

EMC TEST REPORT

REPORT NO.:ECE1712121R

MODEL : CS1000G, please see page 4 for mode list

RECEIVED: Nov. 29, 2017

TESTED: Nov. 30, 2017 to Dec. 07, 2017

APPLICANT: Couso Technology Co., Ltd.

ADDRESS: No. 26#, MinYe Street, TangXia Town, DongGuang City, GuangDong Province,
China

ISSUED BY: Shenzhen SETEK Technology Co., Ltd.

LAB LOCATION: 1003, C Bldg, Fuyuan Business Trade Center, 44 District Bao'an, Shenzhen,
China

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SHENZHEN SETEK TECHNOLOGY CO., LTD.

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Prepared for : Couso Technology Co., Ltd.

Address : No. 26#, MinYe Street, TangXia Town, DongGuang City, GuangDong Province, China

Product : Wireless Keyboard & Mouse set

Model : CS1000G, please see page 5 for mode list

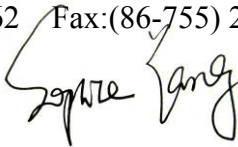
Trademark : COUSO, BANRUO

Test Standard : EN55032: 2015,
EN61000-3-2: 2014,
EN61000-3-3: 2013
EN55024: 2010/A1: 2015
(EN61000-4-2: 2009, EN61000-4-3: 2006+A1:2008+A2:2010, EN61000-4-4: 2012, EN61000-4-5: 2014, EN61000-4-6: 2014/AC:2015, EN61000-4-8: 2010, EN61000-4-11: 2004)

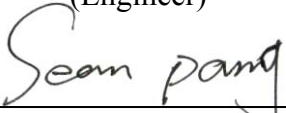
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Report Number : ECE1712121R

Date of Test : Nov. 30, 2017 to Dec. 07, 2017

Date of Report : Dec. 08, 2017



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APPENDIX I (Photos of EUT)

The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Wireless Keyboard & Mouse set

Model : CS1000G, CS2000G, CS3000G, CS4000G, CS4100G, CS4200G, CS4300G, CS4400G, CS4500G, CS4515G, CS4550G, CS4600G, CS4700G, CS4800G, CS4900G, CS5000G, CS5100G, CS5200G, CS5300G, CS5400G, CS5500G, CS5600G, CS5700G, CS5800G, CS5900G, CS-6000G, CS6100G, CS6200G, CS6300G, CS6400G, CS-6500G, CS6600G, CS6700G, CS6800G, CS6900G, CS7000G, CS7100G, CS7200G, CS7300G, CS7400G, CS7500G, CS7600G, CS7700G, CS7800G, CS7900G, CS8000G, CS8100G, CS8200G, CS8300G, CS8400G, CS8500G, CS8600G, CS8700G, CS8800G, CS8900G, CS-9000G, CS9100G, CS9200G, CS9300G, CS9400G, CS9500G, CS9600G, CS9700G, CS9800G, CS9900G, CX100LD, CX120LD, CX130LD, CX140LD, CX150LD, CX160LD, CX170LD, CX180LD, CX190LD, CK410B, CK910B, CS9100L, CS9200L, CS6500LD, CK470TL, CS4570G, CS4380G, CK400G, CK410G, CK420G, CK430G, CK440G, CK450G, CK460G, CK470T, CK480G, CK490G, CK510G, CK520G, CK530G, CK540G, CK550G, CK560G, CK570G, CK580G, CK590G, CK600G, CK601G, CK700G, CK710G, CK720G, CK730G, CK740G, CK750G, CK760G, CK770G, CK780G, CK790G, CM701G, CM702G, CM703G, CM704G, CM705G, CM706G, CM707G, CM708G, CM709G, CM710G, CM720G, CM730G, CM740G, CM750G, CM760G, CM770G, CM780G, CM790G, CM800LD, CM810LD, CM820LD, CM830LD, CM840LD, CM850LD, CM860LD, CM870LD, CM880G, CM890LD, CK920G, CK921G, CK923G, CK927G, CG10LD, CG11LD, CG12LD, CG13LD, CG14LD, CG15LD, CG16LD, CG17LD, CG18LD, CG19LD, CM610LD, CM620LD, CM630LD, CM640LD, CM650LD, CM660LD, CM670LD, CM680LD, CM690LD, CM610B, CM620B, CM630B, CM640B, CM650B, CM660B, CM670B, CM680B, CM690B, CM700B, CM710B, CM720B, CM730B, CM740B, CM750B, CM760B, CM770B, CM780B, CM790B, CM840B, CM850B, CM860B, CM870B, CM880B, CM890B, CM610G, CM620G, CM630G, CM640G, CM650G, CM660G, CM670G, CM680G, CM690G, CM810G, CM815G, CM820G, CM830G, CM840G, CM850G, CM860G, CM870G, CM880G, CM890G, CM891G, CM892G, CM893G, CM894G, CM895G, CM896G, CM897G, CM898G, CM898GL, CNS-HSETW3-RU, CNS-HSETW3-US, CNS-HSETW3-SK,

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CNS-HSETW3-LT, CNS-HSETW3-HU, CNS-HSETW3-BG, CNS-HSETW3-AD, CNS-HSETW3-CZ, CNS-HSETW3-UK, CNS-HKBW2-RU, CNS-HKBW2-US, CNS-HKBW2-SK, CNS-HKBW2-LT, CNS-HKBW2-HU, CNS-HKBW2-AD, CNS-HKBW2-CZ, CNS-HKBW2-EE, CNS-HKBW4-UK, CNS-HSETW4-RU, CNS-HSETW4-CS, CNS-HSETW4-US, CNS-HSETW4-BG, CNS-HSETW4-HU, CNS-HSETW4-LT, CNS-HSETW4-EE, GN-CS8400G, GN-CS8500G

The model(s) are all identical in interior structure, electrical circuits and components, and just the model names are different for the marketing requirement.

We prepare CS1000G for the test.

Power Supply : DC1.5V for Tx (AAA for Keyboard, AA for Mouse) and DC5V for Rx (Host from PC)

Applicant : Couso Technology Co., Ltd.

Address : No. 26#, MinYe Street, TangXia Town, DongGuang City, GuangDong Province, China

Manufacturer : Couso Technology Co., Ltd.

Address : No. 26#, MinYe Street, TangXia Town, DongGuang City, GuangDong Province, China

Date of receiver : Nov. 29, 2017

Date of Test : Nov. 30, 2017 to Dec. 07, 2017

1.2. Description of Support Device

PC : Manufacturer: DELL
M/N: E157FPc
S/N: 53SM12X
CCC, FCC, VCCI, GS, S, CE

Monitor : Manufacturer: SAMSUNG
M/N: 710MP [R]S
S/N: MH17HVV500468F
CCC, SA, UL

Mouse : Manufacturer: DELL
M/N: M056UOA
S/N: F1101WOS
CE, VCCI, FCC, GS, UL

Keyboard : Manufacturer: DELL
M/N: SK-8135
S/N: CN-0DJ340-71616683-01U6
VCCI, CE, FCC

Printer

: Manufacturer: SAMSUNG
M/N: ML-1610
S/N: BKAYB04125
CCC, CE, UL

1.3. Test Standards

Test Standards	
EN 55032:2015	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
EN 55024:2010/A1: 2015	Information technology equipment - Immunity characteristics - Limits and methods of measurement
EN61000-3-2:2014	Electromagnetic compatibility(EMC)-Part 3-2:Limits-Limits for harmonic current emissions(equipment input current $\leq 16A$ per phase)
EN61000-3-3: 2013	Electromagnetic compatibility (EMC)-Part 3-3: Limits-Limitation of voltage changes, Voltage fluctuations and flicker in public low-voltage supply systems. For equipment with Rated current $\leq 16A$ per phase and not subject to conditional connection

1.4. Measurement Uncertainty

Radiation Uncertainty : $U_r = \pm 3.84dB$

Conduction Uncertainty : $U_c = \pm 2.72dB$

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	2017.5.27	1 Year
2.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	2017.5.27	1 Year
3.	50ΩCoaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
4.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	2017.5.27	1 Year
5.	Voltage Probe	Rohde & Schwarz	TK9416	N/A	2017.5.27	1 Year

2.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	2017.5.27	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	2017.5.27	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	2017.5.27	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	2017.5.27	1 Year
5.	EMI Power Line Filter	DUOJI EME	FNF 201 B16	N/A	2017.5.27	1 Year
6.	EMI Power Line Filter	JIANLI	DL-40C	N/A	2017.5.27	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	2017.5.27	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	2017.5.27	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	2017.5.27	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	2017.5.27	1 Year
11.	Signal Generator	HP	8648A	3625U00573	2017.5.27	1 Year

2.3. For Harmonic Current / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	HAEFELY	PHF555	080419-03	2017.5.27	1 Year
2.	PC	N/A	P2L97	N/A	2017.5.27	N/A

2.4. For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1600	H708159	2017.5.27	1 Year

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2.5. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3625U00573	2017.5.27	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	2017.5.27	1 Year
6.	Biconic 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

2.6. For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT4010	080981-16	2017.5.27	1 Year
2.	Coupling Clamp	HAEFELY	IP-4A	147147	2017.5.27	1 Year

2.7. For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	080107-04	2017.5.27	1 Year

2.8. For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS500C	0900-12	2017.5.27	1 Year
2.	CDN	EMTEST	CDN-M2	5100100100	2017.5.27	1 Year
3.	CDN	EMTEST	CDN-M3	0900-11	2017.5.27	1 Year
4.	Injection Clamp	EMTEST	F-2031-23MM	368	2017.5.27	1 Year
5.	Attenuator	EMTEST	ATT6	0010222A	2017.5.27	1 Year

2.9. For Magnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	2017.5.27	1 Year

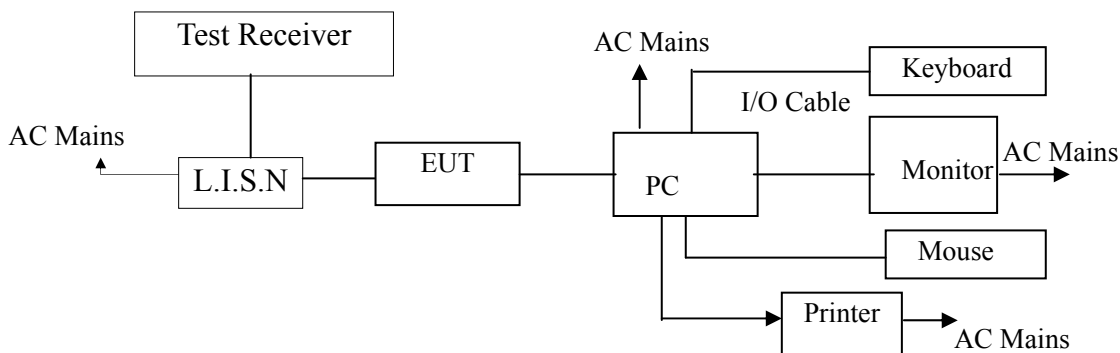
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2.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	HAEFELY	Pline1610	083732-12	2017.5.27	1Year

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Block Diagram of Test Setup



(EUT: Wireless Keyboard & Mouse set)

3.2. Measuring Standard

EN55032: 2015

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.
NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Wireless Keyboard & Mouse set
Model Number : CS1000G
Serial Number : N/A

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown on Section 3.1.

3.4.2. Turn on the power of all equipments.

3.4.3. Let the EUT work in measuring mode (Normal) and measure it.

3.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.

The frequency range from 150kHz to 30MHz is investigated

3.6 Measuring Results

Pass

Please reference to the following pages

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

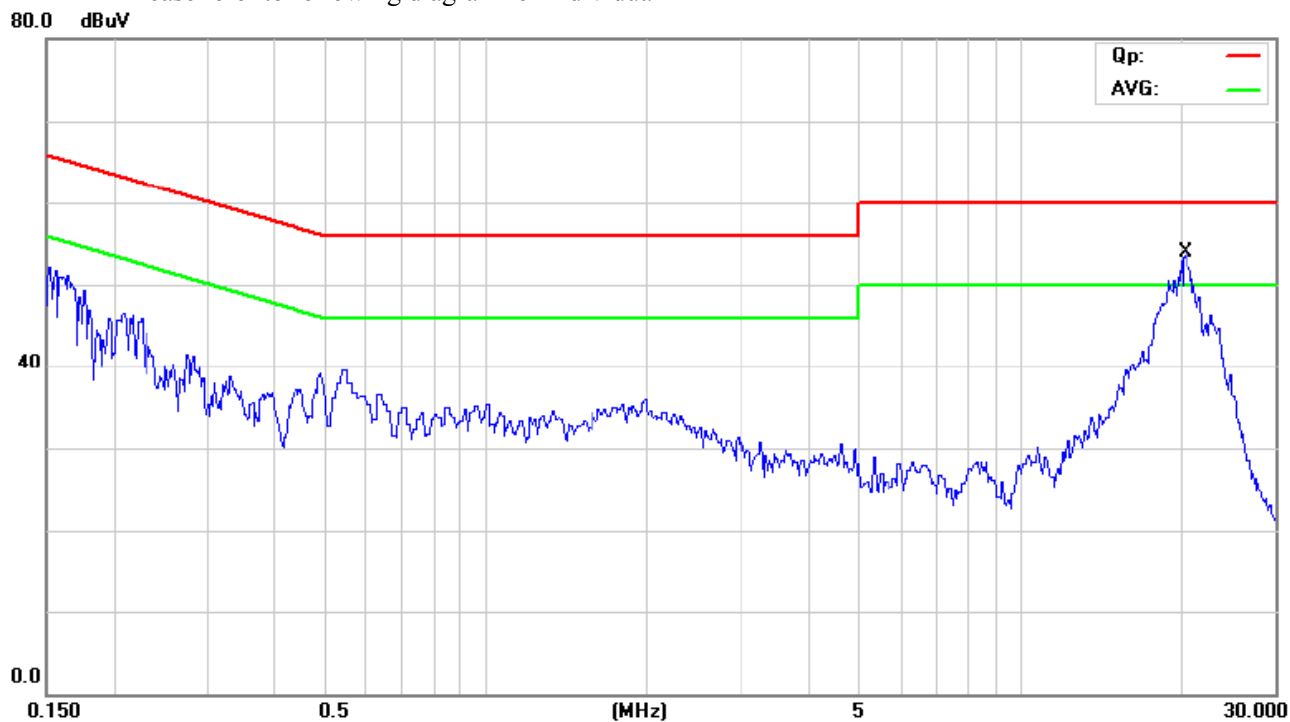
Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Dongle under Normal operation mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		20.3755	35.90	11.12	47.02	60.00	-12.98	QP	
2	*	20.3755	26.80	11.12	37.92	50.00	-12.08	AVG	

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

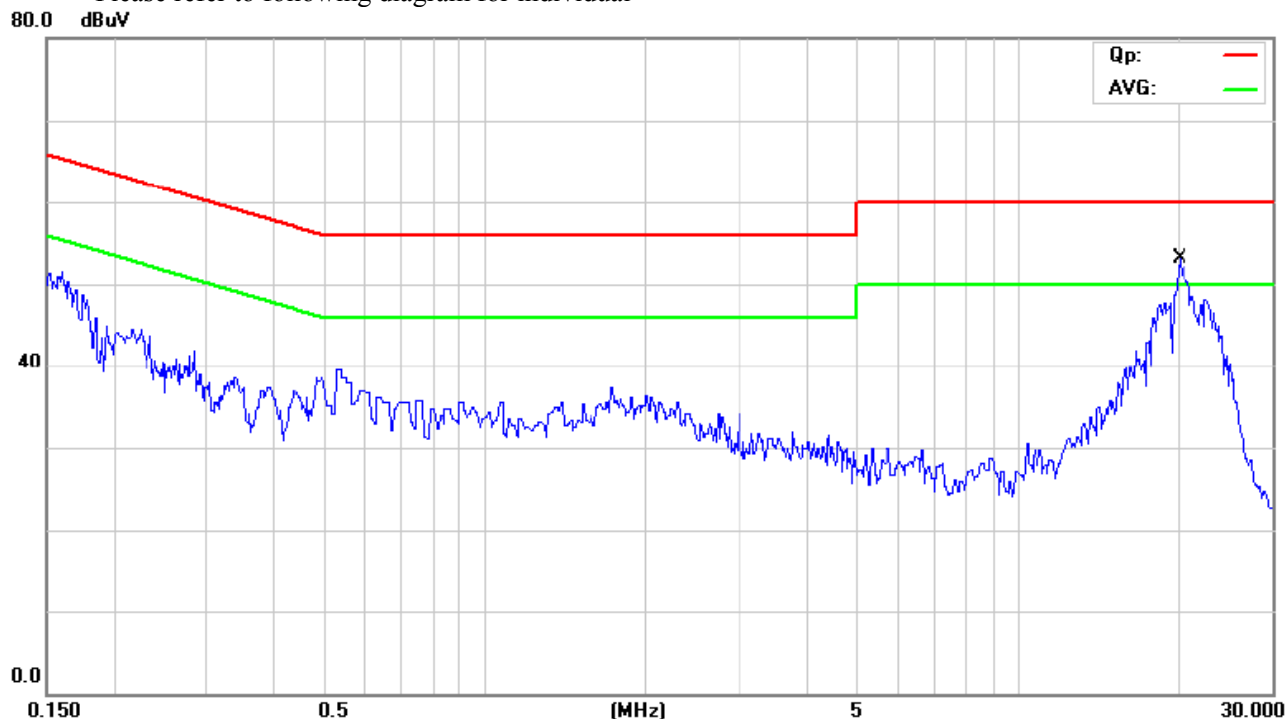
Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Dongle under Normal operation mode

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		20.0664	34.90	11.10	46.00	60.00	-14.00	QP	
2	*	20.0664	26.00	11.10	37.10	50.00	-12.90	AVG	

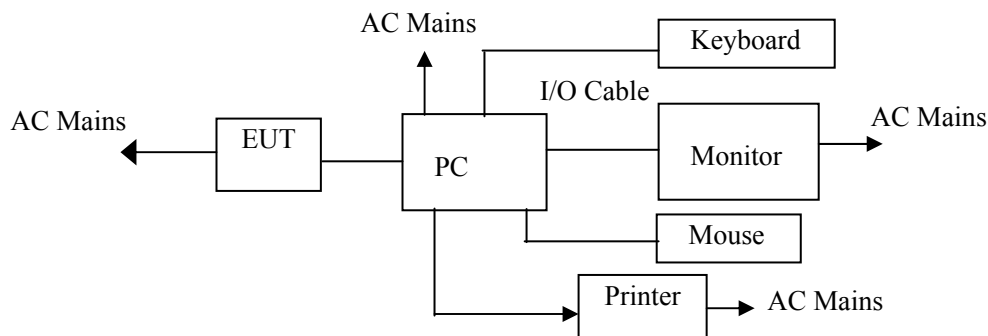
Remarks:

1. Uncertainty in conducted emission measured is 3.6dB.
2. QP and AV are abbreviations of quasi-peak and average individually.
3. The emission levels of other frequencies were very low against the limit.

4. RADIATED EMISSION MEASUREMENT

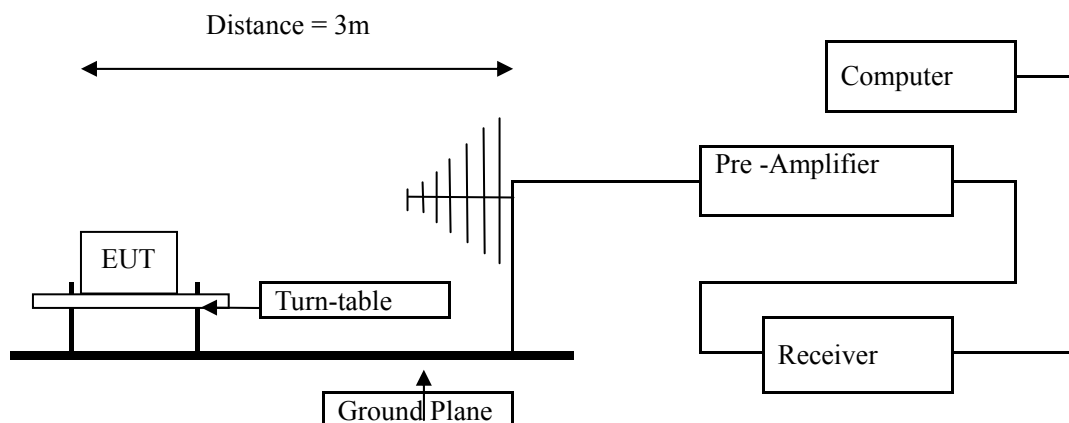
4.1. Block Diagram of Test

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: Wireless Keyboard & Mouse set)

4.1.2. Block diagram of test setup (In chamber)



(EUT: Wireless Keyboard & Mouse set)

4.2. Measuring Standard

EN55032: 2015

4.3. 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 (dB μ V/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.

4.4. EUT Configuration on Test

The EN55032 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.5. Operating Condition of EUT

4.5.1. Turn on the power.

4.5.2. After that, let the EUT work in test mode (Normal) and measure it.

4.6. 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.

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

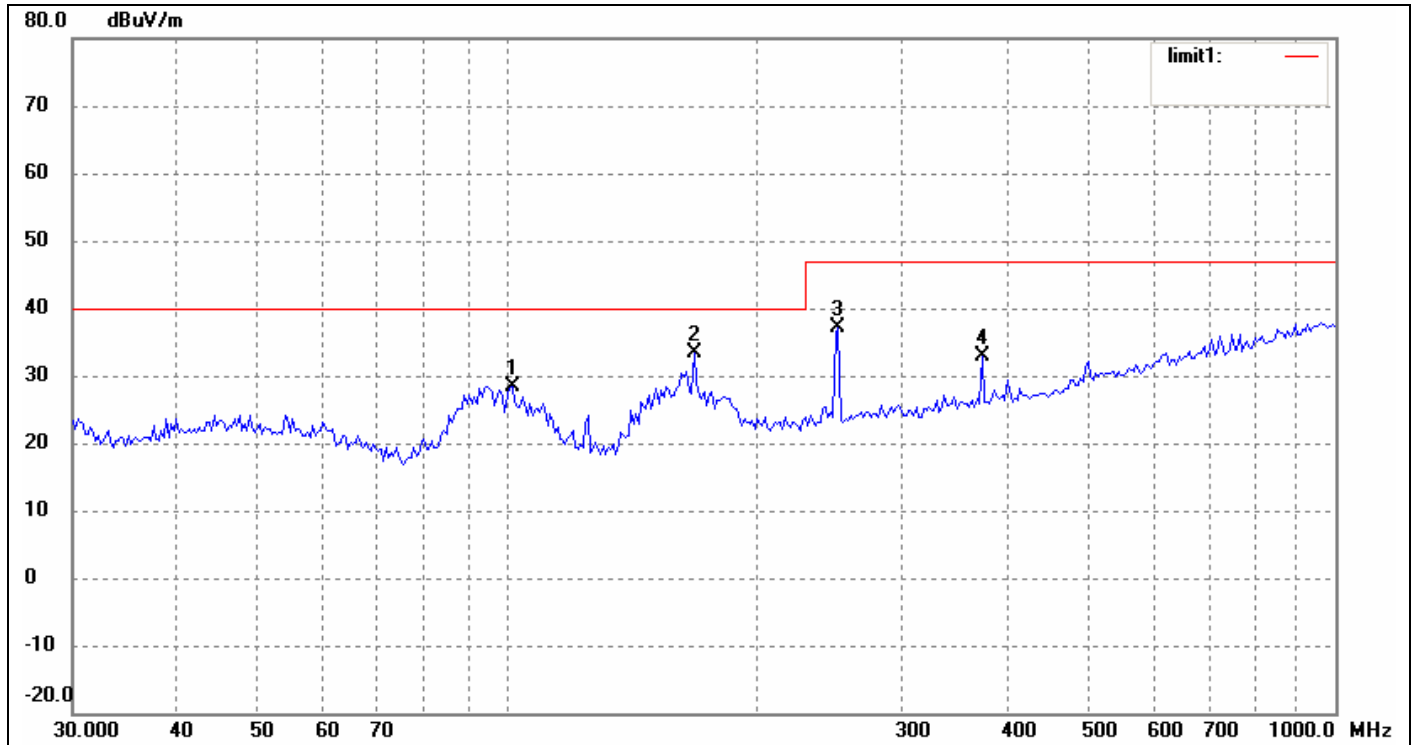
4.7. Measuring Results

PASS.

Please reference to the following pages

Polarization: Horizontal

Normal Mode Test Data

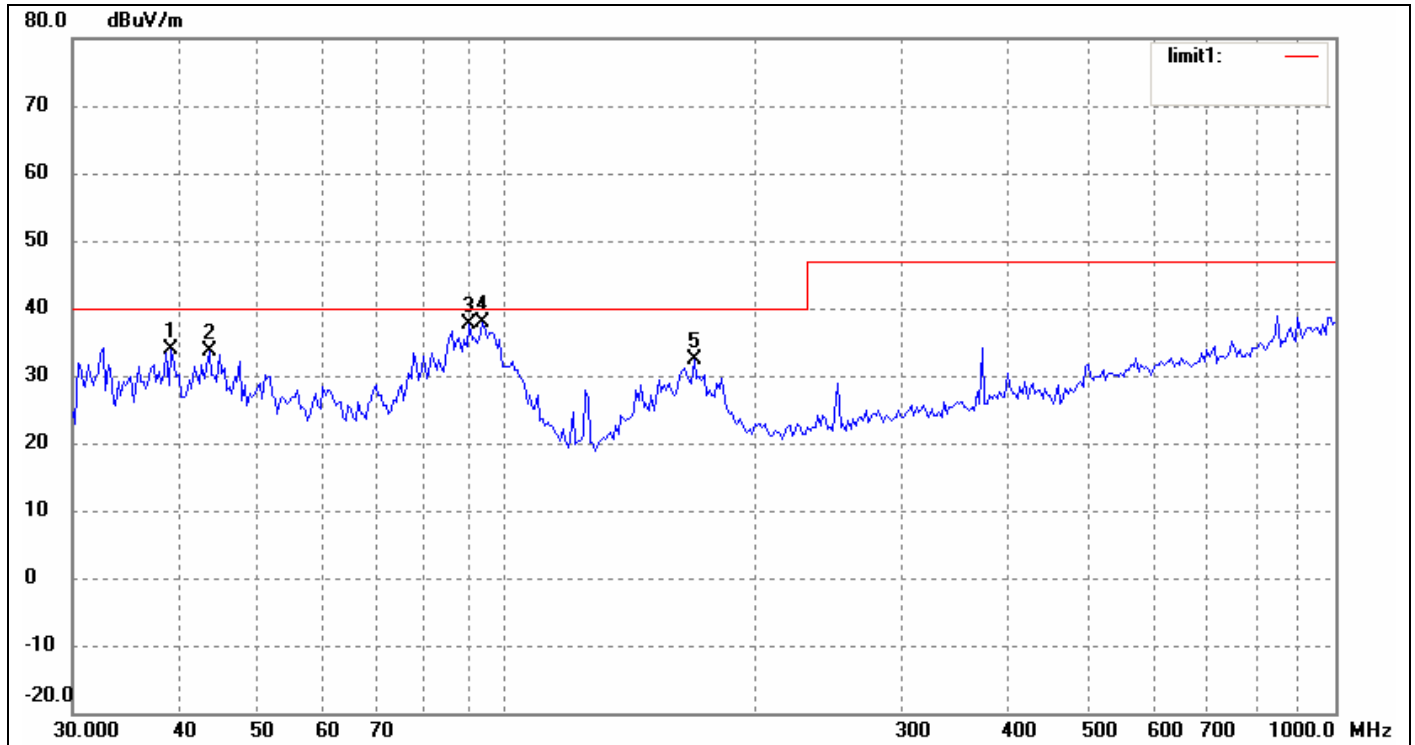


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	101.6443	20.08	8.29	28.37	40.00	-11.63			peak
2	168.4138	28.42	4.84	33.26	40.00	-6.74			peak
3	251.1804	28.51	8.72	37.23	47.00	-9.77			peak
4	374.6226	21.77	11.11	32.88	47.00	-14.12			peak

The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.

Polarization: Vertical

Normal Mode Test Data

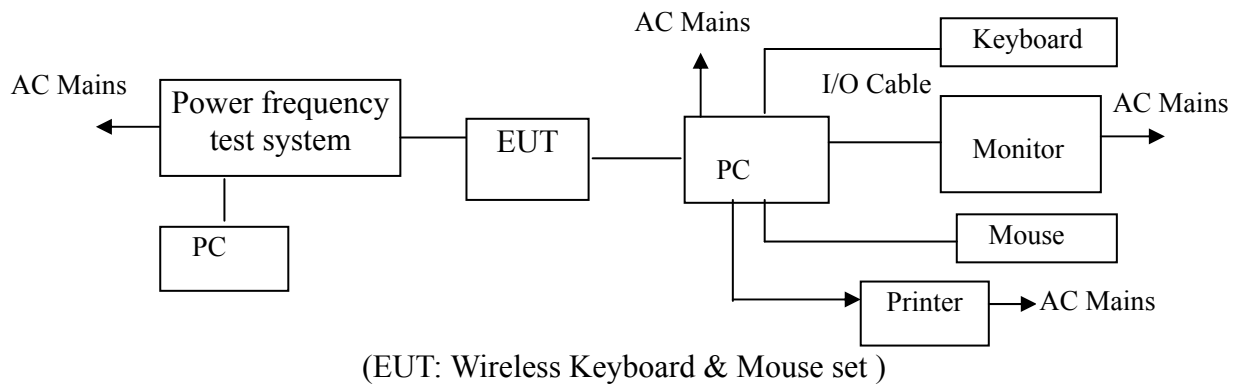


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.4372	25.99	7.99	33.98	40.00	-6.02			peak
2	43.8119	25.38	8.21	33.59	40.00	-6.41			peak
3	90.2205	30.45	7.12	37.57	40.00	-2.43			peak
4	93.4402	30.06	7.76	37.82	40.00	-2.18			peak
5	168.4138	27.45	4.84	32.29	40.00	-7.71			peak

The device described above is tested by SHENZHEN SETTEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETTEK TECHNOLOGY CO., LTD.

5. HARMONIC CURRENT EMISSION MEASUREMENT

5.1 Block Diagram of Test Setup



5.2 Measuring Standard

EN 61000-3-2: 2014 CLASS A

5.3 Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 5.1.

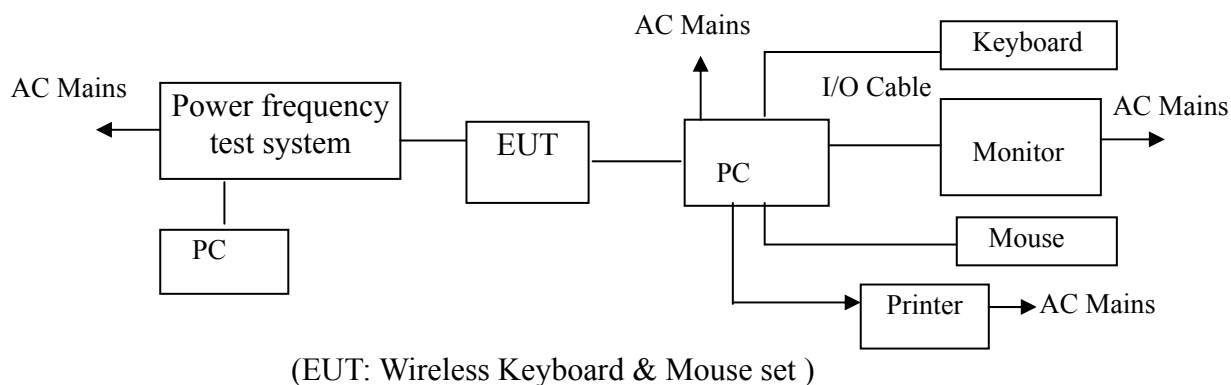
5.4 Measuring Results

N/A

* N/A ---Not apply (DC Operation)

6.VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

6.1Block Diagram of Test Setup



6.2Measuring Standard

EN 61000-3-3: 2013

6.3 Operation Condition of EUT

- 6.3.1 Setup the EUT and simulators as shown in Section6.1.
- 6.3.2 Turn on the power of all equipments.
- 6.3.3 Let the EUT work in test modes (Normal) and test it.

6.4 Measuring Results

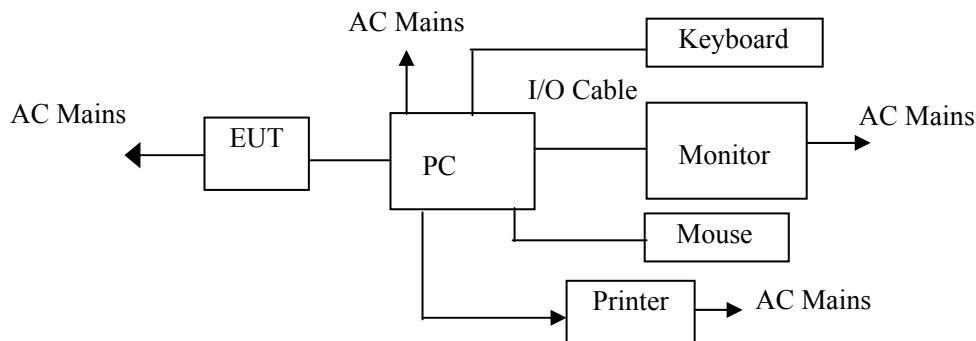
N/A

* N/A ---Not apply (DC Operation)

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

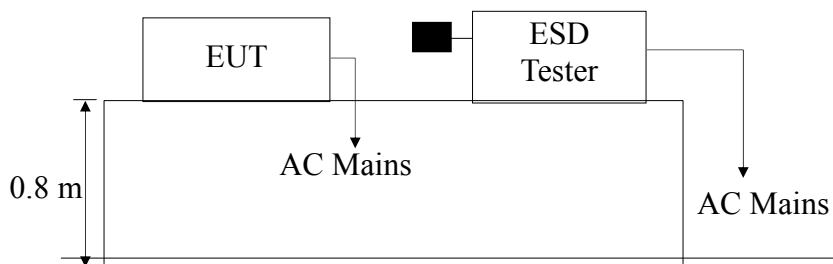
7.1 Block Diagram of Test Setup

7.1.1 Block Diagram of the EUT and the simulators



(EUT: Wireless Keyboard & Mouse set)

7.1.2 Block diagram of ESD test setup



(EUT: Wireless Keyboard & Mouse set)

7.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-2: 2009

Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$ Level: 2 / Contact Discharge: $\pm 4\text{KV}$)

7.3 Severity Levels and Performance Criterion

7.3.1 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

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7.3.2 Performance criterion: **B**

7.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 7.1.

7.6 Test Procedure

7.6.1 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.

7.6.2 Contact Discharge:

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 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.

7.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharge (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.

7.7 Test Results

PASS

Please refer to the following page

Electrostatic Discharge Test Result

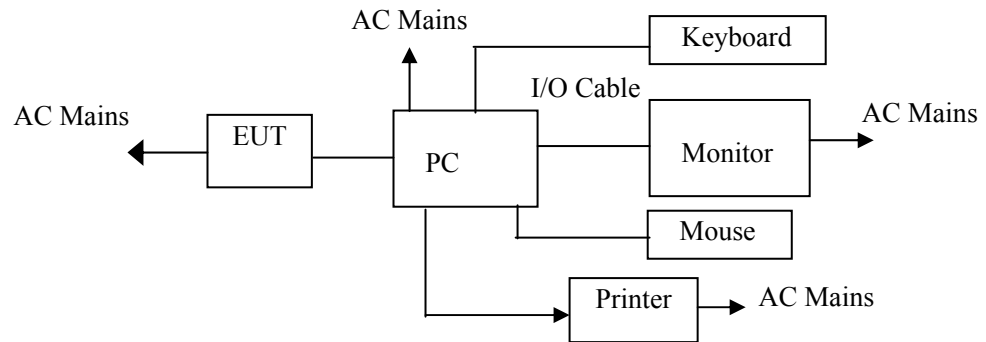
Applicant	: Couso Technology Co., Ltd.	Test Date	: Dec. 05, 2017
EUT	: Wireless Keyboard & Mouse set	Temperature	: 22℃
M/N	: CS1000G	Humidity	: 50%
Power Supply	: DC1.5V for Tx (AAA for Keyboard, AA for Mouse) and DC5V for Rx (Host from PC)	Test Mode	: Normal
Air discharge	: ±8.0KV	Criterion	: B
Contact discharge: ±4.0KV		Test Engineer	: Jack
Location		Kind A-Air Discharge C-Contact Discharge	Result
Enclosure		A	PASS
Key Button		A	PASS
Battery Cover		A	PASS
Screw		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
Test Equipment: ESD Simulator (HAEFELY, PESD1600)			

The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.

8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

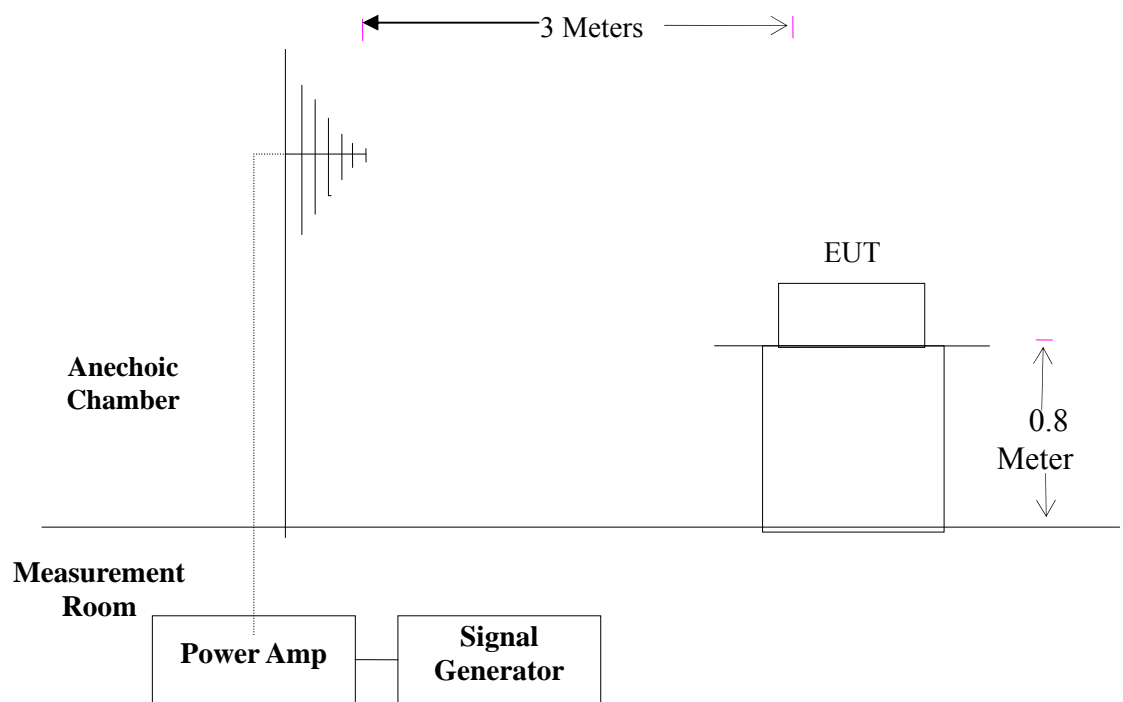
8.1 Block Diagram of Test

Block diagram of connection between the EUT and Load



(EUT: Wireless Keyboard & Mouse set)

8.1.1 Block diagram of RS test setup



(EUT: Wireless Keyboard & Mouse set)

8.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-3: 2006+A1:2008+A2:2010 (Severity Level: 2, 3V / m))

8.3 Severity Levels and Performance Criterion

8.3.1 Severity Levels

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

8.3.2 Performance Criterion : A

8.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

8.5 Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4, except the test setup replaced as Section 8.1.

8.6 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.

8.7 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

SHENZHEN SETEK TECHNOLOGY CO., LTD.

Applicant : Couso Technology Co., Ltd.	Test Date : Dec. 05, 2017
EUT : Wireless Keyboard & Mouse set	Temperature : 22℃
M/N : CS1000G	Humidity : 50 %
Field Strength : 3 V/m	Criterion : A
Power Supply : DC1.5V for Tx (AAA for Keyboard, AA for Mouse) and DC5V for Rx (Host from PC)	Test Mode : Normal
Test Engineer: Jack	Frequency Range: 80 MHz to1000 MHz

Modulation:	<input type="checkbox"/> None	<input type="checkbox"/> Pulse	<input checked="" type="checkbox"/> AM 1KHz	80%
	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2:	
Steps	1	/	%	# / %
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

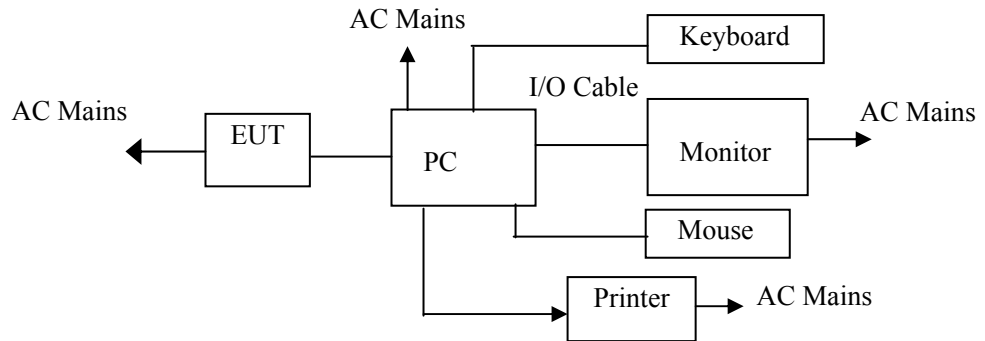
Test Equipment :
1. Signal Generator : 2031 (MARCONI)
2. Power Amplifier : 500A100 & 100W/1000M1 (A&R)
3. Power Antenna : 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor : FM2000 (A&R)

Note:

9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

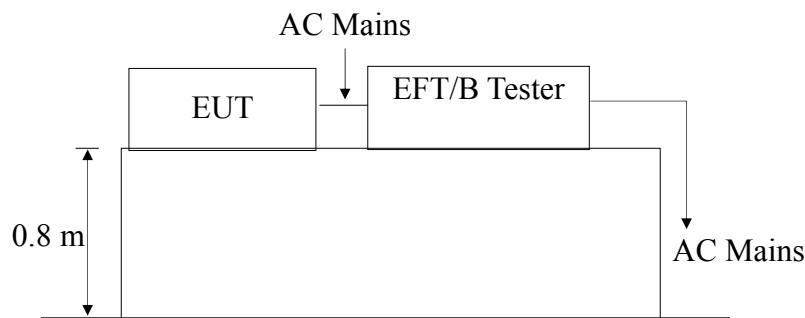
9.1 Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



(EUT: Wireless Keyboard & Mouse set)

9.1.2.EFT Test Setup



(EUT: Wireless Keyboard & Mouse set)

9.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-4: 2012, Severity Level, Level 2: 1KV)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance criterion : B

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9.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

9.5 Operating Condition of EUT

9.5.1 Setup the EUT as shown in Section 9.1.

9.5.2 Turn on the power of all equipments.

9.5.3 Let the EUT work in test mode (Normal) and measure it.

9.6 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1 For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.2 For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

9.6.3 For DC output line ports:

It's unnecessary to test.

9.7 Test Result

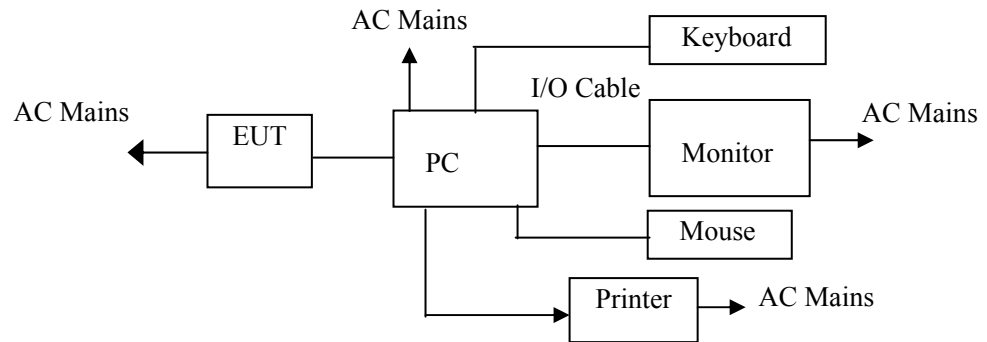
N/A

* N/A ---Not apply (DC Operation)

10. SURGE IMMUNITY TEST

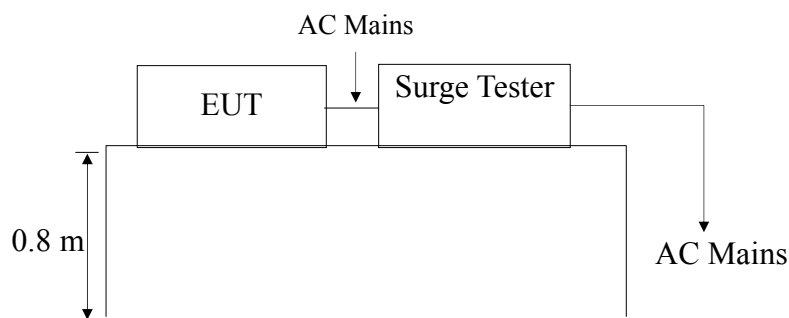
10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of the EUT



(EUT: Wireless Keyboard & Mouse set)

10.1.2. Surge Test Setup



(EUT: Wireless Keyboard & Mouse set)

10.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-5: 2014)

Severity Level: Line to Line: Level 2, 1.0KV

10.3 Severity Levels and Performance Criterion

10.3.1. Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

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10.3.2 Performance criterion : **B**

10.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

10.5 Operating Condition of EUT

10.5.1 Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (Normal) and measure it.

10.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 10.1.2.
- 2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7 Test Result

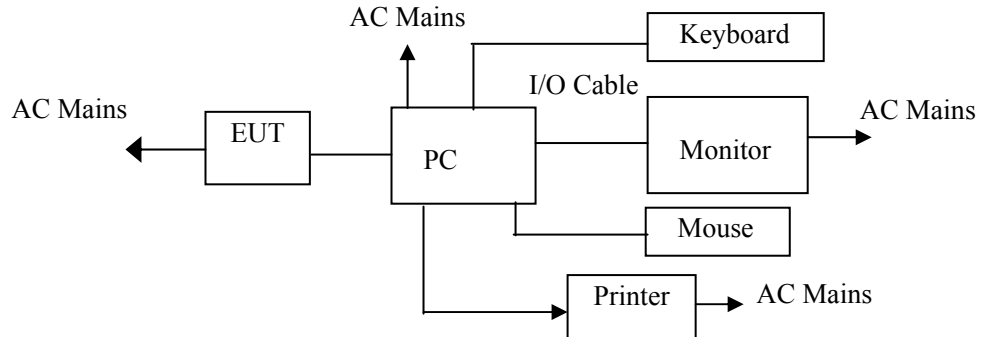
N/A

* N/A ---Not apply (DC Operation)

11. INJECTED CURRENTS SUSCEPTIBILITY TEST

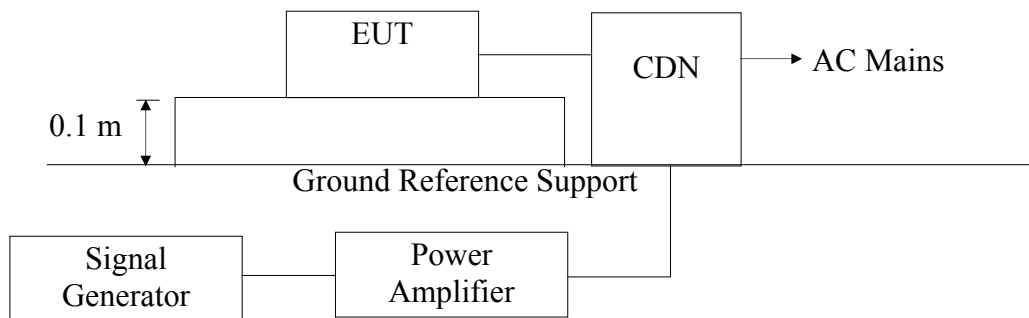
11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT



(EUT: Wireless Keyboard & Mouse set)

11.1.2 Block Diagram of Test Setup



(EUT: Wireless Keyboard & Mouse set)

11.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-6: 2014/AC:2015, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

11.3.2 Performance criterion: A

11.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

11.5 Operating Condition of EUT

11.5.1 Setup the EUT as shown in Section 11.1.

11.5.2 Turn on the power of all equipments.

11.5.3 Let the EUT work in test mode (Normal) and measure it.

11.6 Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.7 Test Results

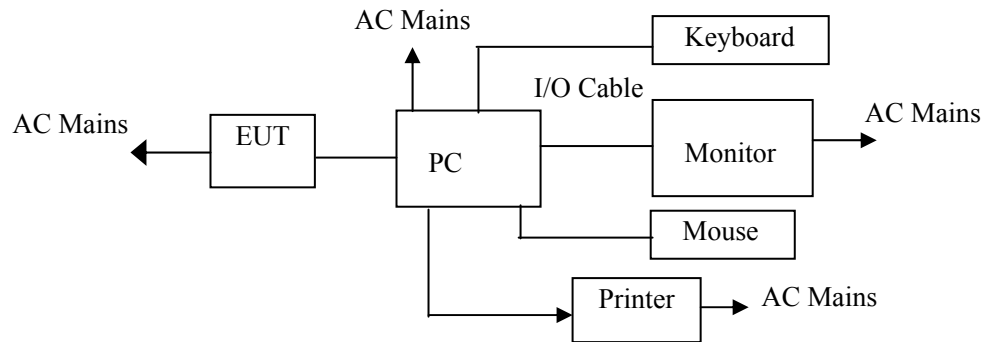
N/A

* N/A ---Not apply (DC Operation)

12. MAGNETIC FIELD SUSCEPTIBILITY TEST

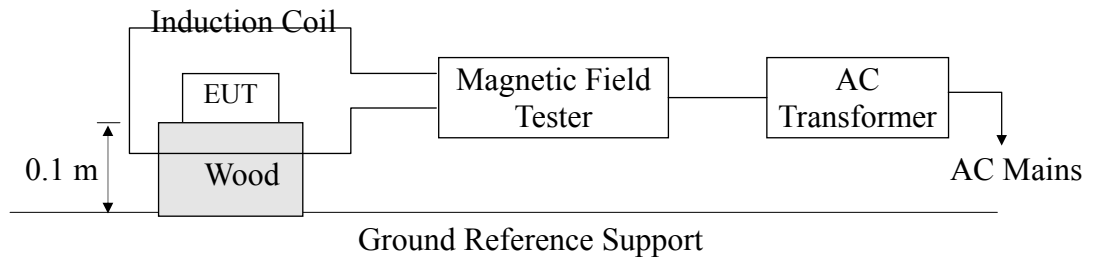
12.1 Block Diagram of Test

12.1.1 Block diagram of test setup



(EUT: Wireless Keyboard & Mouse set)

12.1.2 Magnetic field test setup



(EUT: Wireless Keyboard & Mouse set)

12.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-8: 2010, Severity Level: Level 1, 1A / m)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity Levels

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

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12.3.2 Performance Criterion : A

12.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

12.5 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.

12.6 Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

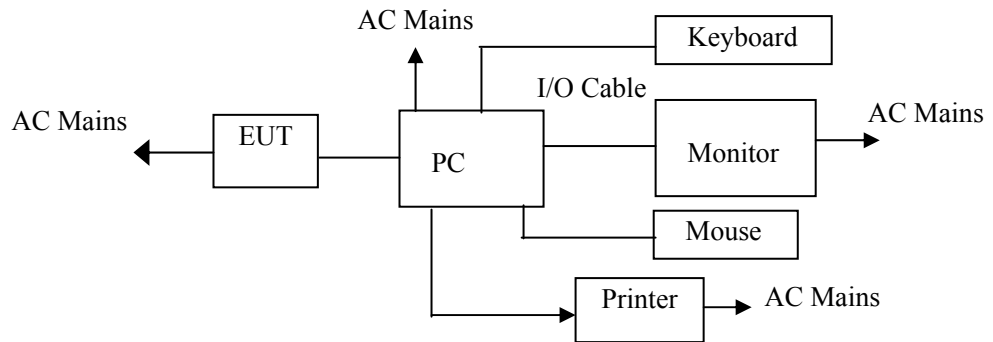
SHENZHEN SETEK TECHNOLOGY CO., LTD.

Standard	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		Result: <input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail	
Applicant : Couso Technology Co., Ltd. EUT : Wireless Keyboard & Mouse M/N: CS1000G set Input Voltage : DC1.5V for Tx (AAA for Keyboard, AA for Mouse) and DC5V for Rx (Host from PC)				
Date of Test : Dec. 05, 2017 Test Engineer: Jack				
Ambient Condition : Temp : 22°C Humid: 58% Criterion: A				
Operation Mode : Normal				
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:				

13. VOLTAGE DIPS AND INTERRUPTIONS TEST

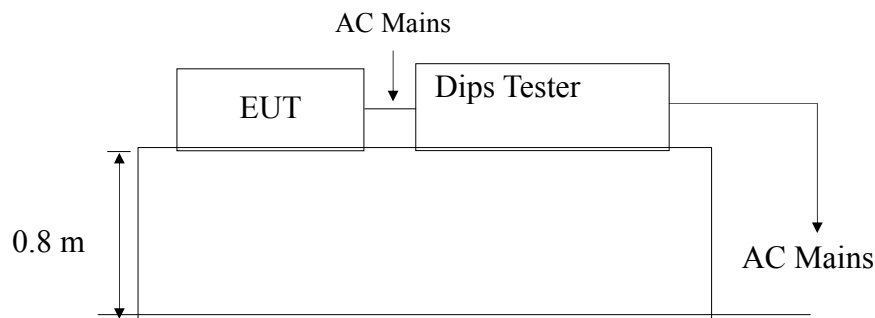
13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



(EUT: Wireless Keyboard & Mouse set)

13.1.2 Dips Test Setup



(EUT: Wireless Keyboard & Mouse set)

13.2 Test Standard

EN55024: 2010/A1: 2015 (EN61000-4-11: 2004)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5
40	60	1
70	30	5
		10
		25
		50
		*

13.3.2 Performance criterion : **B&C**

13.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Normal) and measure it.

13.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruptions is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7 Test Result

N/A

* N/A ---Not apply (DC Operation)

APPENDIX I

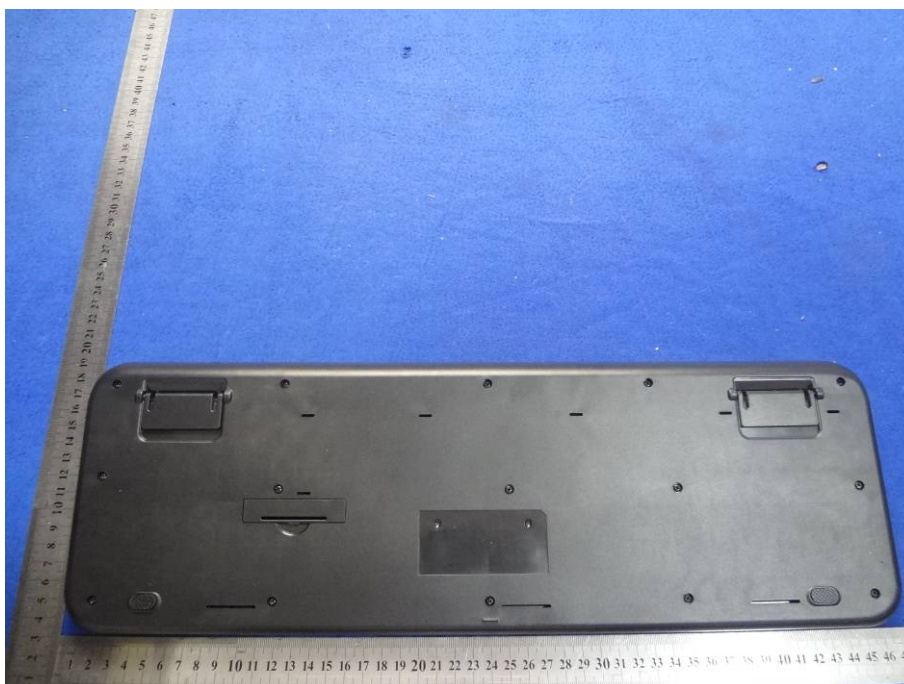
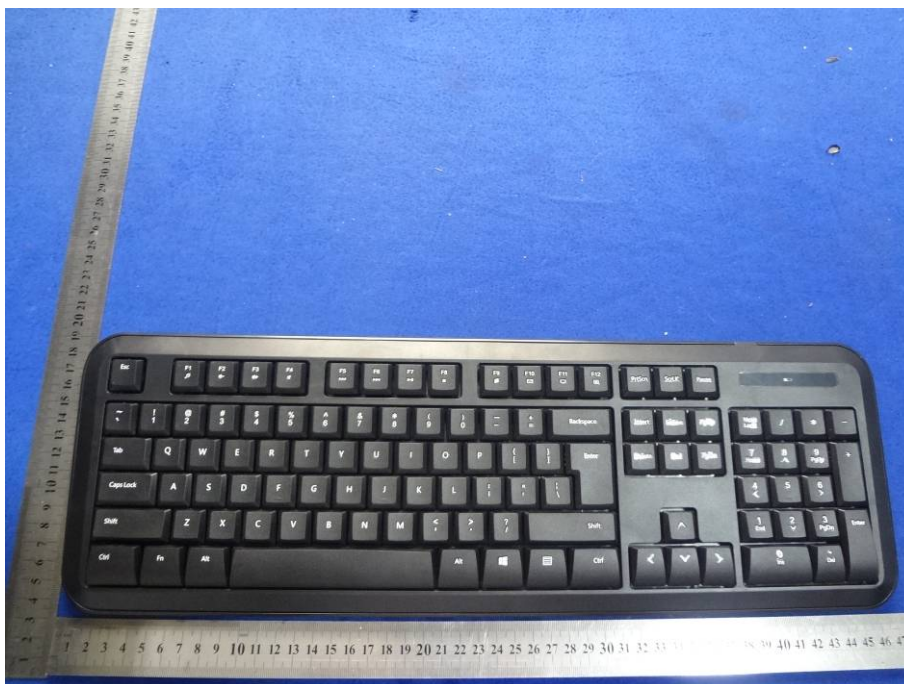
(Photos of EUT)

TX (Mouse + Keyboard)

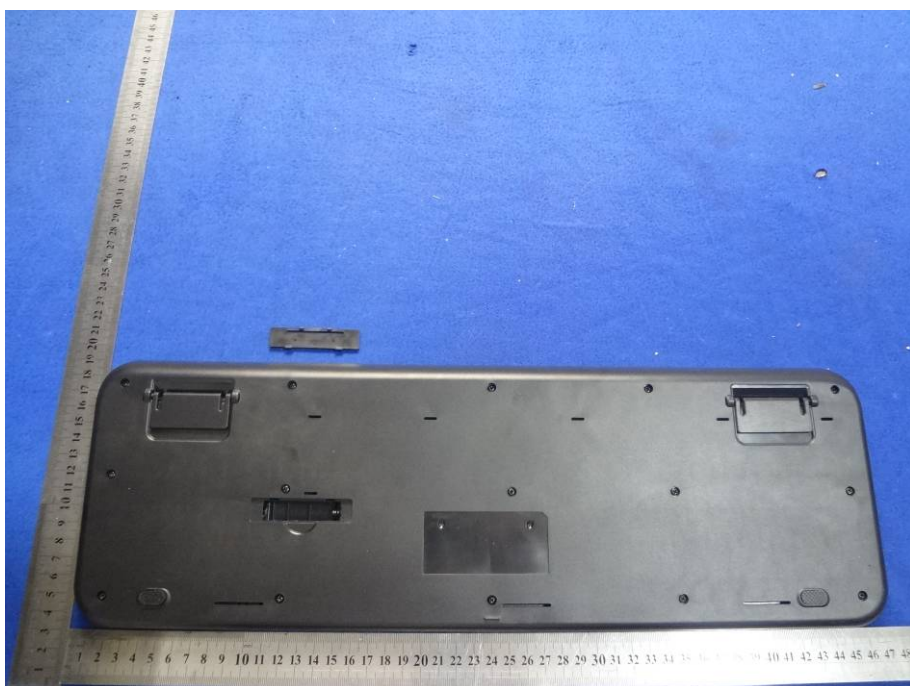


The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.

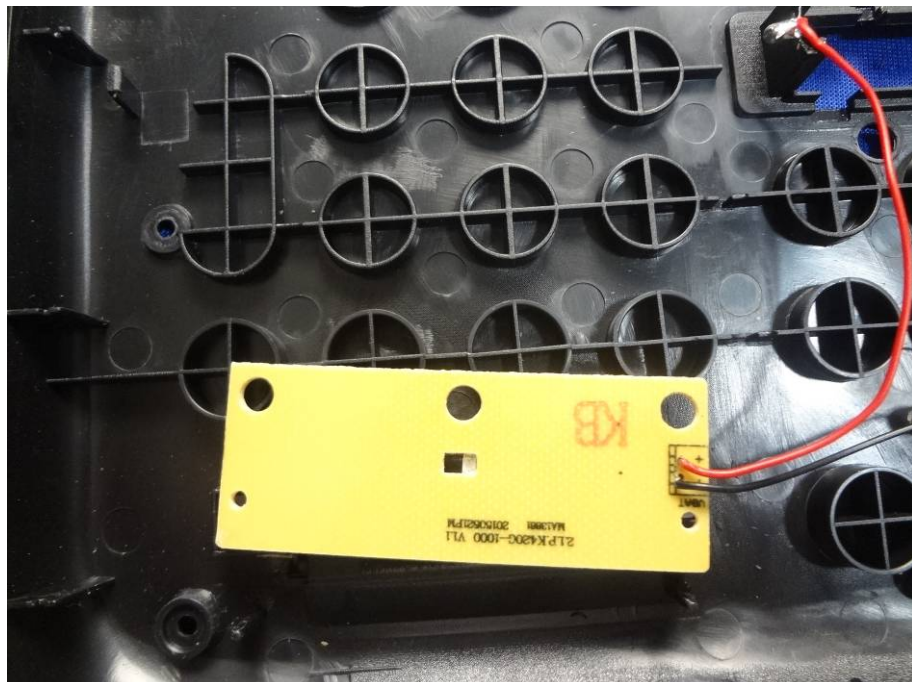
TX (Keyboard)



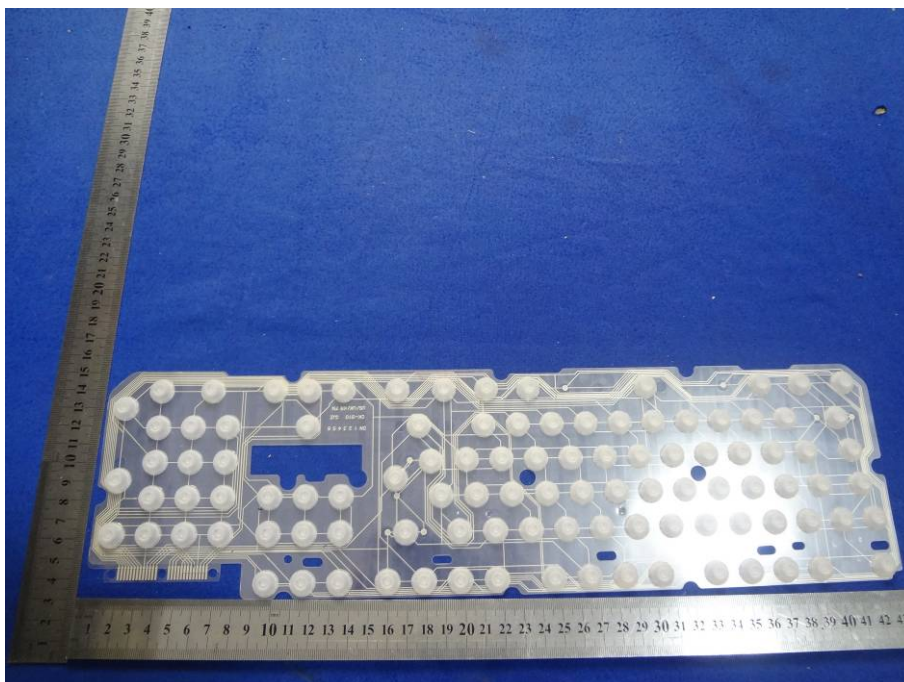
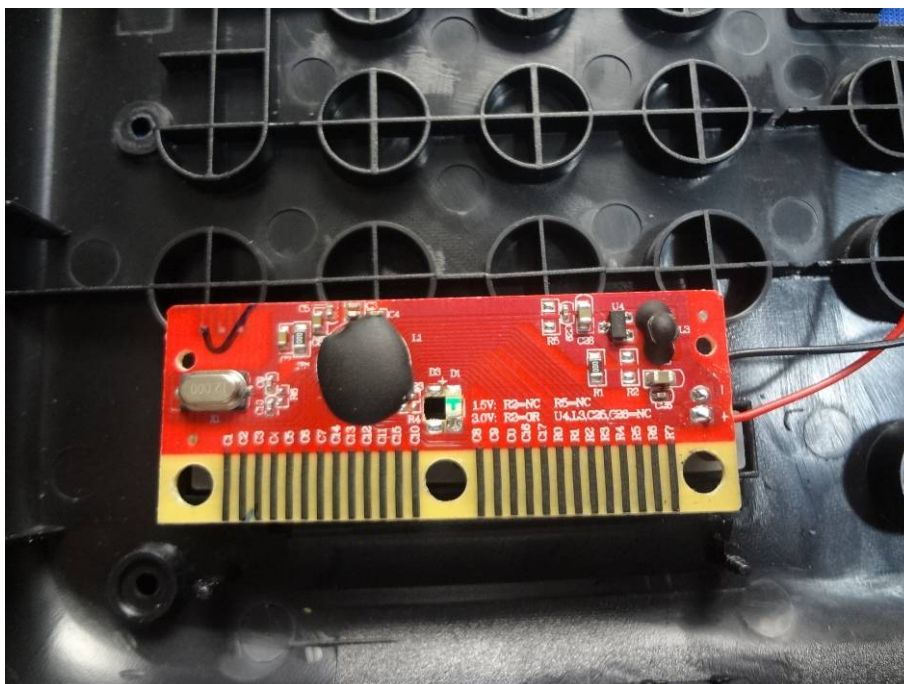
The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.



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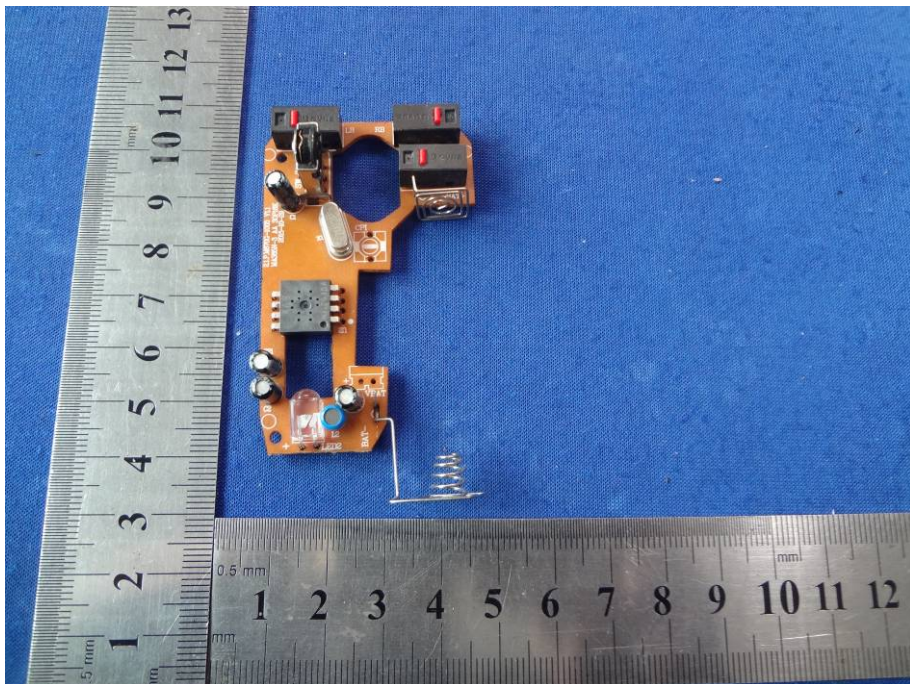


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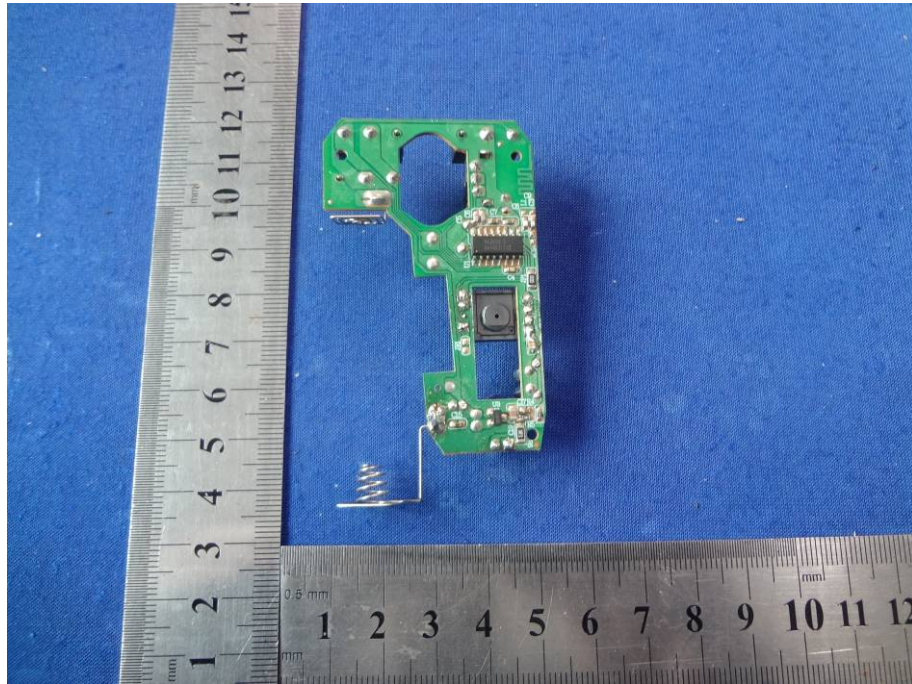
TX (Mouse)



The device described above is tested by SHENZHEN SETEK TECHNOLOGY CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN SETEK TECHNOLOGY CO., LTD.

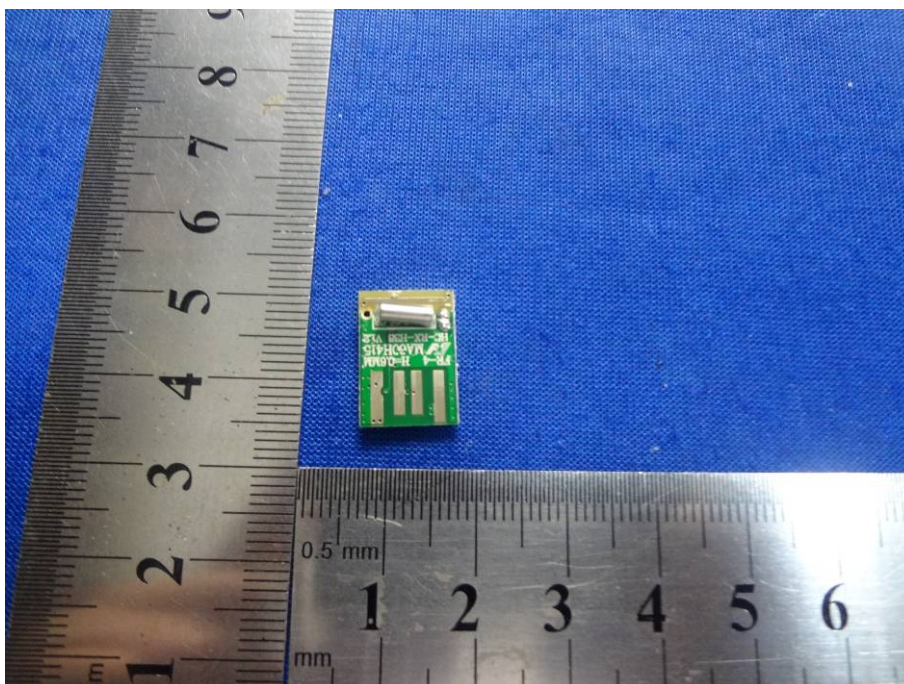
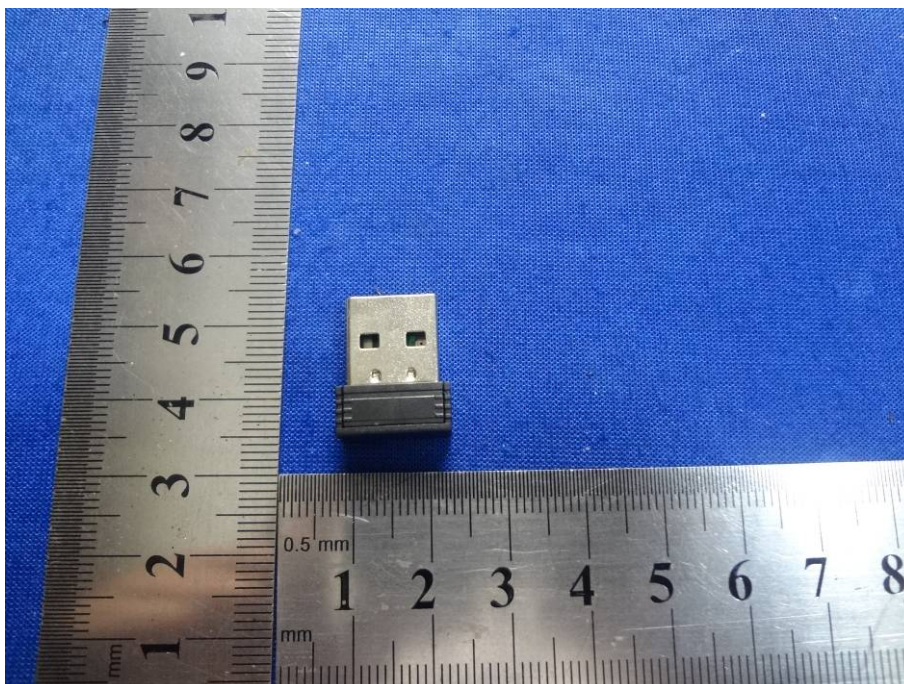


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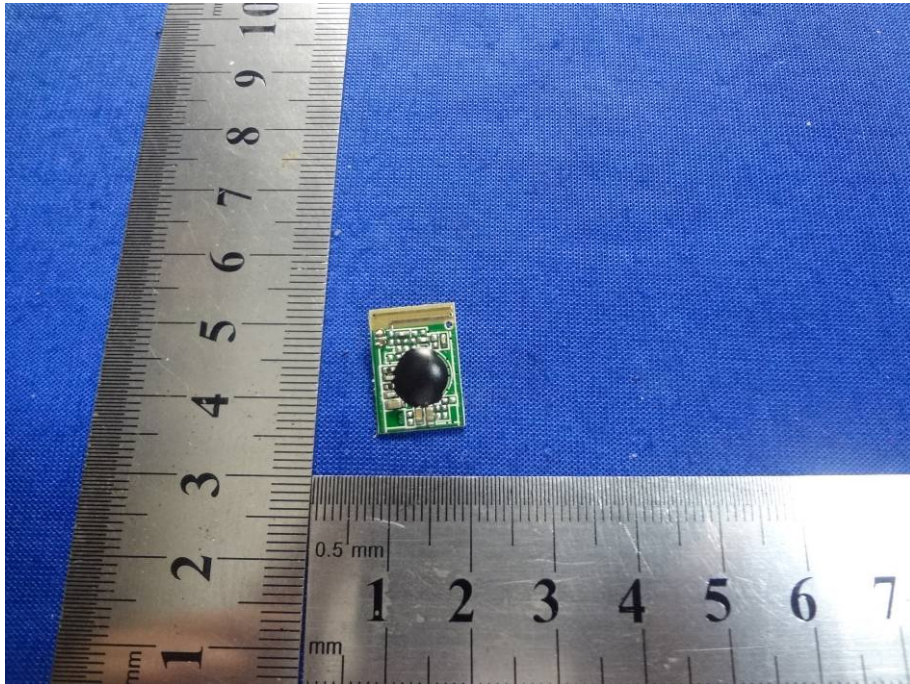


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RX (Host)



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End of the Report