V&V Reference Report
L2 ASCDS Version : 7.6.10

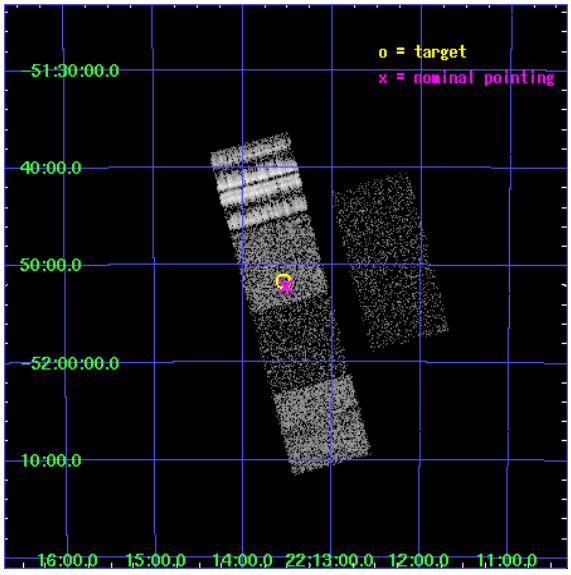
Observation 3415 - L2 Version 001
Chandra X-Ray Center

L2 Processing Date : Jan 16 2007

Contents

1 Front

seq_num	100030
obs_id	3415
title	ACIS-S LOW ENERGY SPECTROSCOPY AND PHOTOMETRIC IMAGING OF CHARGE EXCHANGE X-RAY EMISSION FROM COMET C/LINEAR WM1 (2000)
observer	Dr. Carey Lisse
object	C/LINEAR WM1 (2000)
dtycycle	0
cycle	P
ra_targ	333.38664
dec_targ	-51.86161
ra_nom	333.38005864092
dec_nom	-51.870438160879
roll_nom	255.20417540466
revision	2
ontime	8505.5590476543
livetime	8397.8565375601
ontime2	8508.8000079244
ontime3	8508.8000079244
ontime5	8505.5590476692
ontime6	8505.5590476692
ontime7	8505.5590476543
ontime8	8502.3182071
l2events	33660

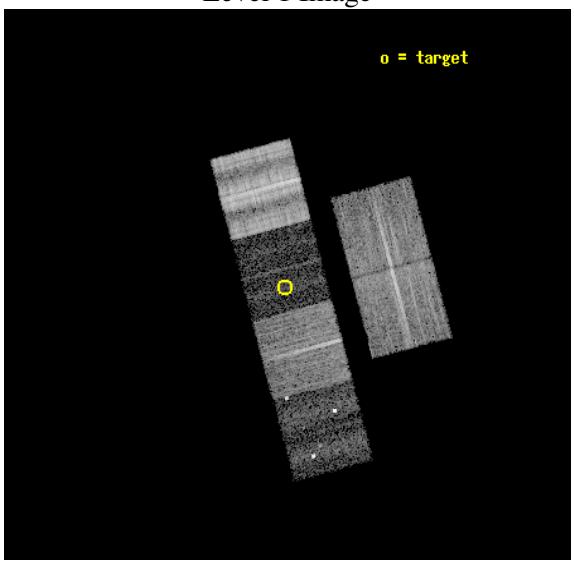


2 OBI

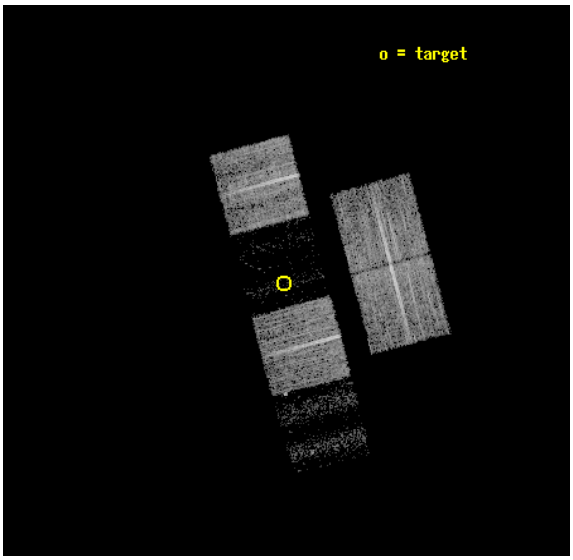
2.1 OBI

2.1.1 Images

Level 1 Image

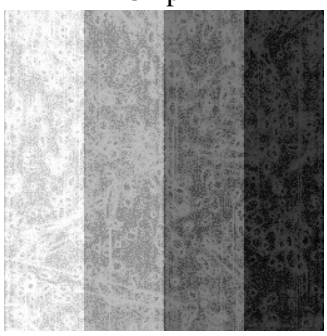


Level 1 Bad Events

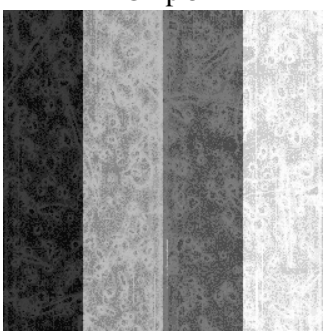


2.1.2 Bias

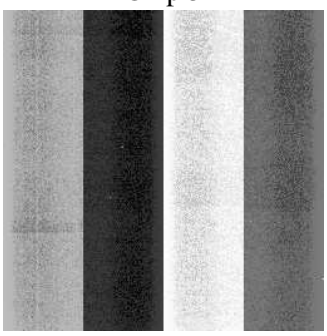
Chip 2



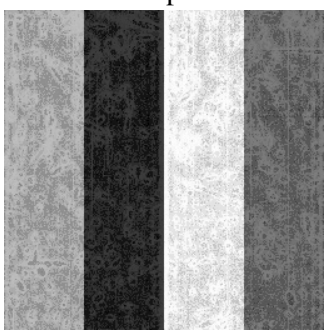
Chip 3



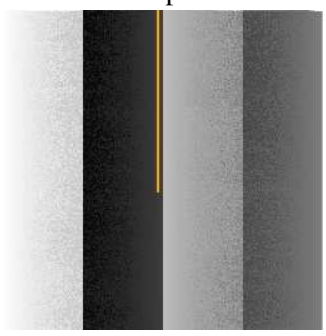
Chip 5



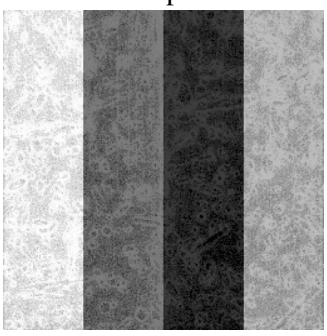
Chip 6



Chip 7



Chip 8



2.1.3 Parameters

obi_num	1
ascdsver	7.6.10
caldbver	3.3.0
date	2007-01-17T02:36:53
revision	2

sched_exp_time	8750.000000
ontime	8505.5590476543
ontime2	8508.8000079244
ontime3	8508.8000079244
ontime5	8505.5590476692
ontime6	8505.5590476692
ontime7	8505.5590476543
ontime8	8502.3182071
l1events	231692

2.1.4 Events

	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
level 1 events	43541	38825	13736	40029	7106	88455
rejected events	40577	37536	4125	37292	1421	41944
rejected %	93%	96%	30%	93%	19%	47%

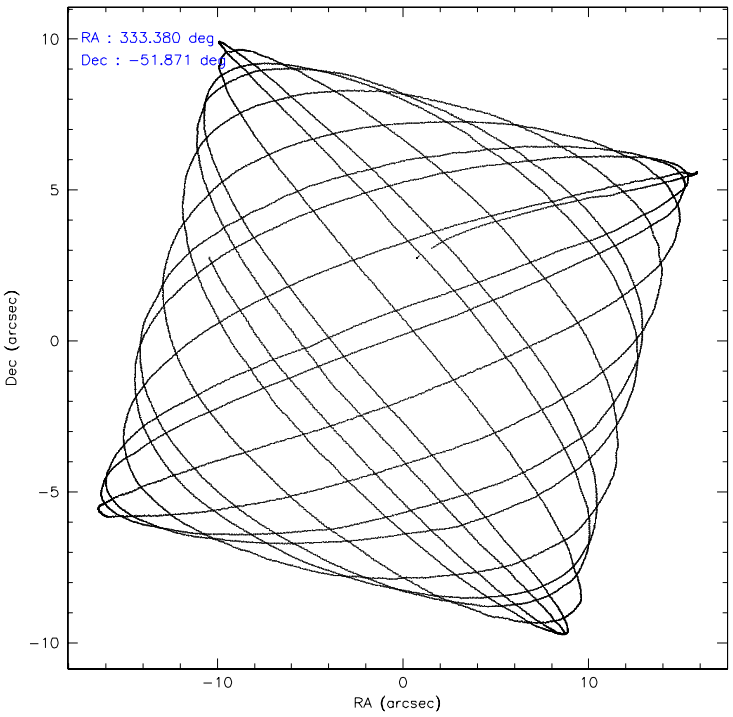
	ccd 2	ccd 3	ccd 5	ccd 6	ccd 7	ccd 8
grade 0 events	1480	623	4173	1525	1507	14550
	3%	1%	30%	3%	21%	16%
grade 1 events	13	7	224	14	23	145
	0%	0%	1%	0%	0%	0%
grade 2 events	799	241	2826	665	2004	5868
	1%	0%	20%	1%	28%	6%
grade 3 events	212	187	915	231	801	8616
	0%	0%	6%	0%	11%	9%
grade 4 events	295	158	868	209	760	7680
	0%	0%	6%	0%	10%	8%
grade 5 events	65	43	661	35	241	654
	0%	0%	4%	0%	3%	0%
grade 6 events	180	80	833	109	621	9836
	0%	0%	6%	0%	8%	11%
grade 7 events	40497	37486	3236	37241	1149	41106
	93%	96%	23%	93%	16%	46%

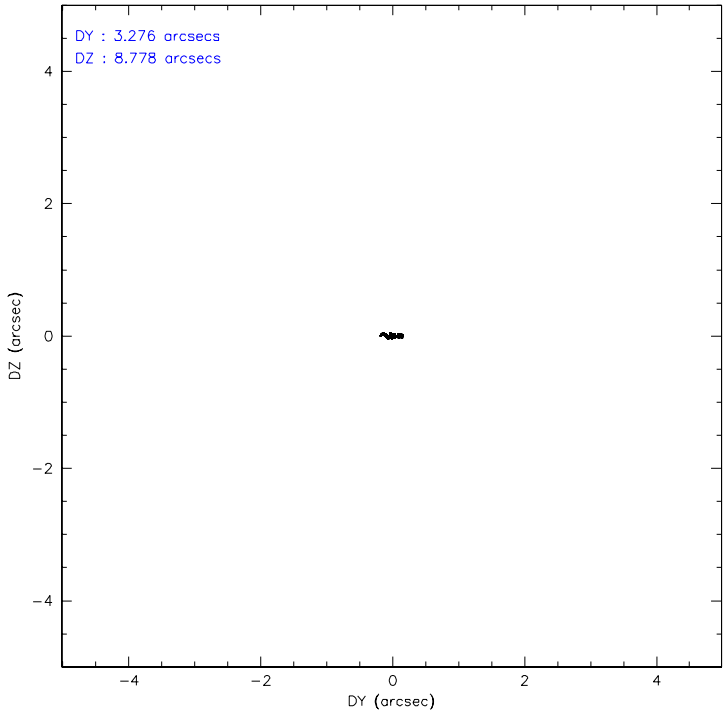
2.2 Compared Parameters

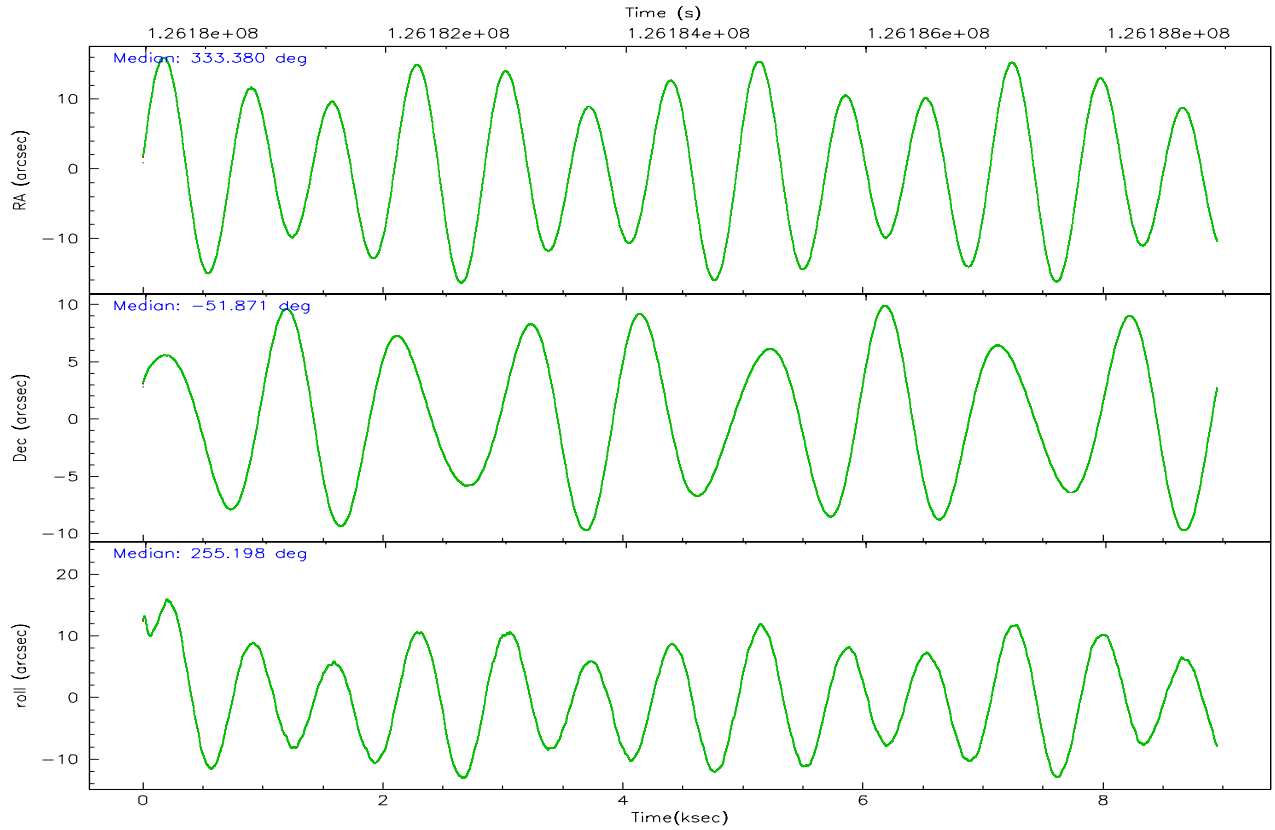
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-235678	ACIS-235678
Grating	LETG	LETG
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
Pointing RA	333.367913	333.3800586409243
Pointing Dec	-51.844203	-51.87043816087947
Pointing Roll	255.037989	255.2041754046581
Window start time	126144064.184000	126144064.184000
Window stop time	126230404.184000	126230404.184000
SIM focus pos (mm)	-0.684267	-0.6828225247311905
SIM defocus (mm)	0	0.001444936568705701
SIM translation stage pos (mm)	-190.132523	-190.1400660498719
SIM translation stage offset (mm)	0	0.00754346686406393
Observation start time	126180177.184000	126179800.50981
Observation start date	2001-12-31T10:01:53	2001-12-31T09:56:40
Observation end time	126188927.184000	126189060.87268
Observation end date	2001-12-31T12:27:43	2001-12-31T12:31:00
Read mode	TIMED	TIMED

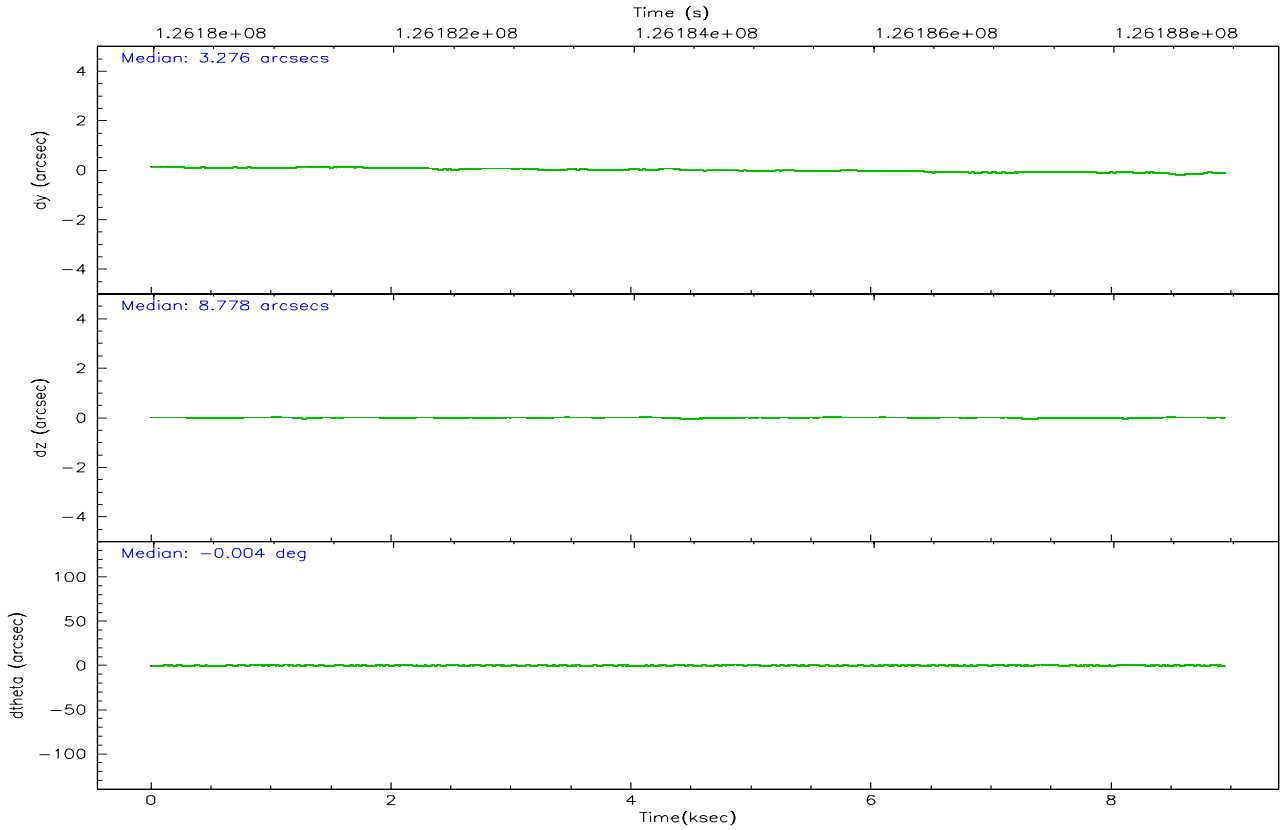
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
Primary exposure time	0.000000	3.2

2.3 Aspect


RA : 333.380 deg
Dec : −51.871 deg
10
5
0
−5
−10
Dec (arcsec)
−10
0
10
RA (arcsec)


DY : 3.276 arcsecs
DZ : 8.778 arcsecs
4
2
0
−2
−4
DZ (arcsec)
−4
−2
0
2
4
DY (arcsec)


Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: 333.380 deg
RA (arcsec)
Median: −51.871 deg
Dec (arcsec)
Median: 255.198 deg
roll (arcsec)
Time(ksec)

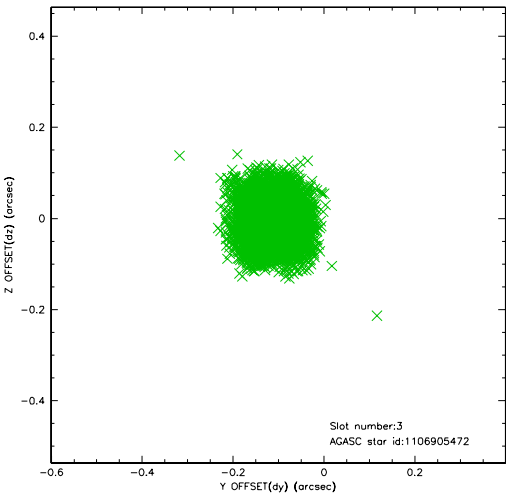

Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: 3.276 arcsecs
dy (arcsec)
Median: 8.778 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

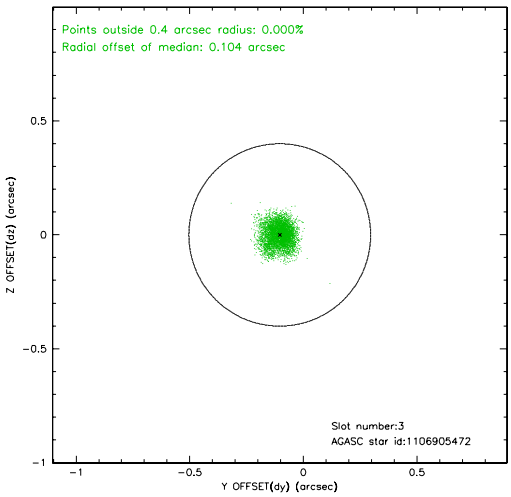
Slot Statistics

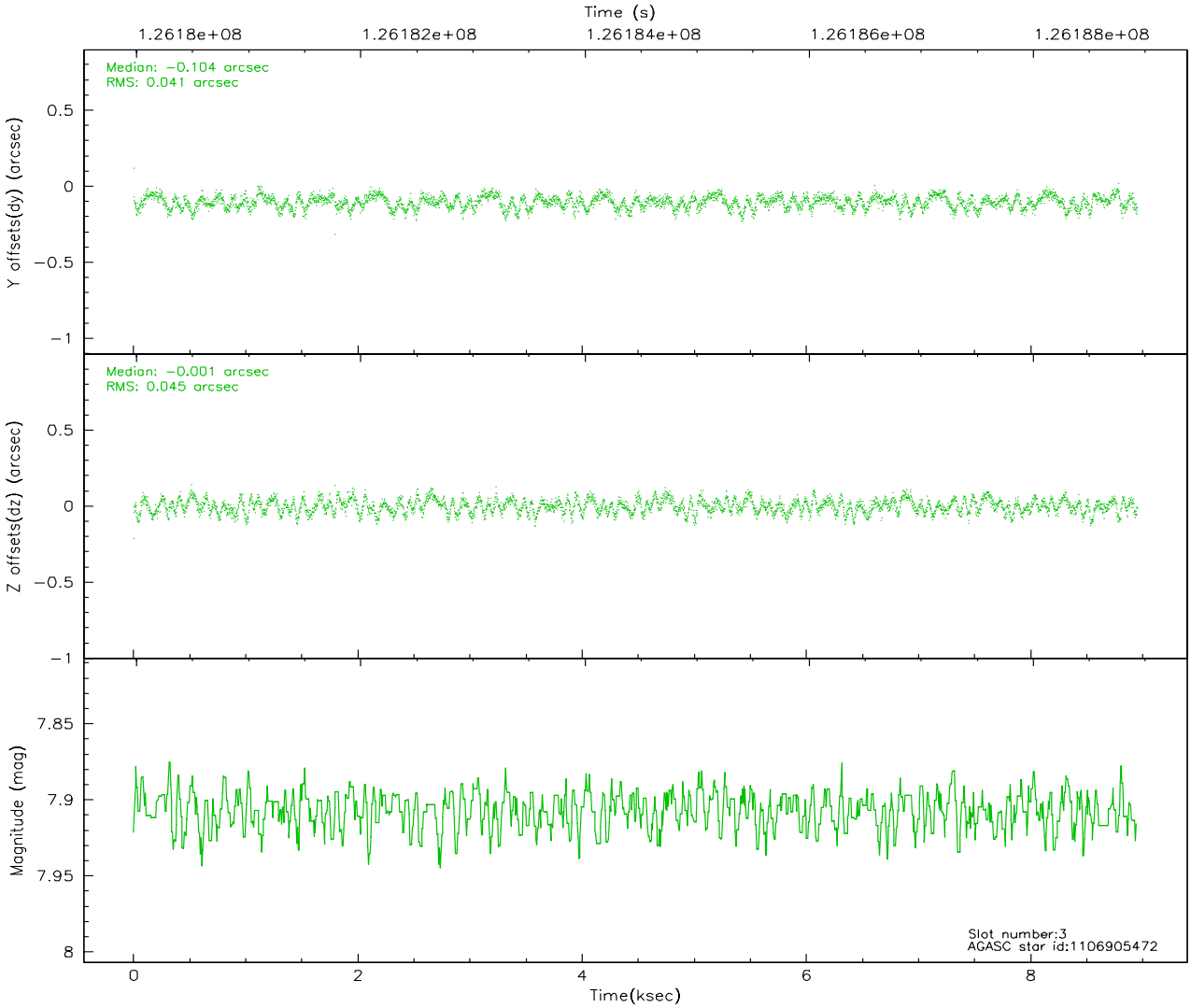
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.11	2182	-0.002	0.014	0.006	0.011	0.000000	0.000000	-755.92	-1729.98
1	FID	ACIS-S-4	7.20	2182	-0.067	-0.003	0.007	0.011	0.000000	0.000000	2157.00	177.87
2	FID	ACIS-S-5	7.24	2183	0.039	-0.003	0.007	0.012	0.000000	0.000000	-1807.94	172.22
3	GUIDE	1106905472	7.91	4359	-0.104	-0.001	0.065	0.103	333.959376	-52.158506	760.49	1554.48
4	GUIDE	1106774680	7.78	4364	0.038	-0.107	0.054	0.087	332.589342	-51.960089	858.09	-1558.74
5	GUIDE	1106775976	8.78	4364	-0.121	-0.015	0.074	0.118	332.311048	-51.807893	497.63	-2303.37
6	GUIDE	1106907400	9.06	4363	-0.012	-0.070	0.082	0.129	334.001770	-51.303937	-2241.62	875.86
7	GUIDE	1156324896	9.30	4361	0.201	0.196	0.082	0.134	334.141564	-52.628198	2298.20	2363.98

2.4 Star Slots

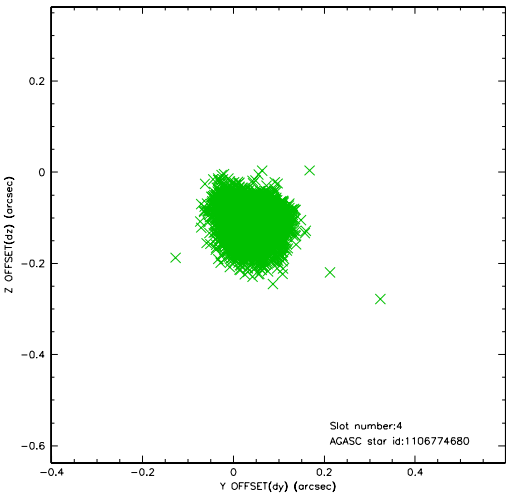
2.4.1 Slot 3

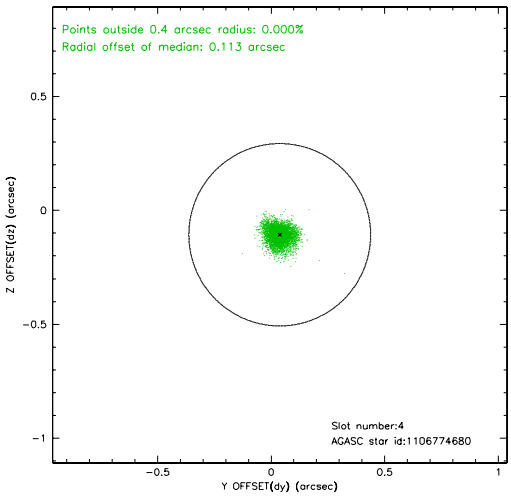


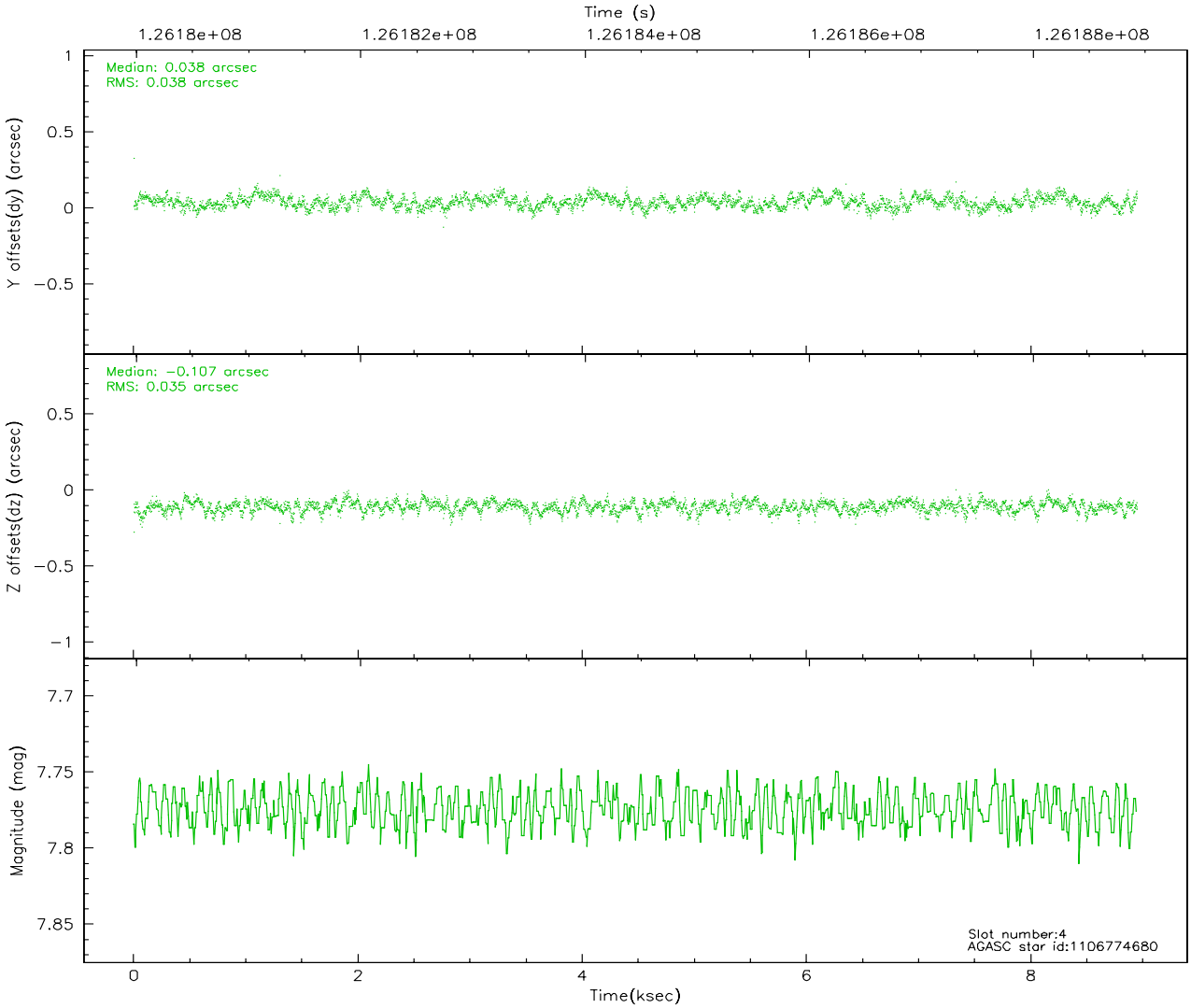




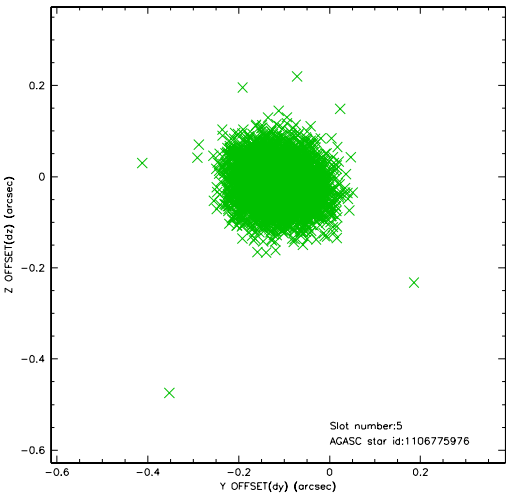
2.4.2 Slot 4

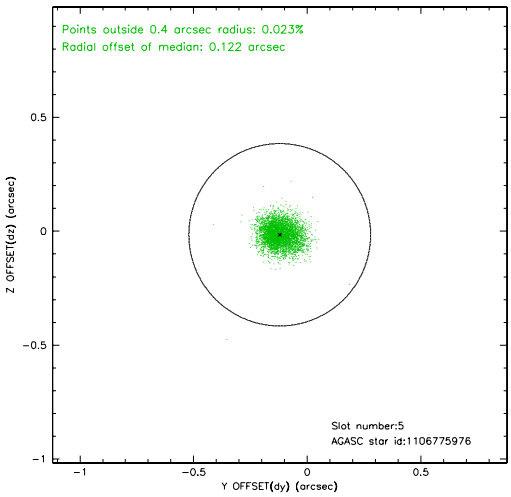

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1106774680

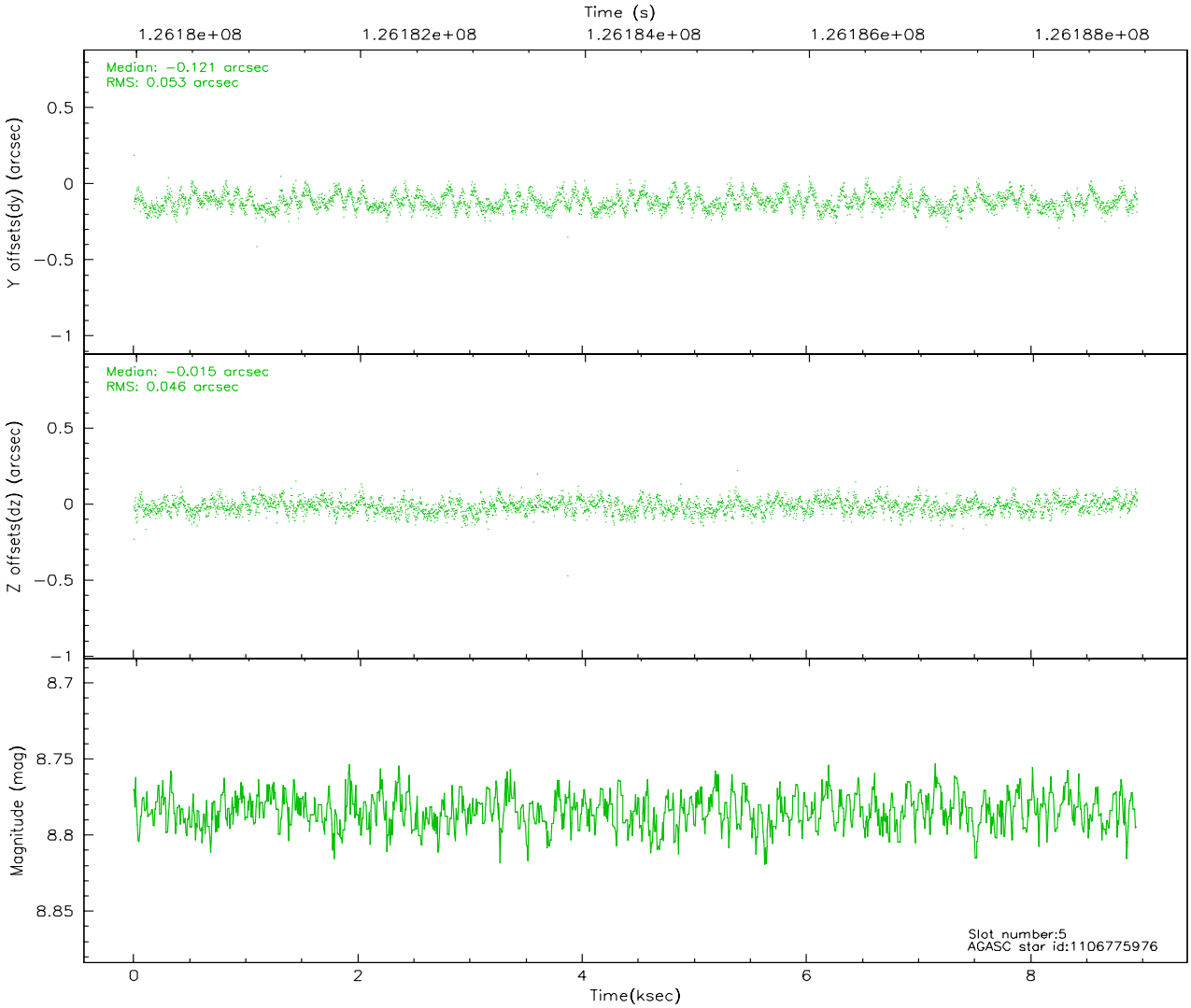

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.113 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:1106774680


Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: 0.038 arcsec
RMS: 0.038 arcsec
Y offsets(dy) (arcsec)
Median: −0.107 arcsec
RMS: 0.035 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:1106774680
Time(ksec)

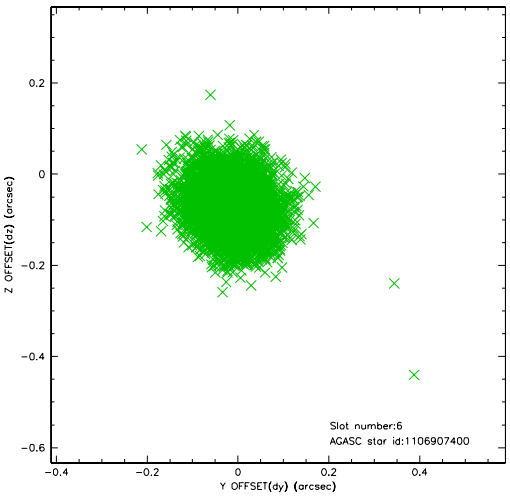
2.4.3 Slot 5

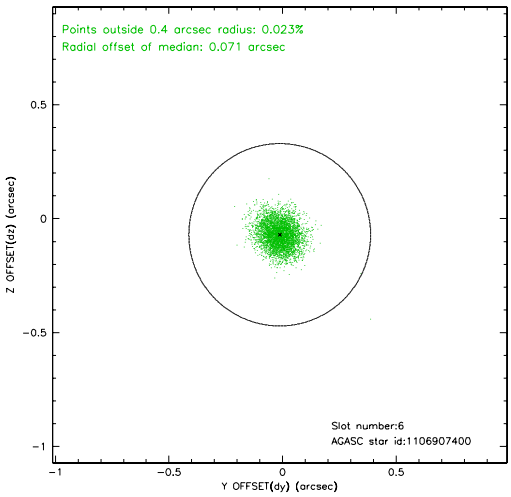

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1106775976

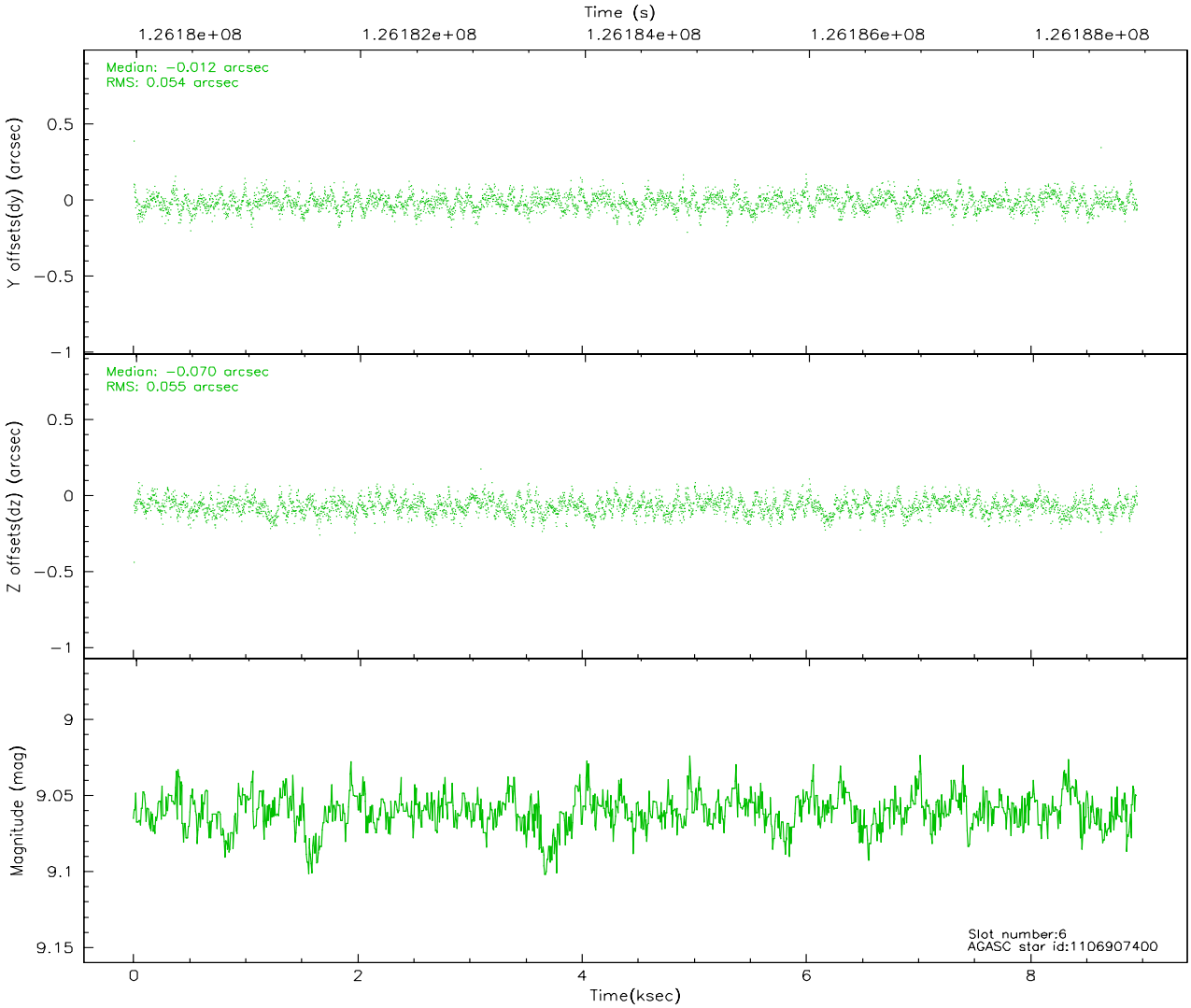

Points outside 0.4 arcsec radius: 0.023%
Radial offset of median: 0.122 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:1106775976


Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: −0.121 arcsec
RMS: 0.053 arcsec
Y offsets(dy) (arcsec)
Median: −0.015 arcsec
RMS: 0.046 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:1106775976
Time(ksec)

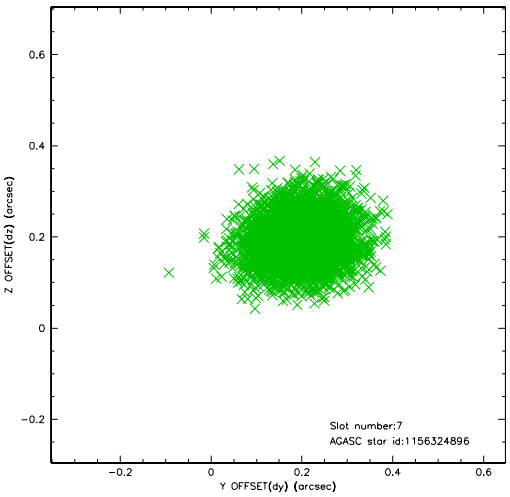
2.4.4 Slot 6

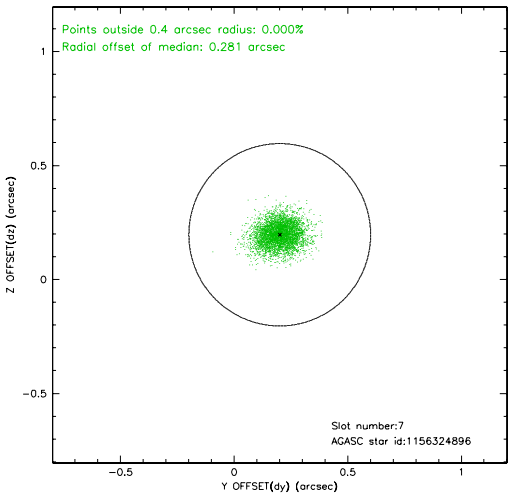

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1106907400

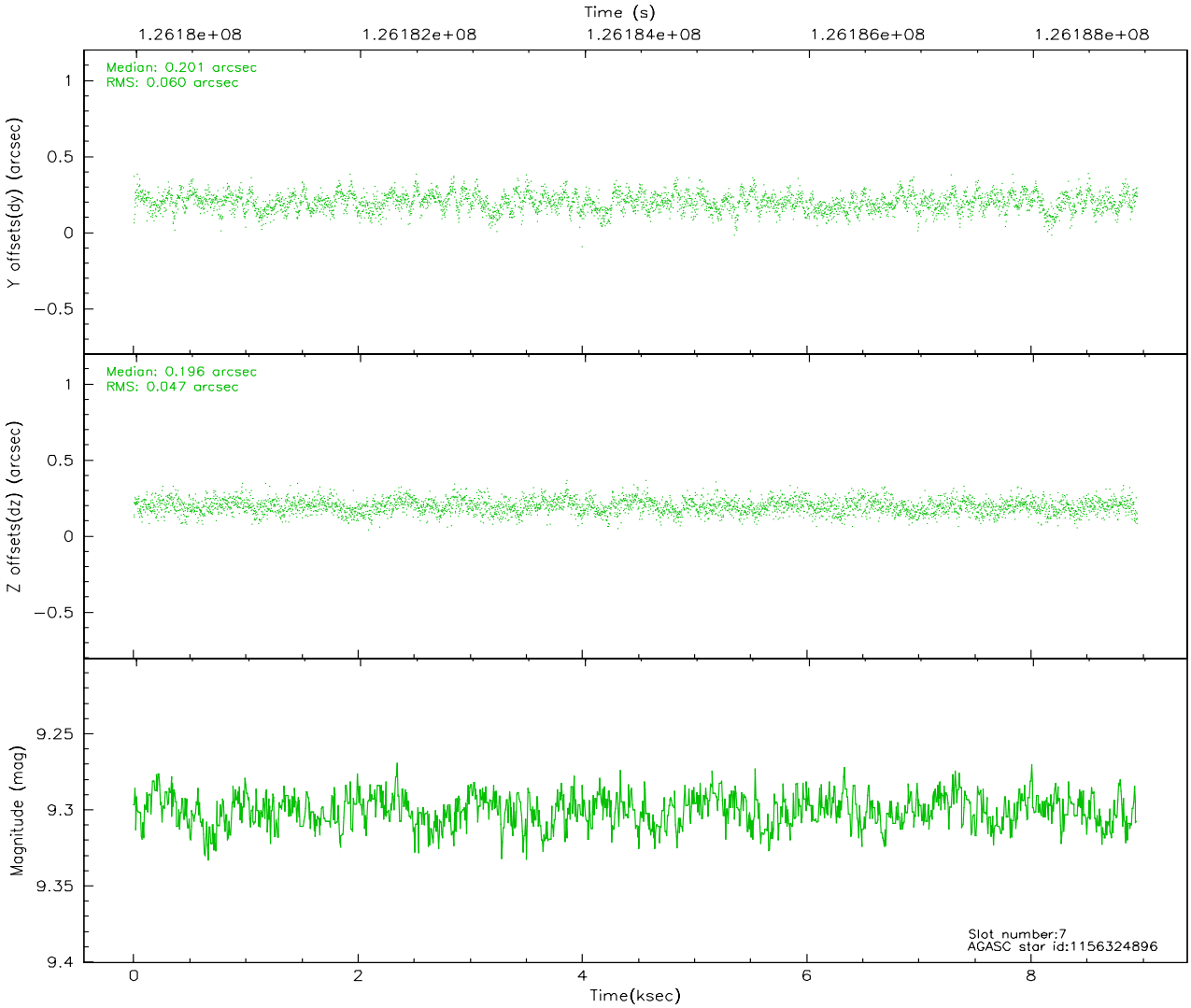

Points outside 0.4 arcsec radius: 0.023%
Radial offset of median: 0.071 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:1106907400


Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: −0.012 arcsec
RMS: 0.054 arcsec
Y offsets(dy) (arcsec)
Median: −0.070 arcsec
RMS: 0.055 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:1106907400
Time(ksec)

2.4.5 Slot 7

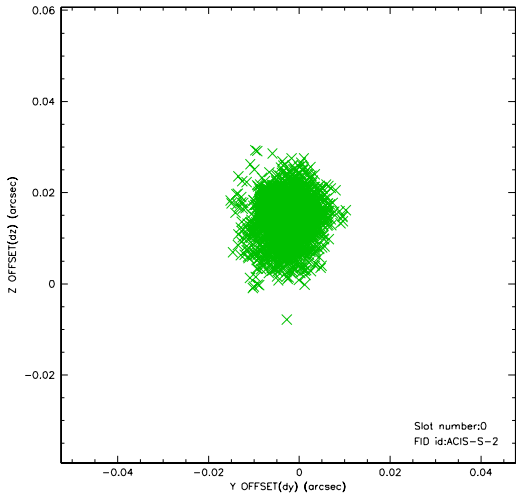

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1156324896

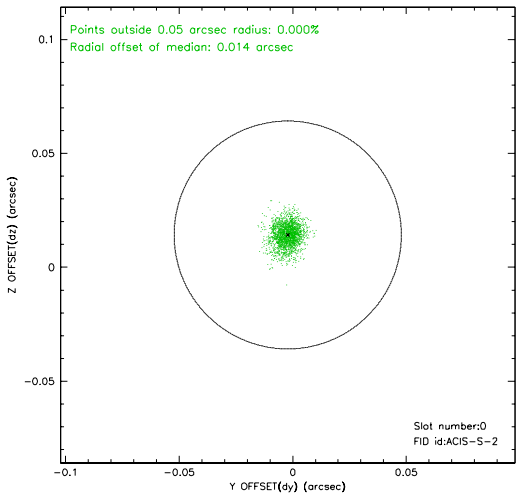

Points outside 0.4 arcsec radius: 0.000%
Radial offset of median: 0.281 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:1156324896

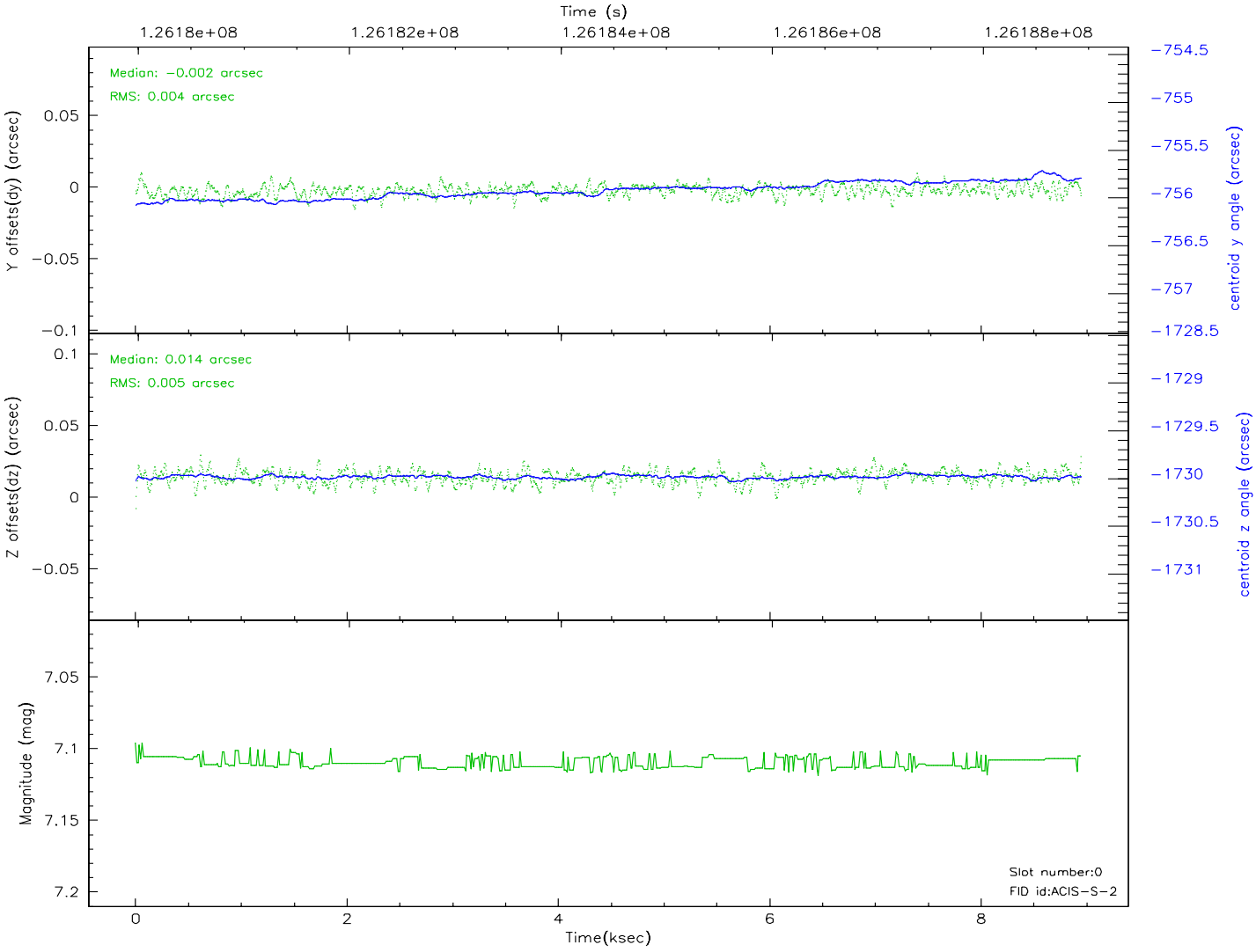

Time (s)
1.2618e+08
1.26182e+08
1.26184e+08
1.26186e+08
1.26188e+08
Median: 0.201 arcsec
RMS: 0.060 arcsec
Y offsets(dy) (arcsec)
Median: 0.196 arcsec
RMS: 0.047 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:1156324896
Time(ksec)

2.5 FID Slots

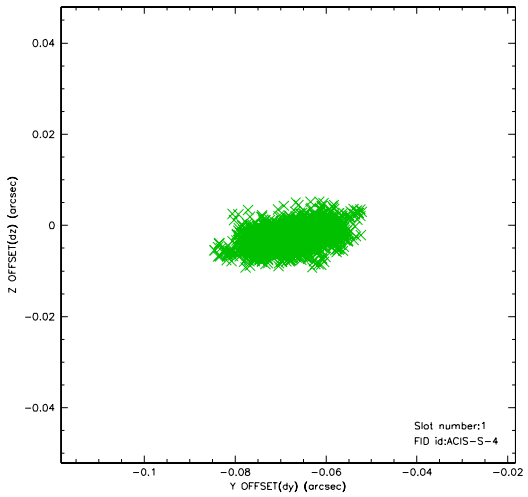
2.5.1 Slot 0

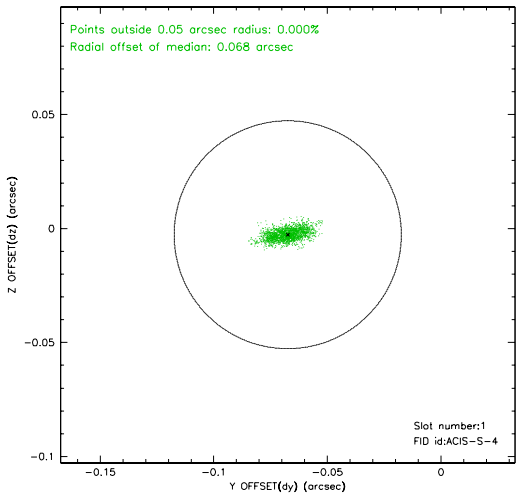


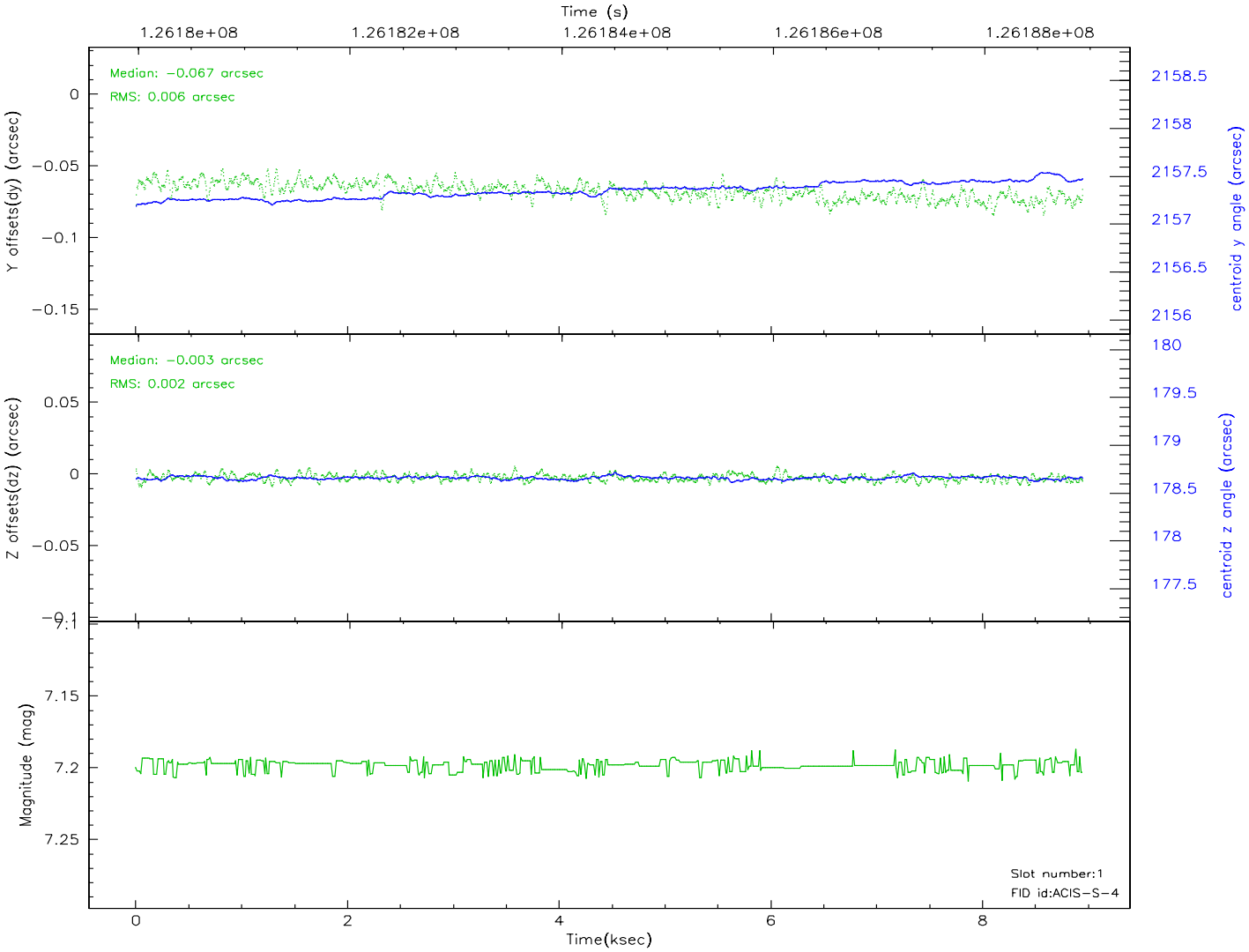




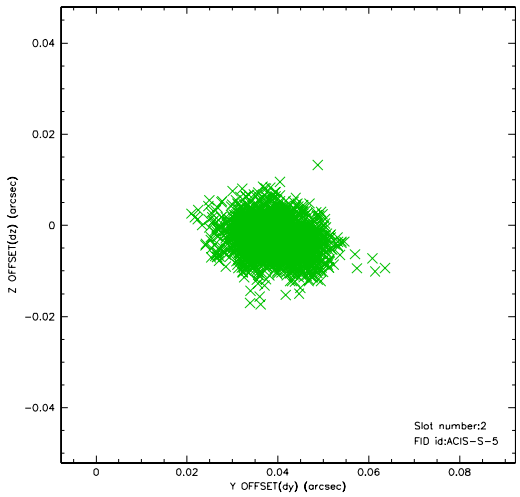
2.5.2 Slot 1

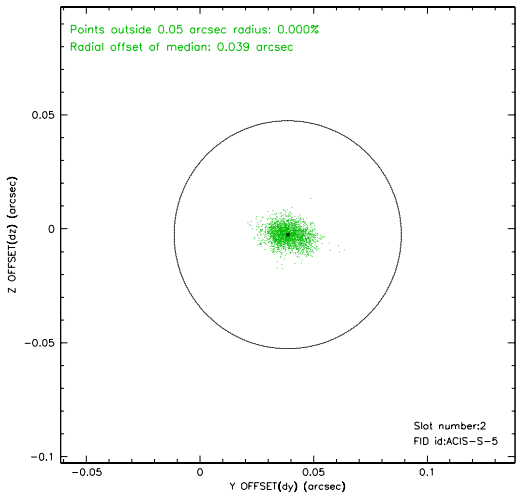

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

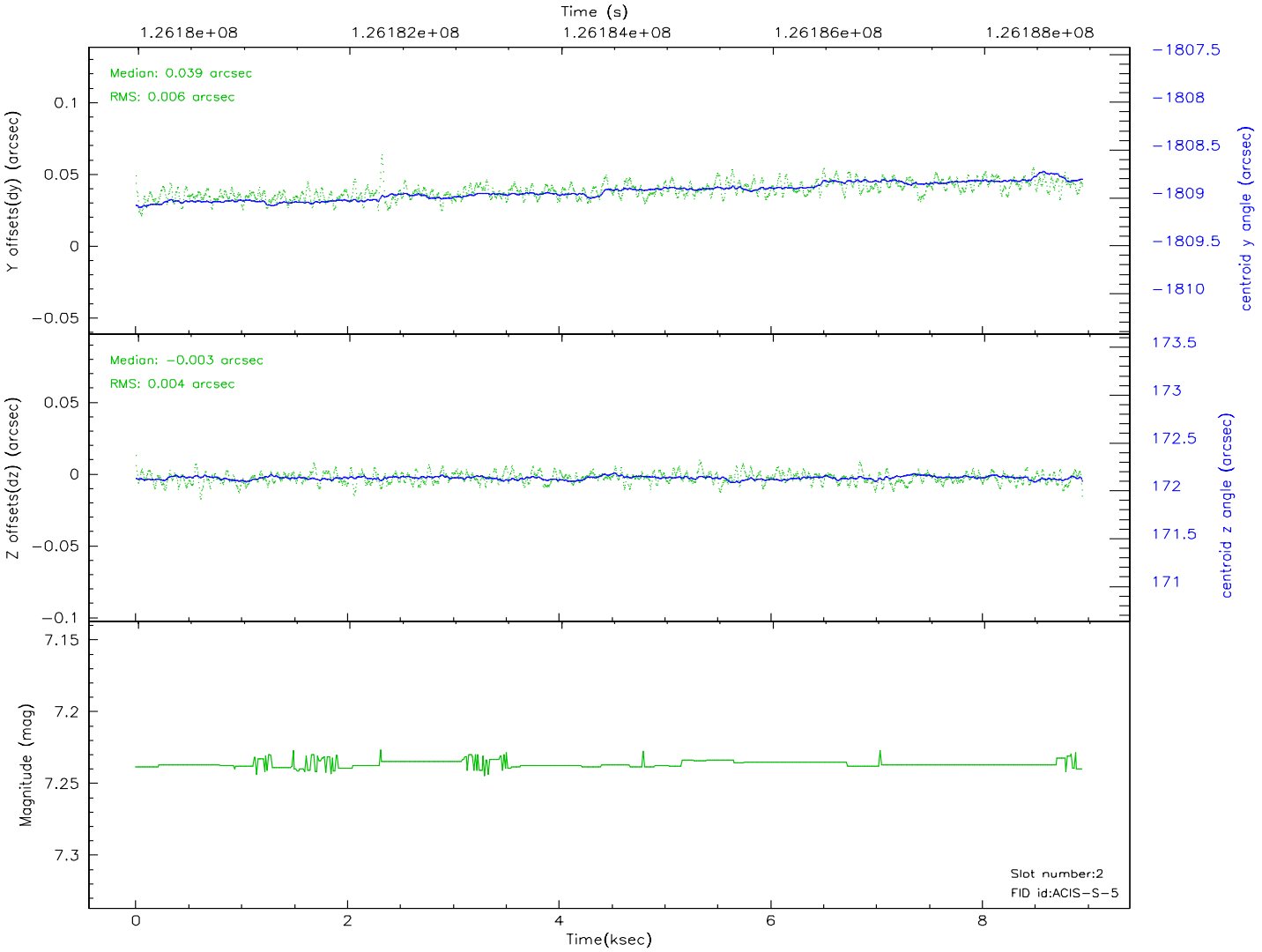

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.068 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
Median: −0.067 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: −0.003 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

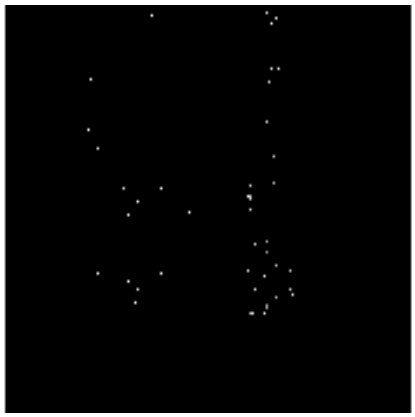

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.039 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5

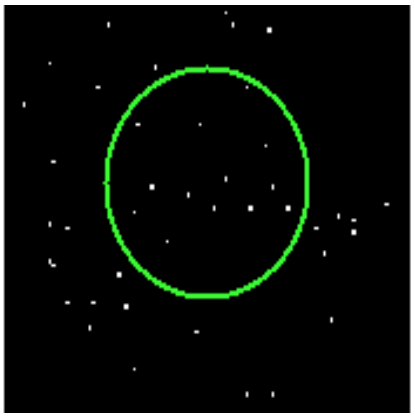

Time (s)
Median: 0.039 arcsec
RMS: 0.006 arcsec
Y offsets(dy) (arcsec)
Median: −0.003 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid y angle (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-5
Time(ksec)

3 Gratings

3.1 LETG Arm

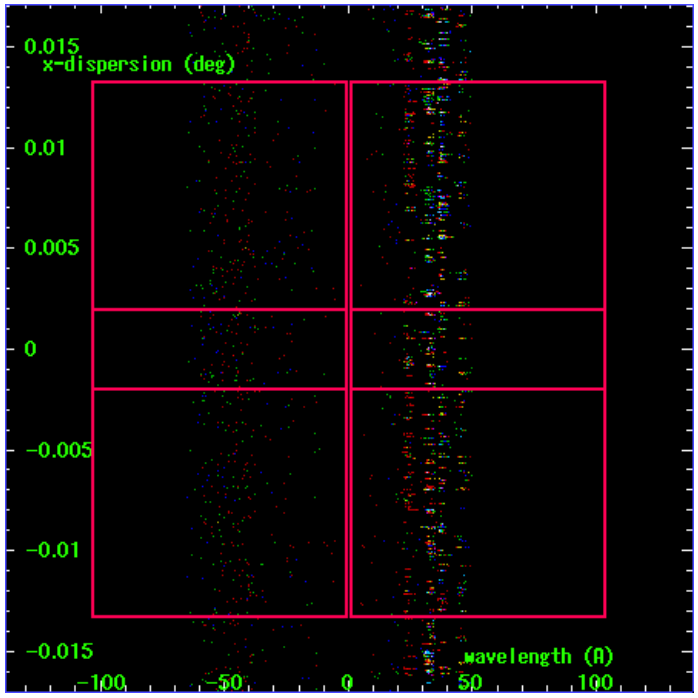


LETG Order Sort 123

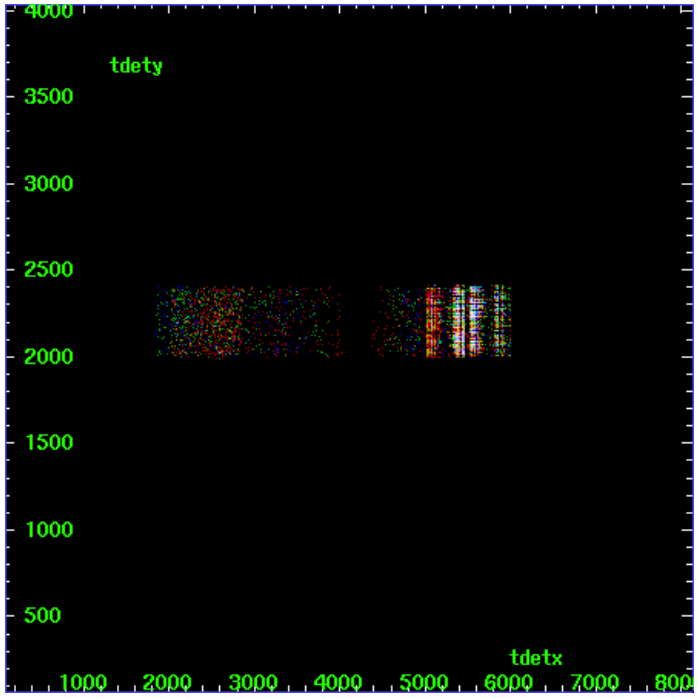


LETG Zero Order

LETG Order Sort ALL

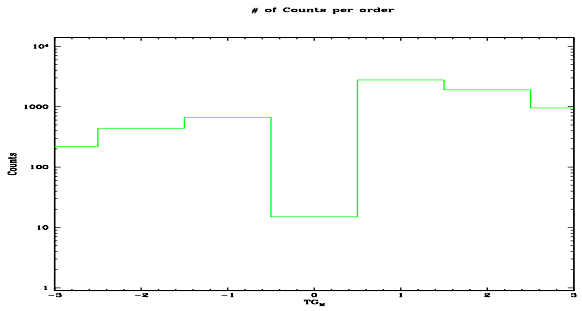


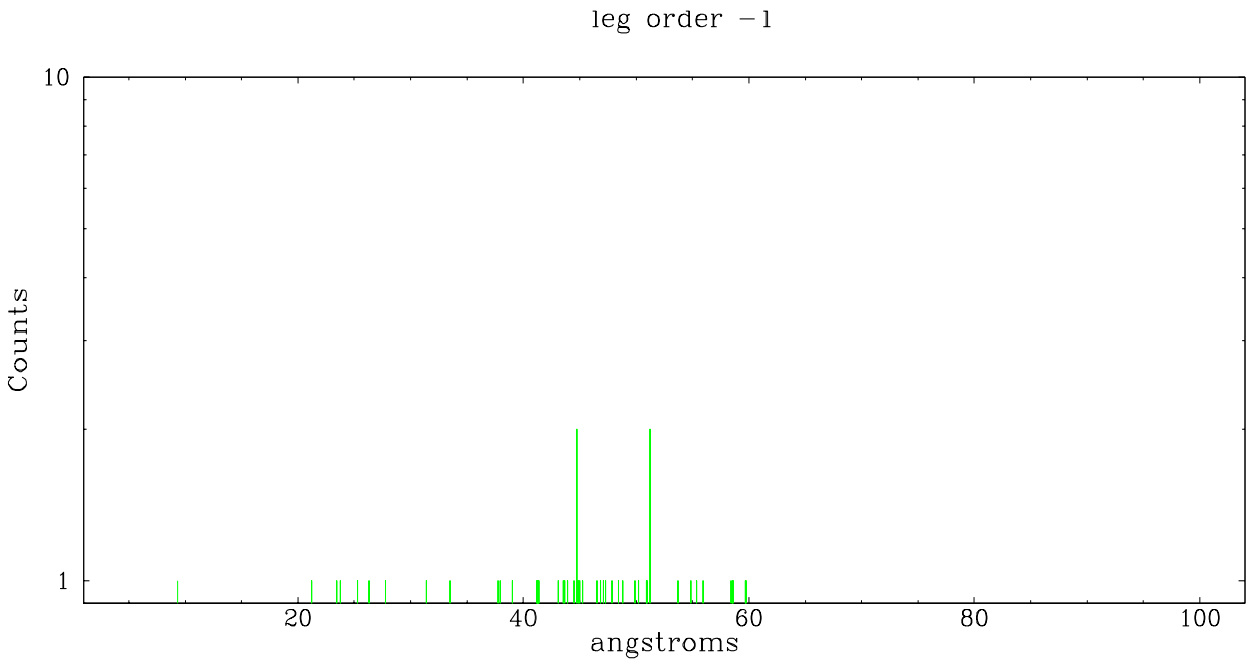
Spot Image LETG

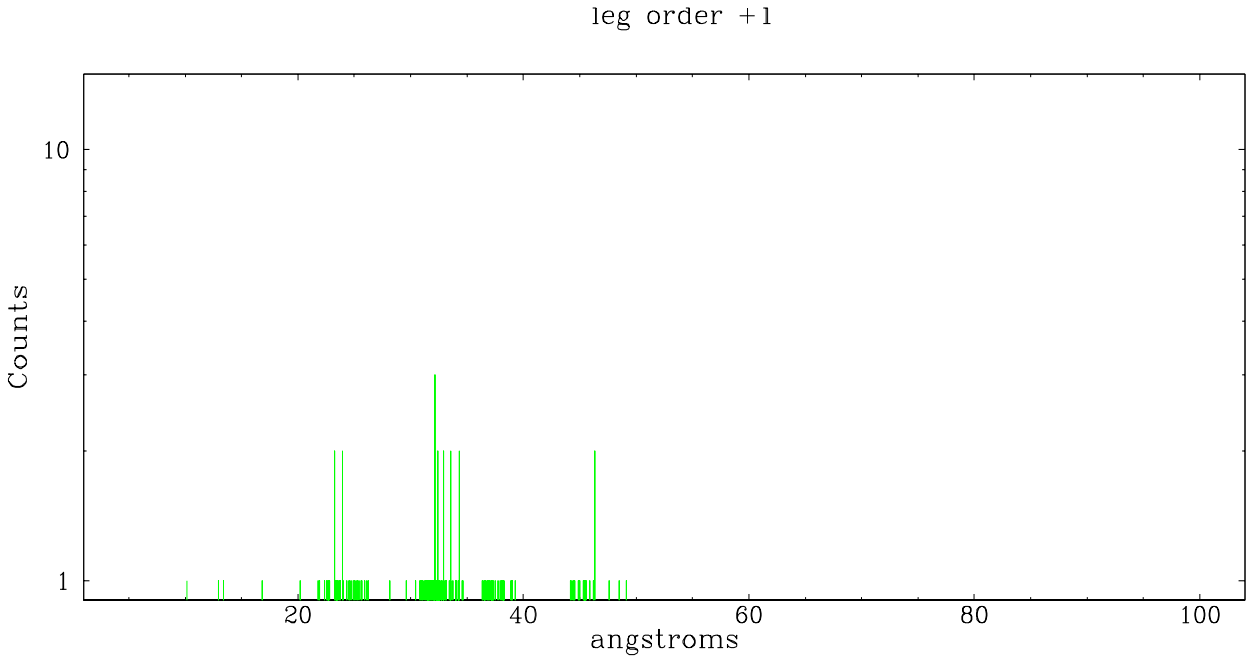


Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	218	439	670	15	2783	1908	952




leg order −1
10
1
Counts
20
40
60
80
100
angstroms


leg order +1
10
1
Counts
20
40
60
80
100
angstroms

A Summary

A.1 Status

V&V Scientist	Joy Nichols
V&V Date (YYYY-MM-DD)	2007.01.31
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	8.508

A.2 Comments

Moving target. Energy filter allowed only events with energies 0.1 to 2.0 keV to be recorded. LETG grating used. Spectral extraction provided with this processing was done without benefit of SAO_freeze software, so the spectrum is meaningless. Streak on chip 8 is not fully removed with pipeline processing. Additional analysis procedures by the user may improve the uniformity of chip 8.