

# V&V Reference Report

## L2 ASCDS Version : 8.4.5

Observation 3286 - L2 Version 4  
Chandra X-Ray Center

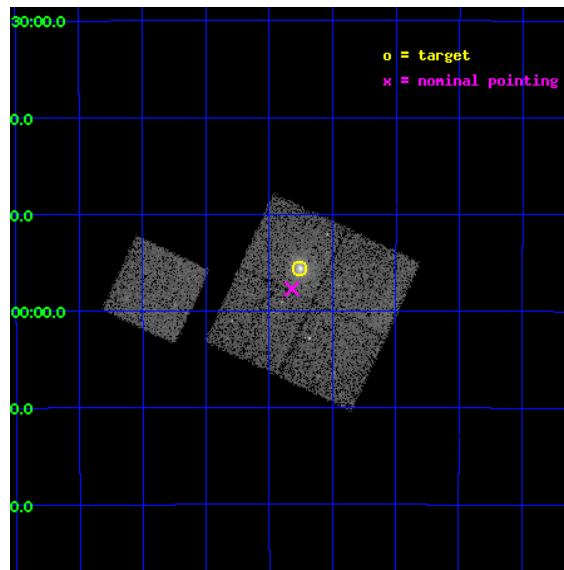
L2 Processing Date : Oct 17 2012

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# 1 Front

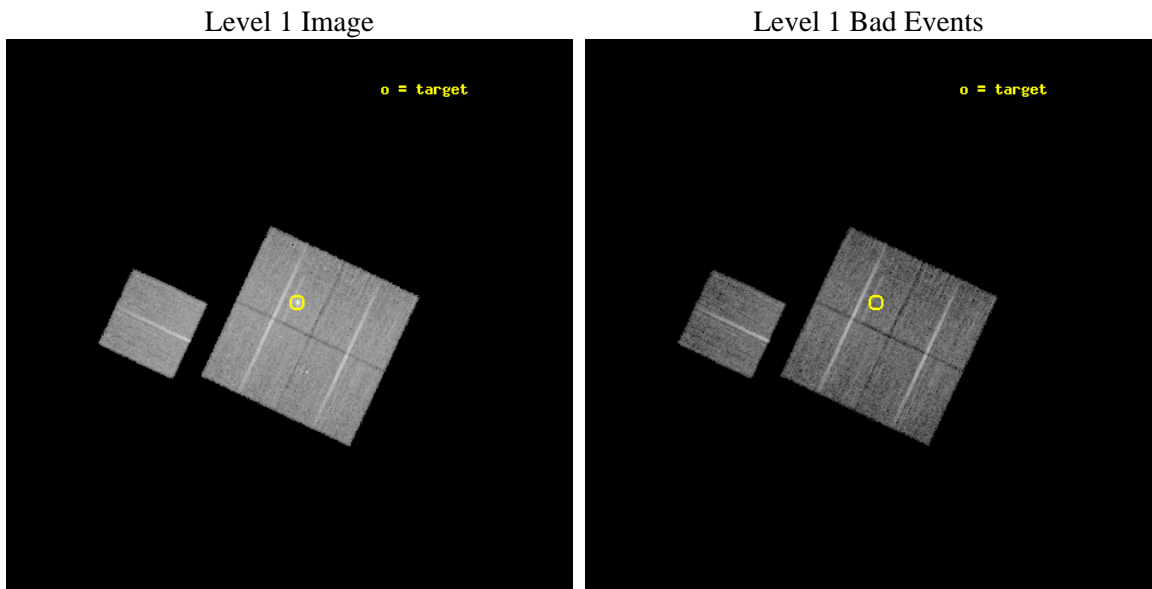
|          |   |   |
|----------|---|---|
| seq_num  | 800286  | Sequence number                             |
| obs_id   | 3286  | Observation id                              |
| title    | MACS: THE X-RAY PROPERTIES OF THE MOST MASSIVE GALAXY CLUSTERS AT Z>0.3 | Proposal title                              |
| observer | Dr. Harald Ebeling  | Principal investigator                      |
| object   | MACSJ2229.7-2755  | Source name                                 |
| dtcycle  | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 337.439167  | Observer's specified target RA [deg]        |
| dec_targ | -27.926944  | Observer's specified target Dec [deg]       |
| ra_nom   | 337.45531176722   | Nominal RA [deg]                            |
| dec_nom  | -27.961846883903  | Nominal Dec [deg]                           |
| roll_nom | 295.13567181692   | Nominal Roll [deg]                          |
| revision | 4   | Processing version of data                  |
| ontime   | 16646.899732888   | Sum of GTIs [s]                             |
| livetime | 16429.395732608   | Livetime [s]                                |
| ontime0  | 16643.635592818   | Sum of GTIs [s]                             |
| ontime1  | 16634.253632426   | Sum of GTIs [s]                             |
| ontime2  | 16640.576702535   | Sum of GTIs [s]                             |
| ontime3  | 16646.899732888   | Sum of GTIs [s]                             |
| ontime6  | 16646.735503107   | Sum of GTIs [s]                             |
| l2events | 47602   | Number of level 2 events                    |



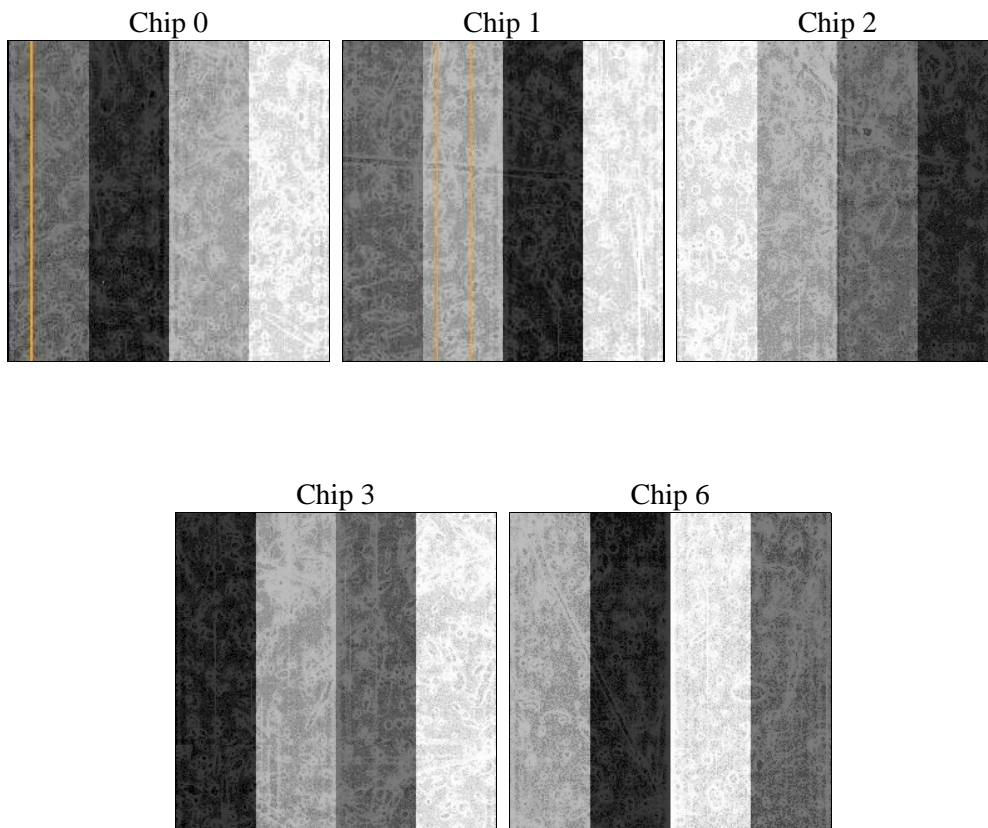
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 16500.000000    | [s] Scheduled observation exposure time |
| ascdsver | 8.4.5               | Processing system revision     | ontime         | 16646.899732888 | Sum of GTIs [s]                         |
| caldbver | 4.5.2               | &#160                          | ontime0        | 16643.635592818 | Sum of GTIs [s]                         |
| date     | 2012-10-17T18:20:44 | Date and time of file creation | ontime1        | 16634.253632426 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime2        | 16640.576702535 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 16646.899732888 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 16646.735503107 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 430709          | Number of level 1 events                |

### 2.1.4 Events

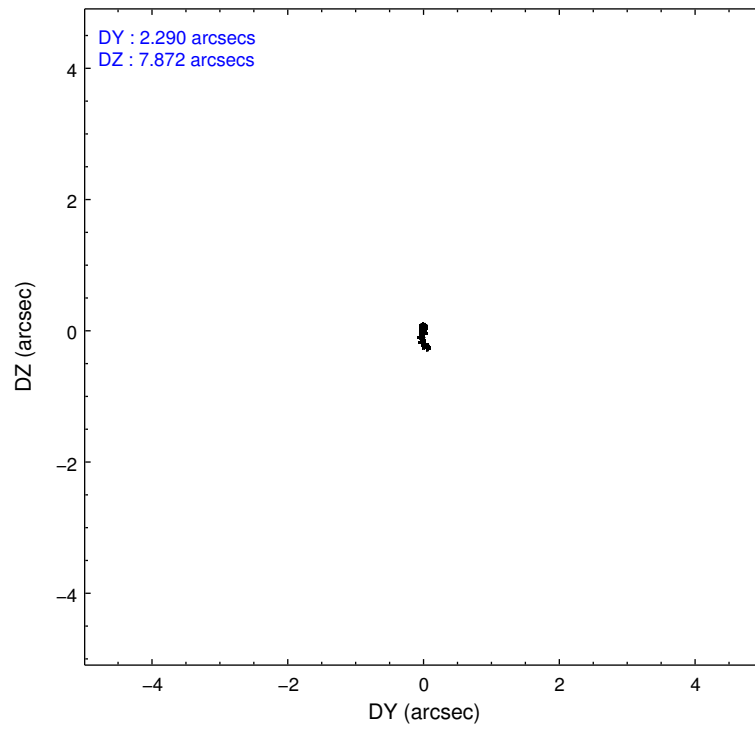
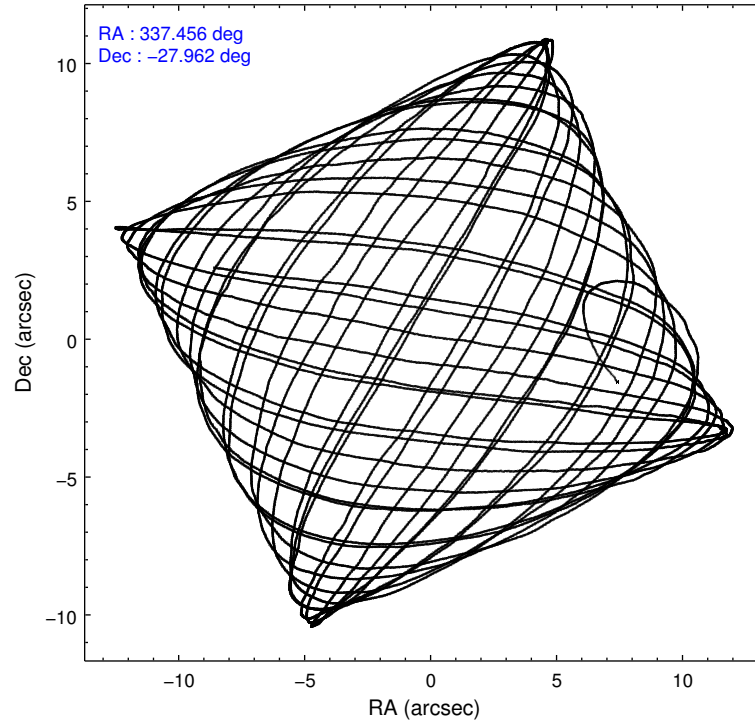
|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 |
|-----------------|-------|-------|-------|-------|-------|
| level 1 events  | 79765 | 82195 | 88863 | 93673 | 86213 |
| rejected events | 70055 | 72007 | 79723 | 77131 | 76329 |
| rejected %      | 87%   | 87%   | 89%   | 82%   | 88%   |

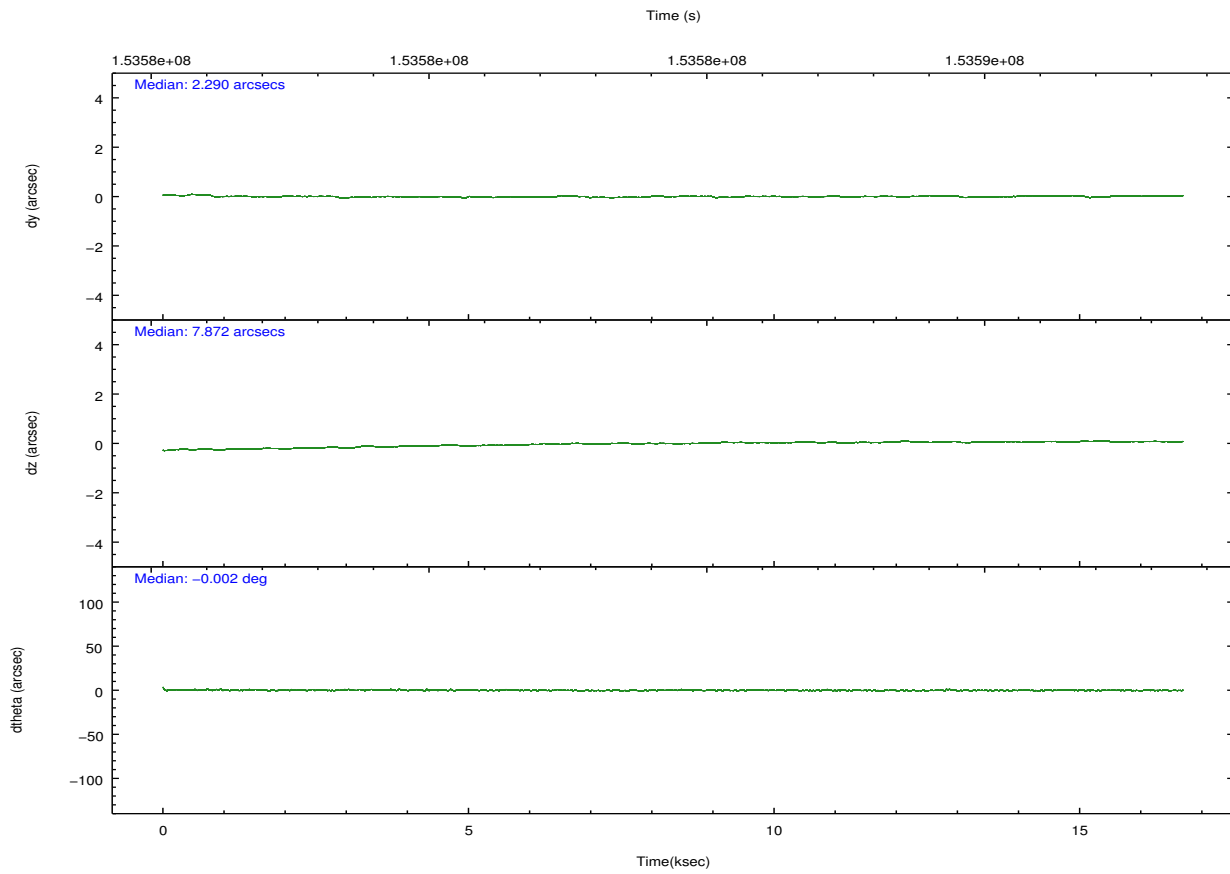
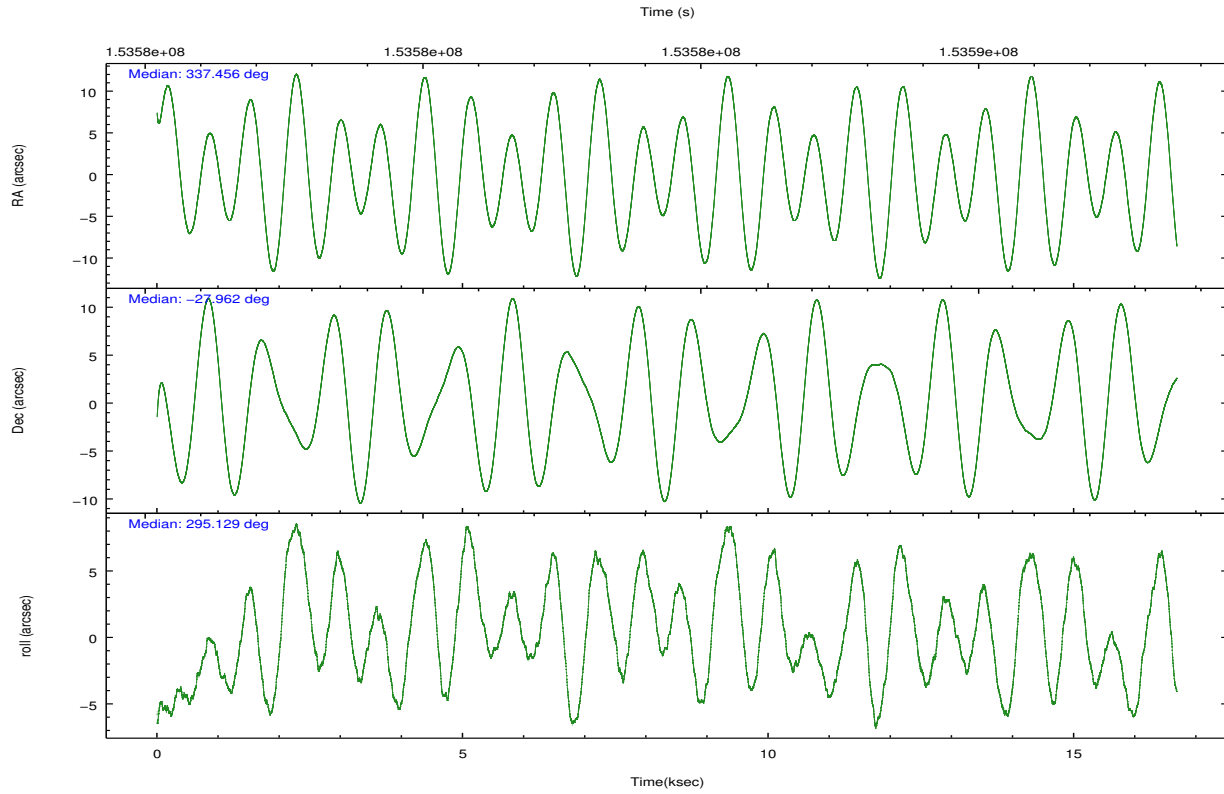
|                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 |
|----------------|-------|-------|-------|-------|-------|
| grade 0 events | 3879  | 4017  | 3680  | 10069 | 4174  |
|                | 4%    | 4%    | 4%    | 10%   | 4%    |
| grade 1 events | 37    | 42    | 53    | 93    | 45    |
|                | 0%    | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 2089  | 2102  | 2013  | 2424  | 1981  |
|                | 2%    | 2%    | 2%    | 2%    | 2%    |
| grade 3 events | 1072  | 1096  | 961   | 1168  | 995   |
|                | 1%    | 1%    | 1%    | 1%    | 1%    |
| grade 4 events | 983   | 1068  | 946   | 1153  | 968   |
|                | 1%    | 1%    | 1%    | 1%    | 1%    |
| grade 5 events | 2907  | 3172  | 2732  | 3207  | 3273  |
|                | 3%    | 3%    | 3%    | 3%    | 3%    |
| grade 6 events | 1689  | 1906  | 1541  | 1728  | 1766  |
|                | 2%    | 2%    | 1%    | 1%    | 2%    |
| grade 7 events | 67109 | 68792 | 76937 | 73831 | 73011 |
|                | 84%   | 83%   | 86%   | 78%   | 84%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-01236          | ACIS-01236           | 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                 | 337.429758          | 337.4553117672233    | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | -27.946240          | -27.96184688390257   | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 294.915004          | 295.1356718169238    | [s] Primary exposure time             | 0.000000  | 3.1     |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272  |                                       |           |         |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334 |                                       |           |         |
| [mm] SIM translation stage pos    | -227.742463         | -227.734108438797    |                                       |           |         |
| [mm] SIM translation stage offset | -5.85               | -5.858344564132665   |                                       |           |         |
| [s] Observation start time (MET)  | 153576239.184000    | 153575246.71751      |                                       |           |         |
| Observation start date            | 2002-11-13T12:02:55 | 2002-11-13T11:47:26  |                                       |           |         |
| [s] Observation end time (MET)    | 153592739.184000    | 153593251.35576      |                                       |           |         |
| Observation end date              | 2002-11-13T16:37:55 | 2002-11-13T16:47:31  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



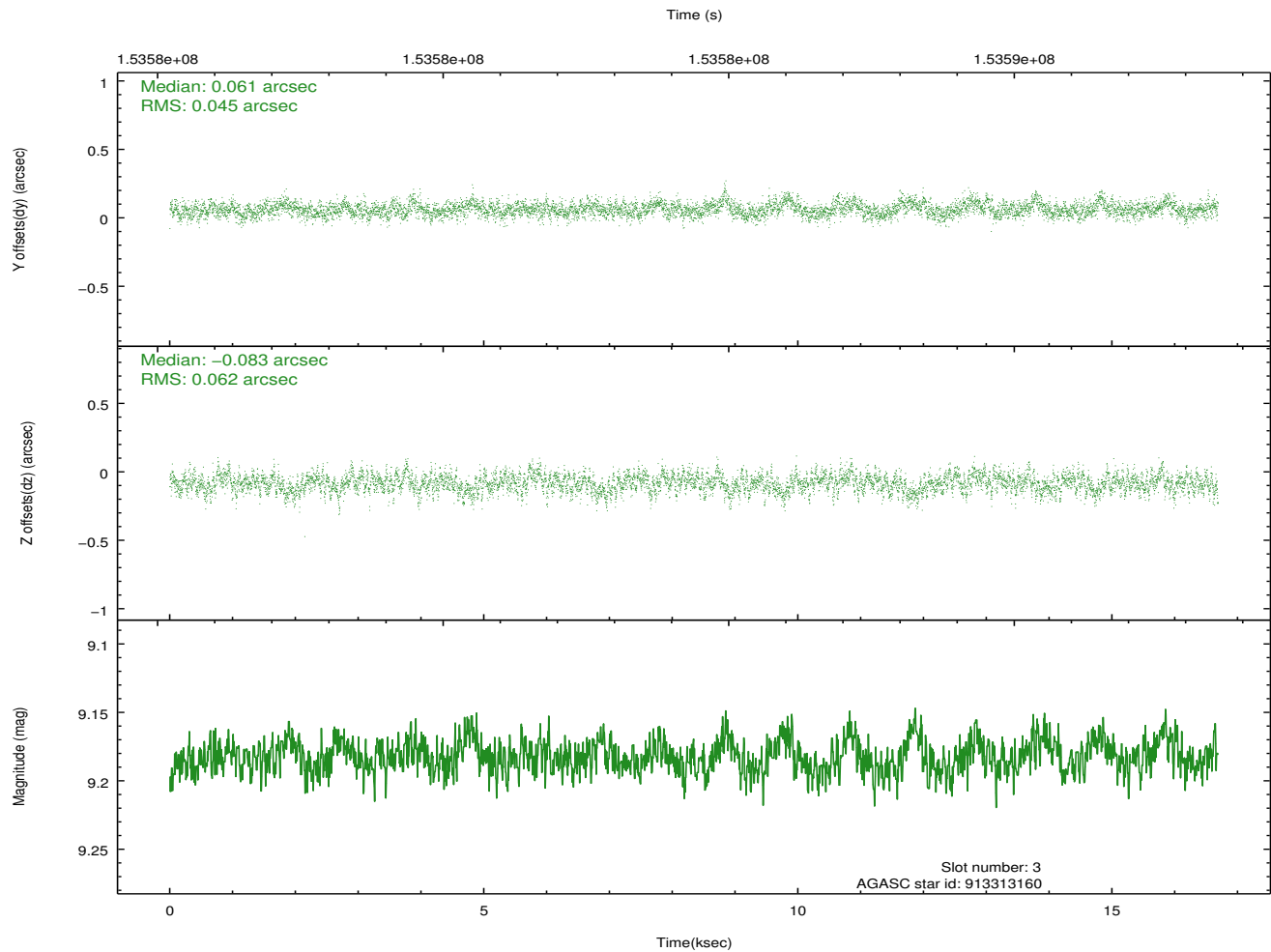
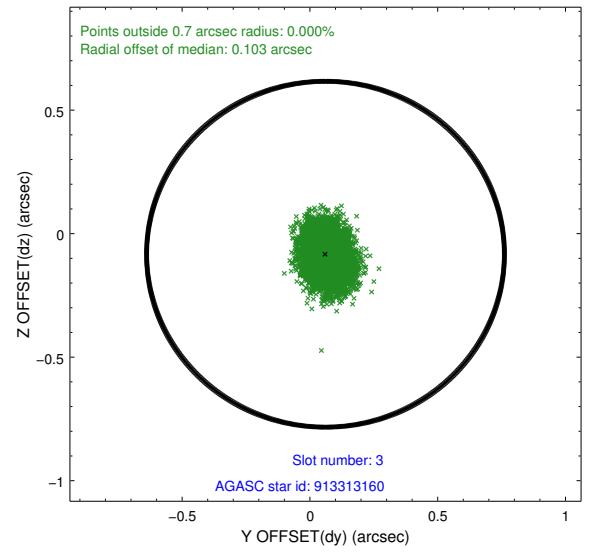
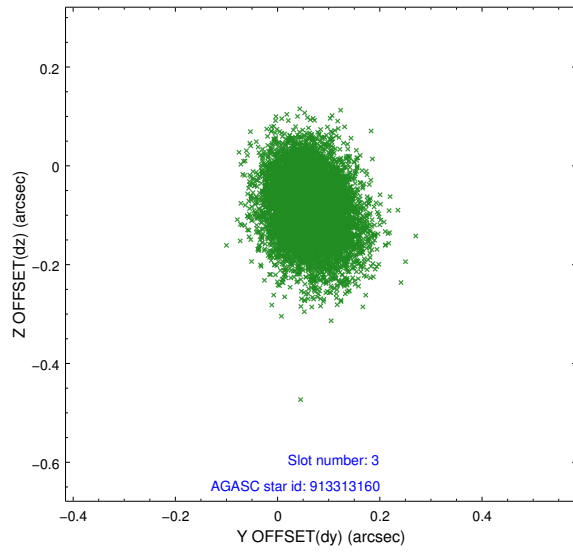


### Slot Statistics

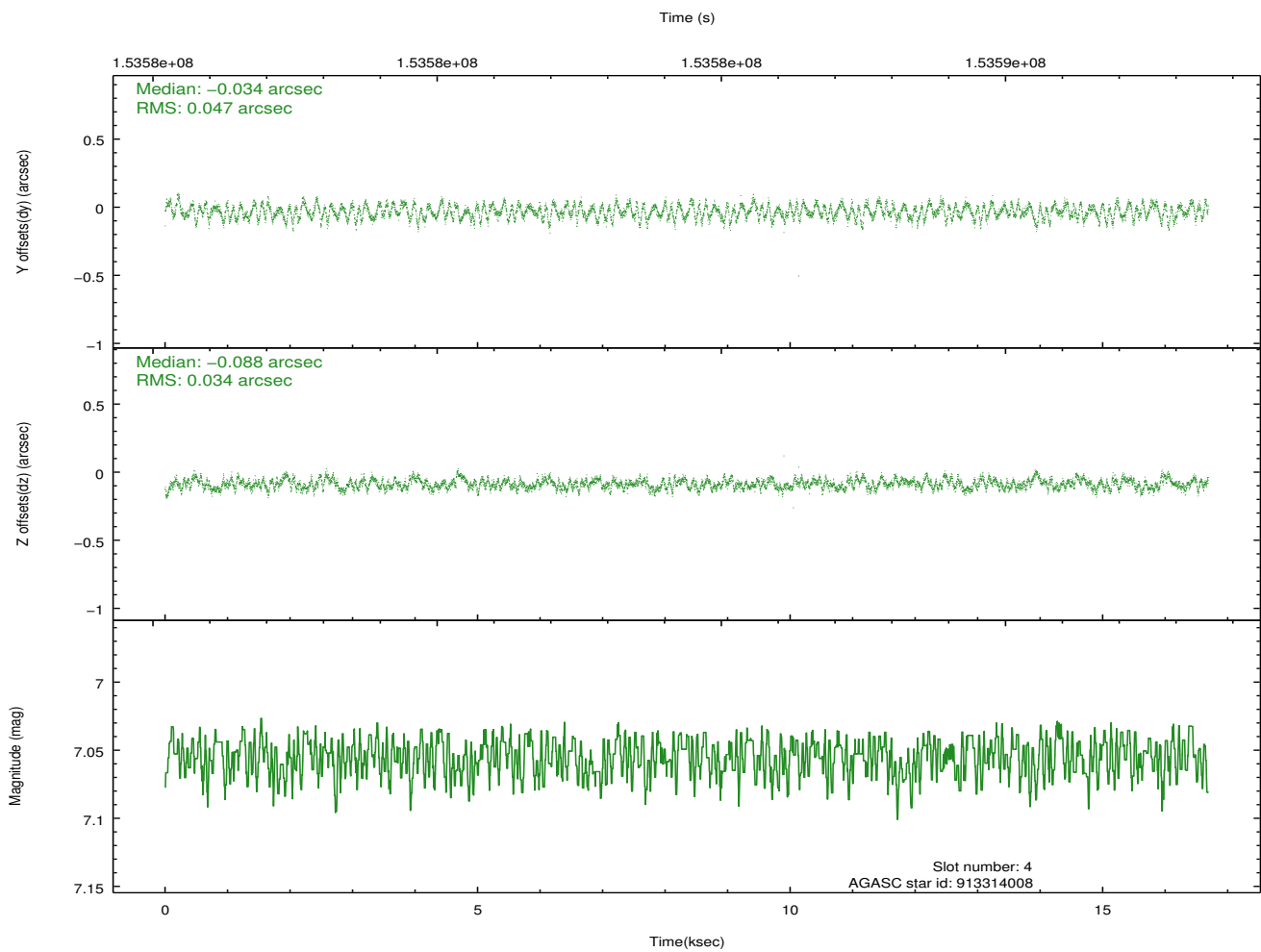
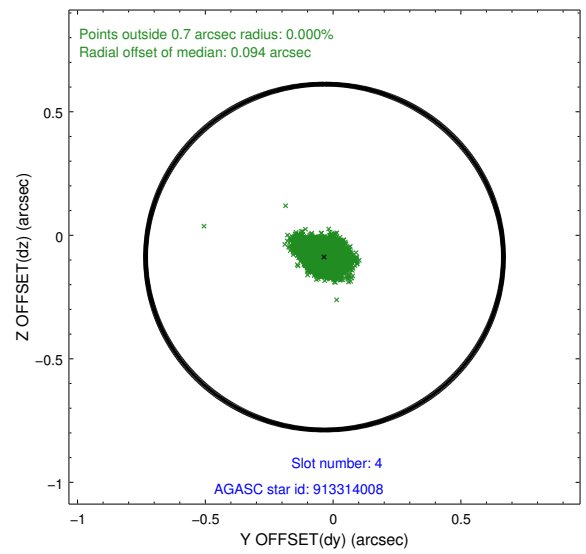
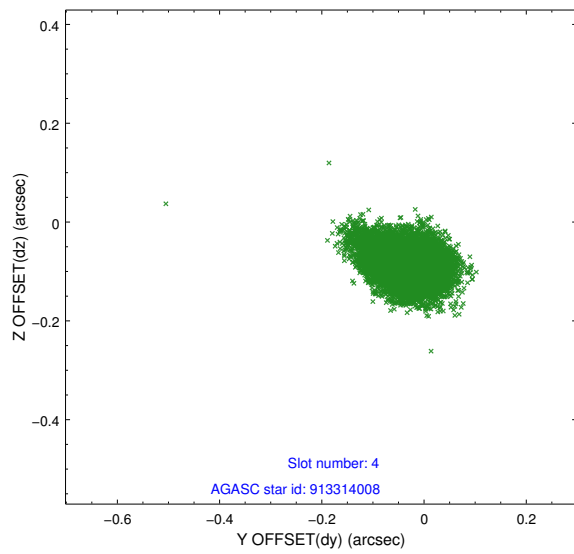
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec        | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|------------|----------|----------|
| 0    | FID    | ACIS-I-1  | 7.24 | 4066  | 0.033  | 0.003  | 0.006 | 0.010 | 0.000000   | 0.000000   | 937.44   | -951.49  |
| 1    | FID    | ACIS-I-5  | 7.23 | 4065  | -0.134 | 0.062  | 0.006 | 0.010 | 0.000000   | 0.000000   | -1810.68 | 945.91   |
| 2    | FID    | ACIS-I-6  | 7.25 | 4067  | 0.009  | 0.005  | 0.007 | 0.011 | 0.000000   | 0.000000   | 402.69   | 1590.64  |
| 3    | GUIDE  | 913313160 | 9.18 | 8126  | 0.061  | -0.083 | 0.081 | 0.135 | 336.843776 | -28.032525 | -499.77  | -1822.52 |
| 4    | GUIDE  | 913314008 | 7.05 | 8134  | -0.034 | -0.088 | 0.061 | 0.097 | 337.357724 | -28.659564 | 2231.94  | -1289.23 |
| 5    | GUIDE  | 913311480 | 9.08 | 8128  | -0.132 | 0.010  | 0.073 | 0.118 | 337.398081 | -27.586667 | -1217.80 | 452.43   |
| 6    | GUIDE  | 913441280 | 8.80 | 8133  | -0.061 | 0.016  | 0.092 | 0.140 | 338.143252 | -27.711258 | 194.92   | 2415.12  |
| 7    | GUIDE  | 913444792 | 8.75 | 8131  | 0.168  | 0.145  | 0.075 | 0.117 | 338.355106 | -28.147577 | 1903.55  | 2353.71  |

## 2.4 Star Slots

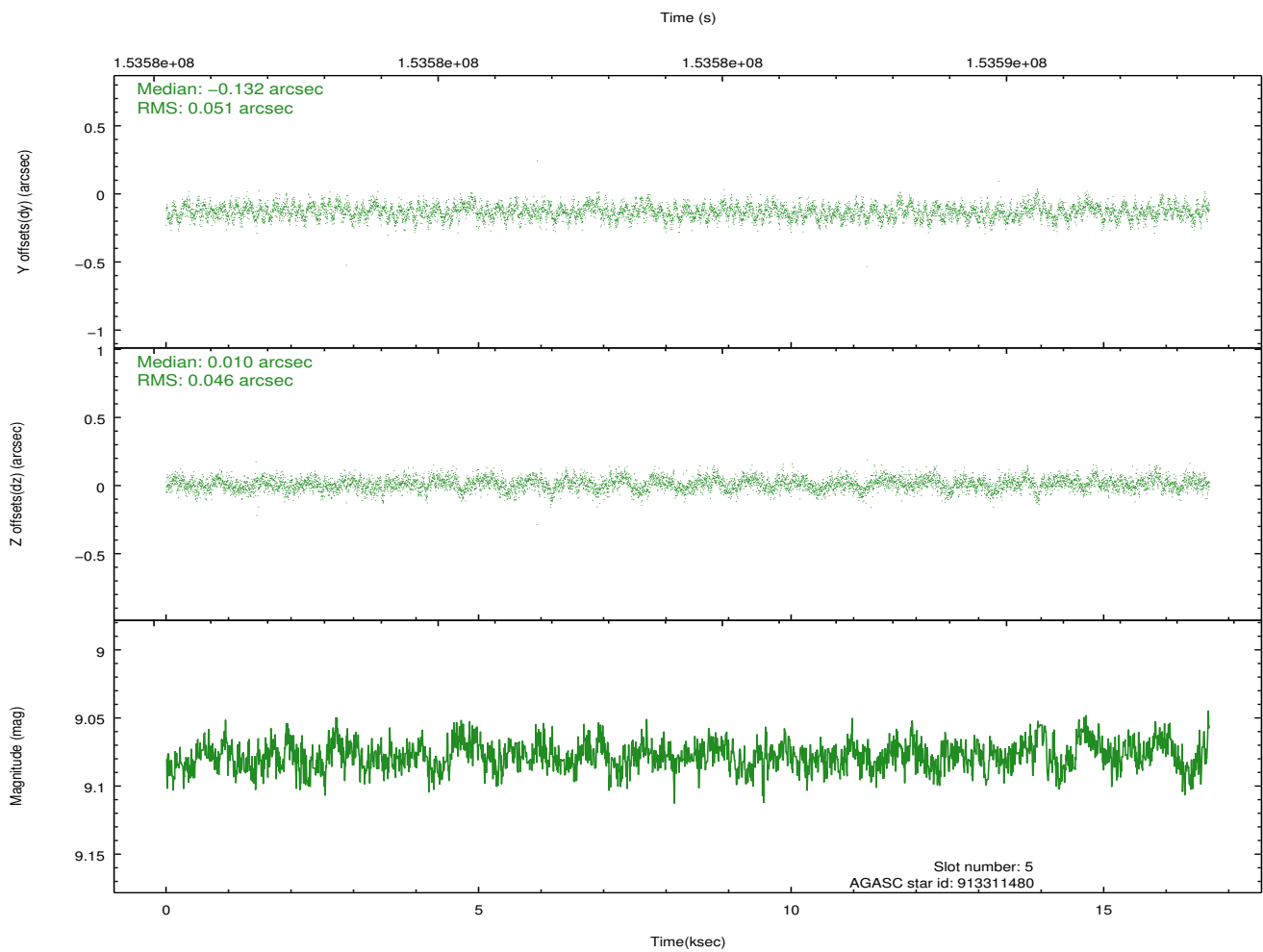
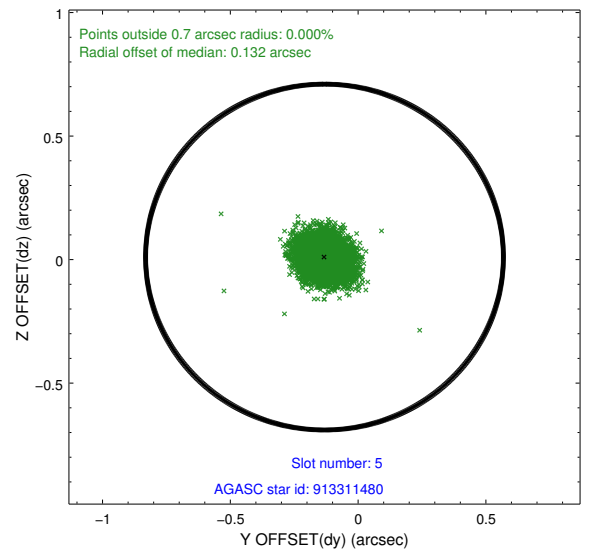
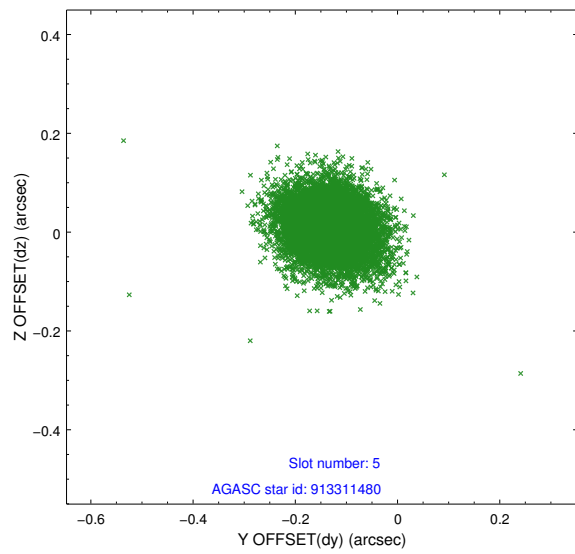
### 2.4.1 Slot 3



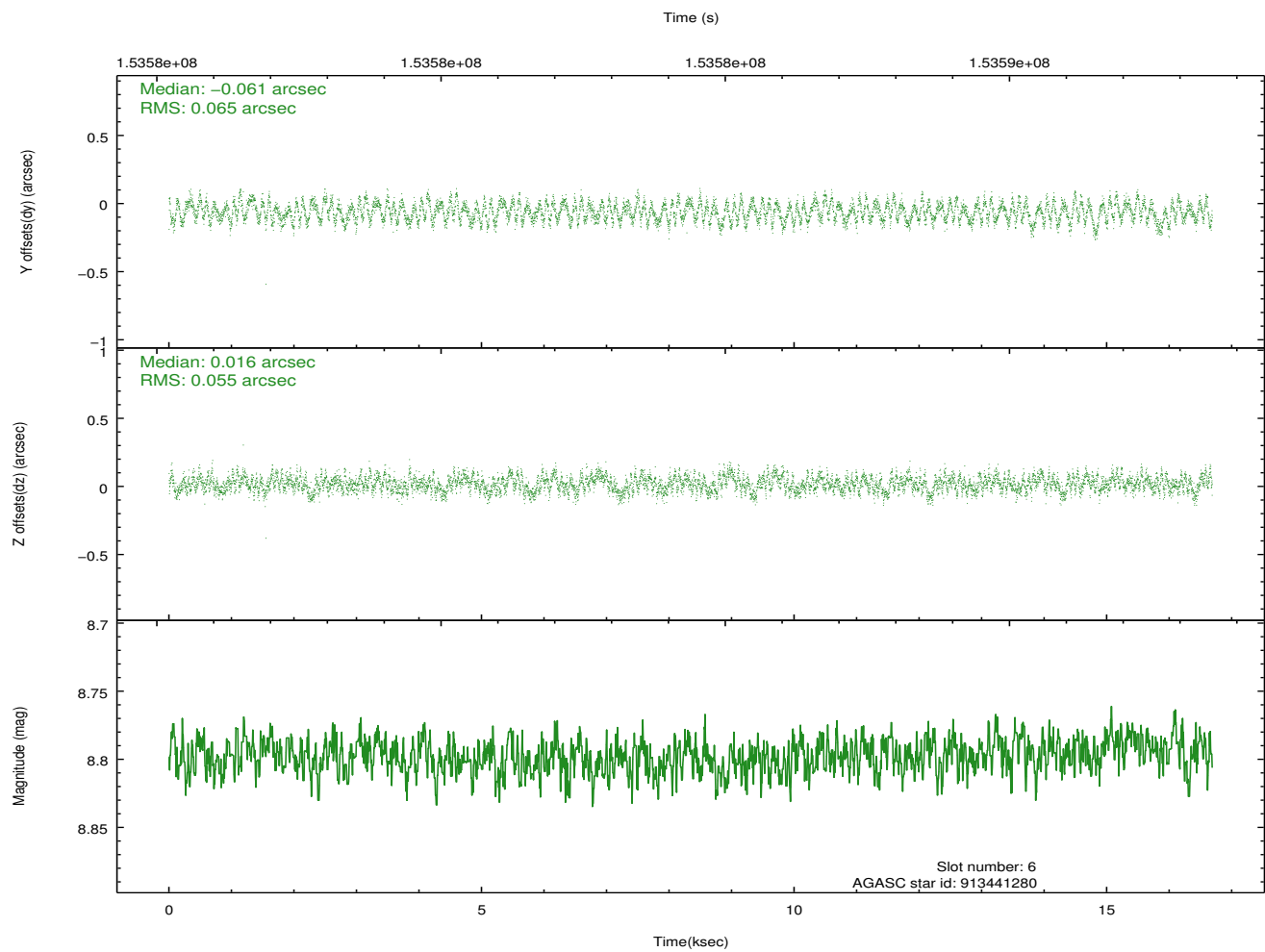
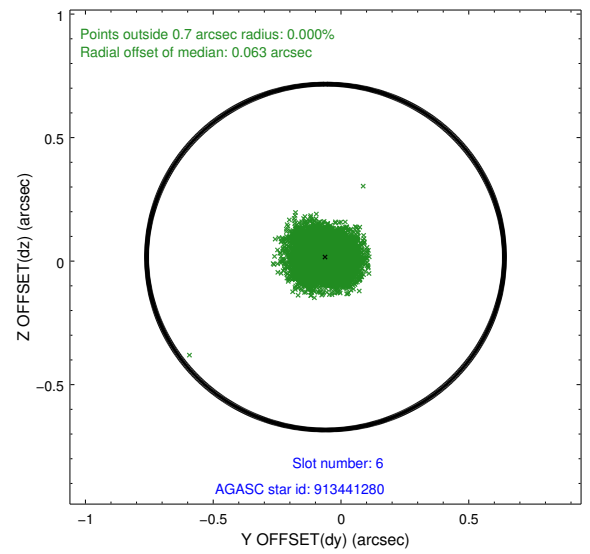
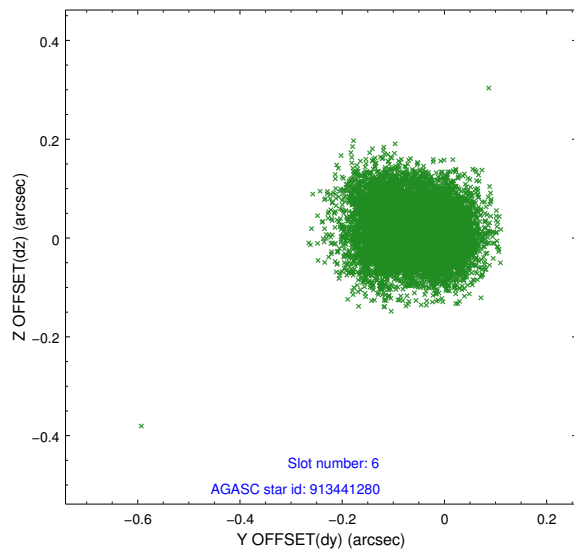
## 2.4.2 Slot 4



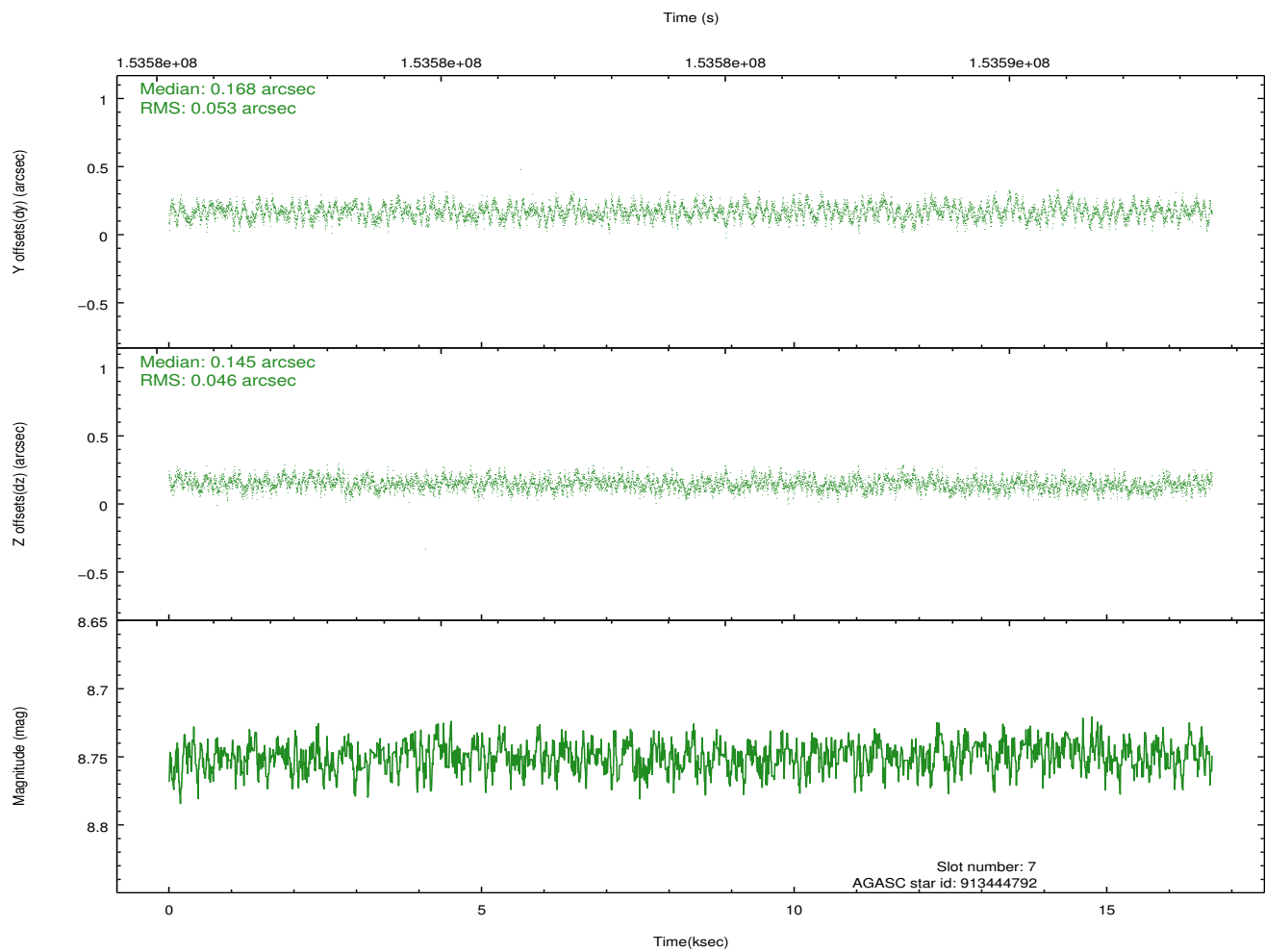
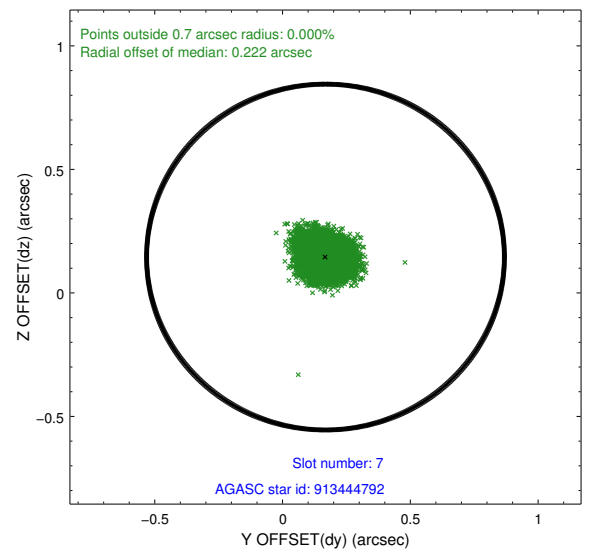
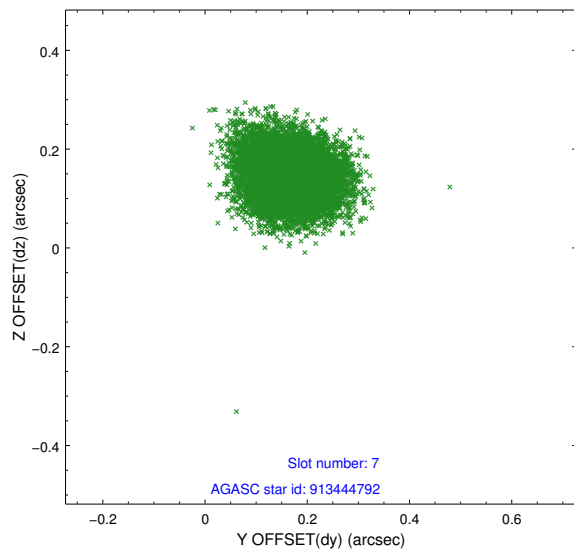
### 2.4.3 Slot 5



## 2.4.4 Slot 6

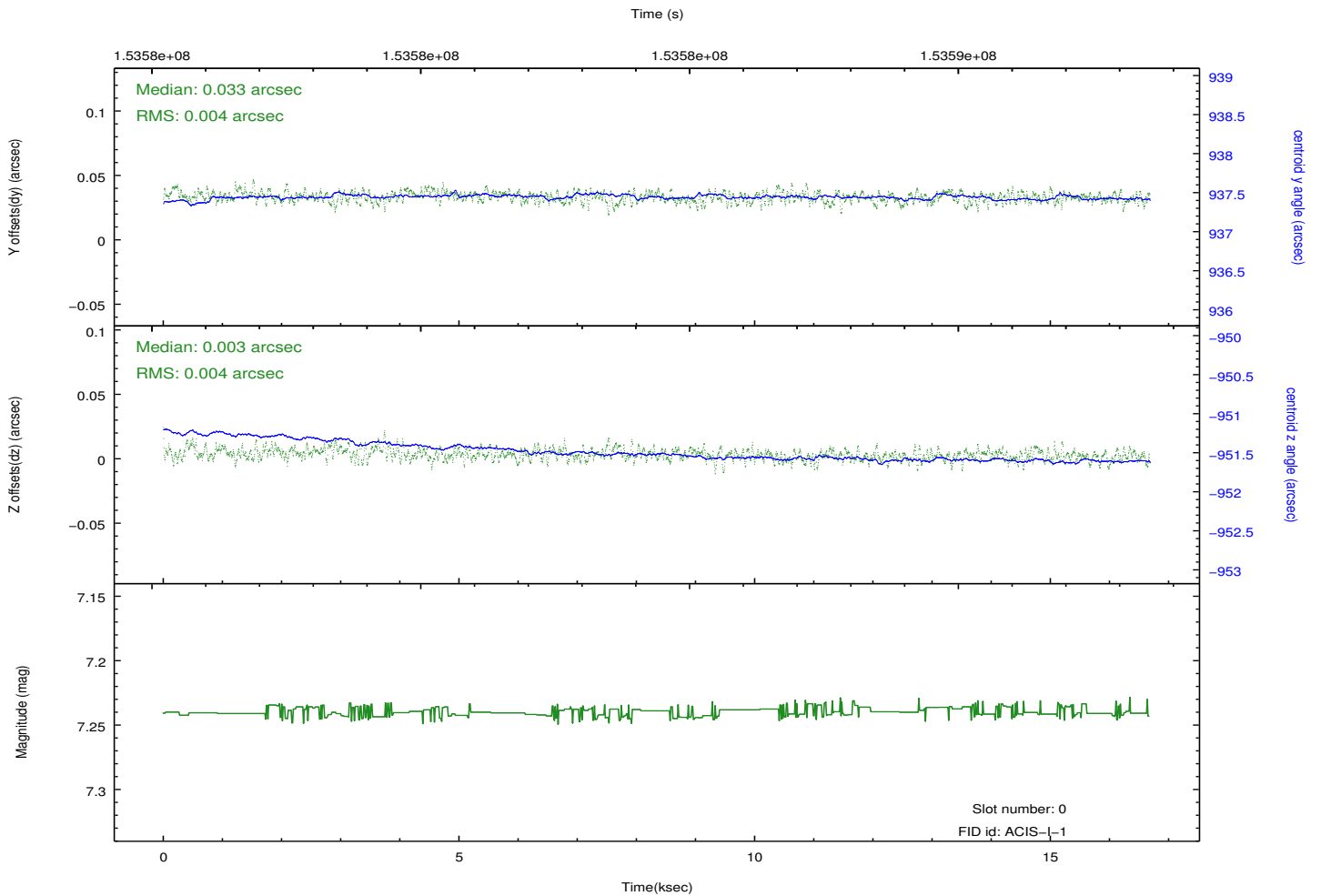
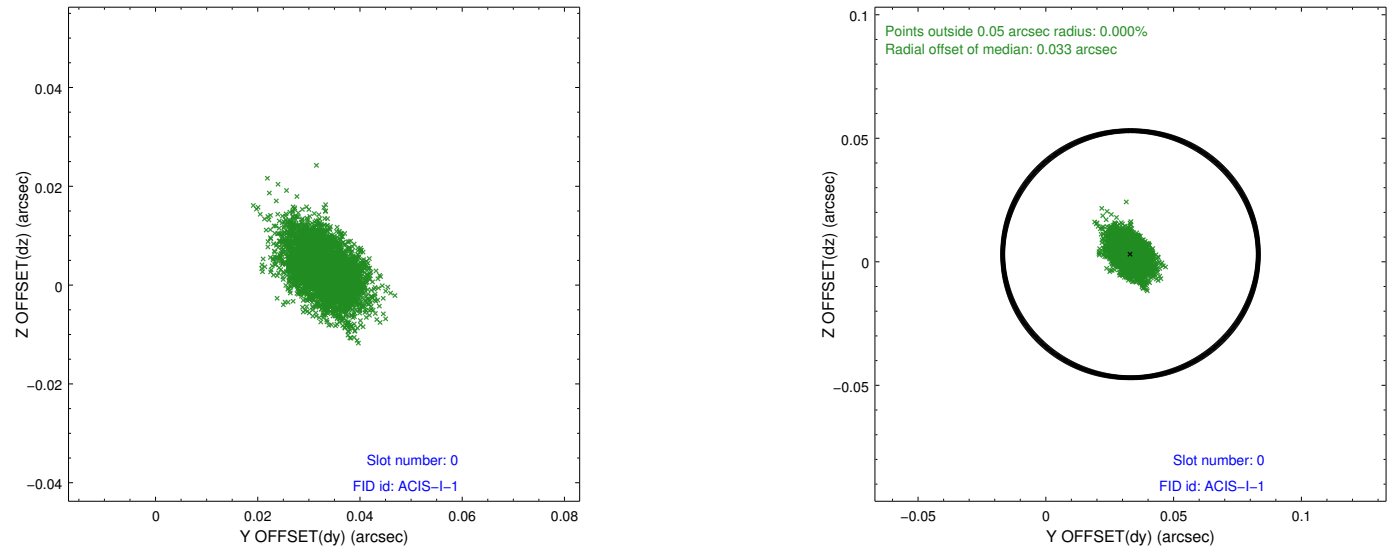


## 2.4.5 Slot 7

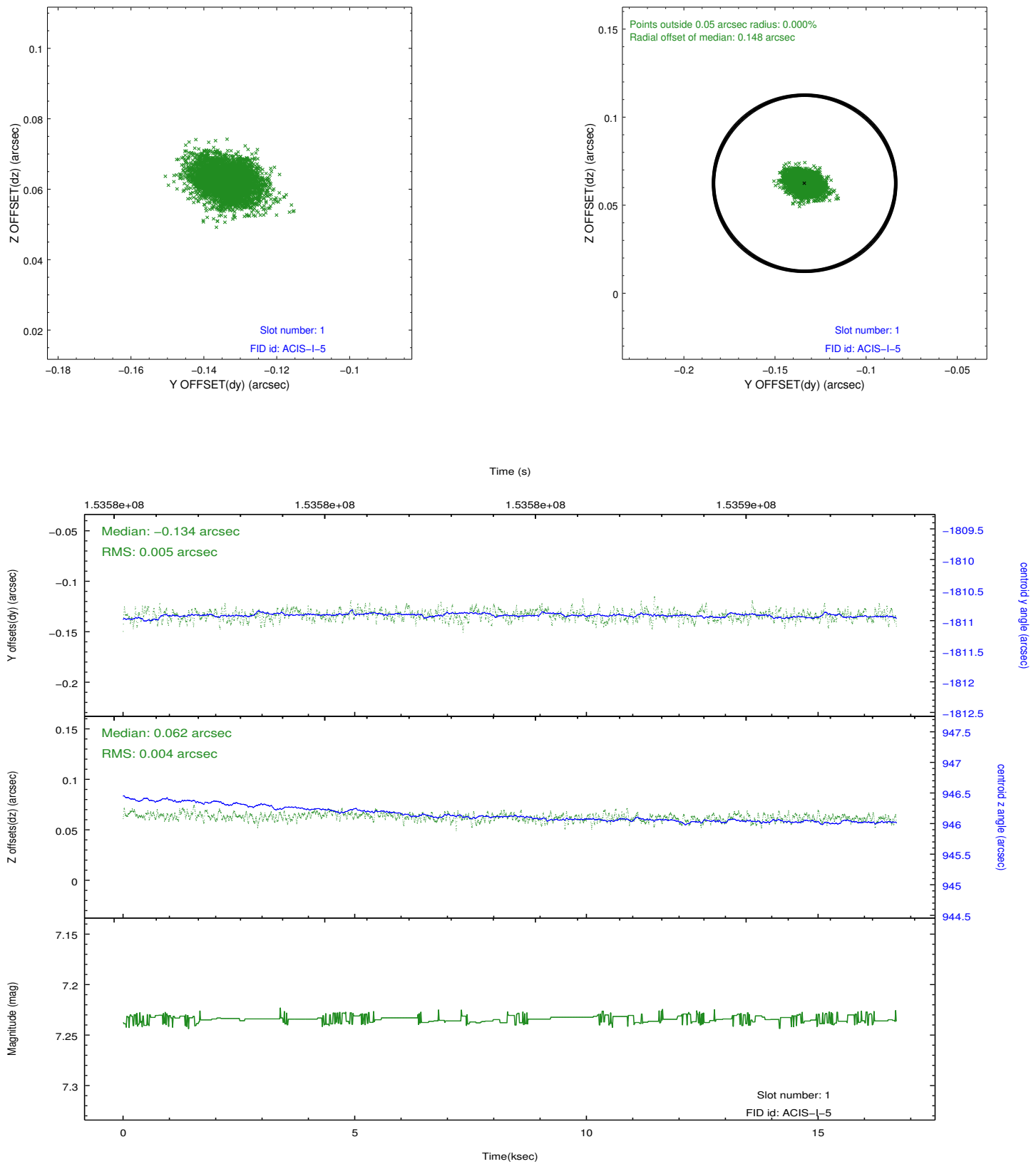


## 2.5 FID Slots

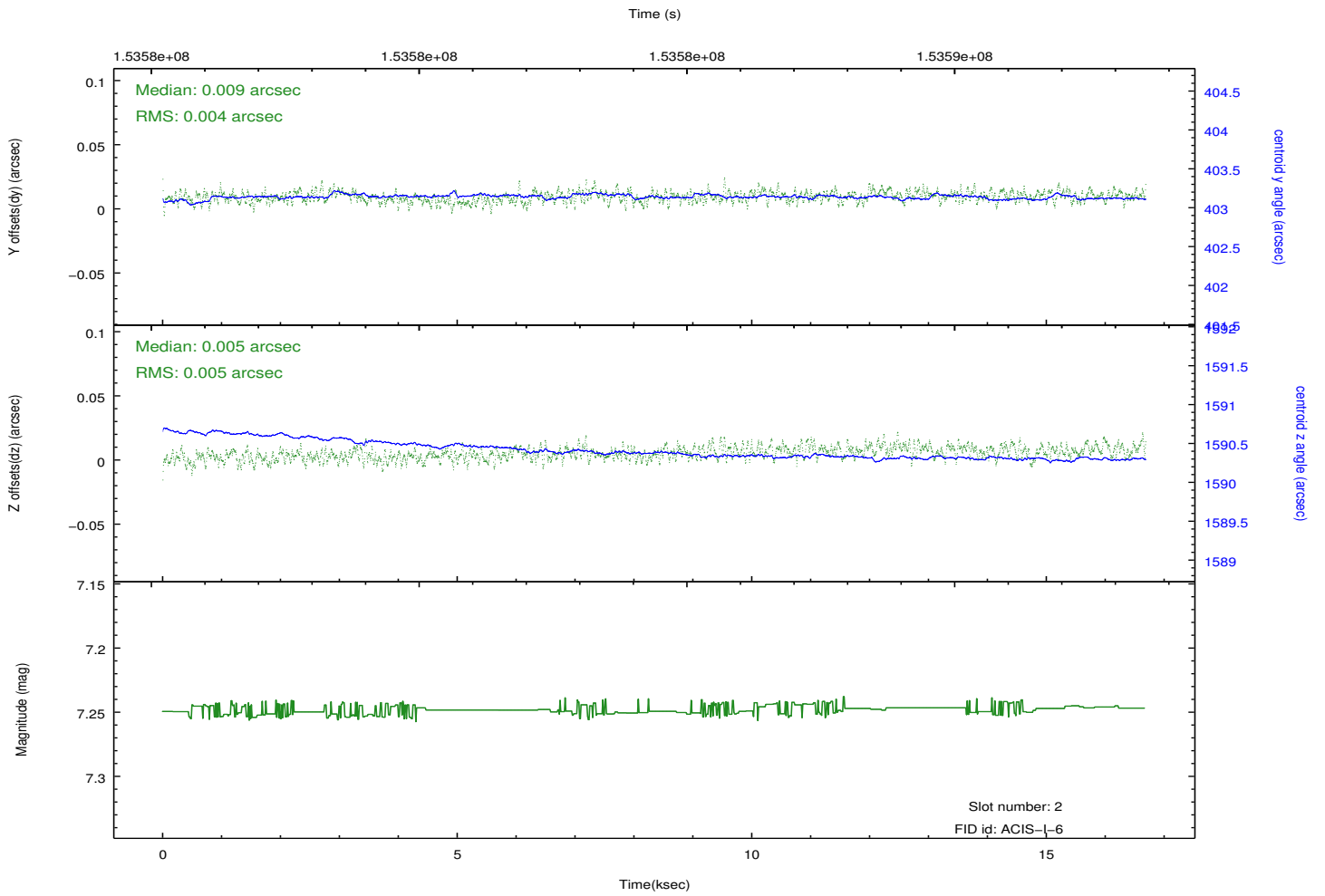
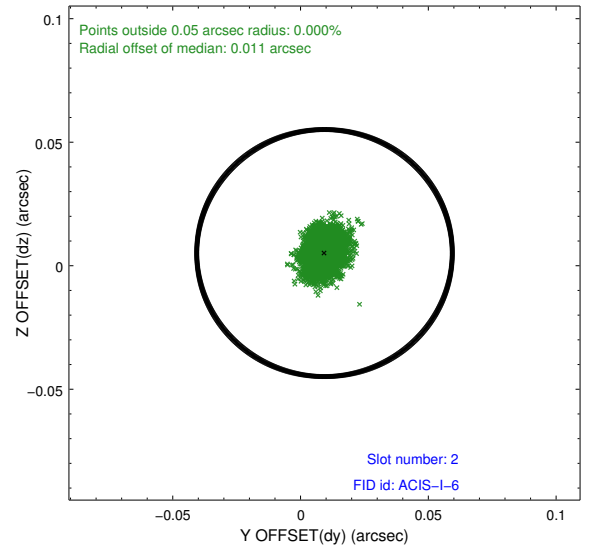
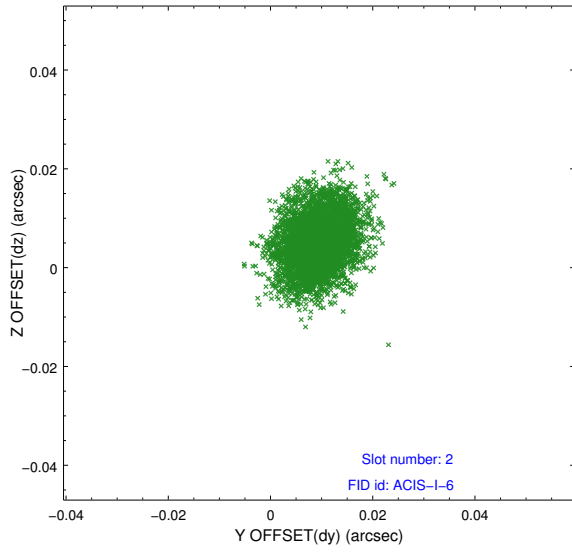
### 2.5.1 Slot 0



## 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)      | 2012.10.28 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 16.65      |

## A.2 Comments

The bias map for CCD\_ID = 3 was incomplete because of gaps in telemetry. The bias map CCD 3 was reconstructed using scaled data from a comparable bias map for another observation to fill the data gaps. The region affected is bounded by the sky coordinates:  
(337.50951,-27.83211), (337.36653,-27.89102), (337.36777,-27.89337), (337.51076,-27.83445)