

## 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<sub>4</sub> 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	125 \$	299-222-482-136	299-222-512-132	195 \$
	½ in	399-222-482-119	399-222-512-115	195 \$	399-222-482-135	399-222-512-131	305 \$
	1 in	499-222-482-118	499-222-512-114	370 \$	499-222-482-134	499-222-512-130	560 \$
	2 in	599-222-482-117	599-222-512-113	505 \$	599-222-482-133	599-222-512-139	790 \$
<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	125 \$	299-224-482-130	299-224-512-136	195 \$
	½ in	399-224-482-113	399-224-512-119	195 \$	399-224-482-139	399-224-512-135	305 \$
	1 in	499-224-482-112	499-224-512-118	370 \$	499-224-482-138	499-224-512-134	560 \$
	2 in	599-224-482-111	599-224-512-117	505 \$	599-224-482-137	599-224-512-133	790 \$
<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	125 \$	299-223-482-133	299-223-512-139	195 \$
	½ in	399-223-482-116	399-223-512-112	195 \$	399-223-482-132	399-223-512-138	305 \$
	1 in	499-223-482-115	499-223-512-111	370 \$	499-223-482-131	499-223-512-137	560 \$
	2 in	599-223-482-114	599-223-512-110	505 \$	599-223-482-130	599-223-512-136	790 \$
<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	125 \$	299-225-482-137	299-225-512-133	195 \$
	½ in	399-225-482-110	399-225-512-116	195 \$	399-225-482-136	399-225-512-132	305 \$
	1 in	499-225-482-119	499-225-512-115	370 \$	499-225-482-135	499-225-512-131	560 \$
	2 in	599-225-482-118	599-225-512-114	505 \$	599-225-482-134	599-225-512-130	790 \$

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>		
¼ in	3.75 in/s	IEC & NAB	-10 dB	221-286-382-103	221-286-412-109	95 \$	221-286-382-129	221-286-412-125	135 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	251-286-482-107	251-286-512-103	100 \$	251-286-482-123	251-286-512-129	150 \$	
½ in	3.75 in/s	IEC & NAB	-10 dB	321-286-382-102	321-286-412-108	140 \$	321-286-382-128	321-286-412-124	220 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	351-286-482-106	351-286-512-102	165 \$	351-286-482-122	351-286-512-128	245 \$	
1 in	3.75 in/s	IEC & NAB	-10 dB	421-286-382-101	421-286-412-107	260 \$	421-286-382-127	421-286-412-123	410 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	451-286-482-105	451-286-512-101	300 \$	451-286-482-121	451-286-512-127	470 \$	
2 in	7.5 in/s	IEC (IEC1)	-10 dB	531-286-382-107	531-286-412-103	370 \$	531-286-382-123	531-286-412-129	560 \$
		NAB (IEC2)	-10 dB	533-286-382-103	533-286-412-109		533-286-382-129	533-286-412-125	
	15 in/s	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	
	30 in/s	AES (IEC2)	0 dB	551-286-482-104	551-286-512-100		410 \$	551-286-482-120	
<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>		
¼ in	3.75 in/s	IEC & NAB	-10 dB	221-287-382-100	221-287-412-106	95 \$	221-287-382-126	221-287-412-122	135 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	251-287-482-104	251-287-512-100	100 \$	251-287-482-120	251-287-512-126	150 \$	
½ in	3.75 in/s	IEC & NAB	-10 dB	321-287-382-109	321-287-412-105	140 \$	321-287-382-125	321-287-412-121	220 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	351-287-482-103	351-287-512-109	165 \$	351-287-482-129	351-287-512-125	245 \$	
1 in	3.75 in/s	IEC & NAB	-10 dB	421-287-382-108	421-287-412-104	260 \$	421-287-382-124	421-287-412-120	410 \$
	7.5 in/s	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	
	15 in/s	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	
30 in/s	AES (IEC2)	0 dB	451-287-482-102	451-287-512-108	300 \$	451-287-482-128	451-287-512-124	470 \$	
2 in	7.5 in/s	IEC (IEC1)	-10 dB	531-287-382-104	531-287-412-100	370 \$	531-287-382-120	531-287-412-126	560 \$
		NAB (IEC2)	-10 dB	533-287-382-100	533-287-412-106		533-287-382-126	533-287-412-122	
	15 in/s	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	
	30 in/s	AES (IEC2)	0 dB	551-287-482-101	551-287-512-107		410 \$	551-287-482-127	

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