

EMC Test Report

Application No. : TB12032636
Applicant : XINDAO (SHANGHAI) CO., LTD.

Equipment Under Test (EUT)

EUT Name : Beam laser presenter

Model No. : P314.103

Serial No. : No supplied by client

Brand Name : XD

Receipt Date : 2012-03-14

Test Date : 2012-03-14 to 2012-03-16

Issue Date : 2012-03-17

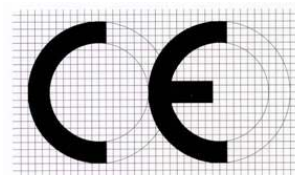
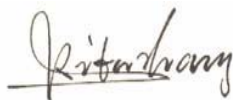
Standards : EN 55022:2006+A1:2007+A2:2010;
EN 55024:2010.

Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above.

The EUT technically complies with the 2004/108/EC directive requirements

Test/Witness Engineer :



Approved & Authorized :



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TABLE OF CONTENTS

1.	GENERAL INFORMATION.....	3
1.1.	Client Information	3
1.2.	General Description of EUT (Equipment Under Test).....	3
1.3.	Block Diagram Showing The Configuration of System Tested	3
1.4.	Description of Support Units.....	4
1.5.	Performance Criterion	4
1.6.	Test Facility	4
2.	TEST RESULTS SUMMARY	5
3.	TEST EQUIPMENT USED	6
3.1.	Test Equipment Used to Measure Conducted Emission	6
3.2.	Test Equipment Used to Measure Radiated Emission	6
3.3.	Test Equipment Used to Measure Harmonic Current/ Voltage Fluctuation and Flicker.....	6
3.4.	Test Equipment Used to Measure Electrostatic Discharge Immunity.....	6
3.5.	Test Equipment Used to Measure Conducted Immunity	6
3.6.	Test Equipment Used to Measure Radio Frequency Electromagnetic Fields Immunity	7
3.7.	Test Equipment Used to Measure Electrical Fast Transient/Burst Immunity	7
3.8.	Test Equipment Used to Measure Surge Immunity	7
3.9.	Test Equipment Used to Measure Voltage Dips and Interruptions Immunity.....	7
3.10.	Test Equipment Used to Measure Power frequency magnetic field	7
4.	RADIATED EMISSION TEST	8
4.1.	Test Standard and Limit	8
4.2.	Test Setup	8
4.3.	Test Procedure	8
4.4.	Test Condition.....	9
4.5.	Test Data	9
5.	ELECTROSTATIC DISCHARGE IMMUNITY TEST	12
5.1.	Test Requirements.....	12
5.2.	Test Setup	12
5.3.	Test Procedure	13
5.4.	Test Data	13
6.	RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST.....	15
6.1.	Test Requirements.....	15
6.2.	Test Setup	15
6.3.	Test Procedure	15
6.4.	Test Data	16
7.	PHOTOGRAPHS - CONSTRUCTIONAL DETAILS.....	18

1. General Information

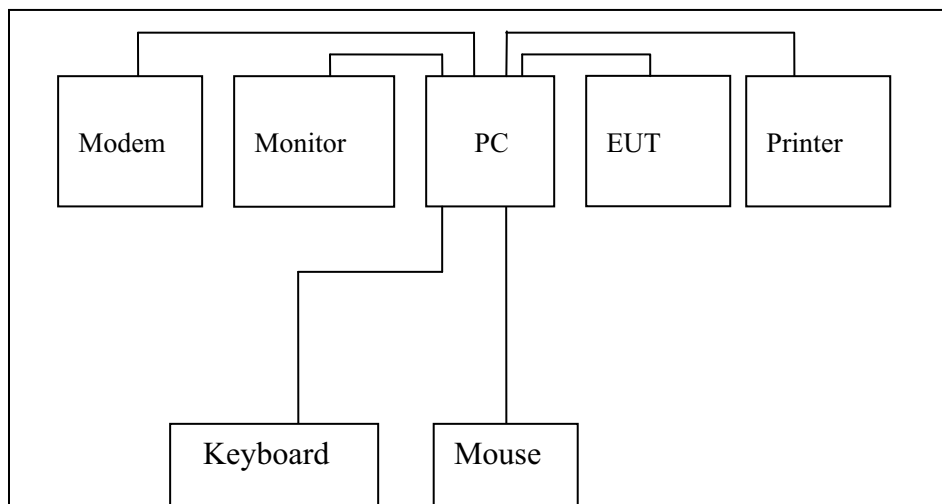
1.1. Client Information

Applicant	:	XINDAO (SHANGHAI) CO., LTD.
Address	:	15 floor, Liziyuan Block, No.4711, Jiaotong Road, Putuo District, Shanghai, China
Manufacturer	:	
Address	:	

1.2. General Description of EUT (Equipment Under Test)

EUT Name	:	Beam laser presenter
Model No.	:	P314.103
Serial No.	:	No supplied by client
Brand Name	:	XD
Power Supply	:	DC 3V, USB 5V

1.3. Block Diagram Showing The Configuration of System Tested



1.4. Description of Support Units

Name	Model	S/N	Manufacturer	Used “√”
Printer	HP1505n	VNF3G06957	HP	√
Modem	RX304Xv2	----	ASUS	√
Adaptor for Modem	PWR-075-U12	----	NE-7GEAR	√
LCD Monitor	E170Sc	----	DELL	√
PC	OPTIPLEX380	----	DELL	√
Keyboard	L100	U01C	DELL	√
Mouse	M-UARDEL7	----	DELL	√

1.5. Performance Criterion

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

1.6. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 10/F., A Block, Jiada R & D Bldg., No.5 Songpingshan Road, Science & Technology Park, Nanshan District, Shenzhen, China. At the time of testing, the following bodies accredited the Laboratory:

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

Jun. 04, 2011 certificated by TUV Rheinland, Shenzhen (Audit Report:17015407-001). The certificate is valid until the next scheduled inspection or up to 18 months, at the discretion of TUV Rhineland.

2. TEST Results Summary

EMISSION		
Description of test items	Standards	Results
Conducted disturbance at mains terminals	EN 55022: 2006+A1:2007 +A2:2010	N/A
Radiated Disturbance	EN 55022: 2006+A1: 2007 +A2:2010	Pass
Harmonic current emissions	EN 61000-3-2: 2006+A2: 2009	N/A
Voltage fluctuation and flicker	EN 61000-3-3: 2008	N/A
IMMUNITY		
Description of test items	Standards	Results
Electrostatic Discharge (ESD)	EN 61000-4-2: 2009	Pass
Radio-frequency, Continuous radiated disturbance	EN61000-4-3:2006+A1:2008 +A2:2010	Pass
EFT/B Immunity	EN 61000-4-4: 2004+A1:2010	N/A
Surge Immunity	EN 61000-4-5: 2006	N/A
Conducted RF Immunity	EN 61000-4-6: 2009	N/A
Power frequency magnetic field	EN 61000-4-8:2010	N/A
Voltage dips, >95% reduction	EN 61000-4-11:2004	N/A
Voltage dips, 30% reduction		
Voltage interruptions		
Note: N/A is an abbreviation for Not Applicable.		

3. Test Equipment Used

3.1. Test Equipment Used to Measure Conducted Emission

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC001	EMI Test Receiver	Rohde & Schwarz	ESCS30	Jan.10, 2012	1 Year
TB-EMC002	AMN	Rohde & Schwarz	ENV216	Jan.10, 2012	1 Year
TB-EMC003	AMN	SCHWARZBECK	NNBL 8226-2	Jan.10, 2012	1 Year

3.2. Test Equipment Used to Measure Radiated Emission

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC004	EMI Test Receiver	Rohde & Schwarz	ESI26	Jan.10, 2012	1 Year
TB-EMC005	Bilog Antenna	SCHWARZBECK	VULB9163	Jan.10, 2012	1 Year
TB-EMC006	Positioning Controller	C&C	CC-C-1F	N/A	N/A

3.3. Test Equipment Used to Measure Harmonic Current/ Voltage Fluctuation and Flicker

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC007	Harmonic Flicker Test System	CI	5001ix-CTS-400	Jan.10, 2012	1 Year

3.4. Test Equipment Used to Measure Electrostatic Discharge Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC008	ESD Tester	TESEQ	NSG437	Jan.10, 2012	1 Year

3.5. Test Equipment Used to Measure Conducted Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC009	RF Generator	FRANKONIA	CIT-10/75	Jan.10, 2012	1 Year
TB-EMC010	Attenuator	FRANKONIA	59-6-33	Jan.10, 2012	1 Year
TB-EMC011	M-CDN	LUTHI	M2/M3	Jan.10, 2012	1 Year
TB-EMC012	CDN	LUTHI	AF2	Jan.10, 2012	1 Year
TB-EMC013	EM Injection Clamp	LUTHI	EM101	Jan.10, 2012	1 Year

3.6. Test Equipment Used to Measure Radio Frequency Electromagnetic Fields Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC014	Signal Generator	Rohde & Schwarz	SMT03	Jan.10, 2012	1 Year
TB-EMC015	Power Meter	Rohde & Schwarz	NRVD	Jan.10, 2012	1 Year
TB-EMC016	Voltage Probe	Rohde & Schwarz	URV5-Z2	Jan.10, 2012	1 Year
TB-EMC017	Voltage Probe	Rohde & Schwarz	URV5-Z2	Jan.10, 2012	1 Year
TB-EMC018	Power Amplifier	AR	150W1000	Jan.10, 2012	1 Year
TB-EMC019	Bilog Antenna	Chase	CBL6111C	Jan.10, 2012	1 Year

3.7. Test Equipment Used to Measure Electrical Fast Transient/Burst Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC020	Simulator	EMTEST	UCS500N5	Jan.10, 2012	1 Year
TB-EMC021	Auto-transformer	EMTEST	V4780S2	Jan.10, 2012	1 Year

3.8. Test Equipment Used to Measure Surge Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC022	Simulator	EMTEST	UCS500N5	Jan.10, 2012	1 Year
TB-EMC023	Coupling Clamp	EMTEST	HFK	Jan.10, 2012	1 Year

3.9. Test Equipment Used to Measure Voltage Dips and Interruptions Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC024	Simulator	EMTEST	UCS500N5	Jan.10, 2012	1 Year
TB-EMC025	Auto-transformer	EMTEST	V4780S2	Jan.10, 2012	1 Year

3.10. Test Equipment Used to Measure Power frequency magnetic field

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
TB-EMC026	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	Jan.10, 2012	1 Year

4. Radiated Emission Test

4.1. Test Standard and Limit

4.1.1. Test Standard

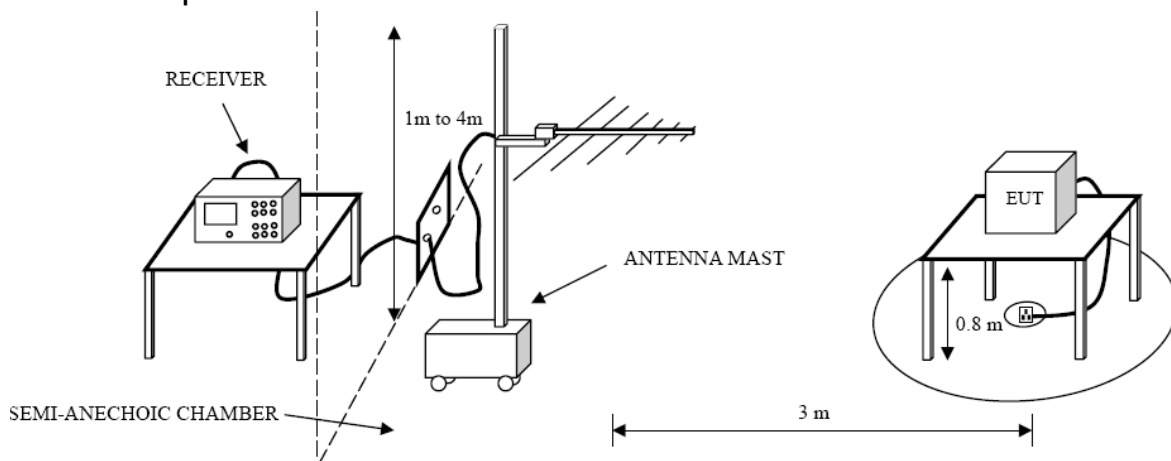
EN 55022:2006+A1:2007+A2:2010

4.1.2. Test Limit

Radiated Disturbance Test Limit (Class B)

Frequency	Limit (dB μ V/m)
	Quasi-peak Level
30MHz~230MHz	40
230MHz~1000MHz	47
Remark: 1. The lower limit shall apply at the transition frequency. 2. The test distance is 3m.	

4.2. Test Setup



4.3. Test Procedure

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

4.4. Test Condition

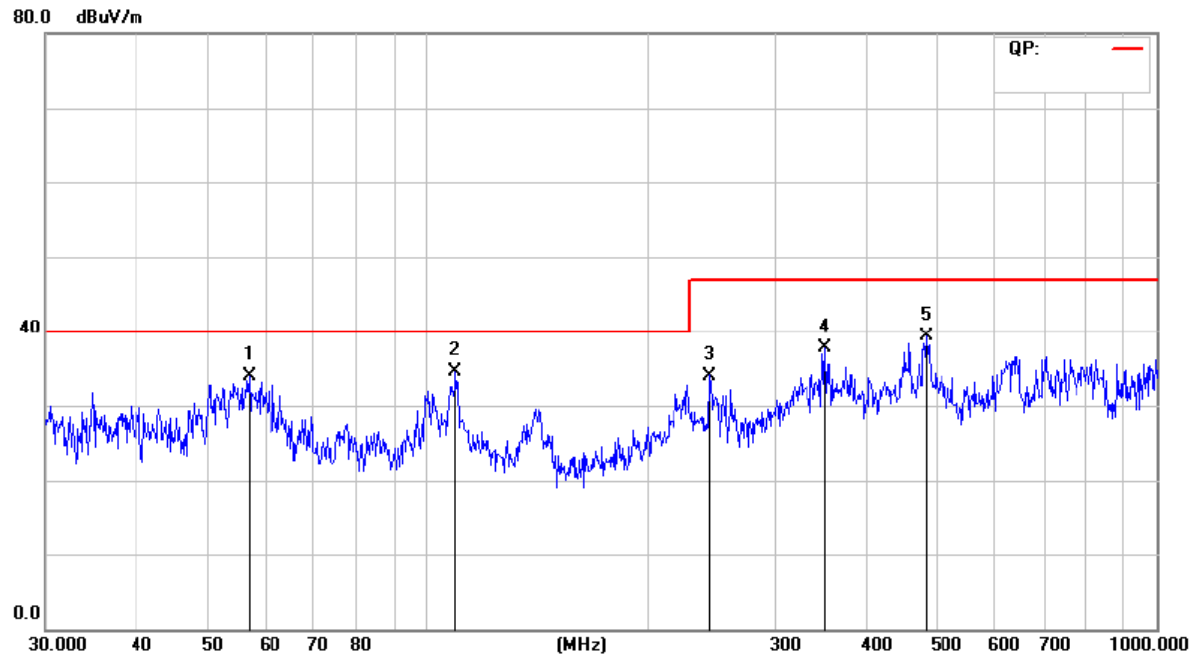
Temperature	:	24 °C
Relative Humidity	:	50 %
Pressure	:	1010 hPa
Test Power	:	USB 5V

4.5. Test Data

Please refer to the following pages.

Operating Condition: Connect to PC

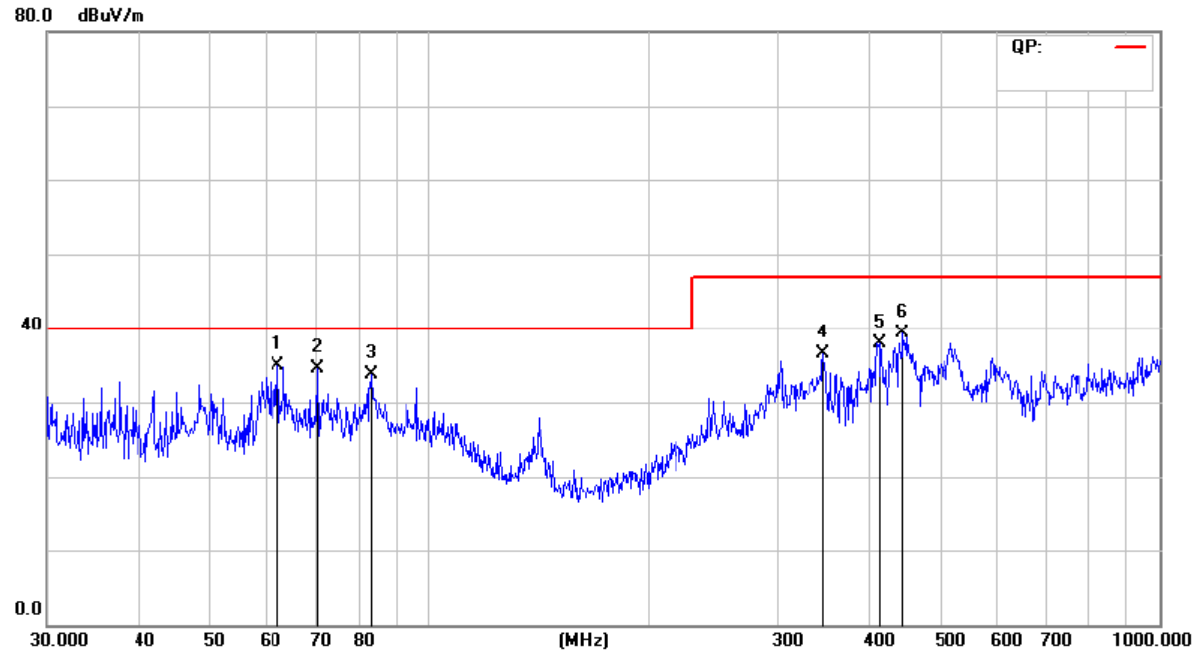
Test Specification: Horizontal



No.	Mk.	Freq.	Level	Factor	ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		56.9912	10.98	22.89	33.87	40.00	-6.13	peak
2	*	109.4116	17.27	17.30	34.57	40.00	-5.43	peak
3		244.2321	16.13	17.87	34.00	47.00	-13.00	peak
4		351.7079	16.29	21.41	37.70	47.00	-9.30	peak
5		482.2156	16.02	23.35	39.37	47.00	-7.63	peak

Operating Condition: Connect to PC

Test Specification: Vertical



No.	Mk.	Freq.	Level	Factor	ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	61.9951	21.95	13.04	34.99	40.00	-5.01	peak
2		70.3365	24.68	9.77	34.45	40.00	-5.55	peak
3		83.2298	24.68	8.93	33.61	40.00	-6.39	peak
4		346.8092	23.86	12.56	36.42	47.00	-10.58	peak
5		413.2706	24.22	13.77	37.99	47.00	-9.01	peak
6		444.8514	25.67	13.72	39.39	47.00	-7.61	peak

5. Electrostatic Discharge Immunity Test

5.1. Test Requirements

5.1.1. Test Standard

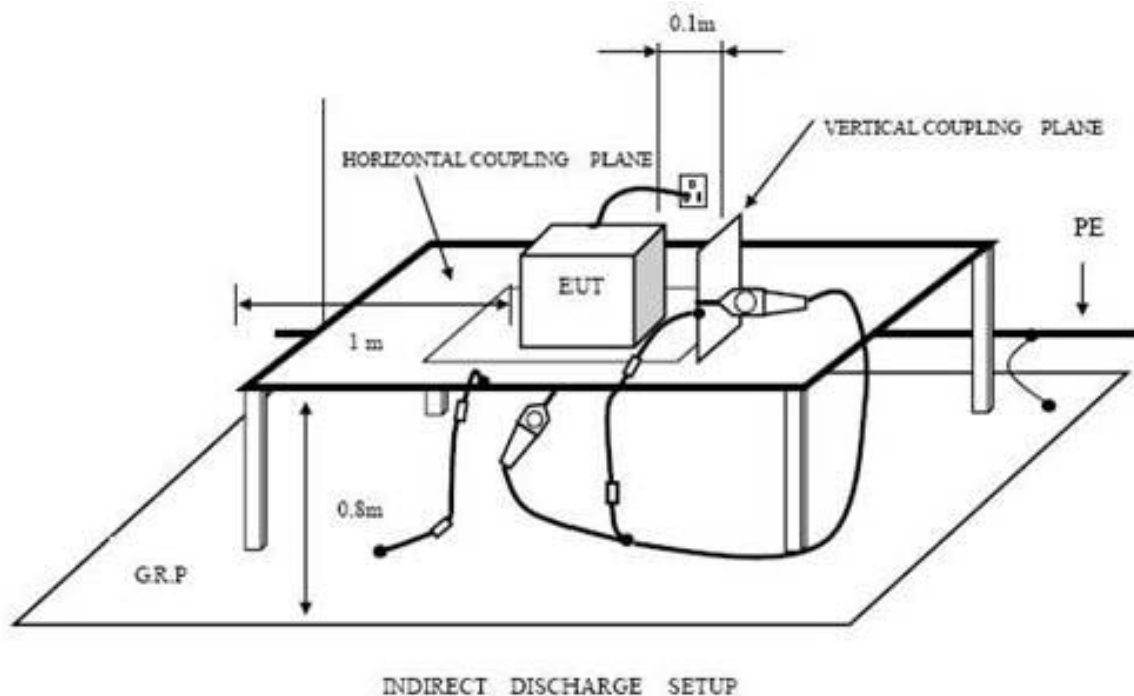
EN 55024:2010 (EN 61000-4-2:2009)

5.1.2. Test 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

5.1.3. Performance criterion: **B**

5.2. Test Setup



5.3. Test Procedure

5.3.1. 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.

5.3.2. Contact Discharge:

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

5.3.3. 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.

5.3.4. 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.

5.4. Test Data

Please refer to the following pages.

Electrostatic Discharge Test Result

EUT	: Beam laser presenter	M/N	: P314.103
Temperature	: 24℃	Humidity	: 50%
Power supply	: USB 5V	Test Mode	: Connect to PC
Criterion: B			
Air Discharge: $\pm 8\text{kV}$ Contact Discharge: $\pm 4\text{kV}$			
For each point positive 10 times and negative 10 times discharge.			
Location	Kind A-Air Discharge C-Contact Discharge		Result
Slot of the EUT	A		PASS
Nonconductive Enclosure	A		PASS
Button	A		PASS
HCP	C		PASS
VCP of front	C		PASS
VCP of rear	C		PASS
VCP of left	C		PASS
VCP of right	C		PASS

6. Radiated Electromagnetic Field Immunity Test

6.1. Test Requirements

6.1.1. Test Standard

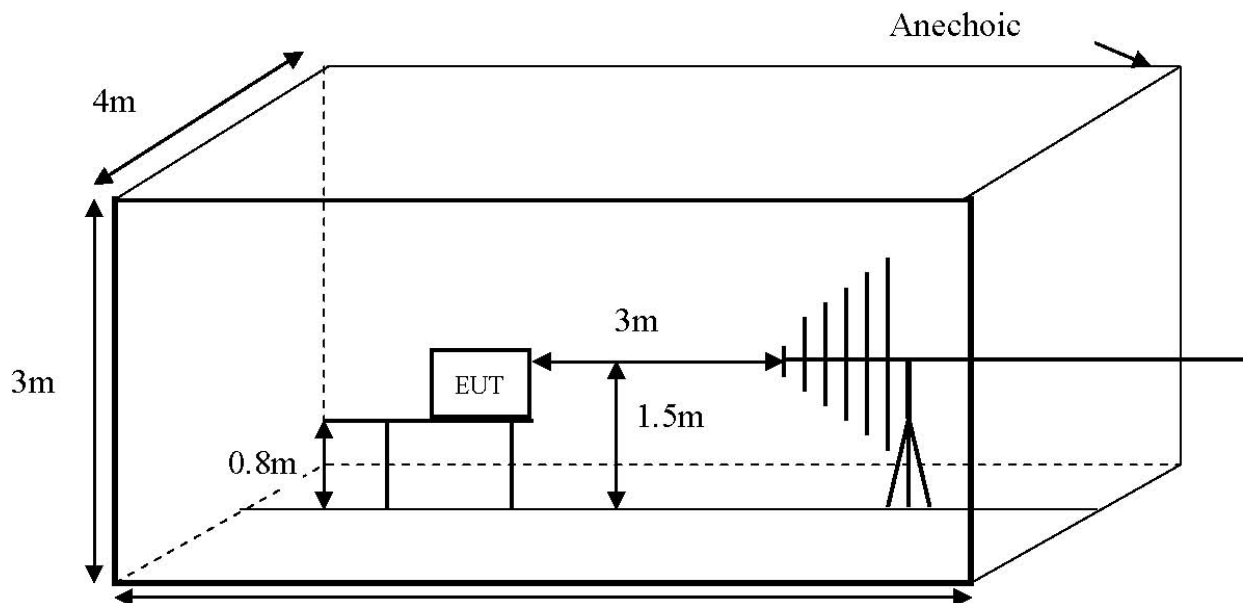
EN 55024:2010 (EN61000-4-3:2006+A1:2008+A2:2010)

6.1.2. Test Level

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

6.1.3. Performance criterion: A

6.2. Test Setup



6.3. 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 is 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 camera is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
Fielded strength	3V/m (Severity Level 2)
Radiated signal	Modulated
Scanning frequency	80-1000MHz
Sweep time of radiated	0.0015 Decade/s
Dwell time	1 Sec.

6.4. Test Data

Please refer to the following pages.

RF Field Strength Susceptibility Test Results

EUT	:	Beam laser presenter	M/N	:	P314.103
Temperature	:	24℃	Humidity	:	50%
Power supply	:	USB 5V	Test Mode	:	Connect to PC
Criterion: A					
Modulation: Unmodulated					
Pulse: AM 1KHz 80%					
	Frequency Range 1			Frequency Range 2	
	80~1000MHz			/	
	Horizontal	Vertical	Horizontal	Vertical	
Front	PASS	PASS	/	/	
Right	PASS	PASS	/	/	
Rear	PASS	PASS	/	/	
Left	PASS	PASS	/	/	

7. Photographs - Constructional Details

Photo 1 Appearance of EUT

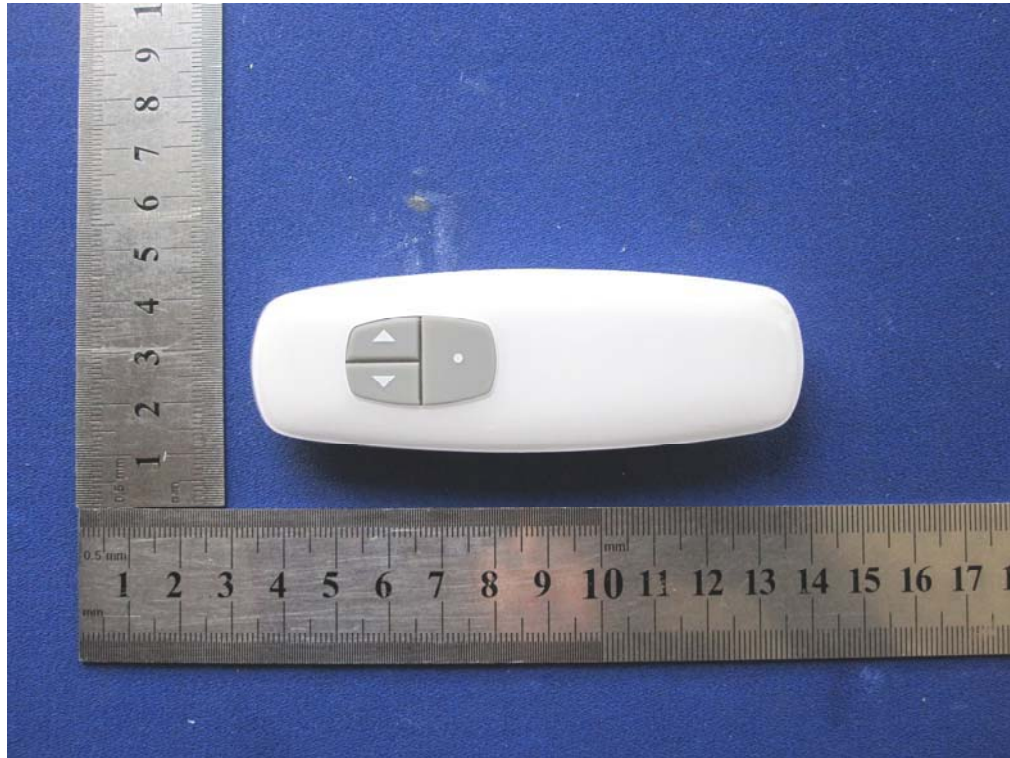


Photo 2 Appearance of EUT



Photo 3 Inside of EUT

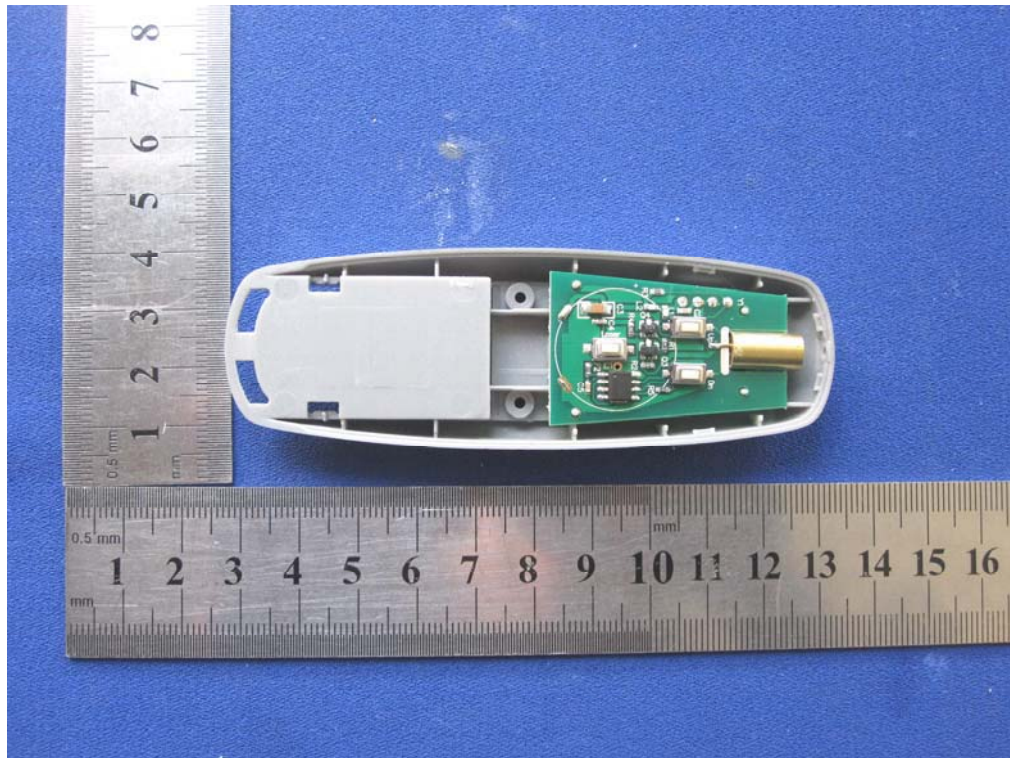


Photo 4 Inside of EUT

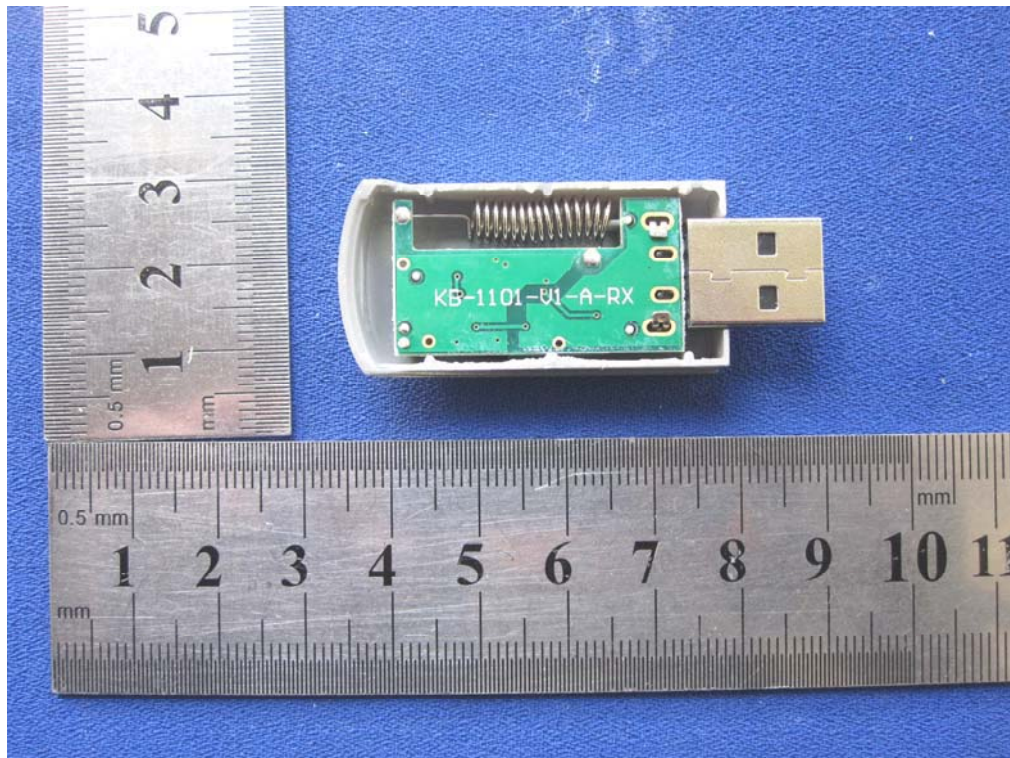


Photo 5 Appearance of PCB

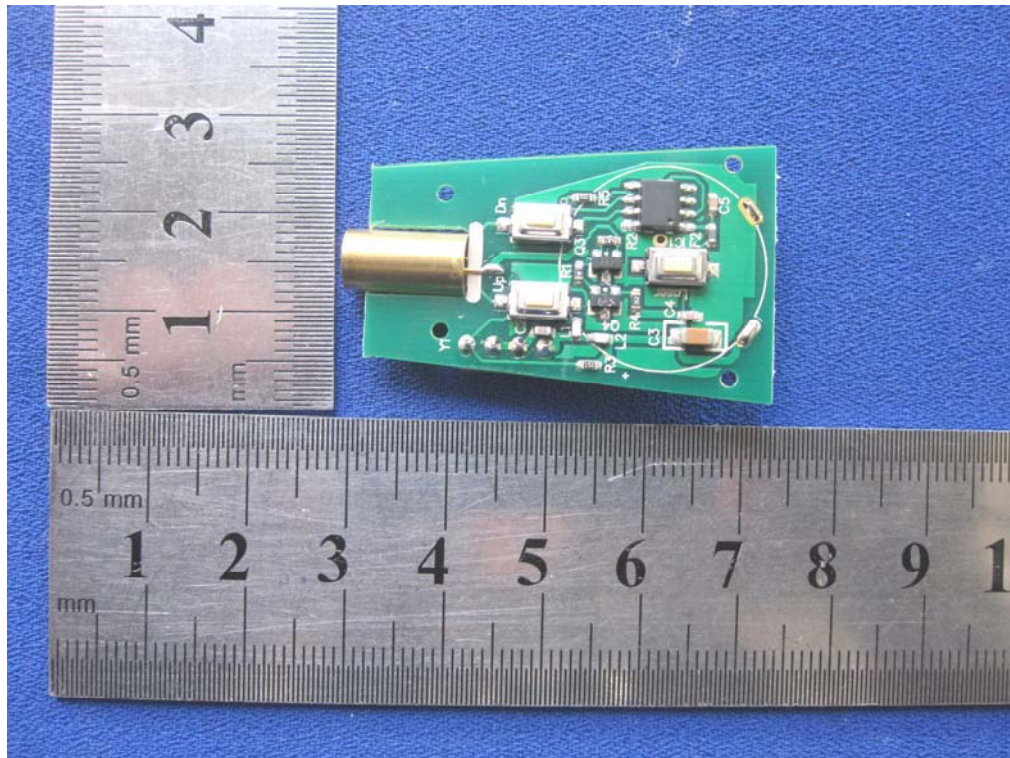


Photo 6 Appearance of PCB

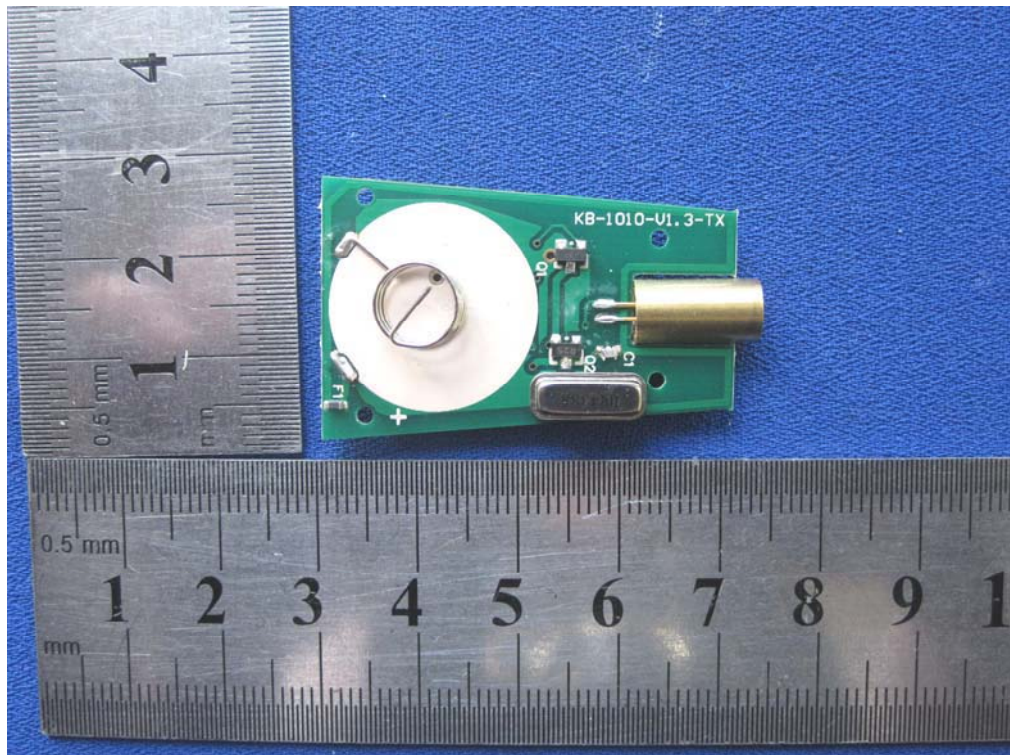


Photo 7 Appearance of PCB

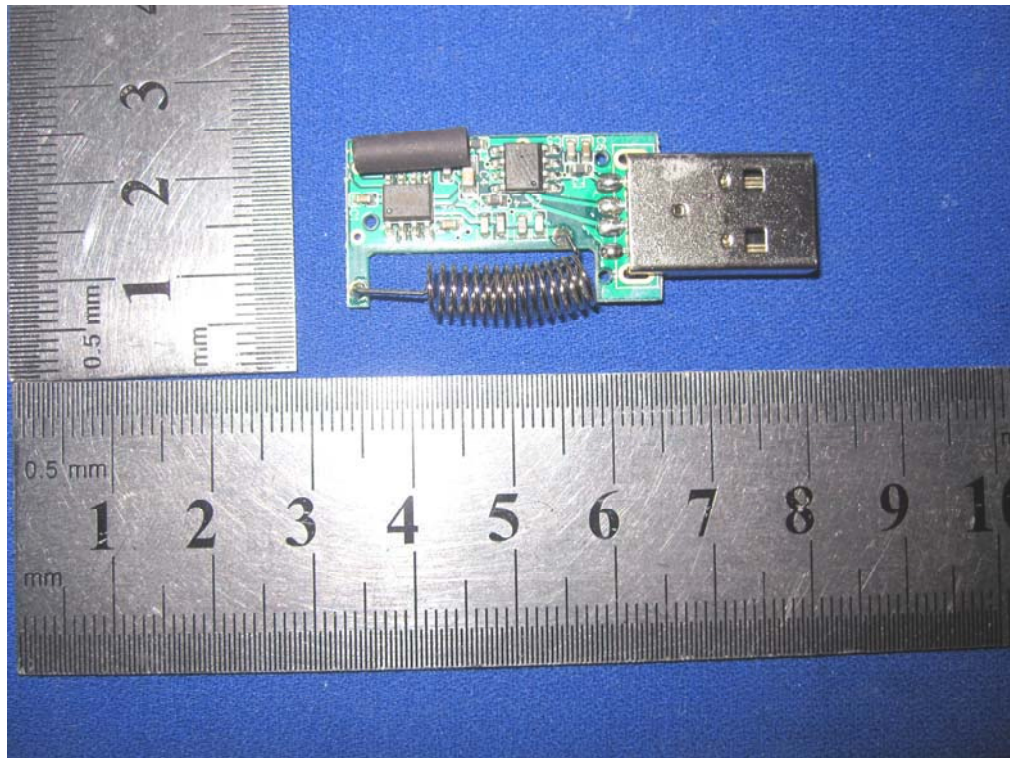
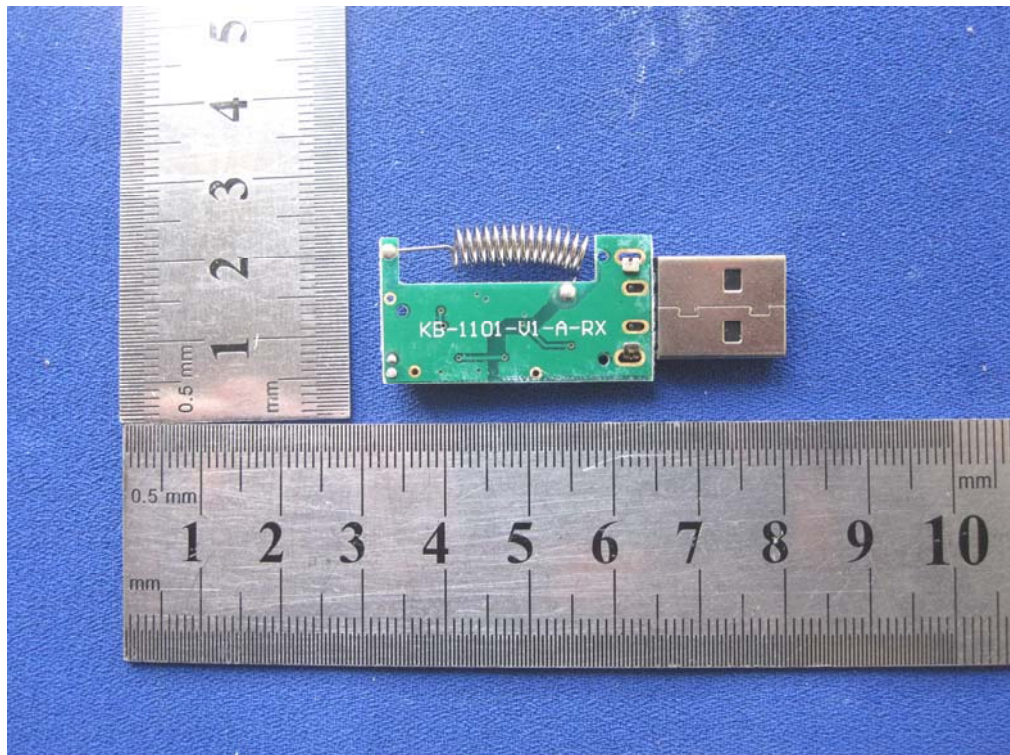


Photo 8 Appearance of PCB



8. Photographs – Test Setup

Photo 1 Radiated Emission Test Setup



Photo 2 Electrostatic Discharge Test Setup

