

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 11553 - L2 Version 2  
Chandra X-Ray Center

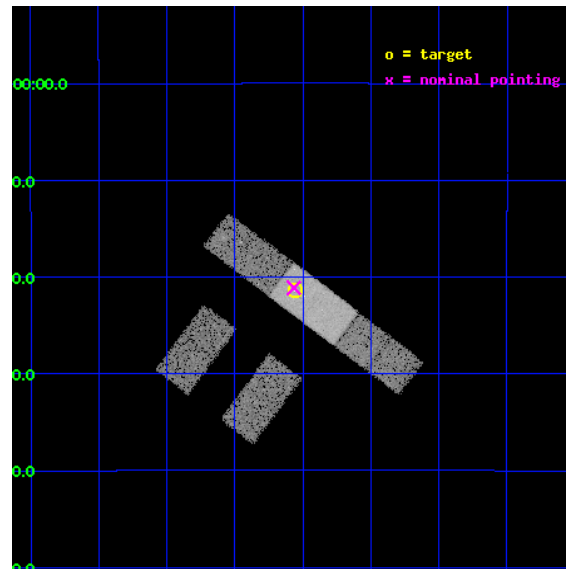
L2 Processing Date : Jun 20 2012

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# 1 Front

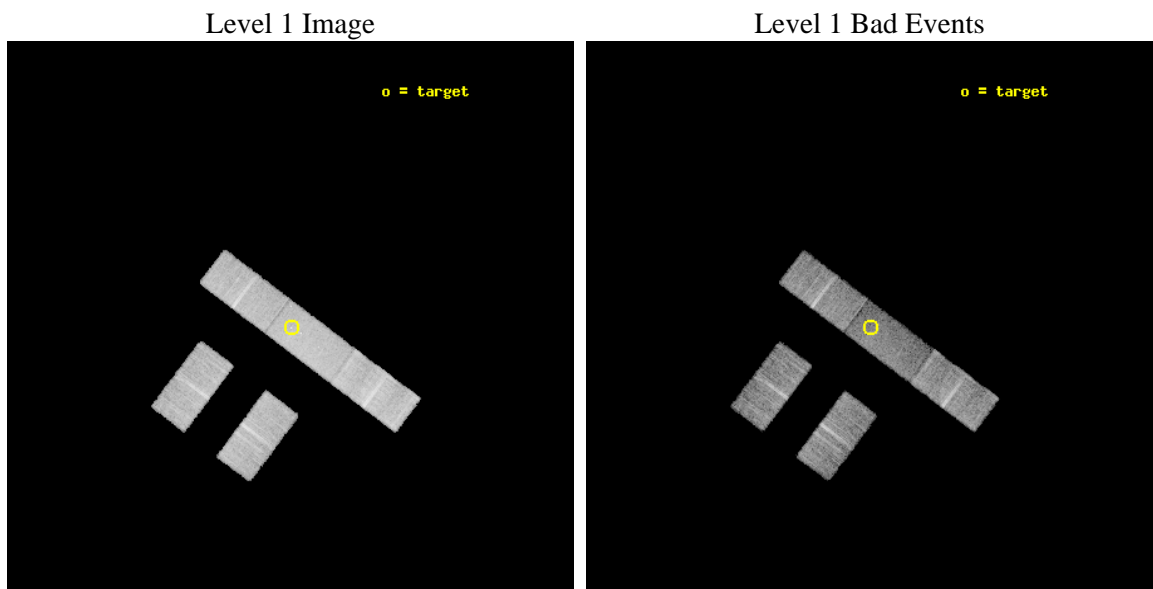
|          |   |   |
|----------|---|---|
| seq_num  | 702139  | Sequence number                             |
| obs_id   | 11553   | Observation id                              |
| title    | The Size of Quasar Non-Thermal/X-ray Emission Regions | Proposal tit                                |
| observer | Prof. Christopher Kochanek                            | Principal investigator                      |
| object   | HE1104-1805   | Source name                                 |
| dtcycle  | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 166.639583  | Observer's specified target RA [deg]        |
| dec_targ | -18.356722  | Observer's specified target Dec [deg]       |
| ra_nom   | 166.64146929489                                       | Nominal RA [deg]                            |
| dec_nom  | -18.352174096142                                      | Nominal Dec [deg]                           |
| roll_nom | 36.979970922109                                       | Nominal Roll [deg]                          |
| revision | 2   | Processing version of data                  |
| ontime   | 13064.092217922                                       | Sum of GTIs [s]                             |
| livetime | 12756.14389702  | Livetime [s]                                |
| ontime2  | 13063.928057909                                       | Sum of GTIs [s]                             |
| ontime3  | 13064.010137916                                       | Sum of GTIs [s]                             |
| ontime6  | 13064.051177919                                       | Sum of GTIs [s]                             |
| ontime7  | 13064.092217922                                       | Sum of GTIs [s]                             |
| ontime8  | 13063.969097912                                       | Sum of GTIs [s]                             |
| l2events | 52961   | Number of level 2 events                    |



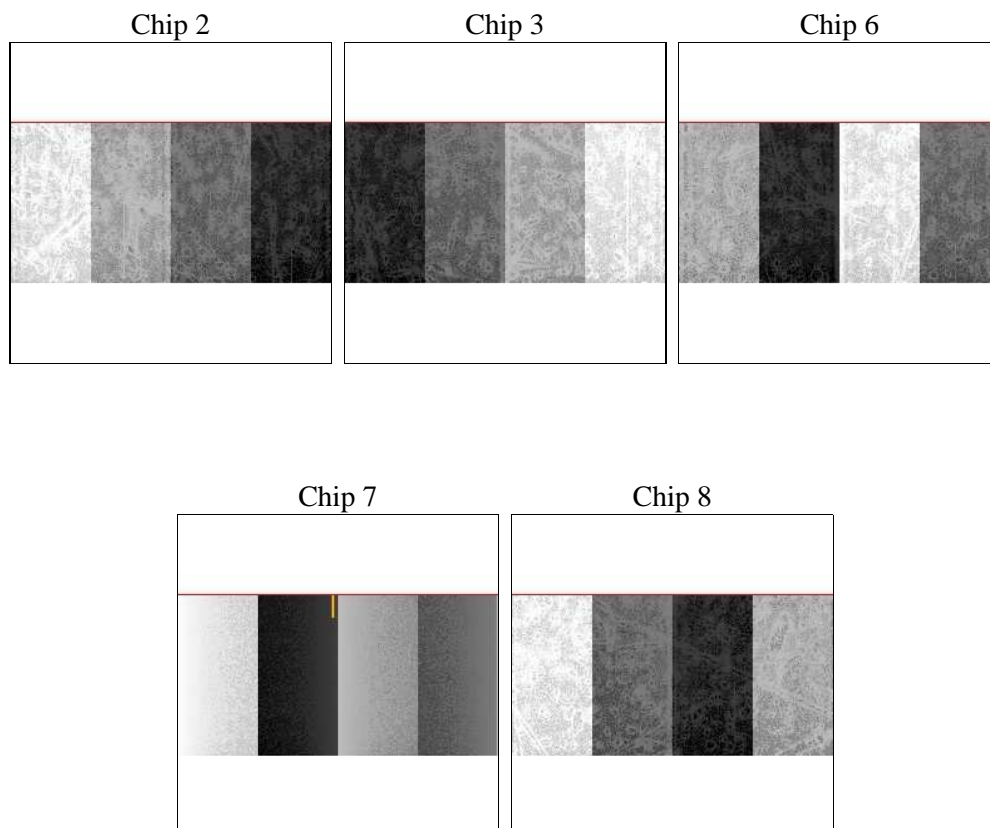
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 13000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.5               | Processing system revision     | ontime         | 13064.092217922 | Sum of GTIs [s]                         |
| caldsver | 4.4.10              | &#160                          | ontime2        | 13063.928057909 | Sum of GTIs [s]                         |
| date     | 2012-06-21T01:20:43 | Date and time of file creation | ontime3        | 13064.010137916 | Sum of GTIs [s]                         |
| revision | 2                   | Processing version of data     | ontime6        | 13064.051177919 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 13064.092217922 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 13063.969097912 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 315642          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 2 | ccd 3 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|-------|-------|-------|-------|-------|
| level 1 events  | 55192 | 56764 | 59191 | 68129 | 76366 |
| rejected events | 49146 | 50796 | 52405 | 36197 | 57622 |
| rejected %      | 89%   | 89%   | 88%   | 53%   | 75%   |

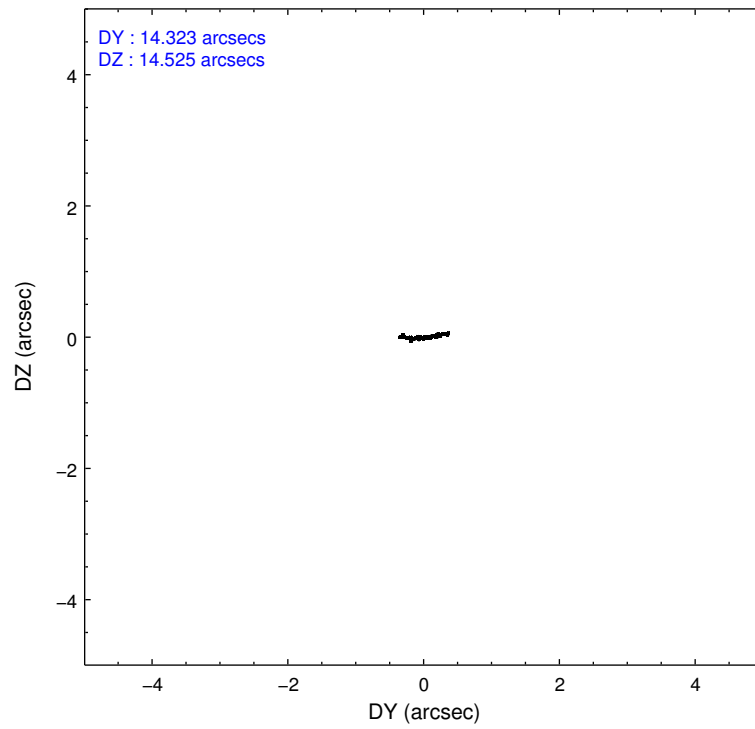
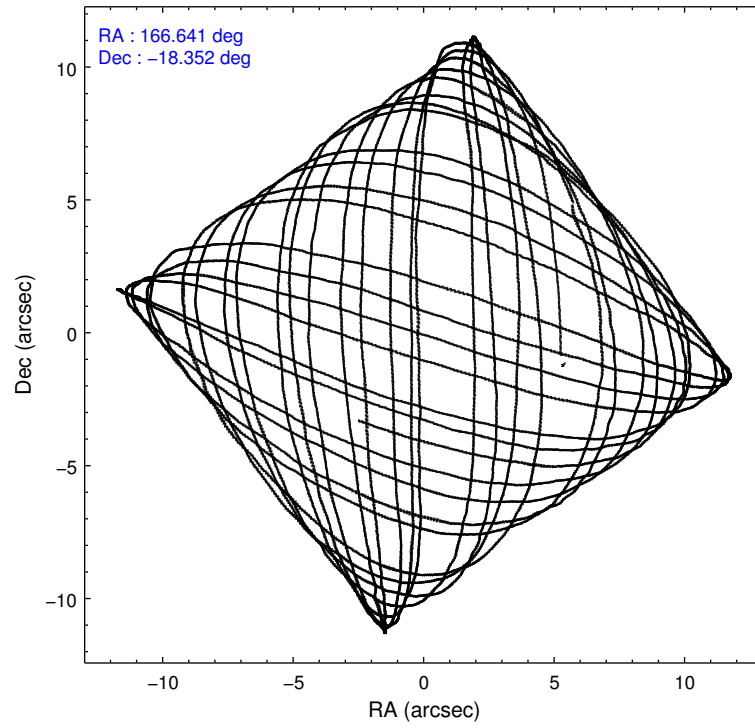
|                | ccd 2 | ccd 3 | ccd 6 | ccd 7 | ccd 8 |
|----------------|-------|-------|-------|-------|-------|
| grade 0 events | 2052  | 2053  | 2281  | 3359  | 5036  |
|                | 3%    | 3%    | 3%    | 4%    | 6%    |
| grade 1 events | 35    | 28    | 25    | 104   | 49    |
|                | 0%    | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 1388  | 1267  | 1423  | 6621  | 4446  |
|                | 2%    | 2%    | 2%    | 9%    | 5%    |
| grade 3 events | 743   | 797   | 812   | 3238  | 2121  |
|                | 1%    | 1%    | 1%    | 4%    | 2%    |
| grade 4 events | 778   | 730   | 894   | 3174  | 1963  |
|                | 1%    | 1%    | 1%    | 4%    | 2%    |
| grade 5 events | 2048  | 2420  | 2517  | 7194  | 3465  |
|                | 3%    | 4%    | 4%    | 10%   | 4%    |
| grade 6 events | 1086  | 1121  | 1378  | 15544 | 5178  |
|                | 1%    | 1%    | 2%    | 22%   | 6%    |
| grade 7 events | 47062 | 48348 | 49861 | 28895 | 54108 |
|                | 85%   | 85%   | 84%   | 42%   | 70%   |

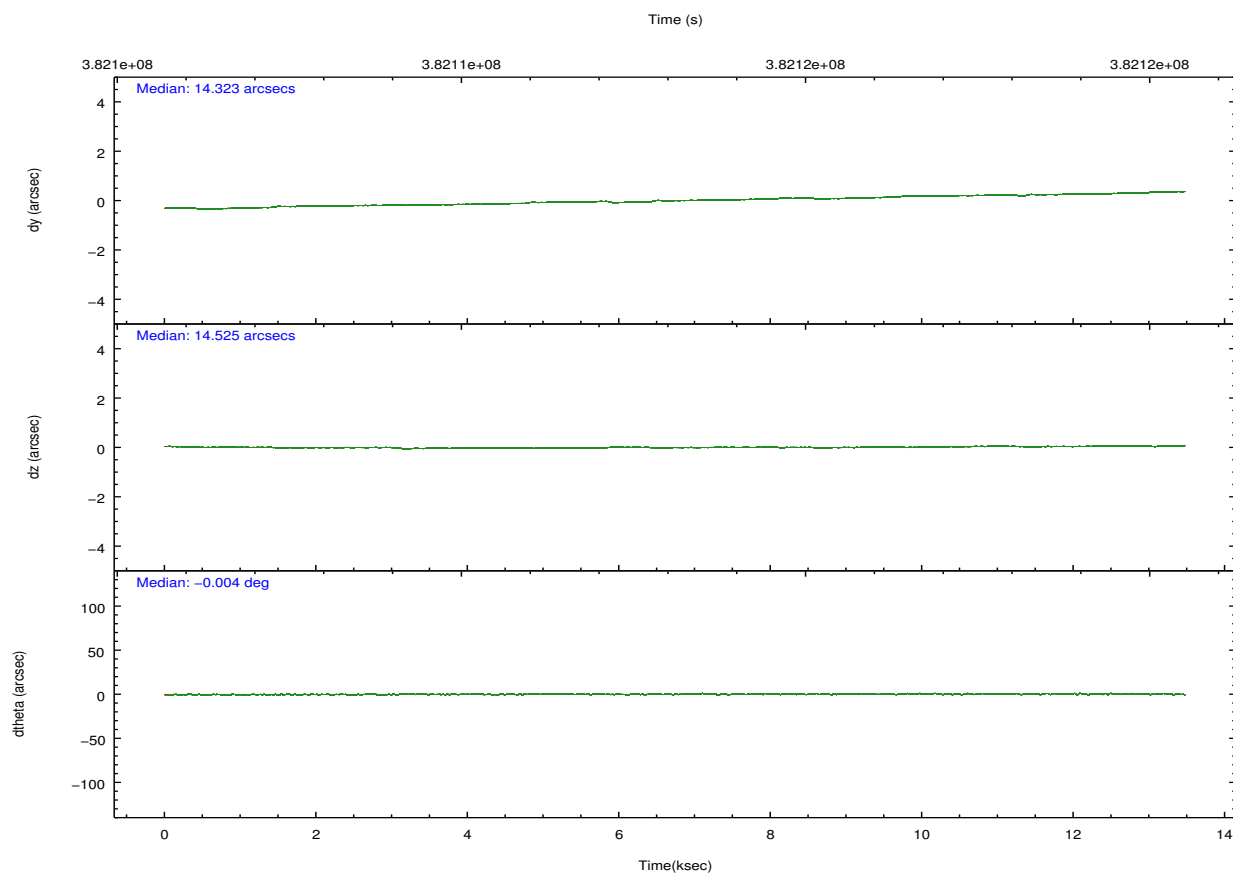
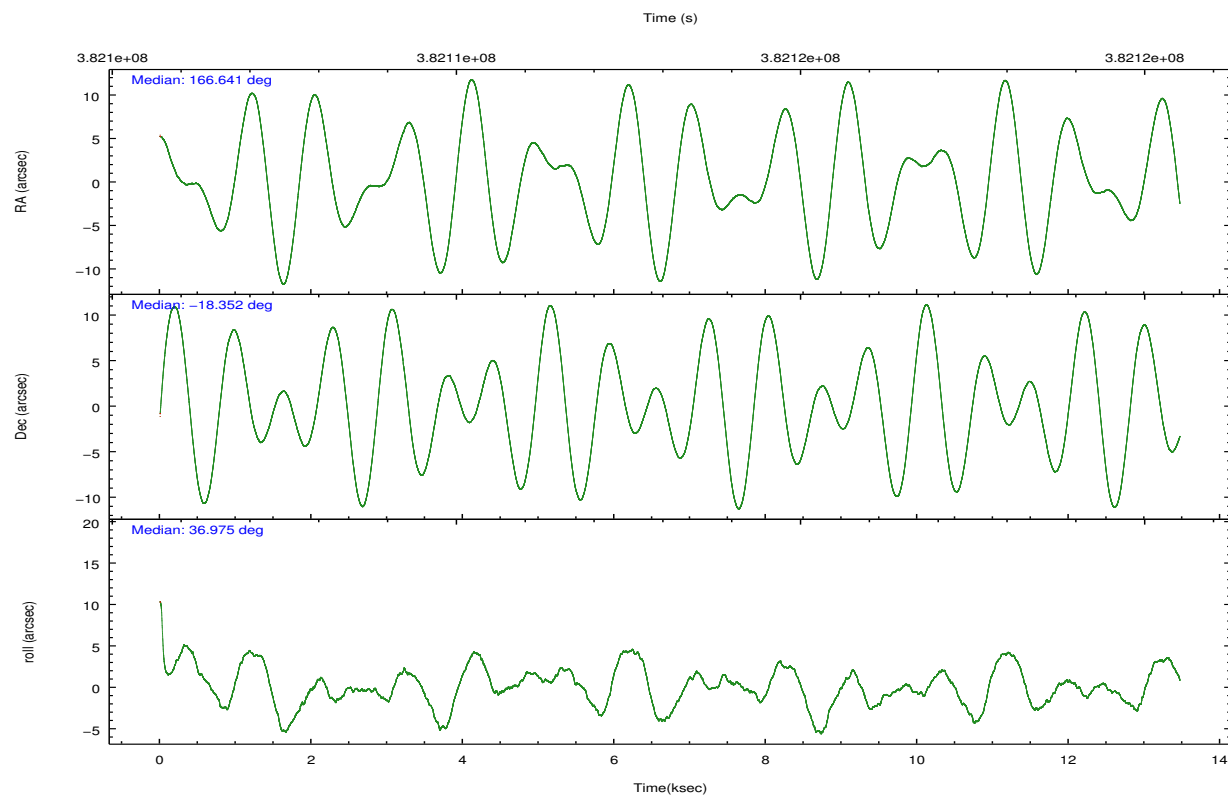
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-23678          | ACIS-23678           |
| Grating                           | NONE                | NONE                 |
| Data mode                         | VFAINT              | VFAINT               |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 166.630533          | 166.6414692948882    |
| [deg] Pointing Dec                | -18.377509          | -18.35217409614203   |
| [deg] Pointing Roll               | 36.819892           | 36.97997092210917    |
| [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)  | 382106844.184000    | 382105950.99704      |
| Observation start date            | 2010-02-09T12:46:18 | 2010-02-09T12:32:30  |
| [s] Observation end time (MET)    | 382119844.184000    | 382120431.68528      |
| Observation end date              | 2010-02-09T16:22:58 | 2010-02-09T16:33:51  |
| 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                             | O4        | Y       |
| CCD I3 on                             | O3        | Y       |
| CCD S0 on                             | N         | N       |
| CCD S1 on                             | N         | N       |
| CCD S2 on                             | O1        | Y       |
| CCD S3 on                             | Y         | Y       |
| CCD S4 on                             | O2        | Y       |
| CCD S5 on                             | N         | N       |
| Number of optional ACIS chips dropped | 0         | 0       |
| On-chip summing requested             | N         | N       |
| Subarray requested                    | CUSTOM    | 1/2     |
| Subarray start row                    | 257       | 257     |
| Subarray row count                    | 512       | 512     |
| Alternating exposures requested       | N         | N       |
| [s] Primary exposure time             | 0.000000  | 1.7     |

## 2.3 Aspect



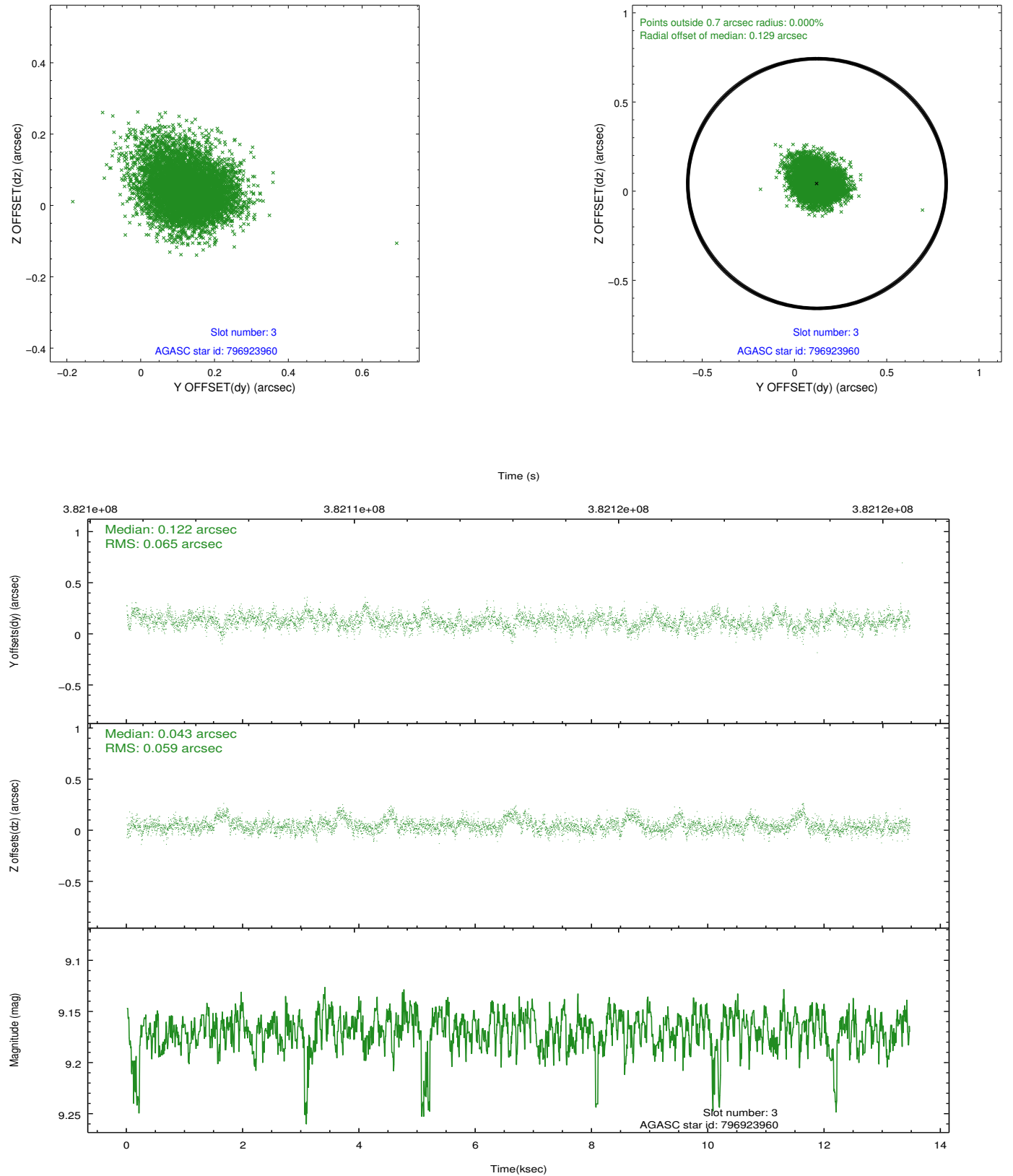


Slot Statistics

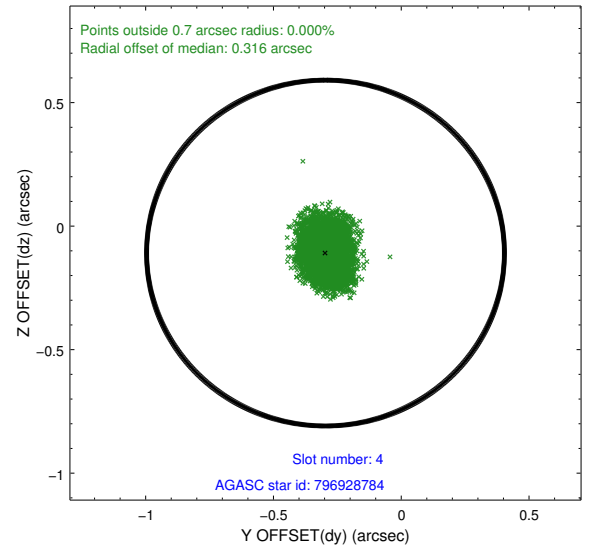
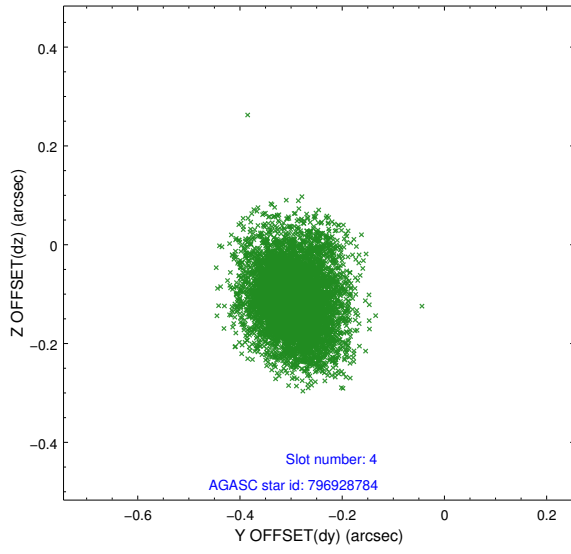
| slot | status | id        | mag   | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec        | mean_y   | mean_z   |
|------|--------|-----------|-------|-------|--------|--------|-------|-------|------------|------------|----------|----------|
| 0    | FID    | ACIS-S-2  | 6.94  | 3285  | -0.071 | -0.035 | 0.011 | 0.016 | 0.000000   | 0.000000   | -767.33  | -1735.94 |
| 1    | FID    | ACIS-S-4  | 7.02  | 3285  | 0.190  | 0.044  | 0.008 | 0.015 | 0.000000   | 0.000000   | 2146.03  | 172.28   |
| 2    | FID    | ACIS-S-5  | 7.05  | 3284  | -0.148 | -0.001 | 0.014 | 0.022 | 0.000000   | 0.000000   | -1819.81 | 166.28   |
| 3    | GUIDE  | 796923960 | 9.17  | 6556  | 0.122  | 0.043  | 0.092 | 0.154 | 167.114946 | -18.113690 | 1894.71  | -234.22  |
| 4    | GUIDE  | 796928784 | 8.40  | 6570  | -0.296 | -0.109 | 0.082 | 0.139 | 166.853792 | -17.800971 | 1856.11  | 1202.71  |
| 5    | GUIDE  | 796928880 | 9.91  | 6473  | 0.204  | 0.149  | 0.133 | 0.220 | 166.621408 | -18.801010 | -939.39  | -1203.02 |
| 6    | GUIDE  | 796930872 | 10.14 | 6560  | -0.153 | -0.096 | 0.151 | 0.244 | 166.504684 | -19.082395 | -1863.84 | -1775.25 |
| 7    | GUIDE  | 796921256 | 9.88  | 6558  | 0.126  | 0.012  | 0.120 | 0.199 | 165.757289 | -18.316611 | -2262.39 | 1958.09  |

## 2.4 Star Slots

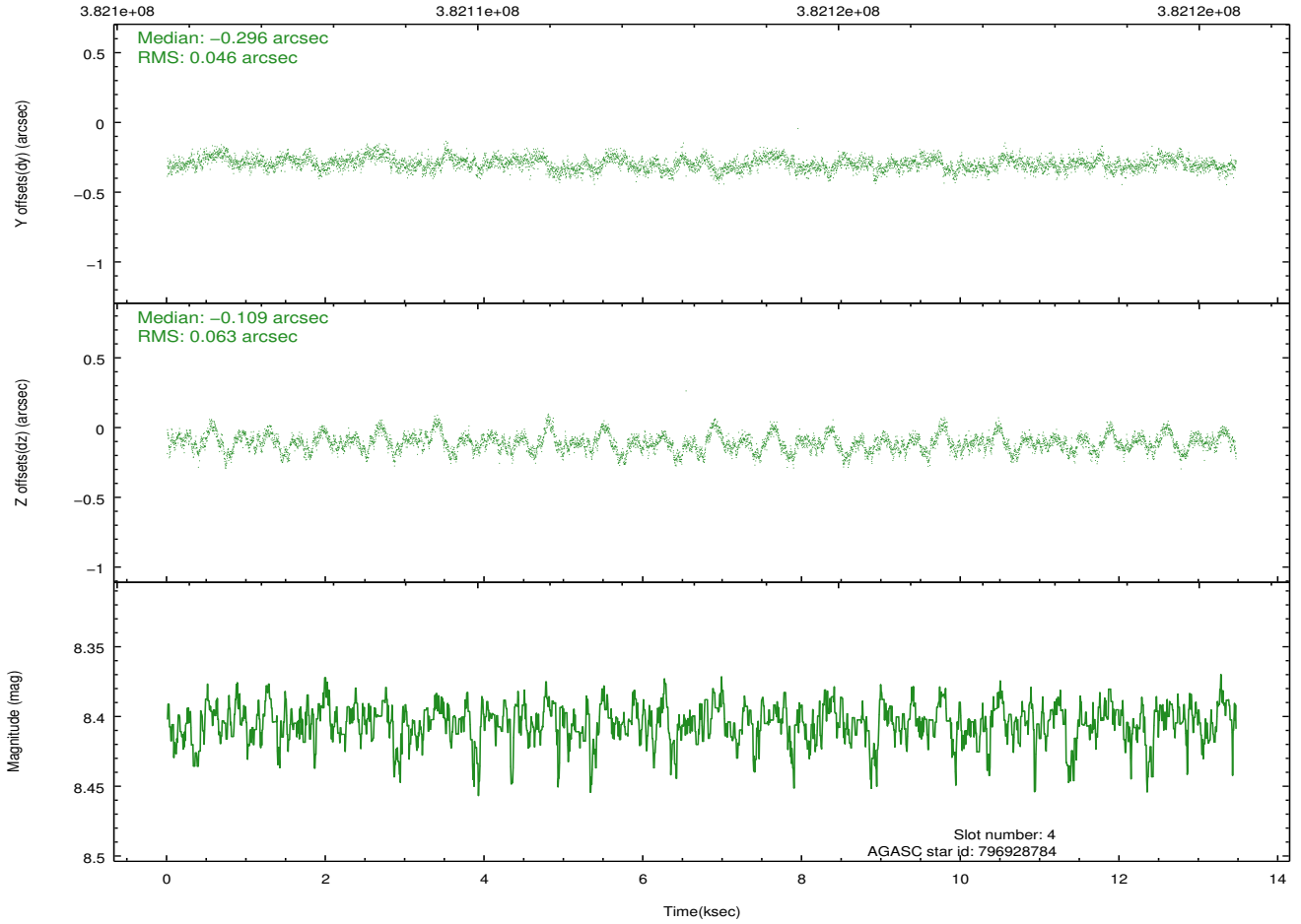
### 2.4.1 Slot 3



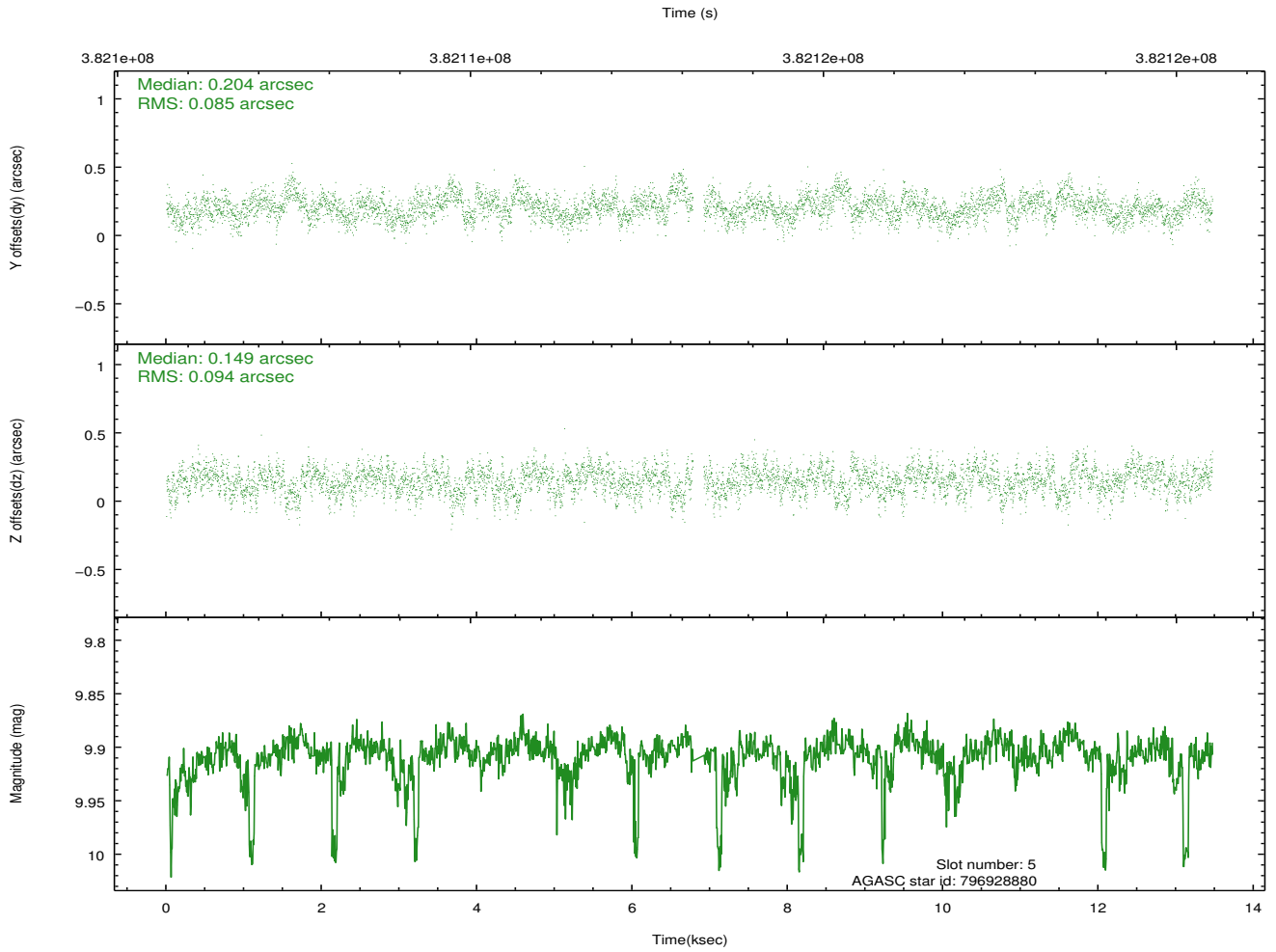
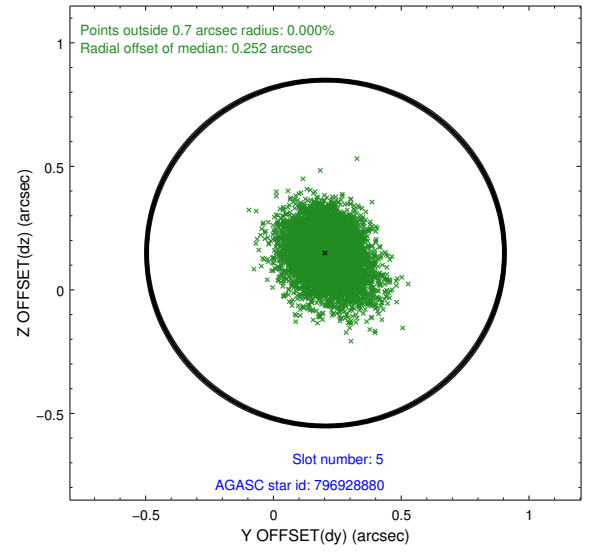
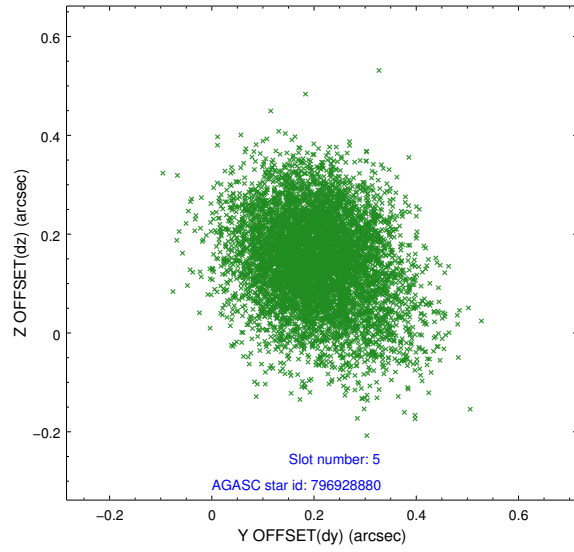
## 2.4.2 Slot 4



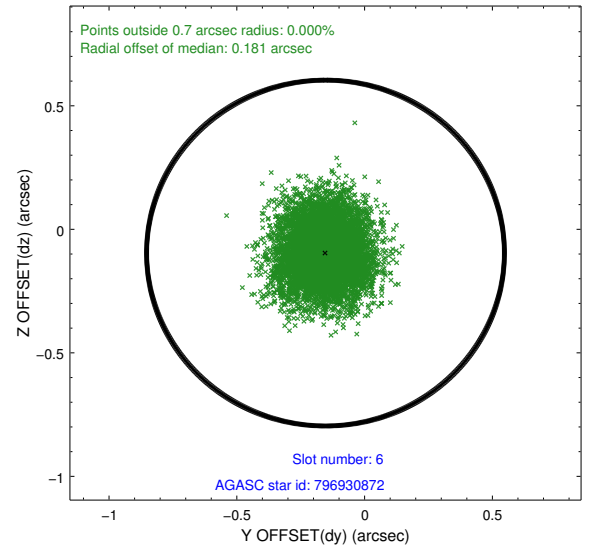
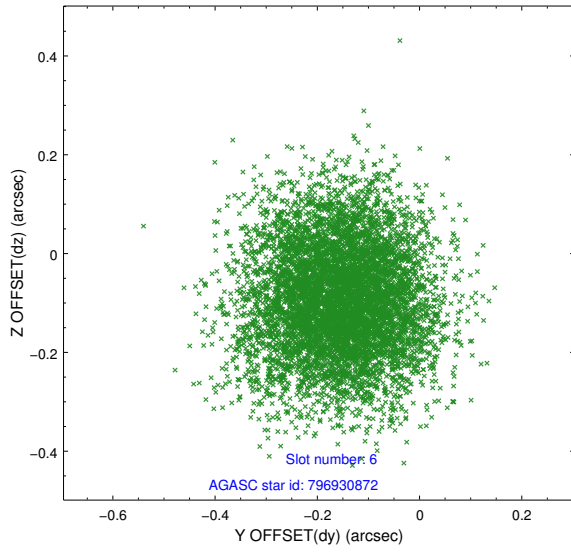
Time (s)



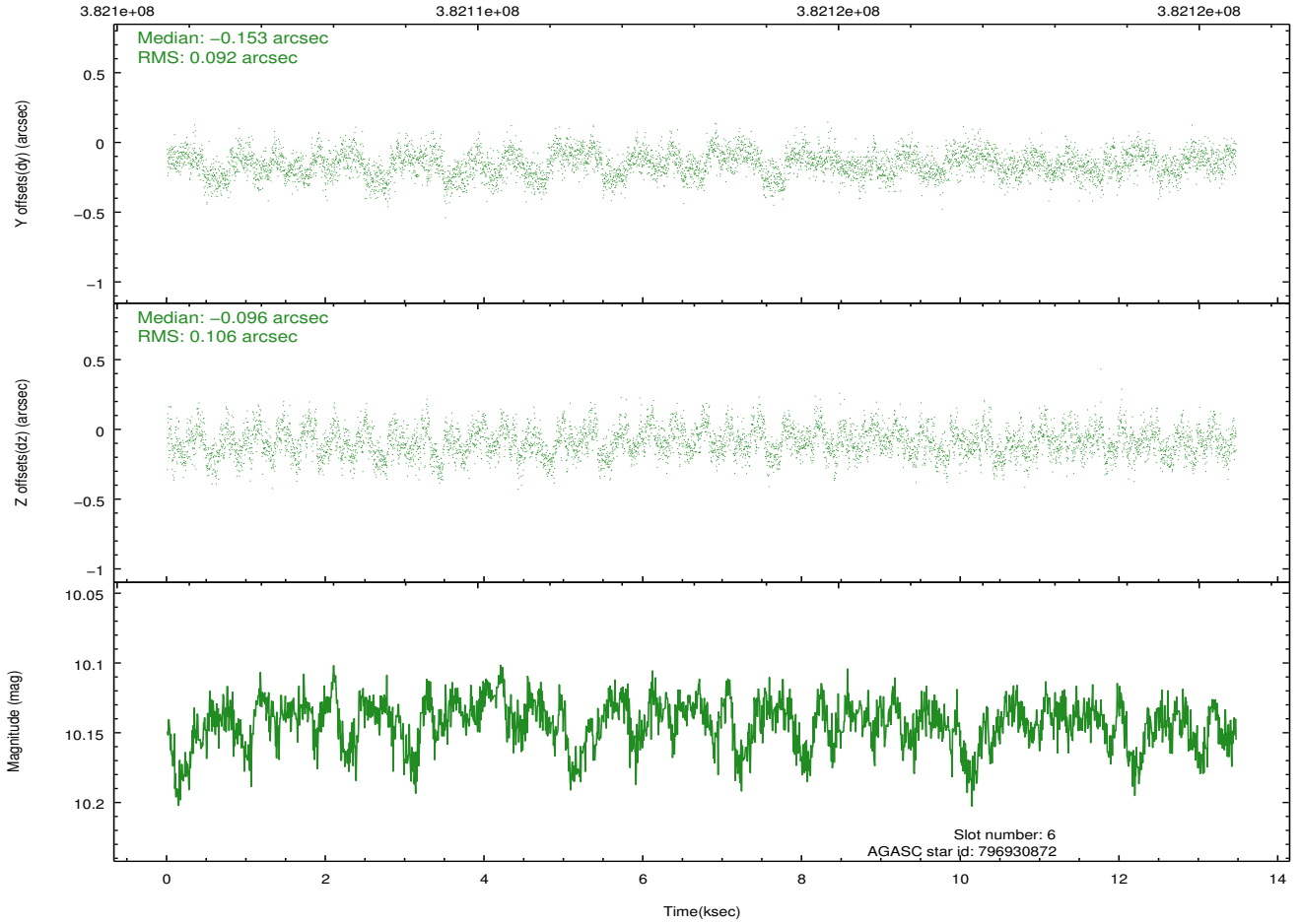
### 2.4.3 Slot 5



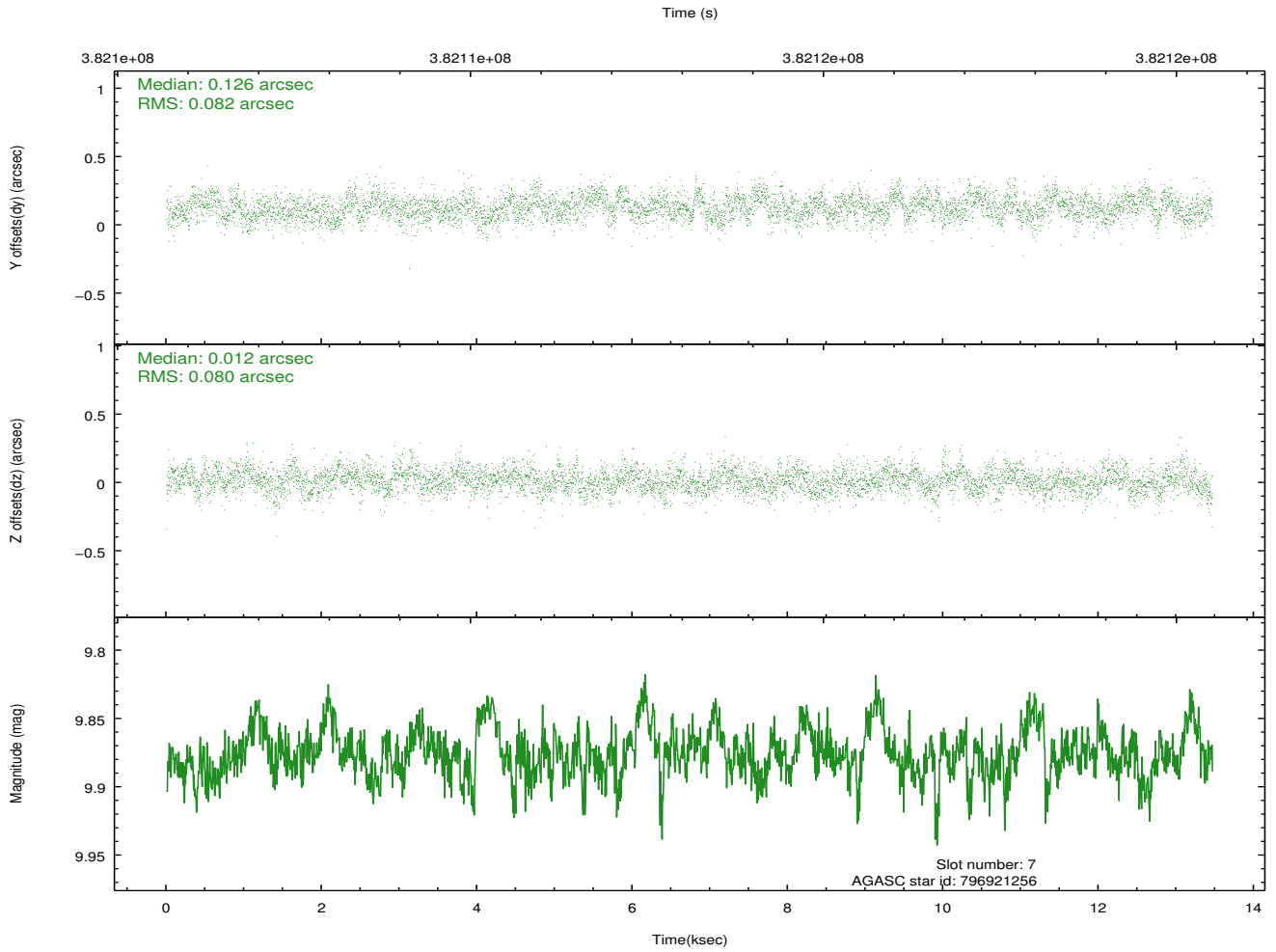
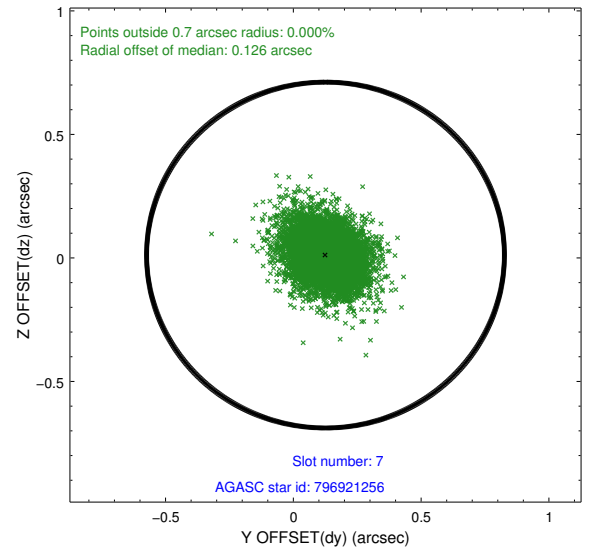
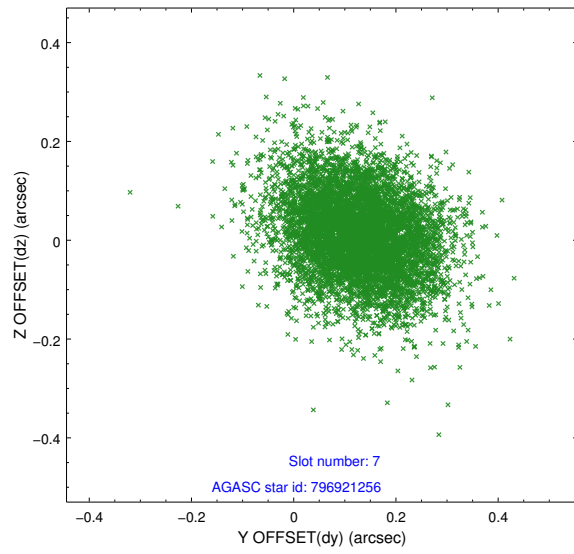
## 2.4.4 Slot 6



Time (s)

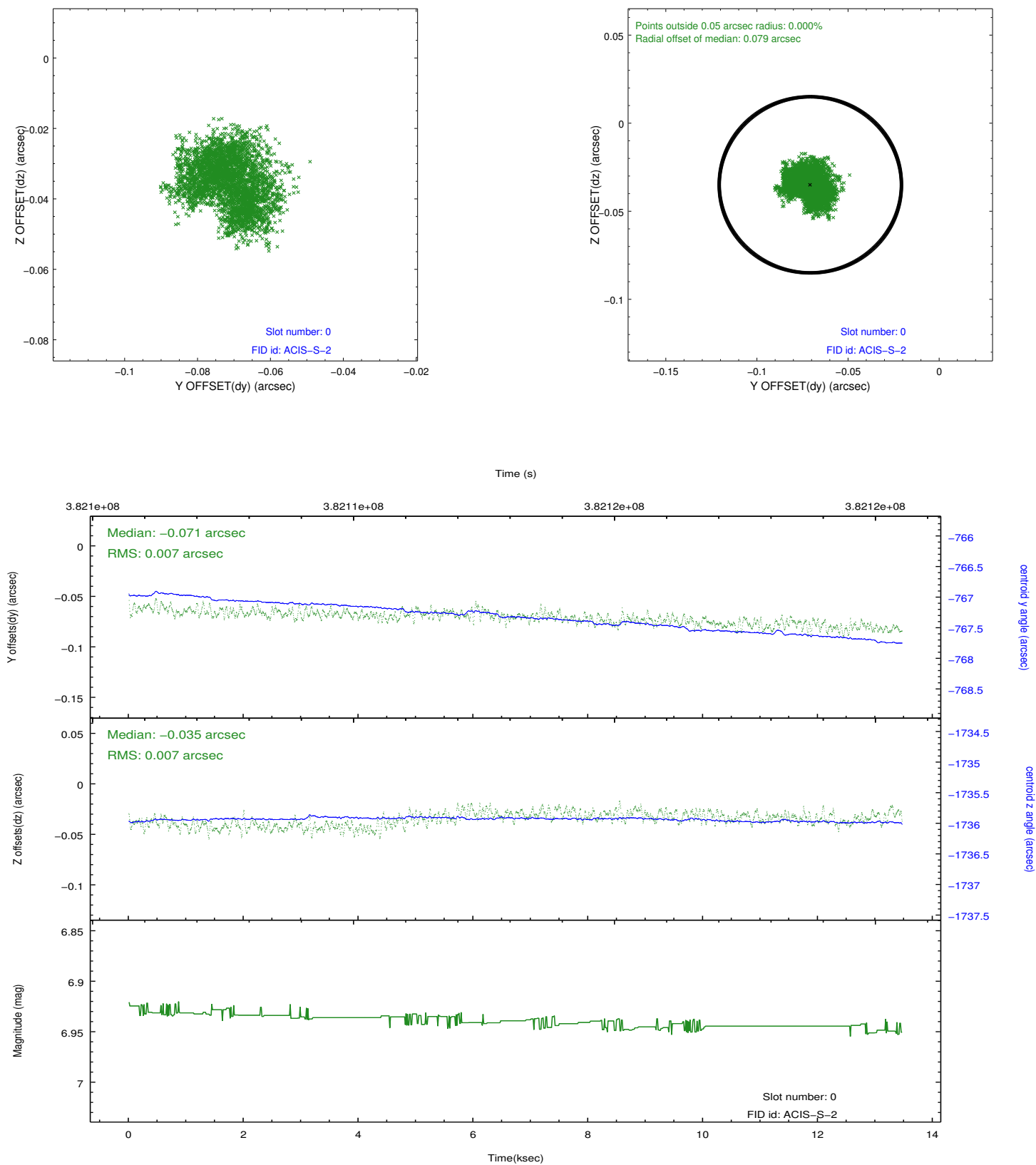


## 2.4.5 Slot 7

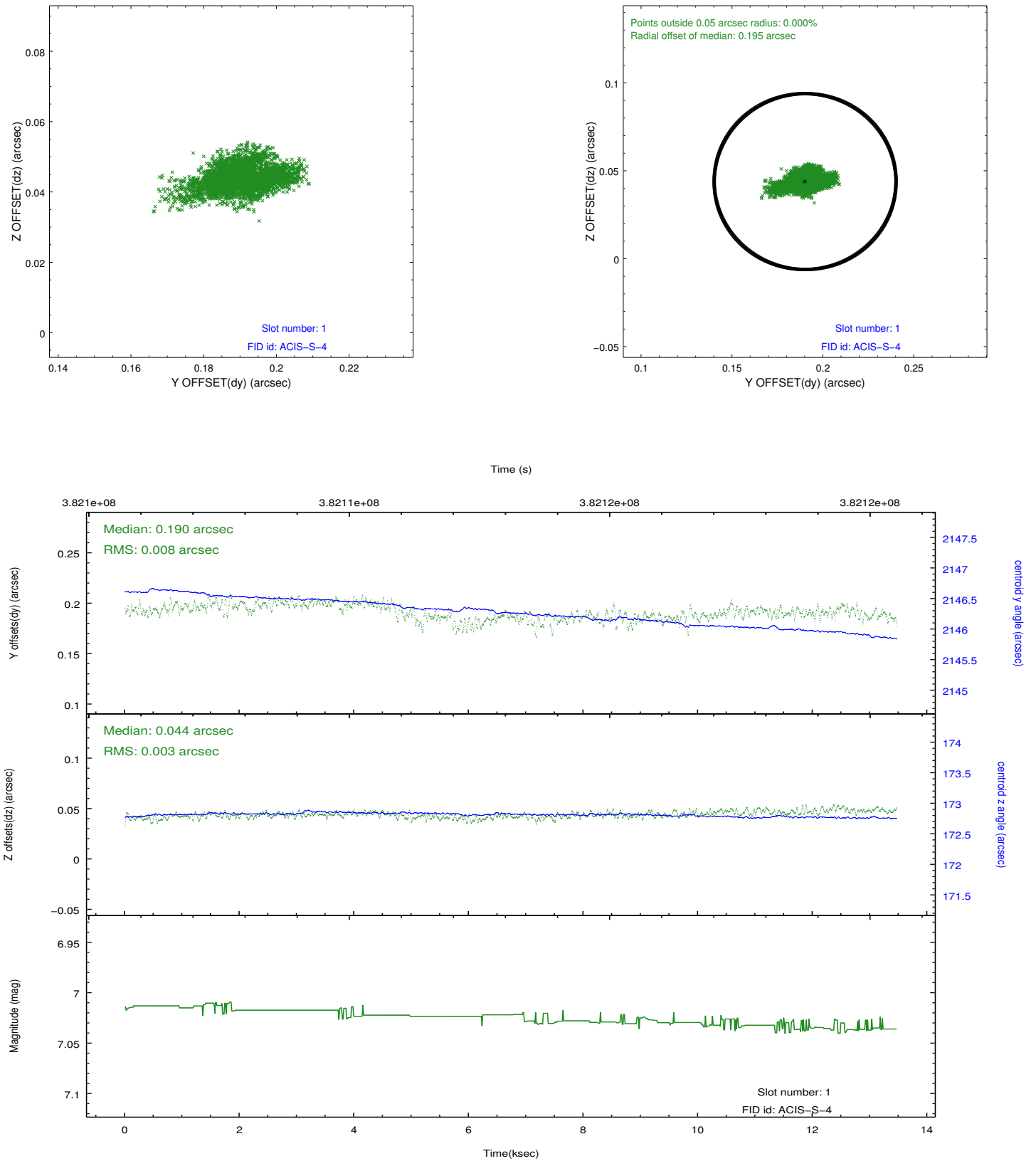


## 2.5 FID Slots

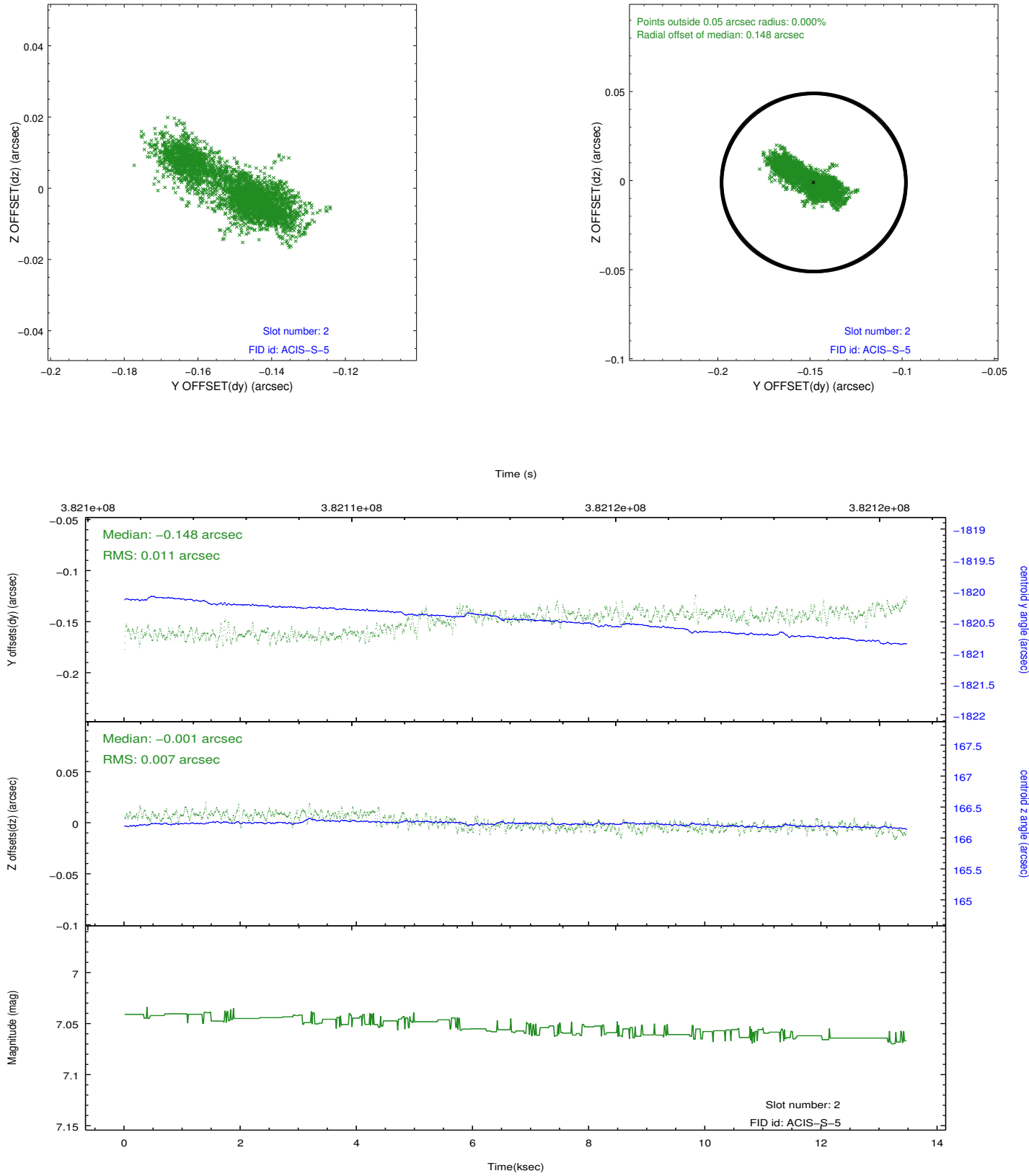
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



## A Summary

### A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Jen Lauer       |
| V&V Date (YYYY-MM-DD)      | 2012.06.27      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 13.064092222452 |

### A.2 Comments