Application for FCC Certification
On behalf of

Altec Lansing, LLC

Product Name: Wireless AirPlay Speaker

Model No.: MA5000

Serial No.: DD1809M00033

FCC ID: VJS-MA5000

(MPE Calculation)

Prepared For : Altec Lansing, LLC
9330 Scranton Road, Suite 600, San Diego, CA 92121,
USA

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F11130
Date of Test : Sep. 05, 2011
Date of Report : Sep. 21, 2011

TABLE OF CONTENTS

Page

TEST REPORT FOR FCC CERTIFICATE

Applicant	:	Altec Lansing, LLC
Manufacturer	:	Inventec Appliances (Pudong) Corporation
EUT Description	:	Wireless AirPlay Speaker
		(A) Model No. : MA5000
		(B) Serial No. : DD1809M00033
		(C) Test Voltage : AC 120V/60Hz

Test Procedure Used:

FCC OET Bulletin 65 August 1997

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC OET Bulletin 65.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: MA5000, S/N: DD1809M00033), which was tested on Sep. 05, 2011 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Sep. 05, 2011 Date of Report : Sep. 21, 2011

Producer : KATHY WANG / Assistant

Review : DIO YANG / Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : BYRON KWO/ Senior Manager
Authorized Signature EMC

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test

Description	:	Wireless AirPlay Speaker
Type of EUT		☑ Production ☐ Pre-product ☐ Pro-type
Model Number	:	MA5000
Serial Number	:	DD1809M00033
Radio Tech	:	IEEE 802.11b/g
Freq. Band	:	2412 MHz - 2462 MHz Total 11 Channels in 5 MHz Separation
Tested Freq.	:	2412 MHz (Channel 01) 2437 MHz (Channel 06) 2462 MHz (Channel 11)
Modulation	:	DSSS for 802.11b OFDM for 802.11g
Transmit data rate:		802.11b: 1, 2, 5.5, 11, 22 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps After testing, the highest average output power of the EUT was at 1 Mbps in 802.11b mode and 12 Mbps in 802.11g mode. So 1 Mbps and 12 Mbps mode were representative selected to test in this report.
Antenna Gain	:	4.59 dBi
Applicant	:	Altec Lansing, LLC 9330 Scranton Road, Suite 600, San Diego, CA 92121, USA
Manufacturer	:	Inventec Appliances (Pudong) Corporation No. 789 Pu Xing Road, Shanghai, PRC

1.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

1.3 Measurement Uncertainty

Output Power Expanded Uncertainty : U = 0.30 dB

2 SUMMARY OF STANDARDS AND RESULTS

2.1 Applicable Standard

FCC OET Bulletin 65:1997

2.2 Specification Limits

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f2)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/150	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

NOTE: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

The limit value 1.0mW/cm^2 is available for this EUT.

2.3 MPE Calculation Method

$$S = PG/(4 \pi R^2)$$

$$R = [PG/(4 \pi S)]^{0.5}$$

where: S = power density (in appropriate units, e.g. mW/ cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
(the measured power value see Report: F11129 Section 6.6)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.4 Calculated Result

2.4.1 Radio Frequency Radiation Exposure Evaluation for 802.11b modulation

Frequency	Output Power to Antenna	Antenna Gain		Power Density	Limit
(MHz)	(mW)	(dBi)	(Numeric)	(mW/cm^2)	(mW/cm^2)
2412	30.55	4.59	2.88	0.0175	1.0
2437	30.55	4.59	2.88	0.0175	1.0
2462	31.41	4.59	2.88	0.0180	1.0

Separation distance R= 20cm.

Frequency	Output Power to Antenna	Antenna Gain		Limit	Distance
(MHz)	(mW)	(dBi)	(Numeric)	(mW/cm^2)	(cm)
2412	30.55	4.59	2.88	1.0	2.65
2437	30.55	4.59	2.88	1.0	2.65
2462	31.41	4.59	2.88	1.0	2.68

The antenna used for this transmitter must be installed to provide a separation distance of at least 2.68cm from all persons.

2.4.2 Radio Frequency Radiation Exposure Evaluation for 802.11g modulation

Frequency	Output Power to Antenna	Antenna Gain		Power Density	Limit
(MHz)	(mW)	(dBi)	(Numeric)	(mW/cm^2)	(mW/cm^2)
2412	95.72	4.59	2.88	0.0548	1.0
2437	94.19	4.59	2.88	0.0540	1.0
2462	93.11	4.59	2.88	0.0533	1.0

Separation distance R= 20cm.

Frequency	Output Power to Antenna	Antenna Gain		Limit	Distance
(MHz)	(mW)	(dBi)	(Numeric)	(mW/cm^2)	(cm)
2412	95.72	4.59	2.88	1.0	4.68
2437	94.19	4.59	2.88	1.0	4.65
2462	93.11	4.59	2.88	1.0	4.62

The antenna used for this transmitter must be installed to provide a separation distance of at least 4.68cm from all persons.