

EMC Test Report

For

Shanghai Panelmate Electronics Co., Ltd.

Test Standards:	EN 55032:2015, EN 55032:2015+A11:2020 EN 55035:2017, EN 55035:2017+A11:2020
Product Description:	<u>KVM</u>
Tested Model:	<u>IDD-LINK4</u>
Report No.:	<u>EC2206005E01</u>
Tested Date:	<u>2022-07-01 to 2022-07-18</u>
Issued Date:	<u>2022-07-28</u>

Prepared By:

Forest Chen

Forest Chen/ Engineer

Approved By:

Anna Xie

Anna Xie / EMC Manager

Hunan Ecloud Testing Technology Co., Ltd.

Building A1, Changsha E Center, No. 18 Xiangtai Avenue, Liuyang Economic and
Technological Development Zone, Hunan, P.R.C

Tel.: +86-731-89634887 Fax.: +86-731-89634887

www.hn-ecloud.com

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Hunan Ecloud Testing Technology Co., Ltd., the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version
V1.0	/	2022-07-28	Valid

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1. GENERAL INFORMATION

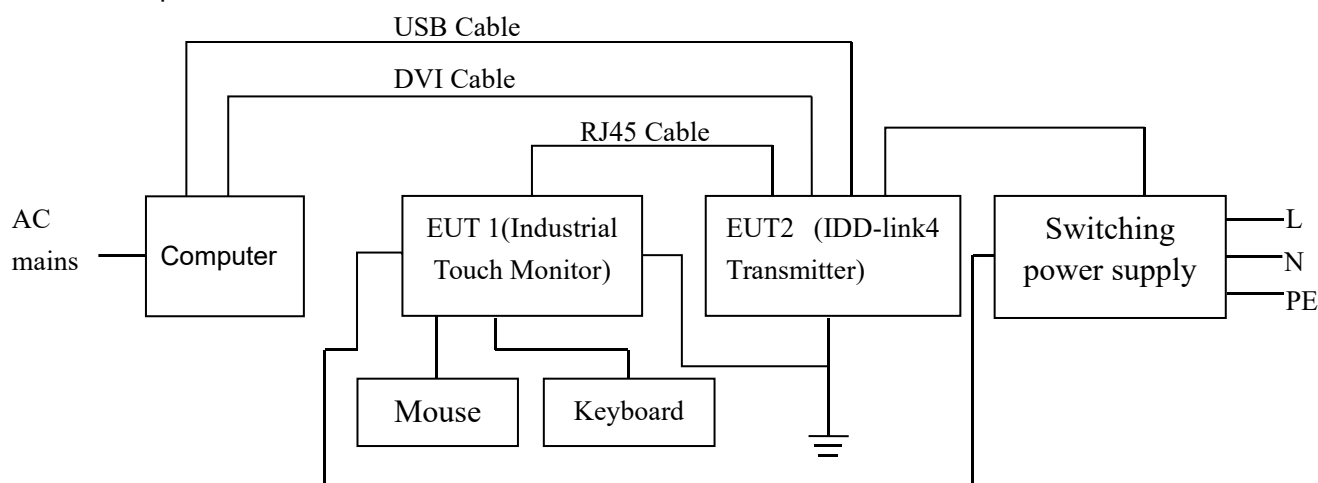
1.1 Product Description for Equipment Under Test (EUT)

Client Information	
Applicant:	Shanghai Panelmate Electronics Co., Ltd.
Address of applicant:	Building 18th, No.177 Fulian 2nd Rd., Baoshan District, Shanghai
Manufacturer:	Shanghai Panelmate Electronics Co., Ltd.
Address of manufacturer:	Building 18th, No.177 Fulian 2nd Rd., Baoshan District, Shanghai

General Description of EUT	
Product Name:	KVM
Trade Name:	Panelmate
Model No.:	IDD-LINK4
Adding Models:	N/A
Difference description	N/A
Rated Voltage	DC 24V
Test Voltage:	DC 24V from switching power supply which inputs AC 230V/50Hz
Highest Frequency::	125MHz
Equipment Category:	Class A
Sample Reception Date:	2022.06.14
Sample number:	2206005E-1/1

1.2 EUT Setup and Operation Mode

EUT Setup Block



Test Mode List		
Test Mode	Description	Remark
1	As shown above after the completion of the connection to start playing video.	for all test

Special Cable List and Details					
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	From	To
RJ45 Cable	5.0/3.0	shielded	Without	EUT1	EUT2
USB cable	1.0	Unshielded	With	Computer	EUT2
DVI Cable	1.5	Unshielded	With	Computer	EUT2

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Computer	Lenovo	Ideacentre 720-181KL	R304E2ZB
Switching power supply	MW	NDR-75-24	/
Mouse	Lenovo	EMS-537A	8020RVS8
Keyboard	Lenovo	SK-8823	02696187

1.3 Measurement Uncertainty

Parameter	Frequency	Measurement uncertainty
Conducted Emission	150kHz-30MHz	2.83dB
Radiated Emission	30MHz-1000MHz	5.40dB
Radiated Emission	1000MHz-6000MHz	4.99dB

1.4 Test Facility

Site	Hunan Ecloud Testing Technology Co., Ltd.
Location	Building A1, Changsha E Center, No. 18 Xiangtai Avenue, Liuyang Economic and Technological Development Zone, Hunan, P.R.C

1.5 Test Equipment List and Details

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
LISN	R&S	ENV216	102125	2021-12-29	2022-12-28
LISN	R&S	ENV432	101327	2021-12-29	2022-12-28
EMI Test Receiver	R&S	ESR3	102143	2021-12-30	2022-12-29
EMI Test Software	Audix	E3	N/A	N/A	N/A

Test Equipment for Radiated Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
EMI Test Receiver	R&S	ESR3	102144	2021-12-30	2022-12-29
Spectrum Analyzer	R&S	FSV 30	103728	2021-12-30	2022-12-29
Amplifier	Sonoma	310	363917	2021-12-29	2022-12-28
Amplifier	HuaYi	ITI-010180G50B	20042201	2021-12-30	2022-12-29
Horn Antenna	Schwarz beck	BBHA 9120 D	1677	2020-02-14	2023-02-13
Broadband Antenna	Schwarz beck	VULB9168	9168-757	2020-09-27	2023-09-26
EMI Test Software	Audix	E3	N/A	N/A	N/A
Test Equipment for ESD					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
ESD Generator	Teseq	NSG 437	1121	2022-01-28	2023-01-27
Test Equipment for EFT/SURGE/DIPS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Surge Generator	Teseq	NSG 3060-MF	4040	2021-12-30	2022-12-29
CDN	Teseq	CDN 3061-S16	3003	2021-12-30	2022-12-29
Surge Generator extension box	Teseq	NSG 3060-TS-EXT-EPO	3005	2021-12-30	2022-12-29
EFT/DIPS Generator	Teseq	NSG 3040-MF	6033	2021-12-30	2022-12-29
Transformer	Teseq	INA6501	1002	2021-12-30	2022-12-29
Capacitive Coupling Clamp	Teseq	CDN 3425	3041	2022-05-07	2023-05-06
Test Equipment for CS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
CS Generator	Teseq	NSG 4070B-80	45341	2021-12-30	2022-12-29
6dB Attenuator	Teseq	ATN 6075	32154	2021-12-29	2022-12-28
CDN	Teseq	CDN M016	45065	2021-12-29	2022-12-28
Electromagnetic forceps	DAZE	ZN3203	19015	2021-11-19	2022-11-18
Test Equipment for RS					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Signal generator	R&S	SMB100A	113825	2021-12-30	2022-12-29
Power Meter	R&S	NRP2	105581	2021-12-30	2022-12-29
Power Sensor	R&S	NRP-Z91	103778	2021-12-30	2022-12-29
Power Sensor	R&S	NRP-Z91	103779	2021-12-30	2022-12-29

Power Amplifier	R&S	BBA150	102377	2021-12-30	2022-12-29
Power Amplifier	R&S	BBA150	102376	2021-12-30	2022-12-29
Power Amplifier	R&S	BBA150	103014	2021-12-30	2022-12-29
Antenna	R&S	HL046E	100230	N/A	N/A
Antenna	Schwarzbeck	STLP 9149	9149-459	N/A	N/A
RS Test Software	Fala	EZ-RS	N/A	N/A	N/A

1.6 Performance Criteria for EMS

According Clause 8 of EN 55035,

- General

General performance criteria are defined in the following. These criteria shall be used during the testing of primary functions where no relevant annex is applicable.

When assessing the impact of a disturbance on a function, the assessment should take into consideration the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

- Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operation state is allowed below a performance level specified by the manufacturer when the equipment is use as intended.

The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

- Performance criterion B

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, 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. The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

- Performance 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. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

2. SUMMARY OF TEST RESULTS

EN 55032:2015、EN 55032:2015+A11:2020		
Emissions		
Test Standards	Description of Test Item	Result
EN 55032:2015 EN 55032:2015+A11:2020	Conducted Emissions	Compliance
EN 55032:2015 EN 55032:2015+A11:2020	Radiated Emissions	Compliance

EN 55035:2017、EN 55035:2017+A11:2020		
Immunity		
Test Standards	Description of Test Item	Result
IEC 61000-4-2	Electrostatic Discharge	Compliance
IEC 61000-4-3	Continuous radiated disturbances	Compliance
IEC 61000-4-4	Electrical Fast Transients	Compliance
IEC 61000-4-5	Surges	Compliance
IEC 61000-4-6	Continuous conducted disturbances	Compliance
IEC 61000-4-8	Power Frequency Magnetic Field	Compliance
IEC 61000-4-11	Voltage Dips and Interruptions	Compliance

*Note1: N/A means not applicable.

*Note2: EN 55032:2015+A11:2020, EN 55035:2017+A11:2020 is not accepted by CANS.

3. Conducted Emissions

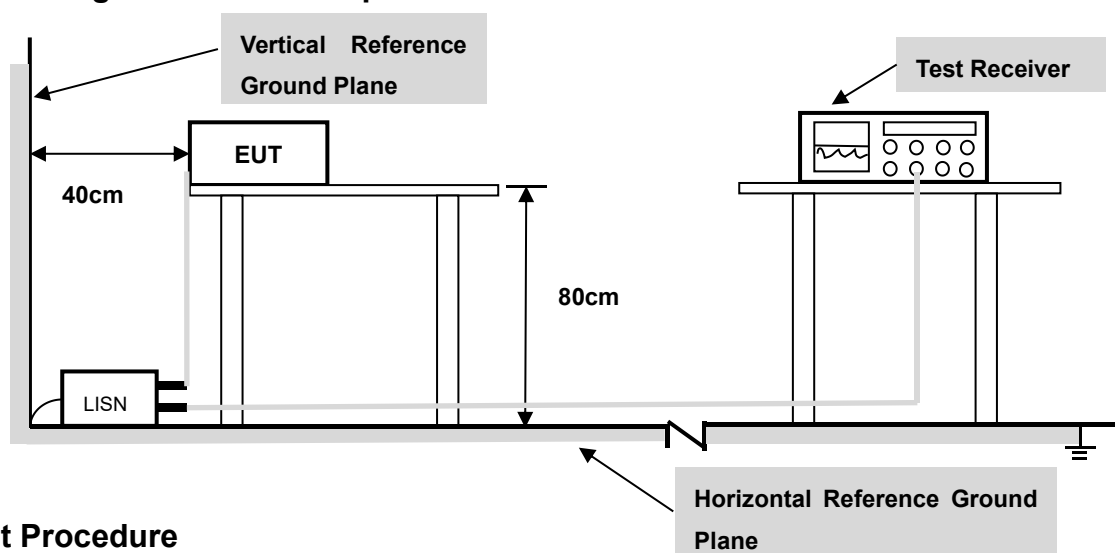
3.1. Conducted Emission Limit

Requirements for conducted emissions from the AC mains power ports of Class A equipment

Frequency Range (MHz)	Coupling device	Detector type/bandwidth	Class A limits dB(μV)
0.15-0.5	AMN	Quasi Peak/9kHz	79
0.5-30			73
0.15-0.5	AMN	Average/9kHz	66
0.5-30			60

Note The lower limit shall apply at the transition frequencies.

3.2 Block Diagram of Test Setup



3.3. Test Procedure

During the conducted emissions test, the adapter was connected to the main outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the Quasi-peak and average detection mode.

3.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the LISN/ISN Factor and the Cable Factor, The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{LISN/ISN Factor} + \text{Cable Factor}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a “Over Limit” of -6dB means the emission is 6dB below the maximum limit for device. The equation for “Over Limit” calculation is as follows:

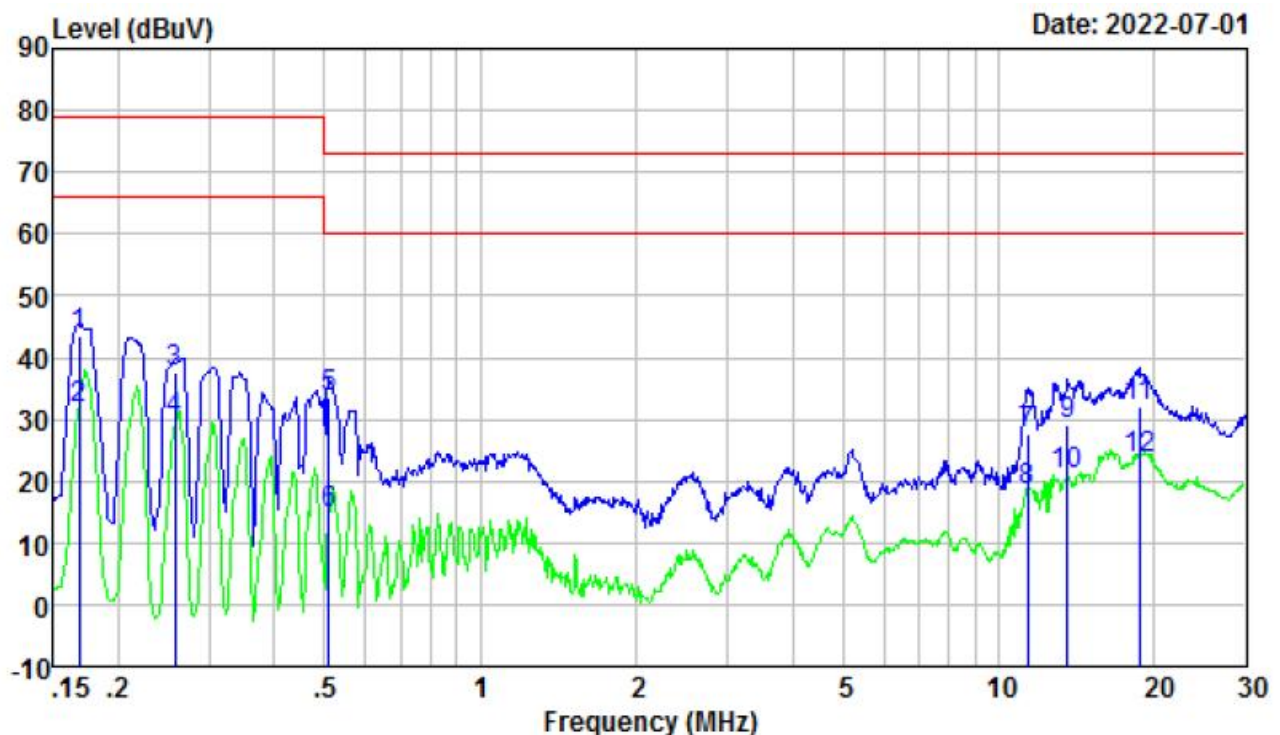
$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

3.5 Environmental Conditions

Temperature:	23° C
Relative Humidity:	67%RH
Atmospheric Pressure:	100.0kPa
Test Date:	2022.07.01
Tested By:	Forest Chen

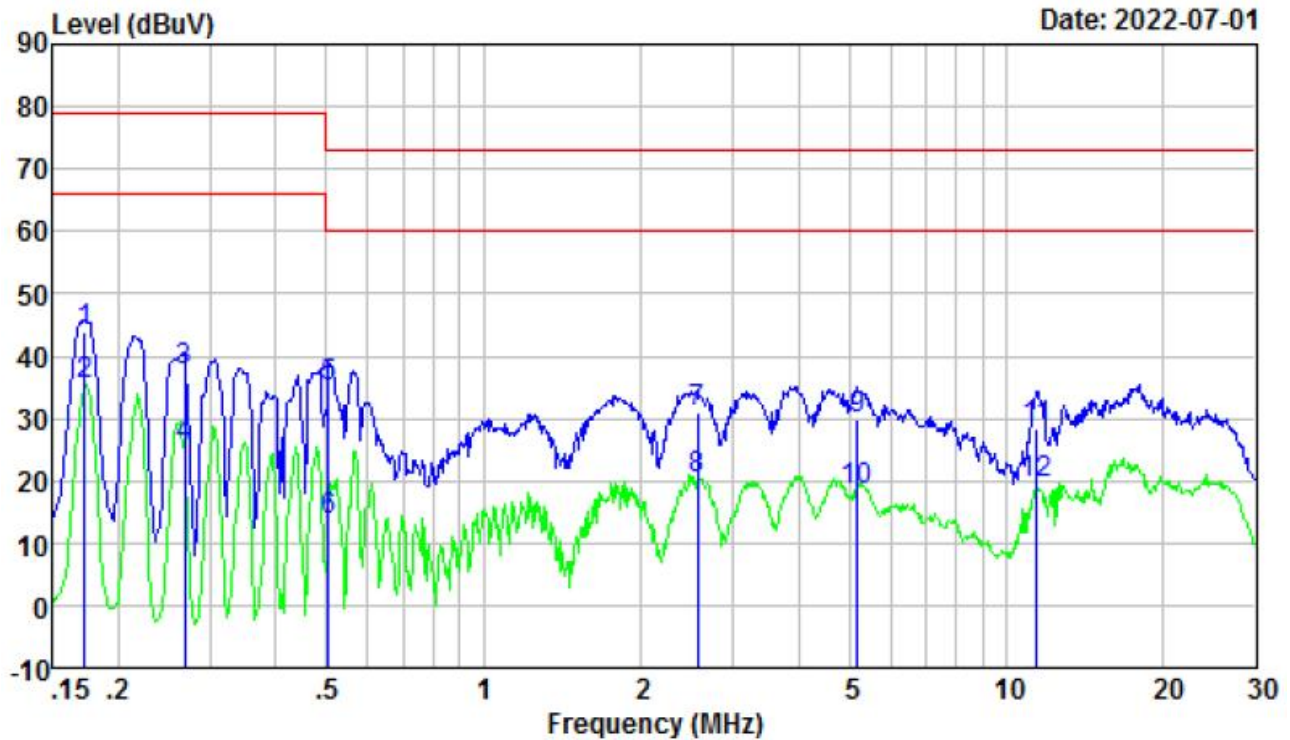
3.6 Test Data and Result

LINE



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.168	34.10	9.53	0.03	43.66	79.00	-35.34	QP
0.168	22.00	9.53	0.03	31.56	66.00	-34.44	Average
0.258	28.00	9.53	0.03	37.56	79.00	-41.44	QP
0.258	20.20	9.53	0.03	29.76	66.00	-36.24	Average
0.510	23.90	9.67	0.03	33.60	73.00	-39.40	QP
0.510	5.20	9.67	0.03	14.90	60.00	-45.10	Average
11.377	17.80	9.86	0.13	27.79	73.00	-45.21	QP
11.377	8.60	9.86	0.13	18.59	60.00	-41.41	Average
13.551	19.20	9.94	0.13	29.27	73.00	-43.73	QP
13.551	10.80	9.94	0.13	20.87	60.00	-39.13	Average
18.721	21.90	10.09	0.13	32.12	73.00	-40.88	QP
18.721	13.50	10.09	0.13	23.72	60.00	-36.28	Average

NEUTRAL



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.172	34.30	9.68	0.03	44.01	79.00	-34.99	QP
0.172	25.80	9.68	0.03	35.51	66.00	-30.49	Average
0.267	27.90	9.70	0.03	37.63	79.00	-41.37	QP
0.267	15.80	9.70	0.03	25.53	66.00	-40.47	Average
0.505	25.40	9.66	0.03	35.09	73.00	-37.91	QP
0.505	3.90	9.66	0.03	13.59	60.00	-46.41	Average
2.567	21.10	9.66	0.06	30.82	73.00	-42.18	QP
2.567	10.50	9.66	0.06	20.22	60.00	-39.78	Average
5.194	19.90	9.68	0.10	29.68	73.00	-43.32	QP
5.194	8.70	9.68	0.10	18.48	60.00	-41.52	Average
11.438	18.10	9.97	0.13	28.20	73.00	-44.80	QP
11.438	9.50	9.97	0.13	19.60	60.00	-40.40	Average

Note: 1. Result Level = Reading Level + LISN/ISN Factor + Cable loss

4. Radiated Emissions

4.1. Radiated Emission Limit

Requirements for radiated emissions at frequencies up to 1GHz for Class A equipment

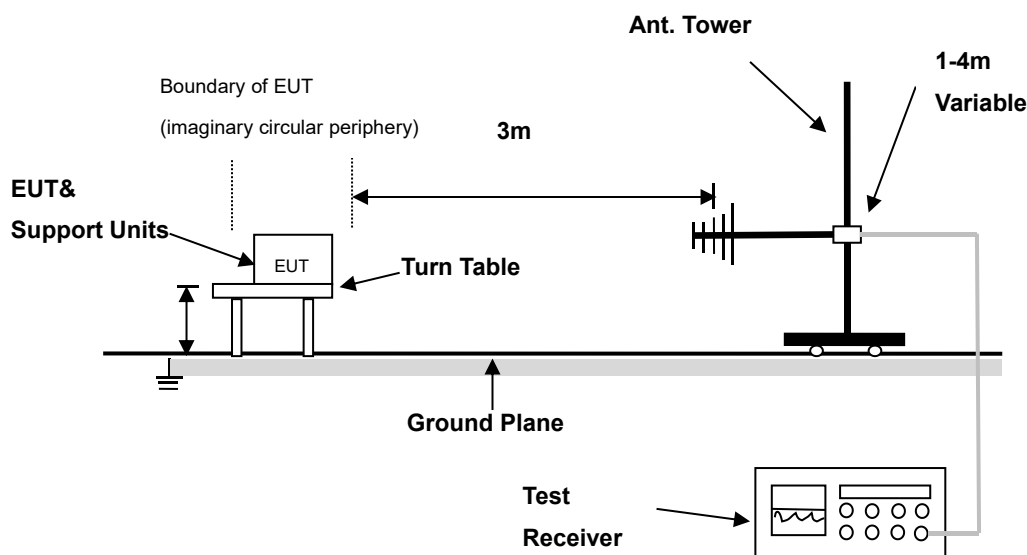
Frequency range (MHz)	Measurement		limits dB(μ V/m)
	Distance (m)	Detector type/bandwidth	
30 ~ 230	3	Quasi Peak/120kHz	50
230 ~ 1000			57

Requirements for radiated emissions at frequencies above 1GHz for Class A equipment

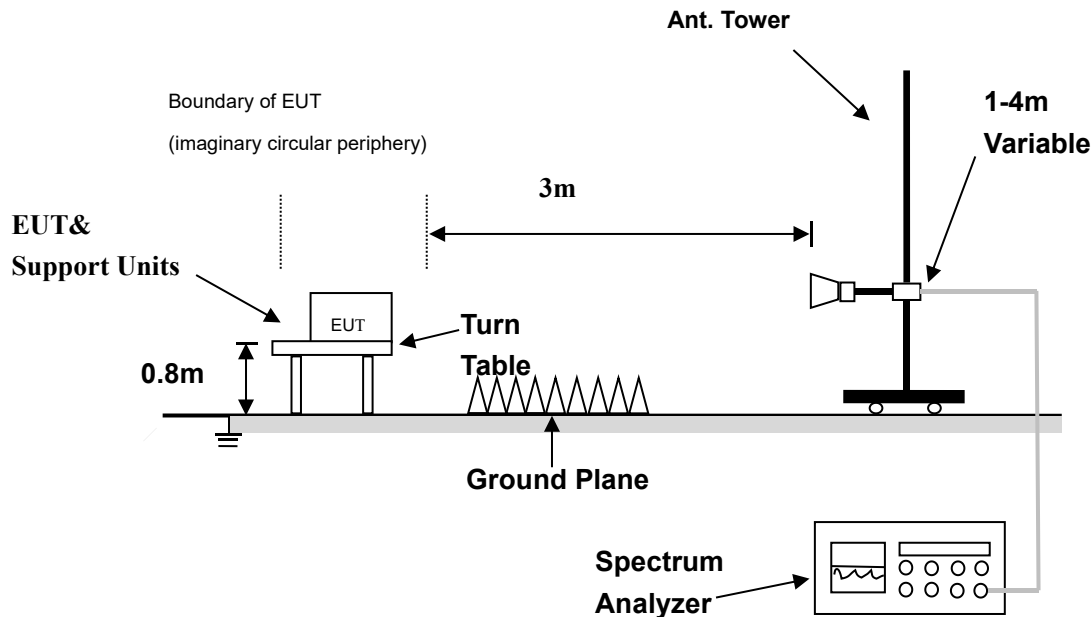
Frequency range (MHz)	Measurement		Class A limits dB(μ V/m)
	Distance (m)	Detector type/bandwidth	
1000 ~ 3000	3	Average/1MHz	56
3000 ~ 6000			60
1000 ~ 3000	3	Peak/1MHz	76
3000 ~ 6000			80

4.2. Block Diagram of Test Setup

Radiated Emissions Frequency: 30MHz to 1000MHz:



Radiated Emissions Frequency: 1000MHz to 6000MHz:



4.3 Test Procedure

- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual.
- (2) Support equipment, if needed, was placed as per EN 55032. All I/O cables were positioned to simulate typical actual usage as per EN 55032.
- (3) The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable 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 an antenna tower. 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.
- (4) Recorded at least the six highest emissions.

4.4 Result Level & Over Limit Calculation

The Result Level is calculated by Reading Level adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit for device. The equation for margin calculation is as follows:

$$\text{Over Limit} = \text{Result Level} - \text{Limit}$$

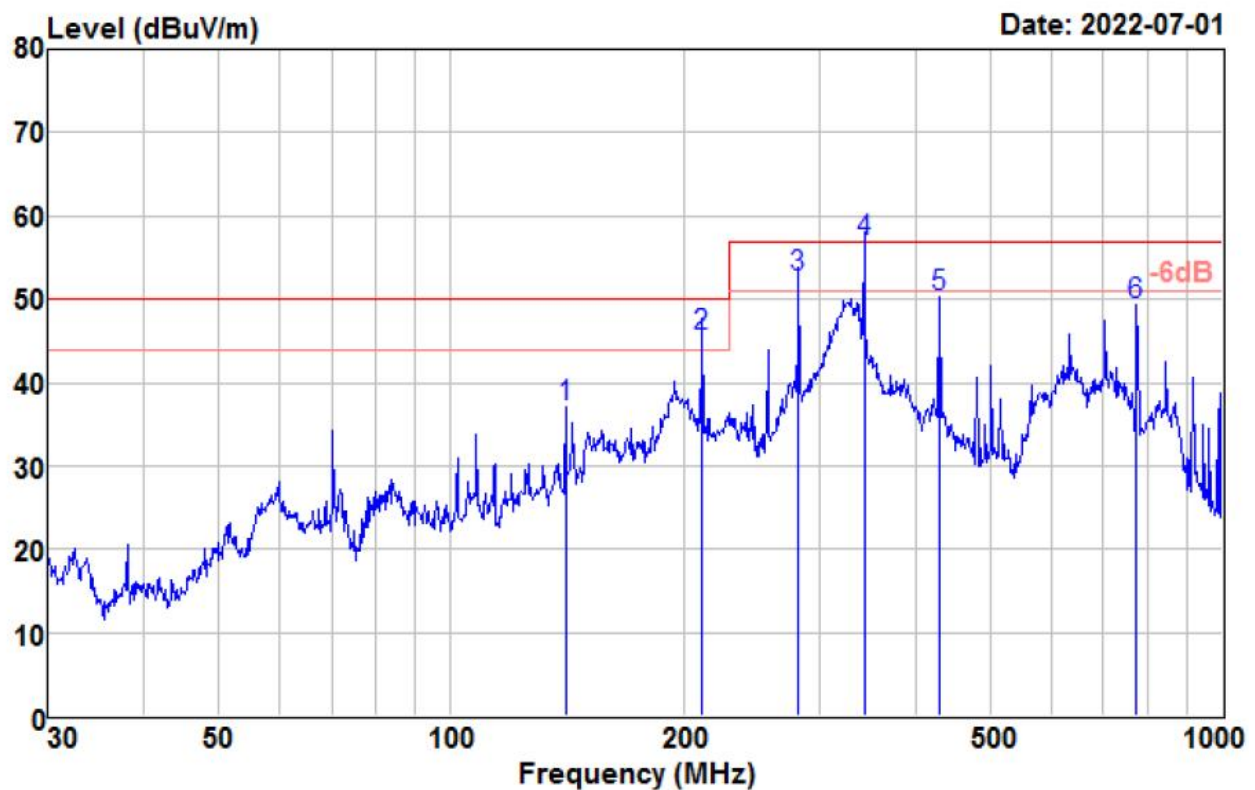
4.5 Environmental Conditions

Temperature:	21° C
Relative Humidity:	57%RH
Atmospheric Pressure:	100.0kPa
Test Date:	2022.07.01
Tested By:	Forest Chen

4.6 Test Data and Result

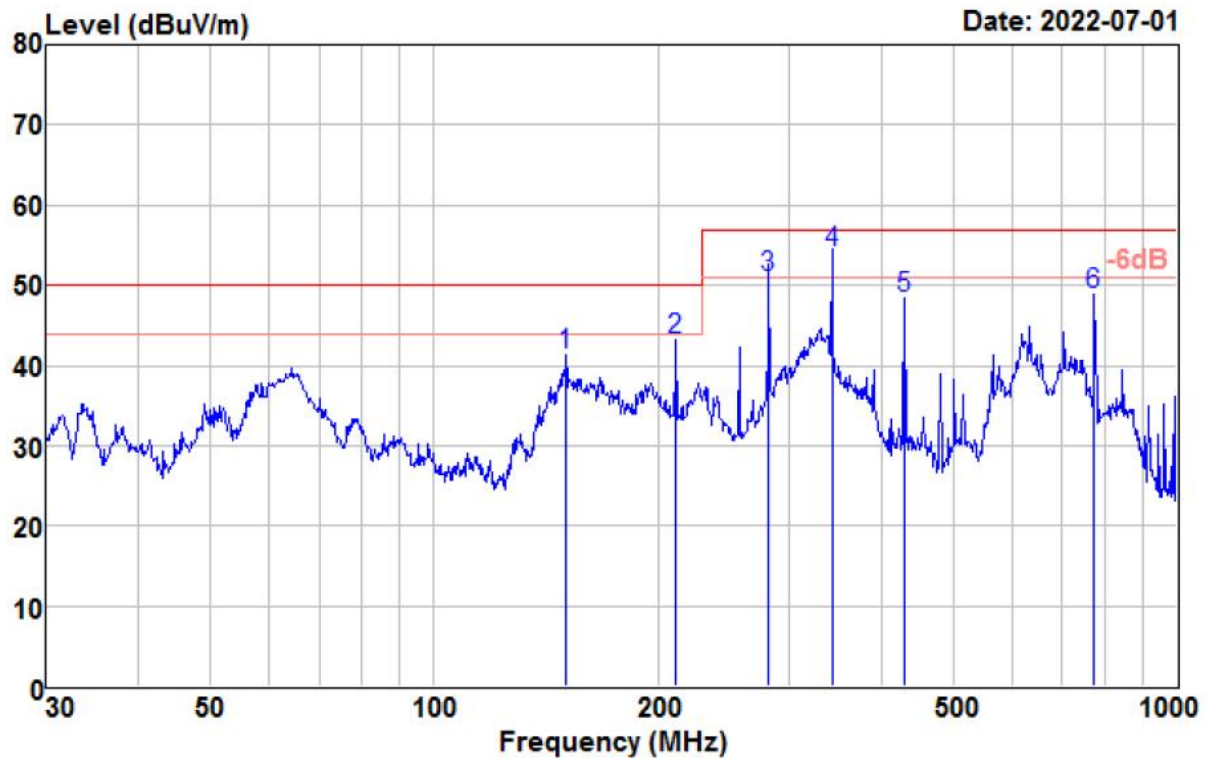
Below 1GHz:

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
140.835	53.52	13.85	2.26	32.66	36.97	50.00	-13.03	QP
211.527	65.40	10.06	2.84	32.67	45.63	50.00	-4.37	QP
281.995	69.10	12.92	3.31	32.65	52.68	57.00	-4.32	QP
343.180	71.80	14.04	3.64	32.68	56.80	57.00	-0.20	QP
429.523	63.08	15.81	4.05	32.77	50.17	57.00	-6.83	QP
774.158	55.01	20.87	5.71	32.29	49.30	57.00	-7.70	QP

Vertical:

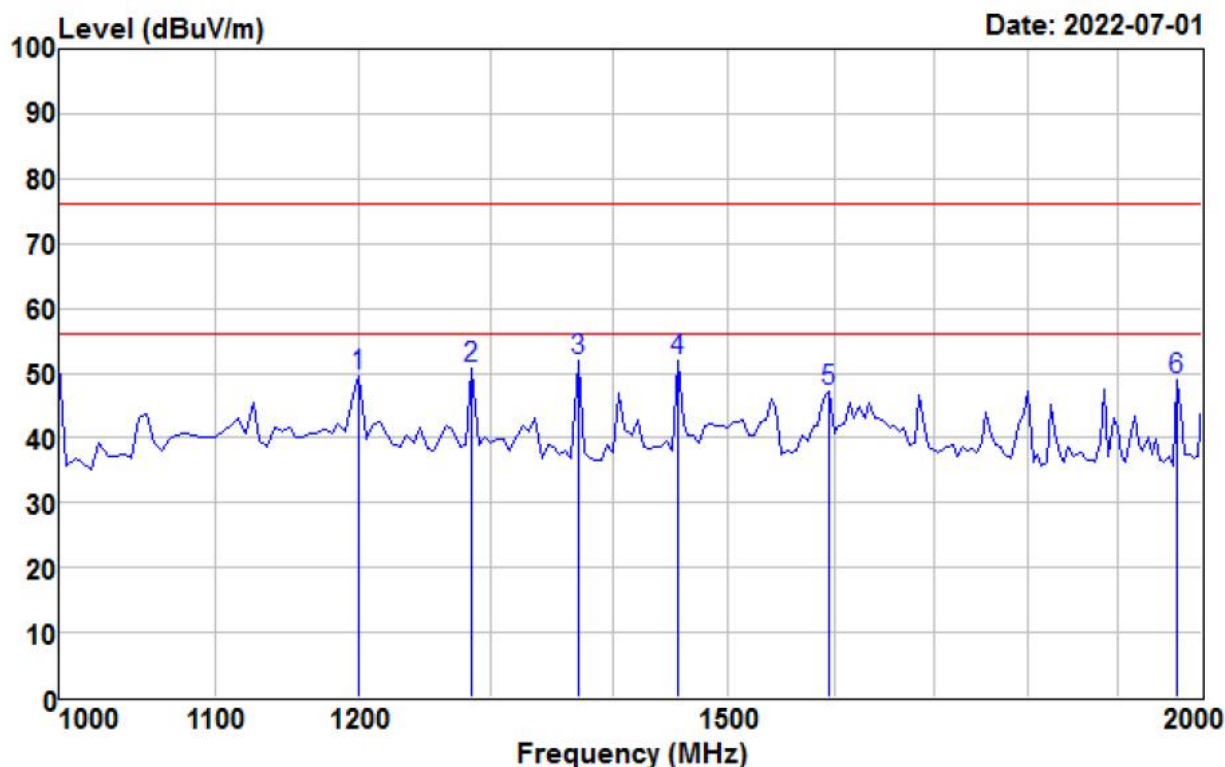


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
150.538	57.23	14.42	2.36	32.67	41.34	50.00	-8.66	QP
211.527	62.96	10.06	2.84	32.67	43.19	50.00	-6.81	QP
281.995	67.50	12.92	3.31	32.65	51.08	57.00	-5.92	QP
343.180	69.10	14.04	3.64	32.68	54.10	57.00	-2.90	QP
429.523	61.23	15.81	4.05	32.77	48.32	57.00	-8.68	QP
774.158	54.50	20.87	5.71	32.29	48.79	57.00	-8.21	QP

Note: 1. Level = Reading Level +Antenna Factor + Cable loss – Preamp factor

Above 1GHz:

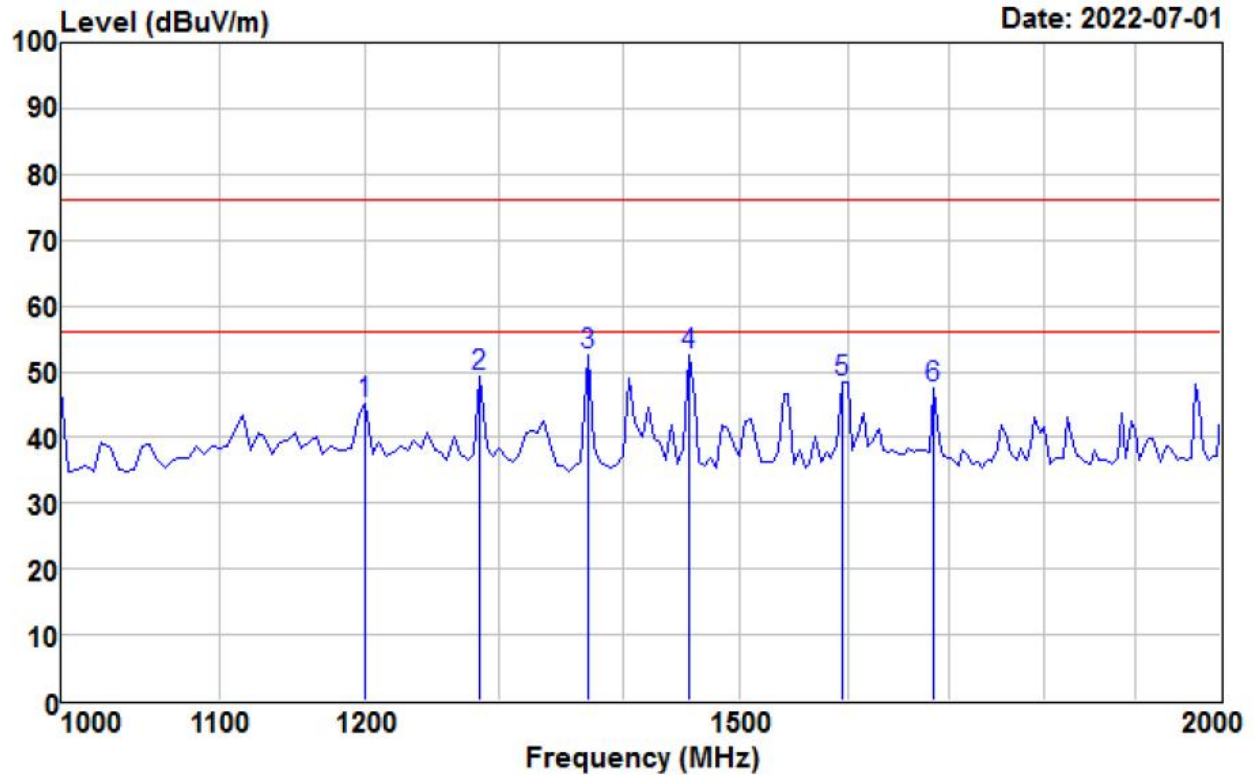
Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1200.000	82.97	24.30	2.87	60.56	49.58	76.00	-26.42	Peak
1285.000	83.85	24.47	2.98	60.50	50.80	76.00	-25.20	Peak
1370.000	84.74	24.64	3.01	60.44	51.95	76.00	-24.05	Peak
1455.000	84.48	24.81	3.09	60.38	52.00	76.00	-24.00	Peak
1595.000	79.05	25.24	3.31	60.28	47.32	76.00	-28.68	Peak
1970.000	78.72	26.59	3.57	60.02	48.86	76.00	-27.14	Peak

Above 1GHz:

Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1200.000	78.48	24.30	2.87	60.56	45.09	76.00	-30.91	Peak
1285.000	82.41	24.47	2.98	60.50	49.36	76.00	-26.64	Peak
1370.000	85.32	24.64	3.01	60.44	52.53	76.00	-23.47	Peak
1455.000	84.93	24.81	3.09	60.38	52.45	76.00	-23.55	Peak
1595.000	80.10	25.24	3.31	60.28	48.37	76.00	-27.63	Peak
1685.000	78.95	25.57	3.27	60.22	47.57	76.00	-28.43	Peak

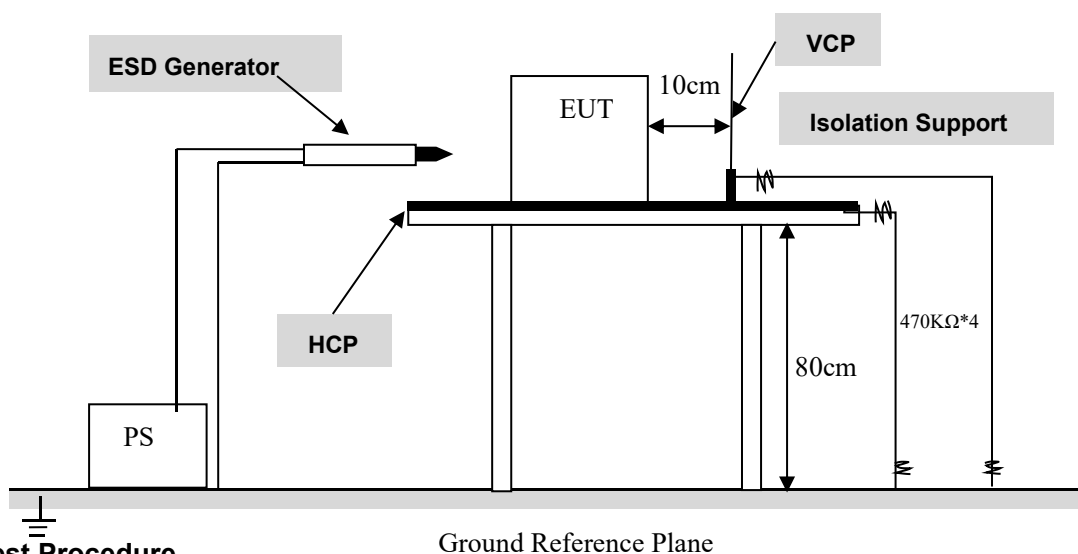
Note: 1. Level = Reading Level +Antenna Factor + Cable loss- Preamp factor

5. Electrostatic Discharge

5.1 ESD Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrostatic discharge	Enclosure port	4kV(Contact Discharge)	IEC 61000-4-2	B
		8kV(Air Discharge)	IEC 61000-4-2	B

5.2 Block Diagram of Test Setup



5.3 Test Procedure

Air Discharges:

This test is done on a non-conductive surface. The round Discharges tip of the Discharges electrode shall be approached as fast as possible to touch the EUT. After each Discharge, the Discharges 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 Discharges completed.

Contact Discharges:

All the procedure shall be same as Section 8.3.2 of IEC 61000-4-2, except that the tip of the Discharges electrode shall touch the EUT before the Discharges switch is operated.

Indirect Discharges for HCP

At least 20 single Discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The Discharges electrode positions vertically at a distance of 0.1 m from the EUT and with the Discharges electrode touching the coupling plane.

Indirect Discharges for VCP

At least 20 single Discharges 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 Environmental Conditions

Temperature:	22° C
Relative Humidity:	41%RH
Atmospheric Pressure:	99.8kPa
Test Date:	2022.07.18
Tested By:	Forest Chen

5.5 Test Data and Result

EN 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-8	+8	-15	+15
Air Discharge								
Screen	A	A	A	A	A	A	/	/
Emergency Stop Switch	A	A	A	A	A	A	/	/
Industrial Touch Monitor Button pad	A	A	A	A	B	B		
IDD-link4 Transmitter Indicator light	A	A	A	A	A	A	/	/
IDD-link4 Transmitter Power interface	A	A	A	A	B	B	/	/

EN 61000-4-2 Test Points	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Contact Discharge								
IDD-link4 Transmitter Shell	A	A	A	A	/	/	/	/
IDD-link4 Transmitter USB Port	A	A	B	B	/	/	/	/
IDD-link4 Transmitter RJ45 port	A	A	A	A	/	/	/	/
IDD-link4 Transmitter DVI port	A	A	B	B	/	/	/	/
Industrial Touch Monitor USB Port	A	A	B	B	/	/	/	/
Industrial Touch Monitor Shell	A	A	B	B	/	/	/	/
Industrial Touch Monitor Reset key	A	A	B	B	/	/	/	/
Industrial Touch Monitor Main power switch	A	A	B	B	/	/	/	/
Industrial Touch Monitor RJ45 port	A	A	B	B	/	/	/	/

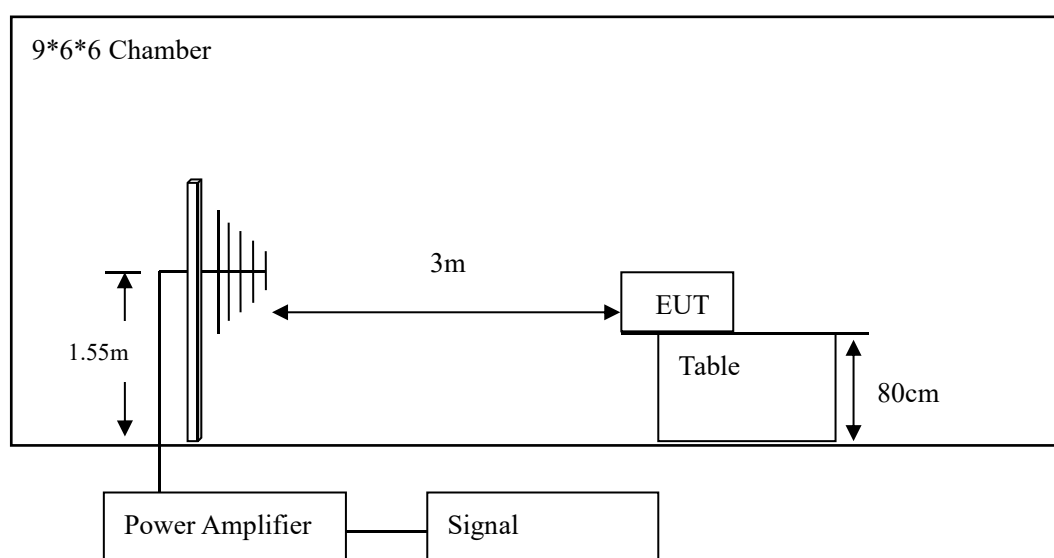
EN 61000-4-2 Test Points	Test Levels (kV)							
	Indirect Contact Discharge (HCP)				Indirect Contact Discharge (VCP)			
	-2	+2	-4	+4	-2	+2	-4	+4
Front Side	A	A	A	A	A	A	A	A
Back Side	A	A	A	A	A	A	A	A
Left Side	A	A	A	A	A	A	A	A
Right Side	A	A	A	A	A	A	A	A

6. Radio Frequency Electromagnetic Field

6.1 RS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Radio-frequency electromagnetic field Amplitude modulated	Enclosure port	80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz 3V/m(unmodulated, r.m.s) 80% AM(1kHz)	IEC 61000-4-3	A

6.2 Block Diagram of Test Setup



6.3 Test Procedure

Test is conducting under the description of IEC61000-4-3.

(1)The EUT was switched on and allowed to warm up to its normal operating condition.

(2)The EUT was exercised and monitored in the manner specified by the customer.

(3)All test instruments were PC controlled, via their IEEE 488.2 bus interfaces, and the test conducted in the following manner:

The testing frequencies were swept over the required frequency range, with a step frequency equal to 1% of fundamental. The sweep rate was 1.0×10^{-3} decades/s. For each frequency tested, the signal generator output level was adjusted automatically until the unmodulated field strength registered by the field monitor reached the desired level. This level was held constant for the specified dwell time.

(4)The EUT was continuously monitored during the test in accordance with the Pass / Fail criteria declared by the customer.

(5)The test was done in both horizontal and vertical antenna polarizations, and for all necessary sides of the EUT.

6.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	59%RH
Atmospheric Pressure:	99.8kPa
Test Date:	2022.07.15
Tested By:	Forest Chen

6.5 Test Data and Result

Field Strength: 3V/m

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

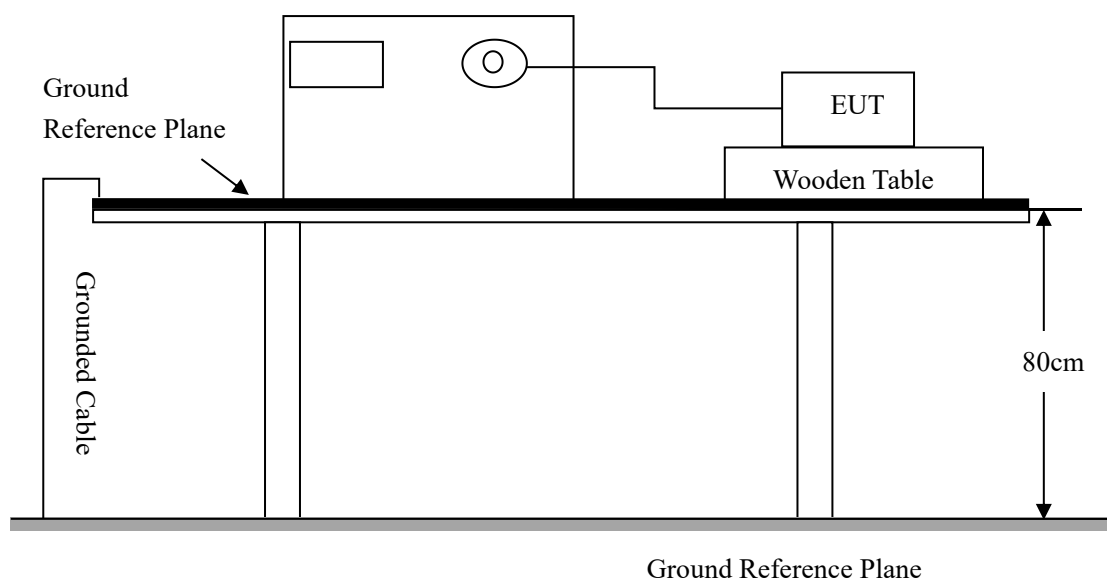
Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A
1800,2600, 3500,5000	3	A	A	A	A	A	A	A	A

7. Electrical fast transients

7.1 EFT Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Electrical fast transients	Input a.c. power ports	1kV(peak) Tr/Th:5/50ns Repetition frequency:5kHz	IEC 61000-4-4	B
	Analogue/digital data ports	0.5kV(peak) Tr/Th:5/50ns Repetition frequency:5kHz		B

7.2 Block Diagram of Test Setup



7.3 Test Procedure

(1)The EUT was switched on and allowed to warm up to its normal operating condition.

(2)D.C./A.C. Power Line Test

The EFT/B test system has a built-in coupling/decoupling network which couples the generated EFT bursts into the EUT power supply lines connected to it. The EFT bursts were coupled to the selected lines (one at a time) of the EUT.

(3)I/O Signal & Control Line Test

The interference impulses were capacitively coupled to the EUT's signal cables.

(4)The EUT was monitored during the test in accordance with the Pass /Fail criteria declared by the customer.

(5)The test was performed with EFT bursts in the positive and negative polarities and repeated on all necessary lines.

7.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	60%RH
Atmospheric Pressure:	99.6kPa
Test Date:	2022.07.17
Tested By:	Forest Chen

7.5 Test Data and Result

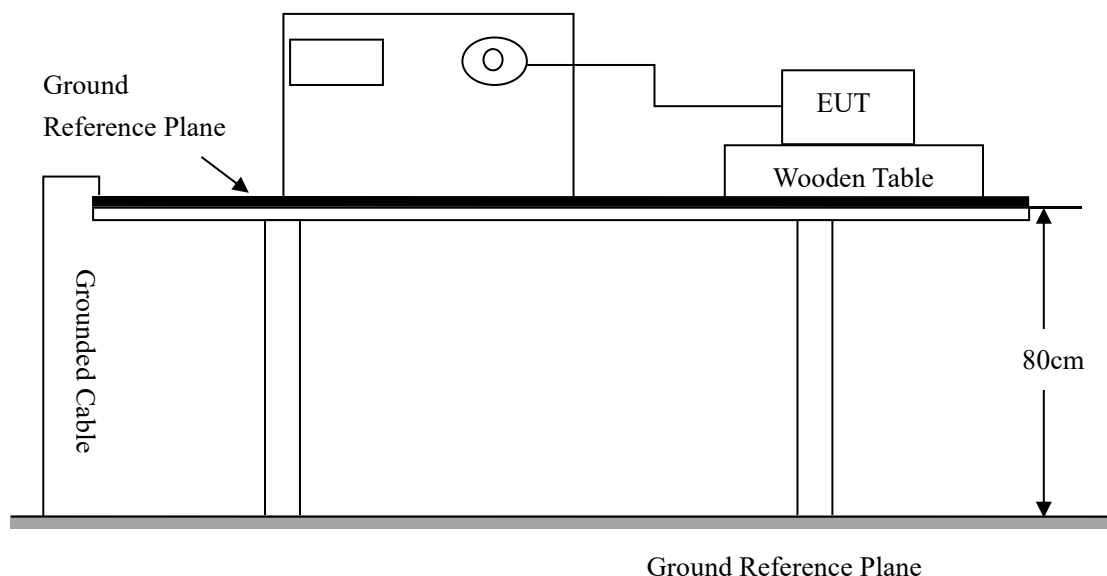
IEC61000-4-4 Test Points		Test Levels(kV)					
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC Mains input port	L	A	A	A	A	/	/
	N	A	A	A	A	/	/
	PE	A	A	A	A	/	/
	L+N	A	A	A	A	/	/
	L+PE	A	A	A	A	/	/
	N+PE	A	A	A	A	/	/
	L+N+PE	A	A	A	A	/	/
Signal Port	RJ45	A	A	/	/	/	/

8. Surges

8.1 Surges Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Surges	Input a.c. power ports	Tr/Th:1,2/50 μ s 1kV (line to line) 2kV(line to earth)	IEC 61000-4-5	B

8.2 Block Diagram of Test Setup



8.3 Test Procedure

- (1)The power supply to EUT was switched on and allowed to warm up to its normal operating condition.
- (2)The surge generator phase shifter was set to different angle.
- (3)The correct open-circuit test level was set with the surge generator disconnected from the coupling network.
- (4)The output of the generator was then reconnected back to the coupling network.
- (5)Five discharges, generated by the voltage surge generator, were made on each relevant line, for each polarity, at each test level, with the relevant discharge interval.
- (6)The EUT was observed during, and checked after the test to determine the result.

8.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	56%RH
Atmospheric Pressure:	99.7kPa
Test Date:	2022.07.02
Tested By:	Forest Chen

8.5 Test Data and Result

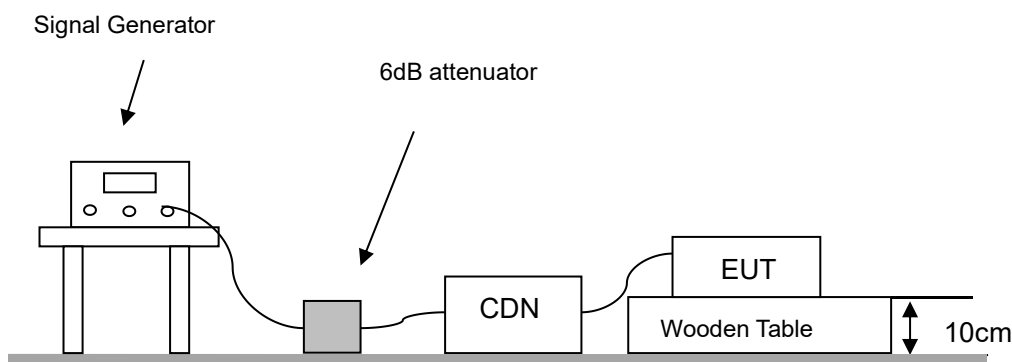
IEC61000-4-5 Test Points		Test Levels(kV)					
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
AC mains power input port	L-N	A	A	A	A	/	/
	L-PE	A	A	A	A	A	A
	N-PE	A	A	A	A	A	A

9. Radio-Frequency Continuous Conducted

9.1 CS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Radio-frequency continuous conducted	Input a.c. power ports	0,15~10MHz,3V 10~30MHz,3~1V 30~80MHz,1V	IEC 61000-4-6	A
	Analogue/digital data ports	0,15~10MHz,3V 10~30MHz,3~1V 30~80MHz,1V		A

9.2 Block Diagram of Test Setup



9.3 Test Procedure

(1)The EUT was switched on and allowed to warm up to its normal operating condition.

(2)The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN(coupling and decoupling device) is placed on the ground plane about 0.3 m 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).

(3)The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.

(4)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. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

(5)The EUT was continuously monitored during the test in accordance with the PASS/FAIL criteria declared by the customer

9.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	59%RH
Atmospheric Pressure:	100.2kPa
Test Date:	2022.07.07
Tested By:	Forest Chen

9.5 Test Data and Result

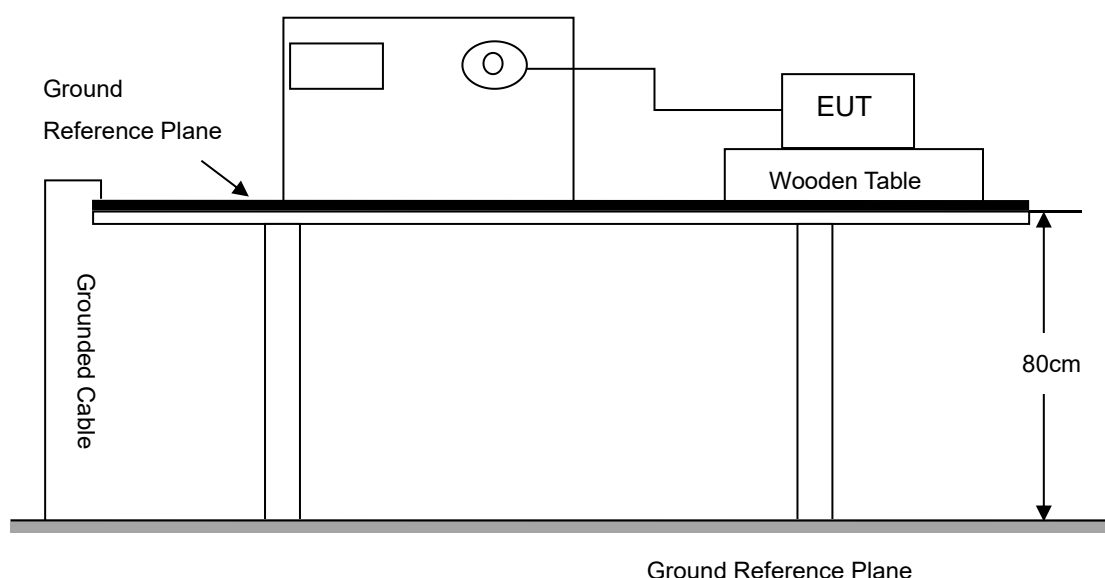
IEC61000-4-6 Test Point	Frequency Range (MHz)	Strength (Vrms)	Modulation	Result
AC Power Line	0.15~10	3	AM	A
	10~30	3~1		A
	30~80	1		A
RJ45 Port	0.15~10	3	AM	A
	10~30	3~1		A
	30~80	1		A

10. Voltage Dips and Interruptions Test Result

10.1 DIPS Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Voltage Dips	Input a.c. power port	>95% reduction 0,5 period	IEC 61000-4-11	B
		30% reduction 25 period		C
Voltage interruptions		>95% reduction 250 period		C

10.2 Block Diagram of Test Setup



10.3 Test Procedure

- (1)The interruption is introduced at selected phase angles with specified duration.
- (2)Record any degradation of performance.

10.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	60%RH
Atmospheric Pressure:	99.6kPa
Test Date:	2022.07.17
Tested By:	Forest Chen

10.5 Test Data and Result

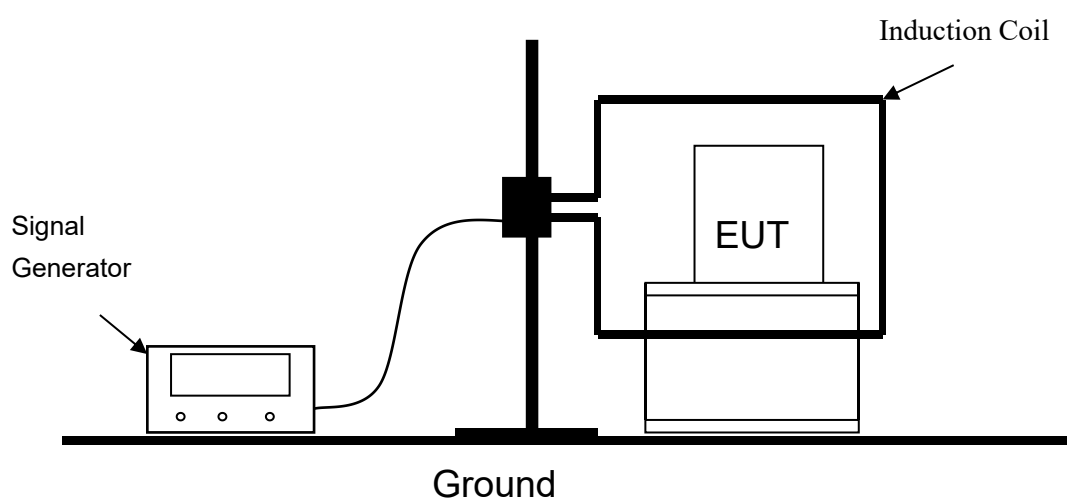
Environmental Phenomenon	Test Level $\%U_T$	Reduction (%)	Duration (periods)	Result
Voltage Dips	<5	>95	0.5	A
	70	30	25	A
Voltage interruptions	<5	>95	250	B

11. Rated Power Frequency Magnetic Field

11.1 PFMF Immunity Requirements

Environmental Phenomenon	Port	Test Specification	Basic Standard	Performance criterion
Rated power frequency magnetic field	Enclosure ports	1A/m, 50Hz or 60Hz	IEC 61000-4-8	A

11.2 Block Diagram of Test Setup



11.3 Test Procedure

The EUT is under the magnetic fields at a level of 1A/m. The test is performed at either 50Hz or 60Hz.

The floor-standing EUT and its cables are isolated from the ground reference plane by an insulating support of 10cm thick.

The test may be performed with the EUT powered at any one of its nominal input voltages and frequencies. During the test, the EUT is powered at the same frequency with the magnetic field.

11.4 Environmental Conditions

Temperature:	22° C
Relative Humidity:	59%RH
Atmospheric Pressure:	100.0kPa
Test Date:	2022.07.14
Tested By:	Forest Chen

11.5 Test Data and Result

Axis	Magnetic Field Strength (A/m)	Test Frequency	Result
X	1	50Hz	A
Y	1	50Hz	A
Z	1	50Hz	A

EXHIBIT A – PHOTOGRAPHS OF TEST SETUP

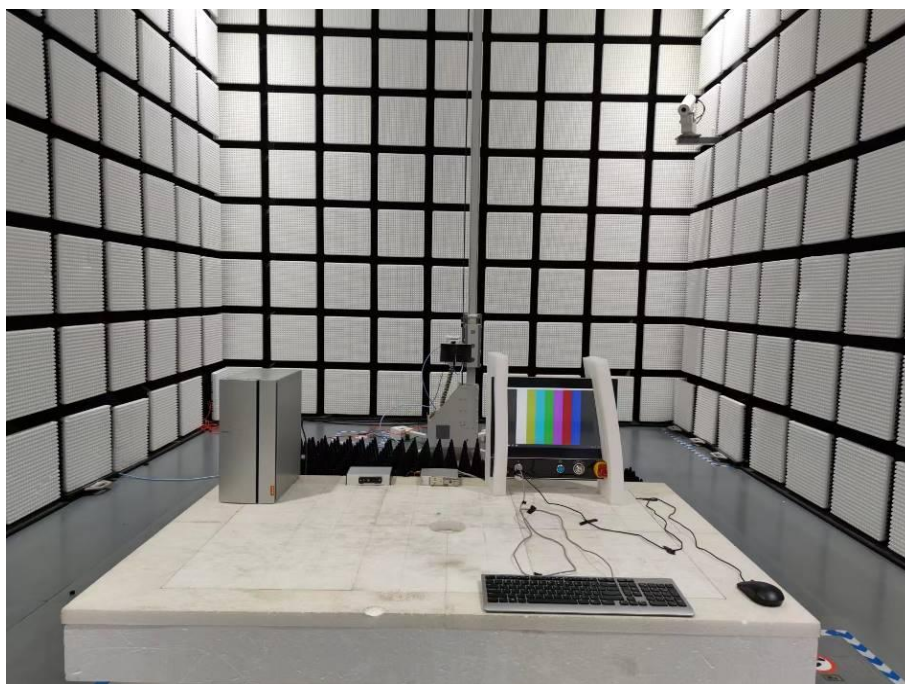
Conducted Emission Test Setup



Radiated Emission Test Setup (Below 1GHz)



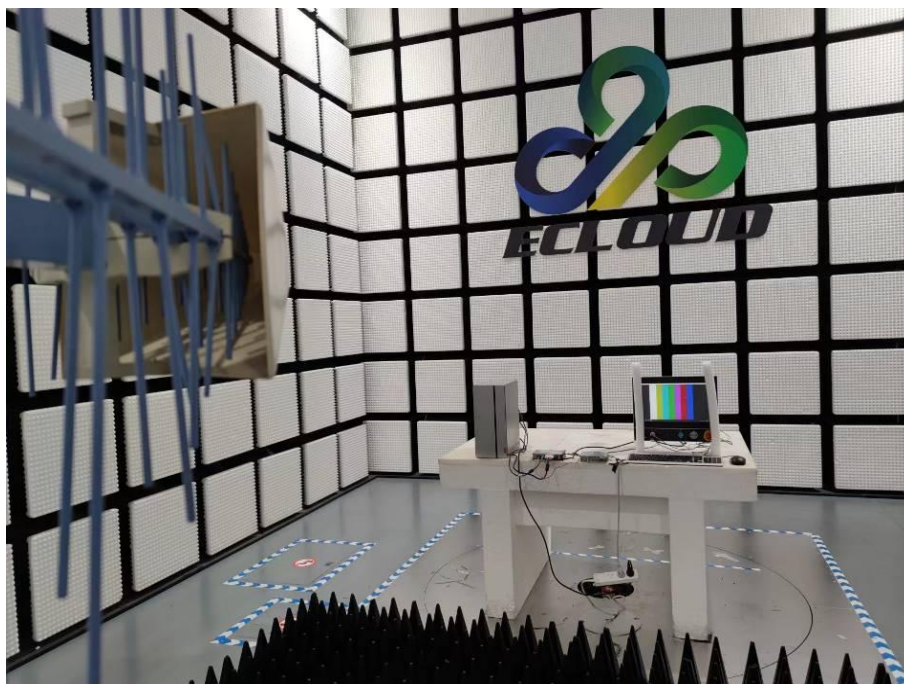
Radiated Emission Test Setup(Above 1GHz)



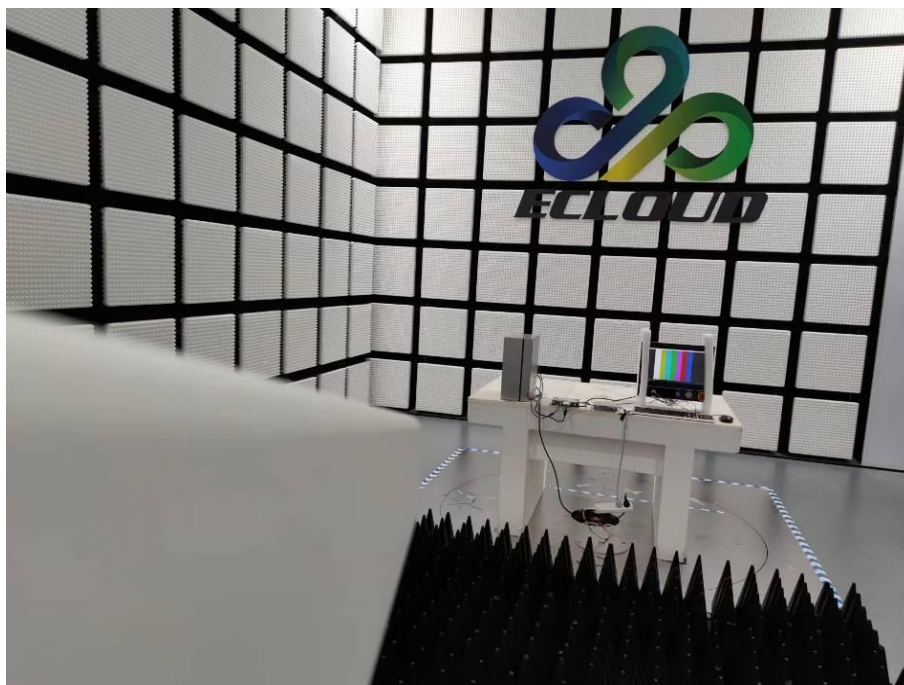
IEC 61000-4-2 ESD Immunity Test View



IEC 61000-4-3 RS Immunity Test View (Below 1GHz)



IEC 61000-4-3 RS Immunity Test View(Above 1GHz)



IEC 61000-4-4 EFT Immunity Test View



IEC 61000-4-4 EFT Immunity Test View(signal port)



IEC 61000-4-5 Surge Immunity Test View



IEC 61000-4-6 CS Immunity Test View



IEC 61000-4-6 CS Immunity Test View(signal port)



IEC 61000-4-11 Dips Immunity Test View



IEC 61000-4-8 PFMF Immunity Test View

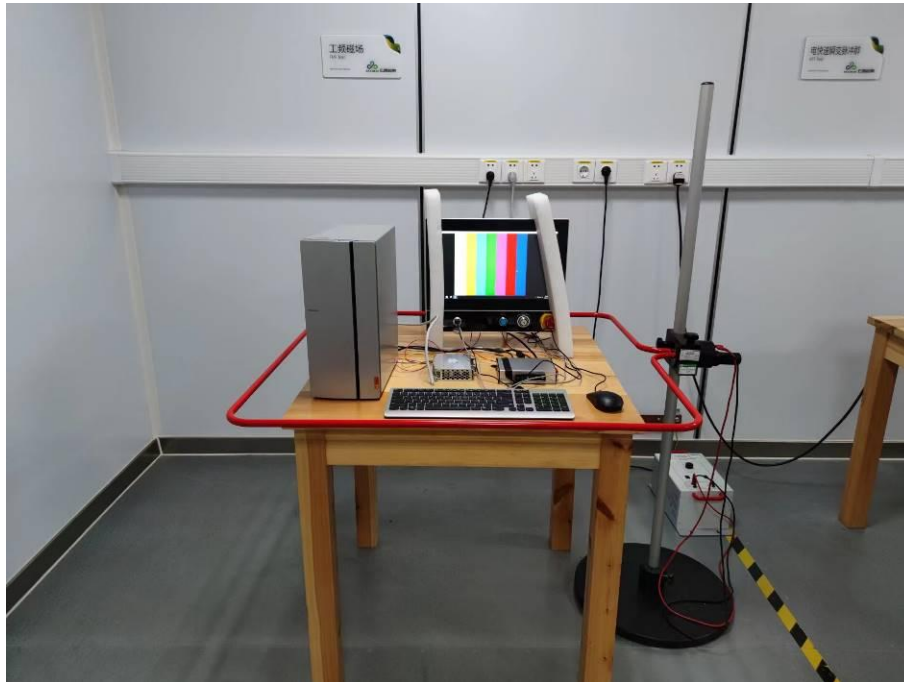


EXHIBIT B – PHOTOGRAPHS OF EUT

EUT All View



IDD-link4 Transmitter External View



IDD-link4 Transmitter External View



IDD-link4 Transmitter External View



IDD-link4 Transmitter External View



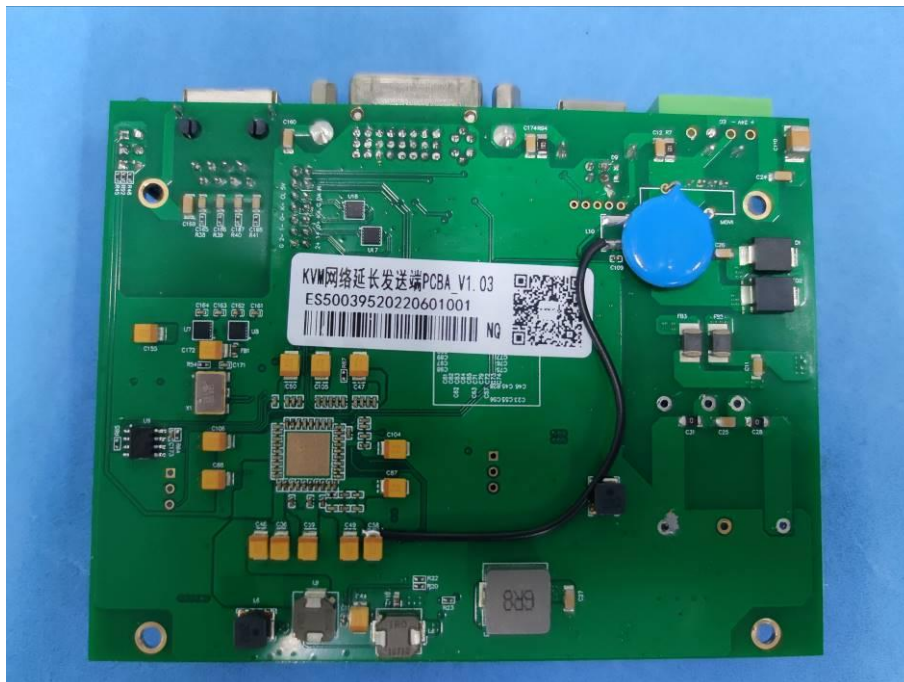
IDD-link4 Transmitter External View



IDD-link4 Transmitter Main Board Bottom View



IDD-link4 Transmitter Main Board TOP View



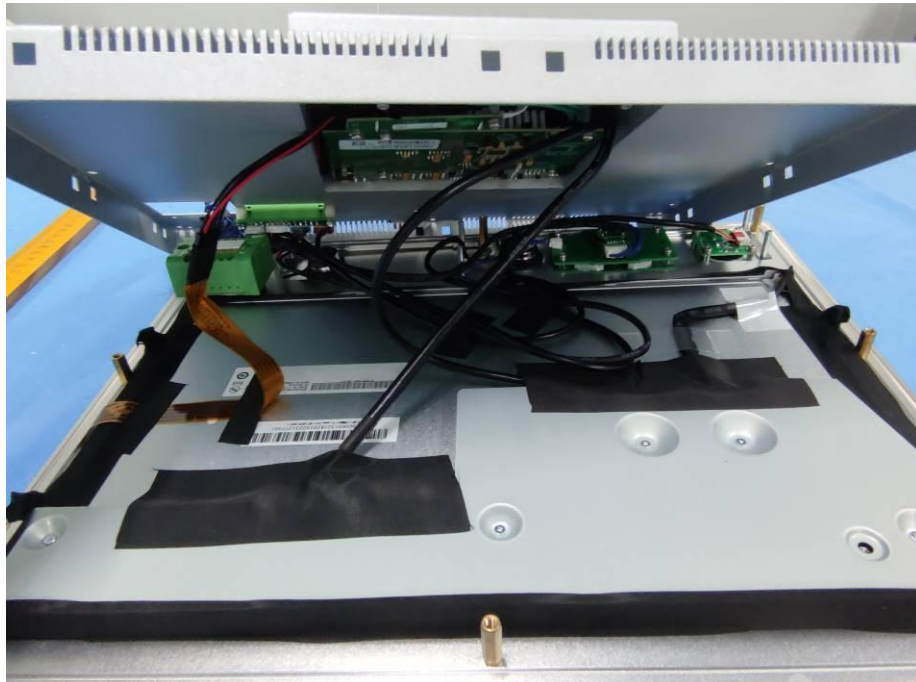
Industrial Touch Monitor External View



Industrial Touch Monitor External View



Industrial Touch Monitor Internal View



***** END OF REPORT *****