

Retroreflection occurs when light is returned to its source. It is important to measure retroreflection effects in many types of optical systems, but it can be a challenge. For example, a classical goniometer measurement doesn't capture retroreflection because the detector hides the light source.

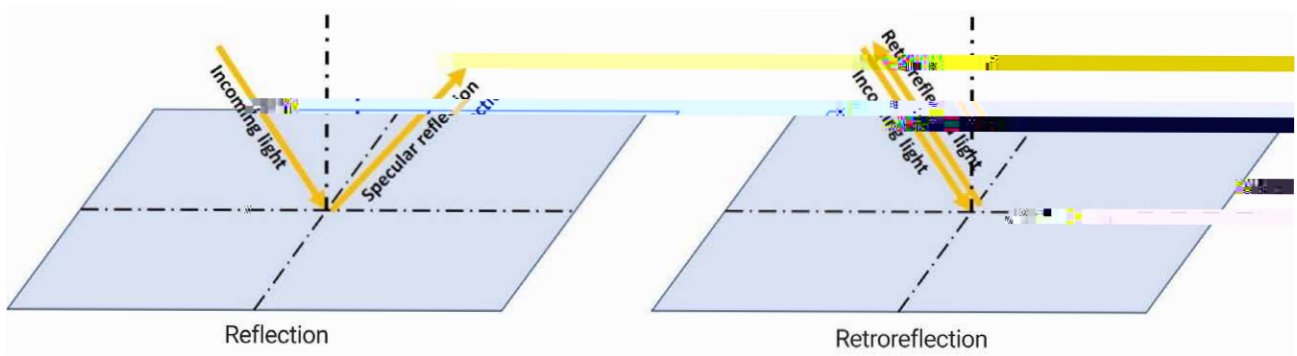


Figure 1: Illustration of reflection and retroreflection

Synopsys Mini-Diff instruments easily support retroreflection measurements, as described in this example featuring a traffic stop

In the following figures, the measurement results correspond to the angle of incidence at 20° for the red area (RGB measurement at top) and for the white area (green light measurement at bottom).

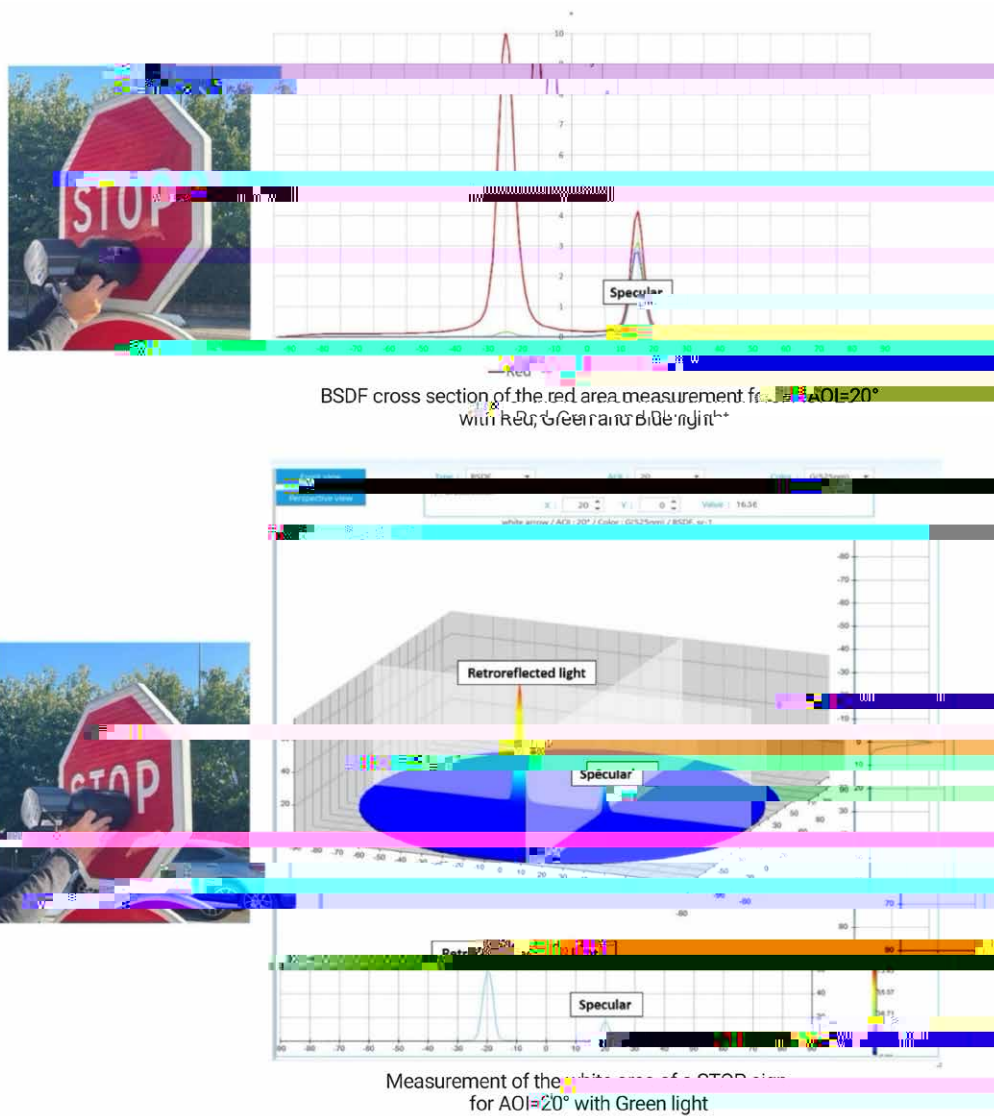


Figure 3: RGB measurement for red area of the sign (top); green light measurement for the white area of the sign (bottom)

The Mini-Diff is able to measure the retroreflected light; a peak is visible in the specular orientation. In addition, the RGB measurements show the color appearance of the different areas of the sign.

The Mini-Diff also allows you to measure and quantify, via a BSGF measurement, the retroreflection of a luminous sign and determine whether the sign will have sufficient night visibility. You can then export measurements for use in optical simulation software such as LightTools.

LightTools simulation results obtained from stop sign measurements are shown in the following figure. The simulations provide a luminance map from the driver's perspective.

