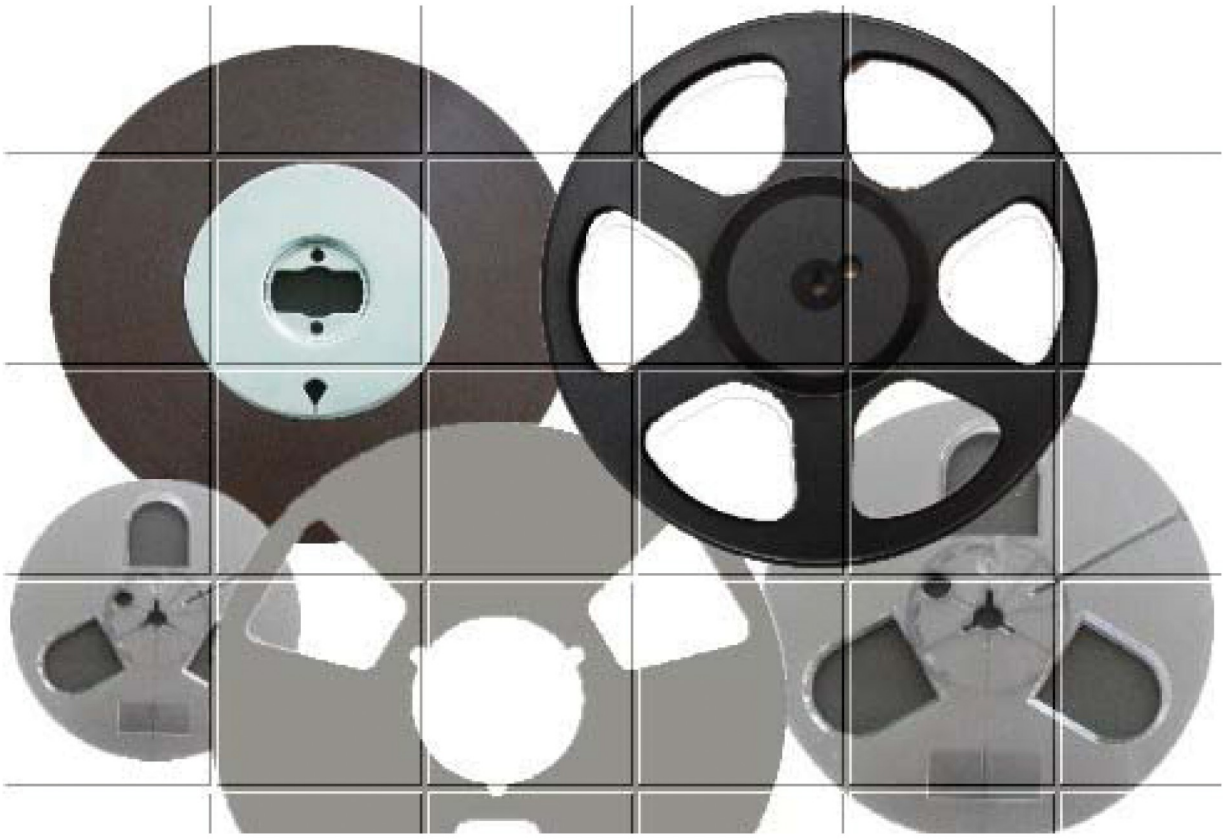
(03) 04/06

Professional Audio LPR 35

1/4 inch long play standard bias studio tape with black backcoating,
Derived from SM 911.
Designed specifically for institutional and semi professional
- low speed recording (7,5 and 3,75 ips),

Offering
- wide dynamic range,
- high level uniformity up to the highest frequencies
- excellent winding properties.



Audio Studio

RMG International

Technical Data Professional Audio LPR 35

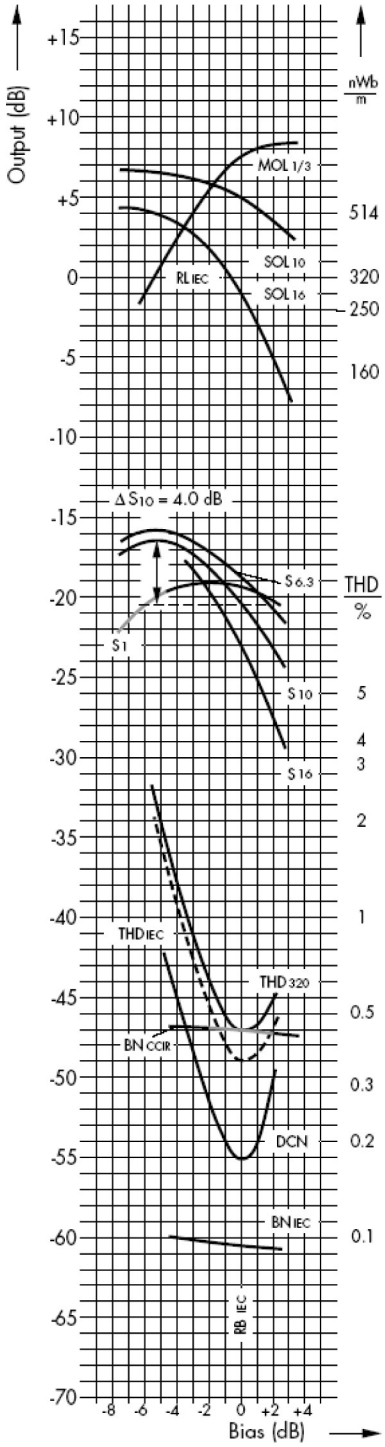
(03) 04/06

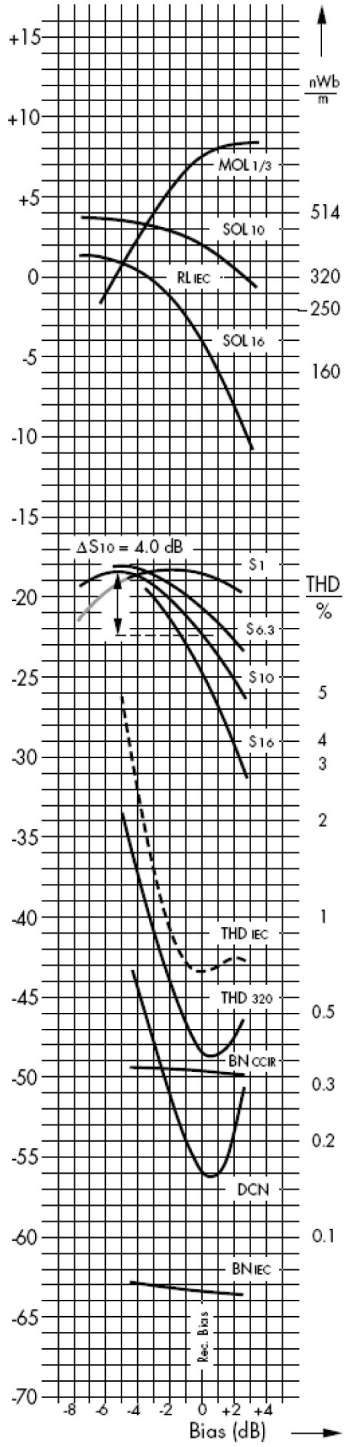
1. **Recording Performance Specifications** (depending on bias settings)

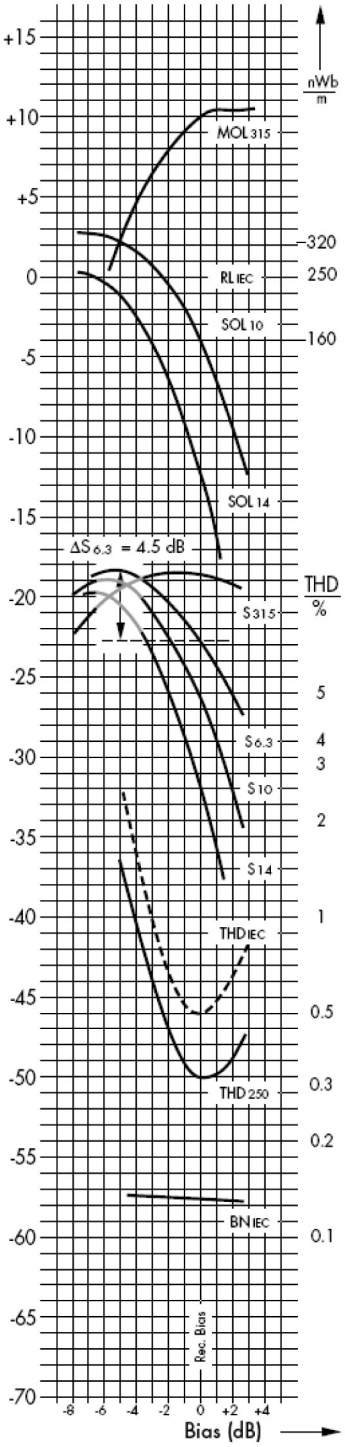
Tape speed	19.05 cm/s
Recording head gap length	7.0 µm
Playback head gap length	3.0 µm
Equalisation	70 µs
Reference level	320 nWb/m

Tape speed	19.05 cm/s
Recording head gap length	7.0 µm
Playback head gap length	3.0 µm
Equalisation	50 + 3180 µs
Reference level	320 nWb/m

Tape speed	9.53 cm/s
Recording head gap length	7.0 µm
Playback head gap length	3.0 mm
Equalisation	90 + 3180 µs
Reference level	250 nWb/m







2. Measurement conditions

Tape speed		**19.05 cm/s 7.5 in/s**	**19.05 cm/s 7.5 in/s**	**9.53 cm/s 3.75 in/s**	
Recording head					**ref.**
	Gap length	7.0 µm	7.0 µm	7.0 µm	1.1
	Track width	6.3 mm	6.3 mm	6.3 mm	
Playback head					
	Gap length	3.0 µm	3.0 µm	3.0 µm	1.1
	Track width	2.575 mm	2.575 mm	2.575 mm	
Playback equalisation		70 µs	50+3180 µs	90+3180 µs	1.2
RL_{IEC}	Reference level (315 kHz)			250 nWb/m	1.3
RL_{IEC}	Reference level (1 kHz)	320 nWb/m	320 nWb/m		1.3
	IEC reference tape: batch	A 342 D	C 264 Z	C 264 Z	
	Reference tape bias definition	Min. THD320	Min. THD320	Min. THD250	1.4
RB_{IEC}	IEC reference bias	0.0 dB			1.5
Rec. Bias	Recommended bias setting	0.0 dB	0.0 dB	0.0 dB	
$\Delta S_{6.3}$ Sensitivity drop for				**4.5 dB**	1.6
ΔS_{10} recommended bias setting		**4.0 dB**	**4.0 dB**		1.6

3. Recording performance specifications

The table below presents the main parameters in the recommended bias setting. All figures given represent nominal values.

$MOL_{315/3}$	Maximum output level at 315 Hz			+10.0 dB	2.1
$MOL_{1/3}$	Maximum output level at 1 kHz	+7.5 dB	+7.5 dB		2.1
SOL_{10}	Saturation output level at 10 kHz	+5.0 dB	+2.0 dB	-4.0 dB	2.2
SOL_{14}	Saturation output level at 14 kHz			-12.5 dB	2.2
SOL_{16}	Saturation output level at 16 kHz	-1.0 dB	-4.0 dB		2.2
S_{315}	Relative tape sensitivity at 315 Hz			+1.5 dB	2.3
S_1	Relative tape sensitivity at 1 kHz	+1.0 dB	+1.5 dB		2.3
$S_{6.3}$	Relative tape sensitivity at 6,3 kHz	+1.5 dB	+2.0 dB	+1.0 dB	2.3
S_{10}	Relative tape sensitivity at 10 kHz	+1.0 dB	+1.0 dB	+1.0 dB	2.3
S_{14}	Relative tape sensitivity at 14 kHz			+1.5 dB	2.3
S_{16}	Relative tape sensitivity at 16 kHz	+1.0 dB	+1.0 dB		2.3
THD_{250}	Third harmonic distortion level at 250 nWb/m			-50.0 dB	2.4
THD_{250}	Third harmonic distortion factor at 250 nWb/m			0.32 %	2.4
THD_{320}	Third harmonic distortion level at 320 nWb/m	-47.0 dB	-48.5 dB		2.4
THD_{320}	Third harmonic distortion factor at 320 nWb/m	0.44 %	0.40 %		2.4
DCN	DC noise, weighted, rel. RL_{IEC}	-55.0 dB	-56.0 dB		2.5
BN_{IEC}	Bias noise level (IEC 94; A curve)	-60.5 dB	-63.5 dB	-57.5 dB	2.6
BN_{CCIR}	Bias noise level (CCIR 468-3)	-47.0 dB	-50.0 dB		2.6
MOL/BN_{IEC}	Signal to bias noise at 1 kHz	68.0 dB	71.0 dB	67.5 dB	2.7
MOL/BN_{CCIR}	Signal to bias noise at 1 kHz	54.5 dB	57.5 dB		2.7
P	Print-through	56.0 dB	56.0 dB	56.0 dB	2.8

4. Magnetic properties 3.0

				ref.
HC	Coercivity	25.5 kA/m	320 Oe	3.1
BRS	Retentivity	165 mT	1650 G	3.2
ØRS	Saturation flux	1800 nWb/m	180 mM/mm	3.3

5. Physical properties

Base material	Polyester		
Tape width	6.3 mm	1/4 inch	
Tolerances of tape width	+0/-0.06 mm	+0/-2,4 mil	
Base thickness	20.0 µm	0.78 mil	4.1
Coating thickness	11.0 µm	0.43 mil	4.1
Backcoating	black		
Total thickness	35.0 µm	1.38 mil	4.1
Surface resistance of magnetic coating	≤ 50,000 MΩ	≤ 50 GΩ	4.2
Surface resistance of matt back	≤ 100 kΩ		
Load for elongation of 3% (F_3)	≥ 17 N	≥ 79 MPa	4.3
Load for elongation of 5% (F_5)	≥ 20 N	≥ 92 MPa	4.3
Breaking tensile strength (6.3 mm tape width)	≥ 50 N	≥ 225 MPa	4.4

6. References

Data in this publication are based on test methods of IEC Publication 94, Part 5. In as far as any test method is not part of this publication, reference has been made.

1.1 Measurement method according to IEC 94, using the IEC standard reference heads for professional application. For this purpose, recording heads with a gap length of 7 µm are recommended. These magnetic heads have been used for domestic recording type measurements, since appropriate heads are still under discussion.

1.2 Playback equalization on the tape testing equipment is adjusted to provide a flat frequency response of the output voltage when compared with the frequency response section of the appropriate IEC calibration tape (time constants t1 = 70 µs or t1 + t2 = 50+3180 µs resp. at tape speed 19.05 cm/s, t1+t2= 90+3180 µs at tape speed 9.53 cm/s).

1.3 RL_{IEC} (Reference Level): The reference level 320 nWb/m or 250 nWb/m resp. corresponds with the reference level section of the IEC calibration tape used.

1.4 Reference tape bias definition: Using the relevant IEC calibration tape and the standard reference heads, the bias current providing the minimum third harmonic distortion level at the reference level (signal frequency 1 kHz) is the reference bias setting. - IEC reference bias definition for domestic recording, using reference tape C 264 Z, is still under discussion. Appropriately, the bias current providing the minimum third harmonic distortion level at the reference level (signal frequency 315 Hz) is the reference bias setting.

1.5 RB_{IEC} (IEC Reference Bias): This data represents the bias ratio of the relevant IEC reference tape and the tape under test at 19.05 cm/s.

1.6 $\Delta S_{6.3}$, ΔS_{10} (Sensitivity drop for recommended bias setting): Operationally, the recommended bias is set with an input signal of 10 kHz (19.05 cm/s) or 6.3 kHz (9.53 cm/s) at -20 dB. Based on the sensitivity curve's $\Delta S_{6.3}$ or S10 resp. peak, the bias is increased until the playback level is reduced by the given value $\Delta S_{6.3}$ or ΔS_{10} resp. (see graph).

2.1 $MOL_{315/3}$, $MOL_{1/3}$ (Maximum Output Level): Output level at 315 Hz (9.53 cm/s) or 1 kHz (19.05 cm/s) relative to reference level RL IEC, with a third harmonic distortion factor of 3 % or THD = -30.5 dB.

2.2 SOL_{10}, SOL_{14}, SOL_{16} (Saturation Output Level): Output level at 10 kHz, 14 kHz or 16 kHz respectively, at which saturation occurs, relative to reference level RL_{IEC}.

2.3 S_{315}, S_{1}, $S_{6.3}$, S_{10}, $S1_{4}$, S_{16} (Sensitivity): The sensitivity curves were recorded using a constant current with no equalisation. The magnetic tape's 1 kHz (19.05 cm/s) or 315 Hz (9.53 cm/s) input signal is approximately 20 dB below the reference level RL_{IEC}. In accordance with IEC publication 94 the values for relative tape sensitivity refer to those of the relevant reference tape (batch A 342 D or C 264 Z resp.) at its own reference bias. – The distance between the sensitivity curves S_{315} or S_{1} and $S_{6.3}$, S_{10}, S_{14} and S_{16} resp. reflects the recording equalisation necessary to achieve a flat frequency response.