

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 2471 - L2 Version 3  
Chandra X-Ray Center

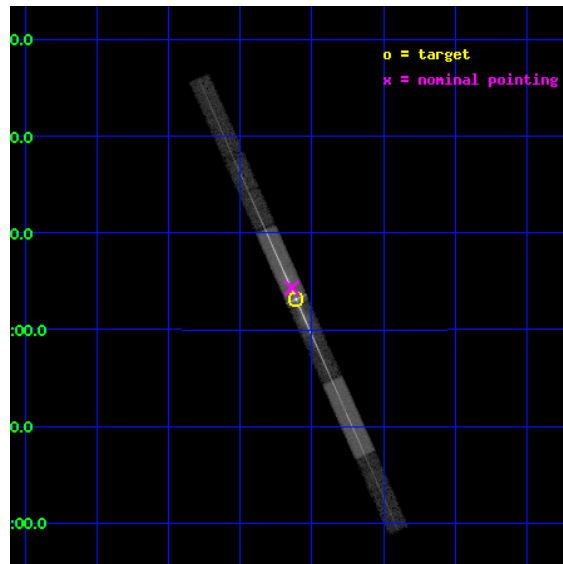
L2 Processing Date : Sep 17 2012

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# 1 Front

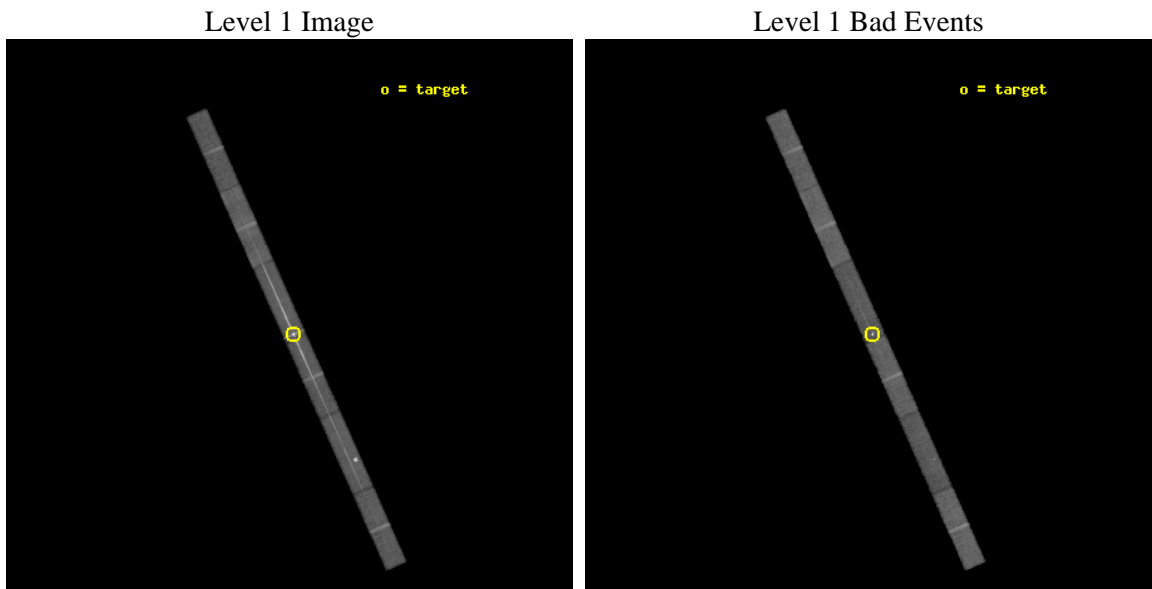
|          |                                       |   |
|----------|---------------------------------------|---|
| seq_num  | 790059                                | Sequence number                             |
| obs_id   | 2471                                  | Observation id                              |
| title    | AO3 CALIBRATION OBSERVATIONS OF 3C273 | Proposal title                              |
| observer | Dr. CXC Calibration                   | Principal investigator                      |
| object   | 3C273                                 | Source name                                 |
| dtycycle | 0                                     | &#160                                       |
| cycle    | P                                     | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 187.277917                            | Observer's specified target RA [deg]        |
| dec_targ | 2.052389                              | Observer's specified target Dec [deg]       |
| ra_nom   | 187.28494622778                       | Nominal RA [deg]                            |
| dec_nom  | 2.07211009738                         | Nominal Dec [deg]                           |
| roll_nom | 245.90610711062                       | Nominal Roll [deg]                          |
| revision | 3                                     | Processing version of data                  |
| ontime   | 25815.858840019                       | Sum of GTIs [s]                             |
| livetime | 24887.334996162                       | Livetime [s]                                |
| ontime4  | 25815.858840019                       | Sum of GTIs [s]                             |
| ontime5  | 25815.858840019                       | Sum of GTIs [s]                             |
| ontime6  | 25815.858840019                       | Sum of GTIs [s]                             |
| ontime7  | 25815.858840019                       | Sum of GTIs [s]                             |
| ontime8  | 25815.858840019                       | Sum of GTIs [s]                             |
| ontime9  | 25816.999860108                       | Sum of GTIs [s]                             |
| l2events | 212451                                | Number of level 2 events                    |



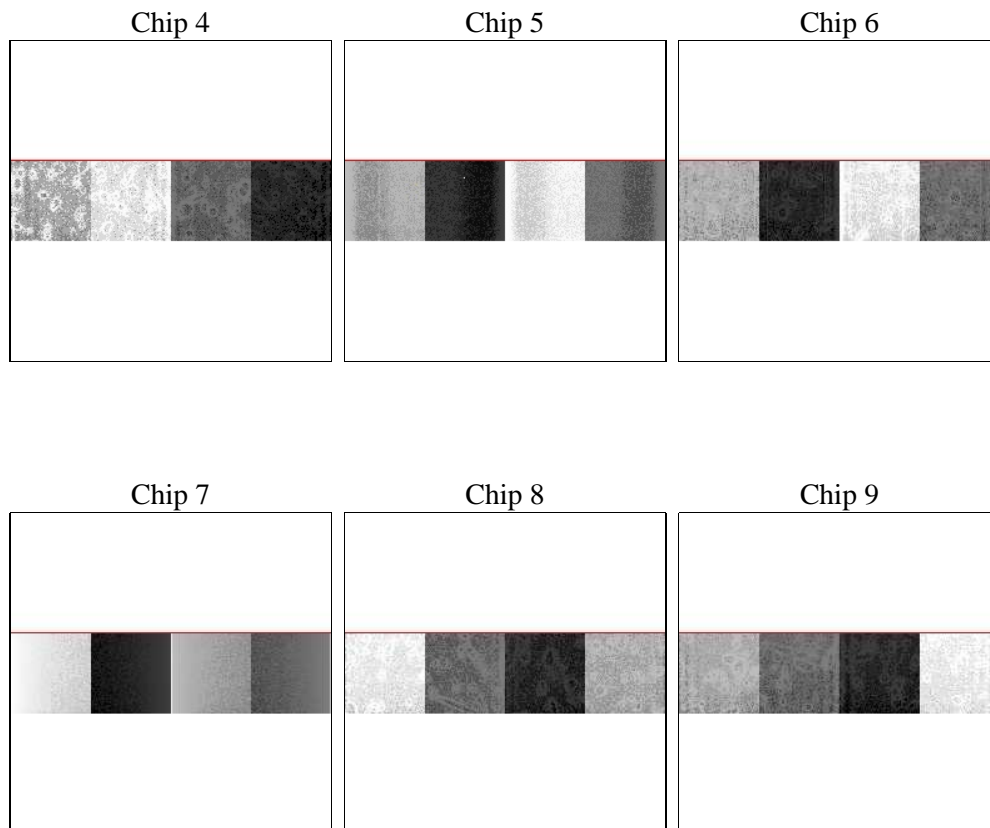
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 27000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.5               | Processing system revision     | ontime         | 25815.858840019 | Sum of GTIs [s]                         |
| caldbver | 4.5.1.1             | &#160                          | ontime4        | 25815.858840019 | Sum of GTIs [s]                         |
| date     | 2012-09-17T22:22:22 | Date and time of file creation | ontime5        | 25815.858840019 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime6        | 25815.858840019 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 25815.858840019 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 25815.858840019 | Sum of GTIs [s]                         |
|          |                     |                                | ontime9        | 25816.999860108 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 569676          | Number of level 1 events                |

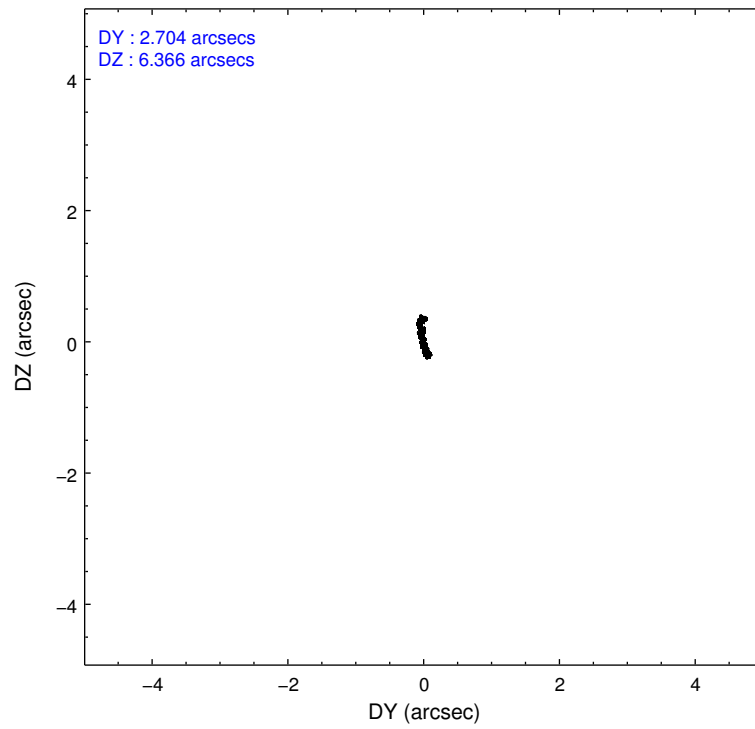
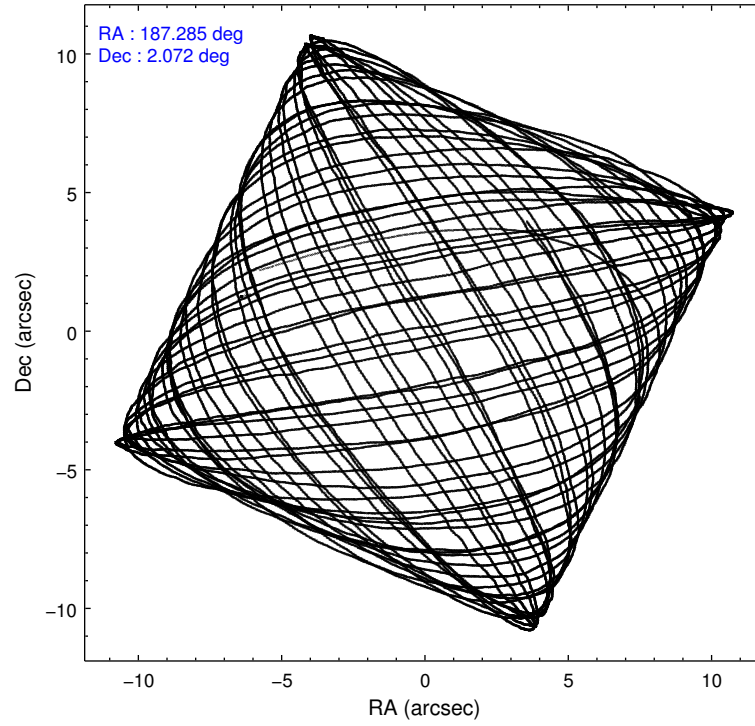
### 2.1.4 Events

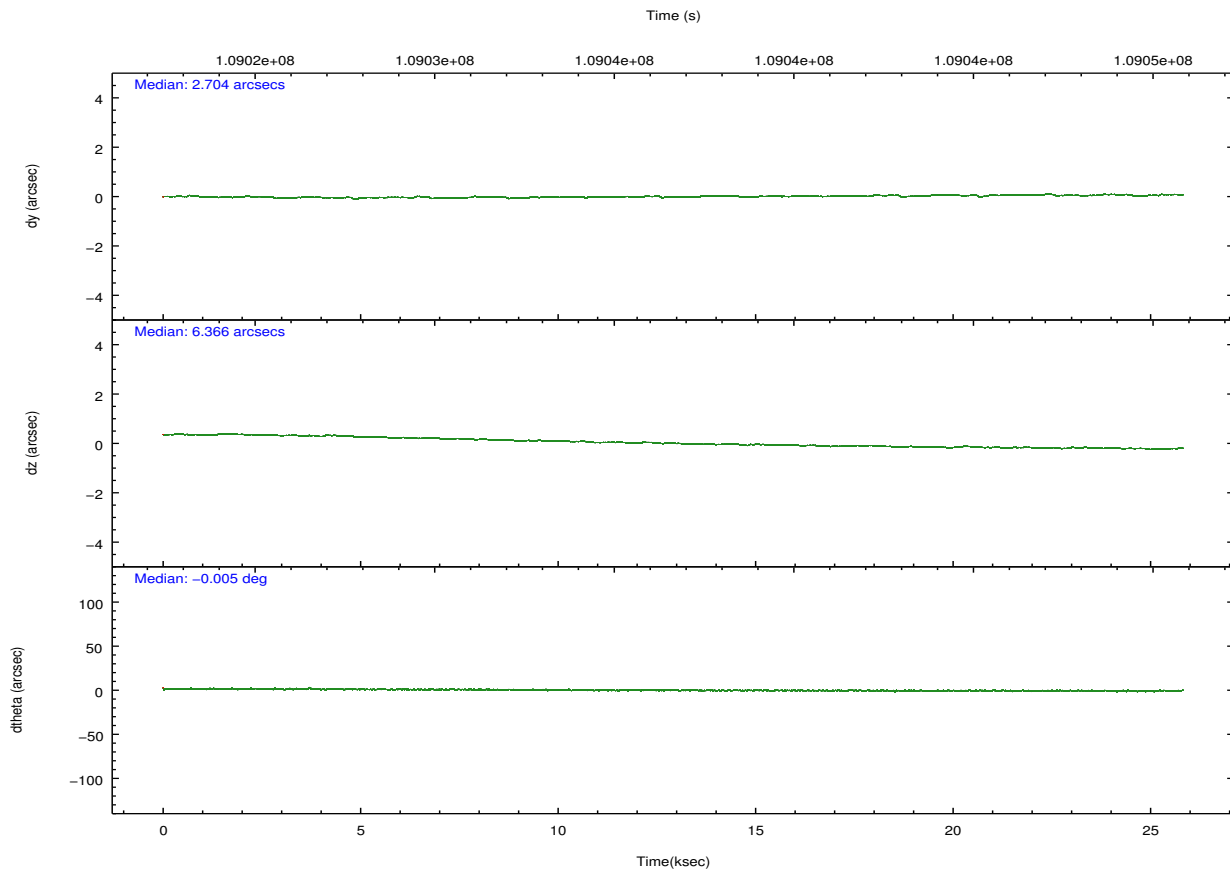
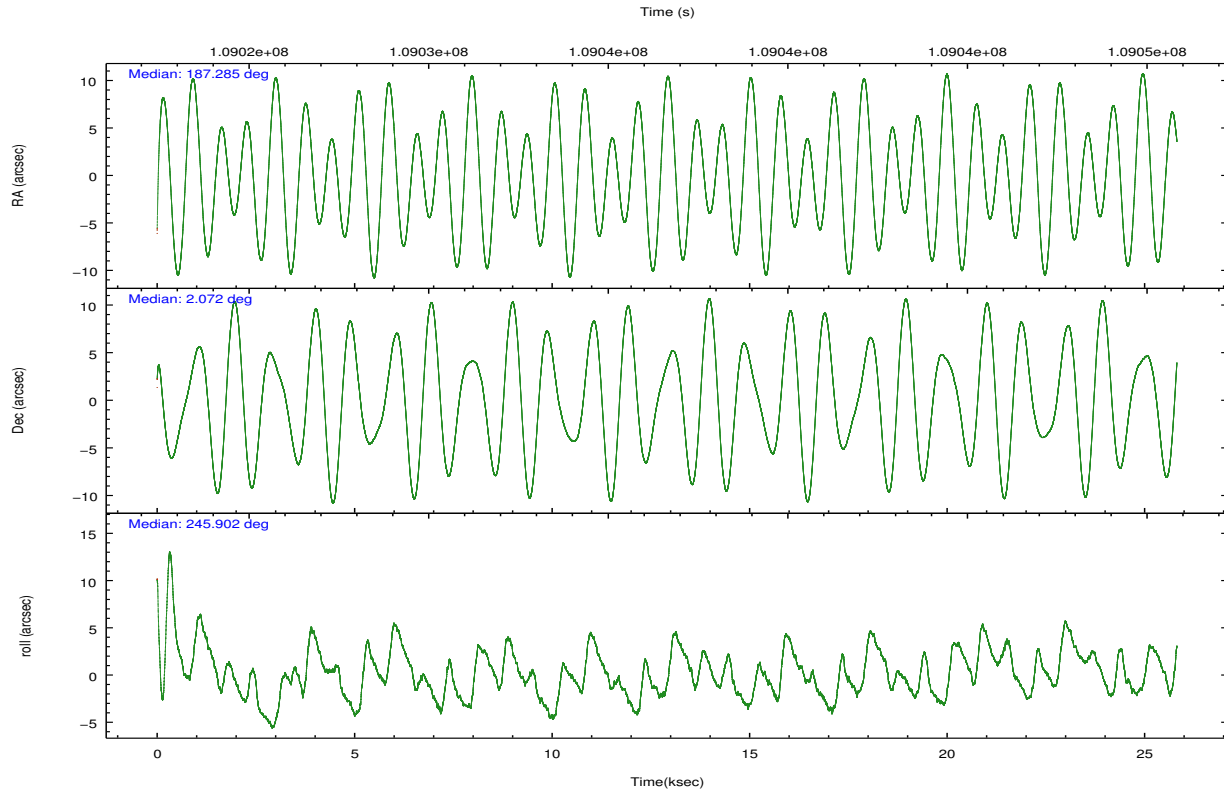
|                 | ccd 4 | ccd 5 | ccd 6 | ccd 7  | ccd 8 | ccd 9 |                | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|-------|-------|-------|--------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 67188 | 93182 | 99708 | 163731 | 87105 | 58762 | grade 0 events | 3666  | 27237 | 35864 | 27605 | 8786  | 3607  |
| rejected events | 58901 | 36685 | 53453 | 52947  | 63724 | 50819 |                | 5%    | 29%   | 35%   | 16%   | 10%   | 6%    |
| rejected %      | 87%   | 39%   | 53%   | 32%    | 73%   | 86%   | grade 1 events | 14    | 92    | 103   | 958   | 37    | 21    |
|                 |       |       |       |        |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |        |       |       | grade 2 events | 1797  | 10523 | 5359  | 26787 | 4166  | 1417  |
|                 |       |       |       |        |       |       |                | 2%    | 11%   | 5%    | 16%   | 4%    | 2%    |
|                 |       |       |       |        |       |       | grade 3 events | 869   | 2440  | 1989  | 12363 | 2768  | 951   |
|                 |       |       |       |        |       |       |                | 1%    | 2%    | 1%    | 7%    | 3%    | 1%    |
|                 |       |       |       |        |       |       | grade 4 events | 850   | 2299  | 1995  | 12324 | 2373  | 910   |
|                 |       |       |       |        |       |       |                | 1%    | 2%    | 2%    | 7%    | 2%    | 1%    |
|                 |       |       |       |        |       |       | grade 5 events | 1722  | 5263  | 1940  | 9913  | 2481  | 1989  |
|                 |       |       |       |        |       |       |                | 2%    | 5%    | 1%    | 6%    | 2%    | 3%    |
|                 |       |       |       |        |       |       | grade 6 events | 1269  | 15699 | 2137  | 34756 | 5825  | 1204  |
|                 |       |       |       |        |       |       |                | 1%    | 16%   | 2%    | 21%   | 6%    | 2%    |
|                 |       |       |       |        |       |       | grade 7 events | 57001 | 29629 | 50321 | 39025 | 60669 | 48663 |
|                 |       |       |       |        |       |       |                | 84%   | 31%   | 50%   | 23%   | 69%   | 82%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-456789         | ACIS-456789          | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | LETG                | LETG                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | FAINT               | FAINT                | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                  | POINTING            | POINTING             | On-chip summing requested             | N         | N       |
| [deg] Pointing RA                 | 187.281848          | 187.284946227782     | Subarray requested                    | CUSTOM    | 1/4     |
| [deg] Pointing Dec                | 2.099242            | 2.072110097380015    | Subarray start row                    | 385       | 385     |
| [deg] Pointing Roll               | 245.749586          | 245.9061071106192    | Subarray row count                    | 256       | 256     |
| [s] Window start time (MET)       | 108777664.184000    | 108777664.184000     | Alternating exposures requested       | N         | N       |
| [s] Window stop time (MET)        | 108950464.184000    | 108950464.184000     | [s] Primary exposure time             | 0.000000  | 1.1     |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  |                                       |           |         |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 |                                       |           |         |
| [mm] SIM translation stage pos    | -190.132523         | -190.1400660498719   |                                       |           |         |
| [mm] SIM translation stage offset | 0                   | 0.00754346686406393  |                                       |           |         |
| [s] Observation start time (MET)  | 109024111.184000    | 109023053.09307      |                                       |           |         |
| Observation start date            | 2001-06-15T20:27:27 | 2001-06-15T20:10:53  |                                       |           |         |
| [s] Observation end time (MET)    | 109051111.184000    | 109050165.36913      |                                       |           |         |
| Observation end date              | 2001-06-16T03:57:27 | 2001-06-16T03:42:45  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



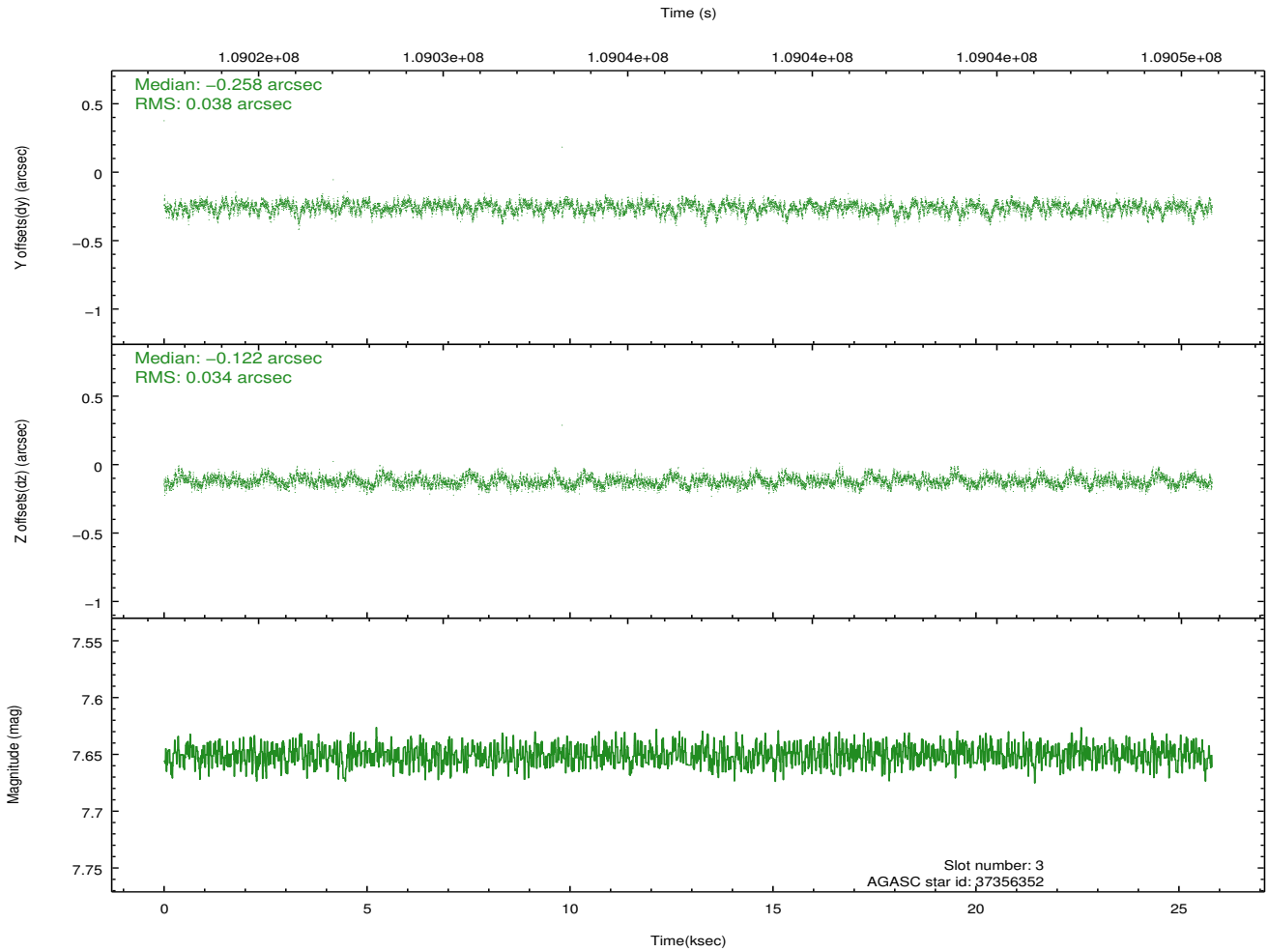
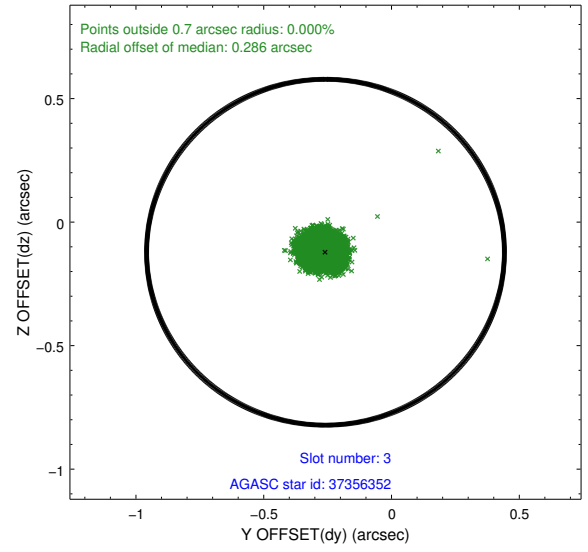
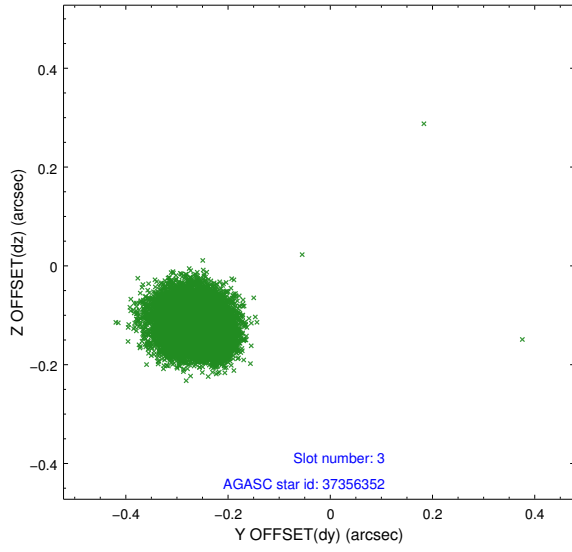


### Slot Statistics

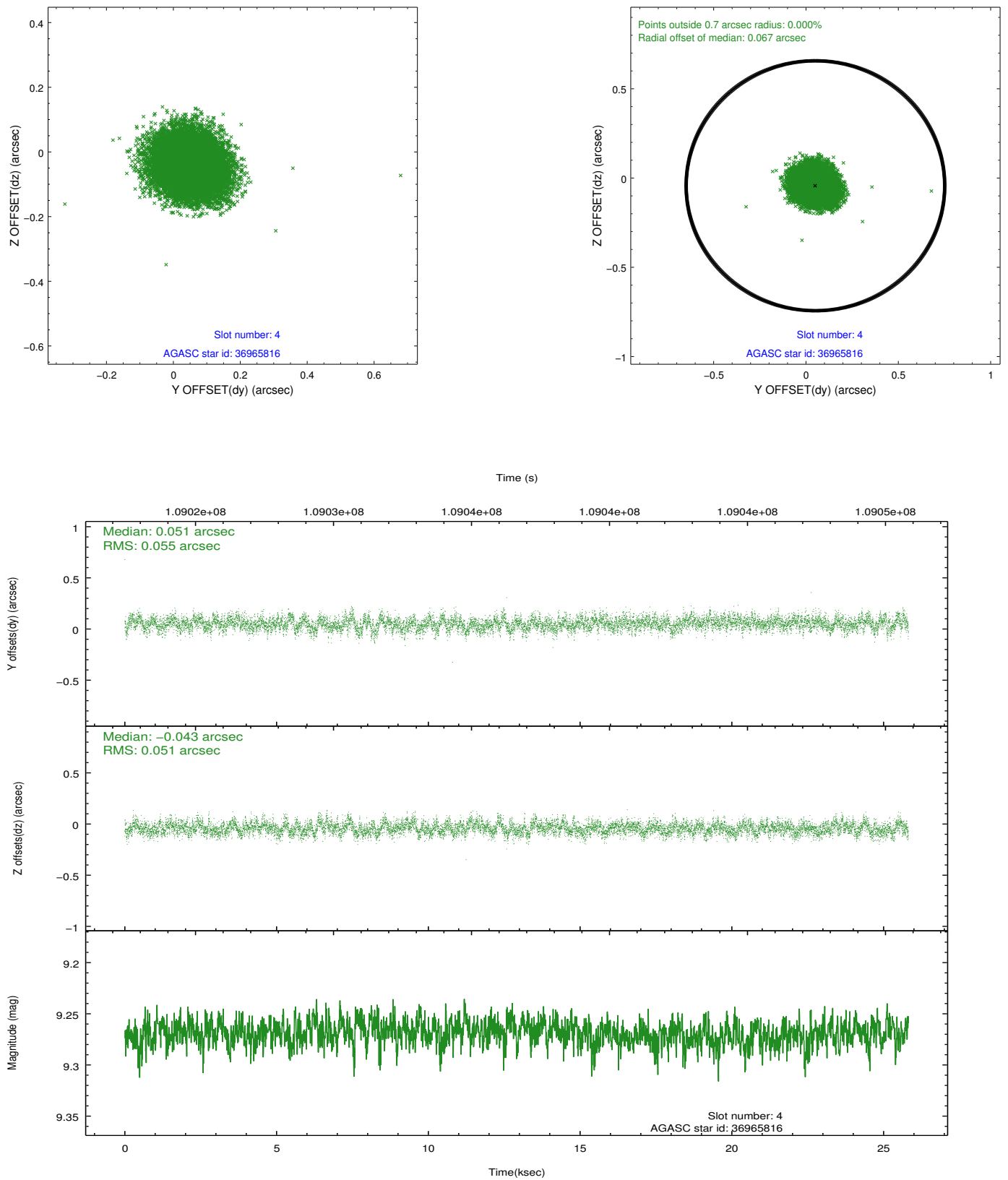
| slot | status | id       | mag   | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec      | mean_y   | mean_z   |
|------|--------|----------|-------|-------|--------|--------|-------|-------|------------|----------|----------|----------|
| 0    | FID    | ACIS-S-2 | 7.11  | 6298  | -0.019 | 0.015  | 0.008 | 0.014 | 0.000000   | 0.000000 | -755.33  | -1727.55 |
| 1    | FID    | ACIS-S-4 | 7.20  | 6298  | -0.058 | 0.005  | 0.007 | 0.012 | 0.000000   | 0.000000 | 2157.83  | 180.85   |
| 2    | FID    | ACIS-S-5 | 7.24  | 6298  | 0.045  | -0.011 | 0.007 | 0.012 | 0.000000   | 0.000000 | -1808.00 | 174.58   |
| 3    | GUIDE  | 37356352 | 7.65  | 12595 | -0.258 | -0.122 | 0.054 | 0.087 | 187.433784 | 2.618460 | -1929.67 | -268.75  |
| 4    | GUIDE  | 36965816 | 9.27  | 12586 | 0.051  | -0.043 | 0.080 | 0.129 | 186.823353 | 1.771455 | 1752.56  | -1018.54 |
| 5    | GUIDE  | 36965296 | 9.09  | 12588 | 0.096  | -0.053 | 0.070 | 0.115 | 186.926292 | 1.837429 | 1384.26  | -778.40  |
| 6    | GUIDE  | 37880408 | 10.07 | 12512 | -0.184 | 0.060  | 0.126 | 0.206 | 187.758191 | 2.290324 | -1332.15 | 1280.55  |
| 7    | GUIDE  | 37883040 | 10.03 | 12540 | 0.299  | 0.161  | 0.134 | 0.223 | 187.575516 | 1.280402 | 2252.91  | 2176.02  |

## 2.4 Star Slots

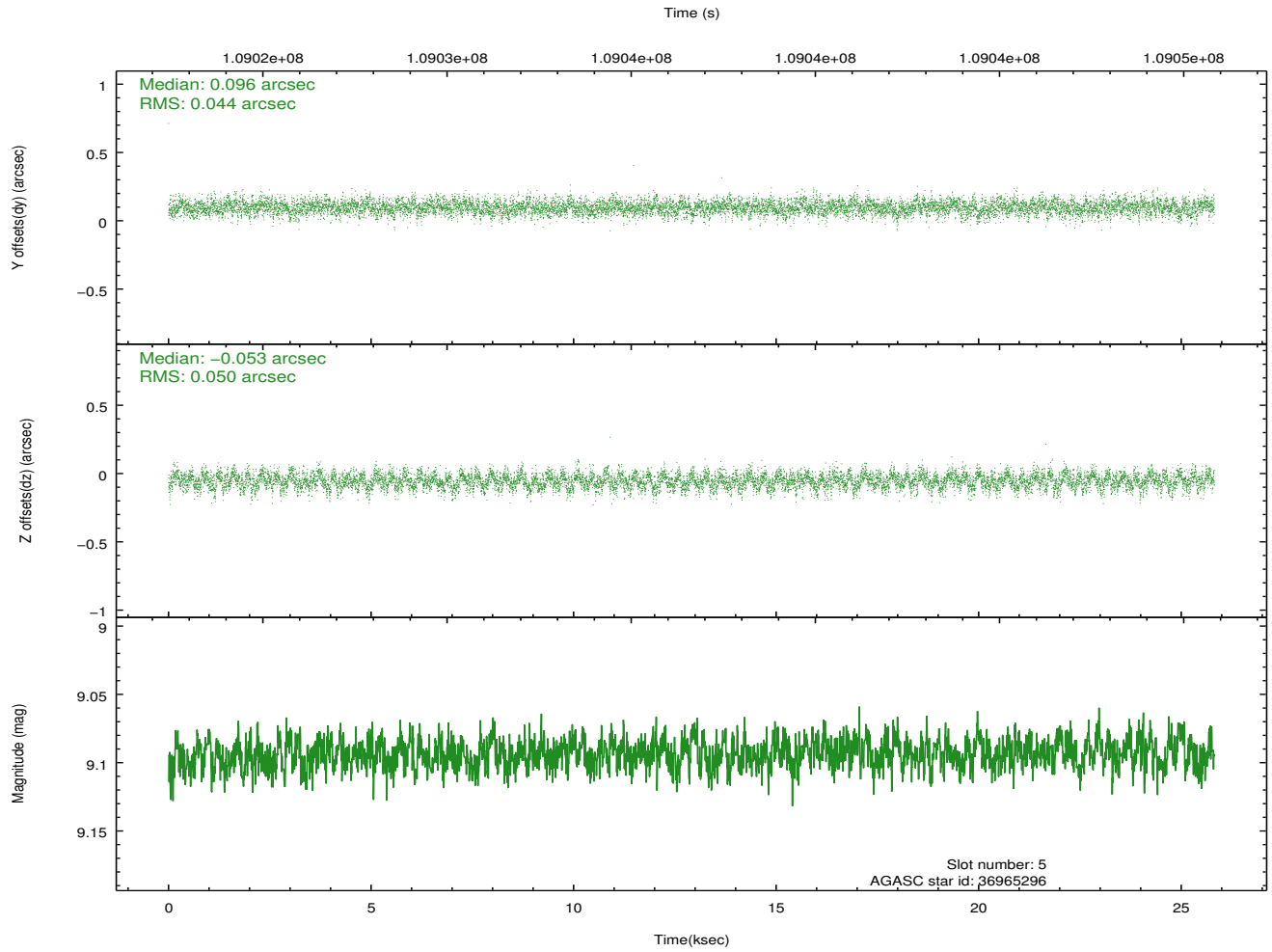
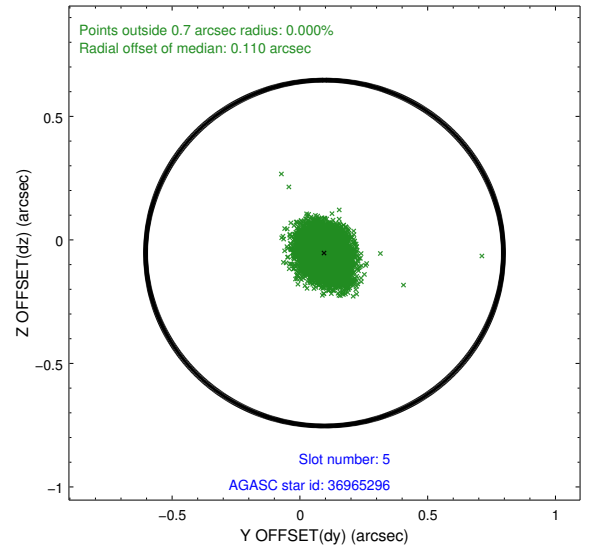
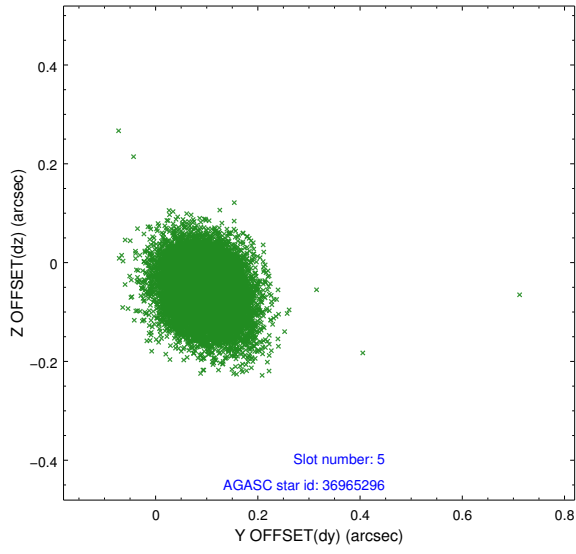
### 2.4.1 Slot 3



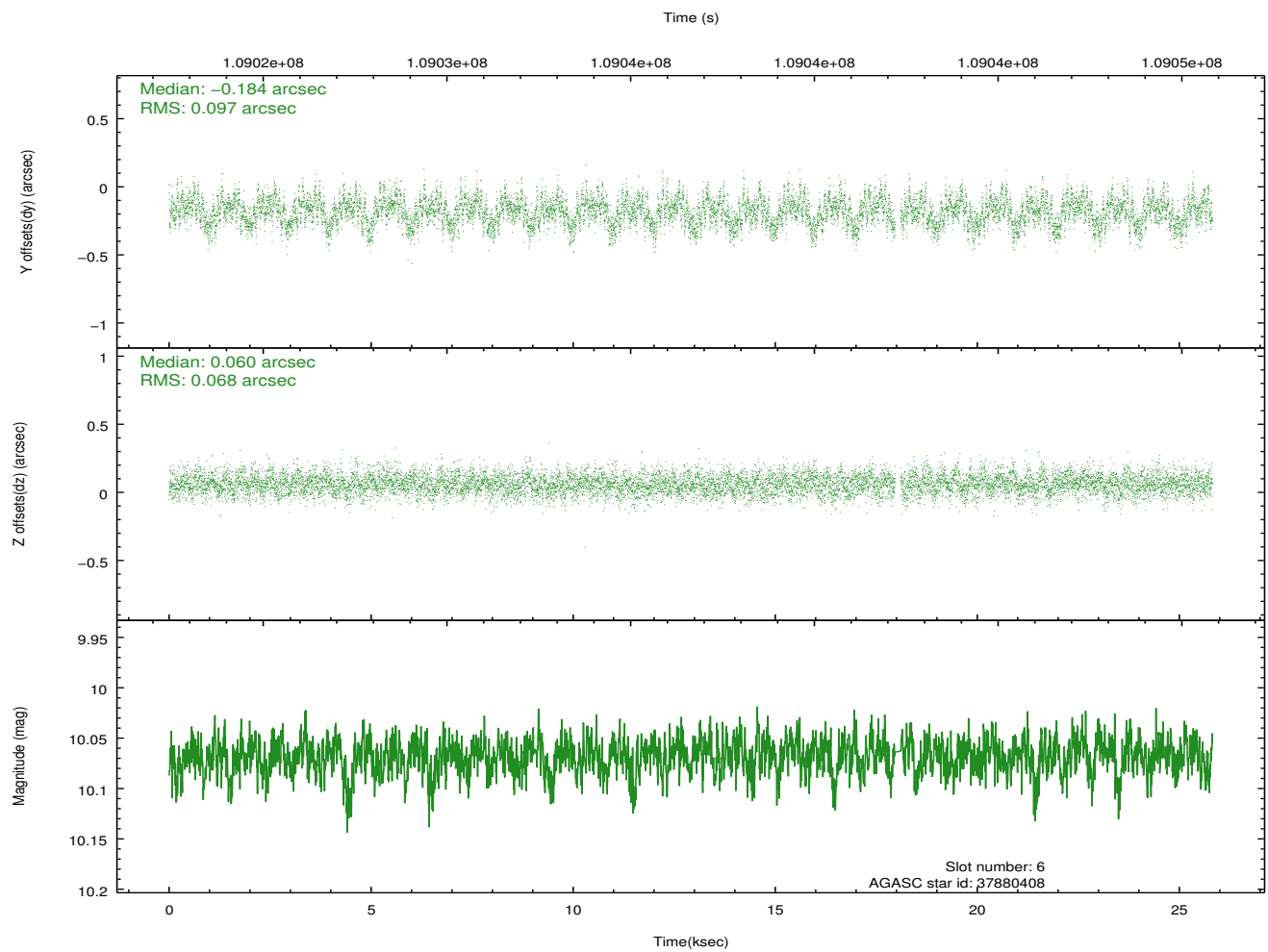
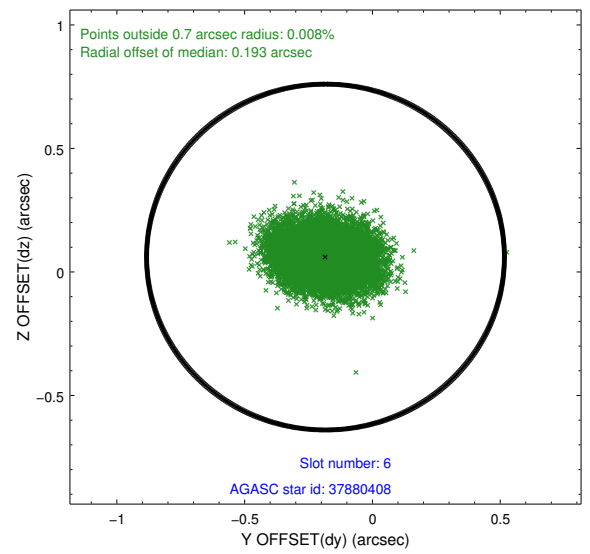
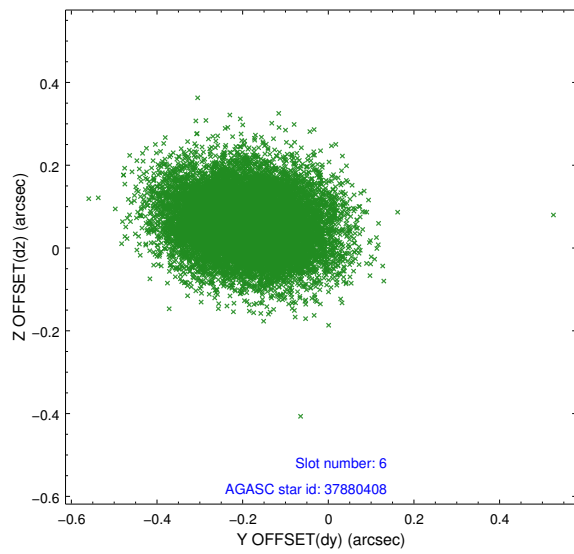
## 2.4.2 Slot 4



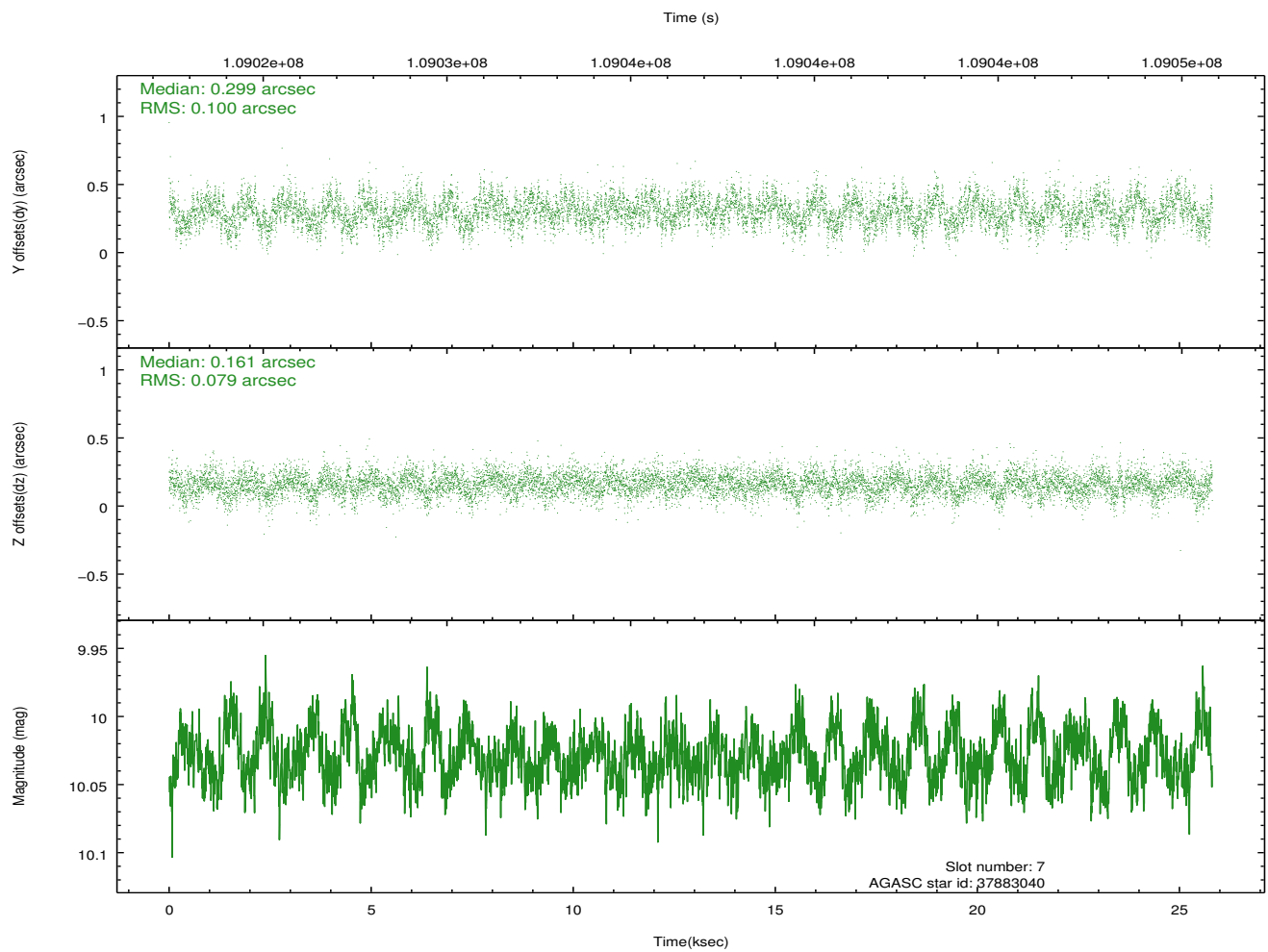
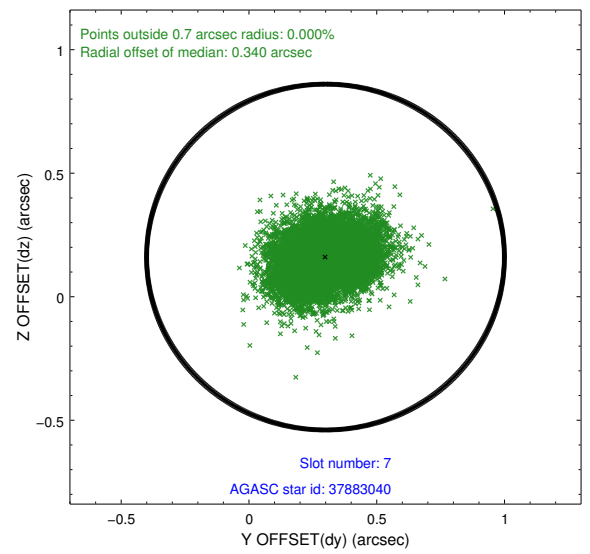
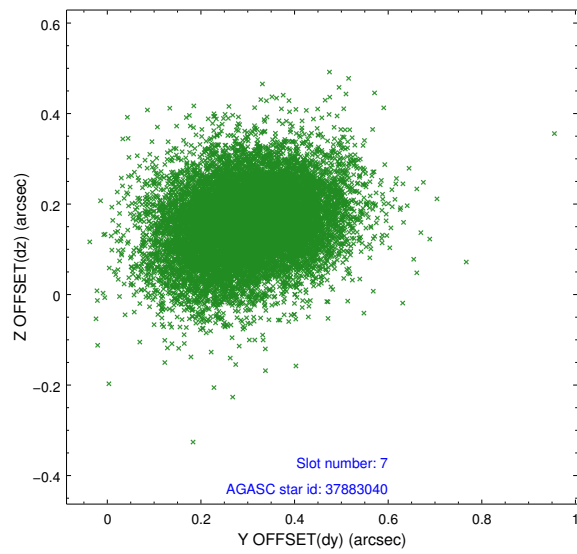
### 2.4.3 Slot 5



## 2.4.4 Slot 6

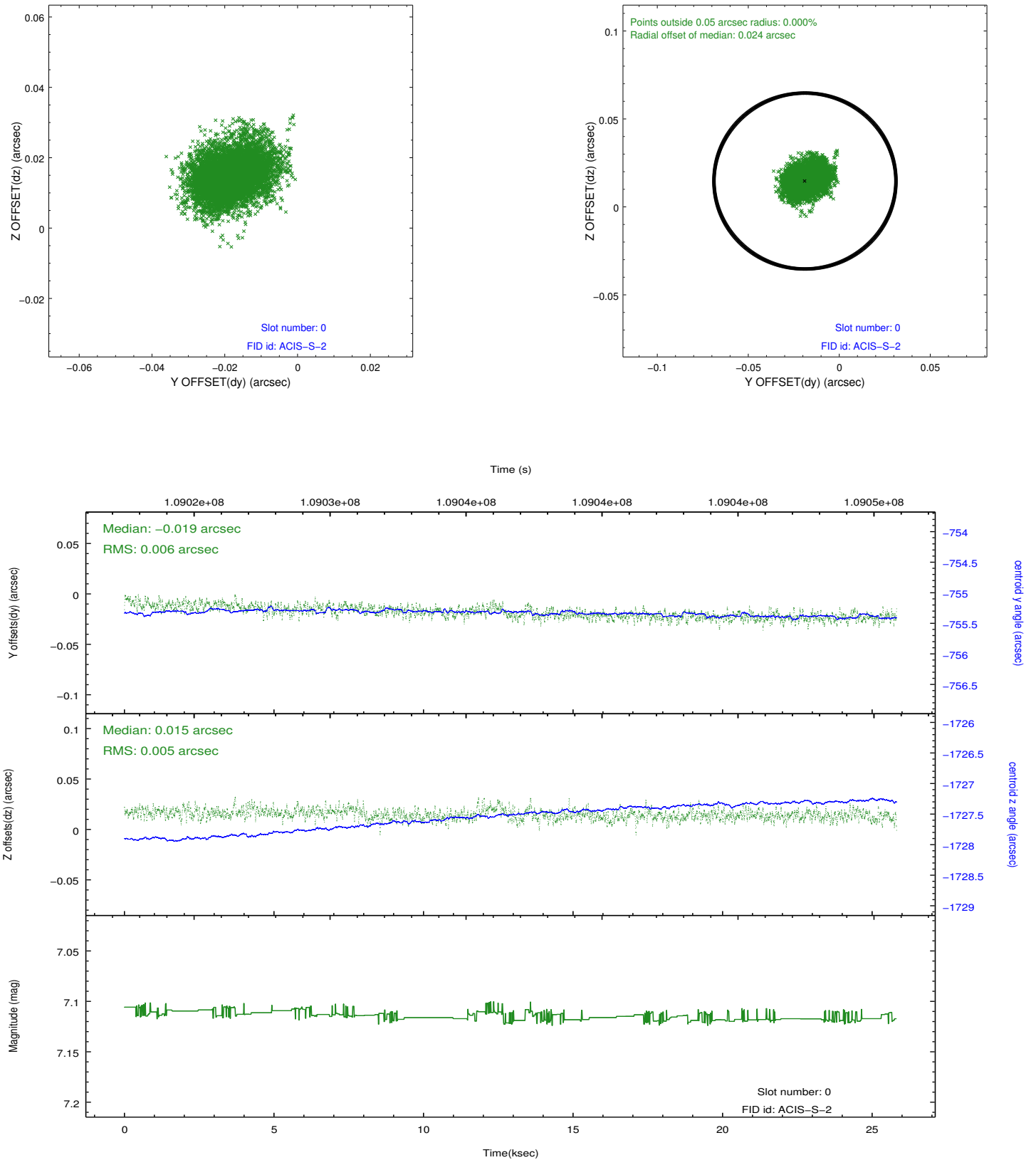


## 2.4.5 Slot 7

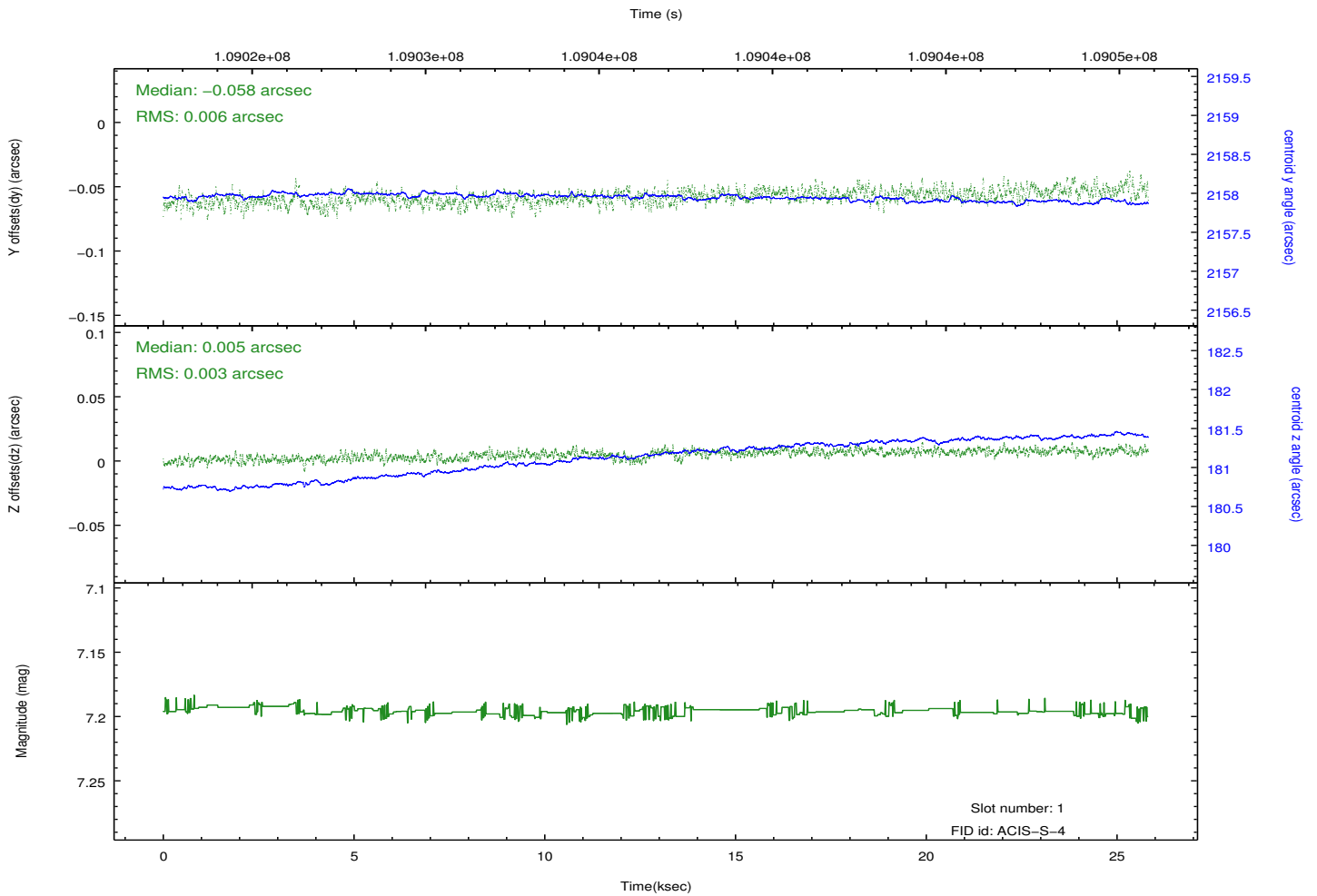
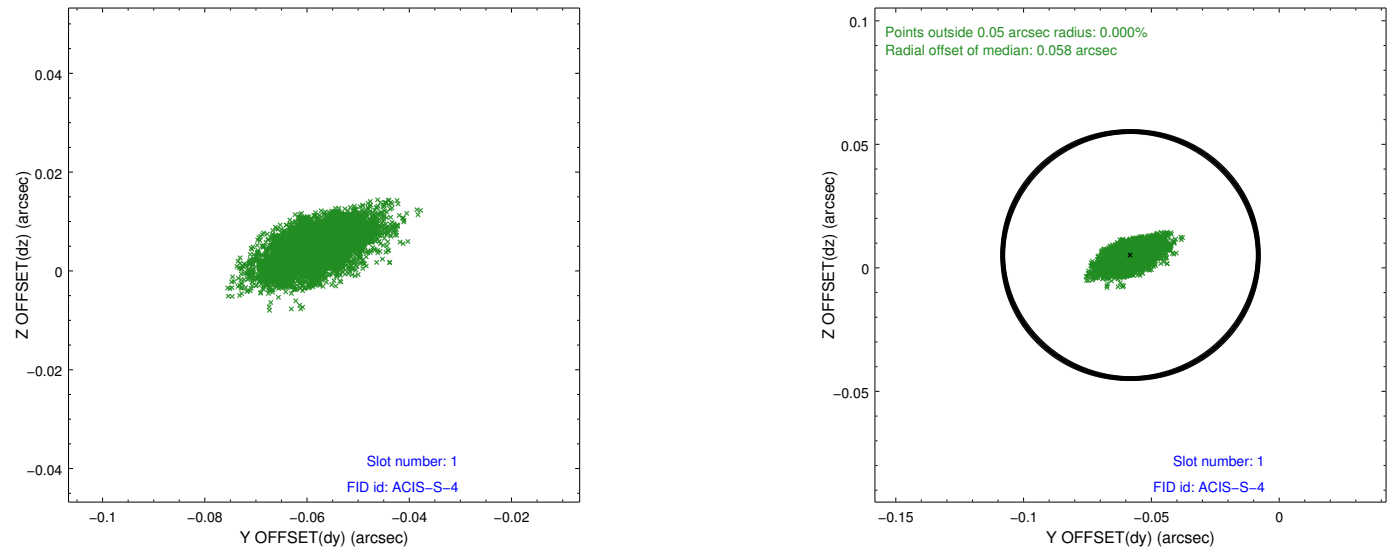


## 2.5 FID Slots

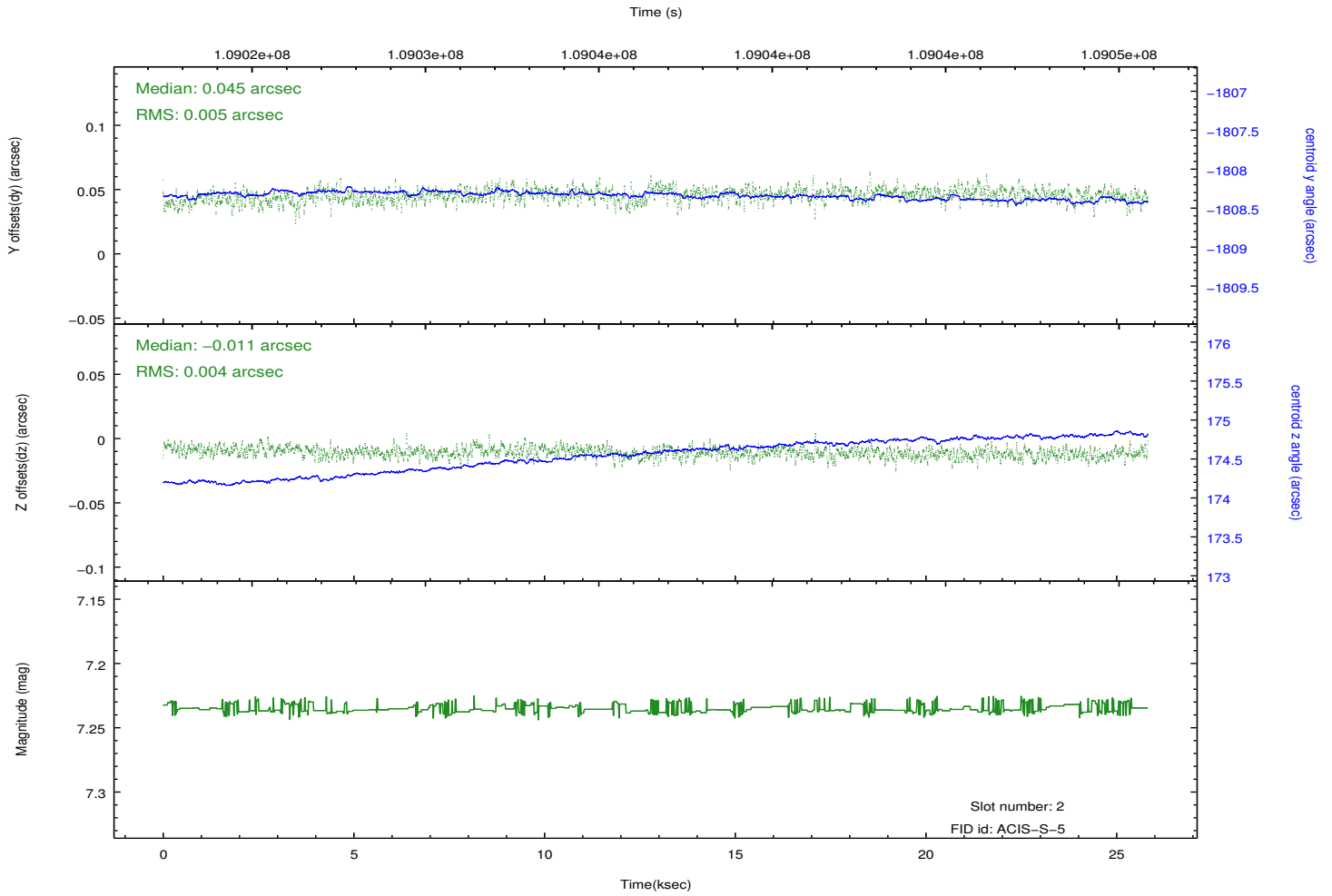
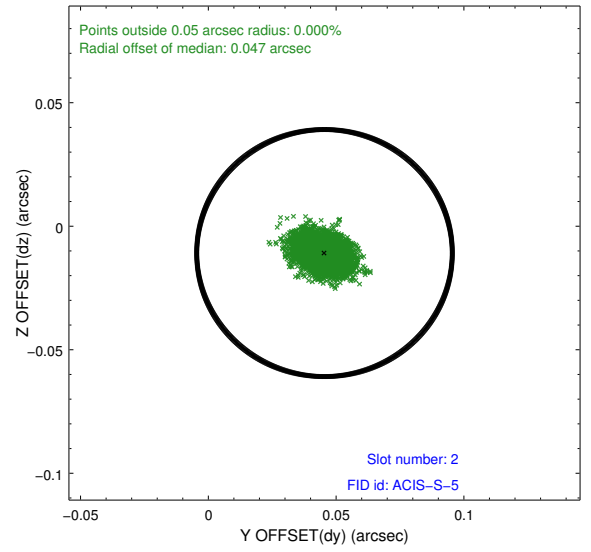
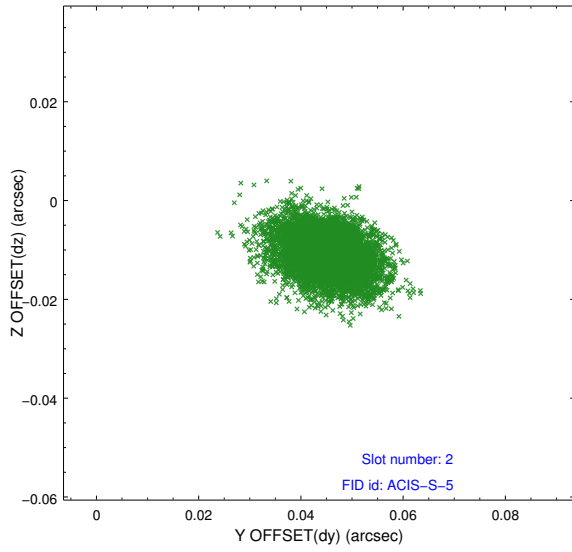
### 2.5.1 Slot 0



## 2.5.2 Slot 1

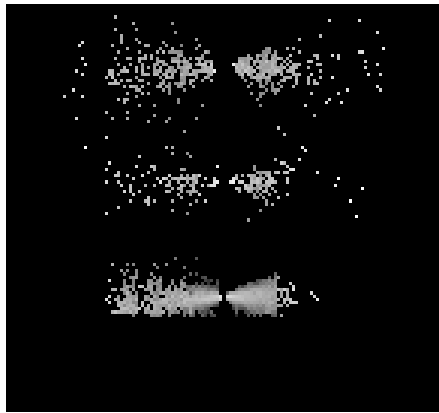


### 2.5.3 Slot 2

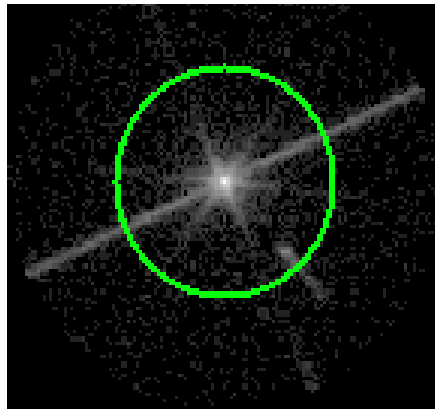


### 3 Gratings

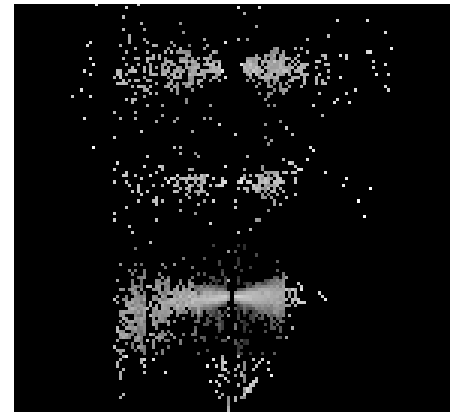
#### 3.1 LETG Arm



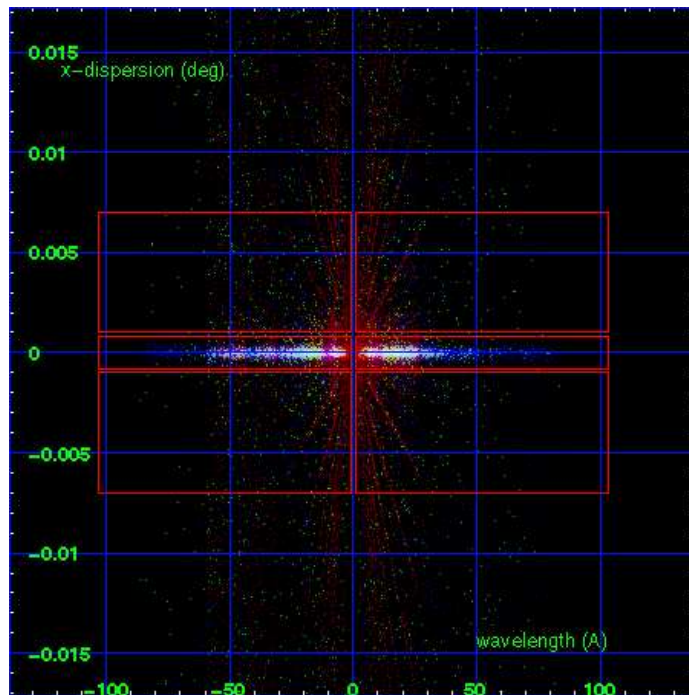
LETG Order Sort 123



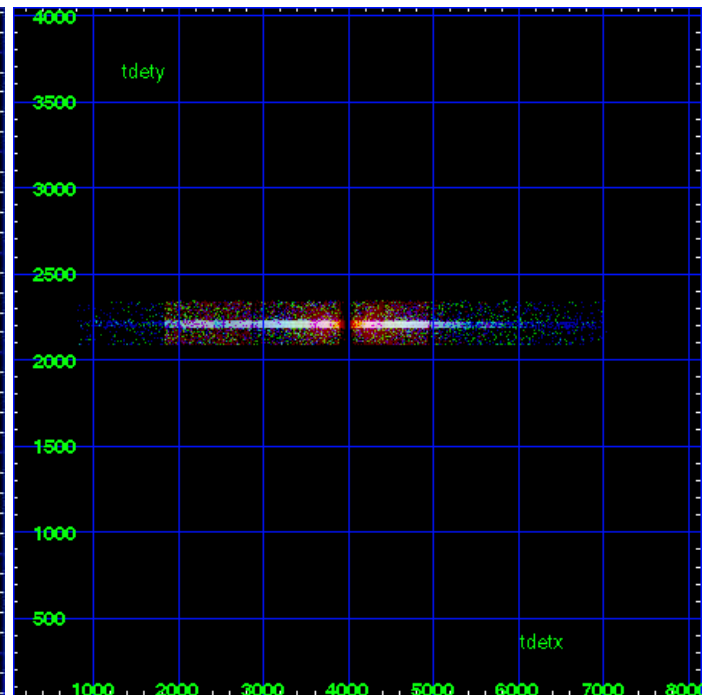
LETG Zero Order



LETG Order Sort ALL

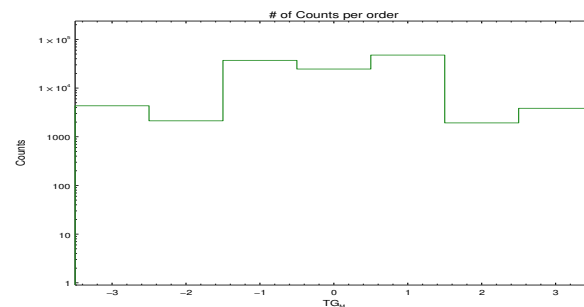


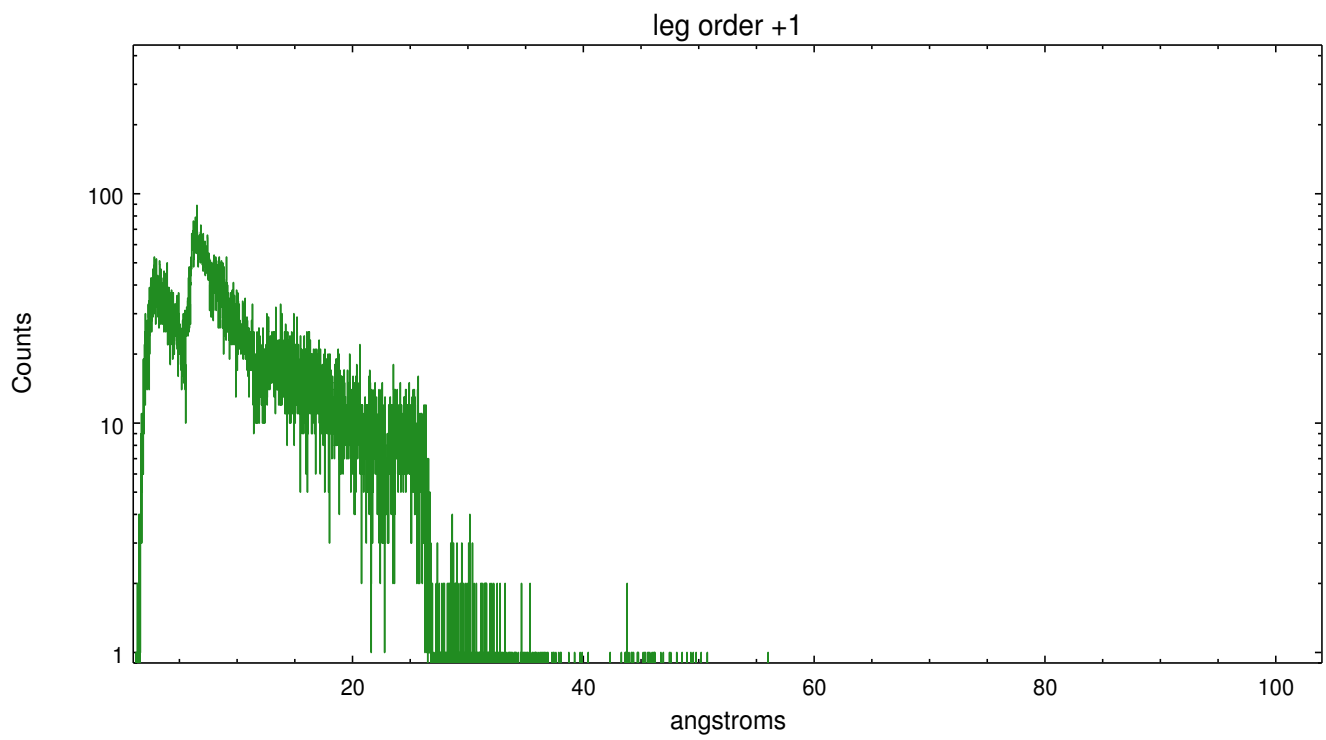
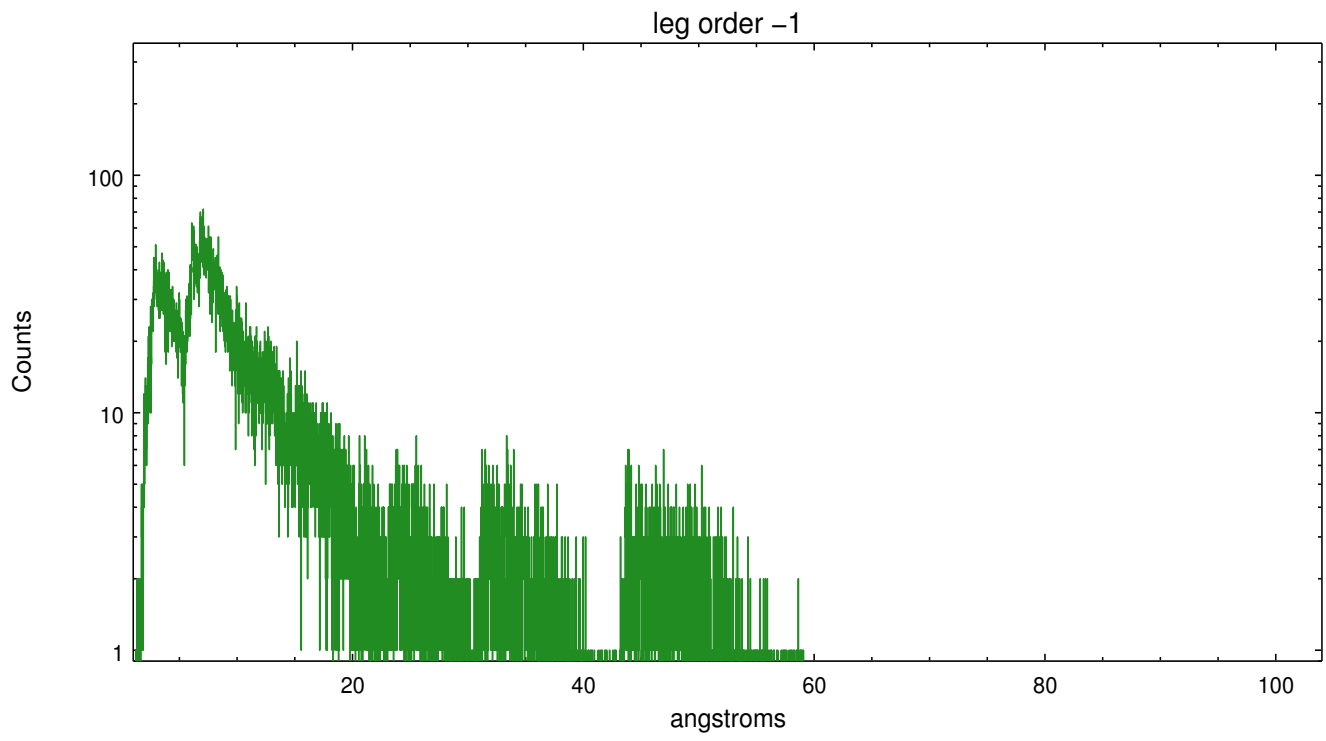
Spot Image LETG



Full Detector LETG

|        | order<br>-3 | order<br>-2 | order<br>-1 | order<br>0 | order<br>1 | order<br>2 | order<br>3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 4326        | 2125        | 37063       | 24593      | 47598      | 1926       | 3840       |





# A Summary

## A.1 Status

|                            |             |
|----------------------------|-------------|
| V&V Scientist              | Joy Nichols |
| V&V Date (YYYY-MM-DD)      | 2012.10.18  |
| V&V Edition                | 1           |
| V&V Disposition and Status | OK          |
| V&V Charge Time            | 25.815      |

## A.2 Comments