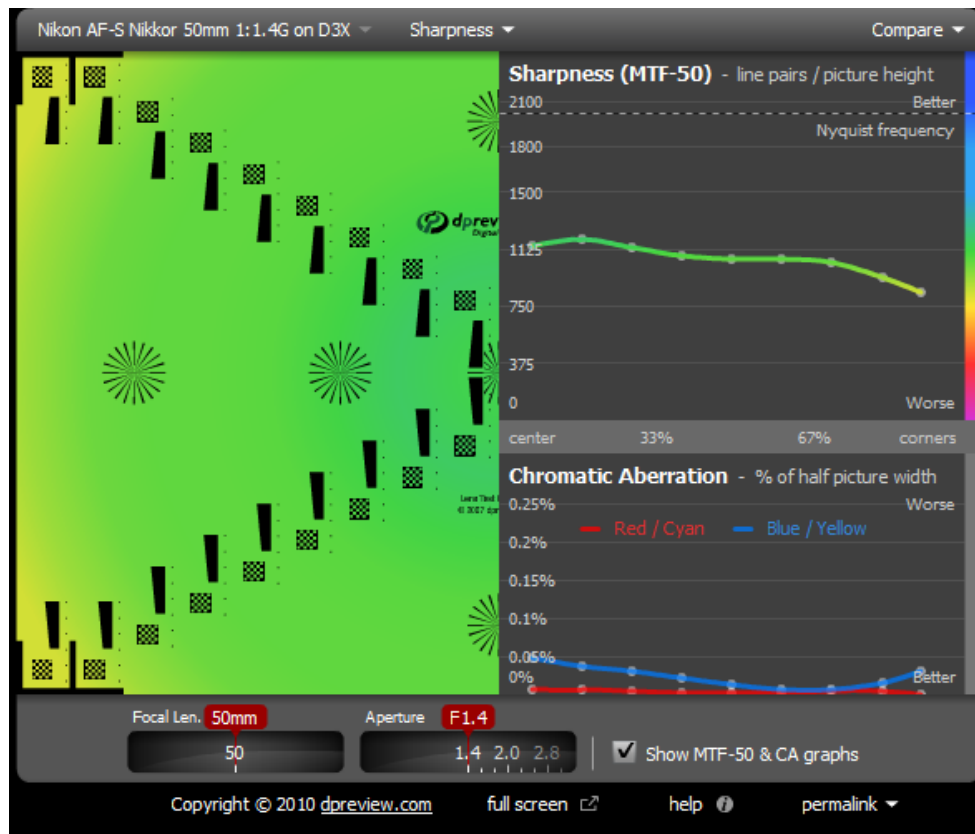


Studio Tests - FX format



NOTE the line marked 'Nyquist Frequency' indicates the maximum theoretical resolution of the camera body used for testing. Whenever the measured numbers exceed this value, this simply indicates that the lens out-resolves the sensor at this point - the calculated MTF values themselves become meaningless.

The Nikon AF-S Nikkor 50mm 1:1.4G comes into its own on its native FX format. Sharpness is notably even right across the image even at F1.4, with the corners better than any other full-frame 50mm we've tested. The improvement over the AF-Nikkor 50mm F1.4D is dramatic, especially in terms of corner performance at larger apertures (although it's important to bear in mind that we tested the older lens on the lower-resolution D3); and while the Sigma 50mm F1.4 EX DC HSM is better in the centre wide open, its advantage disappears on stopping down to just F1.8.

Resolution	Sharpness is good right across the frame wide open, with the centre improving rapidly on stopping down and the corners not too far behind. Optimum apertures are around F5.6 to F8, at which point the lens is out-resolving the D3X's 24Mp sensor with ease.
Chromatic Aberration	Lateral CA is extremely low, with almost no visible fringing. As on DX, the measured CA in the centre of the frame at F1.4 reveals a degree of color-specific spherical aberration, but rather lower than the old 'D' lens
Falloff	We consider falloff to become perceptible when the corner illumination falls to more than 1 stop less than the centre. Falloff is slightly better than average for its class on full frame at 2.3 stops wide open, falling to 1 stop on stopping down to F2.8; this may be annoying to users brought up on smaller formats.
Distortion	Distortion on full frame is a little lower than the older 'D' lens at about 1% barrel; just about enough that it might sometimes be visible in real-world shots.


FX compared to DX

Eagle-eyed viewers will no doubt have noticed that the MTF50 sharpness data at any particular focal length/aperture combination is distinctly higher on FX when compared to DX. This may at first sight appear unexpected, but in fact is an inevitable consequence of our presentation of the sharpness data in terms of line pairs per picture height (and thus independent of format size).

Quite simply, at any given focal length and aperture, the lens will have a fixed MTF50 profile when expressed in terms of line pairs per millimeter. In order to convert to lp/ph, we have to multiply by the sensor height (in mm); as the full-frame sensor is 1.5x larger, MTF50 should therefore be 1.5x higher.

In practice this is an oversimplification; our tests measure system MTF rather than purely lens MTF, and at frequencies close to Nyquist the camera's anti-aliasing filter will have a significant effect in attenuating the measured MTF50. In addition, our testing procedure involves shooting a chart of fixed size, which therefore requires a closer shooting distance on full frame, and this will also have some influence on the MTF50 data.

Macro Focus

	<p>The 50mm behaves similarly in our macro test on full frame as on DX. Naturally the close focus, working distances and magnification figures remain the same as on DX at 43.5cm, 34cm, and 0.16x respectively.</p> <p>Again results aren't great wide open, but the centre sharpens up well on stopping down to F4, and by F8 the corners are looking very sharp too. Barrel distortion is quite visible, and red/cyan chromatic aberration quite visible.</p>
<p>Macro - 237 x 158 mm coverage Distortion: Moderate barrel Corner softness: Moderate Focal length: 50mm</p>	

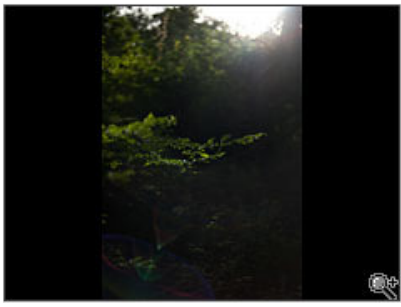
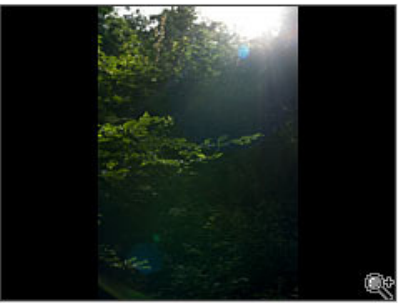
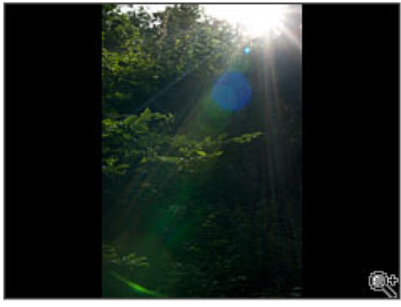

Specific image quality issues

As always, our studio tests are backed up by taking hundreds of photographs with the lens across a range of subjects, and examining them in detail. This allows us to confirm our studio observations, and identify any other issues which don't show up in the tests. We tested the lens on both DX and FX bodies, ranging from the D90 to the top-of-the-range D3.

Flare

If the AF-S Nikkor 50mm F1.4G has a weakness, it would be its handling of flare when shooting into the light. This isn't particularly unusual for fast lenses, but if anything it seems to do a little less well than the older 'D' version - and the Sigma 50mm F1.4 EX DG HSM performs distinctly better.

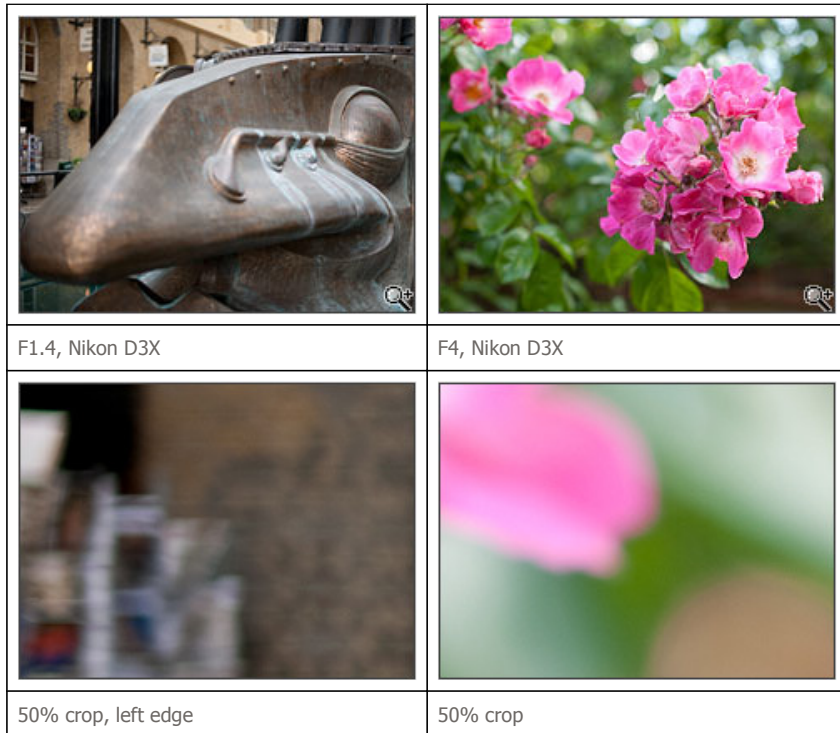
With the sun in the frame, we see various multi-colored flare patterns, which vary with aperture, becoming more intrusive and destructive on stopping down. Move the sun slightly out of the frame and the picture becomes washed-out by swathes of veiling flare. Overall the moral of the story is to avoid shooting towards the sun.

	
<p>F2.8, Nikon D3</p>	<p>F5.6, Nikon D3</p>
	
<p>F16, Nikon D3</p>	<p>F6.3, Nikon D3 (sun out of frame)</p>

Background Blur ('bokeh')

One genuinely desirable, but difficult to measure aspect of a lens's performance is the ability to deliver smoothly blurred out-of-focus regions when trying to isolate a subject from the background, generally when using a long focal length and large aperture. The 50mm F1.4 can be made to blur even relatively close backgrounds into oblivion at wide apertures, a huge advantage for portrait shooting especially on DX.

The bokeh of the 50mm F1.4G is, in part thanks to its circular aperture, generally highly commendable. It's perhaps not quite as smooth as Sigma's 50mm F1.4 EX DG HSM, but equally it's a lot less 'busy' or distracting than many other similar lenses. Even at F1.4, relatively distant backgrounds are rendered quite convincingly, as shown by the brickwork detail below. When shooting closeups, the transitions to out-of-focus regions are smooth and attractive, and thanks to that circular aperture, point light sources are rendered as circles (as opposed to distracting polygrams) even when the lens is significantly stopped down.

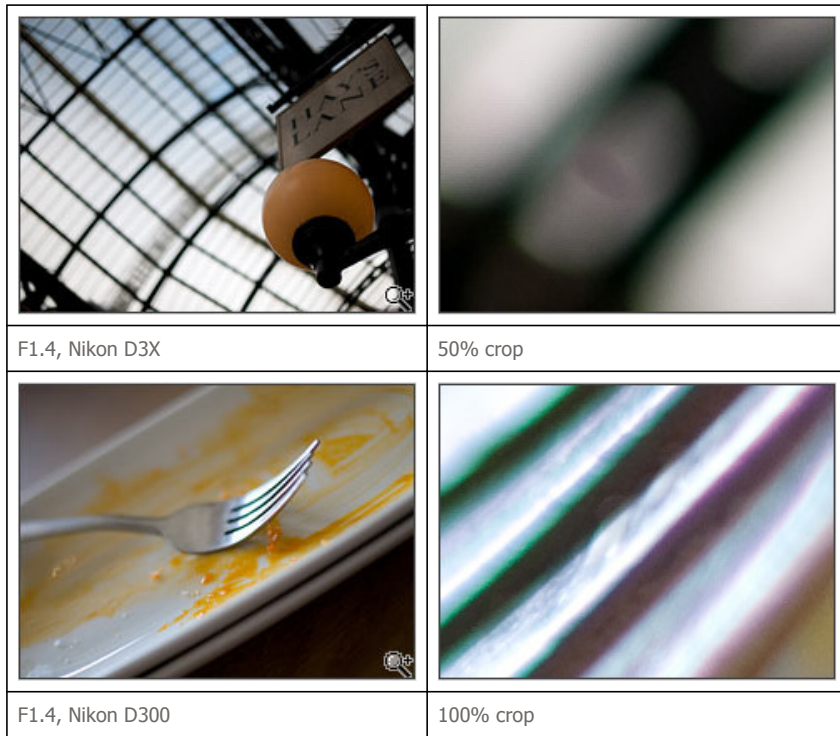


Chromatic aberration

Lateral chromatic aberration is, as expected of a double Gauss type standard prime, pretty well negligible with this lens. If you go looking for it towards the edge of the frame you'll find it, but it's rarely going to spoil an image in any way (and of course most current Nikon DSLRs remove it in JPEG processing anyway). The sample below shows just how little fringing you'll see in normal use, even when looking at output from the 24Mp D3X at 100% (if anything this is testament more to the camera's resolution than a failing of the lens).

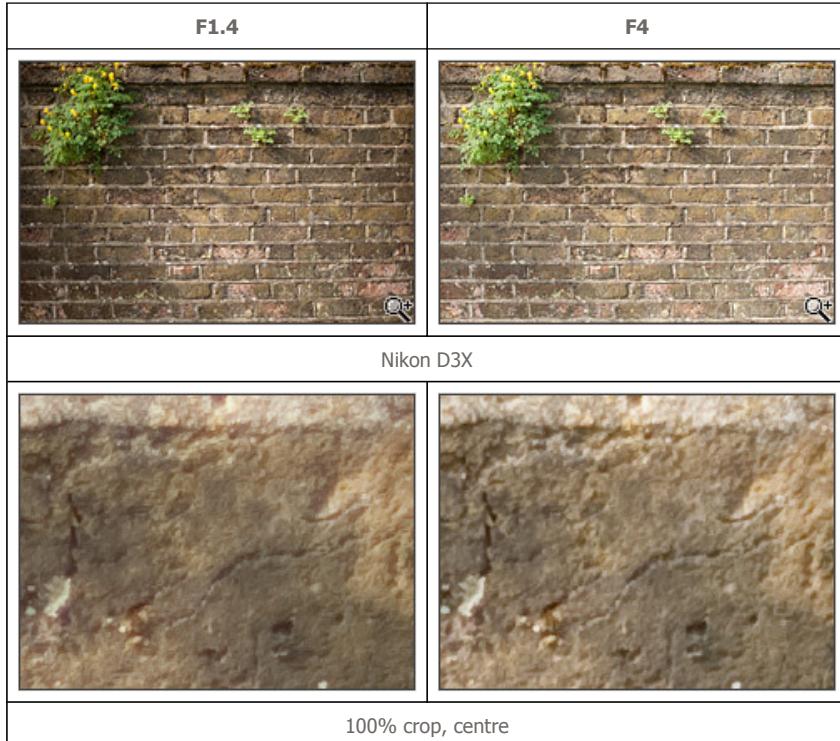


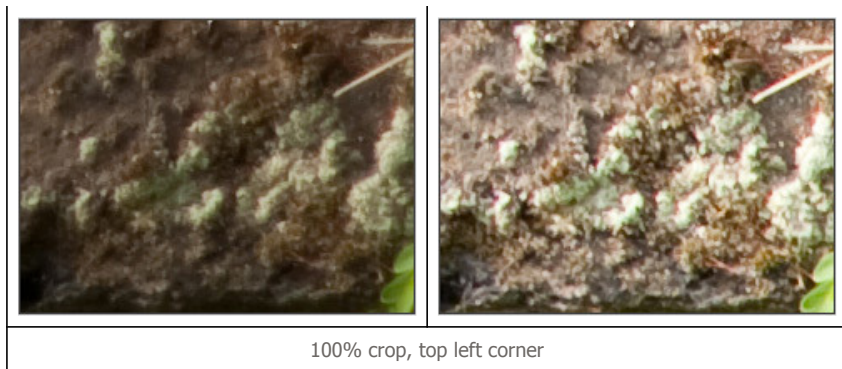
Longitudinal chromatic aberration (*i.e.* colour fringing around high contrast edges in out-of-focus regions of the image) is present, as is pretty well inevitable for a fast prime, but not particularly intrusive. Purple fringing around bright in-focus highlights (inevitably accompanied by often less-intrusive green fringing around background highlights) is also visible at large apertures. This kind of CA more or less disappears on stopping down to F2.8, and the more sophisticated iterations of Nikon's in-camera processing can greatly reduce its appearance, as can the free View NX raw conversion software.



Softness and vignetting at large apertures

As usual, we like to give an impression of how the lens's optical performance at large apertures stands up to the rigors of everyday brick wall shooting. The samples below compare performance at F1.4 and F4 on the D3X (note that despite its higher pixel count, the D3X actually has a slightly larger pixel pitch than the DX format D300 we looked at on the previous page, and so the lens looks a little sharper even in 100% crops). Again the loss of contrast at F1.4 is obvious, but the resolution of fine detail is not bad at all. The extreme corner crops show the fairly strong level of vignetting at F1.4, and at F4 there's some very slight red/cyan fringing from lateral CA.





Of course many objects in the real world tend, inconveniently, to be a little more three-dimensional, making corner softness and vignetting largely academic. Indeed vignetting and shallow depth of field can often combine synergistically to help frame a subject against a dull background; and the 50mm F1.4G's resolution of fine detail is more than sufficient to give a convincing rendition to the in-focus regions at F1.4.

