

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 2031 - L2 Version 3  
Chandra X-Ray Center

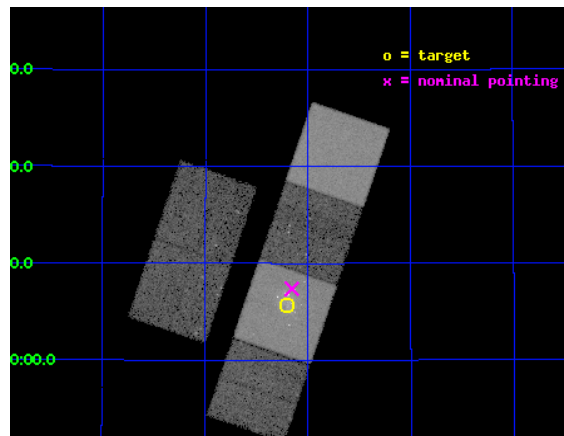
L2 Processing Date : Sep 16 2012

## 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  | 600165  | Sequence number                                |
| obs_id   | 2031  | Observation id                                 |
| title    | STARBURST-DRIVEN OUTFLOWS AND THE EVOLUTION OF DWARF GALAXIES | Prop   |
| observer | Dr. Tim Heckman   | Principal investigator                         |
| object   | NGC 4449  | Source name                                    |
| dtcycle  | 0   | &#160  |
| cycle    | P   | events from which<br>exps?<br>Prim/Second/Both |
| ra_targ  | 187.05  | Observer's specified<br>target RA [deg]        |
| dec_targ | 44.094722   | Observer's specified<br>target Dec [deg]       |
| ra_nom   | 187.03928361872   | Nominal RA [deg]                               |
| dec_nom  | 44.122888124503   | Nominal Dec [deg]                              |
| roll_nom | 108.82839224924   | Nominal Roll [deg]                             |
| revision | 3   | Processing version of<br>data                  |
| ontime   | 26937.600025073   | Sum of GTIs [s]                                |
| livetime | 26596.49991368  | Livetime [s]                                   |
| ontime2  | 26934.359024912   | Sum of GTIs [s]                                |
| ontime3  | 26937.560436741   | Sum of GTIs [s]                                |
| ontime5  | 26937.600025073   | Sum of GTIs [s]                                |
| ontime6  | 26934.359034911   | Sum of GTIs [s]                                |
| ontime7  | 26937.600025073   | Sum of GTIs [s]                                |
| ontime8  | 26937.519396737   | Sum of GTIs [s]                                |
| l2events | 256036  | Number of level 2<br>events                    |

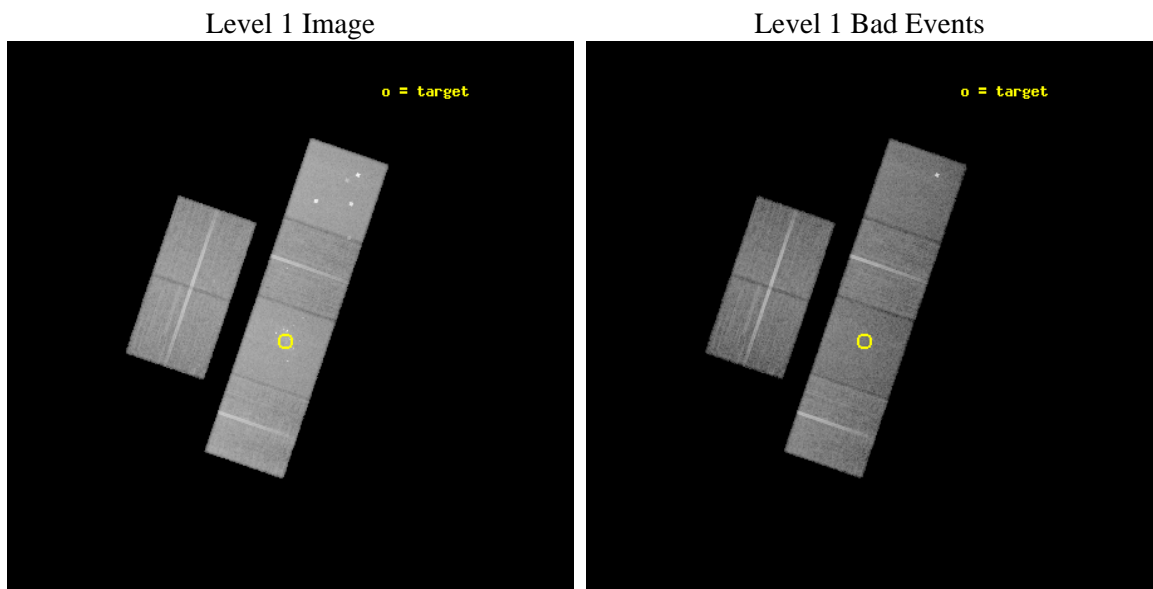




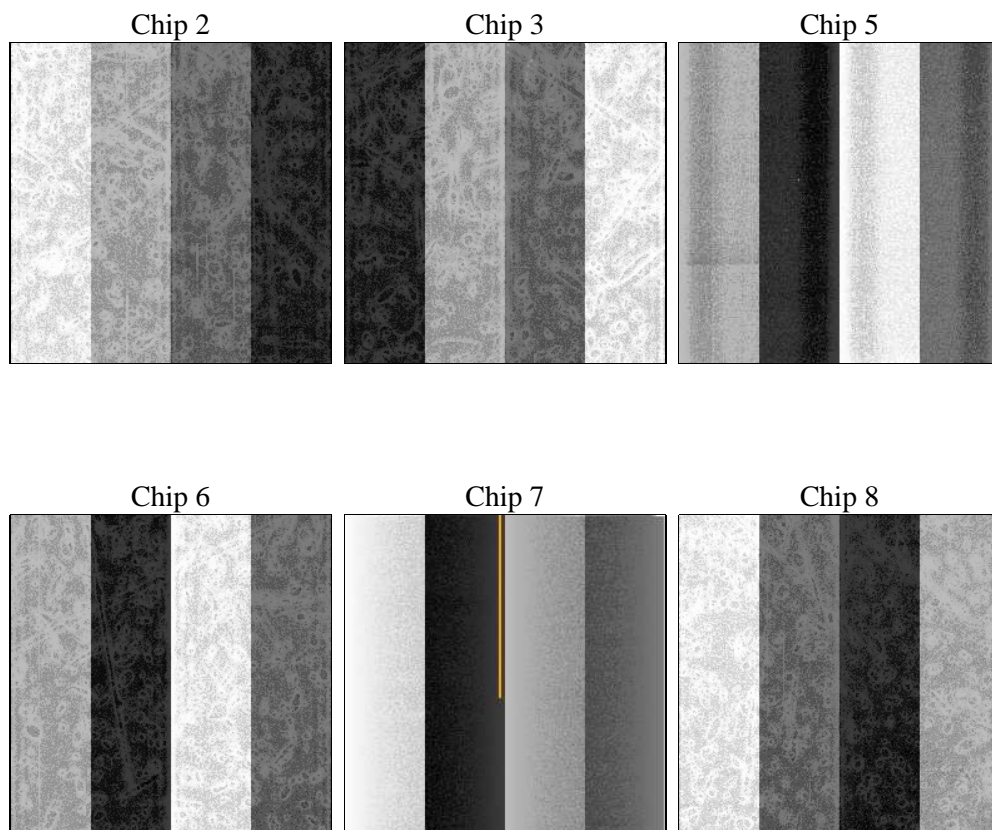
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 27000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.5               | Processing system revision     | ontime         | 26937.600025073 | Sum of GTIs [s]                         |
| caldsver | 4.5.1.1             | &#160                          | ontime2        | 26934.359024912 | Sum of GTIs [s]                         |
| date     | 2012-09-16T03:27:06 | Date and time of file creation | ontime3        | 26937.560436741 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime5        | 26937.600025073 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 26934.359034911 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 26937.600025073 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 26937.519396737 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 1159800         | Number of level 1 events                |

### 2.1.4 Events

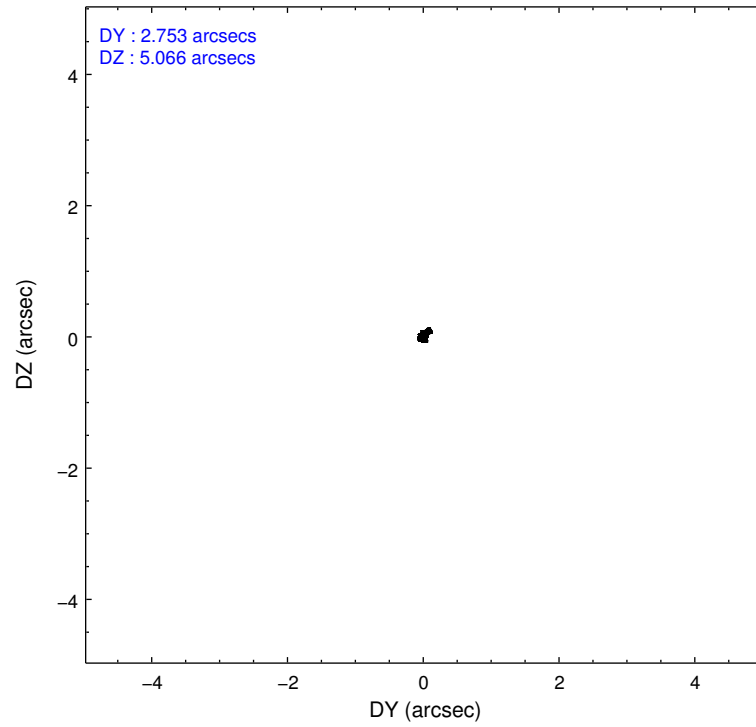
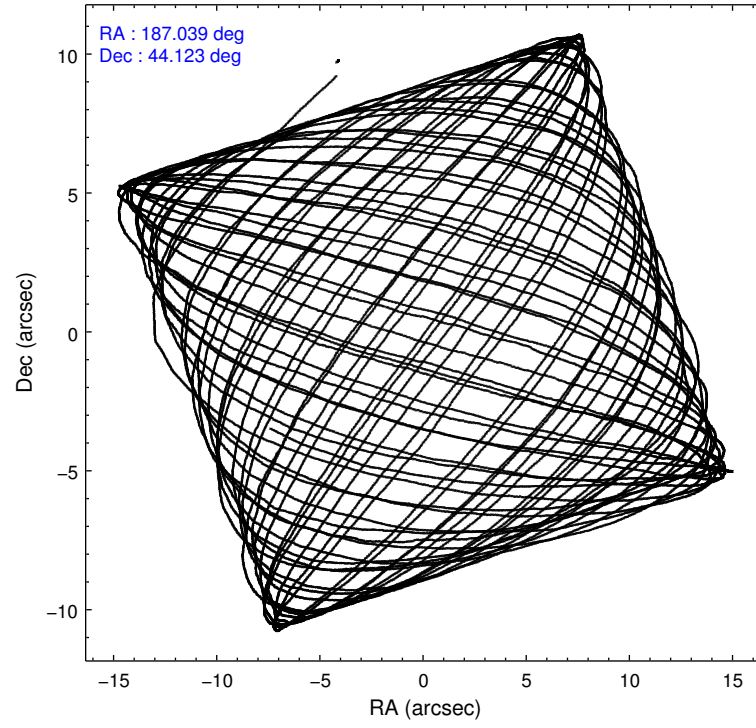
|                 | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7  | ccd 8  |                | ccd 2  | ccd 3  | ccd 5  | ccd 6  | ccd 7  | ccd 8  |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|
| level 1 events  | 167357 | 157408 | 240895 | 168189 | 220133 | 205818 | grade 0 events | 7255   | 7676   | 20638  | 7603   | 12745  | 12677  |
| rejected events | 149612 | 139621 | 126360 | 149395 | 123001 | 166886 |                | 4%     | 4%     | 8%     | 4%     | 5%     | 6%     |
| rejected %      | 89%    | 88%    | 52%    | 88%    | 55%    | 81%    | grade 1 events | 71     | 70     | 279    | 70     | 207    | 127    |
|                 |        |        |        |        |        |        |                | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |
|                 |        |        |        |        |        |        | grade 2 events | 3891   | 3411   | 32088  | 3772   | 19444  | 8355   |
|                 |        |        |        |        |        |        |                | 2%     | 2%     | 13%    | 2%     | 8%     | 4%     |
|                 |        |        |        |        |        |        | grade 3 events | 1703   | 1755   | 4621   | 1889   | 9068   | 4203   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 1%     | 4%     | 2%     |
|                 |        |        |        |        |        |        | grade 4 events | 1732   | 1760   | 4139   | 1839   | 8821   | 3951   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 1%     | 4%     | 1%     |
|                 |        |        |        |        |        |        | grade 5 events | 5767   | 6252   | 17766  | 6974   | 20147  | 8663   |
|                 |        |        |        |        |        |        |                | 3%     | 3%     | 7%     | 4%     | 9%     | 4%     |
|                 |        |        |        |        |        |        | grade 6 events | 3169   | 3188   | 53070  | 3692   | 47064  | 9751   |
|                 |        |        |        |        |        |        |                | 1%     | 2%     | 22%    | 2%     | 21%    | 4%     |
|                 |        |        |        |        |        |        | grade 7 events | 143769 | 133296 | 108294 | 142350 | 102637 | 158091 |
|                 |        |        |        |        |        |        |                | 85%    | 84%    | 44%    | 84%    | 46%    | 76%    |

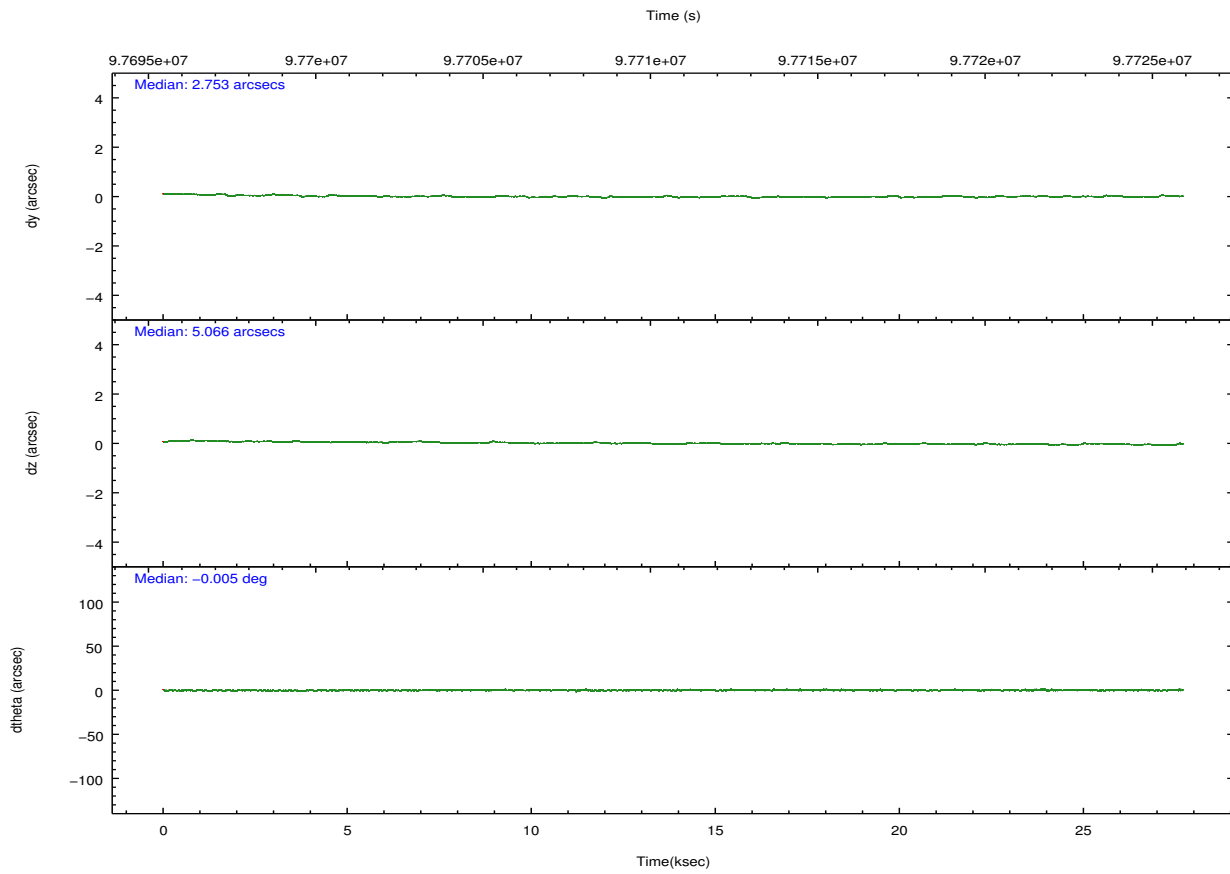
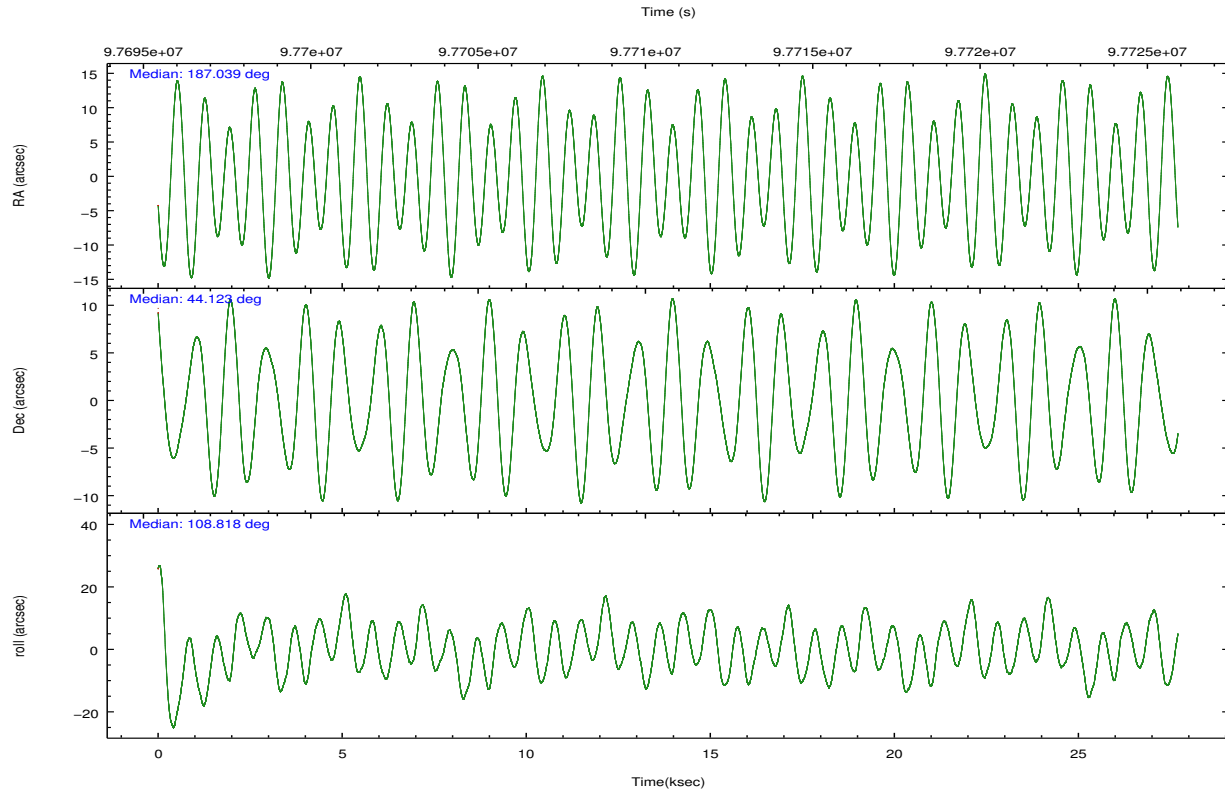
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               |
|-----------------------------------|---------------------|----------------------|
| Instrument                        | ACIS                | ACIS                 |
| Detector                          | ACIS-235678         | ACIS-235678          |
| Grating                           | NONE                | NONE                 |
| Data mode                         | FAINT               | FAINT                |
| Observation mode                  | POINTING            | POINTING             |
| [deg] Pointing RA                 | 187.068137          | 187.0392836187243    |
| [deg] Pointing Dec                | 44.105103           | 44.12288812450304    |
| [deg] Pointing Roll               | 108.651681          | 108.8283922492372    |
| [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)  | 97697528.184000     | 97696310.65411501    |
| Observation start date            | 2001-02-04T18:11:04 | 2001-02-04T17:51:50  |
| [s] Observation end time (MET)    | 97724528.184000     | 97726245.780269      |
| Observation end date              | 2001-02-05T01:41:04 | 2001-02-05T02:10:45  |
| Read mode                         | TIMED               | TIMED                |

| Parameter                             | Planned   | Actual  |
|---------------------------------------|-----------|---------|
| Obspar format version number          | 7         | 7       |
| Obspar file type                      | PREDICTED | ACTUAL  |
| Obspar update status                  | NONE      | UPDATED |
| Number of optional ACIS chips dropped | 0         | 0       |
| On-chip summing requested             | N         | N       |
| Subarray requested                    | NONE      | NONE    |
| Alternating exposures requested       | N         | N       |
| [s] Primary exposure time             | 0.000000  | 3.2     |

## 2.3 Aspect



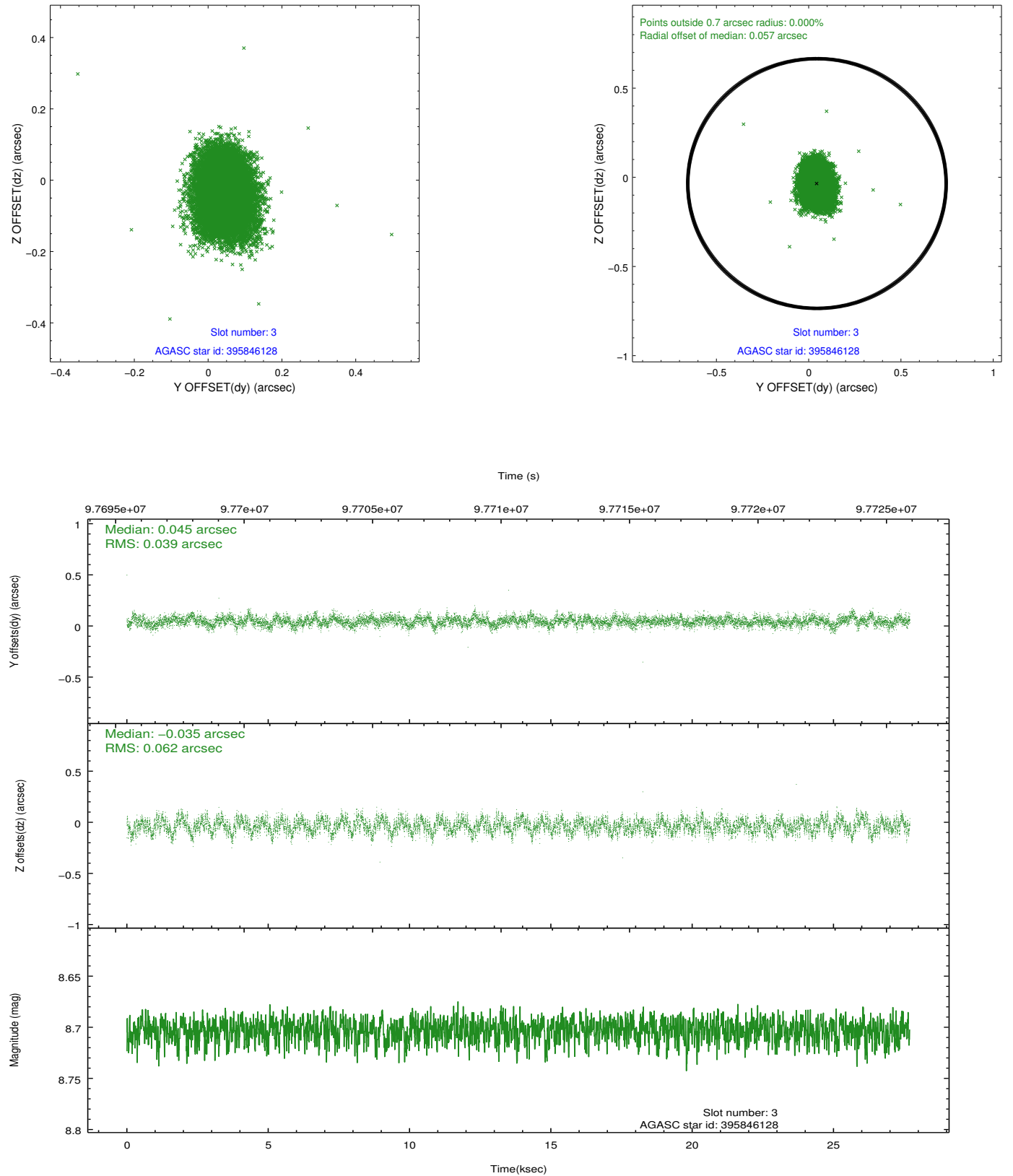


### Slot Statistics

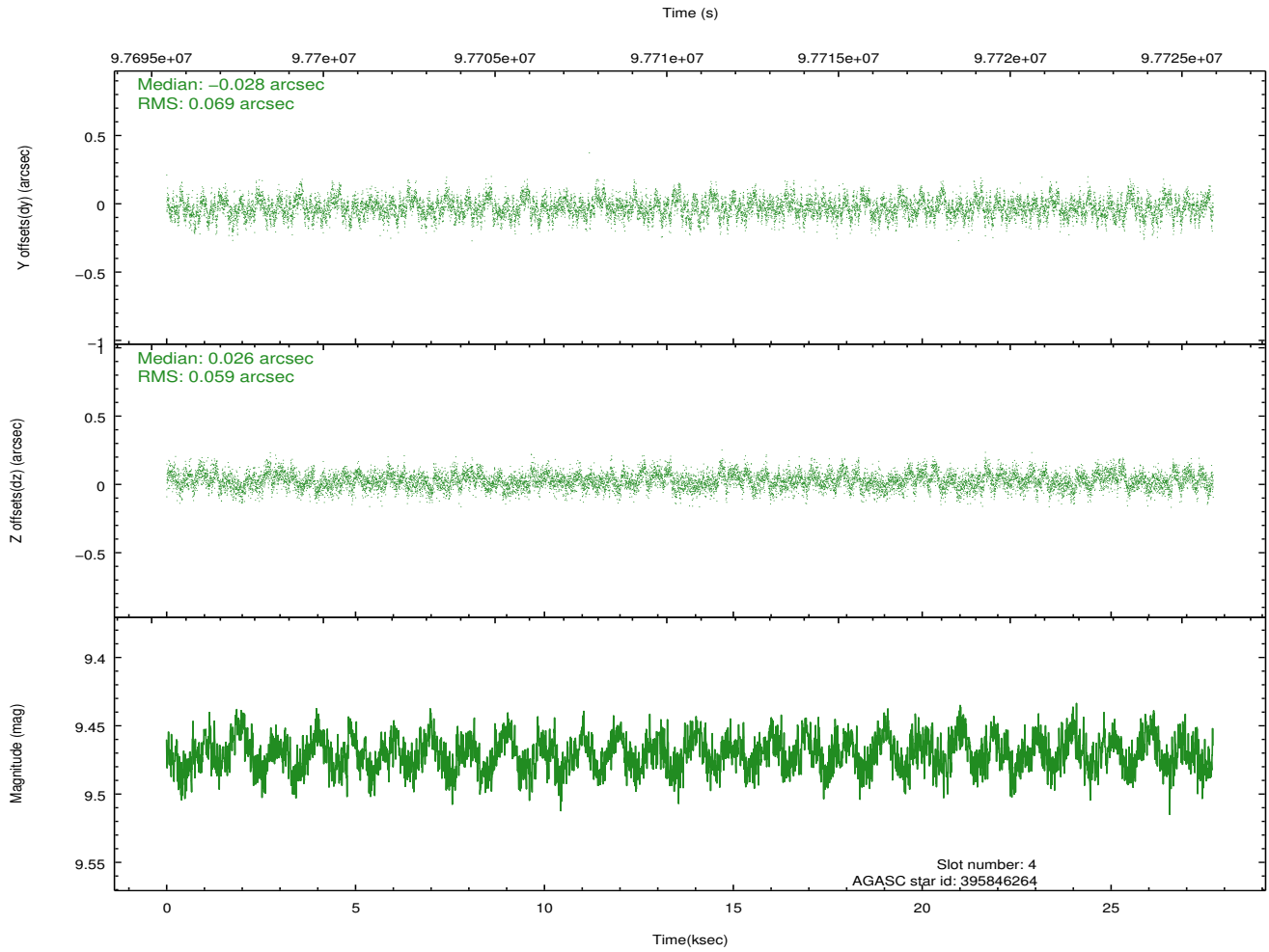
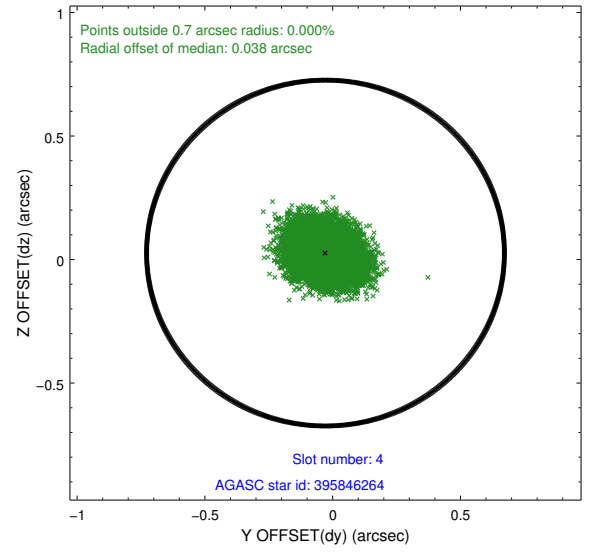
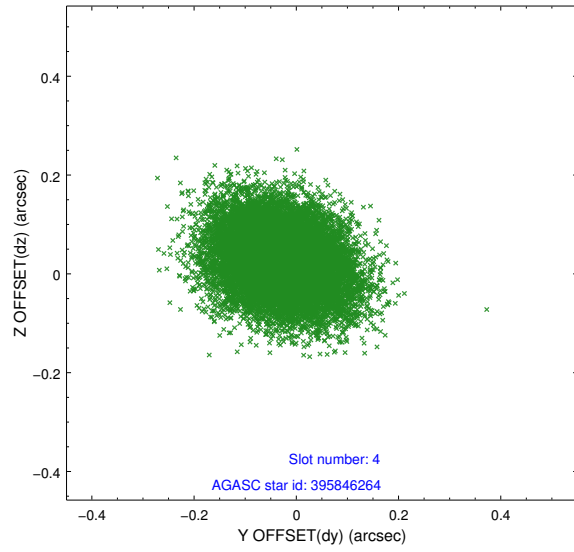
| slot | status | id        | mag   | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|-----------|-------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    | ACIS-S-2  | 7.12  | 6756  | -0.025 | 0.003  | 0.007 | 0.011 | 0.000000   | 0.000000  | -755.39  | -1726.20 |
| 1    | FID    | ACIS-S-4  | 7.20  | 6756  | -0.035 | 0.011  | 0.006 | 0.010 | 0.000000   | 0.000000  | 2157.80  | 182.25   |
| 2    | FID    | ACIS-S-5  | 7.24  | 6757  | 0.029  | -0.005 | 0.007 | 0.012 | 0.000000   | 0.000000  | -1808.09 | 175.94   |
| 3    | GUIDE  | 395846128 | 8.70  | 13509 | 0.045  | -0.035 | 0.077 | 0.126 | 187.720764 | 44.188706 | -246.43  | -1694.24 |
| 4    | GUIDE  | 395846264 | 9.47  | 13505 | -0.028 | 0.026  | 0.097 | 0.158 | 187.191241 | 44.211279 | 261.32   | -422.94  |
| 5    | GUIDE  | 395850104 | 9.62  | 13456 | 0.006  | 0.032  | 0.111 | 0.180 | 187.948425 | 43.919929 | -1349.26 | -1953.33 |
| 6    | GUIDE  | 395854648 | 9.96  | 13499 | -0.038 | 0.063  | 0.111 | 0.179 | 187.682941 | 44.741066 | 1672.85  | -2223.03 |
| 7    | GUIDE  | 395845240 | 10.22 | 13494 | 0.016  | -0.084 | 0.149 | 0.248 | 186.812482 | 44.256464 | 728.63   | 450.26   |

## 2.4 Star Slots

### 2.4.1 Slot 3

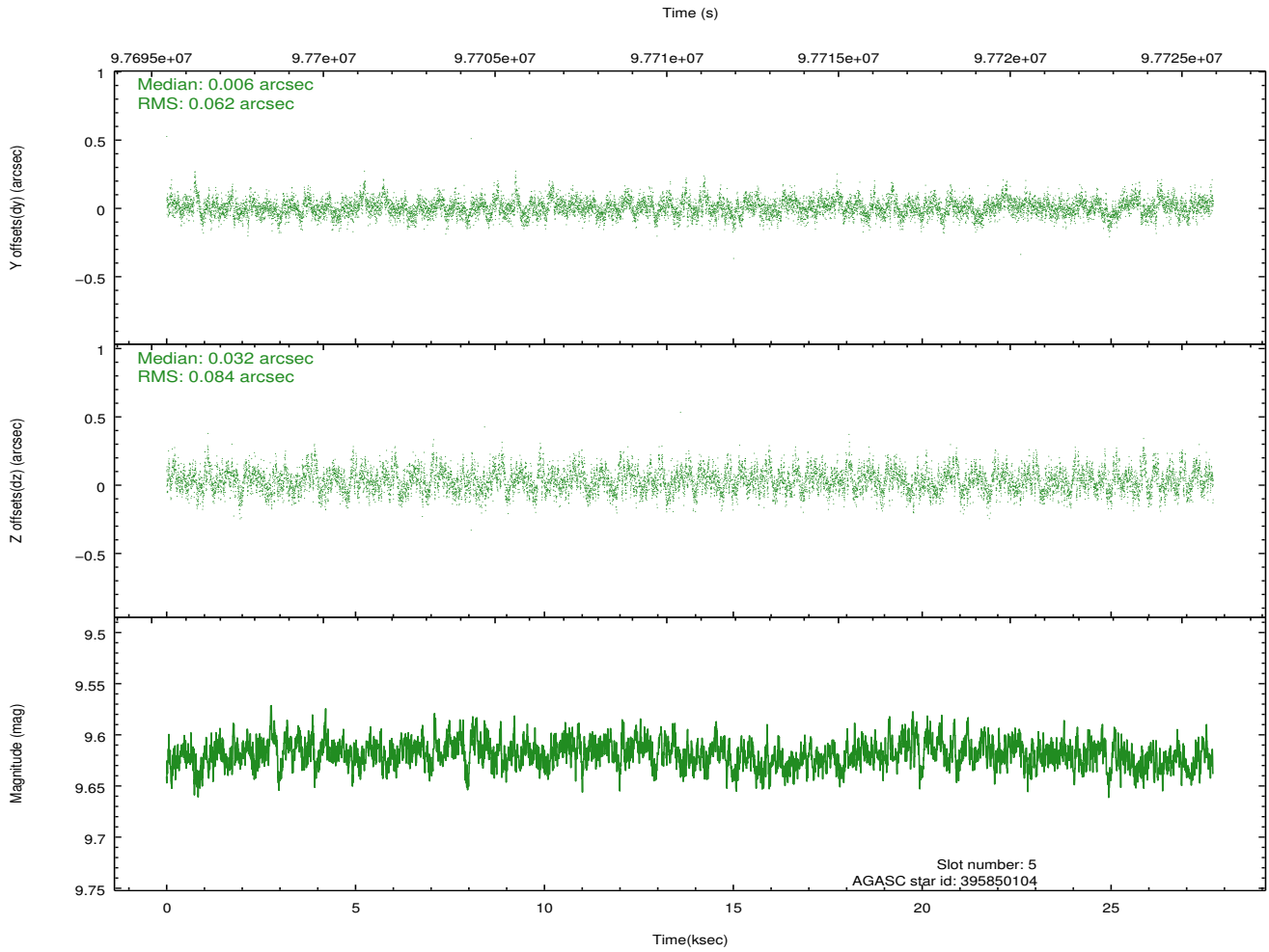
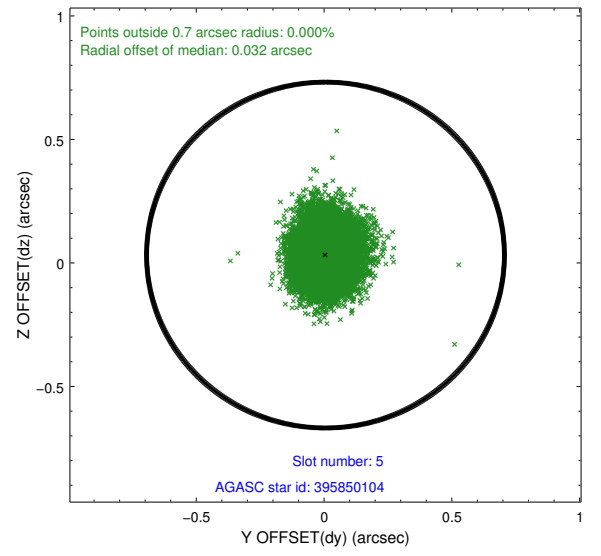
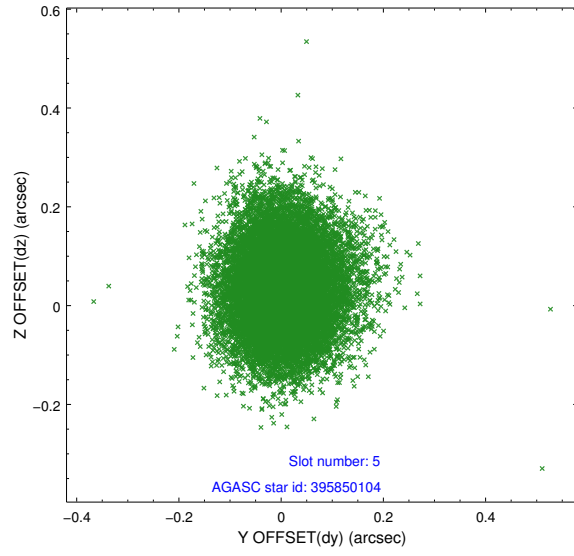


## 2.4.2 Slot 4

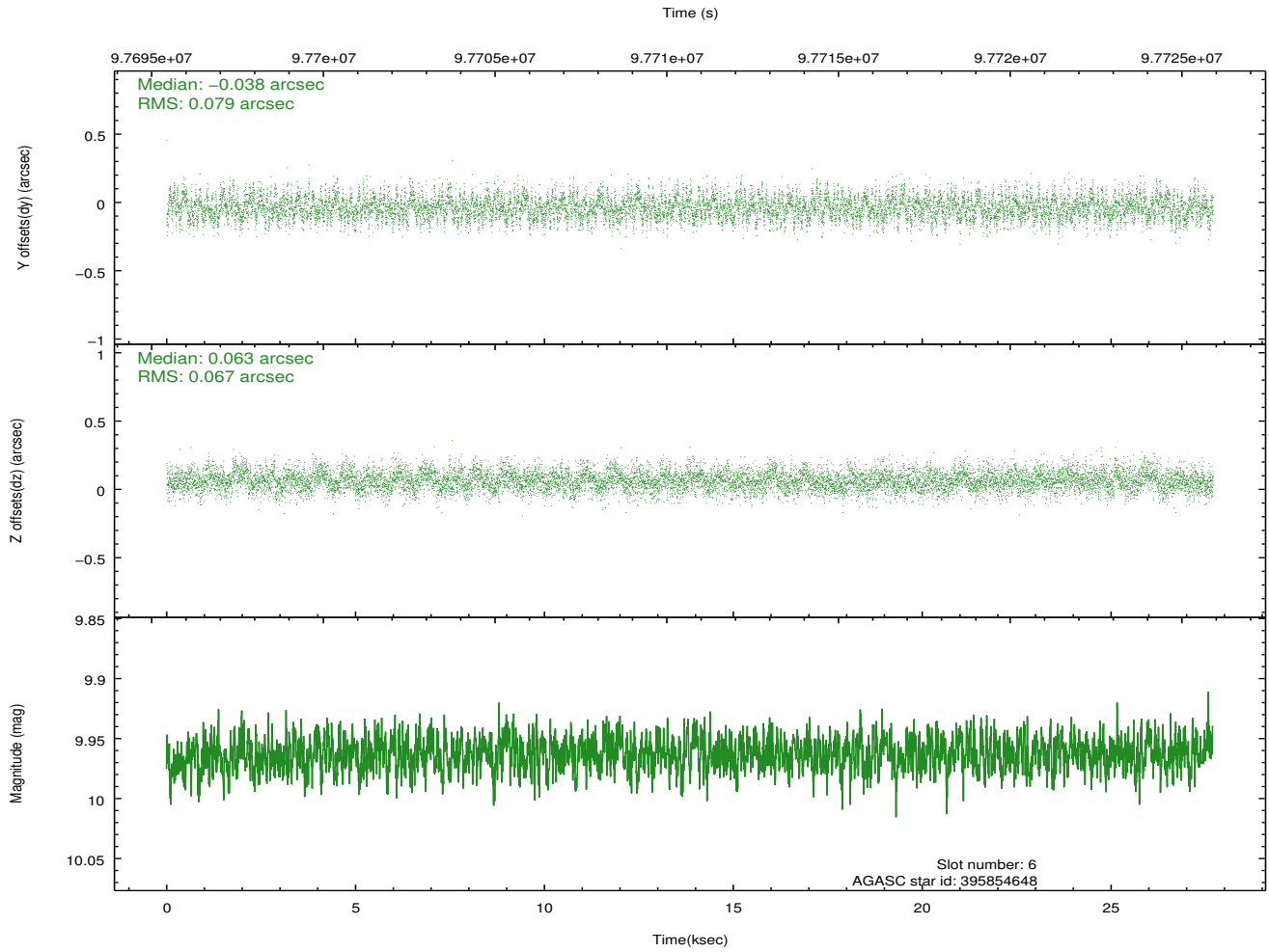
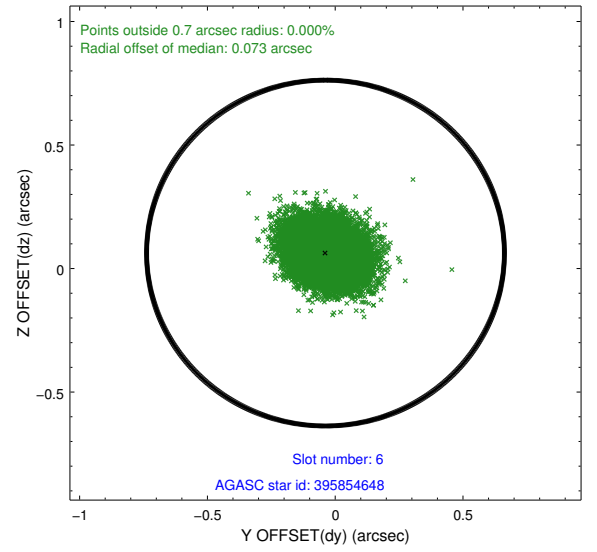
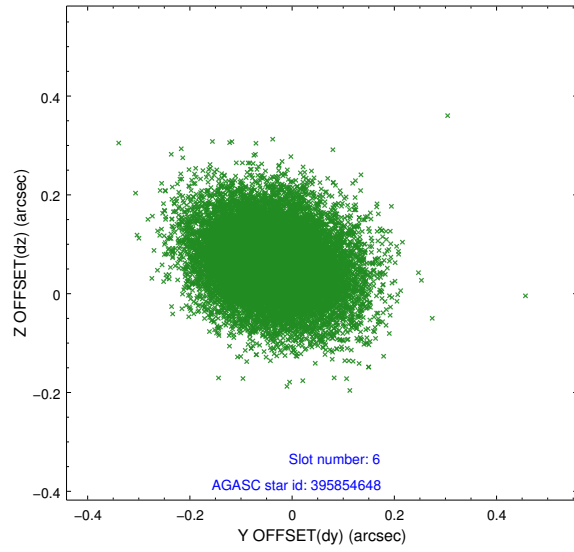




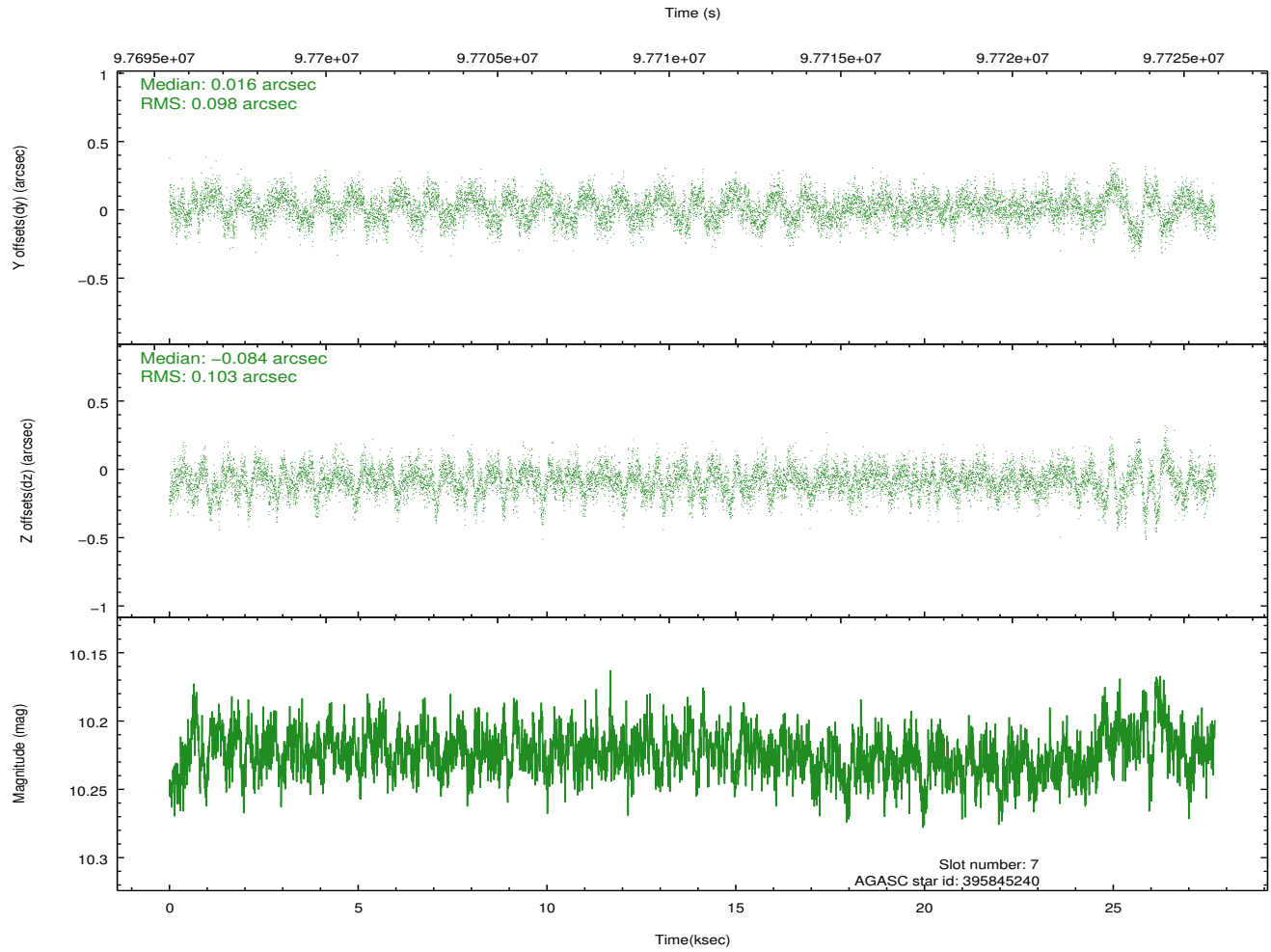
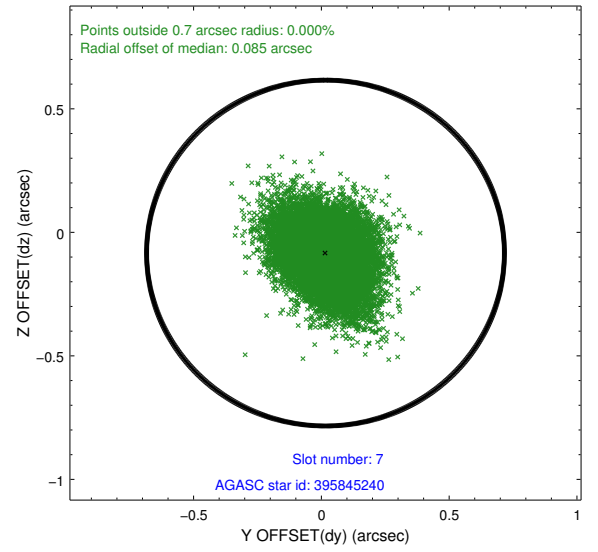
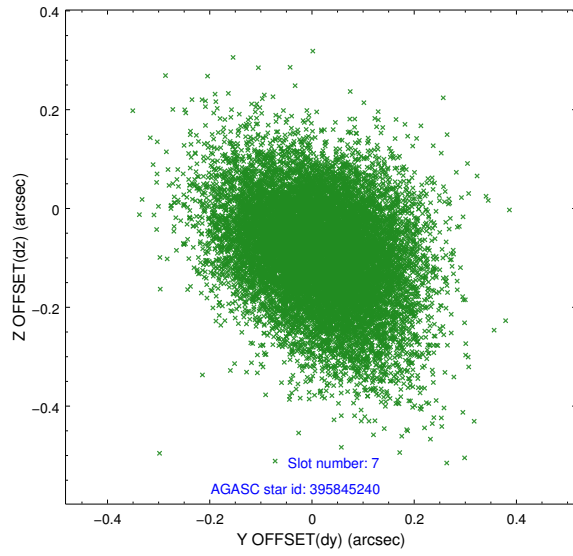
### 2.4.3 Slot 5



## 2.4.4 Slot 6

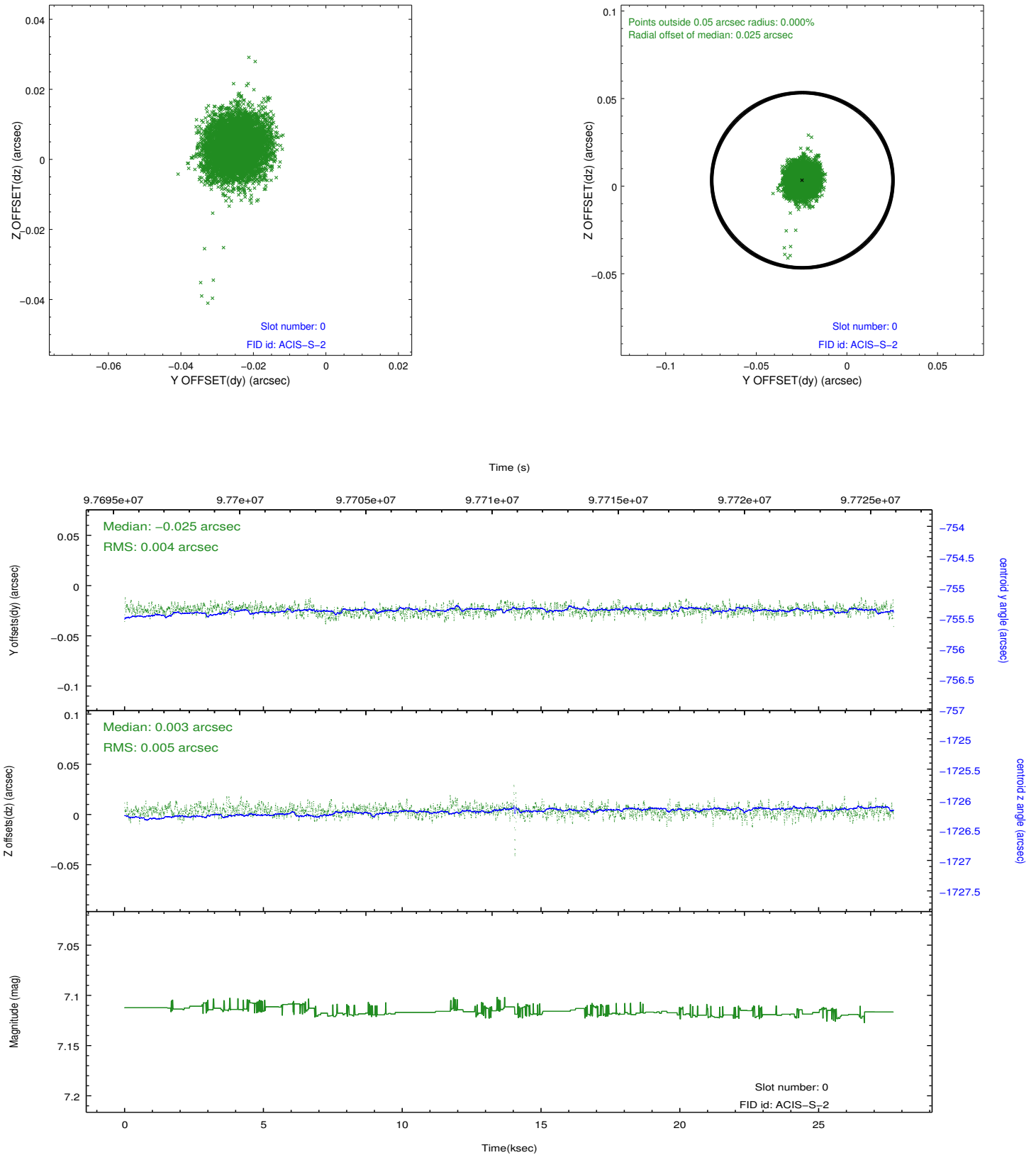


## 2.4.5 Slot 7

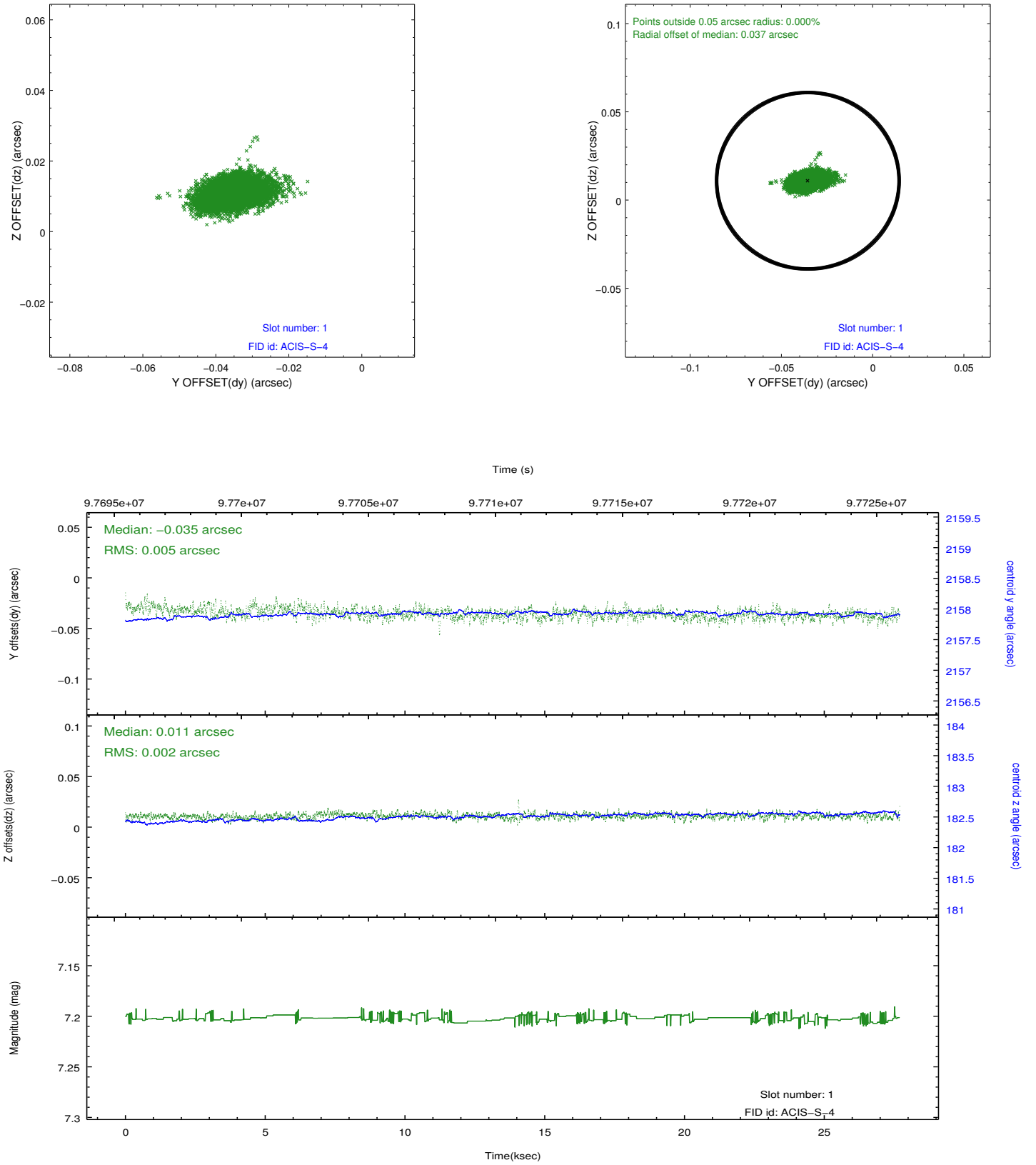


## 2.5 FID Slots

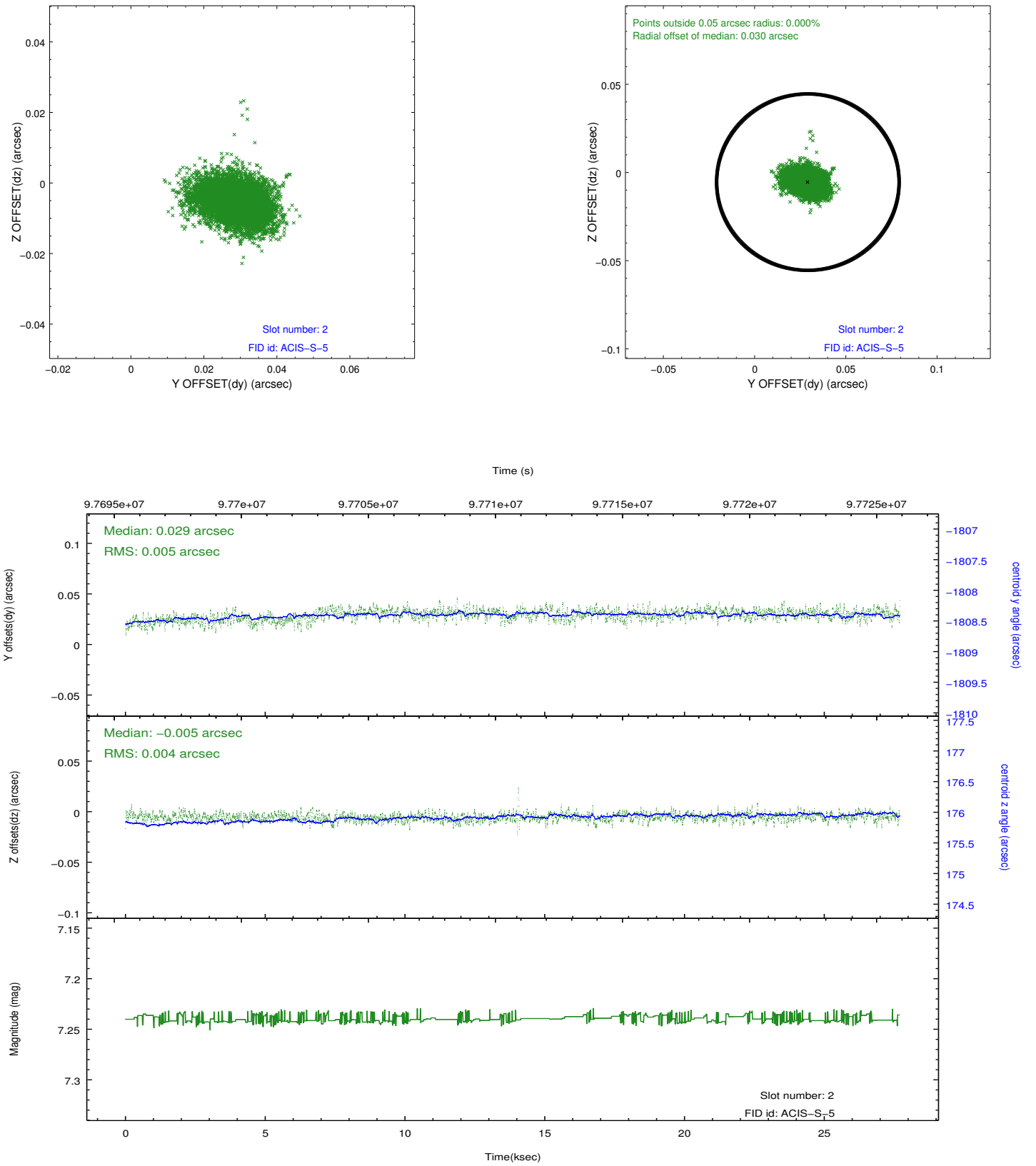
### 2.5.1 Slot 0



## 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)      | 2012.09.19 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 26.94      |

### **A.2 Comments**