# V&V Reference Report
# L2 ASCDS Version : 8.4.3

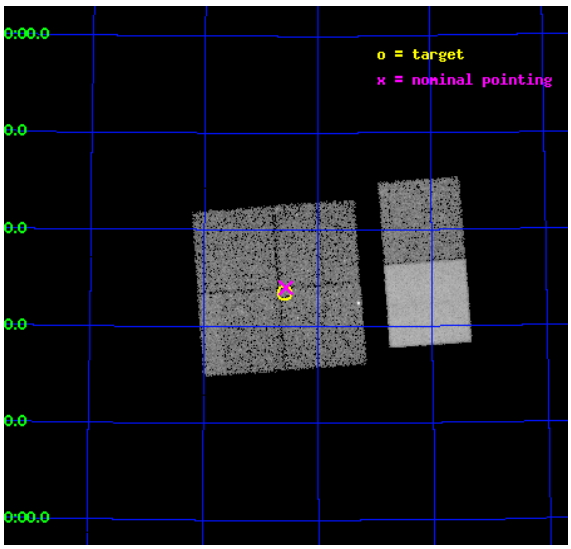
Observation 12935 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Feb 6 2012

## Contents

# 1 Front

| | | |
|---|---|---|
| seq_num | 900967 | Sequence number |
| obs_id | 12935 | Observation id |
| title | Filling the 15 micron Gap: Search for Compton-thick Accretion with Chandra and AKARI in the NEP Deep Field | Proposal title |
| observer | Dr. Mirko Krumpe | Principal investigator |
| object | AKARI-NEP-Deep Field | Source name |
| dtycycle | 0 |   |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 269.14583 | Observer's specified target RA [deg] |
| dec_targ | 66.559167 | Observer's specified target Dec [deg] |
| ra_nom | 269.14120990868 | Nominal RA [deg] |
| dec_nom | 66.56704338931 | Nominal Dec [deg] |
| roll_nom | 85.712956481466 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 17055.735519052 | Sum of GTIs [s] |
| livetime | 16839.765526178 | Livetime [s] |
| ontime0 | 17055.612399042 | Sum of GTIs [s] |
| ontime1 | 17055.653439045 | Sum of GTIs [s] |
| ontime2 | 17055.694479048 | Sum of GTIs [s] |
| ontime3 | 17055.735519052 | Sum of GTIs [s] |
| ontime6 | 17055.817599058 | Sum of GTIs [s] |
| ontime7 | 17055.776559055 | Sum of GTIs [s] |
| l2events | 116521 | Number of level 2 events |

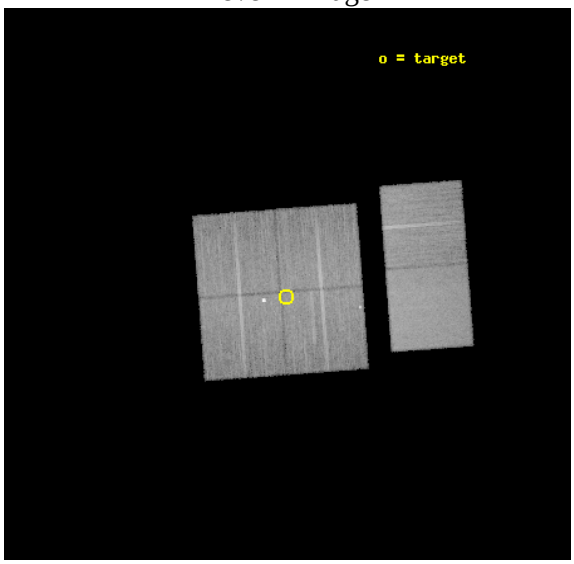


# 2 OBI

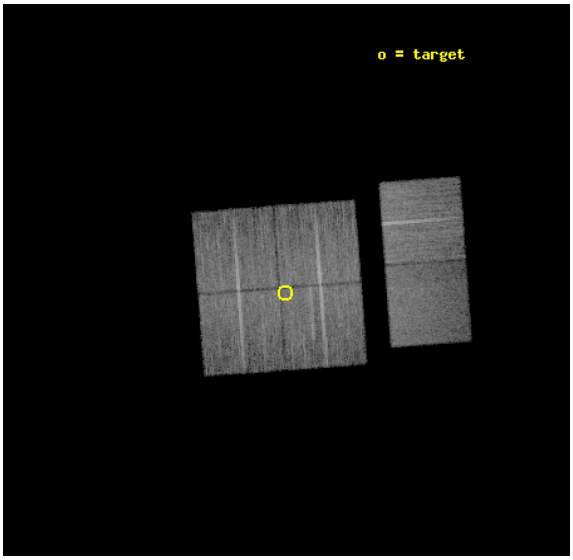
## 2.1 OBI

### 2.1.1 Images

Level 1 Image

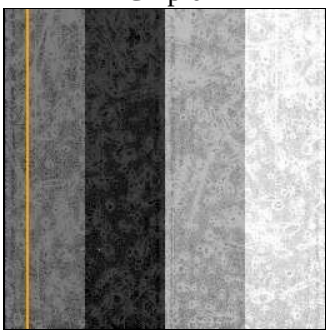



Level 1 Bad Events

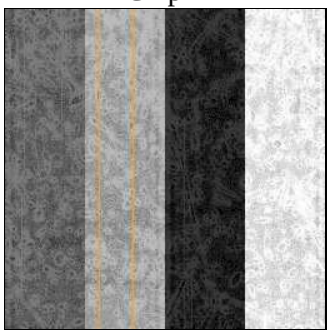



### 2.1.2 Bias

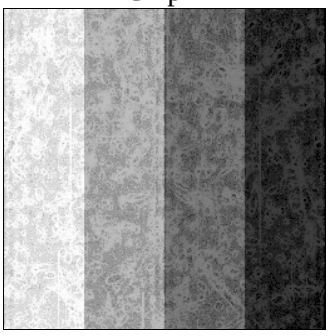
Chip 0



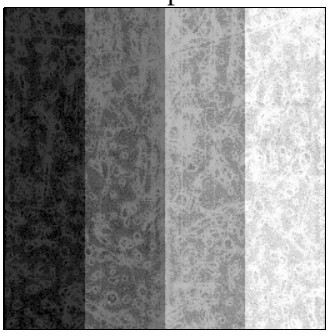
Chip 1



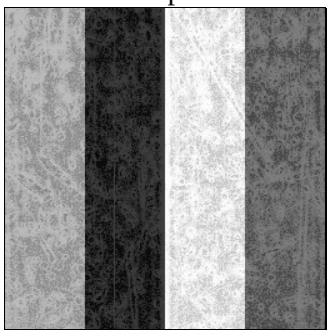
Chip 2



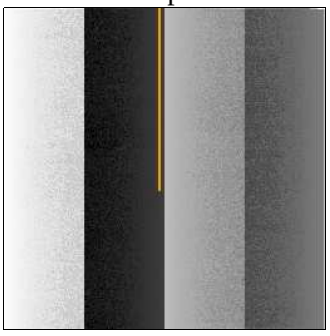
Chip 3



Chip 6



Chip 7



### 2.1.3 Parameters

| | | |
|---|---|---|
| obi_num | 0 | Obi number |
| ascdsver | 8.4.3 | Processing system revision |
| caldbver | 4.4.7 |   |
| date | 2012-02-06T07:00:09 | Date and time of file creation |
| revision | 2 | Processing version of data |

| | | |
|---|---|---|
| sched_exp_time | 17000.000000 | [s] Scheduled observation exposure time |
| ontime | 17055.735519052 | Sum of GTIs [s] |
| ontime0 | 17055.612399042 | Sum of GTIs [s] |
| ontime1 | 17055.653439045 | Sum of GTIs [s] |
| ontime2 | 17055.694479048 | Sum of GTIs [s] |
| ontime3 | 17055.735519052 | Sum of GTIs [s] |
| ontime6 | 17055.817599058 | Sum of GTIs [s] |
| ontime7 | 17055.776559055 | Sum of GTIs [s] |
| l1events | 694434 | Number of level 1 events |

### 2.1.4 Events

| | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|---|---|---|---|---|---|---|
| level 1 events | 103253 | 109859 | 112105 | 110427 | 115788 | 143002 |
| rejected events | 90709 | 90805 | 99896 | 97712 | 102694 | 79265 |
| rejected % | 87% | 82% | 89% | 88% | 88% | 55% |

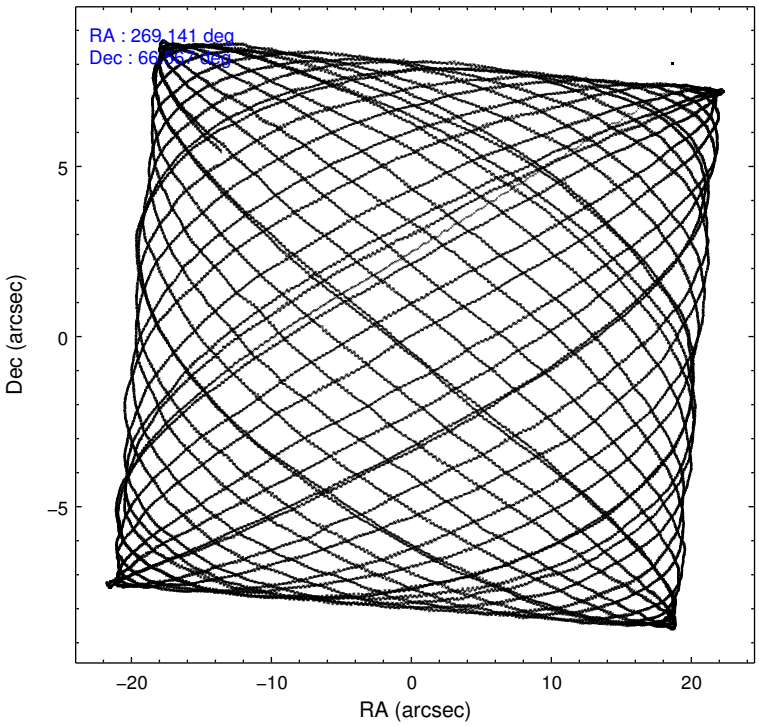
| | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|---|---|---|---|---|---|---|
| grade 0 events | 4284 | 10027 | 4505 | 4985 | 4526 | 5680 |
| | 4% | 9% | 4% | 4% | 3% | 3% |
| grade 1 events | 55 | 92 | 52 | 65 | 56 | 181 |
| | 0% | 0% | 0% | 0% | 0% | 0% |
| grade 2 events | 3063 | 3279 | 2901 | 2653 | 2896 | 13016 |
| | 2% | 2% | 2% | 2% | 2% | 9% |
| grade 3 events | 1330 | 1409 | 1231 | 1300 | 1377 | 5566 |
| | 1% | 1% | 1% | 1% | 1% | 3% |
| grade 4 events | 1260 | 1425 | 1252 | 1290 | 1325 | 5565 |
| | 1% | 1% | 1% | 1% | 1% | 3% |
| grade 5 events | 4626 | 5214 | 4597 | 5362 | 5366 | 14748 |
| | 4% | 4% | 4% | 4% | 4% | 10% |
| grade 6 events | 2613 | 2922 | 2326 | 2493 | 2975 | 33925 |
| | 2% | 2% | 2% | 2% | 2% | 23% |
| grade 7 events | 86022 | 85491 | 95241 | 92279 | 97267 | 64321 |
| | 83% | 77% | 84% | 83% | 84% | 44% |

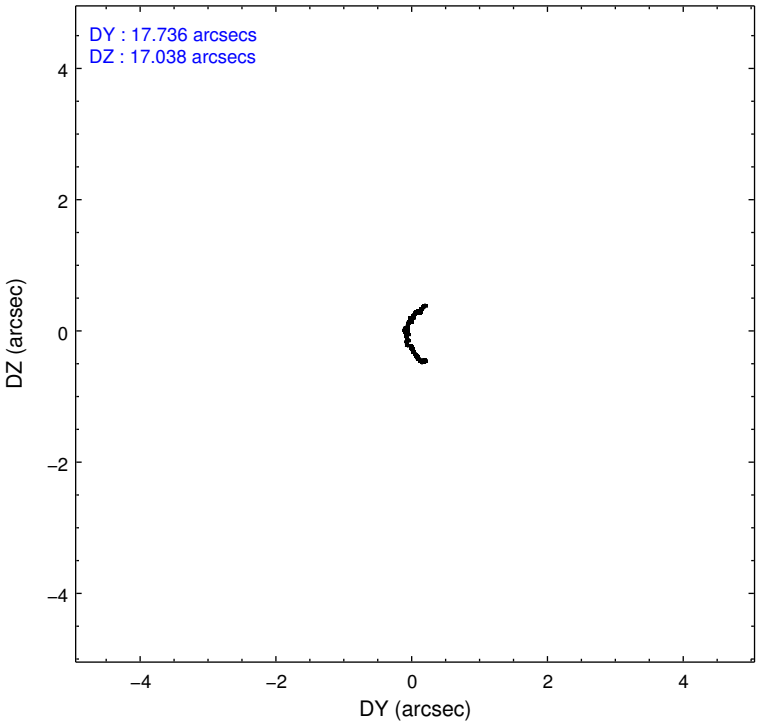
## 2.2 Compared Parameters

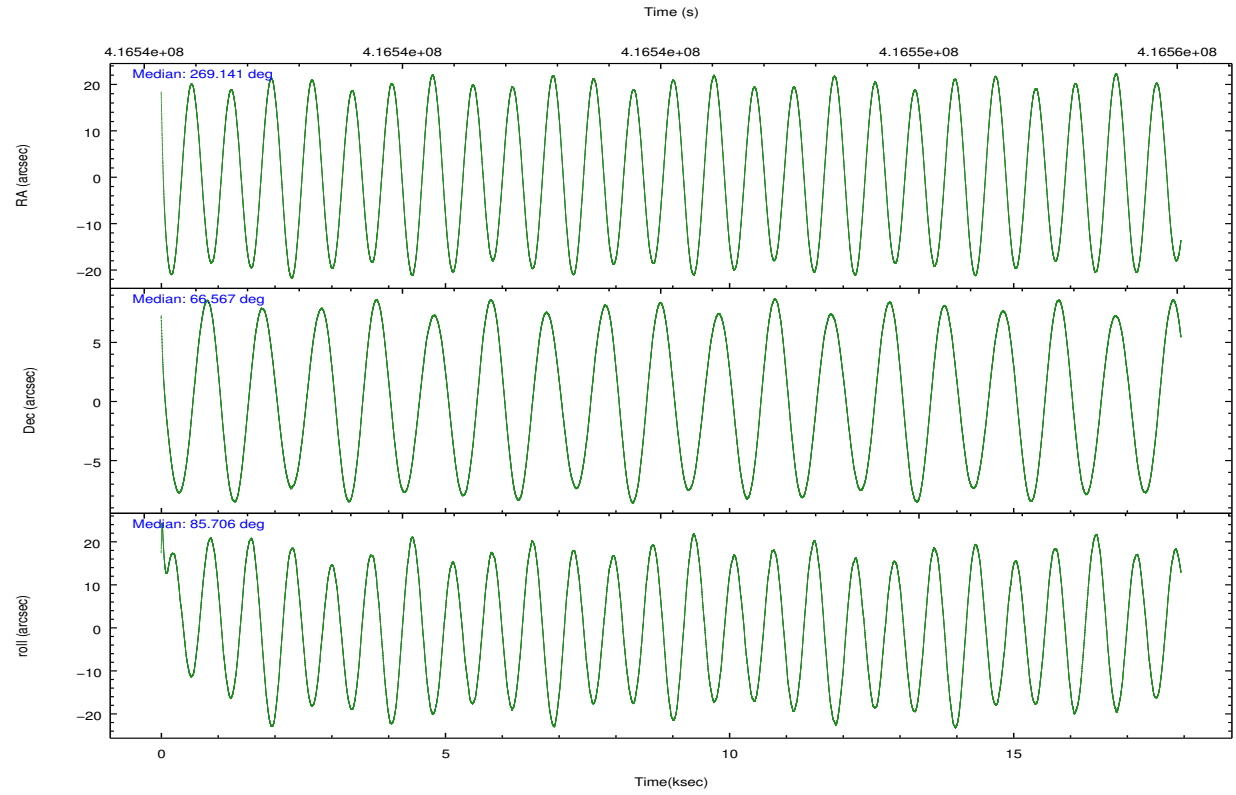
| Parameter | Planned | Actual |
|---|---|---|
| Instrument | ACIS | ACIS |
| Detector | ACIS-012367 | ACIS-012367 |
| Grating | NONE | NONE |
| Data mode | VFAINT | VFAINT |
| Observation mode | POINTING | POINTING |
| [deg] Pointing RA | 269.171472 | 269.1412099086805 |
| [deg] Pointing Dec | 66.542307 | 66.56704338930982 |
| [deg] Pointing Roll | 85.476482 | 85.71295648146585 |
| [mm] SIM focus pos | -0.782348 | -0.7809083437167272 |
| [mm] SIM defocus | 0 | 0.001439871863259334 |
| [mm] SIM translation stage pos | -233.592463 | -233.5874344608287 |
| [mm] SIM translation stage offset | 0 | -0.005018542100998502 |
| [s] Observation start time (MET) | 416537166.184000 | 416535366.56145 |
| Observation start date | 2011-03-15T00:45:00 | 2011-03-15T00:16:06 |
| [s] Observation end time (MET) | 416554166.184000 | 416555119.84997 |
| Observation end date | 2011-03-15T05:28:20 | 2011-03-15T05:45:19 |
| Read mode | TIMED | TIMED |

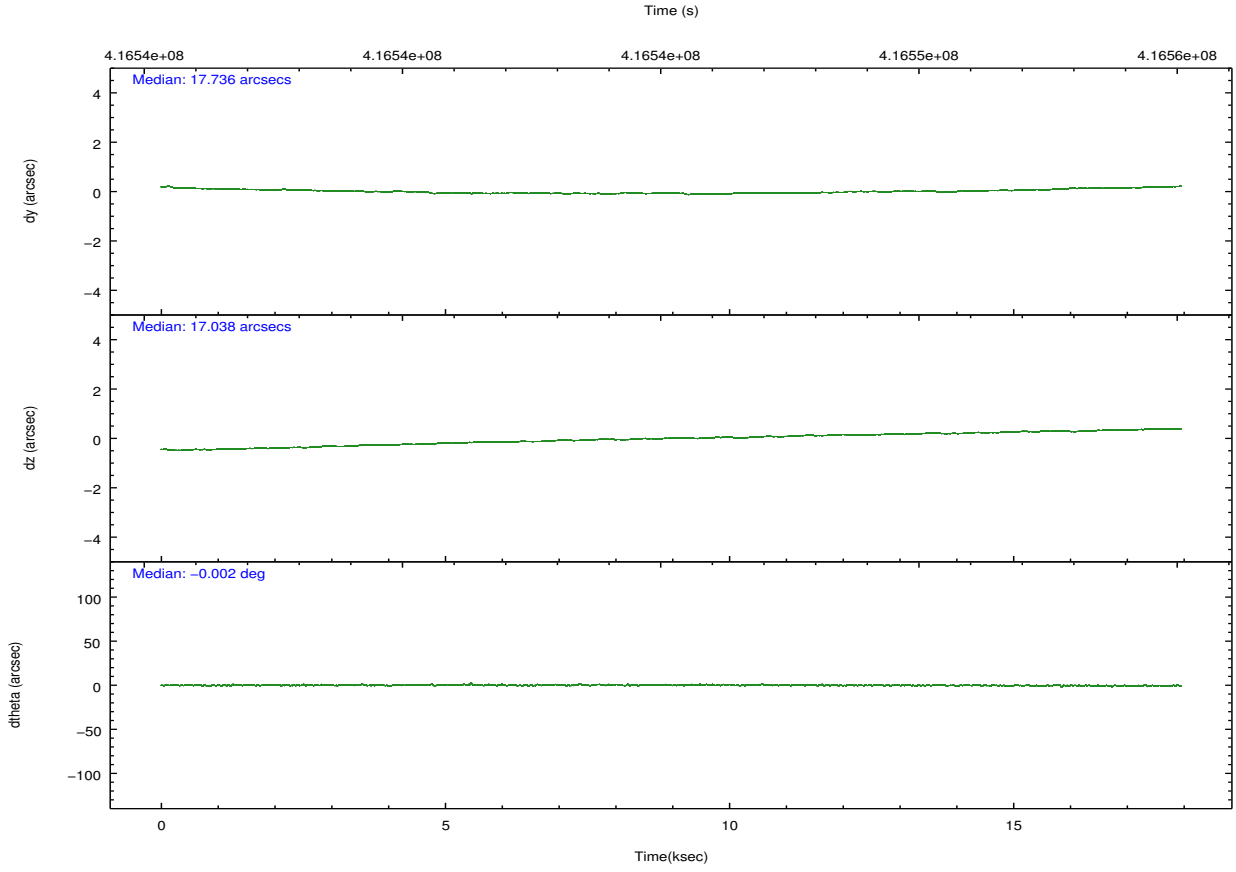
| Parameter | Planned | Actual |
|---|---|---|
| Obspar format version number | 7 | 7 |
| Obspar file type | PREDICTED | ACTUAL |
| Obspar update status | NONE | UPDATED |
| CCD I0 on | Y | Y |
| CCD I1 on | Y | Y |
| CCD I2 on | Y | Y |
| CCD I3 on | Y | Y |
| CCD S0 on | N | N |
| CCD S1 on | N | N |
| CCD S2 on | O2 | Y |
| CCD S3 on | O1 | 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 | 3.2 |

## 2.3 Aspect


RA : 269.141 deg
Dec : 66.057 deg
5
0
−5
Dec (arcsec)
−20
−10
0
10
20
RA (arcsec)


DY : 17.736 arcsecs
DZ : 17.038 arcsecs
4
2
0
−2
−4
DZ (arcsec)
−4
−2
0
2
4
DY (arcsec)


Time (s)
4.1654e+08
4.1654e+08
4.1654e+08
4.1655e+08
4.1656e+08
Median: 269.141 deg
RA (arcsec)
Median: 66.567 deg
Dec (arcsec)
Median: 85.706 deg
roll (arcsec)
Time(ksec)

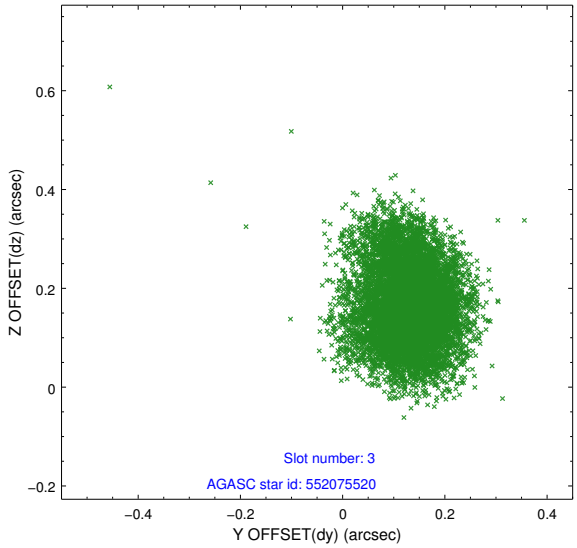

Time (s)
4.1654e+08
4.1654e+08
4.1654e+08
4.1655e+08
4.1656e+08
Median: 17.736 arcsecs
dy (arcsec)
Median: 17.038 arcsecs
dz (arcsec)
Median: −0.002 deg
dtheta (arcsec)
Time(ksec)

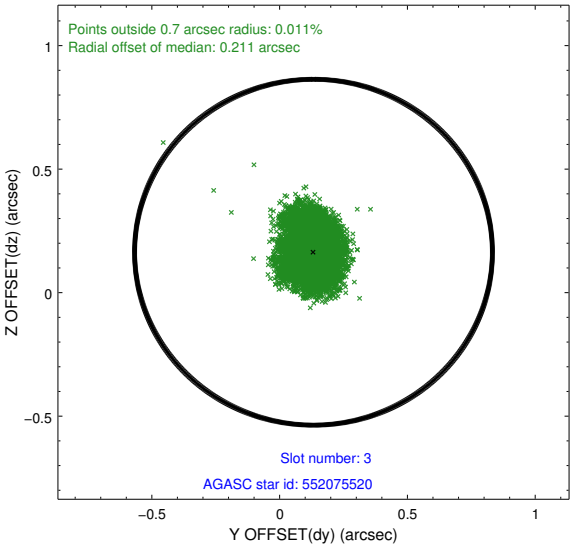
Slot Statistics

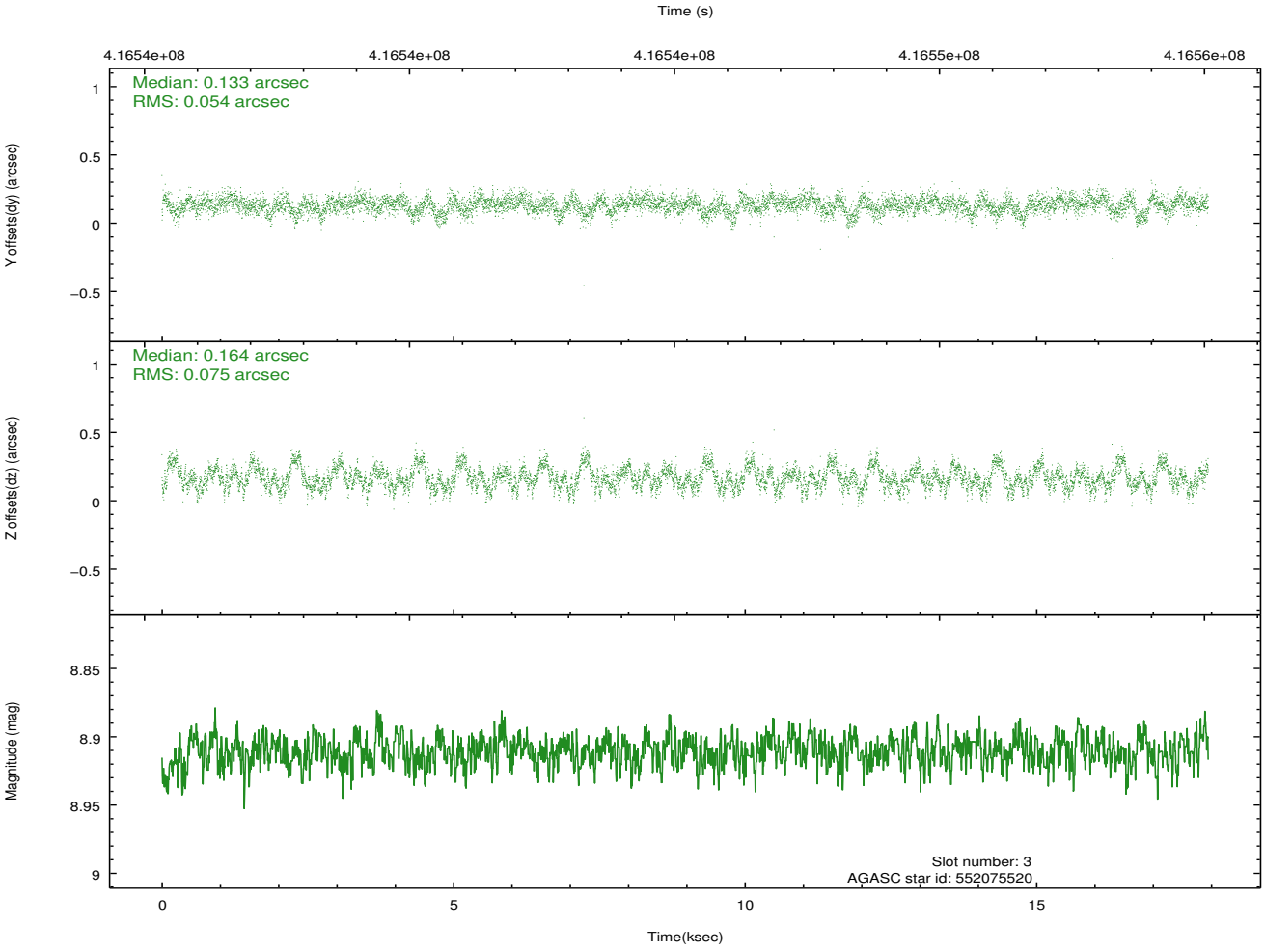
| slot | status | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | FID | ACIS-I-1 | 7.04 | 4378 | 0.057 | -0.018 | 0.012 | 0.020 | 0.000000 | 0.000000 | 921.69 | -840.68 |
| 1 | FID | ACIS-I-5 | 7.02 | 4376 | -0.229 | 0.059 | 0.009 | 0.014 | 0.000000 | 0.000000 | -1826.57 | 1056.78 |
| 2 | FID | ACIS-I-6 | 7.05 | 4378 | 0.079 | 0.031 | 0.013 | 0.022 | 0.000000 | 0.000000 | 387.02 | 1701.50 |
| 3 | GUIDE | 552075520 | 8.91 | 8751 | 0.133 | 0.164 | 0.098 | 0.160 | 269.430358 | 66.310622 | -800.81 | -438.82 |
| 4 | GUIDE | 552081976 | 9.20 | 8746 | -0.142 | -0.216 | 0.112 | 0.170 | 269.000724 | 66.928627 | 1367.76 | 349.94 |
| 5 | GUIDE | 552084280 | 7.63 | 8756 | -0.106 | -0.171 | 0.082 | 0.128 | 268.233478 | 66.419076 | -538.50 | 1312.43 |
| 6 | GUIDE | 552206400 | 8.62 | 8752 | 0.091 | -0.002 | 0.083 | 0.130 | 270.193803 | 65.897301 | -2183.56 | -1680.38 |
| 7 | GUIDE | 552213664 | 8.83 | 8752 | 0.018 | 0.223 | 0.102 | 0.159 | 270.812461 | 66.341359 | -502.88 | -2417.39 |

## 2.4 Star Slots

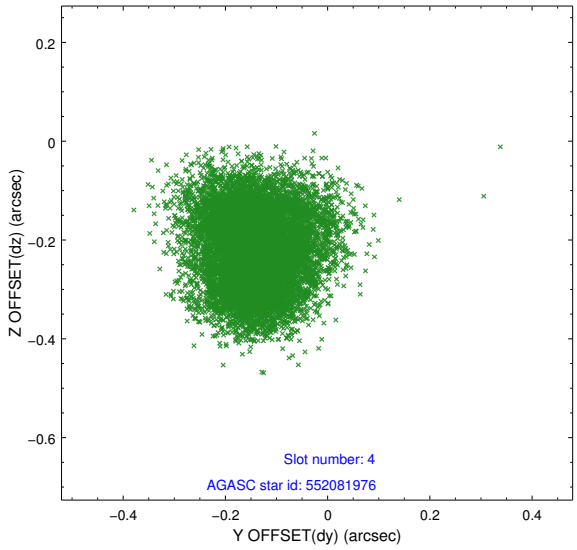
### 2.4.1 Slot 3

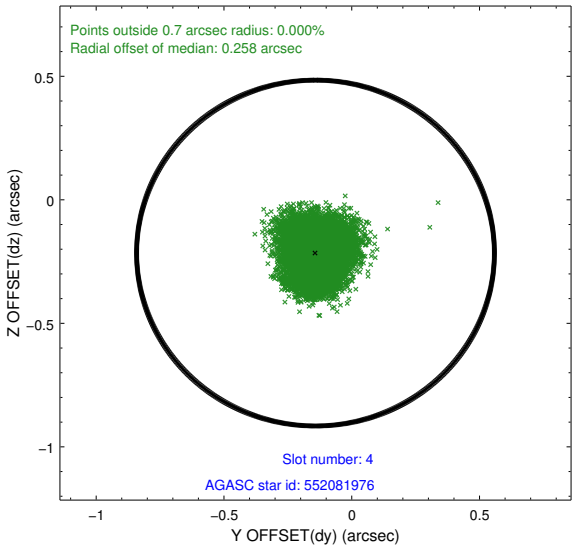


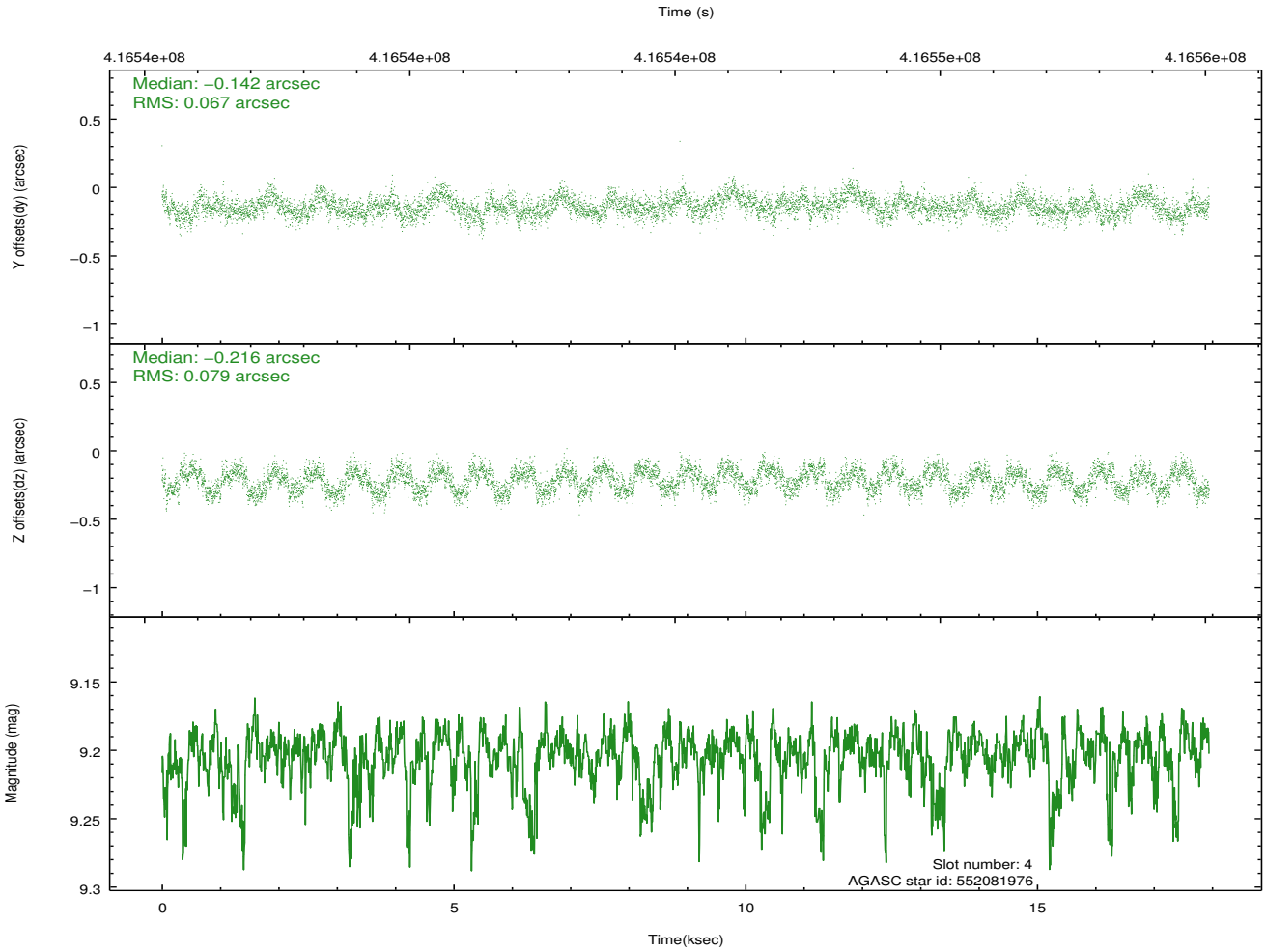



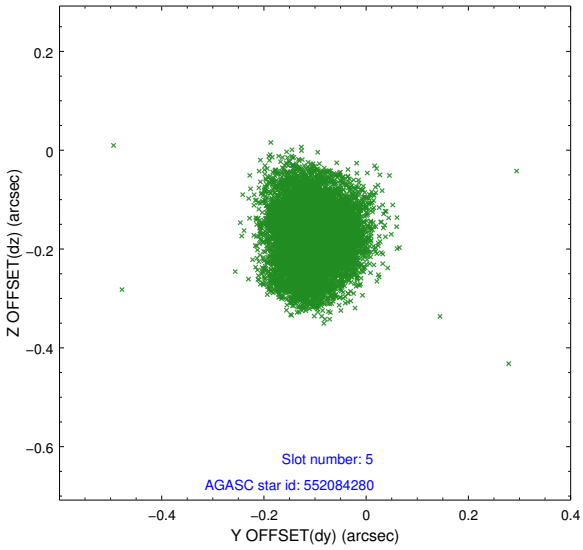
### 2.4.2 Slot 4

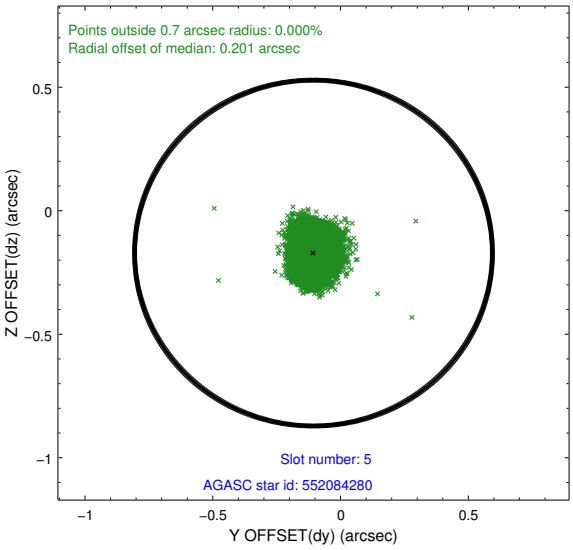

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 552081976

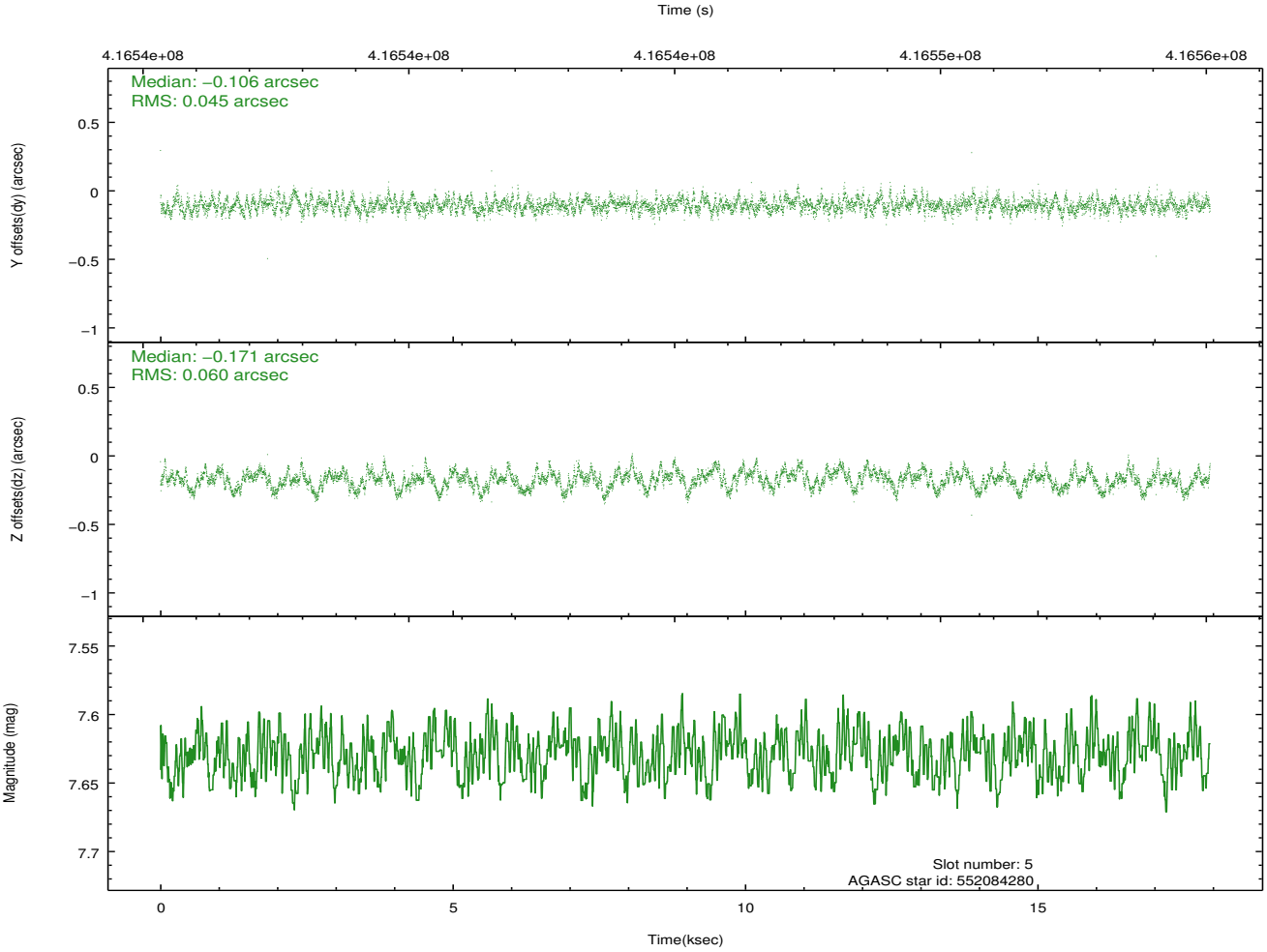

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.258 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 552081976


Time (s)
Median: −0.142 arcsec
RMS: 0.067 arcsec
Y offsets(dy) (arcsec)
Median: −0.216 arcsec
RMS: 0.079 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 552081976
Time(ksec)

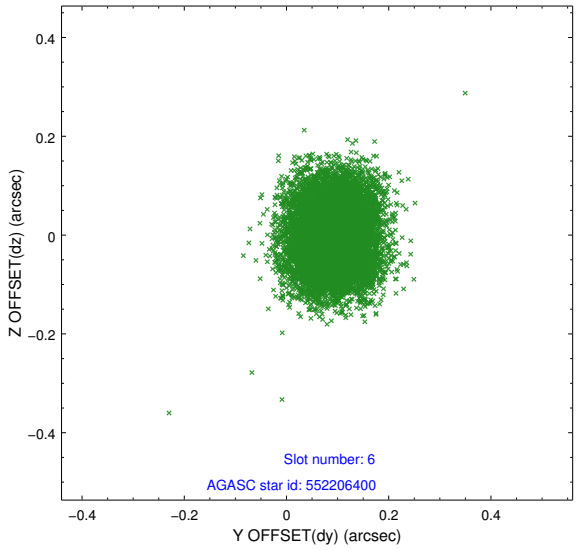
### 2.4.3 Slot 5

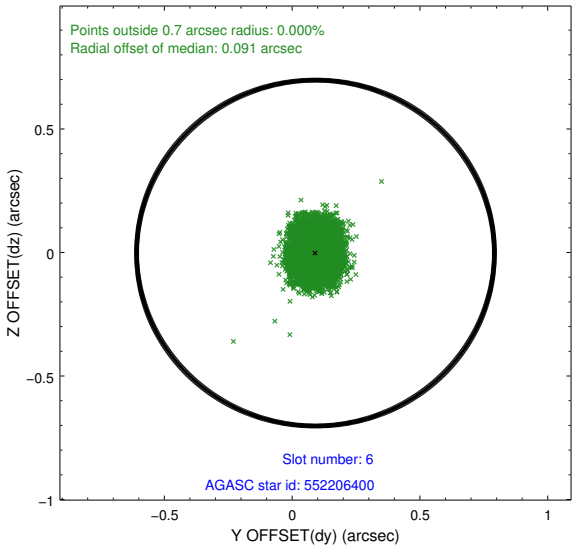

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 552084280

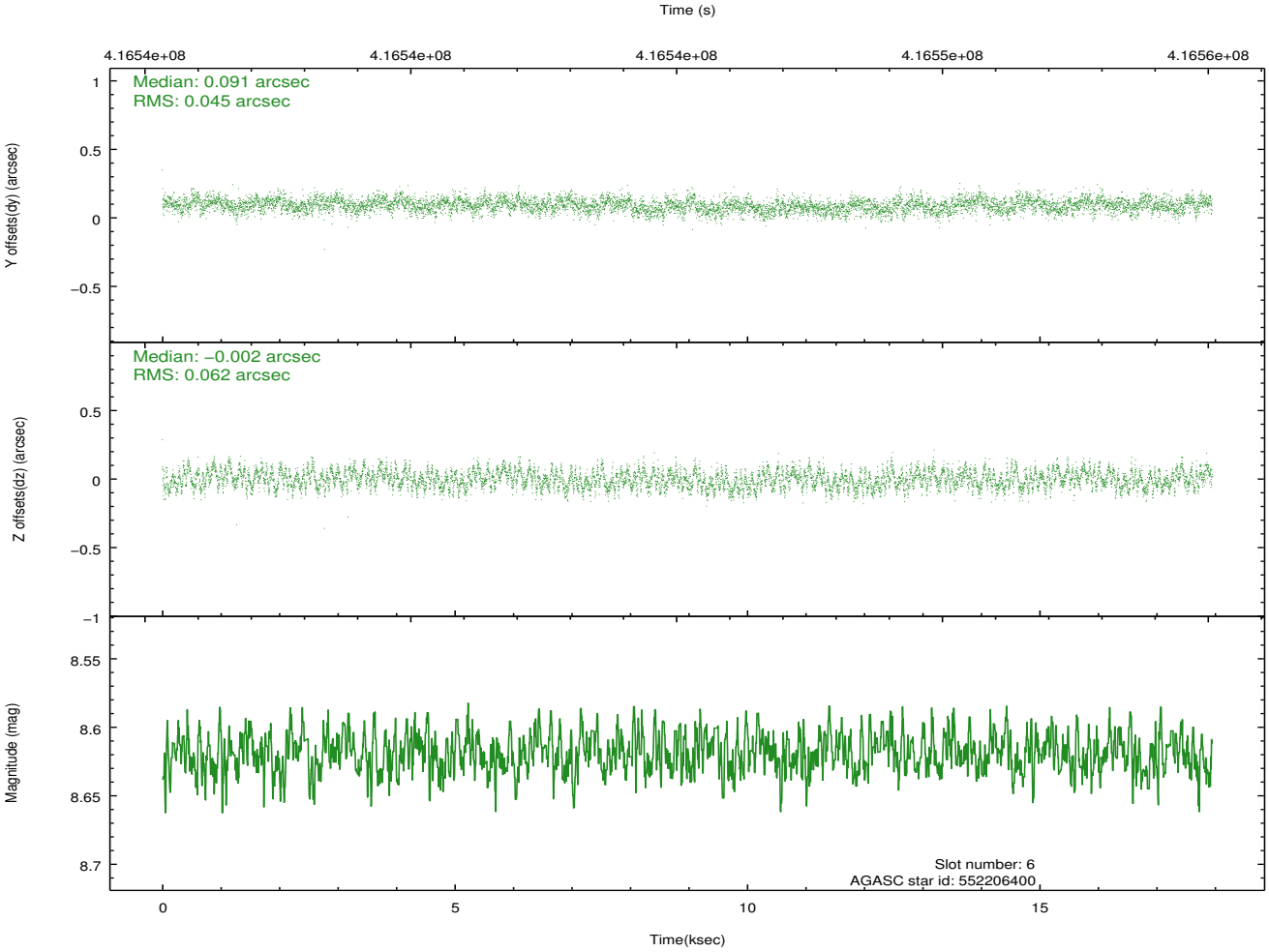

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.201 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 552084280


Time (s)
Median: −0.106 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: −0.171 arcsec
RMS: 0.060 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 552084280
Time(ksec)

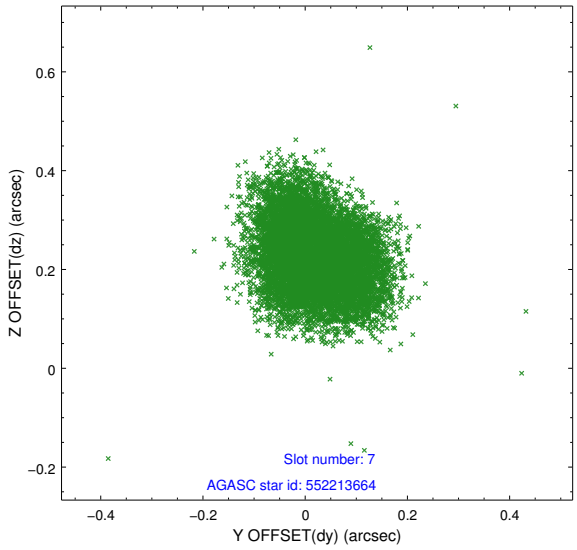
### 2.4.4 Slot 6

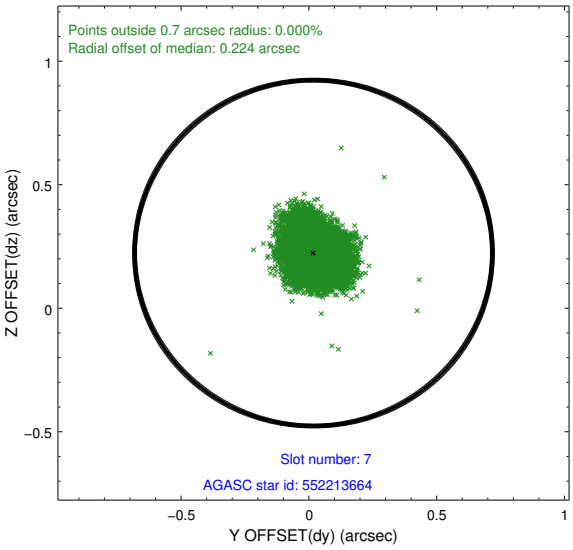

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 552206400

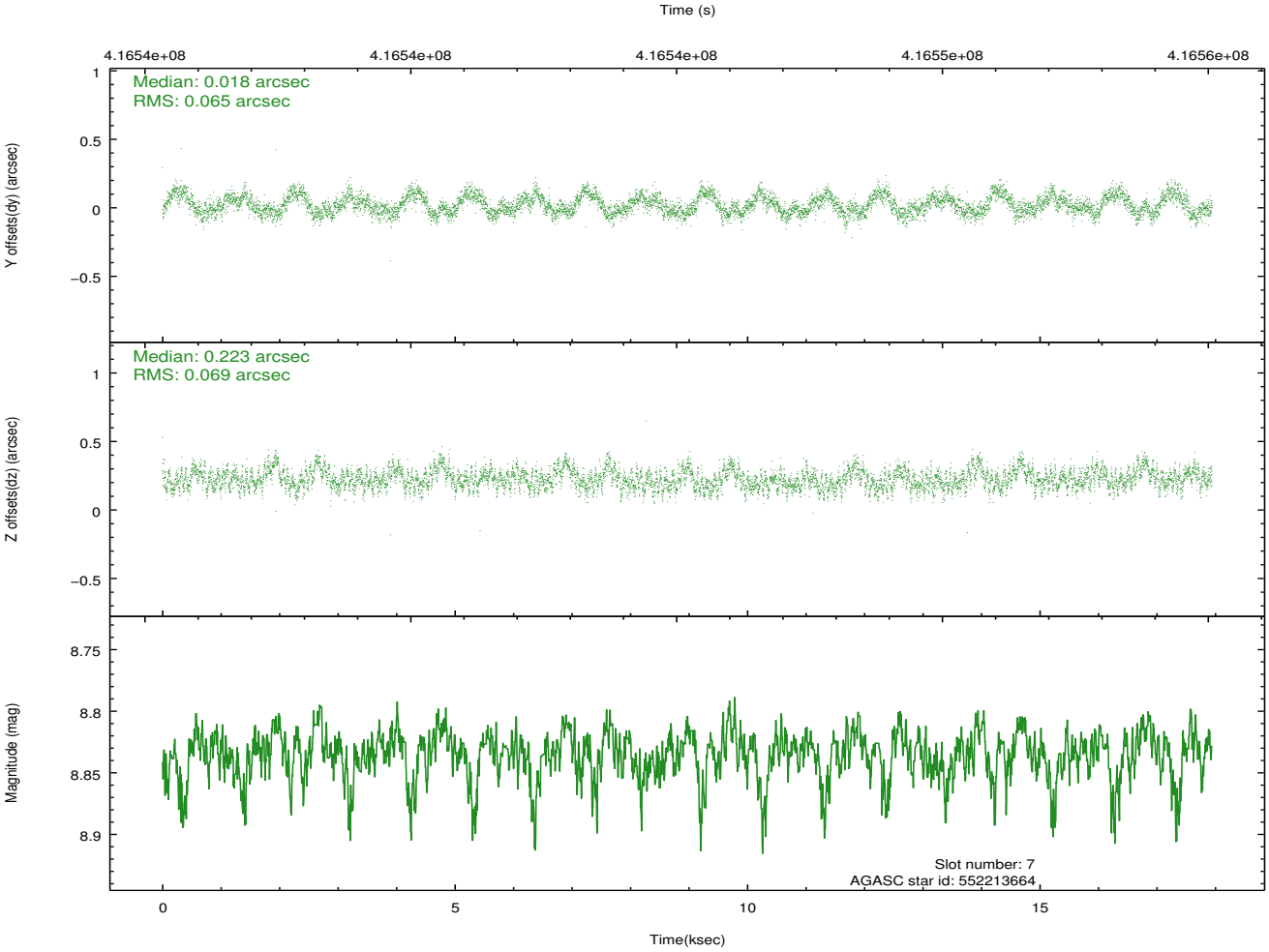

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.091 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 552206400


Time (s)
Median: 0.091 arcsec
RMS: 0.045 arcsec
Y offsets(dy) (arcsec)
Median: −0.002 arcsec
RMS: 0.062 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 552206400
Time(ksec)

### 2.4.5 Slot 7

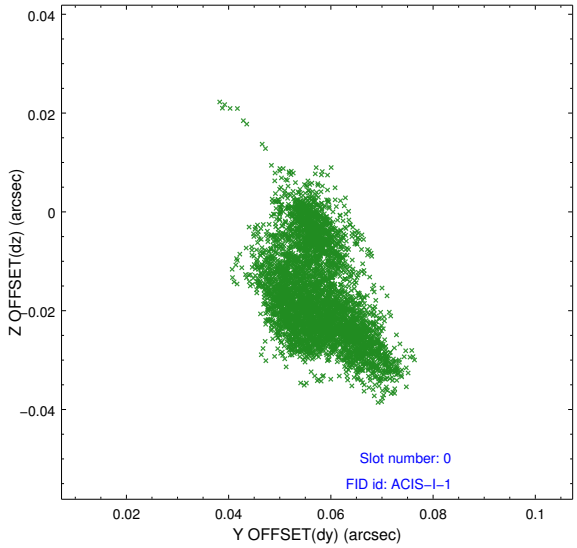

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 552213664

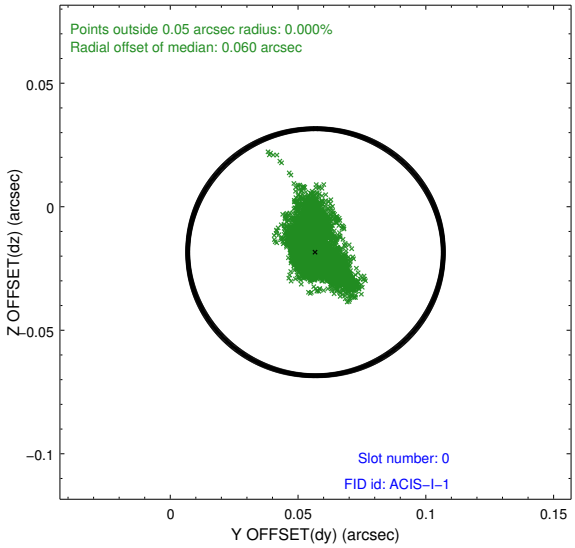

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.224 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 552213664

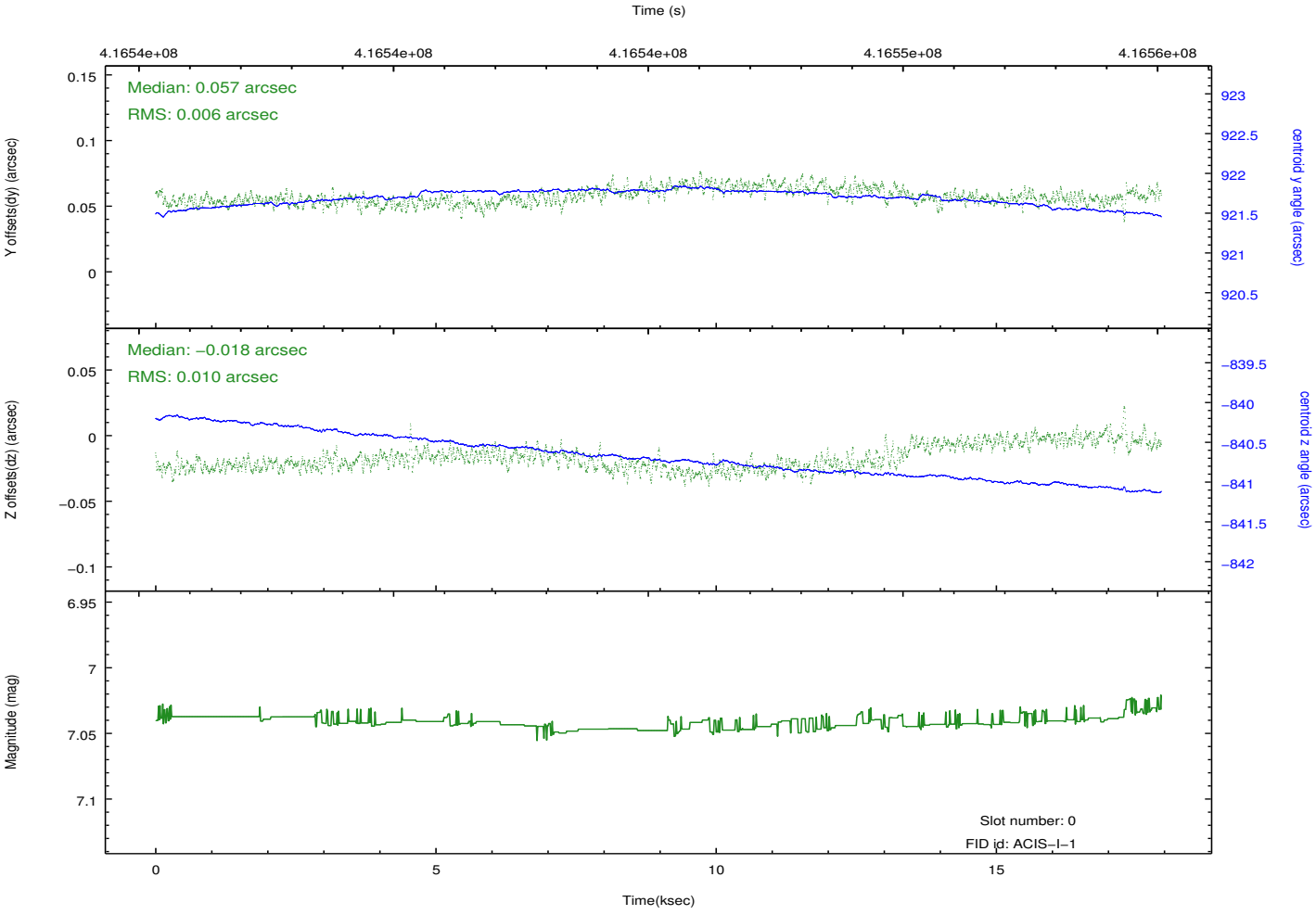

Time (s)
Median: 0.018 arcsec
RMS: 0.065 arcsec
Y offsets(dy) (arcsec)
Median: 0.223 arcsec
RMS: 0.069 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 552213664
Time(ksec)

## 2.5 FID Slots

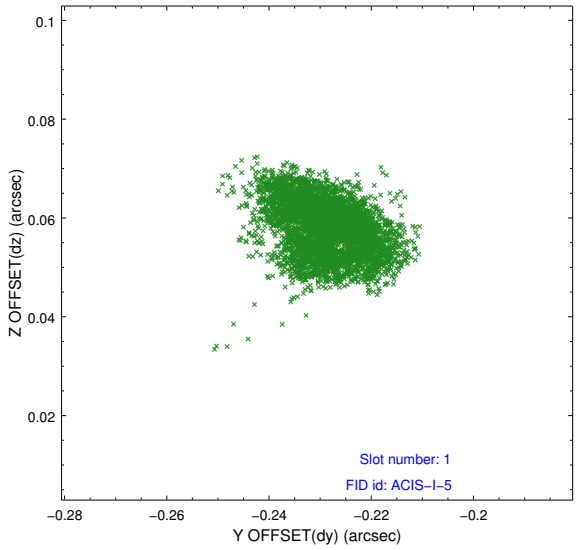
### 2.5.1 Slot 0

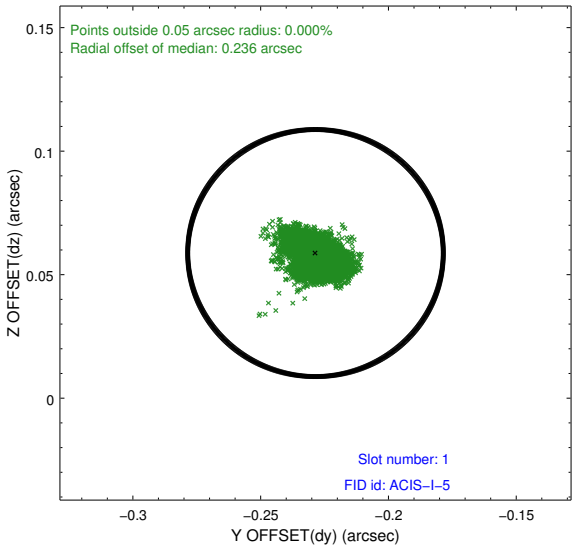


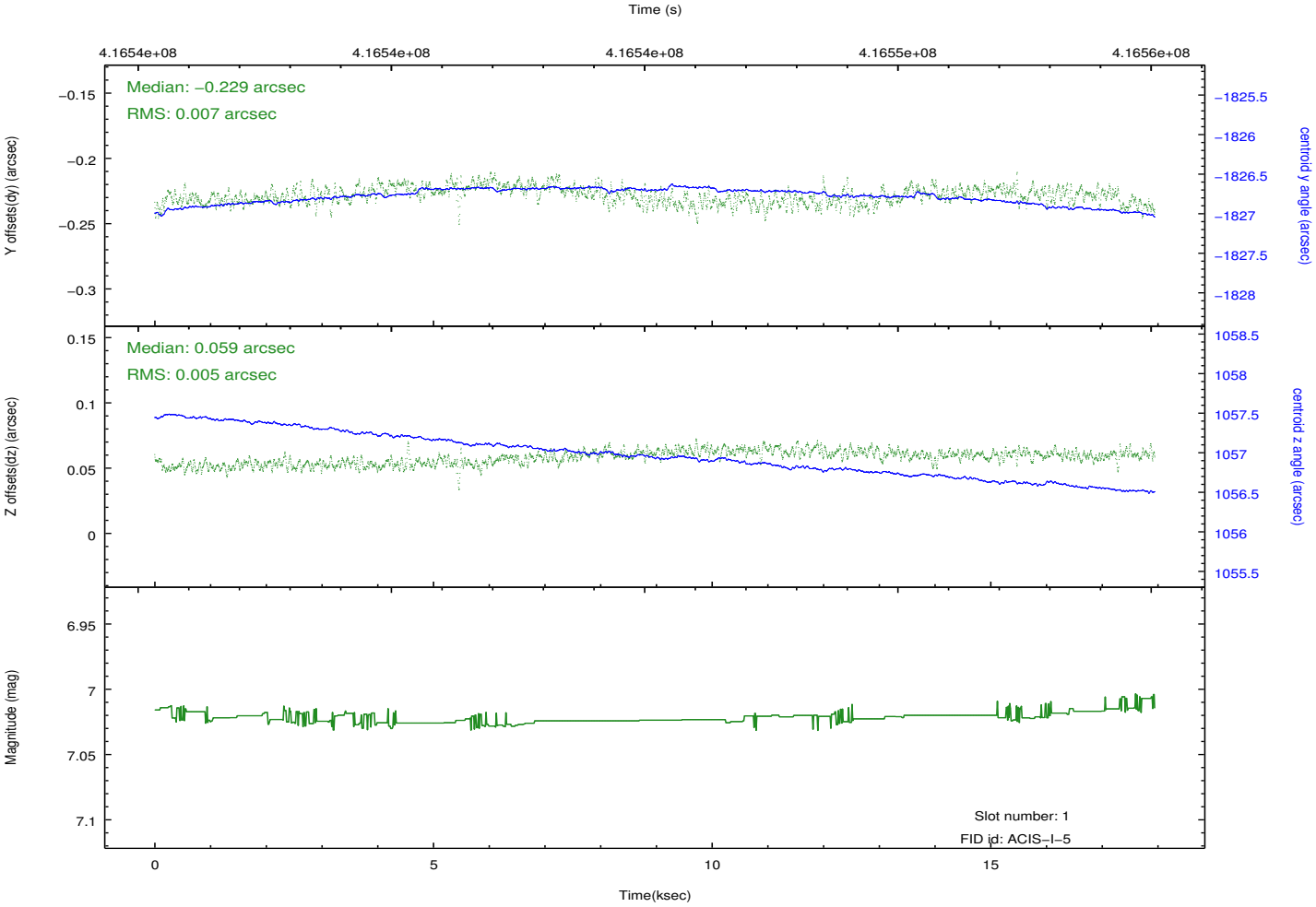



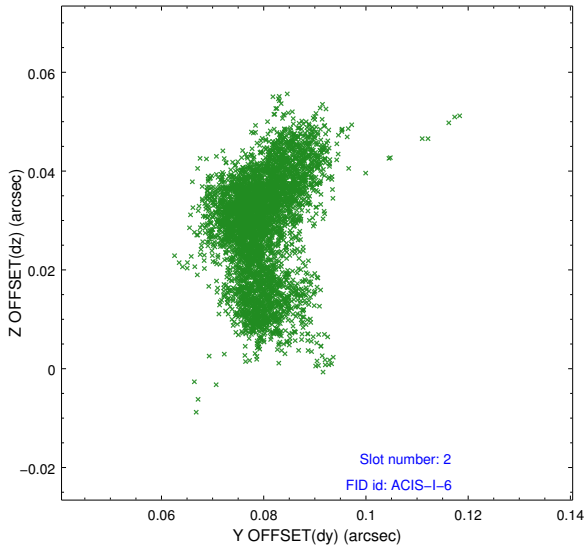
### 2.5.2 Slot 1

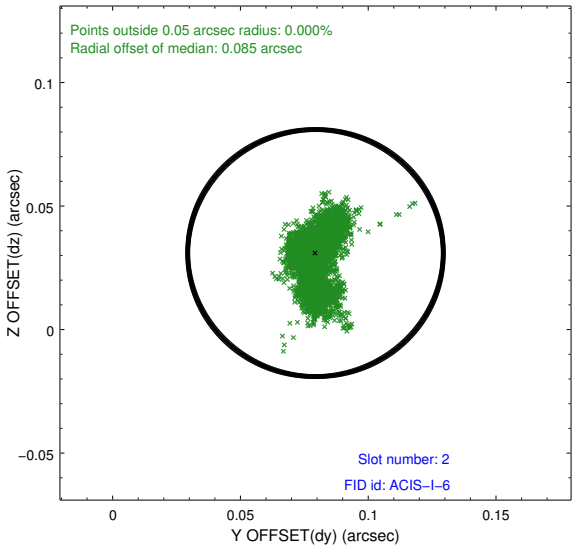

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5

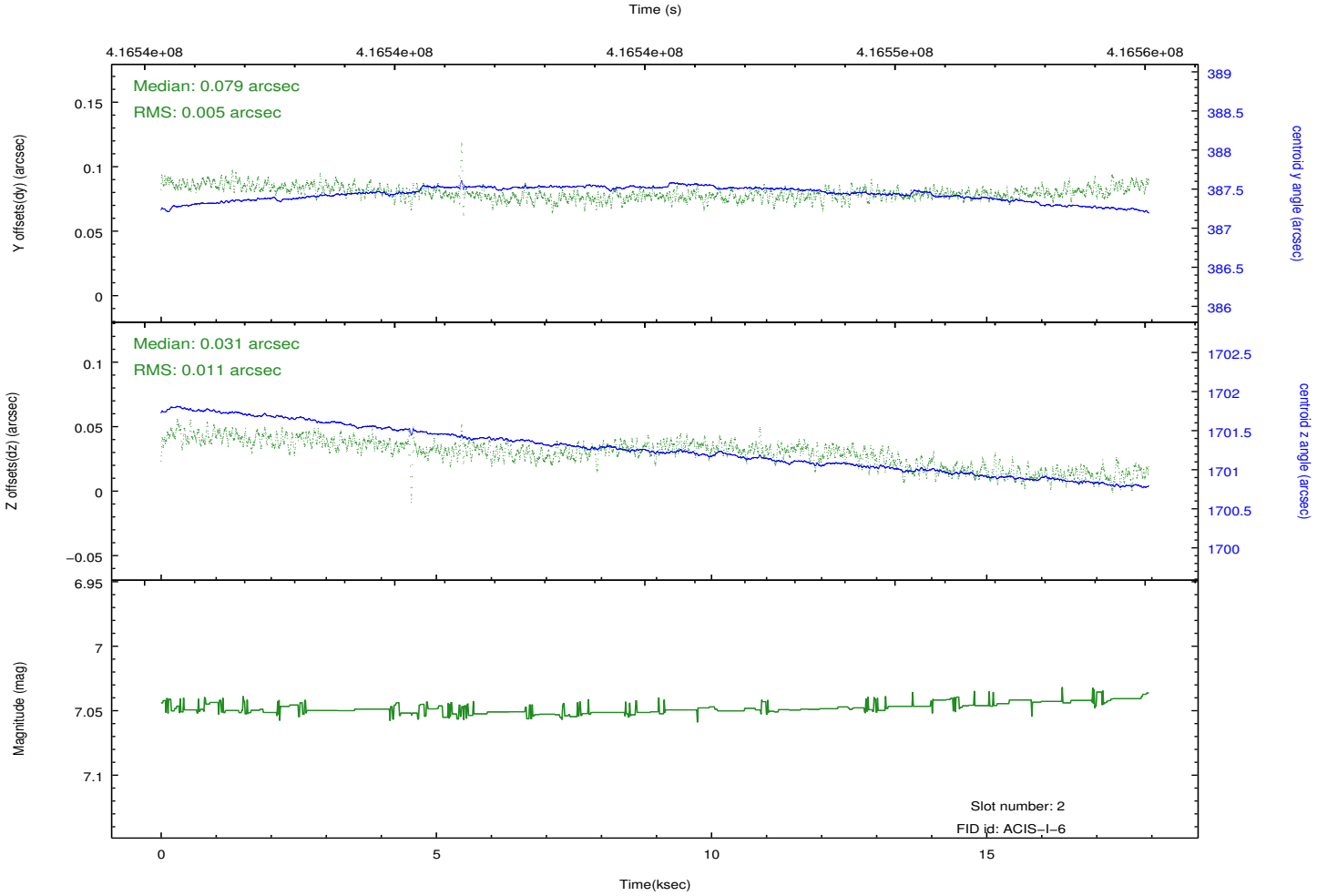

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.236 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−I−5


Time (s)
Median: −0.229 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.059 arcsec
RMS: 0.005 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−I−5
Time(ksec)

### 2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−I−6


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.085 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−I−6


Time (s)
Median: 0.079 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.031 arcsec
RMS: 0.011 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−I−6
Time(ksec)

# A Summary

## A.1 Status

| | |
|---|---|
| V&V Scientist | Jen Lauer |
| V&V Date (YYYY-MM-DD) | 2012.02.08 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 17.055735520422 |

## 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.
======

Roll preference met.
```