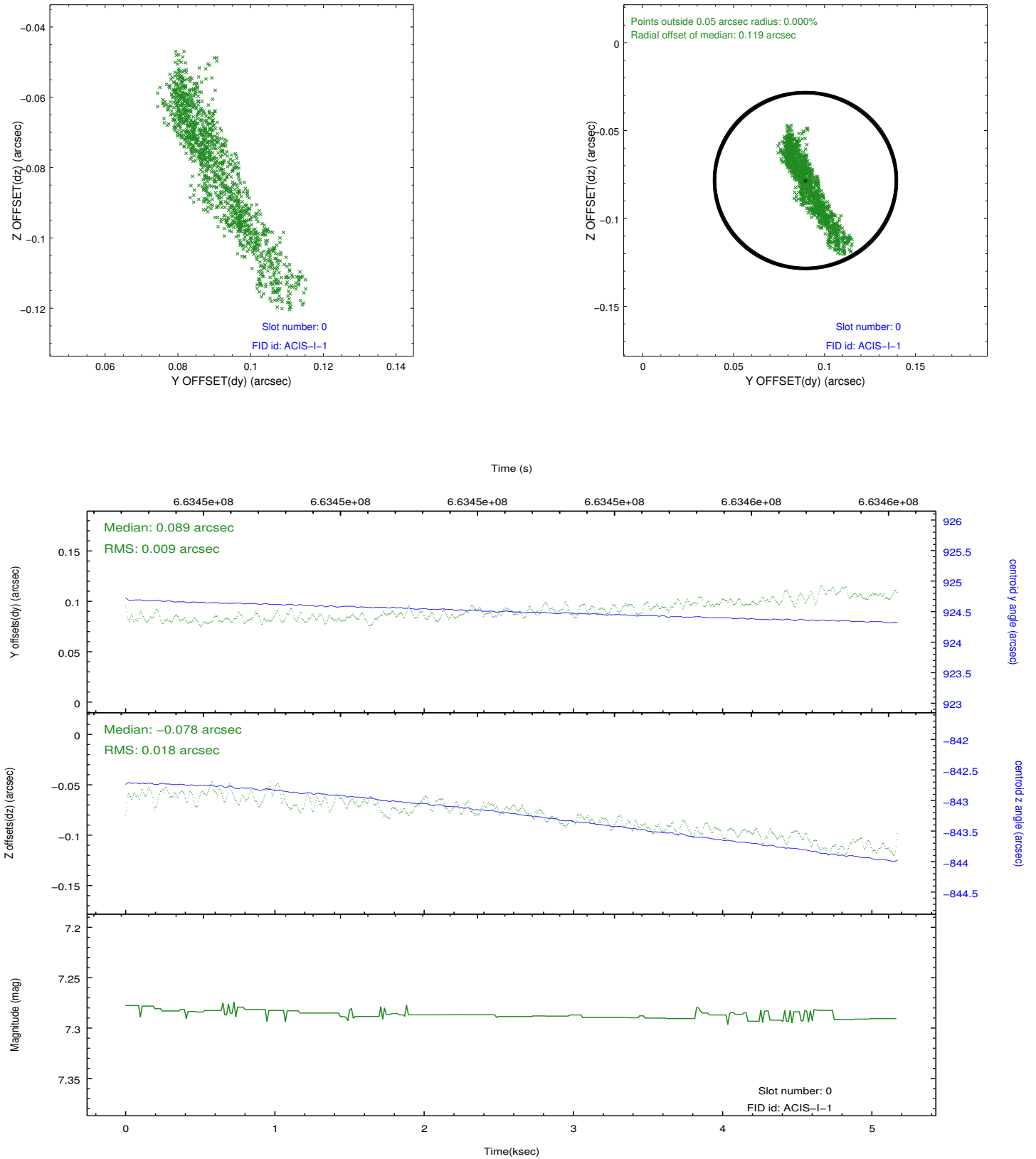


2.4.5 Slot 7

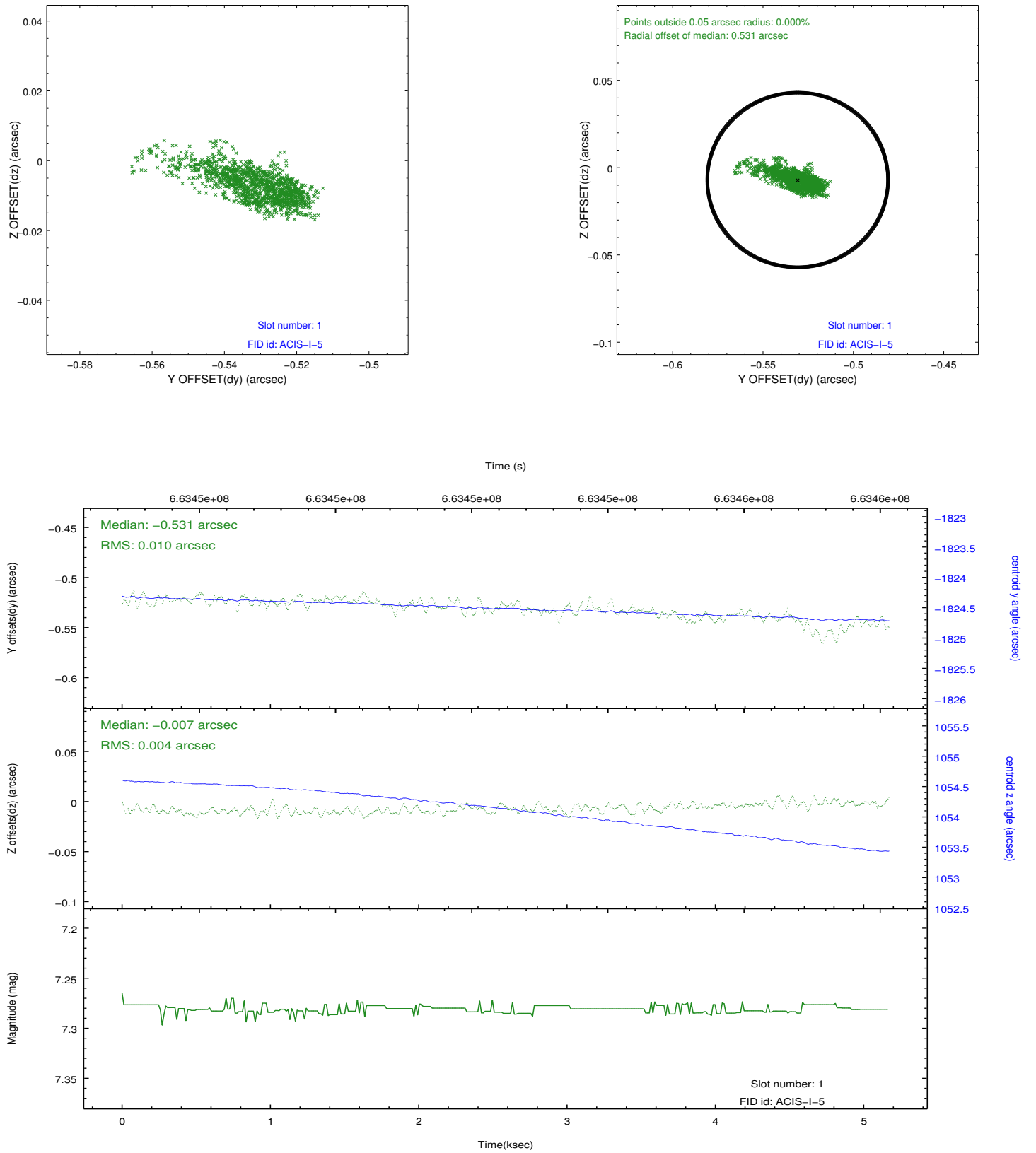


2.5 FID Slots

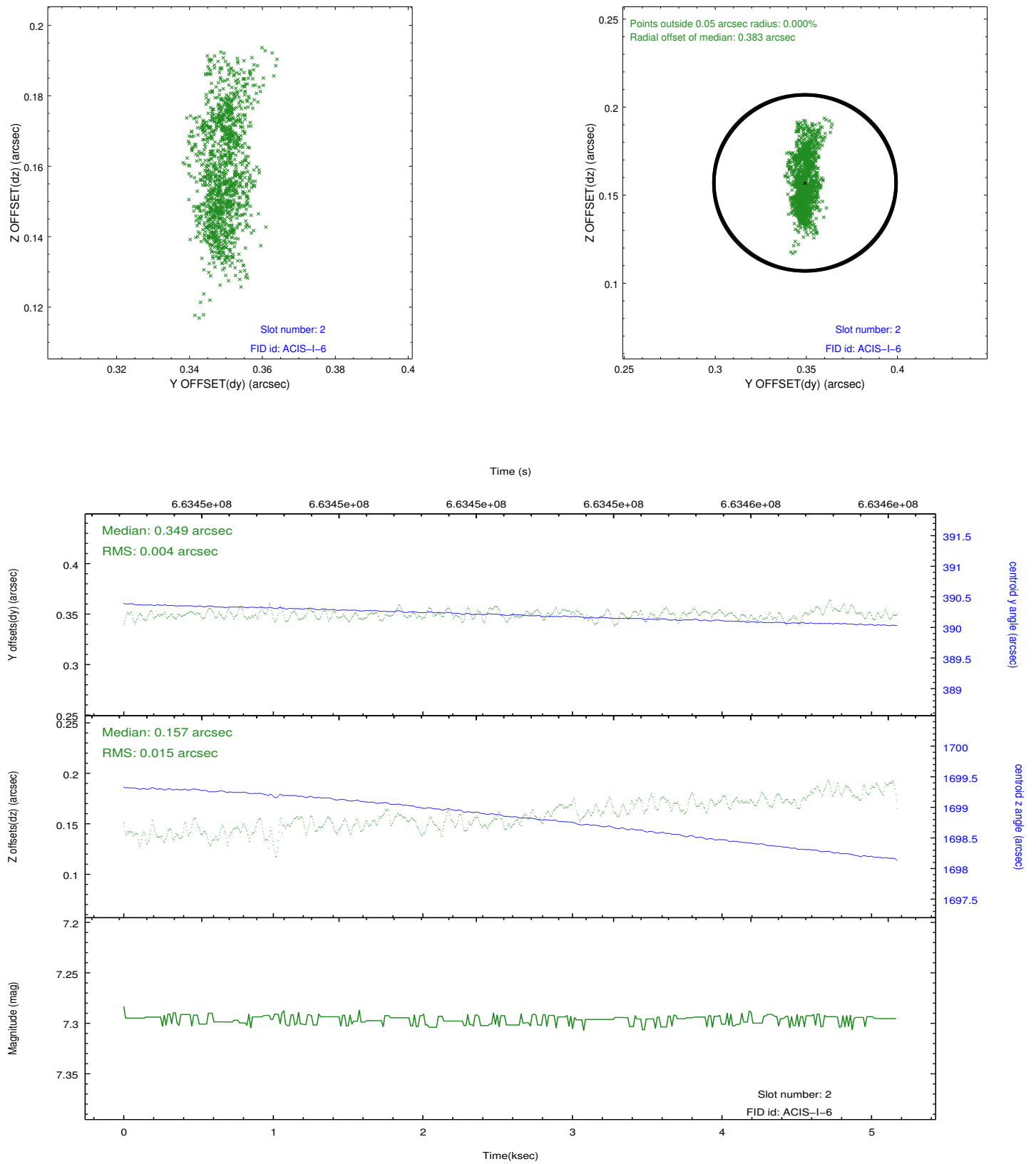
2.5.1 Slot 0



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)	2019.01.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	4.9466519153118

A.2 Comments

The focal plane temperature during the entire 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.