

GY

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GY/T 329-2020

**Test image for subjective evaluation of 4K UHD video image
quality**

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard is under the jurisdiction of the National Radio, Film and Television Standardization Technical Committee (SAC/TC 239).

Drafting organizations of this standard. China Central Broadcasting Corporation, State Administration of Radio and Television Broadcasting and Television Planning Institute, Beijing Zhongshi North Film and Television Production Co., Ltd., Zhongshi Kehua Co., Ltd.

1 Scope

This standard specifies that the signal format conforms to GY/T 307-2017 or GY/T 315-2018, and the image scanning format adopts Test images for subjective evaluation of 4K ultra-high-definition video image quality.

This standard applies to the subjective evaluation of the image quality of 4K ultra-high-definition video systems and equipment, and can also be used for the objective test of image quality.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GY/T 307-2017 UHD TV system program production and exchange parameter values (ITU-R BT.2020-2, MOD) GY/T 315-2018 High dynamic range TV program production and exchange image parameter values

3.1 Terms and definitions

The following terms and definitions apply to this document.

3.1.1

Subjective assessment A method of directly using the observer's subjective response to the quality of the system under test to determine the performance of the system under test.

3.1.2

Test images test materials an image sequence with specific requirements on image content used for video image quality evaluation.

3.2 Abbreviations

The following abbreviations apply to this document.

AC exchange

CC color temperature filter CMOS Complementary Metal Oxide Semiconductor DCT Discrete Cosine Transform EOTF electro-optical conversion function GOP picture group HDR high dynamic range HLG mixed logarithmic gamma ND gray flakes PCM pulse code modulation PQ perceptual quantification QP quantization parameter SDR standard dynamic range TIFF label image file format VBR variable bit rate

4 Test image

In the subjective evaluation of 4K ultra-high-definition video image quality, the test images described and illustrated in Table 1 should be used first. About these tests the image production parameters are shown in Table 2, the shooting, recording and production equipment are shown in Table 3, and the camera parameters are shown in Tables 4 and 5.

In actual application, according to different evaluation purposes and use needs, choose different image characteristics, different severity and a certain number of Test image.

Please refer to Appendix A for the main inspection items of test images, and refer to Appendix B for the statistical characteristics of each test image.

Refer to Appendix C for the severity of the test images, and refer to Appendix D for the color gamut and brightness information of each test image.

6 Providers and business restrictions

The test images in Table 1 were provided by the Central Radio and Television General Station and the Radio and Television Planning Institute of the State Administration of Radio and Television.

The test images in Table 1 can only be used after being authorized by the owner. The authorized person should indicate or explain that the as provided by the General Station and the National Radio and Television Planning Institute.

Without the prior written permission and authorization of the owner, no unit, organization or individual may use the test images in Table 1 in any form Demonstration, testing, integration, editing, or any other commercial purposes, including but not limited to hardware or software testing, debugging, code making Streams, CDs, books, etc., used in exhibitions, advertising, etc. If you need to use the above methods, you should sign the relevant license agreement with the owner.

Appendix A

(Informative appendix) Main inspection items of test images in the subjective evaluation of image quality, a certain number of test images can be selected according to different evaluation purposes and different application categories. because Because these test images have a certain degree of representativeness, they can cover image characteristics related to the performance of the system and equipment under evaluation.

The main inspection items of the test image are shown in Table A.1 and Table A.2.

Appendix C

(Informative appendix) the severity of the test image the severity of the image refers to the difficulty of the image being compressed when the image is compressed and encoded, usually based on the average bit per pixel required Number representation. The coding software with a fixed quantizer is used to compress the test image material, and the total number of bits of the output data and the total image of the image material the ratio of prime numbers is called the criticality of the image material, and the unit is bit per pixel. Average number of bits required per pixel the more, the more strict the image material is for the compression system.

Using AVS2 encoding software, the test image sequence is converted to YUV/4.2.0/10bit, and the test image sequence is processed with a fixed QP value.

Line VBR encoding (QP=50; GOP length. 50; GOP structure. IBP; sampling format. 4.2.0), and output the ratio used for encoding each frame Special number, so as to calculate the corresponding severity. The severity of each test image is shown in Figure C.1.

Figure C.1 Severity of the test image

Appendix D

(Informative appendix) Test image color gamut and brightness information the color gamut and brightness information of each test image are shown in Table D.1, and the conversion curve is represented by PQ.