TEST REPORT

Project No.: TM-2403000347P
Applicant: PERFECTRON Co., Ltd.
Address: 2F., No.190, Sec 2, Zhongxing Rd., Xindian Dist., New Taipei City, 23146, Taiwan.
Manufacturer: PERFECTRON Co., Ltd.
Address: 2F., No.190, Sec 2, Zhongxing Rd., Xindian Dist., New Taipei City, 23146, Taiwan.
Equipment Under Test (EUT):
Name: MICRO-GRID COMPUTER
Brand Name: PERFECTRON
Model No.: SCH3X2-D7
Added Model(s): N/A

Standards:

EN 60945: 2002 (For Clause 9, 10) IEC 60945: 2002 (For Clause 9, 10) IEC 60945 corrigendum 1: 2008	
EN IEC 61000-3-2: 2019 + A1: 2021	EN 61000-3-3: 2013 + A1: 2019 + A2: 2021 + AC: 2022
IEC 61000-4-2: 2008	IEC 61000-4-6: 2023
IEC 61000-4-3: 2020 (Ed. 4.0)	Power supply short-term variation
IEC 61000-4-4: 2012	Power supply failure
IEC 61000-4-5: 2014 + A1: 2017	

Date of Sample Receipt : March 20, 2024
Date of Test : November 13, 2024 ~ December 10, 2024
Date of Issue : January 2, 2025

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 Stanley Cheng ***Date*** **January 2, 2025**

Stanley Cheng (Supervisor of engineering dept.)

Testing Laboratory 1108

Revision History

Revision	Report Number	Description	Issue Date
00	TMXD2408003127DT	Original.	January 2, 2025

Note:

Contents

1. General Description

1.1 General Description of EUT

Name of EUT	MICRO-GRID COMPUTER
Brand Name	PERFECTRON
Model No.(s)	SCH3X2-D7
Added Model(s)	N/A
Variant Description	N/A

1.2 Details of EUT

EUT Power Rating	Rated Input: DC 16-31V Rated output: DC 12V~12.5A
Highest internal frequency	1100MHz

Accessories Cable List

Cable Type	Core	Length	Category	Shielding/Non-shielding

1.3 Description of Support Units

EUT Devices:

No.	PRODUCT	MODEL NO.	MANUFACTURER
1	MB	INS8367A	Perfectron
2	CPU (1.10GHz)	i7-13700TE	Intel
3	Memory (32GB / DDR4)	SO-DIMM	Samsung
4	Storage (128GB)	SATAIII SSD	Phison
5	Power	RSD-150B-12	Meanwell

Peripherals Devices:

No.	PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
1-4	USB HDD	Transcend	TS1TSJ25MC	N/A
5	USB Mouse	Logitech	M-U0026	N/A
6	USB Keyboard	Logitech	YU0036	2325SC30W728
7	Monitor	ASUS	MX27UC	K8LMR024567
8	Monitor	ASUS	PA289Q	R7LMTF011289
9	Server PC	Dell	T3610	57TT032
10	Server PC	DELL	Precision 3640 Tower	G3LLFF3
11-12	Battery	GS	GTH75DL	N/A
13	Ground Wire	N/A	N/A	N/A

Support Equipment Used in Tested Cable

No.	Cable Type	Core	Length	Shielding/Non-shielding
1-4	USB	N/A	1.4m	Shielding
5-6	USB	N/A	1.8m	Shielding
7-8	DP	N/A	1.8m	Shielding
9-10	RJ45 (CAT 6A)	N/A	20m	Non-shielding
11-12	Power	N/A	1.8m	Non-shielding
13	Ground	N/A	1.8m	Non-shielding

1.4 I/O Port Description

I/O Port Types	Q'TY
1. USB 2.0 Port	2
2. USB 3.0 Port	2
3. USB 3.2 Port	2
4. LAN Port	2
5. DP Port	2

1.5 Decision of Test Mode

The test configuration/ mode is as the following:

Conduction Mode:

1	**DP*2 3840*2160@60Hz**	**24VDC**

Radiation Mode:

1	**DP*2 3840*2160@60Hz**	**24VDC**

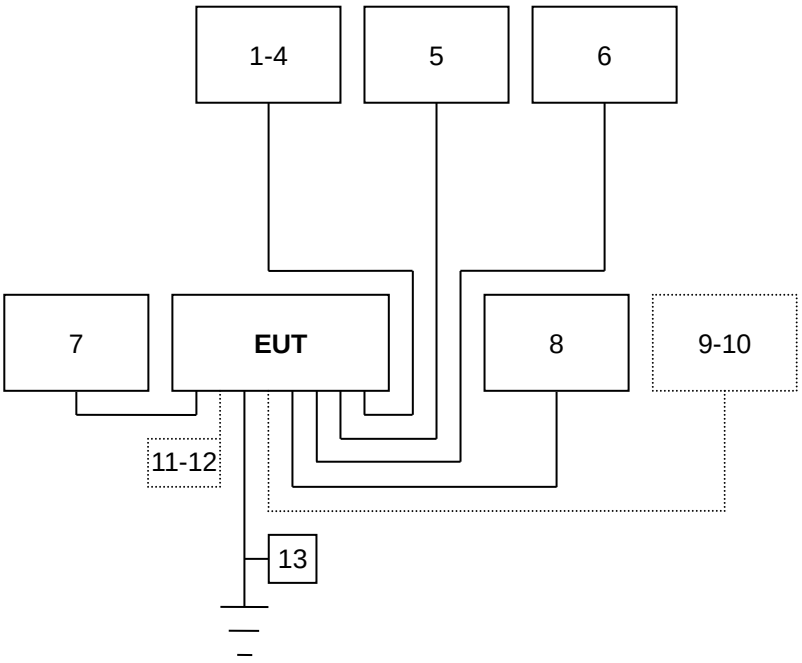
1.6 The Final Test Mode of the EUT

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

Final Test Mode	
Conducted Emission	**Mode 1**
Radiated Emission	**Mode 1**
Harmonics & Flicker	**N/A**
Immunity	**Mode 1**

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 Burnin.exe to activate all peripherals to test EUT.
3. Run LANTEST.exe to ping 192.168.1.60&42 –t (EUT), ping 192.168.1.1&10 –t (Server PC).

1.9 Summary of Results

Emission		
Standard	**Test Type**	**Result**
EN 60945: 2002 (For Clause 9, 10) IEC 60945: 2002 (For Clause 9, 10) IEC 60945 corrigendum 1: 2008		
CISPR 16-1-1, CISPR 16-1-2	Conducted Emission	PASS
CISPR 16-1-1, CISPR 16-1-4	Radiated Emission	PASS
EN IEC 61000-3-2: 2019 + A1: 2021	Harmonic current emissions	N/A
EN 61000-3-3: 2013 + A1: 2019 + A2: 2021 + AC: 2022	Voltage changes, voltage fluctuations & flicker	N/A

Immunity			
Standard	**Test Type**	**Result**	**Performance Criteria**
IEC 61000-4-2: 2008	ESD	PASS	B
IEC 61000-4-3: 2020 (Ed. 4.0)	RS	PASS	A
IEC 61000-4-4: 2012	EFT	PASS	B
IEC 61000-4-5: 2014 + A1: 2017	Surge	N/A	B
IEC 61000-4-6: 2023	CS	PASS	A
POWER SUPPLY SHORT-TERM VARIATION		N/A	B
POWER SUPPLY FAILURE TEST		PASS	C

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

TEST STANDARD: Reference to EN 60945 clause 9.2 Table 5

FREQUENCY (MHz)	Quasi-peak
0.01 – 0.15	96~50
0.15 - 0.35	60~50
0.35 - 30.0	50

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

TEST STANDARD: Reference to EN 60945 clause 9.3 Table 5

FREQUENCY (MHz)	At 3m
0.15 - 0.30	80 ~ 52 (Quasi-peak)
0.30 - 30	52 ~ 34 (Quasi-peak)
30 - 2000	54 (Quasi-peak)
156 - 165	30 (Peak) or 24 (Quasi-peak)

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

2.2 Conducted Emission

2.2.1 Test Instruments

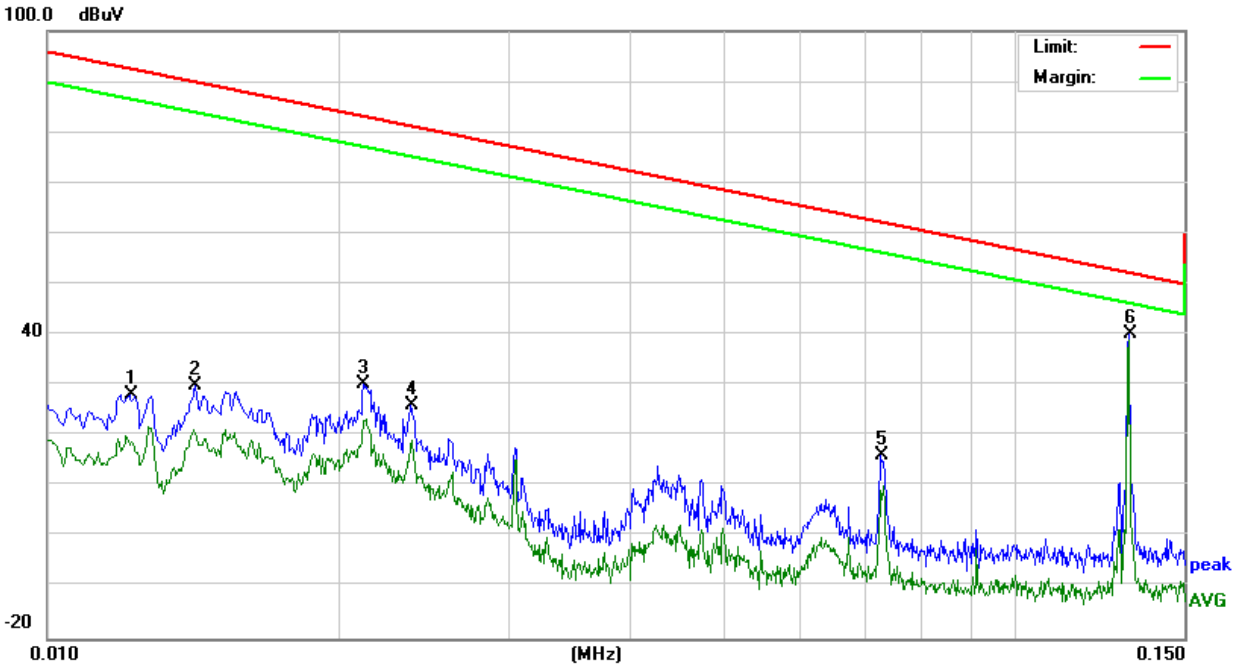
Conducted Emission Room # B					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Attenuator	MCL	HAT-10	SD-C012	03/18/2024	03/17/2025
BNC Cable	EMEC	CFD300-NL	SD-C020	12/28/2023	12/27/2024
EMI Test Receiver	R&S	ESR3	102166	03/05/2024	03/04/2025
LISN	Schwarzbeck	NSLK 8127	01082	03/13/2024	03/12/2025
LISN(EUT)	Schwarzbeck	NSLK 8127	01084	03/13/2024	03/12/2025
Thermo-Hygro Meter	NDr.AV	GM-108A	SD-R100	08/19/2024	08/18/2025
Test S/W	EZ-EMC Ver.CCS-03A1				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan Measurement Uncertainty of Conducted Emission Expanded uncertainty Ulab (k=2) of Conducted Emission is 2.8 dB. Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Conducted Emission measurement is 3.8 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)

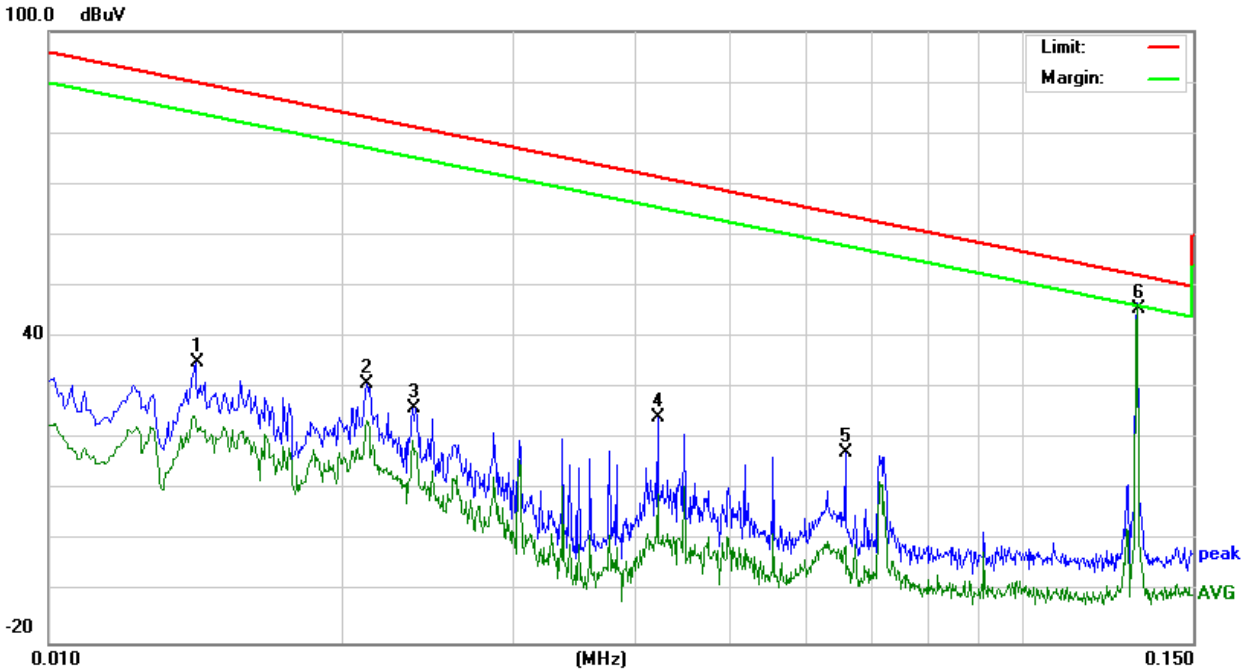
Model No.	SCH3X2-D7	**6dB Bandwidth**	9 kHz
Environmental Conditions	23.2°C, 57% RH	**Test Mode**	Mode 1
Tested by	Kevin Chang	**Phase**	L1
Standard	EN 60945	**Test Date**	2024/12/4



Conducted Emission Readings							
Frequency Range Investigated				**10 kHz to 150 kHz**			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (Q)	Line (L1/L2)
0.0122	**18.05**	**10.21**	**28.26**	**92.62**	**-64.36**	**Q**	**L1**
0.0142	**19.48**	**10.34**	**29.82**	**90.04**	**-60.22**	**Q**	**L1**
0.0212	**19.69**	**10.64**	**30.33**	**83.23**	**-52.90**	**Q**	**L1**
0.0238	**15.42**	**10.55**	**25.97**	**81.27**	**-55.30**	**Q**	**L1**
0.0728	**5.89**	**10.14**	**16.03**	**62.27**	**-46.24**	**Q**	**L1**
0.1314	**30.12**	**10.07**	**40.19**	**52.24**	**-12.05**	**Q**	**L1**

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

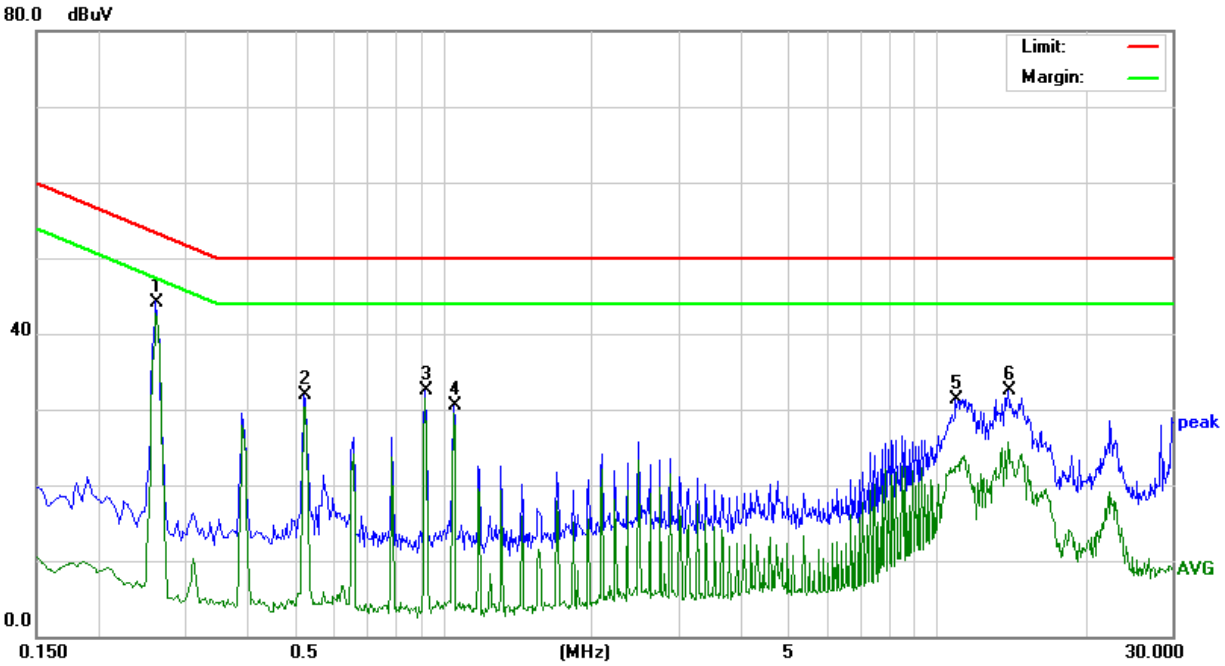
Model No.	SCH3X2-D7	**6dB Bandwidth**	9 kHz
Environmental Conditions	23.2°C, 57% RH	**Test Mode**	Mode 1
Tested by	Kevin Chang	**Phase**	L2
Standard	EN 60945	**Test Date**	2024/12/4



Conducted Emission Readings							
Frequency Range Investigated				**10 kHz to 150 kHz**			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (Q)	Line (L1/L2)
0.0142	**24.79**	**10.31**	**35.10**	**90.04**	**-54.94**	**Q**	**L2**
0.0212	**20.17**	**10.58**	**30.75**	**83.23**	**-52.48**	**Q**	**L2**
0.0237	**15.55**	**10.52**	**26.07**	**81.34**	**-55.27**	**Q**	**L2**
0.0422	**13.97**	**10.22**	**24.19**	**71.54**	**-47.35**	**Q**	**L2**
0.0659	**7.35**	**10.15**	**17.50**	**63.96**	**-46.46**	**Q**	**L2**
0.1314	**35.56**	**10.07**	**45.63**	**52.24**	**-6.61**	**Q**	**L2**

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

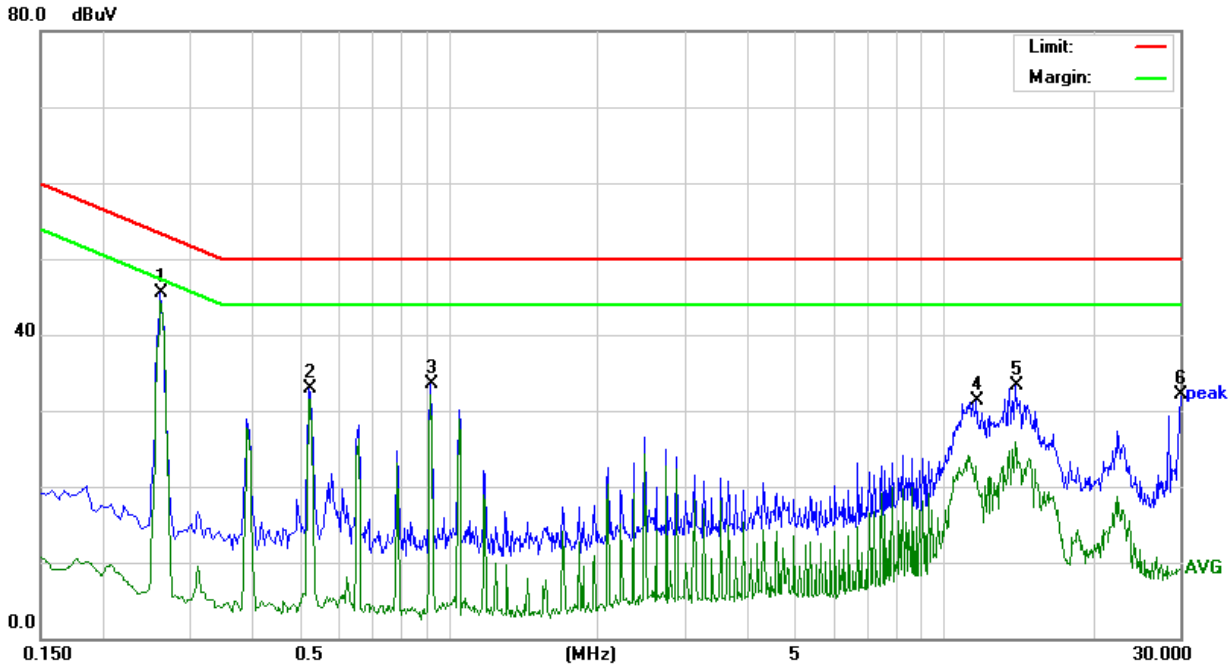
Model No.	SCH3X2-D7	6dB Bandwidth	9 kHz
Environmental Conditions	23.2°C, 57% RH	Test Mode	Mode 1
Tested by	Kevin Chang	Phase	L1
Standard	EN 60945	Test Date	2024/12/4



Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (Q)	Line (L1/L2)
0.2625	34.21	9.99	44.20	53.39	-9.19	Q	L1
0.5235	21.91	9.97	31.88	50.00	-18.12	Q	L1
0.9195	22.46	10.09	32.55	50.00	-17.45	Q	L1
1.0500	20.32	10.10	30.42	50.00	-19.58	Q	L1
10.9320	20.71	10.58	31.29	50.00	-18.71	Q	L1
13.9245	21.80	10.75	32.55	50.00	-17.45	Q	L1

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

Model No.	SCH3X2-D7	6dB Bandwidth	9 kHz
Environmental Conditions	23.2°C, 57% RH	Test Mode	Mode 1
Tested by	Kevin Chang	Phase	L2
Standard	EN 60945	Test Date	2024/12/4



Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (Q)	Line (L1/L2)
0.2625	35.44	9.99	45.43	53.39	-7.96	Q	L2
0.5235	22.85	9.97	32.82	50.00	-17.18	Q	L2
0.9195	23.33	10.10	33.43	50.00	-16.57	Q	L2
11.6475	20.59	10.62	31.21	50.00	-18.79	Q	L2
13.9245	22.63	10.72	33.35	50.00	-16.65	Q	L2
30.0000	20.64	11.48	32.12	50.00	-17.88	Q	L2

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

2.3 Radiated Emission

2.3.1 Test Instruments

Below 1GHz

Chamber # D					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
BNC Cable	EMEC	CFD300-NL	SD-R094	10/25/2024	10/24/2025
MXE EMI Receiver	Keysight	N9038B	MY62210130	01/30/2024	01/29/2025
ARA	Loop Antenna	PLA-1030/B	1027	06/01/2022	05/31/2025
Pre-Amplifier	HP	461A	0946A04138	11/08/2024	11/07/2025
Thermo-Hygro Meter	Wisewind	N/A	SD-R027	08/07/2024	08/06/2025
Bilog Antenna	Sunol	JB1	A100209-2	02/21/2024	02/20/2025
MXE EMI Receiver	Keysight	N9038B	MY62210130	01/30/2024	01/29/2025
N-Type Cable	EMEC	CFD400E-LW	SD-R084	04/12/2024	04/11/2025
Pre-Amplifier	EMCI	EMC330H	980111	08/07/2024	08/06/2025
Thermo-Hygro Meter	Wisewind	N/A	SD-R027	08/07/2024	08/06/2025
Horn Antenna	ETS-Lindgren	3117	00078732	09/05/2024	09/04/2025
K-Type Cable x 1m	JMT	291LK012911000	SD-R078	09/03/2024	09/02/2025
Microflex Cable x 7m	JMT	201LF013017000	SD-R101	09/25/2024	09/24/2025
Pre-Amplifier	HP	8449B	3008A01266	09/04/2024	09/03/2025
Signal Analyzer	Agilent	N9010A	MY53440125	09/04/2024	09/03/2025
Thermo-Hygro Meter	Wisewind	N/A	SD-R027	08/07/2024	08/06/2025
Test S/W	EZ-EMC Ver.CCS-03A1				

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 2.8 dB.(0.009MHz-30MHz)

Expanded uncertainty Ulab (k=2) of Radiated Emission is 5.9 dB.(30MHz-1000MHz)

Expanded uncertainty Ulab (k=2) of Radiated Emission is 4.7 dB.(1000MHz-2000MHz)

Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 3.3 dB.(0.009MHz-30MHz)

Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 6.3 dB.(30MHz-1000MHz)

Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.5 dB.(1000MHz-2000MHz)

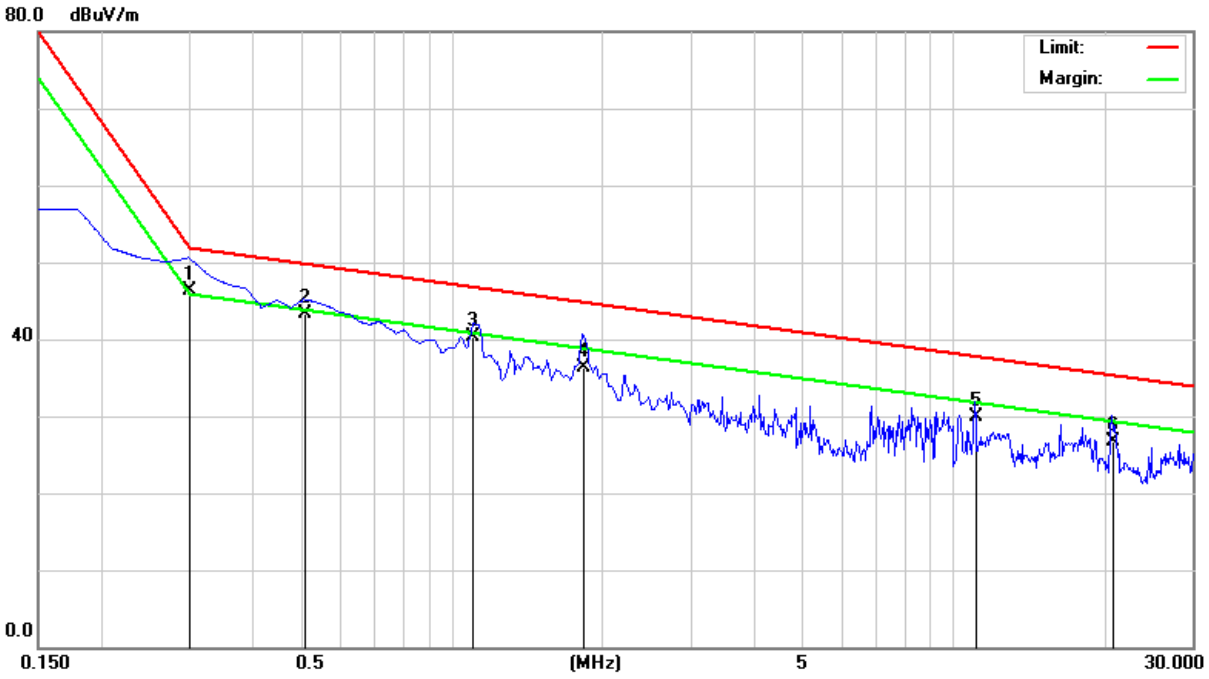
2.3.2 Measurement Level Calculation

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

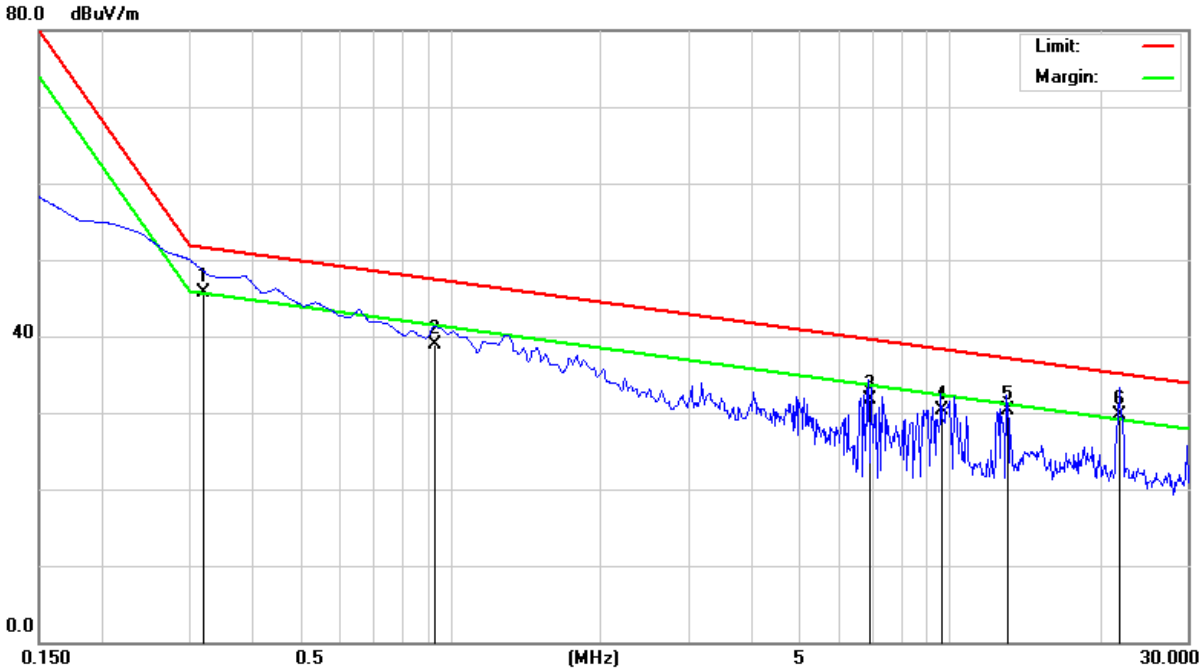
Model No.	SCH3X2-D7	**Test Mode**	Mode 1
Environmental Conditions	24.5ºC, 62% RH	**6dB Bandwidth**	9 kHz
Antenna Pole	Vertical	**Antenna Distance**	3m
Detector Function	Quasi-peak.	**Tested by**	Jack Chen
Standard	EN 60945	**Test Date**	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				**150kHz to 30MHz at 3m**			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
0.2992	**31.50**	**14.76**	**46.26**	**52.08**	**-5.82**	**Q**	**V**
0.5081	**32.80**	**10.44**	**43.24**	**49.94**	**-6.70**	**Q**	**V**
1.1050	**35.60**	**4.66**	**40.26**	**46.90**	**-6.64**	**Q**	**V**
1.8216	**35.60**	**0.79**	**36.39**	**44.95**	**-8.56**	**Q**	**V**
11.0751	**38.50**	**-8.64**	**29.86**	**37.89**	**-8.03**	**Q**	**V**
20.7761	**35.30**	**-8.66**	**26.64**	**35.44**	**-8.80**	**Q**	**V**

Note: 1. Q= Quasi-peak Reading.

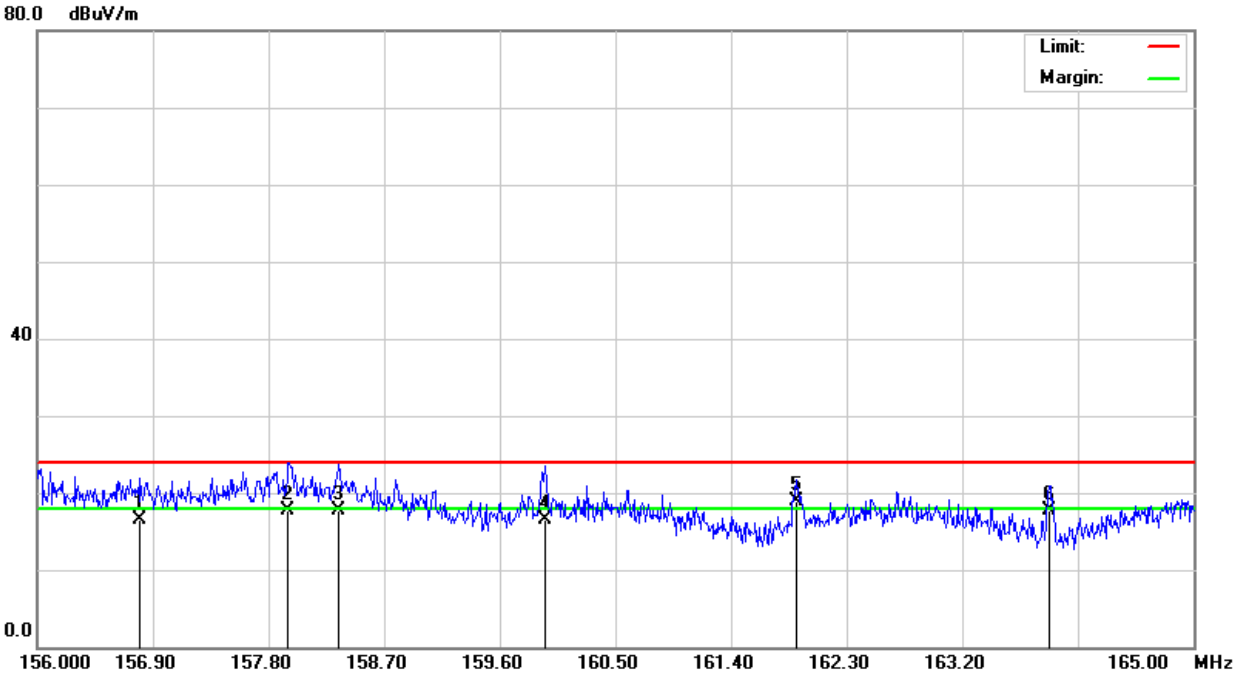
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5°C, 62% RH	6dB Bandwidth	9 kHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				150kHz to 30MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
0.3199	31.40	14.25	45.65	51.75	-6.10	Q	H
0.9261	33.20	5.63	38.83	47.59	-8.76	Q	H
6.8960	39.60	-7.89	31.71	39.75	-8.04	Q	H
9.6423	38.70	-8.34	30.36	38.44	-8.08	Q	H
13.0153	39.40	-9.11	30.29	37.26	-6.97	Q	H
21.8808	38.50	-8.79	29.71	35.23	-5.52	Q	H

Note: 1. Q= Quasi-peak Reading.

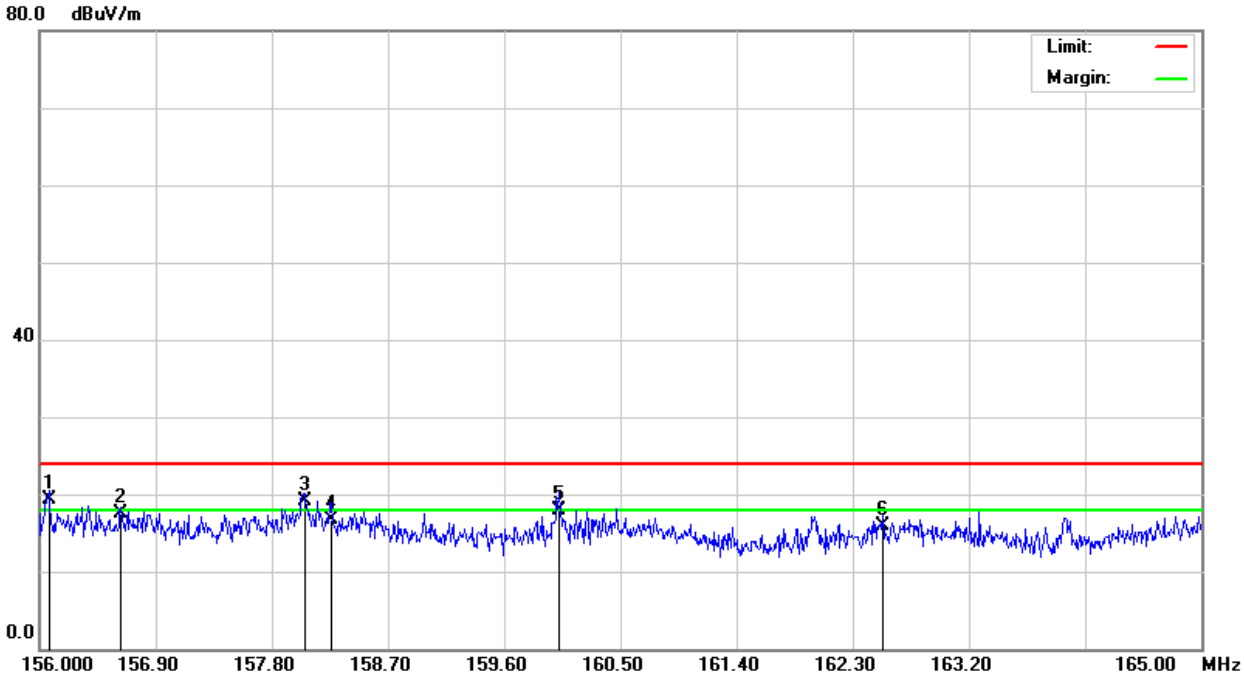
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5ºC, 62% RH	6dB Bandwidth	9 kHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				156MHz to 165MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q)	Pol. (H/V)
156.8009	30.10	-13.50	16.60	24.00	-7.40	Q	V
157.9530	31.20	-13.54	17.66	24.00	-6.34	Q	V
158.3490	31.29	-13.54	17.75	24.00	-6.25	Q	V
159.9510	30.10	-13.67	16.43	24.00	-7.57	Q	V
161.9040	32.60	-13.69	18.91	24.00	-5.09	Q	V
163.8750	31.50	-13.71	17.79	24.00	-6.21	Q	V

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

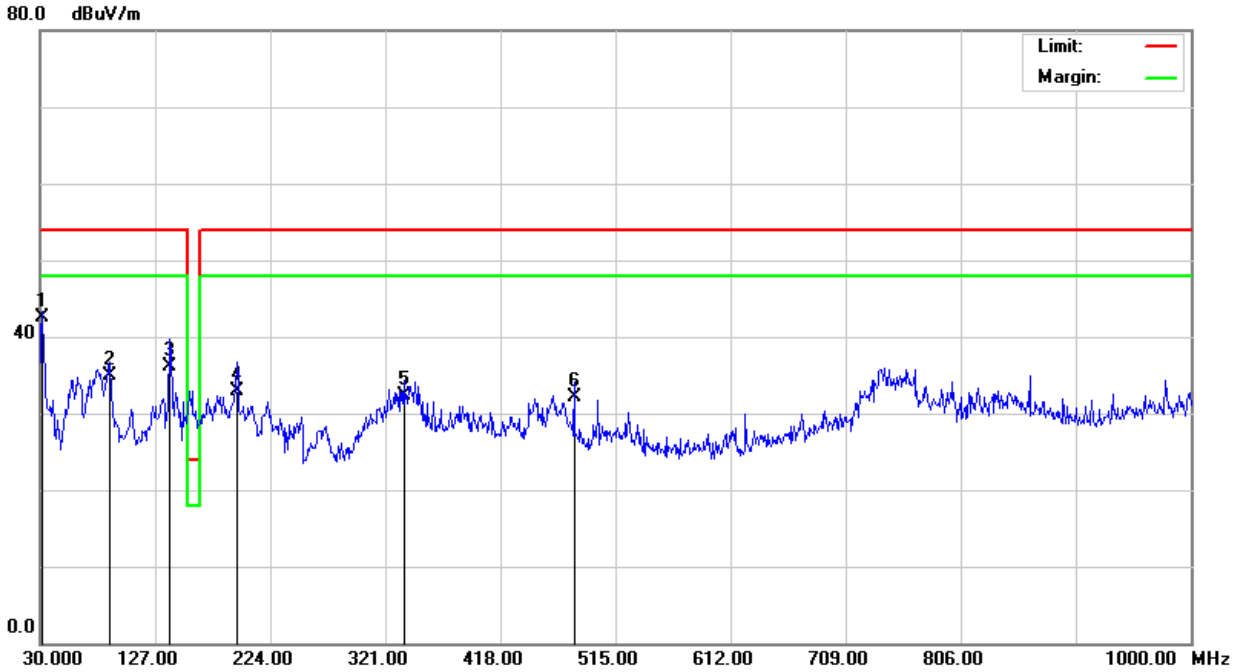
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5ºC, 62% RH	6dB Bandwidth	9 kHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				156MHz to 165MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q)	Pol. (H/V)
156.0720	32.80	-13.42	19.38	24.00	-4.62	Q	H
156.6300	30.90	-13.48	17.42	24.00	-6.58	Q	H
158.0520	32.60	-13.54	19.06	24.00	-4.94	Q	H
158.2589	30.30	-13.54	16.76	24.00	-7.24	Q	H
160.0230	31.50	-13.67	17.83	24.00	-6.17	Q	H
162.5340	29.60	-13.63	15.97	24.00	-8.03	Q	H

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

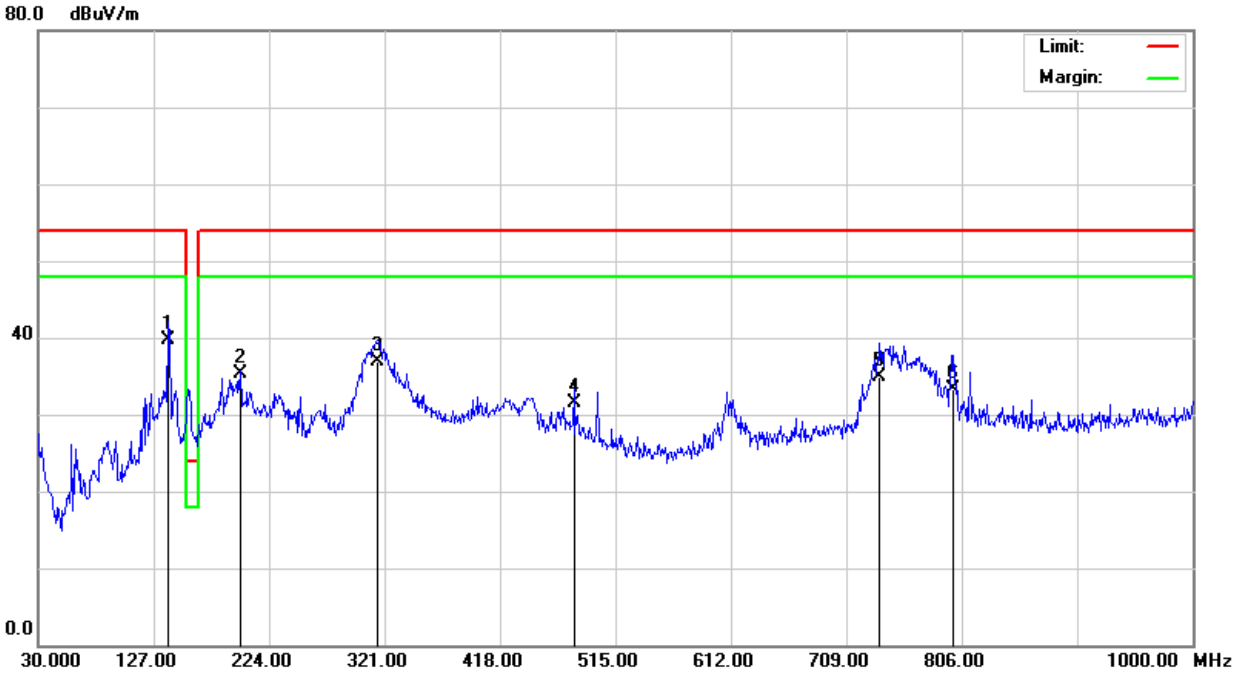
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5ºC, 62% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				30MHz to 1000MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
31.9400	47.80	-5.30	42.50	54.00	-11.50	Q	V
88.2000	53.50	-18.50	35.00	54.00	-19.00	Q	V
138.6400	48.20	-12.02	36.18	54.00	-17.82	Q	V
195.8700	45.40	-12.50	32.90	54.00	-21.10	Q	V
336.5200	43.50	-11.26	32.24	54.00	-21.76	Q	V
480.0800	39.80	-7.74	32.06	54.00	-21.94	Q	V

Note: 1. Q= Quasi-peak Reading.

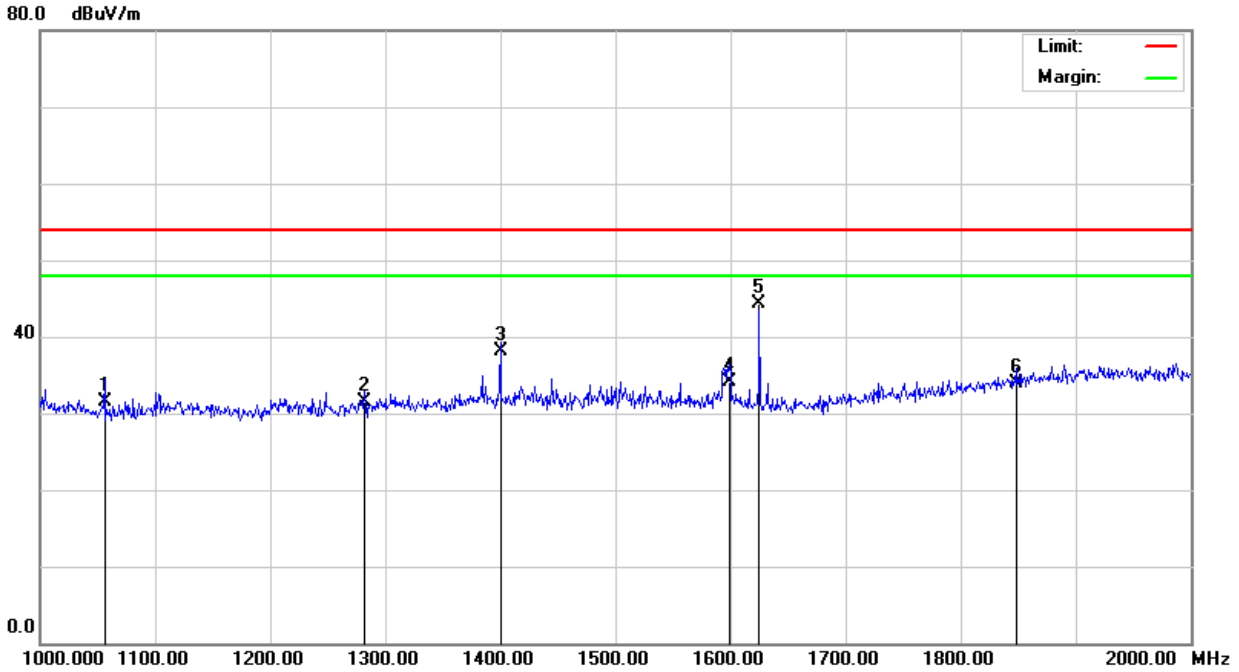
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5°C, 62% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				30MHz to 1000MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
139.6100	51.90	-12.11	39.79	54.00	-14.21	Q	H
199.7500	47.51	-12.25	35.26	54.00	-18.74	Q	H
315.1800	48.60	-11.76	36.84	54.00	-17.16	Q	H
480.0800	39.30	-7.74	31.56	54.00	-22.44	Q	H
737.1300	38.50	-3.54	34.96	54.00	-19.04	Q	H
799.2100	35.40	-2.19	33.21	54.00	-20.79	Q	H

Note: 1. Q= Quasi-peak Reading.

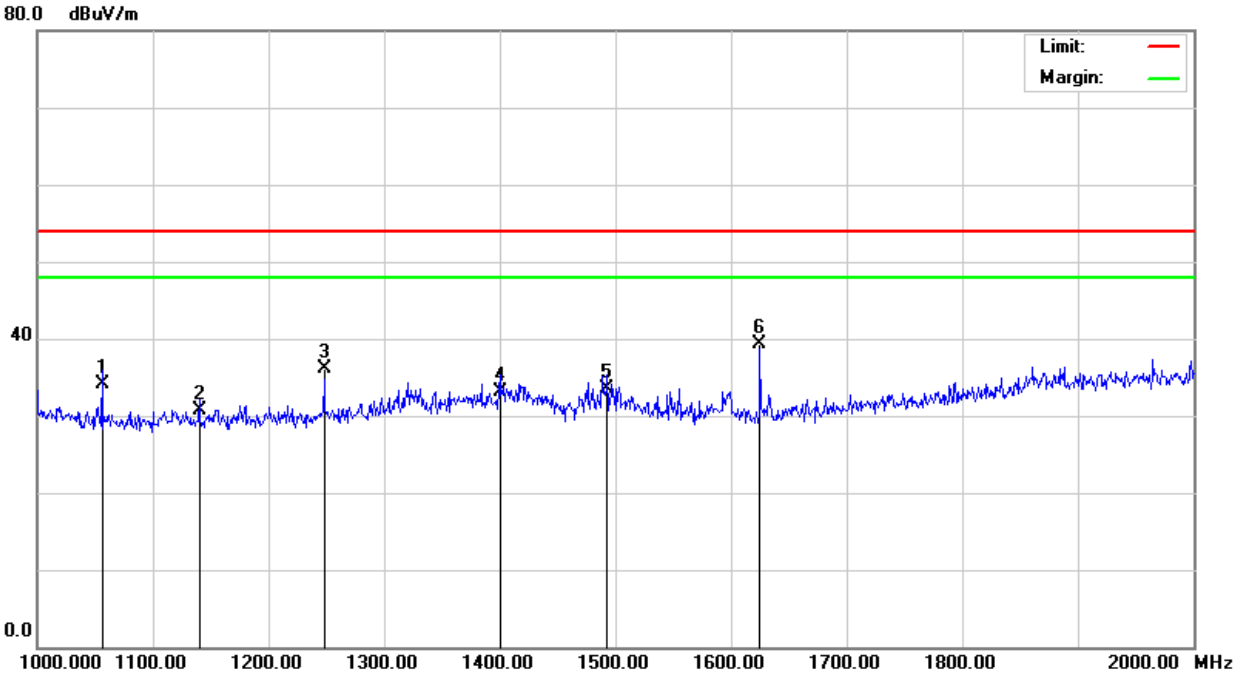
Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	24.5ºC, 62% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				1000MHz to 2000MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
1056.000	31.60	-0.08	31.52	54.00	-22.48	Q	V
1282.000	30.70	0.87	31.57	54.00	-22.43	Q	V
1400.000	38.50	-0.30	38.20	54.00	-15.80	Q	V
1599.000	34.60	-0.46	34.14	54.00	-19.86	Q	V
1625.000	44.50	-0.17	44.33	54.00	-9.67	Q	V
1848.000	30.50	3.45	33.95	54.00	-20.05	Q	V

Note: 1. Q= Quasi-peak Reading.

Model No.	SCH3X2-D7	Test Mode	Mode 1
Environmental Conditions	28.7°C, 64% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function	Quasi-peak.	Tested by	Jack Chen
Standard	EN 60945	Test Date	2024/11/13



Radiated Emission Readings							
Frequency Range Investigated				1000MHz to 2000MHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (Q)	Pol. (H/V)
1056.000	34.20	-0.08	34.12	54.00	-19.88	Q	H
1140.000	30.70	-0.06	30.64	54.00	-23.36	Q	H
1248.000	35.60	0.56	36.16	54.00	-17.84	Q	H
1400.000	33.50	-0.30	33.20	54.00	-20.80	Q	H
1493.000	34.30	-0.81	33.49	54.00	-20.51	Q	H
1625.000	39.40	-0.17	39.23	54.00	-14.77	Q	H

Note: 1. Q= Quasi-peak Reading.

3. Harmonics

3.1 Test Instruments

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

3.2 Measurement Data

Remark: N/A: The subject equipment is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

4. Flicker

4.1 Test Instruments

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

4.2 Measurement Data

Remark: N/A: The subject equipment is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5. IMMUNITY

5.1 STANDARD PERFORMANCE CRITERIA DESCRIPTION

Criterion A - The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed, as defined in the relevant equipment standard and in the technical specification published by the manufacturer.

Criterion B - The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed, as defined in the relevant equipment standard and in the technical specification published by the manufacturer. During the test, degradation or loss of function or performance which is self-recoverable is however, allowed, but no change of actual operating state or stored data is allowed.

Criterion C - Temporary degradation or loss of function or performance is allowed during the test, provided the function is self-recoverable, or can be restored at the end of the test by the operation of the controls, as defined in the relevant equipment standard and in the technical specification published by the manufacturer.

5.2 Test of IEC 61000-4-2

5.2.1 Test Instruments

Immunity Shielded Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Aneroid Barometer	SATO	7610-20	89090	07/23/2024	07/22/2025
ESD Simulator	Teseq	NSG 438	1581	07/03/2024	07/02/2025
Thermo-Hygro Meter	Wisewind	201A	SD-S041	12/12/2023	12/11/2024
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.2.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.7 °C	47 %RH	1009 hpa

5.2.3 Results of Electrostatic Discharge Test (ESD)

Model No. : SCH3X2-D7
Tested By : Jacky Lin
Tested Date : December 10, 2024
Test Mode : Mode 1
Basic Standard : IEC 61000-4-2
Discharge Impedance : 330 ohm / 150 pF
Discharge Voltage : Air Discharge: ±2, 4, 8 kV
Contact Discharge: ±2, 4, 6 kV
HCP/VCP: ±2, 4, 6 kV
Polarity : Positive/Negative
Number of Discharge : 10 times at each test point
Discharge Mode : Single Discharge
Discharge Period : 1 second

A.Observations:

Test points: 1. Front side. 2. Back side. 3. Left side. 4. Right side. 5. Top side. 6. Bottom side.

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8 (Air.)	+/-	1, 2	N/A	A
2, 4, 6 (Cont.)	+/-	1, 3~5	A	N/A
2, 4, 6 (Cont.)	+/-	2	B	N/A

Remark: A: No degradation of performance or loss of function.
B: The transmitting was interrupted during test. It could become normal after test stop.
N/A: Not Applicable.

B.Observations:

Test points: 1. Front side. 2. Back side. 3. Left side. 4. Right side.

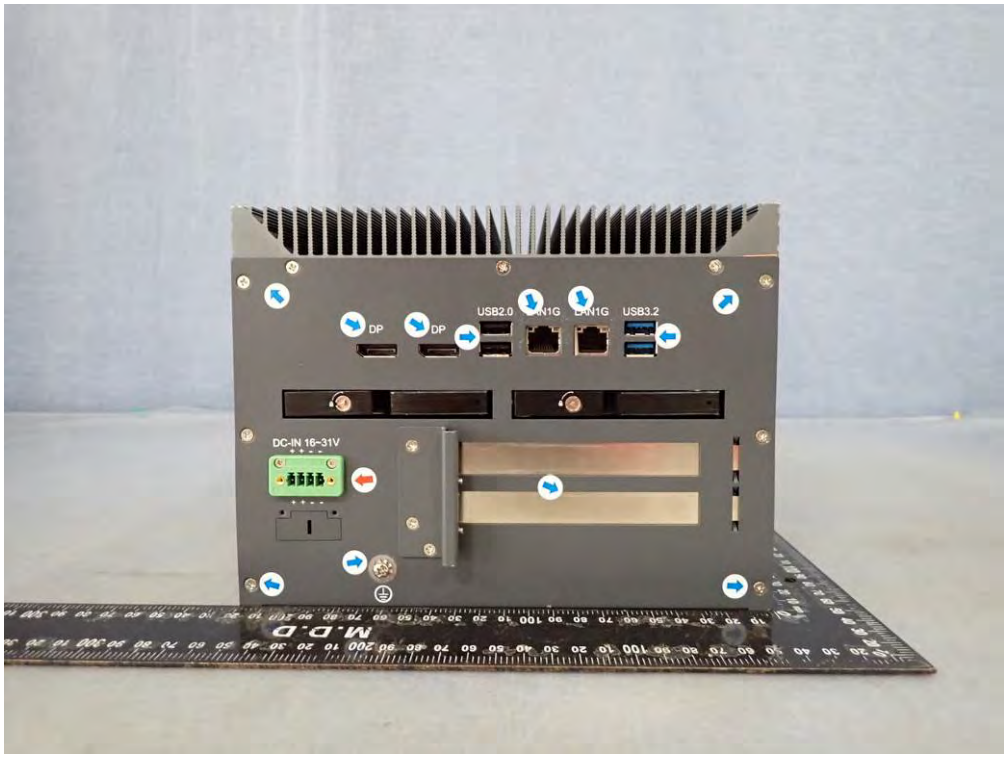
Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2, 4, 6	+/-	1~4	A	A

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

ESD Test point

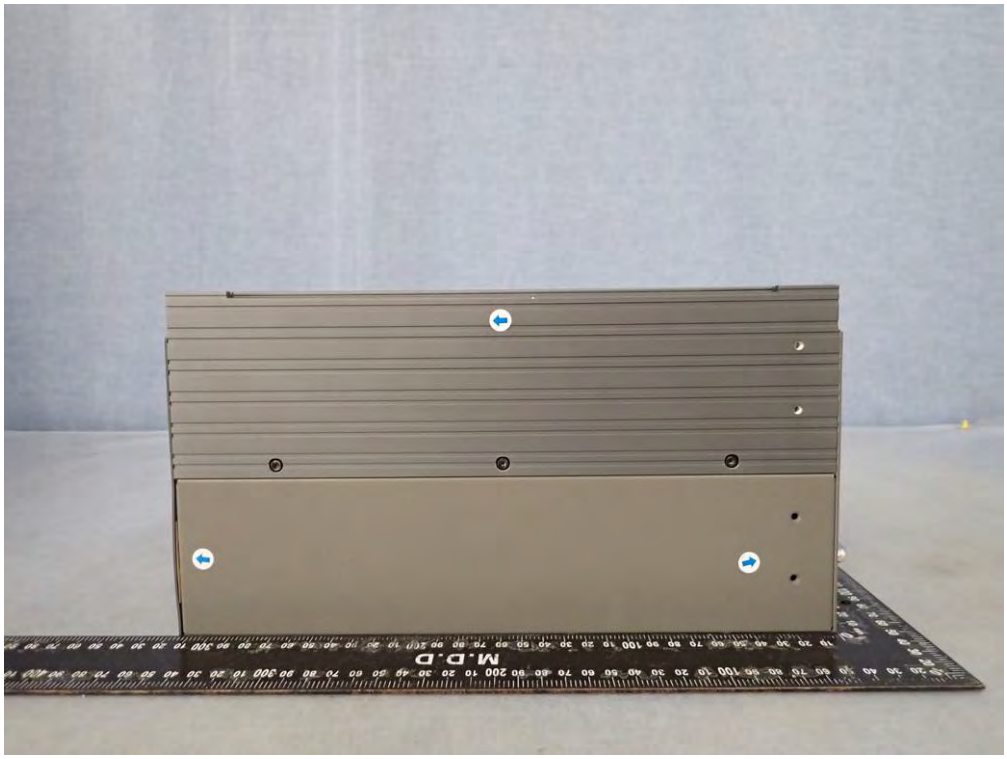
Front

Back

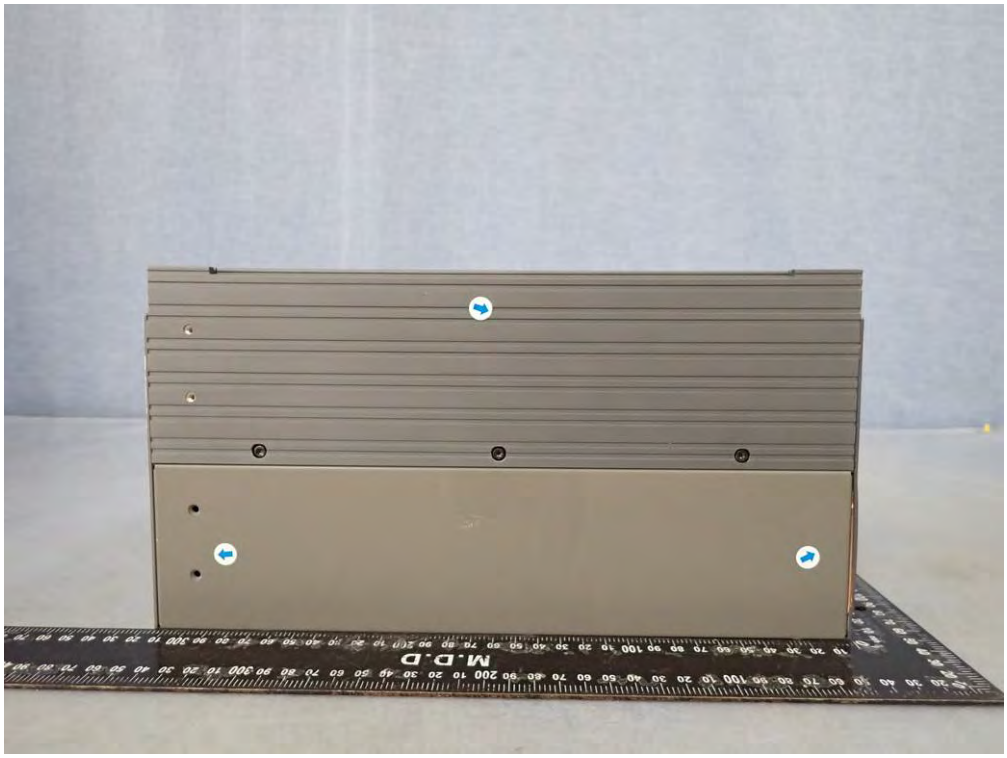


Air Discharge:
Contact Discharge:

Left



Right



Air Discharge:
Contact Discharge:

Top

Air Discharge:
Contact Discharge:

5.3 Test of IEC 61000-4-3

5.3.1 Test Instruments

844 RS Chamber					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Electric Field Probe	AR	FL7006	0356656	03/06/2024	03/07/2025
Field of Calibration	CCS	Chamber#RS	80-1000MHz	02/16/2024	02/15/2025
RF Power Meter	Boonton	4242	17419	01/29/2024	01/28/2025
Power Sensor	Boonton	51011A-EMC	36833	01/29/2024	01/28/2025
Power Sensor	Boonton	51011A-EMC	36834	01/29/2024	01/28/2025
Thermo-Hygro Meter	Wisewind	201A	SD-S019	09/10/2024	09/09/2025
Broadband Antenna	AR	AT1080	311819	N.C.R	N.C.R
Power Amplifier	Teseq	CBA1G-600D	1098099	N.C.R	N.C.R
Analog Signal Generator	Agilent	E8257D	MY48051214	05/28/2024	05/27/2025
Field of Calibration	CCS	Chamber#RS	1000-6000MHz	02/15/2024	02/14/2025
Microwave Antenna	Schwarzbeck	STLP 9149	767	N.C.R	N.C.R
Power Amplifier	Teseq	CBA6G-100D	1087370	N.C.R	N.C.R
Test Software	EmcwareVer. 3.2				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.3.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.6 °C	56 %RH	1009 hpa

5.3.3 Results of Radiated Radio Frequency Electromagnetic (RS)

Model No. : SCH3X2-D7
Tested By : Kevin Chang
Tested Date : November 14, 2024
Test Mode : Mode 1
Basic Standard : IEC 61000-4-3
Frequency range : 80 MHz - 2000 MHz
Field strength : 10 Vrms
Modulation : 400Hz ± 10% Sine Wave, 80% ± 10%, AM Modulation
Frequency step : 1 % of the preceding frequency
Polarity of Antenna : Horizontal and Vertical
Dwell Time : 3 seconds
Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 2000	Vertical/Horizontal	A	0 degree
2	80 - 2000	Vertical/Horizontal	A	90 degree
3	80 - 2000	Vertical/Horizontal	A	180 degree
4	80 - 2000	Vertical/Horizontal	A	270 degree

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

5.4 Test of IEC 61000-4-4

5.4.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Capacitive Clamp	EMC-Partner	CN-EFT1000	589	02/20/2024	02/19/2025
EMC Test System	EMC-Partner	IMU-MGE	109937-1545	05/27/2024	05/26/2025
DIP	EMC-Partner	VAR-EXT1000	103470-1724	05/27/2024	05/26/2025
Test Software	TEMA3000 v4.7.3				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.4.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
22.7 °C	52 %RH	1009 hpa

5.4.3 Results of Electrical Fast Transient (EFT)

Model No. : SCH3X2-D7
Tested By : Jacky Lin
Tested Date : November 14, 2024
Test Mode : Mode 1
Basic Standard : IEC 61000-4-4
Test Voltage : N/A
Signal/Comm. : ± 1 kV
Polarity : Positive/Negative
Impulse Frequency : 5 kHz
Tr/Th : 5/50ns
Burst : 15ms/300ms

Observation:

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

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

5.5 Test of IEC 61000-4-5

5.5.1 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					

5.5.2 EUT Operating Condition

Environment:

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

5.5.3 Results of Surge Test

Model No. : SCH3X2-D7
Tested By : N/A
Tested Date : N/A
Test Mode : N/A
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:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	0.5	N/A
L – PE	0, 90, 180, 270	+/-	1	N/A
N – PE	0, 90, 180, 270	+/-	1	N/A

Remark: N/A: The subject equipment is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.6 Test of IEC 61000-4-6

5.6.1 Test Instruments

CS Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Attenuator	EMCI	SA3NL	10006F	N.C.R	N.C.R
CDN	Teseq	CDN M016	35820	11/30/2023	11/29/2024
CDN	SCHAFFNER	CDN M325	17457	11/30/2023	11/29/2024
CDN	Teseq	CDN T8-10	40378	07/15/2024	07/14/2025
Compact Immunity Test System	Teseq	NSG 4070B-35	39581	09/19/2024	09/18/2025
Test Software	NSG 4070 Control Program Version: V1.2.0				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.6.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.1 °C	53 %RH	1009 hpa

5.6.3 Results of Immunity to Conducted Disturbances (CS)

Model No. : SCH3X2-D7
Tested By : Jacky Lin
Tested Date : November 14, 2024
Test Mode : Mode 1
Basic Standard : IEC 61000-4-6
Frequency range : 0.15 MHz - 80 MHz
Field strength : 3 Vrms
Frequency range : 2MHz, 3MHz, 4MHz, 6.2MHz, 8.2MHz, 12.6MHz, 16.5MHz, 18.8MHz, 22MHz, 25MHz
Field strength : 10 Vrms
Modulation : 400Hz ± 10% Sine Wave, 80% ± 10%, AM Modulation
Frequency step : 1 % of the preceding frequency
Dwell Time : 3 seconds
Coupling Method : CDN-M2; CDN-T8

Cable Description	Frequency (MHz)	Observation
DC input	0.15 – 80	A
DC input	2	A
DC input	3	A
DC input	4	A
DC input	6.2	A
DC input	8.2	A
DC input	12.6	A
DC input	16.5	A
DC input	18.8	A
DC input	22	A
DC input	25	A

Signal Ports

Cable Description	Frequency (MHz)	Observation
RJ45	0.15 – 80	A
RJ45	2	A
RJ45	3	A
RJ45	4	A
RJ45	6.2	A
RJ45	8.2	A
RJ45	12.6	A
RJ45	16.5	A
RJ45	18.8	A
RJ45	22	A
RJ45	25	A

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

5.7 Test of POWER SUPPLY SHORT-TERM VARIATION

5.7.1 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					

5.7.2 EUT Operating Condition

Environment:

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

5.7.3 Result of Immunity to Power Frequency Magnetic Field

Model No. : SCH3X2-D7
Tested By : N/A
Tested Date : N/A
Test Mode : N/A
Basic Standard : POWER SUPPLY SHORT-TERM VARIATION
Test duration time : Minimum three test events in sequence
Interval between event : 1/10 min
Voltage variation rise and decay : nominal ± (20 ± 1) %, duration 1,5 s ± 0,2 s
Frequency variation rise and decay : nominal ± (10 ± 0,5) %, duration 5 s ± 0,5 s, superimposed

Observation:

POWER	Duration (Sec)	Observation
276/55	1.5/5	N/A
184/45	1.5/5	N/A

Remark: N/A: The subject equipment is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.8 Test of POWER SUPPLY FAILURE

5.8.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	5001IX-208-SCH	1207A03643	09/19/2024	09/18/2026
Oscilloscope	Tektronix	TDS 3054C	C013600	04/23/2024	04/22/2025
Software	Win2110.exe				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.8.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.1 °C	53 %RH	1009 hpa

5.8.3 Result of Immunity to Power Frequency Magnetic Field

Model No. : SCH3X2-D7
Tested By : Jim Lian
Tested Date : November 14, 2024
Test Mode : Mode 1
Basic Standard : POWER SUPPLY FAILURE
Test duration time : 60 Sec
Requirement : 3 Times

Observation:

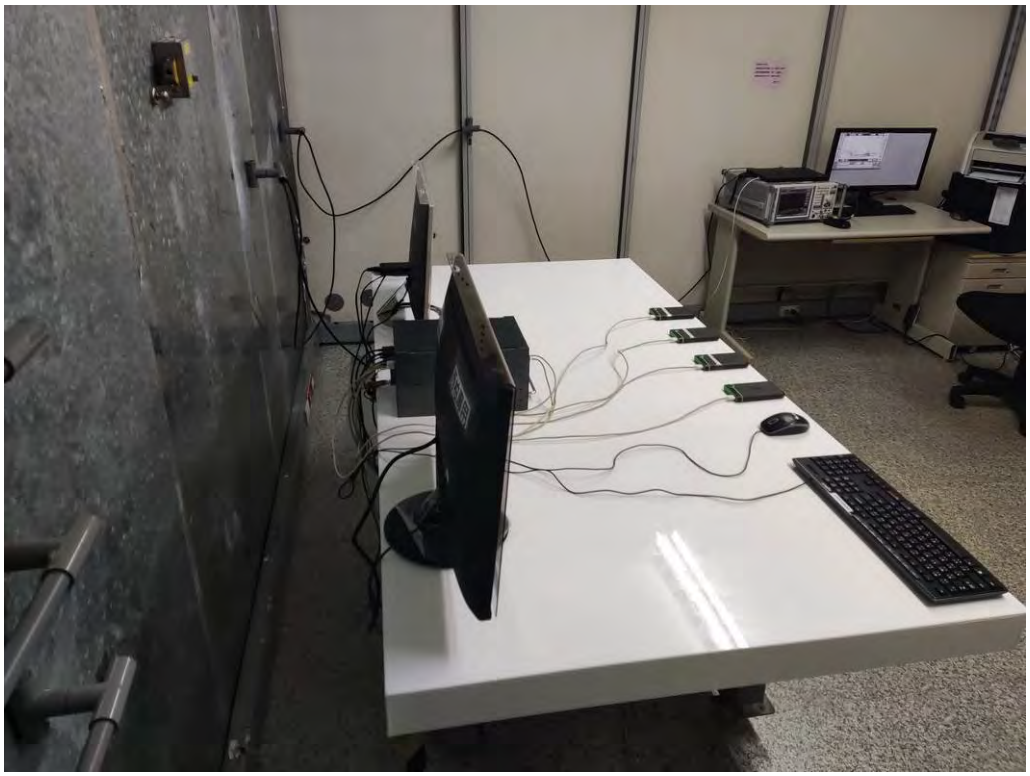
Test Power: 24VDC		
Test specification (% reduction)	**Duration (Sec)**	**Observation**
100	60	C

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

APPENDIX

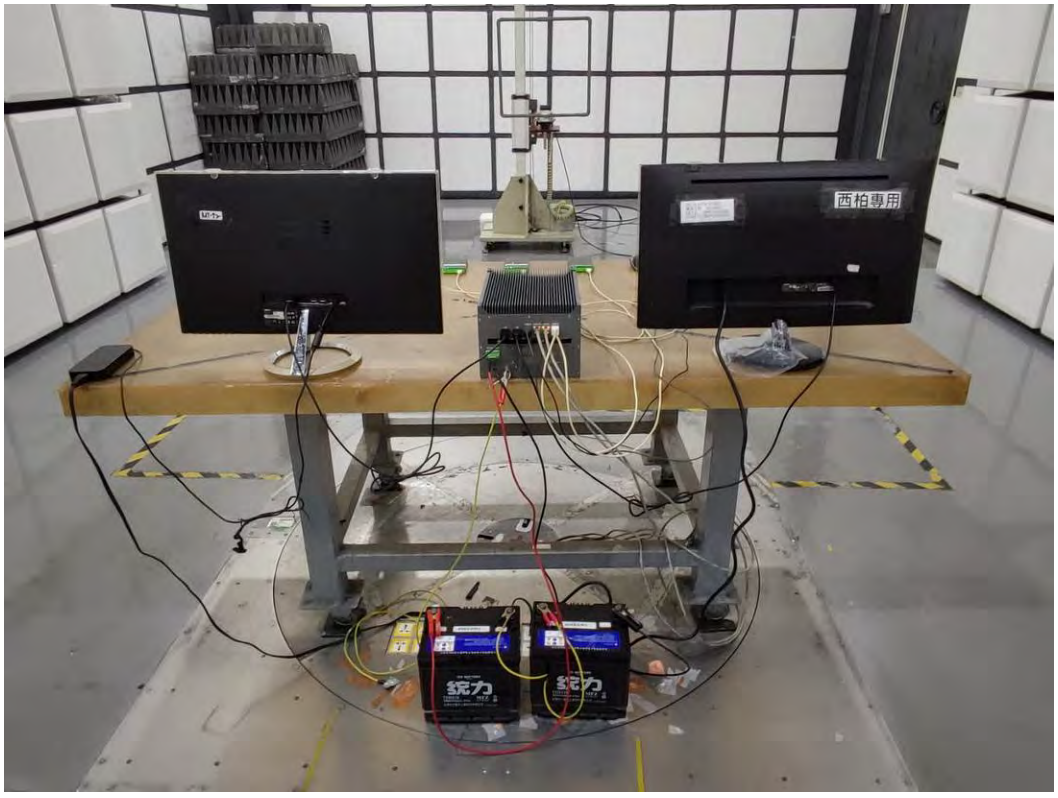
Photograph of Testing General Set-up

CE Testing Set-up

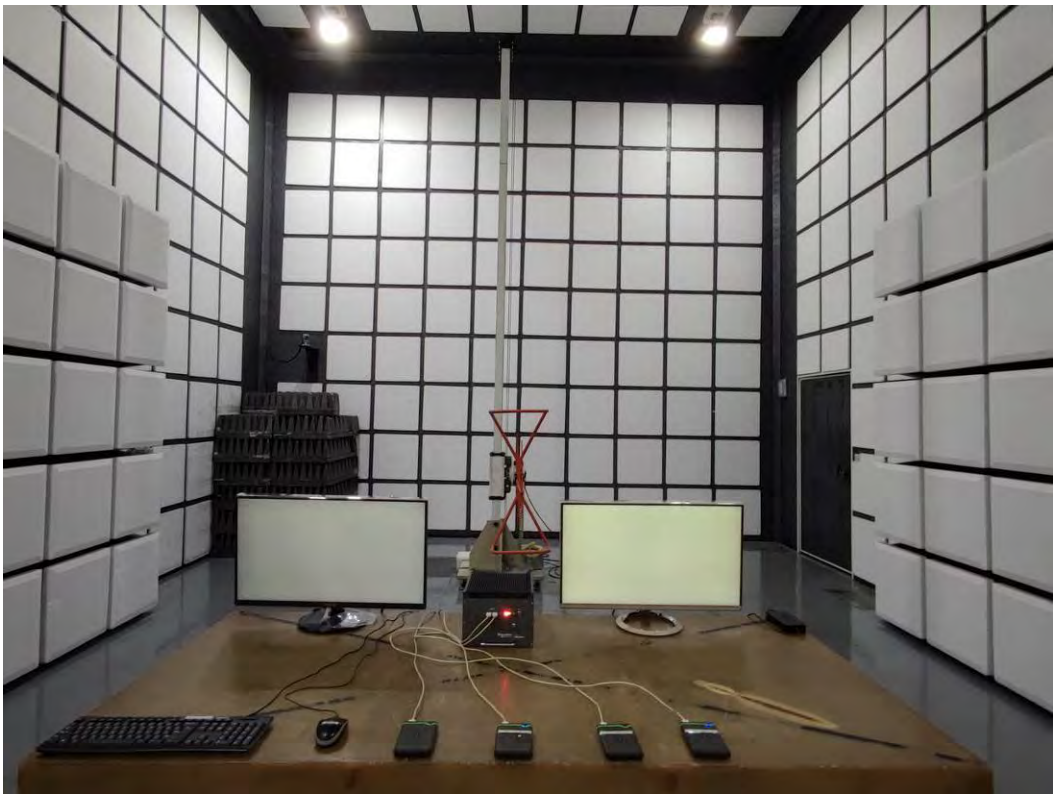


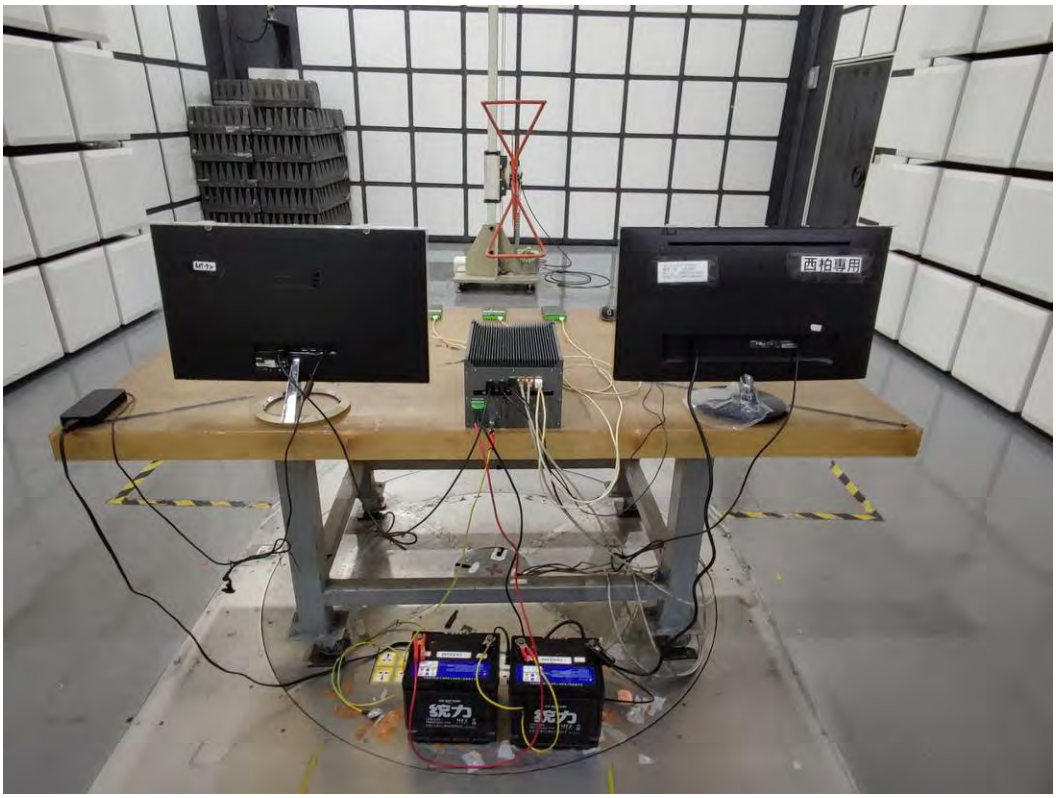
RE Testing Set-up

150kHz ~ 30MHz

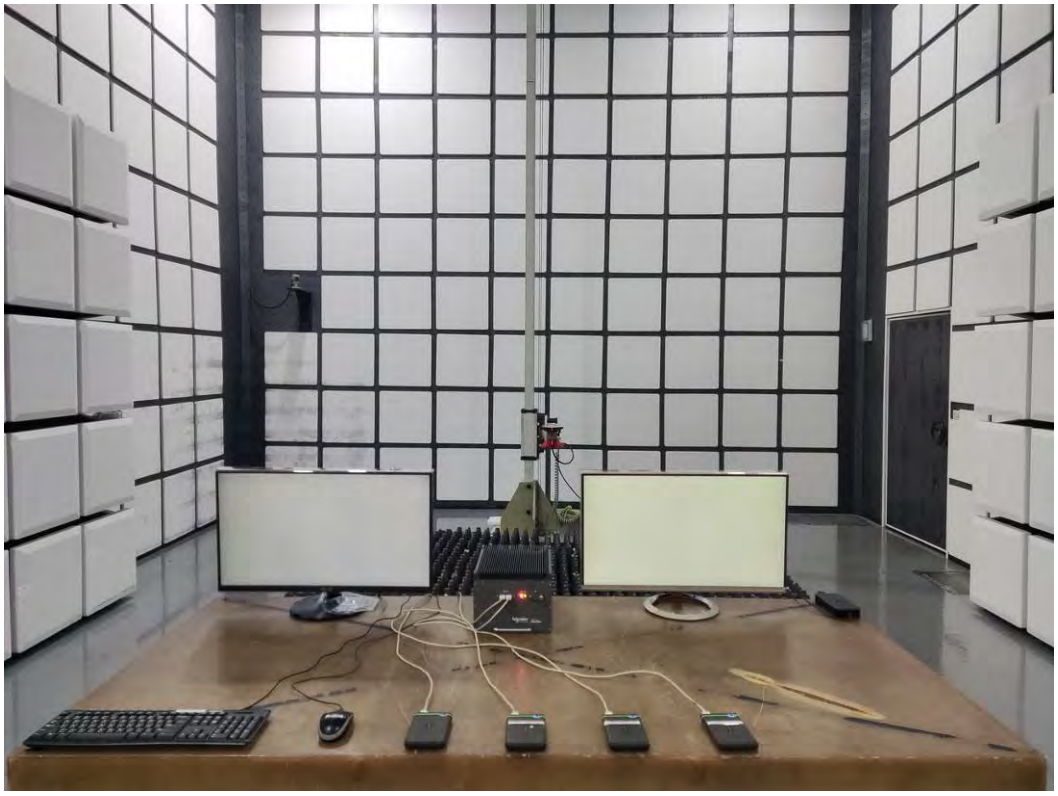


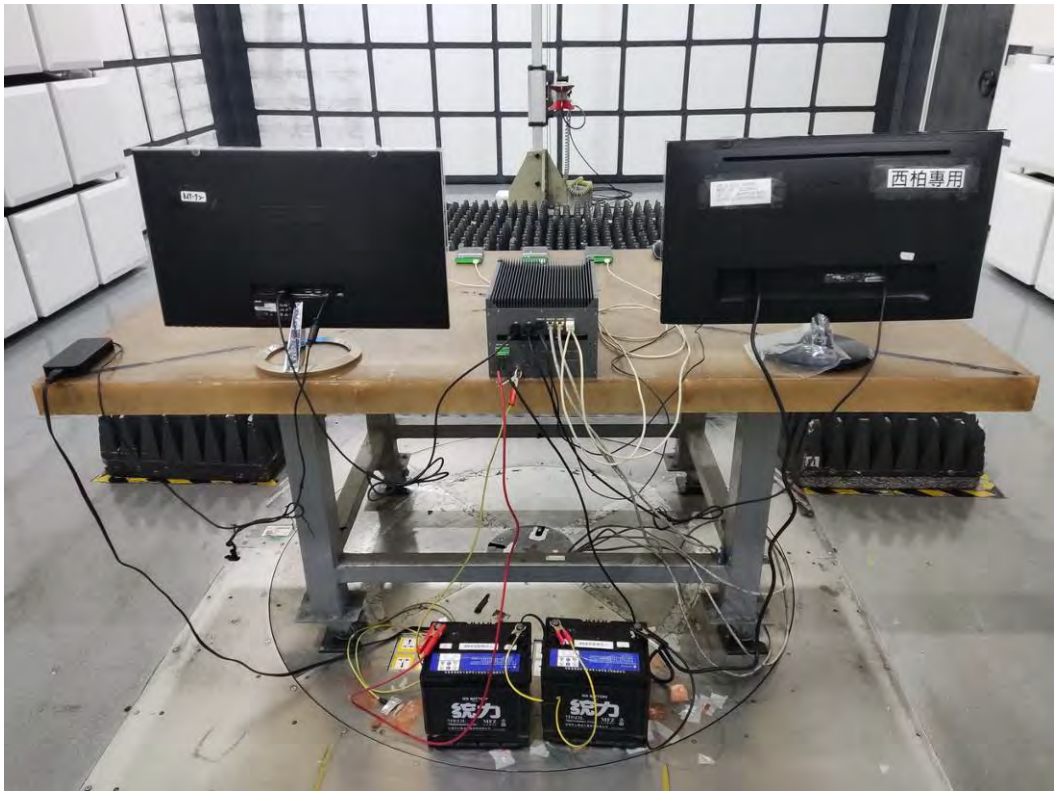
30MHz ~ 1GHz





1GHz ~ 2GHz



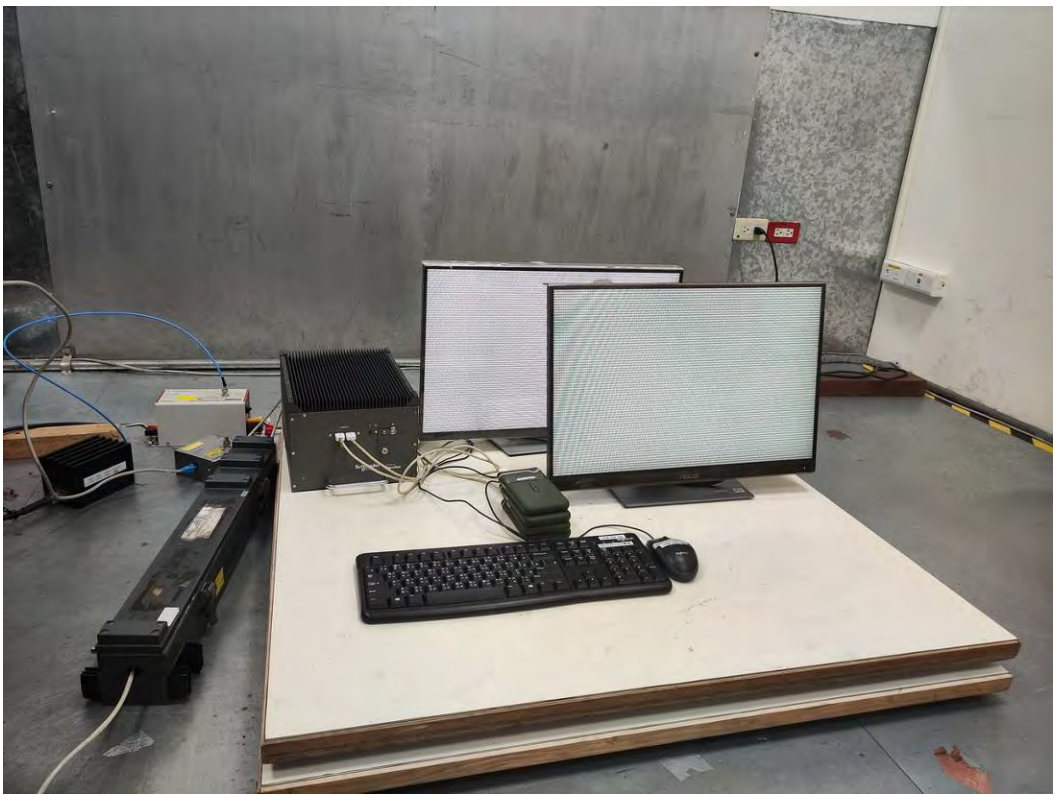


ESD Testing Set-up

RS Testing Set-up

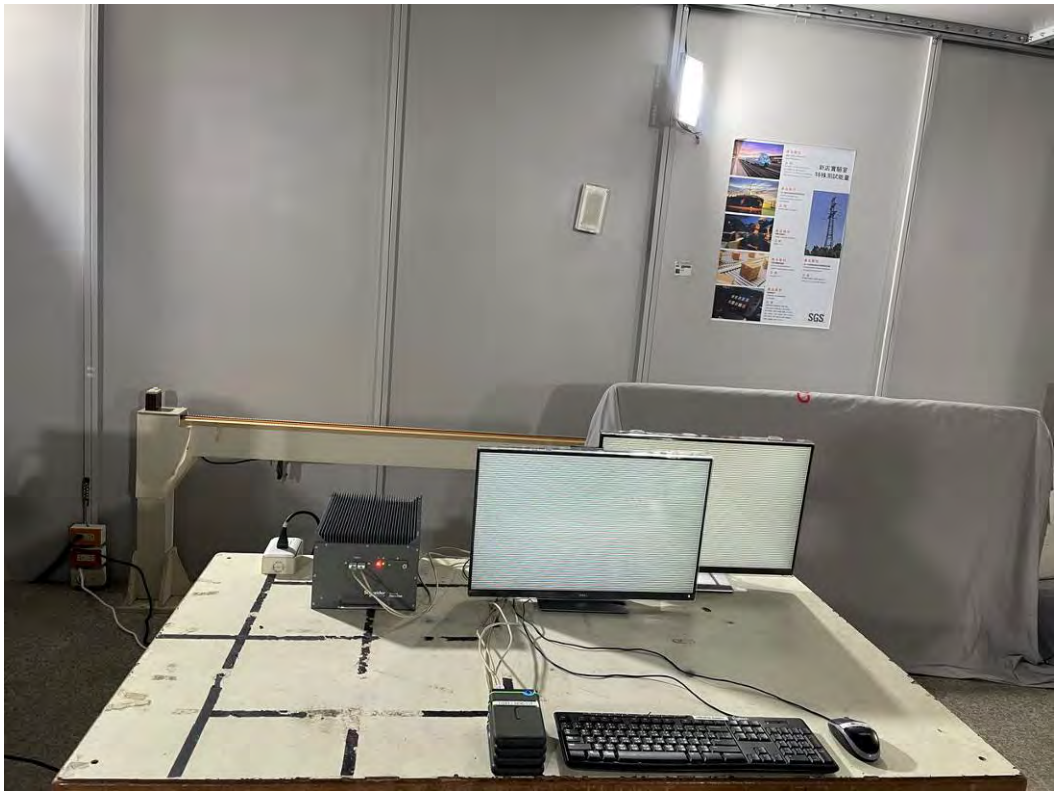
EFT For I/O Testing Set-up

CS Testing Set-up



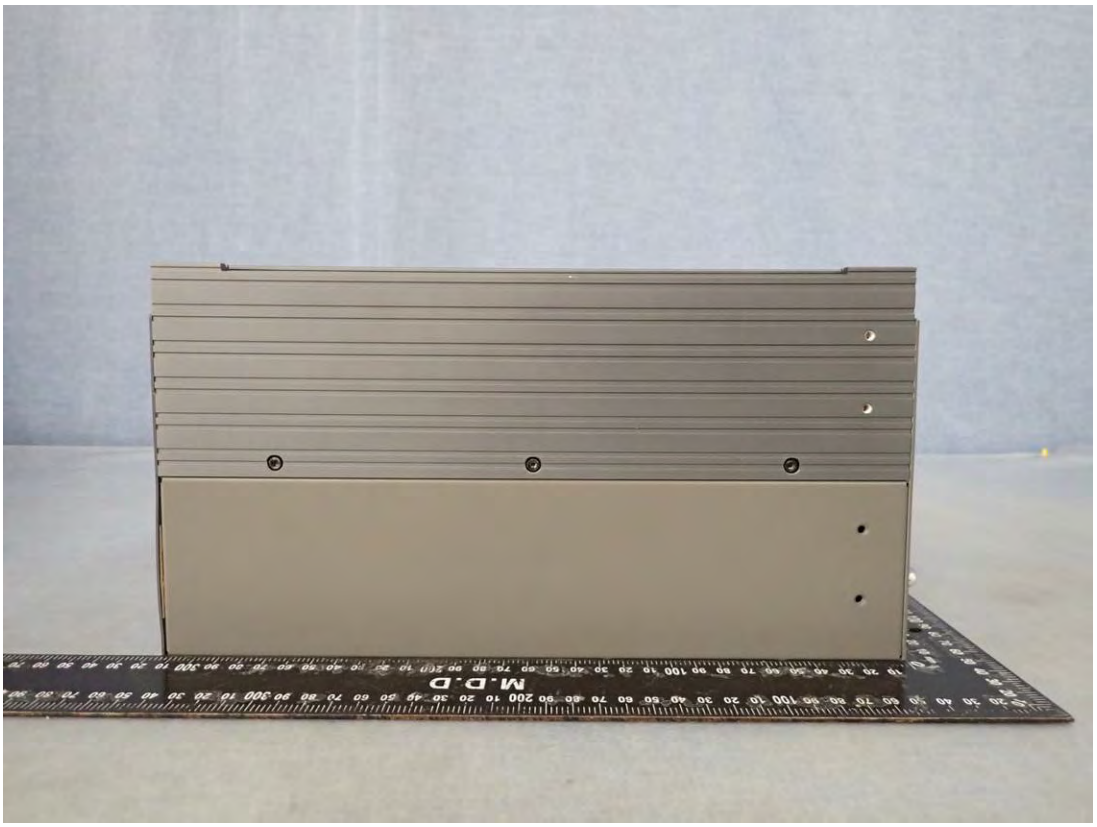
CS For I/O Testing Set-up

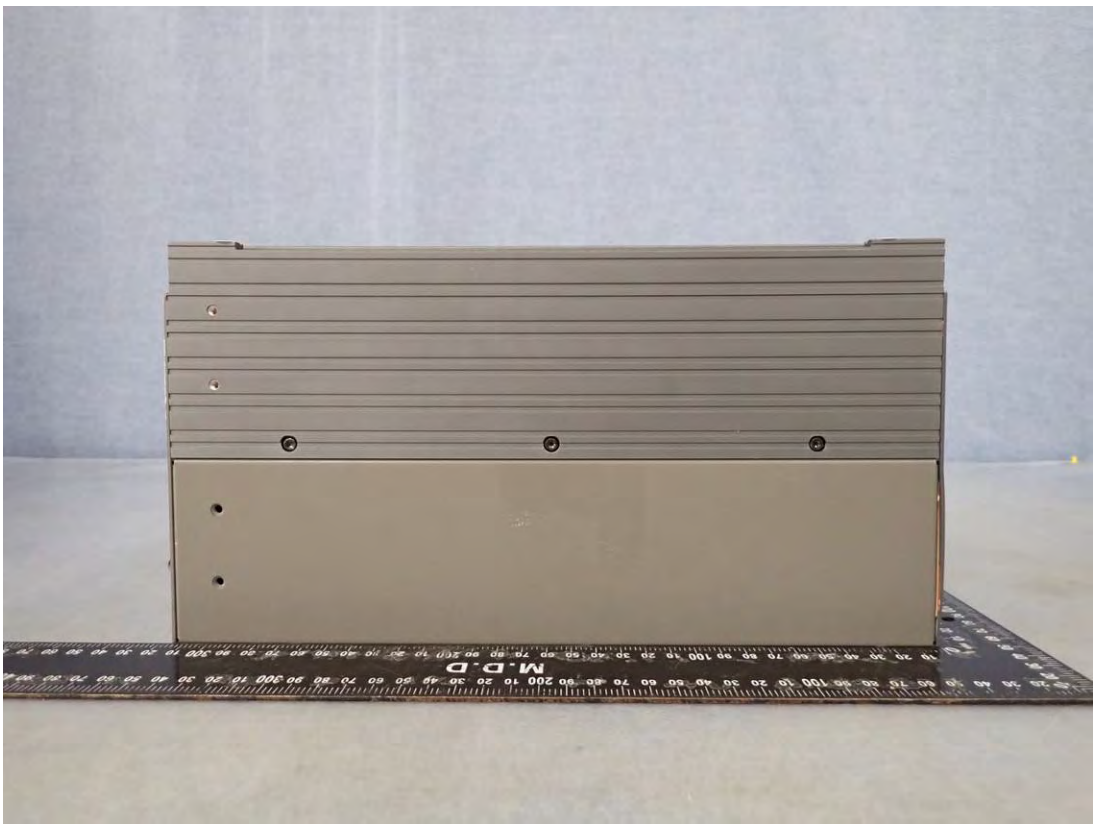
Power Supply Failure Testing Set-up

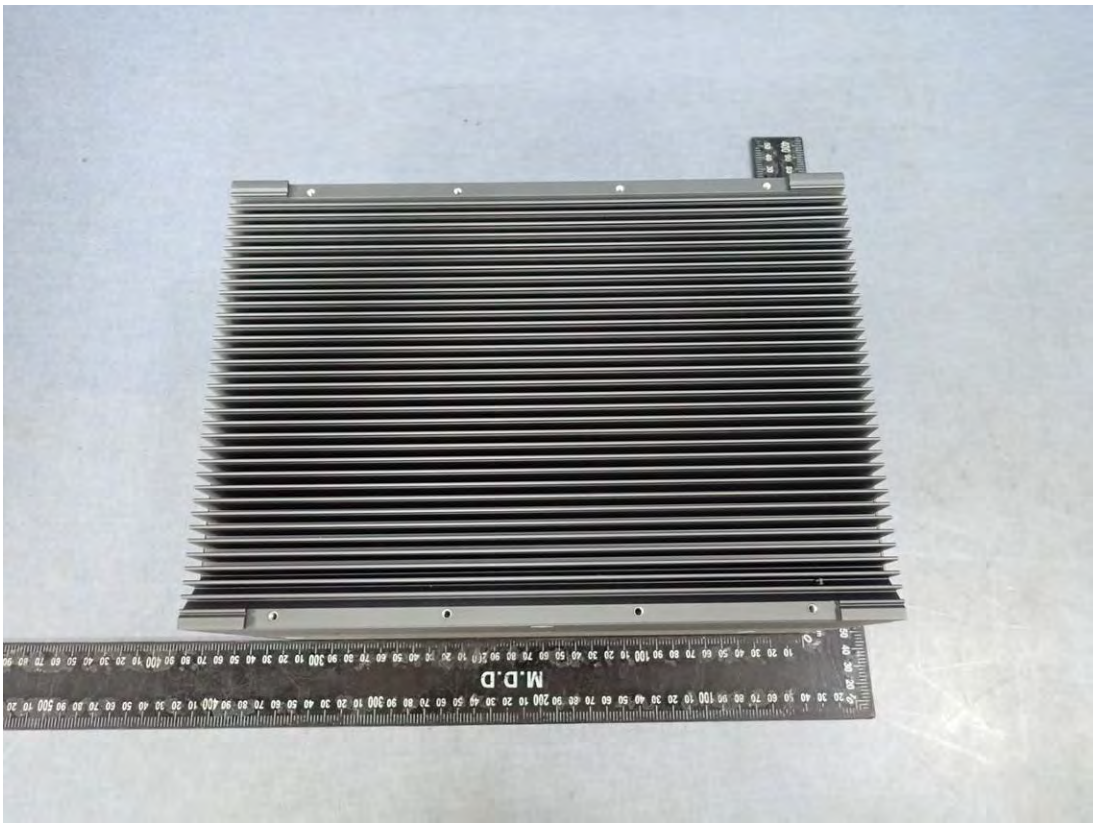


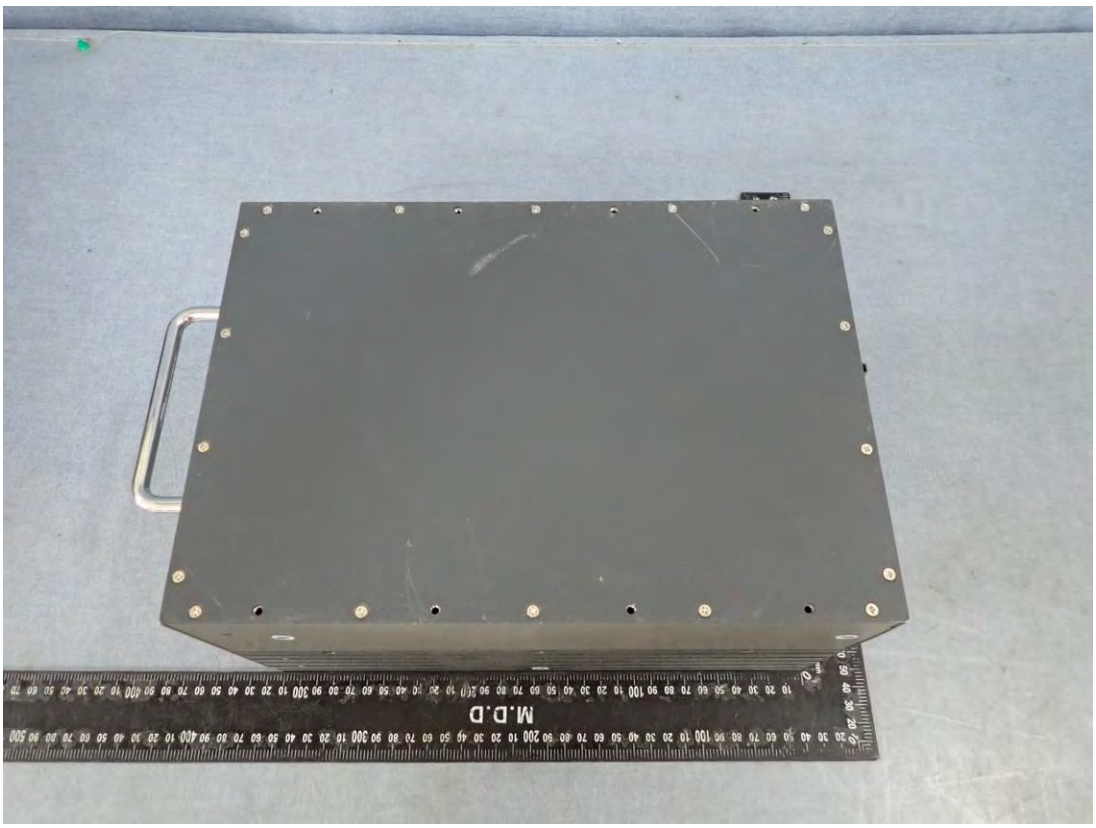
Photographs of EUT Unit

Exterior









** End of Report **