

L46, L56, L96, AND L112 SYSTEMS

Competitive Product Comparisons

Introduction

In this study, each JBL system is compared with three competitive models. In general, the products are compared on the basis of configuration; however, in a few instances, the comparisons are based on price.

First, we present a matrix for each product area outlining the basic details of the product. Most of this data has been taken from the manufacturer's specification sheets. We have indicated by asterisk that data measured by JBL. While the sensitivity data given by most manufacturers was in fact verified by us, some manufacturers presented higher figures than we measured. We made no attempt to verify power ratings, since this could easily result in damage to some of the products.

While the matrix data provides considerable information on these sixteen products, the heart of this study is in the 10-watt on-axis response curves and the plots of 2nd and 3rd harmonic distortion. In each class, the JBL product exhibits the lowest values of distortion. This is mainly the result of the SFG magnetic structures of JBL woofers: the symmetrical field geometry and the aluminum shorting ring around the pole piece. Of the nine manufacturers represented here, JBL is the only one employing SFG.

A drive level of 10 watts may be insignificant in terms of peak power requirements. However, as a swept input signal over the entire frequency range, it will reveal a great deal about the overall clarity of a speaker at normal listening levels. A JBL design goal is to hold 2nd harmonic distortion to levels of 1 — 3% in the MF and HF ranges. For models such as the L96 and L112, these levels are typically much less than 1%. In the curves presented here, 2nd and 3rd harmonic plots are raised 20 dB in level relative to the fundamental.

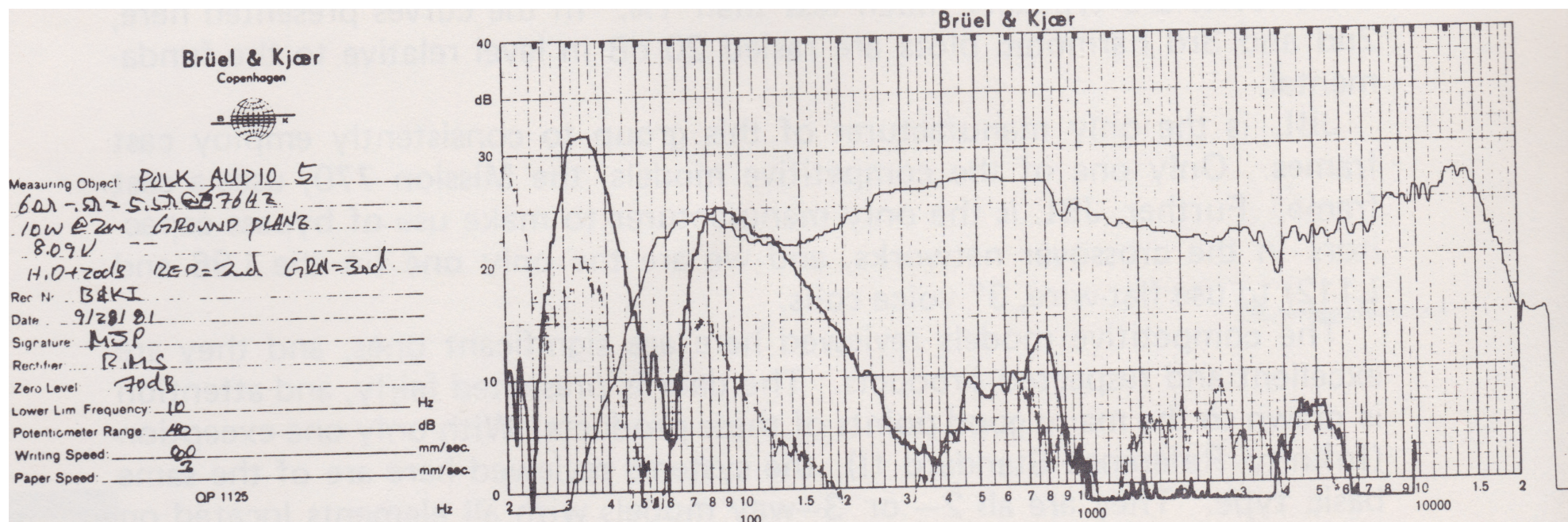
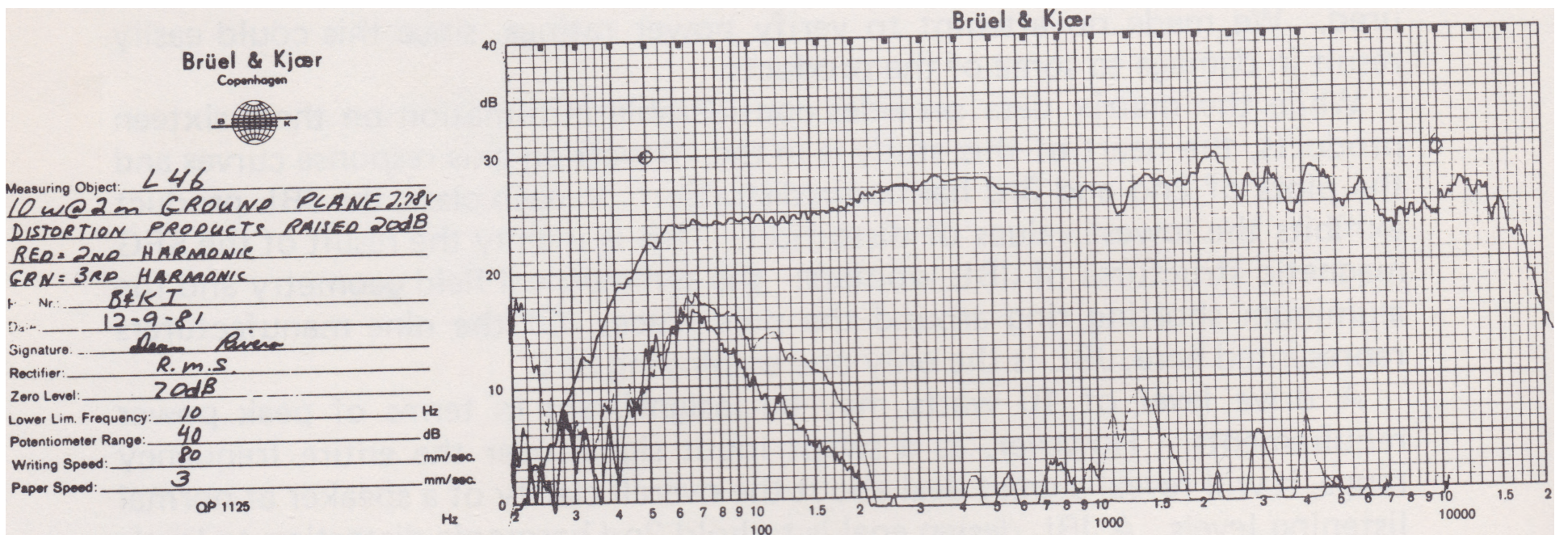
JBL is the only manufacturer of this group to consistently employ cast frames. Only one of the competitive models, the Mission 770, uses a cast frame. Further, JBL is the only manufacturer to make use of bypass capacitors in the crossover networks, and we are the only one (in the L96 and L112) to use flat-wire, 3" voice coils.

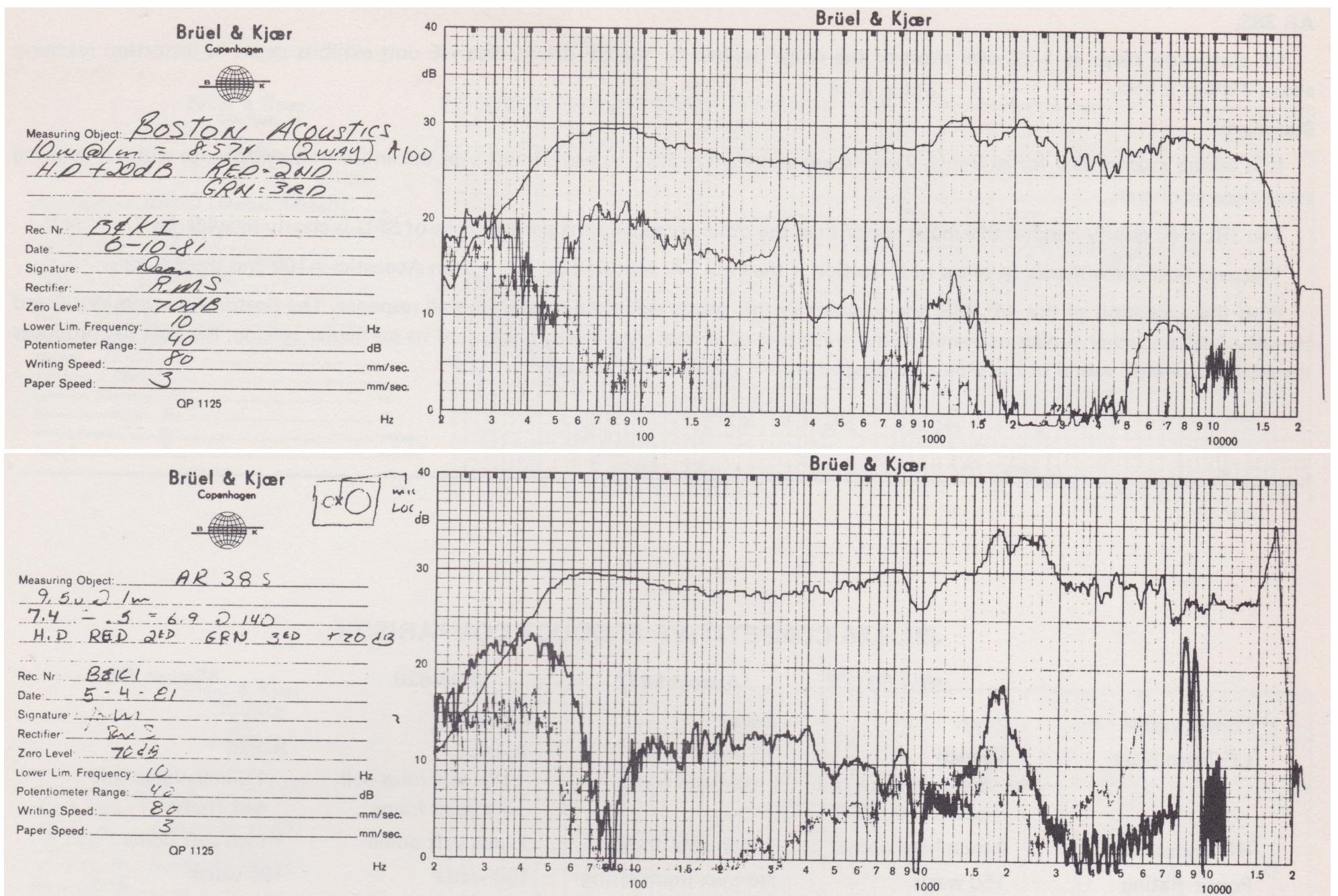
The competitive models reviewed here are significant ones, and they are excellent and respected products. The data is presented fairly, and attention is drawn to the many good points of these products. With only one exception (Infinity Reference Standard II), the systems reviewed here are of the same basic type. They are all 2— or 3—way models with all elements located on a front baffle. Thus, comparisons may be easily and consistently made among them.

JBL L46 COMPETITIVE PRODUCT COMPARISON

	JBL L46	Polk 5A	Boston Acoustics A100	AR38S
Configuration	2-way	2-way	2-way	2-way
LF Transducer	8-inch 1/2-inch voice coil cast frame, SFG	8-inch 1/8-inch passive radiator	10-inch 1-inch voice coil stamped frame	8-inch stamped frame
HF Transducer	1-inch hard dome	1-inch soft dome	1-inch soft dome	1-inch cone
Power Rating	100 watts	100 watts		100 watts
Nominal Impedance	8Ω	8Ω	8Ω	8Ω
Sensitivity (1 W @ 1 m)	88 dB*	87 dB*	88 dB*	88 dB*
Enclosure				
Material	Particle Board	Particle Board	Particle Board	Particle Board
Thickness	5/8-inch		3/4-inch	
Finish	Veneer	Vinyl	Vinyl	Vinyl
Dimensions (H x W x D)	20 1/2 x 12 1/2 x 10 1/2 inches	24 x 14 x 8 1/2 inches	30 1/2 x 16 1/4 x 8 1/2 inches	24 x 13 1/2 x 10 13/16 inches
Suggested List Price	\$165	\$160	\$195	\$150

*As measured by JBL





Commentary

1. On-axis frequency response curves.

JBL L46.

The on-axis response is quite smooth, not varying more than ± 3 dB from 60 Hz to 15 kHz. The transition region between the 8-inch LF unit and the dome HF unit is quite smooth.

POLK 5A.

The on-axis response of the Polk has broad variations, but is free of sharp peaks and dips. The broad rise in the 200-800 Hz range gives the system a slightly forward sound, and the HF rise gives slight edge to the overall sound.

Boston Acoustics A100.

Overall, the on-axis curve is quite smooth, +3 dB from 40 to 15 kHz. The system is quite neutral and performs well on all kinds of program material.

AR 38S.

While the speaker is quite smooth from 50 to 1500 Hz, the variations in HF response above that point color the sound significantly.

2. 10-watt distortion data.

JBL L46.

At 60 Hz, 2nd harmonic distortion is 3%, falling to below 1% in the range above 200 Hz. The result is clarity of musical detail at elevated listening levels.

POLK 5A.

This system reaches 10% 2nd harmonic distortion in the 80-100 Hz range at the 10-watt input. From 400 Hz upward, the distortion remains well below 3%. Overall, this system performs well at elevated levels.

Boston Acoustics A100.

At the 10-watt input, the 2nd harmonic distortion in this system is about 3% over most of the range covered by the LF driver. HF distortion remains in the 1% range or lower.

AR 38S.

LF distortion stays at 1-3% over most of the range covered by the LF driver. The HF unit exhibits peaks in distortion reaching about 7-8% at 8 kHz.

Summary.

It is asking a good deal for an 8-inch 2-way speaker system to take 10 watts input over the entire frequency range without showing some signs of distress.

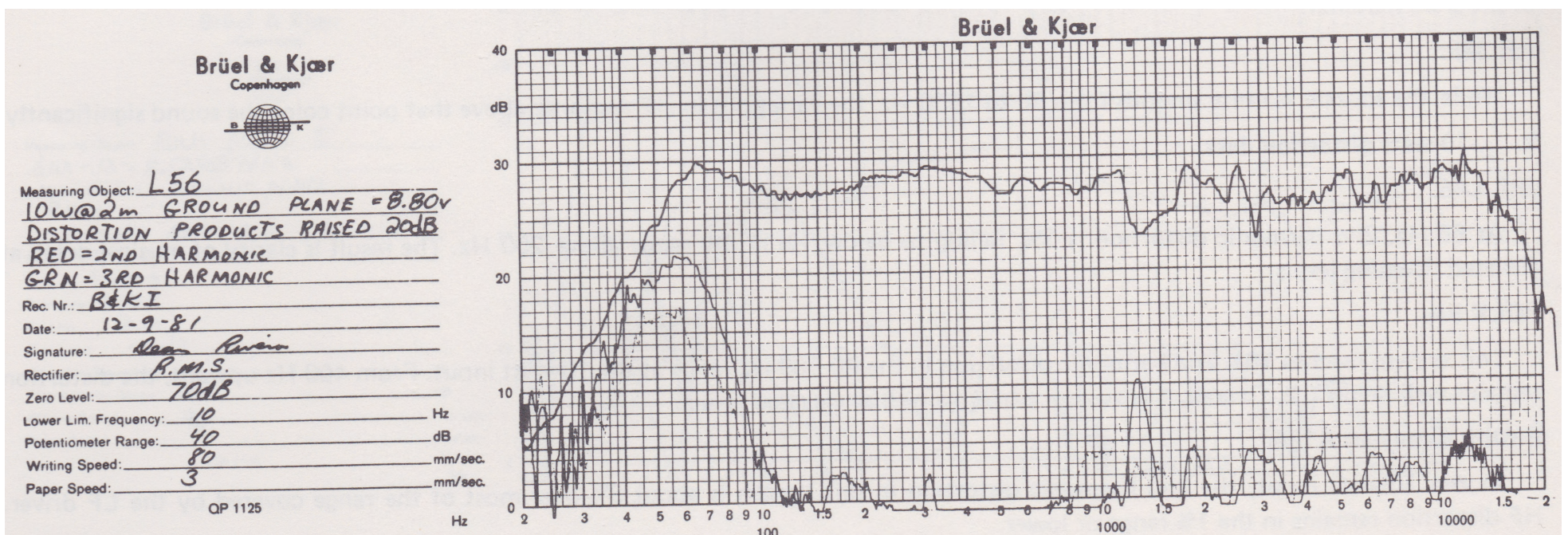
The JBL L46 clearly handles this input better than the other three, and the performance of SFG is clearly in evidence.

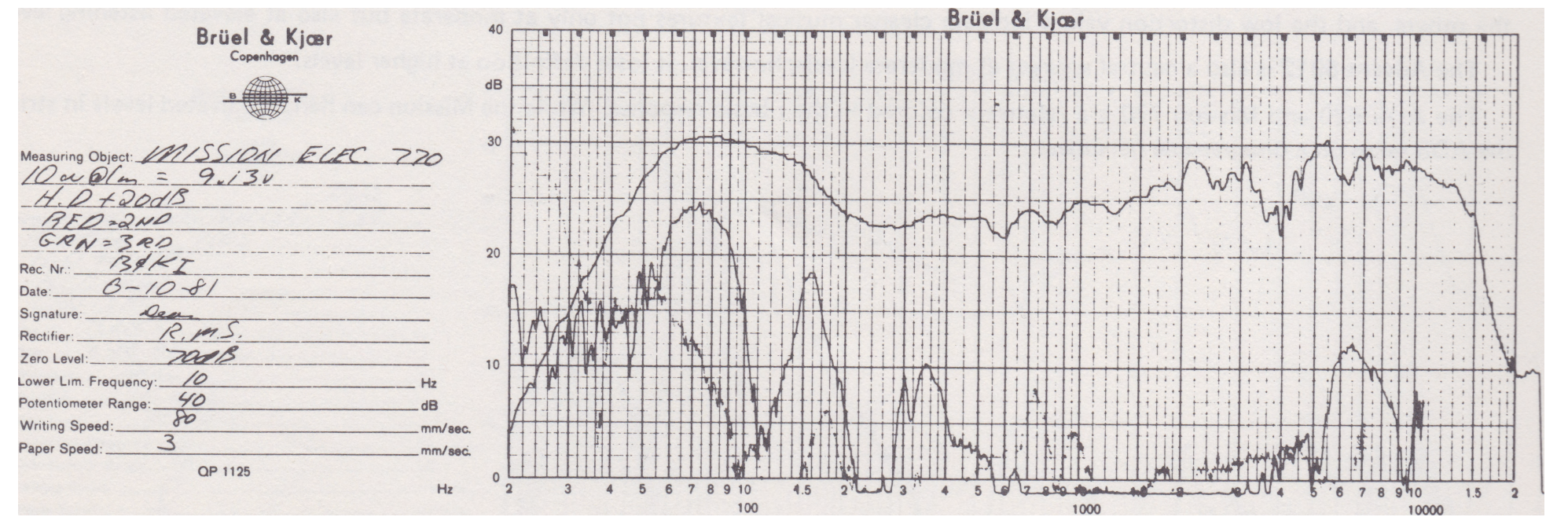
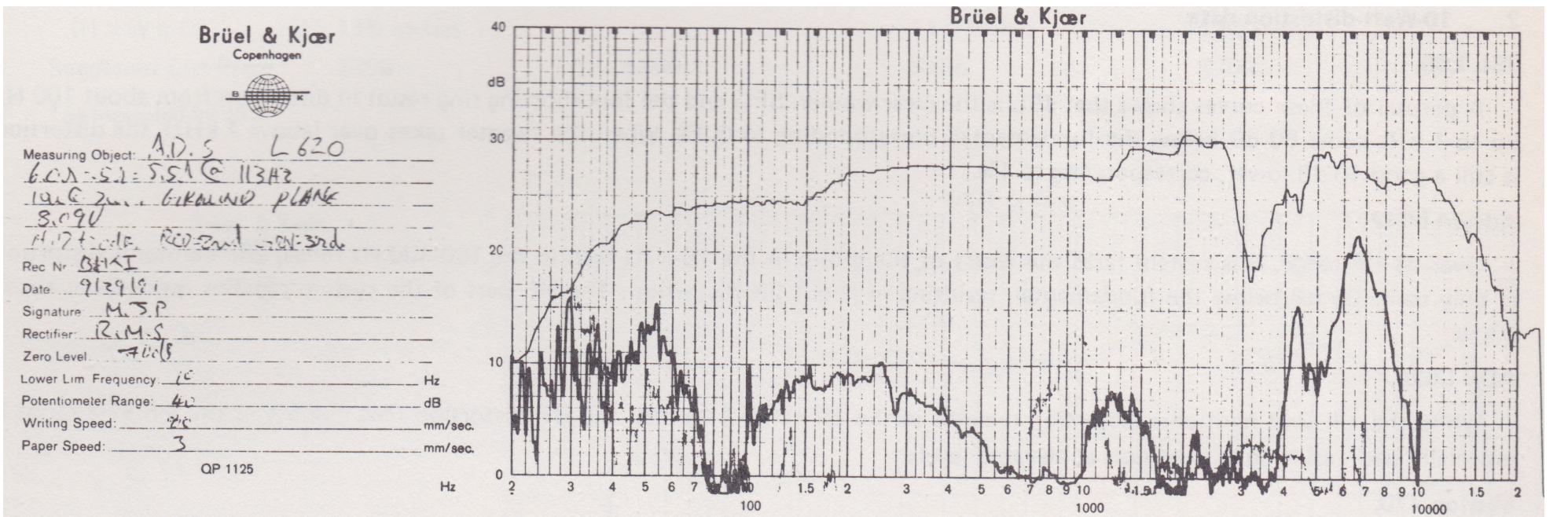
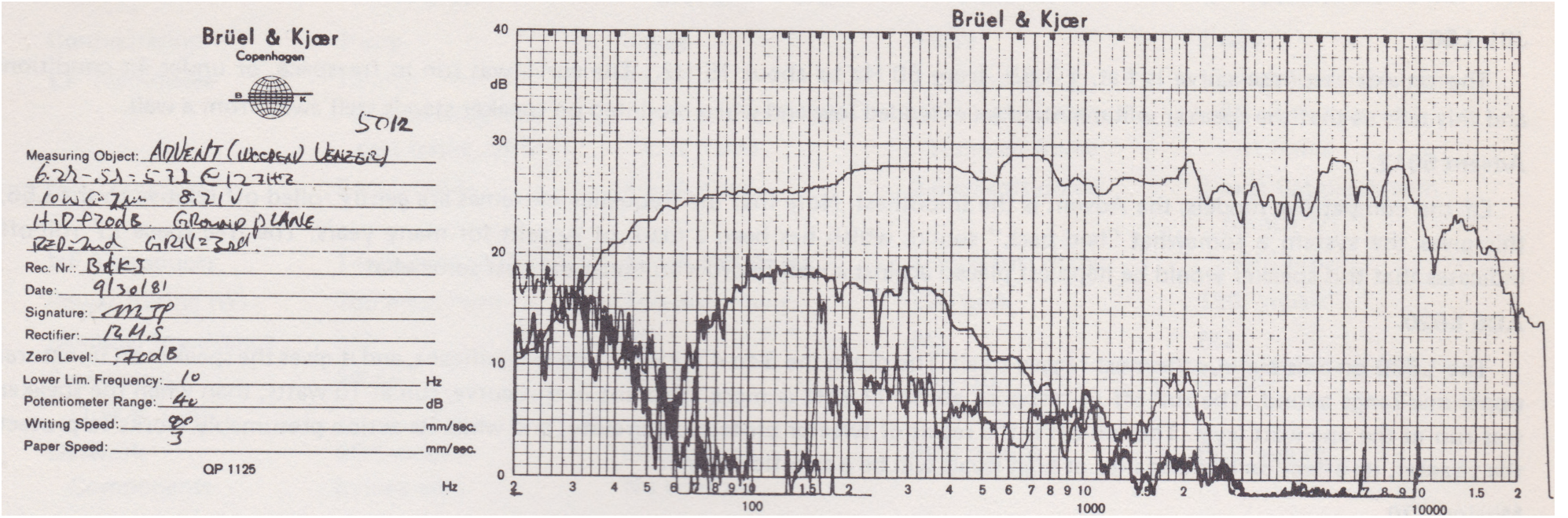
The next best performance in terms of distortion is the Polk 5A, followed by the Boston Acoustics A100 and the AR 38S.

With the exception of the AR 38S, the speakers in this group exhibited smooth overall response. The Boston Acoustics A100 and the JBL L46 are rather similar in overall sound when played at moderate levels. Because of its particular voicing, the Polk 5A produces the most "forward" sound of the group, tending to project vocals rather strongly.

JBL L56 COMPETITIVE PRODUCT COMPARISON

	JBL L56	Advent 5012	ADS 620	Mission 770
Configuration	2-way	2-way	2-way	2-way
LF Transducer	10-inch 1%-inch voice coil cast frame, SFG	10-inch stamped frame	10-inch 1%-inch voice coil stamped frame	8-inch 1%-inch voice coil cast frame
HF Transducer	1-inch hard dome	1-inch soft dome	1-inch soft dome	1-inch soft dome
Power Rating	150 watts	No maximum rating	150 watts	100 watts
Nominal Impedance	812	812	812	812
Sensitivity (1 W@ 1 m)	88 dB	87 dB	87 dB	86 dB
Enclosure				
Material	Particle Board	Particle Board	Particle Board	Particle Board
Thickness	5/8-inch			3/4-inch
Finish	Veneer	Veneer	Vinyl	Veneer
Dimensions (H x W x D)	22% x 14 x 11% inches	20% x 14 3/8 x 11% inches	25 5/8 x 14 3/16 x 11% inches	23.4 x 11.8 x 11.2 inches
Suggested List Price	\$225	\$250	\$249	\$500





Commentary

1. On-axis frequency response.

JBL L56.

The on-axis response curve is flat, +3 dB, from 50 Hz to about 15 Hz. The curve was run in freespace, or under $4n$ conditions, and this tells us that the speaker will maintain an extended low end when mounted on speaker stands well away from a wall.

Advent 5012.

Of the competitive models, the Advent is the smoothest. Note that the frequency extremes are gently rolled off relative to the L56; this gives the system a somewhat "laid back" sound, which has been a mark of Advent for many years. The free space LF roll-off indicates that this speaker would be happiest placed against a wall in order to boost the bass somewhat.

ADS L620.

The L620 on-axis curve is the most ragged of all. The dip in the 3-to-4.5 kHz region is significant, and it gives the speaker an unnatural upper-mid-range sound. The roll-off in response above 11 kHz is more apparent in this curve, run at 10 watts, than when the speaker was run at the one-watt level. The roll-off is the result of tweeter protection circuitry, and while its action presumably works to protect the tweeter, its effect on performance at high levels will be a significant one.

Mission 770.

The Mission is a 2-way 8-inch included here because of its relatively high price tag of \$500. It is a highly-touted English product which has made considerable inroads in some markets. The on-axis response curve shows a broad hump between 50 and 150 Hz which will probably result in a pleasant sound at low levels - but a boomy one at high levels. The overall smoothness of the curve above 150 Hz works to the system's advantage.

2. 10-Watt distortion data.

JBL L56,

A perusal of these curves shows that JBL is the clear winner. SFG and the flux shorting ring result in distortion from about 100 Hz up to 1 kHz some **50 dB below** the fundamental, corresponding to **0.3%**. When the tweeter takes over (above 1 kHz), the distortion is still a good **40 dB** lower, corresponding to **1%**.

Advent 5012

Over its LF range, this system fares the worst of the group in the 10-watt test. In the 100-400 Hz range, 2nd harmonic distortion is only some 35 dB below the fundamental, resulting in about 2% distortion. The HF part of the system remains quite clean above 3 kHz.

ADS L620.

While the LF 2nd harmonic distortion remains in the 1% range (-40 dB), the HF distortion reaching 5% in the 4-8 kHz range is especially bad, resulting in harshness at elevated levels.

Mission 770.

This speaker exhibits moderate distortion levels through most of the mid-range and high end and sounds fairly clean at elevated levels. It is a good 8-inch 2-way, but not nearly as good as JBL's L46.

Summary of Measurements

Overall, the measurements underscore the basic neutrality of the L56 over the three competitive products. The curve is flatter than the others', and the low distortion values indicate cleaner musical textures not only at moderate but also at elevated listening levels.

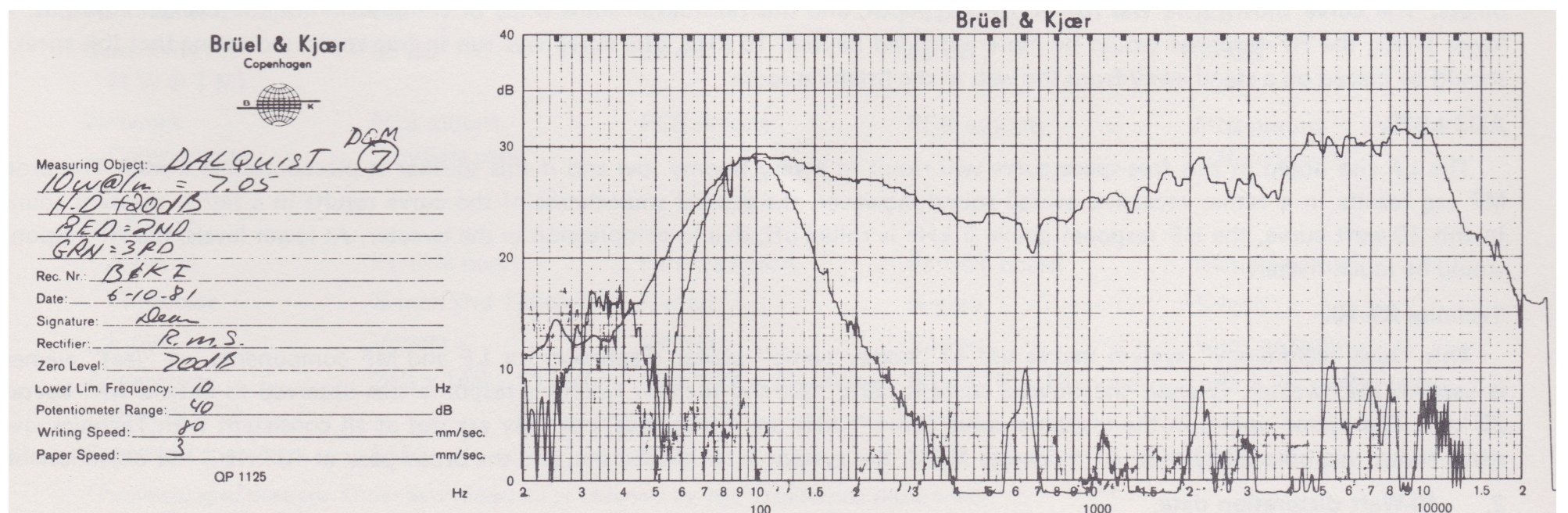
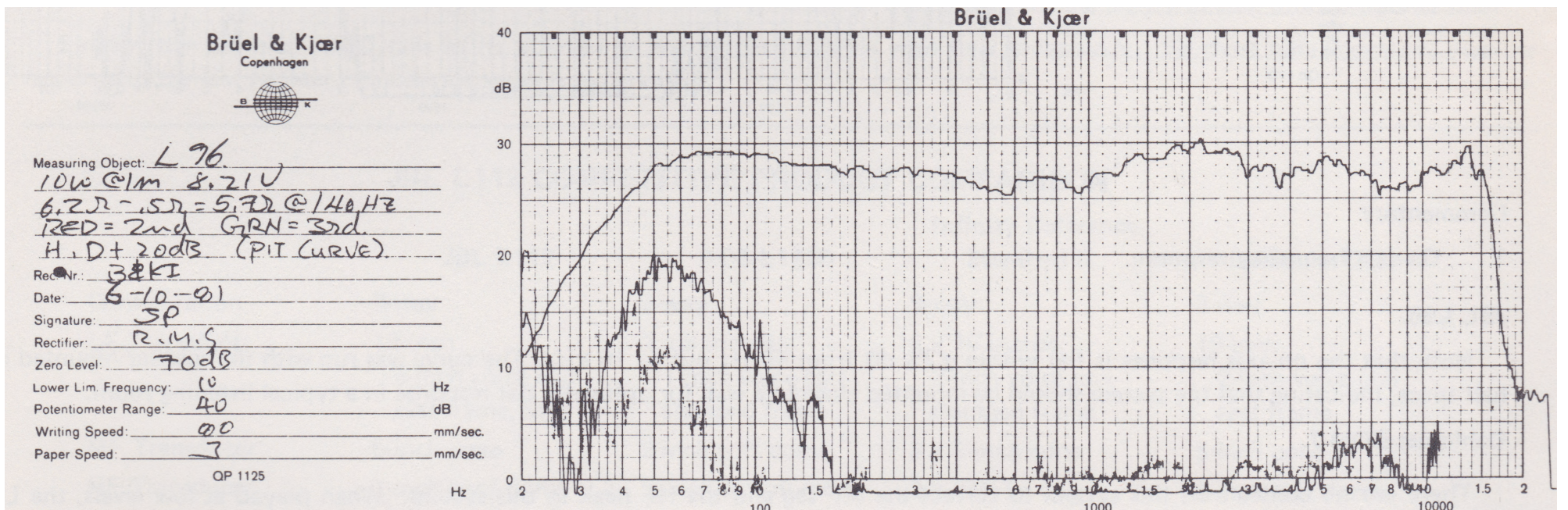
The Advent 5012 is also a neutral speaker at moderate levels; however, it loses definition at higher levels.

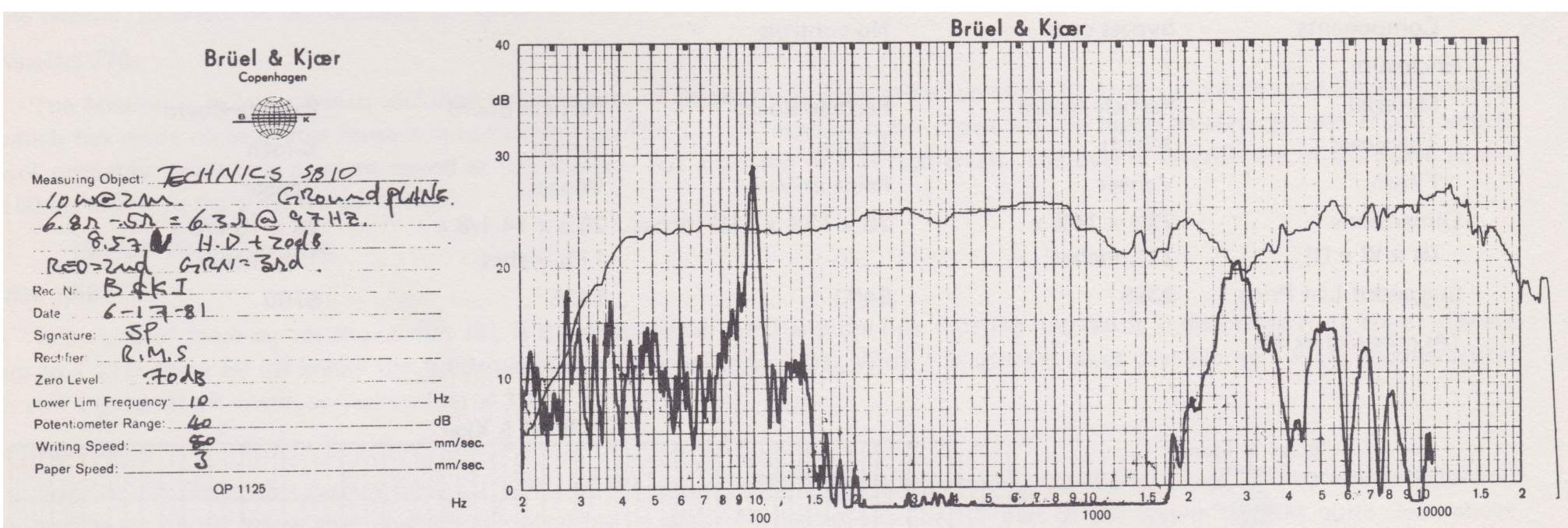
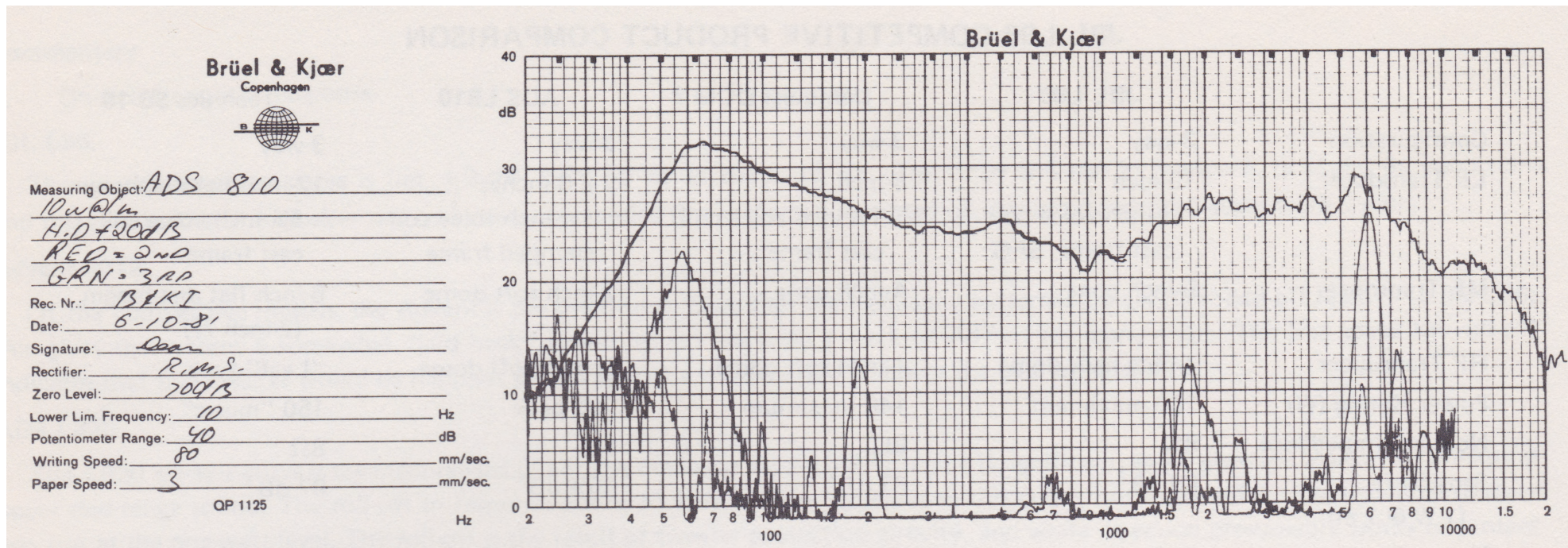
The ADS 620 and Mission 770 are relatively colored in their basic response. While the Mission can handle elevated levels in stride, the ADS takes on a disagreeable harshness.

JBL L96 COMPETITIVE PRODUCT COMPARISON

	JBL L96	Dahlquist DQM 7	ADS L810	Technics SB-10
Configuration	3-way	3-way	3-way	3-way
LF Transducer	10-inch 3-inch voice coil cast frame, SFG	8-inch 1 1/2-inch voice coil cast frame	2x8 inches 1 1/2-inch voice coil stamped frame	12-inch flat diaphragm 6 1/2-inch voice coil cast frame
MF Transducer	5-inch cone	4-inch cone	2-inch soft dome	6-inch flat diaphragm (2-inch ??)
HF Transducer	1-inch hard dome	1-inch soft dome	1/2-inch soft dome	'Leaf' type
Power Rating (W)	250 maximum	140 maximum	200 peak	150 "music"
Nominal Impedance	8 Ω	8 Ω	612	812
Sensitivity (1 W @ 1 m)	89 dB*	87 dB*	85% dB*	87 dB*
Network Components	PCB mount bypass caps	PCB mount No controls	PCB mount	PCB mount
Enclosure				
Material	Particle Board	Particle Board	Particle Board	Particle Board
Thickness	1 1/2-inch	1 1/2-inch	1 1/2-inch	1 1/2-inch
Finish	Veneer	Paint on Vinyl	Veneer	Veneer
Dimensions (H x W x D)	23% x 14% x 11% inches	25 x 13 1/4 x 1 1/2 inches	25 1/4 x 14 1/8 x 11% inches	28 x 15 7/8 x 12% inches
Suggested List Price	\$395	\$400	\$425	\$700

*As measured by JBL





Commentary

1. On-axis frequency response.

JBL L96.

Note that the on-axis response is flat within $\pm 2\frac{1}{2}$ dB from 40 Hz out to 16 kHz. The curve was run with the speaker mounted in half space, indicating that the system should be mounted close to a wall for optimally flat response in a typical listening room.

Dahlquist DQM-7.

There are no controls on this system to correct the MF sag and the HF peak in this system. When played at low levels, the LF rise gives a degree of "warmth" which many listeners may like; however, at elevated levels, the LF rise produces an unpleasant muddiness. The curve shown here was run at 10-watt input, and this resulted in some 5 dB of compression of the tweeter's output. At lower levels, the HF response would be more extended beyond 10 kHz. The curve was run in free space, indicating that this speaker should be placed on a stand away from the wall in the listening room.

ADS L810.

The LF rise noted in this free-space curve will result in a very boomy low end if this speaker is placed against a wall. The broad MF sag results in a rather recessive overall sound; however, the general smoothness of the curve results in a rather pleasant sound. In this 10-watt curve, the HF response above 6 kHz is rolled off, due to compression in the tweeter. At lower levels, the HF response would be much flatter.

Technics SB-10.

This "high technology" system makes use of "honey comb" planar diaphragm for LF and MF components. A "leaf" element is used in the tweeter. Overall, the on-axis curve is fairly flat, and the leaf tweeter's response was observed to extend well beyond 20 kHz. The minor ripples in the response curve above 1 kHz are not serious, but they are not at all consistent with Technics' own story about this unusual system. At moderate levels, the system is fairly accurate, and the broad peak at 10 kHz is not objectionable.

2. 10-Watt distortion data.

JBL L96.

Not surprisingly, the L96 has the lowest 2nd and 3rd harmonic distortion readings for this group of loudspeakers. At 100 Hz, the 2nd harmonic level is about 1% (-40 dB), dropping to the 0.3% level (-50 dB) above 200 Hz.

Dahlquist DQM-7.

At 100 Hz, the 2nd harmonic distortion of this system is 10%! Very high, even considering that it has an 8-inch woofer. (Compare it with the L46, for example). From about 400 Hz upward, the distortion is in the 1% range, with no disagreeable peaks. Overall, the MF and HF performance of this speaker is quite satisfactory, and is a strong contrast to the general muddiness of the 50-to-200 Hz range.

ADS L810.

The dual 8-inch woofers in this system acquit themselves well over the 100-to-1000 Hz range. However, above 1.5 kHz, both the MF and HF soft domes cause trouble. The distortion level in the HF dome reaches 10% at 6 kHz. The effect in high distortion and signal compression at the high-end results in a clouding of musical texture and detail at elevated levels. Clearly, the MF and HF elements are not match for the LF elements, and this system wants to be played only at moderate levels.

Technics SB-10.

This unusual system exhibits an unusual distortion picture. Low-frequency 2nd harmonic distortion is generally the lowest of any speaker measured in this group - except for a peak centered at 100 Hz. Here the distortion rises to nearly 20%, indicating break-up of the planar diaphragm. Through the range of 200-to-1500 Hz, the distortion remains well below 1%, but above 2 kHz, the leaf tweeter is in distress.

Summary of Measurements.

Overall, this set of measurements points up the superiority of the L96 in both smoothness of frequency response and in reduced distortion at high drive levels. This system will remain "unfazed" under all but the most severe drive conditions.

The Dahlquist DQM-7 is a paradox with its clear mid- and high-end response and its "loose" low end. Many listeners will find the bassiness of this system pleasant, however.

The ADS L810 is a speaker for the listener who doesn't care for high levels and who prefers a recessed upper mid-range. Such a system reduces the harshness of many poorly produced recordings, but does little to present the clarity of well-produced ones.

Finally, the technics SB-10 fails in its attempt to match performance with new technology. We must note, however, that the response of the leaf tweeter at moderate levels is remarkable.

JBL L112 COMPETITIVE PRODUCT COMPARISON

	JBL L112	ADS LI230	Infinity Reference Standard II	Dahlquist DQM-9
Configuration	3-way	3-way	3-way	3-way
LF Transducer	12-inch, 3-inch voice coil cast frame, SFG	2x8 inches, 1 -inch voice coil stamped frame	2 x 10 inches, 2-inch voice coil stamped frame	10-inch, 2-inch voice coil cast frame
MF Transducer	5-inch cone	2-inch soft dome	3 x 5-inch cone	5-inch cone
HF Transducer	1 -inch hard dome	¾-inch soft dome	2 x EMIT	1-inch soft dome
Power Rating (W)	300	200 peak	250	200
Nominal Impedance	812	612	412	812
Sensitivity (1 W@ 1 M)	89 dB*	89 dB	88 dB*	87 dB*
Network Components	PCB mount bypass caps	PCB mount	PCB mount	PCB mount No controls
Enclosure				
Material	Particle board	Particle board	Particle board	Particle board
Thickness	¾-inch and 1 -inch	¾-inch	¾-inch	¾-inch
Finish	Veneer	Veneer	Veneer	Paint on Vinyl
Dimensions (H x W x D)	24½ x 14½ x 13 inches	40 x 19½ x 9 1/4 inches	50 x 21 ½ x 19 inches	14 1/4 x 25 x 13½ inches
Suggested List Price	\$530	\$675	\$650	\$600

*Published specifications. Other data measured or observed by JBL Engineering Department.

Brüel & Kjær
Copenhagen



Measuring Object: L112 SYSTEM B
9.5V @ 2m GROUND PLANE

AIST +20dB

Rec. Nr.:

Date: 1-18-80

Signature: G.F.

Rectifier:

Zero Level:

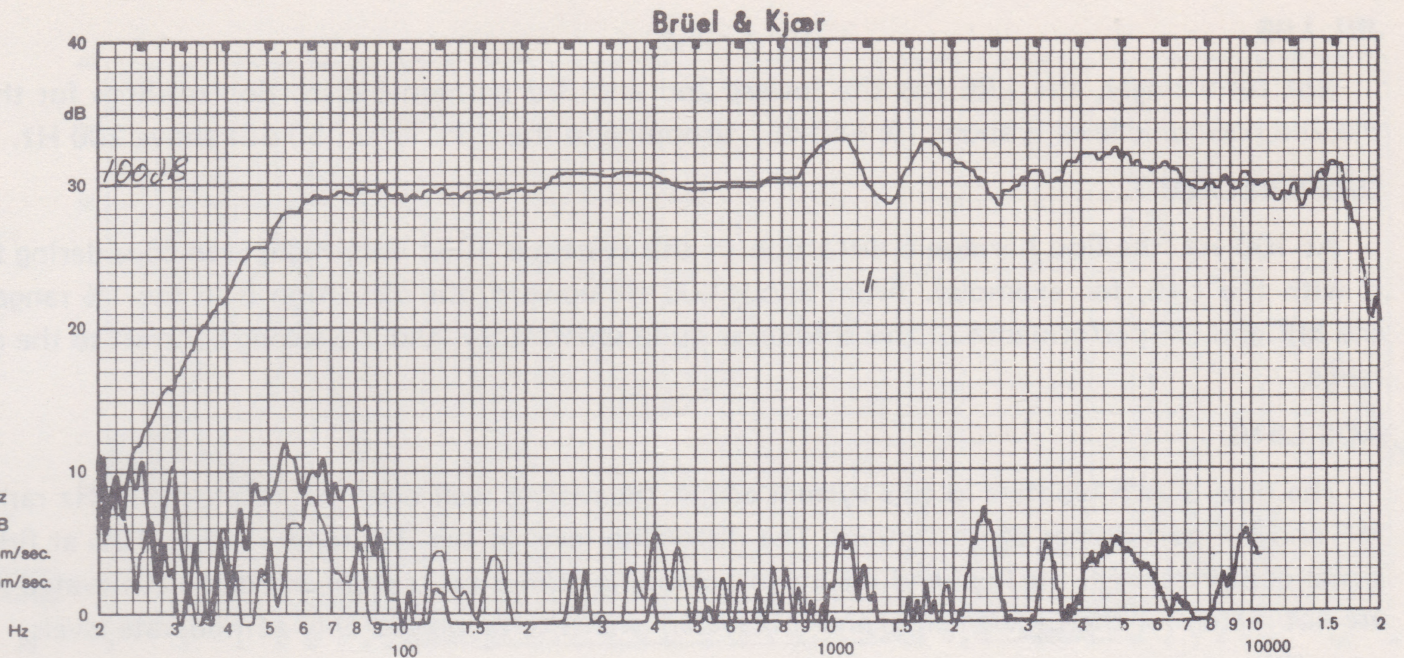
Lower Lim. Frequency: _____ Hz

Potentiometer Range: _____ dB

Writing Speed: _____ mm/sec.

Paper Speed: _____ mm/sec.

QP 1125



Brüel & Kjær
Copenhagen



Measuring Object: ADS L1230

9.5V @ 1m

3.8a - 5a = 3.3a 89Hz

H.D RED 2nd GRN 3rd +20dB

TWEETER CHANGED AT 1500Hz WATER

Rec. Nr.: B*K1

Date: 9-5-81

Signature: John

Rectifier: RMS

Zero Level: 70dB

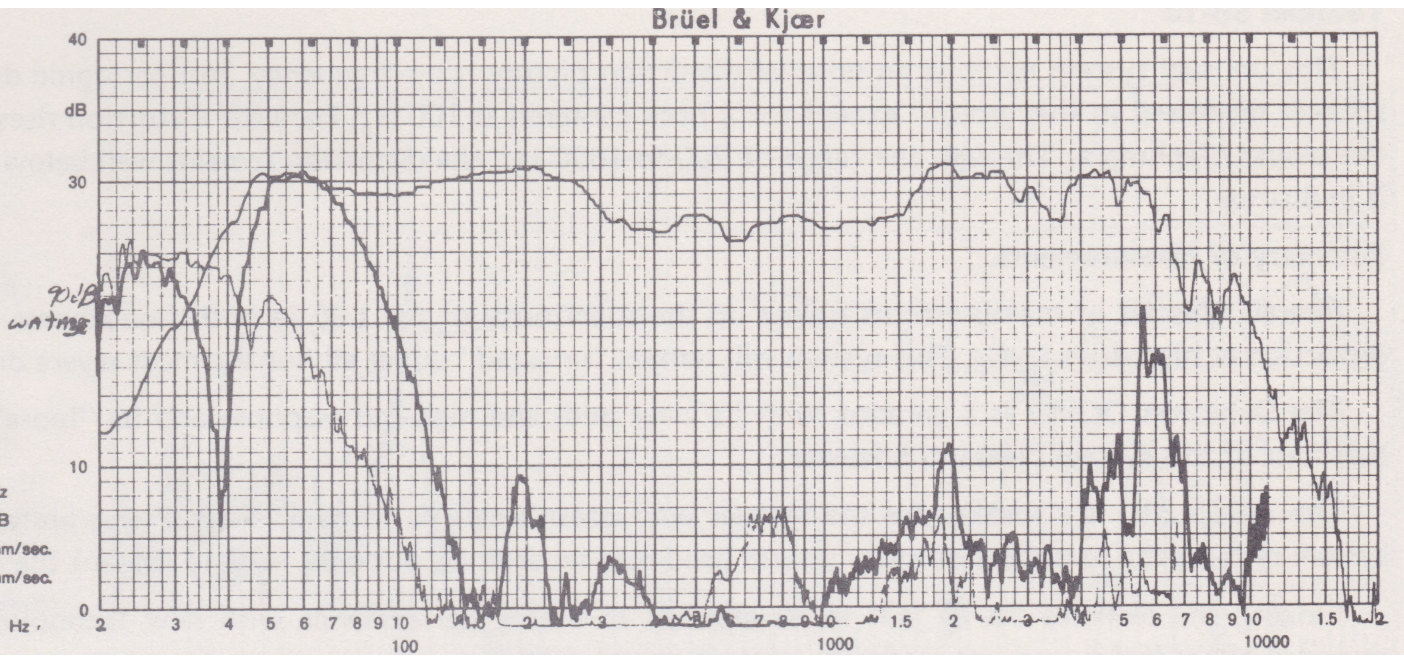
Lower Lim. Frequency: 10 Hz

Potentiometer Range: 40 dB

Writing Speed: 80 mm/sec.

Paper Speed: 3 mm/sec.

QP 1125



Brüel & Kjær
Copenhagen



Measuring Object: INFINITY RSTII

9.5V @ 2m GROUND PLN

H.D RED 2nd GRN 3rd +20dB

Rec. Nr.: B*K1

Date: 3-4-81

Signature: John

Rectifier: RMS

Zero Level: 70dB

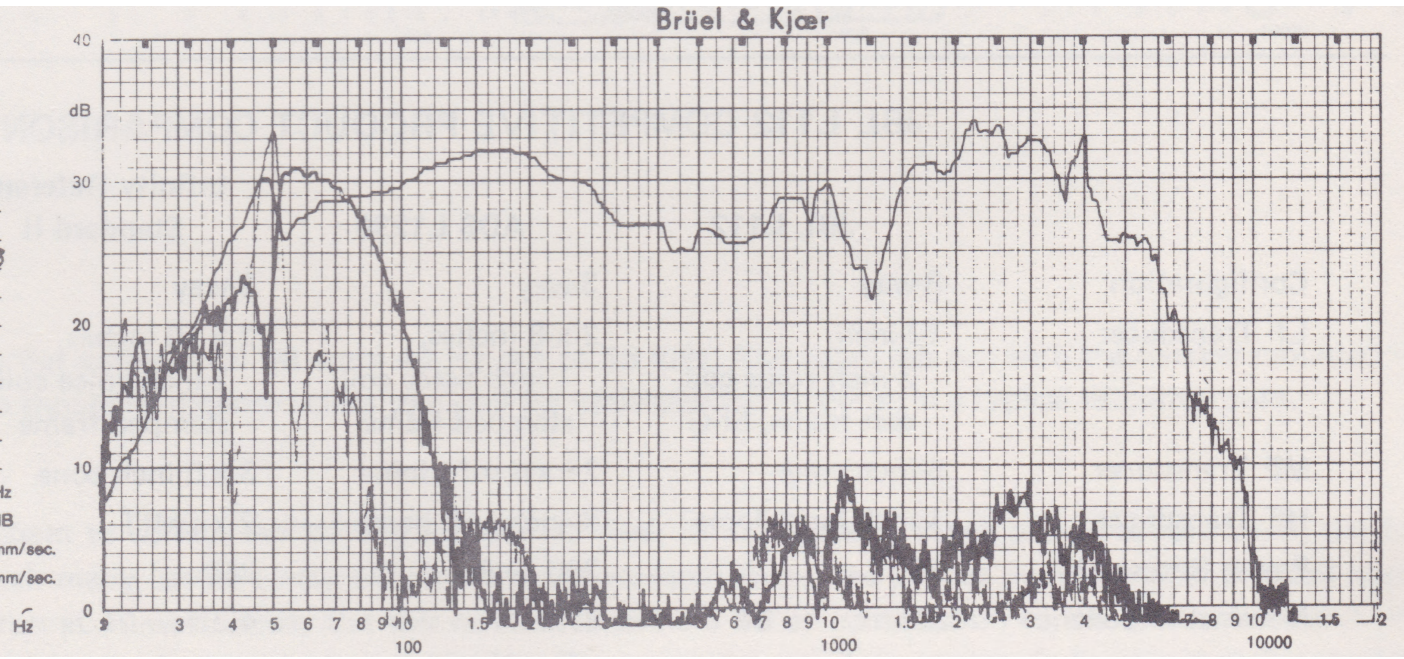
Lower Lim. Frequency: 10 Hz

Potentiometer Range: 40 dB

Writing Speed: 80 mm/sec.

Paper Speed: 3 mm/sec.

QP 1125



Brüel & Kjær
Copenhagen



Measuring Object: DALQVIST DQM 9

10V @ 1m = 7.97V

H.D +20dB

RED = 2ND

GRN = 3RD

Rec. Nr.: B*K1

Date: 6-10-81

Signature: John

Rectifier: R.M.S.

Zero Level: 70dB

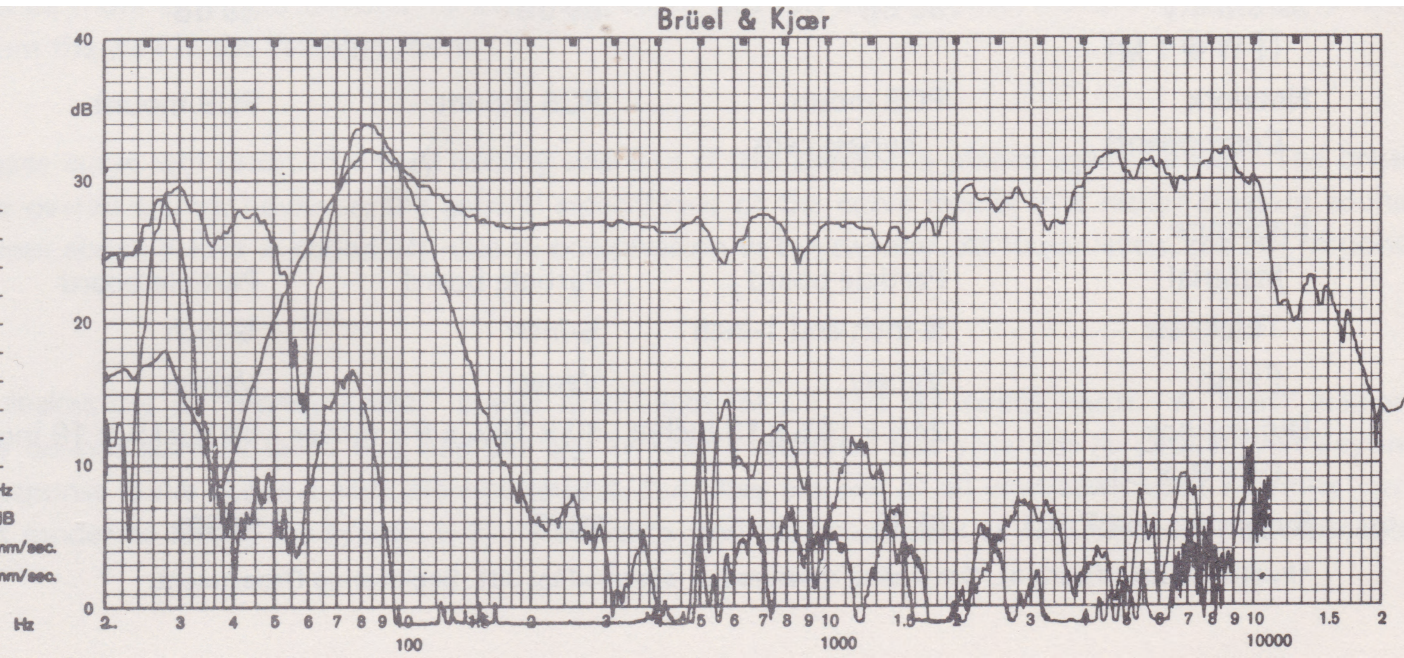
Lower Lim. Frequency: 10 Hz

Potentiometer Range: 40 dB

Writing Speed: 80 mm/sec.

Paper Speed: 3 mm/sec.

QP 1125



Commentary (L112 Competitive Speaker Comparison)

1. On-axis frequency response.

JBL L112.

Were it not for the $\pm 2y_2$ dB ripples between 800 and 2500 Hz, the L112's on-axis response would be almost ruler-flat between 60 Hz and 16 kHz. As it stands, it is clearly the flattest of the four models in this group of speakers. The measurement was made in free space, and its extended response suggests that this speaker should be placed on a stand out from the wall for smoothest overall response.

ADS LI230.

This speaker shows the typical broad mid-range dip which we have seen in other ADS speakers. Also, as we have noted before, the HF roll-off above 7 kHz is more pronounced in this 10-watt curve than it would be at lower drive levels.

Infinity Reference Standard II.

This system is substantially different from the other three in that its MF and HF elements radiate in **dipole** fashion; that is, they are mounted on an open baffle and radiate in both directions. Thus, it is difficult to make direct comparisons with the other on-axis curves, since this system radiates half its MF and HF power toward the rear wall in a typical listening environment. The HF units compress significantly at the 10-watt level, producing a severe roll-off above 5 kHz. At lower input levels, the HF response extends smoothly, but rolled-off, from 5 kHz to 20 kHz.

Dahlquist DQM-9.

Like its little brother, the DQM-7, the DQM-9 exhibits a broad bass rise centered at about 80 Hz, which lends the same warmth to the low end at low levels. The MF and HF response is fairly smooth, with a gentle rise out to about 10 kHz. Above that point, the response rolls off fairly rapidly.

2. 10-Watt distortion data.

JBL L112.

Of all sixteen systems reviewed in this comparison, the L112 exhibits by far the lowest distortion at the 10-watt input level. Nowhere does the value of 2nd or 3rd harmonic distortion exceed 1%; it is down around 0.3-0.5% over most of the range from 100 Hz to 10 kHz. The clarity which this system exhibits at high drive levels in the audible benefit of such low values, and the reasons of course are the SFG pole piece structure, the flux shorting ring, linearity of the moving system and the rigidity of the cone. By any measure, it is the most robust bookshelf system around.

ADS LI 230.

Curiously, the model L1230 speaker exhibits greater low frequency 2nd harmonic distortion than the lower priced model L810. The MF distortion remains fairly low, but the HF dome acts up in the 6 kHz range, just as we noted in the L810 measurements.

Infinity Reference Standard II.

With the exception of high 2nd harmonic distortion (10%) in the range below 100 Hz, this system exhibits remarkably low distortion over most of the frequency range, typically, 1% or less.

Dahlquist DQM-9.

This system exhibits 2nd harmonic distortion in excess of 10% in the range below 100 Hz. From about 200 to 2000 Hz the distortion drops to the 1% range, and is somewhat lower in the range above 2 kHz.

Summary.

The JBL L112 is the clear winner in terms of frequency response and low distortion at high drive levels. In the below-\$1000.00 range, its performance is matched only by the JBL L150A, which has the same complement of drivers. Both models have received numerous rave reviews both here and abroad.

The ADS LI230 is a handsome, well-built product which performs extremely well at moderate levels. The sag in its mid-band response unit take the edge off many peaky recordings, yielding a pleasanter sound. However, good recordings may sound a bit recessive.

Of all the systems reviewed in this entire set of sixteen, the Infinity Reference Standard II is the most unusual. Whereas all other systems have their LF, MF and HF elements mounted on a front baffle surface, the Infinity makes use of both rear and front radiation of its MF and HF elements. This so-called dipole action represents another philosophy of "launching" sound into a room. For those acclimated to traditional systems, the spaciousness which results from the reflected back wave may appear somewhat disconcerting. Many listeners note a certain vagueness in left-to-right imaging, while commenting favorably on enhanced front-to-back imaging. In any event, the relatively low MF and HF distortion make this an excellent performer.

UBL/harman international



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MUSIC

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SERVICE

PLEASE WAIT HERE & A MEMBER
OF OUR TEAM WILL BE WITH
YOU SHORTLY.

Or press finger HERE