

# V&V Reference Report

## L2 ASCDS Version : 10.4

Observation 17668 - L2 Version 1  
Chandra X-Ray Center

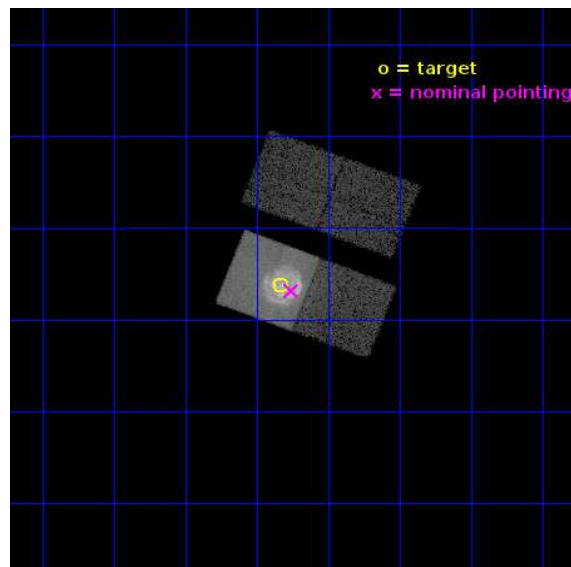
L2 Processing Date : Jul 7 2015

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# 1 Front

|          |                                                                      |                                             |
|----------|----------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 502466                                                               | Sequence number                             |
| obs_id   | 17668                                                                | Observation id                              |
| title    | Expansion of Kes 73, a shell supernova remnant containing a magnetar | &#160                                       |
| observer | Dr. Kazimierz Borkowski                                              | Principal investigator                      |
| object   | Kes 73                                                               | Source name                                 |
| dtcycle  | 0                                                                    | &#160                                       |
| cycle    | P                                                                    | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 280.333333                                                           | Observer's specified target RA [deg]        |
| dec_targ | -4.936389                                                            | Observer's specified target Dec [deg]       |
| ra_nom   | 280.31503067986                                                      | Nominal RA [deg]                            |
| dec_nom  | -4.9470904296568                                                     | Nominal Dec [deg]                           |
| roll_nom | 201.15503907707                                                      | Nominal Roll [deg]                          |
| revision | 1                                                                    | Processing version of data                  |
| ontime   | 21153.17082572                                                       | Sum of GTIs [s]                             |
| livetime | 20876.789076144                                                      | Livetime [s]                                |
| ontime2  | 21153.04770577                                                       | Sum of GTIs [s]                             |
| ontime3  | 21153.088745713                                                      | Sum of GTIs [s]                             |
| ontime6  | 21149.988745451                                                      | Sum of GTIs [s]                             |
| ontime7  | 21153.17082572                                                       | Sum of GTIs [s]                             |
| l2events | 181609                                                               | Number of level 2 events                    |

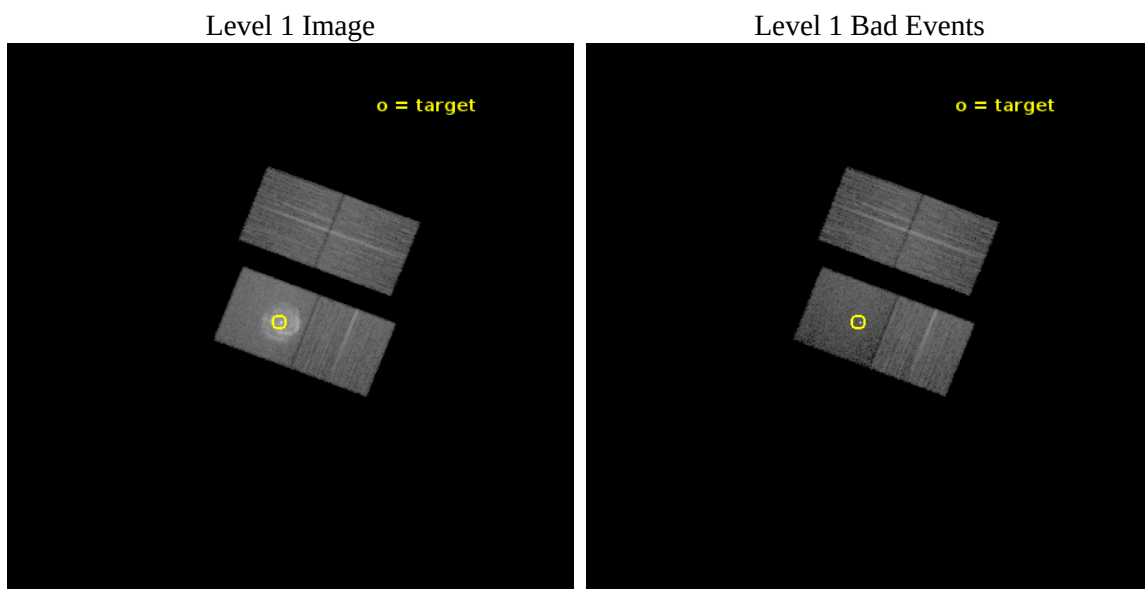




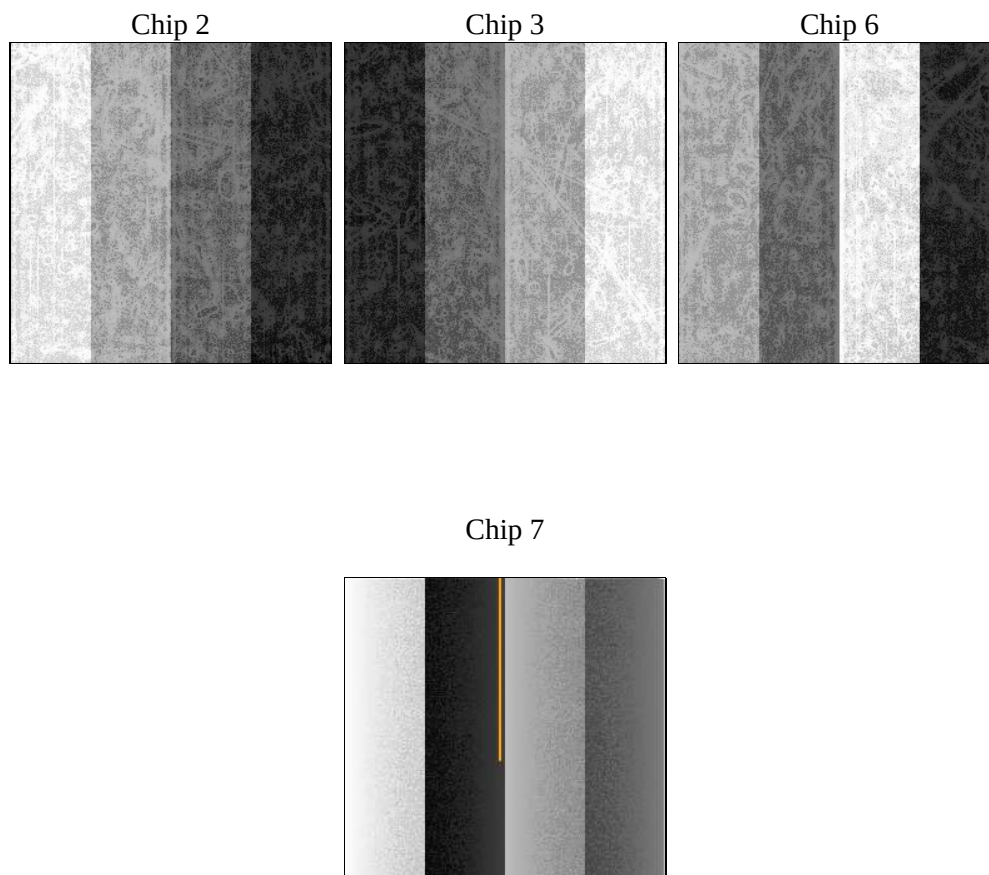
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 3                   | Obi number                     | sched_exp_time | 21087.729000    | [s] Scheduled observation exposure time |
| ascdsver | 10.4                | Processing system revision     | ontime         | 21153.17082572  | Sum of GTIs [s]                         |
| caldsver | 4.6.7               | &#160                          | ontime2        | 21153.04770577  | Sum of GTIs [s]                         |
| date     | 2015-07-08T00:59:08 | Date and time of file creation | ontime3        | 21153.088745713 | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime6        | 21149.988745451 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 21153.17082572  | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 522920          | Number of level 1 events                |

### 2.1.4 Events

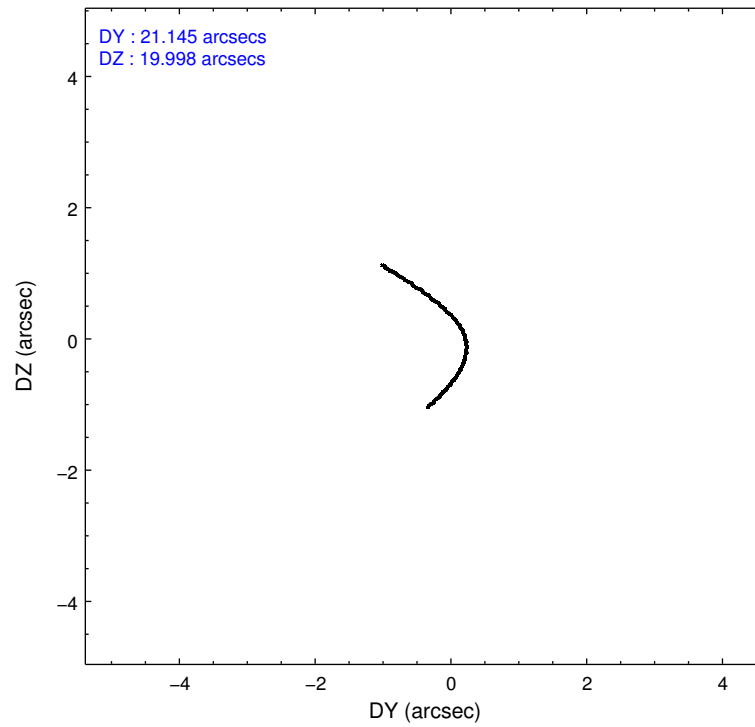
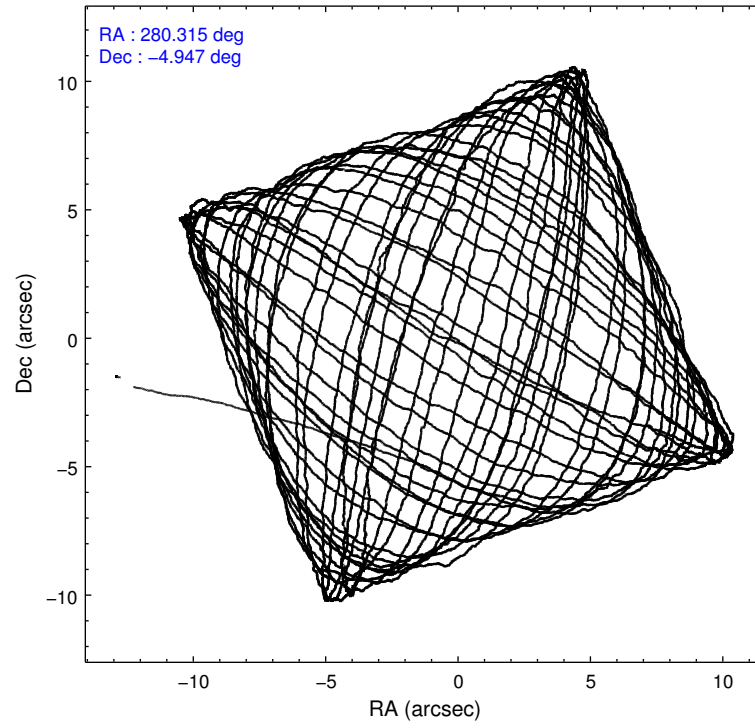
|                 | ccd 2  | ccd 3 | ccd 6  | ccd 7  |
|-----------------|--------|-------|--------|--------|
| level 1 events  | 103180 | 96198 | 108200 | 215342 |
| rejected events | 90588  | 84344 | 92180  | 66991  |
| rejected %      | 87%    | 87%   | 85%    | 31%    |

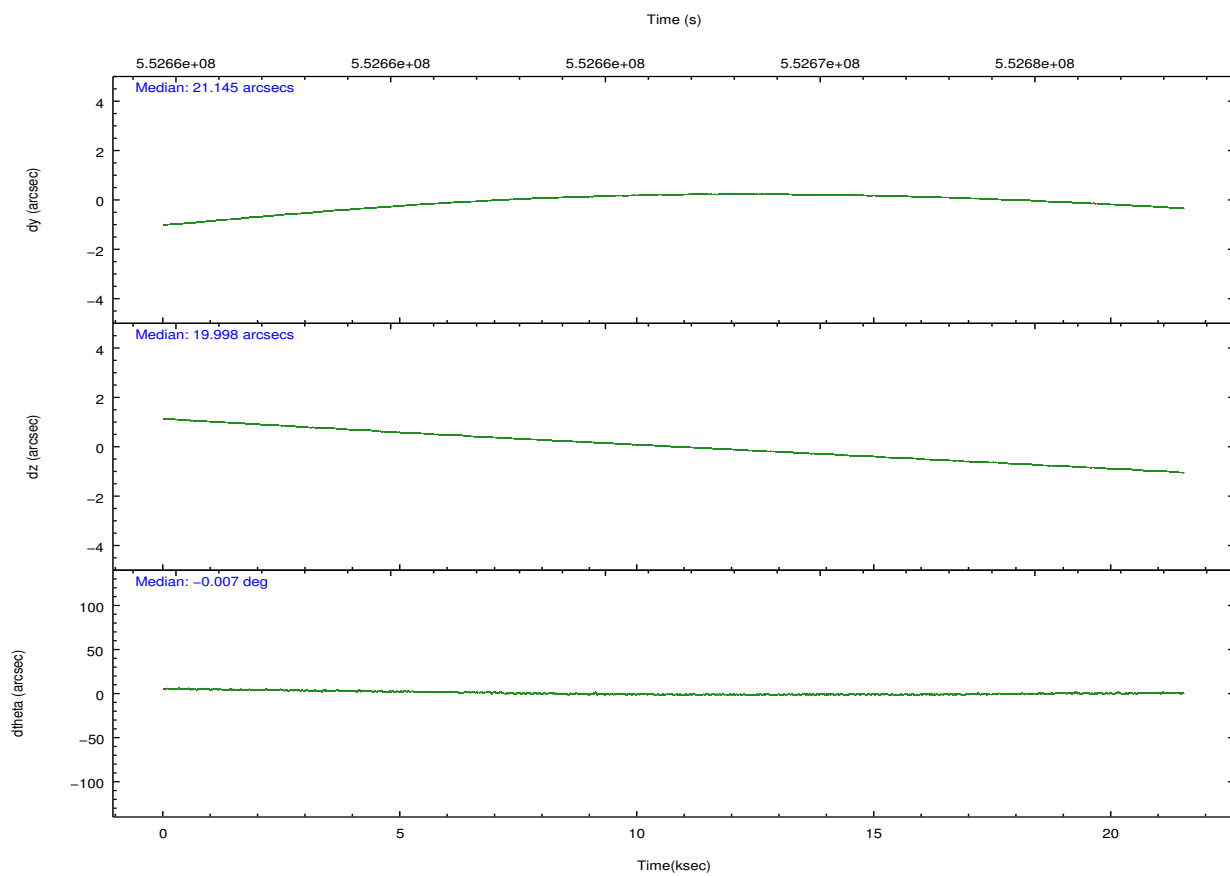
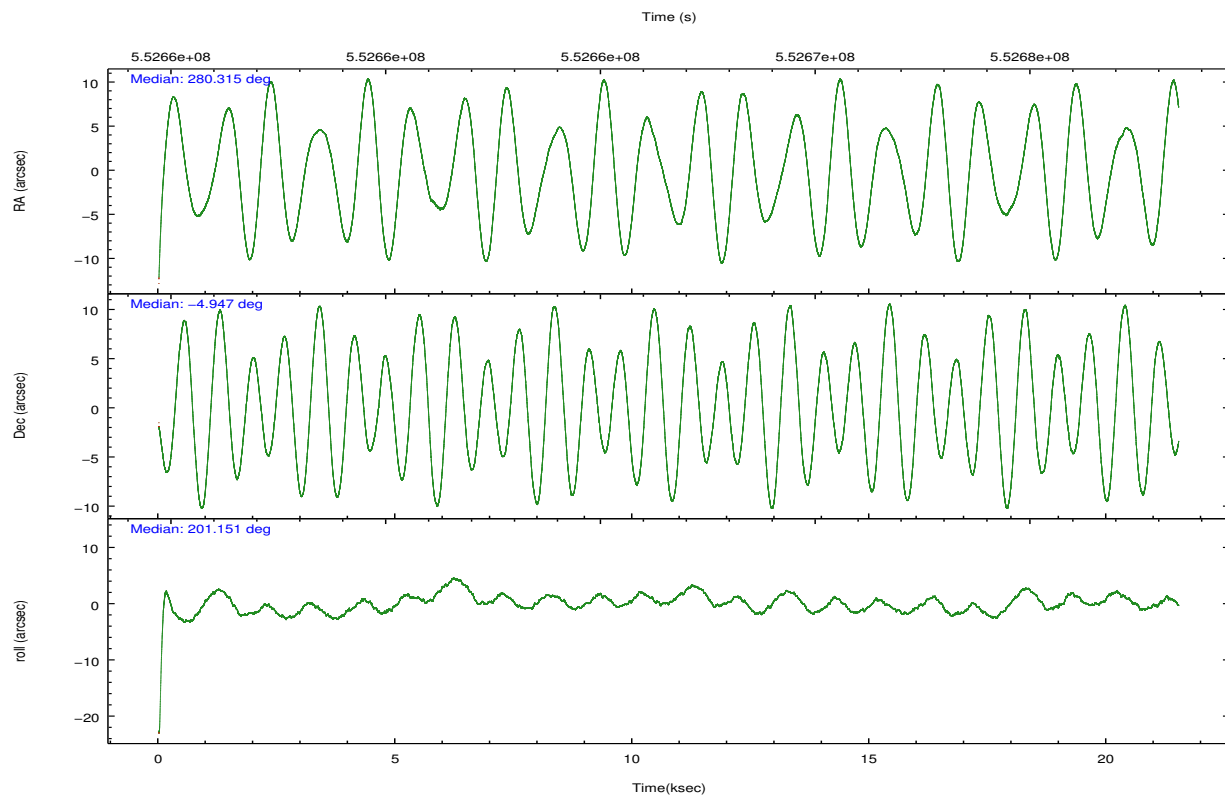
|                | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|----------------|-------|-------|-------|-------|
| grade 0 events | 5152  | 4898  | 7525  | 26604 |
|                | 4%    | 5%    | 6%    | 12%   |
| grade 1 events | 71    | 61    | 52    | 354   |
|                | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 2963  | 2483  | 3226  | 36614 |
|                | 2%    | 2%    | 2%    | 17%   |
| grade 3 events | 1166  | 1212  | 1284  | 15554 |
|                | 1%    | 1%    | 1%    | 7%    |
| grade 4 events | 1185  | 1188  | 1341  | 15220 |
|                | 1%    | 1%    | 1%    | 7%    |
| grade 5 events | 3553  | 4462  | 4563  | 13923 |
|                | 3%    | 4%    | 4%    | 6%    |
| grade 6 events | 2126  | 2076  | 2648  | 54396 |
|                | 2%    | 2%    | 2%    | 25%   |
| grade 7 events | 86964 | 79818 | 87561 | 52677 |
|                | 84%   | 82%   | 80%   | 24%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-2367           | ACIS-2367            | 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                 | 280.331995          | 280.3150306798646    | CCD I2 on                             | O1        | Y       |
| [deg] Pointing Dec                | -4.925473           | -4.947090429656755   | CCD I3 on                             | O2        | Y       |
| [deg] Pointing Roll               | 200.999877          | 201.1550390770731    | CCD S0 on                             | N         | N       |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  | CCD S1 on                             | N         | N       |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 | CCD S2 on                             | Y         | Y       |
| [mm] SIM translation stage pos    | -190.132523         | -190.145094680475    | CCD S3 on                             | Y         | Y       |
| [mm] SIM translation stage offset | 0                   | 0.01257209746719923  | CCD S4 on                             | N         | N       |
| [s] Observation start time (MET)  | 552656262.184000    | 552655262.13412      | CCD S5 on                             | N         | N       |
| Observation start date            | 2015-07-07T11:36:34 | 2015-07-07T11:21:02  | Number of optional ACIS chips dropped | 0         | 0       |
| [s] Observation end time (MET)    | 552677349.184000    | 552677573.82287      | On-chip summing requested             | N         | N       |
| Observation end date              | 2015-07-07T17:28:01 | 2015-07-07T17:32:53  | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                | Alternating exposures requested       | N         | N       |
|                                   |                     |                      | [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect



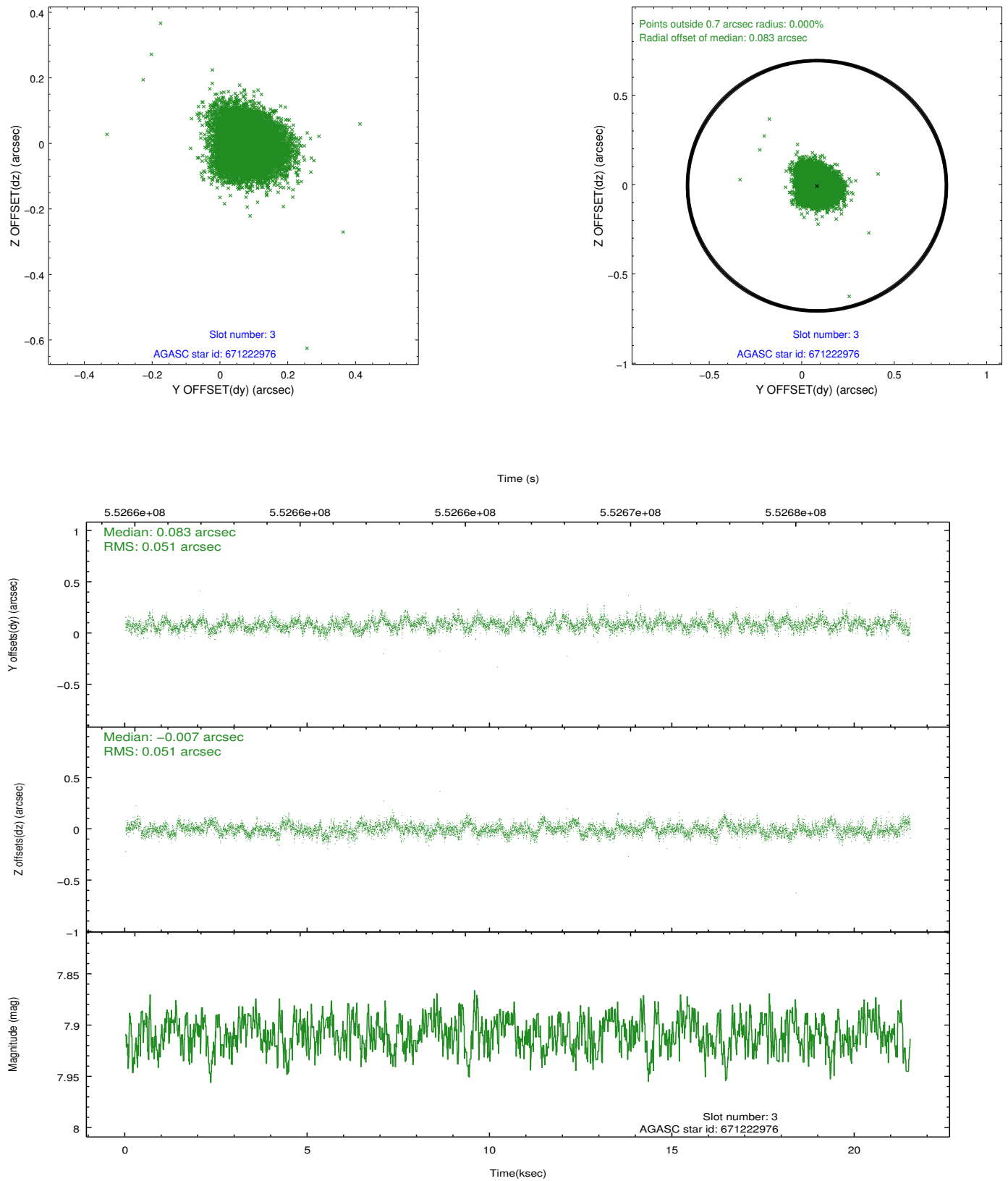


### Slot Statistics

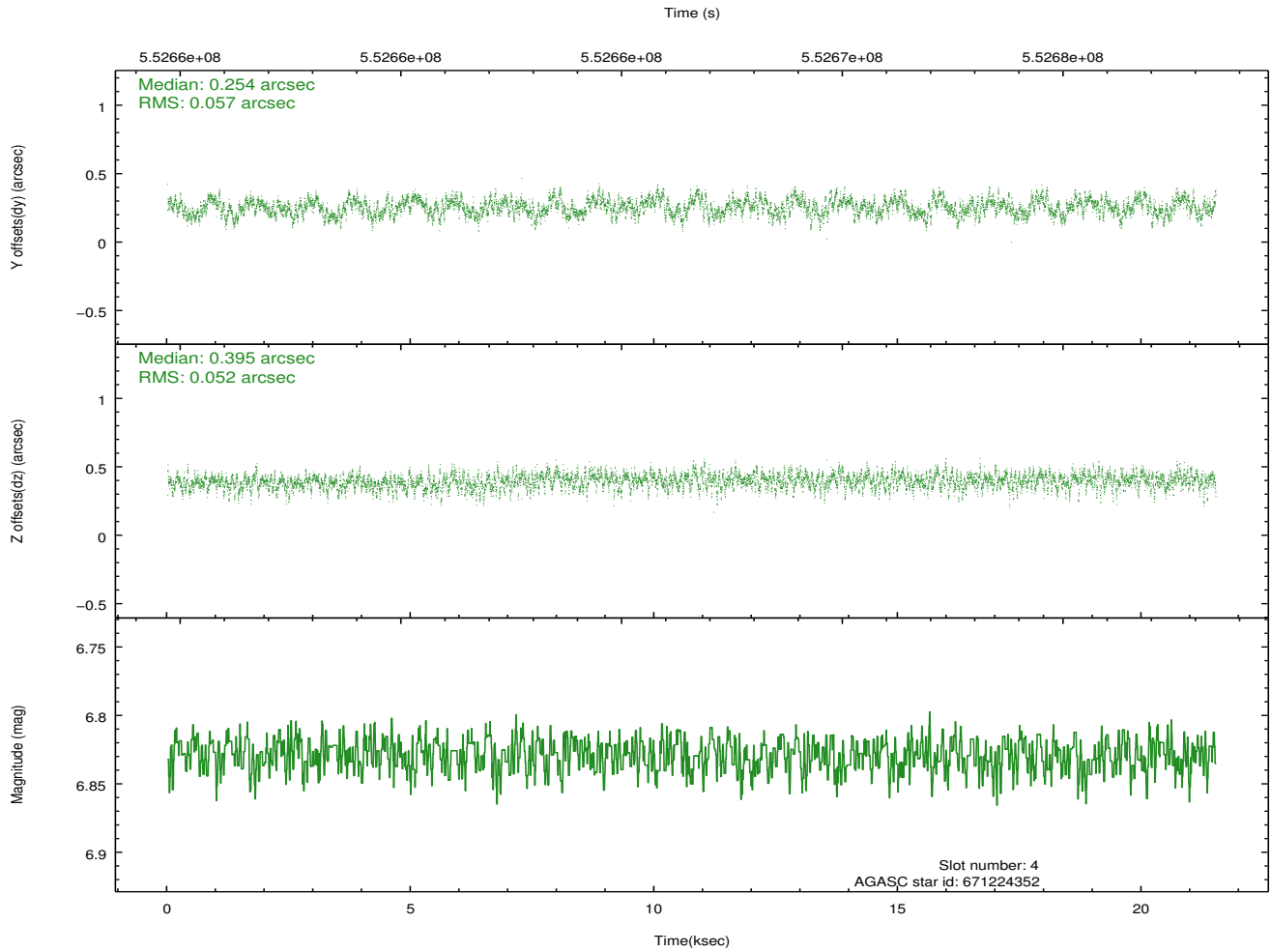
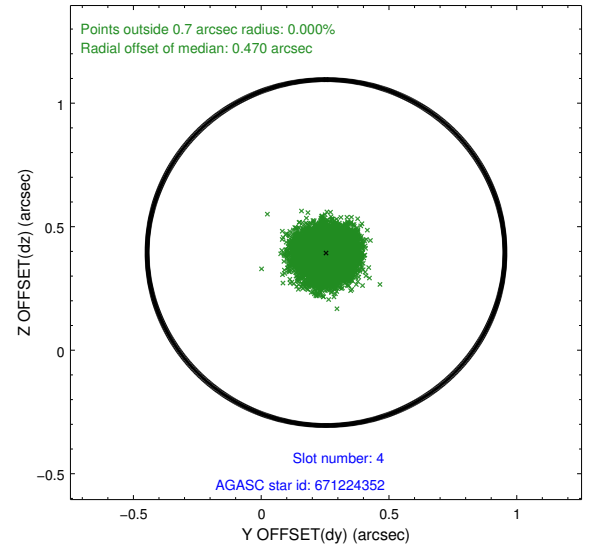
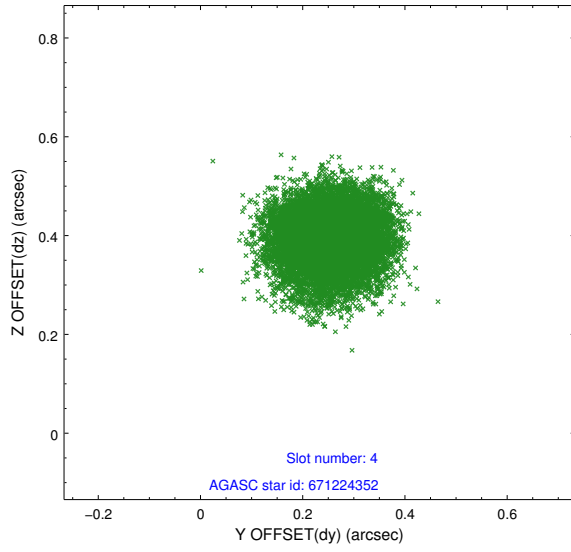
| slot | status | used | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    |      | ACIS-S-1  | 7.06 | 5247  | 0.093  | -0.050 | 0.033 | 0.048 | 0.000000   | 0.000000  | 921.99   | -1737.09 |
| 1    | FID    |      | ACIS-S-5  | 7.10 | 5248  | -0.197 | 0.050  | 0.009 | 0.017 | 0.000000   | 0.000000  | -1827.24 | 160.34   |
| 2    | FID    |      | ACIS-S-6  | 7.21 | 5248  | 0.083  | 0.013  | 0.036 | 0.057 | 0.000000   | 0.000000  | 387.31   | 804.49   |
| 3    | GUIDE  | used | 671222976 | 7.91 | 10496 | 0.083  | -0.007 | 0.076 | 0.123 | 281.033634 | -5.005625 | -2245.00 | 1172.32  |
| 4    | GUIDE  | used | 671224352 | 6.83 | 10495 | 0.254  | 0.395  | 0.083 | 0.130 | 280.197595 | -4.496426 | -102.76  | -1614.23 |
| 5    | GUIDE  | used | 671224408 | 8.93 | 10493 | 0.206  | 0.459  | 0.090 | 0.149 | 280.545473 | -4.404085 | -1386.86 | -1477.11 |
| 6    | GUIDE  | used | 671761568 | 8.38 | 10490 | -0.275 | -0.408 | 0.100 | 0.160 | 280.250283 | -5.657644 | 1217.64  | 2355.49  |
| 7    | GUIDE  | used | 671763744 | 7.51 | 10495 | -0.266 | -0.437 | 0.114 | 0.172 | 280.132895 | -5.707615 | 1674.98  | 2373.23  |

## 2.4 Star Slots

### 2.4.1 Slot 3

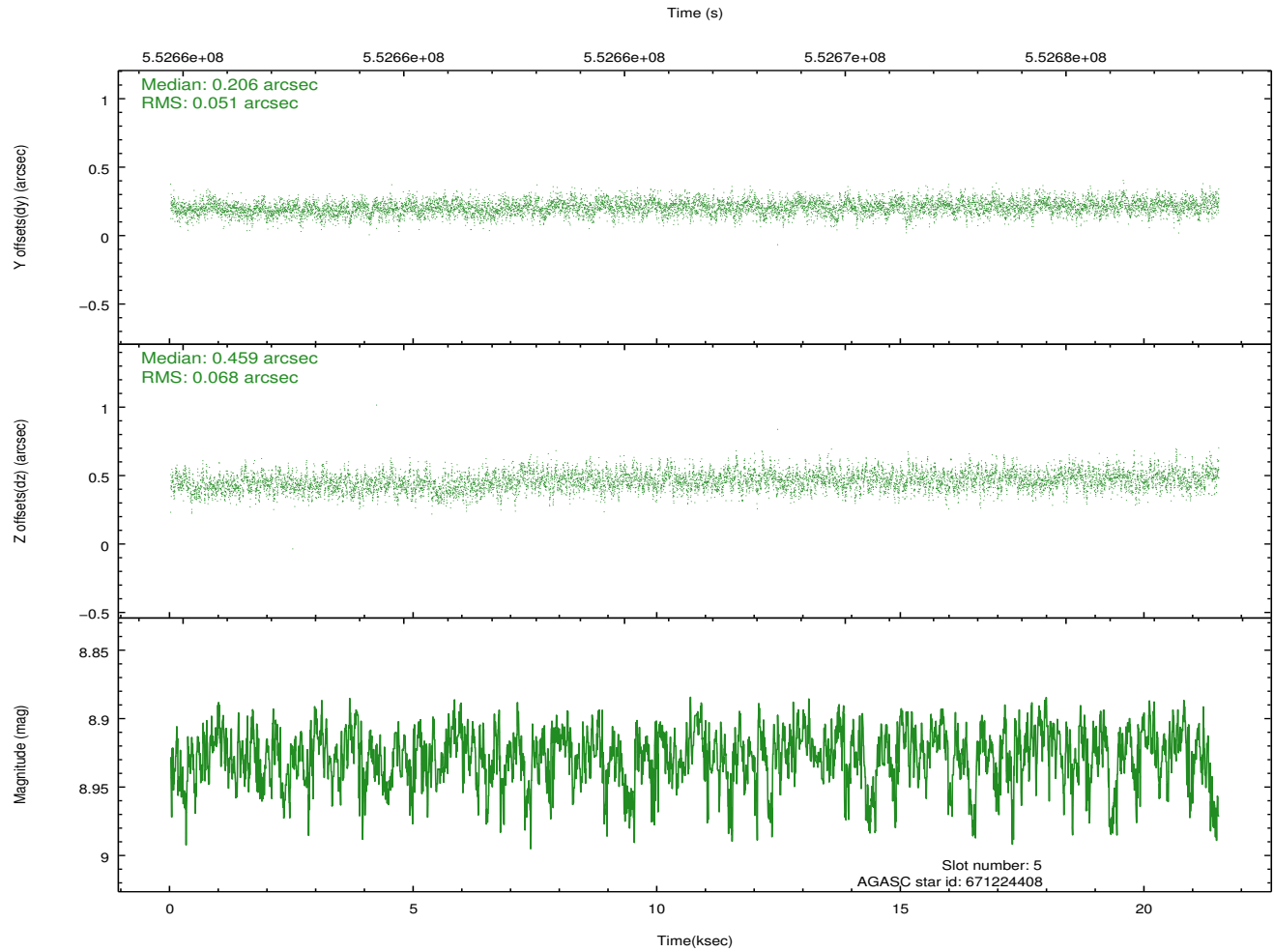
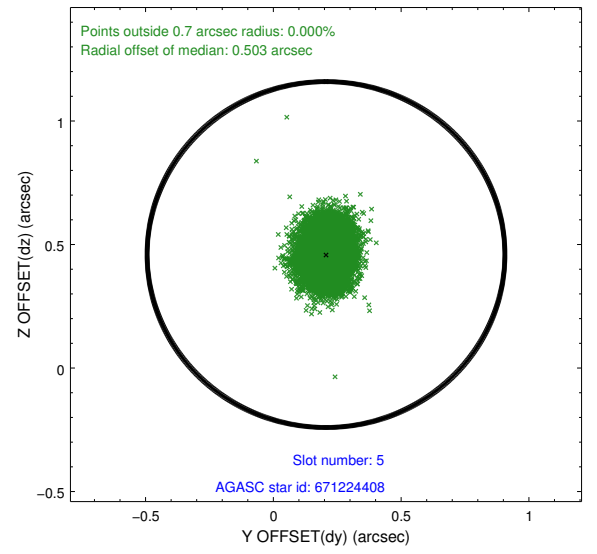
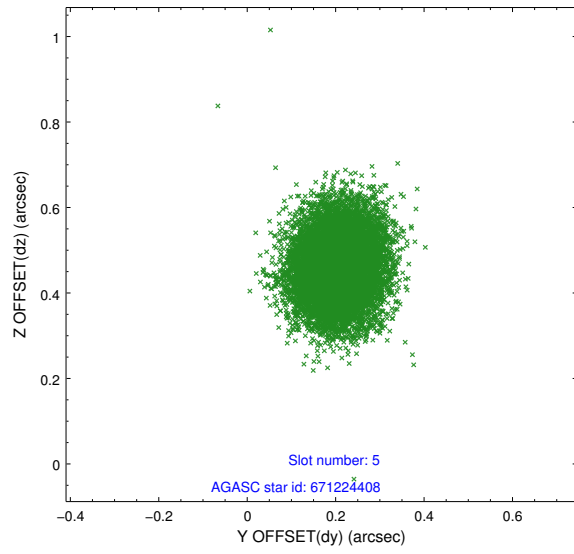


## 2.4.2 Slot 4

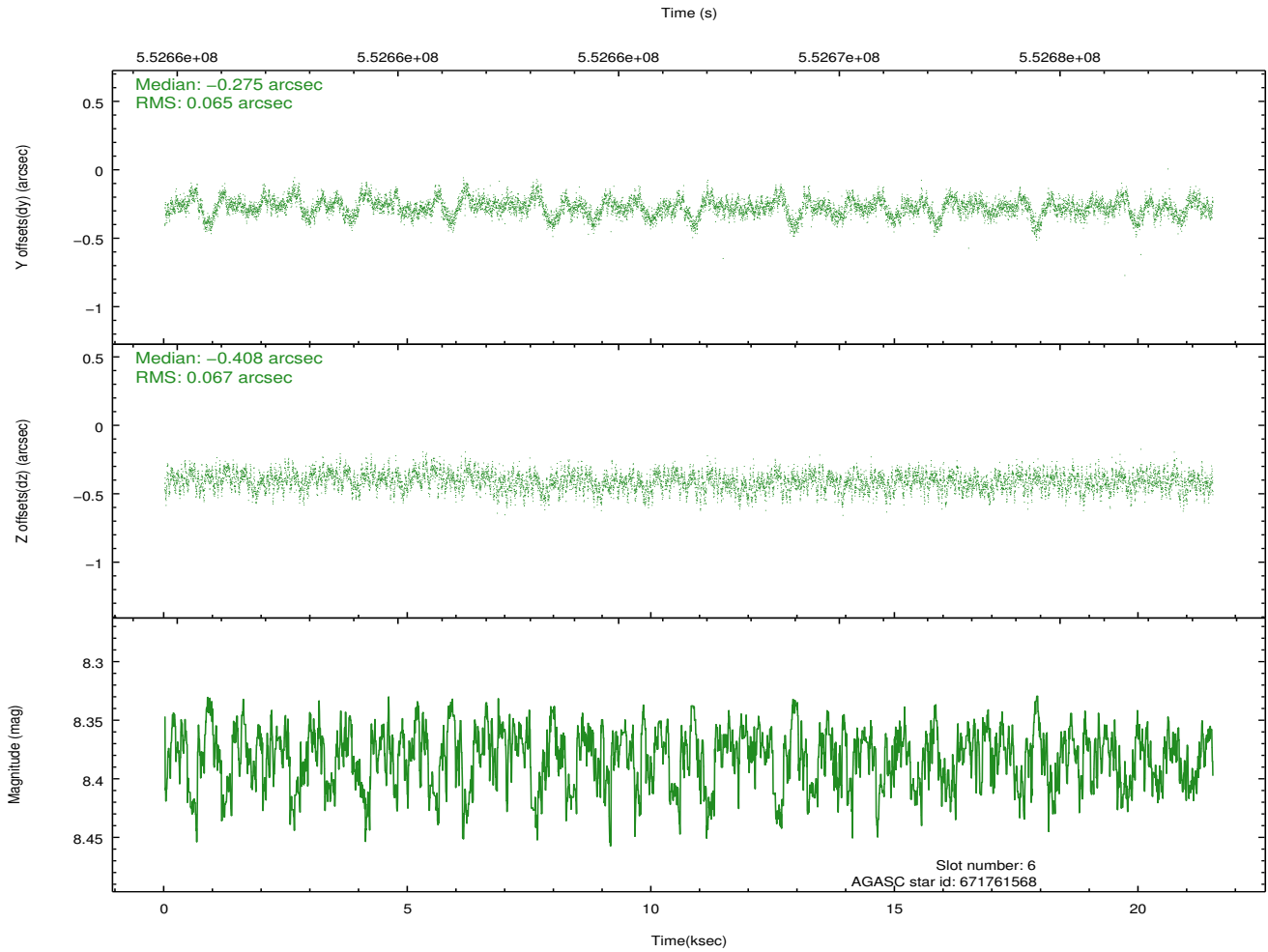
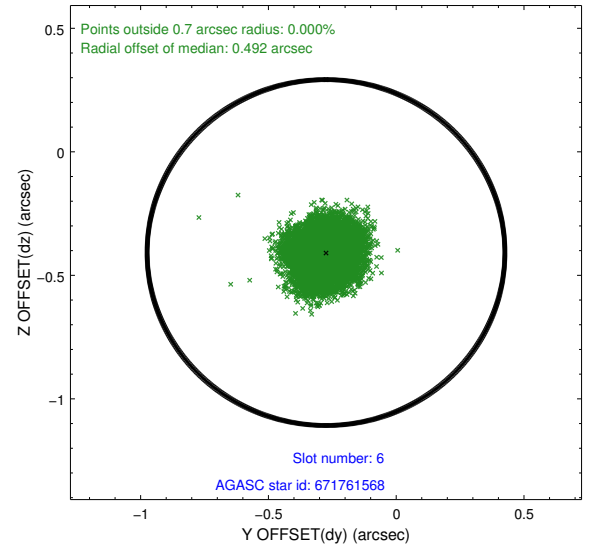
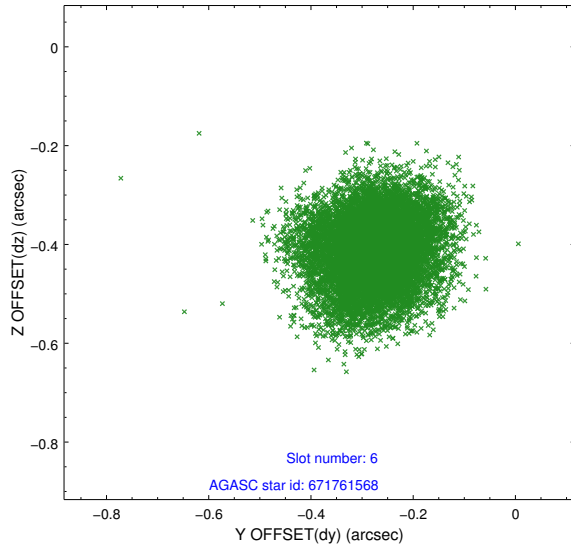




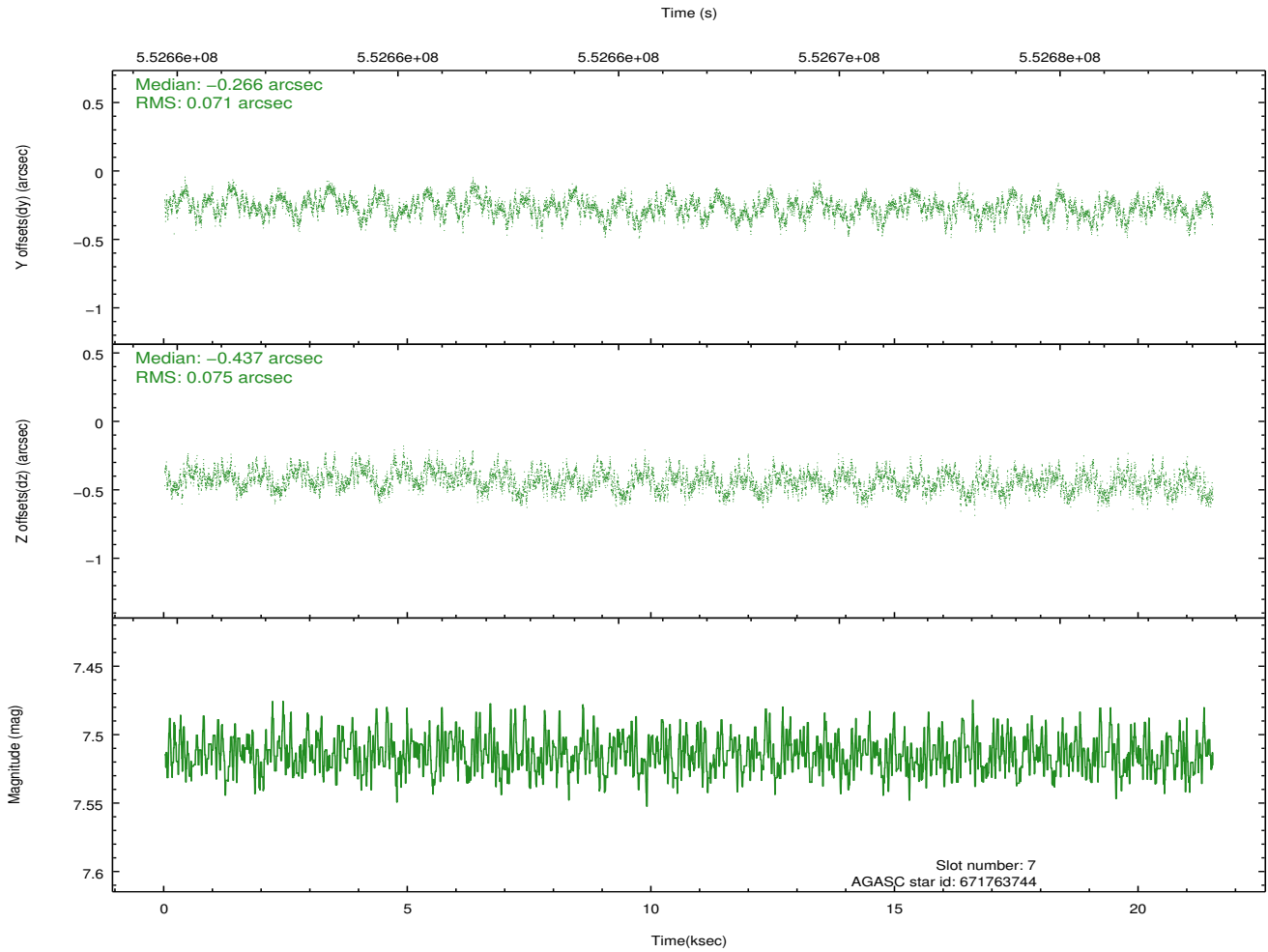
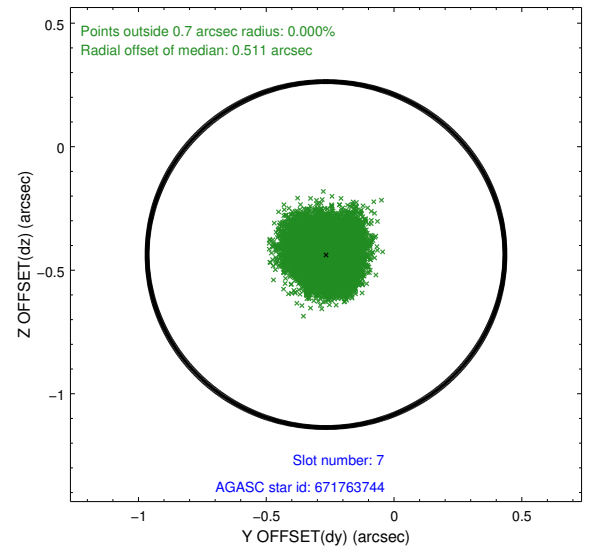
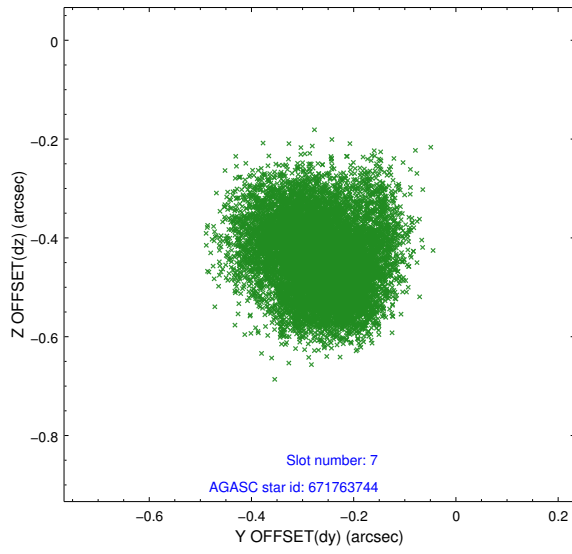
### 2.4.3 Slot 5



## 2.4.4 Slot 6

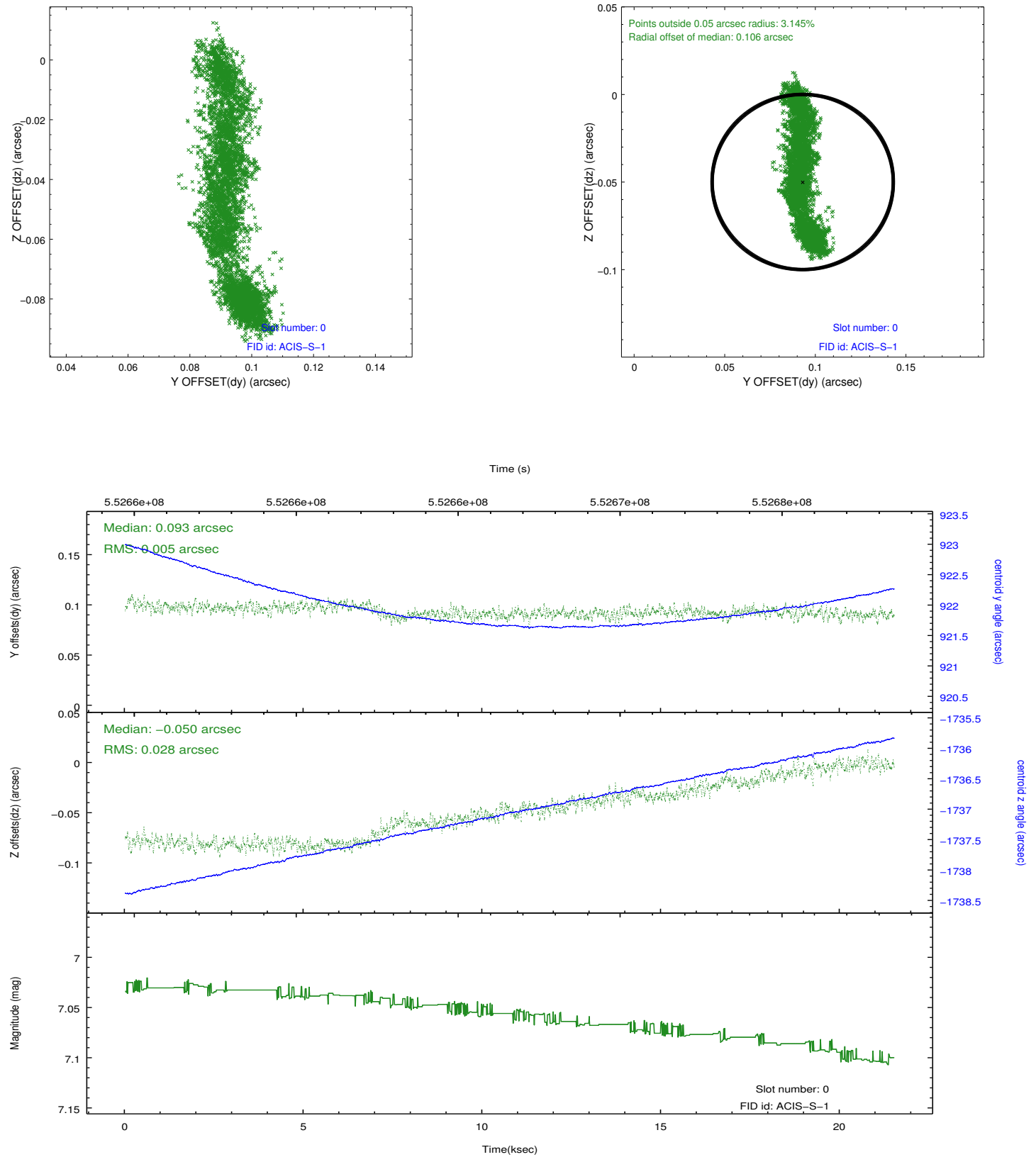


## 2.4.5 Slot 7

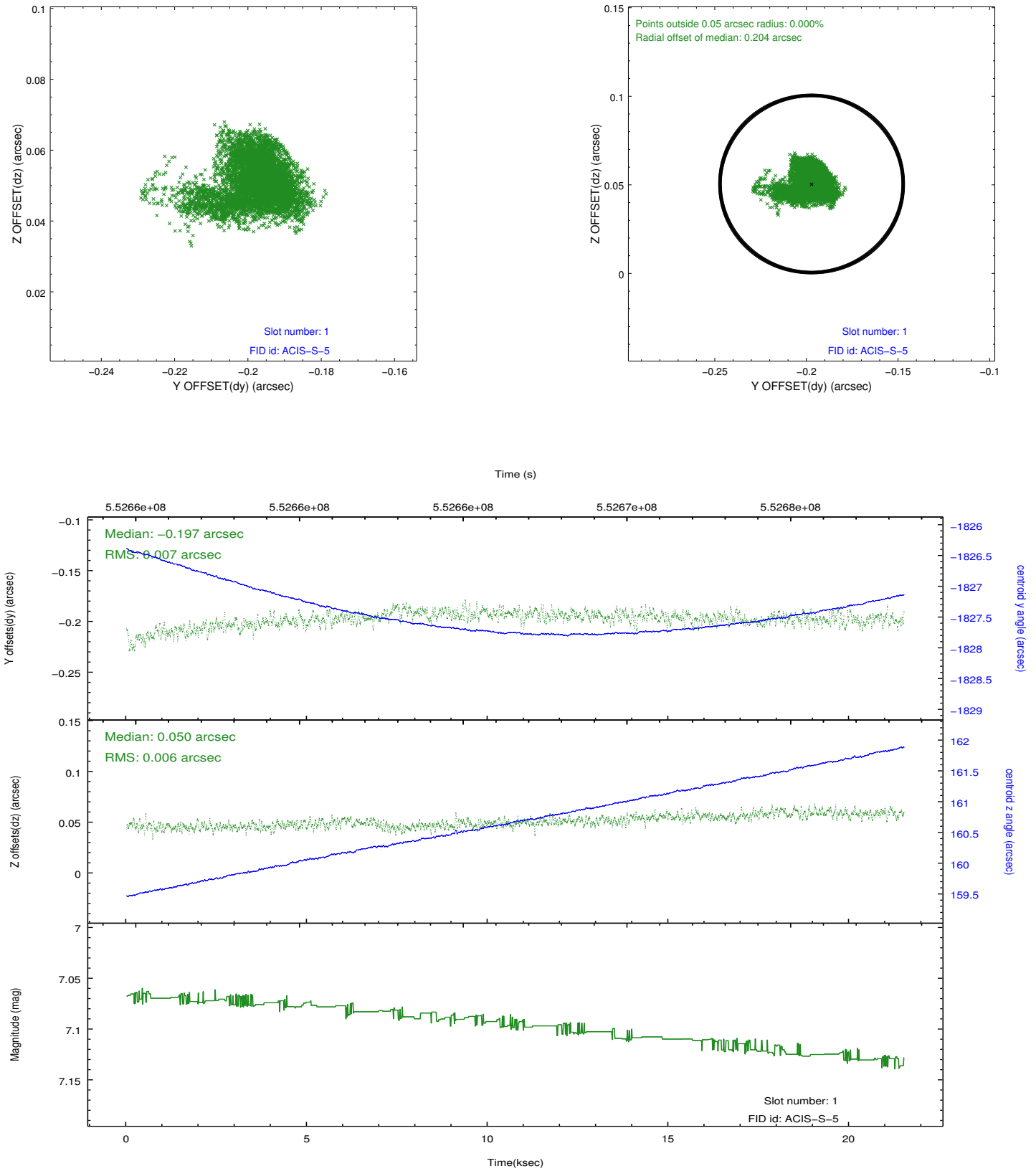


## 2.5 FID Slots

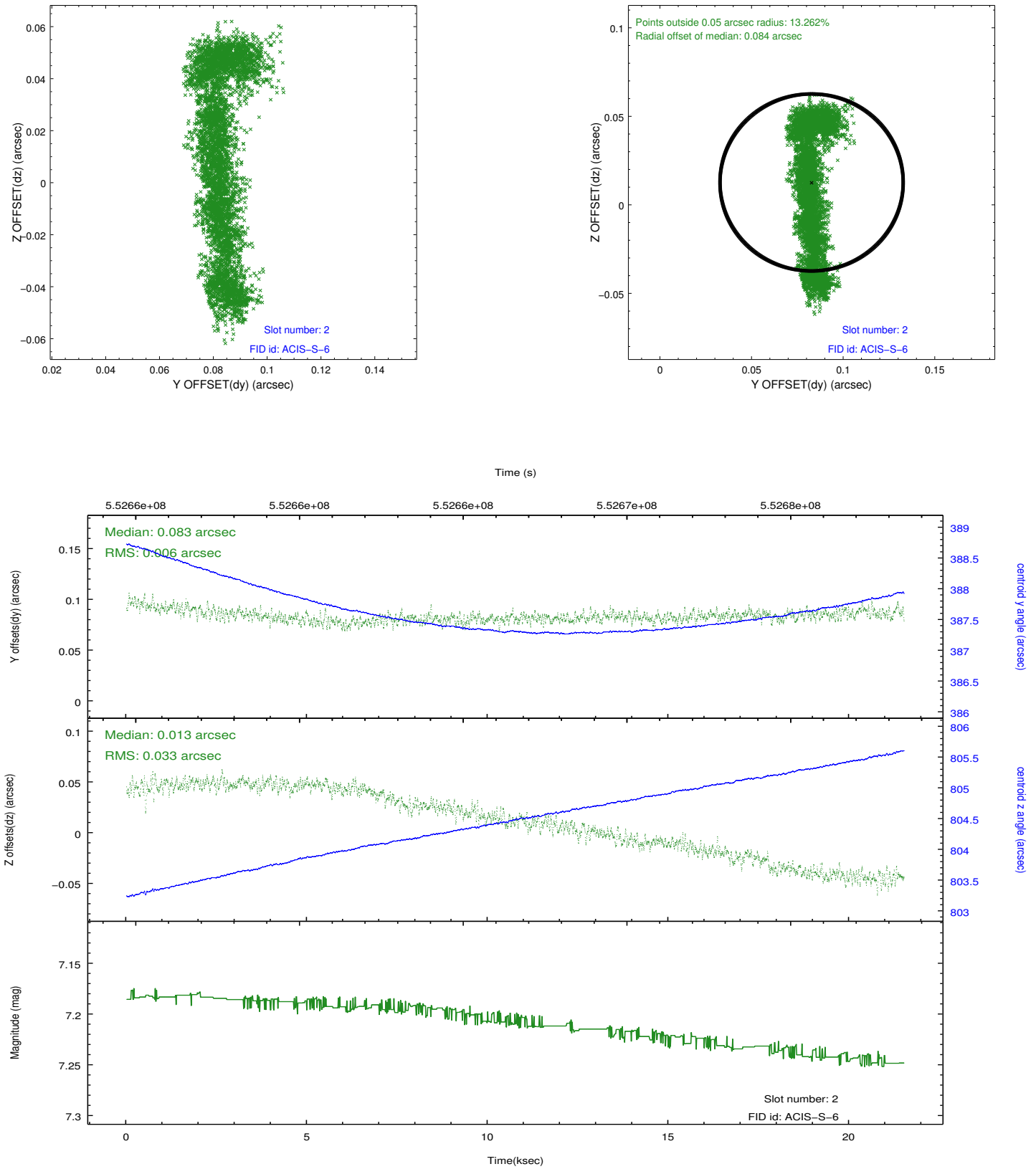
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



## A Summary

### A.1 Status

|                            |                |
|----------------------------|----------------|
| V&V Scientist              | Beth Sundheim  |
| V&V Date (YYYY-MM-DD)      | 2015.07.08     |
| V&V Edition                | 1              |
| V&V Disposition and Status | OK             |
| V&V Charge Time            | 21.15317082572 |

### A.2 Comments