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FCC PART 15 SUBPART B TEST REPORT

FCC PART 15 B

Report Reference No.....: TRE13010013 R/C:90755

FCC ID.....: RPFMOUSEFUL1

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Wenliang Li

Date of issue.....: Jan 18, 2013

Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name: DIGITAL DIVIDE SYSTEMS PTY LTD.

Address: 505 The Studios, 112 Buitengragt St., Cape Town 8001, South Africa

Test specification:

Standard: FCC Part 15 B- Unintentional Radiators

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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Test item description: Mouseful

Trade Mark: /

Model/Type reference.....: Mouseful1

Listed Models: /

Result.....: Positive

TEST REPORT

Test Report No. : TRE13010013	Jan 18, 2013 Date of issue
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Equipment under Test : Mouseful

Model /Type : Mouseful1

Listed Models : /

Applicant : **DIGITAL DIVIDE SYSTEMS PTY LTD.**

Address : 505 The Studios,112 Buitengragt St.,Cape Town
8001,South Africa

Manufacturer **Zhuhai Yuehua Electronic Co.,Ltd**

Address 13, No.4 Pingdong Road, Nanping
Technology District, Zhuhai, Guangdong, China 519060

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 C63.4-2009](#): American National Standard for Methods of Measurement of Radio-Noise Emissions From Low Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Jan 08, 2013
Testing commenced on	:	Jan 10, 2013
Testing concluded on	:	Jan 18, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	☐ 120V / 60 Hz	☐ 115V / 60Hz
		☐ 12 V DC	☐ 24 V DC
		☒ Other (specified in blank below)	

DC 5V for USB Port

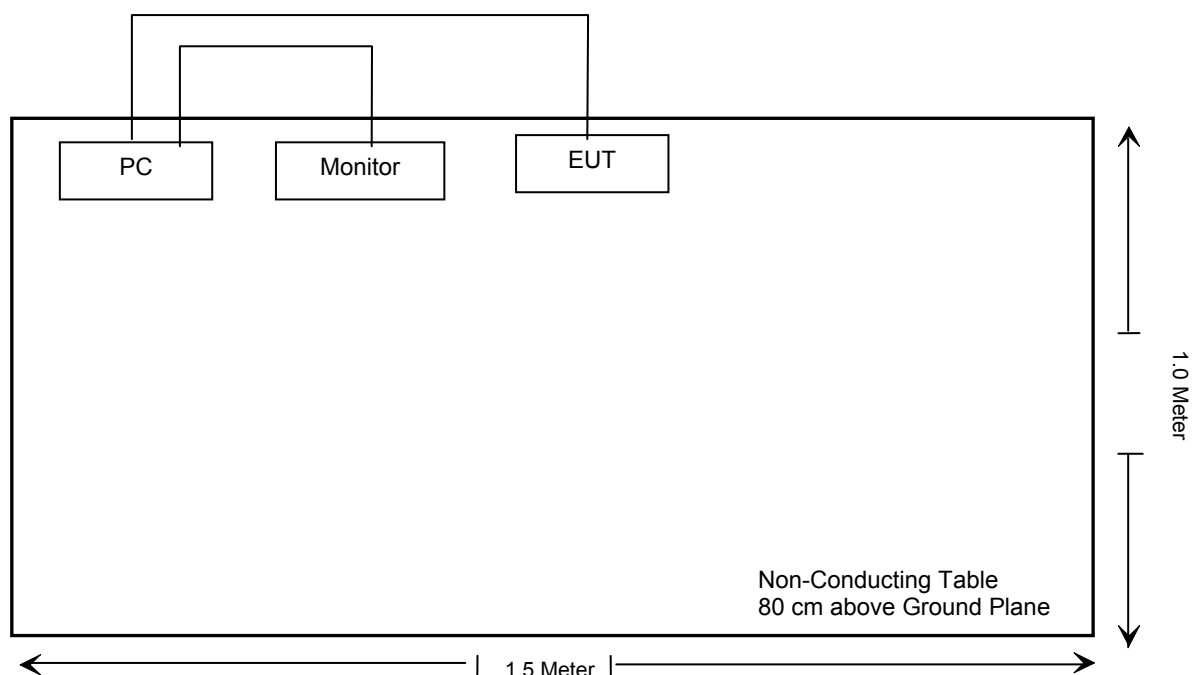
2.3. Short description of the Equipment under Test (EUT)

The EUT is a Mouseful, the Sample models are as follow:

Serial number: Prototype

2.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



2.5. EUT configuration

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

○ - supplied by the manufacturer

● - supplied by the lab

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Toyoplas	LCD Monitor	N/A	N/A	N/A
Dell	PC	380	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable VGA Cable	0.8	EUT	Monitor or PC

2.6. EUT operation mode

The EUT has been tested under typical operating condition.

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

This submittal(s) (test report) of **FCC ID: RPFMOUSEFUL1** filing to comply with the FCC Part 15, Subpart B Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 30, 2009. Valid time is until Feb 28, 2015.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept. 30, 2013.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection 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 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the authorization is valid through July 07, 2013

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2010. Valid time is until May 06, 2013.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2013.

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 Shenzhen Huatongwei International Inspection 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 Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 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

AC Power Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCI	100106	2012/10/27
2	ARTIFICIAL MAINS	ROHDE & SCHWARZ	ESH2-Z5	100028	2012/10/27
3	PULSE LIMITER	ROHDE & SCHWARZ	ESHSZ2	100044	2012/10/27
4	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 1.71	N/A	2012/10/27

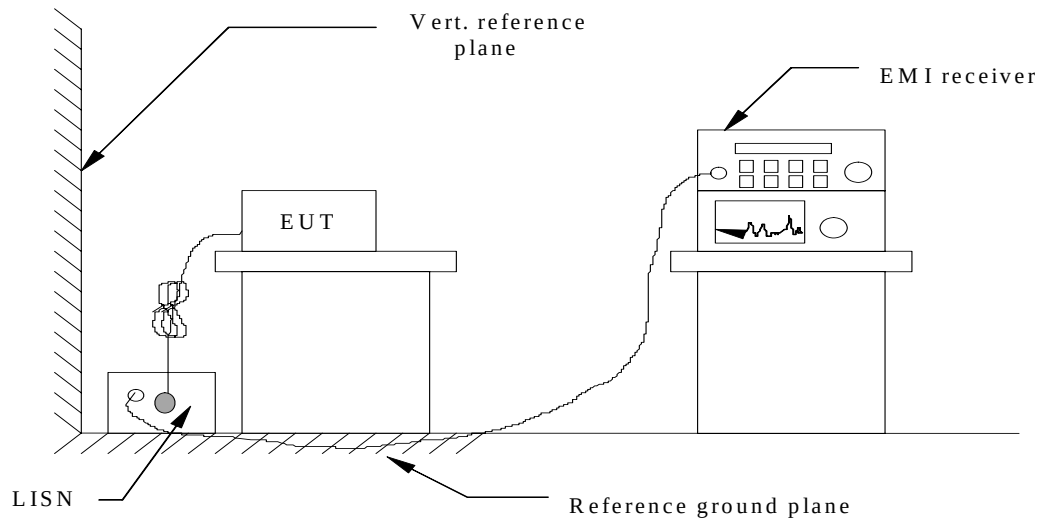
Radiated Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2012/10/27
2	HORN ANTENNA	ROHDE & SCHWARZ	HF906	100039	2012/11/01
3	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2012/10/27
4	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2012/10/27
5	TURNTABLE	ETS	2088	2149	2012/10/27
6	ANTENNA MAST	ETS	2075	2346	2012/10/27
7	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2012/10/27
9	Amplifer	Sonoma	310N	E009-13	2012/10/27
10	JS amplifer	ROHDE & SCHWARZ	JS4-00101800- 28-5A	F201504	2012/11/01

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 the 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 :

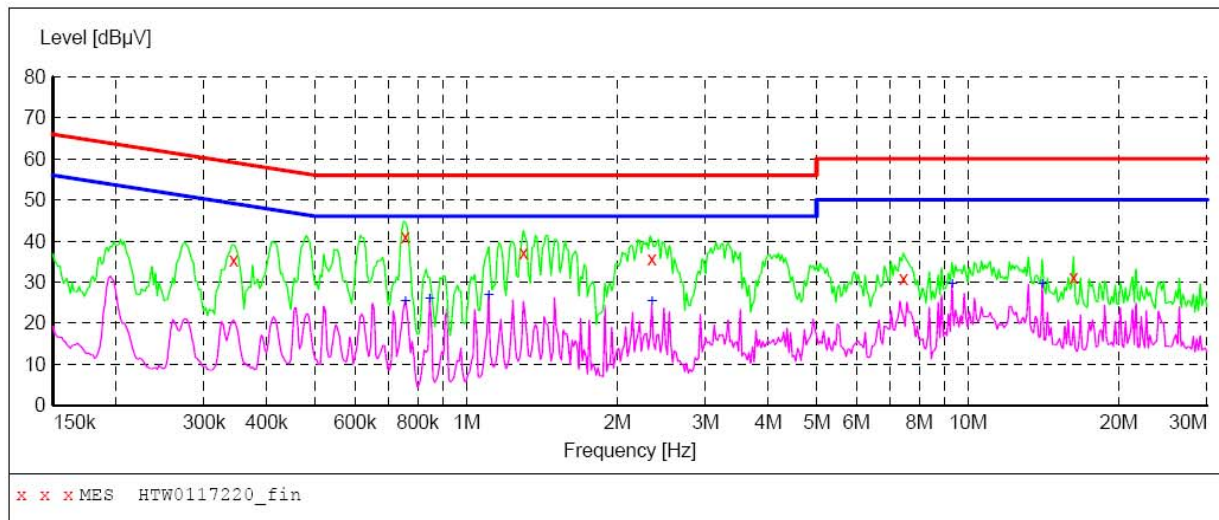
Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0117220_fin"**

1/17/2013 10:35PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.343547	35.40	10.1	59	23.7	QP	N	GND
0.756094	41.20	10.1	56	14.8	QP	N	GND
1.299856	37.20	10.2	56	18.8	QP	N	GND
2.344090	35.70	10.2	56	20.3	QP	N	GND
7.443062	30.80	10.4	60	29.2	QP	N	GND
16.251147	31.30	10.8	60	28.7	QP	N	GND

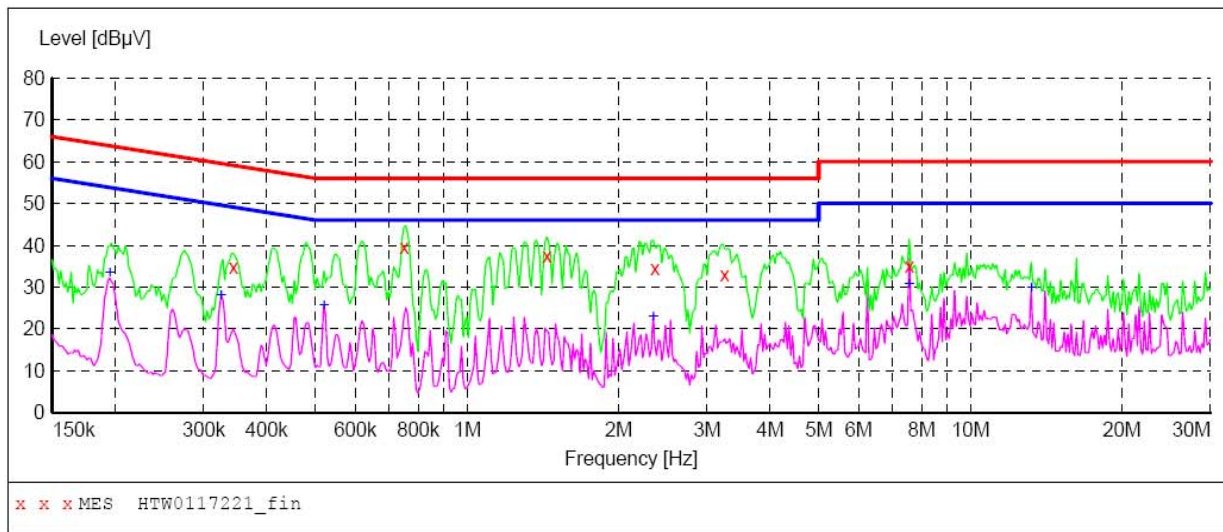
MEASUREMENT RESULT: "HTW0117220_fin2"

1/17/2013 10:35PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.756091	25.40	10.1	46	20.6	AV	N	GND
0.845329	25.80	10.1	46	20.2	AV	N	GND
1.108367	26.60	10.2	46	19.4	AV	N	GND
2.344084	25.40	10.2	46	20.6	AV	N	GND
9.303507	29.50	10.5	50	20.5	AV	N	GND
14.079734	29.40	10.7	50	20.6	AV	N	GND

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0117221_fin"**

1/17/2013 10:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.343547	34.80	10.1	59	24.3	QP	L1	GND
0.750090	39.60	10.1	56	16.4	QP	L1	GND
1.441722	37.40	10.2	56	18.6	QP	L1	GND
2.362840	34.60	10.2	56	21.4	QP	L1	GND
3.249799	33.10	10.2	56	22.9	QP	L1	GND
7.562631	35.00	10.4	60	25.0	QP	L1	GND

MEASUREMENT RESULT: "HTW0117221_fin2"

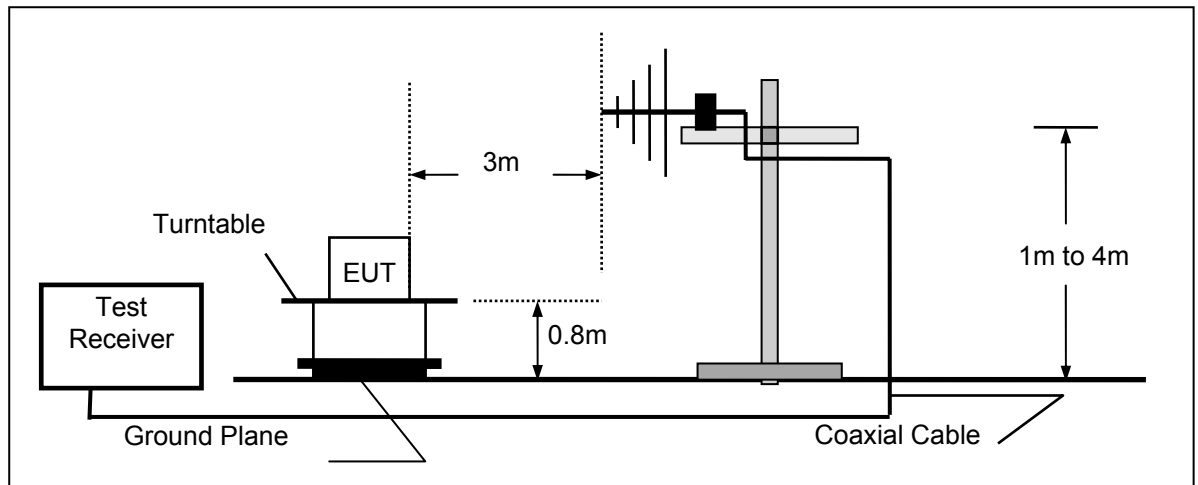
1/17/2013 10:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.195108	33.40	10.1	54	20.4	AV	L1	GND
0.324909	27.90	10.1	50	21.7	AV	L1	GND
0.519916	25.50	10.1	46	20.5	AV	L1	GND
2.344084	22.90	10.2	46	23.1	AV	L1	GND
7.562631	30.70	10.4	50	19.3	AV	L1	GND
13.210223	29.60	10.6	50	20.4	AV	L1	GND

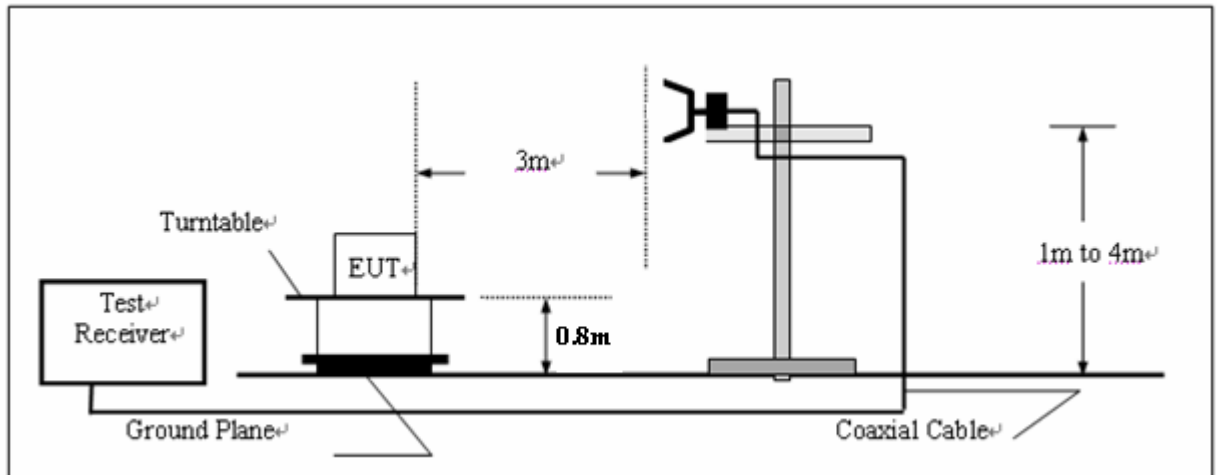
4.2. Radiated Emission Test

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 was placed on a turn table which is 0.8m above ground plane.
- 2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

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:

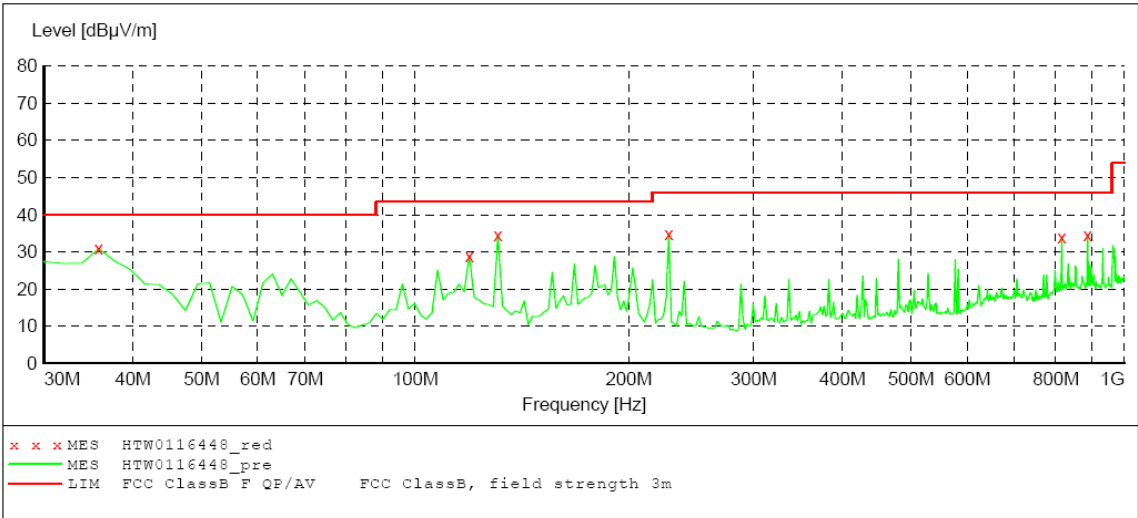
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

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.
7. the highest crystal frequency is 24MHz So the radiation emissions frequency range were tested from 30MHz to 1GHz.

TEST RESULTS

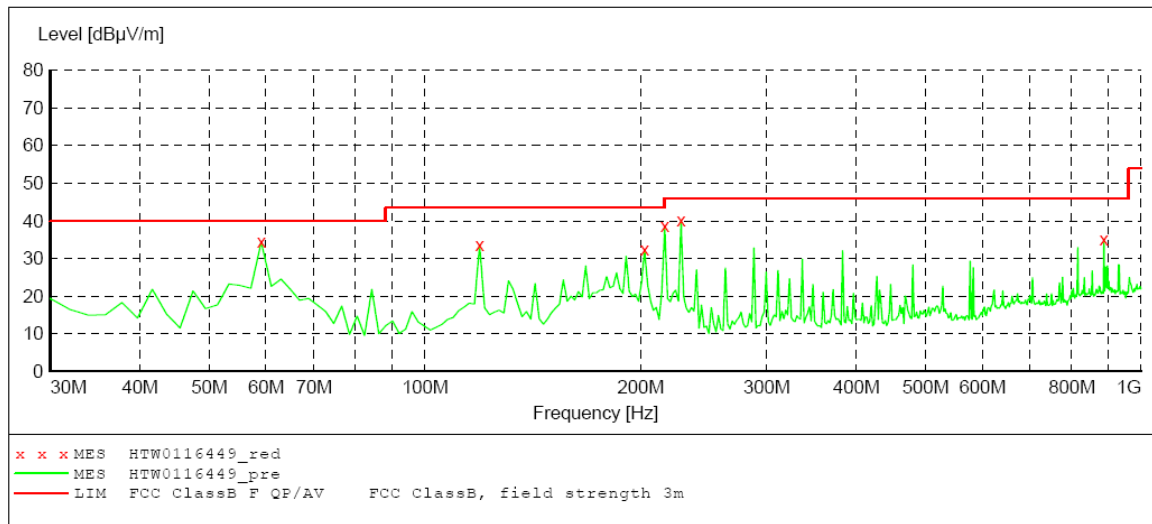


MEASUREMENT RESULT: "HTW0116448_red"

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	30.90	-14.0	40.0	9.1	QP	100.0	65.00	VERTICAL
119.240000	29.00	-19.3	43.5	14.5	QP	100.0	71.00	VERTICAL
130.880000	34.60	-20.5	43.5	8.9	QP	100.0	358.00	VERTICAL
227.880000	34.90	-20.0	46.0	11.1	QP	100.0	56.00	VERTICAL
815.700000	33.90	-7.8	46.0	12.1	QP	100.0	360.00	VERTICAL
887.480000	34.70	-6.7	46.0	11.3	QP	100.0	155.00	VERTICAL

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

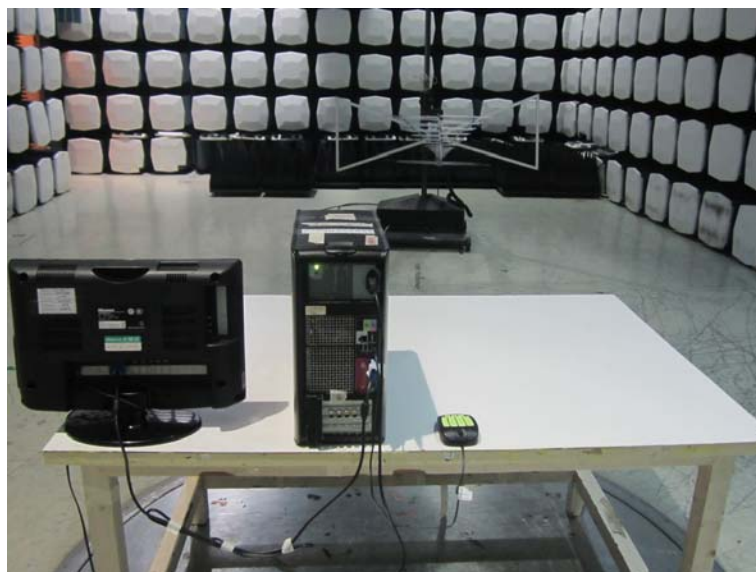
Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562

***MEASUREMENT RESULT: "HTW0116449_red"***

1/16/2013 10:44PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
59.100000	34.40	-25.0	40.0	5.6	QP	100.0	242.00	HORIZONTAL
119.240000	33.50	-19.3	43.5	10.0	QP	300.0	214.00	HORIZONTAL
202.660000	32.40	-21.3	43.5	11.1	QP	100.0	68.00	HORIZONTAL
216.240000	38.60	-20.7	46.0	7.4	QP	100.0	225.00	HORIZONTAL
227.880000	40.20	-20.0	46.0	5.8	QP	100.0	68.00	HORIZONTAL
887.480000	35.20	-6.7	46.0	10.8	QP	100.0	204.00	HORIZONTAL

5. Test Setup Photos of the EUT



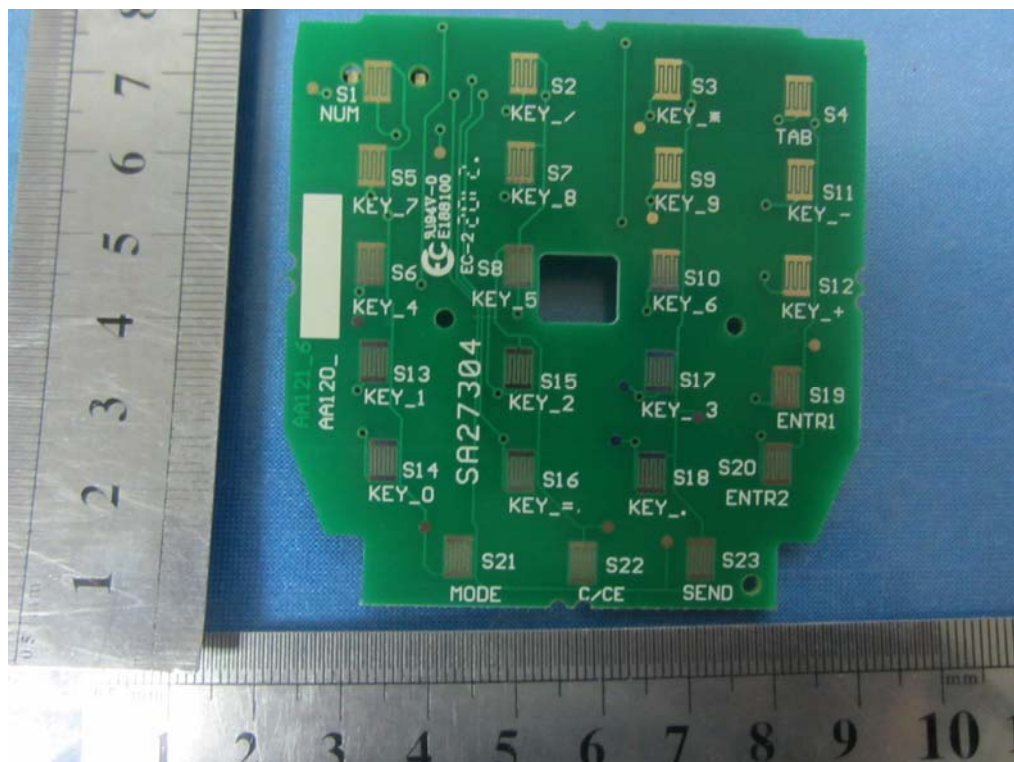
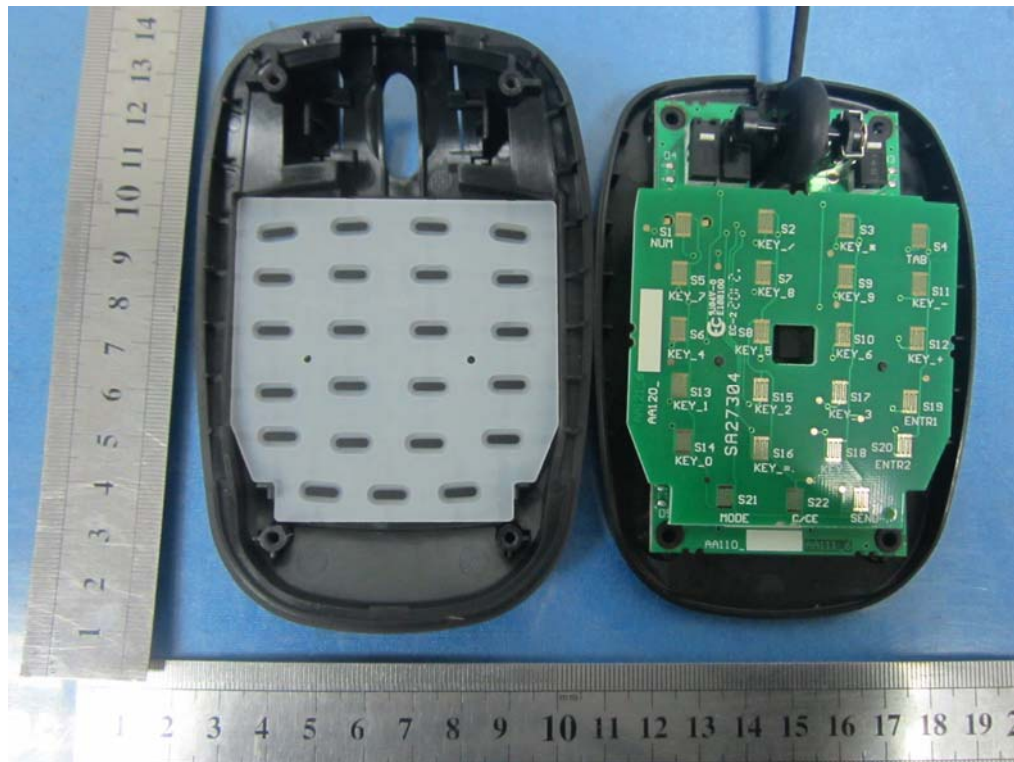
6. External and Internal Photos of the EUT

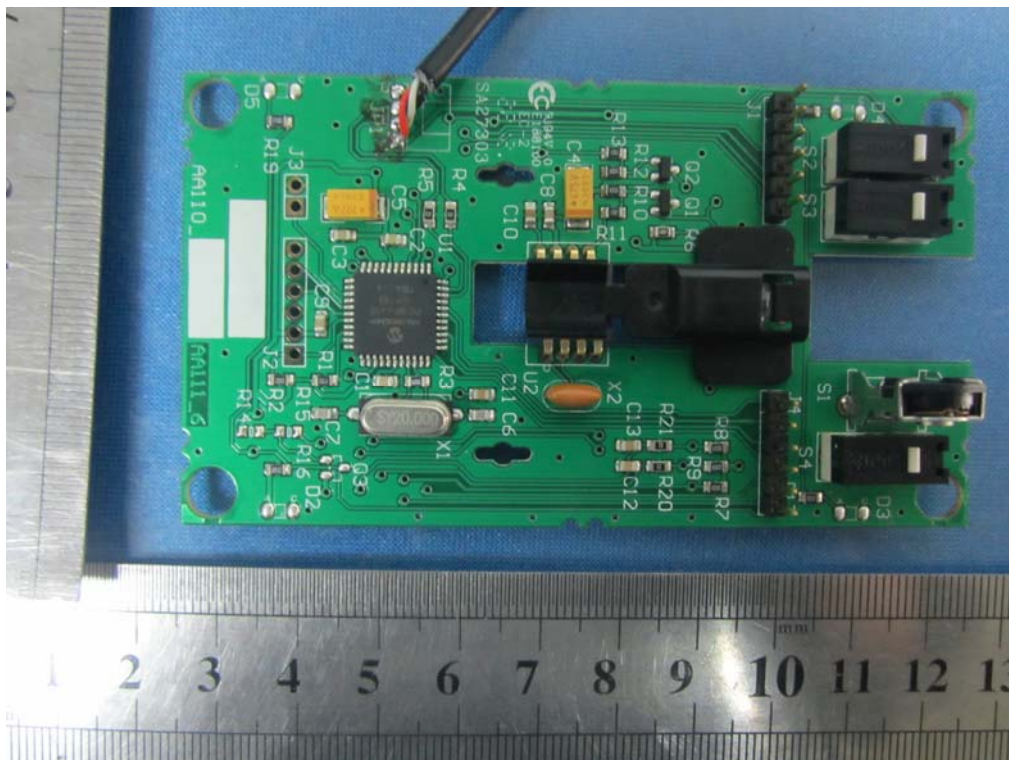
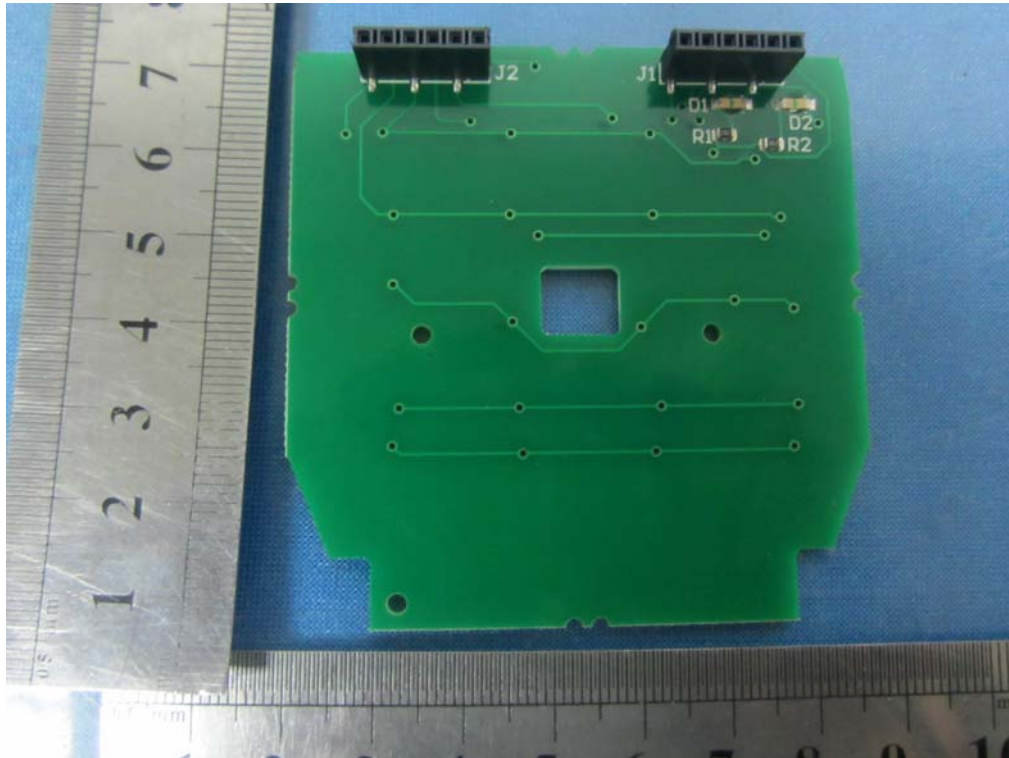
External Photos

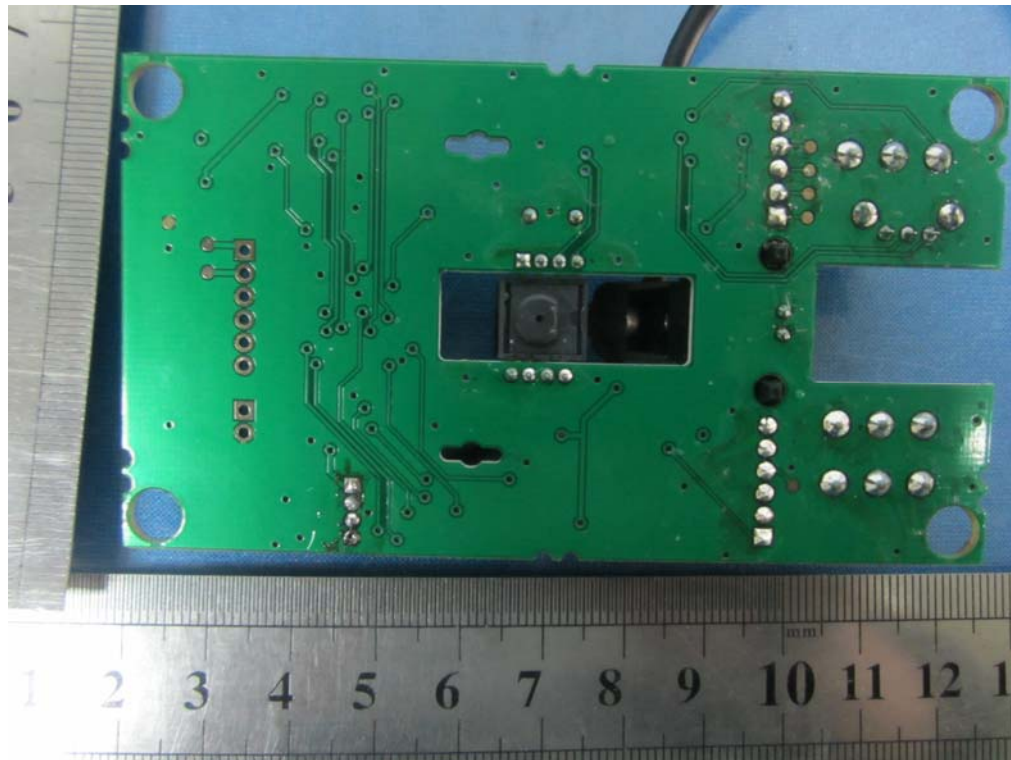




Internal Photos







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