

FCC TEST REPORT**47 CFR FCC Part 15 Subpart B****FCC ID**.....: **2AAVH-CEM960-01D****Report Reference No.**.....: A1307096018-3

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Date of issue.....: Aug 21, 2013

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Testing Laboratory Name: DTT Services Co.,Ltd

Address.....: 1F,2 Block, Jiaquan Building, Guanlan High-tech Park, Bao'an District, Shenzhen, Guangdong, China. 518110

Applicant's name.....: **City Ergonomics**

Address.....: 229 Hurst Road, Sidcup Kent DA159AL United Kingdom

Test specification:Standard: **47 CFR FCC Part 15 Subpart B - Unintentional Radiators
ANSI C63.4: 2009**

TRF Originator: Shenzhen Tian Hai Test Technology Co.,Ltd

Master TRF: Dated 2012-06

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Test item description: DXT Wireless Mouse

Trade Mark: DXT Mouse

Manufacturer: City Ergonomics

Model/Type reference.....: CEM960_01D

Listed Models: /

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

TEST REPORT

Test Report No. :	A1307096018-3	Aug 21, 2013 Date of issue
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Equipment under Test : DXT Wireless Mouse

Model /Type : CEM960_01D

Listed Models : /

Applicant : **City Ergonomics**

Address : 229 Hurst Road, Sidcup
Kent DA159AL United Kingdom

Manufacturer : **City Ergonomics**

Address : 229 Hurst Road, Sidcup
Kent DA159AL United Kingdom

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:

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

[ANSI C63.4: 2009](#) – 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 40GHz

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	July 31,2013
Testing commenced on	:	July 31,2013
Testing concluded on	:	Aug 21, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 5.0V from USB

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

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. Related Submittal(s) / Grant (s)

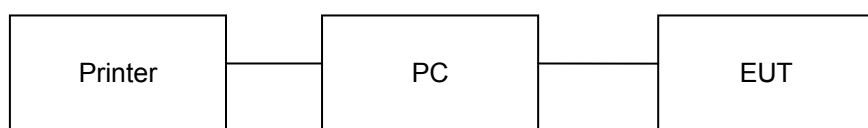
This submittal(s) (test report) is intended for **FCC ID: 2AAVH-CEM960-01D** filing to comply with the FCC Part 15, Subpart B Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

2.7. Configuration of Tested System

Configuration of Tested System



Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.	Notes
1	PC	DELL	PP26L	CNG8390Q6X	DOC
2	Printer	HP	Laserjet 6L C3990	Laserjet 6L C3990A	DOC

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

DTT Services Co.,Ltd
1F,2 Block,Jiaquan Building,Guanlan High-tech Park,Bao'an District, Shenzhen,Guangdong,China.
518110

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

IC Registration No.: 9783A

The 3m alternate test site of DTT Services Co.,Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Aug, 2011.

FCC-Registration No.: 214666

DTT Services 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 214666, Sep 19, 2011.

3.3. Environmental conditions

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

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

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 DTT Services Co.,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 DTT Services Co.,Ltd is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(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

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde & Schwarz	ESCI	100106	2013/4/23
2	ARTIFICIAL MAINS	Rohde & Schwarz	ESH2-Z5	100028	2013/4/23
3	PULSE LIMITER	Rohde & Schwarz	ESHSZ2	100044	2013/4/23
4	EMI TEST SOFTWARE	Audix	Z3	N/A	----

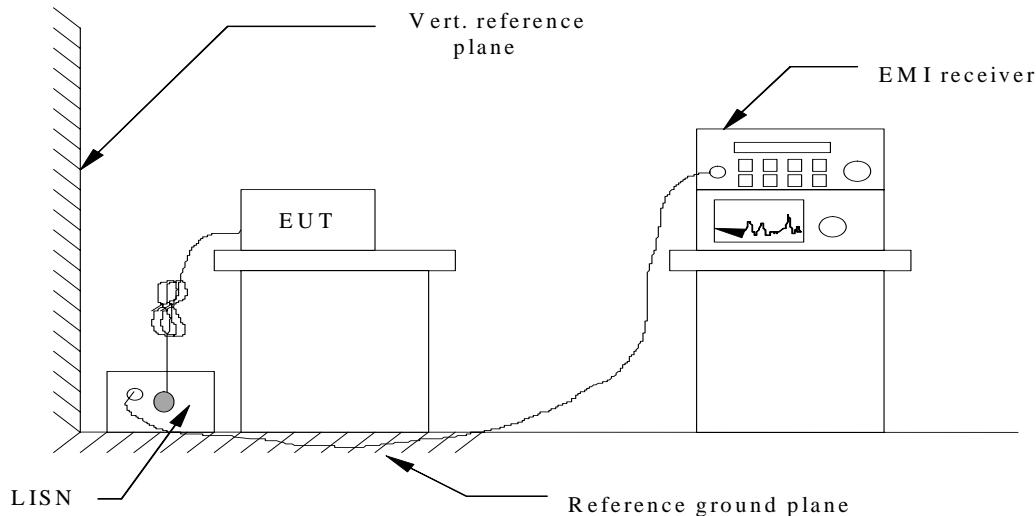
Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2013/4/23
2	EMI TEST OFTWARE	Audix	Z3	N/A	----
3	RF TEST PANEL	Rohde & Schwarz	TS / RSP	335015/ 0017	2013/4/23
4	TURNTABLE	ETS	2088	2149	2013/4/23
5	ANTENNA MAST	ETS	2075	2346	2013/4/23
6	EMI TEST OFTWARE	Rohde & Schwarz	ESK1	N/A	2013/4/23
7	HORN ANTENNA	Rohde & Schwarz	HF906	100039	2013/4/23
8	Amplifier	Sonoma	310N	E009-13	2013/4/23
9	JS amplifier	Rohde & Schwarz	JS4-00101800-28-5A	F201504	2013/4/23
10	EMI TEST OFTWARE	Audix	E3	N/A	2013/4/23

The calibration interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. 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 C63.4-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.4-2009.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
- 4 The EUT 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.

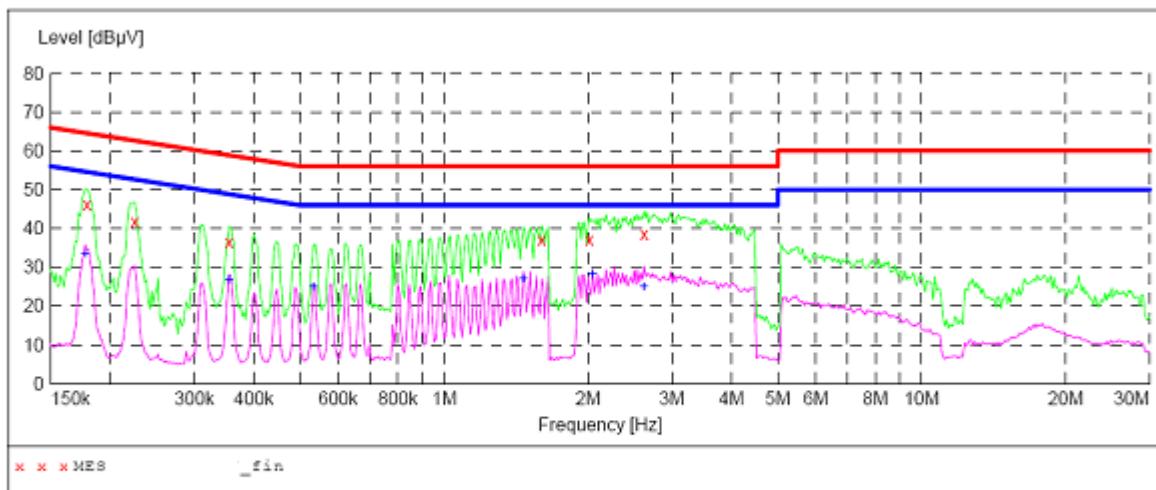
CONDUCTED POWER LINE EMISSION LIMIT

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

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)			
	CLASS A		CLASS B	
	QP	Ave	QP	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

TEST RESULTS

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



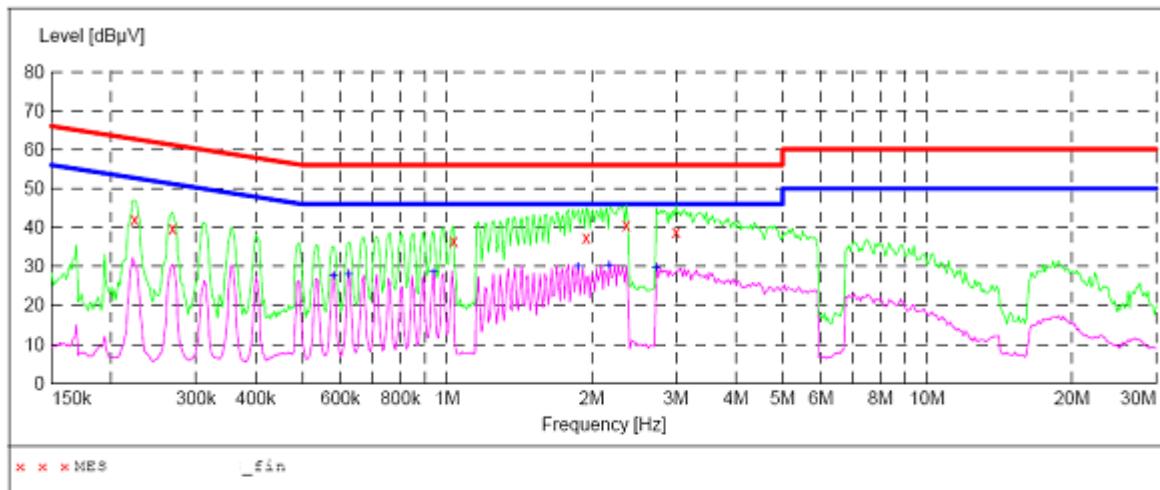
MEASUREMENT RESULT:

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.178740	46.30	10.1	65	18.2	QP	L1	GND
0.225205	41.90	10.1	63	20.7	QP	L1	GND
0.354673	36.60	10.1	59	22.3	QP	L1	GND
1.599077	37.30	10.2	56	18.7	QP	L1	GND
2.014767	37.20	10.2	56	18.8	QP	L1	GND
2.620730	38.80	10.2	56	17.2	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.177322	33.80	10.1	55	20.8	AV	L1	GND
0.354673	26.90	10.1	49	22.0	AV	L1	GND
0.532495	25.30	10.1	46	20.7	AV	L1	GND
1.464885	27.30	10.2	46	18.7	AV	L1	GND
2.047132	28.50	10.2	46	17.5	AV	L1	GND
2.620730	25.30	10.2	46	20.7	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.223418	42.20	10.1	63	20.5	QP	N	GND
0.268355	39.90	10.1	61	21.3	QP	N	GND
1.031668	36.70	10.2	56	19.3	QP	N	GND
1.951563	37.40	10.2	56	18.6	QP	N	GND
2.362846	40.70	10.2	56	15.3	QP	N	GND
3.000899	39.00	10.2	56	17.0	QP	N	GND

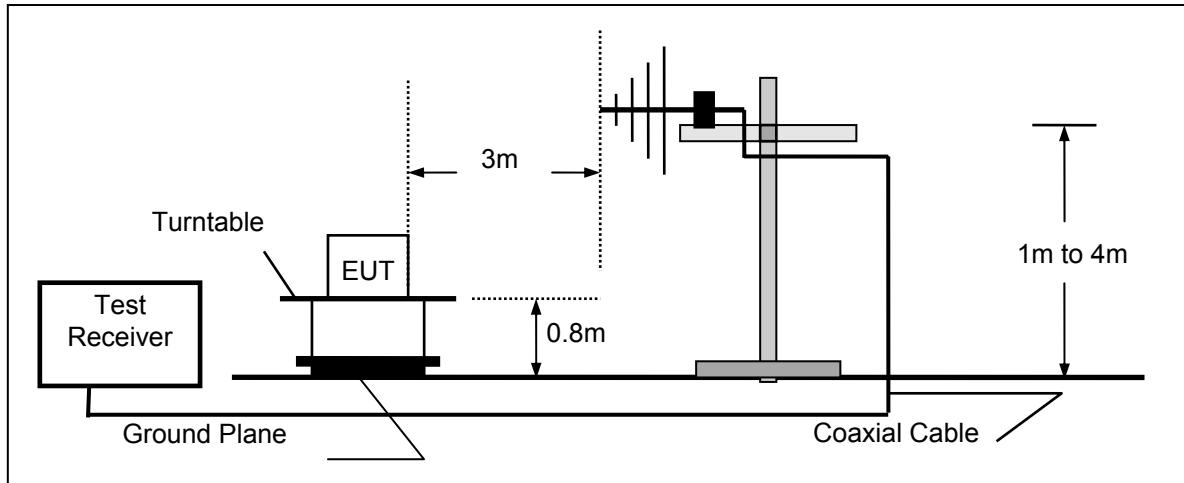
MEASUREMENT RESULT:

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.581275	27.90	10.1	46	18.1	AV	N	GND
0.624491	28.20	10.1	46	17.8	AV	N	GND
0.937591	28.80	10.2	46	17.2	AV	N	GND
1.875340	30.20	10.2	46	15.8	AV	N	GND
2.181876	30.50	10.2	46	15.5	AV	N	GND
2.727250	29.70	10.2	46	16.3	AV	N	GND

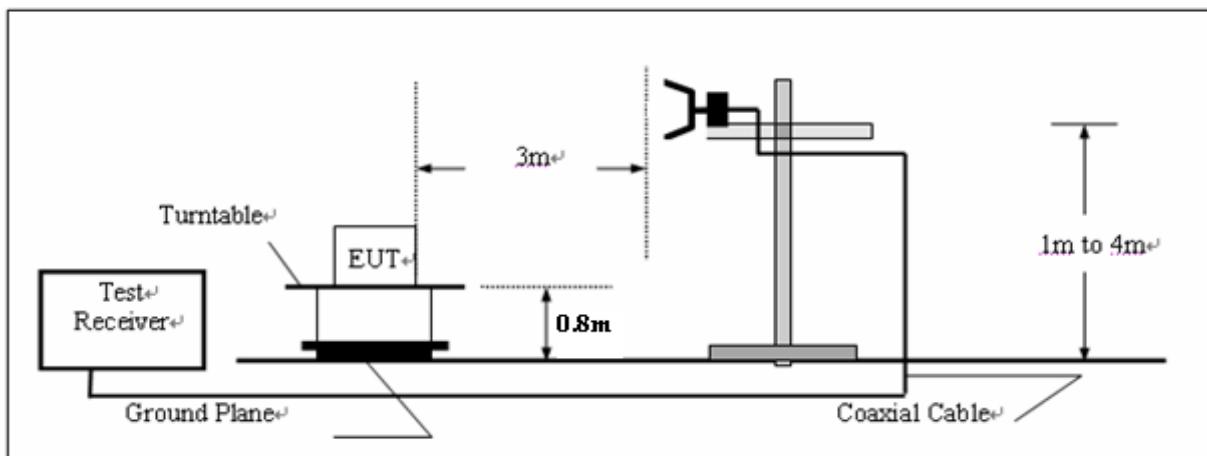
4.2. Radiated Emission Test

TEST CONFIGURATION

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



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



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.
7. The Highest frequency generated or used in the device or on which the device operates or tunes was 1.5GHz, so radiated emissions test frequency from 30MHz to 7.5GHz.

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:

$$\mathbf{FS = RA + AF + CL - AG}$$

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

For example

Frequency (MHz)	FS (dB μ V/m)	RA (dB μ V/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

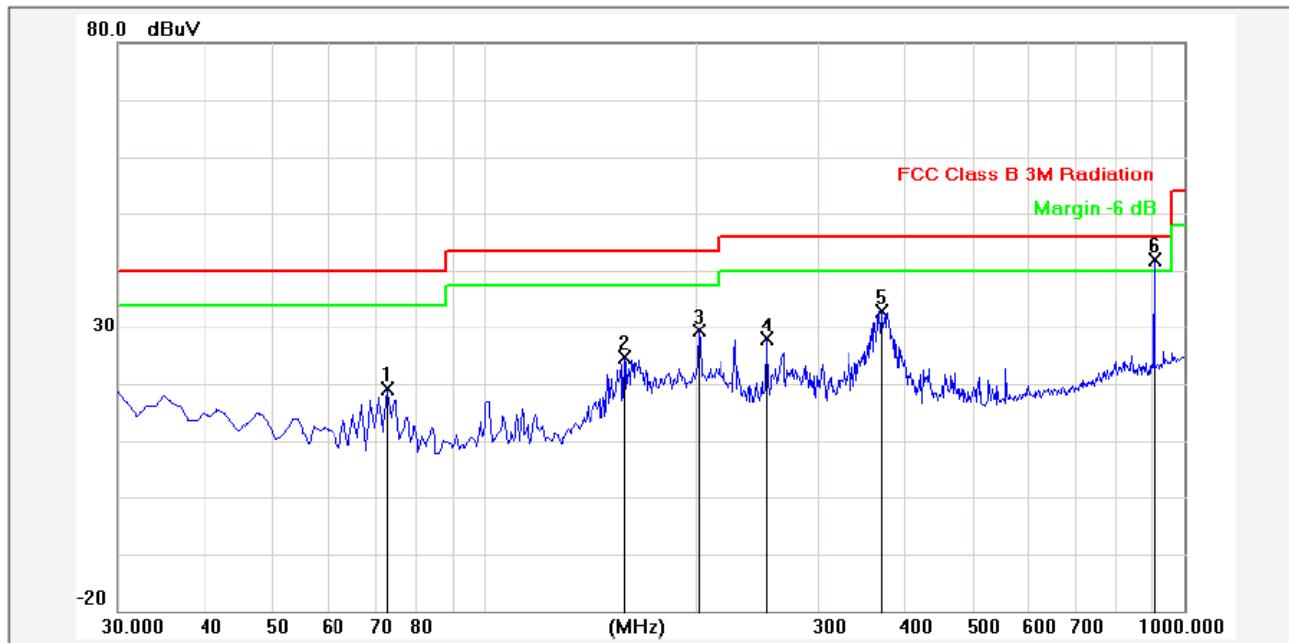
RADIATION LIMIT

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 (dB μ V/m)	Radiated (μ V/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 CONDITION

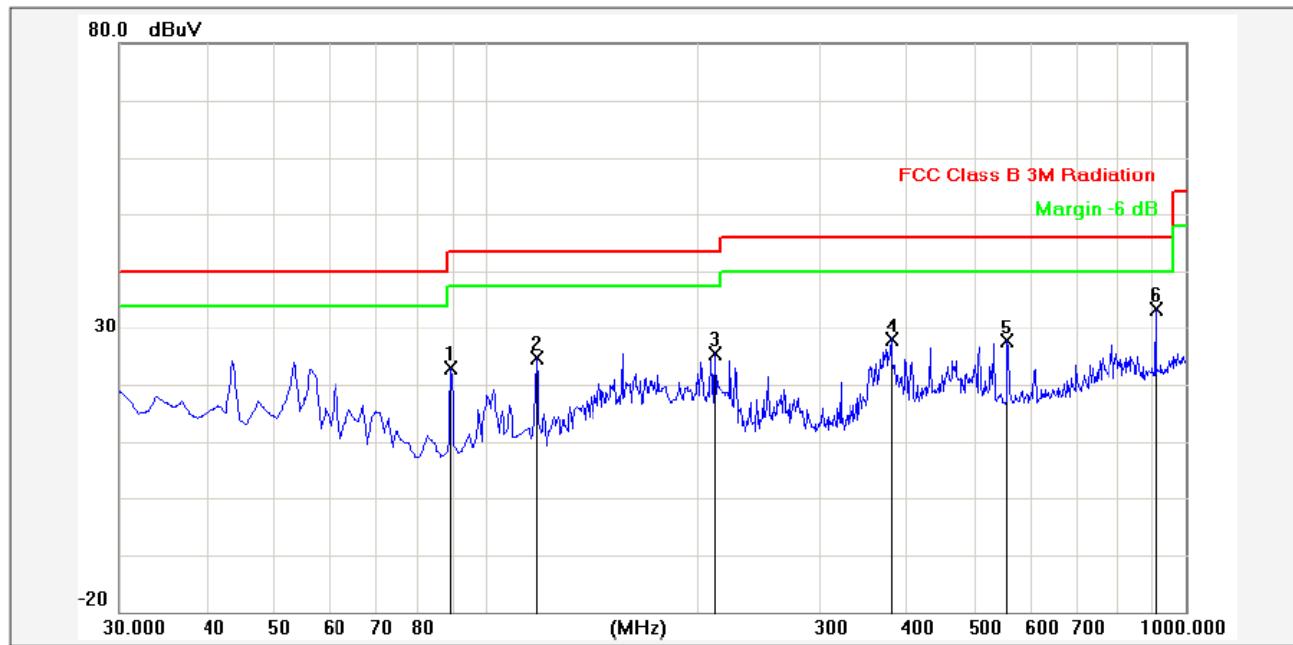
TEST RESULTS**HORIZONTAL**

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	72.6800	-21.07	40.27	19.20	40.00	-20.80	QP			P	
2	159.0100	-19.44	44.03	24.59	43.50	-18.91	QP			P	
3	202.6600	-16.82	46.22	29.40	43.50	-14.10	QP			P	
4	253.1000	-16.40	44.23	27.83	46.00	-18.17	QP			P	
5	369.5000	-13.44	46.25	32.81	46.00	-13.19	QP			P	
6	906.8800	-5.93	47.87	41.94	46.00	-4.06	QP			P	

Remark: 1. Emission Level = Factor + Reading.

2. The Emission levels that are 20dB below the official limit are not reported.

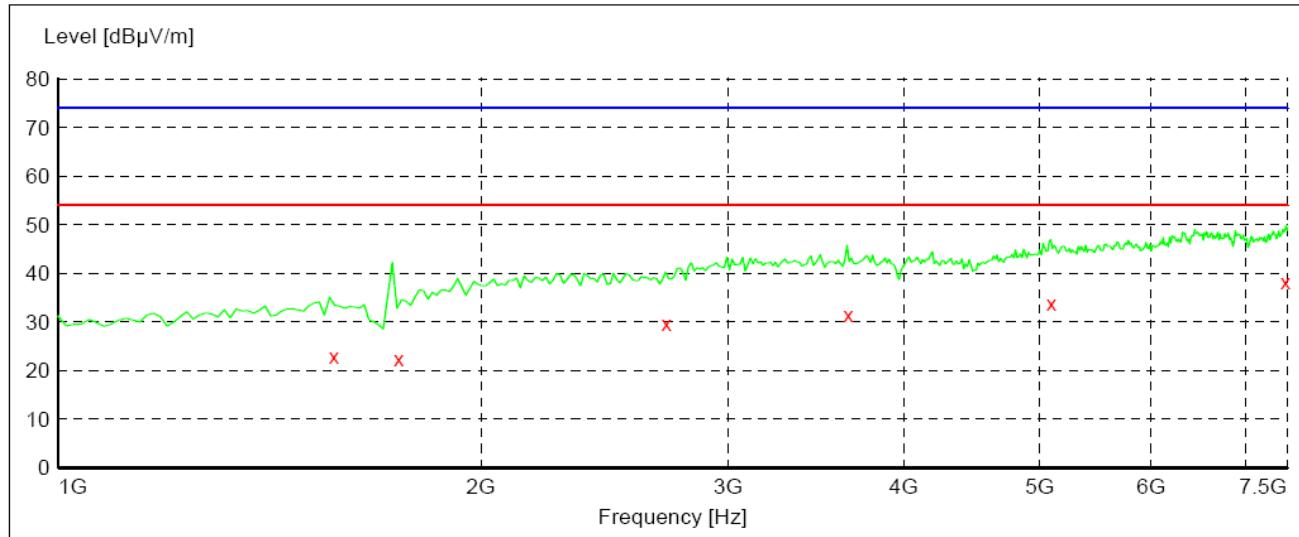
VERTICAL



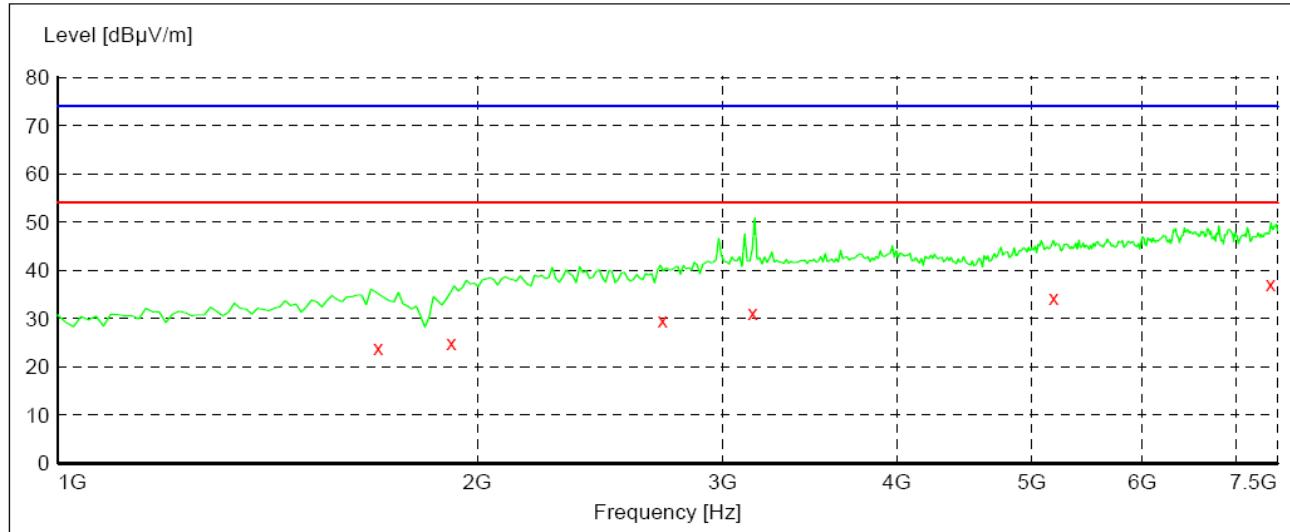
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	89.1700	-18.59	41.40	22.81	43.50	-20.69	QP			P	
2	118.2700	-17.27	41.86	24.59	43.50	-18.91	QP			P	
3	212.3600	-16.75	42.01	25.26	43.50	-18.24	QP			P	
4	381.1400	-13.00	41.00	28.00	46.00	-18.00	QP			P	
5	557.6800	-10.22	37.94	27.72	46.00	-18.28	QP			P	
6	906.8800	-5.93	39.26	33.33	46.00	-12.67	QP			P	

Remark: 1. Emission Level = Factor + Reading.

2. The Emission levels that are 20dB below the official limit are not reported.

For 1G-7.5GHz

Frequency (MHz)	Level (dB μ V/m)	Bandwidth (KHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna Position	Verdict
1572.500000	22.90	1000	100	54.00	31.10	Vertical	Pass
1748.000000	22.30	1000	100	54.00	31.70	Vertical	Pass
2711.000000	29.60	1000	100	54.00	24.40	Vertical	Pass
3652.500000	31.50	1000	150	54.00	22.50	Vertical	Pass
5096.000000	33.80	1000	110	54.00	20.20	Vertical	Pass
7481.000000	38.30	1000	150	54.00	15.70	Vertical	Pass

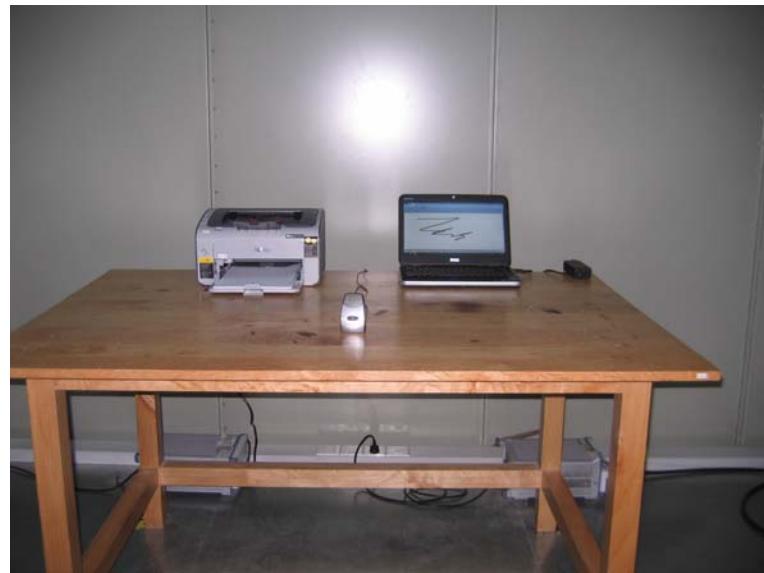
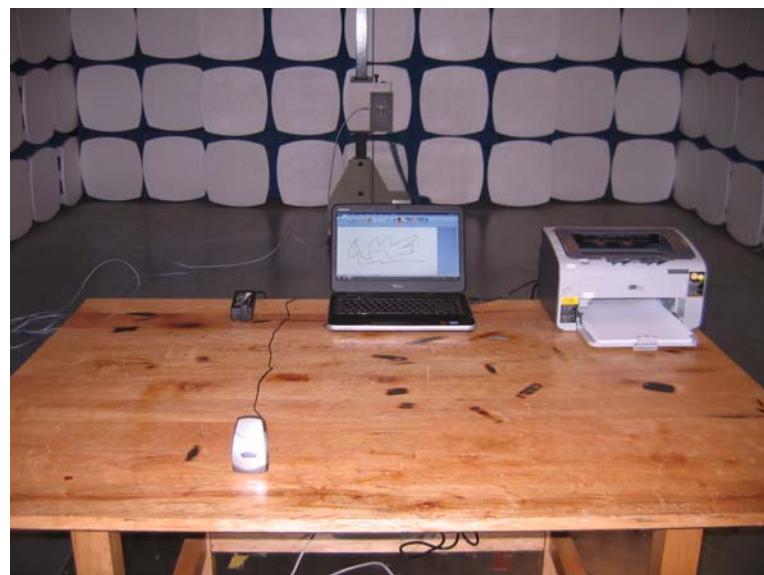


Frequency (MHz)	Level (dB μ V/m)	Bandwidth (KHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna Position	Verdict
1698.000000	24.00	1000	150	54.00	30.00	Horizontal	Pass
1916.500000	24.90	1000	147	54.00	29.10	Horizontal	Pass
2716.000000	29.60	1000	100	54.00	24.40	Horizontal	Pass
3153.000000	31.20	1000	100	54.00	22.80	Horizontal	Pass
5183.500000	34.40	1000	120	54.00	19.60	Horizontal	Pass
7419.500000	37.30	1000	100	54.00	16.70	Horizontal	Pass

Remark:1.Emission Level=Antenna Factor+Cable Loss+Reading.

2.The Emission levels that are 20dB below the official limit are not reported.

5. Test Setup Photos of the EUT



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