

# V&V Reference Report

## L2 ASCDS Version : 8.5.1.1

Observation 4445 - L2 Version 4  
Chandra X-Ray Center

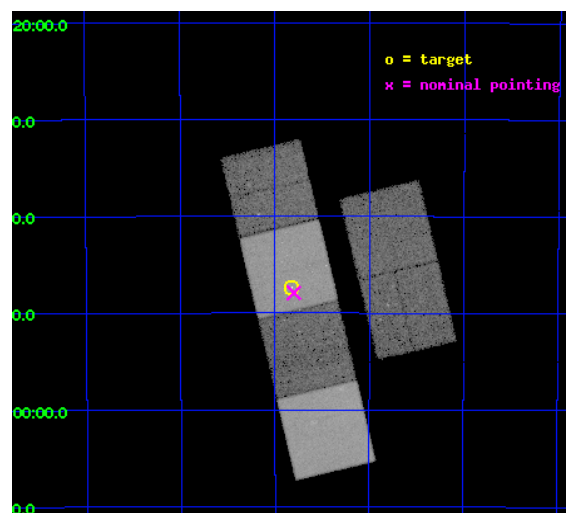
L2 Processing Date : Mar 13 2013

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# 1 Front

|          |  |   |
|----------|--|---|
| seq_num  | 400325   | Sequence number                             |
| obs_id   | 4445   | Observation id                              |
| title    | The large-scale relativistic jet and low-luminosity spectrum of GX 339-4 | Proposal title                              |
| observer | Prof. Rob Fender   | Principal investigator                      |
| object   | GX 339-4   | Source name                                 |
| dtcycle  | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 255.705833   | Observer's specified<br>target RA [deg]     |
| dec_targ | -48.789806   | Observer's specified<br>target Dec [deg]    |
| ra_nom   | 255.69999352598  | Nominal RA [deg]                            |
| dec_nom  | -48.798692915873   | Nominal Dec [deg]                           |
| roll_nom | 256.63431070144  | Nominal Roll [deg]                          |
| revision | 4  | Processing version of<br>data               |
| ontime   | 28665.599893212  | Sum of GTIs [s]                             |
| livetime | 28302.618807012  | Livetime [s]                                |
| ontime2  | 28665.599893212  | Sum of GTIs [s]                             |
| ontime3  | 28665.599893212  | Sum of GTIs [s]                             |
| ontime5  | 28665.599893212  | Sum of GTIs [s]                             |
| ontime6  | 28665.599893212  | Sum of GTIs [s]                             |
| ontime7  | 28665.599893212  | Sum of GTIs [s]                             |
| ontime8  | 28665.599893212  | Sum of GTIs [s]                             |
| l2events | 308261   | Number of level 2 events                    |

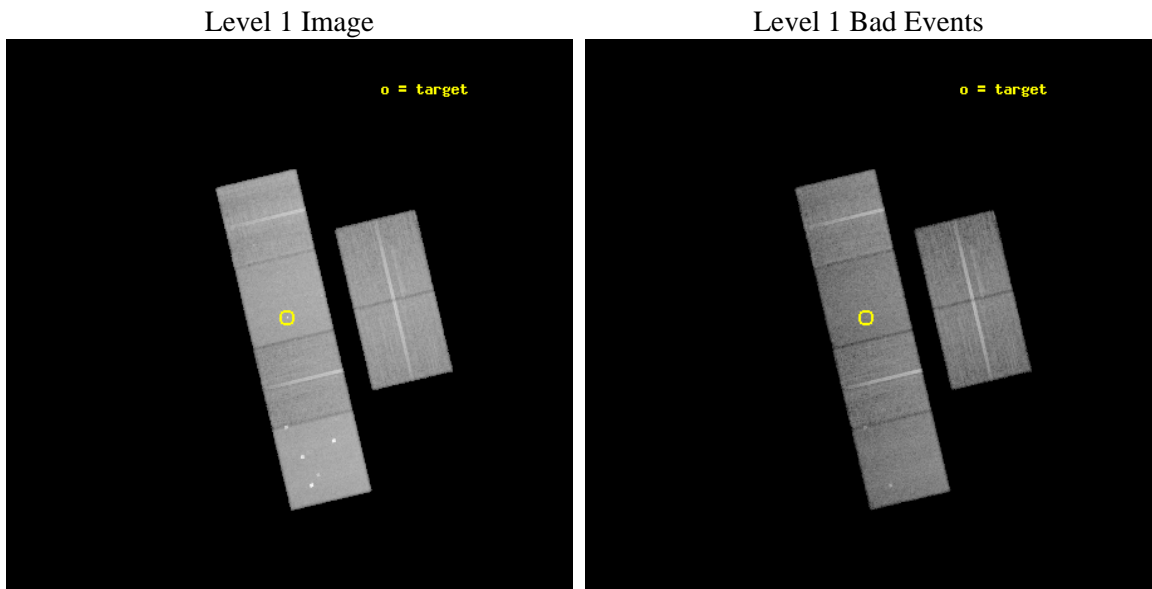




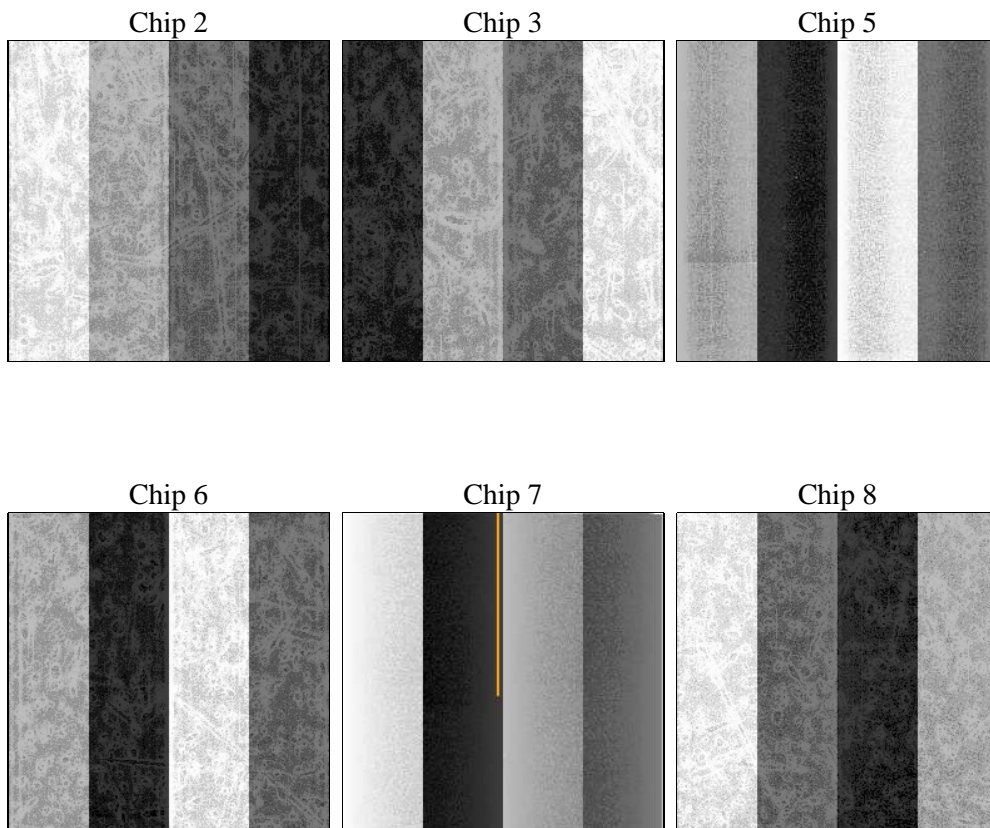
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 28706.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.5.1.1             | Processing system revision     | ontime         | 28665.599893212 | Sum of GTIs [s]                         |
| caldsver | 4.5.6               | &#160                          | ontime2        | 28665.599893212 | Sum of GTIs [s]                         |
| date     | 2013-03-13T22:24:17 | Date and time of file creation | ontime3        | 28665.599893212 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime5        | 28665.599893212 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 28665.599893212 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 28665.599893212 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 28665.599893212 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 1350181         | Number of level 1 events                |

### 2.1.4 Events

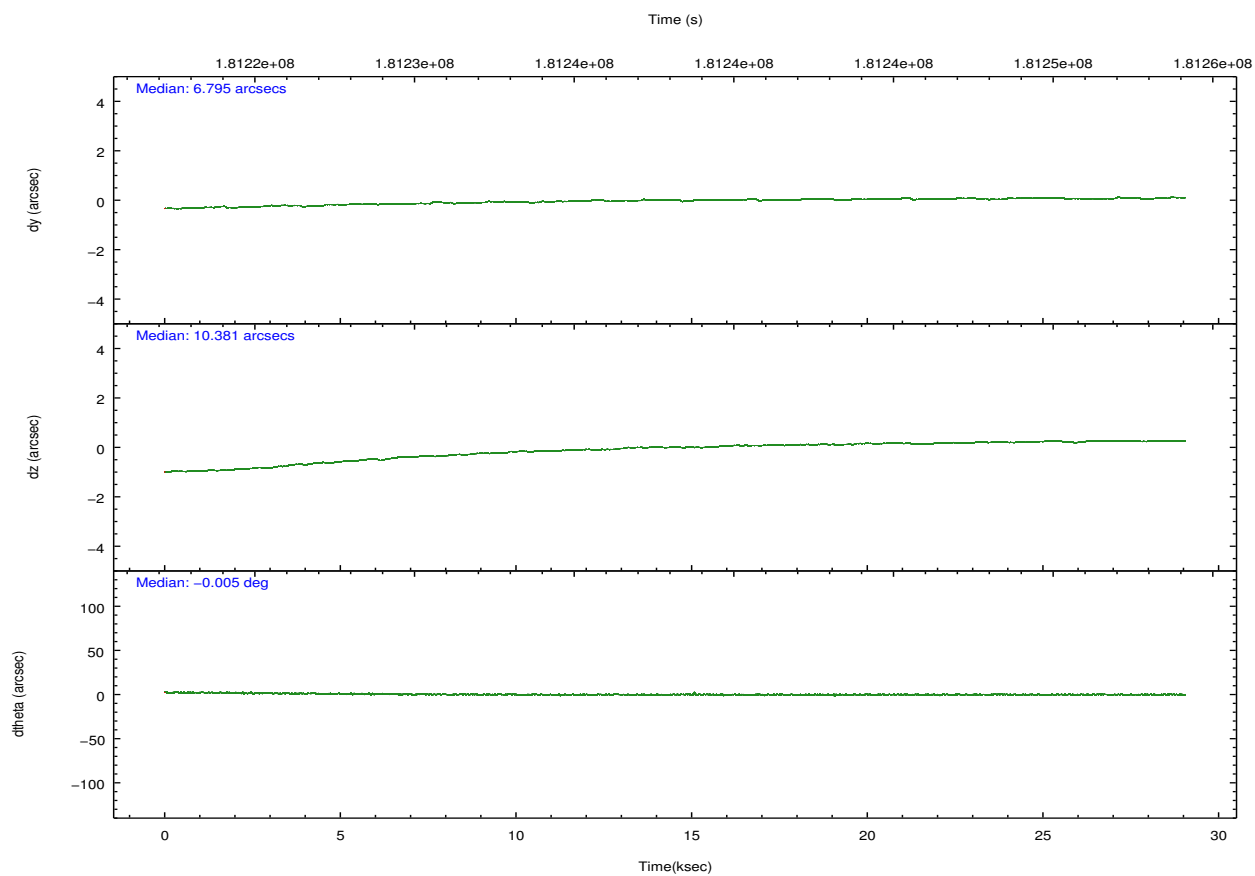
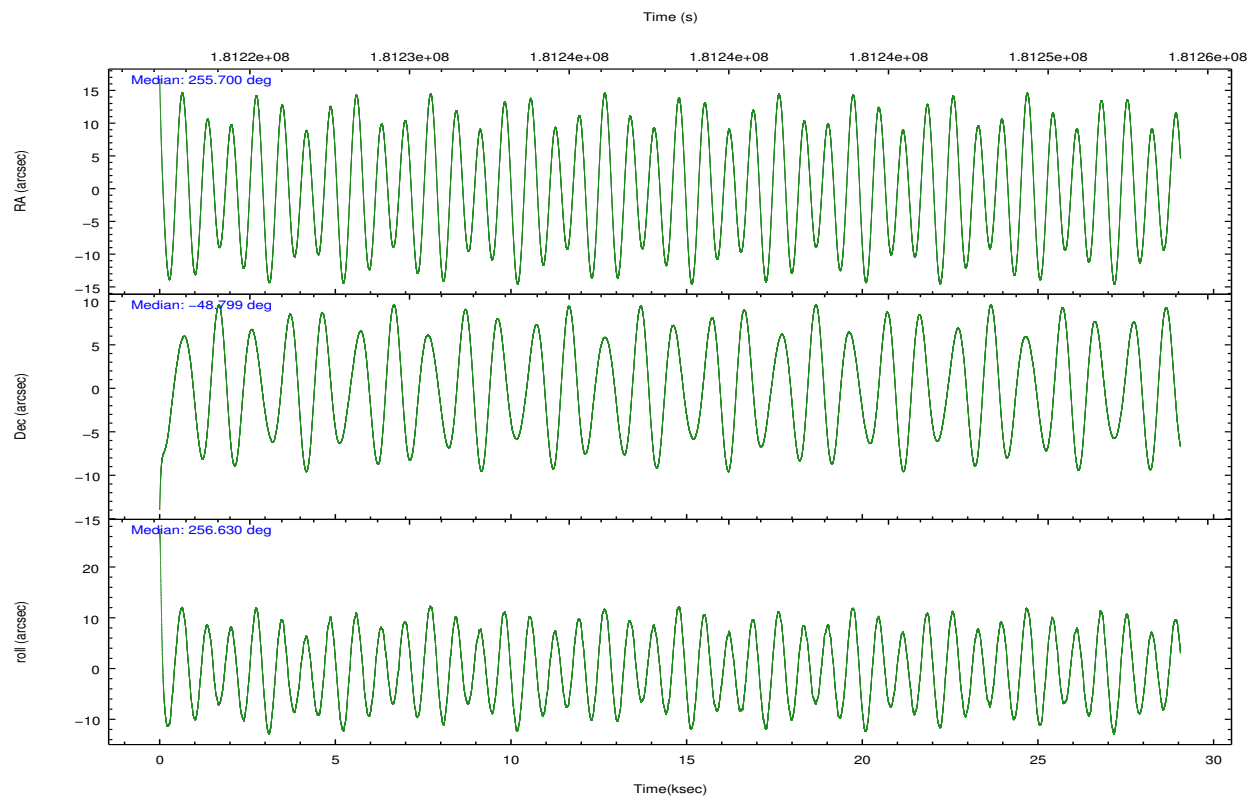
|                 | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7  | ccd 8  |                | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7  | ccd 8  |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|
| level 1 events  | 193650 | 184244 | 293818 | 187003 | 254370 | 237096 | grade 0 events | 10741  | 10019  | 24848  | 9773   | 10333  | 17080  |
| rejected events | 170473 | 161915 | 151282 | 163688 | 147234 | 186640 |                | 5%     | 5%     | 8%     | 5%     | 4%     | 7%     |
| rejected %      | 88%    | 87%    | 51%    | 87%    | 57%    | 78%    | grade 1 events | 115    | 121    | 1060   | 85     | 233    | 162    |
|                 |        |        |        |        |        |        |                | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |
|                 |        |        |        |        |        |        | grade 2 events | 4545   | 4162   | 40560  | 4580   | 21645  | 10571  |
|                 |        |        |        |        |        |        |                | 2%     | 2%     | 13%    | 2%     | 8%     | 4%     |
|                 |        |        |        |        |        |        | grade 3 events | 2128   | 2176   | 5250   | 2238   | 9534   | 5455   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 1%     | 3%     | 2%     |
|                 |        |        |        |        |        |        | grade 4 events | 2157   | 2184   | 5242   | 2198   | 9767   | 4980   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 1%     | 3%     | 2%     |
|                 |        |        |        |        |        |        | grade 5 events | 7213   | 8161   | 20436  | 8532   | 24035  | 10998  |
|                 |        |        |        |        |        |        |                | 3%     | 4%     | 6%     | 4%     | 9%     | 4%     |
|                 |        |        |        |        |        |        | grade 6 events | 3607   | 3788   | 66649  | 4527   | 55872  | 12373  |
|                 |        |        |        |        |        |        |                | 1%     | 2%     | 22%    | 2%     | 21%    | 5%     |
|                 |        |        |        |        |        |        | grade 7 events | 163144 | 153633 | 129773 | 155070 | 122951 | 175477 |
|                 |        |        |        |        |        |        |                | 84%    | 83%    | 44%    | 82%    | 48%    | 74%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-235678         | ACIS-235678          |
| Grating                           | NONE                | NONE                 |
| Data mode                         | FAINT               | FAINT                |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 255.687634          | 255.6999935259794    |
| [deg] Pointing Dec                | -48.772698          | -48.79869291587308   |
| [deg] Pointing Roll               | 256.468373          | 256.6343107014429    |
| [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)  | 181223983.184000    | 181222933.17352      |
| Observation start date            | 2003-09-29T11:58:39 | 2003-09-29T11:42:13  |
| [s] Observation end time (MET)    | 181252689.184000    | 181254319.18737      |
| Observation end date              | 2003-09-29T19:57:05 | 2003-09-29T20:25:19  |
| Read mode                         | TIMED               | TIMED                |

| Parameter                             | Planned   | Actual  |
|---------------------------------------|-----------|---------|
| Obspar format version number          | 7         | 7       |
| Obspar file type                      | PREDICTED | ACTUAL  |
| Obspar update status                  | NONE      | UPDATED |
| 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  | 3.2     |

## 2.3 Aspect

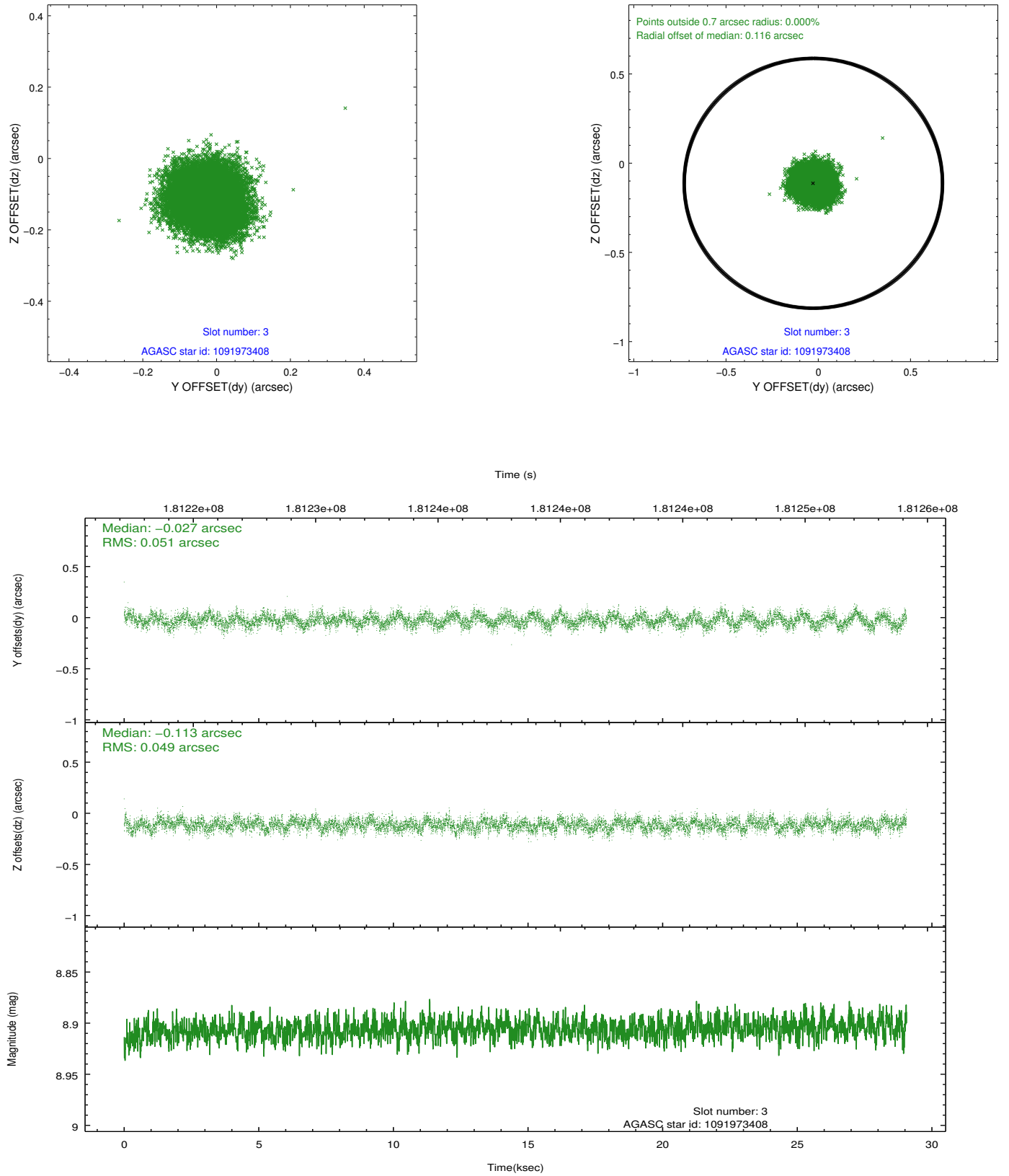


### Slot Statistics

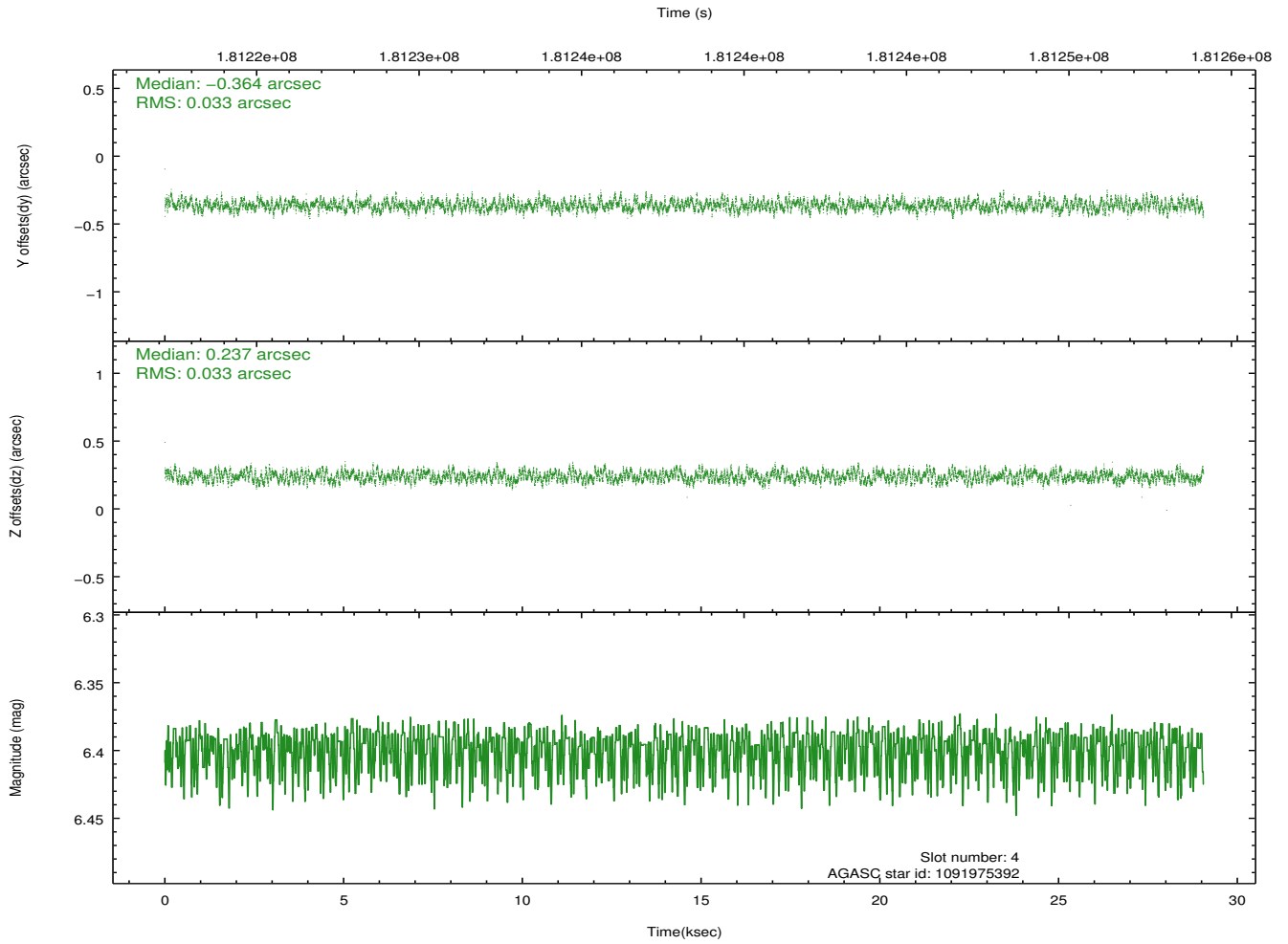
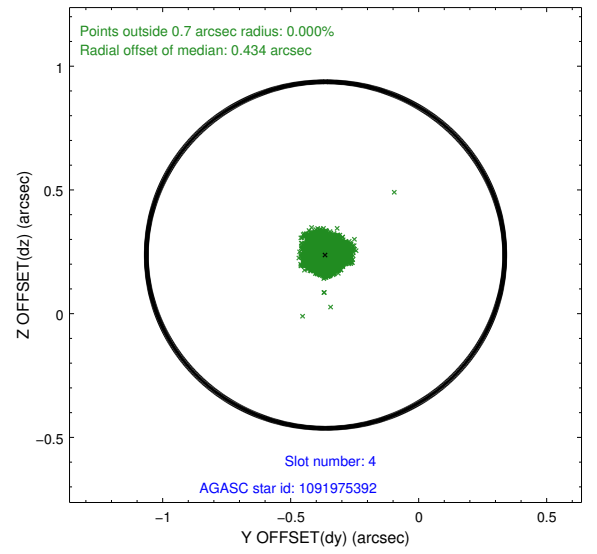
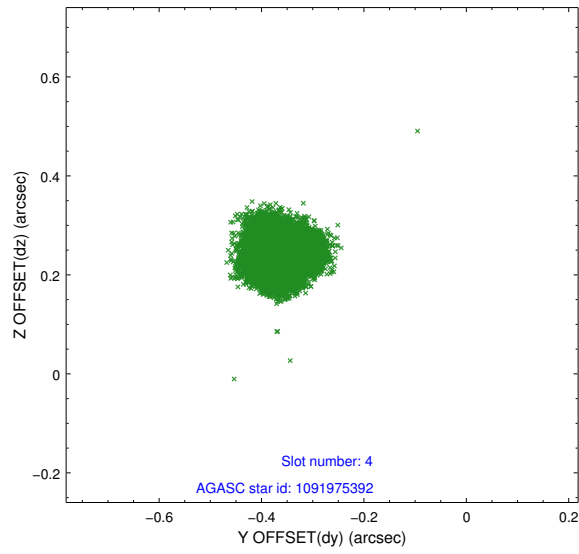
| slot | status | id         | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec        | mean_y   | mean_z   |
|------|--------|------------|------|-------|--------|--------|-------|-------|------------|------------|----------|----------|
| 0    | FID    | ACIS-S-2   | 7.10 | 7088  | -0.058 | -0.020 | 0.008 | 0.016 | 0.000000   | 0.000000   | -759.52  | -1731.53 |
| 1    | FID    | ACIS-S-4   | 7.20 | 7088  | 0.075  | 0.034  | 0.006 | 0.011 | 0.000000   | 0.000000   | 2153.82  | 176.97   |
| 2    | FID    | ACIS-S-5   | 7.23 | 7088  | -0.048 | -0.005 | 0.008 | 0.015 | 0.000000   | 0.000000   | -1812.28 | 170.63   |
| 3    | GUIDE  | 1091973408 | 8.91 | 14171 | -0.027 | -0.113 | 0.076 | 0.120 | 255.800233 | -48.601800 | -660.40  | 116.77   |
| 4    | GUIDE  | 1091975392 | 6.40 | 14175 | -0.364 | 0.237  | 0.051 | 0.078 | 255.805002 | -48.336791 | -1591.29 | -93.70   |
| 5    | GUIDE  | 1092111344 | 9.97 | 14163 | -0.015 | 0.000  | 0.112 | 0.186 | 256.132869 | -48.213784 | -2202.98 | 568.43   |
| 6    | GUIDE  | 1092485728 | 6.88 | 14175 | 0.110  | 0.068  | 0.069 | 0.103 | 254.773222 | -48.875124 | 878.18   | -2015.22 |
| 7    | GUIDE  | 1092491384 | 9.13 | 14166 | 0.287  | -0.196 | 0.077 | 0.123 | 254.923973 | -49.184437 | 1871.15  | -1398.11 |

## 2.4 Star Slots

### 2.4.1 Slot 3

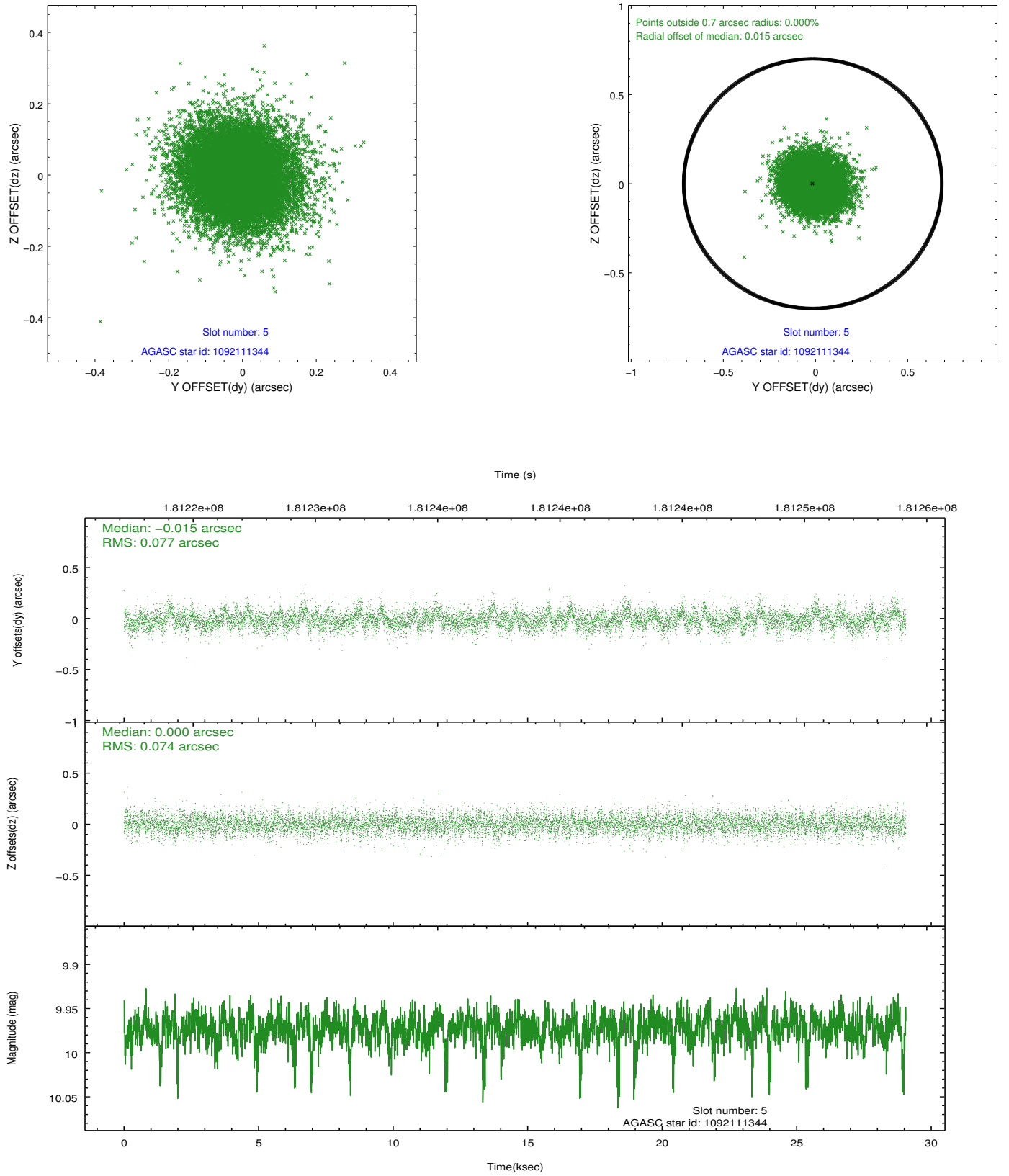


## 2.4.2 Slot 4

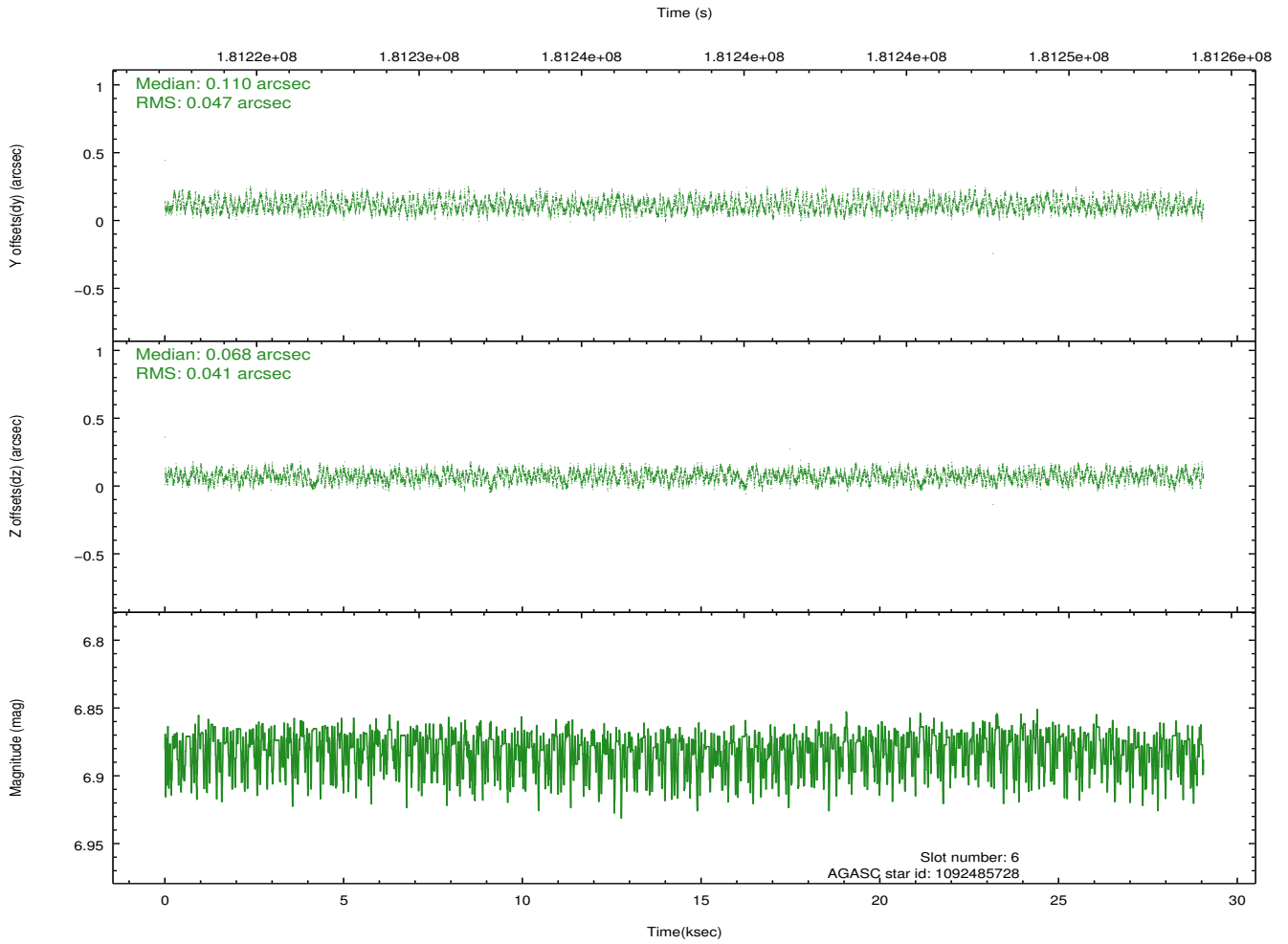
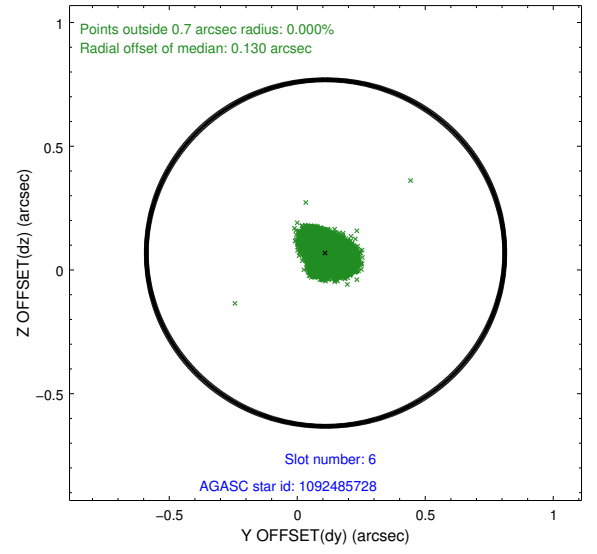
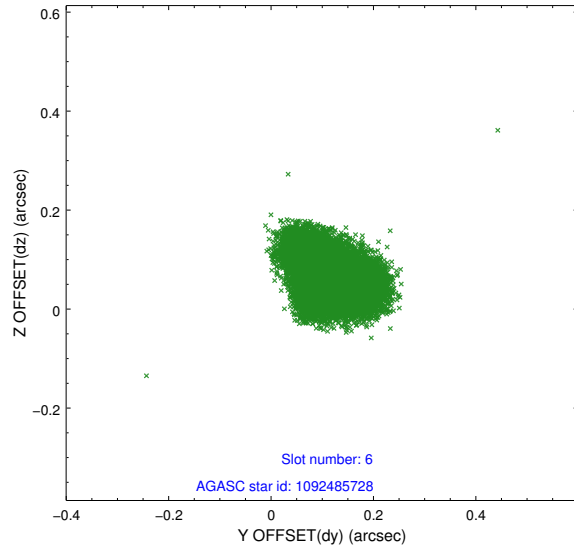




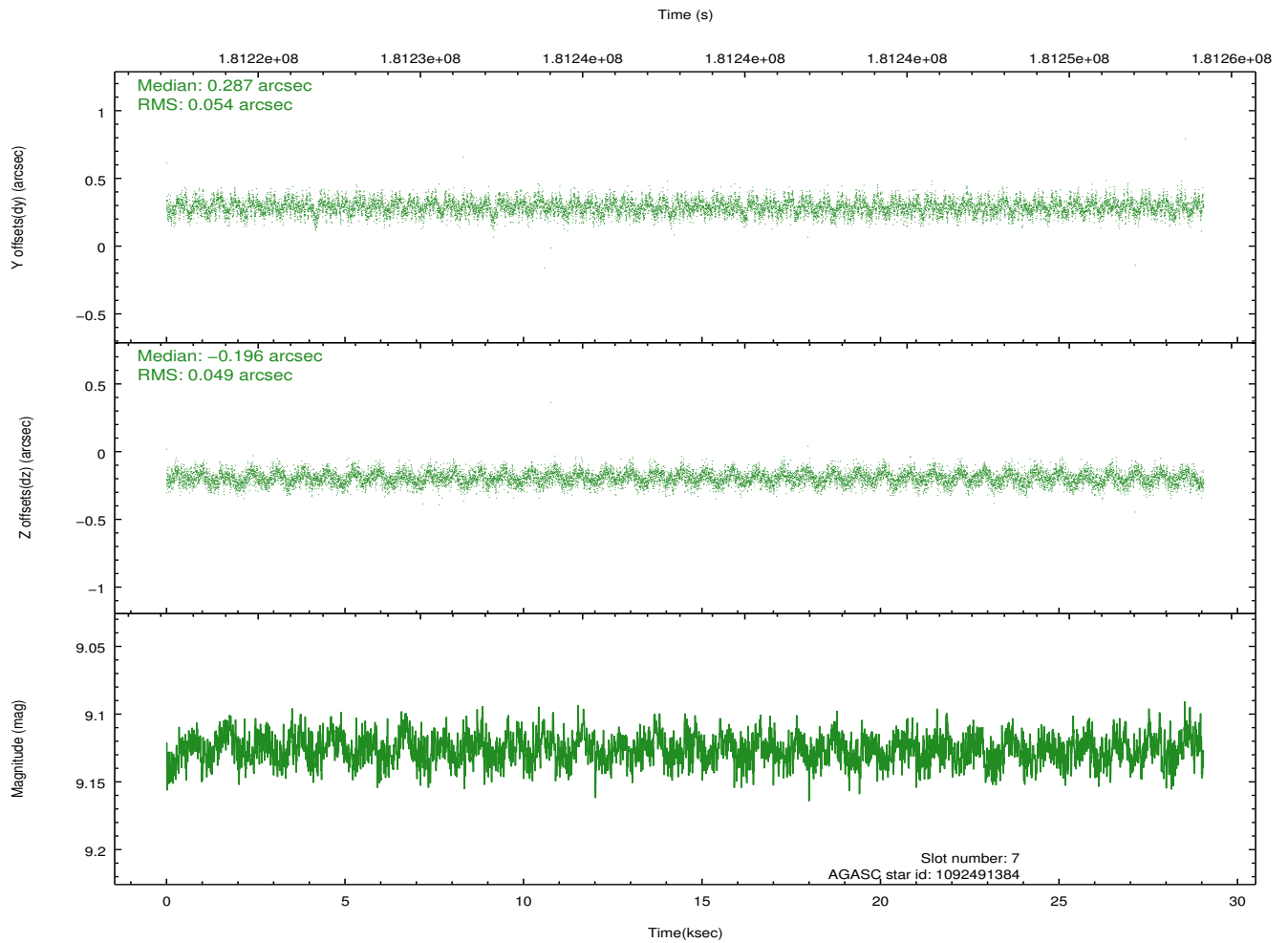
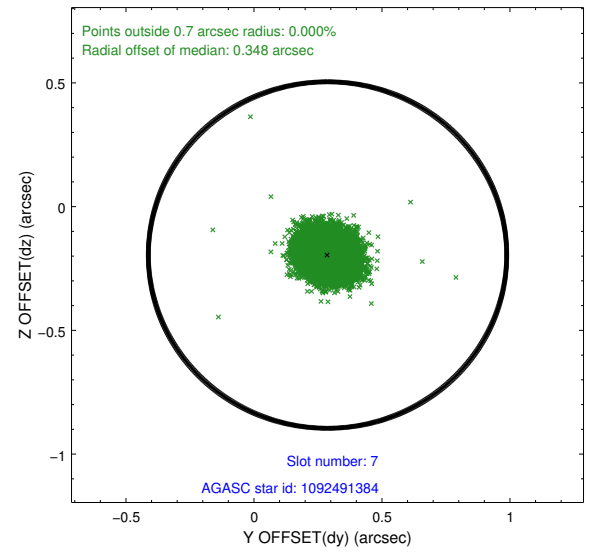
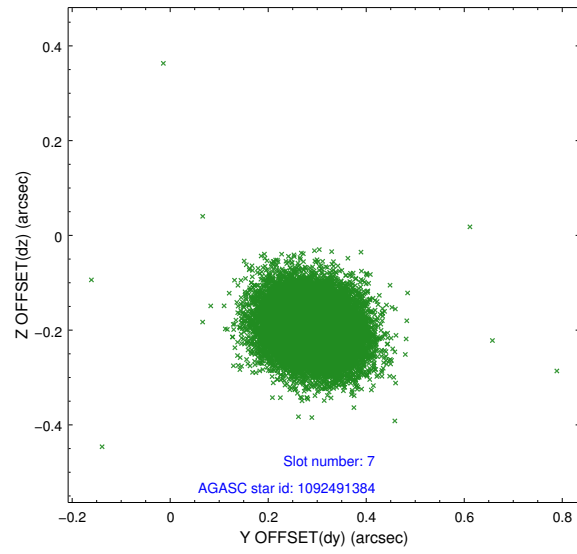
### 2.4.3 Slot 5



## 2.4.4 Slot 6

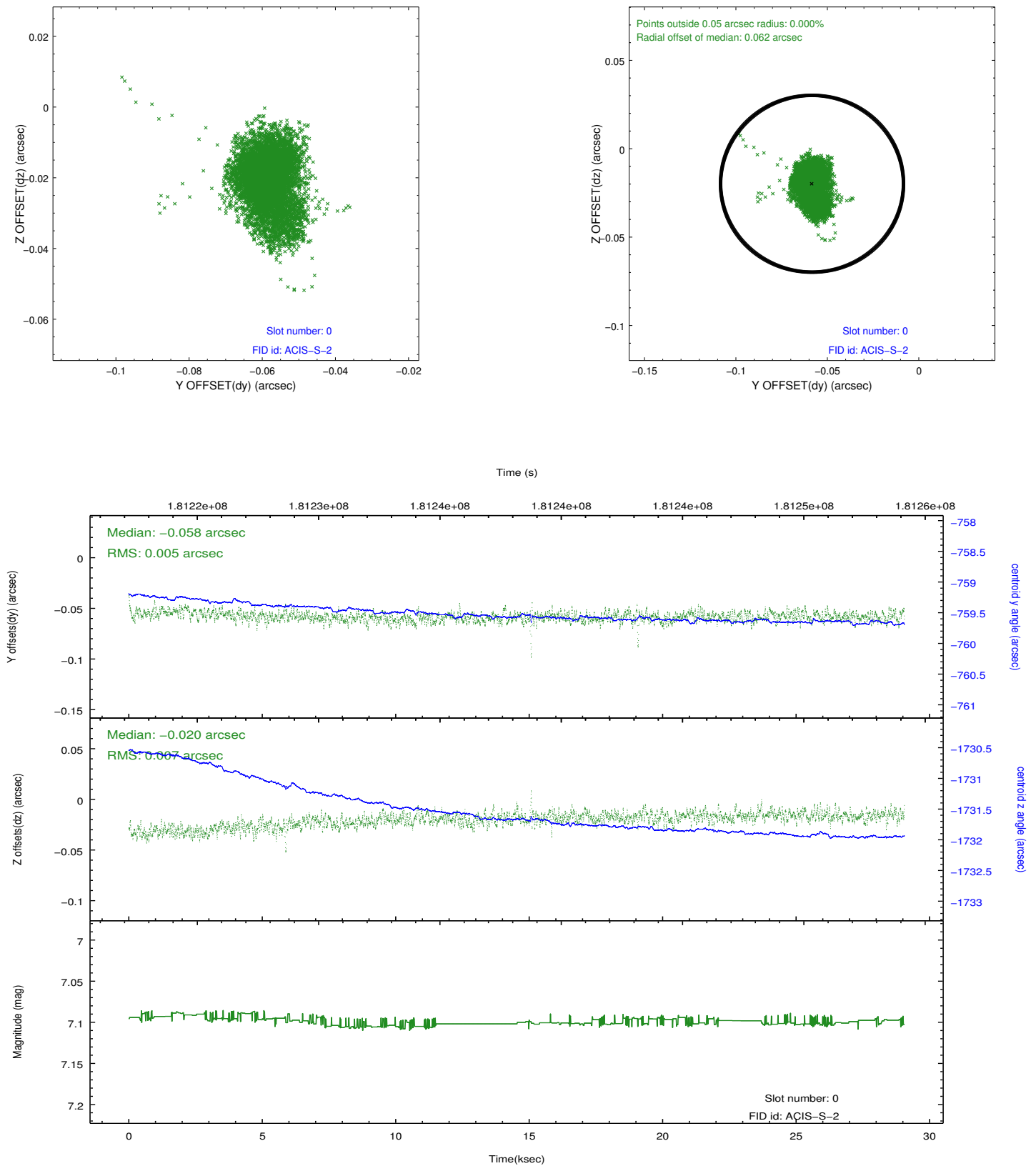


## 2.4.5 Slot 7

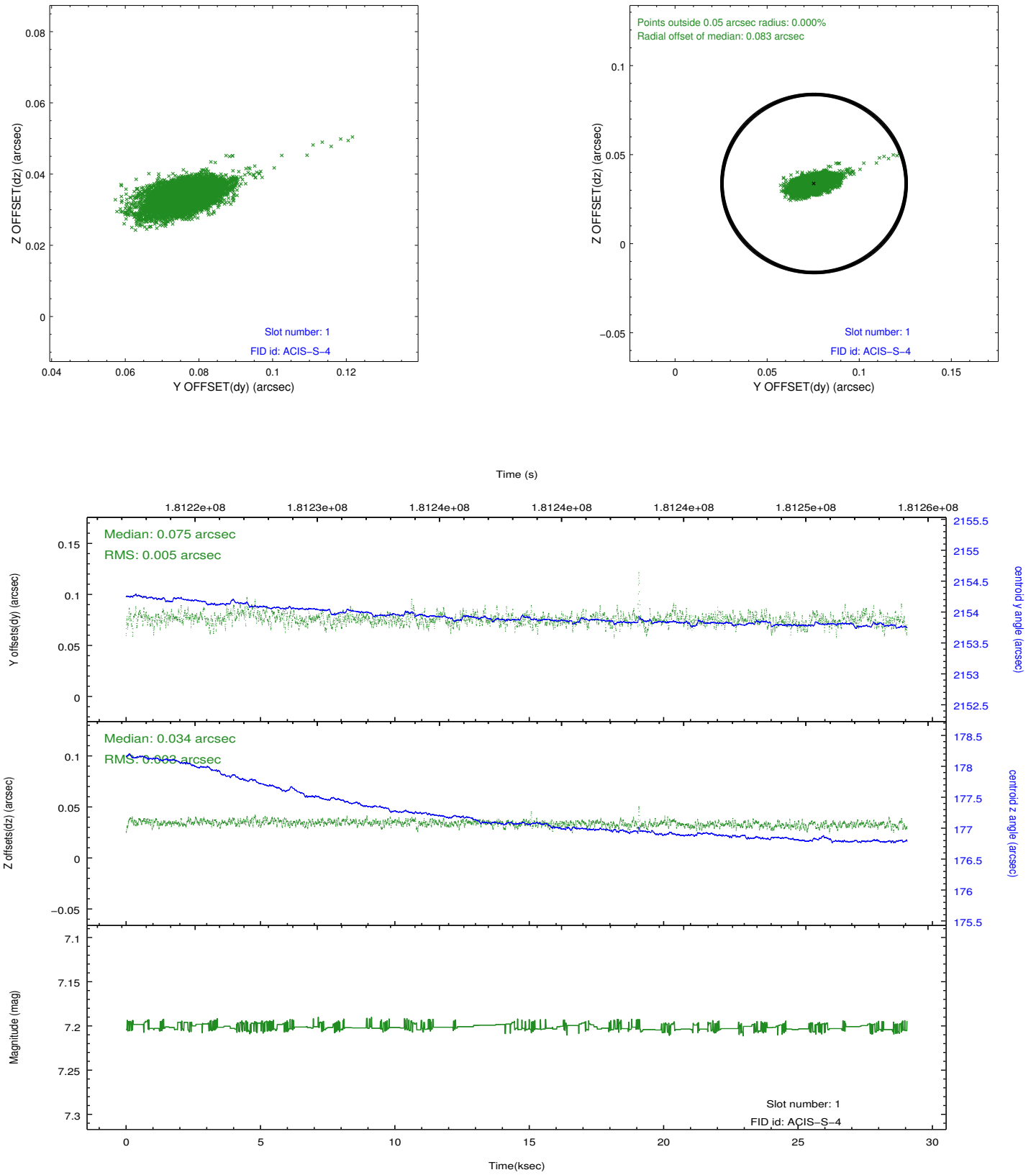


## 2.5 FID Slots

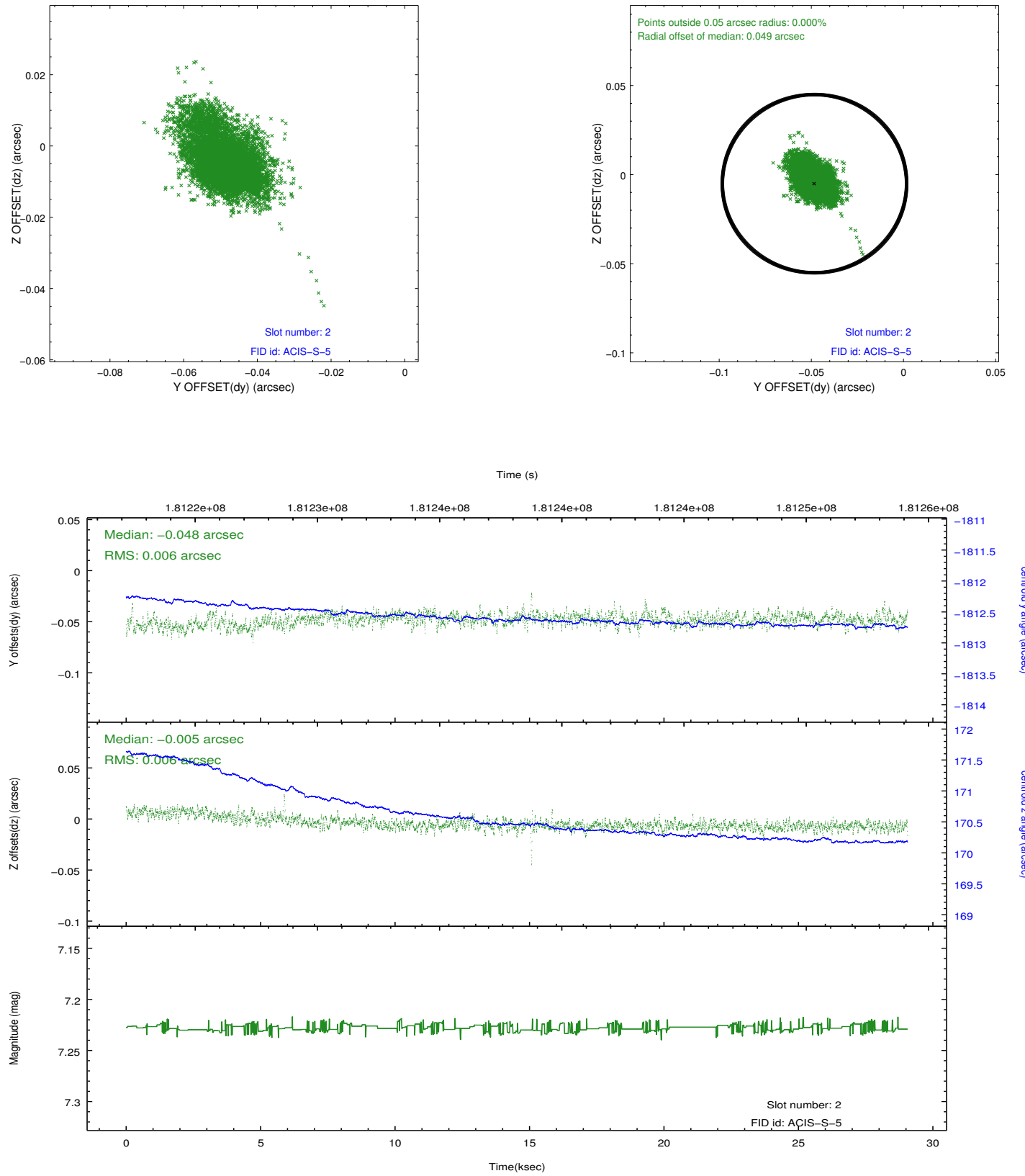
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |            |
|----------------------------|------------|
| V&V Scientist              | Jen Lauer  |
| V&V Date (YYYY-MM-DD)      | 2013.03.14 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 28.668     |

## A.2 Comments

A spatial region of the original bias map for CCD = 2 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 ( $\sim 20$  eV), it depends on many parameters that have not yet been fully explored for this bias anomaly. The bias map for CCD = 2 has been reconstructed for this processing to remove this anomaly using scaled data from a comparable bias map from another observation. The pixels affected by the anomaly are bounded by sky coords:  
(255.30581, -48.88525), (255.31125, -48.88611), (255.36122, -48.75059), (255.35579, -48.74973)