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**Information technology — Digital
compression and coding of
continuous-tone still images: Compliance
testing**

*Technologies de l'information — Compression numérique et codage des
images fixes de nature photographique: Test 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. 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.

International Standard ISO/IEC 10918-2 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 Recommendation T.83.

ISO/IEC 10918 consists of the following parts, under the general title *Information technology — Digital compression and coding of continuous-tone still images*:

- *Part 1: Requirements and guidelines*
- *Part 2: Compliance testing*

Annexes A to D form an integral part of this part of ISO/IEC 10918. Annexes E to H are for information only.

Introduction

This Recommendation | International Standard, *Digital Compression and Coding of Continuous-tone Still Images*, is published as two parts:

- ITU-T Rec. T.81 | ISO/IEC 10918-1: *Requirements and guidelines*.
- ITU-T Rec. T.83 | ISO/IEC 10918-2: *Compliance testing*.

ITU-T Rec. T.81 | ISO/IEC 10918-1 sets out requirements and implementation guidelines for continuous-tone still image encoding and decoding processes, and for the coded representation of compressed image data. These processes and representations are intended to be generic, that is, to be applicable to a broad range of applications for colour and grayscale still images within communications and computer systems.

This part, ITU-T Rec. T.83 | ISO/IEC 10918-2, sets out tests for determining whether implementations comply with the requirements for the various encoding and decoding processes specified in ITU-T Rec. T.81 | ISO/IEC 10918-1. ITU-T Rec. T.83 | ISO/IEC 10918-2 also specifies tests for determining whether any specific instance of compressed data complies with the ITU-T Rec. T.81 | ISO/IEC 10918-1 specification for compressed data format.

The committee which has prepared this Specification is the ISO/IEC JTC1/SC29/WG1 Sub Group on JPEG, also known as the Joint Photographic Experts Group (JPEG). Both the committee and the two parts of this Specification continue to be known informally by the name JPEG.

The “joint” in JPEG refers to the committee’s collaboration with the ITU-T SG8 Rapporteur’s Group on Recommendation Q.16. In this collaboration, WG1 has performed the work of selecting, developing, documenting, and testing the generic compression processes.

ITU-T SG8 has provided the requirements which these processes must satisfy to be useful for specific image communications applications such as facsimile, videotex, and audiographic conferencing.

This Specification is presented in accordance with the rules of ITU-T and ISO/IEC JTC1 established by “Rules for presentation of ITU-T | ISO/IEC common text”.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – DIGITAL COMPRESSION AND CODING OF
CONTINUOUS-TONE STILL IMAGES: COMPLIANCE TESTING**1 Scope**

This Recommendation | International Standard is concerned with compliance tests for the continuous-tone still image encoding processes, decoding processes, and compressed data formats specified in ITU-T Rec. T.81 | ISO/IEC 10918-1.

This Specification:

- specifies compliance tests for the ITU-T Rec. T.81 | ISO/IEC 10918-1 compressed data formats;
- specifies compliance tests for the ITU-T Rec. T.81 | ISO/IEC 10918-1 encoding processes;
- specifies compliance tests for the ITU-T Rec. T.81 | ISO/IEC 10918-1 decoding processes;
- specifies a method for constructing application-specific compliance tests;
- gives guidance and examples on how to implement these tests in practice.

This Specification specifies normative generic compliance tests for the ITU-T Rec. T.81 | ISO/IEC 10918-1 encoding and decoding processes. These compliance tests are applicable to “stand-alone” generic implementations of one or more of the encoding and decoding processes specified in ITU-T Rec. T.81 | ISO/IEC 10918-1. Among the purposes of these tests is to ensure that generic encoder (and decoder) implementations compute the discrete cosine transform (DCT) and quantization functions with sufficient accuracy.

2 Normative references

The following ITU-T Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of 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 editions of the Recommendations and Standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU-T maintains a list of the currently valid ITU-T Recommendations.

2.1 Additional references

- ISO 5807:1985, *Information processing – Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts*.

3 Definitions, abbreviations, symbols, and conventions**3.1 Definitions**

For the purposes of this Specification, the following definitions apply.

- 3.1.1 (coding) process 1:** Coding process with baseline sequential DCT, 8-bit sample precision.
- 3.1.2 (coding) process 2:** Coding process with extended sequential DCT, Huffman coding, 8-bit sample precision.
- 3.1.3 (coding) process 3:** Coding process with extended sequential DCT, arithmetic coding, 8-bit sample precision.
- 3.1.4 (coding) process 4:** Coding process with extended sequential DCT, Huffman coding, 12-bit sample precision.