

# V&V Reference Report

## L2 ASCDS Version : 8.5

Observation 6111 - L2 Version 3  
Chandra X-Ray Center

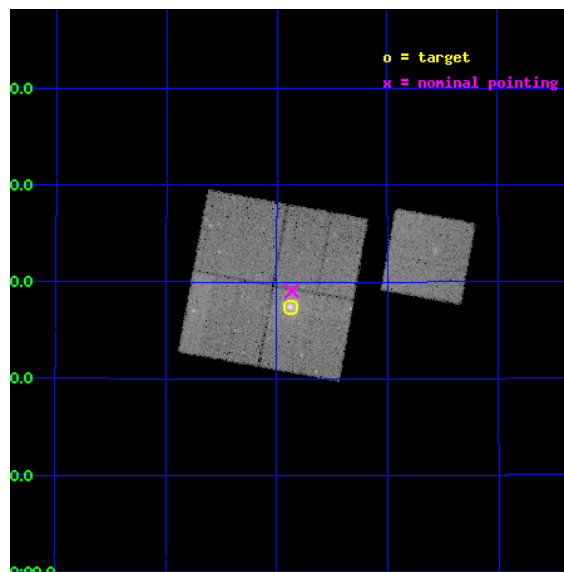
L2 Processing Date : Dec 12 2012

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# 1 Front

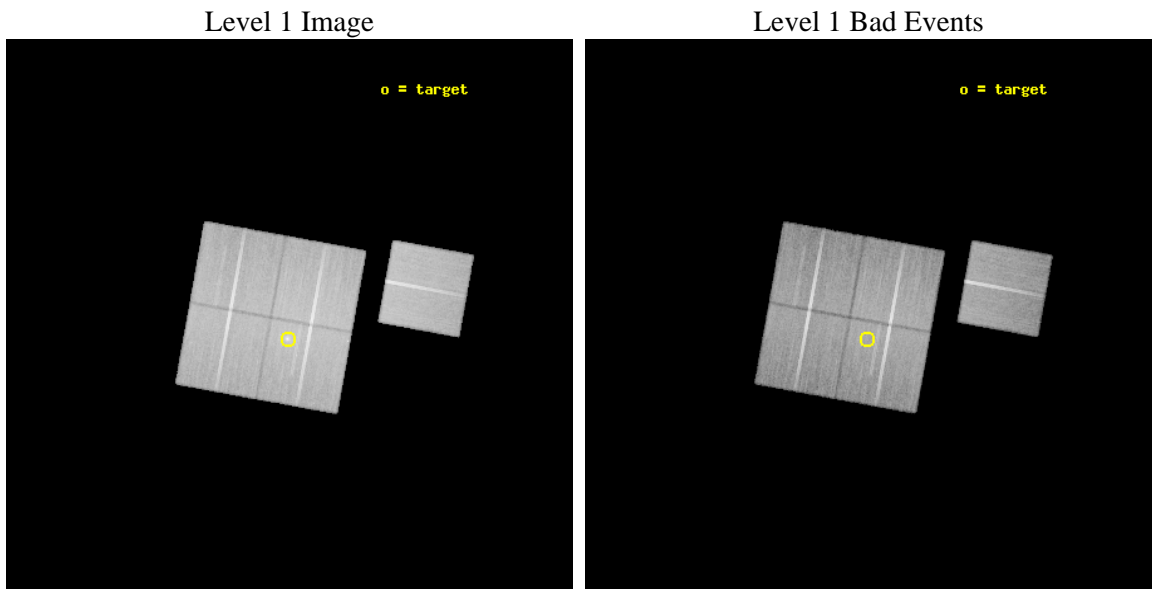
|          |  |   |
|----------|--|---|
| seq_num  | 800559   | Sequence number                             |
| obs_id   | 6111   | Observation id                              |
| title    | Probing dark energy using the X-ray gas mass fraction in dynamically relaxed galaxy clusters | Proposal title                              |
| observer | Prof. Steven Allen   | Principal investigator                      |
| object   | MACS0744.9+3927  | Source name                                 |
| dtcycle  | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 116.22   | Observer's specified target RA [deg]        |
| dec_targ | 39.4575  | Observer's specified target Dec [deg]       |
| ra_nom   | 116.21601200815  | Nominal RA [deg]                            |
| dec_nom  | 39.485004594479  | Nominal Dec [deg]                           |
| roll_nom | 100.31403613771  | Nominal Roll [deg]                          |
| revision | 3  | Processing version of data                  |
| ontime   | 50157.876972735  | Sum of GTIs [s]                             |
| livetime | 49502.527384394  | Livetime [s]                                |
| ontime0  | 50157.876912981  | Sum of GTIs [s]                             |
| ontime1  | 50164.15890336   | Sum of GTIs [s]                             |
| ontime2  | 50161.017893195  | Sum of GTIs [s]                             |
| ontime3  | 50157.876972735  | Sum of GTIs [s]                             |
| ontime6  | 50161.017943025  | Sum of GTIs [s]                             |
| l2events | 145312   | Number of level 2 events                    |



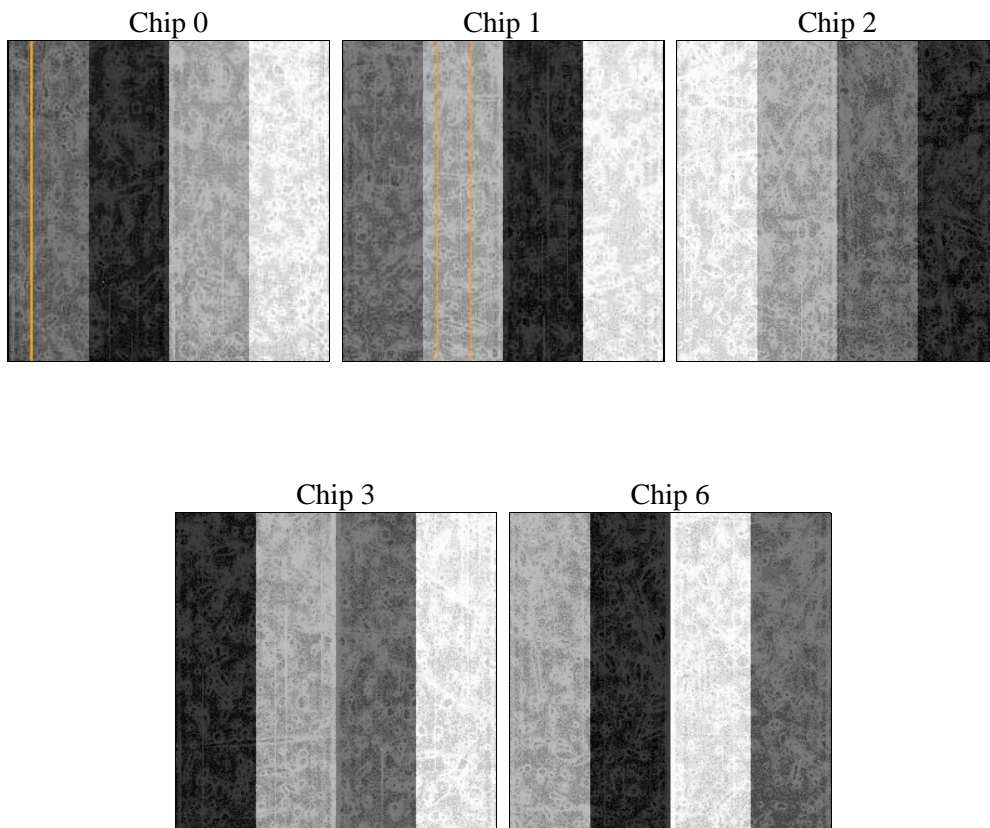
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 50000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.5                 | Processing system revision     | ontime         | 50157.876972735 | Sum of GTIs [s]                         |
| caldbver | 4.5.4               | &#160                          | ontime0        | 50157.876912981 | Sum of GTIs [s]                         |
| date     | 2012-12-12T13:11:05 | Date and time of file creation | ontime1        | 50164.15890336  | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime2        | 50161.017893195 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 50157.876972735 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 50161.017943025 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 1771654         | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 0  | ccd 1  | ccd 2  | ccd 3  | ccd 6  |
|-----------------|--------|--------|--------|--------|--------|
| level 1 events  | 327855 | 330503 | 386435 | 368902 | 357959 |
| rejected events | 294169 | 293634 | 352120 | 329135 | 323380 |
| rejected %      | 89%    | 88%    | 91%    | 89%    | 90%    |

|                | ccd 0  | ccd 1  | ccd 2  | ccd 3  | ccd 6  |
|----------------|--------|--------|--------|--------|--------|
| grade 0 events | 11690  | 13425  | 12613  | 18380  | 12215  |
|                | 3%     | 4%     | 3%     | 4%     | 3%     |
| grade 1 events | 183    | 160    | 232    | 234    | 138    |
|                | 0%     | 0%     | 0%     | 0%     | 0%     |
| grade 2 events | 8624   | 8338   | 8805   | 7897   | 8157   |
|                | 2%     | 2%     | 2%     | 2%     | 2%     |
| grade 3 events | 4023   | 4292   | 3703   | 4049   | 3962   |
|                | 1%     | 1%     | 0%     | 1%     | 1%     |
| grade 4 events | 3756   | 4287   | 3899   | 3875   | 3947   |
|                | 1%     | 1%     | 1%     | 1%     | 1%     |
| grade 5 events | 11836  | 12866  | 11379  | 13480  | 13425  |
|                | 3%     | 3%     | 2%     | 3%     | 3%     |
| grade 6 events | 6496   | 7595   | 6148   | 6537   | 7293   |
|                | 1%     | 2%     | 1%     | 1%     | 2%     |
| grade 7 events | 281247 | 279540 | 339656 | 314450 | 308822 |
|                | 85%    | 84%    | 87%    | 85%    | 86%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-01236          | ACIS-01236           | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | VFAINT              | VFAINT               | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                  | POINTING            | POINTING             | On-chip summing requested             | N         | N       |
| [deg] Pointing RA                 | 116.239069          | 116.216012008147     | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | 39.464193           | 39.48500459447887    | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 100.090685          | 100.314036137709     | [s] Primary exposure time             | 0.000000  | 3.1     |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272  |                                       |           |         |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334 |                                       |           |         |
| [mm] SIM translation stage pos    | -229.442463         | -229.4438428438578   |                                       |           |         |
| [mm] SIM translation stage offset | -4.15               | -4.148610159071865   |                                       |           |         |
| [s] Observation start time (MET)  | 218496394.184000    | 218494696.1651       |                                       |           |         |
| Observation start date            | 2004-12-03T21:25:30 | 2004-12-03T20:58:16  |                                       |           |         |
| [s] Observation end time (MET)    | 218546394.184000    | 218547929.02999      |                                       |           |         |
| Observation end date              | 2004-12-04T11:18:50 | 2004-12-04T11:45:29  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect

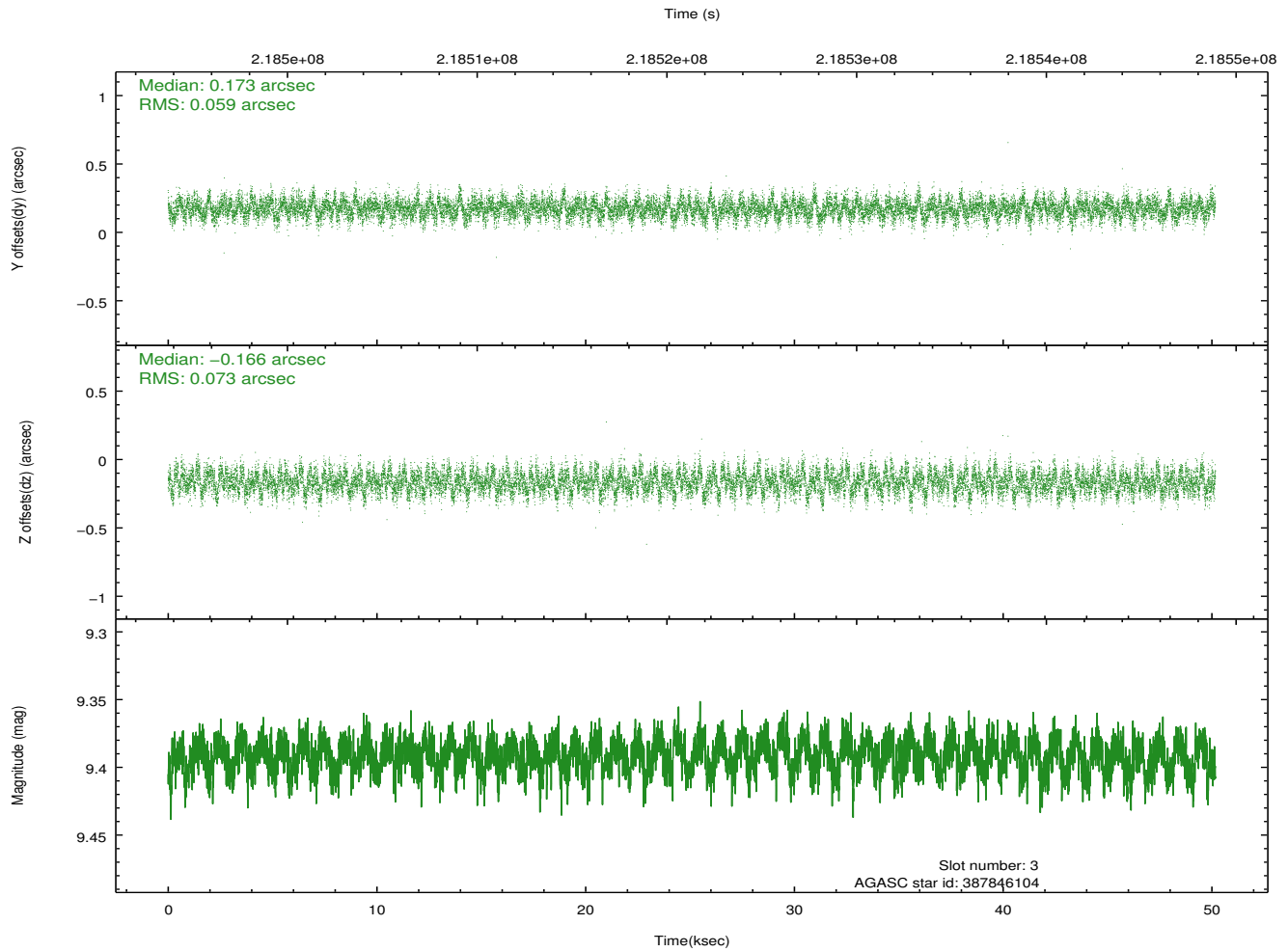
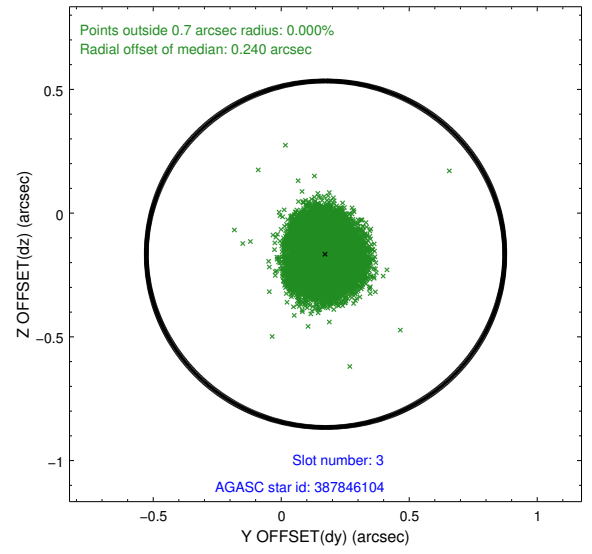
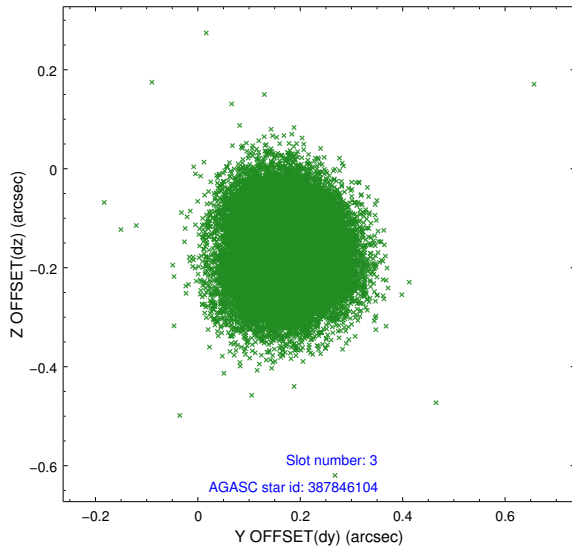


### Slot Statistics

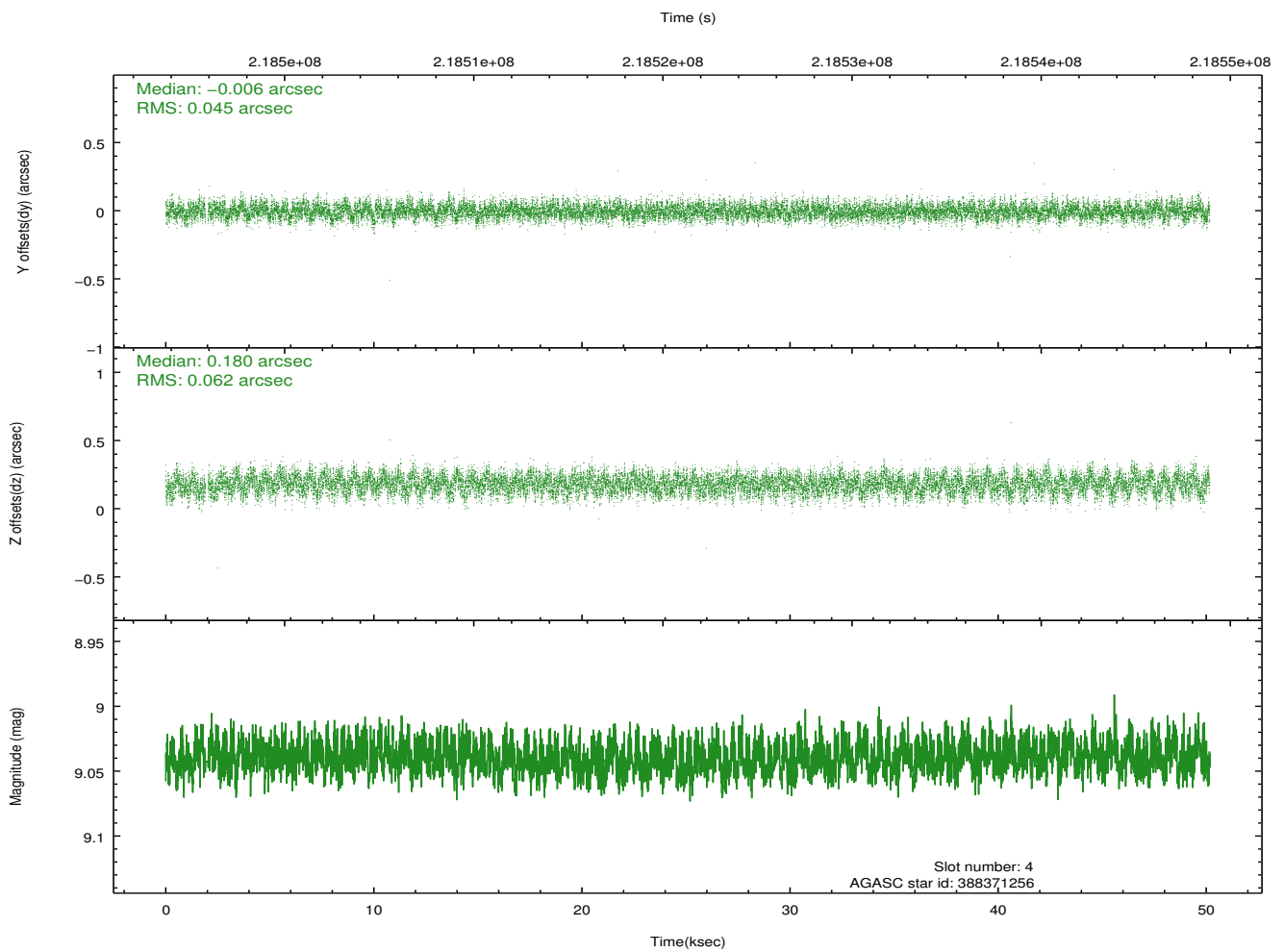
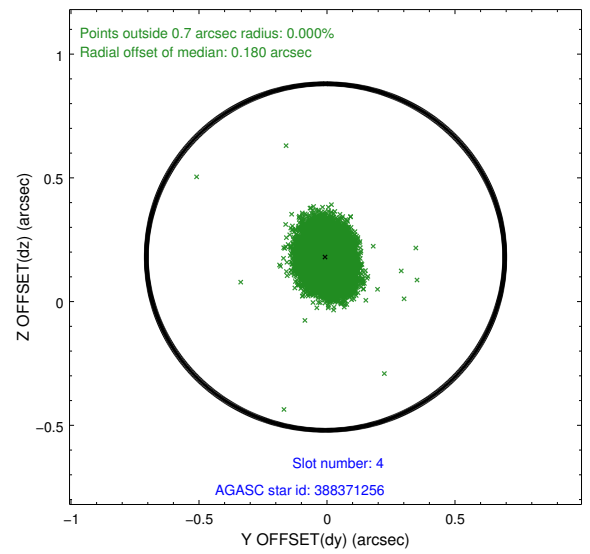
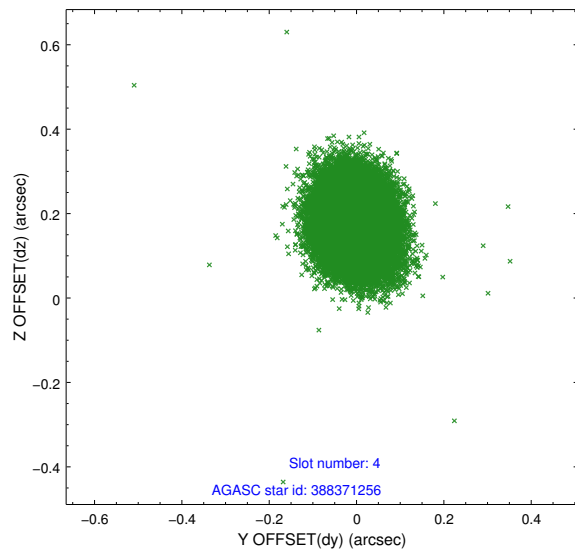
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    | ACIS-I-1  | 7.24 | 12237 | 0.069  | -0.034 | 0.007 | 0.017 | 0.000000   | 0.000000  | 932.41   | -918.87  |
| 1    | FID    | ACIS-I-5  | 7.23 | 12238 | -0.195 | 0.076  | 0.007 | 0.015 | 0.000000   | 0.000000  | -1815.95 | 978.76   |
| 2    | FID    | ACIS-I-6  | 7.25 | 12238 | 0.035  | 0.028  | 0.008 | 0.013 | 0.000000   | 0.000000  | 397.98   | 1623.17  |
| 3    | GUIDE  | 387846104 | 9.39 | 24459 | 0.173  | -0.166 | 0.101 | 0.159 | 115.792368 | 39.298643 | -365.36  | 1328.87  |
| 4    | GUIDE  | 388371256 | 9.04 | 24404 | -0.006 | 0.180  | 0.082 | 0.131 | 116.958551 | 39.618125 | 204.24   | -2062.38 |
| 5    | GUIDE  | 388378136 | 7.40 | 24474 | 0.003  | 0.031  | 0.064 | 0.102 | 116.426409 | 39.546945 | 203.16   | -564.12  |
| 6    | GUIDE  | 388380400 | 9.76 | 24450 | -0.008 | -0.034 | 0.110 | 0.181 | 115.865452 | 39.384708 | -97.25   | 1073.19  |
| 7    | GUIDE  | 388381632 | 9.54 | 24454 | -0.162 | -0.012 | 0.110 | 0.176 | 115.945891 | 39.520102 | 342.20   | 766.18   |

## 2.4 Star Slots

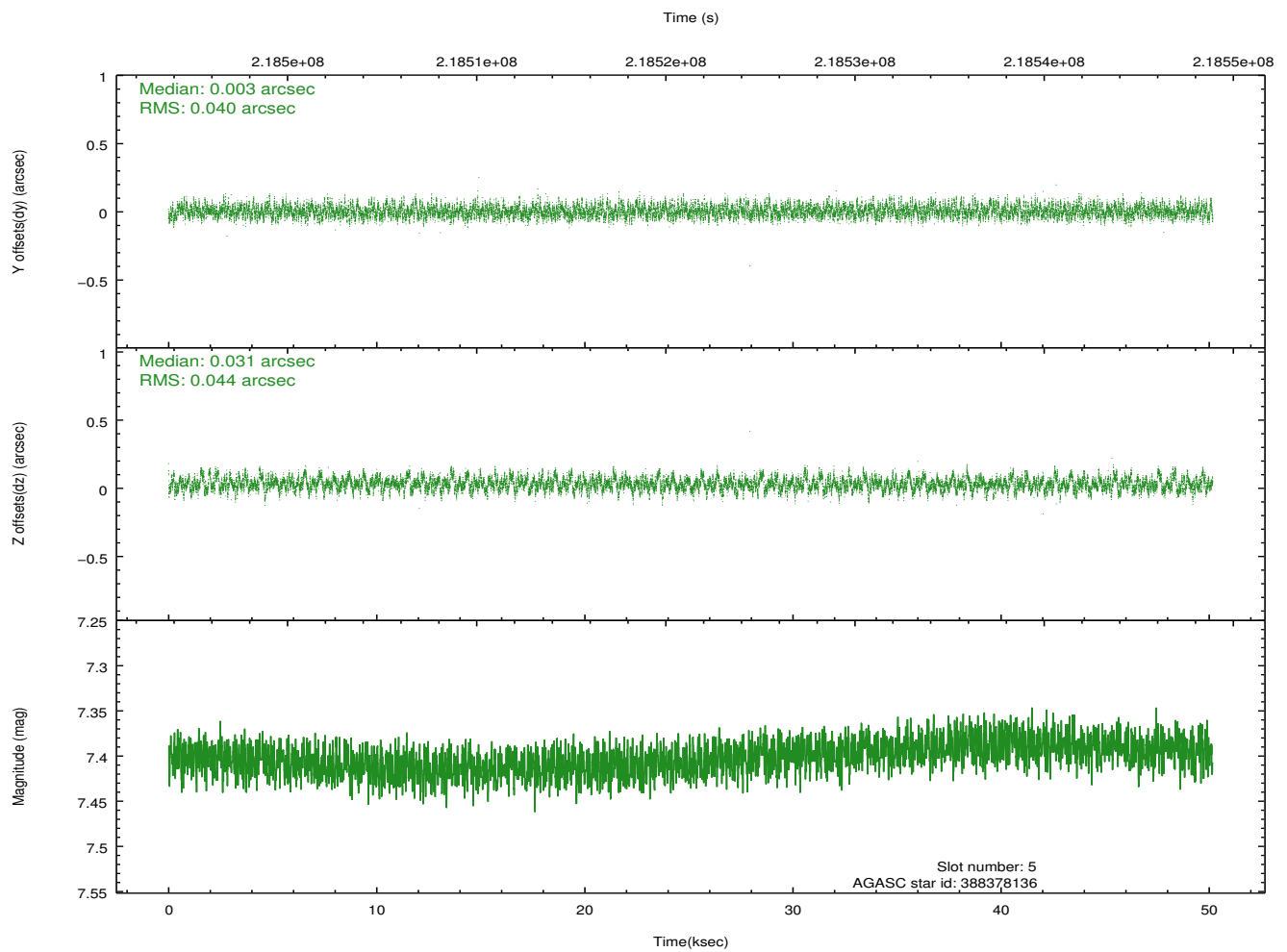
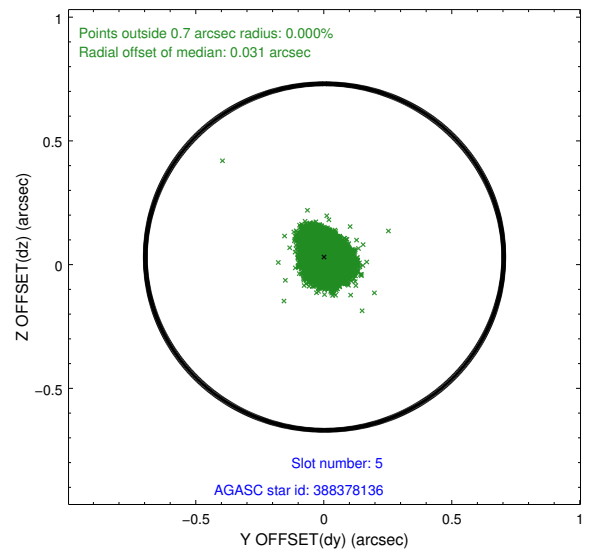
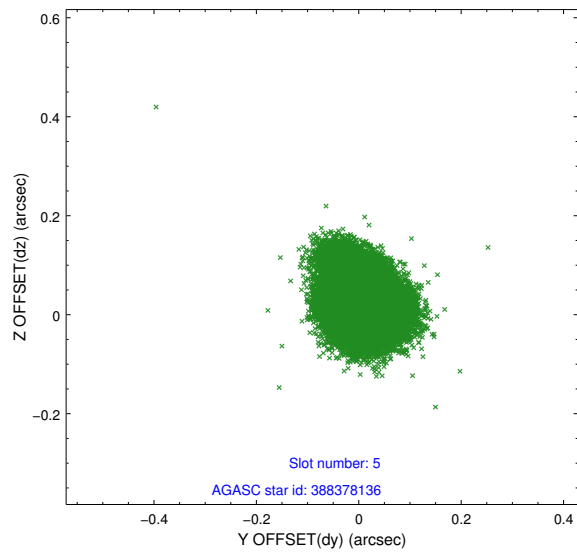
### 2.4.1 Slot 3



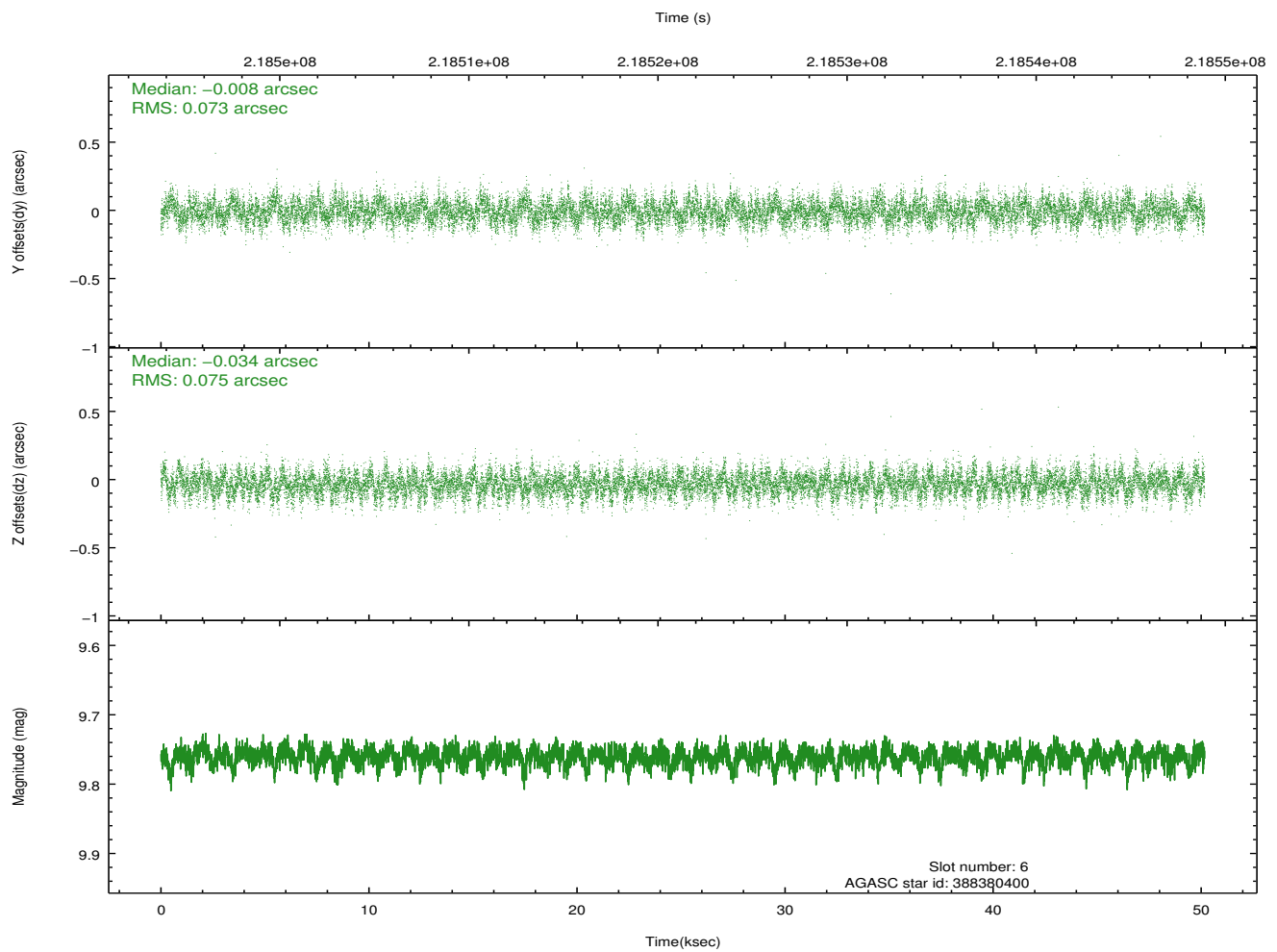
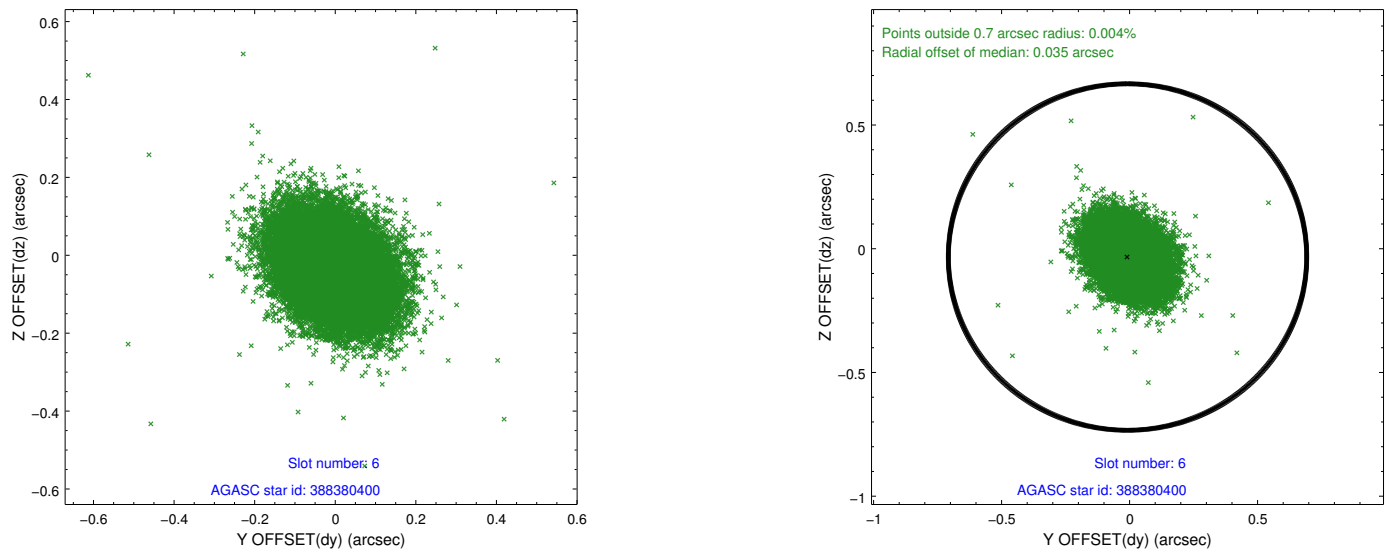
## 2.4.2 Slot 4



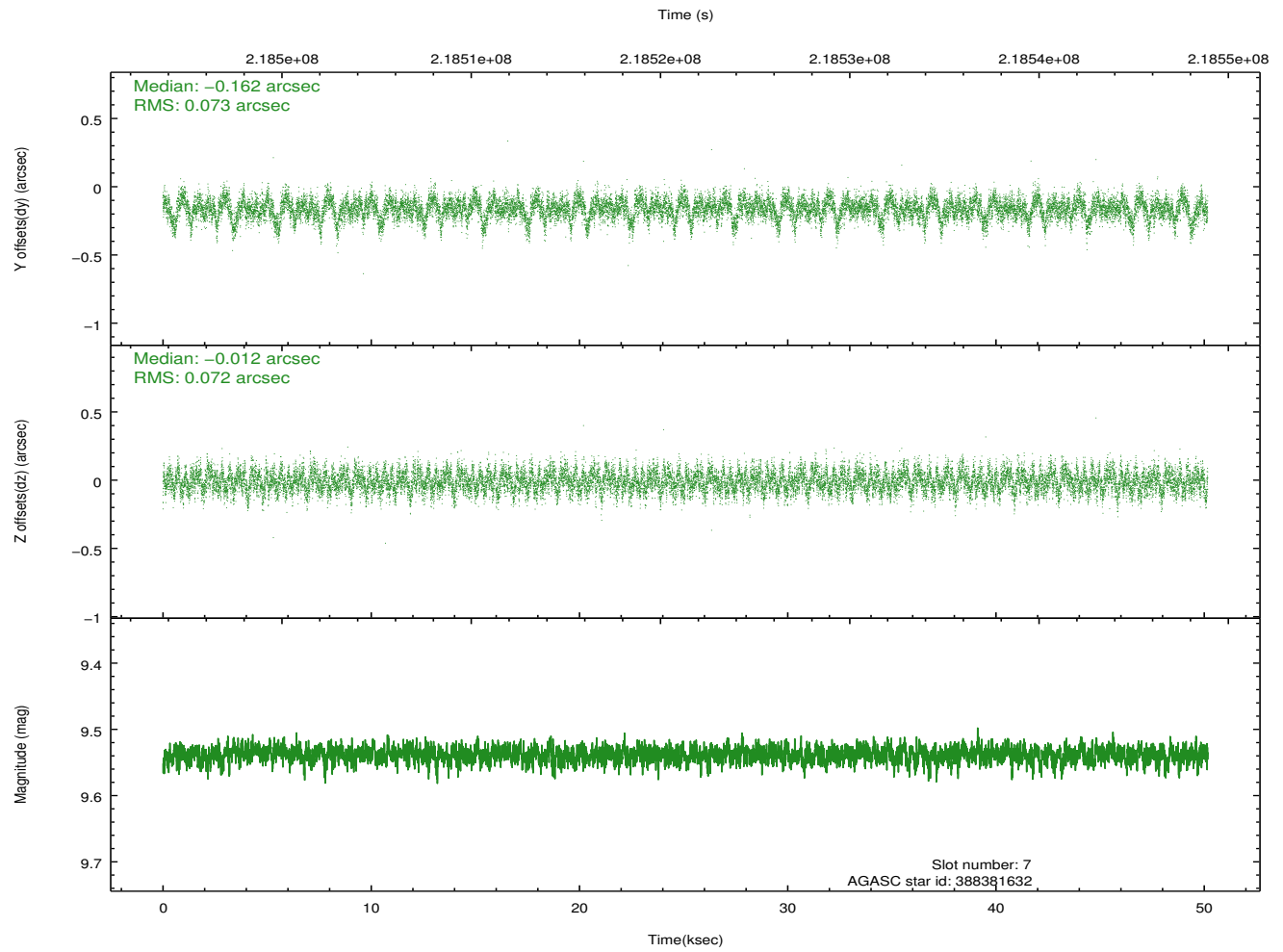
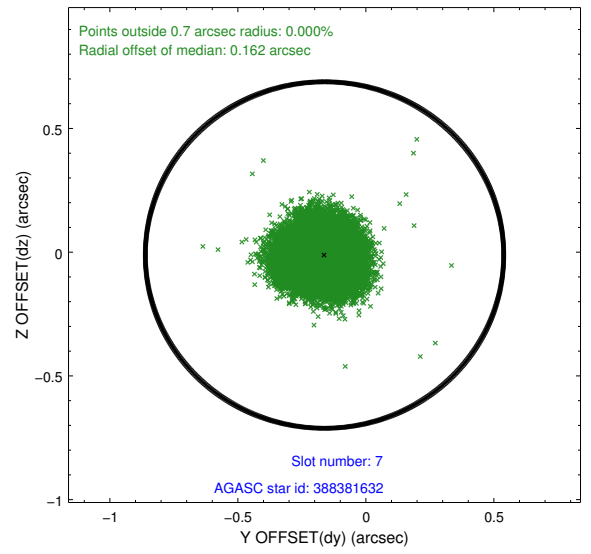
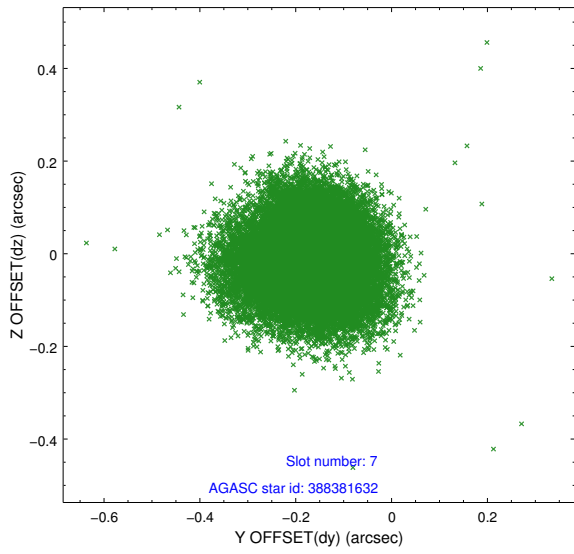
### 2.4.3 Slot 5



## 2.4.4 Slot 6

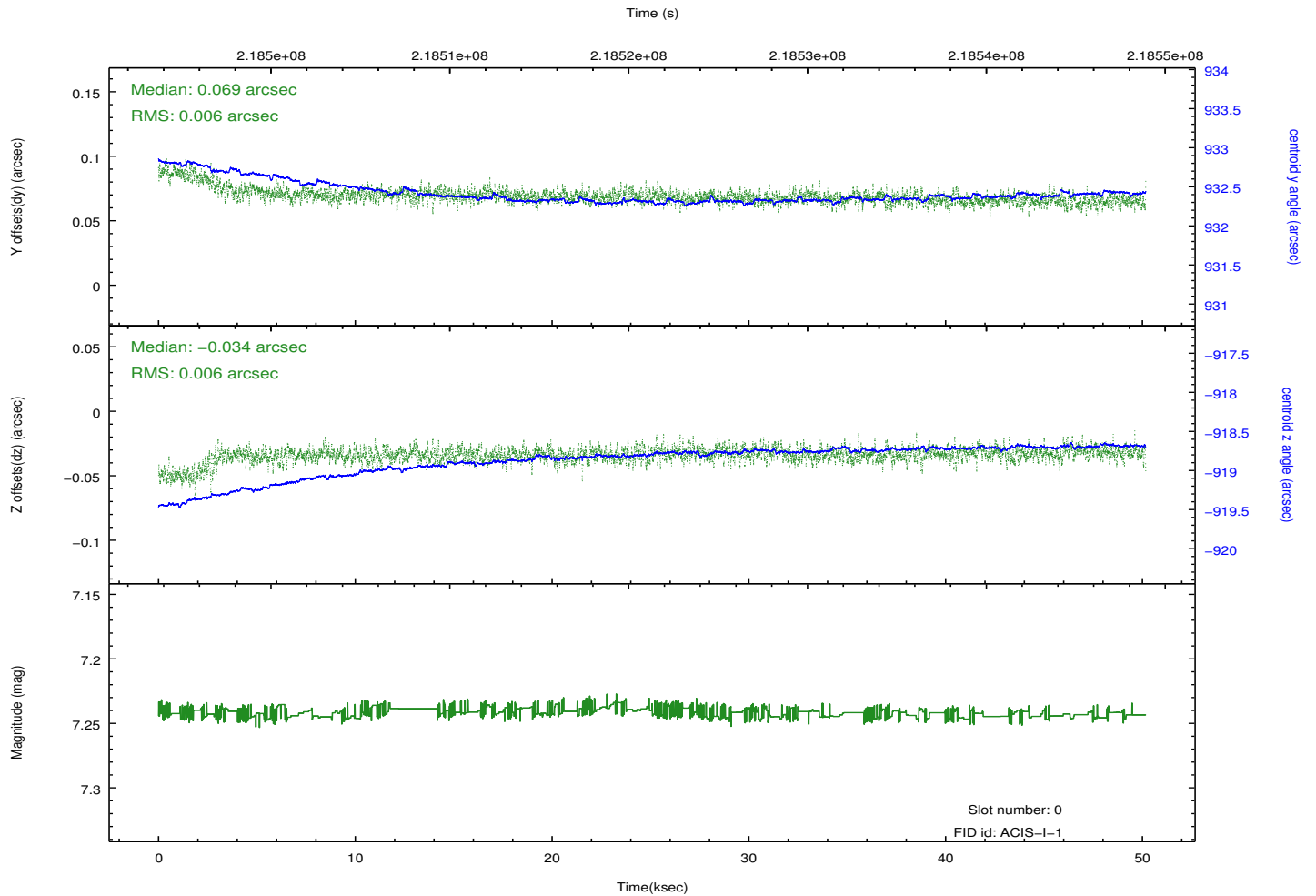
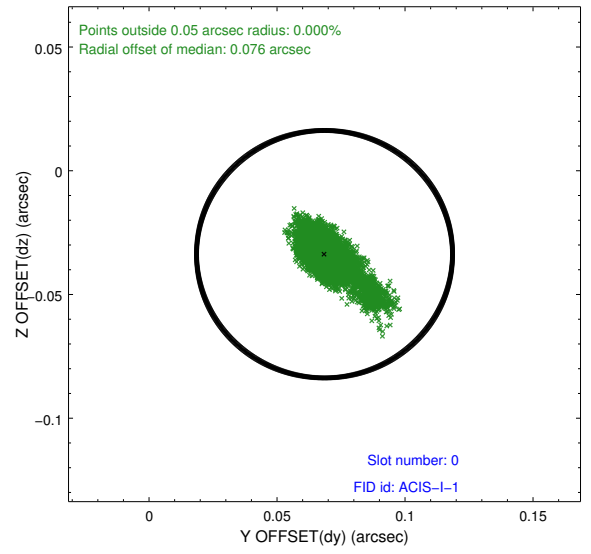
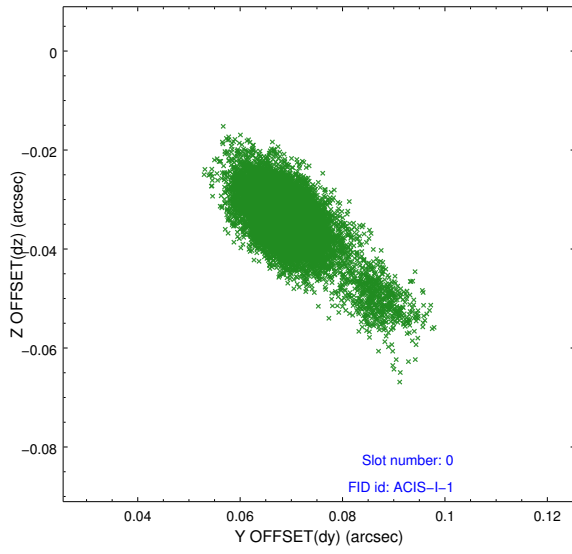


### 2.4.5 Slot 7

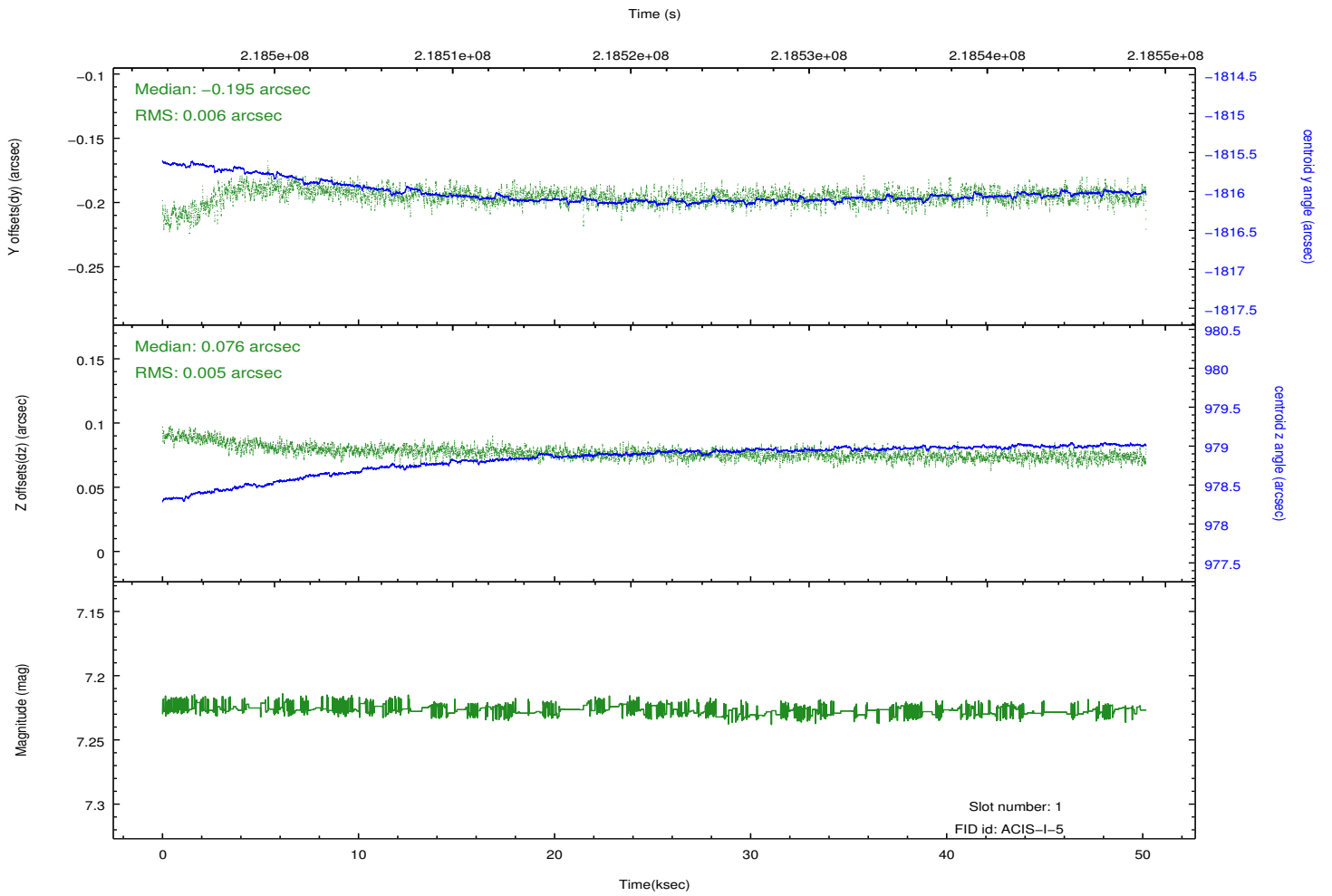
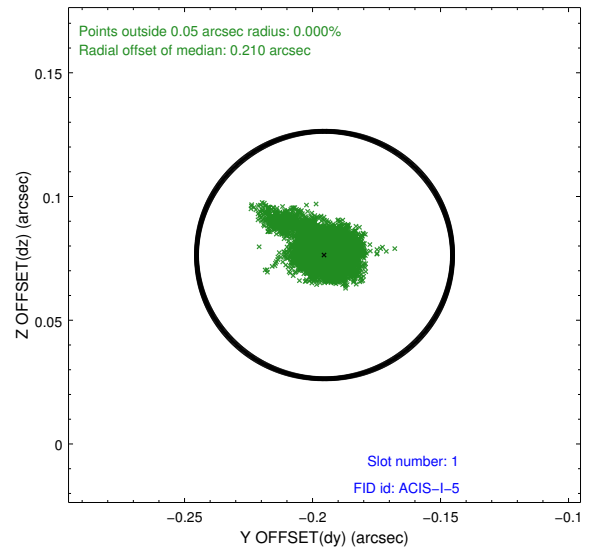
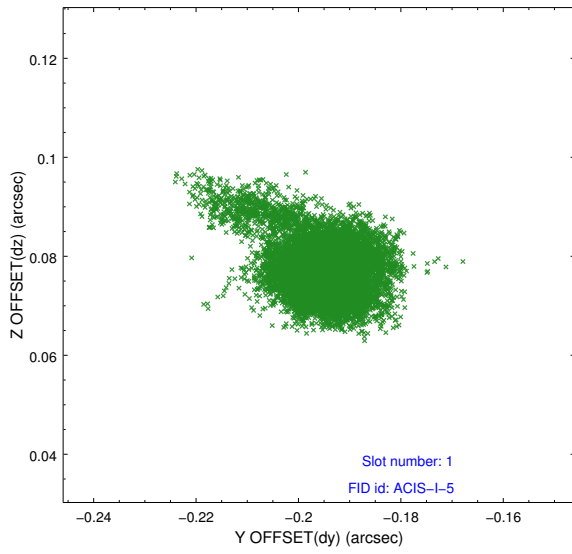


## 2.5 FID Slots

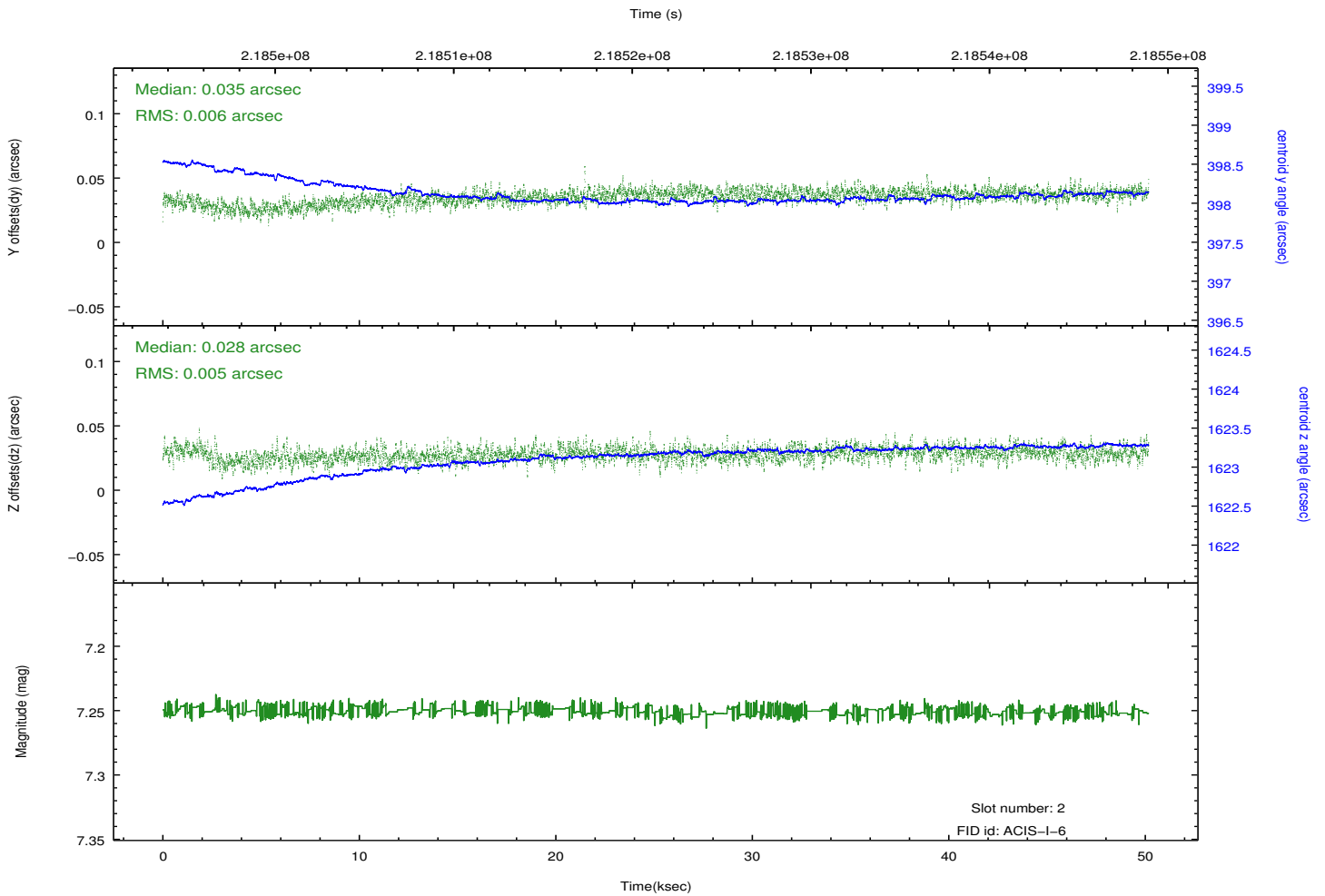
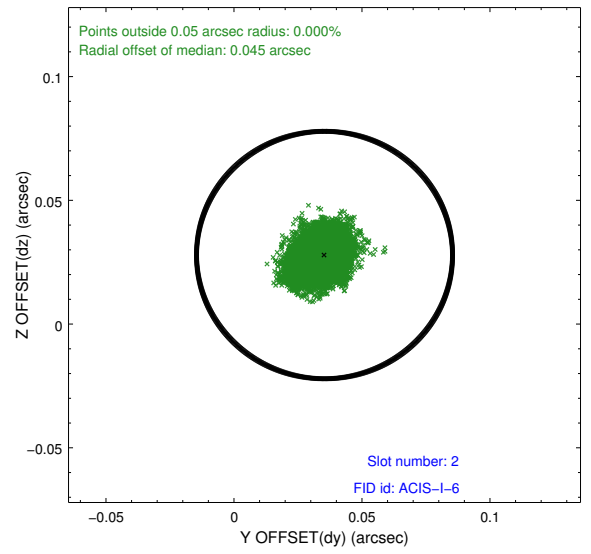
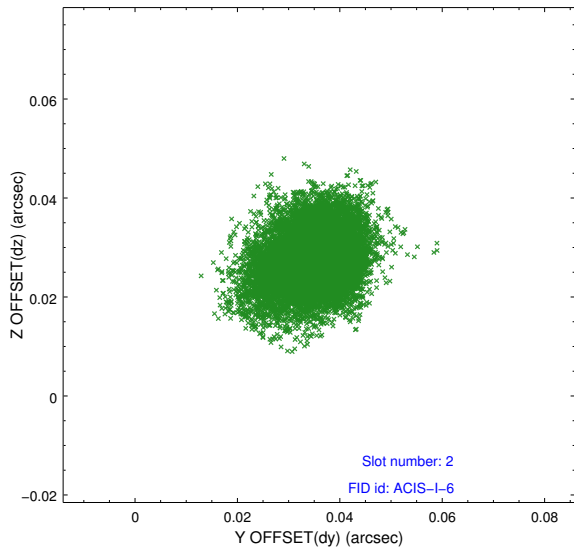
### 2.5.1 Slot 0



## 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)      | 2013.01.04 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 50.1578769 |

## A.2 Comments