

FCC TEST REPORT

FCC ID : UC3R082G4000

Applicant : INTECH ELECTRONICS CORP.

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

Equipment Under Test (EUT) :

Product description : 2.4G Wireless Laser Mouse

Model No. : R08

Standards : FCC Part 15 Subpart B

Date of Test : Sept. 18, 2008

Test Engineer : Olic.huang

Reviewed By : 

Test Result :	PASS *
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* The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

1 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2003	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15, SUBPART B: 2003	ANSI C63.4: 2003	N/A	N/A

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2 General Information

2.1 Client Information

Applicant: INTECH ELECTRONICS CORP.
Address of Applicant: Hall B3 , Yuan-Hu Industry Park , Golf Blvd., Song-Yuan Village, Guan-Lan , Shenzhen , China

Manufacturer: INTECH ELECTRONICS CORP.
Address of manufacturer: Hall B3 , Yuan-Hu Industry Park , Golf Blvd., Song-Yuan Village, Guan-Lan , Shenzhen , China

2.2 General Description of E.U.T.

Product description: 2.4G Wireless Laser Mouse
Model No.: R08

2.3 Details of E.U.T.

Power Supply: DC 5.0V By USB Port

2.4 Description of Support Units

The EUT has been tested as an independent unit.

2.5 Standards Applicable for Testing

The customer requested FCC tests for a 2.4G Wireless Laser Mouse . The standards used were FCC Part 15 Subpart B.

2.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581.June 24,2008.

- **IC – Registration No.: IC7760**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760, July 24, 2008.

2.7 Test Location

All Emissions tests were performed at:-

1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen
518105,China

3 Equipment Used during Test

Equipment	Brand Name	Model	Related standards	Cal.Intal Months	Last Cal. Date	Serial No
3m Semi-anechoic chamber						
EMC Analyzer	Agilent	E7405A	ISO9001:2000	12	Jan-08	MY45114943
Trilog Broadband Antenne	SCHWARZB ECK MESS-ELEKTROM	VULB9163	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	336
Broad-band Horn Antenna	SCHWARZB ECK MESS-ELEKTROM	BBHA 9120 D	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	667
Broadband Preamplifier	SCHWARZB ECK MESS-ELEKTROM	BBV 9718	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	9718-148
10m Coaxial Cable with N-male Connectors usable	SCHWARZB ECK MESS-ELEKTROM	AK 9515 H	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
10m 50 Ohm Coaxial Cable with N-plug, Individual length, usable up to 3(5)GHz, Connectors	SCHWARZB ECK MESS-ELEKTROM	AK 9513	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
Positioning Controller	C&C LAB	CC-C-IF	ISO9001	12	Jan-08	MF7802108
Color Monitor	SUNSPO	SP-14C	ISO9001	12	Jan-08	-
EMI Shielded Room						
Test Receiver	ROHDE&SC HWARZ	ESPI	ISO9001	12	Jan-08	101155
Two-Line V-Network	ROHDE&SC HWARZ	ENV216	ISO9001 EN /ISO/IEC 17025	12	Jan-08	100115
Absorbing Clamp	ROHDE&SC HWARZ	MDS-21	ISO9001 EN/ ISO/IEC 17025	12	Jan-08	100205
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connectors	SCHWARZB ECK MESS-ELEKTROM	AK 9514	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
Others						
Notebook	IBM	X31	-	-	-	-

4 Emissions Test Results

4.1 Conducted Emission Data

Test Requirement:	FCC Part15.107 Class B
Test Method:	Based on ANSI C63.4:2003
Test Date:	-----
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

4.1.1 E.U.T. Operation

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1012 mbar

EUT Operation :

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

4.1.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15.107 Class B limits.

The EUT was placed on the test table in working mode.

4.1.3 Conducted Emission Test Data

Owing to the DC operation of EUT, this test is not performed.

4.2 Radiation Emission Data

Test Requirement:	FCC Part15.109 Class B
Test Method:	Based on ANSI C63.4:2003
Test Date:	Sept .18, 2008
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/m zbove 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

4.2.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the 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 ANSI C63.4:2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC lab is ± 2.9 dB.

4.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Subpart B limits

The EUT was placed on the test table in working mode.

4.2.3 Spectrum Analyzer Setup

According to FCC Part15 Subpart B Rules, the system was tested 30 to 1000MHz.

Start Frequency.....	30 MHz
Stop Frequency	1000 MHz
Sweep Speed Auto	
IF Bandwidth.....	120 kHz
Video Bandwidth.....	100 kHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	100 kHz

4.2.4 Test Procedure

The radiated emissions test.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "Qp" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

4.2.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows

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

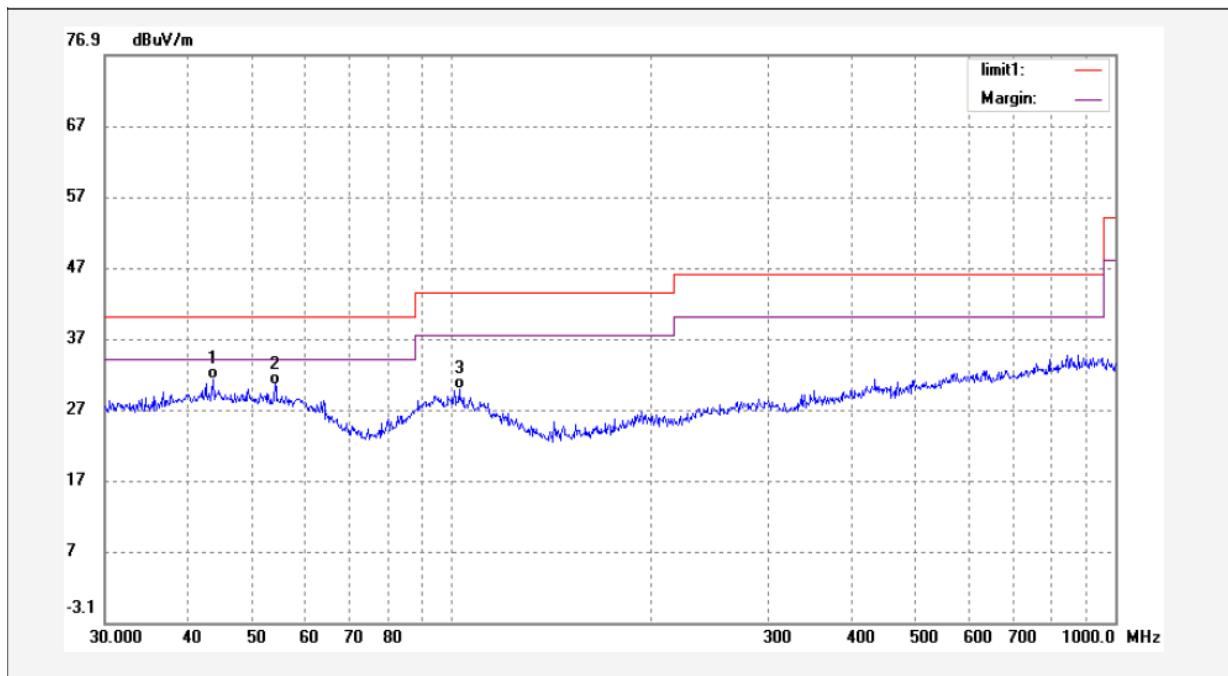
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

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

4.2.6 Summary of Test Results

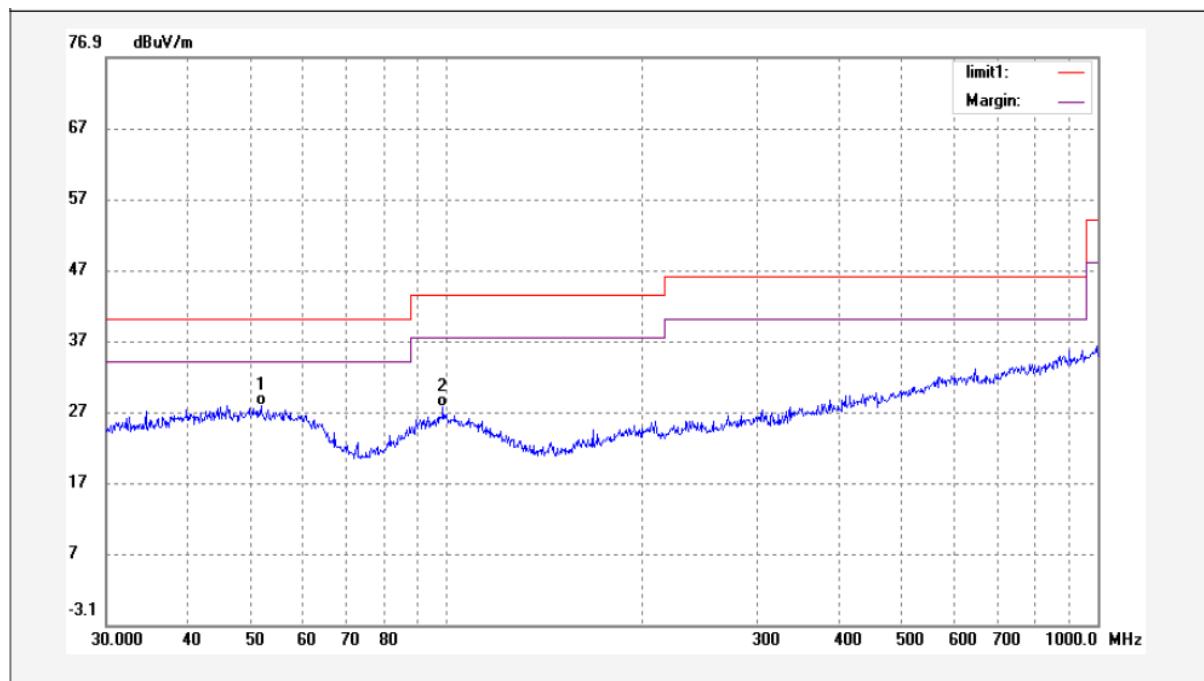
According to the data in this section, the EUT complied with the FCC Part15 Subpart B standards.

Test Antenna Polarization: **Horizontal**



Test Data

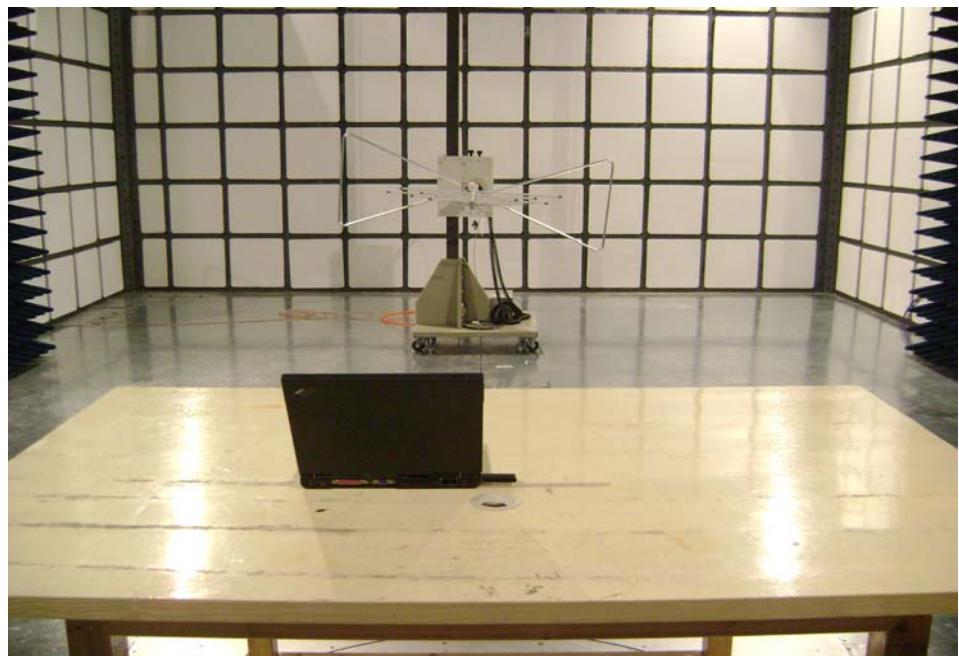
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV)	Margin (dB)	Detector
1	43.6914	12.16	19.12	31.28	40.00	-8.72	QP
2	54.1349	11.88	18.62	30.50	40.00	-9.50	QP
3	102.6117	11.08	18.69	29.77	43.50	-13.73	QP

Test Antenna Polarization: **Vertical**

Test Data

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV)	Margin (dB)	Detector
1	51.8998	11.13	16.72	27.85	40.00	-12.15	QP
2	98.7215	10.75	16.91	27.66	43.50	-15.84	QP

4.2.7 Photographs – Radiation Emission Test Setup



5 Photographs - Constructional Details

5.1 EUT - Front View



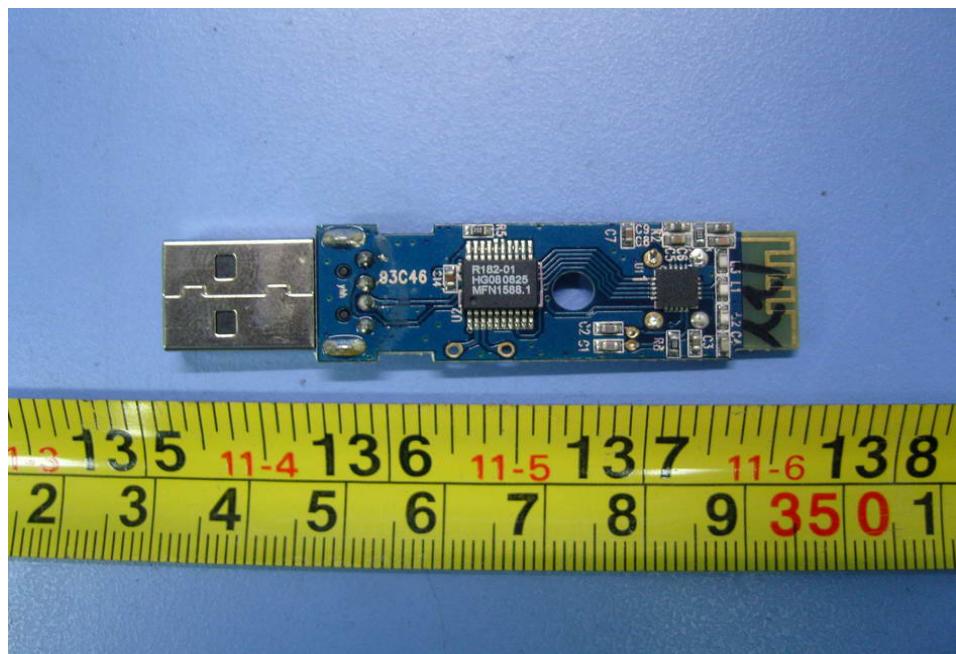
5.2 EUT - Back View



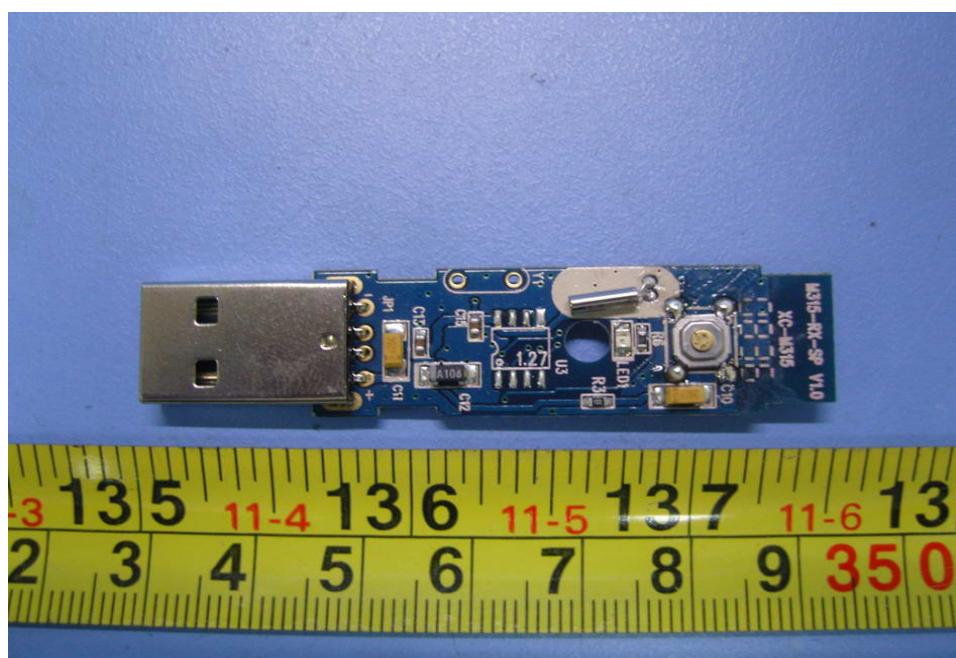
5.3 EUT - Open View



5.4 PCB- Front View



5.5 PCB - Back View



6 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT

EUT Bottom View/proposed FCC ID Label Location

