

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 21189 - L2 Version 1
Chandra X-Ray Center

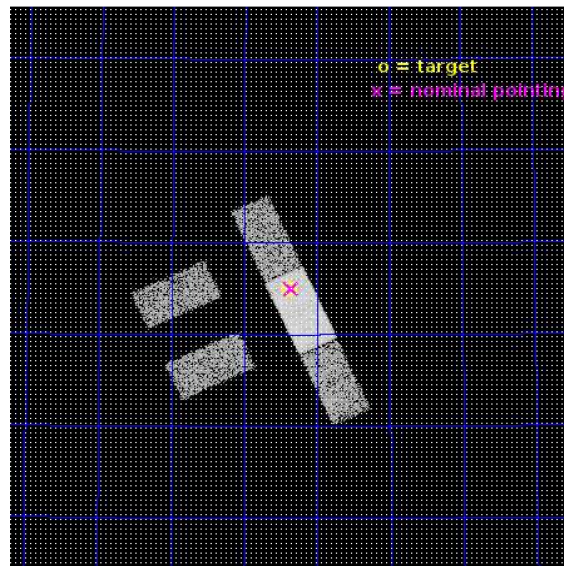
L2 Processing Date : Feb 12 2019

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1 Front

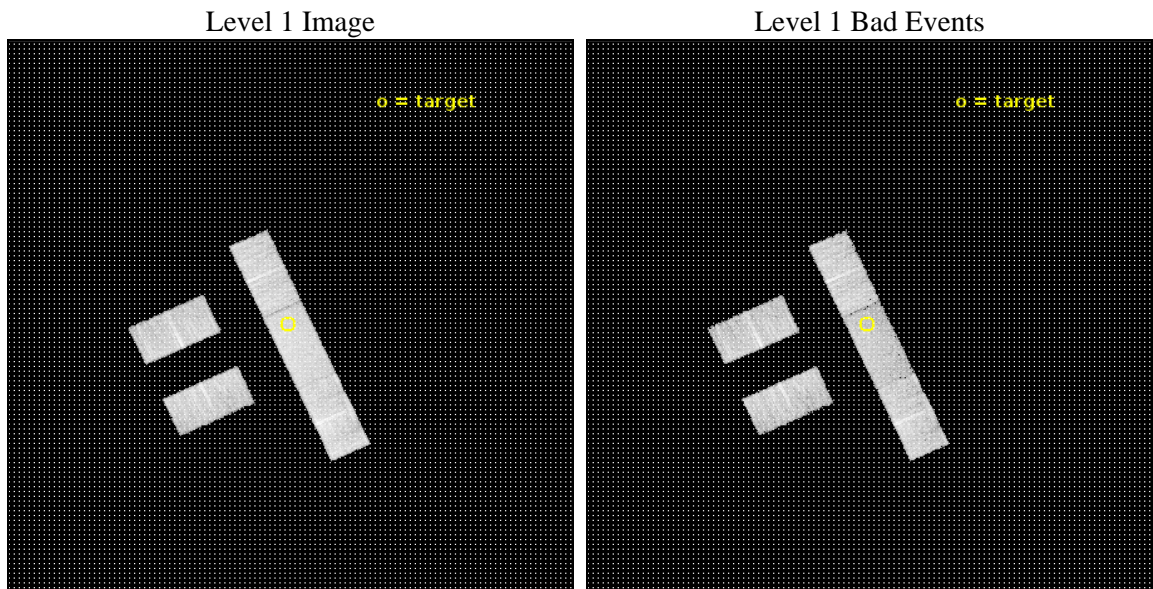
| | | |
|----------|--|---|
| seq_num | 201243 | Sequence number |
| obs_id | 21189 | Observation id |
| title | Testing X-ray activity as an age indicator | Proposal title |
| observer | Christian Schneider | Principal investigator |
| object | BD+59 1783 | Source name |
| dtycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 255.842917 | Observer's specified target RA [deg] |
| dec_targ | 59.581667 | Observer's specified target Dec [deg] |
| ra_nom | 255.8382133626 | Nominal RA [deg] |
| dec_nom | 59.58321749832 | Nominal Dec [deg] |
| roll_nom | 65.312901464593 | Nominal Roll [deg] |
| revision | 1 | Processing version of data |
| ontime | 9021.9002530575 | Sum of GTIs [s] |
| livetime | 8809.2349573805 | Livetime [s] |
| ontime2 | 9021.9002530575 | Sum of GTIs [s] |
| ontime3 | 9021.9002530575 | Sum of GTIs [s] |
| ontime6 | 9021.9002530575 | Sum of GTIs [s] |
| ontime7 | 9021.9002530575 | Sum of GTIs [s] |
| ontime8 | 9021.9002530575 | Sum of GTIs [s] |
| l2events | 33500 | Number of level 2 events |



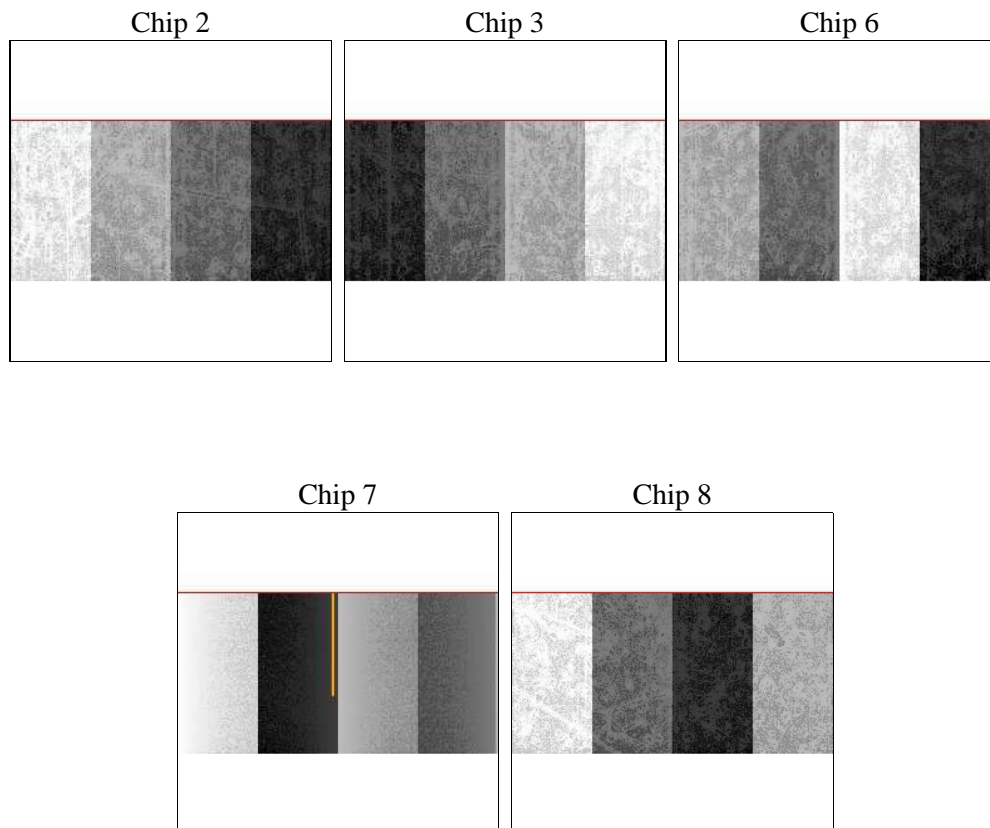
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 9000.000000 | [s] Scheduled observation exposure time |
| ascdsver | 10.7.1 | Processing system revision | ontime | 9021.9002530575 | Sum of GTIs [s] |
| caldbver | 4.8.2 | | ontime2 | 9021.9002530575 | Sum of GTIs [s] |
| date | 2019-02-12T07:04:48 | Date and time of file creation | ontime3 | 9021.9002530575 | Sum of GTIs [s] |
| revision | 1 | Processing version of data | ontime6 | 9021.9002530575 | Sum of GTIs [s] |
| | | | ontime7 | 9021.9002530575 | Sum of GTIs [s] |
| | | | ontime8 | 9021.9002530575 | Sum of GTIs [s] |
| | | | l1events | 213099 | Number of level 1 events |

2.1.4 Events

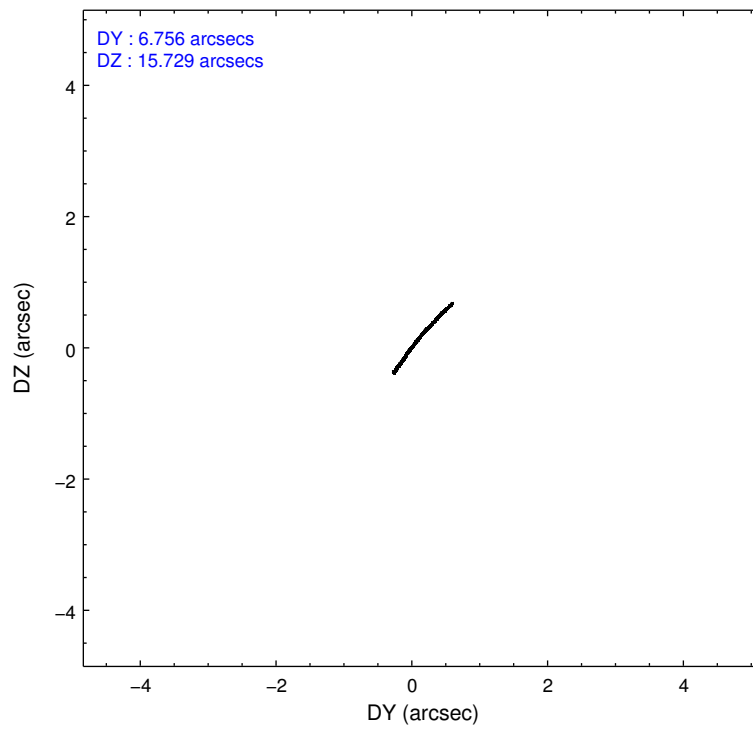
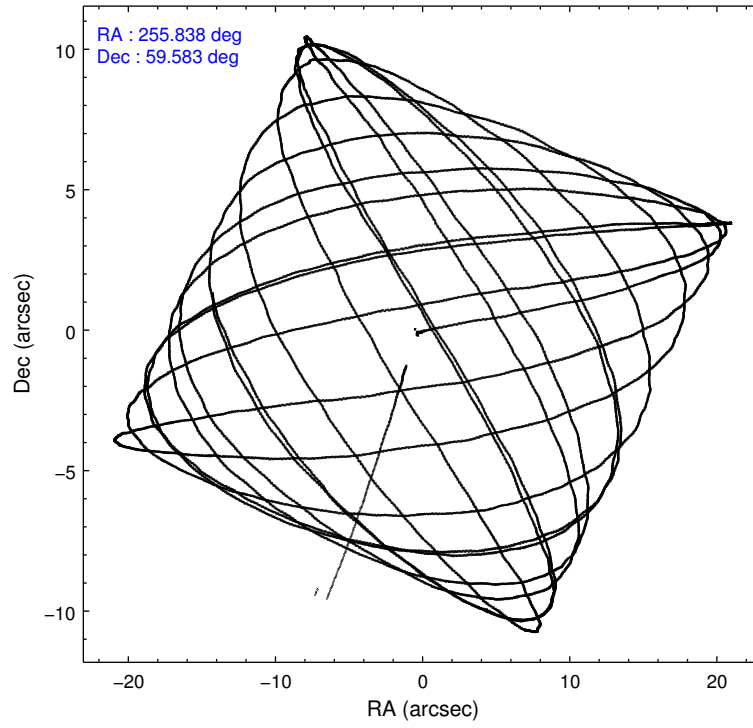
| | ccd 2 | ccd 3 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|-------|-------|-------|-------|-------|
| level 1 events | 37115 | 37580 | 41671 | 47070 | 49663 |
| rejected events | 33354 | 33839 | 37515 | 26843 | 38263 |
| rejected % | 89% | 90% | 90% | 57% | 77% |

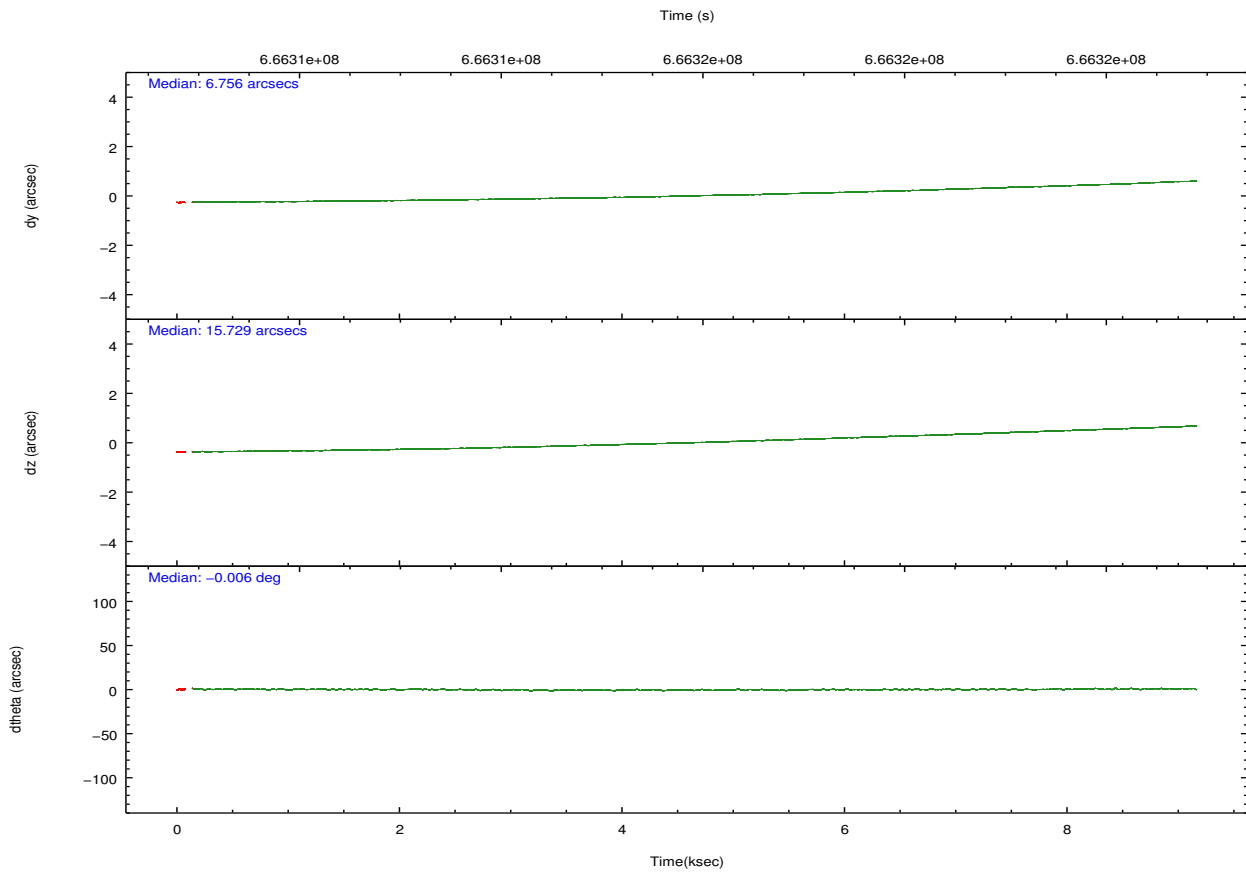
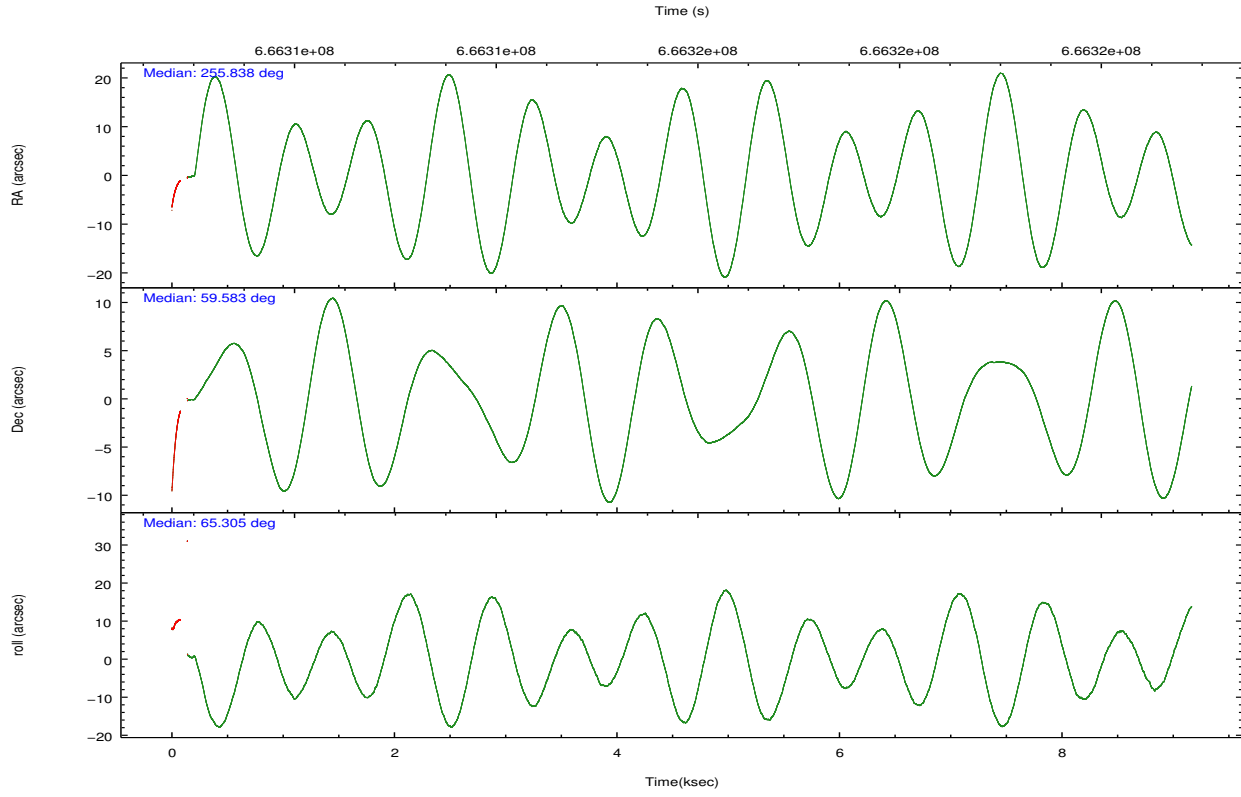
| | ccd 2 | ccd 3 | ccd 6 | ccd 7 | ccd 8 |
|----------------|-------|-------|-------|-------|-------|
| grade 0 events | 1268 | 1251 | 1163 | 1840 | 3078 |
| | 3% | 3% | 2% | 3% | 6% |
| grade 1 events | 11 | 15 | 13 | 69 | 24 |
| | 0% | 0% | 0% | 0% | 0% |
| grade 2 events | 807 | 765 | 1116 | 4157 | 2899 |
| | 2% | 2% | 2% | 8% | 5% |
| grade 3 events | 508 | 485 | 445 | 1784 | 1166 |
| | 1% | 1% | 1% | 3% | 2% |
| grade 4 events | 495 | 482 | 435 | 1842 | 1087 |
| | 1% | 1% | 1% | 3% | 2% |
| grade 5 events | 1285 | 1695 | 1563 | 4758 | 2385 |
| | 3% | 4% | 3% | 10% | 4% |
| grade 6 events | 758 | 805 | 1074 | 10955 | 3308 |
| | 2% | 2% | 2% | 23% | 6% |
| grade 7 events | 31983 | 32082 | 35862 | 21665 | 35716 |
| | 86% | 85% | 86% | 46% | 71% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 7 | 7 |
| Detector | ACIS-23678 | ACIS-23678 | Obspar file type | PREDICTED | ACTUAL |
| Grating | NONE | NONE | Obspar update status | NONE | UPDATED |
| Data mode | VFAINT | VFAINT | CCD I0 on | N | N |
| Observation mode | POINTING | POINTING | CCD I1 on | N | N |
| [deg] Pointing RA | 255.843880 | 255.8382133626025 | CCD I2 on | O1 | Y |
| [deg] Pointing Dec | 59.555950 | 59.58321749832027 | CCD I3 on | Y | Y |
| [deg] Pointing Roll | 65.151385 | 65.31290146459304 | CCD S0 on | N | N |
| [mm] SIM focus pos | -0.684267 | -0.6828225247311905 | CCD S1 on | N | N |
| [mm] SIM defocus | 0 | 0.001444936568705701 | CCD S2 on | Y | Y |
| [mm] SIM translation stage pos | -190.132523 | -190.1400660498719 | CCD S3 on | Y | Y |
| [mm] SIM translation stage offset | 0 | 0.00754346686406393 | CCD S4 on | Y | Y |
| [s] Observation start time (MET) | 666311437.184000 | 666310482.4035 | CCD S5 on | N | N |
| Observation start date | 2019-02-11T22:29:28 | 2019-02-11T22:14:42 | Number of optional ACIS chips dropped | 0 | 0 |
| [s] Observation end time (MET) | 666320437.184000 | 666321150.09164 | On-chip summing requested | N | N |
| Observation end date | 2019-02-12T00:59:28 | 2019-02-12T01:12:30 | Subarray requested | CUSTOM | 1/2 |
| Read mode | TIMED | TIMED | 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





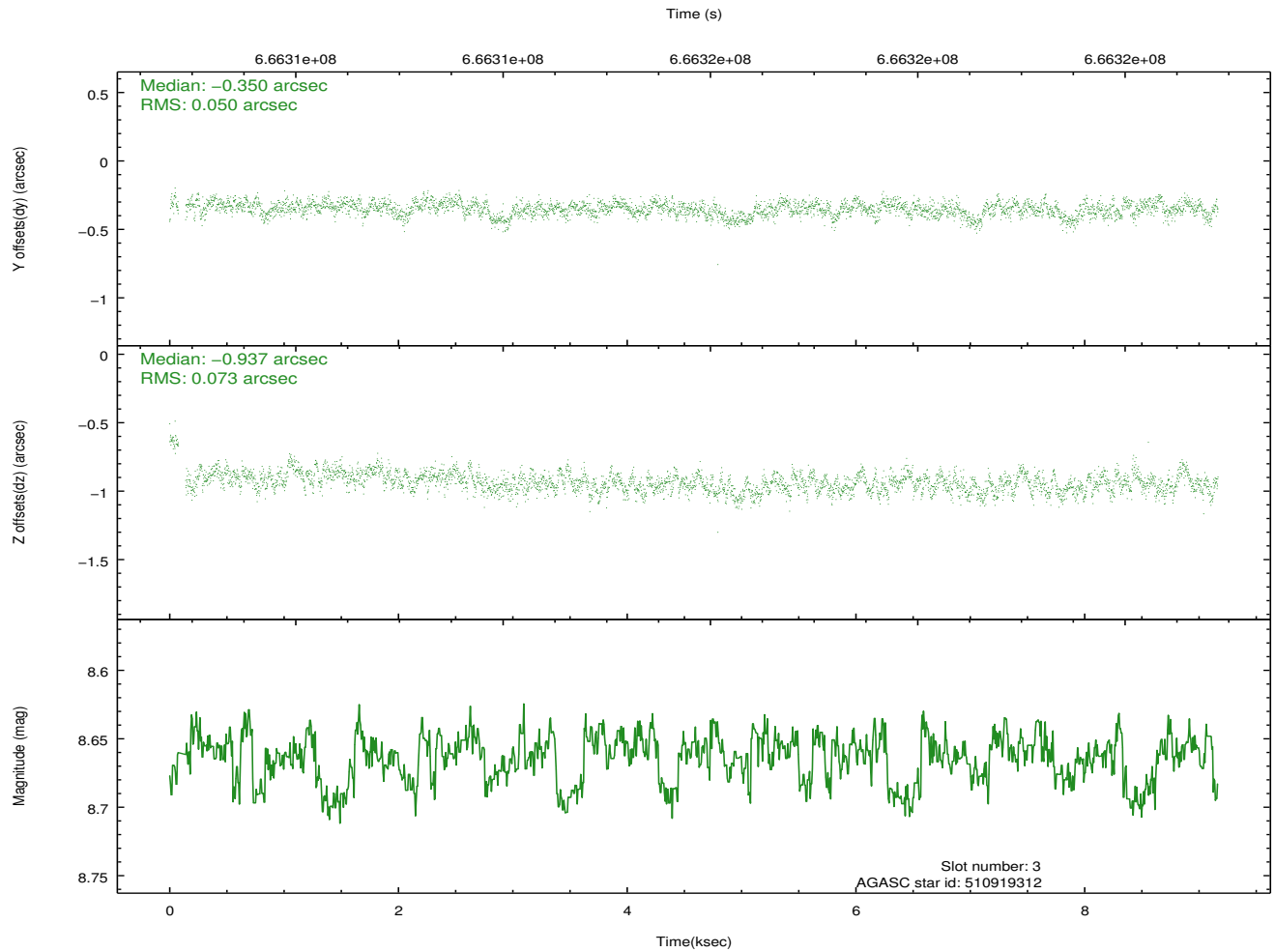
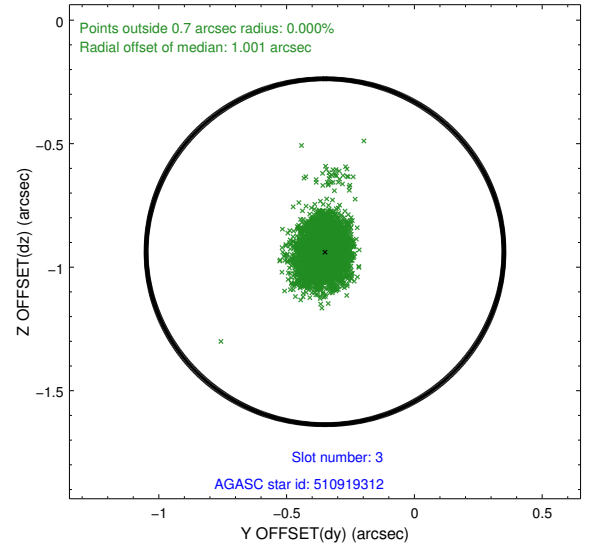
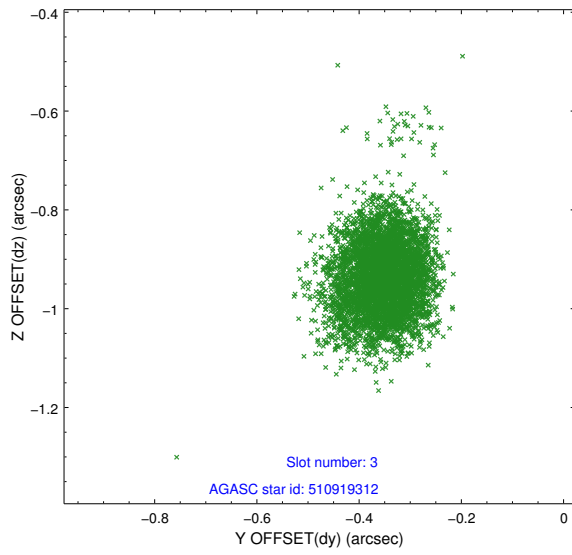
Slot Statistics

| slot | status | used | id | mag | n_pts | frac_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_x |
|------|---------|--------|-----------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|--------|
| 0 | FID | | ACIS-S-2 | 7.10 | 2221 | 1.000 | -0.286 | -0.116 | 0.013 | 0.030 | 0.000000 | 0.000000 | -759.78 | -1737 |
| 1 | FID | | ACIS-S-4 | 7.24 | 2221 | 1.000 | 0.583 | 0.168 | 0.008 | 0.013 | 0.000000 | 0.000000 | 2154.02 | 170 |
| 2 | FID | | ACIS-S-5 | 7.21 | 2221 | 1.000 | -0.331 | -0.044 | 0.013 | 0.029 | 0.000000 | 0.000000 | -1811.97 | 164 |
| 3 | GUIDE | used | 510919312 | 8.66 | 4440 | 1.000 | -0.350 | -0.937 | 0.091 | 0.149 | 254.661158 | 59.797637 | -93.73 | 2316 |
| 4 | GUIDE | used | 510920968 | 8.59 | 4435 | 1.000 | 0.129 | 0.255 | 0.088 | 0.140 | 256.467318 | 58.928049 | -1557.86 | -1997 |
| 5 | GUIDE | used | 510927656 | 8.46 | 4442 | 1.000 | 0.143 | 0.442 | 0.079 | 0.128 | 256.354335 | 58.711592 | -2353.86 | -2141 |
| 6 | GUIDE | used | 511051288 | 8.37 | 4442 | 1.000 | 0.079 | 0.236 | 0.102 | 0.160 | 256.725513 | 59.075379 | -874.68 | -2202 |
| 7 | MONITOR | unused | | 0.00 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000000 | 0.000000 | 0.00 | 0 |

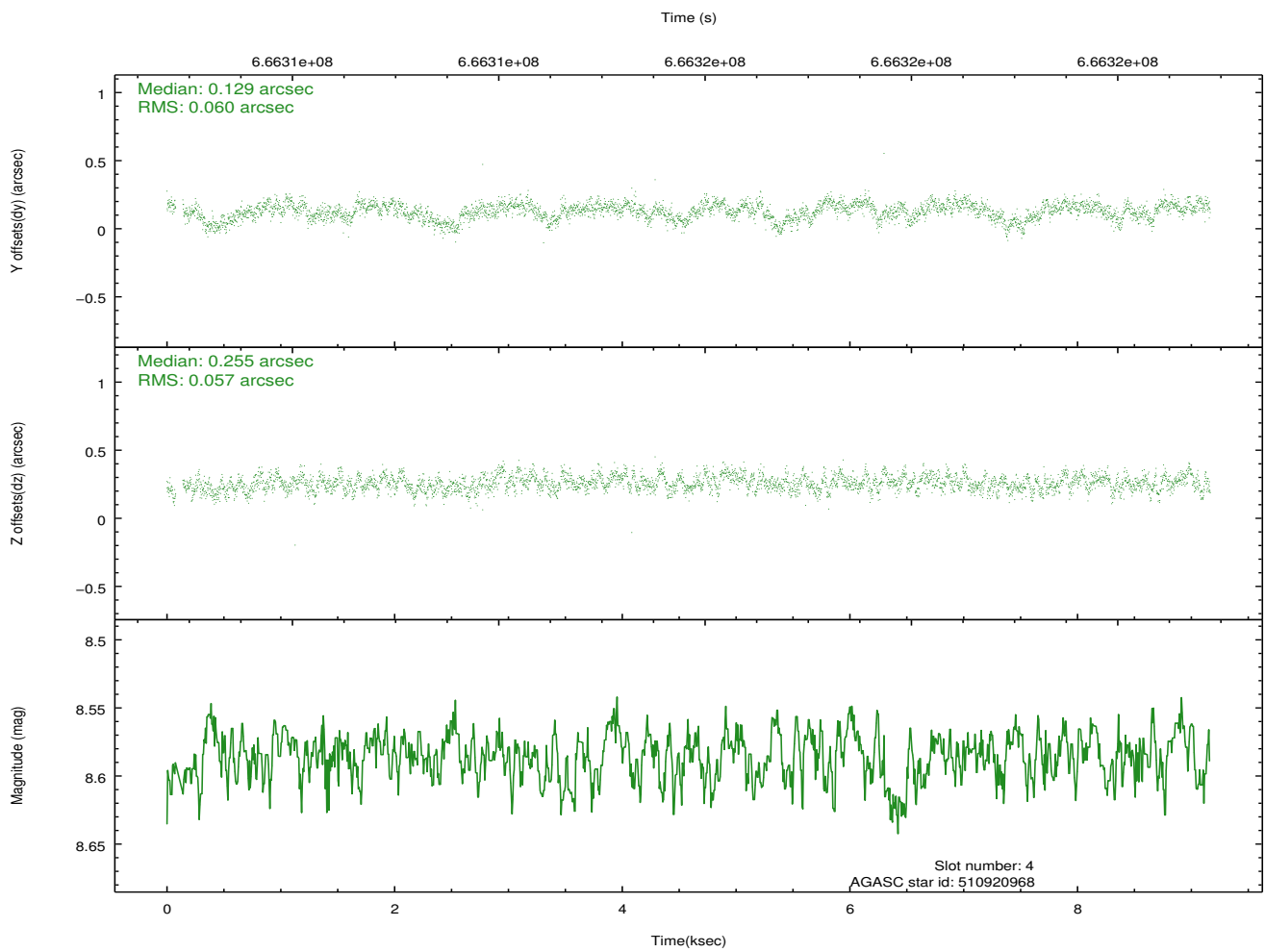
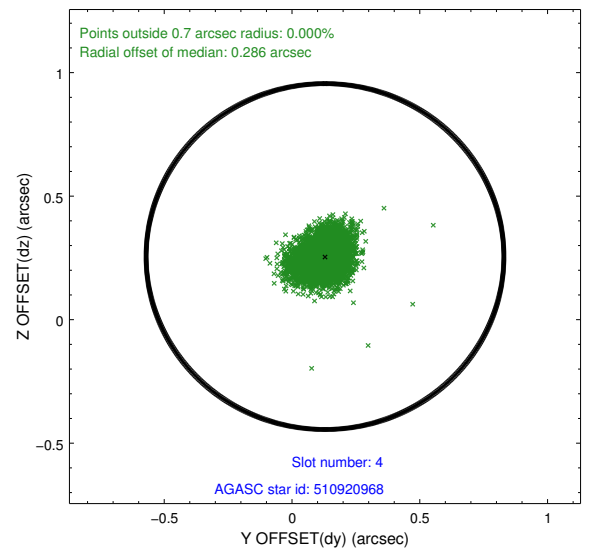
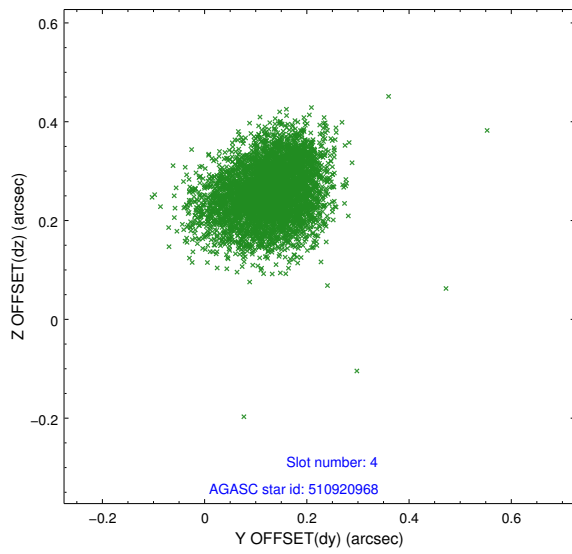
∞

2.4 Star Slots

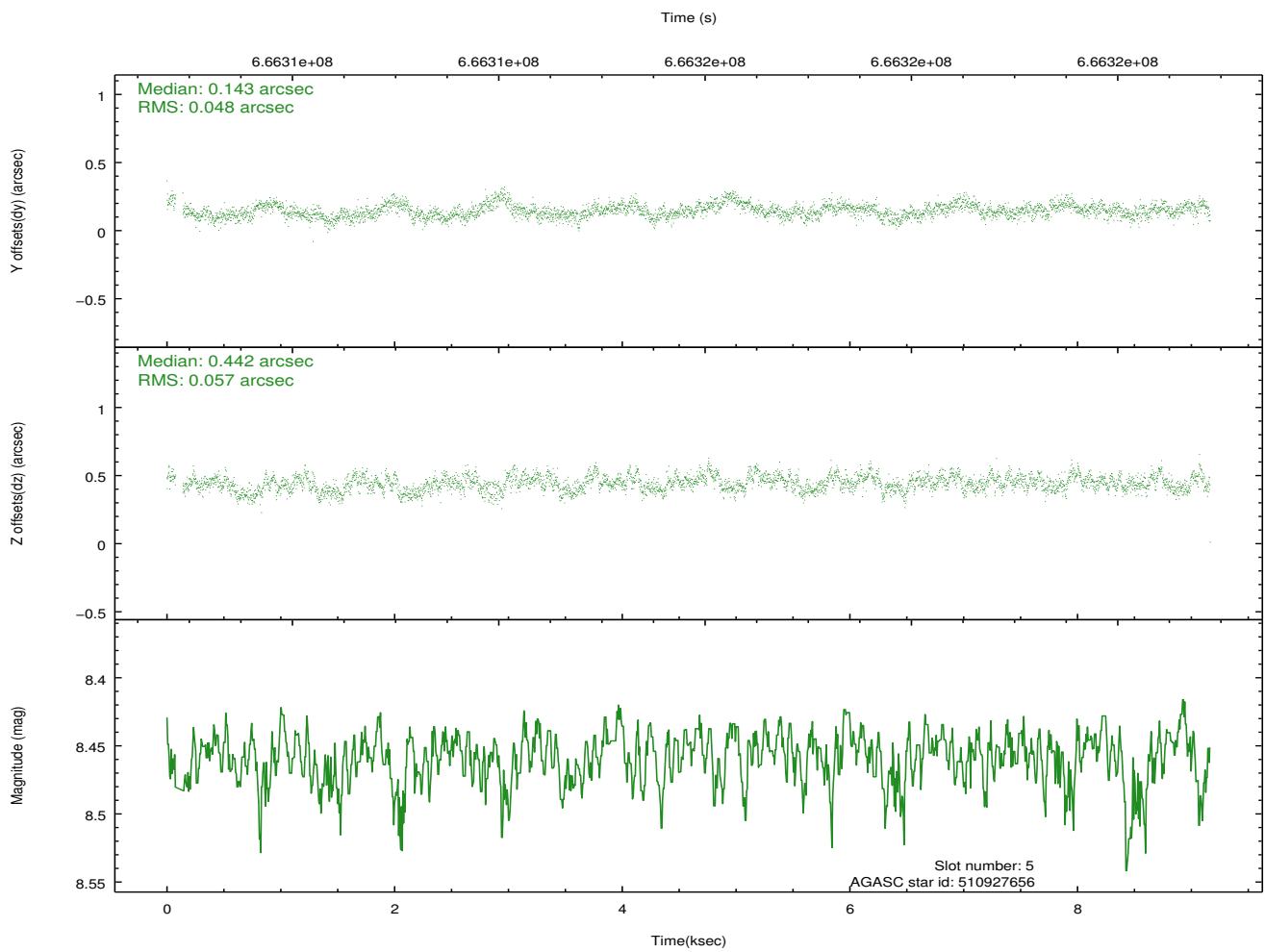
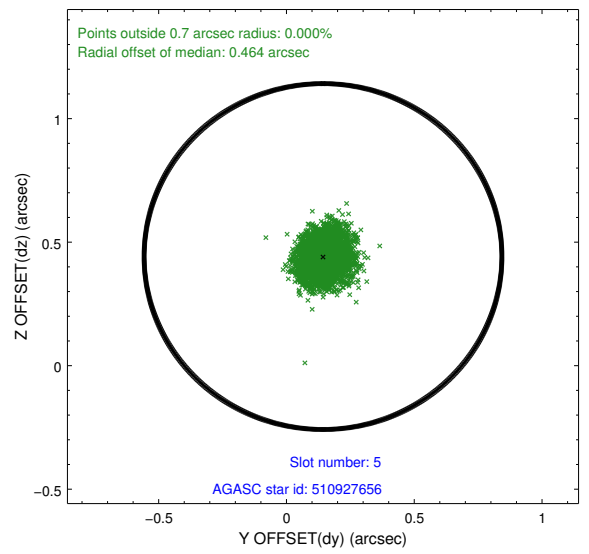
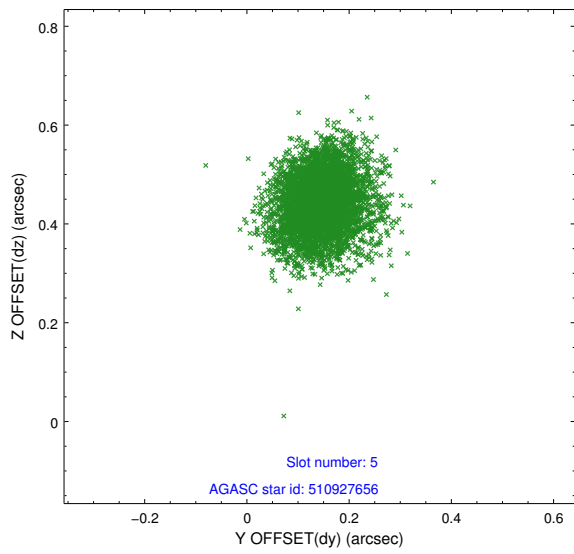
2.4.1 Slot 3



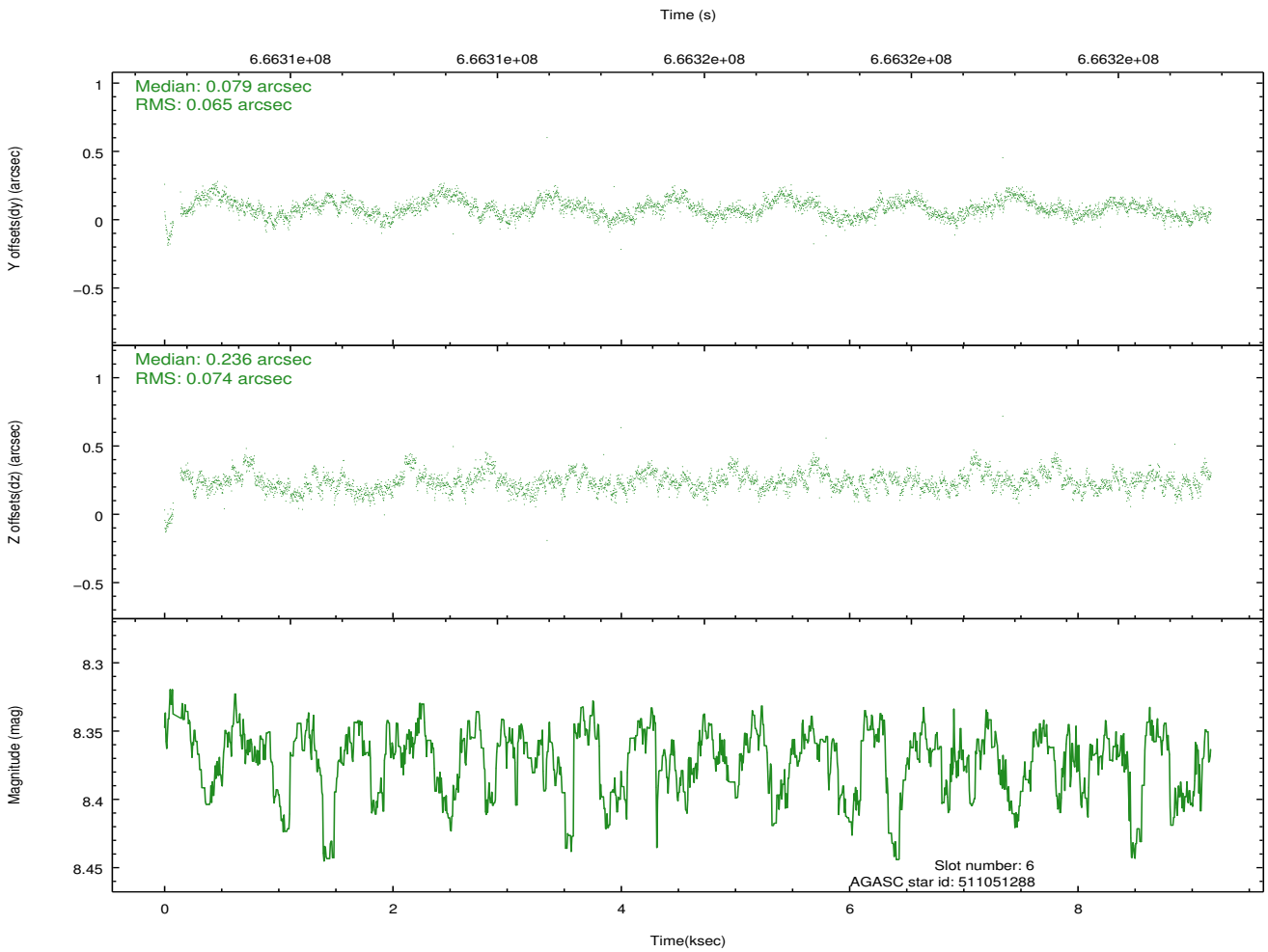
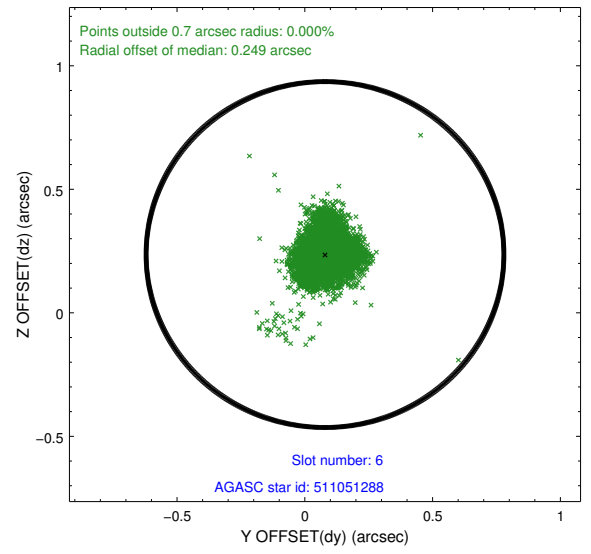
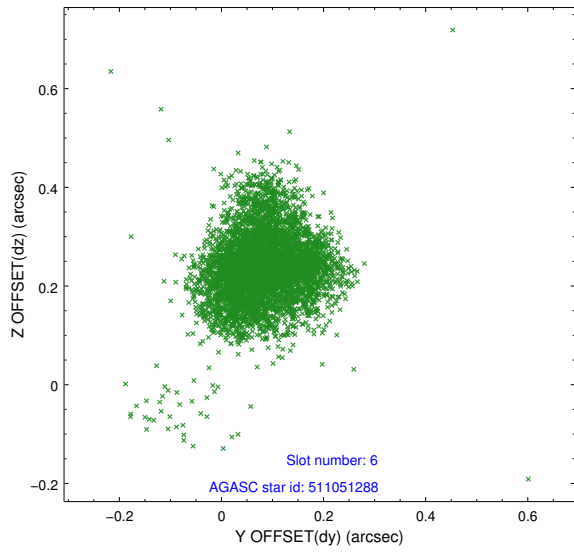
2.4.2 Slot 4



2.4.3 Slot 5

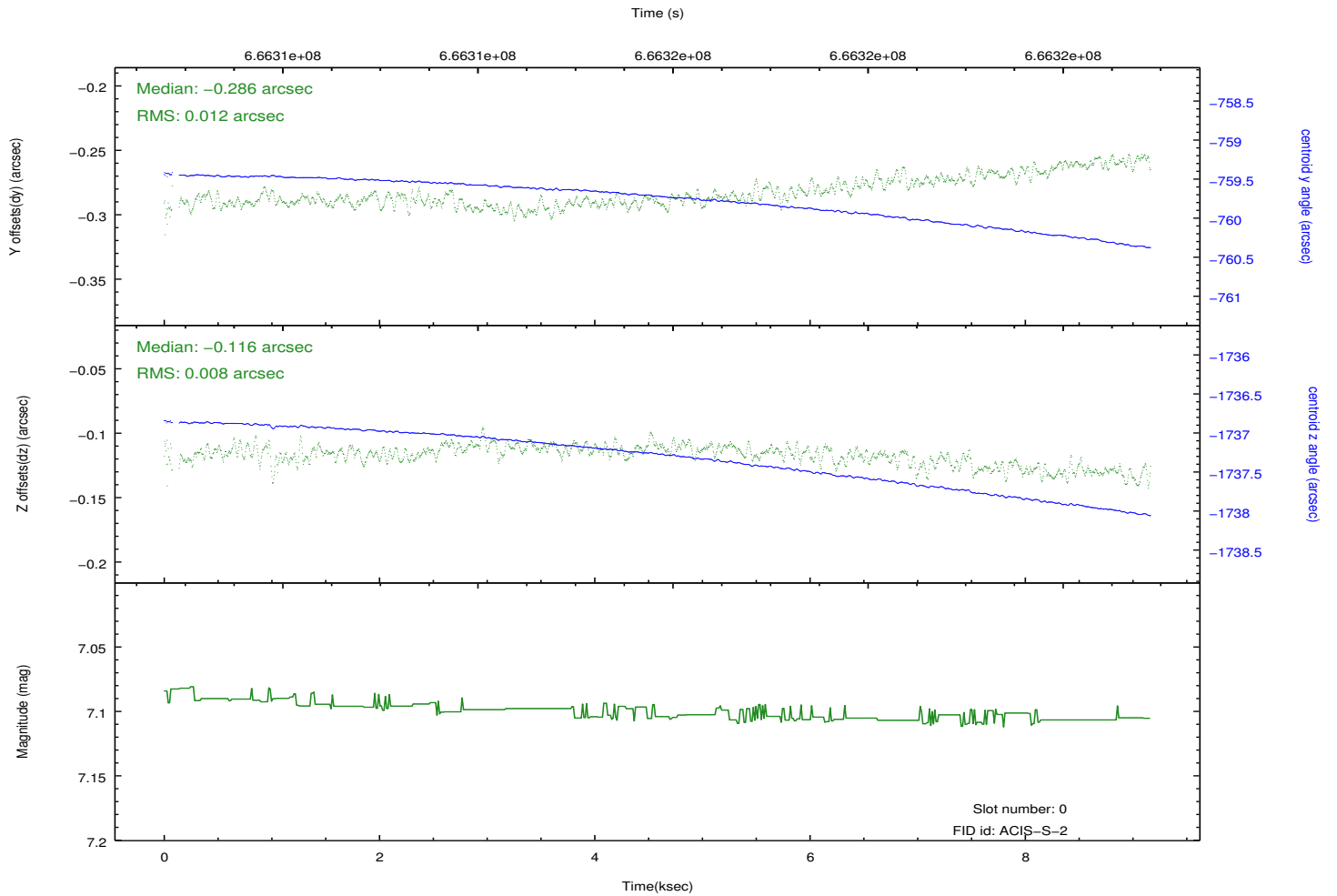
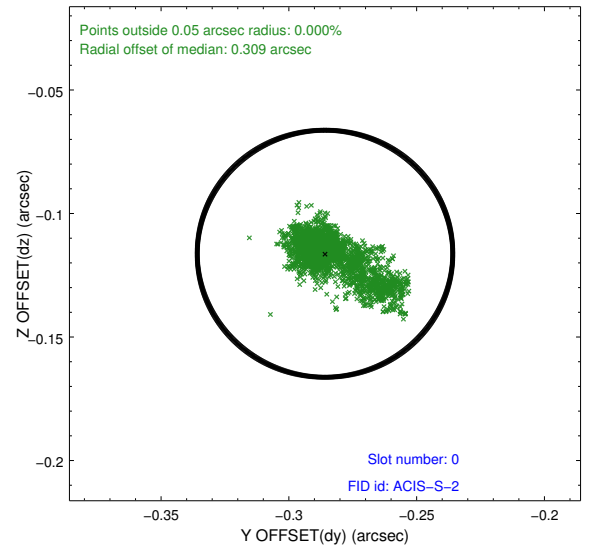
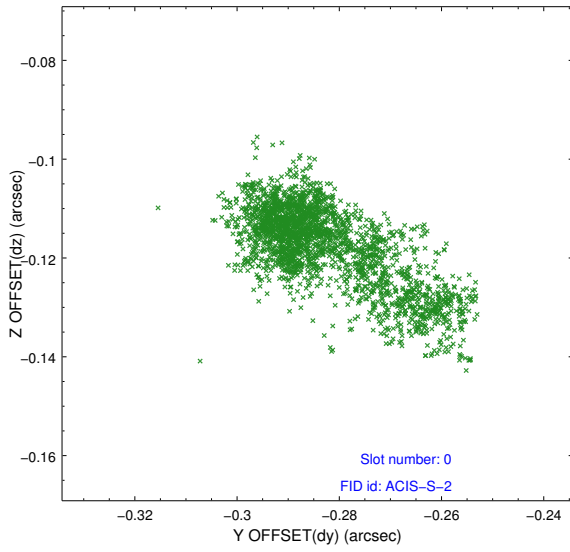


2.4.4 Slot 6

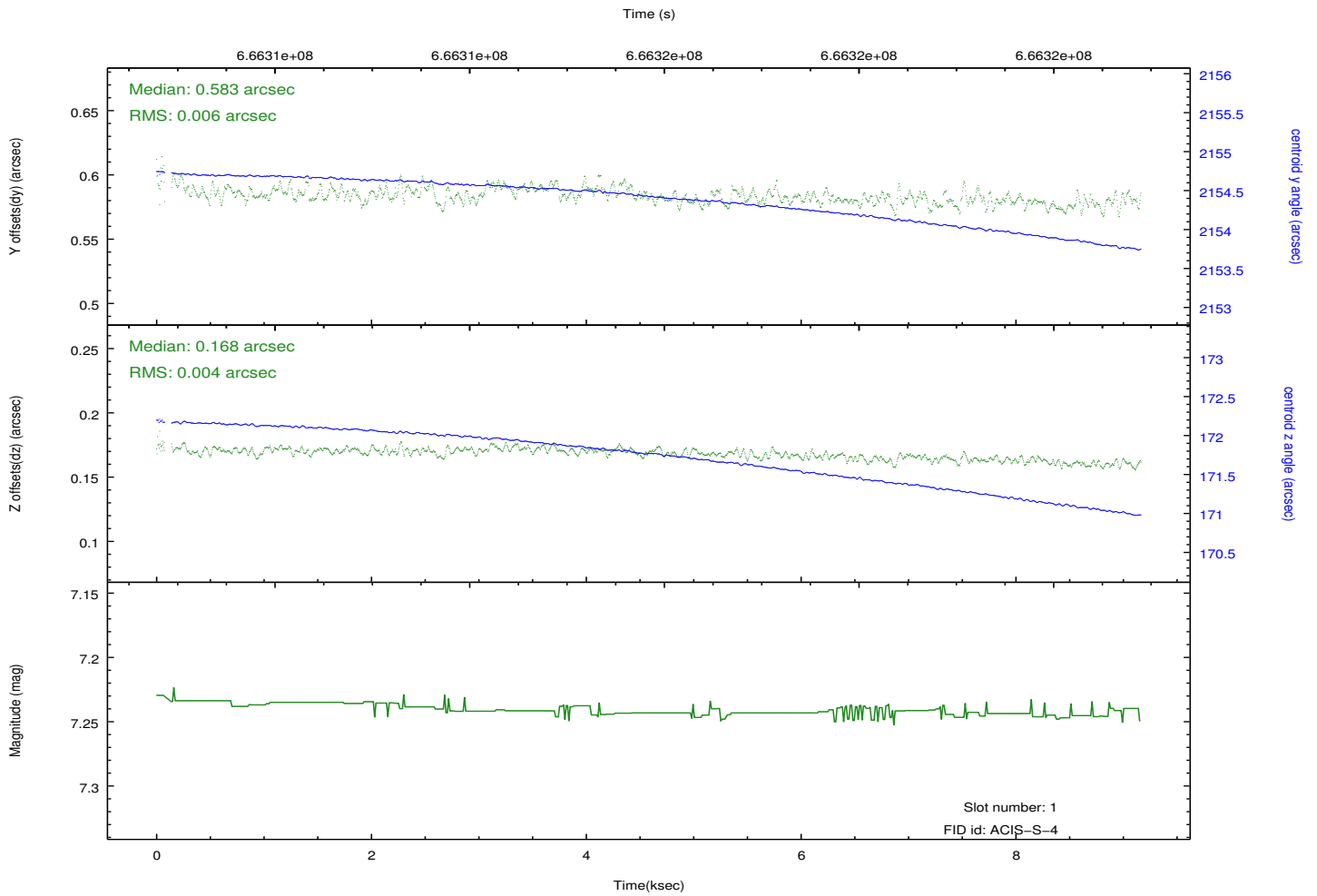
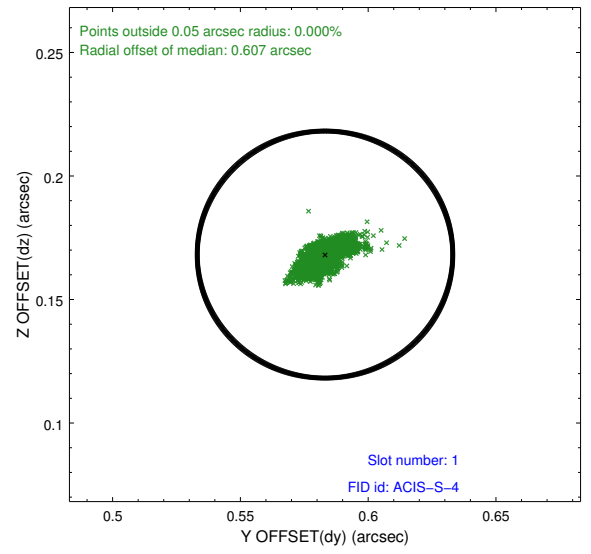
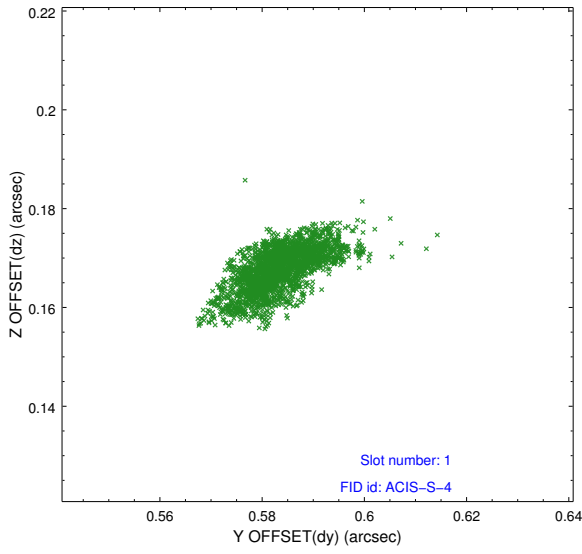


2.5 FID Slots

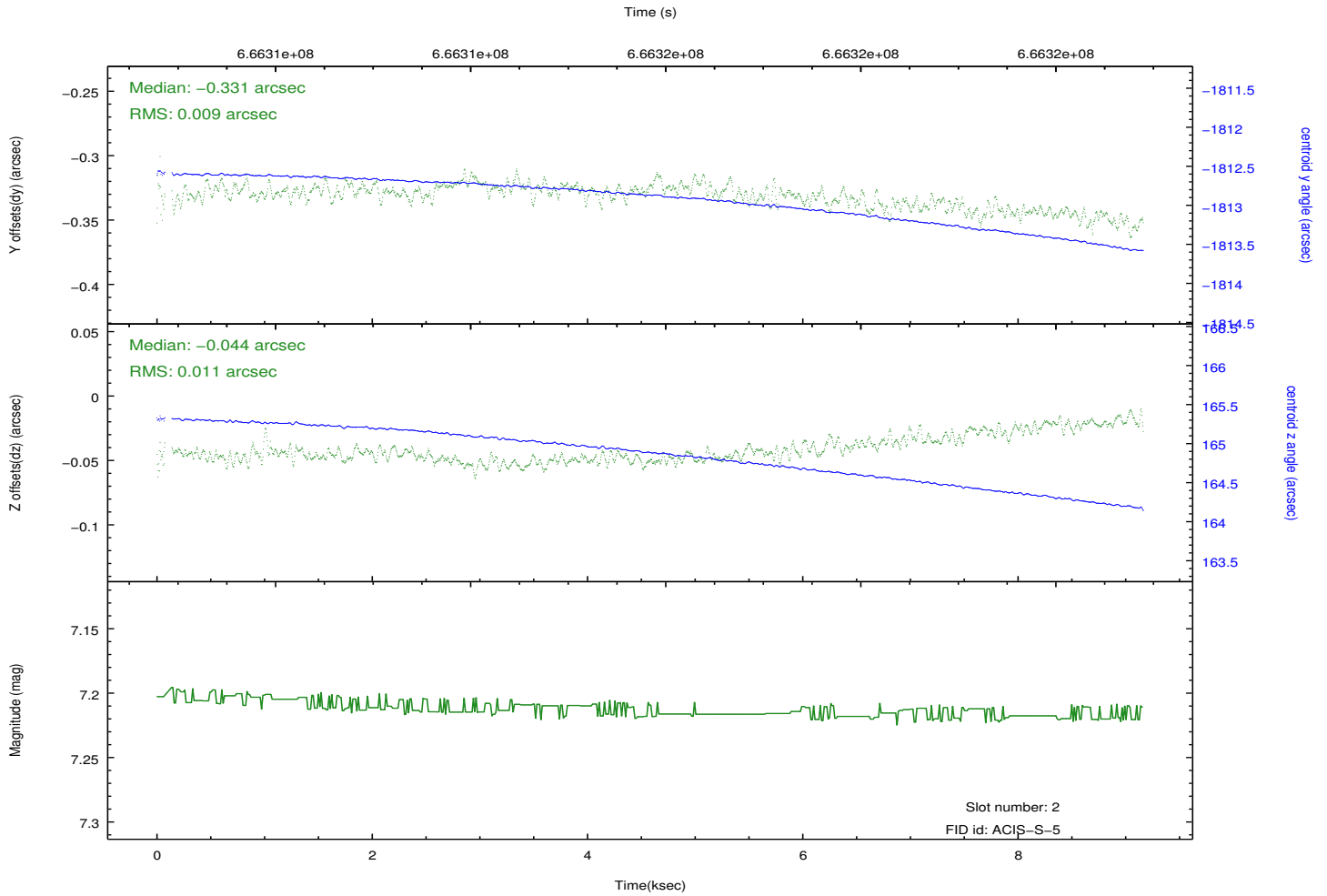
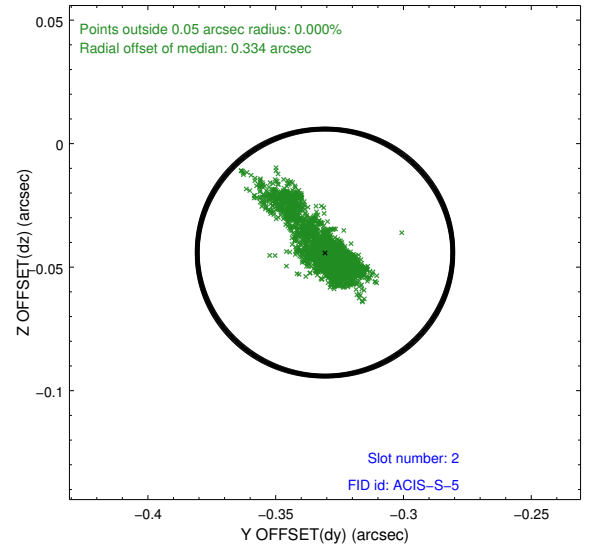
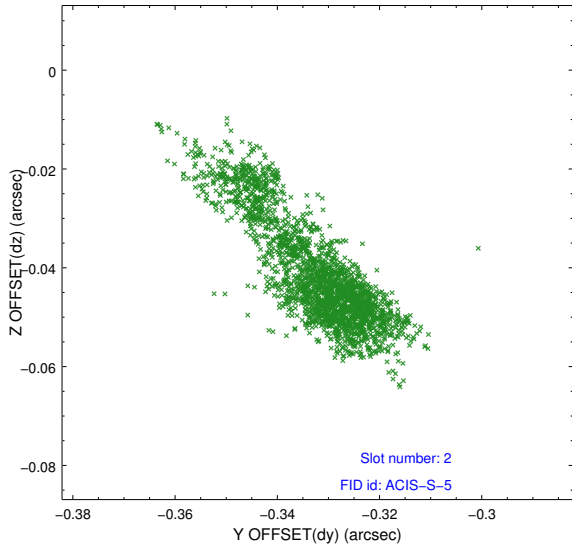
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

| | |
|----------------------------|-----------------|
| V&V Scientist | Joy Nichols |
| V&V Date (YYYY-MM-DD) | 2019.02.12 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 9.0219002530575 |

A.2 Comments

Monitor source used in slot 7. The ACA has the capability to devote one or more of the eight image slots to "monitor" particular sky locations. This allows simultaneous optical photometry of one or more targets in the ACA field of view. These optical sources can be slightly fainter than the ACA guide star limit of $m_{ACA} = 10.2$ mag. The bright-end limit for monitor star photometry is $m_{ACA}=6.2$ mag. However, since there are a fixed number of image slots, devoting a slot to photometry instead of tracking a guide star results in a degradation of the image reconstruction and celestial location accuracy (Section 5.4). Using one monitor slot represents a 15 - 25% increase in the aspect image reconstruction RMS diameter, depending on the particular guide star configuration. Two monitor slots would increase the diameter by about 50 - 60%, but this configuration is not operationally allowed under normal circumstances. The photometric accuracy which can be achieved depends primarily on the star magnitude, integration time, CCD dark current, CCD read noise, sky background, and the CCD dark current uncertainty.