V&V Reference Report
L2 ASCDS Version : 10.5

Observation 18077 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Aug 9 2016

Contents

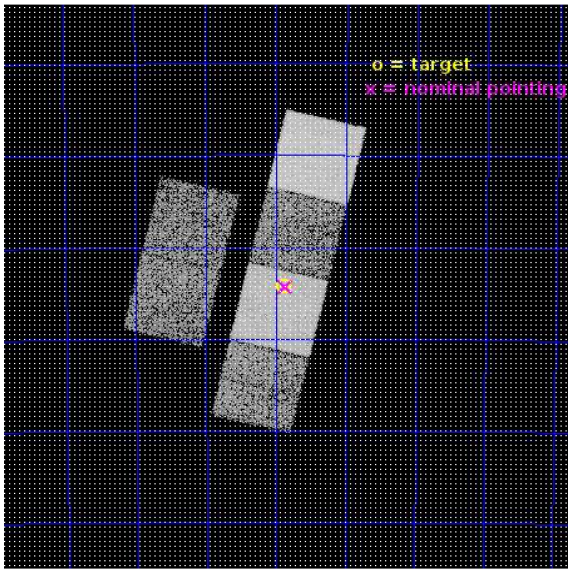
1 Front **2**

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
2.4.5 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

A Summary **17**
A.1 Status . . . 17
A.2 Comments . . . 17

1 Front

seq_num	901191	Sequence number
obs_id	18077	Observation id
title	Compton-Thick AGN: The Hunt is on	Proposal title
observer	Marco Ajello	Principal investigator
object	ESO 116-18	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	51.22125	Observer's specified target RA [deg]
dec_targ	-60.738444	Observer's specified target Dec [deg]
ra_nom	51.216053610371	Nominal RA [deg]
dec_nom	-60.738691278928	Nominal Dec [deg]
roll_nom	103.40470366996	Nominal Roll [deg]
revision	2	Processing version of data
ontime	9948.8001482487	Sum of GTIs [s]
livetime	9822.8224503233	Livetime [s]
ontime2	9945.5591877699	Sum of GTIs [s]
ontime3	9945.559147954	Sum of GTIs [s]
ontime5	9948.8001482487	Sum of GTIs [s]
ontime6	9948.8001482487	Sum of GTIs [s]
ontime7	9948.8001482487	Sum of GTIs [s]
ontime8	9948.8001482487	Sum of GTIs [s]
l2events	109619	Number of level 2 events

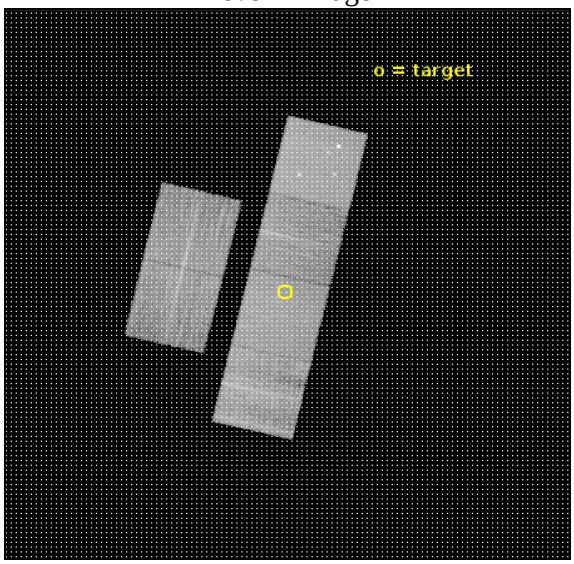


2 OBI

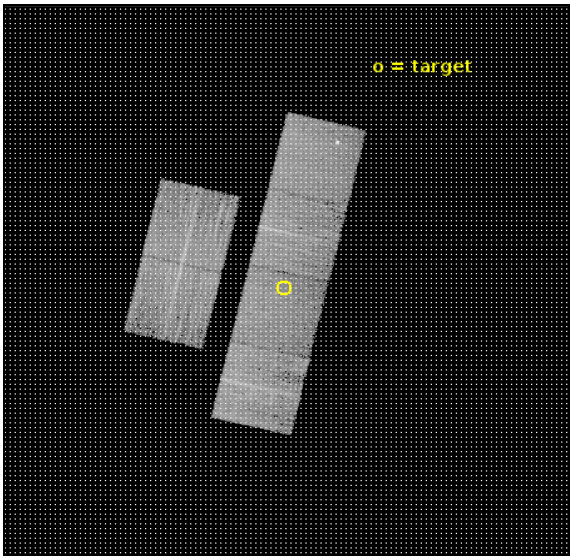
2.1 OBI

2.1.1 Images

Level 1 Image

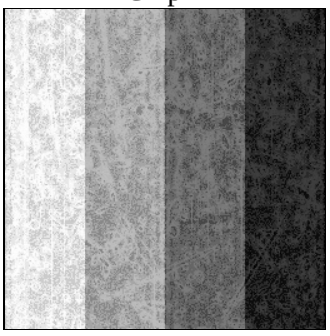


Level 1 Bad Events

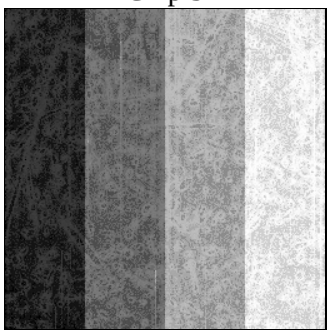


2.1.2 Bias

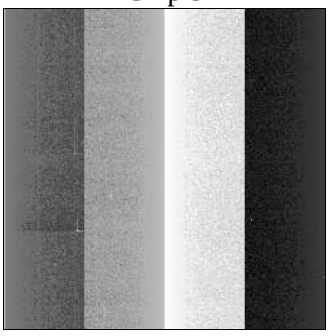
Chip 2



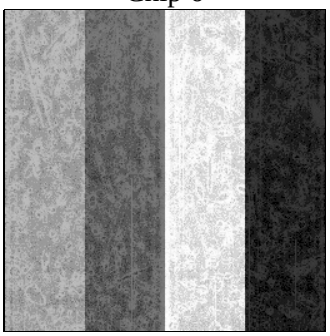
Chip 3



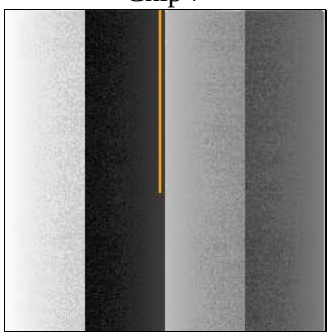
Chip 5



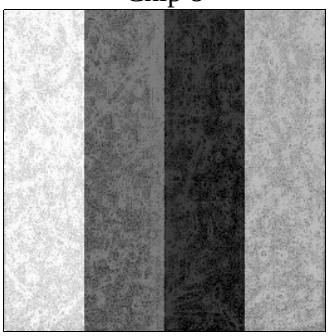
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.5	Processing system revision
caldbver	4.7.2	
date	2016-08-09T19:39:57	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	10000.000000	[s] Scheduled observation exposure time
ontime	9948.8001482487	Sum of GTIs [s]
ontime2	9945.5591877699	Sum of GTIs [s]
ontime3	9945.559147954	Sum of GTIs [s]
ontime5	9948.8001482487	Sum of GTIs [s]
ontime6	9948.8001482487	Sum of GTIs [s]
ontime7	9948.8001482487	Sum of GTIs [s]
ontime8	9948.8001482487	Sum of GTIs [s]
l1events	466863	Number of level 1 events

2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	64580	60756	105883	64528	83894	87222
rejected events	57483	53907	54125	57039	46818	63775
rejected %	89%	88%	51%	88%	55%	73%

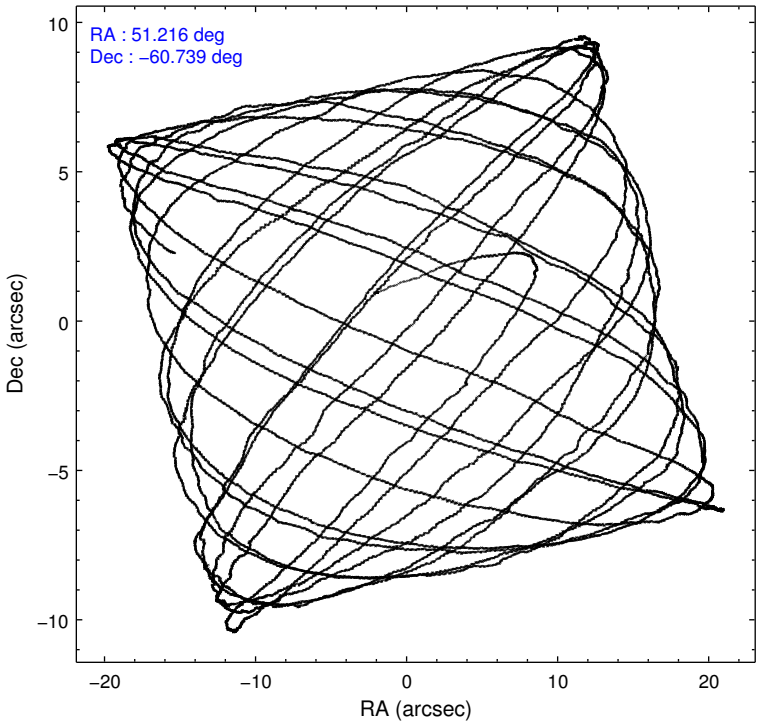
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	2446	2514	5274	2507	3229	6937
	3%	4%	4%	3%	3%	7%
grade 1 events	37	33	473	33	123	72
	0%	0%	0%	0%	0%	0%
grade 2 events	1851	1503	16031	1701	7866	5630
	2%	2%	15%	2%	9%	6%
grade 3 events	709	686	1796	813	3120	2465
	1%	1%	1%	1%	3%	2%
grade 4 events	676	718	1696	741	3069	2293
	1%	1%	1%	1%	3%	2%
grade 5 events	2757	3130	8275	3138	8665	4530
	4%	5%	7%	4%	10%	5%
grade 6 events	1417	1432	26994	1734	19818	6131
	2%	2%	25%	2%	23%	7%
grade 7 events	54687	50740	45344	53861	38004	59164
	84%	83%	42%	83%	45%	67%

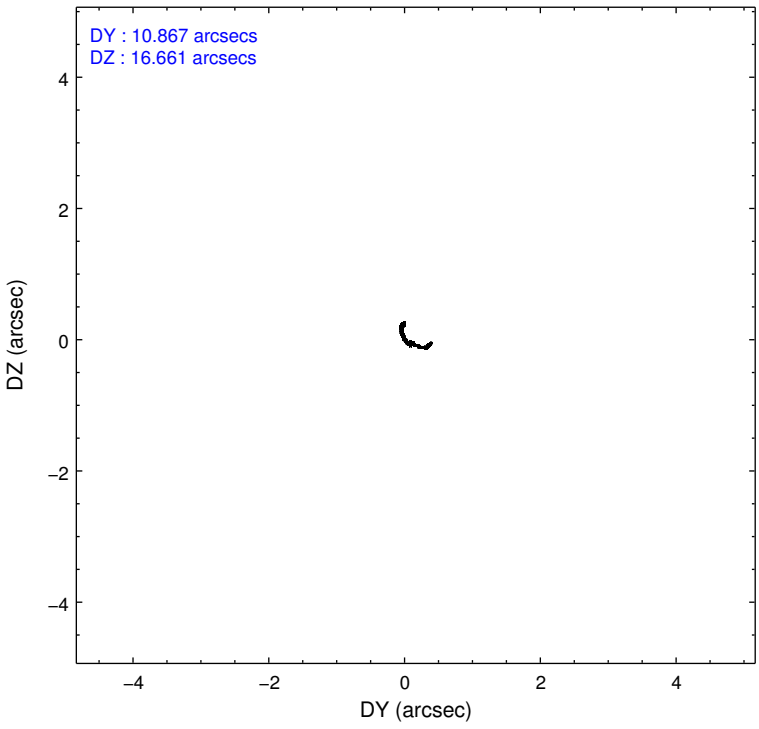
2.2 Compared Parameters

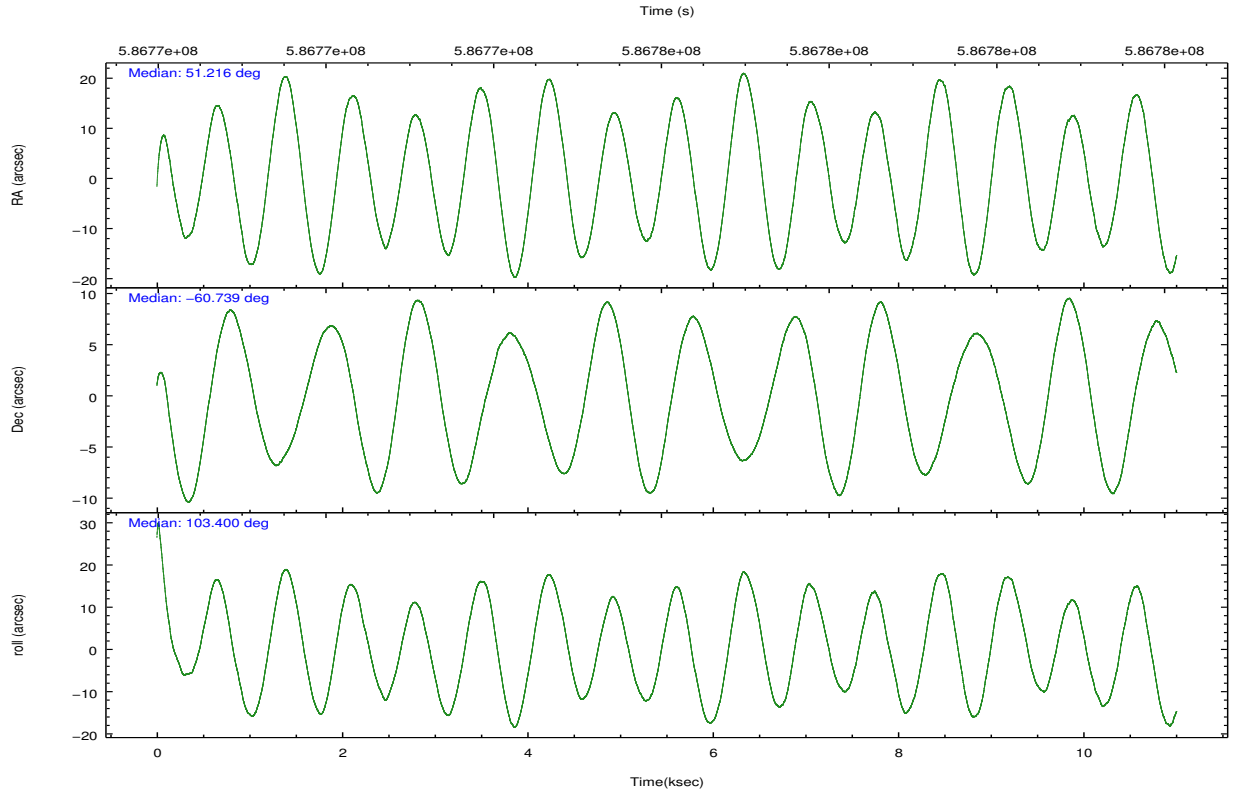
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	NONE	NONE
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	51.255266	51.21605361037095
[deg] Pointing Dec	-60.758376	-60.73869127892753
[deg] Pointing Roll	103.282258	103.404703669958
[mm] 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)	586771560.184000	586769803.21034
Observation start date	2016-08-05T08:04:52	2016-08-05T07:36:43
[s] Observation end time (MET)	586781560.184000	586782057.59855
Observation end date	2016-08-05T10:51:32	2016-08-05T11:00:57
Read mode	TIMED	TIMED

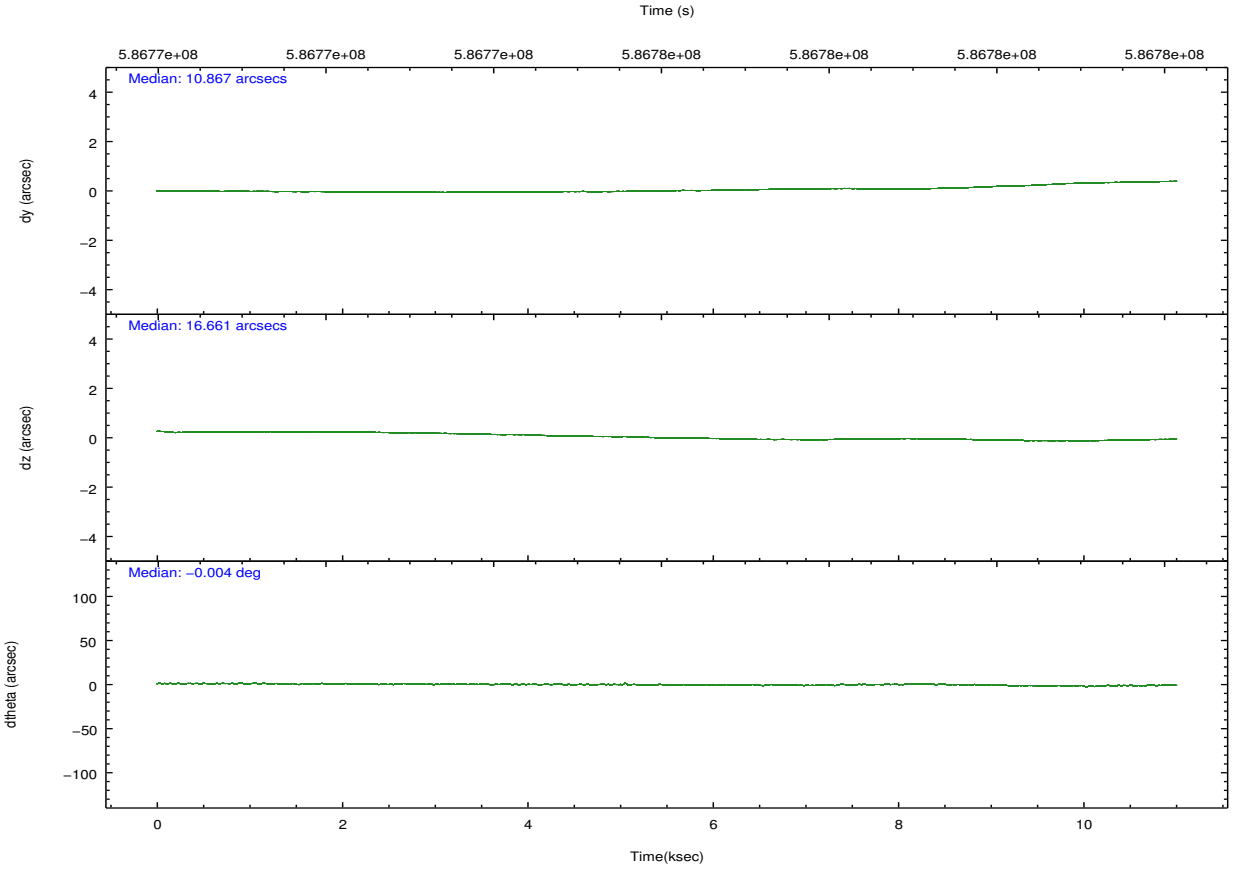
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O4	Y
CCD I3 on	O3	Y
CCD S0 on	N	N
CCD S1 on	O2	Y
CCD S2 on	Y	Y
CCD S3 on	Y	Y
CCD S4 on	O1	Y
CCD S5 on	N	N
Number of optional ACIS chips dropped	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


RA : 51.216 deg
Dec : −60.739 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−20
−10
0
10
20


DY : 10.867 arcsecs
DZ : 16.661 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
5.8677e+08
5.8677e+08
5.8677e+08
5.8678e+08
5.8678e+08
5.8678e+08
5.8678e+08
Median: 51.216 deg
RA (arcsec)
Median: −60.739 deg
Dec (arcsec)
Median: 103.400 deg
roll (arcsec)
Time(ksec)

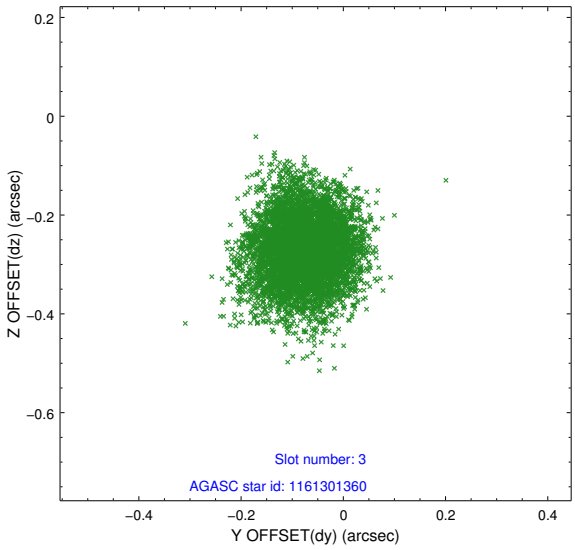

Time (s)
5.8677e+08
5.8677e+08
5.8677e+08
5.8678e+08
5.8678e+08
5.8678e+08
5.8678e+08
Median: 10.867 arcsecs
dy (arcsec)
Median: 16.661 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

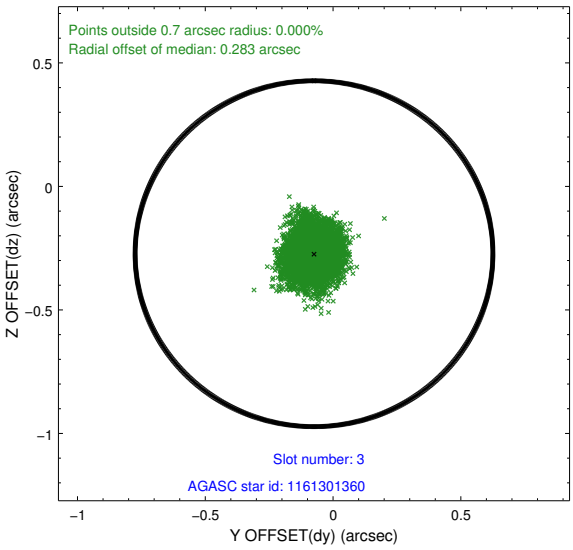
Slot Statistics

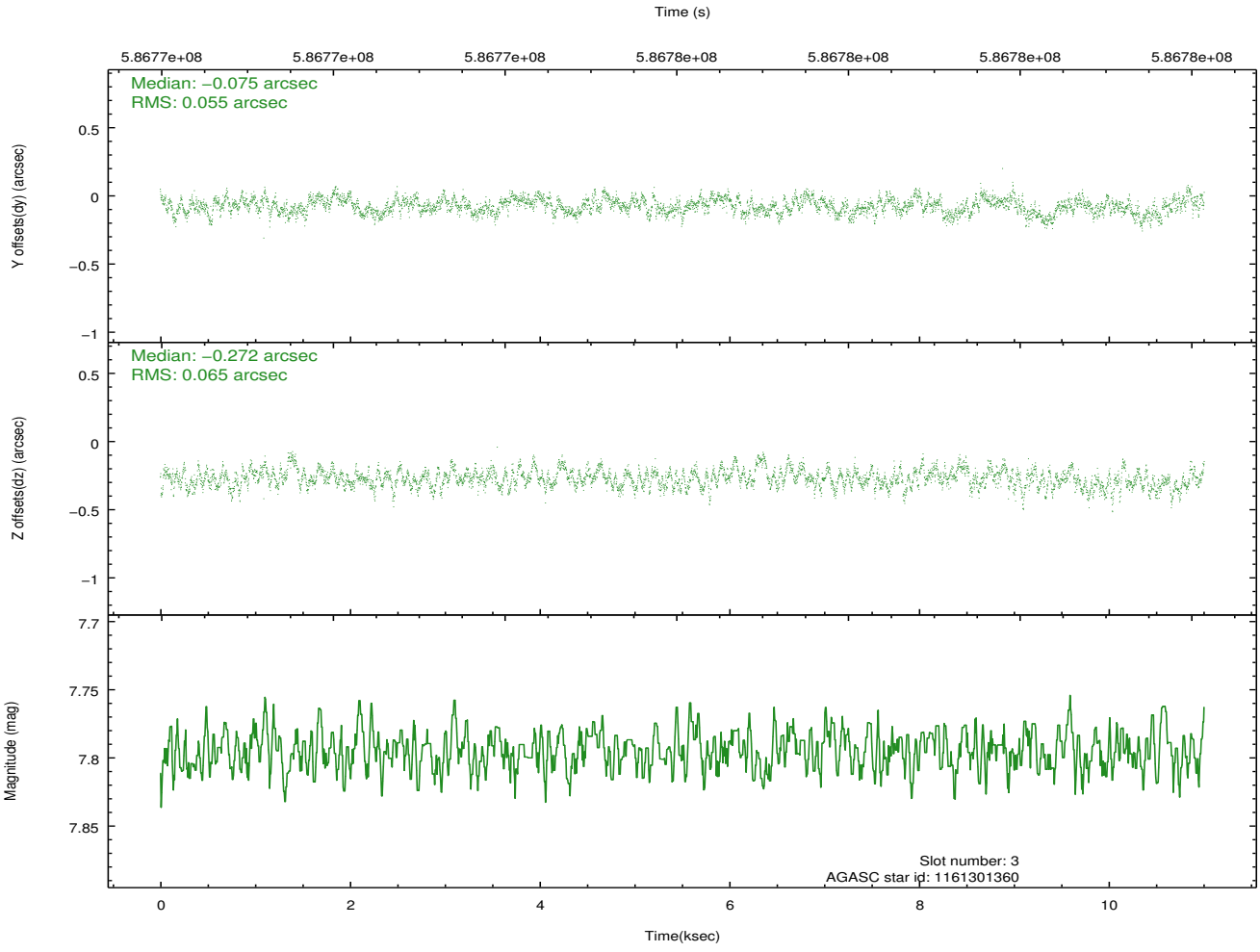
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.90	2685	-0.126	-0.033	0.009	0.014	0.000000	0.000000	-763.91	-1738.17
1	FID		ACIS-S-4	7.02	2683	0.313	0.070	0.007	0.014	0.000000	0.000000	2149.59	169.93
2	FID		ACIS-S-5	7.02	2685	-0.218	-0.027	0.009	0.017	0.000000	0.000000	-1816.25	164.03
3	GUIDE	used	1161301360	7.80	5369	-0.075	-0.272	0.091	0.146	50.015757	-60.494919	1407.86	1925.53
4	GUIDE	used	1161301552	8.69	5367	0.228	-0.115	0.097	0.156	50.499306	-60.990432	-516.61	1478.38
5	GUIDE	used	1161304376	9.77	5362	-0.425	-0.089	0.217	0.361	50.922888	-60.650960	509.38	482.54
6	GUIDE	used	1162218376	9.30	5364	0.234	0.228	0.150	0.225	51.819548	-61.192039	-1747.76	-592.86
7	GUIDE	used	1113988856	8.10	5369	0.005	0.257	0.128	0.214	52.195456	-59.976705	2338.25	-2291.87

2.4 Star Slots

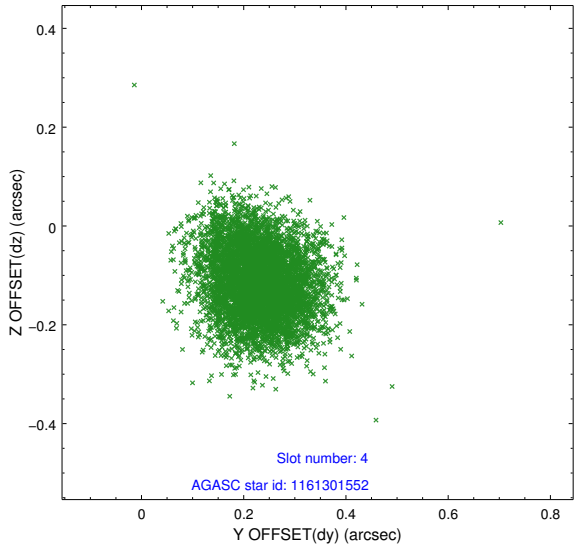
2.4.1 Slot 3

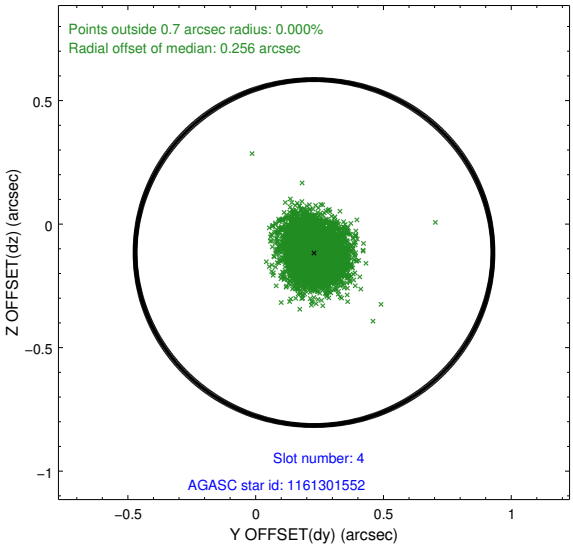


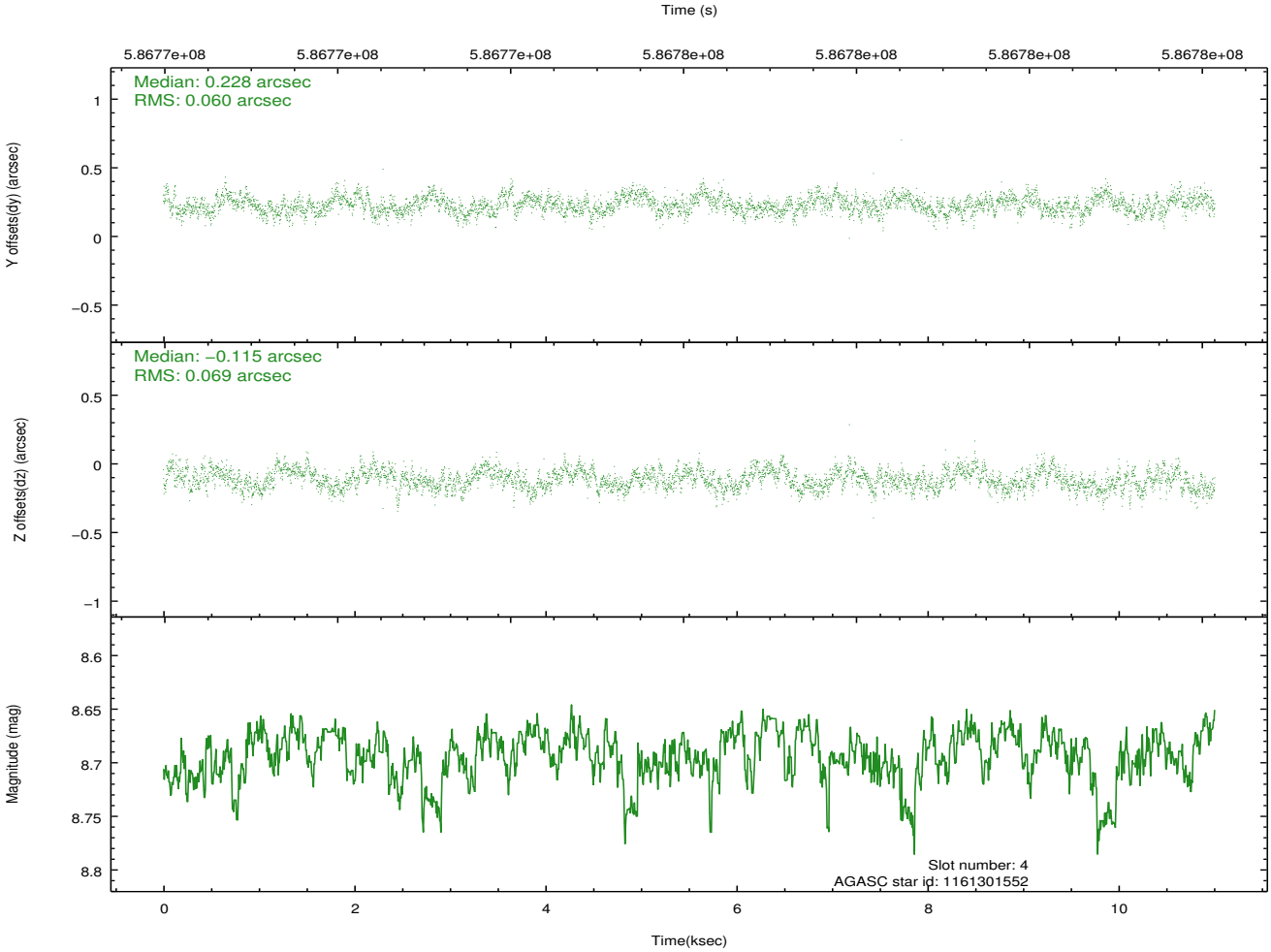




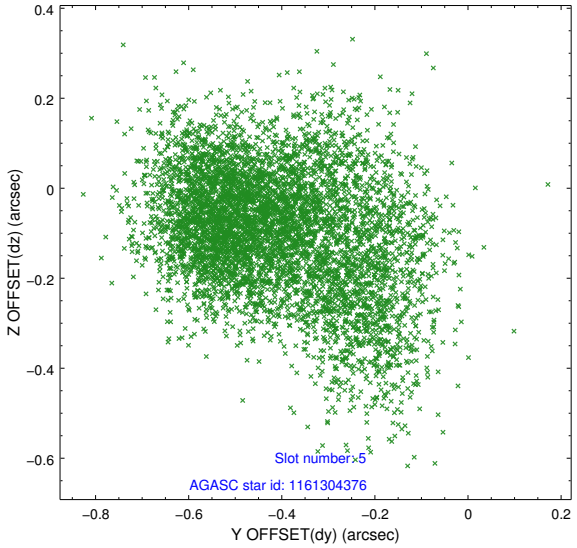
2.4.2 Slot 4

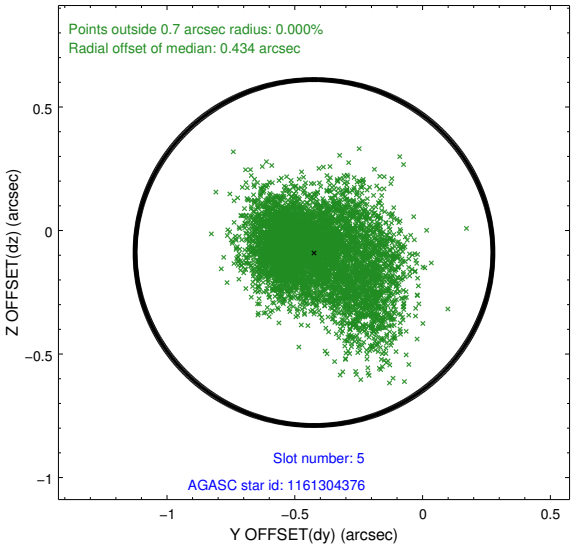

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1161301552

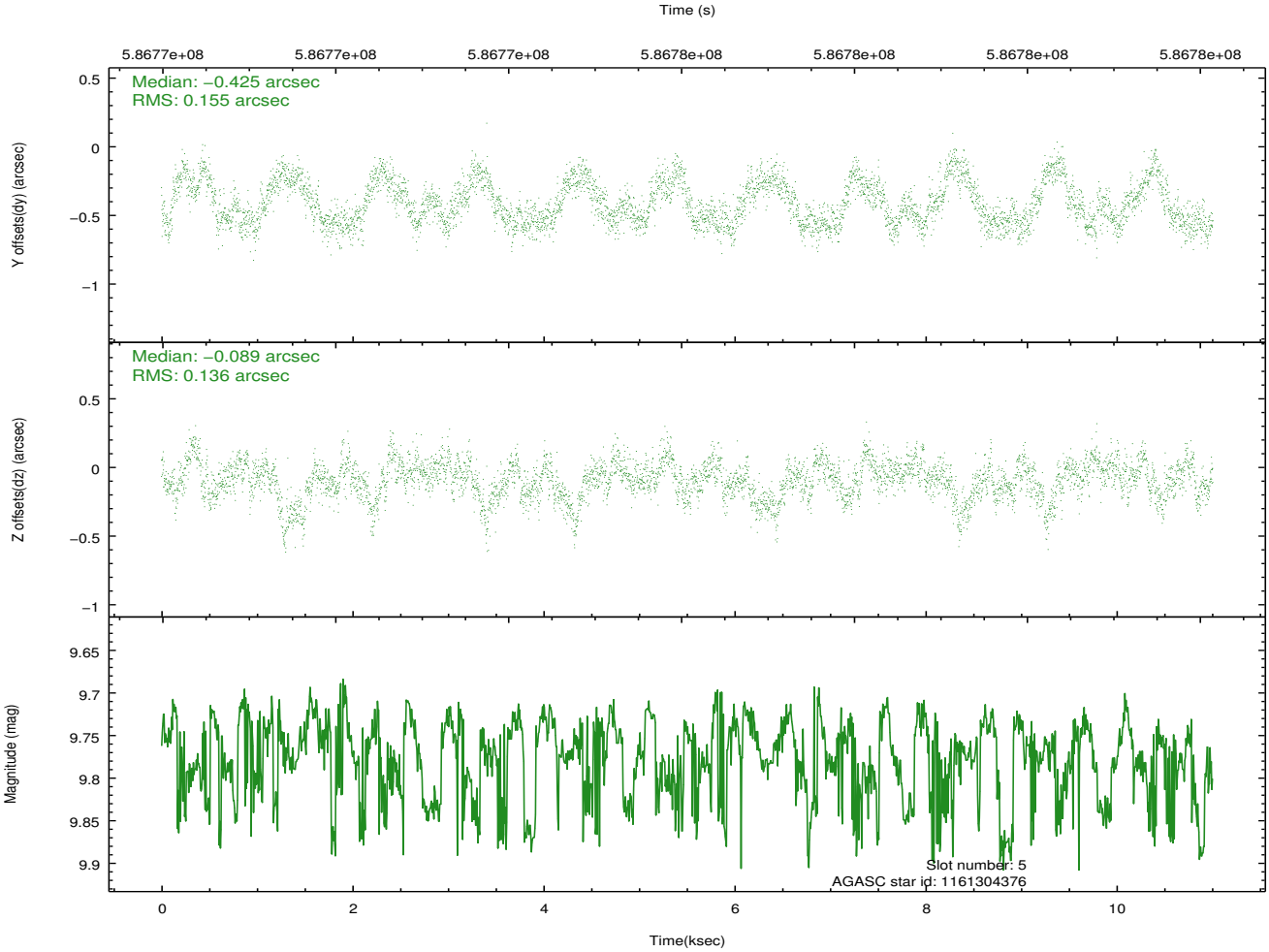

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.256 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 1161301552


Time (s)
Median: 0.228 arcsec
RMS: 0.060 arcsec
Y offsets(dy) (arcsec)
Median: −0.115 arcsec
RMS: 0.069 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 1161301552
Time(ksec)

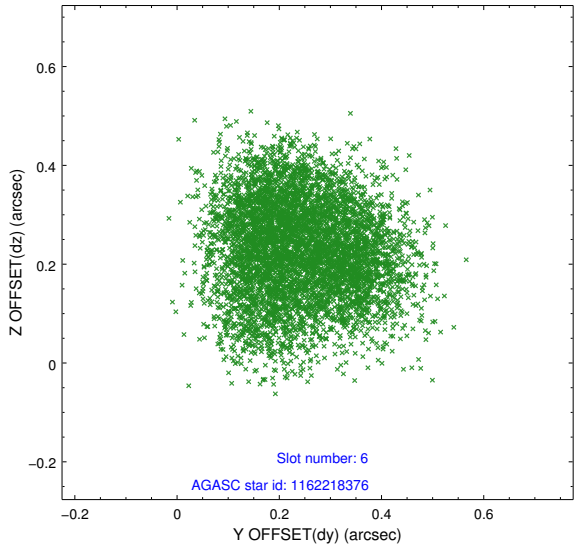
2.4.3 Slot 5

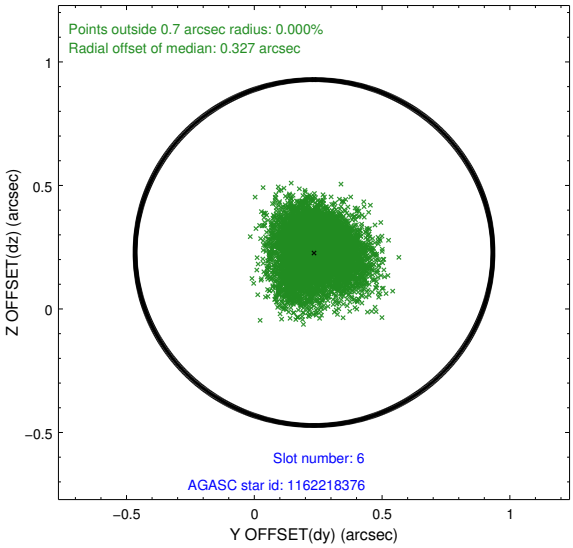

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1161304376

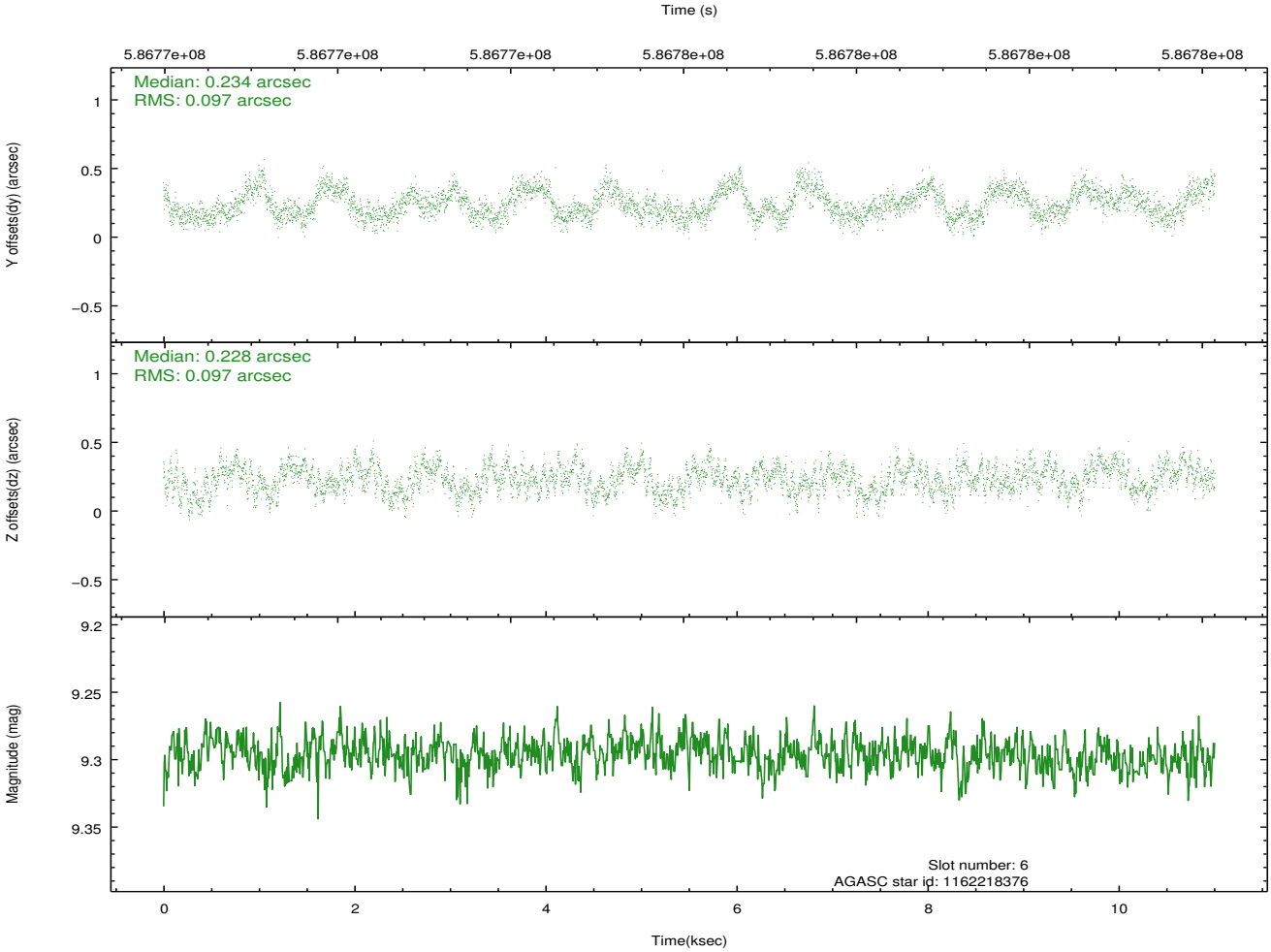

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.434 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 1161304376


Time (s)
Median: −0.425 arcsec
RMS: 0.155 arcsec
Y offsets(dy) (arcsec)
Median: −0.089 arcsec
RMS: 0.136 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 1161304376
Time(ksec)

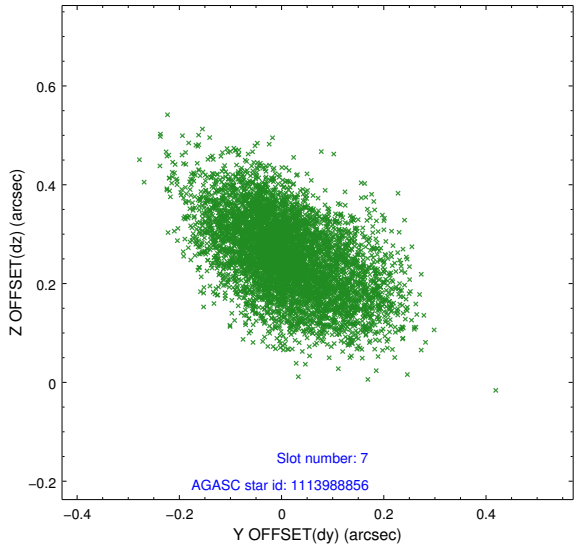
2.4.4 Slot 6

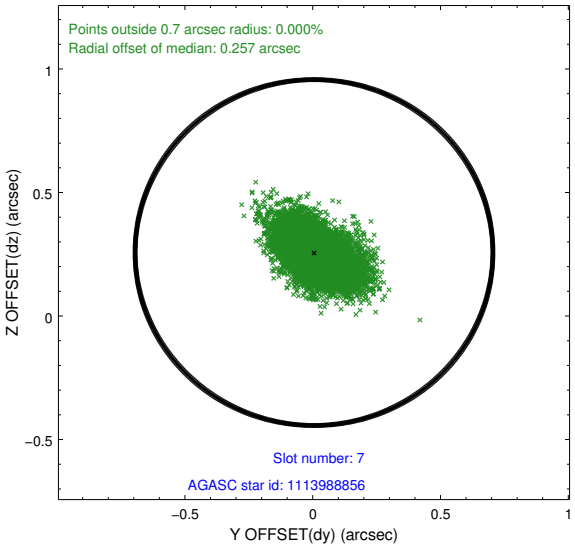

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1162218376

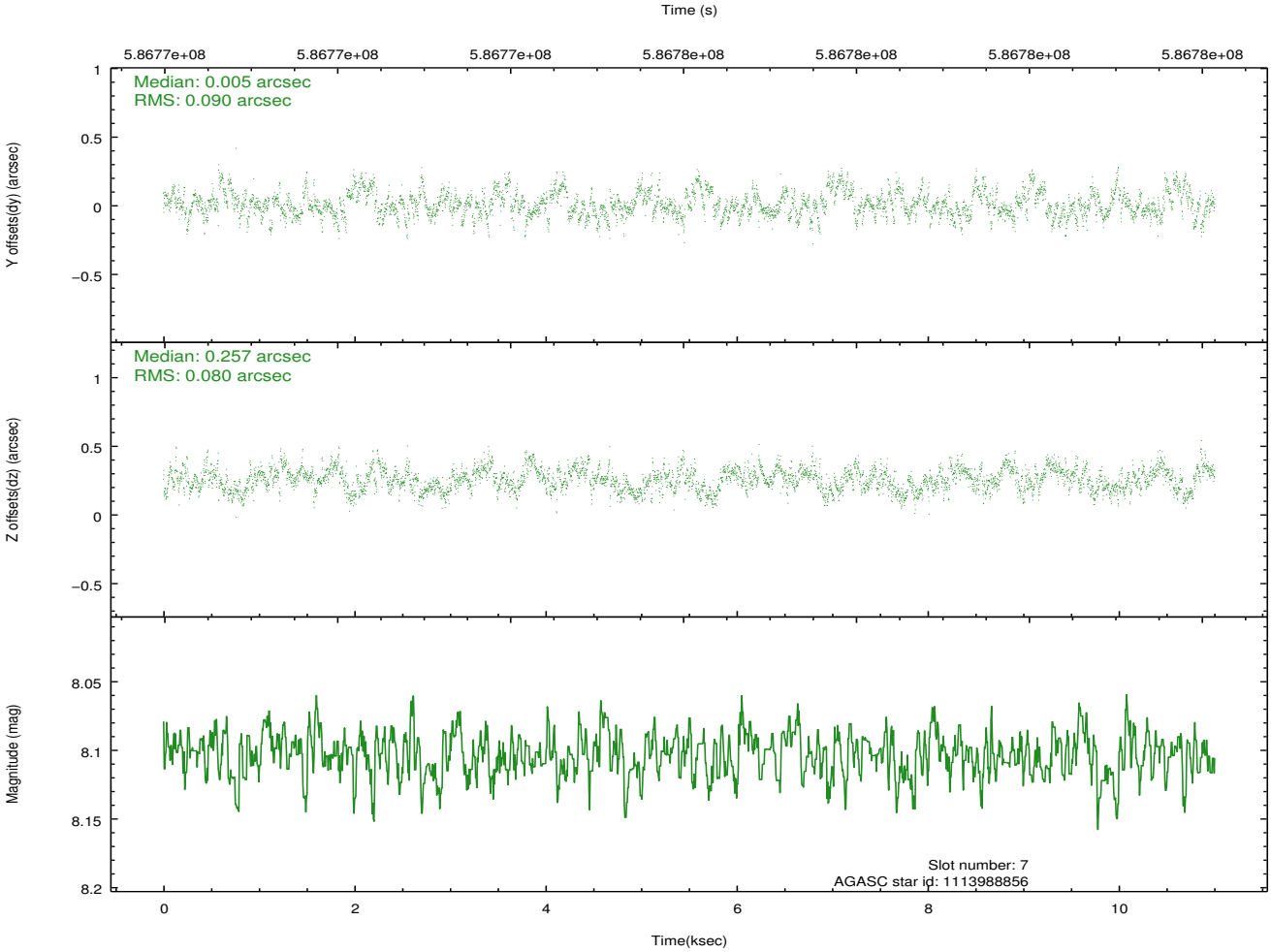

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.327 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 1162218376


Time (s)
Median: 0.234 arcsec
RMS: 0.097 arcsec
Y offsets(dy) (arcsec)
Median: 0.228 arcsec
RMS: 0.097 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 1162218376
Time(ksec)

2.4.5 Slot 7

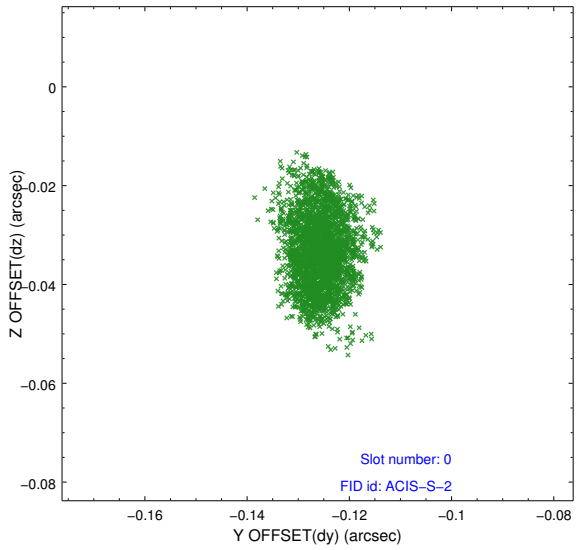

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1113988856

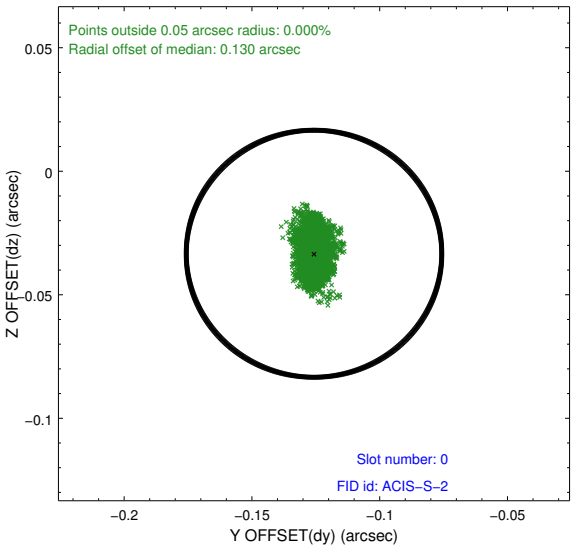

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.257 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 1113988856

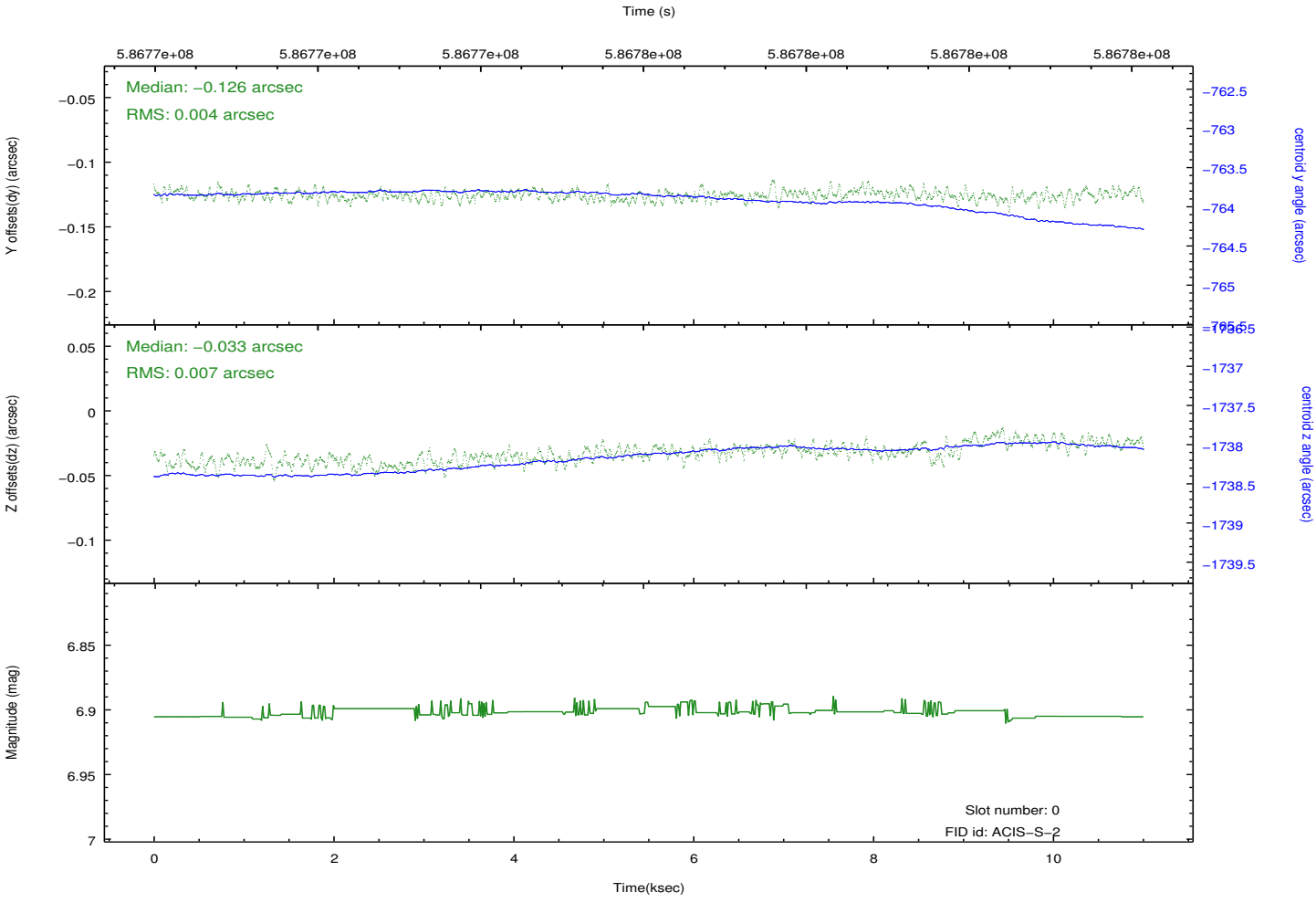

Time (s)
Median: 0.005 arcsec
RMS: 0.090 arcsec
Y offsets(dy) (arcsec)
Median: 0.257 arcsec
RMS: 0.080 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 1113988856
Time(ksec)

2.5 FID Slots

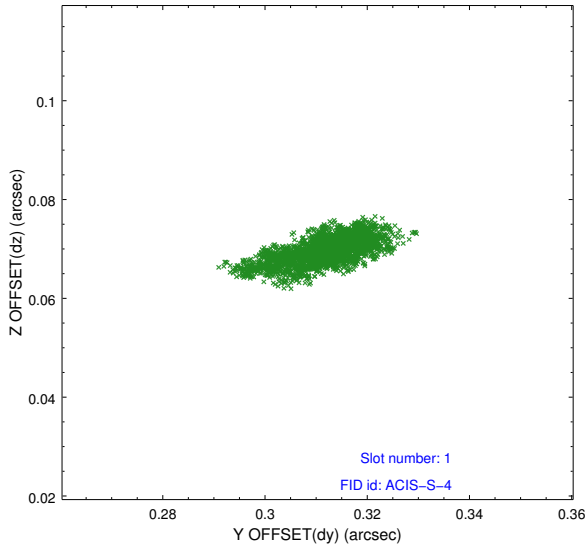
2.5.1 Slot 0

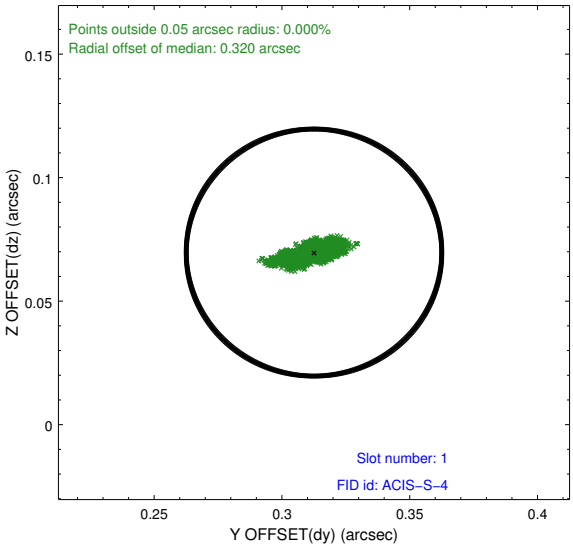


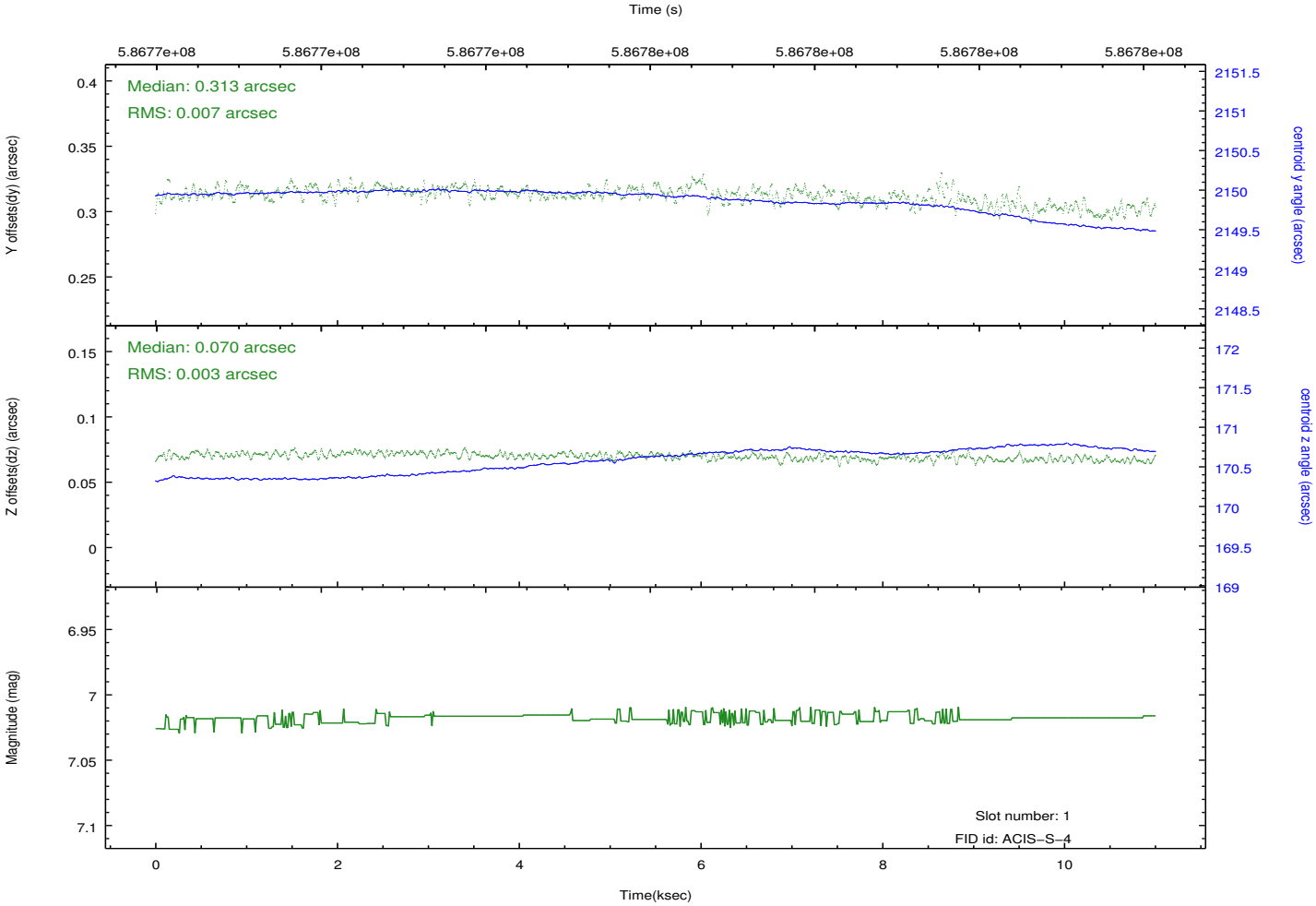




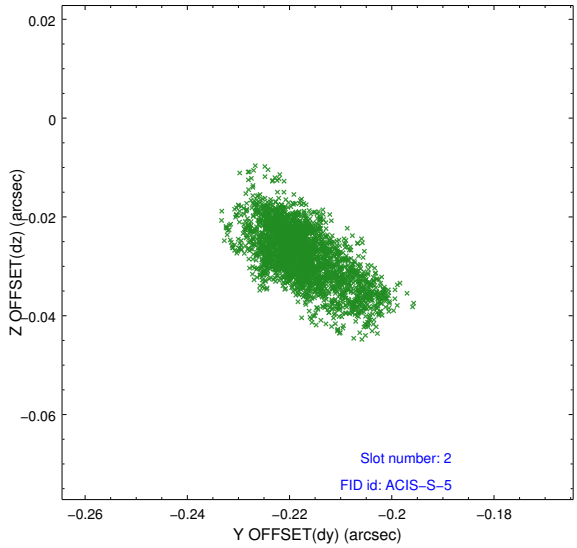
2.5.2 Slot 1

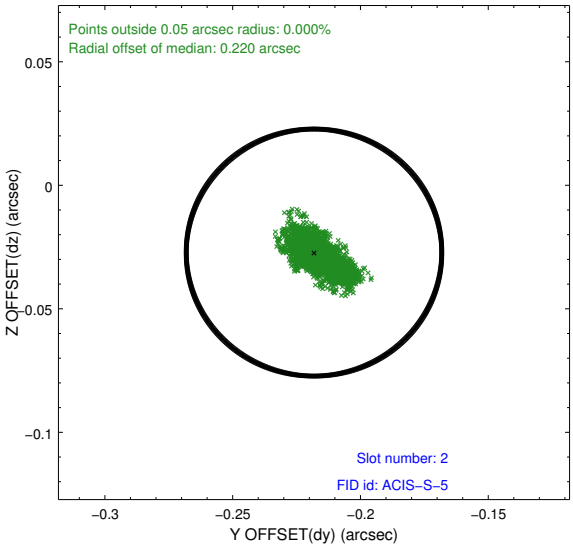

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

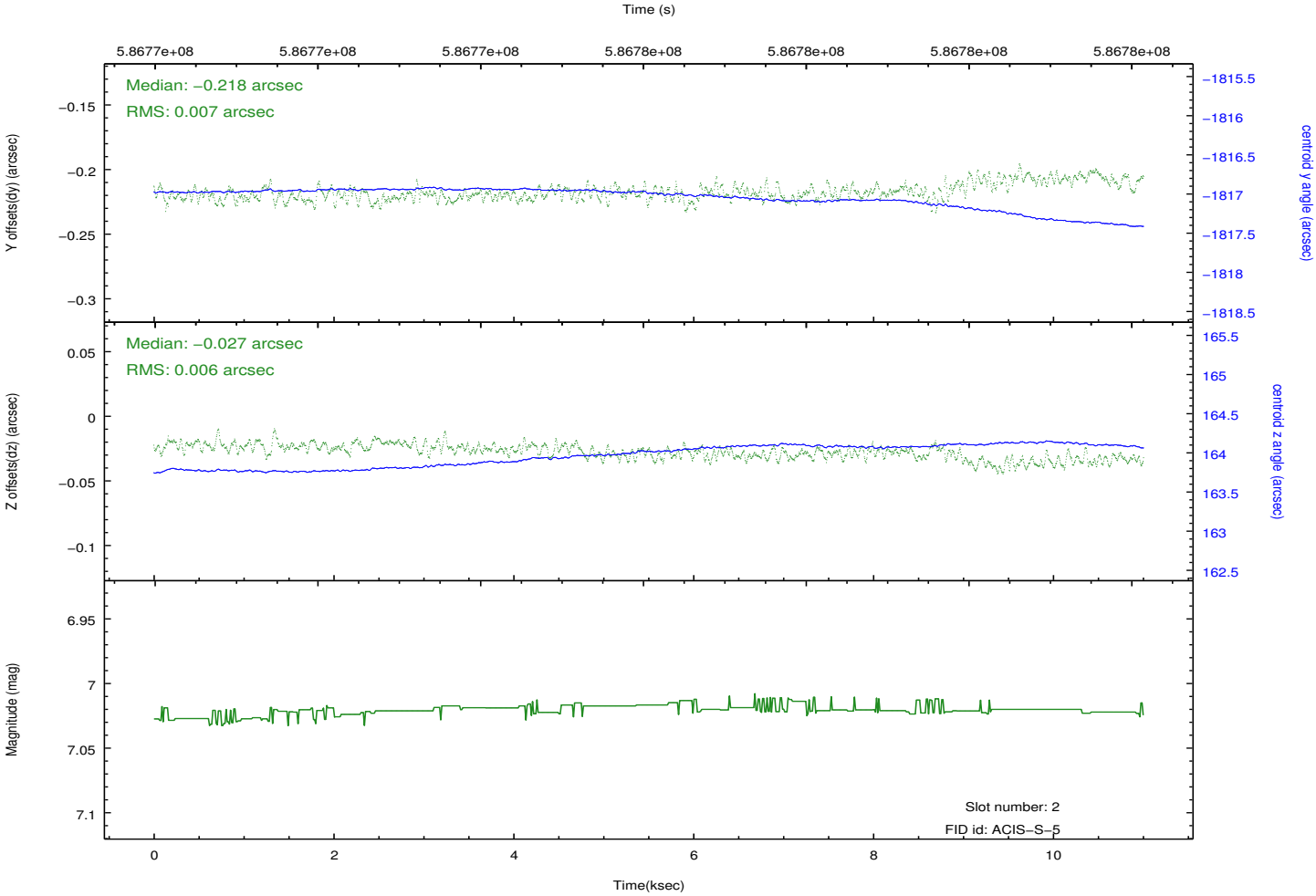

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.320 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.313 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.070 arcsec
RMS: 0.003 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 1
FID id: ACIS−S−4
Time(ksec)

2.5.3 Slot 2


Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.220 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.218 arcsec
RMS: 0.007 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.027 arcsec
RMS: 0.006 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number: 2
FID id: ACIS−S−5
Time(ksec)

A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2016.08.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	9.9488001482487

A.2 Comments

Two spatial regions of the original bias map for CCD = 2 suffered from anomalously high data values. Pixels in the event data that were bias-corrected by one of the original affected bias pixels may have an apparent energy shift. While the change in energy is expected to be small (~20 eV), it depends on many parameters that have not yet been fully explored for this anomaly. The bias map for CCD = 2 has been reconstructed for this processing to remove the anomaly using scaled data from a comparable bias map from another observation.
The pixels in the first area affected by the anomaly are bounded by sky coords:

(51.65185,-60.53924),(51.63760,-60.54097),(51.70535,-60.67641),(51.71966,-60.67467.)

The other affected region is bounded by sky coords:

(51.47663,-60.56048),(51.47070,-60.56119),(51.51453,-60.64983),(51.52047,-60.64911).