EMC Test Report

Report No.: AGC03307150201EE01

PRODUCT DESIGNATION	:	HDMI Extender by cat-5e/6
BRAND NAME	:	CE-LINK
MODEL NAME	:	E30D
CLIENT	:	CE LINK LIMITED
DATE OF ISSUE	:	Feb.11,2015
STANDARD(S)	:	EN 55022:2010+AC:2011 EN 55024:2010+AC:2011
REPORT VERSION	:	V1.0

***A**ttestation of **G**lobal **C**ompliance (Shenzhen) Co., Ltd*

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Feb.11,2015	Valid	Original Report

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1. VERIFICATION OF CONFORMITY

Applicant	CE LINK LIMITED
Address	Building G, Licheng Technology Industrial Zone, Gonghe Village, Shajing Town, Shenzhen City, China
Manufacturer	CE LINK LIMITED
Address	Building G, Licheng Technology Industrial Zone, Gonghe Village, Shajing Town, Shenzhen City, China
Product Designation	HDMI Extender by cat-5e/6
Brand Name	CE-LINK
Test Model	E30D
Date of test	Feb.7~Feb.10, 2015
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-EC-IT/DC(2013-03-01)

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in 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.

Prepared By — Max Zhang — Feb.11,2015

Checked By — Kidd Yang — Feb.11,2015

Authorized By — Solger Zhang — Feb.11,2015

2. SYSTEM DESCRIPTION

1. Connect EUT and peripheral devices (if need)
2. Power on the EUT, The EUT begins to work.
3. Make sure the EUT works normally during the test.

3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by ISO.

- Uncertainty of Radiated Emission, Uc = ±3.2 dB

4. PRODUCT INFORMATION

Housing Type	Plastic and metal
EUT Rating Voltage	DC 5V Supply By PC

I/O Port Information (☒Applicable ☐Not Applicable)

I/O Port of EUT			
I/O Port Type	**Q'TY**	**Cable**	**Tested with**
HDMI input port	1	0.25m, shielded	1
DDC output port	1	0	1
TMDS output port	1	0	1

5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
PC	Apple	MB990CH/A	N/A	N/A	N/A

Note:

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

6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	2014.07.25	2015.07.25
ANTENNA	SCHWARZBECK	VULB9168	494	2014.08.17	2015.08.17
POSITIONING CONTROLLER	MF	MF-7802	MF780208285	--	--

TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	2014.07.30	2015.07.30

TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
SIGNAL GENERATOR	R&S	E4421B	102525	2014.07.25	2015.07.25
ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	2014.08.17	2015.08.17
POWER SENSOR	R&S	URV5-Z4	100124	2014.07.25	2015.07.25
POWER METER	R&S	NRVD	832378/027	2014.07.25	2015.07.25
POWER AMPLIFIER	KALMUS	7100C	N/A	2014.07.25	2015.07.25
RF AMPLIFIER	Milmega	AS01004-55_55	1004793	2014.07.25	2015.07.25
HORN ANTENNA	ETS LINDGREN	3117	N/A	2013.08.17	2015.08.17

7. EN 55022 RADIATED EMISSION TEST

7.1. LIMITS OF RADIATED DISTURBANCES

AT 10M DISTANCES

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m Q.P.)
30-230	10	30.00
230-1000	10	37.00

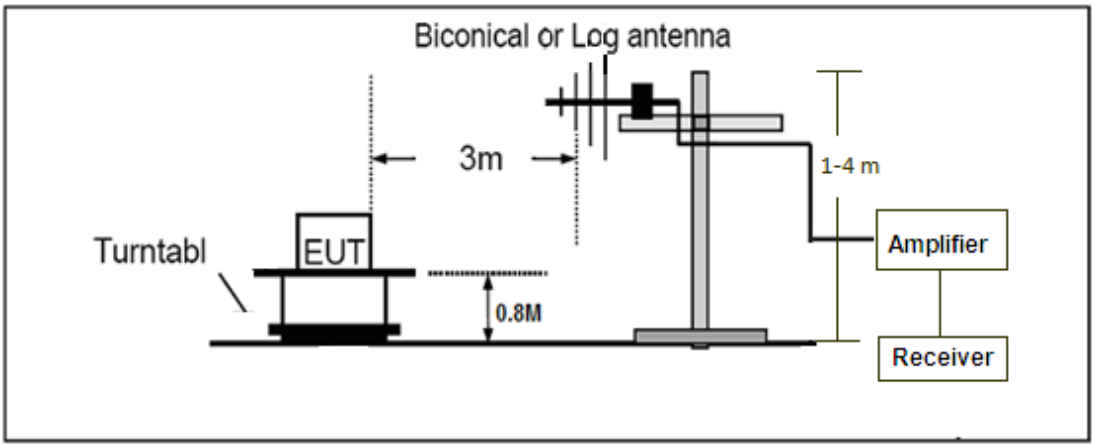
AT 3M DISTANCES

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m Q.P.)
30-230	3	40.00
230-1000	3	47.00

Note: The lower limit shall apply at the transition frequency.

7.2. BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

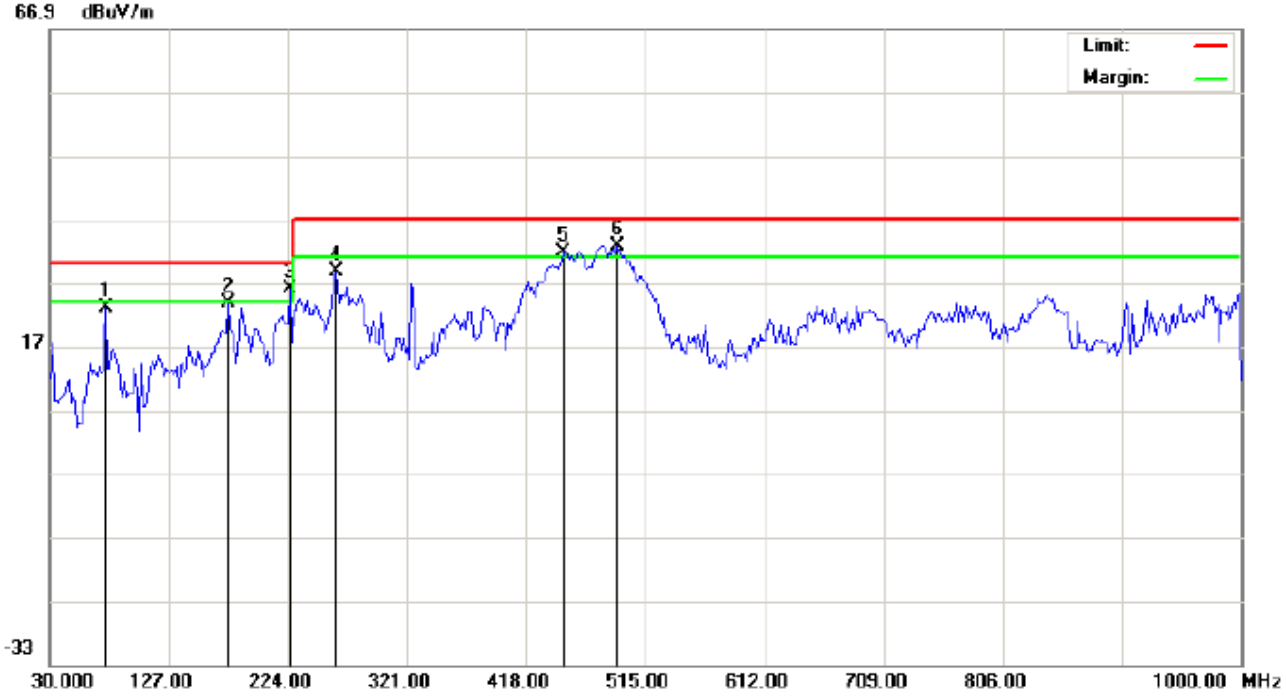


7.3. PROCEDURE OF RADIATED EMISSION TEST

(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 was connected to PC and displayer. All support equipments received AC230V/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 test mode(s) were scanned during the test:
(8) 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.

7.4. TEST RESULT OF RADIATED EMISSION TEST

Radiated Emission Test at 3m Distance-Horizontal



Site: site #1
Limit: CISPR22 ClassB 10M Radiation
EUT: HDMI Extender by cat-5e/6
M/N: E30D
Mode: Normal
Note:

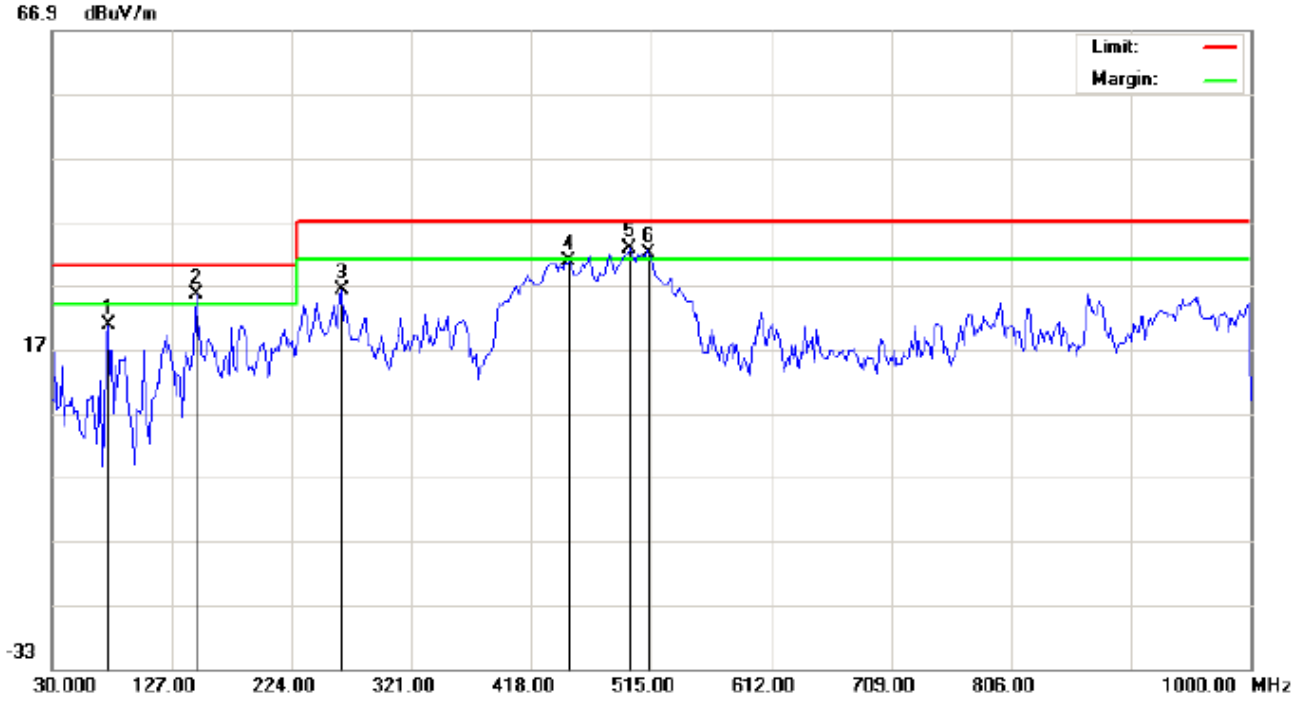
Polarization: *Horizontal*
Power: DC 5V
Distance: 10m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		75.2667	13.57	9.34	22.91	30.00	-7.09	peak			
2		175.5000	6.54	17.16	23.70	30.00	-6.30	peak			
3	*	225.6167	10.87	15.05	25.92	30.00	-4.08	peak			
4		262.8000	12.04	16.86	28.90	37.00	-8.10	peak			
5	!	448.7167	10.27	21.50	31.77	37.00	-5.23	peak			
6	!	492.3666	10.40	22.47	32.87	37.00	-4.13	peak			

RESULT: PASS

Radiated Emission Test at 3m Distance-Vertical



Site: site #1
Limit: CISPR22 ClassB 10M Radiation
EUT: HDMI Extender by cat-5e/6
M/N: E30D
Mode: Normal
Note:

Polarization: *Vertical*
Power: DC 5V
Distance: 10m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		75.2667	11.42	9.27	20.69	30.00	-9.31	peak			
2	!	146.4000	12.00	13.41	25.41	30.00	-4.59	peak			
3		264.4166	9.00	17.23	26.23	37.00	-10.77	peak			
4		448.7167	9.22	21.50	30.72	37.00	-6.28	peak			
5	*	497.2167	9.89	22.78	32.67	37.00	-4.33	peak			
6	!	513.3831	8.95	23.18	32.13	37.00	-4.87	peak			

RESULT: PASS

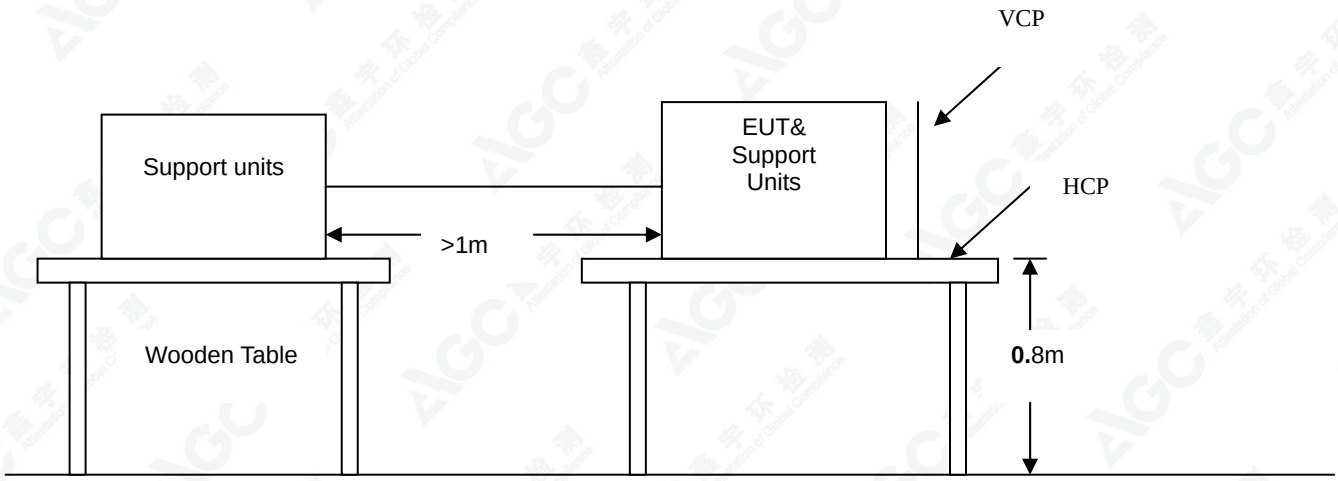
8. IEC 61000-4-2 ESD IMMUNITY TEST

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	Enclosure
Basic Standard	IEC 61000-4-2
Test Level	± 8.0 kV (Air Discharge) ± 4.0 kV (Contact Discharge) ± 4.0 kV (Indirect Discharge)
Standard require	B
Tester	Max
Temperature	20°C
Humidity	50%

8.1. BLOCK DIAGRAM OF TEST SETUP

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



Ground Reference Plane

8.2. TEST PROCEDURE

The EUT was located 0.1 m minimum from all side of the HCP.

The support units were located 1 m minimum away from the EUT.

EUT worked with resistance load, and make sure EUT worked normally.

Active the communication function if the EUT with such port(s).

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.

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.

The application of ESD to the contact of open connectors is not required.

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

The electrostatic discharges were applied as follows:

Voltage	Coupling	Test Performance	Result
±4kV	Contact Discharge	No function loss	A
±4kV	Indirect Discharge HCP (Front)	No function loss	A
±4kV	Indirect Discharge HCP (Left)	No function loss	A
±4kV	Indirect Discharge HCP (Back)	No function loss	A
±4kV	Indirect Discharge HCP (Right)	No function loss	A
±4kV	Indirect Discharge VCP (Front)	No function loss	A
±4kV	Indirect Discharge VCP (Left)	No function loss	A
±4kV	Indirect Discharge VCP (Back)	No function loss	A
±4kV	Indirect Discharge VCP (Right)	No function loss	A
±8kV	Air Discharge	No function loss	A

8.3. 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.

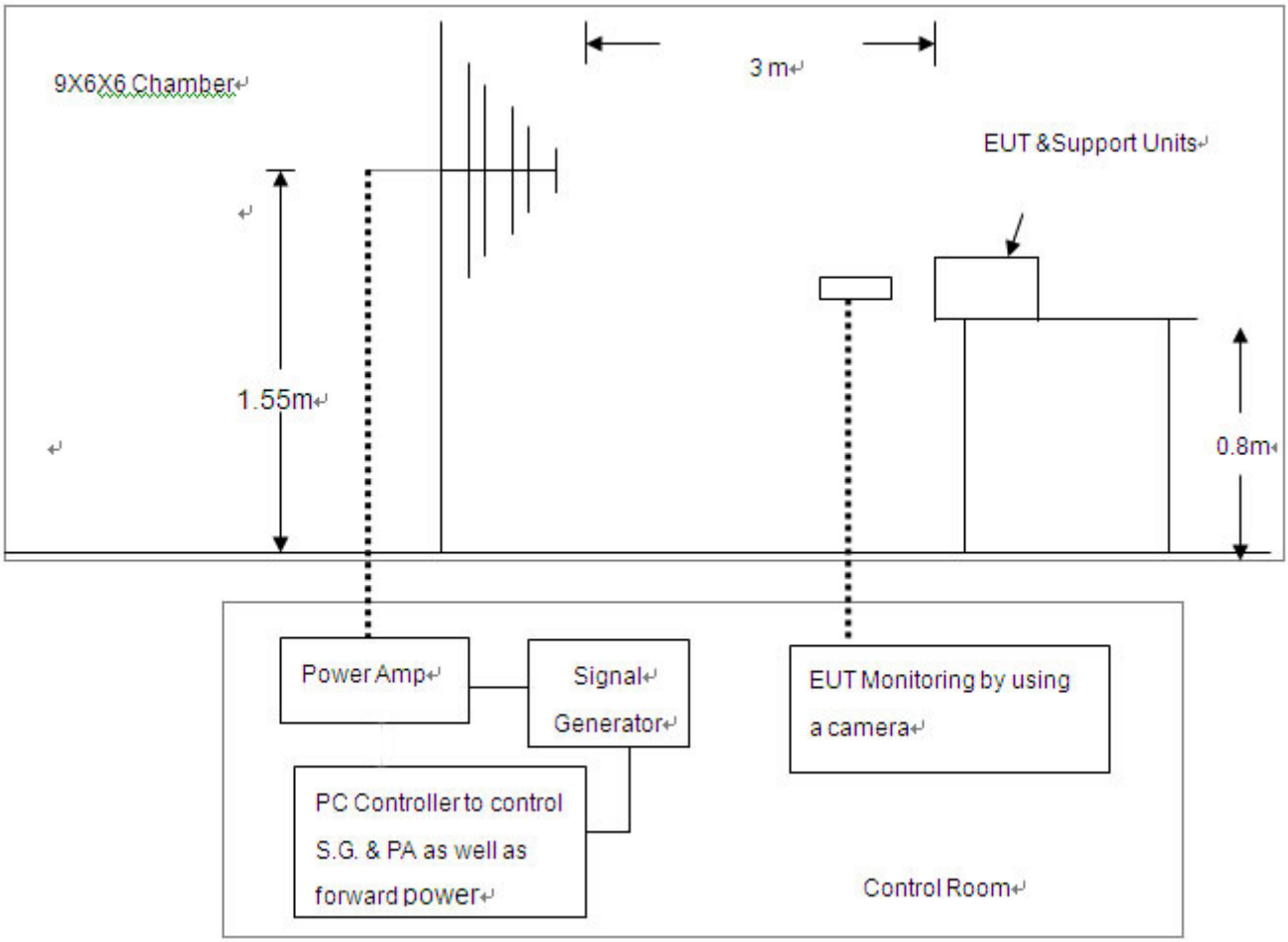
☒***PASS*** ☐***FAIL***

9. IEC 61000-4-3 RS IMMUNITY TEST

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	Enclosure
Basic Standard	IEC 61000-4-3
Test Level:	3V/m with 80% AM. 1kHz Modulation.
Standard require	A
Tester	Max
Temperature	25°C
Humidity	55%

9.1. BLOCK DIAGRAM OF TEST SETUP



9.2. TEST PROCEDURE

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 IEC 61000-4-3.
EUT worked with resistance load, and make sure EUT worked normally.
Setting the testing parameters of RS test software per IEC 61000-4-3.
Performing the test at each side of with specified level (3V/m) at 1% steps and test frequency from 80MHz to 1000MHz
Recording the test result in following table.

IEC 61000-4-3 Final test conditions:

Test level: 3V/m
Steps: 1 % of fundamental
Dwell Time: 1 sec

Range (MHz)	Field	Modulation	Polarity	Position	Test Performance	Result
80-1000	3V/m	AM	H	Front	No function loss	A
80-1000	3V/m	AM	H	Left	No function loss	A
80-1000	3V/m	AM	H	Back	No function loss	A
80-1000	3V/m	AM	H	Right	No function loss	A
80-1000	3V/m	AM	V	Front	No function loss	A
80-1000	3V/m	AM	V	Left	No function loss	A
80-1000	3V/m	AM	V	Back	No function loss	A
80-1000	3V/m	AM	V	Right	No function loss	A

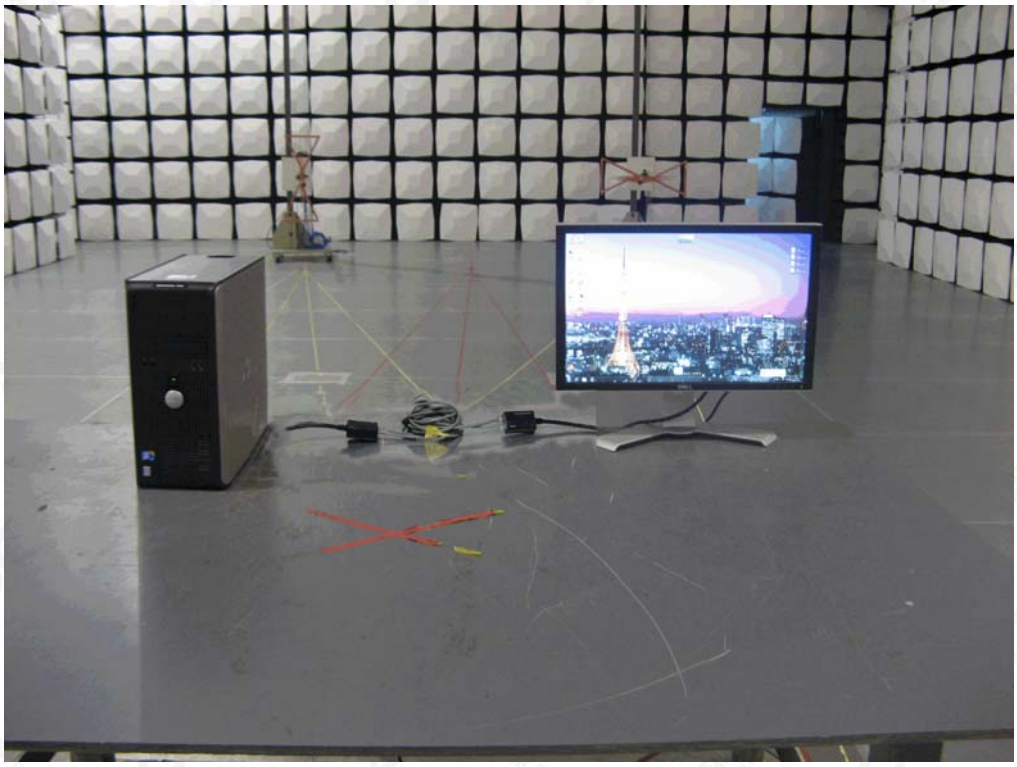
9.3. PERFORMANCE & RESULT

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*** ☐***FAIL***

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

EN 55022 RADIATED EMISSION TEST SETUP

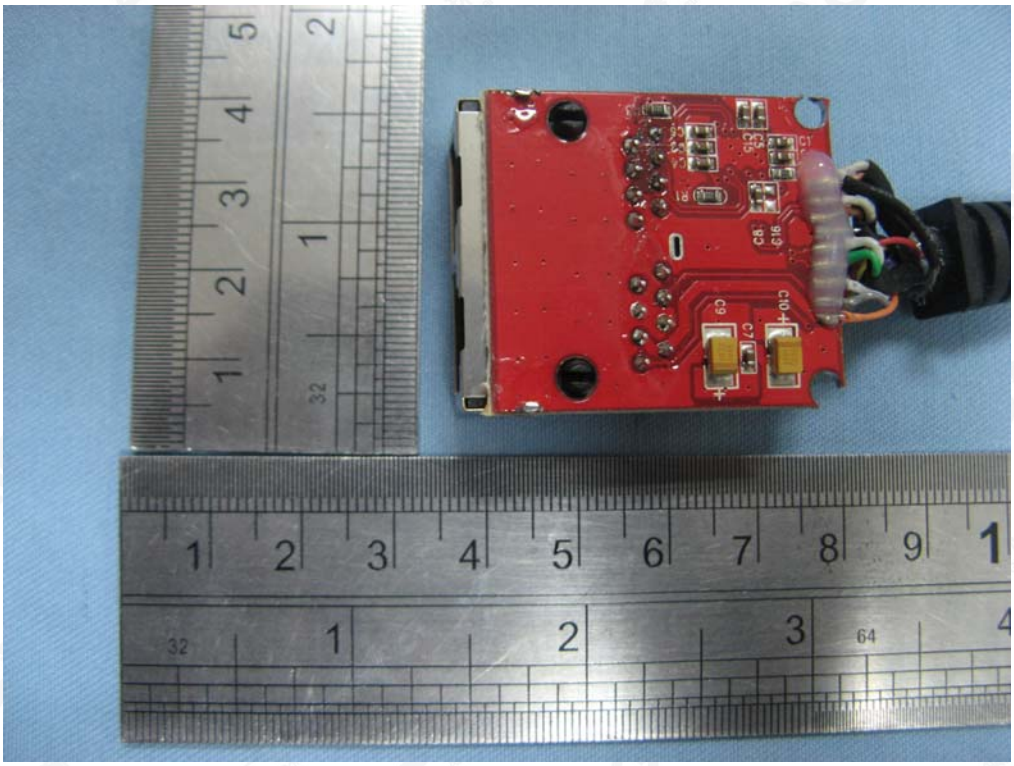


IEC 61000-4-2 ESD IMMUNITY TEST SETUP

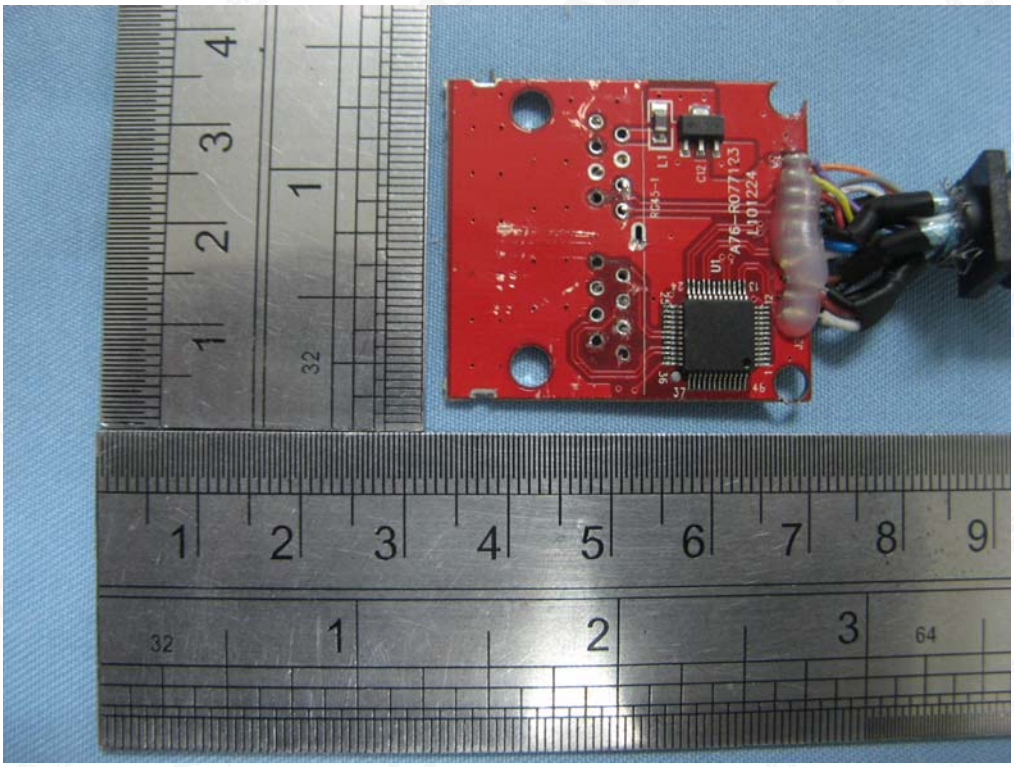
APPENDIX B: PHOTOGRAPHS OF EUT

EXTERNAL VIEW OF EUT

INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



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