

# *Performance Comparison between Glass & Film Substrate Collimating Mirrors; An Optical Component-Level Evaluation*

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## **ABSTRACT**

(500 words max)

Large Collimating mirrors are the trusted standard for high-fidelity, low-parallax, visual performance in safety-critical, multi-observer applications such as aviation simulation training. For decades, metalized film mirrors were the de-facto collimation solution, but film mirror Field of View (FOV) limitations have necessitated the increasingly widespread integration of glass mirror systems, particularly in helicopter and advanced military simulation training applications. Glass market share is now also increasing within fixed wing FAA Level D training applications, which may be explained by economies of scale, tightening regulatory distortion requirements and the broad perception of a more “crisp” glass visual image. This paper seeks to clarify these perceptions of visual image “crispness” through objective measurement of component level optical performance for glass and film substrate collimating mirrors. The results inform a discussion of the connections between reflected light scatter profiles and the perception of visual image crispness in glass systems. The results further relay the impacts of dust accumulation and substrate cleanability.

## **BIO**

### ***PRIMARY AUTHOR***

(250 words max)

**David Emig** is a thought-leader in display and visual system design. With experience covering the range from micro-displays to high-fidelity collimated visual systems, he holds several patents and has authored numerous technical publications. David's work as Lead Optical Engineer for the Motorola Droid phone yielded the 'Best Mobile Picture Quality Award' during independent review, surpassing Apple, Google and Samsung (displaymate.com). He is currently a Staff Display Systems Engineer for FlightSafety International's Visual Simulation Systems division focusing on display systems design and new tech development. Current projects include the architecture and development of parallelized software solutions for display design optimization, correction and integration.