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Test of visual healthy and comfort of LED lighting products

LED照明产品视觉健康舒适度测试

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents"

Drafting is required.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed and coordinated by the Ministry of Science and Technology of the People's Republic of China.

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Introduction

With the advent of the information society, the acquisition of information has become a core element of human life, study, work, growth and development.

More than 80% of information is acquired through vision, so visual health not only affects people's physical health, but also affects people's life, study, work and life.

It plays an important role in production and growth.

As a new type of light source, LED has been widely used in lighting, display and other related lighting products. "Light health or healthy lighting" has become The impact of LED lighting on human visual function has become a key and hot issue of common concern to the whole society.

Especially in the context of the comprehensive implementation of myopia prevention and control for children and adolescents in China. How to objectively and quantitatively evaluate

the photobiological effects of light on the human body?

response characteristics, so as to find out the health effects of LED lighting products on the human body (human visual system) under different light quality characteristics, and then study Producing lighting products that can maximize the visual health and safety of consumers has become a major goal in promoting industrial technology development, improving product competitiveness, It is an important way to ensure visual health, effectively promote the Healthy China strategy, and strongly support the prevention and control of myopia among children and adolescents.

LED visual health and comfort is based on the light biological response characteristics of the human body, and is measured by cell molecular tests and objective physiological indicators.

The health effects of LED lighting products on human body are comprehensively evaluated by means of testing and biochemical analysis of neurotransmitters.

It can effectively regulate the healthy lighting market and help domestic enterprises develop healthy lighting products with independent intellectual property rights.

It has played a positive role in promoting China's creation and occupation of the international market, and helped China's semiconductor lighting industry occupy the "people-oriented" lighting market.

The implementation of this document can promote scientific use of light, improve the health of the people, and effectively reduce the Prevent visual impairment such as myopia caused by lighting and reduce public medical costs.

LED lighting product visual health and comfort test

1 Scope

This document specifies the visual health and comfort evaluation requirements and test methods for LED lighting products.

This document applies to indoor LED lighting systems.

2 Normative references

GB/T 38120

3 Terms and definitions

The terms and definitions defined in GB/T 38120 and the following apply to this document.

3.1 dopamine

Monoamine central neurotransmitters.

3.2 brain neurotransmitter

Chemicals that help transmit signals from one nerve cell to another.

3.3 5-hydroxytryptamine

An inhibitory neurotransmitter found in high concentrations in the cerebral cortex and synapses.

4 Test product requirements

Before a product is tested for health and comfort, it must comply with its stated quality standards, environmental standards and product certifications.

5.1 Test cells

Generally, retinal pigment epithelial cells or retinal photoreceptor cells can be tested using embryonic stem cells and induced pluripotent stem cells derived from human.

induced pluripotent stem cells.

5.2 Environmental requirements

Test equipment environment. room temperature $25.0\text{ }^{\circ}\text{C} \pm 1.2\text{ }^{\circ}\text{C}$, relative humidity 40% ~ 50%.

The environment in which the cells exist. temperature $37.0\text{ }^{\circ}\text{C} \pm 0.5\text{ }^{\circ}\text{C}$, relative humidity $(95 \pm 0.5)\%$.