V&V Reference Report
L2 ASCDS Version : 8.1.1

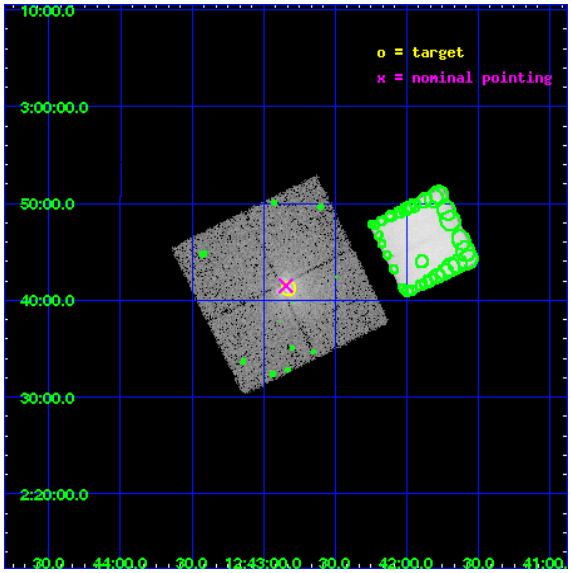
Observation 324 - L2 Version 4
Chandra X-Ray Center

L2 Processing Date : Nov 25 2009

Contents

1 Front

seq_num	600084	Sequence number
obs_id	324	Observation id
title	BRIGHT ELLIPTICAL GALAXIES AND HIGH REDSHIFT CLUSTERS	Proposal tit
observer	DR Richard Mushotzky	Principal investigator
object	NGC 4636	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	190.707083	Observer's specified target RA
dec_targ	2.688111	Observer's specified target Dec
ra_nom	190.71106368854	Nominal RA
dec_nom	2.6914697083973	Nominal Dec
roll_nom	63.686509910515	Nominal Roll
revision	4	Processing version of data
ontime	8483.7141542584	Sum of GTIs [s]
livetime	8376.2882573578	Livetime [s]
ontime0	8466.7302356139	Sum of GTIs [s]
ontime1	8515.345366843	Sum of GTIs [s]
ontime2	8438.2991029248	Sum of GTIs [s]
ontime3	8483.7141542584	Sum of GTIs [s]
ontime7	9558.9376554936	Sum of GTIs [s]
l2events	304396	Number of level 2 events

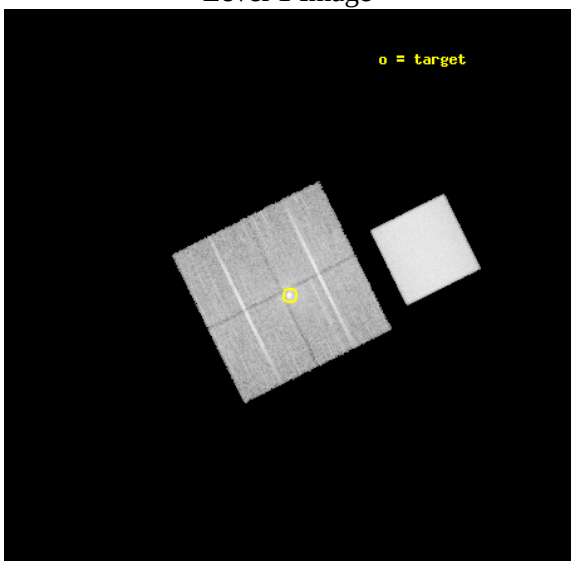


2 OBI

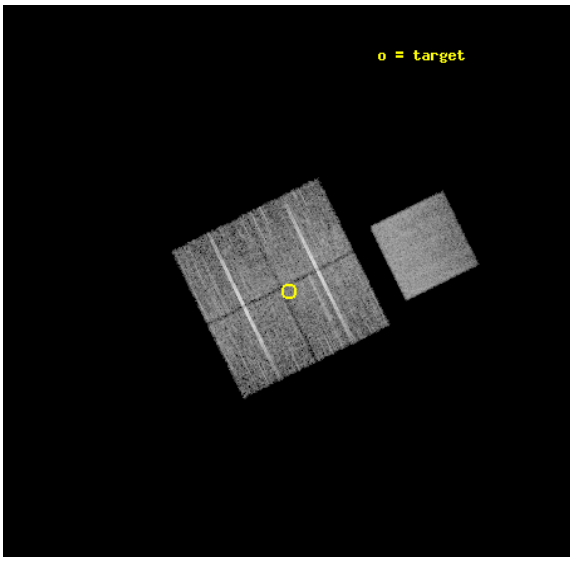
2.1 OBI

2.1.1 Images

Level 1 Image

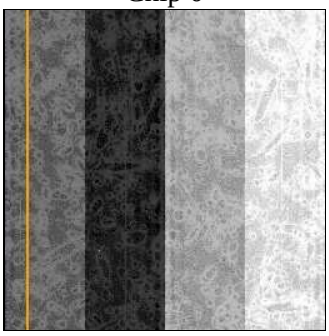


Level 1 Bad Events

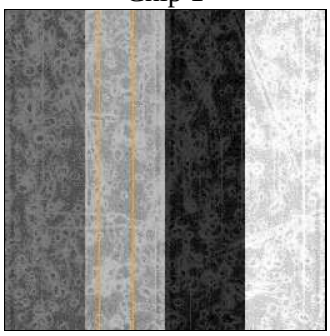


2.1.2 Bias

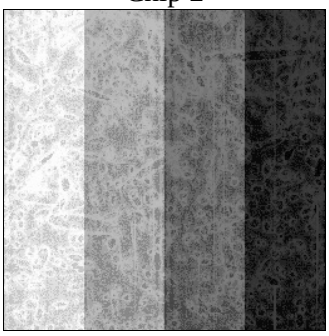
Chip 0



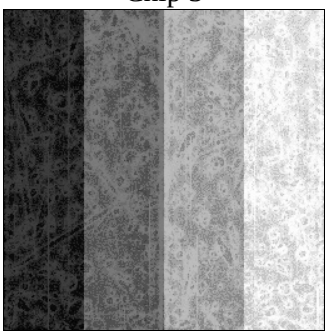
Chip 1



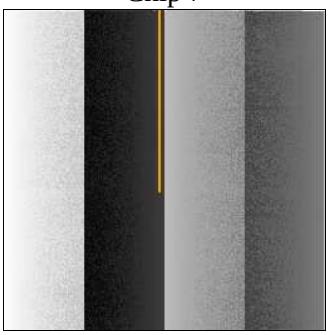
Chip 2



Chip 3



Chip 7



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	8.1.1	ASCDS version number
caldbver	4.1.4	
date	2009-11-25T09:02:39	Date and time of file creation
revision	3	Processing version of data

sched_exp_time	10612.589000	Scheduled observation exposure time
ontime	8483.7141542584	Sum of GTIs [s]
ontime0	8466.7302356139	Sum of GTIs [s]
ontime1	8515.345366843	Sum of GTIs [s]
ontime2	8438.2991029248	Sum of GTIs [s]
ontime3	8483.7141542584	Sum of GTIs [s]
ontime7	9558.9376554936	Sum of GTIs [s]
l1events	650177	Number of level 1 events

2.1.4 Events

	ccd 0	**ccd 1**	**ccd 2**	**ccd 3**	**ccd 7**
level 1 events	75188	74682	81965	85816	332526
rejected events	62231	60041	67585	66101	84188
rejected %	82%	80%	82%	77%	25%

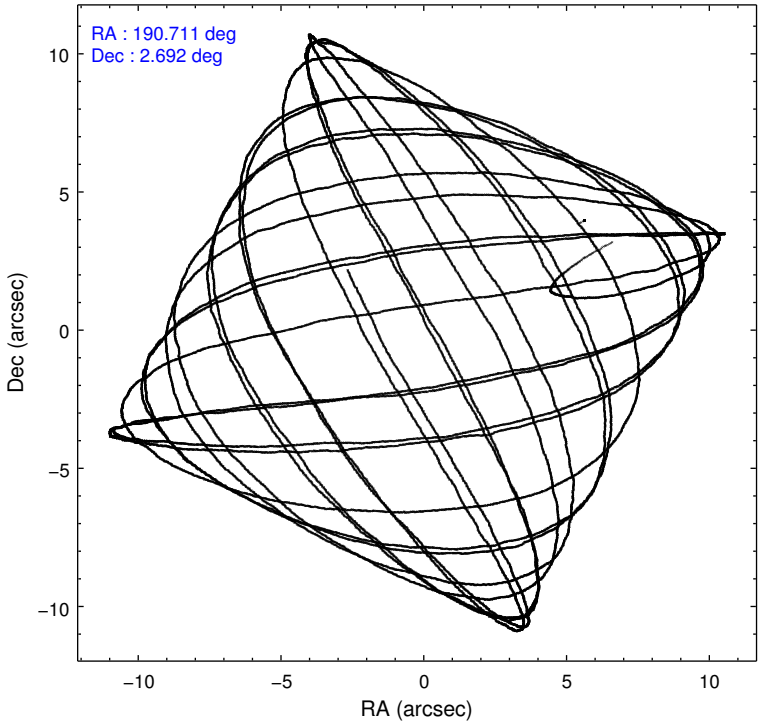
	ccd 0	**ccd 1**	**ccd 2**	**ccd 3**	**ccd 7**
grade 0 events	4930	5765	5797	9507	26532
	6%	7%	7%	11%	7%
grade 1 events	29	21	34	29	77
	0%	0%	0%	0%	0%
grade 2 events	5141	5622	5790	7213	46519
	6%	7%	7%	8%	13%
grade 3 events	575	656	483	563	16103
	0%	0%	0%	0%	4%
grade 4 events	521	653	513	552	15514
	0%	0%	0%	0%	4%
grade 5 events	1482	1570	1175	1395	7270
	1%	2%	1%	1%	2%
grade 6 events	1804	1945	1805	1885	144505
	2%	2%	2%	2%	43%
grade 7 events	60706	58450	66368	64672	76006
	80%	78%	80%	75%	22%

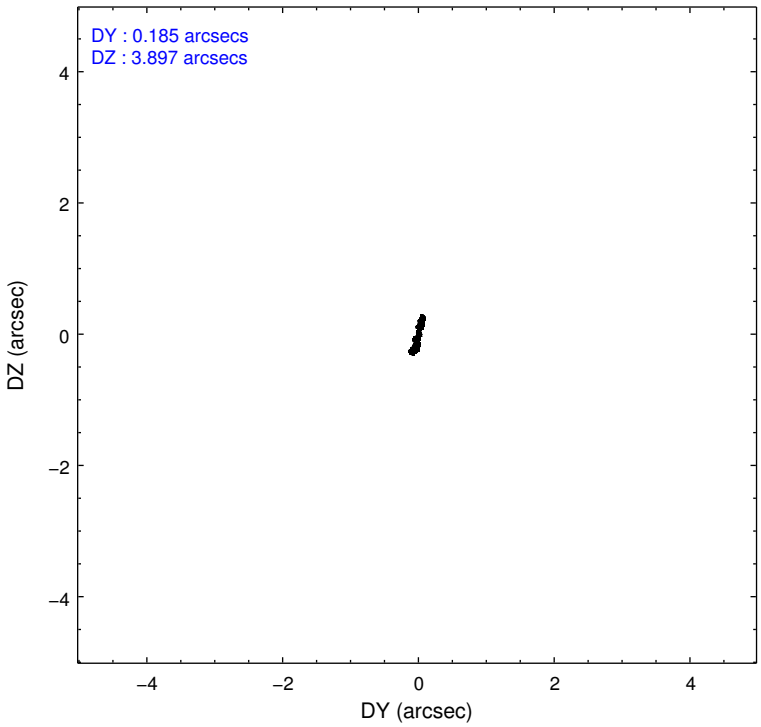
2.2 Compared Parameters

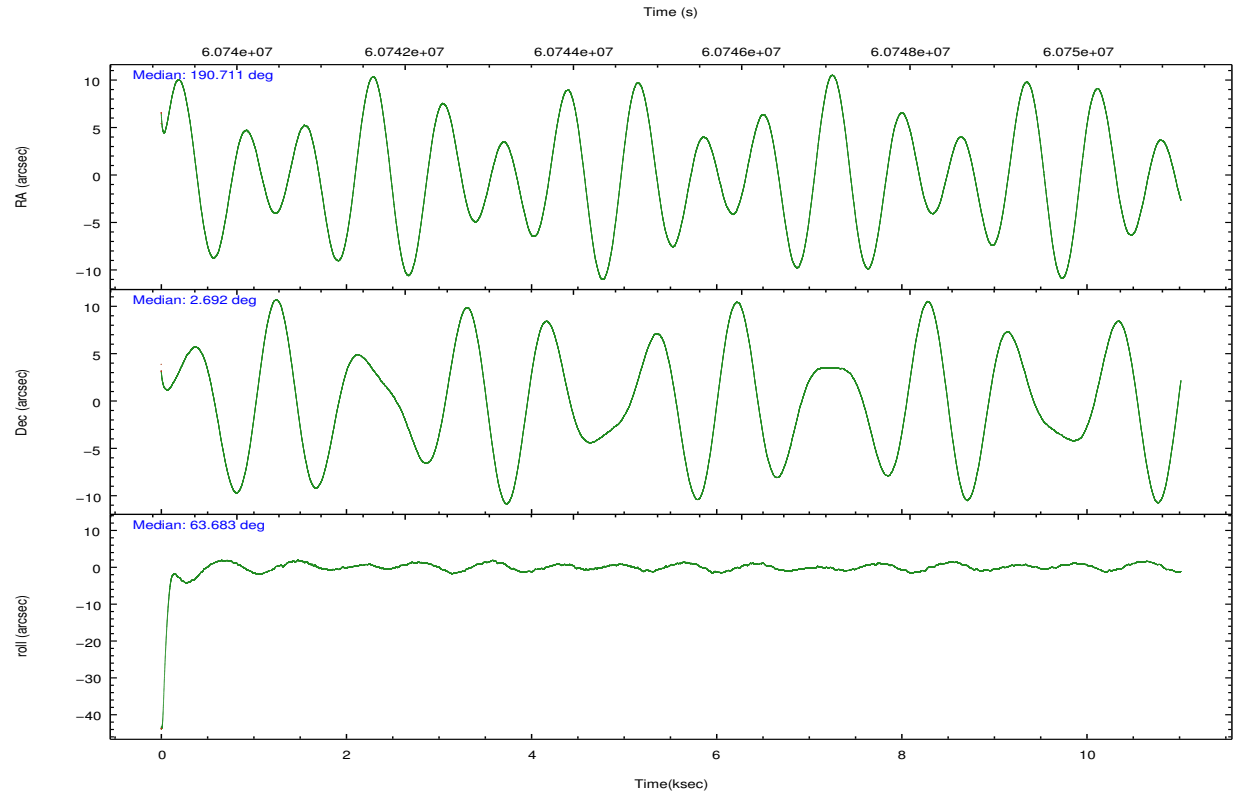
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-01237	ACIS-01237
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
Pointing RA	190.712477	190.7110636885418
Pointing Dec	2.663817	2.691469708397324
Pointing Roll	63.477809	63.6865099105148
SIM focus pos (mm)	-0.782348	-0.7809083437167272
SIM defocus (mm)	0	0.001439871863259334
SIM translation stage pos (mm)	-233.592463	-233.5874344608287
SIM translation stage offset (mm)	0	-0.005018542100998502
Observation start time	60740055.184000	60738481.80088
Observation start date	1999-12-05T00:13:11	1999-12-04T23:48:01
Observation end time	60750668.184000	60751296.863843
Observation end date	1999-12-05T03:10:04	1999-12-05T03:21:36
Read mode	TIMED	TIMED

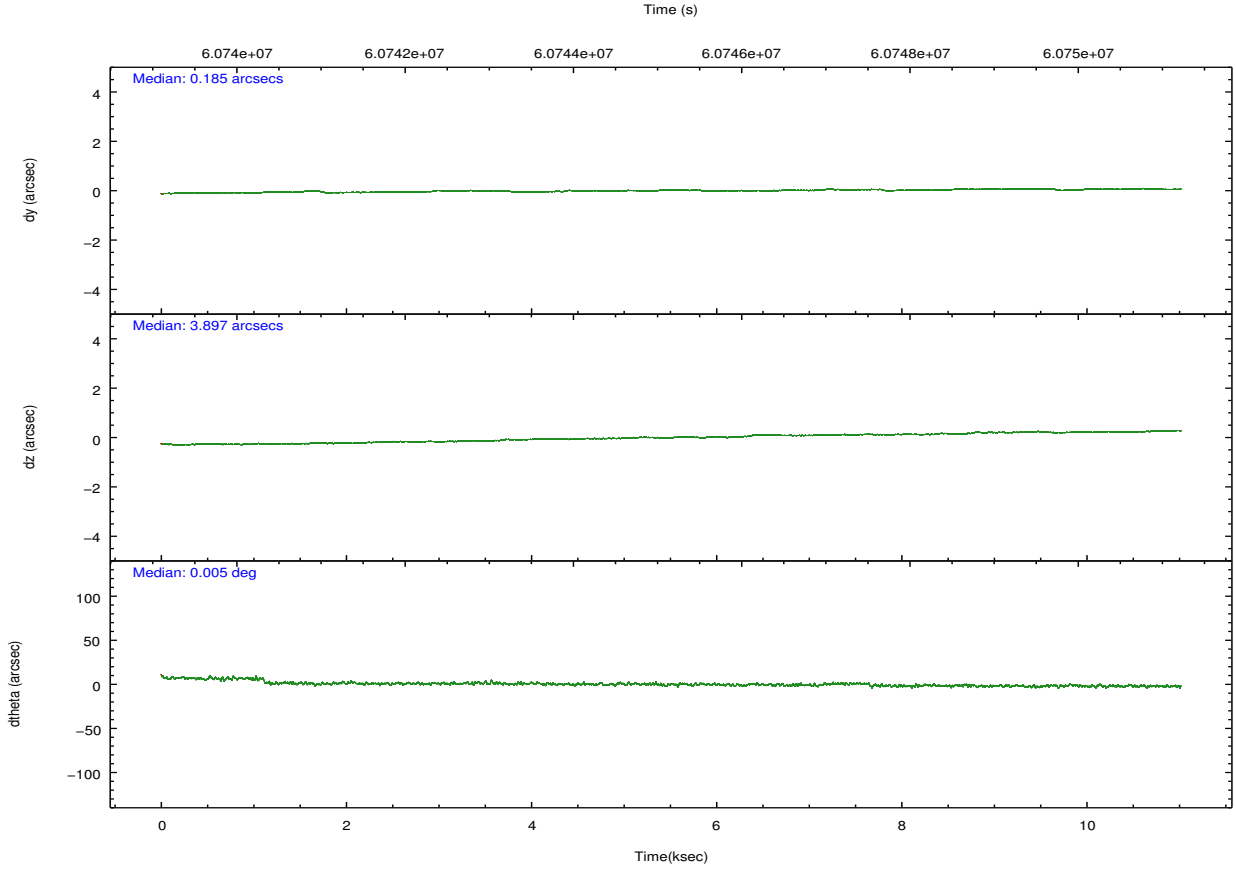
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 190.711 deg
Dec : 2.692 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 0.185 arcsecs
DZ : 3.897 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
6.074e+07
6.0742e+07
6.0744e+07
6.0746e+07
6.0748e+07
6.075e+07
Median: 190.711 deg
RA (arcsec)
Median: 2.692 deg
Dec (arcsec)
Median: 63.683 deg
roll (arcsec)
Time(ksec)

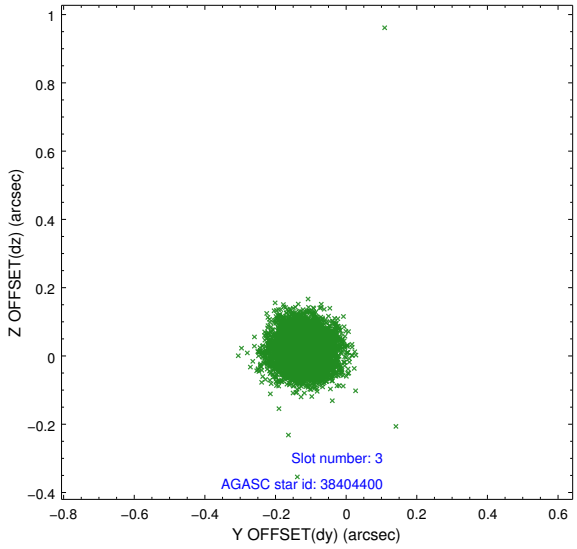

Time (s)
6.074e+07
6.0742e+07
6.0744e+07
6.0746e+07
6.0748e+07
6.075e+07
Median: 0.185 arcsecs
dy (arcsec)
Median: 3.897 arcsecs
dz (arcsec)
Median: 0.005 deg
dtheta (arcsec)
Time(ksec)

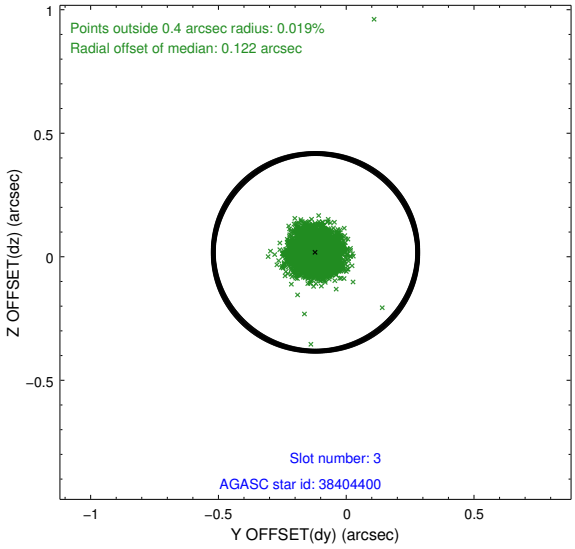
Slot Statistics

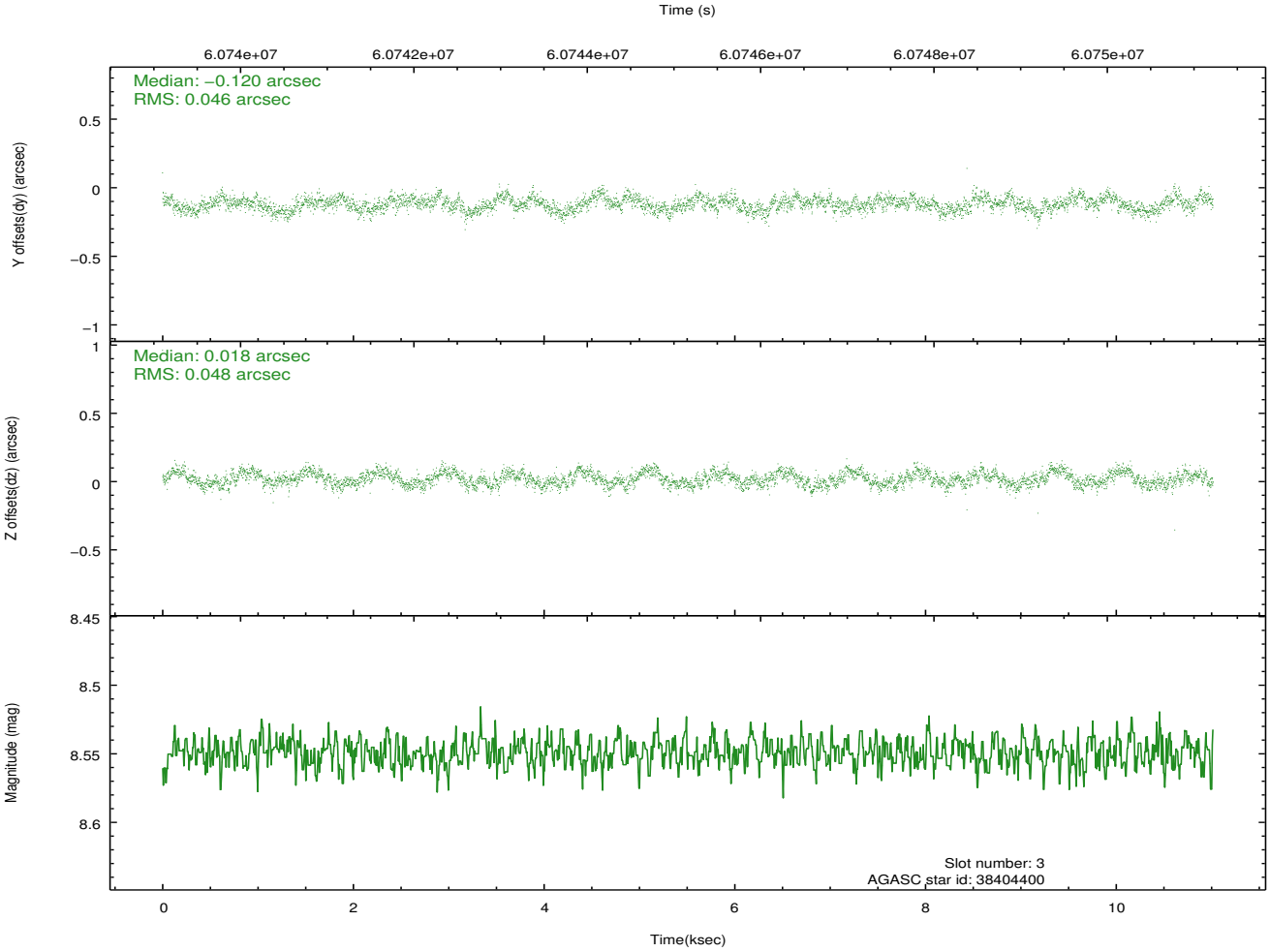
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-I-2	7.19	5374	-0.033	0.021	0.008	0.014	0.000000	0.000000	-754.62	-833.44
1	FID	ACIS-I-4	7.25	5374	-0.036	0.022	0.008	0.014	0.000000	0.000000	2159.59	1072.30
2	OMITTED		0.00	0	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0.00
3	GUIDE	38404400	8.55	5373	-0.120	0.018	0.071	0.111	190.883800	2.621151	137.04	-618.81
4	GUIDE	38407696	8.62	5371	-0.081	0.065	0.162	0.230	190.996559	3.067120	1754.58	-264.34
5	GUIDE	38017480	8.80	5372	-0.047	-0.003	0.068	0.113	190.904265	2.163378	-1304.11	-1420.95
6	GUIDE	38018480	9.08	5371	0.270	-0.148	0.078	0.125	190.261944	2.299844	-1896.47	865.60
7	GUIDE	38404184	9.74	5365	-0.009	0.074	0.097	0.161	190.997184	2.565608	140.09	-1072.74

2.4 Star Slots

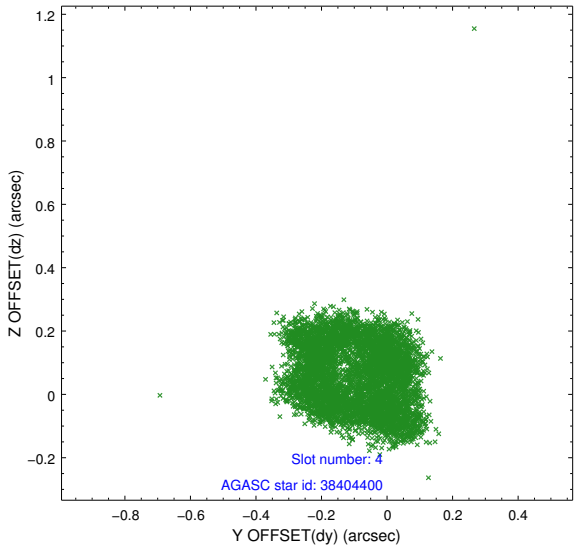
2.4.1 Slot 3

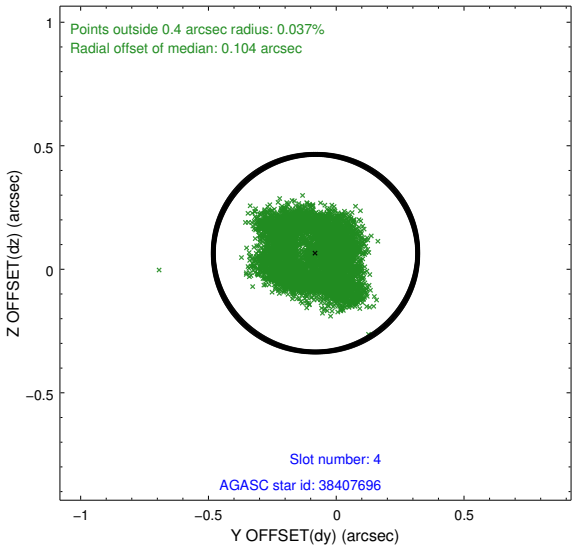


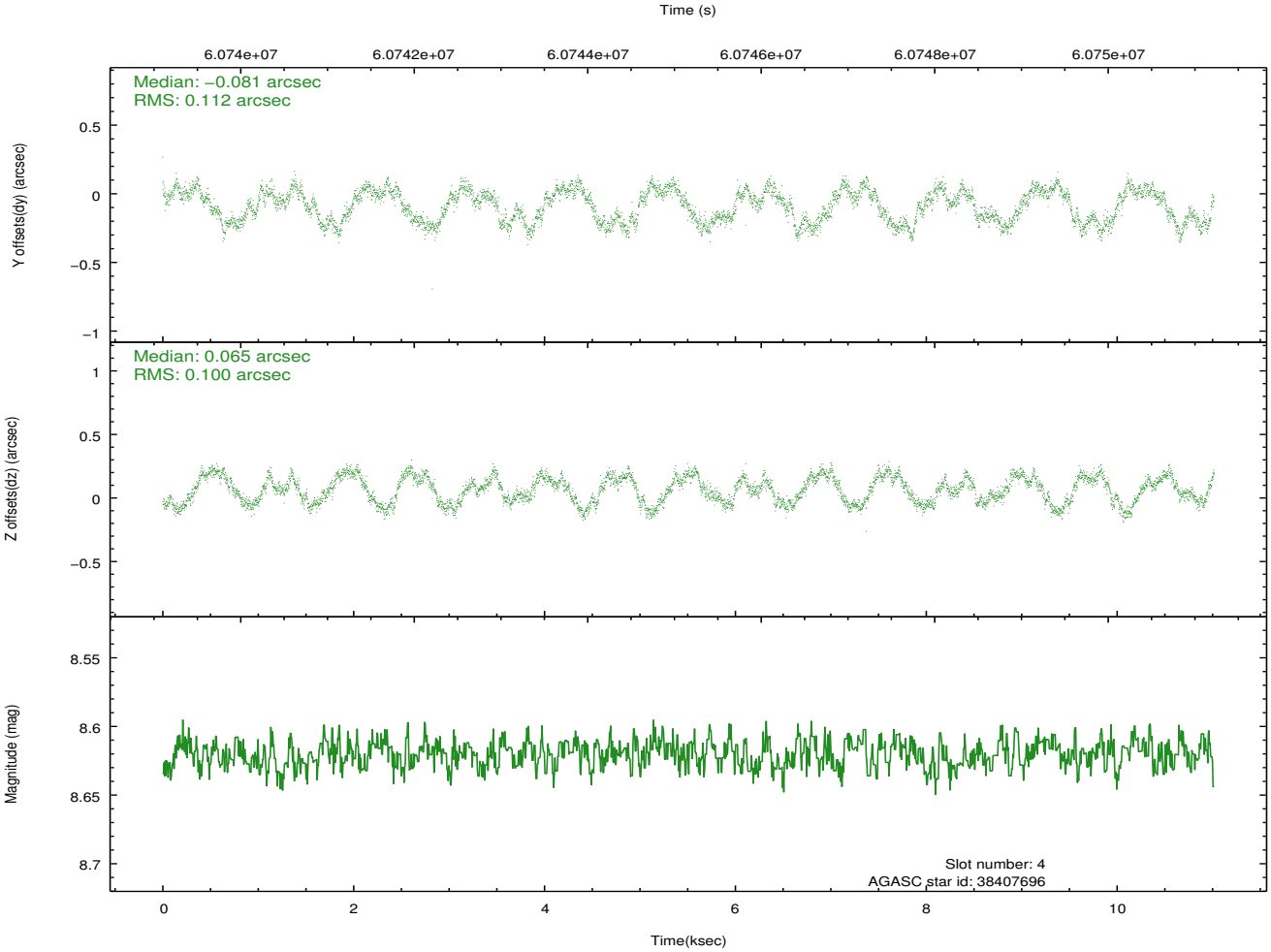




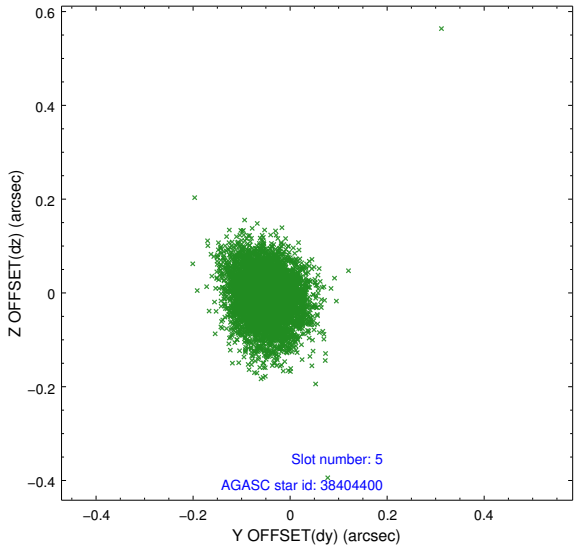
2.4.2 Slot 4

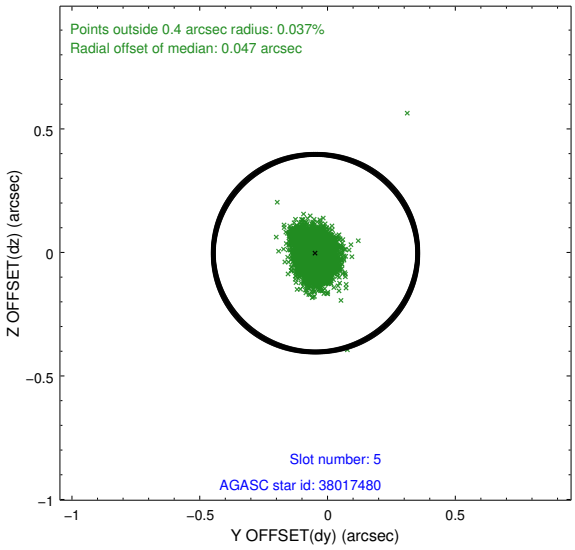

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 38404400

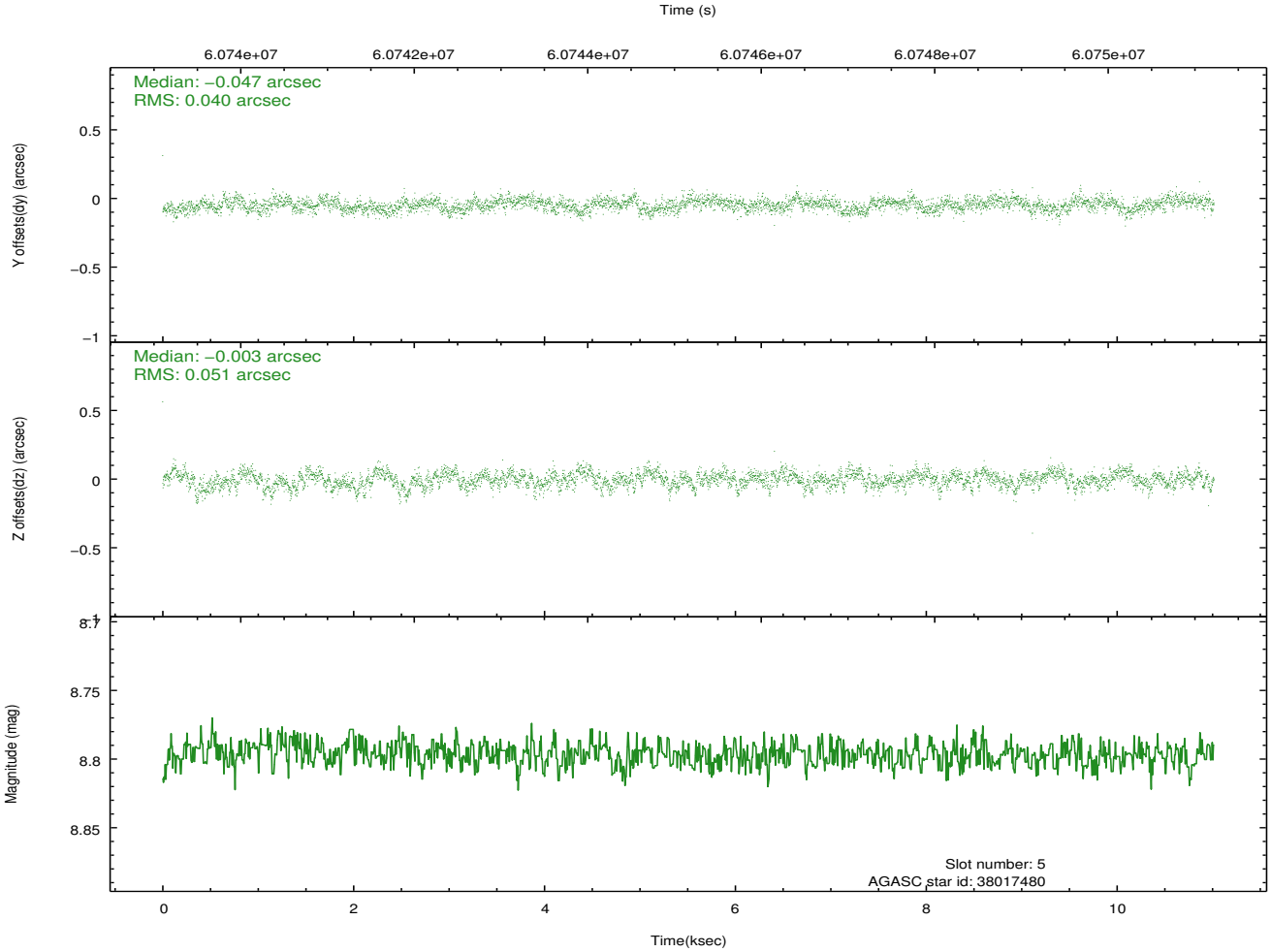

Points outside 0.4 arcsec radius: 0.037%
Radial offset of median: 0.104 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 38407696


Time (s)
Median: −0.081 arcsec
RMS: 0.112 arcsec
Y offsets(dy) (arcsec)
Median: 0.065 arcsec
RMS: 0.100 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 38407696
Time(ksec)

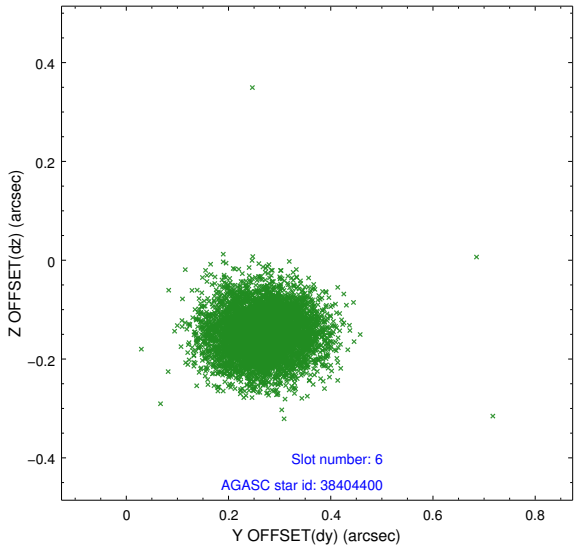
2.4.3 Slot 5

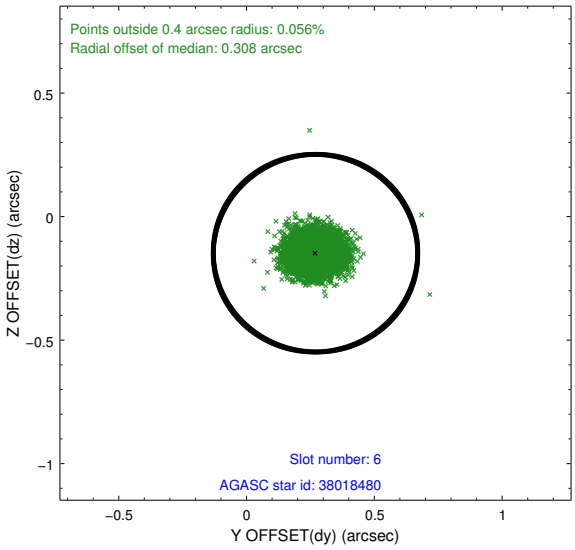

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 38404400

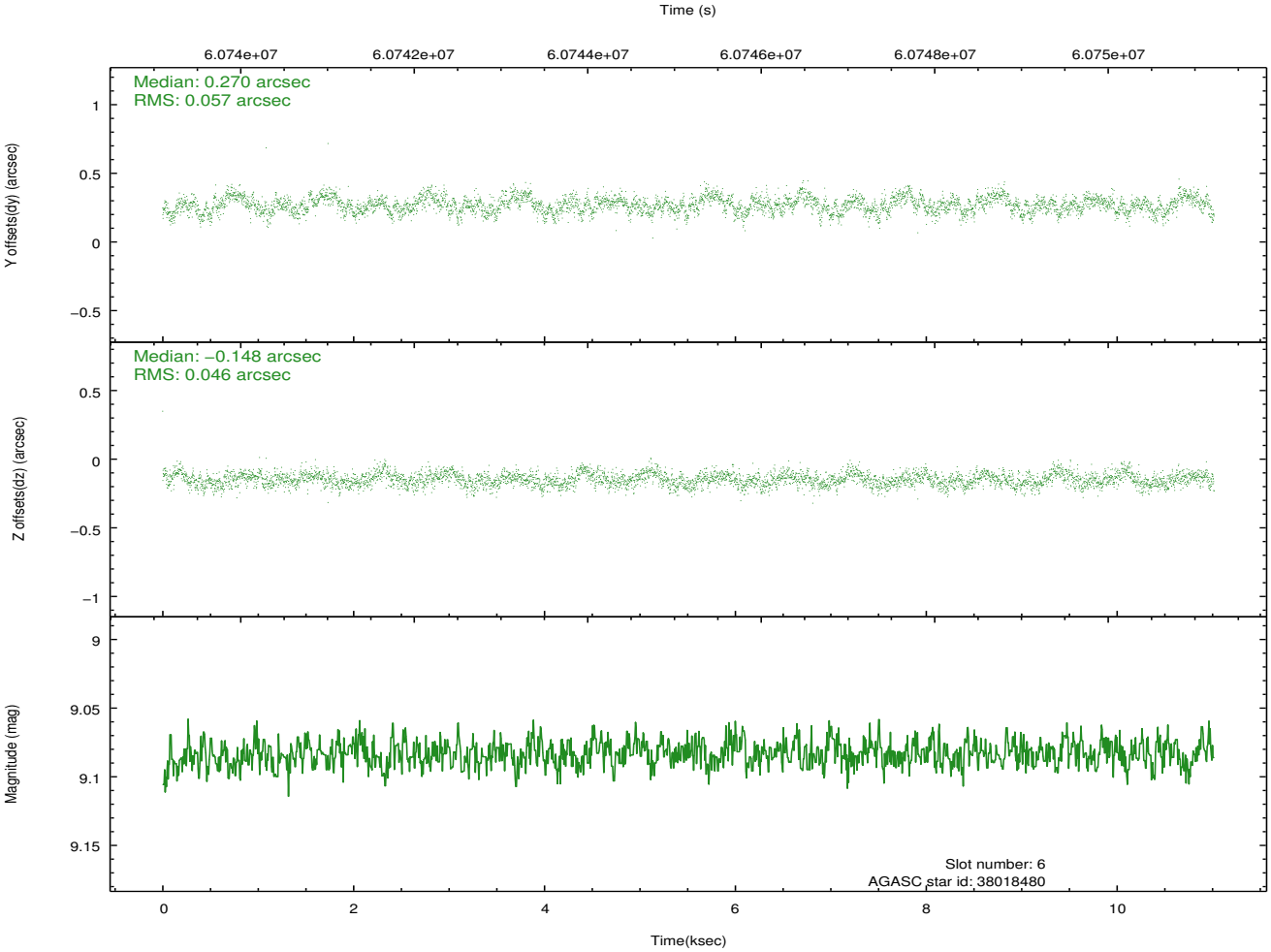

Points outside 0.4 arcsec radius: 0.037%
Radial offset of median: 0.047 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 38017480


Time (s)
Median: −0.047 arcsec
RMS: 0.040 arcsec
Y offsets(dy) (arcsec)
Median: −0.003 arcsec
RMS: 0.051 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 38017480
Time(ksec)

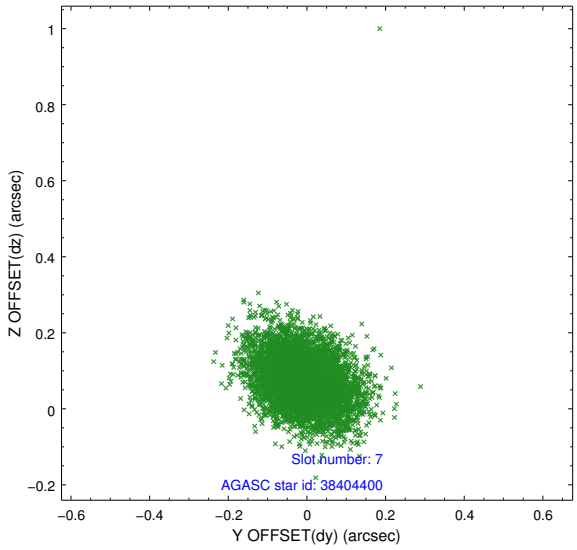
2.4.4 Slot 6

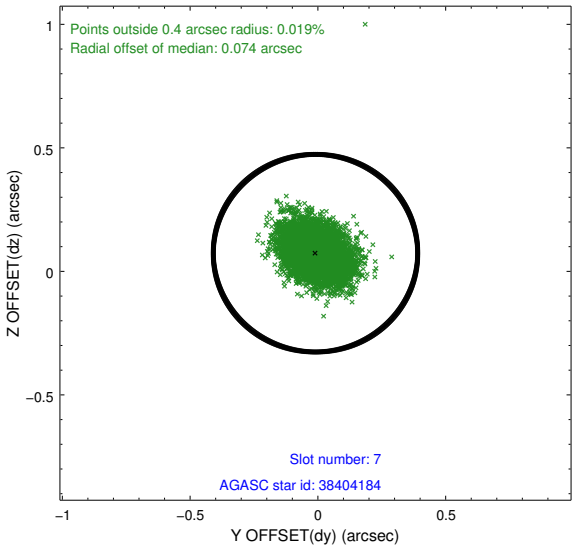

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 38404400

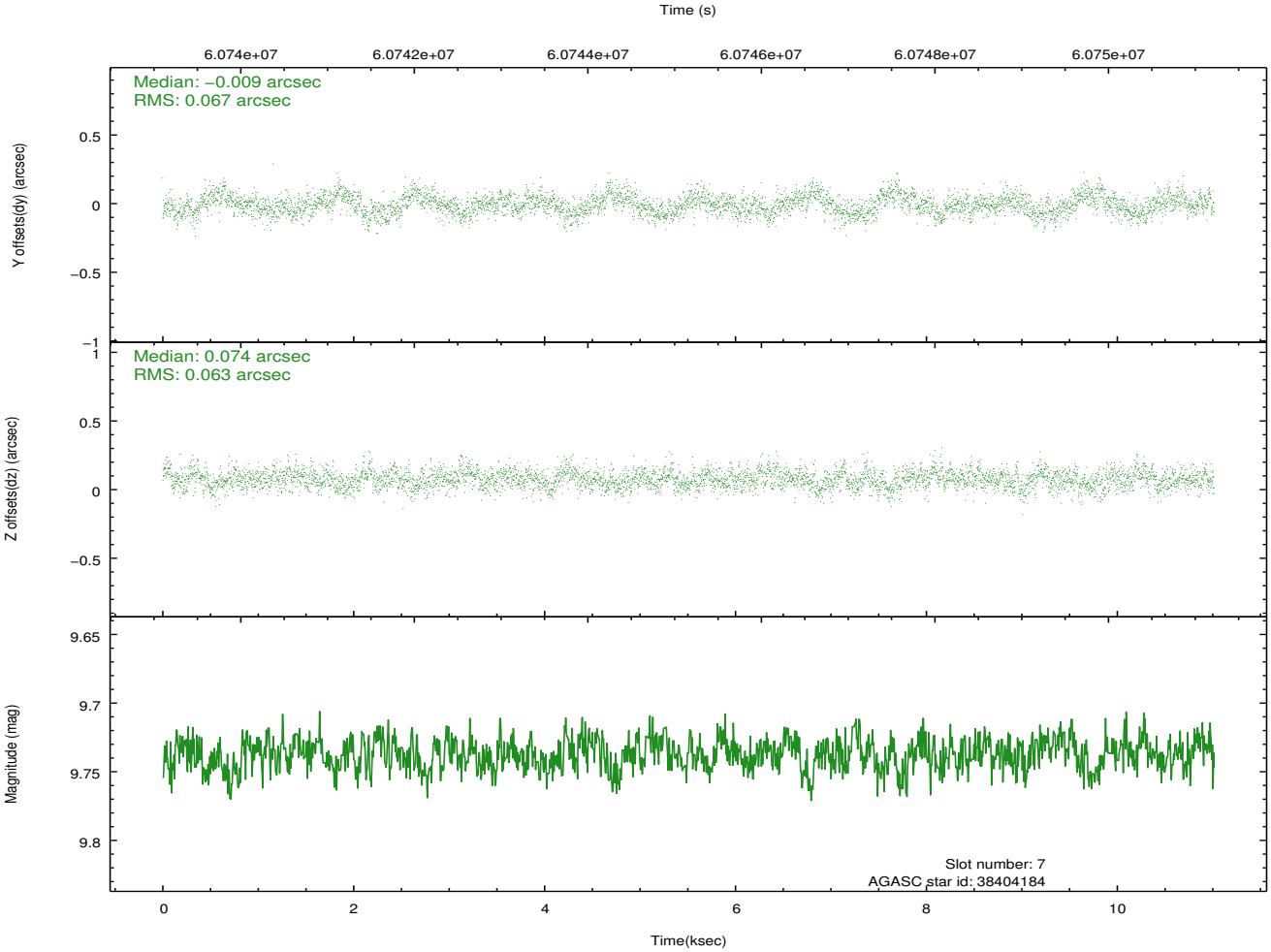

Points outside 0.4 arcsec radius: 0.056%
Radial offset of median: 0.308 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 38018480


Time (s)
Median: 0.270 arcsec
RMS: 0.057 arcsec
Y offsets(dy) (arcsec)
Median: −0.148 arcsec
RMS: 0.046 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 38018480
Time(ksec)

2.4.5 Slot 7

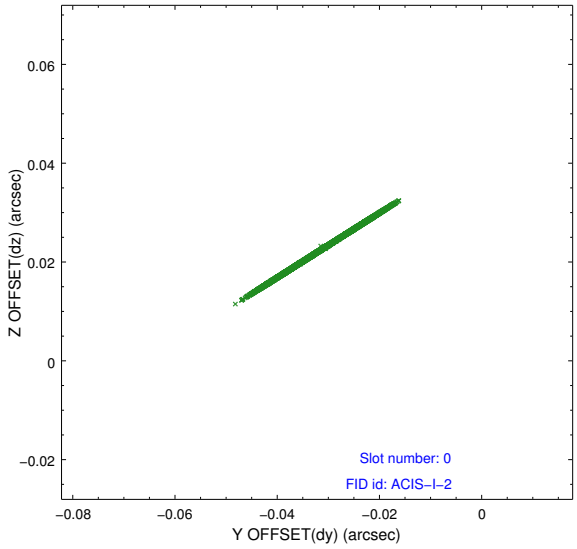

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 38404400

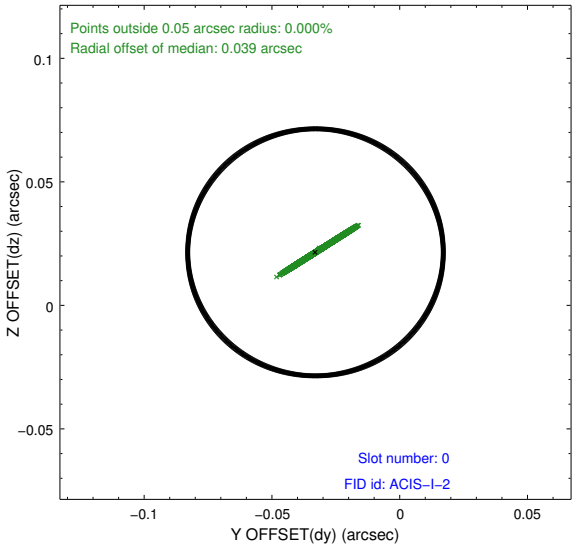

Points outside 0.4 arcsec radius: 0.019%
Radial offset of median: 0.074 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 38404184

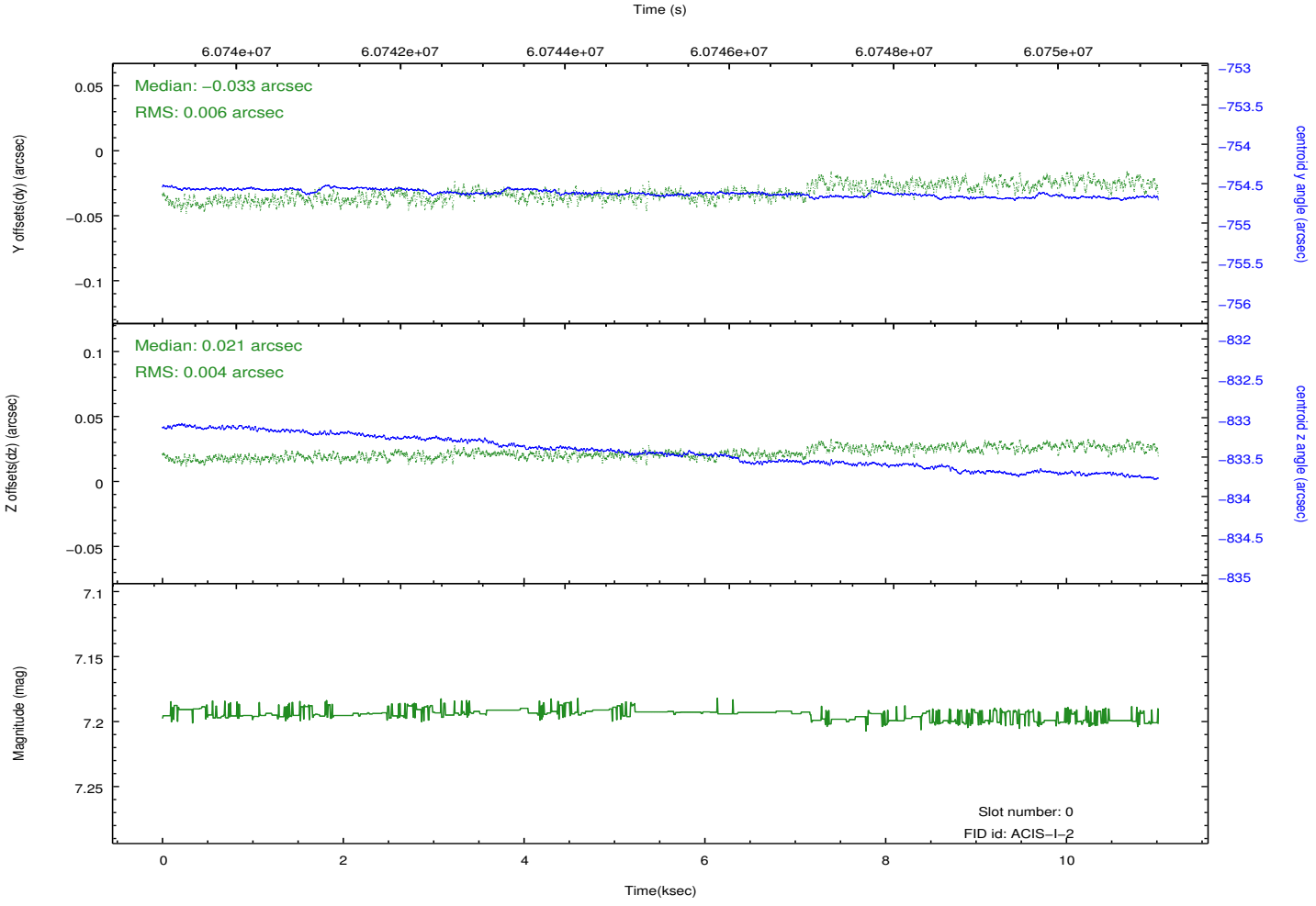

Time (s)
Median: −0.009 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: 0.074 arcsec
RMS: 0.063 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 38404184
Time(ksec)

2.5 FID Slots

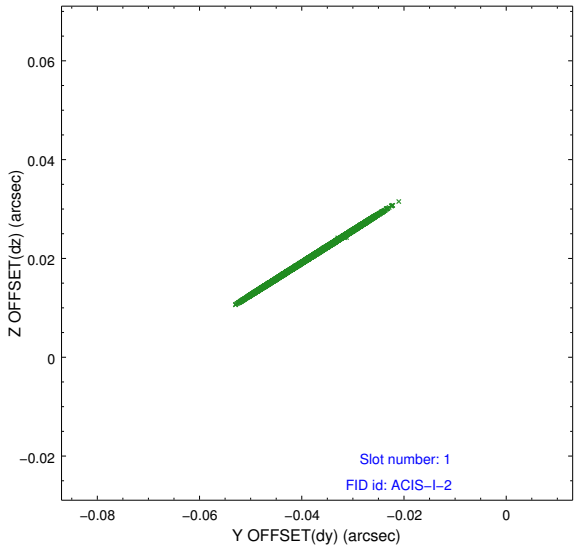
2.5.1 Slot 0

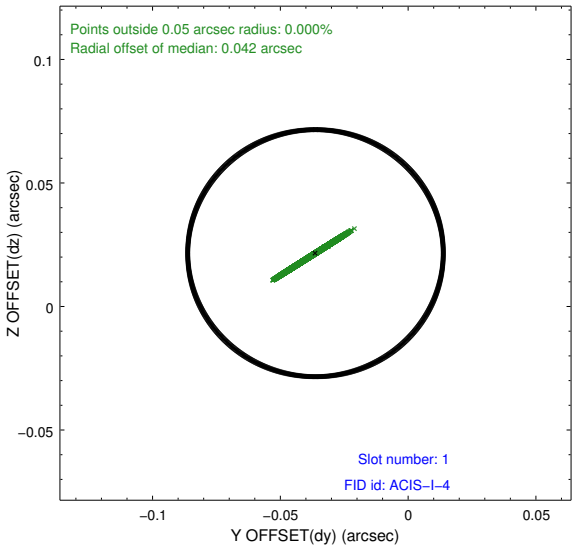


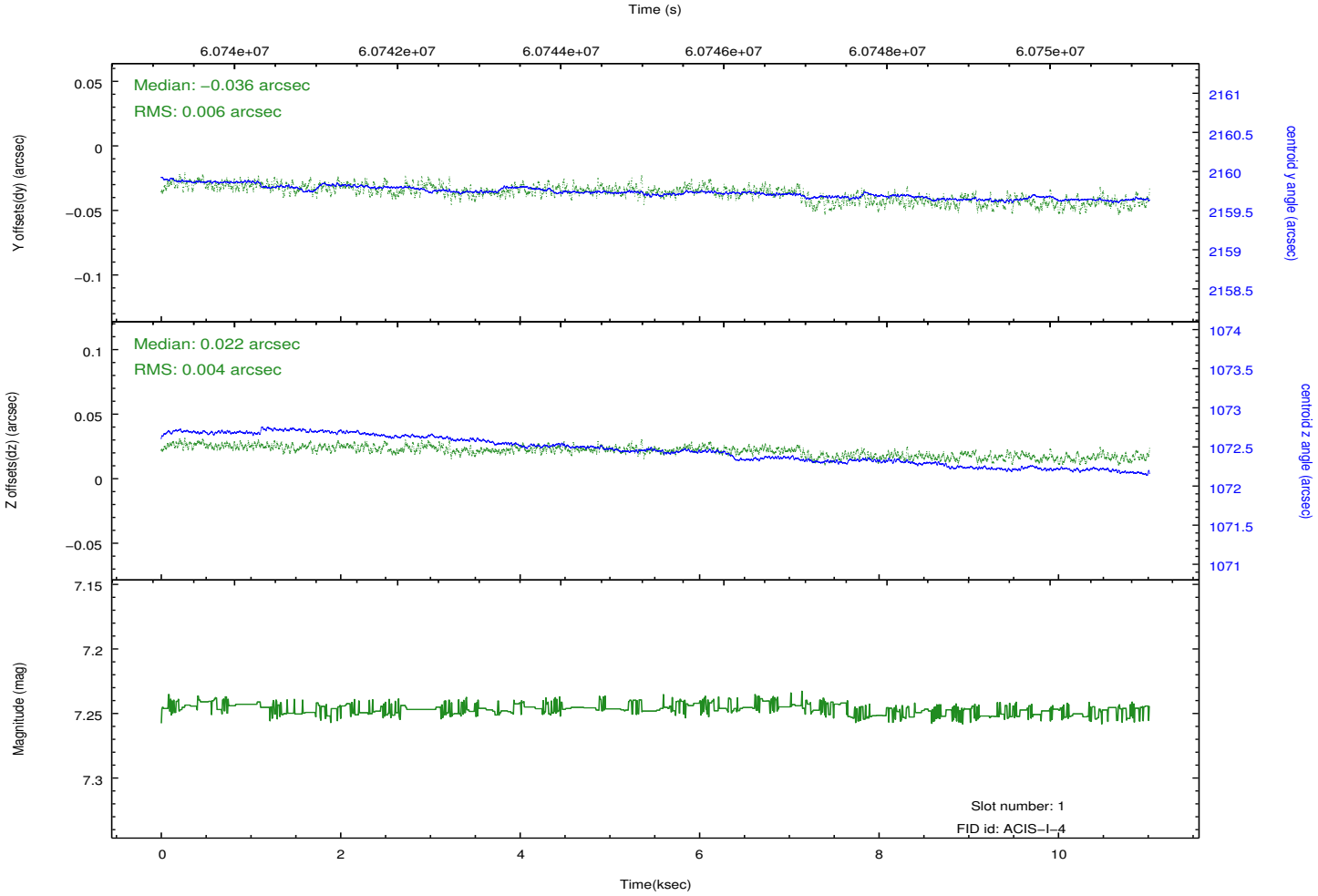




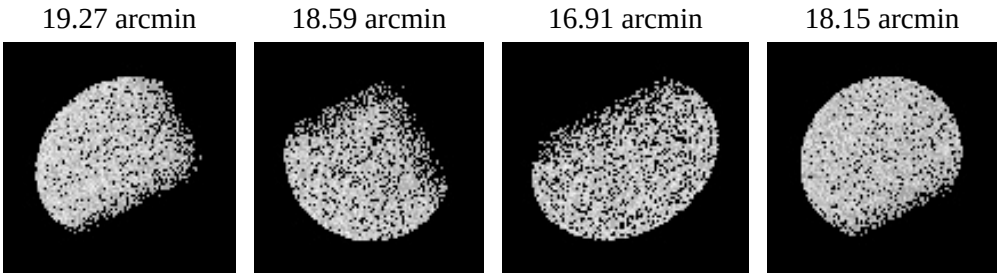
2.5.2 Slot 1


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−2


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.042 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−4


Time (s)
Median: −0.036 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.022 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−I−4
Time(ksec)

3 Point Sources



A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2010.02.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	8.503

A.2 Comments

```
Charge time for this ObsId remains at original value of 8.503 ksec,
although with the current processing the charge time would have been
8.484 ksec.
===
A high radiation environment existed from the beginning of the
observation
to about 1.5 ksec into the observation, and again from about 8 ksec
to the end of the observation. Some of this high radiation period
is not included in the Level 2 data products because it is not included
in the GTI, but some of the high radiation period is included in the
GTI. The data should be carefully examined for high background
periods.
===
The fid light in slot 2 was removed from the aspect solution due to
poor data quality. The aspect solution is not expected to be degraded
by
removing one fid light from the solution.
===
The focal plane temperature is approximately -110 C during this
observation. This reprocessing of the data applies no CTI correction
because none is available for this temperature at present.

The ACIS CTI correction has not been calibrated at this temperature,
because it was early in the mission, and ACIS had not yet been lowered
to the standard -119.7 C. Both front and back illuminated chips are
affected. However a T_GAIN correction has been applied to the BI chips
(ACIS-5 and ACIS-7) data included here.

The ACIS spectral response calibration is less accurate at these warmer
temperatures than it is at -119.7 C. Users whose science objectives
depend on the most accurate spectral response (ie: fitting line-rich
spectra) may notice an effect. Users whose science objectives do not
depend on the most accurate spectral response should not notice an
effect.
Ontimes are low, last ~1/5 ksec of the obsid is missing.
```