

## Reikan FoCal Aperture Sharpness Test Report

for D7100 (serial number 4341964) with 150-600mm f/5-6.3

Test run on: 26/01/2016 17:06:05 with FoCal 2.0.6.2416W

Report created on: 26/01/2016 17:07:35 with FoCal 2.0.6W

### Overview

#### Test Information

Property	Description
Data Creation FoCal Version	2.0.6.2416W
Data Analysis FoCal Version	2.0.6W
OS Version	Microsoft Windows NT 6.2.9200.0
Source Mode	Camera Mode
Image Capture Mode	JPEG
Analysis Method	Multi-ESH (RGB)
Camera Model	D7100
Firmware Version	V1.02
Serial Number	4341964
Shutter count (start)	16092
Test Colour Temp	3200 K
Lens	150-600mm f/5-6.3
Focal Length	600,0mm
Termination Reason	Success
Test ISO	100
Distance to Target	15,4m to 15,5m
Operation Mode	Normal Mode
Diffraction Limited Aperture	f/6,3
Worst Aperture	f/22,0
Optimal Aperture	f/8,0



## Test Details

### Aperture Sharpness Profile

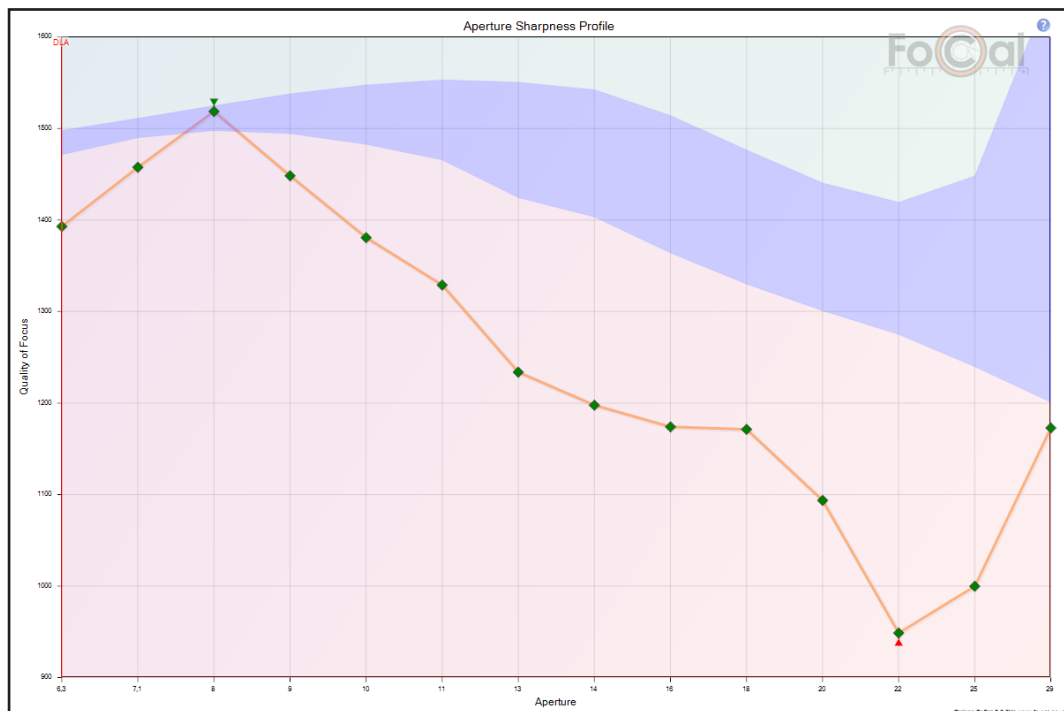
The Aperture Sharpness Profile shows how the image sharpness changes across the tested aperture range.

At small apertures (large f-numbers), diffraction will soften the image and reduce the sharpness. Where possible, the chart will include a red vertical marker at the Diffraction Limited Aperture (DLA) to indicate where diffraction will start to affect the sharpness of the image.

Lenses typically perform less well when close to maximum aperture (smallest f-number) which also results in a drop in sharpness.

If FoCal Comparison Data is available for this camera and lens a red/blue/green overlay will be added to indicate how your camera and lens performance compares with other users as follows:

- Red: indicates below-average performance,
- Blue: typical performance experienced by other users
- Green: above average performance.



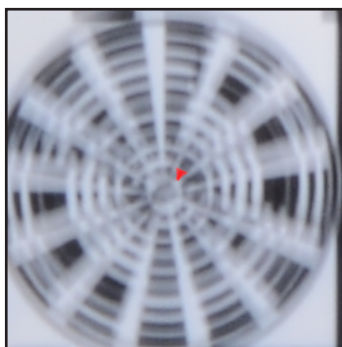
### Analysis Details

Property	Description
Astigmatism Factor Range	54,5% ( $\pm 31,1\%$ )
Spectral Power Range	R: 32% ( $\pm 0,2\%$ ) G: 32% ( $\pm 0,2\%$ ) B: 36% ( $\pm 0,3\%$ )
Red:	
Red Optimal Aperture	f/8,0
Red Peak QoF	1505,1
Green:	
Green Optimal Aperture	f/8,0
Green Peak QoF	1629,3
Blue:	
Blue Optimal Aperture	f/9,0
Blue Peak QoF	1374,9

## Aperture f/29

Aperture	f/29,0
Shutter Speed	1/13s
EV	13,4
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1172,8
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1160,9
Green Quality	1183,7
Blue Quality	1169,6
HVR	38,8%

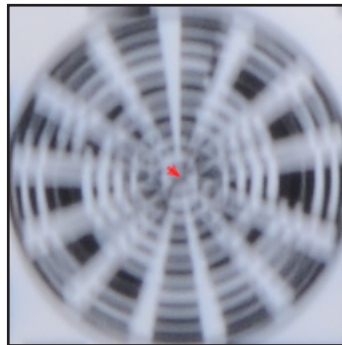
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/25

Aperture	f/25,0
Shutter Speed	1/14s
EV	13,1
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	999,8
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1037,6
Green Quality	999,1
Blue Quality	999,0
HVR	59,6%

The following image is a crop of the section of image analysed by FoCal:



## Aperture f/22

Aperture	f/22,0
Shutter Speed	1/20s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	948,7
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	962,4
Green Quality	960,9
Blue Quality	927,0
HVR	85,6%

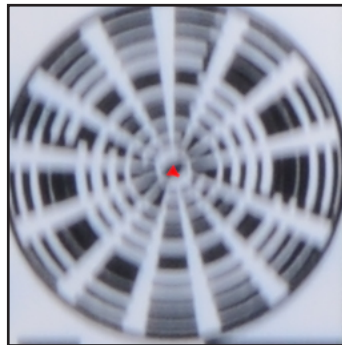
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/20

Aperture	f/20,0
Shutter Speed	1/25s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1093,6
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1074,8
Green Quality	1118,1
Blue Quality	1099,6
HVR	72,8%

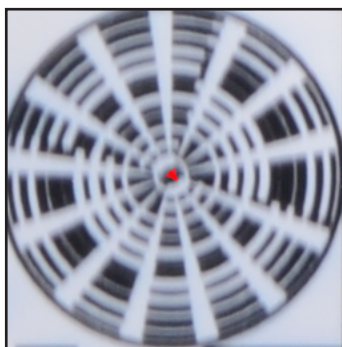
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/18

Aperture	f/18,0
Shutter Speed	1/30s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1171,3
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1142,8
Green Quality	1197,5
Blue Quality	1178,8
HVR	56,0%

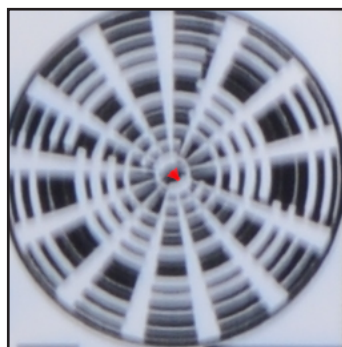
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/16

Aperture	f/16,0
Shutter Speed	1/40s
EV	13,3
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1174,0
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1151,8
Green Quality	1206,4
Blue Quality	1169,7
HVR	70,7%

The following image is a crop of the section of image analysed by FoCal:

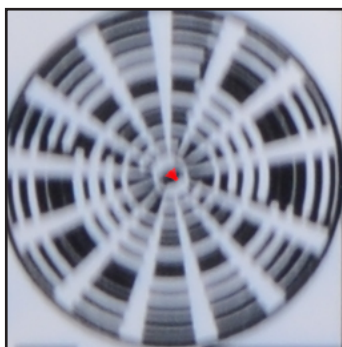




## Aperture f/14

Aperture	f/14,0
Shutter Speed	1/50s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1197,7
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1190,5
Green Quality	1217,0
Blue Quality	1182,7
HVR	71,2%

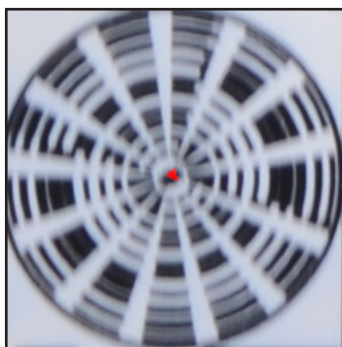
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/13

Aperture	f/13,0
Shutter Speed	1/59s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1233,8
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1218,1
Green Quality	1266,2
Blue Quality	1217,5
HVR	62,5%

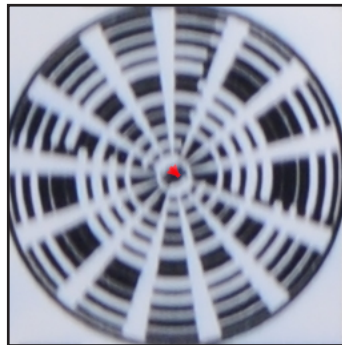
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/11

Aperture	f/11,0
Shutter Speed	1/80s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1329,0
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/32/36
Red Quality	1318,7
Green Quality	1380,6
Blue Quality	1287,4
HVR	45,5%

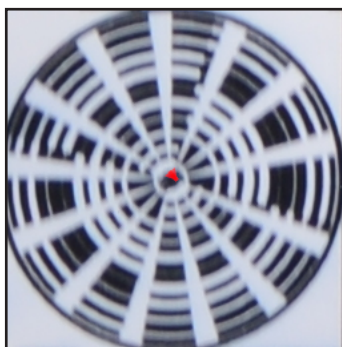
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/10

Aperture	f/10,0
Shutter Speed	1/100s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1380,8
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/32/36
Red Quality	1370,2
Green Quality	1451,3
Blue Quality	1327,3
HVR	38,4%

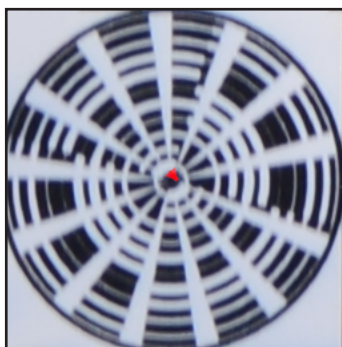
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/9

Aperture	f/9,0
Shutter Speed	1/125s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1448,4
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	31/32/36
Red Quality	1449,6
Green Quality	1535,7
Blue Quality	1374,9
HVR	29,4%

The following image is a crop of the section of image analysed by FoCal:



## Aperture f/8

Aperture	f/8,0
Shutter Speed	1/160s
EV	13,3
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1518,7
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	31/32/36
Red Quality	1505,1
Green Quality	1629,3
Blue Quality	1439,1
HVR	23,9%

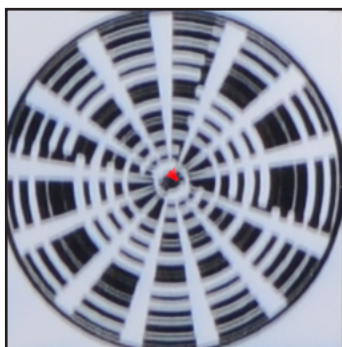
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/7,1

Aperture	f/7,1
Shutter Speed	1/200s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1457,7
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1427,7
Green Quality	1509,5
Blue Quality	1437,2
HVR	30,1%

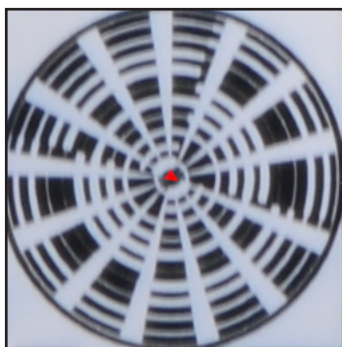
The following image is a crop of the section of image analysed by FoCal:



## Aperture f/6,3

Aperture	f/6,3
Shutter Speed	1/250s
EV	13,2
Colour Temperature	Unknown
Camera Temperature	Unknown
Quality Measure	1393,0
Optimised	Yes
Ignored	No
Spectral Power (R/G/B)	32/33/36
Red Quality	1360,1
Green Quality	1429,6
Blue Quality	1388,4
HVR	23,4%

The following image is a crop of the section of image analysed by FoCal:





## Aperture Sharpness Profile

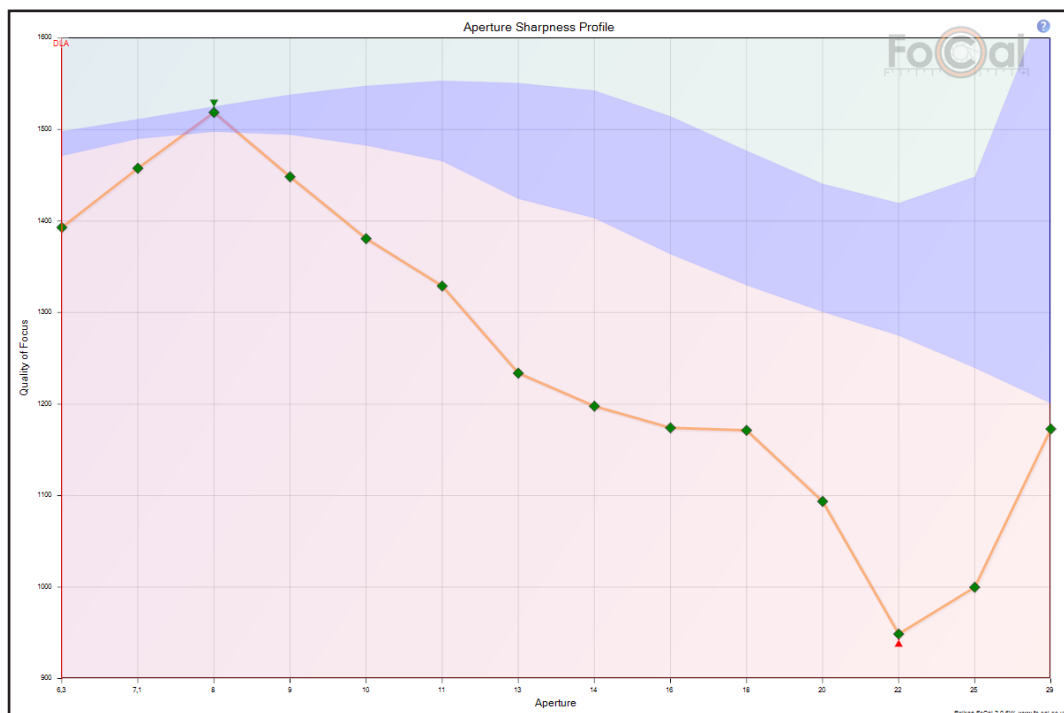
The Aperture Sharpness Profile shows how the image sharpness changes across the tested aperture range.

At small apertures (large f-numbers), diffraction will soften the image and reduce the sharpness. Where possible, the chart will include a red vertical marker at the Diffraction Limited Aperture (DLA) to indicate where diffraction will start to affect the sharpness of the image.

Lenses typically perform less well when close to maximum aperture (smallest f-number) which also results in a drop in sharpness.

If FoCal Comparison Data is available for this camera and lens a red/blue/green overlay will be added to indicate how your camera and lens performance compares with other users as follows:

- Red: indicates below-average performance,
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- Green: above average performance.

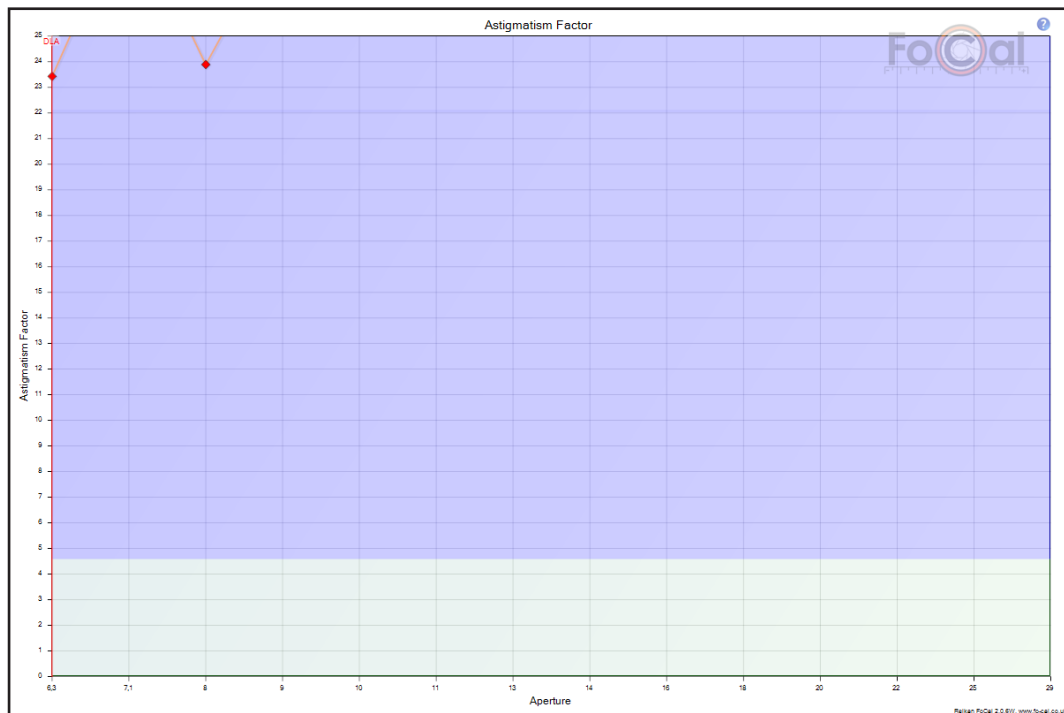


## Astigmatism Factor

The Astigmatism Factor chart shows the image quality ratio between the horizontal and vertical analysis directions. If this value varies by more than 10% across the range, or the average value is more than  $\pm 5\%$  then your lens may be suffering from some decentering or lens element alignment issues.

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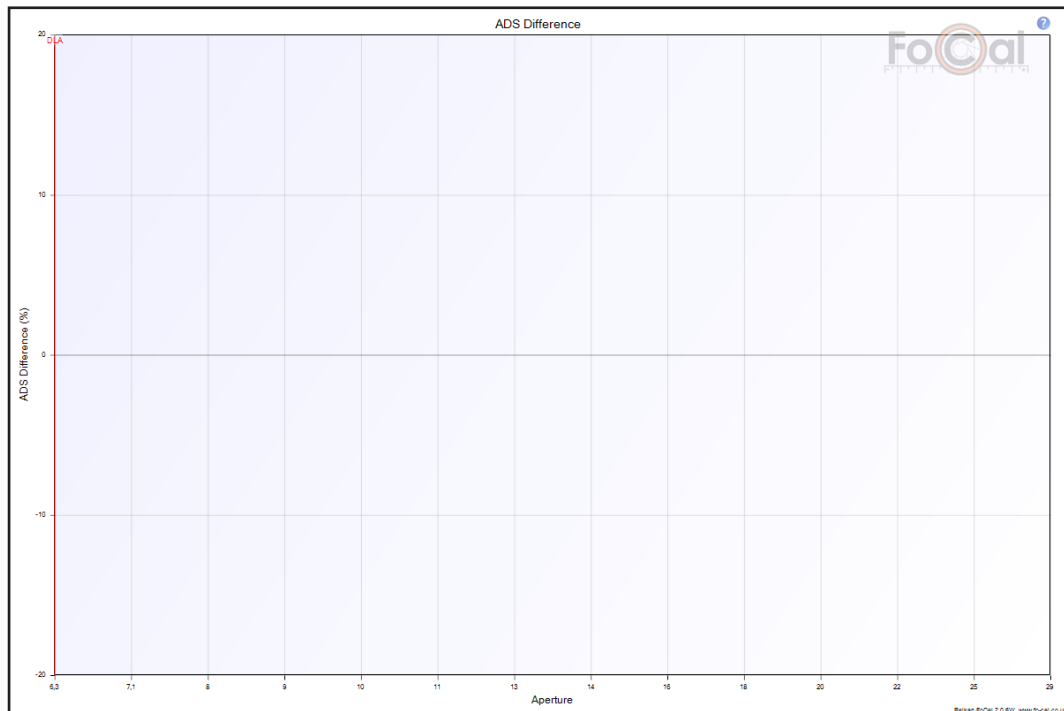
## ADS Difference

The ADS Difference chart shows the point-by-point difference between the data captured from your camera and lens and the processed data from many FoCal users.

The blue line indicates the difference between your data and the median value of other users, while the green area indicates the 25th and 75th percentile data from other users. The median of all the points is shown as a blue horizontal marker line.

Where possible, the chart will include a red vertical marker at the Diffraction Limited Aperture (DLA) to indicate where diffraction will start to affect the sharpness of the image.

A large variation or a median variation significantly away from the zero may indicate that your lens is not performing in the same way as a typical lens.



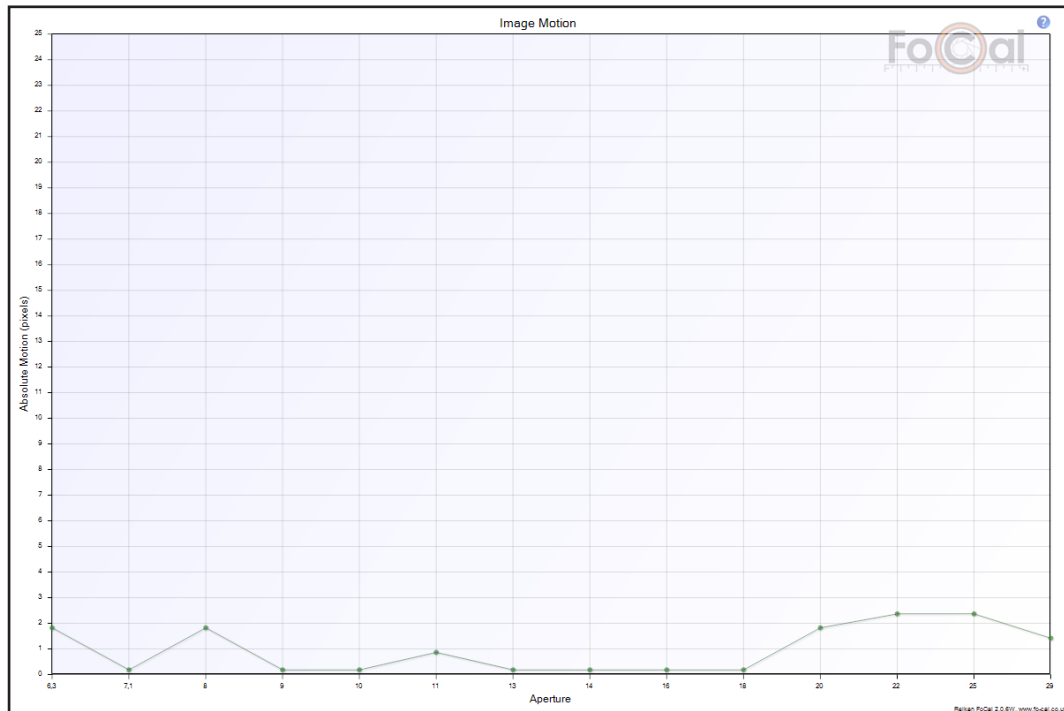
## Image Motion

As changes are made inside a lens (e.g. focussing or aperture change), the image projected onto the sensor can move slightly. The Image Motion chart shows the absolute number of pixels moved for each image compared to the first image captured.

Typically, the Image Motion should be significantly less than 10 pixels, and a repeatable higher value could indicate misaligned lens optics, camera movement or vibration during the test or other environmental or lens issues.

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## Corner Brightness Profile

The Corner Brightness Profile chart shows the relative change in brightness of the corners of the full-frame image through the test. The results use the centre of the image to compensate for common exposure differences. If the corners of the frame are unchanging and not completely dark, this chart can give an idea of the vignetting produced by this lens.

Be aware that a lot of cameras have in-camera lens corrections which are applied to JPEG images, so for a true indication of potential vignetting you should run the test with raw images.

