

TESTING ADAPTIVE HEADLIGHTS IN CONFORMANCE WITH STANDARDS

Variable testing of the overall ADB lighting system with the highest precision in a standard-compliant, realistic situation in the field.

Instrument Systems presents a newly developed measuring system for the variable testing of state-of-the-art ADB headlights (Adaptive Driving Beam) in conformance with standards, also the recently amended US standard FMVSS 108. The fast and reliable test system is based on the proven, high-precision DSP 200 photometer. The latter has a very wide measuring range of 0.1 mlx to 200 klx for all standard light sources and satisfies the requirement of the highest accuracy class L in accordance with DIN 5032-7 (2017). It is ideally suited to ultra-fast measurements – also in combination with the Instrument Systems AMS or LGS series of goniophotometers. With the support of the specifically developed software, conformity tests can be efficiently performed.

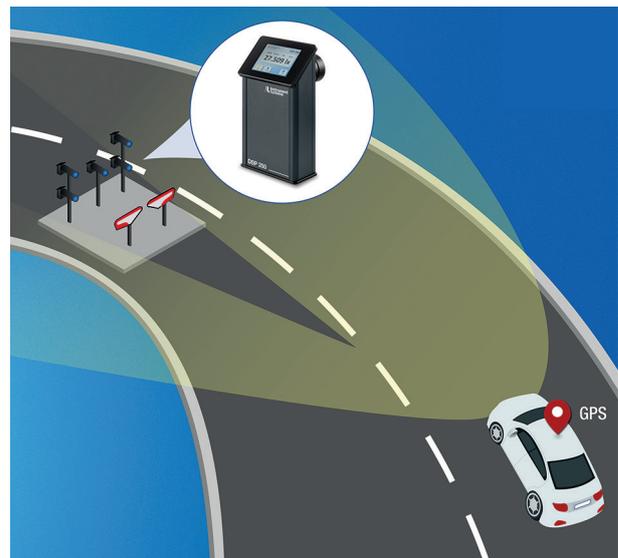
New US standard with specific requirements

The future of automotive lighting lies in glare-free high beam lights in HD quality and close interaction of the vehicle with a variety of sensors. Adaptive headlights afford the driver maximum possible illumination of his or her own travel path while avoiding glare to oncoming traffic by dimming the light (Fig. 1). This spatially varied adaptation of light in different situations enhances safety for all road users. After Europe and Asia, ADB headlights have recently been allowed in the USA, albeit following deviating regulations of the NHTSA. The latter calls for adapted or newly developed light solutions.

Optical testing of ADB light – high precision and fast

For testing ADB light, Instrument Systems offers an all-in-one system with fast and high-precision DSP 200 photometers. The transportable system can be set up flexibly, depending on the test situation in hand. The aim of the newly developed test system is to test the functioning of the overall ADB lighting system with the highest precision in a standard-compliant, realistic situation in the field. The system comes with a set of reference lamps as defined in the regulation. These are fixed on the test rack moving in the field in relation to the vehicle with ADB under validation.

The DSP 200 photometer sets standards in terms of precision, linearity and measurement speed. It satisfies the requirements of accuracy class L in accordance with DIN 5032-7 (2017) and EN 13032-1 for laboratory measurement of the photometric data of lamps and luminaires. The wide measuring range extends from 0.1 mlx (display resolution) to 200 klx for all common light sources. The DSP 200 distinguishes itself by the ability to measure modern test samples with pulse-width modulated LEDs and LED modules, as used in ADB headlights. Typical pulse frequencies lie between 80 Hz and 1 kHz with in part extremely short limit switching cycles.



Testing automobile exterior lighting in multiple scenarios

In addition, in its Optronik Line Instrument Systems offers perfectly coordinated systems for testing further types of automotive exterior lighting: the AMS screen imaging system is a highly efficient solution for qualifying different lighting scenarios of modern headlight types, e.g. HD / ADB / matrix / pixel headlights. The measurement solution combines camera-based measurements on a calibrated projection wall with goniometric far-field measurements. The system setup consists of a classical AMS goniophotometer of the Optronik Line with a fast illuminance meter positioned behind the photometric distance limit, and a LumiCam 2400B / 4000B imaging colorimeter with a resolution of 5- or 12-megapixels.

In combination with other photometers, imaging colorimeters, retroreflectometers and high-end spectroradiometers of the CAS series, Instrument Systems offers all-in-one test solutions for the analysis and quality control of exterior automotive lighting.

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