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

**GB/T 13919-2015**

Replacing GB/T 13919-1992

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**35 mm cinematography - Technical specification of magnetic  
sound test film**

35 mm电影 磁性声带检验片技术规范

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### Foreword Foreword

The document was drafted according to the rules given in GB/T 1.1-2009 and replaces GB/T 13919-1992, of the same title. Besides editorial changes, the main technical differences from the 1992 edition are: the normative references were changed; in Table 1 the entry minimum duration of the signal was changed to duration of the signal and its value changed; in Table 2 the duration of the signal was changed to 30 s; in Table 3 the entry minimum duration of the signal was changed to duration of the signal and the values corresponding to the reference frequency were changed, the value of the maximum output level difference over all frequencies was changed, and the values of relative short-circuit flux at 31.5 Hz and 40 Hz were changed.

The document was prepared by the redrafting method as a modified adoption of ISO 4834-1997 (E), Cinematography - Magnetic sound test films excluding striped release prints - Basic technical characteristics. The technical differences from ISO 4834-1997 (E) are: the international standards among the normative references were replaced by national and sectoral standards; the material on 17.5 mm and 16 mm was deleted and only the part on 35 mm test films kept; the material on the 185 type test film, which suits a mains frequency of 60 Hz, was deleted; and the time constant characteristics were deleted from Table 3.

For ease of use the following editorial changes were also made to ISO 4834-1997 (E): the title of the standard was changed; the foreword and introduction were deleted; the informative Annex A and Annex B were deleted; and some table notes were deleted. The clauses affected by the technical differences from ISO 4834-1997 (E) are marked with a single vertical line in the outer margin.

The document was proposed by and falls under the China Machinery Industry Federation. The drafting organisations were the Qinhuangdao Audio-Visual Machinery Research

Institute, Wuhu Yingxing Jumu Co. Ltd, Zhangjiagang Laite Film and Television Equipment Co. Ltd, Foshan Wangshi Optoelectronic Technology Co. Ltd, Laizhou Xingguang Screen Co. Ltd and China National Machine Tool Corporation. The previous edition of the replaced standard is recorded as GB/T 13919-1992.

## 1 Scope

The document fixes the general requirements and the technical conditions for 35 mm magnetic sound test films. It also fixes the types and the technical characteristics of magnetic sound test films made on 35 mm cinematographic film.

It applies to test films used to check, adjust and measure the sound reproduction systems of cinema equipment, and covers test films for the following purposes: a) magnetic head gap inclination, that is azimuth; b) output level balance of a multi-channel sound reproduction system, that is level; c) frequency response of the reproduction channel, that is multi-frequency; d) unevenness of the running speed of the film, that is flutter.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated references only the edition cited applies; for undated references the latest edition, including all amendments, applies.

GB/T 3240-1982 Preferred frequencies for acoustical measurements (neq ISO 266:1975); GB/T 4637-1994 Position and width dimensions of the magnetic head gaps of three-track, four-track and six-track on 35 mm magnetic film (eqv ISO 162:1985); GB/T 5875-1994 Sound recording characteristics of 35 mm and 16 mm magnetic film (eqv ISO 1189:1986); HG/T 2695-1995 (2009) Dimensions of cinematographic film.

## 3 General requirements

3.1 Test films are to be made from 35 mm cinematographic raw stock whose cutting and perforation dimensions comply with the relevant provisions of HG/T 2695-1995 (2009). 3.2 The position and width dimensions of the sound track of the test film comply with the relevant provisions of GB/T 4637-1994. 3.3 The magnetic recording characteristics of the frequency response magnetic sound test film comply with the relevant provisions of GB/T 5875-1994.

3.4 Apart from splices deliberately made part of the test film, splices are not allowed in a test film. 3.5 Test films are to be recorded at a frame rate of 24 frames per second or 25 frames per second. Use at other frame rates is allowed but has to be stated. All frequency errors apply to the frame rate indicated.

3.6 In a multi-frequency test film a spoken announcement is to precede each frequency

band as identification. The peak level of the announcing speech may not exceed the modulation peak level of the test signal. 3.7 The function of the test film, the kind of film base, acetate or polyester, and its thickness, the frame rate of recording, and the date and place of recording are to be stated in writing on the outside of the container of each test film. 3.8 In a multi-track test film made on a single strip of cinematographic film, the recording of every track has to comply with the relevant provisions of this document and of the referenced standards on raw stock and on recording. 3.9 The recording format the test film suits has to be clearly stated.

3.9.1 If the test film was recorded with a magnetic head of the full width of the film or wider than the normal value of the specified format, the test film still complies with the requirements of this document provided reproduction is carried out in the prescribed manner. 3.9.2 When the track recorded on the test film is wider than the width of the reproducing head, the head picks up long-wavelength fringing flux; a correction method has therefore to be adopted to simulate the normal effect that head would give with a track of standard width, and the correction value and the method of use have to be clearly stated.

3.10 What the document fixes are the minimum requirements for magnetic sound test films. Other test signals may be added as needed, but they too have to comply with 3.6. 3.11 Test films for measuring and adjusting azimuth, reference level and frequency response may be made singly by function, or the test signals of two or more functions may be brought together in one test film; a flutter test film, however, has to be made on its own.

3.11.1 The frequency response characteristic refers to all possible frequencies within the appropriate bandwidth, and the response curve is settled by specifying one or more time constants. 3.11.2 The relative short-circuit flux of a multi-frequency test film is fixed by Table 3, which also states the appropriate time constants. After an incremental correction has been made to each test film as required, the magnetic level of the test film is to lie within the errors fixed by this document. 3.11.3 Other frequency signals to be added to a test film are to be taken from the one-third and one-sixth octave series of GB/T 3240-1982. 3.11.4 For equipment sensitive to the alternating interference field of the mains frequency, the test film used has to contain signals at frequencies other than multiples of the mains frequency.

3.12 In a test film containing a pink noise band, the pink noise is to lie within a one-third octave bandwidth centred on one of the frequencies listed in Table 3. The recording level is to comply with the error range given in Table 3 and may not drive the magnetic tape towards saturation. 3.13 A test film that allows the accuracy of the azimuth to be judged without moving a single-track head: on such a test film short high-frequency signal sections are recorded alternately forward and backward at equal angles relative to the correct position, and when the reproducing head gives equal output from the two sides of the alternating bands the head is in the correct position. For this, the difference between the absolute values of the forward and backward angles may not exceed 2 minutes of arc.

#### 4.1 Azimuth test film

The characteristics of the test film used to check and adjust azimuth are given in Table 1.

Table 1 is a two-column table of test signal against technical requirement, with seven rows: frequency, 12.5 kHz; frequency limit deviation,  $\pm 3\%$ ; maximum output deviation,  $\pm 0.5$  dB; azimuth limit deviation,  $\pm 3$  minutes of arc; optional additional azimuth value, see 3.13,  $\pm 20$  minutes of arc; modulation, 10 dB below reference level; duration of the signal, 60 s.

#### 4.2 Level test film

The characteristics of the test film used to check and adjust the reference level output are given in Table 2. The printed Chinese wording of this sentence carries a stray character in the phrase for reference level output and is reproduced here as read.

Table 2 is a two-column table of test signal against technical requirement, with eight rows: signal frequency, 1 000 Hz; frequency limit deviation,  $\pm 3\%$ ; short-circuit flux at reference level, 320 nWb/m; flux limit deviation,  $\pm 15$  nWb/m; maximum output deviation,  $\pm 0.5$  dB; maximum total harmonic distortion,  $\leq 2\%$ ; maximum weighted wow and flutter,  $\leq 0.1\%$ ; duration of the signal, 30 s.

#### 4.3 Multi-frequency test film

The characteristics of the test film used to check and adjust frequency response are given in Table 3.

Table 3 is a two-column table of test signal against technical requirement. The reference frequency is 1 000 Hz and the output level at the reference frequency is 10 dB below reference level. A nested block then gives the order in which the frequencies are arranged in the test film, each with its relative value in dB: the series runs 31.5 Hz, 40 Hz, 63 Hz, 125 Hz, 160 Hz, 250 Hz, 400 Hz, 500 Hz, 1.0 kHz, 2.0 kHz, 4.0 kHz, 6.3 kHz, 8.0 kHz, 10.0 kHz, 12.5 kHz, 14.0 kHz and 16.0 kHz, with the entry for 400 Hz left as a dash. The frequency limit deviation is  $\pm(3\% + 2\text{ Hz})$ .

Table 3 continued gives five further rows: maximum output deviation within each frequency,  $\pm 0.3$  dB; maximum short-circuit flux deviation,  $\pm 0.5$  dB; maximum output level difference over all frequencies,  $\pm 0.25$  dB; duration of the reference frequency signal, 8 s; duration of the other frequency signals, 8 s. A note adds that normal measurement proceeds from low frequency to high frequency.

#### 4.4 Flutter test film

The characteristics of the test film used to check and measure the unevenness of film running speed are given in Table 4.