

Submitted by the TF S/R
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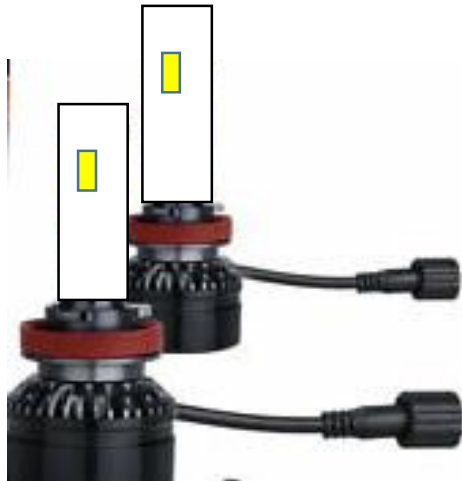
Supporting information for documents GRE/2020/15, GRE-83-11, GRE-83-12, GRE-83-13

Clarification for High Efficiency light source and Additional Electronics

- Default light source:
 - Minimum power ($\approx 50\%$ of filament max) specified; suitable in all applications
 - Only integrated* electronics
- High-Efficiency light source:
 - Marked “HE”
 - Maximum power ($\approx 30\%$ of filament max) specified; suitable for limited applications
 - Only integrated* electronics
- HE-light source combined with Additional Electronics :
 - Tested together during type approval
 - “AE” marking on the electronics (similar to “MD” marking for LED headlamps)
 - The combined power has the same requirements as the “default type”
 - Suitable for all applications

* “integrated” means non-separable electronics (in cap or external)

Combination of an HE LEDr with an AE device



High-efficiency LEDr
Marking:

$\frac{a}{3}$ HE **E4** 1953
a = 2.5 mm min.



Additional Electronics device
Marking:

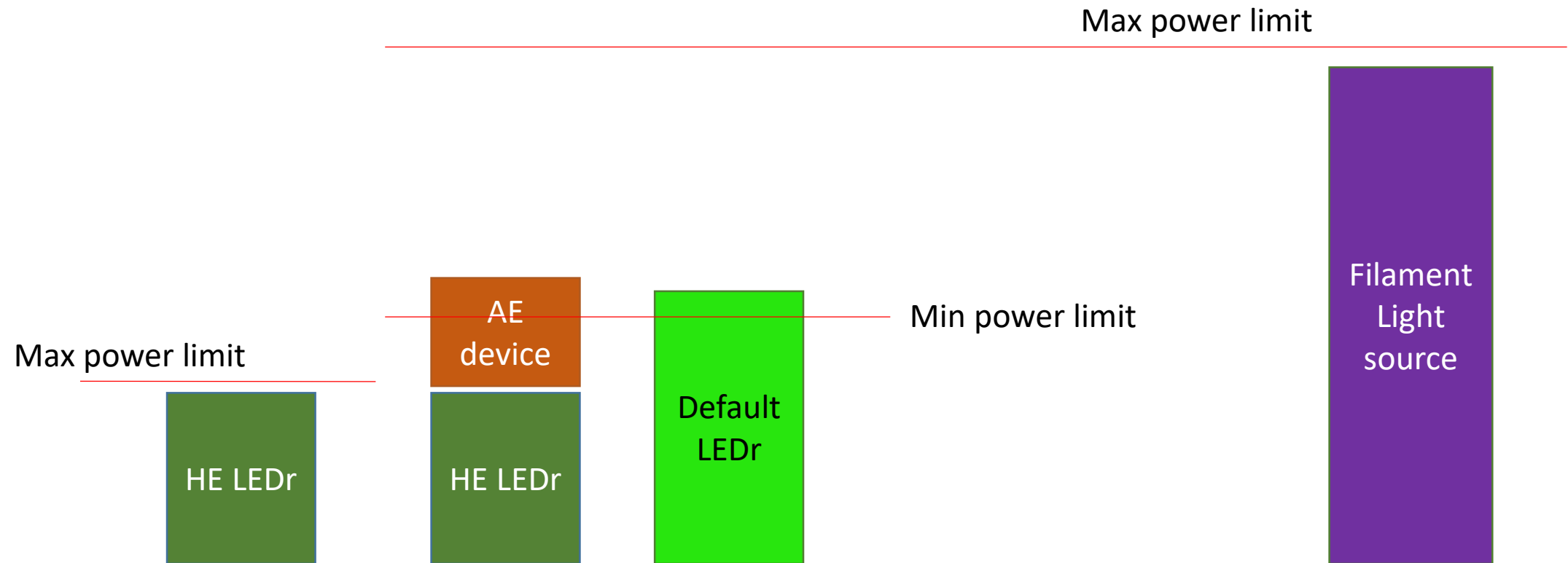
Æ E4 1953

Definition in RE5:

“AE device” means an additional electronics device not integrated with but designed to connect to a high-efficiency LED replacement light source with the purpose to augment the electrical current without changing the other characteristics of this light source.

Consideration of R.E.5 power limits

for HE-LEDr, default LEDr and combination of HE + AE



Note: Power limit is also a current limit e.g. from 12V to 14V

Examples for different failure detection thresholds in vehicles

