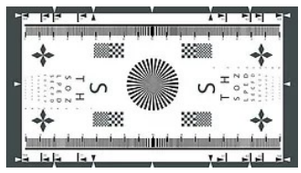
Lens Testing

Is your autofocus lens focusing where you point it? Possibly not. How does your normal lens compare to your zoom?

Here are some tips on how to test your lenses.

These tests are not meant to give scientifically reliable data. They are merely a tool for lens comparison and a way to check for proper function. If you suspect that your lens or camera is not performing properly, send it to the manufacturer for adjustment.



Resolution Testing

What You Will Need

1. Any D-SLR with Live View mode capability.
2. One or more lenses.
3. A stable tripod.
4. A remote trigger release, preferably wireless, but a wired release will work.
5. A printout of a focus test chart. Click here to download a chart. Print the chart on matte paper at a reasonable size. 8x12, 12x18. A large printout will give you more working room.
6. Scotch tape or mounting tape.
7. A clean flat wall on which to attach the printout or a board with the printout attached to it.

Set Up

1. Pick a spot on your wall where you will hang the focus chart. The wall must be vertical and straight. You want the focus chart to be directly in front of the camera, centered at camera height. If the camera or the chart is tilted in any direction the test will be useless.
2. Set up the camera on your tripod and make sure that the camera is placed parallel to the focus chart. Again, make sure that the camera is not tilted left/right/up/down. Use a string or tape measure to verify that all measurements between the camera and chart are equal. The camera must be parallel to the chart. Assume you will need approx. 5-7 feet working distance between the camera and the chart. If you are using a long telephoto you will need a larger working distance.
3. Center the chart in your viewfinder. Fill most of the frame with the chart but leave a little around the edges to help your eye verify that it's parallel and even.

Preparing the Shot

1. Switch your camera to full Manual Mode.
2. Set your ISO to 100.
3. Shoot in RAW mode if possible. If you must shoot jpeg set all image adjustments at normal. No sharpening. Contrast or color adjustments should be set to normal.
4. Take a test shot to determine exposure. this is vital. You must get proper exposure.
5. Set your lens for manual focus.
6. Use live view for focusing. Remember to manually focus.
7. Use mirror lock up and a remote release to avoid camera shake.

Taking the Shot

1. Focus on the chart. Get the best focus you can.
2. Take a shot at every aperture setting. Remember to adjust your shutter speed accordingly to maintain proper exposure.
3. Log every shot on paper, especially if you are testing a lens without electronic contacts.
4. For zoom lenses, do the aperture test run at several points in the zoom range. Typically a 17-85 would be tested at 17mm, 20mm, 30mm, 50mm, 85mm. You may want to save your zoom testing for a time when you can test more than one lens at a particular focal length. This will avoid the need to constantly move the camera.
5. You may want to switch the camera to autofocus and do a quick check for AF accuracy after you complete your aperture tests. Shoot at f5.6 and make sure you start out-of- focus.

Checking the Results

1. Load your RAW images, or jpegs, into your best photo software.
2. Set the magnification to 100%.
3. Do not adjust exposure. This could alter the results.
4. View the center an four corners at each aperture for sharpness, noise, color shifts, etc. If you are consistently seeing one corner sharp and one blurry, you either didn't have the camera and chart parallel to each other or your camera needs service.
5. You may wish to save cropped images of the center and corners for easier reference.
6. If you get consistently blurry results in the center of all images with all of the lenses you test, send your camera in for service. Keep in mind that the corners will never be as sharp as the center and at wide open apertures they may look just plain horrible, but all four corners should be similar in quality.

Focus Accuracy Testing

This test is for autofocus cameras. It helps you determine if the camera is focusing accurately.

What You Will Need

1. A stiff ruler. Very stiff. It must remain flat even if unsupported in the middle. Or a focus calibration aid like this one.
2. An autofocus camera.
3. A tripod.
4. One or more lenses.
5. Approx. 5 feet of working space.

The Test

- Set up the ruler on a table, leaning against a wall. It should be as close to 45° as possible. If the angle is off the test results will be skewed.

- Set up your camera at the same height as the middle of the ruler.
- Use aperture priority if possible.
- You will be using the center AF point in your viewfinder. Line it up on the point of the ruler you wish to focus on.
- Set your camera for manual focus. Turn it to infinity. This will make the camera focus from a neutral starting point.
- Set the camera to single AF.
- Press the shutter button and take the shot.
- Take several shots at different apertures up to f5.6 or so. Remember to start at infinity for each shot.

You will get an image similar to the one pictured to the right. The in focus area is your depth of field. The center of which is your focused point.

You must determine if the camera actually focused on the point you chose. Expect the focus to be slightly off. A few millimeters is okay. This is the advantage of using a ruler and also the reason why it must be at 45°.

If your in focus area is too large, use a larger aperture and shoot it again or move a little closer.