

# Standards and Recommended Practices

## Proposed SMPTE Recommended Practices

One Proposed SMPTE Recommended Practice is published for your information. The first page appears here:

**RP 221**, Specifications for Extraction of 4 x 3 Areas from 16 x 9 Images for Television Systems (\$15.00 US)

## Proposed SMPTE Engineering Guidelines

One Proposed SMPTE Engineering Guideline is published for your information. The first page appears here:

**EG 40**, Conversion of Time Values Between SMPTE 12M Time Code, MPEG-2 PCR Time Base and Absolute Time (\$32.00 US)

All documents are available from Society Headquarters at the prices shown above.

## Approved SMPTE Recommended Practice

The Society recently approved one SMPTE Recommended Practice:

**RP 212-2002**, Ancillary Data Mapping over MPEG-2 Video Elementary Stream Editing Information (\$20.00 US)

All documents are available from Society Headquarters at the prices shown above.

—Carlos V. Girod, Jr., P.E.,  
Director of Engineering

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## SMPTE Standards Subscription Service

The Society provides a Standards Subscription Service to assist firms, libraries, and individuals in establishing and maintaining a complete and current file of approved American National Standards, SMPTE Recommended Practices, and SMPTE Engineering Guidelines in the motion picture, television, and video magnetic recording fields. Through this service, the Society makes automatic distribution to standards subscribers of all new and revised standards, recommended practices, and guidelines that are approved during the calendar year in these fields. Documents are also available either in printed form or on CD-ROM. For further information, write to:

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## SMPTE RP 40-1995

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# PROPOSED SMPTE RECOMMENDED PRACTICE

## Specifications for Extraction of 4 x 3 Areas from 16 x 9 Images for Television Systems

Page 1 of 2 pages

### 1 Scope

This practice describes how to extract 4 x 3 aspect ratio images from the center of a 16 x 9 aspect ratio television picture. This practice is intended primarily for nonscripted or live television productions where it is impractical to use pan and scan techniques to track the areas of interest in the picture. Protecting the 16 x 9 picture for a 4 x 3 extraction will guarantee that the parts of the picture where action occurs will exist in the 4 x 3 cropped picture.

### 2 Normative references

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

SMPTE RP 187-1995, Center, Aspect Ratio, and Blanking of Video Images

### 3 4 x 3 Image area calculation

The 4 x 3 image area is the same height and nominally concentric with the image area defined by the production aperture. The following formulas may be used to calculate the width of the 4 x 3 image area for a production aperture of any size and 16 x 9 aspect ratio.

#### 3.1 Legend

H = Production aperture horizontal size (pixels)  
 V = Production aperture vertical size (lines)  
 $H_{75}$  = 4 x 3 image area width (pixels)  
 $P_H$  = Pixels from production aperture edges to side of 4 x 3 area boundaries (horizontal)

#### 3.2 4 x 3 width (pixels)

$$H_{75} = (H \times 75\%)$$

The values of  $H_{75}$  should be rounded down to the next lesser whole number.

# PROPOSED SMPTE ENGINEERING GUIDELINE

## Conversion of Time Values Between SMPTE 12M Time Code, MPEG-2 PCR Time Base and Absolute Time

Page 1 of 16 pages

### 1 Scope

This guideline specifies a set of formulas for converting between SMPTE 12M time code, MPEG-2 systems layer program clock reference (PCR) time base, and absolute time. Included are formulas for converting SMPTE 12M time address values and MPEG-2 PCR time base values to absolute time, and formulas for converting SMPTE 12M time address values directly to/from MPEG-2 PCR time base values. Absolute time conversion formulas may be useful for converting between different frame rates of SMPTE 12M time code; e.g., a 24-fps SMPTE time code running at 23.976 fps could be converted to true time and then to a 29.97 drop frame SMPTE time code value.

### 2 Normative references

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

SMPTE 12M-1999, Television, Audio and Film — Time and Control Code

SMPTE 339M-2000, Television — Format for Non-PCM Audio and Data in AES3 — Generic Data Types

ITU-T H.222.0 | ISO/IEC 13818-1, Information Technology — Generic Coding of Moving Pictures and Associated Audio: Systems

### 3 Arithmetic operators

The arithmetic operators used in the conversion formulas are defined as follows:

+	Addition
-	Subtraction
x	Multiplication
/ or —	Division
%	Modulus operator
int(x)	Largest integer not greater than x
ceil(x)	Smallest integer not less than x