

Sept 1, 2020



Canon RF 100-500mm F4.5-7.1 L IS USM Lens Review

For advice on the best viewing settings visit <https://mbp.ac/pdf>

I picked up my Canon RF 100-500mm F/4.5-7.1 L lens on August 27, the day it was released into the wild, and I've spent the last few days putting it through its paces, although the oppressive Tokyo heat has held me back to a degree. I like to ensure that my gear is insured before using it outside, as I've actually dropped a camera body in a river before, and don't want to take any chances, so I had to get that sorted out first but then waited for it to cool down a little on Friday the 28th, before heading out to the river down the road from where I live to see what I could find.

We'll take a look at some of my photos shortly, but first I'd like to touch on some of the key points of this wonderful new lens from Canon. First of all, the biggest change for a lens with this positioning is, of course, the increase in the zoom range, from 400mm to 500mm. It was this new increased range that made me decide to sell my 200-400mm lens with the 1.4X Extender built-in, as well as financial considerations. With business being the way it is right now, I simply couldn't have afforded to make all of the recent changes I've made without setting that beast of a lens, but I honestly don't think it's necessary anymore, with this new offering in my kit bag.

I photographed the R5 with the 100-400mm on it the day before I part exchanged the 100-400mm for the 100-500mm, and I left my tripod out and marked the background paper so that I could place the 100-500mm on the right, and shoot a second shot to merge together for comparison. You can see that the RF lens is slightly smaller than the EF lens with the Control Ring Adapter. Despite the extra 100mm reach, the RF 100-500mm is 1,370g without the tripod ring, compared to 1,530g for the EF 100-400mm lens, also without the tripod ring, so the 100-500mm is 160g lighter and slightly shorter than the 100-400mm, although Canon is claiming a 200g difference for some reason.





Extender Zoom Restrictions

As I mentioned a few weeks ago, the only slightly negative aspect of the 100-500mm is that it is restricted to a widest focal length of 300mm when used with either of the new RF mount Extenders. As you can see in the following image, the rubber-coated lens element protruding out of the Extenders prevents the back element of the lens from moving to back to its full extent.

This means that instead of a 200-1000mm lens with the 2X Extender, we get a 600-1000mm lens, and with the 1.4X Extender, we're looking at a 420-700mm lens. This does reduce the versatility of the lens when combined with the Extenders and was a bit of a disappointment, but this is the first time that the shorter distance between the back of the lens and the sensor has added a negative aspect to Canon's RF Mount and Mirrorless line-up.

Although this should have been obvious, I also didn't really think about the fact that the lens would be locked in an extended position while the Extenders are fitted. On the following page are two photos, one with each Extender fitted, showing the shortest focal length that the lens can be pulled back to with each of the Extenders. I'm also still trying to find out if there is a mechanical stopper that prevents the lens from going under 300mm or if the Extender is physically butting up

against that back element. I'm hoping there is a mechanical stopper, as that would make me more comfortable stowing the lens away with the Extender fitted, but if it's elements bashing together, I would not be comfortable putting this combination into my bag.

These are my only concerns though, and I'll certainly live with this for the versatility of this lens. Having the ability to shoot at up to 1000mm with such a small system is very welcome.



One last physical difference between the RF 100-500mm and the EF 100-400mm lens is that the hood is now white, so it matches the body of the lens much better, and although purely cosmetic, the case that comes with the 100-500mm has also switched from white to black. I think I would have preferred white simply because it doesn't get as warm as a black case in strong sunlight, but for me, I actually never use the case anyway. I pretty much always just put the lens into my camera bag, or sling it over my shoulder attached to a camera, as long as I don't have to walk on a slippery surface.

Aperture Decrease Points

As you'll have noticed from the name of the lens, the widest available aperture gradually decreases as you zoom the lens. Starting at f/4.5 at 100mm, this drops to f/5.0 at 150mm, then f/5.6 at 280mm, F/6.3 at 370mm and the smallest aperture of f/7.1 starts from 460mm and, of course, remains at 7.1 up to the maximum focal length of 500mm. The widest aperture available at 300mm is f/5.6 and this remains in place with the Extenders fitted, so the widest available aperture with the RF 1.4X Extender fitted is f/8, with an effective focal length of 420mm, and that transitions through f/9 to f/10 once you zoom to the maximum effective focal length of 700mm. With the RF 2X Extender fitted, you get f/11, dropping to f/14 as the widest aperture at the longest focal length of 1000mm.



The Moon

The image quality is pretty much unchanged with no real visible degradation when working with the Extenders. Here is a photograph of the Moon shot on a humid summer night here in Tokyo, so there was a large halo around the Moon, but the photo is still nice and sharp. This is quite heavily cropped, down to an image of around 17 megapixels, so that you can see and appreciate the detail. I increased the ISO to 1250 for this shot with a shutter speed of 1/160 of a second at f/14, which is the widest aperture available at 1000mm.

This was actually the last outdoor test shot that I made to share with you, so let's back-pedal a little now and I'll walk you through a number of images that I was able to get as I tried to put this lens through its paces. Unfortunately, the oppressive heat of Tokyo at this time of year, and the fact that we are having a bit of a heatwave on top of that, has meant that both the wildlife and me couldn't spend much time in the sun. The day after I got the lens, I took it up to the river a 10-minute walk from my apartment, hoping to see some Black Eared Kites, and maybe also some Egret, but it turned out to be a case of Mad-Dogs and Englishman. I was the only living being out there, except from one Egret that came to the river for a drink, and then promptly flew away again. It was on the far bank, so even at 1000mm was too far to photograph with any impact.

I shot some insects, all with the 2X Extender and the lens at its full extent of 1000mm. These aren't great, because of the surroundings, but it will give you an idea of the image quality and show that this lens can actually be used in the macro range, so first, here is a butterfly shot (following page).





Here also is a Dragonfly, also at 1000mm, and the detail at the base of its wings is absolutely stunning, even when using the 2X Extender and the lens at full extent. I didn't expect to see any real image degradation when using these Extenders with the 100-500mm, but it's certainly nice to get that confirmed first hand.



Scraping the barrel a little, here is a shot of a Water Strider insect, that I actually don't dislike. It's great to see the water bending under the weight of the Strider, but also be able to see how the surface tension is keeping him afloat. Again, shot at 1000mm and has beautiful image quality. These shots were all made hand-held by the way. Also, don't forget that you can click on the images to open them up in the Lightbox and view the shooting information below the image.





Fledgling Barn Swallows

After a few hours, I was drenched in sweat and needed to leave to avoid getting heatstroke, but then as I got to my apartment, I noticed three Barn Swallow fledglings on the telegraph wire over a stream that runs by the building. Their parents were busily catching beaks full of bugs from over the stream and then flew back to the fledglings who, although already larger than their parents, opened their mouths wide

to accept the buggy meal before the parent flew off to catch some more. Here is a photo as the parent swallow flies away and the fledgling tries to swallow its new mouthful of bugs.

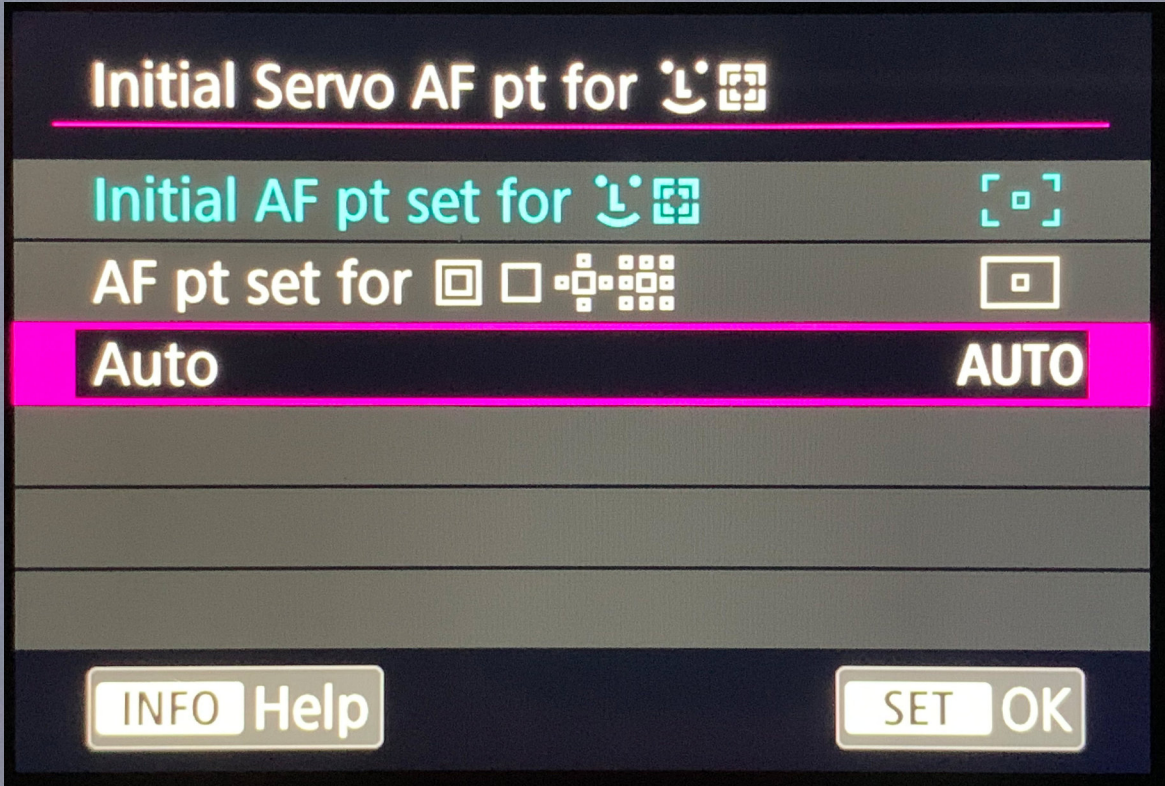
I was impressed with the way the autofocus of EOS R5 and 100-500mm lens stayed with the parent as they dropped down off the telegraph wire and started to fly away. You can see that the fledgling is already out of focus in this shot. I've been asked

about the smaller aperture compared to the 100-400mm, but really, the depth of field is so shallow at these focal lengths that you have to be stopped down to get anything sharp anyway, so it really isn't a problem. I am cranking up the ISO quite a bit though to get these shots. Although this was shot at ISO 6400 and a shutter speed of 1/3200 a second, as it got darker and I increased my shutter speed I ended up shooting at 12800 ISO as well, but the images all still look pretty good.

Dragonflies In Flight

The following day, I visited a local botanical garden's water-plant zone, hoping to photograph some Kingfisher, but it's too hot for them again, as we go through a particularly hot spell, so once again there wasn't really any bird action for me to shoot. As I waited for the Kingfisher that would ultimately not show, I realized that there were enough dragonflies buzzing around to try my hand at photographing them in flight. I've tried this a number of times in the past, and could never focus on them.

At first, I left my autofocus settings the same as those which I showed you in my video showing my settings that I included in the Canon EOS R5 review, but trying to use a single focus point to focus on a small insect flying erratically and always completely out of focus because of the shallow depth of field, was simply not possible. I quickly tried using a cluster of focus points but was instantly reminded of why I dislike this autofocus mode, and it was still not possible to focus, so I pulled all the way back to full Auto, where the camera decides what to focus on. You don't have any visible focus points to start with.



So, in this photo of my settings screen, which you'll find under menu AF5, you see the setting that I usually use highlighted in light blue and the Auto setting that I selected for the Dragonfly selected with the pink border here. I went straight back to my usual setting afterward, and that's why I also registered this setting in My Menu, so that I can quickly get back to it as and when necessary.

I got a number of shots of the Dragonfly in flight, but here are a few that I'm particularly happy with, and once again, I've never been able to get this kind of shot in the past, so I put this down to the EOS R5's improved

autofocus and the speed at which the RF 100-500mm can focus, even with the 1.4X Extender fitted, which is what I was using to shoot these images. Note though that I did have to pull back a little to give myself a chance to get this guy in the frame, so the effective focal length was actually 480mm, so I could have removed the 1.4X Extender for this shot. I love how this looks like an X-Wing out of Star Wars! Also note that the pale blue background of this shot is water, not the sky, and that is why you can perhaps make out some small round lighter areas. These are sunlight reflecting off the water but really out of focus.



Here is a second shot of the Lesser Emperor Dragonfly, this time over a textured background of the foliage reflected in the water. I'm completely impressed that the EOS R5 and 100-500mm lens are able to pick out and focus on a very fast and erratically moving dragonfly the way that it did.

So, no bird shots other than the Swallow image which doesn't really count, but I'll keep trying and report back as time allows. I'm sure you'll agree though that as a test of the autofocus capabilities, these last few shots are pretty impressive.

No More Stroboscopic Subjects!

One thing that I promised to report back on in my EOS R5 review is how much smoother the electronic viewfinder is for real-life subjects, because the EOS R, even with the best settings I was able to find, used to present you with a kind of stroboscopic view of the subjects when shooting in bursts, and at times it made it difficult to track moving subjects. Well, I'm happy to report that this is no longer a problem. With the Electronic shutter, there is no interruption in the signal. It's so smooth it's actually difficult to tell that you are exposing frames at all. And with the mechanical shutter, it's still very smooth. I can't recall ever seeing the shutter in motion as I shot over the last few days.

The White-Tailed Skimmer Video

The various ponds at the garden I visited attract the White-Tailed Skimmer Dragonfly in larger numbers than the Lesser Emperor that I got the flight photos of. The Skimmers are pretty common here and I believe are gradually spreading as far west from Japan as Eastern Europe. They tend to hang around on the stems of reeds quite a lot, so as a test of the 120 frames per second 4K video, I grabbed a number of minutes of footage, all shot hand-held although I was often resting on posts and things, but at mostly 700mm, I was very impressed with the stability of the video. ([The video is here.](#))

From what I have been able to find on the web, it would seem that the RF 100-500mm gets around 5 stops of image stabilization from the lens and in-body image stabilization, but this footage looks better than that, although that's probably because it was shot at 120 fps, so you're only seeing 25% of the camera shake that was introduced anyway.

Note too that I had not realized that you



can't record audio when shooting at 120 frames per second, and I did not have any audio equipment with me, so you'll have to put up with my new track "Nostalgia" as the backing the music. This is the same music that I started using in the podcast a few weeks ago, but the full version, because the length of the track perfectly matched the length of the video that I ended up with.

A Word of Caution

One thing that I would like to mention before we move on, is that I found that sometimes with very fast moving close-by subjects, that I had to drop back to the 1.4X Extender just to be able to frame the subject. I'm pretty good at aligning my camera when zoomed to 400 or 500mm, as you'll have noticed from my tightly frame sea eagle shots that I share each year, but things like the dragonflies flitting around were very difficult to frame up, even with the 1.4X

Extender. The 2X Extender will probably be more suited for more distant subjects, simply because we then get more depth of field, so you can see the scene better to focus, and the amount of the scene in your frame increases as the distance to subject increases.

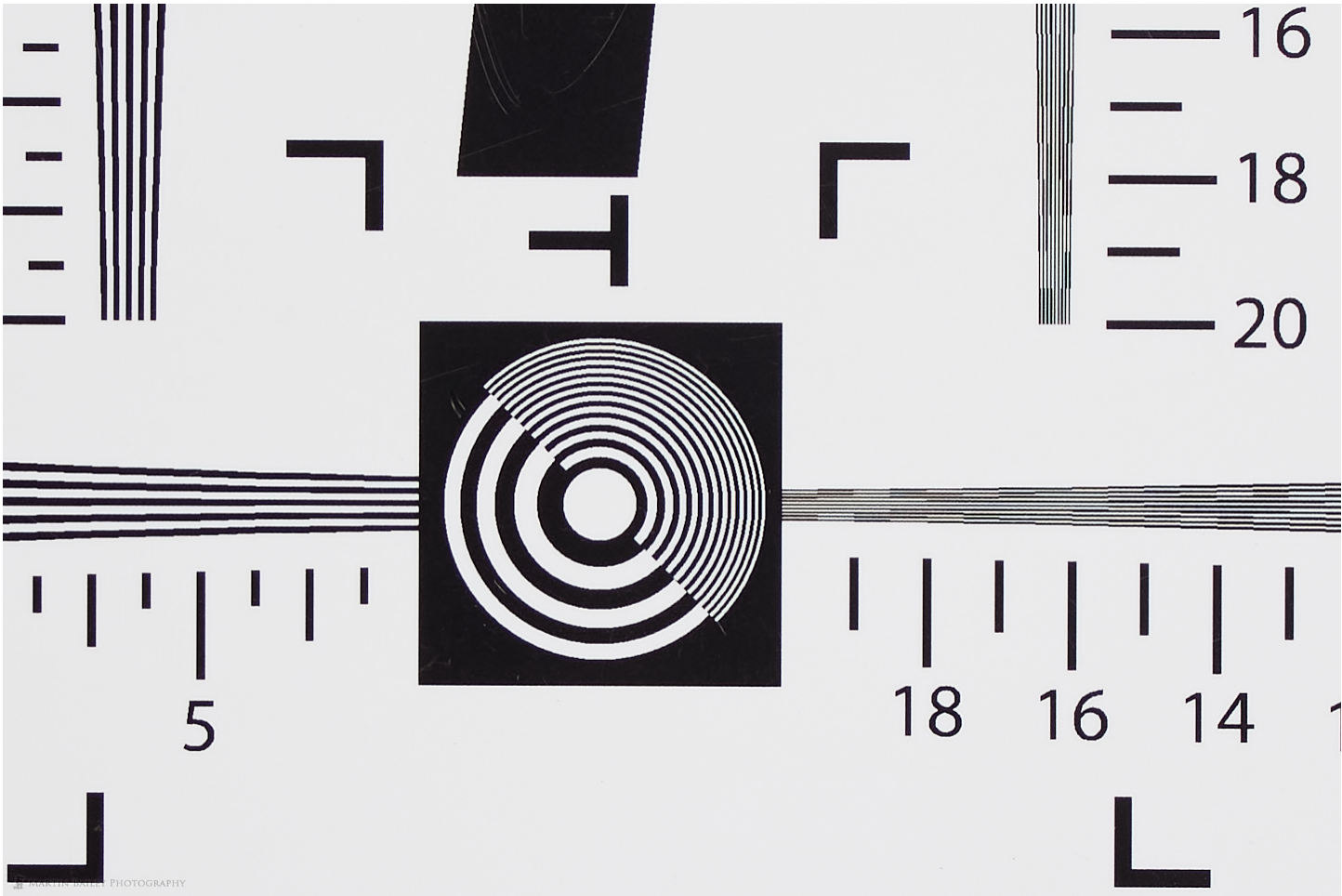
Thankfully though, because the R5 is 45 megapixels, we also have a little more freedom to crop, which helps with small or distant subjects that don't fill the frame. For larger birds, like the Red-Crowned Cranes and Sea Eagles that I love to shoot, I am really looking forward to working with them with just the 100-500mm but do also sometimes need a bit more reach when the cranes are a way off, so the Extenders will come in useful then too. Basically, the Extenders are necessary, and a welcome addition, but I want you to be aware that it sure can become a lot of lens to try to frame up a close-by, and with fast moving subject.

Resolution Test Chart Shots

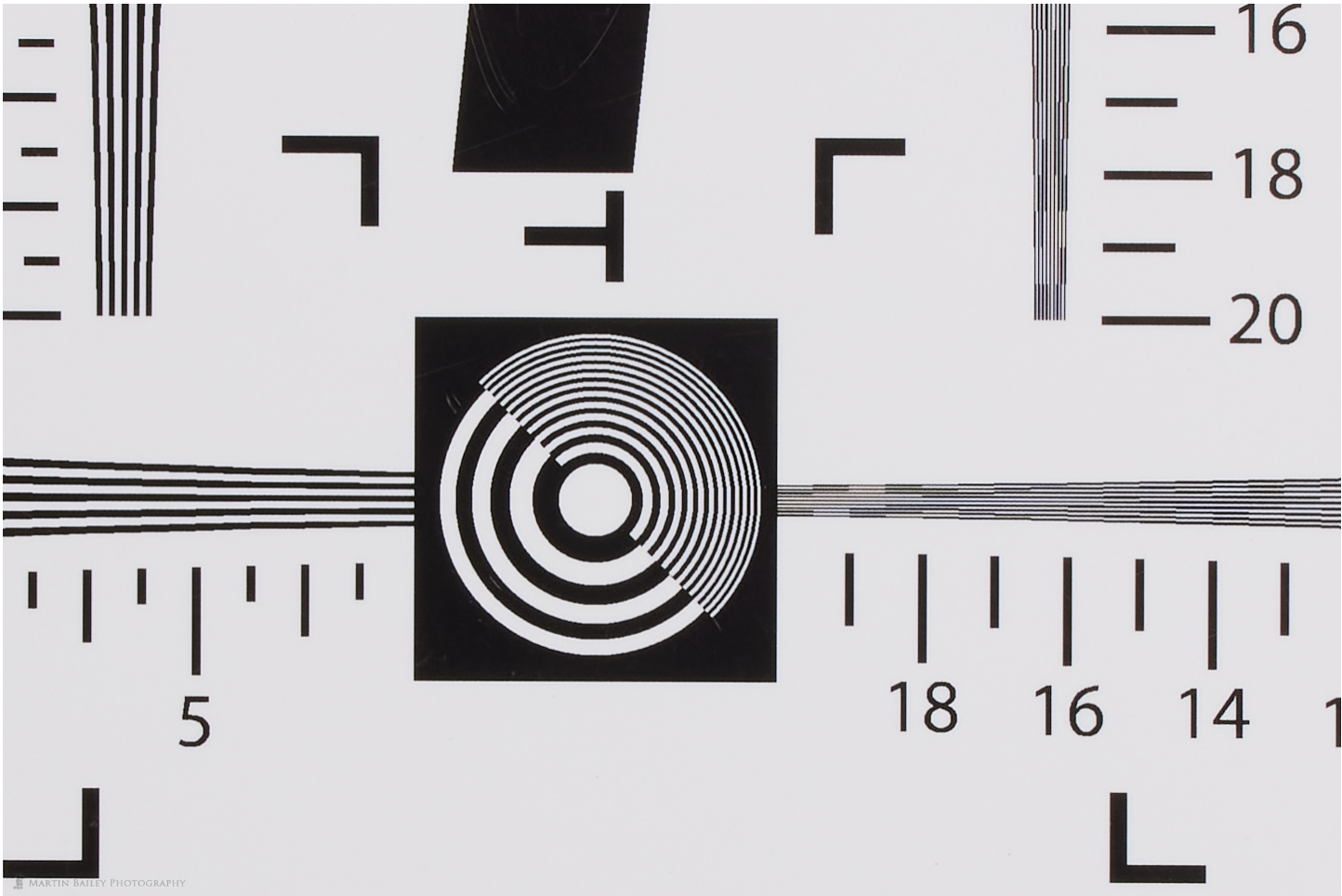
To finish, I'll share a number of shots of a resolution test chart at some of the key focal lengths and apertures, both with and without the Extenders. The results of these tests are now so good with Canon RF lenses that I'm almost ready to just stop including this test in my review, but I think it's still worth it, just to prove how good the resolution of this system is across the range, and especially when using Extenders. I've included details of the focal length, aperture and extender in the caption for this image, so click on them to open them in the Lightbox to see for yourself.

Also note that I was only able to include the full chart up to around 600mm due to lack of space in my studio, so the image does get larger as I add extenders and zoom etc. Note too that I have cropped out the center of the test shots at 100% so that you can see the detail. Including a resized version of the entire image would not show you anything other than what the chart looks like.

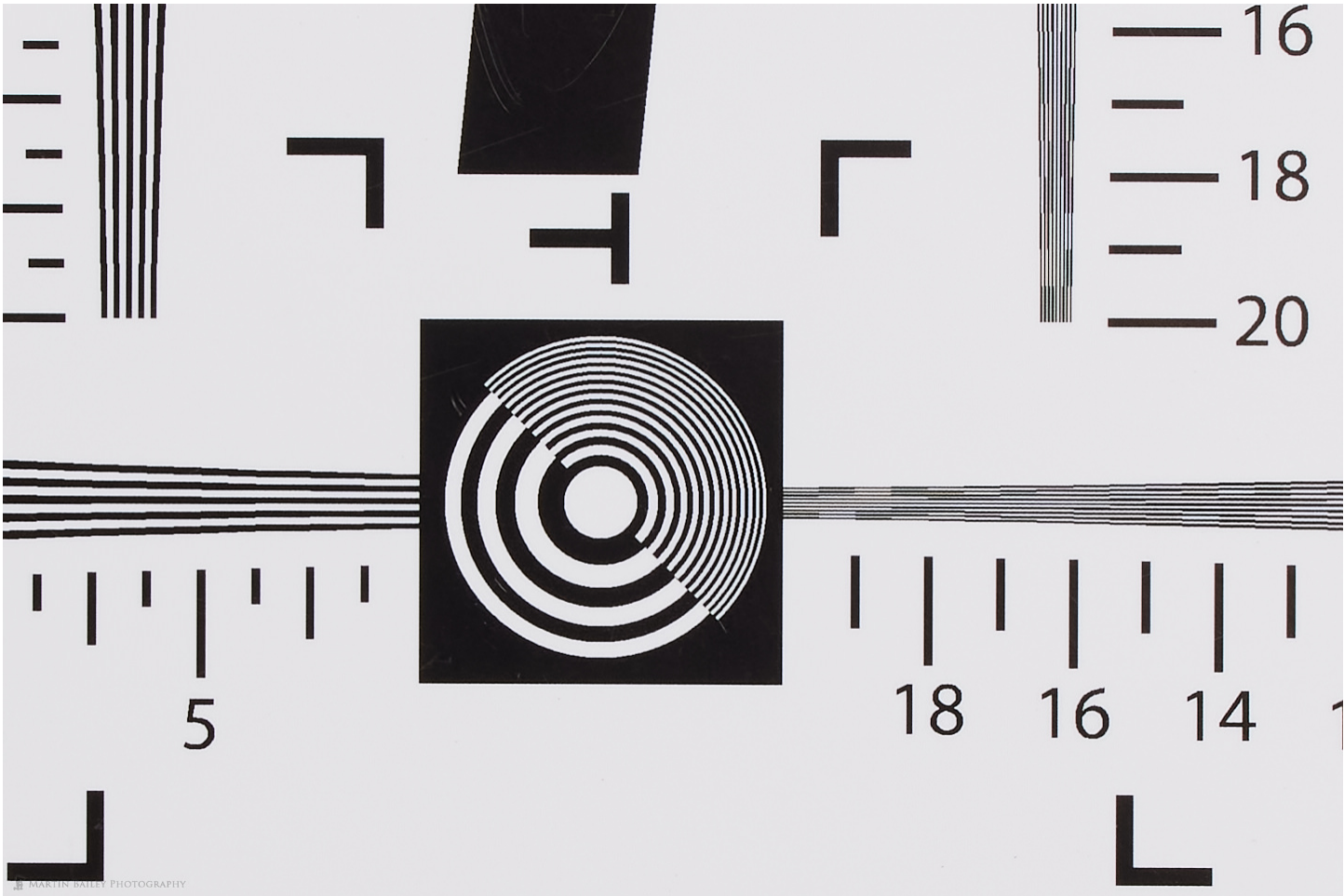
I'll lay out the images 4 per page for the next three pages.



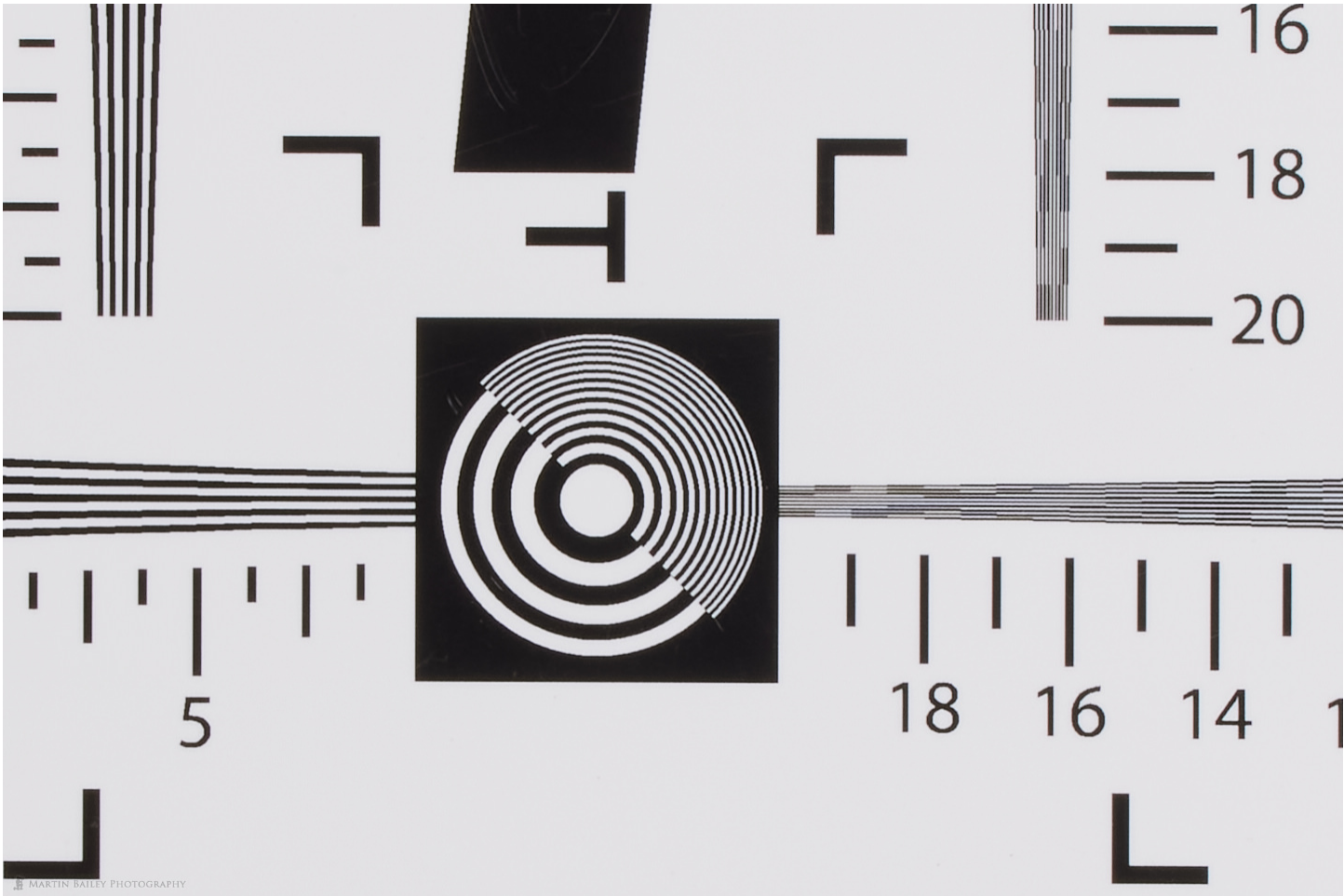
Canon EOS R5 with RF 100-500mm @ f/4.5 100m



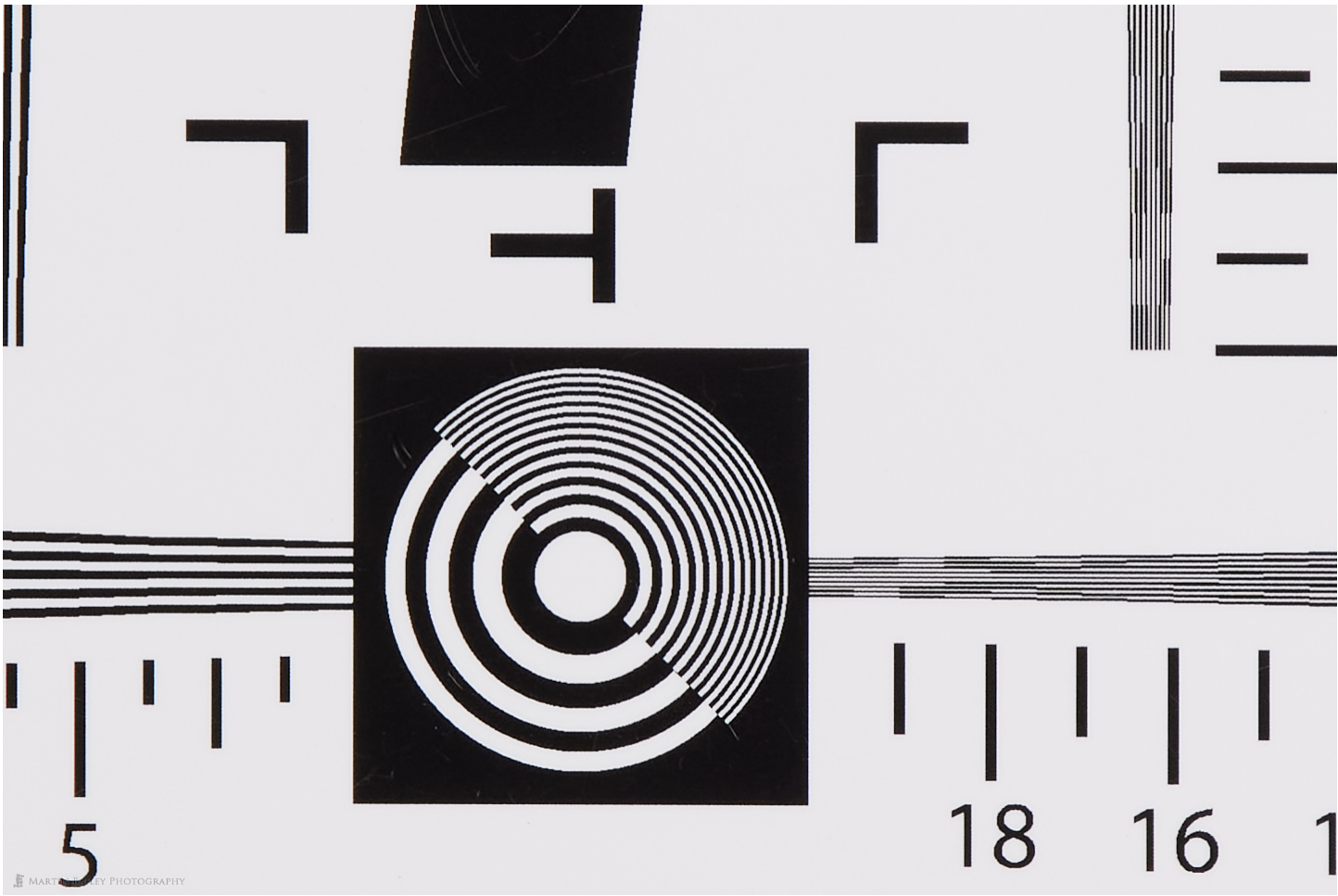
Canon EOS R5 with RF 100-500mm @ f/11 100m



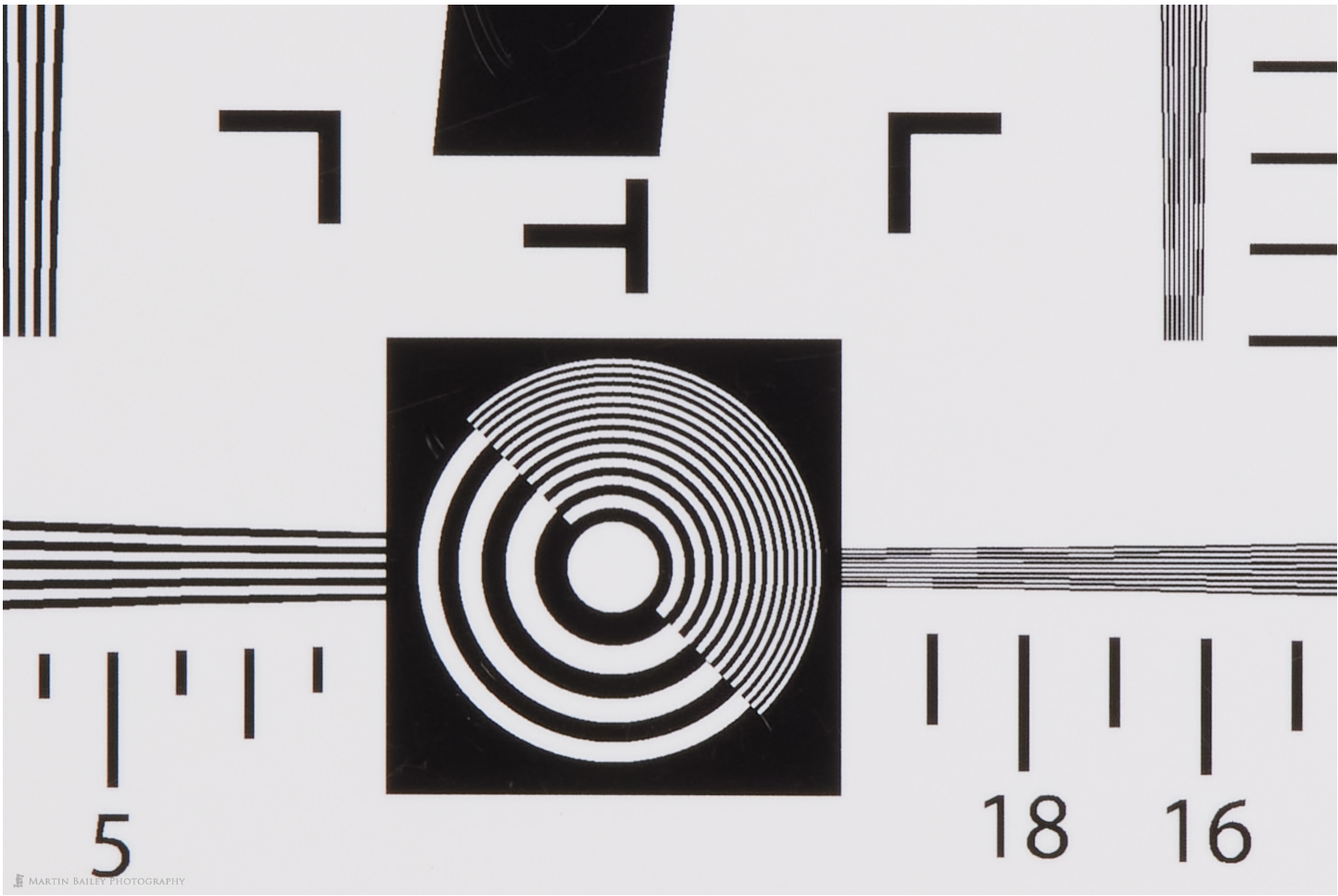
Canon EOS R5 with RF 100-500mm @ f/8 100m



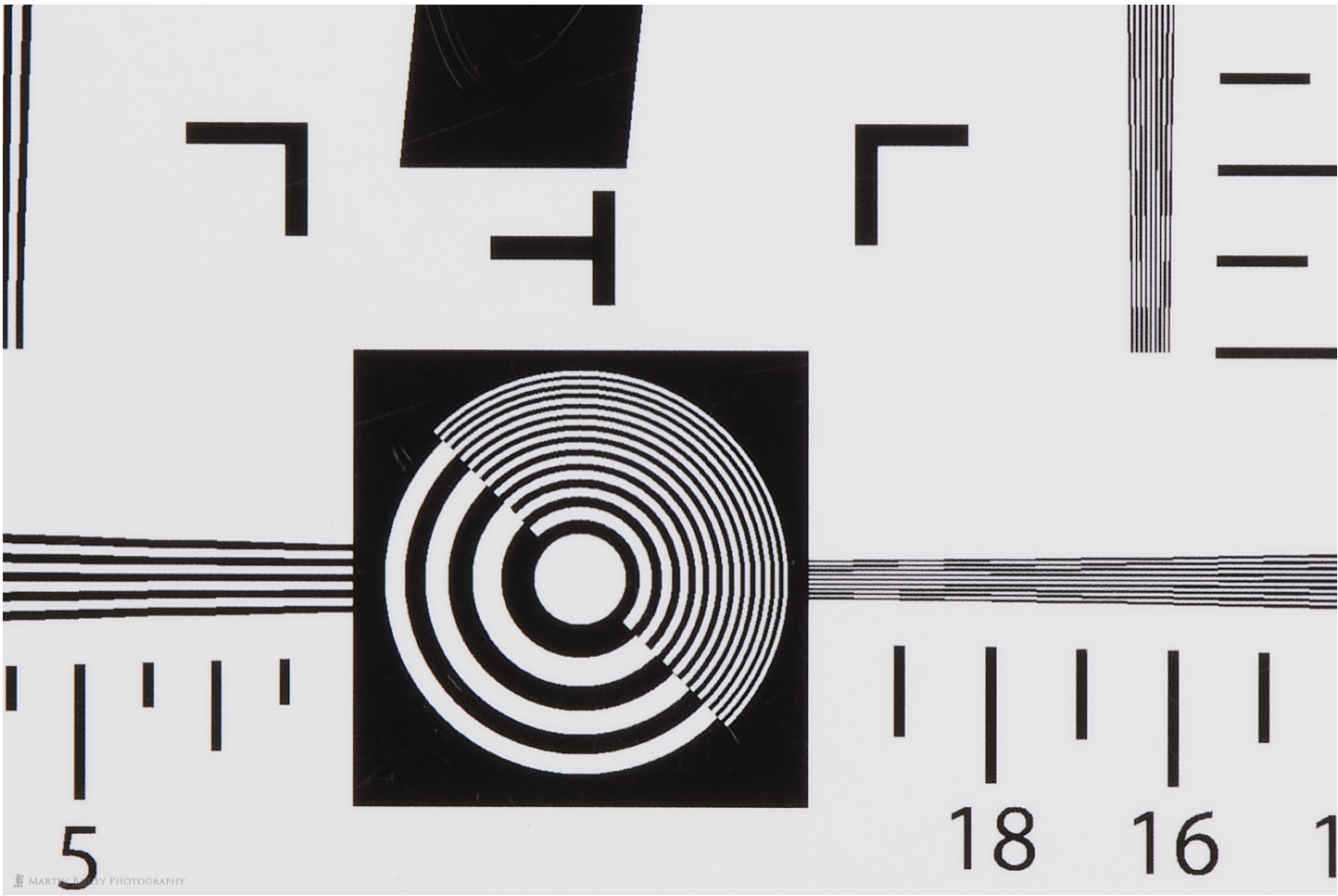
Canon EOS R5 with RF 100-500mm @ f/16 100m



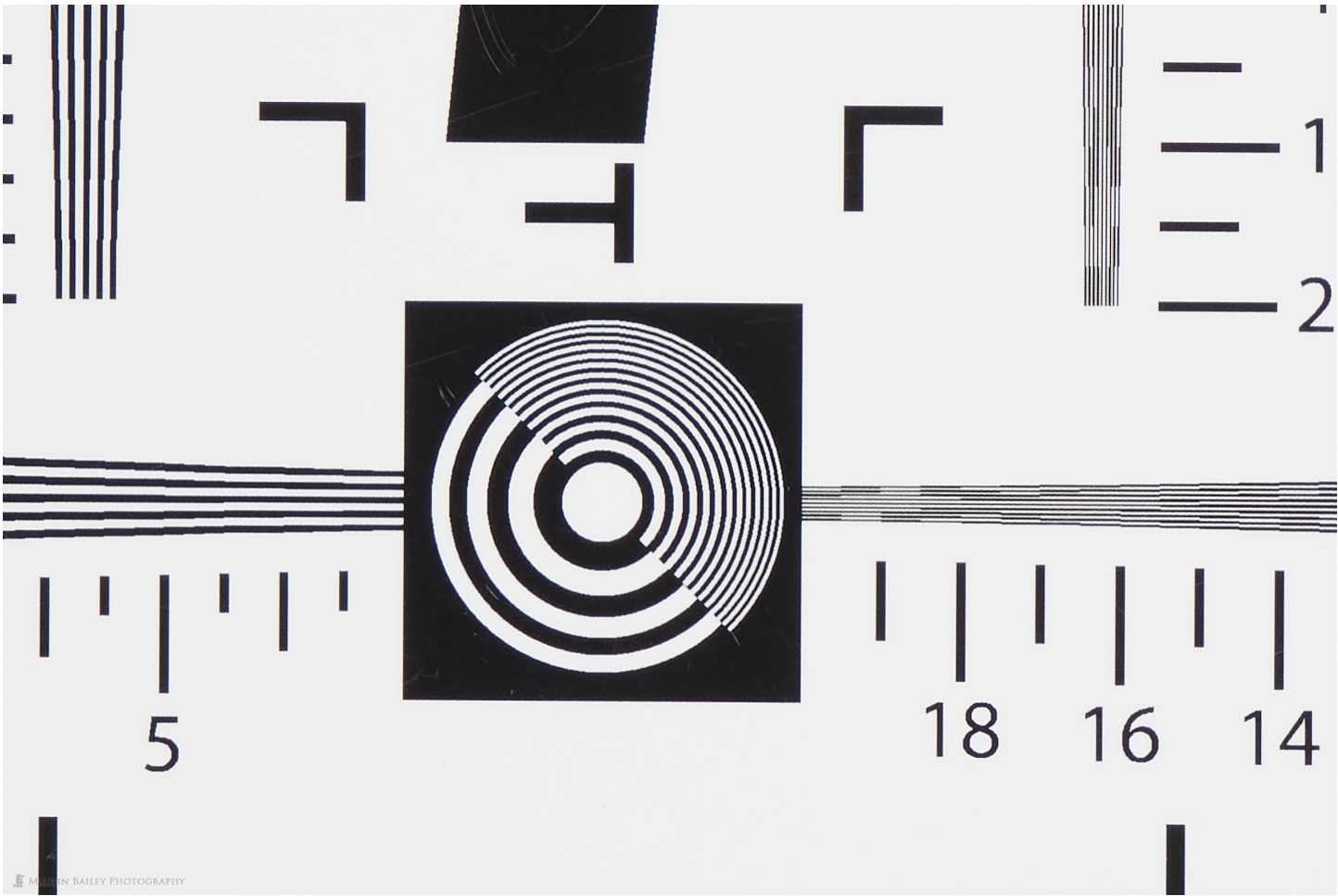
Canon EOS R5 with RF 100-500mm @ f/8 500m



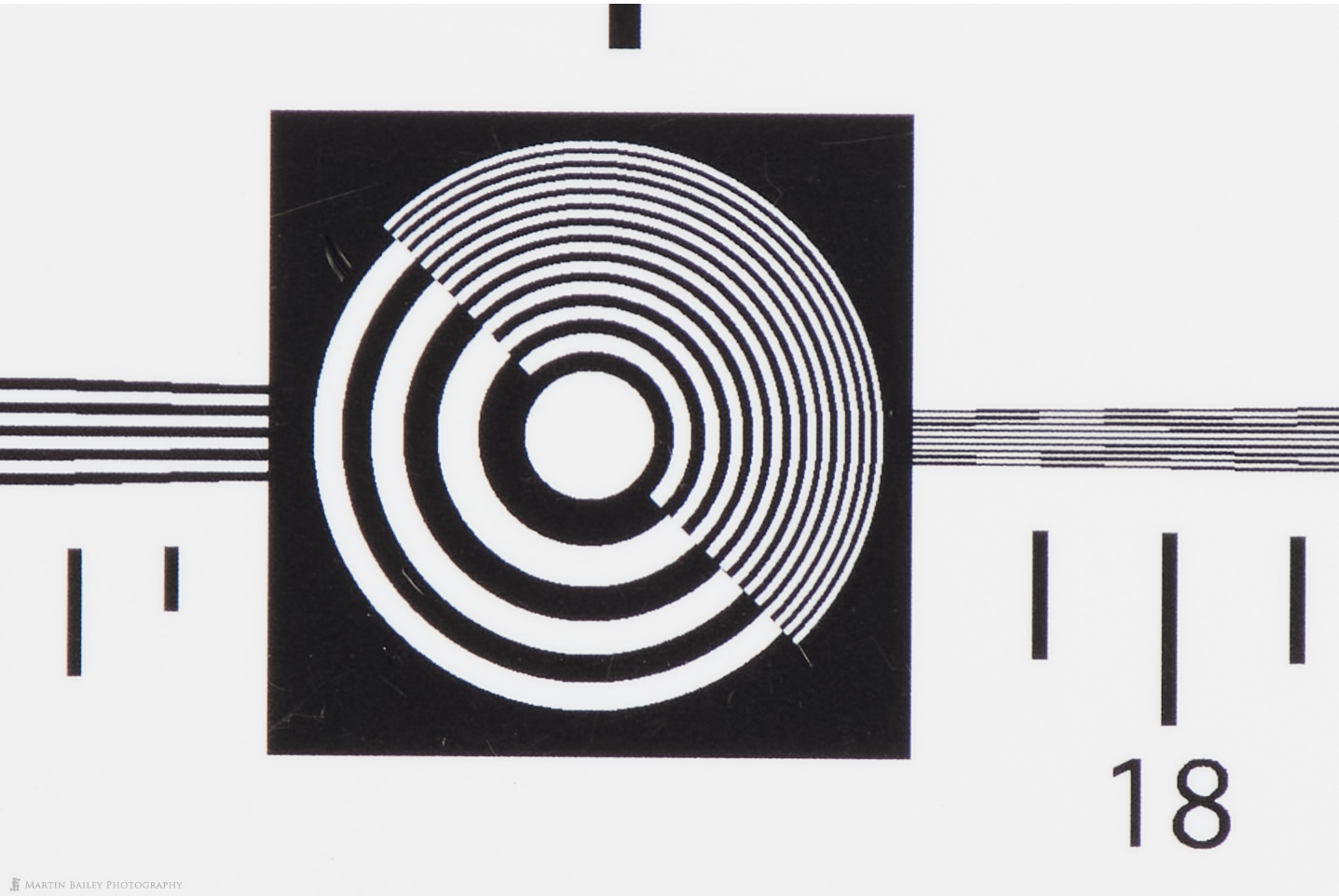
Canon EOS R5 with RF 100-500mm @ f/16 500m



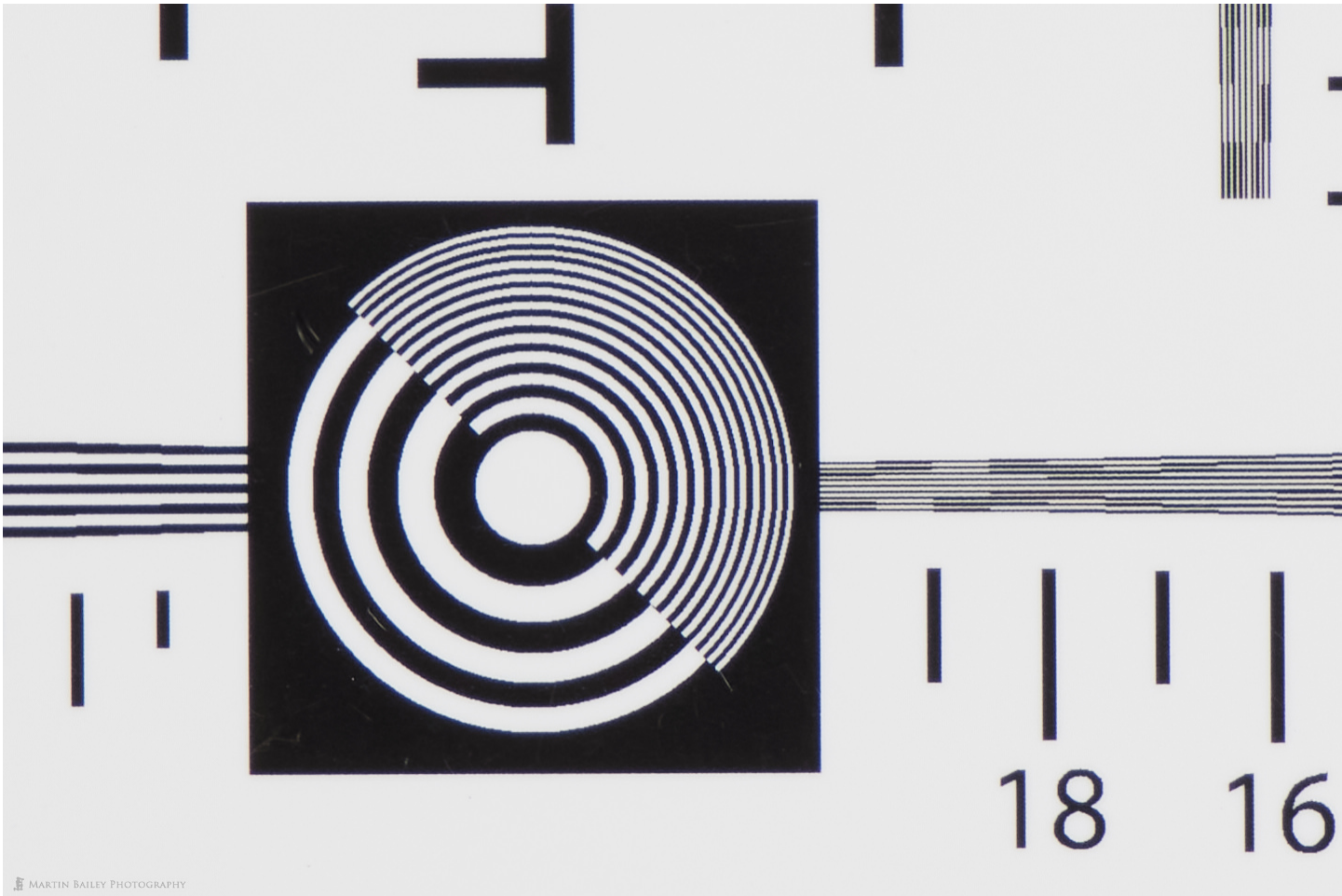
Canon EOS R5 with RF 100-500mm @ f/11 500m



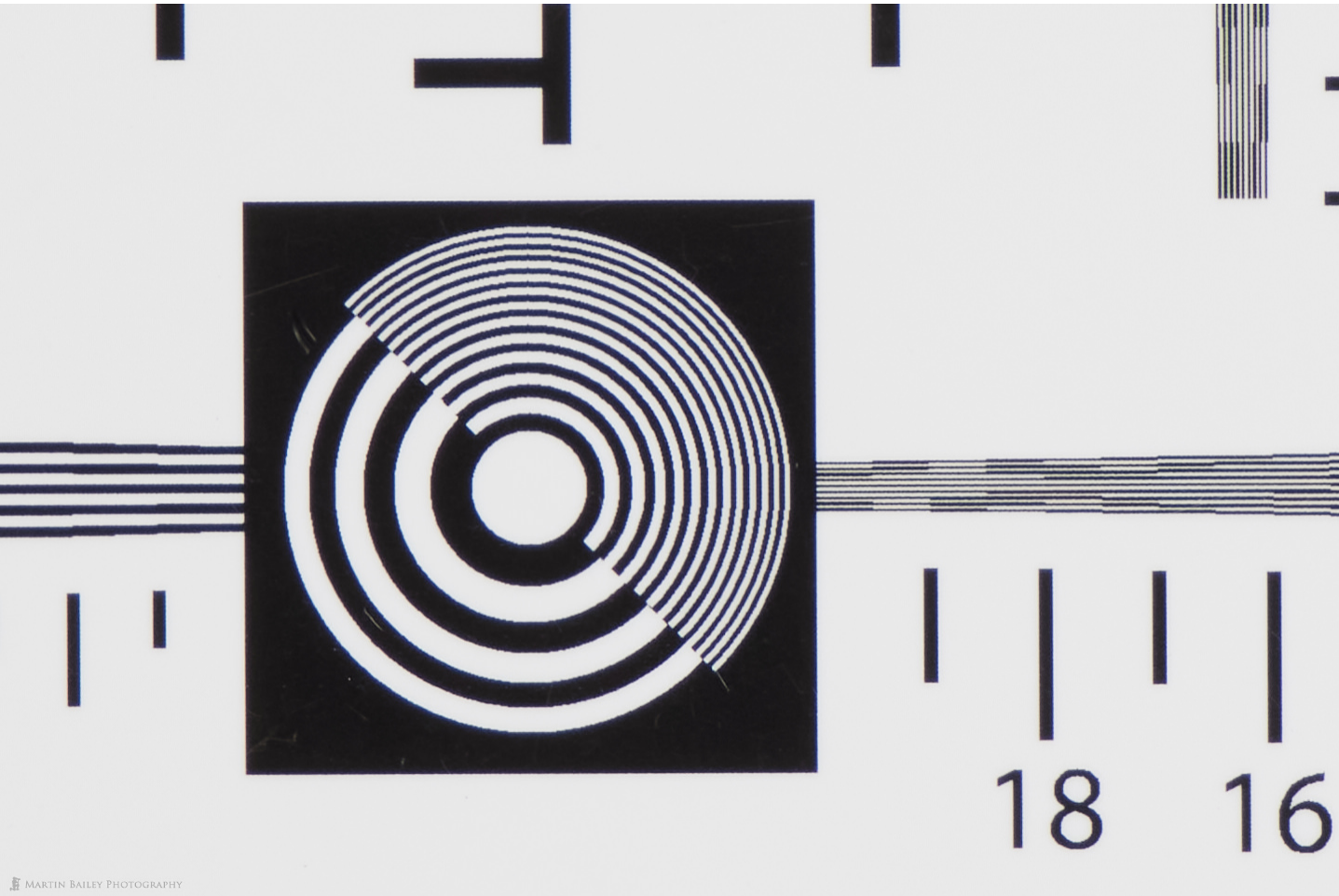
Canon EOS R5 with RF 100-500mm + 1.4X Extender @ f/8 420m



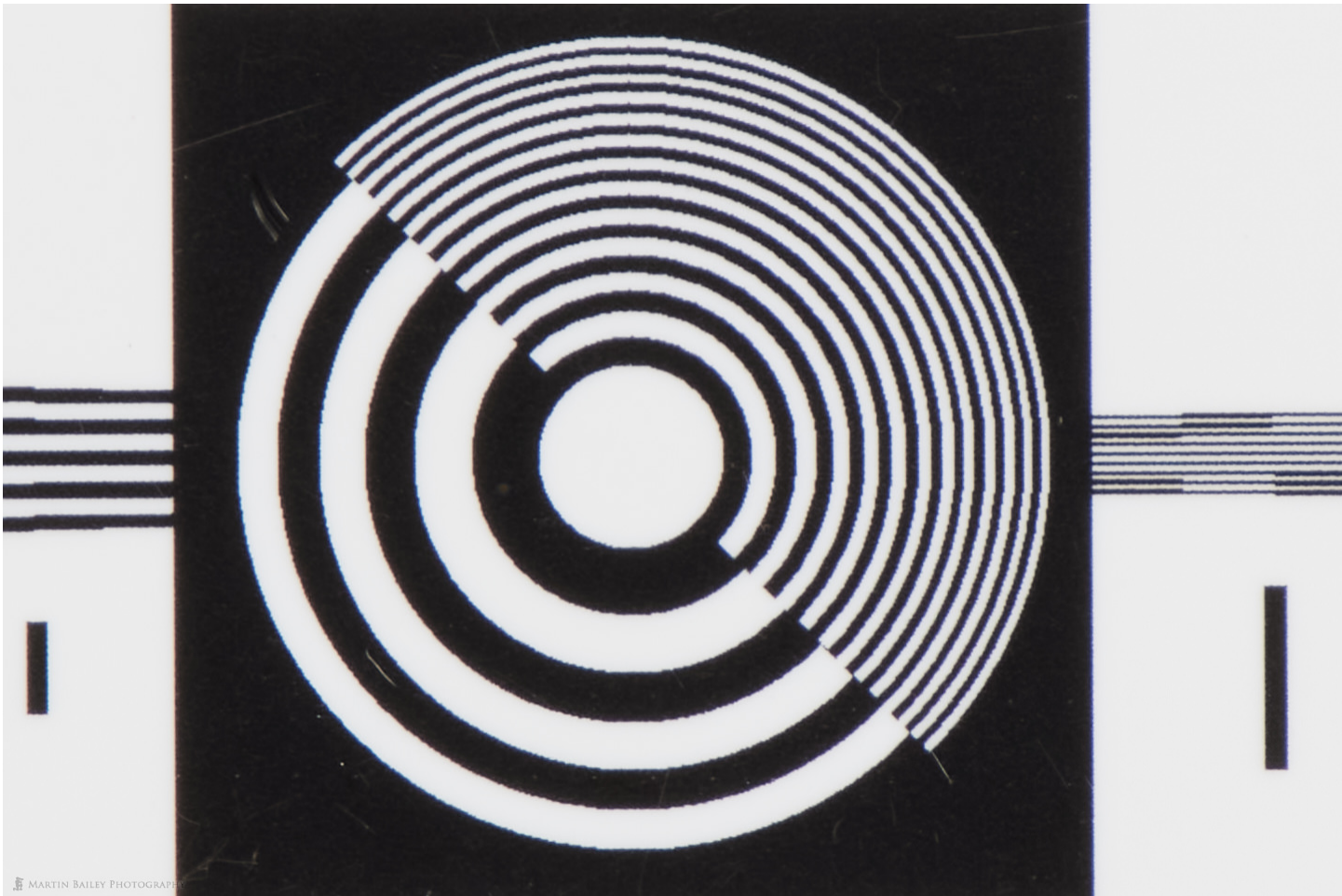
Canon EOS R5 with RF 100-500mm + 1.4X Extender @ f/10 700m



Canon EOS R5 with RF 100-500mm + 2X Extender @ f/11 600m



Canon EOS R5 with RF 100-500mm + 1.4X Extender @ f/14 700m



Canon EOS R5 with RF 100-500mm + 2X Extender @ f/14 1000m

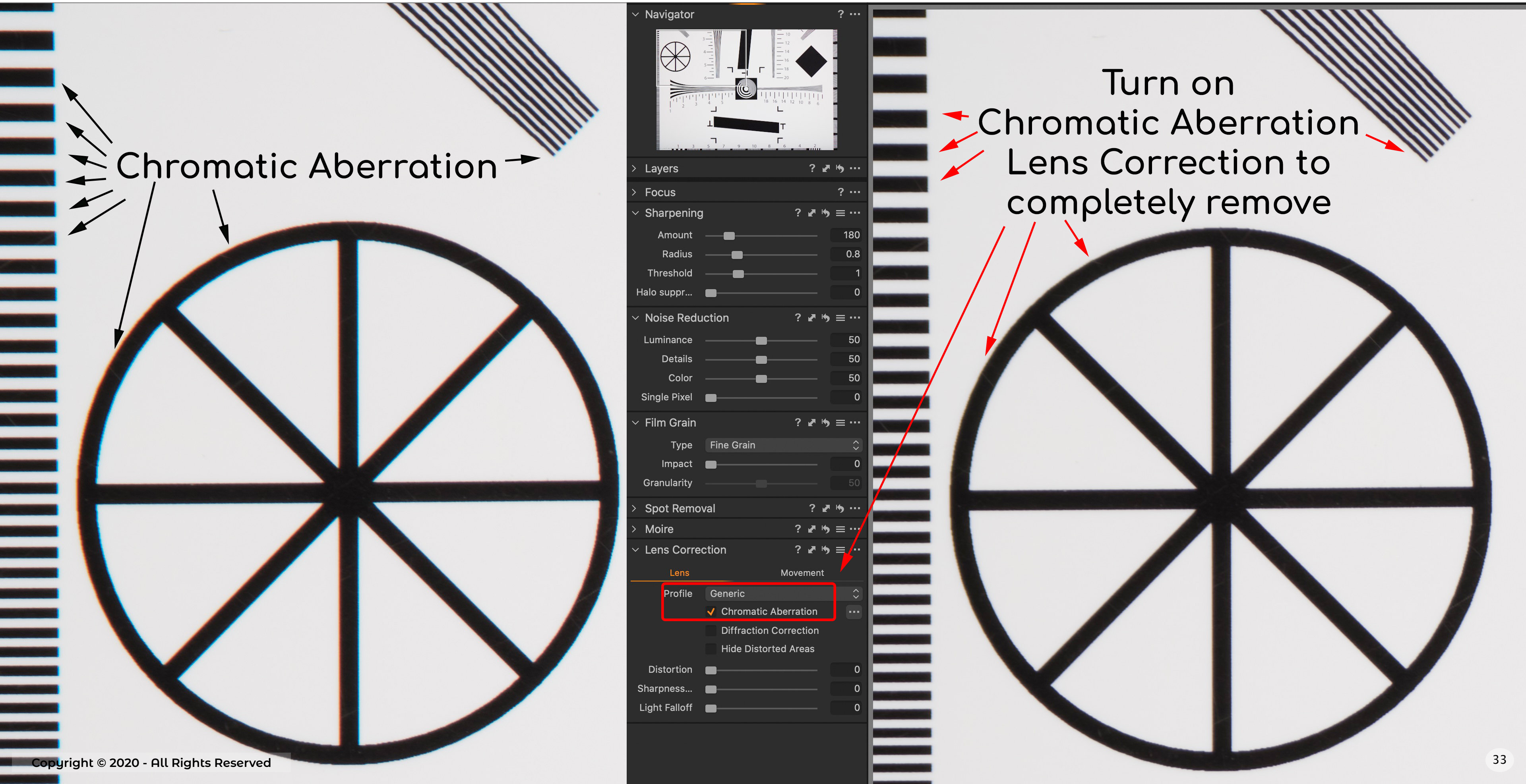
Chromatic Aberration from 700mm

I did notice a little bit of Chromatic Aberration creeping in in the corner of the image from around 700mm with the 1.4X Extender and when using the 2X Extender. This is only in the corners, and even without a lens profile, the

Chromatic Aberration Lens Correction in Capture One Pro removes this instantly, so it's not something to worry about. This screenshot is from the top left corner of the 1000mm f/14 photograph, shot with the 2X Extender, but as you can see it disappears with lens correction Chromatic Aberration turned on.

OK, so I think we'll start to wrap it up there for now. I will report back as I continue to shoot with both the R5 and the 100-500mm lens. At this point, it's still not clear whether my Winter tours will be able to proceed or not next year, and we are still being asked to stay in Tokyo, because we have a higher concentration of corona virus patients than other prefectures, but as soon as

these restrictions are lifted, I'll jump in my car and get somewhere that has some decent wildlife and jump back into this.



Conclusion

As with the EOS R5 that I also reviewed recently, the 100-500mm lens is probably one of the best lenses that Canon has ever made. It's not perfect, with a touch of Chromatic Aberration when using the Extenders, and being locked at a widest focal length of 300mm when using the Extenders isn't ideal either, but for the image quality and versatility that it does bring, I can absolutely live with these tiny inconveniences.

I would like to say in closing, that I have never been happier to be a Canon user. I realize that there are other systems out there that are making good advances as well, but my preference has always been Canon, and that makes it a natural progression to stay with them, but I do get a chance to look at other systems on my workshops, and I can honestly say that none of them are as attractive to me as Canon's current line-up.

As I also mentioned in my recent EOS R5 review, I believe that it is the best camera Canon has ever made, and the RF 100-500mm is an amazing addition to the line-up. It's sharp, hand-holdable with a huge range, and with the RF Extenders gives me enough reach that I will simply never regret having to part with my 200-400mm lens to help with the purchase. I have a second EOS R5 on order, although I hear it may be months now before that arrives.

When I consider that my gear bag will comprise of just three lenses and two bodies and two Extenders now to get me from 15 to 1000 mm, it makes traveling, both logistically and physically, so much easier than just 7 or 8 years ago. For wildlife work back then I was lugging around two full-sized bodies with vertical grips, a 14mm lens, a 16-35mm lens, and a 24-105mm lens, and then the 70-200mm f/2.8 lens and Extenders, and a 300mm f/2.8 and a 600mm f/4 lens. My bag weighed a ton and with the tightened weight restrictions on

international flights now, there is no way I'd get all of that overseas, and I honestly don't think I could carry it all now anyway, definitely not for a full day. So, a huge thumbs up on this latest influx of gear from Canon!

If you are still concerned about jumping to a mirrorless camera system, don't be. The R5 no longer handles like a Mirrorless camera. This is what I was holding off for, for the past five years or so. The EOS R was a great introduction, and it was the RF mount that got me sold on that camera and starting me selling my EF lenses. Now, the system is perfect, and in almost every respect now better than the DSLRs I've owned over the years.

Affiliate Links

As always, if you have found the information I shared here useful, please consider using our affiliate links below when placing your order from B&H Photo. Also, note that no third party has provided any gear to enable me to write this review. I bought everything I have mentioned today with my own hard-earned yen, and everything that I have relayed to you is my own unbiased opinion.

Canon RF 100-500mm f/4.5-7.1L IS USM Lens – <https://mbp.ac/100-500>

Canon EOS R5 Body – <https://mbp.ac/EOSR5>

Canon LP-E6NH Battery – <https://mbp.ac/lp-e6nh>

Canon EOS RF 24-105mm f/4L Lens – <https://mbp.ac/rf24-105>

Canon RF 50mm f1.2L USM Lens – <https://mbp.ac/RF50mm>

Canon RF 15-35mm f/2.8L IS USM Lens – <https://mbp.ac/15-35>

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