

Nikon AF Nikkor 85mm f/1.8D Lens Review



Introduction

Nikon AF Nikkor 85mm f/1.8D, first introduced in 1994, is one of two 85mm primes in Nikon's modern lens lineup (the other one being AF Nikkor 85mm f/1.4D). The lens, along with its faster f/1.4 cousin, has gone through four (five if we count the specialized 80mm f/2 variant) revisions and was initially available as a non AI version (introduced circa 1965), then as an AI variant (introduced in 1973), later replaced by an AiS version (introduced circa 1988) and finally as the AF-D variant. Priced at ~US\$400 (as of May 2008), the lens remains quite affordable for mainstream users (although it is worth noting that when compared to its main rival's Canon EF 85mm f/1.8 USM, Nikon's lens looks a little bit outdated and overpriced).

The optical construction of the lens consists of 6 elements in 6 groups - pretty conventional optical design with no special optical elements incorporated. The build quality of the lens is pretty decent, but not exceptional - the barrel is made out of plastic and by no means comes even close to the quality sported by some high end lenses from Leica and Carl Zeiss. Still, the lens does not feel flimsy at all and there is no wobbling inside or out. This can be partially attributed to the fact that the lens implement rear focusing optical design, so the lens cams do not extend during focusing, keeping the overall length of the lens constant. And at 72 x 59mm (2.3 x 3.8in) and 380g (13.2oz), the lens is pretty compact and light for a telephoto prime.





Like all AF-D designated lenses, AF Nikkor 85mm f/1.8D does not have a dedicated focusing motor. The lens still supports auto-focusing as long as your camera has a drive screw, which locks into a slot on the base of the mount and rotates the lens to move it into focus. Fortunately for the owners of entry level cameras like D40/D40x, which don't have a focusing screw driver, as well as those of you who don't want to rely on camera electronics to control the lens, AF Nikkor 85mm f/1.8D will still allow you to manual focus as well as to manually switch aperture settings - the lens incorporates a thin, but fully rubberized for comfortable grip and quite smooth, focusing ring as well as a dedicated aperture ring. The minimum aperture setting is f/16 and the ring moves in one full f-stop increments (except in the f/1.8-f/2 range). The lens accepts 62mm screw-in type filters and has the minimum focusing distance of 85cm (2.8ft) where it produces the maximum magnification of 1:9.2.



The aperture ring moves from f/1.8 to f/16 in one full f-stop increments (except in the f/1.8-f/2 range). f/16 is marked with different color - once the aperture ring is moved into this position, it can be locked in, using a switch on the right hand side of the aperture ring. This would enable camera's electronic aperture control - aperture levels can then be set directly from the camera and the lens will be stopped down automatically.

The lens sports a DOF scale, which can be quite useful in manual focusing the lens. The scale has 2 markings at f/11 and f/16, which makes it somewhat harder to use. The focusing distance scale has markings from 0.85m to 5m - there are no markings between 5m to infinity.



The groove in the base of the mount (left back side, partially obscured by the mount) is used in all AiS lenses to instruct the camera that the aperture stop down is linear. This allows the camera to control all aperture settings electronically (only if the aperture ring is locked at f/16) - once an aperture level is set in the camera and the shutter button depressed, the camera pulls the aperture level (right hand side) to open up the diaphragm to the required level.

AF function is possible with the use of the slotted screw (bottom side of the mount), which is turned by an AF pin, which extends from the camera to focus the lens mechanically.

The lens incorporates ROM contacts (not visible here), which transfer distance information from the focal plane to the object to allow for advanced 3D Matrix Metering.

The factory box contains Nikon AF Nikkor 85mm f/1.8D lens, front and rear caps, NH-23 metal lens hood, manual and registration cards. Nikon AF Nikkor 85mm f/1.8D is a full frame lens, so when used on APS-C type bodies with 1.6x crop sensors, the field of view of the lens will resemble that of a 136mm prime on a full frame camera. Like all AF-D type lenses, AF Nikkor 85mm f/1.8D is easily adaptable to a number of other cameras, including Canon's FF and APS-C type bodies as well as cameras with 4/3 mounts. Within the scope of this review, the lens was tested on a full frame Nikon D3, APS-C type Canon Digital Rebel XTi and full frame Canon 5D. When using the lens on Canon bodies, I relied on a generic non AF-chipped Nikon F to Canon EF adapter.

Summary	
Lens Composition	6 elements in 6 groups
Angular Field	~28 degrees
Minimum Focus	85cm/2.8ft
Focusing Action	AF/MF
f-stop Scale	f/1.8-f/16, camera/manual
Filter Size	62mm
Lens Hood	BH-23 (included)
Weight	380gg/13.2oz
Dimensions	71.5x58.5mm/2.3x2.8"
Lens Case	CL-15S (optional)

Field Tests

When it comes down to handling, AF Nikkor 85mm f/1.8D behaves pretty much like any other medium telephoto lens out there. Pretty much... There are two notable exceptions worth mentioning here. Firstly, unlike lenses from its main rival Canon, all AF-D lenses, including AF Nikkor 85mm f/1.8D, supports both manual as well as electronic (in-camera) control. As mentioned in the overview section, the lens sports dedicated focusing and aperture rings, which provide full control over the lens. You might ask why this matters so much. Well, the major reason for excitement here is that with a fully manual aperture and focus controls, the lens becomes a great candidate for adaption to an alternative mount. Namely to any Canon EF/EF-S system or even any 4/3 system. Granted, after adaption, you would naturally loose not only auto-focusing and electronic aperture control, but also any advanced feature such as 3D Matrix Metering. Still, if you don't shy the idea of finding a great piece of optics even if it means operating it manually, then AF Nikkor 85mm f/1.8D (as well as any other AF-D Nikkor) is the lens to explore.

The second issue worth mentioning here is the AF system of the lens. Back in the day when Nikon was upgrading its Ai series of lenses, the company decided to implement AF using a purely mechanical system, partly to keep the costs down, partly to keep backward compatibility with thousands of non-Ai, Ai'D, Ai and Ai-S lenses out there. The resulting AF system might have been considered good back then, but is totally outdated in the modern day and age, requiring replacement sooner rather than later. The AF operations on 85mm f/1.8D are just noisy and slow when compared to the modern ultra-sonic AFs.

Speaking of manual focusing. While the lens offers a dedicated focusing ring, precise focusing is not necessarily as easy as with some dedicated manual focus lenses of old time. This is simply due to the relatively short distance the focusing ring has to travel - the ring rotates about 100 degrees when going from the closeup of 85cm to the infinity, with slightly more spacing allowed for in the shorter focus range. Compare this to 270-360 degree rotations implemented in some fully manual lenses. And unlike with wide angle lenses, focusing errors are not going to be masked here due to a relatively narrow field of view.

Moving on... Nikon AF Nikkor 85mm f/1.8D showed very solid overall performance in the field. The lens showed excellent resolving capacity at moderate and small aperture levels - f/8 through f/11 seemed to be the best range for the lens. Images here remained sharp across the entire picture frame (at least visually there was no noticeable degradation in image quality). Wider aperture settings, especially f/1.8, were somewhat of a mixed bag. Here the lens seemed to struggle a little bit, showcasing some softness both in the center, as well as around borders. Furthermore, the lens seemed to perform slightly worse at close distances than at infinity - that was more noticeable at wider apertures than at smaller ones, making f/1.8 pretty challenging at closeup distances. For example, compare center image sharpness of flower and music band pictures in the image gallery. Both were taken at f/1.8, but at different distances - flowers were shot at 85cm, while the music band was shot at infinity (both were shot with an AF enabled).



ISO 400, 1/160, f/1.8, 85mm (Nikon D3)

When shot at f/1.8, the lens produced well rounded, uniformly lit out-of-focus highlights, which often carried harsh edge outlining (common issue in lenses with over-correction for spherical aberration). The effect might become too distracting in some situations, affecting the picture's feel of 'bokeh'. On a positive side, there was no sign of double-edging around OOF objects and contrast transitions in near and far OOF areas were pretty smooth, which generally helped isolate in-focus targets.



Vignetting @ f/1.8 - full frame vs 1.6x crop

The lens showcases pretty heavy vignetting at f/1.8 on a full frame camera, which continues to persist at f/2.8 and even f/4 (albeit in lower amount). Once stopped down to f/5.6, vignetting is completely gone. On an APS-C camera, the lens takes full advantage of the smaller sensor with reduced image circle coverage and shows very minimal amount of vignetting at f/1.8 and practically no vignetting at f/2.8 and beyond. In general, vignetting is relatively easy to correct during post-processing and some modern cameras like Nikon D3 even offer an in-camera correction - just select one of the pre-programmed levels to activate the correction.

Nikon AF Nikkor 85mm f/1.8D fell prone to occasional flare, the amount of which varied in different situations. At wide apertures, the lens showed pretty heavy reflective flare, shown in the image below, as well as veiling flare, which greatly reduced overall image contrast, with the lens pointed up to ~45 degree angle towards a direct light source. However, at smaller apertures (f/8-f/16), the amount of flare and aperture ghosting were quite low, even with a light source directly in the frame. Obviously you can reduce the amount of flare by using a lens hood, or by simply composing your image in a different manner - just be aware of this weakness.

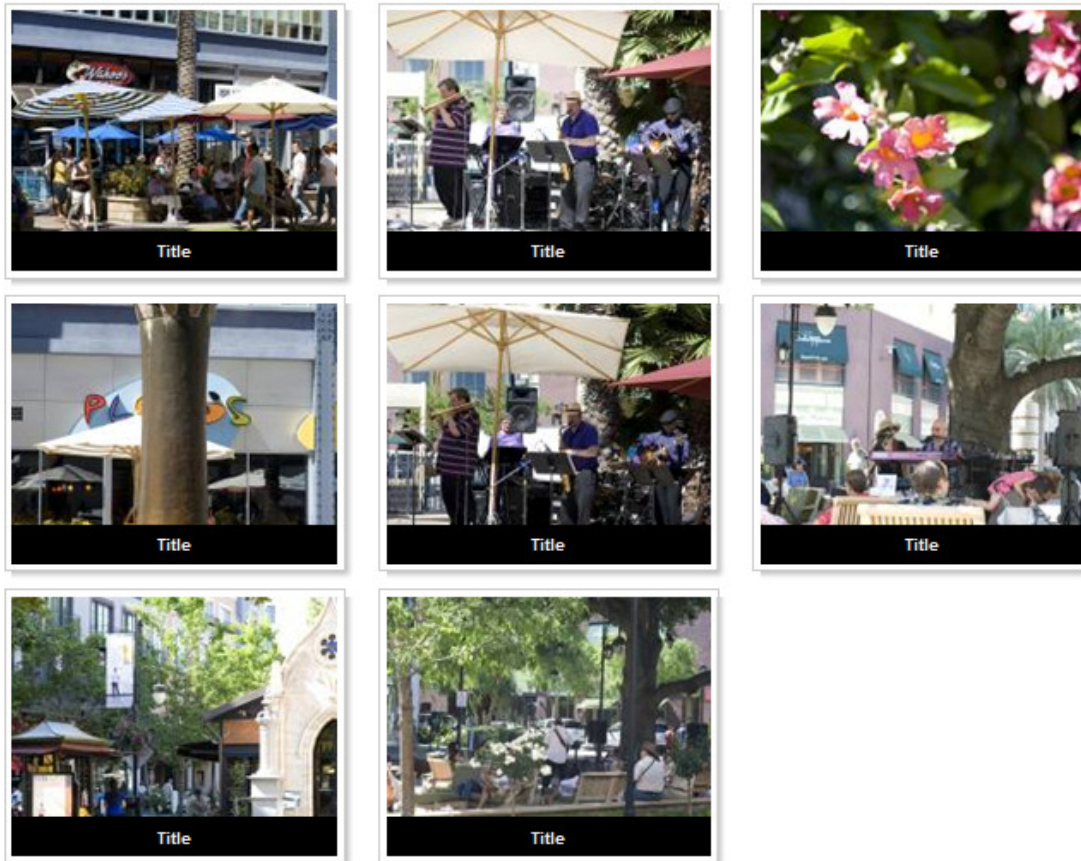


ISO 400, 1/8000, f/1.8, 85mm (Nikon D3)

General color reproduction was quite good - images at wider aperture settings from f/1.8 through f/2.8 showed slightly lower amount of contrast than at smaller apertures and exhibited minor amounts of axial CA, which can be seen in the flower shot in the image gallery. But once stopped down to f/5.6 or f/8, the lens generally produced richly saturated and eye-pleasing textures. Like most medium telephotos, AF Nikkor 85mm f/1.8D did not show visible distortion, which is not that surprising.



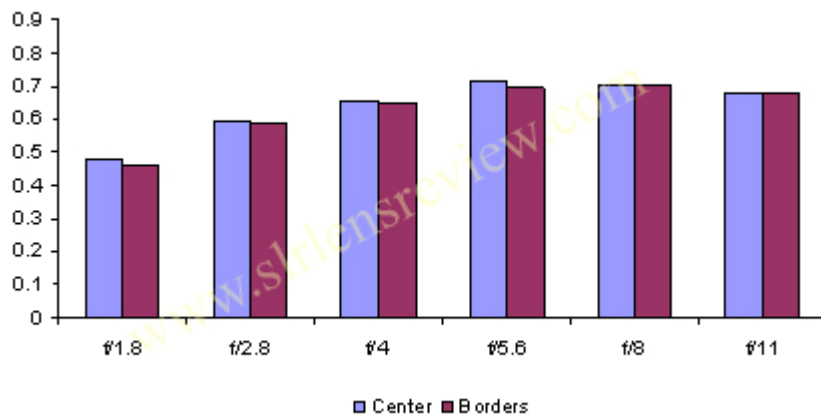
ISO 100, 1/8000, f/1.8, 85mm (100% crop)



Lab Tests

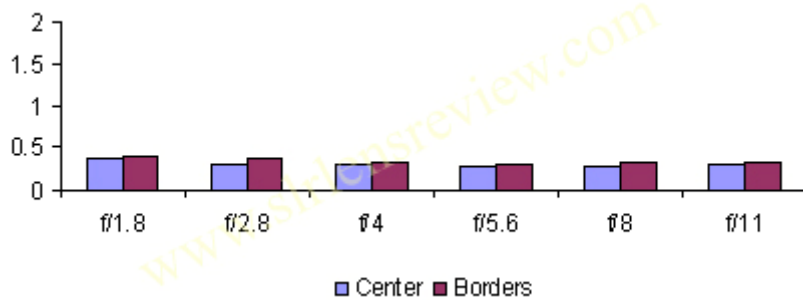
Please note that MTF50 results for APS-C and Full-Frame cameras as well as cameras from different manufacturers are not cross-comparable despite the same normalized [0:1] range used to report results for all types of cameras.

Nikon FF: AF Nikkor 85mm f/1.4D showcased quite good overall performance on a full frame Nikon D3. The lens produced very balanced results across the tested aperture range, with very minimal difference between image center and borders. The lens was notably softer at f/1.8, where its center and border image quality was rather average (not disastrous, but not spectacular either). However, image quality improved with stopped down aperture, reaching solid levels by f/2.8 and outstanding levels by f/5.6. Conclusion? Very good overall performance, with weakness at the widest aperture level. Sounds familiar? Performance is pretty solid among medium telephotos.



Normalized raw MTF50 @ 85mm

Chromatic aberration on a native full frame Nikon D3 was quite low - CA both in the center, as well as borders never exceeded ~0.5px across the tested aperture settings. Nothing really to worry about here.



Chromatic Aberration (FF) @ 85mm

Here are 100% crops taken with a FF type Nikon D3, comparing image borders at f/1.8 and f/8.

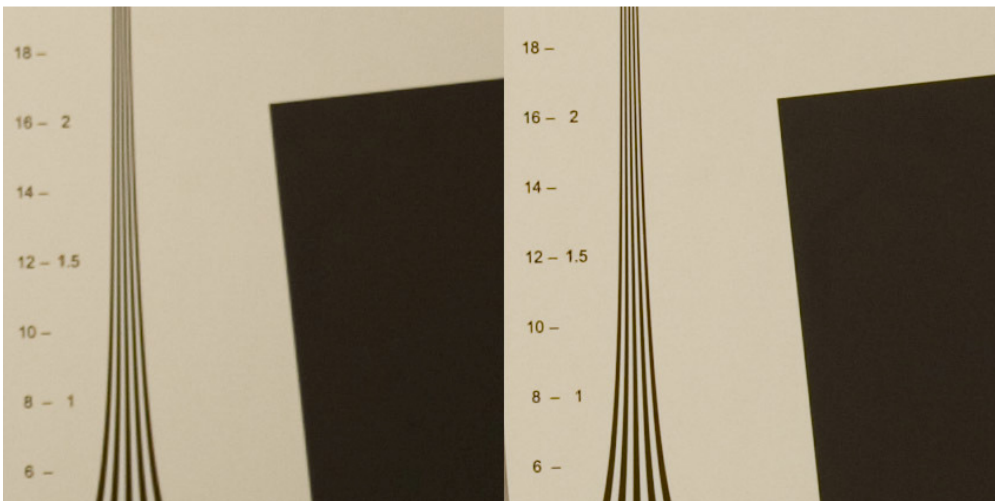
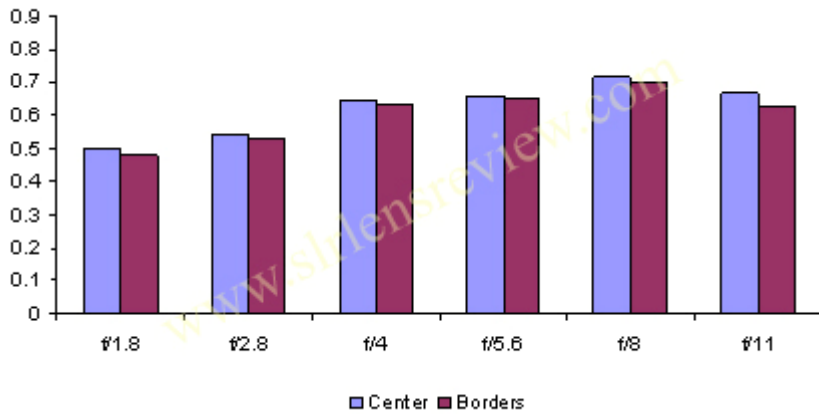


Image borders @ 85mm (100% crop): f/1.8 vs f/8

Canon APS-C: The lens struggled a bit at wider apertures - image quality at f/1.8 was quite unimpressive. Quality at f/2.8 improved slightly, but did not reach outstanding levels until f/4. Like with a full frame Nikon D3, the lens continued to show very balanced results - lower resolution at wider apertures was persistent across the frame. Overall performance peaked around f/8 - here the lens is capable of producing outstanding 19in and decent 24in prints. Conclusion? Image quality at wider apertures is not necessarily very impressive. Still, from f/4 through f/11, the lens is a capable performer that would mostly likely satisfy some of the most demanding users.

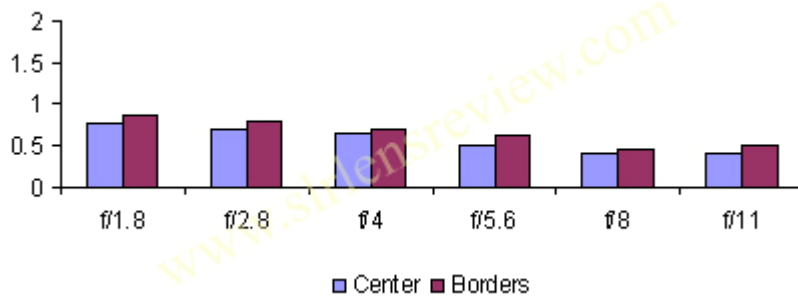
Height(in)			f/1.8	f/2.8	f/4	f/5.6	f/8	f/11
4	Center		376	408	484	495	536	499
	Border		359	401	475	485	526	469
5	Center		300	326	387	396	429	399
	Border		287	321	380	388	421	375
8	Center		188	204	242	247	268	250
	Border		179	201	238	243	263	235
11	Center		137	148	176	180	195	182
	Border		130	146	173	176	191	171
16	Center		94	102	121	124	134	125
	Border		90	100	119	121	132	117
19	Center		79	86	102	104	113	105
	Border		76	84	100	102	111	99
24	Center		63	68	81	82	89	83
	Border		60	67	79	81	88	78

MTF50 (Line Width/Inch on the Print) @ 85mm



Normalized raw MTF50 @ 85mm

CA on an APS-C camera was slightly higher than one would expect from a medium telephoto lens, but still quite manageable, with center CA approaching ~0.7px at f/1.8 and then gradually dropping to ~0.4px by f/11, and border CA hitting ~0.9px at f/1.8 and also dropping to ~0.5px by f/11.



Chromatic Aberration (APS-C) @ 85mm

Here are 100% crops taken with an APS-C type Canon Digital Rebel XT1, comparing image borders at f/1.8 and f/8.

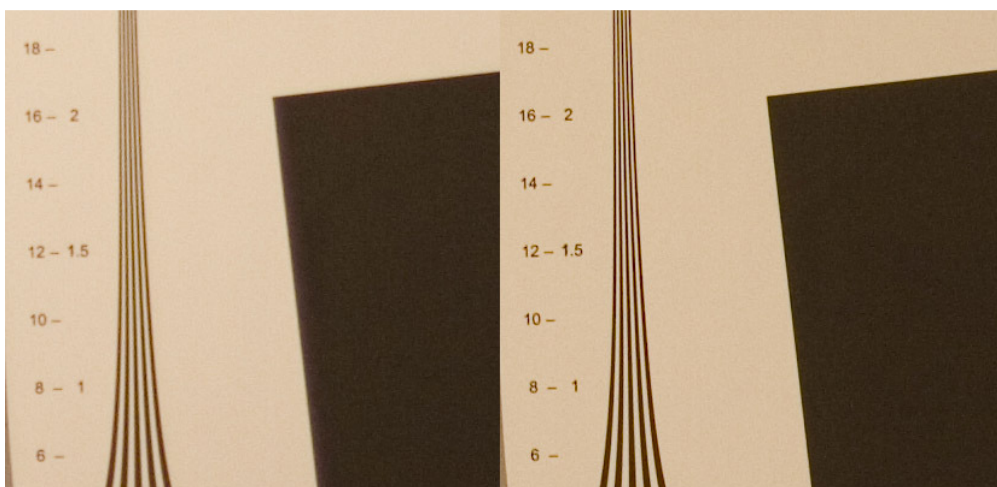
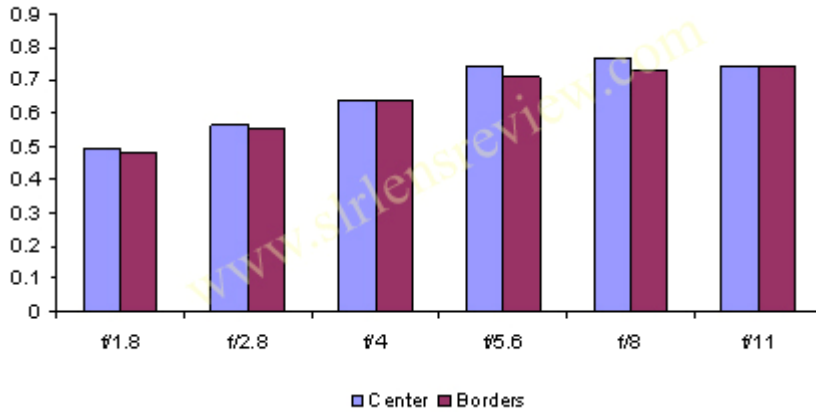


Image borders @ 85mm (100% crop): f/1.8 vs f/8

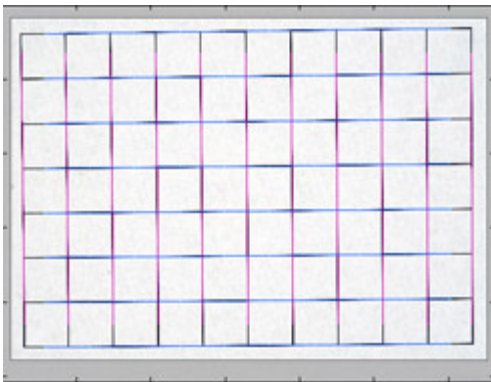
Canon FF: AF Nikkor 85mm f/1.8D continued to show consistent performance even on a full frame Canon 5D. Overall results were very balanced across the frame, with slightly weaker results at f/1.8, and improving with stopped down aperture. Image resolution reached outstanding levels around f/4 and stayed at these levels throughout the rest of the

aperture range, which is quite admirable in any lens. Conclusion? The good news is that the lens behaves very consistently on pretty much any type of camera. Not so good news is that the resolution suffers at wide apertures. While weaker wide apertures are quite common in fast lenses, this still does not make it any more pleasant.



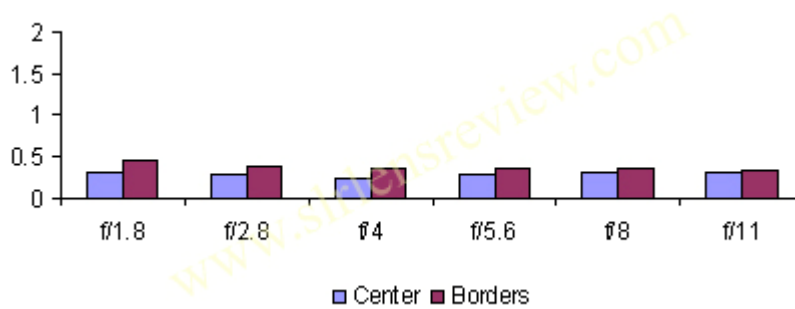
Normalized raw MTF50 @ 85mm

The lens showed very minimal amount of barrel distortion - at 0.04%, distortion should not be even traceable in general photography.



Distortion (FF) @ 85mm

Chromatic aberration on a full frame Canon 5D was well under control. Center CA hovered at ~0.3px across the tested aperture range, while border CA never exceeded ~0.5px (also across the aperture range).



Chromatic Aberration (FF) @ 85mm

Here are 100% crops taken with a FF type Canon 5D, comparing image borders at f/1.8 and f/8.

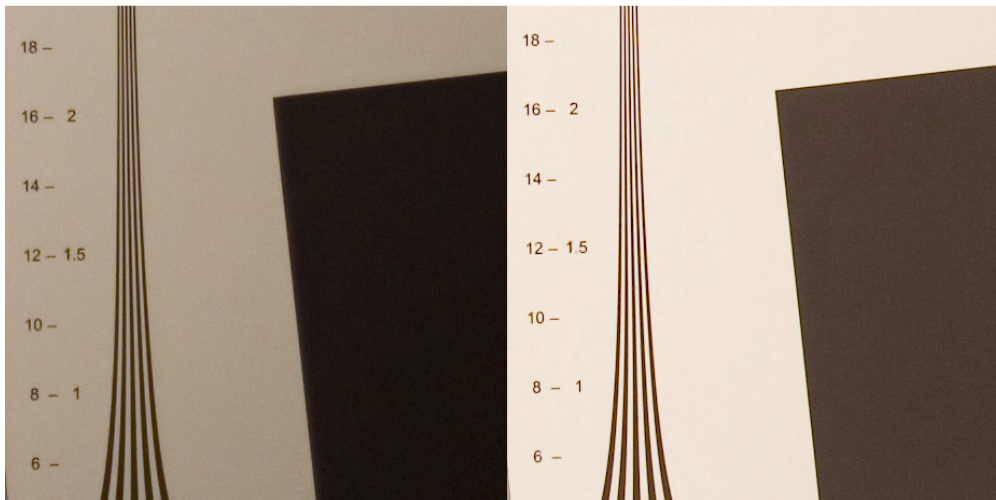


Image borders @ 85mm (100% crop): f/1.8 vs f/8

Alternatives

Nikon currently offers a few medium telephoto lenses in its lineup, including another 85mm variant - [AF Nikkor 85mm f/1.4D](#). The faster version of the lens offers very solid overall image performance, but costs almost 2x the price of its slower f/1.8 variant. Is it worth the price premium? Depends who you ask. For a slightly longer focal length, you might want to consider [Nikon AF DC Nikkor 105mm f/2D](#) and [Nikon AF DC Nikkor 135mm f/2D](#), both of which also offer excellent overall performance, but again at almost double the price. Outside of the Nikon lens camp, you might want to consider Sigma's [Macro 70mm f/2.8 EX DG HSM](#) and [Tamron SP AF 90mm f/2.9 Di Macro](#). Then there's the obvious choice of the now discontinued AiS manual lenses, including [Nikkor 85mm f/1.4 AiS](#), [Nikkor 85mm f/2 AiS](#) and [Nikkor 85mm f/1.8 AiS](#). Finally, once you decide to include manual focus lenses into your list, you might as well evaluate the recently released [Carl Zeiss Distagon T* 85mm f/1.4 ZF](#) or a slightly longer [Carl Zeiss Makro-Planar T* 100mm f/2 ZF](#) (both also available in Pentax K mount). Those of you interested in a side by side comparison of a number of 85mm lenses, including some alternative mount primes like [Leica Summilux-R 80mm f/1.4](#) and [Summicron-R 90mm f/2](#), might want to take a look at the [85mm Challenge](#).

Recommendation

Nikon AF Nikkor 85mm f/1.8D is a pretty solid lens, that despite its aging design still manages to show some character. Image resolution is quite decent on both APS-C as well as FF cameras with one notable exception - f/1.8 (and f/2 to some degree) are the weak points. The lens struggles a bit here and while resolution is not everything, other characteristics, such as flare, vignetting, axial CA, also leave room for improvement (quite a bit of room). But once stopped down to medium, or better yet small, aperture levels, most of the lens 'hiccups' go away. Two other 'areas for improvement' are the AF mechanism, which is pretty outdated by today's standards, as well as the overall build quality, which can certainly be improved as well. Still, at ~US\$400, AF Nikkor 85mm f/1.8 is a decent value among medium telephoto primes.

Source: <http://www.srlensreview.com/web/nikon-slr-lenses-40/telephoto-slr-lenses-165/103-nikon-af-nikkor-85mm-f18d-lens-review.html>

(January 3, 2010)