V&V Reference Report
L2 ASCDS Version : 7.6.10

Observation 1789 - L2 Version 4
Chandra X-Ray Center

L2 Processing Date : Nov 20 2008

Contents

1 Front **2**

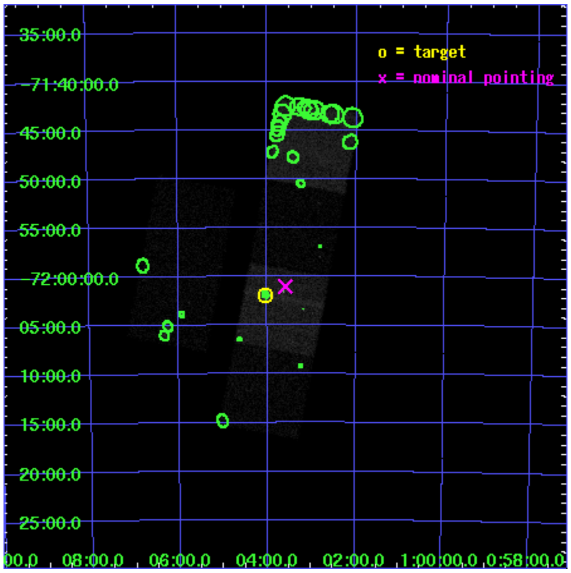
2 OBI **3**
- 2.1 OBI . . . 3
  - 2.1.1 Images . . . 3
  - 2.1.2 Bias . . . 3
  - 2.1.3 Parameters . . . 4
  - 2.1.4 Events . . . 4
- 2.2 Compared Parameters . . . 5
- 2.3 Aspect . . . 6
- 2.4 Star Slots . . . 9
  - 2.4.1 Slot 3 . . . 9
  - 2.4.2 Slot 4 . . . 10
  - 2.4.3 Slot 5 . . . 11
  - 2.4.4 Slot 6 . . . 12
  - 2.4.5 Slot 7 . . . 13
- 2.5 FID Slots . . . 14
  - 2.5.1 Slot 0 . . . 14
  - 2.5.2 Slot 1 . . . 15
  - 2.5.3 Slot 2 . . . 16

3 Point Sources **17**

A Summary **18**
- A.1 Status . . . 18
- A.2 Comments . . . 18

1 Front

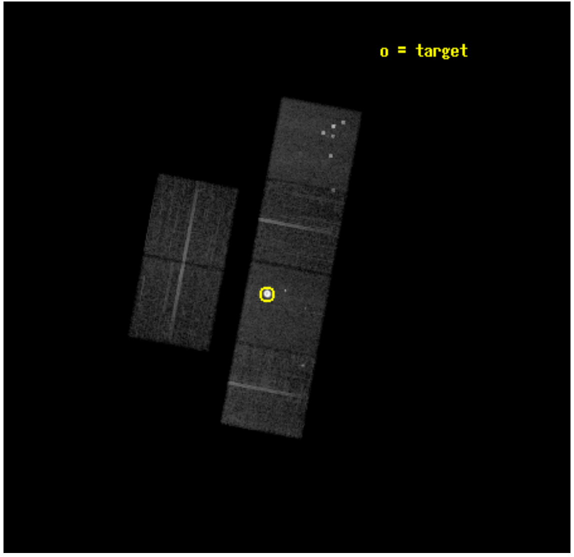
seq_num	590215
obs_id	1789
title	ACIS CHIP RESPONSE TO LINES WITH E=0.6-1.5 KEV
observer	Dr. CXC Calibration
object	E0102-72.3 [Chip S3, T=110, Offsets=-1,-2,0]
dtycycle	0
cycle	P
ra_targ	16.01
dec_targ	-72.032028
ra_nom	15.897055469327
dec_nom	-72.017270754571
roll_nom	100.71847545554
revision	4
ontime	7673.6000071466
livetime	7576.4322633689
ontime2	7673.6000071466
ontime3	7673.6000071466
ontime5	7673.6000071466
ontime6	7673.6000071466
ontime7	7673.6000071466
ontime8	7673.6000071466
l2events	136633

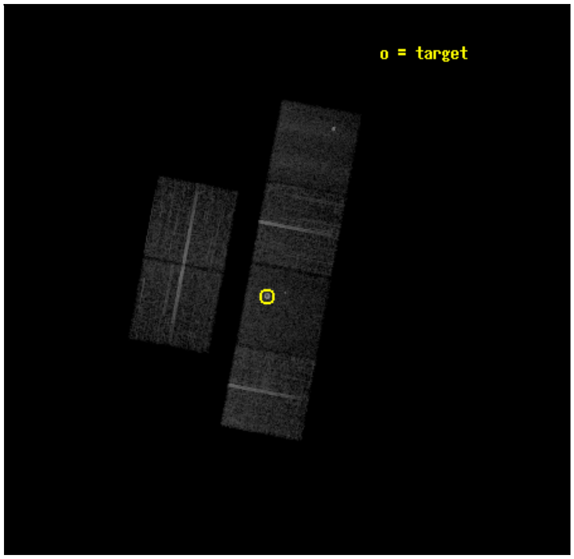


2 OBI

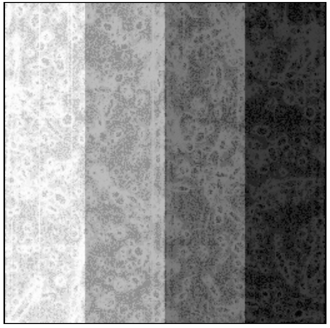
2.1 OBI

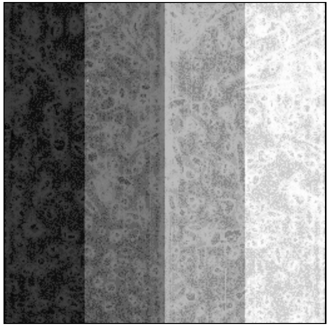
2.1.1 Images

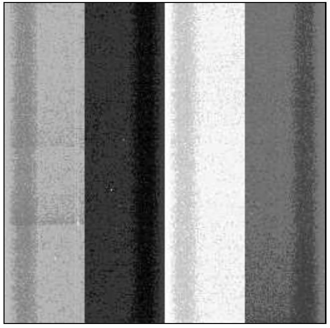

Level 1 Image

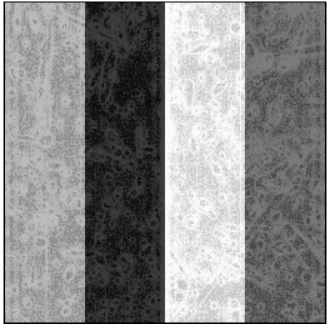

Level 1 Bad Events

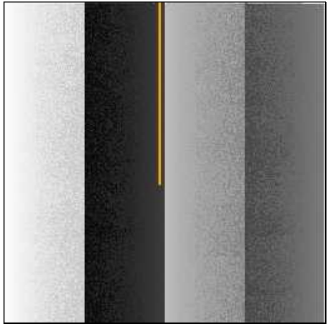
2.1.2 Bias

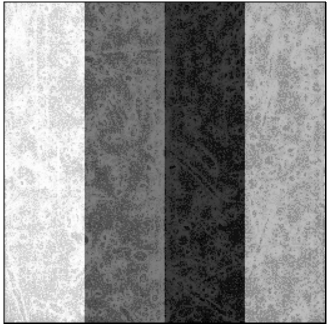

Chip 2


Chip 3


Chip 5


Chip 6


Chip 7


Chip 8

2.1.3 Parameters

obi_num	0
ascdsver	7.6.11.9
caldbver	3.5.0
date	2008-11-20T15:24:57
revision	4

sched_exp_time	7920.000000
ontime	7673.6000071466
ontime2	7673.6000071466
ontime3	7673.6000071466
ontime5	7673.6000071466
ontime6	7673.6000071466
ontime7	7673.6000071466
ontime8	7673.6000071466
l1events	442770

2.1.4 Events

	ccd 2	**ccd 3**	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**
level 1 events	56087	54011	78173	55379	131018	68102
rejected events	51097	48253	41032	49721	40960	56296
rejected %	91%	89%	52%	89%	31%	82%

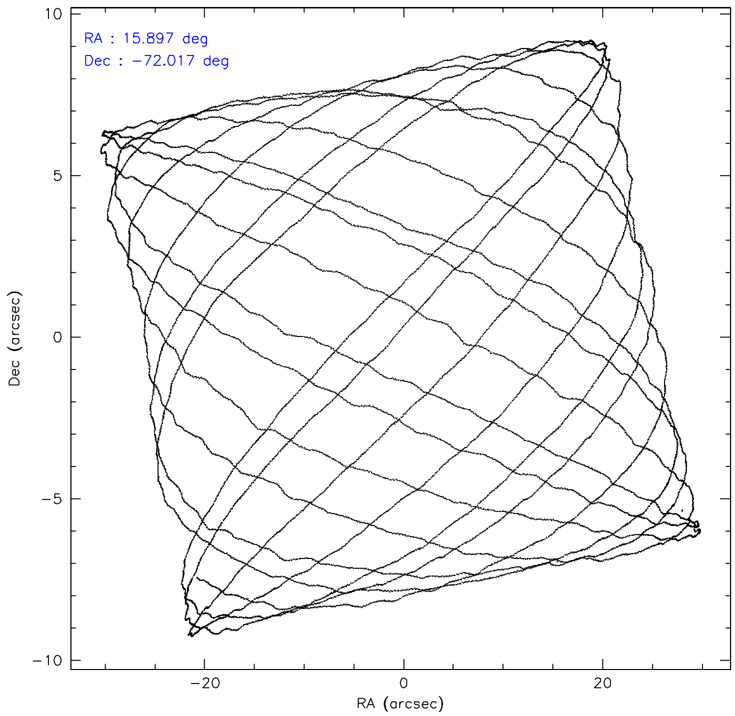
	ccd 2	**ccd 3**	**ccd 5**	**ccd 6**	**ccd 7**	**ccd 8**
grade 0 events	1091	1601	9750	1344	24468	3160
	1%	2%	12%	2%	18%	4%
grade 1 events	10	7	690	13	520	22
	0%	0%	0%	0%	0%	0%
grade 2 events	1998	2112	7842	2124	23316	3585
	3%	3%	10%	3%	17%	5%
grade 3 events	301	359	1135	330	9835	946
	0%	0%	1%	0%	7%	1%
grade 4 events	292	320	966	326	8816	881
	0%	0%	1%	0%	6%	1%
grade 5 events	1025	1090	2629	1212	5126	1590
	1%	2%	3%	2%	3%	2%
grade 6 events	1311	1371	17485	1541	23691	3262
	2%	2%	22%	2%	18%	4%
grade 7 events	50059	47151	37676	48489	35246	54656
	89%	87%	48%	87%	26%	80%

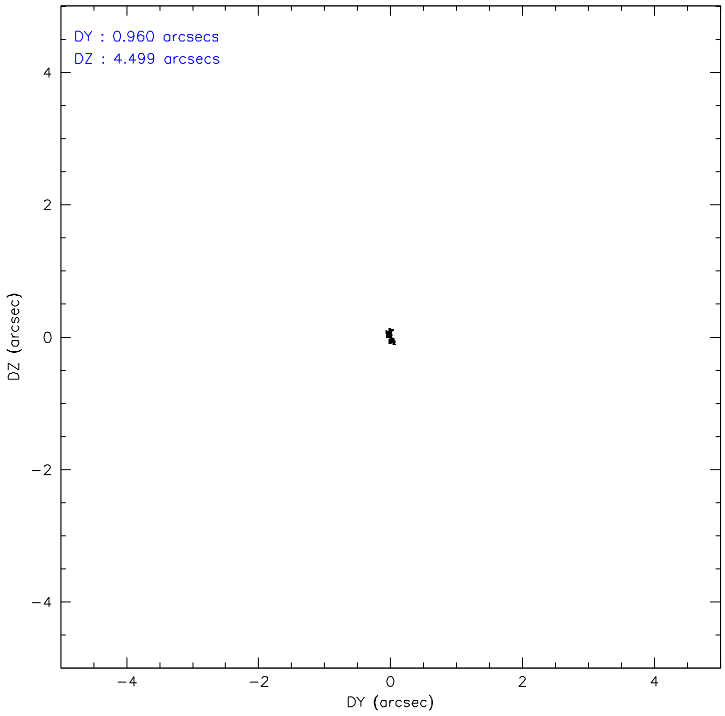
2.2 Compared Parameters

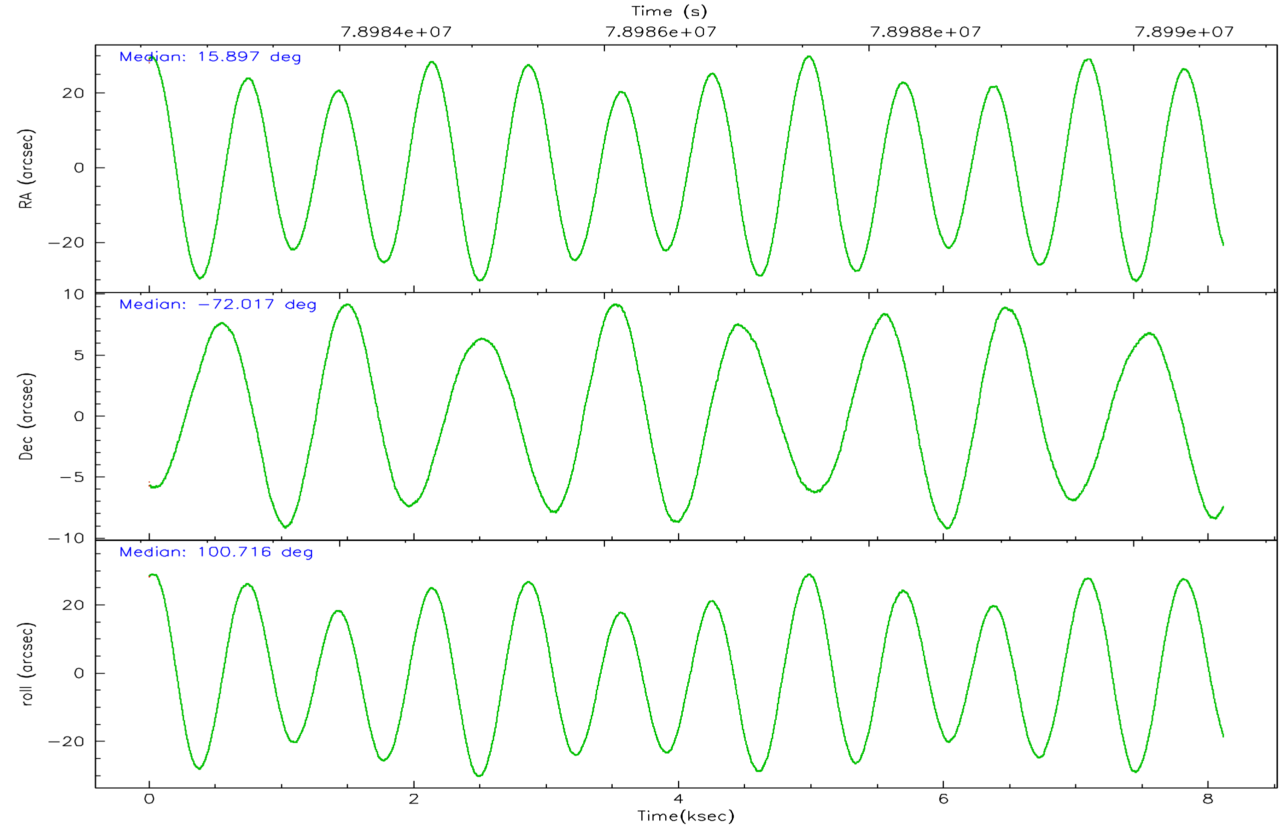
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	15.955310	15.89705546932745
Pointing Dec	-72.037920	-72.01727075457107
Pointing Roll	100.617257	100.718475455536
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-190.132523	-190.1425803651734
SIM translation stage offset (mm)	0	0.01005778216563158
Observation start time	78982759.184000	78982383.209093
Observation start date	2000-07-03T03:38:15	2000-07-03T03:33:03
Observation end time	78990679.184000	78990812.809404
Observation end date	2000-07-03T05:50:15	2000-07-03T05:53:32
Read mode	TIMED	TIMED

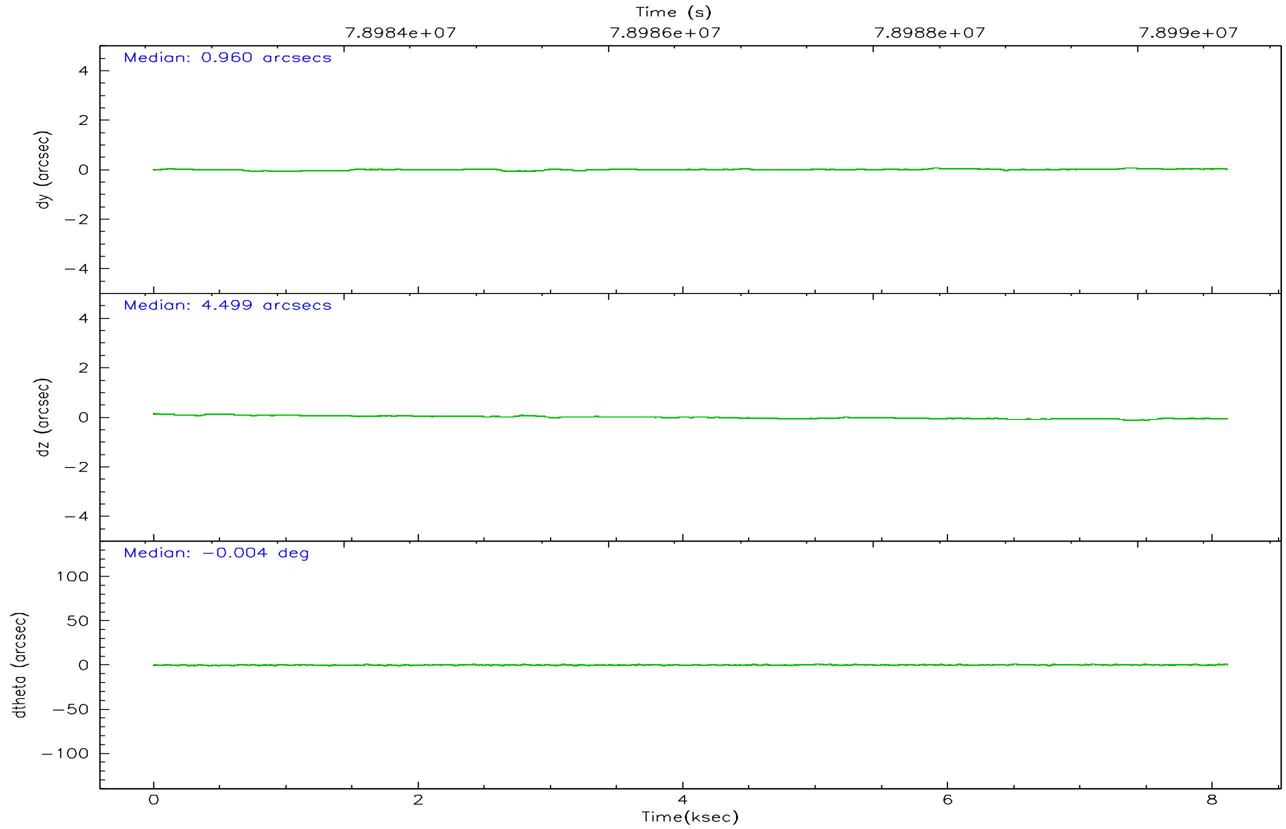
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	3.200000	3.2

2.3 Aspect


RA : 15.897 deg
Dec : −72.017 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−20
0
20


DY : 0.960 arcsecs
DZ : 4.499 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: 15.897 deg
RA (arcsec)
20
0
−20
10
Median: −72.017 deg
Dec (arcsec)
5
0
−5
−10
Median: 100.716 deg
roll (arcsec)
20
0
−20
0
2
4
6
8
Time(ksec)

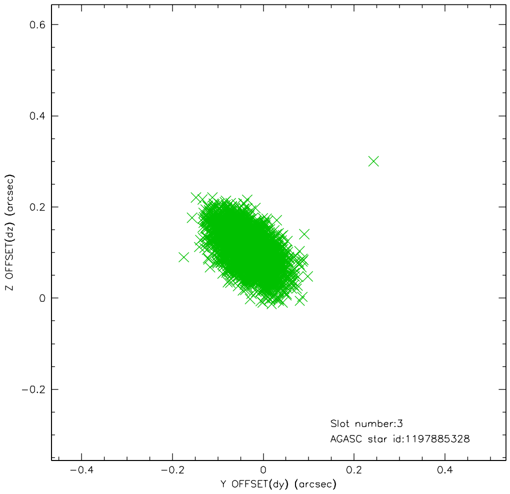

Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: 0.960 arcsecs
dy (arcsec)
4
2
0
−2
−4
Median: 4.499 arcsecs
dz (arcsec)
4
2
0
−2
−4
Median: −0.004 deg
dtheta (arcsec)
100
50
0
−50
−100
0
2
4
6
8
Time(ksec)

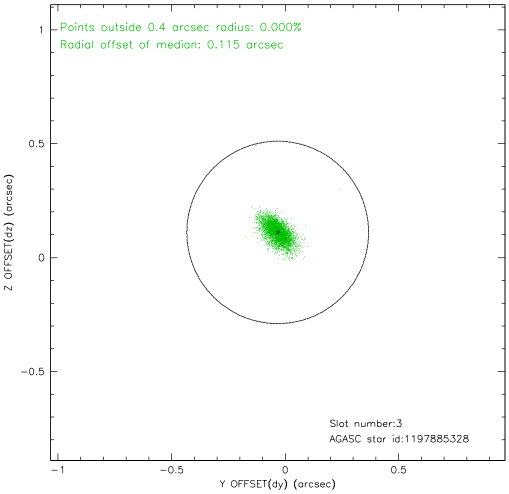
Slot Statistics

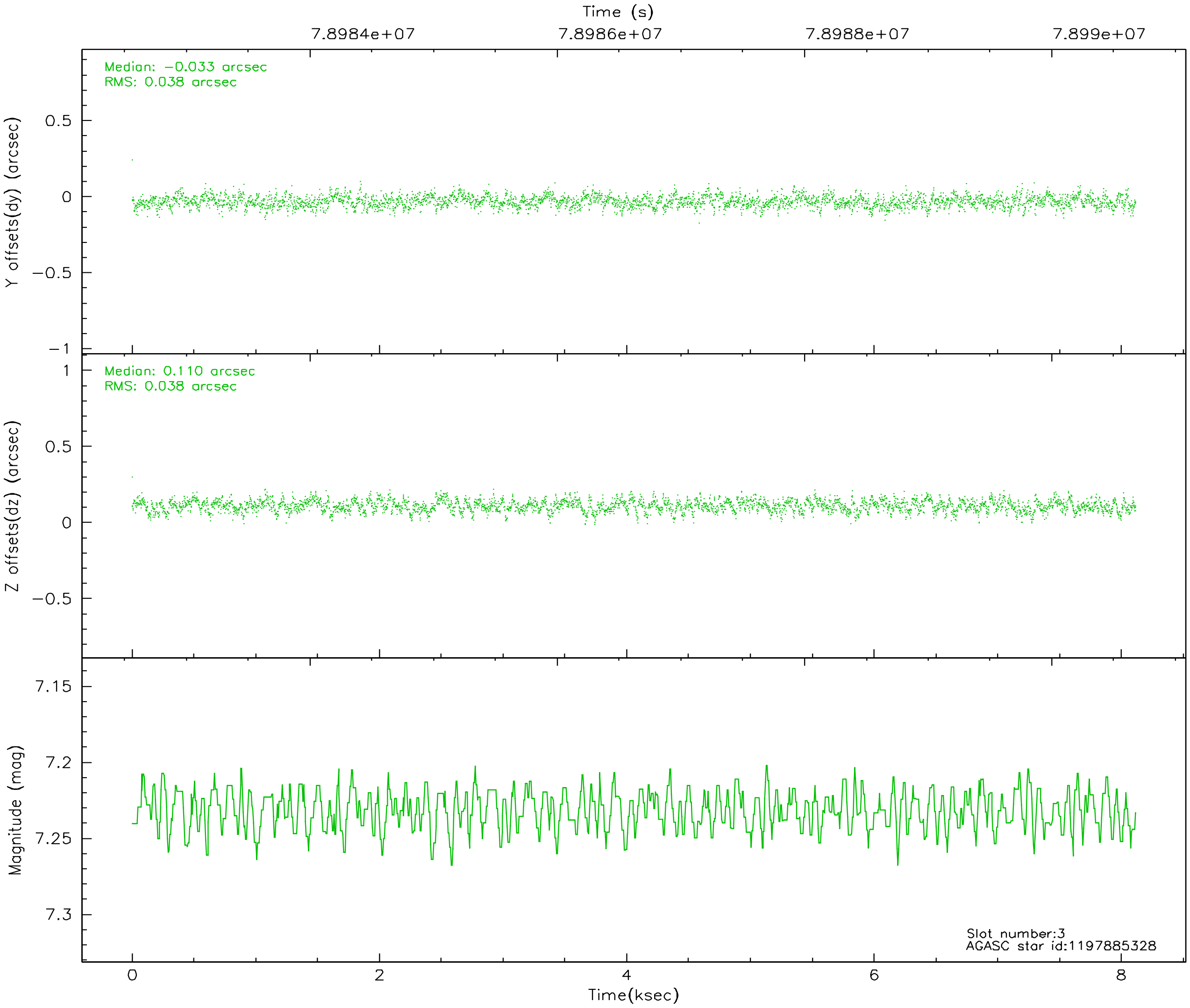
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	1981	-0.013	0.015	0.006	0.010	0.000000	0.000000	-753.57	-1725.53
1	FID	ACIS-S-4	7.21	1981	-0.047	0.002	0.005	0.008	0.000000	0.000000	2159.37	182.22
2	FID	ACIS-S-5	7.24	1981	0.028	-0.008	0.006	0.010	0.000000	0.000000	-1805.47	176.69
3	GUIDE	1197885328	7.23	3961	-0.033	0.110	0.056	0.097	16.283090	-71.733943	1007.01	-565.03
4	GUIDE	1198189696	7.35	3961	0.060	-0.032	0.058	0.108	15.223750	-72.697522	-2193.50	1207.85
5	GUIDE	1197750936	7.57	3961	-0.117	-0.084	0.065	0.108	15.387940	-71.549550	1843.99	312.13
6	GUIDE	1197884536	8.49	3960	-0.014	0.058	0.064	0.105	17.160729	-71.835289	455.52	-1461.52
7	GUIDE	1197749664	9.58	3959	0.103	-0.053	0.086	0.144	15.809015	-72.366369	-1132.22	374.06

2.4 Star Slots

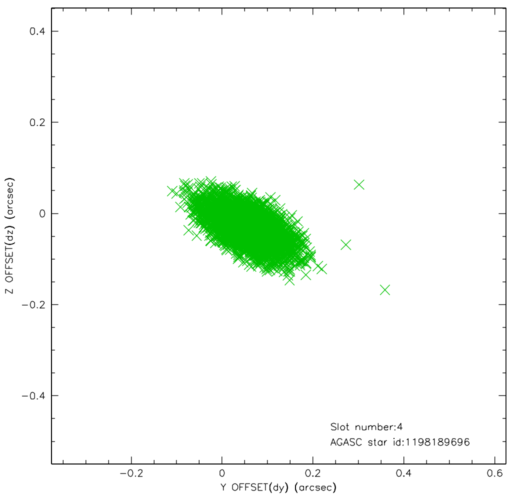
2.4.1 Slot 3

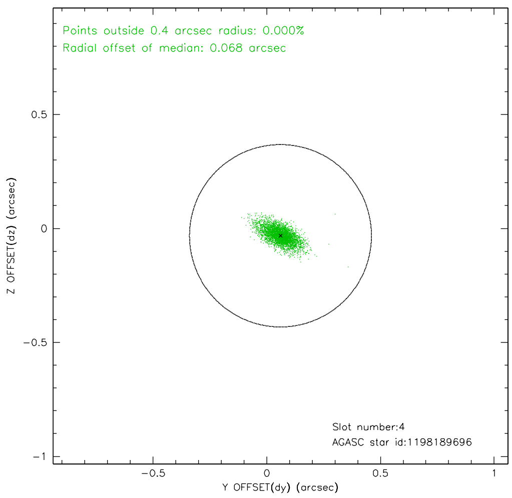


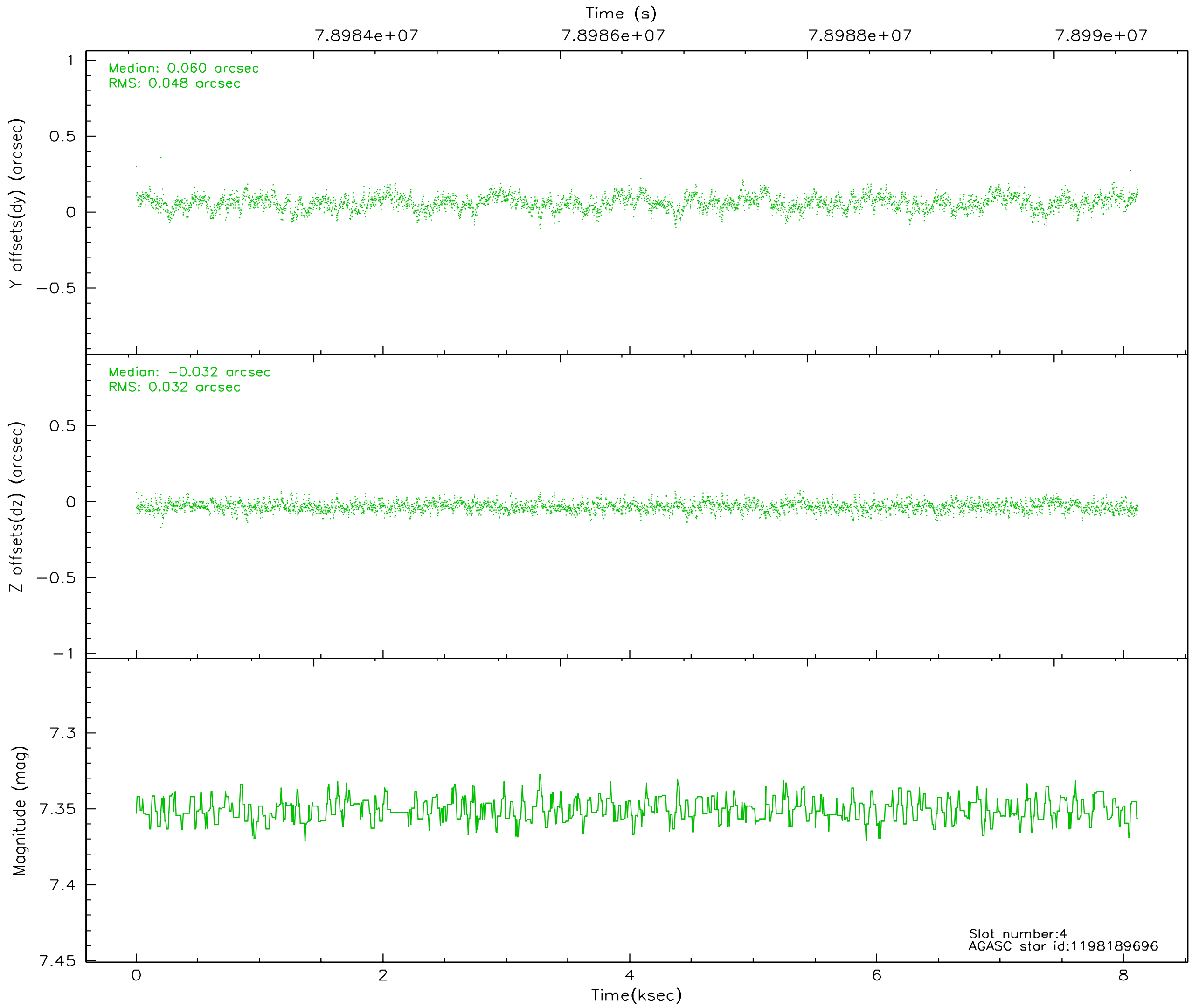




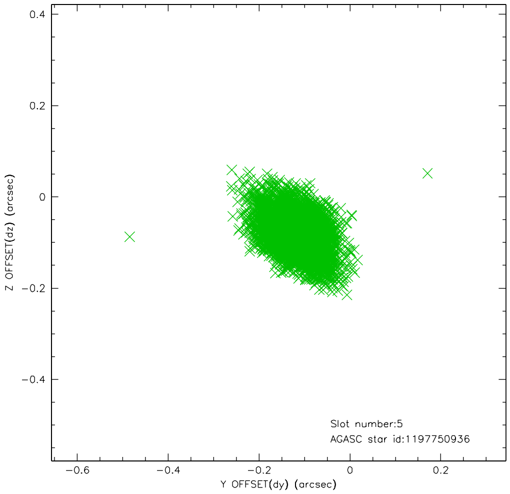
2.4.2 Slot 4

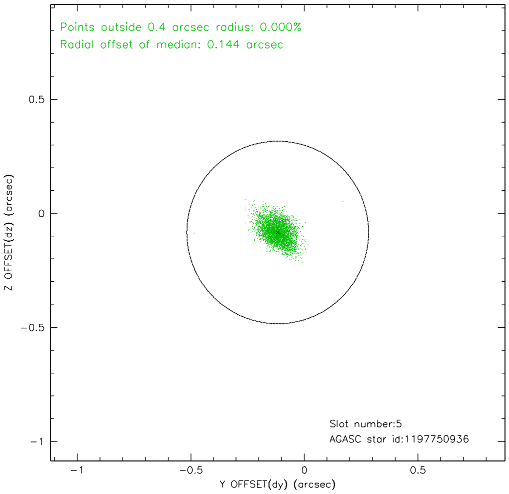

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
0.4
0.2
0
−0.2
−0.4
−0.2
0
0.2
0.4
0.6
Slot number:4
AGASC star id:1198189696

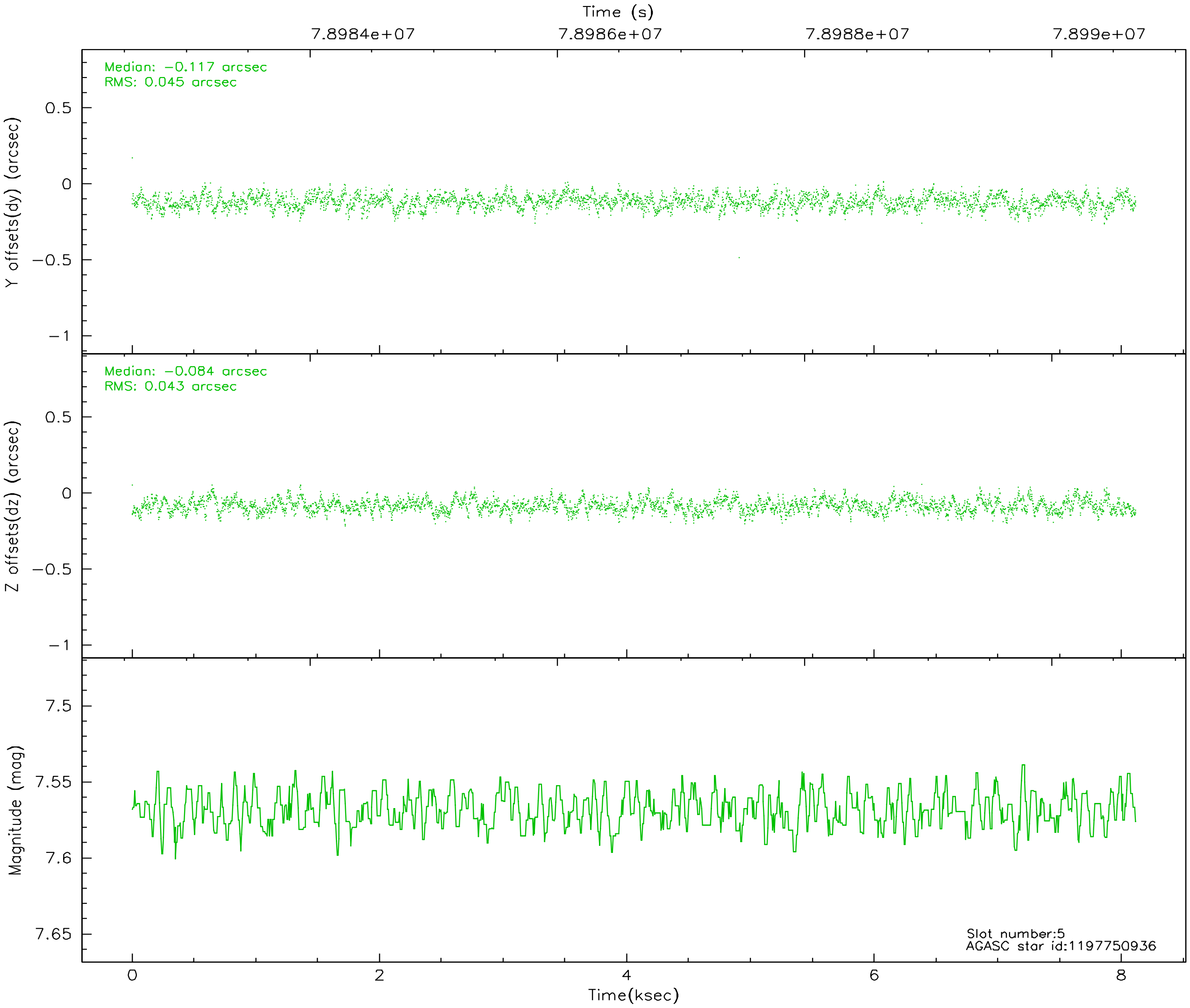

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.068 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
0.5
0
−0.5
−1
−0.5
0
0.5
1
Slot number:4
AGASC star id:1198189696


Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: 0.060 arcsec
RMS: 0.048 arcsec
Y offsets(dy) (arcsec)
1
0.5
0
−0.5
Median: −0.032 arcsec
RMS: 0.032 arcsec
Z offsets(dz) (arcsec)
0.5
0
−0.5
−1
Magnitude (mag)
7.3
7.35
7.4
7.45
Slot number:4
AGASC star id:1198189696
0
2
4
6
8
Time(ksec)

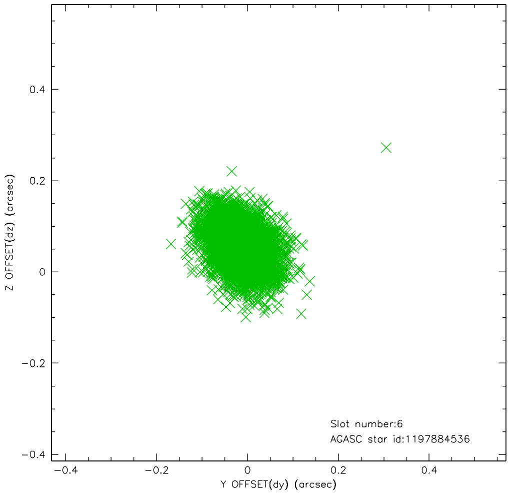
2.4.3 Slot 5


Slot number:5
AGASC star id:1197750936
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
0.4
0.2
0
−0.2
−0.4
−0.6
−0.4
−0.2
0
0.2

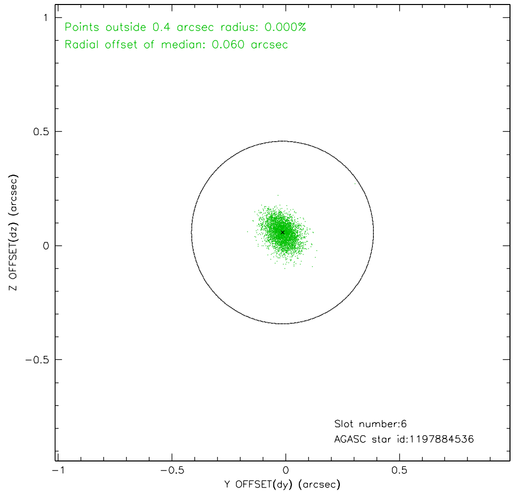

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.144 arcsec
Slot number:5
AGASC star id:1197750936
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
0.5
0
−0.5
−1
−1
−0.5
0
0.5


Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: −0.117 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
0.5
0
−0.5
−1
Median: −0.084 arcsec
RMS: 0.043 arcsec
Z offsets(dz) (arcsec)
0.5
0
−0.5
−1
Magnitude (mag)
7.5
7.55
7.6
7.65
Slot number:5
AGASC star id:1197750936
0
2
4
6
8
Time(ksec)

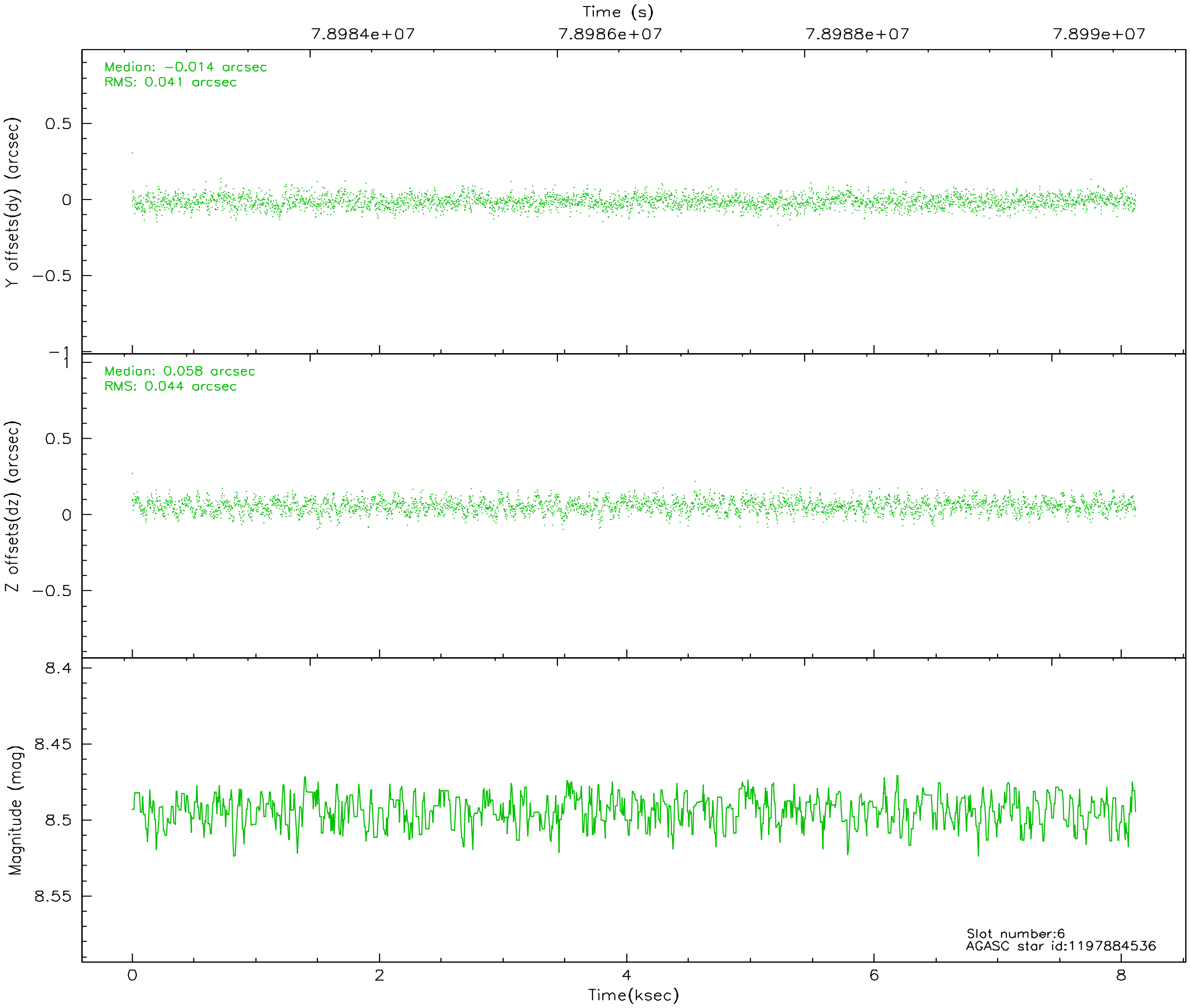
2.4.4 Slot 6



Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
0.4
0.2
0
−0.2
−0.4
−0.4
−0.2
0
0.2
0.4
Slot number:6
AGASC star id:1197884536

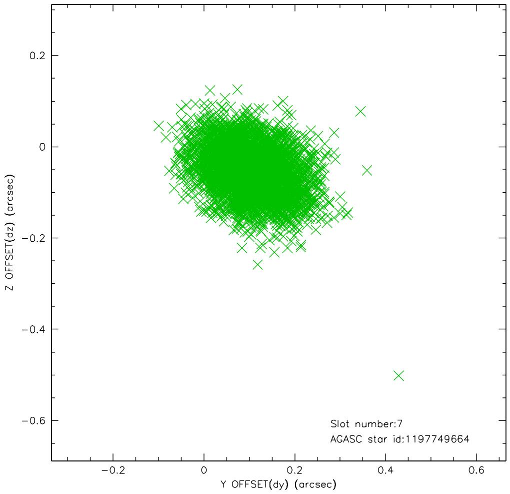


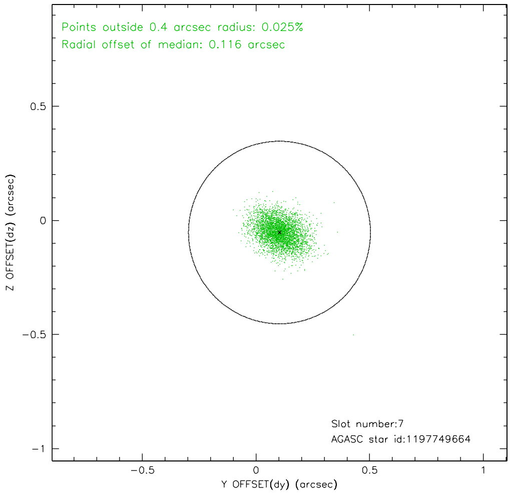
Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.060 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
1
0.5
0
−0.5
−1
−0.5
0
0.5
Slot number:6
AGASC star id:1197884536

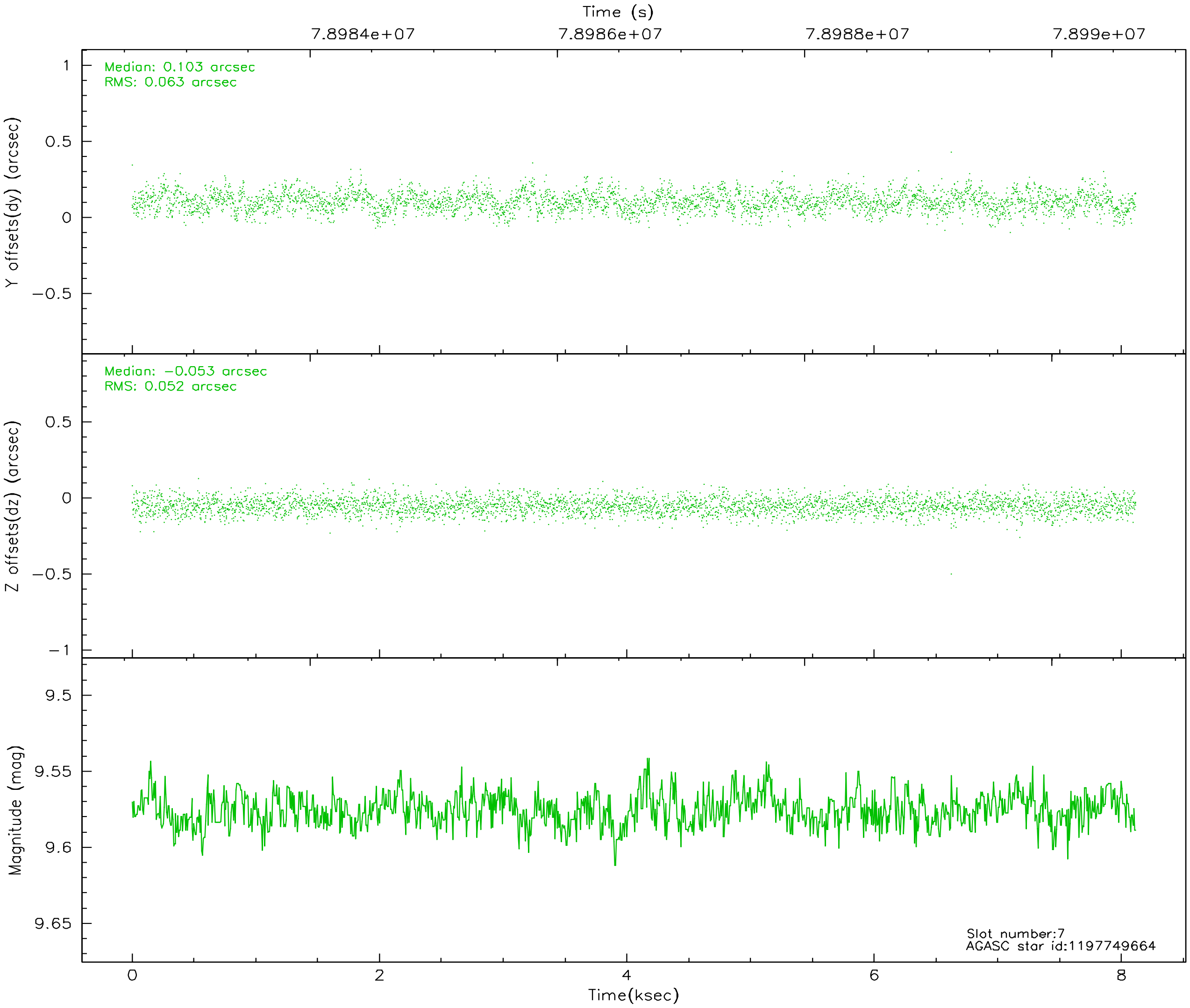


Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: −0.014 arcsec
RMS: 0.041 arcsec
Y offsets(dy) (arcsec)
0.5
0
−0.5
−1
Median: 0.058 arcsec
RMS: 0.044 arcsec
Z offsets(dz) (arcsec)
1
0.5
0
−0.5
Magnitude (mag)
8.4
8.45
8.5
8.55
Slot number:6
AGASC star id:1197884536
0
2
4
6
8
Time(ksec)

2.4.5 Slot 7

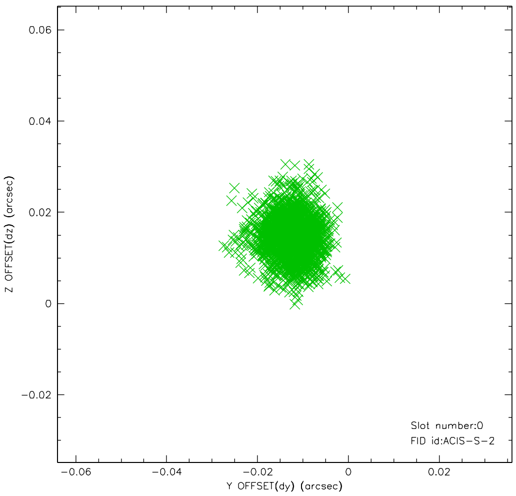

0.2
0
−0.2
−0.4
−0.6
−0.2
0
0.2
0.4
0.6
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1197749664

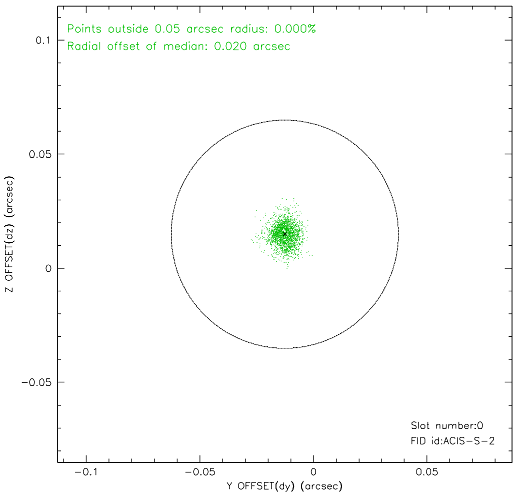

Points outside 0.4 arcsec radius: 0.025%
Radial offset of median: 0.116 arcsec
0.5
0
−0.5
−1
−0.5
0
0.5
1
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1197749664

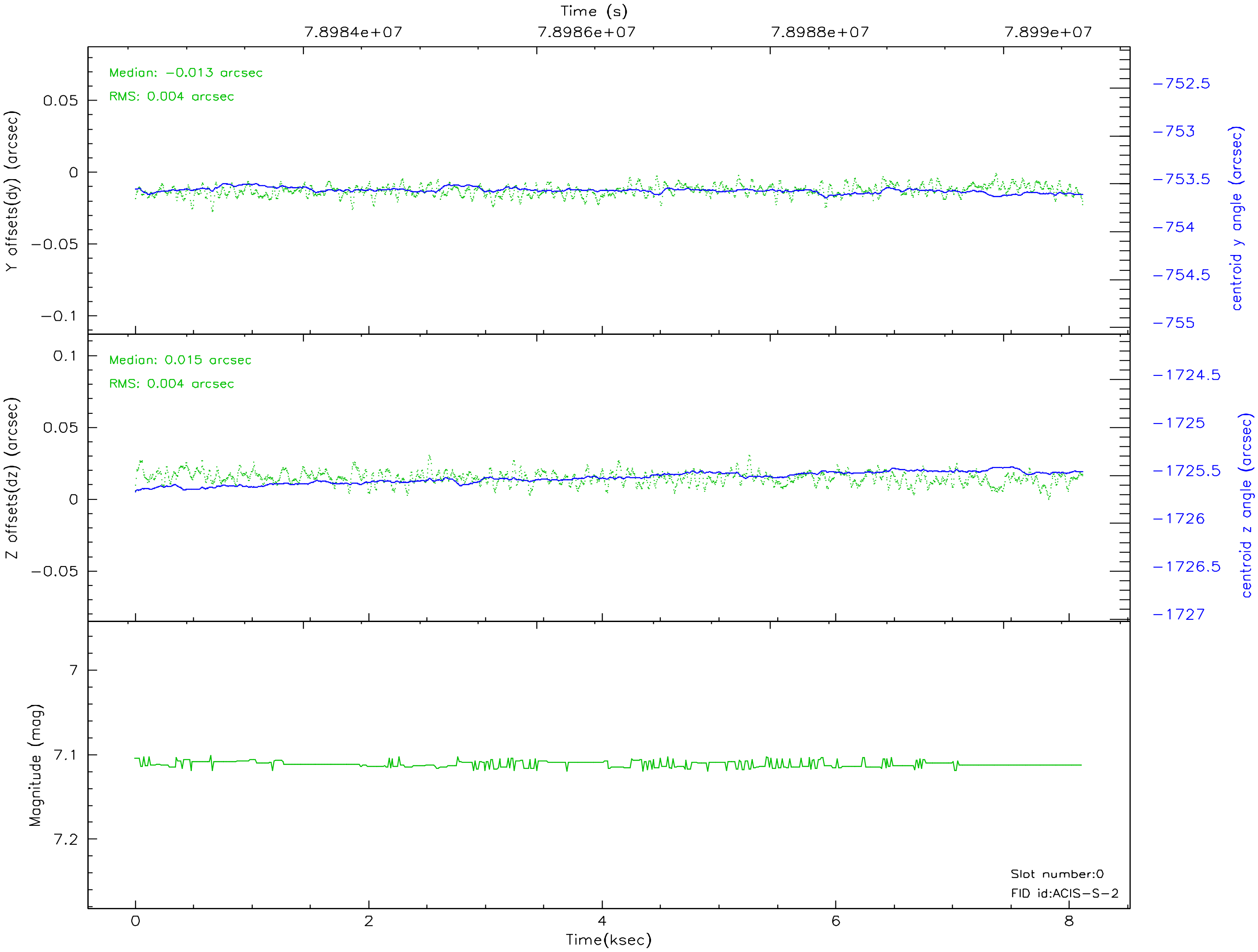

Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: 0.103 arcsec
RMS: 0.063 arcsec
1
0.5
0
−0.5
Y offsets(dy) (arcsec)
Median: −0.053 arcsec
RMS: 0.052 arcsec
0.5
0
−0.5
−1
Z offsets(dz) (arcsec)
9.5
9.55
9.6
9.65
Magnitude (mag)
Slot number:7
AGASC star id:1197749664
0
2
4
6
8
Time(ksec)

2.5 FID Slots

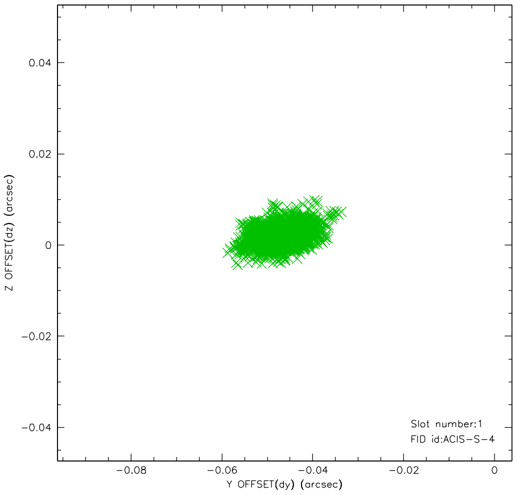
2.5.1 Slot 0

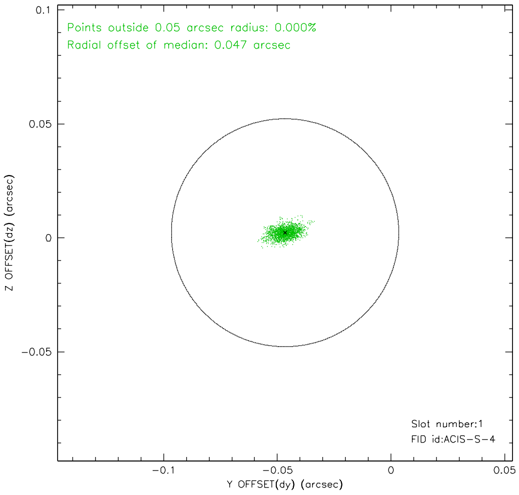


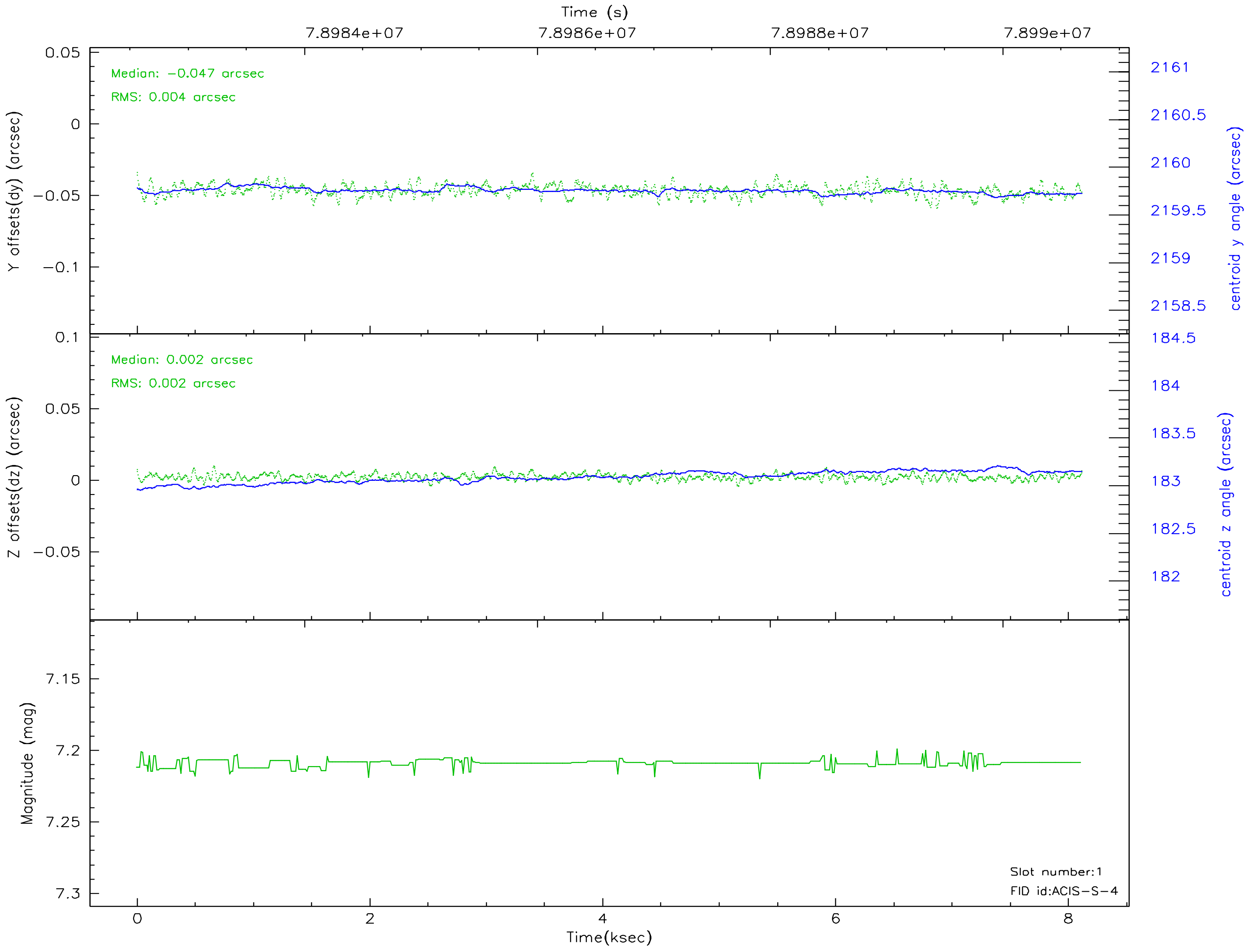




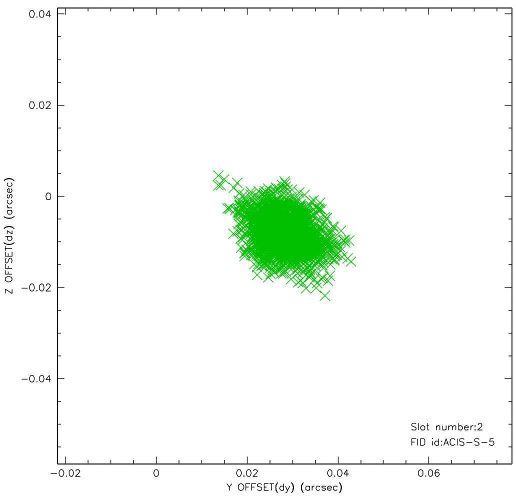
2.5.2 Slot 1


0.04
0.02
0
−0.02
−0.04
Z OFFSET(dz) (arcsec)
−0.08
−0.06
−0.04
−0.02
0
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS−S−4

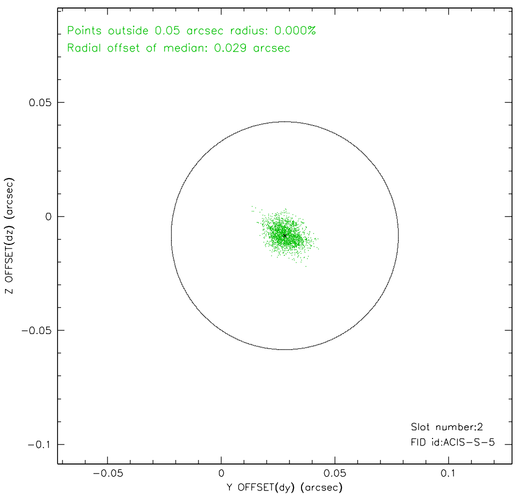

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.047 arcsec
0.1
0.05
0
−0.05
Z OFFSET(dz) (arcsec)
−0.1
−0.05
0
0.05
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS−S−4


Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: −0.047 arcsec
RMS: 0.004 arcsec
0.05
0
−0.05
−0.1
Y offsets(dy) (arcsec)
2161
2160.5
2160
2159.5
2159
2158.5
centroid y angle (arcsec)
Median: 0.002 arcsec
RMS: 0.002 arcsec
0.1
0.05
0
−0.05
Z offsets(dz) (arcsec)
184.5
184
183.5
183
182.5
182
centroid z angle (arcsec)
7.15
7.2
7.25
7.3
Magnitude (mag)
Slot number:1
FID id:ACIS−S−4
0
2
4
6
8
Time(ksec)

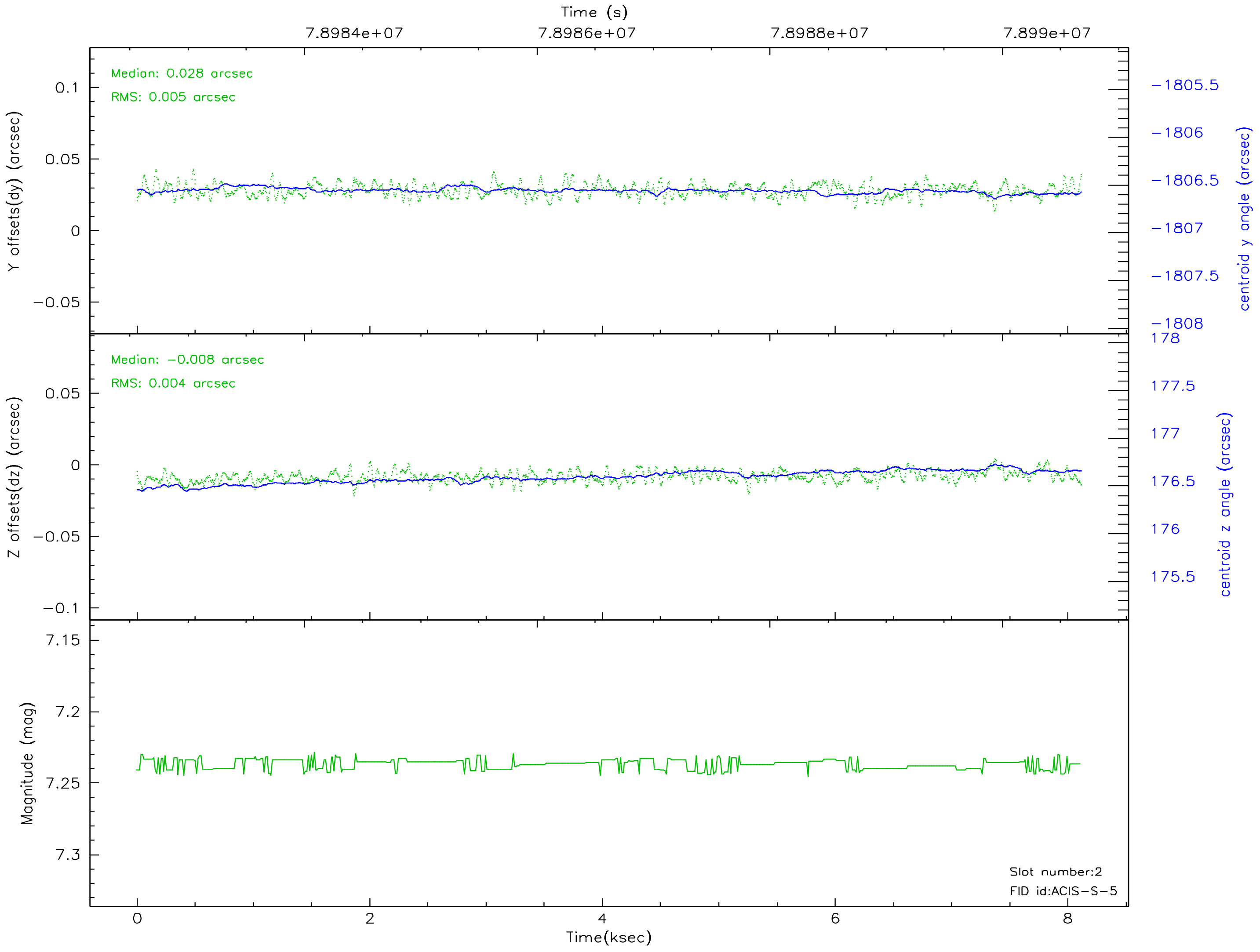
2.5.3 Slot 2



0.04
0.02
0
−0.02
−0.04
Z OFFSET(dz) (arcsec)
−0.02
0
0.02
0.04
0.06
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5

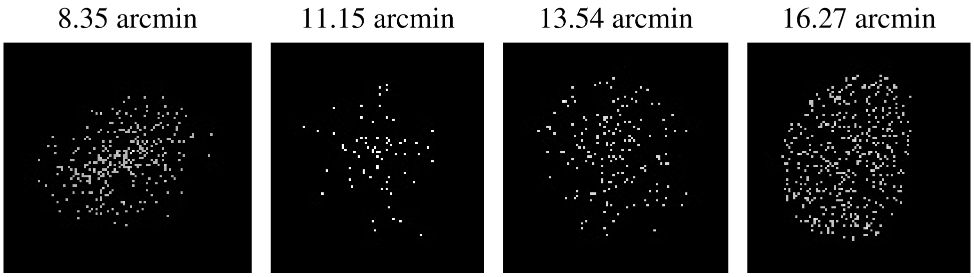


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.029 arcsec
0.05
0
−0.05
−0.1
Z OFFSET(dz) (arcsec)
−0.05
0
0.05
0.1
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5



Time (s)
7.8984e+07
7.8986e+07
7.8988e+07
7.899e+07
Median: 0.028 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
0.1
0.05
0
−0.05
centroid y angle (arcsec)
−1805.5
−1806
−1806.5
−1807
−1807.5
−1808
Median: −0.008 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
0.05
0
−0.05
−0.1
centroid z angle (arcsec)
178
177.5
177
176.5
176
175.5
Magnitude (mag)
7.15
7.2
7.25
7.3
Slot number:2
FID id:ACIS-S-5
0
2
4
6
8
Time(ksec)

3 Point Sources



8.35 arcmin 11.15 arcmin 13.54 arcmin 16.27 arcmin

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2008.11.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	7.683

A.2 Comments

```
Charge time for this ObsId remains at original value of 7.683 ks,
although
with the current processing the charge time would have been 7.673
ksec.=======================================================
This calibration observation was acquired with the focal plane
temperature
raised from -120C to -110C, for attempted recalibration of ACIS for the

1999-09-16 through 2000-01-28 period.
==============================
This reprocessing of the data
applies no
CTI correction because none is available for that temperature.
===========================================================
Focal plane temperature is warmer than -118.7 C degrees during the
entire
observation. This temperature is the upper limit of the verified ACIS
calibration for the front-illuminated chips. The focal plane
temperature
is warmer than -116.7 degrees C for approximately the entire
observation.
This temperature is the upper limit of the
verified ACIS calibration for the back-illuminated chips.
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.
```