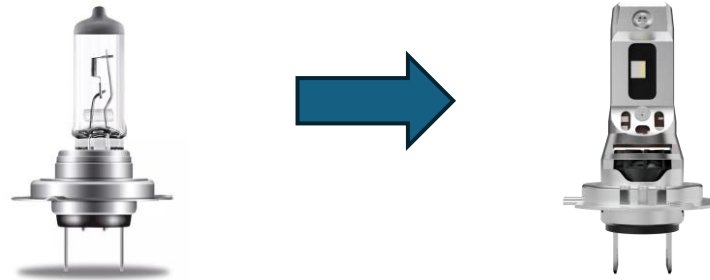


# Specific Aspects for the Inspection of LED Replacement Light Sources



Input provided by light source experts:

Dr. Philipp Plathner, OSRAM, Secretary of GRE TF S/R

Dr. Walter Schlager, Ultinon Motion, Convenor IEC SC34A/WG2

Dr. Bart Terburg, OSRAM, Chairman GTB WG LS

# Background on LED “retrofits” WITHOUT type approval

- Many LED replacement light sources are being offered online / offline without type approval (“retrofits”); such products may be allowed for „off-road only“ use, depending on national law\*
- Often clear consumer information “for off-road use only” is missing
- As they have same interface (electrical + mechanical) like their halogen counterpart, they fit in many headlamps / vehicles
- These products are not safe to use on public roads
- When a vehicle is equipped with such LED “retrofits” in an exterior lighting function, it shall be a condition to fail during PTI

\*Germany is banning the sale of products without type approval (whether or not labelled “off-road only”) , but in many countries these products are available and online sales is difficult to restrict, even in Germany

# Background on LED replacement light sources WITH type approval (LEDr)

- Since some years, LED replacement light sources (LEDr) are available with the necessary type approval
- Extensive testing during type approval is ensuring that they have an equivalent performance to their halogen counterpart
- LEDr are safe and legal to use on public roads
- LEDr provide a clear cut-off line in low beam applications
- LEDr provide at least the same but often improved road illumination without increasing glare level
- When a vehicle is equipped with safe, approved LEDr, the presence of the LEDr shall NOT be a condition to fail the vehicle during PTI

Type approvals of LEDr are done

- EITHER: At national level (for categories where no harmonised /UN requirement exists, e.g. H4 and H7)
- OR: According UN R37 (for categories already covered by the UN (R37, sheets in R.E.5)

# Nationally approved LEDr

- Germany and France issue national approvals for LEDr since 2020 resp. 2021
- Spain, Austria, Sweden, etc. have defined a national process to enable “street legal” LEDr based on the approvals given in Germany / France
- These national approvals of LEDr are based on headlamp beam measurements (compliance to beam photometry requirements) and vehicle installation testing. The use of the nationally approved LEDr is restricted to those vehicle types given in a “positive list”, maintained by the light source manufacturer.
- LEDr with national approval include e.g. H1, H4, H7, H8, H9, H10, H16, H19, HB3, HB4, HIR2, W5W

# UN Regulation No. 37 approved LEDr

- In 2022 the scope of R37 was amended to include LEDr, to enable the inclusion of LEDr category sheets in R.E.5 (Consolidated Resolution on the common specification of light source categories)
- The process to define the necessary LEDr category sheets is running in the UNECE system (i.e. GRE TF S/R)
- The UN approval follows the established extensive testing at light source level (electrical, photometric, thermal, mechanical, geometrical)
  - Approval is at the light source level
  - Beam measurement and vehicle testing is not required
- R37-approved LEDr are “legally equivalent” with R37-approved halogen light sources i.e. legal in all applications, in all vehicles, in all countries where UN R37 is recognized

LEDr category	Status
H11, C5W	In force since 2022
H8, H16, HB4	In force since 2026/03
H10, HIR2, HB3, H9	Expected in force in 2027
H4, H7, ..	Work in progress

# LEDr with National Approval



German ABG



German ABG marking „~~K“

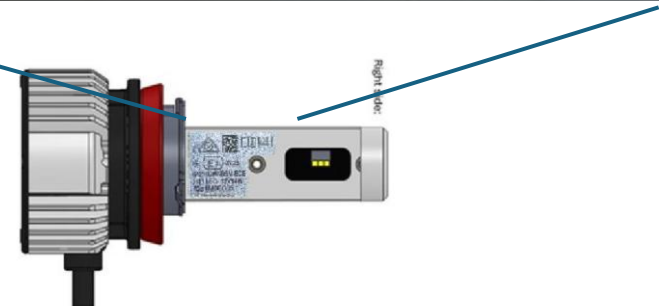
# LEDr with UN R37 approval



UN R37



UN R37 „E1“ marking



## **Conclusion:**

Only LEDr with type approval and corresponding approval marking shall be installed in vehicles

### **But – there is a verification issue:**

the approval marking on a light source is not accessible/visible after installation, and during PTI its removal should be avoided

# Ideas for improving this situation

- Customer to apply sticker on headlamp housing, providing LEDr type approval information (sticker provided in the package)
- Customer to present a copy of LEDr type approval documents, relevant pages only (download via manufacturer website)
- Customer to present packaging of installed light source; the package providing LEDr type approval information;

In case of further doubts:

➔ Remove LEDr and verify-approval marking (“Last Resort”)

A missing approval marking on the light source is the “ultimate” criteria for identifying unsafe products i.e. to fail PTI

# *Thank You*

*Dr. Philipp Plathner*

*Secretary of GRE TF S/R*

*Phone: + 49 160 4744158*

*E-mail: [philipp.plathner@ams-osram.com](mailto:philipp.plathner@ams-osram.com)*