Lab Code: 200707-0

FCC PART 15.227
EMI MEASUREMENT AND TEST REPORT

For

INTECH ELECTRONICS CORP.

Hall B3 , Yuan-Hu Industry Park , Golf Blvd., Song-Yuan Village, Guan-Lan , Shenzhen , China

FCC ID: UC3INTECH-M-216

June 12, 2006

This Report Concerns:	Equipment Type:
☒ Original Report	Transmitter, wireless mouse

Test Engineer:	William Chan
Report No.:	RSZ06060201
Test Date:	June 7- 8, 2006
Reviewed By:	Boni Baniqued
Prepared By:	Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The INTECH ELECTRONICS CORP. 's product, the series products, model: M-216*, LG* CM-100 Series, or the "EUT" as referred to in this report was a wireless mouse which measures approximately 9.0 cm L x 5.0 cm W x 3.5 cm H, rated input voltage: DC 5V Battery.

The products, the model: M-216*, LG* CM-100 Series, have the same block diagram, schematic, technical specification and appearance, so we select M-216 to test.

** The test data gathered are from production sample, serial number: 0606001, provided by the manufacture, we received the EUT on 2006-6-2.*

Objective

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

The objective is to determine compliance with FCC rules, sec 15.203, 15.205, 15.209 and 15.227.

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 Lab Corp. (ShenZhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab 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 Lab 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).

EUT Exercise Software

N/A.

Special Accessories

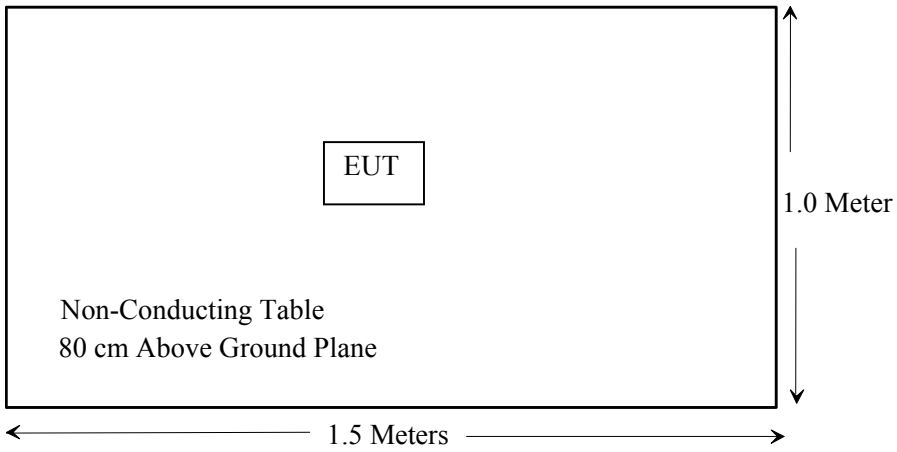
The special accessories were provided by manufacture.

Equipment Modifications

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

Configuration of Test Setup

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Compliant
§15.205	Restricted Band of operation	Compliant
§15.209	Radiated Emission Test	Compliant
§15.227(a)	Field Strength	Compliant
§15.227(b)	Out of Band Emission	Compliant

Note: The highest clocks of the EUT was 27.045 MHz.

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The antenna was build on board, fulfill the requirement of this section.

Test Result: Pass

§15.205, §15.209, §15.227(a) - RADIATED EMISSIONS TEST

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 Lab Corp. (ShenZhen) is ±4.4 dB.

The fundamental data was recorded in average detection mode: set the VBW AVE on, then record the data.

EUT Setup

The radiated emission tests were performed in the chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Subpart C section 15.227 limits.

EMI Test Receiver Setup

According to FCC Rules, 47 CFR 15.33, the EUT emissions were investigated from 27 MHz to 2.7 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency	***RB/W***	***VB/W***	***IF B/W***
9 kHz-30 MHz	10 kHz	10 kHz	9 kHz
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz
1 GHz-3 GHz	*1 MHz*	*1 MHz*	*1 MHz*

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2005-8-17	2006-8-17
HP	Amplifier	HP8447D	2944A09795	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2006-4-28	2007-4-28

*** Statement of Traceability:** Bay Area Compliance Lab 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 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:

Corr. Ampl. = Meter Reading + Antenna Loss + Cable Loss - 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 emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit. – Corr. Ampl

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.227&15.209, with the worst margin reading of:

18.6 dB at **558.892275 MHz** in the **Vertical** polarization.

Test Data

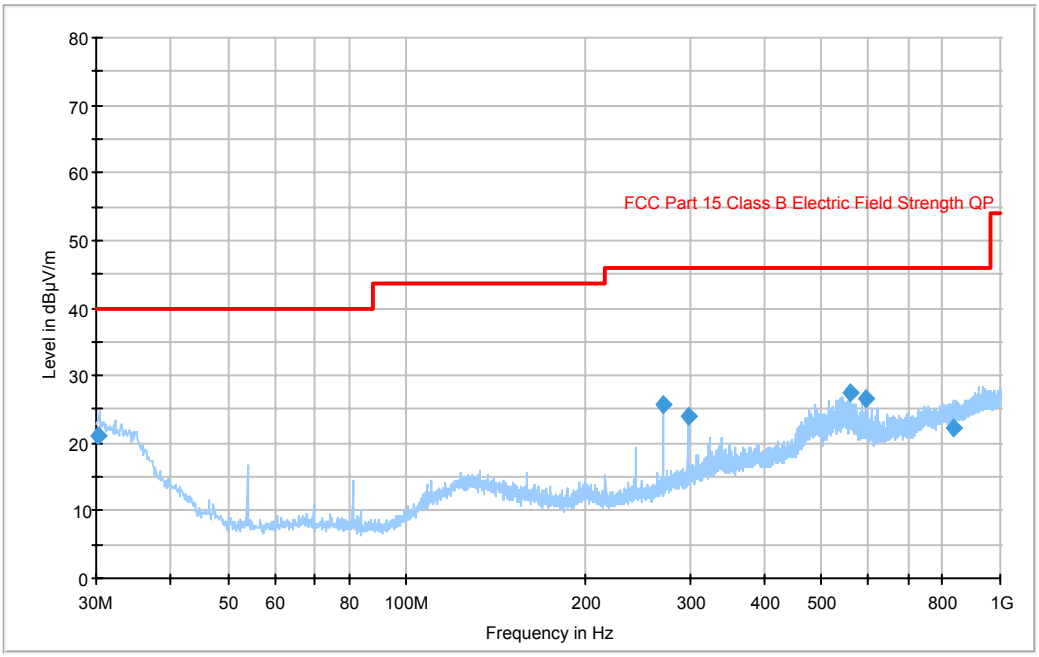
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54 %
ATM Pressure:	1003mbar

The testing was performed by William Chan on 2006-6-8/2006-6-7.

Test Mode: Transmitting

Auto Test(FCC 15 C)



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity
30.247650	21.2	3000.000	120.000	263.0	H
270.524600	25.7	3000.000	120.000	197.0	V
297.477500	24.1	3000.000	120.000	350.0	V
558.892275	27.4	3000.000	120.000	100.0	V
595.342250	26.7	3000.000	120.000	100.0	V
832.393550	22.3	3000.000	120.000	185.0	H

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

Frequency (MHz)	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB µ V/m)	Comment
30.247650	161.0	-2.8	18.8	40.0	
270.524600	281.0	-12.4	20.3	46.0	
297.477500	210.0	-0.1	21.9	46.0	
558.892275	3.0	-5.8	18.6	46.0	
595.342250	7.0	-5.4	19.3	46.0	
832.393550	61.0	-1.5	23.7	46.0	

Frequency	Reading	Detector	Direction	Height	Polar	Antenna factor	Cable loss	Amplifier	Correction Factor	Limit dBuV/m	Margin dB	Remark
MHz	dBuV/m	PK/QP/AV	Degree	Meter	H/V	dB	dB	dB	dBuV/m			
27.045	58.48	PK	0	1.0	H	23.8	0.6	28.8	54.08	100	-45.92	Fundamental
27.045	52.64	PK	0	1.0	V	23.8	0.6	28.8	48.24	100	-51.76	Fundamental
27.045	57.62	AV	0	1.0	H	23.8	0.6	28.8	53.22	80.00	-26.78	Fundamental
27.045	51.86	AV	0	1.0	V	23.8	0.6	28.8	47.46	80.00	-32.54	Fundamental

§15.227(b) - Out of Band Emission

EMI Test Receiver Setup

The system was investigated from 26.8 MHz to 27.3 MHz.

During the out of band emission test, the EMI test receiver was set with the following configurations:

Frequency	RB/W	VB/W	SWT
26.8 MHz-27.3 MHz	*10 kHz*	*30 kHz*	*Auto*

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2005-8-17	2006-8-17
HP	Amplifier	HP8447E	1937A01046	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2006-4-28	2007-4-28
ETS	Passive Loop Antenna	6512	00029604	2006-4-26	2007-4-26

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

Test Procedure

Reading the emission of 26.96 MHz and 27.28 MHz to ensure that the EUT complied with the FCC PART 15.227.

All data was recorded in the Peak detection mode.

Test Data

Environmental Conditions

Temperature:	25° C
Relative Humidity:	54%
ATM Pressure:	1010mbar

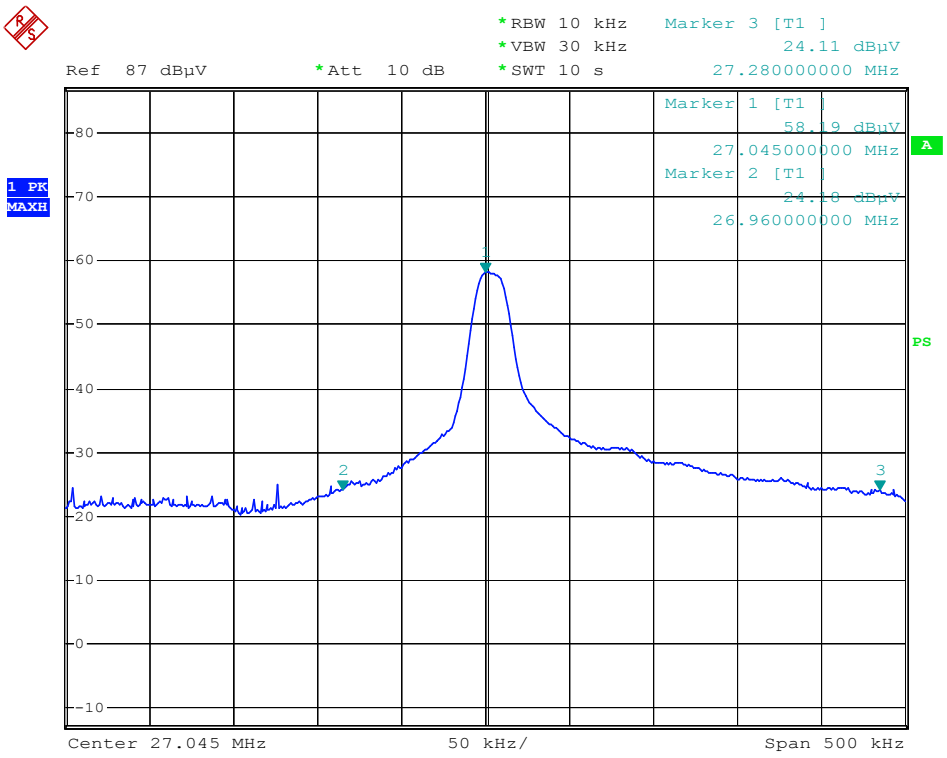
Testing was performed by William Chan on 2006-6-7.

Test Mode: Transmitting

The result has been complied with the 15.227(b), see the following plot:

Frequency MHz	Emission dBμV/m	Limit dBμV/m	Margin dB
26.96	24.10	49.54	-25.44
27.28	24.11	49.54	-25.43

Test Result: Pass



Intech wireless mouse M-216 Transmitting model -- Out of Band

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