

# TEST REPORT

**Project No.:** TM-2207000439P

**Applicant:** AAEON Technology Inc.

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New Taipei City, Taiwan, R.O.C.

**Manufacturer:** AAEON Technology Inc.

**Address:** 5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist.,  
New Taipei City, Taiwan, R.O.C.

**Equipment Under Test (EUT):**

**Name:** UP Squared V2 Main Board; UP Squared V2 Edge System

**Brand Name:** AAEON

**Model No.:** xUPSxEHLx; xUPSxEDGExEHLx (x - Where x may be any combination  
of alphanumeric characters or "-" or blank.)

**Added Model(s):** N/A

## Standards:

EN 55032: 2015 + A11: 2020	BS EN 55032: 2015 + A11: 2020
CISPR 32: 2015 (Ed 2.0) + C1: 2016	
EN IEC 61000-3-2: 2019	BS EN IEC 61000-3-2: 2019
EN 61000-3-3: 2013 + A1: 2019	BS EN 61000-3-3: 2013 + A1: 2019
EN 55035: 2017 + A11: 2020	BS EN 55035: 2017 + A11: 2020
IEC 61000-4-2: 2008	IEC 61000-4-6: 2013 + COR1: 2015
IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010	IEC 61000-4-8: 2009
IEC 61000-4-4: 2012	IEC 61000-4-11: 2004 + A1: 2017
IEC 61000-4-5: 2014 + A1: 2017	

**Date of Sample Receipt :** July 26, 2022

**Date of Test :** August 9, 2022

**Date of Issue :** August 18, 2022

## Remarks:

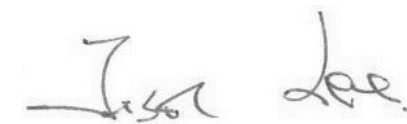
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## Disclaimer

Variants information between/among model numbers / trademarks is provided by the applicant, test results of this test report are applicable to the sample EUT received of main test model name

**Approved By**



**Date**

**August 18, 2022**

**Jason Lee (Section Manager)**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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## Revision History

Revision	Report Number	Description	Issue Date
00	TMXD2207003480DE	Original.	August 18, 2022

**Note:**

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# 1. General Description

## 1.1 General Description of EUT

Name of EUT	UP Squared V2 Main Board; UP Squared V2 Edge System
Brand Name	AAEON
Model No.(s)	xUPSxEHLx; xUPSxEDGExEHLx (x - Where x may be any combination of alphanumeric characters or "-"or blank.)
Added Model(s)	N/A

### Variant Description

Model	Difference	Tested (Checked)
UPS-EHL01	UP Squared V2 Main Board	<input checked="" type="checkbox"/>
UPS-EDGE-EHL01	UP Squared V2 Edge System	<input checked="" type="checkbox"/>
xUPSxEHLx; xUPSxEDGExEHLx	1. x - Where x may be any combination of alphanumeric characters or "-"or blank. 2. For marketing purpose only.	<input type="checkbox"/>

## 1.2 Details of EUT

EUT Power Rating	12VDC from Adaptor
Adaptor	Supplier: Powertron Electronic Corp. Model No.: PS1065-120IB500 I/P: 100-240VAC~50-60Hz, 1.8A O/P: 12VDC, 5.0A 60W
Highest internal frequency	2000MHz

### Accessories Cable List

Cable Type	Core	Length	Category	Shielding/Non-shielding
DC power cable	2 cores	1.1m	N/A	Non-shielding

### 1.3 Description of Support Units

#### EUT Devices:

No.	Equipment	Model No.	Brand Name
1	CPU (2.0GHz)	J6426	Intel
2	Memory (16GB)	MT53E2G32D4DT-046 WT:A	Micron
3	Power Adapter	PS1065-120IB500	Powertron Electronic Corp.
4	Storage (128GB)	SDINBDA4-128G-V	Sandisk

#### Peripherals Devices:

No.	PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
1	Earphone & Microphone	HAWK	X710	N/A
2	USB Mouse	LOGITECH	M-U0026	N/A
3	USB Keyboard	LOGITECH	Y-U0009	N/A
4	USB HDD	Transcend	TS1TSJ25M3G	G19229-0801
5	Monitor	ASUS	PA248Q	N/A
6	Monitor	ASUS	PA248Q	N/A
7	Modem	GALILEO	AL-56ERM	0MERM04A0201
8-9	Server PC	DELL	Precision 3640 Tower	N/A

#### Support Equipment Used in Tested Cable

No.	Cable Type	Core	Length	Shielding/Non-shielding
1	Earphone & Microphone	N/A	1.8m	Non-shielding
2-3	USB	N/A	1.5m	Shielding
4	USB	N/A	0.5m	Shielding
5	HDMI	N/A	2.0m	Shielding
6	DP	N/A	2.0m	Shielding
7	SIO	N/A	1.5m	Shielding
8-9	RJ45	N/A	20m	Non-shielding

### 1.4 I/O Port Description

I/O Port Types	Q'TY
1. HDMI Port	1
2. Earphone Port	1
3. Microphone Port	1
4. USB 3.0 Port	3
5. DP Port	1
6. LAN Port	2
7. SIO Port	1

## 1.5 Decision of Test Mode

The test configuration/ modes are as the following:

### Conduction Modes (Power port):

1	DP+HDMI 1920*1200 60Hz	100VAC, 50Hz
2		230VAC, 50Hz

### Conduction Modes (Wired network ports):

1	LAN 1	10Mbps
2		100Mbps
3		1Gbps
4	LAN 2	1Gbps

### Radiation Modes:

1	DP+HDMI 1920*1200 60Hz	100VAC, 50Hz
2	DP+HDMI 1920*1200 60Hz	230VAC, 50Hz
	DP+HDMI 1920*1200 60Hz / 1-6GHz	

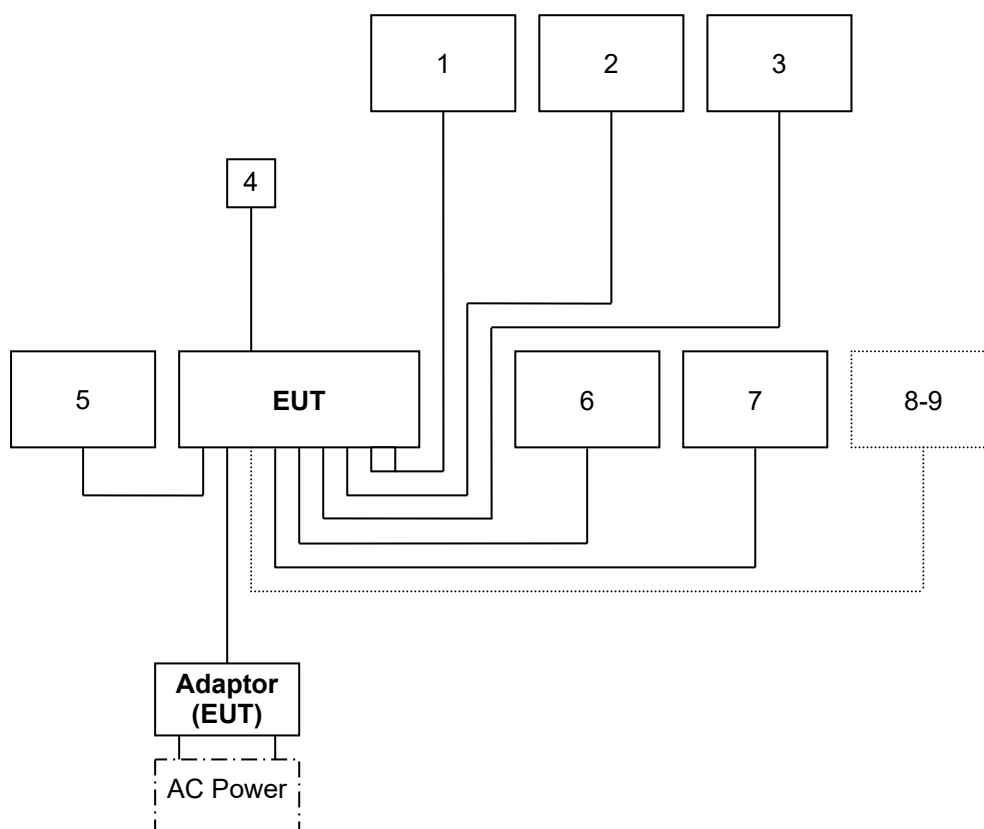
## 1.6 The Final Test Mode of the EUT

After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode	
Conducted Emission	Mode 2
ISN	Mode 2
Radiated Emission Below 1GHz	Mode 2
Radiated Emission Above 1GHz	Mode 2
Harmonics & Flicker	Mode 2
Immunity	Mode 2

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

## 1.7 Configuration of Tested System



## 1.8 Operation Procedure

1. Windows 10 boots system.
2. Run colorbarmove.mp4 to activate all peripherals for test EUT.
3. Run Burnintest 9.0.exe to activate all peripherals for test EUT.
4. Run LanTest20.exe setup max test to Lan port (EUT IP 192.168.1.10/192.168.1.20, Server PC IP 192.168.122/192.168.1.23).

## 1.9 Summary of Results

Emission		
Standard	Test Type	Result
EN 55032: 2015 + A11: 2020	Conducted Emission	PASS
CISPR 32: 2015 (Ed 2.0) + C1: 2016	ISN	PASS
BS EN 55032: 2015 + A11: 2020	Radiated Emission	PASS
EN IEC 61000-3-2: 2019	Harmonic current emissions	PASS
BS EN IEC 61000-3-2: 2019		
EN 61000-3-3: 2013 + A1: 2019	Voltage changes, voltage fluctuations & flicker	PASS
BS EN 61000-3-3: 2013 + A1: 2019		

Immunity			
Standard	Test Type	Result	Performance Criteria
IEC 61000-4-2: 2008	ESD	PASS	B
IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010	RS	PASS	A
IEC 61000-4-4: 2012	EFT	PASS	B
IEC 61000-4-5: 2014 + A1: 2017	Surge	PASS	B
IEC 61000-4-6: 2013 + COR1: 2015	CS	PASS	A
IEC 61000-4-8: 2009	PFMF	N/A	A
IEC 61000-4-11: 2004 + A1: 2017	DIP	PASS	C/C/B

## 1.10 Reporting Statements of Conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

## 1.11 Deviation

No deviation from the mentioned test methods and applicable standards.



## 2.EMISSION

### 2.1 Limit

#### Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class A(dBuV)		Class B(dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

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

#### Maximum permissible level of Common Mode Conducted Emission (Asymmetric Mode)

##### Class A

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	97 - 87	84 - 74	53 - 43	40 - 30
0.5 - 30.0	87	74	43	30

##### Class B

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	84 - 74	74 - 64	40 - 30	30 - 20
0.5 - 30.0	74	64	30	20

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

#### Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	40	30
230 - 1000	47	37

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

### **Maximum permissible level of Radiated Emission measured at 3 meter**

Frequency range (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	50	40
230 - 1000	57	47

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

### **Limits above 1 GHz**

#### **Limits for radiated disturbance of Class A ITE at a measurement distance of 3m**

Frequency range (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 - 3	56	76
3 - 6	60	80

Note: The lower limit applies at the transition frequency.

#### **Limits for radiated disturbance of Class B ITE at a measurement distance of 3m**

Frequency range (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 - 3	50	70
3 - 6	54	74

Note: The lower limit applies at the transition frequency.

### **Requirements for radiated emissions from FM receivers**

Frequency range (MHz)	Measurement				Class B Limit dB(μV/m)
	Facility	Distance (m)	Detector type / Bandwidth	Fundamental	Harmonics
30 - 230	OATS/SAC	10	Quasi Peak / 120 kHz	50	42
230 - 300					42
300 - 1000					46
30 - 230	OATS/SAC	3	Quasi Peak / 120 kHz	60	52
230 - 300					52
300 - 1000					56

These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the LO. Signals at all other frequencies shall be compliant with the limits

Note: SAC: Semi Anechoic Chamber

OATS: Open Area Test Site

## 2.2 Conducted Emission

### 2.2.1 Test Instruments

Conducted Emission Room # B					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Attenuator	MCL	HAT-10	SD-C012	03/22/2022	03/21/2023
BNC Cable	EMEC	CFD300-NL	SD-C020	01/04/2022	01/03/2023
EMI Test Receiver	R&S	ESR3	102166	03/28/2022	03/27/2023
ISN	Teseq	ISN T800	30847	04/11/2022	04/10/2023
LISN	Schwarzbeck	NSLK 8127	8127382	04/06/2022	04/05/2023
LISN(EUT)	Schwarzbeck	NSLK 8127	8127526	04/06/2022	04/05/2023
Thermo-Hygro Meter	Wisewind	N/A	SD-S017	09/02/2021	09/01/2022
Test S/W	EZ-EMC				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Conducted Emission					
Expanded uncertainty U <sub>lab</sub> (k=2) of Conducted Emission is 2.8 dB.					
Expanded uncertainty U <sub>lab</sub> (k=2) of ISN Conducted Emission is 3.2 dB.					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Conducted Emission measurement is 3.8 dB.					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of ISN Conducted Emission measurement is 5.0 dB.					

### 2.2.2 Measurement Level Calculation

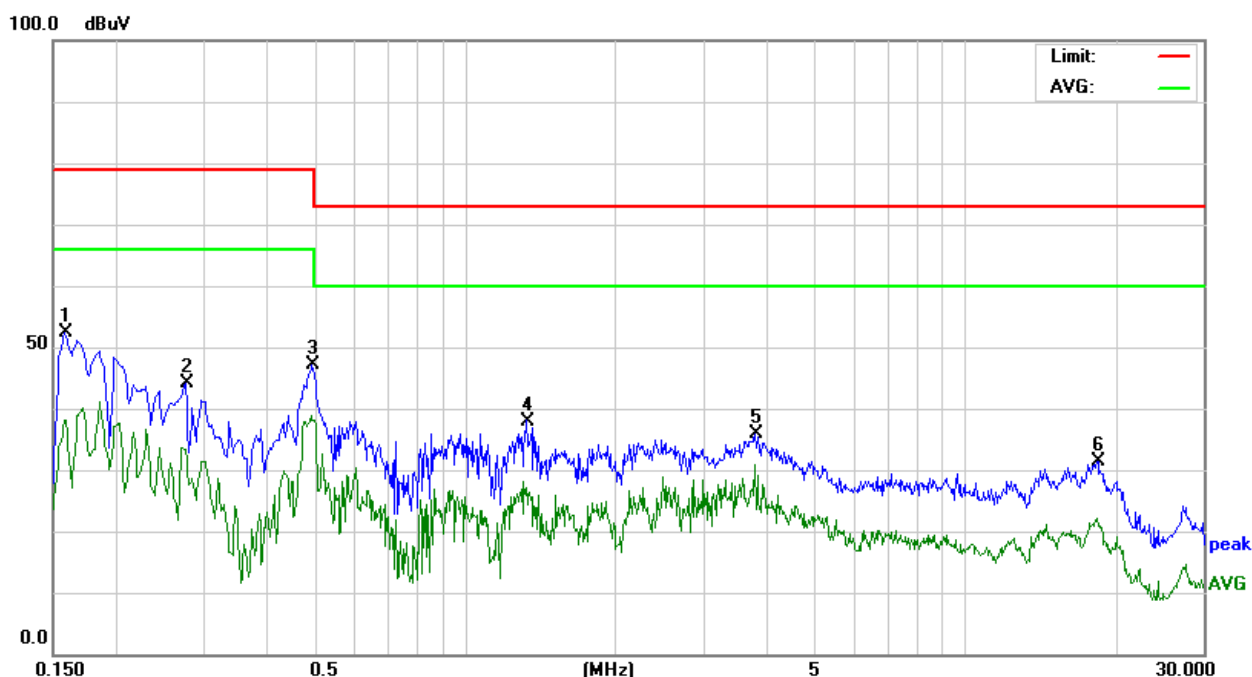
Factor = LISN insertion loss + Cable loss + Pulse Limiter insertion loss

Measurement Level = Reading Level + Factor

Over (Margin) = Measurement Level – Limit

### 2.2.3 Measurement Data (CE)

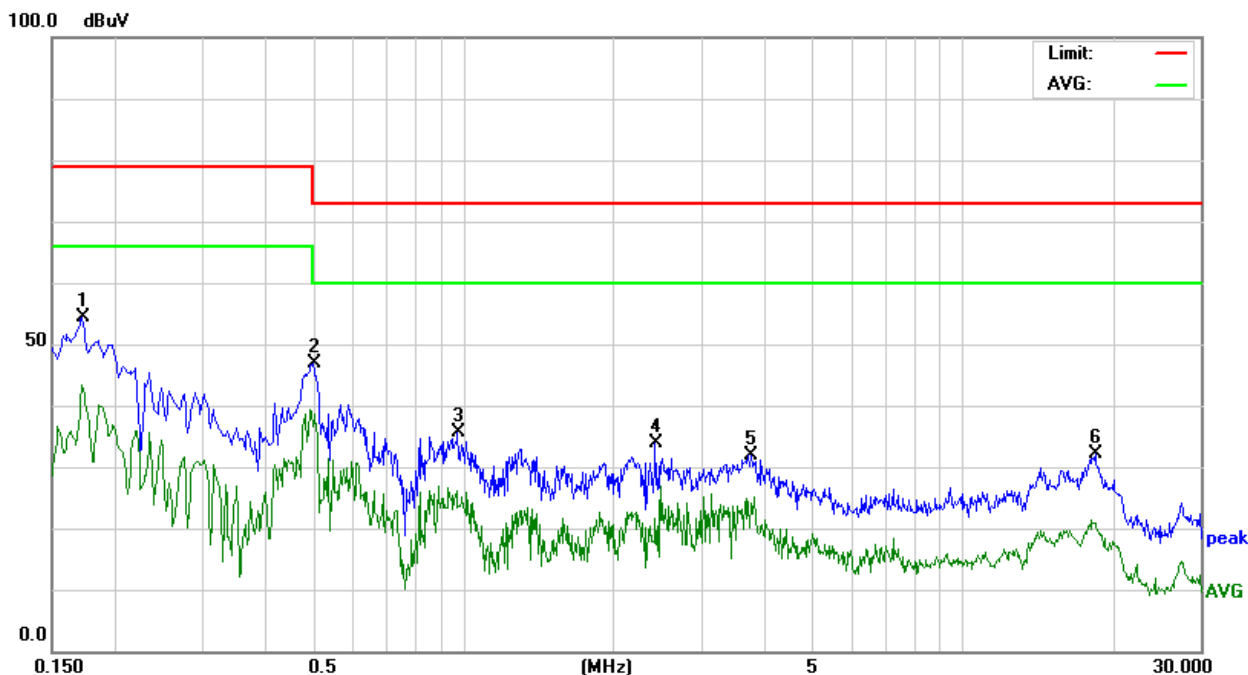
<b>Model No.</b>	UPS-EHL01; UPS-EDGE-EHL01	<b>6dB Bandwidth</b>	9 kHz
<b>Environmental Conditions</b>	22.5°C, 64% RH	<b>Test Mode</b>	Mode 2
<b>Tested by</b>	Jack Chen	<b>Phase</b>	L1
<b>Standard</b>	EN 55032 CLASS A		



Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.1590	42.28	10.08	52.36	79.00	-26.64	P	L1
0.2760	34.02	10.10	44.12	79.00	-34.88	P	L1
0.4965	36.94	10.12	47.06	79.00	-31.94	P	L1
1.3245	27.77	10.23	38.00	73.00	-35.00	P	L1
3.7995	25.46	10.37	35.83	73.00	-37.17	P	L1
18.5055	20.68	10.71	31.39	73.00	-41.61	P	L1

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

<b>Model No.</b>	UPS-EHL01; UPS-EDGE-EHL01	<b>6dB Bandwidth</b>	9 kHz
<b>Environmental Conditions</b>	22.5°C, 64% RH	<b>Test Mode</b>	Mode 2
<b>Tested by</b>	Jack Chen	<b>Phase</b>	L2
<b>Standard</b>	EN 55032 CLASS A		

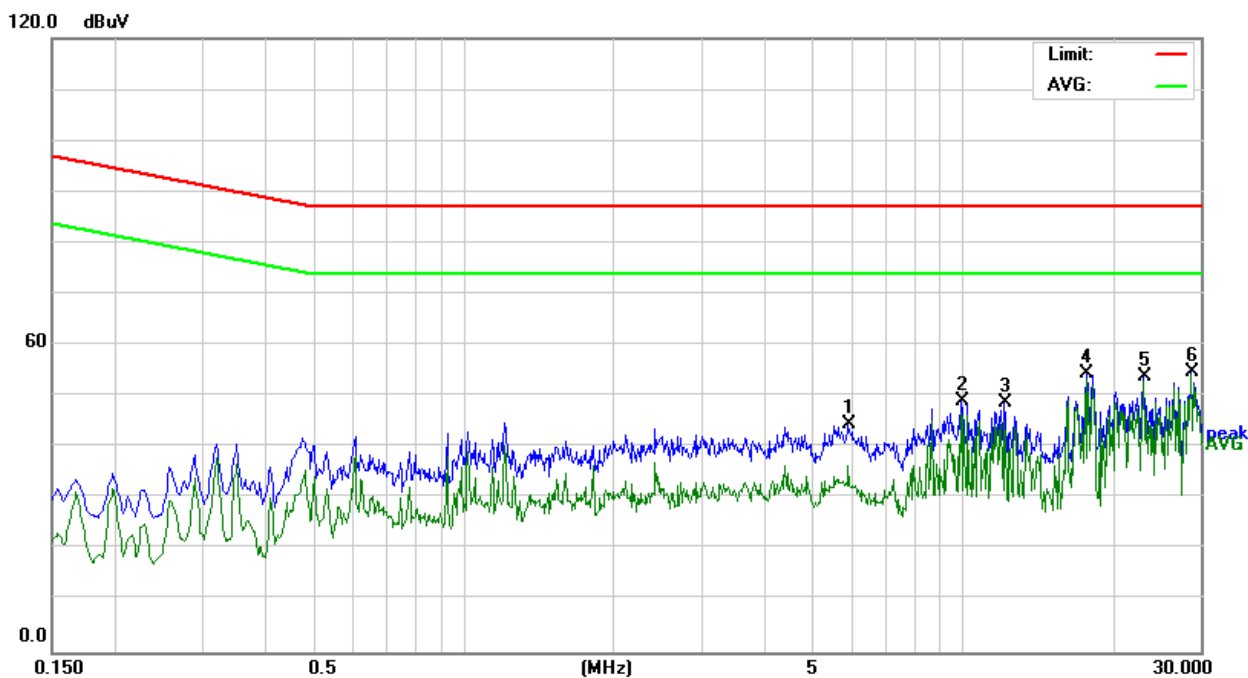


Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.1725	44.39	10.09	54.48	79.00	-24.52	P	L2
0.5010	36.66	10.13	46.79	73.00	-26.21	P	L2
0.9780	25.49	10.19	35.68	73.00	-37.32	P	L2
2.4224	23.52	10.29	33.81	73.00	-39.19	P	L2
3.7725	21.52	10.34	31.86	73.00	-41.14	P	L2
18.5190	21.44	10.68	32.12	73.00	-40.88	P	L2

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

## 2.2.4 Measurement Data (ISN)

<b>Model No.</b>	UPS-EHL01; UPS-EDGE-EHL01	<b>6dB Bandwidth</b>	9 kHz
<b>Environmental Conditions</b>	22.5°C, 64% RH	<b>Test Mode</b>	Mode 2
<b>Tested by</b>	Jack Chen	<b>Standard</b>	EN 55032 CLASS A



Conducted Emission Readings						
Frequency Range Investigated				150 kHz to 30 MHz		
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)
5.9100	24.72	19.69	44.41	87.00	-42.59	P
9.9375	29.45	19.68	49.13	87.00	-37.87	P
12.1380	29.05	19.73	48.78	87.00	-38.22	P
17.6955	34.59	19.85	54.44	87.00	-32.56	P
23.1270	33.96	19.97	53.93	87.00	-33.07	P
28.6845	34.72	20.14	54.86	87.00	-32.14	P

## 2.3 Radiated Emission

### 2.3.1 Test Instruments

#### Below 1GHz

Open Area Test Site # H					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Teseq	CBL 6112D	40529	09/23/2021	09/22/2022
Cable	EMEC	CFD400E-LW	SD-R074	08/12/2021	08/11/2022
EMI Test Receiver	R&S	ESCI	101340	02/11/2022	02/10/2023
Pre-Amplifier	HP	8447D	1937A01554	09/24/2021	09/23/2022
Thermo-Hygro Meter	Wisewind	201A	No. 03	05/18/2022	05/17/2023
Test S/W	EZ-EMC				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Radiated Emission					
Expanded uncertainty Ulab (k=2) of Radiated Emission is 5.1 dB.(30MHz-1000MHz)					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.2 dB.(30MHz-1000MHz)					

#### Above 1GHz

Chamber # E					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Horn Antenna	ETS	3117	00139062	07/06/2022	07/05/2023
Microflex Cable x 7m	EMCI	EMC107-NM-NM-7000	SD-R077	07/05/2022	07/04/2023
K-Type Cable x 1m	EMCI	EMC101G-KM-KM-1000	SD-R075	07/05/2022	07/04/2023
Pre-Amplifier	Com-Power	PAM-118A	551041	06/28/2022	06/27/2023
Signal Analyzer	R&S	FSV40	101269	06/22/2022	06/23/2023
Thermo-Hygro Meter	Wisewind	201A	SD-R046	08/01/2022	07/31/2023
Test S/W	EZ-EMC				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Radiated Emission					
Expanded uncertainty (k=2) of Radiated Emission measurement is 4.6 dB.(1-6GHz)					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.5 dB.(1-6GHz)					

### 2.3.2 Measurement Level Calculation

Correction Factor = Antenna Factor + Cable loss- Amplifier Gain

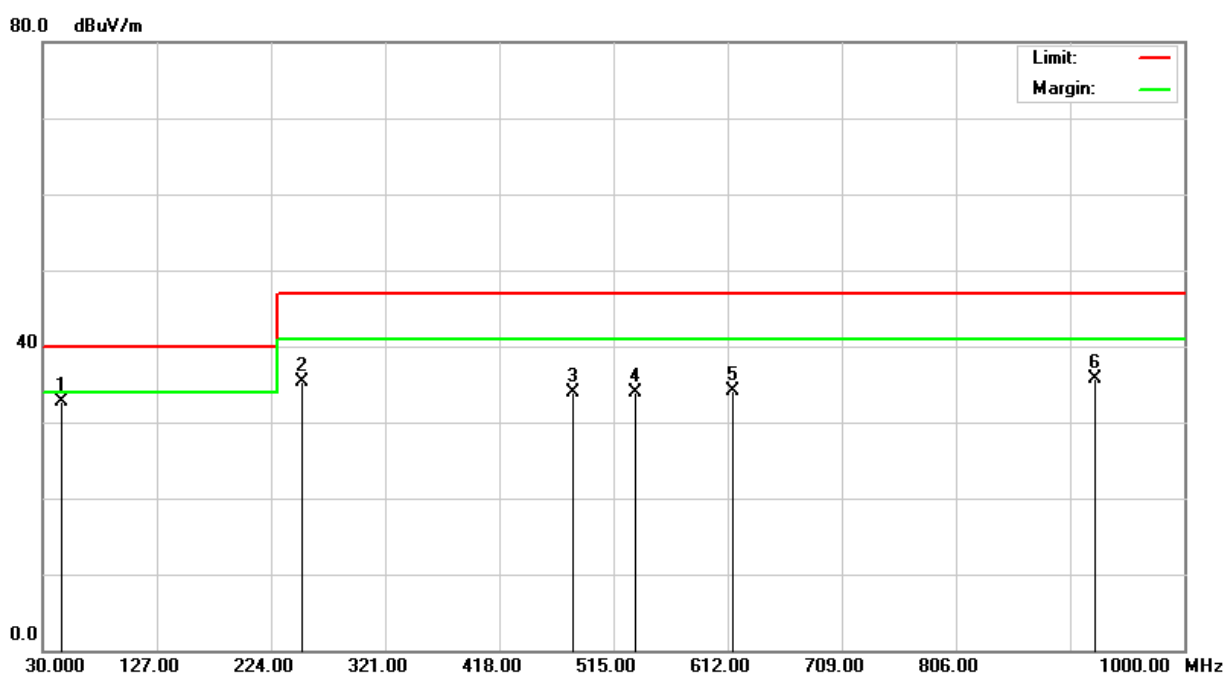
Measurement Level = Reading Level + Correction Factor

Over (Margin) = Measurement Level – Limit

### 2.3.3 Measurement Data

#### Below 1GHz

Model No.	UPS-EHL01; UPS-EDGE-EHL01	Test Mode	Mode 2
Environmental Conditions	29.6°C, 65% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 55032 CLASS A		

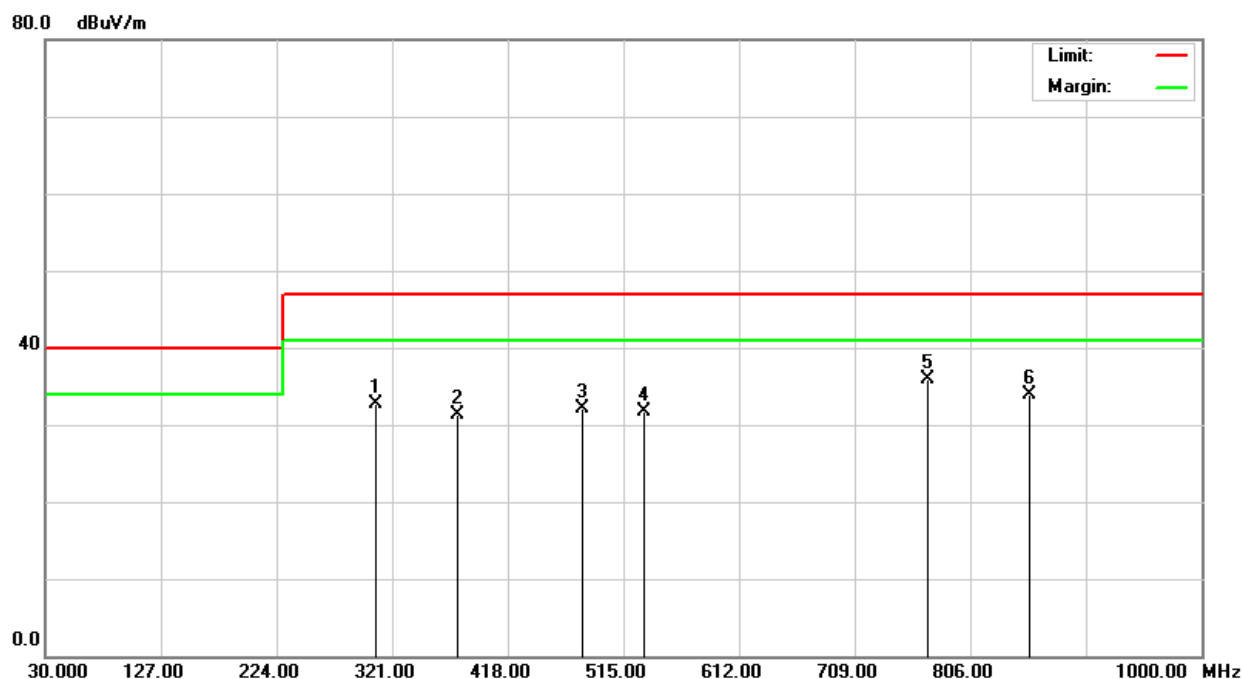


Radiated Emission Readings									
Frequency Range Investigated					30 MHz to 1000 MHz at 10m				
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)
45.6300	43.50	-10.83	32.67	40.00	-7.33	100	284	Q	V
250.9200	42.30	-6.92	35.38	47.00	-11.62	100	136	Q	V
480.7700	35.20	-1.20	34.00	47.00	-13.00	400	277	Q	V
533.2500	34.40	-0.44	33.96	47.00	-13.04	400	165	Q	V
615.8800	33.20	0.97	34.17	47.00	-12.83	400	342	Q	V
924.1900	31.50	4.16	35.66	47.00	-11.34	400	141	Q	V

Note: 1. P= Peak Reading; Q= Quasi-peak Reading.



Model No.	UPS-EHL01; UPS-EDGE-EHL01	Test Mode	Mode 2
Environmental Conditions	29.6°C, 65% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 55032 CLASS A		



Radiated Emission Readings									
Frequency Range Investigated					30 MHz to 1000 MHz at 10m				
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)
307.8700	38.40	-5.76	32.64	47.00	-14.36	400	332	Q	H
375.6600	35.20	-3.98	31.22	47.00	-15.78	400	167	Q	H
480.3500	33.40	-1.21	32.19	47.00	-14.81	100	285	Q	H
531.9400	32.30	-0.53	31.77	47.00	-15.23	100	313	Q	H
769.8100	33.20	2.66	35.86	47.00	-11.14	100	284	Q	H
856.3200	30.10	3.73	33.83	47.00	-13.17	100	145	Q	H

Note: 1. P= Peak Reading; Q= Quasi-peak Reading.

### Above 1GHz

<b>Model No.</b>	UPS-EHL01; UPS-EDGE-EHL01	<b>Test Mode</b>	Mode 2
<b>Environmental Conditions</b>	21.9°C, 57% RH	<b>6dB Bandwidth</b>	1 MHz
<b>Antenna Pole</b>	Vertical / Horizontal	<b>Antenna Distance</b>	3m
<b>Highest frequency generated or used</b>	2000MHz	<b>Upper frequency</b>	6000MHz
<b>Detector Function</b>	Peak and average.	<b>Tested by</b>	Jack Chen
<b>Standard</b>	EN 55032 CLASS A		

Radiated Emission Readings							
Frequency Range Investigated				Above 1GHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)
1050.000	54.54	-8.67	45.87	76.00	-30.13	P	V
1690.000	51.53	-7.08	44.45	76.00	-31.55	P	V
1845.000	47.51	-5.21	42.30	76.00	-33.70	P	V
2225.000	47.56	-4.65	42.91	76.00	-33.09	P	V
2520.000	48.74	-4.04	44.70	76.00	-31.30	P	V
3000.000	47.97	-3.80	44.17	76.00	-31.83	P	V

Radiated Emission Readings							
Frequency Range Investigated				Above 1GHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/A)	Pol. (H/V)
1050.000	52.05	-8.67	43.38	76.00	-32.62	P	H
1685.000	54.36	-7.11	47.25	76.00	-28.75	P	H
1845.000	49.07	-5.21	43.86	76.00	-32.14	P	H
2155.000	48.01	-5.24	42.77	76.00	-33.23	P	H
2495.000	50.17	-4.03	46.14	76.00	-29.86	P	H
3000.000	46.56	-3.80	42.76	76.00	-33.24	P	H

Note: 1. P= Peak Reading; A= Average Reading.

## 3. Harmonics

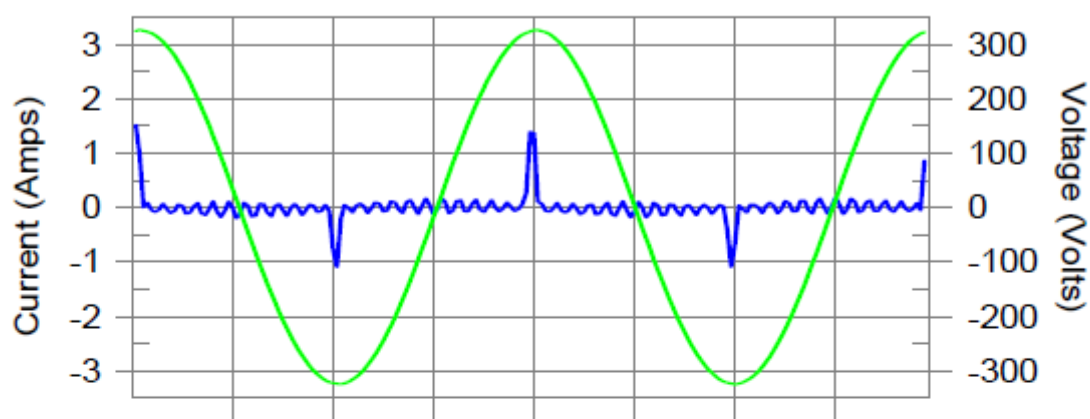
### 3.1 Test Instruments

Immunity A					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	NSG 1007-5	1537A01296	03/11/2022	03/10/2023
Signal Conditioning Unit	Teseq	NSG 1000-1	1846A01831	03/11/2022	03/10/2023
Test Software	WIN2100V4 Ver. 4.22				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

## 3.2 Measurement Data

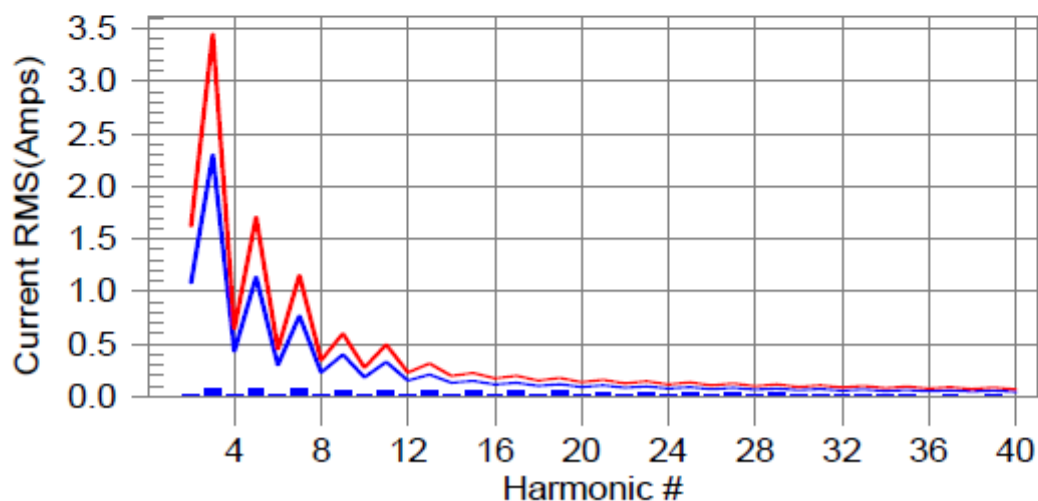
Test Result: Pass      Source qualification: Normal

### Current & voltage waveforms



### Harmonics and Class A limit line

### European Limits



Test result: Pass      Worst harmonics H21-27.9% of 150% limit, H21-40.8% of 100% limit

Test Result: Pass Source qualification: Normal  
 THC(A): 0.208 I-THD(%): 277.2 POHC(A): 0.091 POHC Limit(A): 0.251

Highest parameter values during test:

V RMS (Volts): 229.81 Frequency(Hz): 50.00  
 I Peak (Amps): 1.641 I RMS (Amps): 0.247  
 I Fund (Amps): 0.075 Crest Factor: 6.968  
 Power (Watts): 16.0 Power Factor: 0.294

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.013	1.080	1.2	0.015	1.620	0.9	Pass
3	0.068	2.300	2.9	0.069	3.450	2.0	Pass
4	0.014	0.430	3.2	0.015	0.645	2.4	Pass
5	0.066	1.140	5.8	0.068	1.710	4.0	Pass
6	0.014	0.300	4.6	0.015	0.450	3.4	Pass
7	0.065	0.770	8.4	0.067	1.155	5.8	Pass
8	0.014	0.230	6.1	0.015	0.345	4.5	Pass
9	0.063	0.400	15.7	0.065	0.600	10.8	Pass
10	0.014	0.184	7.7	0.016	0.276	5.6	Pass
11	0.060	0.330	18.3	0.062	0.495	12.5	Pass
12	0.014	0.153	9.4	0.016	0.230	6.8	Pass
13	0.058	0.210	27.5	0.059	0.315	18.8	Pass
14	0.014	0.131	11.0	0.016	0.197	8.0	Pass
15	0.055	0.150	36.3	0.056	0.225	24.9	Pass
16	0.014	0.115	12.6	0.016	0.173	9.0	Pass
17	0.051	0.132	38.7	0.052	0.198	26.5	Pass
18	0.014	0.102	14.1	0.015	0.153	10.1	Pass
19	0.047	0.118	40.1	0.049	0.178	27.4	Pass
20	0.014	0.092	15.4	0.015	0.138	11.1	Pass
21	0.044	0.107	40.8	0.045	0.161	27.9	Pass
22	0.014	0.084	16.6	0.015	0.125	11.9	Pass
23	0.040	0.098	40.8	0.041	0.147	27.9	Pass
24	0.013	0.077	17.4	0.014	0.115	12.5	Pass
25	0.036	0.090	39.9	0.037	0.135	27.3	Pass
26	0.013	0.071	18.0	0.014	0.107	12.9	Pass
27	0.032	0.083	38.4	0.033	0.125	26.3	Pass
28	0.012	0.066	18.3	0.013	0.099	13.3	Pass
29	0.028	0.078	36.4	0.029	0.116	24.9	Pass
30	0.011	0.061	18.3	0.012	0.092	13.3	Pass
31	0.025	0.073	33.8	0.025	0.109	23.2	Pass
32	0.010	0.058	18.0	0.011	0.086	13.2	Pass
33	0.021	0.068	30.8	0.022	0.102	21.1	Pass
34	0.009	0.054	17.2	0.010	0.081	12.6	Pass
35	0.018	0.064	27.5	0.018	0.096	18.8	Pass
36	0.008	0.051	16.2	0.009	0.077	12.0	Pass
37	0.015	0.061	24.1	0.015	0.091	16.5	Pass
38	0.007	0.048	14.9	0.008	0.073	11.1	Pass
39	0.012	0.058	20.6	0.012	0.087	14.0	Pass
40	0.006	0.046	13.3	0.007	0.069	9.9	Pass

Test Result: Pass      Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.81	Frequency(Hz):	50.00
I Peak (Amps):	1.641	I RMS (Amps):	0.247
I Fund (Amps):	0.075	Crest Factor:	6.968
Power (Watts):	16.0	Power Factor:	0.294

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.043	0.460	9.35	OK
3	0.288	2.068	13.95	OK
4	0.020	0.459	4.31	OK
5	0.091	0.919	9.86	OK
6	0.029	0.460	6.21	OK
7	0.021	0.689	3.04	OK
8	0.008	0.460	1.70	OK
9	0.037	0.460	8.04	OK
10	0.013	0.460	2.90	OK
11	0.029	0.230	12.65	OK
12	0.018	0.230	7.76	OK
13	0.035	0.230	15.41	OK
14	0.010	0.230	4.44	OK
15	0.027	0.230	11.73	OK
16	0.010	0.230	4.51	OK
17	0.036	0.230	15.59	OK
18	0.021	0.230	8.95	OK
19	0.039	0.230	16.83	OK
20	0.030	0.230	13.07	OK
21	0.040	0.230	17.54	OK
22	0.015	0.230	6.60	OK
23	0.040	0.230	17.23	OK
24	0.016	0.230	7.04	OK
25	0.036	0.230	15.82	OK
26	0.014	0.230	6.18	OK
27	0.030	0.230	13.12	OK
28	0.016	0.230	6.85	OK
29	0.036	0.230	15.70	OK
30	0.015	0.230	6.41	OK
31	0.031	0.230	13.48	OK
32	0.015	0.230	6.61	OK
33	0.030	0.230	12.95	OK
34	0.014	0.230	6.12	OK
35	0.027	0.230	11.75	OK
36	0.013	0.230	5.77	OK
37	0.024	0.230	10.65	OK
38	0.013	0.230	5.74	OK
39	0.022	0.230	9.61	OK
40	0.021	0.230	9.24	OK

## 4. Flicker

### 4.1 Test Instruments

Immunity A					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	NSG 1007-5	1537A01296	03/11/2022	03/10/2023
Signal Conditioning Unit	Teseq	NSG 1000-1	1846A01831	03/11/2022	03/10/2023
Test Software	WIN2100V4 Ver. 4.22				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

## 4.2 Measurement Data

Test Result: Pass

Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.67

Highest dt (%):

0

T-max (mS):

0.00

Highest dc (%):

0.00

Highest dmax (%):

0.064

Highest Pst (10 min. period):

0.028

Highest Plt (2 hr. period):

Test limit (%):

Test limit (mS):

500.0

Pass

Test limit (%):

3.30

Pass

Test limit (%):

4.00

Pass

Test limit:

1.000

Pass

Test limit:

0.650

Pass



## 5.IMMUNITY

### 5.1 STANDARD PERFORMANCE CRITERIA DESCRIPTION

- Criterion A - The apparatus shall continue 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.
- Criterion B - The apparatus shall continue 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.
- Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

## 5.2 SPECIAL PERFORMANCE CRITERIA DESCRIPTION

### 5.2.1 Performance Criteria Description for Print function

Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the disturbance:

- change of operating state;
- unintended pausing of the print operation;
- a change of print quality or legibility, as appropriate to the test pattern;
- change of character font;
- unintended line feed;
- unintended page feed;
- paper feed failure.

Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations. Paper feed failures are allowed only if, after removal of the jammed sheets, the job is automatically recovered and there is no loss of printed information. Any low-quality print output caused by the application of the disturbance shall not continue beyond the sheet of media being printed, or beyond the typical length of a finished page or sheet printed from continuous roll media. False indicators are permitted during the test provided that a normal operator response to that false indicator is simple (such as pressing a button). False indicators are not acceptable if they would cause the user to discard printing supplies such as ink, toner or paper, when those supplies are actually not empty or faulty. Any false indicator shall either clear automatically or after the operator's response. After the disturbance, the print function may print the remainder of the print job at a quality level within the manufacturer's specifications. Alternately, the print function may halt processing of a print job as a result of the disturbance, but only if the operator is capable of reprinting the job (for example, a fax printing job where the image to be printed still resides in local memory). Automatically restarting the print job from the beginning is also acceptable. In any scenario, the pairing of front and back images during double-sided printing shall be correct.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.2.2 Performance Criteria Description for Scan function

Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the test:

- change of settings, such as which side(s) of the page to be scanned, colour or monochrome, and resolution;
- corruption of the image, for example stretching, compressing or change in colour;
- paper feed failures;
- errors in the reading of bar codes.

Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations.

- Document feed failures are allowed only if the original documents are undamaged and, after removal of the jammed sheets, the job is automatically recovered and there is no loss of scanned information.
- During the test, the representation of the image shall not be degraded such that reading mistakes occur.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.2.3 Performance Criteria Description for Display and display output function

Criterion A - Apply criterion A as defined in 8.2. Additionally, an increase in any degradation greater than just perceptible by observation of the image shall not occur as a consequence of the application of the test.

Examples of such degradations are:

- superimposed patterning;
- positional disturbances due to synchronisation errors;
- geometric distortion;
- change of contrast or brightness;
- picture artefacts;
- freezing or disturbance of motion;
- image loss;
- video data or decoding errors.

Criterion B - The apparatus shall continue 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.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

#### 5.2.4 Performance Criteria Description for Musical tone generating function

- Criterion A - Performance criterion A is subdivided according to the type of equipment and its use. Three subgroups corresponding to different equipment types are defined in Table E.1 and have corresponding performance criteria A1, A2 and A3. The relevant subgroup shall be selected by the manufacturer in accordance with the product specification. The description of criteria A1, A2 and A3 are presented in Table E.2.
- Criterion B - During the test, degradation of performance beyond that defined in criterion A1 of Table E.2 is allowed. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed. After the test, normal operation of the EUT shall be self-recovered. In the case of unintended tone holding caused by a MIDI protocol communication error, the EUT can be re-initialised by the operation of the controls by the user controls in accordance with the manufacturer's instructions. Due to the nature of the MIDI protocol, it is necessary to modify the performance criterion B to allow user intervention when the unintended tone holding is caused by a missing MIDI communication error (for example missing a 'NOTE OFF' message).
- Criterion C - Degradation of the performance beyond that defined in criterion A1 of Table E.2 is permitted provided that the normal operation of the EUT can be restored after the test by operator intervention. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed.

### 5.2.5 Performance Criteria Description for Networking function

Criterion A - Where relevant, during the application of the test the network function shall, as a minimum, operate ensuring that:

- established connections shall be maintained throughout the application of the test;
- no change of operational state or corruption of stored data occurs;
- no increase in error rate above the figure defined by the manufacturer occurs. The manufacturer should select the most appropriate performance measurement criteria for the product or system, for example bit error rate, block error rate;
- no request for retry above the figure defined by the manufacturer;
- the data transmission rate does not reduce below the figure defined by the manufacturer;
- no protocol failure occurs;
- the audio noise level at a two-wire analogue interface (supporting telephony) shall satisfy the requirements of Table G.3. The audio level measurements shall be performed at the demodulated frequency of the disturbance using a narrowband filter with a 3 dB bandwidth of 100 Hz using the method defined in table clause G.1.4. See G.6.1. As described in the example given in J.3.5 the networking function is monitored during testing using direct functions specified elsewhere in this document. If needed to verify the operation of the protocol, the following functions shall be verified as described in Table H.1 when performing the additional spot frequency tests contained in Clause 5:
- ability to establish a connection,
- ability to clear a connection.

Where an EUT has supervisory functions they shall not be affected. Elements that should be monitored include, but are not limited to:

- alarms,
- signalling lamps,
- printer output errors,
- network traffic rates,
- network monitor errors,
- measured network parameters.

Criterion B - Established connections shall be maintained throughout the test, or shall self-recover in a way and timescale that is imperceptible to the user.

The error rate, request for retry and data transmission rates may be degraded during the application of the test. Degradation of the performance as described in criterion A is permitted, provided that the normal operation of the EUT is self-recoverable to the condition established prior to the application of the test. Where required, as defined in Clause 5, the acceptable operation of the function shall be verified at the completion of the test as described in Table H.1, by confirming the following:

- the EUT's ability to establish a connection,
- the EUT's ability to clear a connection.

During surge testing disconnection is allowed on the analogue/digital data port being tested. If the EUT is a supervisory equipment, it shall not impact the normal operation of the network being monitored. In addition, any supervisory functions impacted during the period of the test shall return to the state prior to the test. Elements to consider include:

- alarms,
- signalling lamps,
- printer output,
- network traffic rates,
- network monitoring. is used as intended.

Criterion C - Degradation of performance as described in criteria A and B is permitted provided that the normal operation of the EUT is self-recoverable to the condition immediately before the application of the test, or can be restored after the test by the operator.

### 5.2.6 Performance Criteria Description for Audio output function

Criterion A - The interference ratio (electrical or acoustic) shall meet the limits in column 3; or,  
the acoustic level of the demodulated audio shall be less than the limits in column 4; or,  
the digitally coded level of demodulated audio shall be less than limits in column 5; or,  
the analogue level of the demodulated audio shall be less than the limits in column 6.

Criterion B - The apparatus shall continue 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.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.2.7 Performance Criteria Description for Telephony function

Function to be exercised	Performance criteria		
	A	B	C
Establish new communication	At the additional spot frequency tests <sup>a</sup> , <sup>c</sup>	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance
Maintain established communication	Yes In addition, the requirements of Annex G for the audio output function shall be satisfied <sup>c</sup>	Yes <sup>b</sup>	No
Terminate established communication	At the additional spot frequency tests <sup>a</sup> , <sup>c</sup>	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance
<p>Communication refers to a telephone call or other form of voice connection.</p> <p><sup>a</sup> Applicable to TTE with a dial function that provides dedicated emergency service/safety of life call capability. Where the EUT does not provide this functionality, this limitation shall be stated in the equipment user manual.</p> <p><sup>b</sup> Communication shall be established prior to the application of the disturbance, the communication shall be maintained and the quality of that communication (for example, volume setting, the level of background noise) shall be maintained after completion of the test or disturbance.</p> <p><sup>c</sup> Where defined in Clause 5 (for the tests in Table 1 to Table 4), these functional tests shall be performed during the additional spot frequency tests.</p>			

### 5.3 Test of IEC 61000-4-2

#### 5.3.1 Test Instruments

Immunity Shielded Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Aneroid Barometer	SATO	7610-20	89090	08/04/2022	08/03/2023
ESD Simulator	Teseq	NSG 438	1581	07/08/2022	07/07/2023
Thermo-Hygro Meter	Wisewind	201A	SD-S041	01/05/2022	01/04/2023
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

#### 5.3.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.3 C	45 %RH	1008 hpa



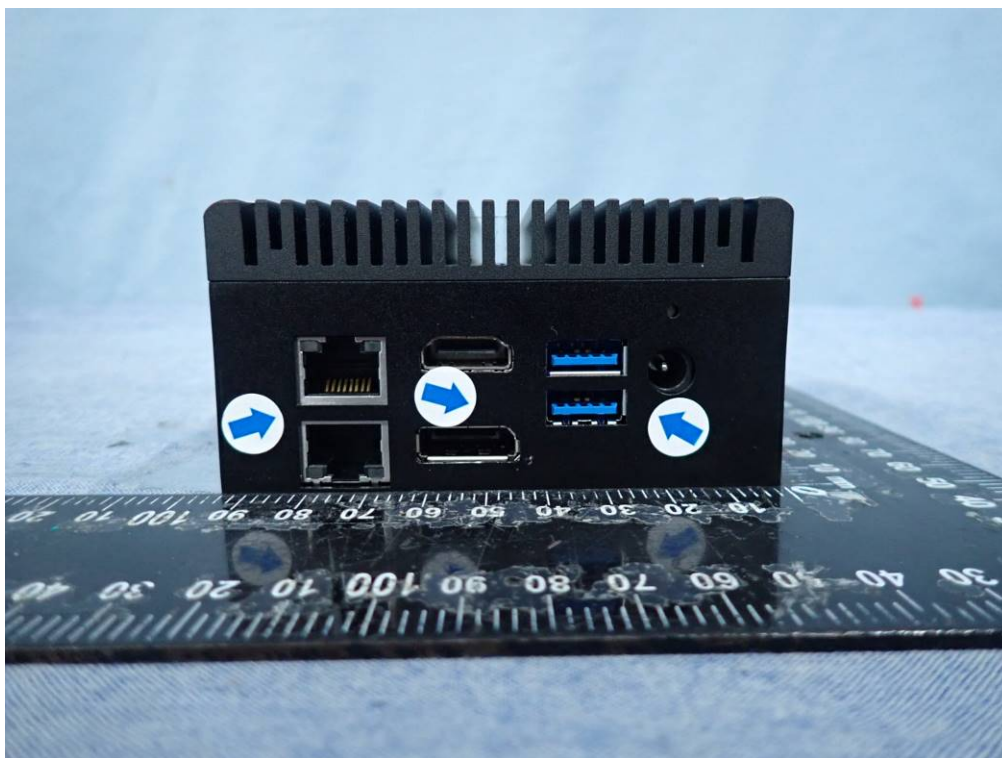


## ESD Test point

### Front



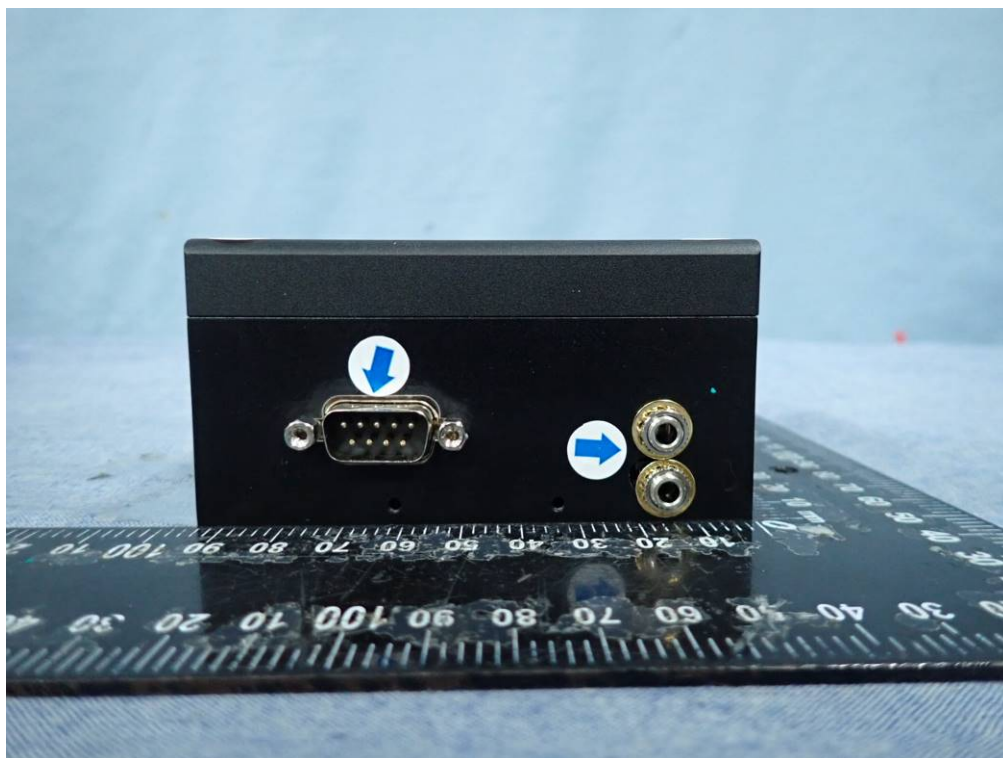
### Back



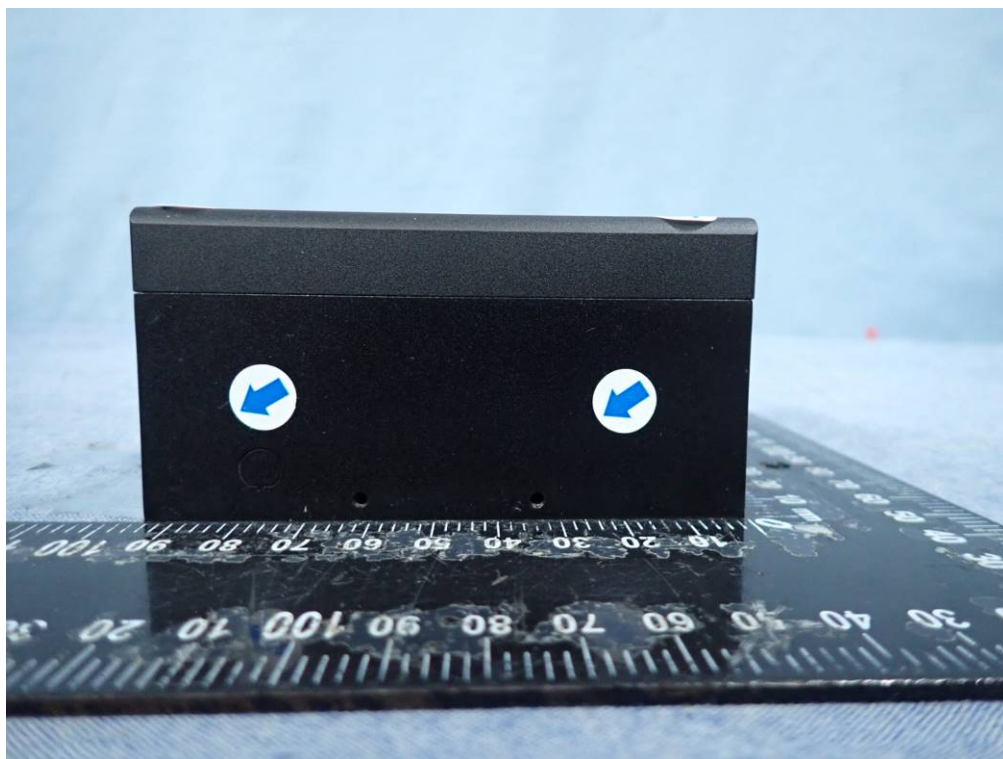
Air Discharge: ↑

Contact Discharge: ↑

Left



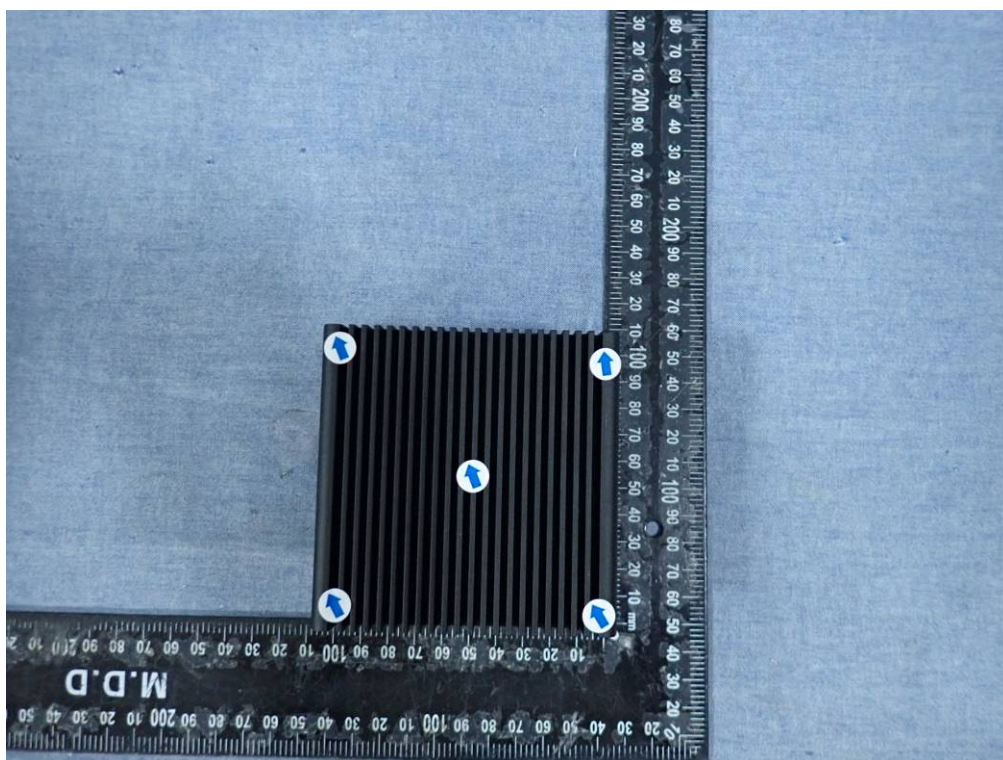
Right



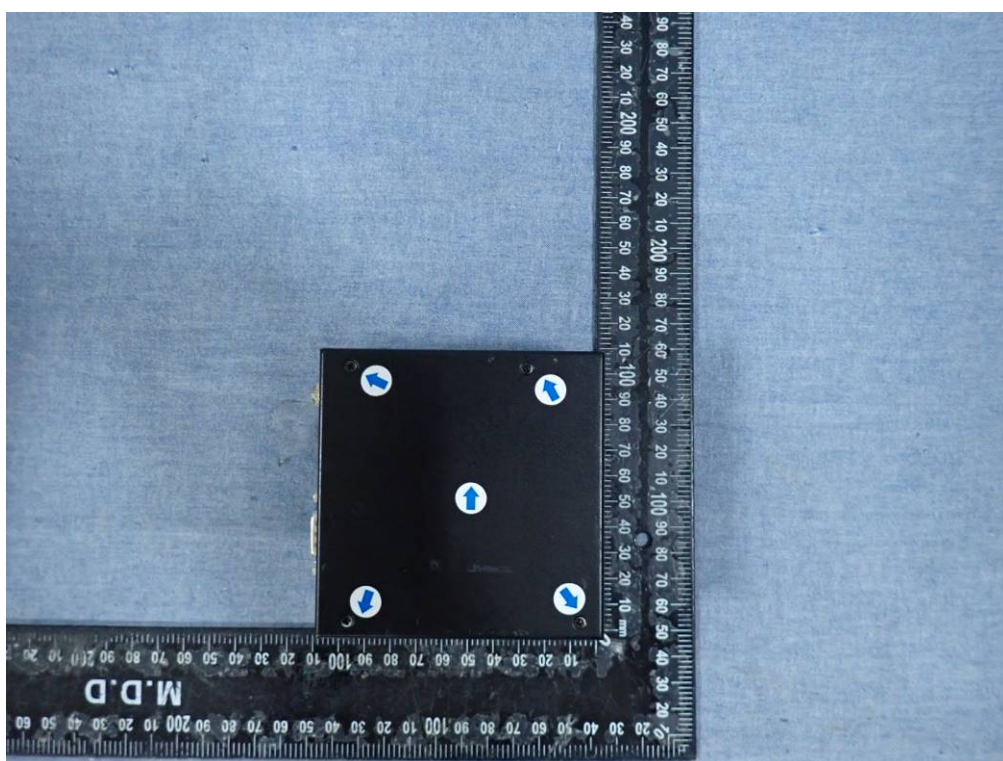
Air Discharge:   
Contact Discharge: 



Top



Bottom



Air Discharge: ↑

Contact Discharge: ↑

## 5.4 Test of IEC 61000-4-3

### 5.4.1 Test Instruments

844 RS Chamber					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Electric Field Probe	AR	FL7006	0356656	10/16/2021	10/15/2022
Field of Calibration	CCS	Chamber#RS	80-1000MHz	02/25/2022	02/24/2023
Power Sensor	Boonton	51011A-EMC	36834	03/07/2022	03/06/2023
Power Sensor	Boonton	51011A-EMC	36833	03/07/2022	03/06/2023
RF Power Meter	Boonton	4242	17419	03/07/2022	03/06/2023
Signal Generator	Agilent	N5181A	MY47421336	09/14/2021	09/13/2022
Thermo-Hygro Meter	Wisewind	N/A	SD-S019	10/05/2021	10/04/2022
Broadband Antenna	Schwarzbeck	VUSLP 9111E	D-69250	N.C.R	N.C.R
Power Amplifier	Milmega	80RF1000-600	1079361	N.C.R	N.C.R
Field of Calibration	CCS	Chamber#RS	1000-6000M	02/23/2022	02/22/2023
Direction Coupler	AR	DC7144A	306217	N.C.R	N.C.R
Microwave Antenna	Schwarzbeck	STLP 9149	767	N.C.R	N.C.R
Power Amplifier	AR	60S1G3	302728	N.C.R	N.C.R
Power Amplifier	Milmega	AS1860-100	1075832	N.C.R	N.C.R
Power Amplifier	Teseq	CBA6G-100D	1087370	N.C.R	N.C.R
Test Software	EmcwareVer. 2.6.0.16				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.4.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
22.4 °C	55 %RH	1005 hpa

### 5.4.3 Results of Radiated Radio Frequency Electromagnetic (RS)

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-3  
 Frequency range : 80 MHz - 1000 MHz  
 Frequency range : 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz ( $\pm 1\%$ )  
 Field strength : 3 V/m  
 Modulation : 80% AM (1kHz)  
 Frequency step : 1 % of fundamental  
 Polarity of Antenna : Horizontal and Vertical  
 Dwell Time : 3 seconds  
 Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

**Remark:** A: No degradation of performance or loss of function.

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	0 degree
2	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	90 degree
3	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	180 degree
4	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	270 degree

**Remark:** A: No degradation of performance or loss of function.

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2 (Audio Mode)  
 Basic Standard : IEC 61000-4-3  
 Frequency range : 80 MHz - 1000 MHz  
 Frequency range : 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz ( $\pm 1\%$ )  
 Field strength : 3 V/m  
 Modulation : 80% AM (1kHz)  
 Frequency step : 1 % of fundamental  
 Polarity of Antenna : Horizontal and Vertical  
 Dwell Time : 3 seconds  
 Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

**Remark:** A: No degradation of performance or loss of function.

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	0 degree
2	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	90 degree
3	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	180 degree
4	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	270 degree

**Remark:** A: No degradation of performance or loss of function.

## 5.5 Test of IEC 61000-4-4

### 5.5.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Capacitive Clamp	EMC-Partner	CN-EFT1000	589	03/30/2022	03/29/2023
EMC Immunity Tester	EMC Partner	TRANSINT 2000	1117	02/23/2022	02/22/2023
Test Software	GenecsVer. 3.27				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.5.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.5 °C	56 %RH	1008 hpa

### 5.5.3 Results of Electrical Fast Transient (EFT)

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-4  
 Test Voltage : AC Input:  $\pm 1$  kV  
 Signal/Comm. :  $\pm 0.5$  kV  
 Polarity : Positive/Negative  
 Impulse Frequency : 5 kHz  
 Tr/Th : 5/50ns  
 Burst : 15ms/300ms

**Observation:**

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
L-N	+/-	1	A
RJ45	+/-	0.5	A

**Remark:** A: No degradation of performance or loss of function



## 5.6 Test of IEC 61000-4-5

### 5.6.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
CDN	EMC-Partner	CDN-UTP8	1502	02/24/2022	02/23/2023
EMC Immunity Tester	EMC Partner	TRANSINT 2000	1117	02/23/2022	02/22/2023
Test Software	GenecsVer. 3.27				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.6.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.5 °C	56 %RH	1008 hpa

### 5.6.3 Results of Surge Test

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-5  
 Test Rate : 1 pulse every minute  
 No. of Tests : 5 positive and 5 negative pulses  
 Waveform : 1.2/50μs (8/20μs)

#### Observation Description

AC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A

**Remark:** A: No degradation of performance or loss of function.

Signal line:

Test Rate : 1 pulse every minute  
 No. of Tests : 5 positive and 5 negative pulses  
 Waveform : 10/700μs

#### Observation Description

Signal line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
RJ45	No phase angle (degree)	+/-	1	B

**Remark:** B: During the test, data accessing via LAN port was paused. It could become normal after test stopped.

## 5.7 Test of IEC 61000-4-6

### 5.7.1 Test Instruments

CS Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
CDN	Teseq	CDN S751A	46649	11/03/2021	11/02/2022
CDN	Teseq	CDN M016	35821	11/03/2021	11/02/2022
CDN	TESEQ	CDN T400A	28547	11/03/2021	11/02/2022
CDN	FCC	FCC-801-M3-25A	9973	11/03/2021	11/02/2022
CDN	Teseq	CDN T8A-10	57182	05/31/2022	05/30/2023
Compact Immunity Test System	TESEQ	NSG 4070B-35	39581	11/04/2021	11/03/2022
Test Software	NSG 4070 Control Program V1.2.0				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.7.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
21.2 °C	60 %RH	1010 hpa

### 5.7.3 Results of Immunity to Conducted Disturbances (CS)

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-6  
 Frequency range : 0.15 MHz -10 MHz  
 Field strength : 3 Vrms  
 Frequency range : 10 MHz - 30 MHz  
 Field strength : 3 V to 1Vrms  
 Frequency range : 30 MHz - 80 MHz  
 Field strength : 1 Vrms  
 Modulation : 80% AM, 1 kHz Sinewave  
 Frequency step : 1 % of fundamental  
 Dwell Time : 3 seconds  
 Coupling Method : CDN-M2; CDN-T8

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A

Signal Ports

Cable Description	Frequency (MHz)	Observation
RJ45	0.15 – 80	A

**Remark:** A: No degradation of performance or loss of function.

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2 (Audio Mode)  
 Basic Standard : IEC 61000-4-6  
 Frequency range : 0.15 MHz -10 MHz  
 Field strength : 3 Vrms  
 Frequency range : 10 MHz - 30 MHz  
 Field strength : 3 V to 1Vrms  
 Frequency range : 30 MHz - 80 MHz  
 Field strength : 1 Vrms  
 Modulation : 80% AM, 1 kHz Sinewave  
 Frequency step : 1 % of fundamental  
 Dwell Time : 3 seconds  
 Coupling Method : CDN-M2; CDN-T8

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A

Signal Ports

Cable Description	Frequency (MHz)	Observation
RJ45	0.15 – 80	A

**Remark:** A: No degradation of performance or loss of function.

## 5.8 Test of IEC 61000-4-8

### 5.8.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.8.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
N/A	N/A	N/A

### 5.8.3 Result of Immunity to Power Frequency Magnetic Field

Model No. : N/A  
 Tested By : N/A  
 Tested Date : N/A  
 Test Mode : N/A  
 Basic Standard : IEC 61000-4-8  
 Power Frequency : 50 Hz  
 Magnetic Field : 1 A/m(r.m.s)  
 Coil Orientation : X, Y, Z Axis  
 Observation : N/A

**Remark:** N/A: There is no any sensitive part for magnetic field test. Applicable only to equipment containing susceptible to magnetic field.

## 5.9 Test of IEC 61000-4-11

### 5.9.1 Test Instruments

Immunity Shielded Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
AC/DC Clamp Meter	Lutron	CM-9930R	I.200121	04/18/2022	04/17/2023
EMC Immunity Tester	EMC Partner	TRANSINT 2000	1117	02/23/2022	02/22/2023
Test Software	GenecsVer. 3.27				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

### 5.9.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.5 °C	56 %RH	1008 hpa

### 5.9.3 Results of Voltage Dips Immunity Test

Model No. : UPS-EHL01; UPS-EDGE-EHL01  
 Tested By : Jack Chen  
 Tested Date : August 9, 2022  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-11  
 EUT Rated Voltage : 230 Volts.  
 Reduction Voltage : 30, >95 % Ut  
 Phase Angle : 0,180 degree  
 Total events : 3 dropouts  
 Event interval : 10 seconds

Test Power: 230Vac, 50Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	C
Voltage dips	30	25	A
	>95	0.5	A

Test Power: 230Vac, 60Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	300	C
Voltage dips	30	30	A

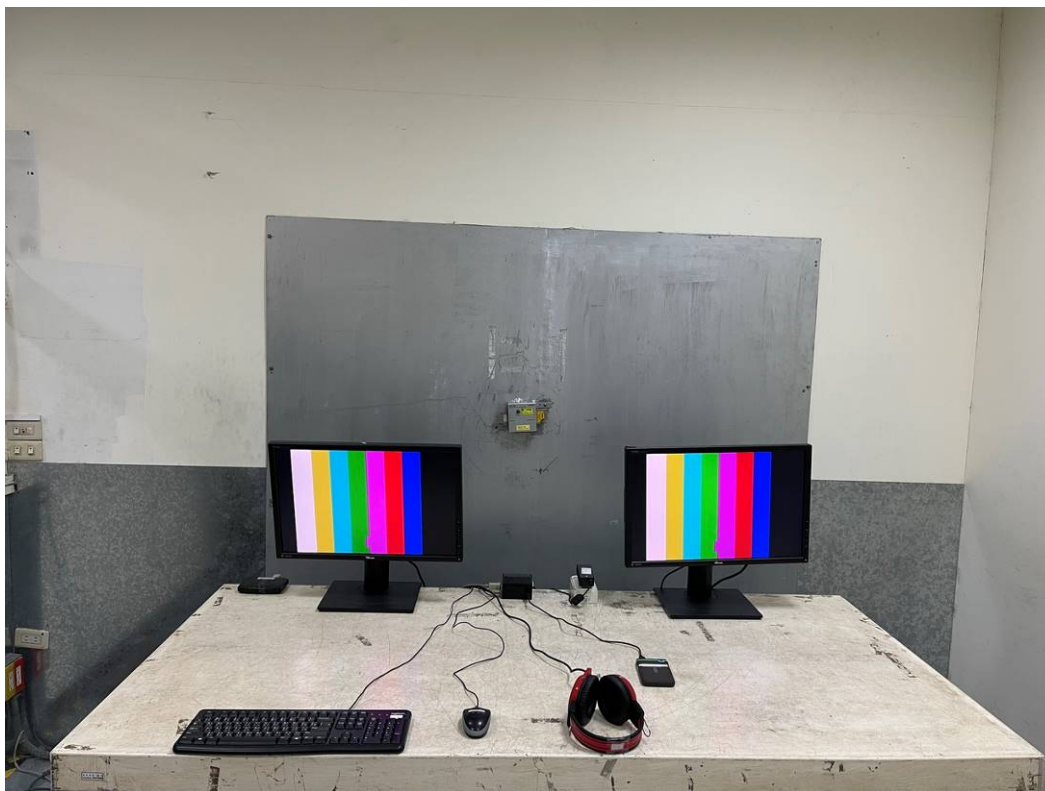
**Remark:** A: No degradation of performance or loss of function.

C: EUT shut down, it could not become normal except reinstalled by operator.

## APPENDIX

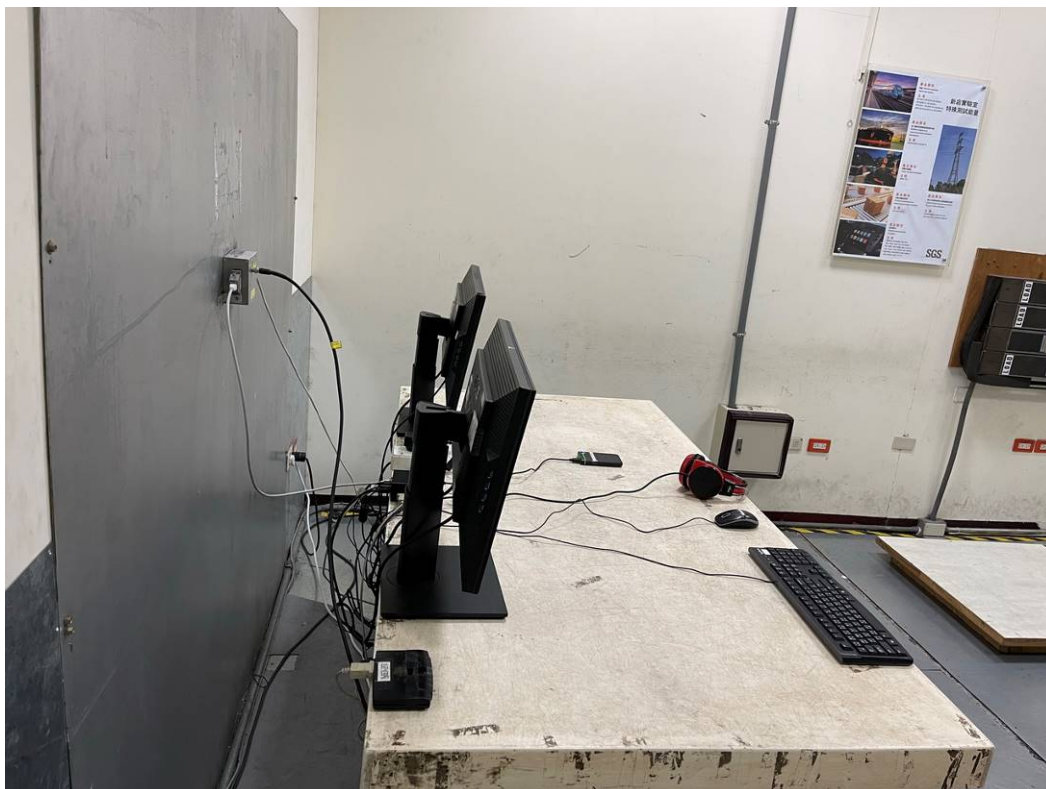
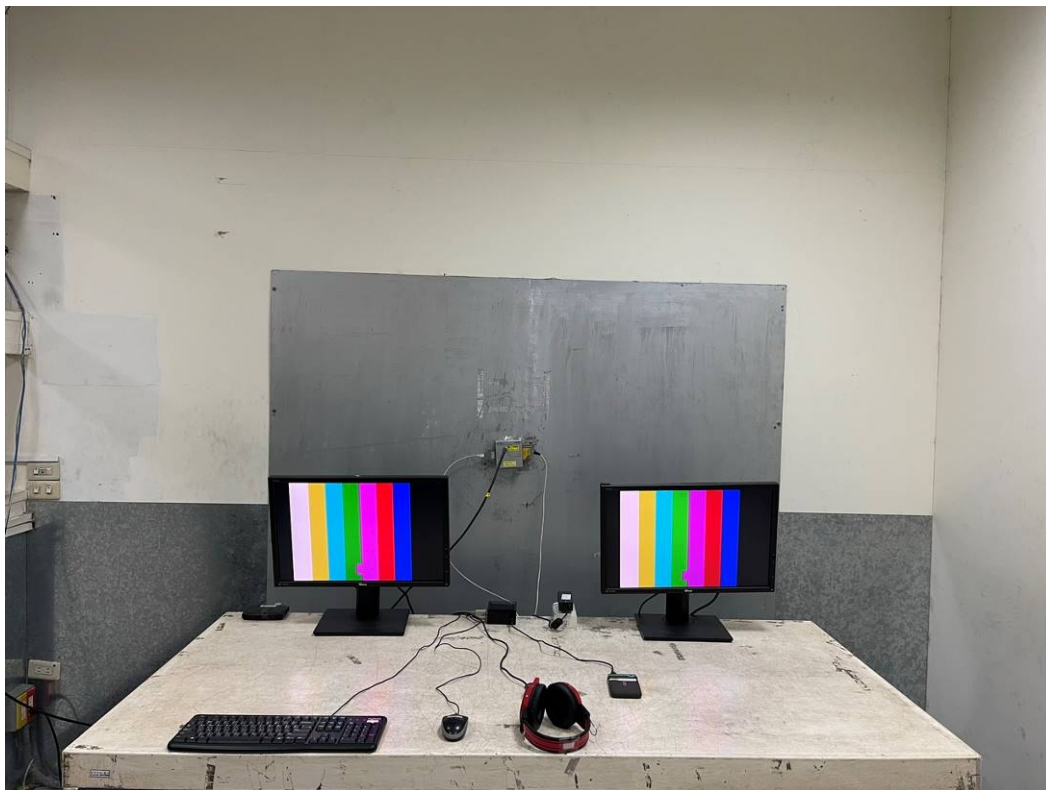
### Photograph of Testing General Set-up

#### CE Testing Set-up





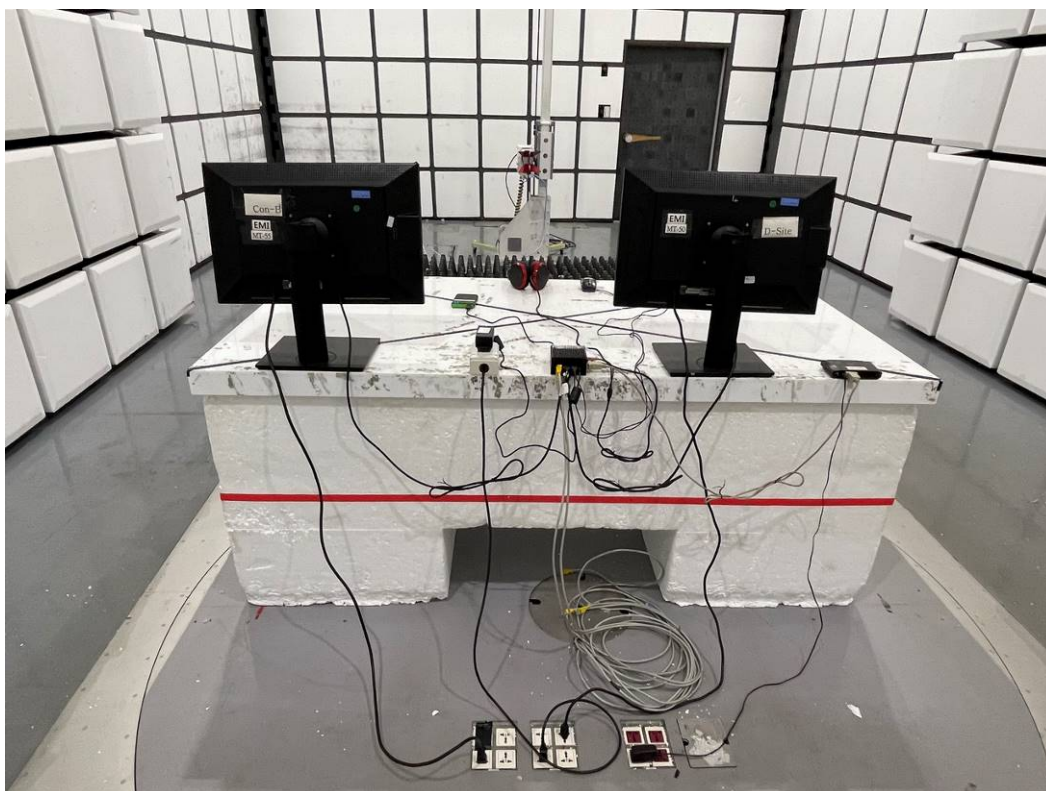
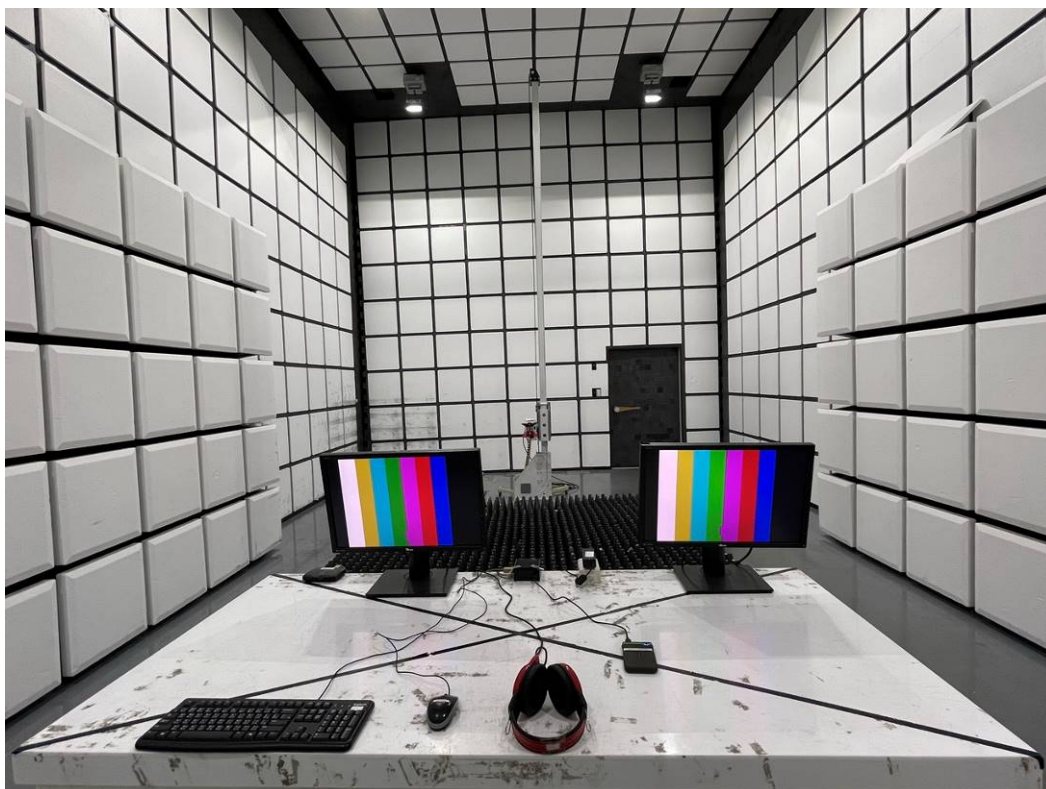
## ISN Testing Set-up



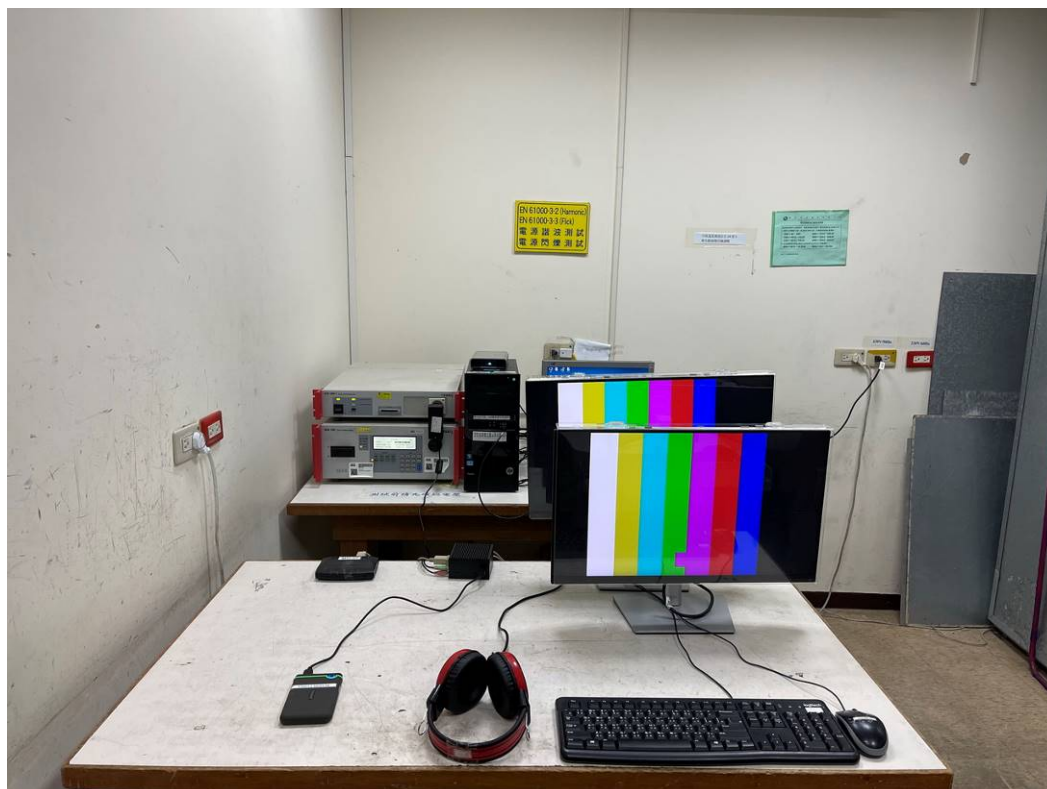
**RE Testing Set-up****Below 1GHz**



## Above 1GHz



## HARMONIC & FLICKER Testing Set-up

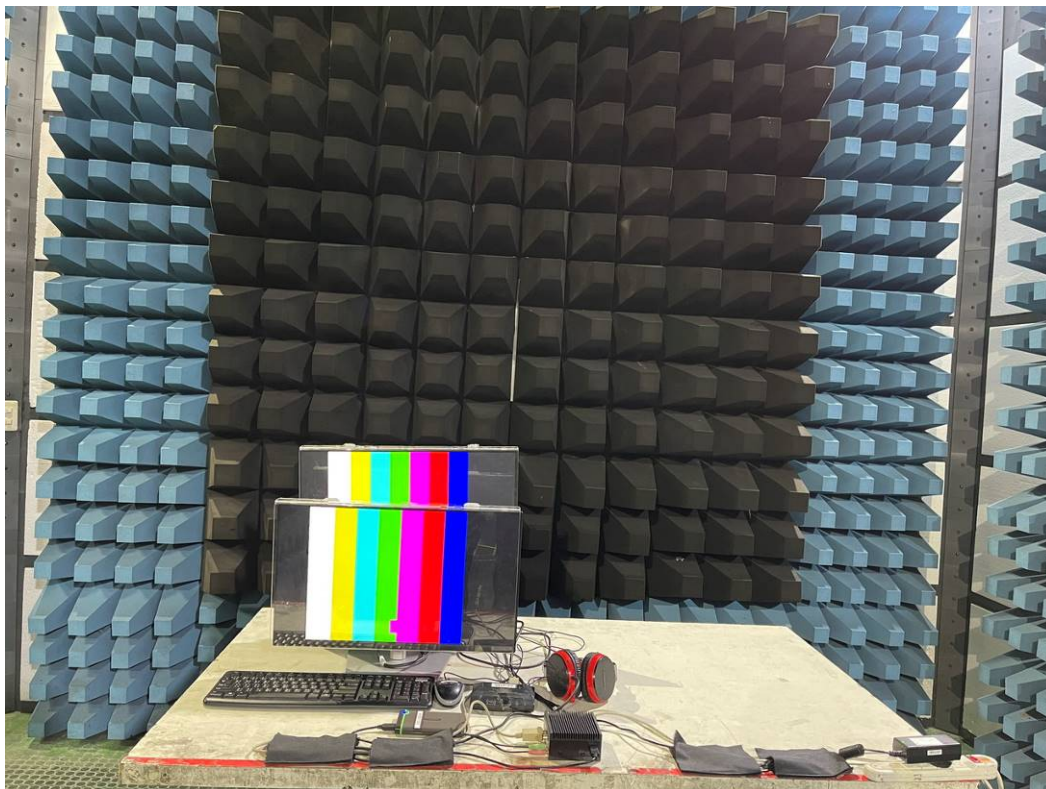


## ESD Testing Set-up

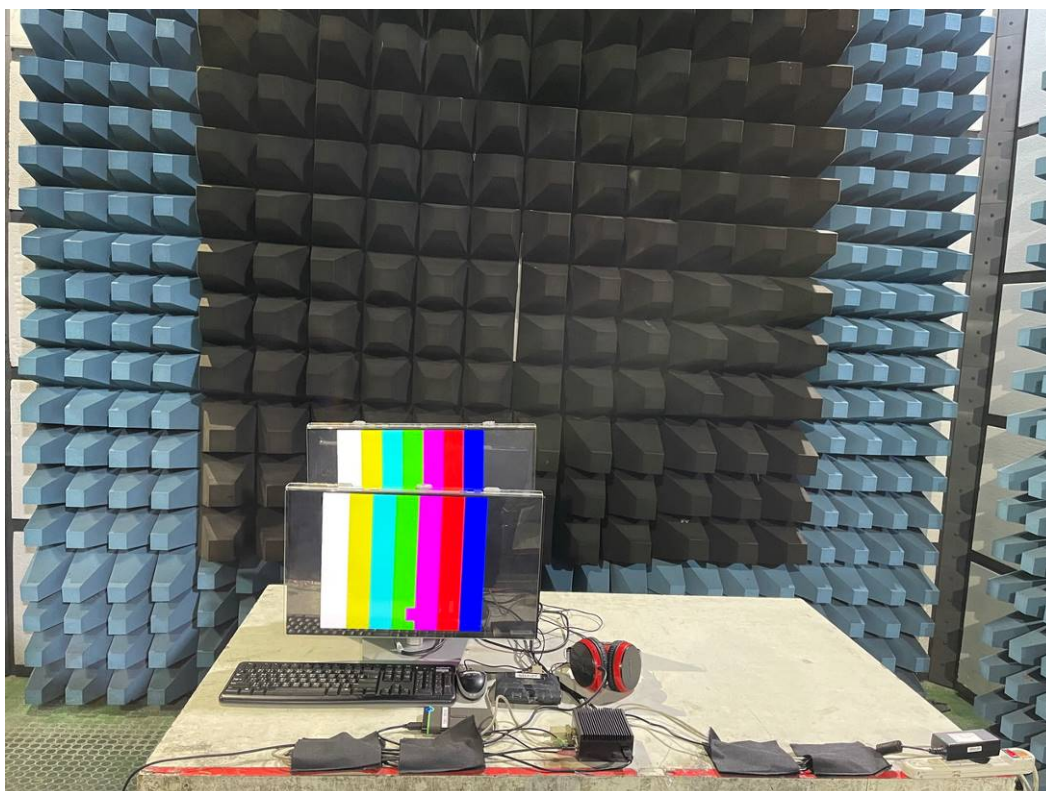




## RS Testing Set-up

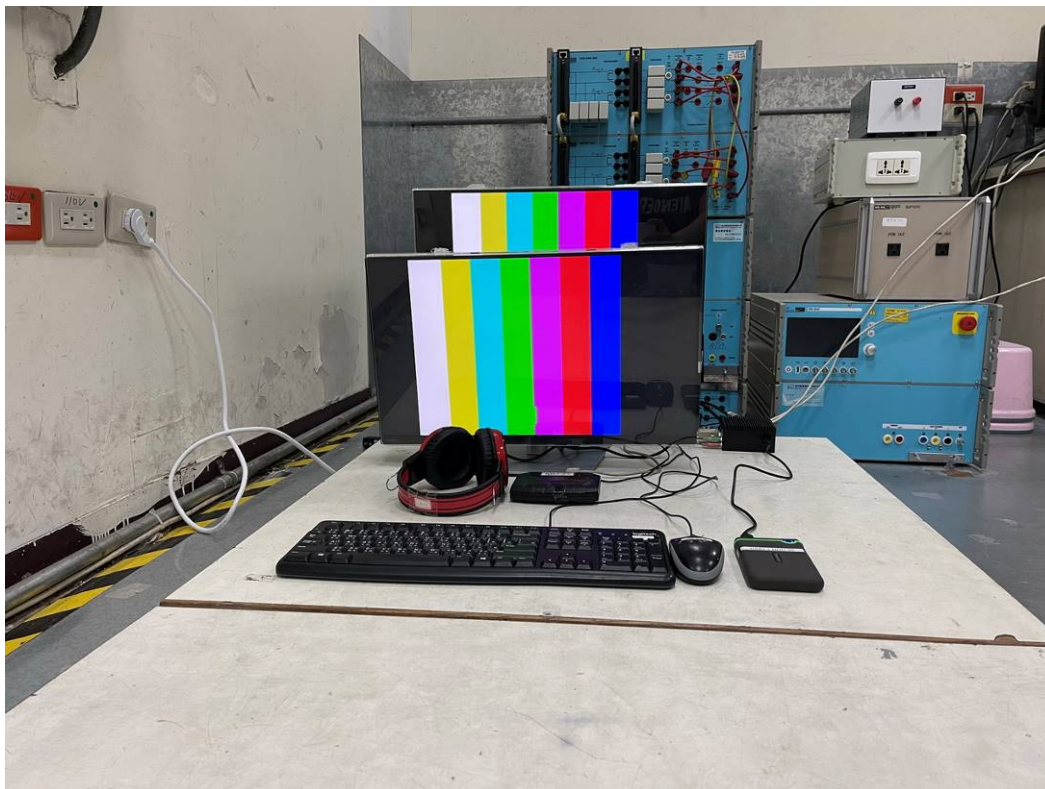


## RS Testing Set-up (Audio Mode)





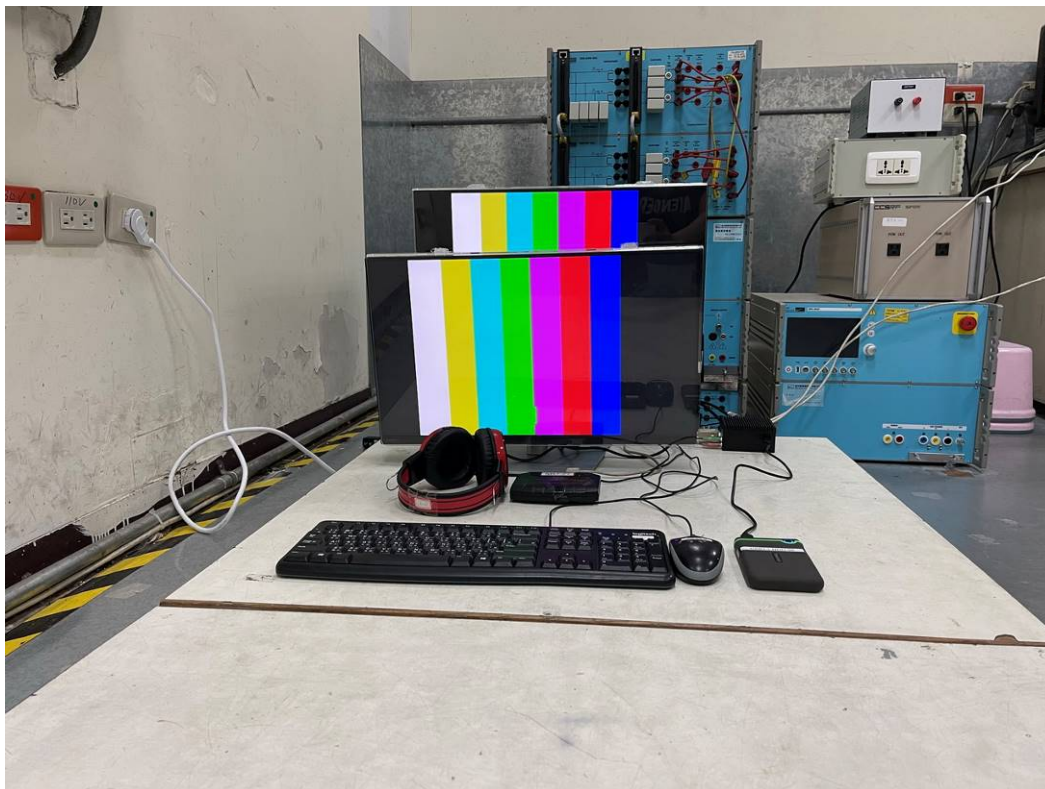
### EFT Testing Set-up



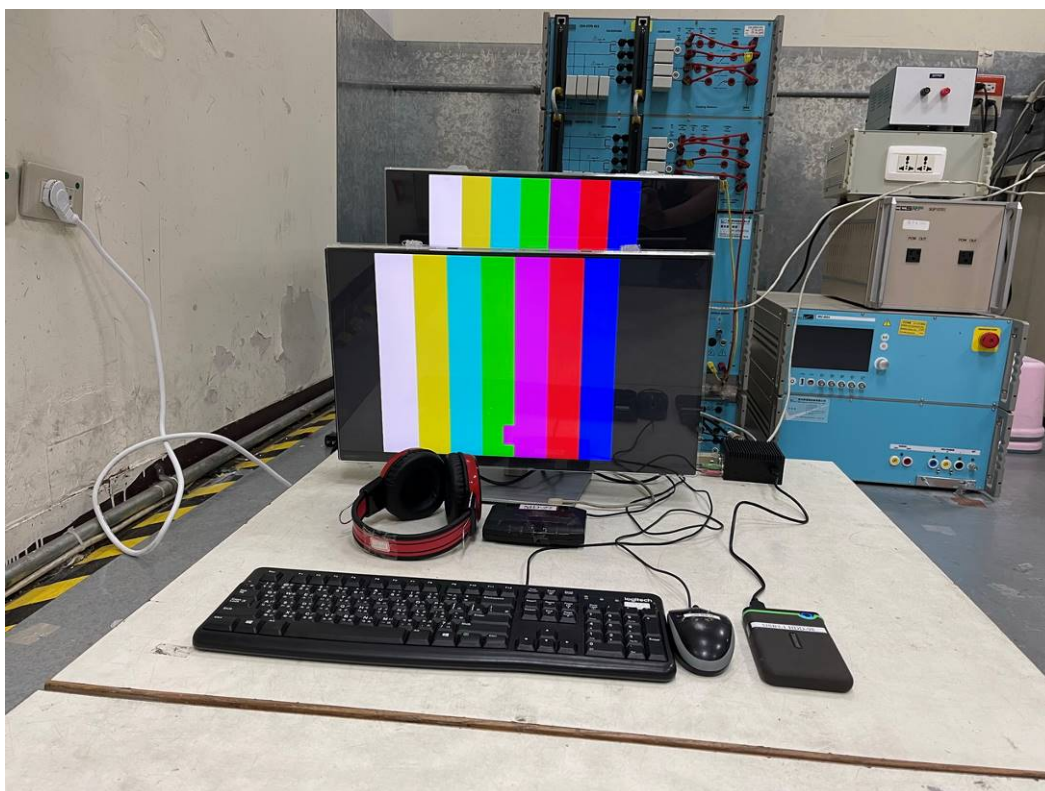
### EFT For RJ45 Testing Set-up



### Surge Testing Set-up

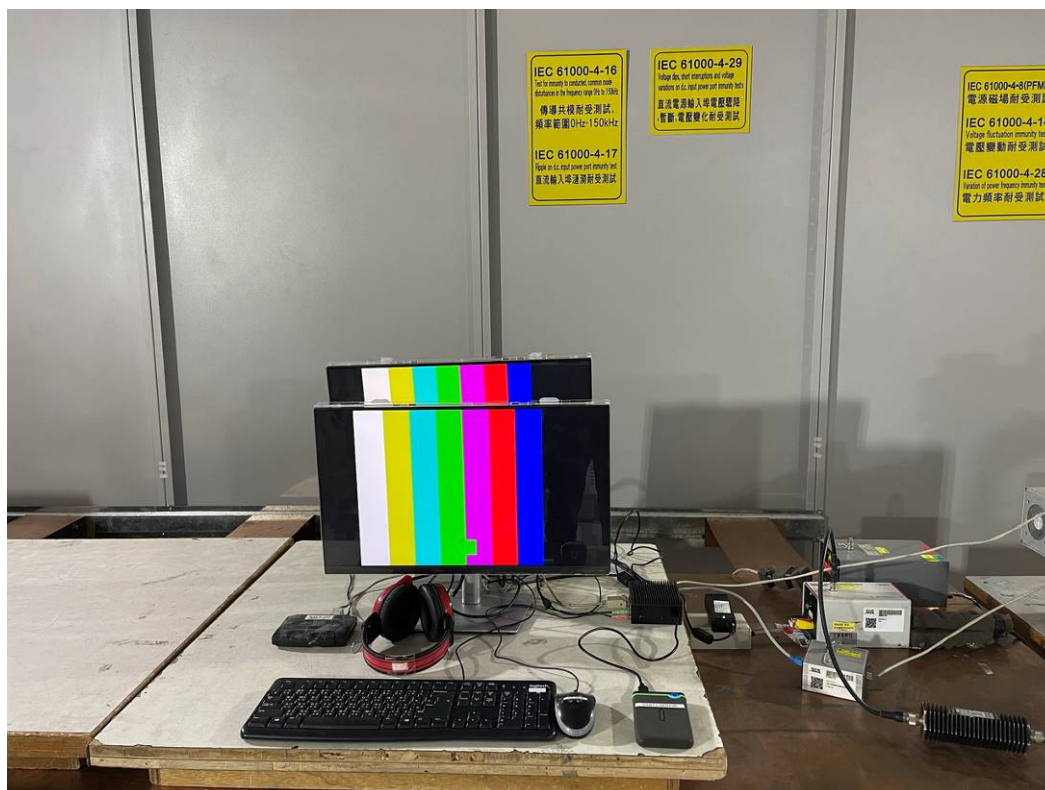


### Surge For RJ45 Testing Set-up





## CS Testing Set-up



## CS Testing Set-up (Audio Mode)



## CS For RJ45 Testing Set-up

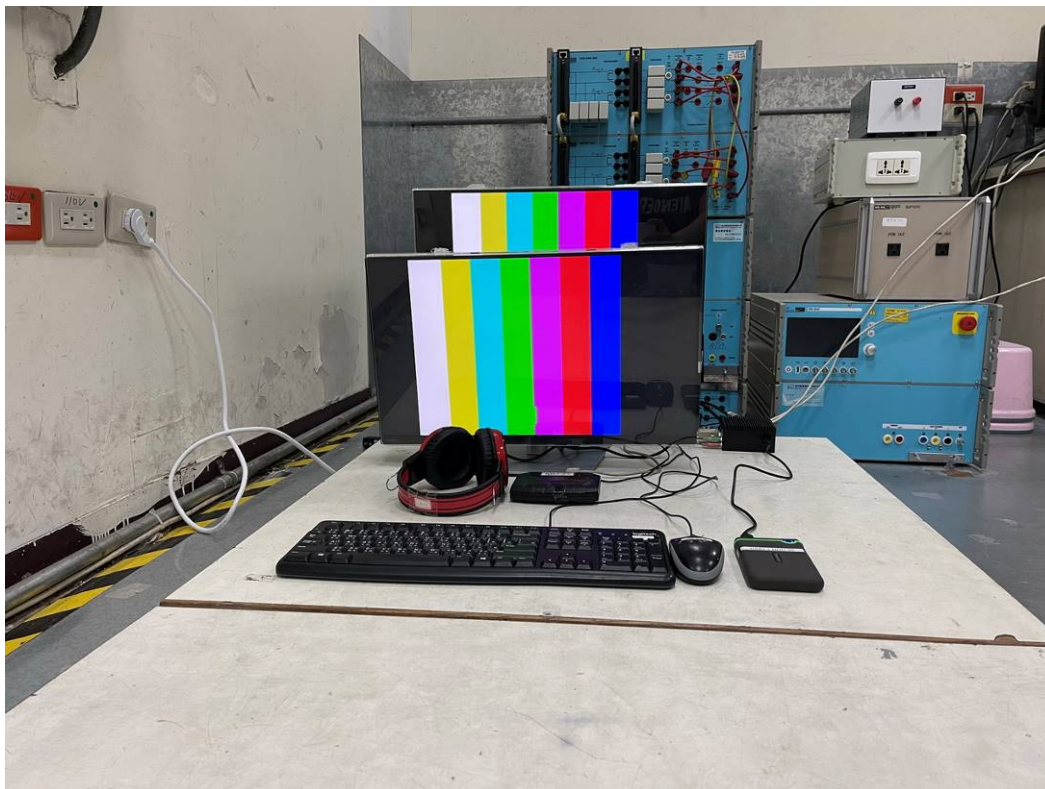


## CS For RJ45 Testing Set-up (Audio Mode)





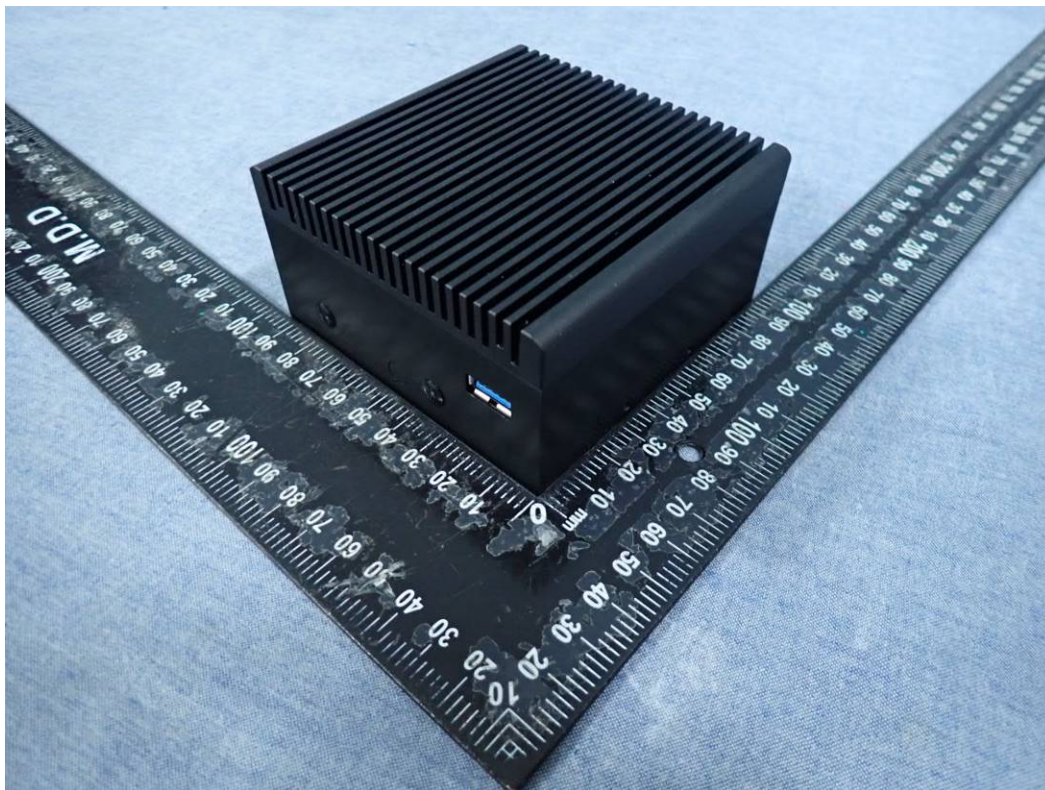
## DIP Testing Set-up

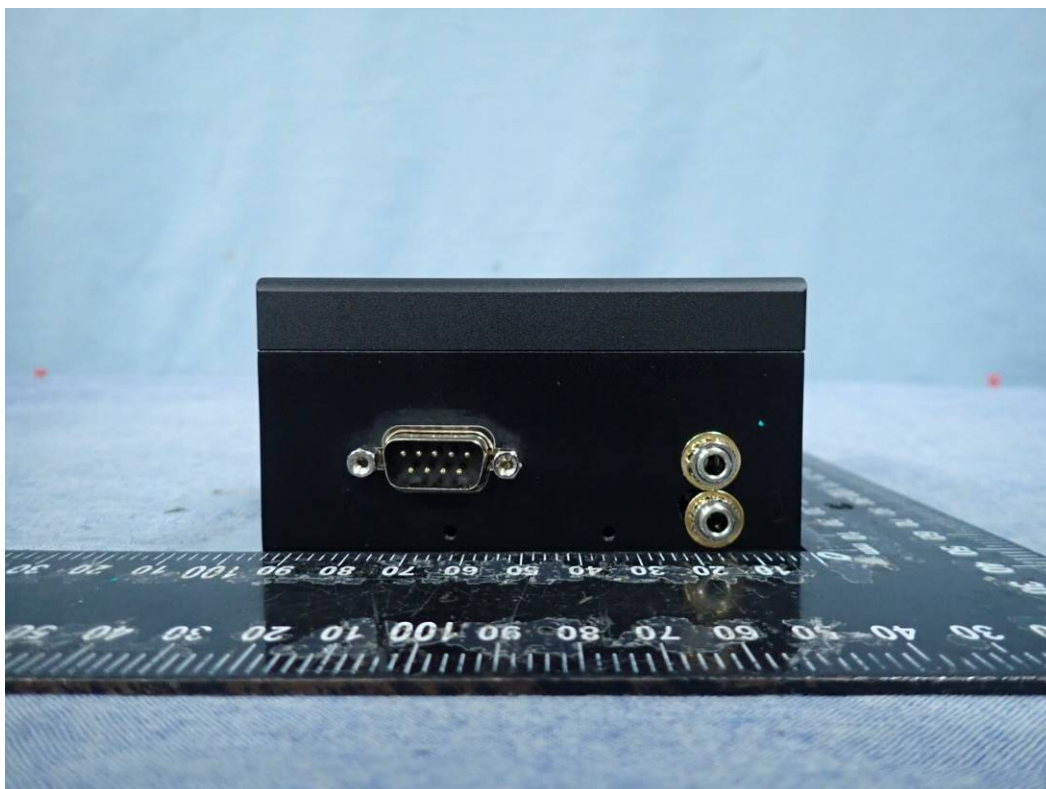




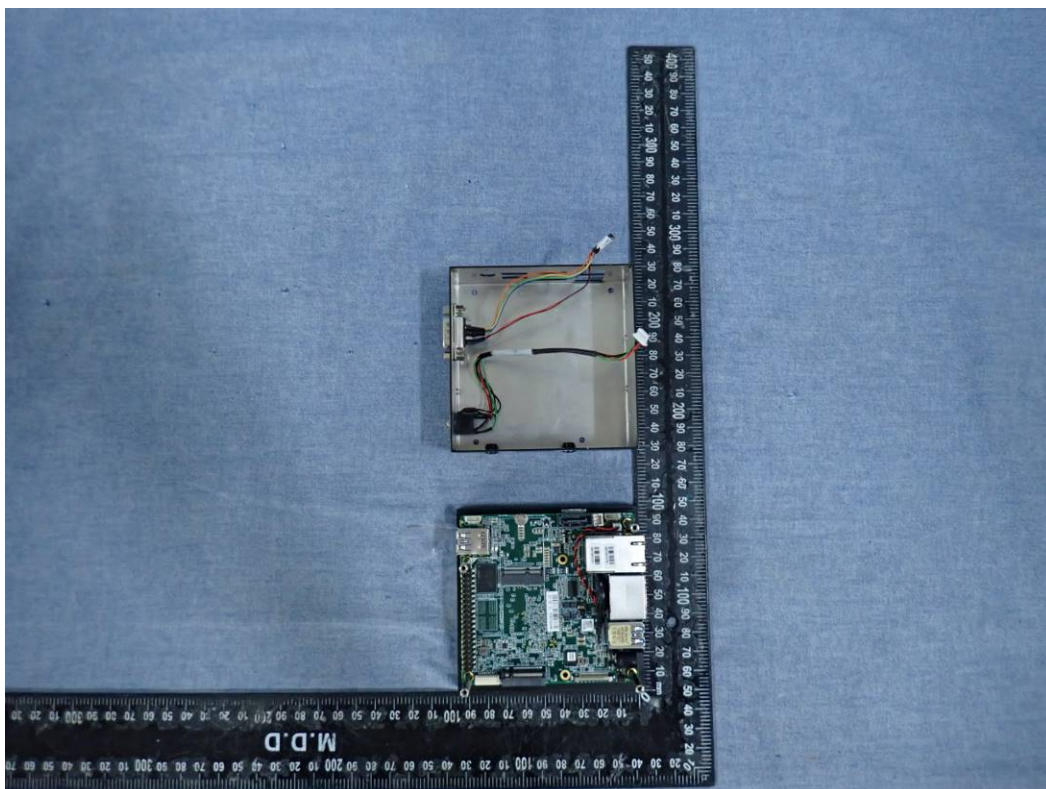
## Photographs of EUT Unit

### Exterior

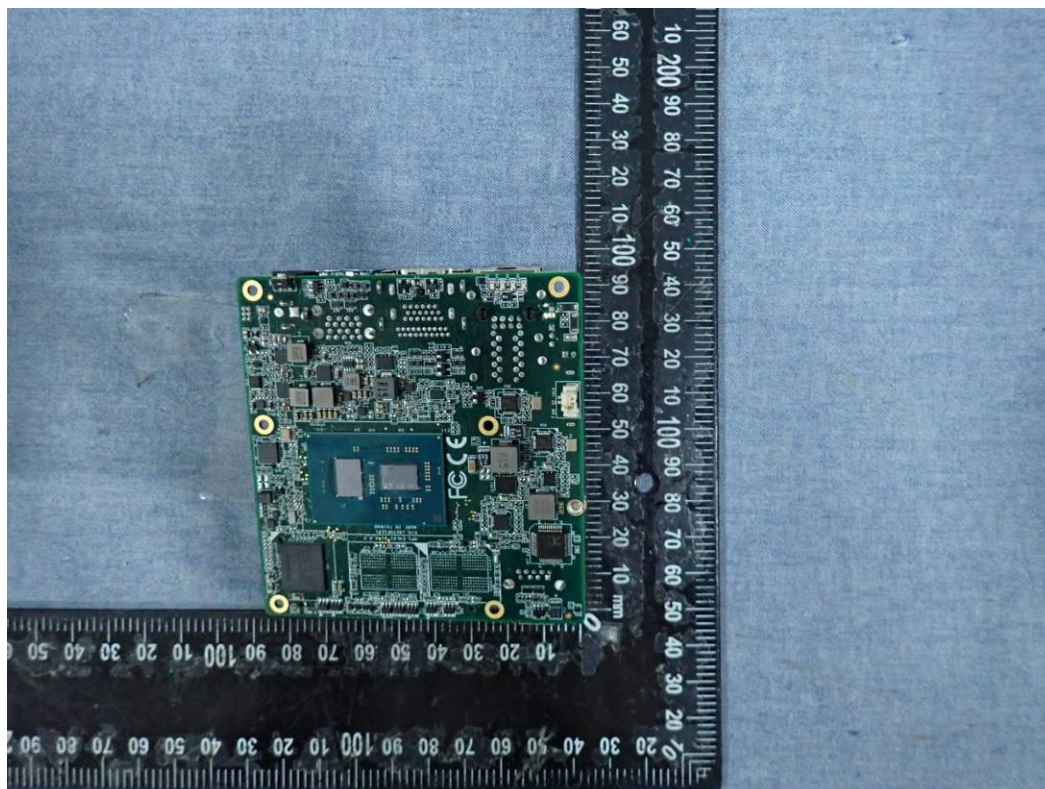
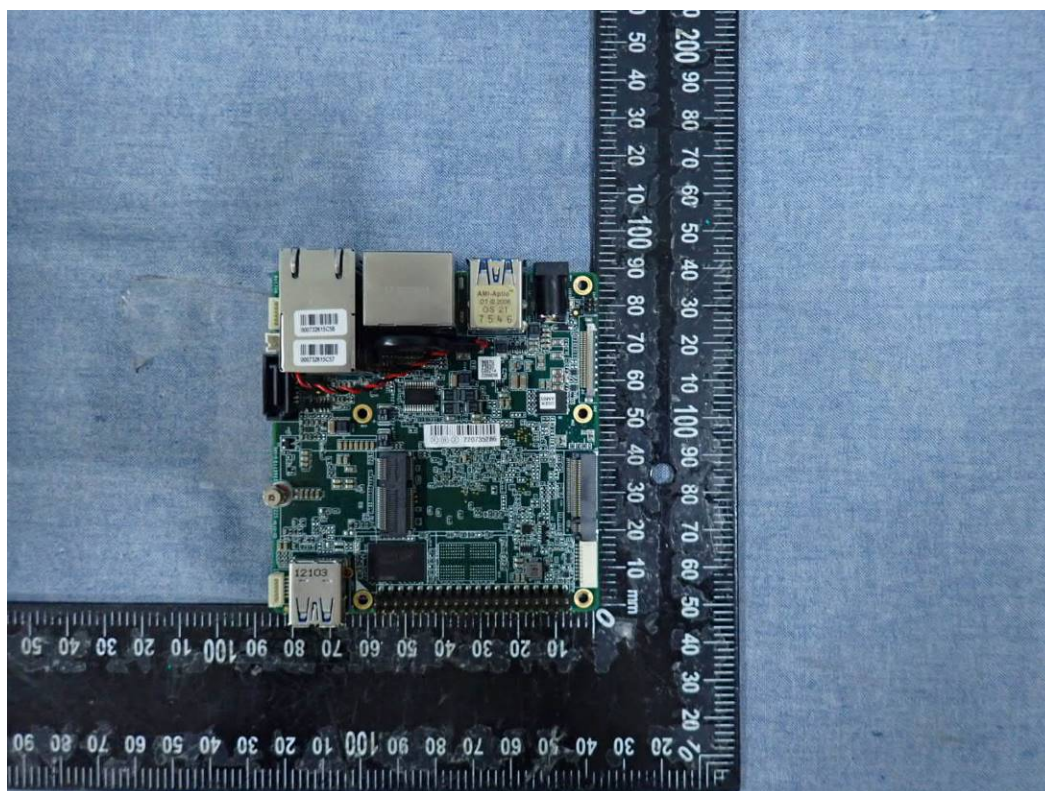


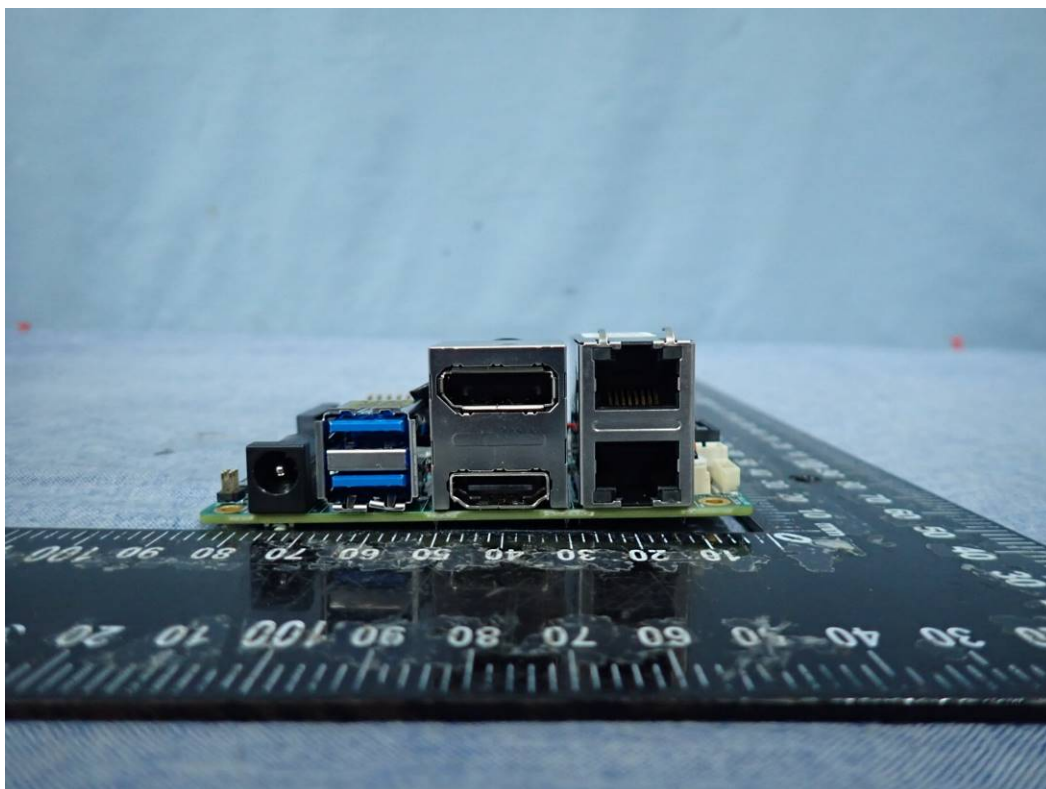
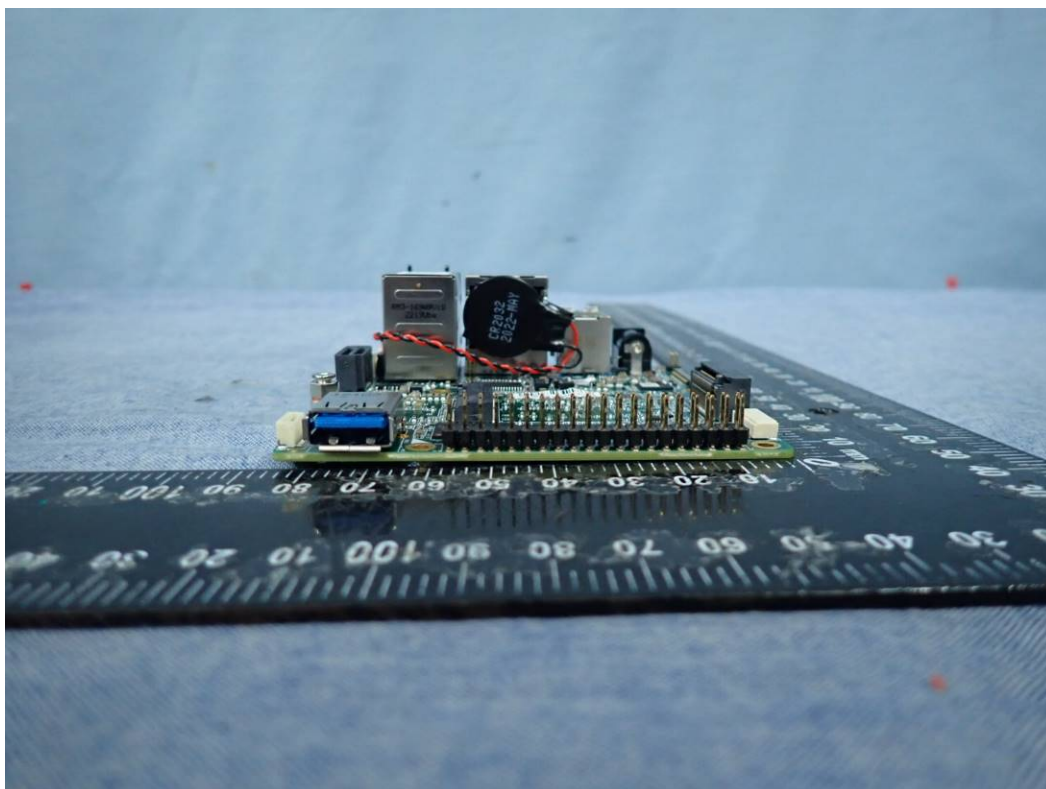




















**\*\* End of Report \*\***