INTERNATIONAL STANDARD

ISO 8622

Second edition
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Cinematography — Magnetic sound records on 70 mm motion-picture release prints with magnetic stripes — A-chain reproduction characteristics

Cinématographie — Enregistrements sonores magnétiques sur copies d'exploitation sur film 70 mm à pistes magnétiques — Caractéristiques de transfert de la chaîne A

Reference number
ISO 8622:1998(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8622 was prepared by Technical Committee ISO/TC 36, *Cinematography*.

This second edition cancels and replaces the first edition (ISO 8622:1990), clause 2 and subclause 3.5 (note 2 added) of which have been technically revised.

Annex A forms an integral part of this International Standard.

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Cinematography — Magnetic sound records on 70 mm motion-picture release prints with magnetic stripes — A-chain reproduction characteristics

1 Scope

This International Standard specifies the A-chain electrical frequency response characteristics for magnetic sound reproduction in motion-picture control rooms and indoor theatres. It is also intended for use, in conjunction with ISO 2969, in the standardization of recording monitor and reproduction characteristics of motion-picture sound in studio 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, and should be read in conjunction with ISO 8590, which defines the recorded characteristics for 35 mm and 70 mm magnetic striped prints.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2969 : 1987, *Cinematography — B-chain electro-acoustic response of motion-picture control rooms and indoor theatres — Specifications and measurements.*

ISO 8395:1995, *Cinematography — Test films for the reproduction of* 70 mm *motion-picture release prints with magnetic stripes — Specifications.*

ISO 8590:1994, *Cinematography — Audio records on* 70 mm *motion-picture release prints with magnetic stripes — Recorded characteristic.*

3 Definitions

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

3.1 complete sound reproduction system: A system used for the playback of motion-picture records (see figure 1) in dubbing theatres, review rooms, and indoor theatres; by convention it consists of an "A-chain and a B-chain".

3.2 type I sound track: A sound record with a characteristic normally only used with monophonic photographic motion-picture prints.

3.3 type II sound track: A sound record which is intended for playback over a theatre B-chain system aligned to curve N of ISO 2969.

3.4 type III sound track: A monophonic or stereophonic magnetic or photographic sound record which is intended for playback over a theatre B-chain system aligned to curve X of ISO 2969.

A type III sound track will normally require decoding with a suitable electronic noise reduction system.

3.5 A-chain (transducer system): The "A" part of a motion-picture sound system as shown in figure 1, which extends from the transducer(s) to the input terminals of the main fader.

NOTES

1 It is customary for the A-chain to contain the necessary de-emphasis network for the playback of type II magnetic sound tracks when being reproduced over a B-chain aligned to curve X as defined in ISO 2969. The A-chain will also contain noise reduction decoding circuitry if required for the playback of type III sound tracks.

2 It has been shown that a low-frequency time constant of infinity should be used for best headroom versus frequency of the medium. It is recognized, however, that it is necessary for the immediate future to continue to add low frequency pre-emphasis of 3 180 µs, because much theatre equipment cannot meet the tolerances of this International Standard when using a time constant of infinity.

3.6 B-chain (final chain): The "B" part of a motion-picture sound system as shown in 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 curve N and X.

3.7 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.

4 Method of measurement

The frequency response of the A-chain shall be measured with a high impedance voltmeter accurate from 20 Hz to 20 kHz ± 1 dB. The measurements shall be taken at the fader input terminals, or at an equivalent position, when a multi-frequency test film conforming to ISO 8395 is played on the reproducer.

5 Characteristics

The measured frequency response shall conform within the quoted tolerances to the characteristics defined for type II and type III sound tracks in table 1 and shown graphically in figures 2, 3 and 4.

5.1 Figure 2 represents current practice for the playback of type II sound tracks over a curve N B-chain.

5.2 Figure 3 represents current practice for the playback of type II sound tracks over a curve X B-chain.

5.3 Figure 4 represents current practice for the playback of type III sound tracks over a curve X B-chain.

5.4 A type III magnetic sound track is not normally considered suitable for playback over a curve N B-chain.

NOTE — For reference purposes, table A.1 and figures A.1 and A.2 show the total "A + B" response for type II and type III sound tracks.

5.5 In multi-channel installations intended for stereophonic reproduction, the difference in electrical output between channels at 1 kHz shall not exceed 1 dB.

Table 1 — A-chain frequency response for reproduction of 70 mm magnetic striped sound records

B-chain playback curve	Type II sound track		Type III sound track	Tolerance
	Curve N	Curve X	Curve X	
Frequency (Hz	dB	dB	dB	dB
31,5	0	− 10,0	0	± 2
40	0	− 8,0	0	± 2
63	0	− 3,0	0	± 2
125	0	0	0	± 1
160	0	0	0	± 1
250	0	0	0	± 1
400	0	0	0	± 1
1 000	0	0	0	± 1
2 500	0	0	0	± 1
4 000	0	0	0	± 1
6 300	0	− 2,5	0	± 1
8 000	0	− 4,0	0	± 1
10 000	0	− 7,0	0	± 1
12 500	0	− 9,0	0	+ 1, − 2
16 000*	0	− 11,0	0	+ 1, − 3

NOTE — The frequencies defined in the table are those listed in the minimum set for the multi-frequency test film described in ISO 8395. The frequency identified with an asterisk (*) is specified as optional in ISO 8395.

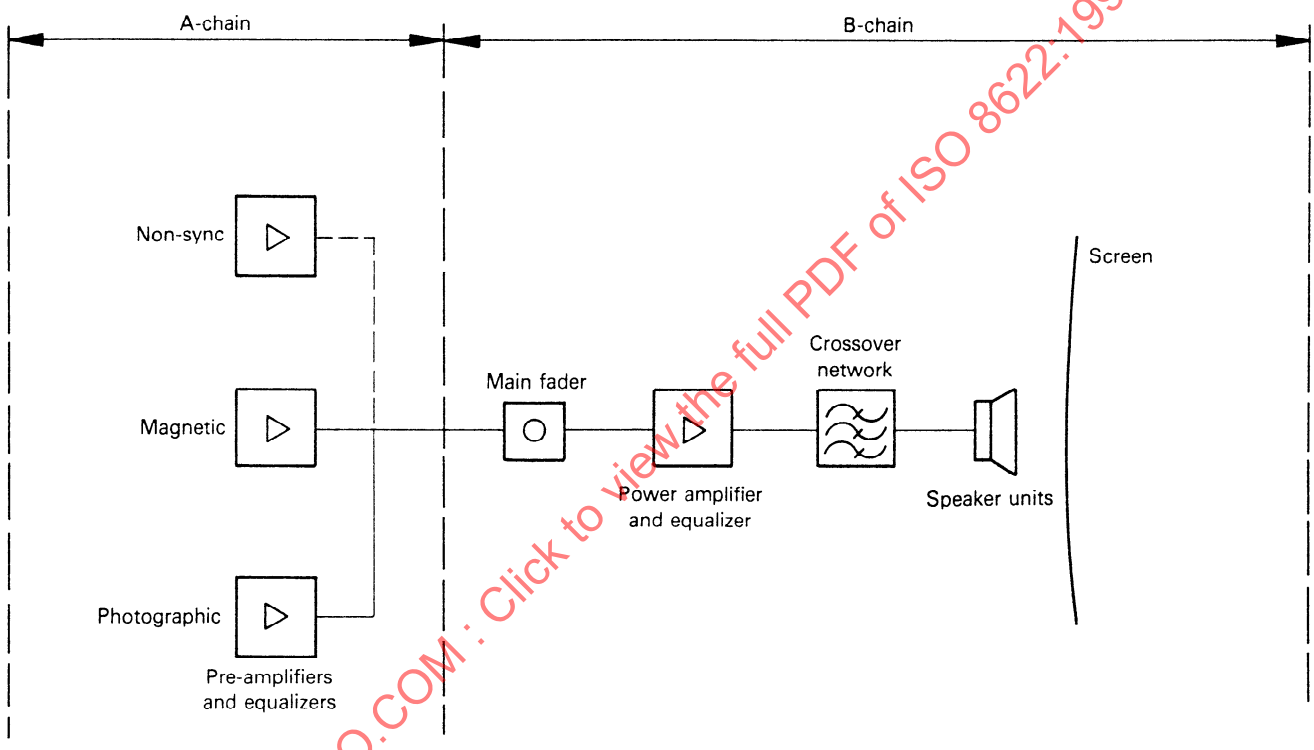

Figure 1 — Complete theatrical sound reproducing system

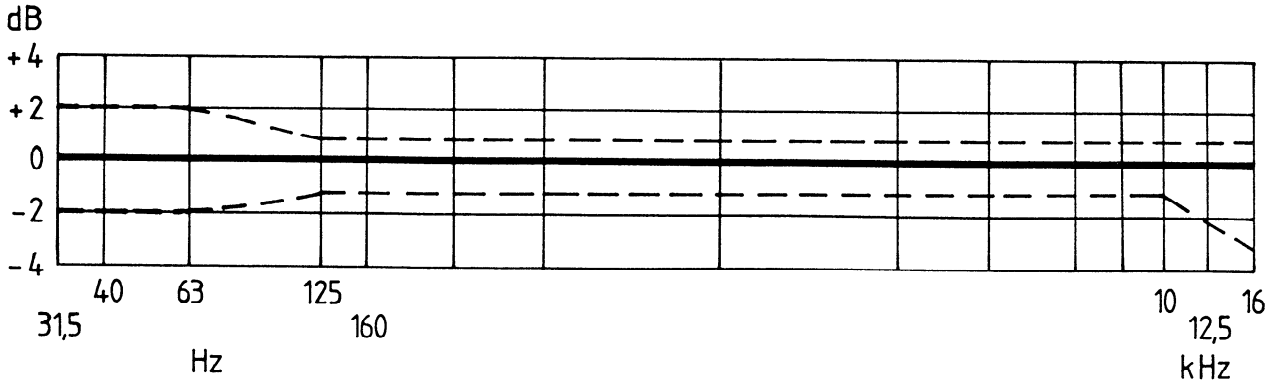

Figure 2 — Type II sound track over curve N B-chain

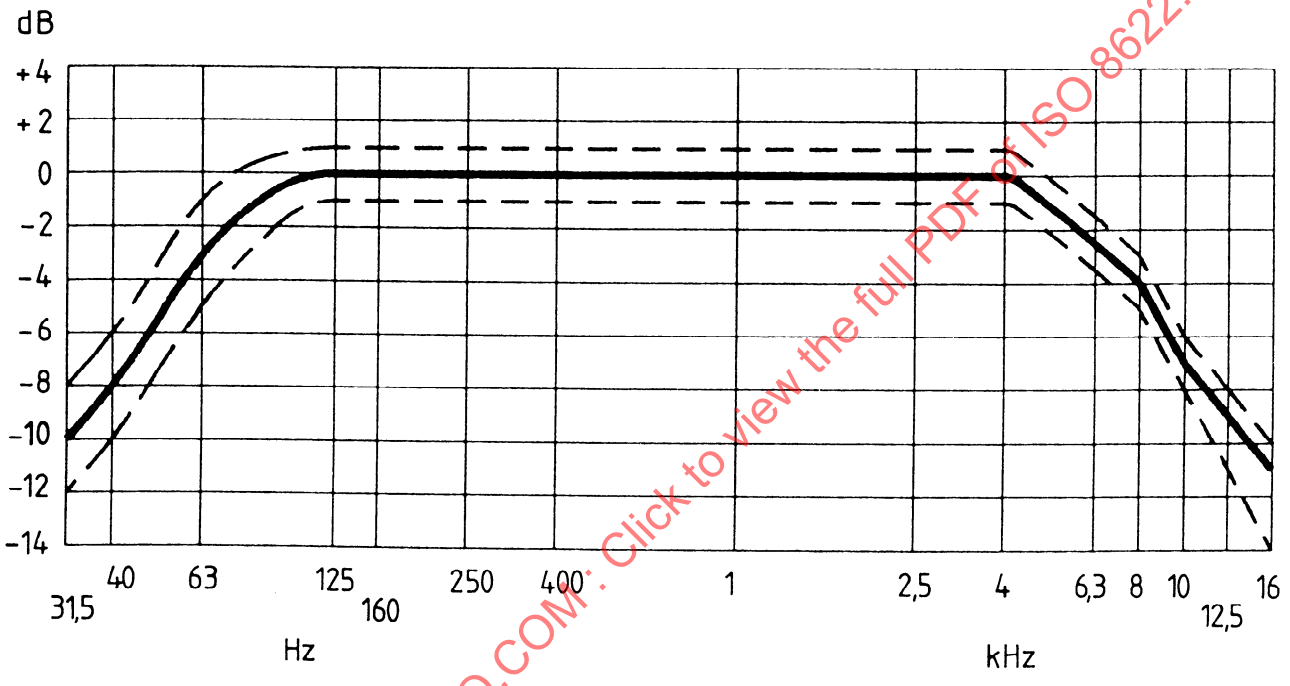

Figure 3 — Type II sound track over curve X B-chain

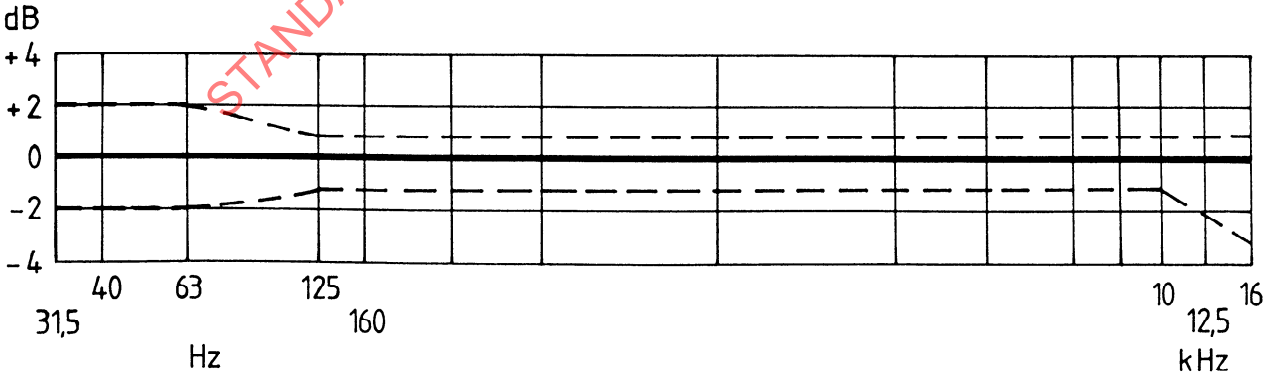

Figure 4 — Type III sound track over curve X B-chain

Annex A
(normative)

Overall "A + B" figures

A.1 For reference purposes only, table A.1 and figures A.1 and A.2 show the overall "A + B" figures for the playback of types II and III magnetic sound tracks.

A.2 The B-chain contribution to the combined "A + B"-chain responses in table A.1 and in figures A.1 and A.2 requires measurement using techniques described in ISO 2969.

Table A.1 — Overall electro-acoustic characteristics

Frequency Hz	Type II sound track dB	Type III sound track dB
31,5*	− 14,0	− 4,0
40	− 10,0	− 2,0
50**	− 6,0	− 1,0
63	− 3,0	0
80**	0	0
100**	0	0
125	0	0
160	0	0
200**	0	0
250	0	0
315**	0	0
400	0	0
500**	0	0
630**	0	0
800**	0	0
1 000	0	0
1 250**	0	0
1 600**	0	0
2 000**	0	0
2 500	− 1,0	− 1,0
3 150**	− 2,0	− 2,0
4 000	− 3,0	− 3,0
5 000**	− 5,0	− 4,0
6 300	− 8,0	− 5,0
8 000	− 11,0	− 6,0
10 000	− 14,0	− 7,0
12 500	− 18,0	− 8,0
16 000*	− 22,0	− 9,0

* These frequencies are not included in ISO 2969, and the data have been extrapolated, with the B-chain characteristics derived in accordance with the procedure described in ISO 2969.

** These frequencies are not included in the minimum set multi-frequency test film described in ISO 8395, but are contained within the third octave set listed in ISO 2969.

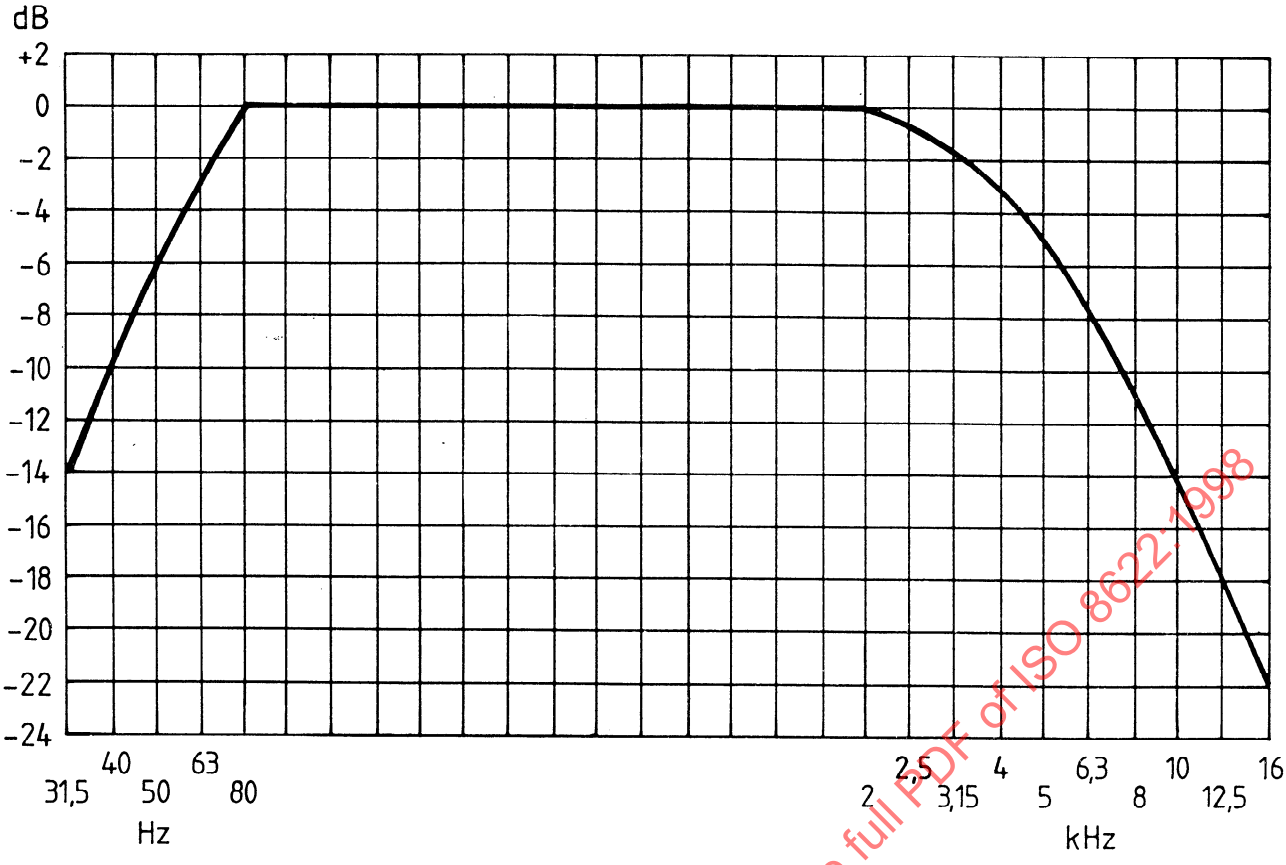

Figure A.1 — "A + B" response for type II sound track

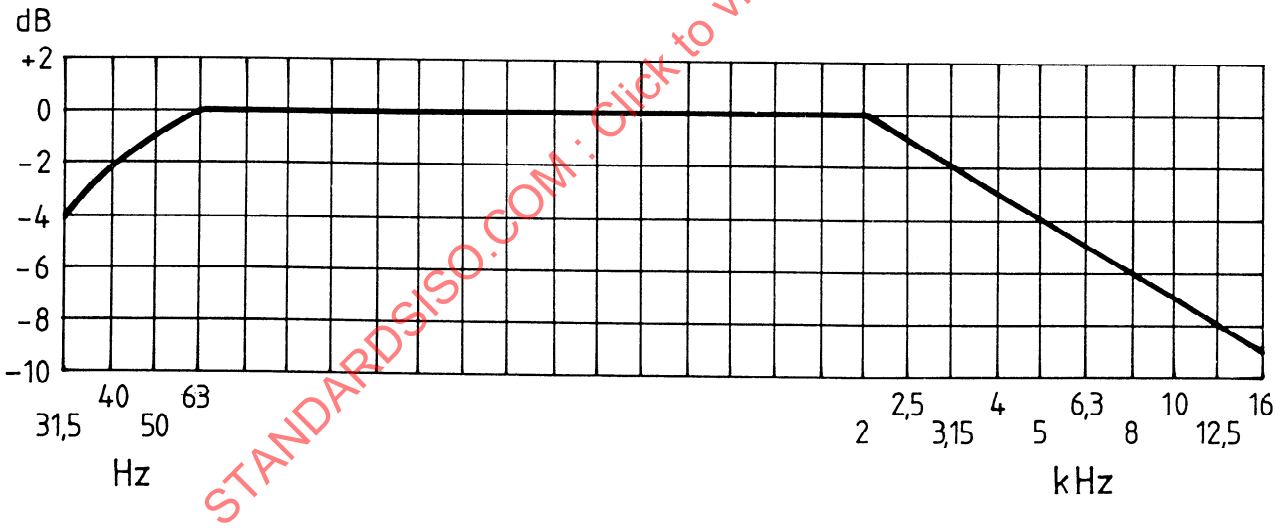

Figure A.2 — "A + B" response for type III sound track

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