

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 5417 - L2 Version 4  
Chandra X-Ray Center

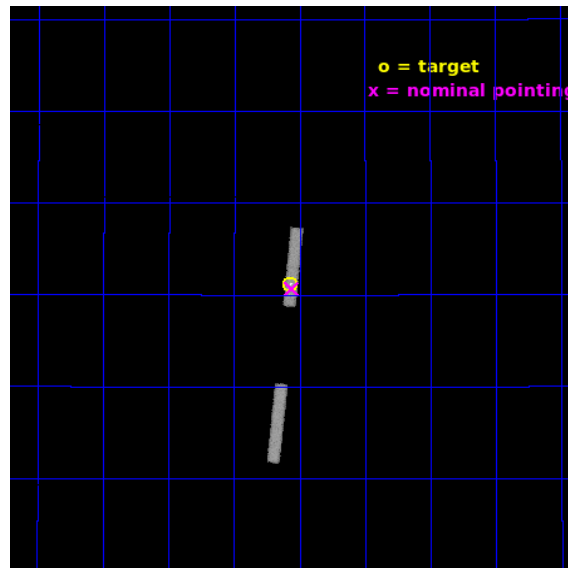
L2 Processing Date : Oct 5 2020

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# 1 Front

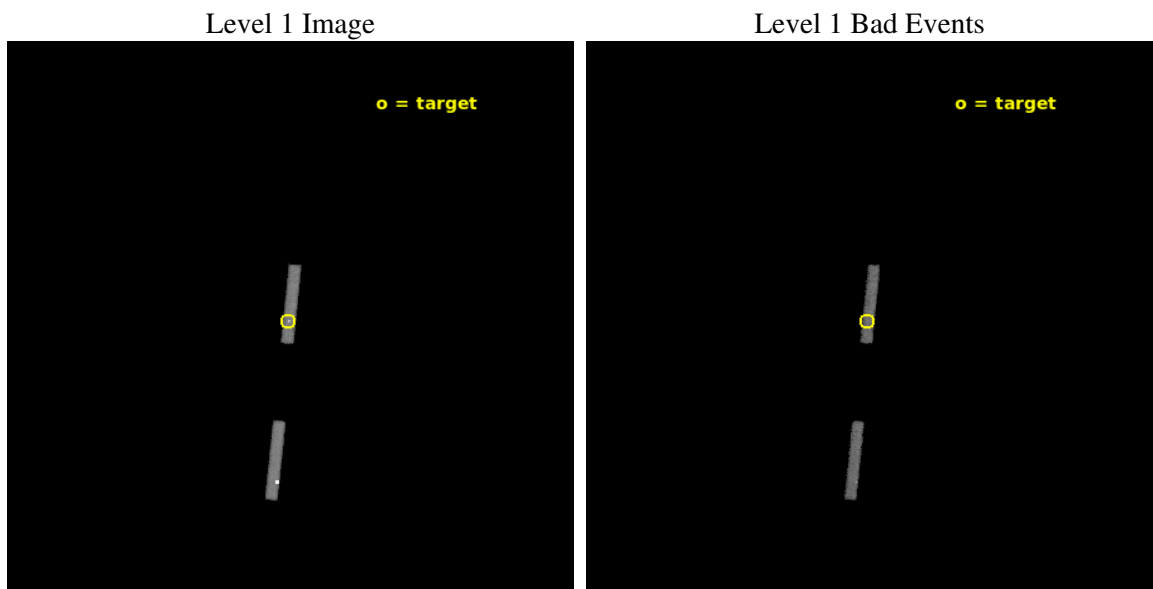
seq_num	200350	Sequence number
obs_id	5417	Observation id
title	Untangling the Accretion Spots on Classical T Tauri Stars	Proposal
observer	Dr. Andisheh Mahdavi	Principal investigator
object	GK Tau	Source name
dtcycle	0	&#160
cycle	P	events from which exps? Prim/Second/Both
ra_targ	68.39375	Observer's specified target RA [deg]
dec_targ	24.3525	Observer's specified target Dec [deg]
ra_nom	68.38950930717	Nominal RA [deg]
dec_nom	24.344397893281	Nominal Dec [deg]
roll_nom	275.55056945423	Nominal Roll [deg]
revision	4	Processing version of data
ontime	15227.0	Sum of GTIs [s]
livetime	14071.972497412	Livetime [s]
ontime5	15227.0	Sum of GTIs [s]
ontime7	15227.0	Sum of GTIs [s]
l2events	19464	Number of level 2 events



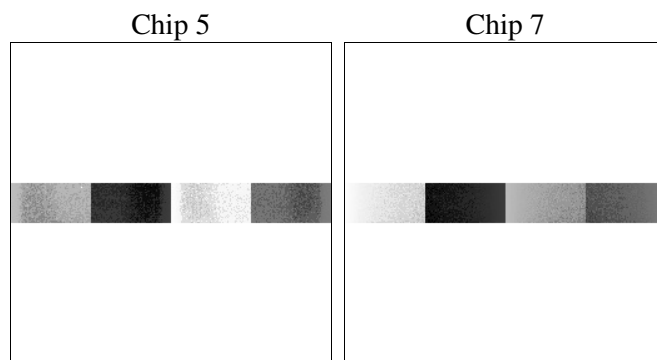
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	15200.000000	[s] Scheduled observation exposure time
ascdsver	10.9.1	Processing system revision	ontime	15227.0	Sum of GTIs [s]
caldsver	4.9.2	&#160	ontime5	15227.0	Sum of GTIs [s]
date	2020-10-06T03:09:21	Date and time of file creation	ontime7	15227.0	Sum of GTIs [s]
revision	4	Processing version of data	l1events	69717	Number of level 1 events

### 2.1.4 Events

	<b>ccd 5</b>	<b>ccd 7</b>
level 1 events	48284	21433
rejected events	11259	10992
rejected %	23%	51%

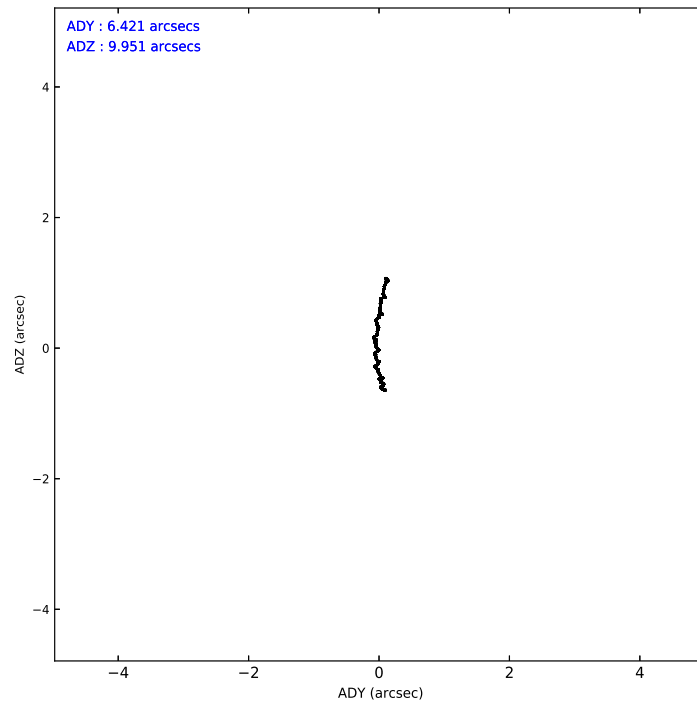
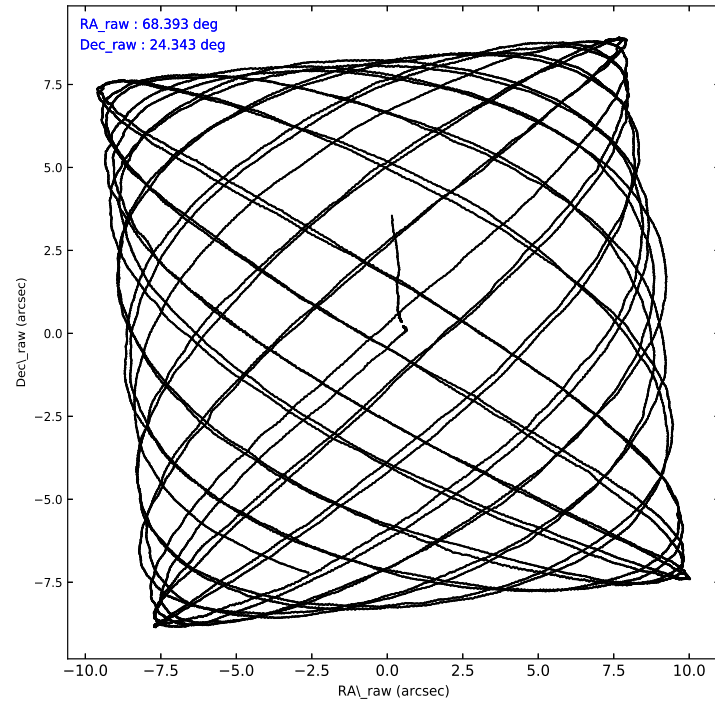
	<b>ccd 5</b>	<b>ccd 7</b>
grade 0 events	15886	1498
	32%	6%
grade 1 events	89	29
	0%	0%
grade 2 events	15555	2190
	32%	10%
grade 3 events	848	1288
	1%	6%
grade 4 events	876	1215
	1%	5%
grade 5 events	1677	1803
	3%	8%
grade 6 events	4779	4495
	9%	20%
grade 7 events	8574	8915
	17%	41%

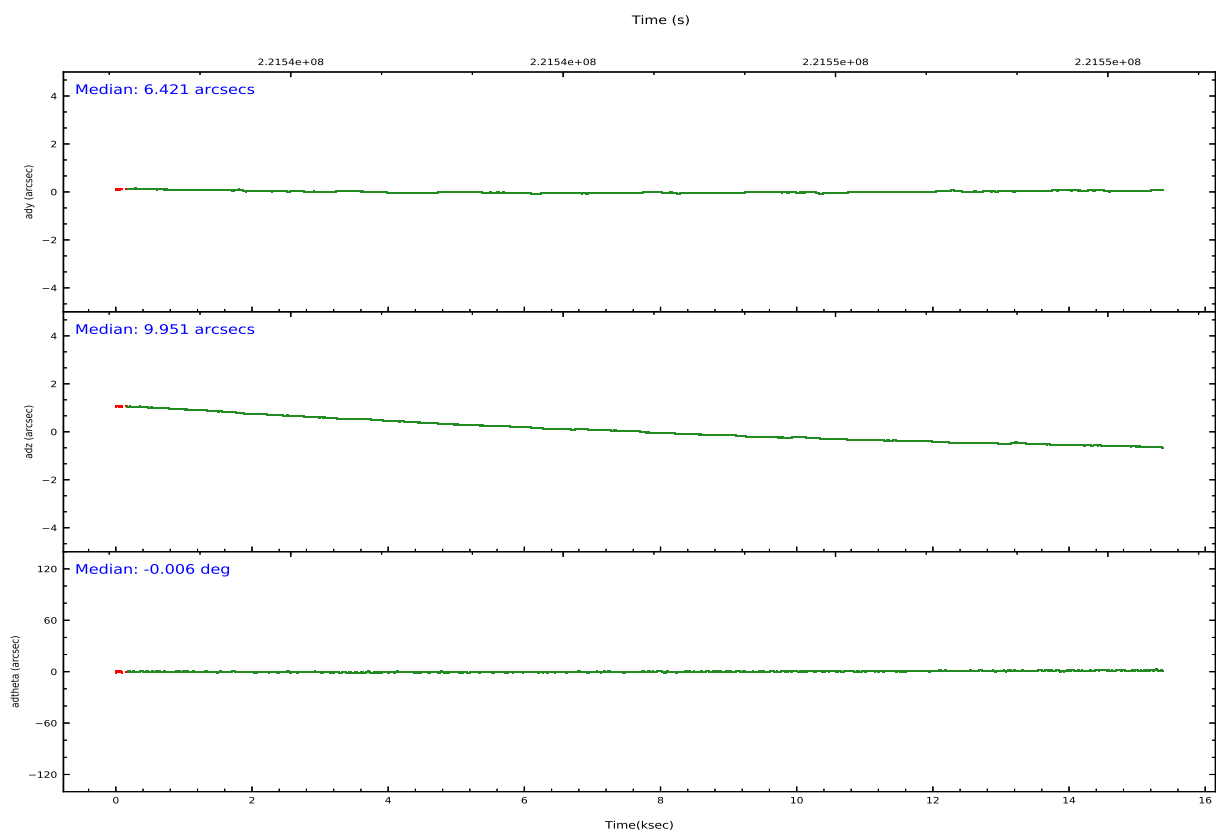
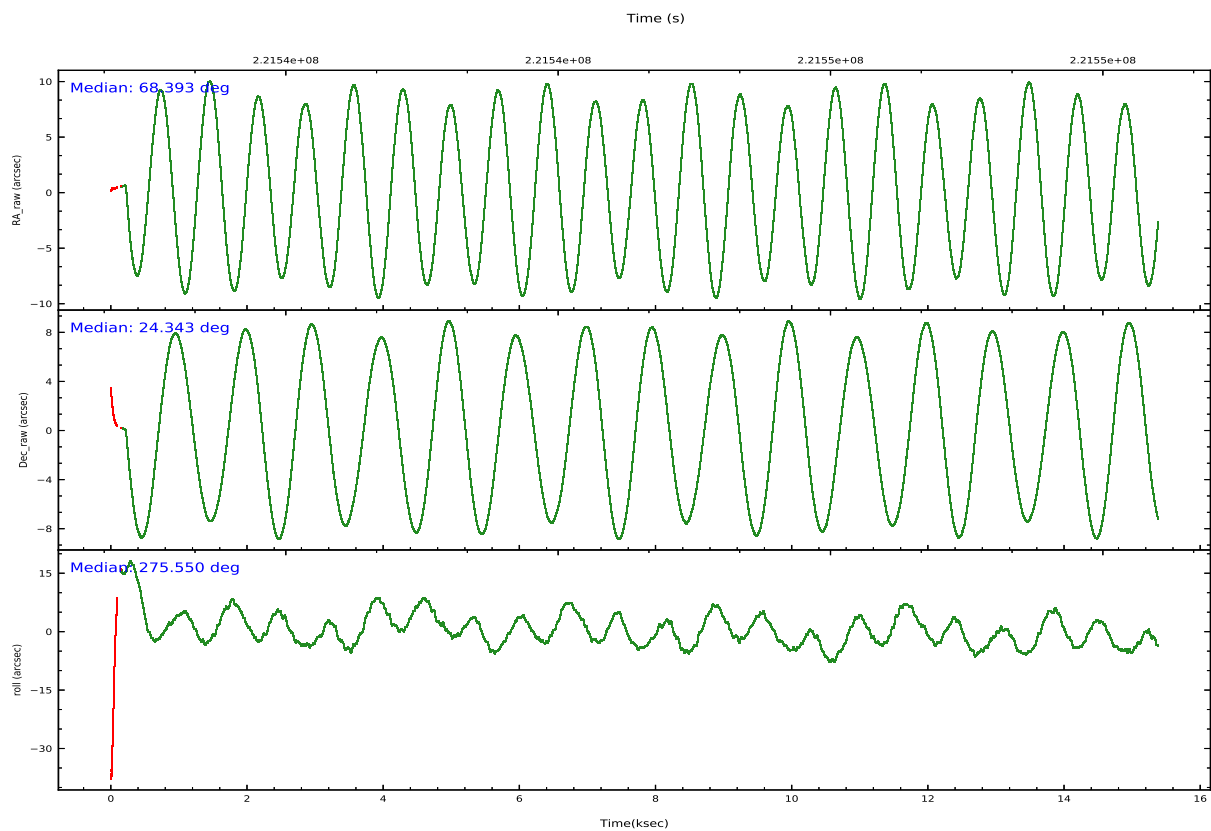


## 2.2 Compared Parameters

Parameter	Planned	Actual	Parameter	Planned	Actual
Instrument	ACIS	ACIS	Obspar version number	8	8
Detector	ACIS-57	ACIS-57	Obspar file type	PREDICTED	ACTUAL
Grating	NONE	NONE	Obspar update status	NONE	UPDATED
Data mode	FAINT	FAINT	Number of optional ACIS chips dropped	0	0
Observation mode	POINTING	POINTING	On-chip summing requested	N	N
[deg] Pointing RA	68.375199	68.38950930717	Subarray requested	CUSTOM	1/8
[deg] Pointing Dec	24.364800	24.344397893281	Subarray start row	449	449
[deg] Pointing Roll	275.393953	275.55056945423	Subarray row count	128	128
[mm] SIM focus pos	-0.684267	-0.6828225247311905	Alternating exposures requested	N	N
[mm] SIM defocus	0	0.001444936568705701	[s] Primary exposure time	0.000000	0.5
[mm] SIM translation stage pos	-190.132523	-190.1400660498719			
[mm] SIM translation stage offset	0	0.00754346686406393			
[s] Observation start time (MET)	221537612.184000	221536840.95209			
Observation start date	2005-01-08T02:12:28	2005-01-08T02:00:40			
[s] Observation end time (MET)	221552812.184000	221553413.66534			
Observation end date	2005-01-08T06:25:48	2005-01-08T06:36:53			
Read mode	TIMED	TIMED			

## 2.3 Aspect



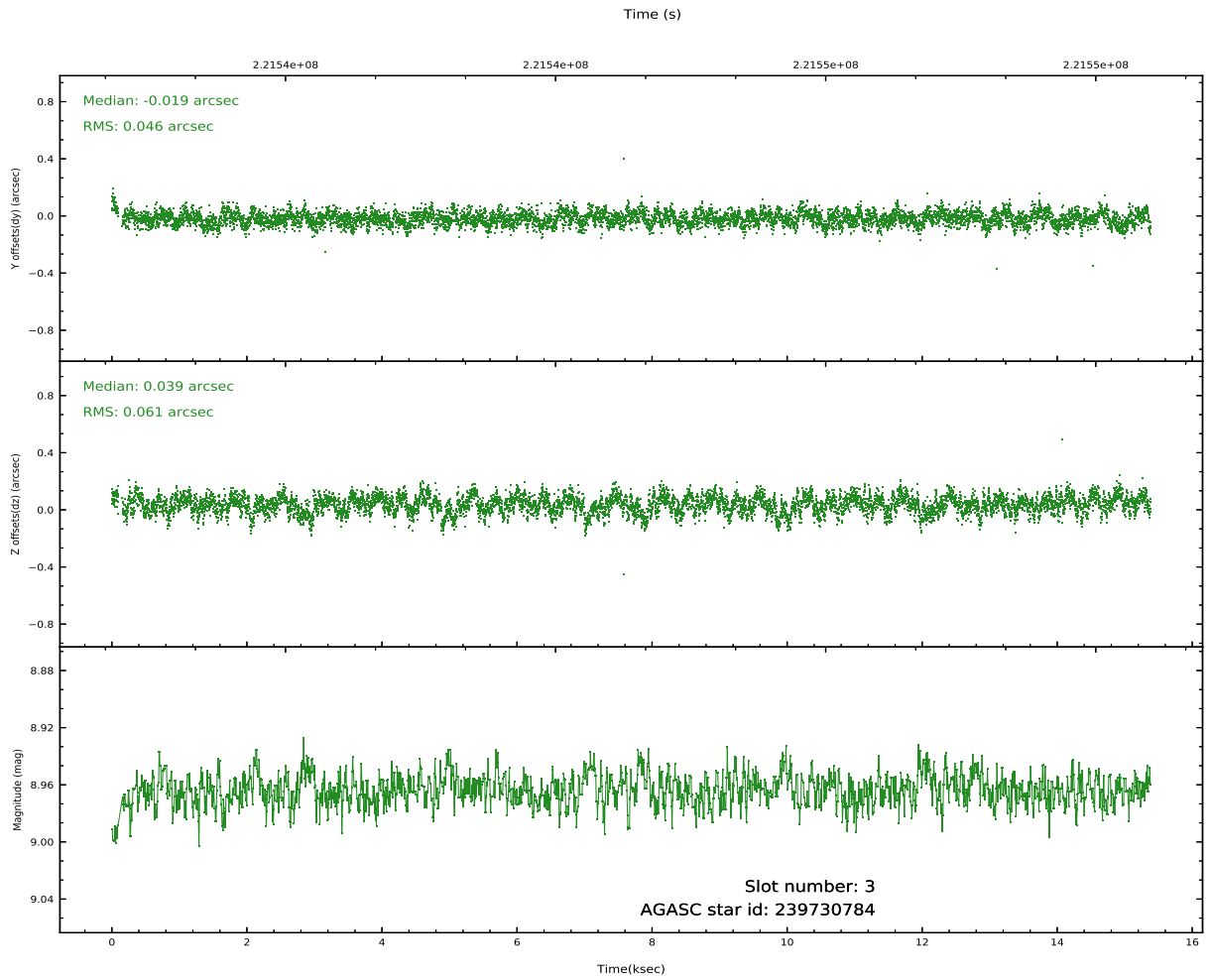
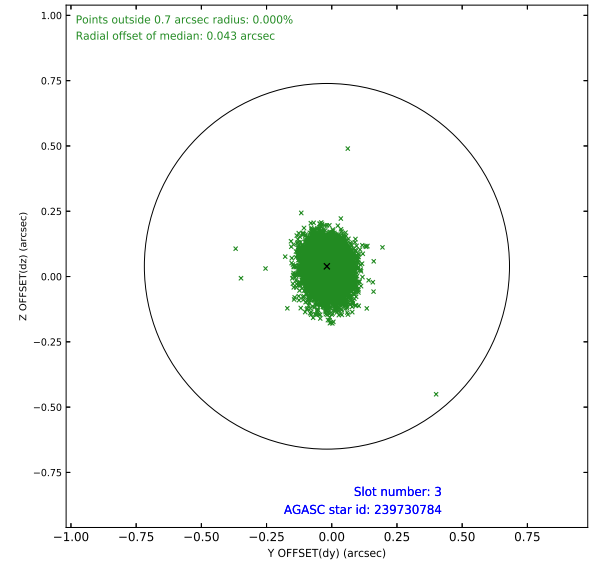
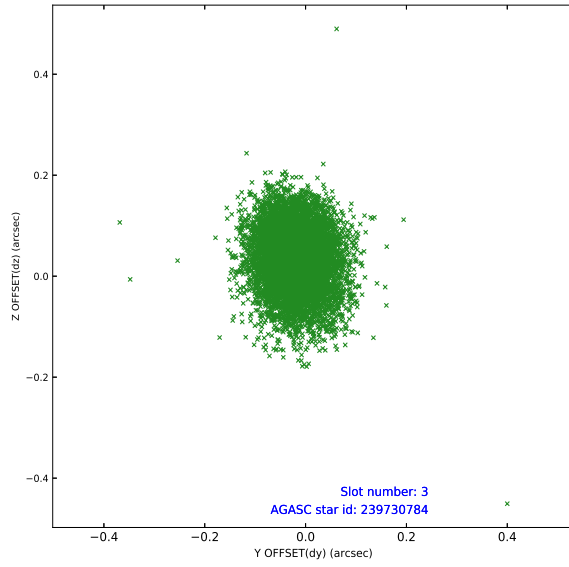


Slot Statistics

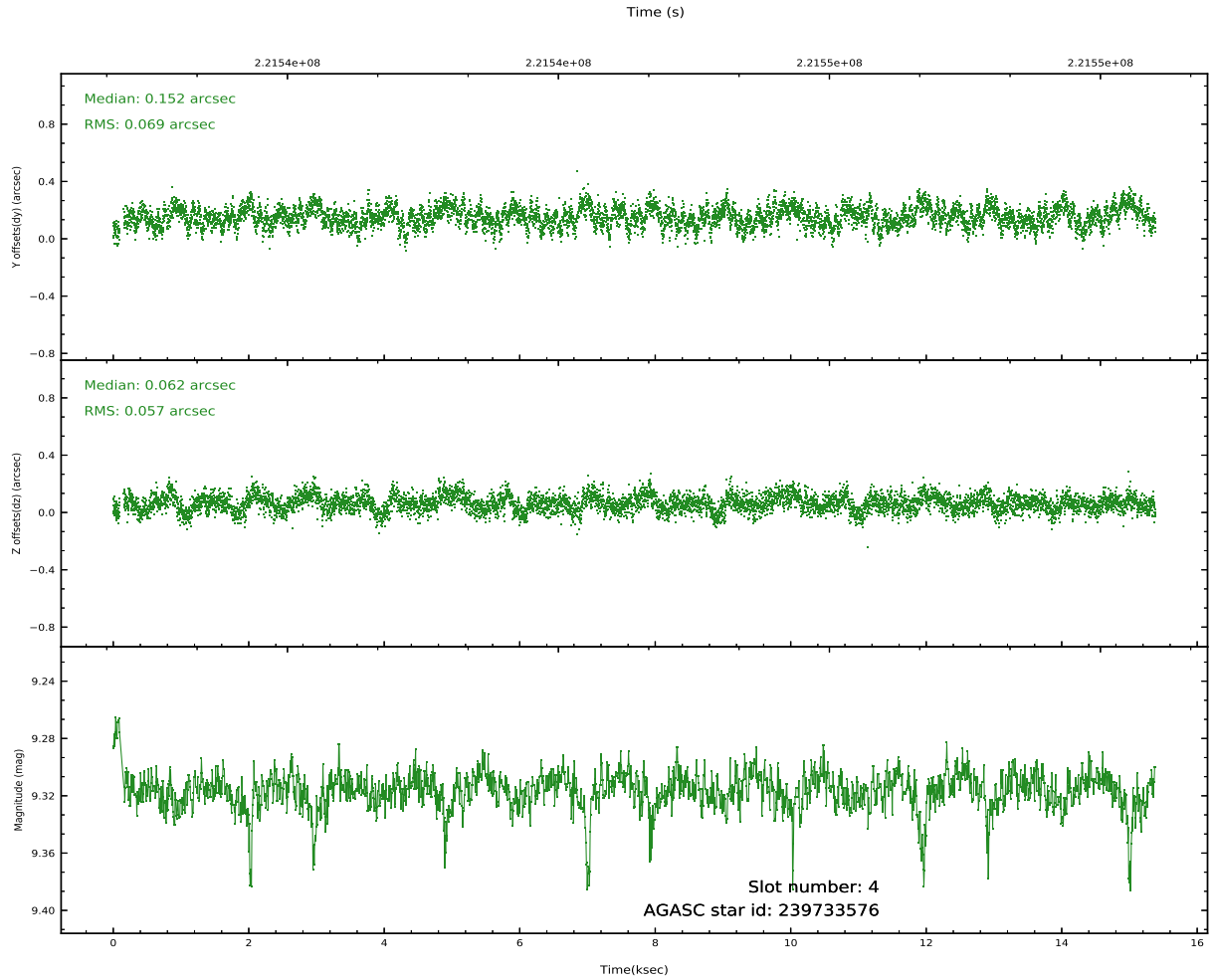
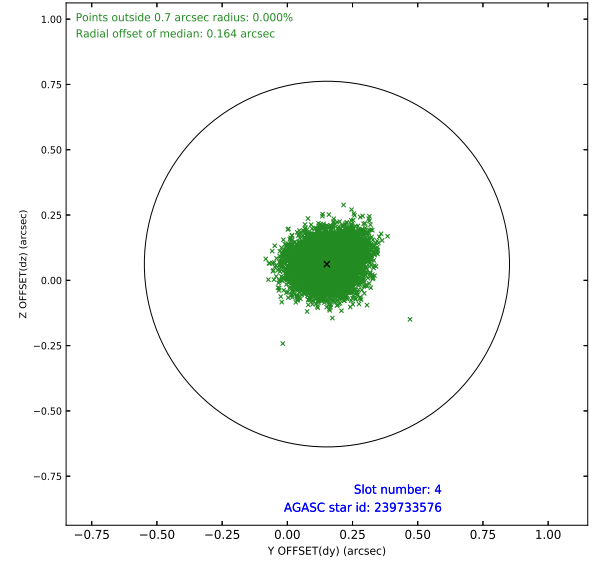
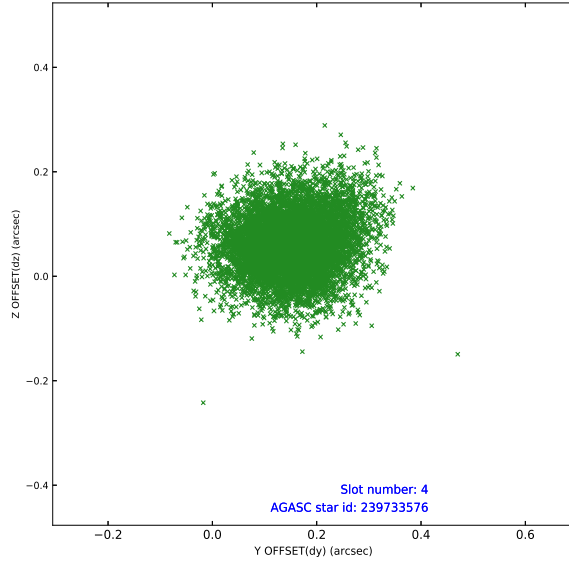
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-S-2	7.10	3737	1.000	-0.088	-0.063	0.012	0.018	0.000000	0.000000	-759.19	-1731
1	FID		ACIS-S-4	7.21	3737	1.000	0.145	0.060	0.007	0.012	0.000000	0.000000	2154.12	177
2	FID		ACIS-S-5	7.23	3736	1.000	-0.088	0.012	0.011	0.017	0.000000	0.000000	-1811.72	170
3	GUIDE	used	239730784	8.96	7471	1.000	-0.019	0.039	0.081	0.131	68.709044	24.244524	532.93	1050
4	GUIDE	used	239733576	9.32	7471	1.000	0.152	0.062	0.096	0.155	68.994910	23.821766	2134.11	1848
5	GUIDE	used	240255024	9.20	7466	1.000	-0.003	-0.125	0.090	0.146	68.465897	24.501998	-463.25	342
6	GUIDE	used	240263016	8.65	7474	1.000	-0.130	0.029	0.063	0.104	68.575597	24.979042	-2140.57	859
7	MONITOR	unused		0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

## 2.4 Star Slots

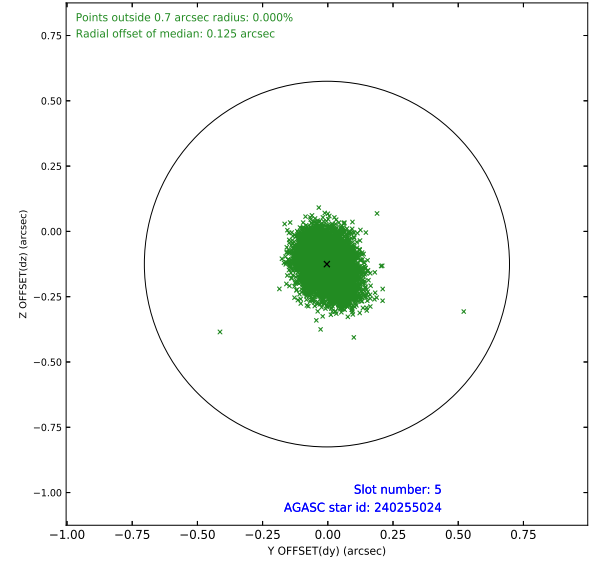
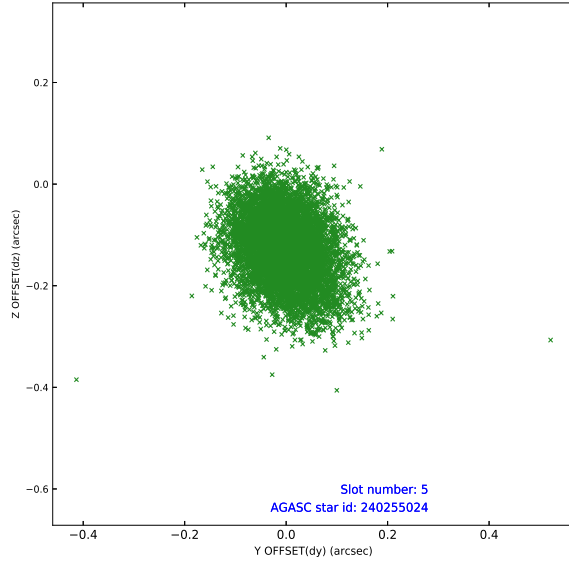
### 2.4.1 Slot 3



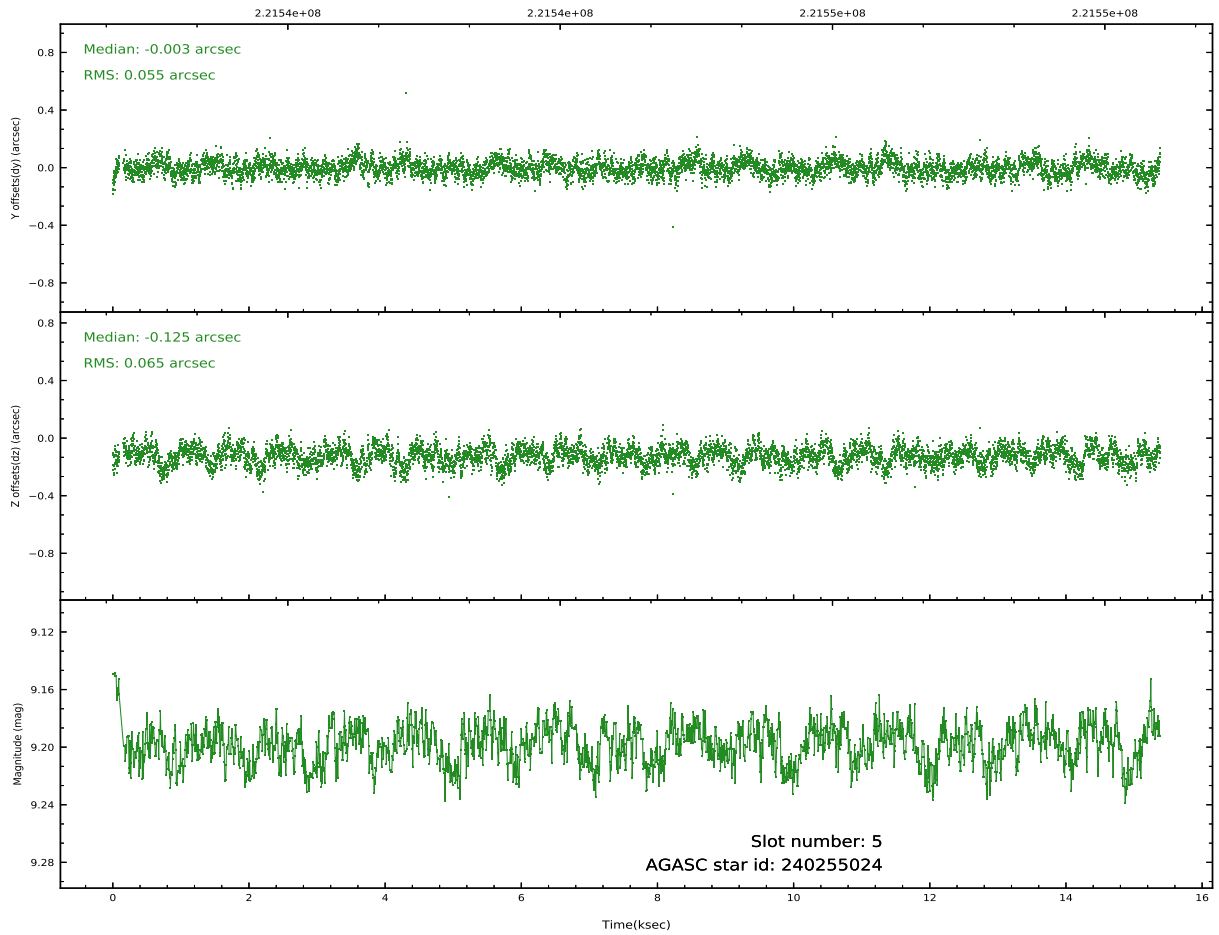
## 2.4.2 Slot 4



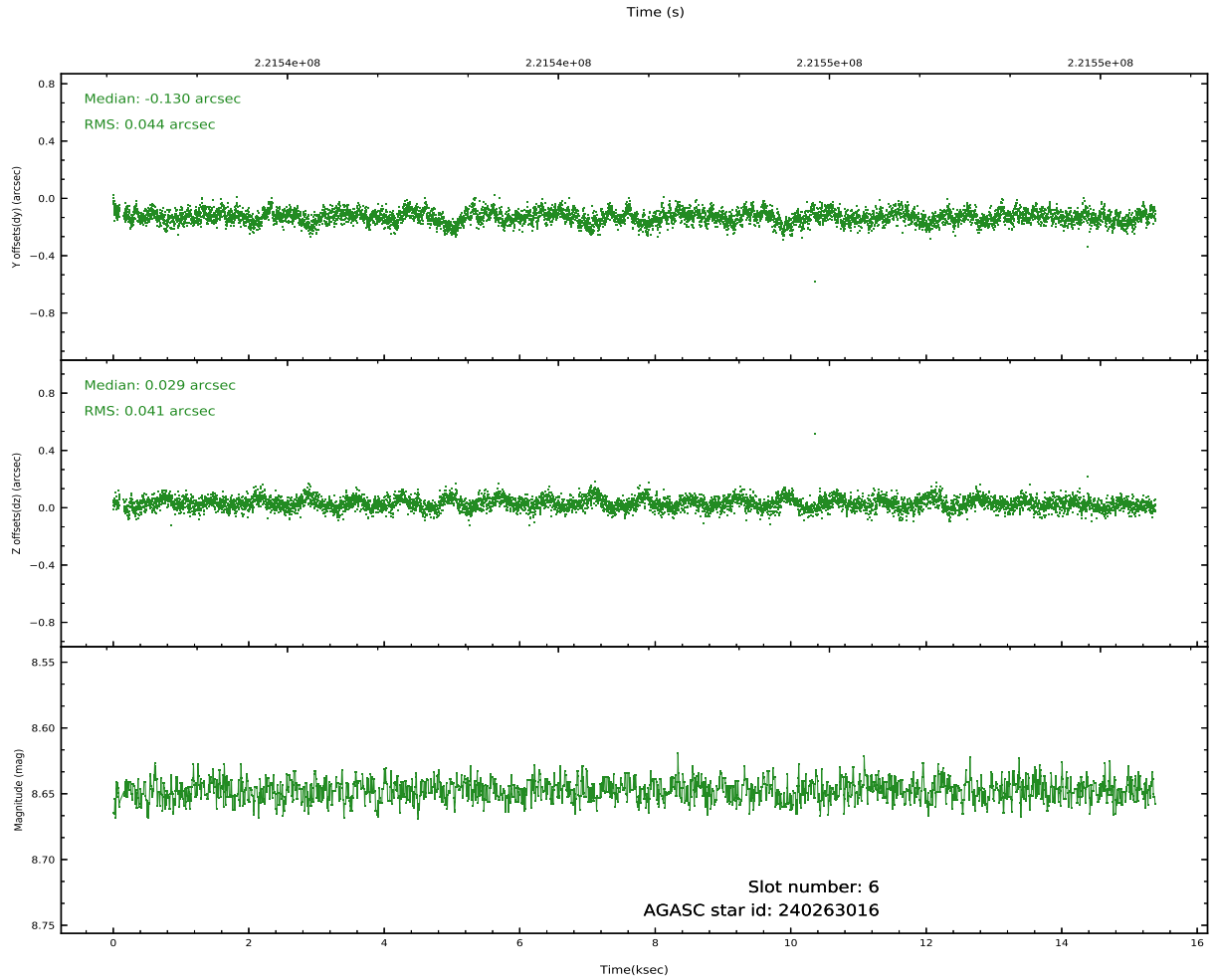
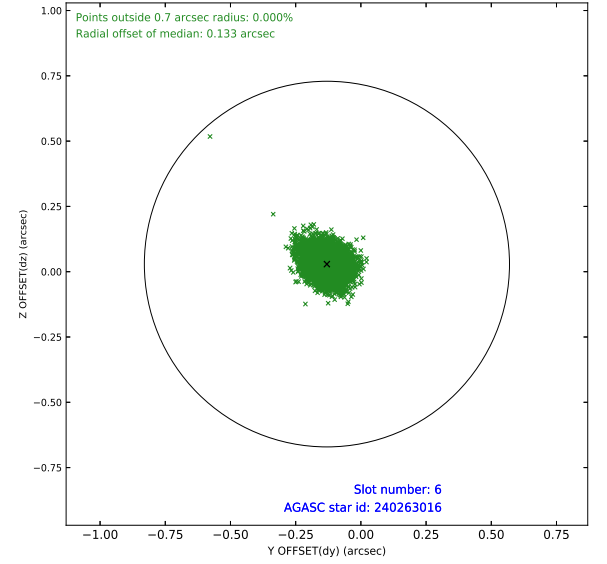
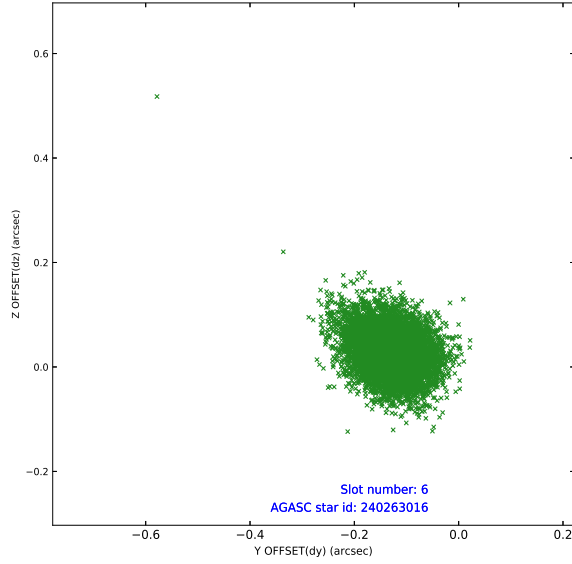
### 2.4.3 Slot 5



Time (s)



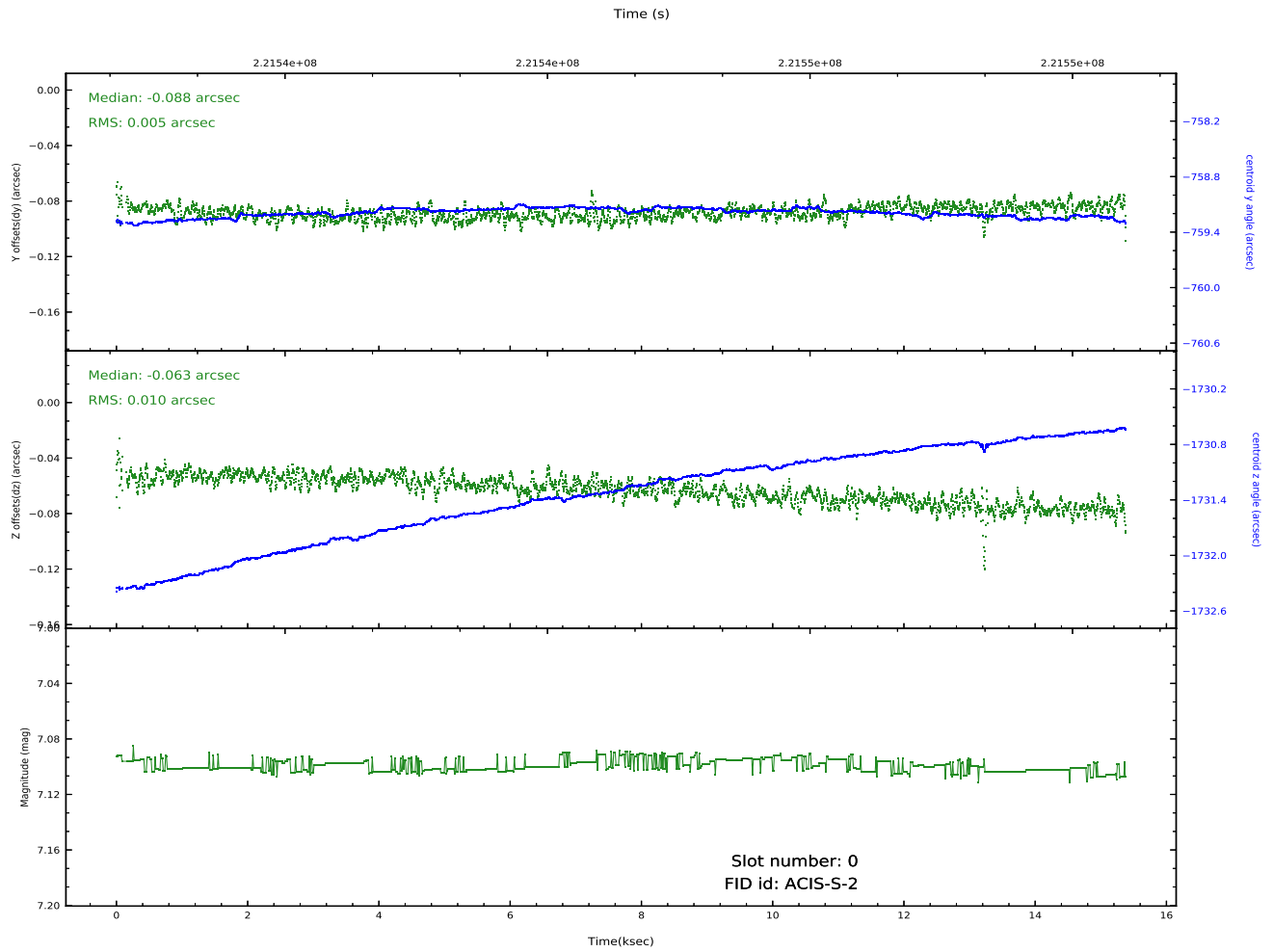
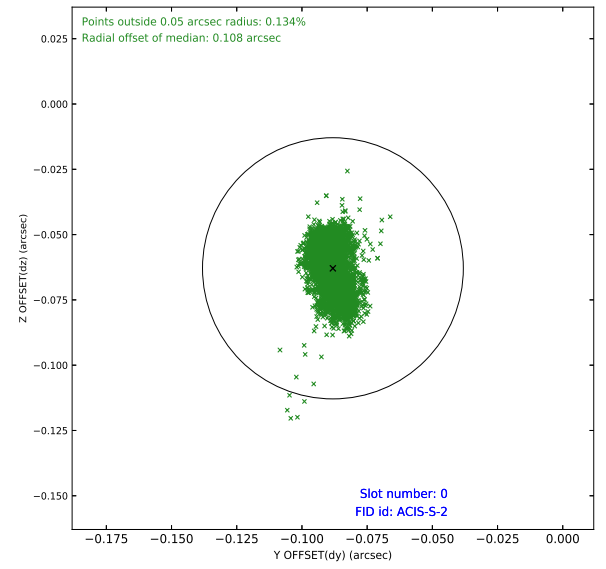
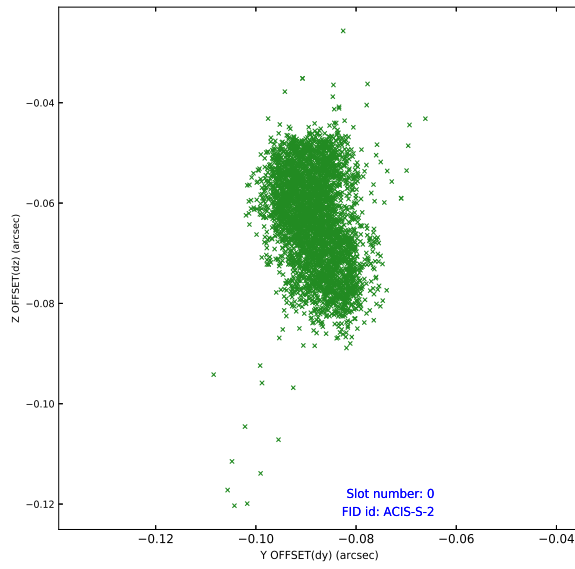
## 2.4.4 Slot 6



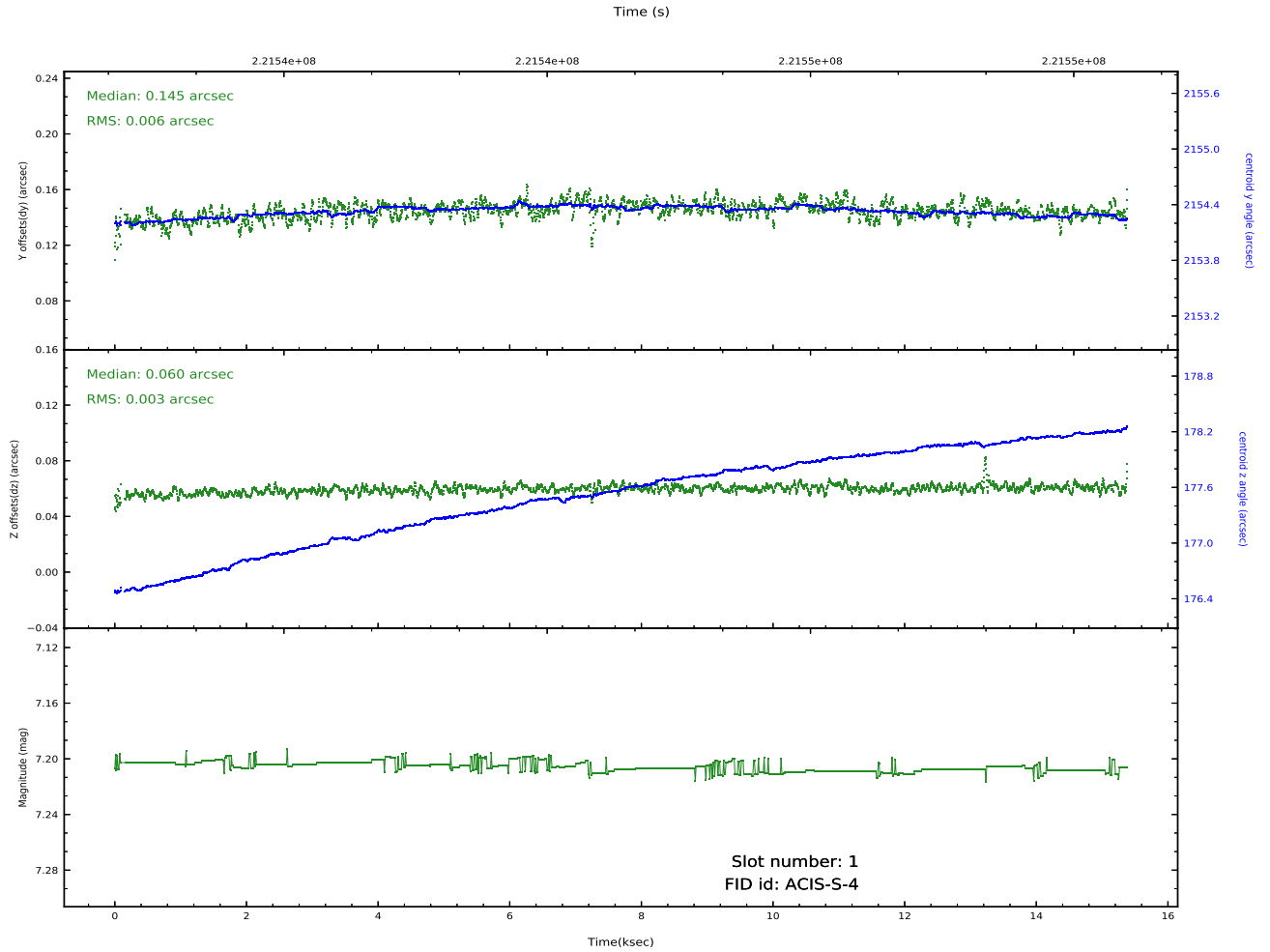
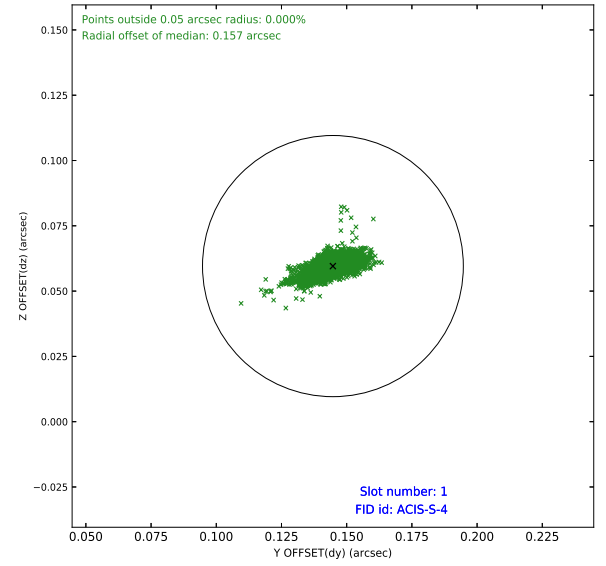
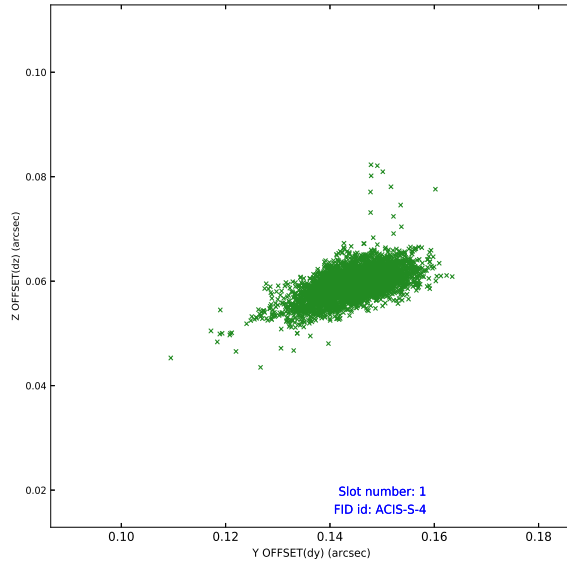


## 2.5 FID Slots

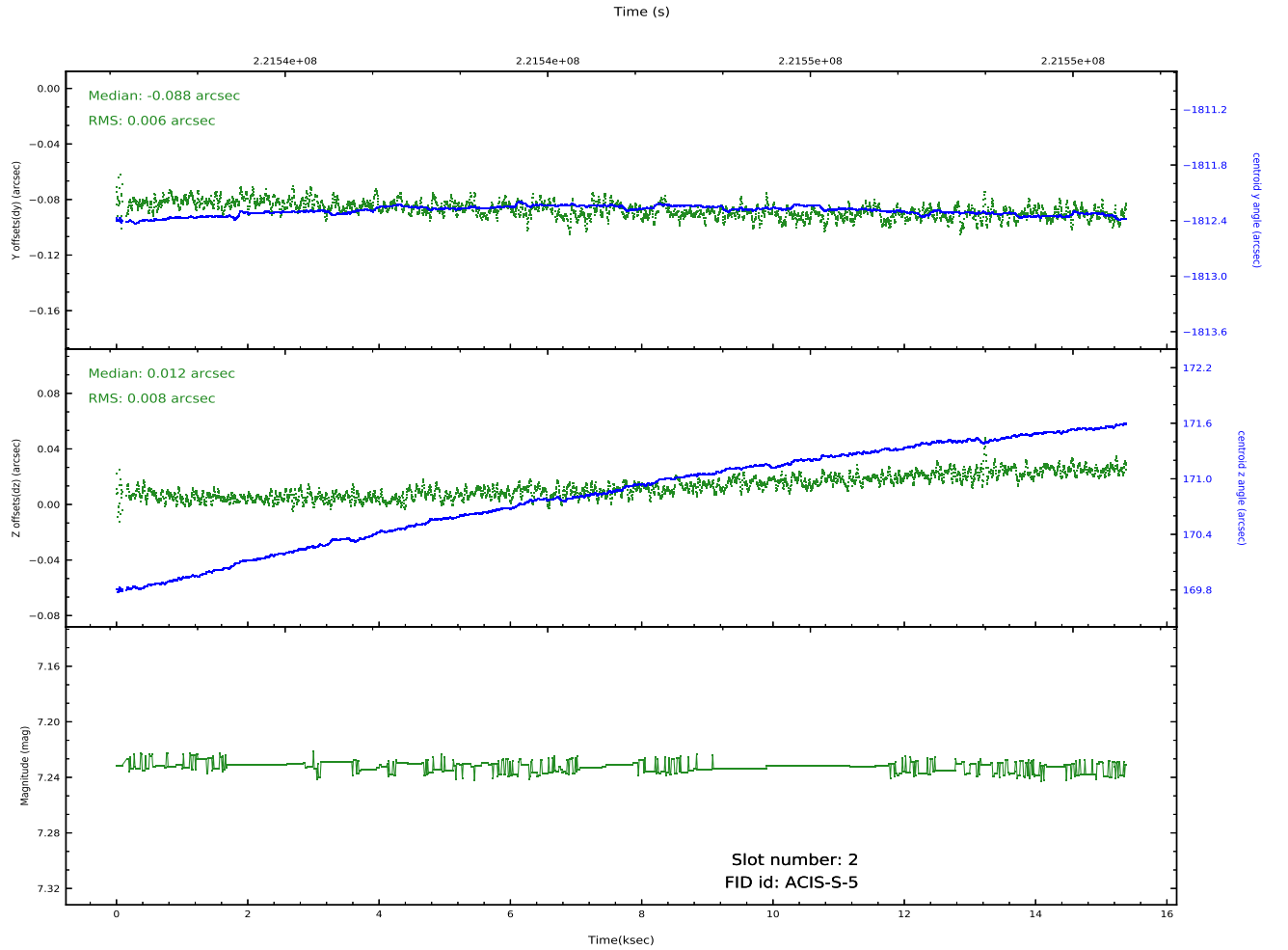
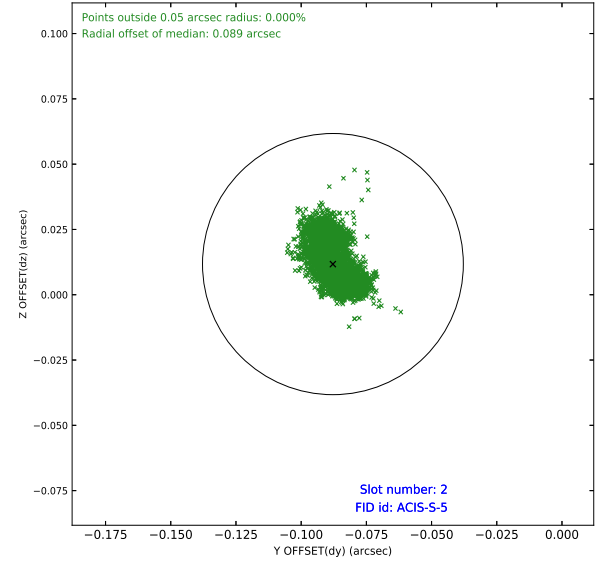
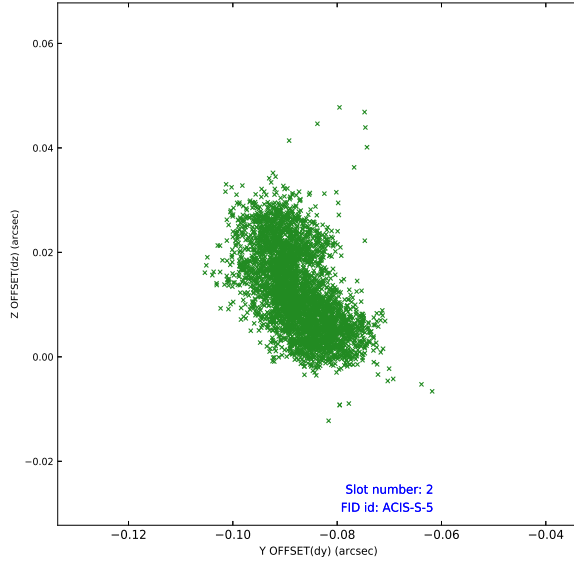
### 2.5.1 Slot 0



## 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)	2020.10.06
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	15.227

## A.2 Comments

The ACA has the capability to devote one or more of the eight image slots to "monitor" particular sky locations. This allows simultaneous optical photometry of one or more targets in the ACA field of view. These optical sources can be slightly fainter than the ACA guide star limit of  $m_{ACA} = 10.2$  mag. The bright-end limit for monitor star photometry is  $m_{ACA}=6.2$  mag. However, since there are a fixed number of image slots, devoting a slot to photometry instead of tracking a guide star results in a degradation of the image reconstruction and celestial location accuracy (Section 5.4). Using one monitor slot represents a 15 - 25% increase in the aspect image reconstruction RMS diameter, depending on the particular guide star configuration. Two monitor slots would increase the diameter by about 50 - 60%, but this configuration is not operationally allowed under normal circumstances. The photometric accuracy which can be achieved depends primarily on the star magnitude, integration time, CCD dark current, CCD read noise, sky background, and the CCD dark current uncertainty.