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Australian STANDARD®

STANDARDS Australia

Information technology — Plenoptic image coding system (JPEG Pleno)

Part 4: Reference software



AS ISO/IEC 21794.4:2026

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This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee IT-029, Coding of audio, picture, multimedia and hypermedia information.

The objective of this document is to provide reference implementations of AS ISO/IEC 21794.1 and AS ISO/IEC 21794.2, also known as JPEG Pleno.

This document is identical to and has been reproduced from, ISO/IEC 21794-4:2022, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 4: Reference software*.

As this document has been reproduced from an international document, a comma is to be read as a full point when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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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.

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 or www.iec.ch/members_experts/refdocs).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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. In the IEC, see www.iec.ch/understanding-standards.

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*.

A list of all parts in the ISO/IEC 21794 series can be found on the and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

This document is part of a series of standards for a system known as JPEG Pleno. The ISO/IEC 21794 series aims to provide a standard framework for representing new imaging modalities. It facilitates the capture, representation, exchange and visualization of plenoptic imaging modalities. A plenoptic image modality can be a light field, point cloud or hologram, which are sampled representations of the plenoptic function in the form of, respectively, a vector function that represents the radiance of a discretized set of light rays, a collection of points with position and attribute information, or a complex wavefront. The plenoptic function describes the radiance in time and in space obtained by positioning a pinhole camera at every viewpoint in 3D spatial coordinates, every viewing angle and every wavelength, resulting in a 7D function.

JPEG Pleno is designed primarily to facilitate the capture, representation, exchange and visualization of point cloud, light field, and holographic imaging approaches. It specifies tools for coding these approaches while providing advanced functionality at the system level such as support for data and metadata manipulation, editing, random access and interaction, protection of privacy and ownership rights as well as other security mechanisms.

This document provides reference software implementations of ISO/IEC 21794-1 and ISO/IEC 21794-2 that demonstrate the features and capabilities of JPEG Pleno for coding light field data. Its purpose is to act as a guideline for implementations and as a reference for conformance testing. As such, the implementations are conforming to ISO/IEC 21794-1, i.e. it implements the structure of a JPL file which includes the concepts of boxes. In addition, the reference software implementations also cover ISO/IEC 21794-2, i.e. light-field coding.

This document includes the source code for reference implementations of ISO/IEC 21794-1 and ISO/IEC 21794-2 as electronic attachments. They have been successfully compiled and tested on Linux®[1] operating system at the time of writing.

Instructions for unpacking and building the software are found in Annexes A. Instructions for its use are listed in Annexes B and C.

[1] Linux® is the trademark of a product supplied by Linus Torvalds. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO/IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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Information technology — Plenoptic image coding system (JPEG Pleno)

Part 4: Reference software

1 Scope

This document provides reference implementations of ISO/IEC 21794-1 and ISO/IEC 21794-2, also known as JPEG Pleno.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 21794-1, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 1: Framework*

ISO/IEC 21794-2, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 2: Light field coding*

ISO/IEC 21794-3, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 3: Conformance testing*

3 Terms and definitions

For the purposes of this document the terms and definitions given in ISO/IEC 21794-1, in ISO/IEC 21794-2, in ISO/IEC 21794-3, and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
codestream
sequence of bytes that conforms to or is to be checked for conformance with the codestream syntax specified in ISO/IEC 21794-1 and/or ISO/IEC 21794-2

3.2
JSON
data interchange format that represents data objects using attribute–value pairs and array data types specified in ISO/IEC 21778

4 Abbreviated terms

JPLM	JPEG Pleno Model
PPM	Portable pixmap format

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