V&V Reference Report
L2 ASCDS Version : 7.6.11.10

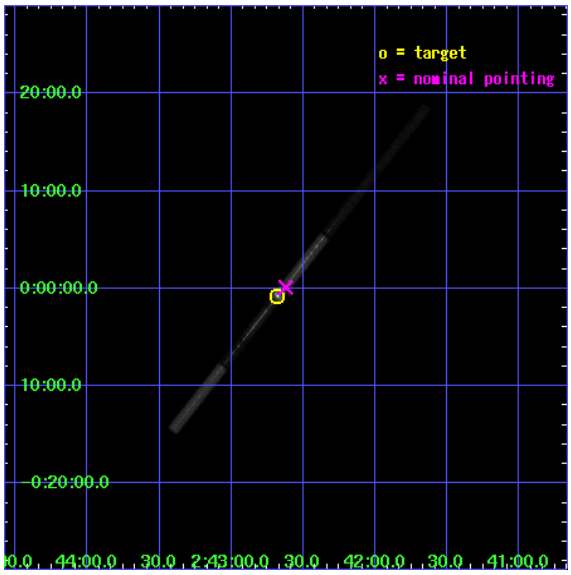
Observation 329 - L2 Version 3
Chandra X-Ray Center

L2 Processing Date : Feb 5 2009

Contents

1 Front

seq_num	700001
obs_id	329
title	OBSERVATIONS OF BRIGHT ACTIVE GALACTIC NUCLEI WITH LETGS
observer	DR. ALBERT BRINKMAN
object	NGC 1068
dtycycle	0
cycle	P
ra_targ	40.670417
dec_targ	-0.013222
ra_nom	40.65530468546
dec_nom	0.001903275429077
roll_nom	308.51476678234
revision	3
ontime	77313.476181686
livetime	72363.792757101
ontime5	77312.194131583
ontime6	77313.476181686
ontime7	77313.476181686
ontime8	77311.553131431
ontime9	77312.194121584
l2events	174667

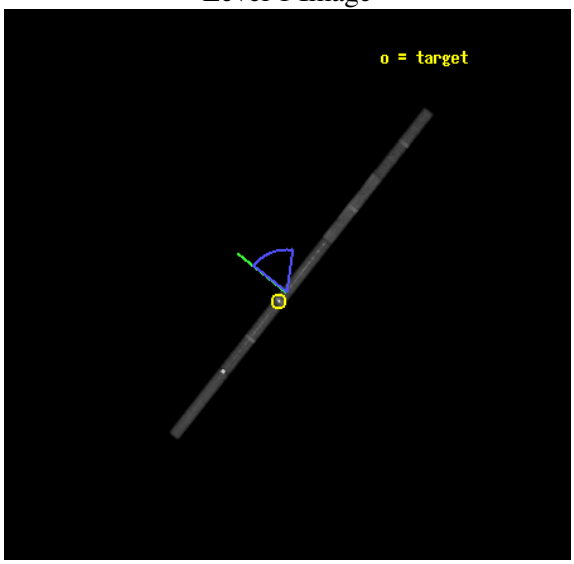


2 OBI

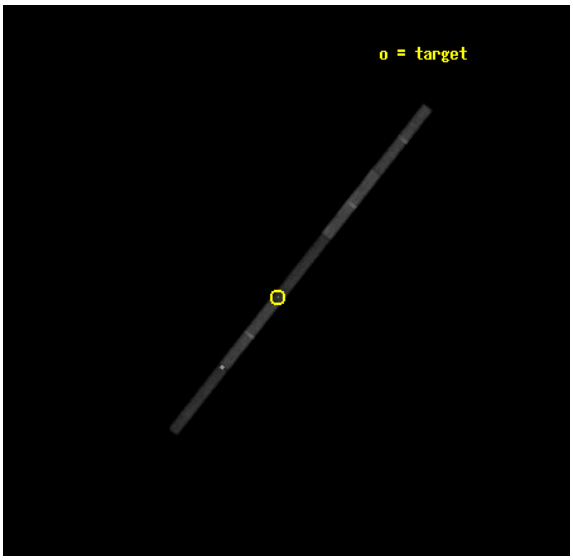
2.1 OBI

2.1.1 Images

Level 1 Image

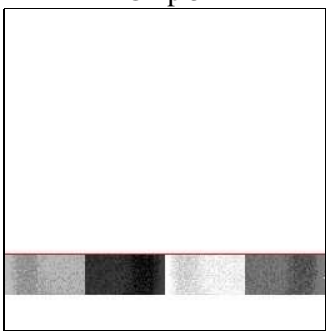


Level 1 Bad Events

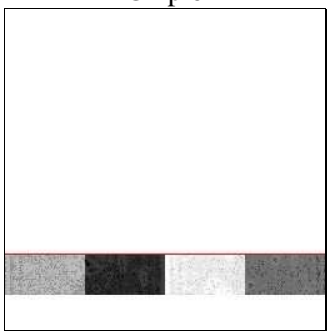


2.1.2 Bias

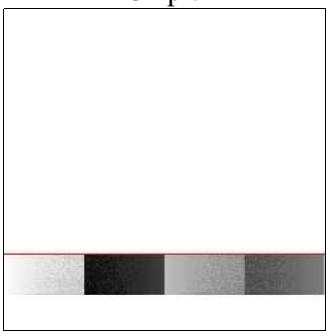
Chip 5



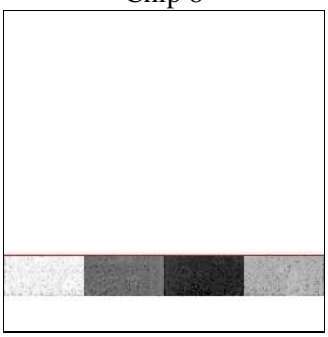
Chip 6



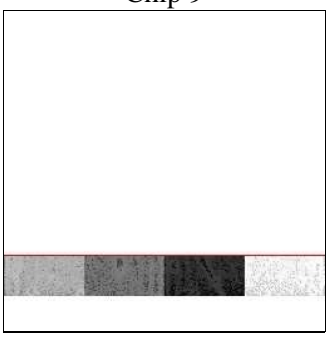
Chip 7



Chip 8



Chip 9



2.1.3 Parameters

obi_num	0
ascdsver	7.6.11.10
caldbver	3.5.1
date	2009-02-05T17:31:25
revision	3

sched_exp_time	76700.000000
ontime	77313.476181686
ontime5	77312.194131583
ontime6	77313.476181686
ontime7	77313.476181686
ontime8	77311.553131431
ontime9	77312.194121584
l1events	562951

2.1.4 Events

	ccd 5	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
level 1 events	130045	96037	145340	113938	77591
rejected events	56757	75416	44286	94549	68906
rejected %	43%	78%	30%	82%	88%

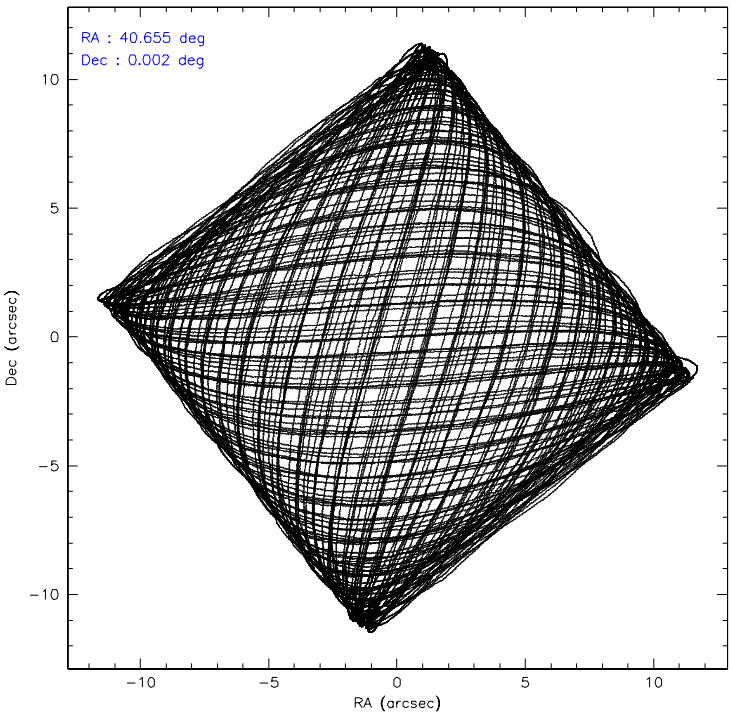
	ccd 5	**ccd 6**	**ccd 7**	**ccd 8**	**ccd 9**
grade 0 events	25591	13183	27207	5675	2993
	19%	13%	18%	4%	3%
grade 1 events	10076	19	257	17	14
	7%	0%	0%	0%	0%
grade 2 events	13737	2322	24664	3329	1301
	10%	2%	16%	2%	1%
grade 3 events	4734	1836	11945	2479	1548
	3%	1%	8%	2%	1%
grade 4 events	9034	1687	11434	2418	1457
	6%	1%	7%	2%	1%
grade 5 events	11204	2140	7496	2716	2125
	8%	2%	5%	2%	2%
grade 6 events	20193	1593	25805	5488	1386
	15%	1%	17%	4%	1%
grade 7 events	35476	73257	36532	91816	66767
	27%	76%	25%	80%	86%

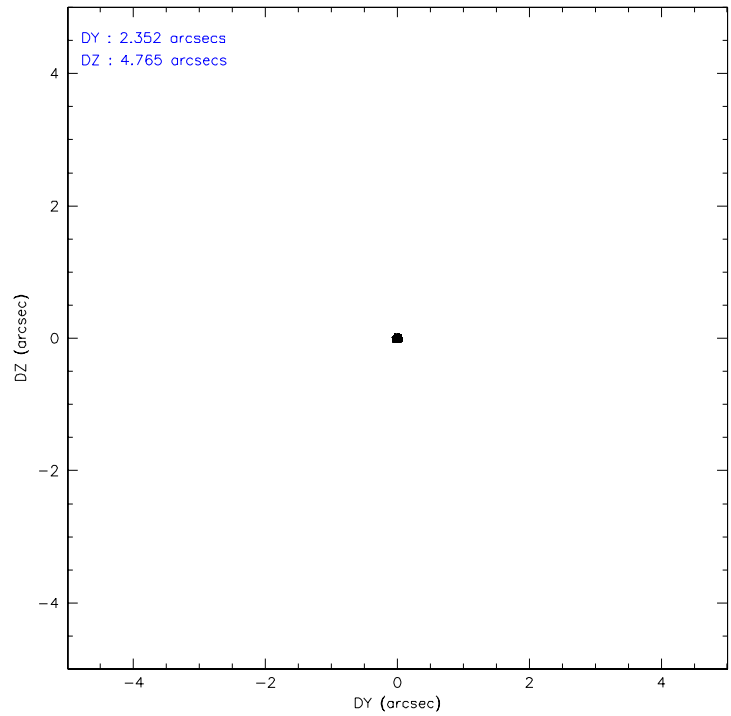
2.2 Compared Parameters

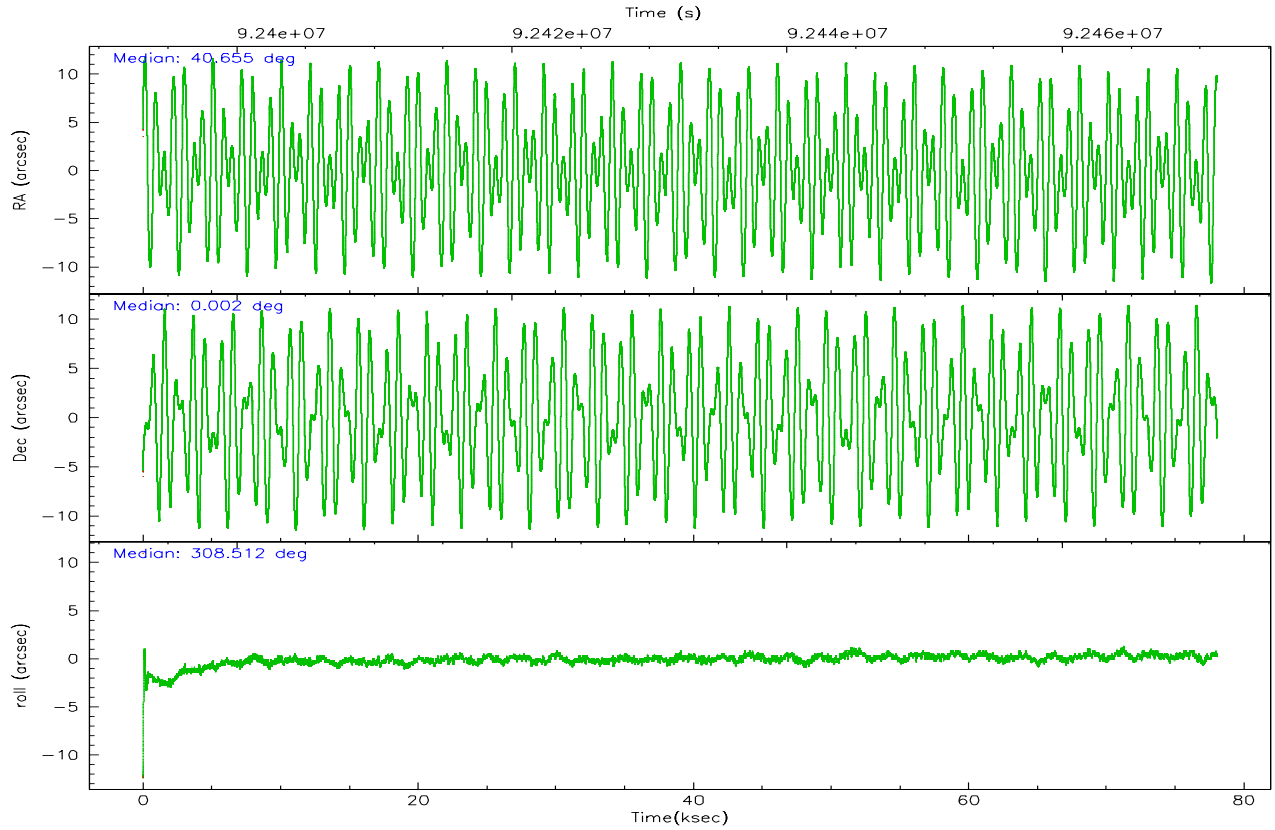
Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-56789	ACIS-56789
Grating	LETG	LETG
Data mode	FAINT	FAINT
Observation mode	POINTING	POINTING
Pointing RA	40.65530468545997	40.65530468545997
Pointing Dec	0.001903275429076973	0.001903275429076973
Pointing Roll	308.5147667823383	308.5147667823383
Roll angle	338	338
Roll tolerance	30.000000	30.000000
Roll constraint allows 180D rotation	N	N
SIM focus pos (mm)	-0.68282252473119	-0.68282252473119
SIM defocus (mm)	0.001444942264670734	0.001444942264670734
SIM translation stage pos (mm)	-182.137000445	-182.137000445
SIM translation stage offset (mm)	-7.995522658967189	-7.995522658967189
Observation start time	92393126.50046922	92393126.50046922
Observation start date	2000-12-05T09:08:15	2000-12-05T08:45:26
Observation end time	92472094.040985	92472094.040985
Observation end date	2000-12-06T06:26:35	2000-12-06T06:41:34
Read mode	TIMED	TIMED

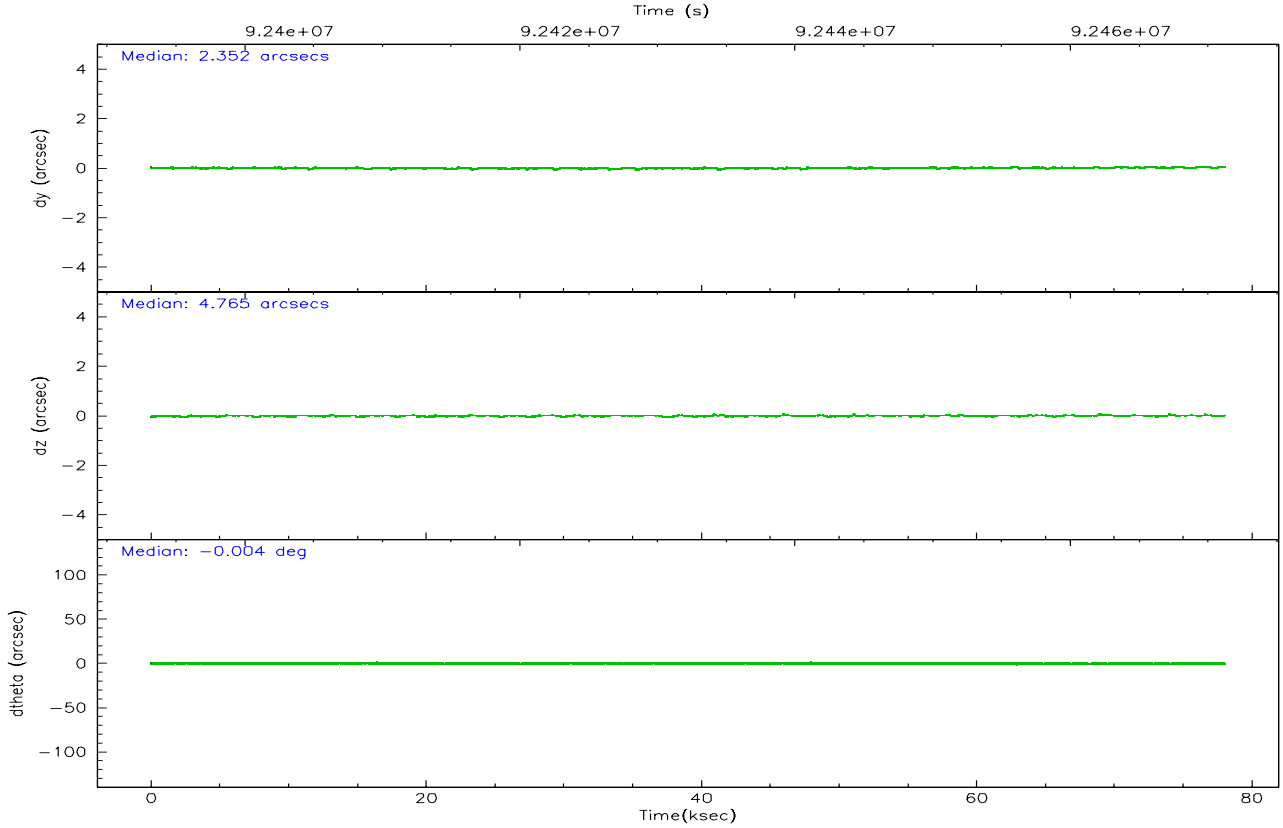
Parameter	Planned	Actual
Obspar format version number	6	6
Obspar file type	PREDICTED	ACTUAL
Obspar update status	OVERRIDE	OVERRIDE
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	1/8	1/8
Subarray start row	115	115
Subarray row count	128	128
Alternating exposures requested	N	N
Primary exposure time	0.6	0.6

2.3 Aspect


RA : 40.655 deg
Dec : 0.002 deg
Dec (arcsec)
RA (arcsec)
10
5
0
−5
−10
−10
−5
0
5
10


DY : 2.352 arcsecs
DZ : 4.765 arcsecs
DZ (arcsec)
DY (arcsec)
4
2
0
−2
−4
−4
−2
0
2
4


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: 40.655 deg
RA (arcsec)
Median: 0.002 deg
Dec (arcsec)
Median: 308.512 deg
roll (arcsec)
Time(ksec)

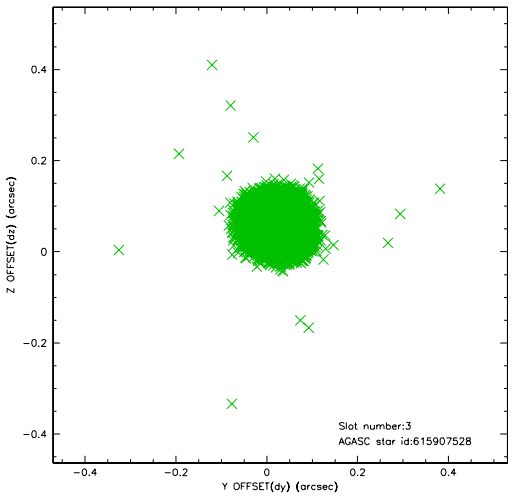

Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: 2.352 arcsecs
dy (arcsec)
Median: 4.765 arcsecs
dz (arcsec)
Median: −0.004 deg
dtheta (arcsec)
Time(ksec)

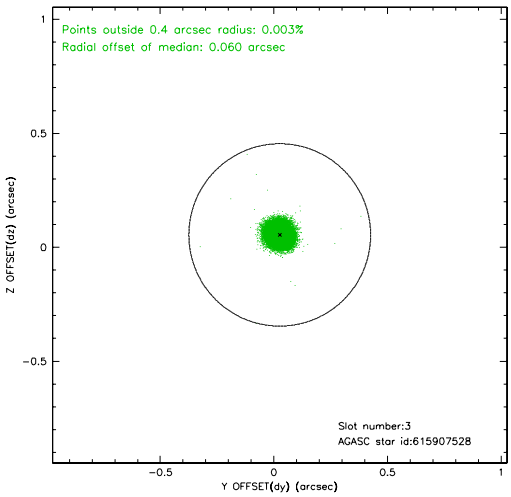
Slot Statistics

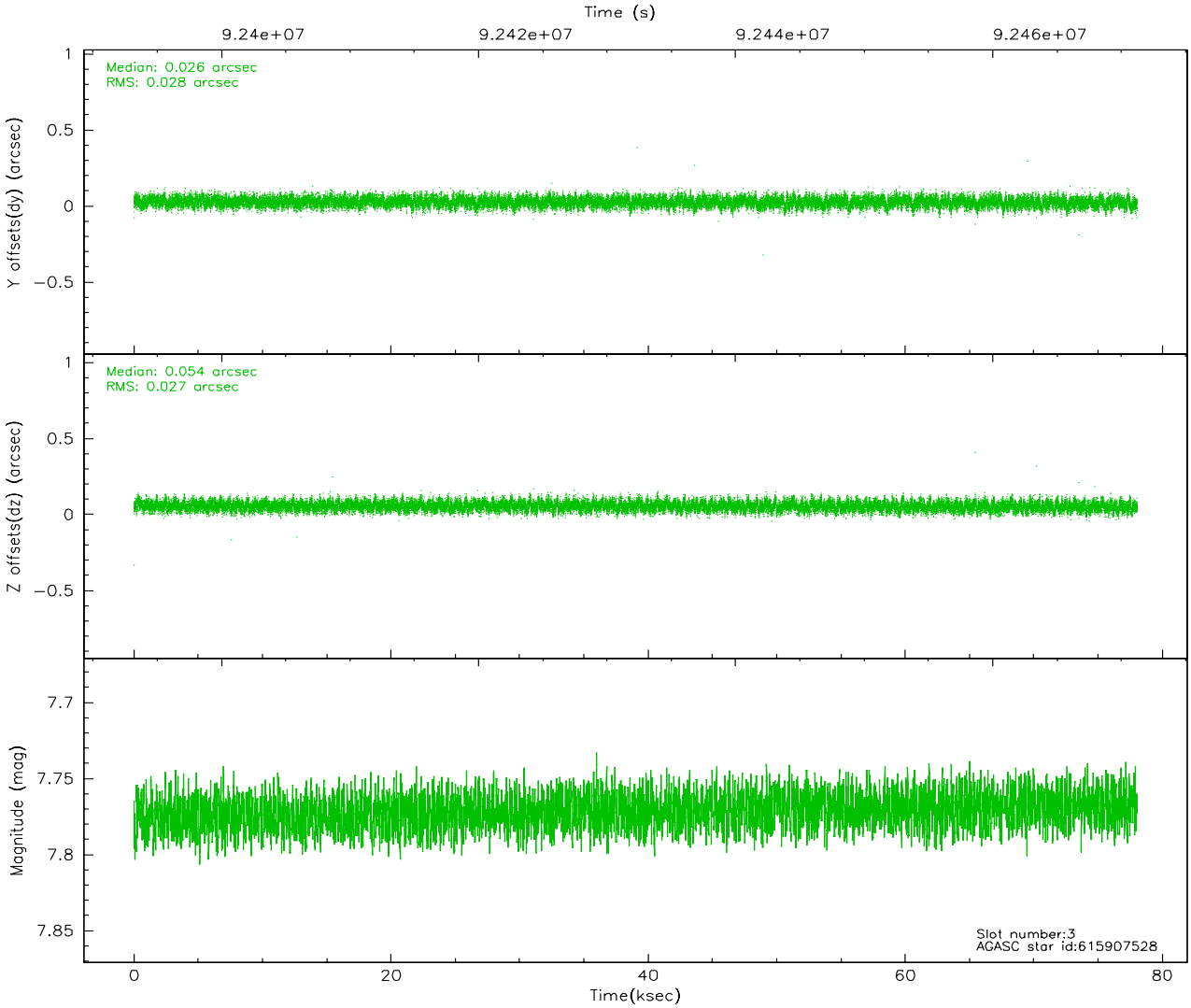
slot	status	id	mag	n_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mean_z
0	FID	ACIS-S-2	7.10	19041	-0.058	-0.074	0.007	0.012	0.000000	0.000000	-754.47	-1890.65
1	FID	ACIS-S-4	7.18	19036	0.049	0.048	0.006	0.010	0.000000	0.000000	2158.95	17.99
2	FID	ACIS-S-5	7.23	19036	-0.022	0.035	0.007	0.012	0.000000	0.000000	-1807.35	11.59
3	GUIDE	615907528	7.77	38073	0.026	0.054	0.041	0.066	41.252710	-0.191636	1965.72	1304.13
4	GUIDE	6160944	8.39	38073	-0.023	-0.060	0.052	0.082	40.821496	0.087247	215.11	709.69
5	GUIDE	615907472	8.38	38068	-0.047	-0.043	0.069	0.116	40.049578	-0.266703	-510.16	-2260.18
6	GUIDE	615913552	8.71	38064	0.108	0.073	0.066	0.109	41.235237	-0.003650	1396.07	1674.71
7	GUIDE	6166048	7.86	38073	-0.059	-0.019	0.041	0.065	40.482066	0.525874	-1781.47	731.39

2.4 Star Slots

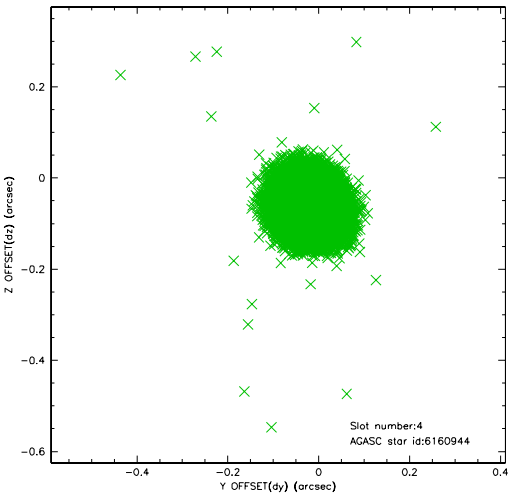
2.4.1 Slot 3

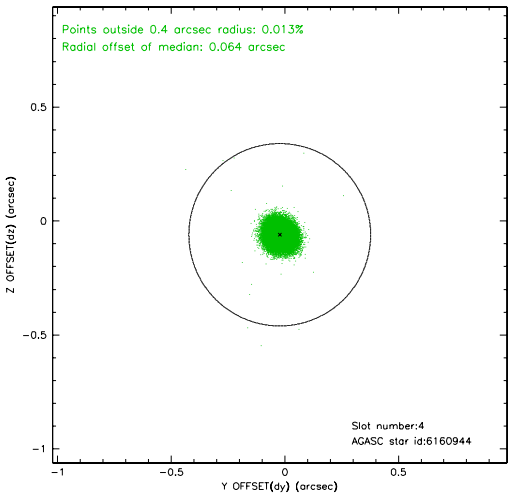


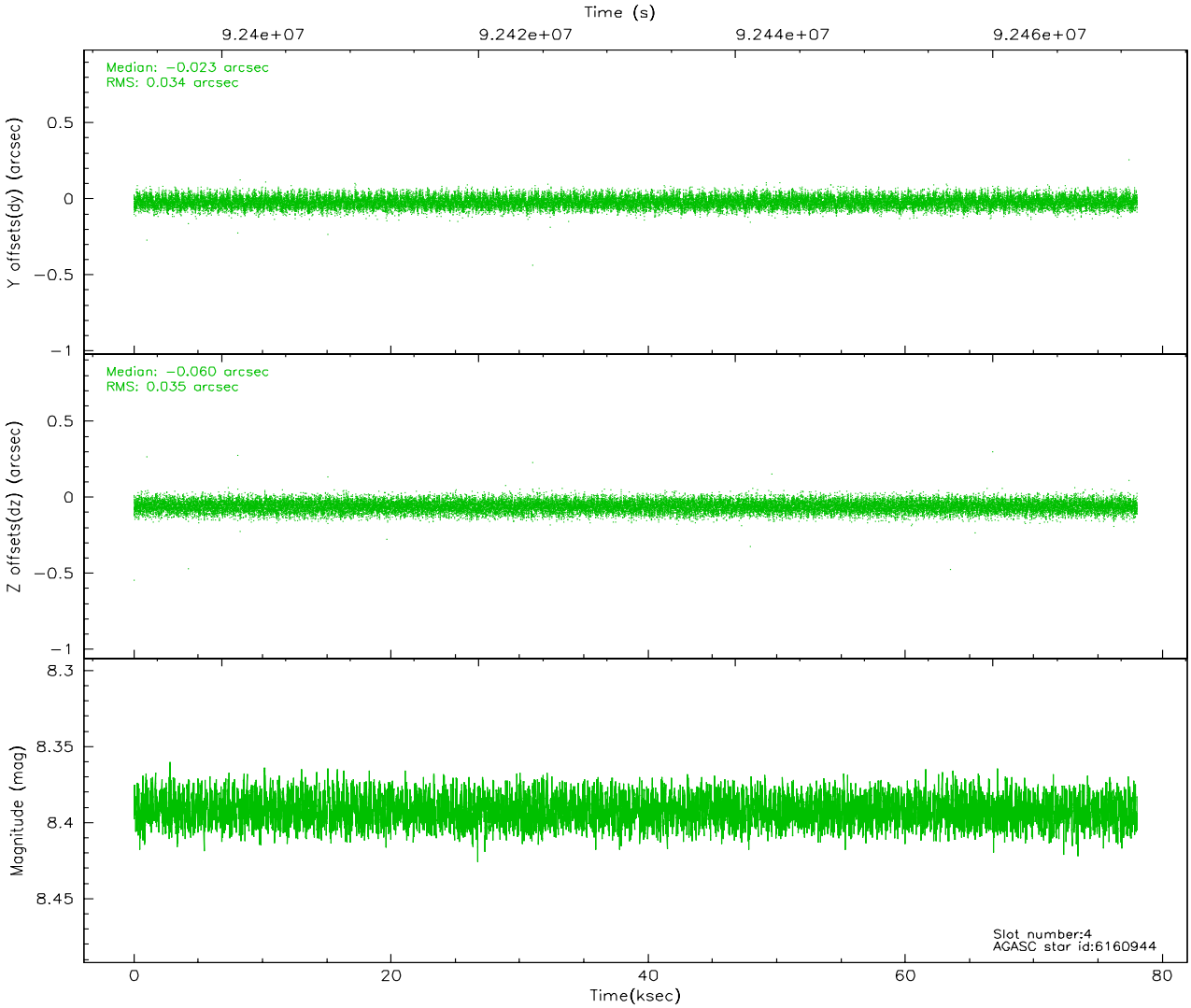




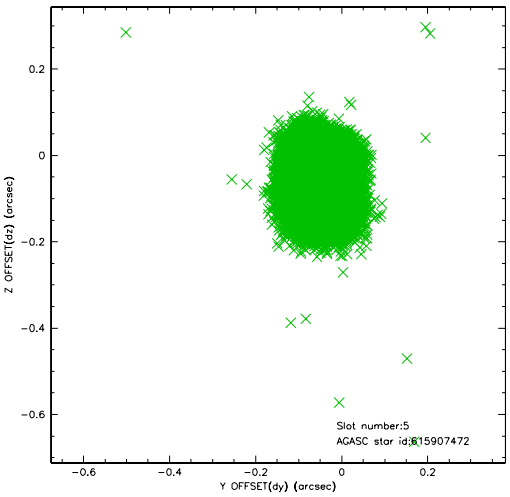
2.4.2 Slot 4

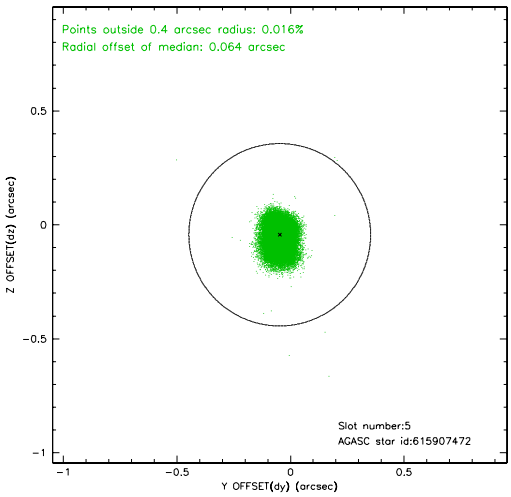

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:6160944

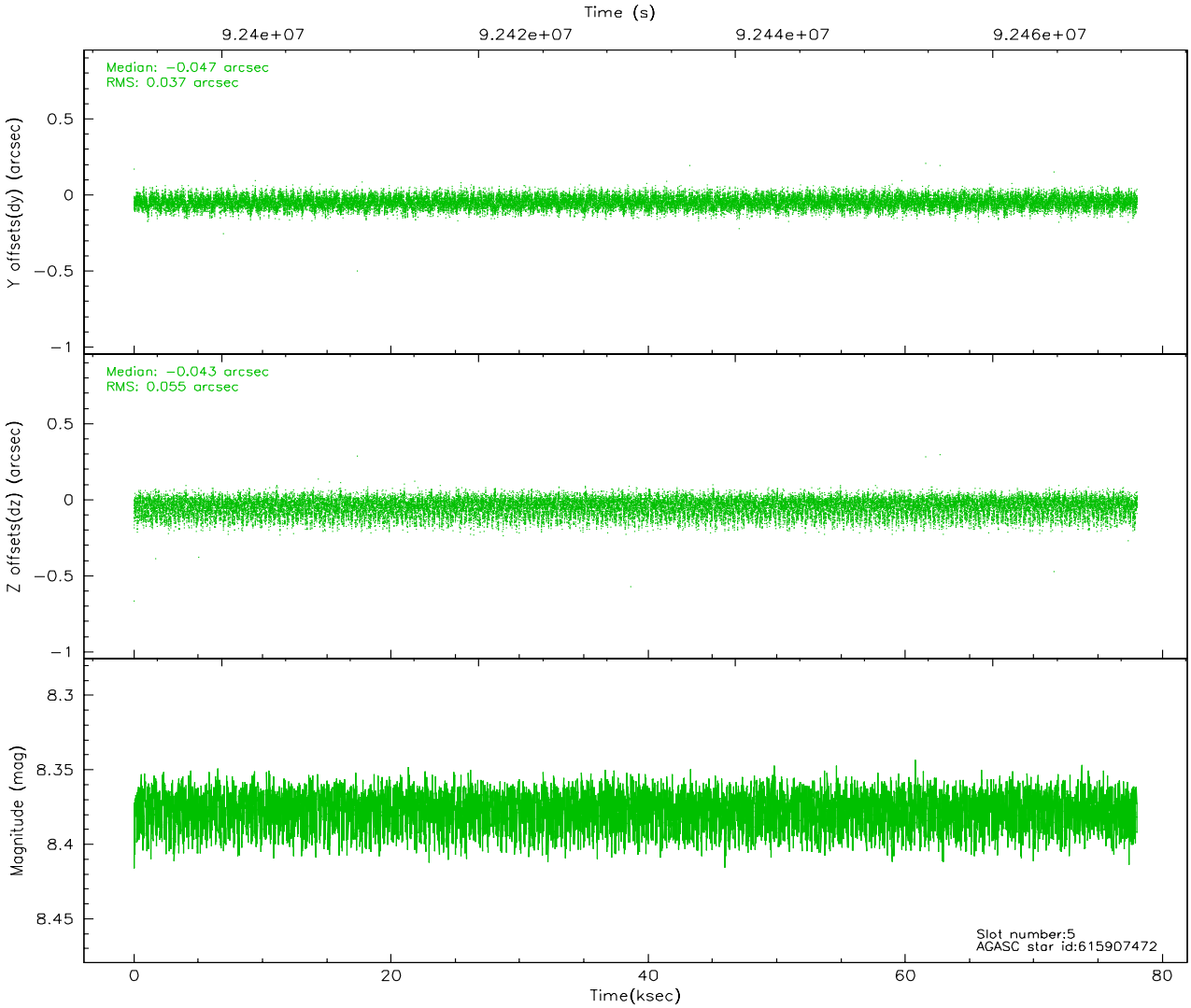

Points outside 0.4 arcsec radius: 0.013%
Radial offset of median: 0.064 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:4
AGASC star id:6160944


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: −0.023 arcsec
RMS: 0.034 arcsec
Y offsets(dy) (arcsec)
Median: −0.060 arcsec
RMS: 0.035 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:4
AGASC star id:6160944
Time(ksec)

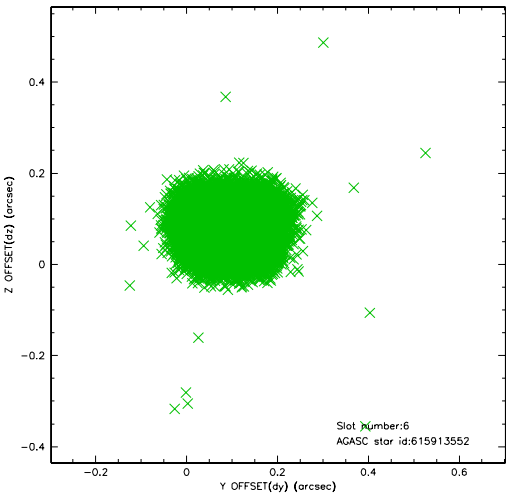
2.4.3 Slot 5

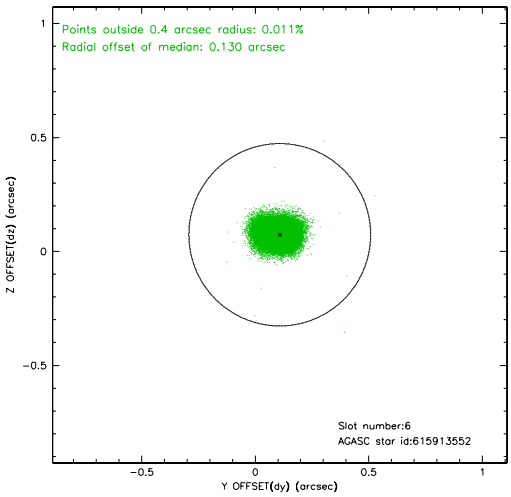

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:615907472

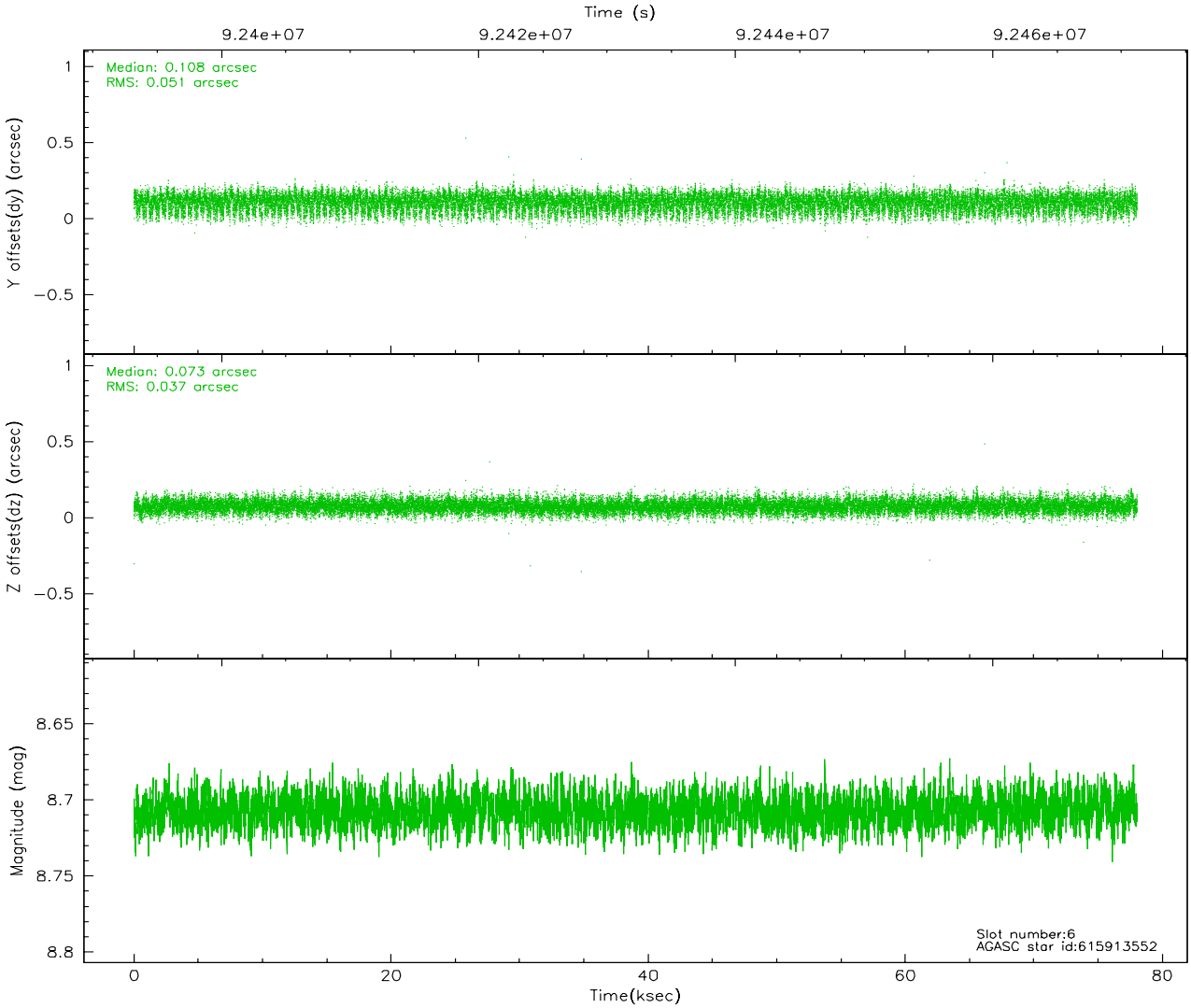

Points outside 0.4 arcsec radius: 0.016%
Radial offset of median: 0.064 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:5
AGASC star id:615907472


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: −0.047 arcsec
RMS: 0.037 arcsec
Y offsets(dy) (arcsec)
Median: −0.043 arcsec
RMS: 0.055 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:5
AGASC star id:615907472
Time(ksec)

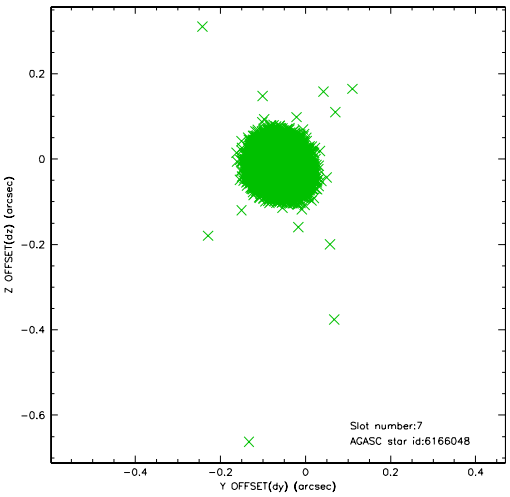
2.4.4 Slot 6

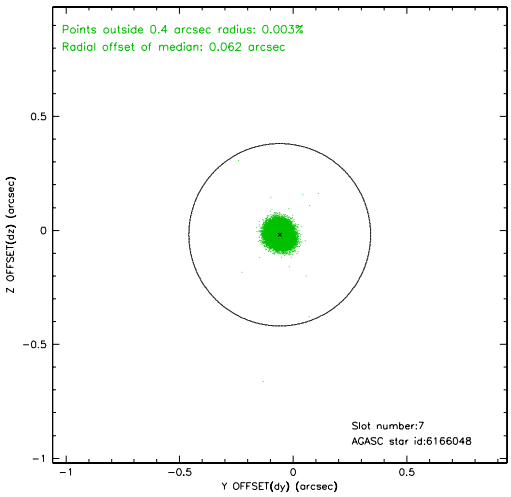

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:615913552

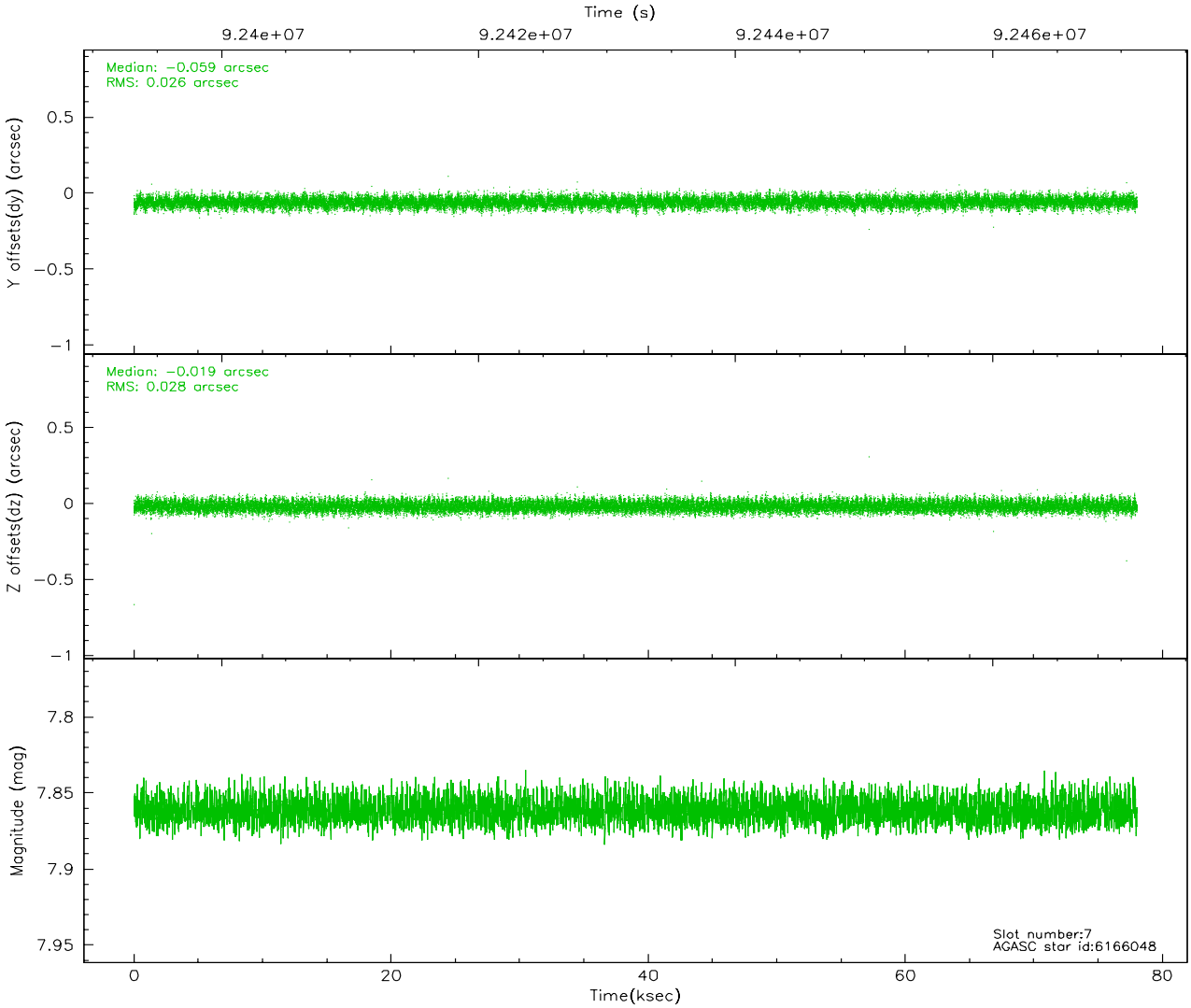

Points outside 0.4 arcsec radius: 0.011%
Radial offset of median: 0.130 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:6
AGASC star id:615913552


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: 0.108 arcsec
RMS: 0.051 arcsec
Y offsets(dy) (arcsec)
Median: 0.073 arcsec
RMS: 0.037 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:6
AGASC star id:615913552
Time(ksec)

2.4.5 Slot 7

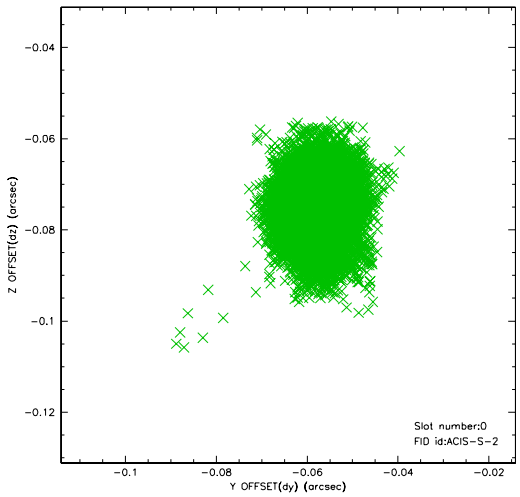

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:6166048

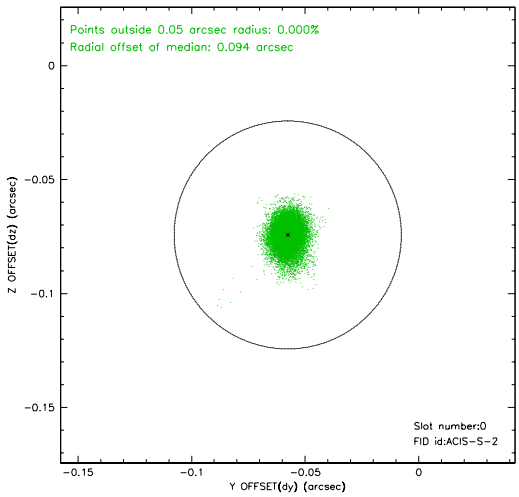

Points outside 0.4 arcsec radius: 0.003%
Radial offset of median: 0.062 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:7
AGASC star id:6166048

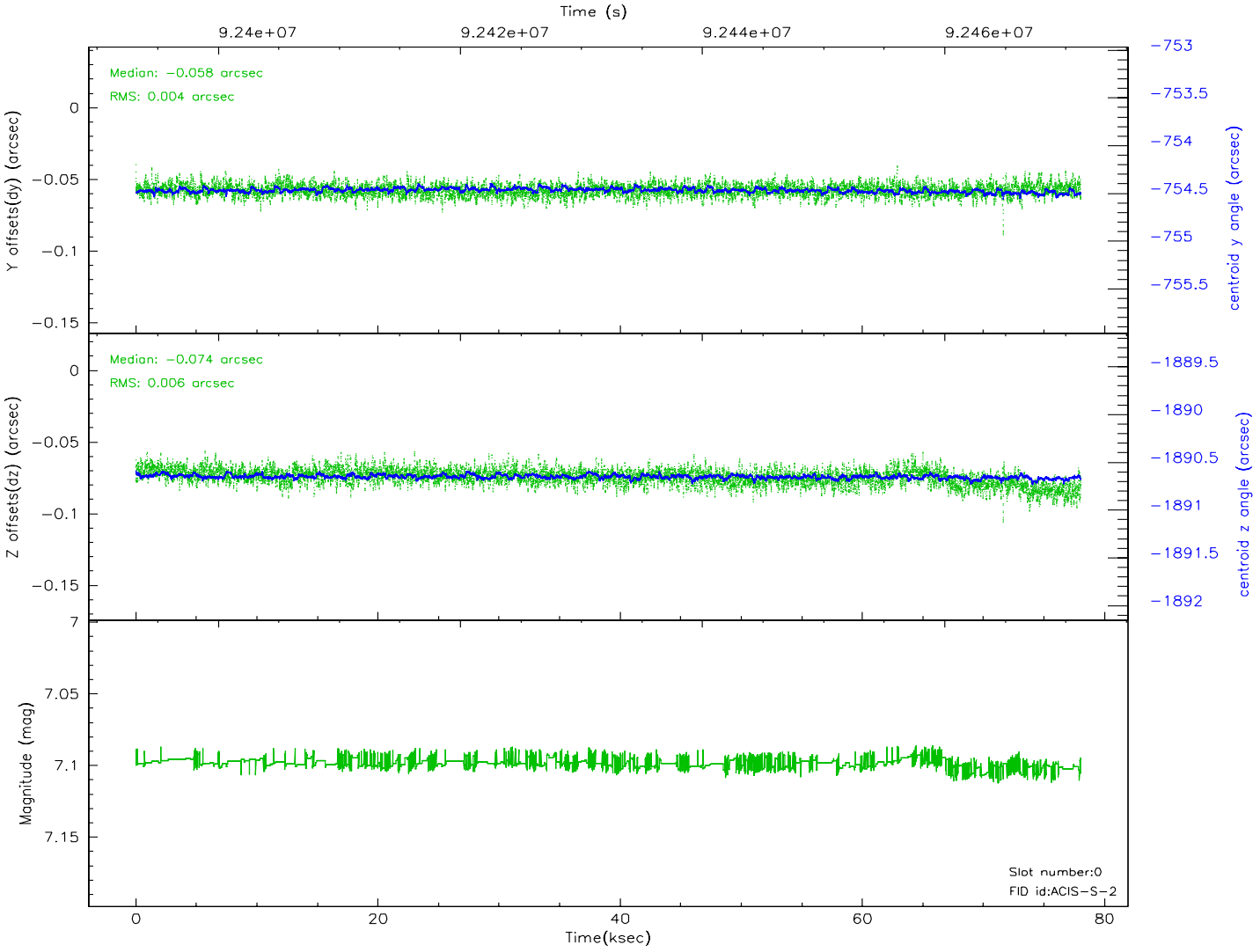

Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: −0.059 arcsec
RMS: 0.026 arcsec
Y offsets(dy) (arcsec)
Median: −0.019 arcsec
RMS: 0.028 arcsec
Z offsets(dz) (arcsec)
Magnitude (mag)
Slot number:7
AGASC star id:6166048
Time(ksec)

2.5 FID Slots

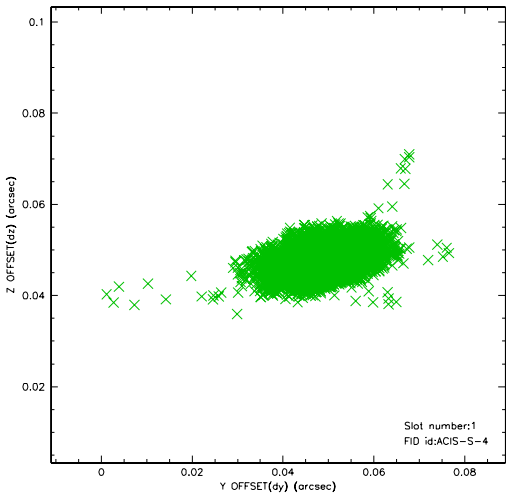
2.5.1 Slot 0

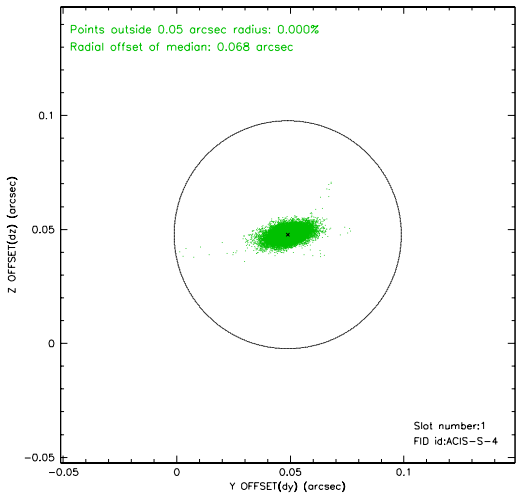


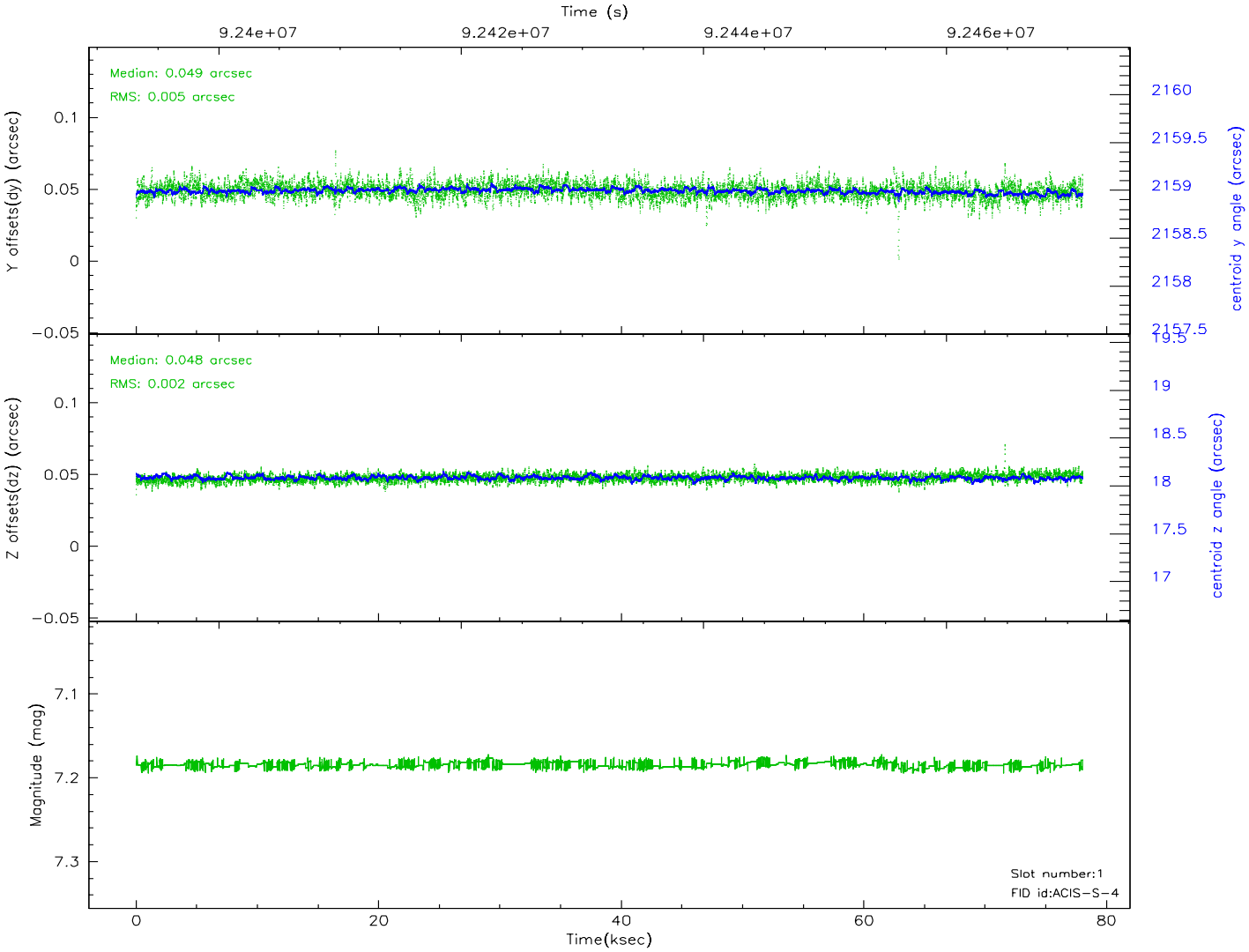




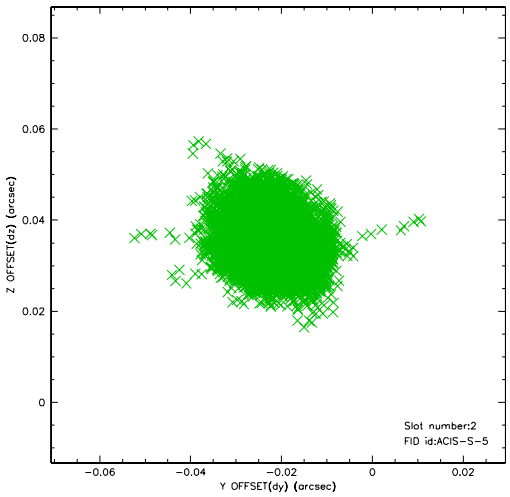
2.5.2 Slot 1

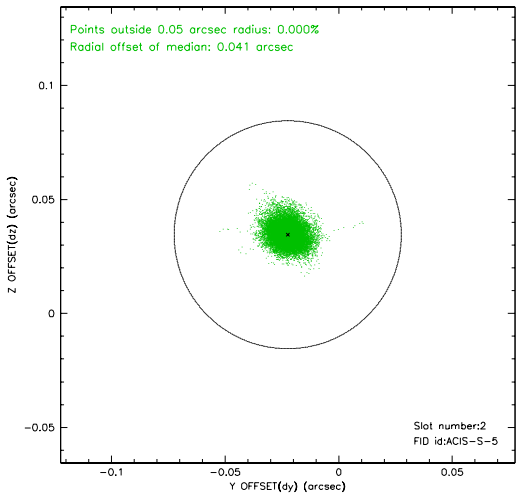

Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4

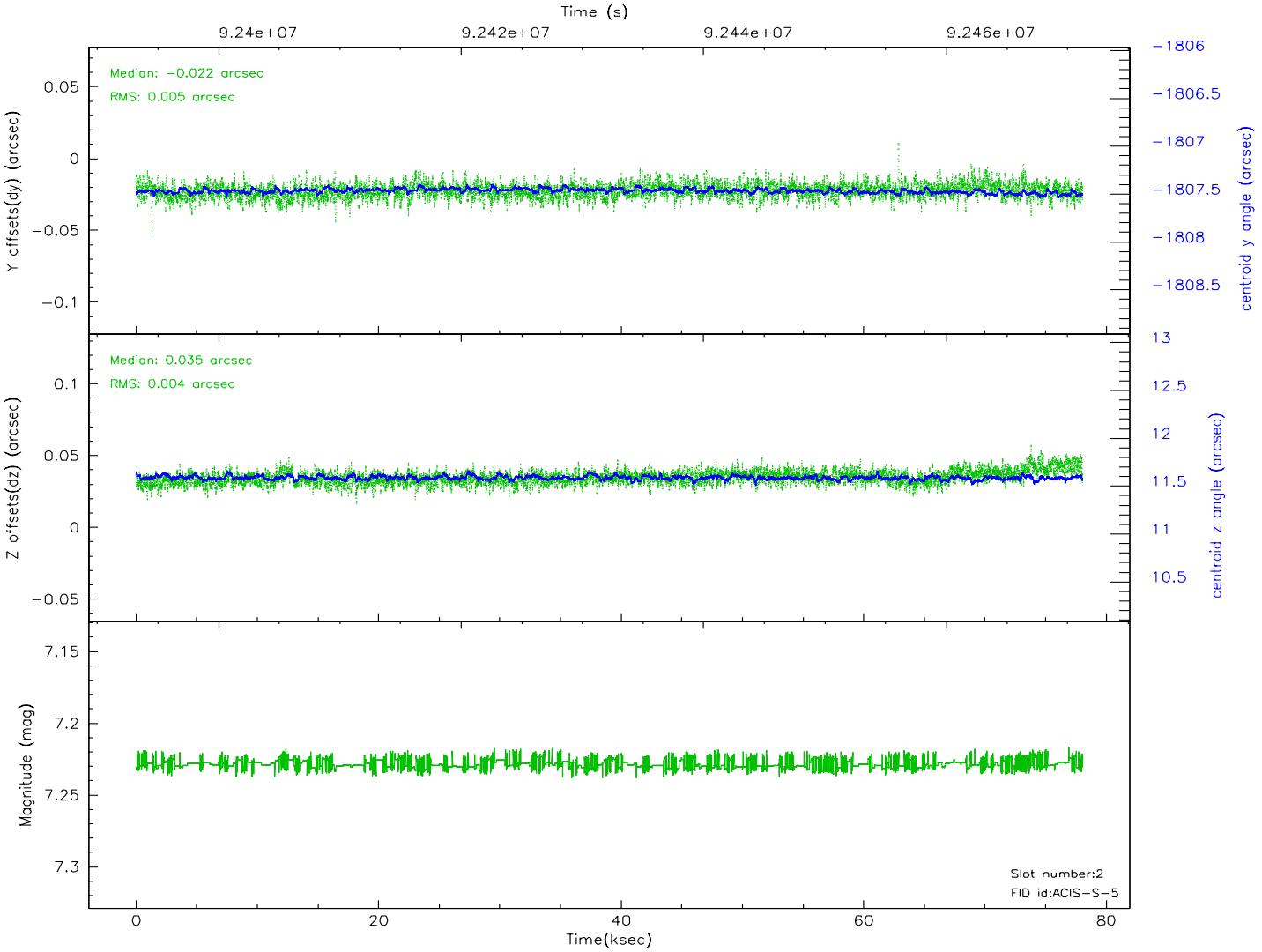

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.068 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:1
FID id:ACIS-S-4


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: 0.049 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.048 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

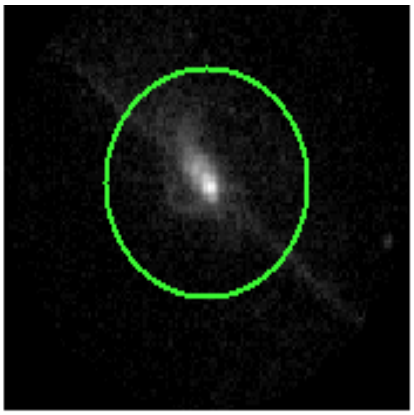

Points outside 0.05 arcsec radius: 0.000%
Radial offset of median: 0.041 arcsec
Z OFFSET(dz) (arcsec)
Y OFFSET(dy) (arcsec)
Slot number:2
FID id:ACIS-S-5


Time (s)
9.24e+07
9.242e+07
9.244e+07
9.246e+07
Median: −0.022 arcsec
RMS: 0.005 arcsec
Y offsets(dy) (arcsec)
centroid y angle (arcsec)
Median: 0.035 arcsec
RMS: 0.004 arcsec
Z offsets(dz) (arcsec)
centroid z angle (arcsec)
Magnitude (mag)
Slot number:2
FID id:ACIS-S-5
Time(ksec)

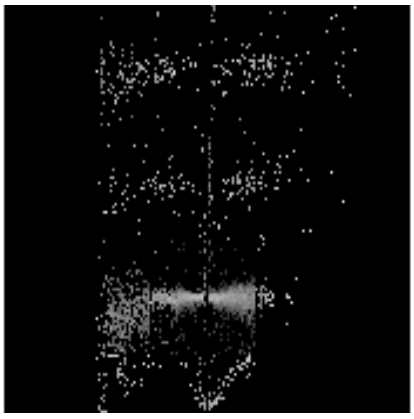
3 Gratings

3.1 LETG Arm

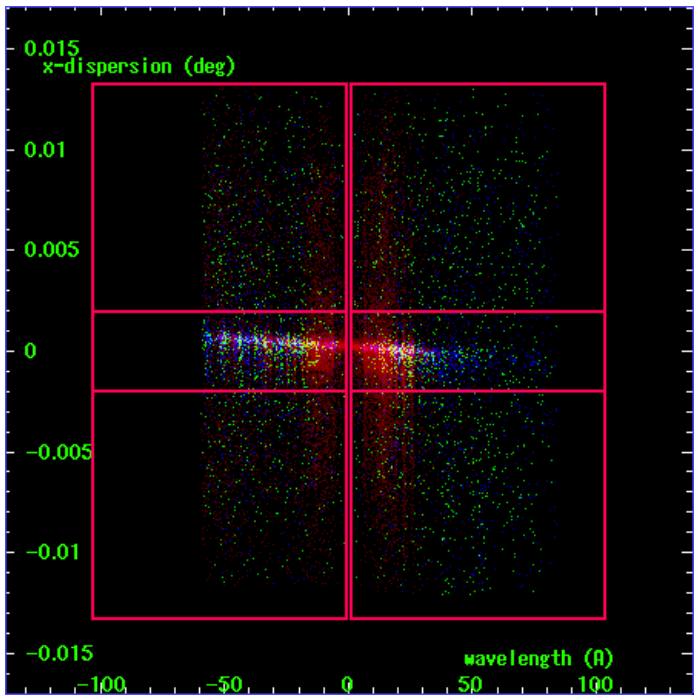
LETG Order Sort 123

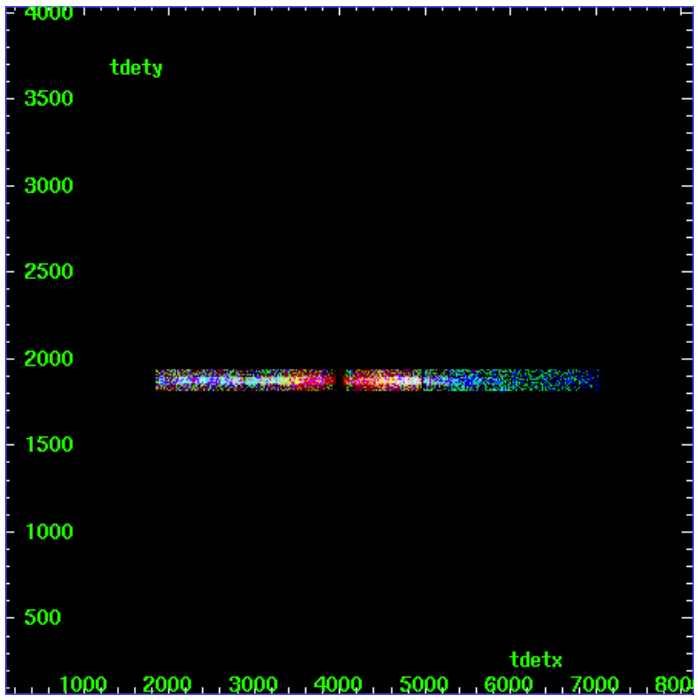


LETG Zero Order



LETG Order Sort ALL

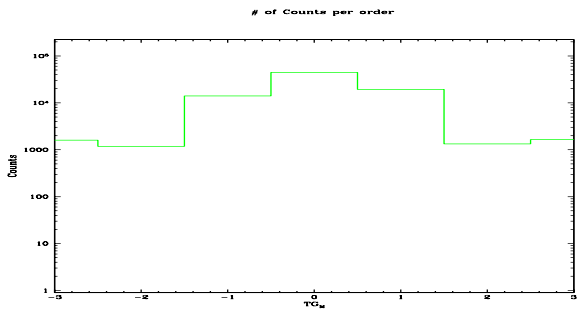


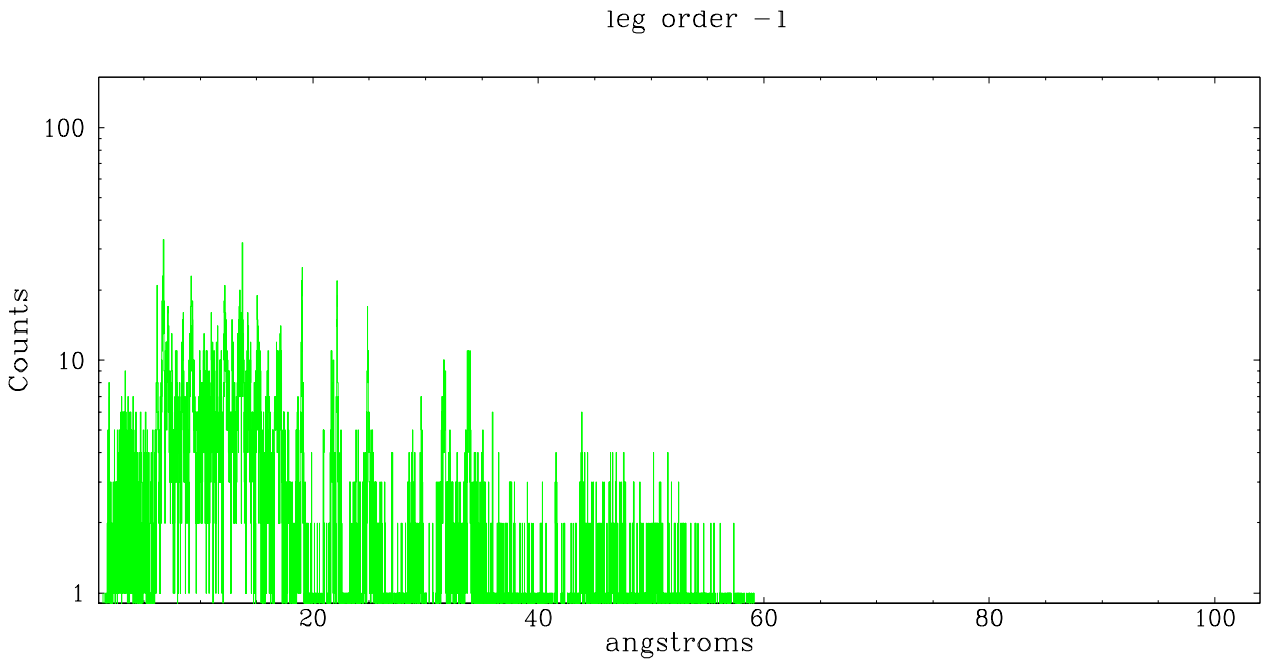


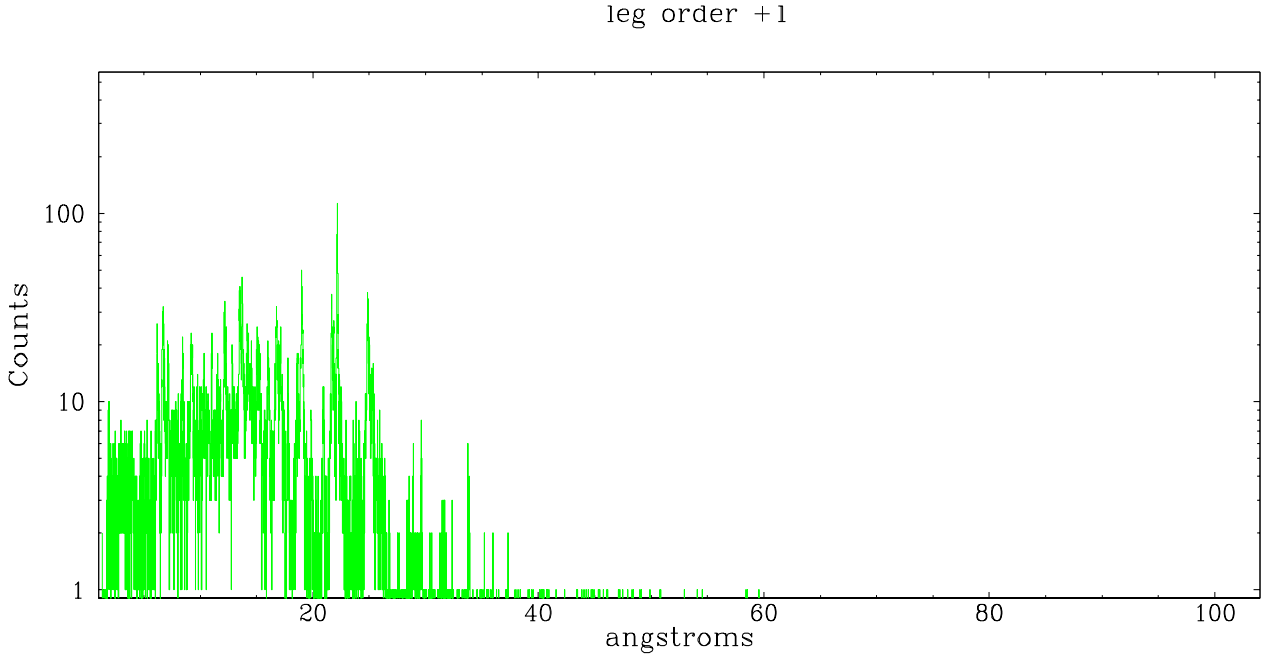
Spot Image LETG

Full Detector LETG

	order -3	order -2	order -1	order 0	order 1	order 2	order 3
Events	1601	1180	13993	44445	19299	1330	1647




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


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

A Summary

A.1 Status

V&V Scientist	David Huenemoerder
V&V Date (YYYY-MM-DD)	2009.02.09
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	77.213

A.2 Comments

```
This is an extended source. The extraction is centered on the brightest
point and used default regions widths. Custom extractions may be
desired to separate extended and core emission.

========================================================================
===


Charge time for this ObsId remains at original value of 77.213 ks,
although
with the current processing the charge time would have been 77.313
ksec.
============================================================
This obsid was reprocessed to correct minor errors in parameters used in
processing. Some of these parameters cannot be determined automatically
for this observation and were derived from spacecraft telemetry.
```