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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	
Two-Speed, 15 in/s **NAB** and 30 in/s **AES**							
1 kHz, 10 kHz 28 s (105 s) ea, Chromatic Sweep 1.8 (1.8) min	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 $
1 kHz, 10 kHz, 100 Hz 18 s (70 s) ea, Chromatic Sweep 1.8 (1.8) min	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 $
Two-Speed, 15 in/s **IEC** and 30 in/s **AES**							
1 kHz, 10 kHz 28 s (105 s) ea, Chromatic Sweep 1.8 (1.8) min	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 $
1 kHz, 10 kHz, 100 Hz 18 s (70 s) ea, Chromatic Sweep 1.8 (1.8) min	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")	
Signals and Durations ☞				**1 kHz & 10 kHz 1 min ea., Chromatic Sweep 1.8 min**			**1 kHz & 10 kHz 3 min ea., Chromatic Sweep 1.8 min**		
¼ in	**3.75 in/s**	IEC & **NAB**	-10 dB	**221-286-382-103**	**221-286-412-109**		**221-286-382-129**	**221-286-412-125**	
	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**	100 $	**233-286-382-122**	**233-286-412-128**	140 $
	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**	105 $	**251-286-482-123**	**251-286-512-129**	155 $
½ in	**3.75 in/s**	IEC & **NAB**	-10 dB	**321-286-382-102**	**321-286-412-108**		**321-286-382-128**	**321-286-412-124**	
	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**	145 $	**333-286-382-121**	**333-286-412-127**	225 $
	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**	170 $	**351-286-482-122**	**351-286-512-128**	250 $
1 in	**3.75 in/s**	IEC & **NAB**	-10 dB	**421-286-382-101**	**421-286-412-107**		**421-286-382-127**	**421-286-412-123**	
	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**	265 $	**433-286-382-120**	**433-286-412-126**	415 $
	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**	305 $	**451-286-482-121**	**451-286-512-127**	475 $
2 in	**7.5 in/s**	IEC (IEC1)	-10 dB	531-286-382-107	531-286-412-103		531-286-382-123	531-286-412-129	
		NAB (IEC2)	-10 dB	**533-286-382-103**	**533-286-412-109**	375 $	**533-286-382-129**	**533-286-412-125**	565 $
	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**	415 $	**551-286-482-120**	**551-286-512-126**	645 $ $
Signals and Durations ☞				**1 kHz, 10 kHz & 100 Hz 45 s ea., Chromatic Sweep 1.8 min**			**1 kHz, 10 kHz, 100 Hz 2 min ea, Chromatic Sweep 1.8 min**		
¼ in	**3.75 in/s**	IEC & **NAB**	-10 dB	**221-287-382-100**	**221-287-412-106**		**221-287-382-126**	**221-287-412-122**	
	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**	100 $	**233-287-382-129**	**233-287-412-125**	140 $
	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**	105 $	**251-287-482-120**	**251-287-512-126**	155 $
½ in	**3.75 in/s**	IEC & **NAB**	-10 dB	**321-287-382-109**	**321-287-412-105**		**321-287-382-125**	**321-287-412-121**	
	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**	145 $	**333-287-382-128**	**333-287-412-124**	225 $
	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**	170 $	**351-287-482-129**	**351-287-512-125**	250 $
1 in	**3.75 in/s**	IEC & **NAB**	-10 dB	**421-287-382-108**	**421-287-412-104**		**421-287-382-124**	**421-287-412-120**	
	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**	265 $	**433-287-382-127**	**433-287-412-123**	415 $
	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**	305 $	**451-287-482-128**	**451-287-512-124**	475 $
2 in	**7.5 in/s**	IEC (IEC1)	-10 dB	531-287-382-104	531-287-412-100		531-287-382-120	531-287-412-126	
		NAB (IEC2)	-10 dB	**533-287-382-100**	**533-287-412-106**	375 $	**533-287-382-126**	**533-287-412-122**	565 $
	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**	420 $	**551-287-482-127**	**551-287-512-123**	645 $ $

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