

# V&V Reference Report

## L2 ASCDS Version : 8.5.1

Observation 5819 - L2 Version 3  
Chandra X-Ray Center

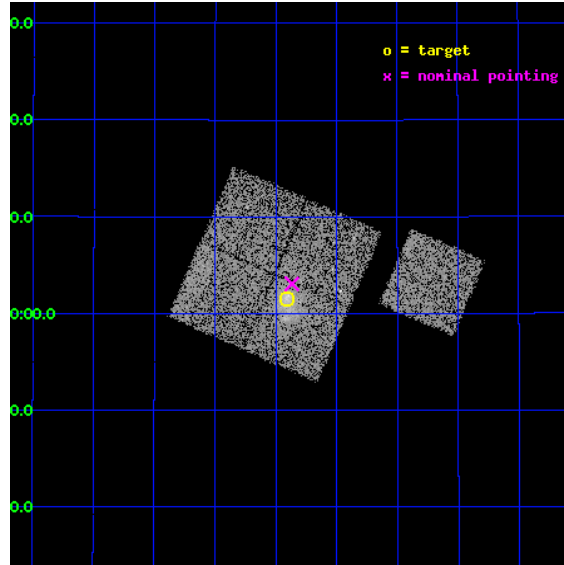
L2 Processing Date : Dec 16 2012

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# 1 Front

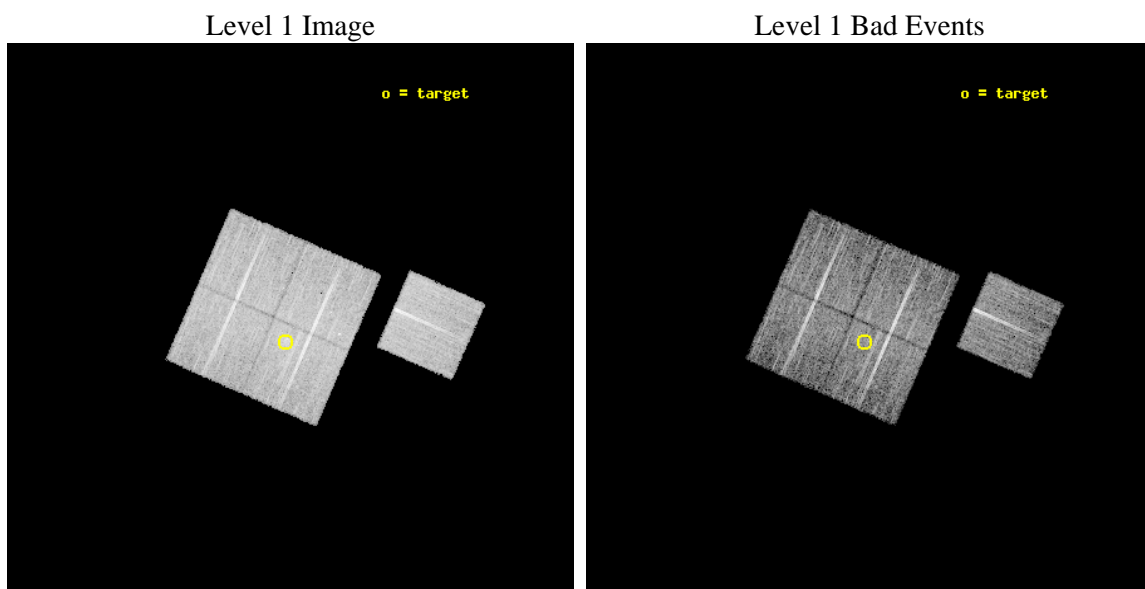
|          |   |   |
|----------|---|---|
| seq_num  | 800532  | Sequence number                             |
| obs_id   | 5819  | Observation id                              |
| title    | MACS: The most massive galaxy clusters at $z>0.3$ | Proposal title                              |
| observer | Dr. Harald Ebeling                                | Principal investigator                      |
| object   | MACSJ1006.9+3200                                  | Source name                                 |
| dtcycle  | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 151.727917  | Observer's specified target RA [deg]        |
| dec_targ | 32.025389   | Observer's specified target Dec [deg]       |
| ra_nom   | 151.71689273203                                   | Nominal RA [deg]                            |
| dec_nom  | 32.051384989136                                   | Nominal Dec [deg]                           |
| roll_nom | 113.61559716447                                   | Nominal Roll [deg]                          |
| revision | 3   | Processing version of data                  |
| ontime   | 11032.858988494                                   | Sum of GTIs [s]                             |
| livetime | 10888.706563536                                   | Livetime [s]                                |
| ontime0  | 11035.999978751                                   | Sum of GTIs [s]                             |
| ontime1  | 11035.999978751                                   | Sum of GTIs [s]                             |
| ontime2  | 11032.858988494                                   | Sum of GTIs [s]                             |
| ontime3  | 11032.858988494                                   | Sum of GTIs [s]                             |
| ontime6  | 11035.999978751                                   | Sum of GTIs [s]                             |
| l2events | 31237   | Number of level 2 events                    |



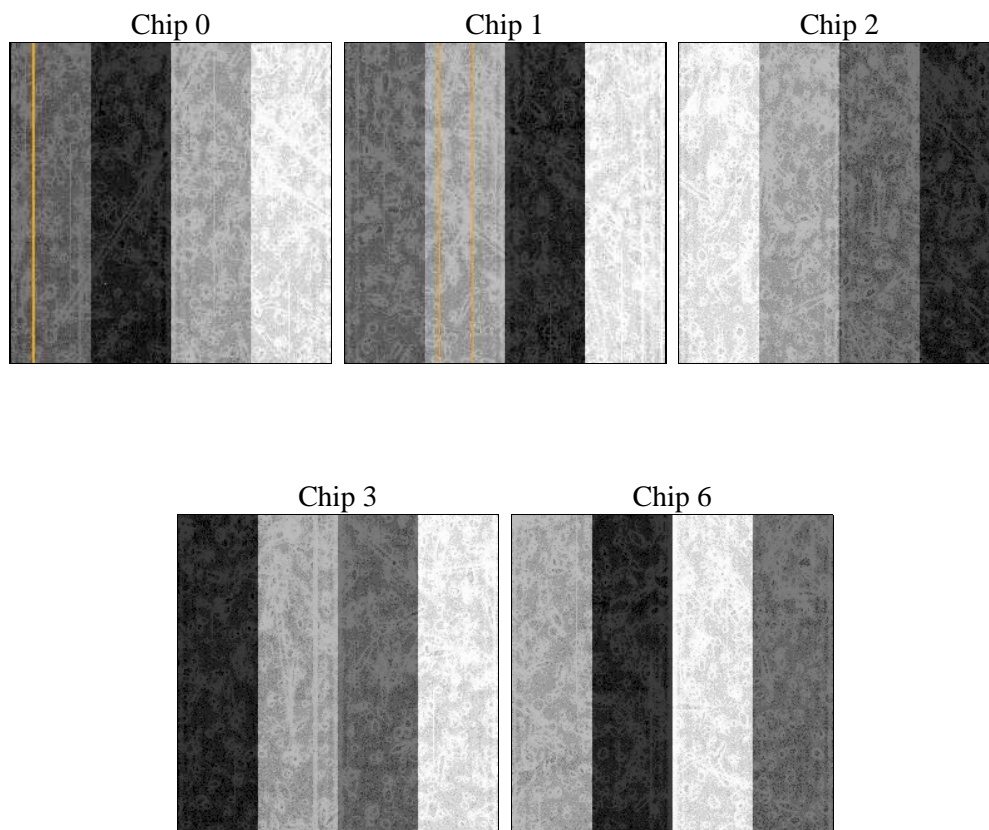
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 11000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.5.1               | Processing system revision     | ontime         | 11032.858988494 | Sum of GTIs [s]                         |
| caldsver | 4.5.5               | &#160                          | ontime0        | 11035.999978751 | Sum of GTIs [s]                         |
| date     | 2012-12-16T12:04:03 | Date and time of file creation | ontime1        | 11035.999978751 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime2        | 11032.858988494 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 11032.858988494 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 11035.999978751 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 330992          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 |
|-----------------|-------|-------|-------|-------|-------|
| level 1 events  | 63708 | 62112 | 69244 | 66843 | 69085 |
| rejected events | 56905 | 54482 | 62053 | 58170 | 62188 |
| rejected %      | 89%   | 87%   | 89%   | 87%   | 90%   |

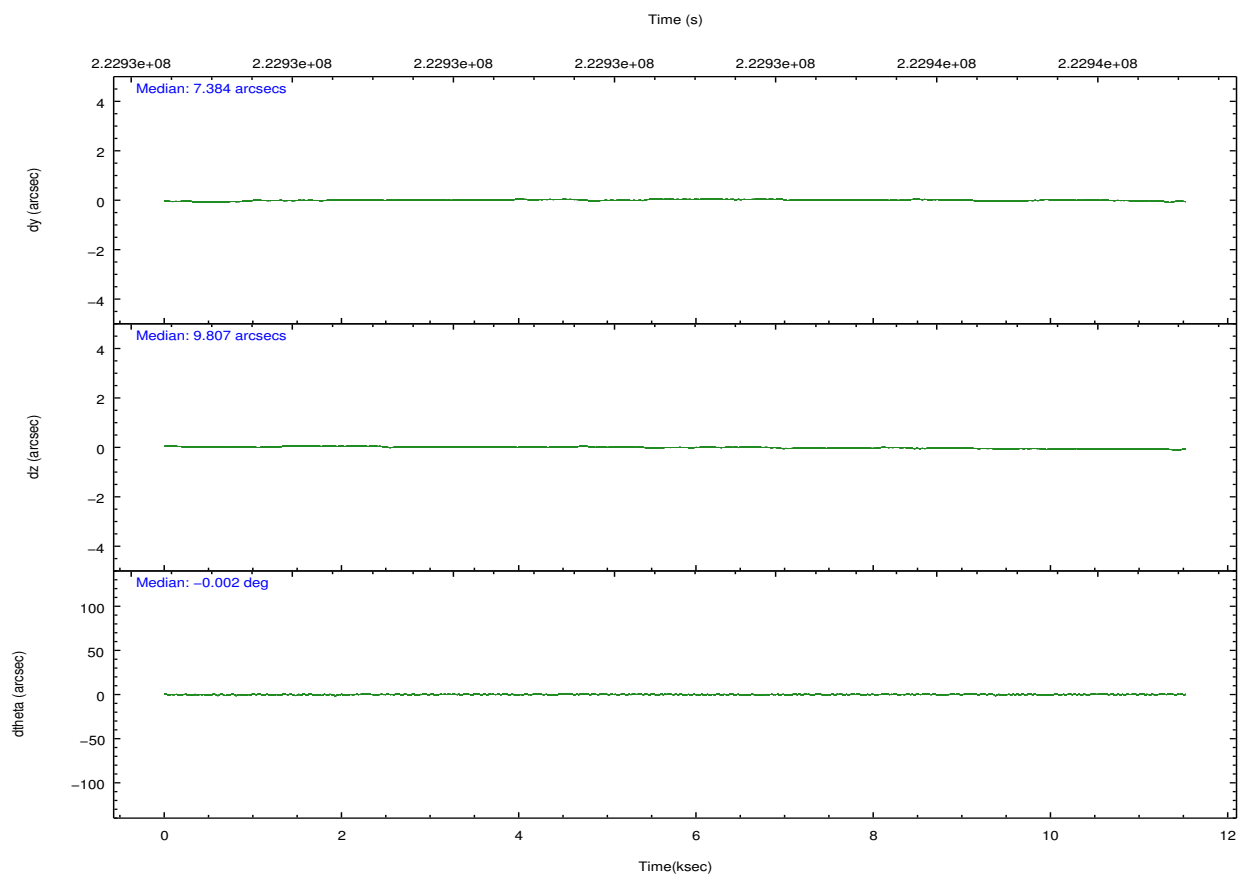
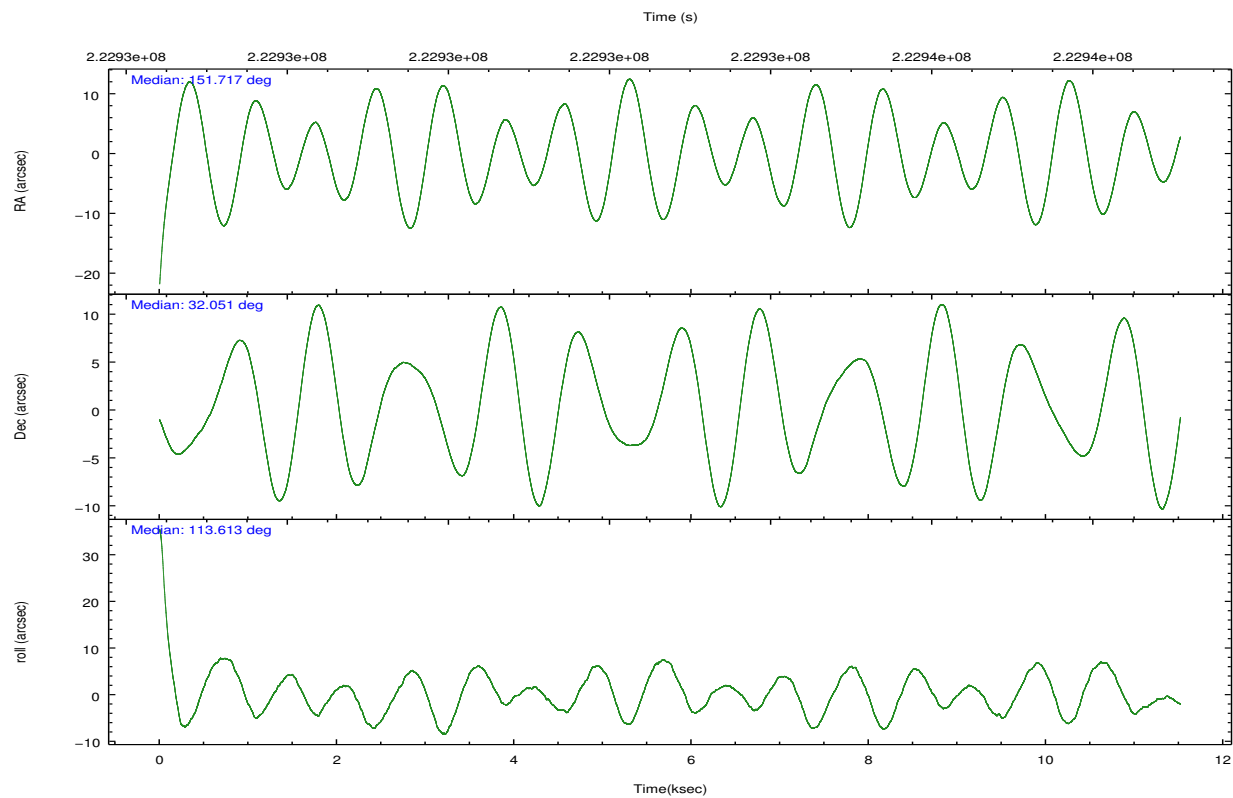
|                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 |
|----------------|-------|-------|-------|-------|-------|
| grade 0 events | 2511  | 2825  | 2908  | 4256  | 2490  |
|                | 3%    | 4%    | 4%    | 6%    | 3%    |
| grade 1 events | 38    | 29    | 39    | 45    | 34    |
|                | 0%    | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 1510  | 1700  | 1554  | 1530  | 1439  |
|                | 2%    | 2%    | 2%    | 2%    | 2%    |
| grade 3 events | 752   | 845   | 728   | 793   | 782   |
|                | 1%    | 1%    | 1%    | 1%    | 1%    |
| grade 4 events | 706   | 764   | 733   | 790   | 757   |
|                | 1%    | 1%    | 1%    | 1%    | 1%    |
| grade 5 events | 2258  | 2470  | 2150  | 2613  | 2527  |
|                | 3%    | 3%    | 3%    | 3%    | 3%    |
| grade 6 events | 1326  | 1497  | 1268  | 1307  | 1431  |
|                | 2%    | 2%    | 1%    | 1%    | 2%    |
| grade 7 events | 54607 | 51982 | 59864 | 55509 | 59625 |
|                | 85%   | 83%   | 86%   | 83%   | 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                 | 151.743006          | 151.7168927320324    | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | 32.035282           | 32.05138498913567    | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 113.393033          | 113.615597164467     | [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)  | 222927516.184000    | 222926419.67725      |                                       |           |         |
| Observation start date            | 2005-01-24T04:17:32 | 2005-01-24T04:00:19  |                                       |           |         |
| [s] Observation end time (MET)    | 222938516.184000    | 222939732.89035      |                                       |           |         |
| Observation end date              | 2005-01-24T07:20:52 | 2005-01-24T07:42:12  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect

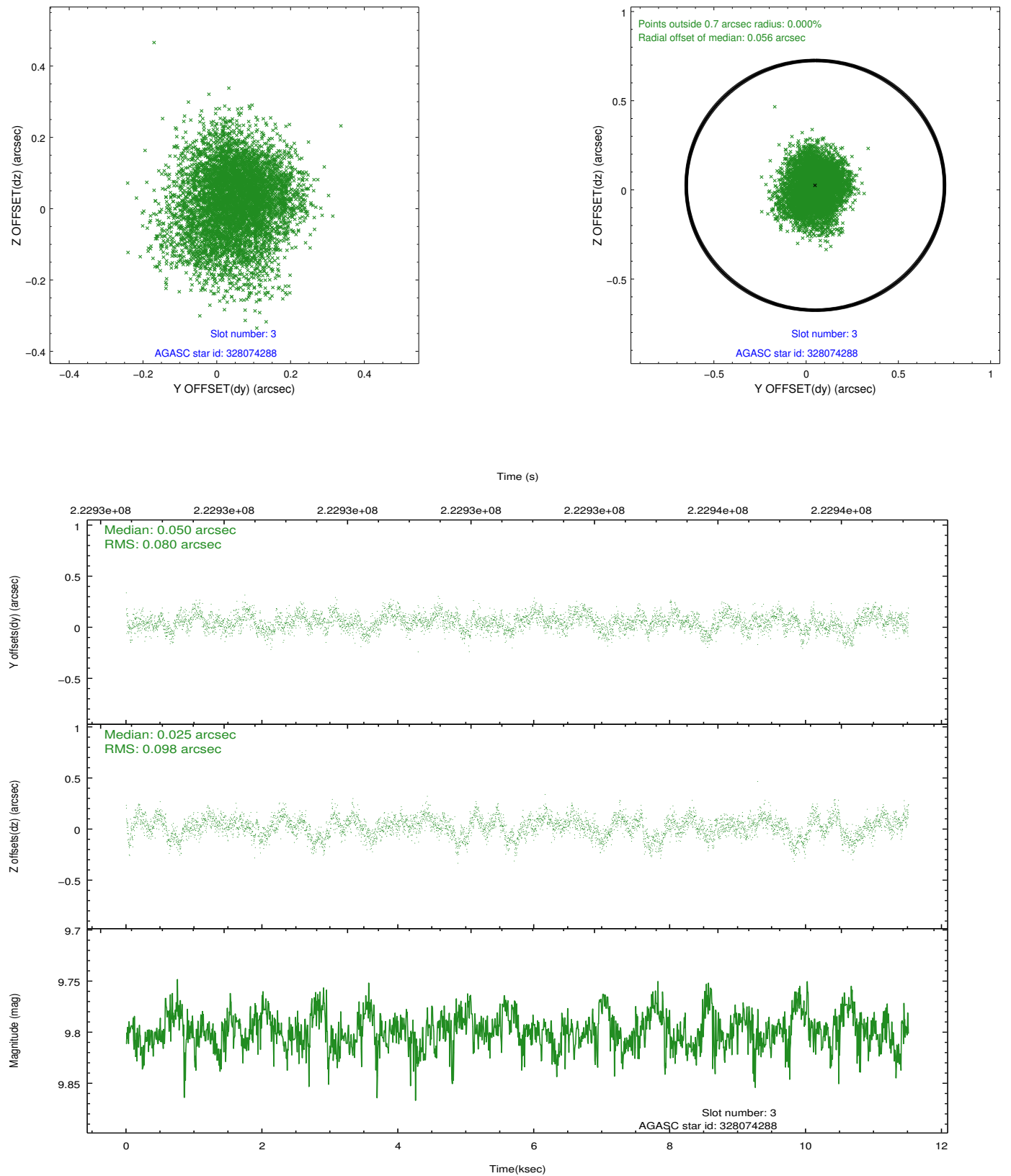


### Slot Statistics

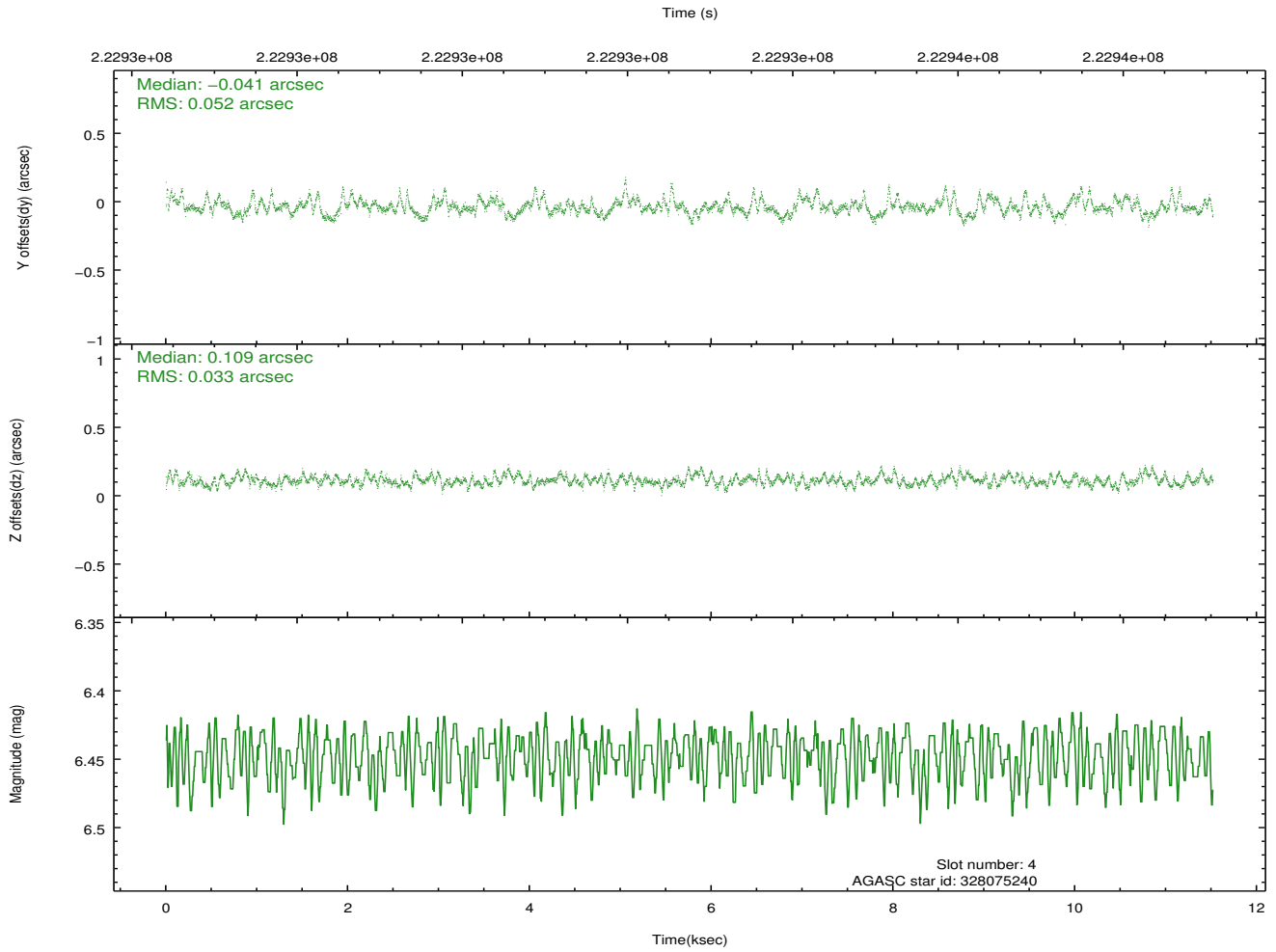
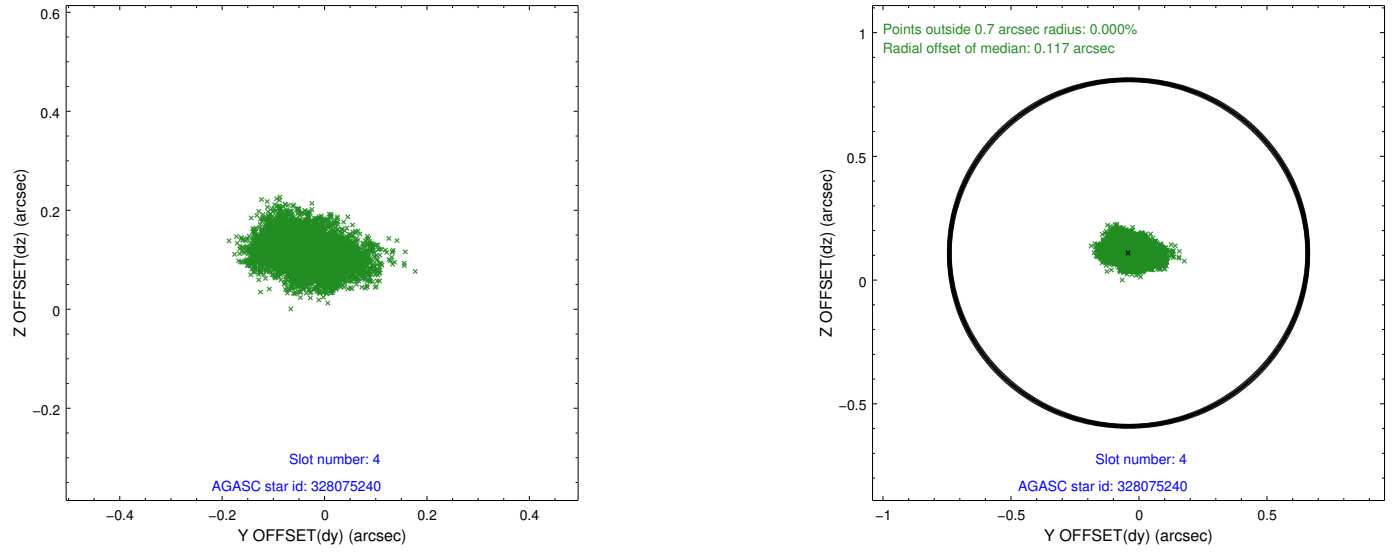
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    | ACIS-I-1  | 7.25 | 2810  | 0.055  | -0.017 | 0.006 | 0.011 | 0.000000   | 0.000000  | 932.26   | -918.40  |
| 1    | FID    | ACIS-I-5  | 7.23 | 2810  | -0.185 | 0.068  | 0.006 | 0.010 | 0.000000   | 0.000000  | -1815.83 | 978.93   |
| 2    | FID    | ACIS-I-6  | 7.25 | 2810  | 0.038  | 0.020  | 0.007 | 0.011 | 0.000000   | 0.000000  | 397.32   | 1623.88  |
| 3    | GUIDE  | 328074288 | 9.80 | 5606  | 0.050  | 0.025  | 0.135 | 0.220 | 151.851051 | 32.207832 | 440.00   | -548.50  |
| 4    | GUIDE  | 328075240 | 6.45 | 5620  | -0.041 | 0.109  | 0.066 | 0.110 | 152.066191 | 31.604067 | -1816.63 | -293.16  |
| 5    | GUIDE  | 328075864 | 7.18 | 5620  | -0.250 | -0.086 | 0.061 | 0.101 | 151.066991 | 32.452445 | 2199.34  | 1286.22  |
| 6    | GUIDE  | 328077552 | 9.54 | 5612  | 0.113  | -0.129 | 0.103 | 0.177 | 151.705157 | 31.641393 | -1254.29 | 669.71   |
| 7    | GUIDE  | 328083000 | 9.64 | 5609  | 0.129  | 0.072  | 0.141 | 0.218 | 152.384129 | 31.587113 | -2255.82 | -1165.93 |

## 2.4 Star Slots

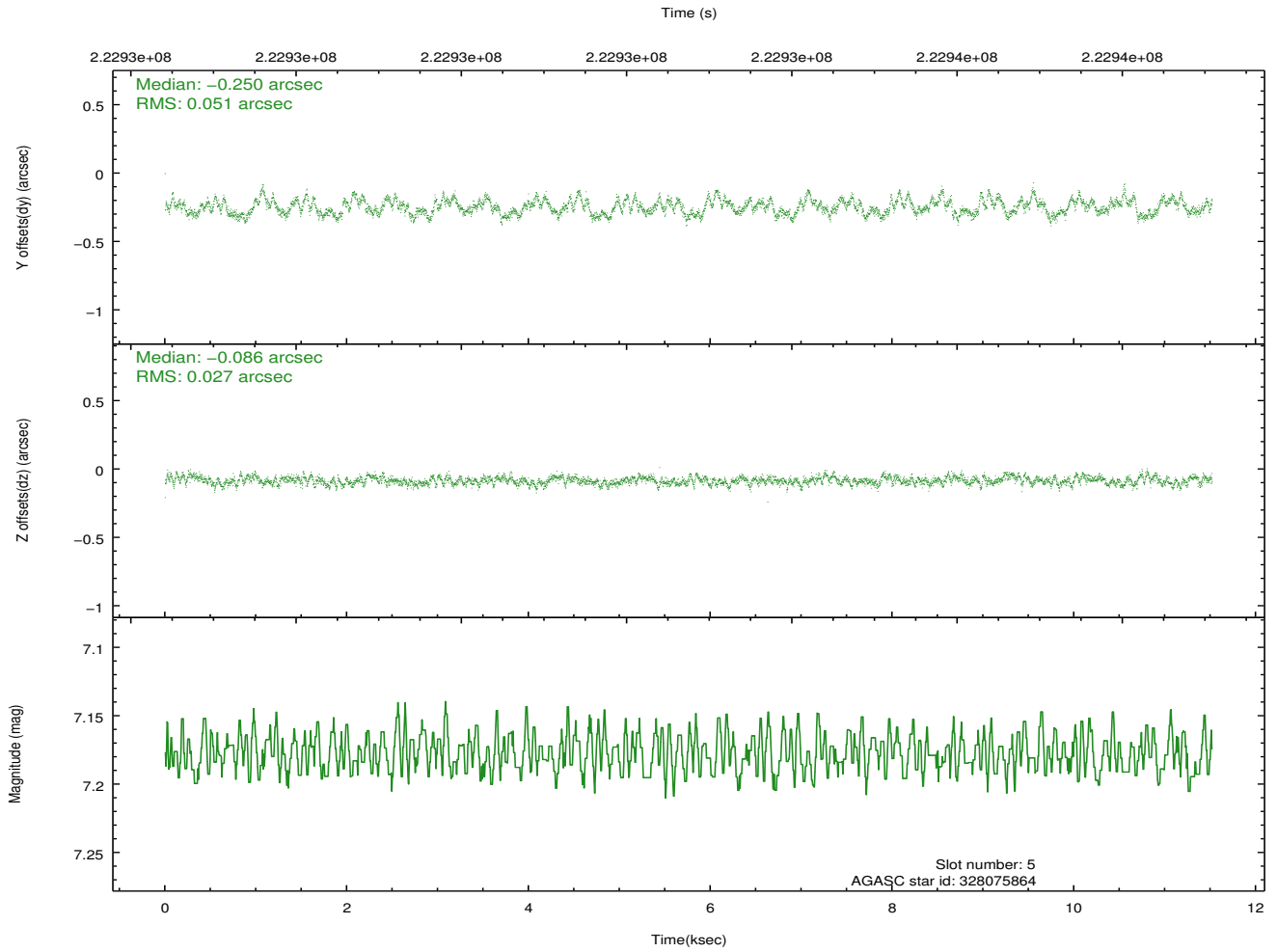
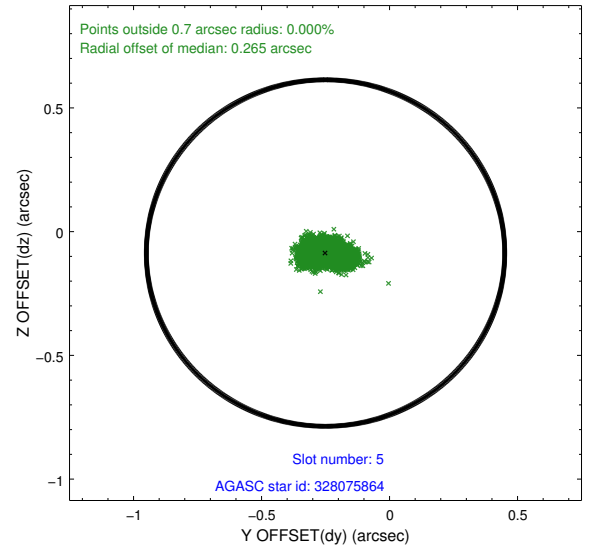
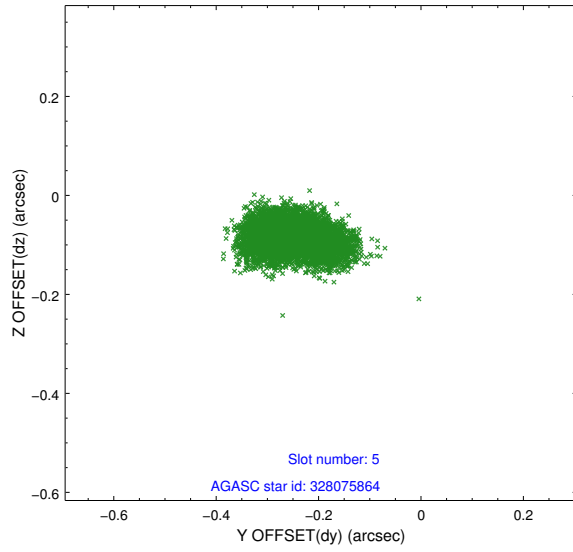
### 2.4.1 Slot 3



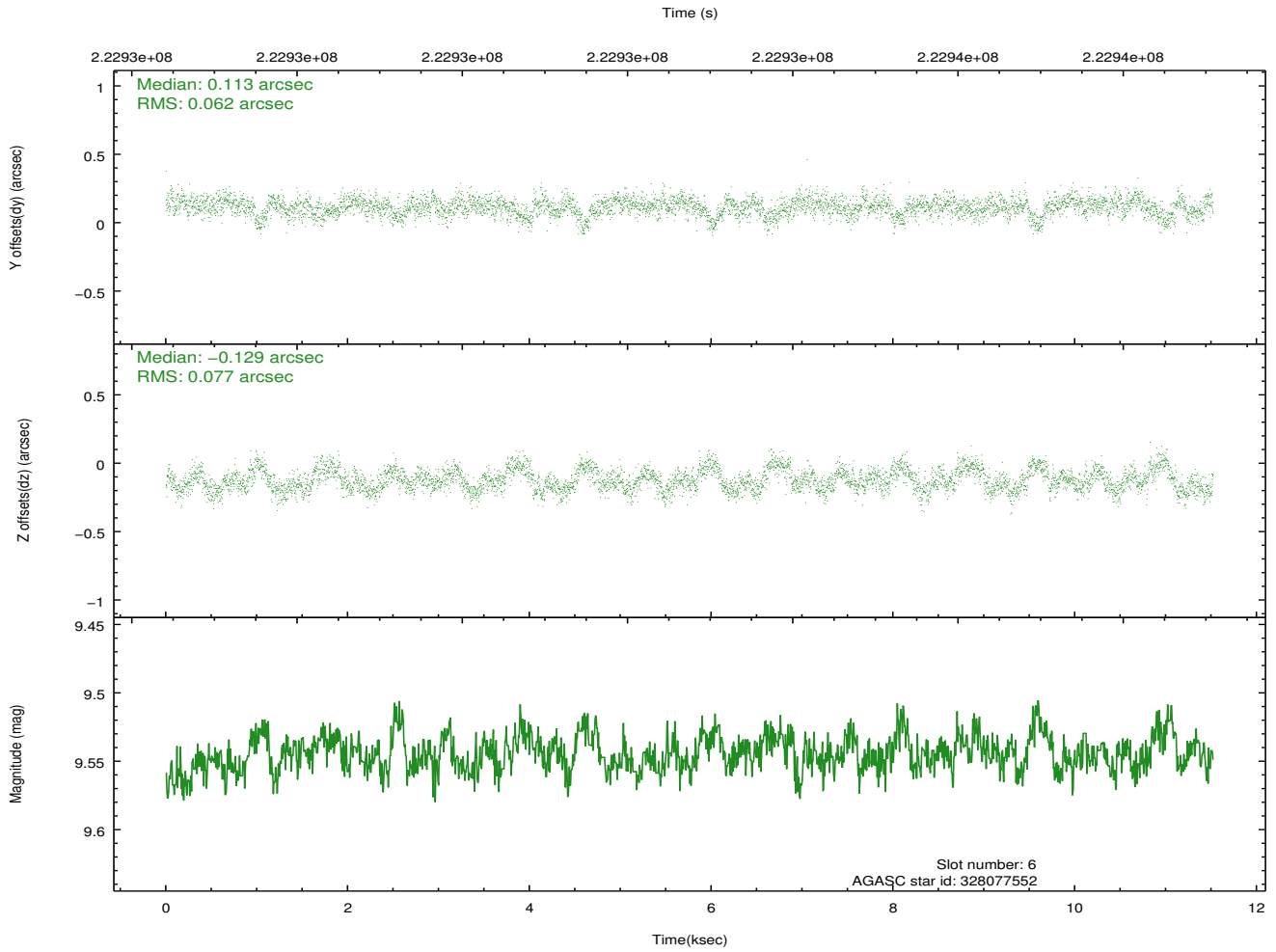
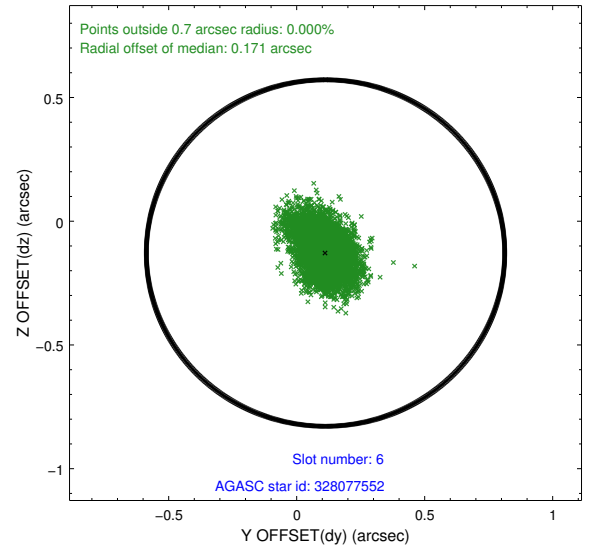
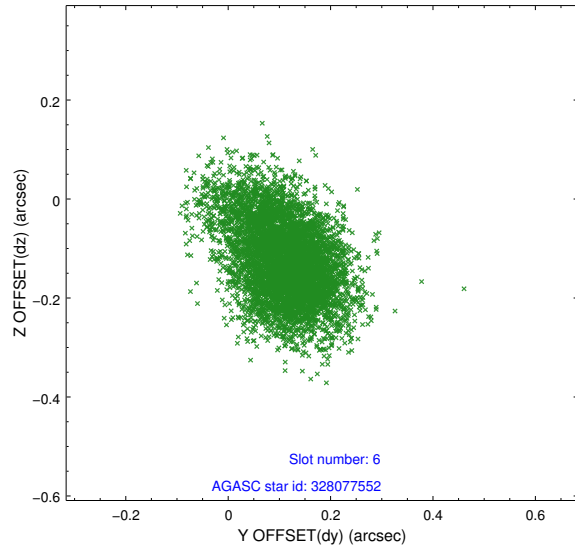
## 2.4.2 Slot 4



### 2.4.3 Slot 5

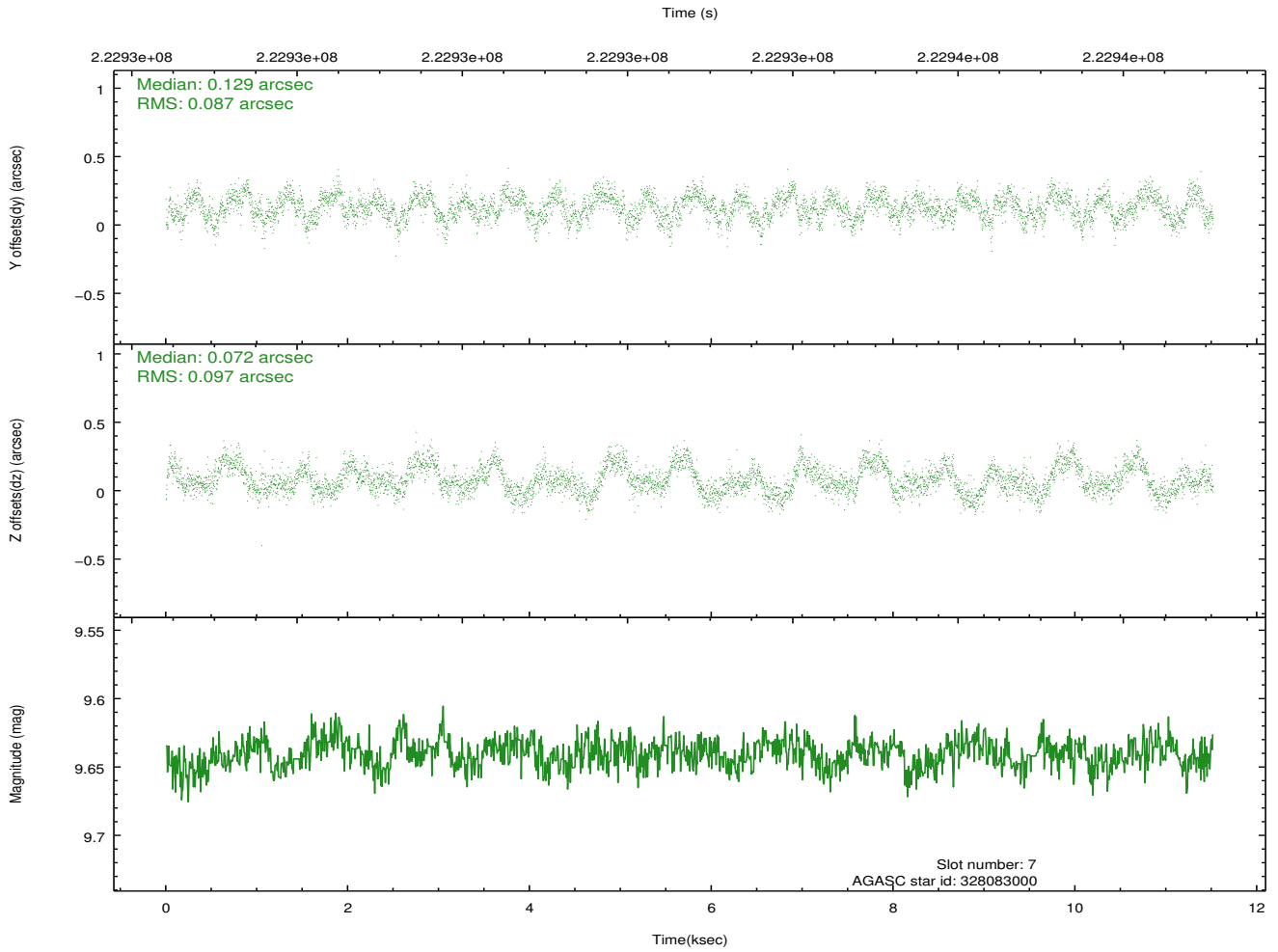
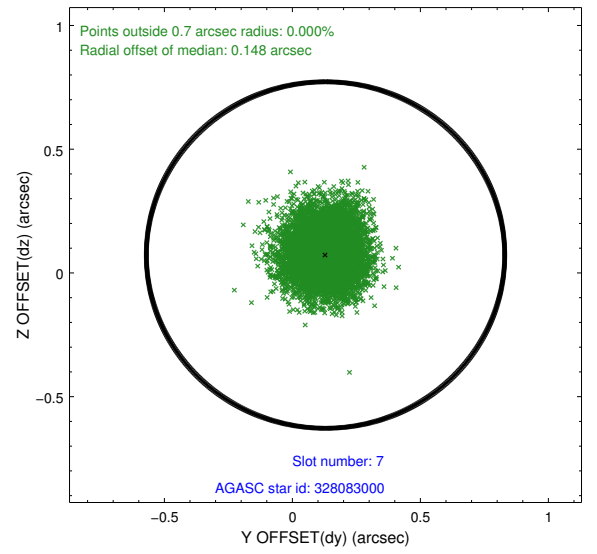
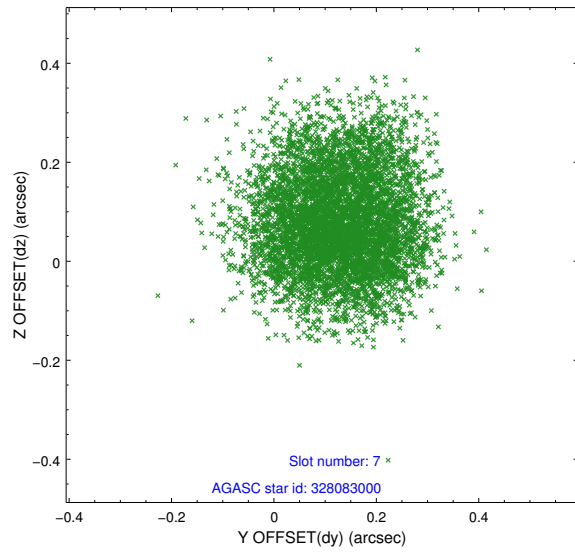


## 2.4.4 Slot 6



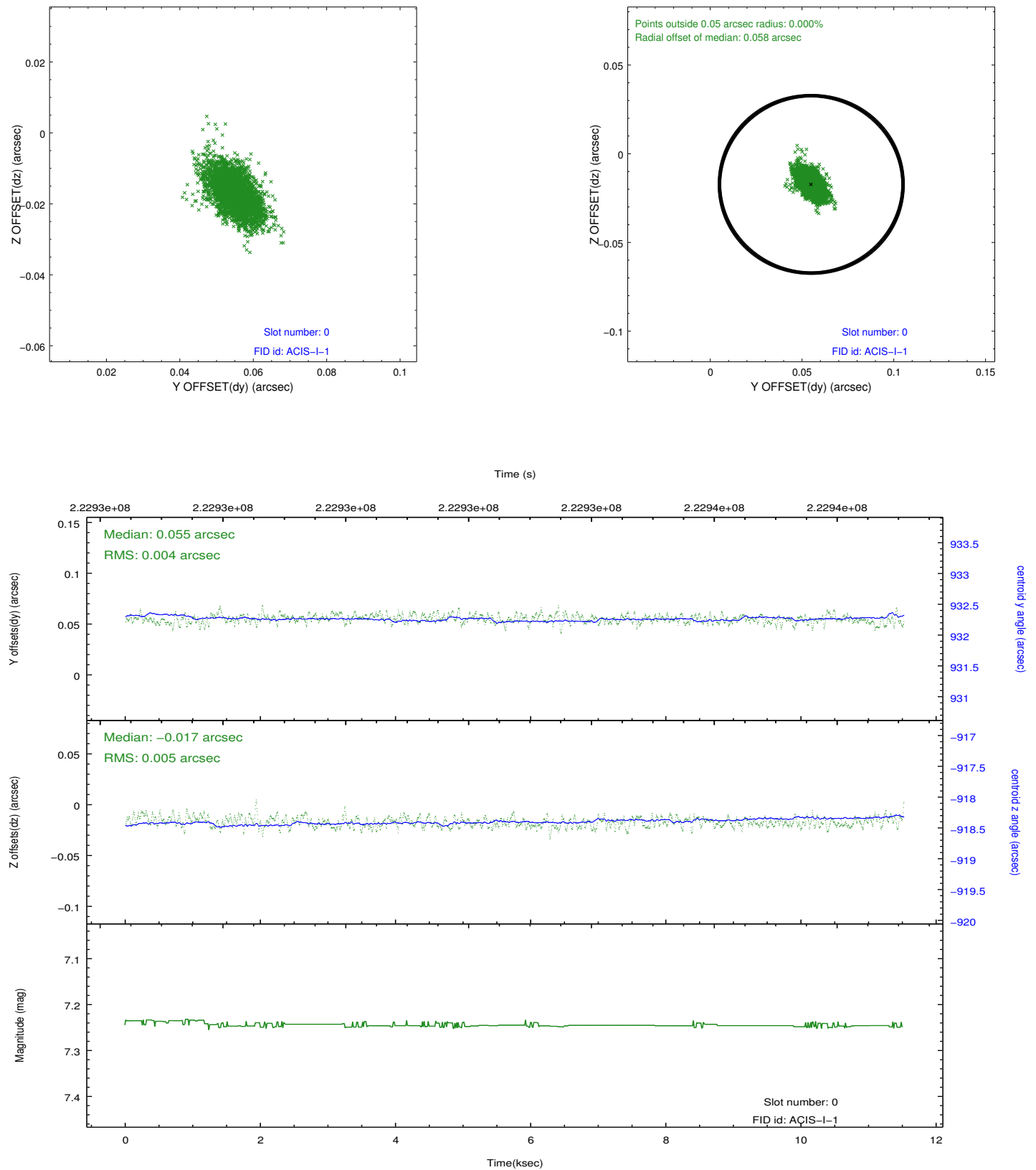


## 2.4.5 Slot 7

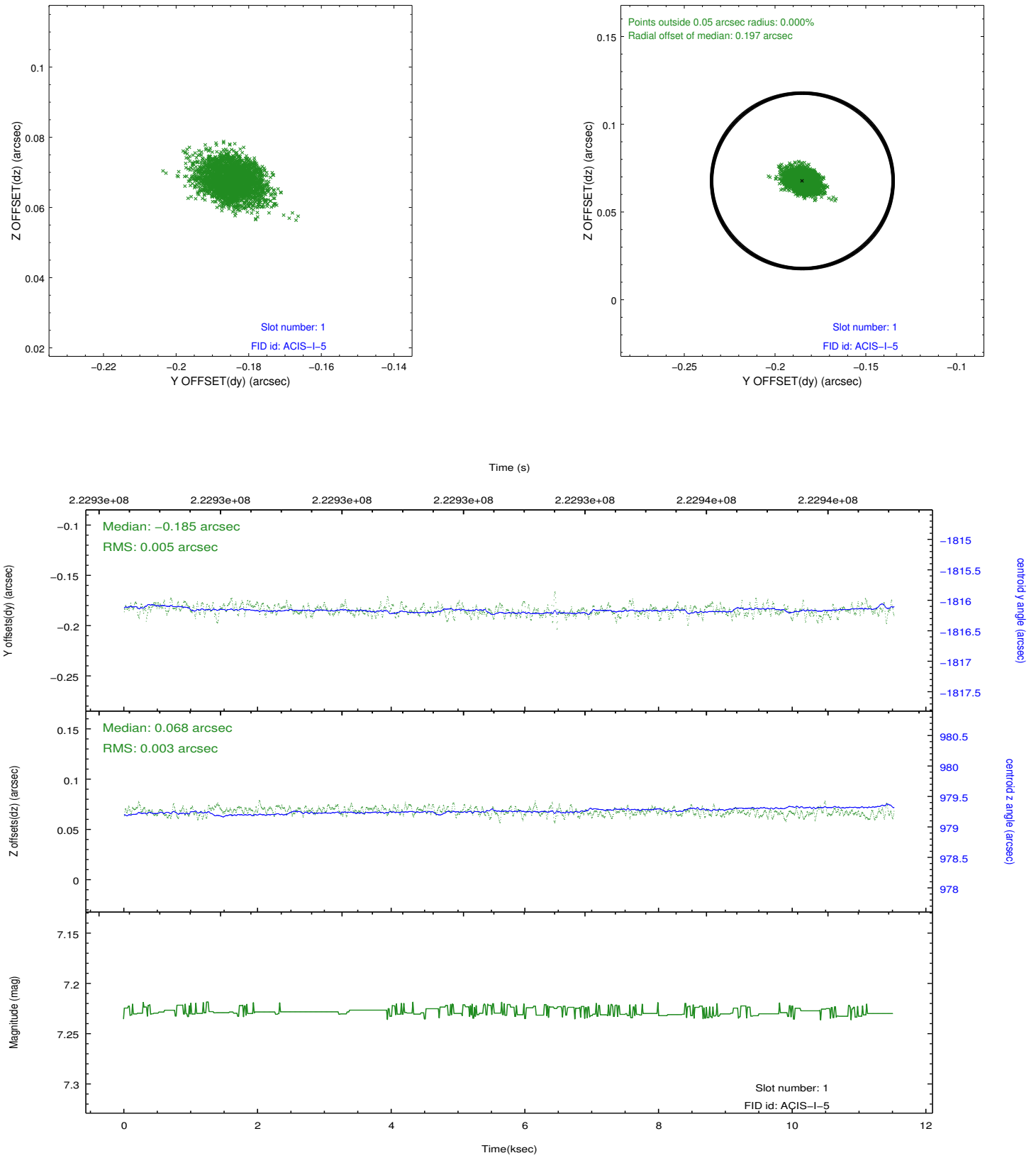


## 2.5 FID Slots

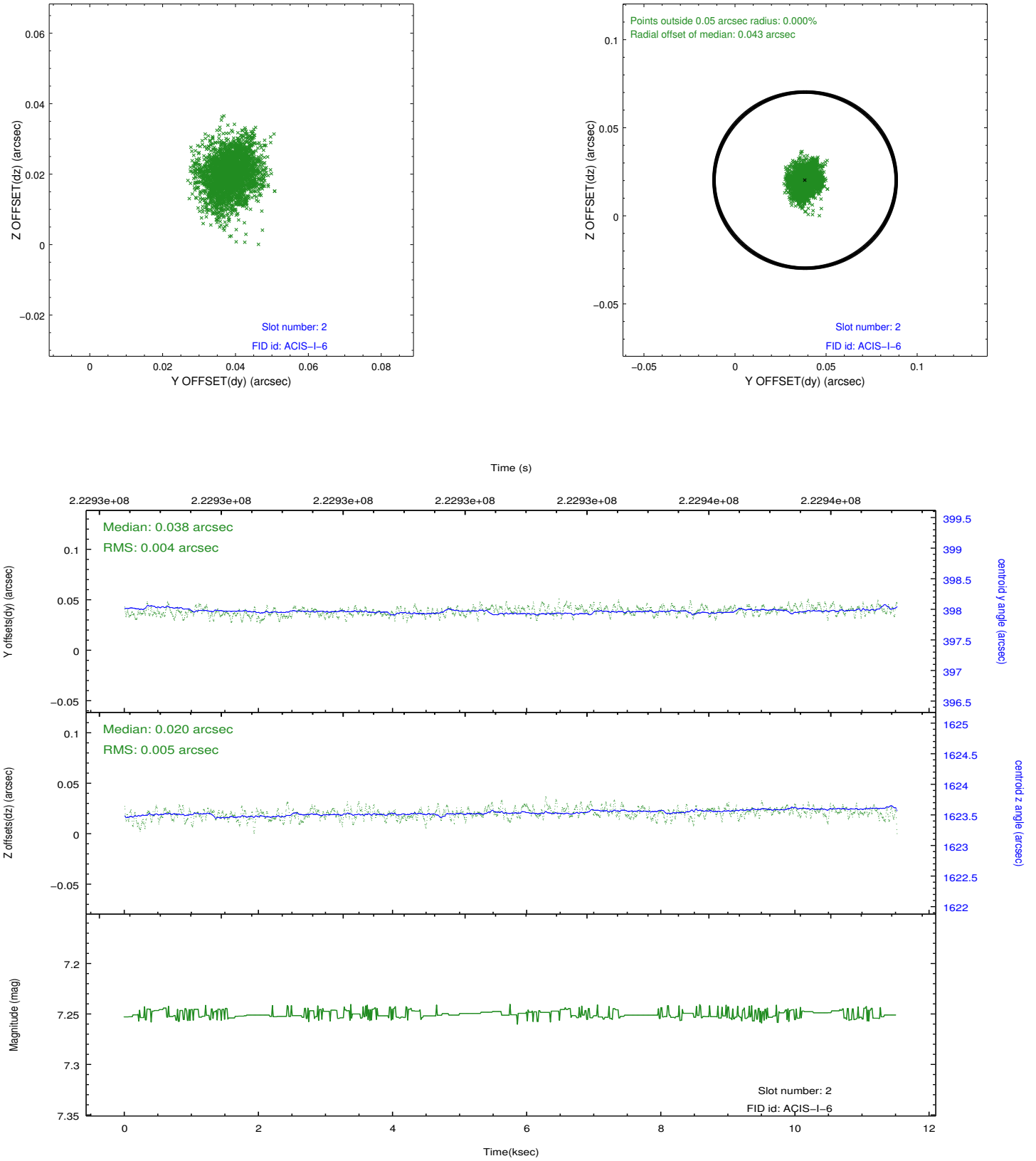
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



## A Summary

### A.1 Status

|                            |               |
|----------------------------|---------------|
| V&V Scientist              | Beth Sundheim |
| V&V Date (YYYY-MM-DD)      | 2013.01.08    |
| V&V Edition                | 1             |
| V&V Disposition and Status | OK            |
| V&V Charge Time            | 11.03285      |

### A.2 Comments