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Information technology - JPEG 2000 image coding system - Part 1: Core coding system

Developed by



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INCITS/ISO/IEC 15444-1:2019 (2020)

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Part 1: Core coding system

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Partie 1: Système de codage de noyau



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FOREWORD

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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).

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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.

This document was prepared by ITU-T as ITU-T T.800 (06/2019) and drafted in accordance with its editorial rules. It was assigned to Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This fourth edition cancels and replaces the third edition (ISO 15444-1:2016), which has been technically revised.

A list of all parts in the ISO/IEC 15444 series can be found on the ISO website.

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Information technology – JPEG 2000 image coding system: Core coding system

Summary

This Recommendation | International Standard defines a set of lossless (bit-preserving) and lossy compression methods for coding bi-level, continuous-tone grey-scale, palletized colour, or continuous-tone colour digital still images.

This Recommendation | International Standard:

- specifies decoding processes for converting compressed image data to reconstructed image data;
- specifies a codestream syntax containing information for interpreting the compressed image data;
- specifies a file format;
- provides guidance on encoding processes for converting source image data to compressed image data;
- provides guidance on how to implement these processes in practice.

This edition includes the following changes relative to the previous edition:

- addition of Profile marker segment;
- addition of Extended capabilities marker segment;
- addition of Table A.55 to indicate valid Profile number values;
- clarification of Table A.13 and Table A.19, making it explicit that some MSBs are reserved for future use;
- updating of Table A.10 to indicate that the Profile marker segment is used to indicate the Profile to which the codestream conforms.

NOTE – As this specification was first published as common text only after ISO/IEC JTC1 had approved the first edition in 2000, edition numbers in the ITU and ISO/IEC versions are offset by one. This is the third edition of ITU-T T.800 and the fourth edition of ISO/IEC 15444-1.

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* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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1	Scope	1
2	References	1
2.1	Identical Recommendations International Standards	1
2.2	Additional references	1
3	Definitions	2
4	Abbreviations and symbols	6
4.1	Abbreviations	6
4.2	Symbols.....	7
5	General description.....	8
5.1	Purpose.....	8
5.2	Codestream.....	8
5.3	Coding principles	9
6	Encoder requirements	10
7	Decoder requirements.....	10
7.1	Codestream syntax requirements.....	11
7.2	Optional file format requirements	11
8	Implementation requirements	11
Annex A	– Codestream syntax	12
A.1	Markers, marker segments and headers.....	12
A.2	Information in the marker segments.....	14
A.3	Construction of the codestream.....	15
A.4	Delimiting markers and marker segments.....	19
A.5	Fixed information marker segment	20
A.6	Functional marker segments.....	26
A.7	Pointer marker segments	36
A.8	In-bit-stream marker and marker segments	40
A.9	Informational marker segments.....	41
A.10	Codestream restrictions conforming to this Recommendation International Standard.....	43
Annex B	– Image and compressed image data ordering.....	59
B.1	Introduction to image data structure concepts.....	59
B.2	Component mapping to the reference grid	59
B.3	Image area division into tiles and tile-components	61
B.4	Example of the mapping of components to the reference grid (informative).....	62
B.5	Transformed tile-component division into resolution levels and sub-bands	65
B.6	Division of resolution levels into precincts	66
B.7	Division of the sub-bands into code-blocks	67
B.8	Layers.....	68
B.9	Packets	69
B.10	Packet header information coding.....	70
B.11	Tile and tile-parts	75
B.12	Progression order	76
Annex C	– Arithmetic entropy coding.....	80
C.1	Binary encoding (informative)	80
C.2	Description of the arithmetic encoder (informative)	81
C.3	Arithmetic decoding procedure	92
Annex D	– Coefficient bit modelling.....	99
D.1	Code-block scan pattern within code-blocks.....	99
D.2	Coefficient bits and significance	99
D.3	Decoding passes over the bit-planes	100
D.4	Initializing and terminating	104
D.5	Error resilience segmentation symbol	105

This is a preview of "INCITS/ISO/IEC 15444...". [Click here to purchase the full version from the ANSI store.](#)

D.7	Vertically causal context formation	106
D.8	Flow diagram of the code-block coding	107
Annex E	– Quantization.....	109
E.1	Inverse quantization procedure	109
E.2	Scalar coefficient quantization (informative).....	110
Annex F	– Discrete wavelet transformation of tile-components.....	112
F.1	Tile-component parameters.....	112
F.2	Discrete wavelet transformations	112
F.3	Inverse discrete wavelet transformation.....	112
F.4	Forward transformation (informative).....	123
Annex G	– DC level shifting and multiple component transformations.....	133
G.1	DC level shifting of tile-components	133
G.2	Reversible multiple component transformation (RCT)	134
G.3	Irreversible multiple component transformation (ICT)	134
G.4	Chrominance component sub-sampling and the reference grid	135
Annex H	– Coding of images with regions of interest.....	136
H.1	Decoding of ROI	136
H.2	Description of the Maxshift method.....	136
H.3	Remarks on region of interest coding (informative)	137
Annex I	– JP2 file format syntax	140
I.1	File format scope.....	140
I.2	Introduction to the JP2 file format	140
I.3	Greyscale/Colour/Palettized/multi-component specification architecture	142
I.4	Box definition.....	144
I.5	Defined boxes.....	146
I.6	Adding intellectual property rights information in JP2	161
I.7	Adding vendor-specific information to the JP2 file format.....	161
I.8	Dealing with unknown boxes	164
Annex J	– Examples and guidelines	165
J.1	Software conventions adaptive entropy decoder	165
J.2	Selection of quantization step sizes for irreversible transformations	166
J.3	Filter impulse responses corresponding to lifting-based irreversible filtering procedures	167
J.4	Example of discrete wavelet transformation	168
J.5	Row-based wavelet transform	171
J.6	Scan-based coding.....	180
J.7	Error resilience	180
J.8	Implementing the Restricted ICC method outside of a full ICC colour management engine	181
J.9	An example of the interpretation of multiple components	185
J.10	An example of decoding showing intermediate steps	185
J.11	Visual frequency weighting	189
J.12	Encoder sub-sampling of components.....	191
J.13	Rate control	192
J.14	Guidelines on handling YCC codestream	196
J.15	Guidelines for digital cinema applications	197
Annex K	– Bibliography.....	213
K.1	General	213
K.2	Quantization and entropy coding	213
K.3	Wavelet transformation	213
K.4	Region of interest coding	214
K.5	Visual frequency weighting	214
K.6	Error resilience	214
K.7	Scan-based coding.....	215

This is a preview of "INCITS/ISO/IEC 15444...". [Click here to purchase the full version from the ANSI store.](#)

K.9	Guidelines for digital cinema applications	215
Annex L	– Patent statement	217
Annex M	– Elementary stream for broadcast applications	218
M.1	Introduction	218
M.2	Definitions.....	218
M.3	Access unit construction.....	218
M.4	Elementary stream marker box (superbox)	219

This is a preview of "INCITS/ISO/IEC 15444...". [Click here to purchase the full version from the ANSI store.](#)

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1 Scope

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2 References

The following 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 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.

2.1 Identical Recommendations | International Standards

- Recommendation ITU-T T.81 (1992) | ISO/IEC 10918-1:1994, *Information technology – Digital compression and coding of continuous-tone still images: Requirements and guidelines.*
- Recommendation ITU-T T.84 (1996) | ISO/IEC 10918-3:1997, *Information technology – Digital compression and coding of continuous-tone still images: Extensions.*
- Recommendation ITU-T T.84 (1996)/Amd.1 (1999) | ISO/IEC 10918-3:1997/Amd.1:1999, *Information technology – Digital compression and coding of continuous-tone still images: Extensions – Amendment 1: Provisions to allow registration of new compression types and versions in the SPIFF header.*
- Recommendation ITU-T T.86 (1998) | ISO/IEC 10918-4:1999, *Information technology – Digital compression and coding of continuous-tone still images: Registration of JPEG Profiles, SPIFF Profiles, SPIFF Tags, SPIFF colour Spaces, APPn Markers, SPIFF Compression types and Registration Authorities (REGAUT).*
- Recommendation ITU-T T.87 (1998) | ISO/IEC 14495-1:2000, *Lossless and near-lossless compression of continuous-tone still images – Baseline.*
- Recommendation ITU-T T.88 (2000) | ISO/IEC 14492:2001, *Information technology – Lossy/lossless coding of bi-level images.*
- Recommendation ITU-T T.810 (2006) | ISO/IEC 15444-11:2007, *Information technology – JPEG 2000 image coding system: Wireless.*
- ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange.*
- ISO 8859-15:1999, *Information technology – 8-bit single-byte coded graphic character sets – Part 15: Latin alphabet No. 9.*

2.2 Additional references

- Recommendation ITU-R BT.601-6 (2007), *Studio encoding parameters of digital television for standard 4:3 and wide screen 16:9 aspect ratios.*