

GRE Task Force LED Substitutes / Retrofits (TF SR)

Status report for GRE82

2019-10-14

K. Manz, DE (Chairman)

Ph. Bailey, UK (Vice-Chairman)

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Meetings

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

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)

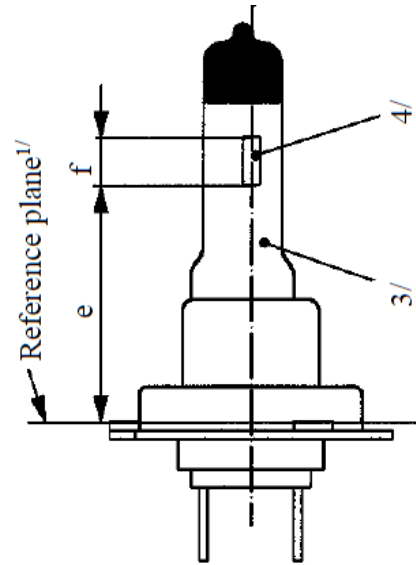
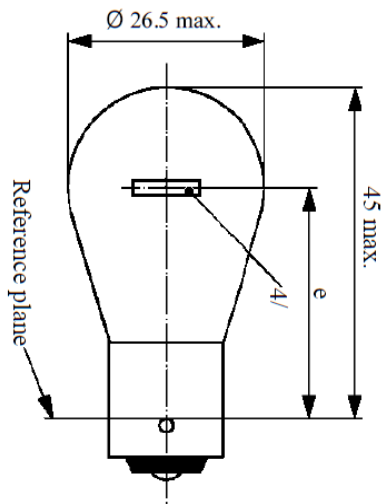


Step 1B: LED Substitutes for road illumination applications

- Detailed discussion started in the 5th TFSR meeting in Aachen and continued in the 6th TFSR in Paris
- Documents for submission to GRE82 approved during 7th 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

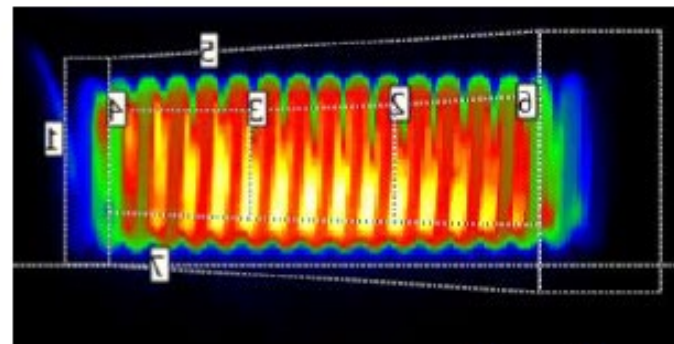
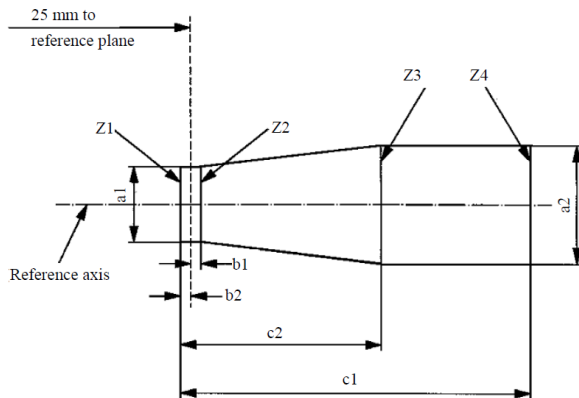
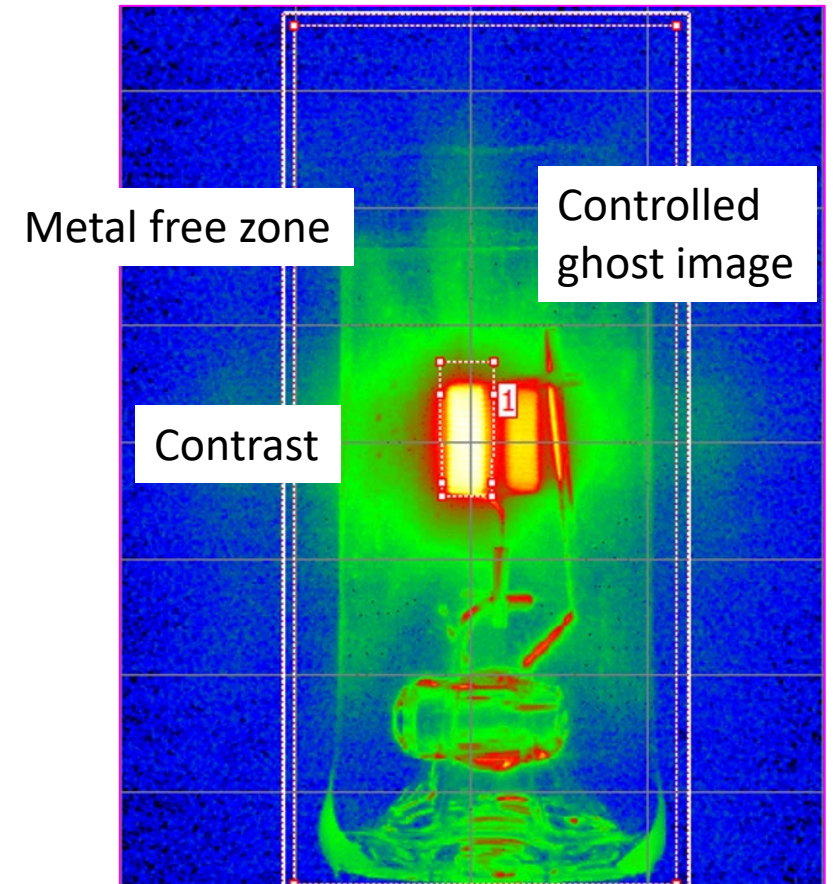
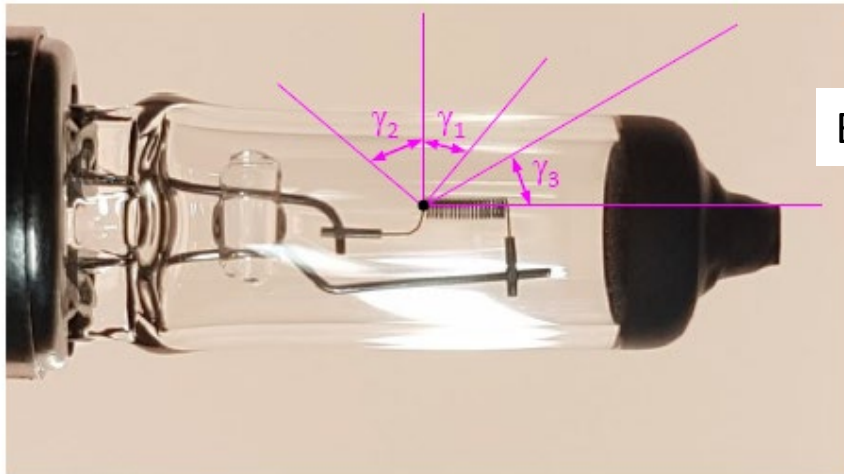
- Specific intensity distribution
- Specific homogeneity of LEA
- Contrast
- ...

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

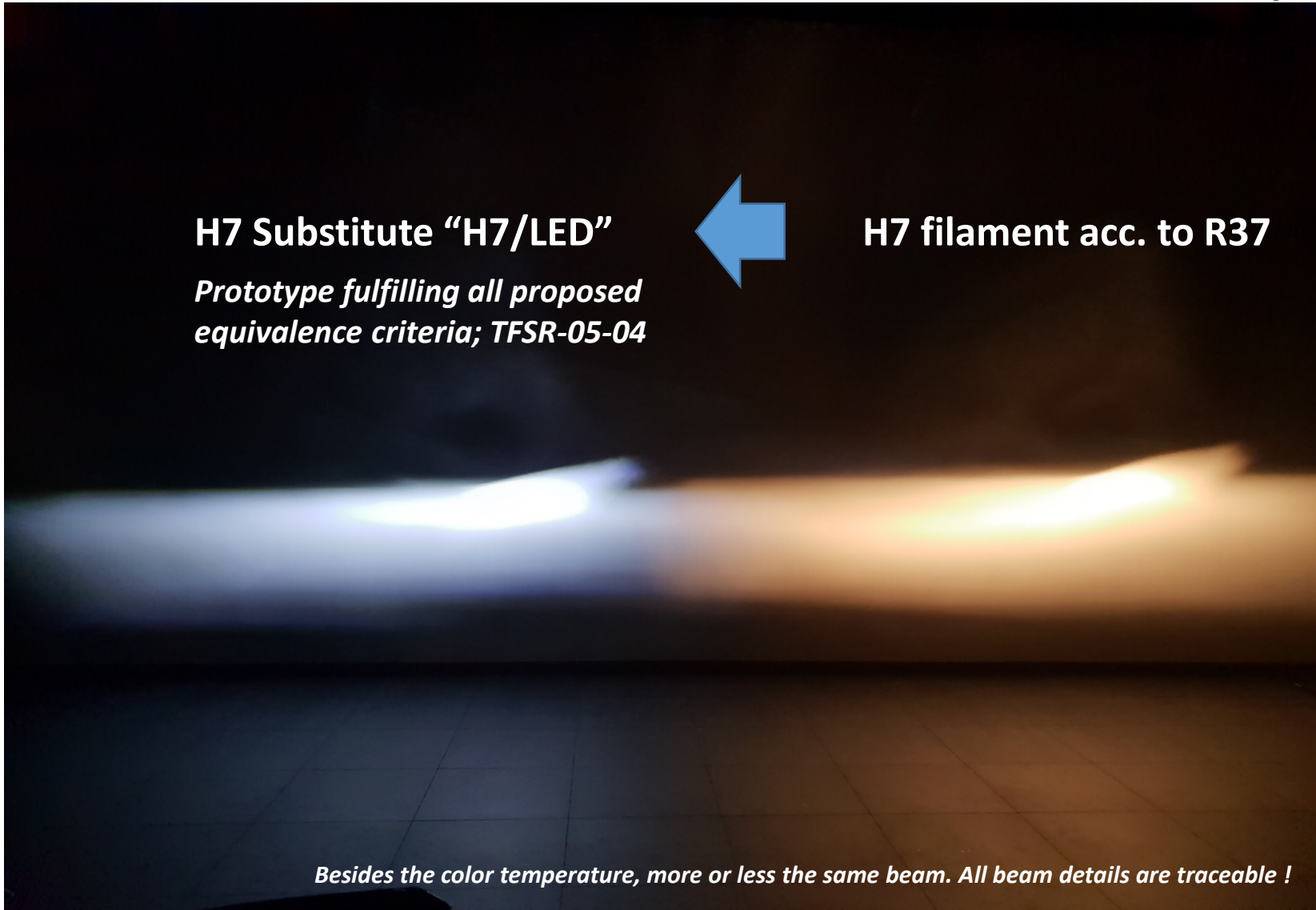
Demonstration of H7 headlamp

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 6th TFSR meeting Paris
- Continued in 7th 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 to be scheduled