

# MAGNETIC REFERENCE LABORATORY, INC.

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## Short Calibration Tapes with Chromatic Sweep

### INTRODUCTION

The "best" test signal to use for calibrating your tape reproducers depends on the measurement equipment that you have, the flexibility of the adjustments on your tape reproducers, and the level of service work being done.

Altho there are many fancy read-out systems that might make your calibration work easier and quicker (for instance, an oscilloscope, graphic level recorder, or real-time analyzer; or a system from Sound Technology or Audio Precision), they are all rather expensive, so most studios use the program level meters ("vu meters") on the tape recorders themselves for routine calibrations.

Altho a few tape reproducers have several equalization adjustments each for the high- and low-frequency response, most have one high-frequency response adjustment and one low-frequency response adjustment. So if the transport is properly aligned mechanically (tape tension, head contact, and azimuth adjustment), and you set the high-frequency response to 0 dB at 10 kHz, there's not much you can do about the response at 4 kHz or at 20 kHz. The exception is that if the maximum of the response is at around 10 kHz, drooping to say -1 dB at 4 kHz and at 16 kHz, for the best average flatness you would probably set the 10 kHz response not to 0 dB, but to around +0.5 dB.

Finally, altho a "sick" reproducer, or one with newly replaced heads, motors, or electronics, might require extensive readjustments, most reproducer calibrations are just a confirmation of performance, or at most a minor readjustment.

For all of these reasons, the traditional MRL "Multifrequency Calibration Tape" may be overkill for your purposes—too many tones, too long to play thru, too much money. For you, we now offer these Short Calibration Tapes with a 1 kHz tone for calibrating gain,

a 10 kHz tone for calibrating phase (azimuth adjustment) and the high-frequency equalizer, optionally a 100 Hz tone for the low-frequency equalizer, and a Chromatic Sweep (described below) for verifying the response over the whole audio range. All are recorded with fringing compensation; with 250- or 355-nWb/m reference fluxivity; and 4- or 8-minute duration at a single tape speed (see other side), or 5.5- or 11-minute duration at two speeds, 15 and 30 in/s, below.

See "Choosing and Using MRL Calibration Tapes for Audio Tape Recorder Standardization", MRL Publication Choo&U, for information on choosing and converting between different equalizations and levels, descriptions of other test signals that are available from MRL, and notes on using Calibration Tapes.

### THE CHROMATIC SWEEP

Frequency Range: . . . . . 32 Hz ... 20 kHz  
Voice Announcements: . . . . . At each octave  
Steps: . . . . . Musical semitone (1/12th octave)  
Reference Frequency: . . . . . 1000 Hz  
Duration at Each Frequency: . . . . . 670 ms  
Total Duration of Sweep. . . . . 110 s (1 min 50 s)

The voice announces the *next* frequency to be heard, except the last announcement (20 kHz) which *follows* the end of the sweep.

If you have absolute pitch on A = 440 Hz, you will notice that this scale is about C th tone sharp, because the reference frequency is 1000 Hz, making A = 447 Hz instead of 440 Hz.

The duration of the tones (670 ms) is sufficient to read the individual levels on a vu meter. More typically you would probably just note, for instance, that the response drooped 0.5 dB between 4 and 8 kHz, and was -2 dB at 20 kHz.


### Two-Speed Calibration Tapes. (See other side for single-speed tapes in various speeds and equalizations.)

Signals and durations, once at each speed: for 5.5 min (or 11 min) total duration	Medium	5.5 minute Total Duration			(11 minute Total Duration)		
		Catalog Number for Reference Fluxivity of:		List Price	Catalog Number for Reference Fluxivity of:		List Price
		250 nWb/m	355 nWb/m		250 nWb/m	355 nWb/m	
<b>Two-Speed, 15 in/s NAB and 30 in/s AES</b>							
<b>1 kHz, 10 kHz 28 s (105 s) ea, Chromatic Sweep 1.8 (1.8) min</b>	¼ in	299-222-482-110	299-222-512-116	130 \$	299-222-482-136	299- 222-512-132	200 \$
	½ in	399-222-482-119	399-222-512-115	200 \$	399-222-482-135	399- 222-512-131	310 \$
	1 in	499-222-482-118	499-222-512-114	375 \$	499-222-482-134	499- 222-512-130	565 \$
	2 in	599-222-482-117	599-222-512-113	515 \$	599-222-482-133	599- 222-512-139	805 \$
<b>1 kHz, 10 kHz, 100 Hz 18 s (70 s) ea, Chromatic Sweep 1.8 (1.8) min</b>	¼ in	299-224-482-114	299-224-512-110	130 \$	299-224-482-130	299- 224-512-136	200 \$
	½ in	399-224-482-113	399-224-512-119	200 \$	399-224-482-139	399- 224-512-135	310 \$
	1 in	499-224-482-112	499-224-512-118	375 \$	499-224-482-138	499- 224-512-134	565 \$
	2 in	599-224-482-111	599-224-512-117	515 \$	599-224-482-137	599- 224-512-133	805 \$
<b>Two-Speed, 15 in/s IEC and 30 in/s AES</b>							
<b>1 kHz, 10 kHz 28 s (105 s) ea, Chromatic Sweep 1.8 (1.8) min</b>	¼ in	299-223-482-117	299-223-512-113	130 \$	299-223-482-133	299- 223-512-139	200 \$
	½ in	399-223-482-116	399-223-512-112	200 \$	399-223-482-132	399- 223-512-138	310 \$
	1 in	499-223-482-115	499-223-512-111	375 \$	499-223-482-131	499- 223-512-137	565 \$
	2 in	599-223-482-114	599-223-512-110	515 \$	599-223-482-130	599- 223-512-136	805 \$
<b>1 kHz, 10 kHz, 100 Hz 18 s (70 s) ea, Chromatic Sweep 1.8 (1.8) min</b>	¼ in	299-225-482-111	299-225-512-117	130 \$	299-225-482-137	299- 225-512-133	200 \$
	½ in	399-225-482-110	399-225-512-116	200 \$	399-225-482-136	399- 225-512-132	310 \$
	1 in	499-225-482-119	499-225-512-115	375 \$	499-225-482-135	499- 225-512-131	565 \$
	2 in	599-225-482-118	599-225-512-114	515 \$	599-225-482-134	599- 225-512-130	805 \$


Prices are in US \$, and do not include shipping or applicable taxes.

Prices may be changed without notice.

**Single-Speed Chromatic Sweep Calibration Tapes. (See other side for two-speed tapes.)**

Medium	Tape Speed	Equalization Standard	Level of Recorded Signals	4 minutes Total Duration			8 minutes Total Duration		
				Catalog Number for Reference Fluxivity of:		List Price	Catalog Number for Reference Fluxivity of:		List Price
				250 nWb/m ("+3 dB")	355 nWb/m ("+6 dB")		250 nWb/m ("+3 dB")	355 nWb/m ("+6 dB")	
<b>Signals and Durations</b> 				<b>1 kHz &amp; 10 kHz 1 min ea., Chromatic Sweep 1.8 min</b>			<b>1 kHz &amp; 10 kHz 3 min ea., Chromatic Sweep 1.8 min</b>		
1/4 in	3.75 in/s	IEC & NAB	-10 dB	221-286-382-103	221-286-412-109	100 \$	221-286-382-129	221-286-412-125	140 \$
		IEC (IEC1)	-10 dB	231-286-382-100	231-286-412-106		231-286-382-126	231-286-412-122	
	NAB (IEC2)	-10 dB	233-286-382-106	233-286-412-102	233-286-382-122		233-286-412-128		
	IEC (IEC1)	0 dB	241-286-482-100	241-286-512-106	241-286-482-126		241-286-512-122		
	NAB (IEC2)	0 dB	243-286-482-106	243-286-512-102	243-286-482-122		243-286-512-128		
7.5 in/s	IEC (IEC1)	0 dB	251-286-482-107	251-286-512-103	105 \$	251-286-482-123	251-286-512-129	155 \$	
	AES (IEC2)	0 dB							
1/2 in	3.75 in/s	IEC & NAB	-10 dB	321-286-382-102	321-286-412-108	145 \$	321-286-382-128	321-286-412-124	225 \$
		IEC (IEC1)	-10 dB	331-286-382-109	331-286-412-105		331-286-382-125	331-286-412-121	
	NAB (IEC2)	-10 dB	333-286-382-105	333-286-412-101	333-286-382-121		333-286-412-127		
	IEC (IEC1)	0 dB	341-286-482-109	341-286-512-105	341-286-482-125		341-286-512-121		
	NAB (IEC2)	0 dB	343-286-482-105	343-286-512-101	343-286-482-121		343-286-512-127		
7.5 in/s	IEC (IEC1)	0 dB	351-286-482-106	351-286-512-102	170 \$	351-286-482-122	351-286-512-128	250 \$	
	AES (IEC2)	0 dB							
1 in	3.75 in/s	IEC & NAB	-10 dB	421-286-382-101	421-286-412-107	265 \$	421-286-382-127	421-286-412-123	415 \$
		IEC (IEC1)	-10 dB	431-286-382-108	431-286-412-104		431-286-382-124	431-286-412-120	
	NAB (IEC2)	-10 dB	433-286-382-104	433-286-412-100	433-286-382-120		433-286-412-126		
	IEC (IEC1)	0 dB	441-286-482-108	441-286-512-104	441-286-482-124		441-286-512-120		
	NAB (IEC2)	0 dB	443-286-482-104	443-286-512-100	443-286-482-120		443-286-512-126		
7.5 in/s	IEC (IEC1)	0 dB	451-286-482-105	451-286-512-101	305 \$	451-286-482-121	451-286-512-127	475 \$	
	AES (IEC2)	0 dB							
2 in	7.5 in/s	IEC (IEC1)	-10 dB	531-286-382-107	531-286-412-103	375 \$	531-286-382-123	531-286-412-129	565 \$
		NAB (IEC2)	-10 dB	533-286-382-103	533-286-412-109		533-286-382-129	533-286-412-125	
	IEC (IEC1)	0 dB	541-286-482-107	541-286-512-103	541-286-482-123		541-286-512-129		
	NAB (IEC2)	0 dB	543-286-482-103	543-286-512-109	543-286-482-129		543-286-512-125		
	IEC (IEC1)	0 dB	551-286-482-104	551-286-512-100	415 \$		551-286-482-120	551-286-512-126	
7.5 in/s	AES (IEC2)	0 dB							

<b>Signals and Durations</b> 				<b>1 kHz, 10 kHz &amp; 100 Hz 45 s ea., Chromatic Sweep 1.8 min</b>			<b>1 kHz, 10 kHz, 100 Hz 2 min ea, Chromatic Sweep 1.8 min</b>		
1/4 in	3.75 in/s	IEC & NAB	-10 dB	221-287-382-100	221-287-412-106	100 \$	221-287-382-126	221-287-412-122	140 \$
		IEC (IEC1)	-10 dB	231-287-382-107	231-287-412-103		231-287-382-123	231-287-412-129	
	NAB (IEC2)	-10 dB	233-287-382-103	233-287-412-109	233-287-382-129		233-287-412-125		
	IEC (IEC1)	0 dB	241-287-482-107	241-287-512-103	241-287-482-123		241-287-512-129		
	NAB (IEC2)	0 dB	243-287-482-103	243-287-512-109	243-287-482-129		243-287-512-125		
7.5 in/s	IEC (IEC1)	0 dB	251-287-482-104	251-287-512-100	105 \$	251-287-482-120	251-287-512-126	155 \$	
	AES (IEC2)	0 dB							
1/2 in	3.75 in/s	IEC & NAB	-10 dB	321-287-382-109	321-287-412-105	145 \$	321-287-382-125	321-287-412-121	225 \$
		IEC (IEC1)	-10 dB	331-287-382-106	331-287-412-102		331-287-382-122	331-287-412-128	
	NAB (IEC2)	-10 dB	333-287-382-102	333-287-412-108	333-287-382-128		333-287-412-124		
	IEC (IEC1)	0 dB	341-287-482-106	341-287-512-102	341-287-482-122		341-287-512-128		
	NAB (IEC2)	0 dB	343-287-482-102	343-287-512-108	343-287-482-128		343-287-512-124		
7.5 in/s	IEC (IEC1)	0 dB	351-287-482-103	351-287-512-109	170 \$	351-287-482-129	351-287-512-125	250 \$	
	AES (IEC2)	0 dB							
1 in	3.75 in/s	IEC & NAB	-10 dB	421-287-382-108	421-287-412-104	265 \$	421-287-382-124	421-287-412-120	415 \$
		IEC (IEC1)	-10 dB	431-287-382-105	431-287-412-101		431-287-382-121	431-287-412-127	
	NAB (IEC2)	-10 dB	433-287-382-101	433-287-412-107	433-287-382-127		433-287-412-123		
	IEC (IEC1)	0 dB	441-287-482-105	441-287-512-101	441-287-482-121		441-287-512-127		
	NAB (IEC2)	0 dB	443-287-482-101	443-287-512-107	443-287-482-127		443-287-512-123		
7.5 in/s	IEC (IEC1)	0 dB	451-287-482-102	451-287-512-108	305 \$	451-287-482-128	451-287-512-124	475 \$	
	AES (IEC2)	0 dB							
2 in	7.5 in/s	IEC (IEC1)	-10 dB	531-287-382-104	531-287-412-100	375 \$	531-287-382-120	531-287-412-126	565 \$
		NAB (IEC2)	-10 dB	533-287-382-100	533-287-412-106		533-287-382-126	533-287-412-122	
	IEC (IEC1)	0 dB	541-287-482-104	541-287-512-100	541-287-482-120		541-287-512-126		
	NAB (IEC2)	0 dB	543-287-482-100	543-287-512-106	543-287-482-126		543-287-512-122		
	IEC (IEC1)	0 dB	551-287-482-101	551-287-512-107	420 \$		551-287-482-127	551-287-512-123	
7.5 in/s	AES (IEC2)	0 dB							

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