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GTB Working Group


Light Sources

Extension of Regulation 128 towards Light Sources for Forward Lighting Applications

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Introduction

- Introduction into R128 of LED light source categories for forward lighting applications (front fog, low beam, high beam, AFS) is planned for **2017**
- R128 changes include performance-based requirements to address forward lighting application-specific parameters:
 - Visibility & Glare
 - Temperature Dependency of LED Light Sources 
- Requirements in R128 have to match with the requirements in the forward lighting device regulations (R19, R98, R112, R113, R123)
- In order to avoid significant delay of introduction of this new technology we propose to implement the required adjustments to the ***device regulations*** before the “period of no change” due to the simplification of device regulations

Light Source Work Items the Pipeline

Regulation 128 Amendments

Body Text & Annexes:

- Visibility & Glare

- Contrast Requirements
 - To ensure adequate performance in devices with a cut-off
- Uniformity Requirements

Light
Source
Specific

- Thermal Behaviour:



- Thermal Grades

Light
Source
& Device
Specific

Plus:

Category Data Sheet (Either in R128 Annex or Resolution)

Amendments to Device Regulations

- Forward Lighting Regulations (R19, R98, R112, R113, R123) need to be amended to accept R128 light sources
 - Adding the option for R128 light sources:
 - Introduction of Thermal Grades from R128 into forward lighting regulations



Amendments to Device Regulations

Example I

R112

- 6.1.1. Headlamps shall be so made that they give adequate illumination without dazzle when emitting the passing-beam, and good illumination when emitting the driving-beam. Bend lighting may be produced by activating one additional filament light source, *one or more LED light source(s)* or one or more LED module(s) being part of the passing-beam headlamp.

Amendments to Device Regulations

Example II

R112

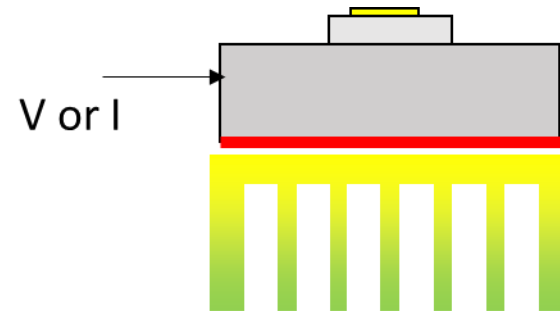
- 1.6. References made in this Regulation to standard (étalon) filament *lamp(s) light source(s)* and to Regulation No. 37 shall refer to Regulation No. 37 and its series of amendments in force at the time of application for type approval.

References made in this Regulation to standard (étalon) LED light source(s) and to Regulation No. 128, including the thermal grade of the LED light source(s), shall refer to Regulation No. 128 and its series of amendments in force at the time of application for type approval.

LED Light Sources According to R128 for Forward Lighting Application

LED light source, with:

- Photometric characteristics
 - near-field and far-field
 - Contrast, uniformity
- Mechanical interface
 - positioning tolerance (after replacement)
- Electrical interface (connector)
 - Either: operated at 13.2V
 - Or: using external control gear
- Thermal performance
 - Either: heat sink integrated
 - Or: thermal interface to heatsink



What is Special for Forward Lighting LED Light Sources?



The headlamp can be close to combustion engine, which would mean different levels of higher temperature conditions at the LED light source

- Introduce the concept of **Thermal Grades** to qualify the appropriate thermal operating environment of the LED light source

Example: all "LWx" emit 700lm \pm 15% at 25°C and ...

„LWx 65C“ means Thermal Grade 65°C	„LWx 85C“ means Thermal Grade 85°C	„LWx 105C“ means Thermal Grade 105°C
700lm \pm 15% at 65°C	700lm \pm 15% at 85°C	700lm \pm 15% at 105°C

Note: Thermal grades have downward compatible keying

Timeline for Consideration

GRE-75:

- Informal document outlining the changes needed to close the technology gap

GRE-76:

- Formal documents
- Final proposal for amendments of R19, R98, R112, R113 and R123
- Informal proposal for amendments of R128 (incl. thermal grades, contrast, uniformity requirements) completed by a category sheet (either in R128 or in the resolution)

END