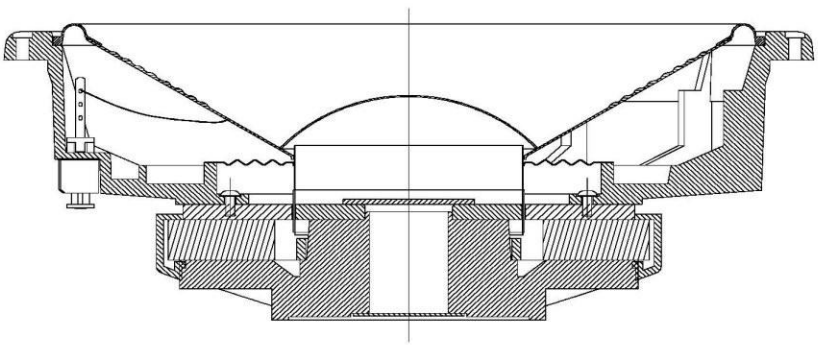
harman consumer group

Engineering Design Specification	Date	Rev #	Document Number
	6/12/2007	X1	364012

14 inch High performance woofer/mid bass

Model Number:	LE14H-4
Part Number:	336321-002
Division:	JBL
Where Used:	S4600
Approved Supplier(s)	JBL Pro Manufacturing
Design Engineer:	Jerry Moro

Assembled View:



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Transducer Mechanical Characteristics

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Assembly

Mounting Diameter:	12.45 inches	Mounting Depth:	4.77 inches
Flange Diameter	13.88 inch (12.75" across flats)	Flange Depth:	.52 inches
Mounting Detail:	4x, .218 inch Dia. thru, .340in C-Bore	Overall Depth:	5.29 inches
Other:			

Frame

Type:	JBL "Squircle"	Material:	Cast Aluminum
Color:	Black	Finish:	Wrinkle
Other:			

Diaphragm

Type:	Cone	Material:	Paper Pulp
Color:	Black	Finish:	Aquaplas (Black)
Other:			

Surround

Type:	Half Roll	Material:	NBR Rubber
Color:	Black	Finish:	Smooth - No Texture
Other:			

Spider

Type:	Flat	Material:	Cotton
Weave:	Standard	Color:	Yellow/Brown
Other:			

Front Gasket

Material:	Rubber	Color:	Black

Rear Gasket

Material:	n/a	Color:	n/a

Voice Coil

I.D.:	3.904	Max. O.D.:	3.963 inches
Wire Type:	High Temp Copper SV-R	Wire Size:	0.170 x 0.600 mm Ribbon
Wire Turns:	106	Wire D.C.R.:	6.0 Ohms
Winding Width:	.780 inch	Winding layers:	1
Former:	High Temp, 0.005in. Fiberglass	Wrapper:	High Temp NEC paper
Other:			

Magnet

Material:	Ceramic 5	Thickness:	.750 inches
O.D.:	8.25 inches	I.D.:	4.60 inches
Other:			

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Transducer Mechanical Characteristics (Motor)

Model #	**LE14H-4**	Part #	**336321-002**

Top Plate

Material:	1008, 1215, or equivalent steel	Thickness:	.280 inches
O.D.:	7.75 inches	I.D.:	3.999 inches
Other:			

Pole Piece

Material	1008, 1215, or equivalent steel	O.D.:	3.879 inches
Vent:	1.35 inch		
Other:			

Back Plate

Material:	Sand Cast Nodular Iron	Thickness:	1.10 inches (tappered)
O.D.:	7.85 inches	I.D.:	1.35 inch vent hole
Other:	Sand Cast back plate includes pole (used with Pole Plate)		

Bucking Magnet

Material:	n/a	Thickness:	
O.D.:		I.D.:	
Other:			

Shielding Can

Material:	n/a	Thickness:	
Other:			

Misc

Terminal Size / Type:	Dual push button	Polarity:	JBL Standard
SFG Configuration:	Pole Plate glued to smaller diameter pole (for Flux ring insert)		
Flux Stabilizing Ring:	Aluminum Ring at bast of pole		
Tinsel Lead Type:	Copper twisted pigtails		
Tinsel Lead Attach.:	Soldered to terminal posts and Eyelets in cone		
Other:			

Notes:

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Transducer Electro-Mechanical Parameters

Fundamental Resonant Frequency (Hz):	Fs	24	+/-	5%
Transducer Direct Current Resistance (Ohms):	DCR	6	+/-	3%
Total Driver Q at Fs, Considering all driver Resistance:	Qts	0.23	+/-	5%
Moving Mass (g):	Mms	124	+/-	10%
Motor Strength (T*m):	Bl	20.8	+/-	5%
Voltage Sensitivity(2.83V@1 meter)	SPL	92.5	+/-	1dB
Radiation Area	Sd	660.52	+/-	n/a

Method

Software:	MLSSA
Mass Loading:	160 Grams
Misc.:	

Magnetic Flux Information (For Engineering Reference Only)

Total flux lines intercepted by coil windings [Maxwell Turns]:	390,549
Conversion to flux density [Tesla]:	0.627
Flux lines throughout gap thickness [Maxwell Turns]:	268,320
Conversion to flux density [Tesla]:	1.2

Notes

Parameters provided are nominal values which are closest to the Engineering Referance Standard

Voltage Sensitivity takes precedence over possible T/S combinations that would produce SPL

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Transducer Test Specifications

production testing quantities per HCG QA AQL

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Polarity Test

Polarity: JBL Standard

Dynamic Test

Sine Sweep Voltage: 10.0 Vrms (throughout sweep range)
Frequency Range: 20 -800Hz
Sweep Duration: 4 seconds minimum

Power Test

Signal: Filtered Pink Noise, 50-500Hz, 6dB Crest, 36.0Vrms
Duration: 8 + 92 hours

Impedance

DC Resistance: 6 Ohms
Min. Impedance @ Frequency: 7.2 Ohms at 200Hz

Frequency Response

Freq. Response:

Window	Averaging	Slope
60 - 254 Hz +1.0dB / -1.0dB	1/6 Octave	36 dB / Octave
269 - 508 Hz +1.0dB / -0.80dB	1/3 Octave	36 dB / Octave
538 - 718 Hz +1.5dB / -1.0dB	1/6 Octave	31 dB / Octave
767 - 1016 Hz +2.0 / -1.0dB	1/6 Octave	32 dB / Octave
1076 - 2032 Hz +2.5dB / -4.0dB	1/6 Octave	33 dB / Octave

Notes:

Engineering Standard Measured Parameters	Date	Rev #	Document Number
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Part # 336321-002

MLSSA SPO 4WI #010227-3479-3488 for Harman Consumer Group

	Measured Parameters			QC Limits
Line	Parameter	Value	Units	
1	RMSE-free	1.13	Ohms	
2	Fs	24.69	Hz	
3	Re	6.07	Ohms	
4	Res	173.03	Ohms	
5	Qms	6.73		
6	Qes	0.24		
7	Qts	0.23		
8	L1	0.78	mH	
9	L2	1.62	mH	
10	R2	5.88	Ohms	
11	RMSE-load	0.81	Ohms	
12	Vas(Sd)	204.81	liters	
13	Mms	124.29	grams	
14	Cms	334	µM/Newton	
15	Bl	22.27	Tesla-M	
16	SPLref(Sd)	93.0	dB[Re]	
17	Rub-index	0.00		

RME = 81.7

Method: Mass-loaded (160.000 grams) Area (Sd): 660.52 sq cm

DCR mode: Fixed (6.59 - 0.52 ohms) QC file: CLOSED

Analysis successful. Shift in Fs = -34.8% (-20% to -50% is recommended).

#6-LE14H-4 Rev.A 3-28-07 ENG EPR STND MLSSA: Parameters

Engineering Standard Frequency Response	Date	Rev #	Document Number
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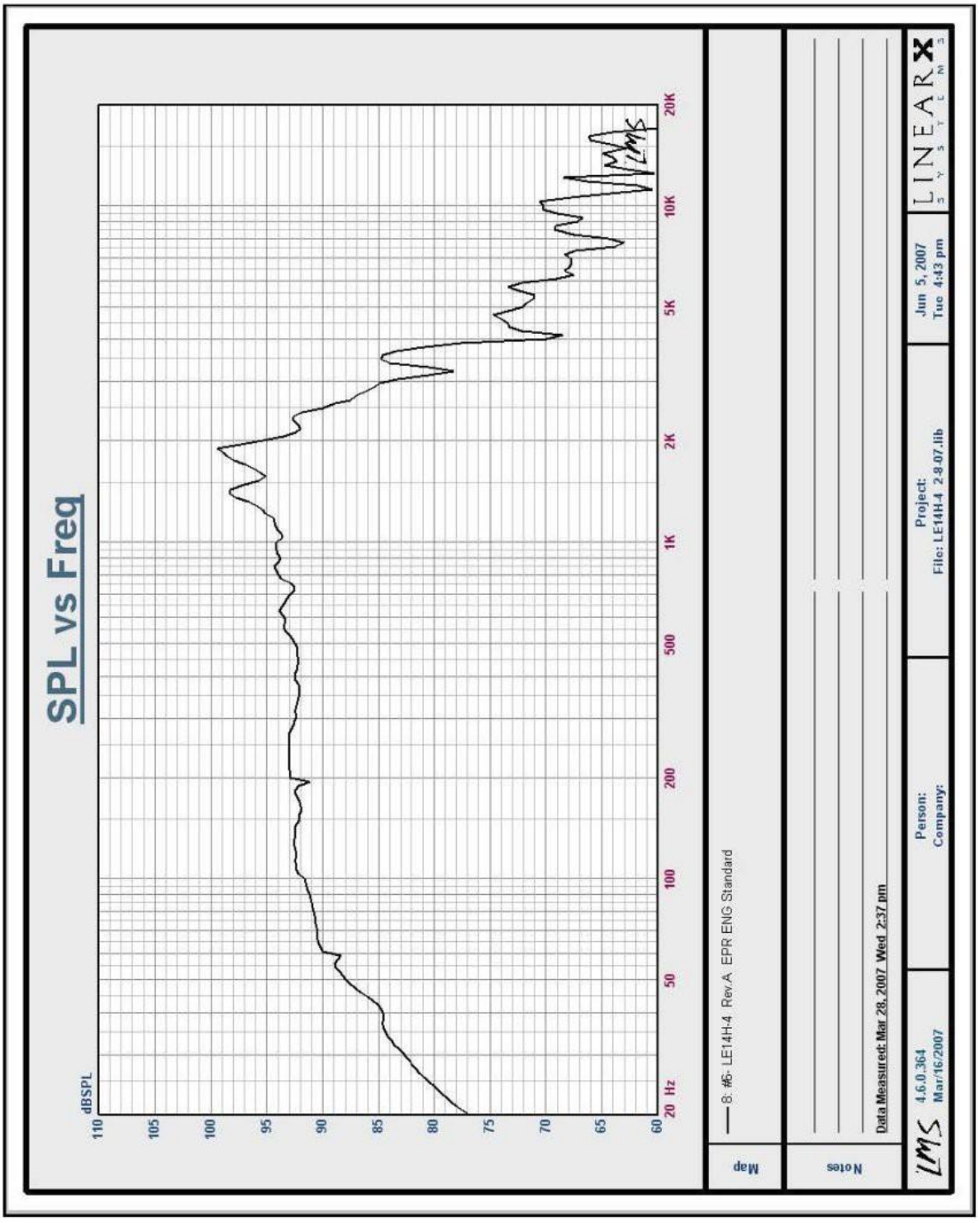

Engineering Standard Distortion (Low Level)	Date 6/12/2007	Rev # X1	Document Number 364012

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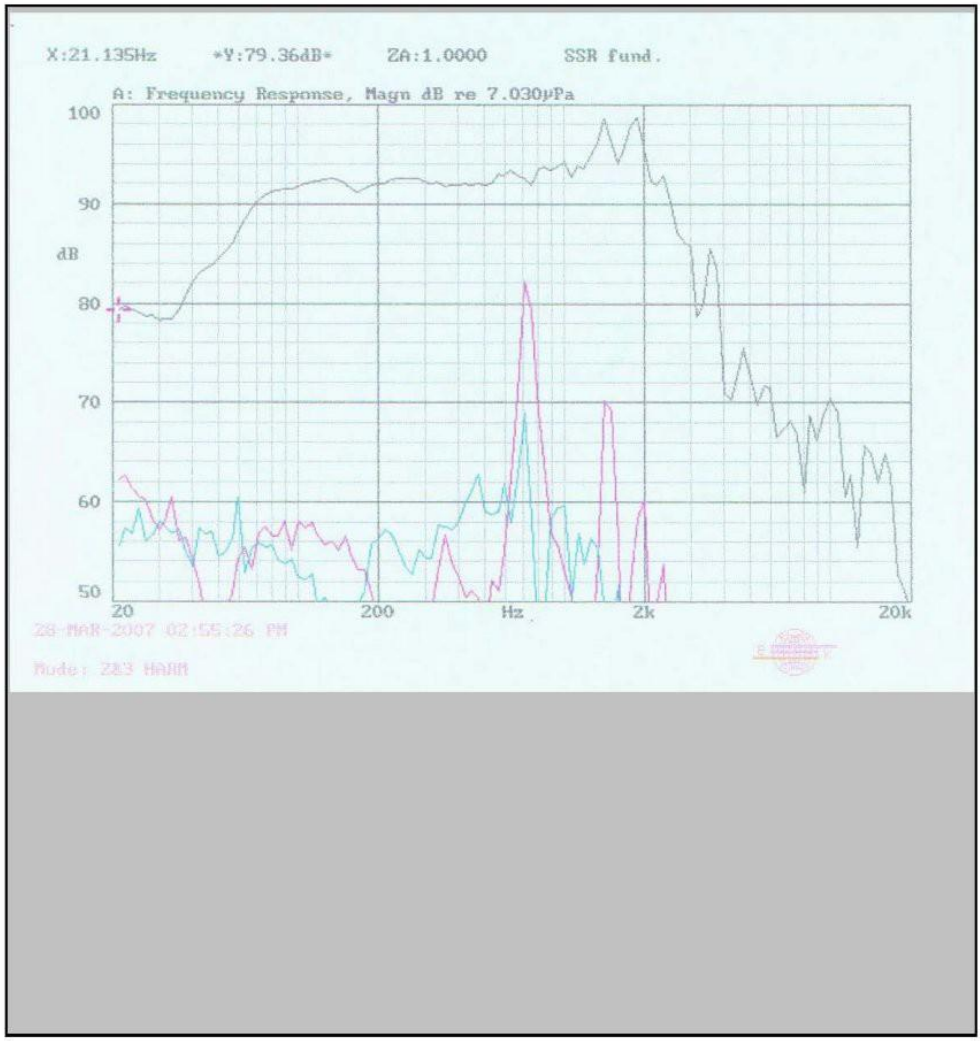

Notes:

2.83 Vrms Distortion raised 20dB relative to Fundamental (RED = 2nd Harmionic, Green = 3rd Harmonic)

Engineering Standard Distortion (High Level)	Date	Rev #	Document Number
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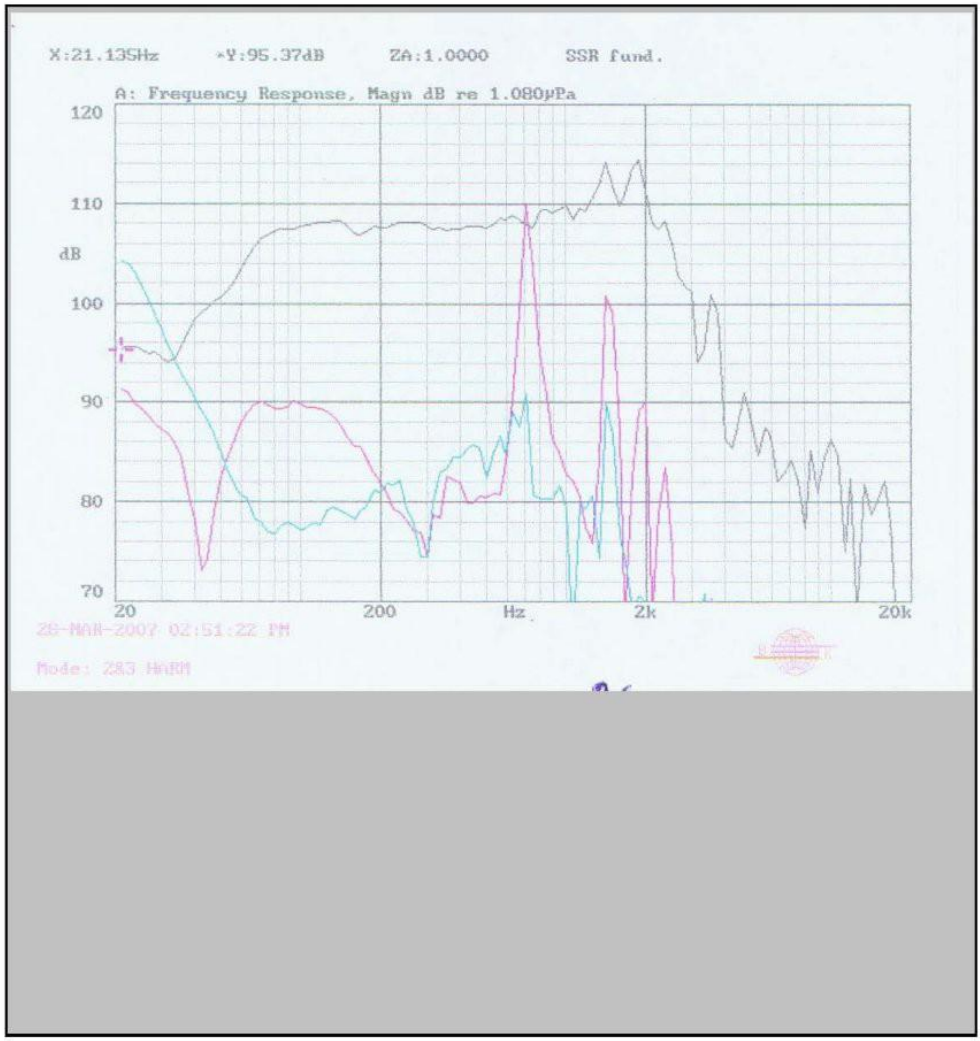

Notes:

18.26 Vrms Distortion raised 20dB relative to Fundamental (RED = 2nd Harmionic, Green = 3rd Harmonic)

Engineering Standard Impedance	Date	Rev #	Document Number
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