

# V&V Reference Report

## L2 ASCDS Version : 8.1.2

Observation 222 - L2 Version 3

Chandra X-Ray Center

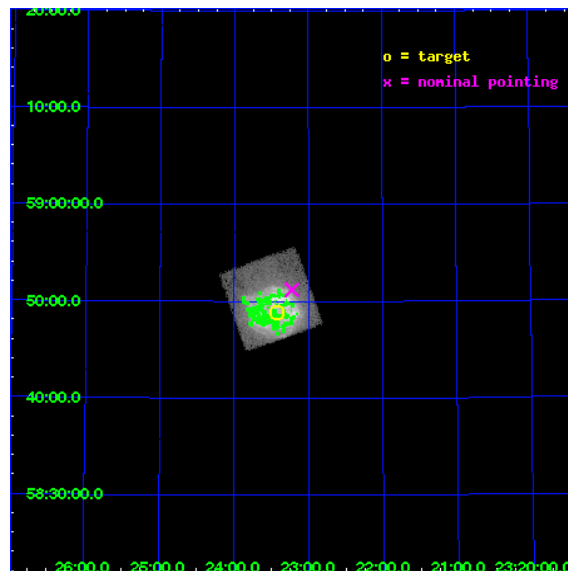
L2 Processing Date : Dec 16 2009

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# 1 Front

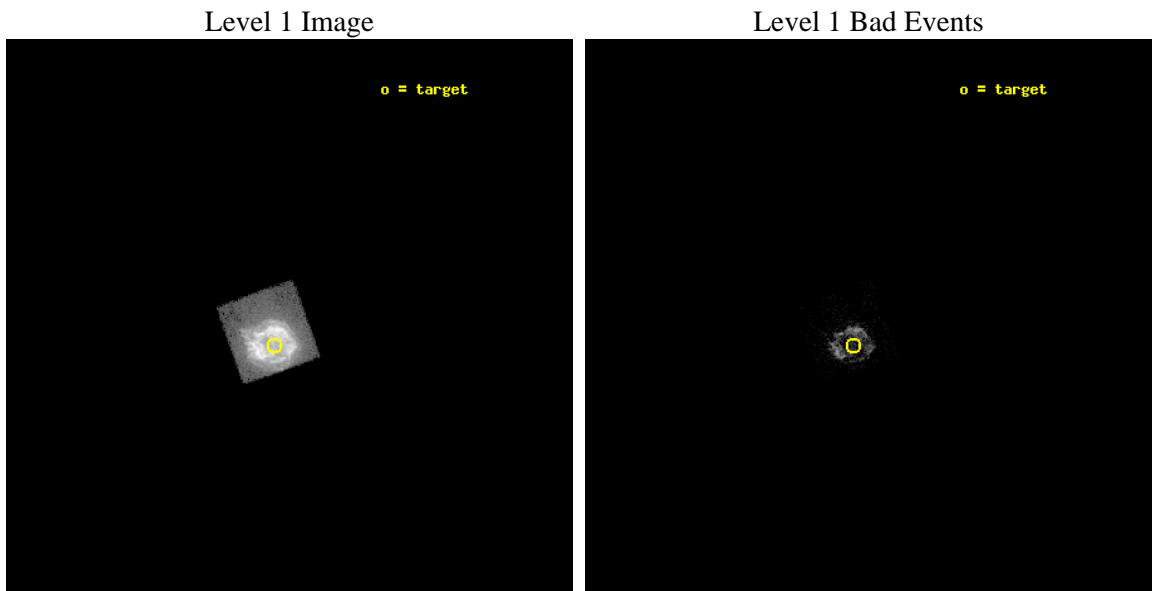
|          |   |   |
|----------|---|---|
| seq_num  | 590090  | Sequence number                             |
| obs_id   | 222   | Observation id                              |
| title    | ACIS CHIP RESPONSE TO CAS A, JAN. 99              | Proposal title                              |
| observer | Dr. CXC Calibration                               | Principal investigator                      |
| object   | CAS A [Chip S3, T=100, Offsets=-2,1,0 Std Candle] | Source name                                 |
| dtcycle  | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 350.8575  | Observer's specified target<br>RA           |
| dec_targ | 58.814833   | Observer's specified target<br>Dec          |
| ra_nom   | 350.80548218021                                   | Nominal RA                                  |
| dec_nom  | 58.85341713852                                    | Nominal Dec                                 |
| roll_nom | 160.35979892723                                   | Nominal Roll                                |
| revision | 3   | Processing version of data                  |
| ontime   | 1043.6098948866                                   | Sum of GTIs [s]                             |
| livetime | 1030.3950780111                                   | Livetime [s]                                |
| ontime4  | 1317.6982986331                                   | Sum of GTIs [s]                             |
| ontime5  | 1758.5093090385                                   | Sum of GTIs [s]                             |
| ontime6  | 1567.1288258582                                   | Sum of GTIs [s]                             |
| ontime7  | 1043.6098948866                                   | Sum of GTIs [s]                             |
| ontime8  | 1508.8738014624                                   | Sum of GTIs [s]                             |
| ontime9  | 1505.5916515887                                   | Sum of GTIs [s]                             |
| l2events | 333394  | Number of level 2 events                    |



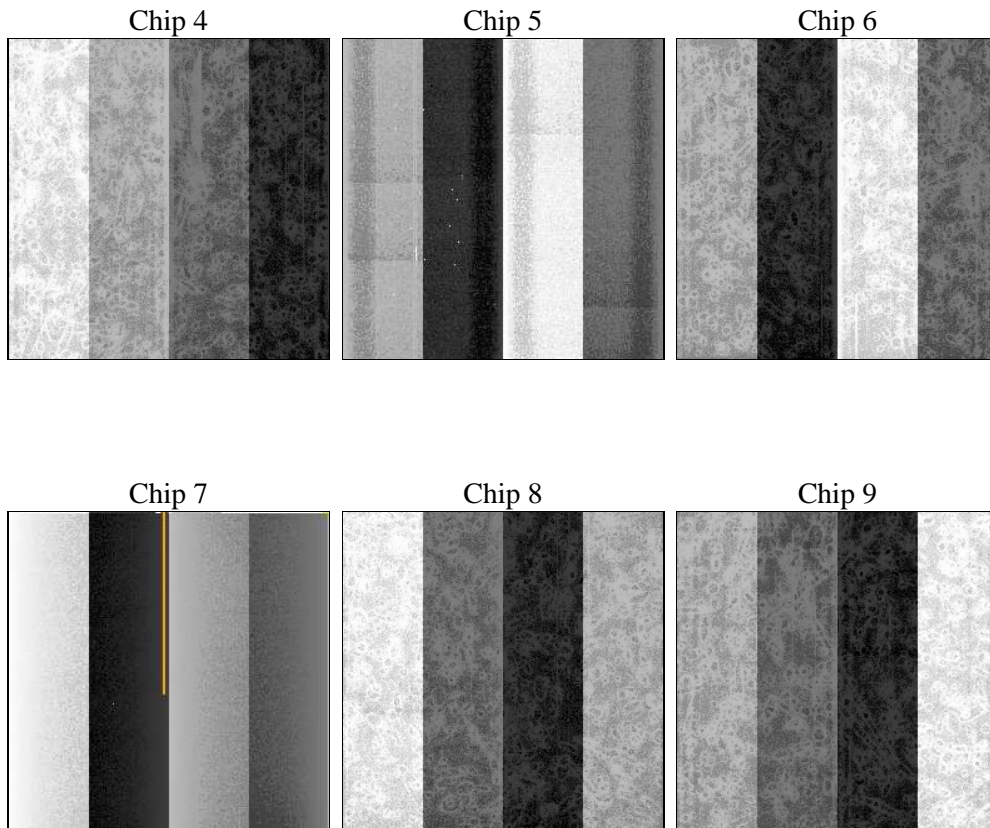
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                     |
|----------|---------------------|--------------------------------|----------------|-----------------|-------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 2000.000000     | Scheduled observation exposure time |
| ascdsver | 8.1.2               | ASCDS version number           | ontime         | 1043.6098948866 | Sum of GTIs [s]                     |
| caldsver | 4.1.4               | &#160                          | ontime4        | 1317.6982986331 | Sum of GTIs [s]                     |
| date     | 2009-12-16T08:05:40 | Date and time of file creation | ontime5        | 1758.5093090385 | Sum of GTIs [s]                     |
| revision | 3                   | Processing version of data     | ontime6        | 1567.1288258582 | Sum of GTIs [s]                     |
|          |                     |                                | ontime7        | 1043.6098948866 | Sum of GTIs [s]                     |
|          |                     |                                | ontime8        | 1508.8738014624 | Sum of GTIs [s]                     |
|          |                     |                                | ontime9        | 1505.5916515887 | Sum of GTIs [s]                     |
|          |                     |                                | l1events       | 346087          | Number of level 1 events            |

### 2.1.4 Events

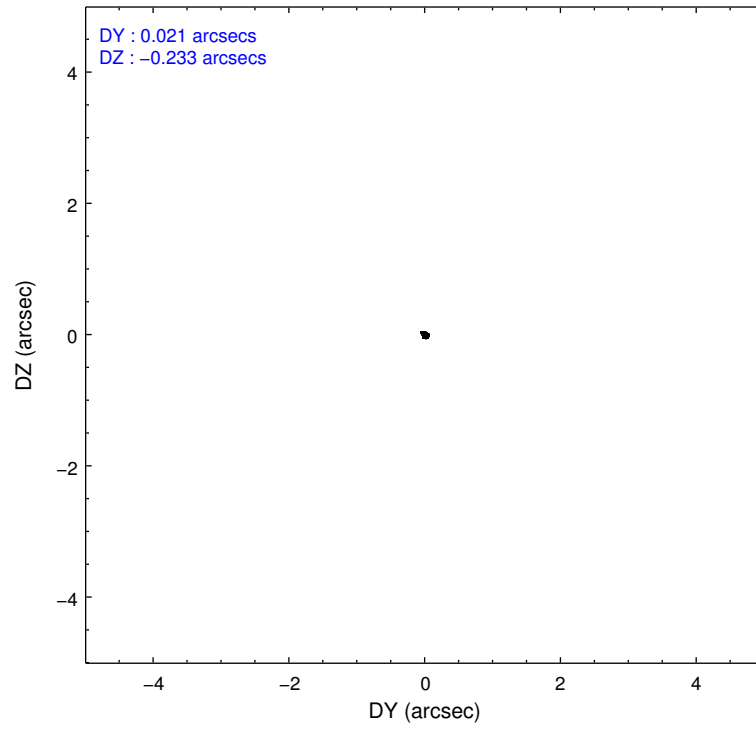
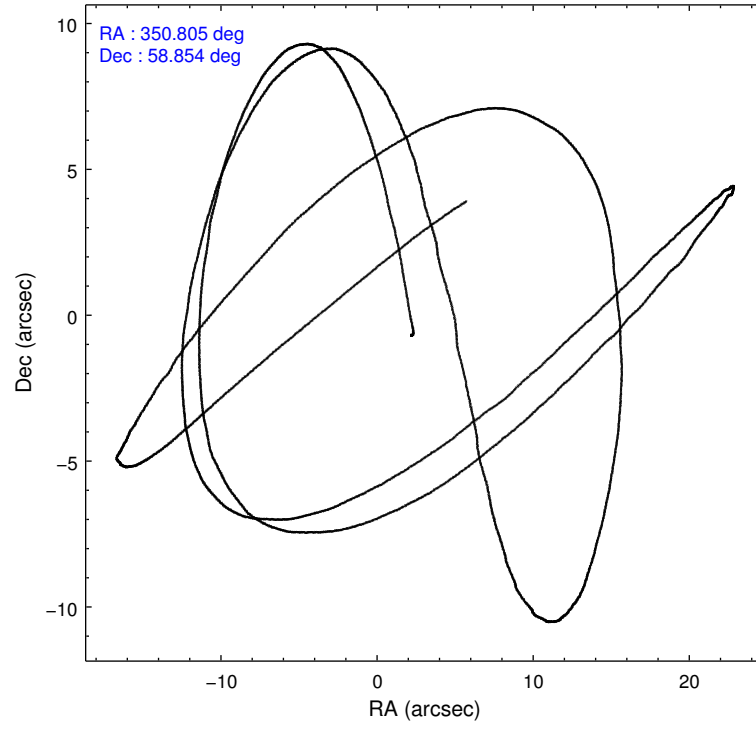
|                 | ccd 4 | ccd 5 | ccd 6 | ccd 7  | ccd 8 | ccd 9 |
|-----------------|-------|-------|-------|--------|-------|-------|
| level 1 events  | 0     | 0     | 0     | 346087 | 0     | 0     |
| rejected events | 0     | 0     | 0     | 9462   | 0     | 0     |
| rejected %      | 0%    | 0%    | 0%    | 2%     | 0%    | 0%    |

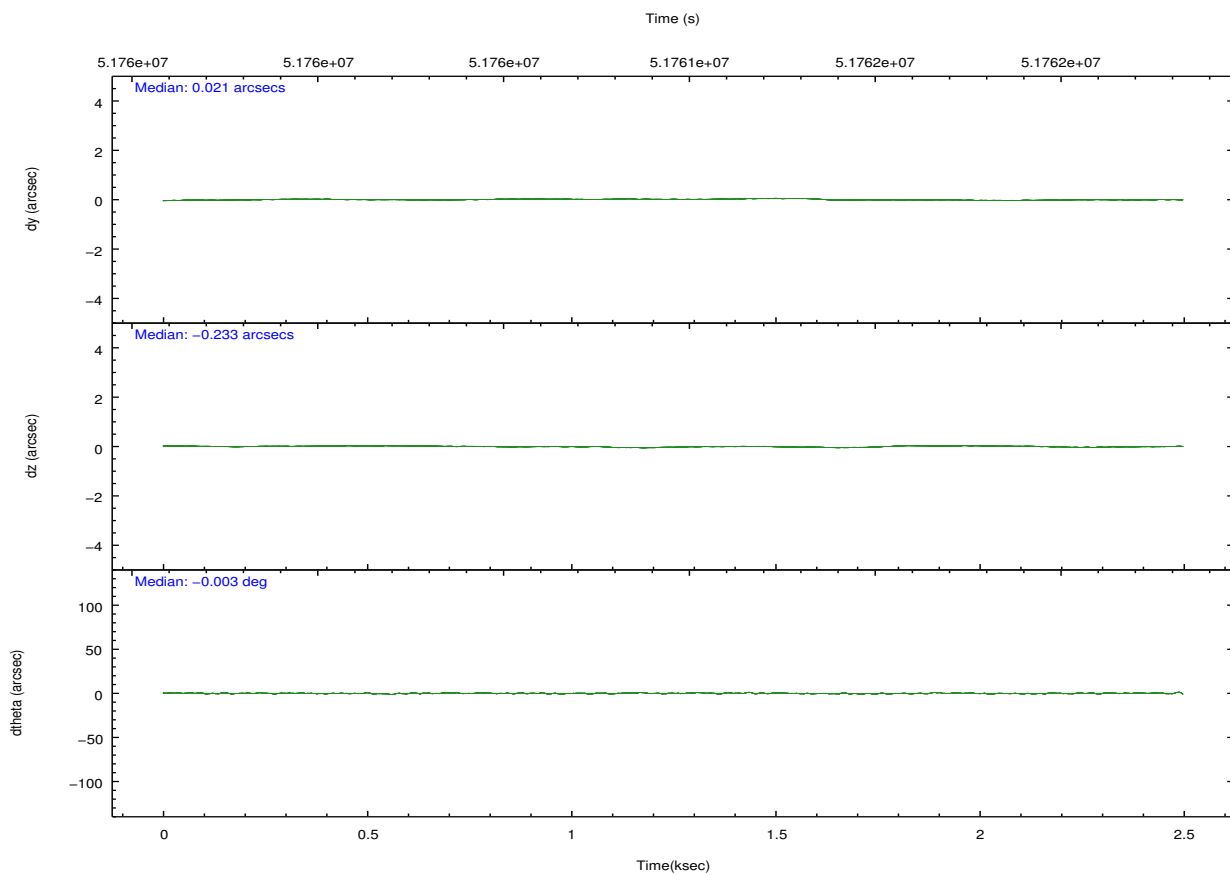
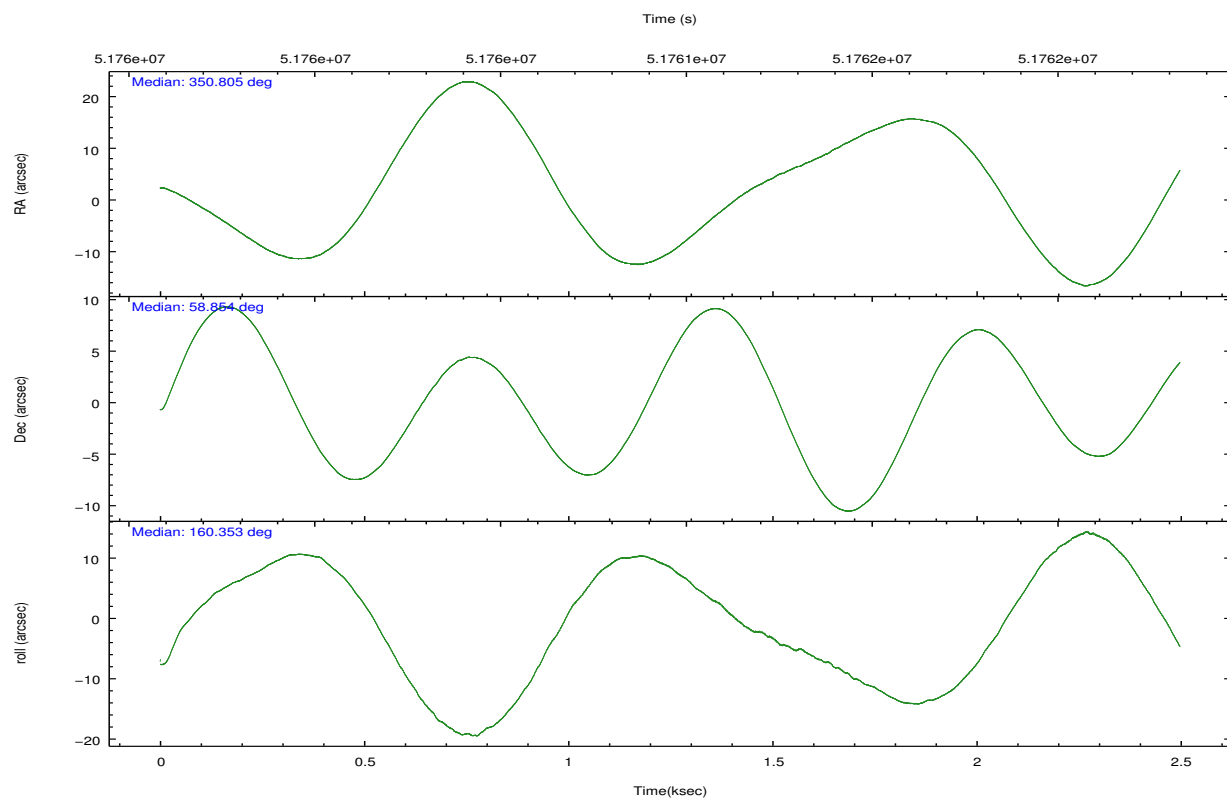
|                | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|----------------|-------|-------|-------|-------|-------|-------|
| grade 0 events | 0     | 0     | 0     | 73003 | 0     | 0     |
|                | 0%    | 0%    | 0%    | 21%   | 0%    | 0%    |
| grade 1 events | 0     | 0     | 0     | 1543  | 0     | 0     |
|                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 0     | 0     | 0     | 80582 | 0     | 0     |
|                | 0%    | 0%    | 0%    | 23%   | 0%    | 0%    |
| grade 3 events | 0     | 0     | 0     | 45376 | 0     | 0     |
|                | 0%    | 0%    | 0%    | 13%   | 0%    | 0%    |
| grade 4 events | 0     | 0     | 0     | 42317 | 0     | 0     |
|                | 0%    | 0%    | 0%    | 12%   | 0%    | 0%    |
| grade 5 events | 0     | 0     | 0     | 6876  | 0     | 0     |
|                | 0%    | 0%    | 0%    | 1%    | 0%    | 0%    |
| grade 6 events | 0     | 0     | 0     | 96390 | 0     | 0     |
|                | 0%    | 0%    | 0%    | 27%   | 0%    | 0%    |
| grade 7 events | 0     | 0     | 0     | 0     | 0     | 0     |
|                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual              | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|---------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                | Obspar format version number          | 6         | 6       |
| Detector                          | ACIS-7              | ACIS-456789         | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | FAINT               | FAINT               | CCD I0 on                             | N         | N       |
| Observation mode                  | POINTING            | POINTING            | CCD I1 on                             | N         | N       |
| Pointing RA                       | 350.858724          | 350.8054821802063   | CCD I2 on                             | N         | N       |
| Pointing Dec                      | 58.857844           | 58.85341713852042   | CCD I3 on                             | N         | N       |
| Pointing Roll                     | 160.157604          | 160.359798927233    | CCD S0 on                             | N         | Y       |
| Window start time                 | 49852864.184000     | 49852864.184000     | CCD S1 on                             | N         | Y       |
| Window stop time                  | 55036864.184000     | 55036864.184000     | CCD S2 on                             | N         | Y       |
| SIM focus pos (mm)                | -0.684267           | -0.865731118321573  | CCD S3 on                             | Y         | Y       |
| SIM defocus (mm)                  | 0                   | -0.1814636570216768 | CCD S4 on                             | N         | Y       |
| SIM translation stage pos (mm)    | -190.132523         | -190.1199515274594  | CCD S5 on                             | N         | Y       |
| SIM translation stage offset (mm) | 0                   | -0.012571055548392  | Number of optional ACIS chips dropped | 0         | 0       |
| Observation start time            | 51760205.184000     | 51759532.209582     | On-chip summing requested             | N         | N       |
| Observation start date            | 1999-08-23T01:49:01 | 1999-08-23T01:38:52 | Subarray requested                    | NONE      | NONE    |
| Observation end time              | 51762205.184000     | 51762331.484683     | Alternating exposures requested       | N         | N       |
| Observation end date              | 1999-08-23T02:22:21 | 1999-08-23T02:25:31 | Primary exposure time                 | 0.000000  | 3.2     |
| Read mode                         | TIMED               | TIMED               |                                       |           |         |

## 2.3 Aspect





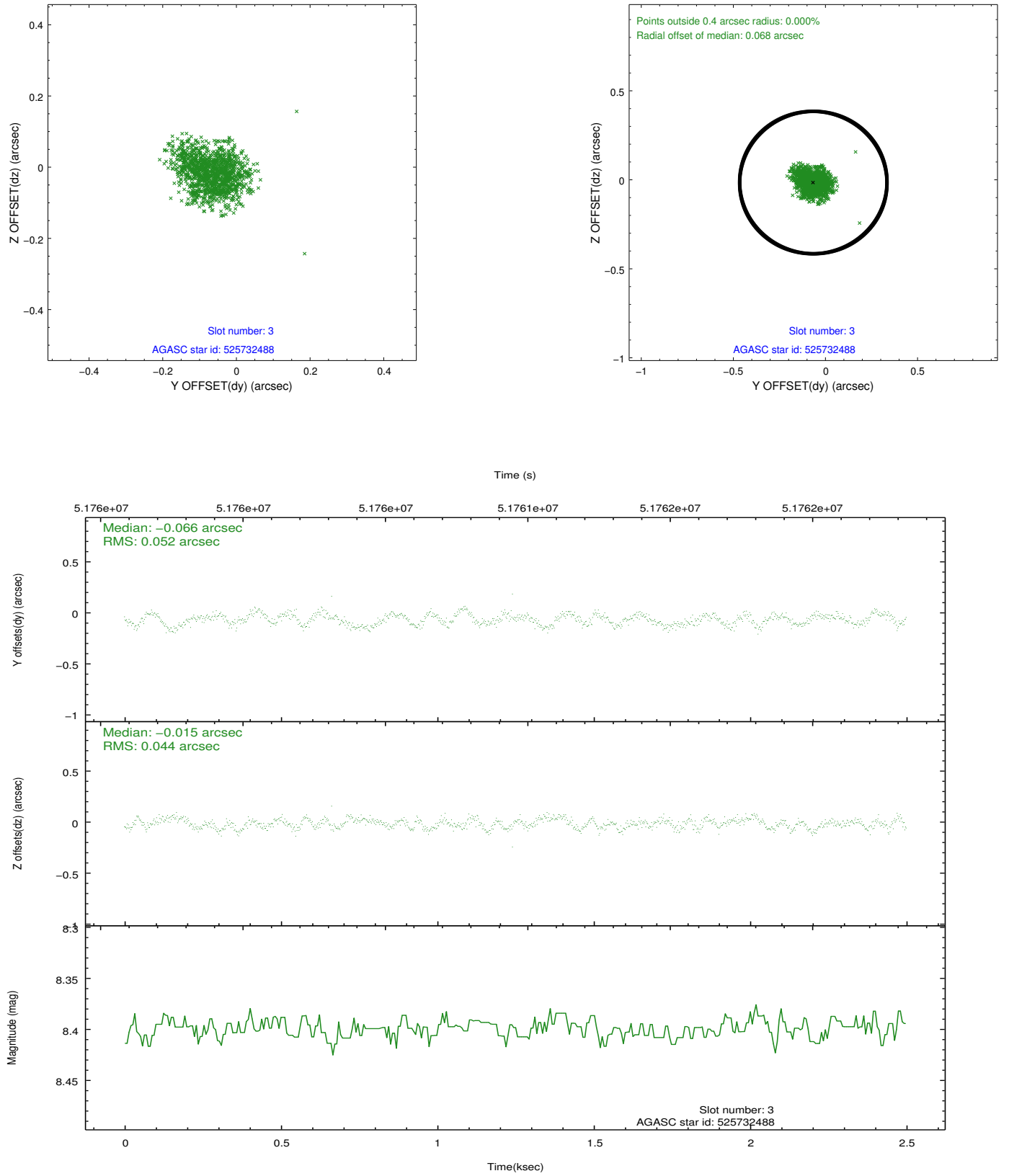
Slot Statistics

| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    | ACIS-S-2  | 7.12 | 1220  | -0.028 | -0.024 | 0.006 | 0.011 | 0.000000   | 0.000000  | -752.63  | -1721.12 |
| 1    | FID    | ACIS-S-4  | 7.22 | 1220  | 0.137  | 0.020  | 0.005 | 0.010 | 0.000000   | 0.000000  | 2160.25  | 186.06   |
| 2    | FID    | ACIS-S-5  | 7.25 | 1220  | -0.140 | 0.012  | 0.007 | 0.010 | 0.000000   | 0.000000  | -1803.96 | 181.19   |
| 3    | GUIDE  | 525732488 | 8.40 | 1220  | -0.066 | -0.015 | 0.073 | 0.113 | 350.087090 | 58.516915 | 949.47   | 1639.49  |
| 4    | GUIDE  | 525609504 | 9.07 | 1218  | -0.074 | -0.217 | 0.088 | 0.137 | 349.896632 | 58.356658 | 1100.49  | 2303.25  |
| 5    | GUIDE  | 525731480 | 9.50 | 1215  | 0.106  | 0.022  | 0.074 | 0.119 | 351.647209 | 58.687294 | -1593.15 | 70.68    |
| 6    | GUIDE  | 525732528 | 9.37 | 1220  | 0.036  | 0.104  | 0.084 | 0.143 | 351.607241 | 59.298932 | -754.63  | -1967.49 |
| 7    | GUIDE  | 525737208 | 9.36 | 1219  | -0.007 | 0.110  | 0.101 | 0.155 | 351.154109 | 59.407897 | 162.03   | -2048.61 |

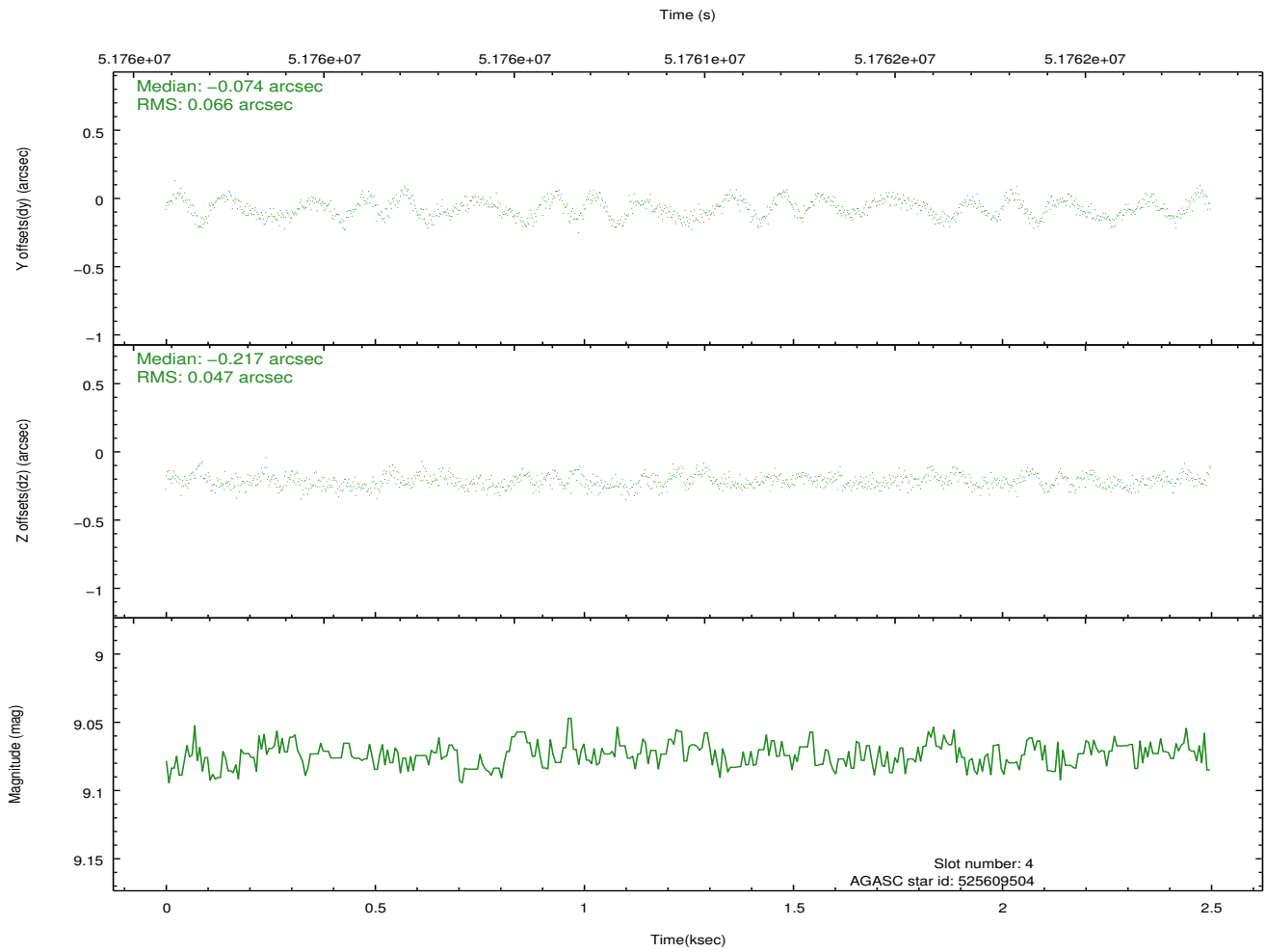
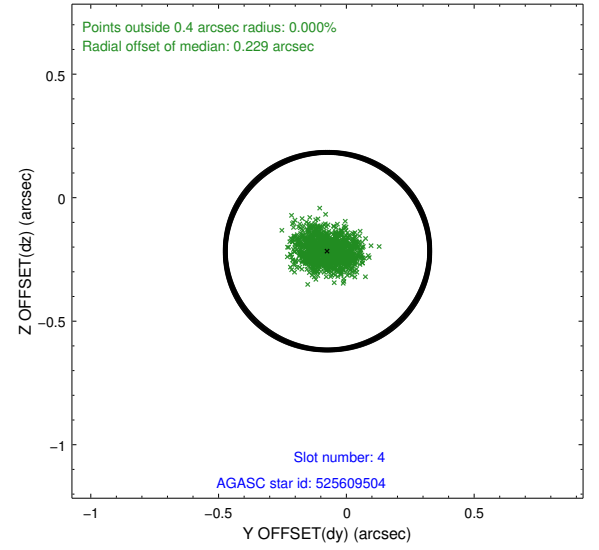
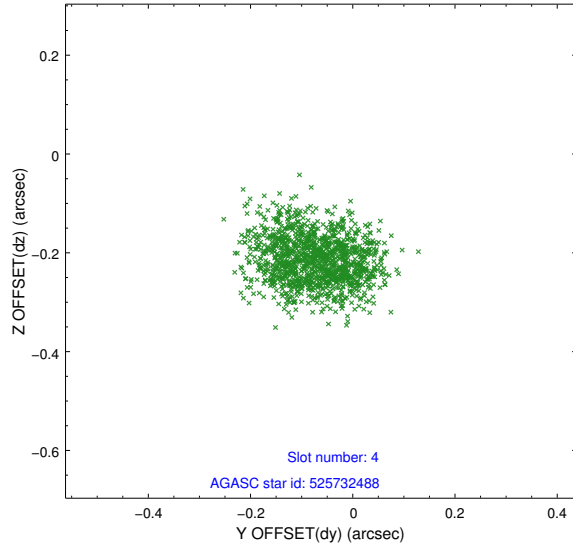


## 2.4 Star Slots

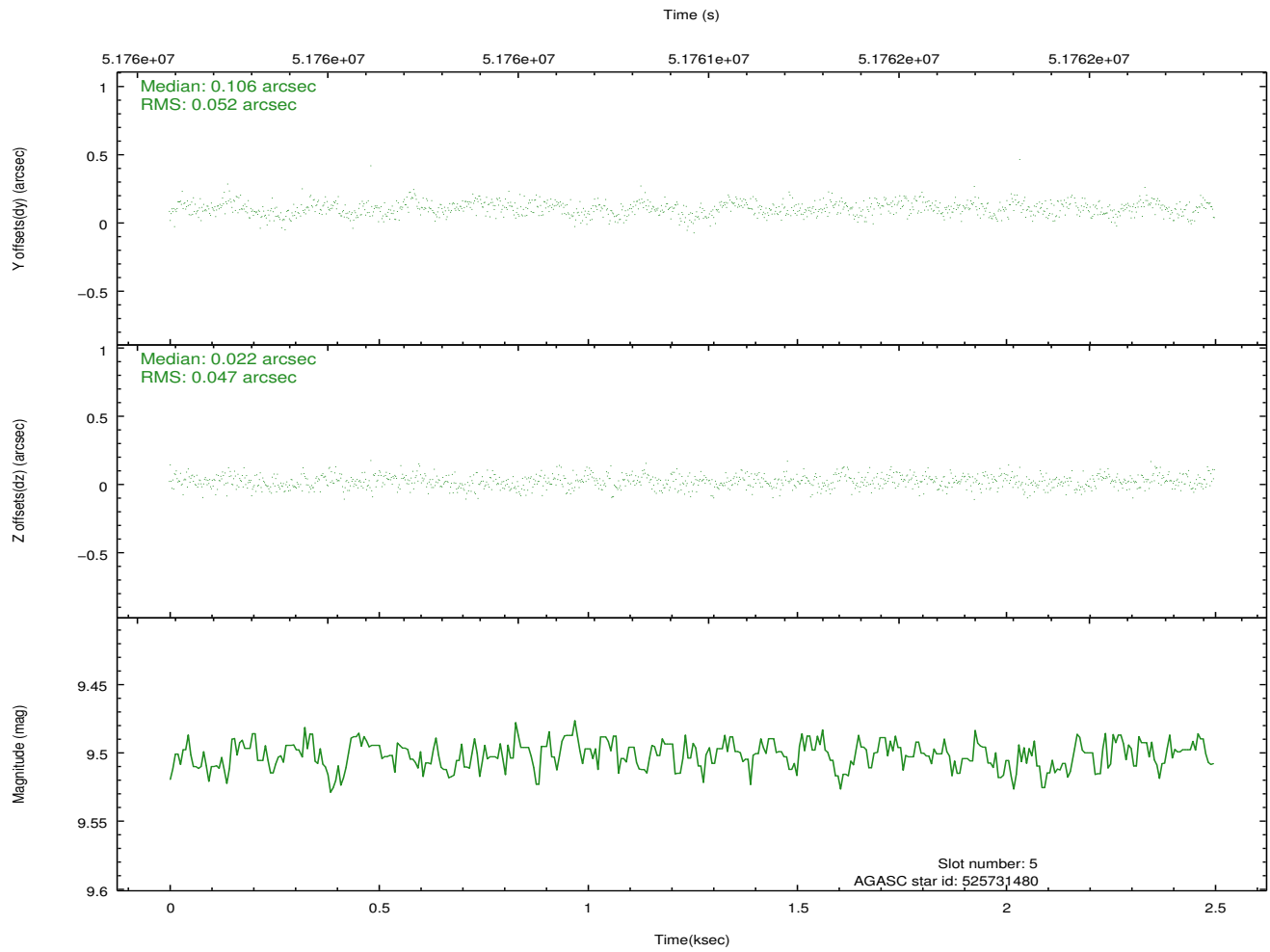
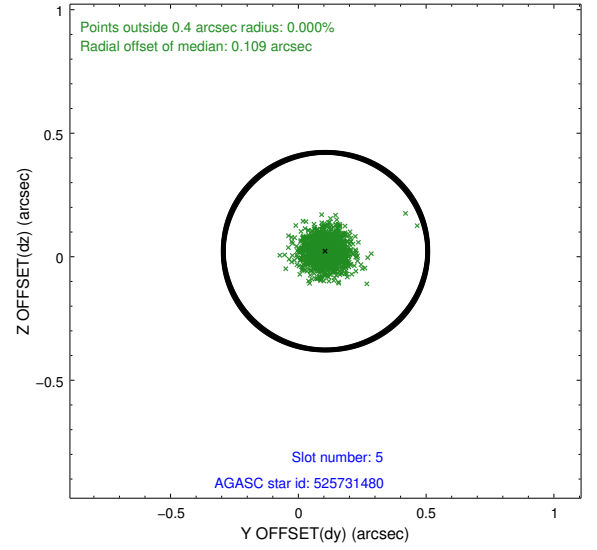
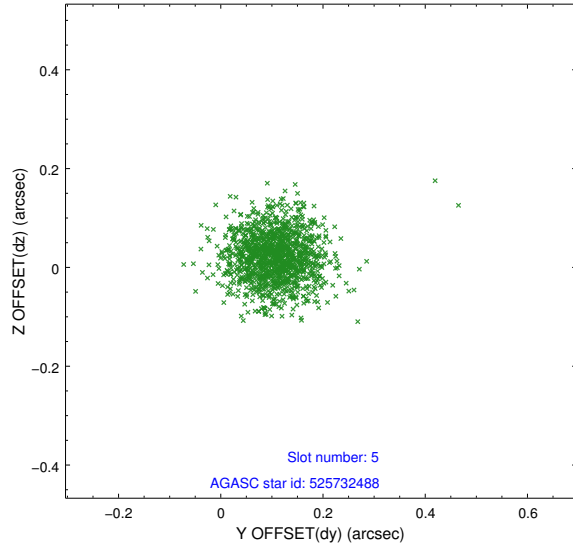
### 2.4.1 Slot 3



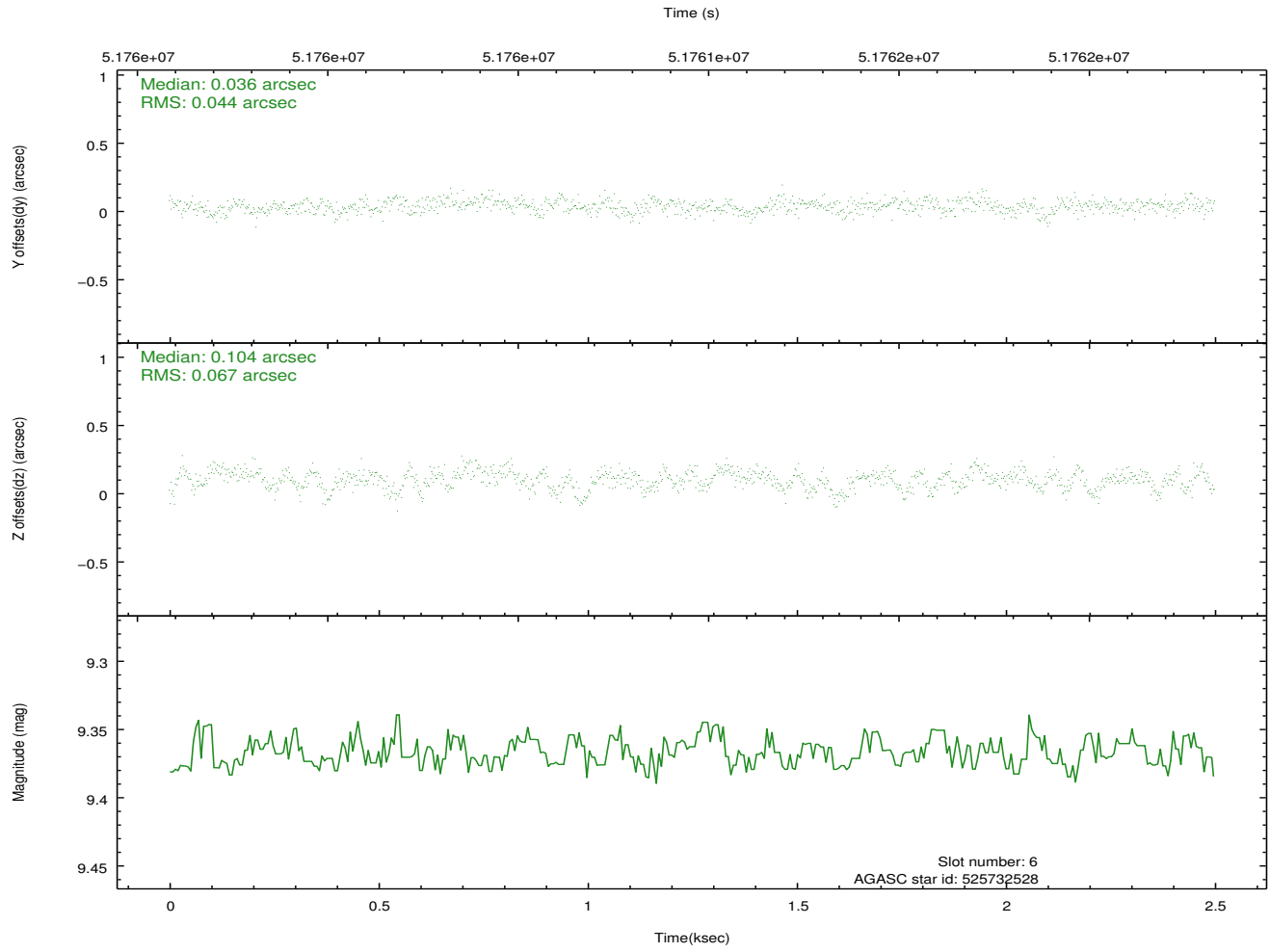
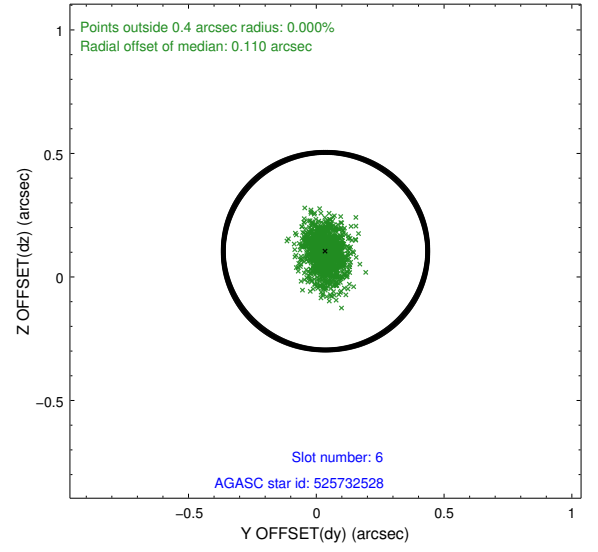
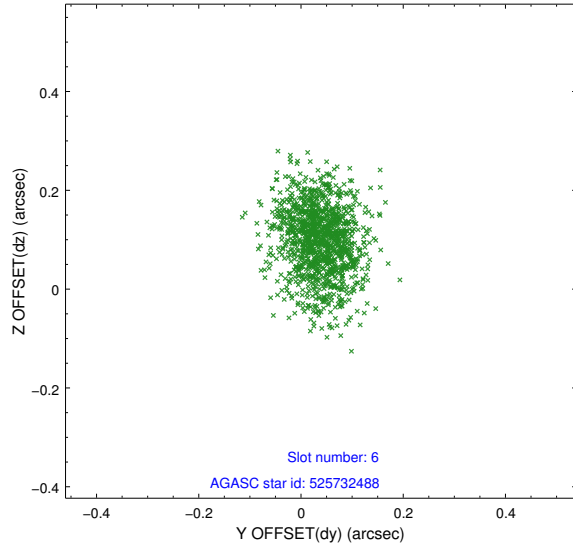
## 2.4.2 Slot 4



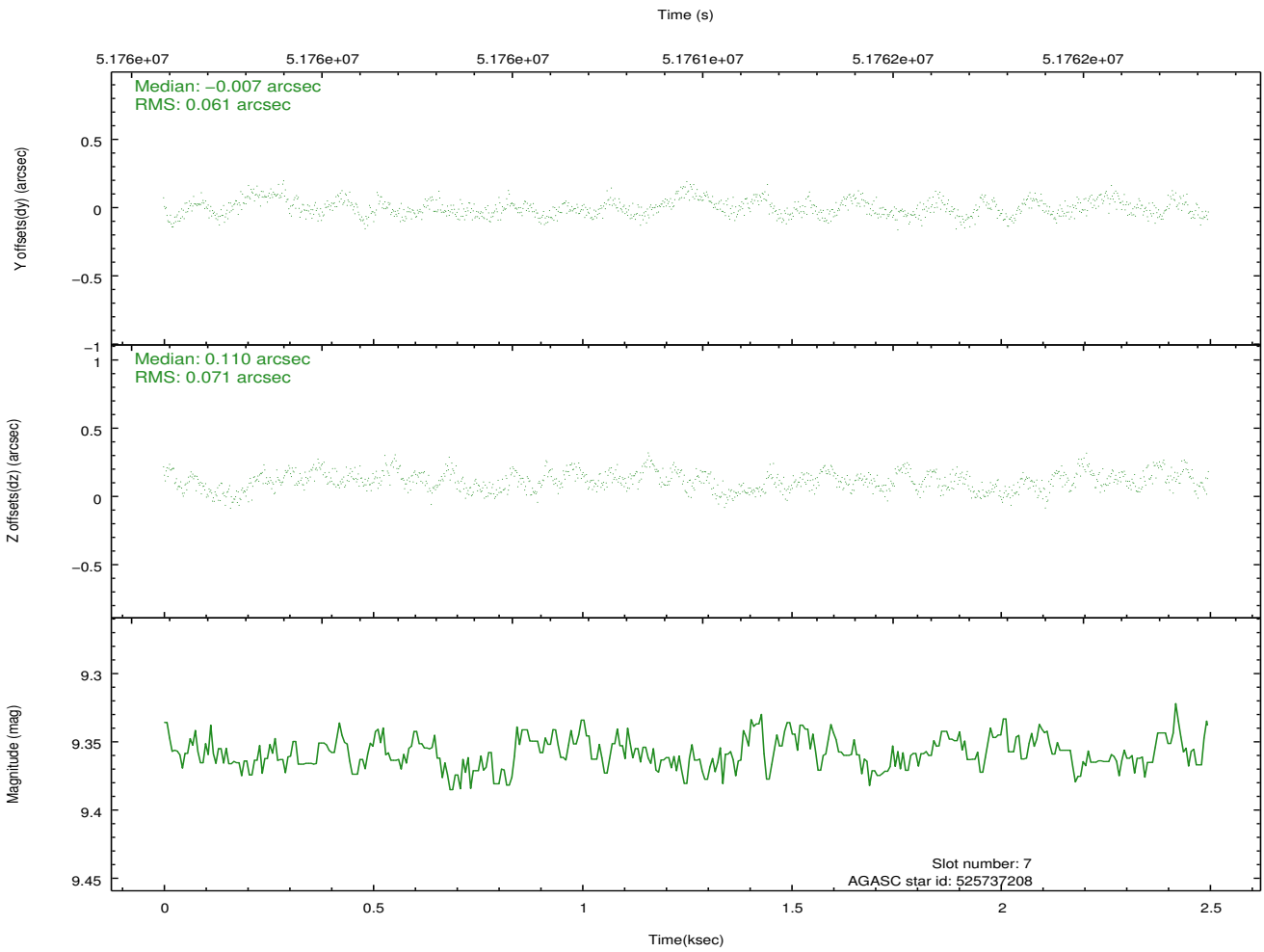
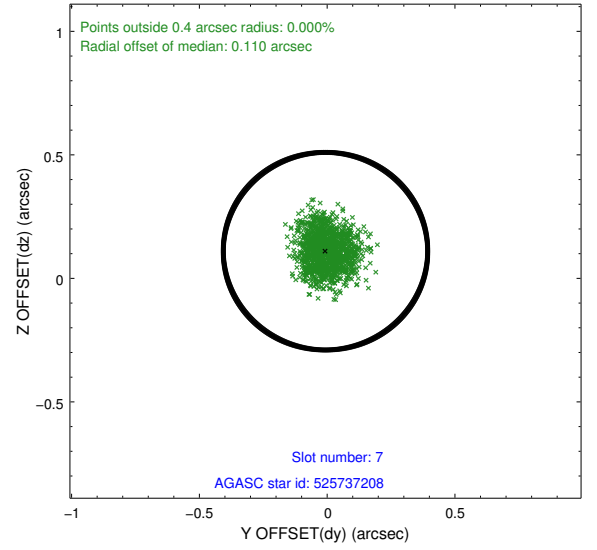
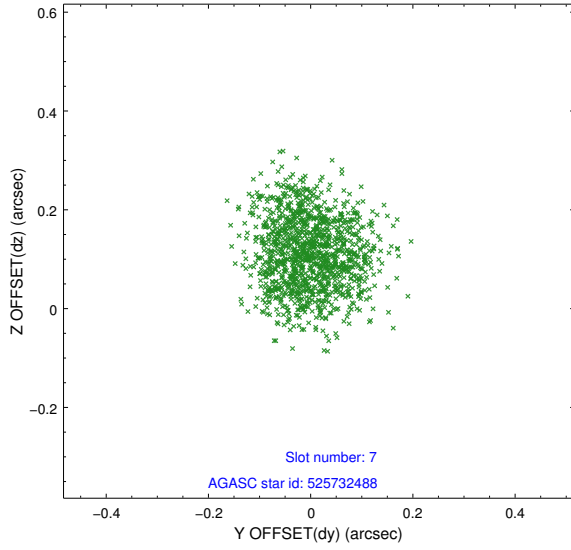
### 2.4.3 Slot 5



## 2.4.4 Slot 6

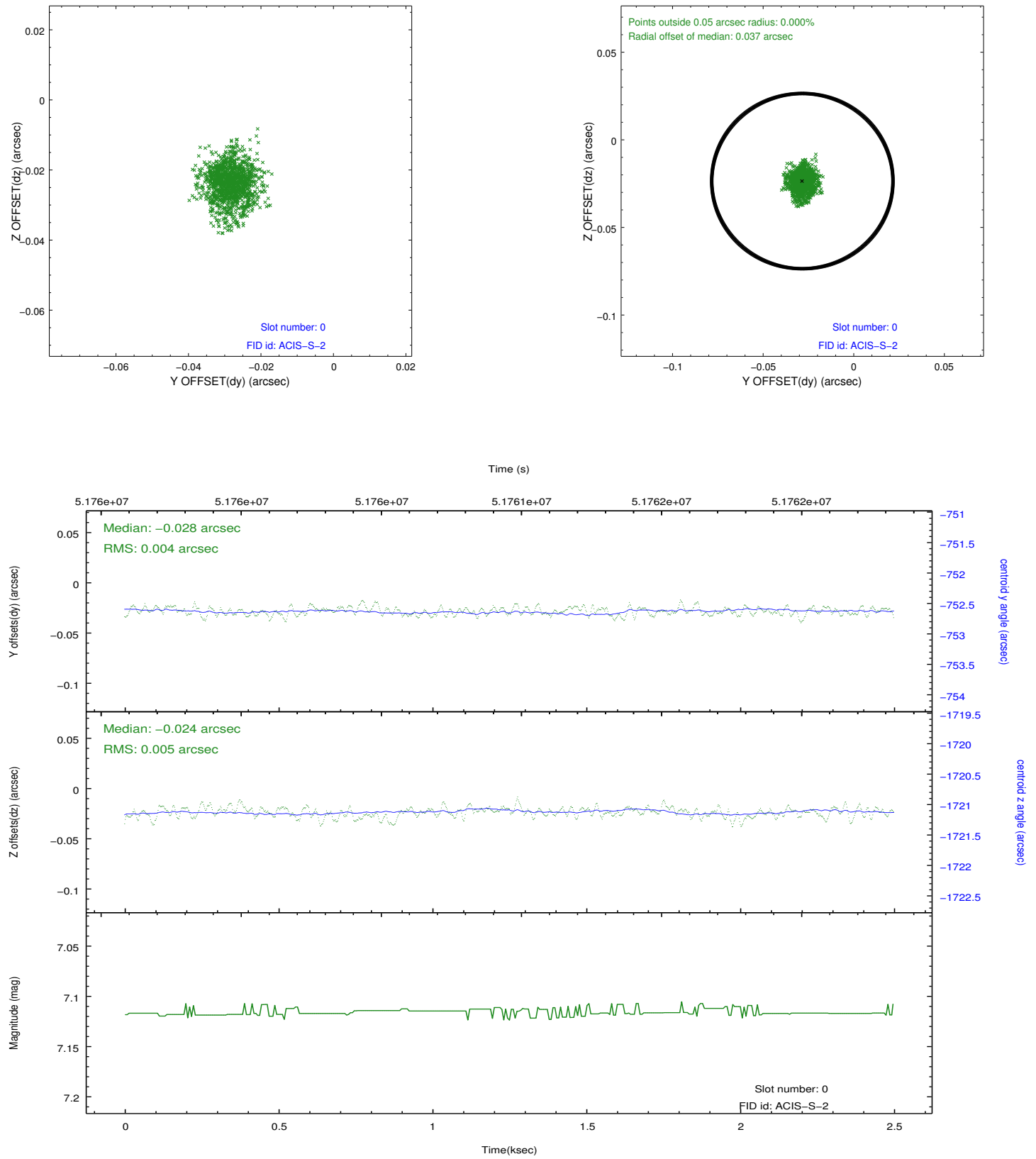


## 2.4.5 Slot 7

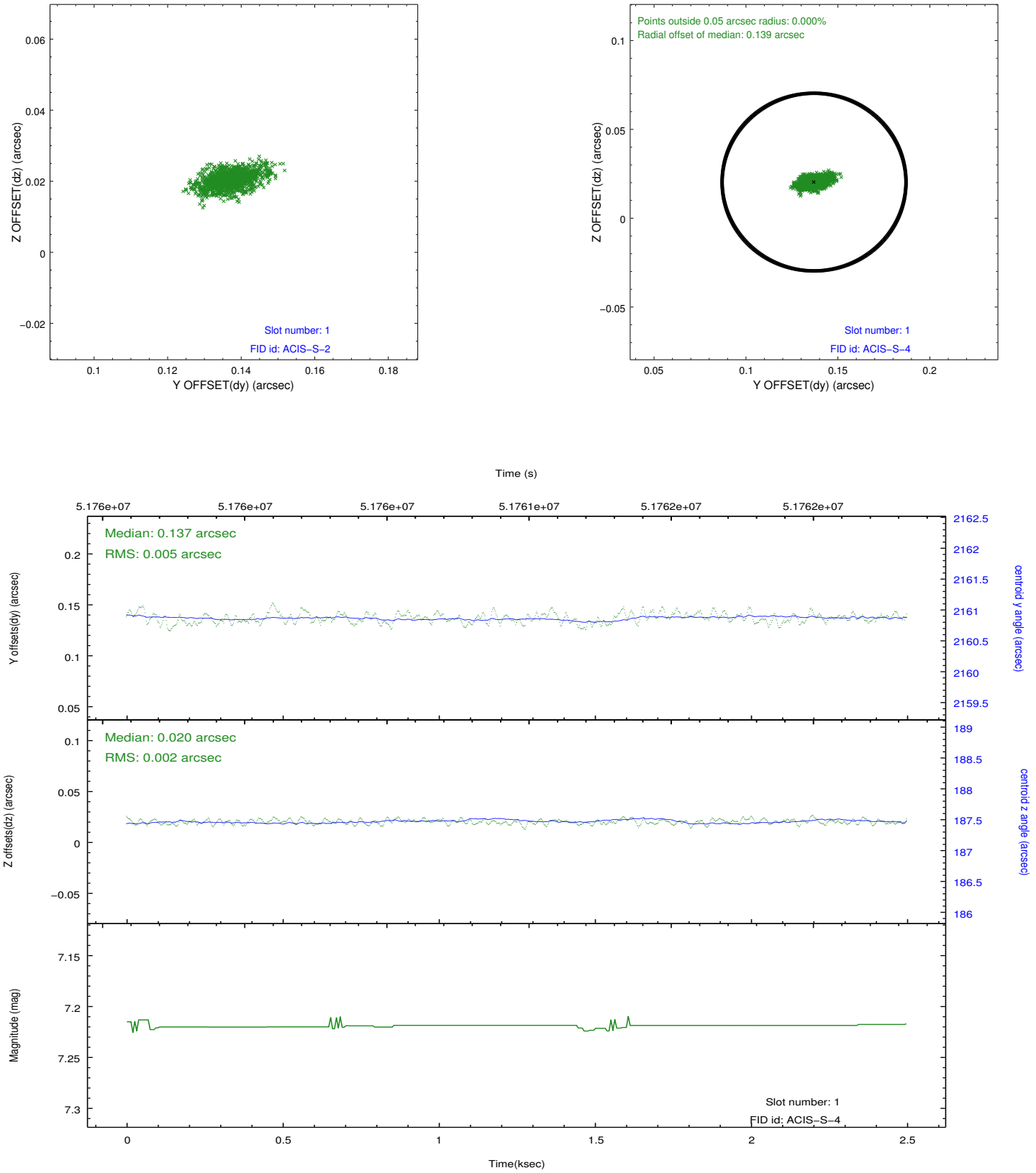


## 2.5 FID Slots

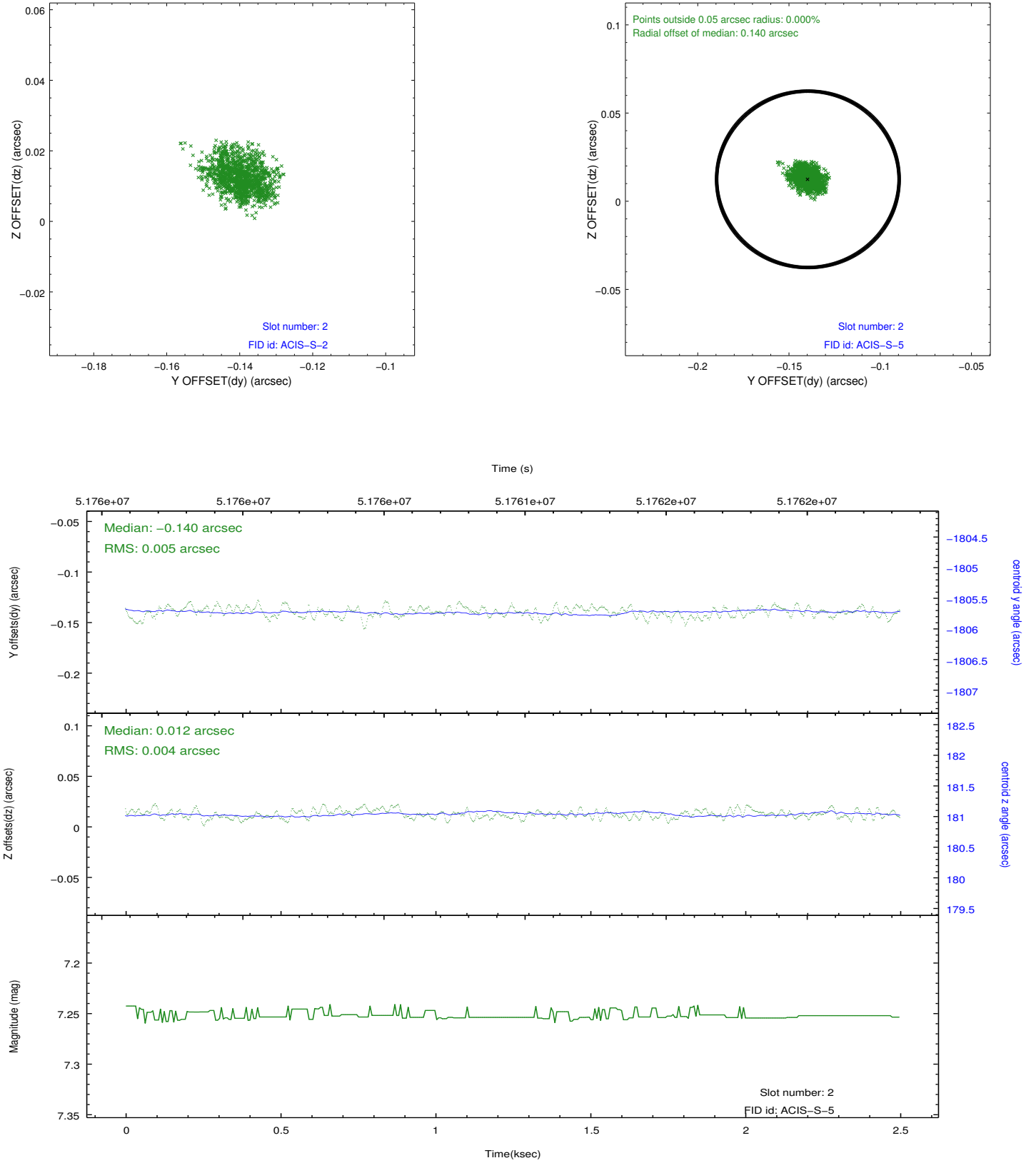
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2





### 3 Point Sources

5.07 arcmin



# A Summary

## A.1 Status

|                            |             |
|----------------------------|-------------|
| V&V Scientist              | Joy Nichols |
| V&V Date (YYYY-MM-DD)      | 2010.04.01  |
| V&V Edition                | 1           |
| V&V Disposition and Status | OK          |
| V&V Charge Time            | 1.051       |

## A.2 Comments

Off-axis ACIS effective area measurement using Cas A on chip S3. Only events from chip S3 were telemetered.

===

Charge time for this ObsId remains at previous value of 1.051 ksec, although with the current processing the charge time would have been 1.043 ksec.

===

Pileup throughout most of the observation.

===

The focal plane temperature is approximately -100 C during this observation. This reprocessing of the data applies no CTI correction because none is available for this temperature at present.

The ACIS CTI correction has not been calibrated at this temperature, because it was early in the mission, and ACIS had not yet been lowered to the standard -119.7 C. Both front and back illuminated chips are affected. However a T\_GAIN correction has been applied to the BI chips (ACIS-5 and ACIS-7) data included here.

The ACIS spectral response calibration is less accurate at these warmer temperatures than it is at -119.7 C. Users whose science objectives depend on the most accurate spectral response (ie: fitting line-rich spectra) may notice an effect. Users whose science objectives do not depend on the most accurate spectral response should not notice an effect.