

# Cinematography —

## Part 7: Production and presentation —

### Section 7.4 Sound —

#### Subsection 7.4.1 Specifications and measurements for the B-chain electro-acoustic response of motion-picture control rooms and indoor theatres

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Cinematography and Photography Standards Policy Committee (CPM/-) to Technical Committee CPM/5, upon which the following bodies were represented:

- Association of Cinematograph Television and Allied Technicians
- Association of Independent Cinemas
- British Broadcasting Corporation
- British Film and Television Producers' Association
- British Film Institute
- British Kinematograph, Sound and Television Society
- Cinematograph Exhibitors' Association of Great Britain and Northern Ireland
- ITV Association
- Institute of Amateur Cinematographers
- Royal Photographic Society

This British Standard, having been prepared under the direction of the Cinematography and Photography Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 30 June 1990

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First published September 1978  
Second edition June 1990  
  
The following BSI references relate to the work on this standard:  
Committee reference CPM/5  
Draft for comment 85/44724 DC

ISBN 0 580 18325 4

## Amendments issued since publication

| Amd. No. | Date | Comments |
|----------|------|----------|
|          |      |          |
|          |      |          |
|          |      |          |
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# National foreword

This Subsection of BS 5550 has been prepared under the direction of the Cinematography and Photography Standards Policy Committee. It is identical with ISO 2969:1987 “*Cinematography — B-chain electro-acoustic response of motion-picture control rooms and indoor theatres — Specifications and measurements*”, published by the International Organization for Standardization (ISO).

This Subsection of BS 5550 supersedes BS 5550-7.4.1:1978, which is withdrawn.

**Cross-references**

| International Standard | Corresponding British Standard                                                                                                                                                  |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 140 <sup>a</sup>   | BS 2750 <i>Measurement of sound insulation in buildings and building elements</i><br>(Identical)                                                                                |
| ISO 266:1975           | BS 3593:1963 <i>Recommendation on preferred frequencies for acoustical measurements</i><br>(Technically equivalent)                                                             |
| IEC 651:1979           | BS 5969:1981 <i>Specification for sound level meters</i><br>(Identical)                                                                                                         |
| ISO 1189:1986          | BS 5550 <i>Cinematography</i><br>Subsection 3.4.2:1990 <i>Specification for recorded characteristics for magnetic sound records on 35 mm motion-picture film</i><br>(Identical) |
| ISO 7831:1986          | Subsection 3.4.9:1987 <i>Specification for reproduction characteristics of the A-chain frequency response for 35 mm photographic sound</i><br>(Identical)                       |

<sup>a</sup> Reference is made to ISO 140 which has been published in several Parts. ISO 140-1 to ISO 140-8 were published in 1978, and were adopted in 1980 as BS 2750-1 to BS 2750-8. ISO 140-9 was published in 1985, and was adopted in 1987 as BS 2750-9.

ISO 8622 is in preparation. Since this is referred to for information only, it does not affect the validity of this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

**Summary of pages**

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

## 0 Introduction

This International Standard shall be used in conjunction with the relevant standards which cover that part of the motion picture sound system from the transducer to the input terminals of the main fader.

## 1 Scope and field of application

This International Standard specifies the characteristics of the B-chain response of motion-picture studio dubbing theatres, review rooms and indoor theatres. It is intended to assist in the standardization of recording monitor and reproduction characteristics of motion-picture sound in rooms with volumes of at least 150 m<sup>3</sup>. It does not apply where the recorded sound is intended for reproduction under domestic listening conditions, i.e. radio and television broadcasting, tape or disk.

This International Standard does not cover the electro-acoustic response characteristic of motion-picture surround or effects loudspeakers, or sub-bass loudspeakers (sub-woofers).

## 2 References

ISO 140, *Acoustics — Measurement of sound insulation in buildings and of building elements*.

ISO 266, *Acoustics — Preferred frequencies for measurements*.

IEC Publication 651, *Sound level meters*.

## 3 Definitions

For the purpose of this International Standard, the following definitions apply.

### 3.1

#### **complete sound reproduction system**

a system used (see Figure 1) in sound dubbing theatres, review rooms and indoor theatres; by convention consists of an A-chain and a B-chain

### 3.2

#### **pre-emphasized sound-track**

a conventional photographic sound-track, also known as an academy sound-track, which is intended for playback over normally de-emphasized theatre playback systems

### 3.3

#### **wide range sound-track**

a photographic sound-track which has been pre-emphasized and is intended for playback over a theatre system whose B-chain has been aligned to curve A of this International Standard

### 3.4

#### **A-chain (transducer system)**

the "A" part of a motion-picture sound system as shown in Figure 1, which extends from the transducer to the input terminals of the main fader

**NOTE** It is customary for the A-chain to contain the necessary de-emphasis network for the playback of pre-emphasized sound-tracks. In some theatres part of the de-emphasis characteristic may result from aperture loss. Wide range sound tracks do not require use of a de-emphasis network and aperture loss will normally require correction. In addition, wide range sound tracks may require the use of noise reduction decoding circuitry.

### 3.5

#### **B-chain (final chain)**

the "B" part of a motion-picture reproduction system (see Figure 1), which extends from the input terminals of the main fader to the listening area of the room or auditorium

**NOTE** Two B-chain characteristics are described in this International Standard: a normal curve typical of current practice, and a wide range curve referred to as curve X.

### 3.6

#### **electro-acoustic response**

the electro-acoustic response of the final chain at a given position is the sound pressure level expressed in decibels with respect to an arbitrary reference pressure over a given frequency range

determination of the electro-acoustic response for the entire listening area requires multiple measurements and averaging as described in clauses A.4 and A.5 of the Annex A

### 3.7

#### **pink noise**

a continuous spectrum noise having constant energy per constant percentage bandwidth, with Gaussian probability distribution of instantaneous values

### 3.8

#### **wideband pink noise**

pink noise having a bandwidth exceeding the frequency range of interest, typically extending from 31,5 Hz to at least 12,5 kHz

## 4 Method of measurement

**4.1** The electro-acoustic response shall be measured with the equipment and instruments arranged in accordance with Figure 2 (see clauses A.3, A.4 and A.5 of the Annex A).

**4.2** Sound pressure level measurements shall be taken as follows (see 4.4 and 4.5):

- in dubbing theatres, at each of the principal listening areas;
- in review rooms and indoor theatres, at a sufficient number of positions to cover the listening area (see 4.5 and 4.6).