

# V&V Reference Report

## L2 ASCDS Version : 10.9.2

Observation 19415 - L2 Version 2  
Chandra X-Ray Center

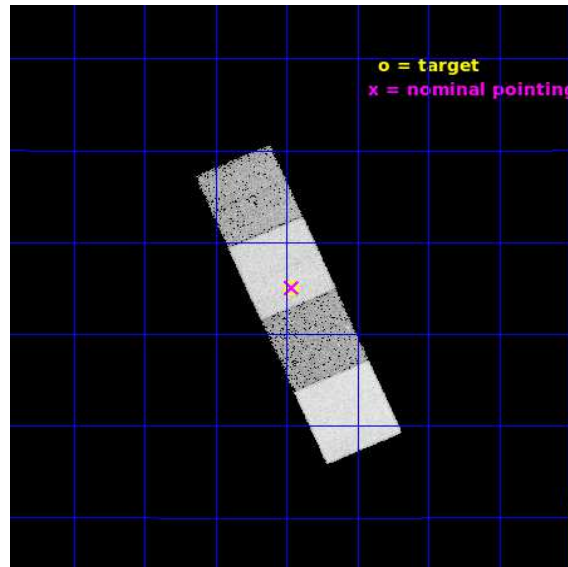
L2 Processing Date : Oct 26 2020

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# 1 Front

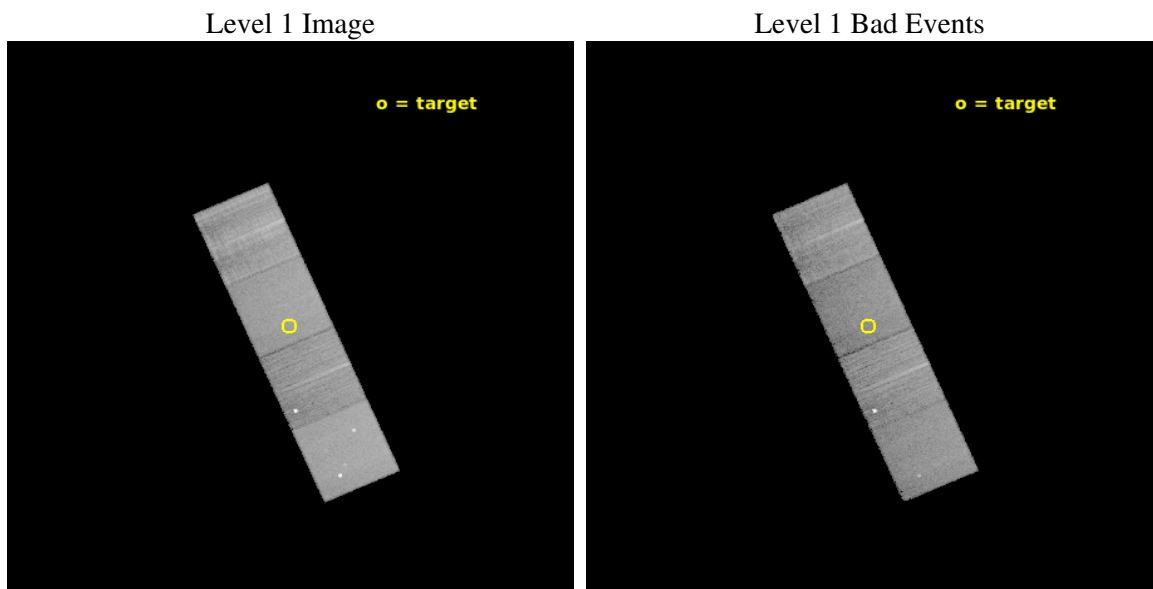
|          |                                      |                                             |
|----------|--------------------------------------|---------------------------------------------|
| seq_num  | 601372                               | Sequence number                             |
| obs_id   | 19415                                | Observation id                              |
| title    | Spiral galaxies of the Virgo cluster | Proposal title                              |
| observer | Roberto Soria                        | Principal investigator                      |
| object   | NGC 4469                             | Source name                                 |
| dtcycle  | 0                                    | &#160                                       |
| cycle    | P                                    | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 187.366667                           | Observer's specified target RA [deg]        |
| dec_targ | 8.749917                             | Observer's specified target Dec [deg]       |
| ra_nom   | 187.36570943345                      | Nominal RA [deg]                            |
| dec_nom  | 8.7510510842462                      | Nominal Dec [deg]                           |
| roll_nom | 246.25706895738                      | Nominal Roll [deg]                          |
| revision | 2                                    | Processing version of data                  |
| ontime   | 15064.57742691                       | Sum of GTIs [s]                             |
| livetime | 14867.747632447                      | Livetime [s]                                |
| ontime5  | 15064.536386967                      | Sum of GTIs [s]                             |
| ontime6  | 15064.495346904                      | Sum of GTIs [s]                             |
| ontime7  | 15064.57742691                       | Sum of GTIs [s]                             |
| ontime8  | 15064.45430696                       | Sum of GTIs [s]                             |
| l2events | 165726                               | Number of level 2 events                    |



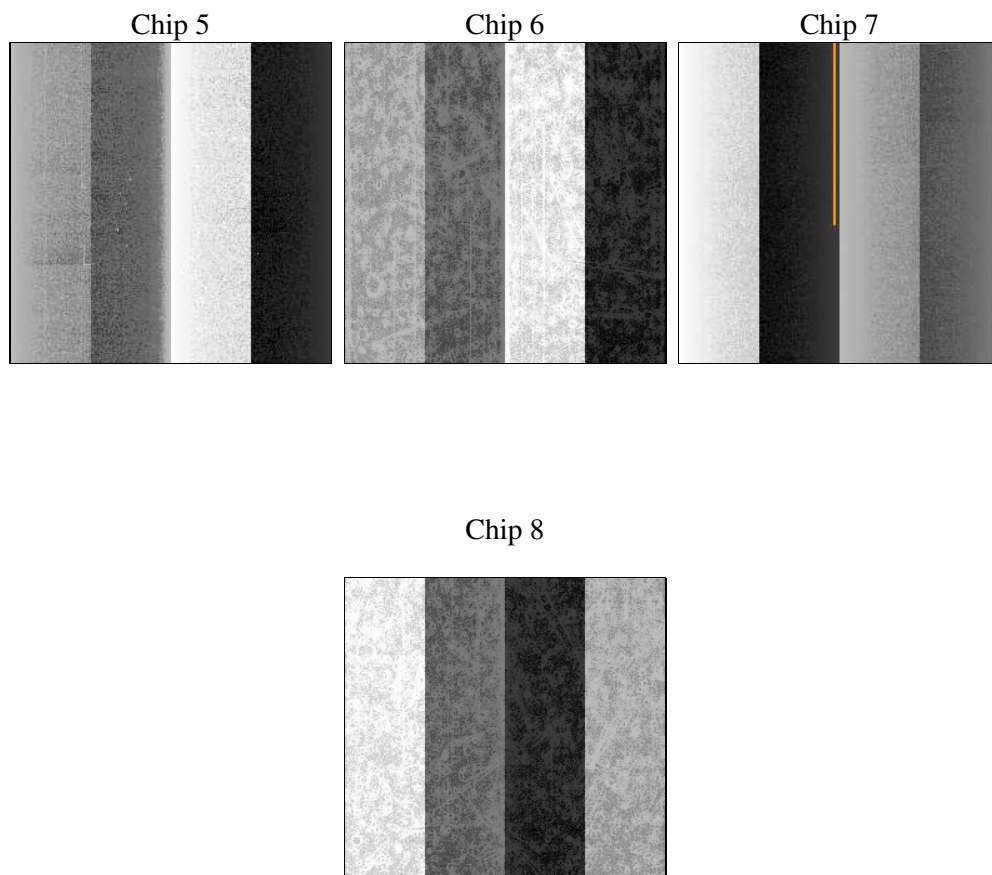
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 15000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.2              | Processing system revision     | ontime         | 15064.57742691  | Sum of GTIs [s]                         |
| caldsver | 4.9.3               | &#160                          | ontime5        | 15064.536386967 | Sum of GTIs [s]                         |
| date     | 2020-10-26T10:11:37 | Date and time of file creation | ontime6        | 15064.495346904 | Sum of GTIs [s]                         |
| revision | 2                   | Processing version of data     | ontime7        | 15064.57742691  | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 15064.45430696  | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 581179          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 5  | ccd 6  | ccd 7  | ccd 8  |
|-----------------|--------|--------|--------|--------|
| level 1 events  | 177327 | 115539 | 141119 | 147194 |
| rejected events | 89473  | 102379 | 78554  | 104044 |
| rejected %      | 50%    | 88%    | 55%    | 70%    |

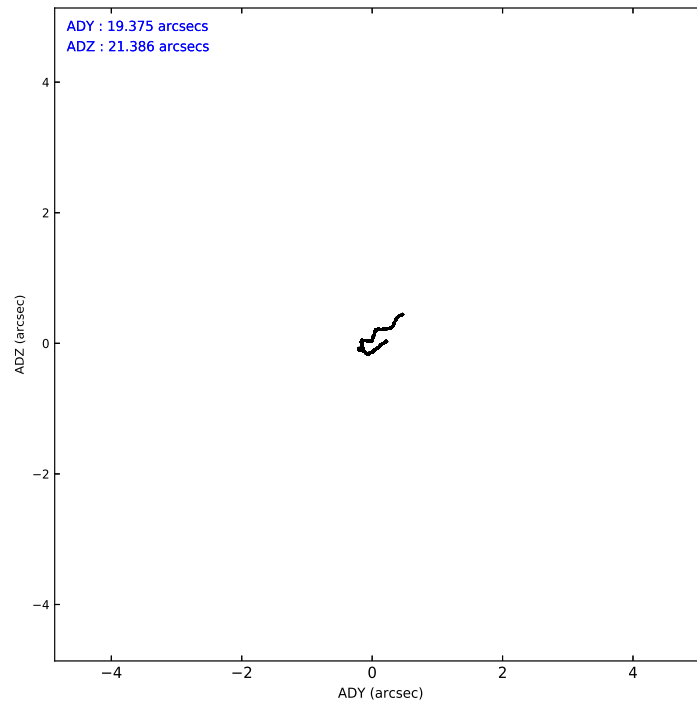
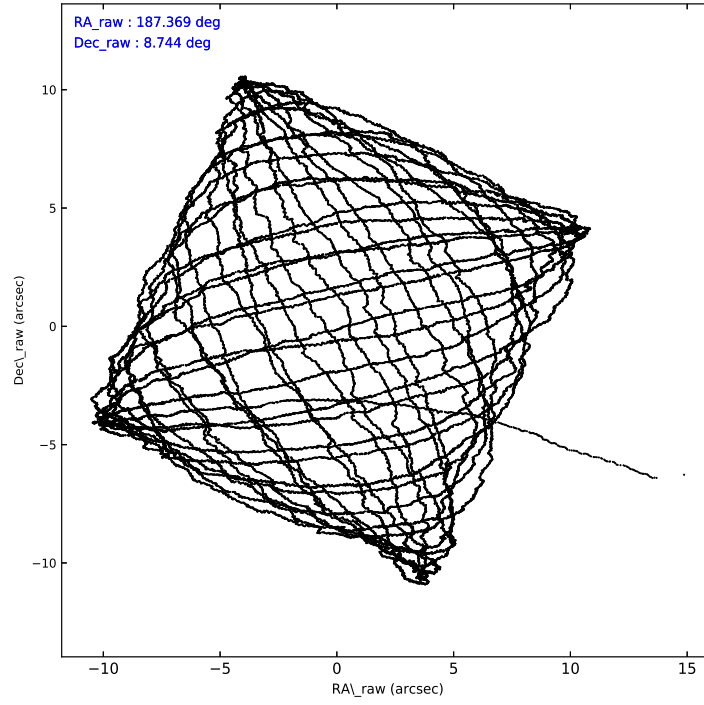
|                | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|----------------|-------|-------|-------|-------|
| grade 0 events | 8610  | 4675  | 5614  | 13083 |
|                | 4%    | 4%    | 3%    | 8%    |
| grade 1 events | 802   | 4762  | 192   | 129   |
|                | 0%    | 4%    | 0%    | 0%    |
| grade 2 events | 28437 | 2971  | 13430 | 10469 |
|                | 16%   | 2%    | 9%    | 7%    |
| grade 3 events | 2883  | 1378  | 4964  | 4304  |
|                | 1%    | 1%    | 3%    | 2%    |
| grade 4 events | 2657  | 1256  | 4951  | 4021  |
|                | 1%    | 1%    | 3%    | 2%    |
| grade 5 events | 12261 | 5164  | 14232 | 7979  |
|                | 6%    | 4%    | 10%   | 5%    |
| grade 6 events | 45297 | 2888  | 33637 | 11276 |
|                | 25%   | 2%    | 23%   | 7%    |
| grade 7 events | 76380 | 92445 | 64099 | 95933 |
|                | 43%   | 80%   | 45%   | 65%   |

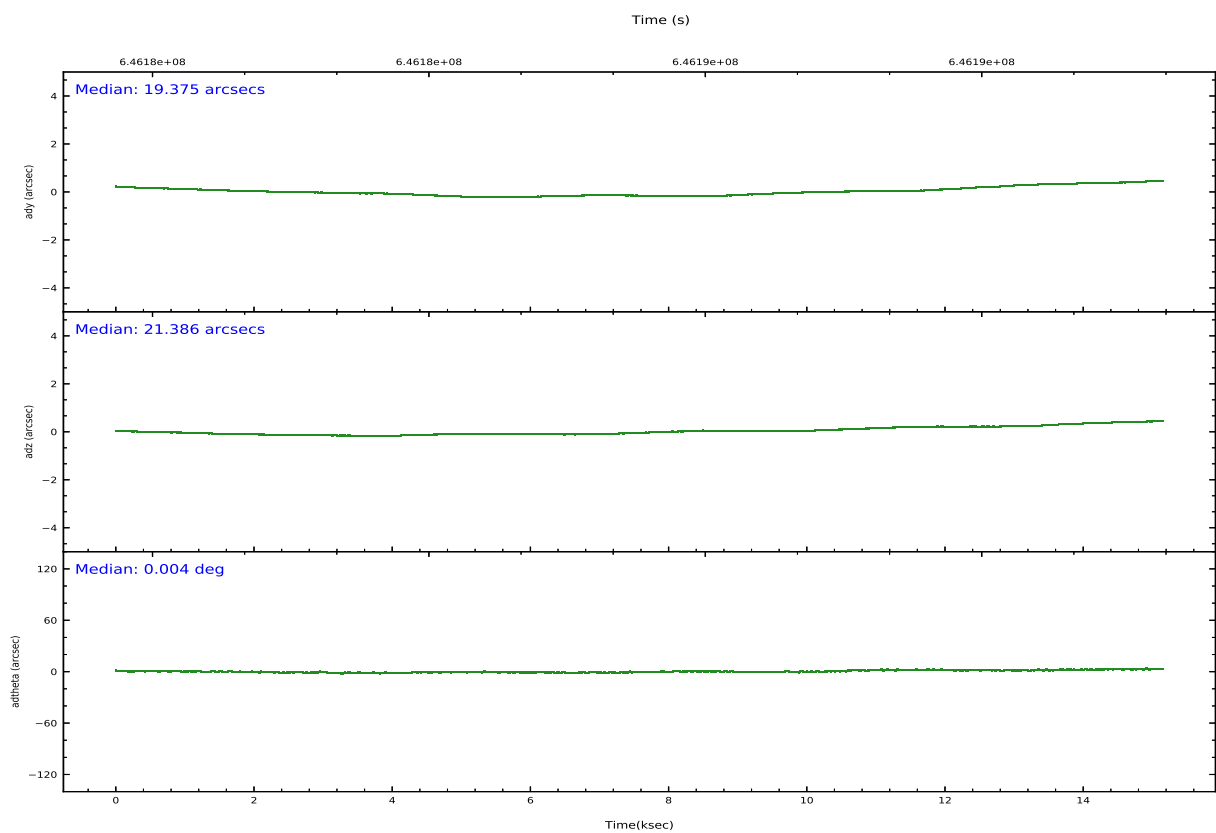
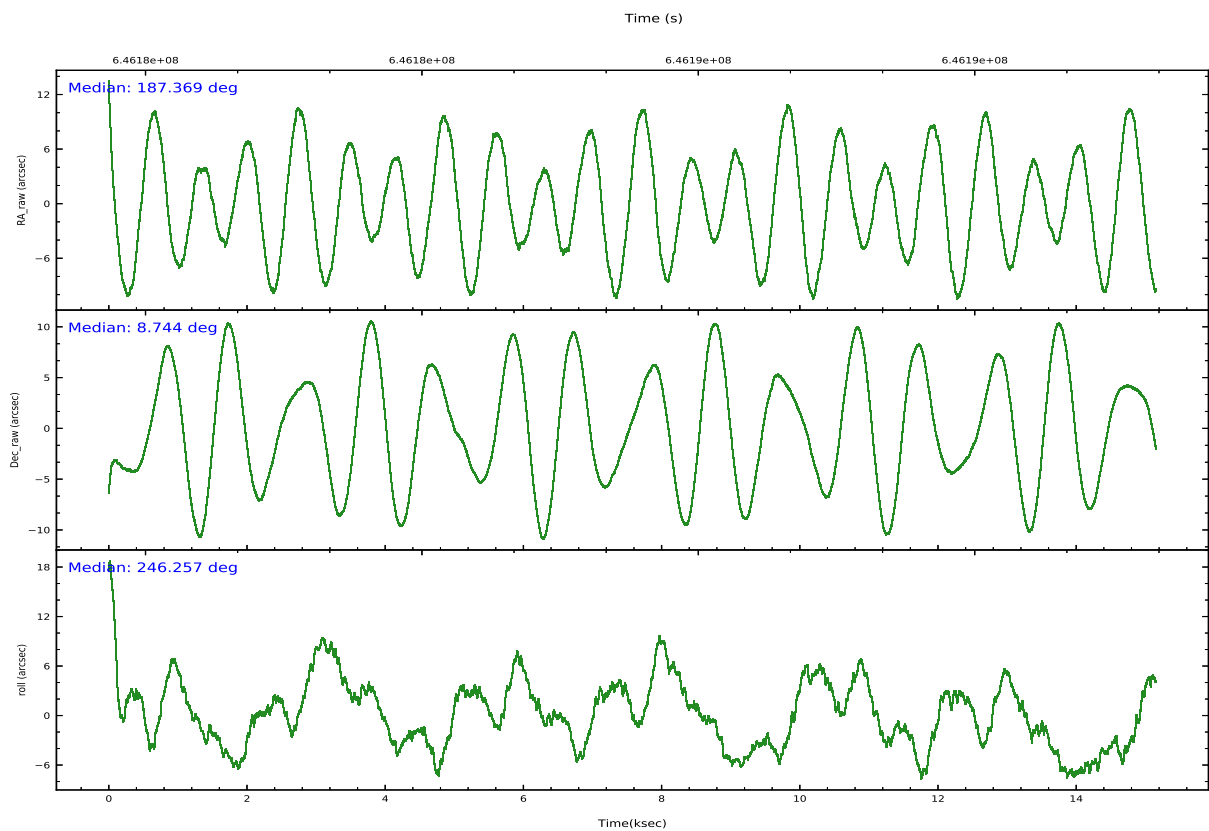


## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar version number                 | 8         | 8       |
| Detector                          | ACIS-5678           | ACIS-5678            | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | VFAINT              | VFAINT               | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                  | POINTING            | POINTING             | On-chip summing requested             | N         | N       |
| [deg] Pointing RA                 | 187.365813          | 187.36570943345      | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | 8.770690            | 8.7510510842462      | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 246.115843          | 246.25706895738      | [s] Primary exposure time             | 0.000000  | 3.1     |
| [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)  | 646179626.184000    | 646178603.72609      |                                       |           |         |
| Observation start date            | 2018-06-23T22:19:17 | 2018-06-23T22:03:23  |                                       |           |         |
| [s] Observation end time (MET)    | 646194626.184000    | 646195736.0896       |                                       |           |         |
| Observation end date              | 2018-06-24T02:29:17 | 2018-06-24T02:48:56  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



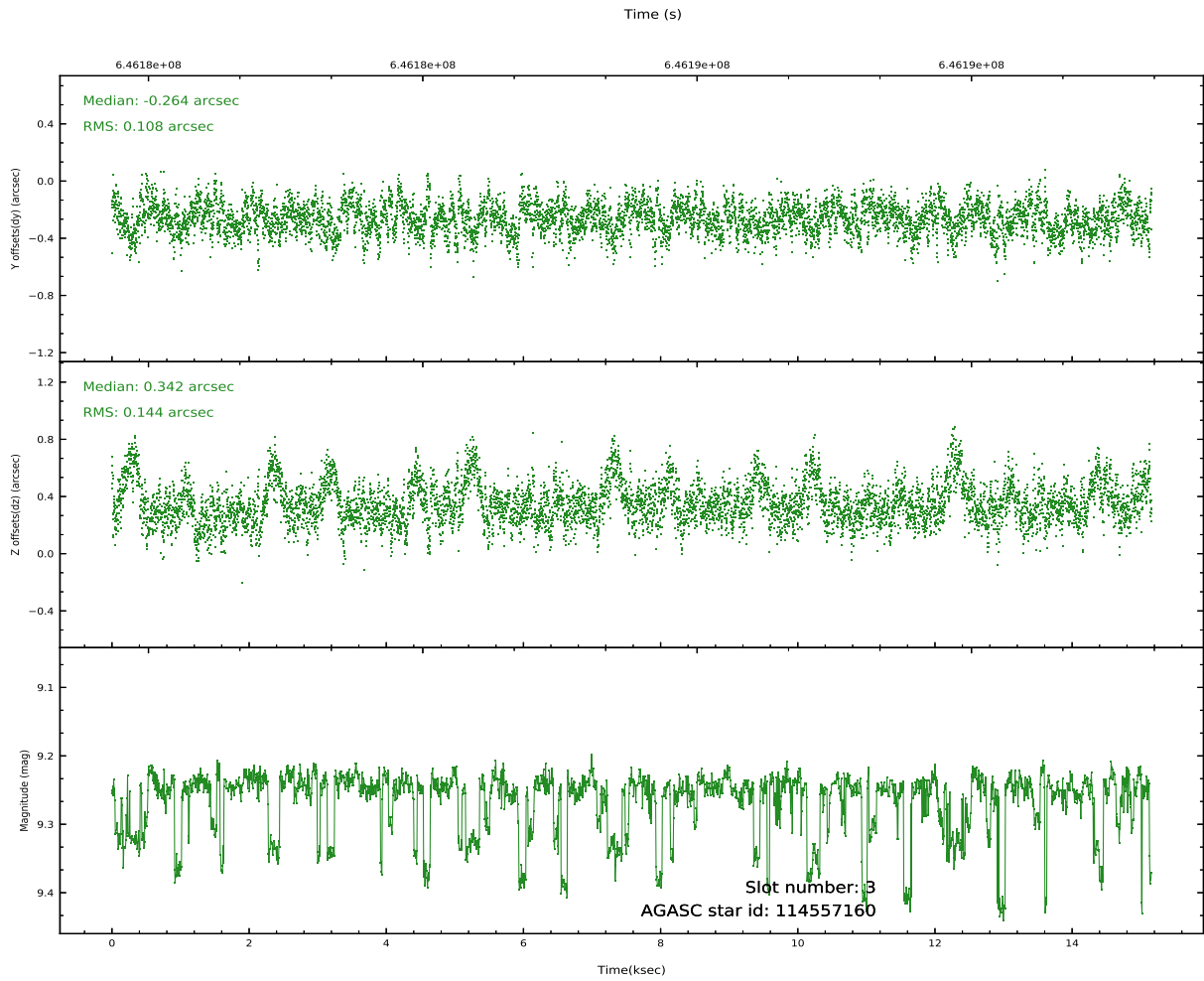
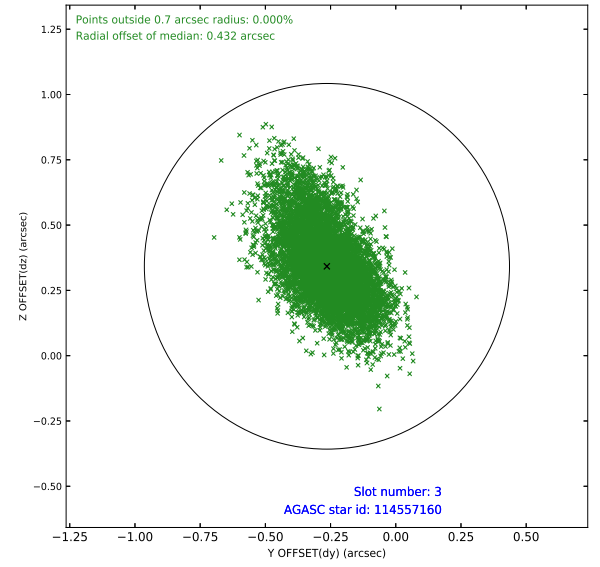
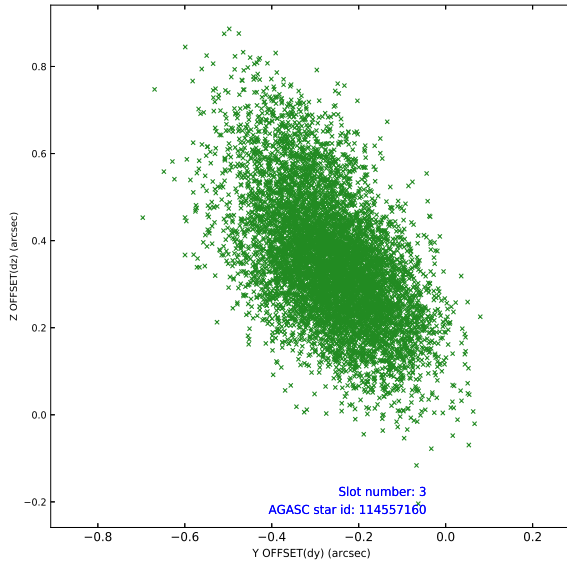


Slot Statistics

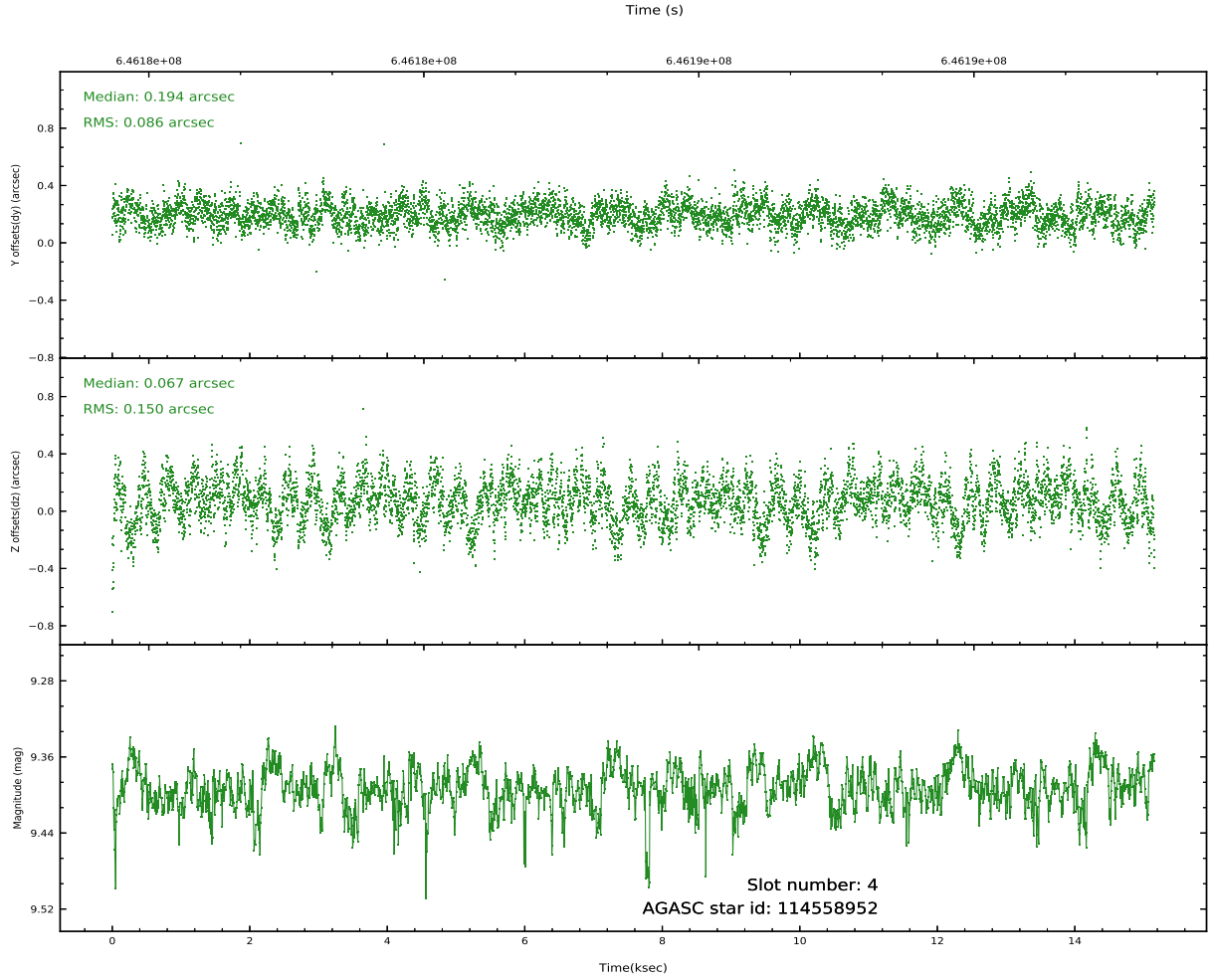
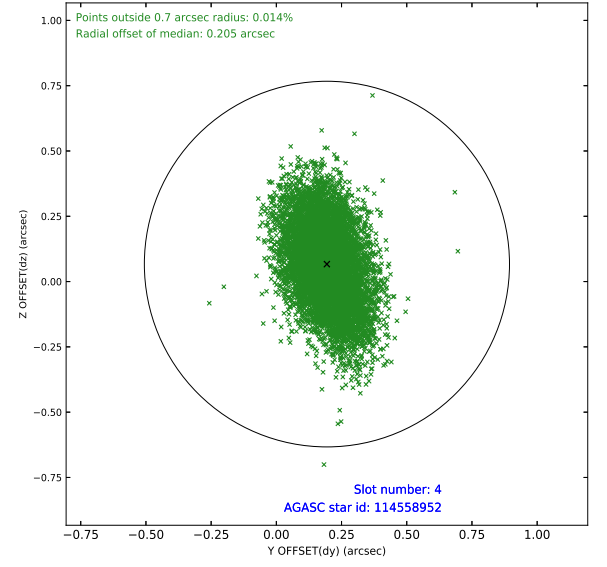
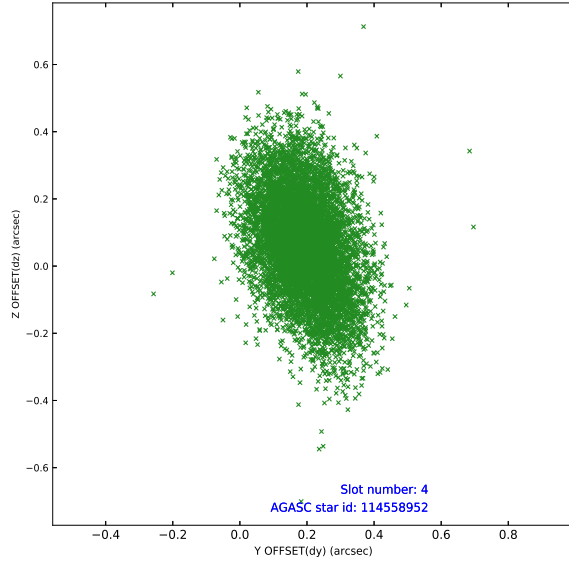
| pt | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec      | mean_y   | mea   |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|------------|----------|----------|-------|
| 0  | FID    |      | ACIS-S-2  | 6.93 | 3696  | 1.000    | 0.114  | -0.070 | 0.010 | 0.016 | 0.000000   | 0.000000 | -772.63  | -1742 |
| 1  | FID    |      | ACIS-S-4  | 7.04 | 3697  | 1.000    | 0.094  | -0.036 | 0.017 | 0.028 | 0.000000   | 0.000000 | 2140.76  | 164   |
| 2  | FID    |      | ACIS-S-5  | 7.03 | 3698  | 1.000    | -0.237 | 0.115  | 0.012 | 0.019 | 0.000000   | 0.000000 | -1825.17 | 159   |
| 3  | GUIDE  | used | 114557160 | 9.25 | 7386  | 1.000    | -0.264 | 0.342  | 0.184 | 0.333 | 188.190957 | 9.093563 | -2253.62 | 2209  |
| 4  | GUIDE  | used | 114558952 | 9.39 | 7385  | 1.000    | 0.194  | 0.067  | 0.181 | 0.309 | 186.929093 | 9.345397 | -1264.06 | -2256 |
| 5  | GUIDE  | used | 114562600 | 8.72 | 7386  | 1.000    | 0.037  | -0.229 | 0.145 | 0.244 | 186.973653 | 8.898661 | 142.92   | -1462 |
| 6  | GUIDE  | used | 114565400 | 6.31 | 7395  | 1.000    | 0.031  | -0.183 | 0.123 | 0.209 | 186.925333 | 8.610343 | 1162.30  | -1199 |
| 7  | GUIDE  | used | 114558824 | 9.69 | 7372  | 1.000    | 0.000  | 0.002  | 0.209 | 0.346 | 187.023305 | 9.331255 | -1352.22 | -1929 |

## 2.4 Star Slots

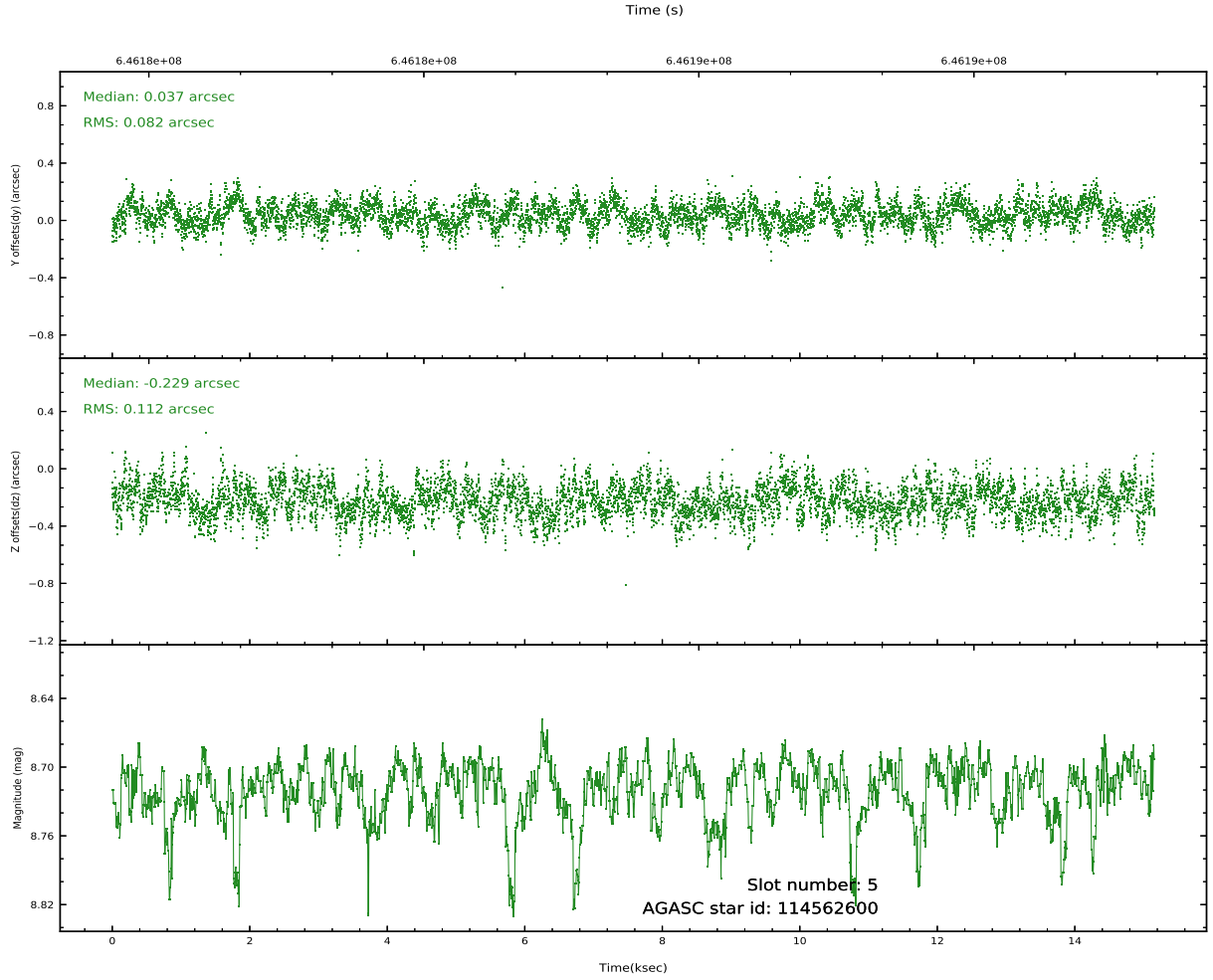
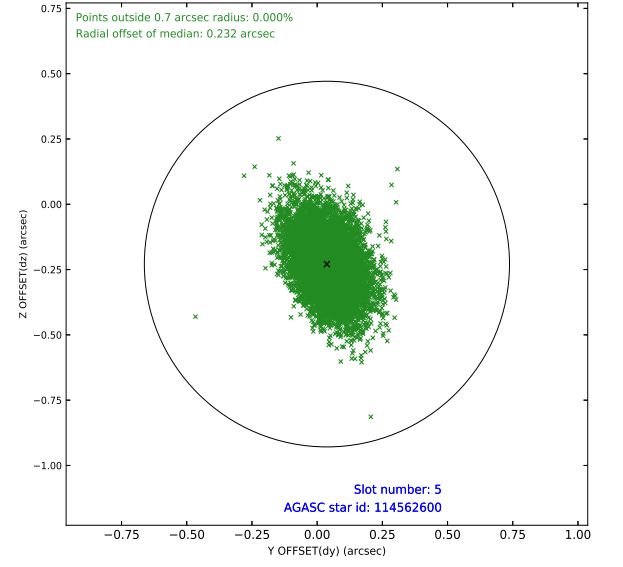
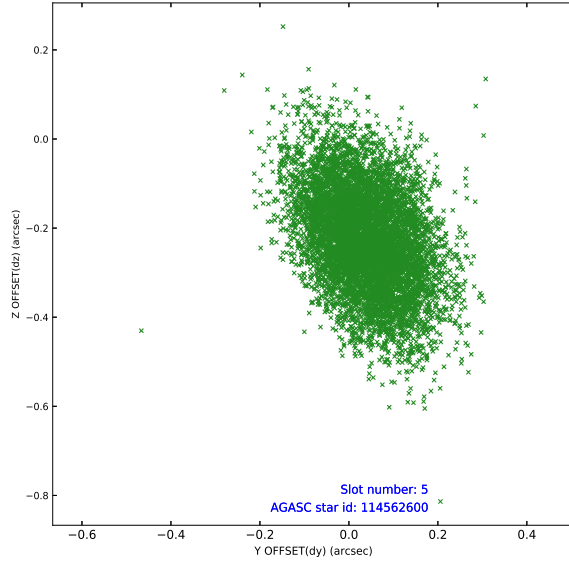
### 2.4.1 Slot 3



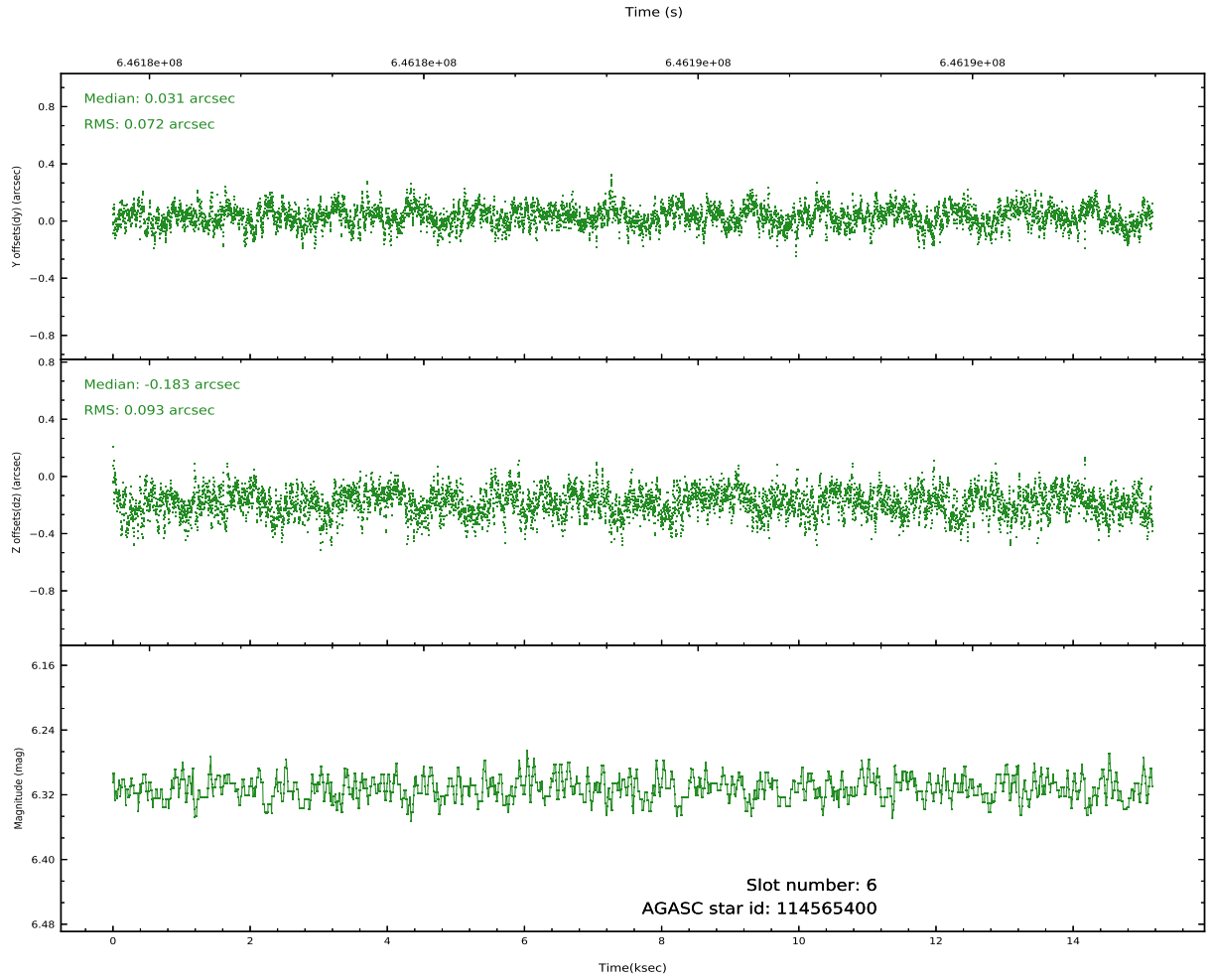
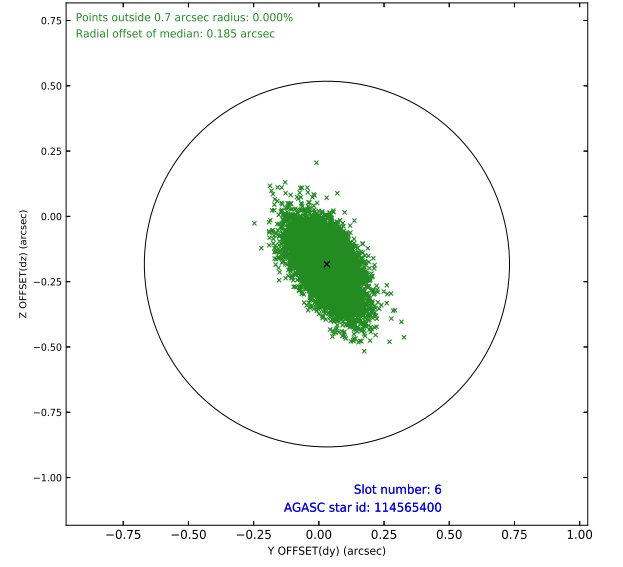
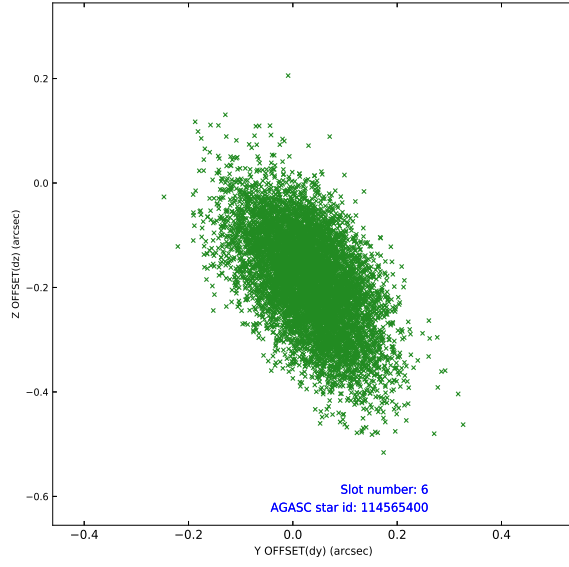
## 2.4.2 Slot 4



### 2.4.3 Slot 5

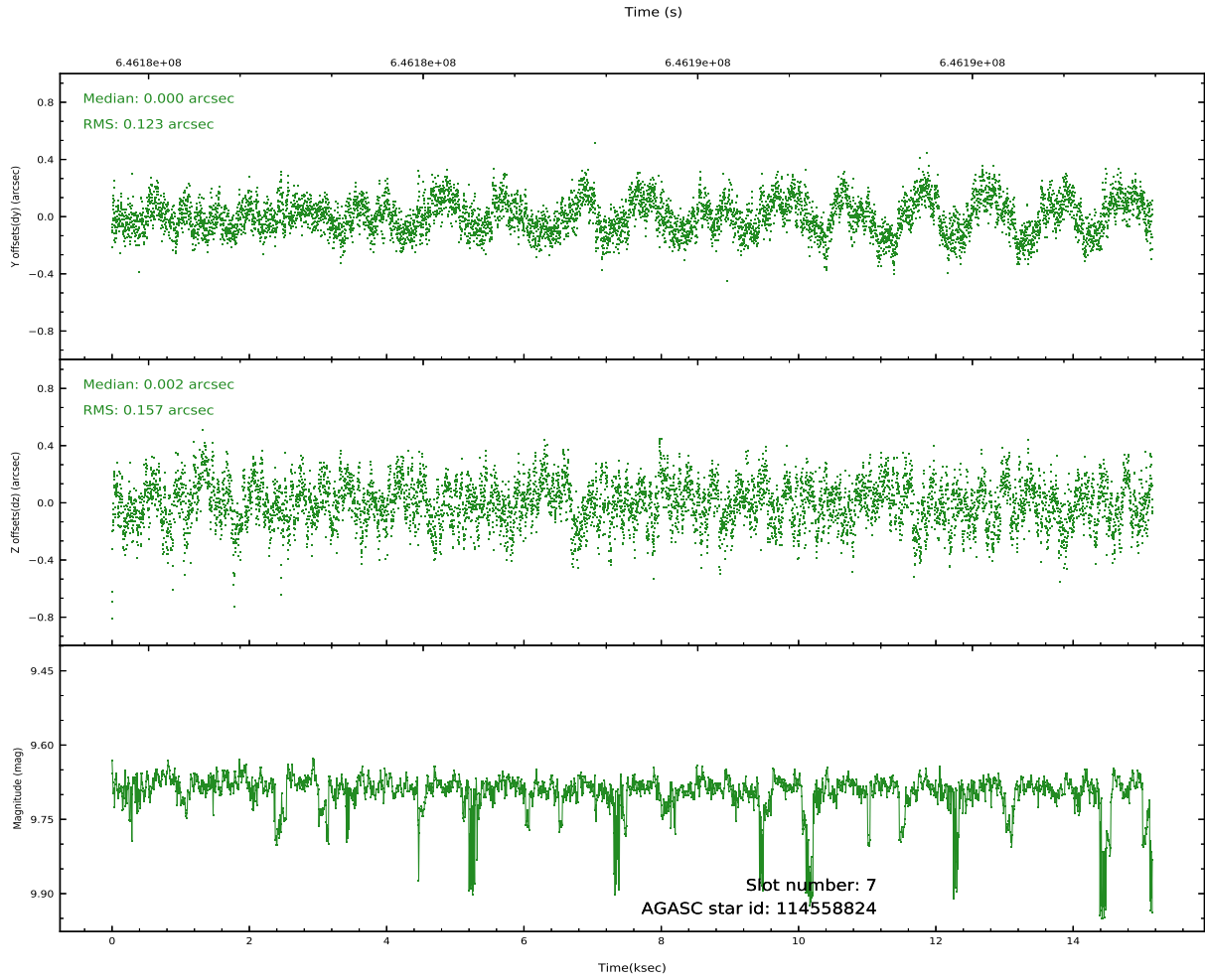
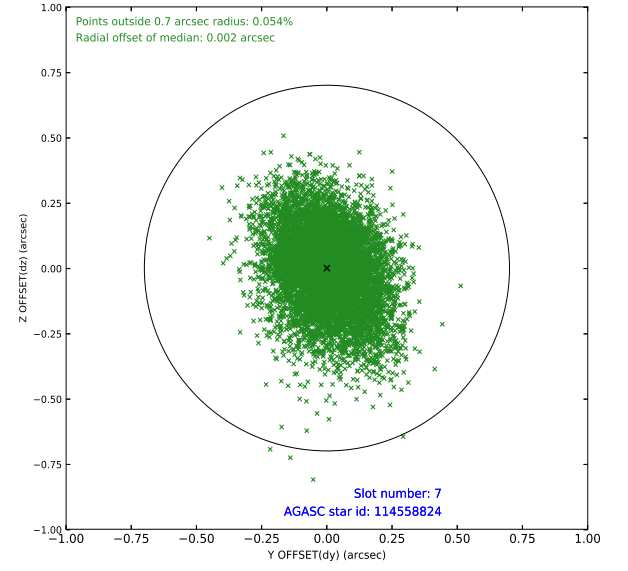
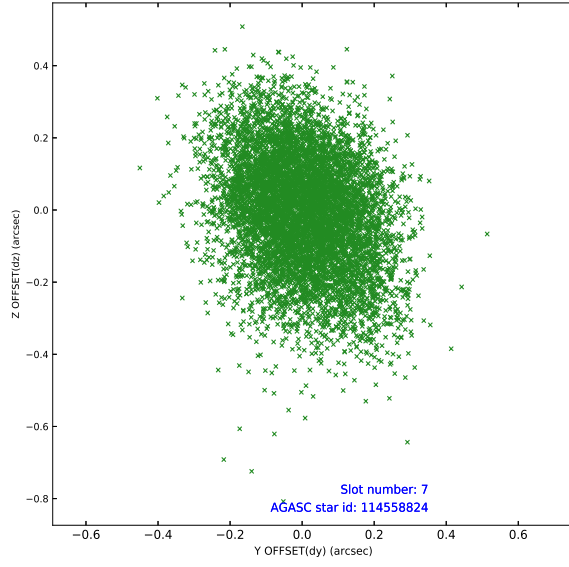


## 2.4.4 Slot 6



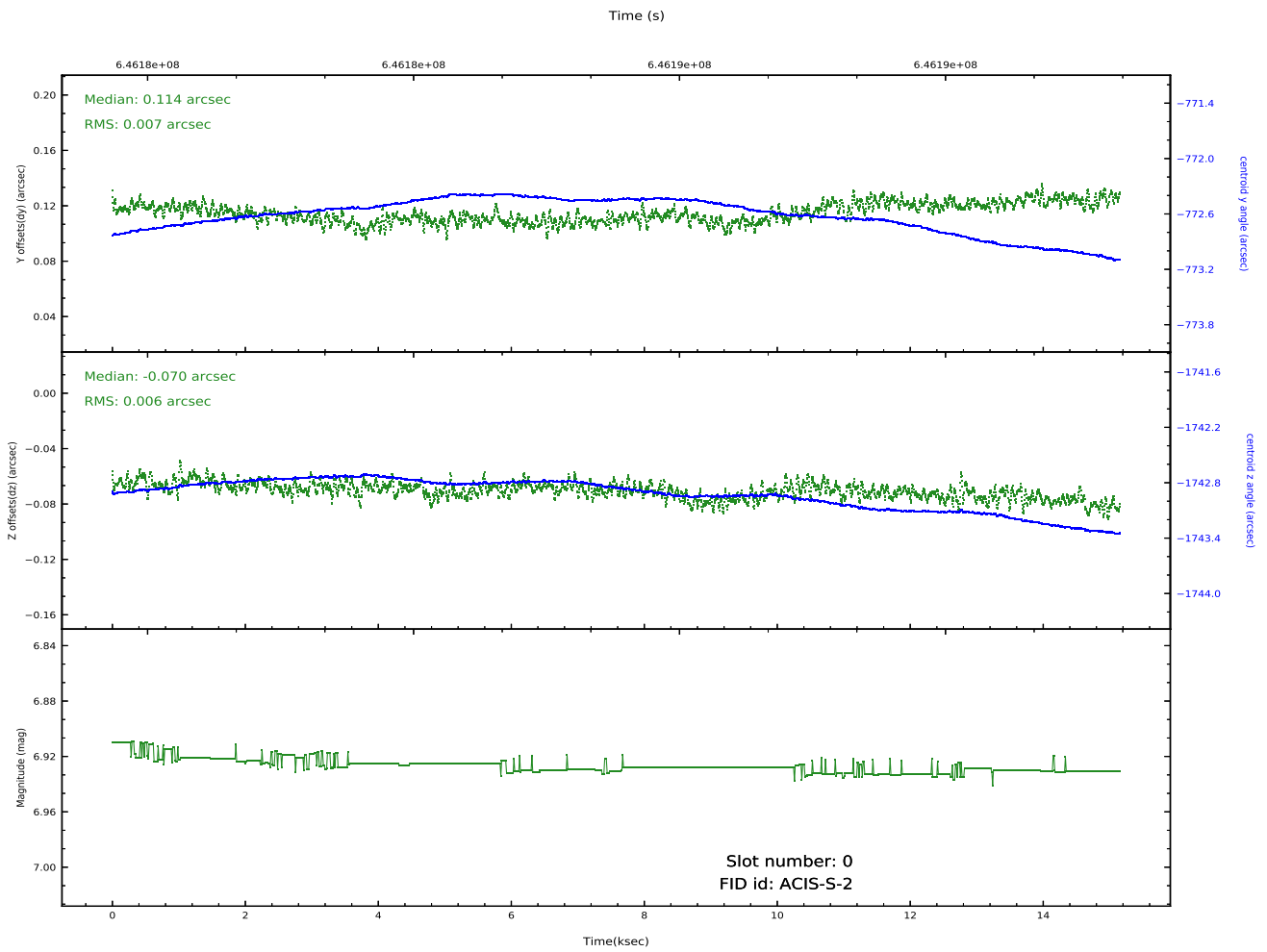
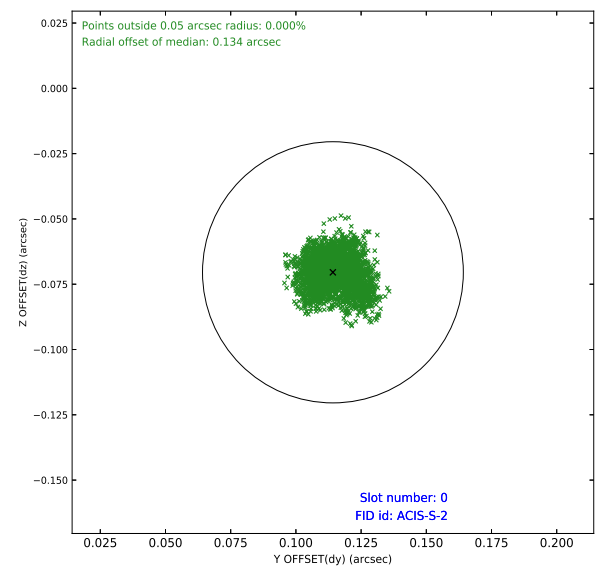
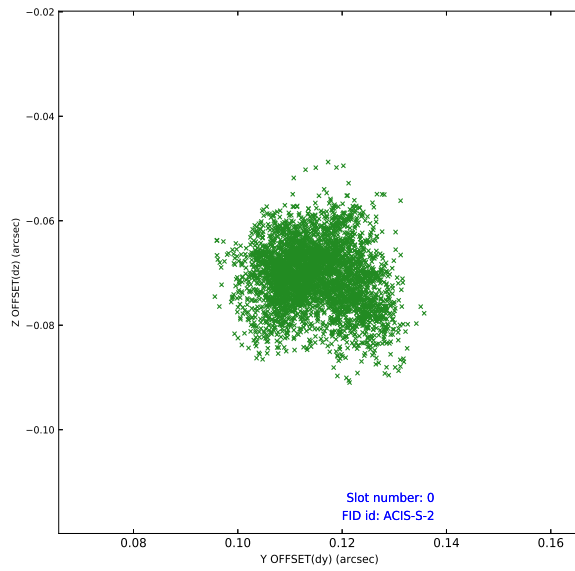


## 2.4.5 Slot 7

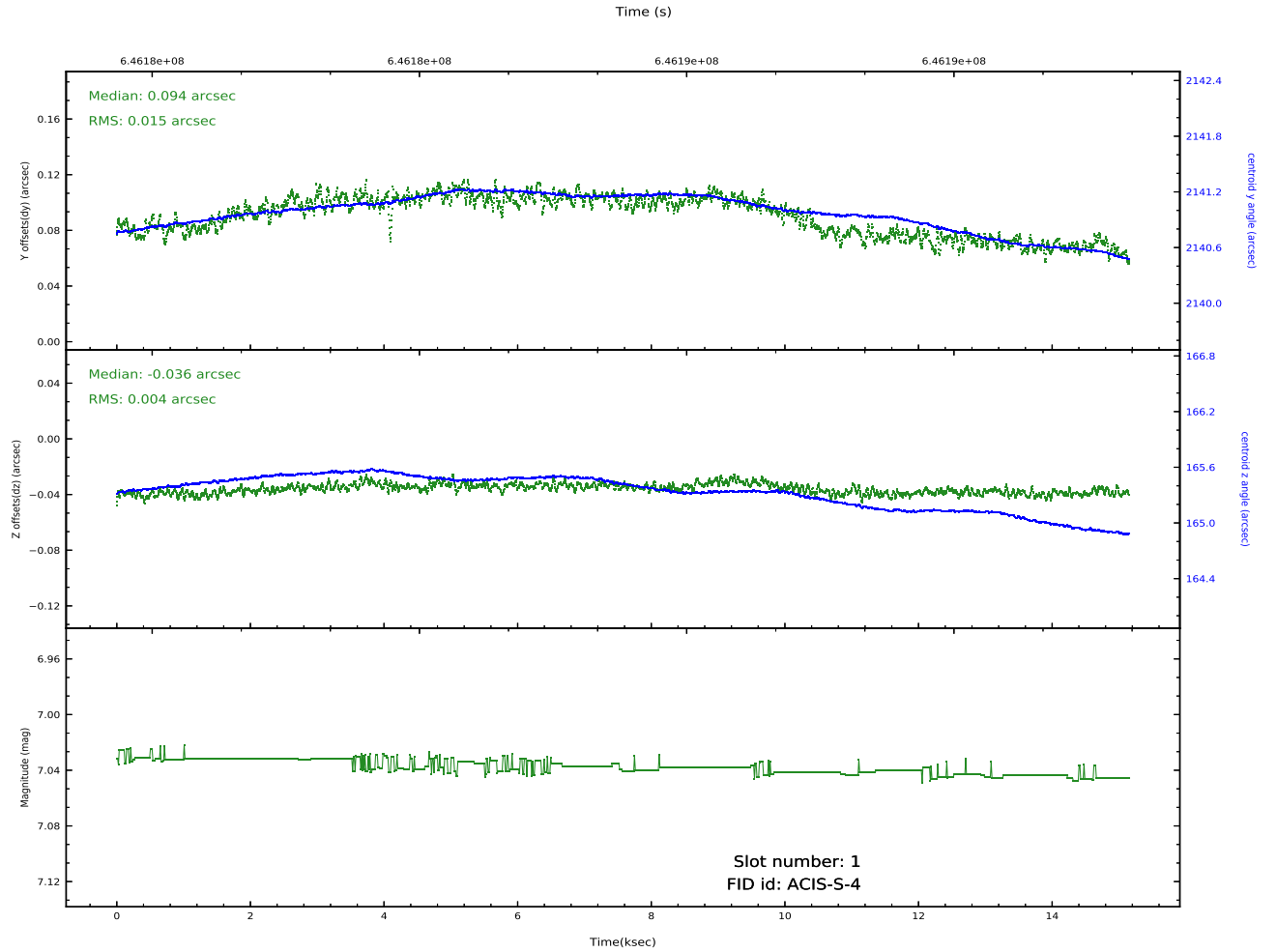
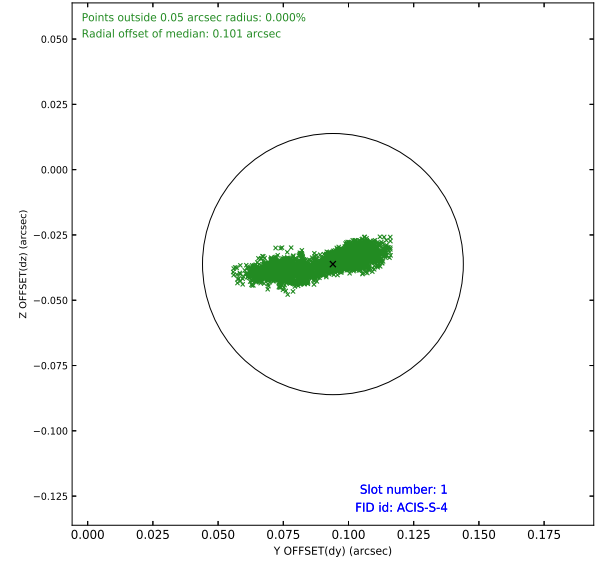
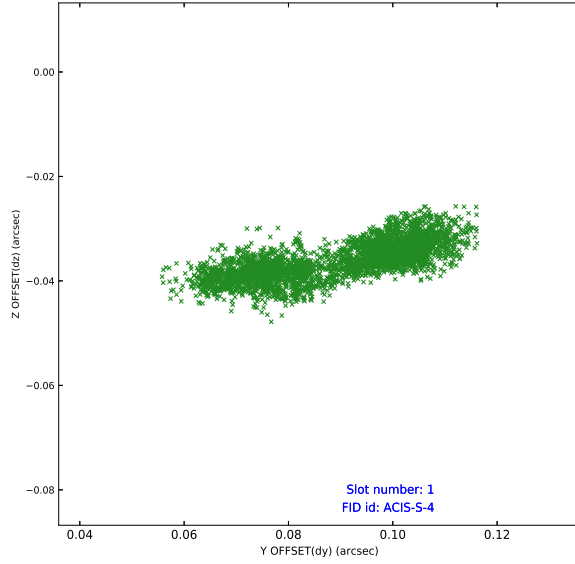


## 2.5 FID Slots

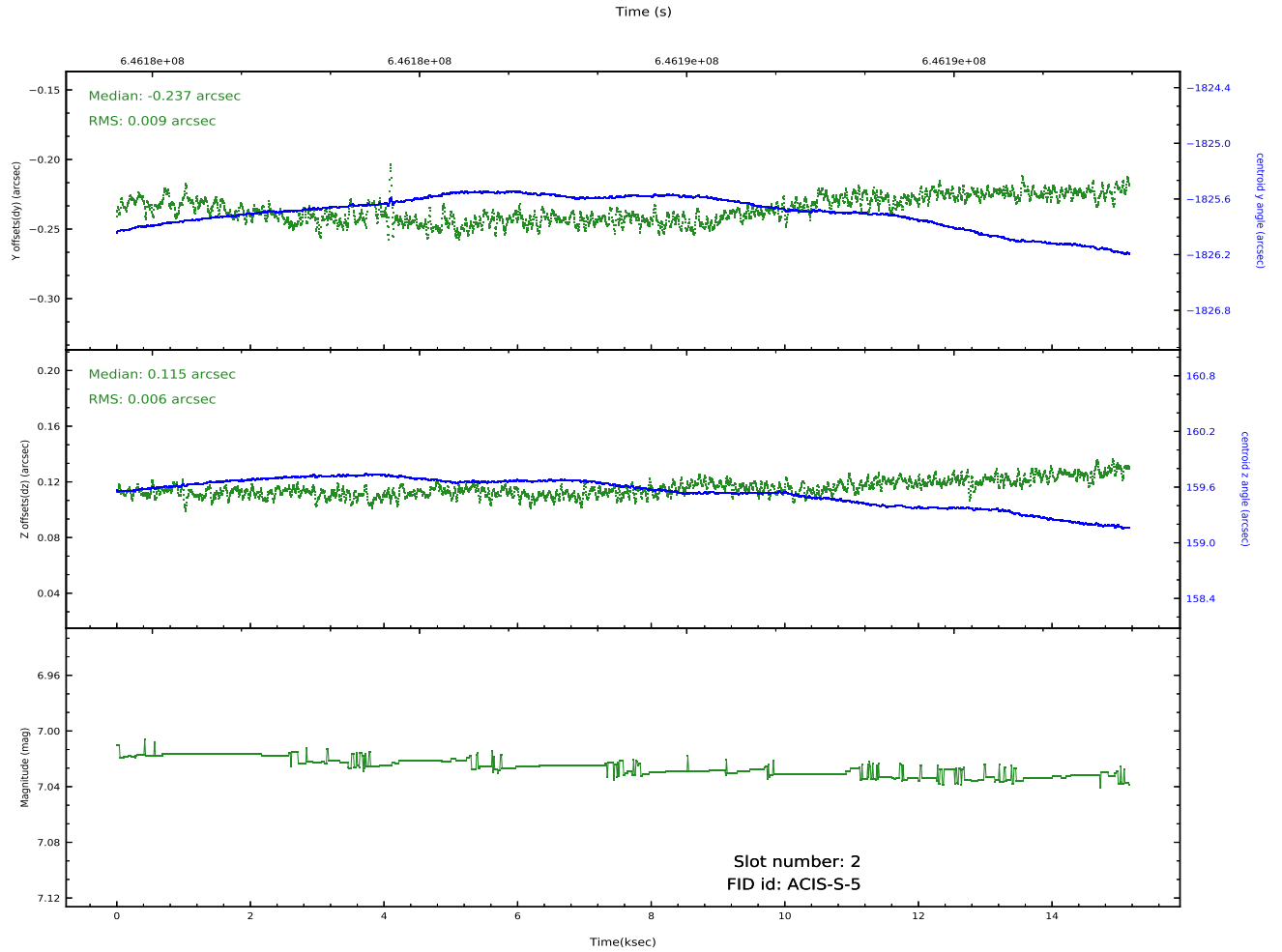
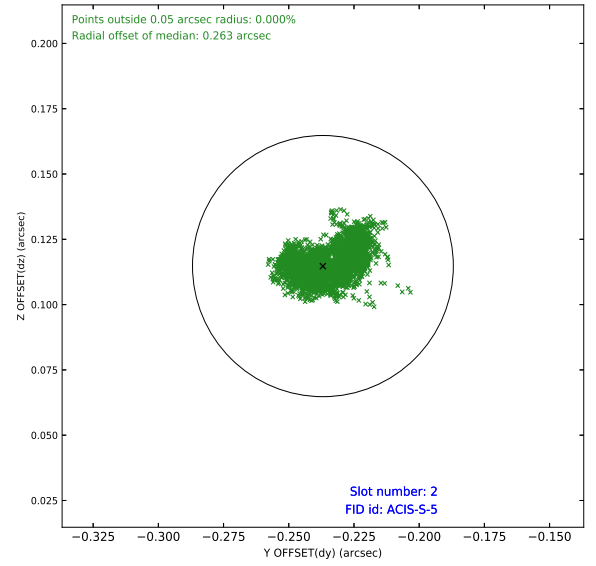
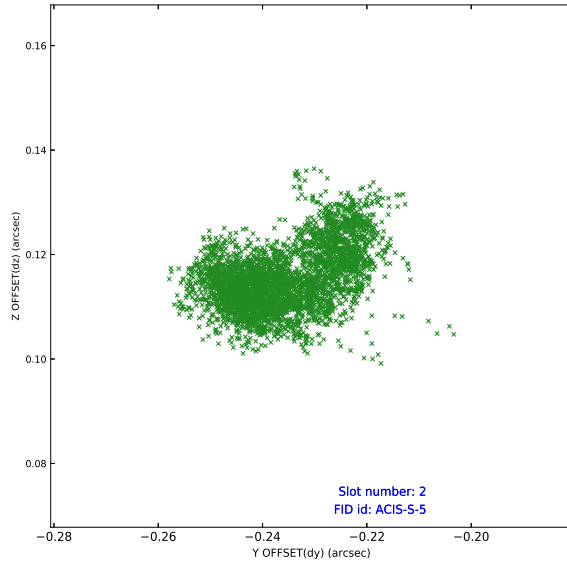
### 2.5.1 Slot 0



## 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)      | 2020.10.26      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 15.064577427387 |

### A.2 Comments