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Information technology — JPEG 2000 image coding system: Conformance testing

Technologies de l'information — Système de codage d'images JPEG 2000: Tests de conformité

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15444-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information* in collaboration with ITU-T. The identical text is published as ITU-T Rec. T.803.

This second edition cancels and replaces the first edition (ISO/IEC 15444-4:2002), which has been technically revised.

ISO/IEC 15444-4 consists of the following parts, under the general title *Information technology — JPEG 2000 image coding system*:

— *Part 1: Core coding system*

— *Part 2: Extensions*

— *Part 3: Motion JPEG 2000*

— *Part 4: Conformance testing*

— *Part 5: Reference software*

— *Part 6: Compound image file format*

— *Part 9: Interactivity tools, APIs and protocols*

— *Part 12: ISO base media file format*

The following parts are under preparation:

— *Part 8: Secure JPEG 2000*

— *Part 10: Extensions for theree-dimensional data and floating point data*

— *Part 11: Wireless JPEG 2000*

INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – JPEG 2000 image coding system: Conformance testing

1 Scope

This Recommendation | International Standard specifies the framework, concepts, methodology for testing, and criteria to be achieved to claim compliance to ITU-T Rec. T.800 | ISO/IEC 15444-1. It provides a framework for specifying abstract test suites and for defining the procedures to be followed during compliance testing.

This Recommendation | International Standard:

- specifies compliance testing procedures for encoding and decoding using JPEG 2000 Part 1 (ITU-T Rec. T.800 | ISO/IEC 15444-1);
- specifies codestreams, decoded images, and error metrics to be used with the testing procedures;
- specifies abstract test suites;
- provides guidance for creating an encoder compliance test.

This Recommendation | International Standard does not include the following tests:

Acceptance testing: the process of determining whether an implementation satisfies acceptance criteria and enables the user to determine whether or not to accept the implementation. This includes the planning and execution of several kinds of tests (e.g., functionality, quality, and speed performance testing) that demonstrate that the implementation satisfies the user requirements.

Performance testing: measures the performance characteristics of an Implementation Under Test (IUT) such as its throughput, responsiveness, etc., under various conditions.

Robustness testing: the process of determining how well an implementation processes data which contains errors.

2 Normative references

The following references document the technical details and legal codestream syntax that serve as a basis for this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

- ITU-T Recommendation T.800 (2002) | ISO/IEC 15444-1:2003, *Information technology – JPEG 2000 image coding system: Core coding system.*

3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply. The definitions from ITU-T Rec. T.800 | ISO/IEC 15444-1 clause 3 also apply to this Recommendation | International Standard.

3.1 **abstract test suite**: Generic compliance testing concepts and procedures for a given requirement.

3.2 **arithmetic coder**: An entropy coder that converts variable length strings to variable length codes (encoding) and vice versa (decoding).

3.3 **big endian**: An order of bytes with the most significant byte first.

3.4 **bit**: A contraction of the term "binary digit"; a unit of information represented by a zero or a one.