SMPTE RECOMMENDED PRACTICE

Ultra High-Definition, 2048 x 1080 and 4096 x 2160 Compatible Color Bar Signal

Table of Contents

Approved
September 16, 2016

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.

SMPTE RP 219-2 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 Engineering Document. 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 recommended practice describes color bar signals for 2048 x 1080 formats, 3840 x 2160 formats, 4096 x 2160 formats and 7680 x 4320 formats having standard dynamic range.

The color bar signals are based on the high-definition, standard-definition compatible color bar signal defined in SMPTE RP 219-1. The structure of the high definition, standard definition compatible color bar signal is maintained, including the central 4:3 aspect ratio part, so that a familiar signal will be generated if these signals are down converted or divided by 2-sample interleave division to HDTV signals, or further down converted and aspect ratio converted to SDTV signals. The +/- I and +Q options from SMPTE RP 219-1 are not included as it is considered unlikely that these signals will be converted to NTSC. The 2048 x 1080 format color bars differ from the 1920 x 1080 format color bars defined in SMPTE RP 219-1 in that they have wider left hand side and right hand side bars. The 3840 x 2160 and the 7680 x 4320 color bars differ from the 1920 x 1080 format color bars defined in SMPTE RP 219-1 in their spatial scaling.

1 Scope

This recommended practice specifies color bar patterns compatible with 2048 x 1080 formats, 3840 x 2160 formats, 4096 x 2160 formats and 7680 x 4320 formats having standard dynamic range.

The 2048 x 1080 and 4096 x 2160 color bar signals have default R′G′B′ colorimetry as defined in SMPTE ST 2048-1 “R′G′B′ Colorimetry”.

The 3840 x 2160 color bar signal can have conventional colorimetry or UHDTV colorimetry as defined in SMPTE ST 2036-1 “System Colorimetry”.

The 7680 x 4320 color bar signal has UHDTV colorimetry.

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; then formal languages; then figures; and then any other language forms.