

Comments on

ECE-TRANS-WP29-GRSG-2008-03e (30.01.2008)

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"2.1.2.4. "Luminance contrast" ~~contrast~~ means the ~~brightness-ratio~~ **luminance difference** between an object and its immediate background/surrounding **divided by the luminance of the background** that allows the object to be distinguished from its background/surroundings."

Comment

- The definition is not consistent with ISO 15008 and the other ISO/TC definitions
- Definitions should follow the existing international standards.

"2.1.2.6 "Critical object" means a ~~circular~~ spherical object with a diameter $D_0 = 0.8 \text{ m}$ ~~2/~~
 $D_0 = 0.3 \text{ m}.$ "

Comment

- A ball? What Characteristics?
 - A precise definition should be given, e.g. zylinder of height x m and diameter y m with the surface characteristics. (colour, reflectance value)
- Note: The procedure must also be applicable for a system integrator (car or coach or truck manufacturer !

"2.1.2.7. "Critical perception" means the level of perception that can just be obtained under critical conditions via the viewing system that is used. This corresponds to the situation in which the diameter of the critical object is a multiple times larger than the smallest detail that can be via the viewing system ~~the human eye is generally capable of achieving under various conditions. For traffic conditions the limiting value for a critical perception is eight arc-minutes of visual angle.~~"

Comment

- Which viewing system is used?
- How many "multiple times" larger?
- Various conditions of environments and traffic situations have to be considered
- "eight arc minutes" is too small from ergonomics point of view

"2.1.2.9. "Detection distance" means the distance measured ~~at ground level from the centre of the lens of the camera~~ ~~viewing reference point~~ to the extreme point at which a critical object can just be perceived (as defined by the critical perception ~~the limiting value for a~~ ~~critical~~ ~~perception~~ ~~just~~ ~~barely~~ ~~achieved~~)."

Comment

- The definition does not consider the viewing distance on the monitor !
The viewing distance on the monitor is essential for the CMS manufacturer and the integrator!
- We should distinguish between
 - > distance between the object and camera
 - > distance between the observer and monitor

"6.2.2.2.1. The camera should function well under low sunlight conditions. The camera shall provide a luminance contrast of at least 1:3 under low sun condition in a region outside the part of the image where the light source is reproduced (condition as defined in EN 12368: 8.4). The light source shall illuminate the camera with 40,000 lx. The angle between the normal of the sensor plane and the line **The camera shall function well in conditions in which sunlight falls on the camera. The saturated area (defined as the area in which the luminance contrast of a high contrast pattern falls below 0.2 shall be limited. In the representative test case with a (simulated sun)light of 40000 lx on the camera, a background illumination of 3000 lx ($\pm 25\%$) and a light source spanning an angle of 5° ($\pm 10\%$), which is displayed at the centre of the monitor, the saturated area shall be less than 10% of the image. A description of a test method is given in Annex 9. A test method other than that prescribed in Annex 9 may be used but evidence must be furnished that it is equivalent."**

Comment

Delete sentence: "A test method other than that prescribed in Annex 9 may be used but evidence must be furnished that it is equivalent."

Reason: A light source spanning an angle of 5° does not reflect reality (sun $\leq 1^\circ$). As far as from reality, as critical the method. New methods which are more close to reality would not be accepted. Technology progress will be avoided.

Comment continued on 6.2.2.2.1

- Is there any validation of the test method available ?
- How many manufacturers, suppliers and labs are able to measure according to the mentioned procedure and come to the same results?
- Are results of a Round-Robin-Test available ?
- Definition of luminance contrast should follow international standard ISO 15008 and referred ISO standards as well as the other terminology.

"Annex 9

(reserved)

Test for the determination of the saturated area of the camera under the conditions mentioned in paragraph 6.2.2.2.1

Measurement set-up

A high-intensity light (e.g., theatre spotlight) is reflected into the image using a small mirror (see Figure 1). The illuminance of the camera by the light reflected from the mirror shall be 40,000 lx. The light source is depicted in the centre of the camera: the light enters the camera from the normal direction. A high contrast black and white pattern (e.g. a checkerboard pattern) is illuminated by a set of lamps to create an even illumination of 3000 ($\pm 25\%$) lx.

The glare source should extend an angle (diameter) of 5° ($\pm 10\%$). A schematic drawing of the set-up is given in Figure 1.

Comment

The test method is not mature enough for reproduce the results, therefore all needed parameters should be reviewed and described

- > light source (e.g. spectral distribution, uniformity)
- > mirror (e.g. size, reflectance, distance to light source and camera)
- > Checkerboard (e.g. size, contrast, reflectance)
- > illumination conditions for the monitor,.....

measured. The saturated area is defined by the area in which the contrast of a high contrast test pattern falls below 0.2. The contrast (C) is defined by the difference in luminance between the bright (L_w) and dark (L_b ; black) and regions divided by the luminance of the bright (white) regions:

$$C = \frac{L_w - L_b}{L_w}$$

The saturated area shall not cover more than 10% of the display area.

Comment

- Definitions should follow international standards and the ISO terminology, not specific literature.
- The definition is not consistent with ISO 15008.

Annex 10, paragraphs 1.to 1.2., amend to read:

"1.CAMERA MONITOR DEVICE FOR INDIRECT VISION

Comment

- This chapter contains deleted definitions. Are and where these invalid? What is the reason and justification for deleting them?
- This chapter contains new methods. Is there any comparison with “old” methods available?
- A user test is a subjective test method and must be described in detail (e.g. number of users, age, vision,.....) for reproduceability!
- We should use the “character height” according to ISO 15008 as a already existing requirement for the minimum displayed object size.

Conclusion

- The existing measurement procedure in 2003/97/EC addresses the basic metrology for the CMS assessment
- The “TNO” method contains a new approach of CMS assessment with new definitions and procedures with new discussion and addressing specific standardization items (see existing ISO metrology for contrast and others, validation of procedure,...) → Change and revision of current standards would be required by ISO
- Proposal: The measurement procedure in 2003/97/EC (ECE 46) should be improved and extended for the actually not mature enough parts
 - light source
 - test object characteristics and test object illumination
 - Blooming
 - viewing distance criteria of monitor and monitor size in relation to the viewing angle of the cameraas the essential characteristics to describe a CMS in their context of use