V&V Reference Report
L2 ASCDS Version : 8.4.3

Observation 13206 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Feb 6 2012

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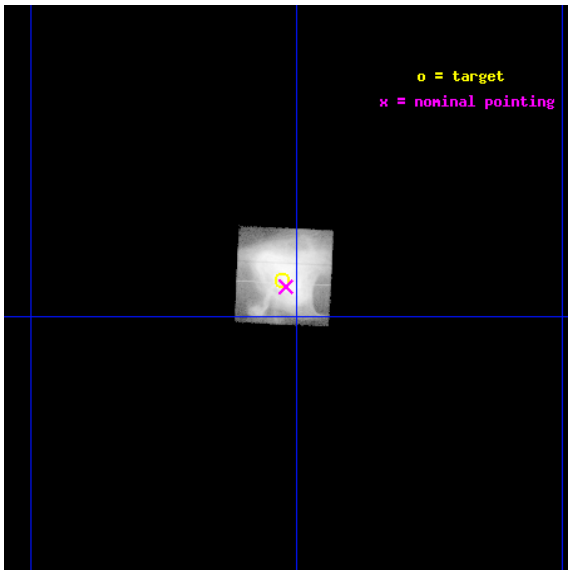
1 Front

seq_num	501544	Sequence number
obs_id	13206	Observation id
title	Monitoring of the Crab Nebula	Proposal title
observer	Dr. Martin Weisskopf	Principal investigator
object	Crab	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	83.631667	Observer's specified target RA [deg]
dec_targ	22.015667	Observer's specified target Dec [deg]
ra_nom	83.63008289965	Nominal RA [deg]
dec_nom	22.012810078754	Nominal Dec [deg]
roll_nom	272.71092466756	Nominal Roll [deg]
revision	2	Processing version of data
ontime	3328.4568321705	Sum of GTIs [s]
livetime	580.41656474219	Livetime [s]
ontime7	3328.4568321705	Sum of GTIs [s]
l2events	1698437	Number of level 2 events

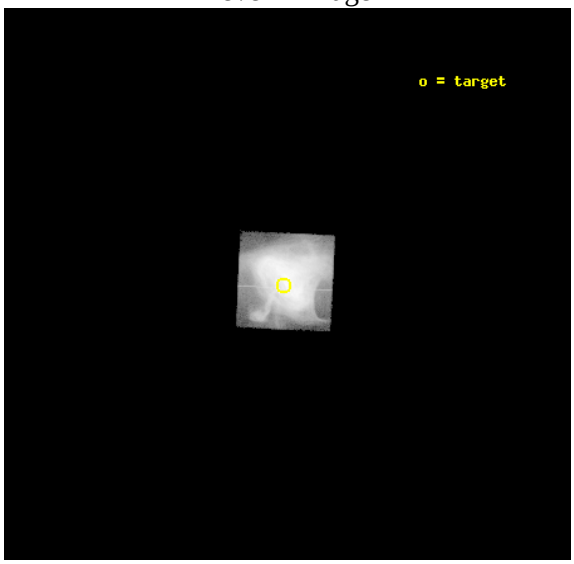


2 OBI

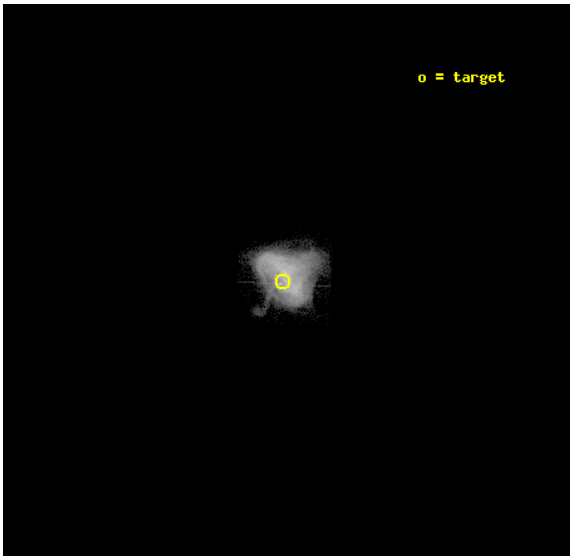
2.1 OBI

2.1.1 Images

Level 1 Image



Level 1 Bad Events



2.1.2 Parameters

obi_num	0	Obi number
ascdsver	8.4.3	Processing system revision
caldbver	4.4.7	
date	2012-02-06T06:53:10	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	5000.000000	[s] Scheduled observation exposure time
ontime	3328.4568321705	Sum of GTIs [s]
ontime7	3328.4568321705	Sum of GTIs [s]
l1events	1888929	Number of level 1 events

2.1.3 Events

	ccd 7
level 1 events	1888929
rejected events	166526
rejected %	8%

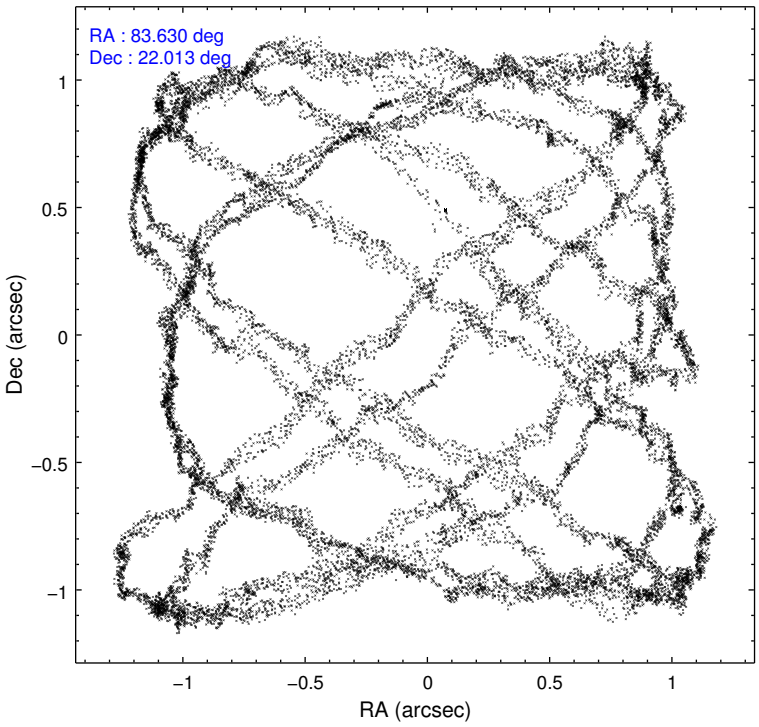
	ccd 7
grade 0 events	386977
	20%
grade 1 events	21745
	1%
grade 2 events	465058
	24%
grade 3 events	196226
	10%
grade 4 events	193088
	10%
grade 5 events	61250
	3%
grade 6 events	481644
	25%
grade 7 events	82941
	4%

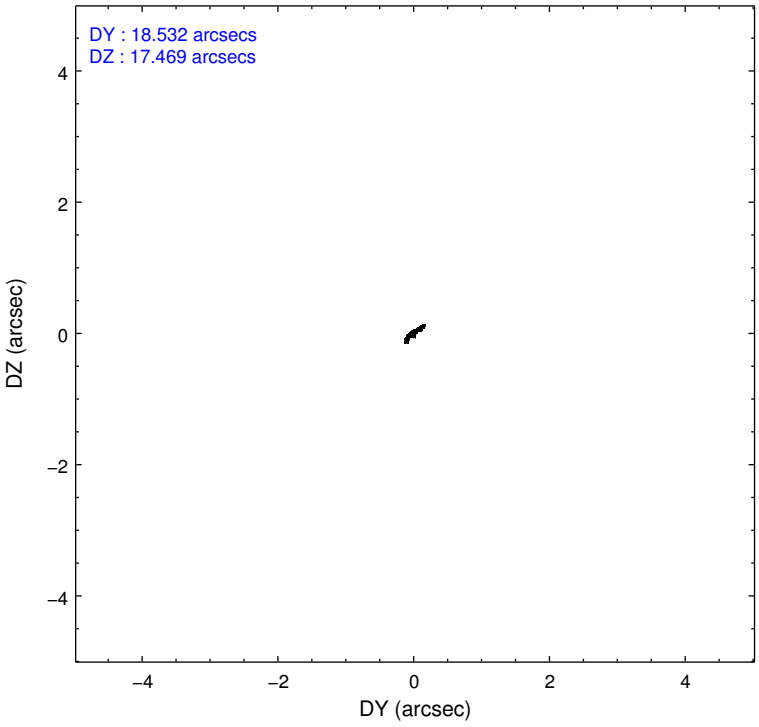
2.2 Compared Parameters

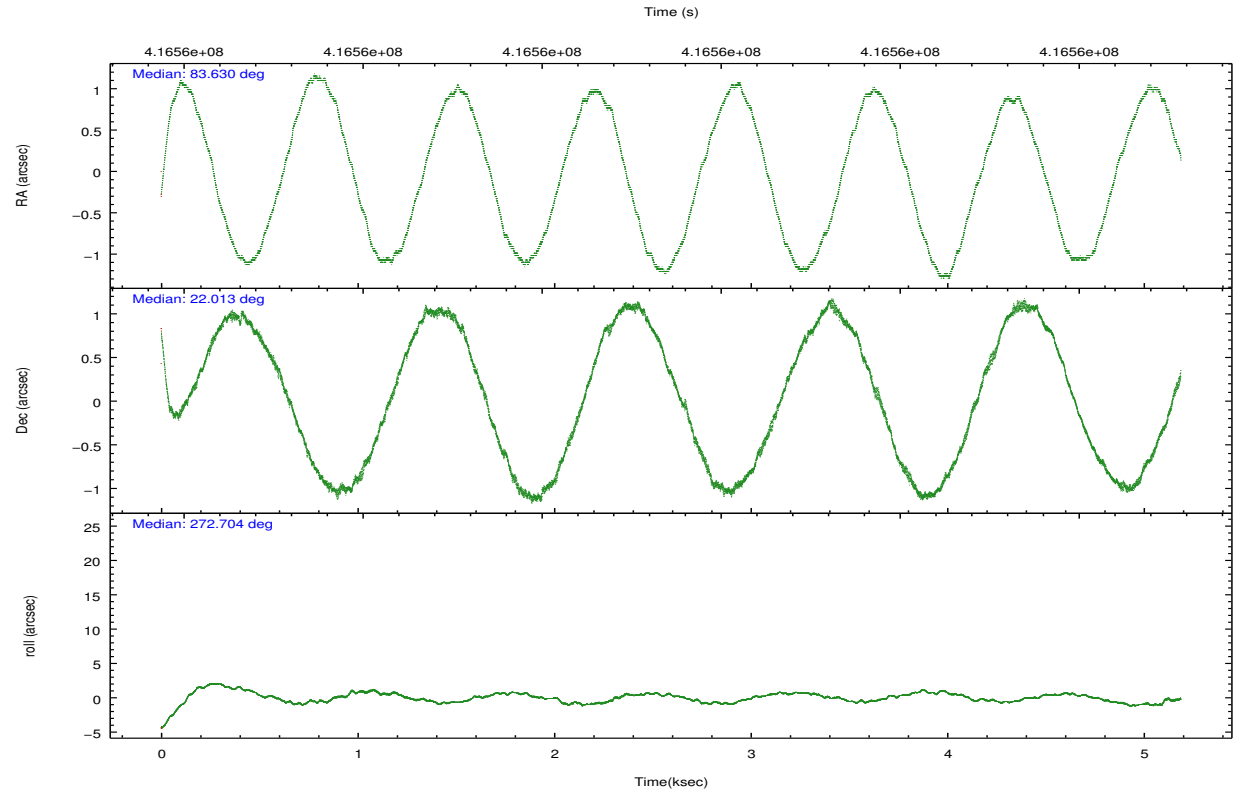
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-7	ACIS-7
Grating	NONE	NONE
Data mode	GRADED	GRADED
Observation mode	POINTING	POINTING
[deg] Pointing RA	83.613793	83.63008289964962
[deg] Pointing Dec	22.035613	22.01281007875367
[deg] Pointing Roll	272.560413	272.7109246675592
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-184.796523	-184.7921174034538
[mm] SIM translation stage offset	-5.336	-5.34040517955404
[s] Observation start time (MET)	416556314.184000	416555119.84997
Observation start date	2011-03-15T06:04:08	2011-03-15T05:45:19
[s] Observation end time (MET)	416561314.184000	416562446.03785
Observation end date	2011-03-15T07:27:28	2011-03-15T07:47:26
Read mode	TIMED	TIMED

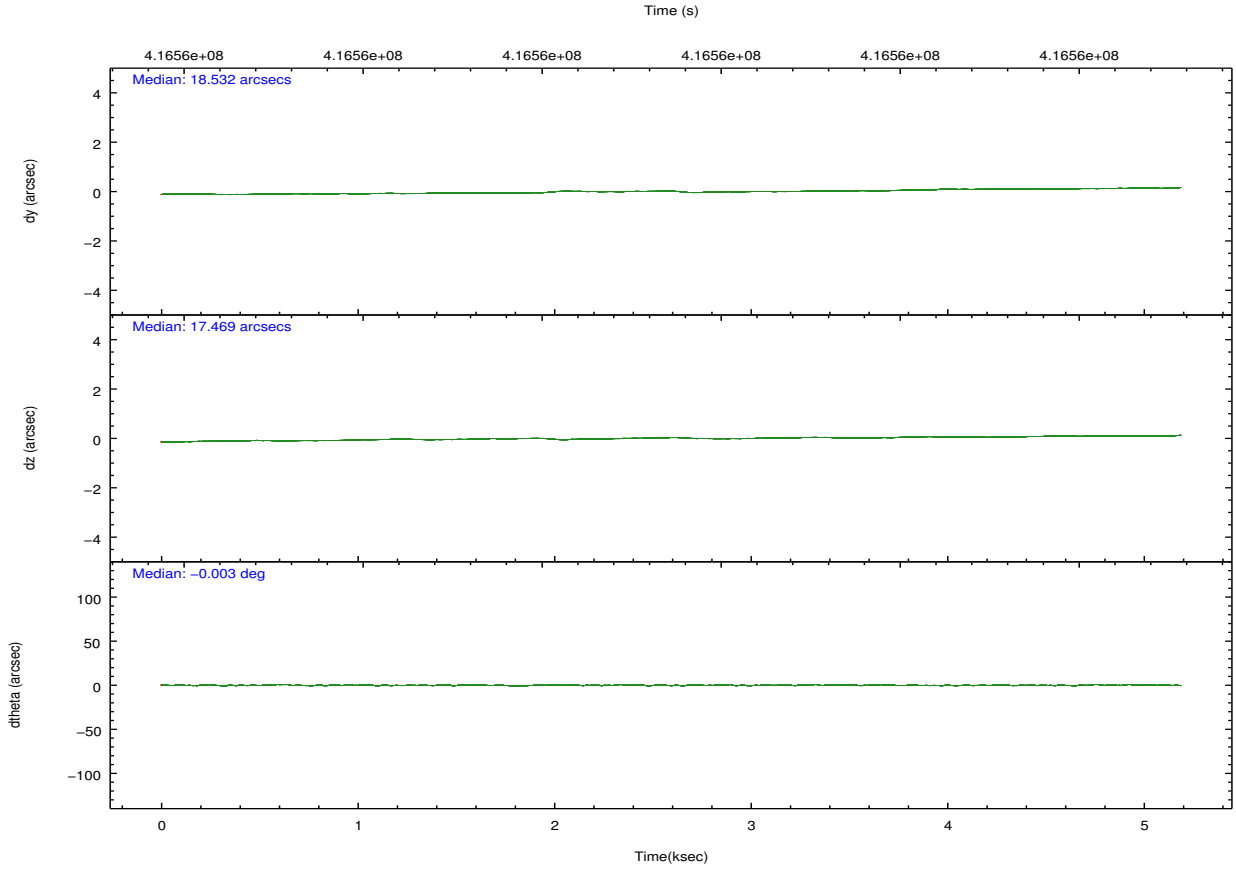
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	CUSTOM	CUSTOM
Subarray start row	115	115
Subarray row count	300	300
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	0.2

2.3 Aspect


RA : 83.630 deg
Dec : 22.013 deg
Dec (arcsec)
RA (arcsec)
1
0.5
0
−0.5
−1
−1
−0.5
0
0.5
1


DY : 18.532 arcsecs
DZ : 17.469 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
Median: 83.630 deg
RA (arcsec)
Median: 22.013 deg
Dec (arcsec)
Median: 272.704 deg
roll (arcsec)
Time(ksec)

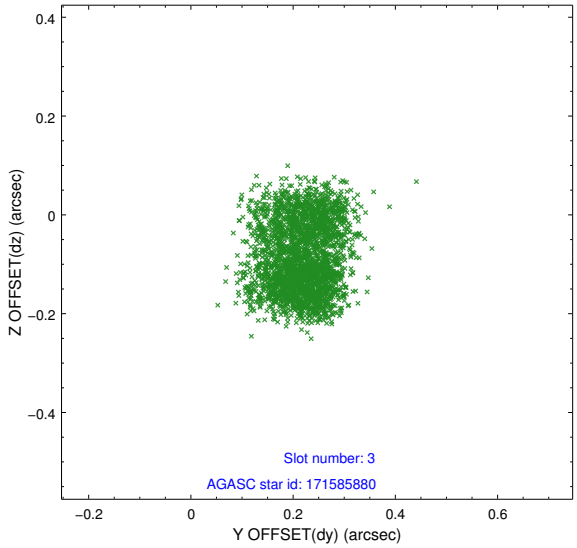

Time (s)
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
4.1656e+08
Median: 18.532 arcsecs
dy (arcsec)
Median: 17.469 arcsecs
dz (arcsec)
Median: −0.003 deg
dtheta (arcsec)
Time(ksec)

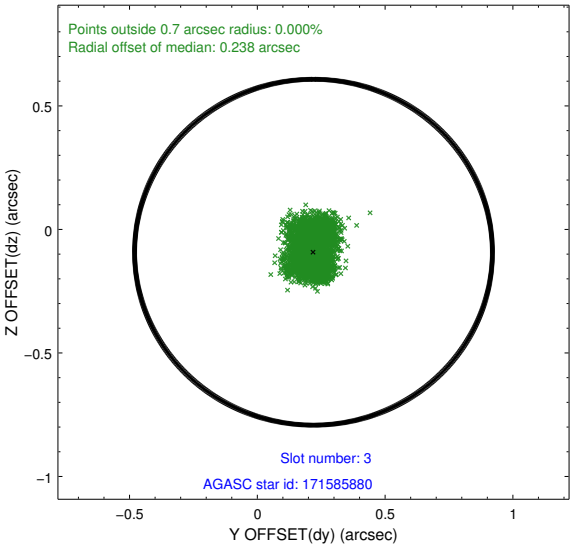
Slot Statistics

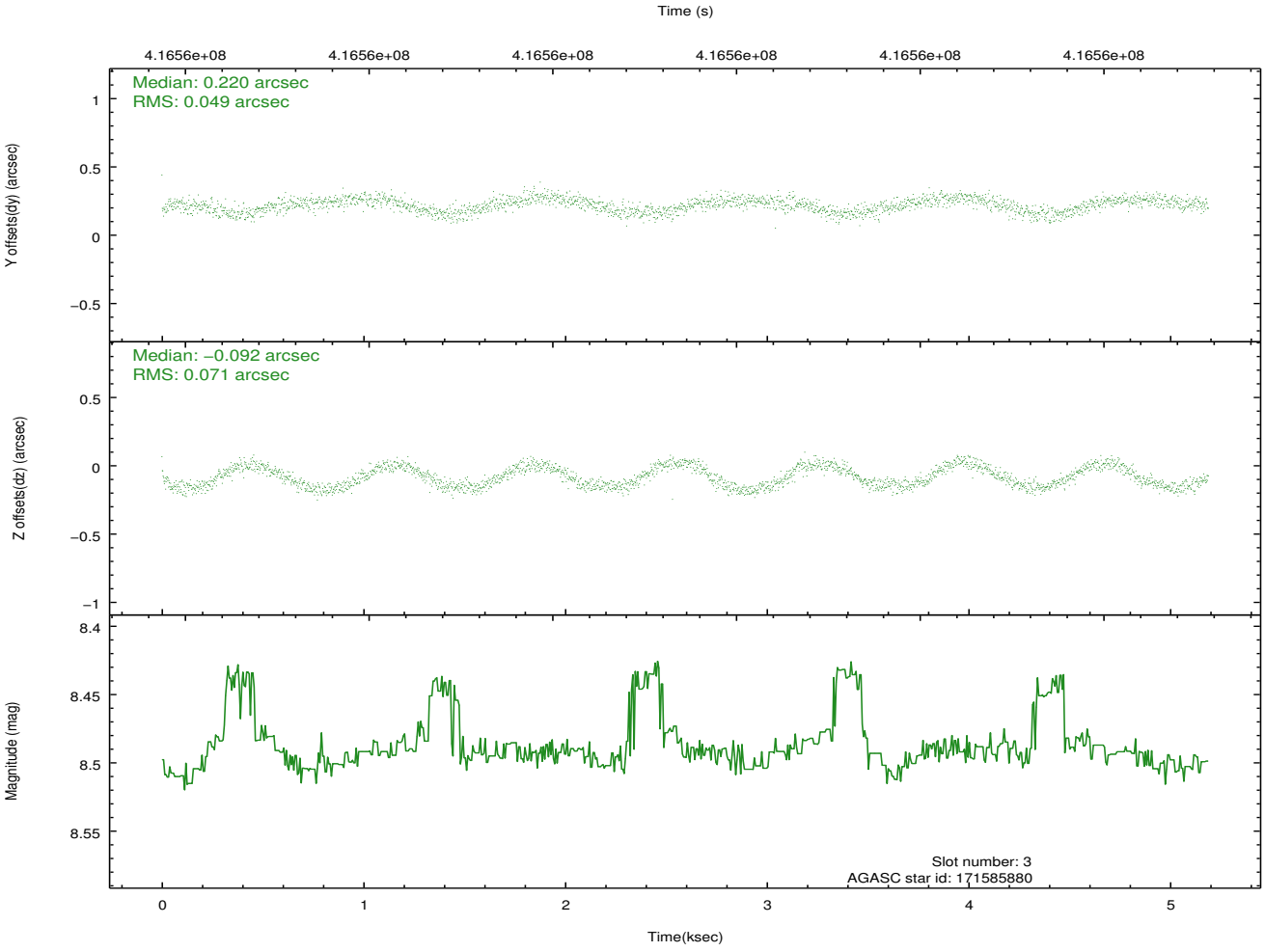
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	6.88	1266	-0.096	-0.115	0.007	0.010	0.000000	0.000000	-771.35	-1849.12
1	FID	ACIS-S-4	6.97	1266	0.228	0.077	0.008	0.014	0.000000	0.000000	2141.74	58.20
2	FID	ACIS-S-5	7.02	1266	-0.163	0.046	0.007	0.011	0.000000	0.000000	-1822.74	53.24
3	GUIDE	171585880	8.49	2530	0.220	-0.092	0.095	0.139	83.676260	22.176319	-496.16	230.64
4	GUIDE	171586032	8.93	2528	0.043	0.003	0.062	0.101	83.950197	22.083225	-122.21	1129.00
5	GUIDE	171721904	9.20	2530	-0.189	0.276	0.116	0.167	84.272676	22.116922	-199.10	2209.34
6	GUIDE	243941560	8.25	2532	-0.256	0.064	0.050	0.085	83.733264	22.568598	-1899.03	483.16
7	GUIDE	171597832	9.16	2530	0.183	-0.251	0.071	0.121	83.183230	21.366702	2339.28	-1549.27

2.4 Star Slots

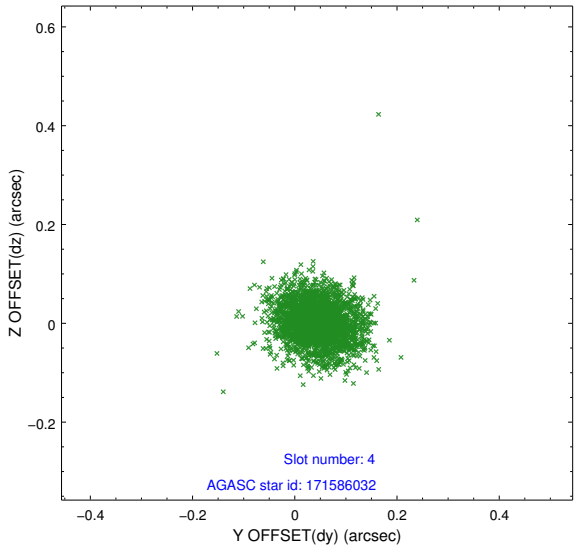
2.4.1 Slot 3

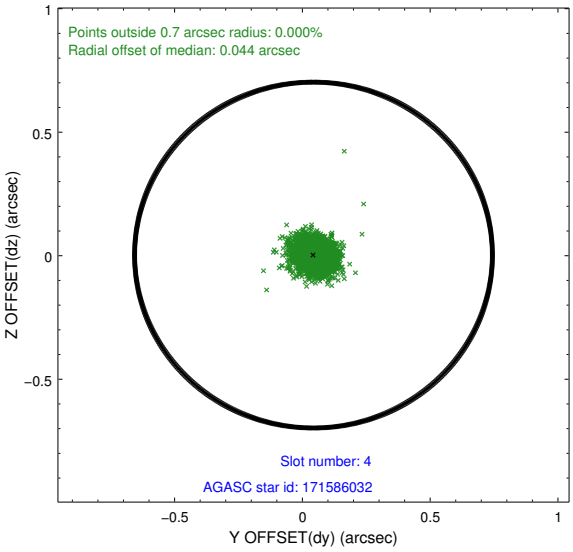


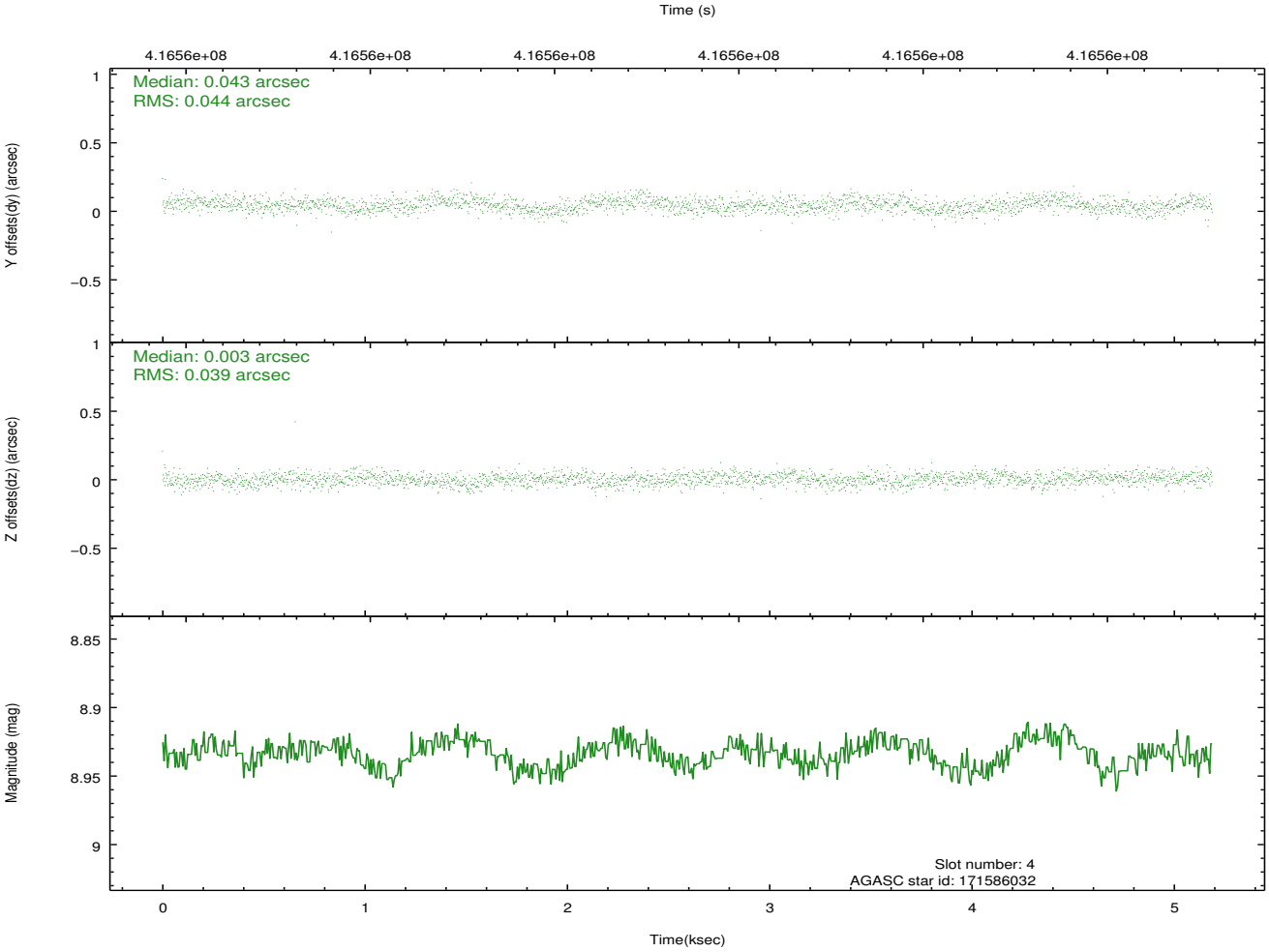




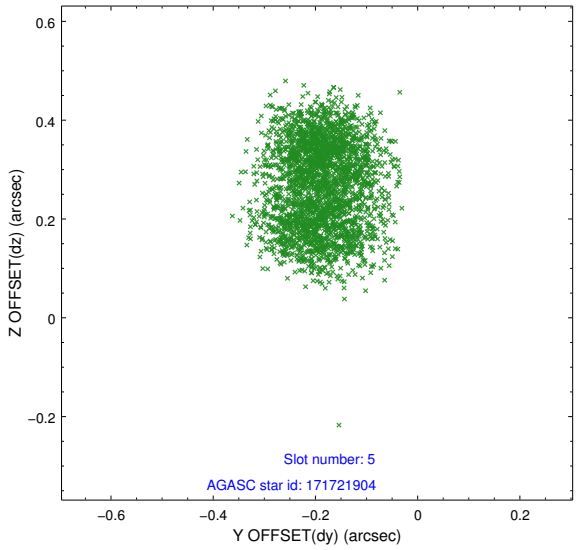
2.4.2 Slot 4

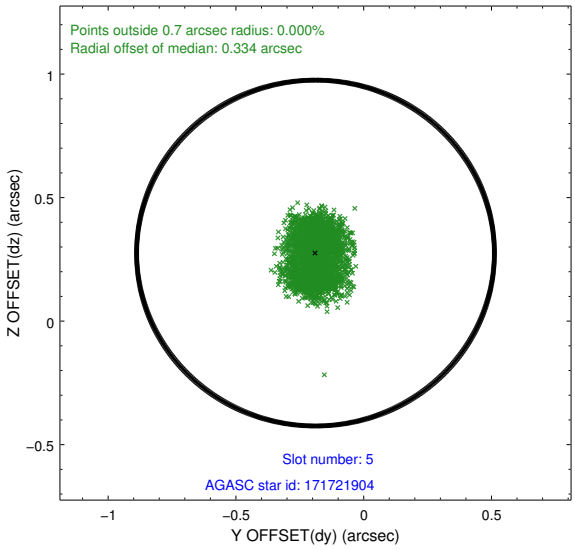

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032

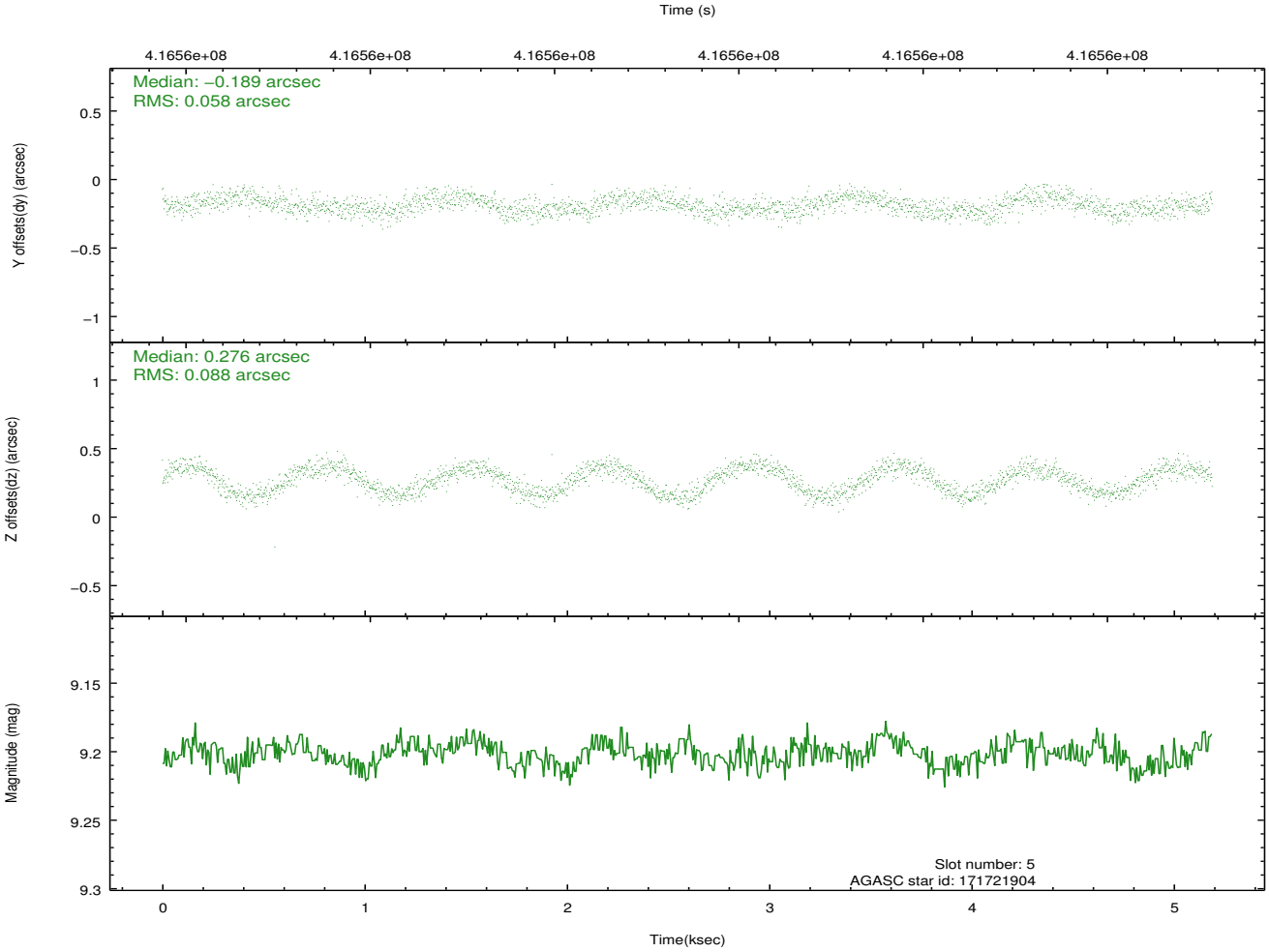

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.044 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 171586032


Time (s)
Median: 0.043 arcsec
RMS: 0.044 arcsec
Y offsets(dy) (arcsec)
Median: 0.003 arcsec
RMS: 0.039 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 171586032
Time(ksec)

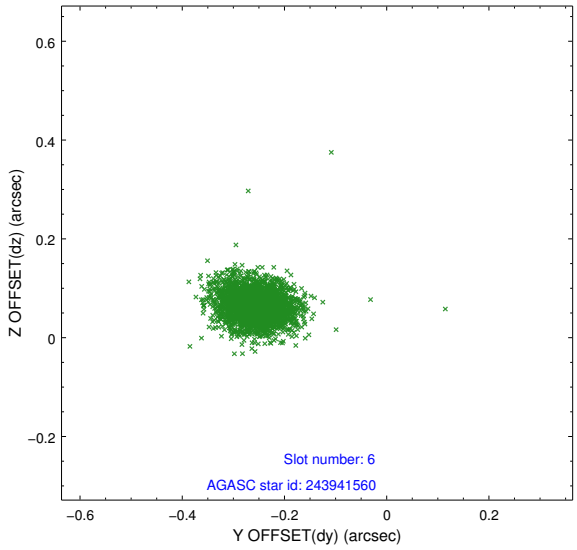
2.4.3 Slot 5

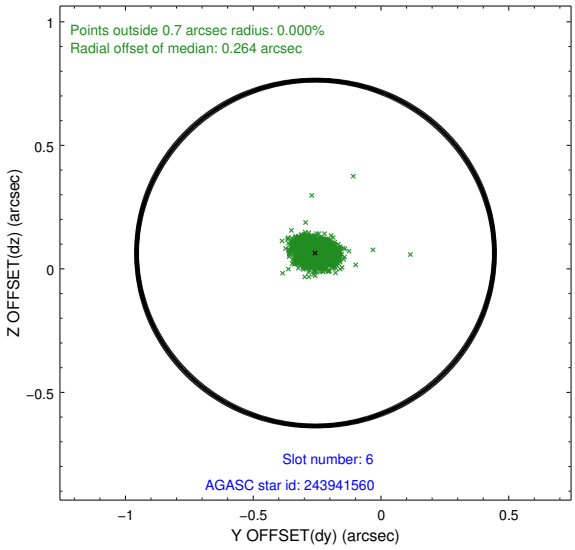

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904

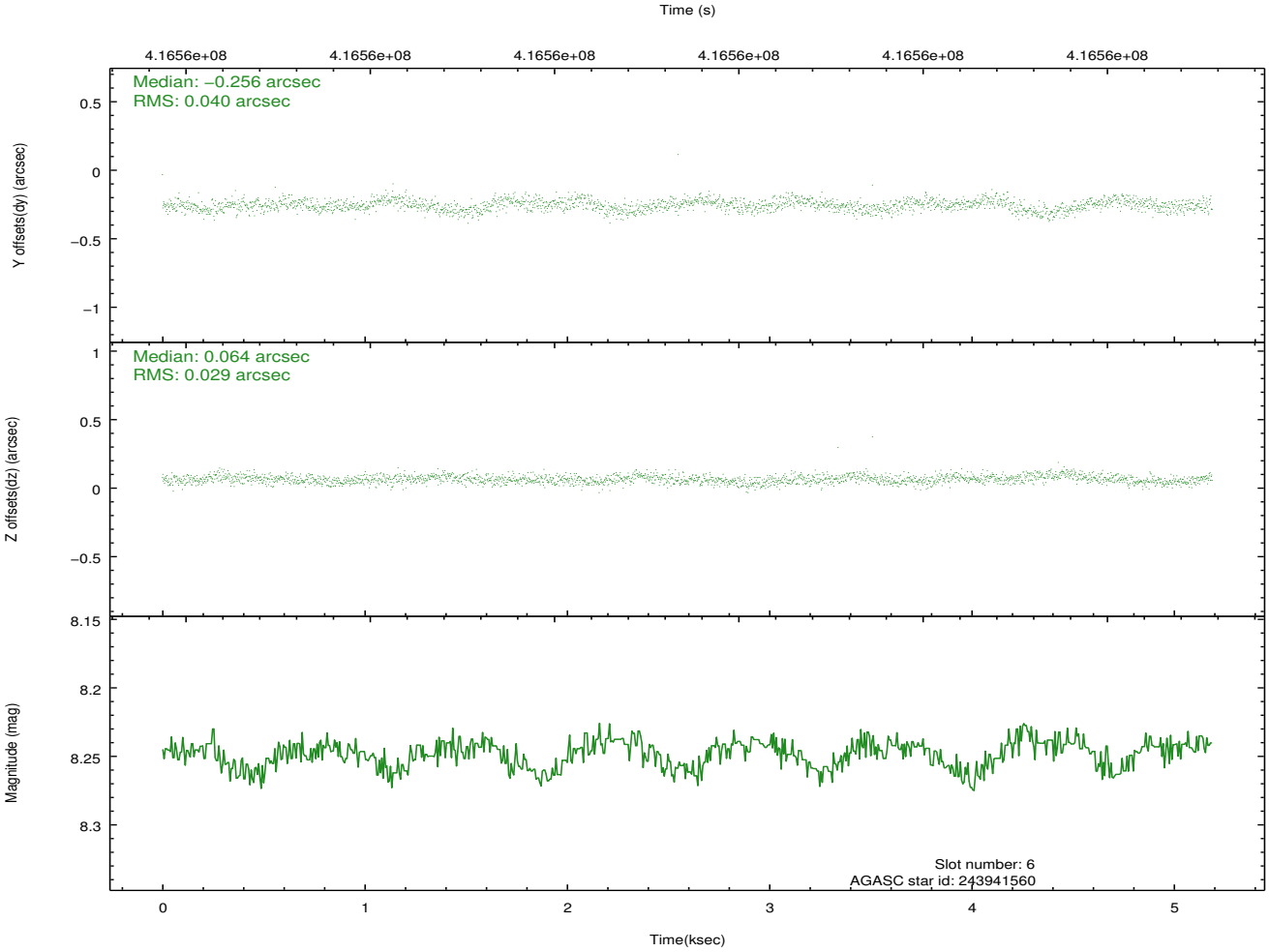

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.334 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 171721904


Time (s)
Median: −0.189 arcsec
RMS: 0.058 arcsec
Y offsets(dy) (arcsec)
Median: 0.276 arcsec
RMS: 0.088 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 171721904
Time(ksec)

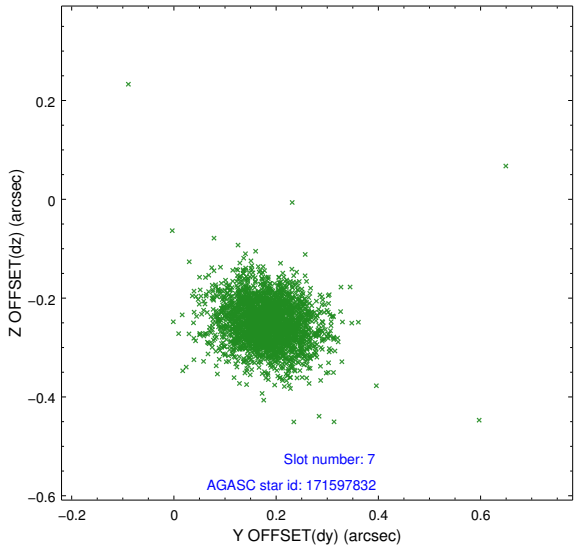
2.4.4 Slot 6

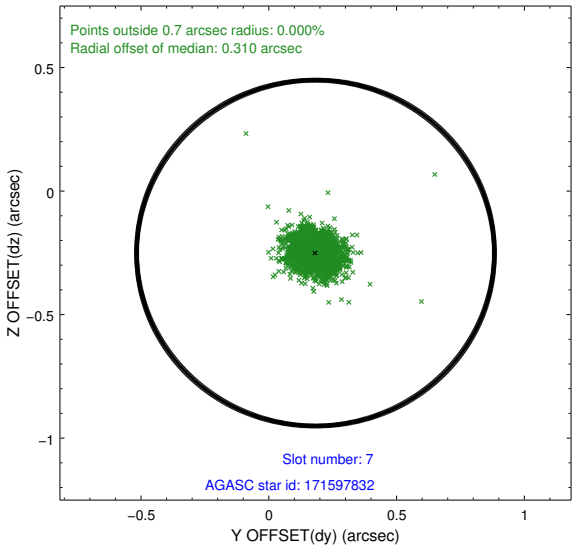

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560

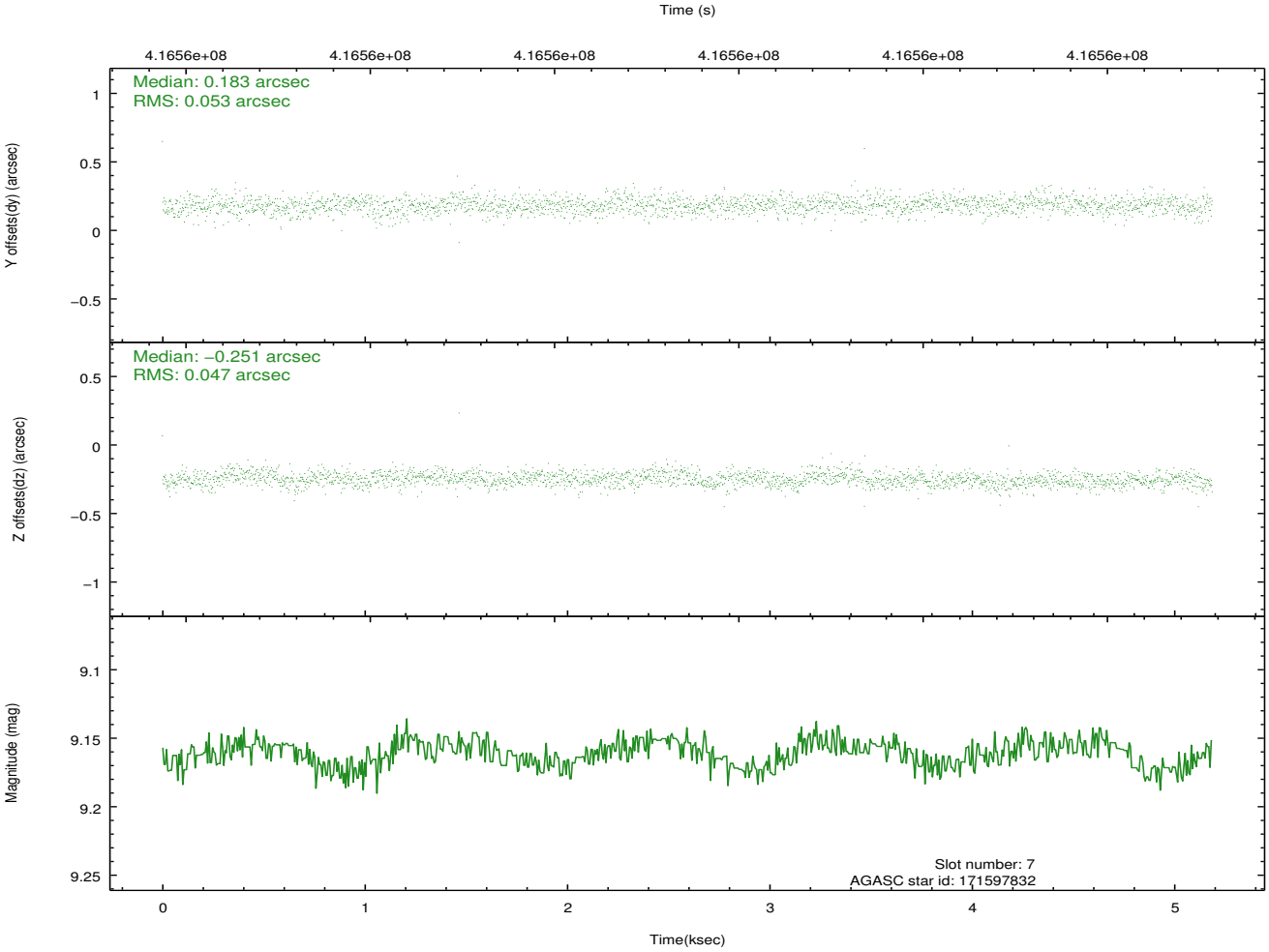

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.264 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 243941560


Time (s)
Median: −0.256 arcsec
RMS: 0.040 arcsec
Y offsets(dy) (arcsec)
Median: 0.064 arcsec
RMS: 0.029 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 243941560
Time(ksec)

2.4.5 Slot 7

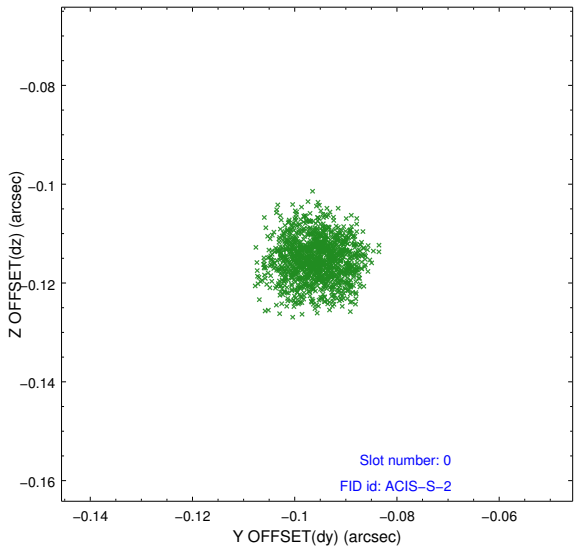

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

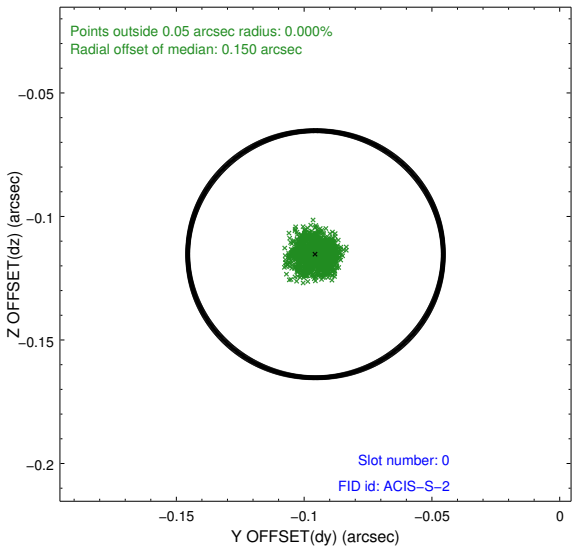

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.310 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 171597832

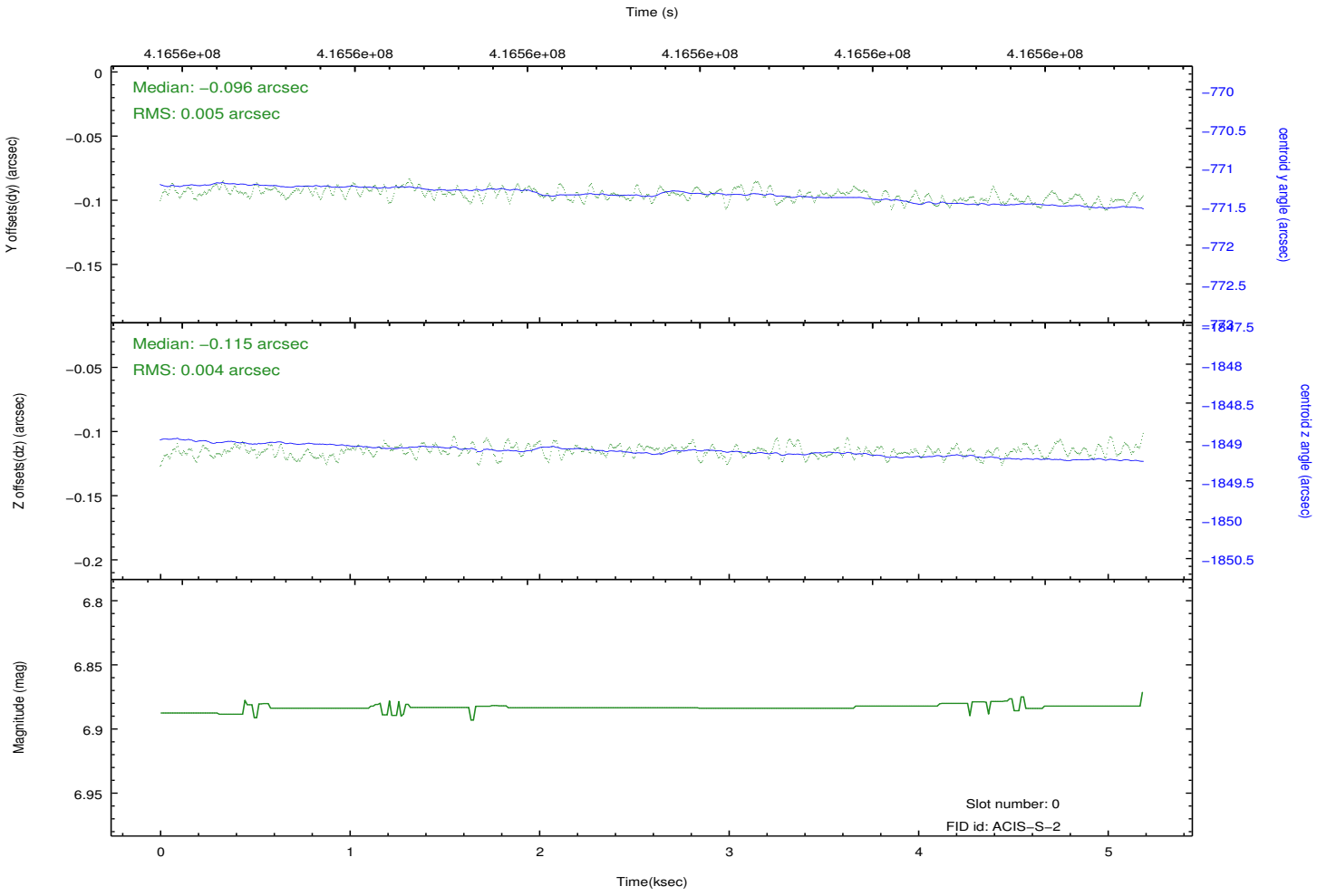

Time (s)
Median: 0.183 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: −0.251 arcsec
RMS: 0.047 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 171597832
Time(ksec)

2.5 FID Slots

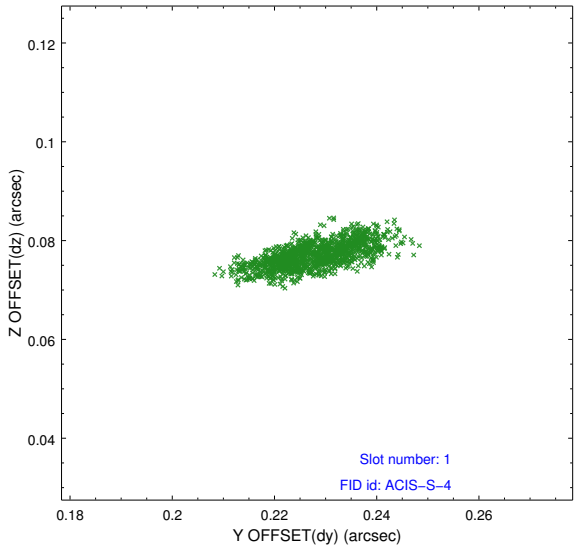
2.5.1 Slot 0

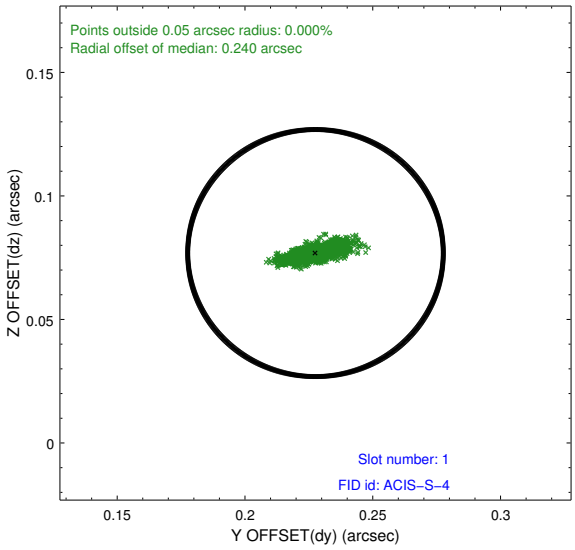


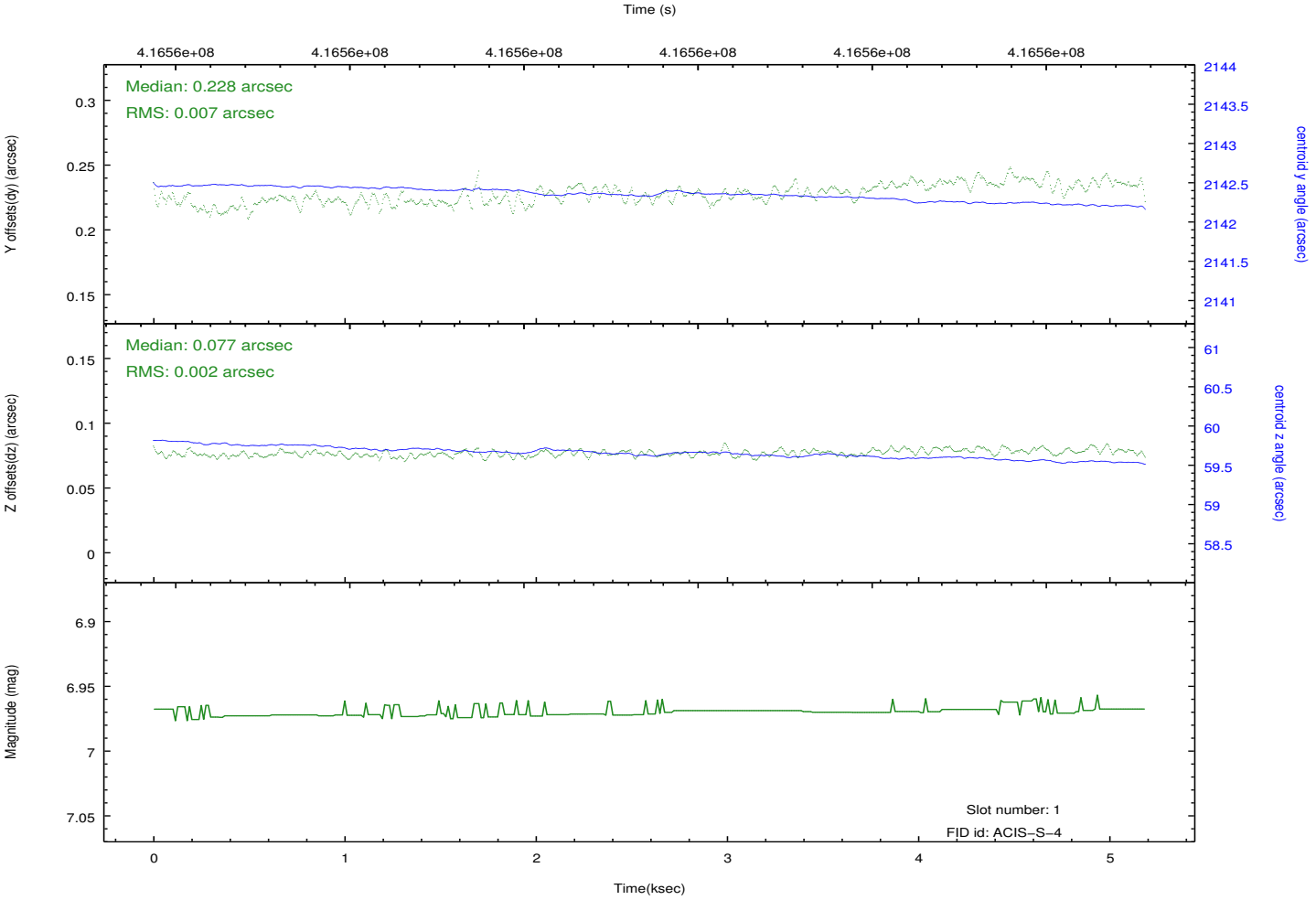




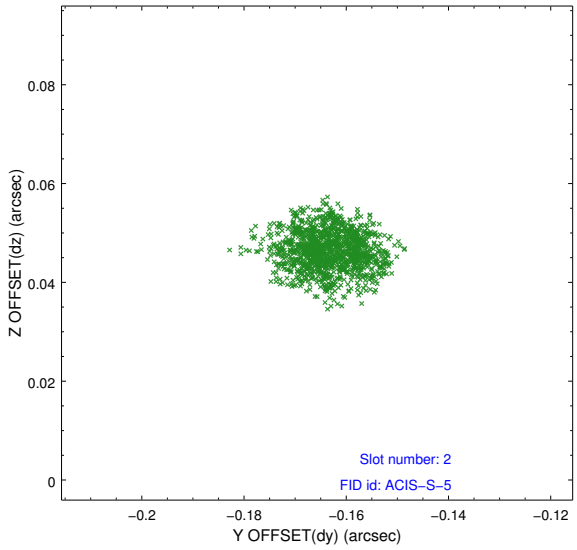
2.5.2 Slot 1

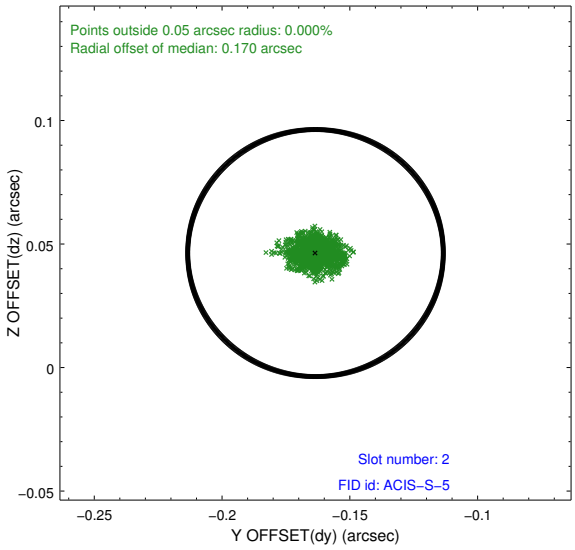

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

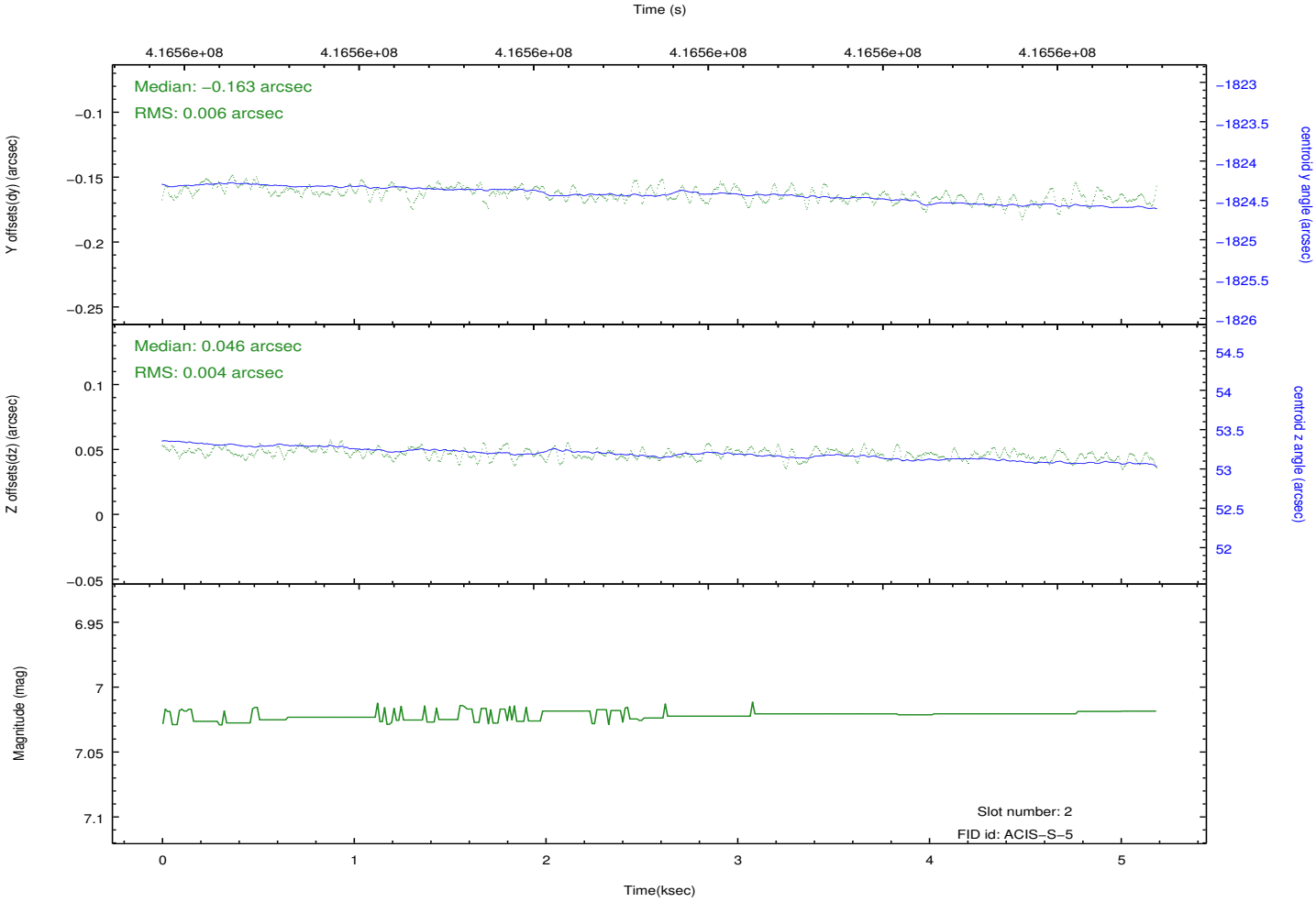

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.240 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.228 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.077 arcsec
RMS: 0.002 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−S−4
Time(ksec)

2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.170 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.163 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.046 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−5
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2012.02.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	5

A.2 Comments

```
The data for this observation have been processed using the 'EDSER'
sub-pixel event-repositioning algorithm of Li et al. (2004, ApJ, 610,
1204). Small-scale features should become sharper for sources near the
aim point. The improvement will be less noticeable for off-axis sources
where the size of the point-spread function is comparable to or larger
than the size of an ACIS pixel. To take full advantage of the
improvement, images should be binned on spatial scales smaller than the
size of an ACIS pixel. Note that, at present, the point-spread function
has not been calibrated for data to which the EDSER algorithm has been
applied. If dither was disabled for the observation, then the algorithm
can introduce artificial aliasing effects on spatial scales smaller than
a pixel. If you would prefer to use no sub-pixel adjustment or to apply
a coordinate randomization, then use acis_process_events to reprocess
the data with the parameter pix_adj=NONE or RANDOMIZE, respectively.
======
Charge time: ONTIME of 3328.4568318129 seconds is less than 85% of
expected scheduled time of 5000 seconds. The LIVETIME of 580.795 s is
much shorter than the ONTIME of 3330.629 s because the frame time of 0.2
s is shorter than the minimum time that it takes to read out the
detector (about 0.9 s) in the specified configuration. Therefore, there
is a flush of 0.90588 s preceeding each frame. This flush time is dead
time. The source appears to be bright enough to saturate telemetry.
After the first 347 frames of data, only about 70% of the remaining
frames contain data. Since an image of the source is apparent in the bad
events, the source is most likely piled.
======
Charge time has been edited to reflect the scheduled time.
```