V&V Reference Report
L2 ASCDS Version : 10.2.2

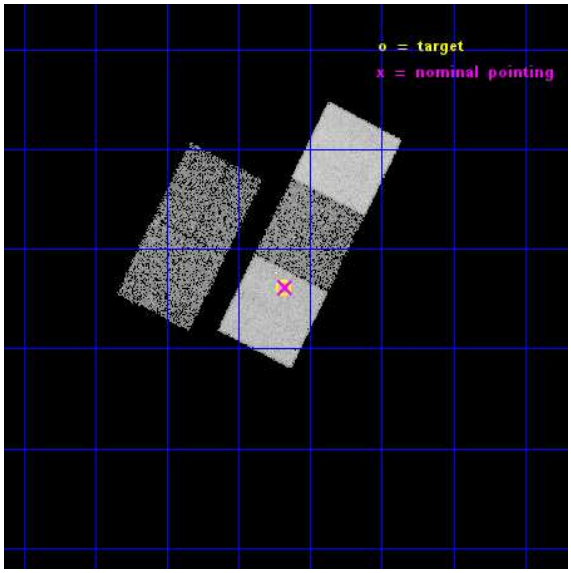
Observation 16102 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 11 2014

Contents

1 Front

seq_num	702990	Sequence number
obs_id	16102	Observation id
title	Studying AGN evolution with ionization echoes	Proposal title
observer	Dr. Mischa Schirmer	Principal investigator
object	J011341.1+010608	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	18.42125	Observer's specified target RA [deg]
dec_targ	1.102222	Observer's specified target Dec [deg]
ra_nom	18.418240390304	Nominal RA [deg]
dec_nom	1.1025361567355	Nominal Dec [deg]
roll_nom	116.75669258788	Nominal Roll [deg]
revision	2	Processing version of data
ontime	15069.100115895	Sum of GTIs [s]
livetime	14872.211229171	Livetime [s]
ontime2	15069.100115895	Sum of GTIs [s]
ontime3	15062.818185091	Sum of GTIs [s]
ontime5	15069.100115895	Sum of GTIs [s]
ontime6	15069.100115895	Sum of GTIs [s]
ontime7	15069.100115895	Sum of GTIs [s]
l2events	104754	Number of level 2 events

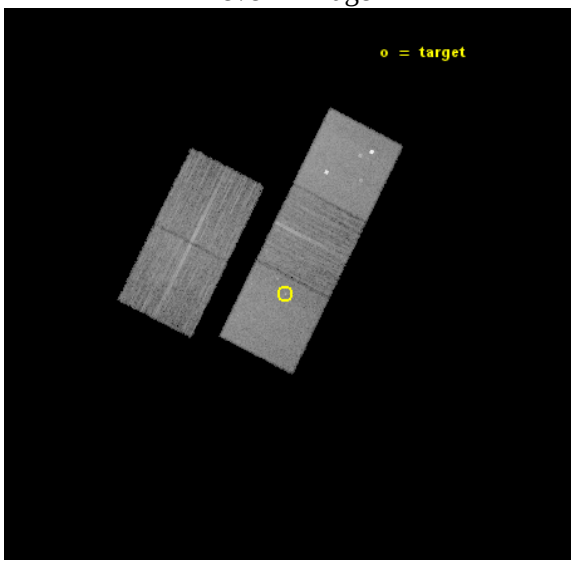


2 OBI

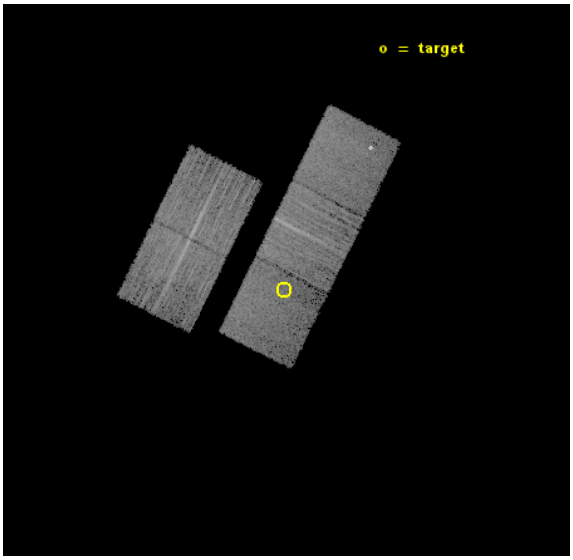
2.1 OBI

2.1.1 Images

Level 1 Image

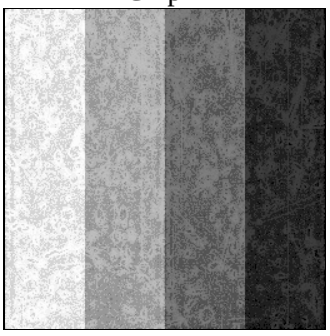


Level 1 Bad Events

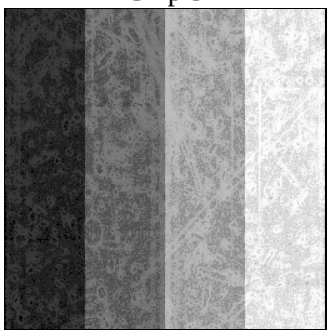


2.1.2 Bias

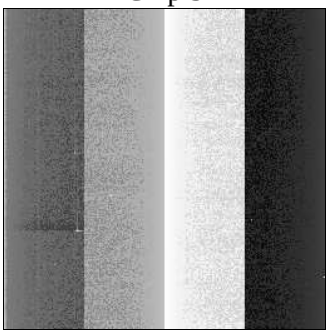
Chip 2



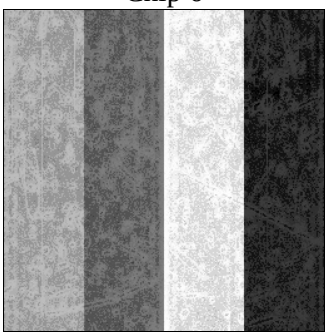
Chip 3



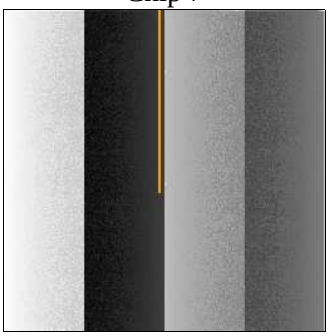
Chip 5



Chip 6



Chip 7



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.3.1	Processing system revision
caldbver	4.6.4	
date	2014-12-12T01:26:32	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	15000.000000	[s] Scheduled observation exposure time
ontime	15069.100115895	Sum of GTIs [s]
ontime2	15069.100115895	Sum of GTIs [s]
ontime3	15062.818185091	Sum of GTIs [s]
ontime5	15069.100115895	Sum of GTIs [s]
ontime6	15069.100115895	Sum of GTIs [s]
ontime7	15069.100115895	Sum of GTIs [s]
l1events	381672	Number of level 1 events

2.1.4 Events

	ccd 2	**ccd 3**	**ccd 5**	**ccd 6**	**ccd 7**
level 1 events	64227	61327	111117	65823	79178
rejected events	57046	54158	51388	57774	41763
rejected %	88%	88%	46%	87%	52%

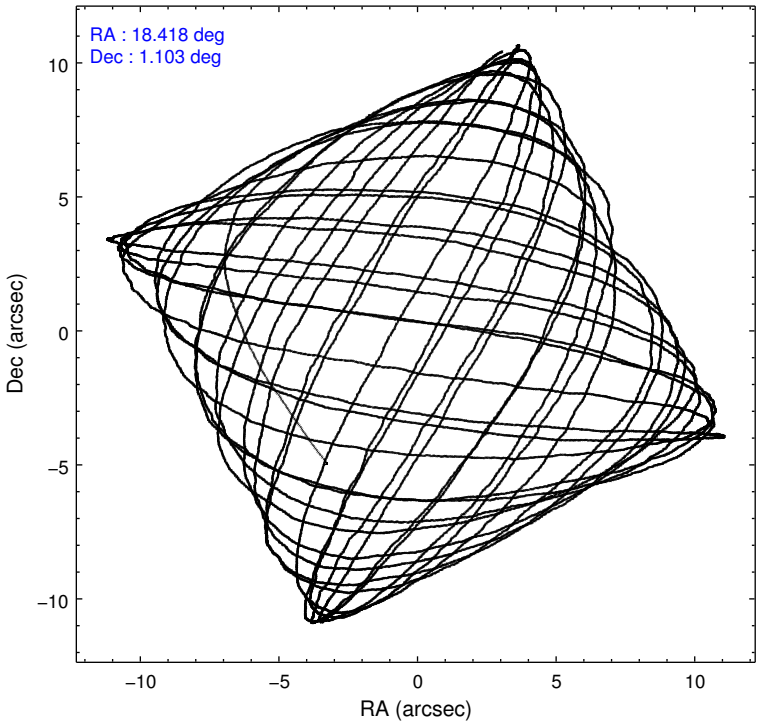
	ccd 2	**ccd 3**	**ccd 5**	**ccd 6**	**ccd 7**
grade 0 events	2631	2546	10422	2797	3548
	4%	4%	9%	4%	4%
grade 1 events	37	40	174	39	112
	0%	0%	0%	0%	0%
grade 2 events	1785	1584	17669	1839	8019
	2%	2%	15%	2%	10%
grade 3 events	709	770	2224	816	3262
	1%	1%	2%	1%	4%
grade 4 events	750	753	1910	788	3256
	1%	1%	1%	1%	4%
grade 5 events	2464	3051	7830	3025	8418
	3%	4%	7%	4%	10%
grade 6 events	1312	1518	27520	1811	19340
	2%	2%	24%	2%	24%
grade 7 events	54539	51065	43368	54708	33223
	84%	83%	39%	83%	41%

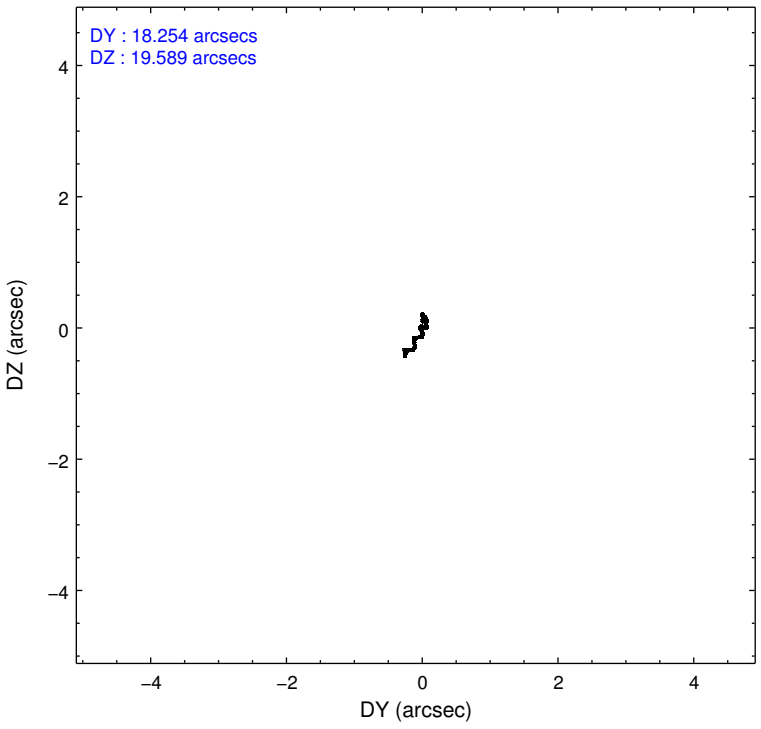
2.2 Compared Parameters

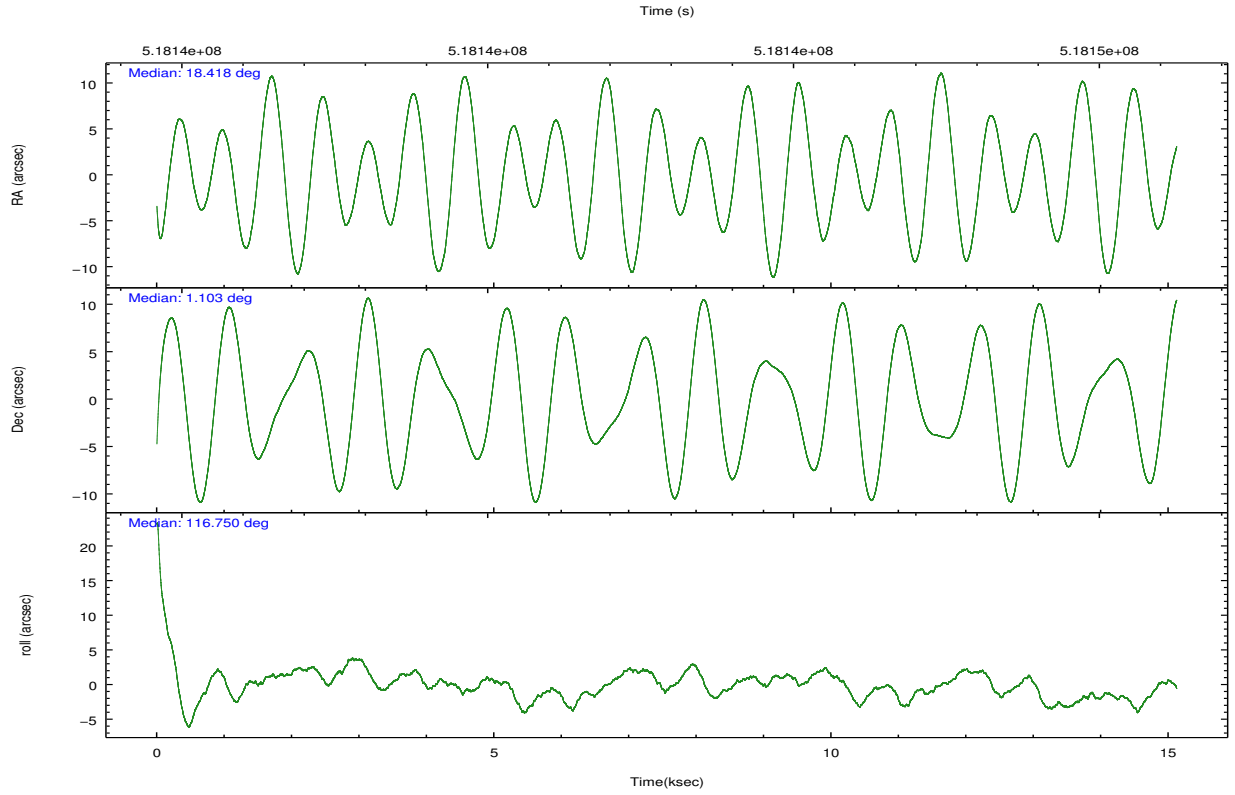
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-23567	ACIS-23567
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	18.441313	18.41824039030443
[deg] Pointing Dec	1.087853	1.102536156735525
[deg] Pointing Roll	116.599622	116.7566925878803
[mm] SIM focus pos	-0.684267	-0.6828225247311905
[mm] SIM defocus	0	0.001444936568705701
[mm] SIM translation stage pos	-190.132523	-190.1425803651734
[mm] SIM translation stage offset	0	0.01005778216563158
[s] Observation start time (MET)	518135488.184000	518133847.53453
Observation start date	2014-06-02T22:30:21	2014-06-02T22:04:07
[s] Observation end time (MET)	518150488.184000	518151563.12301
Observation end date	2014-06-03T02:40:21	2014-06-03T02:59:23
Read mode	TIMED	TIMED

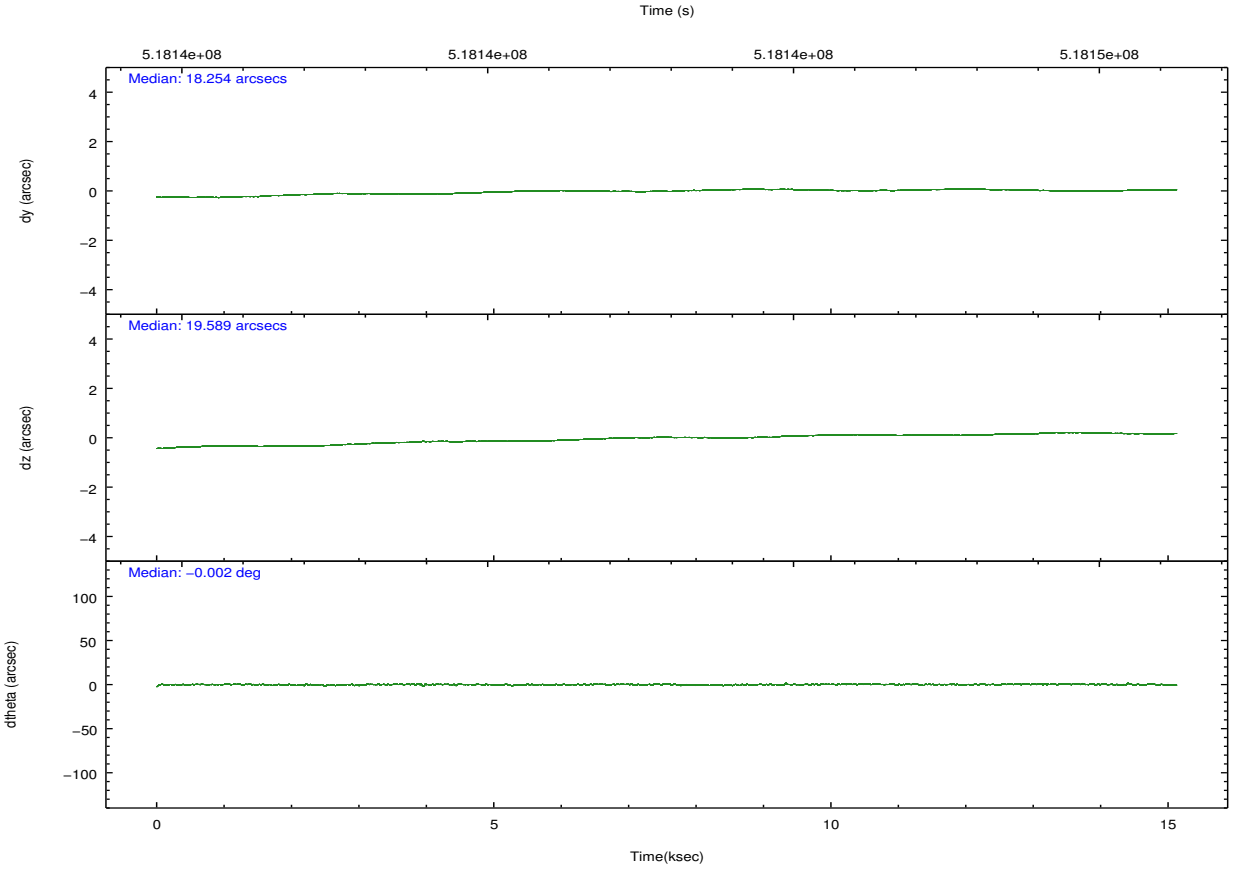
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O3	Y
CCD I3 on	O2	Y
CCD S0 on	N	N
CCD S1 on	O1	Y
CCD S2 on	O4	Y
CCD S3 on	Y	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.1

2.3 Aspect


RA : 18.418 deg
Dec : 1.103 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 18.254 arcsecs
DZ : 19.589 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: 18.418 deg
RA (arcsec)
Median: 1.103 deg
Dec (arcsec)
Median: 116.750 deg
roll (arcsec)
Time(ksec)

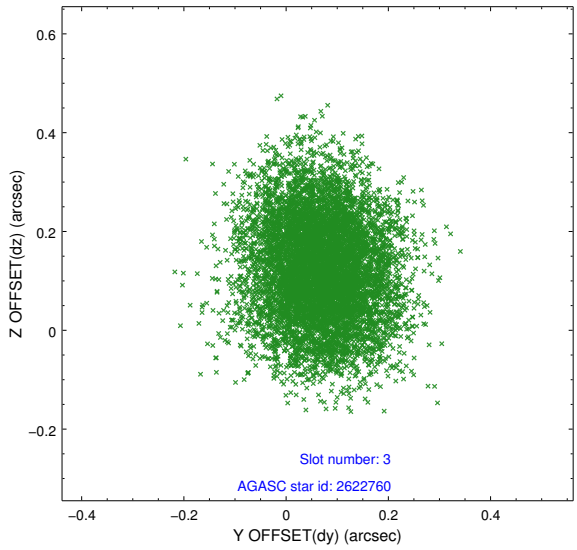

Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: 18.254 arcsecs
dy (arcsec)
Median: 19.589 arcsecs
dz (arcsec)
Median: −0.002 deg
dtheta (arcsec)
Time(ksec)

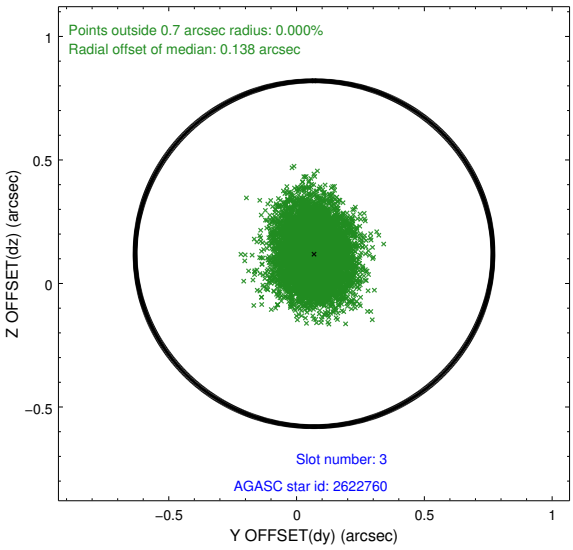
Slot Statistics

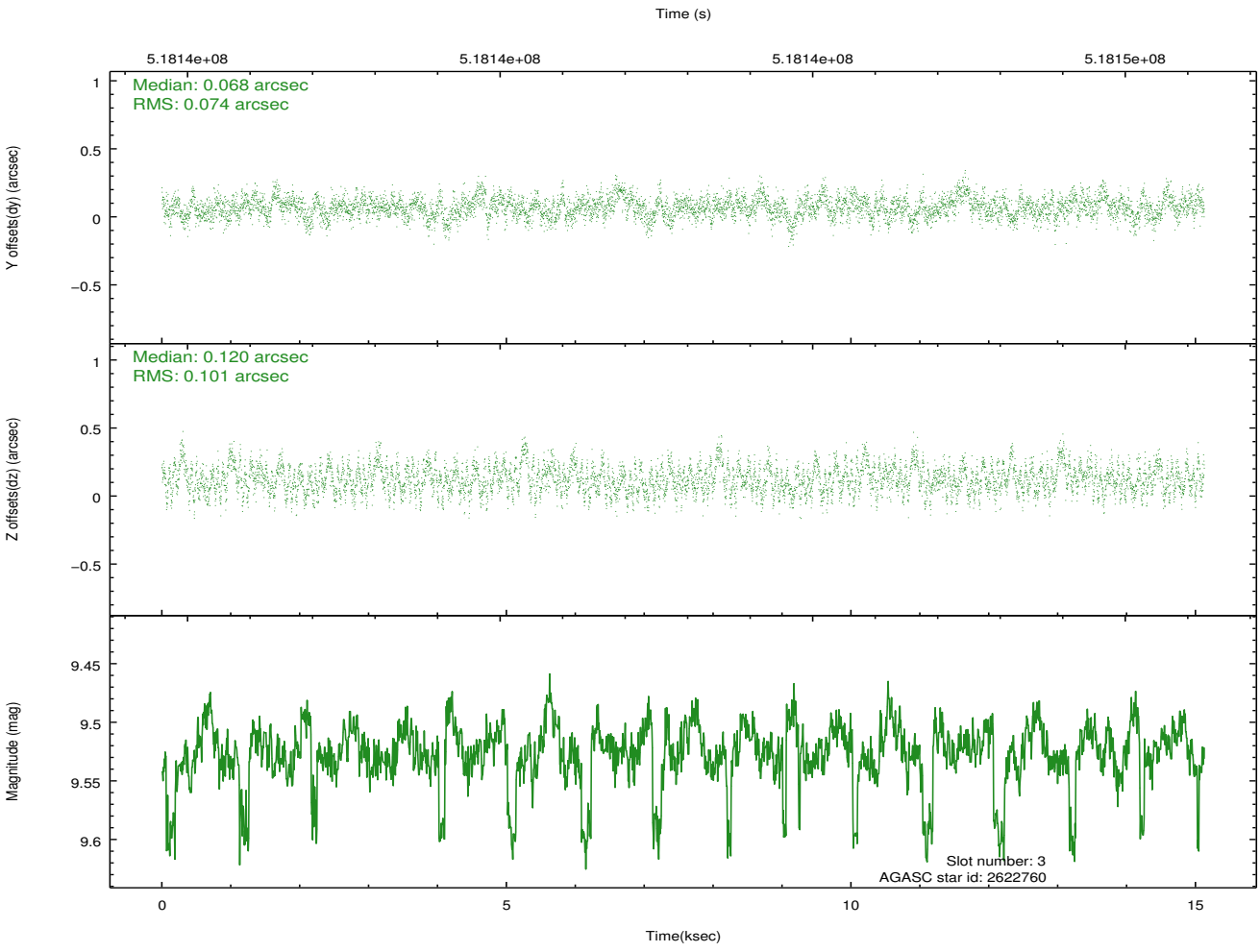
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.97	3689	-0.157	-0.097	0.006	0.011	0.000000	0.000000	-771.48	-1741.06
1	FID		ACIS-S-4	7.05	3689	0.184	0.085	0.006	0.010	0.000000	0.000000	2142.05	167.21
2	FID		ACIS-S-6	7.18	3689	-0.055	0.019	0.007	0.011	0.000000	0.000000	391.06	804.93
3	GUIDE	used	2622760	9.53	7376	0.068	0.120	0.134	0.214	18.942327	0.938727	-1286.93	-1372.20
4	GUIDE	used	2625224	8.58	7378	-0.146	-0.099	0.095	0.155	18.131446	0.981160	152.15	1167.90
5	GUIDE	used	2626464	7.13	7379	-0.133	-0.144	0.100	0.161	18.898535	0.912454	-1301.15	-1189.02
6	GUIDE	used	2631712	8.62	7377	0.211	0.297	0.124	0.185	18.767492	1.234020	-54.84	-1285.26
7	GUIDE	used	2626960	9.78	7367	-0.020	-0.170	0.228	0.379	18.130186	1.649327	2307.19	94.46

2.4 Star Slots

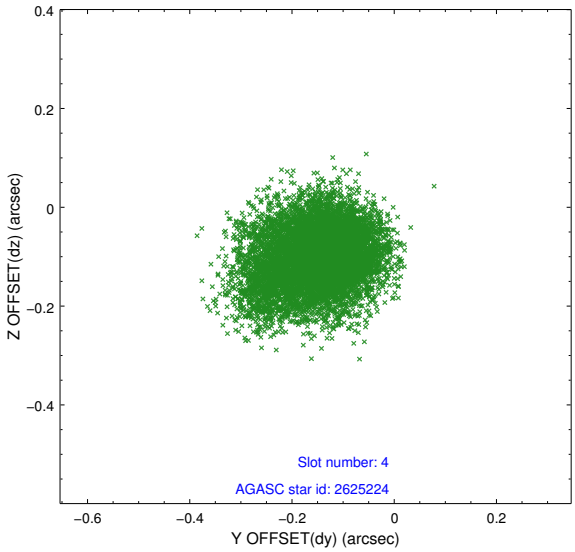
2.4.1 Slot 3

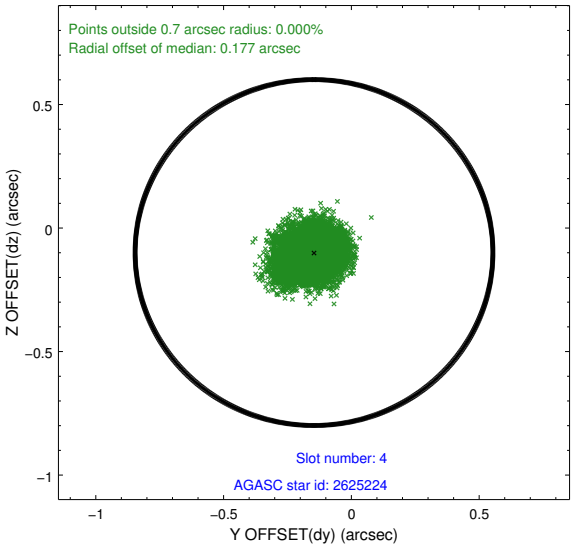


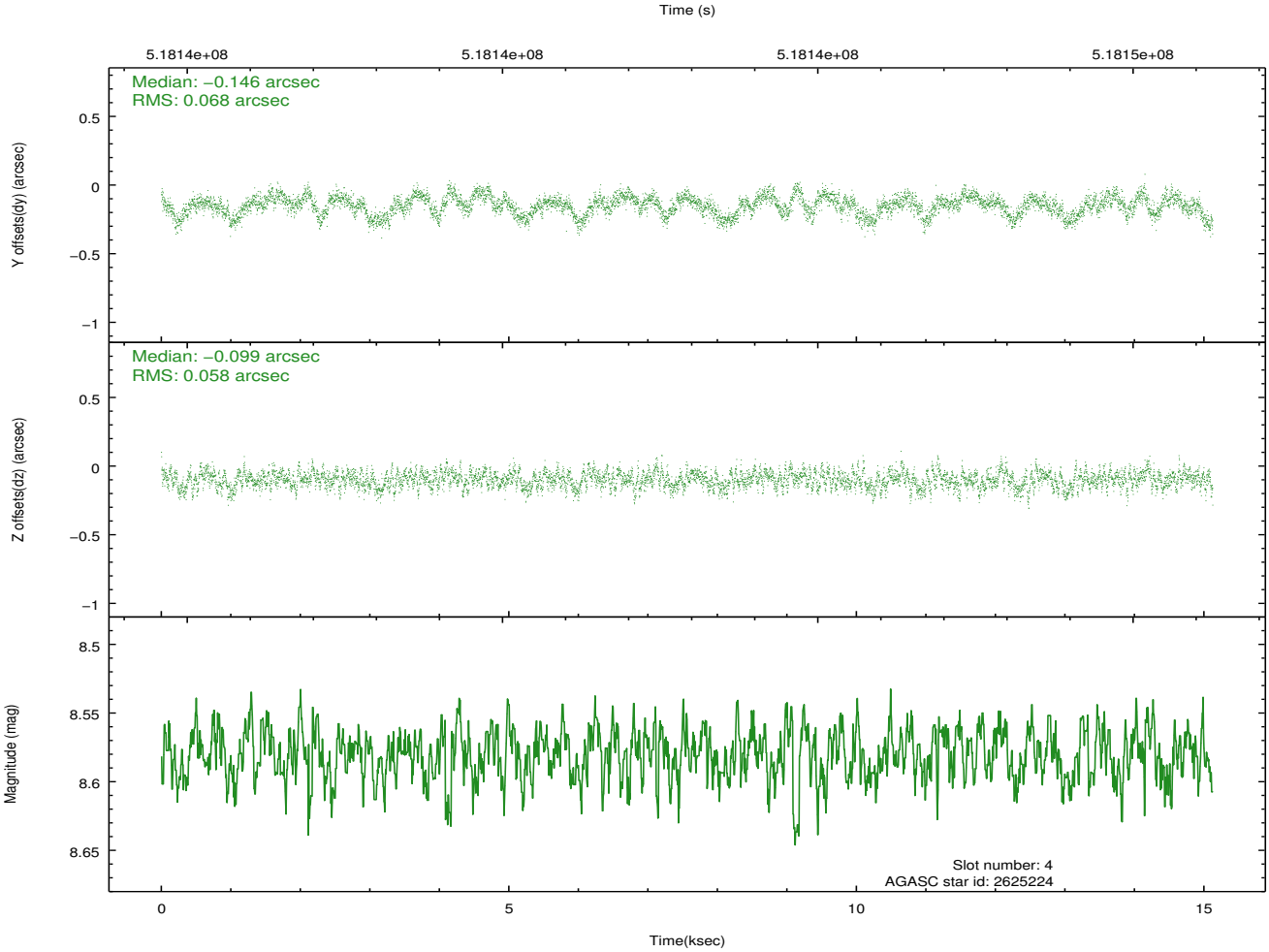




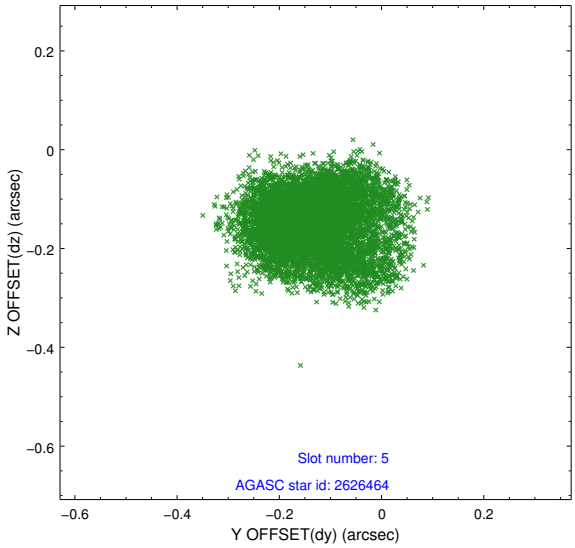
2.4.2 Slot 4

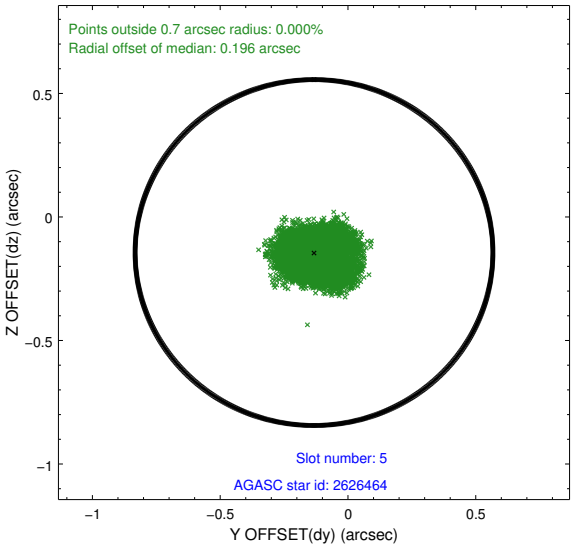

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 2625224

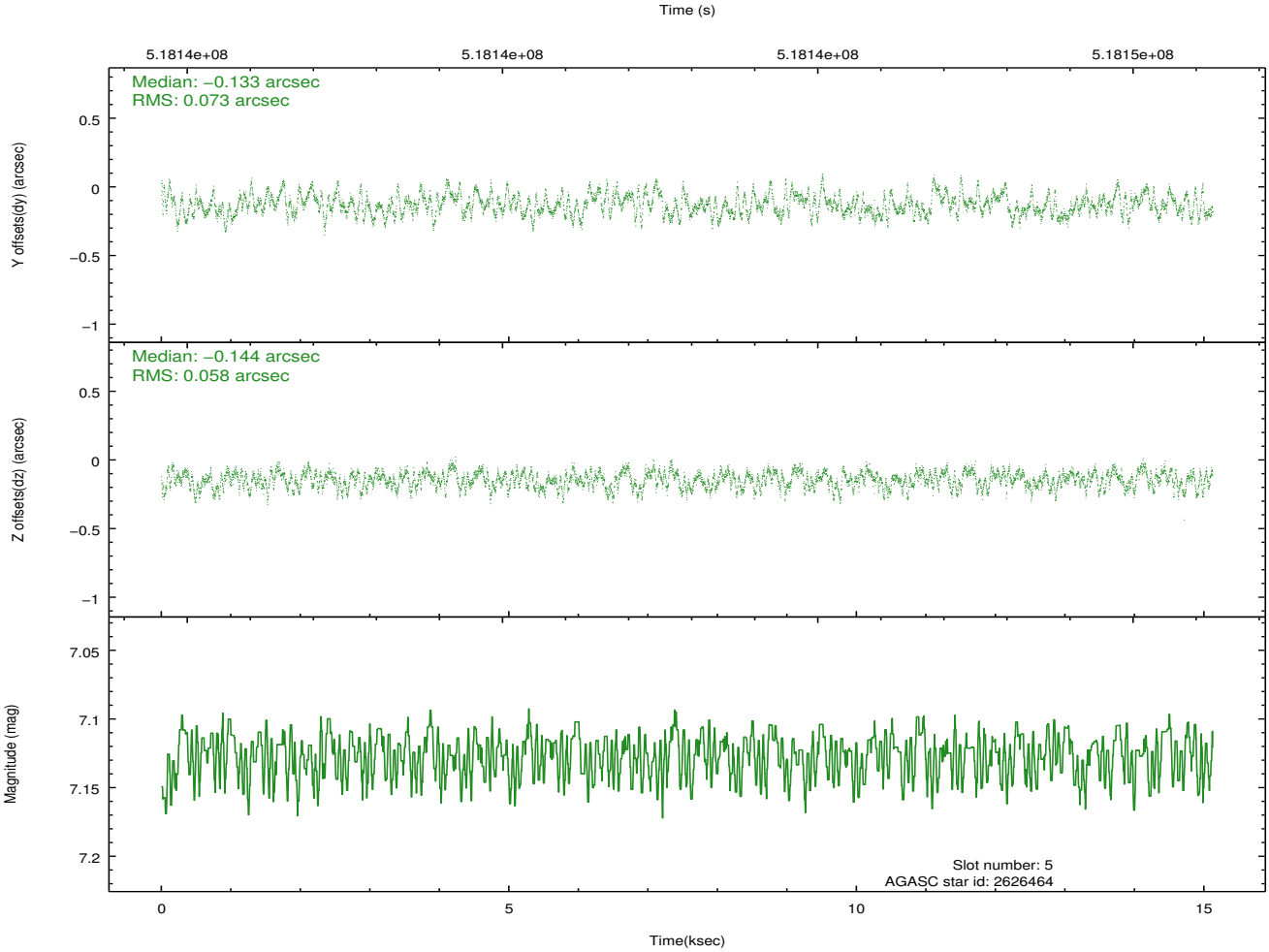

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.177 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 2625224


Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: −0.146 arcsec
RMS: 0.068 arcsec
Y offsets(dy) (arcsec)
Median: −0.099 arcsec
RMS: 0.058 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 2625224
Time(ksec)

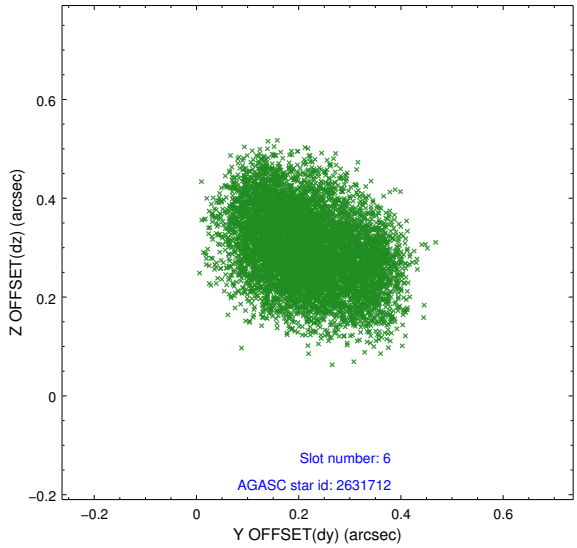
2.4.3 Slot 5

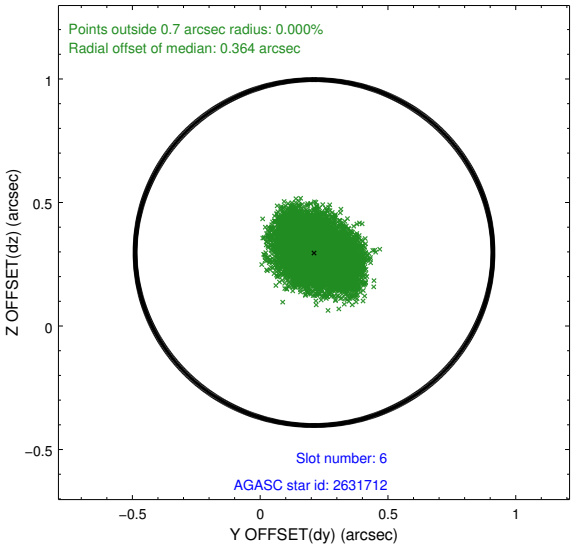

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 2626464

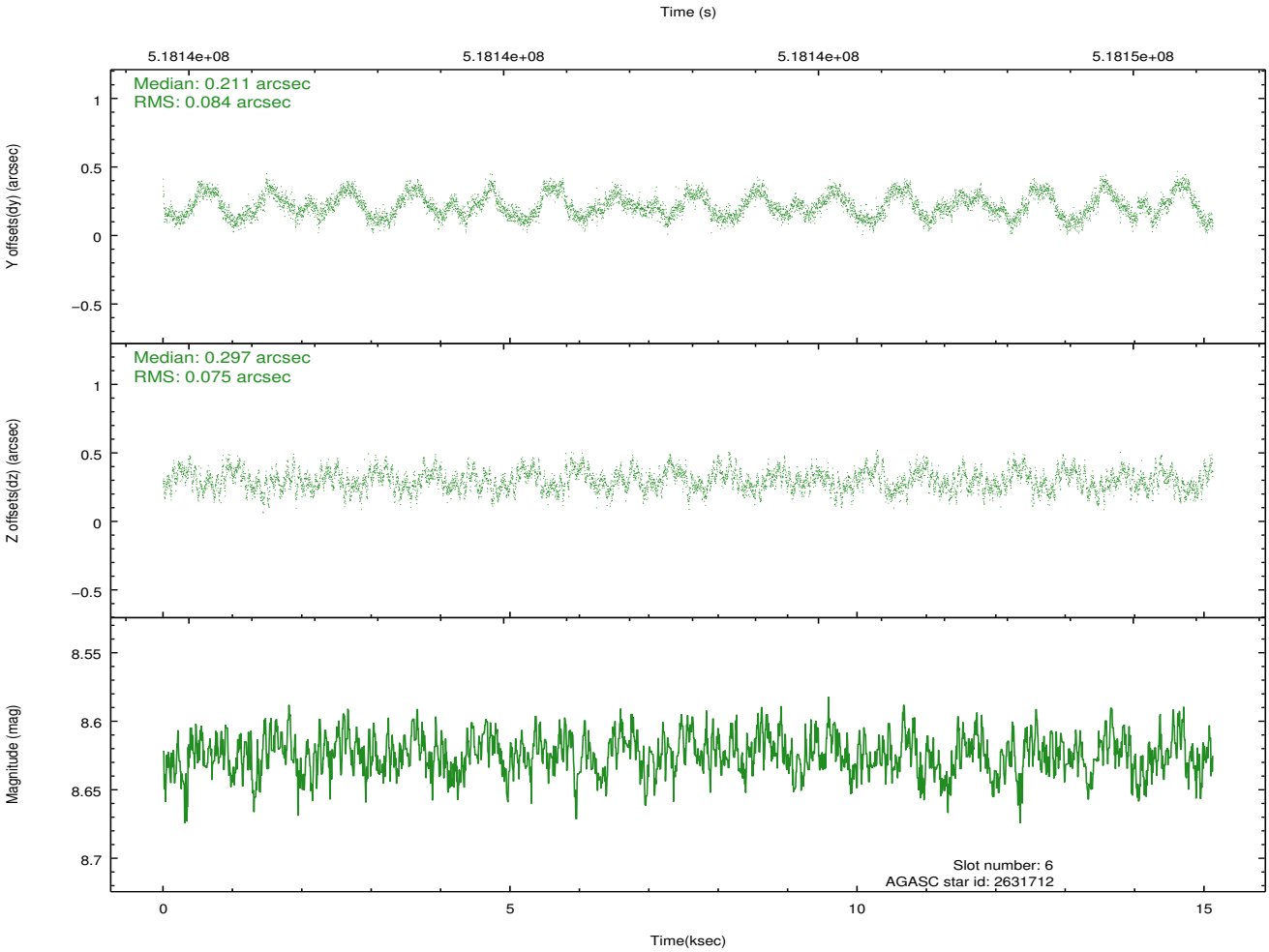

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.196 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 2626464


Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: −0.133 arcsec
RMS: 0.073 arcsec
Y offsets(dy) (arcsec)
Median: −0.144 arcsec
RMS: 0.058 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 2626464
Time(ksec)

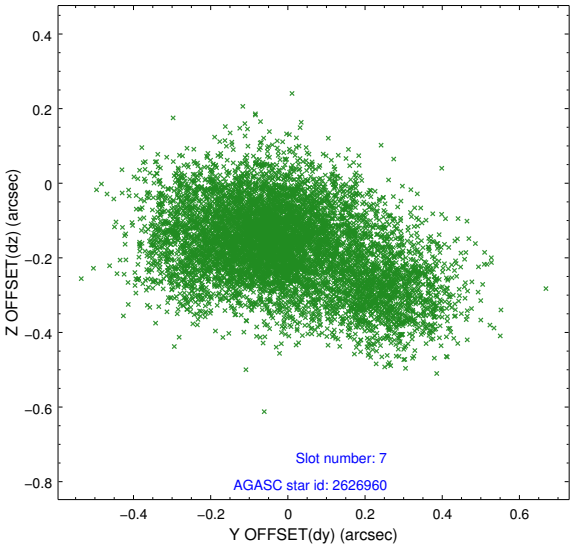
2.4.4 Slot 6

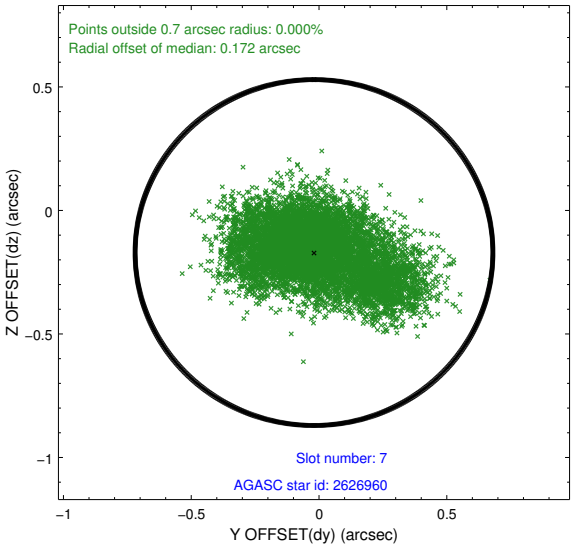

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 2631712

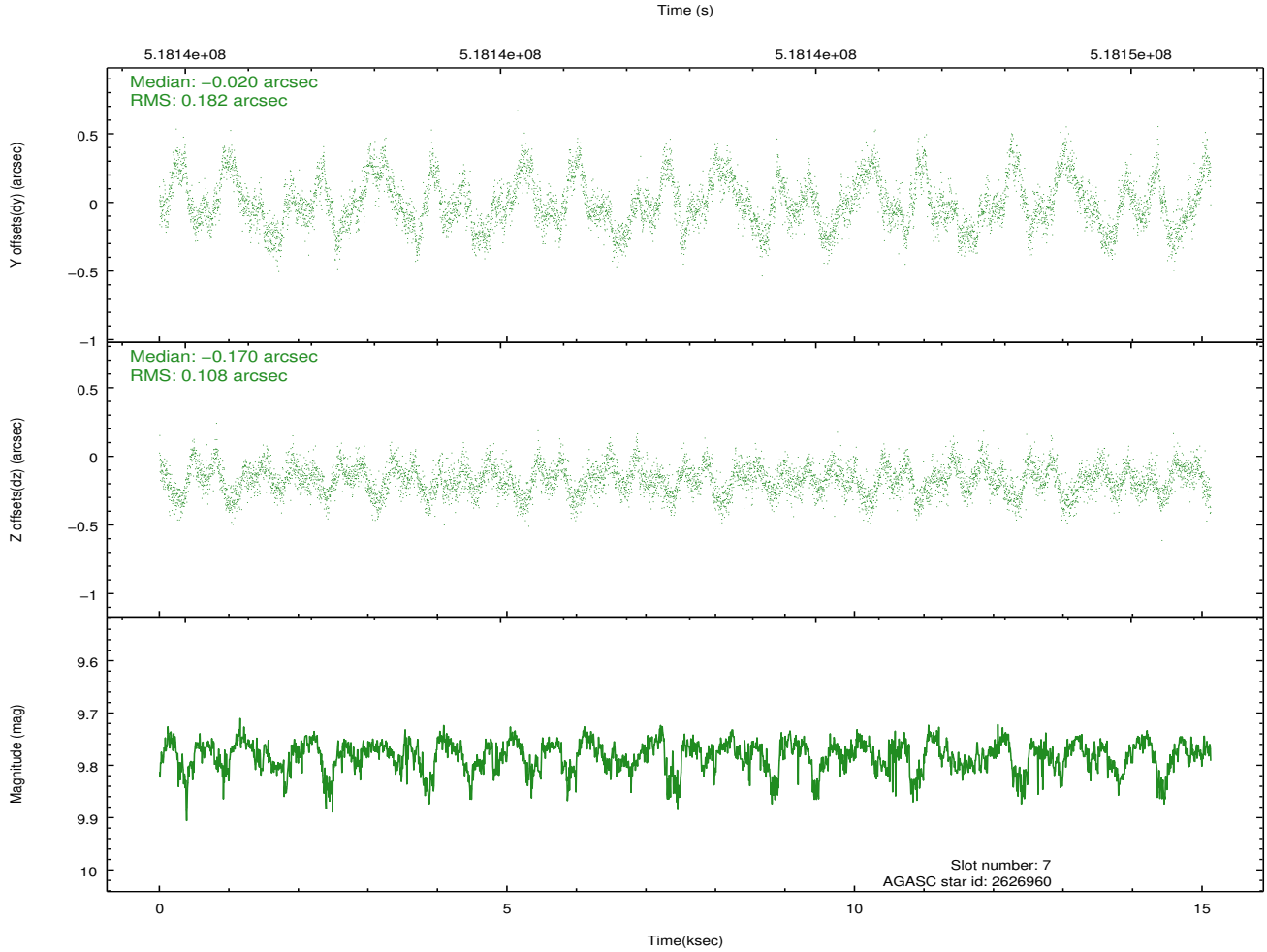

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.364 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 2631712


Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: 0.211 arcsec
RMS: 0.084 arcsec
Y offsets(dy) (arcsec)
Median: 0.297 arcsec
RMS: 0.075 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 2631712
Time(ksec)

2.4.5 Slot 7

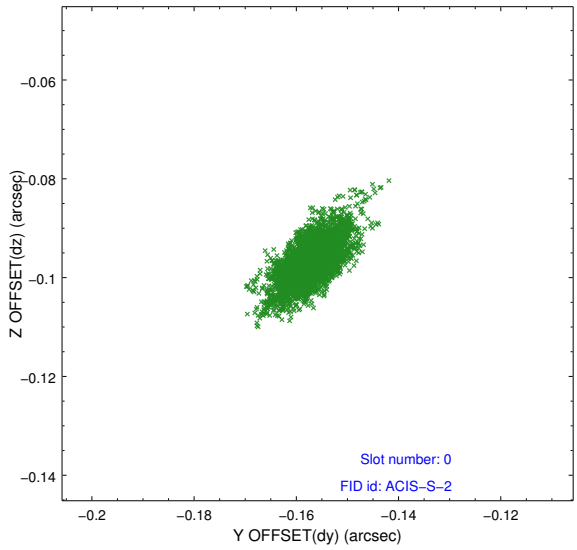

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 2626960

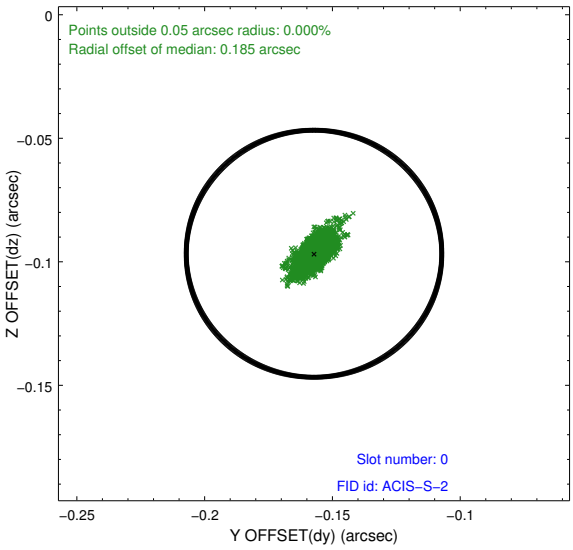

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.172 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 2626960

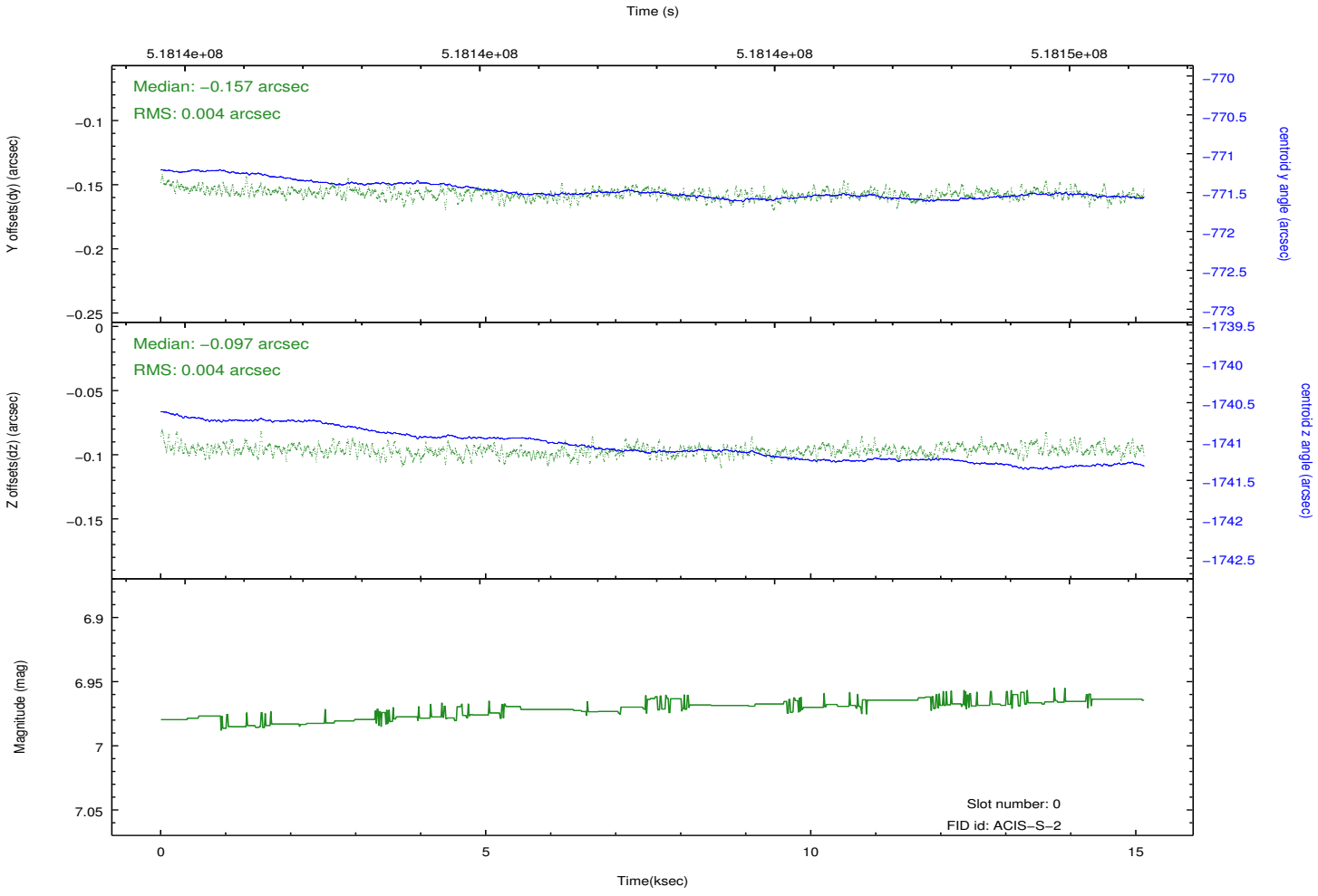

Time (s)
5.1814e+08
5.1814e+08
5.1814e+08
5.1815e+08
Median: −0.020 arcsec
RMS: 0.182 arcsec
Y offsets(dy) (arcsec)
Median: −0.170 arcsec
RMS: 0.108 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 2626960
Time(ksec)

2.5 FID Slots

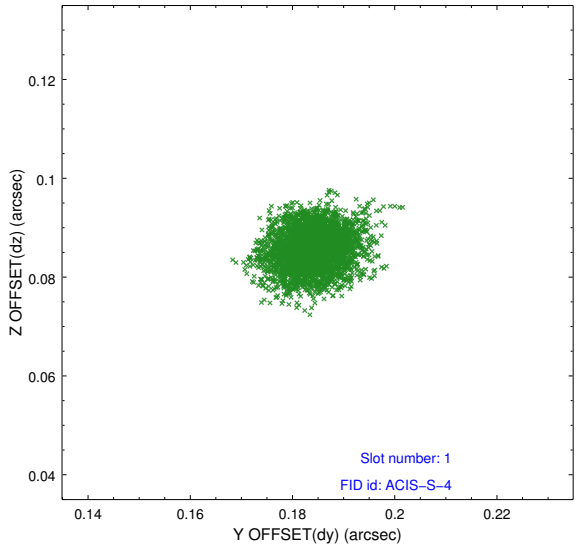
2.5.1 Slot 0

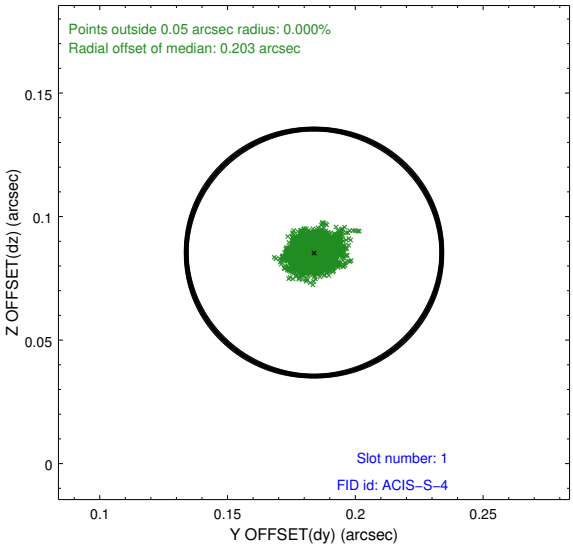


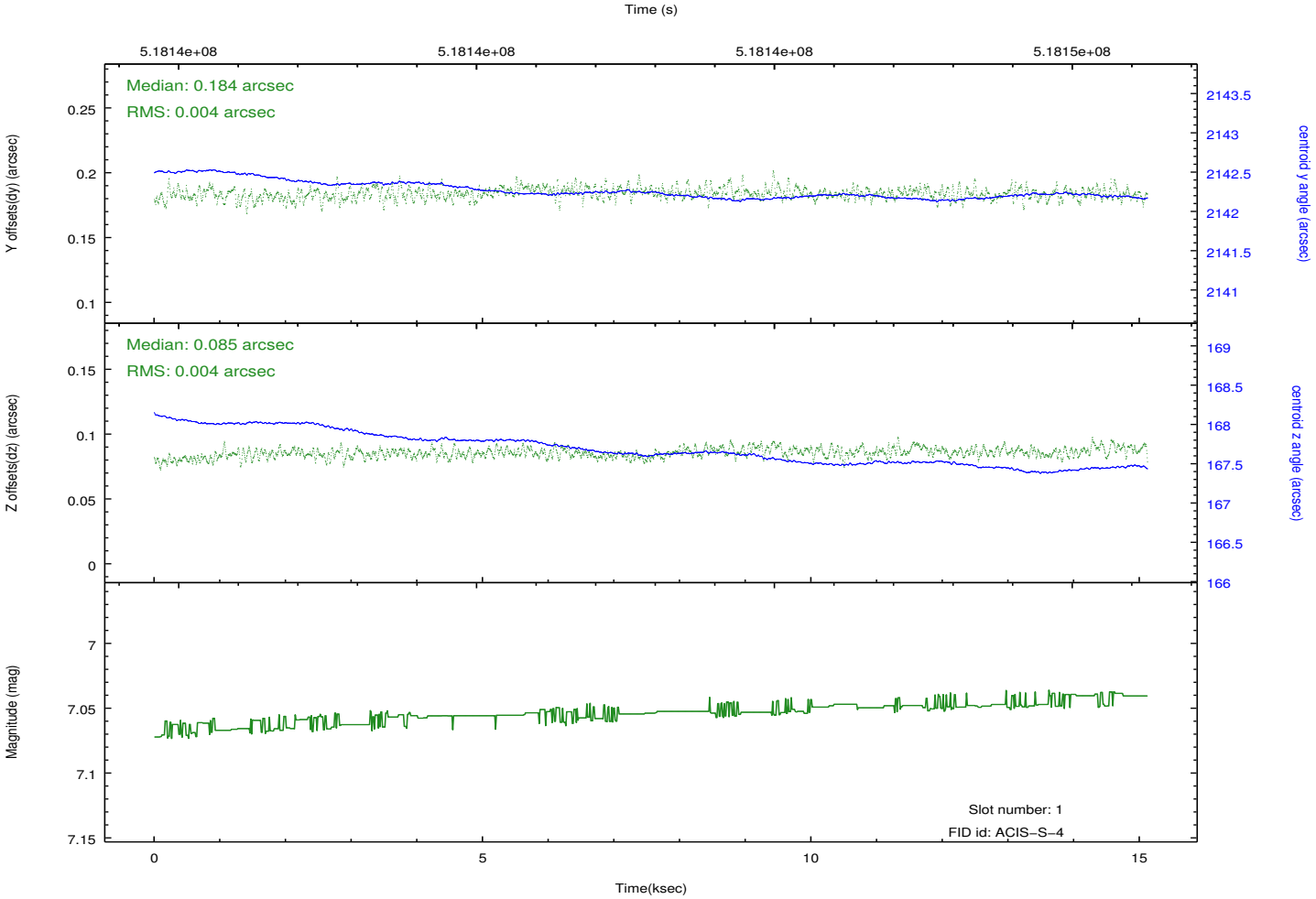




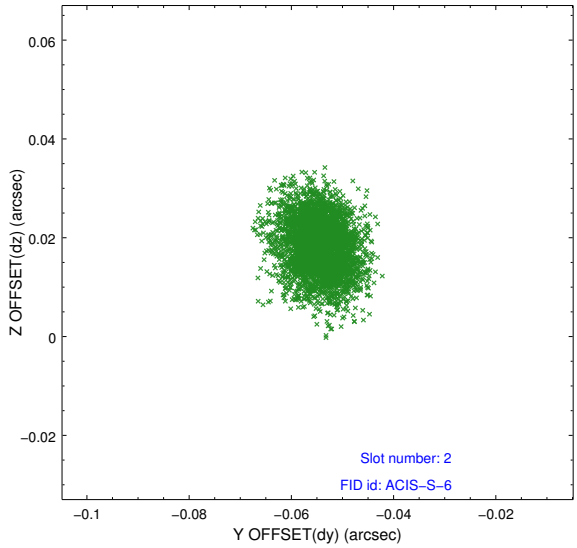
2.5.2 Slot 1

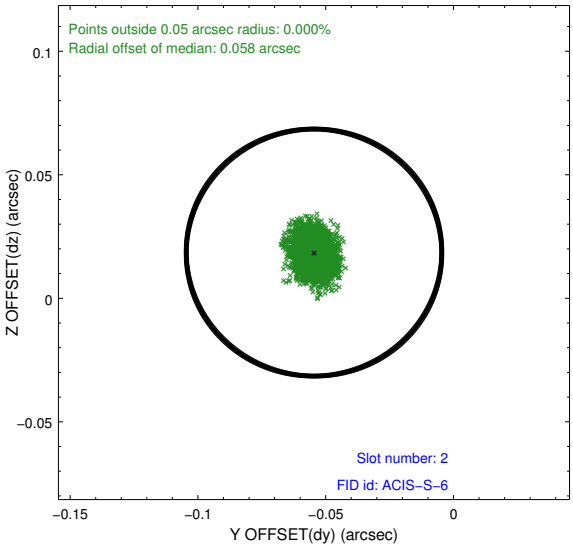

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

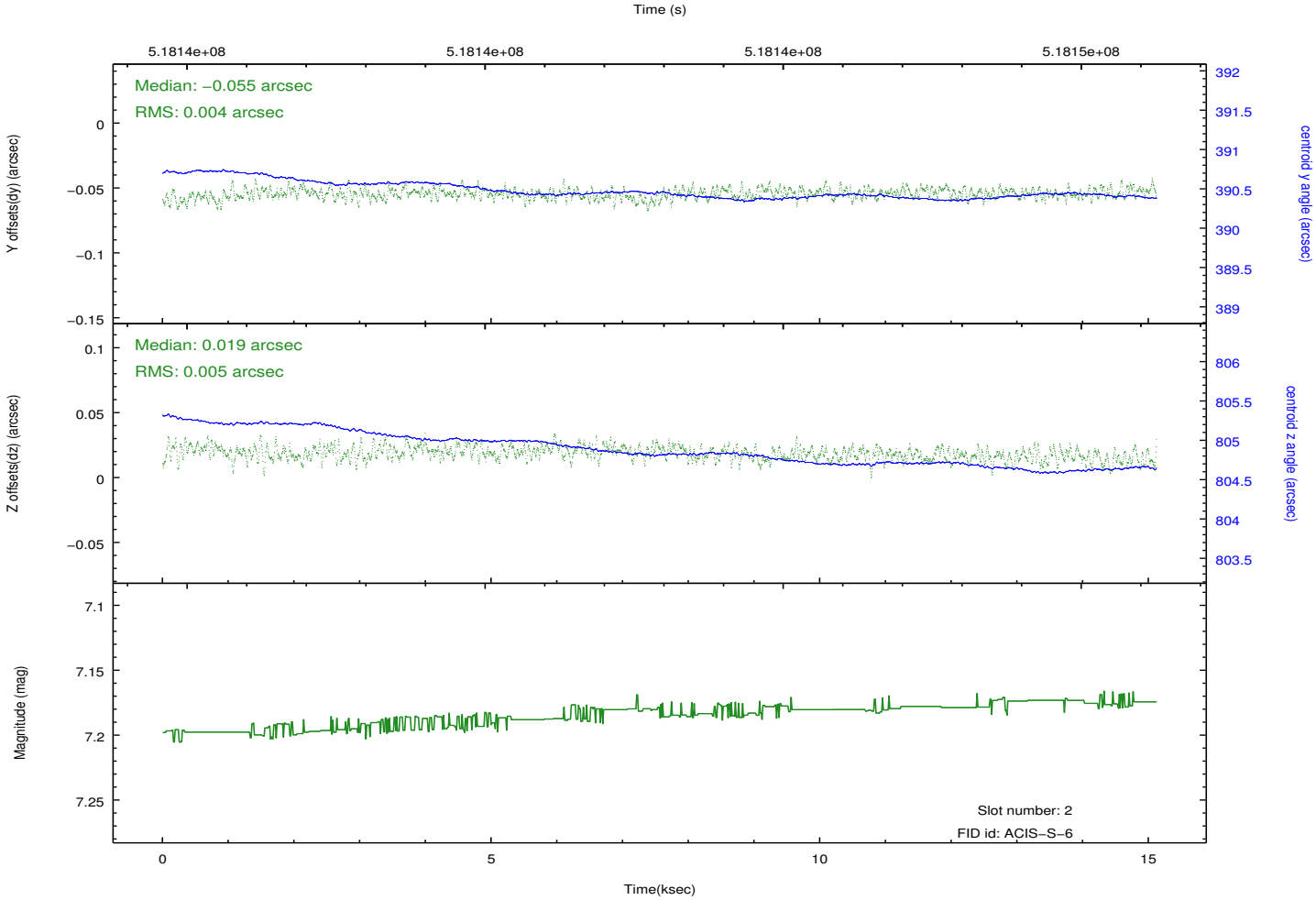

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.203 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.184 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.085 arcsec
RMS: 0.004 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−6


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.058 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−6


Time (s)
Median: −0.055 arcsec
RMS: 0.004 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.019 arcsec
RMS: 0.005 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−6
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Jen Lauer
V&V Date (YYYY-MM-DD)	2014.12.19
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	15.069100115895

A.2 Comments

```
These data have been reprocessed with new aspect alignment calibration
files that correct small mean offsets (up to 0.4 arcsecs) and improve
overall astrometric accuracy. The new calibration was determined using
data from the time period being reprocessed and was performed using
cross-correlation of X-ray sources with radio and optical counterparts.
```