Digital Master 931

Digital Master tape for multichannel recording. Specially developed magnetic coating for high mechanical robustness. Highly-polished surface gives optimum error characteristic. Extremely precise tape edges ensure perfect tracking. Fully compatible to IEC Reference Tape.

Audio Studio

EMTEC

Figure 1:
Average signal level (dB)

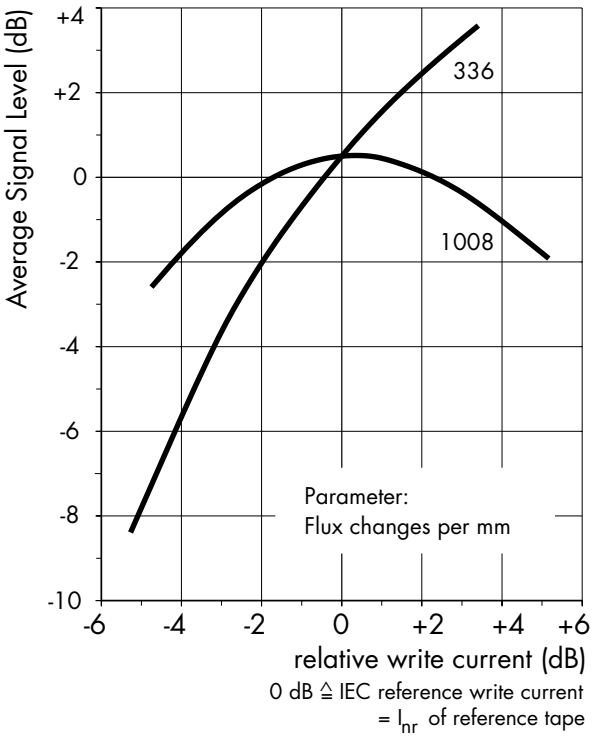


Figure 2:
Relative resolution (dB)

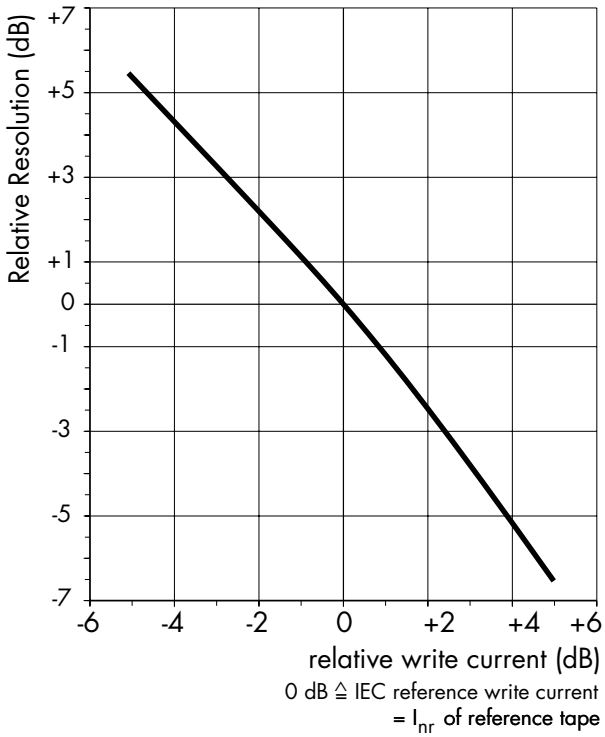


Figure 3:
Evaluation of recommended write current

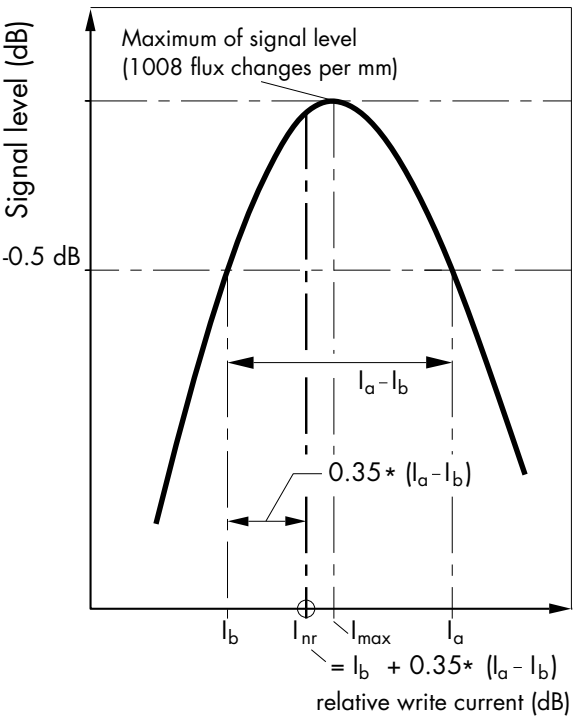
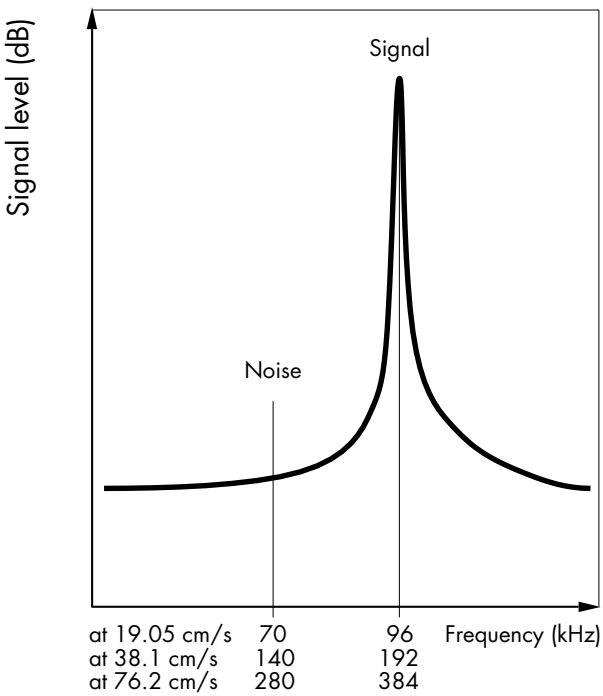


Figure 4:
Signal-to-noise measurement



Technical Data

Digital Master 931

(03) · 06/99

			Ref.
1 Measurement Conditions			1.0
Reference tape	IEC (Batch 8000)		1.1
Tape speed	38.1 cm/s	15 ips	1.1
Test density A	336 Fc/mm		1.1
Test density B	1008 Fc/mm		1.1
Track width	115 µm	4.5 mil	1.1
Test write current	0.0 dB		1.2
2 Signal Characteristics (Record/Replay)			
Recommended write current (cf.Fig. 3)	0.0 dB		2.1
Average signal level, test density A (cf. Fig. 1)	+0.5 dB		2.2
Average signal level, test density B (cf. Fig. 1)	+0.5 dB		2.2
Relative resolution (cf. Fig. 2)	0.0 dB		2.3
Signal-to-Noise Ratio (cf. Fig. 4)	+1.5 dB		2.4
Overwrite characteristic	+1.5 dB		2.5
Signal errors per track	< 6/min		2.6
3 Magnetic Properties			3.0
Oxide orientation	longitudinal		
Coercivity	53.0 kA/m	670 Oe	3.1
Retentivity	140 mT	1400 G	3.2
4 Physical Properties			
Base material	Polyester		
Tape width	12.66 mm $^{+0}_{-0,02}$	1/2 in	4.1
	25.37 mm $^{+0}_{-0,04}$	1 in	
Tape width variations	< 6 µm	< 0.24 mil	
Thicknesses (nominal)			
Total	27.0 µm	1.1 mil	4.2
Coating	6.0 µm	0.24 mil	4.3
Back coating	1.5 µm	0.06 mil	4.4
Base film	19.5 µm	0.77 mil	4.5
Static longitudinal curvature	< 5 mm/m		4.6
Yield strength F5*	75 N		4.7
Breaking tensile strength*	≥ 90 N		4.8
*per 25.4 mm tape width			
5 Other Properties			
Storage temperature, unrecorded	-20 °C to +55 °C -2 °F to +130 °F		5.1
Operating temperature	-20 °C to +50 °C +5 °F to +120 °F		5.2
Surface resistance			
Coating	< 10,000 MΩ	< 10 GΩ	5.3
Back coating	< 100 kΩ		5.3
Translucence	< 1 %		5.4

Notes

1.0 The data in this publication are in accordance with test methods of
- "DIS 60 A(CO) 139 IEC (Future IEC Publication 1120-4): Digital audio tape recorder reel-to-reel system, using 6.3 mm magnetic tape, for professional use";
- IEC 94, part 4

In as far as any test method is not part of these publications, DIN or IEC methods have been used.

1.1 Primary reference tape and measurement conditions are in accordance with DIS 60A(CO) 139 IEC.

1.2 The test write current equals the recommended write current of the reference tape. Further measurements are done on this condition

2.1 Recommended write current is defined as follows:
-Test recording B
-evaluate write current I_{max} causing maximum output signal level
-evaluate write current Ia ($I_a > I_{max}$) causing an output signal level equal to -0.5 dB of the maximum level
-evaluate write current Ib($I_b < I_{max}$) causing an output signal level equal to -0.5 dB of the maximum level
-recommended write current I_{nr} is $I_{nr} = I_b + 0.35 * (I_a - I_b)$
The figure shown is the ratio of recommended write currents evaluated for tape under test and reference tape.

2.2 Average signal level is found as follows:
-measure at least 76 mm (3 in) along the tape
-using reference tape, measure root mean square output voltages at test densities A and B (= standart reference level)
-repeat procedure, using tape under test
-evaluate the ratio of standard reference level and output signal level of tape under test

2.3 Relative resolution is defined as follows:
-using reference tape, evaluate:
-average signal level $d0_a$ at test density A
-average signal level $d0_b$ at test density B
-calculate resolution $d0 = d0_b - d0_a$
-using tape under test, evaluate:
-average signal level da at test density A
-average signal level db at test density B
-calculate resolution $d = d_b - d_a$
-calculate relative resolution $D = d - d0$

2.4 The relative average signal level to noise ratio at 38.1 cm/s (15 ips) is calculated according DIS 60A(CO) 139 IEC as follows:
-record on tape under test a square wave of frequency 192 kHz
-measure noise level at a nominal frequency of 140 kHz with a bandwidth of 200 Hz ... 500 Hz
-calculate the signal-to-noise ratio m [dB]
-repeat the same measurements using reference tape
-calculate the signal-to-noise ratio m0 [dB]
-relative average signal level to noise ratio results from $M = m - m0$

2.5 Overwrite characteristic is defined as follows:
-record on tape using test density A
-overwrite the same portion of the tape using test density B
-calculate the attenuation ratio of the residual average signal level (after overwriting)
-calculate the difference of attenuation ratio figures evaluated at tape under test and reference tape.

2.6 Measured on a half-inch recorder at 76.2 cm/s (30 ips) using the DASH format; measuring time 60 min. The figure shown is the mean value.

3.0 The measurements are made by means of magnetic field having a strength of 200 kA/m (equal to 2.500 Oe)

3.1 Coercivity is that magnetic field under whose influence the magnetization of a magnetically saturated tape is reduced to zero.

3.2 The remanent saturation flux specifies the remaining tape flux after the tape has been subjected to saturation magnetization.

4.1 Tape width is measured as follows:
-place tape without tension and cover with glass
-measure tape width at at least five different positions
-calculate the arithmetical average of results.

4.2 Total tape thickness is measured as follows:
-make ten measurements at intervals of approximately 1m (3ft) along the tape
-the figure shown is the arithmetical average of the ten measurement results.

4.3 Coating thickness is measured as follows:
-measure total tape thickness according note 4.2
-remove magnetic coating and measure again
-calculate the difference between total tape thickness and the arithmetical average of the ten measurement results.

4.4 Back coating thickness is measured analogously to note 4.3.

4.5 Base film thickness is measured analogously to note 4.3.

4.6 Static longitudinal curvature is measured according to IEC 94 part 4, clause 5.3. Two tape samples of >1m length are allowed to unroll and assume their curvature on a flat surface. The maximum deviation of the edge of the tape from a straight line joining the extremities of the tape sample is defined as the static longitudinal curvature.

4.7 The yield strength (F 5%) is defined according to IEC 735 as follows:
-use a sample test length of 200 mm
-use an elongation rate of 100 mm/min
-evaluate the force necessary to produce 5% elongation.

4.8 Breaking tensile strength is the force to get the breaking point of a tape sample, according to IEC 735

5.1 Changing environmental conditions due to dew point require appropriate conditioning of the tape. Condensation is to be avoided.

5.2 Operating temperature depends mainly on the equipment used.

5.3 According to IEC 735 surface resistance is measured as follows:
-place two electrodes at a distance equal to tape width
-place the test sample across the two electrodes
-apply a defined load to both ends of the tape
-the figure given is the electrical resistance.

5.4 Optical properties are measured according to IEC 94, part 4, clause 5.9 which refers to ISO 4057; light wave length has to be 800...900 nm.

All data given in the specification are subject to change without prior notice due to technical progress.

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