

Nikon AF-S 180-400mm f/4E TC1.4 FL ED VR Lens Review

by E.J. Peiker

About 5 years ago, in May 2013, Canon introduced a completely new kind of lens that took the market by storm. It was a 200-400mm f/4 fixed aperture internal zoom lens that had a built in 1.4x teleconverter which could be inserted into the optical path with the flick of a switch turning it into a 280-560mm f/5.6 fixed aperture lens. As a straight 200-400mm f/4 lens it literally blew the doors off of the Nikon 200-400 f/4 lens for sharpness, especially at longer focusing distances. With the 1.4x inserted, it was a good lens but did not rival a 500 or 600mm prime lens. This lens was, and continues to be, a workhorse for Canon sports and event shooters due to its versatility. It took 5 years, until early 2018, for Nikon to release a lens that competes with the Canon, the Nikon AF-S Nikkor 180-400mm f/4E TC1.4 FL ED VR lens. This lens expands the wide end to 180mm compared to Canon's 200mm while maintaining a 560mm f/5.6 long end making it an extremely versatile lens. The lens is constant aperture for a given teleconverter setting, has internal focusing, internal zoom (meaning the lens does not change size as it is zoomed), using fluorite coatings and sports Nikon's latest vibration reduction (VR) mechanism which reduces the effects of camera shake by approximately 5 stops. It is a hefty lens weighing in at 7.7 pounds, approximately what a modern 500mm f/4 prime lens weighs, but it is smaller since its maximum aperture on the long end, with the TC inserted is f/5.6 compared to f/4 for the prime lens. This is a complex lens employing 27 lens elements in 19 groups and has a maximum reproduction ratio of 0.25x. A built in lens collar and mounting foot is included although it does not have an Arca-Swiss dovetail on the mounting foot (something all lenses with a lens foot should have) so most will need either a long Arca-swiss mounting plate which adds weight or a third party lens foot with a built-in dovetail in order to mount the lens on a tripod head. The lens retails for a hefty sum of \$12,400 USD.



I evaluated the 180-400 f/4E TC1.4 lens using test charts as well as test shots of real world subjects. In all aspects this lens performed flawlessly and it easily bests any and all competition in the super zoom arena including its most direct competitor, the Canon 200-400 f/4L 1.4x. While the Canon is very good and rivals the new Nikon lens without the TC inserted, with the built in 1.4x inserted on both lenses, there is simply no comparison. The Nikkor loses essentially nothing and continues to have the optical performance of a high end prime lens super-tele. The Canon, while good, does not compete against 500mm and 600mm primes for sharpness with its teleconverter inserted. I also tested the new Nikon lens for infinity sharpness and detail rendering. The predecessor Nikon 200-400 f/4G lens performed great at shorter focusing distances but was simply awful at longer shooting distances. This is also true, to a lesser extent, of the previous generation 500mm f/4G and 600mm f/4G lenses. The new lens has no problem whatsoever at long shooting distances. I photographed a pedestrian's shirt at 300 feet and was able to see the texture in the fabric of the shirt! Similarly a textured wall at 500 feet was completely sharp with no loss of image acuity.



Verdin (D500, 180-400 f/4 1.4TC @ 550mm)

Below you will see some 100% clips of a lizard statue that I often use for lens comparisons. All images were taken with a D500 at f/8 and 1/640s at ISO 400 mounted on a tripod. The shooting distance is 25 feet which is approximately the distance that I shoot backyard birds from my set-up. We'll start with 400mm comparisons:



Nikon 180-400 @ 400mm

Comparing the new 180-400mm f/4 TC1.4 lens to other lenses in my stable that can shoot at 400mm, it is clear that the new and much more expensive lens outpaces the others for sharpness by miles. Even in this PDF document with its associated compressions, the sharpness and texture of the lizard is significantly higher than its rivals. I have also previously tested the Nikon 200-500 f/5.6 and the Tamron 150-600mm lenses and both of those fall below the Sigma.



Nikon 80-400 @ 400mm

This test also shows that there is less focus breathing with the new Nikon lens than the others. Focus breathing is a phenomenon where the focal length of a lens gets shorter as the lens is focused closely. One can see in this comparison that the lizard shot with the 180-400 at 400mm is larger than with the others.

Contrast on both the Nikon 180-400 and the Sigma 150-600 is better than the Nikon 80-400.



Sigma 150-600 Sport @ 400mm



Nikon 180-400 TC1.4 @ 560mm



Sigma 150-600mm Sport @ 560mm



Sigma 500mm Prime

In this comparison we have the 180-400 f/4 TC1.4 at 560mm compared to the Sigma 150-600 Sport at 560mm and the excellent Sigma 500mm f/4 prime lens. Again one can see a higher acuity on the Nikon zoom compared to the Sigma zoom but the difference is less than in the 400mm crops. This is not surprising as the weakest range of the Sigma sport is in the 450 to 500mm range. The Sigma's focus calibration software calibrates the lens at 150mm, 250mm, 400mm and 600mm. There is often a big jump in calibration settings from 400mm to 600mm making the 450 to 500mm range an interpolated "guess". By 560mm one is getting back into the more accurately calibrated range set by the 600mm setting. The Sigma does very well here considering its \$2000 price point but still is well shy of the \$12,400 Nikon. For comparison I have also included the \$6000 Sigma 500 f/4 prime both at 500mm and at 700mm with the Sigma dedicated 1.4x teleconverter. At half the price this lens is essentially equal to the Nikon but of course is nowhere as versatile. For a zoom lens, the Nikon 180-400 f/4 TC1.4 has no equals, not even close. It is incredibly sharp through the zoom range with and without the teleconverter and, surprisingly, even with the built in 1.4x inserted gives up nothing in sharpness.



Sigma 500mm Prime + Sigma TC1401

The images above consist largely of the central area of the lens' image circle. While I won't reproduce them here, the 180-400 f/4E TC1.4 lens out-resolved the limits of the test chart all the way into the corners on a full frame D850 camera. That means it is capable of rendering more than 4000 per frame, the limit of the chart, all the way into the corners. This is on par with high end primes such as the 500 f/4 and 600 f/4 class lenses and almost unheard of with zoom lenses in this range.

Nikon has hit a grand slam home-run with the Nikkor 180-400 f/4E TC1.4 lens in the optical department. There is simply nothing on the market from any manufacturer that compares for image quality through the zoom range and even with the built-in 1.4x teleconverter inserted. It is an exceptional lens in every regard and is on par with 400mm, 500mm and 600mm prime lenses. Unfortunately the price of the lens is also exceptional. Nikon nearly doubled the price from the 200-400mm f/4 lens (\$7000 at introduction in 2010, now \$3350) that it replaces but also doubled the performance and added a 1.4x teleconverter. I would think that would command a premium of about \$2500 bringing the lens to \$9500 at introduction not \$12,400. However, if you want the very best super-tele zoom that money can buy, nothing else touches it. If I had a spare \$12,000 sitting around, I would replace my Sigma 150-600 Sport lens with this lens without hesitation.



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