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**Information technology — JPEG XL  
Image Coding System —**

**Part 3:  
Conformance testing**



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CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
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# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Testing procedure</b> .....	<b>1</b>
4.1 Structure of the test corpora .....	1
4.1.1 General .....	1
4.1.2 Numpy File Format.....	2
4.2 Image similarity .....	2
4.3 Conformance on a single test case .....	3
4.4 Encoder test .....	4
4.5 Decoder .....	4
<b>Annex A (informative) Description of the test corpora</b> .....	<b>5</b>
<b>Bibliography</b> .....	<b>7</b>

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 document 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](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 18181 series can be found on the ISO and IEC websites.

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](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

## Introduction

The ISO/IEC 18181 series, also known as "JPEG XL", supports lossless and lossy compression of images and image sequences.

This document provides the framework, concepts and methodology for testing codestreams and implementations, and the criteria to be achieved to claim conformance to the ISO/IEC 18181 series. The objective of this standard is to promote interoperability between JPEG XL decoders, and to test these systems for conformance. Conformance testing is the testing of a candidate implementation for the existence of specific characteristics required by a standard.

The purpose of this document is to define a common test methodology, to provide a framework for specific test suites, and to define the procedures to be followed during conformance testing.



# Information technology — JPEG XL Image Coding System —

## Part 3:

## Conformance testing

### 1 Scope

This document specifies the conformance testing of the ISO/IEC 18181 series, also known as JPEG XL. Other desirable aspects of implementation (including robustness and performance) are outside the scope of this document.

### 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/IEC 18181-1, *Information technology — JPEG XL image coding system — Part 1: Core coding system*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 18181-1 apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 4 Testing procedure

#### 4.1 Structure of the test corpora

##### 4.1.1 General

NOTE JPEG XL specifies infinite-precision arithmetic, whereas practical implementations are likely to use finite-precision arithmetic. Allowing each intermediate operation to round the result to a floating-point representation might not give sufficient freedom for alternate implementation strategies, or conversely too much freedom to be useful. This document therefore specifies tolerances for the decoded samples.

A description of the test corpora is provided in [Annex A](#) and the following files are available from <https://standards.iso.org/iso-iec/18181/-3/ed-1/en/>:

- a testcases/ subdirectory, containing
  - multiple subdirectories, each of which contains a single test case for conformance testing
  - multiple .txt files, each line of which contains the name of a folder corresponding to a test case
- a conformance.py file that provides a possible implementation of the testing procedure described in this document
- a lcms2.py file, which is a supporting file for conformance.py