

# TEST RESULT SUMMARY

## FCC Part 15 Subpart C Section 15.231

### IC RSS-210 Issue 6

MANUFACTURER	BodySound Technologies
NAME OF EQUIPMENT	BodySound Home Entertainment chair.
MODEL NUMBER	BDSYC001
MANUFACTURER'S ADDRESS	10230 West 70th Street Eden Prairie, MN., 55344
TEST REPORT NUMBER	WC603155
TEST DATE	1 June 2006

According to testing performed at TÜV America Inc, the above-mentioned unit is in compliance with the applicable electromagnetic compatibility (EMC) portions of the requirements defined in FCC Part 15 Subpart C Section 15.231 and Industry Canada RSS-210 Issue 6 Section 2

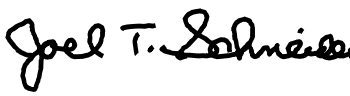
It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable EMC requirements of FCC Part 15 Subpart C Section 15.231 "Periodic operation in the band 40.66–40.70 MHz and above 70 MHz" and Industry Canada RSS-210 Issue 6 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment".

Date: 05 July 2006

Location: Taylors Falls MN  
USA

  
\_\_\_\_\_  
JC Sausen  
EMC Technician

  
\_\_\_\_\_  
JT Schneider  
Senior EMC Engineer

Not Transferable

# EMC Emission - TEST REPORT

Test Report File No. : **WC603155** Date of issue: 05 July 2006

Model / Serial nos. : BDSYC001 / ---

Product Name : BodySound Home Entertainment chair

Product Type : Home entertainment chair with audio amplifier.

Applicant : BodySound Technologies

Manufacturer : BodySound Technologies

License Holder : BodySound Technologies

Address : 10230 West 70th Street  
Eden Prairie, MN., 55344

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number :  
Reference(s) : **WC603155**

Total pages including Appendices 26

*TÜV America Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV America Inc issued reports.*

*This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP, NIST, or any agency of the US government.*

*TÜV America Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI*

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### IC RSS-210

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### Sign Explanations:

□ - not applicable

■ - applicable

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- |   |   |                                    |
|---|---|------------------------------------|
| <input type="checkbox"/> - EN 50081-1 / 1991                | <input type="checkbox"/> - Group 1                          | <input type="checkbox"/> - Group 2 |
| <input type="checkbox"/> - EN 55011 / 1991                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55013 / 1990                  |   |                                    |
| <input type="checkbox"/> - EN 55014 / 1987                  | <input type="checkbox"/> - Household appliances and similar |                                    |
|   | <input type="checkbox"/> - Portable tools                   |                                    |
|   | <input type="checkbox"/> - Semiconductor devices            |                                    |
| <input type="checkbox"/> - EN 55014 / A2:1990               | <input type="checkbox"/> - Household appliances and similar |                                    |
| <input type="checkbox"/> - EN 55014 / 1993                  | <input type="checkbox"/> - Portable tools                   |                                    |
|   | <input type="checkbox"/> - Semiconductor devices            |                                    |
| <input type="checkbox"/> - EN 55015 / 1987                  |   |                                    |
| <input type="checkbox"/> - EN 55015 / A1:1990               |   |                                    |
| <input type="checkbox"/> - EN 55015 / 1993                  |   |                                    |
| <input type="checkbox"/> - EN 55022 / 1987                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55022 / 1991                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - BS                               |   |                                    |
| <input type="checkbox"/> - VCCI                             | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - FCC Part 15 Subpart B            | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input checked="" type="checkbox"/> - FCC Part 15 Subpart C |   |                                    |
| <input type="checkbox"/> - CISPR 11 (1990)                  | <input type="checkbox"/> - Group 1                          | <input type="checkbox"/> - Group 2 |
|   | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - CISPR 22 (1993)                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input checked="" type="checkbox"/> - IC RSS-210 Issue 6    |   |                                    |

## RF Exposure Statement

The model BDSYC001 complies with RF exposure limits for humans as called out in FCC 2.1091 and IC RSS-102 2.5.2 (mobile >20 cm) or FCC 2.1093 and IC RSS-102 2.5.1 (portable <20 cm). Based on the highest field strength measured using a peak detector. The device is exempt from RF Evaluation because of it's operating frequency of 433.9 MHz and ERP of 38.5  $\mu$ W peak based on;

$$\text{ERP} = E \text{ (dB}\mu\text{V/m)} - 106.92 + 20 \log D \text{ (km)} = 83.23 \text{ dB}\mu\text{V/m pk} - 106.92 + 20 \log .003 = -74.15 \text{ dBk} = 38.5 \text{ }\mu\text{W peak.}$$

This is less than the 1.5 W requirement for a mobile device, or the 200 mW requirement for a portable device.

## Deactivation time, FCC 15.231(a)(2), IC RSS-210 A1.1.1

### Test summary

The requirements are: ■ - MET □ - NOT MET

The device deactivates the transmitter 5 seconds after a keypad button is released

### Test limit

5 seconds

### Manufacturer's statement

The BodySound chair complies with paragraph (a) of FCC 15.231.

The system now deactivates the transmitter 5 seconds after a keypad button is released.

Don Hanson, BodySound Technologies



## Field strength of emissions, FCC 15.231(b), IC RSS-210 A1.1.2

### Test summary

The requirements are: ■ - MET □ - NOT MET

Minimum margin of compliance for the fundamental transmit signal is 20.0 dB at 433.9 MHz

Minimum margin of compliance for the spurious emissions is 30.6 dB at 1736 MHz (peak measurement vs. average limit)

### Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

□ - Wild River Lab Small Test Site (Open Area Test Site)

### Test Distance

■ - 3 meters

□ - 10 meters

### Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3204	EM-6917B	Electro-Metrics	Biconicalog Periodic	102	19-Oct-06
2075	3115	Electro-Mechanics (EMCO)	Ridge Guide Ant. 1-18 GHz	9001-3275	07-Dec-06
2670	8447D	Hewlett-Packard	Preamplifier	2443A03954	Code B
3958	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0002	Code B
3895	NHP-600	Mini-Circuits	30-600 MHz Stopband Filter	3	Code B
2684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	15 Mar 07
2690	8566B	Hewlett-Packard	Spectrum Analyzer	2430A00930	12 May 07
2673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	12 May 07

Cal Code B = Calibration verification performed internally.

### Test limit

Fundamental frequency (MHz)	Field strength fundamental $\mu\text{V/m}$	Field strength spurious $\mu\text{V/m}$
40.66 - 40.70	2250	225
70 - 130	1250	125
130 - 174	1250 - 3750*	125 - 375*
174 - 260	3750	375
260 - 470	3750 - 12500*	375 - 1250*
Above 470	12500	1250

\* Linear interpolations.

80.8 dB $\mu\text{V/m}$  average at 433.9 MHz

61.9 dB $\mu\text{V/m}$  average at 1736 MHz

### Test Data

Pages A2 - A3

## Bandwidth, FCC 15.231(c), IC RSS-210 A1.1.3

### Test summary

The requirements are: ■ - MET □ - NOT MET

20 dB bandwidth  $\leq$  192 kHz

99% Occupied bandwidth = 100 kHz

### Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

□ - Wild River Lab Small Test Site (Open Area Test Site)

### Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3204	EM-6917B	Electro-Metrics	Biconicalog Periodic	102	19-Oct-06
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	02-Sep-06

### Test limit

No wider than 0.25% of the center frequency or 1.08 MHz

### Test Data

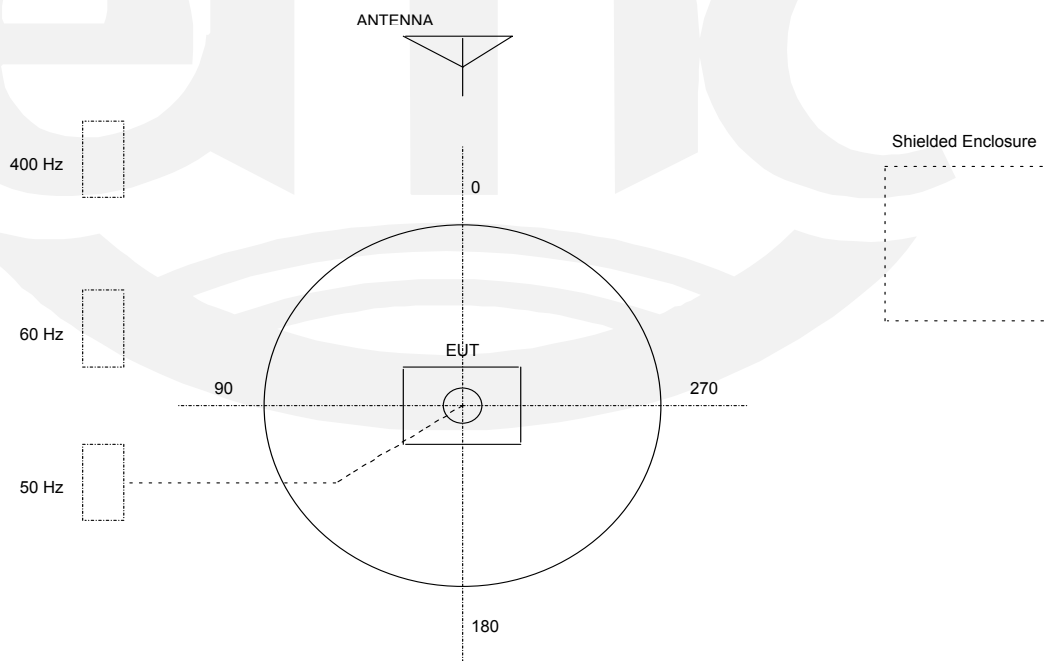
Pages A4 - A5

## TEST SETUP FOR EMISSIONS TESTING

### WILD RIVER LAB Large Test Site

#### Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.





Test setup photo, radiated emissions



Test setup photo, radiated emissions



### **Test Operation Mode:**

**The device under test was operated under the following conditions during emissions testing:**

- - Theatre mode



**DEVIATIONS FROM STANDARD:**

None.

**GENERAL REMARKS:**

None

Modifications required to pass:

- ☒ None
- ☐ As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:

- ☒ None
- ☐ As indicated in the Test Plan

**SUMMARY:**

The requirements according to the technical regulations are

- ☒ - met
- ☐ - **not** met.

The device under test does

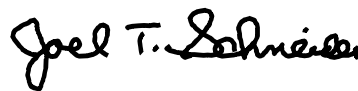
- ☒ - fulfill the general approval requirements mentioned on page 3.
- ☐ - **not** fulfill the general approval requirements mentioned on page 3.

EUT Received Date:	<u>1 June, 2006</u>
Condition of EUT:	<u>Normal</u>
Testing Start Date:	<u>1 June, 2006</u>
Testing End Date:	<u>1 June, 2006</u>

- TÜV AMERICA INC -



JC Sausen  
EMC Technician



JT Schneider  
Senior EMC Engineer

## Appendix A

### Test Data Sheets



# RADIATED EMISSIONS



Test Report #: WC603155 Run 1 Test Area: LTS

EUT Model #: BDSYC001 Date: 6/1/2006

EUT Serial #: \_\_\_\_\_ EUT Power: 110VAC / 60Hz Temperature: 22.0 °C

Test Method: FCC 15.231 Air Pressure: 99.0 kPa

Customer: Body Sound Rel. Humidity: 51.0 %

EUT Description: 433 MHz Transmitter - Chair

Notes: \_\_\_\_\_

Data File Name: 3155.dat

Page: 1 of 2

## List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1	DELTA2
Maximized fundamental						
433.909 MHz	42.71 Av	1.74 / 16.39 / 0.0 / 0.0	60.84	H / 1.00 / 76	n/a	n/a
433.909 MHz	65.1 Pk	1.74 / 16.39 / 0.0 / 0.0	83.23	H / 1.00 / 76	n/a	n/a
Added preamp for spurious scan						
867.8 MHz	29.6 Pk	2.44 / 21.98 / 27.19 / 0.4	27.23	H / 1.00 / 76	n/a	n/a
1.736 GHz	50.65 Pk	4.02 / 26.41 / 50.41 / 0.6	31.28	V / 1.00 / 76	n/a	n/a
2.17 GHz	47.85 Pk	4.09 / 28.32 / 50.27 / 0.5	30.49	V / 1.00 / 76	n/a	n/a
No further EUT emissions detected above noise floor 30 MHz to 4500 MHz, vert and hor ant.						
noise floor:						
1.302 GHz	40.55 Pk	3.18 / 25.08 / 50.66 / 0.48	18.63	V / 1.00 / 76	n/a	n/a
2.604 GHz	44.1 Pk	4.3 / 29.15 / 49.81 / 0.5	28.23	V / 1.00 / 76	n/a	n/a
3.038 GHz	42.5 Pk	4.96 / 29.99 / 49.34 / 0.4	28.51	V / 1.00 / 76	n/a	n/a
3.472 GHz	39.0 Pk	5.29 / 31.03 / 48.88 / 0.5	26.94	V / 1.00 / 76	n/a	n/a
3.905 GHz	37.4 Pk	5.55 / 32.07 / 48.41 / 0.66	27.27	V / 1.00 / 76	n/a	n/a
4.339 GHz	38.95 Pk	5.83 / 32.16 / 47.95 / 0.95	29.95	V / 1.00 / 76	n/a	n/a

Tested by: GSJ, JCS

Printed

*JC Lawson*

Signature

Reviewed by: Greg Jakubowski

Printed

*G Jakubowski*

Signature

# RADIATED EMISSIONS



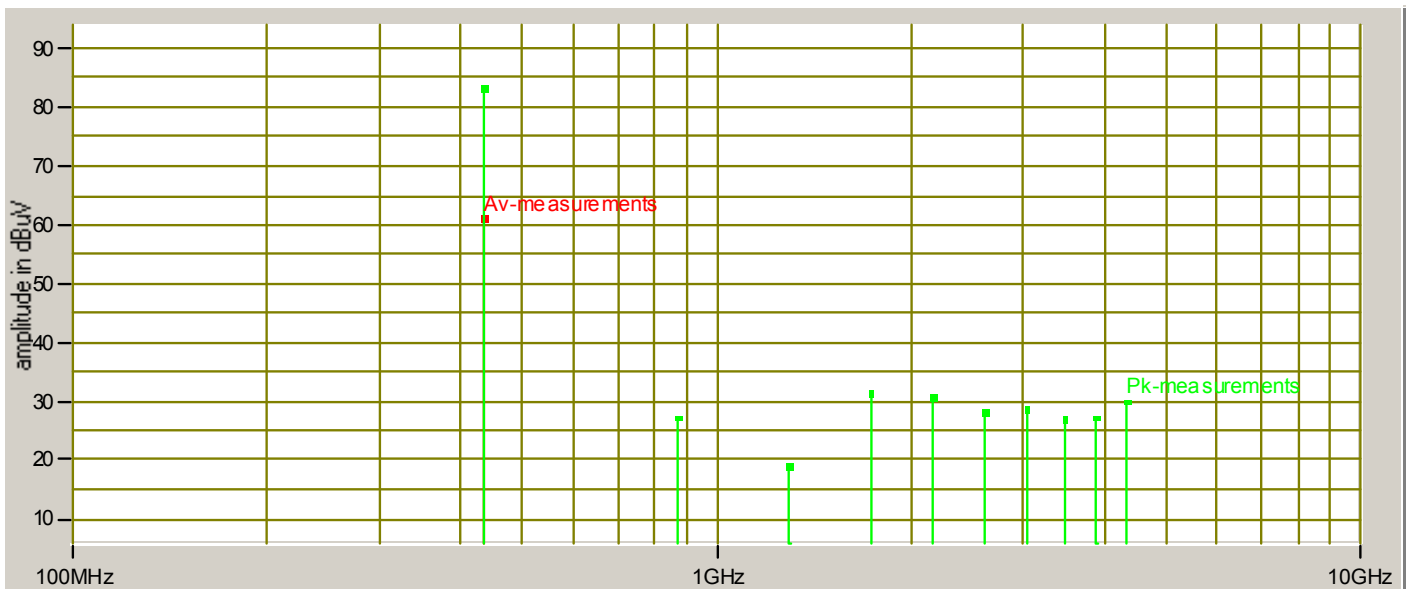
Test Report #: WC603155 Run 1 Test Area: LTS  
EUT Model #: BDSYC001 Date: 6/1/2006  
EUT Serial #: \_\_\_\_\_ EUT Power: 110VAC / 60Hz Temperature: 22.0 °C  
Test Method: FCC 15.231 Air Pressure: 99.0 kPa  
Customer: Body Sound Rel. Humidity: 51.0 %  
EUT Description: 433 MHz Transmitter - Chair

Notes: \_\_\_\_\_

Data File Name: 3155.dat

Page: 2 of 2

## Graph:



Tested by: GSJ, JCS

Printed

Signature

Reviewed by: Greg Jakubowski

Printed

Signature



# Bandwidth



Test Report #: WC603155 Run 1 Test Area: LTS

EUT Model #: BDSYC001 Date: 6/1/2006

EUT Serial #: \_\_\_\_\_ EUT Power: 110VAC / 60Hz Temperature: 22.0 °C

Test Method: FCC 15.231 Air Pressure: 99.0 kPa

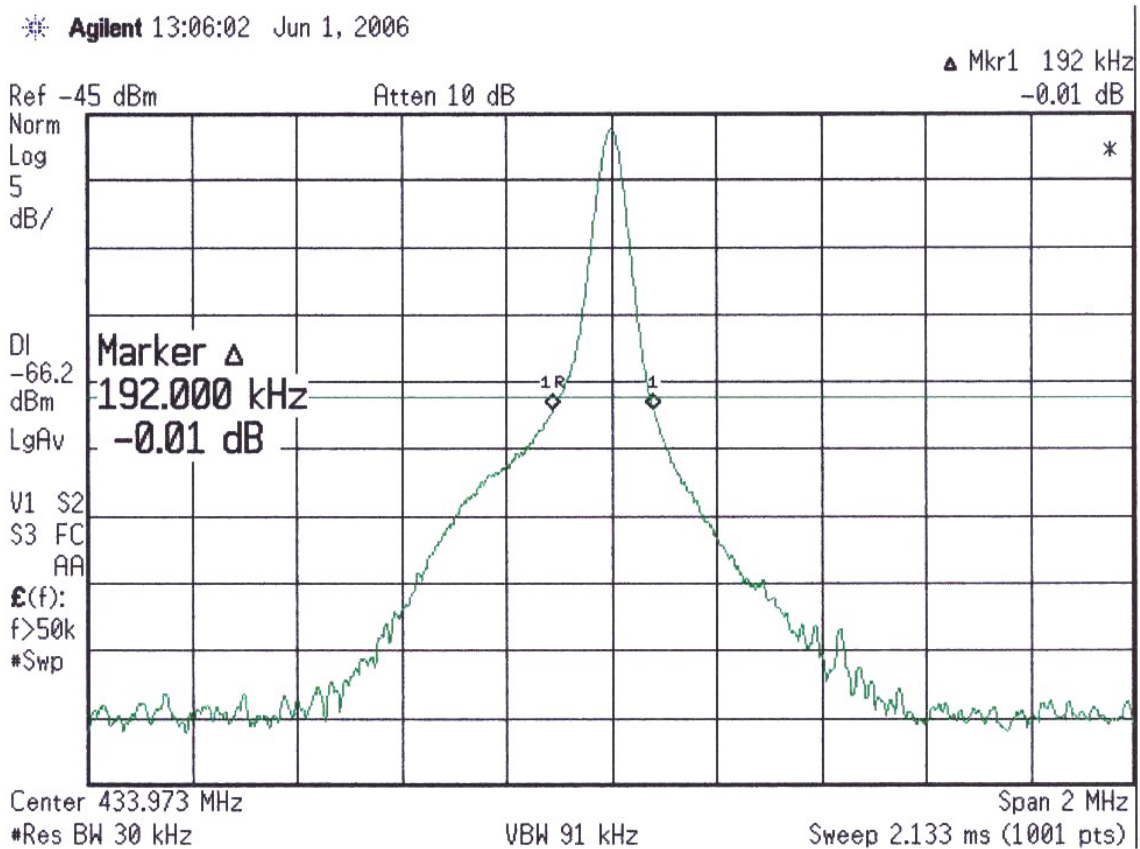
Customer: Body Sound Rel. Humidity: 51.0 %

EUT Description: 433 MHz Transmitter - Chair

Notes: \_\_\_\_\_

Data File Name: 3155.dat

Page: 1 of 2



Tested by: GSJ, JCS

Printed

*JC Sauson*

Signature

Reviewed by: Greg Jakubowski

Printed

*G Jakubowski*

Signature



# Bandwidth



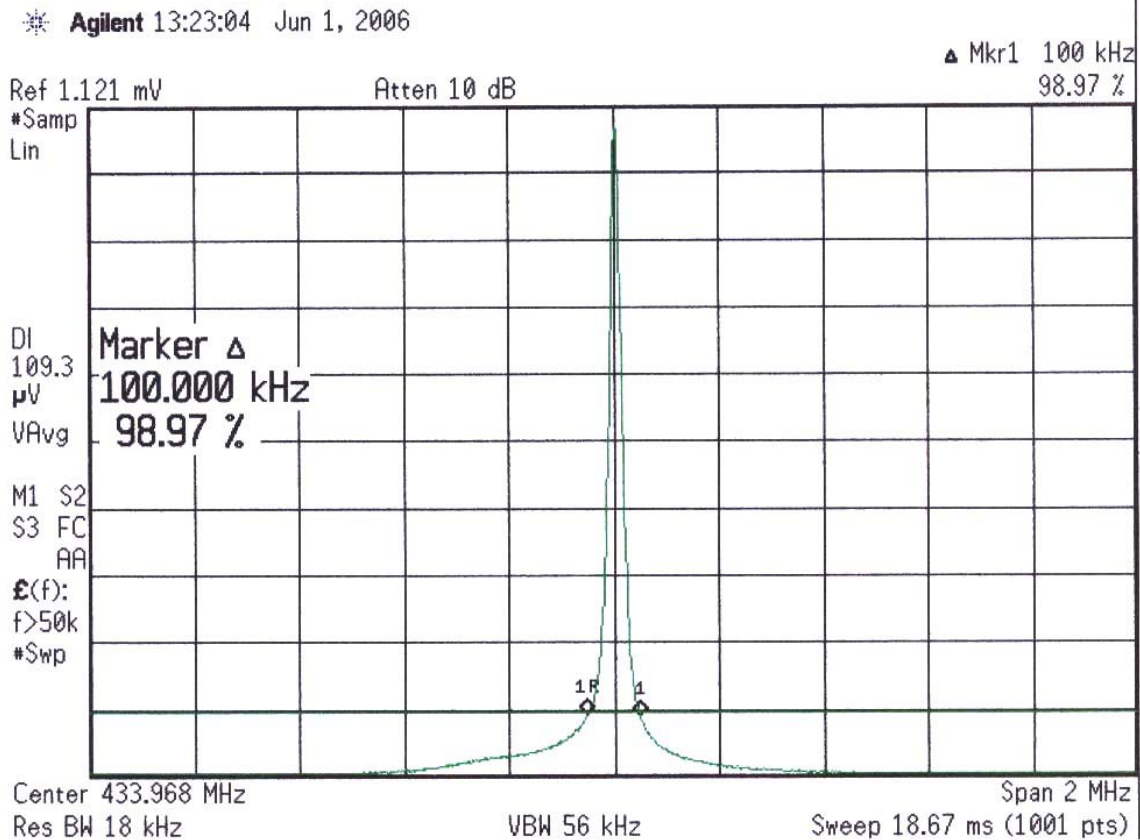
Test Report #: WC603155 Run 1 Test Area: LTS  
EUT Model #: BDSYC001 Date: 6/1/2006  
EUT Serial #: \_\_\_\_\_ EUT Power: 110VAC / 60Hz Temperature: 22.0 °C  
Test Method: FCC 15.231 Air Pressure: 99.0 kPa  
Customer: Body Sound Rel. Humidity: 51.0 %  
EUT Description: 433 MHz Transmitter - Chair

Notes: \_\_\_\_\_

Data File Name: 3155.dat

Page: 2 of 2

99% Occupied



Tested by: GSJ, JCS

Printed

*JC Lawson*

Signature

Reviewed by: Greg Jakubowski

Printed

*G Jakubowski*

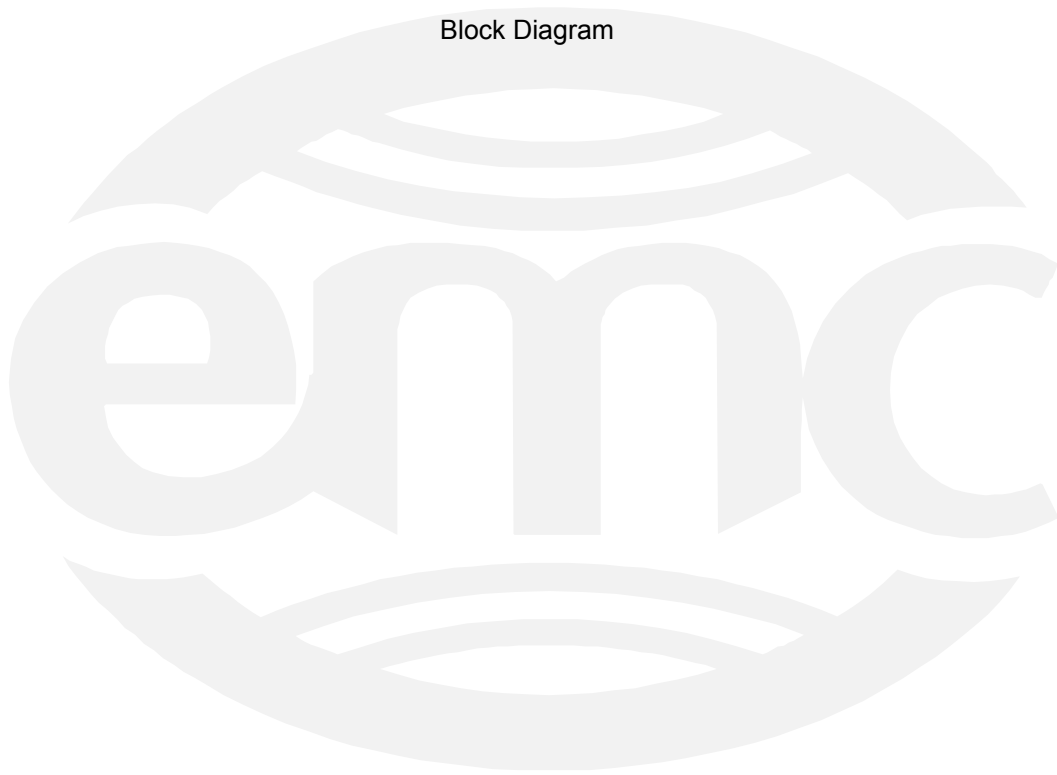
Signature

## Appendix B

Constructional Data Form

and

Block Diagram





## EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.  
**NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.**

Company: BodySound Technologies  
 Address: 10230 West 70th Street  
Eden Prairie, MN., 55344  
 Contact: Del Mattson Position: Project Manager  
 Phone: 952-943-4041 Fax: 952-944-6355  
 E-mail Address: dmattson@oneredriver.com

### General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description Home entertainment chair with audio amplifier.  
 EUT Name BodySound Home Entertainment chair.  
 Model No.: Deluxe chair. Serial No.: \_\_\_\_\_  
 Product Options: With an audio Distribution amplifier.  
 Configurations to be tested: Deluxe chair with an audio Distribution amplifier.

### Equipment Modification (If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)

Modifications since last test: \_\_\_\_\_  
 Modifications made during test: \_\_\_\_\_

### Test Objective(s): Please indicate the tests to be performed, entering the applicable standard(s) where noted.

- |  |  |
|--|--|
| <input type="checkbox"/> EMC Directive 89/336/EEC (EMC)                                      | <input checked="" type="checkbox"/> FCC: Class <input type="checkbox"/> A <input checked="" type="checkbox"/> B Part <u>15</u> |
| Std: _____   | <input type="checkbox"/> VCCI: Class <input type="checkbox"/> A <input type="checkbox"/> B                                     |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC)                                | <input type="checkbox"/> BSMI: Class <input type="checkbox"/> A <input type="checkbox"/> B                                     |
| Std: _____   | <input checked="" type="checkbox"/> Canada: Class <input type="checkbox"/> A <input checked="" type="checkbox"/> B             |
| <input type="checkbox"/> Medical Device Directive 93/42/EEC (EMC)                            | <input type="checkbox"/> Australia: Class <input type="checkbox"/> A <input type="checkbox"/> B                                |
| Std: _____   | <input type="checkbox"/> Other: _____  |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC)                                  |  |
| Std: _____   |  |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket Notification Submissions (EMC) |  |

### Third Party Certification, if applicable (\*Signature on Page 6 Required)

- |   |  |
|---|--|
| <input type="checkbox"/> Attestation of Conformity (AoC)*                             | <input type="checkbox"/> EMC Certification (used with Octagon Mark)*   |
| <input type="checkbox"/> Certificate of Conformity (CoC)*                             | <input type="checkbox"/> Compliance Document*  |
| Protection Class (N/A for vehicles)   | <input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III |
| (Press F1 when field is selected to show additional information on Protection Class.) |  |
| <input checked="" type="checkbox"/> FCC / TCB Certification                           | <input checked="" type="checkbox"/> Industry Canada / FCB Certification  |
| <input type="checkbox"/> E-Mark Certification   | <input type="checkbox"/> Taiwan Certification  |

**EMC Test Plan and Constructional Data Form****Attendance**Test will be: ☒ Attended by the customer ☐ Unattended by the customer**Failure - Complete this section if testing will not be attended by the customer.**

If a failure occurs, TÜV America should:

- ☐ Call contact listed above, if not available then stop testing. (After hrs phone): \_\_\_\_\_
- ☐ Continue testing to complete test series.
- ☐ Continue testing to define corrective action.
- ☐ Stop testing.

**EUT Specifications and Requirements**Length: 36" Width: 36" Height: 48" Weight: 200 lbs**Power Requirements**

*Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)*

Voltage: 110/230VAC (If battery powered, make sure battery life is sufficient to complete testing.)# of Phases: 1Current (Amps/phase(max)): 2 Current (Amps/phase(nominal)): 1

Other \_\_\_\_\_

**Other Special Requirements****Typical Installation and/or Operating Environment**

(ie. Hospital, Small Business, Industrial/Factory, etc.)  
Used in a residential area.

**EUT Power Cable**

☐ Permanent OR ☒ Removable Length (in meters): 3

☐ Shielded OR ☒ Unshielded

☐ Not Applicable



## EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables														
Type	Analog	Digital	During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent	
			Active	Passive		Yes	No							Type
<b>EXAMPLE:</b> RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>



## EMC Test Plan and Constructional Data Form

### EUT Software.

Revision Level: V 1.05

Description:

**Equipment Under Test (EUT) Operating Modes to be Tested --** list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Theater Mode
- 2.
- 3.

**Equipment Under Test (EUT) System Components --** List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
Chair	BDSYC001	C0010606000001	
Power Supply	BDSYP001	P0010606000001	
Remote Control	BDSYR001	R0010606000001	
Distribution Amplifier	BDSYD001	D0010606000001	



## EMC Test Plan and Constructional Data Form

**Support Equipment** -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)  
This information is required for FCC & Taiwan testing.

<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Compact Disk Player	D-E351	1027702	

### Oscillator Frequencies

<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>
433.92 MHz		U2 on the amplifier PCB.	TR3000 transceiver by RF Monolithics
24.5 MHz		U1 on the amplifier PCB.	C8051F310 microcontroller.
433.92 MHz		U4 on the Remote Control PCB.	TR3000 transceiver by RF Monolithics
24.5 MHz		U2 on the Remote Control PCB.	C8051F314 microcontroller.

### Power Supply

<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
BodySound Technologies	BDSYP001	P0010606000001	<input type="checkbox"/> Switched-mode: (Frequency) _____ <input checked="" type="checkbox"/> Linear <input type="checkbox"/> Other: _____
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____

### Power Line Filters

<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
Corcom	PS0SXDS60	In power supply.

**EMC Test Plan and Constructional Data Form****Critical EMI Components (Capacitors, ferrites, etc.)**

<i>Description</i>	<i>Manufacturer</i>	<i>Part # or Value</i>	<i>Qty</i>	<i>Component # / Location</i>

**EMC Critical Detail** -- Describe other EMC Design details used to reduce high frequency noise.

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

**Authorization Signatures (Signature Required for Certifications checked on pg 1)**

---

Customer authorization to perform tests  
according to this test plan.

---

Date

---

Test Plan/CDF Prepared By (please print)

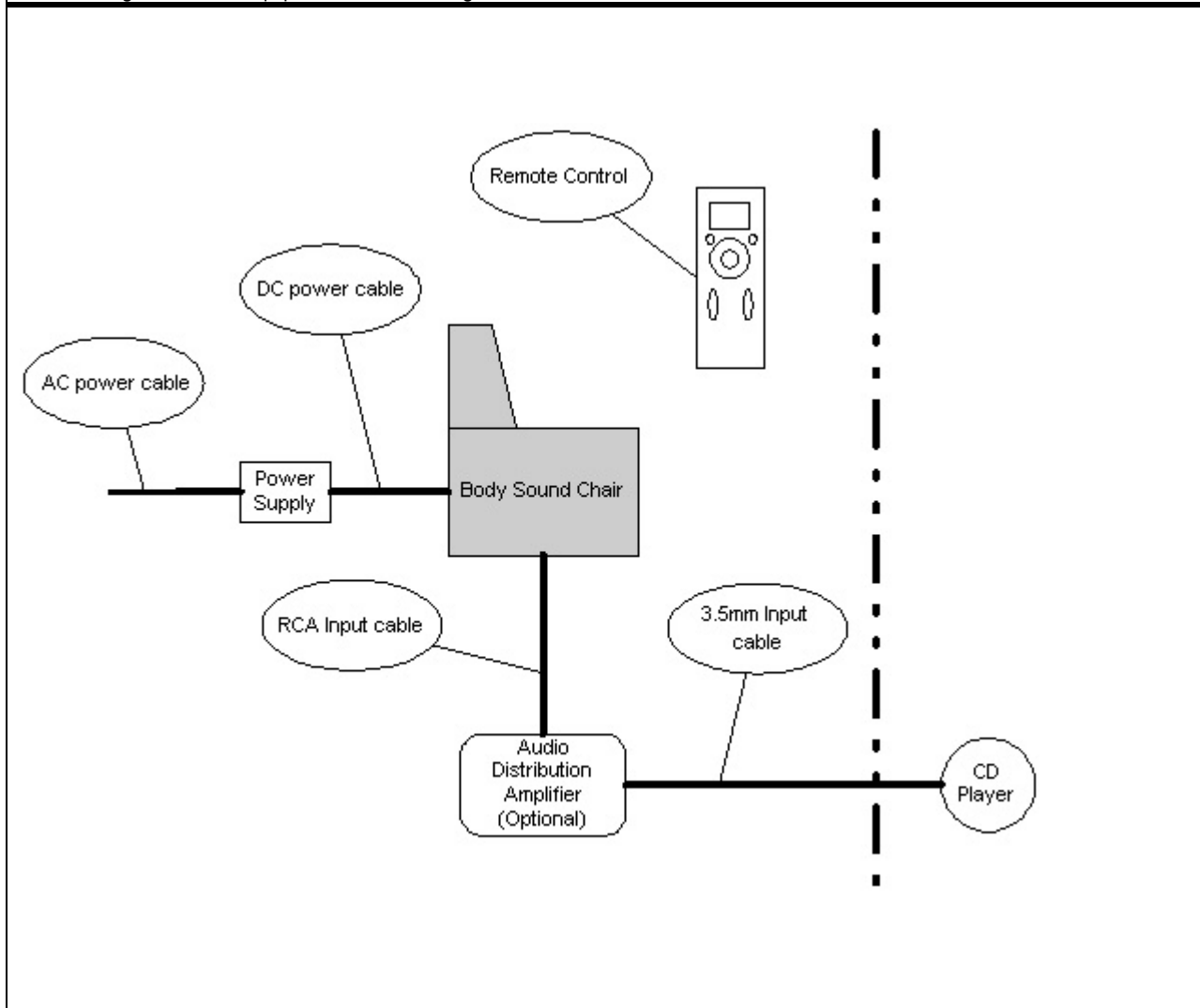
---

Date



## EMC Block Diagram Form

**System Configuration Block Diagram** -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



### Authorization Signatures

Customer authorization to perform tests  
according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date

## Appendix C

### Measurement Protocol



## MEASUREMENT PROTOCOL

### Environmental conditions in the lab, (TUV)

Temperature: 22° C

Relative Humidity: 51 %

Atmospheric pressure: 99.0 kPa

### Test Methodology

Emissions testing is performed according to the procedures in ANSI C63.4-2003.

### Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of  $\pm 1.8$  dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of  $\pm 4.8$  dB. The equipment comprising the test systems is calibrated on an annual basis.

### Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

### Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB resolution/video bandwidths and quasi-peak, average or peak detection. Measurements above 1000 MHz are made with a 1 MHz/6 dB resolution bandwidth, and a peak (1 MHz vbw)/average (10 Hz vbw) detection. Tabletop equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. Intentional radiators are rotated through three orthogonal axes to determine the attitude that maximizes the emissions.

The final level, in dB $\mu$ V/m, equals the reading from the spectrum analyzer (Level dB $\mu$ V), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ (MHz)	LEVEL (dB $\mu$ V)	CABLE/ANT/PREAMP (dB)	FINAL (dB $\mu$ V/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

### Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.