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Traditional Chinese medicine — Computerized tongue image analysis system —

Part 2: Light environment

Médecine traditionnelle chinoise — Système d'analyse d'images numérisées de la langue —
Partie 2: Environnement lumineux

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Foreword

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 249, *Traditional Chinese medicine*.

A list of all the parts in the ISO 20498 series can be found on the ISO website.

Traditional Chinese medicine — Computerized tongue image analysis system —

Part 2: Light environment

1 Scope

This document specifies the light environment necessary for the functioning of a computerized tongue image analysis system (CTIS).

This document does not include the electrical safety and biocompatibility of the lighting component.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CIE 013.3-1995, *Method of measuring and specifying colour rendering properties of light sources*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
effective surface area
surface on which the patient rests according to the intended position

Note 1 to entry: The area can be specified in the accompanying documents.

3.2
light environment
optical conditions on effective surface area

Note 1 to entry: This includes illuminance, colour temperature, colour rendering index, illumination distribution, irradiance and ultraviolet irradiance.

4 Technical requirements

4.1 Illuminance

Illuminance should be between 500 lx and 13 000 lx.

4.2 Colour temperature

Colour temperature should be between 3 000 K and 7 000 K.

4.3 Colour rendering index

Colour rendering index should be more than 90.

4.4 Illumination distribution

The relative illumination distribution on the effective surface area shall comply with the following condition:

the ratio of illuminance_{min} to illuminance_{max} shall be more than 0,9.

4.5 Irradiance

For the spectral region 300 nm to 2 500 nm, the total irradiance shall not exceed 350 $W \cdot m^{-2}$.

NOTE 300 nm to 2 500 nm is the main spectral region which can produce thermal risk to retinal and skin.

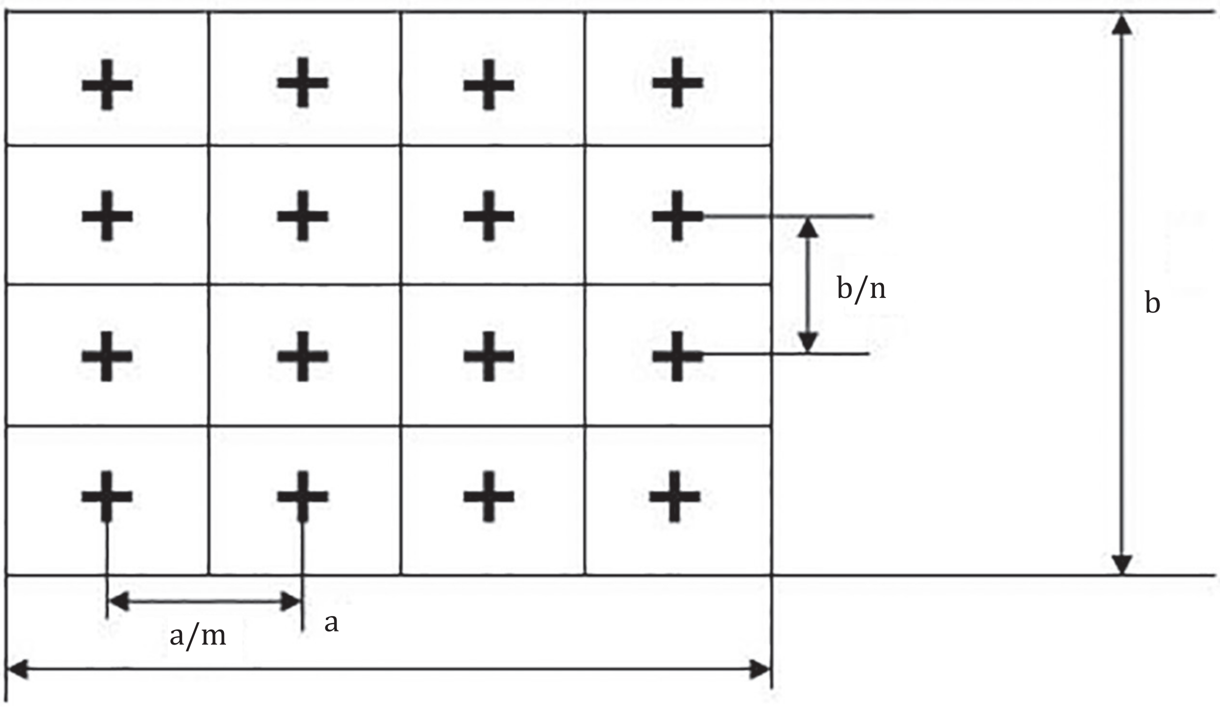
4.6 Ultraviolet irradiance

For the spectral region 200 nm to 400 nm, the effective ultraviolet irradiance shall not exceed 0,008 $W \cdot m^{-2}$.

5 Test methods

5.1 Measuring points on effective surface area

The measuring area shall be divided into a number of congruent rectangular or square partial surfaces according to Figure 1. The grid is centred to cover the whole effective surface area. The measuring points are identical with the centres of the partial surfaces. The distances between the measuring points on the grid shall not exceed 3 cm.



NOTE m and n are the number of partial surfaces in the direction of length a and width b.

Figure 1 — Example of a measuring grid

5.2 Illuminance

Select the measuring points described in 5.1. Use an illuminance metre to measure the illuminance on each point. Every test value should comply with 4.1.

5.3 Colour temperature

Select the measuring points described in 5.1. Every test value should comply with 4.2.

5.4 Colour rendering index

Select the measuring points described in 5.1 and measure according to the methods in CIE 013.3-1995. Every test value should comply with 4.3.

5.5 Illumination distribution

Select the measuring points described in 5.1. Use an illuminance metre to measure the illuminance on each point. Calculate the ratio of illuminance$_{min}$ to illuminance$_{max}$. The value should comply with 4.4.

5.6 Irradiance

Select the maximum illuminance point described in 5.1. Measure the total irradiance spectral region 300 nm to 2 500 nm with a sensor whose diameter is no more than 3 cm. The test value should comply with 4.5.

5.7 Ultraviolet irradiance

Select the maximum illuminance point described in 5.1. Measure the irradiance spectral region 200 nm to 400 nm as E(λ) (unit is W·m^{-2}·nm^{-1}); effective ultraviolet irradiance is defined using Formula (1):

$$\sum_{200}^{400} \mathrm{E}\left(\lambda\right) \cdot S_{\mathrm{UV}}\left(\lambda\right) \cdot \Delta\lambda \tag{1}$$

where

$\Delta\lambda$ is the bandwidth in nm;

$S_{\mathrm{UV}}(\lambda)$ is actinic ultraviolet hazard weighting function and its spectral values are shown in Annex A.

The test value should comply with 4.6.

Annex A
(informative)

Spectral weighting function for assessing ultraviolet hazards

Table A.1 — Spectral weighting function for assessing ultraviolet hazards

Wavelength (λ)/nm[a]	$S_{UV}(\lambda)$	**Wavelength** (λ)/nm	$S_{UV}(\lambda)$
200	0,030	313[b]	0,006
205	0,051	315	0,003
210	0,075	316	0,002 4
215	0,095	317	0,002 0
220	0,120	318	0,001 6
225	0,150	319	0,001 2
230	0,190	320	0,001 0
235	0,240	322	0,000 67
240	0,300	323	0,000 54
245	0,360	325	0,000 50
250	0,430	328	0,000 44
254[b]	0,500	330	0,000 41
255	0,520	333[b]	0,000 37
260	0,650	335	0,000 34
265	0,810	340	0,000 28
270	1,000	345	0,000 24
275	0,960	350	0,000 20
280[b]	0,880	355	0,000 16
285	0,770	360	0,000 13
290	0,640	365[b]	0,000 11
295	0,540	370	0,000 093
297[b]	0,460	375	0,000 077
300	0,300	380	0,000 064
303[b]	0,120	385	0,000 053
305	0,060	390	0,000 044
308	0,026	395	0,000 036
310	0,015	400	0,000 030

[a] Wavelengths chosen are representative; other values should be obtained by logarithmic interpolation at intermediate wavelengths.

[b] Emission lines of a mercury discharge spectrum.

SOURCE: IEC 62471:2006, Table 4.1.