

ECE R112 & R123

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Conditions on the luminous flux of light sources

Foreword

- To show that the provisions § 5.3.2.3 of Regulation R112 and §5.1.4 in R123 are useless.
- These prescriptions required a minimum luminous flux of 1000 lumen for the LED modules contributing to the principal Low beam.
- We compare the optical efficiency and the power consumption of LED LB (less than 1000 lm on the source) with two halogen LB.

Optical systems

- **Basic LB 1 – luminous flux of the LED Module= 1000 Lm. ~20W**
- **Basic LB 2 - Luminous flux of the LED Module = 800 Lm. ~16W**
- **H7 Reflector– 1500 Lm @ 13.2V. 58W**
- **H4 Reflector – 1020 Lm @ 13.2 V. 68W**

What the driver sees

Basic LB 1 - Initial LED 1000 lm



Basic LB 2 - Reduced LED 800 lm



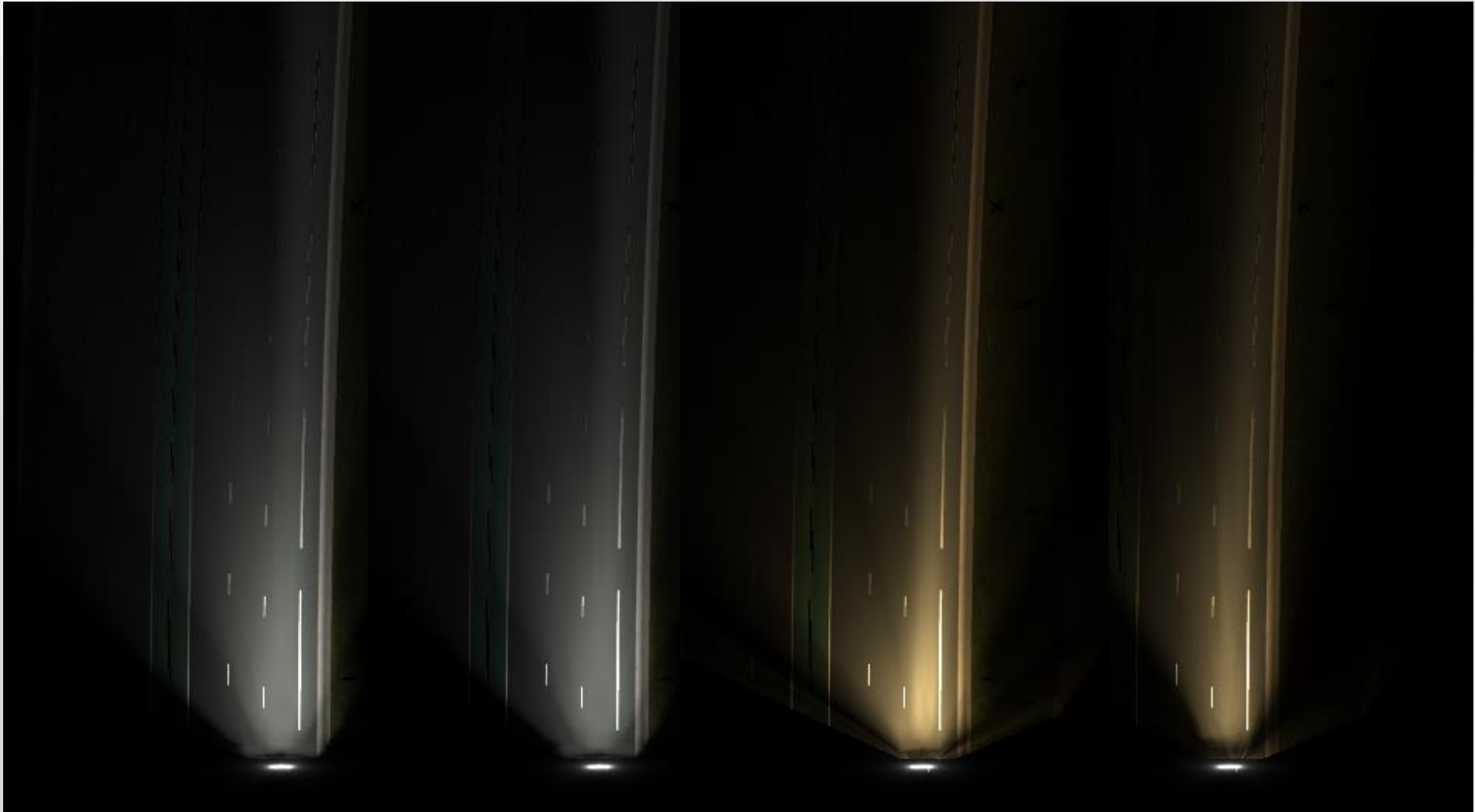
H7 LB Reflector - @13.2V



H4 LB Reflector - @13.2V

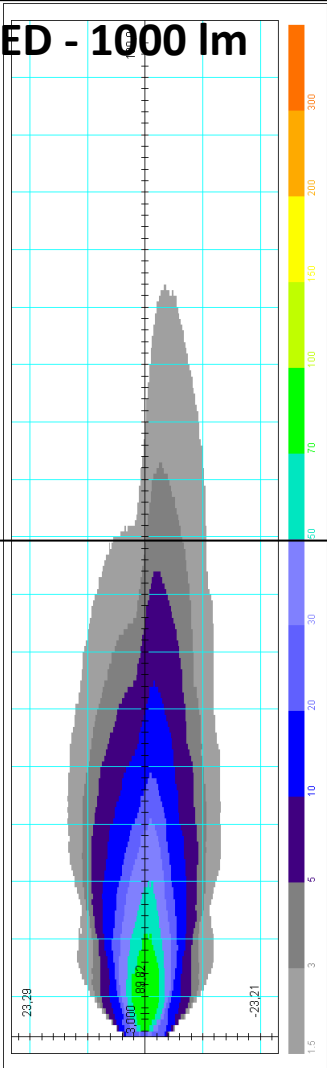


Bird's eye view

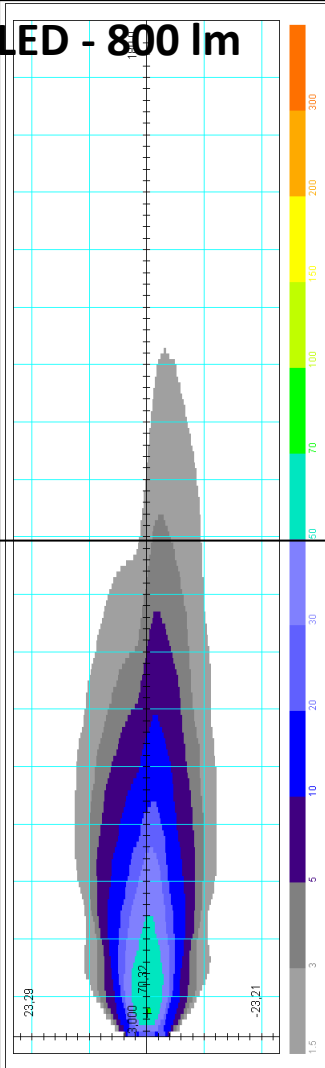


Illumination on the road

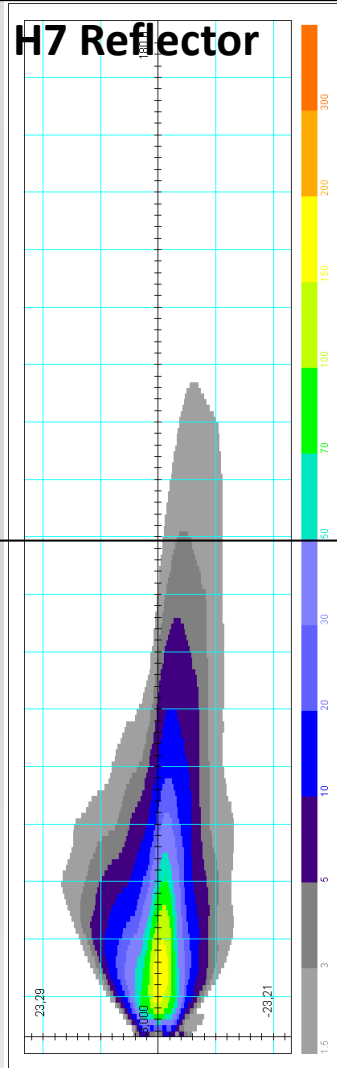
LED - 1000 lm



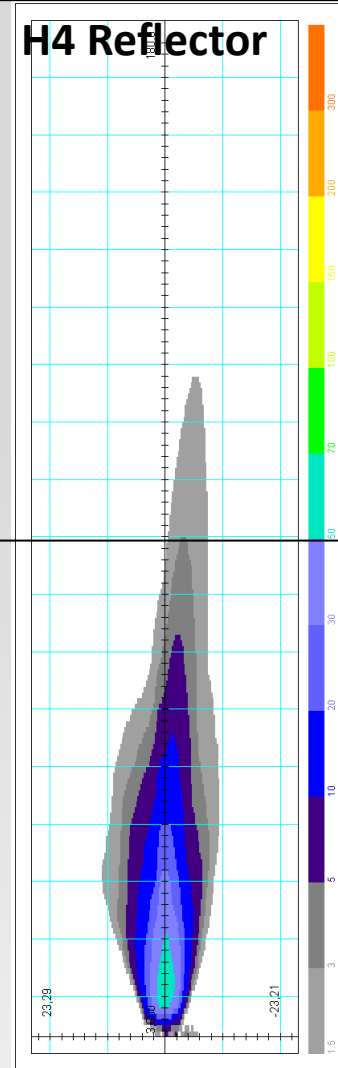
LED - 800 lm



H7 Reflector



H4 Reflector

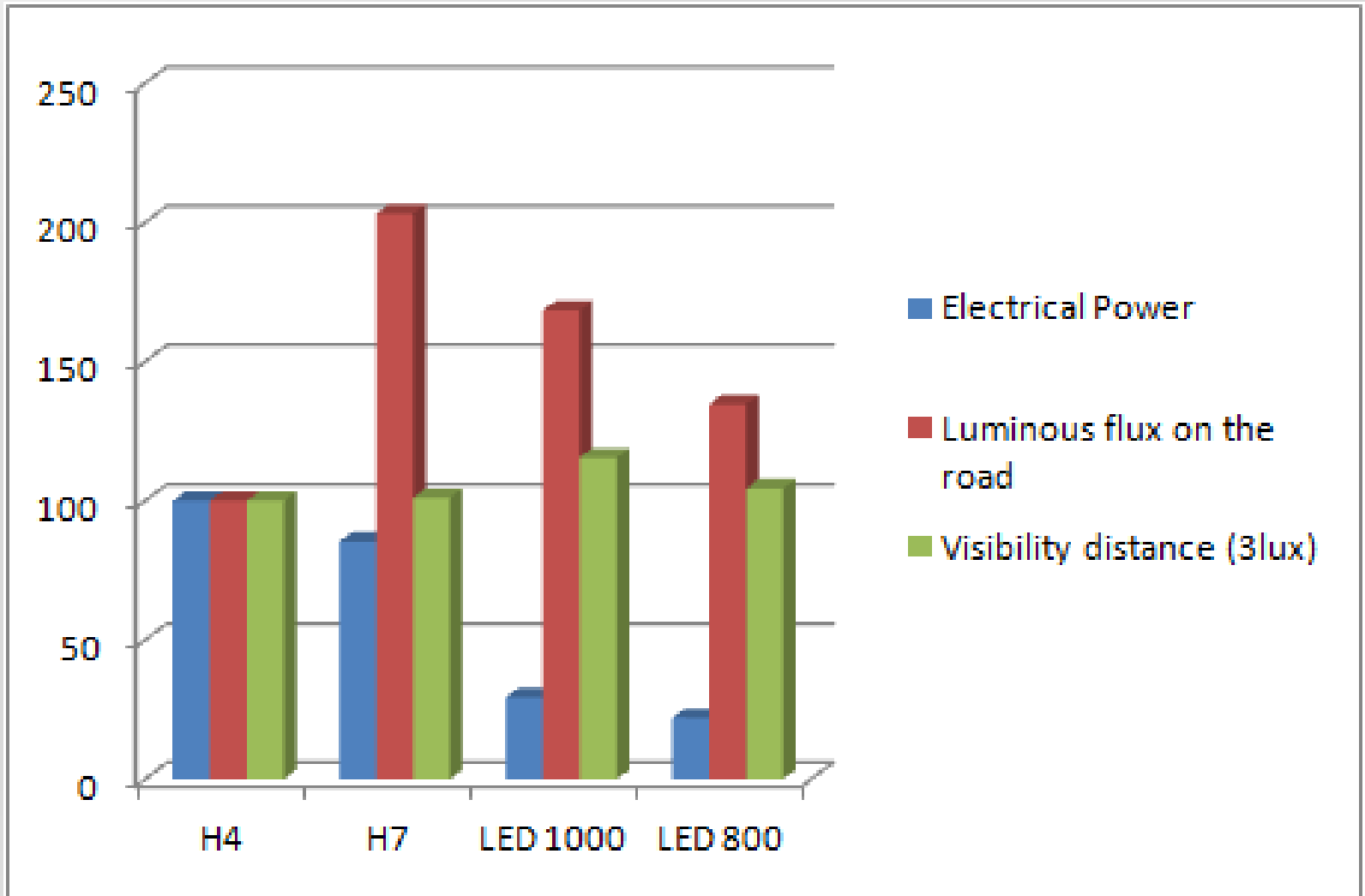


180m

90m



Synthesis



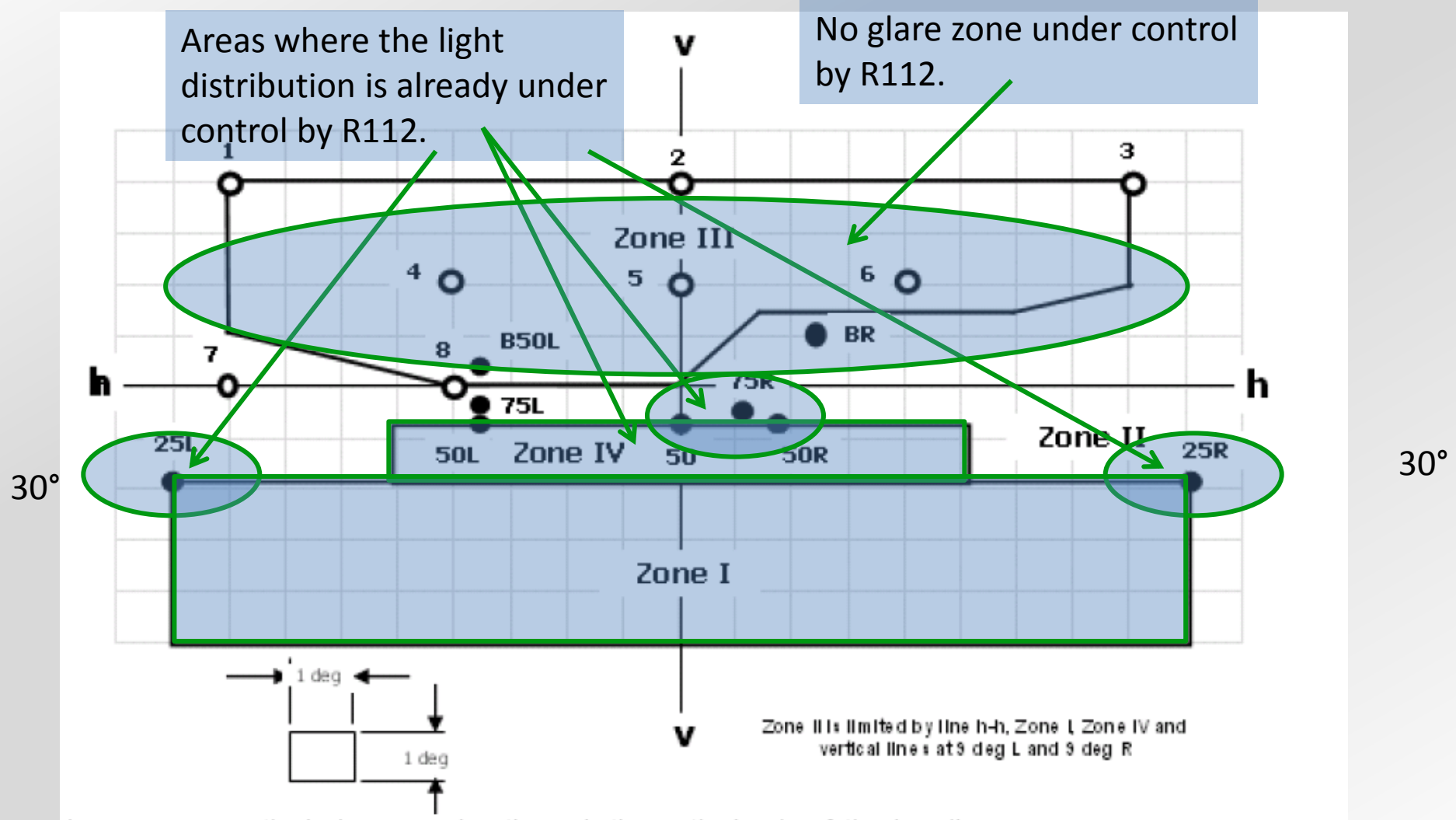
GRE Session March April 2014

- During the previous session (71st session) , this proposal was presented as two Informal documents by France.
 - 71/09 and 71/10.
- Some contracting parties were reluctant to adopt such a proposal:
 - Possibility to design a compliant beam with patches on the road
 - Risk of low flux on the road.
- France proposes new formal documents taking into account these comments.
 - TRANS/WP29/GRE/2014/35 and 2014/36.

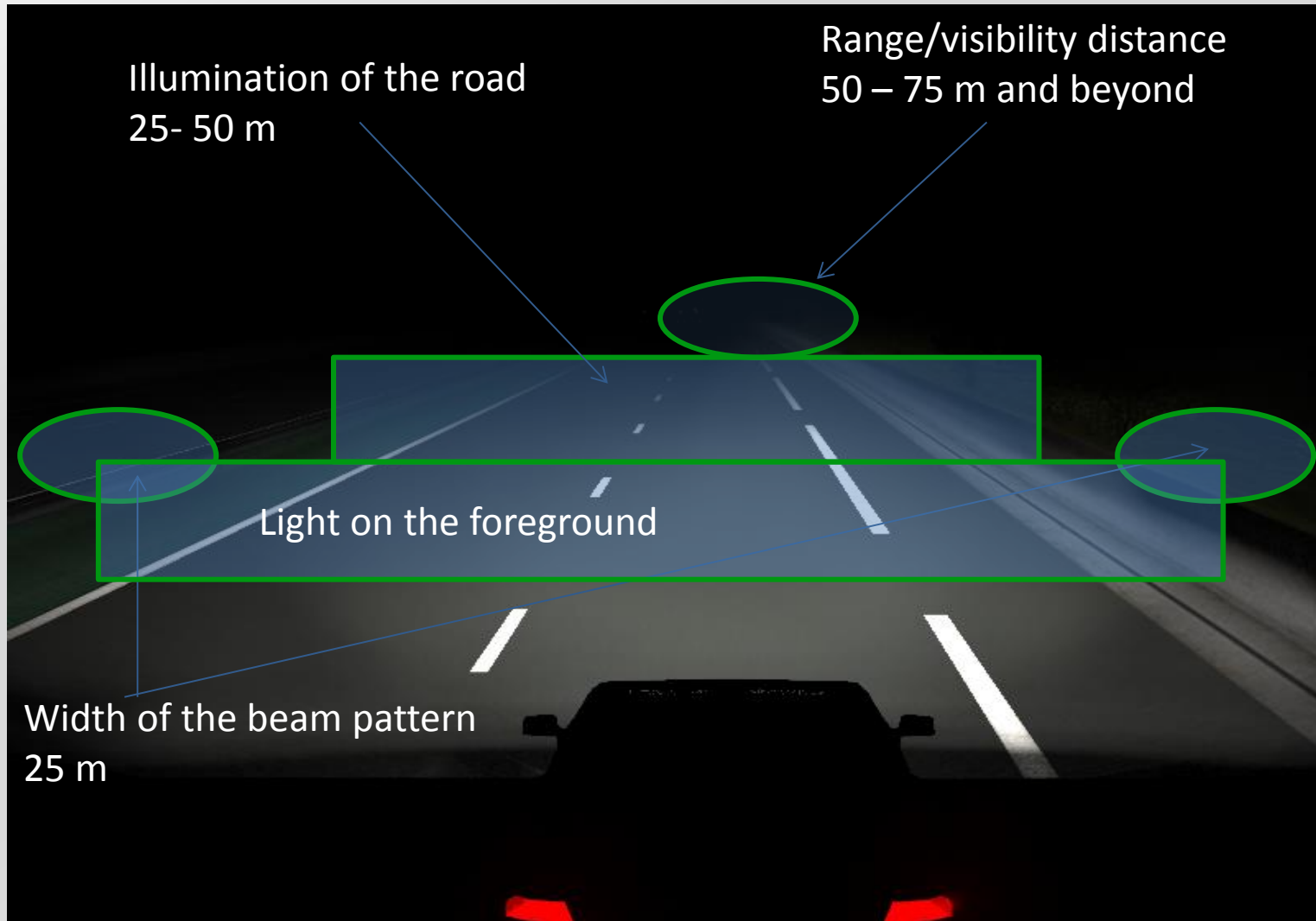
Characteristics of a safe low beam

- No glare.
- Good visibility distance.
- Good road illumination on the road between 25m and 50 m.
- Good width of the beam pattern.
- Not too much light on the foreground.
- Enough light on the landscape.

Current requirement of the regulation. (R112)



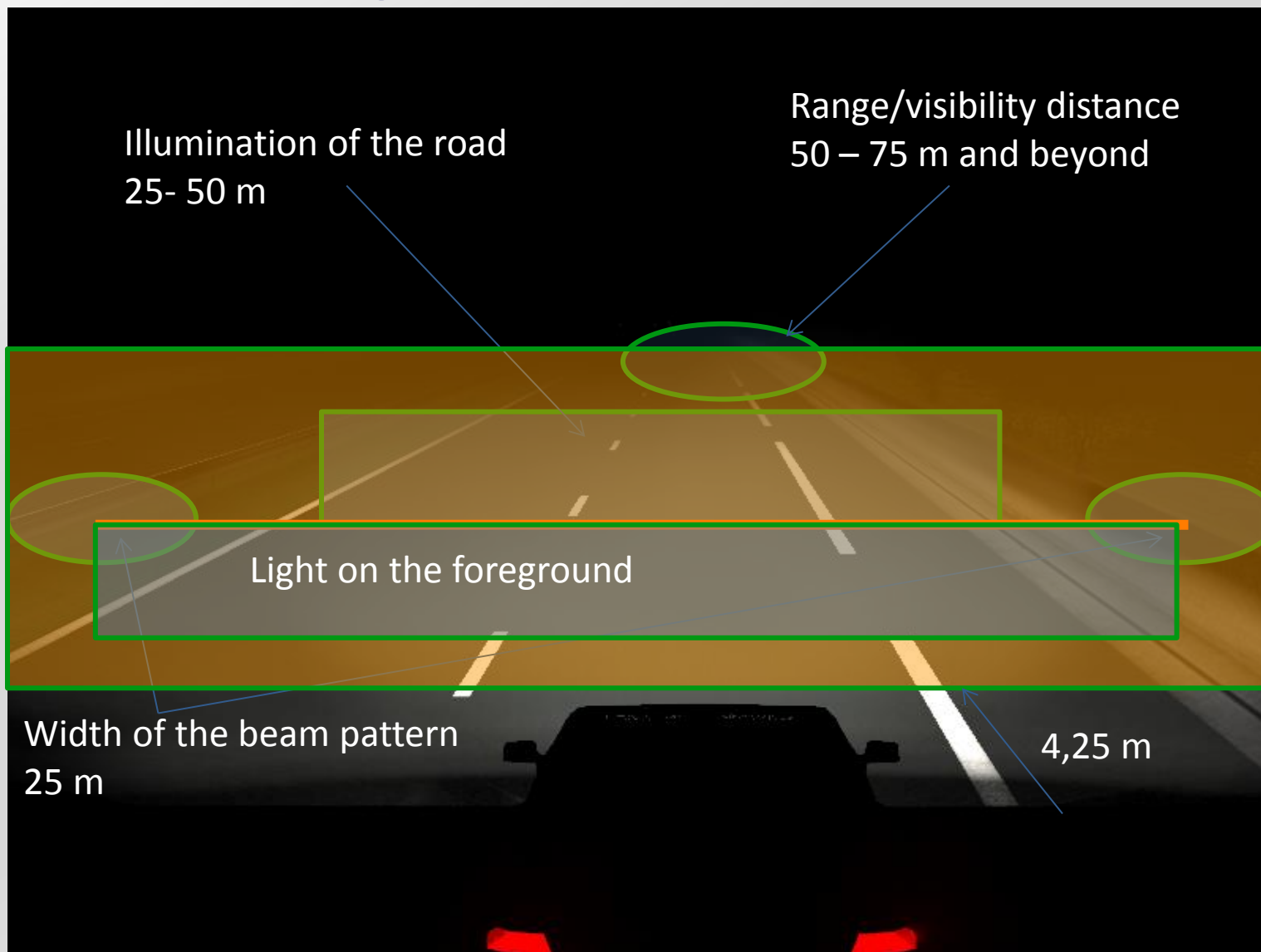
Requirement of the regulation, on the road



Characteristics of a safe low-beam

- No glare: **OK.**
- Good visibility distance: **OK.**
- Good road illumination on the road between 25m and 50 m: **OK.**
- Good width of the beam pattern: **OK.**
- Not too much light on the foreground : **OK**
- Enough light on the landscape: Not covered by the regulation.

Requirement of the regulation with modification, on the road



Characteristics of a safe low beam

- No glare: OK
- Good visibility distance: OK
- Good road illumination on the road between 25m and 50 m: OK
- Good width of the beam pattern: OK and improved
- Enough light on the landscape: Controlled by the regulation: OK.

Conclusion

- The optical efficiency of a LED systems is better than that of a Halogen (60% versus 35%).
- The visibility distance and the light distribution of LED system with a luminous flux lower than 1000 lumen are better than or equal to those of Halogen headlamps.
- The power consumption of the LED system is lower.
- The minimum threshold of the luminous flux for LED modules required in R112 § 5.3.2.3. and R123 §5.1.4 should be removed.
- During the session in March 2014, some Contracting Parties were reluctant to remove the 1,000Lm because of a risk of low luminous flux on the road which is covered by new proposals to be discussed.