



**Recommendation ITU-R BT.2111-0**  
(12/2017)

**Specification of colour bar test pattern for  
high dynamic range television systems**

**BT Series**  
**Broadcasting service**  
**(television)**



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## Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

### Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

| Series     | Title                                                                                |
|------------|--------------------------------------------------------------------------------------|
| <b>BO</b>  | Satellite delivery                                                                   |
| <b>BR</b>  | Recording for production, archival and play-out; film for television                 |
| <b>BS</b>  | Broadcasting service (sound)                                                         |
| <b>BT</b>  | <b>Broadcasting service (television)</b>                                             |
| <b>F</b>   | Fixed service                                                                        |
| <b>M</b>   | Mobile, radiodetermination, amateur and related satellite services                   |
| <b>P</b>   | Radiowave propagation                                                                |
| <b>RA</b>  | Radio astronomy                                                                      |
| <b>RS</b>  | Remote sensing systems                                                               |
| <b>S</b>   | Fixed-satellite service                                                              |
| <b>SA</b>  | Space applications and meteorology                                                   |
| <b>SF</b>  | Frequency sharing and coordination between fixed-satellite and fixed service systems |
| <b>SM</b>  | Spectrum management                                                                  |
| <b>SNG</b> | Satellite news gathering                                                             |
| <b>TF</b>  | Time signals and frequency standards emissions                                       |
| <b>V</b>   | Vocabulary and related subjects                                                      |

**Note:** This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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## RECOMMENDATION ITU-R BT.2111-0

**Specification of colour bar test pattern for high dynamic range television systems**

(Question 142-2/6)

(2017)

**Scope**

This Recommendation specifies reference test patterns for the high dynamic range television systems specified in Recommendation ITU-R BT.2100.

**Keywords**

Test pattern, test signal, HDR, HDR-TV, colour bars, PQ, HLG

The ITU Radiocommunication Assembly,

*considering*

- a) that test patterns provide a convenient means of assessing chrominance and luminance performance in a television system;
- b) that such a test pattern may be useful when broadcasting in multiple formats or when converting between formats;
- c) that the use of a test pattern can simplify test procedures and reduce the opportunity for misinterpretation of signal parameters and misalignment of systems,

*noting*

that Recommendation ITU-R BT.2100 specifies image parameter values for high dynamic range television for use in production and international programme exchange,

*recommends*

that the test patterns defined in Annex 1 should be implemented and may be used for production and distribution purposes in high dynamic range television (HDR-TV) systems.

## **Annex 1 (normative)**

### **Specifications of test pattern**

#### **1 Normative references**

Recommendation ITU-R BT.471 – Nomenclature and description of colour bar signals

Recommendation ITU-R BT.2100 – Image parameter values for high dynamic range television for use in production and international programme exchange

Recommendation ITU-R BT.709 – Parameter values for the HDTV standards for production and international programme exchange.

#### **2 Purpose**

The reference test pattern has several purposes:

- quality control of chrominance and luminance through the production chain;
- checking and adjusting the chrominance and luminance alignment of broadcast equipment, particularly video monitors;
- general testing of equipment for video production, emission and presentation;
- establishing that a video circuit is active and that associated audio is available.

It is not intended that this test pattern be used for black level adjustment, which is best set using a PLUGE signal.

#### **3 System types**

The pattern described in this Recommendation is intended for use with Recommendation ITU-R BT.2100. These systems are distinguished by the proportions of their colour encoding (or “colorimetry”) and by their resolution.

#### **4 Sections of test pattern<sup>1</sup>**

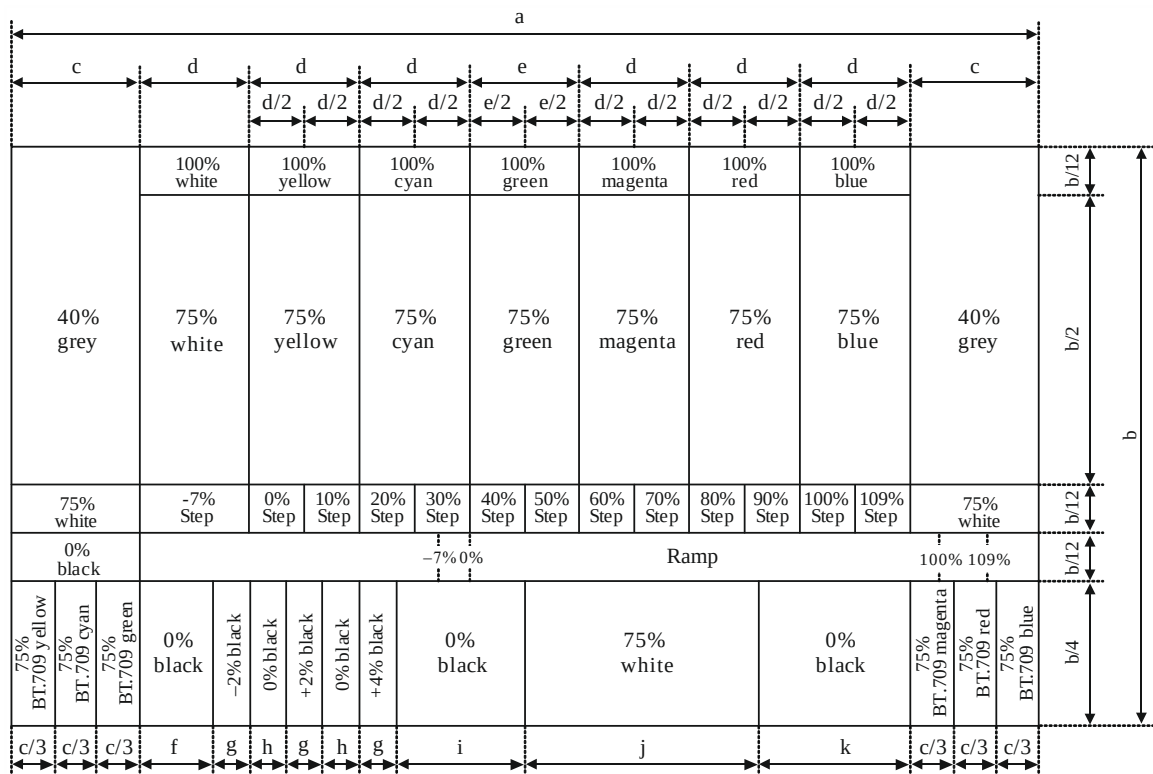
The various sections of the test pattern for the HLG system with narrow range coding are shown in Fig. 1; the pattern for the PQ system with narrow range coding is shown in Fig. 2, and the pattern for the PQ system with full range coding is shown in Fig. 3. A colour diagram is shown in Fig. 4. See also Attachments 1 and 2.

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<sup>1</sup> It is desirable that implementers should include in this test signal some visual identification of the signal format (HLG narrow range, PQ narrow range, or PQ full range). The test pattern includes grey bars (top right and top left) that may optionally be used for this and/or other purposes.

FIGURE 1

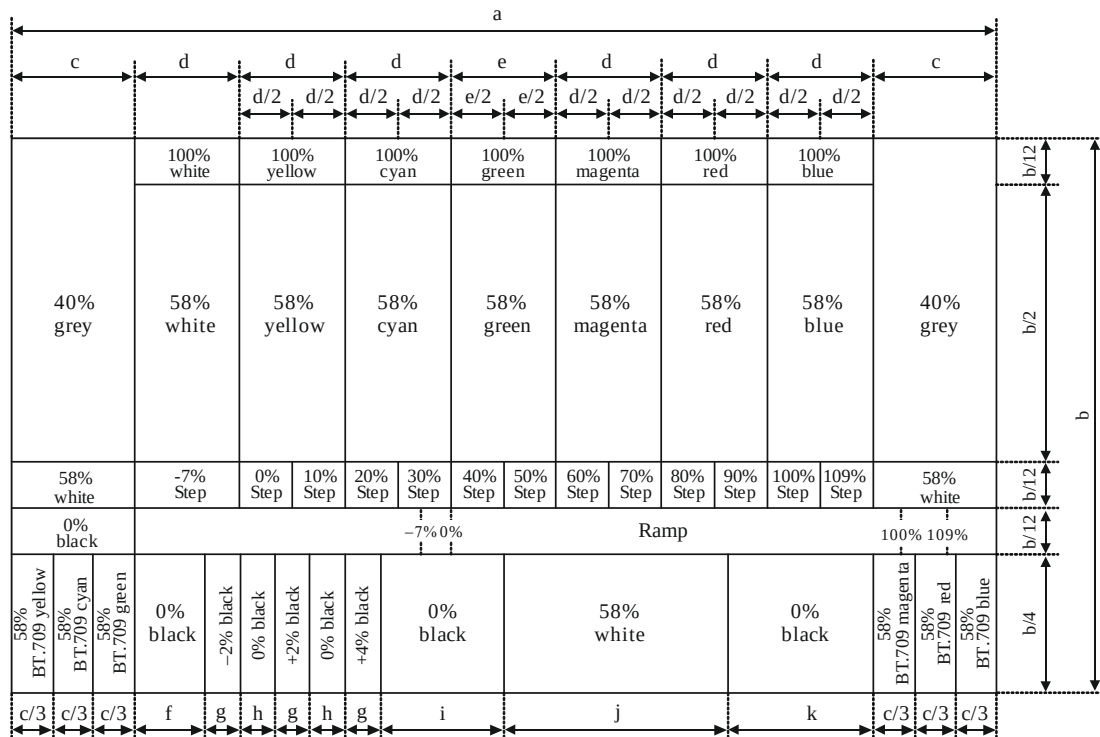
Test pattern details for HLG narrow range



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FIGURE 2

Test pattern details for PQ narrow range



BT.2111-02