

CAMERA MONITOR SYSTEMS OR ELECTRONIC MIRROR UNDER UN REGULATION No. 46 AND ISO 16505

The latest version of UN Regulation No. 46 addresses ergonomic and performance requirements for Camera Monitor Systems (CMS) that are intended for replacement of mandatory inside and outside rearview mirrors of class I and class III for passenger cars and class II and class IV for commercial vehicles.

Main key performance requirements in UN Regulation No. 46 follow ISO 16505:2015 are addressed to

- display isotropy (lateral and directional)
- field of view
- magnification and resolution
- operating readiness
- system latency
- luminance uniformity
- contrast rendering
- colour rendering
- smear and blooming
- sharpness, depth of field
- system documentation

Some performance requirements in UN Regulation No. 46 are beyond ISO 16505 due to the needs of elderly drivers or safety reasons. Examples are:

- luminance contrast under night condition $\geq 10:1$ (instead of $5:1$ acc. to ISO 16505)
- luminance contrast under day conditions considers a higher luminance of the diffuse sky light
- grey scale rendering*
- smear shall be transparent and not be more than 10% of the maximum luminance
- point light sources*
- flicker* and image formation time*

*) no requirement in ISO 16505

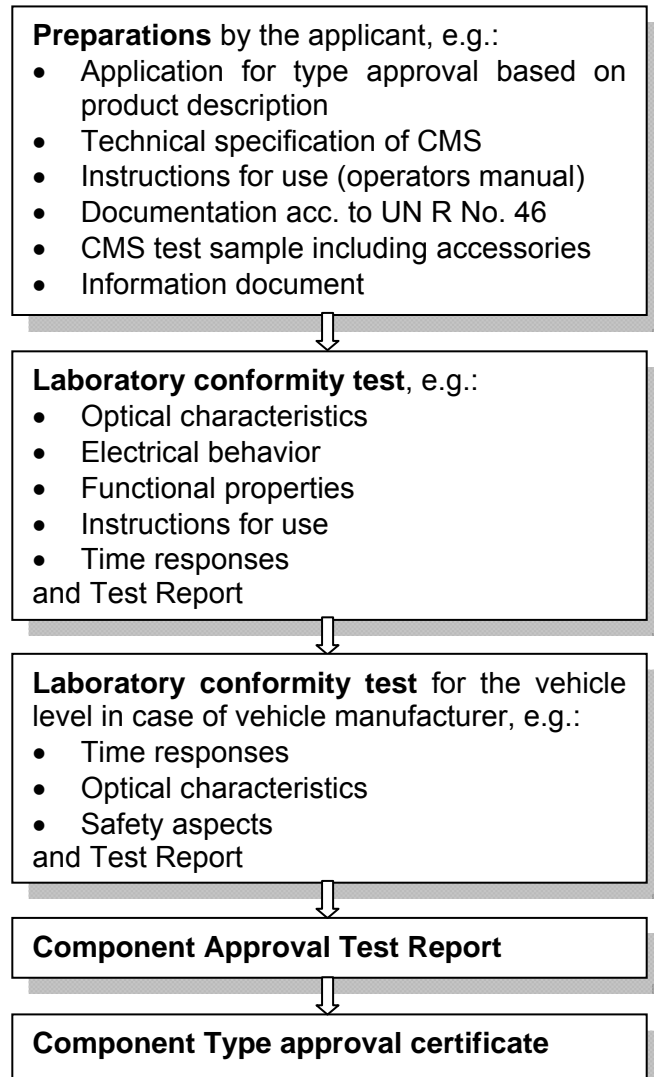
NOTE: the presented information gives only a limited overview about the standard, for detailed information the reader is asked to study ISO 16505 and UN Regulation No. 46.

The qualification of the CMS regarding the optical, electrical, mechanical and functional design requirements asks for a specific measurement and test set-up for a verification of the design.

For ISO 16505 TÜV Rheinland LGA Products is an accredited test laboratory by the German accreditation body DAkkS. TÜV Rheinland Krafftahrt is designated as Technical Service by

Krafftahrt-Bundesamt-KBA, Approval Authority in Germany and other Approval Authorities in charge for UN R type approval.

The CMS Type-Approval Service Process for the component level is shown here:



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