

EBU

OPERATING EUROVISION AND EURORADIO

R 95

SAFE AREAS FOR 16:9 TELEVISION PRODUCTION

VERSION 1.1

SOURCE: VIDEO SYSTEMS

Geneva
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Safe areas for 16:9 television production

<i>EBU Committee</i>	<i>First Issued</i>	<i>Revised</i>	<i>Re-issued</i>
BHD, QC, TC	1999	2000, '08, '15, '16 ¹ , '17 ²	

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Introduction

Two safe areas are needed in television production; all essential action should be protected inside an **Action Safe Area**, and all graphics inside a **Graphics Safe Area**.

Previous versions of this document had guidelines to safe areas that protected 16:9 originated programmes for 4:3 & 14:9 presentation and 4:3 originated programme for 14:9 presentation.

The present recommendation concerns safe areas that protect 16:9 originated programmes (16:9 full format) for 16:9 full screen presentations and in addition, pixel and line values are provided for SDTV and HDTV formats. Given that HD productions will inevitably also provide content to standard definition television services that are still feeding 4:3 consumer displays. This recommendation is aimed at those involved in any stage of the programme-making process and at manufacturers of production equipment.

Recommendation

The EBU recommends that all makers of 16:9 television programmes should frame pictures to ensure that:

- where appropriate, all essential action takes place inside the Action Safe Area, and
- all graphics are framed in the Graphics Safe Area, and
- the centre of the image retains its position throughout all production processes unless there are creative reasons to deliberately do otherwise,

as defined in **Figures 1 - 6** in terms of pixel and line counts for 576-line (SDTV), 720 & 1080-line (HDTV) and 2160 & 4320 (UHDTV) formats and in each case as a percentage of relative picture height and width.

¹ March 2016; errors in Figures 3 & 4 corrected (3.5% of 16:9 was misquoted as 76, instead of the correct, 67 pixels). July 2016, another error in Figures 3 & 4 corrected (4:3 total width is 1296, not 1248 pixels).

² June 2017, Ver. 1.1: new note to this recommendation (number 5) added as clarification.

Notes to this Recommendation

1. The definitions of the safe areas are given in numbers of lines for the vertical direction and number of pixels for the horizontal direction, which are now more definitive than the percentages used previously. However, percentages are also included because they are the basis on which comparisons may be made.
2. The line numbering of interlaced scanning rasters has been calculated on the basis that field 1 is paired with the field 2 line below it, and the line from field 1 which is just inside the percentage box is defined as the edge of the safe area concerned.
3. The pixel numbering has been calculated by using the same notation as in SMPTE 274M/296M and ITU-R BT.1120-7, in which the first sample of the active part of a digital line is counted as value "0". For HD services this is also the first sample of the active image.
4. The safe areas are defined by the first and last safe line in vertical direction and by the first and last safe pixel in the horizontal direction. In addition the total number of lines (vertical) and pixel (horizontal) which are within the safe areas are given.
5. The action safe area is 3.5% and the graphics safe area is 5%, at the top, bottom and lateral parts of the image.
6. The coordinates of the centre of an image are defined as
 - vertically, there will be an equal number of lines within the clean aperture above and below the centre point, and
 - horizontally, there will be an equal number of pixels within the clean aperture to the left and the right of the centre point.

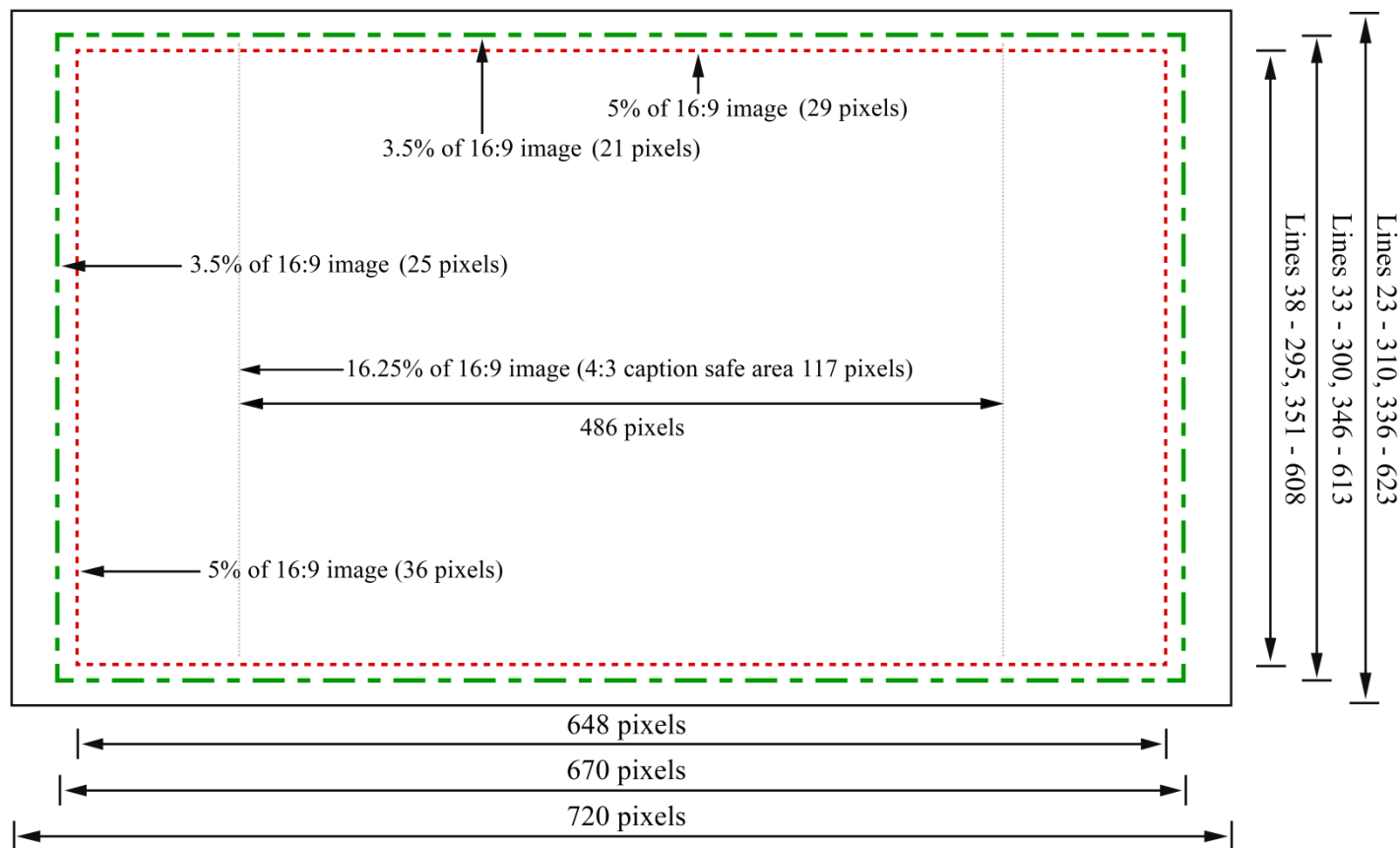
Note: See EBU R92 "Active picture area and picture centring in analogue and digital 625/50 television systems" concerning peculiarities of the 576i/25 (625/50) scanning raster.

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Scanning raster 576i 16:9 safe areas for 16:9 presentation

Image format: 16:9 Full Format

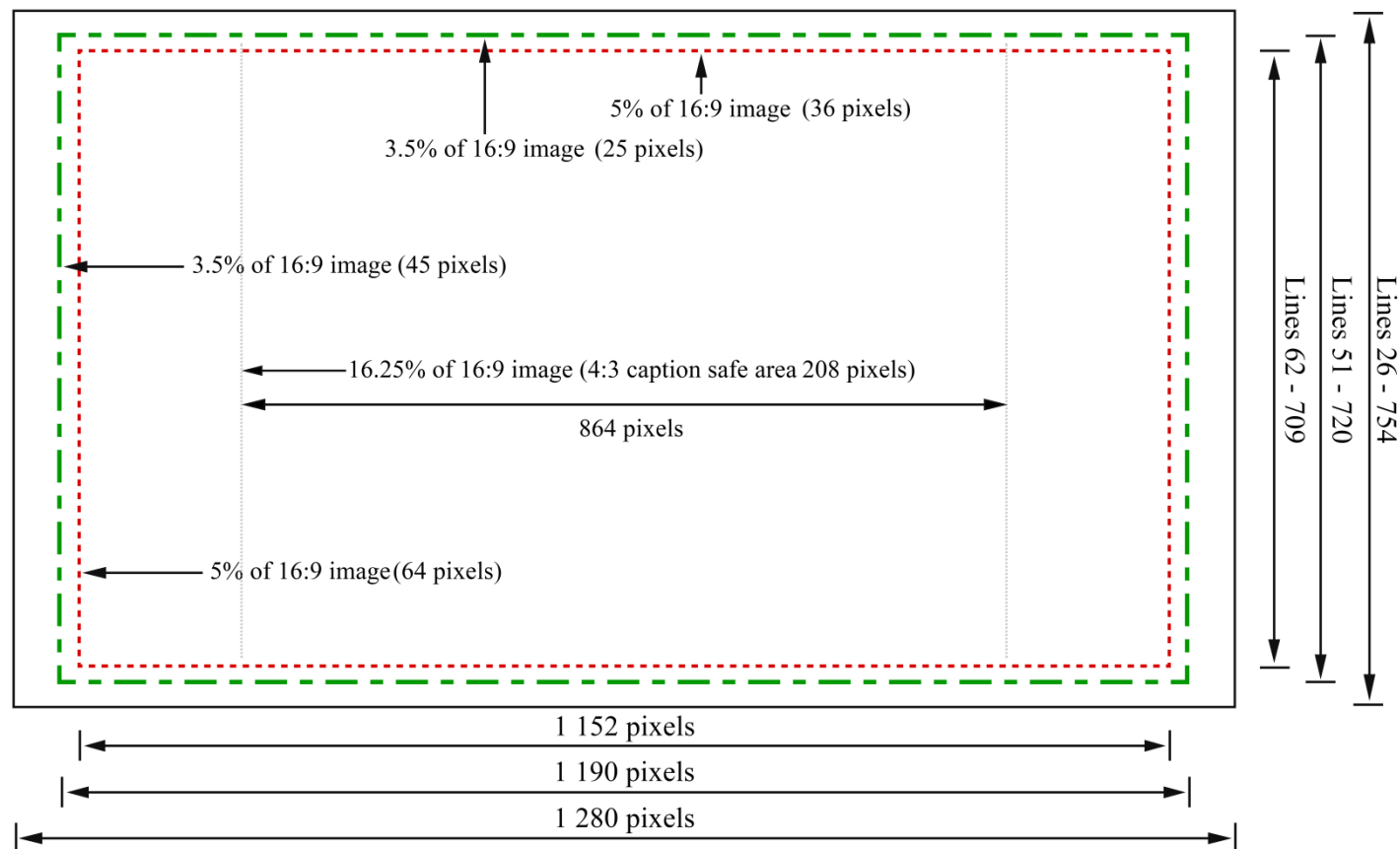


* The total number of lines is 625 (active lines from 23 to 310 and 336 to 623 inclusive = 576 lines).

** The complete digital line comprises 864 samples. Of these, the "digital active line" comprises 720 samples or pixels (numbered from 0 - 719 inclusive) of which the image active line comprises pixels 9 to 710 inclusive (see EBU R92 concerning peculiarities of the 576i/25 (625/50) scanning raster).

Figure 1

Scanning raster 720p 16:9 safe areas for 16:9 presentation
 Image format: 16:9 Full Format



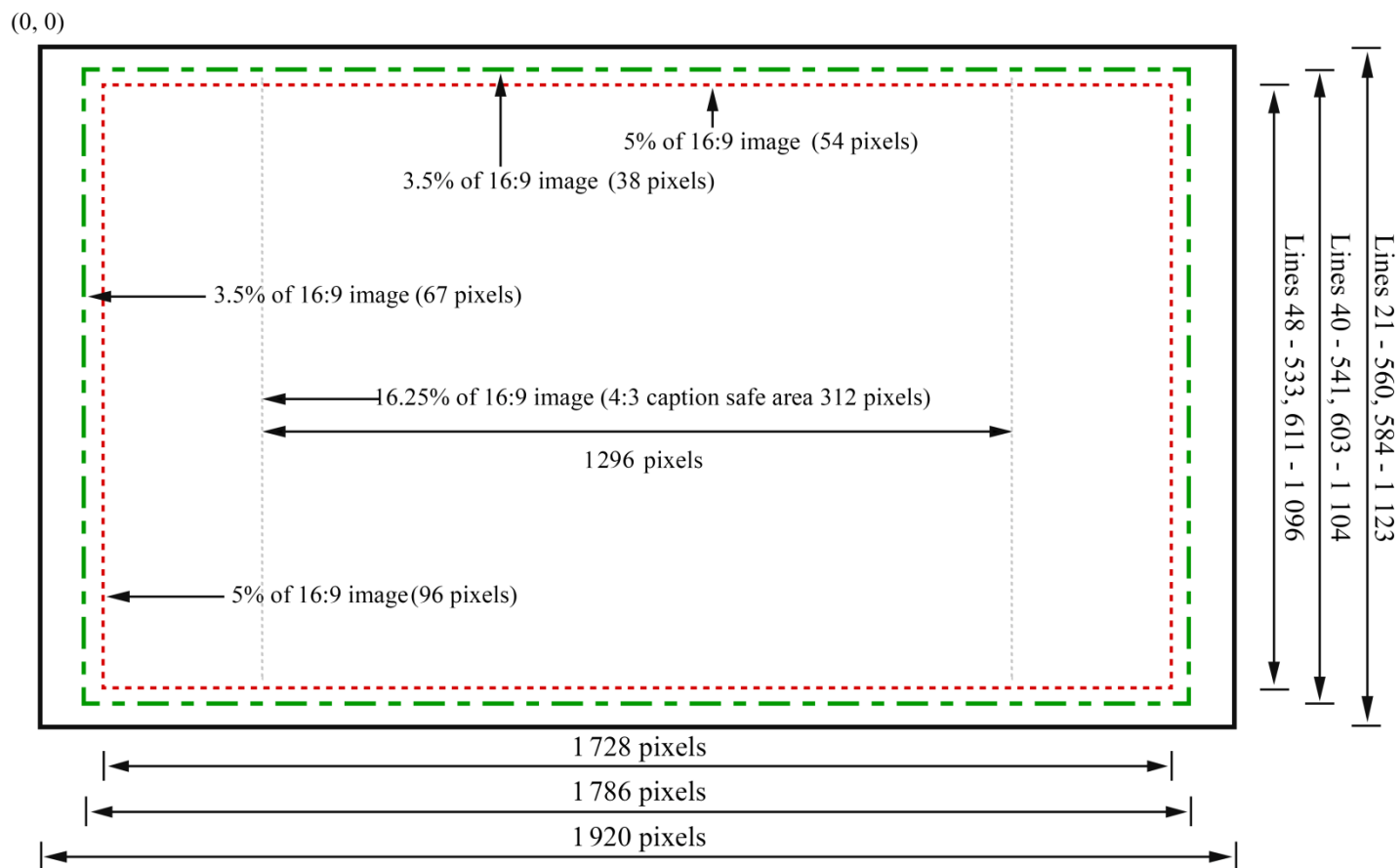
* The total number of lines is 750 (active lines from 26 to 745 inclusive = 720 lines).

** The complete digital line consists of 1650 pixels (active pixel from 0 - 1279 inclusive = 1280 pixel).

Figure 2

Scanning raster 1080i and 1080psf 16:9 safe areas for 16:9 presentation

Image format: 16:9 Full Format



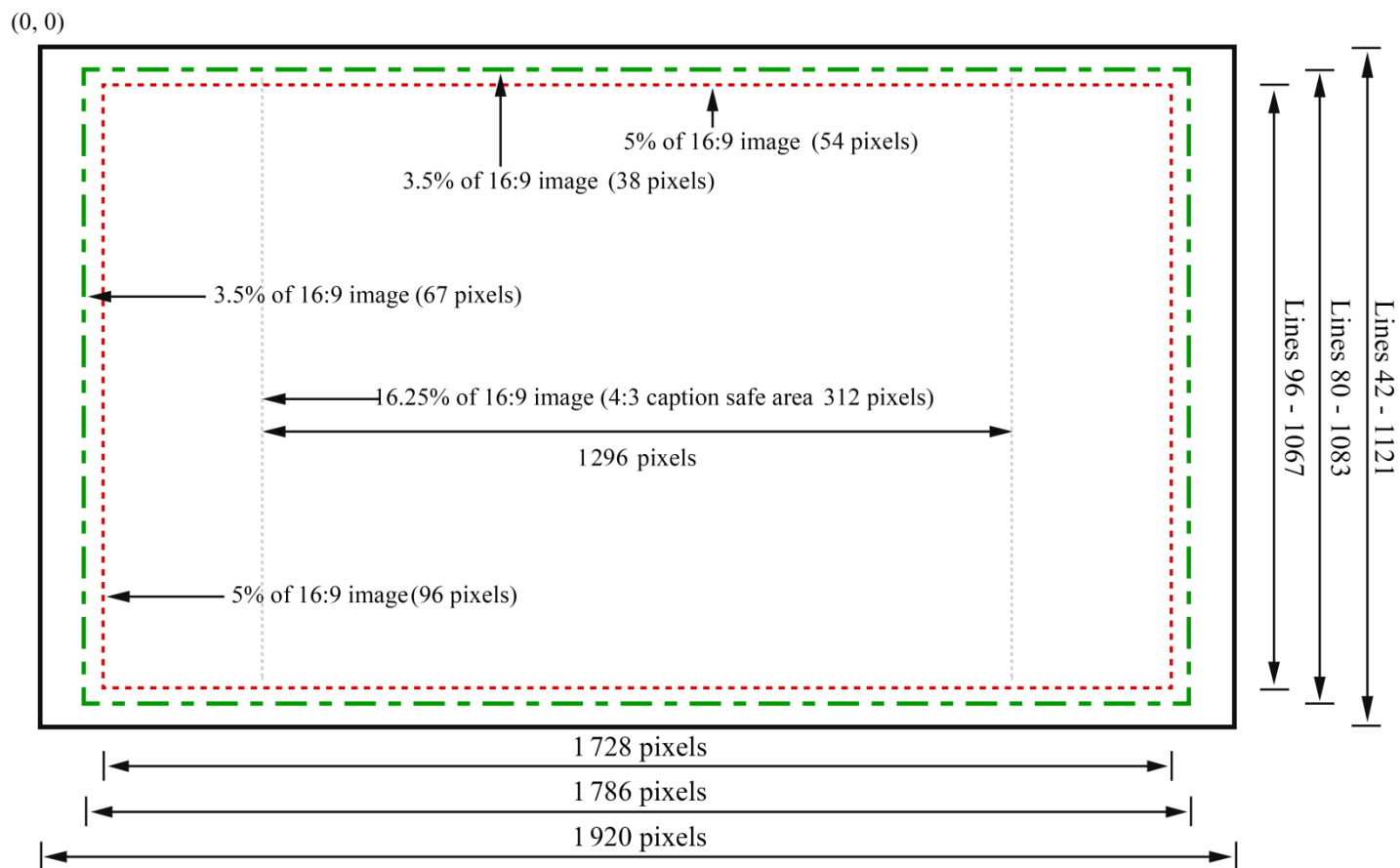
* The total number of lines is 1125 (active lines from 21 to 560 and 584 to 1123 inclusive = 1080 lines).

** The complete digital line comprises 2200 pixels. Of these, the “digital active line” comprises 1920 pixels (numbered from 0 - 1919 inclusive). All active pixels are included in the image active line.

Figure 3

Scanning raster 1080p 16:9 safe areas for 16:9 presentation

Image format: 16:9 Full Format

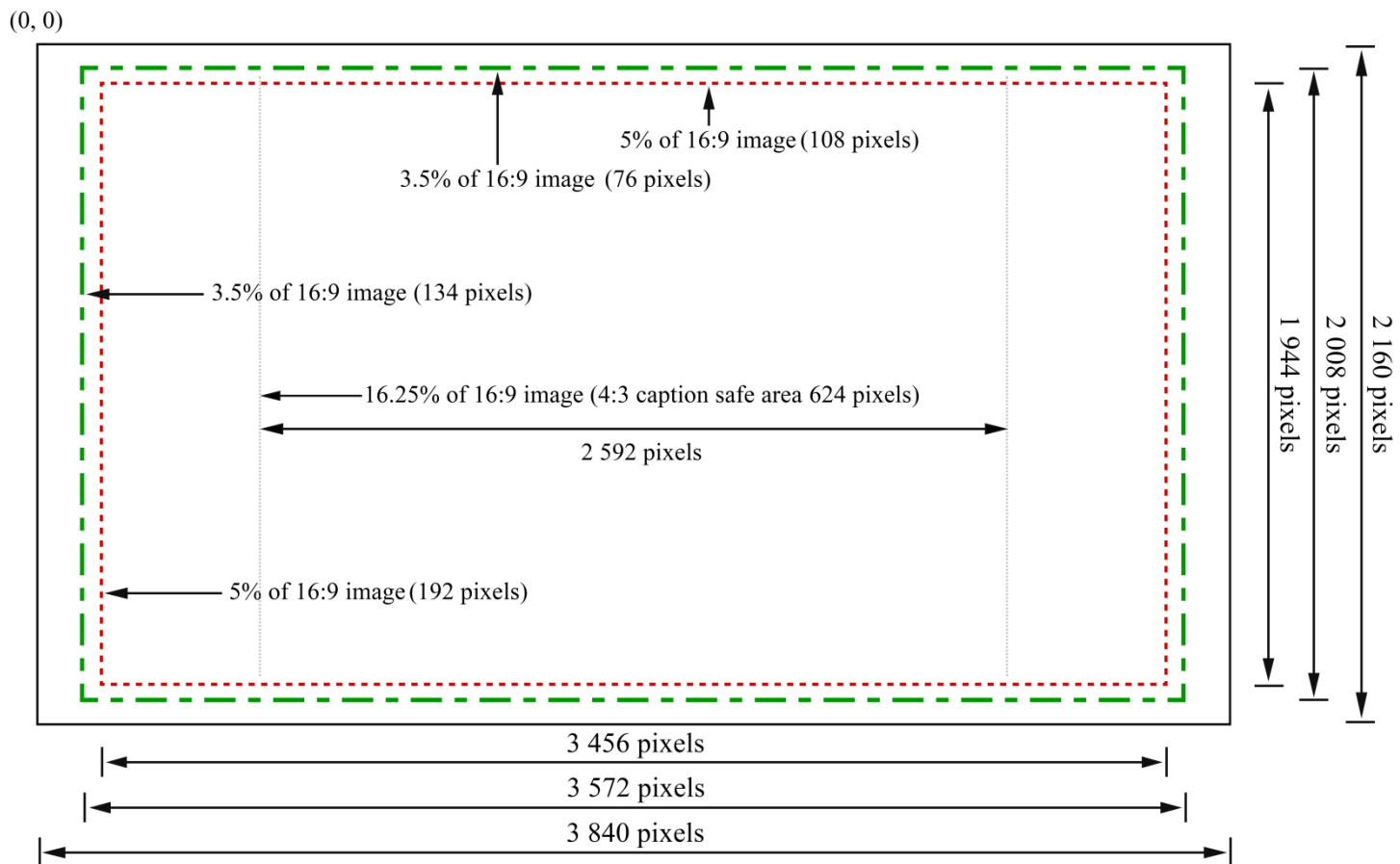


* The total number of lines is 1125 (active lines from 42 to 1121 inclusive = 1080 lines).

** The complete digital line consists of 2200 pixels (active pixel from 0 to 1919 inclusive = 1920 pixel). Of these all active pixels are included in the image active line.

Figure 4

Scanning raster 2160p 16:9 safe areas for 16:9 presentation
Image format: 16:9 Full Format

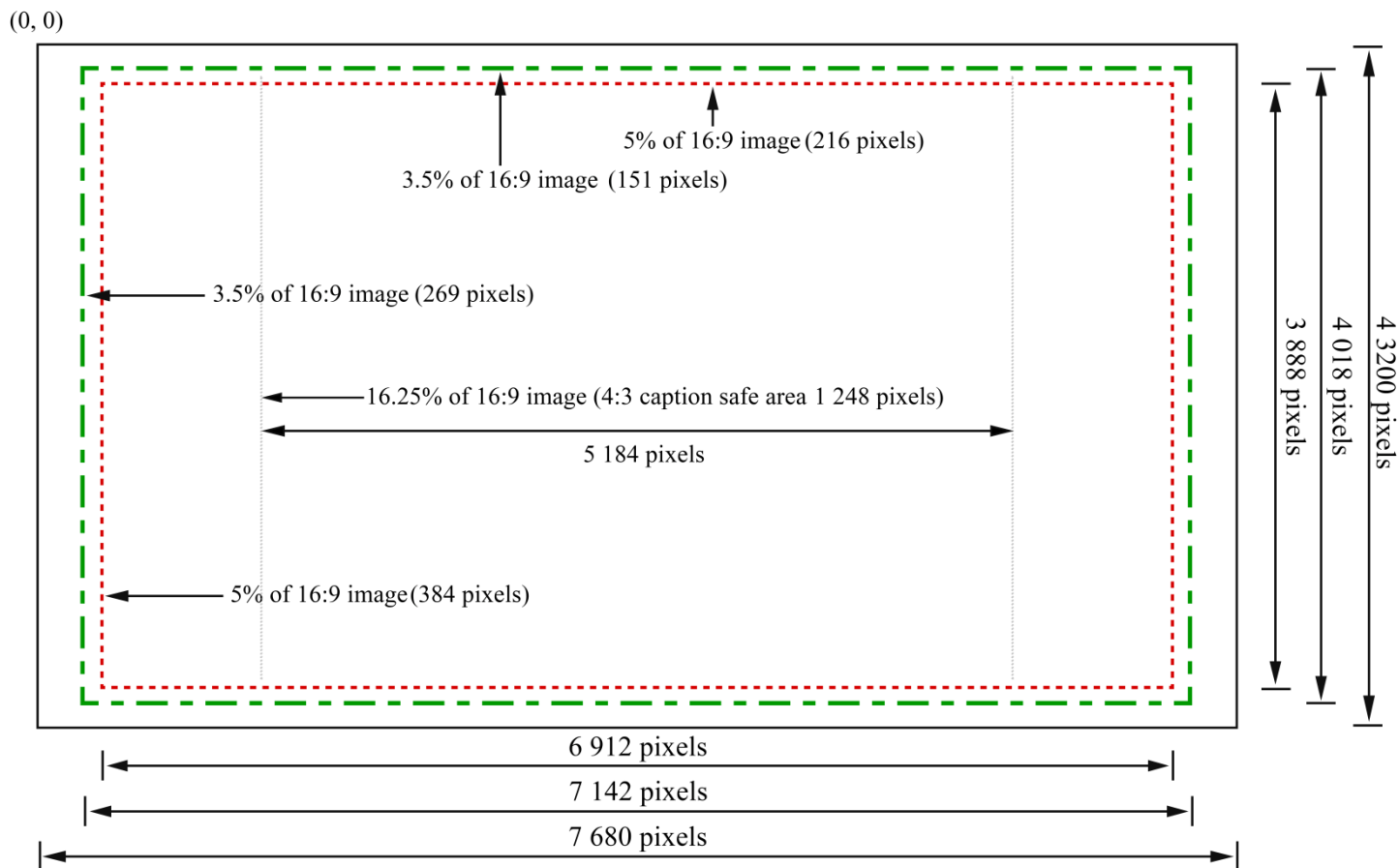


* For the 2160p UHD raster only the term “pixels” is used for horizontal and vertical measurements. All measurements are made from the (0,0) origin point

Figure 5

Scanning raster 4320p 16:9 safe areas for 16:9 presentation

Image format: 16:9 Full Format



* For the 4320p UHD raster only the term “pixels” is used for horizontal and vertical measurements. All measurements are made from the (0,0) origin point

Figure 6