

GY

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

GY/T 340-2020

**Subjective evaluation method for image quality of
ultra-high-definition television dual-stimulus continuous quality
scale method**

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Normative references
3 Terms and definitions
4 Abbreviations
5 Double stimulus continuous mass scaling method
5.1 Overview
5.3 Test image
5.4 Viewers
5.5 Evaluation and testing phase
5.6 Display of test image
5.7 Scoring scale

Foreword

This document is in accordance with GB/T 1.1-2020 "Guidelines for Standardization Part 1: Structure and Drafting Rules of Standardization Documents" to be drafted.

1 Scope

This document specifies a method for subjective evaluation of the image quality of ultra-high-definition television with dual stimulus continuous quality scale in a laboratory environment (Referred to as the double stimulus continuous mass scaling method).

This document is suitable for subjective evaluation of the image quality of ultra-high-definition television systems and equipment.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated reference documents, Only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document file.

GY/T 307-2017 UHD TV system program production and exchange parameter values
GY/T 315-2018 High dynamic range television program production and exchange of image

parameter values ITU-R BT.500-14 Methodology for the subjective assessment of TV image quality the quality of television pictures)

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 Abbreviations

The following abbreviations apply to this document.

HDR High Dynamic Range (High Dynamic Range) SDR Standard Dynamic Range (Standard Dynamic Range)

5.1 Overview

The dual-stimulus continuous quality scaling method is generally used to evaluate the image quality of the system under test or the influence of the transmission system on the image quality. Especially for to investigate the overall quality of the system under test, the dual-stimulus continuous quality scaling method (in accordance with ITU-R BT.500) is particularly effective. Use this evaluation in the method, the viewer watches a pair of images, both of which come from the same signal source, one of which is the source image directly output by the signal source.

The other is the image after the signal source passes through the system under test, which is called the image under test. The source image and the image under test are arranged in a pseudo-random order.

The viewer needs to evaluate the image quality of both.

The longest evaluation period is 30 minutes. After the evaluation is over, the scores of the source image and the measured image are calculated.

5.2 Laboratory subjective evaluation conditions, display technical requirements and parameter values the subjective evaluation conditions of the laboratory should meet the requirements of Table 1, and the technical requirements and parameter values of the display should meet the requirements of Table 2.

5.3 Test image

The format of the test image shall meet the requirements of GY/T 307-2017 and/or GY/T 315-2018.

A set of test images should contain at least 4 images. These images can be still images or image sequences with motion characteristics. Each motion the image sequence lasts approximately 10s to 15s. For the system under test, the test image should have the best

image quality.

The test image should be a "strict but not excessive" general test image, which contains content that is sensitive to various evaluation factors.

At the same time, it can represent the typical content of a TV program. The evaluation elements of image quality include: sharpness, dynamic sharpness, brightness level (highlight Partial gradation reproduction, low-brightness partial gradation reproduction), contrast, color reproduction and sports characteristics, etc.

5.4 Viewers

Viewers are scoring personnel who are invited to participate in subjective evaluations. There are usually two types, namely professional viewers and non-professional viewers. Generally by Non-professional observers perform subjective evaluation, and when precise judgment is required, professional observers with professional training can perform evaluation and analysis.

The viewers should be representative, that is, they should include viewers of different genders, ages, and cultural levels; they should have normal vision (including corrective vision).

It should have a certain analysis and judgment ability; it should be able to accept and master the evaluation methods and requirements quickly.

The number of viewers required for subjective evaluation should be 15 or more.

5.5 Evaluation and testing phase

At the beginning of each evaluation cycle, the observer should be introduced to the observer in detail and accurately the evaluation method, quality elements or the types of damage that may occur, the scoring scale, test image, and evaluation time length are evaluated, and the evaluation demonstration is displayed. Demonstration shows that images or images different from the formal test should be used Sequence, but the demonstration image or sequence should represent the type and extent of damage of the system under test to be evaluated, and should be consistent with the formal test the images or sequences used in are comparable.

An evaluation cycle including demonstration instructions should not exceed 30 minutes. Before the start of the formal test, 3 to 5 evaluation sequences should be introduced to stabilize the discriminative power of the viewer is determined, and the result data is not included in the statistics of the test results. The display sequence of different test images adopts pseudo-random mode.

In order to detect the correlation, some tests can be repeated, but it is necessary to avoid the same test images appearing in successive evaluation sequences.

The display process of the evaluation cycle is shown in Figure 1.

Figure 1 Display process of the evaluation cycle

5.6 Display of test image

An evaluation period consists of multiple playback displays. Each time you play and display, you must first display signal A and signal B one or more times.

The duration of each time is the same so that the viewer can make a corresponding judgment, and then the two signals are displayed one or more times, and the viewer evaluates Minute. The number of repetitions depends on the length of the test sequence. For still images, use a sequence of 3s to 4s and repeat 5 times (display in the last 2 Score during the image). For moving images, a 10s sequence is used and repeated twice (scoring during the second repetition). Figure 2 shows the broadcast Put the display order. Among them, both signal A and signal B may be the source image or the measured image, and the viewer is not told which one is the source image and which One is the image to be tested.

5.7 Scoring scale

When evaluating, the viewer should be on the vertical ruler...