

# V&V Reference Report

## L2 ASCDS Version : 10.7.1

Observation 21564 - L2 Version 1  
Chandra X-Ray Center

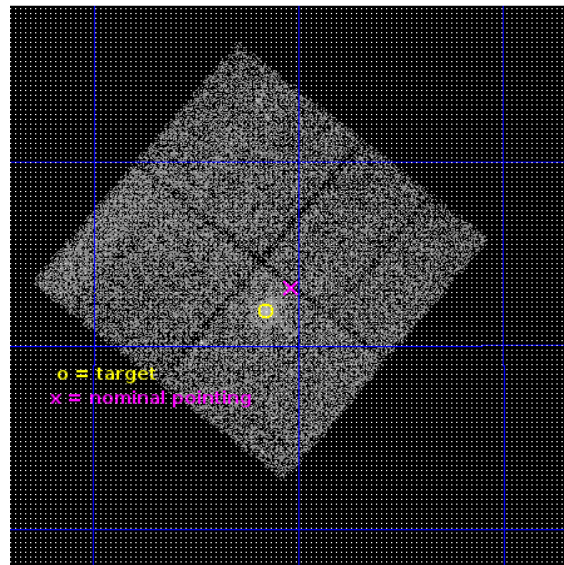
L2 Processing Date : Jan 5 2019

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# 1 Front

|          |                                                                   |                                             |
|----------|-------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 801842                                                            | Sequence number                             |
| obs_id   | 21564                                                             | Observation id                              |
| title    | Characterizing the most X-ray luminous galaxy clusters at z=0.5-1 | &#160                                       |
| observer | Harald Ebeling                                                    | Principal investigator                      |
| object   | eMACSJ0840.2+4421                                                 | Source name                                 |
| dtcycle  | 0                                                                 | &#160                                       |
| cycle    | P                                                                 | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 130.039167                                                        | Observer's specified target RA [deg]        |
| dec_targ | 44.365                                                            | Observer's specified target Dec [deg]       |
| ra_nom   | 130.00842509874                                                   | Nominal RA [deg]                            |
| dec_nom  | 44.386218779251                                                   | Nominal Dec [deg]                           |
| roll_nom | 129.23018306864                                                   | Nominal Roll [deg]                          |
| revision | 1                                                                 | Processing version of data                  |
| ontime   | 19776.696045876                                                   | Sum of GTIs [s]                             |
| livetime | 19518.298952644                                                   | Livetime [s]                                |
| ontime0  | 19779.713926196                                                   | Sum of GTIs [s]                             |
| ontime1  | 19779.75496614                                                    | Sum of GTIs [s]                             |
| ontime2  | 19779.796006203                                                   | Sum of GTIs [s]                             |
| ontime3  | 19776.696045876                                                   | Sum of GTIs [s]                             |
| l2events | 57799                                                             | Number of level 2 events                    |

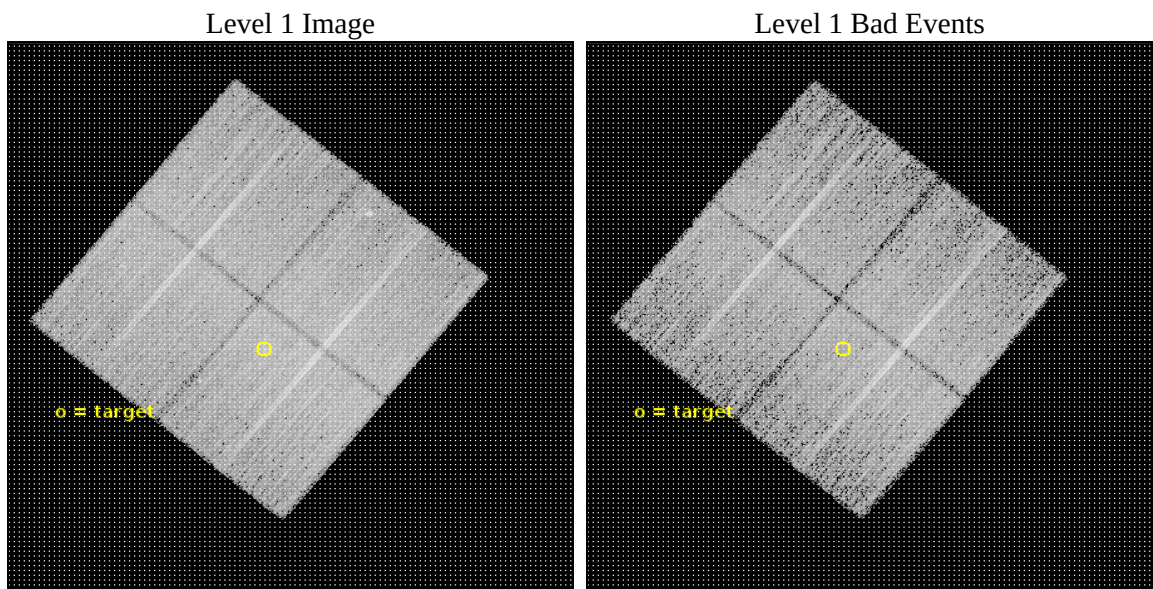




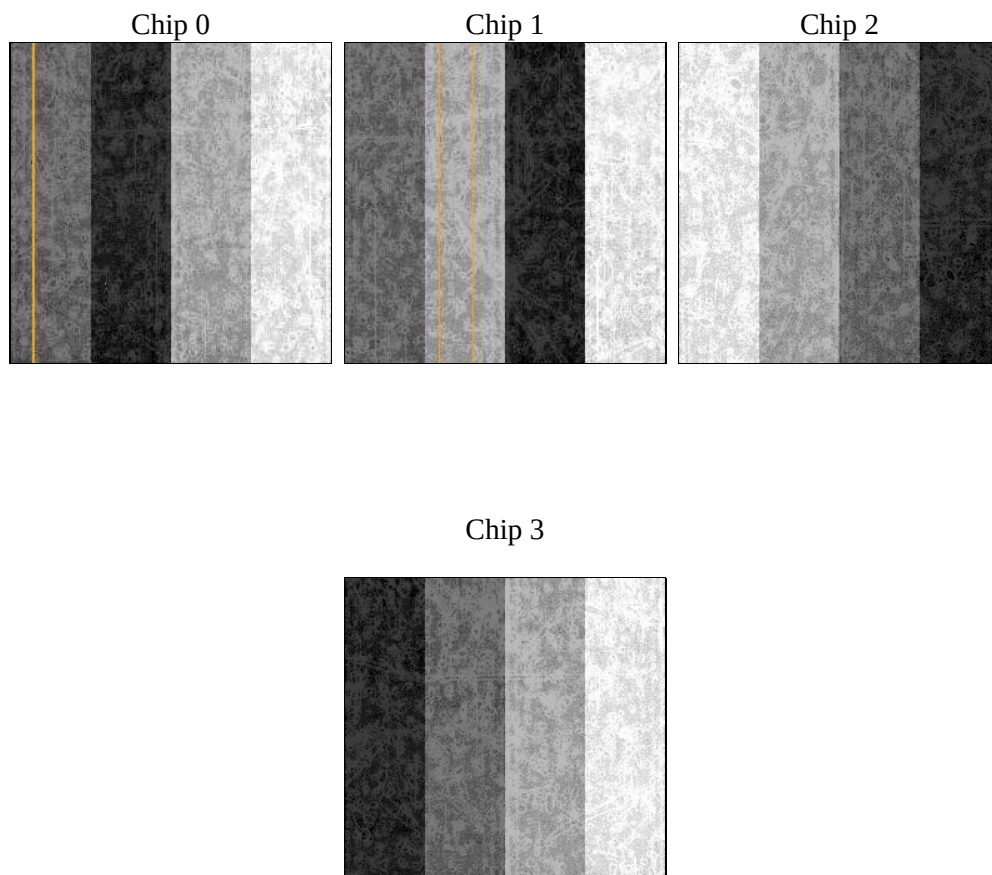
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 19701.888000    | [s] Scheduled observation exposure time |
| ascdsver | 10.7.1              | Processing system revision     | ontime         | 19776.696045876 | Sum of GTIs [s]                         |
| caldsver | 4.8.2               | &#160                          | ontime0        | 19779.713926196 | Sum of GTIs [s]                         |
| date     | 2019-01-05T05:29:54 | Date and time of file creation | ontime1        | 19779.75496614  | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime2        | 19779.796006203 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 19776.696045876 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 579042          | Number of level 1 events                |

### 2.1.4 Events

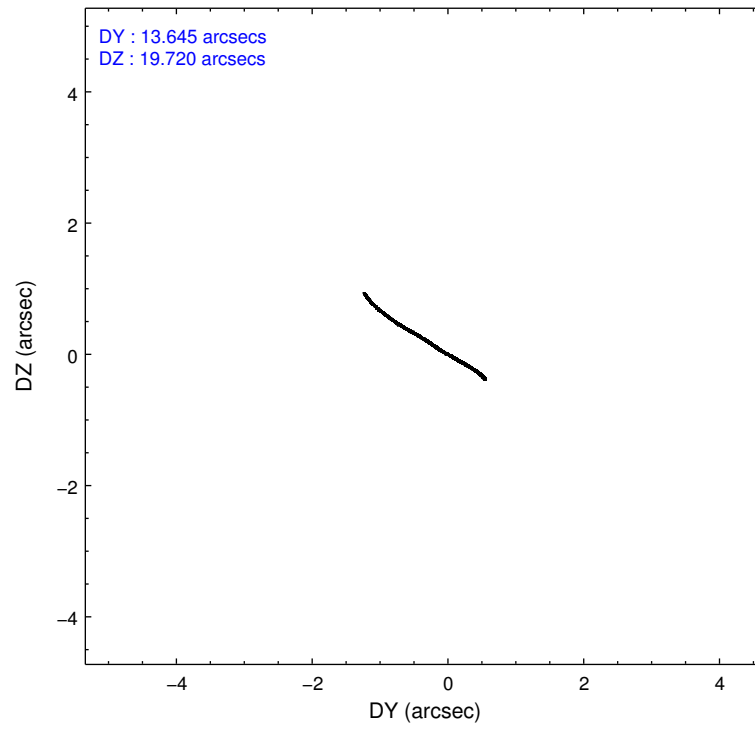
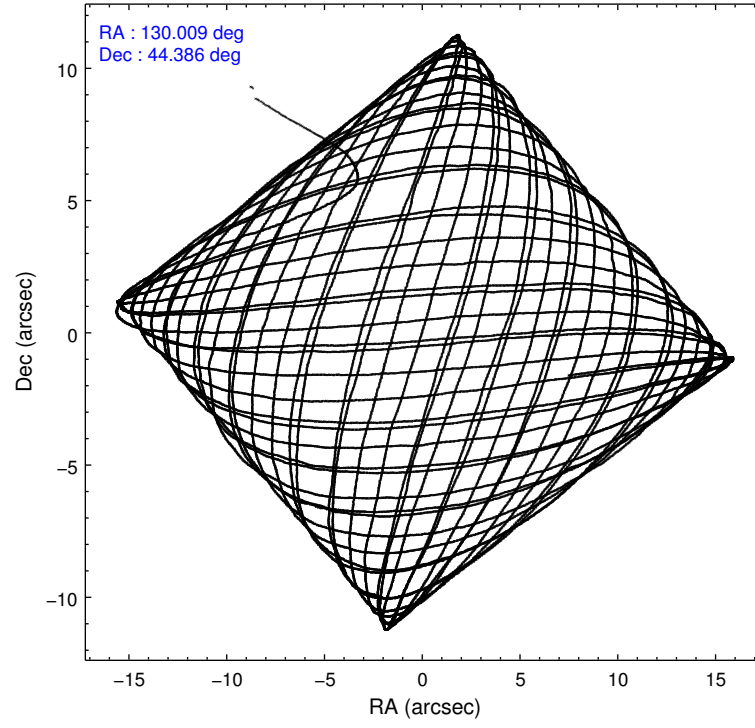
|                 | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|-----------------|--------|--------|--------|--------|
| level 1 events  | 136360 | 141142 | 149266 | 152274 |
| rejected events | 119587 | 122616 | 132524 | 134607 |
| rejected %      | 87%    | 86%    | 88%    | 88%    |

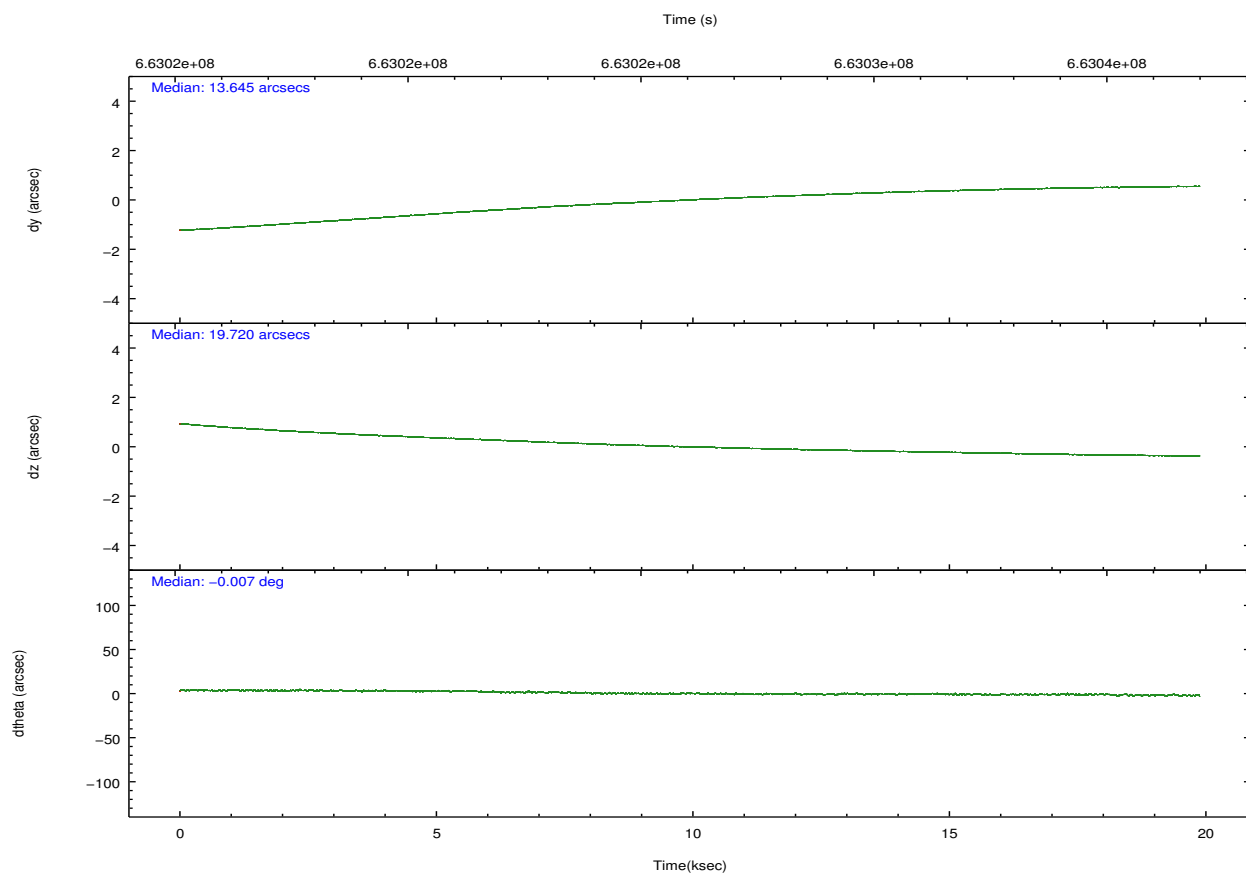
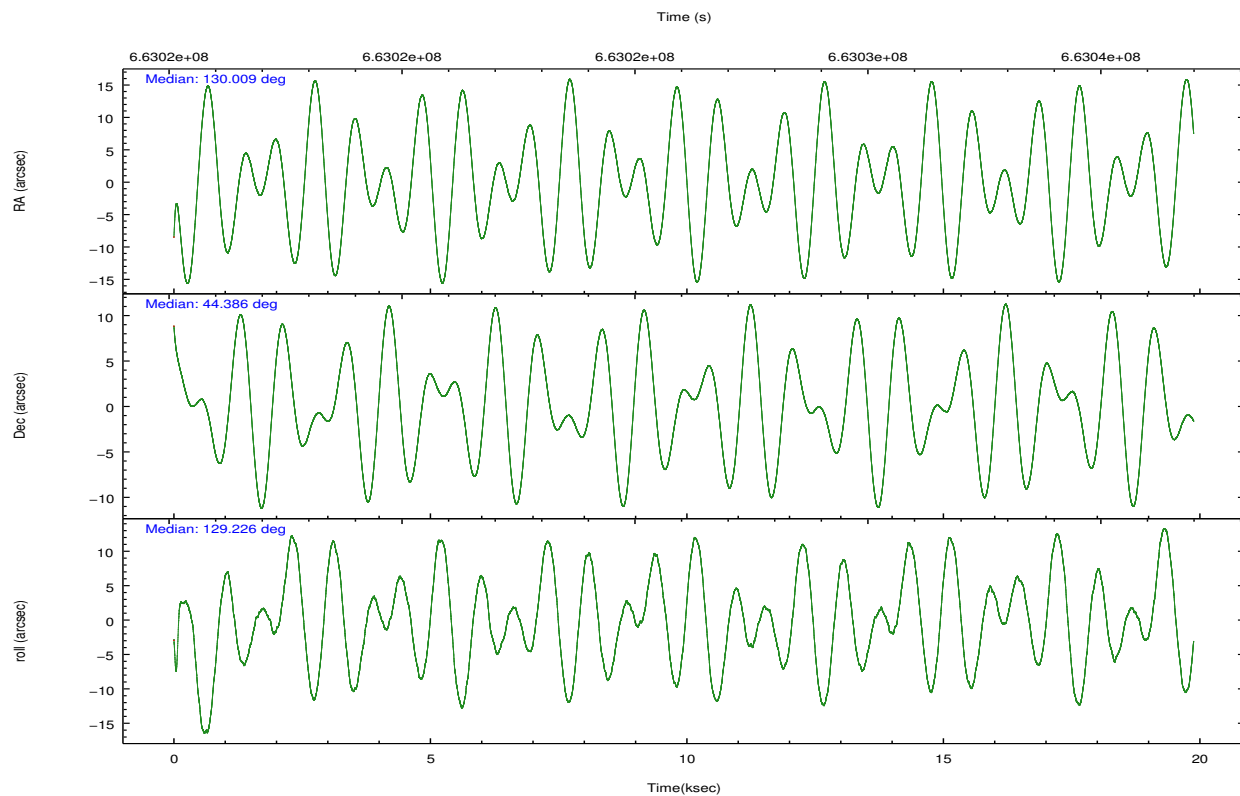
|                | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|----------------|--------|--------|--------|--------|
| grade 0 events | 5735   | 6334   | 6264   | 7065   |
|                | 4%     | 4%     | 4%     | 4%     |
| grade 1 events | 79     | 85     | 93     | 105    |
|                | 0%     | 0%     | 0%     | 0%     |
| grade 2 events | 4220   | 4679   | 4032   | 3687   |
|                | 3%     | 3%     | 2%     | 2%     |
| grade 3 events | 1764   | 1748   | 1597   | 1705   |
|                | 1%     | 1%     | 1%     | 1%     |
| grade 4 events | 1574   | 1686   | 1578   | 1711   |
|                | 1%     | 1%     | 1%     | 1%     |
| grade 5 events | 6529   | 6792   | 5902   | 7148   |
|                | 4%     | 4%     | 3%     | 4%     |
| grade 6 events | 3487   | 4082   | 3277   | 3507   |
|                | 2%     | 2%     | 2%     | 2%     |
| grade 7 events | 112972 | 115736 | 126523 | 127346 |
|                | 82%    | 81%    | 84%    | 83%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar format version number          | 7         | 7       |
| Detector                          | ACIS-0123           | ACIS-0123            | 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                 | 130.044586          | 130.0084250987392    | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | 44.376517           | 44.38621877925067    | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 128.996209          | 129.2301830686375    | [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    | -229.442463         | -229.4438428438578   |                                       |           |         |
| [mm] SIM translation stage offset | -4.15               | -4.148610159071865   |                                       |           |         |
| [s] Observation start time (MET)  | 663016273.184000    | 663015389.08169      |                                       |           |         |
| Observation start date            | 2019-01-04T19:10:04 | 2019-01-04T18:56:29  |                                       |           |         |
| [s] Observation end time (MET)    | 663035975.184000    | 663036476.40795      |                                       |           |         |
| Observation end date              | 2019-01-05T00:38:26 | 2019-01-05T00:47:56  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



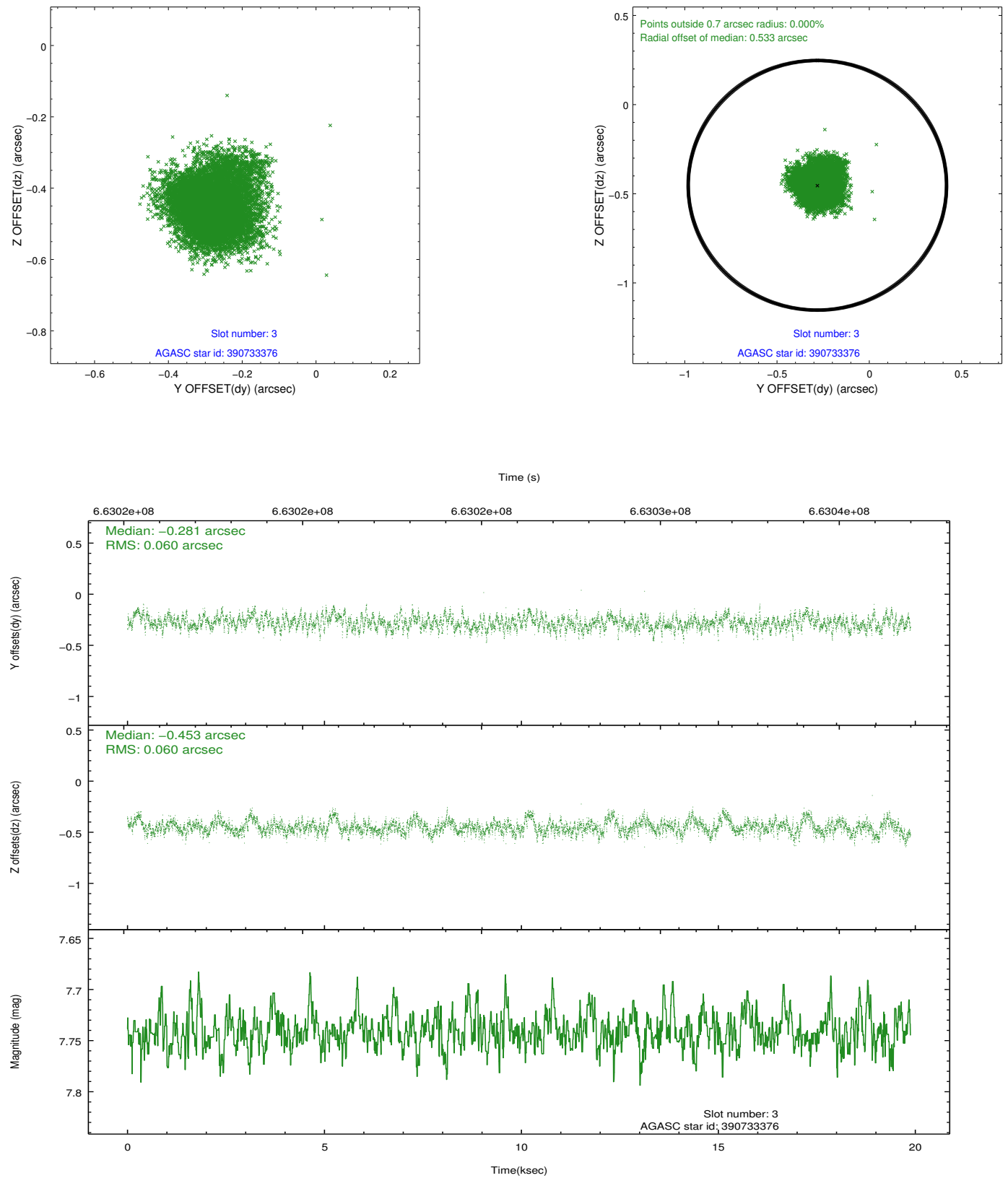


# Slot Statistics

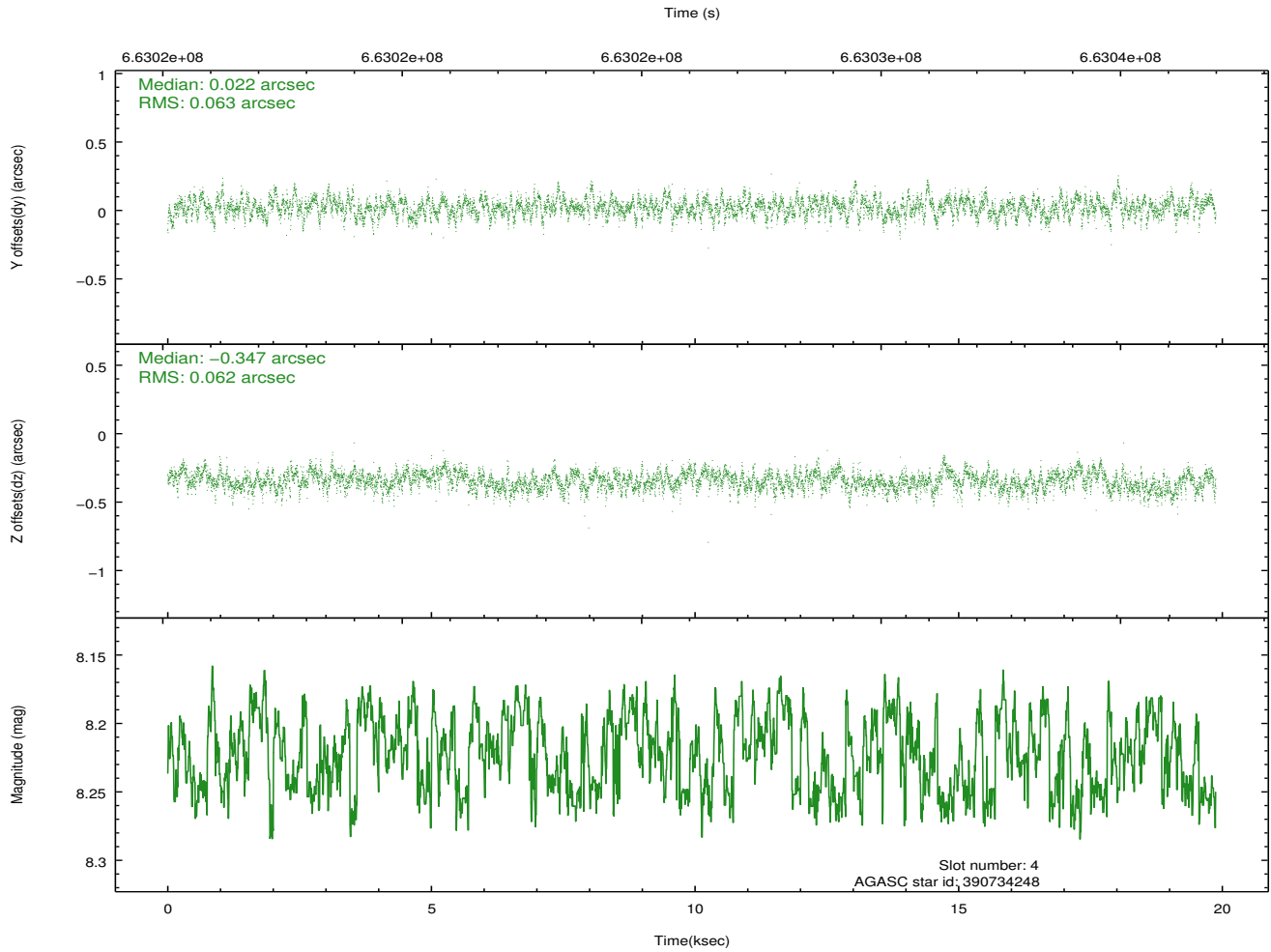
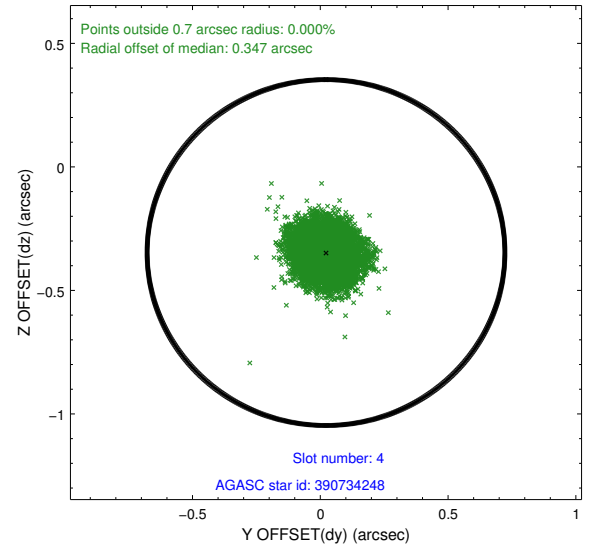
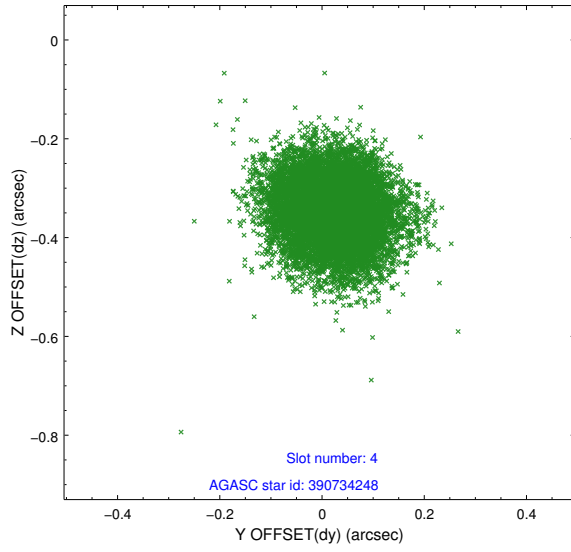
| pt | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea   |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|-------|
| 0  | FID    |      | ACIS-I-1  | 7.20 | 4849  | 1.000    | 0.162  | -0.164 | 0.024 | 0.035 | 0.000000   | 0.000000  | 926.15   | -928  |
| 1  | FID    |      | ACIS-I-5  | 7.17 | 4848  | 1.000    | -0.499 | 0.063  | 0.019 | 0.029 | 0.000000   | 0.000000  | -1822.69 | 968   |
| 2  | FID    |      | ACIS-I-6  | 7.20 | 4848  | 1.000    | 0.246  | 0.168  | 0.021 | 0.034 | 0.000000   | 0.000000  | 391.33   | 1613  |
| 3  | GUIDE  | used | 390733376 | 7.74 | 9692  | 1.000    | -0.281 | -0.453 | 0.090 | 0.149 | 129.873945 | 44.291817 | 40.19    | 533   |
| 4  | GUIDE  | used | 390734248 | 8.22 | 9697  | 1.000    | 0.022  | -0.347 | 0.095 | 0.150 | 129.816628 | 44.244114 | 0.75     | 757   |
| 5  | GUIDE  | used | 391652496 | 8.41 | 9698  | 1.000    | 0.078  | 0.520  | 0.099 | 0.160 | 130.682166 | 44.105713 | -1789.28 | -670  |
| 6  | GUIDE  | used | 391654272 | 8.11 | 9692  | 1.000    | -0.004 | 0.138  | 0.132 | 0.224 | 130.440258 | 44.863186 | 728.43   | -1887 |
| 7  | GUIDE  | used | 447743808 | 8.77 | 9687  | 1.000    | 0.180  | 0.151  | 0.131 | 0.228 | 130.244224 | 45.149778 | 1845.98  | -2145 |

## 2.4 Star Slots

### 2.4.1 Slot 3

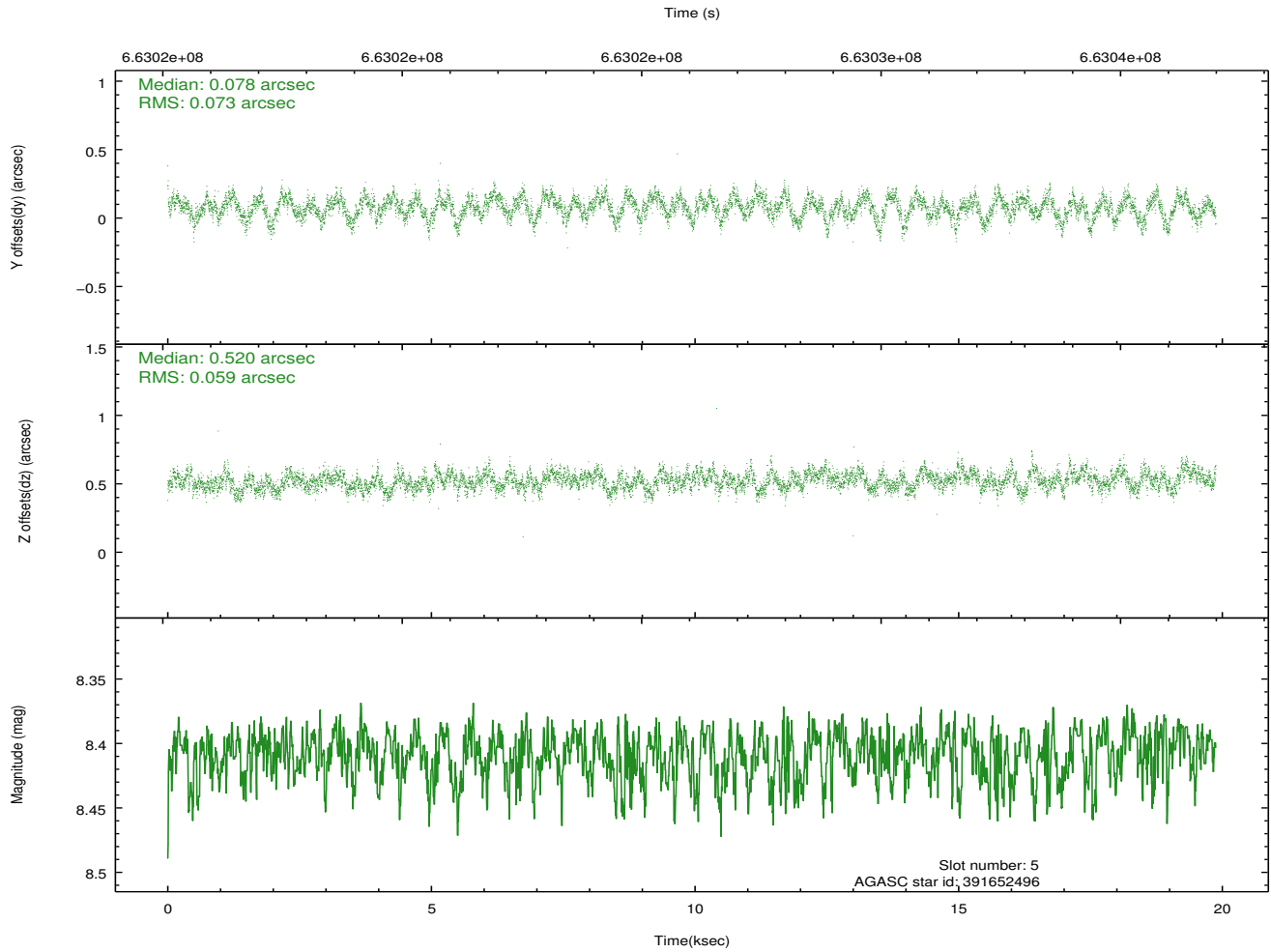
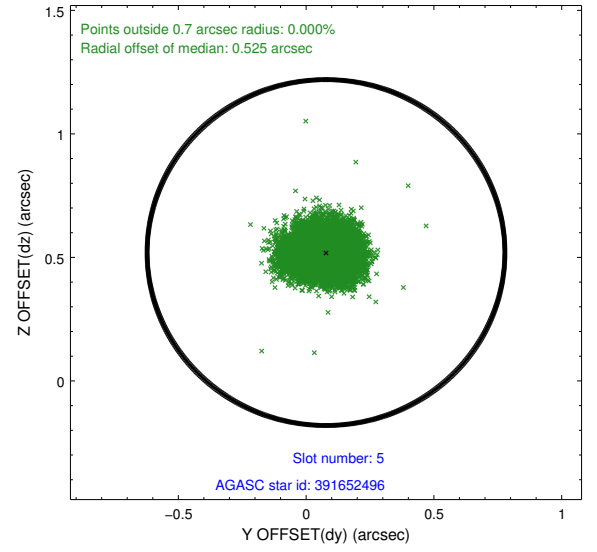
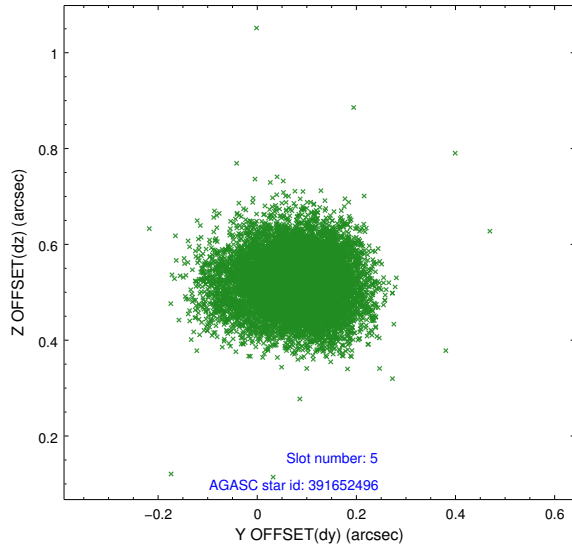


## 2.4.2 Slot 4

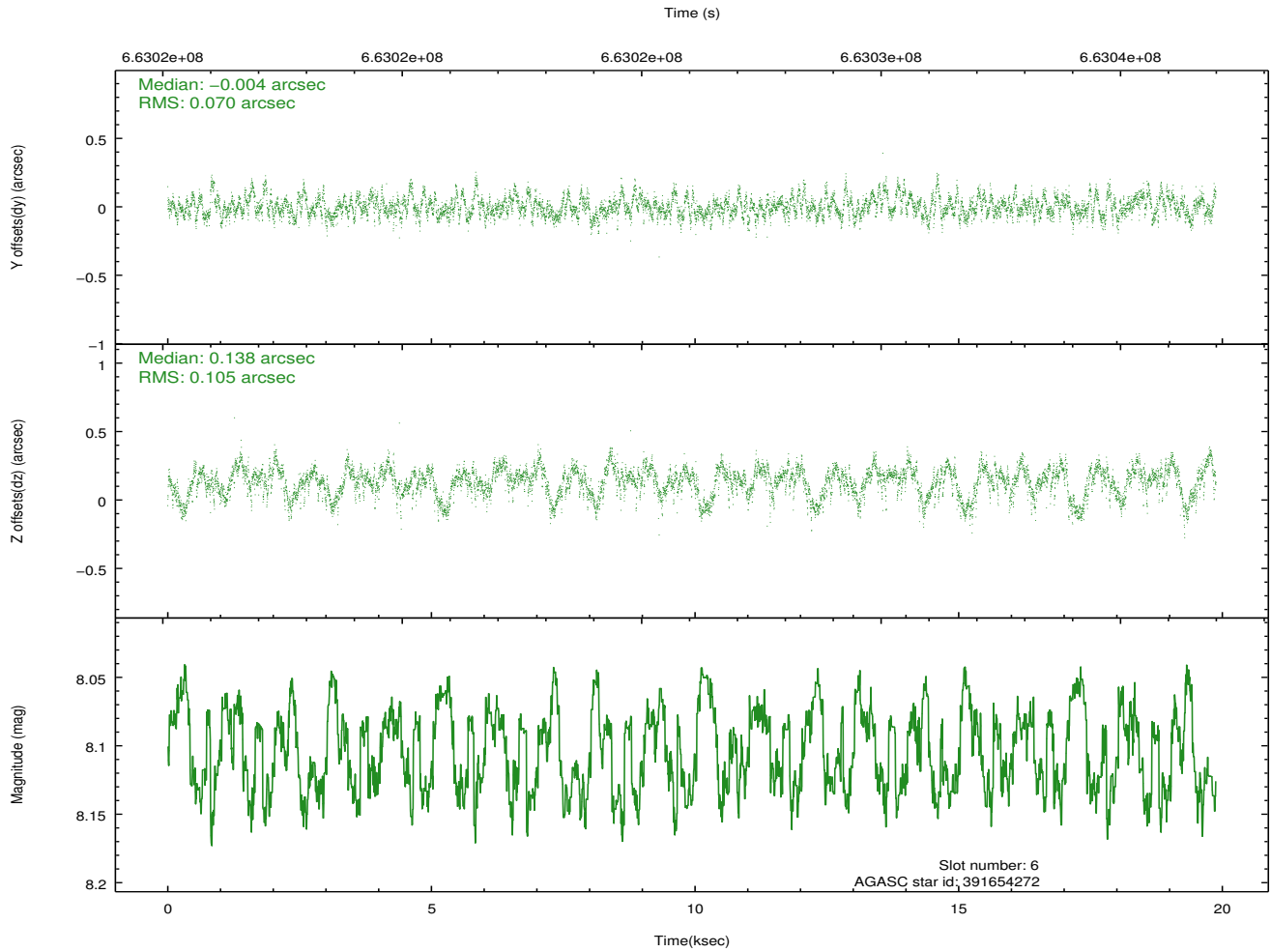
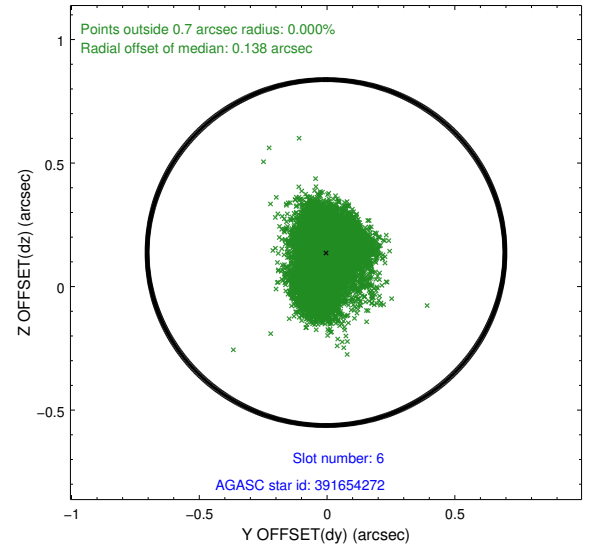
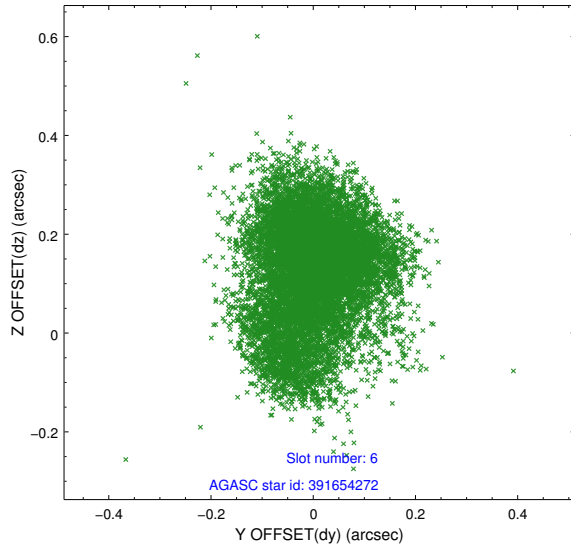




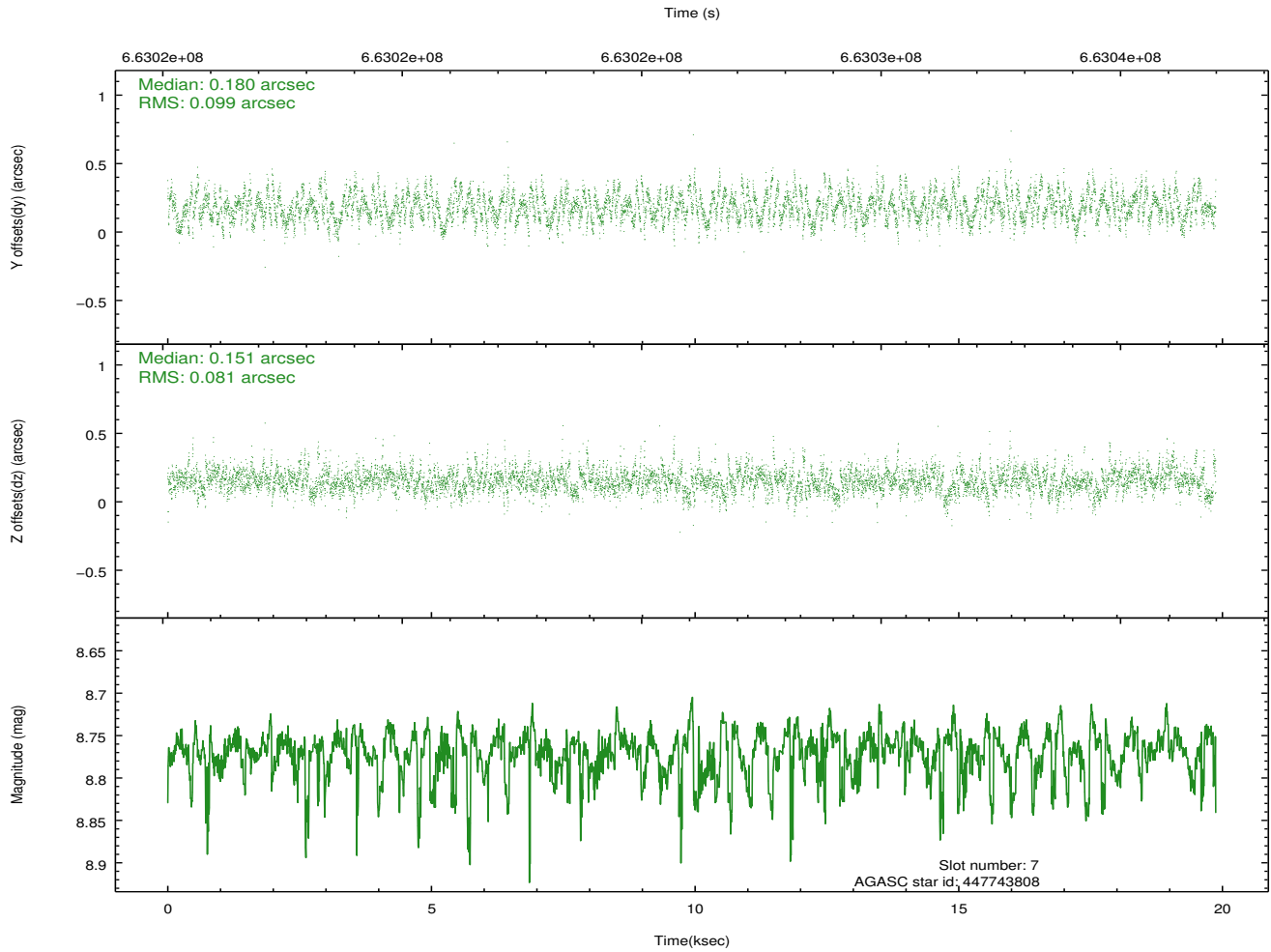
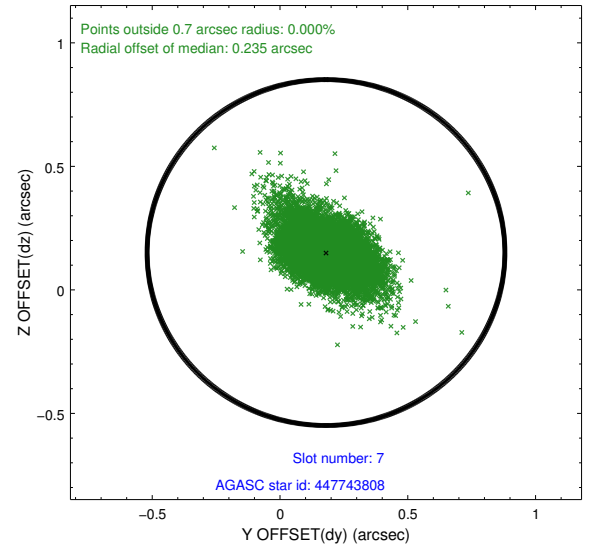
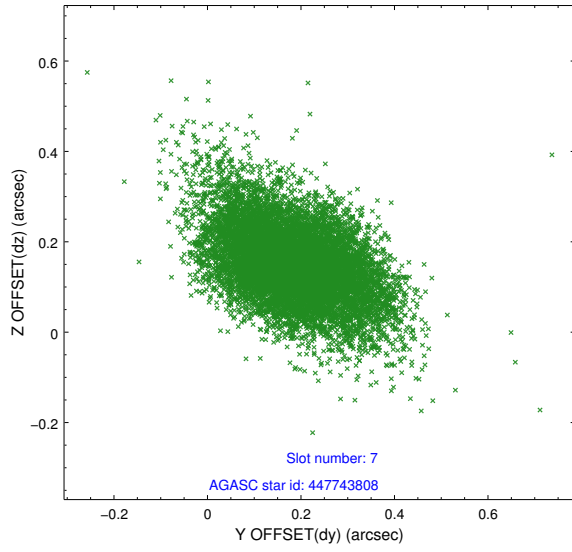
### 2.4.3 Slot 5



## 2.4.4 Slot 6

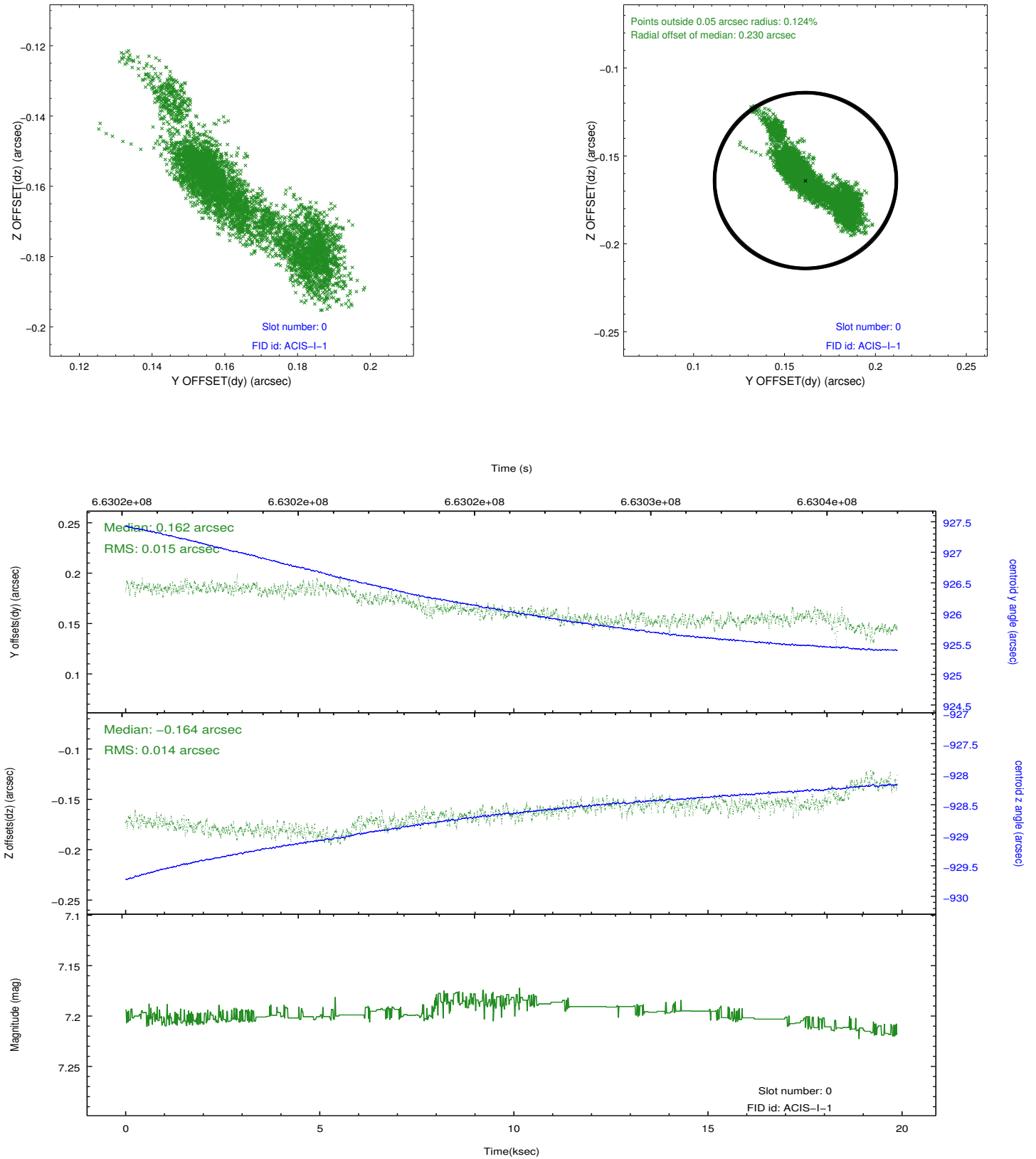


## 2.4.5 Slot 7

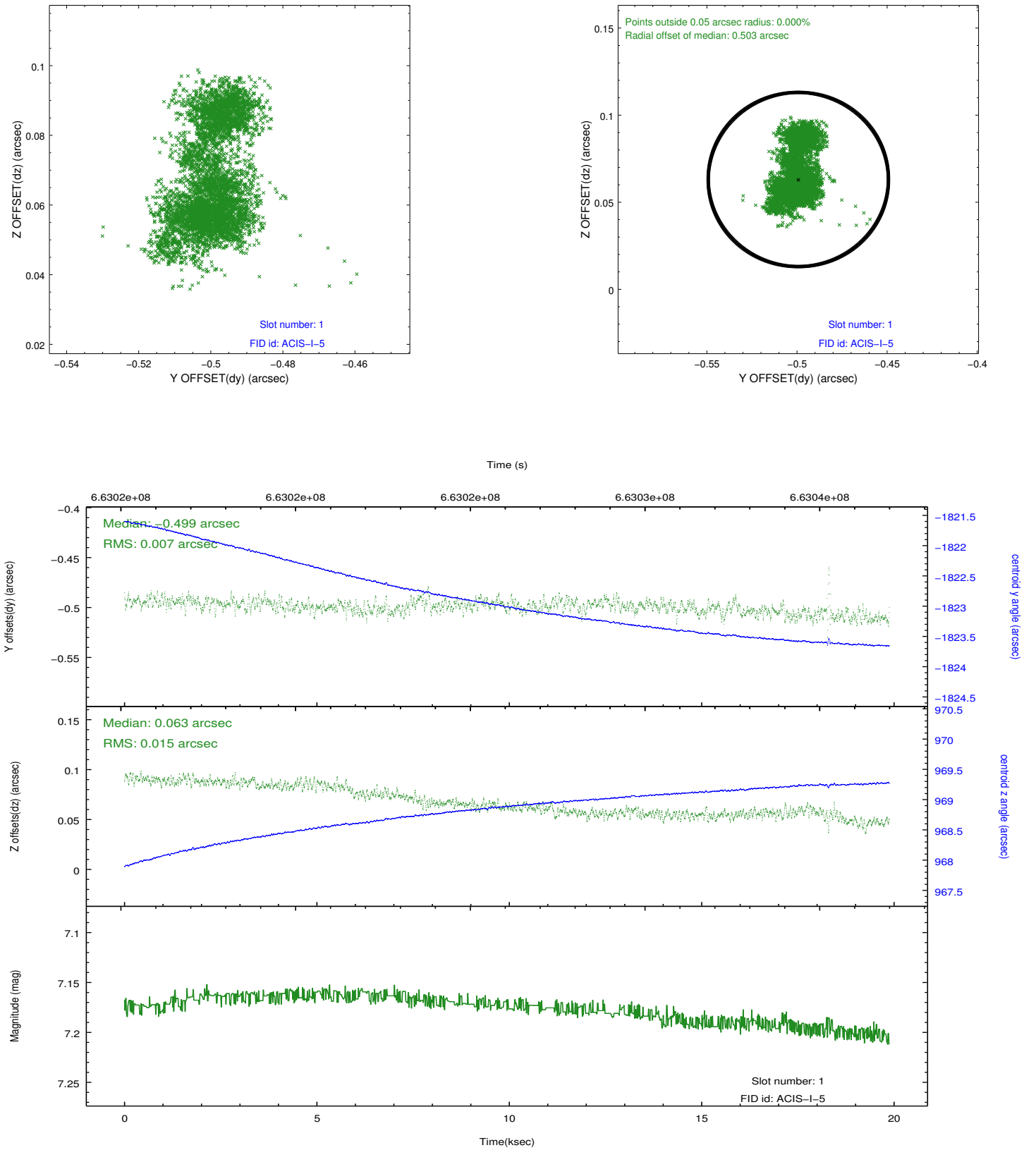


## 2.5 FID Slots

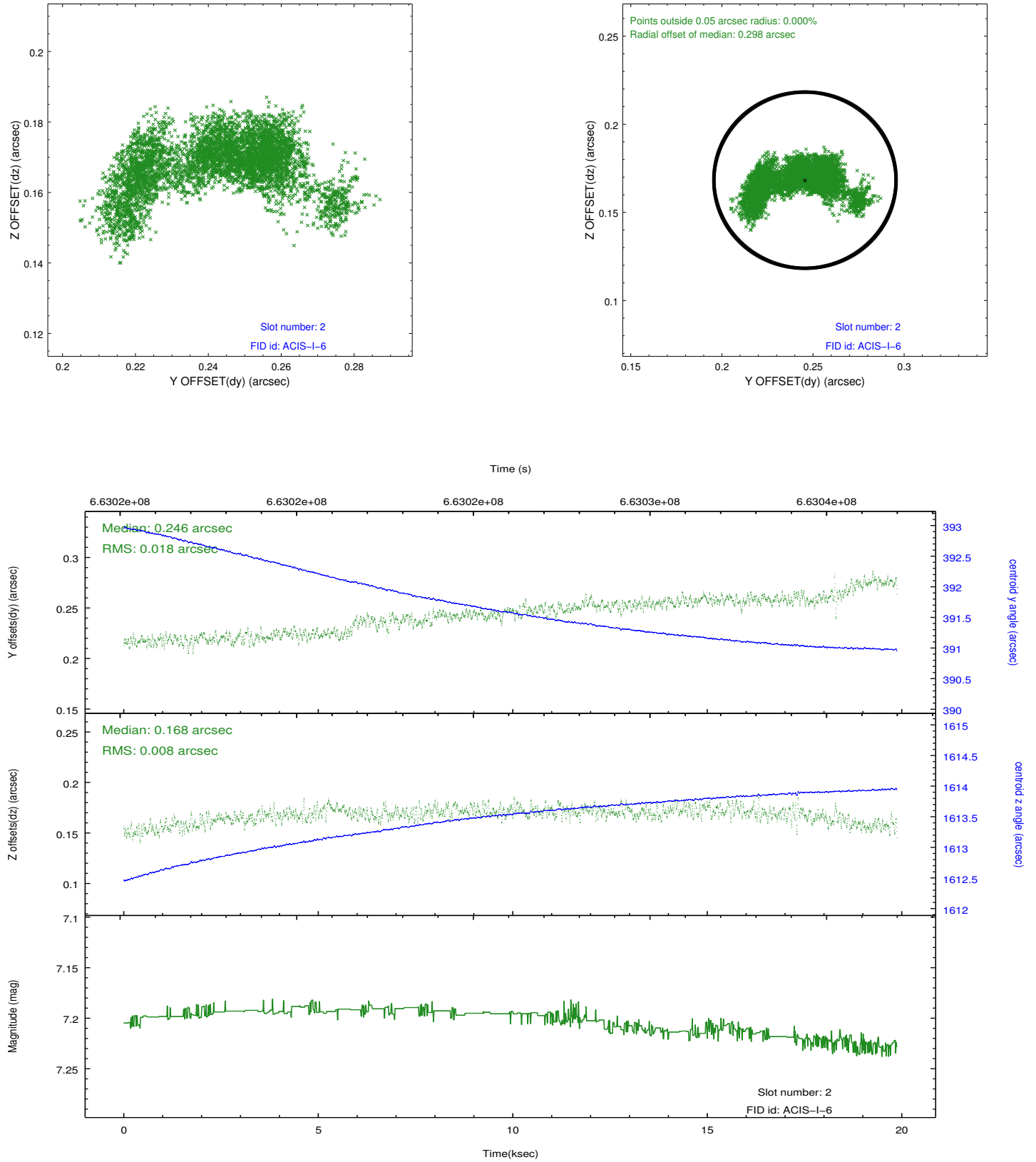
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Beth Sundheim   |
| V&V Date (YYYY-MM-DD)      | 2019.01.06      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 19.776696045876 |

## A.2 Comments

Joint proposal with HST.