# V&V Reference Report
# L2 ASCDS Version : 8.4.5

Observation 2113 - L2 Version 5
Chandra X-Ray Center

L2 Processing Date : Oct 1 2012

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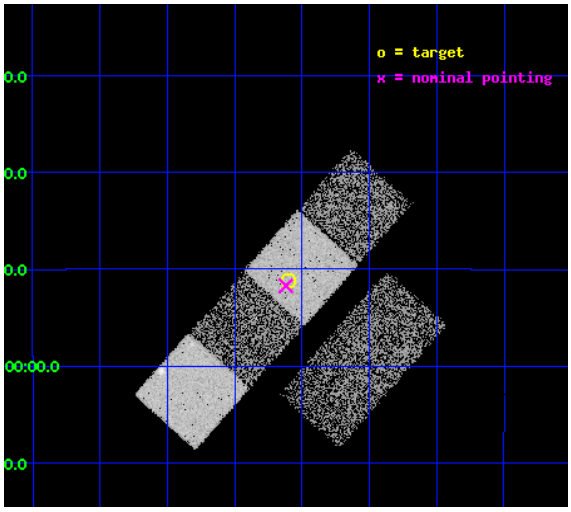
# 1 Front

| | | |
|---|---|---|
| seq_num | 700303 | Sequence number |
| obs_id | 2113 | Observation id |
| title | PUBLIC OBSERVATIONS OF A WELL-DEFINED SAMPLE OF BAL QSOS FROM THE LARGE BRIGHT QUASAR SURVEY: REMOVING THE BARRIERS | Proposal title |
| observer | Prof. William Brandt | Principal investigator |
| object | LBQS 2154-2005 | Source name |
| dtycycle | 0 |   |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 329.274583 | Observer's specified target RA [deg] |
| dec_targ | -19.853917 | Observer's specified target Dec [deg] |
| ra_nom | 329.28011160493 | Nominal RA [deg] |
| dec_nom | -19.862206854637 | Nominal Dec [deg] |
| roll_nom | 311.71583055848 | Nominal Roll [deg] |
| revision | 5 | Processing version of data |
| ontime | 5065.3179023862 | Sum of GTIs [s] |
| livetime | 5001.1777971379 | Livetime [s] |
| ontime2 | 5065.3589423895 | Sum of GTIs [s] |
| ontime3 | 5065.1947823912 | Sum of GTIs [s] |
| ontime5 | 5065.2768623829 | Sum of GTIs [s] |
| ontime6 | 5065.2358223945 | Sum of GTIs [s] |
| ontime7 | 5065.3179023862 | Sum of GTIs [s] |
| ontime8 | 5065.1537423879 | Sum of GTIs [s] |
| l2events | 53898 | Number of level 2 events |

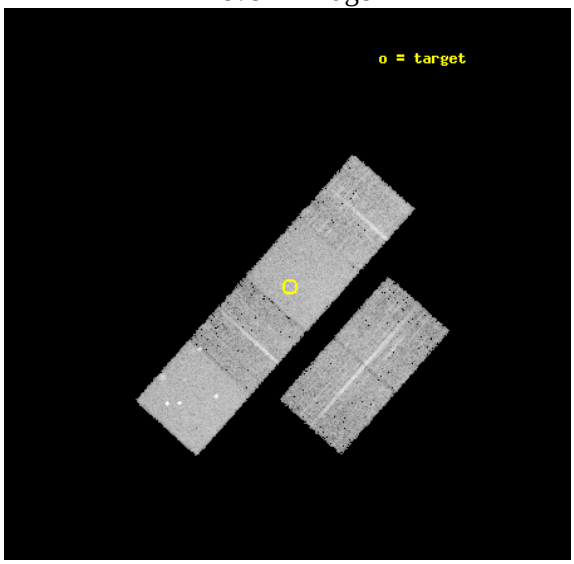


# 2 OBI

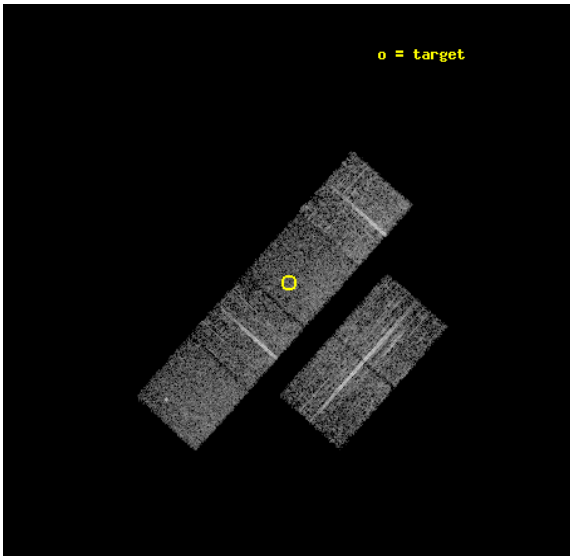
## 2.1 OBI

### 2.1.1 Images

Level 1 Image

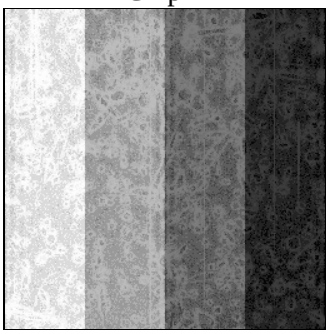



Level 1 Bad Events

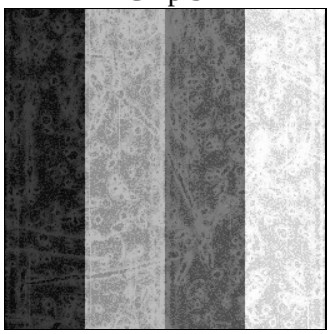



### 2.1.2 Bias

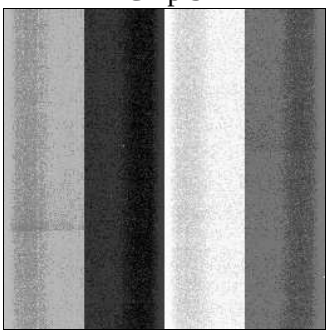
Chip 2



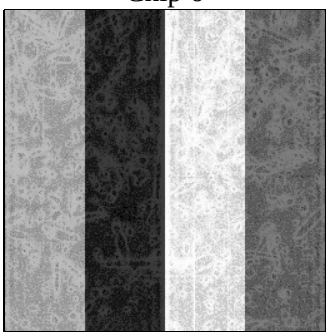
Chip 3



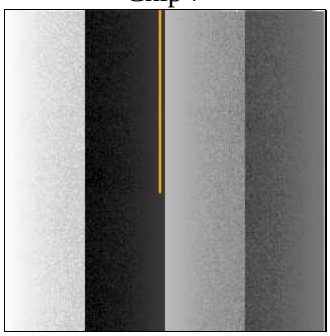
Chip 5



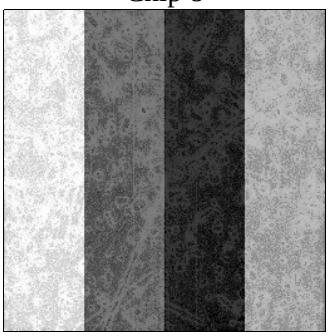
Chip 6



Chip 7



Chip 8



### 2.1.3 Parameters

| | | |
|---|---|---|
| obi_num | 0 | Obi number |
| ascdsver | 8.4.5 | Processing system revision |
| caldbver | 4.5.2 |   |
| date | 2012-10-01T17:32:06 | Date and time of file creation |
| revision | 5 | Processing version of data |

| | | |
|---|---|---|
| sched_exp_time | 5000.000000 | [s] Scheduled observation exposure time |
| ontime | 5065.3179023862 | Sum of GTIs [s] |
| ontime2 | 5065.3589423895 | Sum of GTIs [s] |
| ontime3 | 5065.1947823912 | Sum of GTIs [s] |
| ontime5 | 5065.2768623829 | Sum of GTIs [s] |
| ontime6 | 5065.2358223945 | Sum of GTIs [s] |
| ontime7 | 5065.3179023862 | Sum of GTIs [s] |
| ontime8 | 5065.1537423879 | Sum of GTIs [s] |
| l1events | 229027 | Number of level 1 events |

### 2.1.4 Events

| | **ccd 2** | **ccd 3** | **ccd 5** | **ccd 6** | **ccd 7** | **ccd 8** |
|---|---|---|---|---|---|---|
| level 1 events | 31815 | 32733 | 49297 | 30754 | 43360 | 41068 |
| rejected events | 28324 | 29185 | 24426 | 26950 | 24049 | 33077 |
| rejected % | 89% | 89% | 49% | 87% | 55% | 80% |

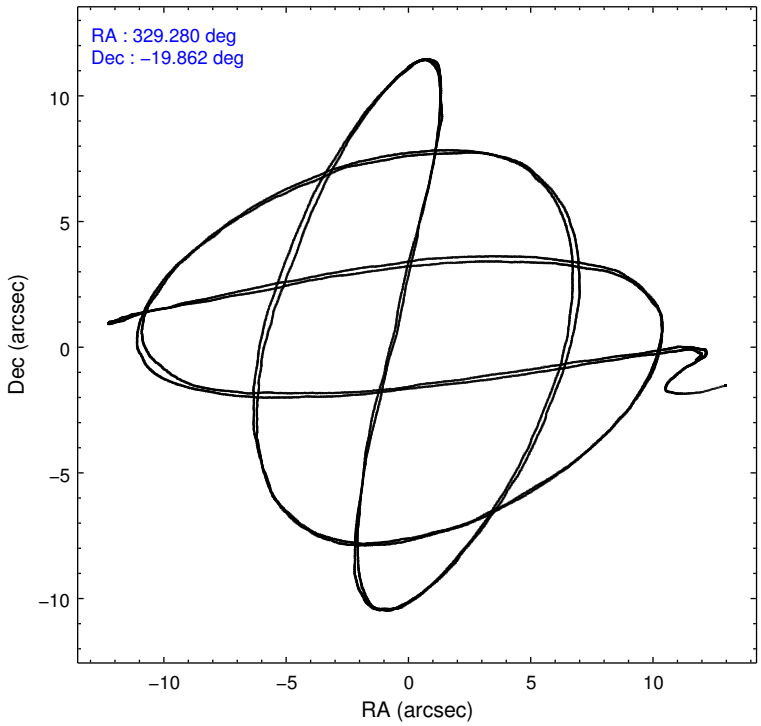
| | **ccd 2** | **ccd 3** | **ccd 5** | **ccd 6** | **ccd 7** | **ccd 8** |
|---|---|---|---|---|---|---|
| grade 0 events | 1396 | 1500 | 4391 | 1645 | 1950 | 2462 |
| | 4% | 4% | 8% | 5% | 4% | 5% |
| grade 1 events | 16 | 14 | 256 | 24 | 57 | 20 |
| | 0% | 0% | 0% | 0% | 0% | 0% |
| grade 2 events | 765 | 725 | 6731 | 743 | 3754 | 1829 |
| | 2% | 2% | 13% | 2% | 8% | 4% |
| grade 3 events | 342 | 338 | 1093 | 344 | 1733 | 800 |
| | 1% | 1% | 2% | 1% | 3% | 1% |
| grade 4 events | 347 | 332 | 1173 | 354 | 1712 | 731 |
| | 1% | 1% | 2% | 1% | 3% | 1% |
| grade 5 events | 1066 | 1248 | 3470 | 1350 | 3957 | 1691 |
| | 3% | 3% | 7% | 4% | 9% | 4% |
| grade 6 events | 643 | 655 | 11501 | 720 | 10167 | 2172 |
| | 2% | 2% | 23% | 2% | 23% | 5% |
| grade 7 events | 27240 | 27921 | 20682 | 25574 | 20030 | 31363 |
| | 85% | 85% | 41% | 83% | 46% | 76% |

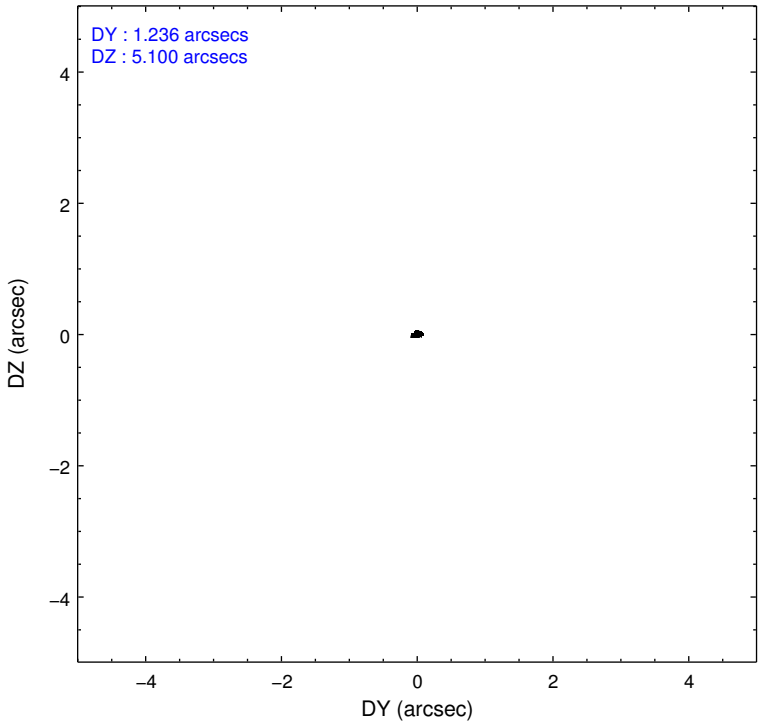
## 2.2 Compared Parameters

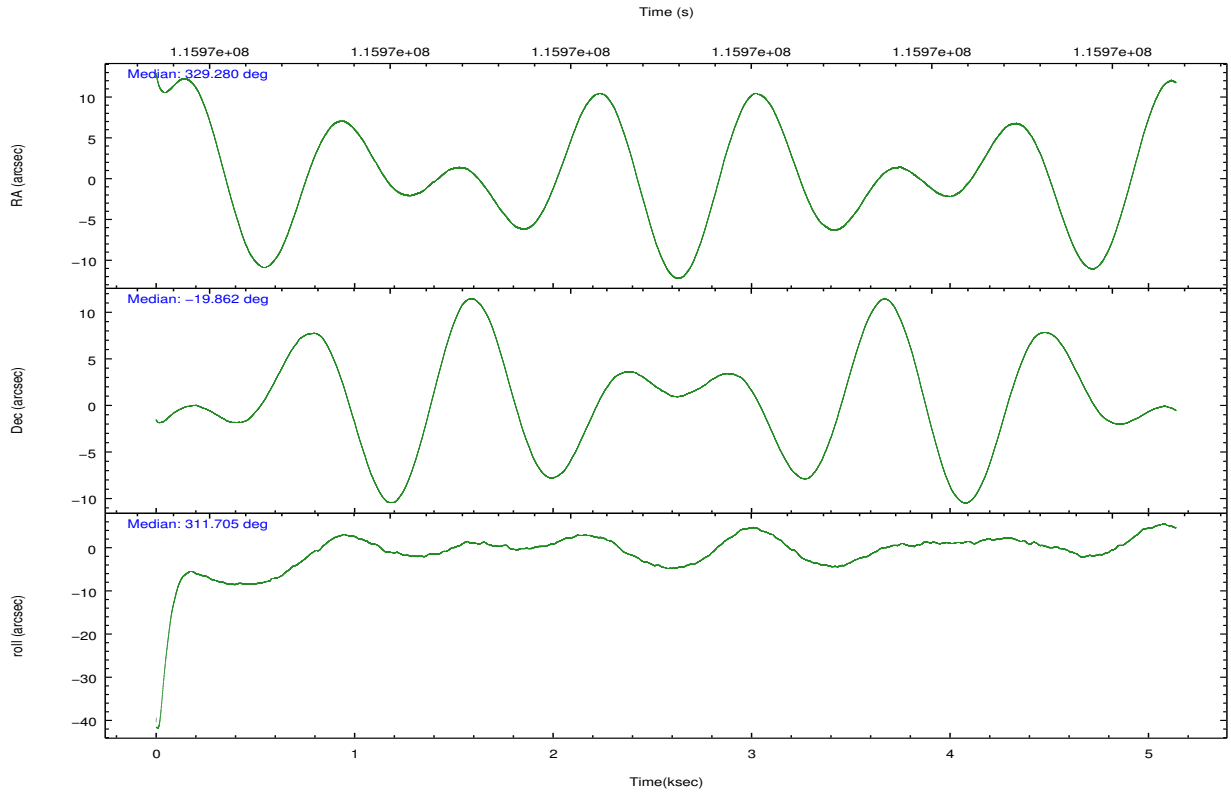
| Parameter | Planned | Actual |
|---|---|---|
| Instrument | ACIS | ACIS |
| Detector | ACIS-235678 | ACIS-235678 |
| Grating | NONE | NONE |
| Data mode | FAINT | FAINT |
| Observation mode | POINTING | POINTING |
| [deg] Pointing RA | 329.252357 | 329.2801116049345 |
| [deg] Pointing Dec | -19.853958 | -19.86220685463676 |
| [deg] Pointing Roll | 311.549845 | 311.7158305584818 |
| [mm] SIM focus pos | -0.684267 | -0.6828225247311905 |
| [mm] SIM defocus | 0 | 0.001444936568705701 |
| [mm] SIM translation stage pos | -190.132523 | -190.1400660498719 |
| [mm] SIM translation stage offset | 0 | 0.00754346686406393 |
| [s] Observation start time (MET) | 115967098.184000 | 115966079.46558 |
| Observation start date | 2001-09-04T05:03:54 | 2001-09-04T04:47:59 |
| [s] Observation end time (MET) | 115972098.184000 | 115972852.15334 |
| Observation end date | 2001-09-04T06:27:14 | 2001-09-04T06:40:52 |
| Read mode | TIMED | TIMED |

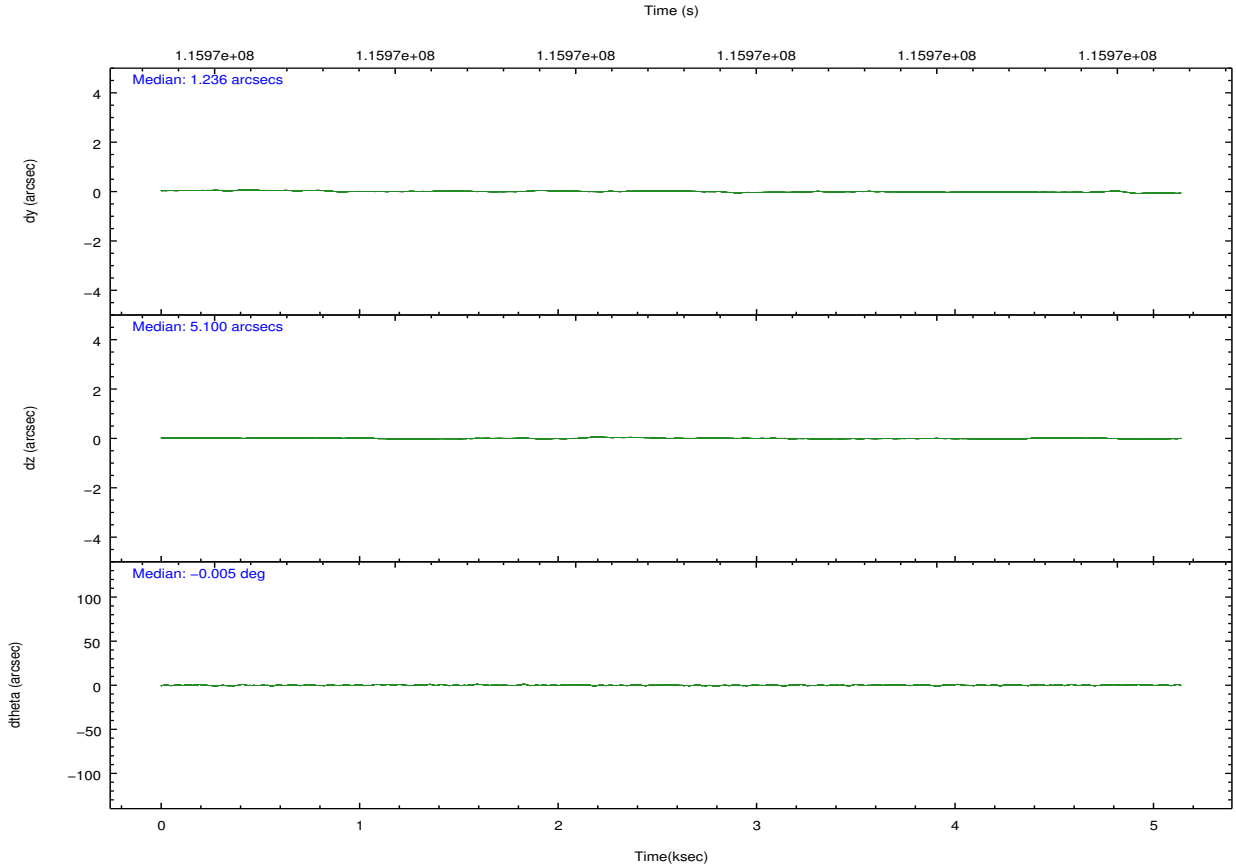
| Parameter | Planned | Actual |
|---|---|---|
| Obspar format version number | 7 | 7 |
| Obspar file type | PREDICTED | ACTUAL |
| Obspar update status | NONE | UPDATED |
| Number of optional ACIS chips dropped | 0 | 0 |
| On-chip summing requested | N | N |
| Subarray requested | NONE | NONE |
| Alternating exposures requested | N | N |
| [s] Primary exposure time | 0.000000 | 3.2 |

## 2.3 Aspect


RA : 329.280 deg
Dec : −19.862 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 1.236 arcsecs
DZ : 5.100 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
Median: 329.280 deg
RA (arcsec)
Median: −19.862 deg
Dec (arcsec)
Median: 311.705 deg
roll (arcsec)
Time(ksec)

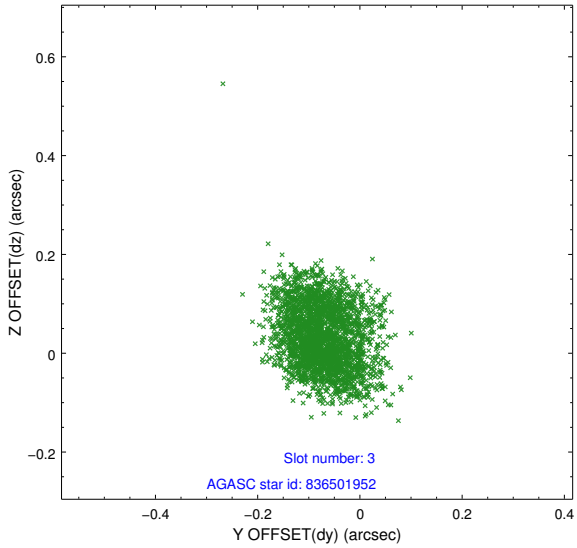

Time (s)
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
1.1597e+08
Median: 1.236 arcsecs
dy (arcsec)
Median: 5.100 arcsecs
dz (arcsec)
Median: −0.005 deg
dtheta (arcsec)
Time(ksec)

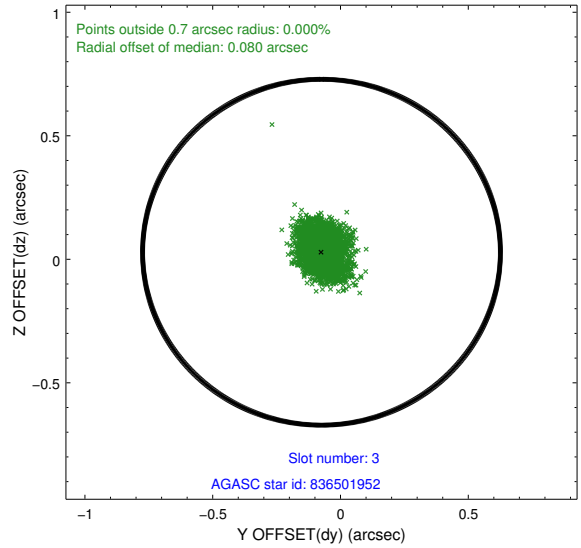
Slot Statistics

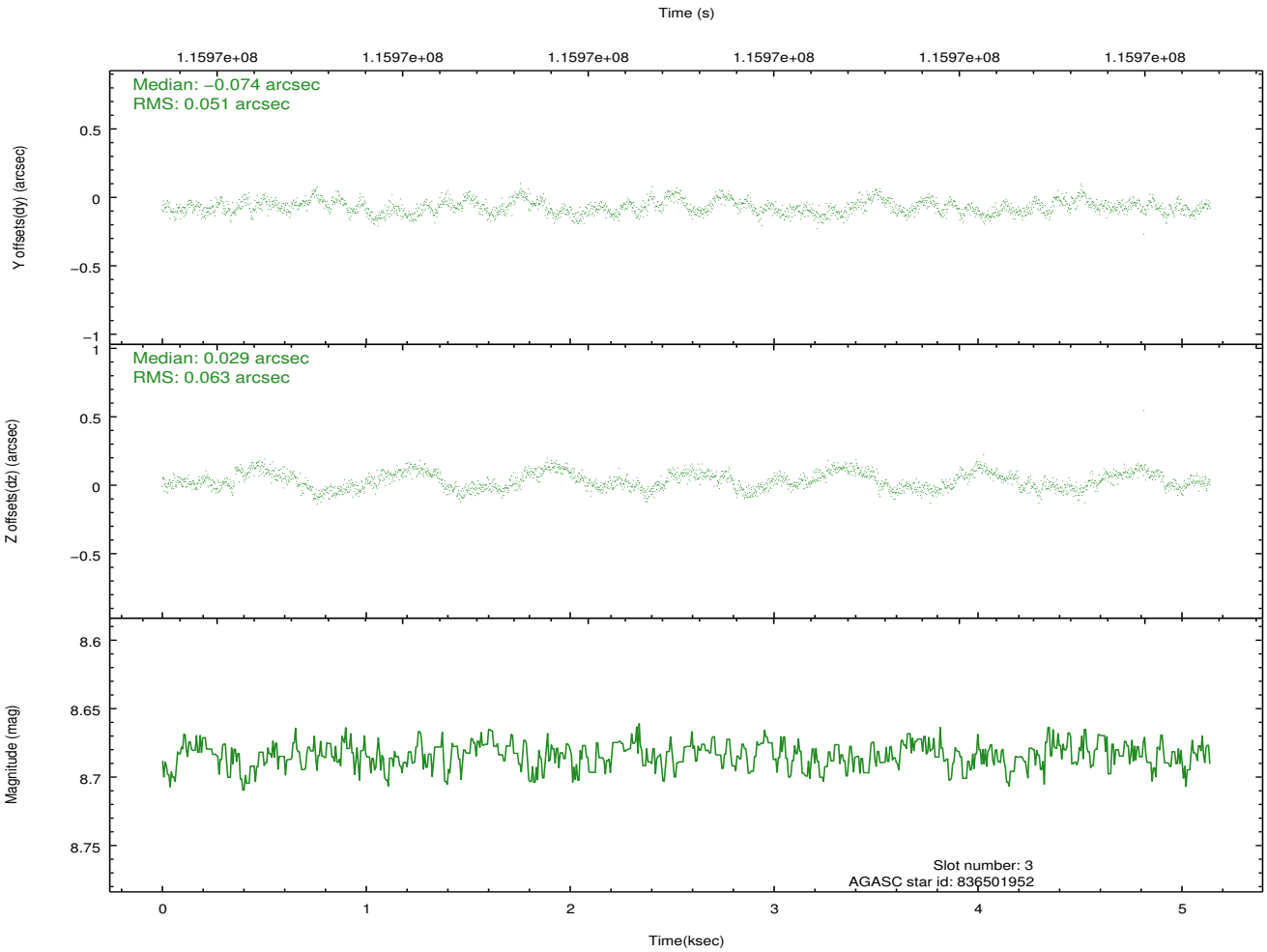
| slot | status | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | FID | ACIS-S-2 | 7.12 | 1254 | -0.053 | -0.016 | 0.007 | 0.011 | 0.000000 | 0.000000 | -753.84 | -1726.25 |
| 1 | FID | ACIS-S-4 | 7.20 | 1254 | 0.008 | 0.030 | 0.006 | 0.010 | 0.000000 | 0.000000 | 2158.92 | 181.13 |
| 2 | FID | ACIS-S-5 | 7.24 | 1254 | 0.013 | -0.005 | 0.007 | 0.011 | 0.000000 | 0.000000 | -1805.14 | 176.02 |
| 3 | GUIDE | 836501952 | 8.68 | 2508 | -0.074 | 0.029 | 0.087 | 0.134 | 329.135727 | -20.027570 | 206.39 | -710.13 |
| 4 | OMITTED | | 0.00 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000000 | 0.000000 | 0.00 | 0.00 |
| 5 | GUIDE | 836505600 | 9.45 | 2506 | 0.108 | -0.093 | 0.123 | 0.200 | 329.144586 | -20.765323 | 2215.73 | -2448.10 |
| 6 | GUIDE | 836111928 | 9.45 | 2507 | -0.021 | 0.021 | 0.126 | 0.205 | 329.185792 | -19.087061 | -2215.68 | 1660.06 |
| 7 | GUIDE | 836120360 | 9.37 | 2507 | 0.001 | 0.052 | 0.227 | 0.336 | 329.603756 | -19.385137 | -471.80 | 2011.84 |

## 2.4 Star Slots

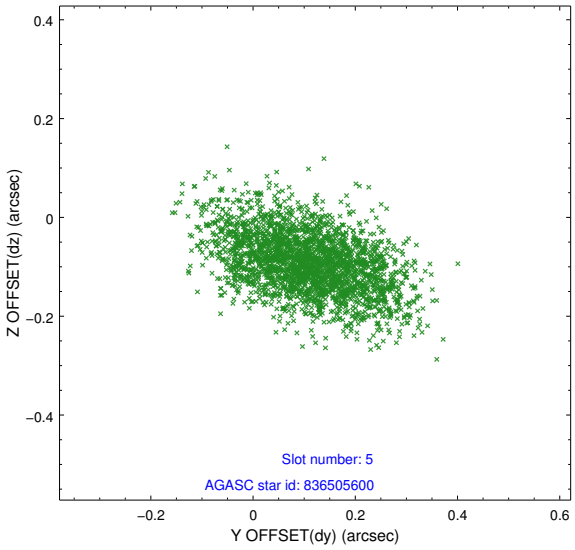
### 2.4.1 Slot 3

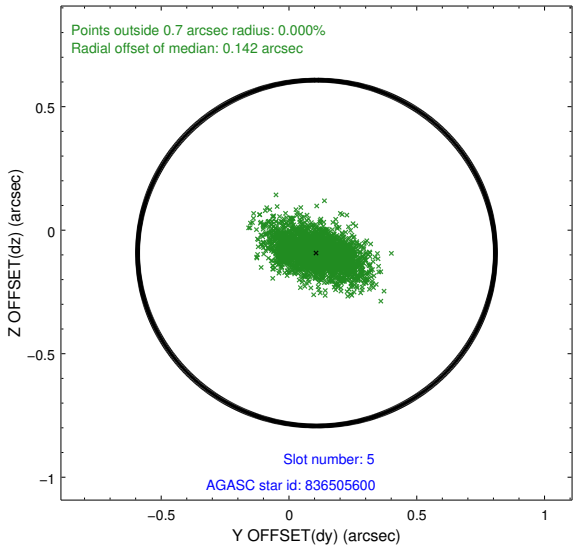


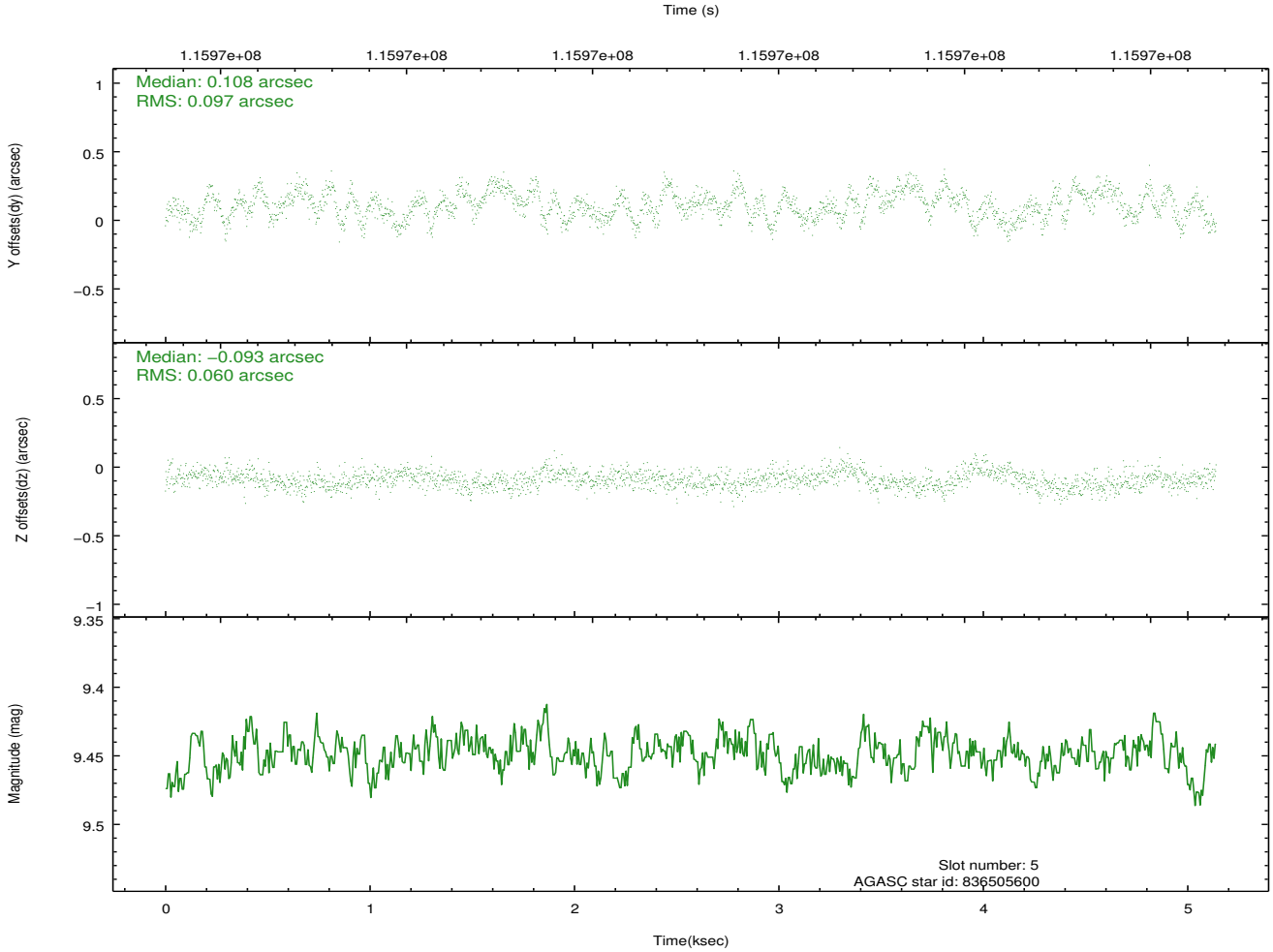



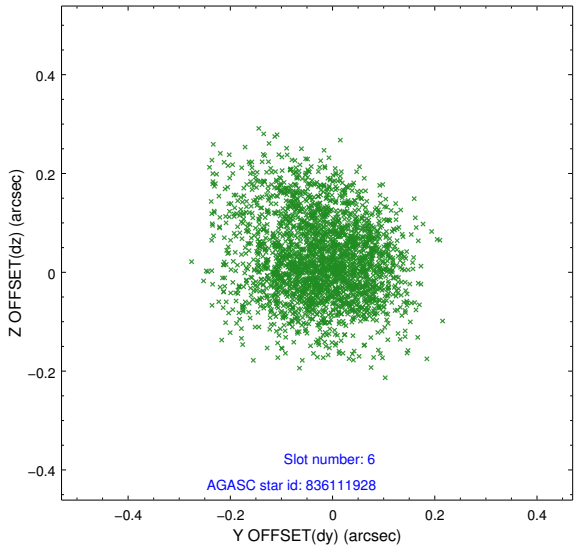
### 2.4.2 Slot 5

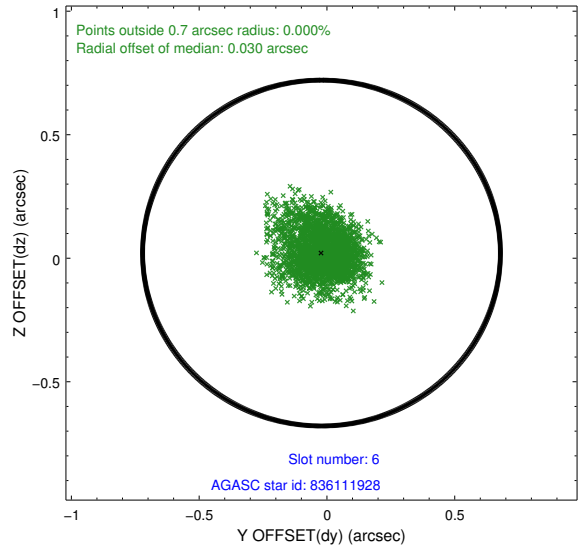

Slot number: 5
AGASC star id: 836505600
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

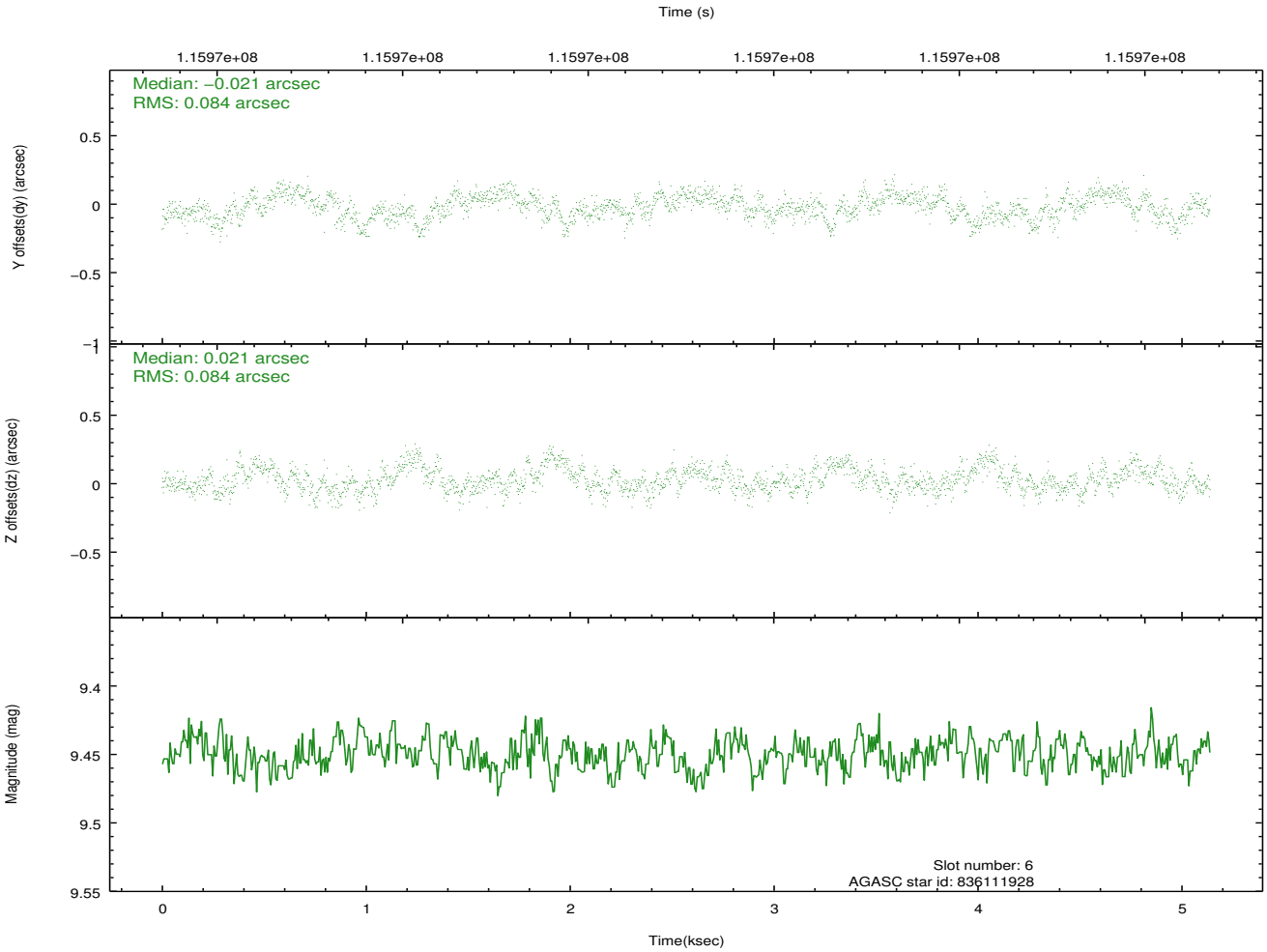

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.142 arcsec
Slot number: 5
AGASC star id: 836505600
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)


Time (s)
1.1597e+08
Median: 0.108 arcsec
RMS: 0.097 arcsec
Y offsets(dy) (arcsec)
Median: −0.093 arcsec
RMS: 0.060 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 836505600
Time(ksec)

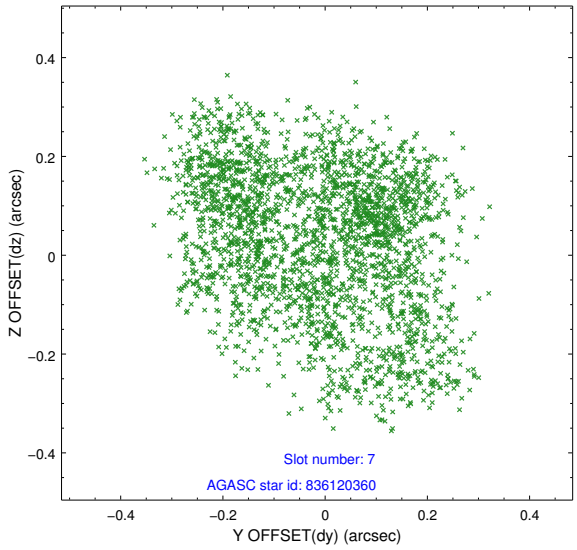
### 2.4.3 Slot 6

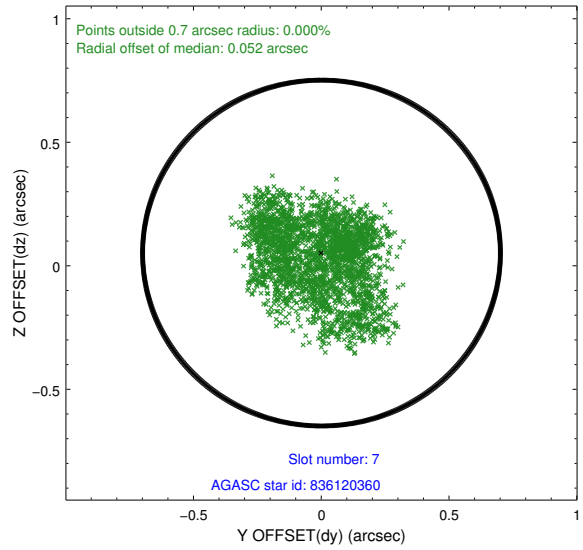

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 836111928

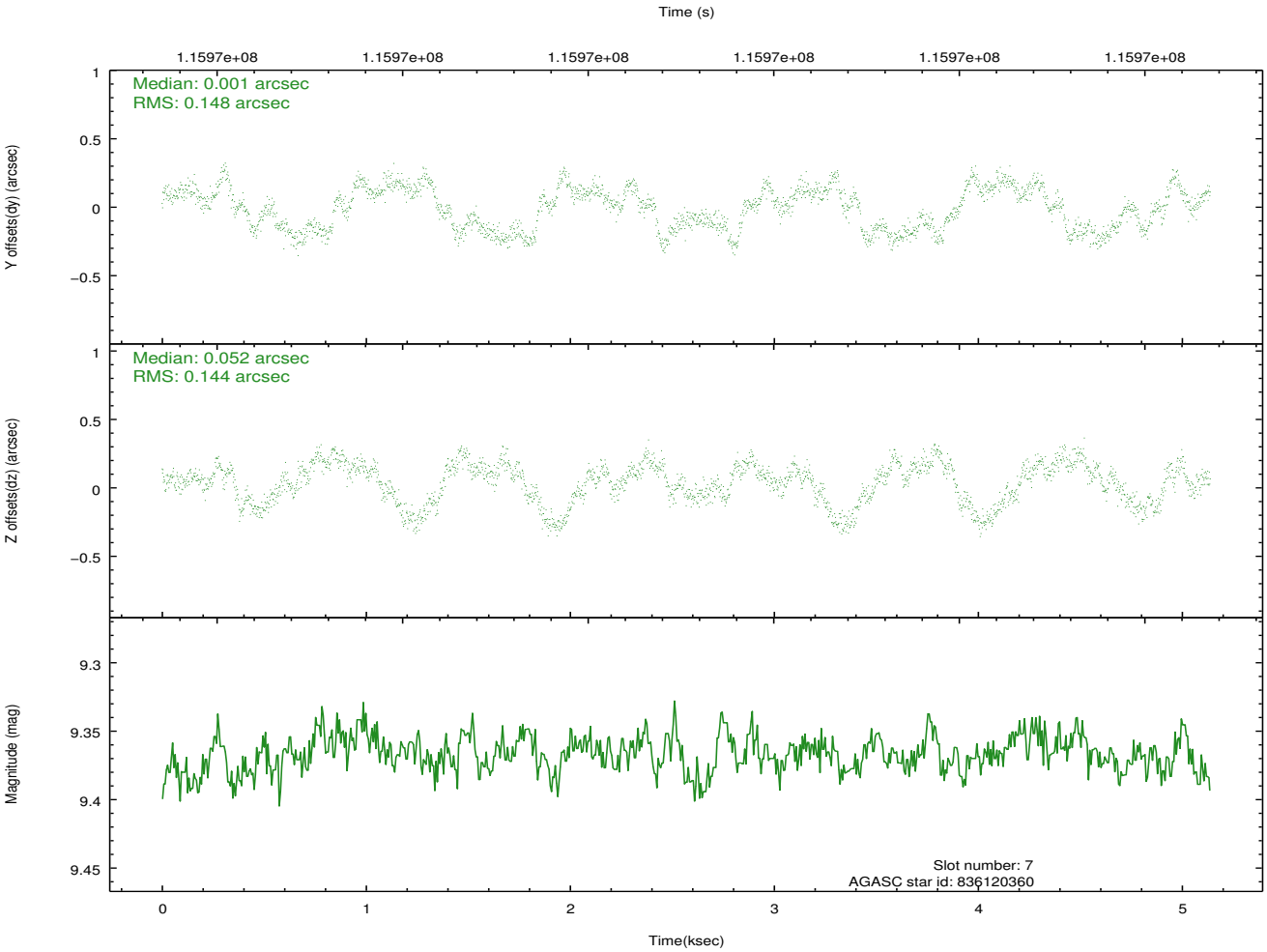

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.030 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 836111928


Time (s)
Median: −0.021 arcsec
RMS: 0.084 arcsec
Y offsets(dy) (arcsec)
Median: 0.021 arcsec
RMS: 0.084 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 836111928
Time(ksec)

### 2.4.4 Slot 7

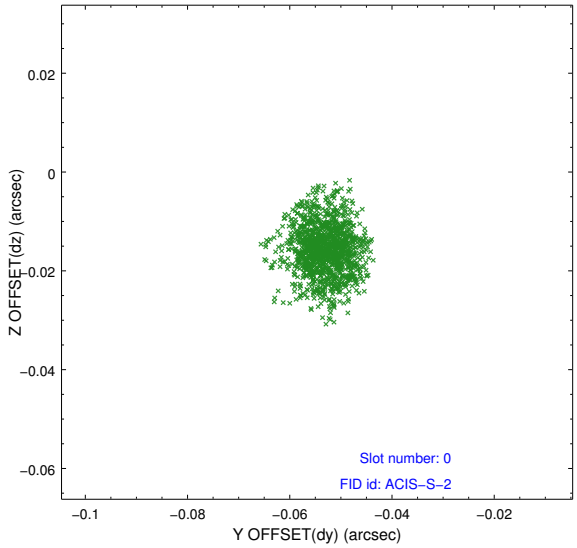

Slot number: 7
AGASC star id: 836120360
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

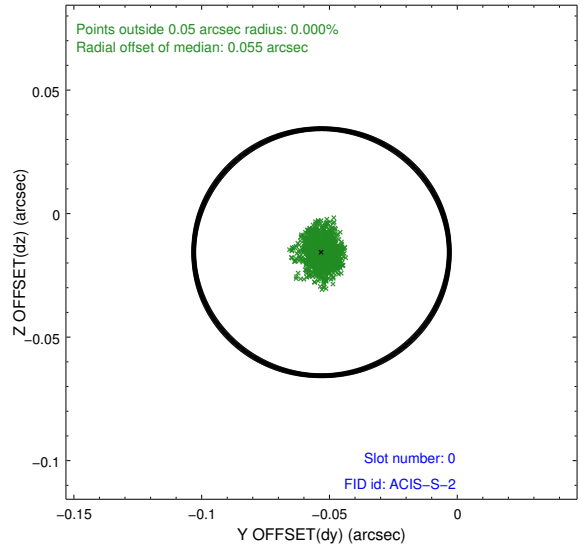

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.052 arcsec
Slot number: 7
AGASC star id: 836120360
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)

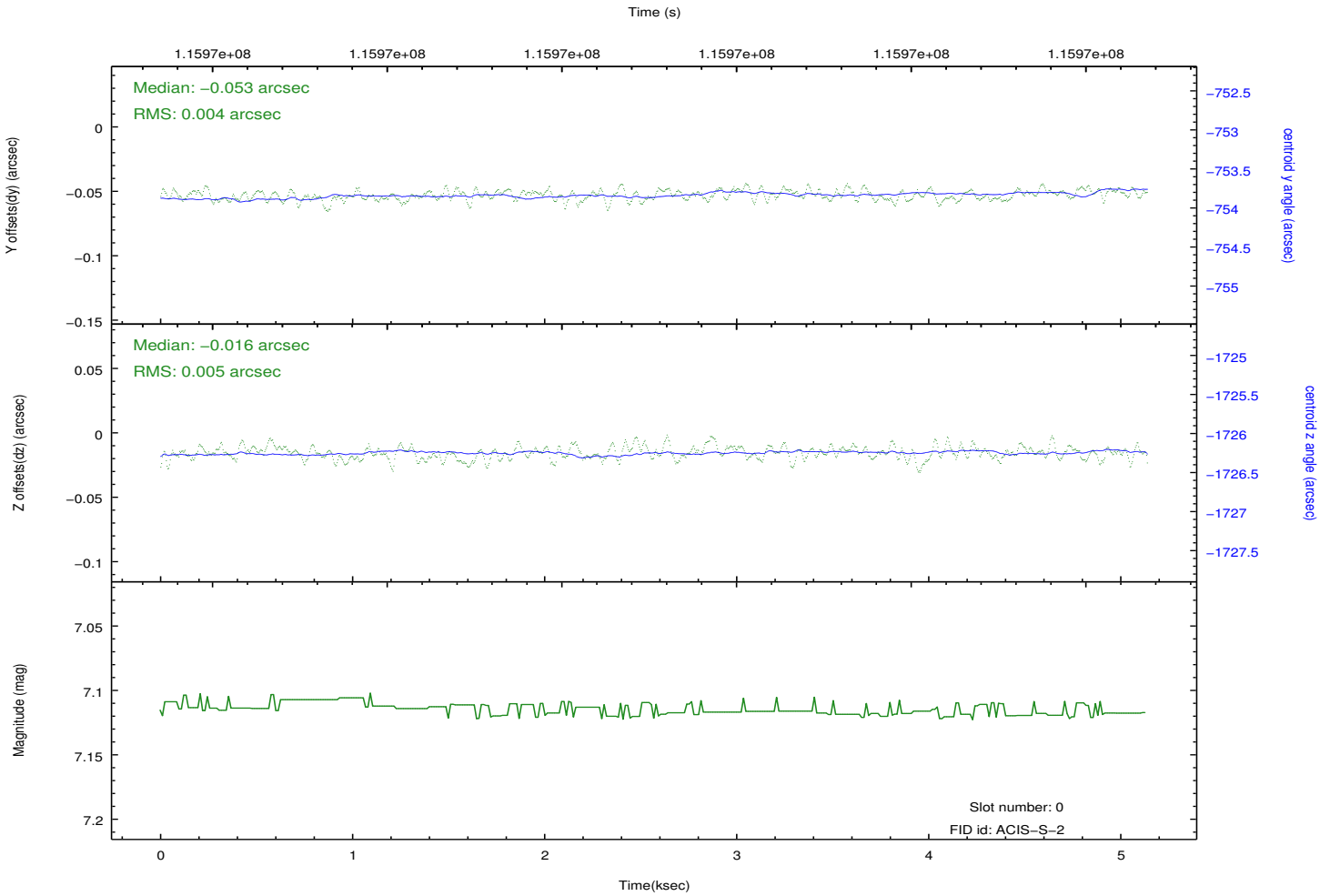

Time (s)
Median: 0.001 arcsec
RMS: 0.148 arcsec
Y offsets(dy) (arcsec)
Median: 0.052 arcsec
RMS: 0.144 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 836120360
Time(ksec)

## 2.5 FID Slots

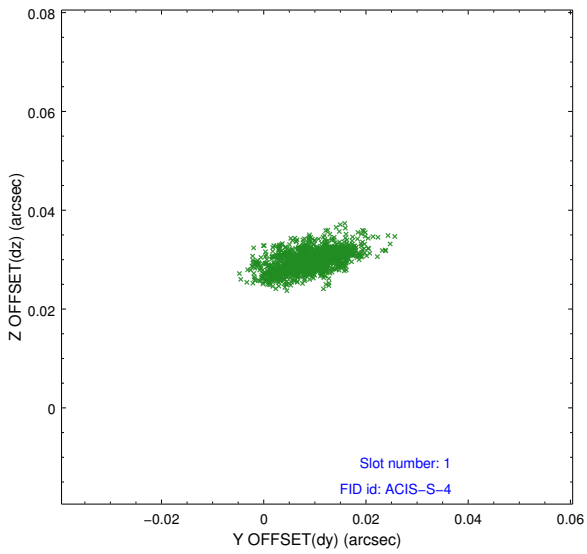
### 2.5.1 Slot 0

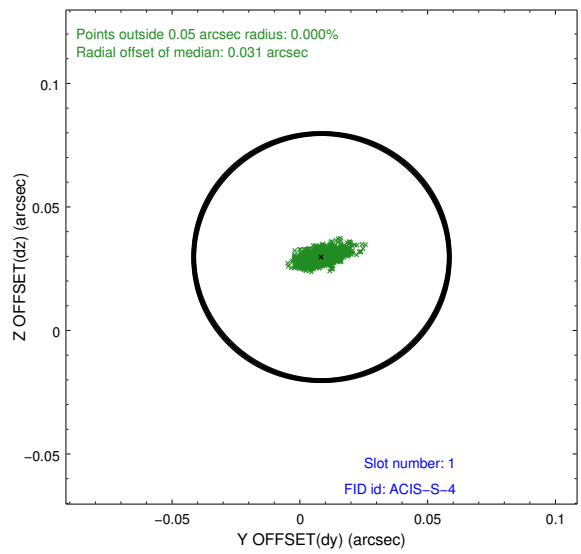


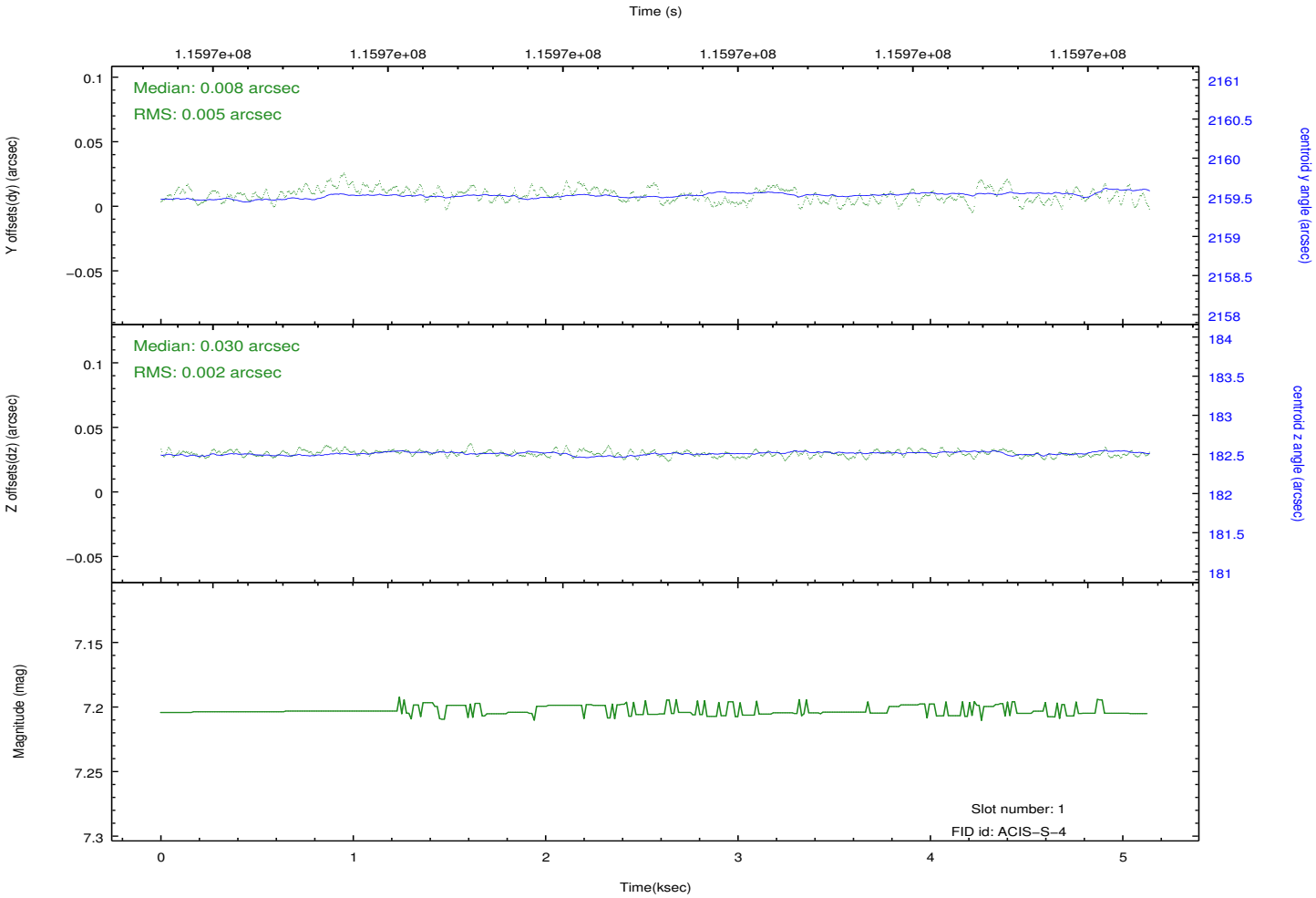



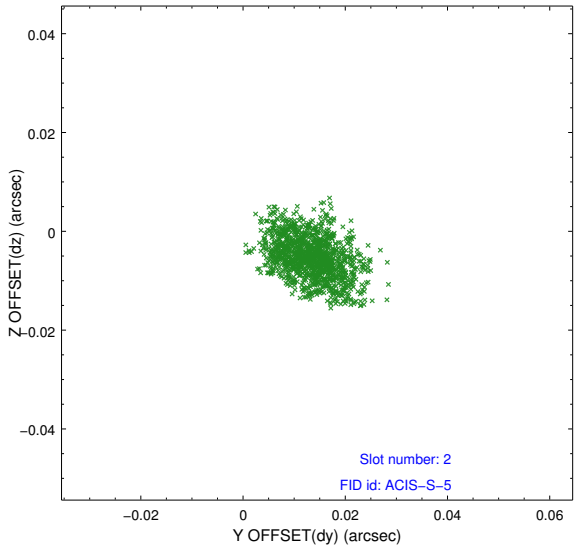
### 2.5.2 Slot 1

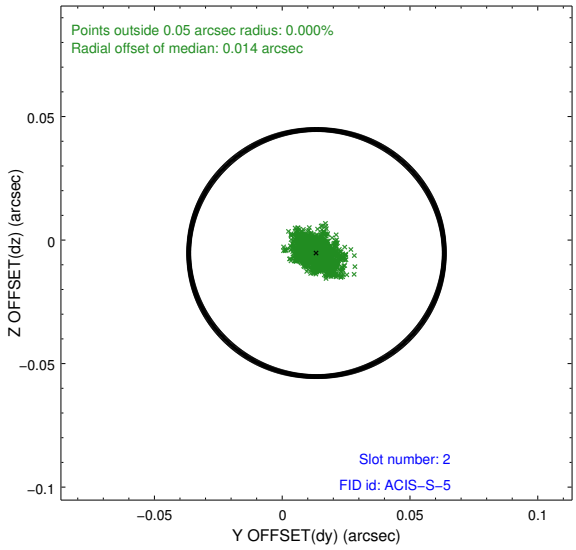

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

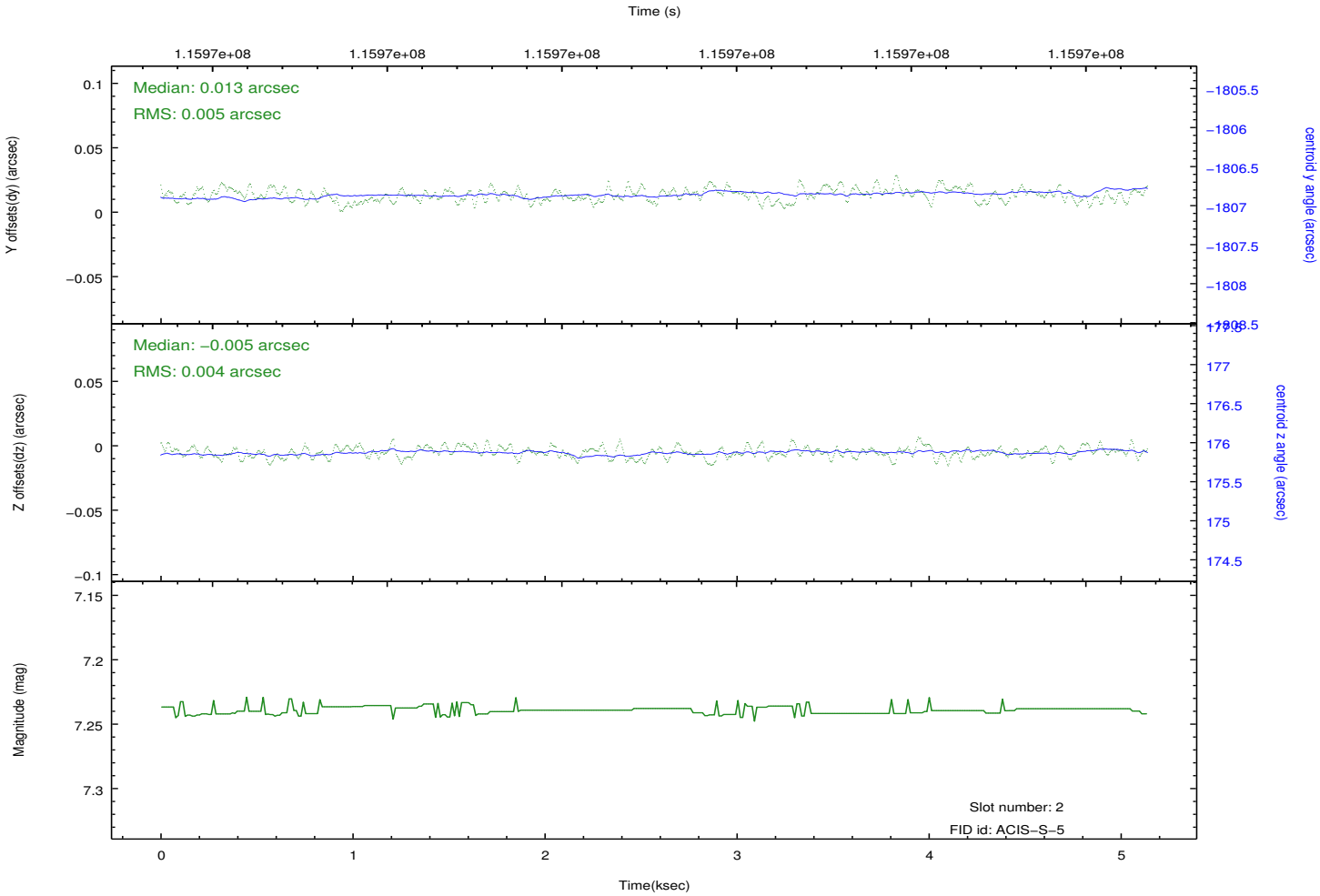

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.031 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.008 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.030 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: 0.014 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: 0.013 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.005 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) | 2012.10.03 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 5.066 |

## A.2 Comments

```
The guide star in slot 4 was removed from the aspect solution due to
poor data quality. The aspect solution is improved by the removal of
this guide star from the solution.
```