

SECTION 5

Reproducer Characteristics

Loop Response

Amplifier Response

The following response curves will supply needed data for the common tape speeds. Both the old (1590 and 120 microsecond) cassette curve and the newer (3180 and 120) are shown. Various combinations can be derived when needed. The "Chrome" and certain high energy cassette tapes employ 70 microseconds for high end equalization with a 3180 microsecond low end equalization. The 7½ ips European curve provides a 70 microsecond top and that curve may be helpful in adjusting a cassette "chrome" equalizer. The 3180 microsecond low end can be seen in the curves for 7½, 15 ips, NAB.

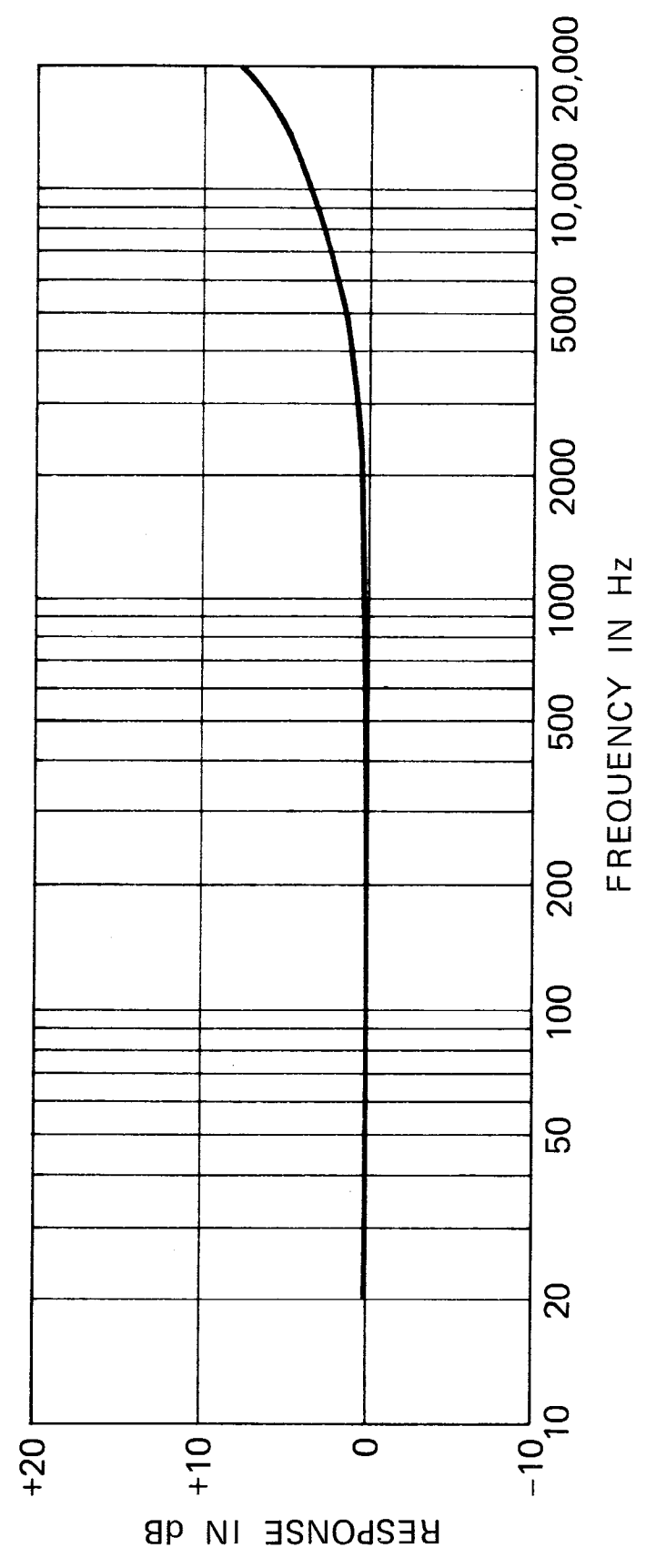
AES STANDARD REPRODUCING CHARACTERISTIC
30 ips (17.5 μ s)

Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

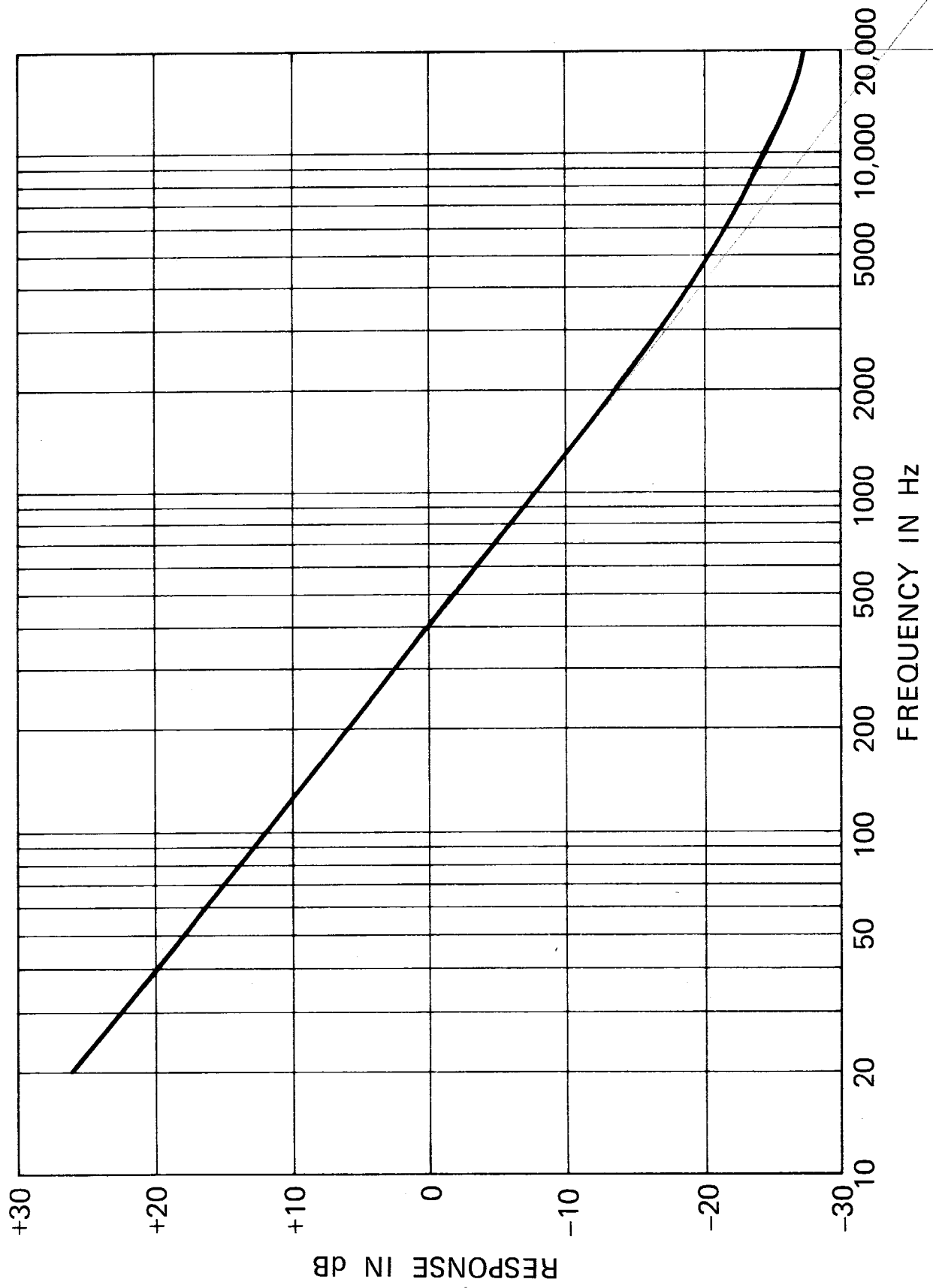
Frequency	Response	Frequency	Response
20 Hz	+ .00002	1.5 kHz	+ .11658
25	.00003	2	.20513
30	.00005	2.5	.31640
40	.00008	3	.44863
50	.00013	4	.76811
60	.00019	5	1.14709
70	.00026	6	1.56944
75	.00030	7	2.02079
80	.00034	7.5	2.25351
90	.00043	8	2.48923
100	.00053	9	2.96541
150	.00118	10	3.44231
200	.00210	11	3.91483
250	.00328	12	3.37943
300	.00472	13	4.83375
400	.00839	14	5.27628
500	.01311	15	5.70619
600	.01866	16	6.12306
700	.02566	17	6.52684
750	.02944	18	6.91765
800	.03348	19	7.29580
900	.04233	20 kHz	+ 7.66168
1 kHz	+ .05220		

AES STANDARD REPRODUCING CHARACTERISTIC

30 ips (17.5 μs)



AES AMPLIFIER PLAYBACK CHARACTERISTIC
30 ips (17.5 μ s)



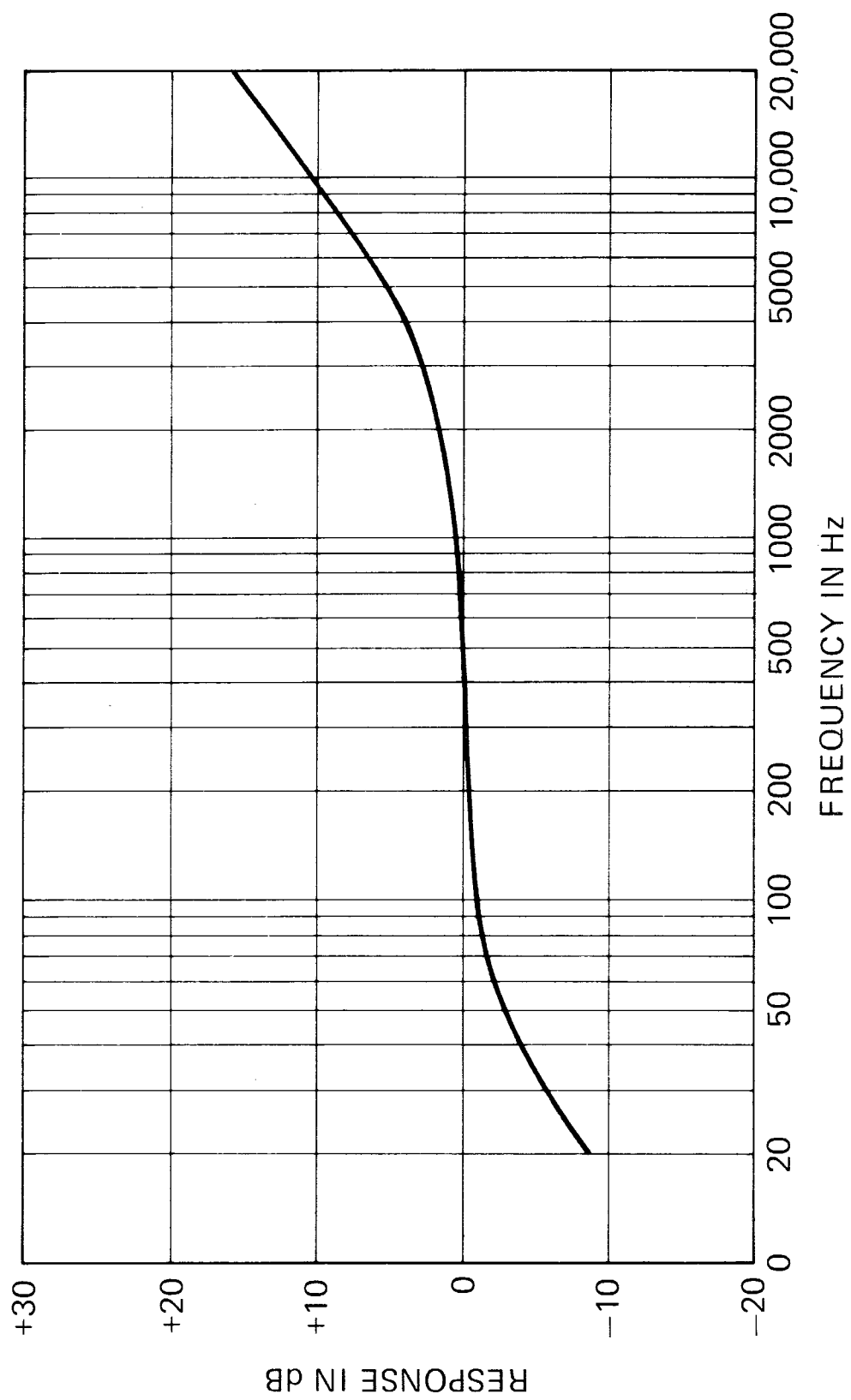
NAB STANDARD REPRODUCING CHARACTERISTIC

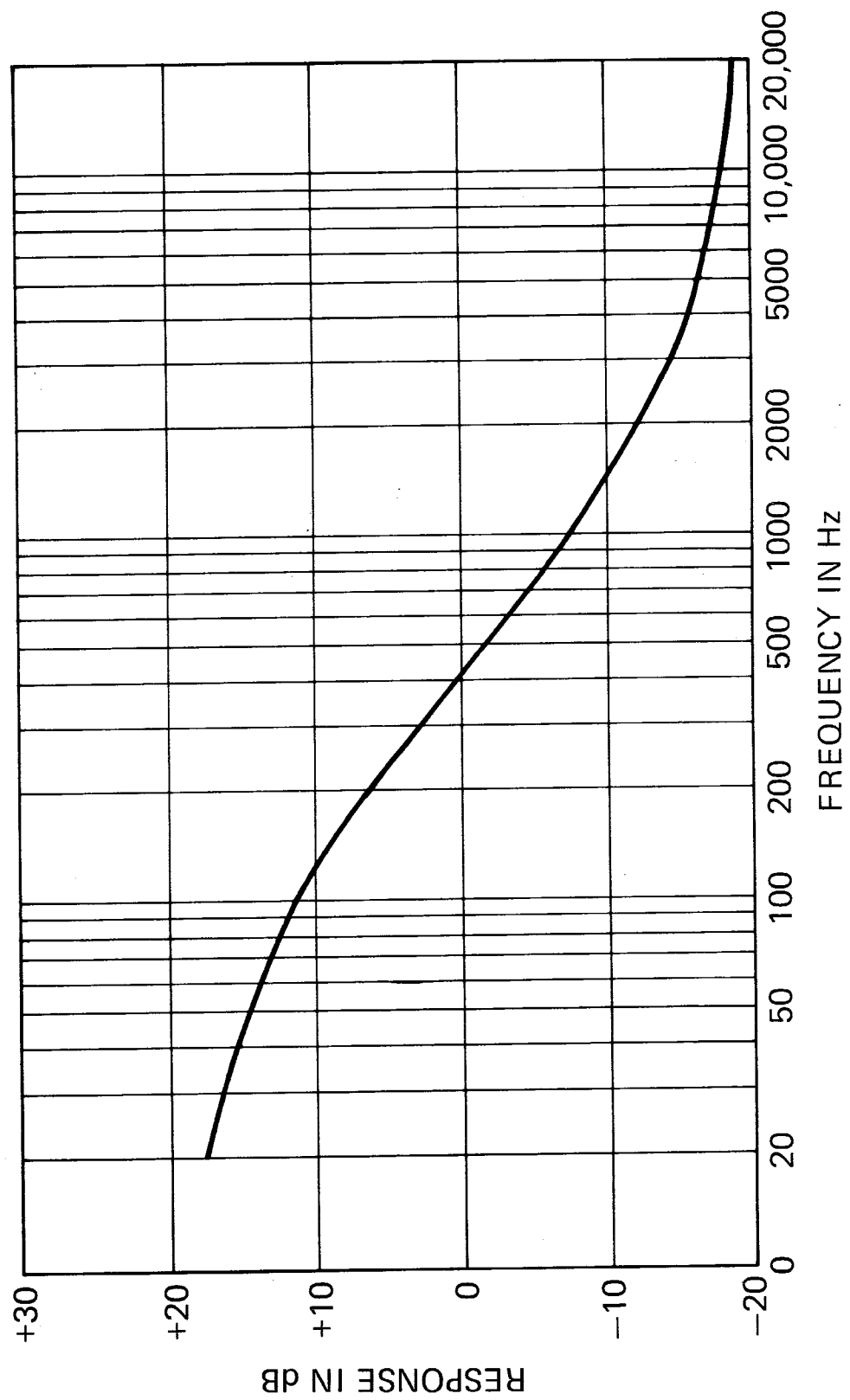
7½ and 15 ips (3180 and 50μs)

Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	- 8.6105	1.5 kHz	+ .86611
25	6.9962	2	1.44235
30	5.7782	2.5	2.08495
40	4.0911	3	2.75941
50	3.01346	4	4.11406
60	2.29219	5	5.39960
70	1.79111	6	6.58272
75	1.59720	7	7.66100
80	1.43173	7.5	8.16331
90	1.16673	8	8.64289
100	.96650	9	9.53957
150	.44878	10	10.36202
200	.24667	11	11.11999
250	.14395	12	11.82185
300	.08081	13	12.47466
400	+ .00058	14	13.08439
500	.06255	15	13.65606
600	.12151	16	14.19392
700	.18296	17	14.70159
750	.21535	18	15.18214
800	.24904	19	15.63825
900	.32060	20 kHz	+ 16.07220
1 kHz	+ .39791 db		

REPRODUCING CHARACTERISTIC, NAB

7.5 and 15 ips (3180 and 50 μ s)

NAB AMPLIFIER PLAYBACK CHARACTERISTIC7.5 and 15 ips (3180 and 50 μ s)

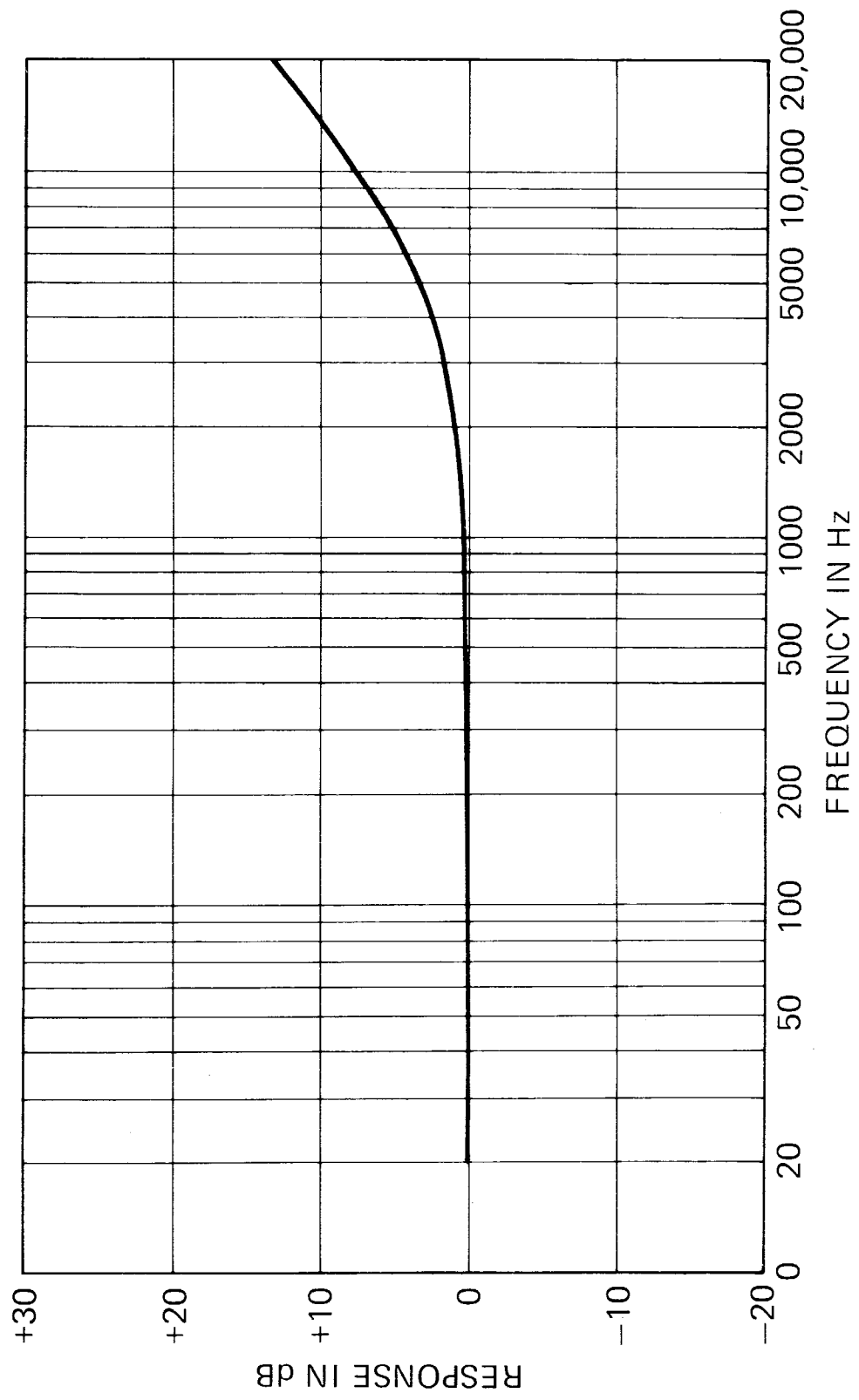
I.E.C./CCIR STANDARD REPRODUCING CHARACTERISTIC

15 and 30 ips (35 μ sec)Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	+ .00008	1.5 kHz	+ .44863
25	.00013	2	.76810
30	.00018	2.5	1.14709
40	.00033	3	1.56943
50	.00052	4	2.48922
60	.00075	5	3.44230
70	.00102	6	4.37943
75	.00118	7	5.27628
80	.00134	7.5	5.70618
90	.00170	8	6.12306
100	.00210	9	6.91765
150	.00472	10	7.66168
200	.00839	11	8.35843
250	.01310	12	9.01178
300	.01886	13	9.62560
400	.03347	14	10.20359
500	.05219	15	10.74911
600	.07496	16	11.26520
700	.10172	17	11.75456
750	.11657	18	12.21960
800	.13239	19	12.66244
900	.16689	20 kHz	+ 13.08497
1 kHz	+ .20513		

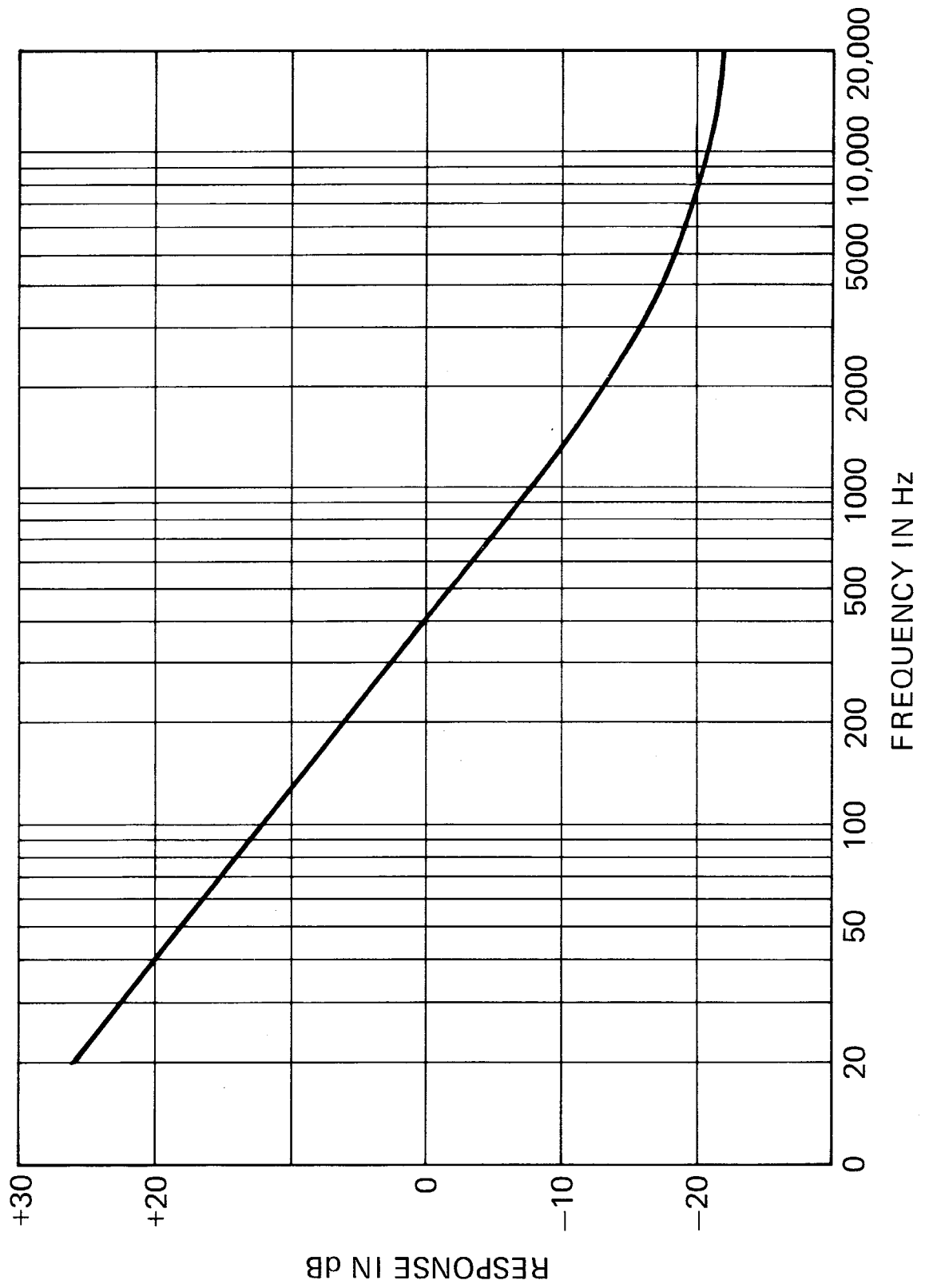
CCIR STANDARD REPRODUCING CHARACTERISTIC

15 and 30 ips (35 μ s)



CCIR AMPLIFIER PLAYBACK CHARACTERISTIC

15 and 30 ips (35 μ s)

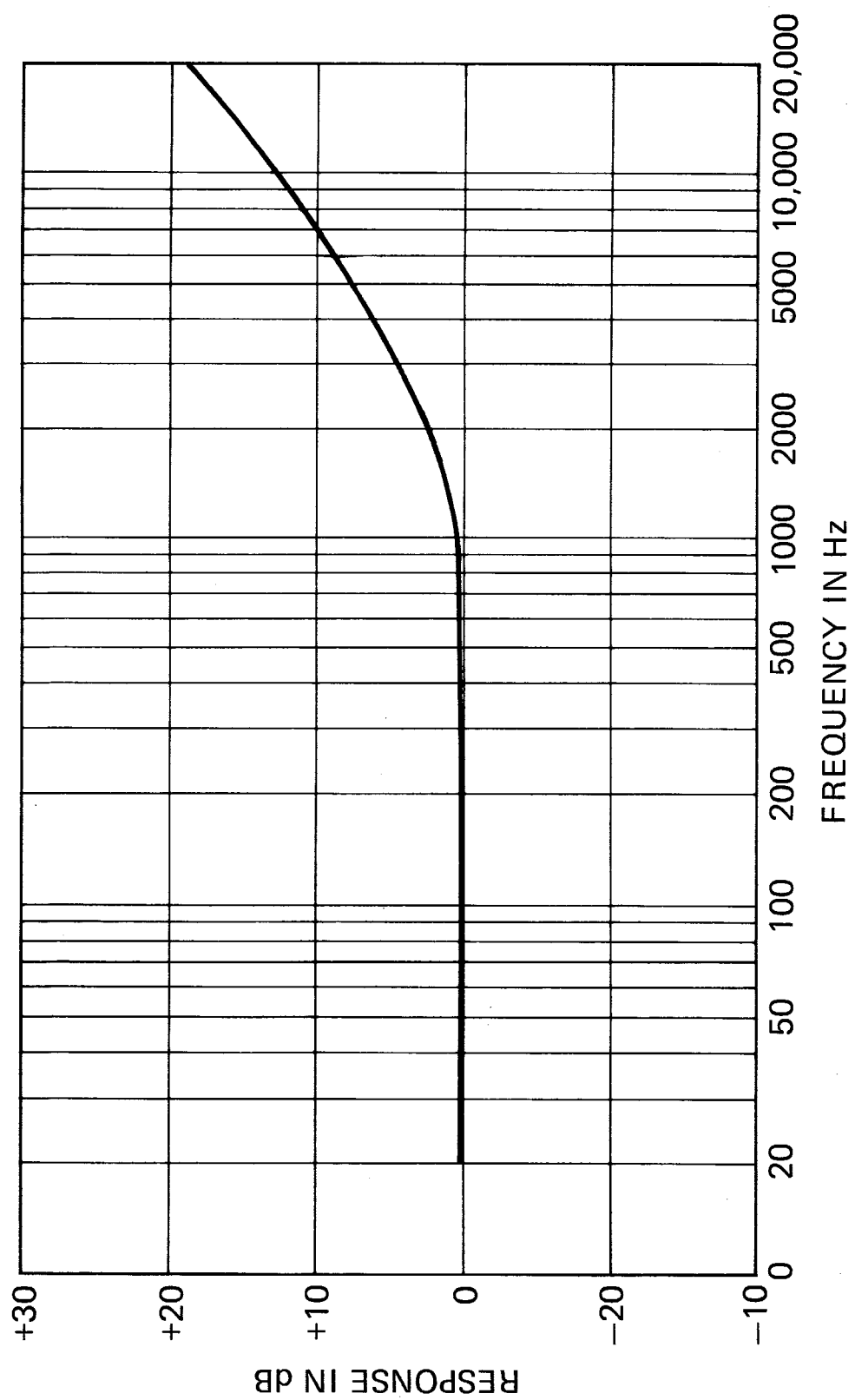


I.E.C./CCIR STANDARD REPRODUCING CHARACTERISTIC

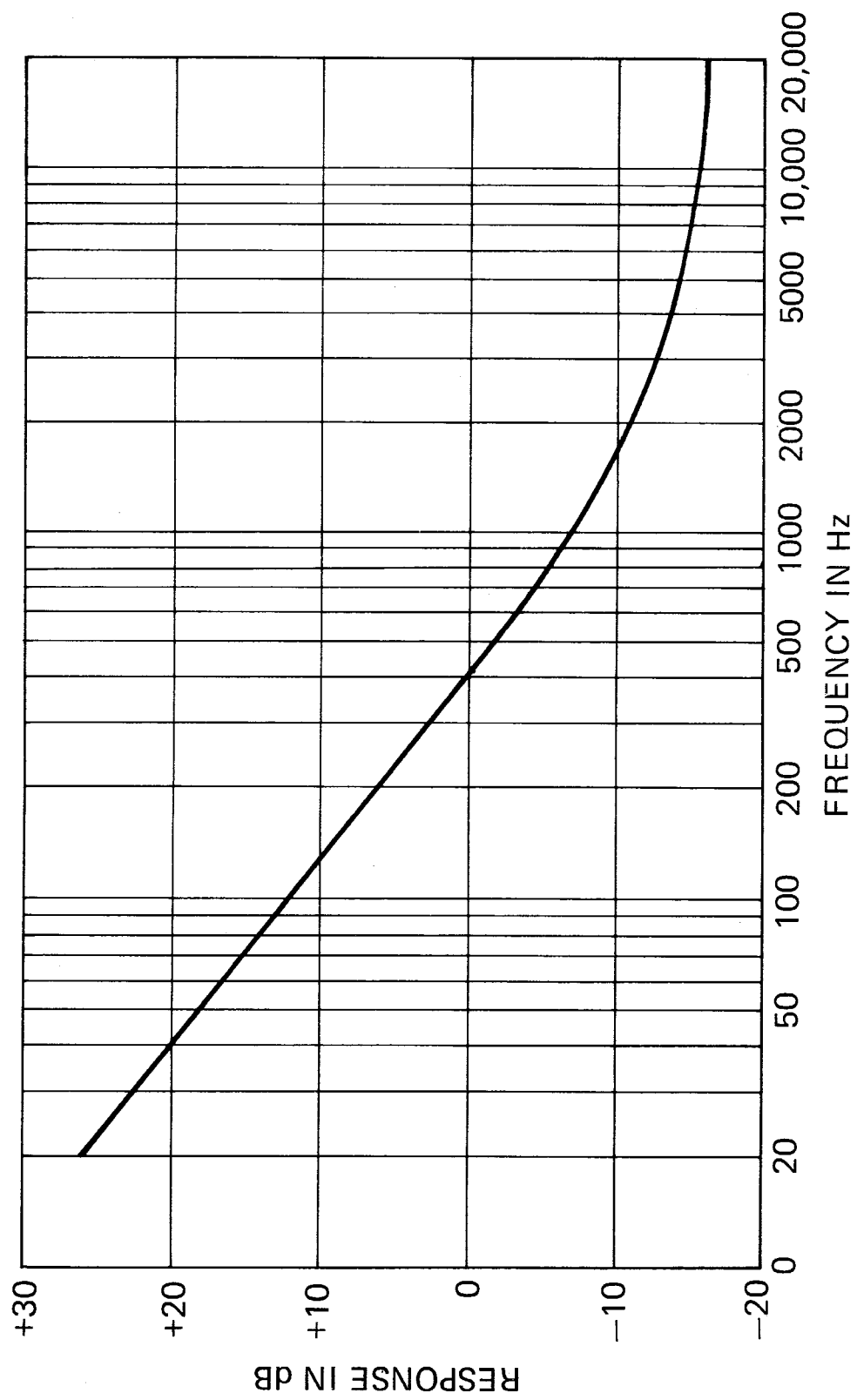
7.5 ips (70 μ sec)Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	+ .00033	1.5 kHz	+ 1.57001
25	.00052	2	2.49006
30	.00075	2.5	3.44335
40	.00134	3	4.38064
50	.00210	4	6.12450
60	.00302	5	7.66326
70	.00411	6	9.01345
75	.00472	7	10.20532
80	.00537	7.5	10.75086
90	.00680	8	11.26697
100	.00839	9	12.22139
150	.01887	10	13.08678
200	.03349	11	13.8774
250	.05222	12	14.60472
300	.07500	13	15.27765
400	.13245	14	15.90356
500	.20522	15	16.48843
600	.29253	16	17.03718
700	.39351	17	17.55394
750	.44882	18	18.04216
800	.50717	19	18.50479
900	.63250	20 kHz	+ 18.94436
1 kHz	+ .76841		

INDUCTION LOOP - CCIR STANDARD REPRODUCING CHARACTERISTIC

7.5 ips (70 μ s)

CCIR AMPLIFIER PLAYBACK CHARACTERISTIC

7.5 ips (70 μ s)

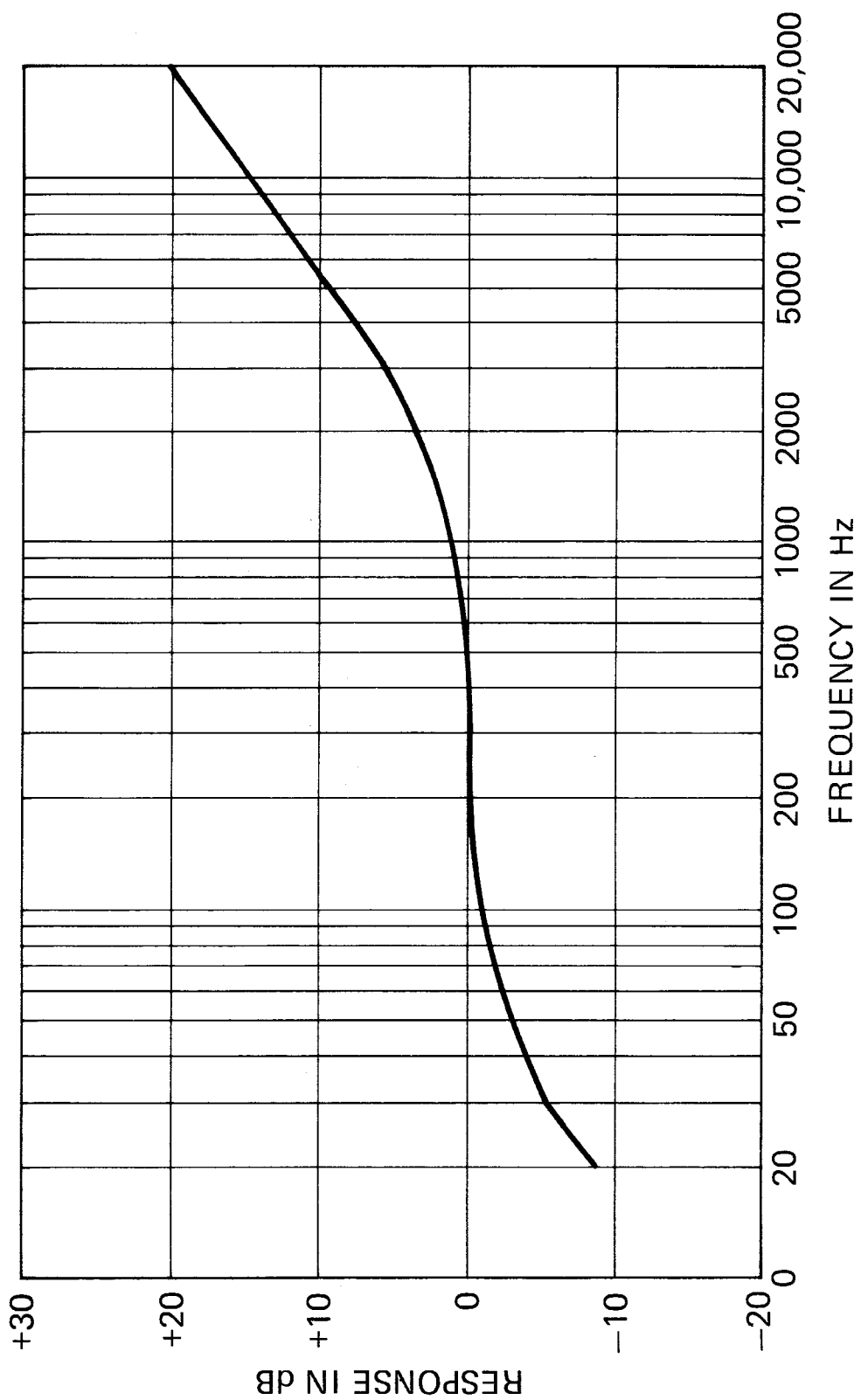
NAB STANDARD REPRODUCING CHARACTERISTIC

$1\frac{7}{8}$ and $3\frac{3}{4}$ ips (3180 and $90\mu s$)

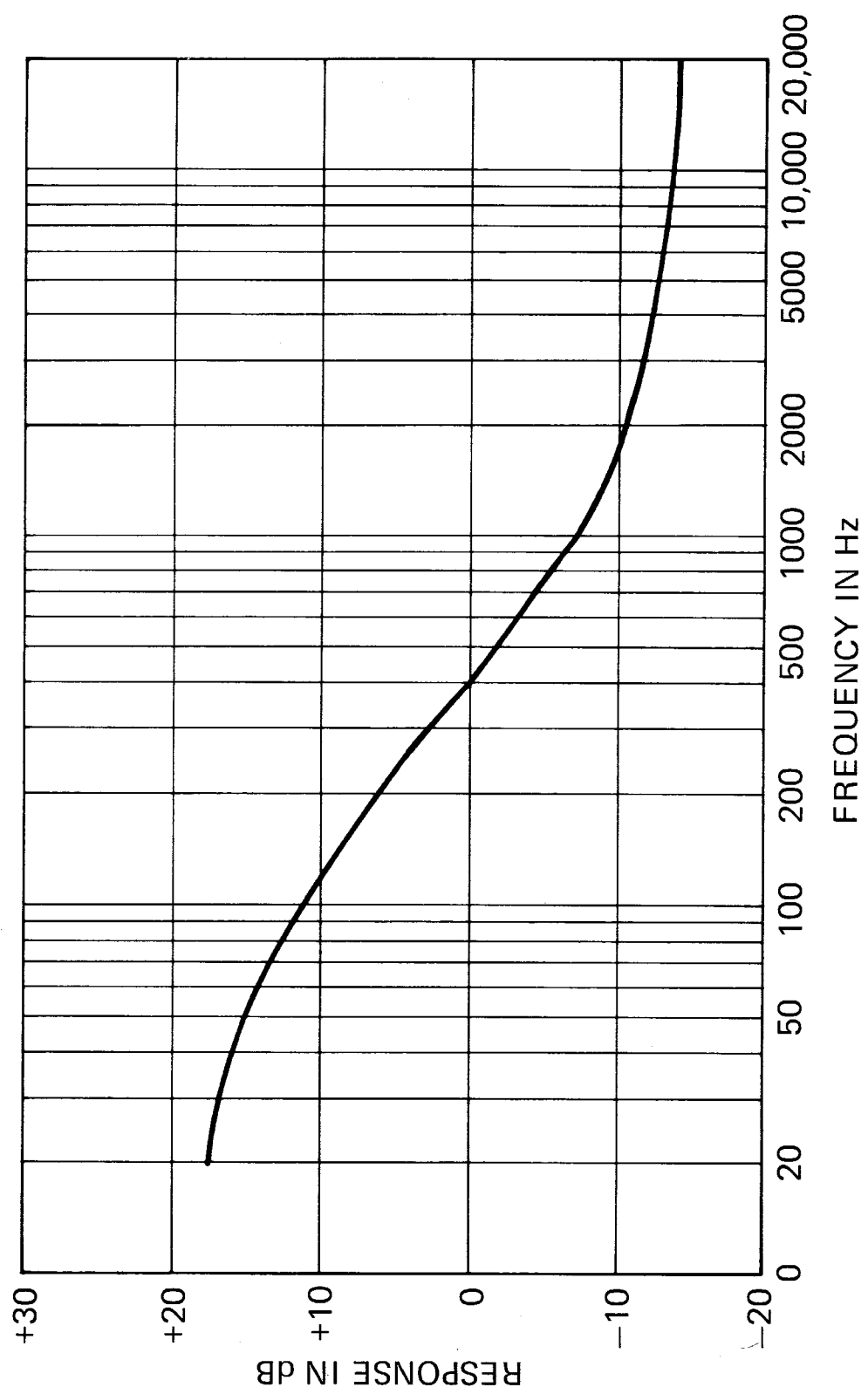
Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	– 8.61011 db	1.5 kHz	+ 2.34917
25	6.99560	2	3.57491
30	5.77733	2.5	4.76743
40	4.08957	3	5.88484
50	3.01106	4	7.86428
60	2.28874	5	9.53927
70	1.78641	6	10.97293
75	1.59180	7	12.21886
80	1.42559	7.5	12.78445
90	1.15897	8	13.31726
100	.95692	9	14.29767
150	.42728	10	15.18207
200	.20858	11	15.98702
250	.08471	12	16.72530
300	+ .00400	13	17.40687
400	.14924	14	18.03969
500	.29071	15	18.63016
600	.44309	16	19.18353
700	.61002	17	19.70412
750	.69905	18	20.19558
800	.79166	19	20.66094
900	.98690	20 kHz	21.10284
1 kHz	1.19413 db		

INDUCTION LOOP - REPRODUCING CHARACTERISTIC, NAB
1.875 and 3.750 ips (3180 and 90 μ s)



NAB AMPLIFIER PLAYBACK CHARACTERISTIC
1.875 and 3.750 ips (3180 and 90 μ s)

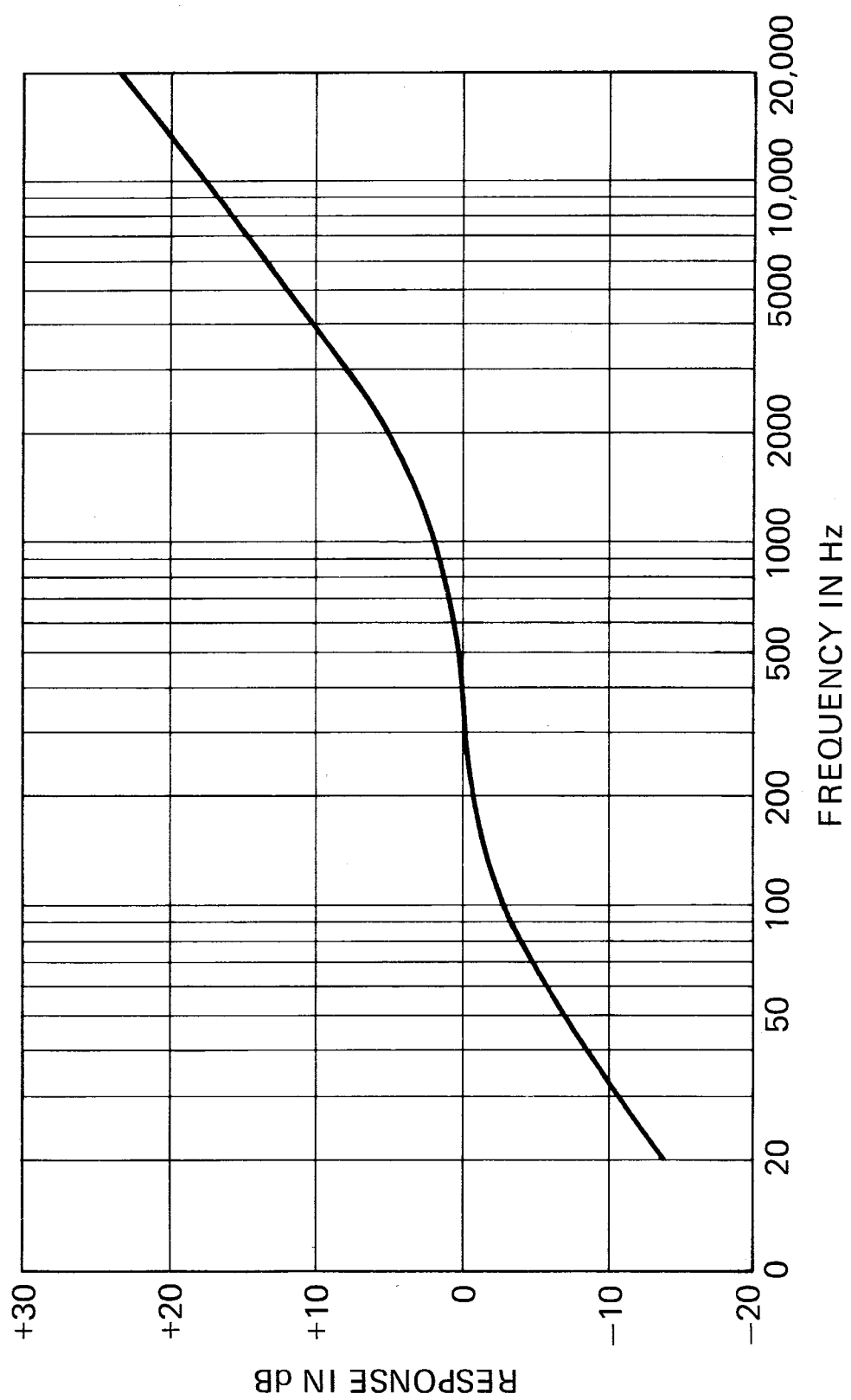


REPRODUCING CHARACTERISTIC 1.875 ips PHILLIPS CASSETTE
(1590 and 120 μ s)

Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	- 14.15688	1.5 kHz	+ 3.55833
25	12.31090	2	5.13986
30	10.83738	2.5	6.57607
40	8.60672	3	7.86012
50	6.99030	4	10.03870
60	5.76970	5	11.82018
70	4.82350	6	13.31622
75	4.42852	7	14.60146
80	4.07602	7.5	15.18140
90	3.47665	8	15.72609
100	2.98991	9	16.72483
150	1.54441	10	17.62251
200	0.87314	11	18.43739
250	0.49411	12	19.18327
300	- 0.24171	13	19.87080
400	+ 0.11429	14	20.50836
500	0.40646	15	21.10267
600	0.68940	16	21.65919
700	0.97930	17	22.18240
750	1.12832	18	22.67605
800	1.28014	19	23.14328
900	1.59155	20 kHz	+ 23.58677
1 kHz	+ 1.91151		

INDUCTION LOOP - REPRODUCING CHARACTERISTIC
1.875 ips Phillips Cassette (1590 and 120 μ s)



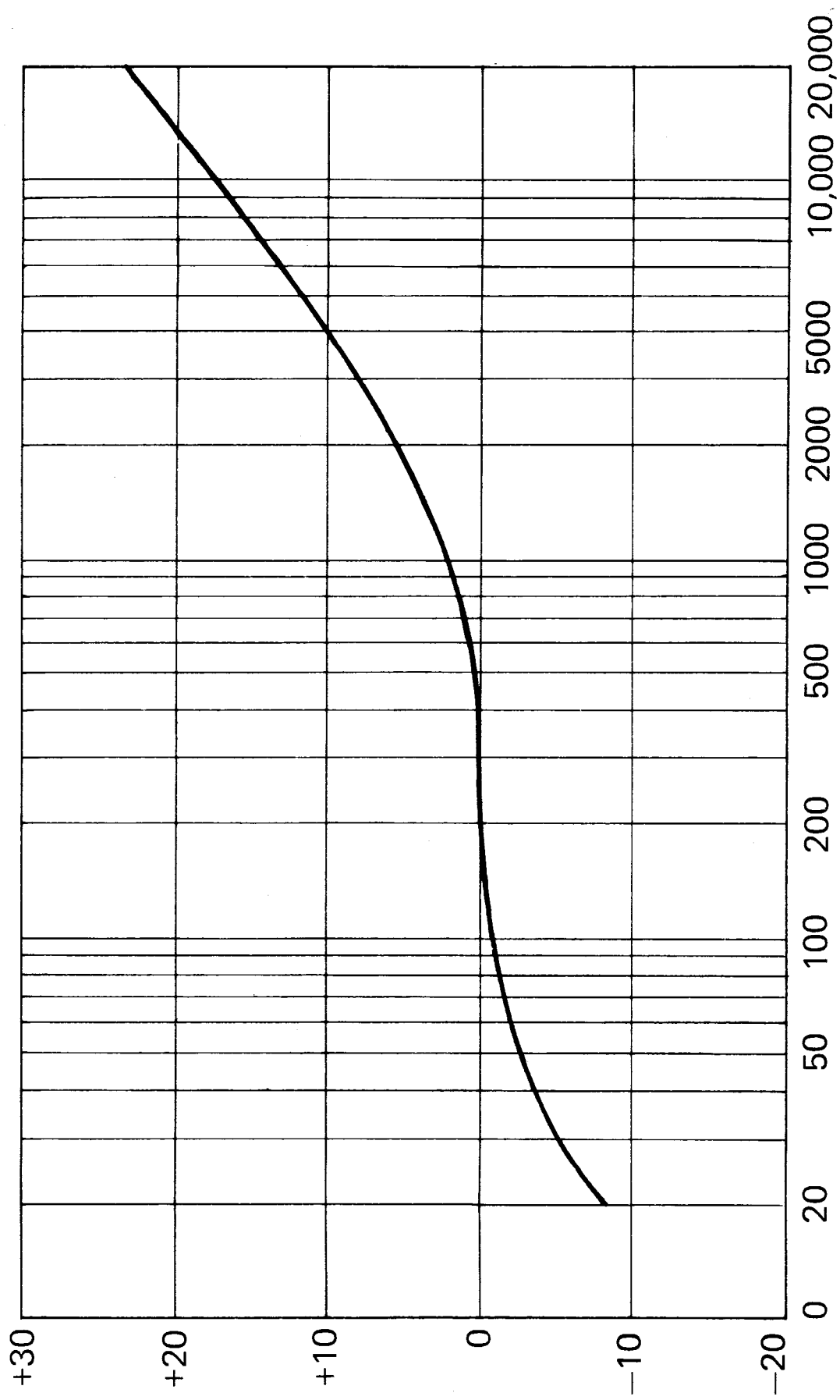
LATEST CASSETTE REPRODUCING CHARACTERISTIC

1.875 ips (120 μ s)

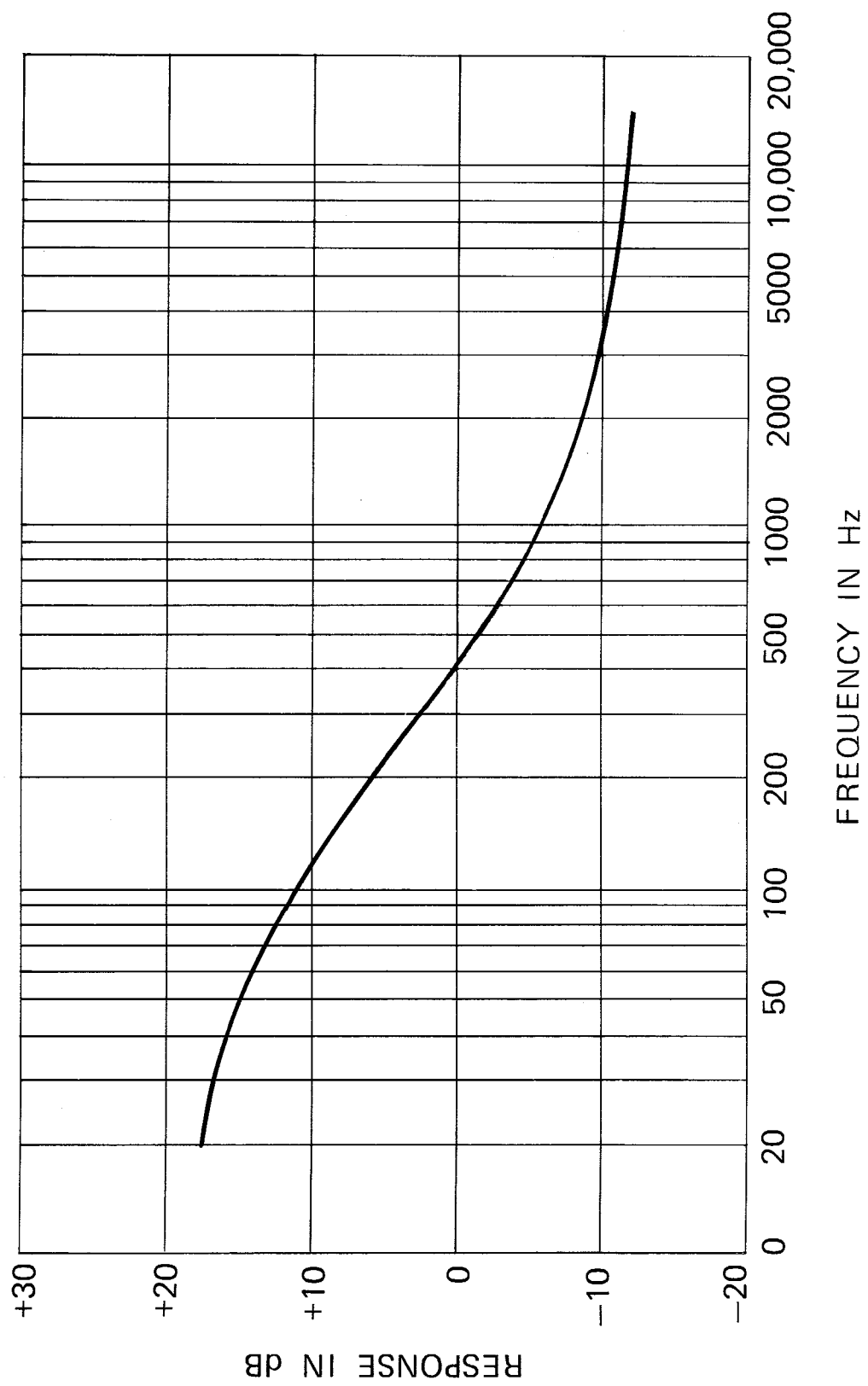
Reproducing Amplifier Output for Constant Flux
in the Core of an Ideal Reproducing Head

Frequency	Response	Frequency	Response
20 Hz	-8.60969	1.5 kHz	+ 3.57280
25	6.99493	2	5.14801
30	5.77636	2.5	6.58129
40	4.08785	3	7.86375
50	3.00836	4	10.04074
60	2.28486	5	11.82149
70	1.78114	6	13.31713
75	1.58575	7	14.60213
80	1.41871	7.5	15.18199
90	1.15025	8	15.72661
100	0.94617	9	16.72524
150	0.40322	10	17.62284
200	0.16614	11	18.43767
250	0.01903	12	19.18350
300	+0.09748	13	19.87100
400	0.31062	14	20.50853
500	0.53383	15	21.10282
600	0.77852	16	21.65932
700	1.04507	17	22.18252
750	1.18570	18	22.67615
800	1.33065	19	23.14337
900	1.63154	20	23.58685
1 kHz	1.94395		

INDUCTION LOOP - REPRODUCING CHARACTERISTIC
1.875 ips (3180 and 120 μ s)



AMPLIFIER PLAYBACK CHARACTERISTIC
1.875 ips Phillips Cassette (3180 and 120 μ s)



SECTION 6

Wavelength Charts

		TAPE SPEED, ips					
		30	15	7 1/2	3 3/4	1 7/8	15/16
30	kHz	.025	.013	.006			
20	kHz	.038	.019	.010	.005		
15	kHz	.051	.025	.013	.006	.003	
12	kHz	.064	.032	.016	.008	.004	
10	kHz	.076	.038	.019	.010	.005	
8	kHz	.095	.048	.024	.012	.006	
7.5	kHz	.102	.051	.025	.013	.006	.003
5	kHz	.152	.076	.038	.019	.010	.005
4	kHz	.203	.102	.051	.025	.013	.006
3	kHz	.254	.127	.064	.032	.016	.008
1.875	kHz	.406	.203	.102	.051	.025	.013

WAVELENGTH (mm)

		TAPE SPEED, ips					
		30	15	7 1/2	3 3/4	1 7/8	15/16
30	kHz	1.0	.500	.250			
20	kHz	1.5	.750	.375	.187		
15	kHz	2.0	1.0	.500	.250	.125	
12	kHz	2.5	1.25	.625	.312	.156	
10	kHz	3.0	1.5	.750	.375	.187	
8	kHz	3.75	1.87	.937	.468	.234	
7.5	kHz	4.0	2.0	1.0	.500	.250	.125
5	kHz	6.0	3.0	1.5	.750	.375	.188
4	kHz	8.0	4.0	2.0	1.0	.500	.250
3	kHz	10.0	5.0	2.5	1.25	.625	.312
1.875	kHz	16.0	8.0	4.0	2.0	1.0	.500
	kHz						

WAVELENGTH (MILS)