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**Eyewear display - Part 22-10: Specific measurement methods
for AR type - Optical properties
(English Translation)**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 22-10 of GB/T 48075 "Eye-Wearing Displays". GB/T 48075 has already published the following parts.

--Part 20-20.Basic Test Methods for Image Quality;

--Part 22-10.Optical performance of AR special test methods this document is modified to adopt IEC 63145-22-10.20 "Ophthalmic Displays - Part 22-10.AR - Special Test Methods - Optics" performance".

The technical differences between this document and IEC 63145-22-10:2020, and the reasons therefor, are as follows.

--Based on the specific technical content, Chapter 1 clarifies the scope of this document, which includes "the transmission characteristics of eye-worn displays and..." "Ambient optical performance" has been changed to "including directional spectral transmittance, chromaticity difference, forward stray light, and modulation contrast of eye-worn displays".

Performance parameters such as degree;

--The phrase "The lighting source and LMD are oriented, not arbitrary, and their optical axes are aligned" (see 6.1.1) has been removed. Because...

The actual illumination source used is diffuse, exhibiting good diffuse illumination characteristics, at least within the FOV covering the test sample.

The LMD (Light Detector Device) is defined in great detail in section 5.2.1.It is a type of luminance meter and does not have a concept of orientation.

--The light source in the integrating sphere has a smooth, broadband spectrum, approximating the CIE standard illuminant specified in ISO 11664-2.

"D65" is changed to "The light source in the integrating sphere has a smooth, broadband spectrum (see 6.1.2.1)" (see 6.3.2.1) because "smooth broadband" is used to describe the light source in the integrating sphere.

The terms "broad spectrum" and "CIE standard illuminant D65" are contradictory. D65 is not a smooth, broadband spectrum. In actual testing, the measurement...

The test light source is the same as in 6.1.2.1;

--The label "dLT" has been added (see Figure 8) because the aperture diameter (dLT) of the optical trap is a key feature in the schematic diagram of the haze measurement device.

The size, the aperture diameter (dLT) of the optical trap, is closely related to the set angle ($\theta_{LT} = 8^\circ$) relative to the center of the test sample aperture.

The lack of information results in incomplete technical specifications.

The following editorial changes have been made to this document.

IEC 63145-20-20 (see Chapter 1, 3.2 and Annex A);

--Note 3.1 has been modified;

--In Figure 1, positive and negative signs are added to the arrow directions to indicate the positive and negative angle directions, which facilitates the representation of data;

--In sections 5.2.2.2 and 5.2.2.3, change "the angular accuracy and displacement accuracy should not be less than" to "the angular accuracy should not be greater than".

--The description in paragraph 4 of section 6.3.2.1, "The light source in the integrating sphere has a smooth broadband spectrum," has been optimized, and Listed alongside the following content as one of the requirements for an integrating sphere light source;

--Informative references to ISO 11664-2 have been removed (see 6.3.2.1);

--The variable symbols in formula (11) have been corrected (see 6.4.4) because the variables "LM" and "Lm" in formula (11) are not consistent with those in the text.

"LvM" and "Lvm" are the same.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Technical Committee on Standardization of Electronic Display Devices (SAC/TC 547).

Introduction

To meet the needs of my country's manufacturing, inspection, and import/export trade of eye-wearing display products, a series of standards for eye-wearing displays have been formulated.

--Part 1-2.Terminology. The purpose is to define eye-worn displays such as augmented reality, virtual reality, and mixed reality, and their image or video rendering...

A term related to dyeing.

--Part 20-10.Basic Test Methods for Optical Performance. The aim is to describe the standard measurement conditions and...

Measurement methods.

--Part 20-20.Basic Test Methods for Image Quality. The aim is to describe the standard measurement conditions for image quality in eye-worn displays and...

Measurement methods.

--Part 21-20.Special Test Methods for VR Image Quality - Screen Door Effect. The aim is to describe standard measurement criteria for the screen door effect.

Components and testing methods.

--Part 22-10.Optical Performance of AR-Specific Test Methods. The aim is to describe the optical performance of (optical) see-through augmented reality eye-worn displays.

Standard measurement conditions and methods for the optical characteristics and imaging quality of displays.

--Part 22-20.AR-Specific Test Methods for Image Quality. The aim is to describe the standards for image quality in augmented reality eye-wear displays.

Preliminary measurement conditions and methods.

Eye-worn display

Part 22-10.Special Testing Methods for AR Optical performance

1 Scope

This document describes the standard measurement conditions for the optical characteristics and image quality of (optical) see-through augmented reality (AR) eye-wear displays.

Measurement methods include performance parameters of eye-worn displays such as directional spectral transmittance, chromaticity difference, forward stray light, and modulation contrast.

This document does not apply to contact lens-mounted displays.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO/CIE 11664-5 Colorimetry Part 5: CIE 1976 $L^*u^*v^*$ color space and u' , v' uniform chromaticity diagram (Colorimetry-Part 5: CIE 1976 $L^*u^*v^*$ color space and u' , v' uniform chromaticity scale diagram)