CE

EMC COMPLIANCE TEST REPORT

For

USB 3.0 10M ACTIVE EXTENSION CABLE

Trade Name: UNITEK
Model Number: Y-3018
Report Number: SZ1402023-E
Date: March 7, 2014
Regulations: See below

Standards	Results (Pass/Fail)
EN 55022: 2010	PASS
EN 55024: 2010	PASS
-EN61000-4-2: 2009	PASS
-EN61000-4-3: 2006+A1:2008+A2:2010	PASS

Prepared for：

TECH-TOP TECHNOLOGY LIMITED
ROOM 3, 10/F, BLOCK A, TONIC INDUSTRIAL CENTRE, 26 KAI CHENG ROAD, KOWLOON BAY, HONG KONG

Prepared by：

SEC ENGINEERING SERVICE CO., LTD
21A, BLDG C, SHENNAN GARDEN, SCIENCE＆TECHNOLOGY PARK
SHENZHEN, GUANGDONG, CHINA
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TABLE OF CONTENTS

1 VERIFICATION OF COMPLIANCE

Equipment Under Test:	USB 3.0 10M ACTIVE EXTENSION CABLE
Trade Name:	UNITEK
Model Number:	Y-3018
Serial Number:	N/A
EUT Powered during test:	5V from PC
Applicant:	TECH-TOP TECHNOLOGY LIMITED ROOM 3, 10/F, BLOCK A, TONIC INDUSTRIAL CENTRE, 26 KAI CHENG ROAD, KOWLOON BAY, HONG KONG
Manufacturer:	OCEAN COMPUTER TECHNOLOGY (SHEN ZHEN) CO., LTD. BLOCK 1, NO. 6 INDUSTRIAL ZONE, YU LV VILLAGE, GONG MING TOWN, BAO'AN DISTRICT, SHEN ZHEN
Type of Test:	EMC Directive 2004/108/EC for CE Marking
Technical Standards:	EN 55022: 2010 EN 55024: 2010 -EN61000-4-2: 2009 -EN61000-4-3: 2006+A1:2008+A2:2010
File Number:	SZ1402023-E
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by SEC Engineering Service Co., Ltd for compliance with the requirements set forth in Directive 2004/108/EC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Approved by Authorized Signatory: SEC Engineering Service Co., Ltd. Approval

Jack/ Manager

2 SYSTEM DESCRIPTION

EUT Test Program:

1. The EUT was connected to PC via USB port.
2. PC was load and executed in Windows XP system.
3. Set up other relative support equipments and work normally during test
4. Keep the EUT working throughout testing.

3 PRODUCT INFORMATION

Housing Type: Plastic
Power during test: 5V from PC

I/O Port of EUT:

I/O Port Type	Q'TY	Tested with
USB3.0 Female	1	1
USB3.0 Male	1	1

Difference between model numbers as below: N/A

4 SUPPORT EQUIPMENT

No.	Equipment	Model #	Trade Name	Data Cable	Power Cord
1)	PC	OPTIPLEX 755	DELL	N/A	Unshielded 1.8m
2)	Keyboard	SK-8115	DELL	Shielded 1.8m	N/A
3)	LCD Monitor	E1909WF	DELL	Shielded 1.5 m	Unshielded 1.8m
4)	Mouse	MOC5110	DELL	Shielded 1.5m	N/A
5)	LCD Monitor		AOC	Shielded 1.5 m	Unshielded 1.8m

****Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

5 TEST FACILITY

Location: No.1 Workshop, M-10, Middle Section, Science& Technology Park, Shenzhen, China

Description: There are one 3 chamber and one line conducted labs for final test. The 3m chamber and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

Site Accreditation: Accredited by FCC, December 09, 2002
The Certificate Registration Number. is 709623
Accredited by Industry Canada, January 8, 2003
The Certificate Registration Number. is 46405-4480
Accredited by TUV Rheinland Group, January , 2005

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

6 TEST EQUIPMENT LIST

Instrumentation: The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

Equipment used during the tests:

For Conducted Emission Test

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1	L.I.S.N.	ETS-LINDGREN	SEL0021	18-06-2013	17-06-2014
2	EMI Test Receiver	Rohde& Schwarz	SEL0022	18-06-2013	17-06-2014
3	Shielding Room	ZhongYu Electron	SEL0042	N/A	N/A
4	Coaxial Cable	SGS	SEL0024	18-06-2013	17-06-2014
5	ISN	Rohde&Schwarz	EMC0114	18-06-2013	17-06-2014
6	ISN	Rohde&Schwarz	EMC0115	18-06-2013	17-06-2014

For Radiated Emission Test

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1	3m Semi-Anechoic	ETS-LINDGREN	SEL0017	16-06-2013	15-06-2014
2	EMI Test Receiver	Rohde&Schwarz	SEL0023	12-12-2013	11-12-2014
3	EMI Test software	AUDIX	SEL0050	N/A	N/A
4	BiConiLog Antenna	ETS-LINDGREN	SEL0014	12-08-2013	11-08-2014
5	Double-ridged horn	ETS-LINDGREN	SEL0005	25-12-2013	24-12-2014
6	Coaxial cable	SGS	SEL0028	18-06-2013	17-06-2014
7	Pre-amplifer (0.1-1300MHz)	Agilent Technologies	SEL0053	18-06-2013	17-06-2014
8	Horn Antenna(18-26GHz)	ETS-LINDGREN	SEL0076	12-08-2013	11-08-2014
09	Pre-amplifer(1-18GHz)	Rohde&Schwarz	SEL0081	18-06-2013	17-06-2014
10	Pre-amplifer(18-26GHz)	Rohde&Schwarz	SEL0080	18-06-2013	17-06-2014
11	Band filter	Amindeon	SEL0094	18-06-2013	17-06-2014
12	Active Loop Antenna	Beijing Daze	SEL0097	15-06-2013	14-06-2014

For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1.	ESD Simulator	Thermo	SEL0012	03-04-2013	02-04-2014
	ESD Ground Plane	SGS(3m*3m)	SEL0004	N/A	N/A

For Conducted Immunity Test

1.	RF-Generator	SCHAFFNER	SEL0039	12-12-2013	11-12-2014
2.	Coupling/Decoupling Network	SCHAFFNER	SEL0040	12-12-2013	11-12-2014
3.	EM CLAMP	SCHAFFNER	SEL0041	12-12-2013	11-12-2014

For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1.	3m Semi-Anechoic Chamber	ETS-LINDGREN	SEL0017	16-06-2013	15-06-2014
2.	Signal Generator	Rohde& Schwarz	SEL0068	18-06-2013	17-06-2014
3.	Amplifier 30M-1GHz	Amplifier Research	SEL0066	12-12-2013	11-12-2014
4.	Amplifier 0.8-3.0GHz	Amplifier Research	SEL0065	12-12-2013	11-12-2014
5	Power Meter	Rohde& Schwarz	SEL0069	18-06-2013	17-06-2014
6	Power Sensor	Rohde& Schwarz	SEL0071	18-06-2013	17-06-2014
7	Power Sensor	Rohde& Schwarz	SEL0072	18-06-2013	17-06-2014
8	Software EMC32	Rohde& Schwarz	SEL0082	N/A	N/A
9	Log-periodic Antenna	Amplifier Research	SEL0073	N/A	N/A
10	Antenna Tripod	Amplifier Research	SEL0074	N/A	N/A
11	High Gain Horn Antenna(0.8-5GHz)	Amplifier Research	SEL0075	N/A	N/A

For Electrical Fast Transient/Burst Immunity, Surge, Voltage dips and Interruptions Test

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1.	ProPLUS System	Thermo ELECTRON	SEL0007	12-12-2013	11-12-2014
2	ProPLUS Capacitive Clamp	Thermo ELECTRON	SEL0008	N/A	N/A
3	CM-HCOIL H-field loop	Thermo ELECTRON	SEL0010	12-12-2013	11-12-2014

For General Used Equipment

Item	Equipment	Manufacturer	Serial No.	Last Cal.	Cal. Interval
1.	Humidity/Temperature Indicator	Shanghai	SEL0101 to SEL0103	12-12-2013	11-12-2014
2.	Barometer	Changchun	SEL0088	11-07-2013	10-07-2014

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

7 TEST RESULTS

7.1 LINE CONDUCTED AND RADIATED EMISSION

7.1.1 LINE CONDUCTED EMISSION

7.1.1.1 PRELIMINARY LINE CONDUCTED EMISSION TEST

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When 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 EN55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per EN55022.
3) All I/O cables were positioned to simulate typical actual usage as per EN55022.
4) The EUT received DC power from PC, and PC received AC230V/50Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5) All support equipments received power from a second LISN supplying power of AC 230V/50Hz, 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 150kHz to 30MHz for emissions in each of the test modes.
8) During the above scans, the emissions were maximized by cable manipulation.
9) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test			
Frequency Range Investigated		150KHz TO 30 MHz	
Mode of operation	Date	Data Report No.	Worst Mode

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

7.1.1.2 FINAL LINE CONDUCTED EMISSION TEST

1) EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.
2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using an Average detector.
3) The test data of the worst case condition(s) was reported on the Summary Data page.

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

NOTE: Line conducted emission test is not applied since the EUT is not AC main powered directly.

7.1.2 RADIATED EMISSION TEST

7.1.2.1 PRELIMINARY RADIATED EMISSION TEST

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used).When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per EN 55022.
3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.
4) The EUT received DC power from PC, and PC received AC 230V/50Hz through the outlet socket under the turntable. All support equipments received AC 230V/50Hz power from socket under the turntable, if any.
5) The antenna was placed at 3 meter away from the EUT as stated in EN 55022. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
7) The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test			
Frequency Range Investigated		30 MHz TO 1000 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
WORKING	2014/2/22	Y-3018(H,V)	☒

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

7.1.2.2 FINAL RADIATED EMISSION TEST

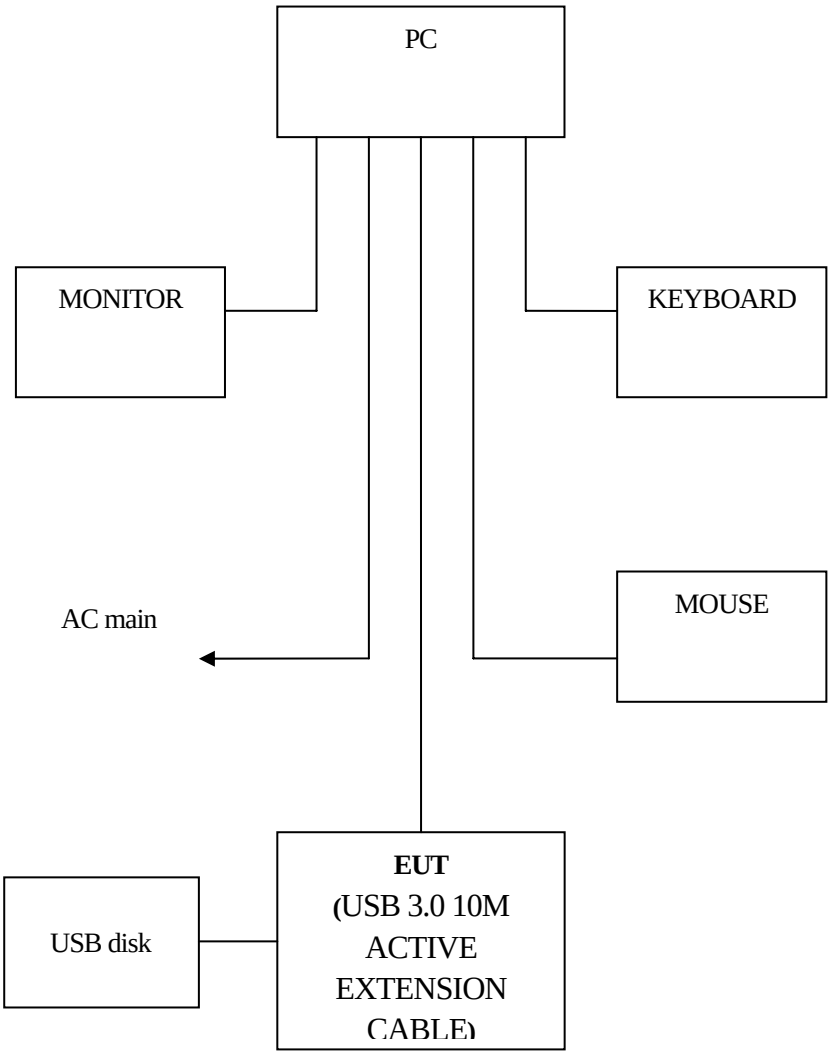
1) EUT and support equipment were set up on the turntable as per step 7 of the preliminary test.
2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30-230	3	40
230-1000	3	47

7.1.3 **Block Diagram of Test Setup**

EUT : USB 3.0 10M ACTIVE EXTENSION CABLE
Trade Name : UNITEK
Model Number : Y-3018

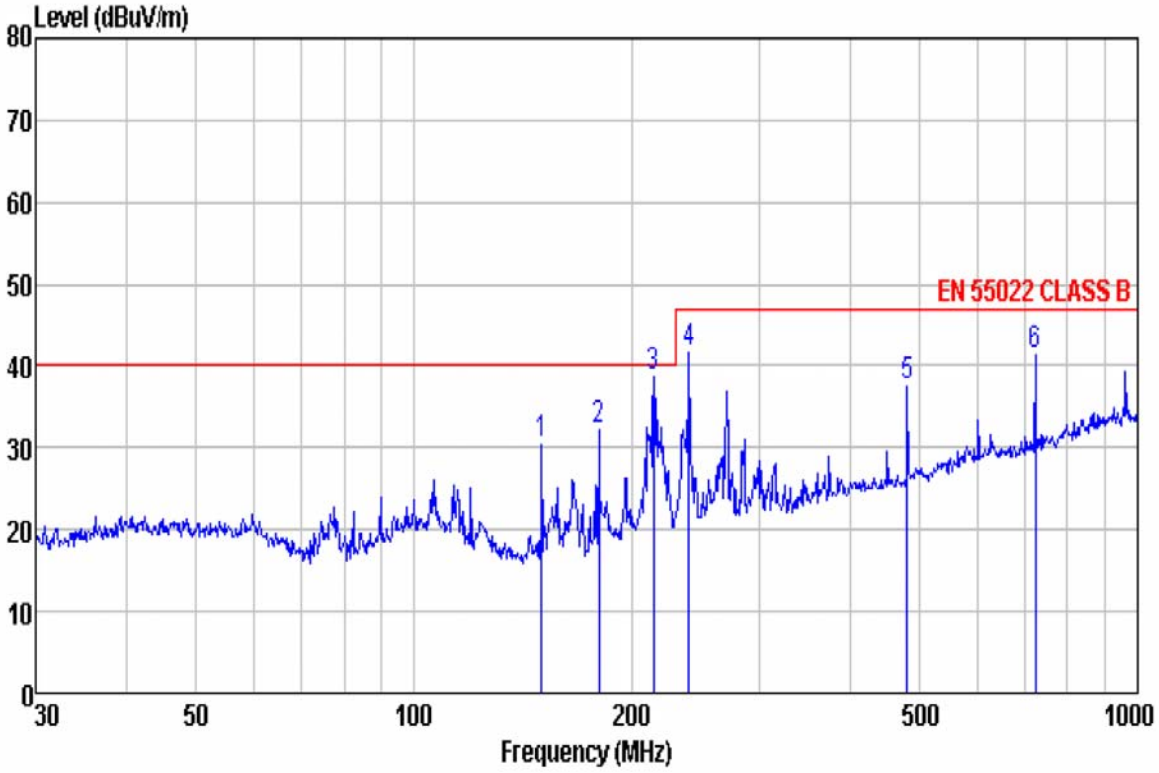


7.1.4 **Summary Data**

Model Number: Y-3018 **Location:** Chamber

Tested by: Ying **Polar:** Horizontal

Test Mode: Working **Detector Function:** Peak/QP



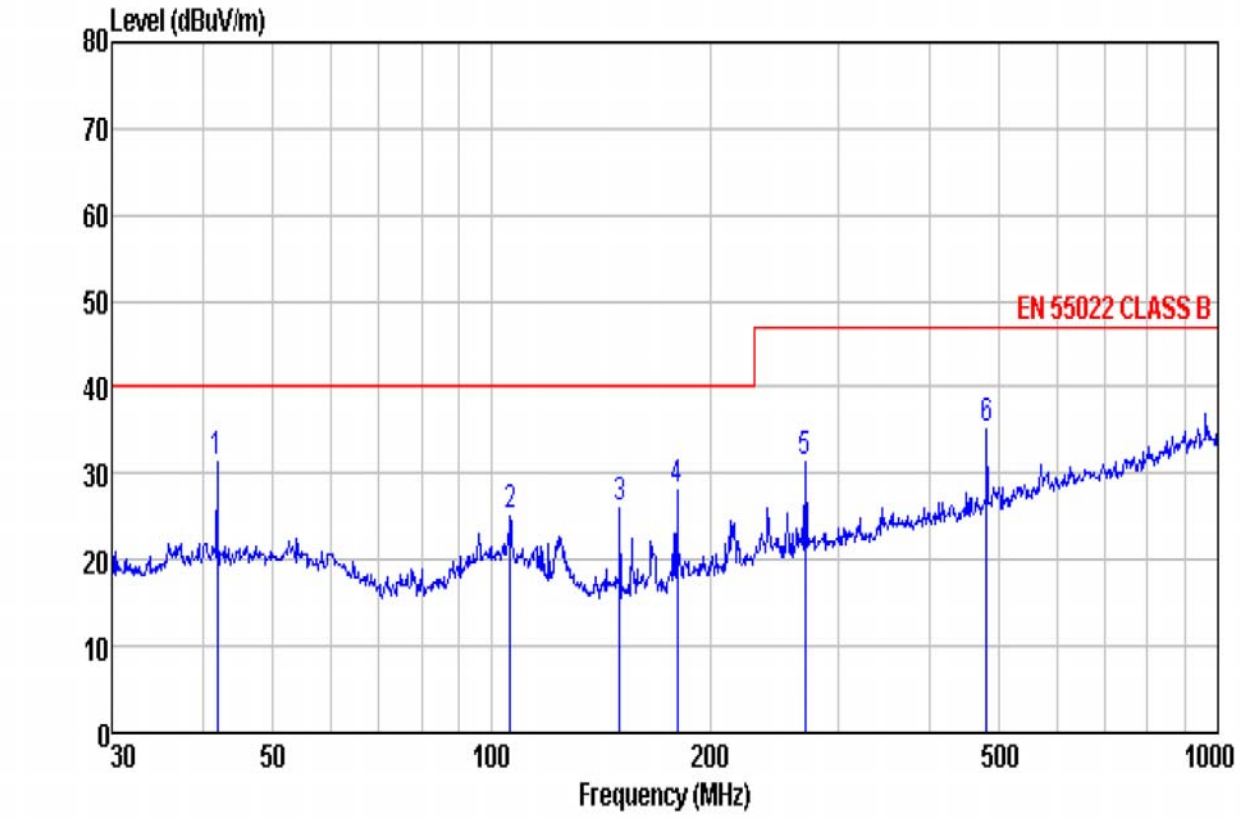
Site : 3m chamber
Condition : EN 55022 CLASS B 3m VULB9163-2013M HORIZONTAL
EUT : USB 3.0 10M EXTENSION CABLE
Model : Y-3018
Test mode :
Power Rating : AC 230V/50Hz
Test Engineer: ying
Remark :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	150.011	50.60	10.26	1.57	31.98	30.45	40.00	-9.55	Peak
2	180.017	50.84	11.68	1.74	32.08	32.18	40.00	-7.82	Peak
3	214.514	55.95	13.03	1.93	32.15	38.76	40.00	-1.24	Peak
4	239.987	57.57	14.09	2.07	32.16	41.57	47.00	-5.43	Peak
5	480.528	47.87	18.07	3.22	31.62	37.54	47.00	-9.46	Peak
6	721.726	47.14	21.10	4.17	31.22	41.19	47.00	-5.81	Peak

Model Number: Y-3018 **Location:** Chamber

Tested by: Ying **Polar:** Vertical

Test Mode: Working **Detector Function:** Peak/QP



Site : 3m chamber
Condition : EN 55022 CLASS B 3m VULB9163-2013M VERTICAL
EUT : USB 3.0 10M EXTENSION CABLE
Model : Y-3018
Test mode :
Power Rating : AC 230V/50Hz
Test Engineer: ying
Remark :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	41.860	47.21	15.57	0.68	32.04	31.42	40.00	-8.58	Peak
2	106.013	41.19	14.59	1.25	31.79	25.24	40.00	-14.76	Peak
3	150.011	46.20	10.26	1.57	31.98	26.05	40.00	-13.95	Peak
4	180.017	46.83	11.68	1.74	32.08	28.17	40.00	-11.83	Peak
5	270.375	46.89	14.38	2.22	32.17	31.32	47.00	-15.68	Peak
6	480.528	45.57	18.07	3.22	31.62	35.24	47.00	-11.76	Peak

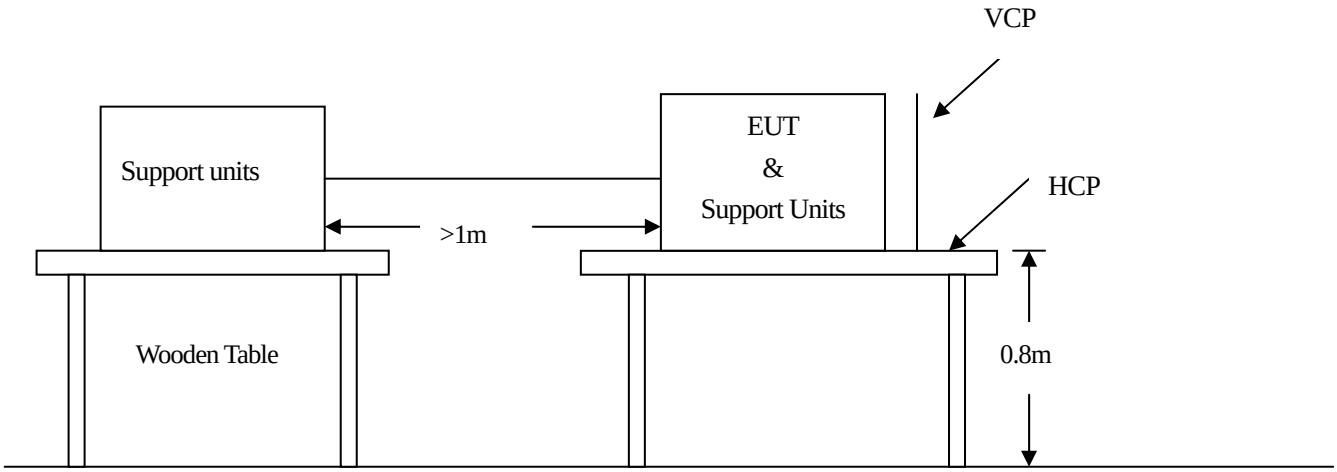
7.2 ELECTROSTATIC DISCHARGE

7.2.1 ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	**:**	Enclosure
Basic Standard	**:**	EN 61000-4-2
Test Level	**:**	± 8 kV (Air Discharge)
		± 4 kV (Contact Discharge)
		± 4 kV (Indirect Discharge)
Performance Criteria	**:**	B (Standard require)
Temperature	**:**	20°C
Humidity	**:**	55%

7.2.2 Block Diagram of Test Setup

(The 470 k ohm resistors are installed per standard requirement)



7.2.3 **Test Procedure**

1. The EUT was located 0.1 m minimum from all side of the HCP.
2. Set up the EUT with the support equipment.
3. EUT was loaded and executed in windows XP mode.
4. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge(contact) to the front edge of horizontal coupling plane.
5. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
6. The application of ESD to the contact of open connectors is not required.
7. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

Note: As per the A2 to EN 61000-4-2, a bleed resistor cable is connected between the EUT and HCP during the test.

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
Mini 25 /Point	±4kV	Contact Discharge	Pass
Mini 25 /Point	±4kV	Indirect Discharge HCP (Front)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Left)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Back)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Right)	Pass
Mini 10 /Point	±8kV	Air Discharge	Pass

7.2.4 **Performance & Result**

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

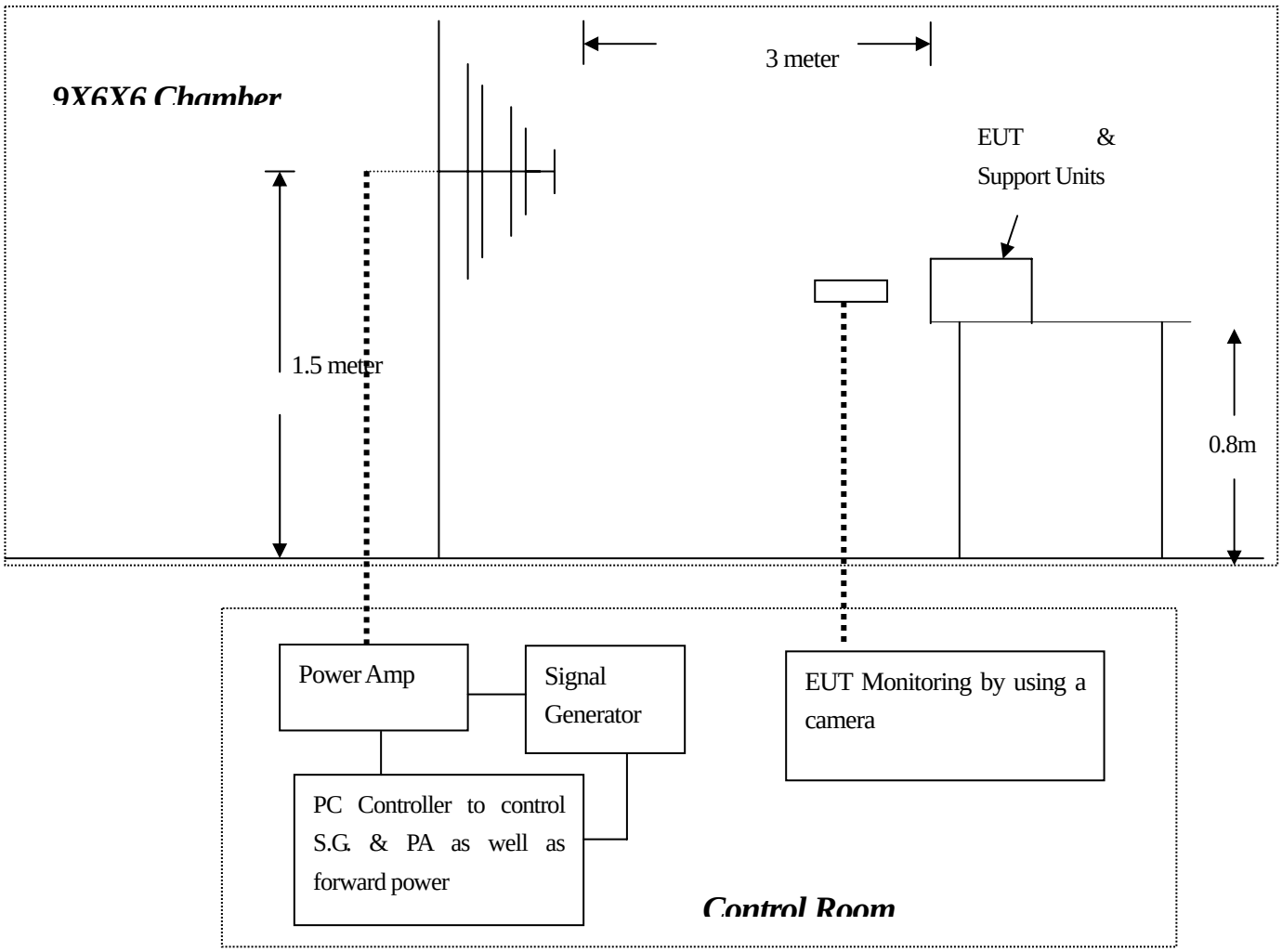
☑ ***PASS***	☐ ***FAILED***

7.3 RADIATED ELECTROMAGNETIC FIELD

7.3.1 RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	**:**	Enclosure
Basic Standard	**:**	EN 61000-4-3
Requirements	**:**	3 V/m with 80% AM. 1kHz Modulation.
Performance Criteria	**:**	A (Standard require)
Temperature	**:**	20°C
Humidity	**:**	55%

7.3.2 Block Diagram of Test Setup



7.3.3 **Test Procedure**

1. The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per EN 61000-4-3.
2. EUT was loaded and executed in windows XP mode.
3. Setting the testing parameters of RS test software per EN 61000-4-3.
4. Performing the pre-test at each side of with double specified level (6V/m) at 4% steps.
5. From the result of pre-test in step 4, choose the worst side of EUT for final test from 80 MHz to 1000 MHz at 1% steps.
6. Recording the test result in following table.
7. It is not necessary to perform test as per annex A of EN 55024 if the EUT doesn't belong to TTE product.

EN 61000-4-3 Preliminary test conditions:

Test level : 6V/m

Steps : 4 % of fundamental

Dwell Time : 1 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	6V/m	Yes	H	Front	Pass
80-1000	6V/m	Yes	V	Front	Pass
80-1000	6V/m	Yes	H	Right	Pass
80-1000	6V/m	Yes	V	Right	Pass
80-1000	6V/m	Yes	H	Back	Pass
80-1000	6V/m	Yes	V	Back	Pass
80-1000	6V/m	Yes	H	Left	Pass
80-1000	6V/m	Yes	V	Left	Pass

EN 61000-4-3 Final test conditions:

Test level : 3V/m

Steps : 1 % of fundamental

Dwell Time : 1 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	3V/m	Yes	H	Right	Pass
80-1000	3V/m	Yes	V	Right	Pass

7.3.4 **Performance & Result**

[V] **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

[ ] **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

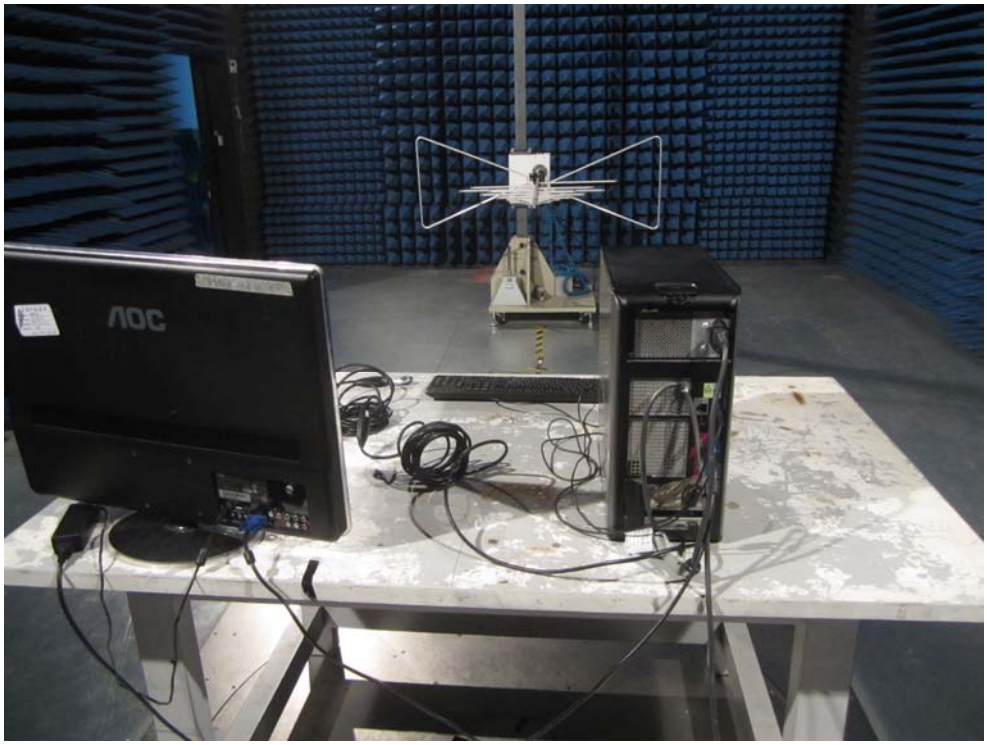
[ ] **Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

[V] ***PASS*** [ ] ***FAILED***

8 PHOTOGRAPHS

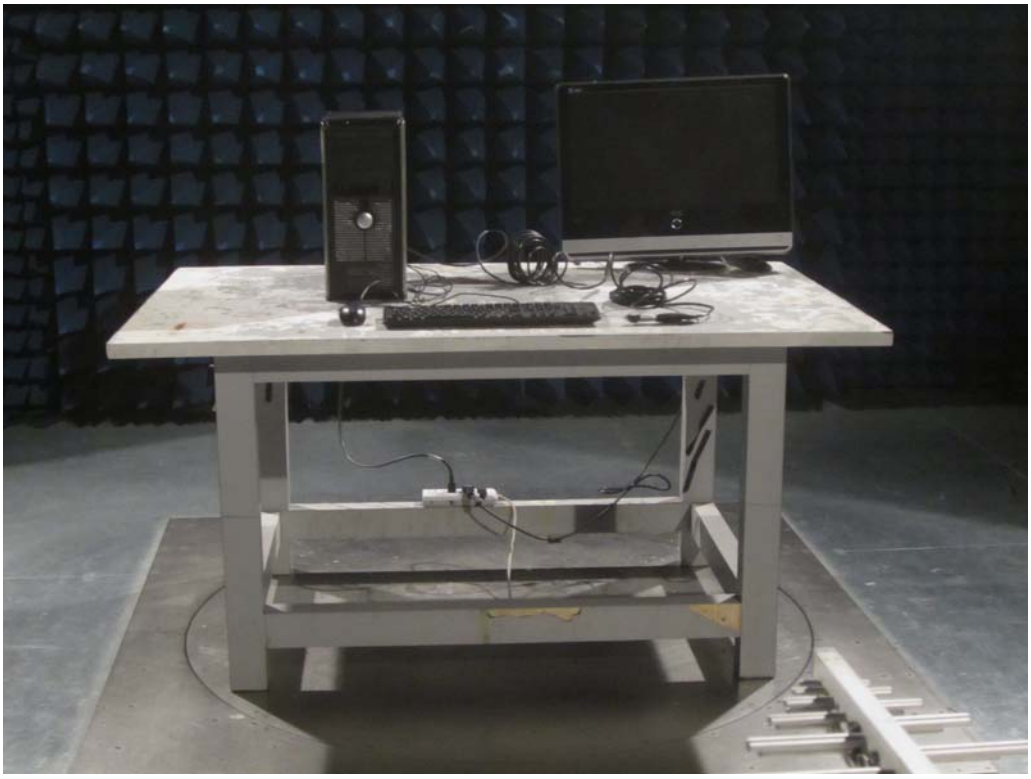
8.1 PHOTOS OF TEST SETUP

RADIATED EMISSION TEST



ELECTROSTATIC DISCHARGE TEST

RADIATED ELECTROMAGNETIC FIELD



8.2 PHOTOS OF EUT