



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Dentistry - Digitizing devices for CAD/CAM systems for indirect
dental restorations - Test methods for assessing accuracy**

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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 of Standardization Documents" drafted.

This document is equivalent to ISO 12836:2015 "Dental Indirect Dental Restoration CAD/CAM System Digital Equipment Accuracy

Test Methods for Degree Evaluation".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

The use of computer-aided design/computer-aided manufacturing (CAD/CAM) systems is increasing around the world.

This document specifies three experimental evaluation methods for the accuracy of CAD/CAM system dental digitization equipment.

The premise of this document is based on the fact that only matching point clouds and resulting shape surfaces conform to the Stereolithography Interface Specification (also known as Stereolithography).

Lithography Interface Language or STL) is only considered a scan of the physical model.

This document includes dental scanners (lab-based optical scanners as well as lab-based mechanical contact scanners)

Measurement of digitized images. Digital images can be used not only for the production of dental restoration products, but also for teaching in the field of dentistry

and research, such as in odontology, measurement of changes in tooth and gingival shape,

etc.

It has been argued that more physical models are needed than spheres, such as a shape with an inlay cavity, sharp edges, capable of moulding

The face of the prepared edge of the inlay. When no method (e.g. software algorithm) can be used to calculate the points of the point cloud or the STL surface with the accuracy as

When measuring the standard deviation of the difference between the physical model surfaces, this requires some software that can match the CADSTL format file of the physical model.

However, these physical models have differences in point clouds or STL surfaces and visualizations, so qualitative evaluations are also required.

Appendix A, Appendix B, and Appendix C specify the following three test specimens (two dental, one mechanic) for evaluating digital equipment.

- a) Specimen used to simulate the shape of the inlay cavity;
- b) Multi-component specimens, including two post and core, can cover two full crowns with a center distance of 30mm, to simulate the digital four single bit pons;
- c) a sphere whose measurements are limited to the hemisphere located above the horizontal plane.

ISO 5725-1 uses the terms "correctness" and "precision" to describe the accuracy of a measurement method. "Correctness" is used for

Refers to "the degree of agreement between the mean obtained from a large number of test results and the accepted reference value". "Precision" is used to mean "under specified conditions

The degree of agreement between independent test results". Usually "accuracy" includes correctness and precision.

Dental indirect dental restoration CAD/CAM system

Test method for accuracy evaluation of digital equipment

1 Scope

This document describes the digital design of a computer-aided design/computer-aided manufacturing (CAD/CAM) system for indirect dental restorations

Test methods for accuracy assessment.

This document applies to digitizing equipment with optical or mechanical contact systems,

not for hand-held scanners, nor for

Methods (X-rays) and devices for digitization by means of Magnetic Resonance Imaging (MRI).

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

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

ting-Specifications)

ISO 1942 Dentistry-Vocabulary

Note. GB/T 9937-2020 Dental terminology (ISO 1942:2009, MOD)

ISO 3290-2 Rolling bearing balls Part 2.Ceramic balls (Rollingbearings-Balls-Part 2.Ceramicballs)

Note. GB/T 308.2-2010 Rolling Bearing Balls Part 2.Ceramic Balls (ISO 3290-2:2008, IDT)

ISO 5725-1 Accuracy (correctness and precision) of measurement methods and results - Part 1.General and definitions [Accuracy

tions]

Note. GB/T 6379.1-2004 Accuracy (correctness and precision) of measurement methods and results - Part 1.General provisions and definitions (ISO 5725-1:1994,

IDT)

ISO /IEC Guide 99 International Metrology Vocabulary Fundamentals and Common Concepts and Related Terms (VIM) [International

3 Terms and Definitions

Terms and definitions as defined in ISO 1942, ISO 5725-1 and ISO /IEC Guide 99 and the following apply to this document.

3.1

accuracy

< Measurement> The degree of agreement between the test result and the true value being measured.

Note. Accuracy is a qualitative concept. See 3.8 "Precision" and 3.17 "Correctness" for quantification of its two components.

[Source. ISO 5725-1.1994, 3.6, with modifications]

3.2

calibration

Under specified conditions, a series of operations are used to determine the indication value of a measuring instrument or measuring system, which can also be represented by a measuring instrument or a reference material.