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| Engineering Design and Test Specification (EDS) |
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Model Name: ARRAY 8
Part Number: 361254-001
Description: 8 inch woofer / midrange
Division: JBL
Where used: 800 Array, 8 inch 3-Way system

Approved Supplier: GGEC

Design Engineer: Jerry Moro

Approval Sample number: GGEC EPR sample #O 0202 #3 (GGEC #O 01324 with 4 grams additional Mass

Approved Production Line Reference

Standard (chosen from MSB / Pilot / Production runs):

Data Code:

| | |
|-------------------------------|-----------|
| GGEC MSB unit #17, Eng STND | 4/19/2005 |
| GGEC MSB unit #8, QA STND #2 | 4/19/2005 |
| GGEC MSB unit #3, SYS STND #1 | 4/19/2005 |
| GGEC MSB unit #6, QA STND #1 | 4/19/2005 |
| GGEC MSB unit #13, GGEC STND | 4/19/2005 |
| GGEC MSB unit #9, SYS STND #2 | 4/19/2005 |

Pages: 9

Revision: X2

5/24/05

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
 - T/S Parameters
 - Frequency Response
 - Harmonic Distortion
 - Impedance

Physical and Mechanical Characteristics

Model name: ARRAY 8 **JBL Part #** 361254-001
Description: 8 inch woofer / midrange

Motor steel and Plating type: Typical 1008 / 1010 low carbon steel with Clear Zinc plating
Frame Type: Cast Aluminum **Frame Finish:** Powder Coat Black
Outer Dia. 228.6mm **Mounting Depth:** 118.6mm
Mounting Dia: 182mm **Overall Height:** 131mm

Trim Ring: **Type:** None **Color:** n/a
Surround: **Type:** Butyl or NBR rubber **Color:** Black
Cone: **Type:** Paper Pulp, Restruck with 5-ribs **Color:** Black
Dome: **Type:** Paper pulp, Restruck **Color:** Black

Front Gasket: **Type:** None **Color:** n/a
Rear Gasket: **Type:** 0.030 Neoprene rubber **Color:** Black
Tinsel Lead **Type:** Silver-twisted tinsel leads **Attachment:** Soldered to Cone Eyelets
Terminal: **Type:** Male Lugs **Lug Size:** 0.250 inch and 0.205 inch
Polarity: EIA STND - Positive applied to RED (.250) terminal moves cone away from magnet

Voice Coil: **Diameter:** 36.0mm VCID **Wire:** 0.30mm CCAW round
Layers: 2 **Former:** Kapton, 0.125mm thick
Turns: 109 +/-4 **Wrapper:** Kraft paper, 0.1mm thick
Winding Length : 21.0mm +/- .6mm **DCR:** 4.9 +/- 0.5 Ohms

Top Plate: **Thickness:** 8.0 mm
Primary Magnet: **Type:** Ceramic 5 **OD:** 120.7mm **Thickness:** 25.0mm
Bucking Magnet: **Type:** Ceramic 5 **OD:** 79.5mm **Thickness:** 15mm
Shield Can: **Yes or No** none **OD:** n/a **Thickness:** n/a

Notes: Design is "overhung" type with long coil and short gap height.

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|-------------------------|--------------------------------|-------------------------------|------------------|
| Model ARRAY 8 | Engineering Test Specification | Document Number TBD | Rev X2 |
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1. Model Description: 8 inch woofer / midrange

Model Part # **361254-001** Design Engineer: **Jerry Moro**
 (Part # listed is S/M level for systems and M/I level for transducers)
 Shipping Weight: **7.40 LBS** Packaging Test Method:

2. Dynamic Test: (100% test) Input Voltage (@ lowest sweep range): **9.0 vrms sweep**
 Sweep Range: **500 to 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: **19.0 Vrms**

4. Impedance: (Ref only) D.C. Resistance: **4.9 ohms**
 Rated Impedance: **8.0 ohms** Min. Impedance: **6.1 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 3:

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 speaker 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 | Rolltoff dB/Octave | Tolerance | |
|-----------|-----------|---------|-----------------|--------------------|-----------|--------|
| | Start | Stop | | | Upper | Lower |
| Group 1 | 95 Hz | 640 Hz | 6 | 36 | 1.0 dB | 1.0 dB |
| Group 2 | 678 Hz | 2281 Hz | 6 | 36 | 1.5 dB | 1.5 dB |
| Group 3 | 2416 Hz | 3225 Hz | 6 | 36 | 3.0 dB | 3.0 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 |
|-----|--|-----------|--------------|
| X1 | Initial release | 3/24/2005 | Jerry Moro |
| X2 | Group 2 and 3 frequency window changed and tolerance | 9/26/2005 | Jerry Moro |
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| T/S Parameters |
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|---------------------|--------------------------|-------------------|------------|
| Model # | ARRAY 8 | NMG Part # | 361254-001 |
| Description: | 8 inch woofer / midrange | | |

| | | | | |
|--|------------|------|-----|--------|
| Fundamental Resonant Frequency: | Fs | 35 | +/- | 10% |
| Transducer Direct Current Resistance: | DCR | 4.9 | +/- | 5% |
| Total Driver Q at Fs, Considering all driver Resistance: | Qts | 0.36 | | |
| Moving Mass: | Mms | 28.5 | +/- | 10% |
| Motor Strength: | Bl | 9.15 | +/- | 5% |
| Voltage Sensitivity(2.83V@1 meter) from 200hz to 600hz (see Frequency response for reference) | SPL | 89 | +/- | 1.0 dB |

Magnetic Flux information: (For Engineering Reference ONLY)

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|---|---------|
| Total Flux lines intercepted by Coil Windings [Maxwell turns]: | 174,237 |
| Conversion to Flux Density [Tesla]: | 0.721 |

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

Method: MLSSA added MASS

Notes:

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

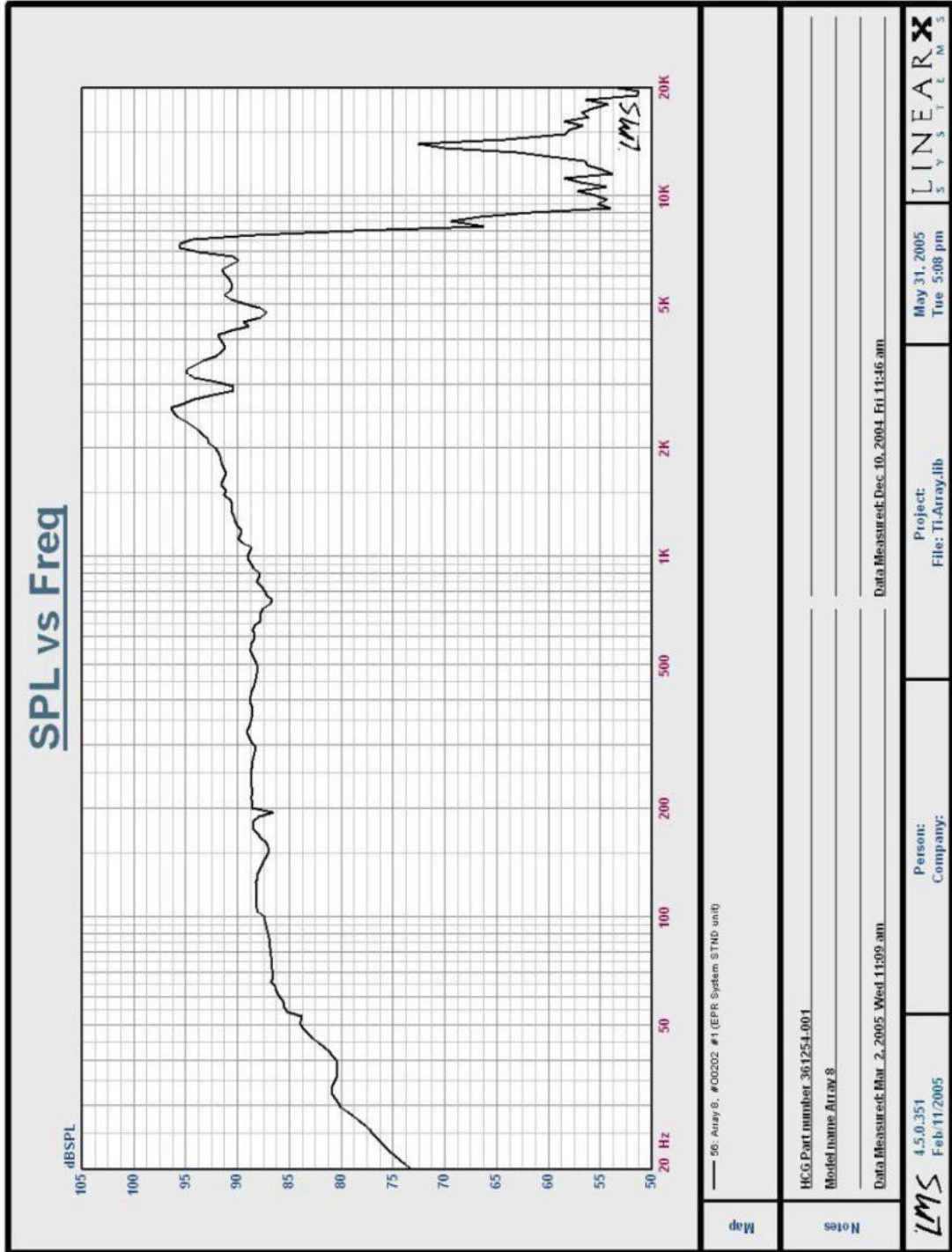
| Line | Parameter | Value | Units |
|------|------------|--------|-----------------------------|
| 1 | RMSE-free | 0.49 | Ohms |
| 2 | Fs | 34.14 | Hz |
| 3 | Re | 5.01 | Ohms |
| 4 | Res | 137.80 | Ohms |
| 5 | Qms | 10.28 | |
| 6 | Qes | 0.37 | |
| 7 | Qts | 0.36 | |
| 8 | L1 | 0.32 | mH |
| 9 | L2 | 0.60 | mH |
| 10 | R2 | 5.37 | Ohms |
| 11 | RMSE-load | 0.42 | Ohms |
| 12 | Vas(Sd) | 47.94 | liters |
| 13 | Mms | 29.11 | grams |
| 14 | Cms | 747 | $\mu\text{M}/\text{Newton}$ |
| 15 | B1 | 9.15 | Tesla-M |
| 16 | SPLref(Sd) | 87.9 | dB[4 ohms] |
| 17 | Rub-index | 0.00 | |

$R_{me} = 16.7$

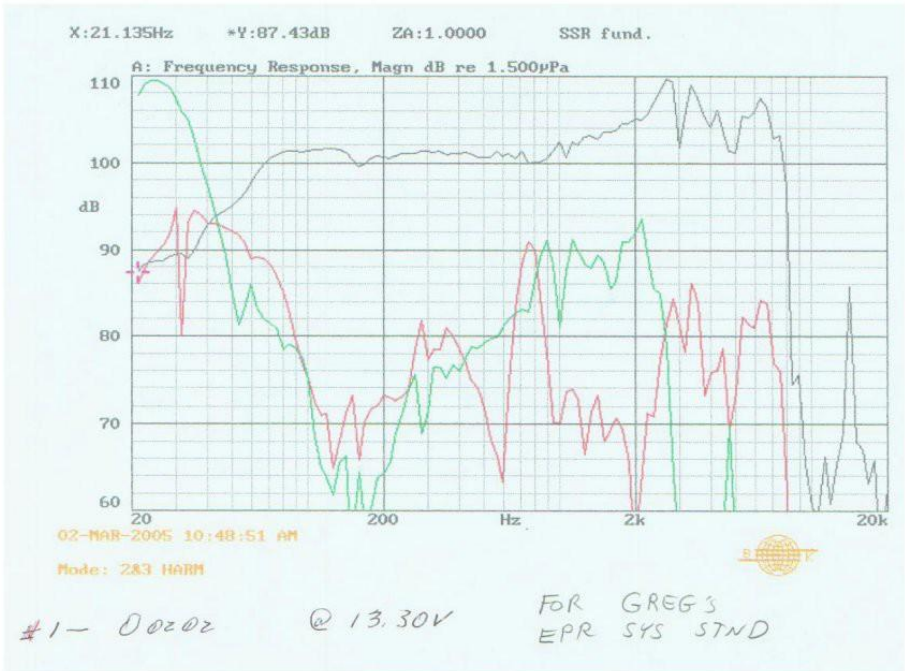
Method: Mass-loaded (40.000 grams) Area (Sd): 213.82 sq cm
 DCR mode: Fixed (5.52 - 0.51 ohms) QC file: CLOSED

Analysis successful. Shift in Fs = -36.9% (-20% to -50% is recommended).

Frequency Response, 2.83Vrms @ 1Meter - 2pie



2nd and 3rd Harmonic distortion raised 20dB relative to Fundamental
Red = 2nd , Green = 3rd
13.3 volt at 1 Meter for approx 100dB midband output



Revision: X2

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ARRAY 8

361254-001

LMS Impedance

