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Information technology — JPEG XL image coding system —

Part 1: Core coding system

AMENDMENT 1: Profiles and levels for JPEG XL image coding system

Technologies de l'information — Système de codage d'images JPEG XL —

Partie 1: Système de codage de noyau

AMENDEMENT 1: Profils et niveaux pour le système de codage d'images JPEG XL

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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*.

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AMENDMENT 1: Profiles and levels for JPEG XL image coding system

Clause 8

Replace the following sentence:

> "Annexes A to L are normative in the sense that they are defining an output that alternative implementations shall duplicate."

by:

> "Annexes A to L and Annex N are normative in the sense that they are defining an output that alternative implementations shall duplicate."

Annex N

Add the following annex after Annex M, before the Bibliography.

Annex N
(normative)

Profiles and levels

To promote interoperability, a single profile, named "Main" profile, is defined. This profile is intended for use (among others) in mobile phones, web browsers and image editors. It includes all of the coding tools in this document.

The Main profile has two levels. Level 5 is suitable for end-user image delivery, including web browsers and mobile apps. Level 10 corresponds to a broad range of use cases such as image authoring workflows, print, scientific applications, satellite imagery, etc.

Levels are defined in such a way that if a decoder supports level *N*, it will also support lower levels.

Unless signalled otherwise, a JPEG XL codestream is assumed to conform to the Main profile, level 5.

The levels define thresholds for the following parameters, which are specified in Table N.1:

— `width` and `height` are the largest permissible dimensions (horizontally and vertically, respectively) of the image and its frames, in pixels.

— `output_size` is the largest size in bytes of the ICC profile (Annex B).

— `bits_per_sample` is the largest value of bits_per_sample in any of the channels.

— `num_splines` and `num_patches` are limits on the number of splines and patches (respectively) which are overlaid on a frame (Annex K).

— `nb_transforms` is the largest number of modular transforms for any group (including transforms in the GlobalModular section).

— `nb_channels` is the maximum number of modular channels (initially, before taking transforms into account).

— `nb_channels_tr` is the maximum number of modular channels that is derived from the channel initialization and the series of transforms, as described in C.9.2.

— `max_tree_depth` is the maximum tree depth (maximum distance from root to any leaf node) of the MA trees that are used in modular encoding; see D.7.3.

— Minimum non-zero frame duration shall be interpreted as follows: if the frame duration is above this threshold, the decoder shall make the best effort to respect the value; if the frame duration is below this threshold (but not zero), the decoder is allowed to behave as if the frame duration is equal to this threshold.

Table N.1 — Levels in the Main profile

Parameter	Level 5	Level 10
Maximum `width` × `height` (A.3)	2^{28}	2^{40}
Maximum `width` (A.3)	2^{18}	2^{30}
Maximum `height` (A.3)	2^{18}	2^{30}
ICC `output_size` (B.1)	2^{22}	2^{28}
Maximum `bits_per_sample`	16	32
Extra channel types	any type except kBlack	any type
Maximum num_extra_channels	4	256
`num_splines` (C.4.8.2)	min(2^{24}, `width` × `height`/4)	
`num_patches` (C.4.7.2)	min(2^{24}, `width` × `height`/16)	
modular_16bit_buffers	true	true or false
Modular `nb_transforms` (C.9.2)	8	512
Modular `nb_channels_tr` (C.9.2)	256	2^{16}
Modular `max_tree_depth` (D.4)	64	2048
Modular max tree nodes (D.4)	1024 + `width` × `height` × `nb_channels`	
Total number of pixels in consecutive zero-duration frames	2^{28}	no limit
Minimum non-zero frame duration	1/120 s	no limit