

#### **Engineering Test and Performance Specification**

Model Name: Synthesis 8

Part Number: 361072-001

**Description:** Low distortion Woofer / Midrange

JBL Synthesis Division:

Where Used: Synthesis SAM2LF

Approved Supplier: GGEC

**Design Engineer:** Jerry Moro

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

Pages:

10

A Revision:

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

T/S Parameters Frequency Response Harmonic Distortion Impedance Supplier Sample Cover Sheet Assembly Drawing

Description:       Low distortion Woofer / Midrange         Motor Steel and Plating type:       Low Carbon Steel (1008 or Equiv.) with Black Zinc plating         Frame Type:       Cast Aluminum (PEL 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:       OMMD       Color: Black         Tome:       Type:       CMMD       Color: Black         Dome:       Type:       CMMD       Color: m/a         Rear Gasket:       Type::125 thk, med density Foam type       Color: m/a         Timsel Lead       Type: Standard push-on lugs       Lug Size:       205 / 250         Polarity:       ELA STND - Positive applied to .250 terminal moves cone away from magnet         Voice Coil:       Diameter:       \$1.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Hightemp. 10mm CEB       Winding Length:       16.0mm <th>Model #</th> <th>Synthesis 8</th> <th></th> <th></th> <th></th> <th>Part #</th> <th>361072</th> <th>2-001</th> <th></th>	Model #	Synthesis 8				Part #	361072	2-001	
Motor Steel and Plating type:       Low Carbon Steel (1008 or Equiv.) with Black Zine plating         Frame Type:       Cast Aluminum (TEL 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: Black with slight texture         Surround:       Type:       Integrated with Surround       Color: Black with slight texture         Cone:       Type:       CMMD       Color: Black         Dome:       Type:       CMMD       Color: Black         Front Gasket:       Type:       CMMD       Color: m/a         Tinsel Lead       Type: Standard posh-on lugs       Lug Size:       205 / .250         Polarity:       ELA STND - Positive applied to .250 terminal moves one away from magnet         Voice Coil:       Diameter:       51.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Hightemp.102mm, CEB       Magnet:       902 size       102 size       102 size       102 mm       102 mm       102 mm         Shield Magnet:       Type:       Nee-38SH	Description	ption: Low distortion Woofer / Midrange							
Frame Type:       Cast Aluminum (TBL Squirele style)       Frame Finish:       Powder Coat, Black         Mounting Dia:       7.09 inches       7.09 inches       Overall Height:       4.22 inches         Spider:       Type:       5-Progressive roll (Nomex)       Color: Brown       Color: Black with slight texture         Spider:       Type:       Integrated with Surround       Color: Black with slight texture       Color: Black with slight texture         Surround:       Type:       MBR nubber 60 Shore A       Color: Black with slight texture       Color: Black         Cone:       Type:       CMMD       Color: Ilack       Color: Black         Dome:       Type:       CMMD       Color: Ilack       Color: Black         Front Gasket:       Type:       CMMD       Color: Ilack       Color: Ilack         Tinsel Lead       Type: Slandard push-on lugs       Lug Size:       205 / .250         Polarity:       ELA 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 .10mm CEB       Wrapper:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       8.4 Ohms +/- 5%	Motor Steel	and Plating type:		Low Corbon St	tool (1008 c	Fauir )	with Pl	ook Zino plating	
Trim time:Colspan="2">Colspan="2"Colspa	Frame Type	Cast Aluminun	(TBLS	Souimle style)	Frame	Finish	wiui Di	Powder Cost B	lack
Mounting Dia:       7.09 inches       Overall Height:       4.22 inches         Spider:       Type:       S-Progressive roll (Nomex)       Color: Brown         Trim Ring:       Type:       Integrated with Surround       Color: Black with slight texture         Surround:       Type:       NBR nibber 60 Shore A       Color: Black with slight texture         Cone:       Type:       CMMD       Color: Black with slight texture         Dome:       Type:       CMMD       Color: Black         Dome:       Type:       CMMD       Color: Islack         Front Gasket:       Type:       CMMD       Color: Islack         Tinsel Lead       Type:Silver/Cad-free/Copper-twisted       Attachment:       Soldered to Coil patches         Terminal:       Type:Standard push-on lugs       Lug Size:       205 / .250         Polarity:       ELA STND - Positive applied to .250 terminal moves cone away from magnet         Voice Coil:       Diameter:       \$1.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Highternp125mm (Til) Fiberglass         Turns:       109 +/-2       Wrapper:       Highternp10mm CEB         Winding Length :       16.0mm       DCR:       8.4 Ohms +/- 5%	Outer Dia.	8.76 inches (7	97 inch	across 4 flats)	Mount	ing Den	th:	4 00 inches	HOR
Spider:       Type:       5-Frogressive 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 with slight texture         Dome:       Type:       CMMD       Color:       Black       Color:         Front Gasket:       Type:       CMMD       Color:       n/a       Color:       Black       Color:       Black         Front Gasket:       Type:       CMMD       Color:       n/a       Color:       n/a         Tinsel Lead       Type:       Siber/Cad-free/Copper-twisted       Attachment:       Soldered to Coil patches         Terminal:       Type:       Standard push-on lugs       Lug Size:       .205 / .250         Polarity:       ELA STND - Positive applied to .250 terminal moves cone away from magnet         Voice Coil:       Diameter:       \$1.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Hightemp .10mm CEB       Winding Length:       16.0mm         Magnet:       Type:       Neo-	Mounting D	ia: 7.09 inches			Overal	l Heigh	t:	4.22 inches	
Spring       S-Progressive roll (Womex)       Color: Elock with slight texture         Trim Ring:       Type:       Integrated with Surround       Color: Elack with slight texture         Surround:       Type:       OMMD       Color: Elack with slight texture         Cone:       Type:       CMMD       Color: Elack with slight texture         Dome:       Type:       CMMD       Color: Elack         Dome:       Type:       CMMD       Color: Elack         Front Gasket:       Type:       CMMD       Color: Iack         Tinsel Lead       Type:       Ister/Cad-free/Coppertwisted       Attachment:       Soldered to Coll patches         Terminal:       Type:       Standard push-on lugs       Lug Size:       205 / 250         Polarity:       ELA 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 .10mm CEB         Winding Length :       16.0mm       DCR:       84 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       Thickness:       10.2mm         Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thick	Cuidon	Tuna	6 D		-	Calar	. D		
Num Rung:       Type:       Integrated with Surround       Color:       Black with sight texture         Surround:       Type:       OBM       Color:       Black       Color:       Black         Dome:       Type:       CMMD       Color:       Black       Color:       Black         Front Gasket:       Type:       CMMD       Color:       Black       Color:       Black         Front Gasket:       Type:       CMMD       Color:       n/a       Color:       Black         Front Gasket:       Type:       CMMD       Color:       Indegrated with sight texture       Color:       Black         Front Gasket:       Type:       CMMD       Color:       Indegrated with sight texture         Front Gasket:       Type:       CMMD       Color:       Black         Timsel Lead       Type:       Color:       Black         Terminal:       Type: Standard push-on lugs       Lug Size:       Color:       Black         Voice Coil:       Diameter:       51.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Hightemp .10zmm (Til) Fiberglass         Turns:       109 +/.2       Wrapper:       Hightemp .10mm CEB	Spider:	Type:	5-Prog	gressive roll (Noi	mex)	Color:	Brown	- 11 - 11 - 1 - 1	
Surround.       Type:       NBK hubber do Shore A       Codor: Elack with sight texture         Cone:       Type:       CMMD       Color: Black         Dome:       Type:       CMMD       Color: Black         Front Gasket:       Type: 125 thk, med density Foam type       Color: n/a         Rear Gasket:       Type: Silver/Cad-free/Copper-twisted       Attachment:       Soldered to Coil patches         Terminal:       Type: Standard push-on lugs       Lug Size:       .205 / .250         Polarity:       ELA 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:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       &4 0hms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       Thickness:       10.2mm         Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Magnet is mounted above p	Surround:	Type:	Integr	Integrated with Surroun		Color	r: Black with slight texture		
Conte:       Type:       Contail       Contail       Contail         Dome:       Type:       CMMD       Color:       Black         Front Gasket:       Type:       CMMD       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:       ELA 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:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       84 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       Top Plate:       Thickness:       15.10mm         Magnet:       Type:       Neo-38SH       OD:       49.6mm       Thickness:       15.10mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Magnet:       Yes or No       n/a       OD:	Conor	Type.	CLOK	nober og anore.	A	Color:	Diack	with slight texture	
Front Gasket:       Type:       Color:       n/a         Rear Gasket:       Type:       Silver/Cad-free/Copper-twisted       Attachment:       Soldered to Coil patches         Tinsel Lead       Type:       Standard push-on lugs       Lug Size:       .2057.250         Polarity:       ELA STND - Positive applied to .250 terminal moves cone away from magnet         Voice Coil:       Diameter:       \$1.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0 120mm, Edge wnd.         Layers:       1       Former:       Hightemp .125mm (Til) Fiberglass         Turns:       109 +/-2       Wrapper:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       84 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 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	Cone:	Type:	CMM			Color	Diack		
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:       \$1.5mm (2 inch)       Wire:       CCAR Ribbon 0.50x0.120mm, Edge wnd.         Layers:       1       Former:       Hightemp .125mm (Til) Fiberglass         Turns:       109 +/-2       Wrapper:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       8.4 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       Thickness:       15.10mm         Magnet:       Type:       Neo-38SH       OD:       49.6mm       Thickness:       15.10mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       15.10mm         Shield Can:       Yes or No       n/a       OD:       14.20mm       Thickness:       15.10mm         Shield Magnet is mounted above pole piece and charged opposite of main magnet.	Dome:	Type	CIVIIVI	D	-		DIACK		
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:       Silver/Cad-free/Copper-twisted       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 .1025mm (Fil) 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       Thickness:       10.0mm         Magnet:       Type:       Neo-38SH       OD:       49.6mm       Thickness:       10.0mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       n/a         Shield Can:       Yes or No       n/a       OD:       33.0mm       Thickness:       n/a         Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       Shield Magnet is mounted above pole piece and charged opposite of main m	Front Gask	et: Type:None			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:       ELA 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:       Hightemp .10mm CEB         Winding Length:       16.0mm       DCR:       &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:       10.2mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       n/s         Shield Can:       Yes or No       n/a       OD:       n/a       Thickness:       n/s         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 Harmoni	Rear Gaske	t: Type: 125 th	Type: 125 thk med density Foam type		e Color:	n/a			
Terminal:       Type: Standard push-on lugs       Lug Size:       .205 / .250         Polarity:       ELA 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       Thickness:       15.10mm         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:       33.0mm       Thickness:       10.2mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       31.7mm       In/a       Thickness:       10.2mm         Shield Magnet is mounted above pole piece and charged opposite of main magnet.       Pole piece incorporates a Copper	Tinsel Lead	Lead Type: Silver/Cad-free/Co		/Copper-twisted	Attach	ment:	Soldered to Coil patches		
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:       Hightemp .125mm (Til) Fiberglass         Winding Length:       16.0mm       DCR:       8.4 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter         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:       33.0mm       Thickness:       10.2mm         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.	Terminal:	Type: Standar	Type: Standard push-on lugs			Lug Size: .205 / .250			
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:       Hightemp .125mm (Til) Fiberglass         Winding Length :       160mm       DCR:       84 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter         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:       10.2mm         Notes:       Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       Notestiel 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.		Polarity:	Polarity: EIA STND - Positive ar		applied to .2	250 termir	nal move	es 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:       Hightemp .10mm CEB         Winding Length :       16.0mm       DCR:       8.4 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       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:       10.2mm         Notes:       Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       Notes:       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.	<b>W</b> · <b>A</b> ·	<b>D</b> !			***				
Layers:       1       Former:       Hightemp .125mm (Til) Fiberglass         Turns:       109 +/-2       Wrapper:       Hightemp .10mm CEB         Winding Length :       16.0mm       DCR:       8.4 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter         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       No       Notor with main Neo 38SH grade Magnet below Pole.       Notes:       Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       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 for the plate.	Voice Coil:	Diameter:	51.5mm (2 inch)		-Wire:	CCARI	Ribbon 0.50x0.120mm, Edge wnd.		ge wnd.
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:       33.0mm       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       10.2mm       n/a       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       10.2mm       n/a       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       10.2mm       n/a       Thickness:       10.2mm         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 and the plate of the pl		Layers:	1		-Former	r <u>:</u>	Hightemp .125mm (Til) Fiberglass		
Winding Length :       16.0mm       DCR:       8.4 Ohms +/- 5%         Perforations:       Yes, 2 rows of 10 at 4mm diameter       Yes, 2 rows of 10 at 4mm diameter         Top Plate:       Thickness:       8.0mm       Thickness:       15.10mm         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:       10.2mm         Shield Magnet:       Yes or No       n/a       OD:       n/a       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       n/a       Thickness:       10.2mm         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 and top plate.		Turns:	109 +/	(-2	_wrapp	er:	High te	emp .10mm CEB	
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         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.         Notes:       Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       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.		Winding Le	ength :	16.0mm	-	DCR:		8.4 Ohms +/- 59	/o
Top Plate:       Thickness:       8.0mm         Magnet:       Type:       Neo-38SH       OD:       49.6mm       Thickness:       15.10mn         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       m/a       Thickness:       10.2mm         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.         Notes:       Design is Neodymium Motor with main Neo 38SH grade Magnet below Pole.       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.	<b>T D</b>	Perforation	s:	Yes, 2 rows of	10 at 4mm	diameter			
Magnet:       Type:       Neo-38SH       OD:       49.0mm       Inickness:       15.10mm         Shield Magnet:       Type:       Neo-38SH       OD:       33.0mm       Thickness:       10.2mm         Shield Can:       Yes or No       n/a       OD:       n/a       Thickness:       10.2mm         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.	Top Plate:		mess:	8.0mm	-			T1.1.1	
Shield Magnet:Type:Neo-38SHOD:33.0mmThickness:10.2mnShield Can:Yes or No $n/a$ OD: $n/a$ Thickness: $n/a$ $n/a$ 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.	Magnet:	1 ype:		Neo-38SH		49.6mm	Leine -	- I mckness:	15.10mm
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.	Shield Mag	iet: Type:		Neo-38SH	_OD:	33.0mm	L.		10.2mm
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.	Shield Can:	Y es o	r No	n/a		n/a	40.000	I hickness:	n/a
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.	Notor: I	Design is Neodymiu	im Mot	or with main	Neo 38SH	I grade	Magne	t below Pole.	-+
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.	Notes: S	le piece incorporates a Copper cap to lower distortion (Industance modulation							
between the Pot and Top plate. A 2.5mm spider spacer ring increases spider to top plate.	1	ne prece incorporates a copper cap to lower distortion (inductance modulation							
between the Pot and Top plate. A 2.5min spheer spacer ring increases spheer to top plate	<u>(</u>	onu or and srd Har	tween the Dot and Top plate A 2.5 mm spider spacer ring increases spider to top plate.						
	<u> </u>	ciween uie Poi and	Topp	ate. A 2.5IIII	i spider s	pacer fil	ig incr	eases spider to t	op plate.

	1000				Document Nu	umber	Re
Synthesis	8	Engineerin	g Test Speci	3	63370	A	
. Model Descriptio	n:	Low distortion W	Voofer / Midra	nge			
Model Part # (Part # listed is S/M level <sub>.</sub>	<b>361072-001</b> for systems and M/I	level for transducers)	Design	Engineer:	Jerry Moro		
Shipping Weight:	approx 4.72 11	IS	Packag	ing Test Method	d:		
Dynamic Test: (.	100% test)	Input Voltage (@	lowest sweep	range):	14.0 Vr	ms	
Sweep Range:	500 - 20hz		Sweep	Duration:	4 secon	ds	
Power Test-Prod	uction Audit of	of 6 pcs @ each	h run: (Mus	t EPR Qualij	fy at 100 hou	rs@same spe	c)
nput Signal: Pink N	Voise	Filter: 50 - 5001	Hz,				
Crest Factor: 6	dB	Duration (hours)	: 2 hrs	Input 1	Voltage: 27.0	) Vrms	
Impedance: (Rej	f only)	D.C. Resistance:	8.4 6	ohms			
Rated Impedance:	8.0 ohms	Min.Impedance:	9.5 0	ohms Motion	nal Impedance:		
Thiele-Small; See:			Impeda	nce Curve; See			
Driver 1: Driver 2: Driver 5:							
Frequency Resp	onse Test: (1	00% test)					
fic Position (inches)	X.	Y.	Z	X=vert., Y=Horiz, Z = 1	Dist from beffle. 0.0.0 =	lower left corner facing :	sokr front
vorsonar Framancias	(System Raf)		2.				
ametics File Name	(System Ref).			Test Voltage			
timulus File		Gate Lenoth		Preorte Le	noth		
lumber of Stacks		Mic Distance		Voise			
	Frea	uencv	Bins Per	Rolloff	Tolerance		
Channel 1	Start	Stop	Octave	dB/Octave	Upper	Lower	
Group 1	57 Hz,	718 Hz	6	36	1.0 dB	1.0 dB	1
Group 2	806 Hz	2874 Hz	1	26	15 AP	1 5 AP	
		The second s	0	30	1.5 00	1.5 40	
Group 3	3225 Hz	9123 Hz	6	36	2.5 dB	2.5 dB	
Group 3 Group 4	3225 Hz	9123 Hz	0 6	36	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5	3225 Hz	9123 Hz	6	36	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5 Group 6	3225 Hz	9123 Hz	6 6	36	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5 Group 6 Group 7	3225 Hz	9123 Hz	6 6	36	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5 Group 6 Group 7 Group 8	3225 Hz	9123 Hz	6	36	2.5 dB	2.5 dB	-
Group 3 Group 4 Group 5 Group 6 Group 7 Group 8 Iote: Group ranges listed p Other:	3225 Hz	9123 Hz	0 6 effective ranges o	30 36	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5 Group 6 Group 7 Group 8 Iote: Group ranges listed p Other:	3225 Hz.	9123 Hz	0 6 effective ranges o	36 36 fgroup(s).	2.5 dB	2.5 dB	
Group 3 Group 4 Group 5 Group 5 Group 7 Group 8 Jote: Group ranzes listed p Other:	3225 Hz,	9123 Hz	6 effective ranges o Proc. H	30 36 fgroup(s).	2.5 dB		
Group 3 Group 4 Group 5 Group 5 Group 7 Group 8 Note: Group ranzes listed p Other: ignatures Marketing: Mfg Engr.:	3225 Hz	9123 Hz	o 6 effective ranges o Proc. E Dev. Et	30 36 fgroup(s).	2.5 dB	Date:	
Group 3 Group 4 Group 5 Group 5 Group 7 Group 7 Group 8 Note: Group ranges listed p Other: Other: Marketing: Marketing: DA Lab:	3225 Hz	9123 Hz 9123 Hz	o 6 effective ranges o Proc. H Dev. Bi	30 36 fgroup(s).	2.5 dB	Date:	
Group 3 Group 4 Group 5 Group 5 Group 7 Group 8 lote: Group ranges listed p Other: anatures Aarketing: Afg Engr.: 24 Lab: evision History	3225 Hz	9123 Hz 9123 Hz Pate Date Date Date Date Date Date Date	o 6 effective ranges o Proc. H Dev. H	30 36 (group(s).	2.5 dB	Date:	
Group 3 Group 4 Group 5 Group 7 Group 8 Vote: Group ranges listed p Other: ignatures Marketing: Afg Engr.: 2A Lab: evision History Rev Release.	3225 Hz er OF1004, rev B. F	9123 Hz 9123 Hz	o 6 effective ranges o Proc. E Dev. E	30 36 (group(s).	2.5 dB	L.5 dB     L.5 dB     Date:     Date:     Date:	

# JBL

urt # <u>361072-</u> 0	Part # <u>361072-</u> Voofer / Midrange	01	
<b>7s</b> 48	<b>Fs</b> 48	_ +/_	10%
CR 8.4	ce: DCR <u>8.4</u>	+/-	5%
0.51	driver Resistance: Qts0.51	_	
ms28.6	Mms 28.6	+/-	5%
31 11.6	<b>Bl</b> 11.6	+/-	5%
PL 86	- see curve SPL 86	+/-	1.0 dP
Y) sla]: 0.648	ngineering Reference ONLY) Windings [Maxwell turns]: <u>170,269</u> ersion to Flux Density [Tesla]: <u>0.648</u>		
Y) sla]: <u>0.643</u>	agineering Reference ONLY) Windings [Maxwell turns]: <u>170,269</u> ersion to Flux Density [Tesla]: <u>0.648</u> [Maxwell turns]: lux Density [Tesla]:		
Y) : <u>170,269</u> sla]: <u>0.648</u>	ngineering Reference ONLY) Windings [Maxwell turns]: <u>170,269</u> ersion to Flux Density [Tesla]: <u>0.648</u> [Maxwell turns]: hux Density [Tesla]:		
Y) : <u>170,269</u> sla]: <u>0.643</u> 	agineering Reference ONLY) Windings [Maxwell turns]: 170,269 ersion to Flux Density [Tesla]: 0.648 [Maxwell turns]:		
Y) : <u>170,269</u> sla]: <u>0.648</u> 	ersion to Flux Density [Tesla]: 0.648 [Maxwell turns]: 0.648 [Maxwell turns]:		
Y) ; sla]:	agineering Reference ONLY) Windings [Maxwell turns]: ersion to Flux Density [Tesla]: [Maxwell turns]: lux Density [Tesla]:	<u>170,269</u> 0.648	<u>170,269</u> 0.648



#### 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

3BL	. (papu	arameters
Group	recomme	ILSSA: P
imits imits 3.82 sq	-50% is	-
arman C QC L Sd): 21: e)·GL031	20% to -	DARD
8 for H Area (	0.5% (-)	STAND
9479-348 is is is is is is is is is is is is is	Fs = -3	EPR
a grams 110227-5 Unit Unit Unit Unit Unit Unit Unit Unit	ift in	14-05
441 #8 0 441 #8 0.60 0.60 0.60 1.51 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53	ful. Sh	8" 6-
SSA SPO Measure free d) d) free d) free d) free d) free d) free d) free d) free d) free d) free d) free d) free d free d free d free d free d free d free d free d free free	success	thesis,
M RMSE- RMSE	alysis	622 Syn
Line Line Metho DCR m	An	#4- 00

MLSSA Parameter sheet example:

Eng EPR STND, GGEC # 00622, unit # 4



LMS impedance curve

Eng EPR STND, GGEC # 00622, unit # 4



#### Synthesis 6 - Approved Transducer Assembly (for reference only) Drawing shown here is not maintained. Receive current revision from HCG Engineering.