RECOMMENDATION ITU-R BR.778-1*

Analogue component television tape recording

Standards for the international exchange of television programmes on magnetic tape**

(1992-1994)

The ITU Radiocommunication Assembly,

recommends

that magnetic recordings of analogue component signals used for the international exchange of television programmes should meet the following standards.

1 Television standard

Recording on magnetic tape of television programmes for international exchange should be carried out in accordance with one of the following classes of television systems:

– 625-lines: 50 field/s;

– 525-lines: 60 field/s.

2 Recording format

2.1 Analogue recording of component video signals

The recordings should conform with one of the formats specified in the following:

– helical-scan video tape cassette system using 12.65 mm (0.5 in) magnetic tape on type L: IEC Publication 961 + Amendment 1;

– helical-scan video tape cassette system using 12.65 mm (0.5 in) magnetic tape on type M 2: IEC Publication 1118.

NOTE 1 – The characteristics of the television systems are given in Recommendation ITU-R BT.470.

NOTE 2 – References for the measurement and alignment for television tape recorders will be contained in a draft new Recommendation.

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* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2001 in accordance with Resolution ITU-R 44.

** 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 pratices, except by prior bilateral agreement among the parties involved.

NOTE 3 – Guidelines for the storage of magnetic tapes are contained in EBU Publication Tech 3202.

NOTE 4 – Format L mode I is frequently referred to as betacam format. Format L mode II is frequently referred to as betacam SP format.

3 Specifications for programme sound recording

3.1 Alignment level

In Europe, when no other practice has been agreed between the exchanging organizations, the alignment flux level at 1 000 Hz should correspond to the reference flux level supplied on the Sony alignment cassette CR8-1BPS. Details of the alignment procedures designed to achieve this are given in EBU Recommendation R73-1993.

3.2 Programme sound allocation

The allocation of audio tracks should be as follows:

Operational mode	Channel	Track(1)
Finished monophonic television programmes	Monophonic programme mix	1
	International sound (if any)	2
Finished stereophonic television programmes	Stereo left	1
	Stereo right	2
Original news recordings	Commentary (if any)	1
	International sound (if any)	2

(1) Track 1 is the inner track.

The allocation of programme sound channels to the FM and (optionally) PCM audio tracks requires prior agreement.

NOTE 1 – Many broadcasting organizations use companding for internal purposes. In Europe the use of Dolby-C audio companding is recommended on the longitudinal audio tracks of format L mode II (betacam SP) tapes for programme exchange (EBU Recommendation R39-1993).

4 Editing

Electronic editing shall maintain an off-tape synchronizing pulse train with a phase relationship to the playback reference of the machine sufficiently close to avoid disturbances.

Information on the time and control code required for editing can be found in IEC Publication 461.

The requirements for dominant field editing as defined in EBU Technical Recommendation R62-1990 must be observed (see Annex 1 of Recommendation ITU-R BR.469).

NOTE 1 – If the programme signals recorded have been derived from a composite source, special rules for composite editing should be observed to achieve optimum signal quality. The EBU has issued Technical Statements D23-1984 and D25-1986 describing in detail the EBU requirements for synchronizing pulse generators for 625-line/50 fields PAL signals. Further information can be found in Recommendation ITU-R BR.469, Annex 2.

5 Composition and duration of leaders and trailers

Leader and trailer sections of monophonic recordings should be located on the tape in conformity with the sequence shown in Table 1. For stereophonic recordings see Table 2.

TABLE 1

<table>
<tr><th colspan="2">Tape section</th><th>Duration (s)</th><th>Picture</th><th>Sound (on any channel carrying programme sound)</th><th>Control track signal</th></tr>
<tr><td rowspan="6">Leader</td><td>Protection leader</td><td>10 (minimum)</td><td colspan="3">Blank tape</td></tr>
<tr><td>Alignment leader</td><td>60 (minimum)</td><td>Alignment signal(1)</td><td>1 000 Hz at reference level(2)</td><td>Uninterrupted</td></tr>
<tr><td>Optional</td><td>5 (maximum)</td><td colspan="3">Blank tape</td></tr>
<tr><td>Identification leader</td><td>15 (minimum)</td><td>Programme identification</td><td>Spoken identification preferred, or silence</td><td rowspan="5">Uninterrupted</td></tr>
<tr><td rowspan="2">Cue-up leader</td><td>8</td><td>Black or cue(3)</td><td>Silence or cue</td></tr>
<tr><td>2</td><td>Black(3)</td><td>Silence</td></tr>
<tr><td colspan="2">Programme(4)</td><td>Playing time of programme</td><td colspan="2">Programme</td></tr>
<tr><td colspan="2">Run-out trailer</td><td>30 (minimum)</td><td>Black(3)</td><td>Silence</td></tr>
</table>

(1) Examples of suitable alignment signals for 625-lines, 50 field/s systems will be given in a draft new Recommendation.

(2) See § 3.1 of Recommendation ITU-R BR.469.

(3) In the case of colour recordings the black signal should be colour black. It is desirable that the colour field sequence (8 fields in PAL, 4 fields in NTSC) should continue uninterrupted in relation to the beginning and end of the programme recording.

(4) Where the time and control code is recorded on the assigned longitudinal track (see § 3), the time indication of the programme start should be shown on the label accompanying the tape.

TABLE 2

Tape section		Duration (s)	Picture	Sound track 1	Sound track 2	Control track signal
Leader	Protection leader	10 (minimum)	Blank tape			
	Alignment leader	60 (minimum)	Alignment signal(1)	1 000 Hz at reference level(2), interrupted(3), (4)	1 000 Hz at reference level(2), (4)	Uninterrupted
	Optional	5 (maximum)	Blank tape			
	Identification leader	15 (minimum)	Programme identification	Spoken identification preferred, or silence	Spoken identification preferred, or silence	Uninterrupted
	Cue-up leader	8	Black or cue	Silence or cue	Silence or cue	
		2	Black	Silence	Silence	
Programme(5)		Playing time of programme	Programme			Uninterrupted
Run-out trailer		30 (minimum)	Black	Silence	Silence	

(1) Examples of suitable alignment signals for 625-lines, 50 field/s systems will be given in a draft new Recommendation.

(2) See § 3.1 of Recommendation ITU-R BR.469. The tones for both tracks must be coherent (i.e. from the same source) and in phase.

(3) The tone should be interrupted for 0.25 s every 3 s to enable identification of stereophonic recordings. The interruption may be made without using automatic equipment by organizations that only very occasionally need to interchange stereophonic video tape recordings. Under these circumstances, it is recognized that the specified interruption duration will not be strictly adhered to.

(4) In Australia the reference tone is on track 1 and the interrupted reference tone is on track 2. This is done to identify tracks and retain compatibility with mono track 1 reference tone.

(5) Where the time and control code is recorded on the assigned longitudinal track, the time indication of the programme start should be shown on the label accompanying the tape.

6 Programme identification

6.1 The following minimum information should be supplied with each recorded television tape:

– name of the organization which made the recording;

– title of programme, or title, sub-title and episode number;

– total number of spools, and number of the spool in the sequence when the programme is contained on more than one spool;
– reference number (library number) of programme or of tape;
– total playing-time, and playing-time of the programme material recorded on the tape;
– line and field system (625/50 or 525/60);
– aspect ratio of recorded image (see Note 1) if different from 4:3;
– which audio tracks have been used;
– the content of each audio track;
– use of noise reduction on audio tracks.

NOTE 1 – Further details of the labelling and identification of 16:9 aspect ratio television recordings are given in EBU Recommendation R71-1992.

6.2 The information required in § 6.1 shall be provided in at least one of the official languages of the ITU.