

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 5938 - L2 Version 4  
Chandra X-Ray Center

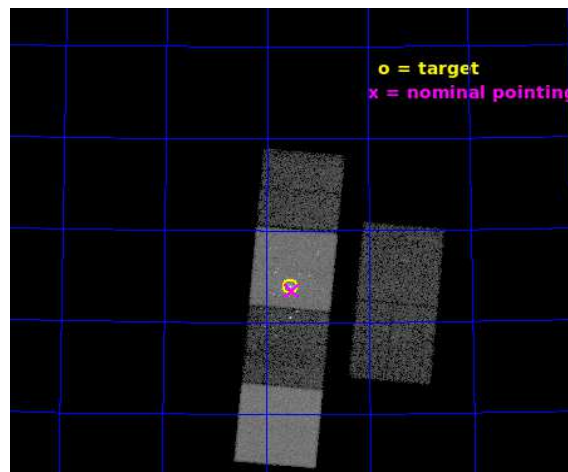
L2 Processing Date : Oct 8 2020

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# 1 Front

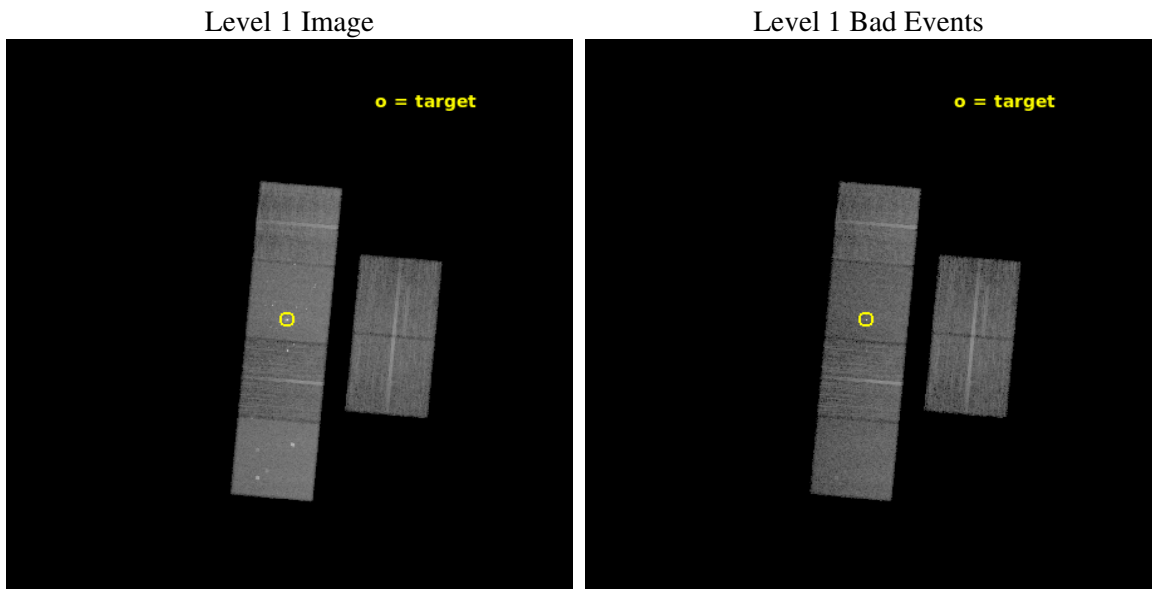
|          |   |   |
|----------|---|---|
| seq_num  | 600457  | Sequence number                             |
| obs_id   | 5938  | Observation id                              |
| title    | An Unprecedented View of a Galaxy's Dynamic X-ray Source Population | &#160                                       |
| observer | David Pooley  | Principal investigator                      |
| object   | M81   | Source name                                 |
| dtcycle  | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 148.888333  | Observer's specified<br>target RA [deg]     |
| dec_targ | 69.065306   | Observer's specified<br>target Dec [deg]    |
| ra_nom   | 148.87681134008   | Nominal RA [deg]                            |
| dec_nom  | 69.057453594859   | Nominal Dec [deg]                           |
| roll_nom | 275.16130533269   | Nominal Roll [deg]                          |
| revision | 4   | Processing version of<br>data               |
| ontime   | 11958.399955451   | Sum of GTIs [s]                             |
| livetime | 11806.975494732   | Livetime [s]                                |
| ontime2  | 11958.399955451   | Sum of GTIs [s]                             |
| ontime3  | 11958.399955451   | Sum of GTIs [s]                             |
| ontime5  | 11958.399955451   | Sum of GTIs [s]                             |
| ontime6  | 11955.158995181   | Sum of GTIs [s]                             |
| ontime7  | 11958.399955451   | Sum of GTIs [s]                             |
| ontime8  | 11958.399955451   | Sum of GTIs [s]                             |
| l2events | 155691  | Number of level 2<br>events                 |



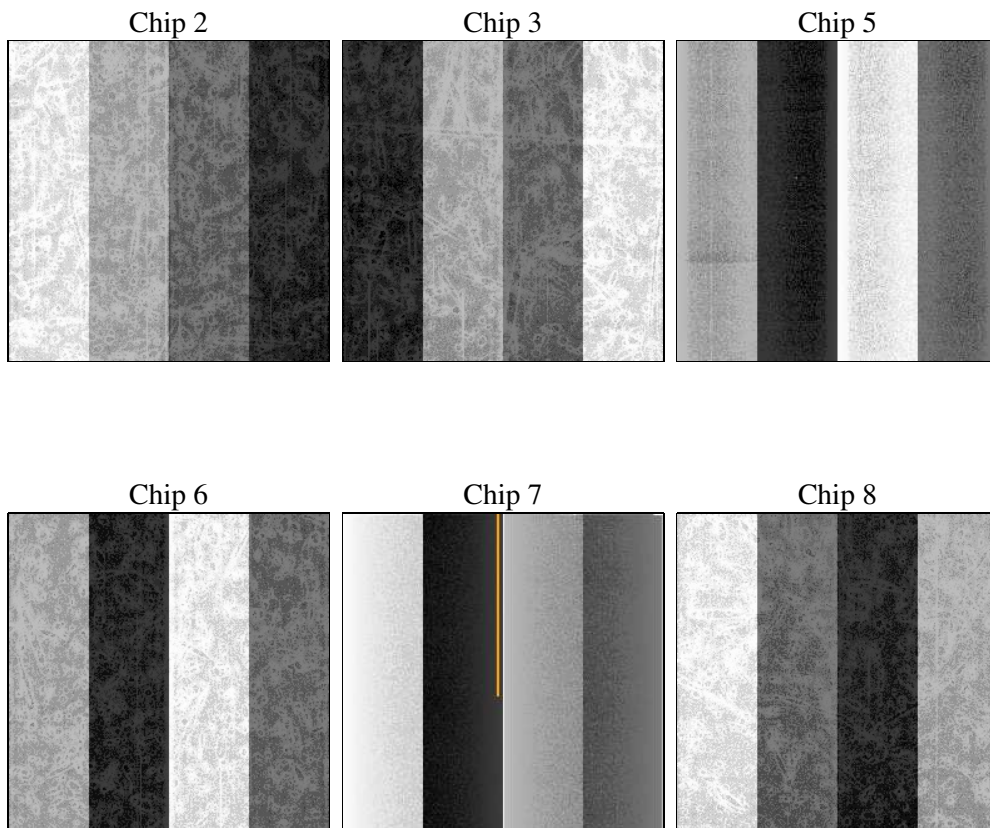
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 12000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.1              | Processing system revision     | ontime         | 11958.399955451 | Sum of GTIs [s]                         |
| caldsver | 4.9.2               | &#160                          | ontime2        | 11958.399955451 | Sum of GTIs [s]                         |
| date     | 2020-10-08T18:27:10 | Date and time of file creation | ontime3        | 11958.399955451 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime5        | 11958.399955451 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 11955.158995181 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 11958.399955451 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 11958.399955451 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 656172          | Number of level 1 events                |

### 2.1.4 Events

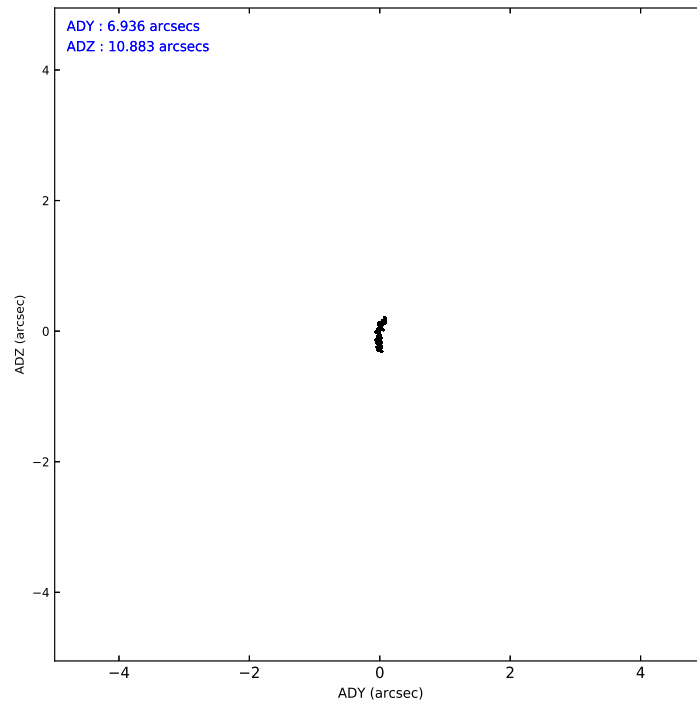
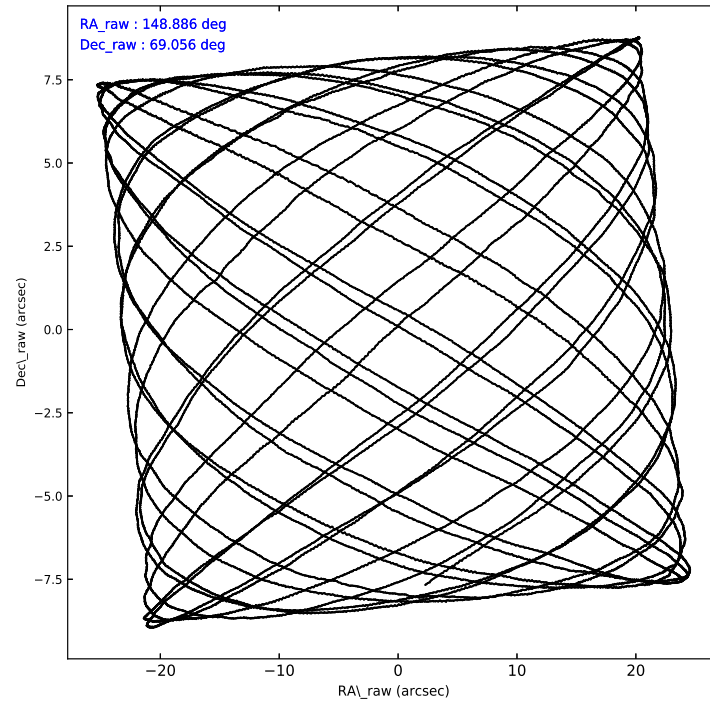
|                 | ccd 2 | ccd 3 | ccd 5  | ccd 6 | ccd 7  | ccd 8  |                | ccd 2 | ccd 3 | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|-------|-------|--------|-------|--------|--------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 89790 | 87542 | 137272 | 92036 | 133886 | 115646 | grade 0 events | 4763  | 4617  | 7670  | 5945  | 6943  | 7783  |
| rejected events | 78893 | 76990 | 73676  | 79098 | 74712  | 90911  |                | 5%    | 5%    | 5%    | 6%    | 5%    | 6%    |
| rejected %      | 87%   | 87%   | 53%    | 85%   | 55%    | 78%    | grade 1 events | 55    | 53    | 319   | 83    | 235   | 83    |
|                 |       |       |        |       |        |        |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |        |       |        |        | grade 2 events | 2281  | 1979  | 18530 | 2496  | 11997 | 5583  |
|                 |       |       |        |       |        |        |                | 2%    | 2%    | 13%   | 2%    | 8%    | 4%    |
|                 |       |       |        |       |        |        | grade 3 events | 993   | 1018  | 2337  | 1118  | 5308  | 2545  |
|                 |       |       |        |       |        |        |                | 1%    | 1%    | 1%    | 1%    | 3%    | 2%    |
|                 |       |       |        |       |        |        | grade 4 events | 1016  | 1016  | 2319  | 1053  | 5342  | 2332  |
|                 |       |       |        |       |        |        |                | 1%    | 1%    | 1%    | 1%    | 3%    | 2%    |
|                 |       |       |        |       |        |        | grade 5 events | 3658  | 3972  | 9907  | 4236  | 12068 | 5592  |
|                 |       |       |        |       |        |        |                | 4%    | 4%    | 7%    | 4%    | 9%    | 4%    |
|                 |       |       |        |       |        |        | grade 6 events | 1844  | 1922  | 32779 | 2328  | 29602 | 6497  |
|                 |       |       |        |       |        |        |                | 2%    | 2%    | 23%   | 2%    | 22%   | 5%    |
|                 |       |       |        |       |        |        | grade 7 events | 75180 | 72965 | 63411 | 74777 | 62391 | 85231 |
|                 |       |       |        |       |        |        |                | 83%   | 83%   | 46%   | 81%   | 46%   | 73%   |

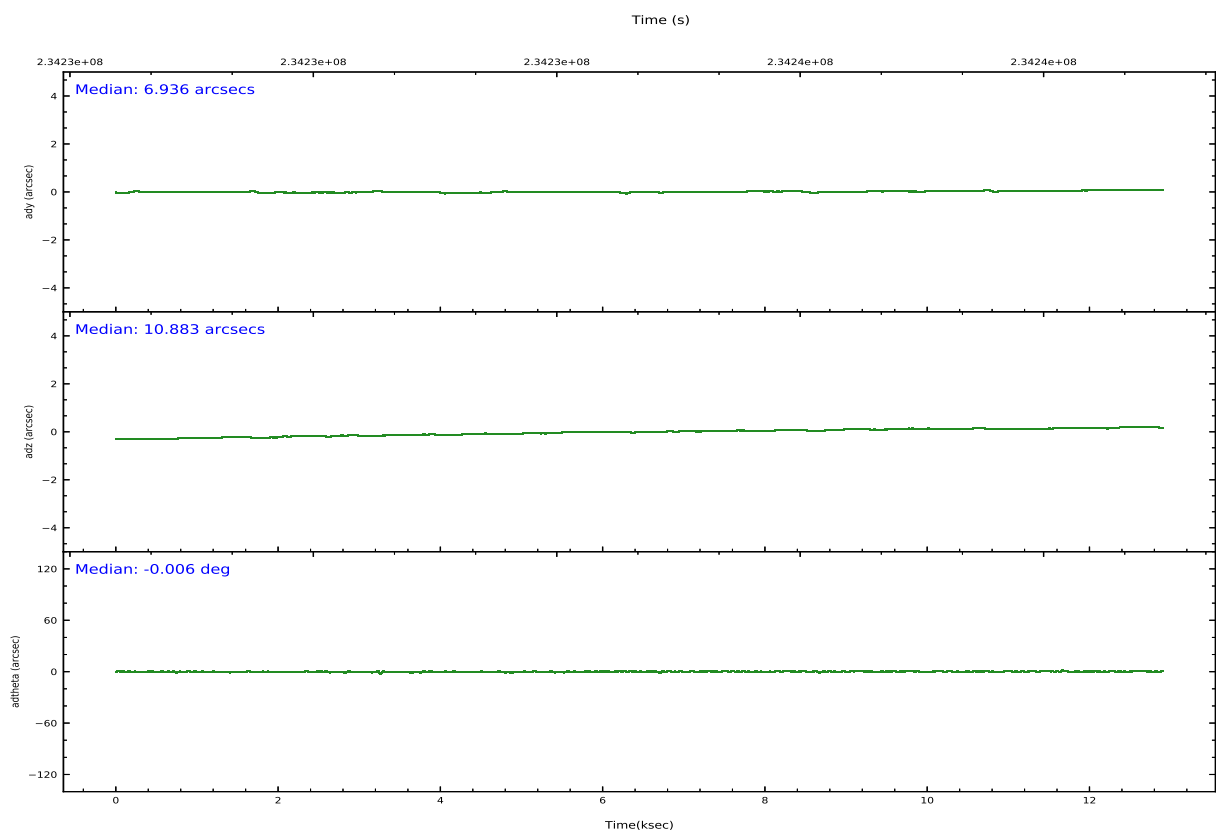
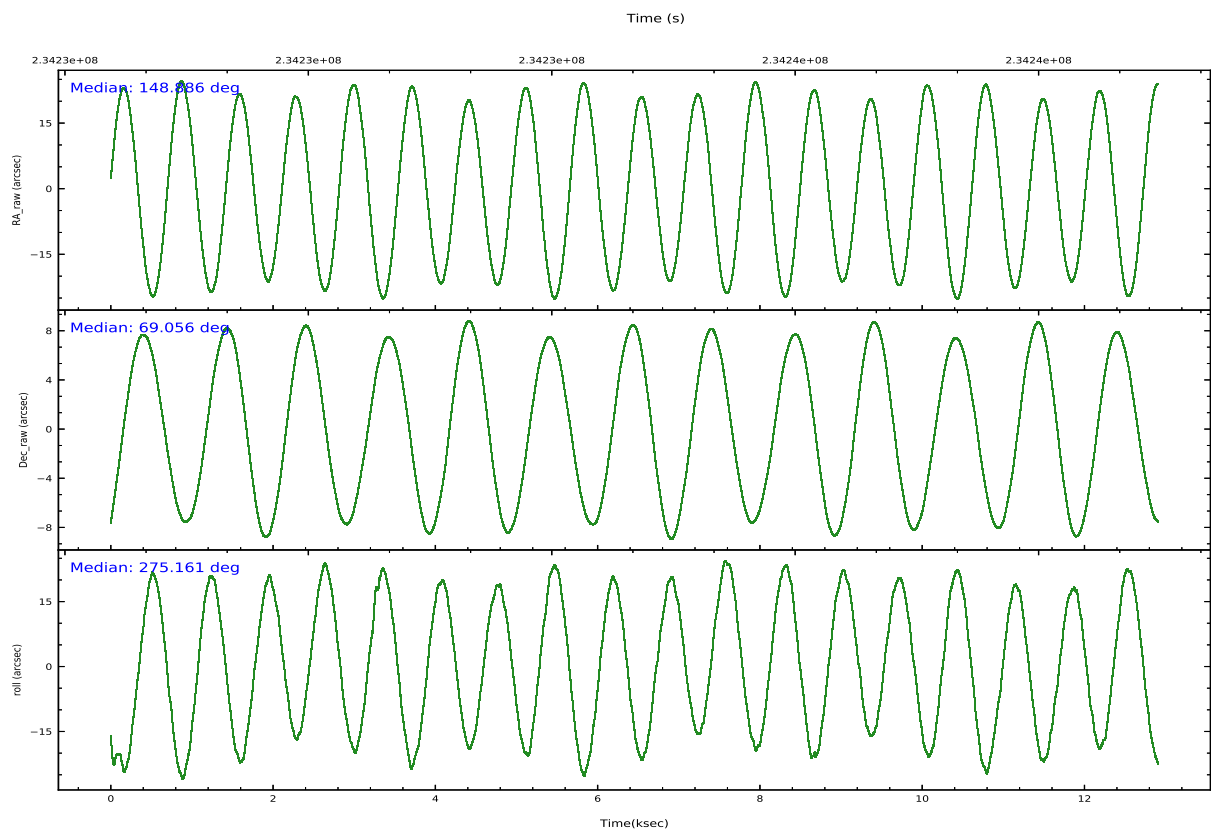


## 2.2 Compared Parameters

| 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                 | 148.841248          | 148.87681134008      | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | 69.077716           | 69.057453594859      | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 275.043974          | 275.16130533269      | [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)  | 234227474.184000    | 234226149.85276      |                                       |           |         |
| Observation start date            | 2005-06-03T23:10:10 | 2005-06-03T22:49:09  |                                       |           |         |
| [s] Observation end time (MET)    | 234239474.184000    | 234240514.20341      |                                       |           |         |
| Observation end date              | 2005-06-04T02:30:10 | 2005-06-04T02:48:34  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



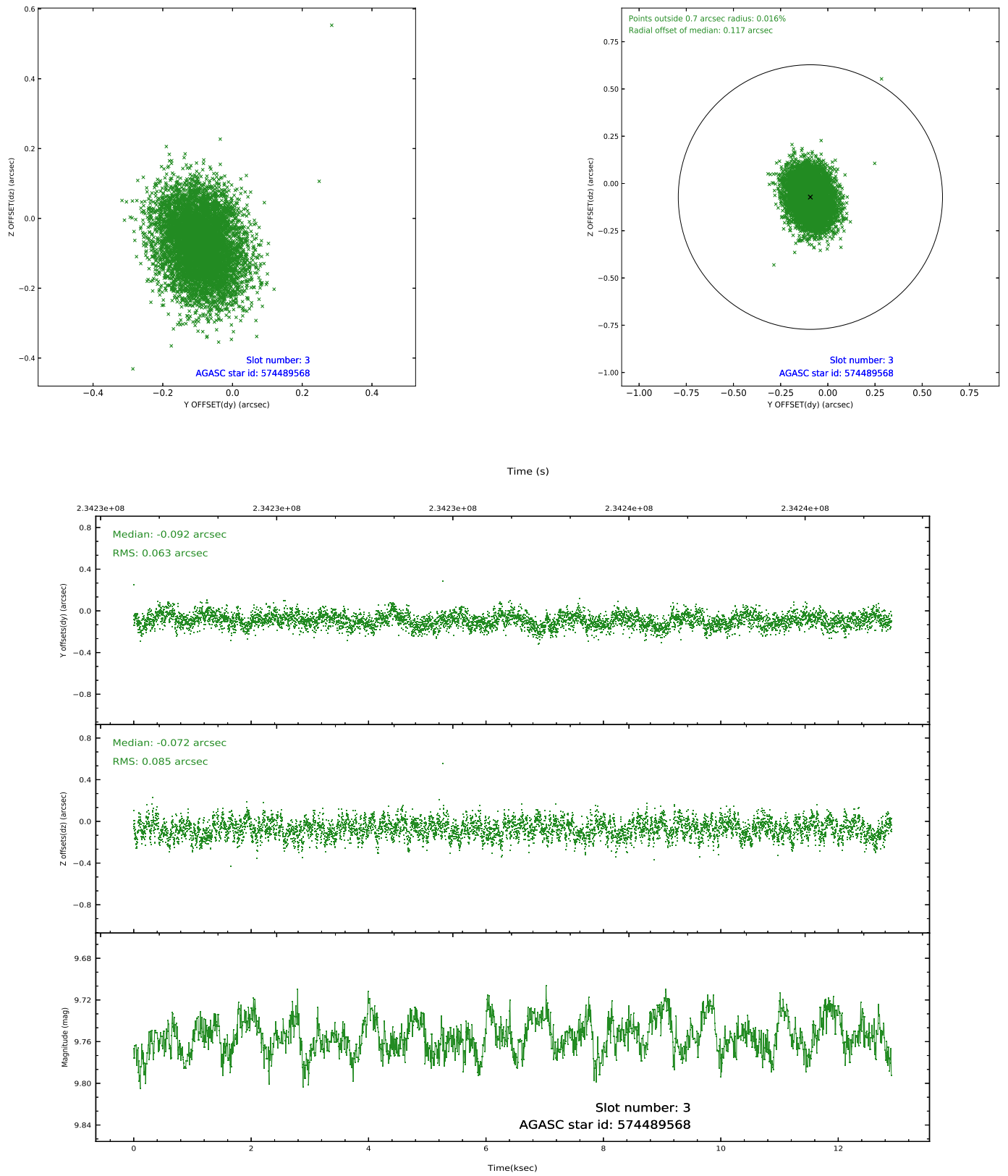


Slot Statistics

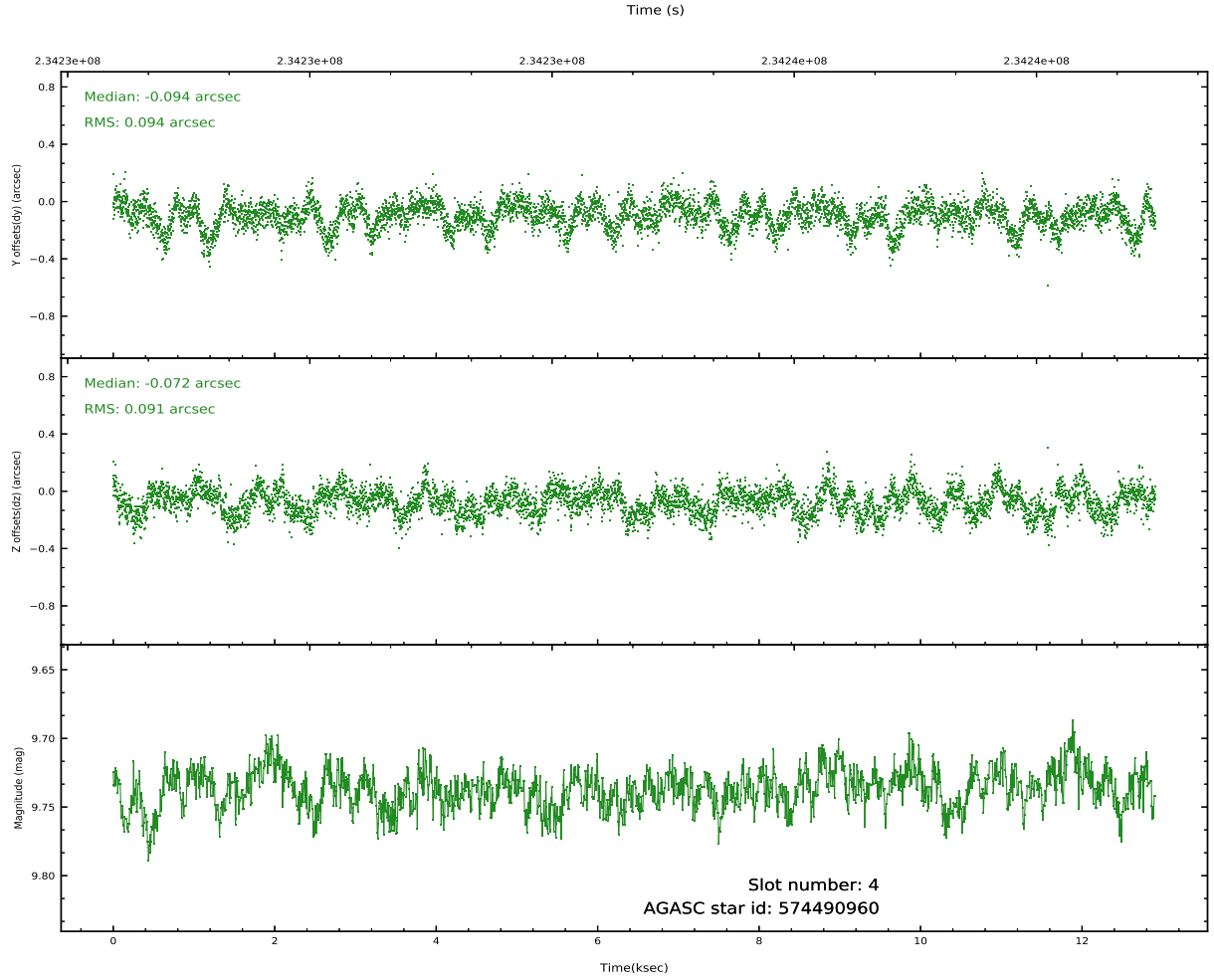
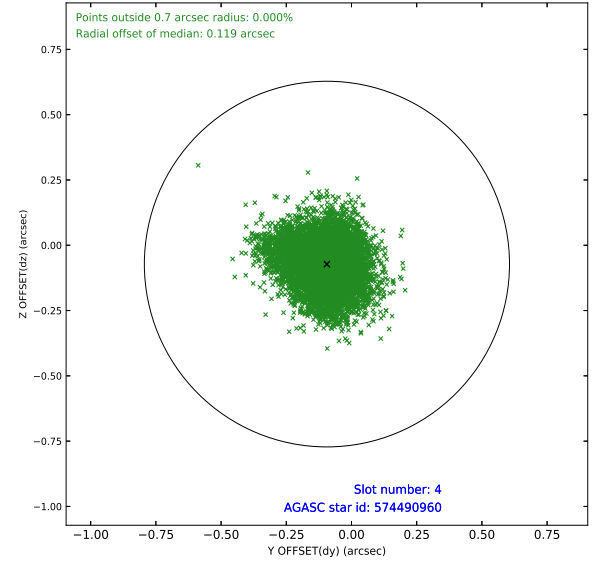
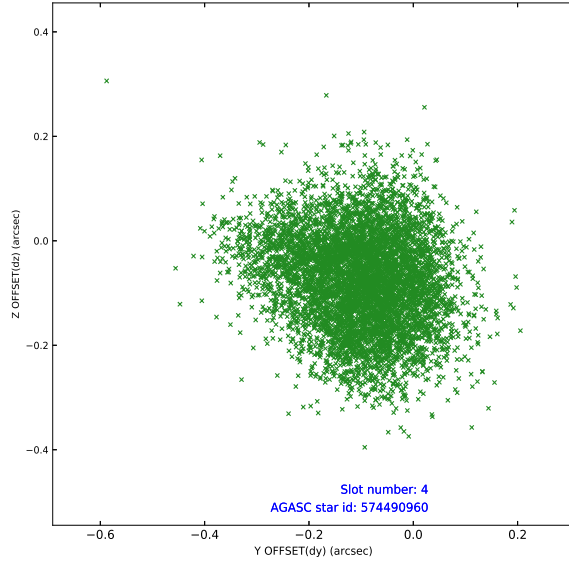
| pt | status | used | id        | mag   | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea   |
|----|--------|------|-----------|-------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|-------|
| 0  | FID    |      | ACIS-S-2  | 7.10  | 3149  | 1.000    | -0.084 | -0.051 | 0.007 | 0.011 | 0.000000   | 0.000000  | -759.72  | -1732 |
| 1  | FID    |      | ACIS-S-4  | 7.20  | 3148  | 1.000    | 0.144  | 0.054  | 0.007 | 0.012 | 0.000000   | 0.000000  | 2153.56  | 176   |
| 2  | FID    |      | ACIS-S-5  | 7.23  | 3149  | 1.000    | -0.092 | 0.006  | 0.007 | 0.011 | 0.000000   | 0.000000  | -1812.15 | 170   |
| 3  | GUIDE  | used | 574489568 | 9.76  | 6293  | 1.000    | -0.092 | -0.072 | 0.113 | 0.180 | 147.223974 | 69.438157 | -1498.85 | -1920 |
| 4  | GUIDE  | used | 574490960 | 9.74  | 6287  | 1.000    | -0.094 | -0.072 | 0.140 | 0.223 | 148.185918 | 69.658768 | -2159.94 | -633  |
| 5  | GUIDE  | used | 574491280 | 9.36  | 6295  | 1.000    | -0.073 | 0.013  | 0.096 | 0.156 | 148.611567 | 69.450135 | -1361.12 | -172  |
| 6  | GUIDE  | used | 574497600 | 10.44 | 6284  | 1.000    | 0.097  | -0.046 | 0.187 | 0.301 | 147.824120 | 68.451903 | 2115.32  | -1536 |
| 7  | GUIDE  | used | 574496360 | 9.46  | 6295  | 1.000    | 0.170  | 0.187  | 0.120 | 0.197 | 150.806604 | 68.529829 | 2151.97  | 2409  |

## 2.4 Star Slots

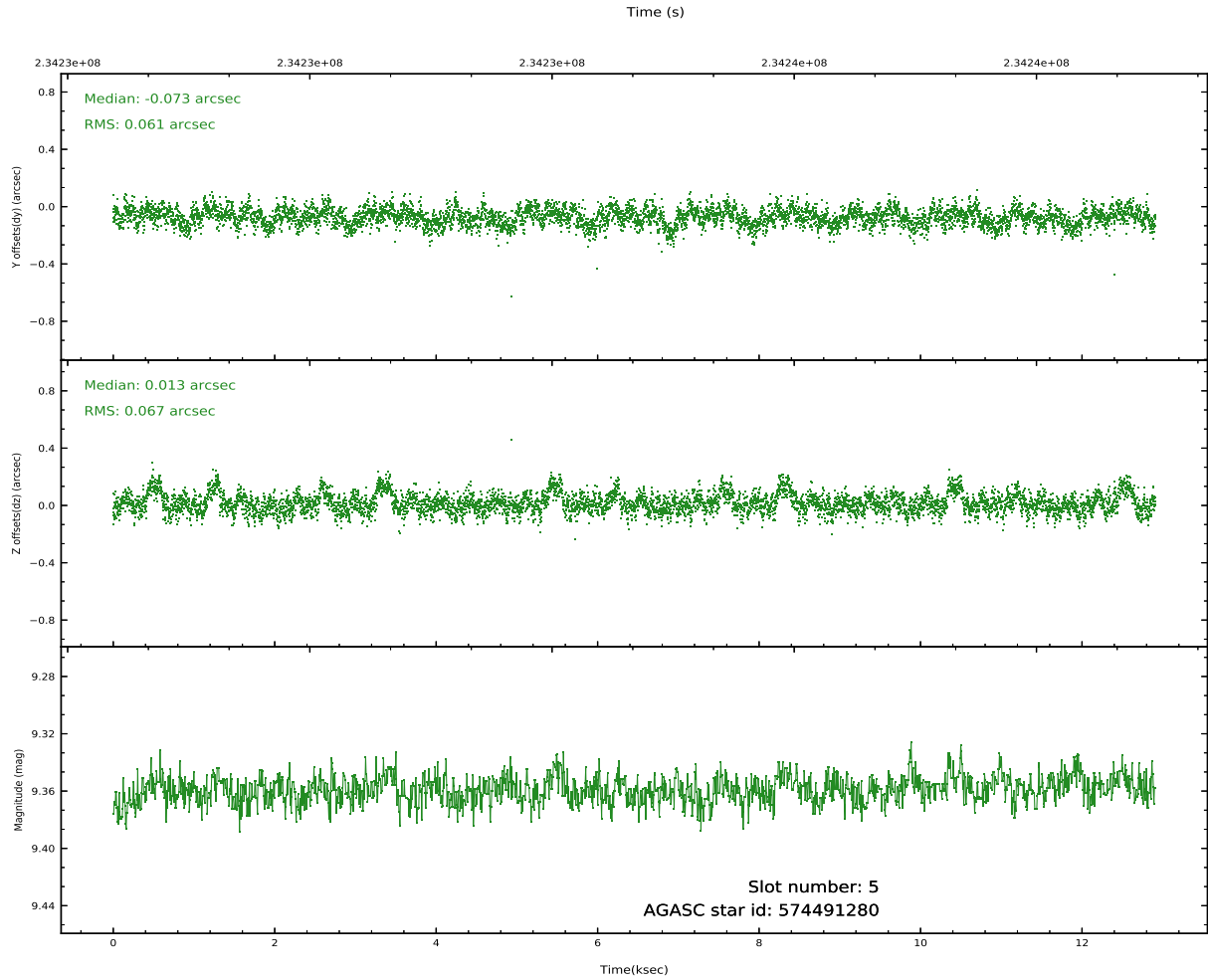
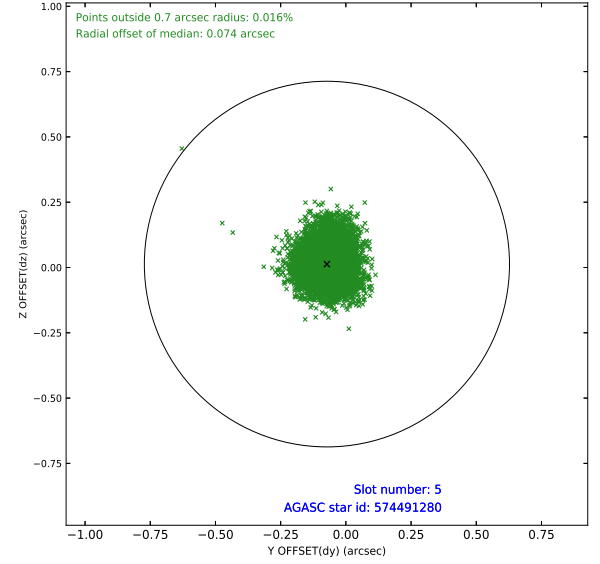
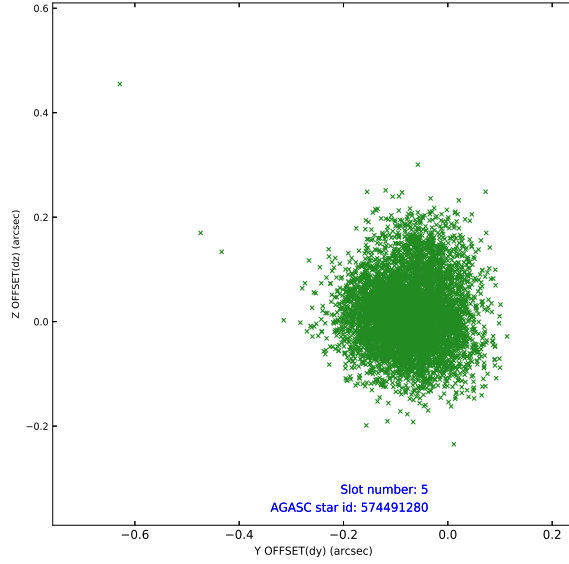
### 2.4.1 Slot 3



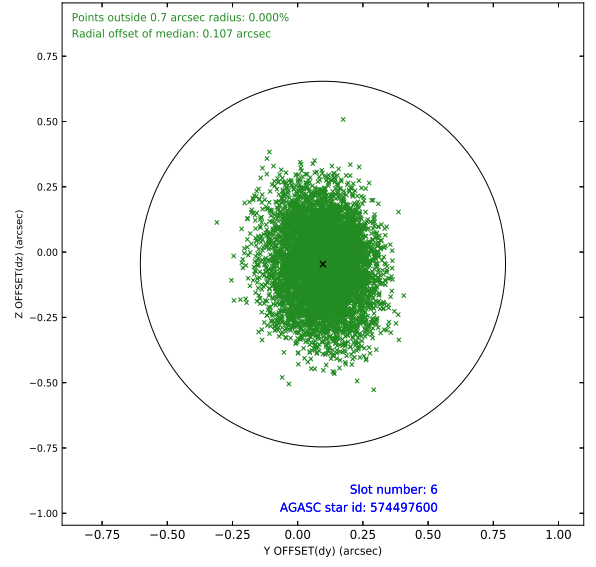
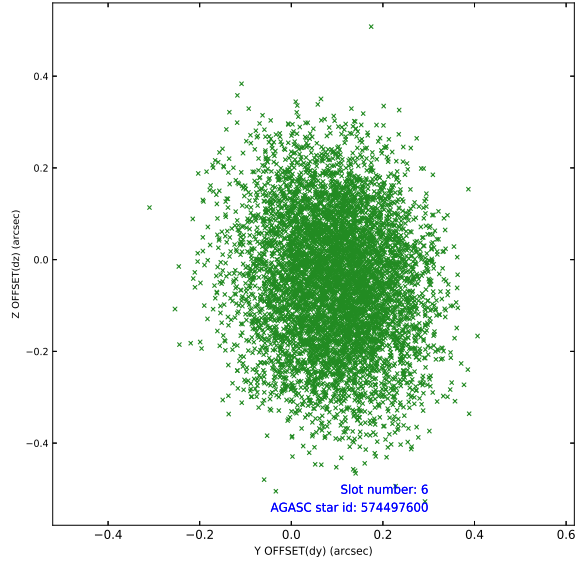
## 2.4.2 Slot 4



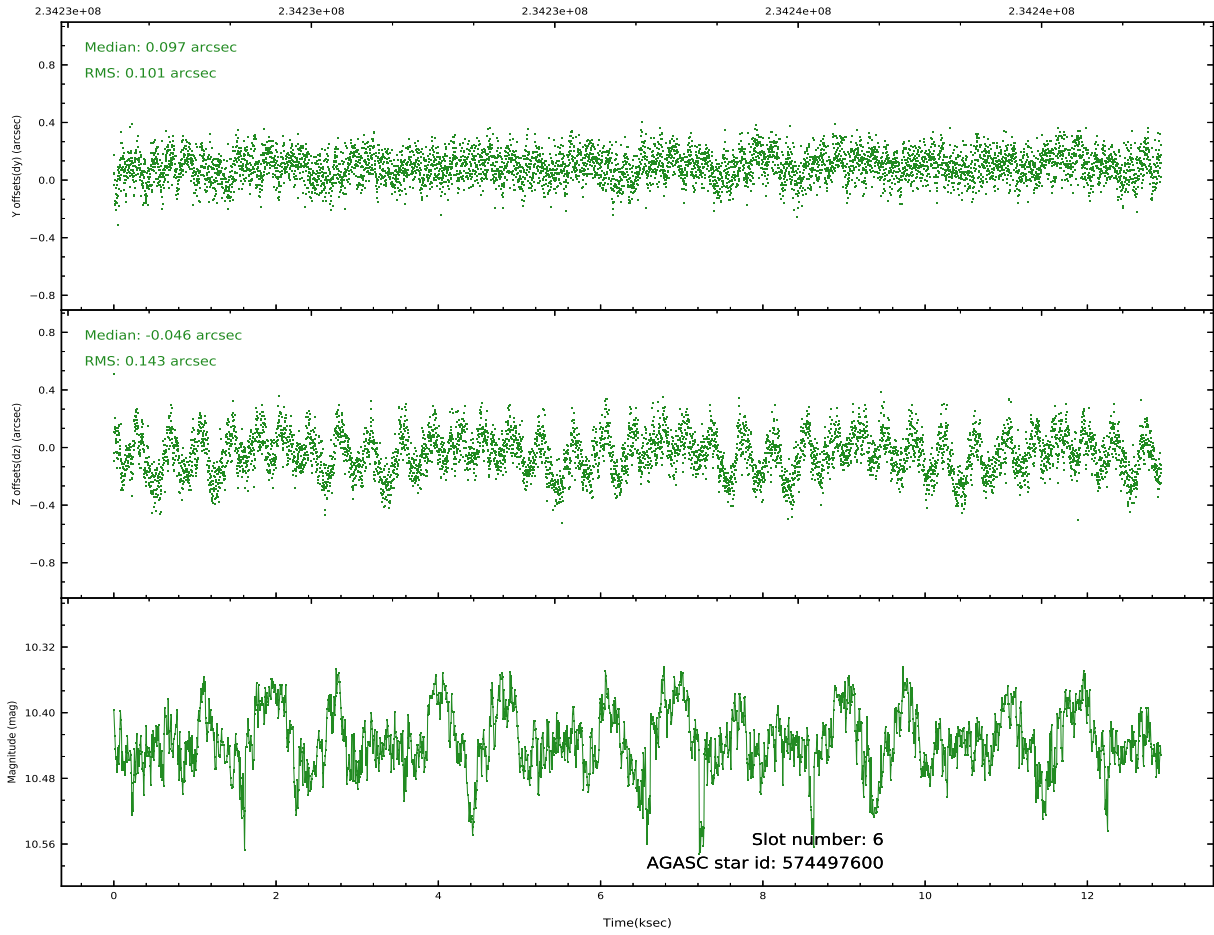
## 2.4.3 Slot 5



## 2.4.4 Slot 6

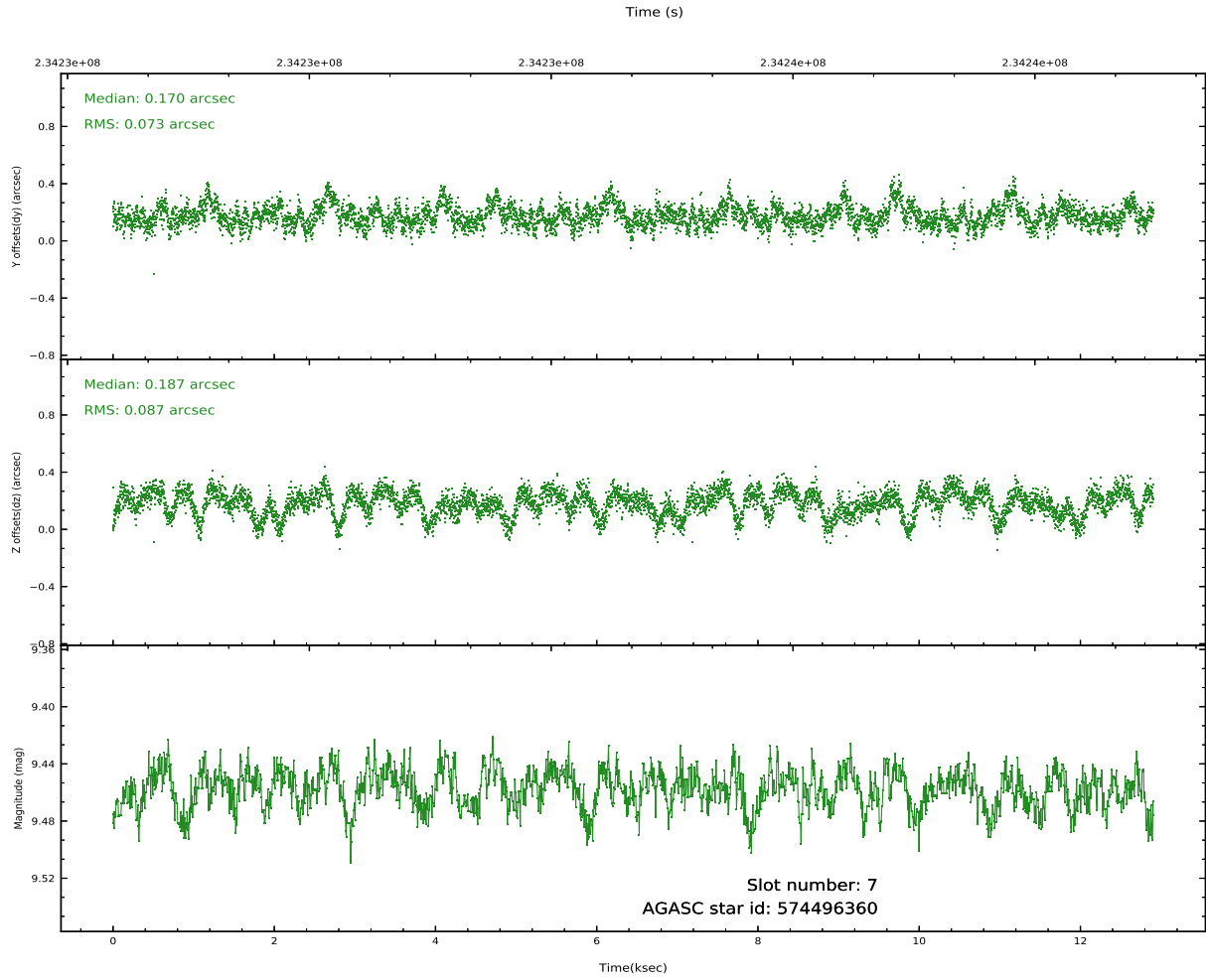
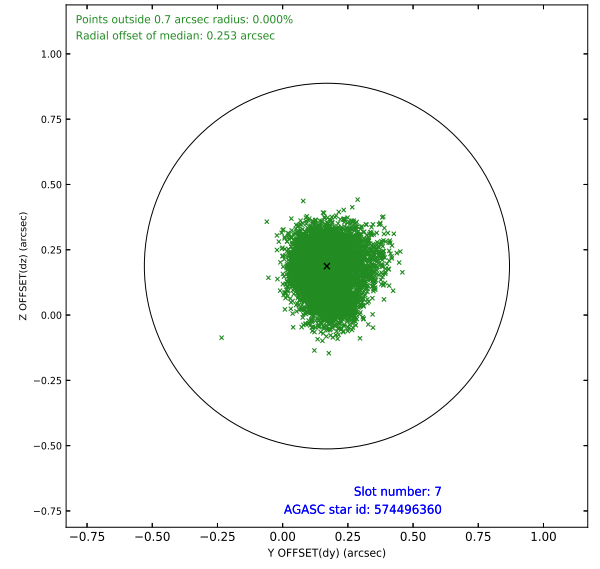
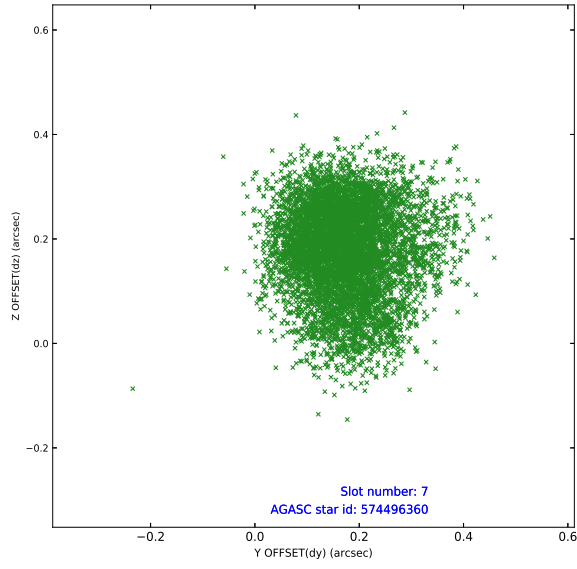


Time (s)



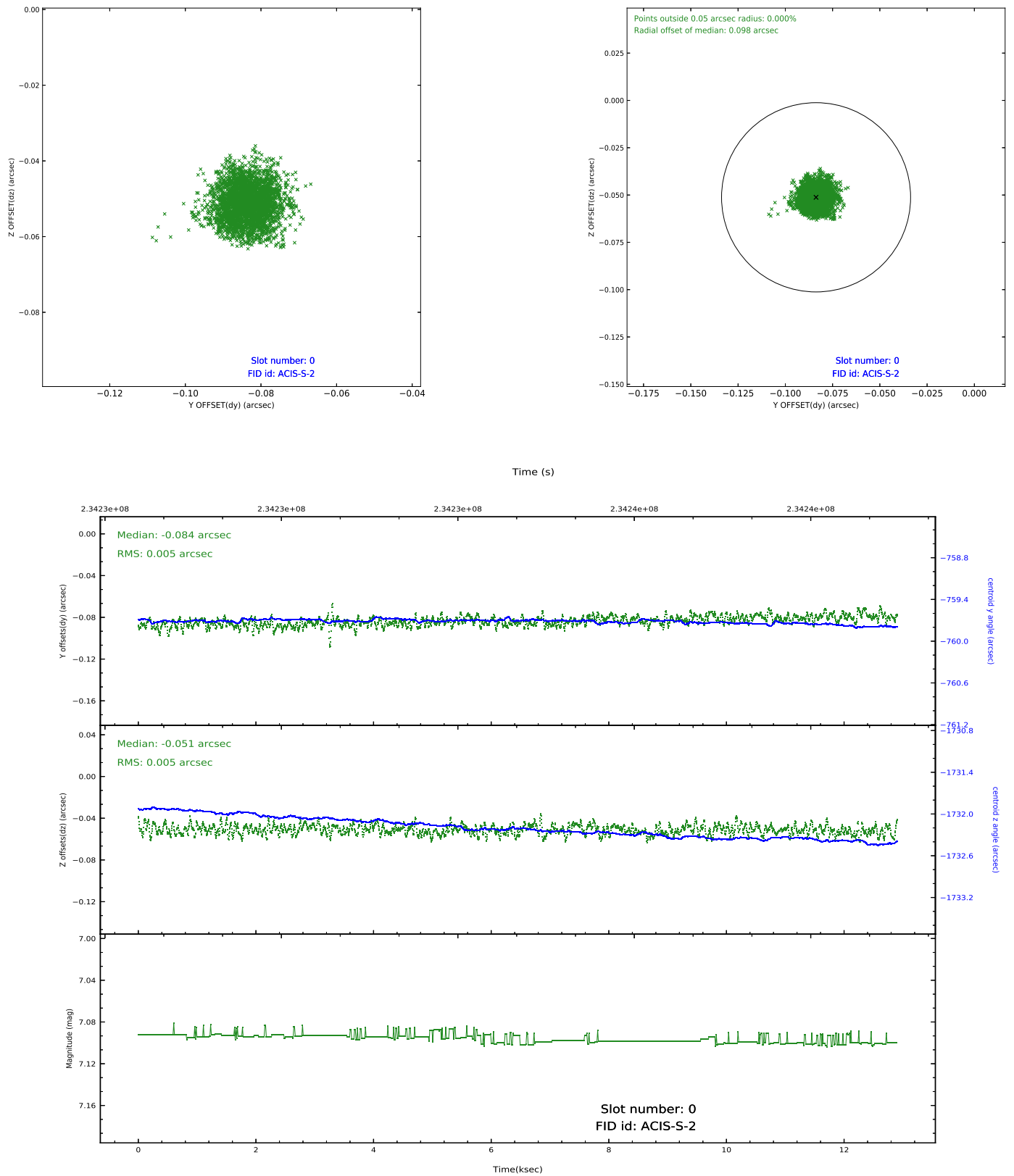


## 2.4.5 Slot 7

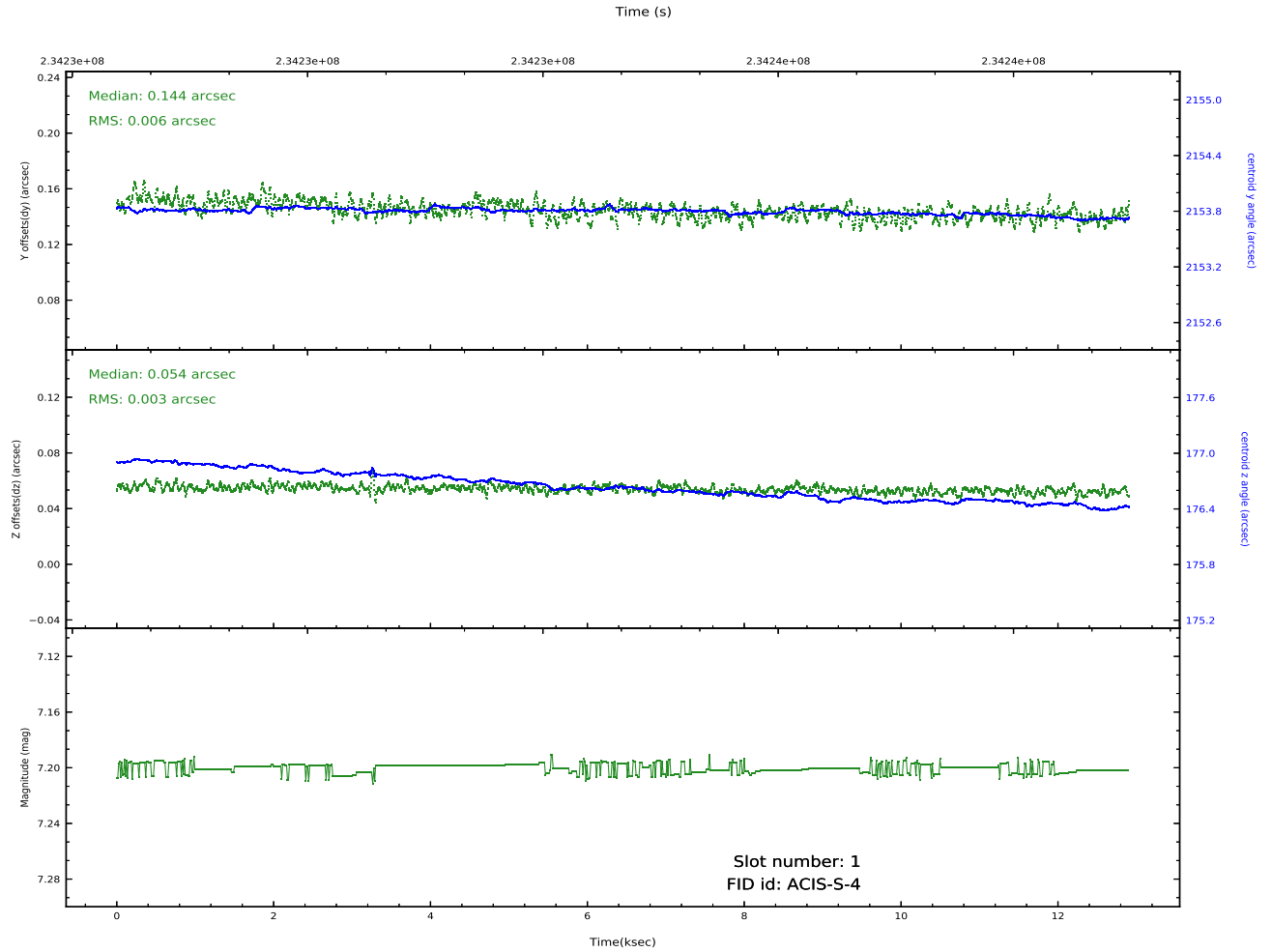
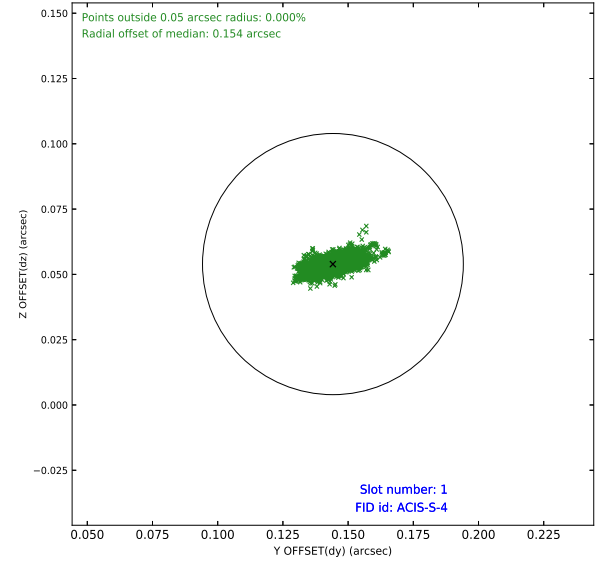
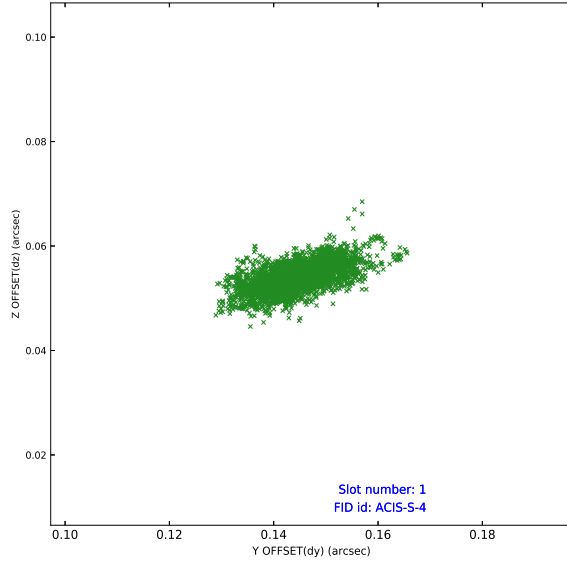


## 2.5 FID Slots

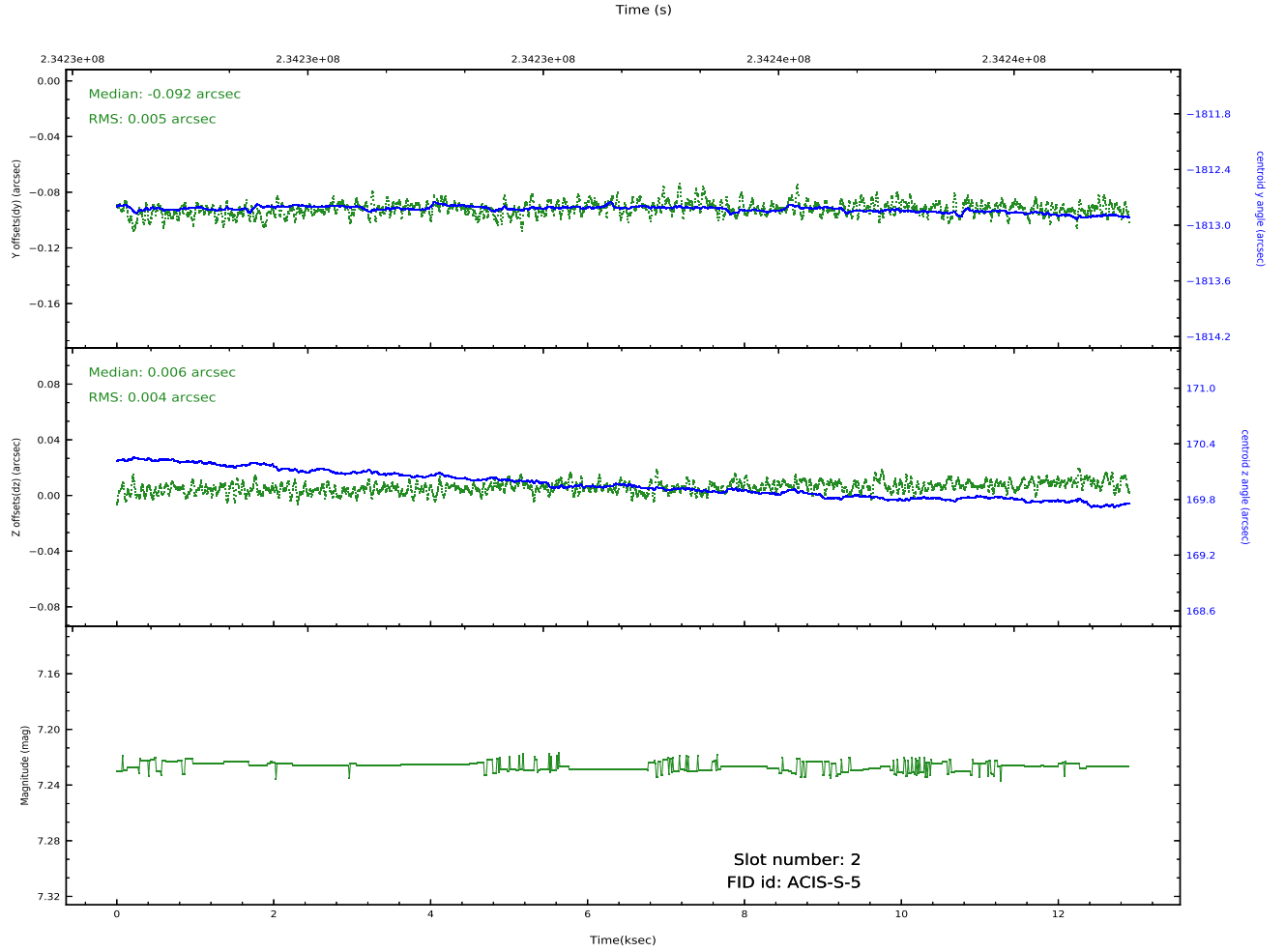
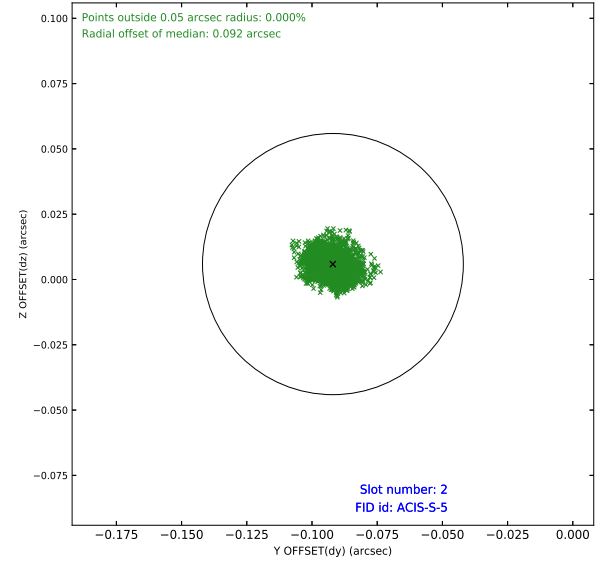
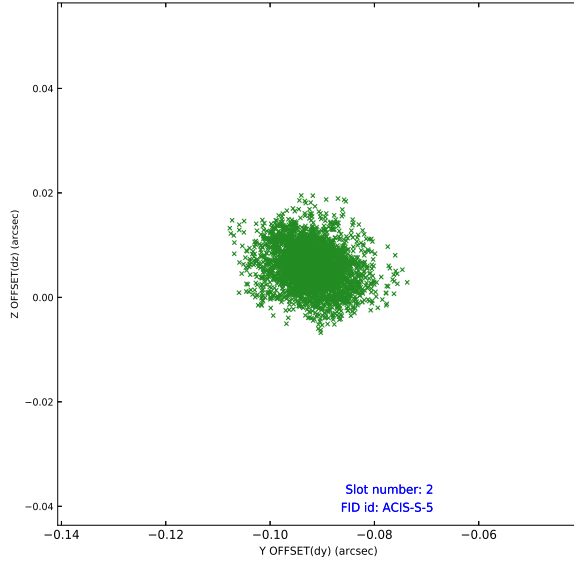
### 2.5.1 Slot 0



## 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)      | 2020.10.09    |
| V&V Edition                | 1             |
| V&V Disposition and Status | OK            |
| V&V Charge Time            | 11.95839      |

### A.2 Comments