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Merilna metoda za barvnostno (krominančno) razmerje signal-naključni šum za videorekorderje

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Measuring method for chrominance signal-to-random noise ratio for video tape recorders

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MEASURING METHOD FOR CHROMINANCE SIGNAL-TO-RANDOM NOISE RATIO FOR VIDEO TAPE RECORDERS

Méthode de mesure du rapport signal à bruit aléatoire de chrominance pour magnétoscopes

Meßverfahren für den Chrominanz-Störabstand von Videobandgeräten

BODY OF THE HD

The Harmonization Document consists of:

- IEC 883 (1987) ed 1; IEC/SC 60B, not appended

This Harmonization Document was approved by CENELEC on 1989-06-01.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1989-12-01

to publish their new harmonized national standard by or before 1990-06-01

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Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

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Méthode de mesure du rapport signal à bruit aléatoire de chrominance pour magnétoscopes

Measuring method for chrominance signal-to-random noise ratio for video tape recorders

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEASURING METHOD FOR CHROMINANCE SIGNAL-TO-RANDOM NOISE RATIO FOR VIDEO TAPE RECORDERS

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
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4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

PREFACE

This standard has been prepared by Sub-Committee 60B: Video Recording, of IEC Technical Committee No. 60: Recording.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting
60B(CO)69	60B(CO)78

Further information can be found in the Report on Voting indicated in the table above.

MEASURING METHOD FOR CHROMINANCE SIGNAL-TO-RANDOM NOISE RATIO FOR VIDEO TAPE RECORDERS

INTRODUCTION

When reproducing colour pictures on a video tape recorder, changes in colour occur caused partly by the recording method (conversion of the subcarrier) and partly by the equipment (tape, tape recorder).

1. Scope and object

This standard describes a technique for measuring the impairment of a TV picture due to random noise in a colour signal. It should be realized that other mechanisms can be present which introduce impairments that appear to be caused by random noise, but are not measured by this technique.

Other techniques are necessary for measuring parameters such as moiré, time base error and cross-colour.

The values which result from this measurement method make it possible to compare different video tape recorders, recording systems and video tapes for the random noise characteristics.

This standard is intended for use with all IEC recognized video recording formats.

2. Chrominance signal-to-random noise measurement

This method is suitable for PAL and NTSC colour video signals.

2.1 *Test signal*

2.1.1 The suggested test signal is an all-red signal which has been made to correspond with the following colour bar test pattern: colour bar 100/0/75/0 (test pattern *b* of CCIR Recommendation 471) for 625/50 PAL system and 75/7.5/75/7.5 (test pattern *c* of CCIR Recommendation 471) for 525/60 NTSC and PAL-M system.

The test pattern values are shown in Figure 1, page 9, and Table I.

For measurements with PAL systems, the phase of the (R-Y) component of the test signal should be switched from line to line in correspondence to the PAL phase.

The test signal levels are selected to minimize the contribution of moiré to the chrominance noise measurement in NTSC and PAL direct colour recording systems.

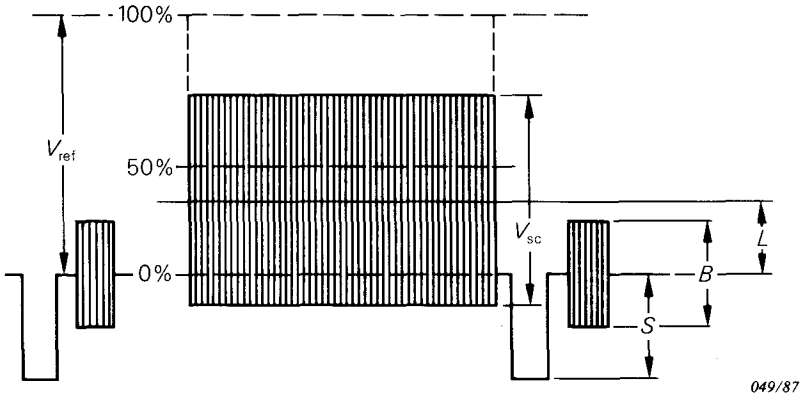

FIG. 1. – Test pattern waveform.

TABLE I

Test pattern values

	625/50 PAL (75% amplitude, 0% set-up)		525/60 NTSC/PAL-M (75% amplitude, 7.5% set-up)	
Luminance level	L	157 mV	202 mV	153 mV†
Colour subcarrier level	V_{sc}	664 mV p-p	626 mV p-p	714 mV p-p†
Sync level	S	300 mV	286 mV	
Burst level	B	300 mV p-p	286 mV p-p	
Reference level	V_{ref}	700 mV p-p	714 mV p-p	

† See Note 1 to Table IV.

2.1.2 In a PAL system there are some situations where it is more convenient for the phase of the test signal not to be phase switched.

In this case, a test signal with the levels of Table I, and having an unswitched chroma phase of –(B–Y), should be used.

2.1.3 When measuring VTR's having an automatic gain control circuit, a white signal with a duration of two lines within the vertical blanking interval after every field pulse shall be added to the video signal.

2.2 *Chrominance signal-to-noise ratio*

This method applies to NTSC and PAL colour video signals. The chrominance signal-to-noise (S/N) ratio is separated into amplitude-modulated (AM) chrominance S/N ratio (ratio of reference signal level to amplitude-modulated noise component) and phase-modulated (PM) chrominance S/N ratio (ratio reference signal level to phase modulated noise component). The reference signal level is the voltage (V_{ref}) of the chrominance signal corresponding to 100% amplitude of the non-composite video signal.