RECOMMENDATION ITU-R BR.408-7*

International exchange of sound programmes recorded in analogue form**

(Question ITU-R 215/10)

(1951-1953-1956-1959-1963-1966-1970-1974-1982-1990-1992-2001)

The ITU Radiocommunication Assembly,

considering

a) that the international exchange of monophonic and stereophonic sound programmes between broadcasting organizations, recorded in analogue form, may be made by means of magnetic recordings on tape;

b) that it is desirable to limit the number of standards and formats in which such recordings may be exchanged;

c) that such exchanges would be facilitated by the use of uniform and widely accepted specifications and operating practices;

d) the content of Resolution ITU-R 41 – Collaboration with the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) on broadcasting technologies,

recommends

1 that, when such recorded sound programmes are exchanged in the form of analogue magnetic recordings on tape, the exchanges should be effected by means of 6.3 mm wide tapes (nominal value), recorded at a speed of 38.1 cm/s or 19.05 cm/s, conforming with IEC Publication 94-1 (the "IEC-1" recording characteristics of IEC Publication 94-1 is preferred);

2 that the maximum diameter of exchanged full spools should be 290 mm (11.5 in.) for Type I spools and 267.5 mm (10.5 in.) for Type II spools (see IEC Publication 94-1);

3 that the operating practices and additional requirements detailed below should be used for such recorded sound programme exchanges.

1 Additional information on the tape container

MONO or STEREO in Latin characters;

Width of track (for stereophonic signals only);

Maximum recorded level (in nWb/m).

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* This Recommendation replaces Recommendation ITU-R BR.407, which is hereby deleted.

** International programme exchange is defined as the transmission of television or sound programme material (or components thereof) among professional parties in different countries. It should be based on internationally agreed and widely employed technical standards or operating practices, except by prior bilateral agreement among the parties involved.

2 Additional requirements for stereophonic recordings

The minimum width of a recorded track should be 2 mm.

The outside limits of both tracks should coincide with the edges of the tape.

The distance between the tracks, situated symmetrically with respect to the central axis of the tape should be at least 0.75 mm. (The central axis is defined as a line situated at a distance of 3.125 mm from the reference edge.)

The edge of Track No. 1 is taken as the reference edge.

3 Beginning of a programme

The programme material should be preceded by a reference signal of 1 000 Hz recorded at a level of 9 dB below maximum permitted programme peaks.

On monophonic tapes, this reference signal should have a duration of about 10 s, with a pause of about 5 s before the start of the programme modulation.

On stereophonic tapes, this reference signal should be recorded in the *A*-(left) channel for about 5 s, then in both channels for about 10 s, with a pause of about 5 s before the start of the programme modulation.

4 Amplitude/frequency response of the two stereophonic channels

For reference purposes, a hypothetical recording-duplicating chain is specified. It is expected that exchanged recordings will be made by using a chain similar to the hypothetical reference recording-duplicating chain here described.

The hypothetical reference recording-duplicating chain consists of a master recorder and the duplicating replay-recorder equipment. The input of the recording-duplicating chain is the input of the master recorder. The short-circuit flux on the magnetic tape to be exchanged is the output of the recording-duplicating chain.

The chain should be considered as a complete system. The chain's overall characteristics are measured by feeding electronic test signals to the input of the reference recorder and measuring the output tape recording produced by the duplicating equipment. This measurement is carried out by means of a test reproducing chain. The amplitude/frequency response of the chain should conform to that of the reproduction chain characteristic for professional equipment as specified in IEC Publication 94-3.

4.1 The tolerances on the amplitude/frequency response of the two channels *A* and *B* shall fall in the template:

40 Hz	to	125 Hz:	+2	to	−3	dB
125 Hz	to	630 Hz:	+1	to	−1	dB
630 Hz	to	1 250 Hz:	+0.5	to	−0.5	dB
1 250 Hz	to	10 kHz:	+1	to	−1	dB
10 kHz	to	15 kHz:	+2	to	−3	dB

4.2 A difference of 1.5 dB in recorded level between tracks is admissible in the frequency range of 125 to 10 000 Hz. Beyond these limits, a progressive increase up to 2 dB is admissible at 40 Hz and 16 000 Hz.

4.3 A phase difference of 15° between tracks is admissible in the frequency range from 250 Hz to 4 000 Hz. Outside these frequency limits, a progressive increase of this value is admissible; it can reach 30° at 40 Hz and 65° at 16 000 Hz.

4.4 The crosstalk should not exceed –35 dB in the frequency range from 250 to 4 000 Hz. Outside these frequency limits, a progressive increase up to –20 dB at 40 Hz and –25 dB at 16 000 Hz is admissible.

4.5 The weighted signal-to-noise ratio of the *A*, *B* and *M* signals should be better than 51 dB.

NOTE 1 – This value represents the difference in level between the noise measured with the meter and weighting network defined in Recommendation ITU-R BS.468 and a signal, the amplitude of which corresponds to the maximum level of programme peaks indicated.

4.6 The total percentage harmonic distortion of the *A*, *B* and *M* signals should be less than the following values:

2% from 40 Hz to 125 Hz

1.6% from 125 Hz to 8 kHz.