EMC TEST REPORT
For
TECH-TOP TECHNOLOGY LIMITED

USB2.0 RJ45 Extension adapter up to 100M length
Model No.: Y-2506

Prepared for	:	TECH-TOP TECHNOLOGY LIMITED
Address	:	Unit 3, 10th Floor, Block A, Tonic Industrial Centre, No.26 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Prepared by	:	SHENZHEN LCS CERTIFICATION SERVICES INC.
Address	:	12/F., Tower A, Pengdou Building, Nanhai Road, Nanshan District, Shenzhen, Guangdong, China

Report Number	:	LCS10092451102E
Date of Test	:	September 15, 2010
Date of Report	:	September 24, 2010

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TEST REPORT DESCRIPTION

Applicant	:	TECH-TOP TECHNOLOGY LIMITED
Manufacturer	:	OCEAN COMPUTER TECHNOLOGY（SHENZHEN）CO.,LTD
EUT	:	USB2.0 RJ45 Extension adapter up to 100M length
Model No.	:	Y-2506
Power Supply	:	5V(Connect to PC)

Measurement Procedure Used:

EN55022: 2006+A1:2007
EN55024: 1998+A1: 2001+A2: 2003
(EN61000-4-2: 1995+A1: 1998+A2: 2001, EN61000-4-3: 2006, EN61000-4-8: 1993+A1: 2001)

The device described above is tested by SHENZHEN LCS CERTIFICATION SERVICES INC. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and SHENZHEN LCS CERTIFICATION SERVICES INC. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN55022 and EN55024 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN LCS CERTIFICATION SERVICES INC.

Date of Test : September 24, 2010

Prepared by : _____
(Engineer)

Reviewed by : _____
(Quality Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	USB2.0 RJ45 Extension adapter up to 100M length
Model Number	:	Y-2506
Power Supply	:	5V(Connect to PC)
Applicant	:	TECH-TOP TECHNOLOGY LIMITED
Address	:	Unit 3, 10th Floor, Block A, Tonic Industrial Centre, No.26 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Manufacturer	:	OCEAN COMPUTER TECHNOLOGY（SHENZHEN）CO., LTD
Address		BLOCK 1, NO. 6 INDUSTRIAL ZONE, YU LV VILLAGE, GONG MING TOWN, BAO'AN DISTRICT, SHEN ZHEN
Date of Sample	:	September 15, 2010
Date of Test	:	September 24, 2010

1.2. Description of Support Device

Notebook	:	Manufacturer: DELL M/N: VL420 MT S/N: CN15100363 CE, FCC: DOC
AC/DC Adaptor	:	Manufacturer: DELL M/N: TDL023 S/N: T09D31593 CE, FCC: DOC
Mouse	:	Manufacturer: HEWLETT PACKARD M/N: M-S48a S/N: LZE14823966AW CE, FCC: DOC
Printer	:	Manufacturer: HEWLETT PACKARD M/N: C89520 S/N: CN25S182N6 CE, FCC: DOC

1.3. Test Facility

Site Description

EMC Lab. : Accredited by TUV Rheinland, July, 2007
The Certificate Registration No. is 17004408 002.
Accredited by FCC, July 07, 2005
The Certificate Registration Number. is 662850.
Accredited by Industry Canada, Nov. 28, 2005
The Certificate Registration Number. is 46405-5377

1.4. Measurement Uncertainty

Radiation Uncertainty	:	Ur = ±4.26dB
Conduction Uncertainty	:	Uc = ±2.66dB

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1.For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Mar 29, 2009	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Mar 29, 2009	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Mar 29, 2009	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Mar 29, 2009	1 Year
5.	Cable	Schwarzbeck	AK9513(1m)	CR RX2	Mar 29, 2009	1 Year
6.	Cable	Schwarzbeck	AK9513(10m)	AC RX1	Mar 29, 2009	1 Year
7.	Cable	Rosenberger	N/A(6m)	CR RX1	Mar 29, 2009	1 Year
8.	Cable	Rosenberger	N/A(10m)	FP2RX2	Mar 29, 2009	1 Year
9.	DC Power Filter	MPE	23872C	N/A	Mar 29, 2009	1 Year
10.	Single Phase Power Line Filter	MPE	23332C	N/A	Mar 29, 2009	1 Year
11.	3 Phase Power Line Filter	MPE	23333C	N/A	Mar 29, 2009	1 Year
12.	Signal Generator	HP	8648A	3625U00573	Mar 29, 2009	1 Year

2.2 For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1600	H708159	Mar 29, 2009	1 Year

2.3 For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3625U00573	Mar 29, 2009	1 Year
2.	Amplifier	AR	500A100	17034	NCR	NCR
3.	Amplifier	AR	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	AR	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	AR	FP2000	16755	Mar 29, 2009	1 Year
6.	Bionic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	AR	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

2.4 For Magnetic Field Immunity Test

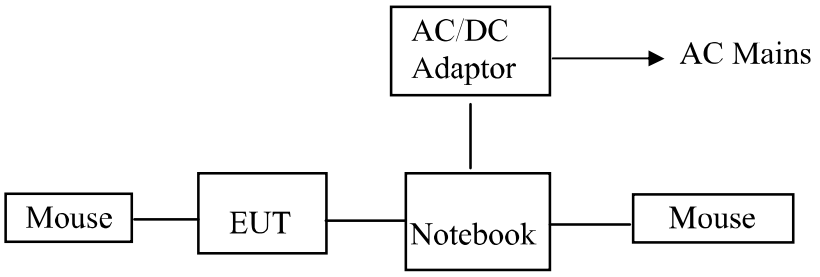
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	Mar 29, 2009	1Year

3. RADIATED EMISSION MEASUREMENT

3.1.Block Diagram of Test

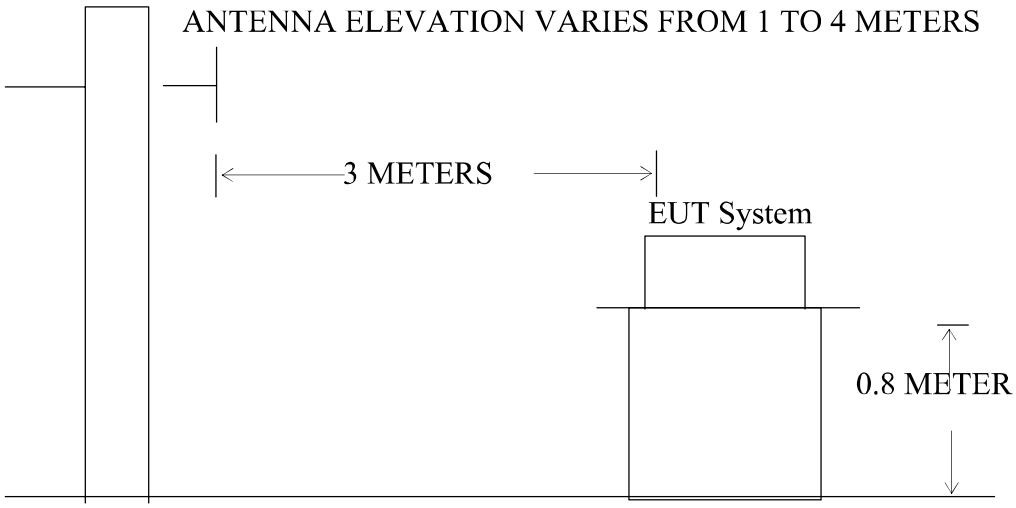
3.1.1.Block diagram of connection between the EUT and simulators

For Connect to PC



(EUT:USB2.0 RJ45 Extension adapter up to 100M length)

3.1.2.Block diagram of test setup (In chamber)



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

3.2.Measuring Standard

EN55022: 2006

3.3.Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	10	30
230 ~ 1000	10	37

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

3.4.EUT Configuration on Test

The EN 55022 regulations test method must be used to find the maximum emission during radiated emission measurement.

3.5.Operating Condition of EUT

3.5.1.Turn on the power.

3.5.2.Let the EUT work in test mode (Connect to PC) and measure it.

3.6.Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz.
All the scanning curves are attached in Appendix I.

3.7.Measuring Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

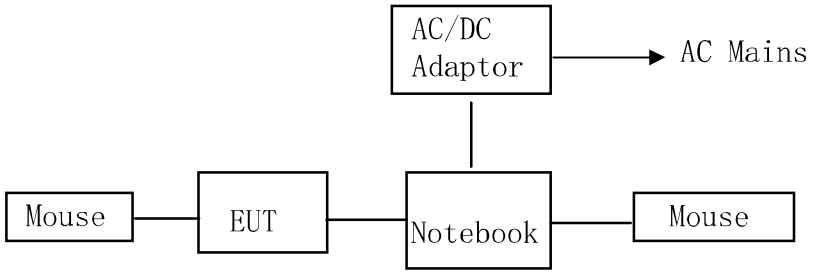
Please reference to the attached data.

4. ELECTROSTATIC DISCHARGE IMMUNITY TEST

4.1 Block Diagram of Test Setup

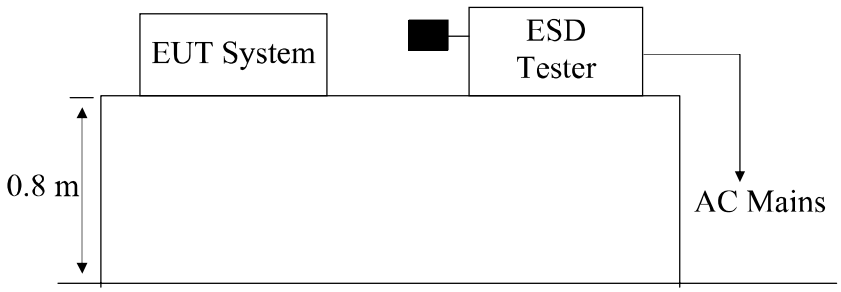
4.1.1 For block diagram of the EUT

For Connect to PC



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

4.1.2 For block diagram of test setup



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

4.2 Test Standard

EN55024: 1998+A1: 2001+A2: 2003(EN61000-4-2: 1995+A1: 1998+A2: 2001, Severity Level: 2 / Contact Discharge: ±4KV Severity Level: 3 / Air Discharge: ± 8KV)

4.3 Severity Levels and Performance Criterion

4.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

4.3.2 Performance criterion **: B**

4.4 EUT Configuration

The configurations of EUT are listed in Section 1.1.

4.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test set up replaced by Section 4.1.

4.6 Test Procedure

4.6.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

4.6.2 Contact Discharge:

All the procedure shall be same as Section 4.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

4.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

4.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

4.7 Test Results

PASS

Please refer to the following pages

Electrostatic Discharge Test Results

SHENZHEN LCS CERTIFICATION SERVICES INC.

Applicant :	TECH-TOP TECHNOLOGY LIMITED		
EUT :	USB2.0 RJ45 Extension adapter up to 100M length	Test Date :	September 15, 2010
M/N :	Y-2506	Temperature :	22℃
Power Supply :	5V(Connect to PC)	Humidity :	50%
Air discharge :	±8.0KV	Criterion :	B
Contact discharge:	±4.0KV		
Test Mode :	Connect to PC		

Location	Kind A-Air Discharge C-Contact Discharge	Result
Others slot of EUT 12 points	A	PASS
Port 6 point	C	PASS
HCP	C	PASS
VCP of front	C	PASS
VCP of rear	C	PASS
VCP of left	C	PASS
VCP of right	C	PASS

Note:

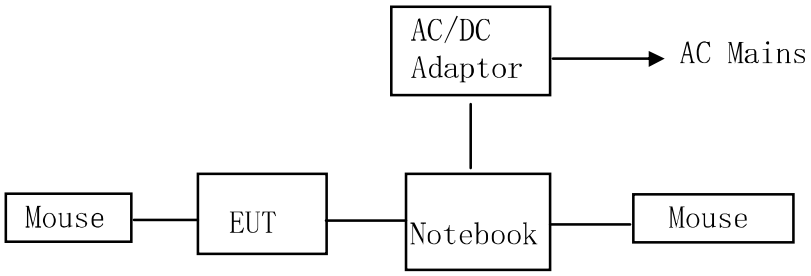
Test Equipment: ESD Simulator (HAEFELY, PESD1600)

5. RF FIELD STRENGTH SUSCEPTIBILITY TEST

5.1 Block Diagram of Test

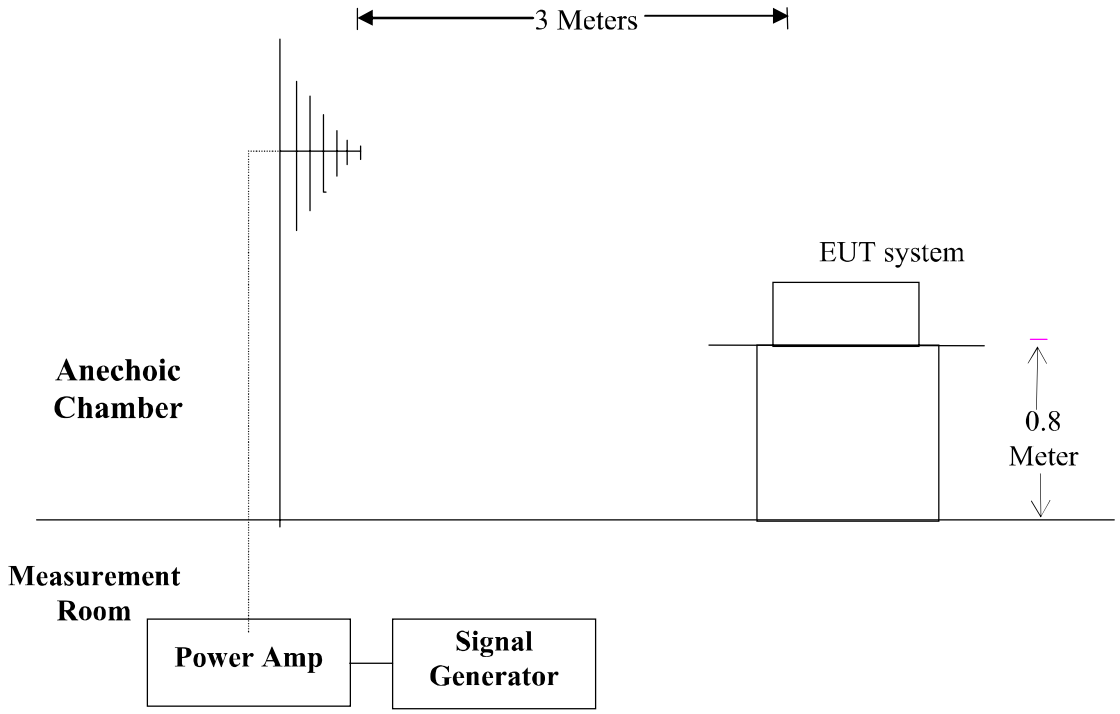
5.1.1 Block diagram of connection between the EUT and Load

For Connect to PC



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

5.1.2 Block diagram of RS test setup



5.2 Test Standard

EN55024: 1998+A1: 2001+A2: 2003
(EN61000-4-3: 2006, Severity Level: 2, 3V /m)

5.3 Severity Levels and Performance Criterion

5.3.2 Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

5.3.3 Performance Criterion : **A**

5.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.4.

5.5 Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.5 except the test setup replaced as Section 5.1.

5.6 Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor its screen . All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

5.7 Test Results

PASS.
Please refer to the following page.

RF Field Strength Susceptibility Test Results

SHENZHEN LCS CERTIFICATION SERVICES INC.

Applicant	: TECH-TOP TECHNOLOGY LIMITED		
EUT	: USB2.0 RJ45 Extension adapter up to 100M length	Test Date	: September 15, 2010
M/N	: Y-2506	Temperature	: 22℃
Field Strength	: 3 V/m	Humidity	: 50%
Test Mode	: 5V(Connect to PC)	Criterion	: A
		Frequency Range:	80 MHz to 1000 MHz

Modulation: ☐None ☐ Pulse ☑AM 1KHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2:	
Steps	# / %		# / %	
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

Test Equipment:
1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

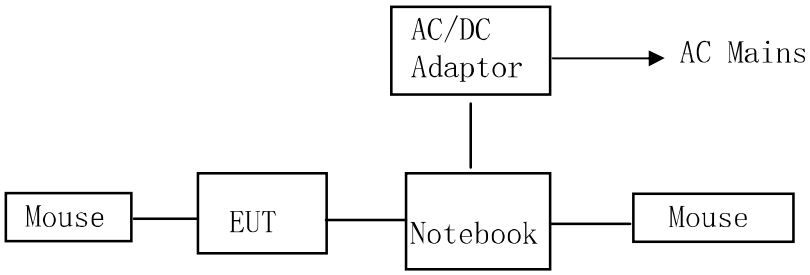
Note:

6. MAGNETIC FIELD SUSCEPTIBILITY TEST

6.1 Block Diagram of Test

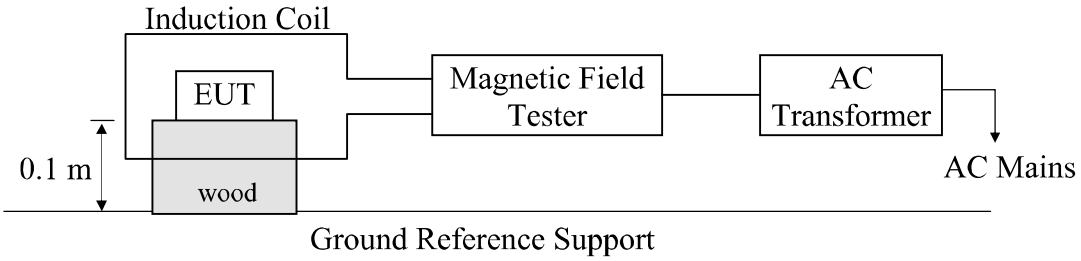
6.1.1 Block diagram of test setup

For Connect to PC



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

6.1.2 Magnetic field test setup



(EUT: USB2.0 RJ45 Extension adapter up to 100M length)

6.2 Test Standard

EN55024: 1998+A1: 2001+A2: 2003
(EN61000-4-8: 1993+A1: 2001 Severity Level: 1,1A / m)

6.3 Severity Levels and Performance Criterion

6.3.1. Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

6.3.2 Performance Criterion : **A**

6.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.4.

6.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table,0.8 m above the ground. Both horizontal and vertical polarization of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

6.6 Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8 ☑ EN 61000-4-8	Result: ☑ Pass / ☐ Fail

Applicant : TECH-TOP TECHNOLOGY LIMITED

EUT : USB2.0 RJ45 Extension adapter up to 100M length M/N: Y-2506

Power Supply : 5V(Connect to PC)

Date of Test : September 15, 2010 Test Engineer: ANDY

Ambient Condition : Temp : 22℃ Humid: 50%

Criterion : A

Operation Mode : Connect to PC

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	PASS
1	5 mins	Y	A	PASS
1	5 mins	Z	A	PASS

Operation Mode :

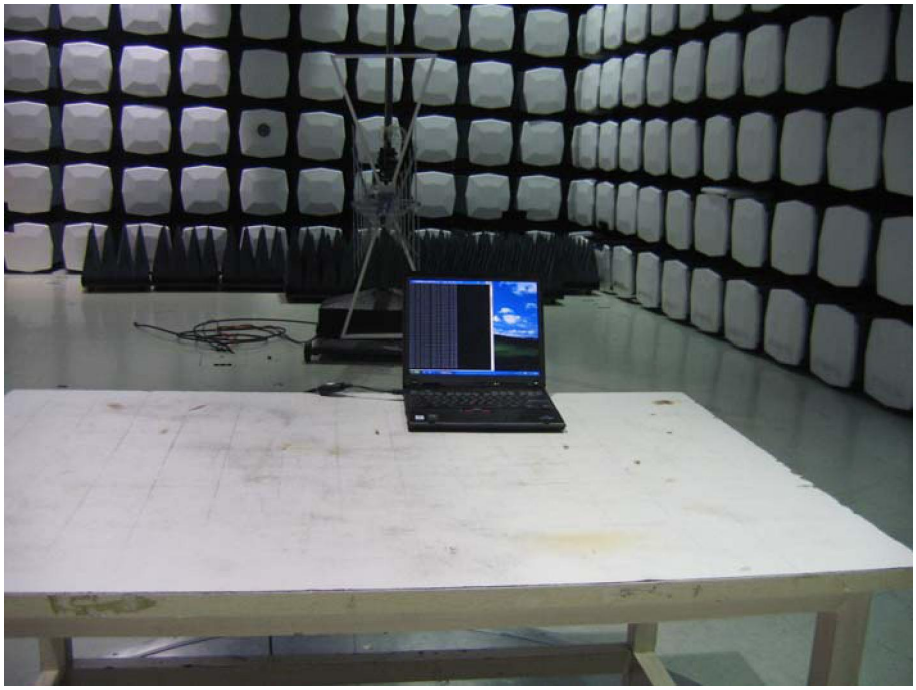
Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result

Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1

Note:

7. PHOTOGRAPH

7.1. Photo of Radiated Measurement

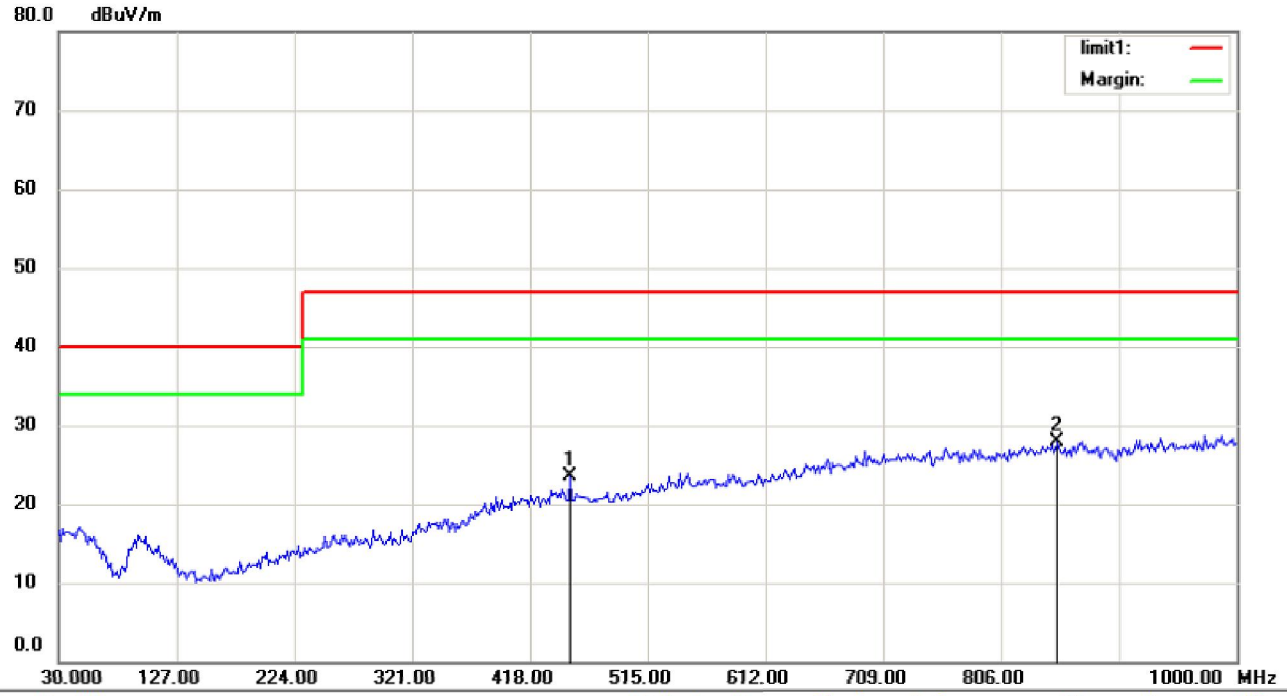


7.2. Photo of Electrostatic Discharge Test

7.3. Photo of RF Field Strength susceptibility Test

APPENDIX I

Radiated Emission Measurement



Site site #1 Polarization: ***Horizontal*** Temperature: 22

Limit: (RE)EN55022 class B Power: AC 230V/50Hz Humidity: 55 %

EUT: USB2.0 RJ45 Extension adapter up to 100M length

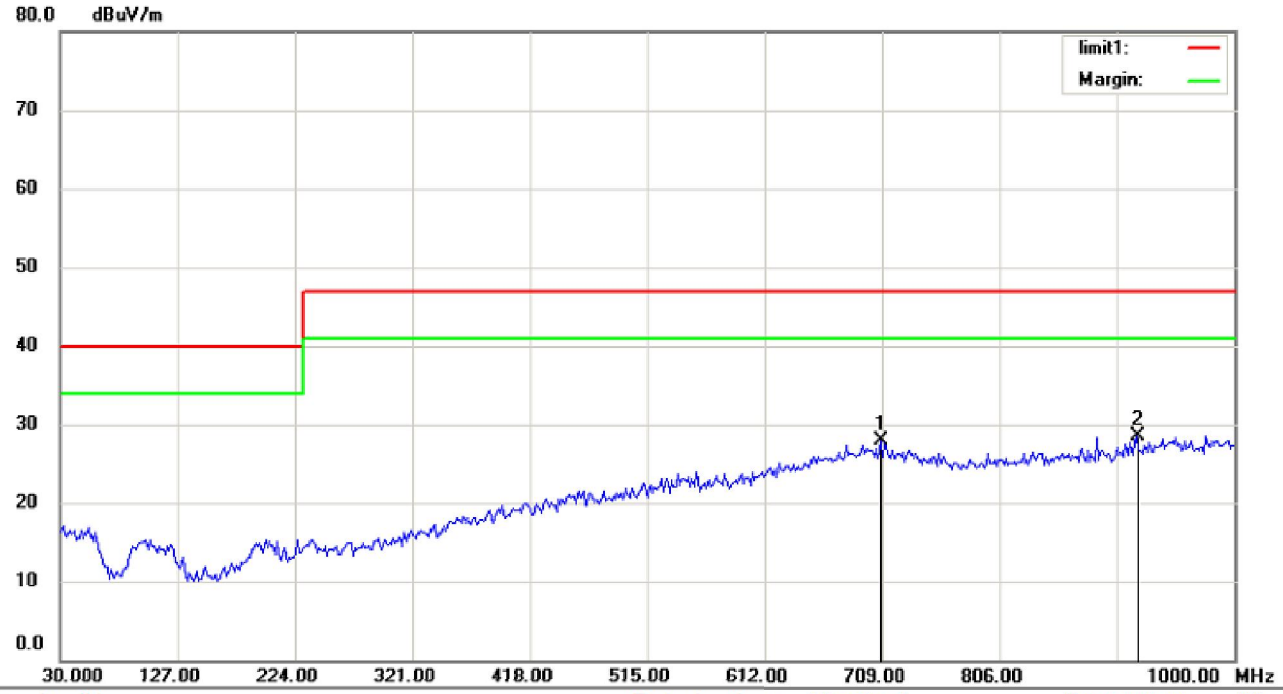
M/N: Y-2506

Mode: CONNECT TO PC

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		451.2660	5.03	18.42	23.45	47.00	-23.55	peak			
2	*	852.3237	3.88	23.96	27.84	47.00	-19.16	peak			

Radiated Emission Measurement



Site site #1 Polarization: ***Vertical*** Temperature: 22

Limit: (RE)EN55022 class B Power: AC 230V/50Hz Humidity: 55 %

EUT: USB2.0 RJ45 Extension adapter up to 100M length

M/N: Y-2506

Mode: CONNECT TO PC

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		707.7564	4.00	23.82	27.82	47.00	-19.18	QP			
2	*	919.1667	4.20	24.30	28.50	47.00	-18.50	QP			

APPENDIX II
(Photos of EUT)

GENERAL APPEARANCE OF EUT

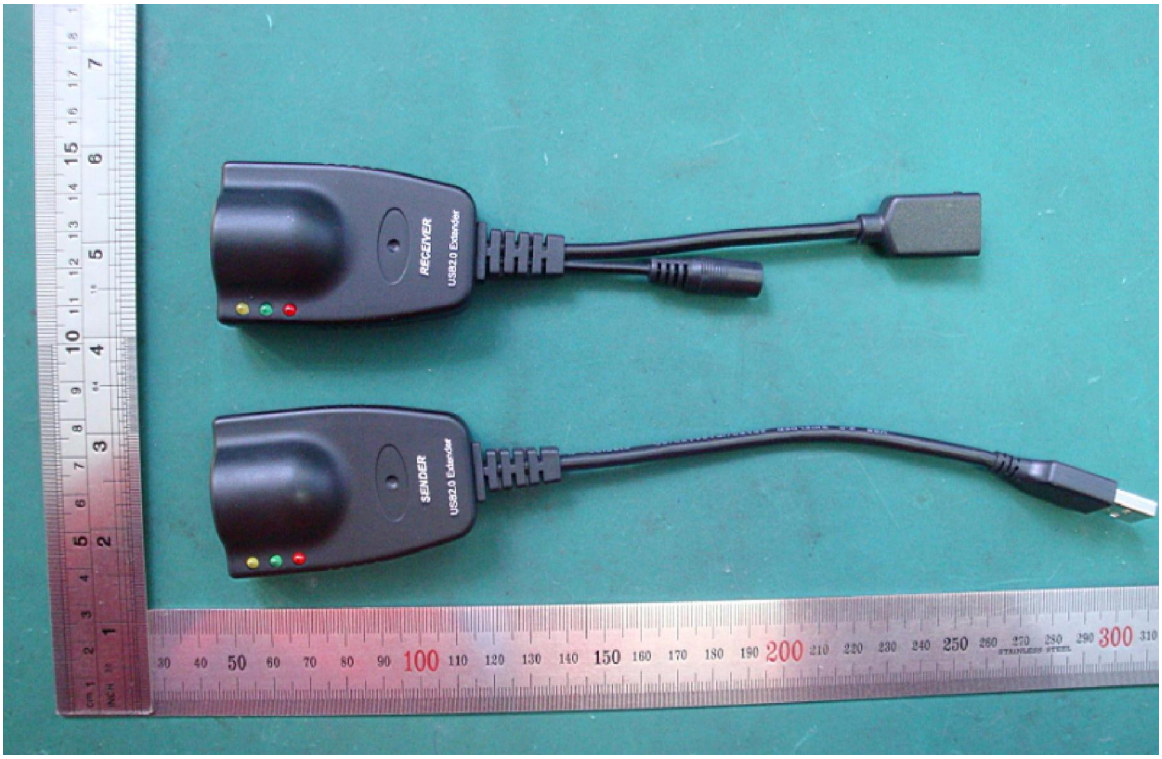


Fig .1

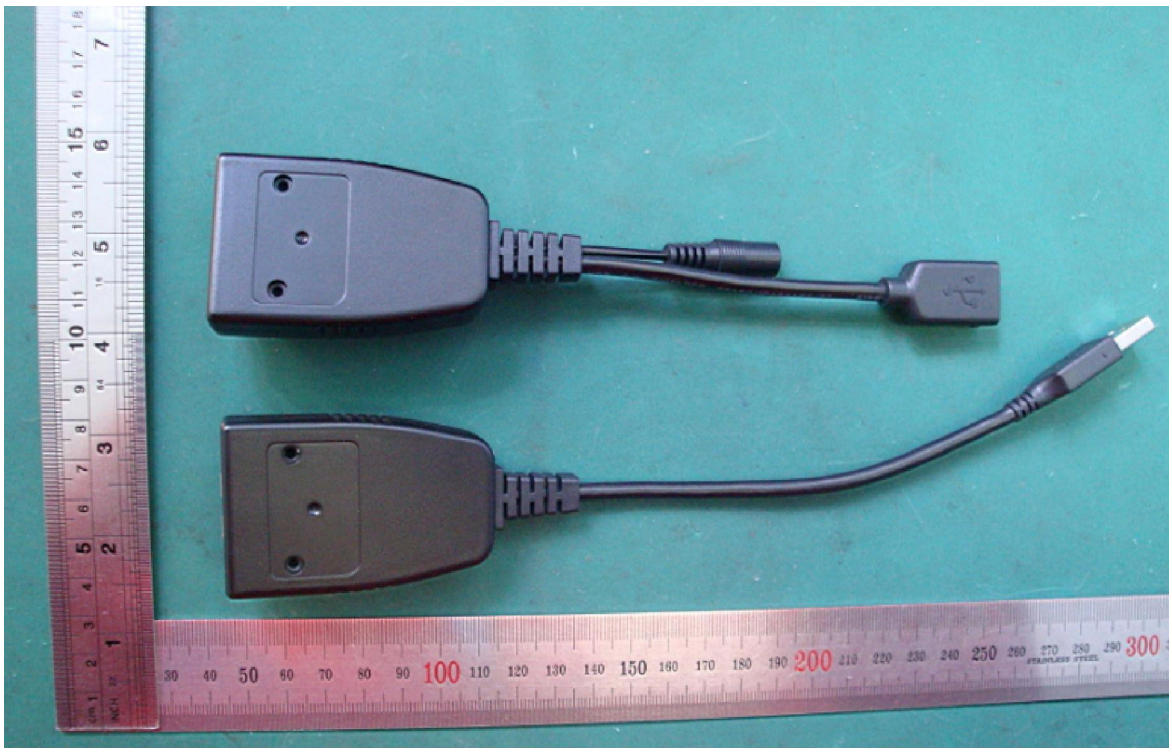


Fig. 2

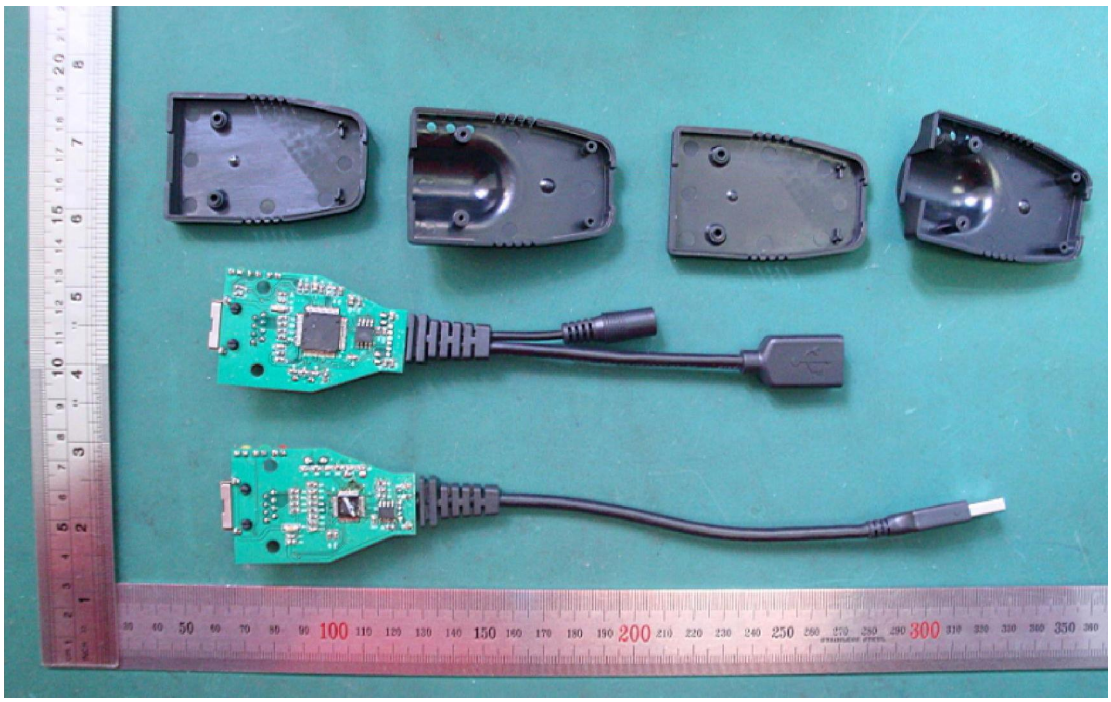


Fig. 3

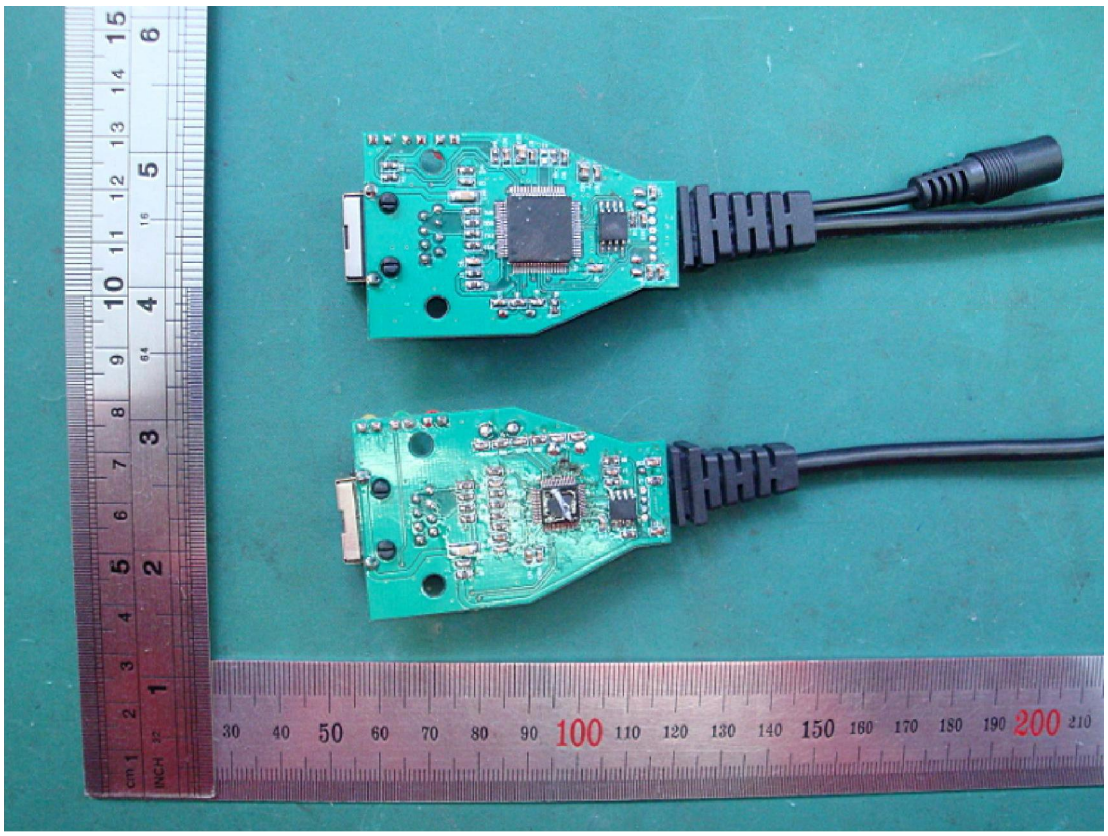


Fig. 4

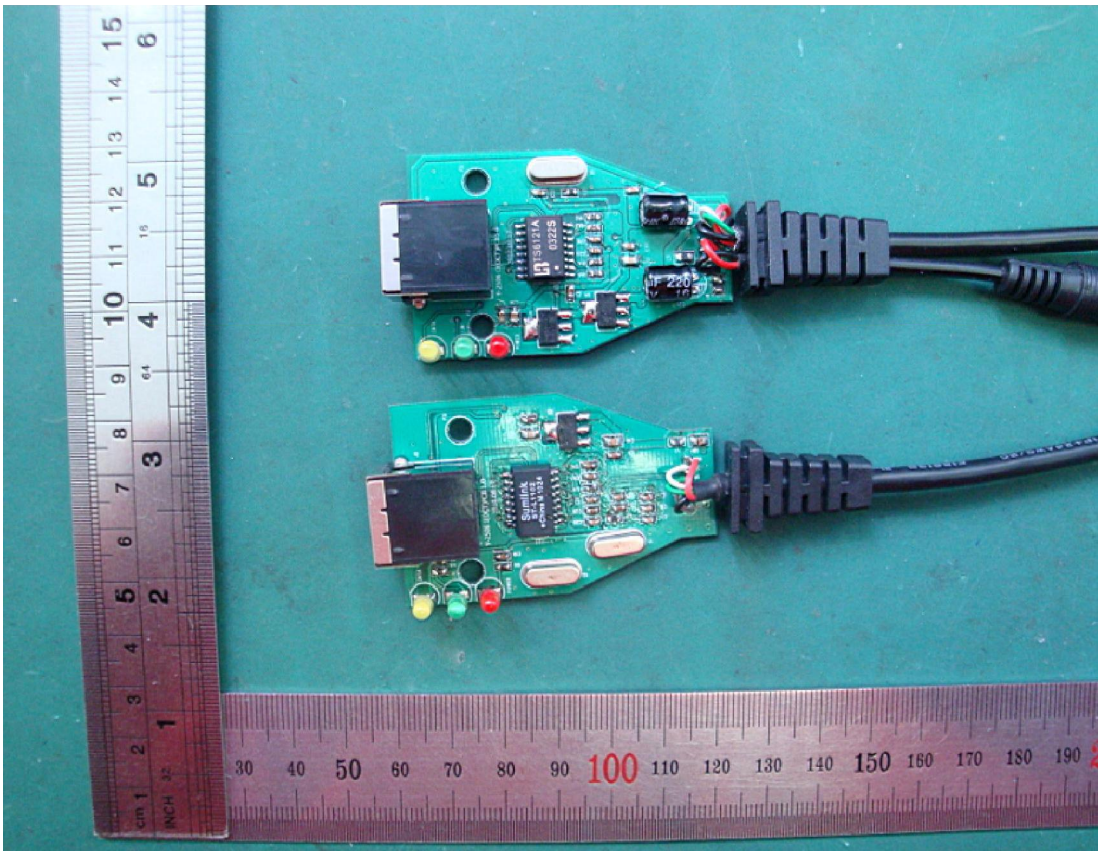


Fig. 5