

Standards for Evaluating Photographic and Cinematic Lenses

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Abstract:

For a camera, the lens is the eye. It collects the light rays reflected to it from the scene being photographed, to create an image of this scene on the film or camera sensor. Thus, there is no way to obtain a good image, whether still or motion, without using a highly efficient lens. If the light rays reflected from the photographed scene pass through a lens with poor optical performance, the camera, whatever its efficiency and its sensor, will not be able to produce a good image. Which increases the importance of assessing and testing the lens's efficiency and its ability to convey the details of the captured scenes in objective ways. The research problem lies in the fact that failure to evaluate the lens, may cause many problems that negatively affect either the use of the lens during shooting, or the quality of the images that we get with this lens, such as: The problem of the difficulty of using the lens due to poor design, And the problem of the lens's lack of ability to translate the contrast of the photographed scenes, and its poor resolution. As well as the heterogeneity of the optical performance of the lens from its center to its edges. Therefore, the research aims to examine the criteria for evaluating the lenses used in photography and cinematography, whether those related to the efficiency of the design and movement of its various mechanisms, or those that relate to the efficiency of the optical performance of the lens such as: lens speed, resolution, contrast, sharpness, and maximum depth of field, as well as the absence of lens defects that negatively affect the images formed by it.

Keywords:

Photographic Lenses, Cinematic Lenses, Evaluating Lenses, Lens Speed, Lens Contrast, Lens Resolution, MTF Charts, Circle of Confusion.