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Traditional Chinese medicine — Computerized tongue image analysis system —

Part 4: Peripheral visual instruments

Médecine traditionnelle chinoise — Système d'analyse d'images numérisées de la langue —

Partie 4: Instruments visuels périphériques

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of 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 www.iso.org/iso/foreword.html.

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

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Traditional Chinese medicine — Computerized tongue image analysis system —

Part 4: Peripheral visual instruments

1 Scope

This document specifies the performance criteria of peripheral visual instruments in the computerized tongue image analysis system (CTIS), including colour reproduction, distortion and resolution.

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.

ISO/TS 20498-3, *Computerized tongue image analysis system — Part 3: Colour chart*

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:

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

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

3.1
peripheral visual instrument
device which includes computer display drive used in CTIS

Note 1 to entry: Display drive includes graphics, display drive software and related colour reproduction software

3.2
colour reproduction
ability to accurately reproduce the colour of the object

3.3
CIELAB colour difference
CIE1976 L*a*b* colour difference
ΔE^*_{ab}
difference between two colour stimuli defined as the Euclidean distance between the points representing them in L*a*b* colour space

[SOURCE: CIE 17.4:1987, 845-03-55]

3.4
display resolution
number of distinct pixels displayed in each dimension

3.5
distortion
shape deformation of the image versus object due to difference between magnification of centre and margin of image, usually expressed in absolute distortion or relative distortion

3.6
sRGB
colour space standardized by the IEC

[SOURCE: IEC 61966-2-1:1999]

4 Performance

4.1 Colour reproduction

The imaging device shall give accurate colour reproduction and reproduces the colour in the colour chart. The CIELAB colour difference ΔE^*_{ab} of single colour in the CIE L*a*b* colour space shall be no more than 5.

Conformity is checked by the following test:

Open the image file of the colour chart and display it on the peripheral visual instrument. The displayed image shall meet the requirements of ISO/TS 20498-3. Use colour spectrophotometer for testing; compare the real value with the specified value in ISO/TS 20498-3 according to the following formula to calculate the colour difference. The result shall be in accordance with the requirements.

$$\Delta E^*_{ab} = [(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2]^{1/2}$$

where ΔE^*_{ab} is the colour difference of the CIE L*a*b* colour space.

It is recommended that colour patches of primary colour (CMY), (RGB) and grey scales, including black and white colour patches, be used for calibration of the LCD monitor.

NOTE The characteristics of the colour chart are listed in Annex A, Table A.1, for additional information.

4.2 Display resolution

Display resolution shall not be less than 1024 × 768 pixels at aspect ratio 4:3.

4.3 Distortion

The distortion shall not be larger than 1 % in both horizontal and vertical directions.

Step 1:

Place the concentric test card (as shown in Figure 1) perpendicular to the optical axis of the imaging device. The concentric test card consists of two concentric circles, with the diameters of the small and large circles being d = 20 mm ± 0,1 mm and D = 100 mm ± 0,1 mm, respectively.

Step 2:

Take the image under a simulation environment which has the same working distance and working conditions as the real application. The test card shall be located at the centre of the field of view and, as far as possible, be filled with the entire view.

Step 3: