

# V&V Reference Report

## L2 ASCDS Version : 10.4.2.1

Observation 18298 - L2 Version 1  
Chandra X-Ray Center

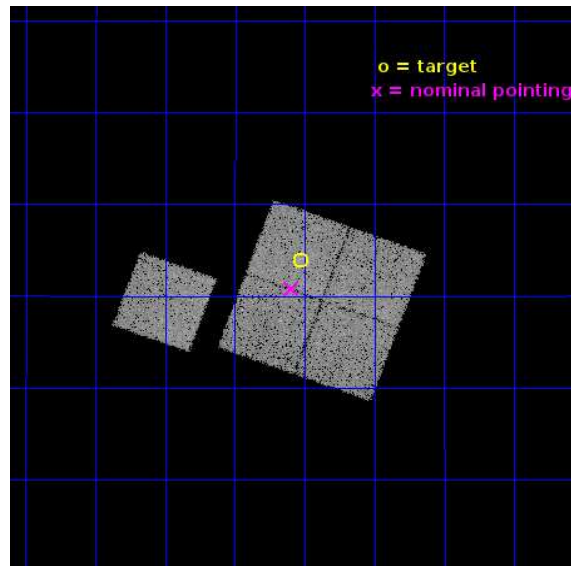
L2 Processing Date : Nov 7 2015

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# 1 Front

|          |                                                                   |                                             |
|----------|-------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 801616                                                            | Sequence number                             |
| obs_id   | 18298                                                             | Observation id                              |
| title    | Determining the Universality of f <sub>gas</sub> at High Redshift | Proposal ti                                 |
| observer | Prof. Mark Brodwin                                                | Principal investigator                      |
| object   | MOO J0105+1323                                                    | Source name                                 |
| dtcycle  | 0                                                                 | &#160                                       |
| cycle    | P                                                                 | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 16.38125                                                          | Observer's specified target RA [deg]        |
| dec_targ | 13.398611                                                         | Observer's specified target Dec [deg]       |
| ra_nom   | 16.398784287095                                                   | Nominal RA [deg]                            |
| dec_nom  | 13.346833038198                                                   | Nominal Dec [deg]                           |
| roll_nom | 290.20464231327                                                   | Nominal Roll [deg]                          |
| revision | 1                                                                 | Processing version of data                  |
| ontime   | 24527.09412086                                                    | Sum of GTIs [s]                             |
| livetime | 24206.629579587                                                   | Livetime [s]                                |
| ontime0  | 24526.97100091                                                    | Sum of GTIs [s]                             |
| ontime1  | 24527.012040854                                                   | Sum of GTIs [s]                             |
| ontime2  | 24527.053080916                                                   | Sum of GTIs [s]                             |
| ontime3  | 24527.09412086                                                    | Sum of GTIs [s]                             |
| ontime6  | 24526.929960847                                                   | Sum of GTIs [s]                             |
| l2events | 62491                                                             | Number of level 2 events                    |

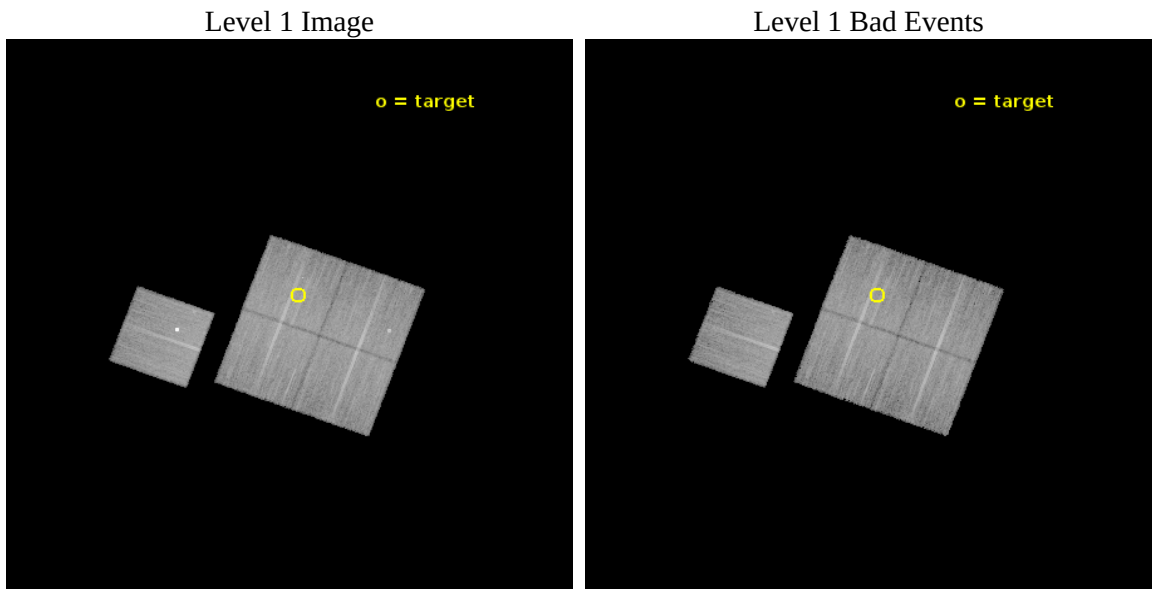




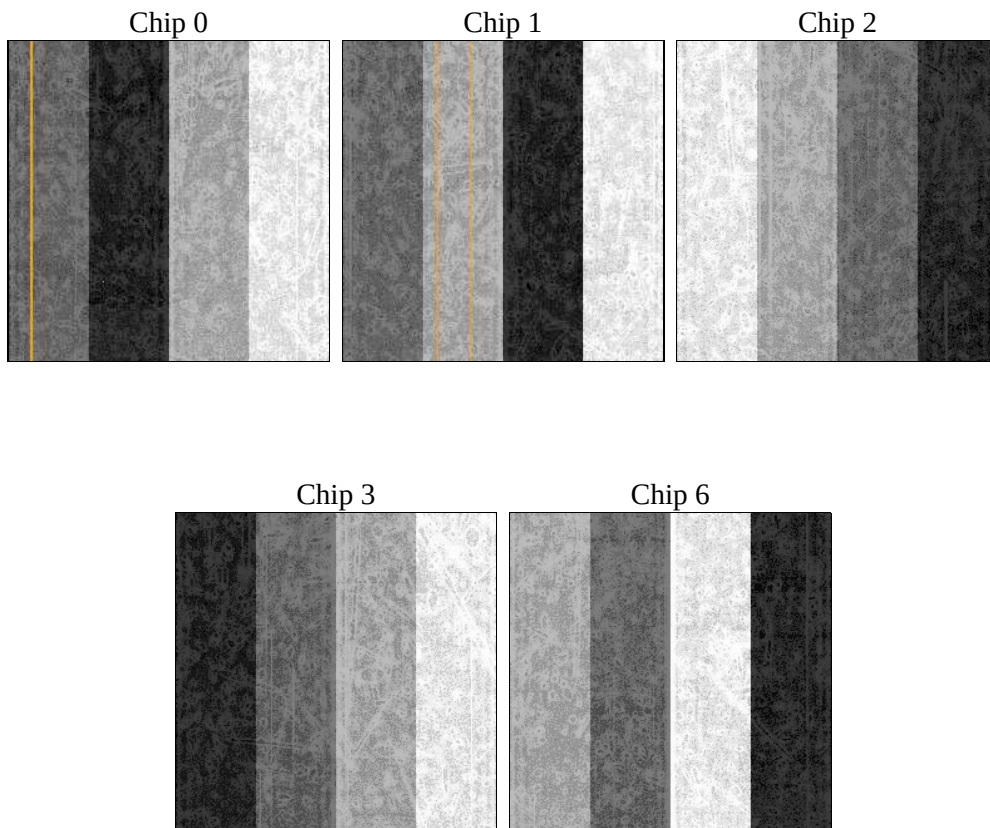
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 24450.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.4.2.1            | Processing system revision     | ontime         | 24527.09412086  | Sum of GTIs [s]                         |
| caldsver | 4.6.10a             | &#160                          | ontime0        | 24526.97100091  | Sum of GTIs [s]                         |
| date     | 2015-11-07T22:40:25 | Date and time of file creation | ontime1        | 24527.012040854 | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime2        | 24527.053080916 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 24527.09412086  | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 24526.929960847 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 635729          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 0  | ccd 1  | ccd 2  | ccd 3  | ccd 6  |
|-----------------|--------|--------|--------|--------|--------|
| level 1 events  | 120542 | 121136 | 127895 | 127127 | 139029 |
| rejected events | 106183 | 104938 | 113888 | 112458 | 116481 |
| rejected %      | 88%    | 86%    | 89%    | 88%    | 83%    |

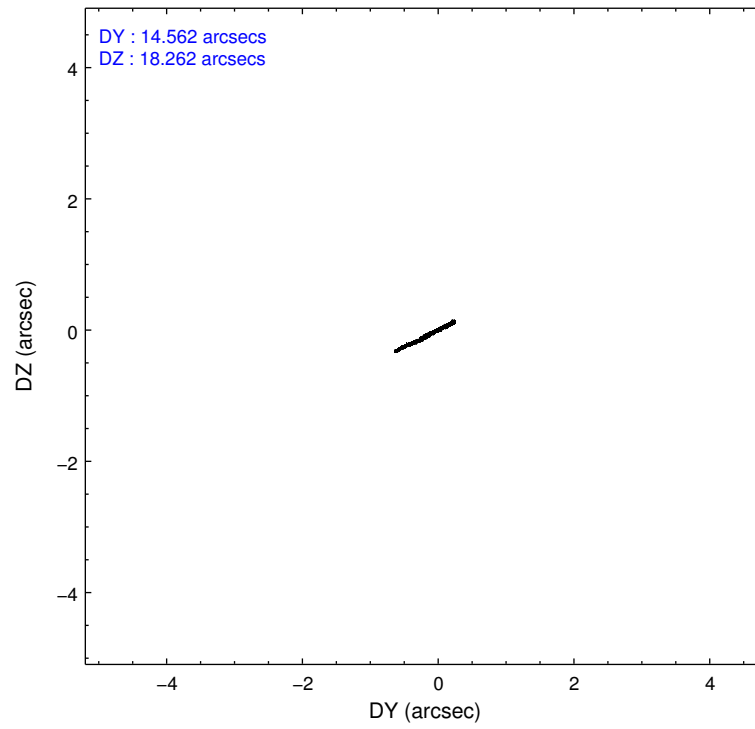
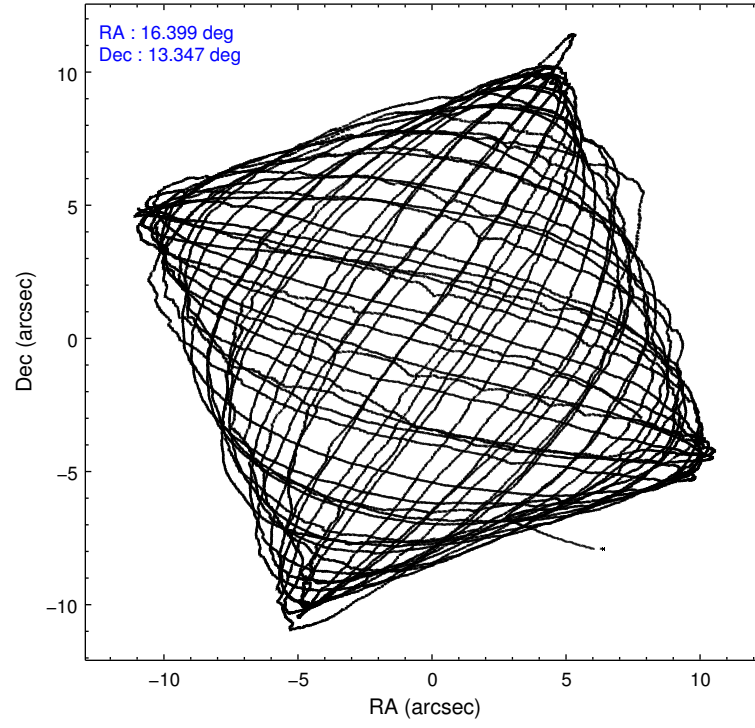
|                | ccd 0  | ccd 1 | ccd 2  | ccd 3  | ccd 6  |
|----------------|--------|-------|--------|--------|--------|
| grade 0 events | 4829   | 5856  | 4997   | 5253   | 7237   |
|                | 4%     | 4%    | 3%     | 4%     | 5%     |
| grade 1 events | 54     | 60    | 65     | 77     | 69     |
|                | 0%     | 0%    | 0%     | 0%     | 0%     |
| grade 2 events | 3480   | 3649  | 3293   | 3223   | 8749   |
|                | 2%     | 3%    | 2%     | 2%     | 6%     |
| grade 3 events | 1489   | 1464  | 1411   | 1527   | 1470   |
|                | 1%     | 1%    | 1%     | 1%     | 1%     |
| grade 4 events | 1432   | 1503  | 1440   | 1546   | 1394   |
|                | 1%     | 1%    | 1%     | 1%     | 1%     |
| grade 5 events | 5788   | 5729  | 5467   | 6605   | 6010   |
|                | 4%     | 4%    | 4%     | 5%     | 4%     |
| grade 6 events | 3130   | 3728  | 2868   | 3123   | 3703   |
|                | 2%     | 3%    | 2%     | 2%     | 2%     |
| grade 7 events | 100340 | 99147 | 108354 | 105773 | 110397 |
|                | 83%    | 81%   | 84%    | 83%    | 79%    |

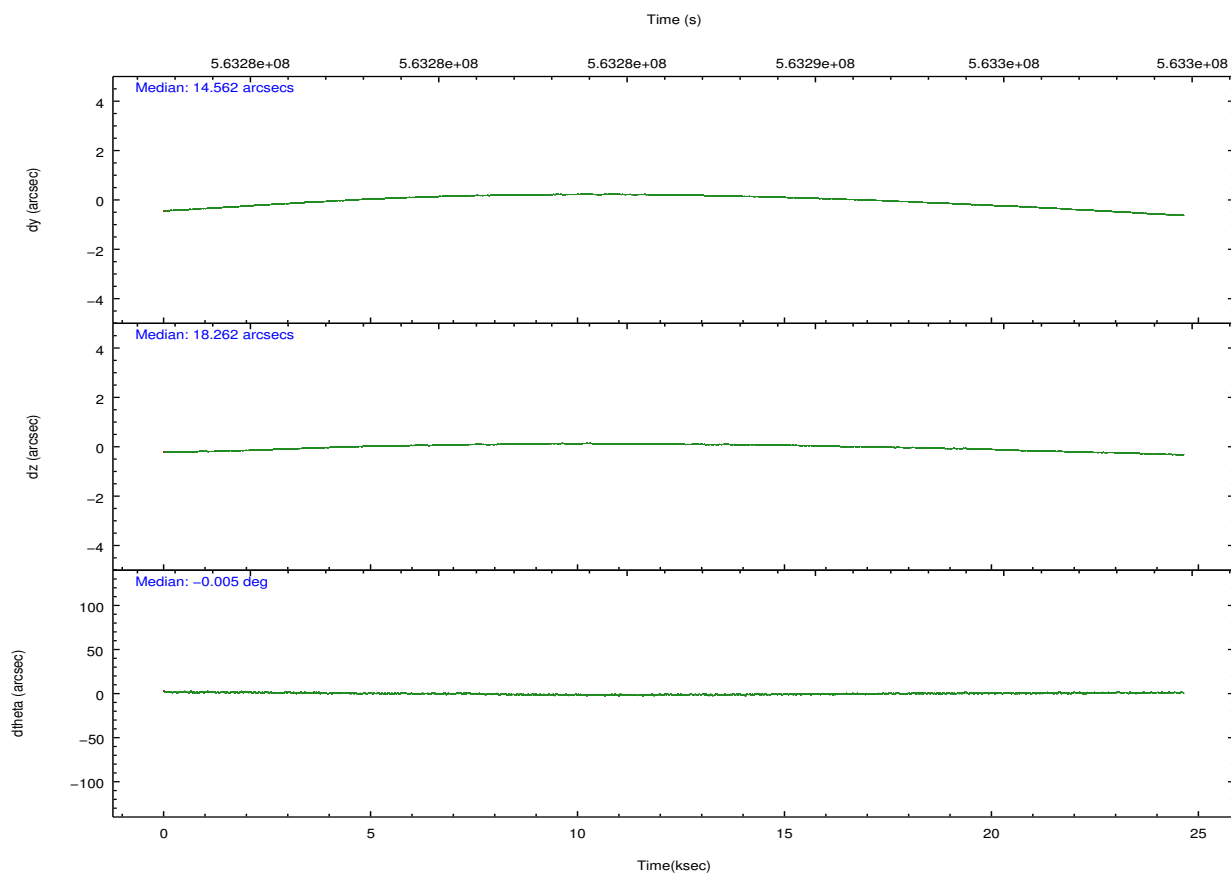
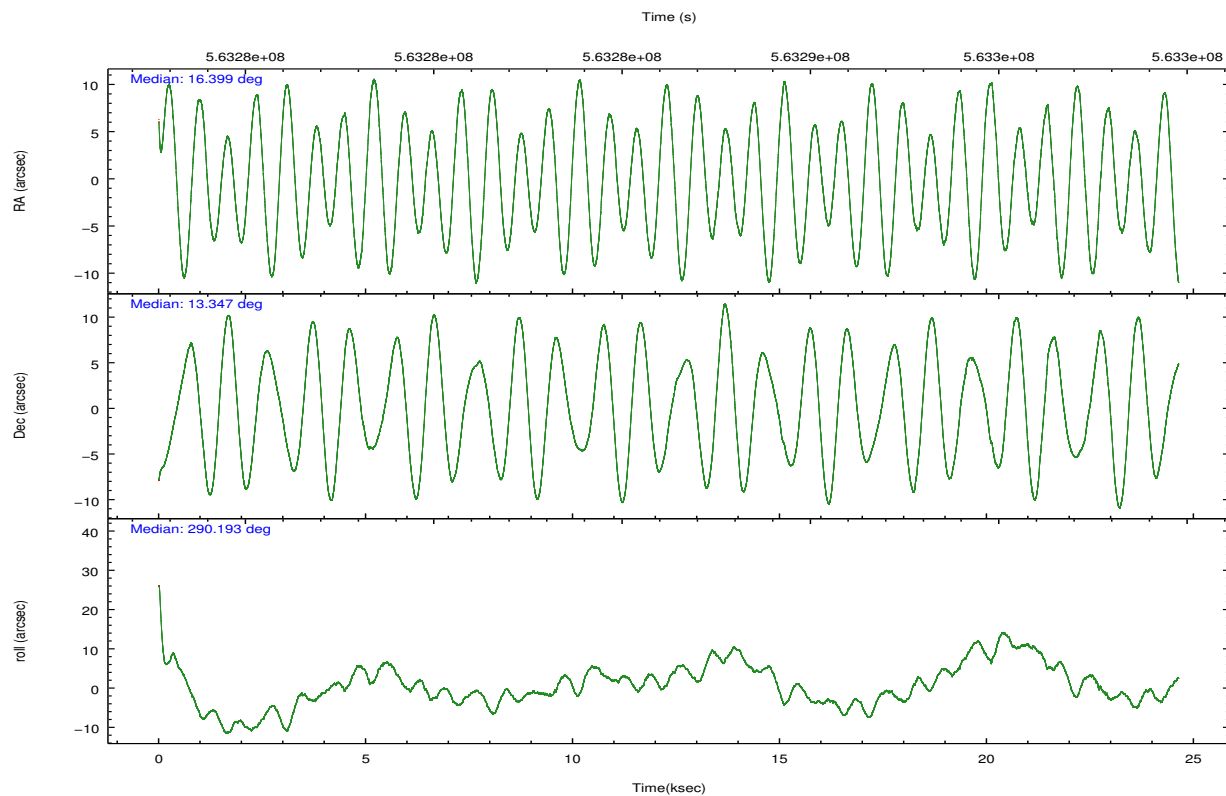
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-01236          | ACIS-01236           |
| Grating                           | NONE                | NONE                 |
| Data mode                         | VFAINT              | VFAINT               |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 16.376900           | 16.39878428709522    |
| [deg] Pointing Dec                | 13.364429           | 13.34683303819848    |
| [deg] Pointing Roll               | 290.001006          | 290.2046423132653    |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272  |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334 |
| [mm] SIM translation stage pos    | -225.840463         | -225.8433433320239   |
| [mm] SIM translation stage offset | -7.752              | -7.749109670905796   |
| [s] Observation start time (MET)  | 563274115.184000    | 563272893.0973001    |
| Observation start date            | 2015-11-07T09:00:47 | 2015-11-07T08:41:33  |
| [s] Observation end time (MET)    | 563298565.184000    | 563299608.1863101    |
| Observation end date              | 2015-11-07T15:48:17 | 2015-11-07T16:06:48  |
| 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                             | Y         | Y       |
| CCD I1 on                             | Y         | Y       |
| CCD I2 on                             | Y         | Y       |
| CCD I3 on                             | Y         | Y       |
| CCD S0 on                             | N         | N       |
| CCD S1 on                             | N         | N       |
| CCD S2 on                             | O1        | Y       |
| CCD S3 on                             | N         | N       |
| 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



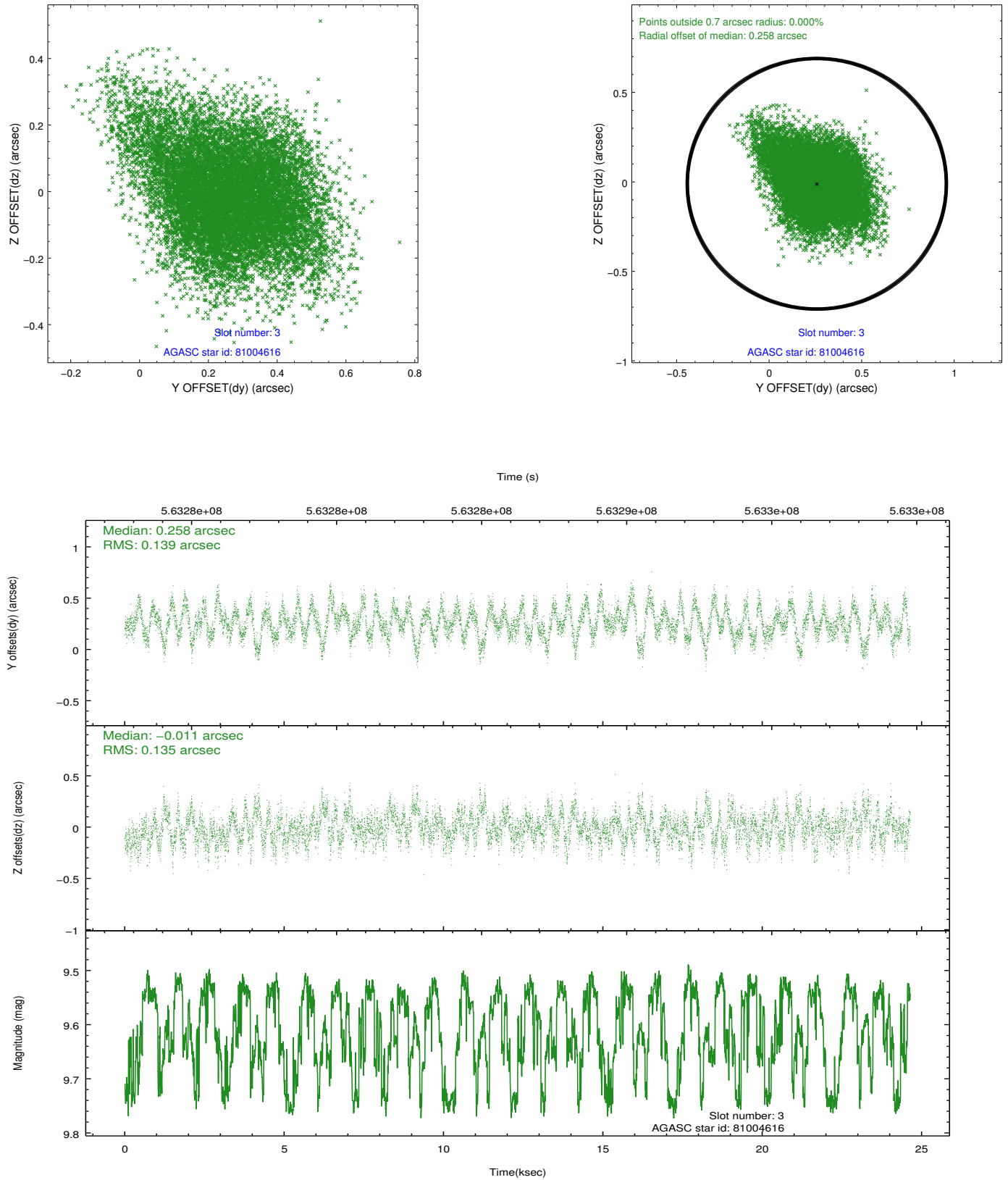


# Slot Statistics

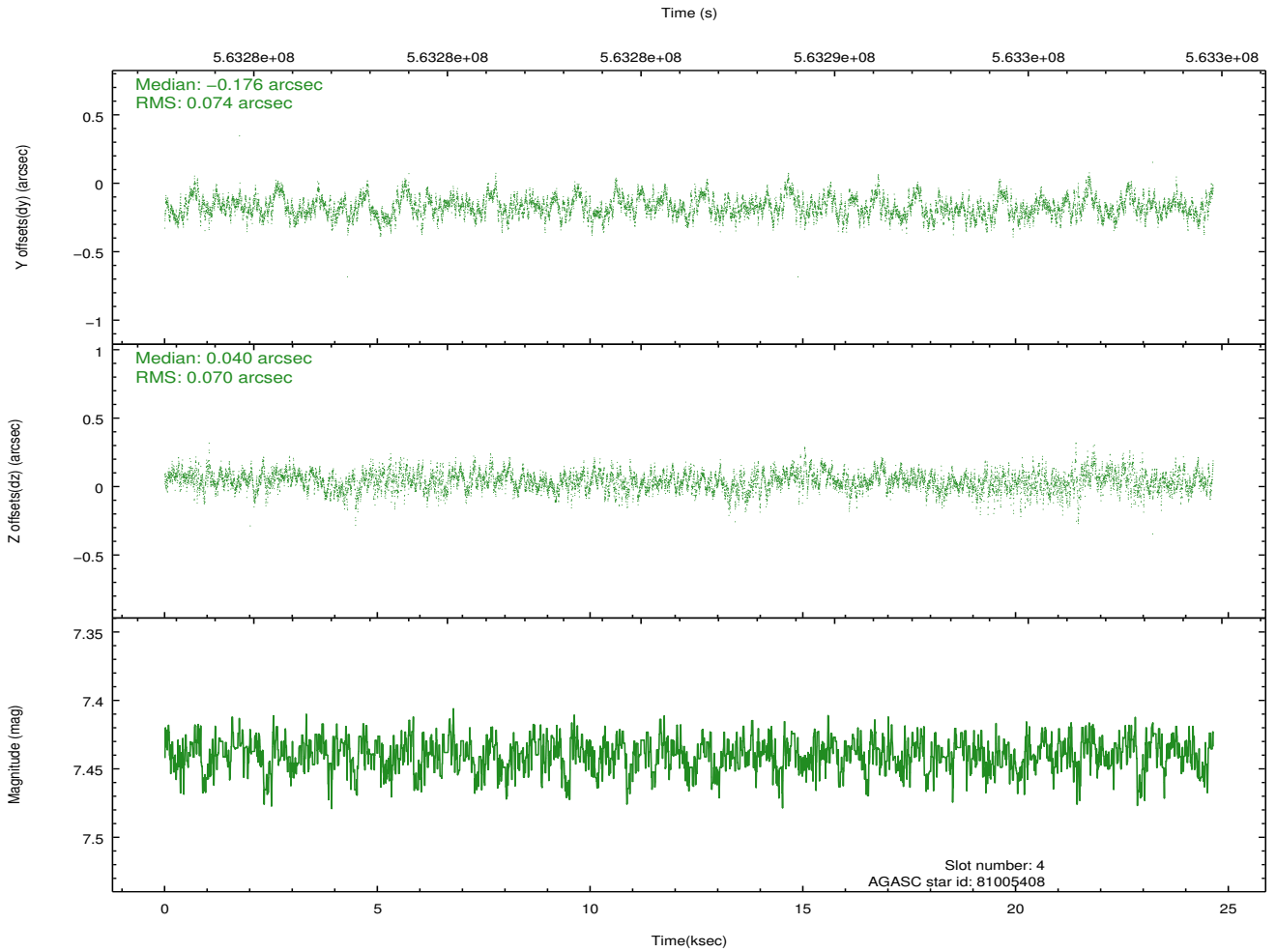
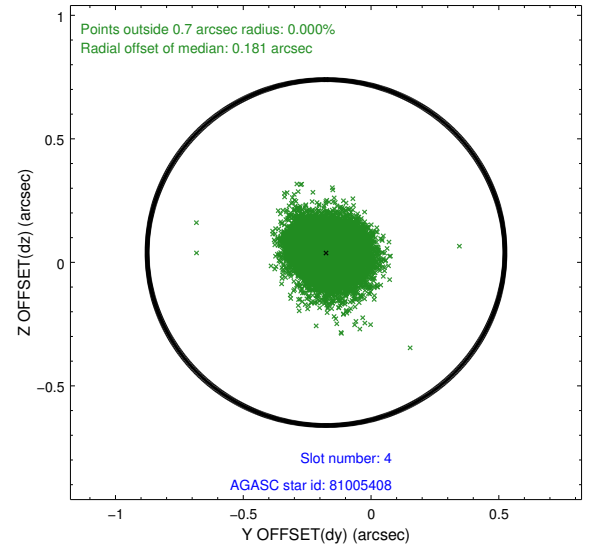
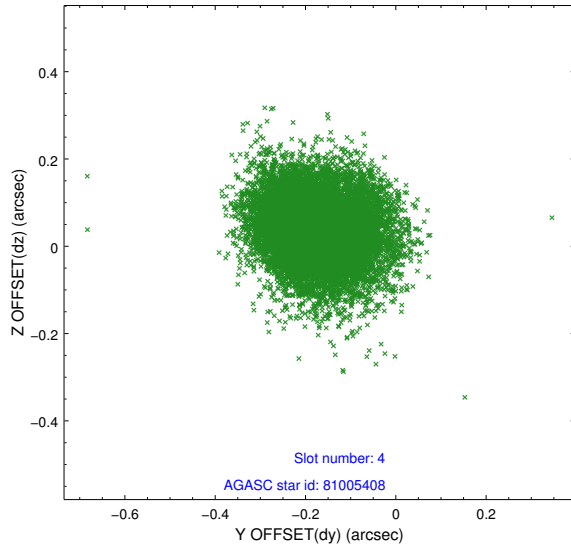
| slot | status | used | id       | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra        | dec       | mean_y   | mean_z   |
|------|--------|------|----------|------|-------|--------|--------|-------|-------|-----------|-----------|----------|----------|
| 0    | FID    |      | ACIS-I-1 | 7.26 | 6009  | 0.137  | -0.091 | 0.009 | 0.022 | 0.000000  | 0.000000  | 925.02   | -1001.04 |
| 1    | FID    |      | ACIS-I-5 | 7.26 | 6010  | -0.389 | 0.084  | 0.008 | 0.014 | 0.000000  | 0.000000  | -1823.65 | 896.38   |
| 2    | FID    |      | ACIS-I-6 | 7.28 | 6010  | 0.162  | 0.077  | 0.008 | 0.014 | 0.000000  | 0.000000  | 390.31   | 1541.15  |
| 3    | GUIDE  | used | 81004616 | 9.62 | 12011 | 0.258  | -0.011 | 0.203 | 0.340 | 16.727653 | 13.590154 | -344.05  | 1430.62  |
| 4    | GUIDE  | used | 81005408 | 7.44 | 12019 | -0.176 | 0.040  | 0.109 | 0.176 | 16.652176 | 13.884607 | -1430.64 | 1545.30  |
| 5    | GUIDE  | used | 81006216 | 9.55 | 12005 | 0.030  | -0.195 | 0.136 | 0.223 | 16.941956 | 13.675787 | -379.80  | 2240.67  |
| 6    | GUIDE  | used | 81007920 | 8.20 | 12013 | -0.139 | -0.081 | 0.098 | 0.159 | 16.552631 | 13.252748 | 589.27   | 443.90   |
| 7    | GUIDE  | used | 81010200 | 7.88 | 12014 | 0.024  | 0.247  | 0.125 | 0.200 | 15.776299 | 13.048724 | 346.46   | -2366.75 |

## 2.4 Star Slots

### 2.4.1 Slot 3

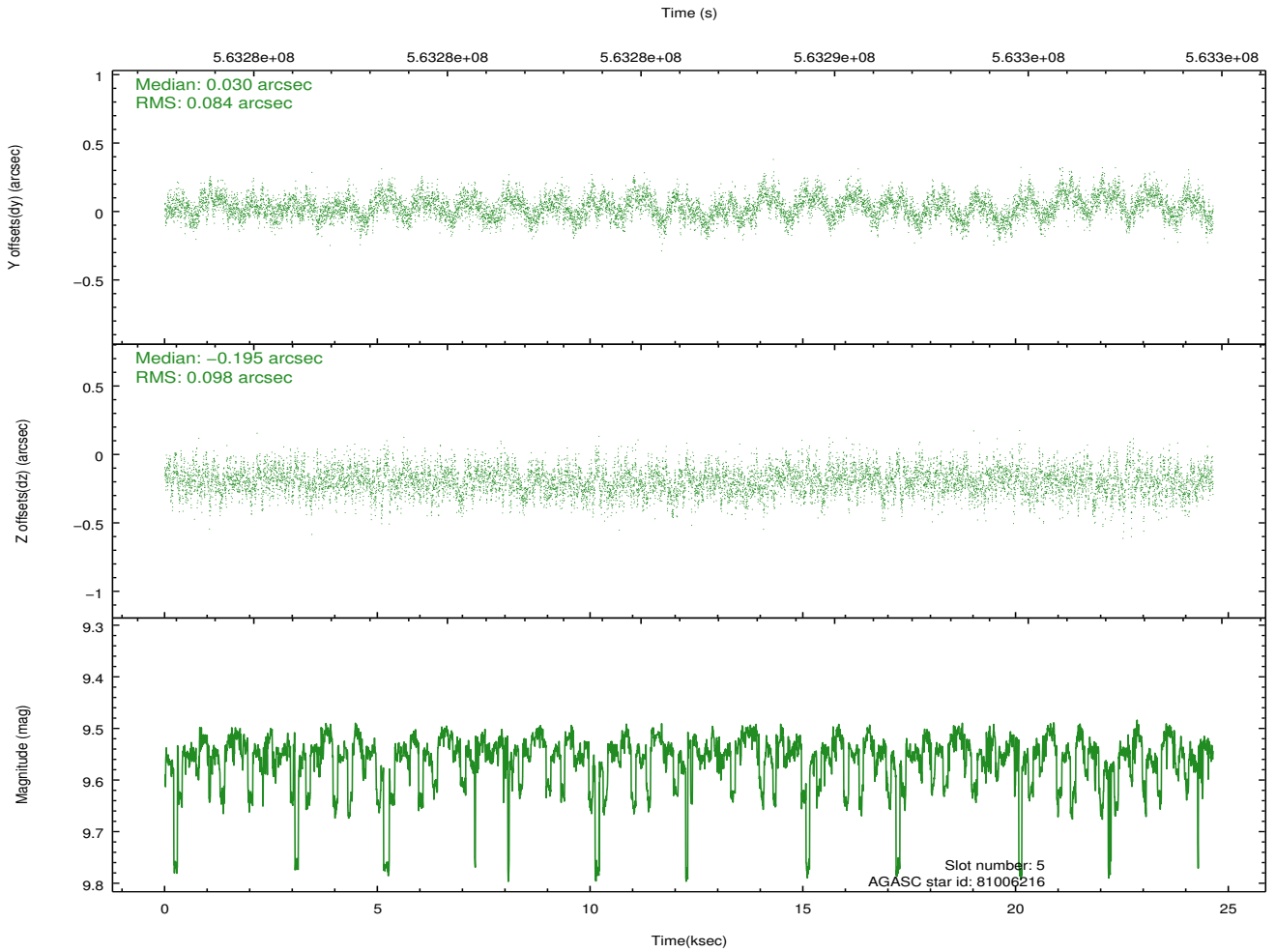
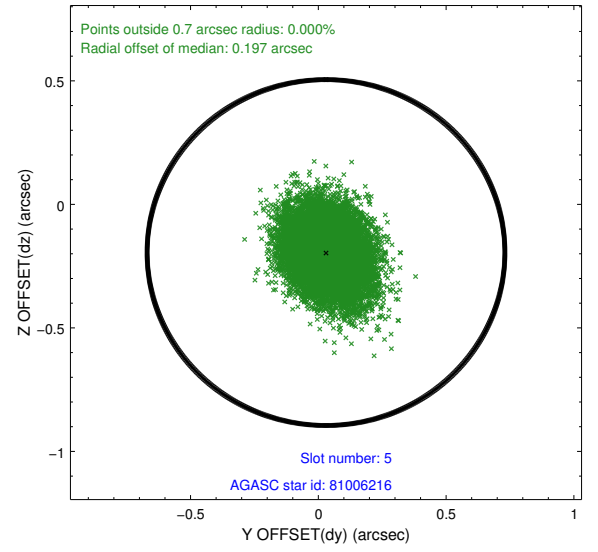
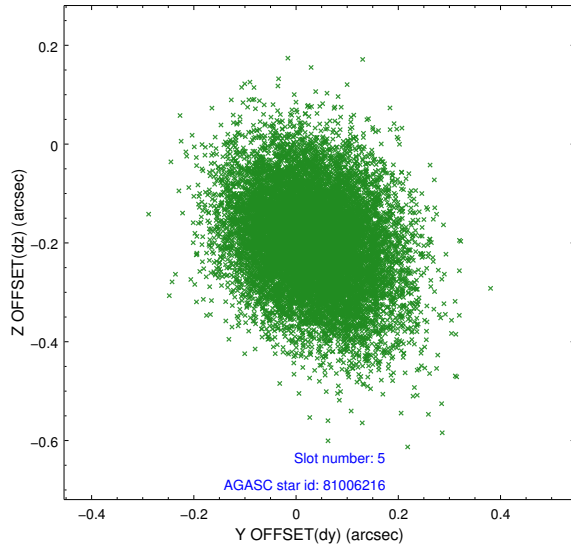


## 2.4.2 Slot 4

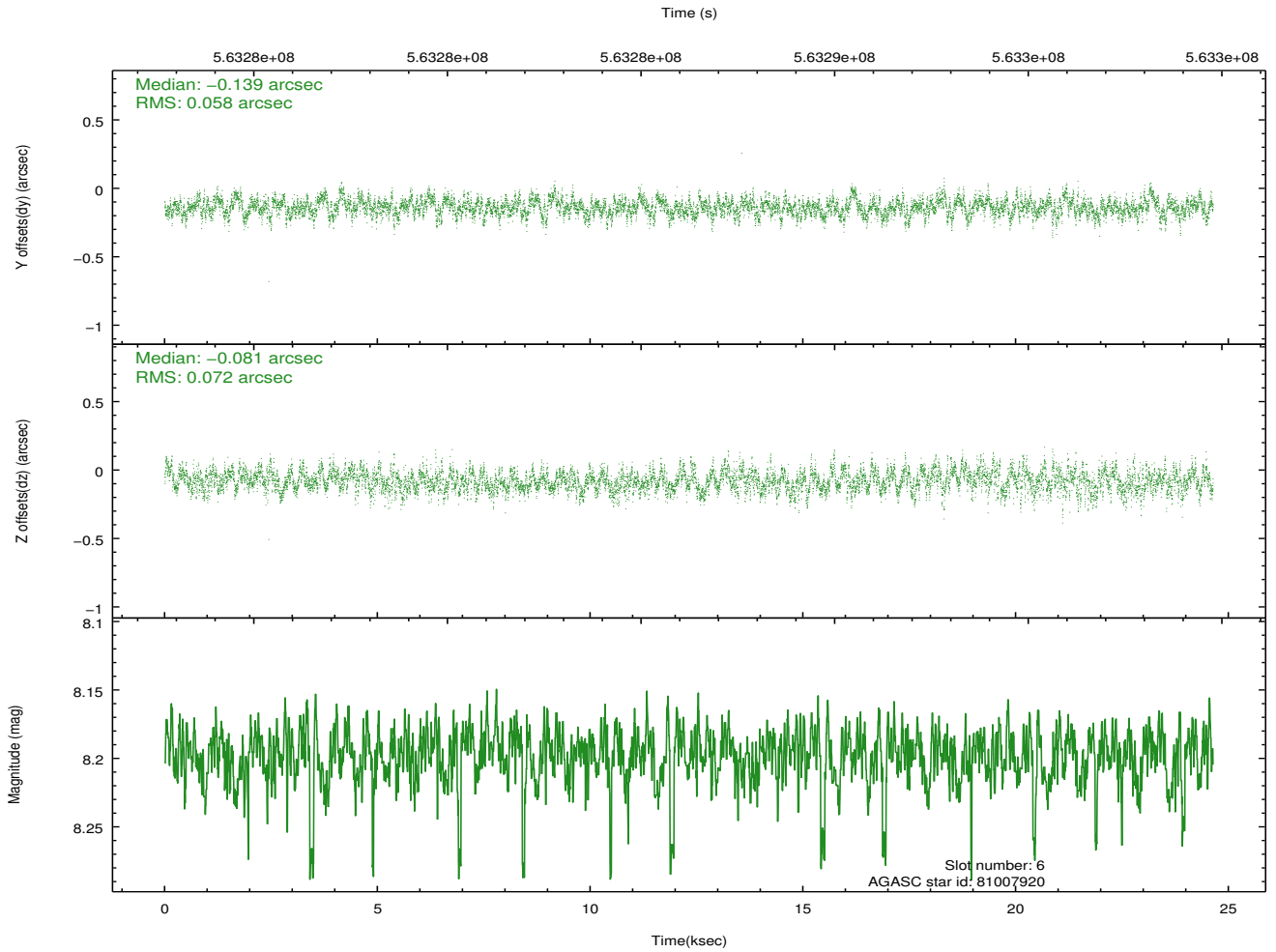
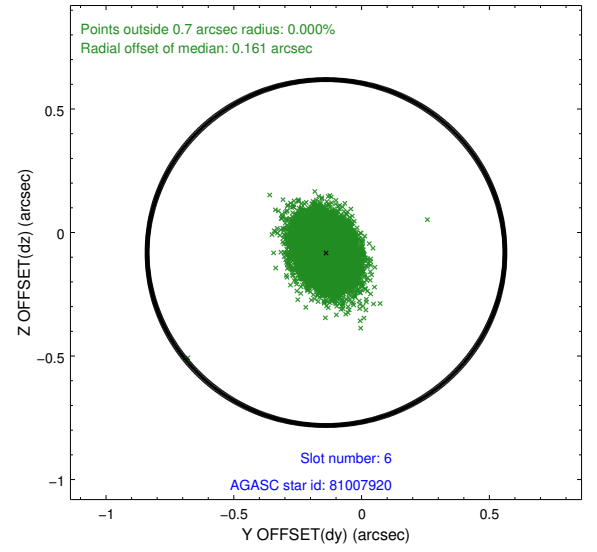
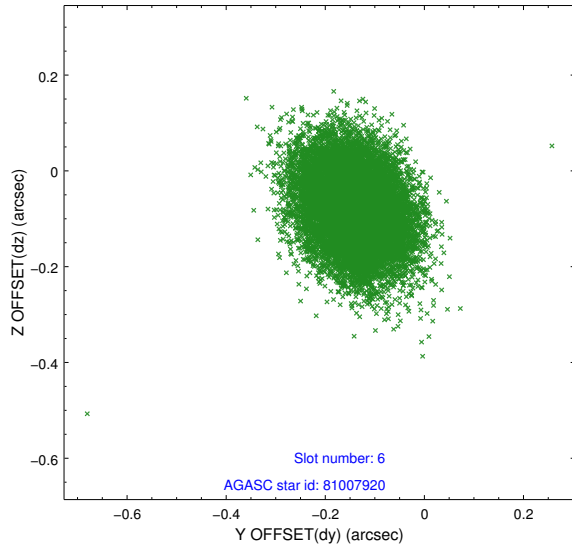




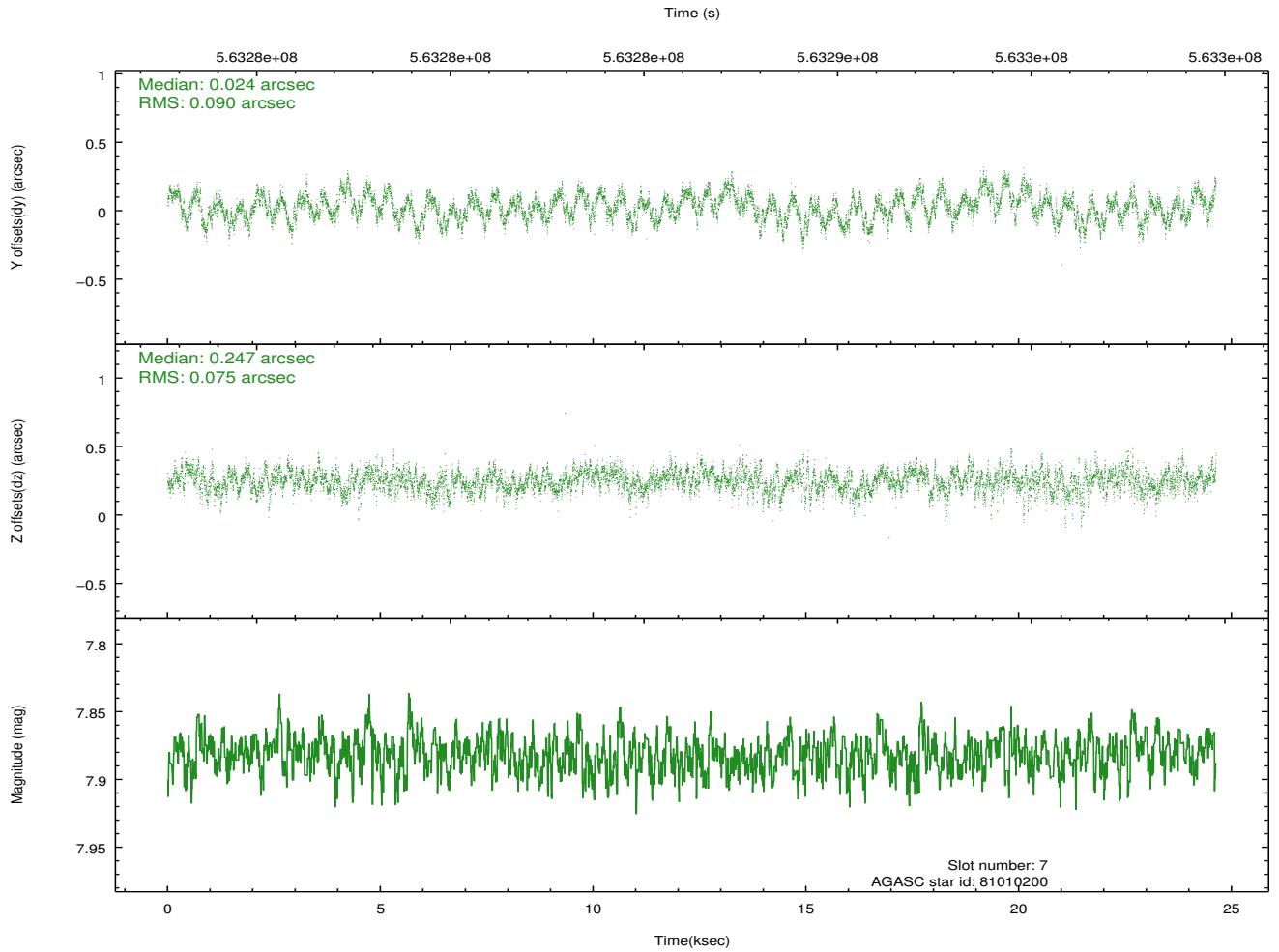
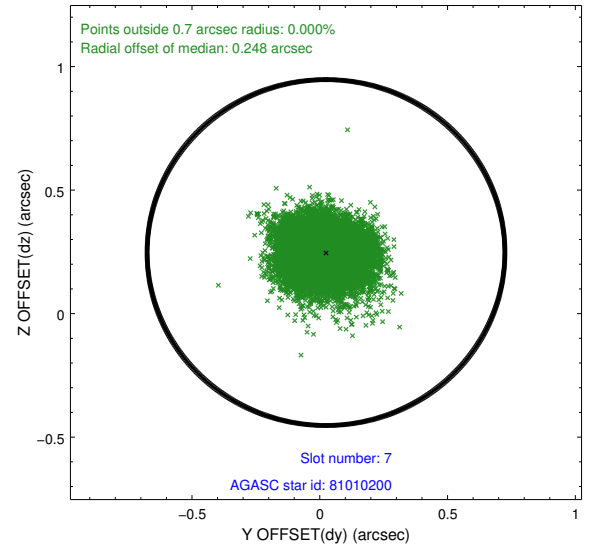
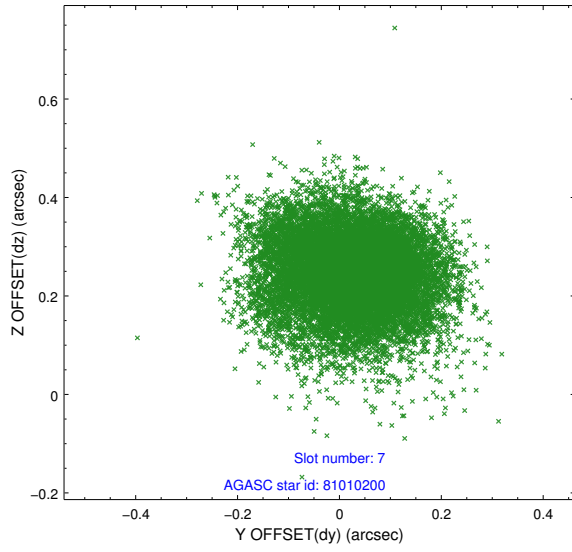
### 2.4.3 Slot 5



## 2.4.4 Slot 6

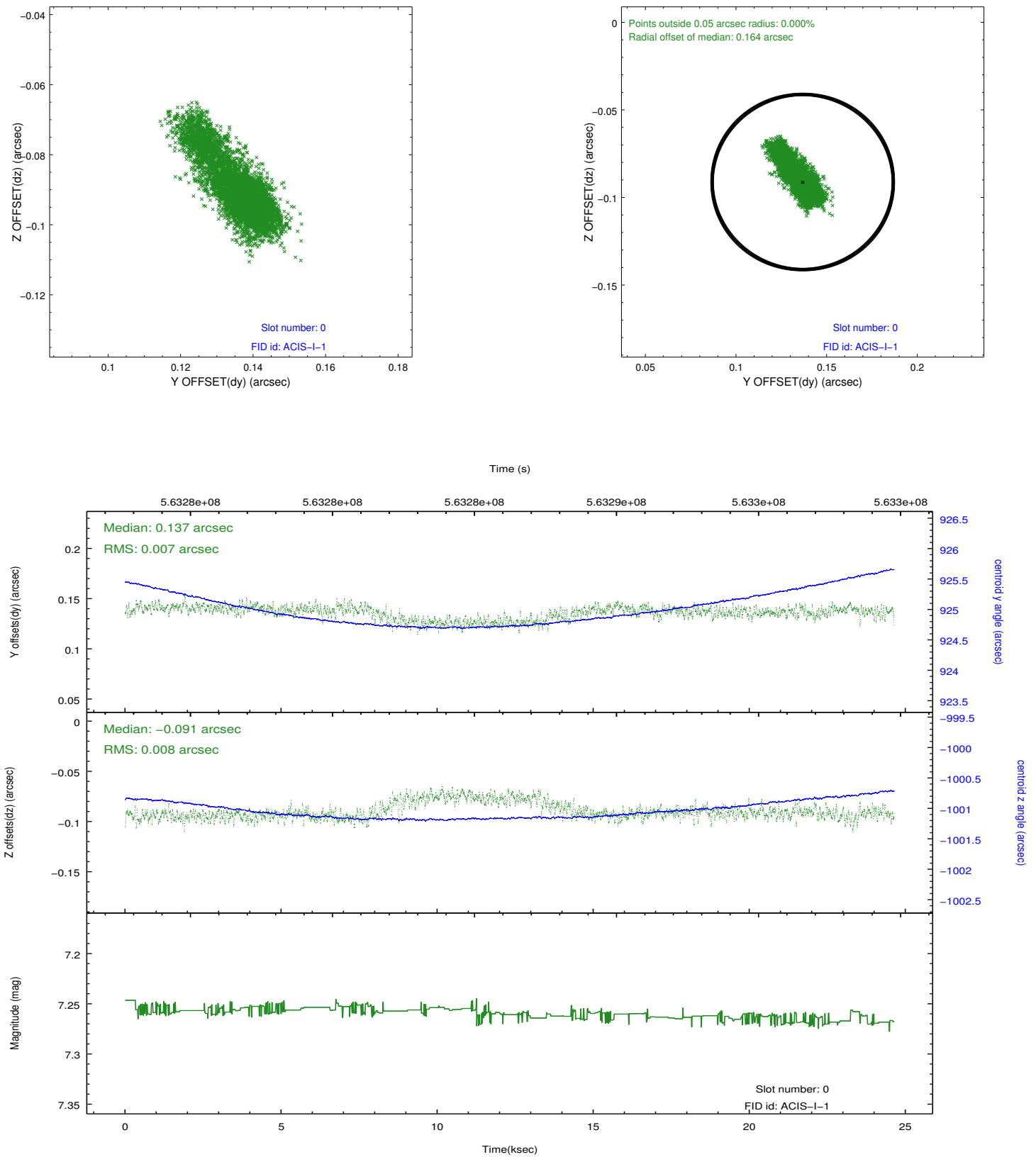


## 2.4.5 Slot 7

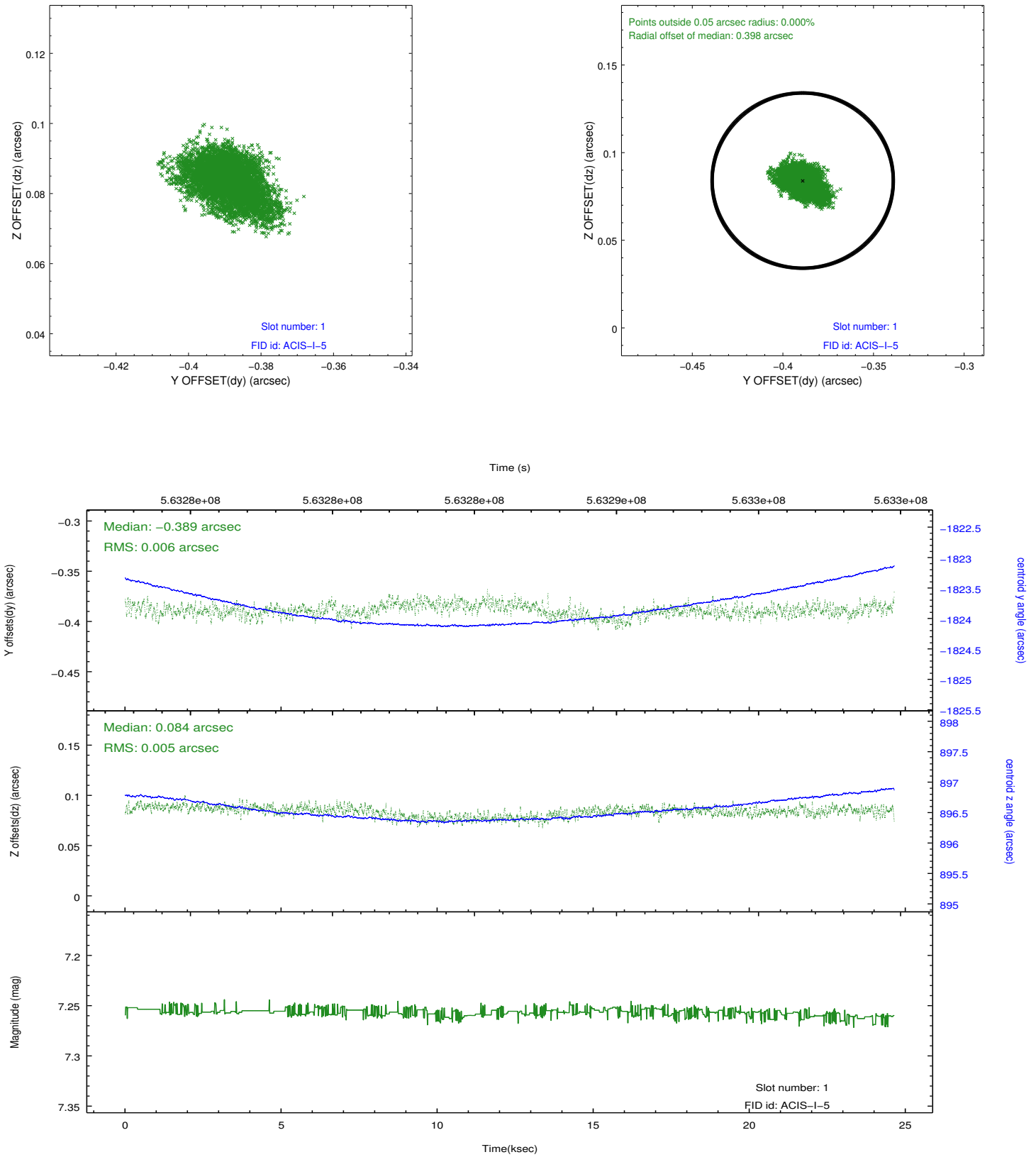


## 2.5 FID Slots

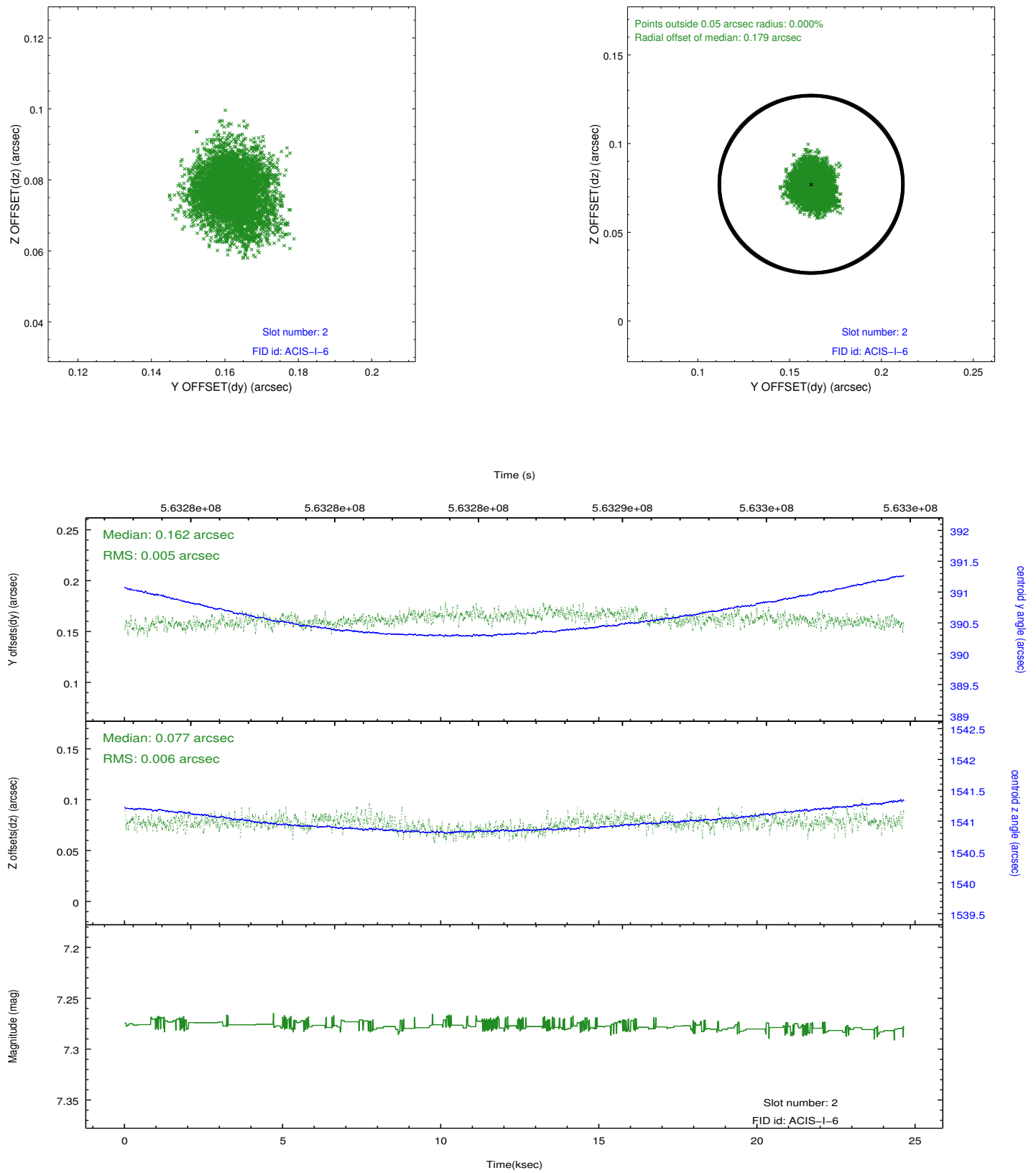
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



## A Summary

### A.1 Status

|                            |                |
|----------------------------|----------------|
| V&V Scientist              | Joy Nichols    |
| V&V Date (YYYY-MM-DD)      | 2015.11.09     |
| V&V Edition                | 1              |
| V&V Disposition and Status | OK             |
| V&V Charge Time            | 24.52709412086 |

### A.2 Comments