

# GRE Task Force LED Substitutes / Retrofits (TF SR)

## Status report for GRE82

2019-10-14

K. Manz, DE (Chairman)

Ph. Bailey, UK (Vice-Chairman)

Ph. Plathner, IEC (Secretary)

# Meetings

- 1<sup>st</sup> meeting: 2017-12-14, Aachen (report: TFSR-01-11)
- 2<sup>nd</sup> meeting: 2018-02-06, Bonn (report: TFSR-02-05)
- 3<sup>rd</sup> meeting: 2018-03-27, Brussels (report: TFSR-03-09)
- 4<sup>th</sup> meeting: 2018-06-06 Brussels (report: TFSR-04-09)
- 5<sup>th</sup> meeting: 2018-01-30 Aachen (report: TFSR-05-09)
- 6<sup>th</sup> meeting: 2019-05-15 Paris (report: TFSR-06-06)
- 7<sup>th</sup> meeting: 2019-07-18 Karlsruhe (report: TFSR-07-07)
- 8<sup>th</sup> meeting: 2019-12-10 Bonn (scheduled)

## Two-step approach:

- Step 1: LED Substitutes
  - Step 1A: light signaling applications
  - Step 1B: road illumination applications
- Step 2: LED Retrofits
  - Step 2A: Administrative items
  - Step 2B: Technical items

# Step 1A: LED Substitutes for light signaling applications

- Package of documents approved by GRE80
  - R128
  - RE5
  - R148 (LSD)
  - Installation Regulations
- Approved by WP29 in March 2019 (R128, RE5)
- Enter-into-force October 2019 (R128, RE5)

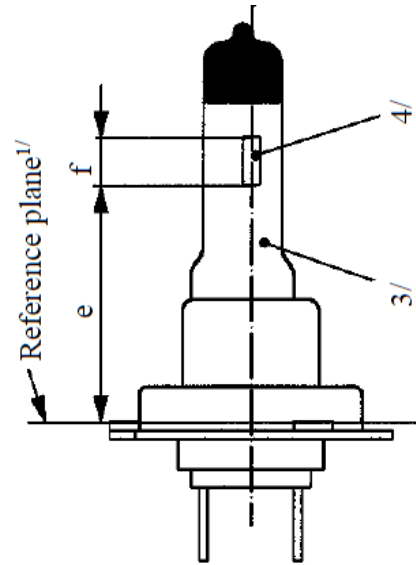
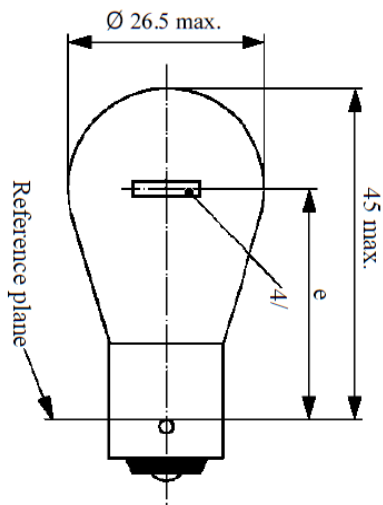


# Step 1B: LED Substitutes for road illumination applications

- Detailed discussion started in the 5<sup>th</sup> TFSR meeting in Aachen and continued in the 6<sup>th</sup> TFSR in Paris
- Documents for submission to GRE82 approved during 7<sup>th</sup> TFSR meeting in Karlsruhe:
  - GRE/2019/19 to amend R-149 (RID)
  - GRE/2019/21 to include H11/LED into RE5
  - GRE-82-03 to extend the equivalence criteria documents

# Extended equivalence criteria for road illumination applications

To remind from GRE-81-14



## GRE-82-03

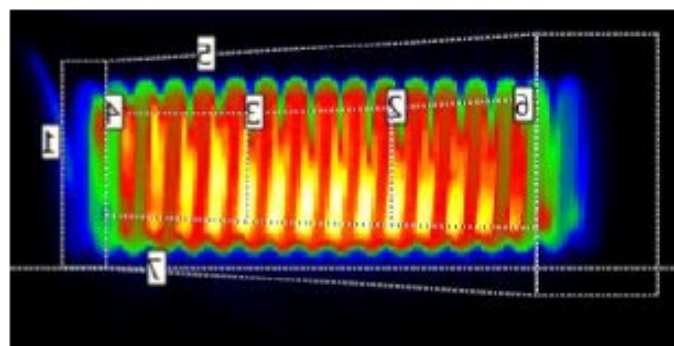
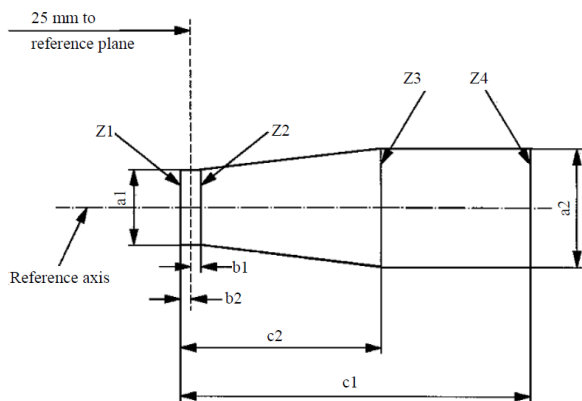
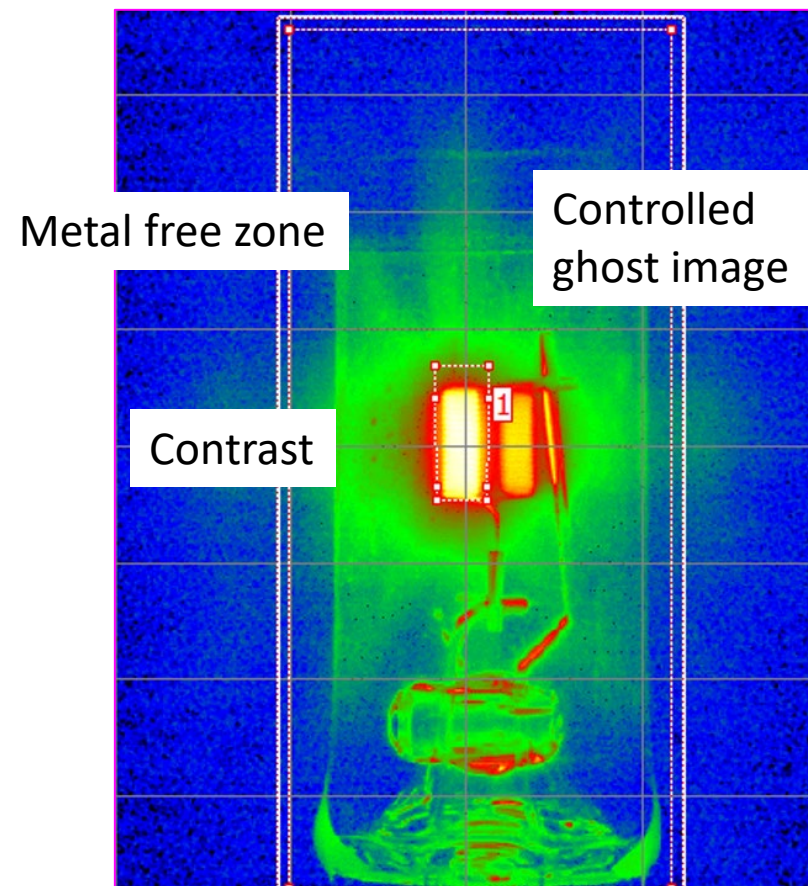
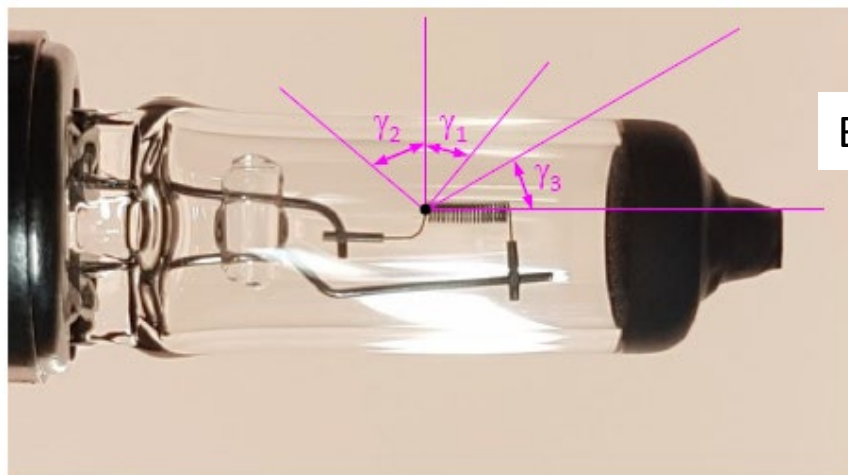
- Specific intensity distribution
- Specific homogeneity of LEA
- Contrast
- ...

## GRE-80-02

- Test voltage
- Luminous flux
- ...
- Intensity distribution
- Homogeneity of LEA
- ...
- Spectral content
- Thermal behavior
- ...

# Specific aspects for road illumination

Distortion free area



Tighter tolerances on filament shape, dimension, position and homogeneity

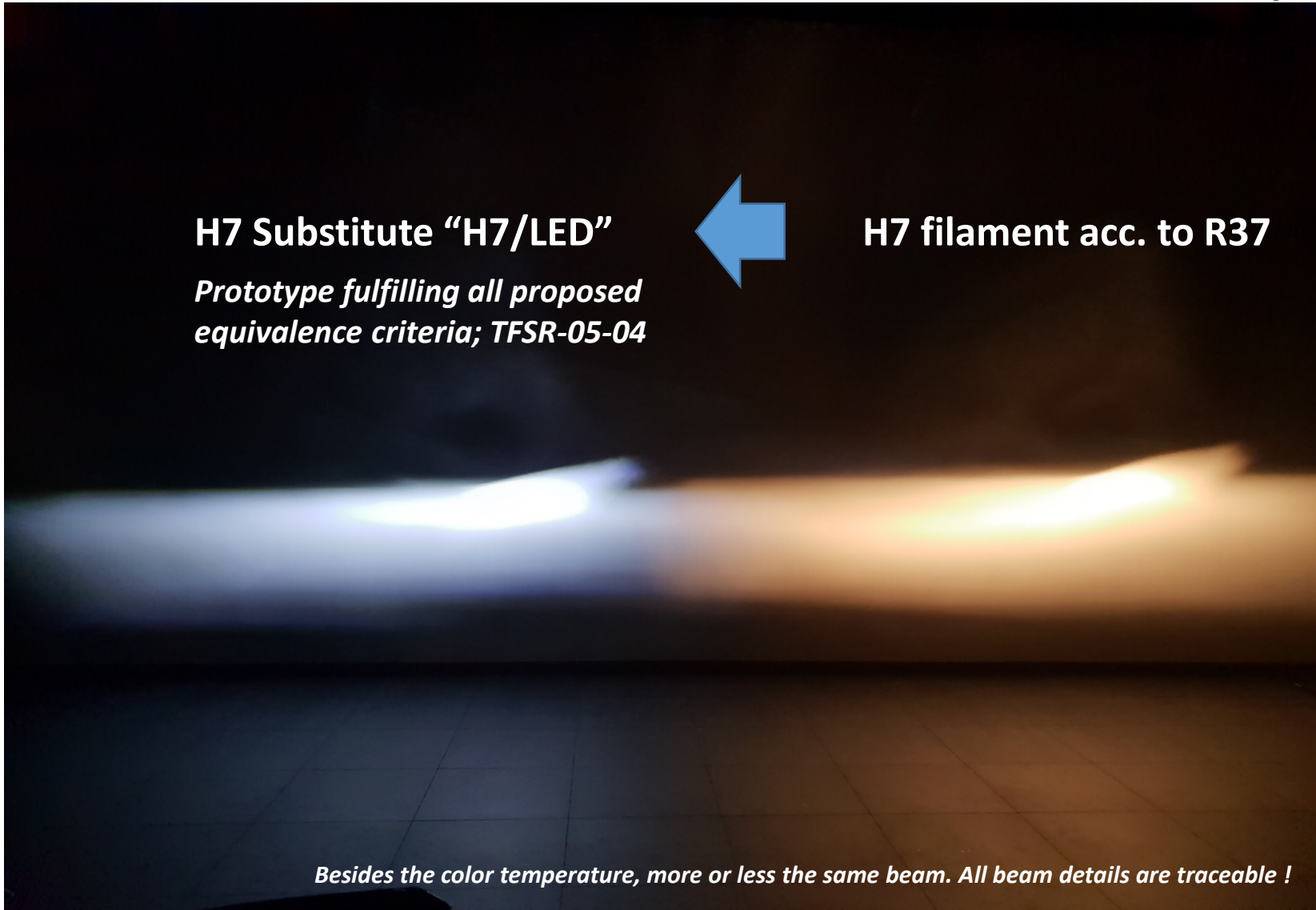
# Demonstration of H7 headlamp

Source  
GRE-81-14

**H7 Substitute "H7/LED"**  
*Prototype fulfilling all proposed  
equivalence criteria; TFSR-05-04*



**H7 filament acc. to R37**



*Besides the color temperature, more or less the same beam. All beam details are traceable !*

# Step 2: “LED retrofits”:

## Step 2A: Administrative items

- First discussion on “administrative equivalence” in 6<sup>th</sup> TFSR meeting Paris
- Continued in 7<sup>th</sup> meeting in Karlsruhe
- Target: achieve “administrative” equivalence, i.e. by making R37 “technology neutral” and allow interchange of R37-approved light source of the same category, independent of the technology used for light generation
- Conclusions:
  - Stop activity to include LED retrofits in R128
  - Start activity to make R37 performance based and technology neutral
    - By amending the scope of R37 to include also other light generating technologies e.g. LED



# The **new** document scope

R37

Filament Light Sources

- By thermal radiation (incandescence)
- **By other technology e.g. LED**

R99

HID light sources

R128

LED light sources

LED substitute light sources

R.E.5 Category sheets

Filament light sources by thermal radiation

**Filament light sources by other technologies e.g. LED**

HID light sources

LED light sources, including LED substitute light sources

# Step 2: “LED retrofits”:

## Step 2B: Technical items

- Photometric equivalence is taken over from LED substitute discussion
- Other technical items need to be addressed (detailed discussion not started yet)
  - Electrical
  - Thermal

# Request for Guidance from GRE

- Can the TF SR proceed with the proposed way forward:
  - Open the scope of R37 to allow other technologies; i.e. achieve administrative equivalence between the different technologies (Step 2A)
  - Further develop the necessary criteria for technical equivalence (Step 2B)
- Next meeting of the TFSR will be on **10 December in Bonn**

*Possible proposal to Regulation No. 37*

**New Title of the Regulation:**

**UNIFORM PROVISIONS CONCERNING THE APPROVAL OF FILAMENT LIGHT SOURCES FOR USE IN APPROVED LAMPS OF POWER-DRIVEN VEHICLES AND OF THEIR TRAILERS**

**Same for the Scope.**

## ***Possible proposal to Regulation No. 48***

Definition in R 48:

*2.9.1.4. "Filament light source " means a light source where the only element for visible radiation is one or more filament(s) producing visible light.*

*Such a Filament light source could be either:*

- a filament lamp or*
- a Filament light source type LED.*

*2.9.1.4.1. "Filament lamp" means a light source where the only element for visible radiation is one or more filaments producing thermal radiation.*

*2.9.1.4.2. "Filament light source type LED" means a light source where the only element(s) for visible radiation is one or more filament(s) where the visible light is generated by LED only.*

**The intention for the usage of this nomenclature in Regulation No. 37 is:**

**filament light sources** - for all general paragraphs independent of the technology;

**filament lamp** - for all specific procedures for filament lamps;

**filament light sources  
type LED** - for all specific procedures for filament light sources where the light is produced by LED;

**+ Requirements for necessary objective evidences for:**

- **lighting Performance** → solved by the substitutes

- **list** → solved by the substitutes

- **by check list** → for the proper functioning in existing approved lamps e. g.  
– thermal behavior, defogging , etc. ....