V&V Reference Report
L2 ASCDS Version : 10

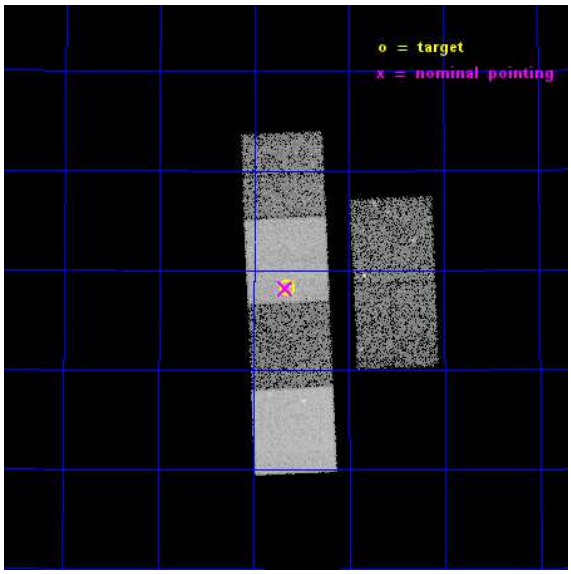
Observation 15067 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 3 2014

Contents

1 Front

seq_num	702874	Sequence number
obs_id	15067	Observation id
title	C-GOALS: The Chandra-RBGS Survey of a Complete Sample of Major-Merger LIRGs	Proposal title
observer	Professor David Sanders	Principal investigator
object	MCG+08-18-013	Source name
dtycycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	144.16375	Observer's specified target RA [deg]
dec_targ	48.471944	Observer's specified target Dec [deg]
ra_nom	144.16748285727	Nominal RA [deg]
dec_nom	48.470217895606	Nominal Dec [deg]
roll_nom	267.45413074067	Nominal Roll [deg]
revision	2	Processing version of data
ontime	13963.835636377	Sum of GTIs [s]
livetime	13787.017141537	Livetime [s]
ontime2	13963.876676381	Sum of GTIs [s]
ontime3	13963.712516367	Sum of GTIs [s]
ontime5	13963.794596374	Sum of GTIs [s]
ontime6	13963.753556371	Sum of GTIs [s]
ontime7	13963.835636377	Sum of GTIs [s]
ontime8	13963.671476364	Sum of GTIs [s]
l2events	119441	Number of level 2 events

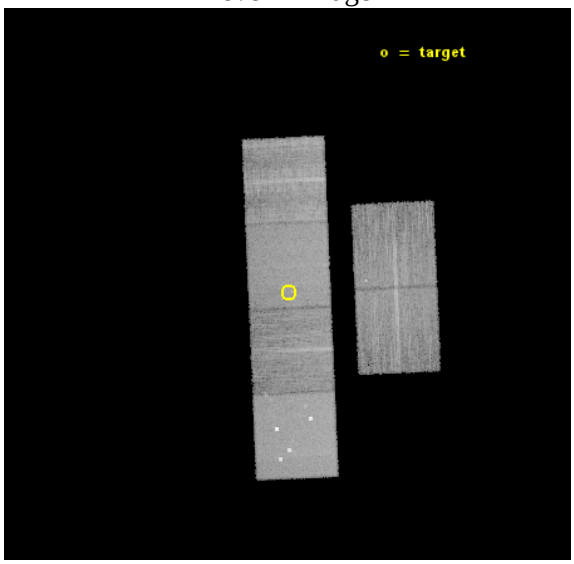


2 OBI

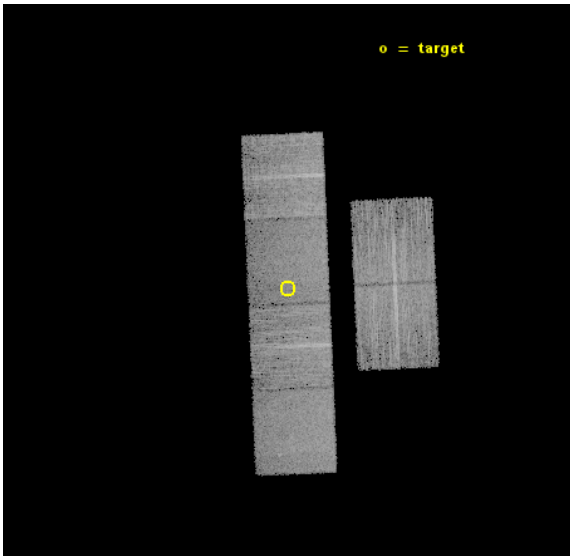
2.1 OBI

2.1.1 Images

Level 1 Image

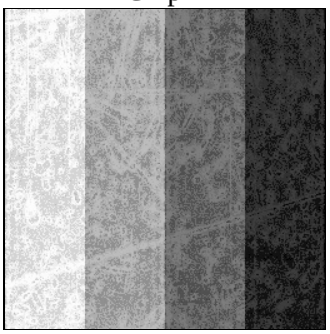


Level 1 Bad Events

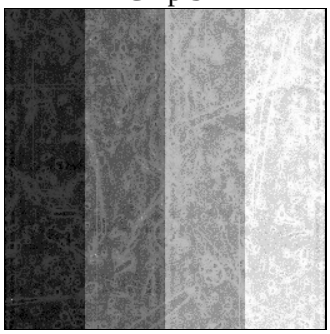


2.1.2 Bias

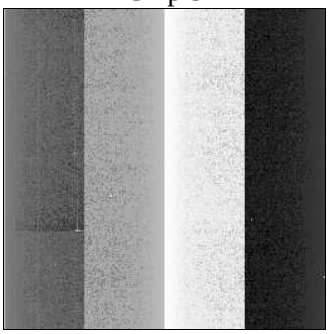
Chip 2



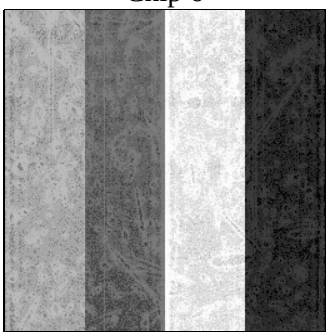
Chip 3



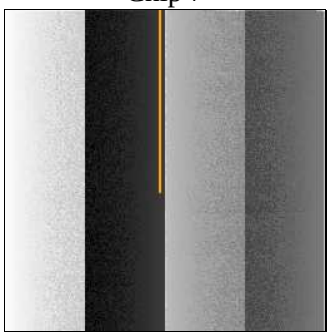
Chip 5



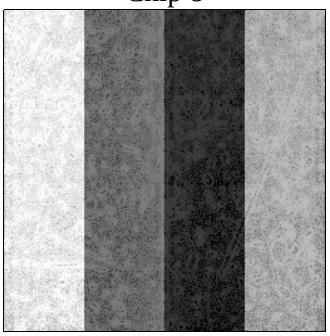
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	0	Obi number
ascdsver	10.3	Processing system revision
caldbver	4.6.4	
date	2014-12-03T11:43:42	Date and time of file creation
revision	2	Processing version of data

sched_exp_time	14000.000000	[s] Scheduled observation exposure time
ontime	13963.835636377	Sum of GTIs [s]
ontime2	13963.876676381	Sum of GTIs [s]
ontime3	13963.712516367	Sum of GTIs [s]
ontime5	13963.794596374	Sum of GTIs [s]
ontime6	13963.753556371	Sum of GTIs [s]
ontime7	13963.835636377	Sum of GTIs [s]
ontime8	13963.671476364	Sum of GTIs [s]
l1events	497505	Number of level 1 events

2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	67060	64864	119035	67021	90485	89040
rejected events	59194	56960	56668	59008	50443	65259
rejected %	88%	87%	47%	88%	55%	73%

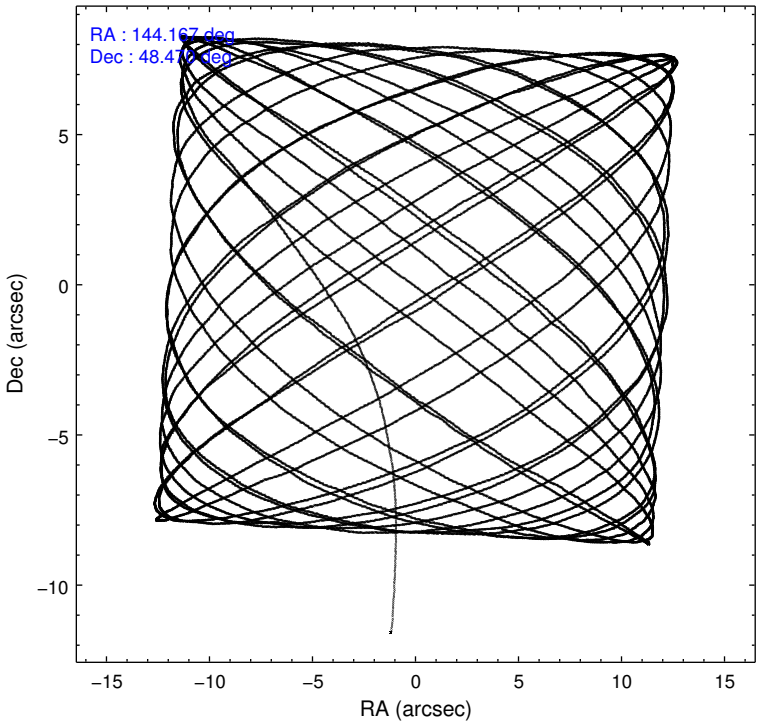
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	2890	2992	12932	2733	3662	7066
	4%	4%	10%	4%	4%	7%
grade 1 events	40	39	291	33	103	68
	0%	0%	0%	0%	0%	0%
grade 2 events	1898	1702	16754	1810	8313	5436
	2%	2%	14%	2%	9%	6%
grade 3 events	802	786	1959	877	3475	2527
	1%	1%	1%	1%	3%	2%
grade 4 events	789	786	1941	836	3406	2271
	1%	1%	1%	1%	3%	2%
grade 5 events	2958	3312	8302	3419	9265	4976
	4%	5%	6%	5%	10%	5%
grade 6 events	1487	1639	28806	1762	21200	6485
	2%	2%	24%	2%	23%	7%
grade 7 events	56196	53608	48050	55551	41061	60211
	83%	82%	40%	82%	45%	67%

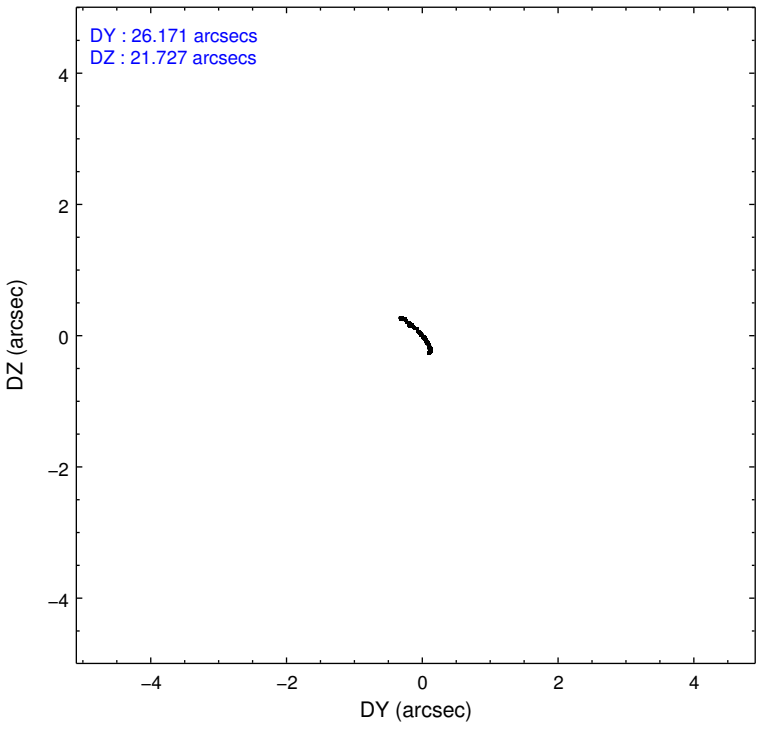
2.2 Compared Parameters

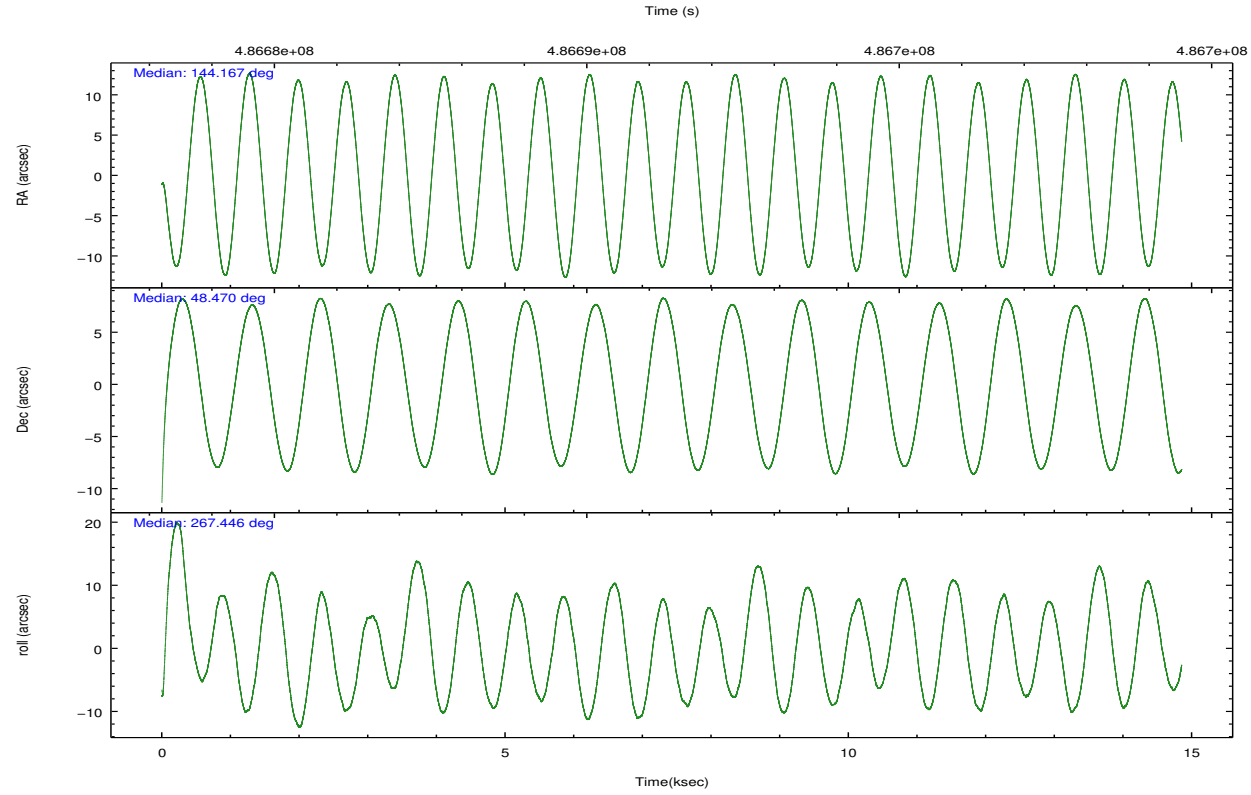
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	144.147974	144.1674828572714
[deg] Pointing Dec	48.494289	48.47021789560585
[deg] Pointing Roll	267.312124	267.454130740667
[mm] 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)	486684792.184000	486682364.51045
Observation start date	2013-06-03T22:12:05	2013-06-03T21:32:44
[s] Observation end time (MET)	486698792.184000	486699854.5989
Observation end date	2013-06-04T02:05:25	2013-06-04T02:24:14
Read mode	TIMED	TIMED

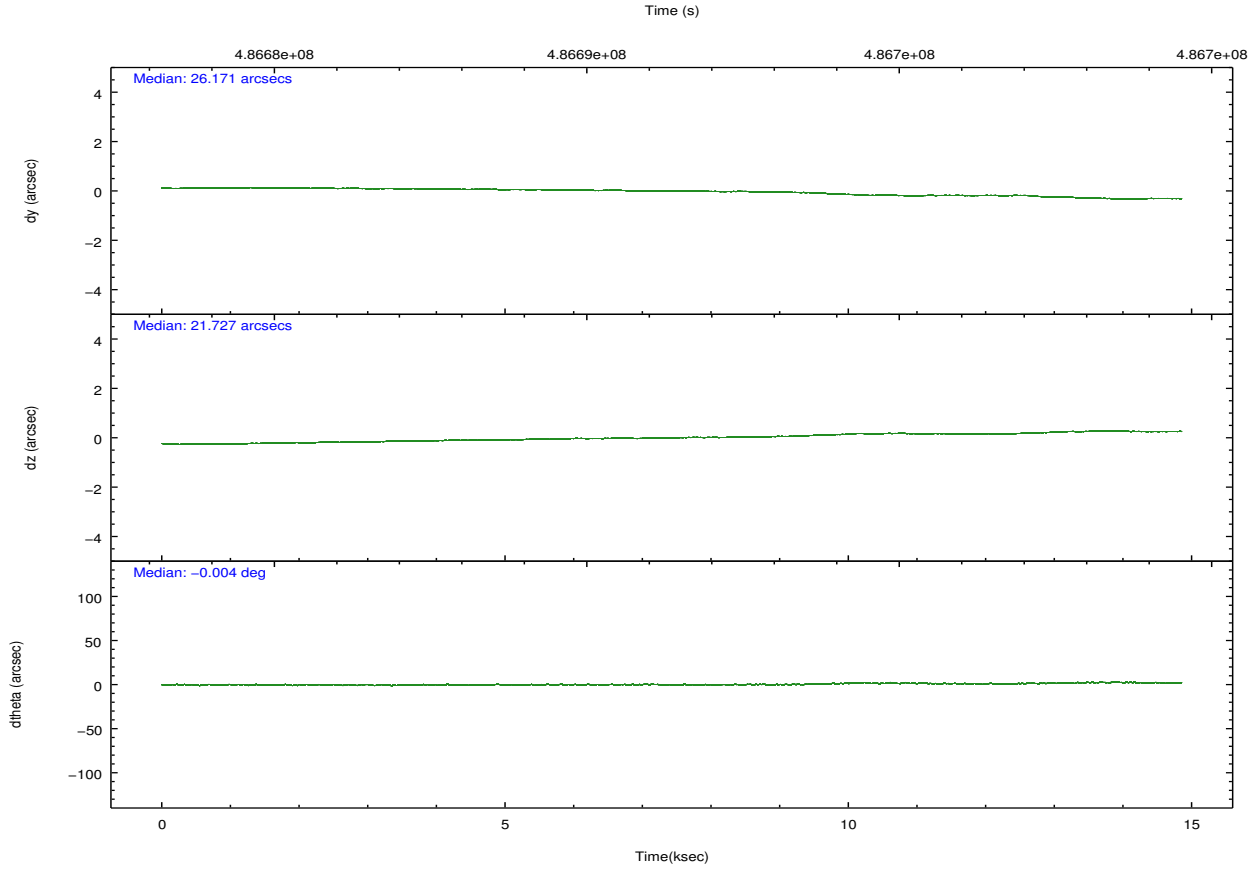
Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	N	N
CCD I1 on	N	N
CCD I2 on	O2	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	O1	Y
CCD S2 on	Y	Y
CCD S3 on	Y	Y
CCD S4 on	Y	Y
CCD S5 on	N	N
Number of optional ACIS chips dropped	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 : 144.167 deg
Dec : 48.470 deg
Dec (arcsec)
RA (arcsec)
5
0
−5
−10
−15
−10
−5
0
5
10
15


DY : 26.171 arcsecs
DZ : 21.727 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
4.8668e+08
4.8669e+08
4.867e+08
4.867e+08
Median: 144.167 deg
RA (arcsec)
Median: 48.470 deg
Dec (arcsec)
Median: 267.446 deg
roll (arcsec)
Time(ksec)

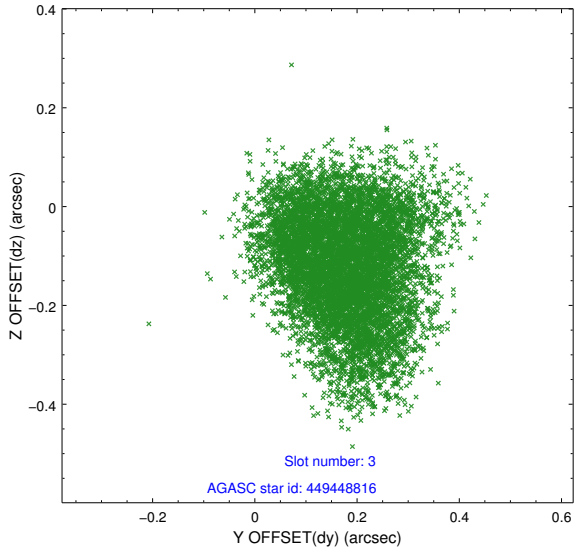

Time (s)
4.8668e+08
4.8669e+08
4.867e+08
4.867e+08
Median: 26.171 arcsecs
dy (arcsec)
Median: 21.727 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

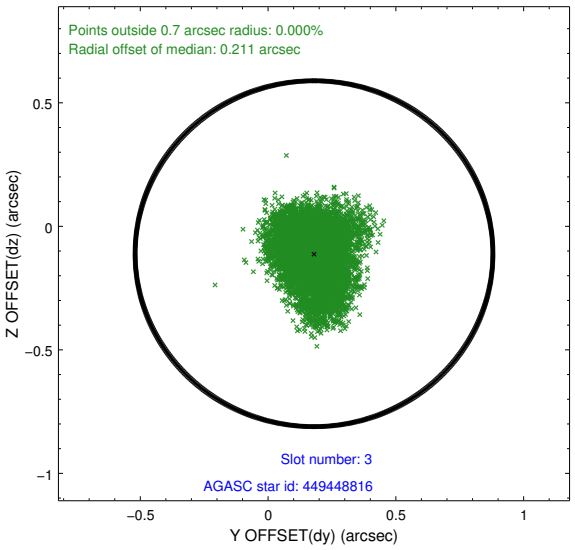
Slot Statistics

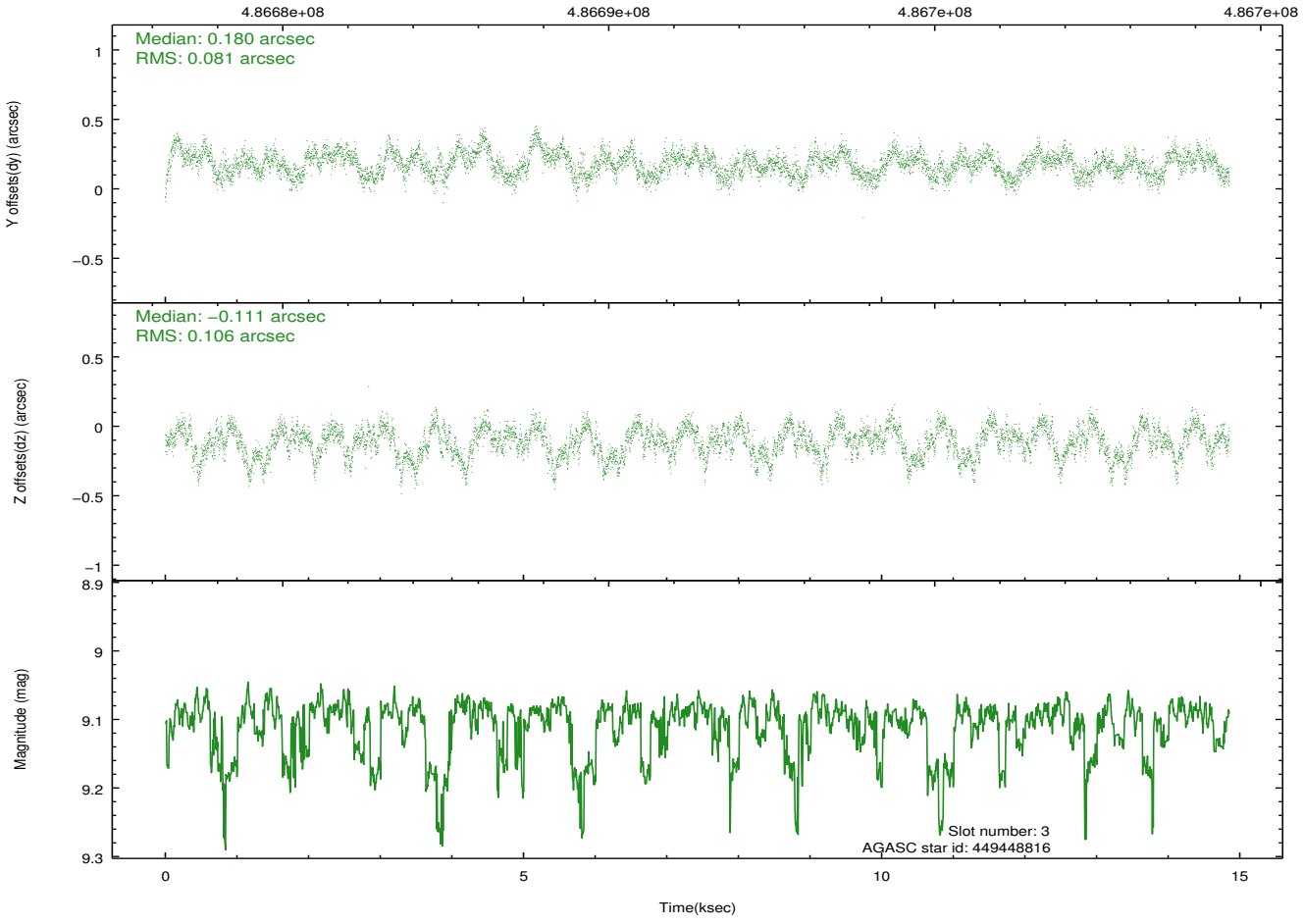
slot	status	used	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID		ACIS-S-2	6.85	3623	-0.158	-0.008	0.008	0.013	0.000000	0.000000	-779.56	-1743.30
1	FID		ACIS-S-4	6.94	3623	0.316	0.078	0.009	0.015	0.000000	0.000000	2134.05	164.93
2	FID		ACIS-S-5	6.97	3624	-0.190	-0.062	0.008	0.013	0.000000	0.000000	-1832.04	158.83
3	GUIDE	used	449448816	9.10	7202	0.180	-0.111	0.143	0.227	144.399943	48.506710	-72.74	597.99
4	GUIDE	used	449452592	8.42	7247	-0.050	-0.055	0.088	0.140	143.982685	48.303628	704.28	-362.76
5	GUIDE	used	449453952	7.47	7246	0.001	0.110	0.082	0.131	143.632500	48.754670	-882.20	-1265.79
6	GUIDE	used	449454840	9.03	7223	-0.107	-0.069	0.106	0.167	144.483566	49.003019	-1867.36	705.84
7	GUIDE	used	449456240	7.85	7245	-0.025	0.143	0.093	0.152	143.139943	48.331492	683.74	-2383.04

2.4 Star Slots

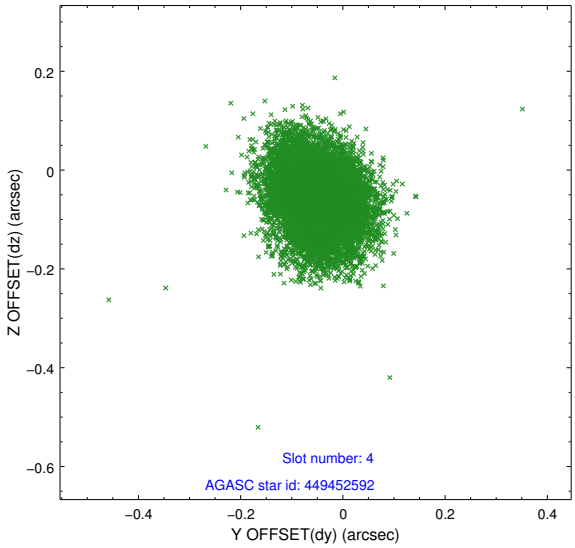
2.4.1 Slot 3

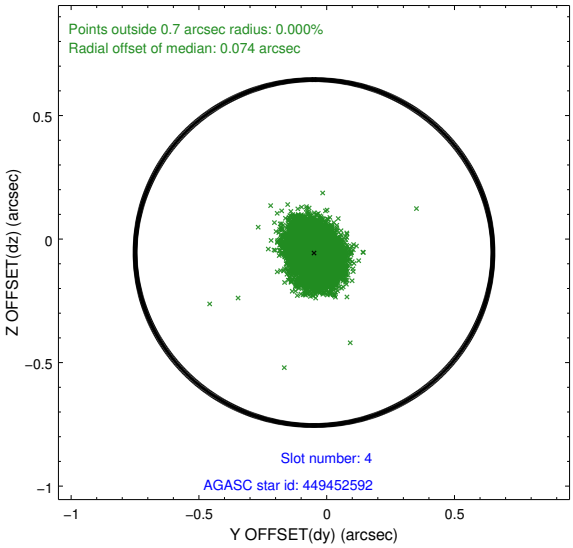


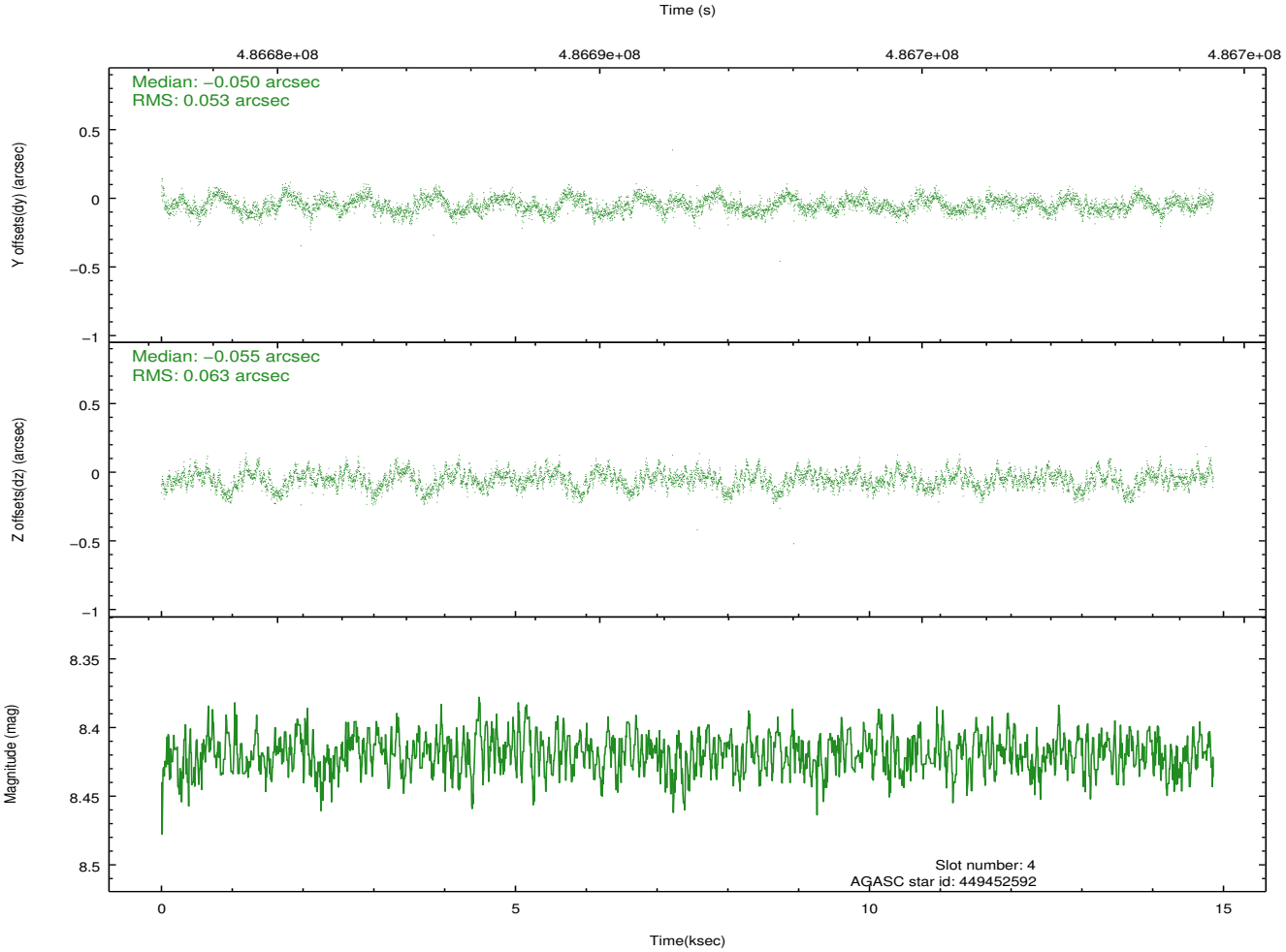




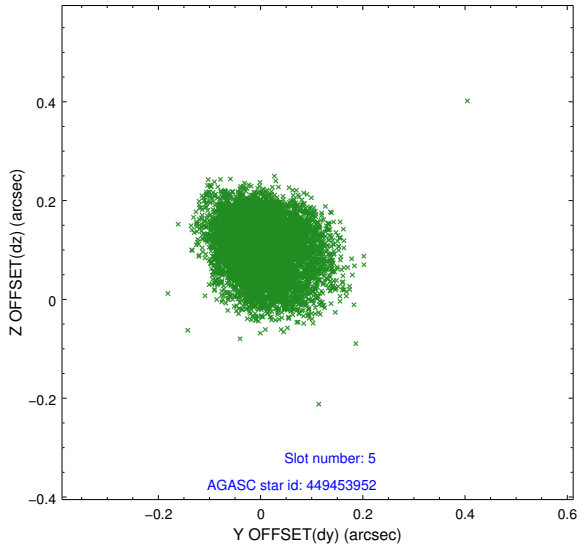
2.4.2 Slot 4

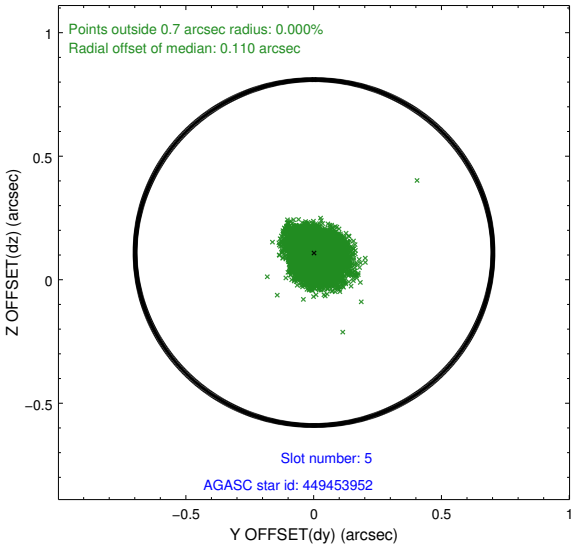

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 449452592

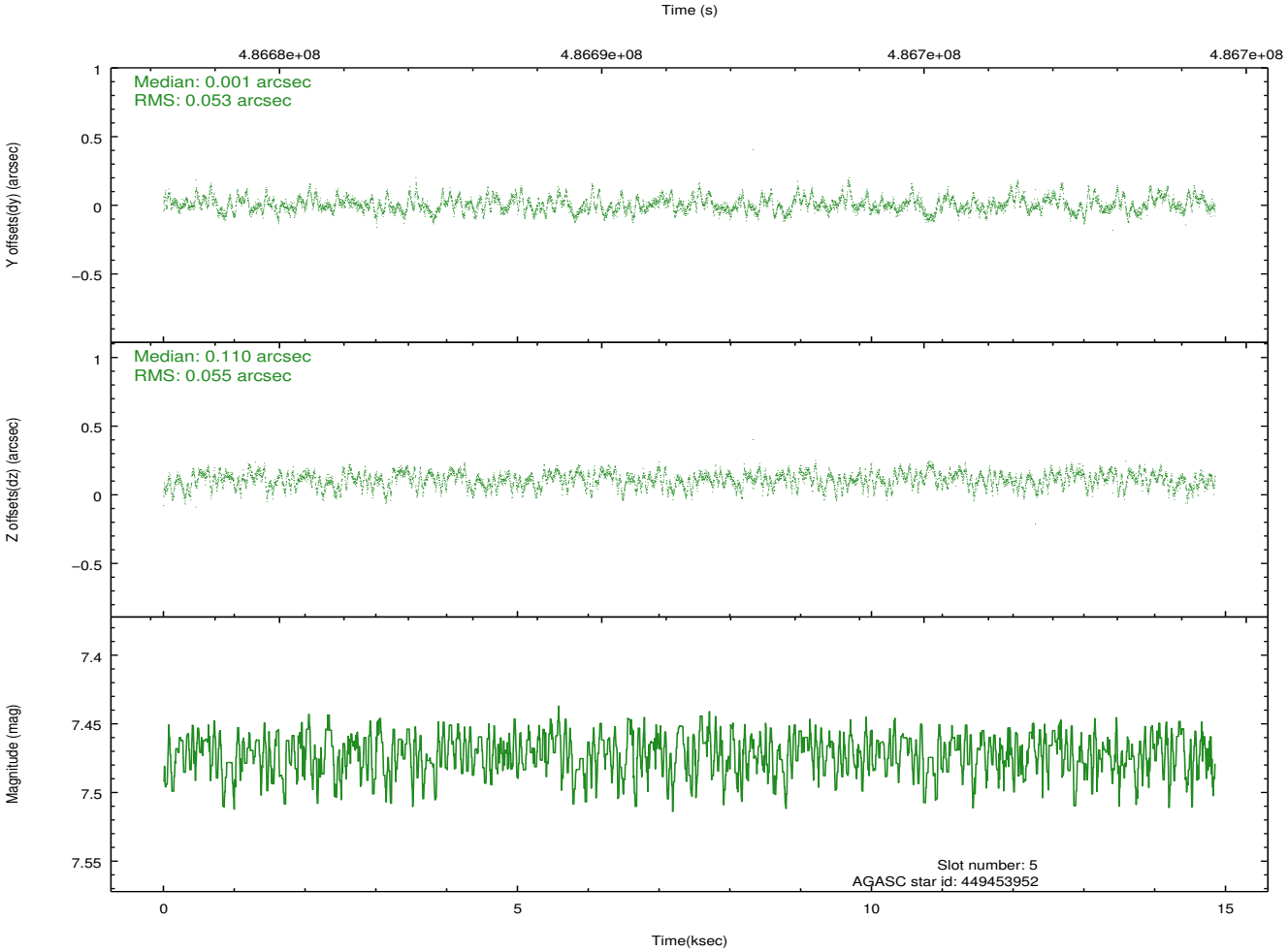

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.074 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 4
AGASC star id: 449452592


Time (s)
Median: −0.050 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: −0.055 arcsec
RMS: 0.063 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 4
AGASC star id: 449452592
Time(ksec)

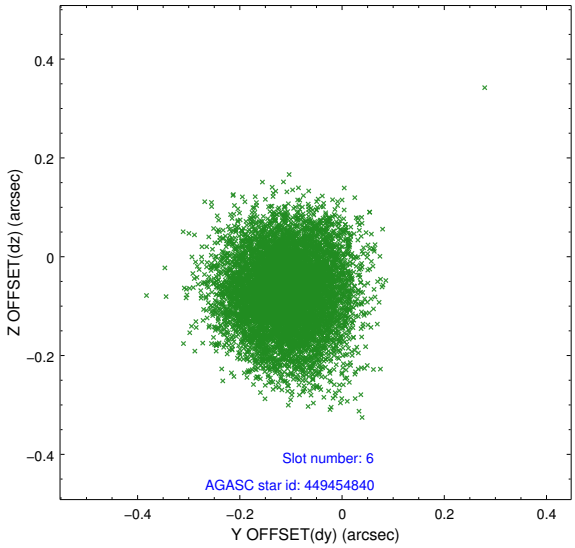
2.4.3 Slot 5

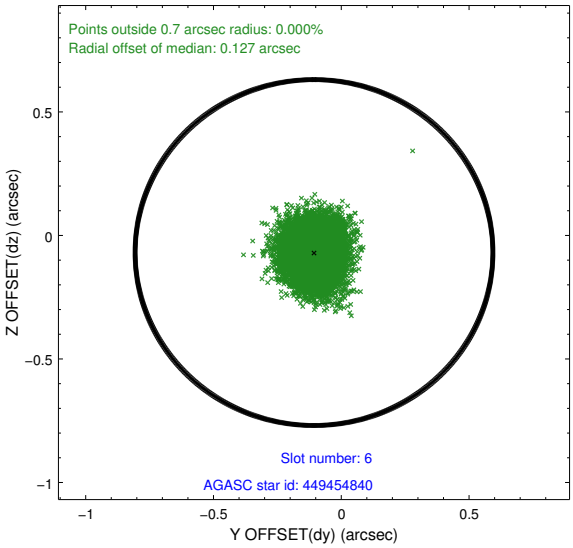

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 449453952

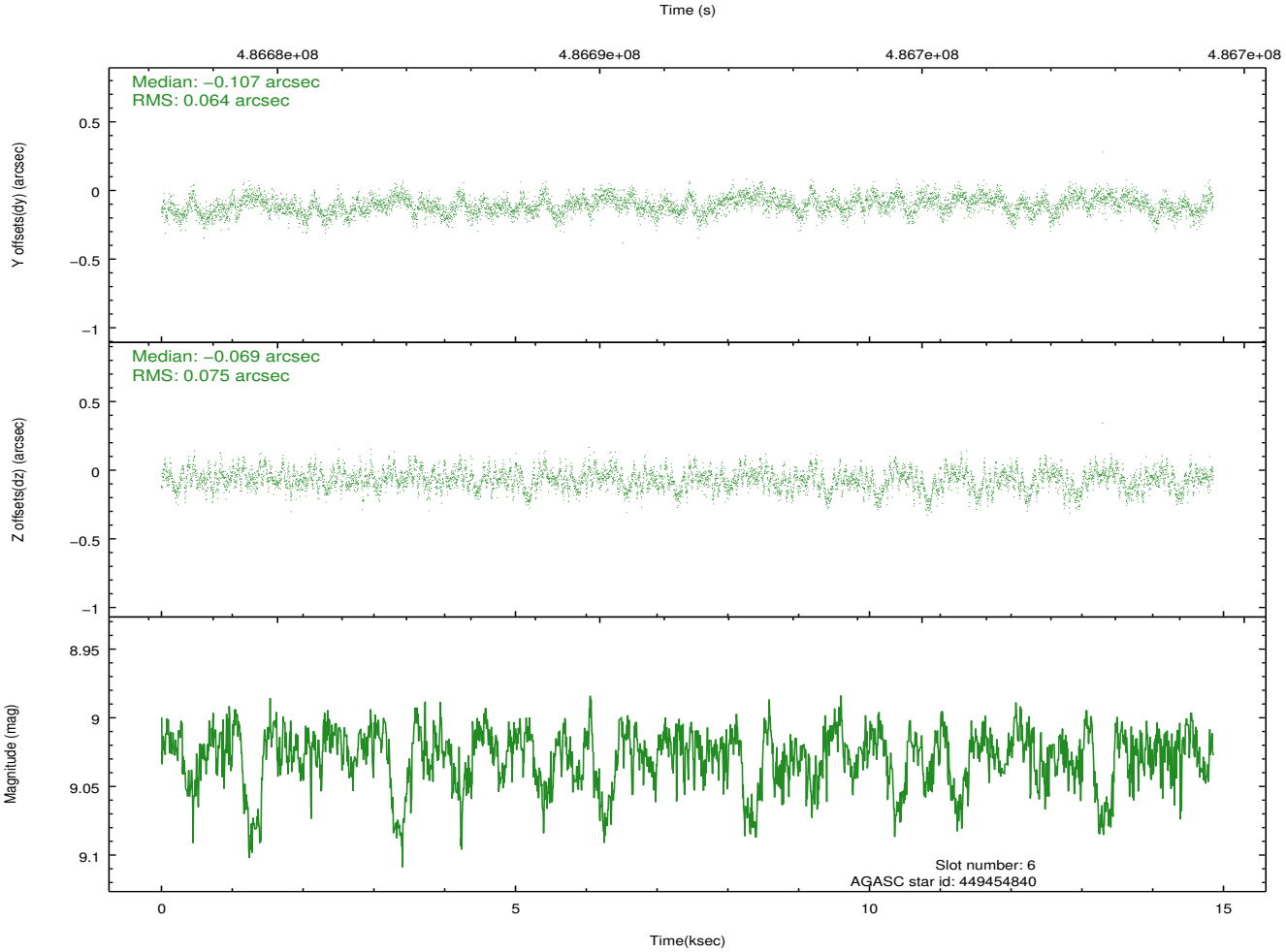

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.110 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 5
AGASC star id: 449453952


Time (s)
Median: 0.001 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: 0.110 arcsec
RMS: 0.055 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 5
AGASC star id: 449453952
Time(ksec)

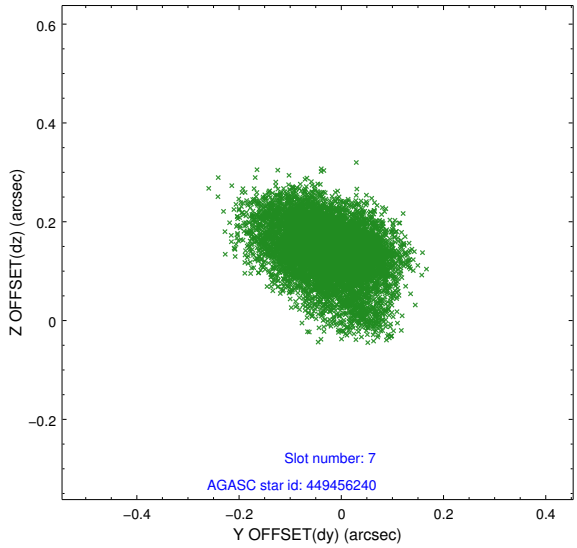
2.4.4 Slot 6

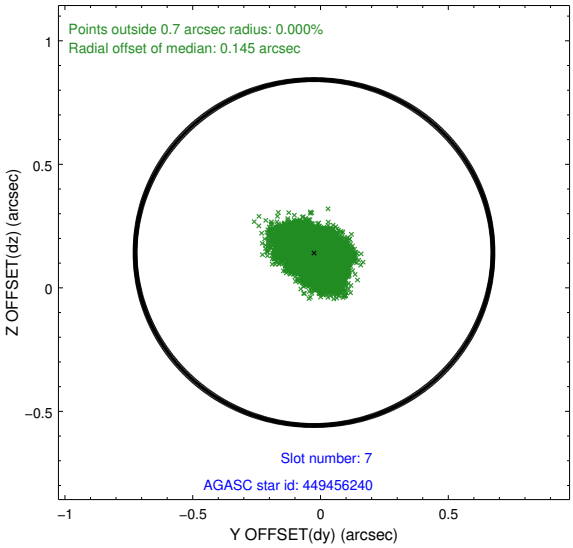

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 449454840

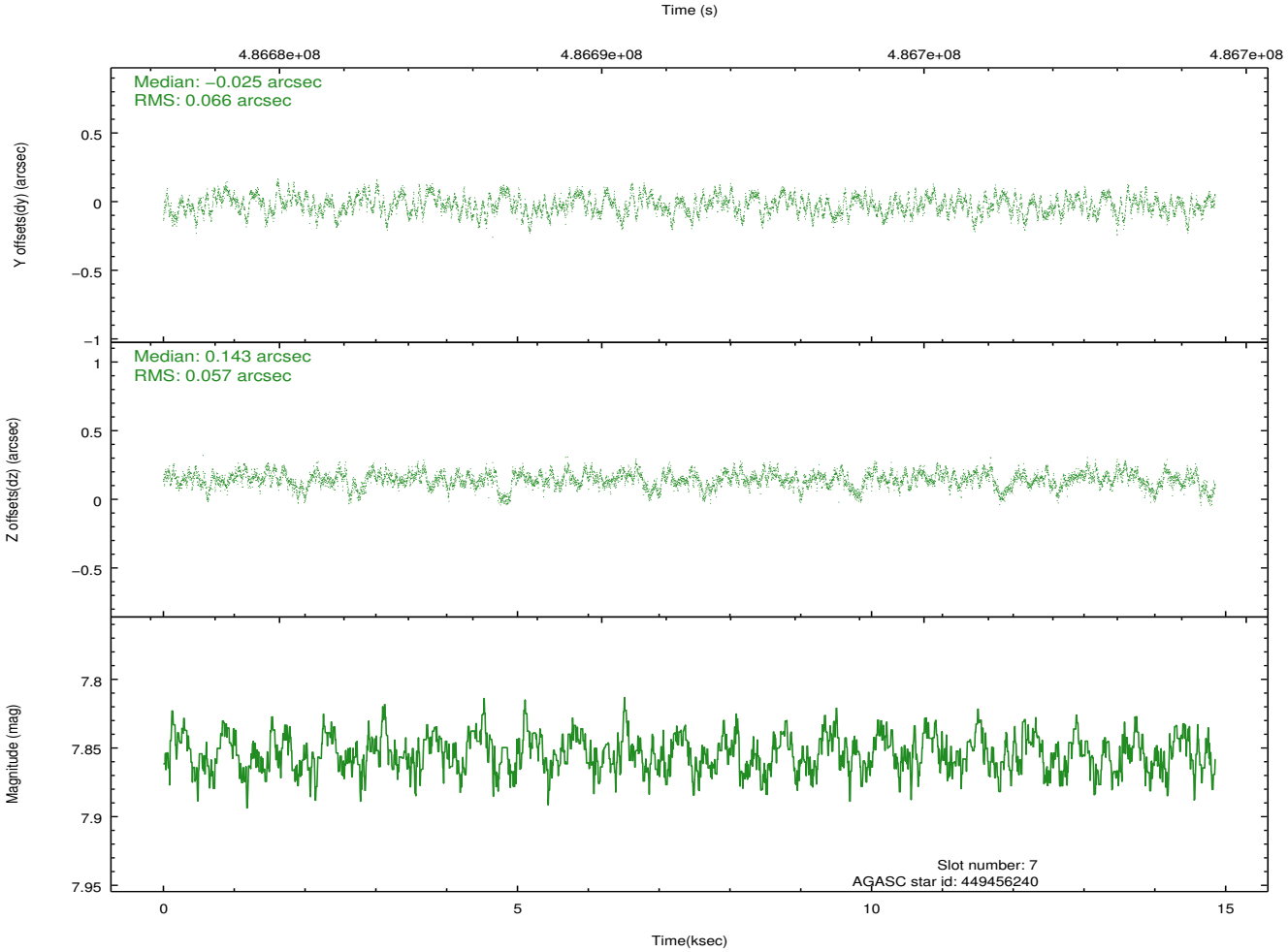

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.127 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 6
AGASC star id: 449454840


Time (s)
4.8668e+08
4.8669e+08
4.867e+08
4.867e+08
Median: −0.107 arcsec
RMS: 0.064 arcsec
Y offsets(dy) (arcsec)
Median: −0.069 arcsec
RMS: 0.075 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 6
AGASC star id: 449454840
Time(ksec)

2.4.5 Slot 7

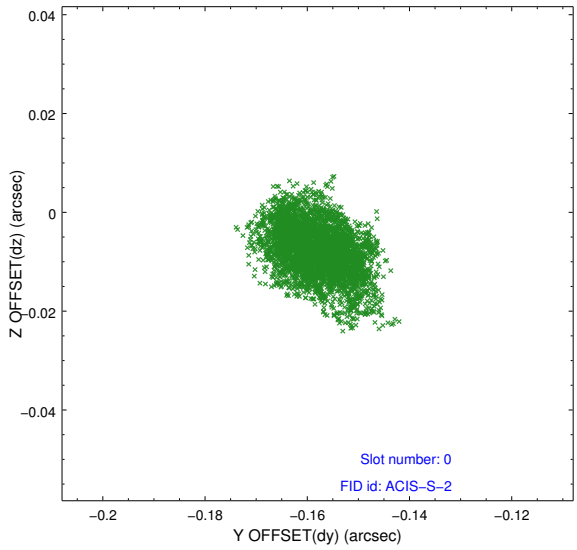

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 449456240

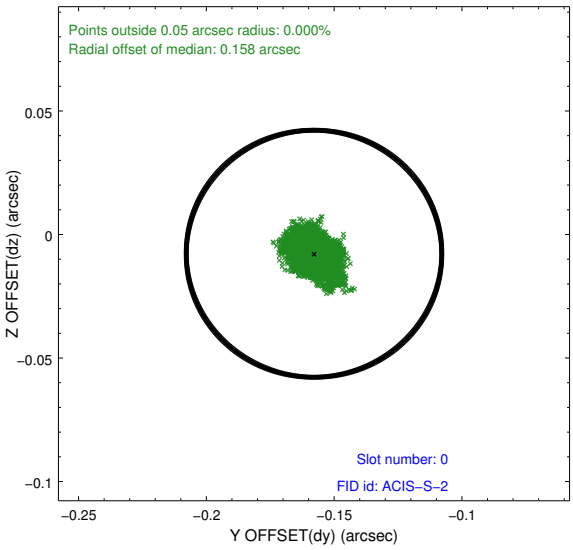

Points outside 0.7 arcsec radius: 0.000%
Radial offset of median: 0.145 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 7
AGASC star id: 449456240

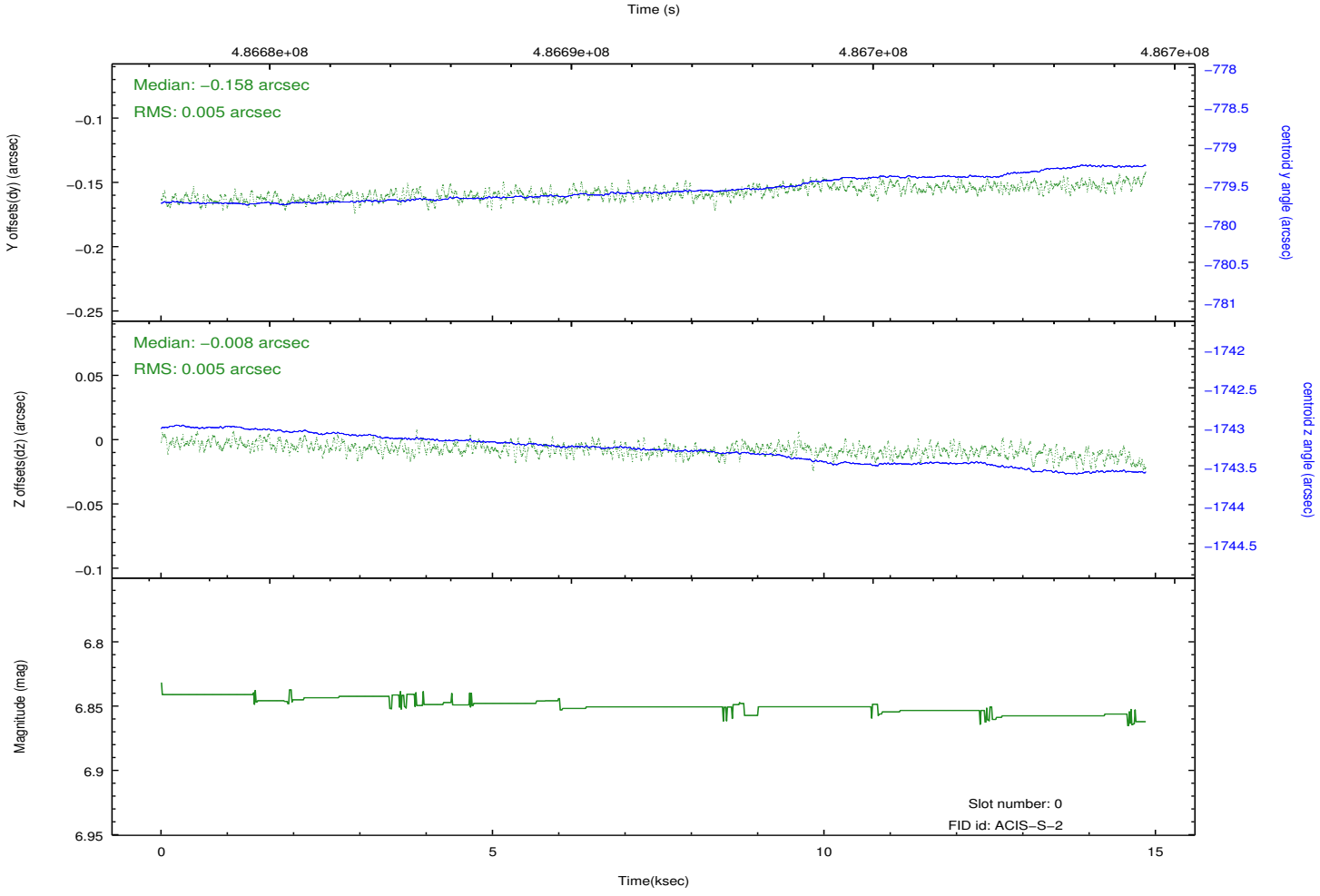

Time (s)
Median: −0.025 arcsec
RMS: 0.066 arcsec
Y offsets(dy) (arcsec)
Median: 0.143 arcsec
RMS: 0.057 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number: 7
AGASC star id: 449456240
Time(ksec)

2.5 FID Slots

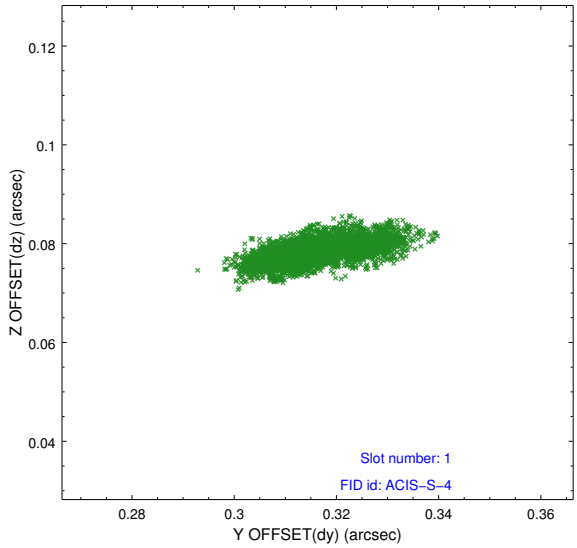
2.5.1 Slot 0

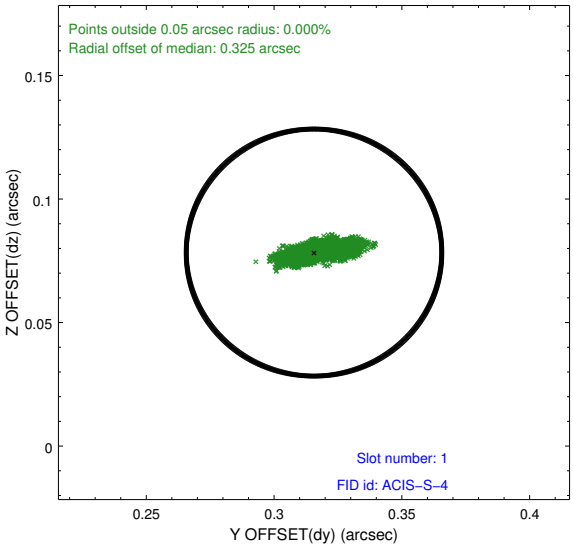


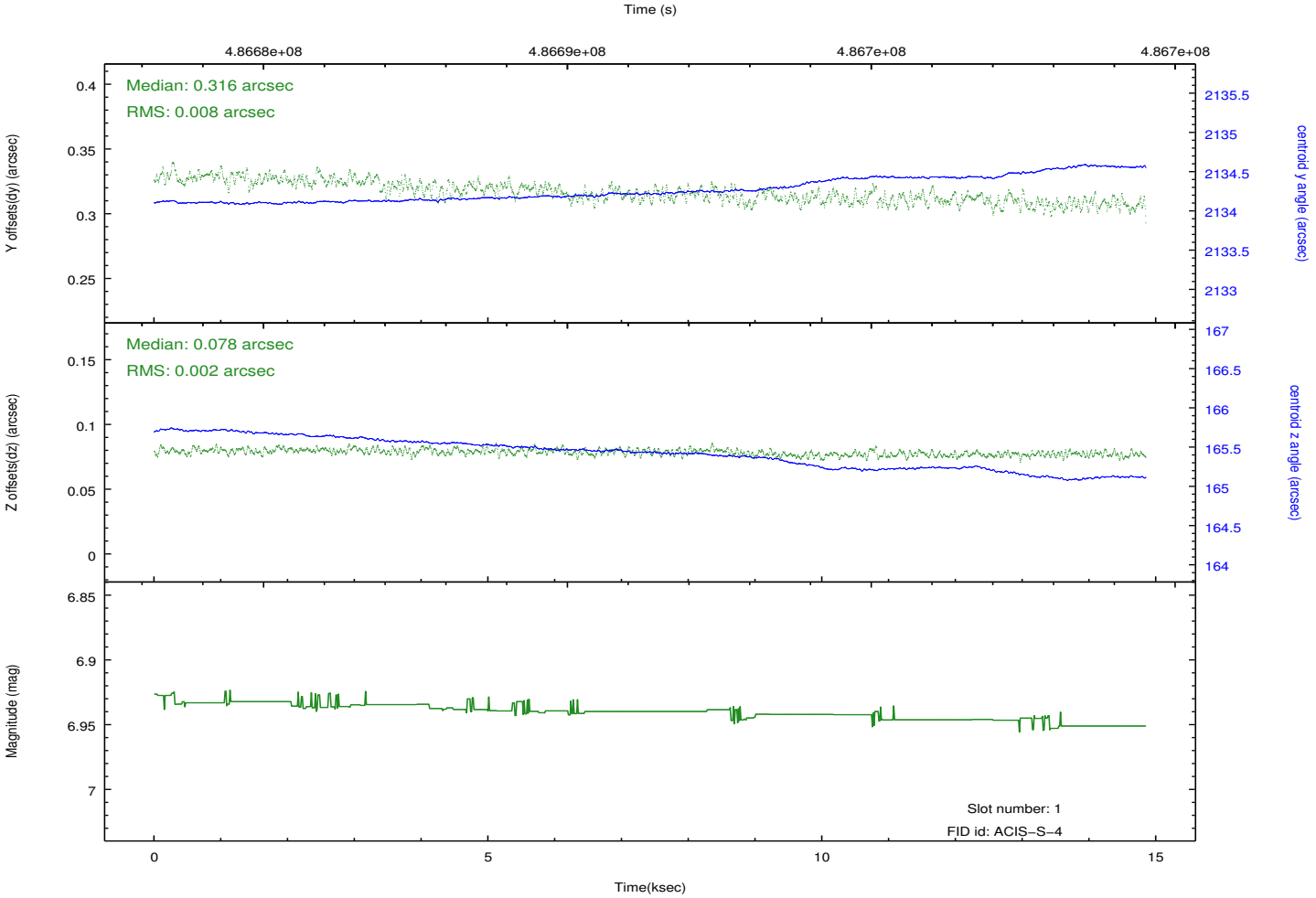




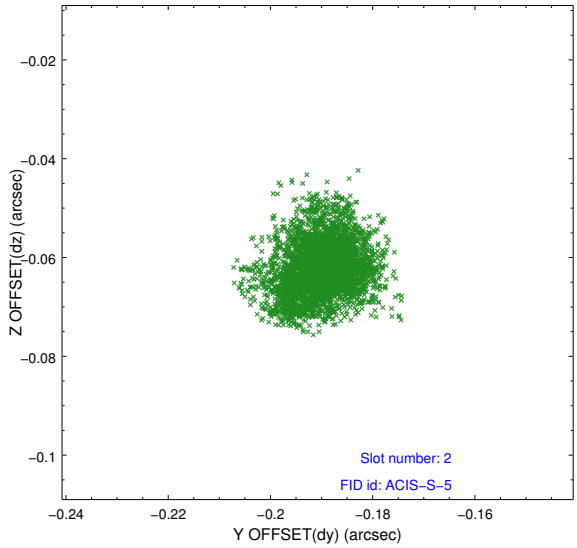
2.5.2 Slot 1

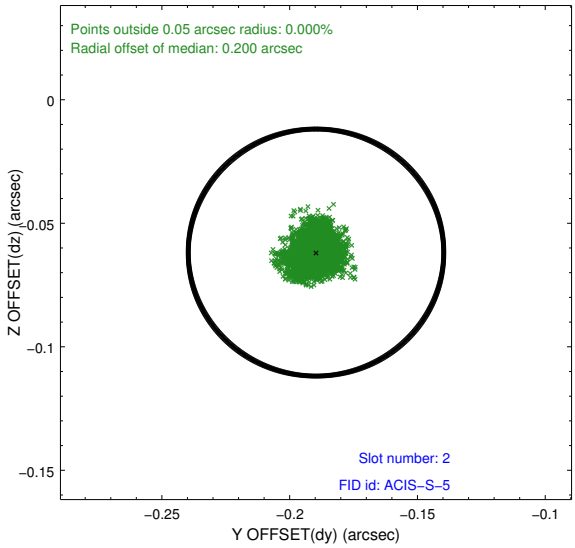

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4

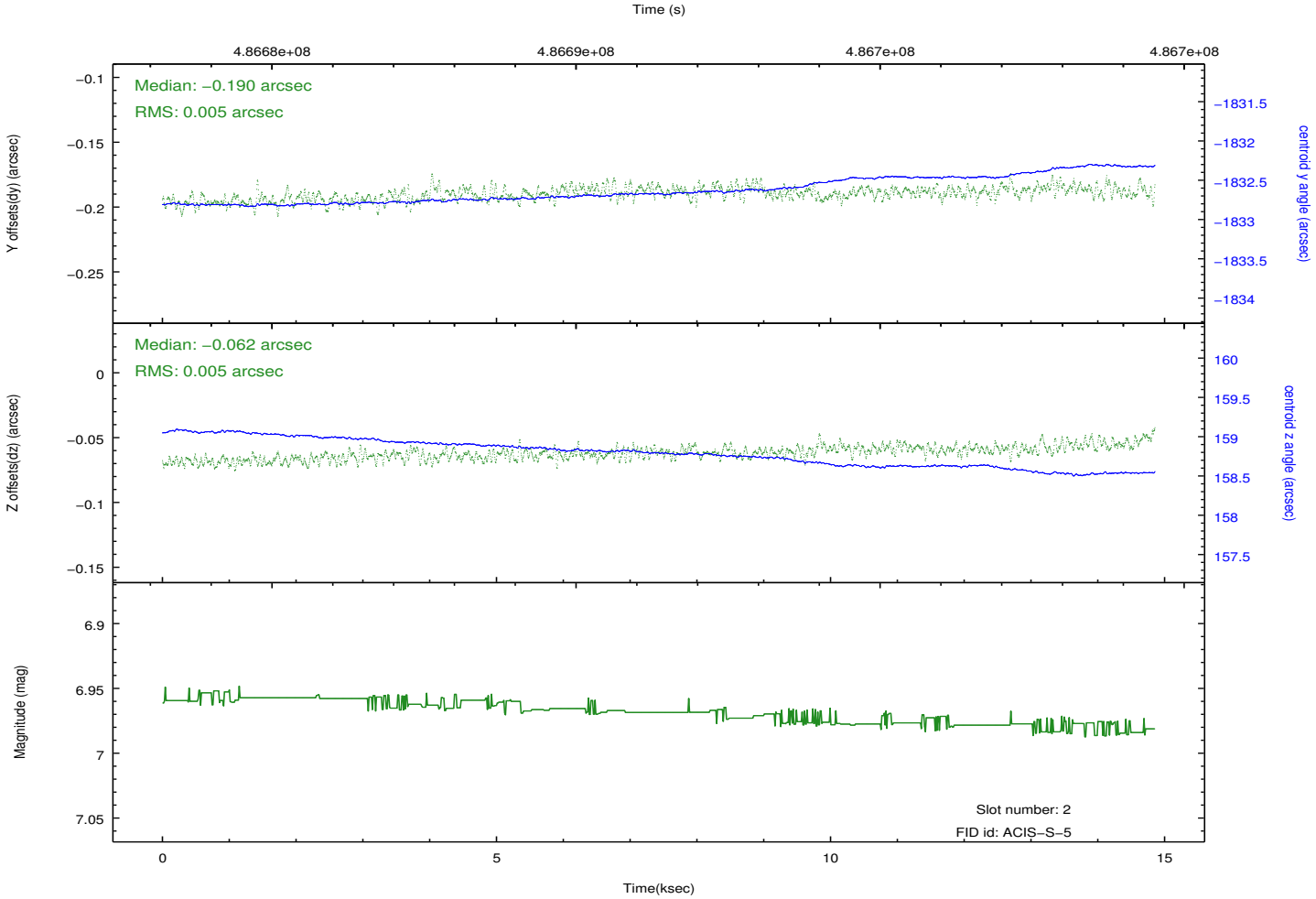

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.325 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 1
FID id: ACIS−S−4


Time (s)
Median: 0.316 arcsec
RMS: 0.008 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.078 arcsec
RMS: 0.002 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: 0.200 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number: 2
FID id: ACIS−S−5


Time (s)
Median: −0.190 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.062 arcsec
RMS: 0.005 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)	2014.12.10
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	13.963835636377

A.2 Comments

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.