

V&V Reference Report

L2 ASCDS Version : 8.5.1.1

Observation 15537 - L2 Version 2
Chandra X-Ray Center

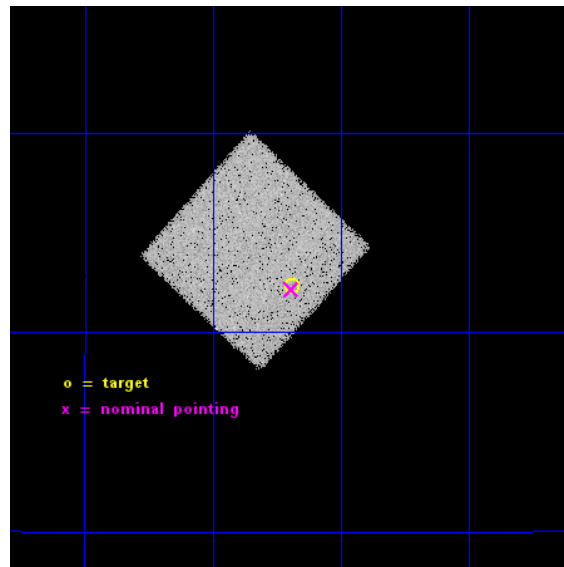
L2 Processing Date : Dec 2 2014

Contents

| | | |
|----------|-------------------------------|-----------|
| 1 | Front | 2 |
| 2 | OBI | 3 |
| 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 |
| 2.5 | FID Slots | 13 |
| 2.5.1 | Slot 0 | 13 |
| 2.5.2 | Slot 1 | 14 |
| 2.5.3 | Slot 2 | 15 |
| A | Summary | 16 |
| A.1 | Status | 16 |
| A.2 | Comments | 16 |

1 Front

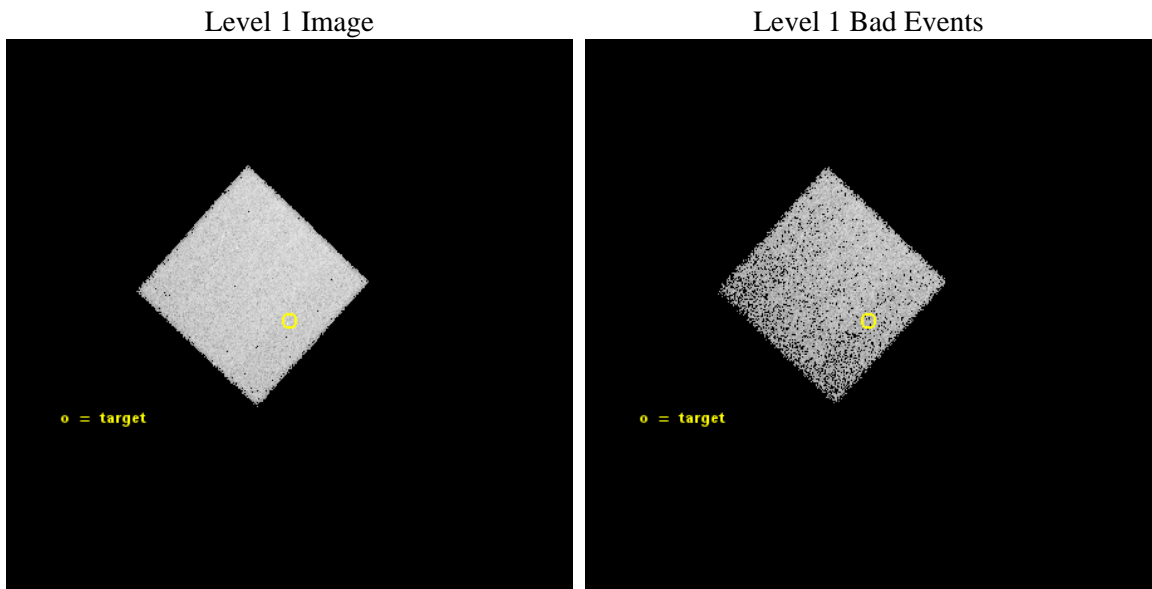
| | | |
|----------|--|---|
| seq_num | 200909 | Sequence number |
| obs_id | 15537 | Observation id |
| title | Properties and dynamics of the upper atmosphere of the hot-Neptune GJ 436b | Proposal title |
| observer | Dr David Ehrenreich | Principal investigator |
| object | GJ 436 | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 175.5475 | Observer's specified target RA [deg] |
| dec_targ | 26.705528 | Observer's specified target Dec [deg] |
| ra_nom | 175.54809014943 | Nominal RA [deg] |
| dec_nom | 26.702551347147 | Nominal Dec [deg] |
| roll_nom | 222.65589756955 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 19172.734456301 | Sum of GTIs [s] |
| livetime | 18913.991058619 | Livetime [s] |
| ontime7 | 19172.734456301 | Sum of GTIs [s] |
| l2events | 56471 | Number of level 2 events |



2 OBI

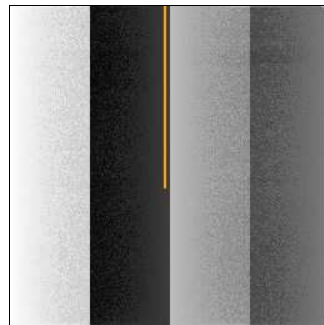
2.1 OBI

2.1.1 Images



2.1.2 Bias

Chip 7



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 20000.000000 | [s] Scheduled observation exposure time |
| ascdsver | 10.3 | Processing system revision | ontime | 19172.734456301 | Sum of GTIs [s] |
| caldbver | 4.6.4 | | ontime7 | 19172.734456301 | Sum of GTIs [s] |
| date | 2014-12-02T18:38:23 | Date and time of file creation | l1events | 131633 | Number of level 1 events |
| revision | 2 | Processing version of data | | | |

2.1.4 Events

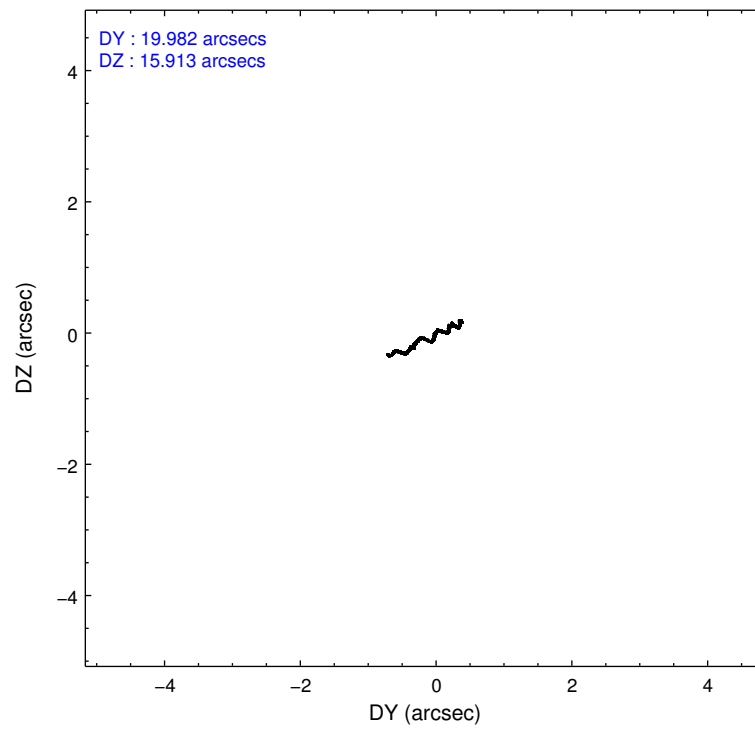
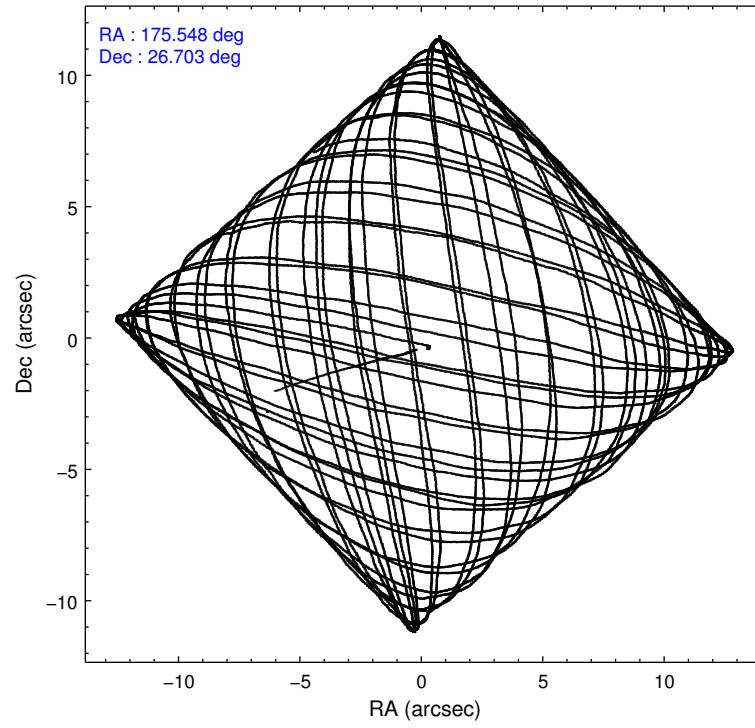
| | ccd 7 |
|-----------------|--------------|
| level 1 events | 131633 |
| rejected events | 73699 |
| rejected % | 55% |

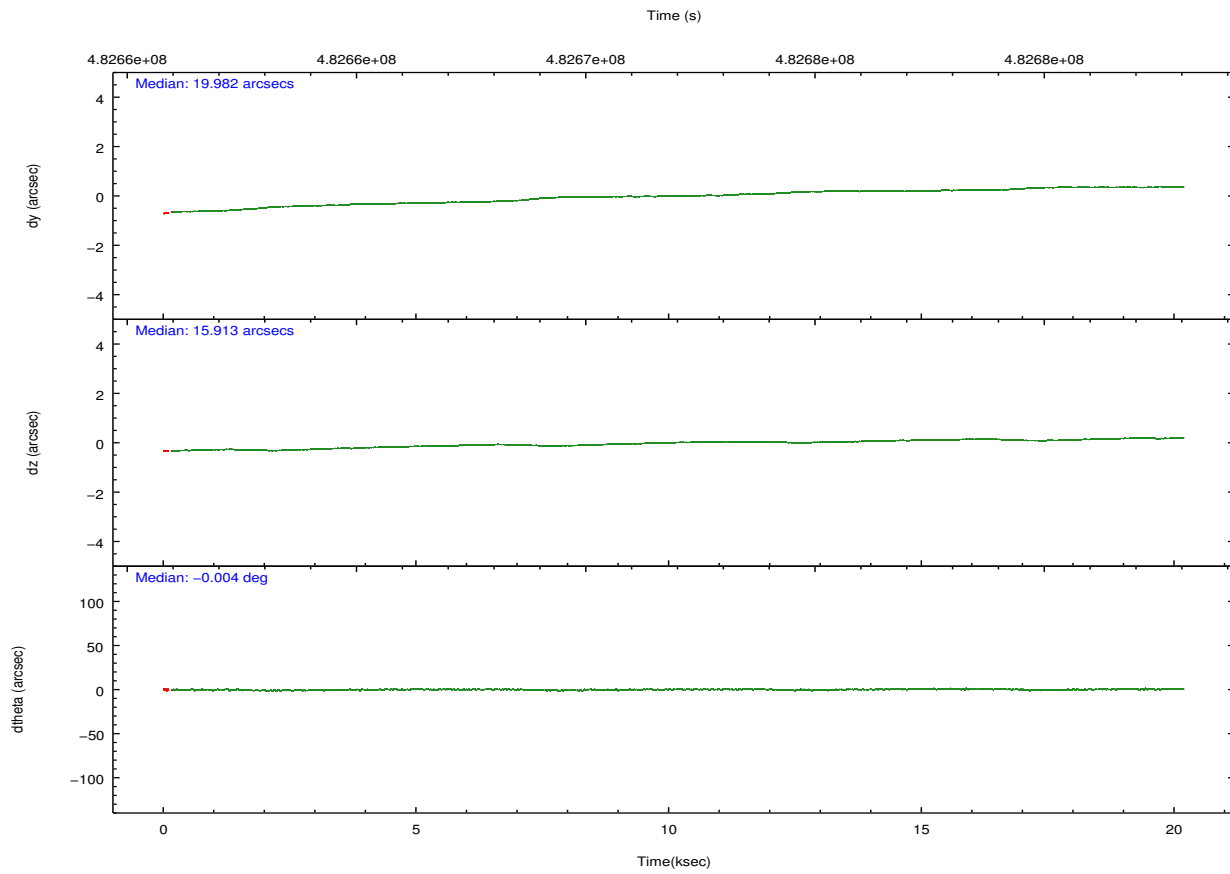
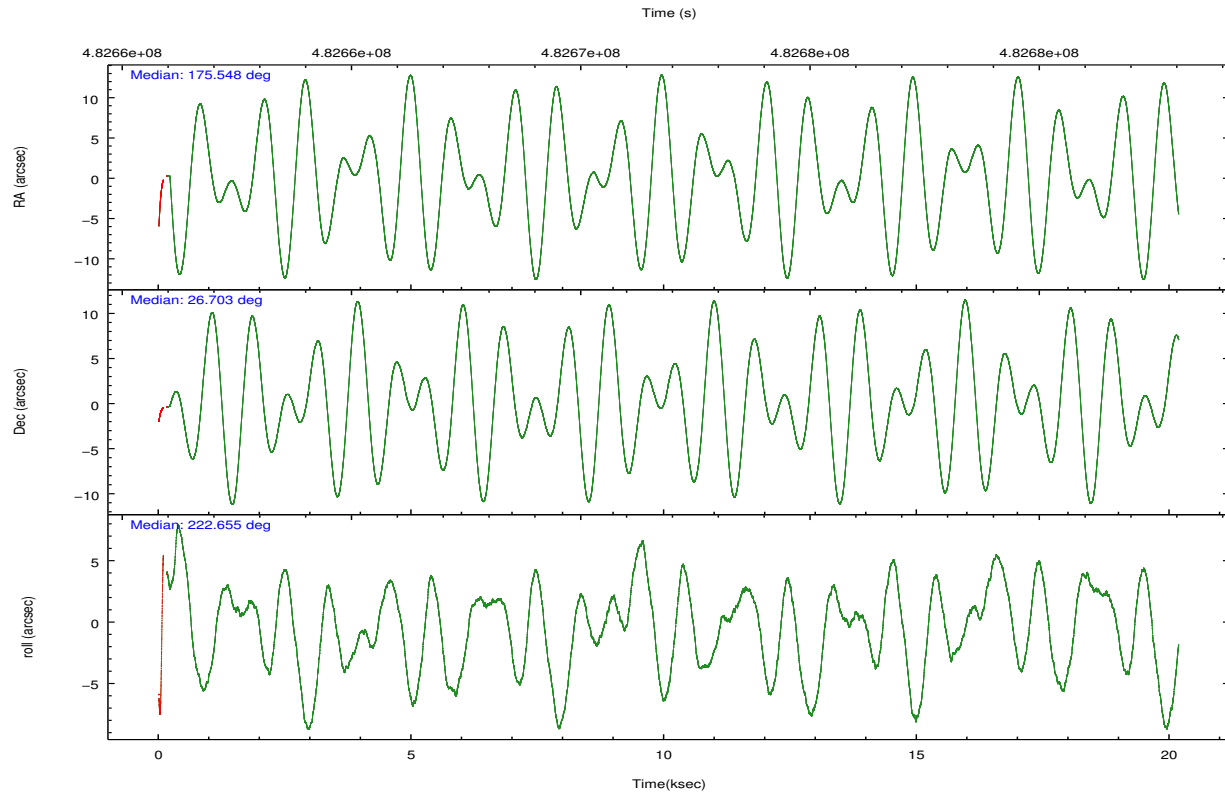
| | ccd 7 |
|----------------|--------------|
| grade 0 events | 5150 |
| | 3% |
| grade 1 events | 131 |
| | 0% |
| grade 2 events | 11733 |
| | 8% |
| grade 3 events | 5066 |
| | 3% |
| grade 4 events | 5027 |
| | 3% |
| grade 5 events | 13650 |
| | 10% |
| grade 6 events | 30963 |
| | 23% |
| grade 7 events | 59913 |
| | 45% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 7 | 7 |
| Detector | ACIS-7 | ACIS-7 | 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 | 175.556821 | 175.5480901494252 | Subarray requested | NONE | NONE |
| [deg] Pointing Dec | 26.728757 | 26.70255134714675 | Alternating exposures requested | N | N |
| [deg] Pointing Roll | 222.495360 | 222.6558975695536 | [s] Primary exposure time | 0.000000 | 3 |
| [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 | | | |
| Phase constraints | Y | Y | | | |
| [d] Phase period | 2.643898 | 2.643898 | | | |
| [d] Phase epoch (MJD) | 54864.583210 | 54864.583210 | | | |
| Phase start | 0.900000 | 0.900000 | | | |
| Phase end | 0.990000 | 0.990000 | | | |
| Phase start error | 0.030000 | 0.030000 | | | |
| Phase end error | 0.030000 | 0.030000 | | | |
| [s] Observation start time (MET) | 482662016.184000 | 482661140.15497 | | | |
| Observation start date | 2013-04-18T08:45:49 | 2013-04-18T08:32:20 | | | |
| [s] Observation end time (MET) | 482682016.184000 | 482682628.25613 | | | |
| Observation end date | 2013-04-18T14:19:09 | 2013-04-18T14:30:28 | | | |
| Read mode | TIMED | TIMED | | | |

2.3 Aspect



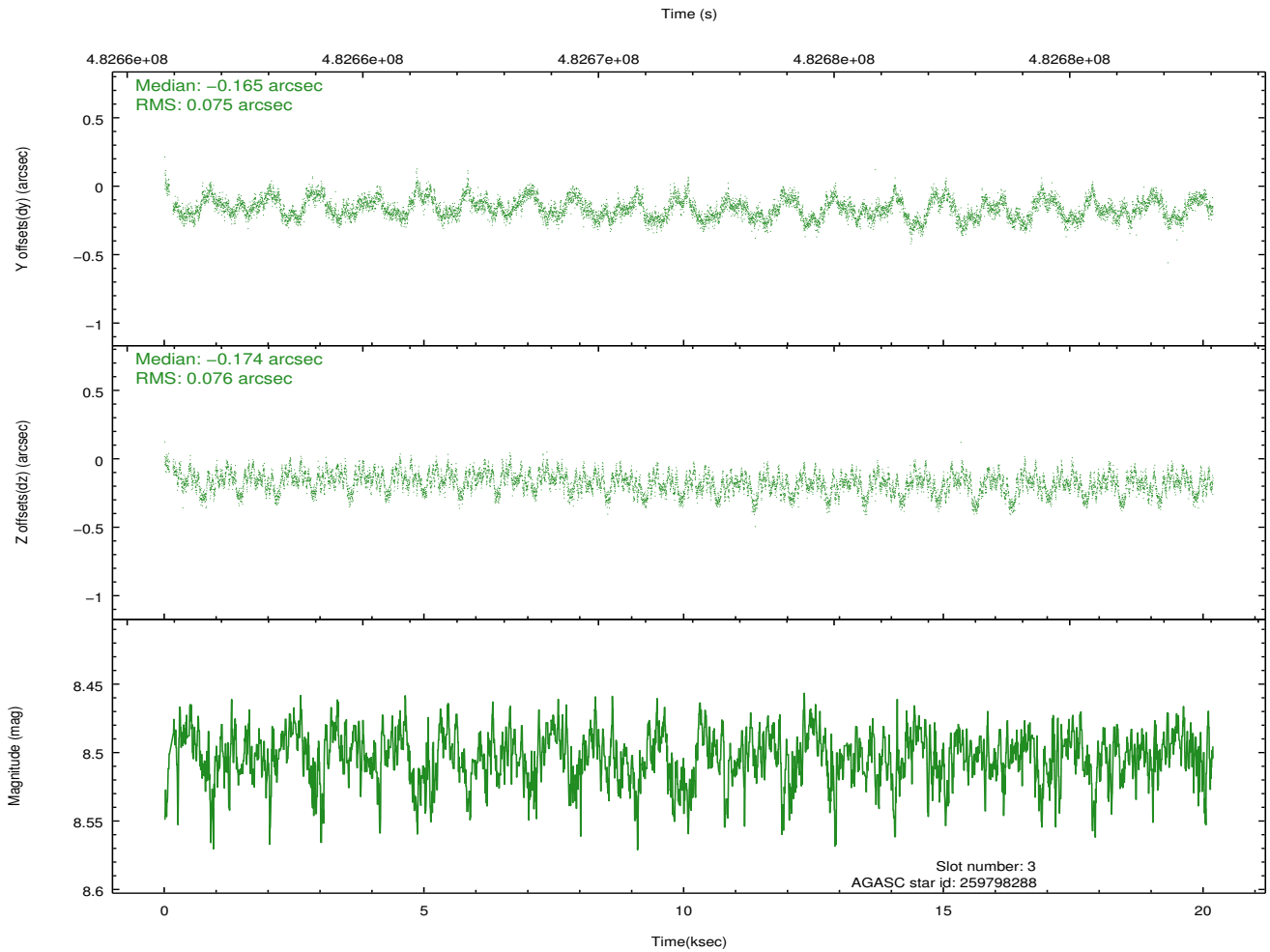
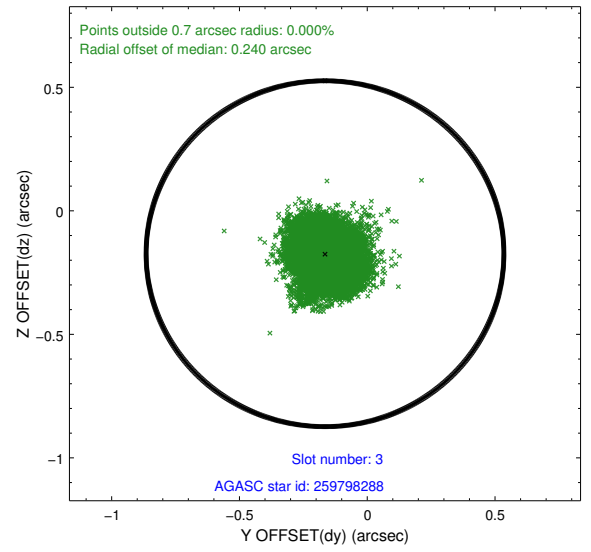
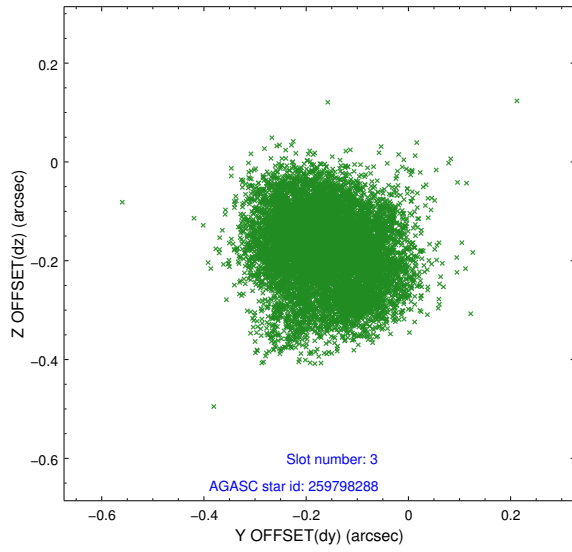


Slot Statistics

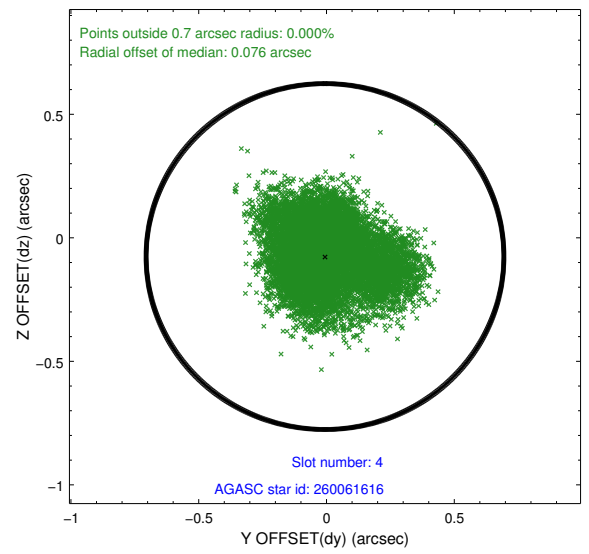
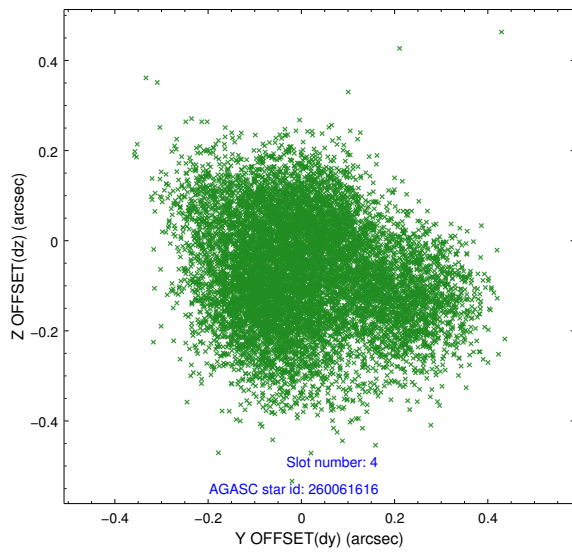
| slot | status | used | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|------|---------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0 | FID | | ACIS-S-2 | 6.98 | 4906 | -0.150 | -0.025 | 0.008 | 0.013 | 0.000000 | 0.000000 | -773.19 | -1737.25 |
| 1 | FID | | ACIS-S-4 | 7.07 | 4906 | 0.321 | 0.079 | 0.013 | 0.022 | 0.000000 | 0.000000 | 2140.47 | 171.16 |
| 2 | FID | | ACIS-S-5 | 7.10 | 4906 | -0.201 | -0.045 | 0.014 | 0.025 | 0.000000 | 0.000000 | -1825.86 | 164.89 |
| 3 | GUIDE | used | 259798288 | 8.50 | 9810 | -0.165 | -0.174 | 0.116 | 0.179 | 175.466547 | 25.926495 | 2166.23 | 1933.47 |
| 4 | GUIDE | used | 260061616 | 9.81 | 9796 | -0.006 | -0.076 | 0.198 | 0.311 | 175.767684 | 26.863293 | -826.28 | 100.39 |
| 5 | GUIDE | used | 260064728 | 9.04 | 9779 | -0.068 | 0.225 | 0.102 | 0.165 | 175.679144 | 27.248869 | -1551.19 | -1116.61 |
| 6 | GUIDE | used | 260064920 | 9.87 | 9795 | 0.218 | 0.028 | 0.200 | 0.320 | 175.209684 | 27.211295 | -353.66 | -2031.76 |
| 7 | MONITOR | unused | | 0.00 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000000 | 0.000000 | 0.00 | 0.00 |

2.4 Star Slots

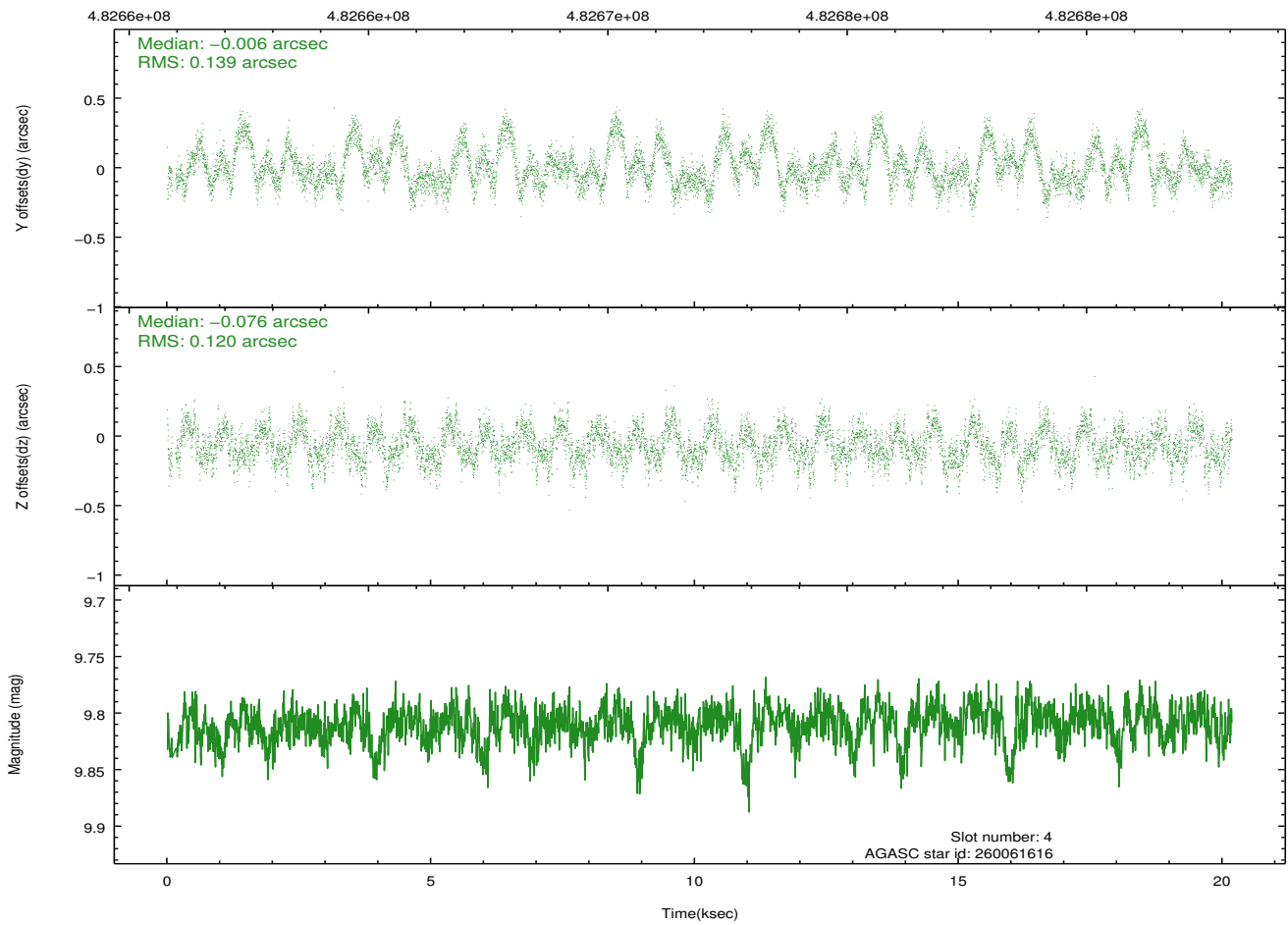
2.4.1 Slot 3



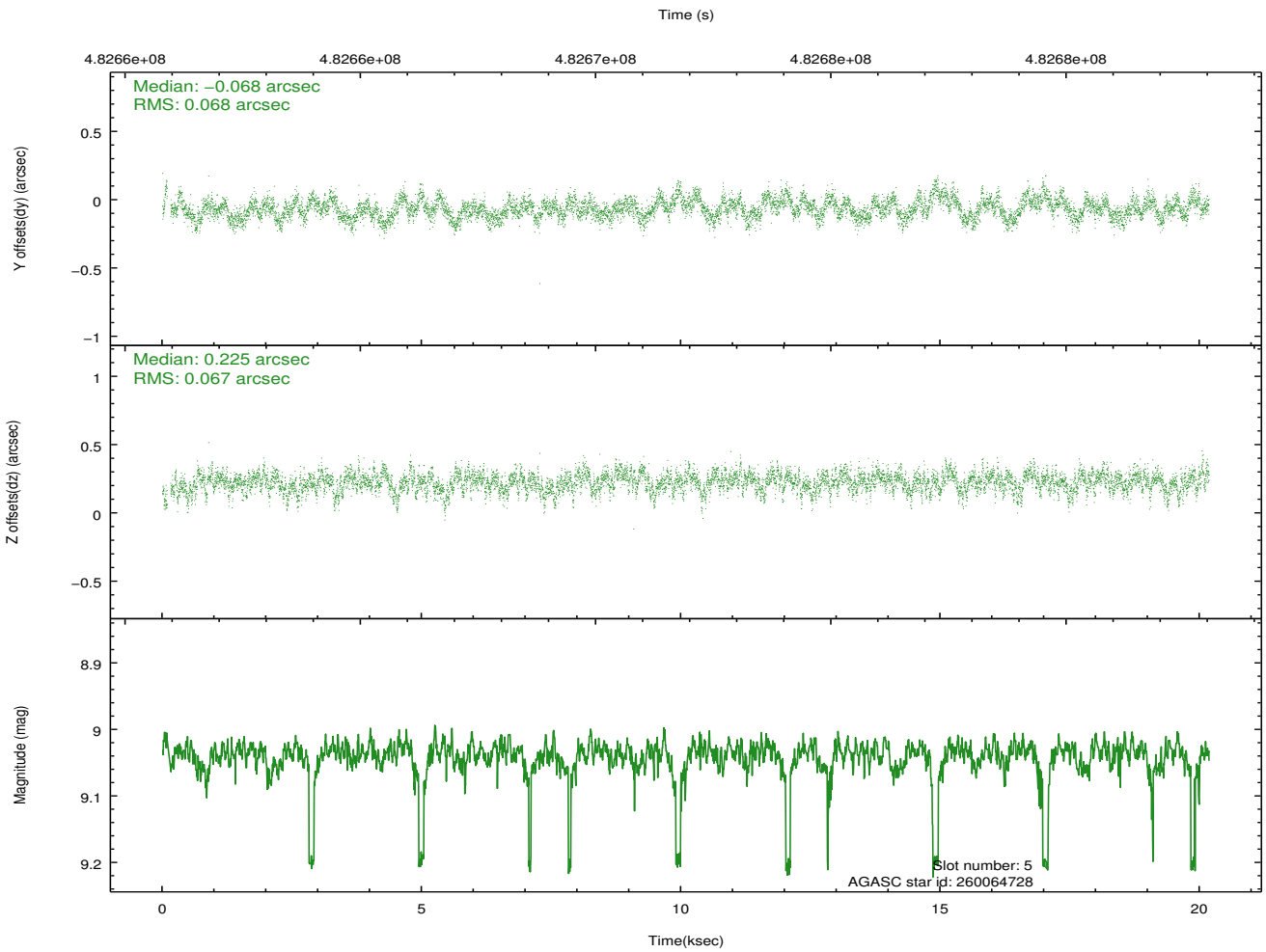
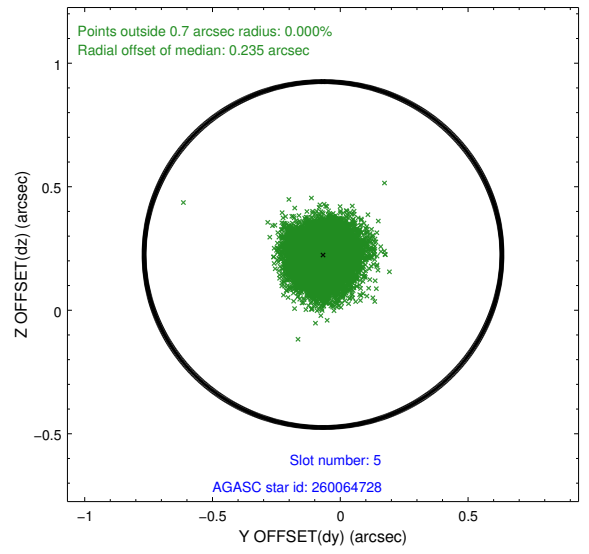
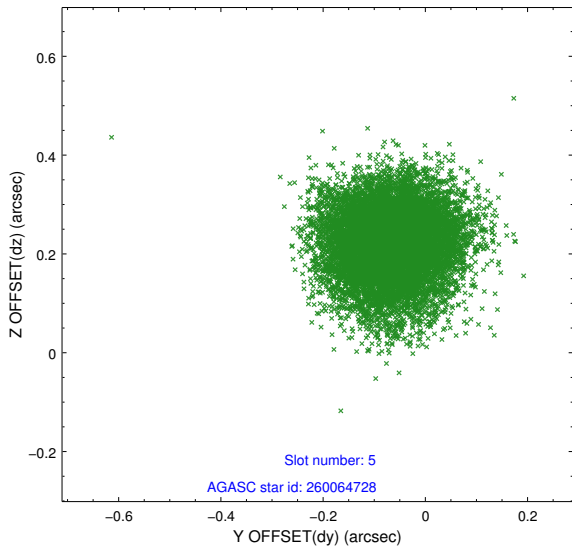
2.4.2 Slot 4



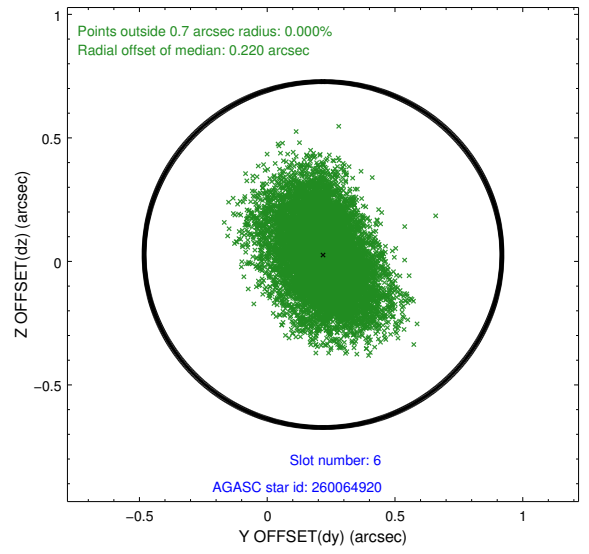
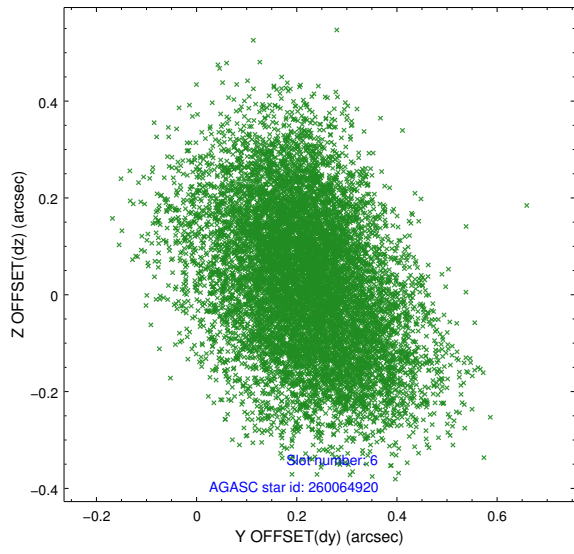
Time (s)



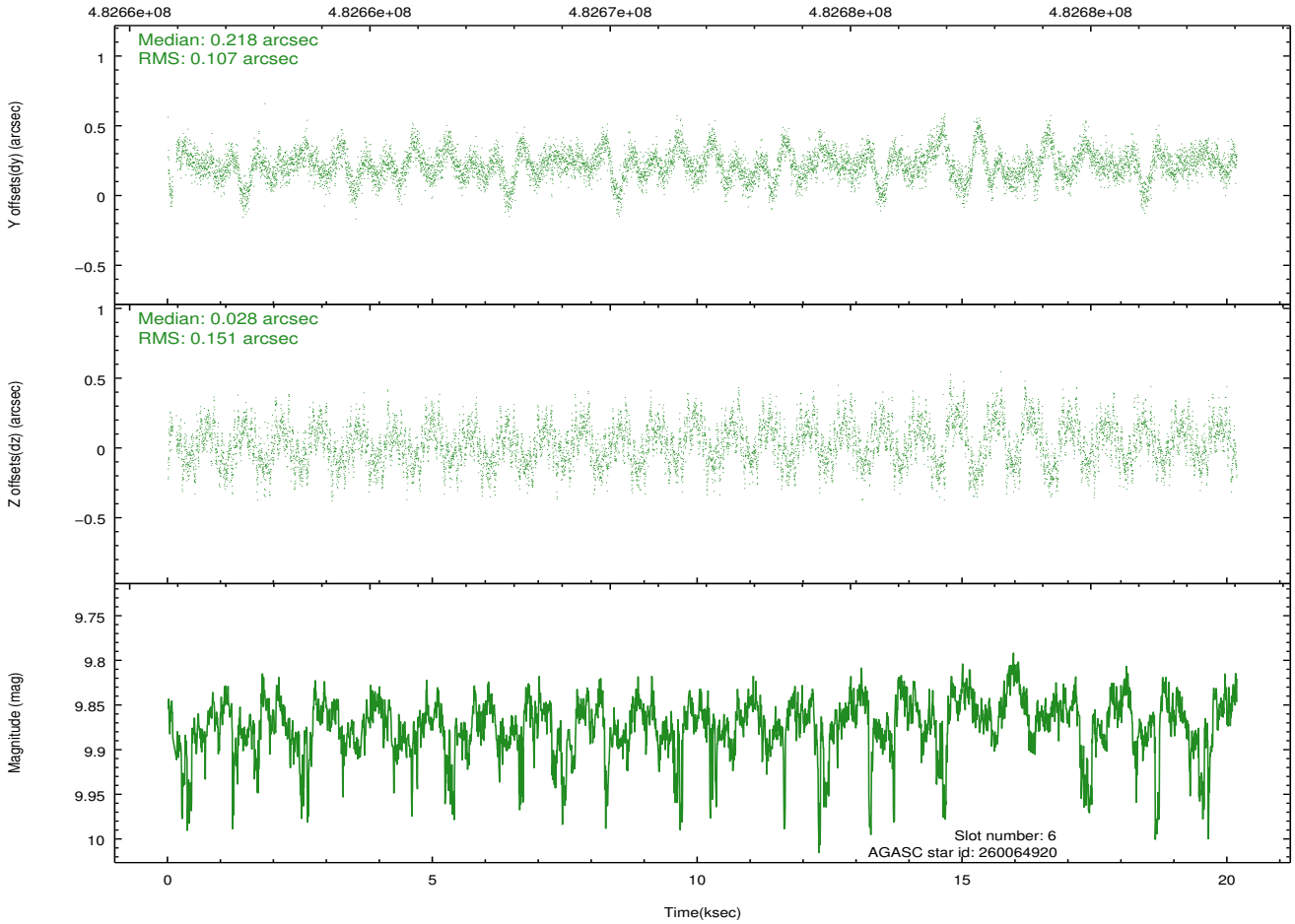
2.4.3 Slot 5



2.4.4 Slot 6

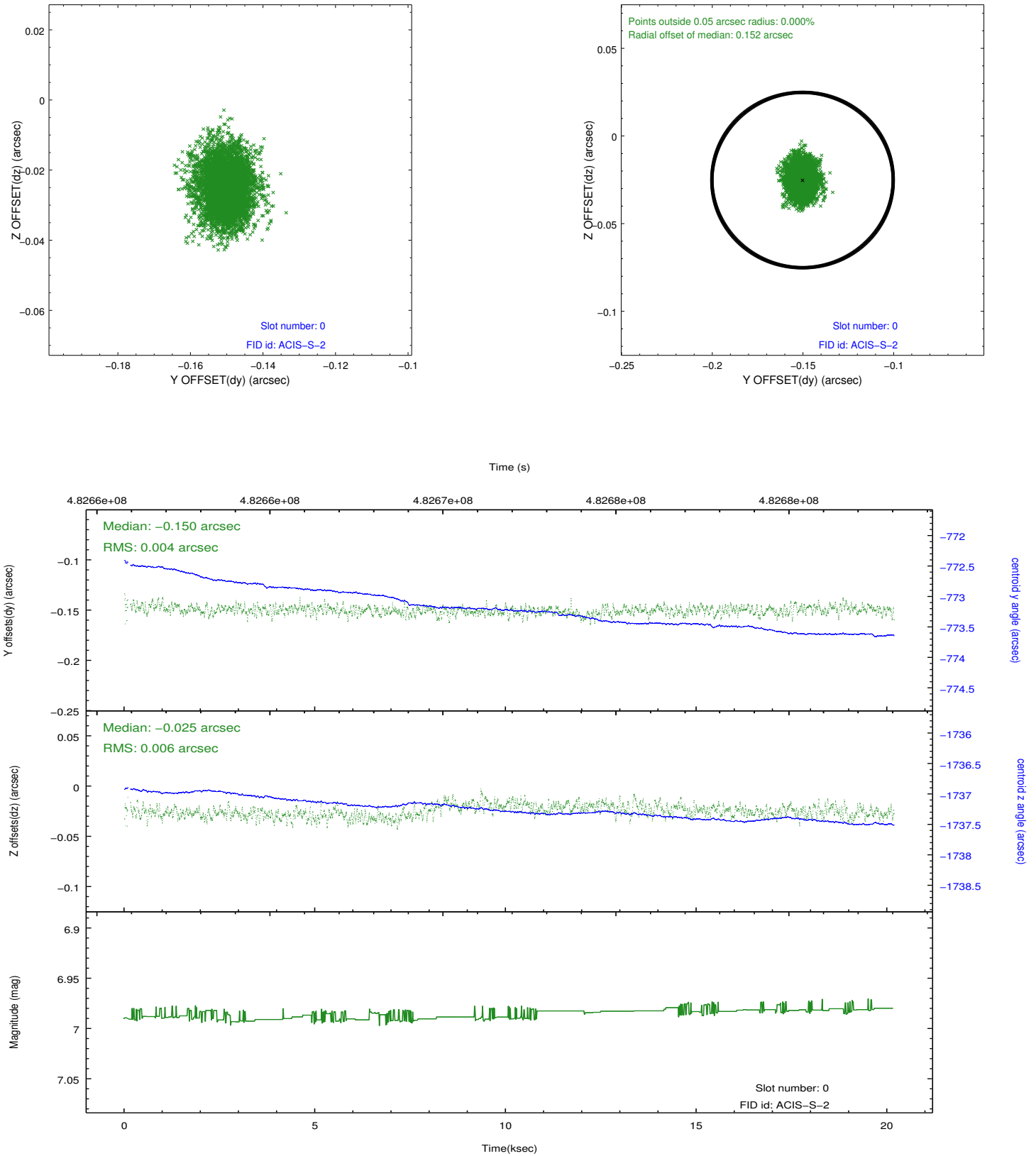


Time (s)

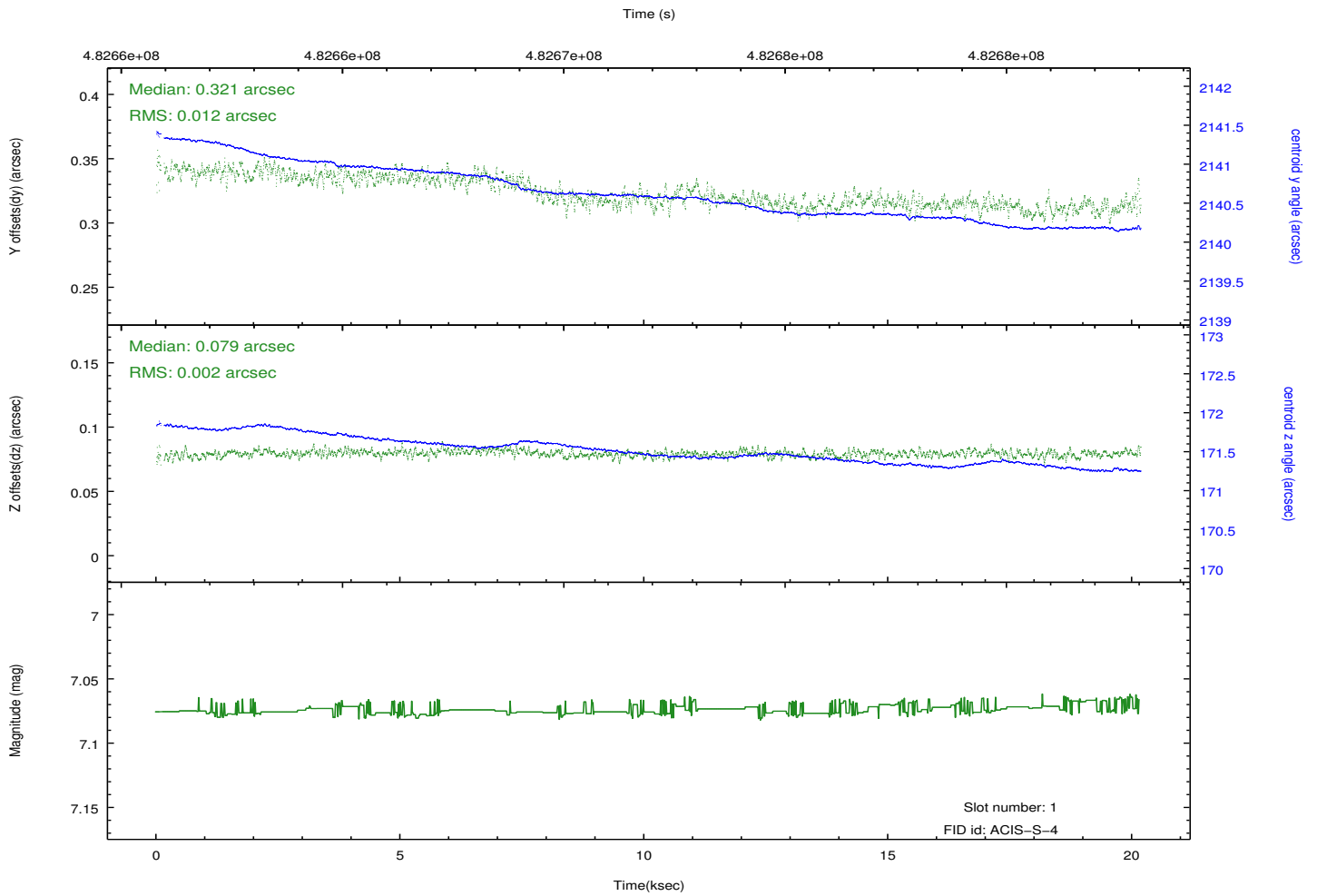
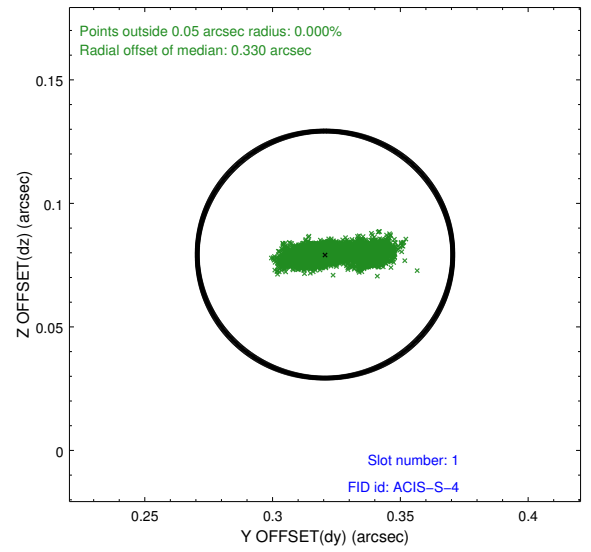
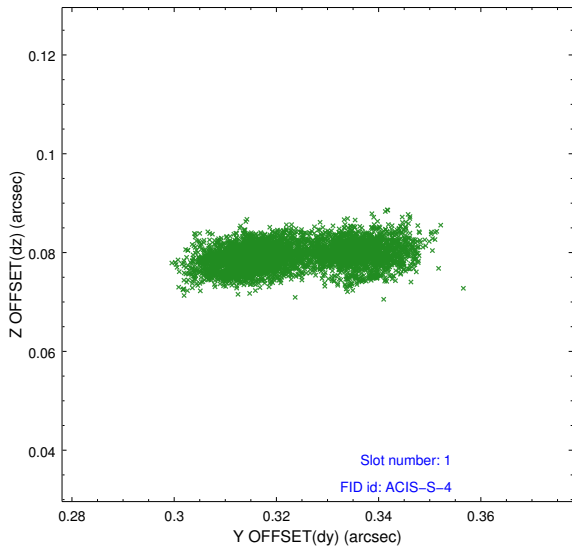


2.5 FID Slots

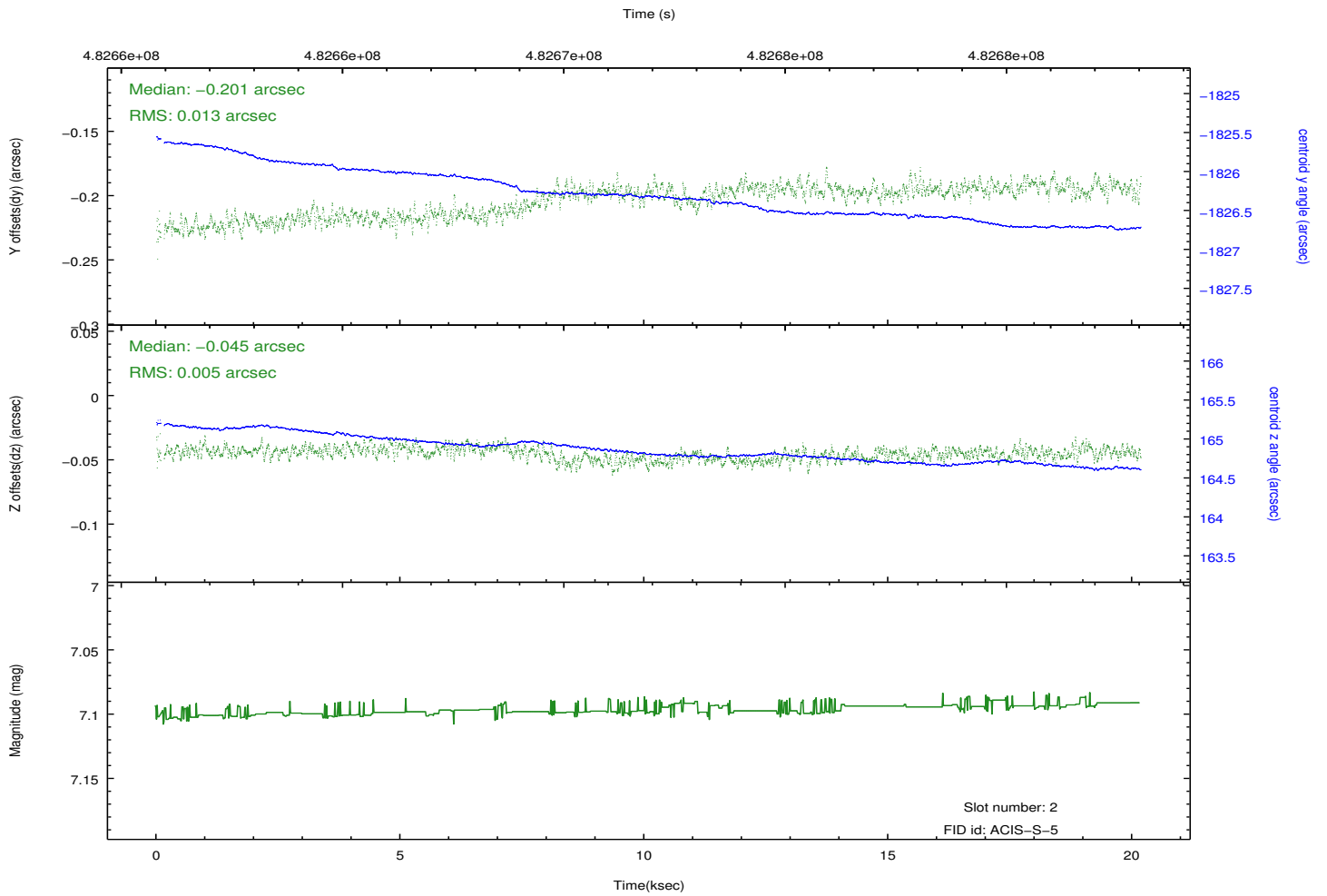
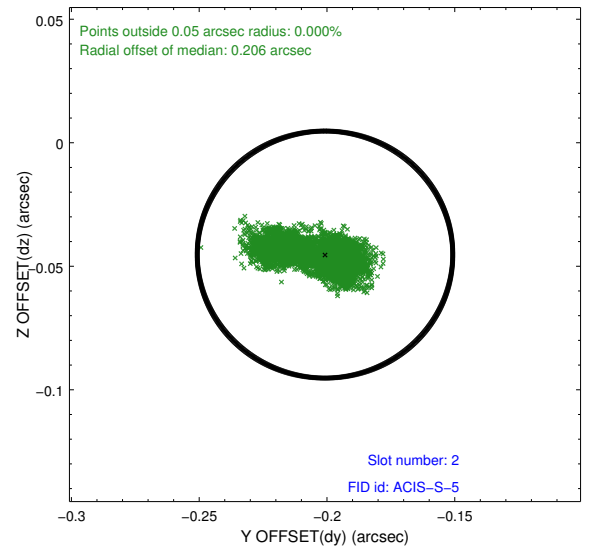
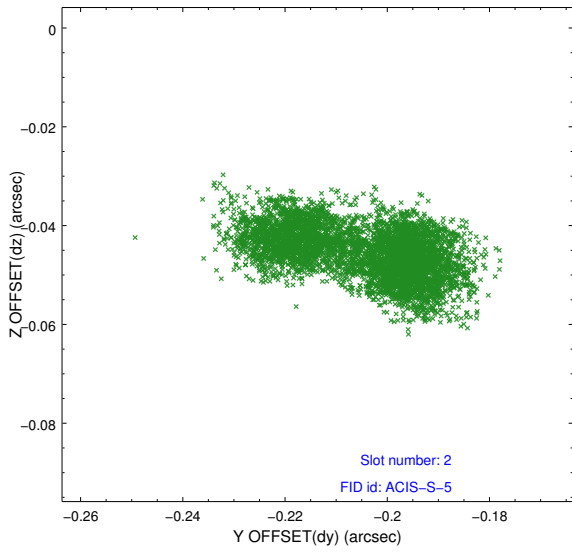
2.5.1 Slot 0



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) | 2014.12.10 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 19.172734456301 |

A.2 Comments

Joint proposal with HST.

Observation coordinated with HST.

Slot 7 has been used for optical photometry.

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.