

IEEE Standard for Quality of Experience (QoE) and Visual-Comfort Assessments of Three-Dimensional (3D) Contents Based on Psychophysical Studies

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IEEE Standard for Quality of Experience (QoE) and Visual-Comfort Assessments of Three-Dimensional (3D) Contents Based on Psychophysical Studies

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**Standards Activities Board
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IEEE Computer Society**

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Abstract: As the demand and supply for 3D technologies grows, the development of accurate quality-assessment techniques shall be used to develop the 3D display device and signal-processing engine industries. The underlying principles and statistical characteristics of 3D contents based on the human visual system (HVS) are described in this standard. In addition, a reliable 3D subjective assessment methodology that covers the characteristics of human perception, display mechanism, and the viewing environment is introduced in this standard.

Keywords: accommodation and vergence conflict, foveation, human visual system, HVS, IEEE 3333.1.1™, QoE, quality assessment, quality of experience, saliency detection, stereoscopic, stereoscopic display, subjective assessment, visual (dis)comfort, visual contents analysis

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Introduction

This introduction is not part of IEEE Std 3333.1.1™-2015, IEEE Standard for Quality of Experience (QoE) and Visual-Comfort Assessments of Three-Dimensional (3D) Contents Based on Psychophysical Studies.

This standard establishes methods of visual discomfort and quality of experience (QoE) assessments of three-dimensional (3D) contents based on psychophysical studies. These key factors are constructed in conjunction with the visual factors used to quantify discomfort and QoE degradation.

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1. Scope

This standard establishes methods for visual saliency prediction, visual contents analysis, and subjective assessment for quantifying the visual discomfort and quality of experience (QoE) of three-dimensional (3D) image and video.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ITU-R BT.500-13: Methodology for the subjective assessment of the quality of television pictures.¹

¹ ITU publications are available from Publication Sales, International Telecommunication Union, Place des Nations, 1211 Geneva 20, Switzerland (<http://www.itu.int/>).