

Annex

ISO - NEW WORK ITEM PROPOSAL

Proposer: UN/ECE/TRANS/WP.29/GRSG - IGCMS

a) Title

Road vehicles - Ergonomic and performance aspects of Camera-Monitor Systems - Requirements and test procedures

Introduction

This International Standard considers Camera-Monitor Systems (CMS) as used in road vehicles to present the required outside information of a specific field of view in-vehicle. A CMS consists of a camera, a monitor and accompanying components to provide a visual image of the scene captured by the camera in real-time on the monitor. Depending on the mounting of the camera a CMS is able to provide different views to the driver.

b) Scope

This International Standard gives minimum ergonomic & performance requirements for Camera-Monitor Systems as used in road vehicles. It addresses Camera-Monitor Systems (CMS) that will be used in road vehicles to present the required outside information of a specific field of view in-vehicle. These specifications are intended to be independent of camera and display technologies.

Normative references: ISO 15008,

Terms and definitions: open

Guiding principles: open

Ergonomic requirements and recommendations (Items to be addressed):

- CMS – Applications (Use Cases, especially “Use Classes I to IV and VII as defined in UNECE regulation 46/02” and split screen use cases)
- Viewing conditions like viewing distance, viewing direction, viewing area and mirror class related to the display monitor
- Illuminance conditions (in vehicle, outside vehicle, night, day)
- Task requirements for the different use cases (mirror classes)
- Special physical requirements (Vibration, Wind, rain, snow, ice, excessive temperatures...) and coatings for protection against rain, snow and dirt, sensitivity of the system for rain,
- Performance requirements on detection and identification of the critical object as well as readability and/or legibility if required (representative and critical object(s) specifications):
- Implications for the size of the critical object related to the display and viewing conditions like geometric proportions between the size of the real critical object and the size of the displayed critical object
- CMS-Performance requirements under different lighting conditions:
Display luminance and luminance contrast of the monitor under different illumination conditions, night sight (minimum illumination level),

adaptation of the light intensity during the night,
Colour presentation and colour uniformity

- Image artefacts (blooming, smear, lens reflection, geometric distortion) and freezing risk due to processing of image information
- image interpretation,
Camera and display defects (Sensor pixel and display pixel defects)
- Temporal fidelity (flicker)
- Spatial instability (jitter)
- Detection of motion in real time, image moving artefacts, motion blur
- Latency (delay of time until image is displayed)
- Image compression
- failure of the system
- wireless technology issues (image artefacts during image processing,...)

Compliance assessment

- Measurement & laboratory environment
- Measurement equipment and set-up
- Assessment and compliance procedures for different CMS applications
- Measurement Uncertainties

Bibliography: open

c) Envisaged publication type: ISO (alternatively TR or PAS)

d) Purpose and justification

1) Specific aims, reasons for standardization: Directive 2003/97/EC and ECE regulation 46.02 require the standardisation and extension of minimum ergonomic & performance requirements for camera-monitor systems as well as assessment and measurements methods for the compliance with the intended application(s).

2) Main interest groups; automotive industry, consumers and users which drive a vehicle and other road users, governments

3) Timeliness: 2 years

e) Relevant documents: UN/ECE regulation 46 Rev2, Directive 2003/97/EC, IGCMS working papers, <http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsg/grsgage.html>

e) Cooperation and liaisons:

UN/ECE/TRANS/WP.29/GRSG-IGCMS (=INFORMAL GROUP ON CAMERA MONITOR SYSTEMS), <http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsg/grsgage.html>