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FCC PART 15 SUBPART B TEST REPORT

FCC PART 15B

Report Reference No......: **VITE1007003F**

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Date of issue.....: July 14, 2010

Representative Laboratory Name .: **Shenzhen VITE Technology Co., Ltd**

Address.....: Suite 2123, Building 4, Hongfa Centre, Central Area Baoan, Baoan District, Shenzhen, Guangdong, 518101, P.R. China

Test Firm.....: **Bontek Compliance Testing Laboratory Ltd**

Address.....: 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

Applicant's name.....: **SHENZHEN OCEAN ELECTRONICS CO., LTD.**

Address.....: B4 Building, XinHaoSheng DingFeng Technology Park, Yonghe Road, Fuyong Town, Bao'An District, Shenzhen, P.R.C

Test specification:

Standard: **FCC Part 15B**

TRF Originator.....: Shenzhen VITE Technology Co., Ltd

Master TRF.....: Dated 2009-01

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Test item description : Optical Mouse

Trade Mark: /

Model/Type reference.....: MO-345

Listed Models: /

Power Supply.....: DC 5V

Result.....: **Positive**

FCC ID.....: **YL2MO-345**

TEST REPORT

Test Report No. : VITE1007003F	July 14, 2010 Date of issue
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Equipment under Test : Optical Mouse

Model /Type : MO-345

Listed Models : /

Applicant : SHENZHEN OCEAN ELECTRONICS CO., LTD.

Address : B4 Building, XinHaoSheng DingFeng Technology Park,
Yonghe Road, Fuyong Town, Bao'An District, Shenzhen,
P.R.C

Manufacturer : SHENZHEN OCEAN ELECTRONICS CO., LTD.

Address : B4 Building, XinHaoSheng DingFeng Technology Park,
Yonghe Road, Fuyong Town, Bao'An District, Shenzhen,
P.R.C

Test Result according to the standards on page 4:	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15 Subpart B - Unintentional Radiators](#)

[ANSI C63.4-2003](#)

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : July 05, 2010

Testing commenced on : July 08, 2010

Testing concluded on : July 12, 2010

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : o 230V / 50 Hz ● 120V / 60Hz
 o 12 V DC o 24 V DC
 o Other (specified in blank below)

/

2.3. Short description of the Equipment under Test (EUT)

Optical Mouse.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

o - supplied by the manufacturer

● - supplied by the lab

o Notebook Computer

Manufacturer : DELL

Model No. : PP26L

o Keyboard

Manufacturer : DELL

Model No. : 8115

o Printer

Manufacturer : Epson

Model No. : STYLUS C61

o LCD Display

Manufacturer : DELL

Model No. : E248WFP

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: YL2MO-345** filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Test Result Summary

Test Item	Test Requirement	Standard Paragraph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	PASS

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements

3.2. Test Facility

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

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory 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 338263, March 24, 2008.

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2008.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.22dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.5. Equipments Used during the Test

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2010/04
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2010/04
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2010/04
4	TURNTABLE	ETS	2088	2149	2010/04
5	ANTENNA MAST	ETS	2075	2346	2010/04
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2010/04
7	Loop Antenna	ROHDE & SCHWARZ	HFH2-Z2	8335211/0035	2010/04

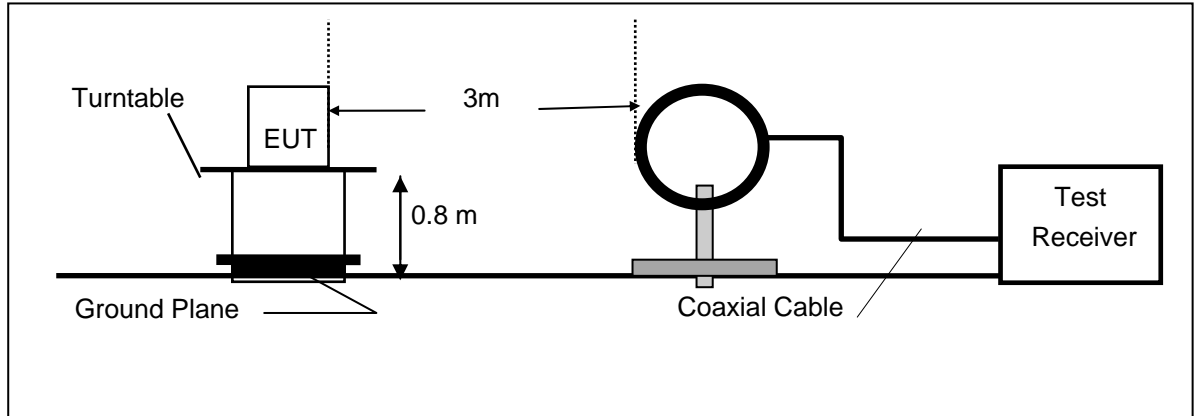
Conducted Emissions(AC main input port & Telecommunication ports)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101224	2010/04
2	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100522	2010/04
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100212	2010/04
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2010/04

4. TEST CONDITIONS AND RESULTS

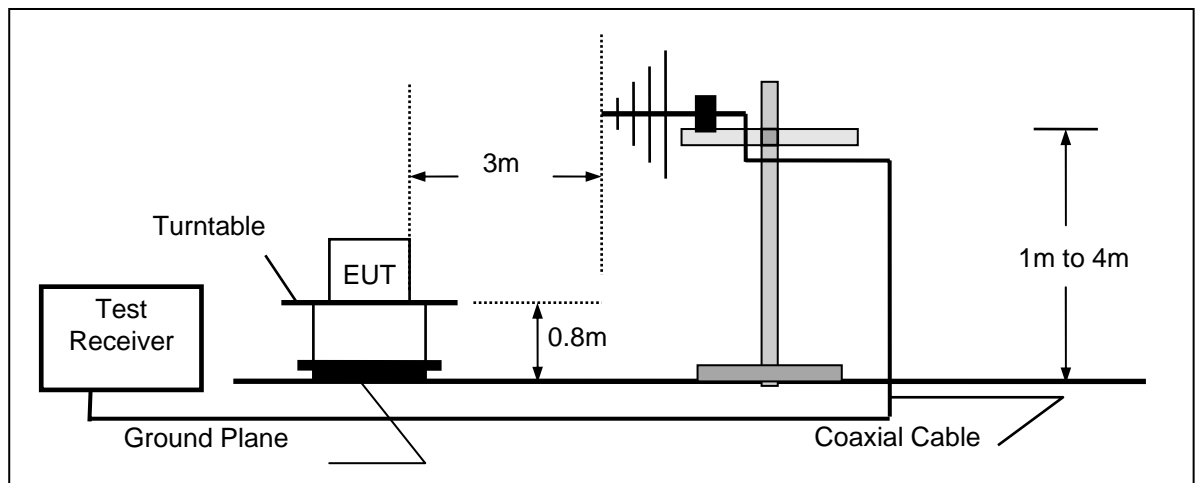
4.1. Radiated Emission Test

TEST CONFIGURATION

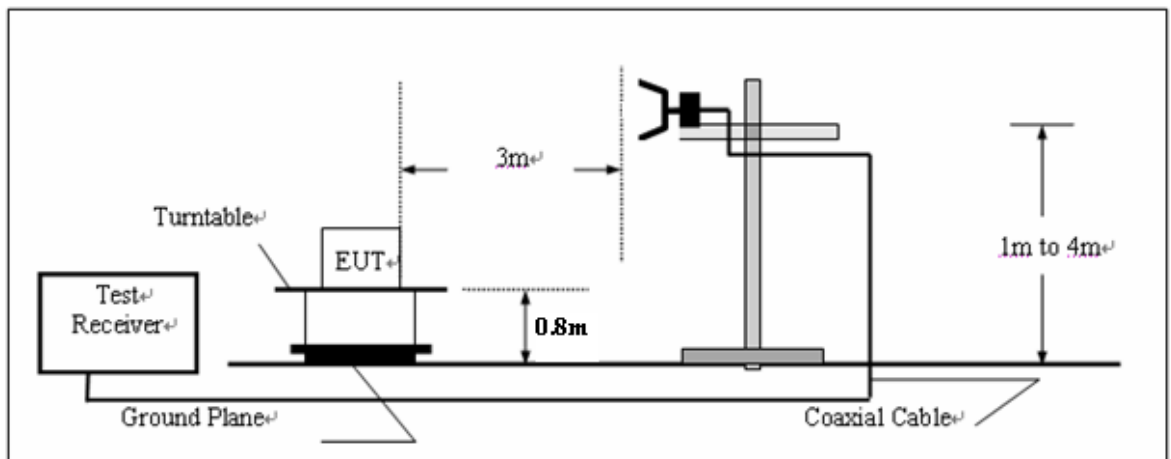
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiation Test Results

Remark:

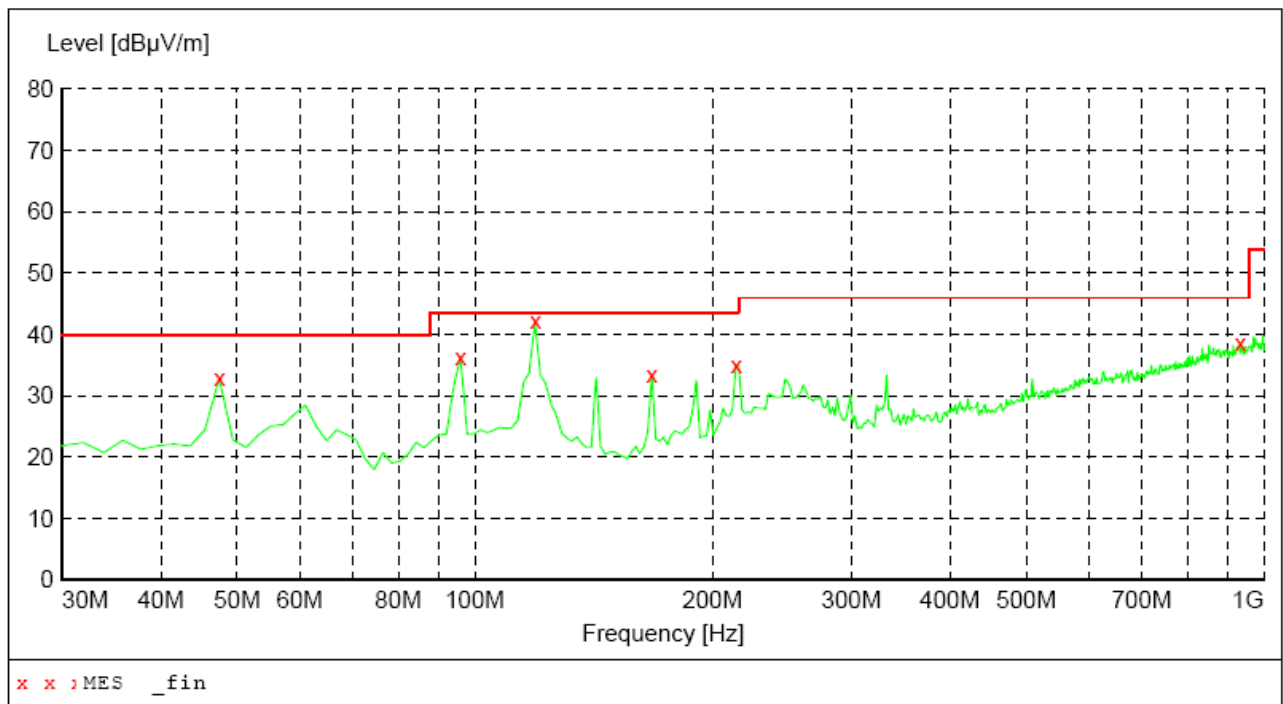
- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.105, then the general radiated emission limits in 15.109 apply.
- (3) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

Shenzhen VITE Technology Co.,Ltd**RADIATED EMISSION FCC PART15 B**

EUT: Optical Mouse M/N:MO-345
 Manufacturer: SHENZHEN OCEAN ELECTRONICS CO., LTD.
 Operating Condition: Normal Working
 Test Site: 3m CHAMBER
 Operator: CHEN
 Test Specification: AC 120V/60Hz
 Comment: Polarisation:H
 Start of Test: 7/12/2010 / 20:00:30

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

**MEASUREMENT RESULT:**

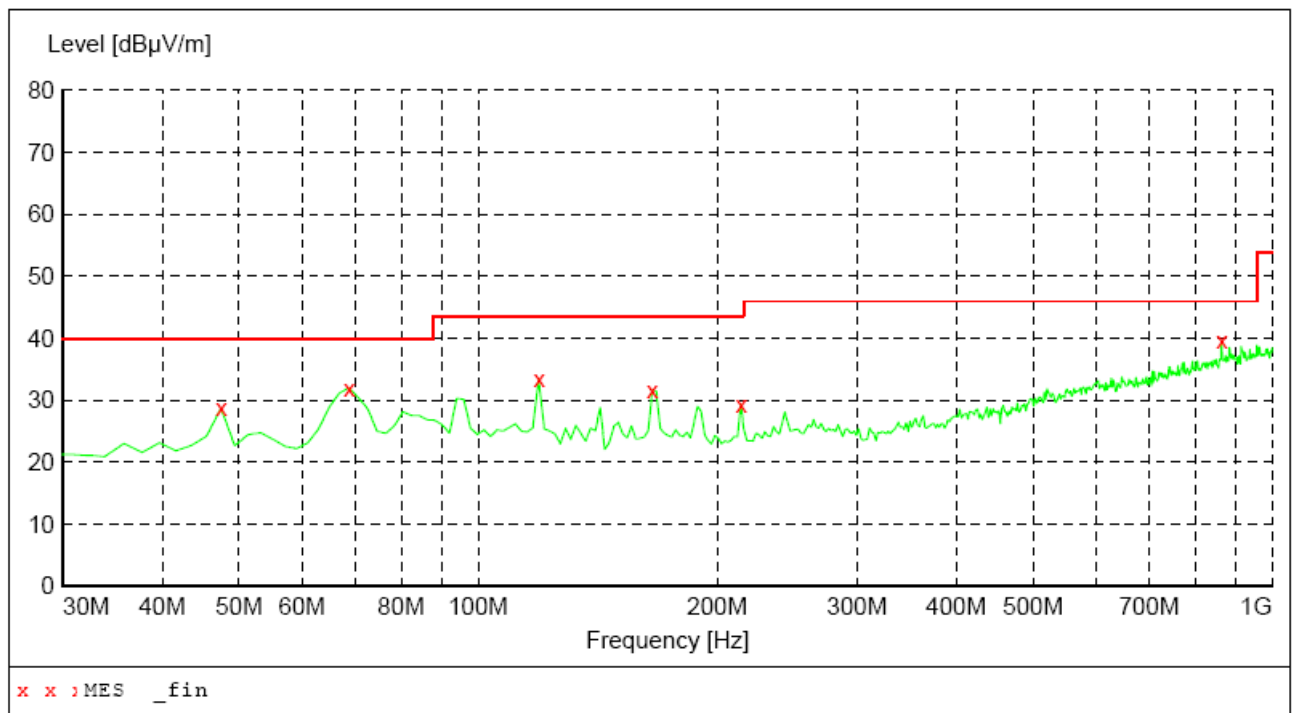
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	32.80	15.8	40.0	7.2	QP	300.0	12.00	HORIZONTAL
95.960000	36.40	17.2	43.5	7.1	QP	300.0	145.00	HORIZONTAL
119.240000	42.10	15.2	43.5	1.4	QP	300.0	62.00	HORIZONTAL
167.740000	33.50	14.2	43.5	10.0	QP	100.0	258.00	HORIZONTAL
214.300000	34.90	16.1	43.5	8.6	QP	100.0	33.00	HORIZONTAL
934.040000	38.50	31.6	46.0	7.5	QP	300.0	349.00	HORIZONTAL

Shenzhen VITE Technology Co.,Ltd**RADIATED EMISSION FCC PART15 B**

EUT: Optical Mouse M/N:MO-345
 Manufacturer: SHENZHEN OCEAN ELECTRONICS CO., LTD.
 Operating Condition: Normal Working
 Test Site: 3m CHAMBER
 Operator: CHEN
 Test Specification: AC 120V/60Hz
 Comment: Polarisation:V
 Start of Test: 7/12/2010 / 20:03:46

SWEEP TABLE: "test (30M-1G)"

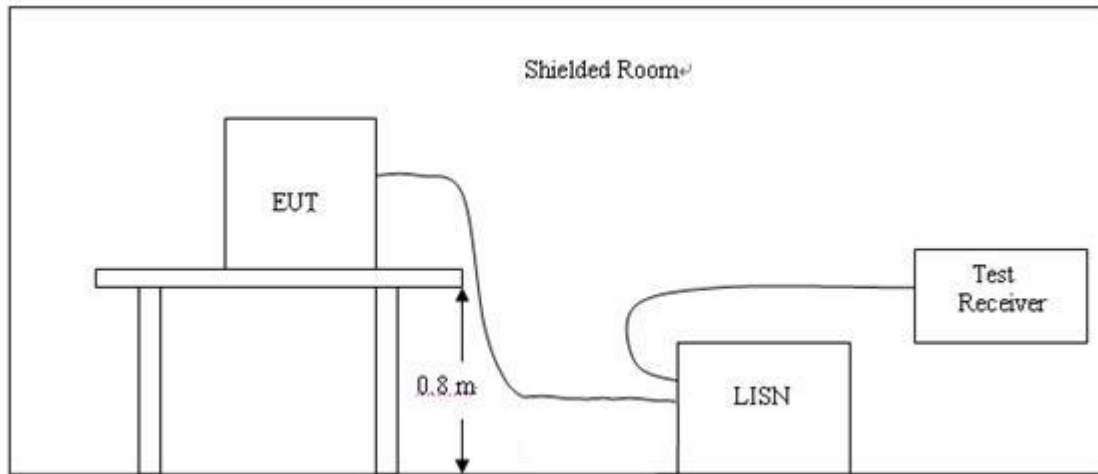
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	28.70	15.8	40.0	11.3	QP	100.0	45.00	VERTICAL
68.800000	32.00	12.7	40.0	8.0	QP	100.0	235.00	VERTICAL
119.240000	33.50	15.2	43.5	10.0	QP	100.0	66.00	VERTICAL
165.800000	31.60	14.1	43.5	11.9	QP	100.0	347.00	VERTICAL
214.300000	29.40	16.1	43.5	14.1	QP	100.0	356.00	VERTICAL
864.200000	39.60	30.6	46.0	6.4	QP	100.0	22.00	VERTICAL

4.2. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 The EUT received DC 5V power from the computer, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

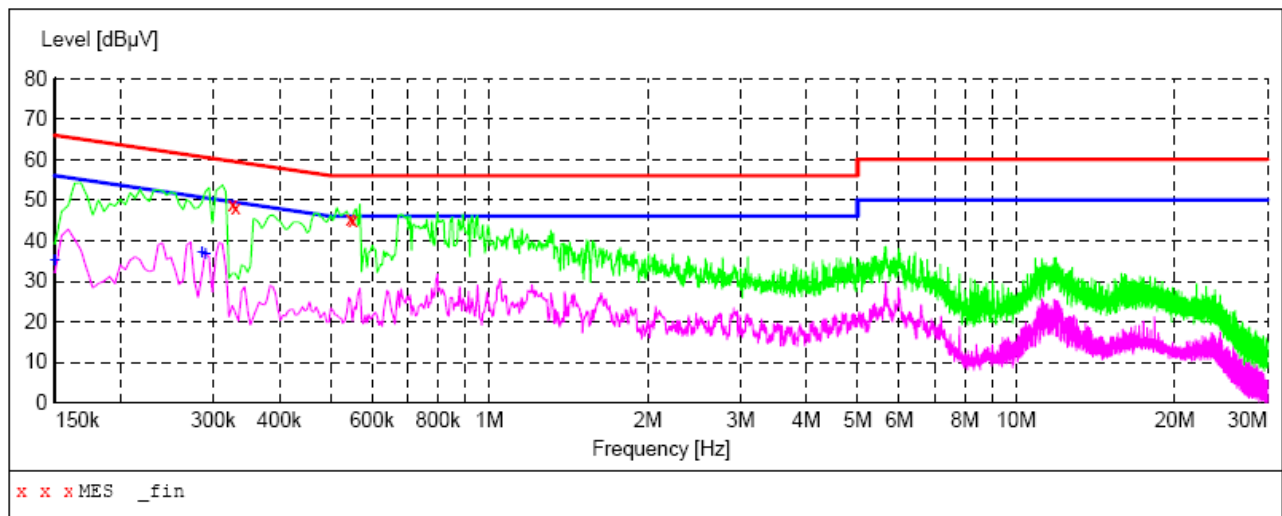
Shenzhen VITE Technology Co.,Ltd

Voltage Mains FCC PART15 B

EUT: Optical Mouse M/N:MO-345
Manufacturer: SHENZHEN OCEAN ELECTRONICS CO., LTD.
Operating Condition: Running
Test Site: SHIELDED ROOM
Operator: CHEN
Test Specification: AC 120V/60Hz
Comment: L LINE
Temperature:24 Humiuity:60%

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.325500	48.90	10.0	60	10.7	QP	L1	GND
0.330000	48.00	10.0	60	11.5	QP	L1	GND
0.546000	45.20	9.9	56	10.8	QP	L1	GND
0.550500	45.10	9.9	56	10.9	QP	L1	GND

MEASUREMENT RESULT:

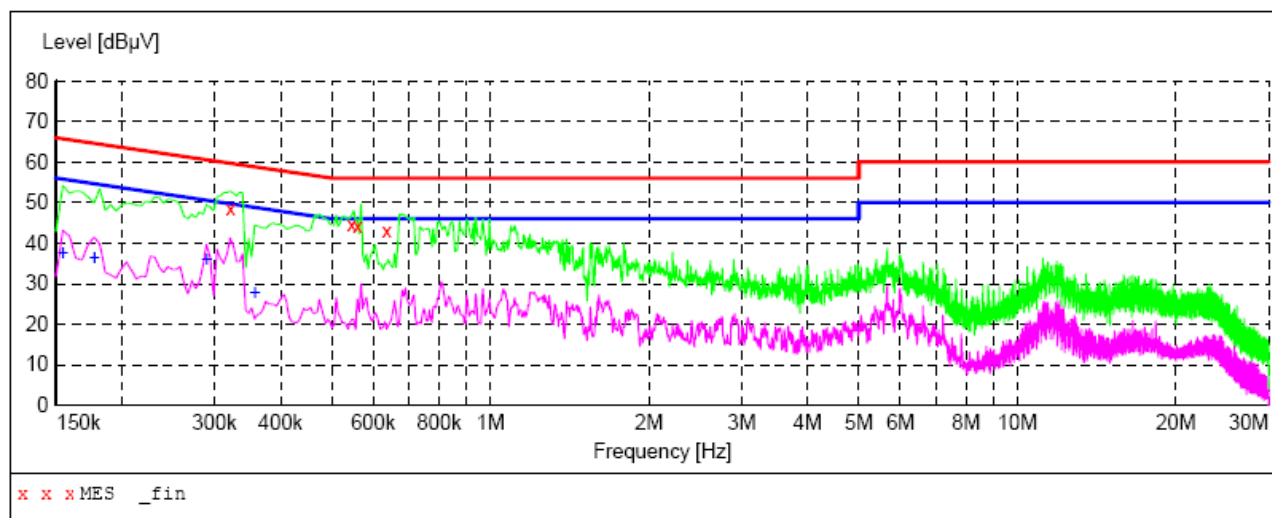
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	35.30	9.9	56	20.7	AV	L1	GND
0.285000	37.30	9.9	51	13.4	AV	L1	GND
0.289500	36.90	10.0	51	13.6	AV	L1	GND

Shenzhen VITE Technology Co.,Ltd**Voltage Mains FCC PART15 B**

EUT: Optical Mouse M/N:MO-345
 Manufacturer: SHENZHEN OCEAN ELECTRONICS CO., LTD.
 Operating Condition: Running
 Test Site: SHIELDED ROOM
 Operator: CHEN
 Test Specification: AC 120V/60Hz
 Comment: N LINE
 Temperature:24 Humiuity:60%

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.321000	48.60	10.0	60	11.1	QP	N	GND
0.546000	44.70	9.9	56	11.3	QP	N	GND
0.559500	44.30	9.9	56	11.7	QP	N	GND
0.636000	43.10	9.9	56	12.9	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	37.40	9.9	56	18.4	AV	N	GND
0.177000	36.40	9.9	55	18.2	AV	N	GND
0.289500	35.90	10.0	51	14.6	AV	N	GND
0.357000	27.90	9.9	49	20.9	AV	N	GND

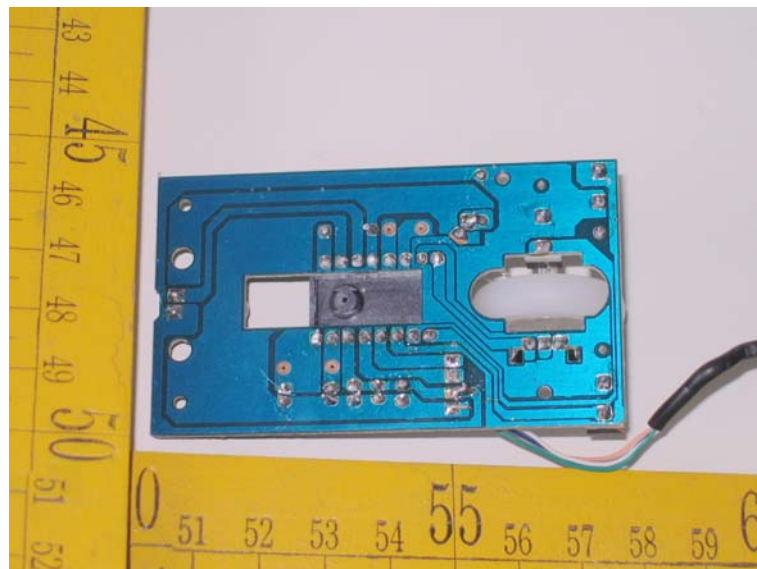
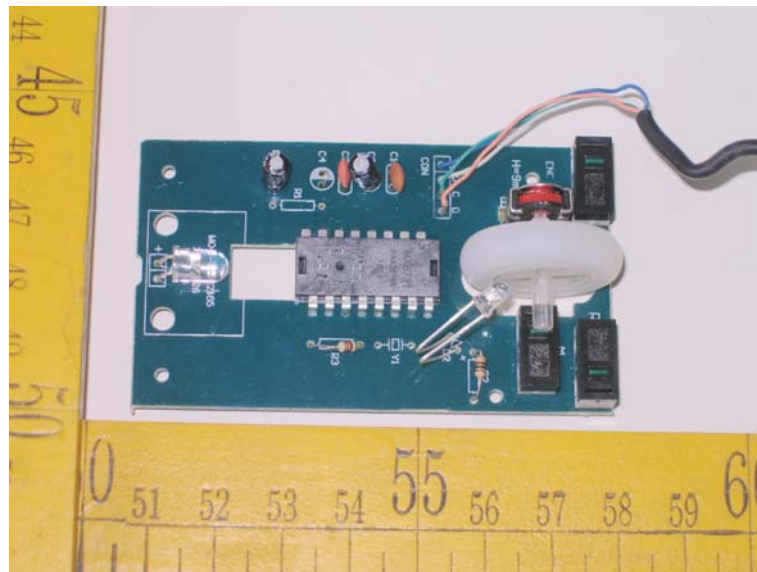
5. Test Setup Photos of the EUT



6. External and Internal Photos of the EUT

External Photos



Internal Photos

.....End of Report.....