

# V&V Reference Report

## L2 ASCDS Version : 10.7

Observation 21251 - L2 Version 1  
Chandra X-Ray Center

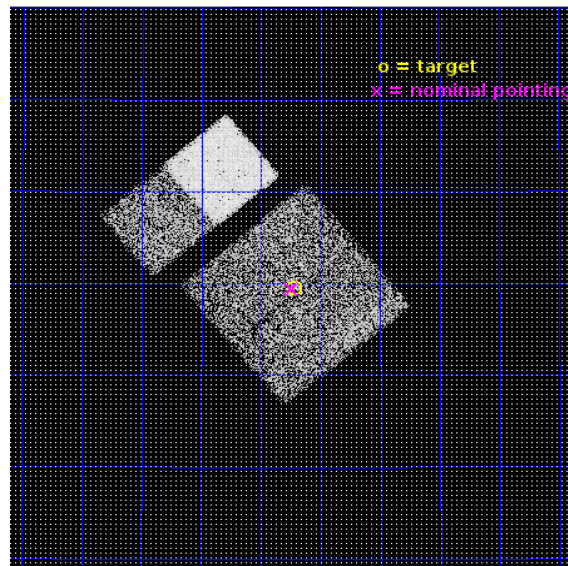
L2 Processing Date : Nov 30 2018

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# 1 Front

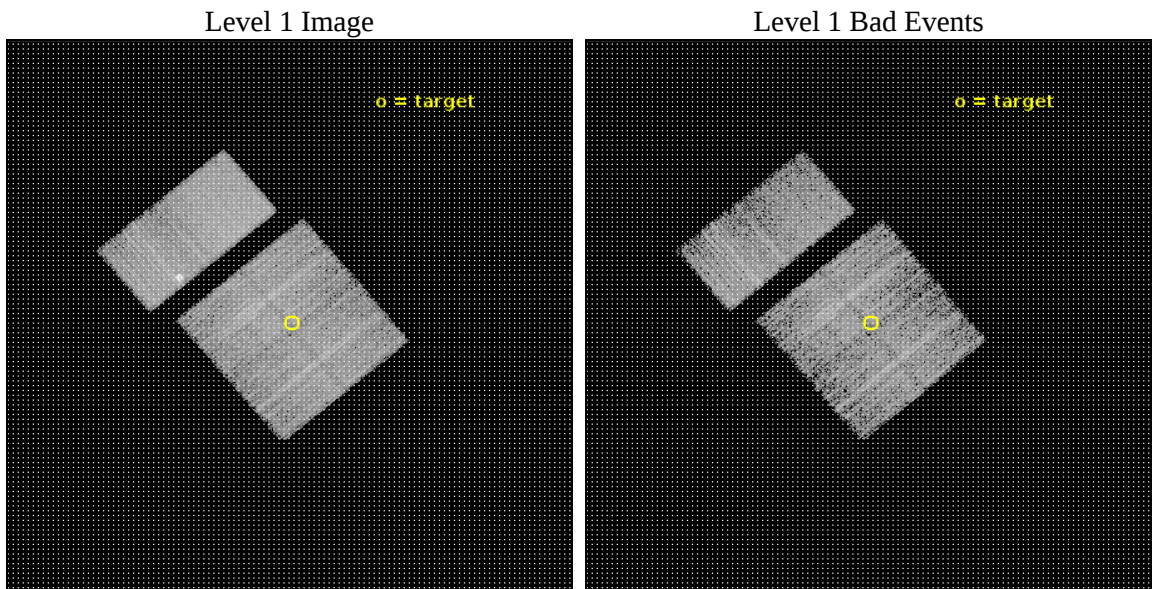
|          |                                                      |                                             |
|----------|------------------------------------------------------|---------------------------------------------|
| seq_num  | 402083                                               | Sequence number                             |
| obs_id   | 21251                                                | Observation id                              |
| title    | The Nature of INTEGRAL Sources in the Galactic Plane | Proposal titl                               |
| observer | John Tomsick                                         | Principal investigator                      |
| object   | IGR J19577+3339                                      | Source name                                 |
| dtcycle  | 0                                                    | &#160                                       |
| cycle    | P                                                    | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 299.429167                                           | Observer's specified target RA [deg]        |
| dec_targ | 33.658                                               | Observer's specified target Dec [deg]       |
| ra_nom   | 299.43617141321                                      | Nominal RA [deg]                            |
| dec_nom  | 33.657272287817                                      | Nominal Dec [deg]                           |
| roll_nom | 320.20489198368                                      | Nominal Roll [deg]                          |
| revision | 1                                                    | Processing version of data                  |
| ontime   | 4958.5729357004                                      | Sum of GTIs [s]                             |
| livetime | 4895.7844994944                                      | Livetime [s]                                |
| ontime0  | 4958.4498157501                                      | Sum of GTIs [s]                             |
| ontime1  | 4958.4908556938                                      | Sum of GTIs [s]                             |
| ontime2  | 4958.5318957567                                      | Sum of GTIs [s]                             |
| ontime3  | 4958.5729357004                                      | Sum of GTIs [s]                             |
| ontime6  | 4958.655015707                                       | Sum of GTIs [s]                             |
| ontime7  | 4958.6139757633                                      | Sum of GTIs [s]                             |
| l2events | 38466                                                | Number of level 2 events                    |



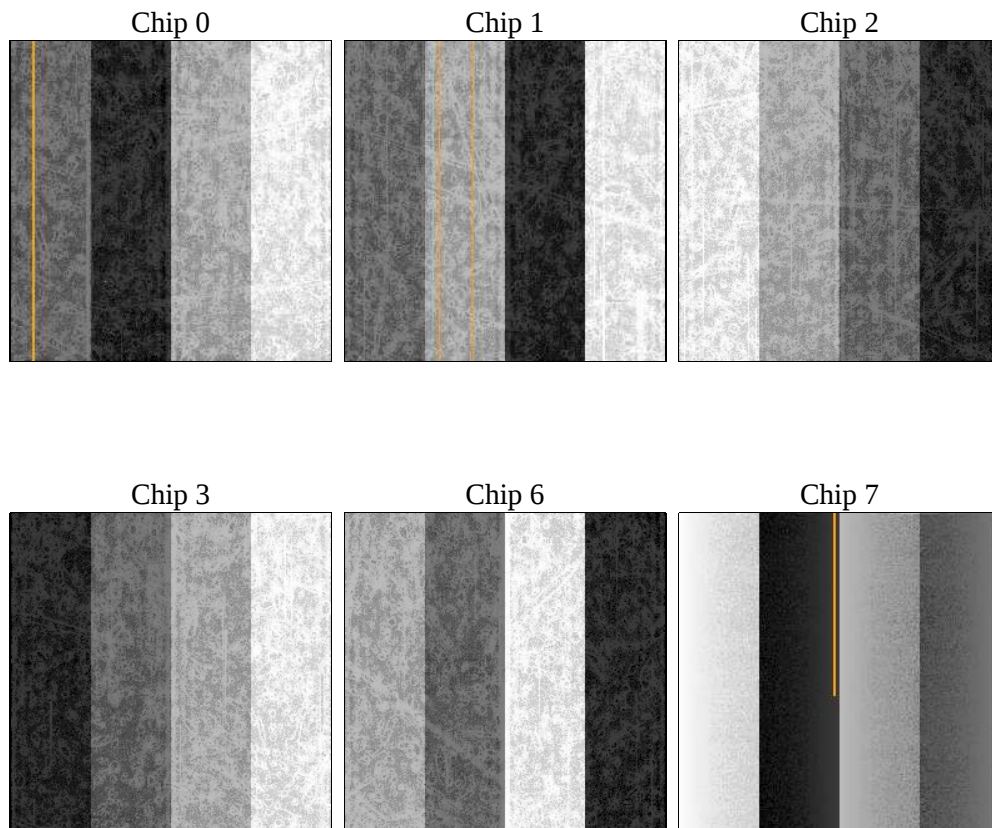
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 5000.000000     | [s] Scheduled observation exposure time |
| ascdsver | 10.7                | Processing system revision     | ontime         | 4958.5729357004 | Sum of GTIs [s]                         |
| caldsver | 4.8.0.1             | &#160                          | ontime0        | 4958.4498157501 | Sum of GTIs [s]                         |
| date     | 2018-11-30T17:48:04 | Date and time of file creation | ontime1        | 4958.4908556938 | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime2        | 4958.5318957567 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 4958.5729357004 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 4958.655015707  | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 4958.6139757633 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 235575          | Number of level 1 events                |

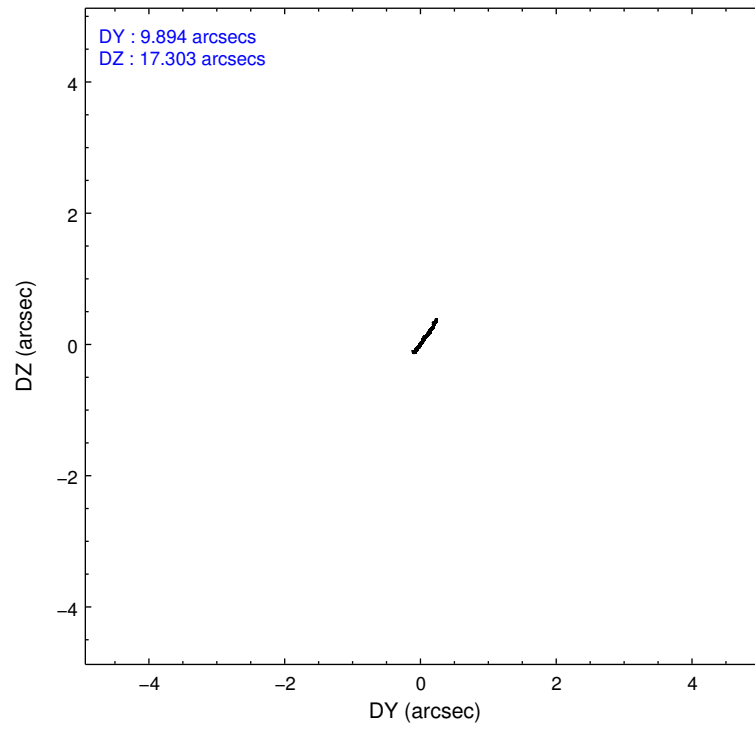
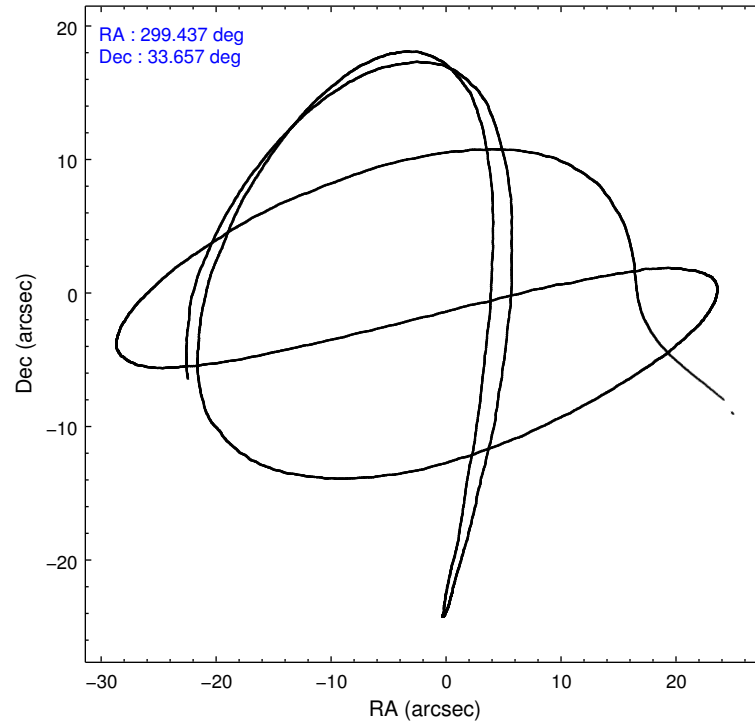
### 2.1.4 Events

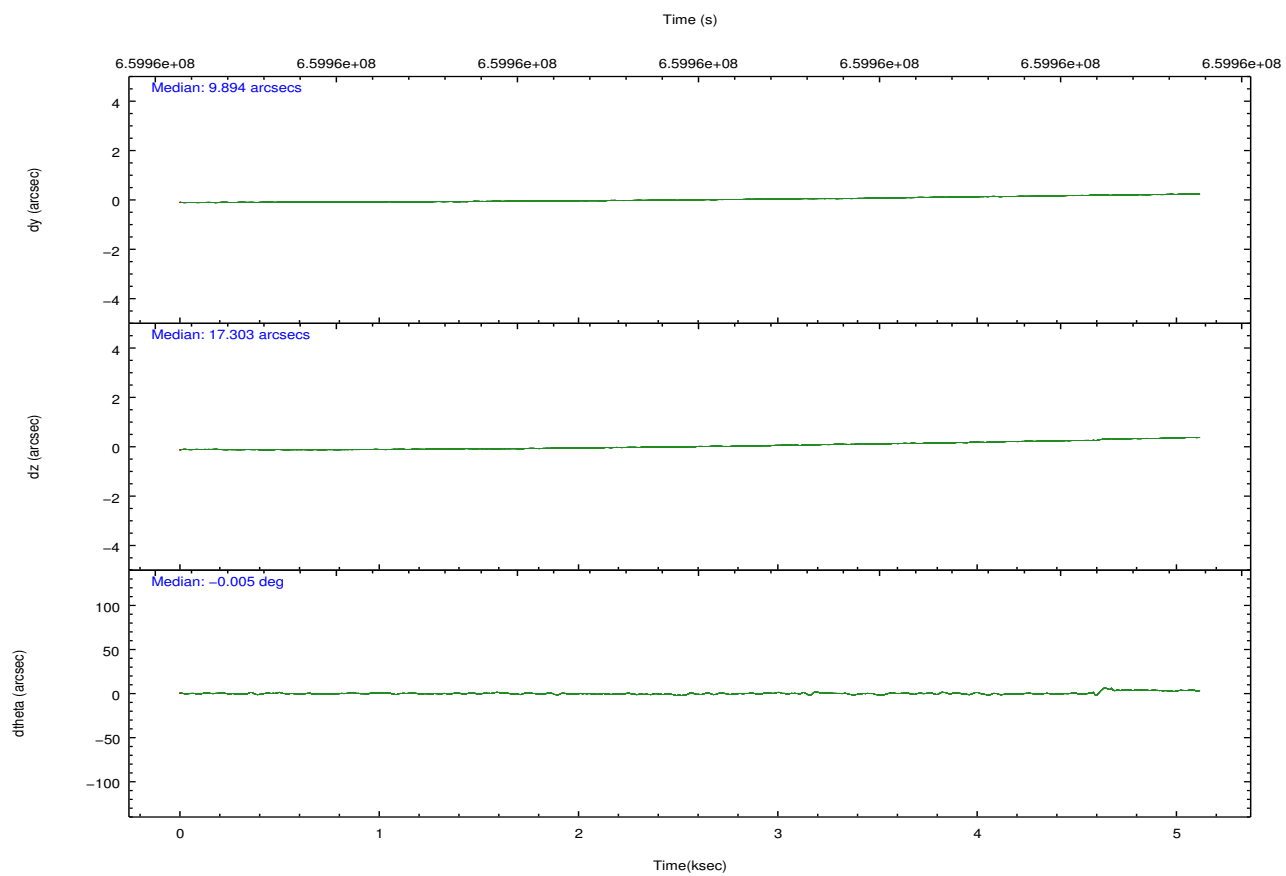
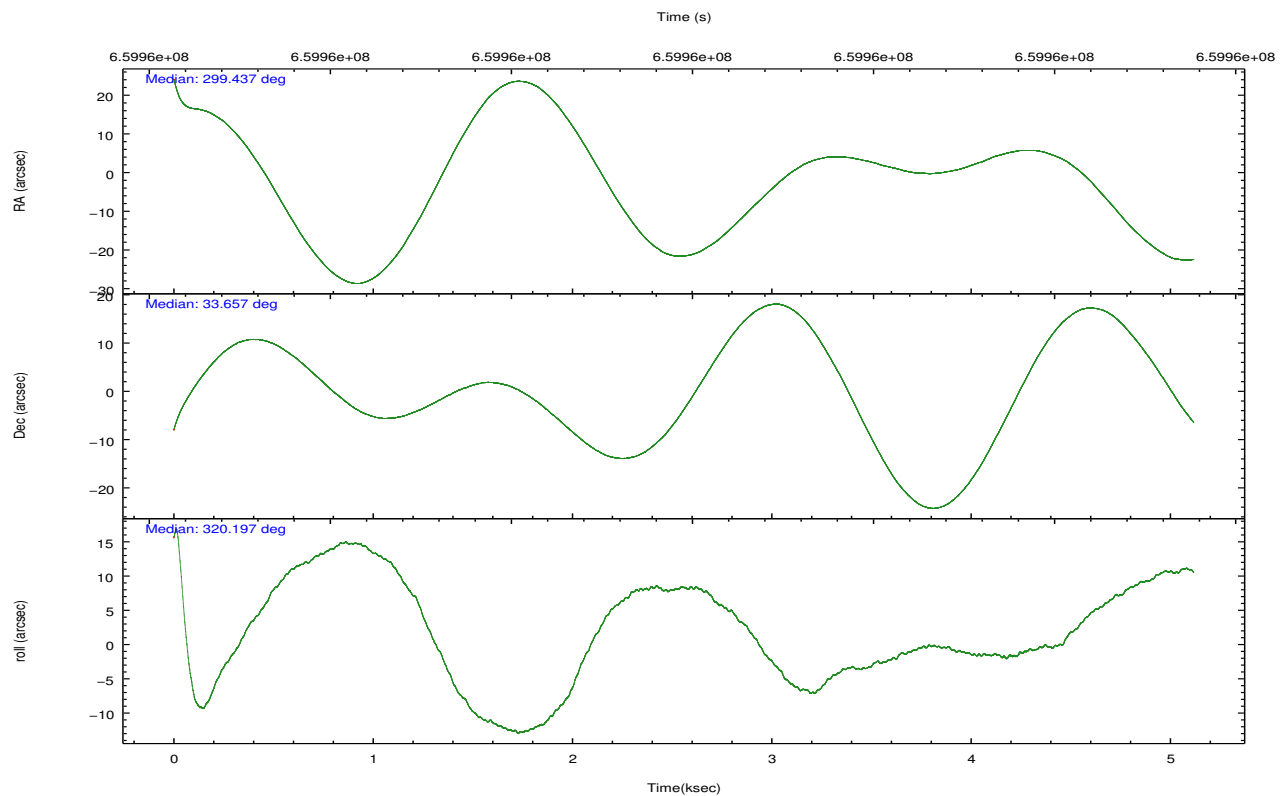
|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|-----------------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 35014 | 34504 | 37591 | 36371 | 43150 | 48945 | grade 0 events | 1502  | 1589  | 1531  | 1391  | 2786  | 1771  |
| rejected events | 30748 | 29860 | 33501 | 32517 | 35915 | 27759 |                | 4%    | 4%    | 4%    | 3%    | 6%    | 3%    |
| rejected %      | 87%   | 86%   | 89%   | 89%   | 83%   | 56%   | grade 1 events | 23    | 15    | 19    | 20    | 29    | 61    |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |       |       |       | grade 2 events | 1066  | 1185  | 932   | 851   | 2536  | 4543  |
|                 |       |       |       |       |       |       |                | 3%    | 3%    | 2%    | 2%    | 5%    | 9%    |
|                 |       |       |       |       |       |       | grade 3 events | 444   | 396   | 411   | 396   | 409   | 1657  |
|                 |       |       |       |       |       |       |                | 1%    | 1%    | 1%    | 1%    | 0%    | 3%    |
|                 |       |       |       |       |       |       | grade 4 events | 400   | 470   | 416   | 386   | 436   | 1611  |
|                 |       |       |       |       |       |       |                | 1%    | 1%    | 1%    | 1%    | 1%    | 3%    |
|                 |       |       |       |       |       |       | grade 5 events | 1586  | 1632  | 1492  | 1760  | 1721  | 4865  |
|                 |       |       |       |       |       |       |                | 4%    | 4%    | 3%    | 4%    | 3%    | 9%    |
|                 |       |       |       |       |       |       | grade 6 events | 857   | 1004  | 805   | 832   | 1073  | 11614 |
|                 |       |       |       |       |       |       |                | 2%    | 2%    | 2%    | 2%    | 2%    | 23%   |
|                 |       |       |       |       |       |       | grade 7 events | 29136 | 28213 | 31985 | 30735 | 34160 | 22823 |
|                 |       |       |       |       |       |       |                | 83%   | 81%   | 85%   | 84%   | 79%   | 46%   |

## 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                         | VFAINT              | VFAINT                | CCD I0 on                             | Y         | Y       |
| Observation mode                  | POINTING            | POINTING              | CCD I1 on                             | Y         | Y       |
| [deg] Pointing RA                 | 299.403583          | 299.4361714132147     | CCD I2 on                             | Y         | Y       |
| [deg] Pointing Dec                | 33.661425           | 33.65727228781736     | CCD I3 on                             | Y         | Y       |
| [deg] Pointing Roll               | 320.014179          | 320.2048919836843     | CCD S0 on                             | N         | N       |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272   | CCD S1 on                             | N         | N       |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334  | CCD S2 on                             | O1        | Y       |
| [mm] SIM translation stage pos    | -233.592463         | -233.5874344608287    | CCD S3 on                             | O2        | Y       |
| [mm] SIM translation stage offset | 0                   | -0.005018542100998502 | CCD S4 on                             | N         | N       |
| [s] Observation start time (MET)  | 659955484.184000    | 659954345.29916       | CCD S5 on                             | N         | N       |
| Observation start date            | 2018-11-30T08:56:55 | 2018-11-30T08:39:05   | Number of optional ACIS chips dropped | 0         | 0       |
| [s] Observation end time (MET)    | 659960484.184000    | 659961381.41207       | On-chip summing requested             | N         | N       |
| Observation end date              | 2018-11-30T10:20:15 | 2018-11-30T10:36:21   | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                 | Alternating exposures requested       | N         | N       |
|                                   |                     |                       | [s] Primary exposure time             | 0.000000  | 3.2     |

## 2.3 Aspect



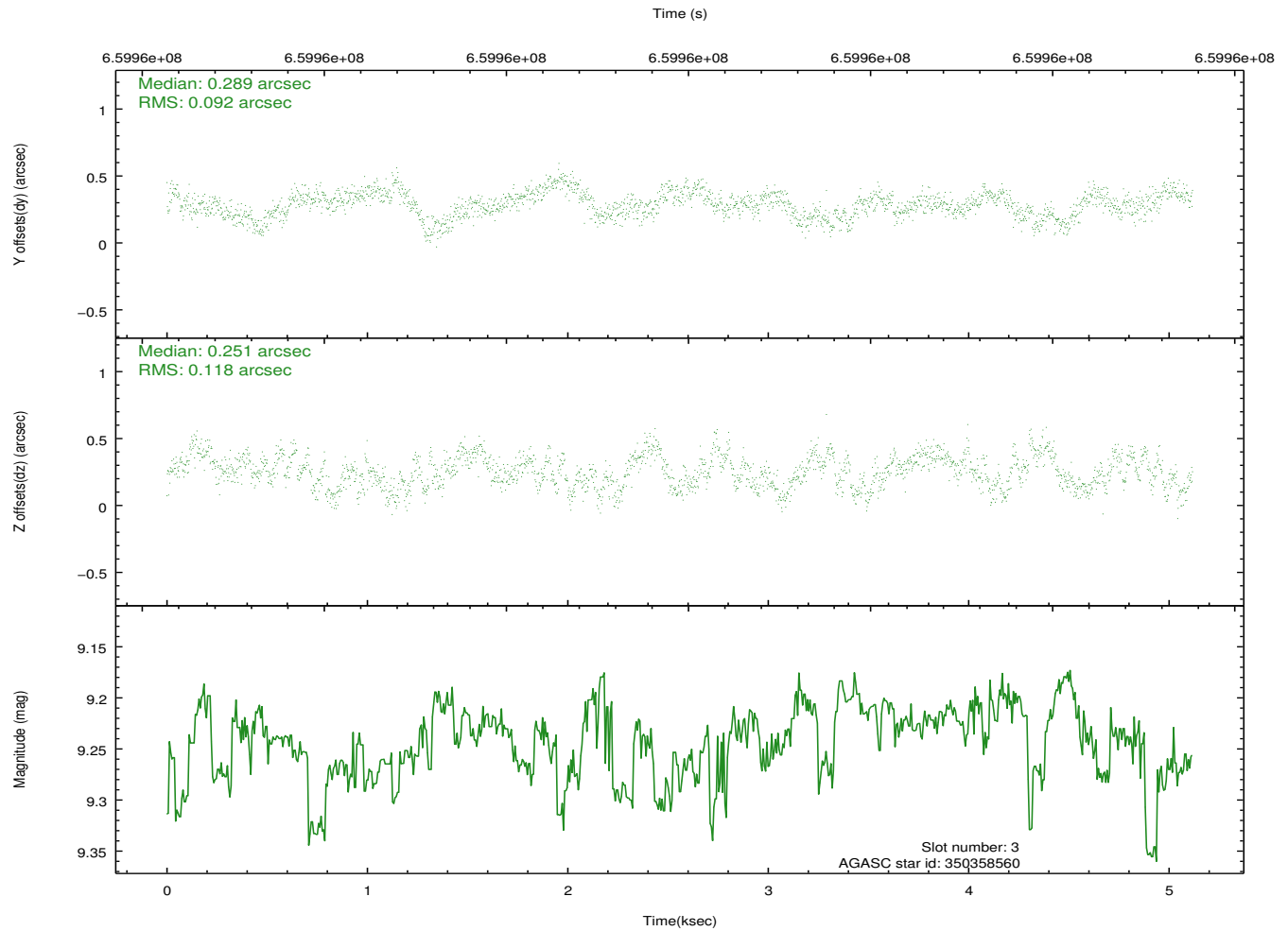
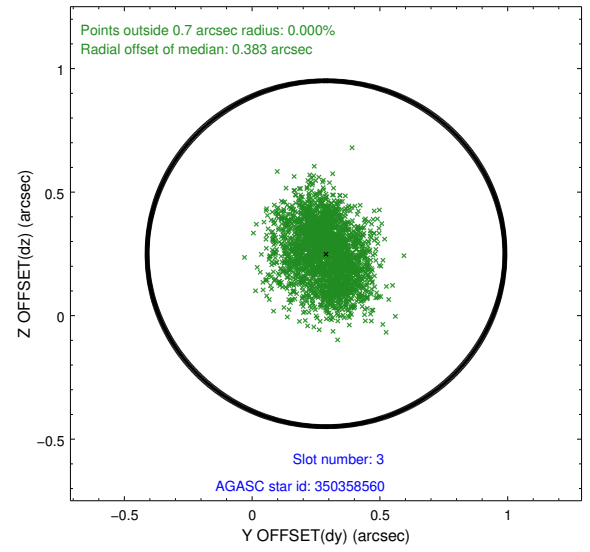
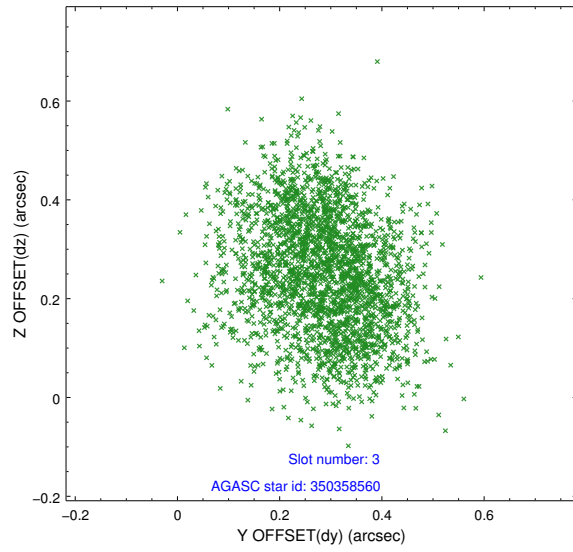


# Slot Statistics

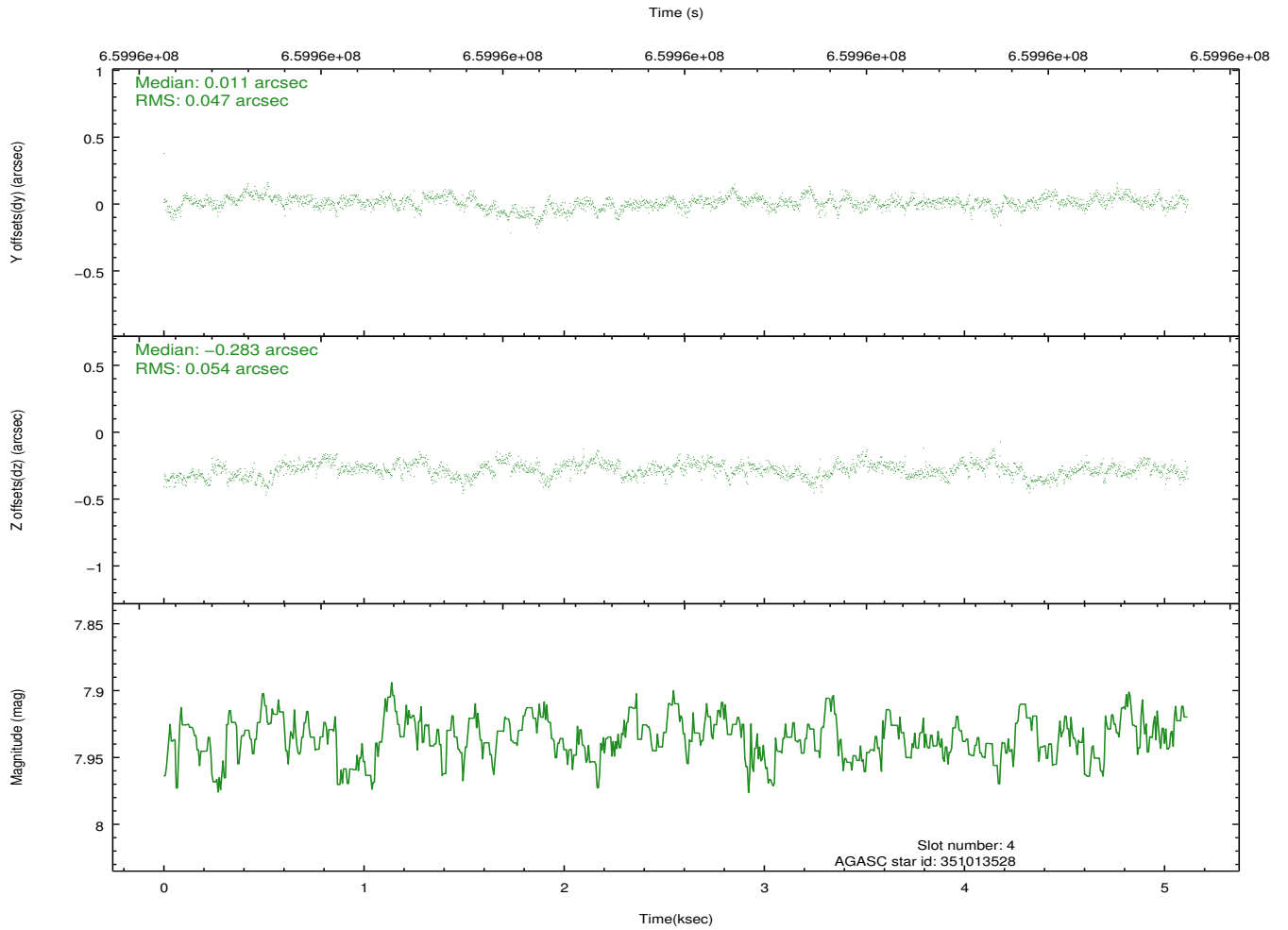
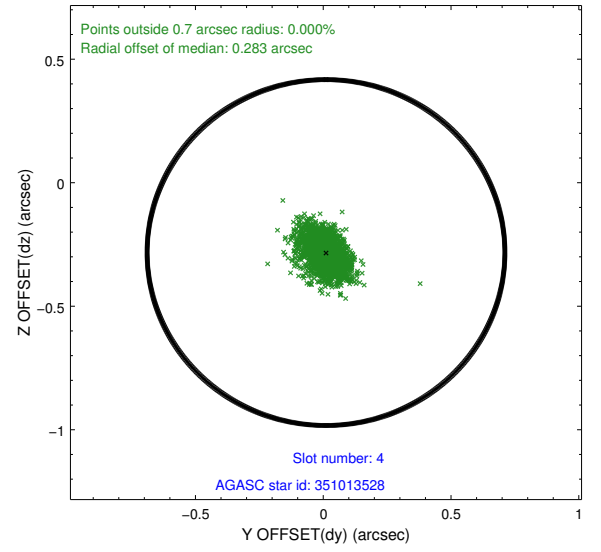
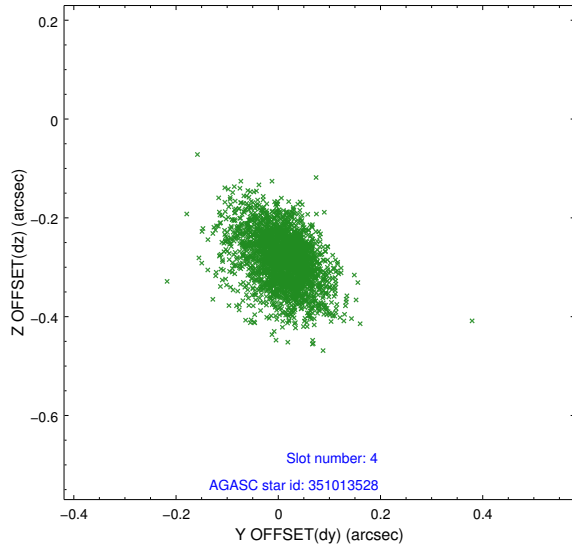
| pt | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea   |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|-------|
| 0  | FID    |      | ACIS-I-2  | 7.08 | 1249  | 1.000    | -0.367 | -0.158 | 0.013 | 0.039 | 0.000000   | 0.000000  | -764.82  | -847  |
| 1  | FID    |      | ACIS-I-4  | 7.14 | 1249  | 1.000    | 0.680  | 0.230  | 0.008 | 0.018 | 0.000000   | 0.000000  | 2149.65  | 1058  |
| 2  | FID    |      | ACIS-I-5  | 7.20 | 1249  | 1.000    | -0.413 | -0.003 | 0.011 | 0.029 | 0.000000   | 0.000000  | -1817.26 | 1057  |
| 3  | GUIDE  | used | 350358560 | 9.24 | 2495  | 1.000    | 0.289  | 0.251  | 0.163 | 0.248 | 298.717588 | 33.363378 | -892.72  | -2142 |
| 4  | GUIDE  | used | 351013528 | 7.94 | 2497  | 1.000    | 0.011  | -0.283 | 0.073 | 0.128 | 299.566064 | 34.059332 | -548.38  | 1407  |
| 5  | GUIDE  | used | 351021120 | 8.28 | 2496  | 1.000    | -0.171 | -0.470 | 0.112 | 0.187 | 299.697407 | 33.891251 | 141.23   | 1198  |
| 6  | GUIDE  | used | 350357320 | 8.67 | 2496  | 1.000    | 0.028  | 0.544  | 0.100 | 0.177 | 298.323948 | 33.544676 | -2220.75 | -2390 |
| 7  | GUIDE  | used | 351018080 | 8.32 | 2495  | 1.000    | -0.147 | -0.034 | 0.130 | 0.259 | 299.327312 | 34.581247 | -2300.69 | 2389  |

## 2.4 Star Slots

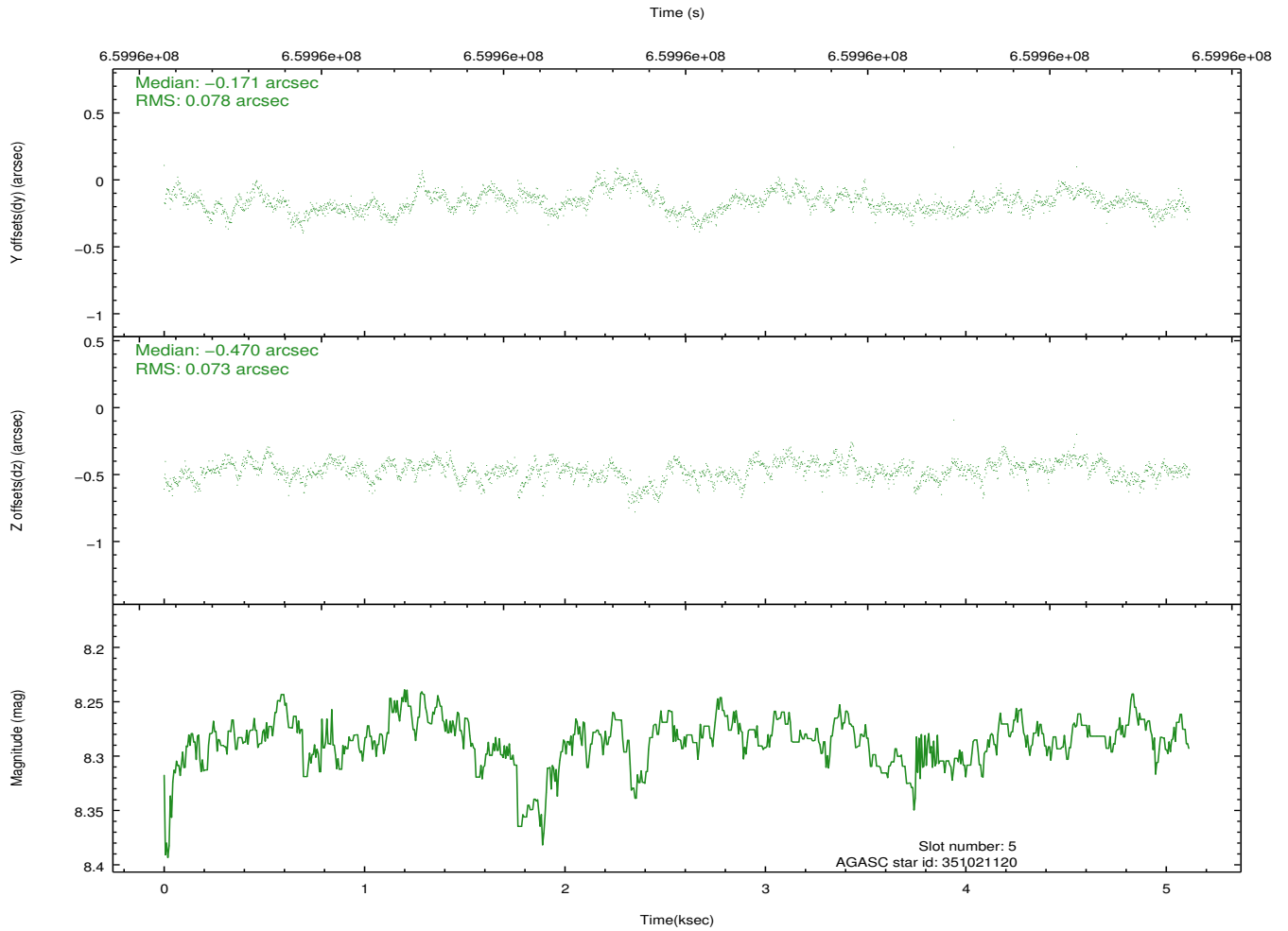
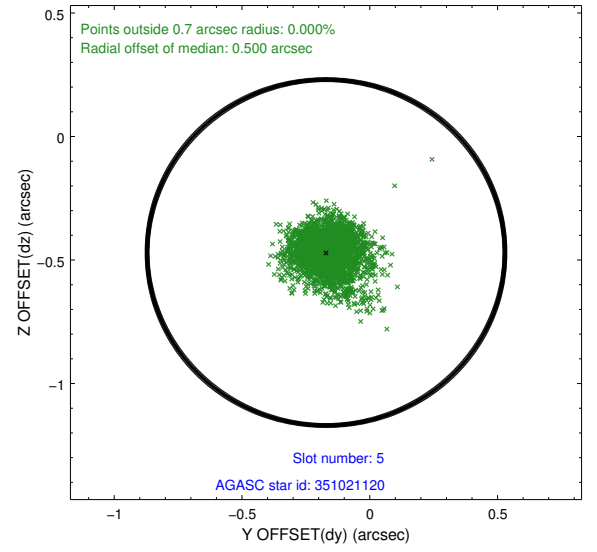
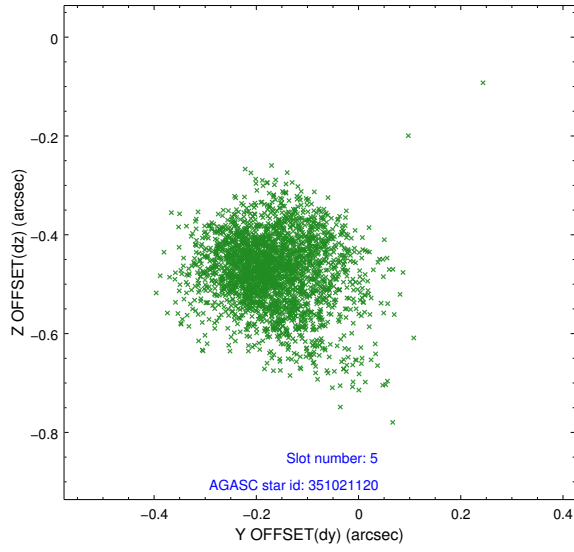
### 2.4.1 Slot 3



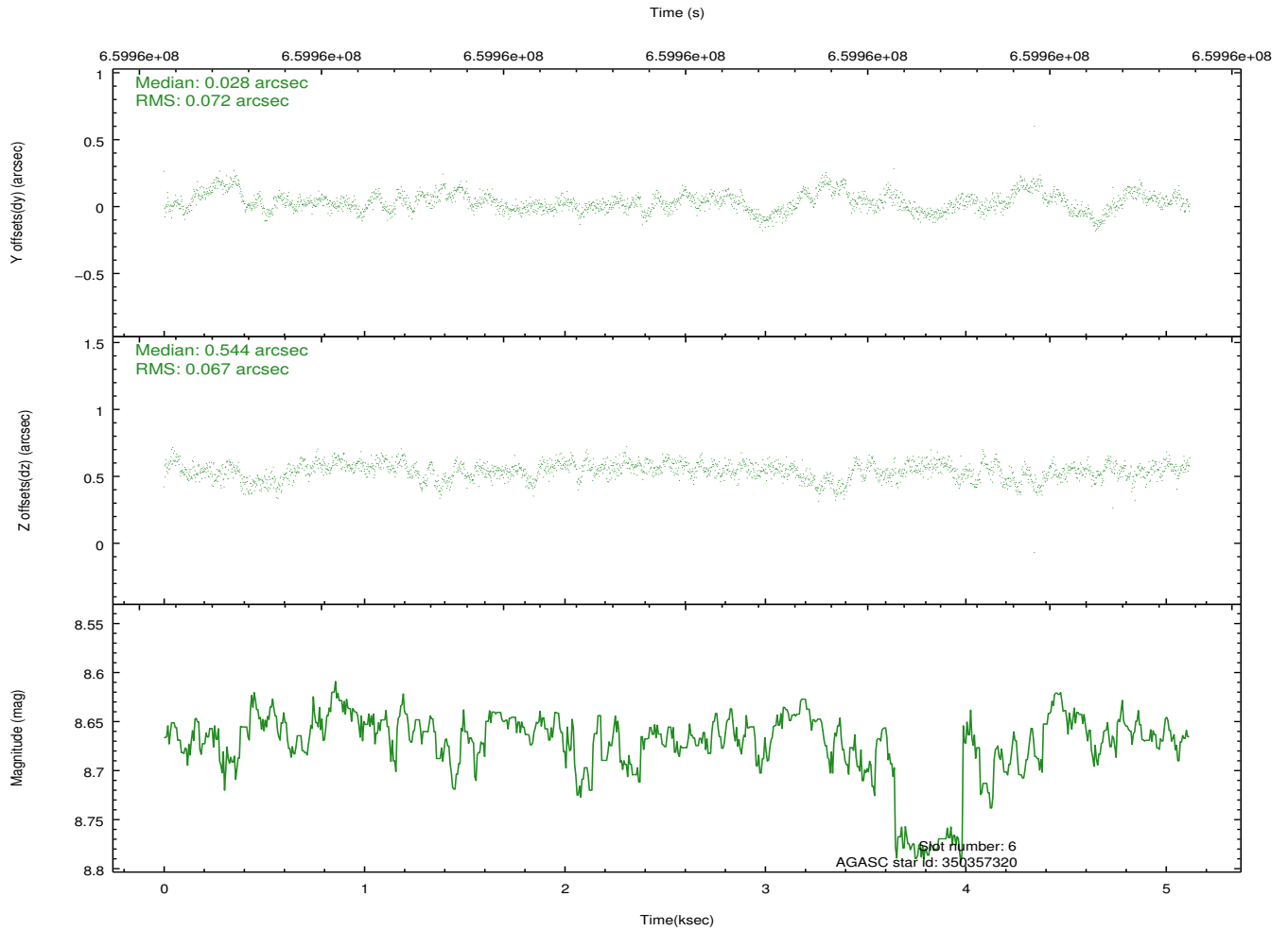
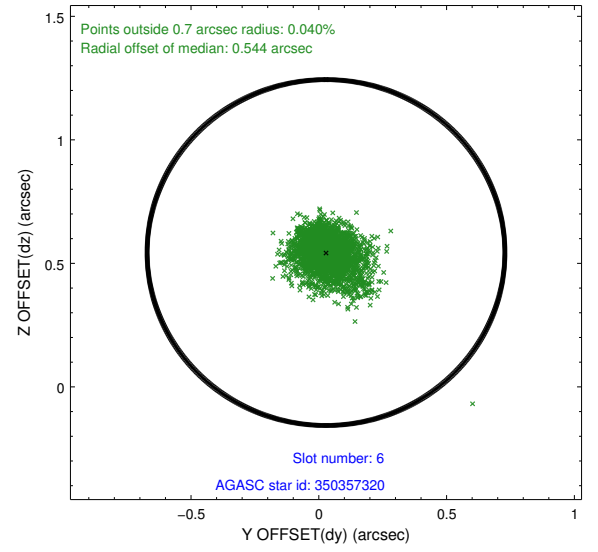
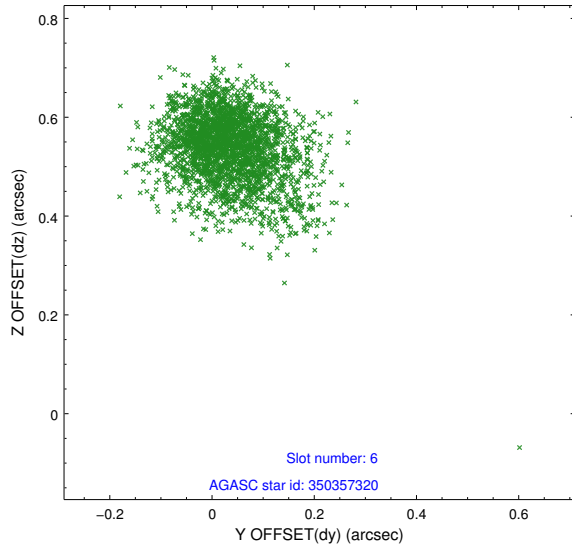
## 2.4.2 Slot 4



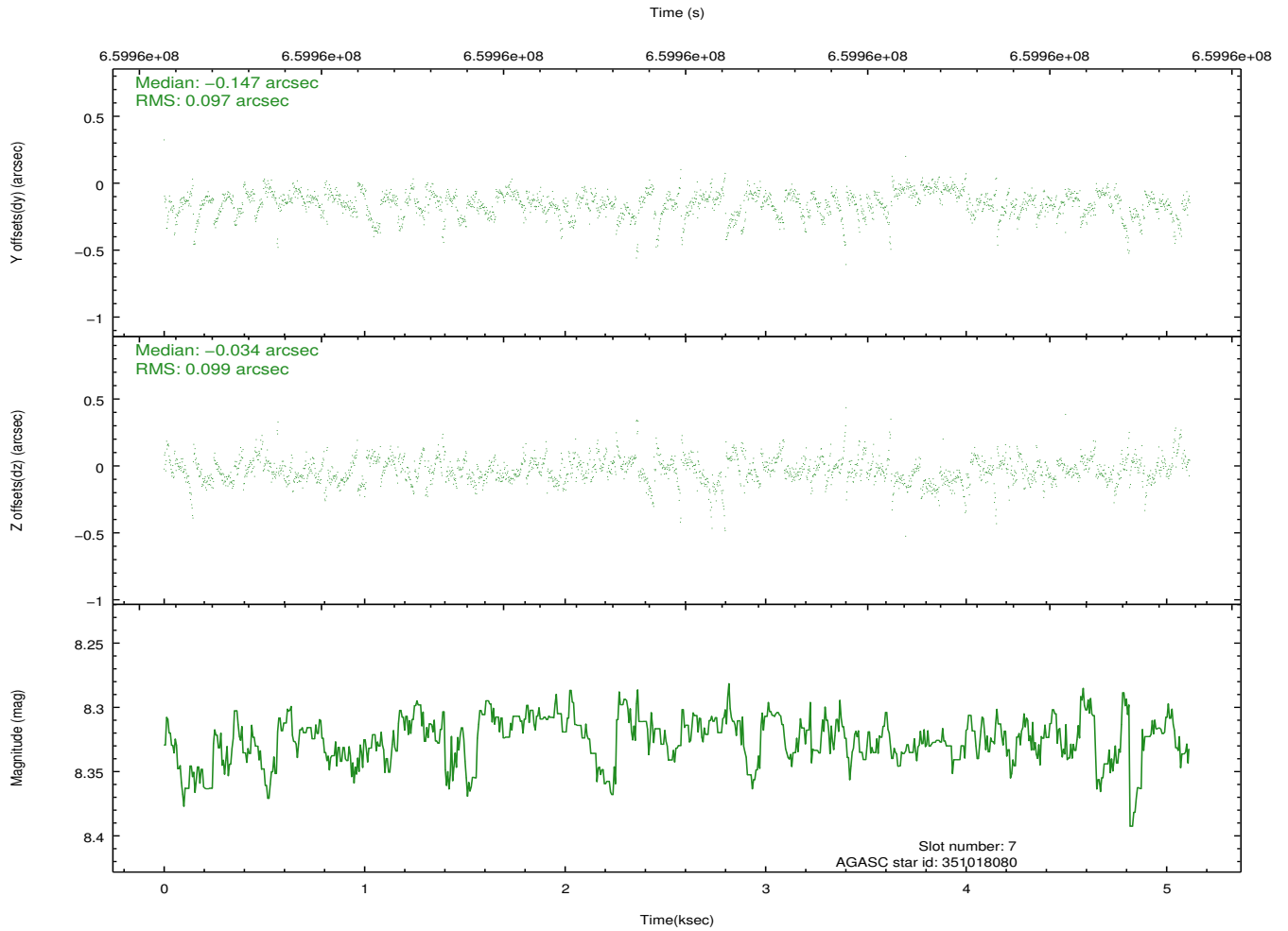
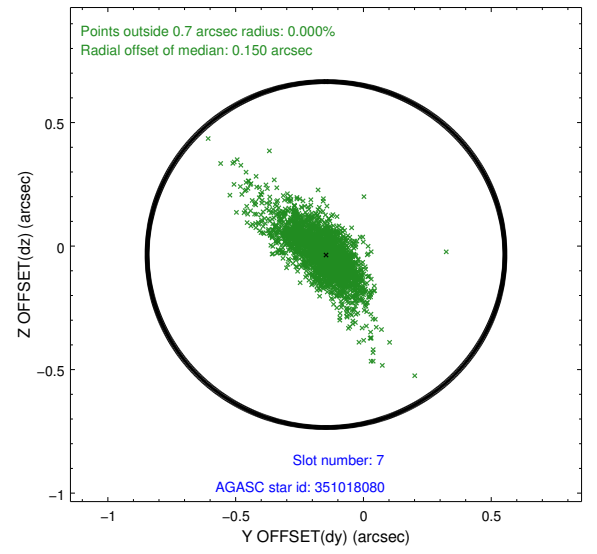
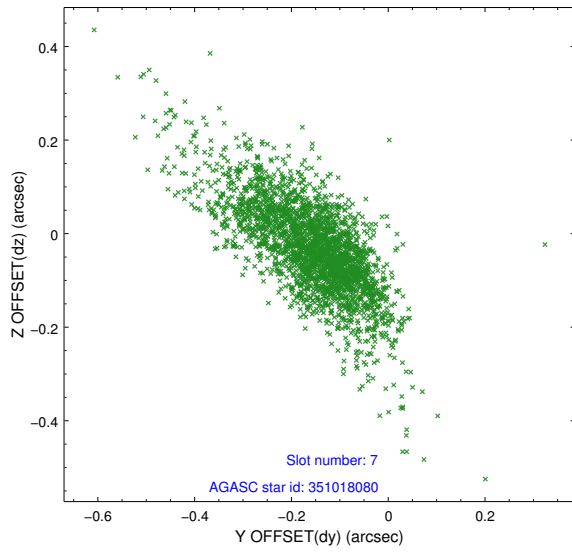
### 2.4.3 Slot 5



## 2.4.4 Slot 6

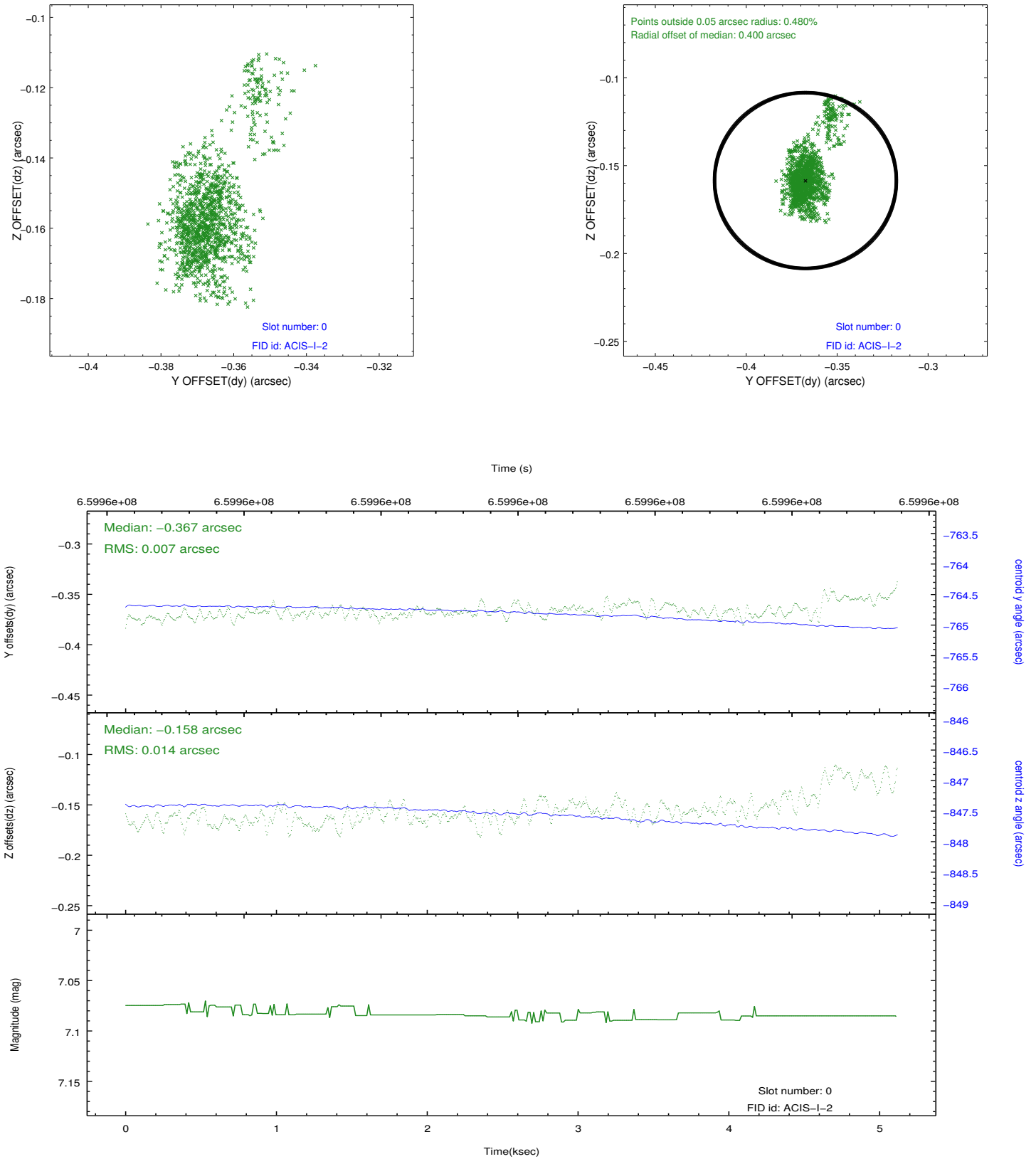


## 2.4.5 Slot 7

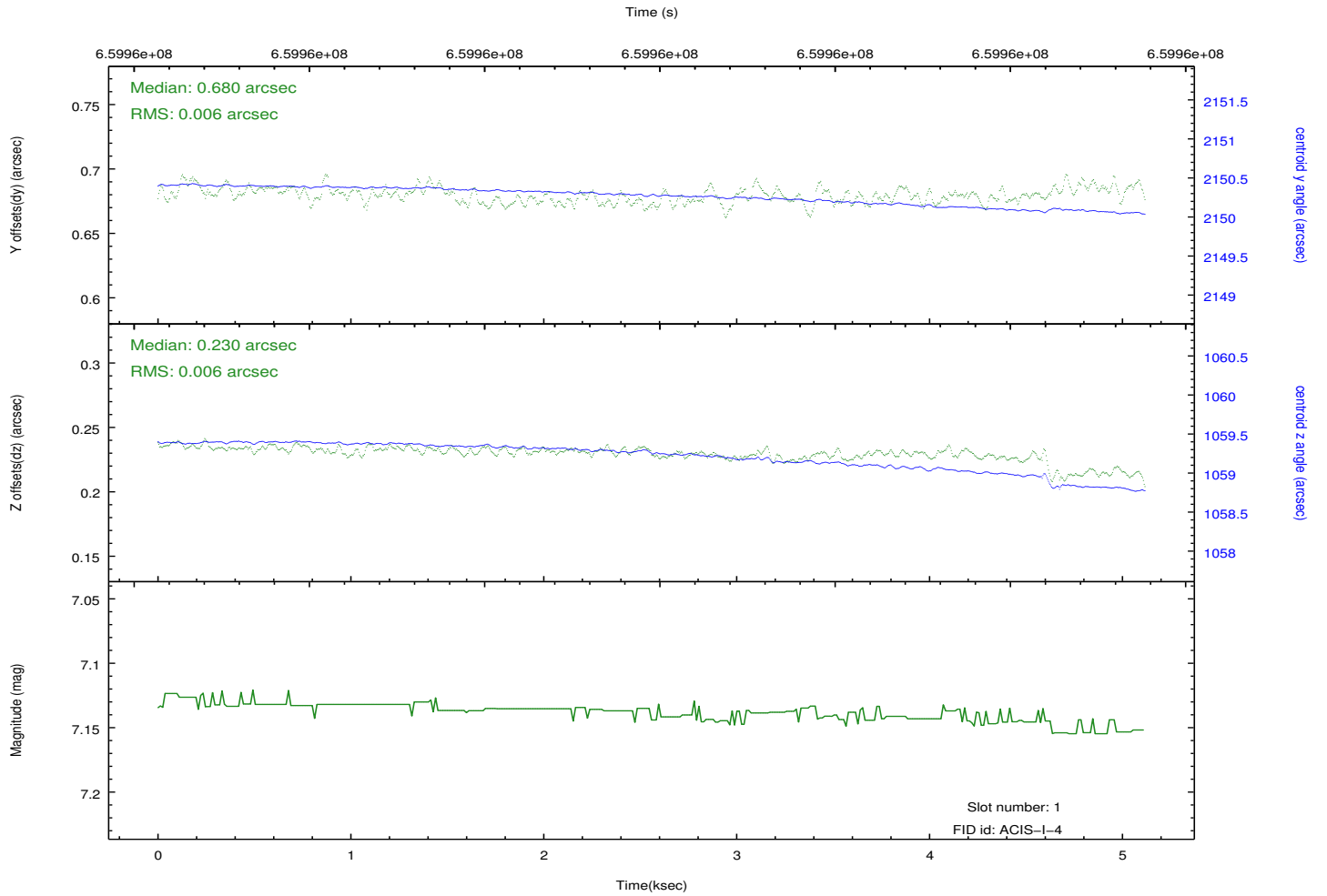
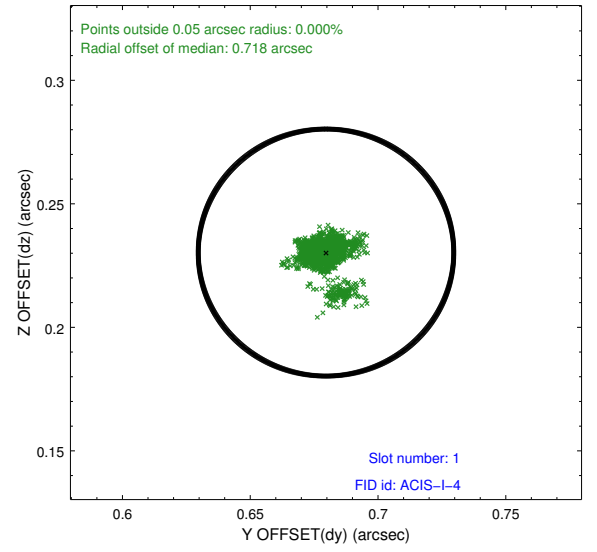
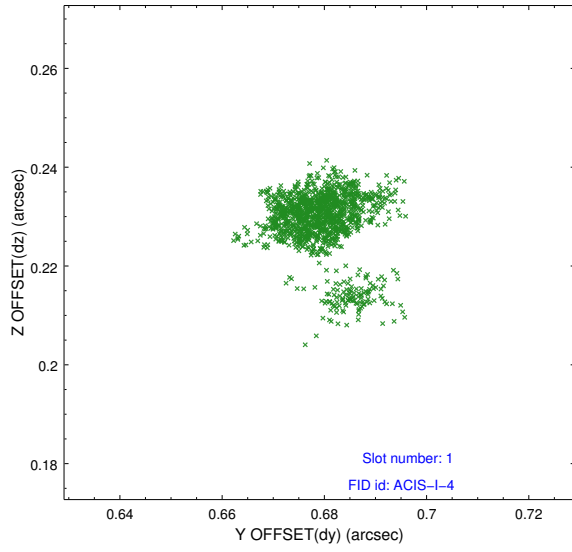


## 2.5 FID Slots

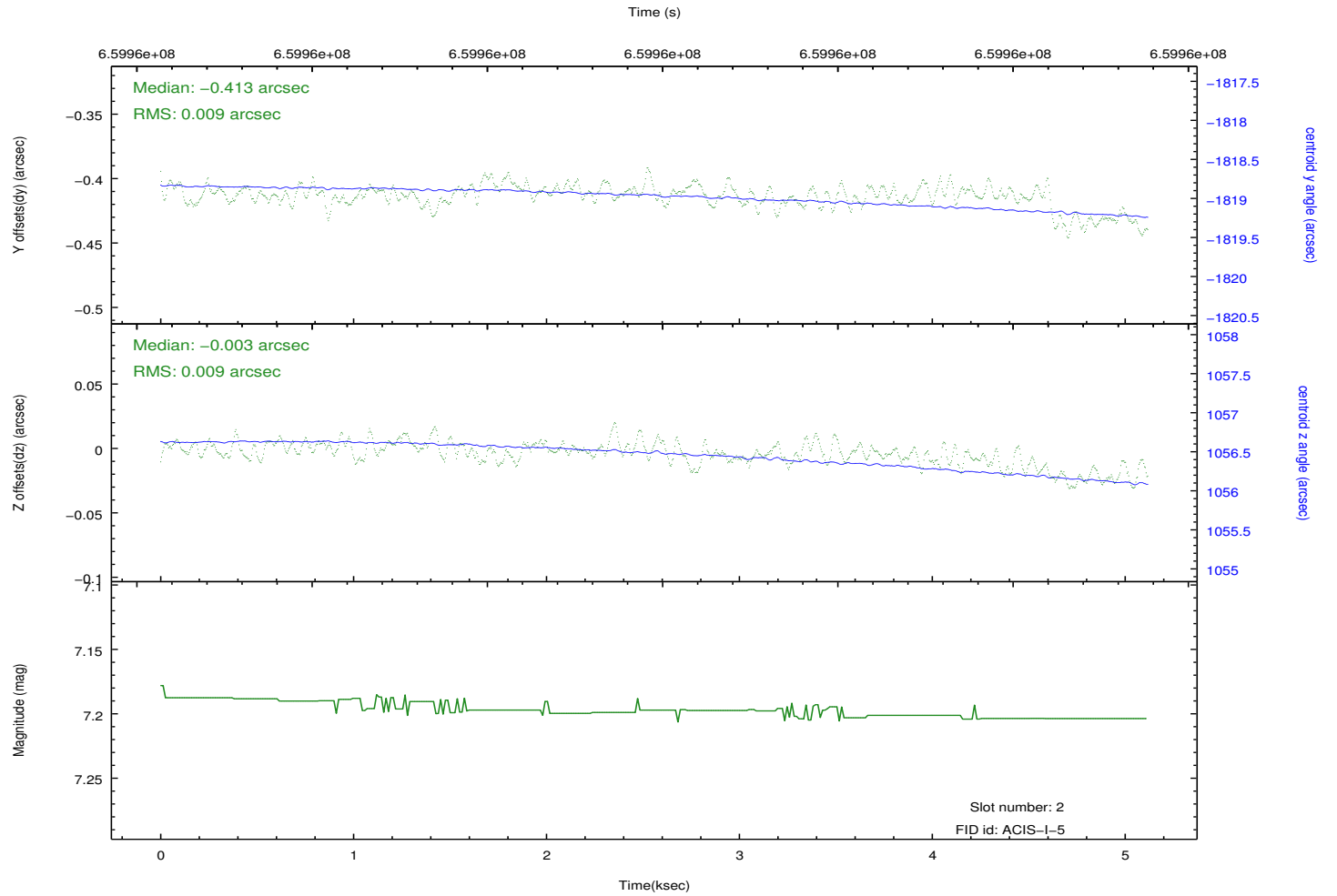
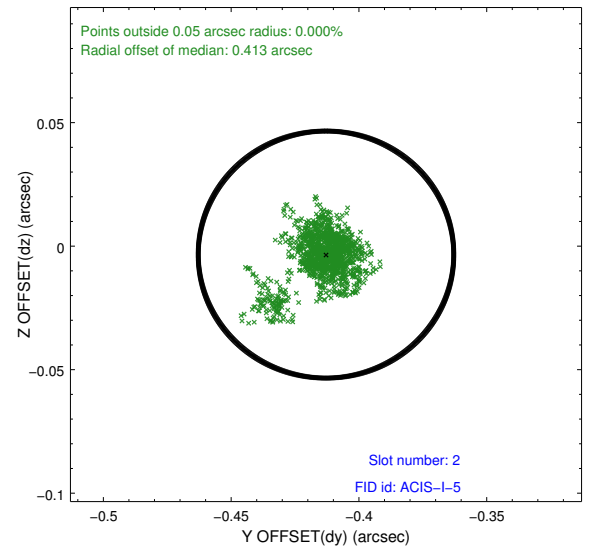
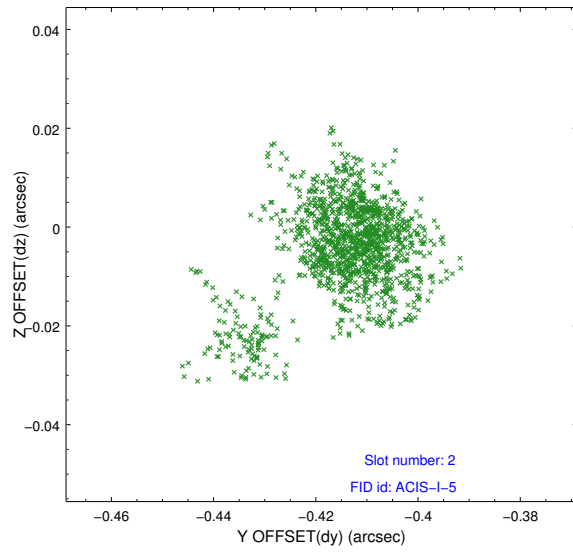
### 2.5.1 Slot 0



## 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)      | 2018.12.10      |
| V&V Edition                | 2               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 4.9585729357004 |

## A.2 Comments

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 (~20 eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. In this case, the bias map for CCD = 1 could not be improved because no suitable data at a compatible temperature and time range are available to use as replacement values. The bias map used in this processing is the original bias map telemetered with the observation.