INTERNATIONAL STANDARD

ISO/IEC 10918-3

First edition
1997-05-01

Information technology — Digital compression and coding of continuous-tone still images: Extensions

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

Contents

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 10918-3 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.84.

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*

— *Part 3: Extensions*

— *Part 4: Registration procedures for JPEG profile, APPn marker and SPIFF profile ID marker*

— *Part 5: MHEG subset for base level implementation*

Annexes A to G form an integral part of this part of ISO/IEC 10918. Annexes H and I are for information only.

Introduction

This Recommendation | International Standard, Digital compression and coding of continuous-tone still images, is published as three parts:

- CCITT 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.84 | ISO/IEC 10918-3: Extensions.

This Recommendation | International Standard sets out requirements and guidelines for encoding and decoding extensions to the processes defined by CCITT Rec. T.81 | ISO/IEC 10918-1, and for the coded representation of compressed image data of these extensions. This Recommendation | International Standard also defines tests for determining whether implementations comply with the requirements for the various encoding and decoding extensions.

This Recommendation | International Standard:

- defines extensions [including variable quantization, selective refinement, composite tiling, and a Still Picture Interchange File Format (SPIFF)] to processes for converting source image data to compressed image data;

- defines extensions to processes for converting compressed image data to reconstructed image data;

- defines coded representations for compressed image data;

- gives guidance and examples on how to implement these extensions in practice;

- describes compliance tests for these extensions.

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ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – DIGITAL COMPRESSION AND CODING OF CONTINUOUS-TONE STILL IMAGES: EXTENSIONS

1   Scope

This Recommendation | International Standard is applicable to continuous-tone – grayscale or colour – digital still image data. It is applicable to a wide range of applications which require use of compressed images.

This Recommendation | International Standard:

- defines extensions [including variable quantization, selective refinement, tiling, and a Still Picture Interchange File Format (SPIFF)] to processes for converting source image data to compressed image data;

- defines extensions to processes for converting compressed image data to reconstructed image data;

- defines coded representations for compressed image data;

- gives guidance and examples on how to implement these extensions in practice;

- describes compliance tests for these extensions.

2   Normative references

The following Recommendations and International Standards contain provisions which, through references 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 edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau (TSB) of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1   Identical Recommendations | International Standards

- ITU-T Recommendation H.262 (1995) | ISO/IEC 13818-2:1995, *Information technology – Generic coding of moving pictures and associated audio information: Video.*

- CCITT Recommendation T.81 (1992) | ISO/IEC 10918-1:1994, *Information technology – Digital compression and coding of continuous-tone still images – Requirements and guidelines.*

- ITU-T Recommendation T.82 (1993) | ISO/IEC 11544:1993, *Information technology – Coded representation of picture and audio information – Progressive bi-level image compression.*

- ITU-T Recommendation T.83 (1994) | ISO/IEC 10918-2:1995, *Information technology – Digital compression and coding of continuous-tone still images: Compliance testing.*

2.2   Additional references

- ISO 3166:1993[1], *Codes for the representation of names of countries.*

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

- ISO 8601:1988, *Data elements and interchange formats – Information interchange – Representation of dates and times.*

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[1] Currently under revision.

- ISO 8859-1:1987, *Information processing – 8-bit single byte coded graphic character sets – Part 1: Latin alphabet No. 1.*

- ISO 8859-2:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 2: Latin alphabet No. 2.*

- ISO 8859-3:1988, *Information processing – 8-bit single-byte coded graphic character sets – Part 3: Latin alphabet No. 3.*

- ISO 8859-4:1988, *Information processing – 8-bit single-byte coded graphic character sets – Part 4: Latin alphabet No. 4.*

- ISO/IEC 8859-5:1988, *Information processing – 8-bit single-byte coded graphic character sets – Part 5: Latin/Cyrillic alphabet.*

- ISO 8859-6:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 6: Latin/Arabic alphabet.*

- ISO 8859-7:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 7: Latin/Greek alphabet.*

- ISO 8859-8:1988, *Information processing – 8-bit single-byte coded graphic character sets – Part 8: Latin/Hebrew alphabet.*

- ISO/IEC 8859-9:1989, *Information processing – 8-bit single-byte coded graphic character sets – Part 9: Latin alphabet No. 5.*

- ISO/IEC 8859-10:1992, *Information technology – 8-bit single-byte coded graphic character sets – Part 10: Latin alphabet No. 6.*

- ISO/IEC 10646-1:1993, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane.*

- ISO/IEC 11172-2:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video.*

- ITU-T Recommendation T.4 (1993), *Standardization of group 3 facsimile apparatus for document transmission.*

- CCITT Recommendation T.6 (1988), *Facsimile coding schemes and coding control functions for Group 4 facsimile apparatus.*

- ITU-T Recommendation T.30 (1993), *Procedures for document facsimile transmission in the general switched telephone network.*

- ITU-T Recommendation T.42 (1994), *Continuous-tone colour representation method for facsimile.*

- CCITT Recommendation T.51 (1992), *Latin based coded character sets for telematic services.*

- ITU-T Recommendation T.85 (1995), *Application profile for Recommendation T.82 – Progressive bi-level image compression (JBIG coding scheme) for facsimile apparatus.*

- CCITT Recommendation T.503 (1991), *A document application profile for the interchange of Group 4 facsimile documents.*

- CIE 1976 (L* a* b*) space, *CIE Publication No. 15.2, Colorimetry, 2nd. Ed. (1986).*

- Recommendation ITU-R BT.470-3 (1995), *Television systems.*

- Recommendation ITU-R BT.601-4 (1992), *Encoding parameters of digital television for studios.*

- Recommendation ITU-R BT.709-1, *Basic parameter values for the HDTV standards for the studio and for international programme exchange.*

- SMPTE 170M – 1994, *For television – Composite analog video signal – NTSC for studio applications.*

- SMPTE 240M – 1994, *For television – Signal parameters – 1125 line high definition production systems.*