

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 2291 - L2 Version 4  
Chandra X-Ray Center

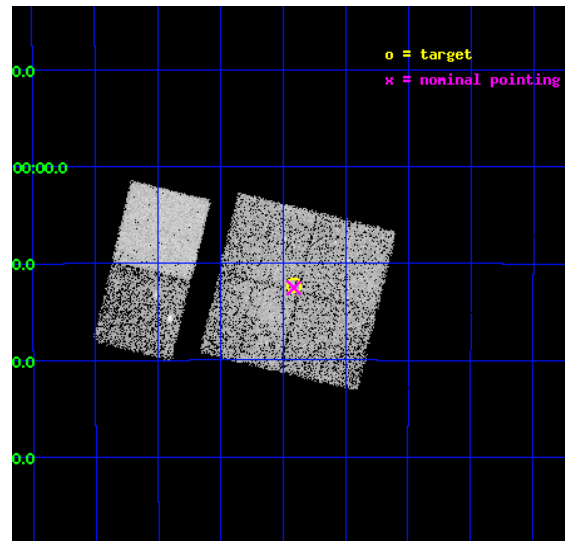
L2 Processing Date : Oct 18 2012

## Contents

|          |                               |           |
|----------|-------------------------------|-----------|
| <b>1</b> | <b>Front</b>                  | <b>2</b>  |
| <b>2</b> | <b>OBI</b>                    | <b>3</b>  |
| 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        |
| <b>A</b> | <b>Summary</b>                | <b>17</b> |
| A.1      | Status . . . . .              | 17        |
| A.2      | Comments . . . . .            | 17        |

# 1 Front

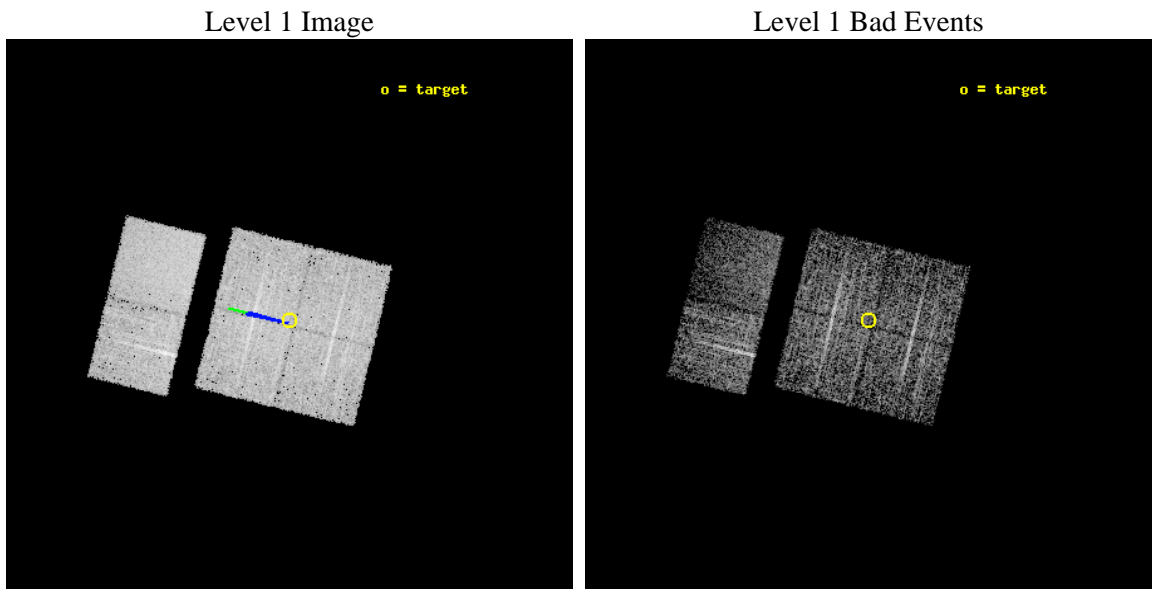
|          |  |   |
|----------|--|---|
| seq_num  | 900118   | Sequence number                             |
| obs_id   | 2291   | Observation id                              |
| title    | CHANDRA SURVEY OF THE GALACTIC RIDGE AROUND THE MILKY WAY CENTER | P   |
| observer | Prof. Q. Daniel Wang   | Principal investigator                      |
| object   | GCS 16   | Source name                                 |
| dtcycle  | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 266.4793   | Observer's specified target RA [deg]        |
| dec_targ | -29.2042   | Observer's specified target Dec [deg]       |
| ra_nom   | 266.47845827947  | Nominal RA [deg]                            |
| dec_nom  | -29.208890632191   | Nominal Dec [deg]                           |
| roll_nom | 283.80728374232  | Nominal Roll [deg]                          |
| revision | 4  | Processing version of data                  |
| ontime   | 10758.400010005  | Sum of GTIs [s]                             |
| livetime | 10622.170671147  | Livetime [s]                                |
| ontime0  | 10758.400010005  | Sum of GTIs [s]                             |
| ontime1  | 10758.400010005  | Sum of GTIs [s]                             |
| ontime2  | 10758.400010005  | Sum of GTIs [s]                             |
| ontime3  | 10758.400010005  | Sum of GTIs [s]                             |
| ontime6  | 10758.400010005  | Sum of GTIs [s]                             |
| ontime7  | 10758.400010005  | Sum of GTIs [s]                             |
| l2events | 57548  | Number of level 2 events                    |



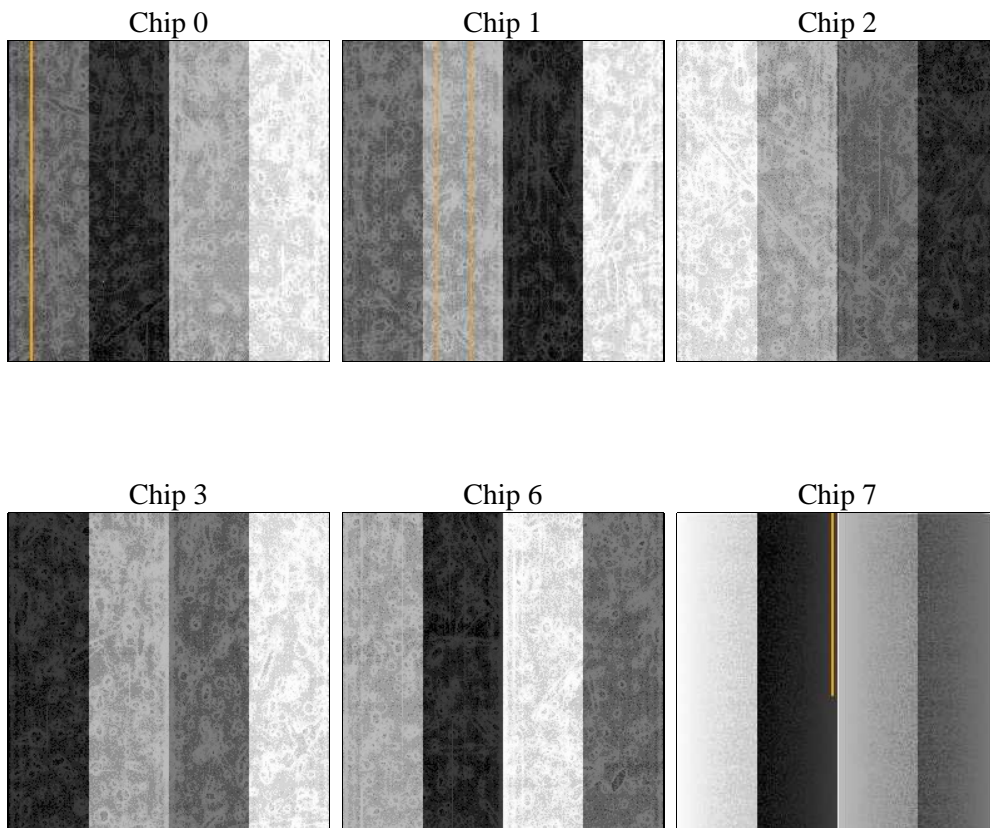
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 11000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.5               | Processing system revision     | ontime         | 10758.400010005 | Sum of GTIs [s]                         |
| caldsver | 4.5.2               | &#160                          | ontime0        | 10758.400010005 | Sum of GTIs [s]                         |
| date     | 2012-10-18T20:11:54 | Date and time of file creation | ontime1        | 10758.400010005 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime2        | 10758.400010005 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 10758.400010005 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 10758.400010005 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 10758.400010005 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 190596          | Number of level 1 events                |

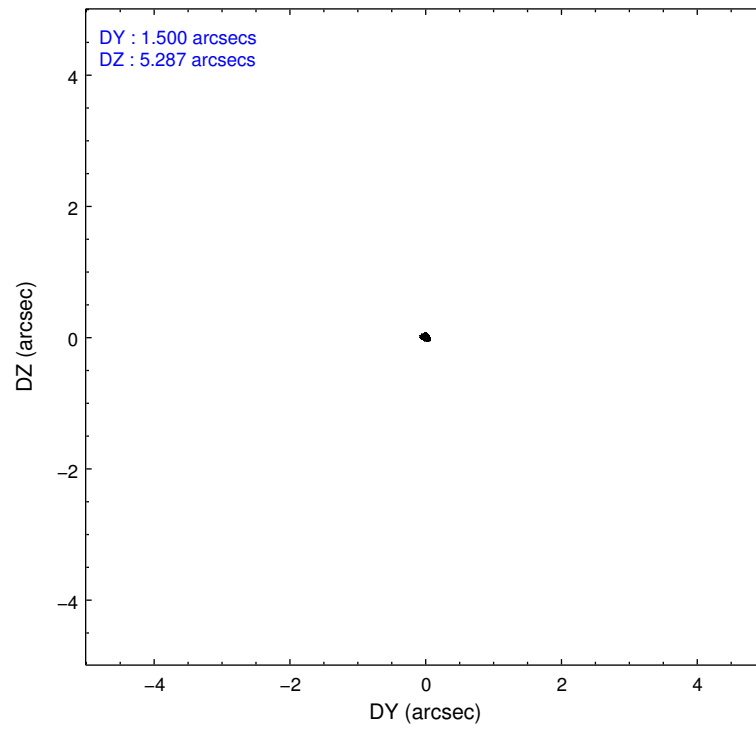
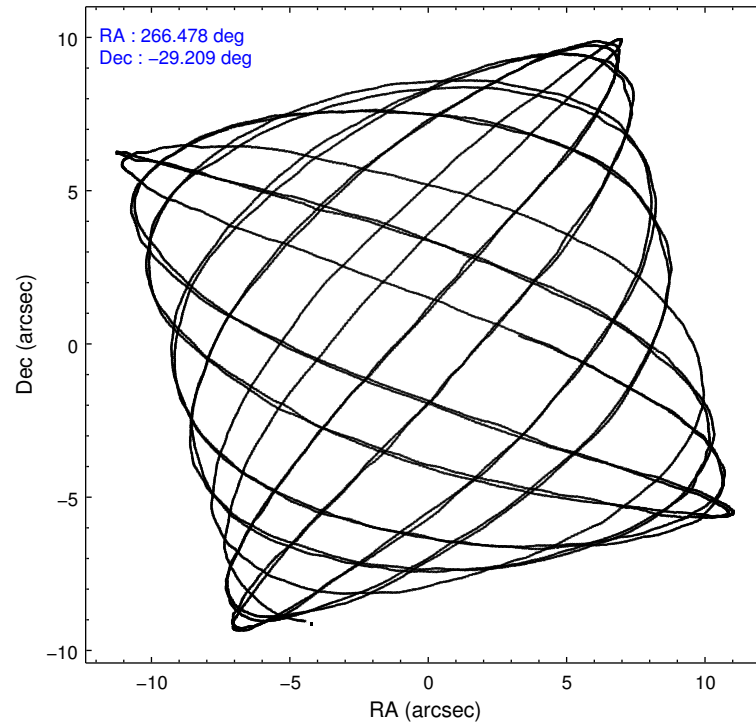
### 2.1.4 Events

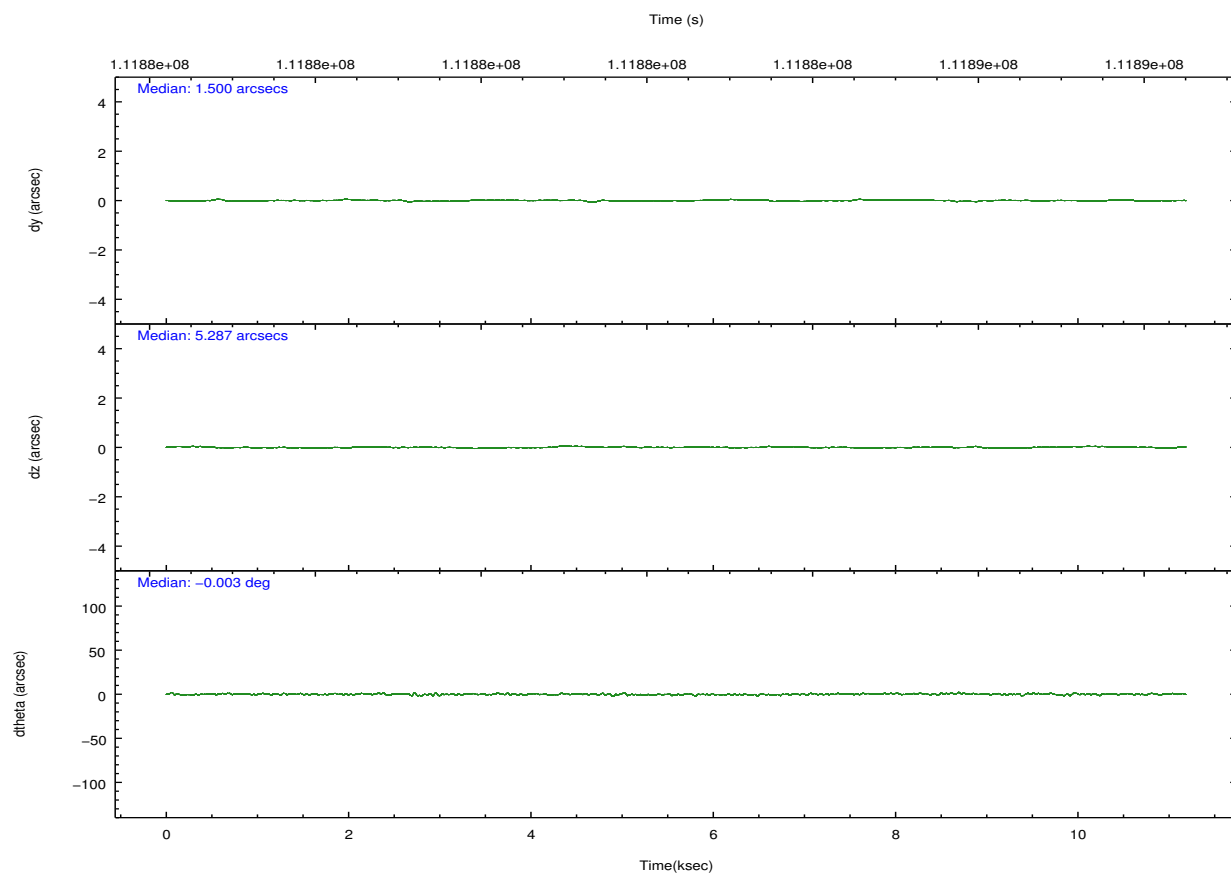
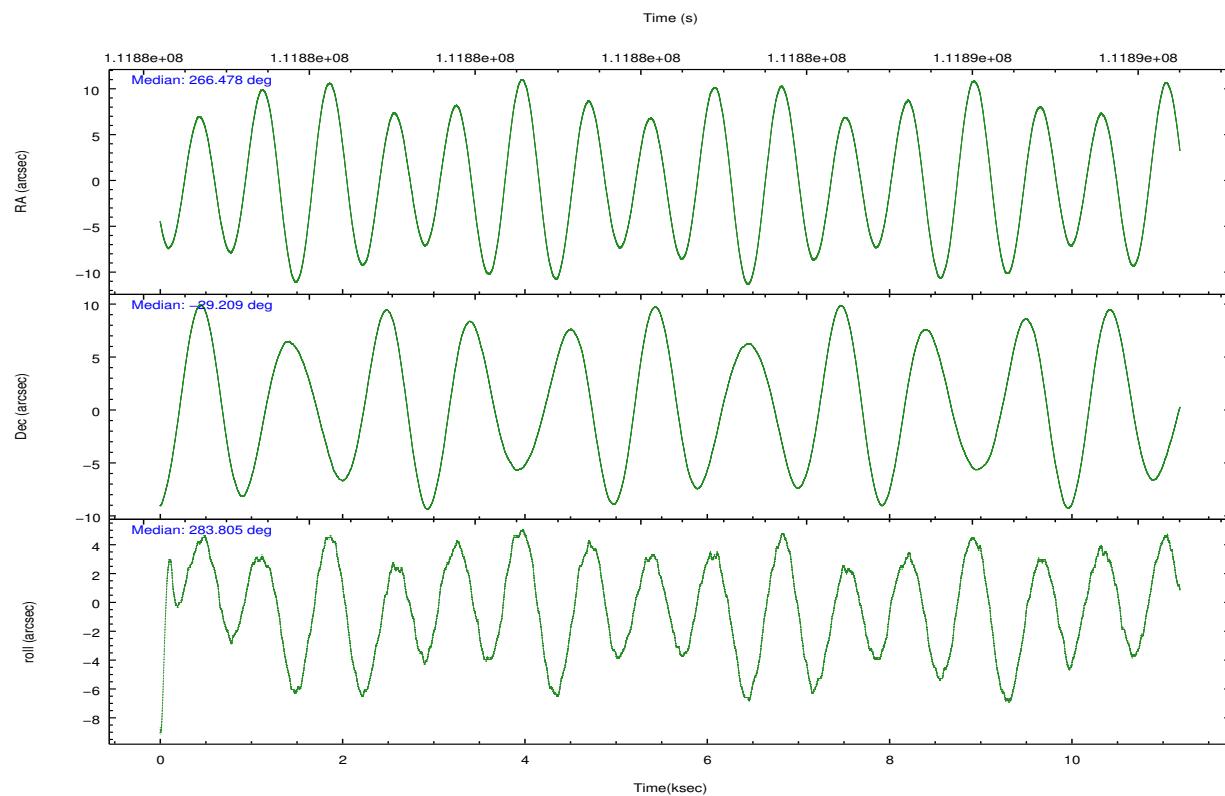
|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|-----------------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 28428 | 30581 | 32644 | 31661 | 30958 | 36324 | grade 0 events | 4467  | 5797  | 5698  | 5417  | 2907  | 2019  |
| rejected events | 20737 | 20595 | 23619 | 22465 | 25165 | 16911 |                | 15%   | 18%   | 17%   | 17%   | 9%    | 5%    |
| rejected %      | 72%   | 67%   | 72%   | 70%   | 81%   | 46%   | grade 1 events | 33    | 46    | 39    | 41    | 23    | 43    |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |       |       |       | grade 2 events | 1284  | 1630  | 1400  | 1545  | 1081  | 3895  |
|                 |       |       |       |       |       |       |                | 4%    | 5%    | 4%    | 4%    | 3%    | 10%   |
|                 |       |       |       |       |       |       | grade 3 events | 538   | 622   | 512   | 593   | 475   | 1863  |
|                 |       |       |       |       |       |       |                | 1%    | 2%    | 1%    | 1%    | 1%    | 5%    |
|                 |       |       |       |       |       |       | grade 4 events | 511   | 730   | 531   | 574   | 426   | 1892  |
|                 |       |       |       |       |       |       |                | 1%    | 2%    | 1%    | 1%    | 1%    | 5%    |
|                 |       |       |       |       |       |       | grade 5 events | 1033  | 1265  | 1015  | 1252  | 1338  | 4048  |
|                 |       |       |       |       |       |       |                | 3%    | 4%    | 3%    | 3%    | 4%    | 11%   |
|                 |       |       |       |       |       |       | grade 6 events | 894   | 1208  | 888   | 1068  | 906   | 9749  |
|                 |       |       |       |       |       |       |                | 3%    | 3%    | 2%    | 3%    | 2%    | 26%   |
|                 |       |       |       |       |       |       | grade 7 events | 19668 | 19283 | 22561 | 21171 | 23802 | 12815 |
|                 |       |       |       |       |       |       |                | 69%   | 63%   | 69%   | 66%   | 76%   | 35%   |

## 2.2 Compared Parameters

| Parameter                            | Planned             | Actual                | Parameter                             | Planned   | Actual  |
|--------------------------------------|---------------------|-----------------------|---------------------------------------|-----------|---------|
| Instrument                           | ACIS                | ACIS                  | Obspar format version number          | 7         | 7       |
| Detector                             | ACIS-012367         | ACIS-012367           | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                              | NONE                | NONE                  | Obspar update status                  | NONE      | UPDATED |
| Data mode                            | FAINT               | FAINT                 | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                     | POINTING            | POINTING              | On-chip summing requested             | N         | N       |
| [deg] Pointing RA                    | 266.456652          | 266.4784582794662     | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                   | -29.189091          | -29.20889063219086    | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll                  | 283.587955          | 283.807283742319      | [s] Primary exposure time             | 0.000000  | 3.2     |
| [deg] Roll angle                     | 283.600000          | 283.600000            |                                       |           |         |
| [deg] Roll tolerance                 | 2.000000            | 2.000000              |                                       |           |         |
| Roll constraint allows 180D rotation | N                   | N                     |                                       |           |         |
| [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)     | 111876944.184000    | 111876568.64203       |                                       |           |         |
| Observation start date               | 2001-07-18T20:54:40 | 2001-07-18T20:49:28   |                                       |           |         |
| [s] Observation end time (MET)       | 111887944.184000    | 111888078.36748       |                                       |           |         |
| Observation end date                 | 2001-07-18T23:58:00 | 2001-07-19T00:01:18   |                                       |           |         |
| Read mode                            | TIMED               | TIMED                 |                                       |           |         |

## 2.3 Aspect



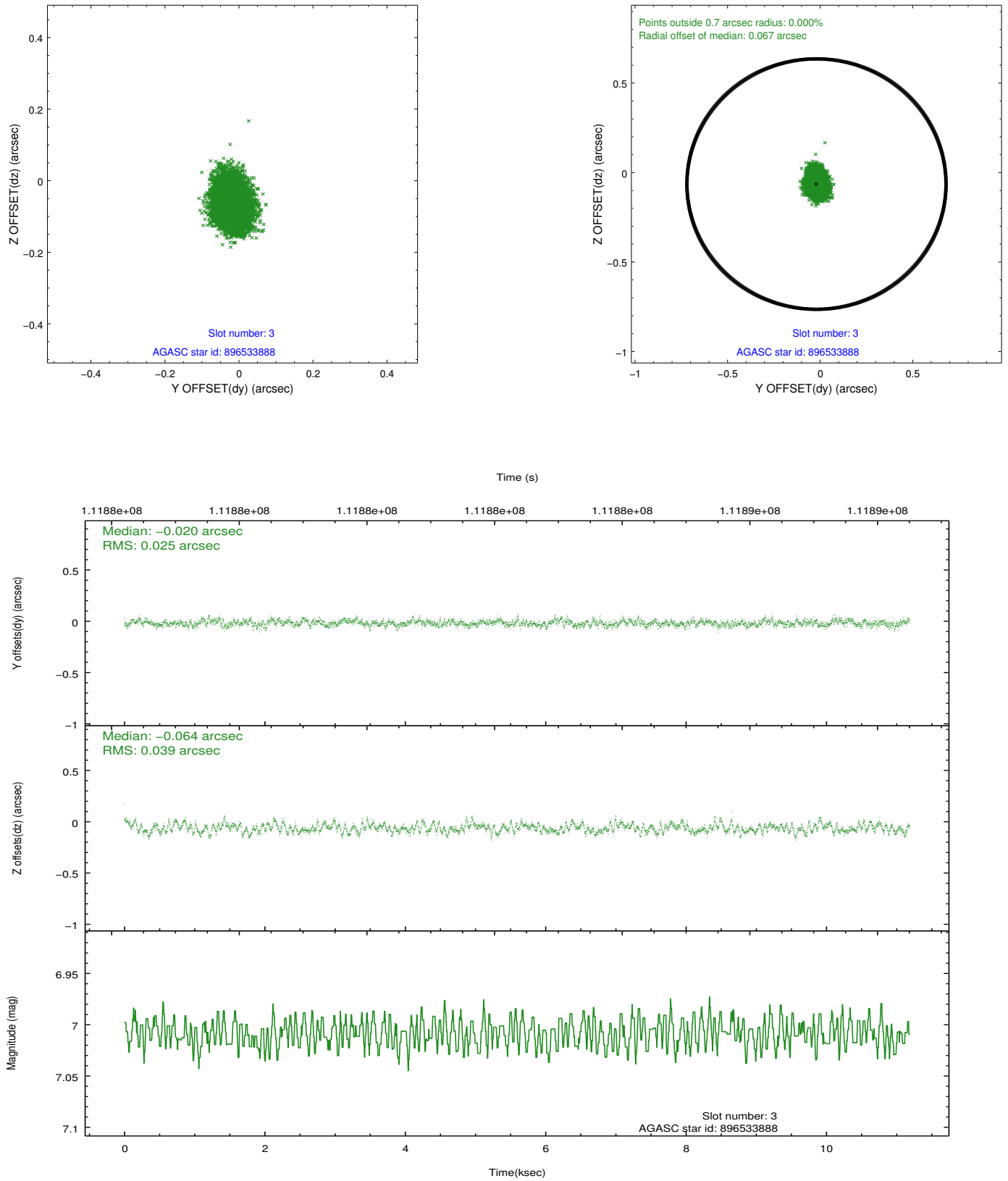


### Slot Statistics

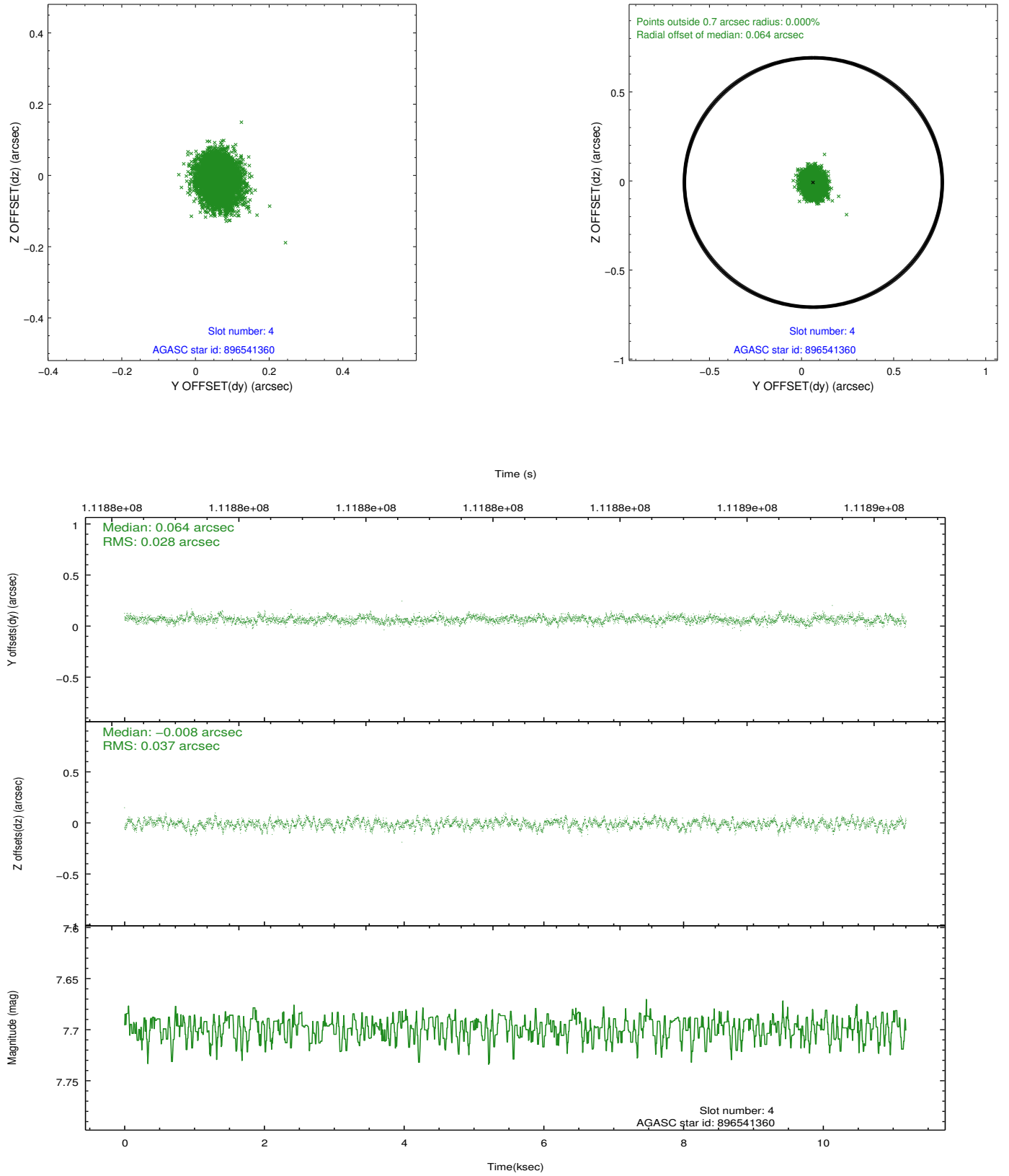
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec        | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|------------|----------|----------|
| 0    | FID    | ACIS-I-2  | 7.15 | 2729  | -0.026 | -0.048 | 0.010 | 0.017 | 0.000000   | 0.000000   | -755.85  | -835.06  |
| 1    | FID    | ACIS-I-4  | 7.18 | 2729  | -0.030 | 0.037  | 0.006 | 0.010 | 0.000000   | 0.000000   | 2157.97  | 1071.01  |
| 2    | FID    | ACIS-I-5  | 7.23 | 2728  | -0.045 | 0.080  | 0.010 | 0.016 | 0.000000   | 0.000000   | -1809.13 | 1069.37  |
| 3    | GUIDE  | 896533888 | 7.01 | 5458  | -0.020 | -0.064 | 0.049 | 0.082 | 266.666434 | -29.392757 | 868.60   | 467.43   |
| 4    | GUIDE  | 896541360 | 7.70 | 5458  | 0.064  | -0.008 | 0.049 | 0.080 | 266.684478 | -29.453744 | 1095.54  | 470.57   |
| 5    | GUIDE  | 896537176 | 8.02 | 5458  | -0.091 | -0.018 | 0.045 | 0.073 | 266.498272 | -28.678259 | -1755.74 | 560.08   |
| 6    | GUIDE  | 896540808 | 7.50 | 5457  | -0.038 | 0.010  | 0.050 | 0.085 | 265.985401 | -29.308604 | 74.05    | -1539.34 |
| 7    | GUIDE  | 896536320 | 8.96 | 5457  | 0.082  | 0.080  | 0.075 | 0.124 | 266.369048 | -29.307026 | 349.08   | -367.00  |

## 2.4 Star Slots

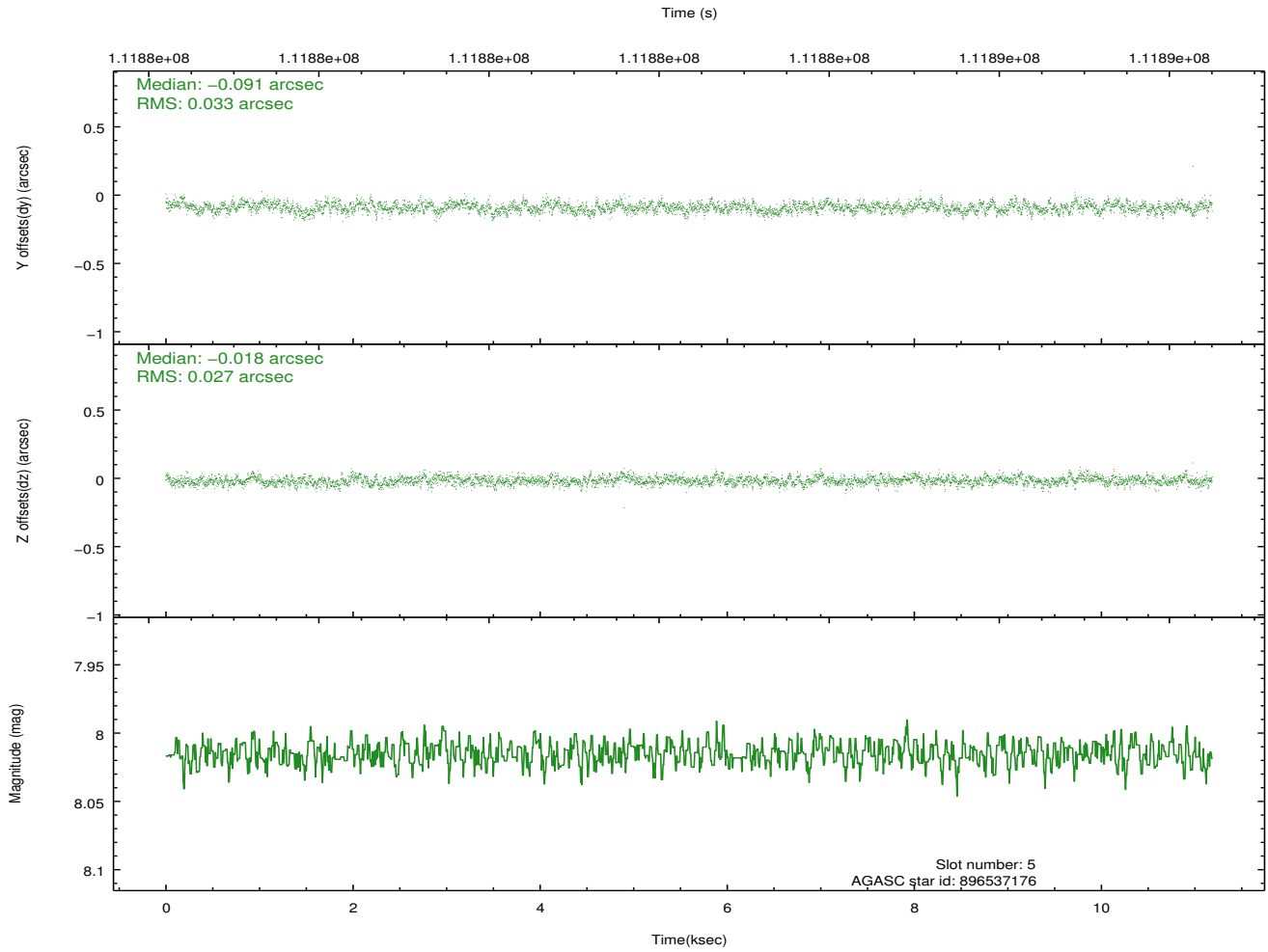
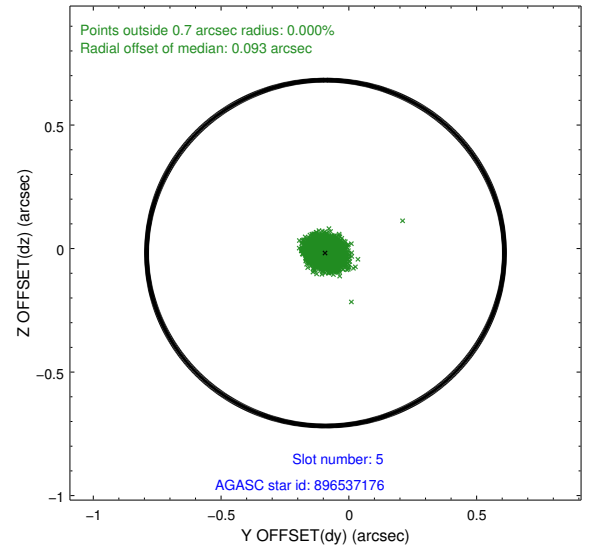
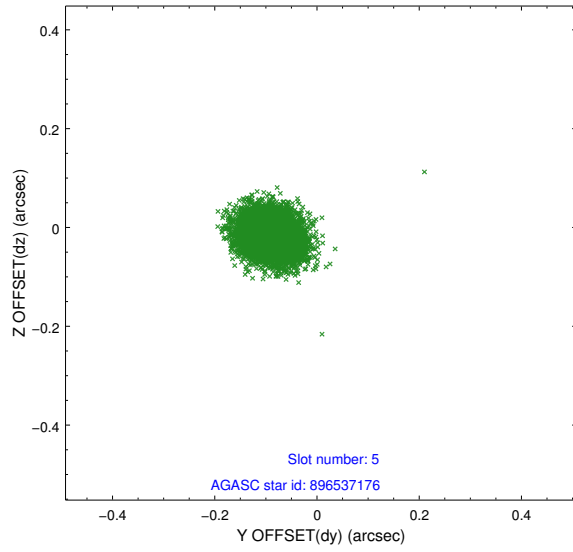
### 2.4.1 Slot 3



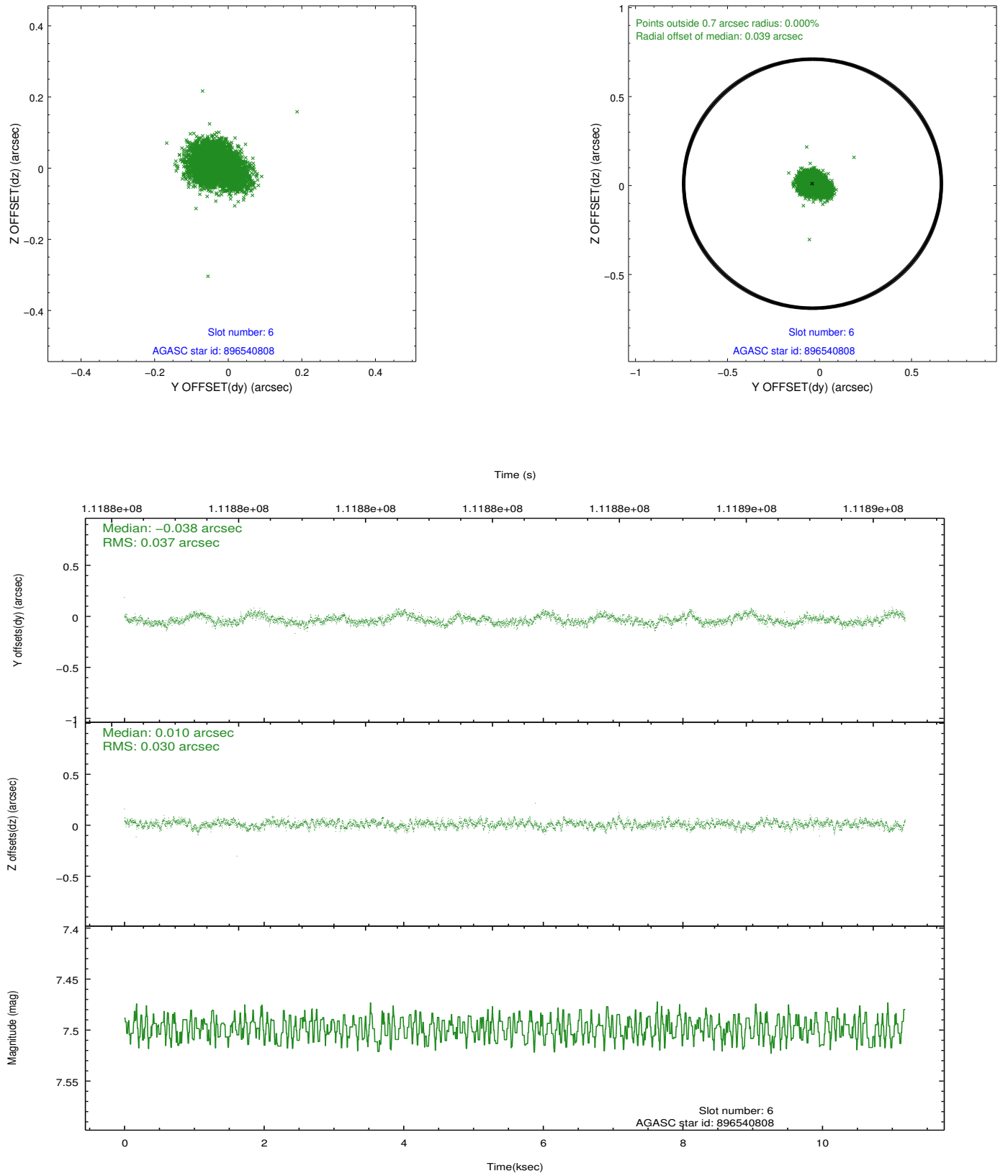
## 2.4.2 Slot 4



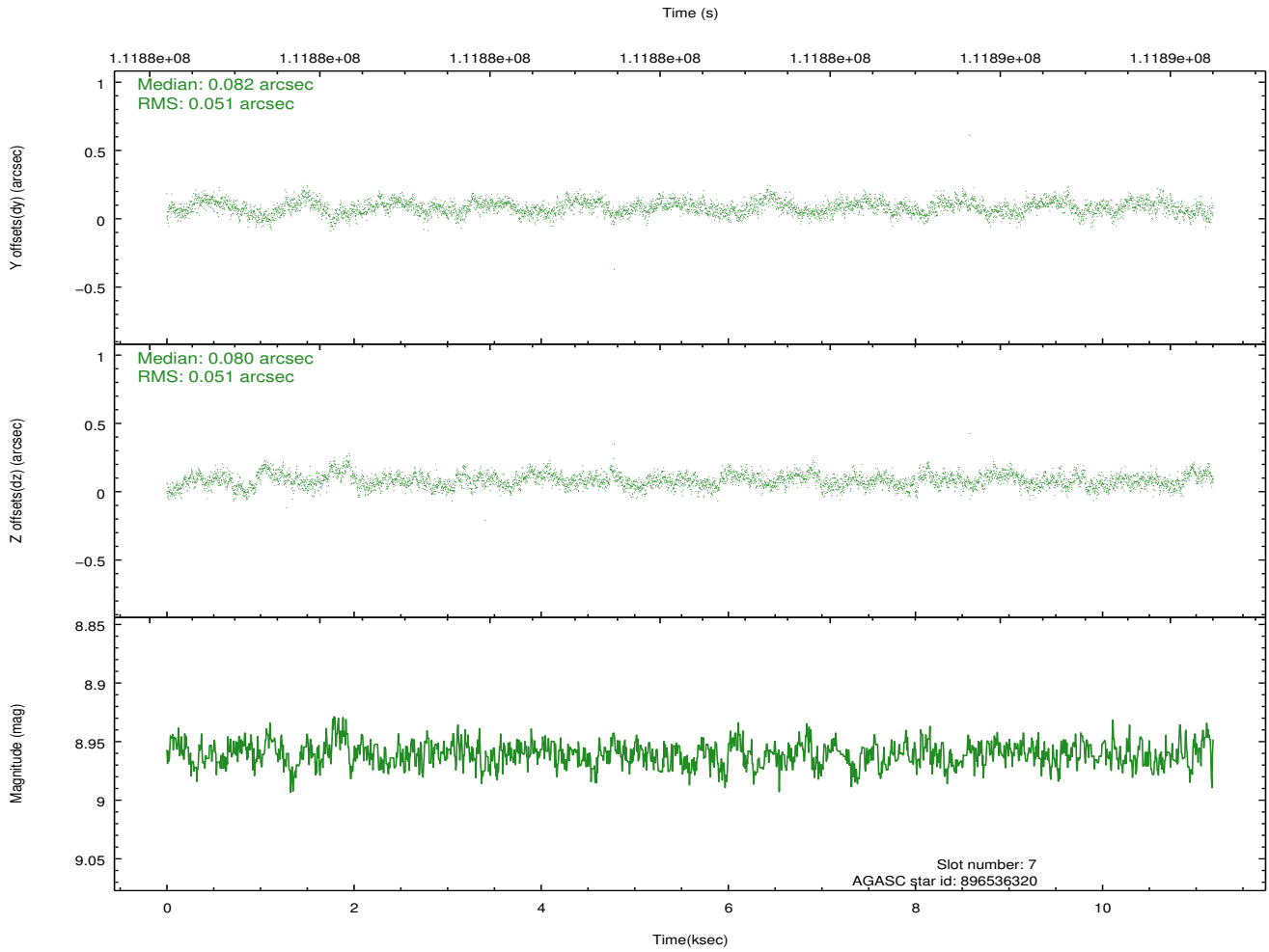
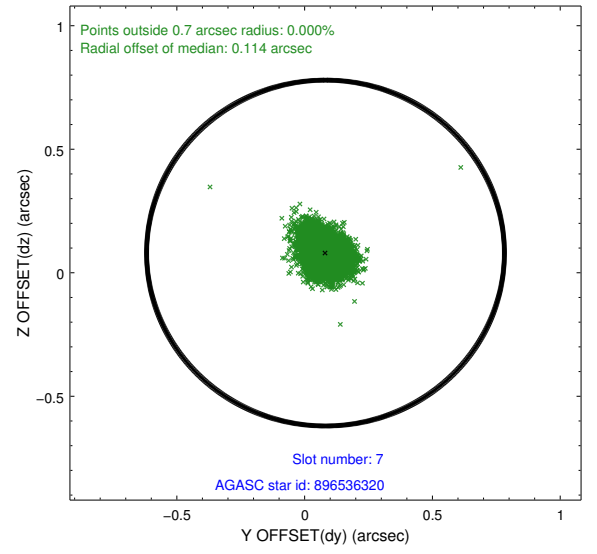
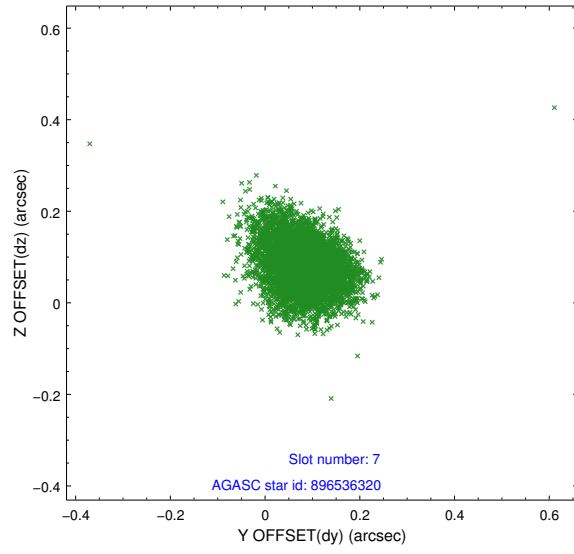
### 2.4.3 Slot 5



## 2.4.4 Slot 6

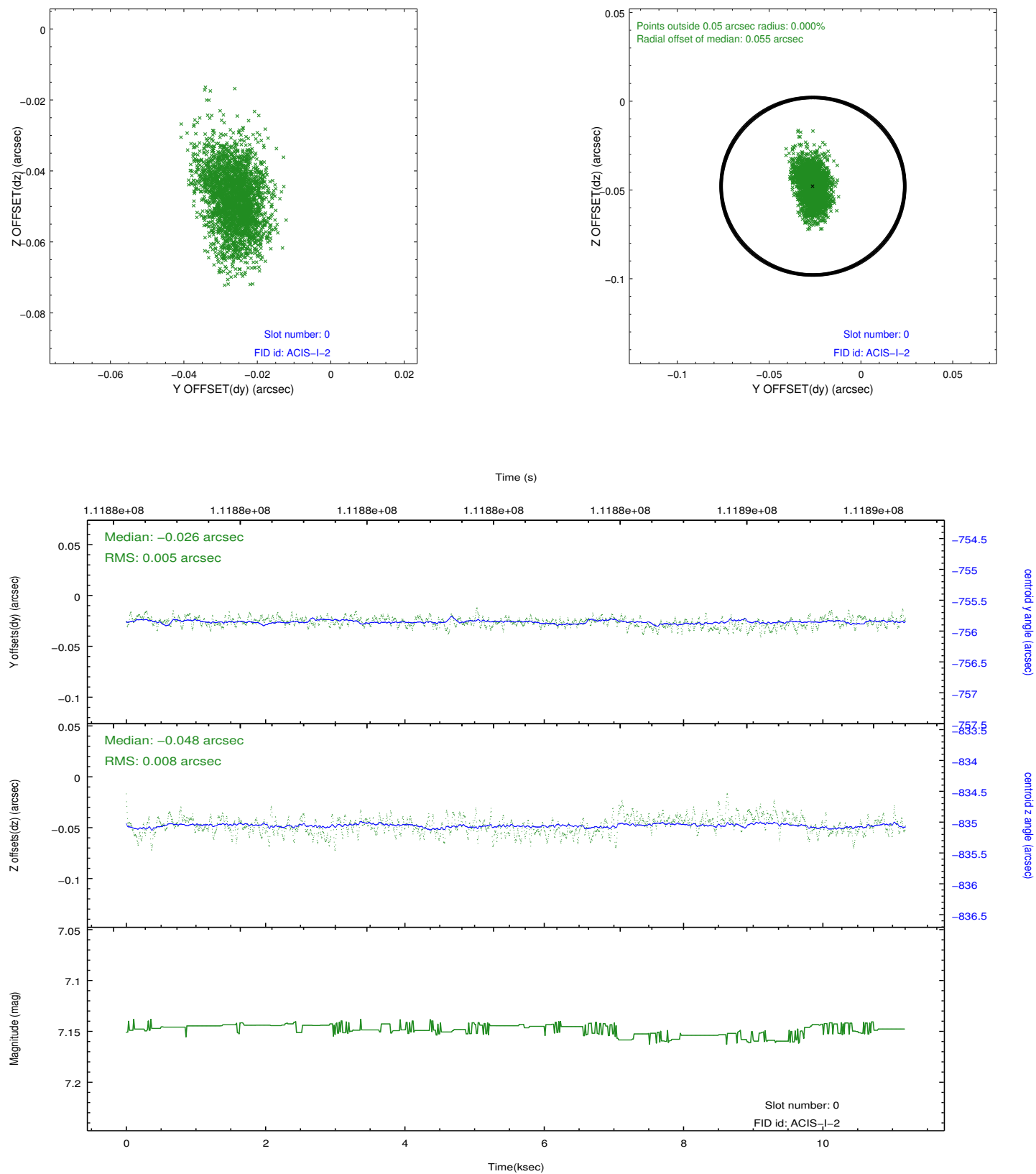


## 2.4.5 Slot 7

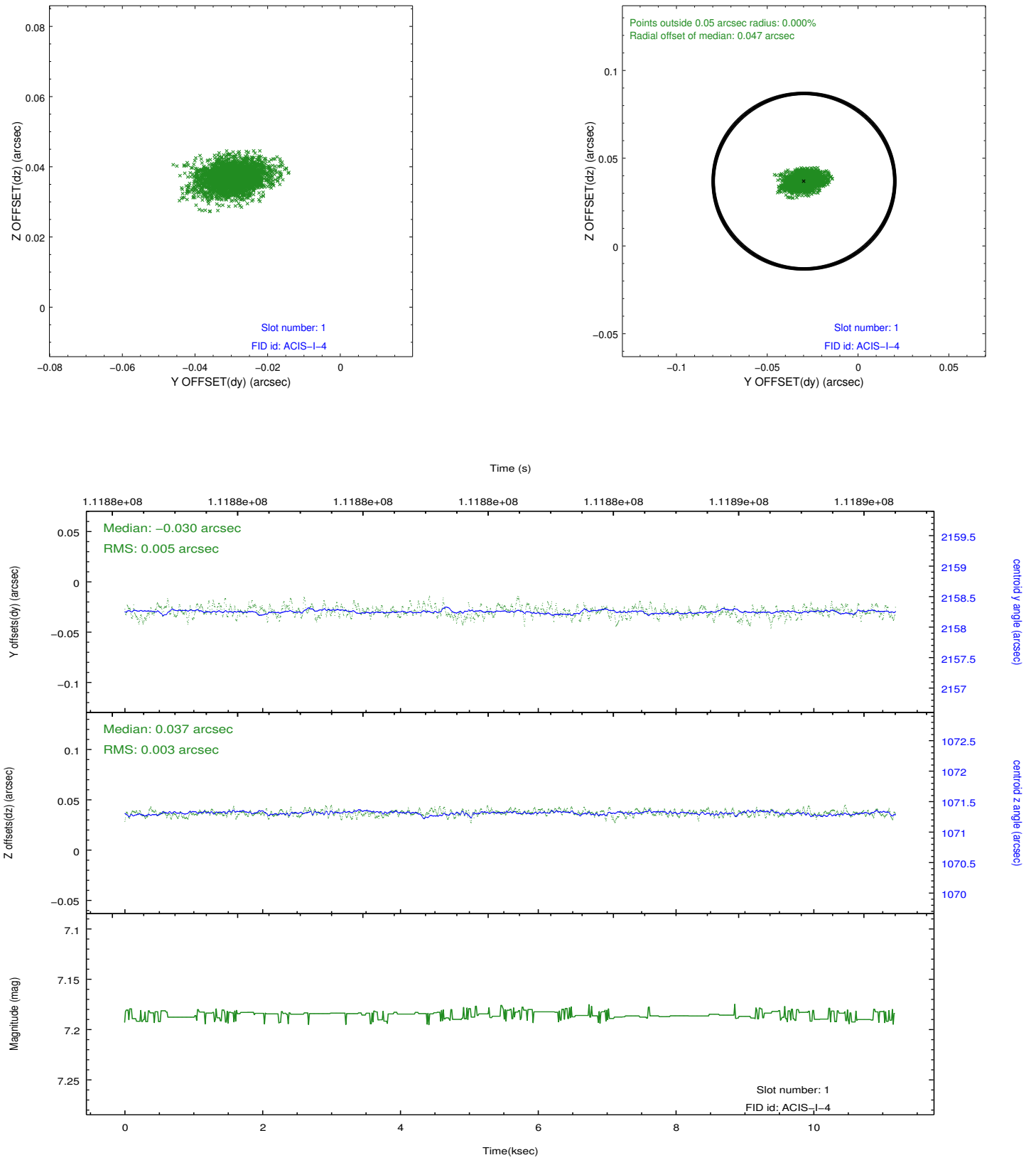


## 2.5 FID Slots

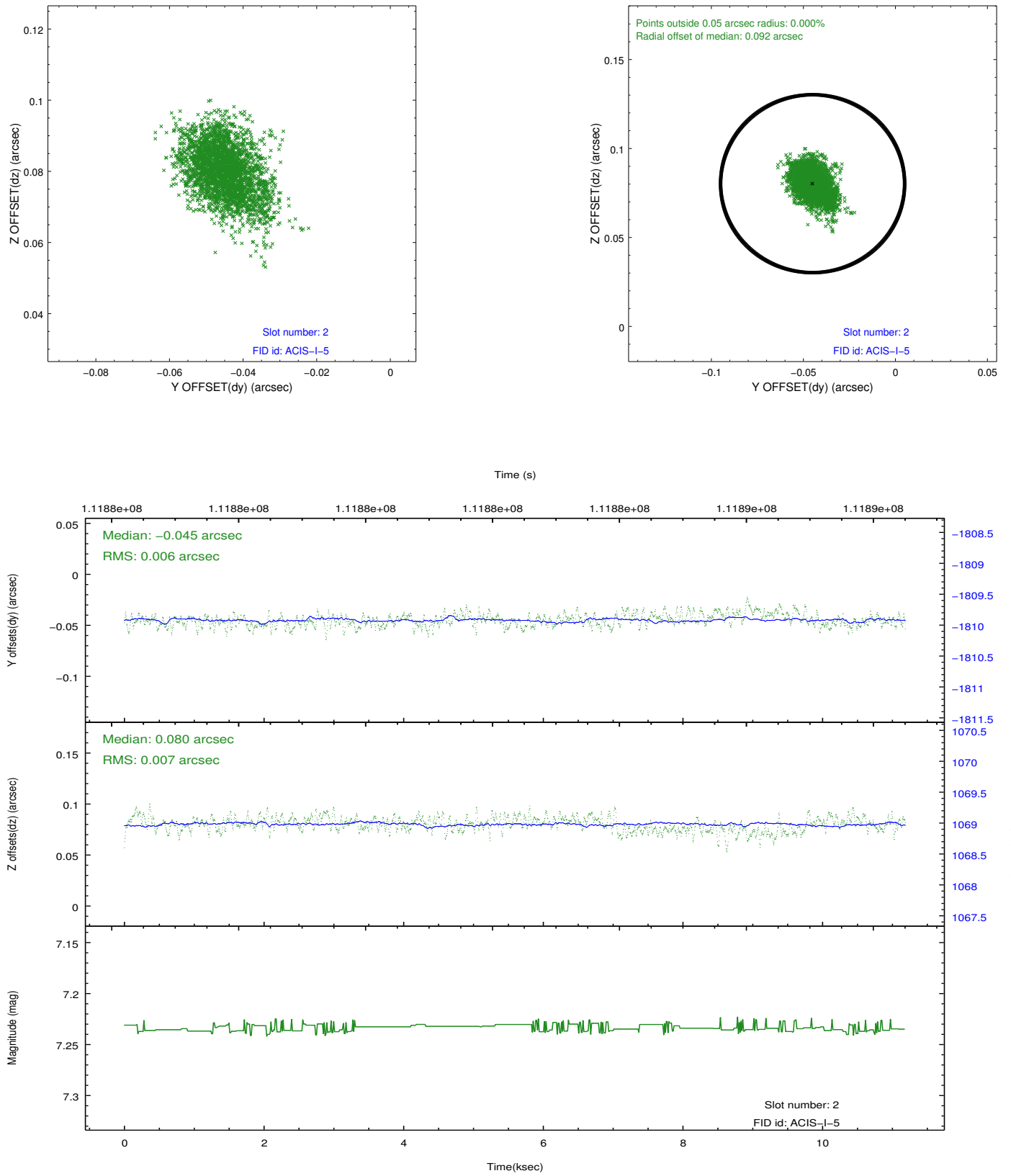
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |            |
|----------------------------|------------|
| V&V Scientist              | Jen Lauer  |
| V&V Date (YYYY-MM-DD)      | 2012.10.23 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 10.761     |

## A.2 Comments

Roll constraint met.

=====

A spatial region of the original bias map for CCD = 1 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small ( $\sim 20$  eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 1 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:  
(266.36759,-29.09280),(266.36335,-29.09372),(266.36776,-29.10948),(266.37200,-29.10856)