



NVLAP LAB CODE 200707-0



FCC PART 15.249

EMI MEASUREMENT AND TEST REPORT

For

Messiah Entertainment Inc.

14431 Ventura Blvd., #295, Sherman Oaks, CA 91423, USA

FCC ID: SFD-M085

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: Generation NEX Wireless Arcade Stick
Test Engineer: Deny Xiong	
Report No.: RSZ07012304	
Test Date: 2007-01-26 to 2007-02-05	
Report Date: 2007-02-05	
Reviewed By: EMC Manager: Boni Baniquid	
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Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratory Corp. (Shenzhen). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the Federal Government.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	4
JUSTIFICATION	4
EQUIPMENT MODIFICATIONS	4
CONFIGURATION OF TEST SETUP	5
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
§15.203 - ANTENNA REQUIREMENT.....	7
STANDARD APPLICABLE	7
ANTENNA CONNECTOR CONSTRUCTION	7
§15.205 §15.209(A) §15.249(A) - RADIATED EMISSIONS.....	8
MEASUREMENT UNCERTAINTY	8
EUT SETUP	8
EMI TEST RECEIVER SETUP.....	9
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST PROCEDURE	9
CORRECTED AMPLITUDE & MARGIN CALCULATION	9
TEST RESULTS SUMMARY	10
TEST DATA	10
§15.249(D) – OUT OF BAND EMISSIONS	12
STANDARD APPLICABLE	12
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST PROCEDURE	12
TEST DATA	12

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Messiah Entertainment Inc.*'s product, model number: *M085* or the "EUT" as referred to in this report is a *Generation NEX Wireless Arcade Stick*. The EUT is measured approximately 27.8 cm L x 21.7 cm W x 18.0 cm H, rated input voltage: DC 6V battery.

** The test data gathered are from production sample, serial number: 0701022, provided by the manufacturer, we received EUT on 2007-01-23.*

Objective

This Type approval report is prepared on behalf of *Messiah Entertainment Inc.* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.249 rules.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratory Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratory Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Equipment Modifications

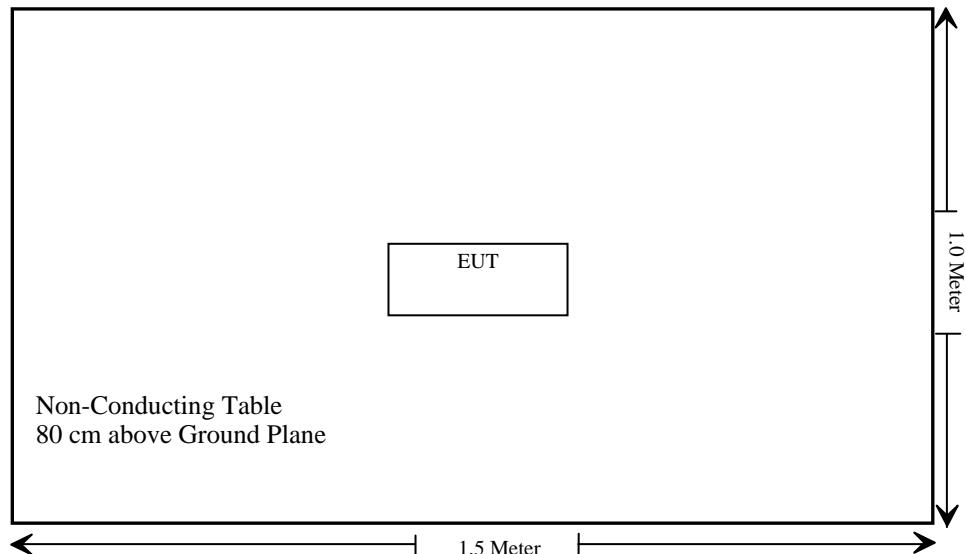
Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

Configuration of Test Setup



EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	N/A*
§15.205(a), §15.209(a), §15.249(a)	Radiated Emissions	Compliant
§15.249(d)	Out of band emissions	Compliant

* Battery operation.

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used.

Antenna Connector Construction

The EUT antenna is a permanently attached antenna, which in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.

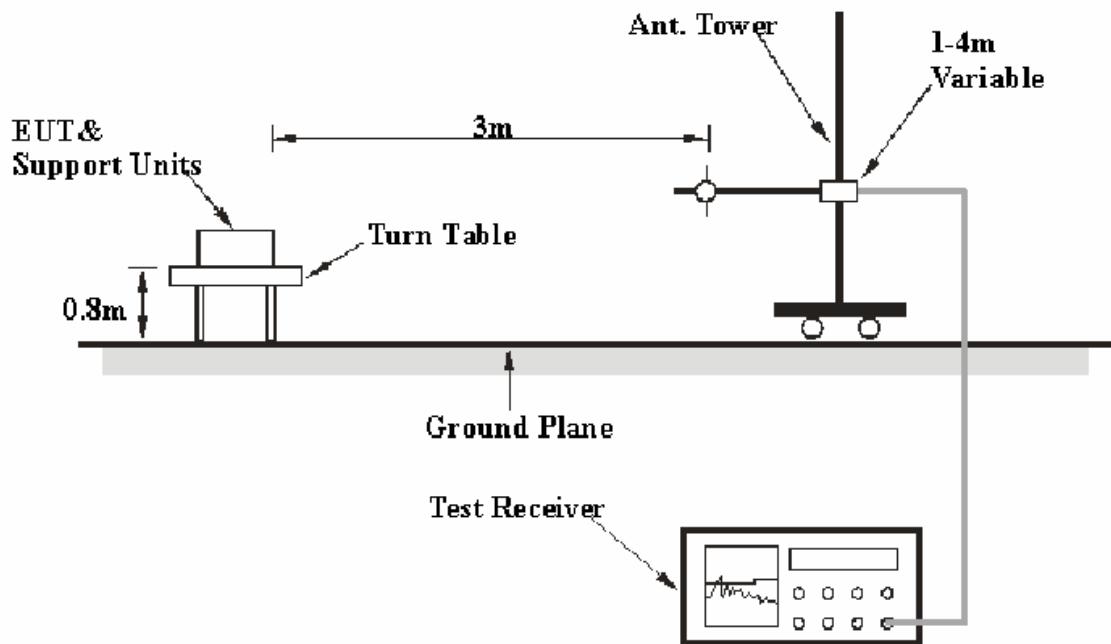
§15.205 §15.209(a) §15.249(a) - RADIATED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 4.0 dB.

EUT Setup



The radiated emissions and out of band emissions test were performed in the 3 meters chamber B, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209 and FCC 15.249 limits.

The EUT is powered by DC 6V battery.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 25000 MHz.

During the radiated emissions and out of band emissions test, the test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W
30 – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25000 MHz	1MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2006-08-14	2007-08-14
Agilent	Spectrum Analyzer	8564E	3943A01781	2006-11-22	2007-11-22
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-07-20	2007-07-20

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak, average and Quasi-Peak detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emissions is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 & 15.249, with the worst margin reading of:

30 - 1000MHz: 17.4 dB at 897.354750 MHz in the **Horizontal** polarization.

Above 1GHz:

Low Channel: 13.06 dB at 4864 MHz in the **Horizontal** polarization.
High Channel: 11.09 dB at 4882 MHz in the **Horizontal** polarization.

Test Data

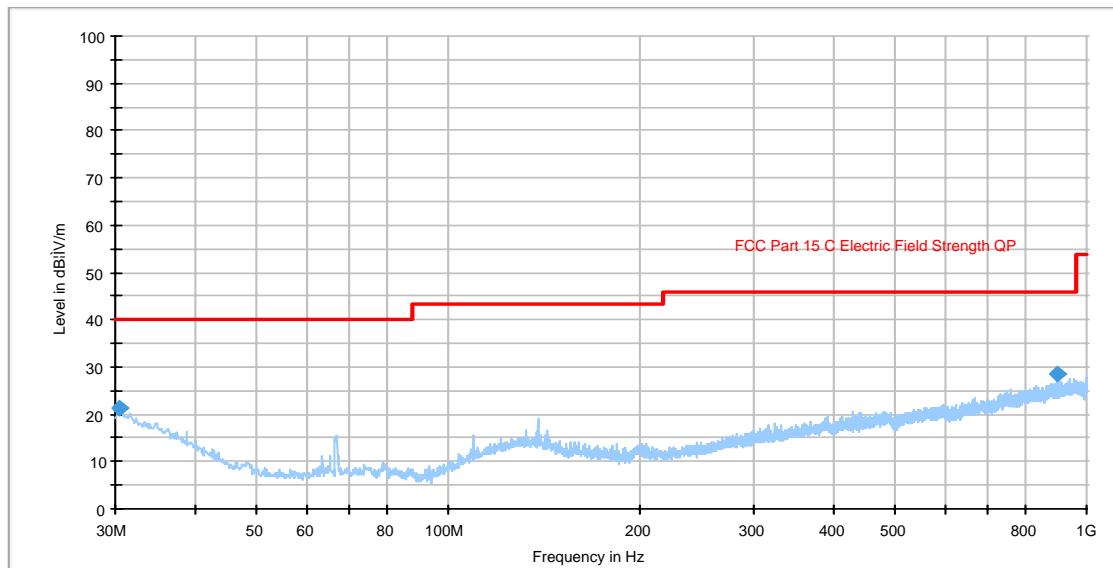
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1000mbar

The testing was performed by Deny Xiong on 2007-01-26.

Test Mode: Transmitting

30-1000MHz:



Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	Polarity	Turntable Position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
897.354750	28.6	236.0	H	326.0	-0.2	46.0	17.4
30.358800	21.3	125.0	V	176.0	-5.1	40.0	18.7

Above 1GHz:

Frequency (MHz)	Meter Reading dBuV/m	Detector PK/AV	Direction Degree	Height Meter	Polar H / V	Antenna Factor dB/m	Cable loss dB	Duty Cycle Factor dB	Amplifier Gain dB	Corr. Ampl. dB uV/m	FCC Part 15.209 & 15.249		
											Limit dBuV/m	Margin dB	Remarks
Low Channel													
4864	58.4	PK	49	1.2	H	31.3	4.64	0	33.4	60.94	74	13.06	Harmonic
7296	52.4	PK	180	1.3	H	35.4	4.51	0	33.7	58.61	74	15.39	Harmonic
4864	56.07	PK	250	1.0	V	31.3	4.64	0	33.4	58.61	74	15.39	Harmonic
2432	101.9	PK	20	1.2	H	27.4	3.61	0	35.0	97.91	114	16.09	Fundamental
9728	45.57	PK	158	1.6	H	38.2	5.77	0	34.1	55.44	74	18.56	Harmonic
9728	44.40	PK	158	1.3	V	38.2	5.77	0	34.1	54.27	74	19.73	Harmonic
7296	47.07	PK	180	1.0	V	35.4	4.51	0	33.7	53.28	74	20.72	Harmonic
2432	97.07	PK	18	1.6	V	27.4	3.61	0	35.0	93.08	114	20.92	Fundamental
4864	58.4	AV	270	1.6	H	31.3	4.64	-33.08	33.4	27.86	54	26.14	Harmonic
7296	52.4	AV	261	1.0	H	35.4	4.51	-33.08	33.7	25.53	54	28.47	Harmonic
4864	56.07	AV	180	1.6	V	31.3	4.64	-33.08	33.4	25.53	54	28.47	Harmonic
2432	101.9	AV	263	1.4	H	27.4	3.61	-33.08	35.0	64.83	94	29.17	Fundamental
9728	45.57	AV	238	1.5	H	38.2	5.77	-33.08	34.1	22.36	54	31.64	Harmonic
9728	44.40	AV	158	1.3	V	38.2	5.77	-33.08	34.1	21.19	54	32.81	Harmonic
7296	47.07	AV	90	1.2	V	35.4	4.51	-33.08	33.7	20.2	54	33.80	Harmonic
2432	97.07	AV	45	1.0	V	27.4	3.61	-33.08	35.0	60.0	94	34.00	Fundamental

Frequency (MHz)	Meter Reading dBuV/m	Detector PK/AV	Direction Degree	Height Meter	Polar H / V	Antenna Factor dB/m	Cable loss dB	Duty Cycle Factor dB	Amplifier Gain dB	Corr. Ampl. dB uV/m	FCC Part 15.209 & 15.249		
											Limit dBuV/m	Margin dB	Remarks
High Channel													
4882	60.37	PK	109	1.2	H	31.3	4.64	0	33.4	62.91	74	11.09	Harmonic
4882	58.9	PK	45	1.0	V	31.3	4.64	0	33.4	61.44	74	12.56	Harmonic
2441	103.22	PK	197	1.6	H	27.4	3.61	0	35.0	99.23	114	14.77	Fundamental
7323	49.9	PK	180	1.0	H	35.3	4.75	0	33.7	56.25	74	17.75	Harmonic
7323	49.9	PK	90	1.2	V	35.3	4.75	0	33.7	56.25	74	17.75	Harmonic
9764	45.9	PK	259	1.2	V	38.2	5.77	0	34.1	55.77	74	18.23	Harmonic
9764	45.07	PK	147	1.6	H	38.2	5.77	0	34.1	54.94	74	19.06	Harmonic
2441	97.4	PK	182	1.2	V	27.4	3.61	0	35.0	93.41	114	20.59	Fundamental
4882	60.37	AV	109	1.2	H	31.3	4.64	-33.08	33.4	29.83	54	24.17	Harmonic
4882	58.9	AV	180	1.6	V	31.3	4.64	-33.08	33.4	28.36	54	25.64	Harmonic
2441	103.22	AV	197	1.6	H	27.4	3.61	-33.08	35.0	66.15	94	27.85	Fundamental
7323	49.9	AV	45	1.0	H	35.3	4.75	-33.08	33.7	23.17	54	30.83	Harmonic
7323	49.9	AV	90	1.2	V	35.3	4.75	-33.08	33.7	23.17	54	30.83	Harmonic
9764	45.9	AV	259	1.2	V	38.2	5.77	-33.08	34.1	22.69	54	31.31	Harmonic
9764	45.07	AV	147	1.6	H	38.2	5.77	-33.08	34.1	21.86	54	32.14	Harmonic
2441	97.4	AV	182	1.2	V	27.4	3.61	-33.08	35.0	60.33	94	33.67	Fundamental

Note: Duty Cycle Factor

$$T_p = 100 \text{ ms}, T_{on} = 0.3696 \times 6 = 2.2176 \text{ ms}$$

$$\text{Duty Cycle Factor} = 20 \log (T_{on}/T_p) \text{ dB} = 20 \log (2.2176/100) \text{ dB} = -33.08 \text{ dB}$$

§15.249(d) – OUT OF BAND EMISSIONS

Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in §15.209, whichever is the lesser attenuation.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure and record the value of the edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Data

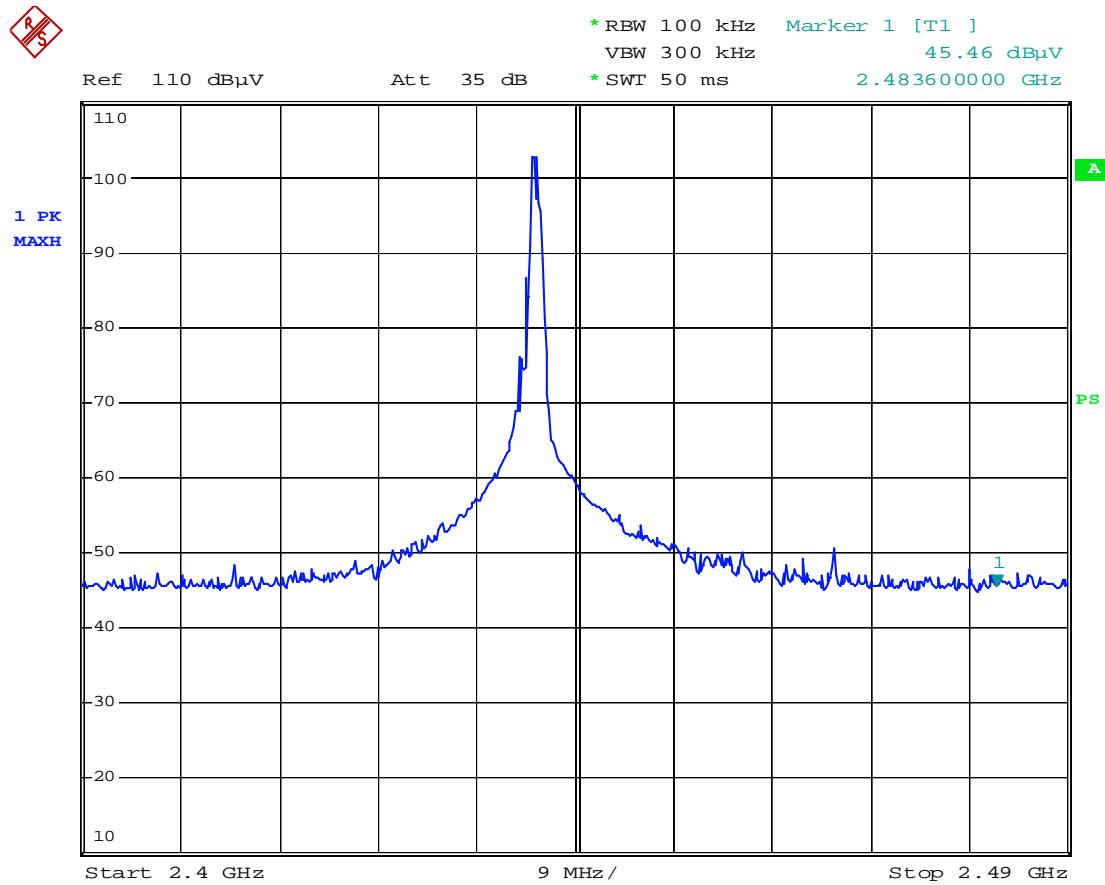
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1016mbar

The testing was performed by Deny Xiong on 2007-01-26.

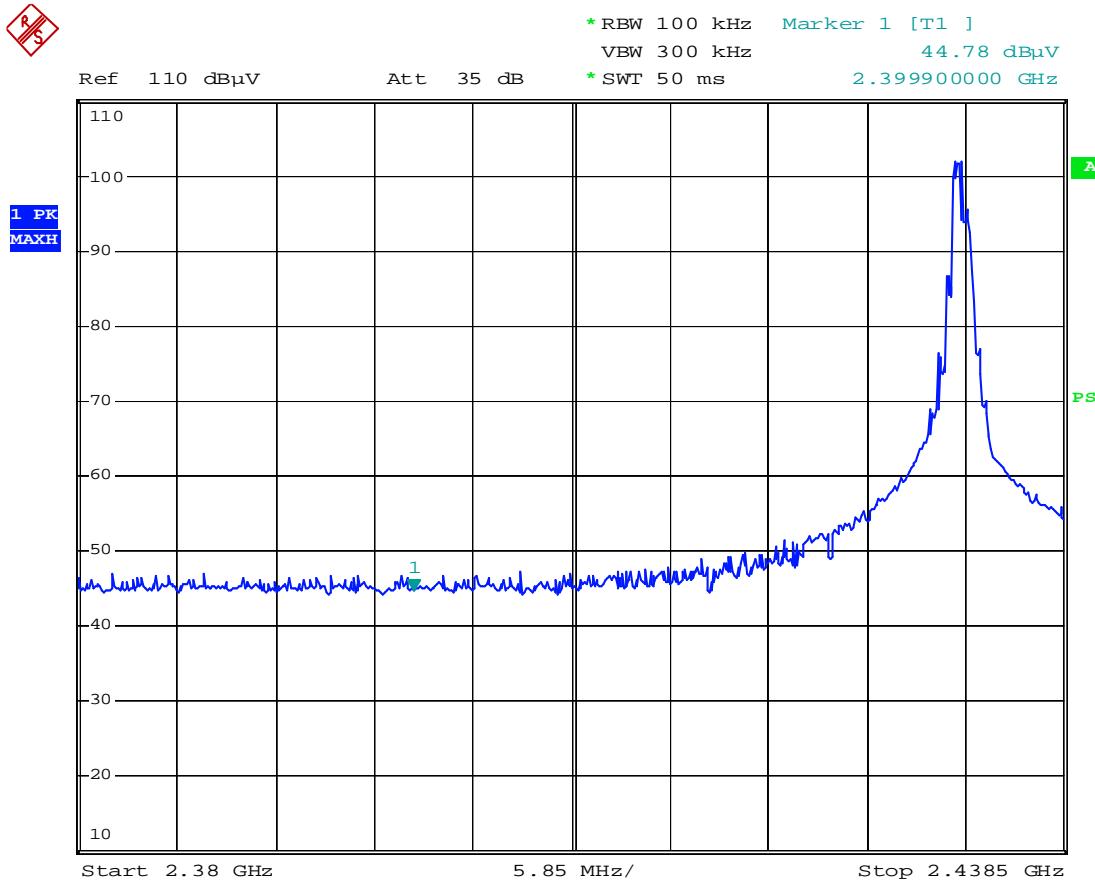
Test Result: Pass

Test Mode: Transmitting



bandedge1

Date: 26.JAN.2007 11:23:11



bandedge2

Date: 26.JAN.2007 11:26:15