

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 4839 - L2 Version 4  
Chandra X-Ray Center

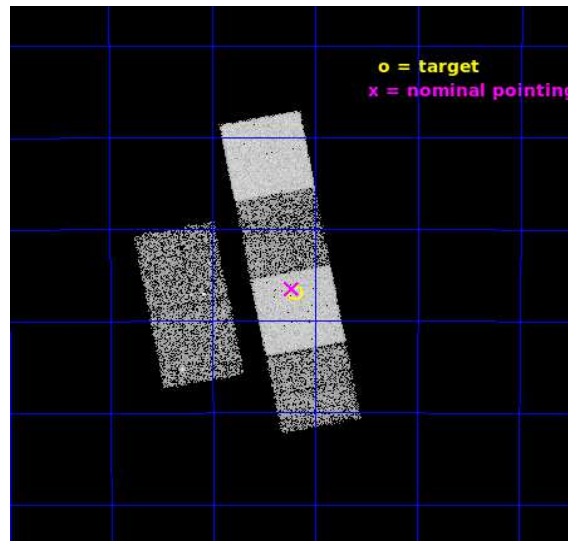
L2 Processing Date : Sep 26 2020

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# 1 Front

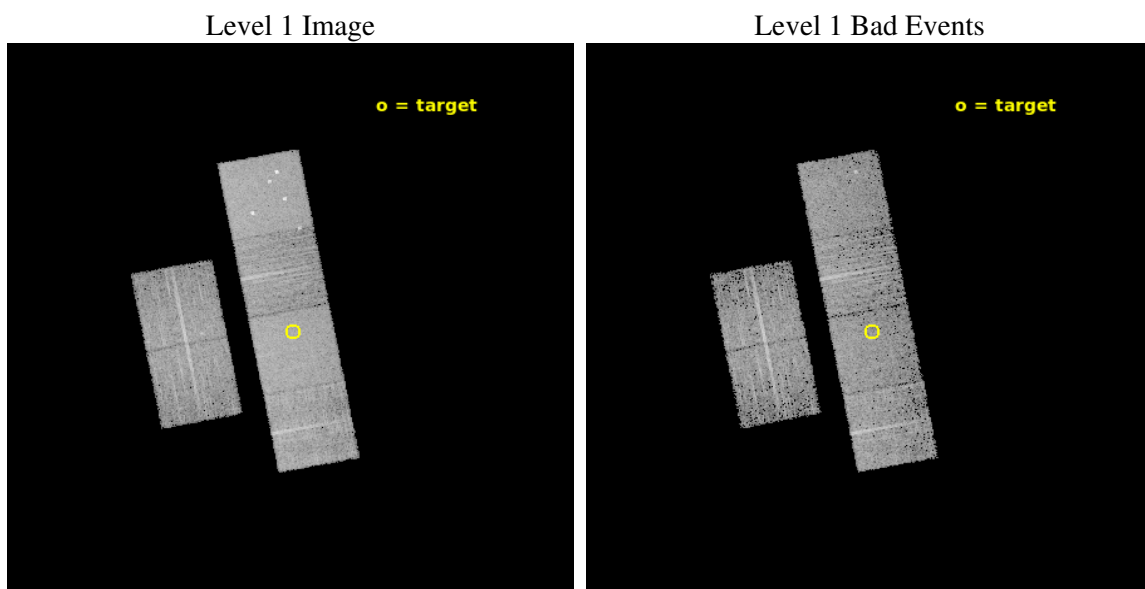
|          |  |   |
|----------|--|---|
| seq_num  | 700921   | Sequence number                             |
| obs_id   | 4839   | Observation id                              |
| title    | Constraining the Hard-X-ray Through Submm SEDs of a Complete Sample of Broad Absorption Line Quasars | Proposal title                              |
| observer | Dr. Sarah Gallagher  | Principal investigator                      |
| object   | LBQS 2116-4439   | Source name                                 |
| dtcycle  | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 320.048333   | Observer's specified target RA [deg]        |
| dec_targ | -44.448333   | Observer's specified target Dec [deg]       |
| ra_nom   | 320.05644862289  | Nominal RA [deg]                            |
| dec_nom  | -44.441715534113   | Nominal Dec [deg]                           |
| roll_nom | 79.15000319021   | Nominal Roll [deg]                          |
| revision | 4  | Processing version of data                  |
| ontime   | 5724.0468310714  | Sum of GTIs [s]                             |
| livetime | 5651.5655034891  | Livetime [s]                                |
| ontime2  | 5724.0878710747  | Sum of GTIs [s]                             |
| ontime3  | 5723.9237110615  | Sum of GTIs [s]                             |
| ontime5  | 5724.0057910681  | Sum of GTIs [s]                             |
| ontime6  | 5723.9647510648  | Sum of GTIs [s]                             |
| ontime7  | 5724.0468310714  | Sum of GTIs [s]                             |
| ontime8  | 5723.882671088   | Sum of GTIs [s]                             |
| l2events | 70135  | Number of level 2 events                    |



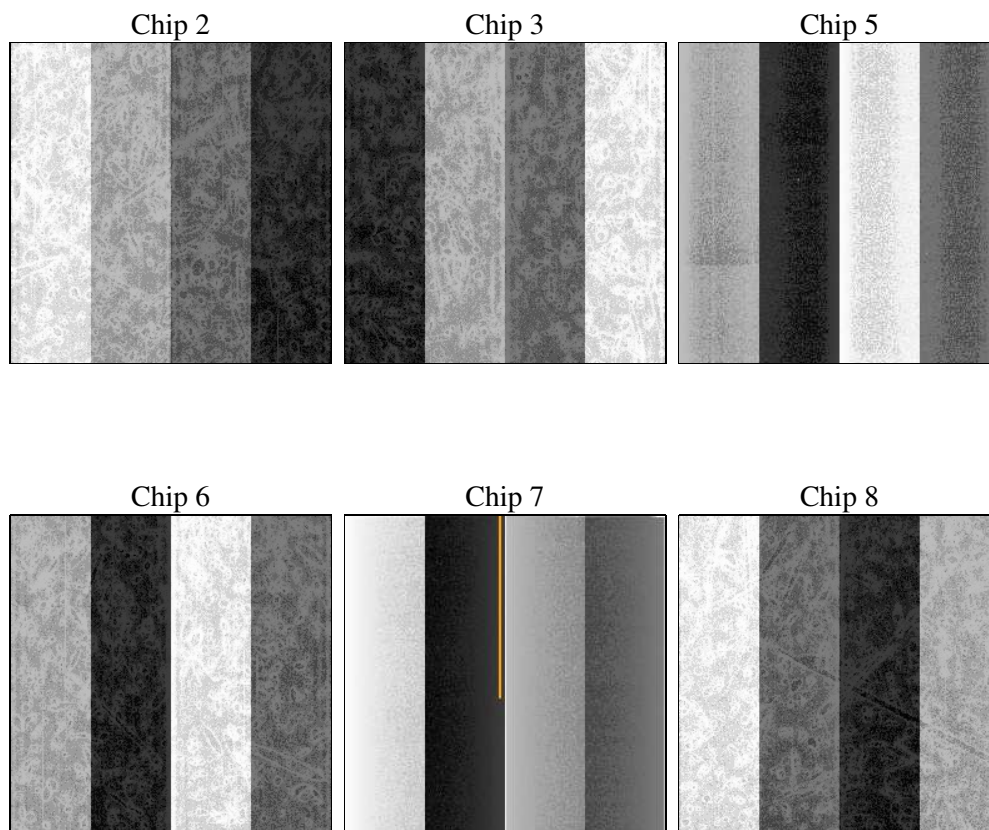
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 5767.128000     | [s] Scheduled observation exposure time |
| ascdsver | 10.9.1              | Processing system revision     | ontime         | 5724.0468310714 | Sum of GTIs [s]                         |
| caldsver | 4.9.2               | &#160                          | ontime2        | 5724.0878710747 | Sum of GTIs [s]                         |
| date     | 2020-09-26T19:44:30 | Date and time of file creation | ontime3        | 5723.9237110615 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime5        | 5724.0057910681 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 5723.9647510648 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 5724.0468310714 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 5723.882671088  | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 303447          | Number of level 1 events                |

### 2.1.4 Events

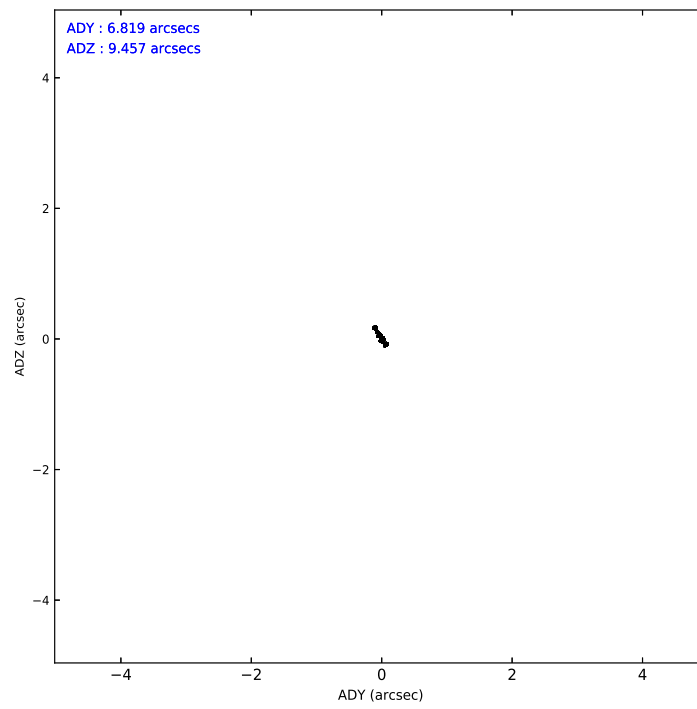
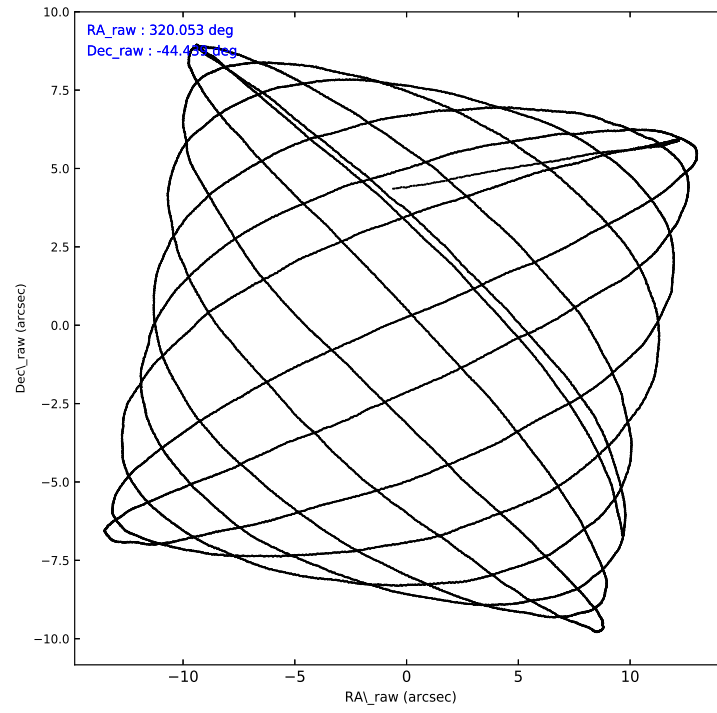
|                 | ccd 2 | ccd 3 | ccd 5 | ccd 6 | ccd 7 | ccd 8 |                | ccd 2 | ccd 3 | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 42483 | 41022 | 64832 | 43372 | 58186 | 53552 | grade 0 events | 2726  | 2648  | 4551  | 2410  | 2287  | 4093  |
| rejected events | 37072 | 35534 | 33933 | 37913 | 33696 | 41365 |                | 6%    | 6%    | 7%    | 5%    | 3%    | 7%    |
| rejected %      | 87%   | 86%   | 52%   | 87%   | 57%   | 77%   | grade 1 events | 34    | 30    | 78    | 19    | 50    | 42    |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |       |       |       | grade 2 events | 976   | 988   | 8961  | 1070  | 4821  | 2580  |
|                 |       |       |       |       |       |       |                | 2%    | 2%    | 13%   | 2%    | 8%    | 4%    |
|                 |       |       |       |       |       |       | grade 3 events | 472   | 459   | 1155  | 498   | 2243  | 1268  |
|                 |       |       |       |       |       |       |                | 1%    | 1%    | 1%    | 1%    | 3%    | 2%    |
|                 |       |       |       |       |       |       | grade 4 events | 465   | 490   | 1069  | 470   | 2233  | 1270  |
|                 |       |       |       |       |       |       |                | 1%    | 1%    | 1%    | 1%    | 3%    | 2%    |
|                 |       |       |       |       |       |       | grade 5 events | 1707  | 1811  | 4533  | 1853  | 5478  | 2489  |
|                 |       |       |       |       |       |       |                | 4%    | 4%    | 6%    | 4%    | 9%    | 4%    |
|                 |       |       |       |       |       |       | grade 6 events | 781   | 915   | 15193 | 1020  | 12937 | 2984  |
|                 |       |       |       |       |       |       |                | 1%    | 2%    | 23%   | 2%    | 22%   | 5%    |
|                 |       |       |       |       |       |       | grade 7 events | 35322 | 33681 | 29292 | 36032 | 28137 | 38826 |
|                 |       |       |       |       |       |       |                | 83%   | 82%   | 45%   | 83%   | 48%   | 72%   |

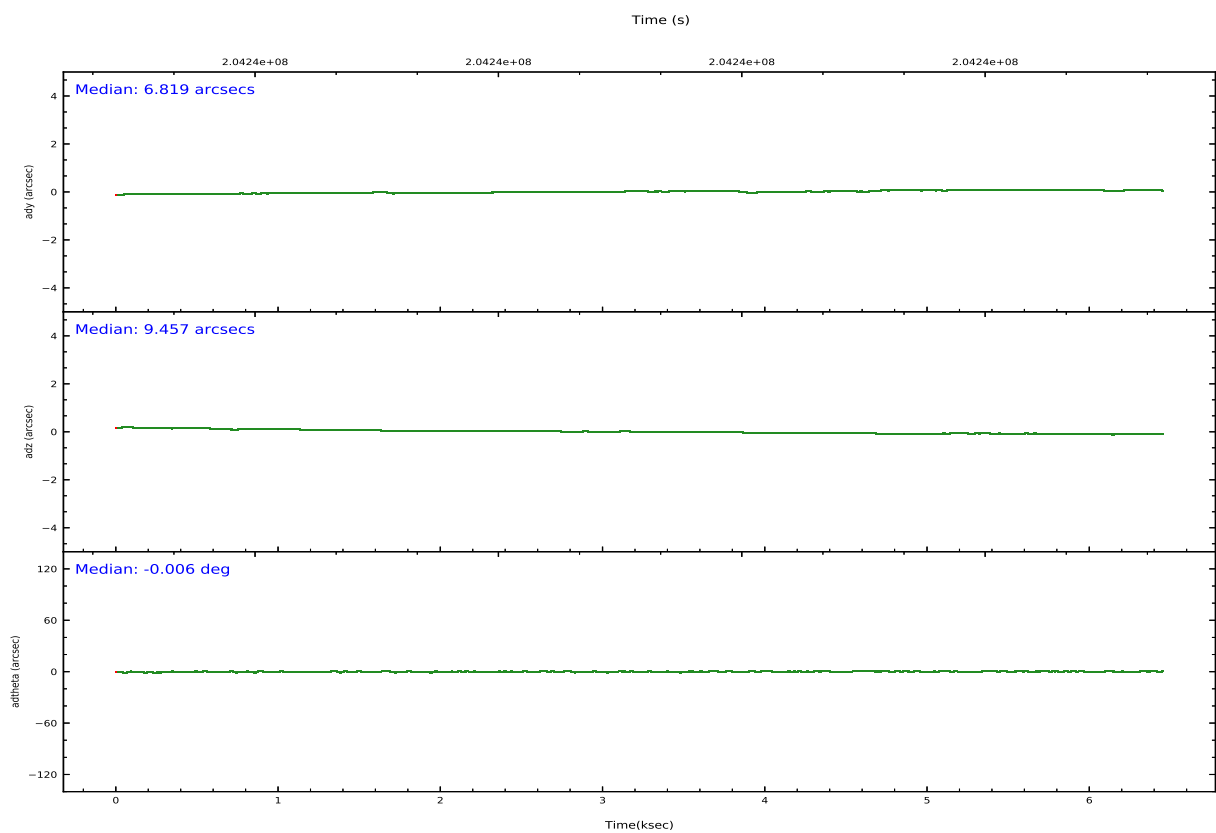
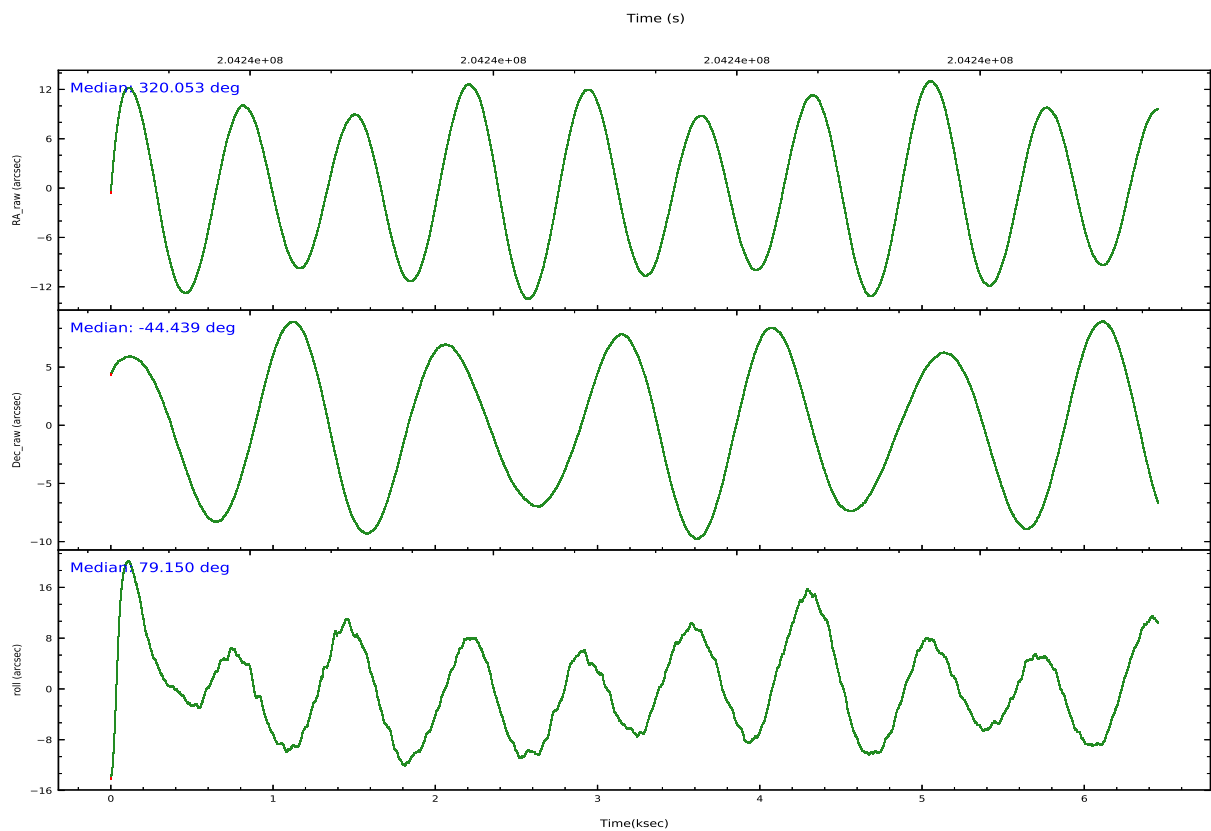


## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar version number                 | 8         | 8       |
| Detector                          | ACIS-235678         | ACIS-235678          | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | 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                 | 320.066175          | 320.05644862289      | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | -44.464906          | -44.441715534113     | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 78.996758           | 79.15000319021       | [s] Primary exposure time             | 0.000000  | 3.2     |
| [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)  | 204234829.184000    | 204233618.89129      |                                       |           |         |
| Observation start date            | 2004-06-21T19:52:45 | 2004-06-21T19:33:38  |                                       |           |         |
| [s] Observation end time (MET)    | 204240596.184000    | 204240813.87911      |                                       |           |         |
| Observation end date              | 2004-06-21T21:28:52 | 2004-06-21T21:33:33  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



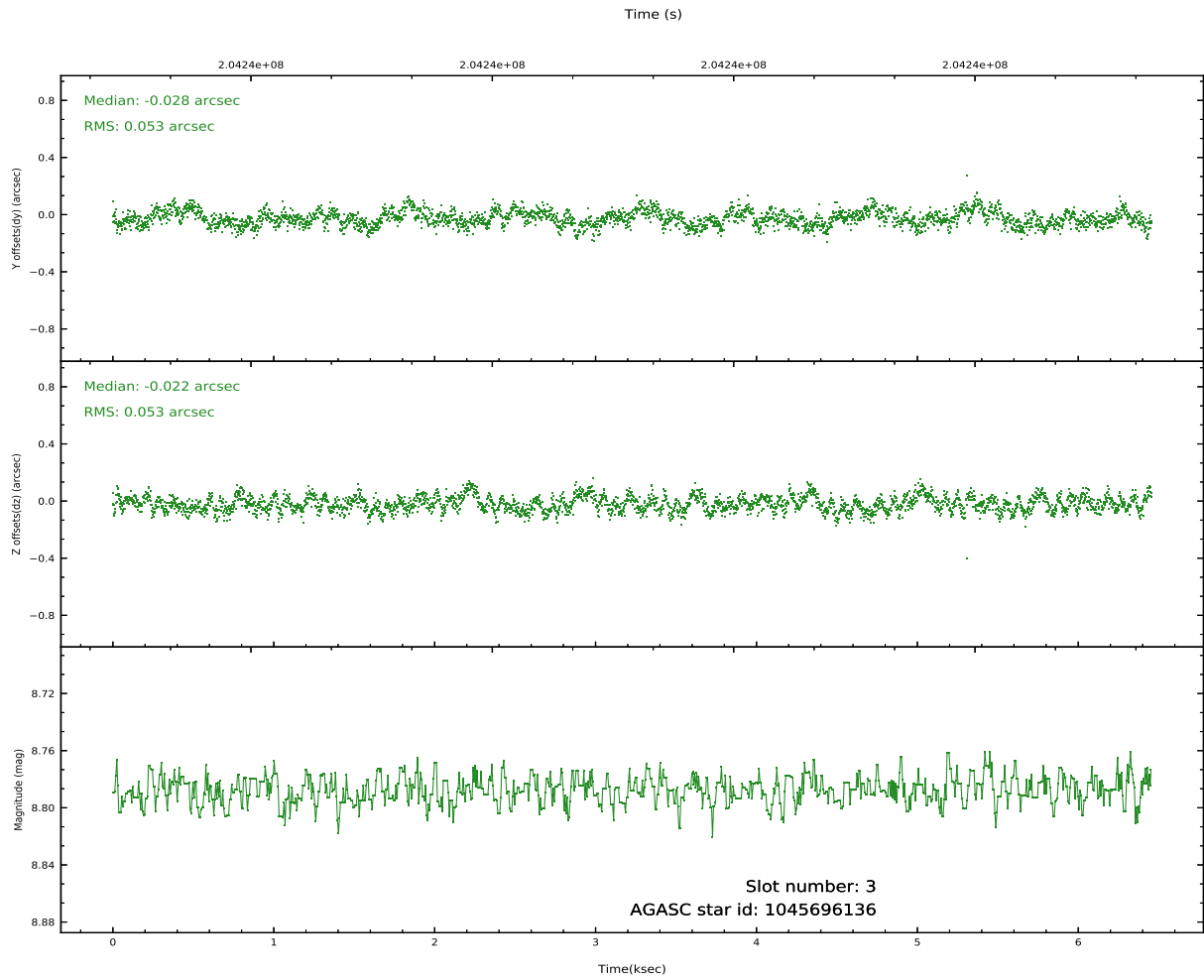
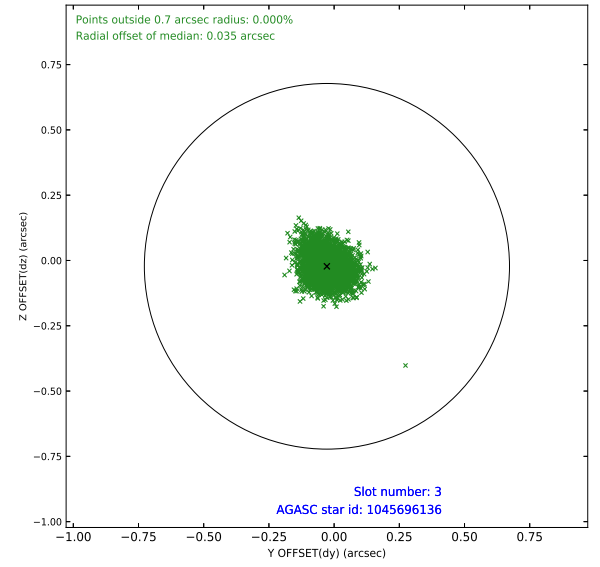
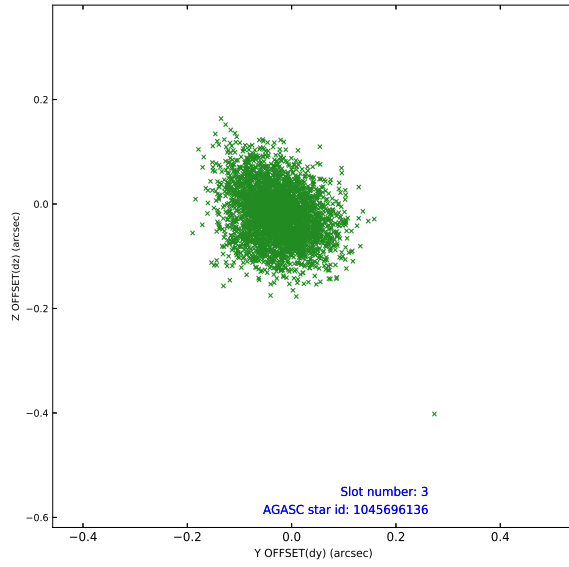


Slot Statistics

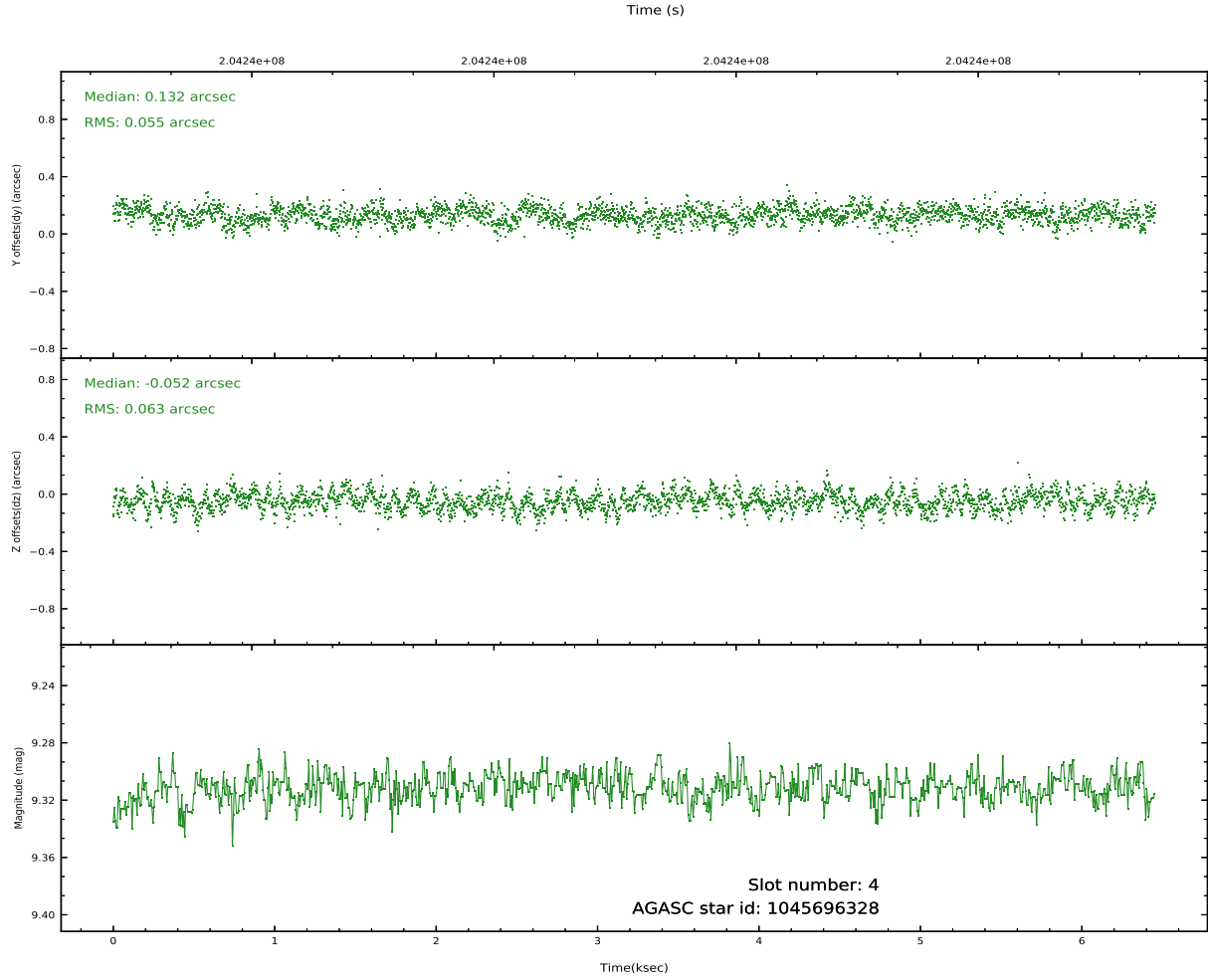
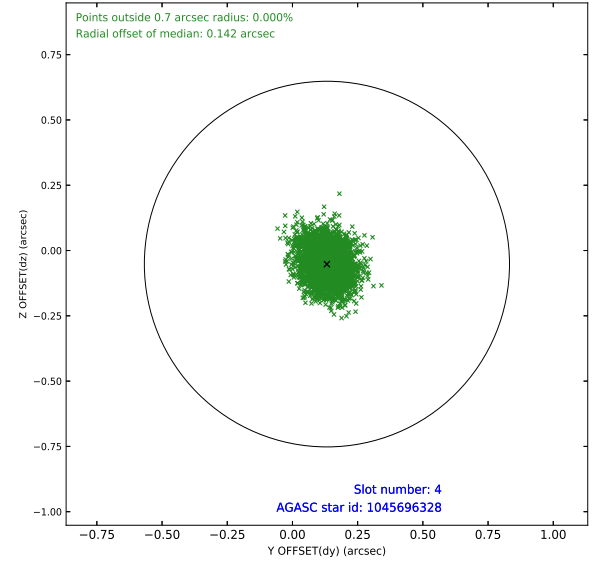
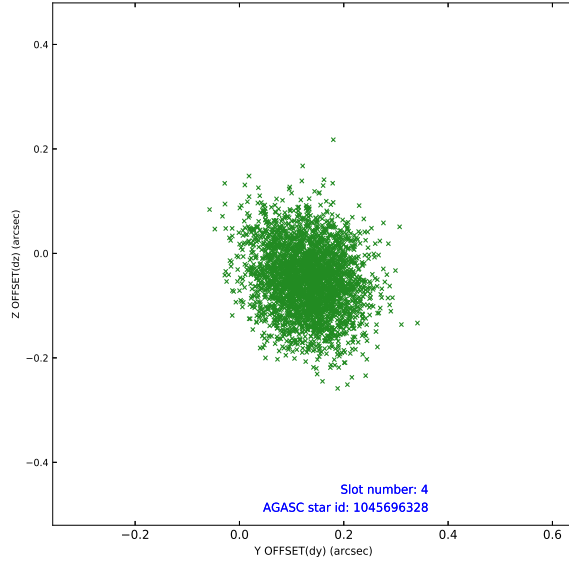
| pt | status | used | id         | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec        | mean_y   | mea   |
|----|--------|------|------------|------|-------|----------|--------|--------|-------|-------|------------|------------|----------|-------|
| 0  | FID    |      | ACIS-S-2   | 7.10 | 1575  | 1.000    | -0.072 | -0.063 | 0.007 | 0.012 | 0.000000   | 0.000000   | -759.59  | -1730 |
| 1  | FID    |      | ACIS-S-4   | 7.20 | 1575  | 1.000    | 0.127  | 0.051  | 0.006 | 0.014 | 0.000000   | 0.000000   | 2153.42  | 176   |
| 2  | FID    |      | ACIS-S-5   | 7.23 | 1575  | 1.000    | -0.087 | 0.020  | 0.007 | 0.013 | 0.000000   | 0.000000   | -1811.33 | 171   |
| 3  | GUIDE  | used | 1045696136 | 8.79 | 3149  | 1.000    | -0.028 | -0.022 | 0.079 | 0.127 | 319.762481 | -44.279801 | 502.89   | 895   |
| 4  | GUIDE  | used | 1045696328 | 9.31 | 3150  | 1.000    | 0.132  | -0.052 | 0.090 | 0.144 | 319.356854 | -44.995999 | -2228.87 | 1406  |
| 5  | GUIDE  | used | 1047396392 | 9.79 | 3149  | 1.000    | 0.014  | -0.138 | 0.140 | 0.220 | 320.008382 | -44.246607 | 742.25   | 296   |
| 6  | GUIDE  | used | 1047400272 | 9.87 | 3144  | 1.000    | -0.005 | 0.135  | 0.129 | 0.229 | 320.338940 | -44.055003 | 1582.28  | -410  |
| 7  | GUIDE  | used | 1047401552 | 9.10 | 3147  | 1.000    | -0.114 | 0.070  | 0.082 | 0.130 | 320.556709 | -44.260143 | 961.65   | -1101 |

## 2.4 Star Slots

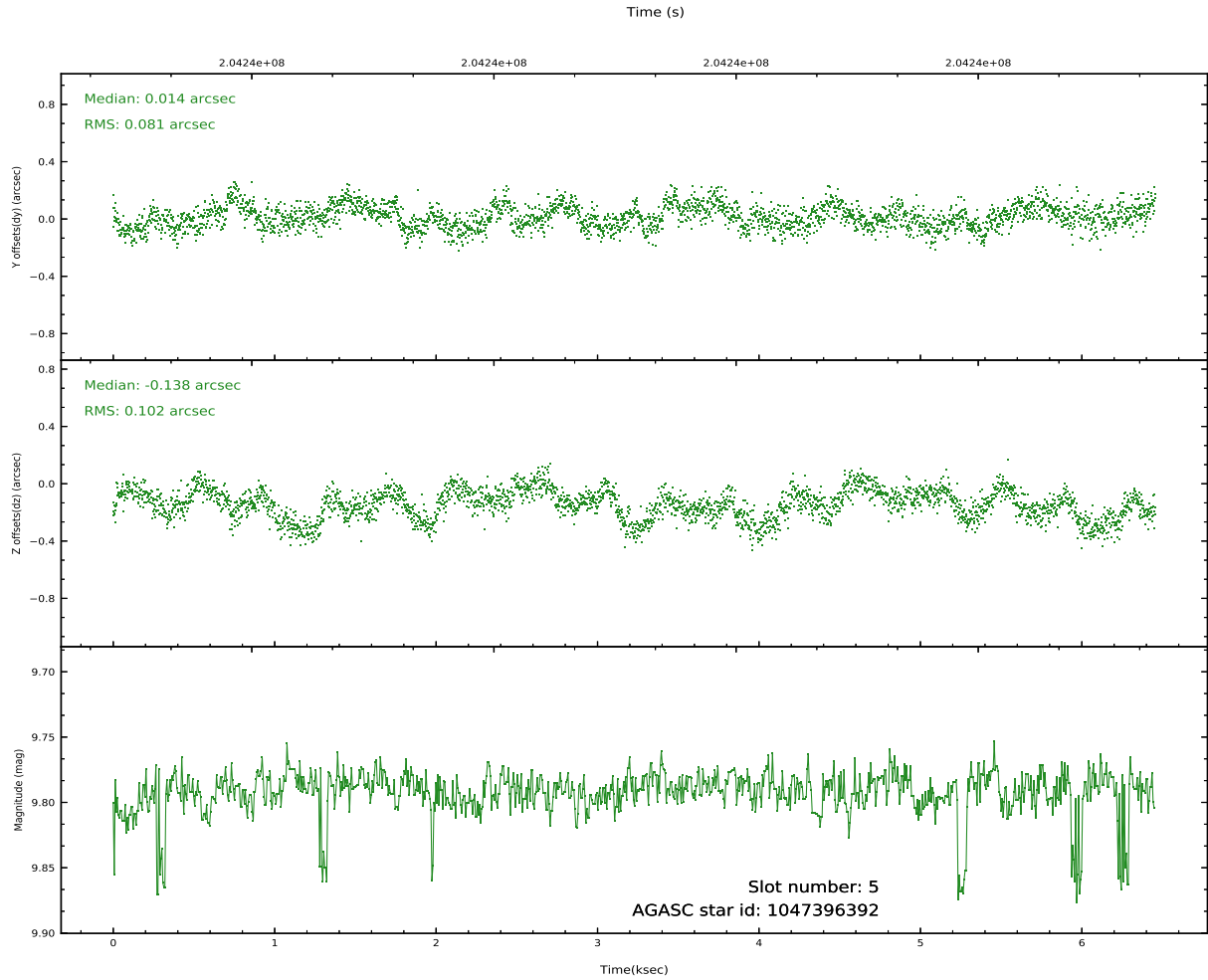
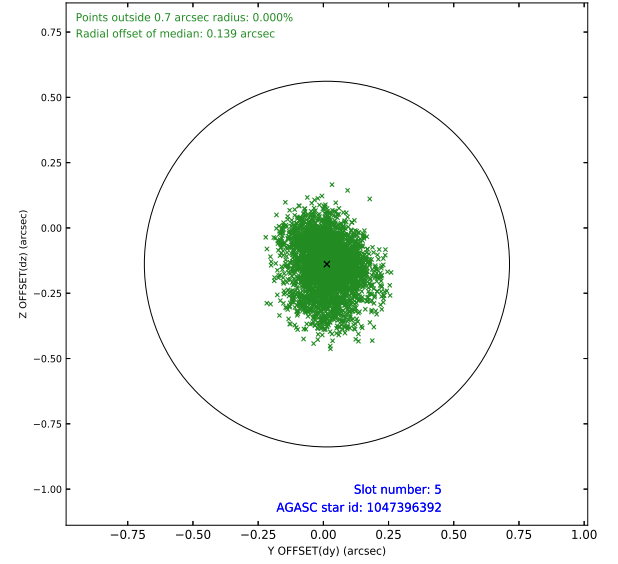
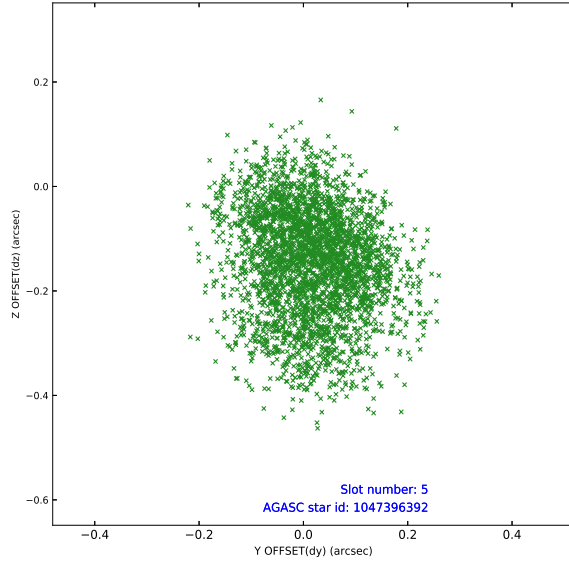
### 2.4.1 Slot 3



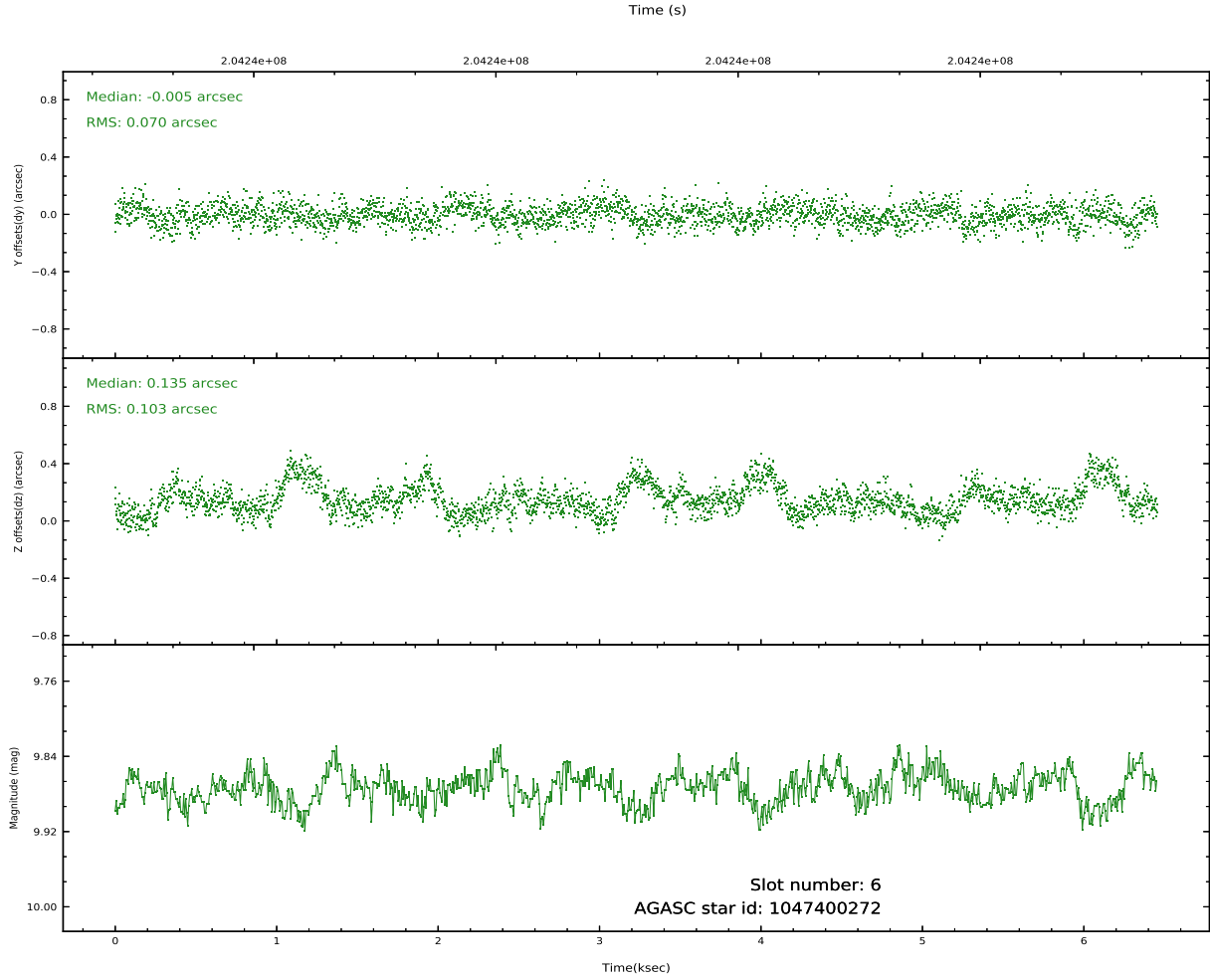
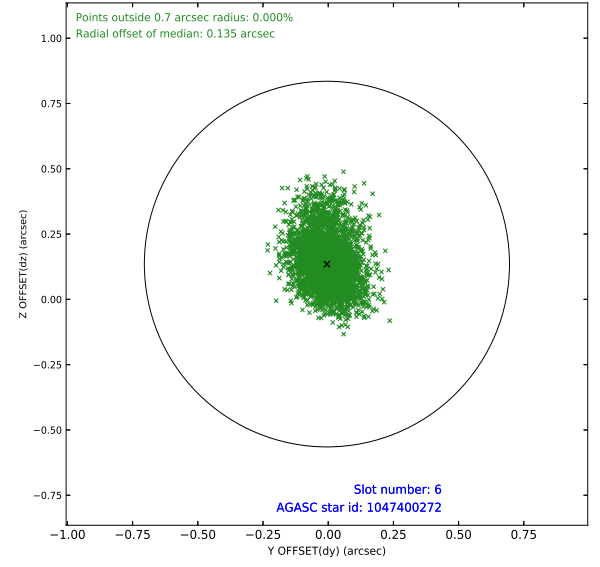
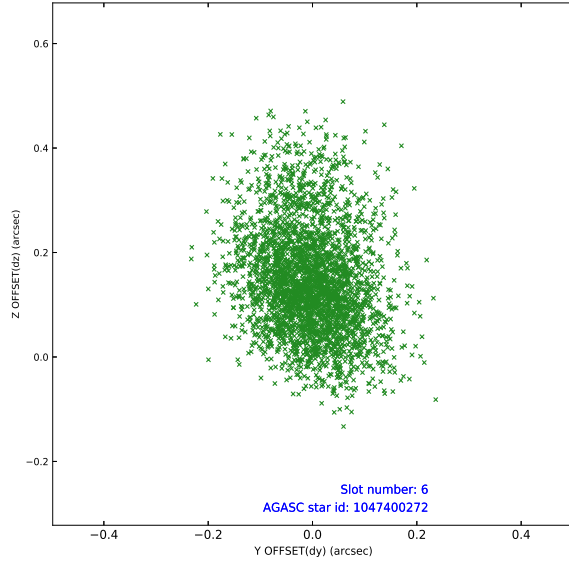
## 2.4.2 Slot 4



### 2.4.3 Slot 5

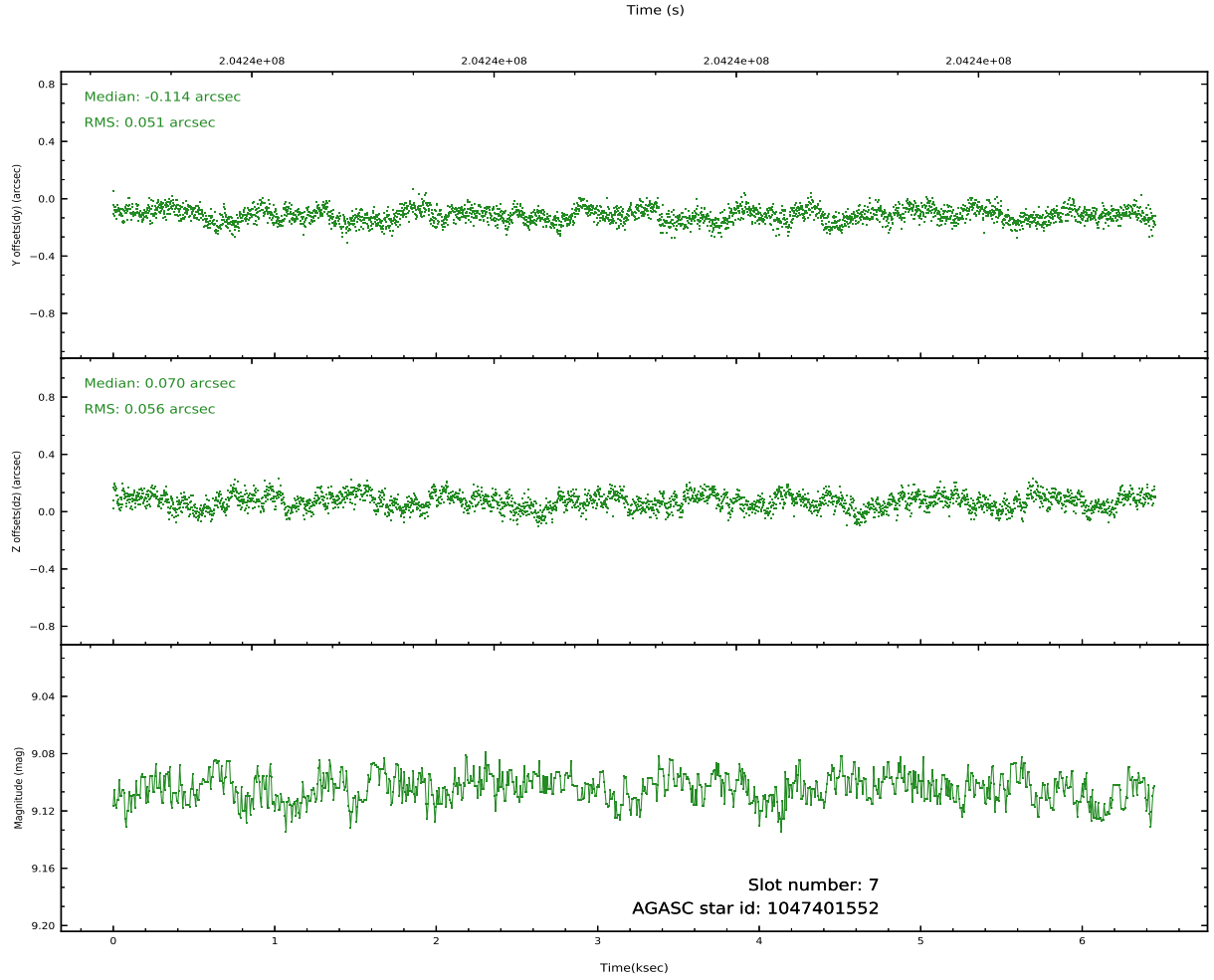
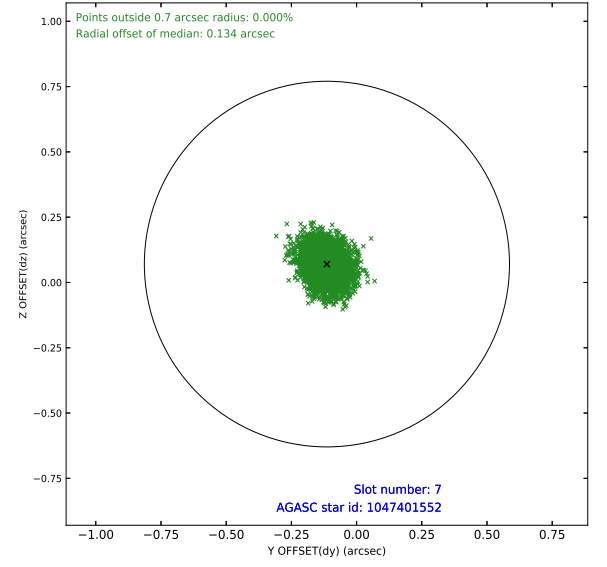
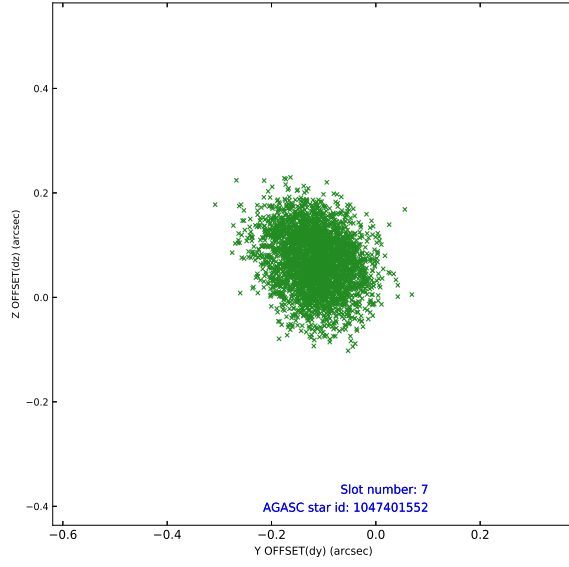


## 2.4.4 Slot 6



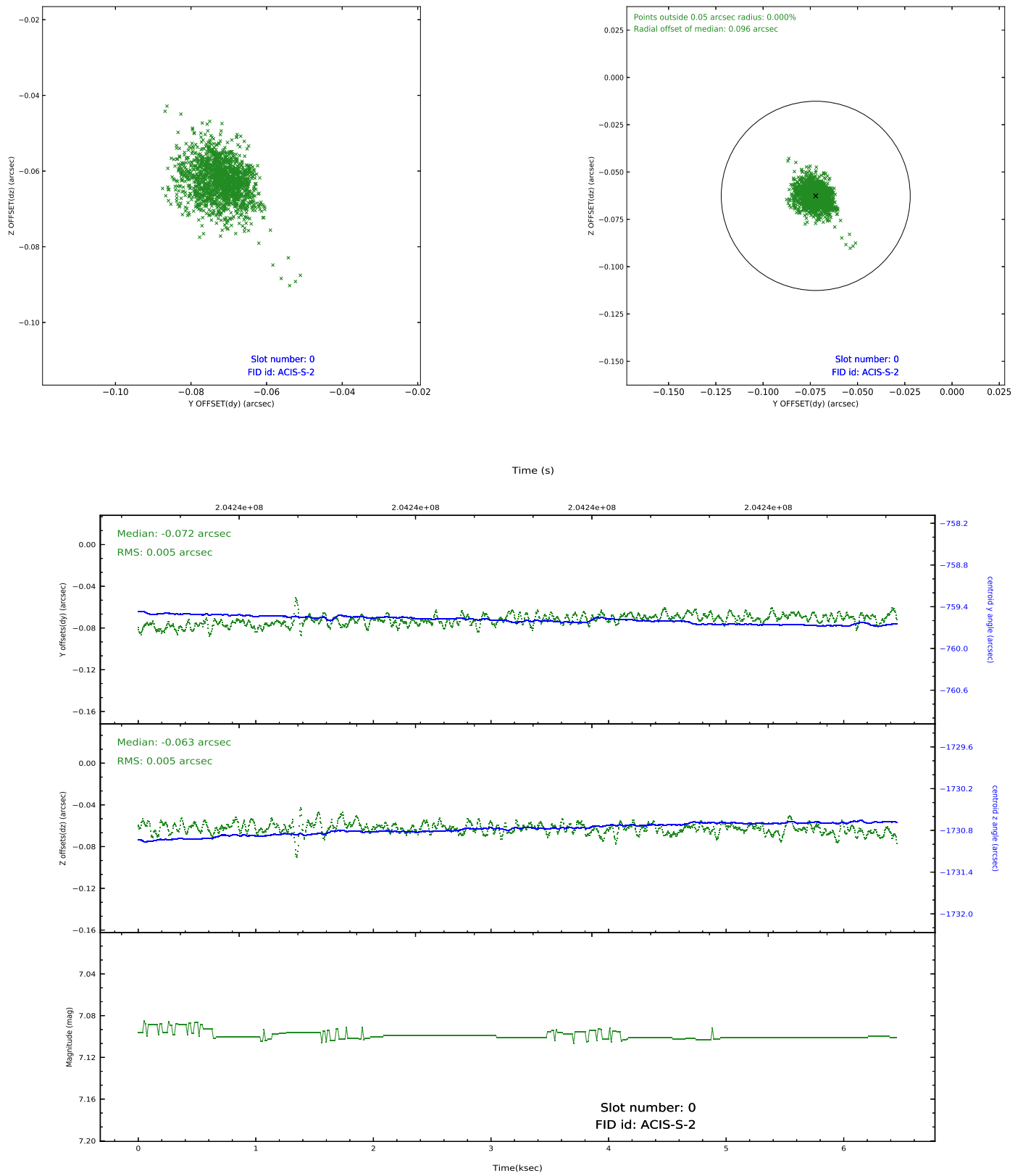


## 2.4.5 Slot 7

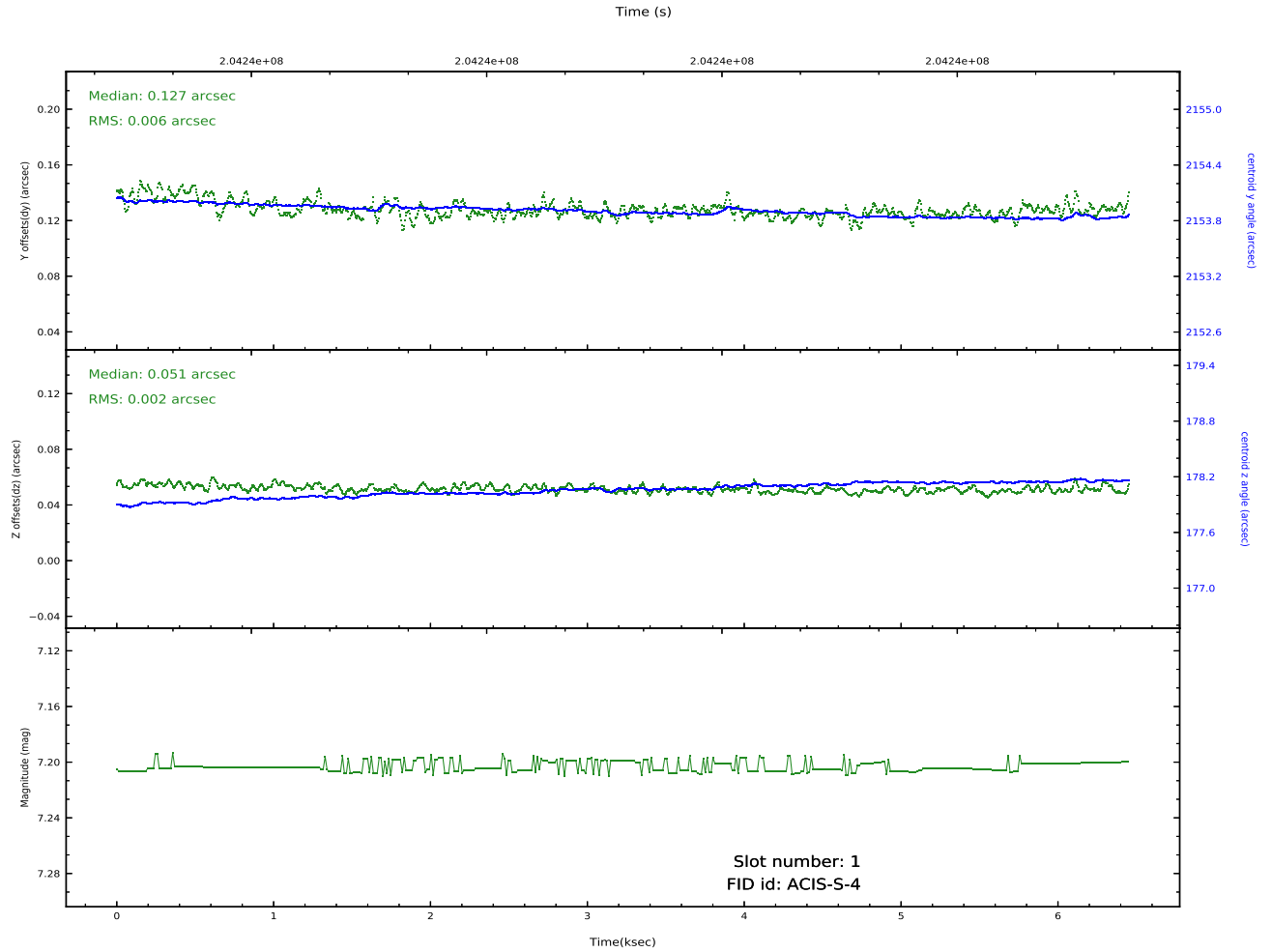
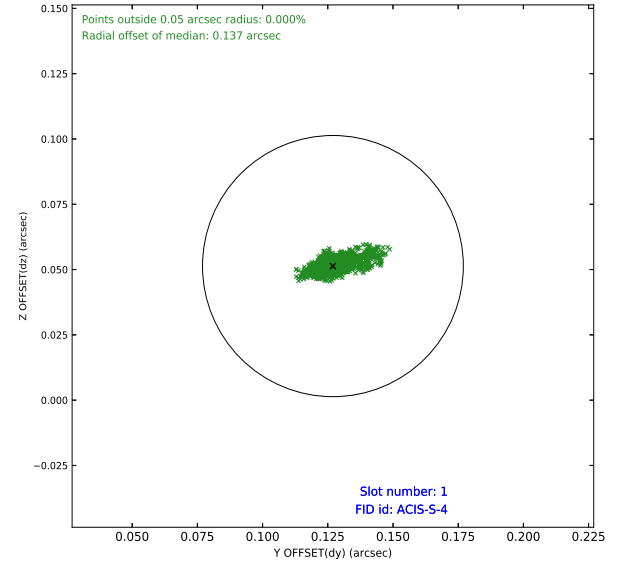
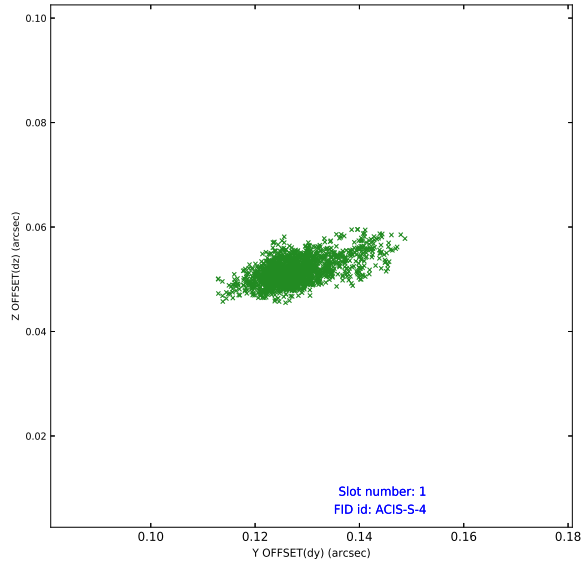


## 2.5 FID Slots

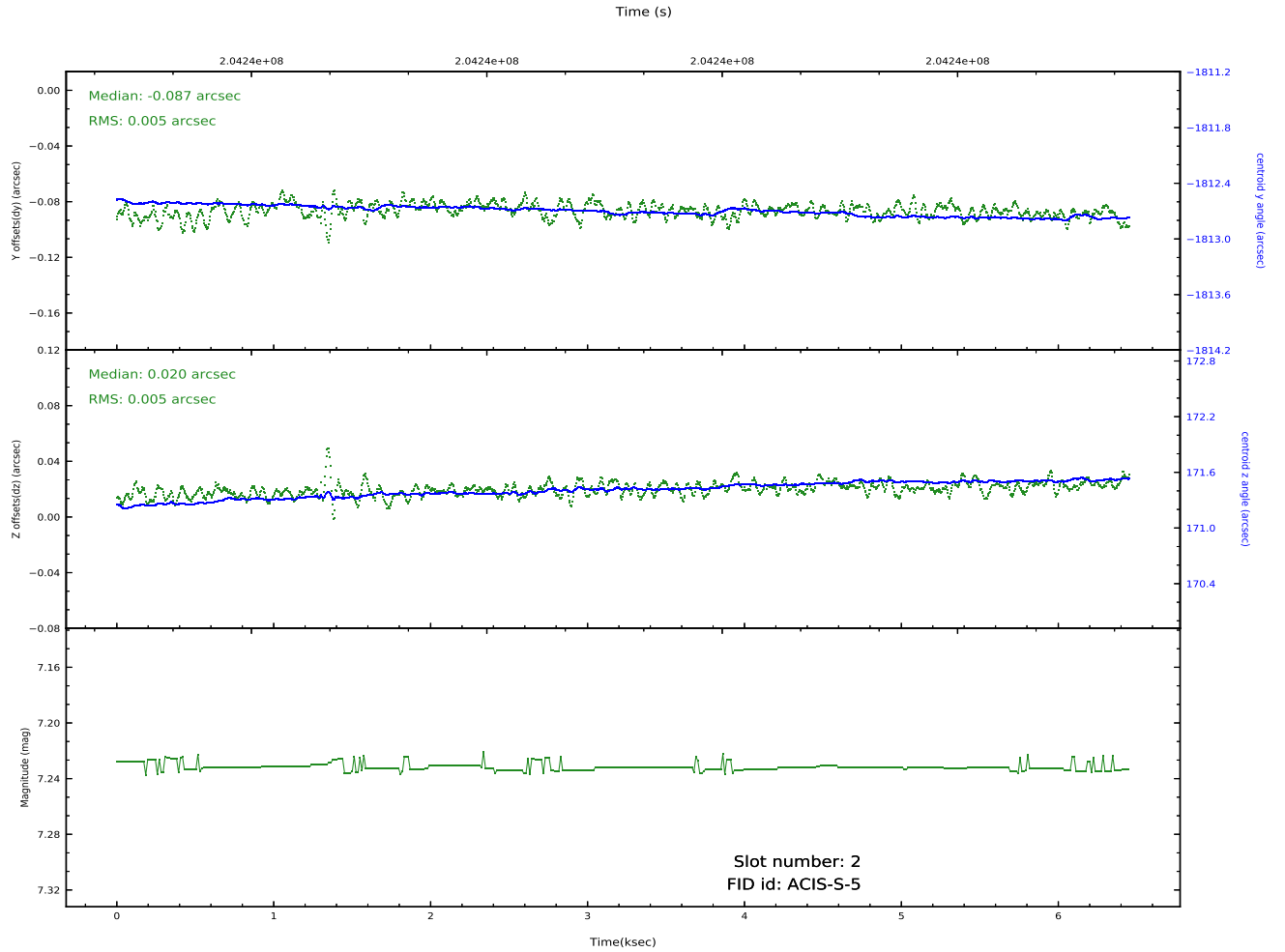
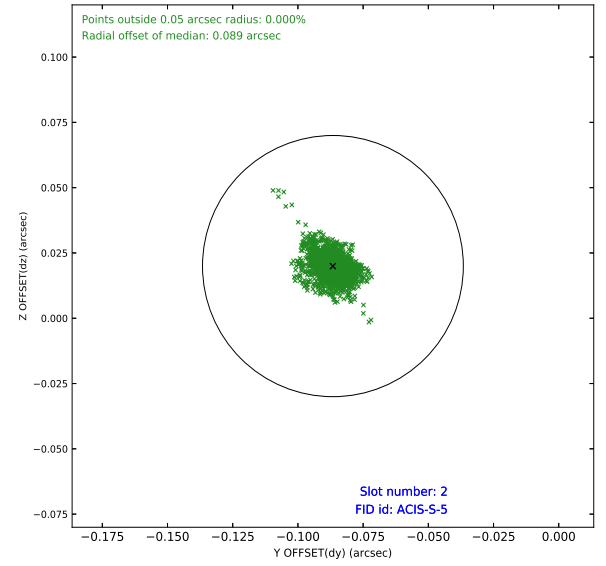
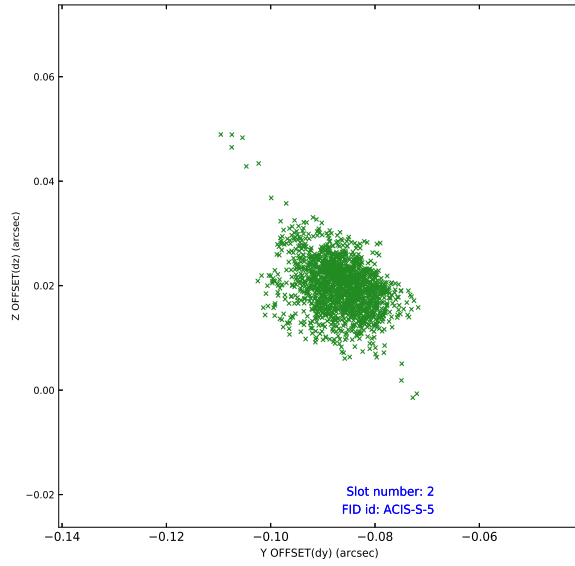
### 2.5.1 Slot 0



## 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)      | 2020.09.28    |
| V&V Edition                | 1             |
| V&V Disposition and Status | OK            |
| V&V Charge Time            | 5.724         |

### A.2 Comments