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(54) **APPARATUS AND SYSTEM FOR TESTING AN IMAGE PRODUCED BY A HELMET-MOUNTED DISPLAY**

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(52) **U.S. Cl.** ..... **382/209; 382/217; 382/219**

(58) **Field of Classification Search** ..... 345/7, 345/8, 9; 348/65, 73, 76, 53  
See application file for complete search history.

(56) **References Cited**  
**U.S. PATENT DOCUMENTS**  
5,836,869 A \* 11/1998 Kudo et al. .... 600/173  
(Continued)

**FOREIGN PATENT DOCUMENTS**  
WO WO-01/22149 3/2001

**OTHER PUBLICATIONS**  
Thomas et al., "Optical and Biodynamic Evaluation of the Helmet Integrated Display Sight System (HIDSS) for the RAH-66 Comanche Development and Validation Program Phase", U.S. Army Aeromedical Research Laboratory, Mar. 1998.

(Continued)  
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(57) **ABSTRACT**  
The present invention relates to a system and method for allowing quality of an image to be tested. For example, the present invention may be utilized to test the quality of an image produced by a helmet-mounted display such as an Integrated Helmet and Display Sighting System (IHADSS). In at least one embodiment, after the image is captured by a camera, for example, at least one measurable aspect of the image is analyzed in an objective manner to determine at least one possible difference in the measurable aspect of the image and a corresponding measurable aspect of a recalled representation of the image and presenting the difference via a visual display device.

**19 Claims, 12 Drawing Sheets**

