International Standard 7831

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Cinematography — A-chain frequency response for reproduction of 35 mm photographic sound — Reproduction characteristics

Cinématographie — Réponse en fréquence de la reproduction du son des films photographiques de 35 mm *— Chaîne A — Caractéristiques de reproduction*

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7831 was prepared by Technical Committee ISO/TC 36, *Cinematography.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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INTERNATIONAL STANDARD ISO 7831-1986 (E)

Cinematography — A-chain frequency response for reproduction of 35 mm photographic sound — Reproduction characteristics

1 Scope and field of application

This International Standard specifies the A-chain electrical frequency response characteristic for photographic sound reproduction in motion-picture control rooms and indoor theatres. It is intended, in conjunction with ISO 2969, to assist in the standardization of recording monitor and reproduction characteristics of motion-picture sound dubbing theatres, review rooms and indoor theatres. This International Standard covers that part of the motion-picture sound system from the transducer to the input terminals of the main fader.

2 References

ISO 2969, *Cinematography — Electro-acoustic response of motion-picture control rooms and indoor theatres — Specifications and measurements.*

ISO 6025, *Cinematography — Photographic-monophonic sound test films — Specifications.*

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 type 1 sound track (also known as an academy sound track): A conventional pre-emphasized photographic sound track, which is intended for replay over conventionally de-emphasized theatre playback systems.

3.3 type 2 sound track : This equalization in recording and reproduction is only applied to some magnetic tracks and is outside the scope of this International Standard.

3.4 type 3 sound track : A photographic sound track which has been pre-emphasized and is intended for replay over a theatre loudspeaker system aligned to Curve X of ISO 2969.

NOTE — A type 3 sound track will normally require decoding with an electronic noise reduction system decoder.

3.5 A-chain (transducer system): The "A" part of a motion-picture sound system (see 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 replay of type 1 sound tracks. In some theatres part of the de-emphasis characteristic may result from aperture loss. Type 3 sound tracks do not require use of a de-emphasis network and aperture loss will normally require the use of noise reduction decoding circuitry.

3.6 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 ISO 2969, identified as curves N and X.

4 Method of measurement

The electrical response shall be measured across the fader input terminals or at an equivalent position, using a high impedance voltmeter accurate from 20 Hz to 20 kHz ± 1 dB.

5 Characteristics

When a multi-frequency photographic test film, conforming to ISO 6025, is played on the reproducer, the measured frequency response characteristic shall be within the tolerances of the curves given in tables 1 and 2.

5.1 Column two of table 1 represents current practice for the replay of type 1 sound tracks over curve N B-chain.

5.2 Column three of table 1 represents current practice for the replay of type 1 sound tracks over a curve X B-chain.

5.3 Column four of table 1 represents current practice for the replay of type 3 sound tracks over a curve X B-chain.

NOTE — In some theatres, it may not be possible to separate the overall A + B responses. For reference purposes, therefore, table 2 and figure 3 show the total "A + B" responses.

Table 1 — A-chain frequency response for reproduction of 35 mm photographic sound

Frequency	Type 1 sound track		Type 3 sound track for use with curve X B-chain	Tolerances
	for use with curve N B-chain	for use with curve X B-chain		
Hz	dB	dB	dB	dB
40	0	0	0	± 2
63	0	0	0	
125	0	0	0	± 1
250	0	0	0	
500	0	0	0	
1 000	0	0	0	
2 000	−1,0	− 1,0	0	
2 500	−2,0	− 2,0	0	
3 150	−3,0	− 3,0	0	
4 000	−4,0	− 4,5	0	
5 000	−5,0	− 6,5	0	
6 300	−6,0	− 9,0	0	
7 100	−7,0	−10,5	0	
8 000	−7,5	−12,0	0	
9 000	−8,0	−14,0	0	
10 000	−9,0	−16,0	0	

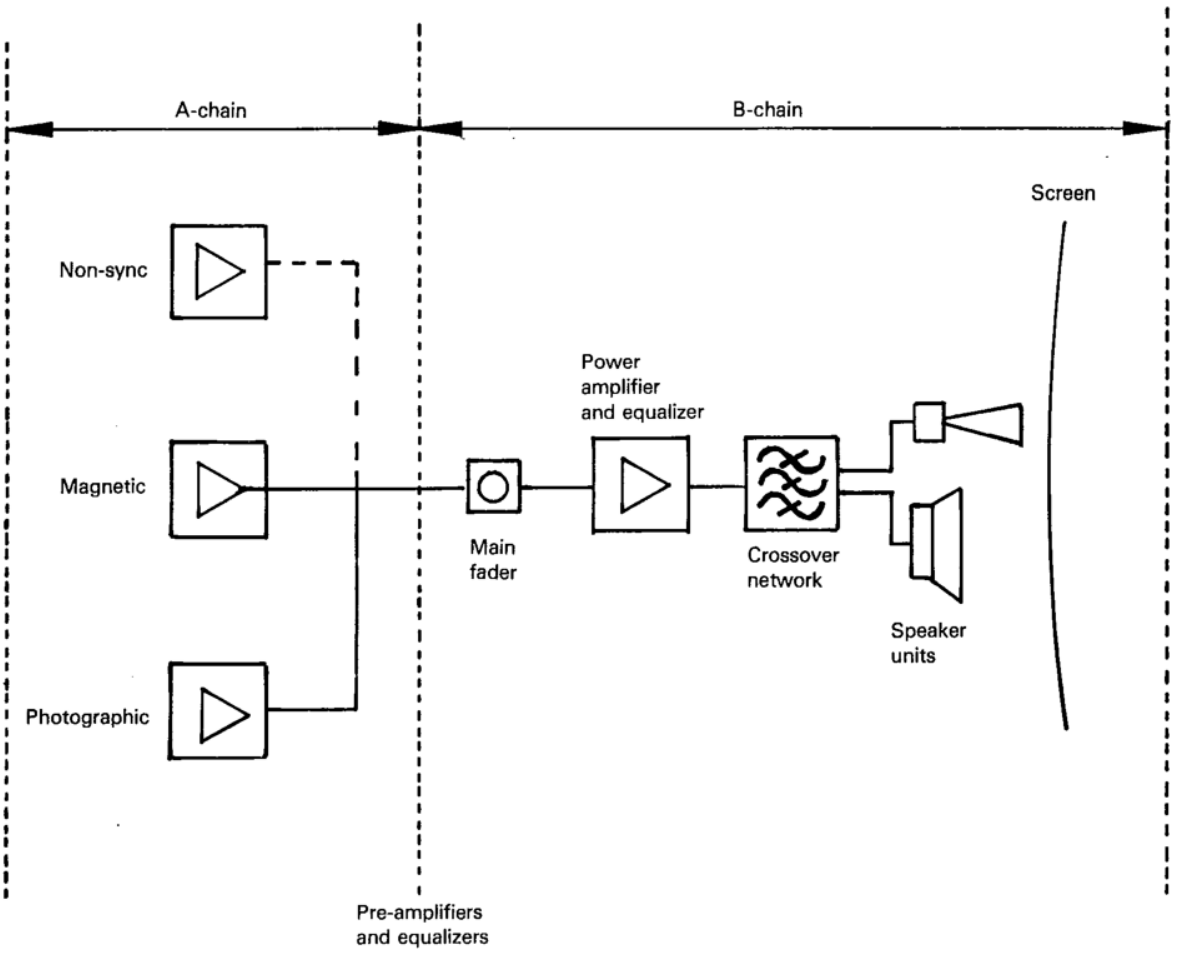

Figure 1 — Complete sound reproducing system

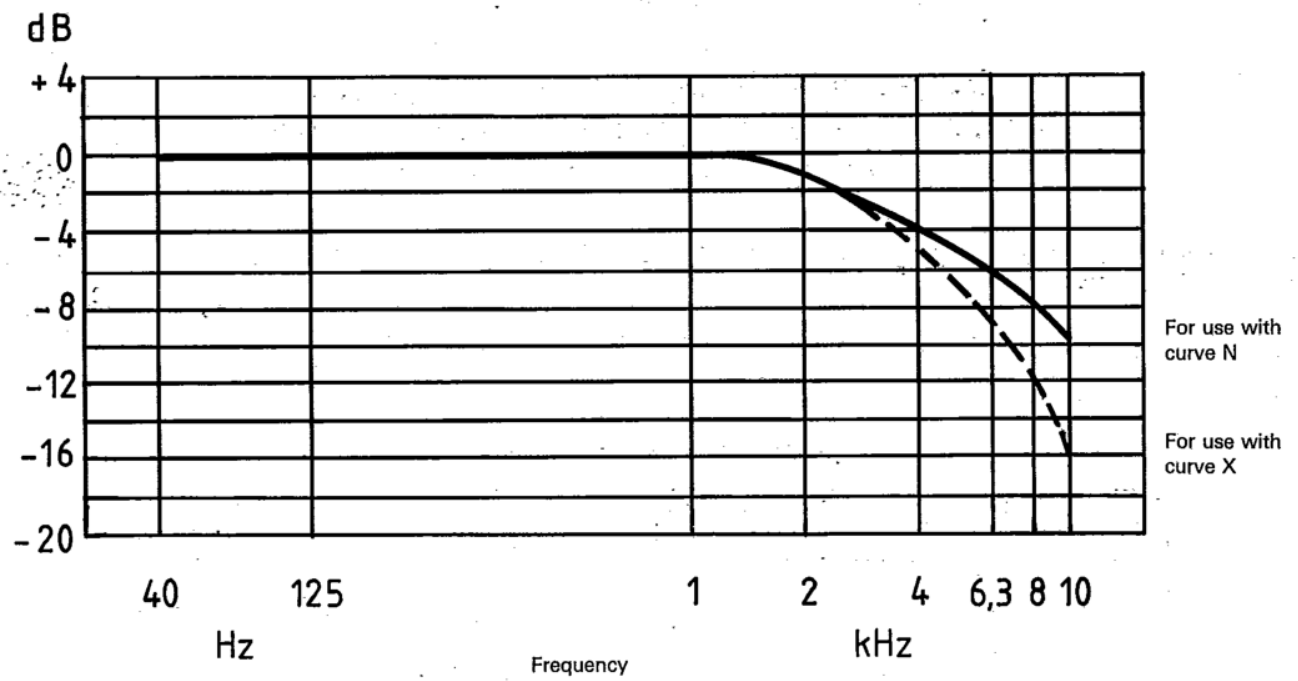

Figure 2 — A-chain characteristics for type 1 photographic sound tracks

Annex

Overall A + B response for the replay of type 1 and type 3 photographic sound track

(This annex does not form a part of the standard.)

A.1 For reference purposes only, table 2 and figure 3 show the overall A + B response for the replay of type 1 and type 3 photographic sound-track.

NOTE — The B-chain contribution to the overall A + B response is derived from the measurement techniques described in ISO 2969.

Table 2 — Overall A + B response

Frequency	Type 1 sound track	Type 3 sound track
Hz	dB	dB
40	− 8,0	−2,0
63	− 3,0	0
125	0	0
250	0	0
500	0	0
1 000	0	0
2 000	− 1,0	0
2 500	− 3,0	−1,0
3 150	− 5,0	−2,0
4 000	− 7,5	−3,0
5 000	−10,5	−4,0
6 300	−14,0	−5,0
7 100	−16,0	−5,5
8 000	−18,0	−6,0
9 000	−20,5	−6,5
10 000	−23,0	−7,0

A.2 The figures in table 2 (column two) and figure 3 (solid curve) represent the average of 150 theatre replay curves measured in six countries between 1971 and 1975, adjusted slightly to take account of current international practice. This curve is intended to ensure satisfactory replay of typically pre-emphasized sound tracks.

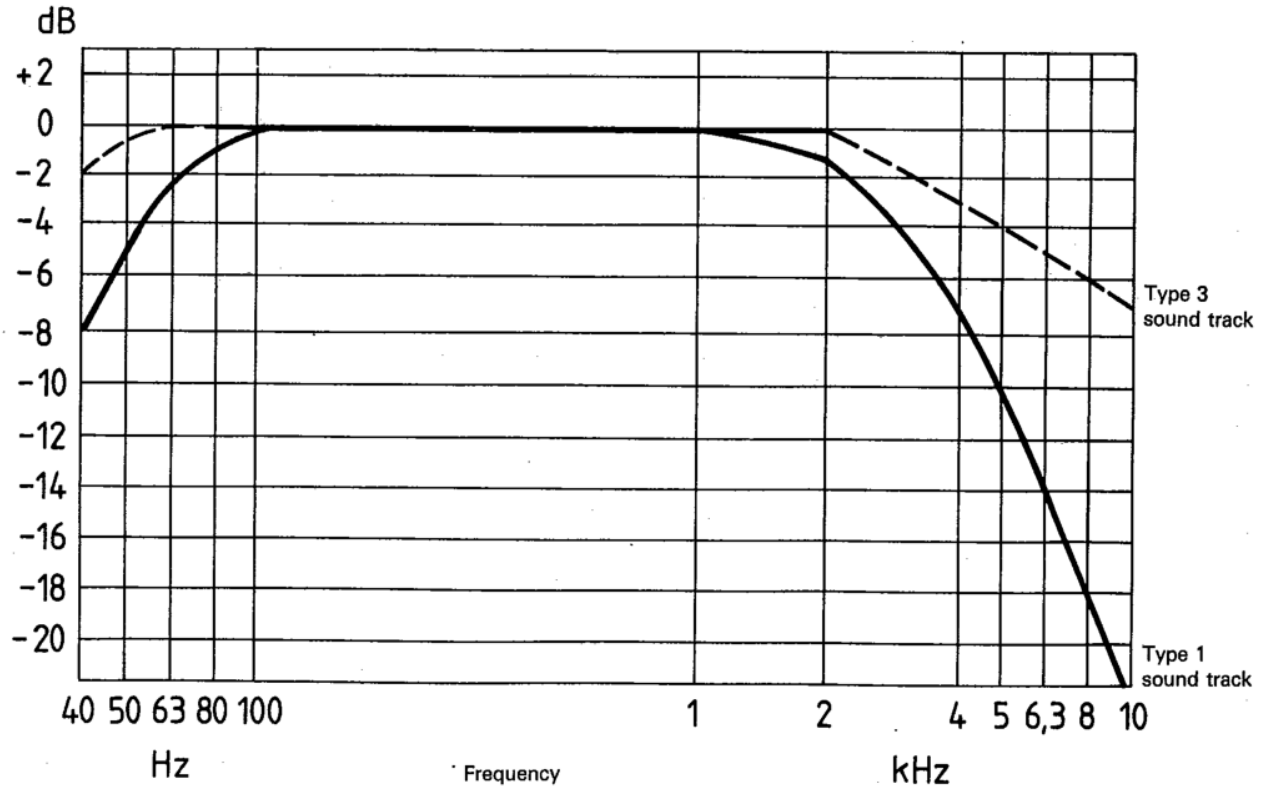

Figure 3 — Overall A + B response