



## Engineering Test and Performance Specification

**Division:** JBL

**Project:**

**Model Number:** 1500FE

**Part Number:** 338975-001

**Description:** 15" Ceramic, 4" VC, High power woofer/sub-woofer.

**Where Used:** JBL 4348 mk2

**Approved Supplier:** Nexus Manufacturing

**Design Engineer:** An Nguyen

**Approval Sample number:** EPR approved revision X1

**Approved Production Line Reference  
Standard (chosen from MSB run):**

**Data Code:**

Revision:   A  

8/19/2005

## **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 #** 1500FE **Part #** 338975-001  
**Description:** 15" Ceramic, 4" VC, high power woofer/sub-woofer

**Frame Type:** Heavy Cast Aluminum **Frame Finish:** Power Coat, Charcoal  
**Outer Dia.** 15.25" **Mounting Depth:** \_\_\_\_\_  
**Mounting Dia:** 13.75" **Overall Height:** \_\_\_\_\_

**Trim Ring:** **Type:** NBR Rubber one piece **Color:** Black  
**Surround:** **Type:** EPDM Foam Rubber **Color:** Black  
**Cone:** **Type:** Apuaplas/paper Pulp **Color:** Black  
**Dome:** **Type:** Compressed Paper **Color:** Black

**Front Gasket:** **Type:** None **Color:** \_\_\_\_\_  
**Rear Gasket:** **Type:** None **Color:** \_\_\_\_\_  
**Tinsel Lead** **Type:** SilverPlateCadCopper-Twisted **Attachment:** \_\_\_\_\_  
**Terminal:** **Type:** Dual 5-way Binding posts **Lug Size:** \_\_\_\_\_  
**Polarity:** EIA - Positive voltage applied to RED terminal cone moves away from magnet

**Voice Coil:** **Diameter:** 4" **Wire:** .050X.0077 Aluminum  
**Layers:** 1 **Former:** Fiber glass .010" thick  
**Turns:** 150+/- 5% **Wrapper:** Nomex .010" thick  
**Winding Length :** 1.2" +/-5%

**Top Plate:** **Thickness:** .5"  
**Primary Magnet:** **Type:** Ceramic **OD:** 8" **Thickness:** .864"  
**Bucking Magnet:** **Type:** N/A **OD:** \_\_\_\_\_ **Thickness:** \_\_\_\_\_  
**Shield Can:** **Yes or No** No **OD:** \_\_\_\_\_ **Thickness:** \_\_\_\_\_

### Notes:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Revision : \_\_\_\_\_

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Model <b>1500FE</b>	Engineering Test Specification	Document Number <b>338975</b>	Rev <b>A</b>
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**1. Model Description:** 15" sub woofer, 4" VC

Model Part #: 338975-001 Design Engineer: An Nguyen  
 (Part # listed is S/M level for systems and M/L level for transducers)  
 Shipping Weight: Packaging Test Method:

**2. Dynamic Test: (100% test)** Input Voltage (@ lowest sweep range): 15 V  
 Sweep Range: 20 Hz - 500 Hz Sweep Duration: 6 seconds

**3. Power Test-Production Audit of 6 pcs @ each run: (Must EPR Qualify at 100 hours@same spec)**  
 Input Signal: Pink Noise Filter: 30 Hz - 300 Hz  
 Crest Factor: 6 dB Duration (hours): 2 hrs Input Voltage: 40 Vrms

**4. Impedance: (Ref only)** D.C. Resistance: 5.7 ohms  
 Rated Impedance: 8.0 ohms Min. Impedance: 6.7 ohms Motional Impedance: 232.0 ohms  
 Thiele-Small: See: Impedance Curve: See:

**5. Polarity: (Automatically checked 100% during Canetics test.):** JBL 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	Rolloff dB/Octave	Tolerance	
	Start	Stop			Upper	Lower
Group 1	53 Hz	905 Hz	6	36	1.0 dB	1.0 dB
Group 2						
Group 3						
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

<b>T/S Parameters</b>
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Model #	<u>1500FE</u>	Part #	<u>338975-001</u>
Description:	<u>15" low frequency transducer</u>		

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Fundamental Resonant Frequency:	Fs	<u>27 Hz</u>	+/-	<u>10%</u>
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Transducer Direct Current Resistance:	DCR	<u>5.75 Ohms</u>	+/-	<u>5%</u>
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Total Driver Q at Fs, Considering all driver Resistance:	Qts	<u>0.24</u>		
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Moving Mass:	Mms	<u>154 grams</u>	+/-	<u>5%</u>
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Motor Strength:	Bl	<u>25.1 T.M</u>	+/-	<u>5%</u>
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Voltage Sensitivity(2.83V@1 meter)	SPL	<u>94</u>	+/-	<u>1.0 dB</u>
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Magnetic Flux information: (For Engineering Reference ONLY)

Total Flux lines intercepted by Coil Windings [Maxwell turns]: \_\_\_\_\_  
Conversion to Flux Density [Tesla]: \_\_\_\_\_

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

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Method; \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Notes; \_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

# 1500FE MLSSA Parameters

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

Measured Parameters		QC Limits	
Line	Parameter	Value	Units
1	RMSE-free	1.08	Ohms
2	Fs	27.23	Hz
3	Re	5.74	Ohms
4	Res	231.21	Ohms
5	Qms	9.66	
6	Qes	0.24	
7	Qts	0.23	
8	L1	0.83	mH
9	L2	2.18	mH
10	R2	8.82	Ohms
11	RMSE-load	0.77	Ohms
12	Vas(Sd)	235.28	liters
13	Mms	153.78	grams
14	Cms	222	$\mu\text{M}/\text{Newton}$
15	B1	25.09	Tesla-M
16	SPLref(Sd)	94.8	dB[Re]
17	Rub-index	0.00	

Method: Mass-loaded (200.000 grams)      Area (Sd): 868.31 sq cm  
DCR mode: Fixed (6.25 - 0.51 ohms)      QC file: CLOSED

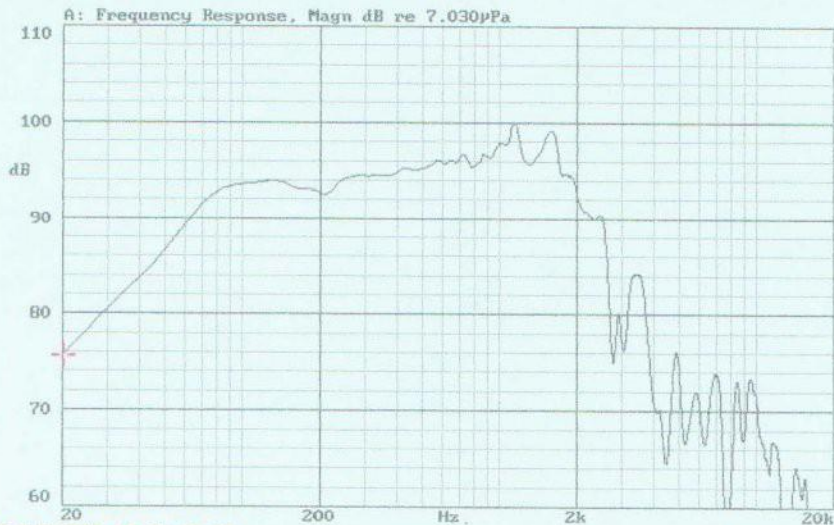
Analysis successful. Shift in Fs = -35.7% (-20% to -50% is recommended).

#2 /500FEREV.B 8-7-01

MLSSA: Parameters

# 1500FE Frequency response, 2.83Vrms @ 1Meter

X:20.000Hz Y:75.76dB ZA:Live Curve TSR fund.



07-AUG-2001 11:29:12 AM

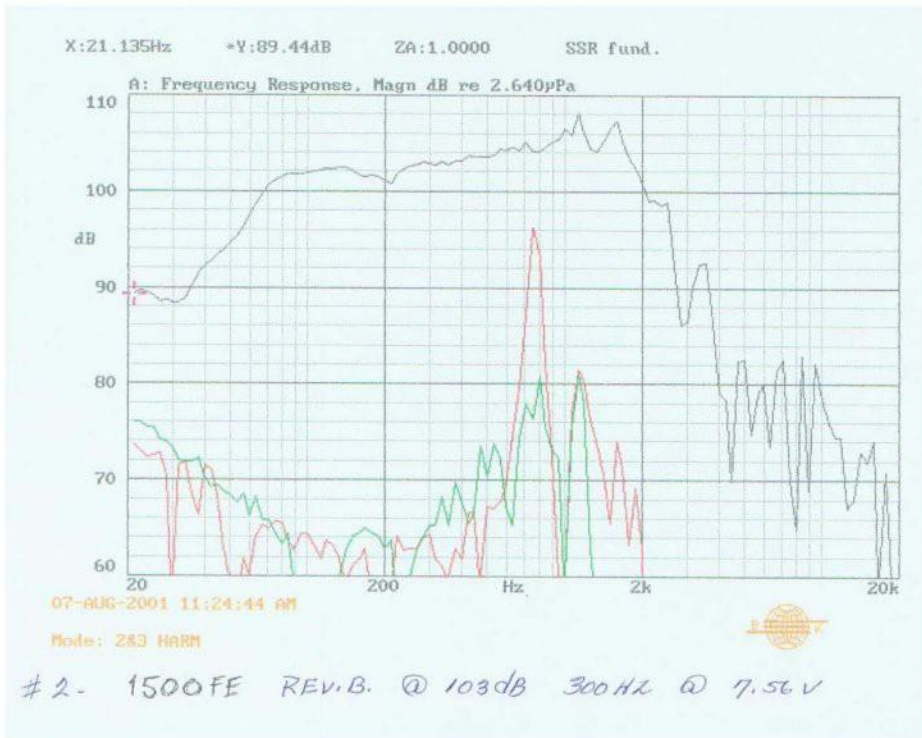
Mode: TSR



# 2. 1500FE REV. B.

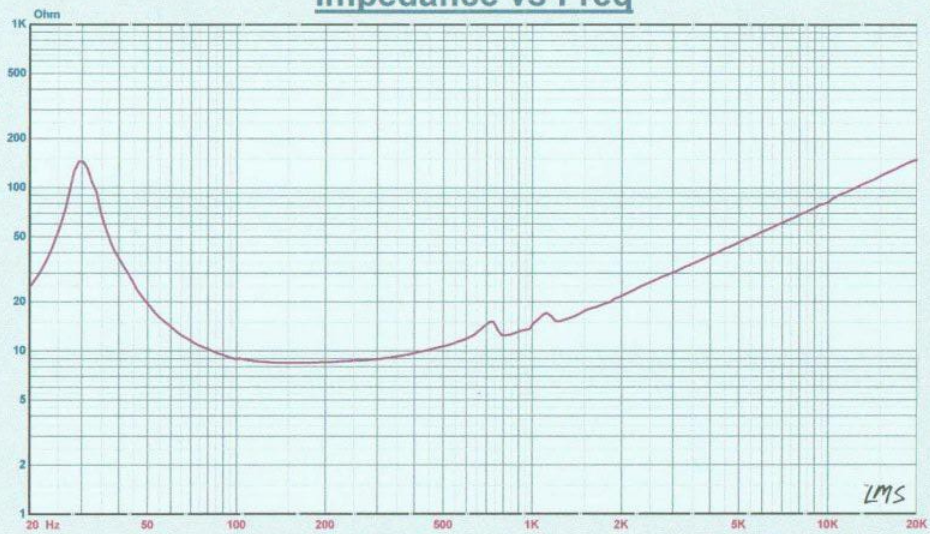
1500FE Harmonic Distortion at 103dB at 300Hz

2nd and 3rd Harmonic distortion raised 20dB relative to Fundamental





# Impedance vs Freq



Map

— 36: #2 1500 FE REV.B

Notes

Notes section with horizontal lines for text entry.

LMS 4.3.0.295  
Apr30/2001

Person:  
Company:

Project:  
File: An.lib

Aug 7, 2001  
Tue 11:55 am

LINEAR X  
S Y S T E M S