



Engineering Test and Performance Specification

Model Name: Synthesis 8
Part Number: 361072-001
Description: Low distortion Woofer / Midrange
Division: JBL Synthesis
Where Used: Synthesis SAM2LF

Approved Supplier: GGEC

Design Engineer: Jerry Moro

Approval Sample number: GGEC EPR Standard #O 0622, unit#4

Pages: 10

Revision: A

6/23/06

Engineering Test and Performance Specification

Purpose:

To define and establish a reference for the JBL Engineering approved performance characteristics of the stated model. To define the type of testing, and minimum conditions for testing, of production units of the stated model. To insure that the JBL design and performance intent is met. The performance data contained in this document is taken from the JBL Engineering Reference Standard unit that is held in the Harman Northridge facility.

This document is a JBL Engineering specification only and does not attempt to establish AQL or Visual acceptance levels or other criteria that are set forth and enforced by the Customer Purchasing, Incoming Inspection, and Quality Assurance groups.

Contents:

1) Physical and Mechanical Specifications

2) Engineering Test Specification (ETS)

Defines minimum testing for production units and response variation tolerance

3) Performance Specification

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Supplier Sample Cover Sheet

Assembly Drawing



Physical and Mechanical Characteristics

Model # Synthesis 8 **Part #** 361072-001

Description: Low distortion Woofer / Midrange

Motor Steel and Plating type: Low Carbon Steel (1008 or Equiv.) with Black Zinc plating

Frame Type: Cast Aluminum (JBL Squirele style) **Frame Finish:** Powder Coat, Black

Outer Dia. 8.76 inches (7.97 inch across 4 flats) **Mounting Depth:** 4.00 inches

Mounting Dia: 7.09 inches **Overall Height:** 4.22 inches

Spider: **Type:** 5-Progressive roll (Nomex) **Color:** Brown

Trim Ring: **Type:** Integrated with Surround **Color:** Black with slight texture

Surround: **Type:** NBR rubber 60 Shore A **Color:** Black with slight texture

Cone: **Type:** CMMD **Color:** Black

Dome: **Type:** CMMD **Color:** Black

Front Gasket: **Type:** None **Color:** n/a

Rear Gasket: **Type:** .125 thk, med density Foam type **Color:** n/a

Tinsel Lead **Type:** Silver/Cad-free/Copper-twisted **Attachment:** Soldered to Coil patches

Terminal: **Type:** Standard push-on lugs **Lug Size:** .205 / .250

Polarity: EIA STND - Positive applied to .250 terminal moves cone away from magnet

Voice Coil: **Diameter:** 51.5mm (2 inch) **Wire:** CCAR Ribbon 0.50x0.120mm, Edge wnd.

Layers: 1 **Former:** Hightemp .125mm (Til) Fiberglass

Turns: 109 +/-2 **Wrapper:** High temp .10mm CEB

Winding Length : 16.0mm **DCR:** 8.4 Ohms +/- 5%

Perforations: Yes, 2 rows of 10 at 4mm diameter

Top Plate: **Thickness:** 8.0mm

Magnet: **Type:** Neo-38SH **OD:** 49.6mm **Thickness:** 15.10mm

Shield Magnet: **Type:** Neo-38SH **OD:** 33.0mm **Thickness:** 10.2mm

Shield Can: **Yes or No** n/a **OD:** n/a **Thickness:** n/a

Notes:

Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.


Shield Magnet is mounted above pole piece and charged opposite of main magnet.

Pole piece incorporates a Copper cap to lower distortion (Inductance modulation

control and 3rd Harmonic). Also incorporates JBL Flux Stabilization ring captured

between the Pot and Top plate. A 2.5mm spider spacer ring increases spider to top plate.

excursion to about 18mm.

Model Synthesis 8 	Engineering Test Specification	Document Number 363370	Rev A
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1. Model Description: *Low distortion Woofer / Midrange*
 Model Part # **361072-001** Design Engineer: **Jerry Moro**
 (Part # listed is S/M level for systems and M/I level for transducers)
 Shipping Weight: **approx 4.72 IBS** Packaging Test Method:

2. Dynamic Test: (100% test) Input Voltage (@ lowest sweep range): **14.0 Vrms**
 Sweep Range: **500 - 20hz** Sweep Duration: **4 seconds**

3. Power Test-Production Audit of 6 pcs @ each run: (Must EPR Qualify at 100 hours@same spec)
 Input Signal: **Pink Noise** Filter: **50 - 500Hz**
 Crest Factor: **6 dB** Duration (hours): **2 hrs** Input Voltage: **27.0 Vrms**

4. Impedance: (Ref only) D.C. Resistance: **8.4 ohms**
 Rated Impedance: **8.0 ohms** Min. Impedance: **9.5 ohms** Motional Impedance:
 Thiele-Small; See: Impedance Curve; See:

5. Polarity: (Automatically checked 100% during Canetics test.): **EIA STANDARD**
 EIA = + volt. to + term. gives forward cone movement; phase detector green; JBL = + volt. to + term. gives reverse movement, phase detector red.
For System only (this section not applicable to transducers alone):
 Description: Polarity:
 Driver 1:
 Driver 2:
 Driver 5:

6. Frequency Response Test: (100% test)
 Mic Position (inches): X: Y: Z: X=vert., Y=Horiz, Z = Dist from baffle. 0,0,0 = lower left corner facing spkr front.
 Crossover Frequencies (System Ref):
 Canetics File Name Test Voltage
 Stimulus File Gate Length Pregate Length
 Number of Stacks Mic Distance Max Noise

Channel 1	Frequency		Bins Per Octave	Rolloff dB/Octave	Tolerance	
	Start	Stop			Upper	Lower
Group 1	57 Hz	718 Hz	6	36	1.0 dB	1.0 dB
Group 2	806 Hz	2874 Hz	6	36	1.5 dB	1.5 dB
Group 3	3225 Hz	9123 Hz	6	36	2.5 dB	2.5 dB
Group 4						
Group 5						
Group 6						
Group 7						
Group 8						

Note: Group ranges listed per OF1004, rev B. Frequencies shown are effective ranges of group(s).

7. Other:

Signatures
 Marketing: _____ Date: _____ Proc. Eng: _____ Date: _____
 Mfg Engr.: _____ Date: _____ Dev. Engr.: _____ Date: _____
 QA Lab: _____ Date: _____

Revision History

Rev	Release Action	Date	Rev Initials
A	Release for Production BCO # 32277	8/23/2006	Jerry Moro



T/S Parameters

Model # Synthesis 8 Part # 361072-001
Description: Low distortion Woofer / Midrange

Fundamental Resonant Frequency:	Fs	<u>48</u>	+/-	<u>10%</u>
Transducer Direct Current Resistance:	DCR	<u>8.4</u>	+/-	<u>5%</u>
Total Driver Q at Fs, Considering all driver Resistance:	Qts	<u>0.51</u>		
Moving Mass:	Mms	<u>28.6</u>	+/-	<u>5%</u>
Motor Strength:	Bl	<u>11.6</u>	+/-	<u>5%</u>
Voltage Sensitivity(2.83V@1 meter) - see curve	SPL	<u>86</u>	+/-	<u>1.0 dB</u>

Magnetic Flux information: (For Engineering Reference ONLY)

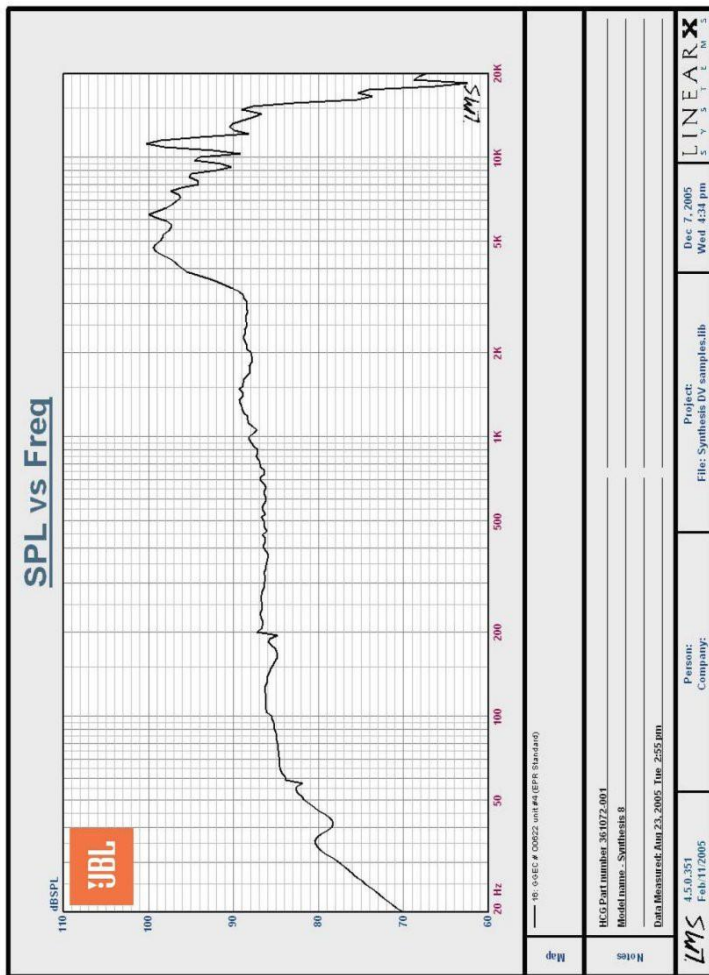
Total Flux lines intercepted by Coil Windings [Maxwell turns]: 170,269
Conversion to Flux Density [Tesla]: 0.648

Flux lines throughout Gap thickness [Maxwell turns]: _____
Conversion to Flux Density [Tesla]: _____

Method; MLSSA added MASS

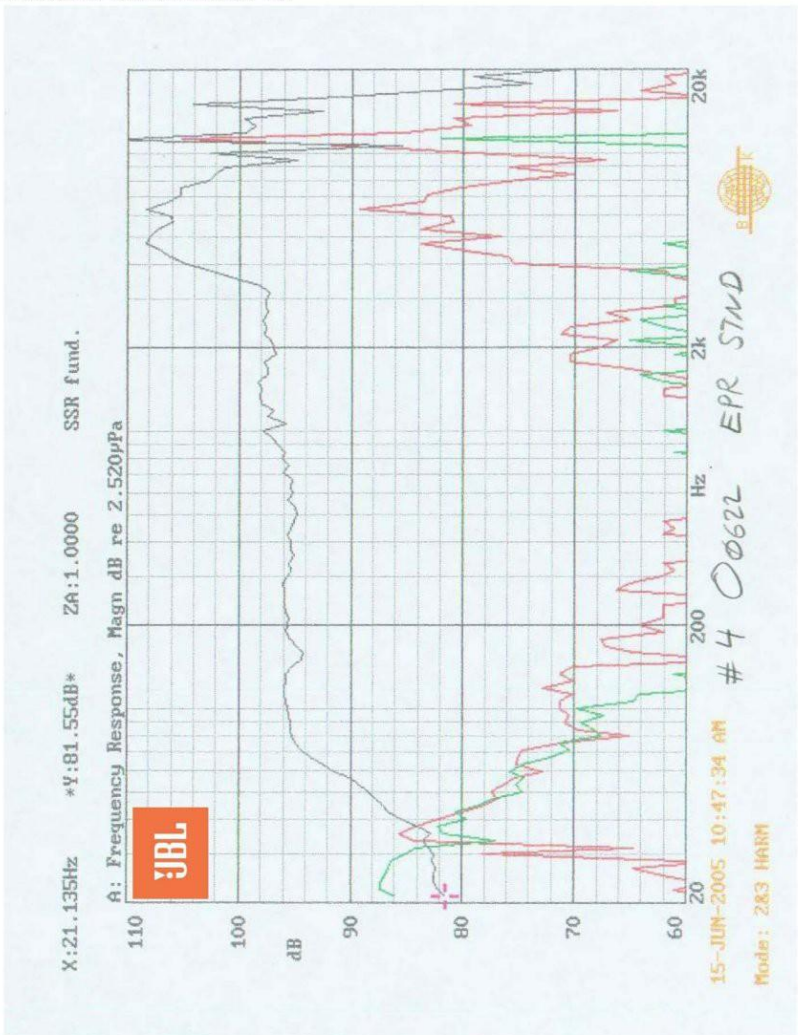
Notes; Flux measured with a 2.057 inch diameter, single turn Search coil

Frequency Response, 2.83Vrms @ 1Meter




Eng EPR STND, GGEC # 00622, unit # 4

2nd and 3rd Harmonic distortion raised 20dB relative to Fundamental
Measured at 8.0 vrms at 1M



Eng EPR STND, GGEC # 00622, unit # 4

MLSSA Parameter sheet example:



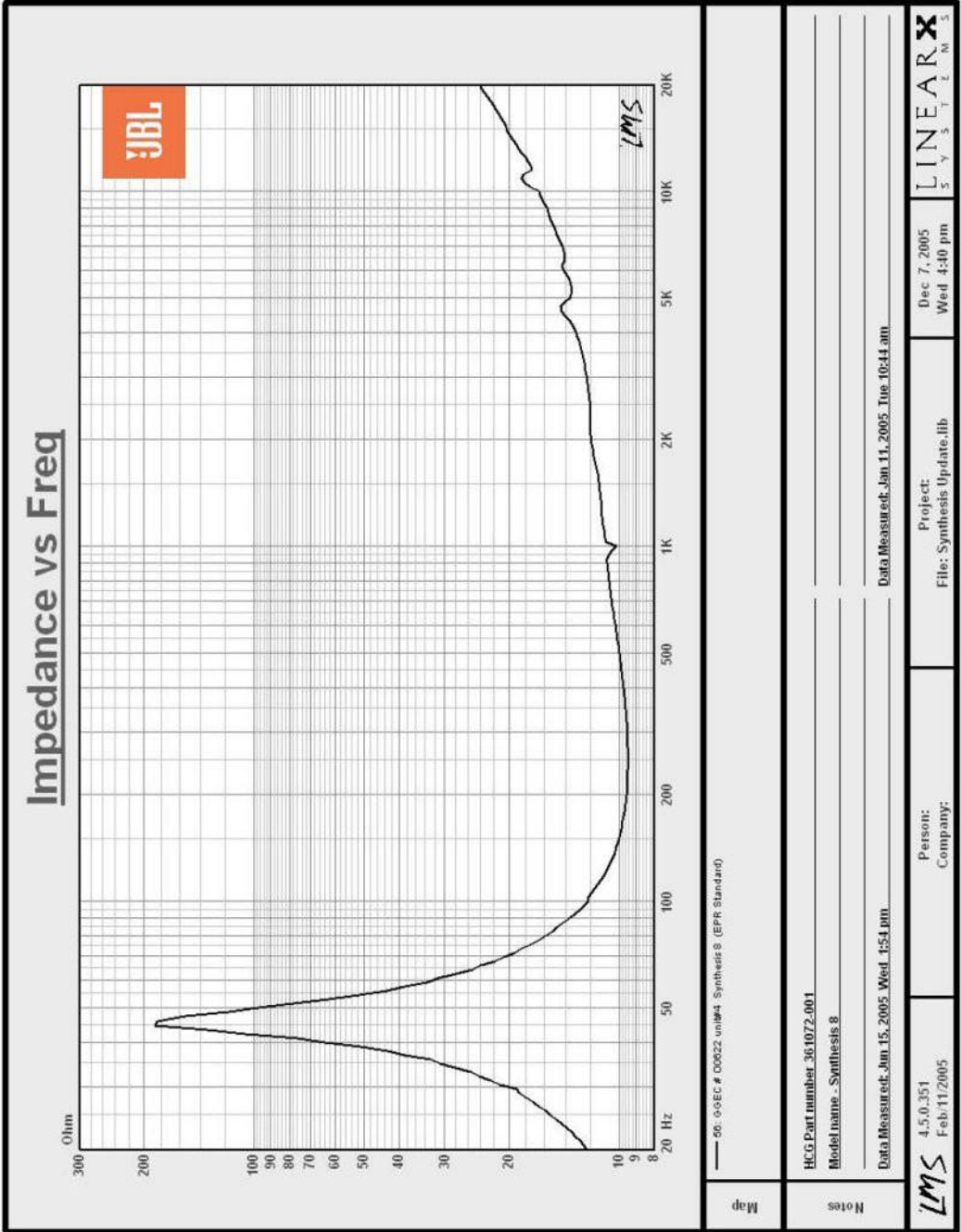
MLSSA SPO 4WI #010227-3479-3488 for Harman Consumer Group
QC Limits

Line	Parameter	Value	Units
1	RMSE-free	0.60	Ohms
2	Fs	47.93	Hz
3	Re	8.36	Ohms
4	Res	213.87	Ohms
5	Qms	13.67	
6	Qes	0.53	
7	Qts	0.51	
8	L1	0.19	mH
9	L2	0.92	mH
10	R2	3.05	Ohms
11	RMSE-load	0.59	Ohms
12	Vas(Sd)	24.74	liters
13	Mms	28.62	grams
14	Cms	385	µM/Newton
15	B1	11.61	Tesla-M
16	SPLref(Sd)	88.7	dBS @ 0.000 grams
17	Rub-index	0.00	Area (Sd): 213.82 sq cm

Method: Mass-loaded (0.000 grams) ·QC file: CLOSED.....
DCR mode: Fixed (8.86 - 0.50 ohms)

Analysis successful. Shift in Fs = -30.5% (-20% to -50% is recommended).
#4- 00622 Synthesis, 8" 6-14-05 EPR STANDARD MLSSA: Parameters

LMS impedance curve



Eng EPR STND, GGEC # 00622, unit # 4

