

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 22122 - L2 Version 1  
Chandra X-Ray Center

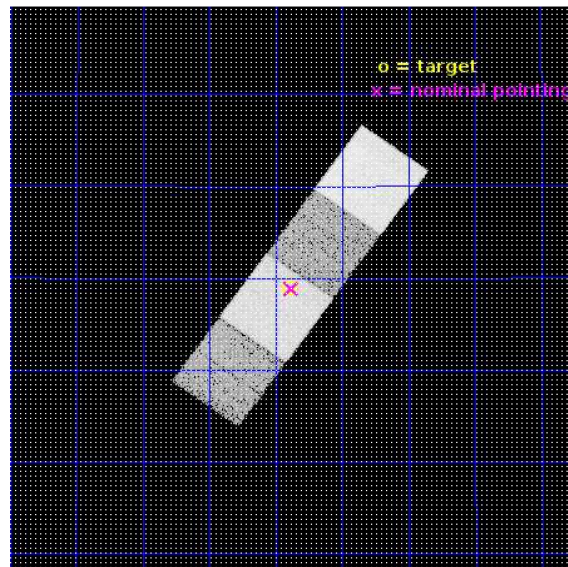
L2 Processing Date : Feb 25 2019

## Contents

|          |                               |           |
|----------|-------------------------------|-----------|
| <b>1</b> | <b>Front</b>                  | <b>2</b>  |
| <b>2</b> | <b>OBI</b>                    | <b>3</b>  |
| 2.1      | OBI . . . . .                 | 3         |
| 2.1.1    | Images . . . . .              | 3         |
| 2.1.2    | Bias . . . . .                | 3         |
| 2.1.3    | Parameters . . . . .          | 4         |
| 2.1.4    | Events . . . . .              | 4         |
| 2.2      | Compared Parameters . . . . . | 5         |
| 2.3      | Aspect . . . . .              | 6         |
| 2.4      | Star Slots . . . . .          | 9         |
| 2.4.1    | Slot 3 . . . . .              | 9         |
| 2.4.2    | Slot 4 . . . . .              | 10        |
| 2.4.3    | Slot 5 . . . . .              | 11        |
| 2.4.4    | Slot 6 . . . . .              | 12        |
| 2.4.5    | Slot 7 . . . . .              | 13        |
| 2.5      | FID Slots . . . . .           | 14        |
| 2.5.1    | Slot 0 . . . . .              | 14        |
| 2.5.2    | Slot 1 . . . . .              | 15        |
| 2.5.3    | Slot 2 . . . . .              | 16        |
| <b>A</b> | <b>Summary</b>                | <b>17</b> |
| A.1      | Status . . . . .              | 17        |
| A.2      | Comments . . . . .            | 17        |

# 1 Front

|          |                                                |                                             |
|----------|------------------------------------------------|---------------------------------------------|
| seq_num  | 801782                                         | Sequence number                             |
| obs_id   | 22122                                          | Observation id                              |
| title    | Galaxy collisions and shocks in compact groups | Proposal title                              |
| observer | Ewan O'Sullivan                                | Principal investigator                      |
| object   | HCG57                                          | Source name                                 |
| dtcycle  | 0                                              | &#160                                       |
| cycle    | P                                              | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 174.475                                        | Observer's specified target<br>RA [deg]     |
| dec_targ | 21.981389                                      | Observer's specified target<br>Dec [deg]    |
| ra_nom   | 174.47067974721                                | Nominal RA [deg]                            |
| dec_nom  | 21.980882579212                                | Nominal Dec [deg]                           |
| roll_nom | 125.46050394612                                | Nominal Roll [deg]                          |
| revision | 1                                              | Processing version of data                  |
| ontime   | 15221.000117183                                | Sum of GTIs [s]                             |
| livetime | 15022.126545114                                | Livetime [s]                                |
| ontime5  | 15221.000117183                                | Sum of GTIs [s]                             |
| ontime6  | 15217.85902679                                 | Sum of GTIs [s]                             |
| ontime7  | 15221.000117183                                | Sum of GTIs [s]                             |
| ontime8  | 15217.858986497                                | Sum of GTIs [s]                             |
| l2events | 174835                                         | Number of level 2 events                    |

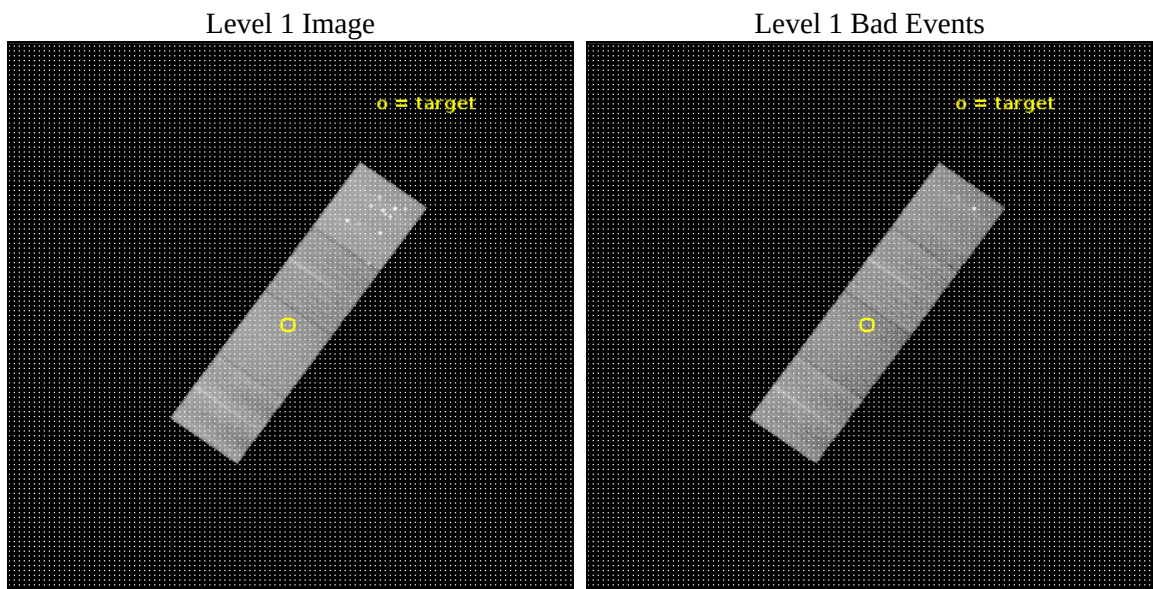




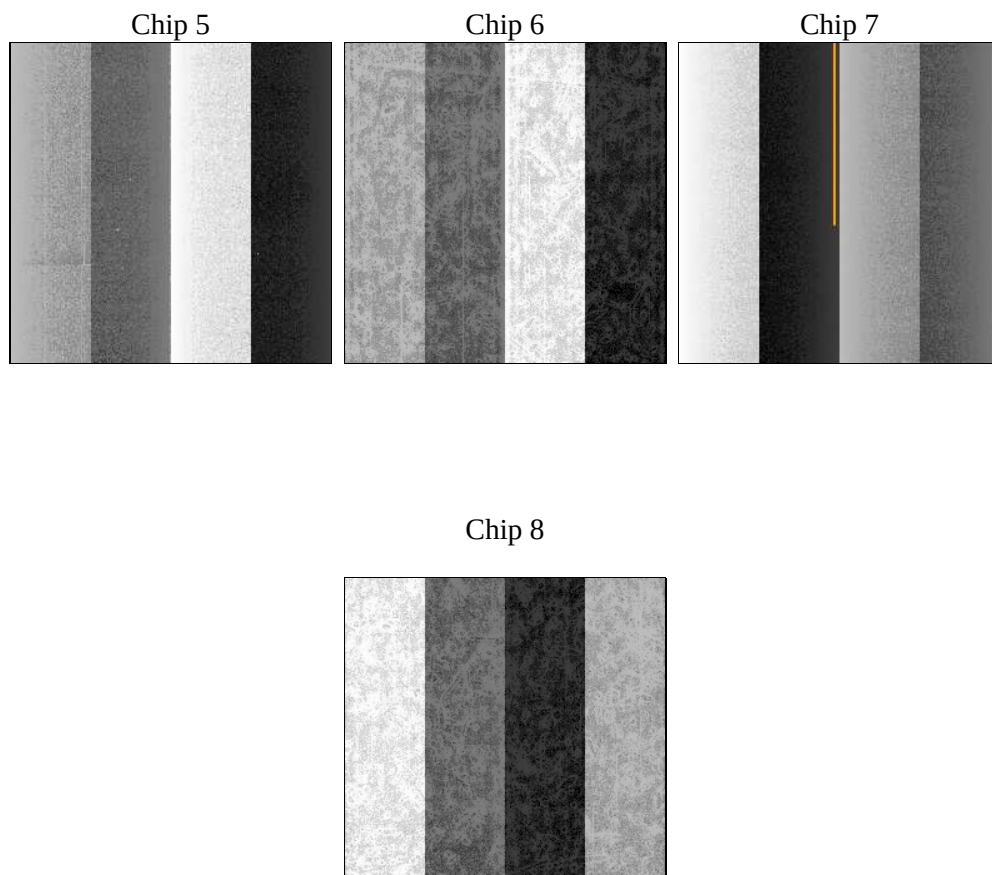
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 15000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.7.1              | Processing system revision     | ontime         | 15221.000117183 | Sum of GTIs [s]                         |
| caldsver | 4.8.2               | &#160                          | ontime5        | 15221.000117183 | Sum of GTIs [s]                         |
| date     | 2019-02-25T23:02:15 | Date and time of file creation | ontime6        | 15217.85902679  | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime7        | 15221.000117183 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 15217.858986497 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 651453          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 5  | ccd 6  | ccd 7  | ccd 8  |
|-----------------|--------|--------|--------|--------|
| level 1 events  | 218883 | 124282 | 152529 | 155759 |
| rejected events | 102478 | 110747 | 86730  | 116281 |
| rejected %      | 46%    | 89%    | 56%    | 74%    |

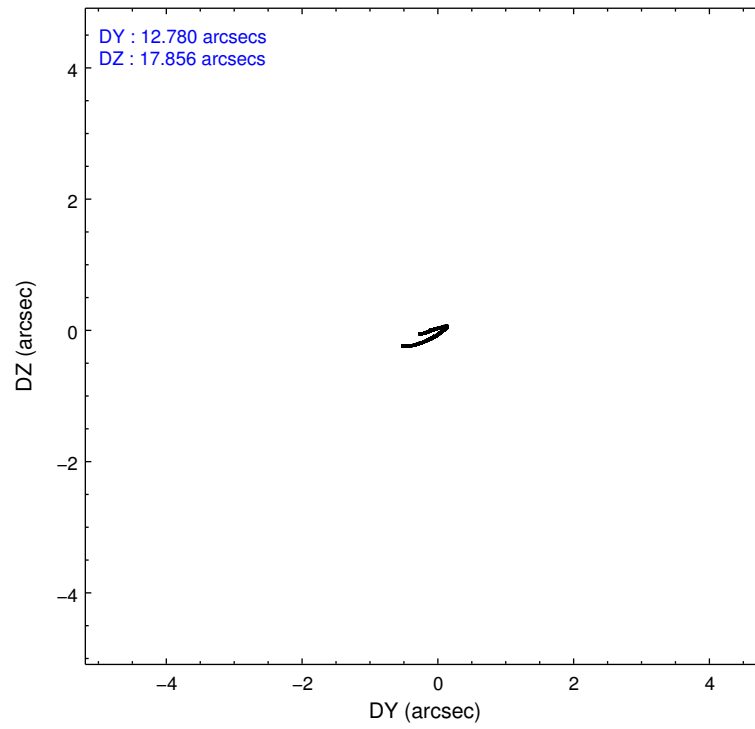
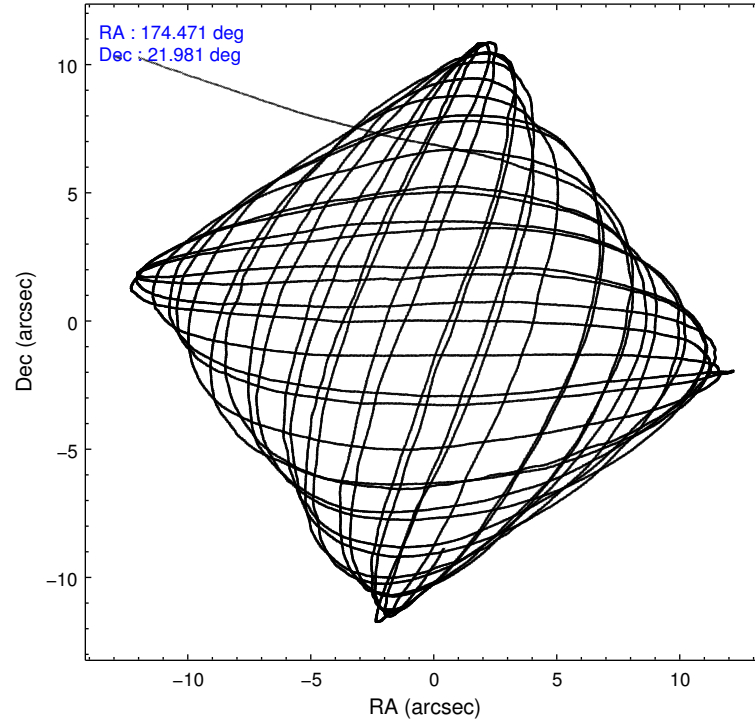
|                | ccd 5 | ccd 6  | ccd 7 | ccd 8  |
|----------------|-------|--------|-------|--------|
| grade 0 events | 26483 | 4051   | 5479  | 10411  |
|                | 12%   | 3%     | 3%    | 6%     |
| grade 1 events | 522   | 53     | 206   | 126    |
|                | 0%    | 0%     | 0%    | 0%     |
| grade 2 events | 33364 | 3483   | 13899 | 9903   |
|                | 15%   | 2%     | 9%    | 6%     |
| grade 3 events | 2968  | 1272   | 5191  | 4032   |
|                | 1%    | 1%     | 3%    | 2%     |
| grade 4 events | 2887  | 1173   | 5065  | 3700   |
|                | 1%    | 0%     | 3%    | 2%     |
| grade 5 events | 12186 | 5070   | 15031 | 7949   |
|                | 5%    | 4%     | 9%    | 5%     |
| grade 6 events | 50761 | 3563   | 36204 | 11464  |
|                | 23%   | 2%     | 23%   | 7%     |
| grade 7 events | 89712 | 105617 | 71454 | 108174 |
|                | 40%   | 84%    | 46%   | 69%    |

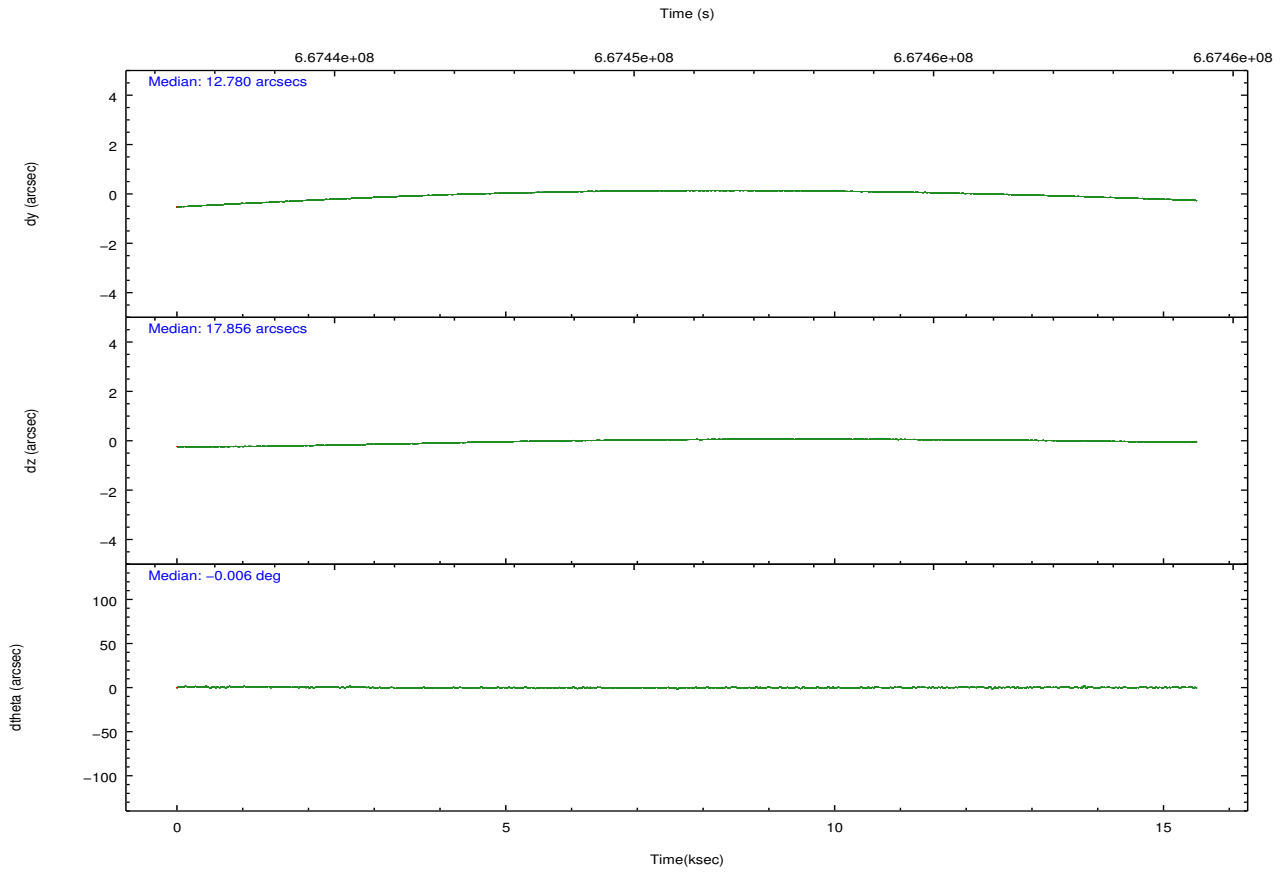
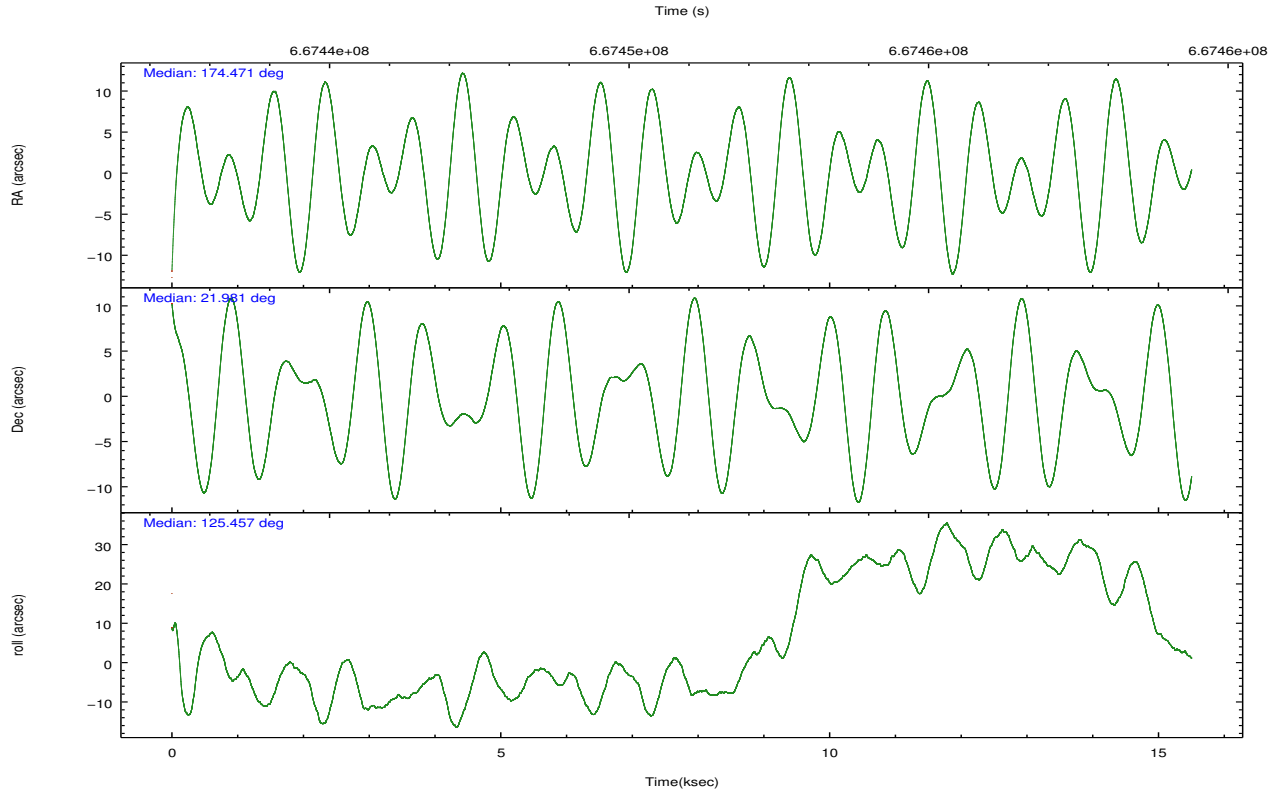
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-5678           | ACIS-5678            |
| Grating                           | NONE                | NONE                 |
| Data mode                         | VFAINT              | VFAINT               |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 174.497757          | 174.4706797472139    |
| [deg] Pointing Dec                | 21.969826           | 21.98088257921221    |
| [deg] Pointing Roll               | 125.293733          | 125.4605039461198    |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 |
| [mm] SIM translation stage pos    | -190.132523         | -190.1425803651734   |
| [mm] SIM translation stage offset | 0                   | 0.01005778216563158  |
| [s] Observation start time (MET)  | 667443642.184000    | 667442519.6336499    |
| Observation start date            | 2019-02-25T00:59:33 | 2019-02-25T00:41:59  |
| [s] Observation end time (MET)    | 667458642.184000    | 667459359.35965      |
| Observation end date              | 2019-02-25T05:09:33 | 2019-02-25T05:22:39  |
| Read mode                         | TIMED               | TIMED                |

| Parameter                             | Planned   | Actual  |
|---------------------------------------|-----------|---------|
| Obspar format version number          | 7         | 7       |
| Obspar file type                      | PREDICTED | ACTUAL  |
| Obspar update status                  | NONE      | UPDATED |
| CCD I0 on                             | N         | N       |
| CCD I1 on                             | N         | N       |
| CCD I2 on                             | O1        | N       |
| CCD I3 on                             | O2        | N       |
| CCD S0 on                             | N         | N       |
| CCD S1 on                             | Y         | Y       |
| CCD S2 on                             | Y         | Y       |
| CCD S3 on                             | Y         | Y       |
| CCD S4 on                             | Y         | Y       |
| CCD S5 on                             | N         | N       |
| Number of optional ACIS chips dropped | 2         | 2       |
| On-chip summing requested             | N         | N       |
| Subarray requested                    | NONE      | NONE    |
| Alternating exposures requested       | N         | N       |
| [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect



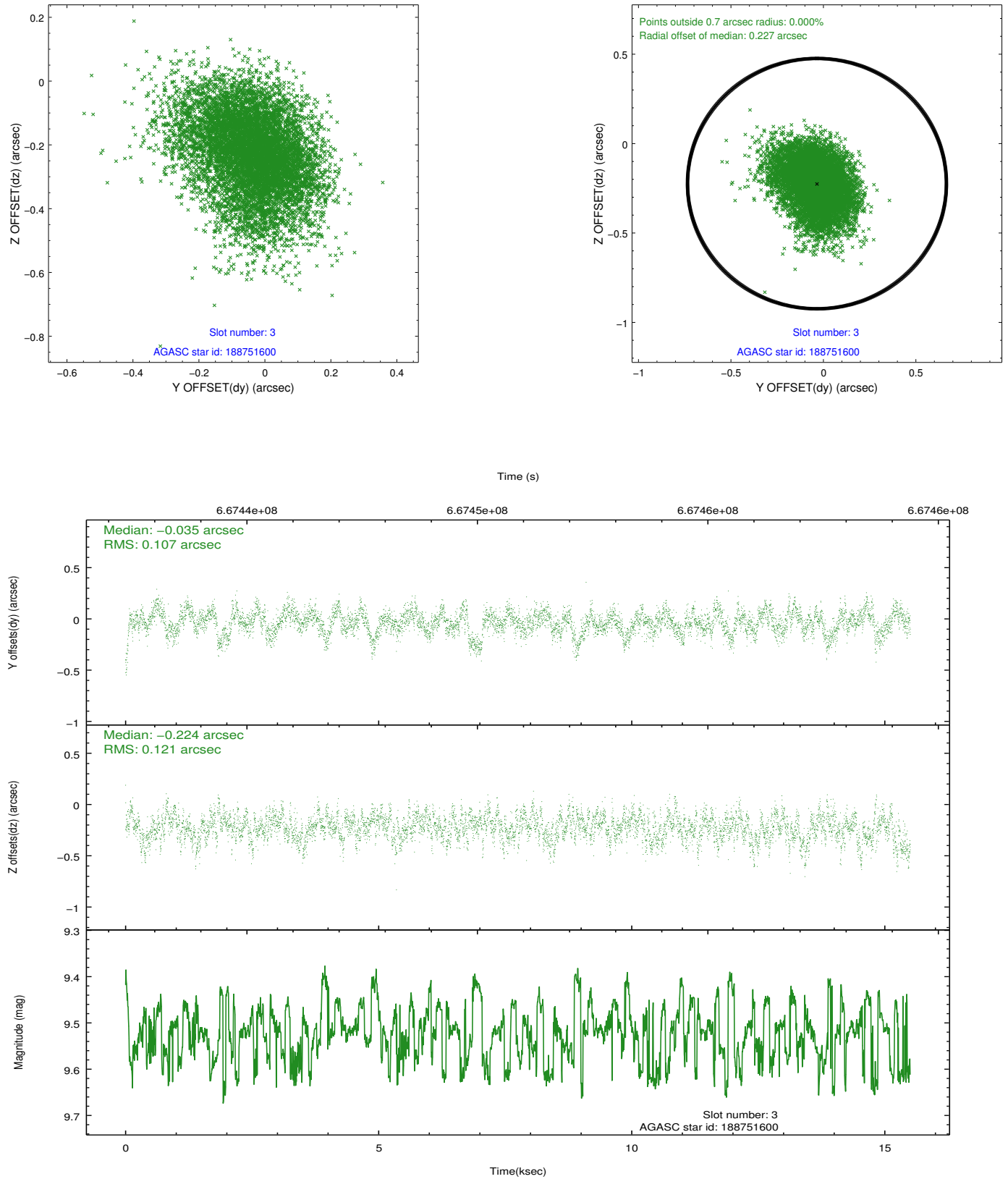


# Slot Statistics

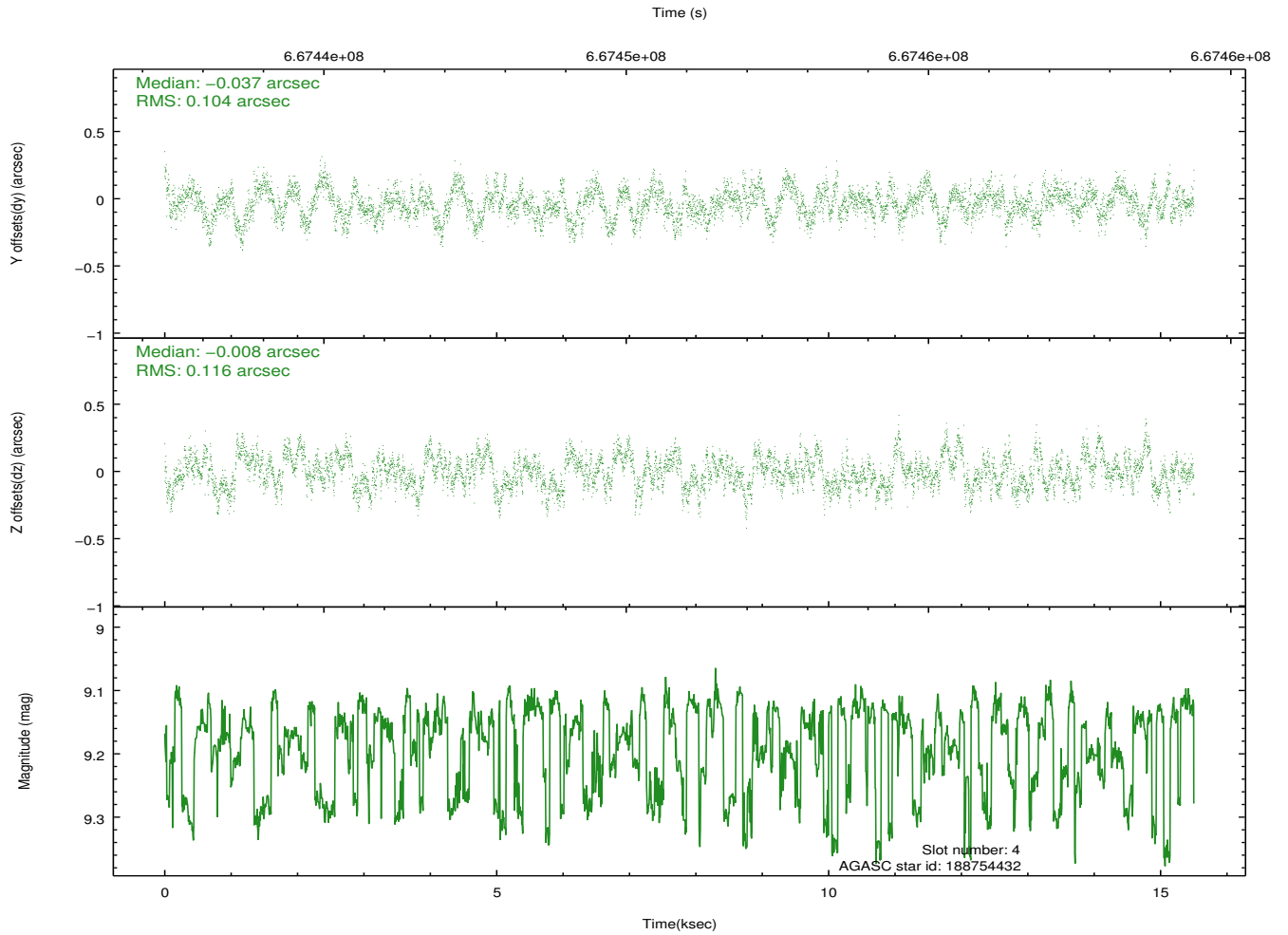
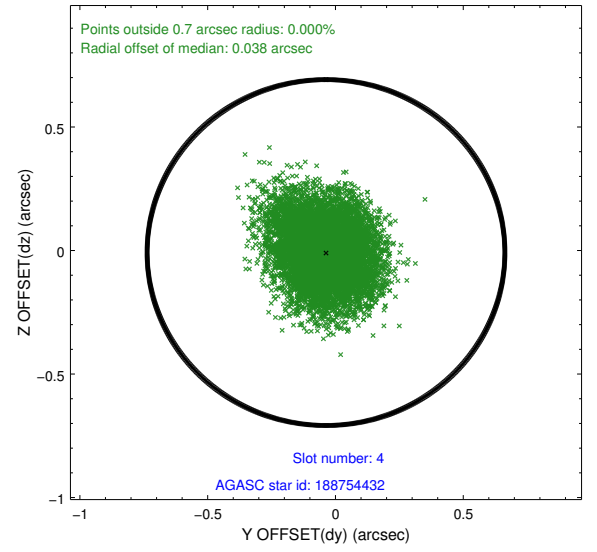
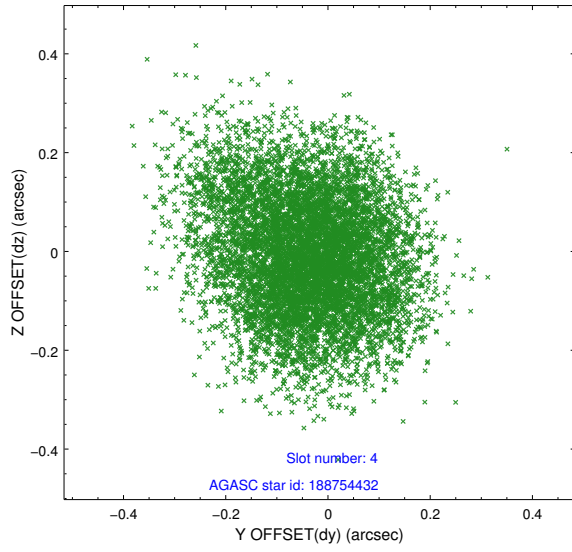
| id | status | used | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_x |
|----|--------|------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|--------|
| 0  | FID    |      | 7.02 | 3782  | 1.000    | -0.249 | -0.186 | 0.012 | 0.019 | 0.000000   | 0.000000  | -765.82  | -1739  |
| 1  | FID    |      | 7.15 | 3782  | 1.000    | 0.696  | 0.170  | 0.011 | 0.034 | 0.000000   | 0.000000  | 2148.19  | 169    |
| 2  | FID    |      | 7.13 | 3782  | 1.000    | -0.477 | 0.024  | 0.014 | 0.027 | 0.000000   | 0.000000  | -1818.59 | 162    |
| 3  | GUIDE  | used | 9.52 | 7545  | 1.000    | -0.035 | -0.224 | 0.172 | 0.279 | 174.166921 | 21.601986 | -440.28  | 1669   |
| 4  | GUIDE  | used | 9.18 | 7552  | 1.000    | -0.037 | -0.008 | 0.168 | 0.266 | 174.164183 | 22.388902 | 1874.12  | 34     |
| 5  | GUIDE  | used | 8.40 | 7560  | 1.000    | 0.060  | 0.130  | 0.151 | 0.246 | 174.474570 | 21.745106 | -614.73  | 530    |
| 6  | GUIDE  | used | 7.73 | 7561  | 1.000    | 0.035  | 0.066  | 0.126 | 0.192 | 174.548855 | 21.871657 | -386.60  | 65     |
| 7  | GUIDE  | used | 9.08 | 7555  | 1.000    | -0.016 | 0.046  | 0.144 | 0.236 | 174.426696 | 21.691710 | -679.55  | 773    |

## 2.4 Star Slots

### 2.4.1 Slot 3

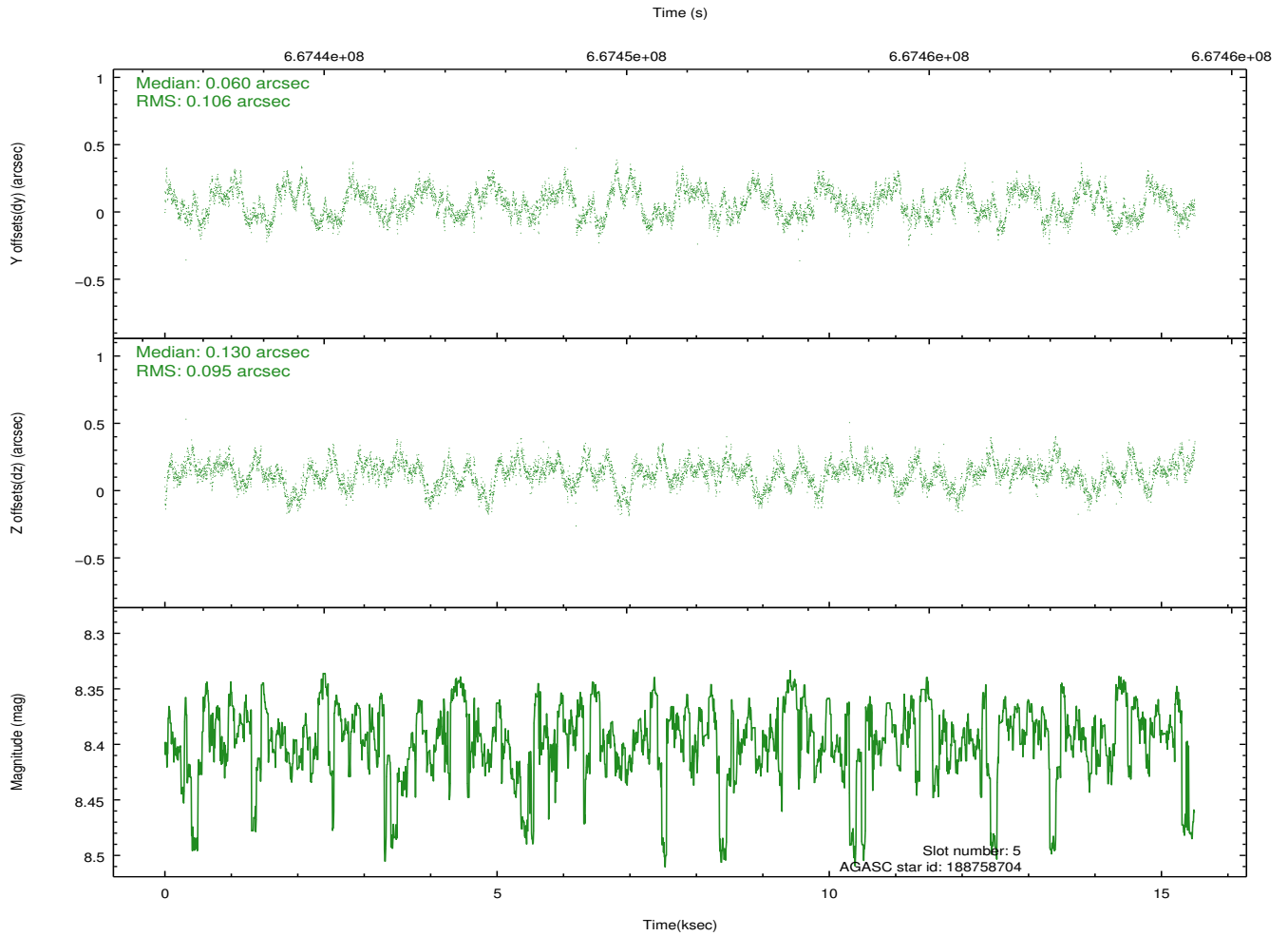
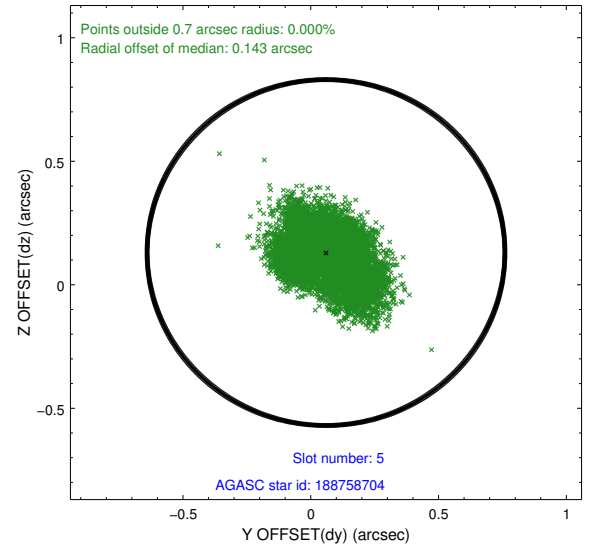
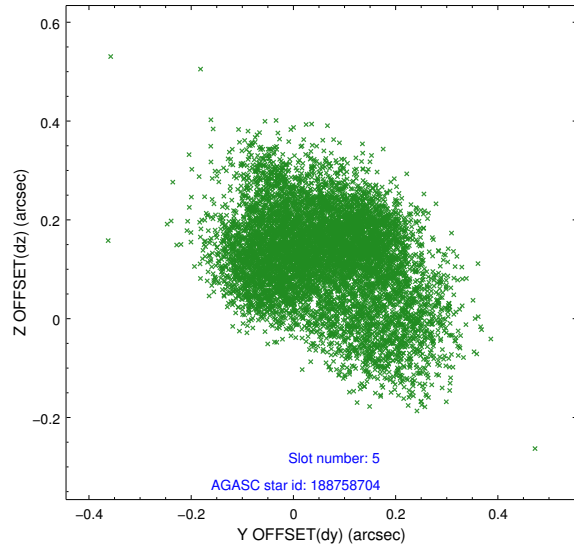


## 2.4.2 Slot 4

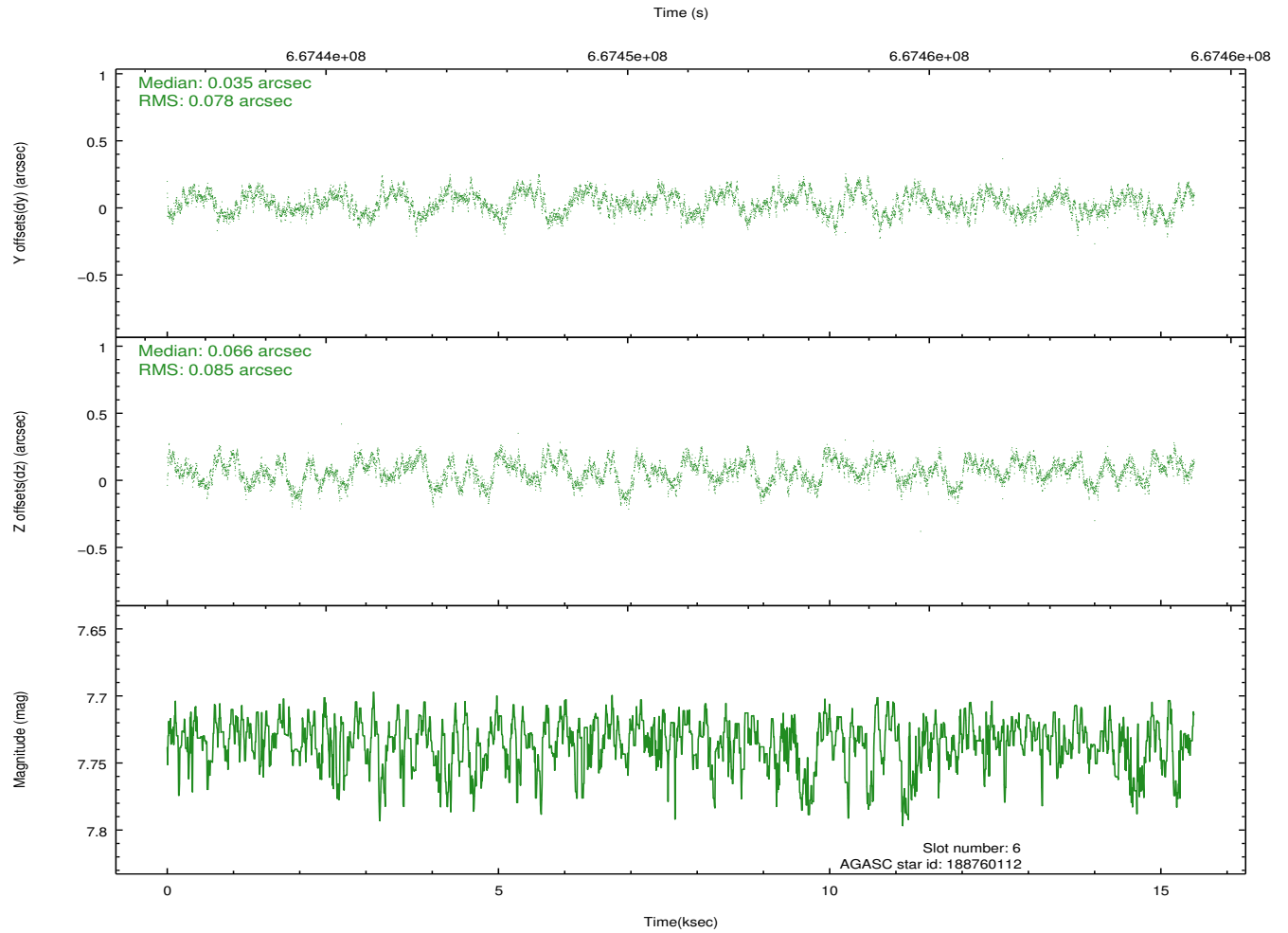
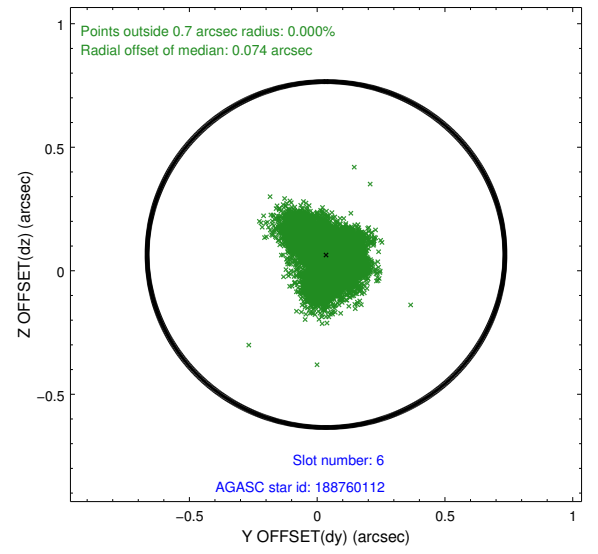
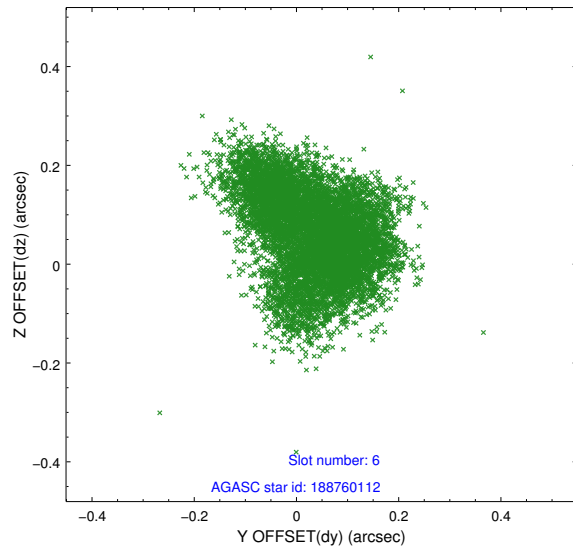




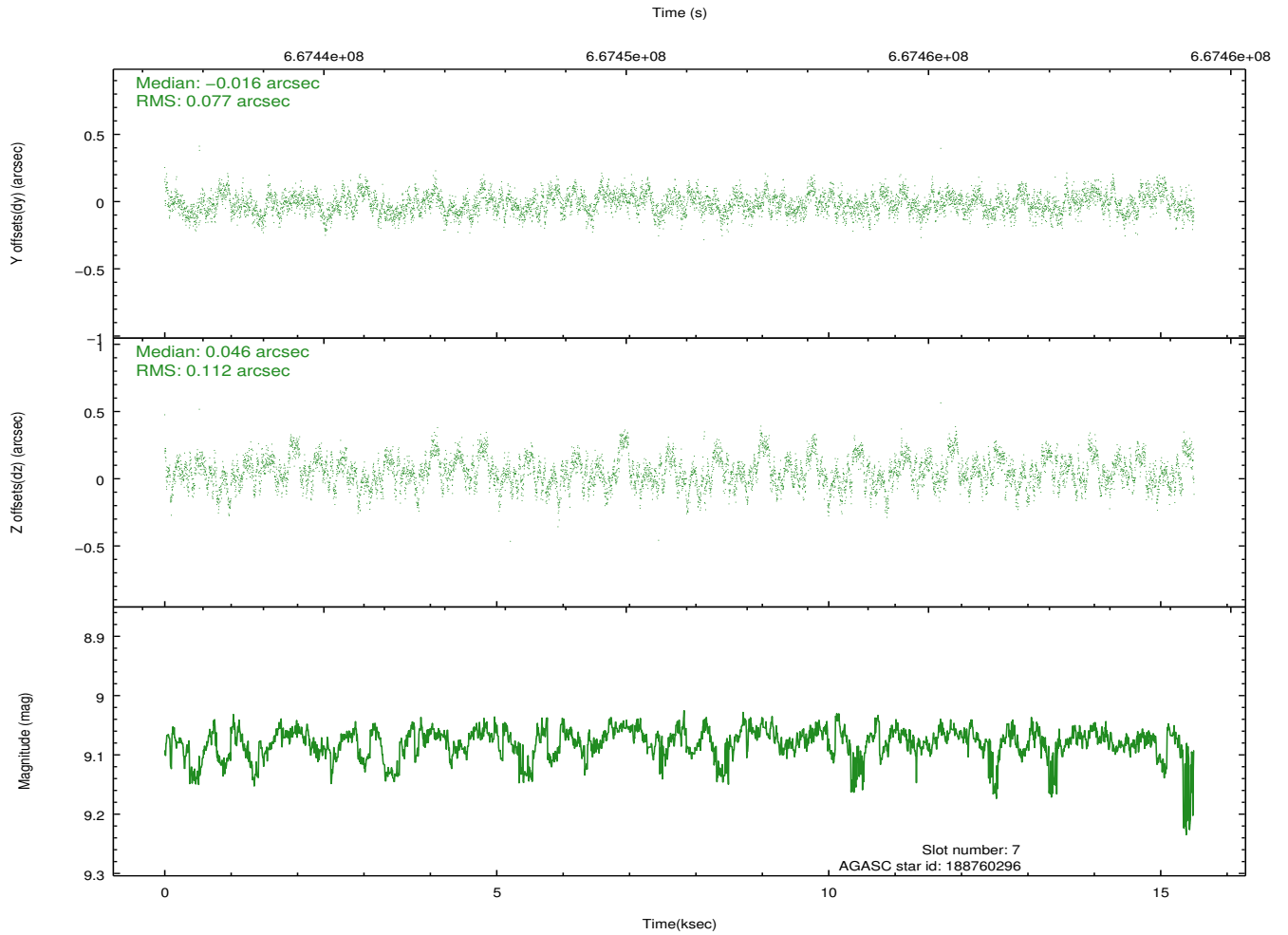
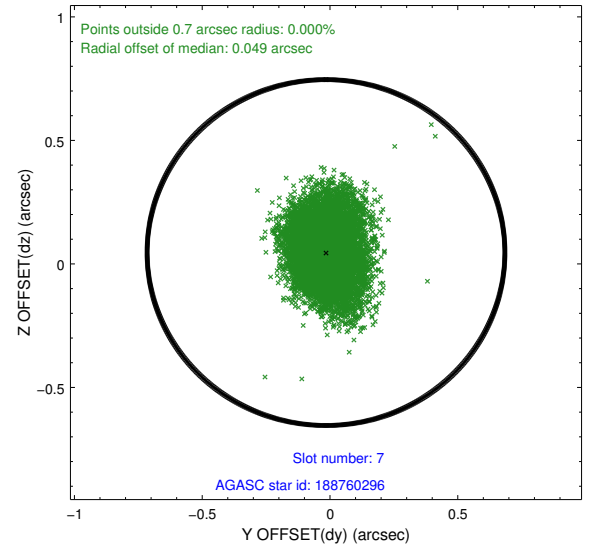
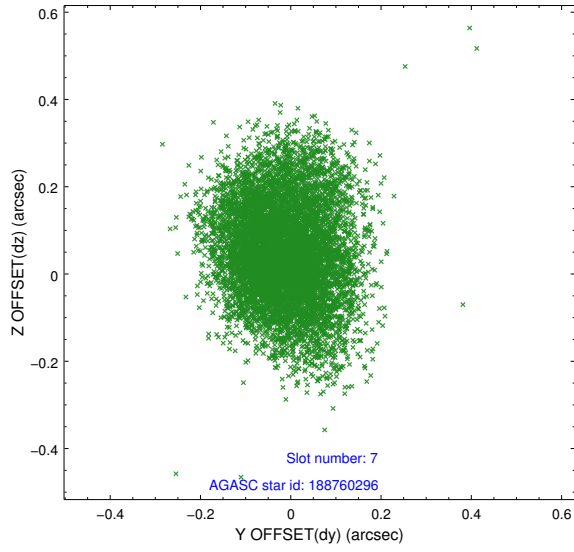
### 2.4.3 Slot 5



## 2.4.4 Slot 6

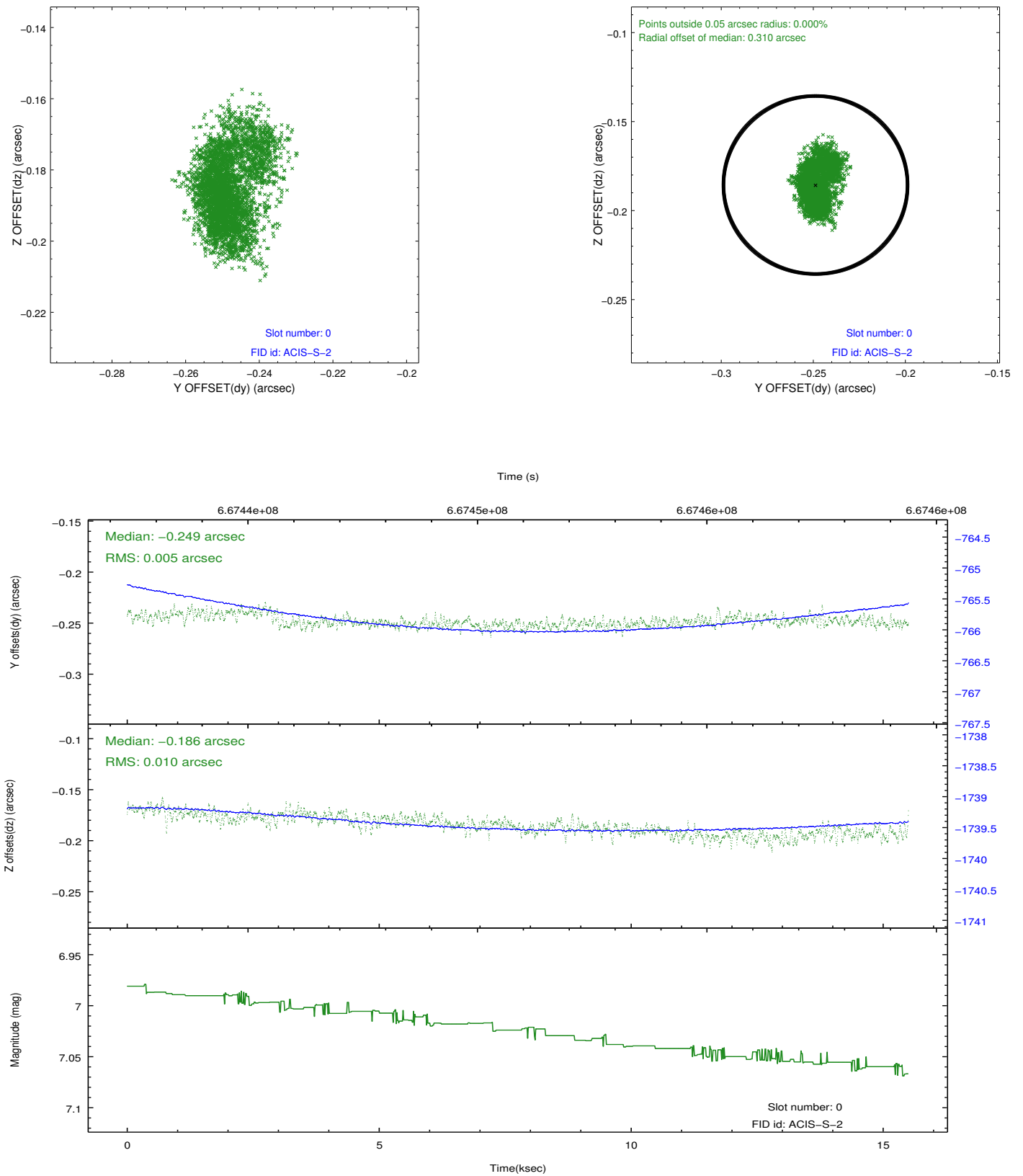


## 2.4.5 Slot 7

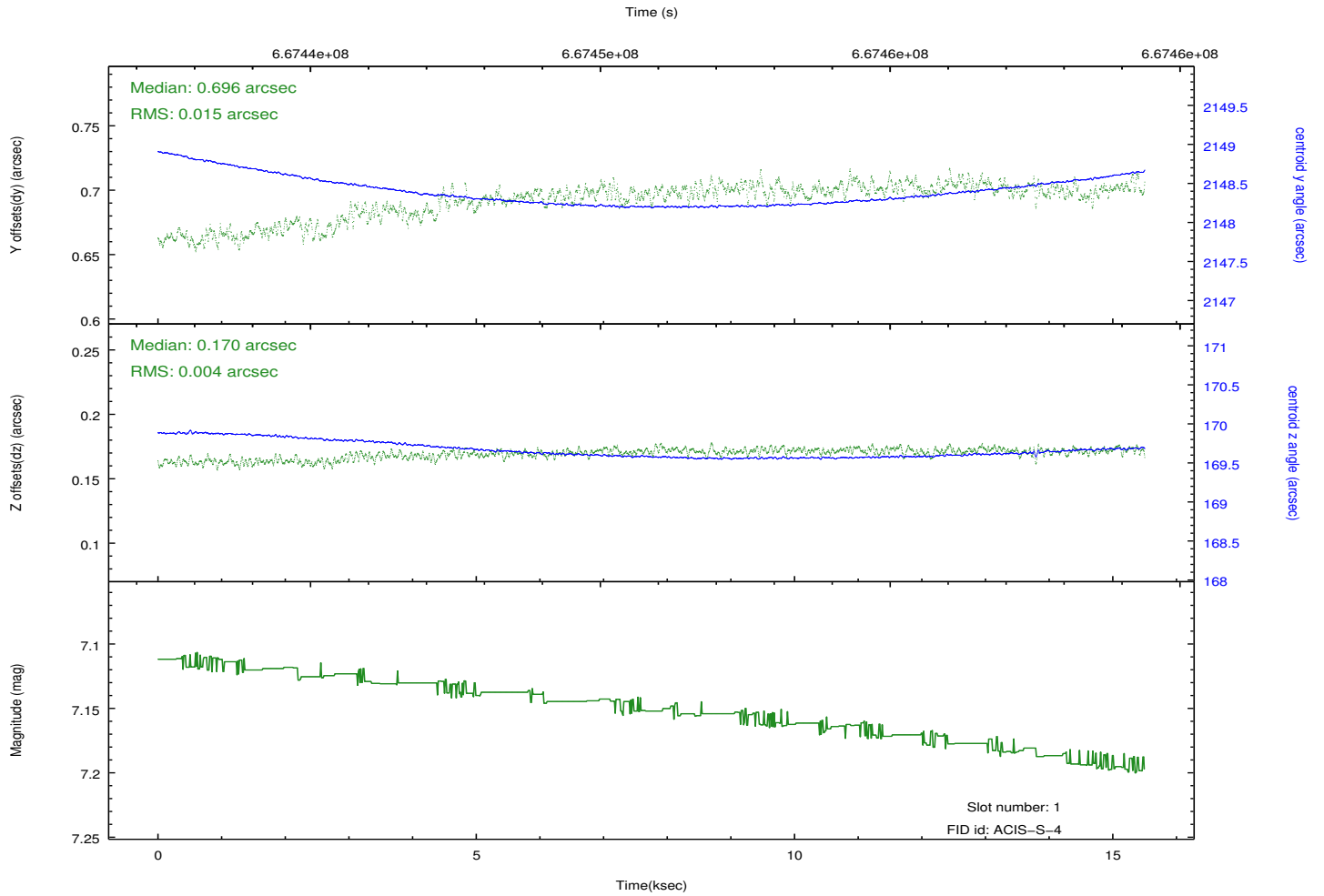
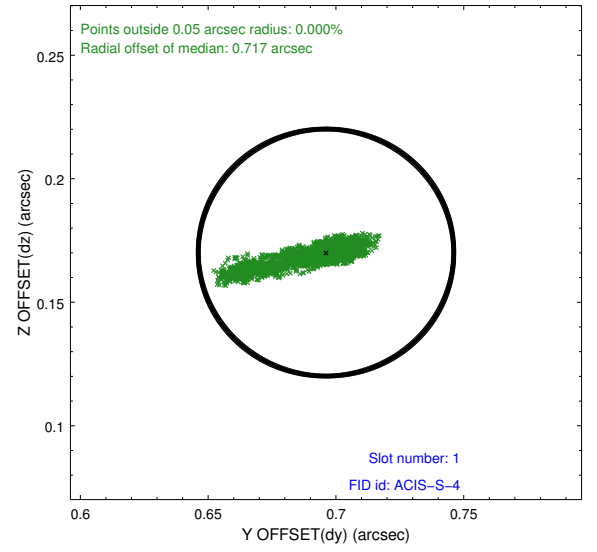
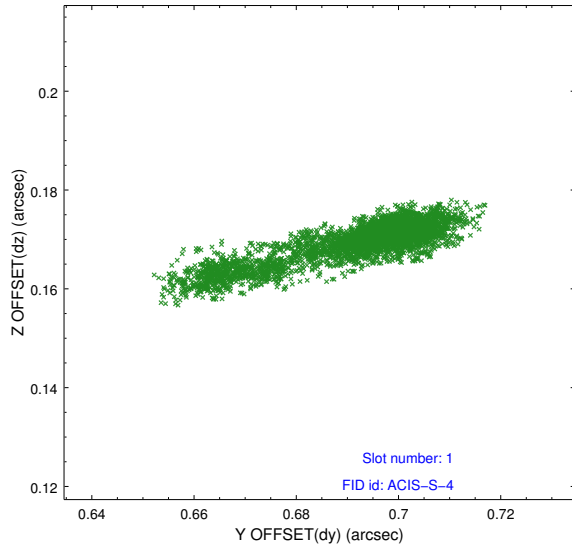


## 2.5 FID Slots

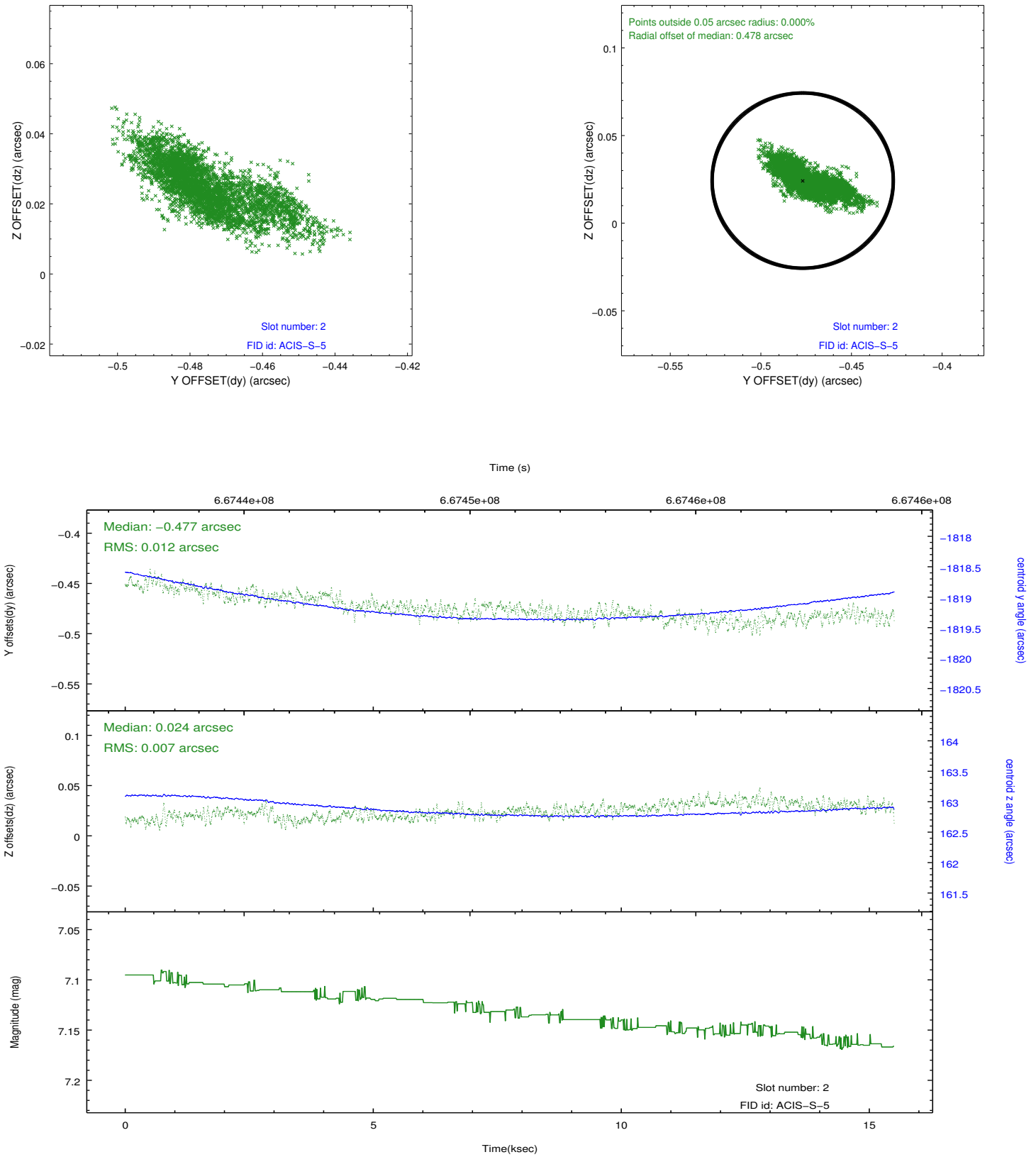
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



## A Summary

### A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Joy Nichols     |
| V&V Date (YYYY-MM-DD)      | 2019.02.26      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 15.221000117183 |

### A.2 Comments