

Voltage control gear

in relation to halogen filament light sources

IEC position

GRE 67

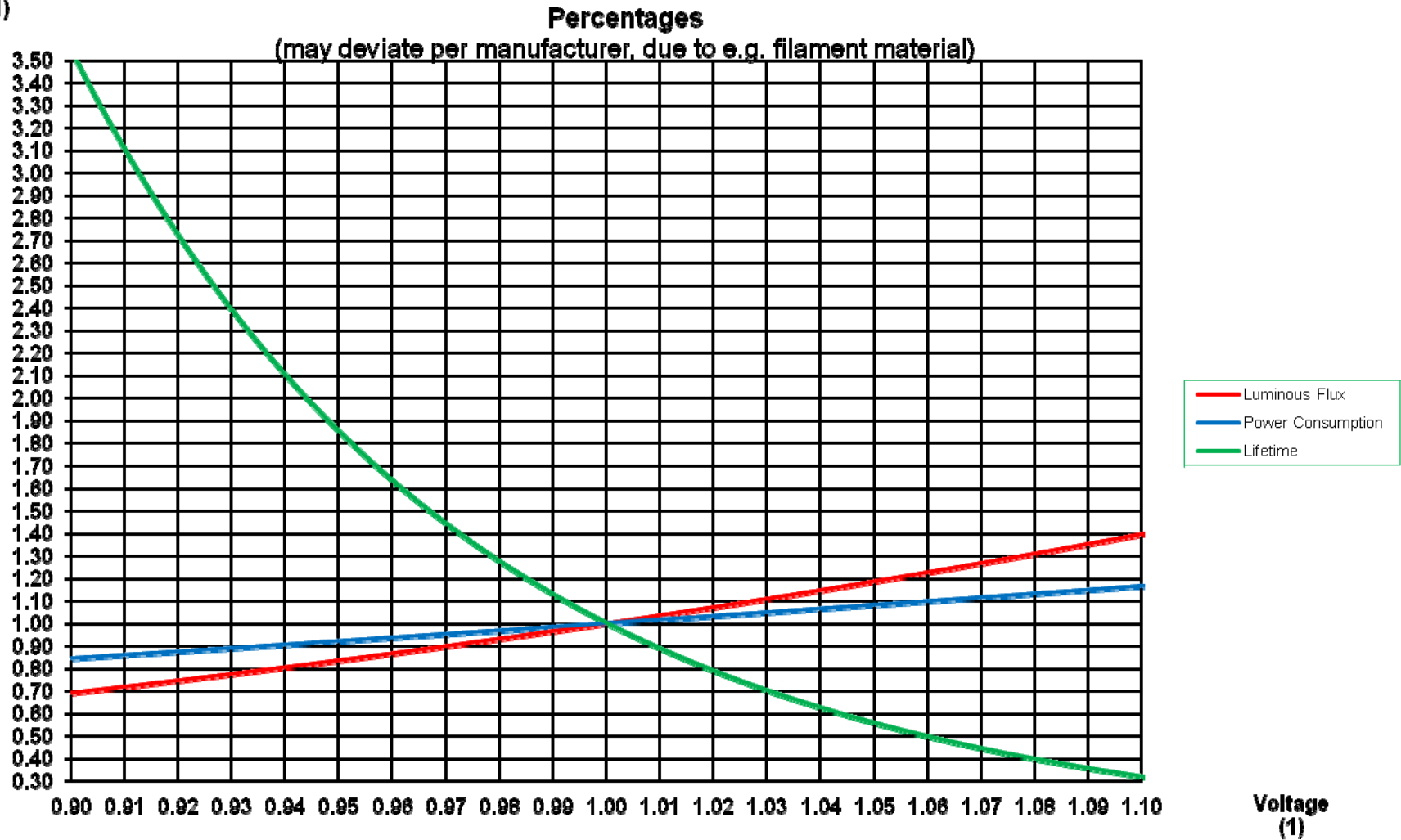
(ref. to GRE-67-17)

IEC concerns GRE-67-17

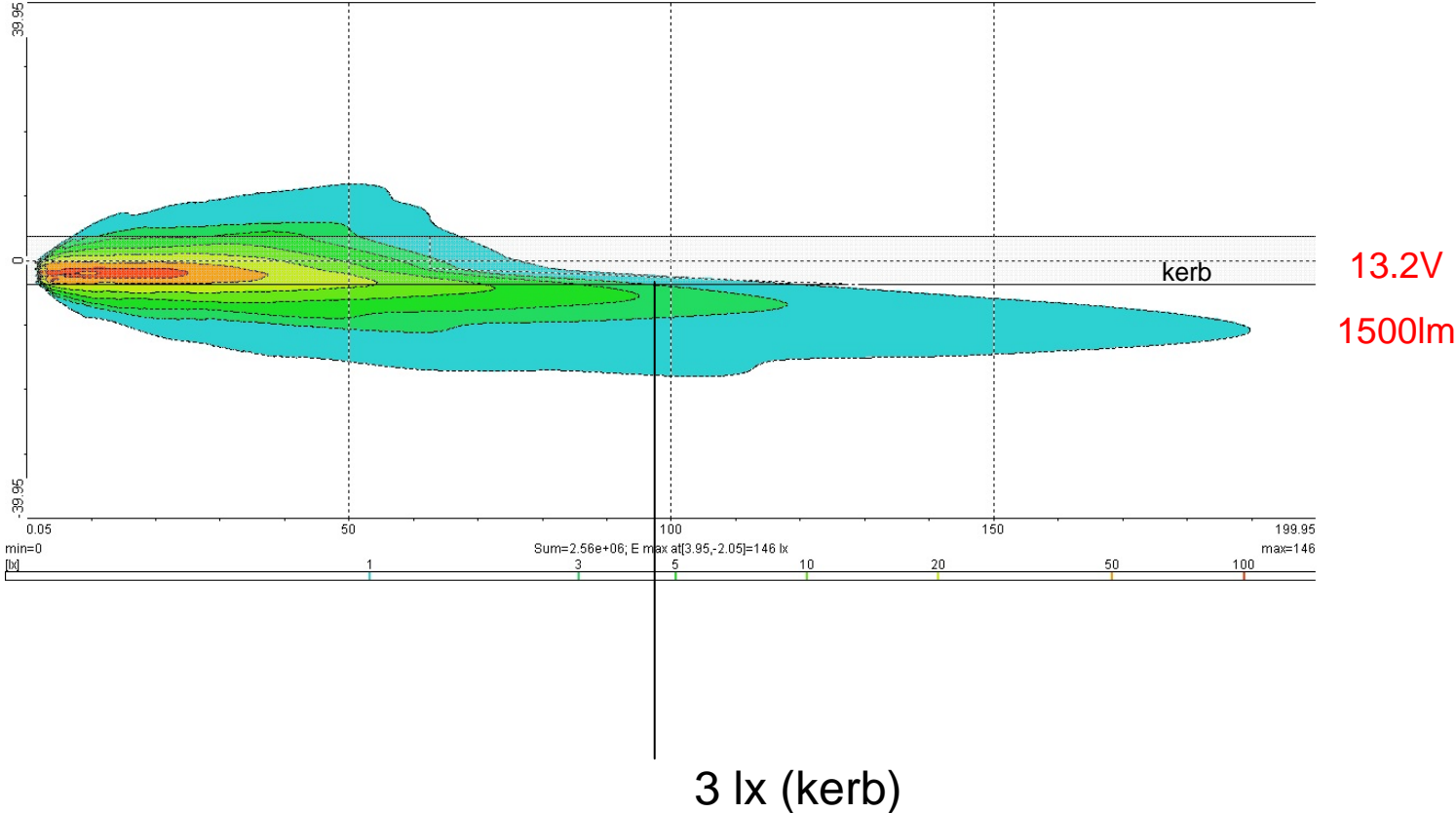
- No clear correlation between
 - the voltage applied to the halogen light source; and
 - the voltage applied at the time of homologation
- Proposal allows continuous low voltage
- Voltage variation has consequences for
 - the correct physical operation
for physical aspects, the effects of voltage variation are fairly well known
 - the chemical operation
the chemical effects cannot be generally specified
- Low voltages to halogen filament lamps has consequences for road-usage:
 - Less light on the road
 - Early failures
due to disturbance of the flow of gas and filament particles
 - Glare
due to filament distortion since filament particles evaporate and land elsewhere

Theoretical physical behaviour of filament light sources

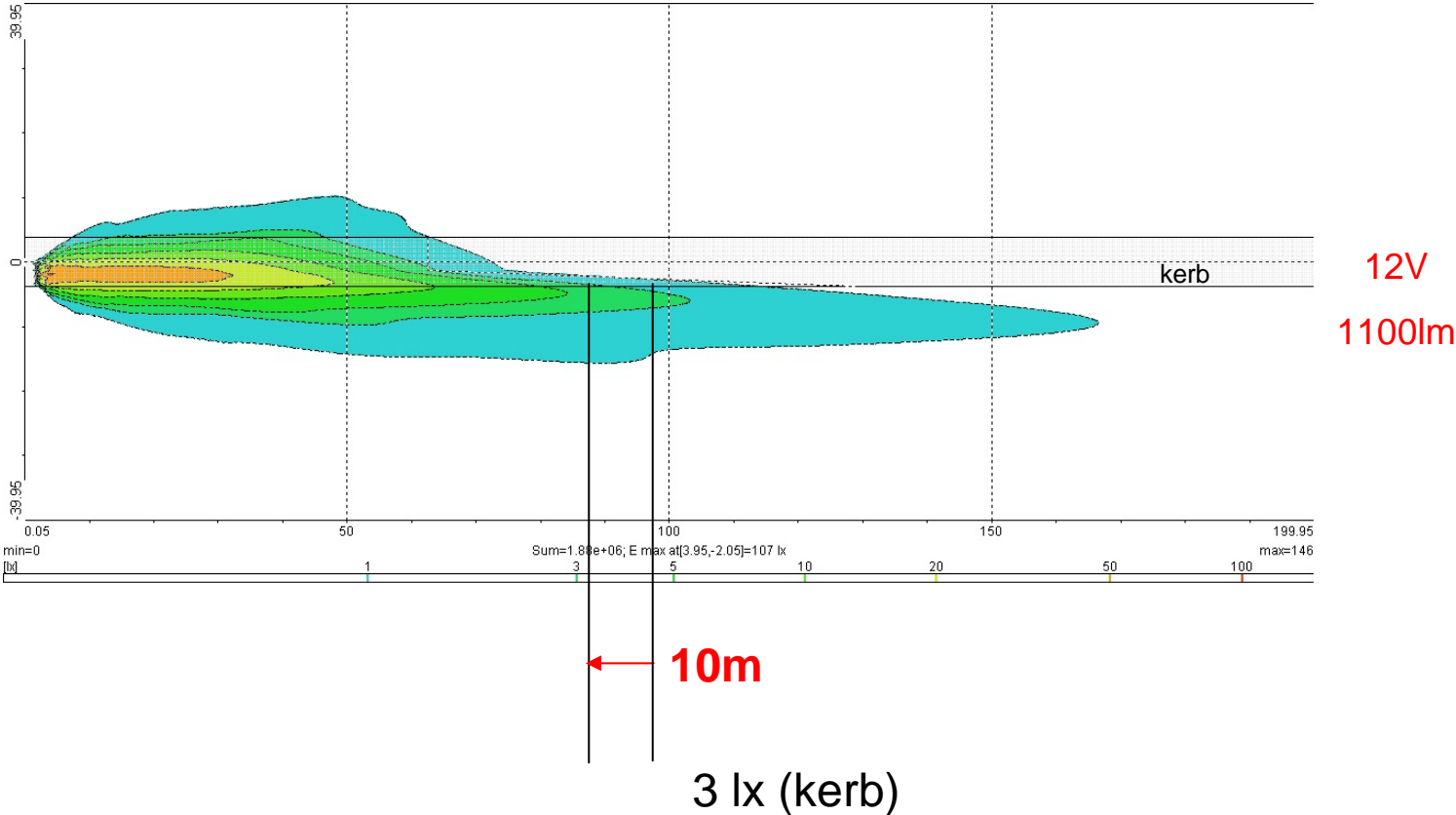
(1)



Example H7 low beam reduced flux 13.2V (1500lm) vs 12V(1100lm)

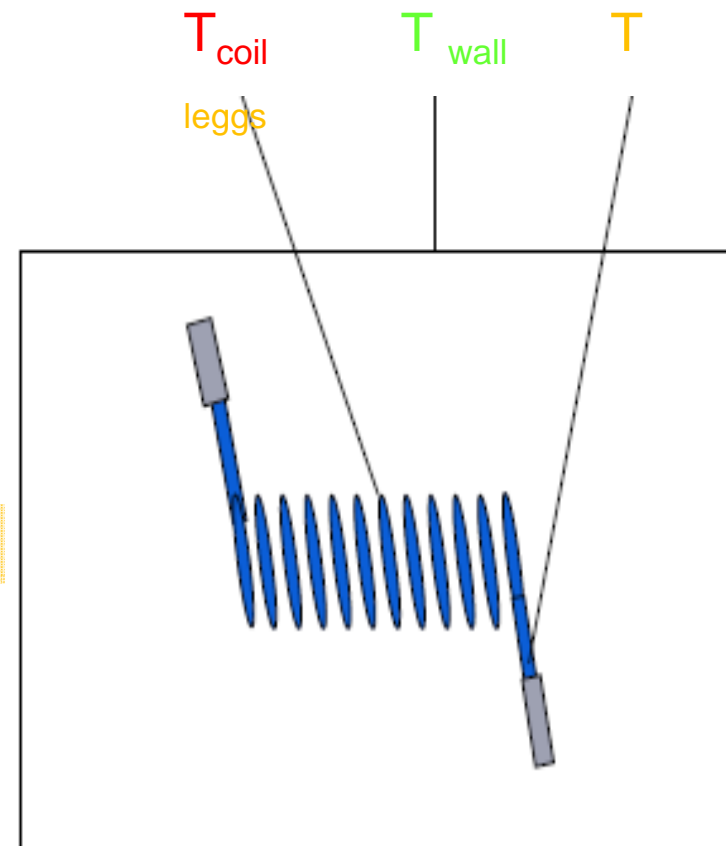
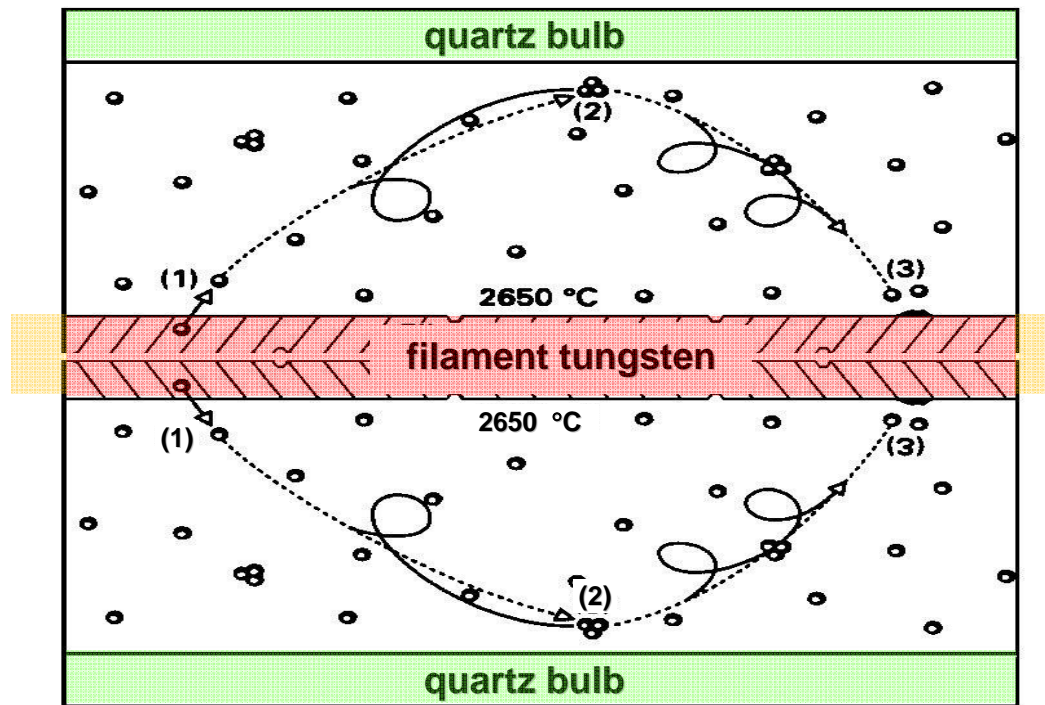


Example H7 low beam reduced flux 13.2V (1500lm) vs 12V(1100lm)

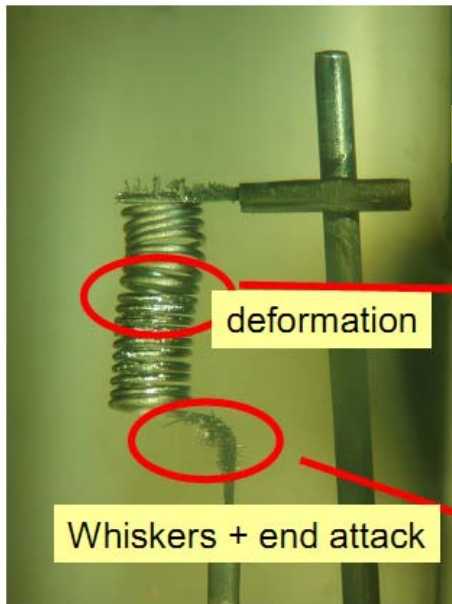


Theoretical chemical behaviour of halogen light sources

$$T_{\text{coil}} > T_{\text{leggs}} > T_{\text{wall}}$$



Failure modes



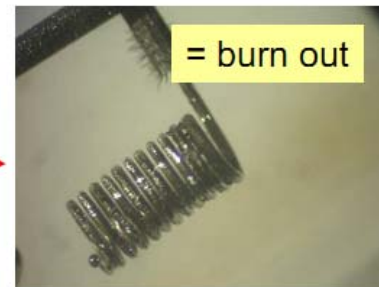
blackening

deformation

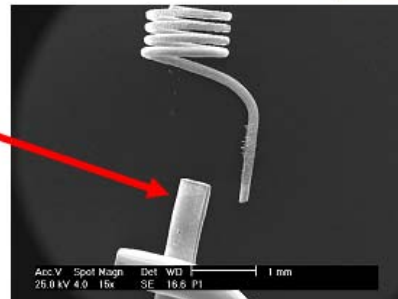
Whiskers + end attack



= burst risc



= burn out



= broken legs / coil

IEC position GRE/2012/12

IEC supports:

- the proposal to introduce VCG in the head lamp body as an option
- to continue to use the reference luminous flux for R112 approval
- to maintain an upper limit for the output-voltage of the VCG

IEC requests:

- to avoid a constant low voltage,
- for the principal / basic passing beam

IEC additional proposal(s) to GRE/2012/12

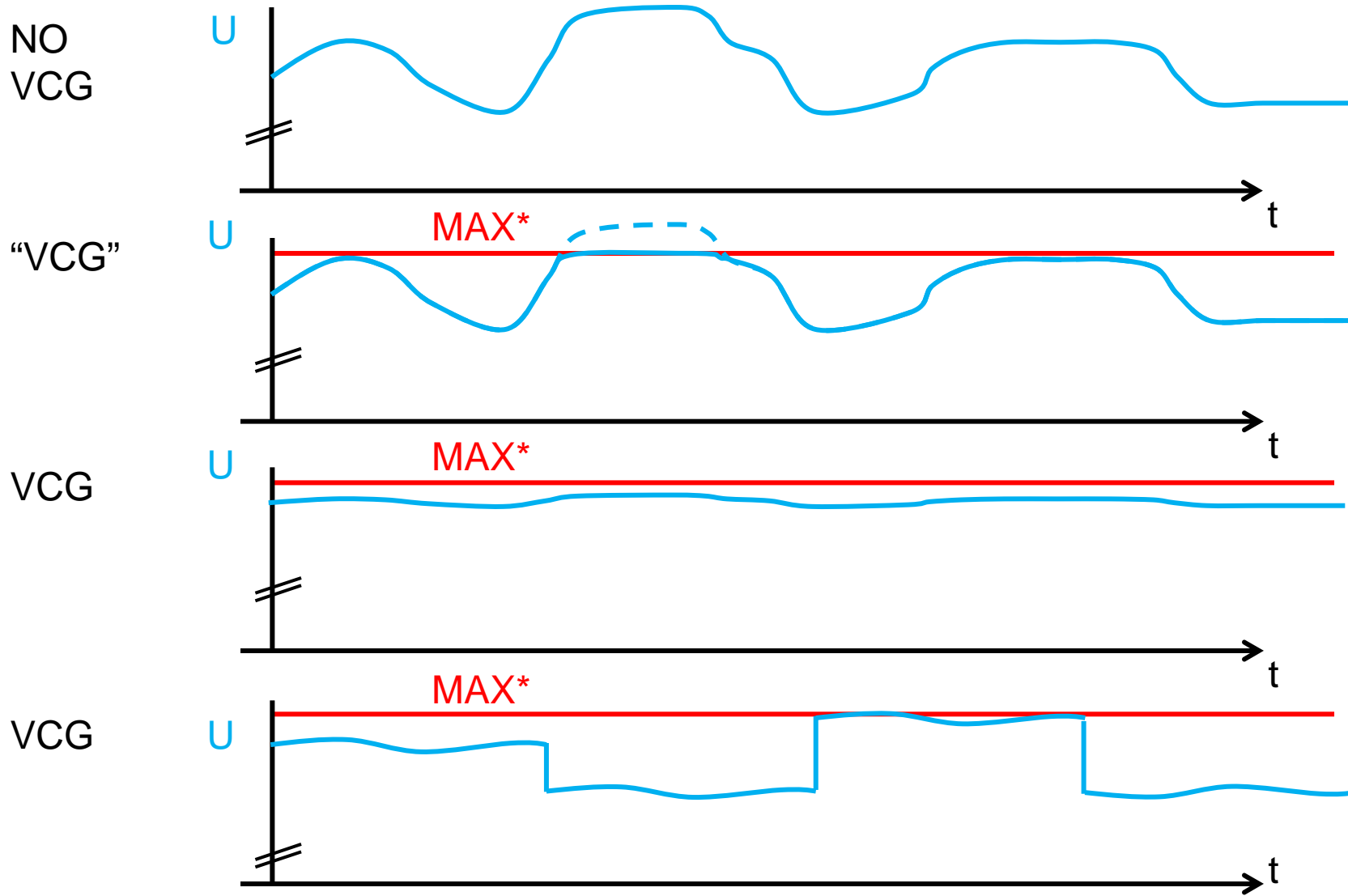
IEC proposes:

- To allow VCG in R112
 - No dimming
 - No step-up conversion
 - Maximizing voltage

AND/ OR

- To complete R48, paragraph 5.27, in case of any voltage control gear
 - Add a requirement to the minimum voltage offered to voltage control gear
 - No spikes taken into account, but :
 - As an effective voltage determined over quite a long period of time

Regulation No. 112



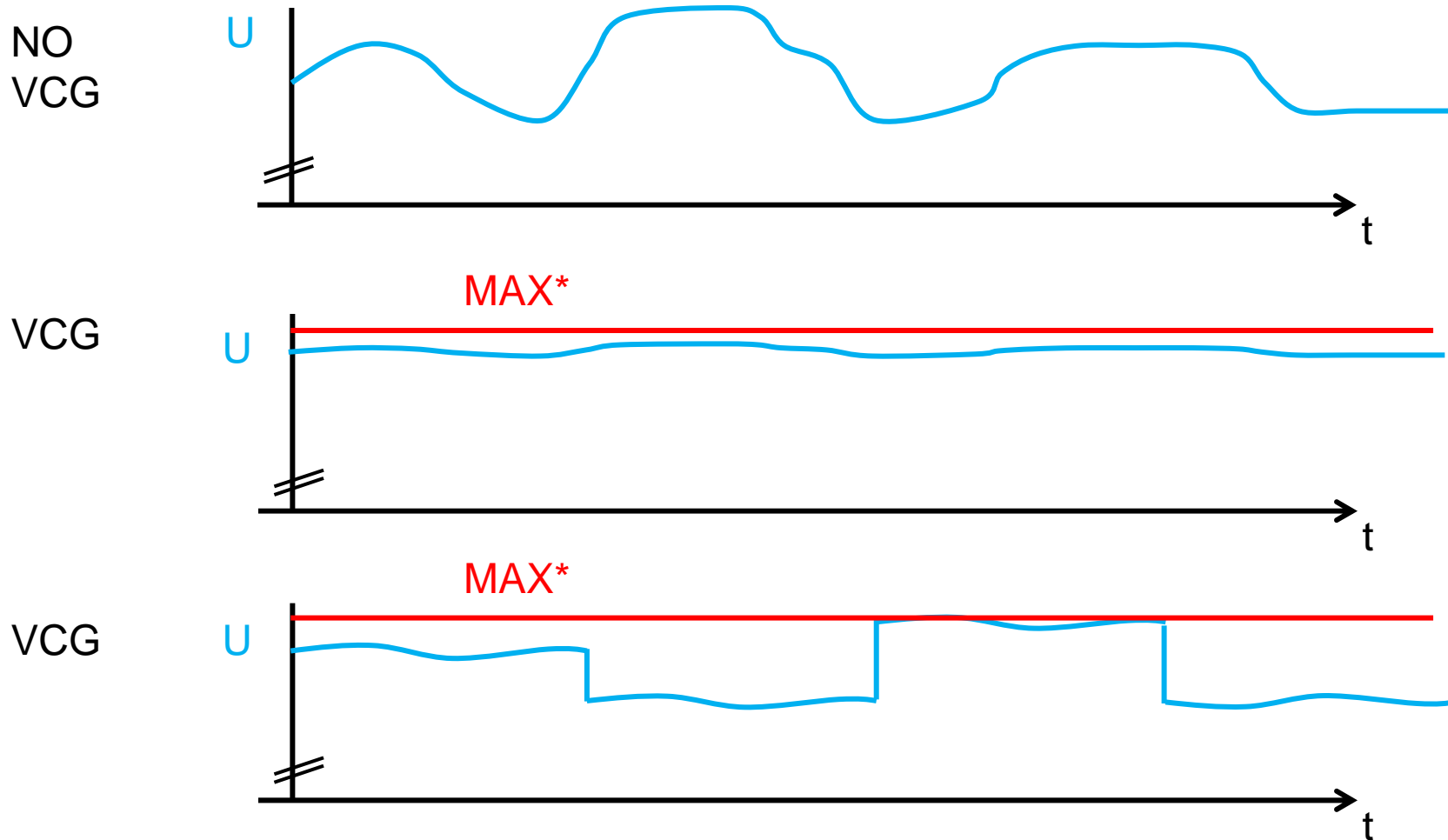
Regulation No. 112

Insert new paragraph 5.3.1.3., to read:

“5.3.1.3. In case of electronic light source control gear(s) being part of the headlamp, the electronic light source control gear(s) shall convert the voltage at the terminals of the affected filament light source only if the input voltage at the terminals of the electronic light source control gear exceeds the specified test voltage by more than 3%.

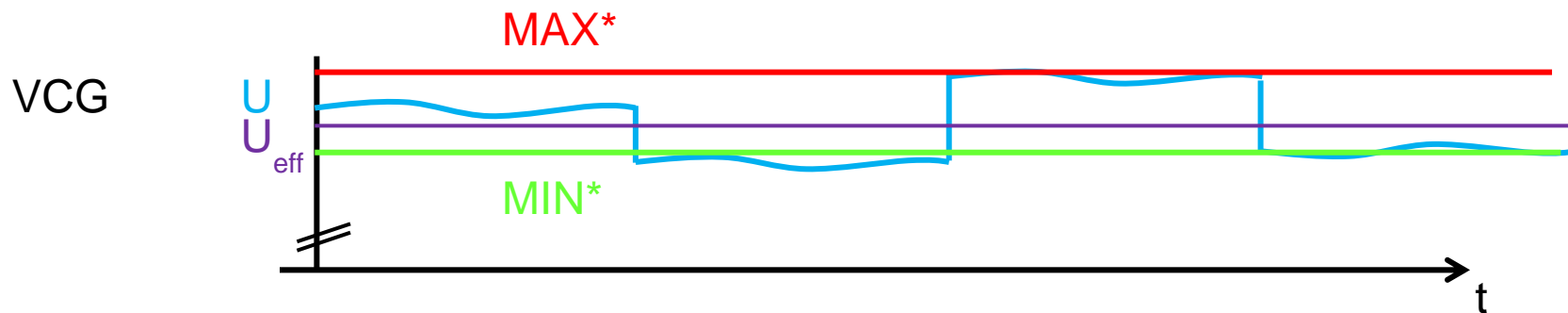
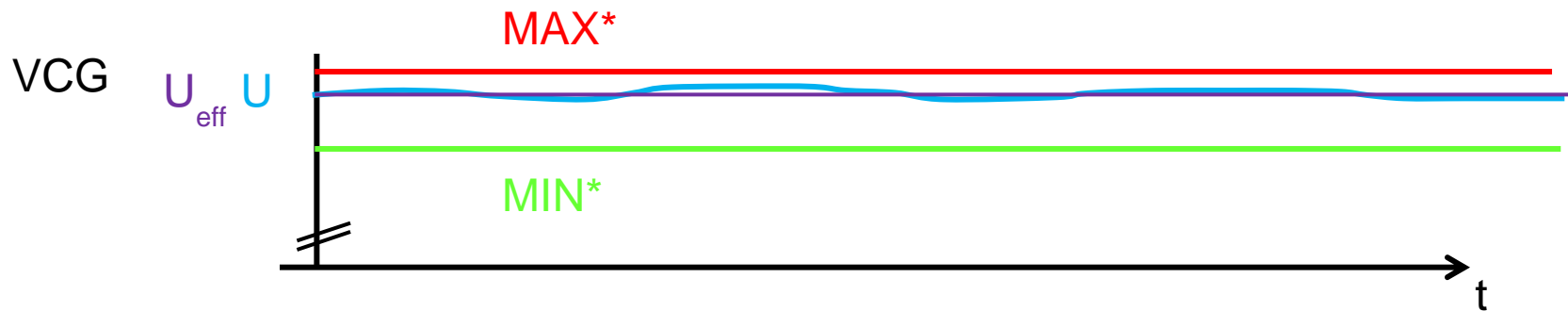
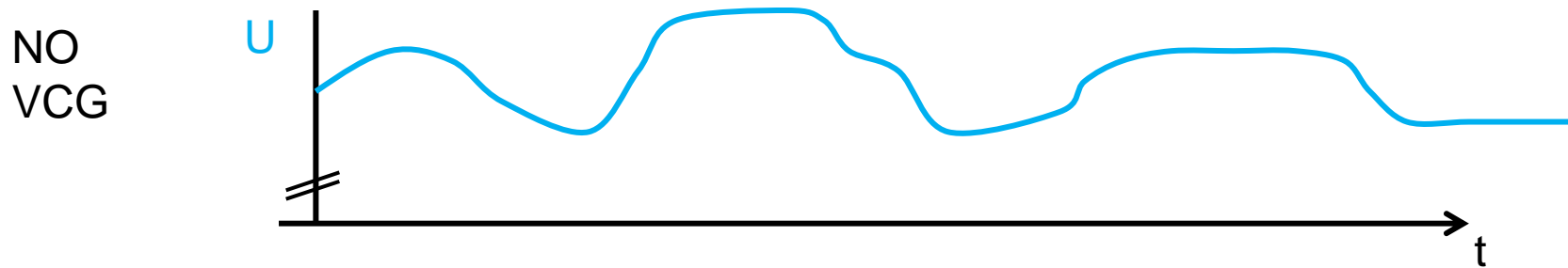
In these cases, the voltage at the terminals of the affected light source shall be stabilized within $\pm 3\%$ of the relevant test voltage(s) as specified in Regulation No. 37.”

Currently Regulation No. 48



*under "constant voltage operating conditions"

A constant low voltage should be avoided



*under "constant voltage operating conditions"

Regulation No. 48

Renumber paragraph 5.27.4 into 5.27.5 and insert a new paragraph 5.27.4:

“5.27.4. In the particular case where devices equipped with a filament light source produce the principal or basic passing beam in conjunction with electronic light source control gear, the effective voltage determined over [20 minutes], at the terminals of the filament light source when the electrical system of the vehicle is in a constant voltage operating condition according to paragraph 5.27. shall not deviate from 6.3 V (6 Volt-Systems), 13.2 V (12 Volt-Systems) or 28.0 V (24 Volt-Systems) by more than minus 3%. Additionally, in the case of filament light sources for which more than one test voltage is specified in Regulation No. 37 this deviation shall not be more than minus 3% from the lowest value of these test voltages that are being applied in the device.”

requirements



design(er)

