

# V&V Reference Report

## L2 ASCDS Version : 10.5

Observation 18031 - L2 Version 1  
Chandra X-Ray Center

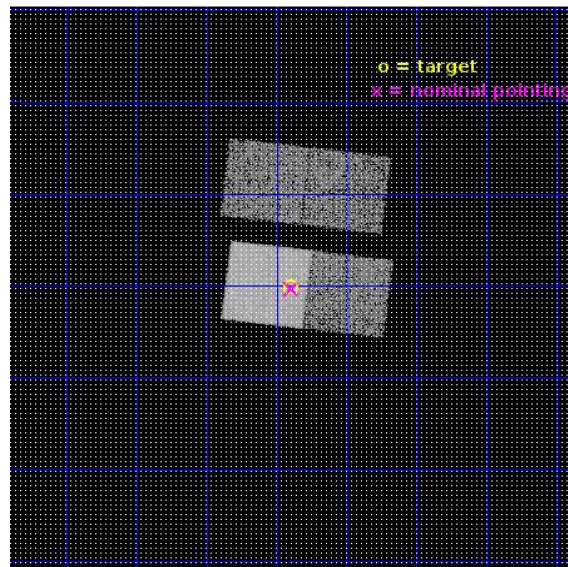
L2 Processing Date : Aug 19 2016

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# 1 Front

|          |                                                                   |                                             |
|----------|-------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 502647                                                            | Sequence number                             |
| obs_id   | 18031                                                             | Observation id                              |
| title    | Chandra Observations of the Remarkable Late-interacting SN 2001em | &#160                                       |
| observer | Dan Milisavljevic                                                 | Principal investigator                      |
| object   | SN2001em                                                          | Source name                                 |
| dtcycle  | 0                                                                 | &#160                                       |
| cycle    | P                                                                 | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 325.598333                                                        | Observer's specified target RA [deg]        |
| dec_targ | 12.497306                                                         | Observer's specified target Dec [deg]       |
| ra_nom   | 325.59826244408                                                   | Nominal RA [deg]                            |
| dec_nom  | 12.49480263518                                                    | Nominal Dec [deg]                           |
| roll_nom | 186.98638133656                                                   | Nominal Roll [deg]                          |
| revision | 1                                                                 | Processing version of data                  |
| ontime   | 15061.715304971                                                   | Sum of GTIs [s]                             |
| livetime | 14864.922906238                                                   | Livetime [s]                                |
| ontime2  | 15061.59218502                                                    | Sum of GTIs [s]                             |
| ontime3  | 15061.633224964                                                   | Sum of GTIs [s]                             |
| ontime6  | 15061.674265027                                                   | Sum of GTIs [s]                             |
| ontime7  | 15061.715304971                                                   | Sum of GTIs [s]                             |
| l2events | 79940                                                             | Number of level 2 events                    |

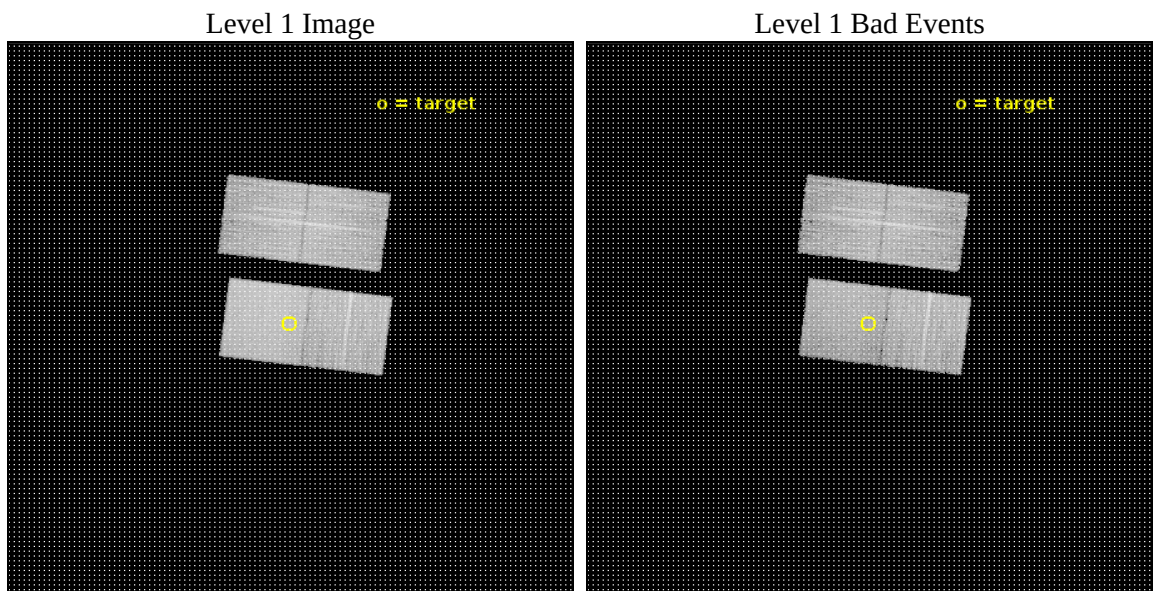




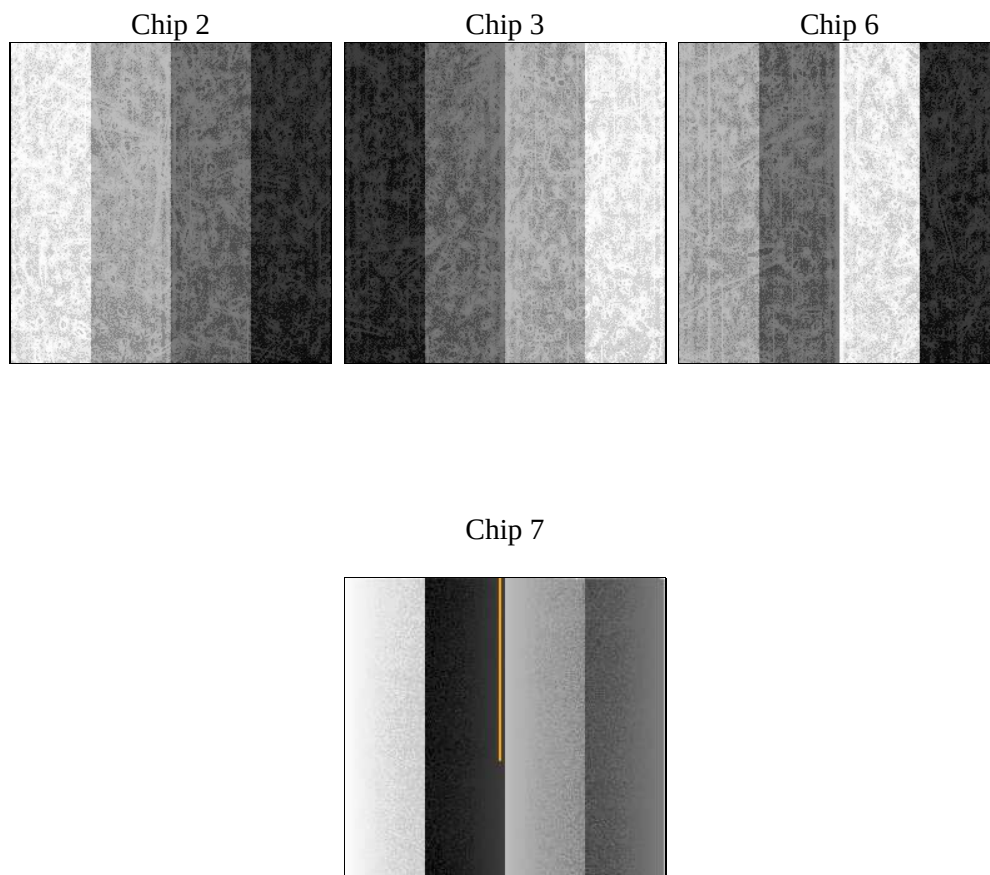
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 15000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.5                | Processing system revision     | ontime         | 15061.715304971 | Sum of GTIs [s]                         |
| caldsver | 4.7.2               | &#160                          | ontime2        | 15061.59218502  | Sum of GTIs [s]                         |
| date     | 2016-08-19T14:07:34 | Date and time of file creation | ontime3        | 15061.633224964 | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime6        | 15061.674265027 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 15061.715304971 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 418899          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 2 | ccd 3 | ccd 6  | ccd 7  |
|-----------------|-------|-------|--------|--------|
| level 1 events  | 97579 | 94068 | 101025 | 126227 |
| rejected events | 87546 | 84295 | 90069  | 71552  |
| rejected %      | 89%   | 89%   | 89%    | 56%    |

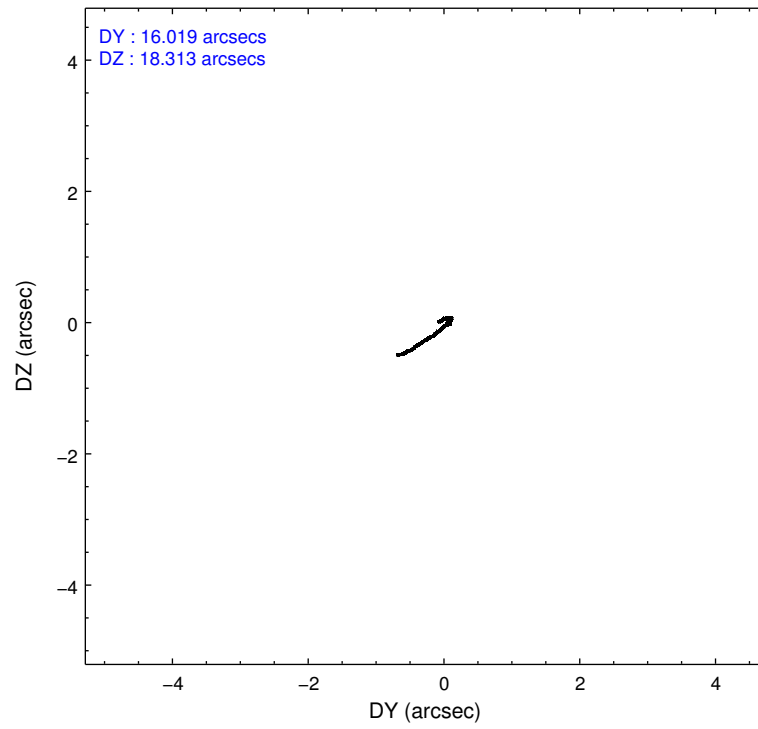
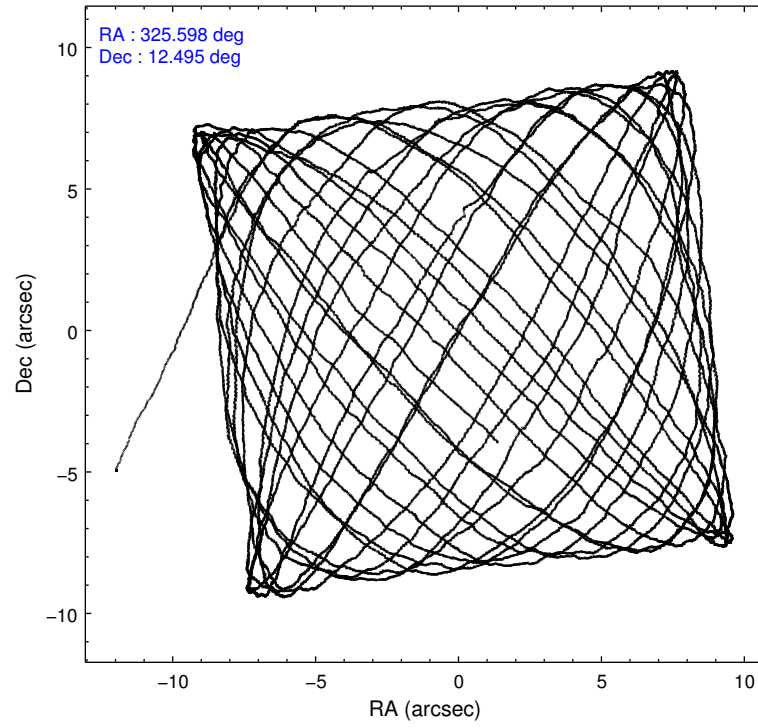
|                | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|----------------|-------|-------|-------|-------|
| grade 0 events | 3423  | 3362  | 3526  | 4614  |
|                | 3%    | 3%    | 3%    | 3%    |
| grade 1 events | 72    | 52    | 40    | 183   |
|                | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 2583  | 2174  | 2552  | 11735 |
|                | 2%    | 2%    | 2%    | 9%    |
| grade 3 events | 993   | 1062  | 1085  | 4264  |
|                | 1%    | 1%    | 1%    | 3%    |
| grade 4 events | 1028  | 1053  | 1104  | 4189  |
|                | 1%    | 1%    | 1%    | 3%    |
| grade 5 events | 3680  | 4688  | 4603  | 12545 |
|                | 3%    | 4%    | 4%    | 9%    |
| grade 6 events | 2007  | 2126  | 2693  | 29905 |
|                | 2%    | 2%    | 2%    | 23%   |
| grade 7 events | 83793 | 79551 | 85422 | 58792 |
|                | 85%   | 84%   | 84%   | 46%   |

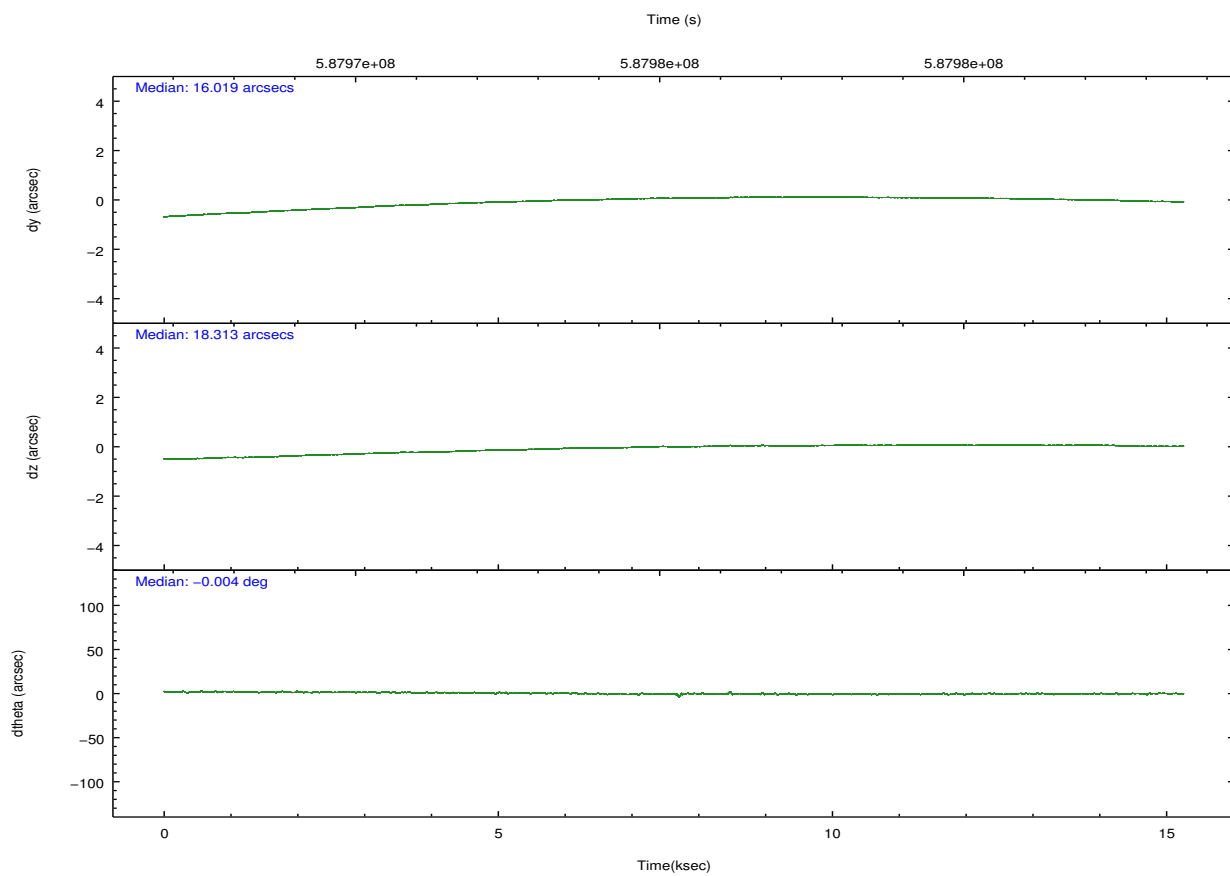
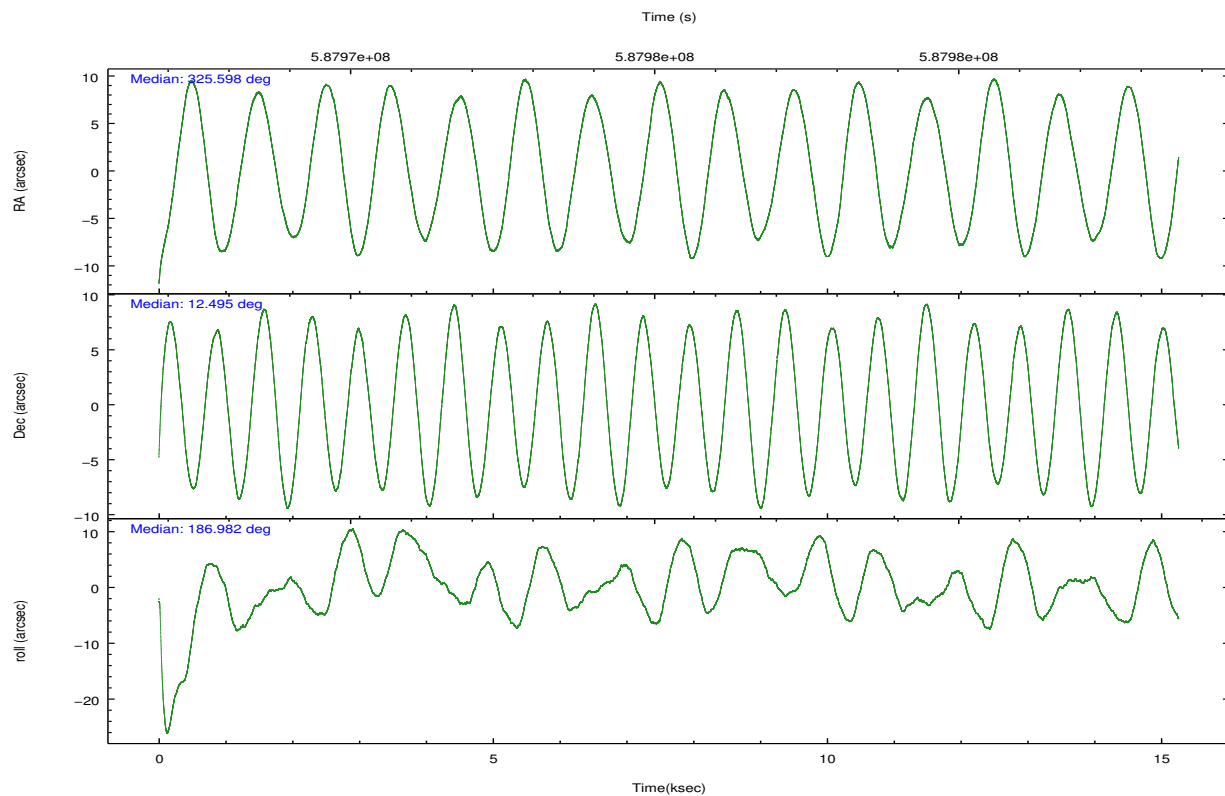
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-2367           | ACIS-2367            |
| Grating                           | NONE                | NONE                 |
| Data mode                         | VFAINT              | VFAINT               |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 325.620517          | 325.5982624440846    |
| [deg] Pointing Dec                | 12.511586           | 12.49480263517999    |
| [deg] Pointing Roll               | 186.824918          | 186.9863813365645    |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 |
| [mm] SIM translation stage pos    | -190.132523         | -190.1425803651734   |
| [mm] SIM translation stage offset | 0                   | 0.01005778216563158  |
| [s] Observation start time (MET)  | 587967871.184000    | 587966954.0791399    |
| Observation start date            | 2016-08-19T04:23:23 | 2016-08-19T04:09:14  |
| [s] Observation end time (MET)    | 587982871.184000    | 587983867.60511      |
| Observation end date              | 2016-08-19T08:33:23 | 2016-08-19T08:51:07  |
| 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                             | N         | N       |
| CCD I1 on                             | N         | N       |
| CCD I2 on                             | O1        | Y       |
| CCD I3 on                             | O2        | Y       |
| CCD S0 on                             | N         | N       |
| CCD S1 on                             | N         | N       |
| CCD S2 on                             | Y         | Y       |
| CCD S3 on                             | Y         | 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  | 3.1     |

## 2.3 Aspect



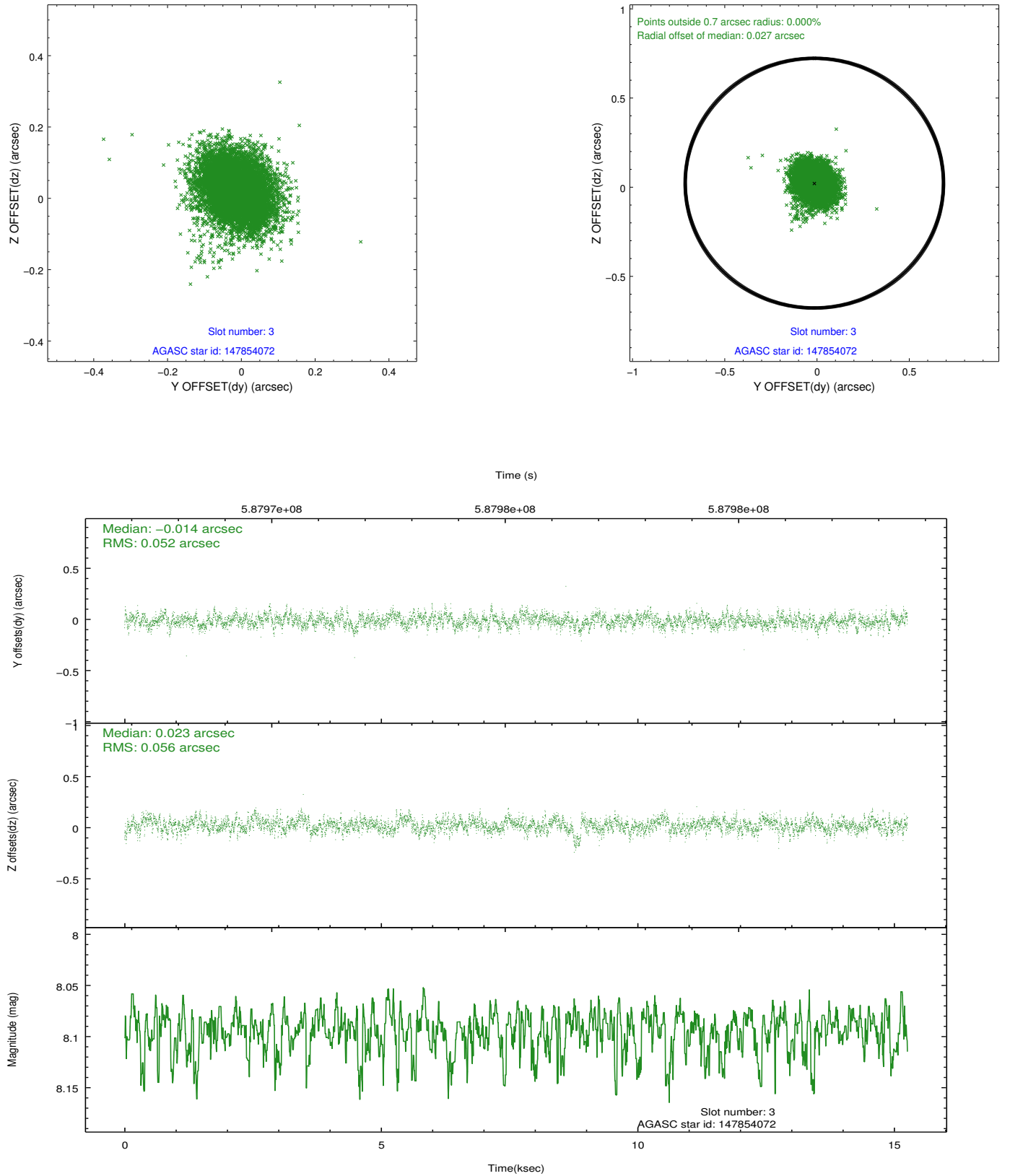


# Slot Statistics

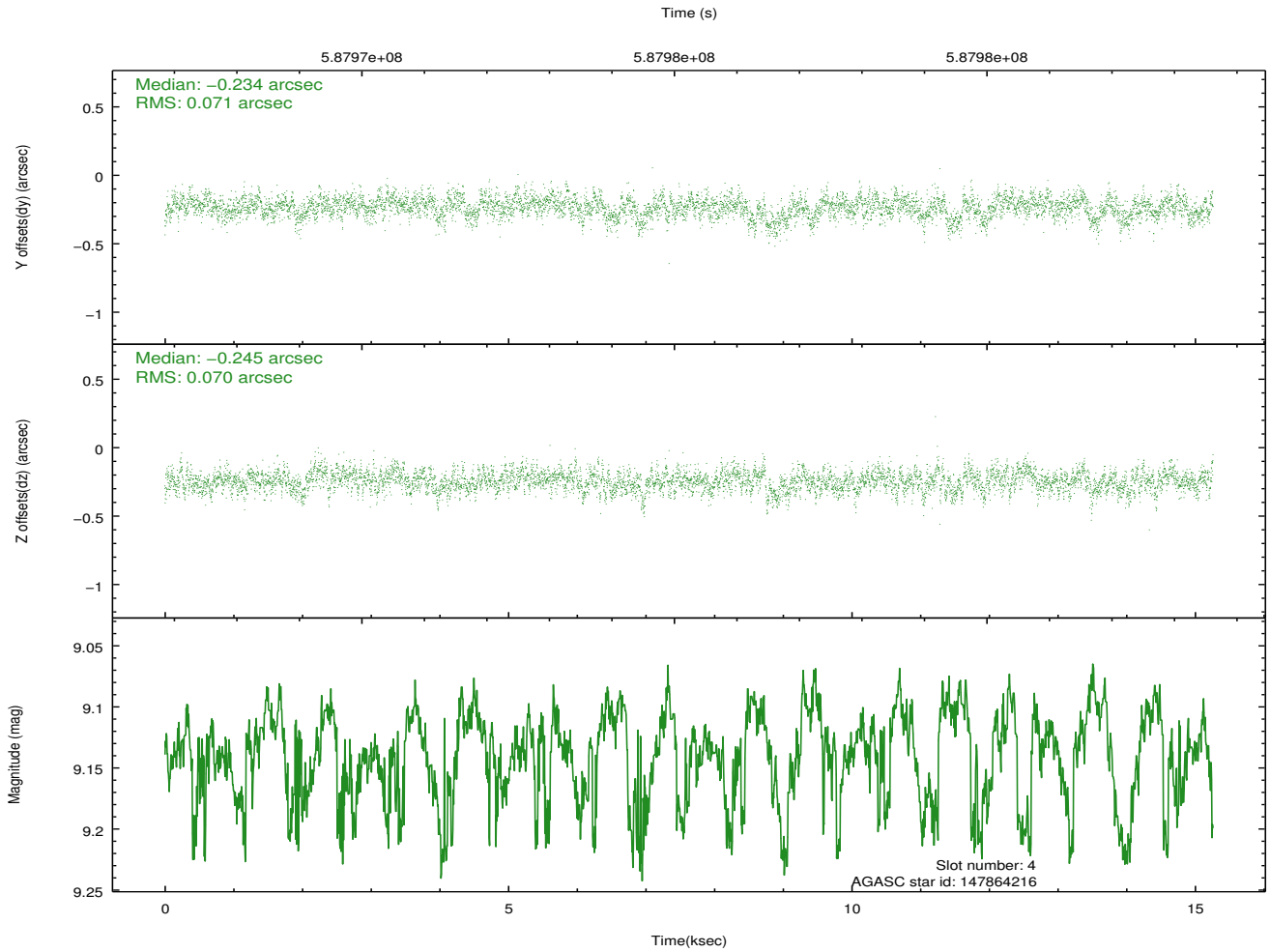
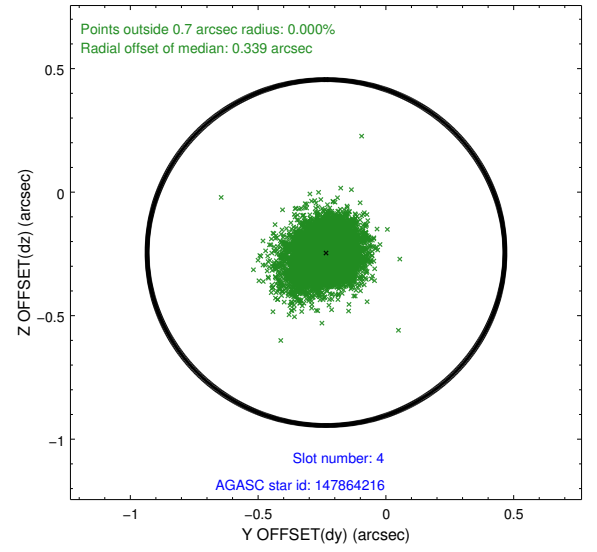
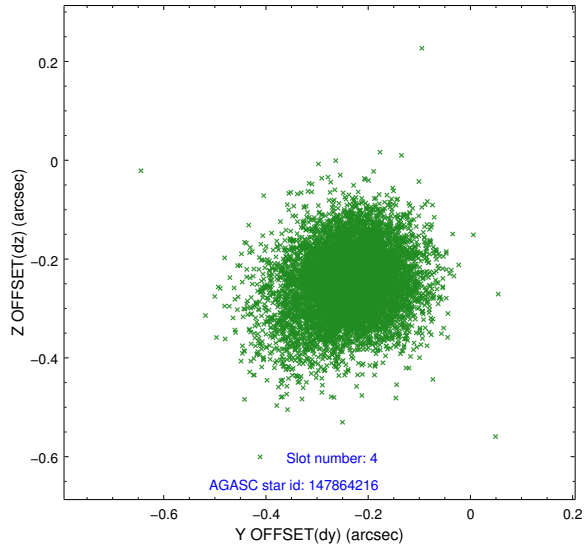
| slot | status | used | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    |      | ACIS-S-2  | 7.07 | 3722  | -0.178 | -0.116 | 0.009 | 0.013 | 0.000000   | 0.000000  | -769.11  | -1739.75 |
| 1    | FID    |      | ACIS-S-4  | 7.18 | 3722  | 0.421  | 0.117  | 0.006 | 0.013 | 0.000000   | 0.000000  | 2144.64  | 168.65   |
| 2    | FID    |      | ACIS-S-5  | 7.17 | 3722  | -0.274 | 0.008  | 0.008 | 0.015 | 0.000000   | 0.000000  | -1821.66 | 162.56   |
| 3    | GUIDE  | used | 147854072 | 8.09 | 7442  | -0.014 | 0.023  | 0.080 | 0.134 | 325.349490 | 12.755754 | 840.82   | -985.87  |
| 4    | GUIDE  | used | 147864216 | 9.14 | 7437  | -0.234 | -0.245 | 0.104 | 0.175 | 325.021145 | 12.092394 | 2274.30  | 1245.58  |
| 5    | GUIDE  | used | 147995336 | 8.71 | 7441  | 0.328  | 0.417  | 0.093 | 0.155 | 326.176555 | 13.042686 | -2162.81 | -1667.89 |
| 6    | GUIDE  | used | 147993728 | 9.03 | 7367  | -0.442 | -0.527 | 0.140 | 0.212 | 325.561791 | 11.853388 | 486.23   | 2327.52  |
| 7    | GUIDE  | used | 147984864 | 9.20 | 7435  | 0.363  | 0.324  | 0.140 | 0.227 | 326.223612 | 13.062402 | -2335.12 | -1719.44 |

## 2.4 Star Slots

### 2.4.1 Slot 3

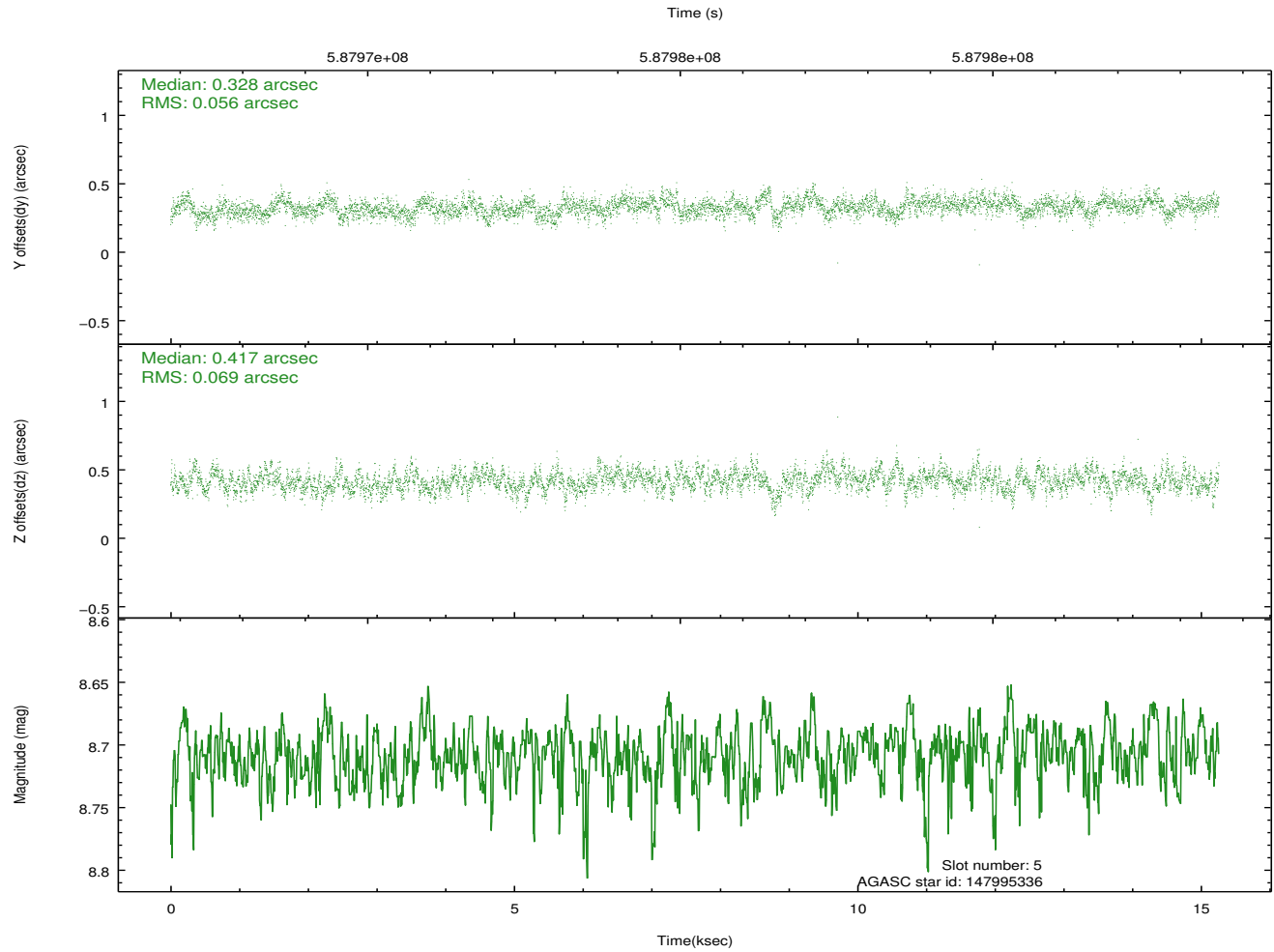
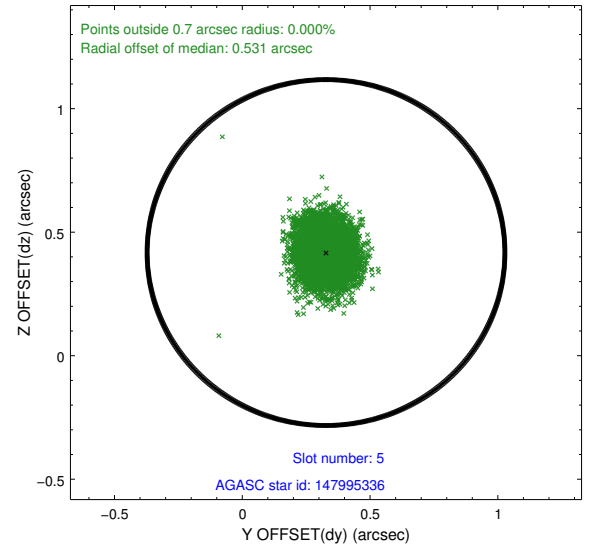
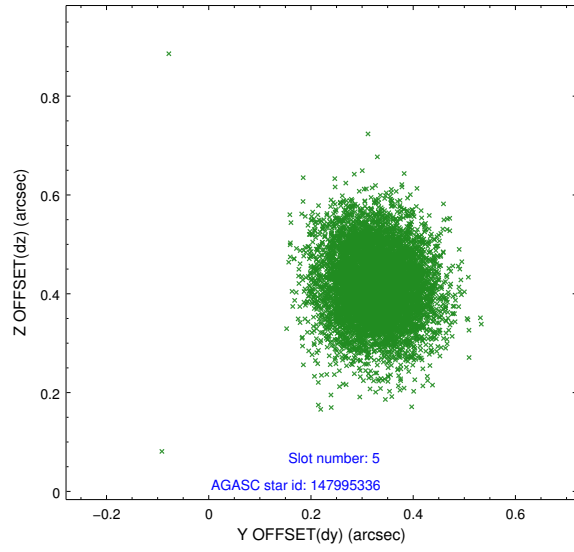


## 2.4.2 Slot 4

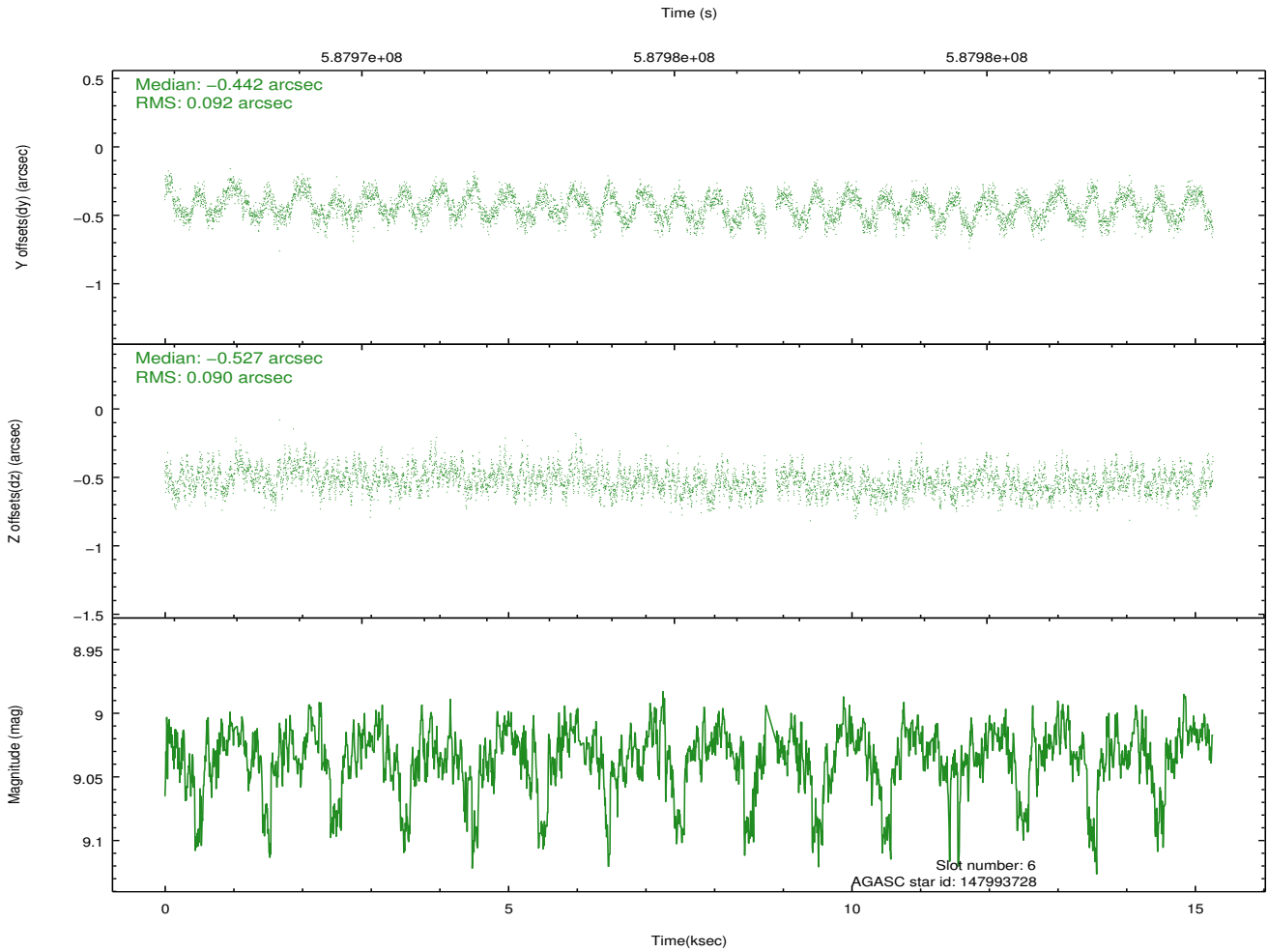
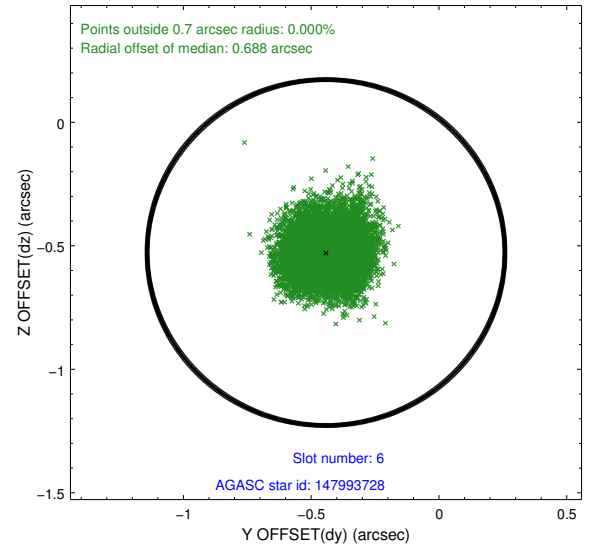
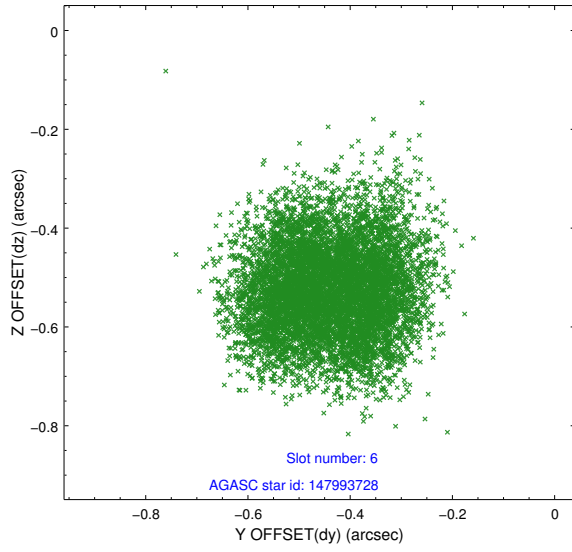




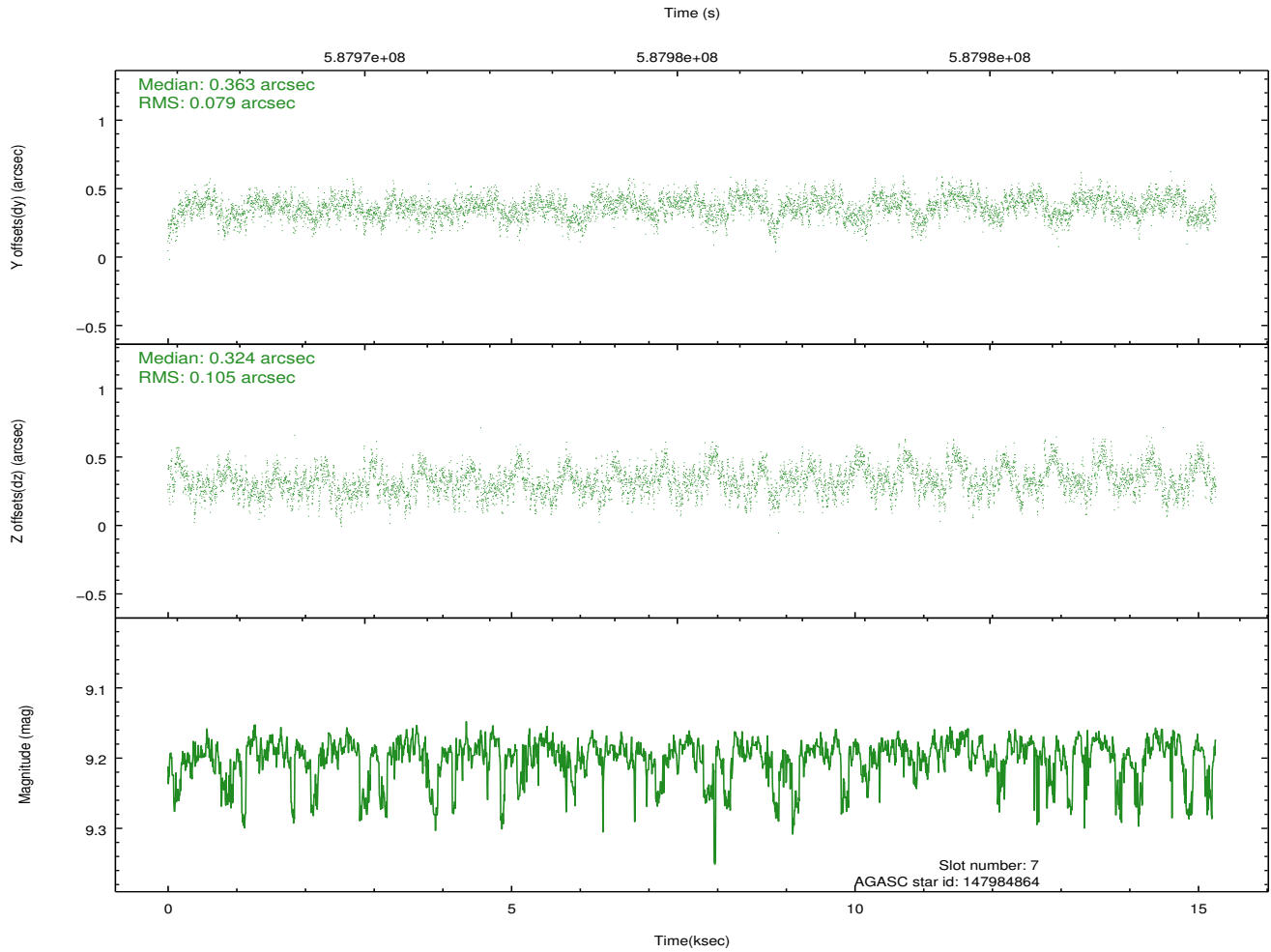
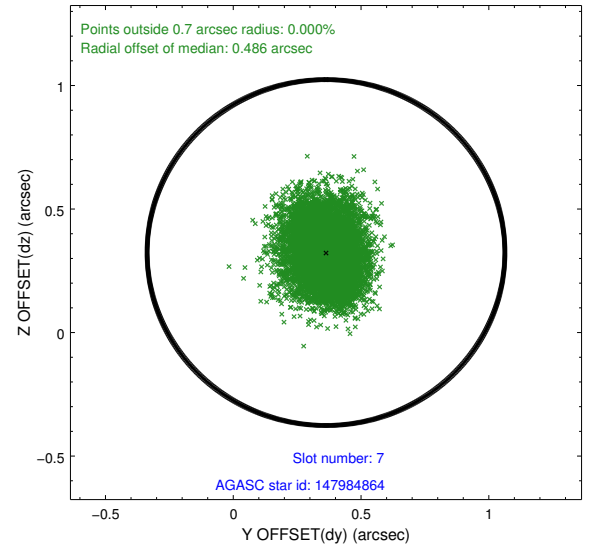
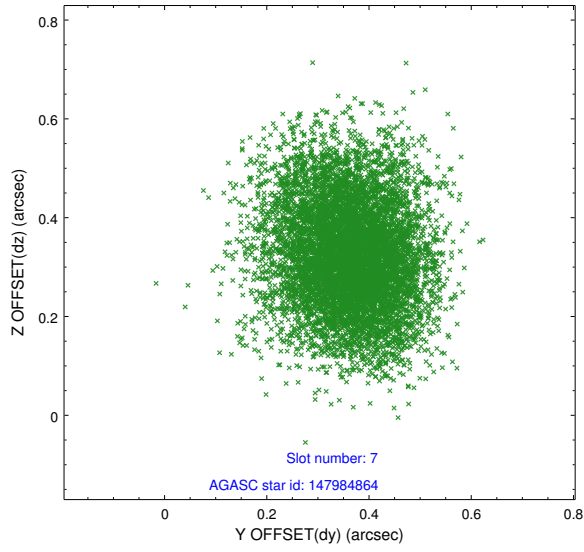
### 2.4.3 Slot 5



## 2.4.4 Slot 6

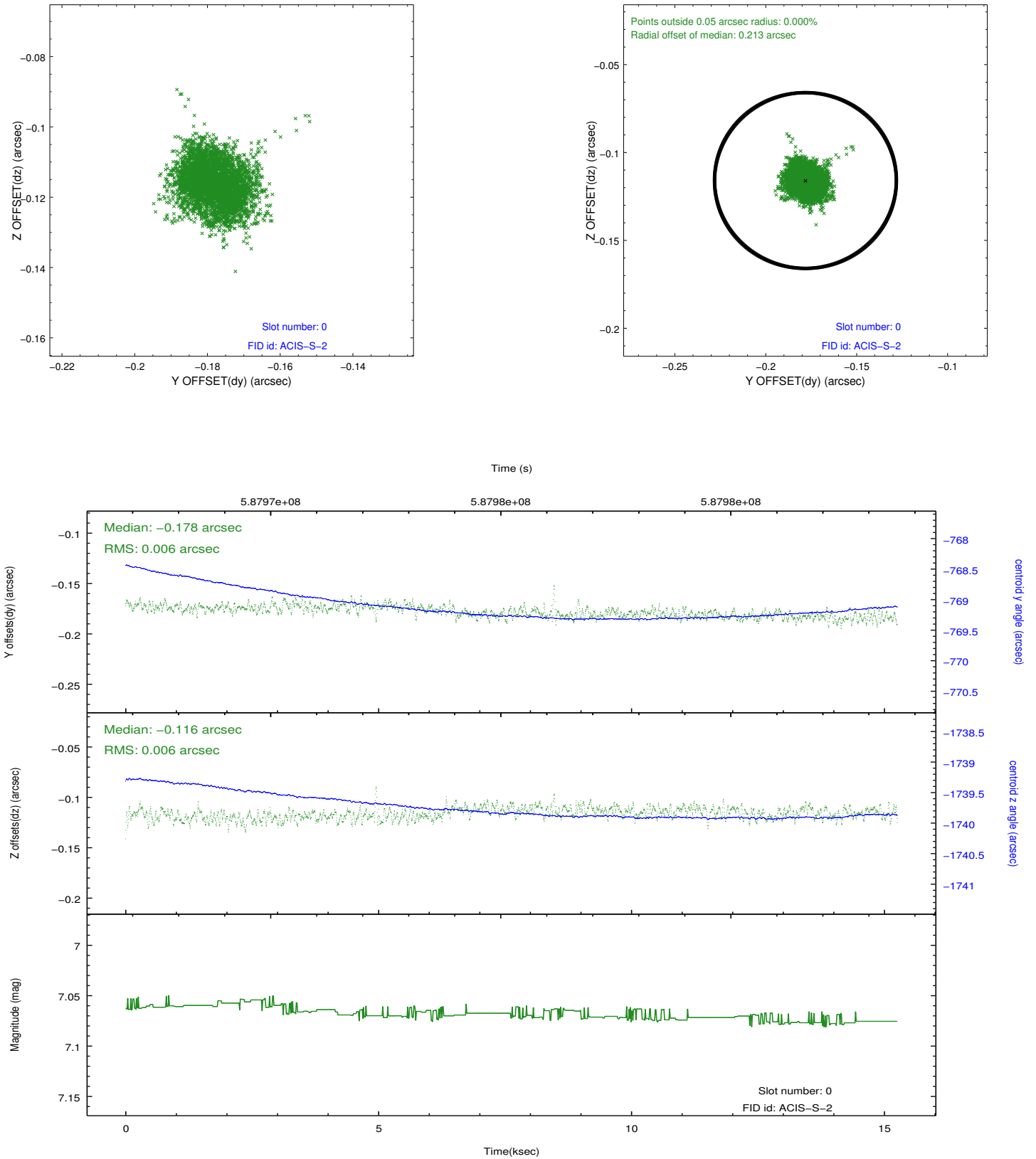


## 2.4.5 Slot 7

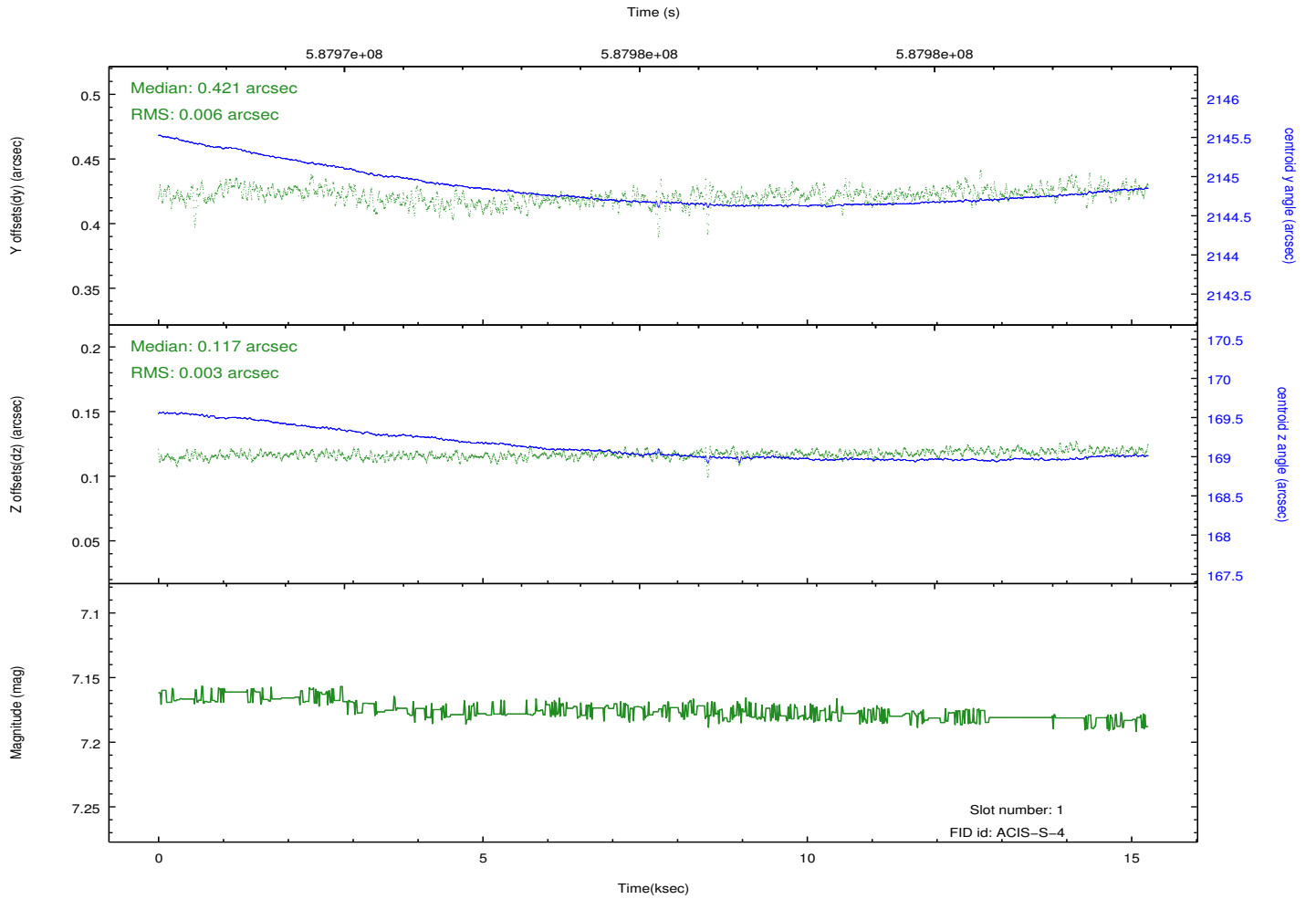
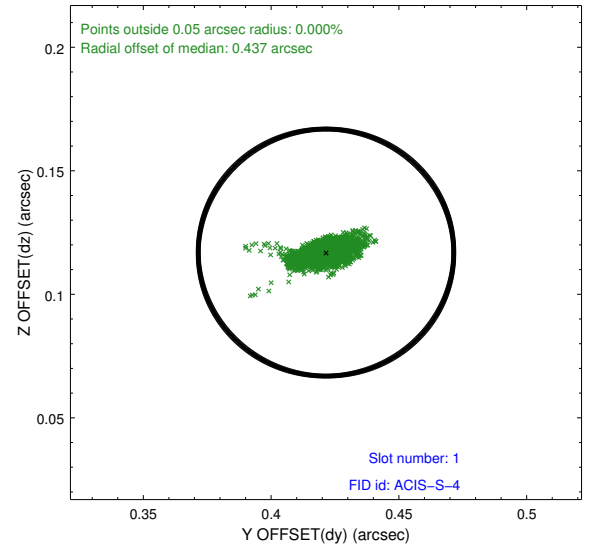
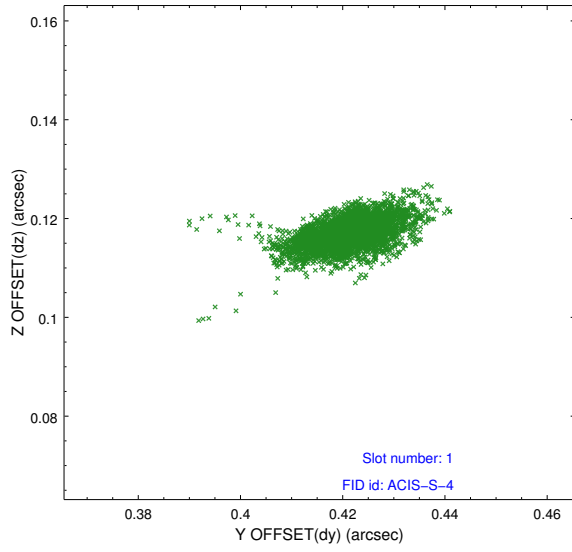


## 2.5 FID Slots

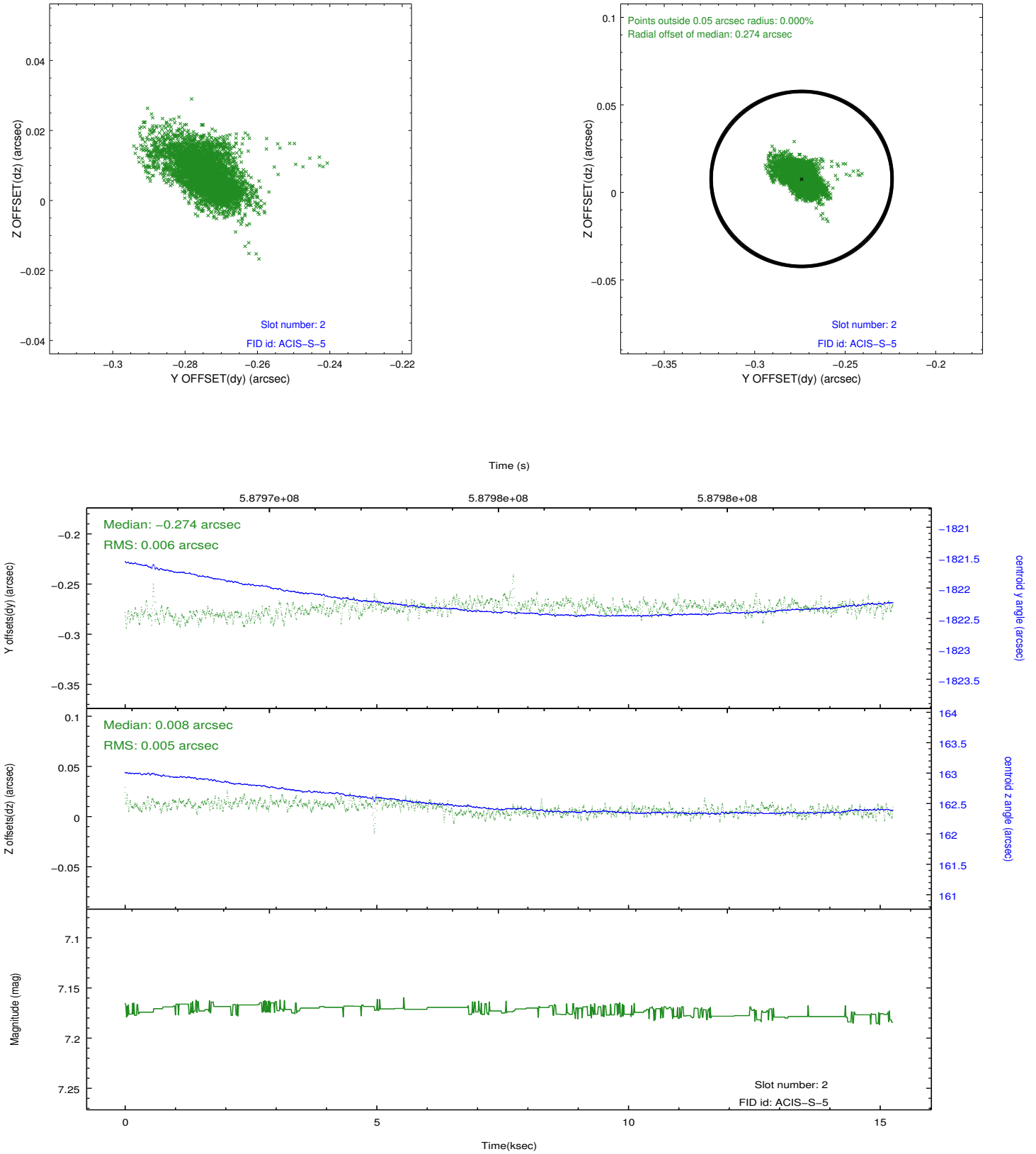
### 2.5.1 Slot 0



## 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)      | 2016.08.19      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 15.061715304971 |

## A.2 Comments

Joint proposal with NRAO.