

# V&V Reference Report

## L2 ASCDS Version : 8.4.3

Observation 14365 - L2 Version 3  
Chandra X-Ray Center

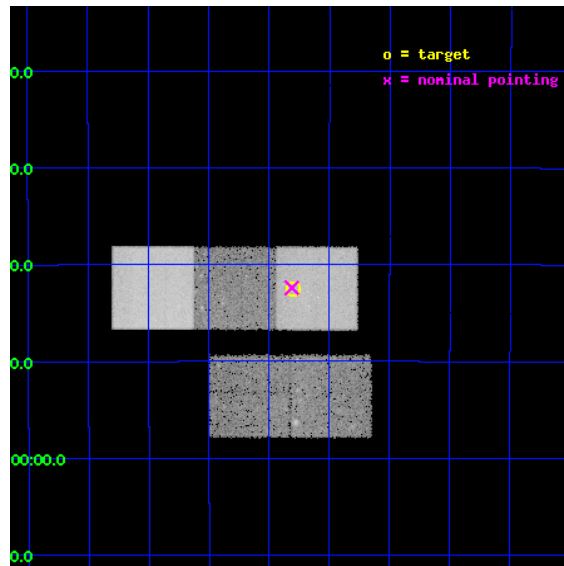
L2 Processing Date : Feb 26 2012

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# 1 Front

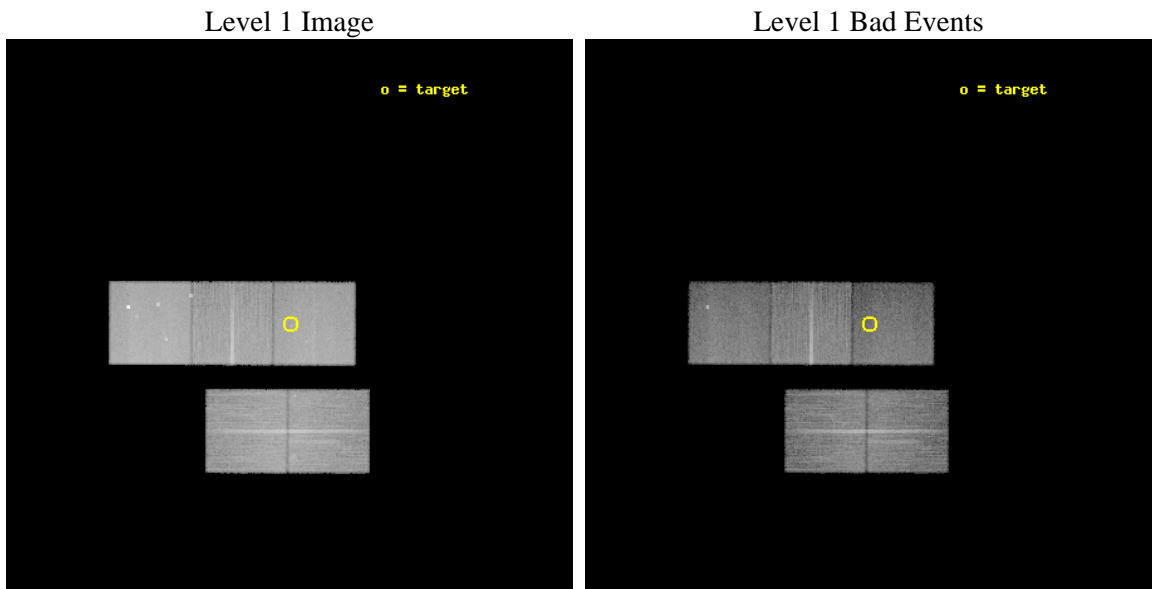
|          |                                                    |                                             |
|----------|----------------------------------------------------|---------------------------------------------|
| seq_num  | 501527                                             | Sequence number                             |
| obs_id   | 14365                                              | Observation id                              |
| title    | SEARCH FOR JET BREAKS IN LONG GRB X-RAY AFTERGLOWS | Proposal title                              |
| observer | Prof. David Burrows                                | Principal investigator                      |
| object   | GRB 111008A                                        | Source name                                 |
| dtycycle | 0                                                  | &#160                                       |
| cycle    | P                                                  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 60.450917                                          | Observer's specified target RA [deg]        |
| dec_targ | -32.709472                                         | Observer's specified target Dec [deg]       |
| ra_nom   | 60.452839249914                                    | Nominal RA [deg]                            |
| dec_nom  | -32.706923030873                                   | Nominal Dec [deg]                           |
| roll_nom | 0.15765374858558                                   | Nominal Roll [deg]                          |
| revision | 3                                                  | Processing version of data                  |
| ontime   | 30041.890565097                                    | Sum of GTIs [s]                             |
| livetime | 29649.371148346                                    | Livetime [s]                                |
| ontime2  | 30038.585354745                                    | Sum of GTIs [s]                             |
| ontime3  | 30041.767445087                                    | Sum of GTIs [s]                             |
| ontime5  | 30041.849525094                                    | Sum of GTIs [s]                             |
| ontime6  | 30038.66745472                                     | Sum of GTIs [s]                             |
| ontime7  | 30041.890565097                                    | Sum of GTIs [s]                             |
| l2events | 259023                                             | Number of level 2 events                    |



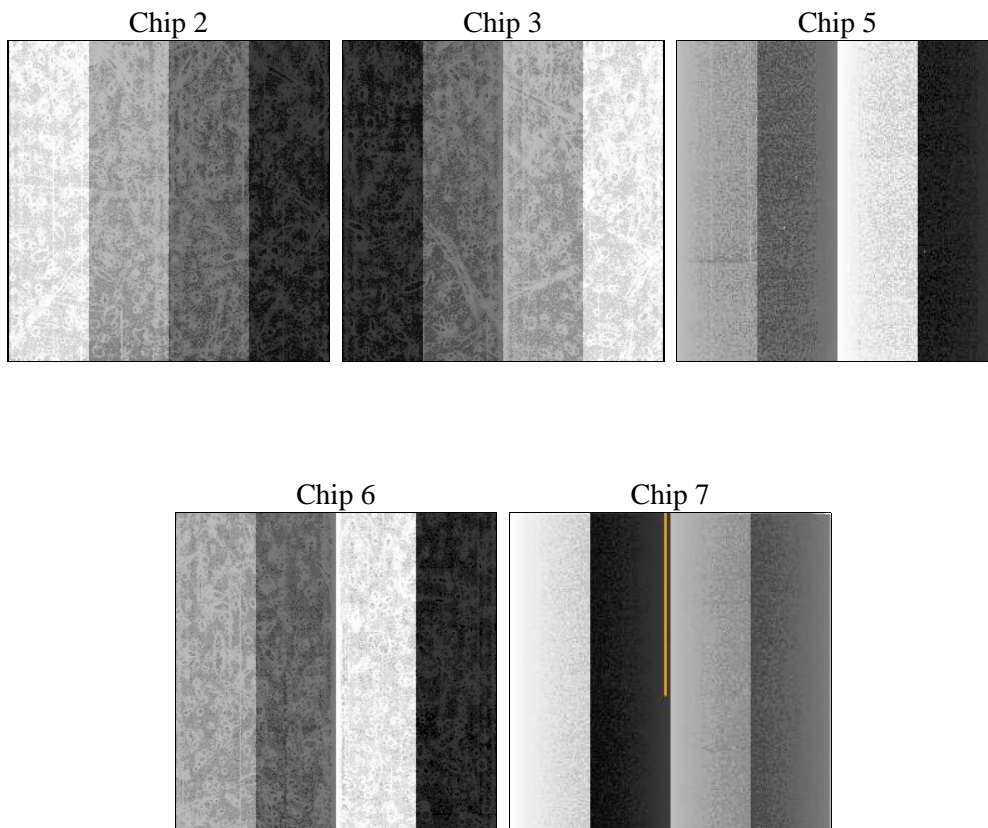
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 30000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.3               | Processing system revision     | ontime         | 30041.890565097 | Sum of GTIs [s]                         |
| caldbver | 4.4.8               | &#160                          | ontime2        | 30038.585354745 | Sum of GTIs [s]                         |
| date     | 2012-02-27T00:00:35 | Date and time of file creation | ontime3        | 30041.767445087 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime5        | 30041.849525094 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 30038.66745472  | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 30041.890565097 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 960681          | Number of level 1 events                |

### 2.1.4 Events

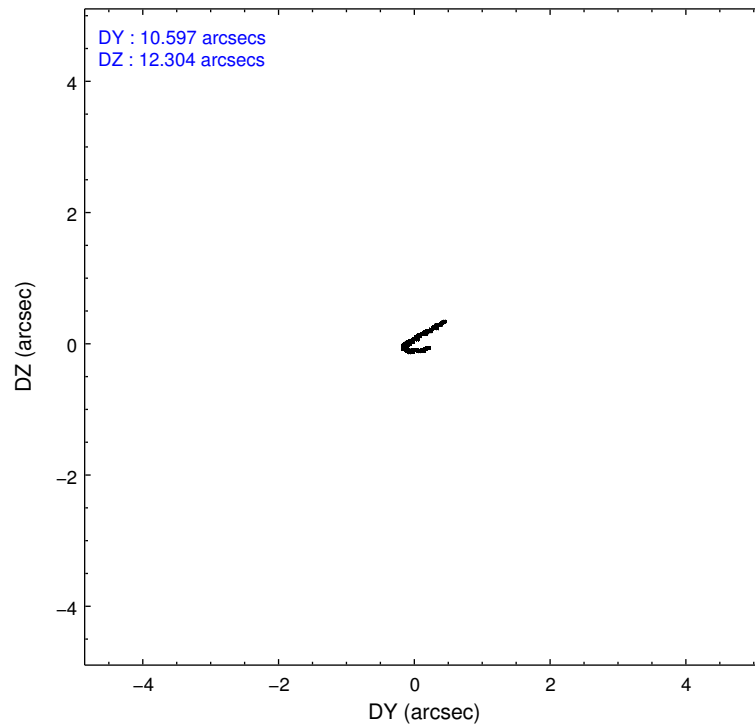
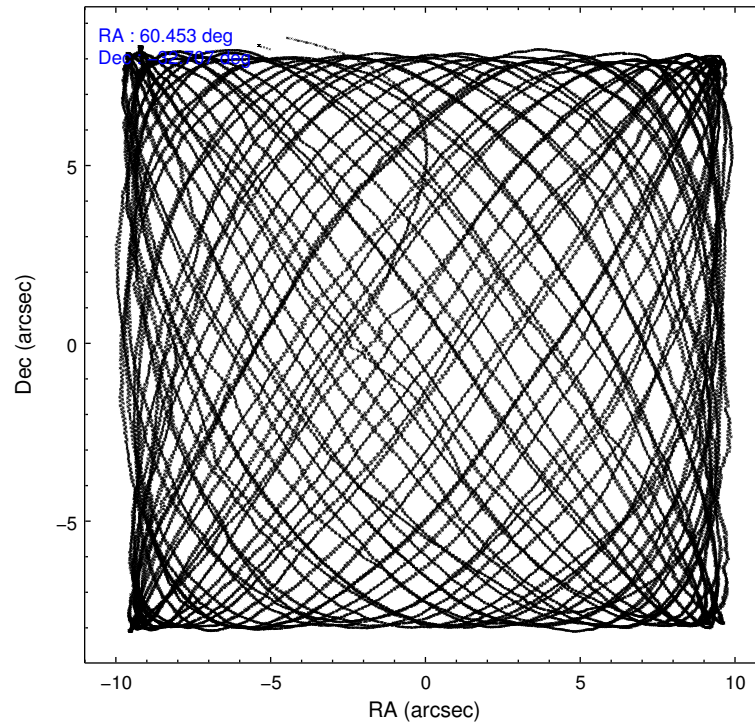
|                 | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7  |
|-----------------|--------|--------|--------|--------|--------|
| level 1 events  | 173376 | 164177 | 251802 | 178430 | 192896 |
| rejected events | 155073 | 145111 | 121478 | 158137 | 101351 |
| rejected %      | 89%    | 88%    | 48%    | 88%    | 52%    |

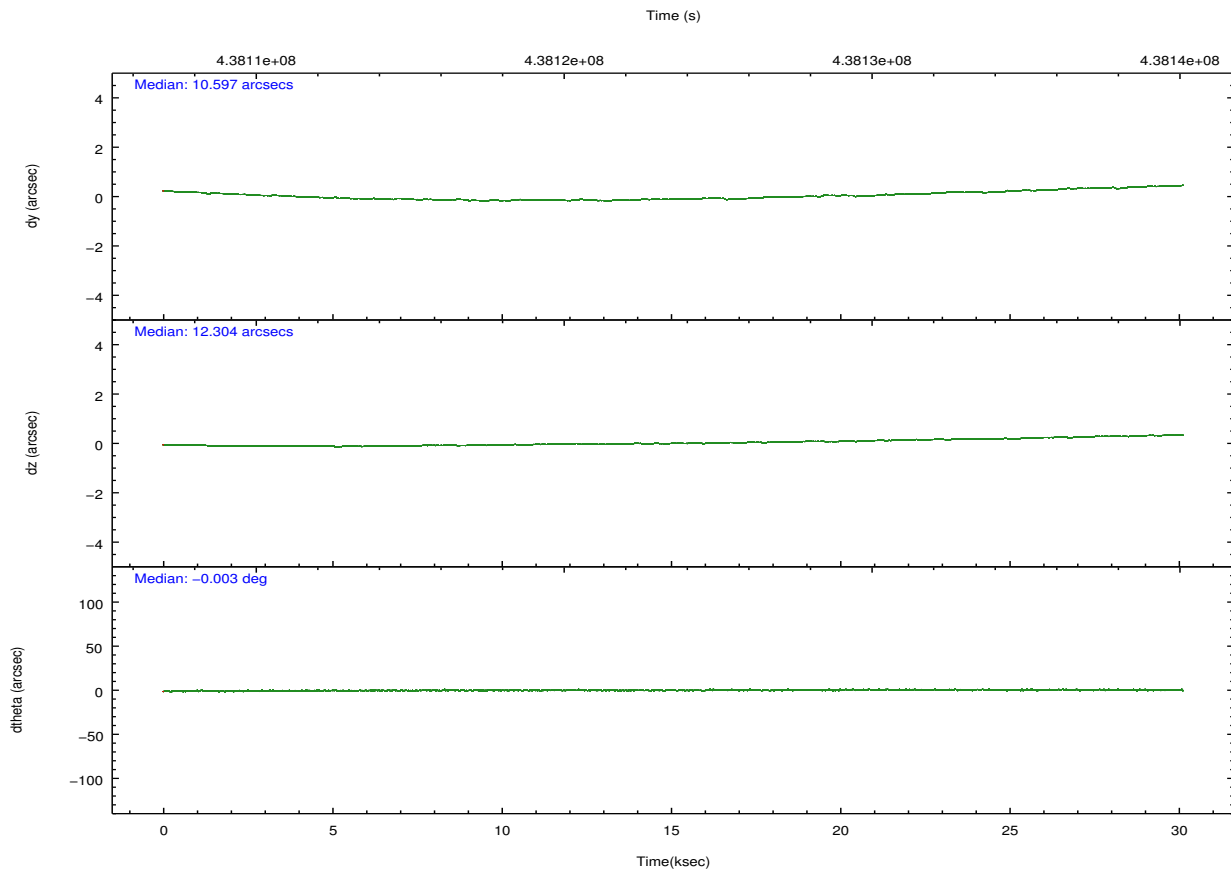
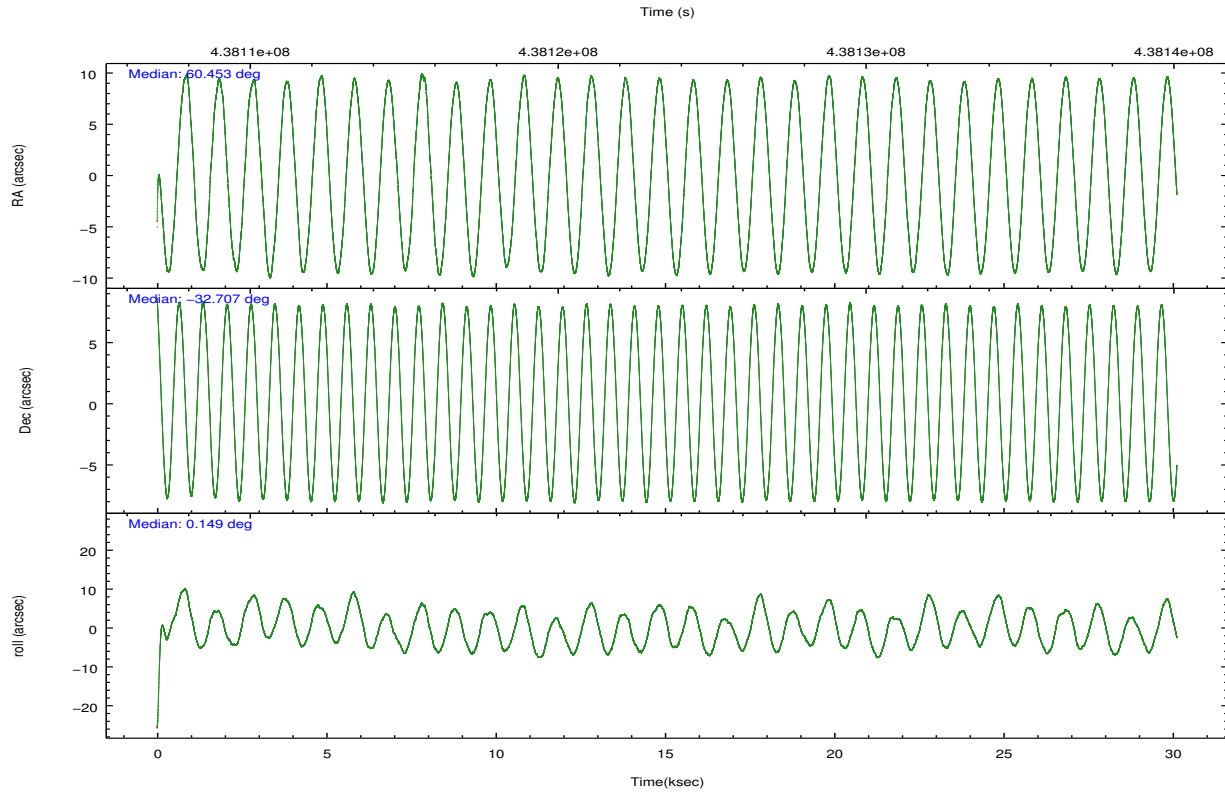
|                | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7 |
|----------------|--------|--------|--------|--------|-------|
| grade 0 events | 6790   | 7504   | 12701  | 7391   | 9076  |
|                | 3%     | 4%     | 5%     | 4%     | 4%    |
| grade 1 events | 100    | 101    | 1419   | 81     | 294   |
|                | 0%     | 0%     | 0%     | 0%     | 0%    |
| grade 2 events | 4407   | 4049   | 41342  | 4481   | 19468 |
|                | 2%     | 2%     | 16%    | 2%     | 10%   |
| grade 3 events | 1826   | 2023   | 4585   | 2055   | 8094  |
|                | 1%     | 1%     | 1%     | 1%     | 4%    |
| grade 4 events | 1896   | 1924   | 4306   | 2025   | 7896  |
|                | 1%     | 1%     | 1%     | 1%     | 4%    |
| grade 5 events | 5959   | 7351   | 18570  | 7215   | 20368 |
|                | 3%     | 4%     | 7%     | 4%     | 10%   |
| grade 6 events | 3389   | 3570   | 67414  | 4347   | 47029 |
|                | 1%     | 2%     | 26%    | 2%     | 24%   |
| grade 7 events | 149009 | 137655 | 101465 | 150835 | 80671 |
|                | 85%    | 83%    | 40%    | 84%    | 41%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-23567          | ACIS-23567           | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | VFAINT              | VFAINT               | CCD I0 on                             | N         | N       |
| Observation mode                  | POINTING            | POINTING             | CCD I1 on                             | N         | N       |
| [deg] Pointing RA                 | 60.424969           | 60.45283924991382    | CCD I2 on                             | O2        | Y       |
| [deg] Pointing Dec                | -32.720978          | -32.70692303087322   | CCD I3 on                             | O3        | Y       |
| [deg] Pointing Roll               | 359.985975          | 0.1576537485855776   | CCD S0 on                             | N         | N       |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  | CCD S1 on                             | O1        | Y       |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 | CCD S2 on                             | O4        | Y       |
| [mm] SIM translation stage pos    | -190.132523         | -190.1425803651734   | CCD S3 on                             | Y         | Y       |
| [mm] SIM translation stage offset | 0                   | 0.01005778216563158  | CCD S4 on                             | N         | N       |
| [s] Observation start time (MET)  | 438108586.184000    | 438107206.52796      | CCD S5 on                             | N         | N       |
| Observation start date            | 2011-11-19T16:48:40 | 2011-11-19T16:26:46  | Number of optional ACIS chips dropped | 0         | 0       |
| [s] Observation end time (MET)    | 438138586.184000    | 438139274.67965      | On-chip summing requested             | N         | N       |
| Observation end date              | 2011-11-20T01:08:40 | 2011-11-20T01:21:14  | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                | Alternating exposures requested       | N         | N       |
|                                   |                     |                      | [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect



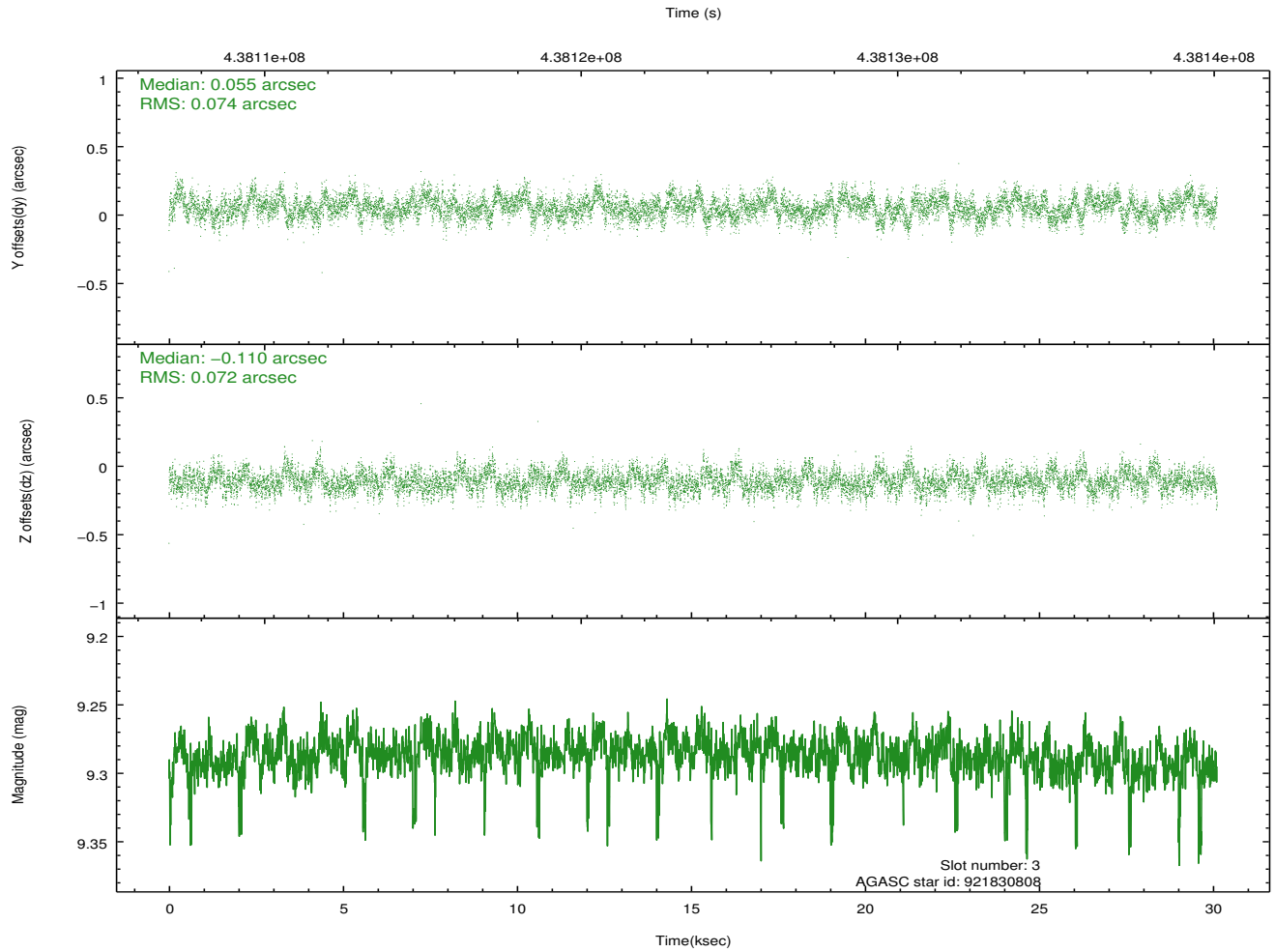
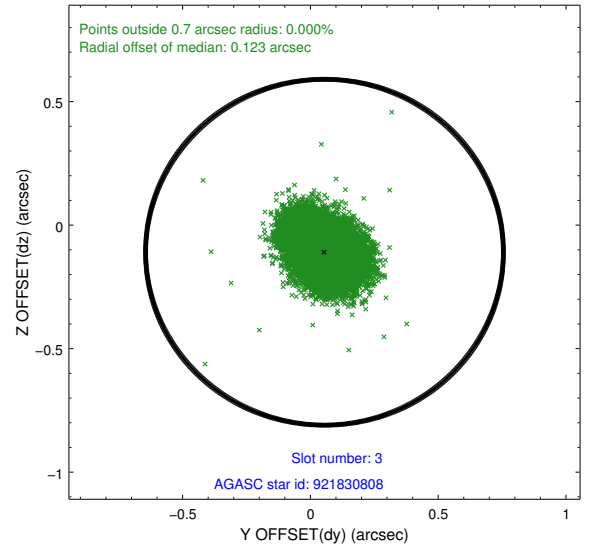
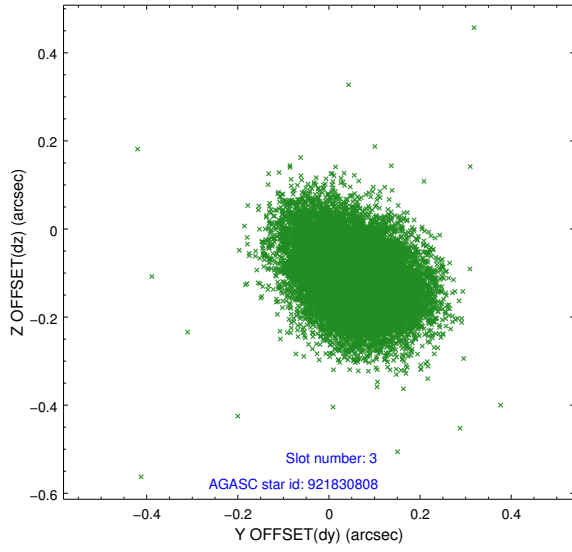


### Slot Statistics

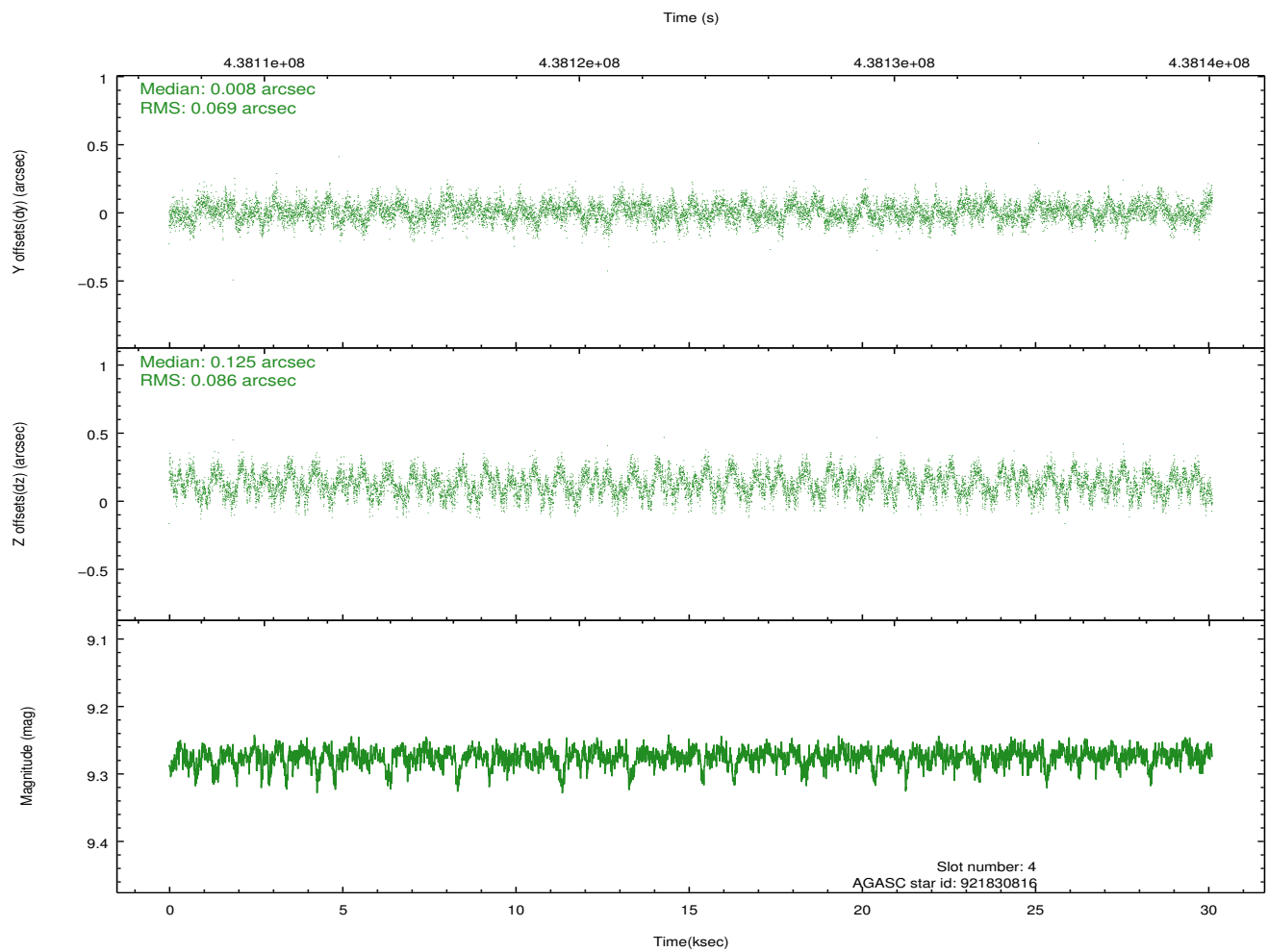
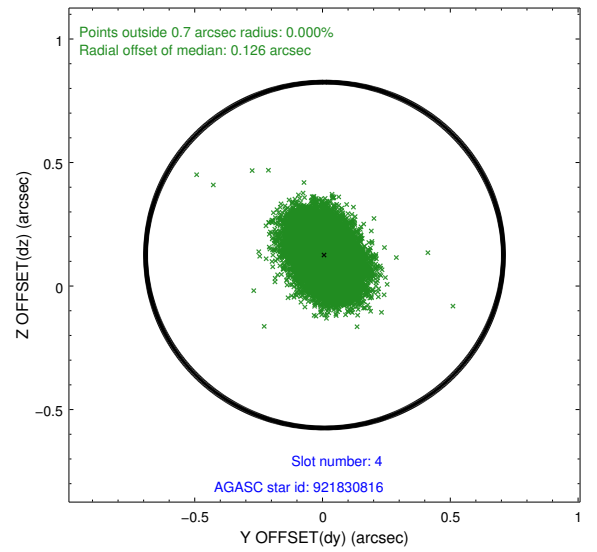
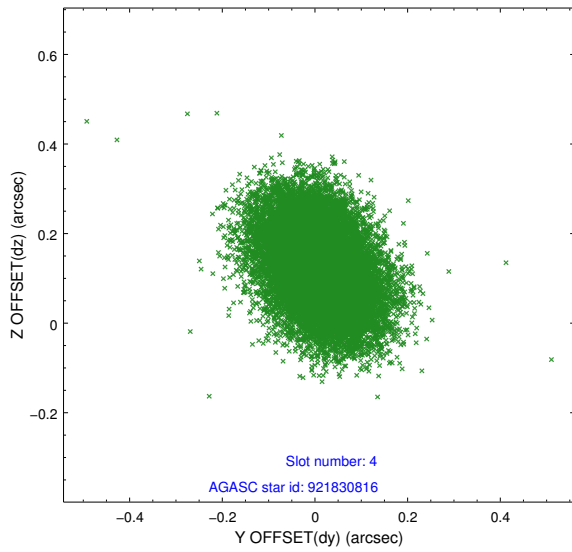
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra        | dec        | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|-----------|------------|----------|----------|
| 0    | FID    | ACIS-S-2  | 7.03 | 7347  | -0.065 | -0.061 | 0.008 | 0.013 | 0.000000  | 0.000000   | -763.58  | -1733.65 |
| 1    | FID    | ACIS-S-4  | 7.12 | 7346  | 0.232  | 0.047  | 0.009 | 0.017 | 0.000000  | 0.000000   | 2149.99  | 174.82   |
| 2    | FID    | ACIS-S-5  | 7.15 | 7347  | -0.199 | 0.022  | 0.010 | 0.017 | 0.000000  | 0.000000   | -1816.43 | 168.62   |
| 3    | GUIDE  | 921830808 | 9.29 | 14630 | 0.055  | -0.110 | 0.108 | 0.178 | 60.276185 | -32.589442 | -450.98  | 473.47   |
| 4    | GUIDE  | 921830816 | 9.27 | 14681 | 0.008  | 0.125  | 0.119 | 0.188 | 60.304216 | -32.967704 | -364.19  | -888.08  |
| 5    | GUIDE  | 921833400 | 9.02 | 14687 | 0.002  | 0.078  | 0.092 | 0.148 | 60.219654 | -33.055948 | -618.86  | -1206.40 |
| 6    | GUIDE  | 921440256 | 9.38 | 14679 | 0.061  | -0.133 | 0.126 | 0.203 | 60.293712 | -32.073324 | -401.48  | 2330.70  |
| 7    | GUIDE  | 921313800 | 9.45 | 14682 | -0.126 | 0.038  | 0.187 | 0.282 | 59.659209 | -32.210928 | -2333.19 | 1827.47  |

## 2.4 Star Slots

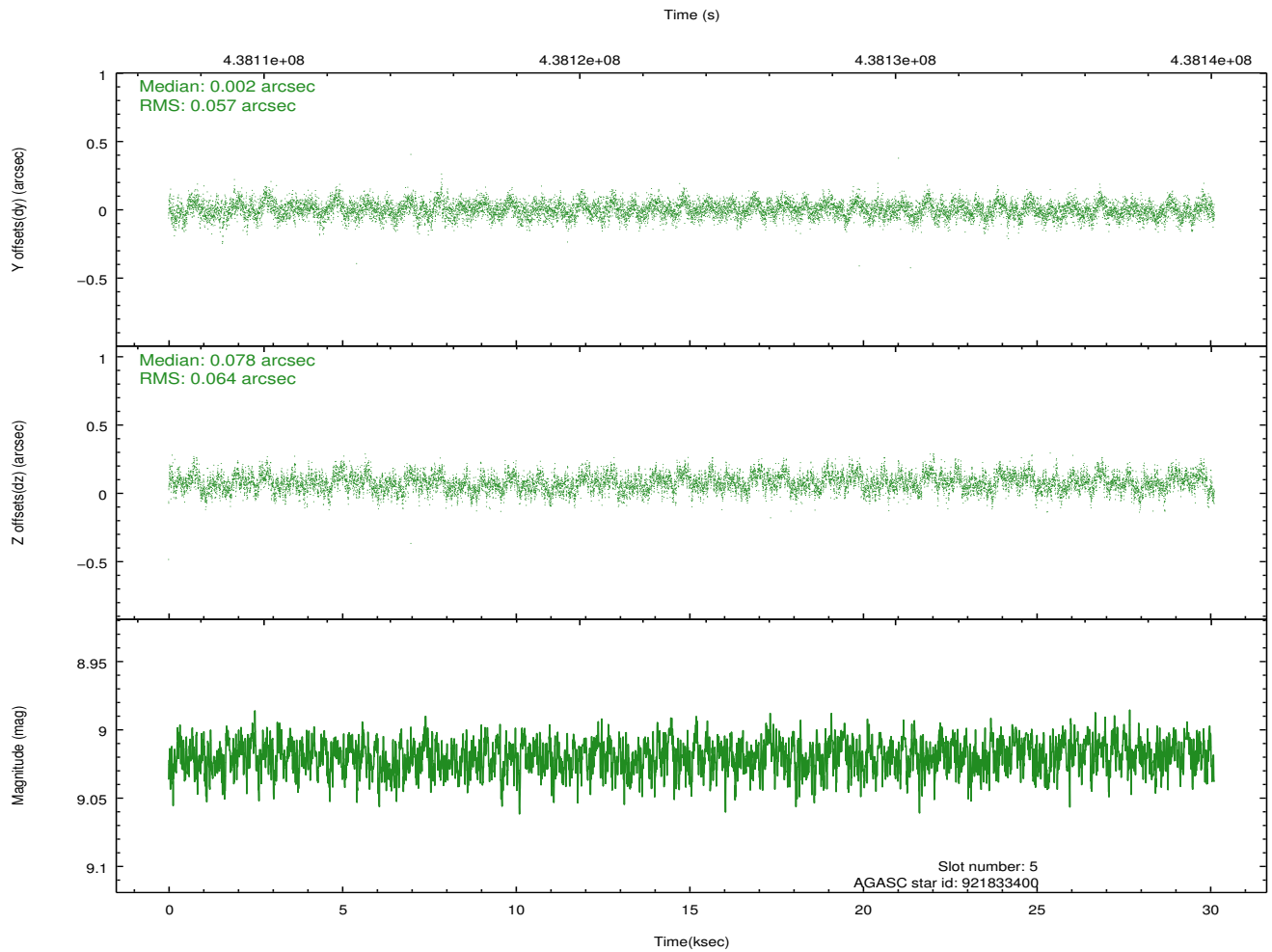
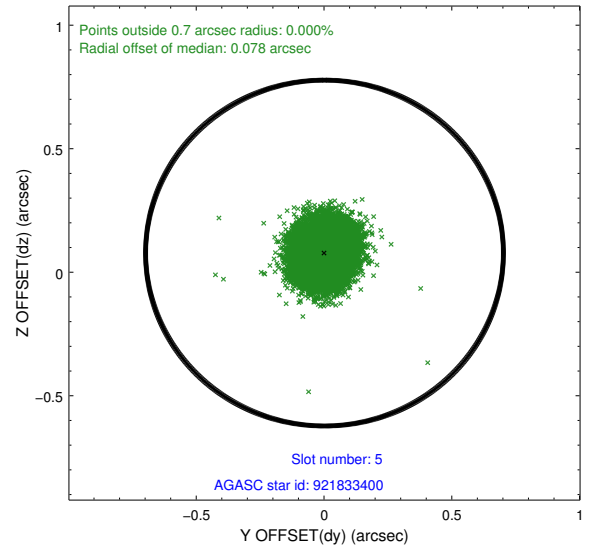
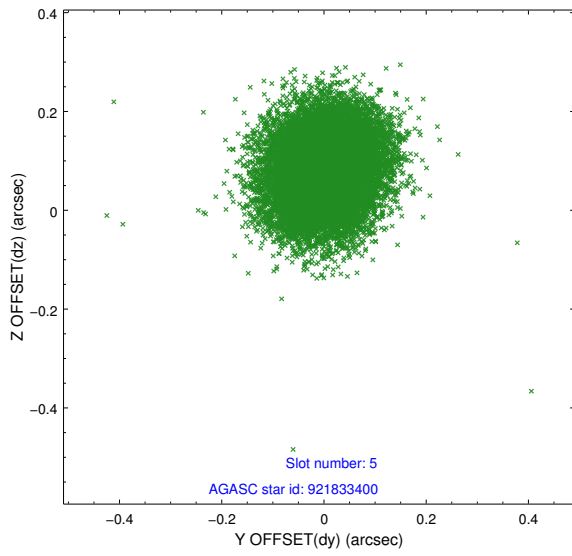
### 2.4.1 Slot 3



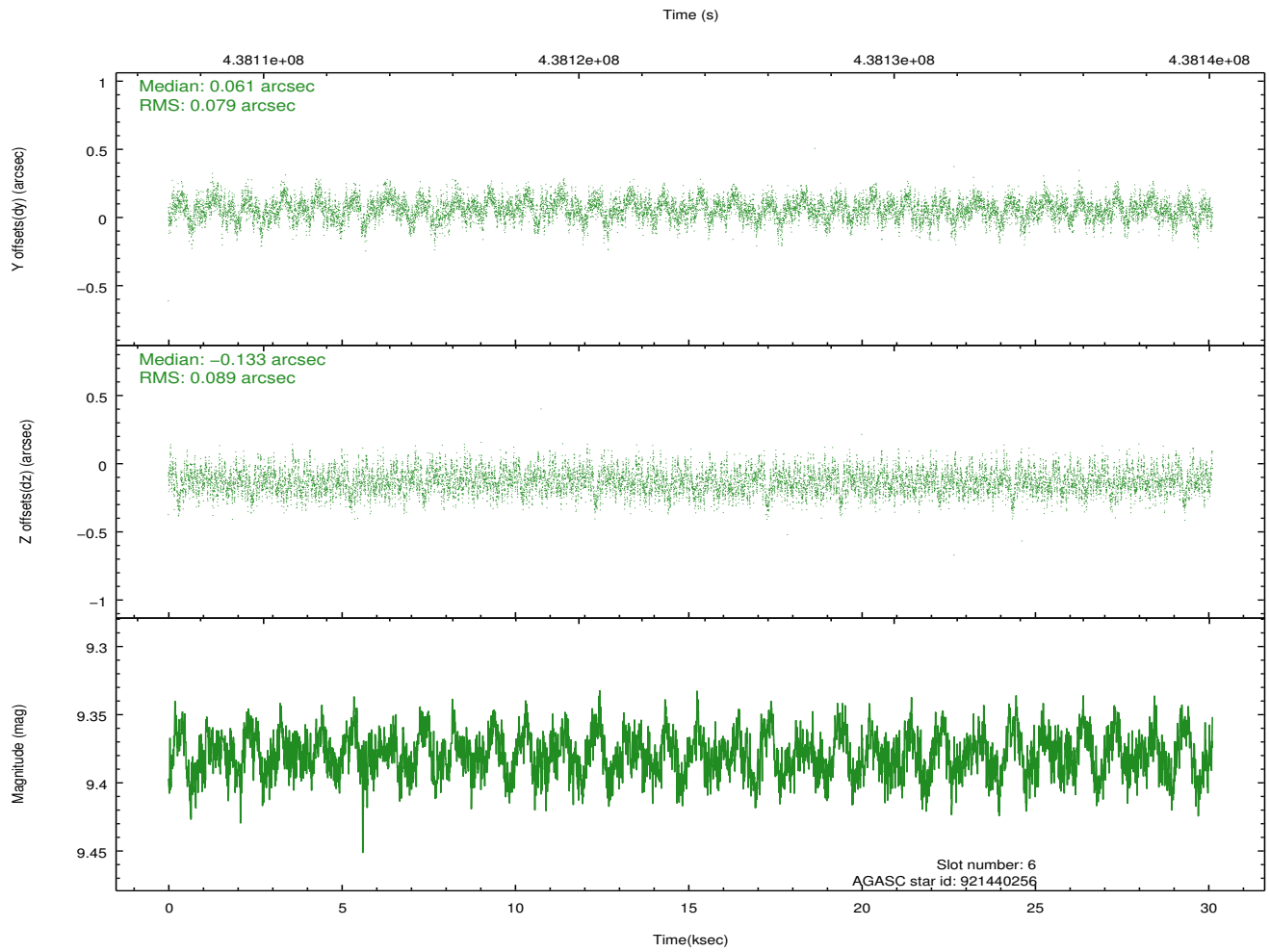
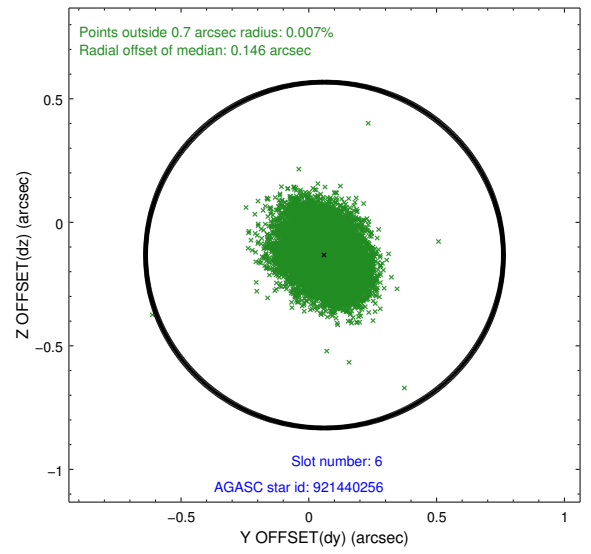
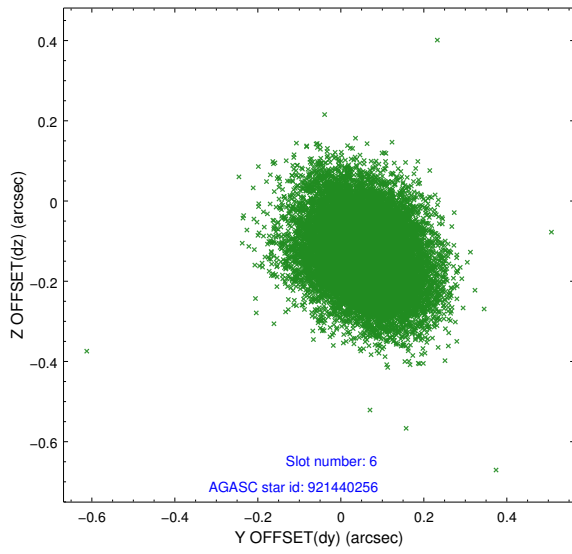
## 2.4.2 Slot 4



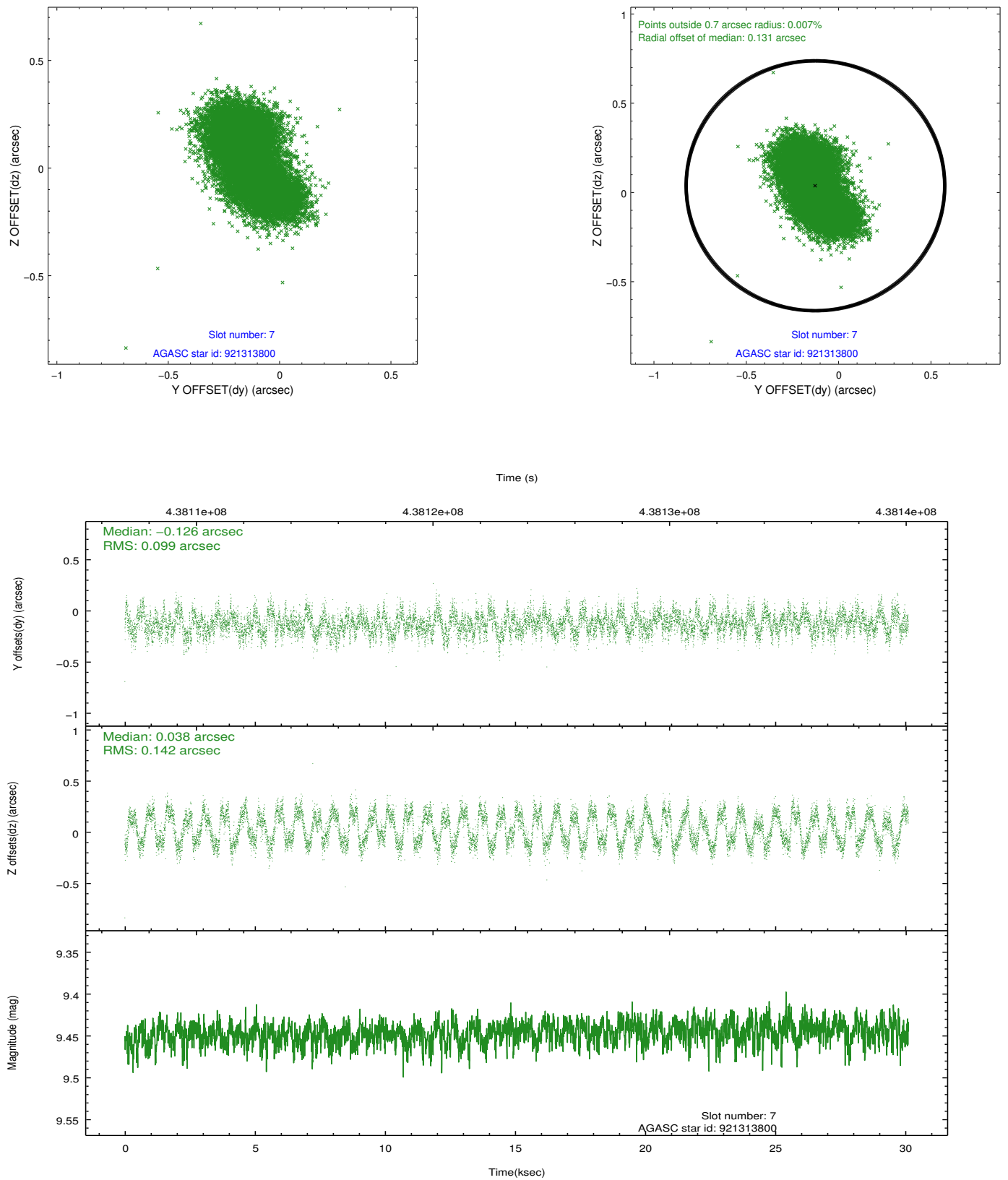
### 2.4.3 Slot 5



## 2.4.4 Slot 6

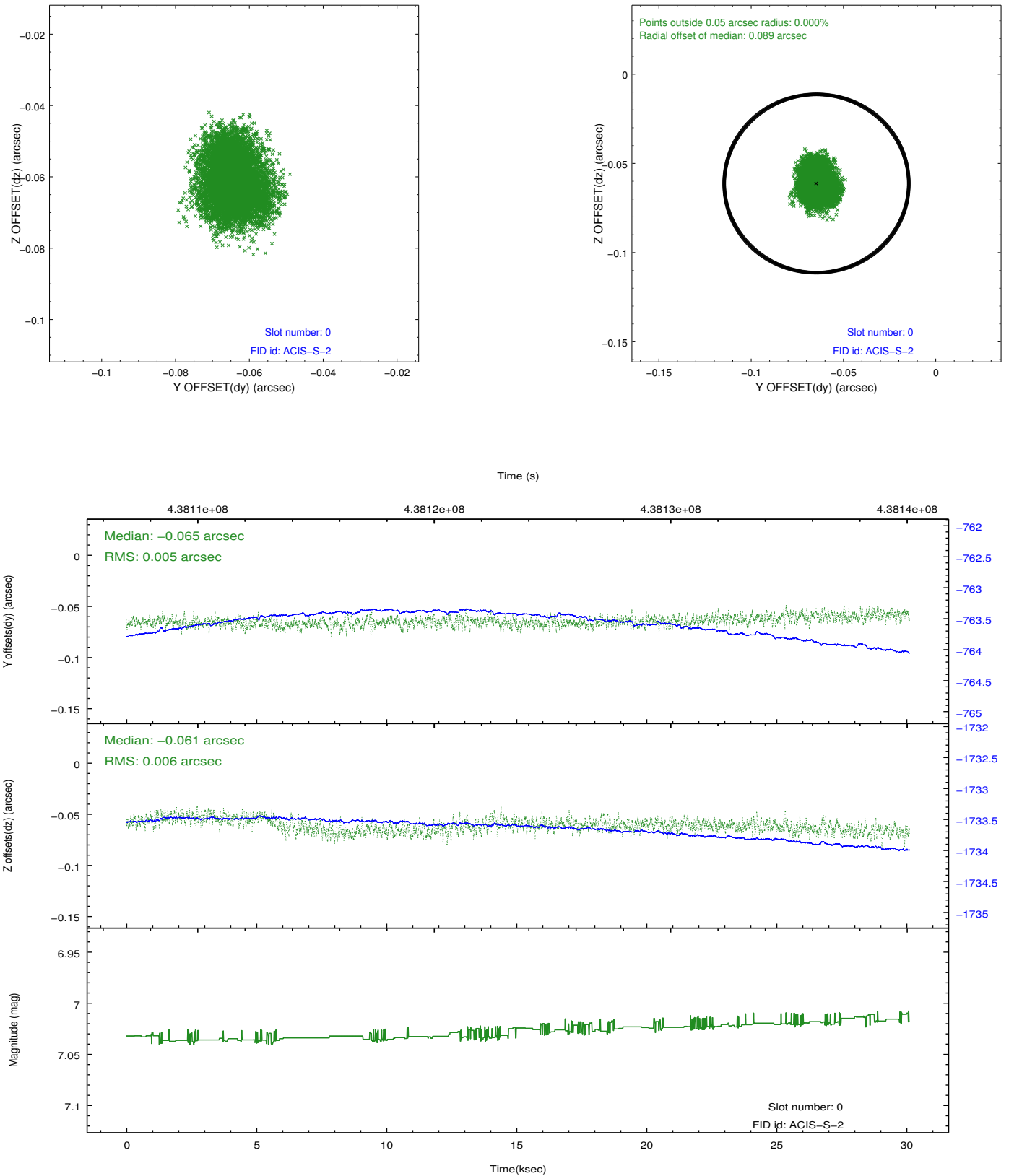


## 2.4.5 Slot 7

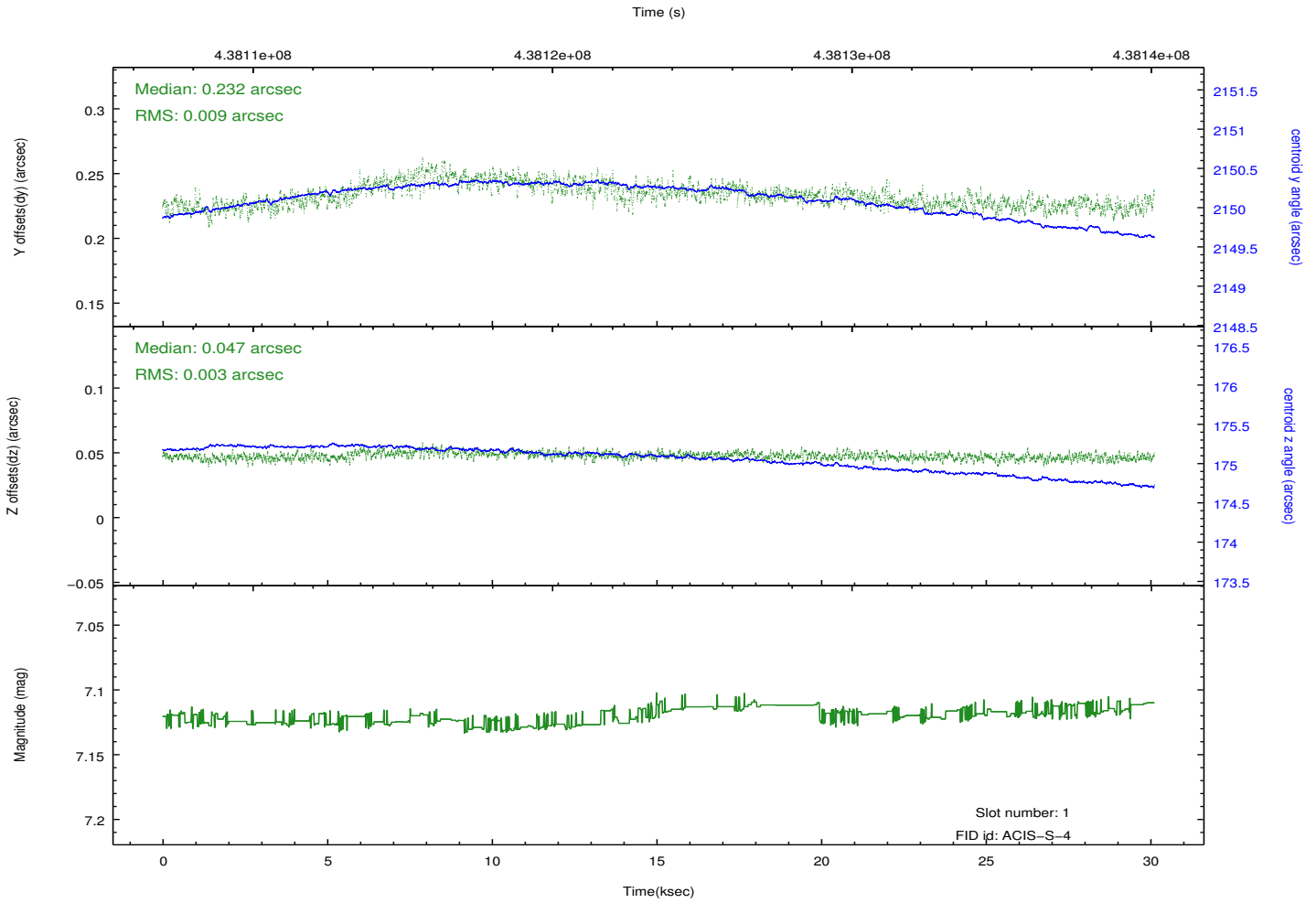
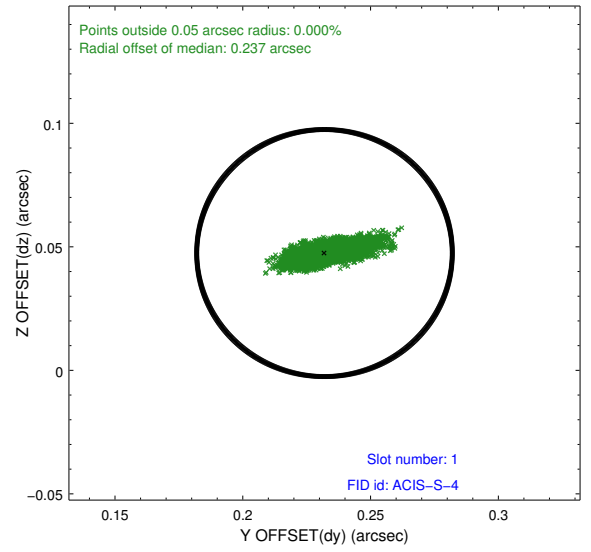
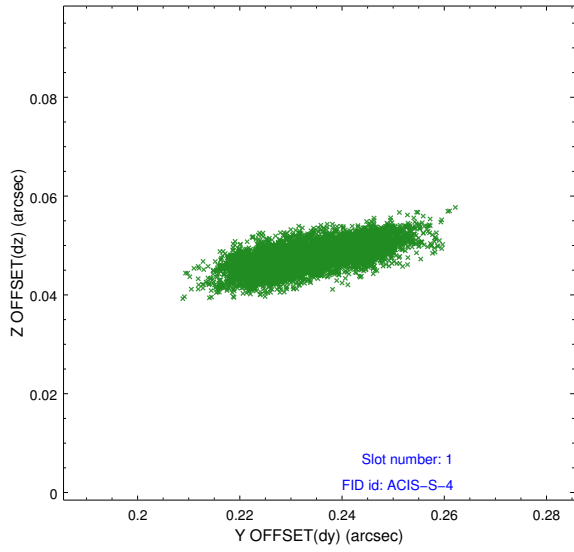


## 2.5 FID Slots

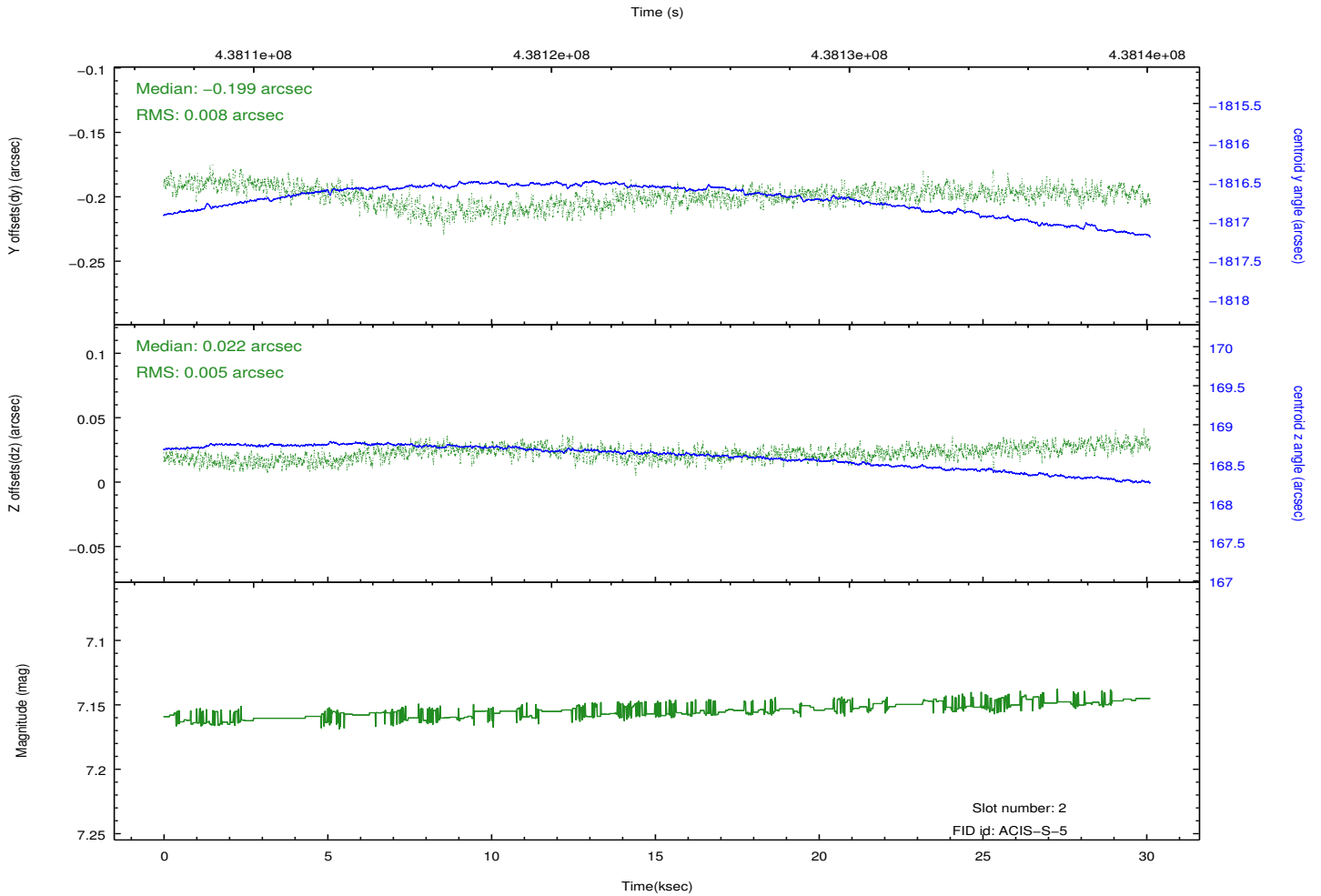
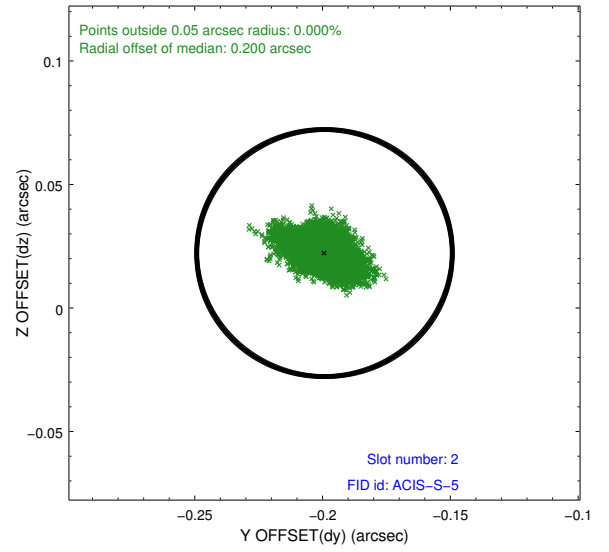
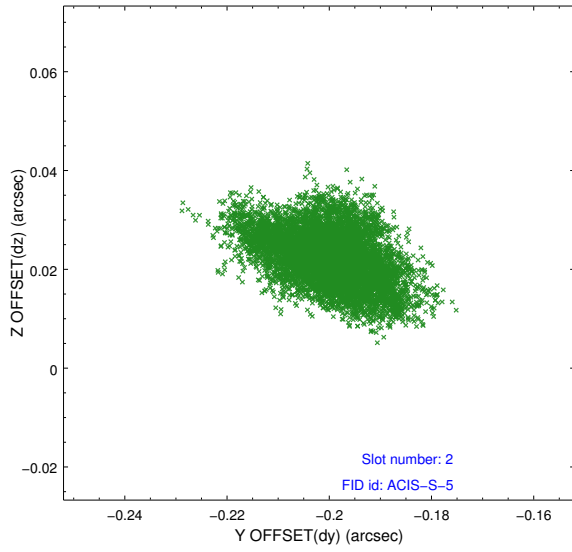
### 2.5.1 Slot 0



## 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)      | 2012.02.29      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 30.041890565395 |

## A.2 Comments

Two spatial regions of the original bias map for CCD = 6 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 = 6 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:

Region 1:

(60.56761, -32.63756), (60.56470, -32.63757), (60.56523, -32.73283), (60.56813, -32.73023)

Region 2:

(60.59825, -32.63743), (60.59646, -32.63744), (60.59689, -32.70964), (60.59869, -32.71127)