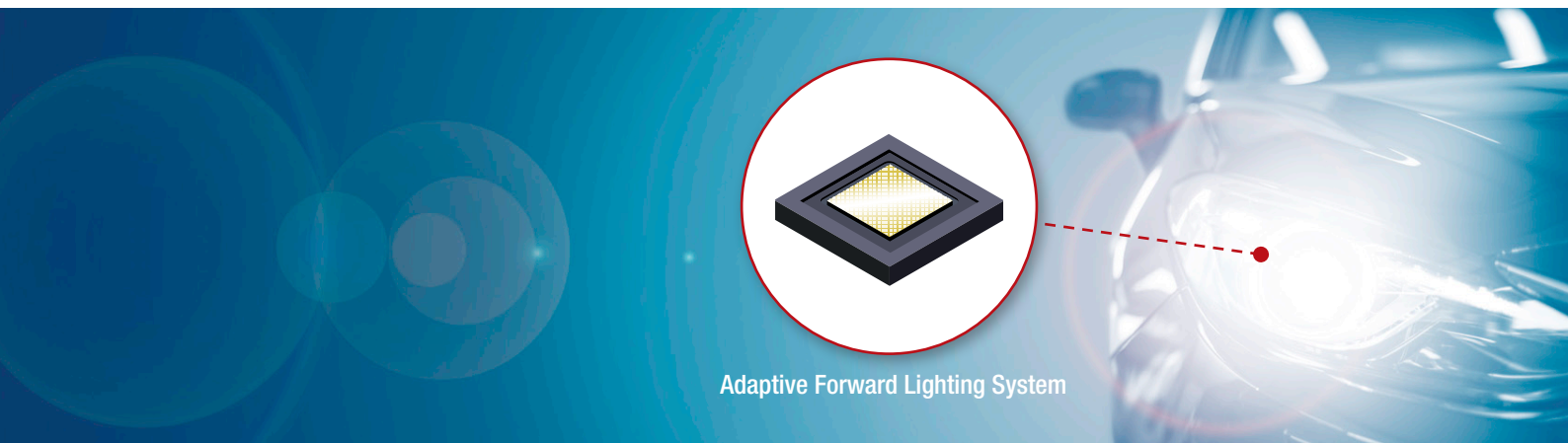


# 2D Measurement of $\mu$ LED Arrays for AFS

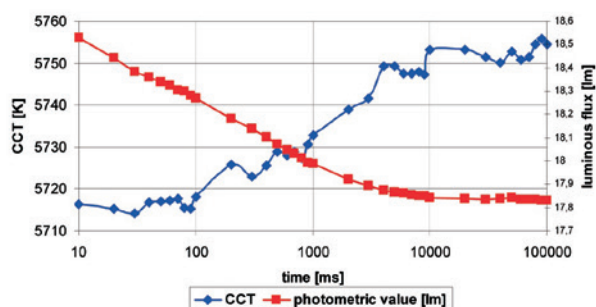


Adaptive Forward Lighting System

## \\ CHALLENGES OF AFS TESTING

### 1. Temperature dependence on measurement

The major challenge for high-power LED measurement is LED self-heating when powered on. The resulting heat causes a drop in output and results in a color shift



Exemplary drift of brightness (red) and color temperature (blue) of a white LED after turning on.

### 2. High accuracy at high measurement speed

An advanced system is required to quickly achieve the required accuracy level.

Method	One-by-one approach – each LED measured individually	2D approach – LED array measured in one shot
System	Spectrometer and sphere; only one LED is turned on for measurement	Camera-based system; measurement of all LEDs in one shot
Pro	Highly precise measurement of LED power and spectrum	Very fast measurement of LED power and color
Contra	Time consuming	Challenging to achieve high accuracy of camera readings

## \\ 2D MEASUREMENT SOLUTION

### LumiTop system for $\mu$ LED array measurement in AFS application:

- » LumiTop 4000 with 12-megapixel camera and a 100 mm lens
- » Smallest field of view: 10 x 14 mm
- » LumiTop system solves the heating-up problem by measuring all color channels in a single shot
- » High-precision CAS 140D spectrometer corrects the camera readings to an extraordinary level of accuracy
- » Absolute system calibration: Instrument Systems is an ISO 17025-accredited testing lab – the accuracy of each system is verified before shipment
- » Ideal for measurement in the lab or production in-line testing



LumiTop 2D measurement system.