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## FCC PART 15 SUBPART B TEST REPORT

### FCC PART 15B

**Report Reference No.**.....: **VITE1007005F**

Compiled by

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*Tracy Qi*

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.....: MC-318A

Listed Models .....: /

Power Supply.....: DC 5V

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

**FCC ID.....:** **YL2MC-318A**

**TEST REPORT**

<b>Test Report No. :</b> VITE1007005F	July 14, 2010 Date of issue
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Equipment under Test : Optical Mouse

Model /Type : MC-318A

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

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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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: YL2MC-318A** 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 mains 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

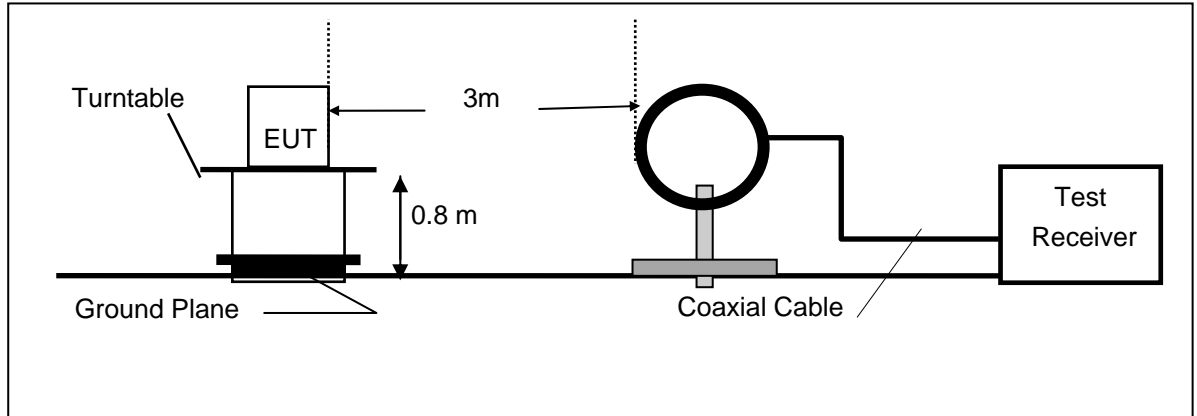


## 4. TEST CONDITIONS AND RESULTS

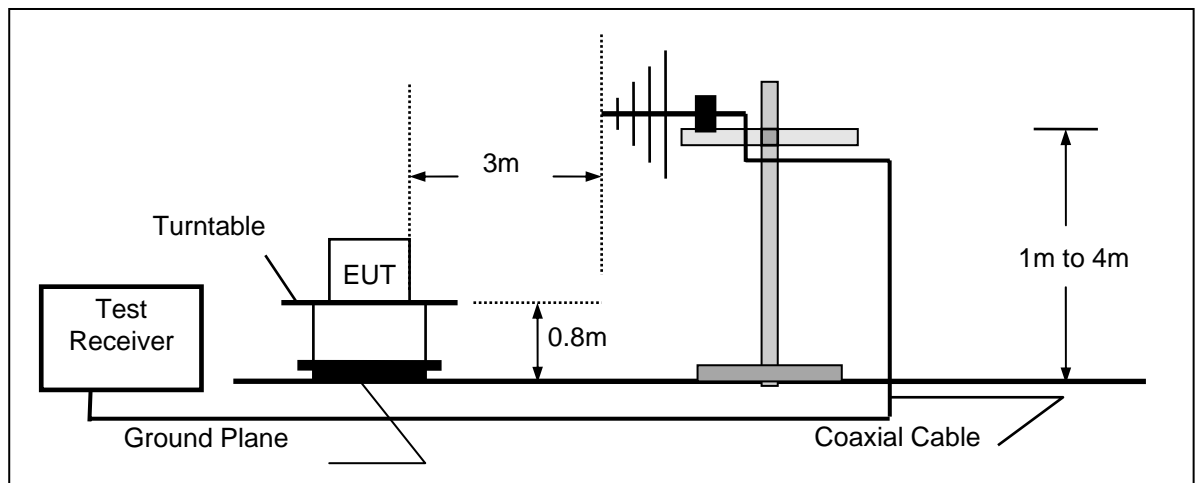
### 4.1. Radiated Emission Test

#### TEST CONFIGURATION

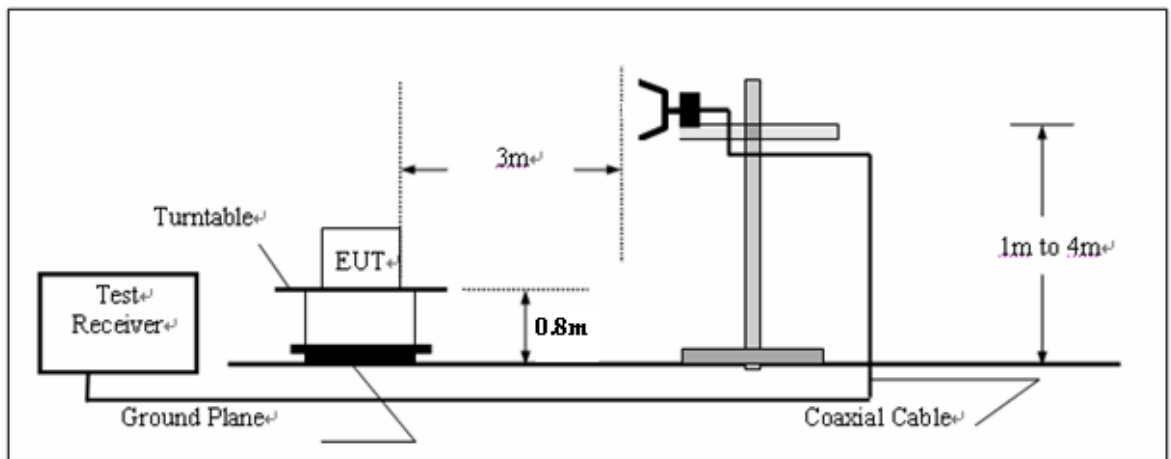
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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:

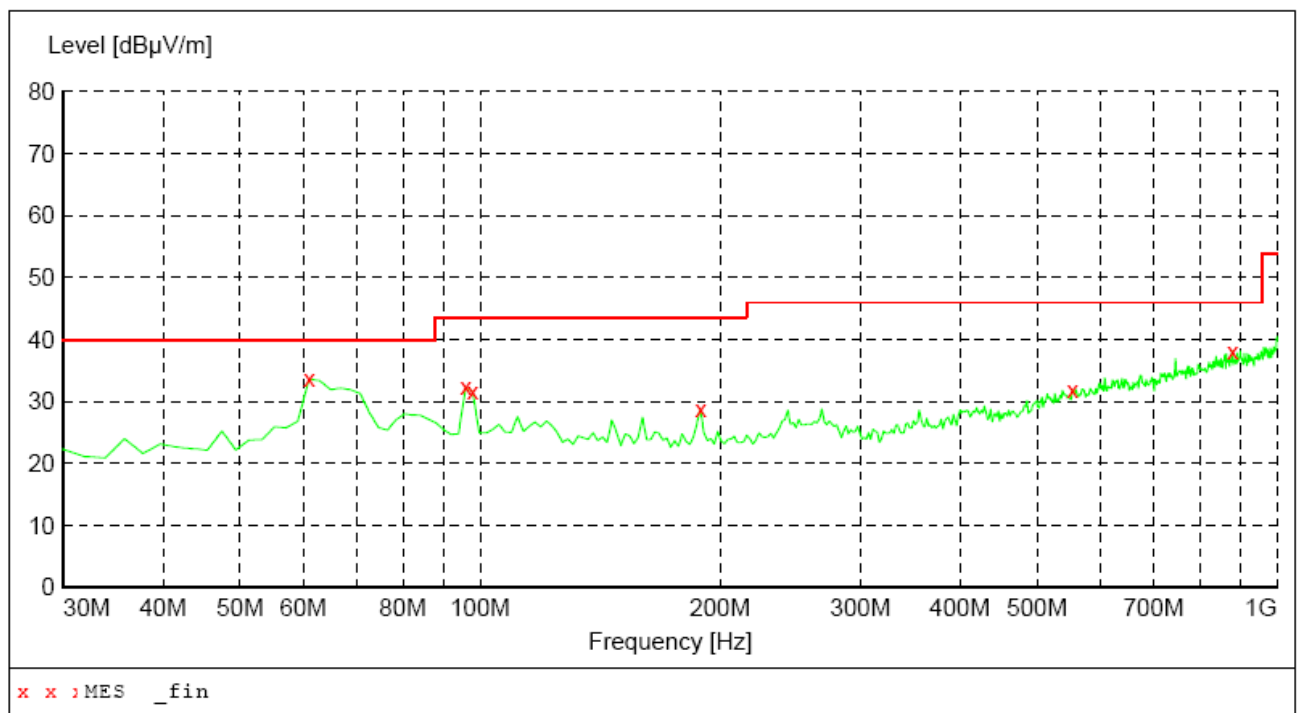
- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.105, then the general radiated emission limits in 15.109 apply.
- (3) Data of measurement within this frequency range shown "---" in the table 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:MC-318A  
 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 / 19:54:35

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

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

**MEASUREMENT RESULT:**

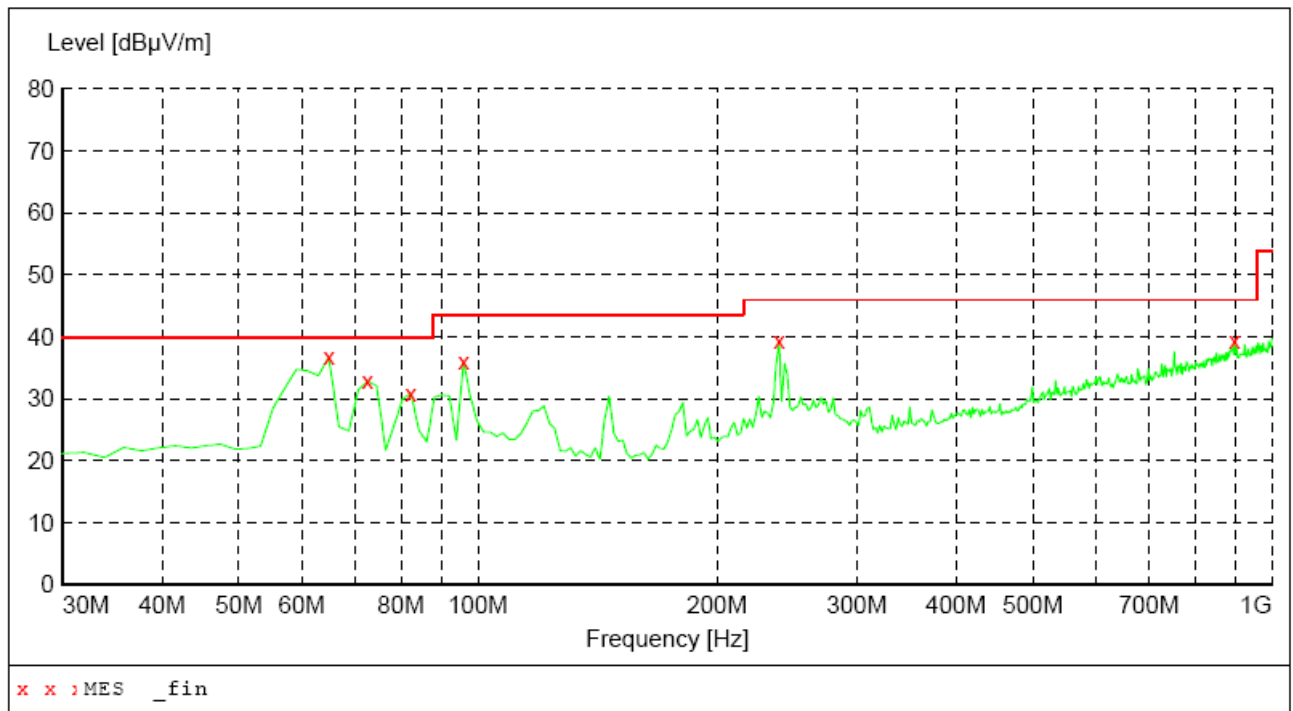
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
61.040000	33.60	14.2	40.0	6.4	QP	100.0	45.00	VERTICAL
95.960000	32.30	17.2	43.5	11.2	QP	100.0	125.00	VERTICAL
97.900000	31.60	17.4	43.5	11.9	QP	100.0	321.00	VERTICAL
189.080000	28.80	16.0	43.5	14.7	QP	100.0	56.00	VERTICAL
553.800000	31.90	25.3	46.0	14.1	QP	100.0	190.00	VERTICAL
879.720000	38.20	30.9	46.0	7.8	QP	100.0	42.00	VERTICAL

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

EUT: Optical Mouse M/N:MC-318A  
 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 / 19:56:39

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

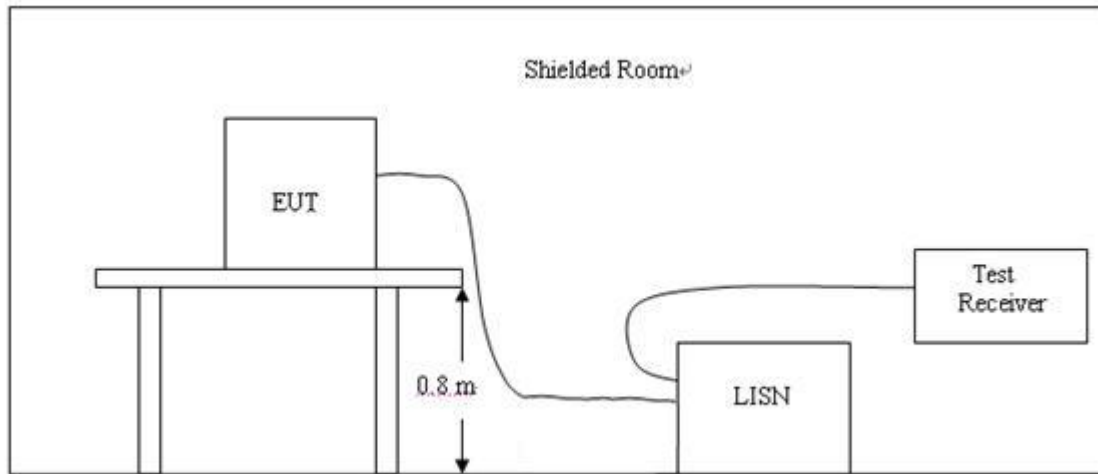
Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency				
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
64.920000	36.80	13.5	40.0	3.2	QP	300.0	356.00	HORIZONTAL
72.680000	32.80	12.1	40.0	7.2	QP	300.0	75.00	HORIZONTAL
82.380000	30.90	13.4	40.0	9.1	QP	300.0	121.00	HORIZONTAL
95.960000	36.10	17.2	43.5	7.4	QP	300.0	5.00	HORIZONTAL
239.520000	39.30	17.1	46.0	6.7	QP	100.0	45.00	HORIZONTAL
897.180000	39.30	31.2	46.0	6.7	QP	300.0	296.00	HORIZONTAL

## 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.

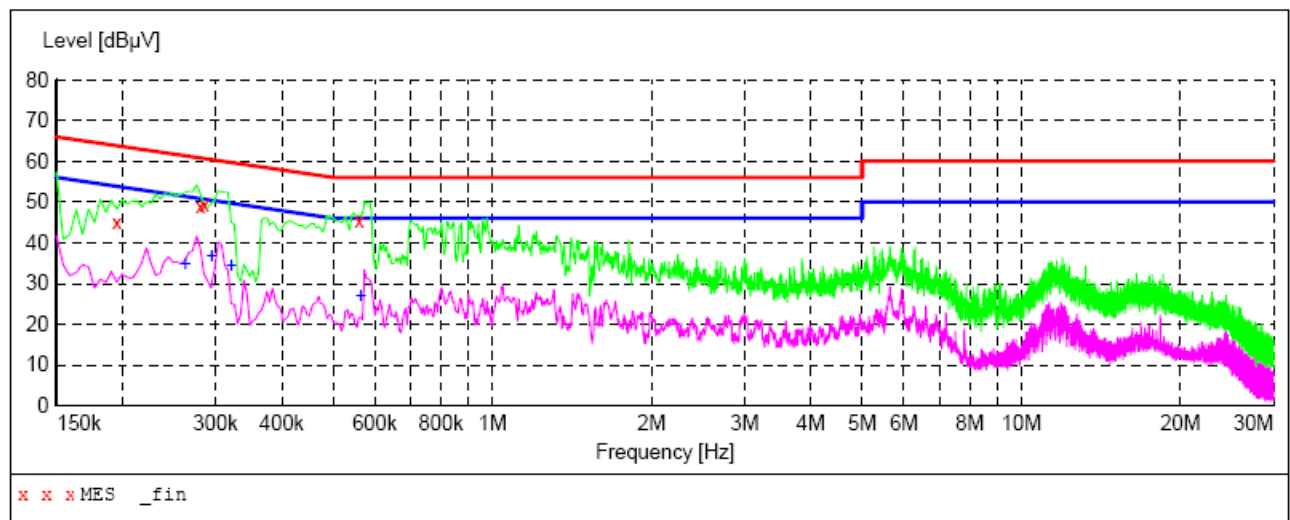
### TEST RESULTS

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

EUT: Optical Mouse M/N:MC-318A  
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
0.195000	45.00	9.9	64	18.8	QP	L1	GND
0.280500	49.00	9.9	61	11.8	QP	L1	GND
0.285000	49.40	9.9	61	11.3	QP	L1	GND
0.559500	45.50	9.9	56	10.5	QP	L1	GND

**MEASUREMENT RESULT:**

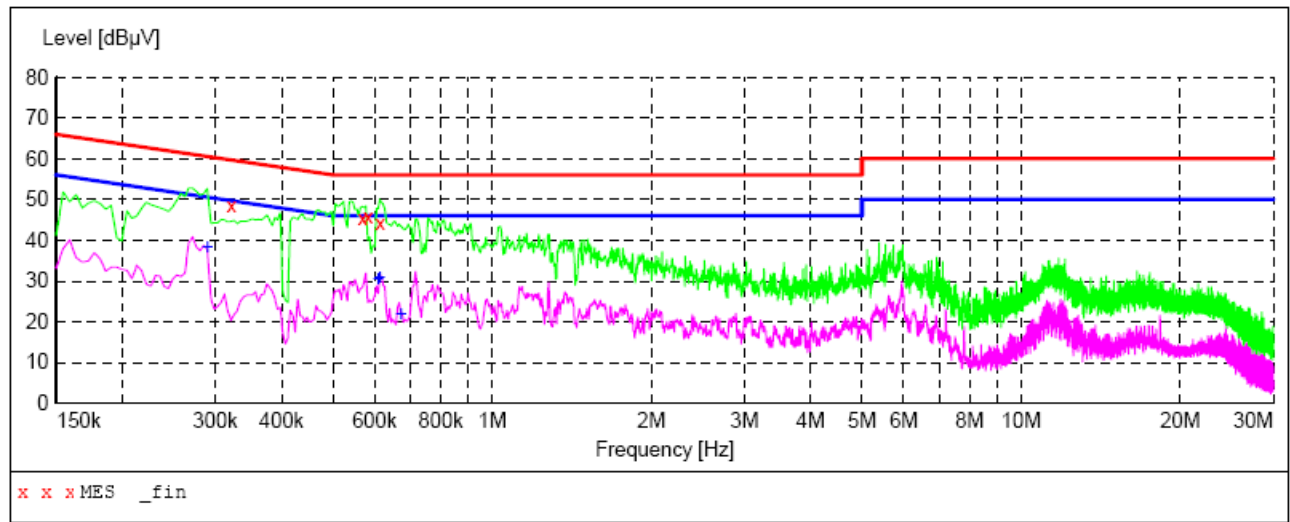
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.262500	34.90	9.9	51	16.5	AV	L1	GND
0.294000	36.90	10.0	50	13.5	AV	L1	GND
0.321000	34.60	10.0	50	15.1	AV	L1	GND
0.564000	26.90	9.9	46	19.1	AV	L1	GND

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

EUT: Optical Mouse M/N:MC-318A  
 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
0.568500	45.20	9.9	56	10.8	QP	N	GND
0.582000	45.90	9.9	56	10.1	QP	N	GND
0.613500	44.40	9.9	56	11.6	QP	N	GND

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.289500	38.50	10.0	51	12.0	AV	N	GND
0.609000	30.60	9.9	46	15.4	AV	N	GND
0.613500	30.90	9.9	46	15.1	AV	N	GND
0.672000	21.80	9.9	46	24.2	AV	N	GND

## **5. Test Setup Photos of the EUT**

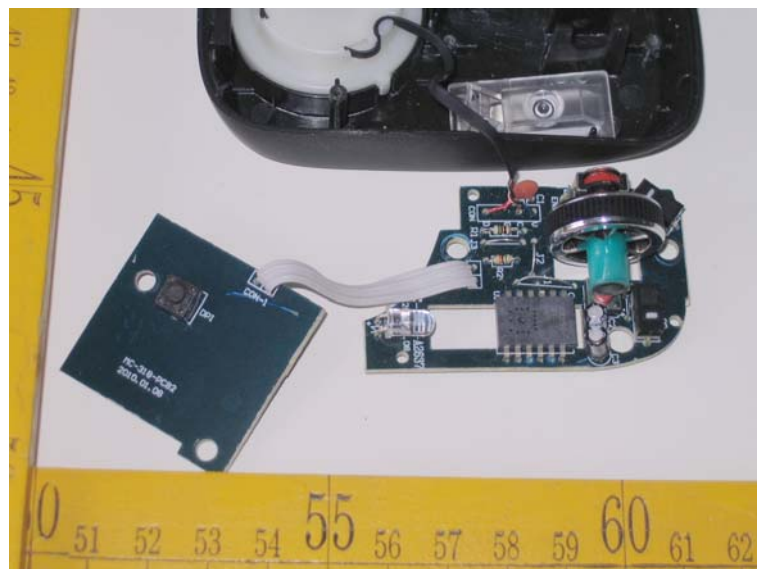




## 6. External and Internal Photos of the EUT

### External Photos



Internal Photos

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