MTF tests of Canon & Nikon 300 mm lenses

Acknowledgments

In this page I have the pleasure to show you the MTF curves obtained by **Centro Studi Progresso Fotografico** (CSPF, www.fotografia.it). The results were previously published in *Tutti Fotografi* magazine and are reproduced here with their permission. Therefore I am grateful to the **CSPF** director, Dr. Sergio Namias, for his kindness.

CSPF was founded in early '80s and is ranked as one of the most important labs in the world for instrumental measurements of the optical performance of photographic lenses.

I wish also to thank the Editor-in-Chief of *Tutti Fotografi* magazine (my friend Maurizio Capobussi) for continuous valuable and stimulating discussions about new trends in the wonderful world of Photography. He surely contributed to my growth as a writer and photographer.

How to read the MTF curves

The plots below show the average sharpness of the lens (full squares) *vs.* lens aperture. The sharpness values are indicated on the y-axes. The y-axis at the right-hand side of each plot shows the SUBJECTIVE QUALITY FACTOR (SQF) determined from MTF curves according to Granger and Cupery (Kodak Research Laboratory). The y-axis at the left-hand side of the plot shows the corresponding image quality, as evaluated by human eye (SCADENTE = poor; SCARSA = scarce; SUFFICIENTE = sufficient; DISCRETA = average; BUONA = good; OTTIMA = very good; ECCELLENTE = excellent).

The grey band shows the dispersion of SQF values between center and borders of the frame. Narrower the band, more even the performance across the frame.

Performance

Although a really fair comparison should be done by looking at huge amounts of films on the light table (this would allow to check also features as important as color rendition, flare behaviour, ghosting, etc.), the MTF tests below might contribute to stimulate discussions and have to be regarded just as instrumental measurements.

The first two plots show MTF curves of the early 300 mm f/4 autofocus lenses produced by Nikon and Canon, the AF 300/4 IF ED and the EF 300/4 L.

Then the plots referring to 2nd generation 300 mm f/4 lenses are reported, namely the AFS lens by Nikon and the IS lens by Canon.

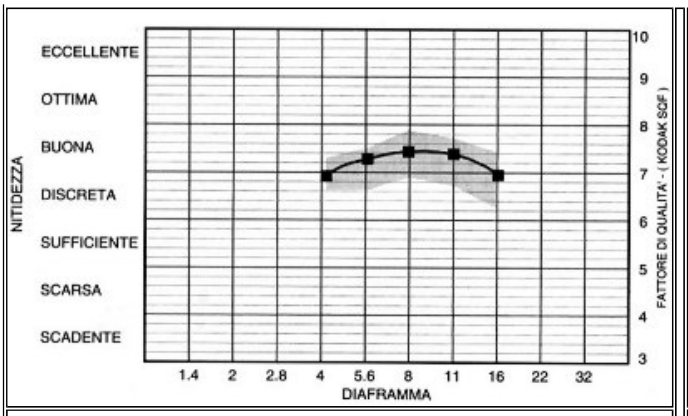
Finally, the last two plots show the quality of the professional AF 300 mm f/2.8 lenses, the AF-S Nikkor 300/2.8 II and the IS lens produced by Canon.

The tests show some differences between the various lenses in terms of optical quality. I'll try to summarize these differences, as they emerge from instrumental data.

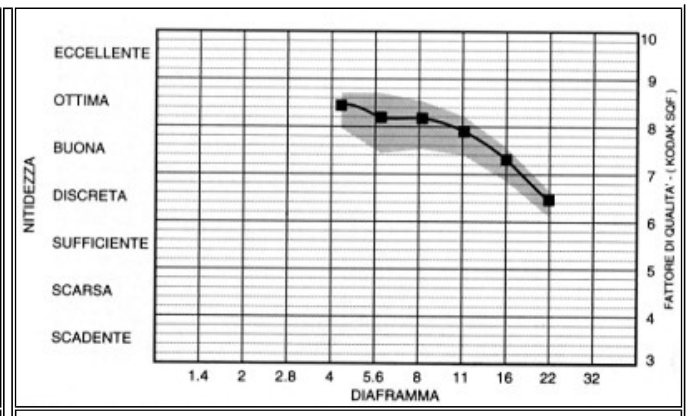
The f/4 lenses by Nikon never attain the top-notch quality of the pro-calibre AF-S 300/2.8, although the AF-S 300/4 exhibits a higher quality than the former AF 300/4, a very good overall sharpness and an outstanding performance @ f/5.6.

The former EF 300/4 by Canon was an outstanding performer, with a w/open quality comparable to the Canon EF 300/2.8 IS. The latter 300/4 IS version shows a slightly lower quality at full aperture, probably due to the more complex optical design of the Image Stabilizer (IS) group. Nevertheless, the EF 300/4 IS exhibits a slightly better MTF behaviour than the AF-S Nikkor 300/4.

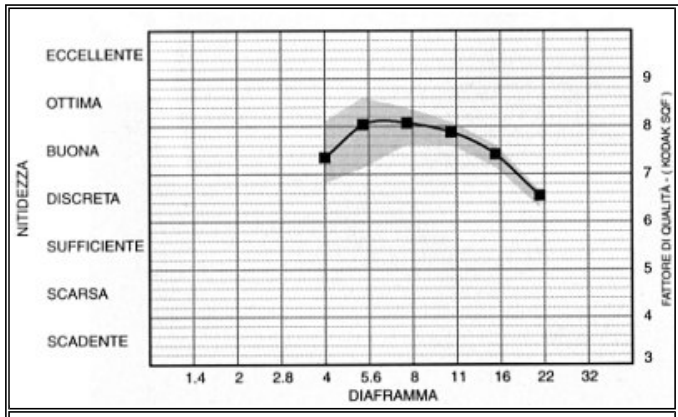
Finally, both Canon and Nikon 300/2.8 lenses exhibit state-of-the-art performance, but again the Nikkor seems to stay a step behind, due to a slightly lower perfomance @ f/2.8 and - last but not least - the lack of IS (VR).



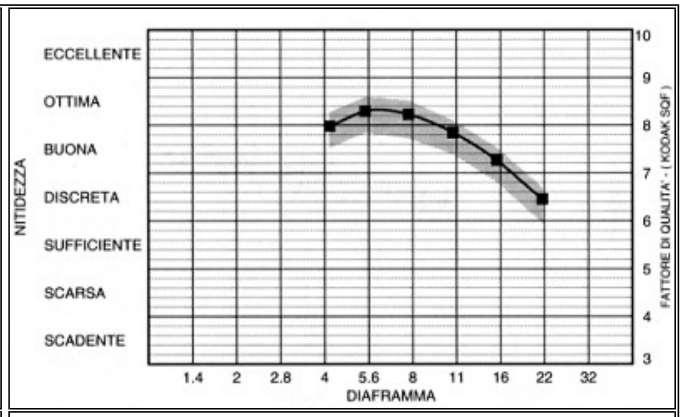
AF Nikkor 300 mm f/4 IF-ED



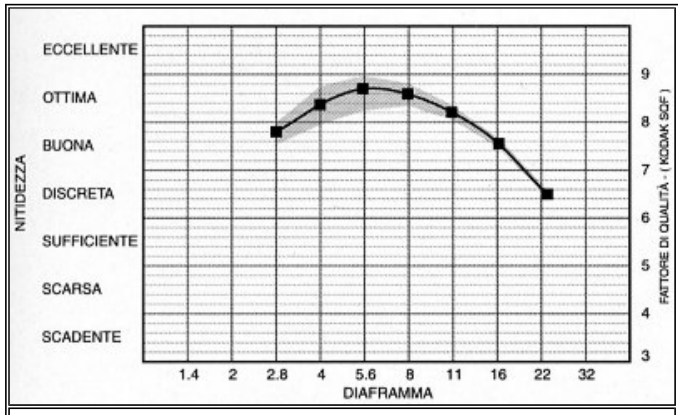
Canon EF 300 mm f/4 L



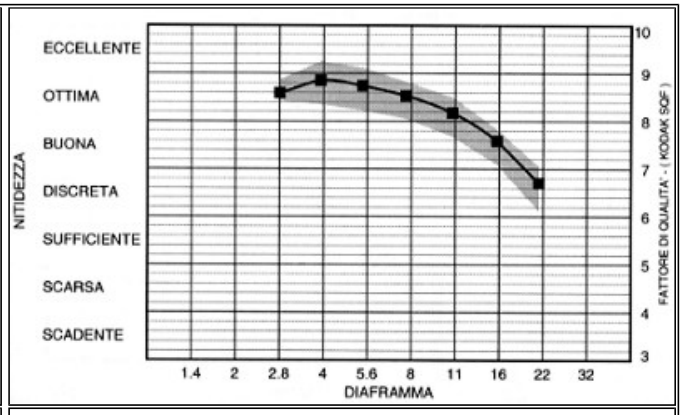
AF-S Nikkor 300 mm f/4 D IF-ED



Canon EF 300 mm f/4 IS



AF-S Nikkor 300 mm f/2.8 D IF-ED



Canon EF 300 mm f/2.8 IS