

## RECOMMENDATION ITU-R BT.815-1\*

**Specification of a signal for measurement of the contrast ratio of displays**

(Question ITU-R 211/11)

(1992-1994)

**Scope**

This Recommendation defines a test signal for the measurement of contrast ratio of a display device.

The ITU Radiocommunication Assembly,

*considering*

- a) that a reliable method to measure the contrast ratio of various displays is required;
- b) that the use of different signals can lead to different results;
- c) that the measurement of the contrast ratio should be carried out using a signal with an average picture level (APL) as close as possible to normal programme pictures,

*recommends*

**1** that the test signal and method of measurement shown in Annex 1 should be employed to facilitate the consistent measurement of contrast ratio.

**Annex 1****The test signal and method of measurement<sup>1</sup>**

The test signal (see Fig. 1) consists of a peak white level patch surrounded by four black level patches, all set against a background of grey. The grey level of the waveform is at 50% of the peak signal. The digital references to these levels are shown in Fig. 1. The luminance values of the peak white level patch, and of the four black level patches, are measured using a photometer.

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\* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2007 in accordance with Resolution ITU-R 44.

<sup>1</sup> NOTE – This Recommendation intends to specify the levels and position of the elements in a test pattern used for contrast ratio measurement. The alignment of displays and the geometric position of the elements in the test pattern with respect to each other and to the centre and borders of the television image is shown in Fig. 1. The sample numbers and the line numbers needed to identify the position of those elements on a digital television raster. The sample numbers and the line numbers needed to identify the position of those elements on a digital television raster conforming with Recommendation ITU-R BT.709 are shown as a reference. To adopt this pattern for other television systems scaling of the numbers will be required to insure that the position of the elements remain in the same geometric relationship.

The ratio  $R$  of the luminance of the black level, to that of the peak white, is expressed in the following formula, the inverse of which is the contrast ratio:

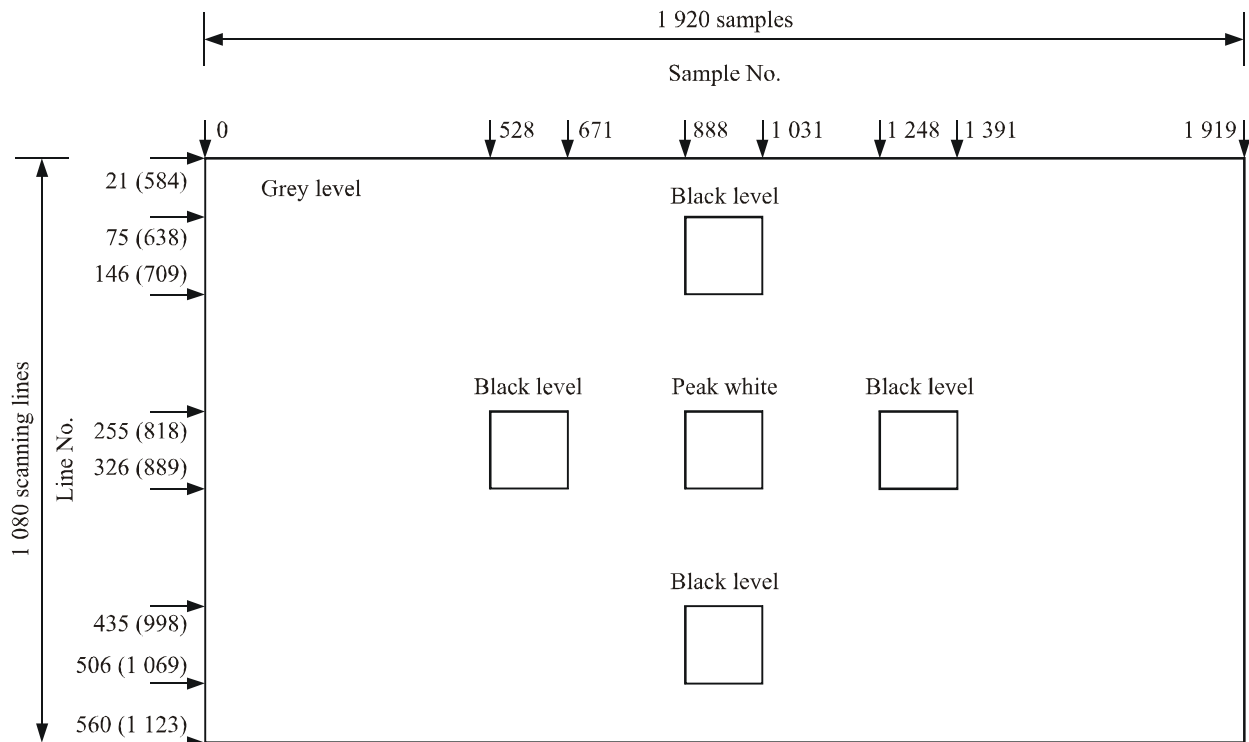
$$R = (L_{b1} + L_{b2} + L_{b3} + L_{b4}) / (4 \times L_w)$$

where:

$L_w$ : measured luminance of peak white

$L_{b1}$  to  $L_{b4}$ : measured luminance of black in the four areas.

FIGURE 1  
Signal for measuring contrast ratio



() indicates second field.

Sample and line numbers are inclusive  
e.g. for the top black box 888 is the first black sample  
and 1 031 is the last black sample

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Parameter values, Fig. 1	8 bit digital value	10 bit digital value
Peak white	235	940
Black level	16	64
Grey level	126	504