

# **SMPTE STANDARD**



## **VC-2 Level Definitions**

---

<b>Table of Contents</b>	<b>Pages</b>
<b>Foreword</b> .....	<b>2</b>
<b>Intellectual Property</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>2</b>
<b>1 Scope</b> .....	<b>3</b>
<b>2 Conformance Notation</b> .....	<b>3</b>
<b>3 Normative Reference</b> .....	<b>3</b>
<b>4 VC-2 Levels</b> .....	<b>4</b>
<b>5 Generalized Levels</b> .....	<b>4</b>
5.1 General.....	4
5.2 Level Definitions .....	4
5.3 Sequence Header Parameters .....	5
5.4 Picture Header Parameters .....	6
5.5 Sequence Structure .....	6
<b>Annex A Catalogue of Specialized VC-2 Levels (Informative)</b> .....	<b>7</b>
<b>Bibliography (Informative)</b> .....	<b>8</b>

## Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in its Standards Operations Manual. This SMPTE Engineering Document was prepared by Technology Committee 10E.

## Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Standard. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

## Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

This standard defines levels for the VC-2 video coding standard. Level values, along with profile values, provide a fast look-up for decoders to establish whether they can decode a VC-2 stream. Profile values are defined in the VC-2 specification. VC-2 levels are divided into generalized and specialized categories. Generalized levels are defined to provide identification of a range of encoded video parameters and are defined in this document. Specialized levels are defined for specific applications where other VC-2 level specifications do not suffice.

## 1 Scope

VC-2 is a video codec that includes parameter values to identify the complexity of the coded VC-2 bit-stream through the use of profiles and levels. These values provide a fast assessment for a decoder to establish whether it has the capability to decode the VC-2 bit-stream.

Profiles are defined in the VC-2 standard (SMPTE ST 2042-1). This standard defines the coding constraints for generalized level values lying in the range 0 to 63. This standard also informatively registers the values of specialized levels with values exceeding 63.

## 2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document. The keyword "reserved" indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword "forbidden" indicates "reserved" and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to this document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next; followed by formal languages; then Figures; and then any other language forms.

## 3 Normative Reference

The following standard contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

SMPTE ST 2042-1:2017, VC-2 Video Compression