TEST REPORT

100, Jangjateo-ro, Hobeop-myeon,
Icheon-si, Gyeonggi-do, 17396, Korea
Tel: 031-637-8898 / Fax: 0505-116-8895

Test Report

1. Client

· Name :	WIZNET Co., Ltd.
· Address :	5F Humax Village, 216, Hwangsaeul-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

2. Use of Report : CE DoC

3. Sample Description :

· Model	W6300-EVB-Pico2
· Kind of Product	iEthernet Module
· Variant Model Name	-

4. Date of Receipt : 2025. 08. 07

5. Date of Test : 2025. 08. 23 ~ 2025. 08. 27

6. Test Method :
EN 55032:2015/A1:2020, CLASS A
EN 55035:2017/A11:2020
EN 61000-3-2 : 2019/A1:2021
EN 61000-3-3 : 2013/A1:2019

7. Test Results : Complied

※ The results shown in this test report are the results of testing the samples provided.
※ This test report is prepared according to the requirements of ISO / IEC 17025.

Affirmation	Tested by	Park Bum Jun	박범준 (signature)	Technical Manager YONG MIN, PARK (signature)

08. 27 , 2025

EMC Labs Co., Ltd. (seal)

[Contents]

1. Revision history

Issued report No.	Version	Issued date	Revisions
KR0140-EC2508-004	Rev.00	August 27, 2025	Original

2. Test Regulation

▣ Emission : EN 55032:2015/A1:2020

▣ EN 55032 : 2015/A1:2020

▣ Class A Equipment ☐ Class B Equipment

▣ Generic

▣ EN 61000-3-2 : 2019/A1:2021

▣ EN 61000-3-3 : 2013/A1:2019

▣ Immunity : EN 55035:2017/A11:2020

▣ EN 61000-4-2 : 2009

▣ EN 61000-4-3 : 2006/A2:2010

▣ EN 61000-4-4 : 2012

▣ EN 61000-4-5 : 2006

▣ EN 61000-4-6 : 2009

☐ EN 61000-4-8 : 2010

▣ EN 61000-4-11 : 2004

3. Laboratory Information

Address

EMC Labs Co., Ltd.

Laboratory : 100, Jangjateo-ro, Hobeop-myeon, Icheon-si, Gyeonggi-do, 17396, Korea
Telephone Number : +82-31-637-8895
Facsimile Number : +82-505-116-8895

SITE MAP

period

4. Equipment Under Test

4.1 Product Specification

EUT Power Source : AC 230 V / 50 Hz
EUT Highest frequency: 25 MHz

4.2 EUT Modification

- N/A

4.3 General Information

▣ Table-Top ☐ Floor – Standing

☐ Table-Top & Floor-Standing (Combination)

4.4 Configuration of the equipment under test

Equipment	Model	Manufacture	Serial No.
USB mouse	B100	LOGITECH	1802HS08MFV8
USB keyboard	km100	HP	-
PC	NCORE	ABKO	-
monitor	27TQ625SW	LG	312NTFAAC427
monitor Adapter	AD2137S20	BAO HUI SCIENCE & TECHNOLOGY CO.,LTD	-
headset	FS-850	FUSION FNC	-

Type	Description	Connection	Spec.	Length(m)
EUT	USB TYPE C	PC	USB TYPE A	1.5
	LAN	PC	LAN	5.0

Display Observation Distance	1.2 m
The type of cable used to test the networking functionality	CAT.5 (NO SHIELD)
Data rate when testing networking functionality	100 Mbps
The level selected during the audio output function test	-

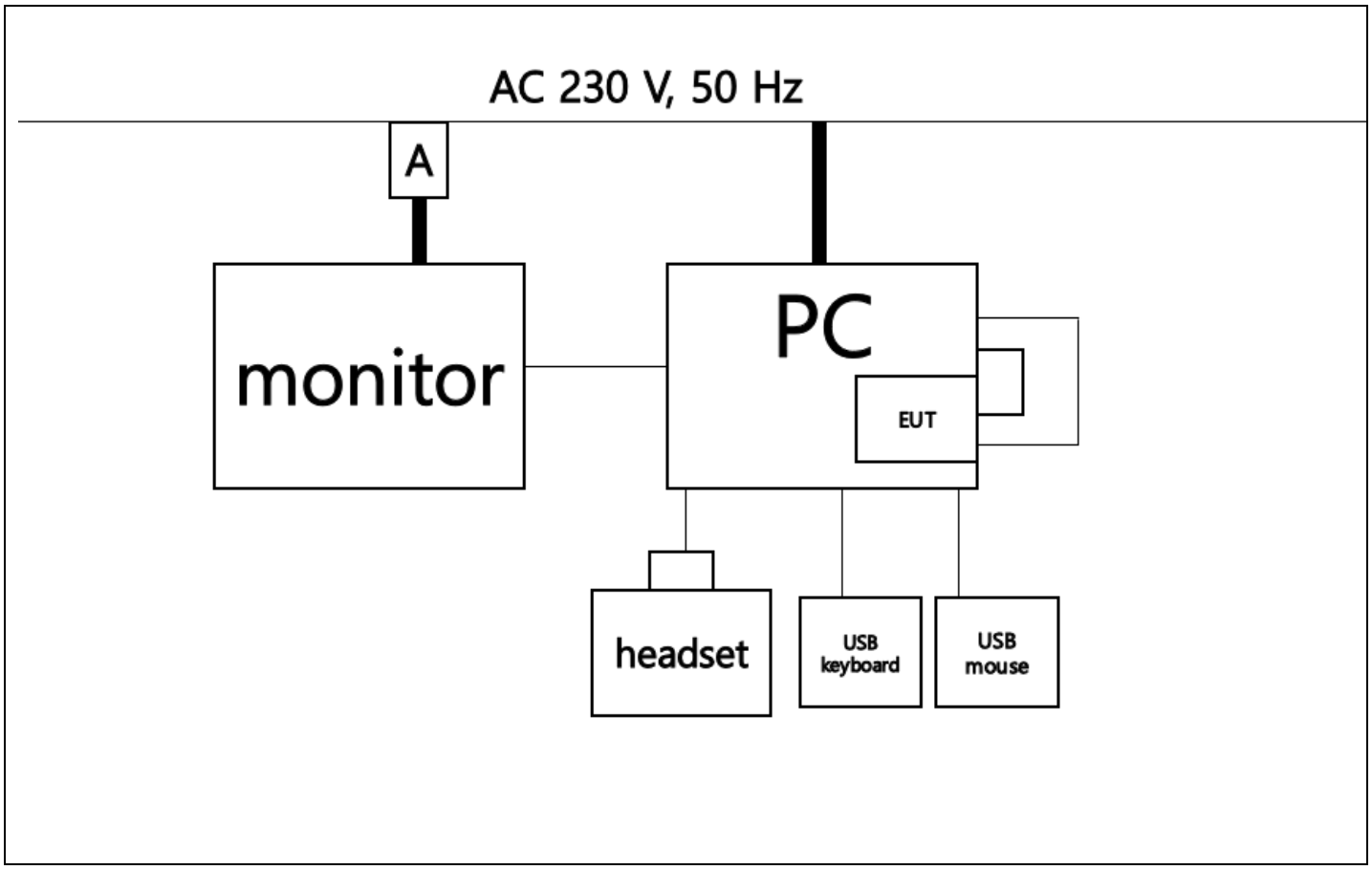
4.5 Operating Conditions

The equipment under test was operated during the measurement under following

Test mode	Normal Operating
1	Power on the EUT, enter the PC IP (192.168.0.4), gateway (192.168.0.1), and PC port (5000). Then, use the vendor-provided program (Hercules Tool) to verify operation and test.
2	LAN – Test in Ping Test Mode.

* Electromagnetic Conductivity Test (Communication Port) was performed using the program (IBM Exerciser – 100 Mbps).

4.6 The drawing of general test setup



5. Summary of Test Result

5.1 Summary of EMI emission test result

EN 55032 : 2015/A1:2020

Electromagnetic compatibility of multimedia equipment – Emission Requirements.

Test items		Result
Conducted Emission (Power Line)	EN55032:2015/A1:2020	Pass
Conducted Emission (Telecommunication Line)	EN55032:2015/A1:2020	Pass
Radiated Emission (Below 1GHz)	EN55032:2015/A1:2020	Pass
Radiated Emission (Above 1GHz)	EN55032:2015/A1:2020	Not application

EN 61000-3-2 : 2019/A1:2021

Limits for harmonic-current emissions (equipment input current up to including 16A per phase)

Test items	Test methods	Result
Harmonics	EN 61000-3-2 : 2019/A1:2021	Pass

EN 61000-3-3 : 2013/A1:2019

Limitation of voltage fluctuations and flicker in public low-voltage supply systems,

for equipment with rated current ≤ 16A per phase and not subject to conditional connection

Test items	Test methods	Result
Flicker	EN 61000-3-3: 2013/A1:2019	Pass

5.2 Summary of immunity test result

EN 55035:2017/A11:2020

Electromagnetic compatibility of multimedia equipment – Immunity Requirements.

Test items	Test methods	Result
Electrostatic discharge	EN 61000-4-2:2009	Pass
Electromagnetic field	EN 61000-4-3:2006/A2:2010	Pass
Electric fast transients	EN 61000-4-4:2012	Pass
Surge	EN 61000-4-5:2006	Pass
Conducted Immunity	EN 61000-4-6:2009	Pass
Magnetic field Immunity	EN 61000-4-8:2010	Not application
Voltage dip/interruption	EN 61000-4-11:2004	Pass

5.3 Performance criteria

Performance criterion A
The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state 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 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.

6. Test Results

6.1 Conducted Emission

Environmental Conditions

Temperature	(23.5 ℃)
Humidity	(37.0 % R.H.)
Test Area	Conducted Room
Test date	2025.08.27

6.1.1 Limits of conducted emission measurement

* Class A equipment

Frequency range (㎒)	Coupling device (EN 55032 see table A.7)	Detector type / bandwidth	Class A limits (dB(㎶))
0.15 to 0.50	AMN	Quasi Peak / 9 kHz	79
0.50 to 30			73
0.15 to 0.50	AMN	Average / 9 kHz	66
0.50 to 30			60
* Apply across the entire frequency range.			

* Class B equipment

Frequency range (㎒)	Coupling device (EN 55032 see table A.7)	Detector type / bandwidth	Class B limits (dB(㎶))
0.15 to 0.50	AMN	Quasi Peak / 9 kHz	66 – 56
0.50 to 5			56
5 to 30			60
0.15 to 0.50	AMN	Average / 9 kHz	56 – 46
0.50 to 5			46
5 to 30			50
* Apply across the entire frequency range.			

6.1.2 Measurement procedure

Mains
The measurements were performed in a shielded room.
EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.
The rear of table was located 0.4 m to the vertical conducted plane.
EUT was power through the LISN, which was bonded to the ground plane.
The LISN power was filtered. Each EUT power lead, except ground (safety) lead, was individually connected through a LISN to input power source.
All I.O cables are positioned to simulate typical actual usage according to the test standard.
Both lines of power cord, hot and neutral, were measured.

6.1.3 Used equipments

Equipment	Model	Manufacturer	Serial No.	Next Cal. Date	Used
MEASUREMENT SOFTWARE	EMC32 VER 10.60.15	Rohde&Schwarz	-	-	☒
Test Receiver	ESU8	ROHDE&SCHWARZ	100219	2026.06.25	☒
※LISN	ENV216	Rohde&Schwarz	102596	2026.04.14	☒
LISN	3825-2	EMCO	8901-1458	2026.01.06	☒
PULSE LIMITER	EPL-30	lignex1	-	2026.01.04	☒

6.1.4 Test data

• Note. QP = Quasi-Peak, AV= Average

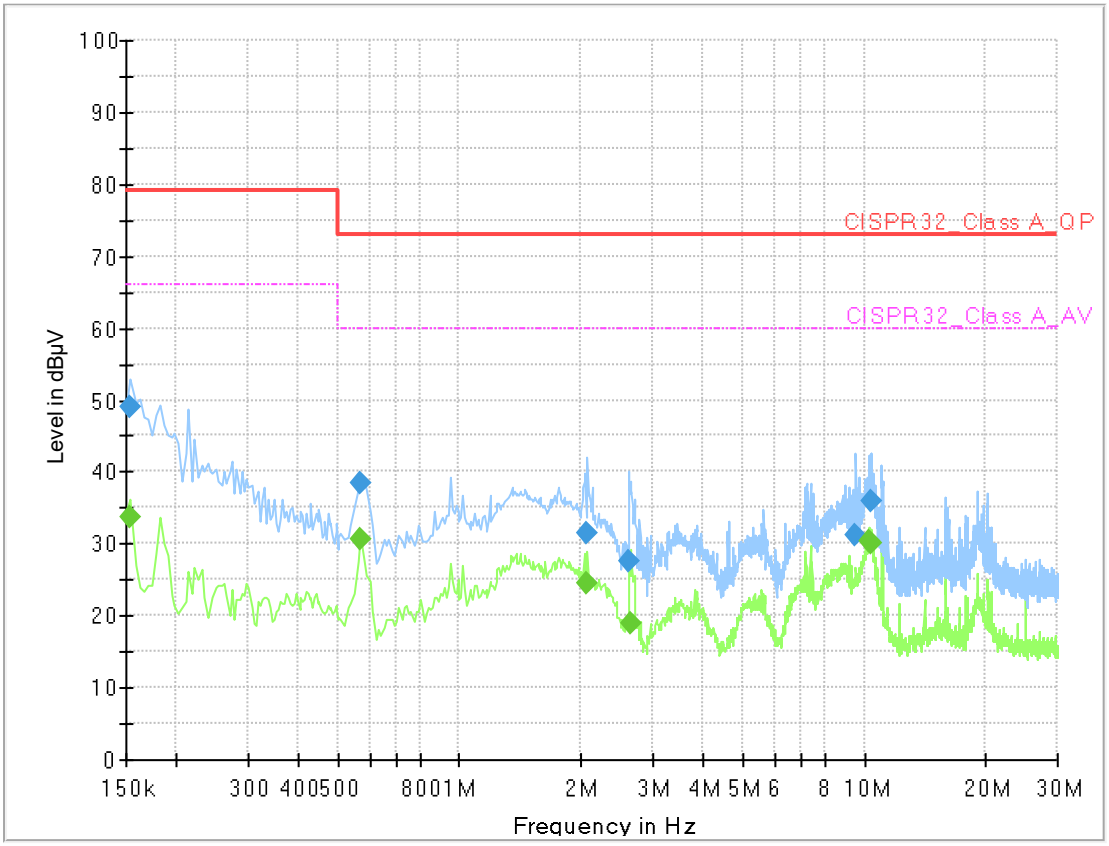
• Loss = LISN Loss + Cable Loss+ Pulse Limiter

• Measurement time : 1 s

• Measurement uncertainty : Below 1GHz : 2.00 dB (Confidence level about 95 %, k = 2)

6.1.5 Test Result

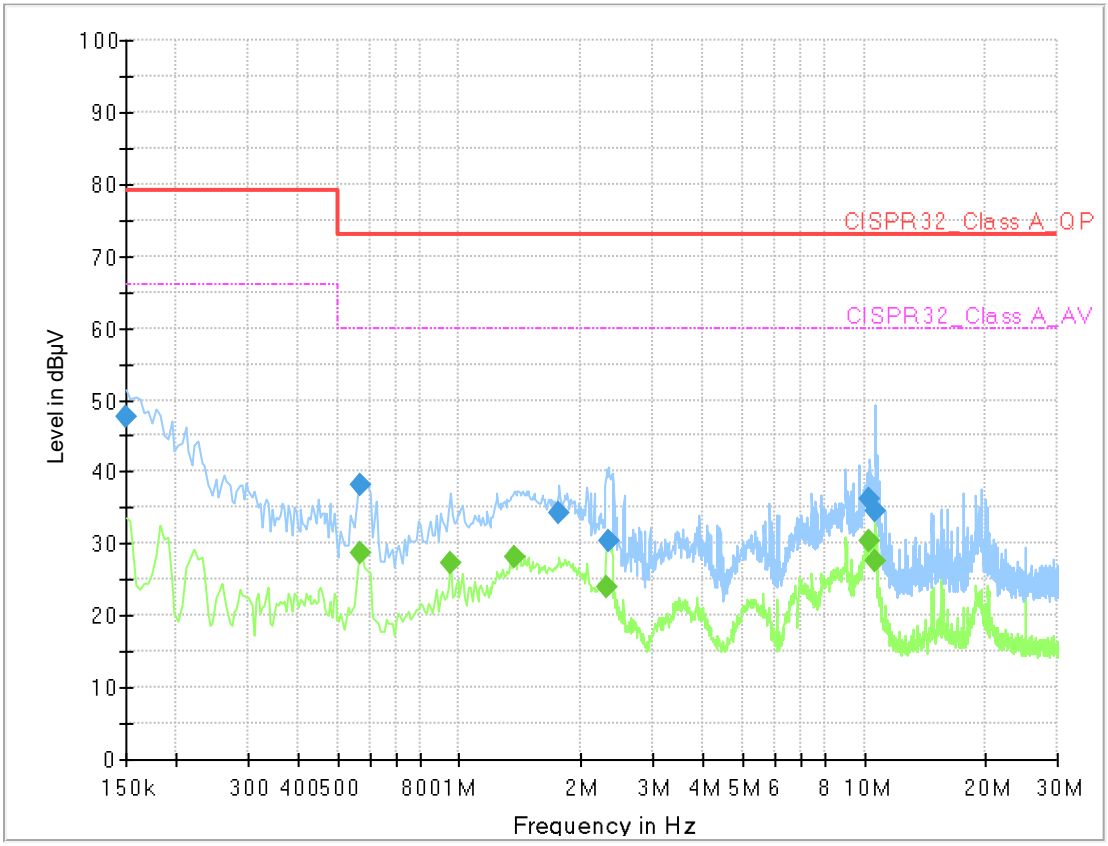
[HOT]



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.154	---	33.69	66.00	32.31	9	L1	19.5
0.154	48.99	---	79.00	30.01	9	L1	19.5
0.570	---	30.66	60.00	29.34	9	L1	19.8
0.570	38.40	---	73.00	34.60	9	L1	19.8
2.070	---	24.61	60.00	35.39	9	L1	19.6
2.070	31.50	---	73.00	41.50	9	L1	19.6
2.620	27.71	---	73.00	45.29	9	L1	19.6
2.640	---	18.81	60.00	41.19	9	L1	19.6
9.540	31.12	---	73.00	41.88	9	L1	19.8
10.280	---	30.26	60.00	29.74	9	L1	19.9
10.410	---	30.04	60.00	29.96	9	L1	19.9
10.410	35.96	---	73.00	37.04	9	L1	19.9

[NEUTRAL]



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.150	47.68	---	79.00	31.32	9	N	19.4
0.570	---	28.56	60.00	31.44	9	N	19.8
0.570	38.09	---	73.00	34.91	9	N	19.8
0.950	---	27.32	60.00	32.68	9	N	19.7
1.370	---	28.04	60.00	31.96	9	N	19.7
1.760	34.22	---	73.00	38.78	9	N	19.6
2.300	---	23.90	60.00	36.10	9	N	19.6
2.340	30.45	---	73.00	42.55	9	N	19.6
10.310	---	30.33	60.00	29.67	9	N	19.9
10.330	36.11	---	73.00	36.89	9	N	19.9
10.630	---	27.68	60.00	32.32	9	N	19.9
10.630	34.63	---	73.00	38.38	9	N	19.9

6.2 Conducted Emission(Telecommunications/network)

Environmental Conditions

Temperature	(23.5 ℃)
Humidity	(37.0 % R.H.)
Test Area	Conducted Room
Test date	2025.08.27

6.2.1 Measurement procedure

Telecommunications/network
All power was connected to the system through Artificial Mains Network (AMN). All tested telecommunications lines were connected to an Asymmetric Artificial Network (AAN) and conducted voltage measurements on telecommunications lines were made at the output of the AAN. Where an AAN was not appropriate or available measurements were made using a Capacitive Voltage Probe and Current probe.

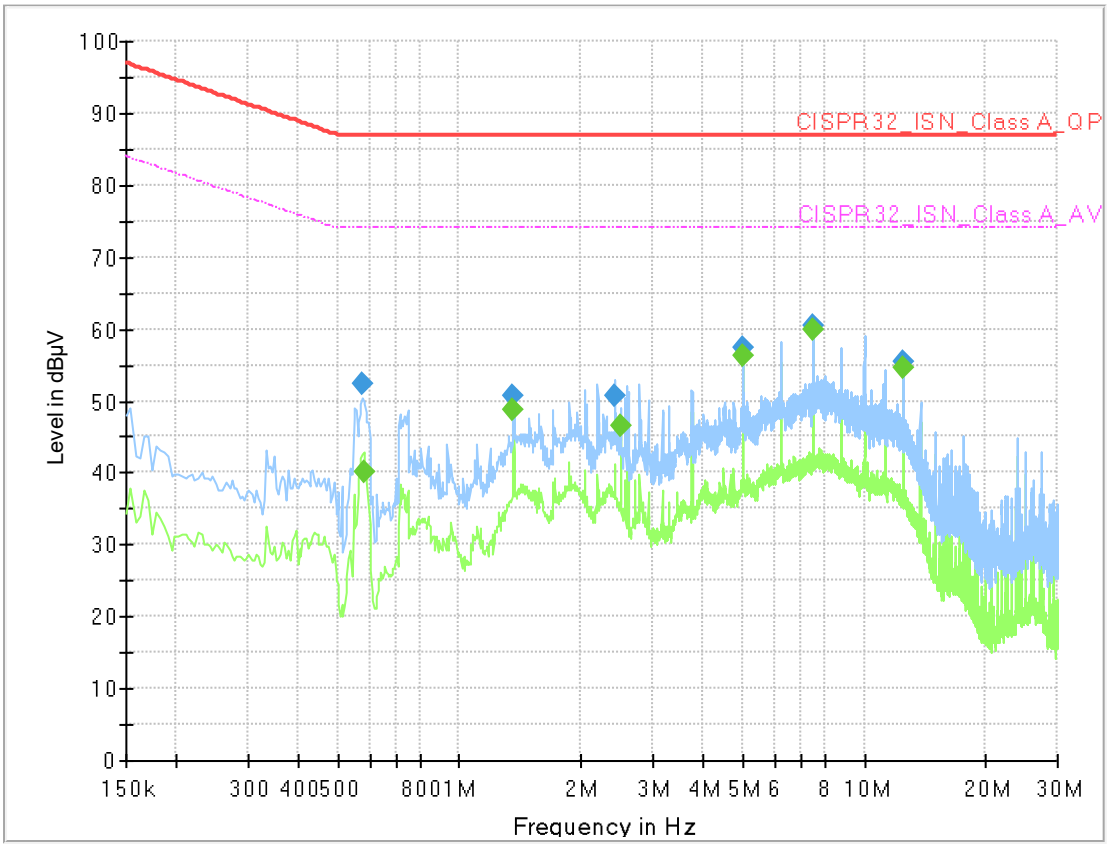
* For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

6.2.2 Used equipments

Equipment	Model	Manufacturer	Serial No.	Next Cal. Date	Used
MEASUREMENT SOFTWARE	EMC32 VER 10.60.15	Rohde&Schwarz	-	-	☒
Test Receiver	ESU8	Rohde&Schwarz	100219	2026.06.25	☒
※LISN	ENV216	Rohde&Schwarz	102596	2026.04.14	☒
LISN	3825-2	EMCO	8901-1458	2026.01.06	☒
ISN	CAT5 8158	SCHWARZBECK	CAT5-8158-0033	2026.03.17	☒
ISN	ST08	TESEQ	41234	2026.06.25	☒
PULSE LIMITER	EPL-30	lignex1	-	2026.01.04	☒

6.2.3 Test Result

[ISN_100 CAT.5]



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth	Corr. (dB)
0.576	52.49	---	87.00	34.51	9	19.5
0.580	---	40.07	74.00	33.93	9	19.5
1.360	---	48.87	74.00	25.13	9	19.4
1.360	50.83	---	87.00	36.17	9	19.4
2.416	50.65	---	87.00	36.35	9	19.4
2.500	---	46.42	74.00	27.58	9	19.4
5.000	57.26	---	87.00	29.74	9	19.4
5.000	---	56.25	74.00	17.75	9	19.4
7.500	60.50	---	87.00	26.50	9	19.5
7.500	---	59.76	74.00	14.24	9	19.5
12.500	---	54.73	74.00	19.27	9	19.5
12.500	55.50	---	87.00	31.50	9	19.5

6.3 Radiated emission

Environmental Conditions

Temperature	(23.7 °C) - Semi anechoic chamber (10m) (°C) - Fully anechoic chamber(3m)
Humidity	(38.0 % R.H.) - Semi anechoic chamber (10m) (% R.H.) - Fully anechoic chamber(3m)
Test Area	Semi anechoic chamber (10m) – Below 1GHz Fully anechoic chamber(3m) – Above 1GHz
Test date	2025.08.27 - Semi anechoic chamber (10m) 2025.00.00 - Fully anechoic chamber(3m)

6.3.1 Limits of radiated emission measurement

*Limits below 1GHz

* Class A equipment

Frequency range (㎒)	Measurement		Class A limits (dB(μV/m))
	Distance (m)	Detector type/ bandwidth	OATS/SAC
30 to 230	10	Quasi Peak / 120 kHz	40
230 to 1 000			47
30 to 230	3		50
230 to 1 000			57

* Class B equipment

Frequency range (㎒)	Measurement		Class B limits (dB(μV/m))
	Distance (m)	Detector type/ bandwidth	OATS/SAC
30 to 230	10	Quasi Peak / 120 kHz	30
230 to 1 000			37
30 to 230	3		40
230 to 1 000			47

*Limits above 1 GHz

* Class A equipment

Frequency range (㎒)	Measurement		Class A limits (dB(μV/m))
	Distance (m)	Detector type/ bandwidth	FSOATS
1 to 3	3	Average / 1 MHz	56
3 to 6			60
1 to 3		Peak / 1 MHz	76
3 to 6			80

* Class B equipment

Frequency range (㎒)	Measurement		Class B limits (dB(μV/m))
	Distance (m)	Detector type/ bandwidth	FSOATS
1 to 3	3	Average / 1 MHz	50
3 to 6			54
1 to 3		Peak / 1 MHz	70
3 to 6			74

6.3.2 Measurement procedure

Mains

A test was performed at 3m & 10m distance in a semi-anechoic chamber for searching correct frequency.
The final test was done at a 10m/3m semi-anechoic chamber with a quasi-peak detector peak detector & average detector.
EUT was placed on a non-metallic table height of 0.8m above the reference ground plane.
Cables were folded back and forth forming a bundle 0.3m to 0.4m long and were hanged at a 0.4m height to the ground plane.
Cables connected to EUT were fixed to cause maximum emission.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.
The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

6.3.3 Used equipments

* Below 1 GHz

Equipment	Model no	Manufacturer	Serial no.	Next cal. date	Used
MEASUREMENT SOFTWARE	EMC32 VER 10.60.15	Rohde&Schwarz	-	-	☐
Spectrum Analyzer	E4401B	HP.Agilent	US39440387	2026.06.25	☒
EMI TEST RECEIVER	ESU7	ROHDE&SCHWARZ	101616	2026.06.25	☒
Controllers	CO3000-4port	Innco Systems GmbHRE	CO3000/ 1060/42111117/P	-	☒
Antenna Masts	MA4640/800-XP-ET	Innco Systems GmbHRE	-	-	☒
Turn tables	DS3000-S-1t	Innco Systems GmbHRE	-	-	☒
AMPLIFIER	PO-LS960	PANOPTICS	PL181004	2026.01.03	☒
Bi-Log Ant	VULB9160	Schwarzbeck	3260	2026.04.01	☒

* Above 1 GHz

Equipment	Model no	Manufacturer	Serial no.	Next cal. date	Used
MEASUREMENT SOFTWARE	EMC32 VER 10.60.15	Rohde&Schwarz	-	-	☐
EMI TEST RECEIVER	ESW44	Rohde&Schwarz	101952	2026.03.17	☐
Controllers	CO3000-4port	Innco Systems GmbHRE	CO3000/ 1061/ 42111117/P	-	☐
Antenna Masts	MA4640/800-XP-ET	Innco Systems GmbHRE	-	-	☐
Turn tables	DS2000-S-1t	Innco Systems GmbHRE	-	-	☐
Horn Ant.	SCHWARZBECK	BBHA9120D	974	2025.11.29	☐
AMPLIFIER	TK-PA18H	TESTEK	220104-L	2026.05.23	☐

6.3.4 Test data

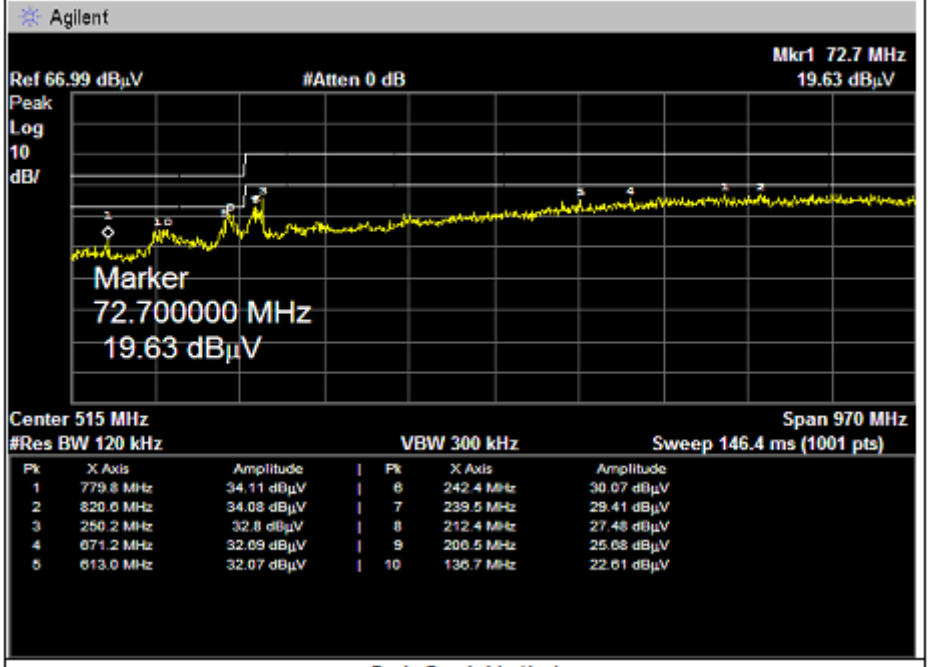
* Receiving Antenna Mode : Horizontal, Vertical
* Note : Total Reading = Test Receiver meter,
Reading = Correction(Antenna factor + Cable factor - Amp Gain)
Pol.= Polarization → H = Horizontal, V = Vertical
Result [dB(㎶/m)] = Total reading [dB(㎶)] + AF [dB/m] + CL [dB] - AG [dB]
* Measurement uncertainty
- Below 1GHz : 6.08 dB (Confidence level about 95 %, k = 2)

6.3.5 Test Result

[Below 1 GHz]

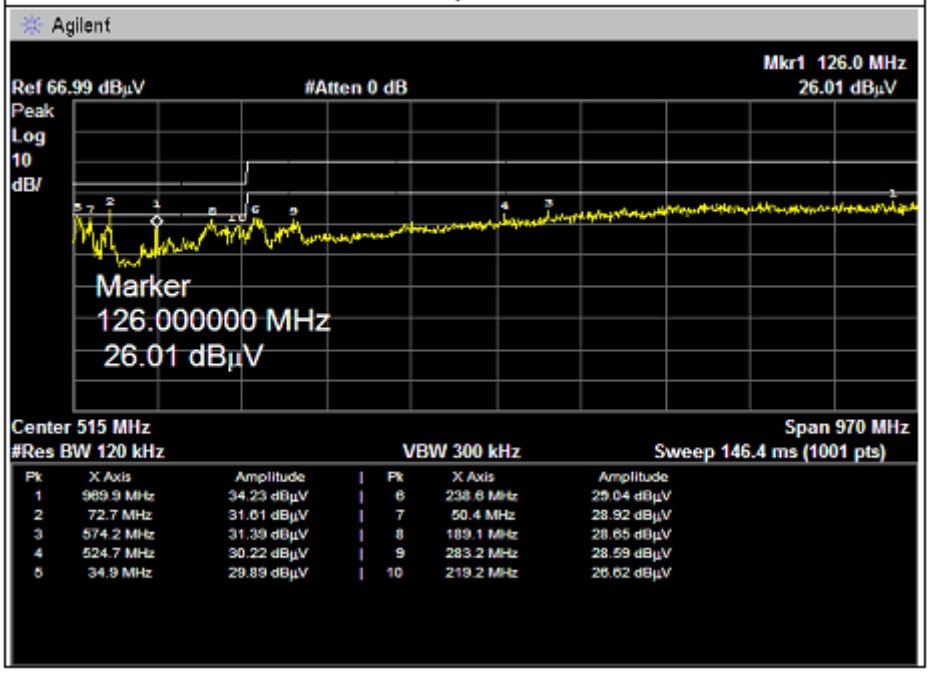
Radiated Emission Data Graph (30 MHz ~ 1 GHz) Operating 2025-08-27

Peak Graph-Horizontal



Pk	X Axis	Amplitude	Pk	X Axis	Amplitude
1	779.8 MHz	34.11 dBµV	6	242.4 MHz	30.07 dBµV
2	820.6 MHz	34.08 dBµV	7	239.5 MHz	29.41 dBµV
3	250.2 MHz	32.8 dBµV	8	212.4 MHz	27.48 dBµV
4	671.2 MHz	32.09 dBµV	9	206.5 MHz	25.68 dBµV
5	613.0 MHz	32.07 dBµV	10	136.7 MHz	22.61 dBµV

Peak Graph-Vertical



Pk	X Axis	Amplitude	Pk	X Axis	Amplitude
1	989.9 MHz	34.23 dBµV	6	238.6 MHz	29.04 dBµV
2	72.7 MHz	31.61 dBµV	7	50.4 MHz	28.92 dBµV
3	574.2 MHz	31.39 dBµV	8	189.1 MHz	28.65 dBµV
4	524.7 MHz	30.22 dBµV	9	283.2 MHz	28.59 dBµV
5	34.9 MHz	29.89 dBµV	10	219.2 MHz	26.62 dBµV

***10m Chamber Scan Data**

A

Frequency [MHz]	Total Reading [dBμV/m]	Pol.	Height [m]	angle [°]	Quasi-Peak [dBμV/m]	Correction			Limits [dBμV/m]	Result [dBμV/m]	Margin [dB]
						Antenna [dB/m]	Cable [dB]	Amp Gain [dB]			
35.18	29.87	V	1.0	86	(21.12)	17.70	2.90	41.72	40	29.87	10.13
72.92	31.62	V	1.0	108	(21.16)	15.90	4.26	41.32	40	31.62	8.38
212.74	27.46	H	4.0	167	(17.86)	15.70	7.44	41.00	40	27.46	12.54
250.49	32.81	H	4.0	297	(14.66)	17.90	8.20	40.76	47	32.81	14.19
779.95	34.11	H	4.0	318	0.91	28.30	15.15	42.54	47	34.11	12.89
970.24	34.25	V	1.0	223	4.20	30.30	17.24	43.34	47	34.25	12.75

[Above 1 GHz]

- Not Applicable.

6.4 Electrostatic Discharge

Environmental Conditions

Temperature	(23.8 ℃)
Humidity	(38.0 % R.H.)
Atmosphere pressure	(100.6 ㎪)
Test Area	EMC Test Room
Test date	2025.08.27

6.4.1 Measurement procedure

A ground reference plane was located on the floor, and connected to earth via a low impedance connection.
The return cable of the ESD generator was connected to the reference plane. In case of floor standing equipment, EUT was placed on the reference plane on 0.1 m of insulating Support.
In case of table top equipment, EUT was placed on a wooden table 0.8m above the reference grounded floor.
A horizontal coupling plane(HCP) was placed on the table, and Connected to the reference plane via a 470 resistor located in each end (0.5mm insulating support between EUT and HCP).

In both cases a vertical coupling plane(VCP) OF 0.5 X 0.5m was located 10cm from the EUT′s sides.

The VCP was connected to the reference plane in the same matter as the HCP.

6.4.2 Used equipments

Equipment	Model No.	Manufacturer	Serial No.	Next Cal. Date	Used
ESD SIMULATOR	ESS-B3011	NOISEKEN	ESS1796831	2026.07.23	☒

6.4.3 Test Data

Test Specification : EN 61000-4-2:2009

Kind of Discharges
☒ Contact Discharge
☒ Air Discharge
☒ HCP / VCP (Indirect Discharge)

Discharge Voltages
☒ Contact Discharge : ± 4 kV
☒ Air Discharge : ± 2 / 4 / 8 kV
☒ HCP / VCP : ± 4 kV

Discharge Impedance
☒ 330 Ω/150pF ☐ 2KΩ/330pF

Number Of Discharge

☒ Number of discharges per point, for each voltage and polarity
: 20 (Interval between discharges : ≥ 1s)

Test point (Please refer to attached photograph.)

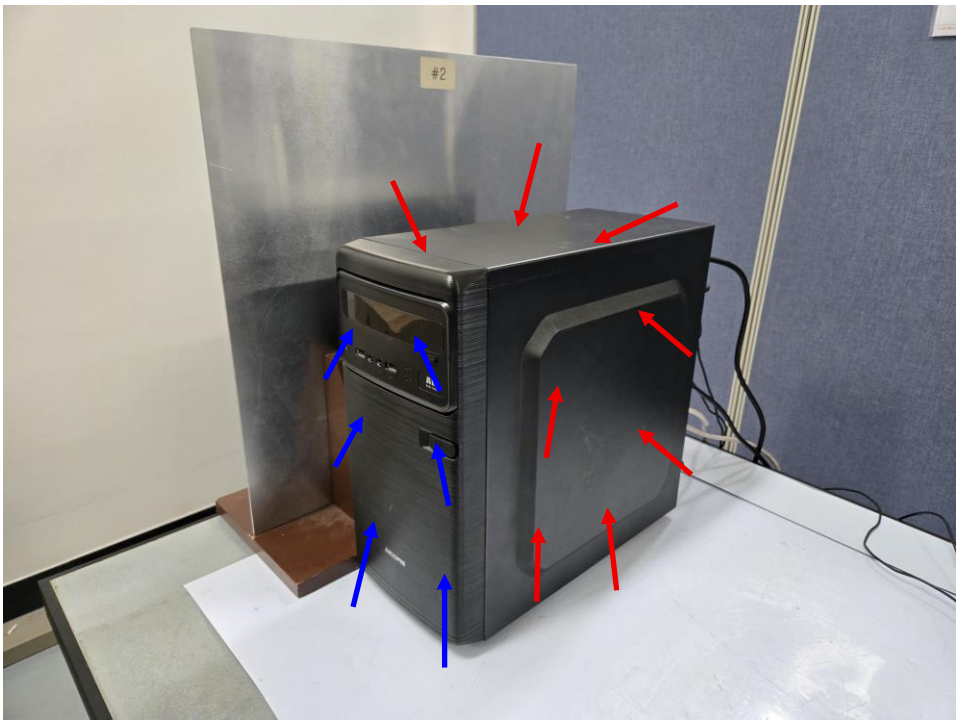
Test Results
☒ Complied ☐ Not complied

Comment :

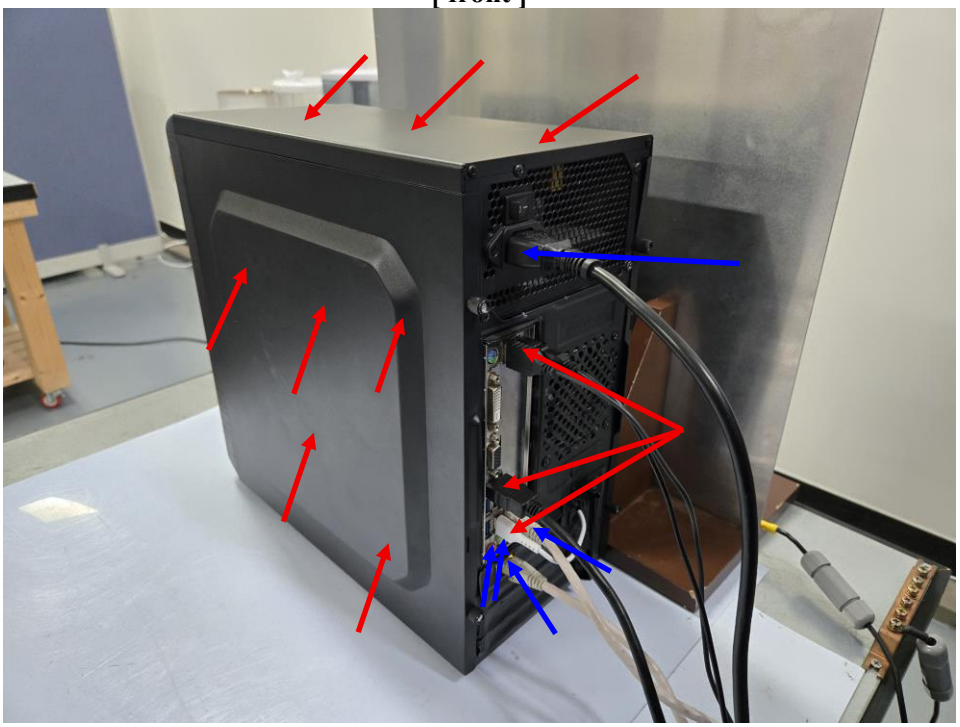
- There was no change of operation status during above testing.

Electrostatic Discharge (Test Point)

Air discharge →
Contact discharge →



[front]



[rear]

Indirect Discharge

	Test Point	Kind of Discharge	Performance Criteria	Result	Remark
Indirect	HCP	Contact	B	A	
	VCP			A	

Direct Discharge

Direct	PC CASE, PC I/O PORT, USB	Contact	B	A	
	LAN, PC FRONT CASE, AC IN, AUX	Air		A	

6.5 Radio Frequency Electromagnetic Fields

Environmental Conditions

Temperature	(23.9 ℃)
Humidity	(40.0 % R.H.)
Test Area	RS Chamber
Test date	2025.08.23

6.5.1 Measurement procedure

The test was performed at 3m full anechoic chamber.
For floor standing equipment, the EUT was standing on the floor.
For tabletop equipment, the EUT was located on a wooden table 0.8m above the floor.
The EUT was tested all sides, horizontal and vertical polarization.
The field uniformity was calibrated for 3V/m.

6.5.2 Used equipments

Equipment	Model no.	Manufacturer	Serial no.	Next Cal. date	Used
RADIATED SUSCEPTIBILITY SOFTWARE	I2 20180112 (v5)	Audix	-	-	☒
Signal Generator	8665B	HP	3315A00341	2025.12.13	☒
Amplifier	150W1000M2	AR	0331745	-	☒
Amplifier	ITRS-1030A50	Infinitech	20121000001	-	☒
Amplifier	ES3060BP60	SUNGSAN	SA1031-OPT1-0002	-	☒
Power Meter	E4419B	AGILENT	MY41291980	2026.05.07	☒
Power Head Sensor	E9301A	AGILENT	US39212396	2026.05.07	☒
Power Head Sensor	E9301A	AGILENT	US39210340	2026.05.07	☒
Directional Coupler	DC6180A	AR	0331175	2026.05.07	☒
Coaxial Directional Coupler	M2001-2801	-	M2001-0001	2025.09.10	☒
Antenna	3142D	ETS LINDGREN	00102179	-	☒
RADIATED SUSCEPTIBILITY SOFTWARE	I2 190813a (v5)	Audix	-	-	☐
Amplifier	ESU210BP300	Sungsan	SA8015-0001	-	☐
Amplifier	ES1060BP100	Sungsan	SA8016-0001	-	☐
Directional Coupler	DCU210P300-40	Sungsan	DC1001-0003	2025.09.10	☐
Directional Coupler	DCU1060P100-40	Sungsan	DC0034-0002	2025.09.10	☐
Rack & Switch Control Box	-	Sungsan	-	-	☐
Broadband Antenna	N9128	RAPA TCL	-	-	☐
Log Periodic Antenna	VULP9118E	Schwarzbeck	1015	-	☐
Log Periodic Antenna	STLP9149	Schwarzbeck	677	-	☐
Power meter	E4419B	Agilent	GB43312904	2026.05.07	☐
Power sensor	8481A	Agilent	2702A58374	2025.09.10	☐
Power sensor	8481A	Agilent	1926A28196	2025.09.10	☐
Signal Generator	APSIN6010HC	Anapico	111-433600410-1298	2025.09.10	☐
Audio Acoustic Tester	TST-1000	TESTEK	230104-A	2026.02.18	☐
Impedance Box	TIB-R1	TESTEK	230106-R	-	☐

6.5.3 Test Data

Test Specification : EN 61000-4-3:2006/A2:2010

Frequency Range

☒ 80MHz – 1000MHz ☐ 1400 MHz – 2000MHz ☐ 2000 MHz – 2700 MHz ☐ 80MHz – 2500MHz

☒ 1.8 GHz, 2.6GHz, 3.5GHz, 5GHz (Spot Frequency)

Test level

☐ 1V/m ☒ 3V/m ☐ 10V/m

Modulation

☒ AM : 1kHz, 80%
☐ PM :

Frequency step

☒ log 1% step ☐ log 3% step ☐ log 5% step

Dwell Time

☐ 3 s ☐ 2 s ☒ 1 s

Test point

☒ Front (Horizontal / Vertical)
☒ Rear (Horizontal / Vertical)
☒ Left (Horizontal / Vertical)
☒ Right (Horizontal / Vertical)

Audio output function

☒ Possible ☐ Impossible

Test Results

☒ Complied ☐ Not complied

Comment :

- There was no change of operation status during above testing. .

6.6 Electric Fast Transient/BURST

Environmental Conditions

Temperature	(23.8 ℃)
Humidity	(37.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.26

6.6.1 Measurement procedure

A ground reference plane was located on the floor.
EFT generator was connected to reference ground plane via low impedance connection.
For floor standing equipment, EUT was placed on a 0.1 m wooden table.
For tabletop equipment, EUT was placed on a wooden table(0.1m) above the reference plane.
Test generator and coupling/decoupling network was placed on, and bounded to, the
ground reference plane.
When using the coupling clamp, the minimum distance between the coupling plates and all other conductive surfaces, except the ground reference plane beneath the coupling clamp, Shall be 0.5 m.

6.6.2 Used equipments

Equipment	Model No.	Manufacturer	Serial No.	Next Cal. date	Used
IMMUNITY TEST SOFTWARE	IEC.CONTROL VER 9.2.2	AMETEK CTS GmbH	-	-	☒
MULTIFUNCTIONAL TEST GENERATOR	compact NX5	EM Test	P1725200197	2026.05.07	☒
Motorized Variac	variac NX1-260-16	EM Test	P1745207277	-	☒
CAPACITIVE COUPLING CLAMP	CCL	EM Test	P1745207364	2026.05.07	☒

6.6.3 Used equipments

Test Specification : EN 61000-4-4:2012

Location of Coupling (AC cable Length : 0.5m)
☒ Power ☒ Signal Lines ☐ Telecommunication line

Test level
☒ Power : 1 kV
☒ Signal Line : 0.5 kV
☐ Tel. line :

Burst frequency : 5 kHz, 5/50 ns

Coupling Time : > 60 s

Test Results
☒ Complied ☐ Not complied

Coupling Point (AC main)	Polarity	Levels (kV)	Results (criterion)
L1 - L2 - PE	±	1 (kV)	A

Coupling Point (Clamp)	Polarity	Levels (kV)	Results (criterion)
LAN CABLE	±	0.5 (kV)	A

Comment :

- There was no change of operation status during above testing.

6.7 Surge

Environmental Conditions

Temperature	(23.8 ℃)
Humidity	(37.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.27

6.7.1 Measurement procedure

A ground reference plane was located on the floor.
SURGE generator was connected to reference ground plane via low impedance connection.
For floor standing equipment, EUT was placed on a 0.8 m wooden table.
For tabletop equipment, EUT was placed on a wooden table(0.8m) above the reference plane.
The following additional pulses are required only if the EUT has an earth connection or if the EUT is earthed via any AE.

6.7.2 Used equipments

Equipment	Model No.	Manufacturer	Serial No.	Next Cal. date	Used
IMMUNITY TEST SOFTWARE	IEC.CONTROL VER 9.2.2	AMETEK CTS GmbH	-	-	☒
MULTIFUNCTIONAL TEST GENERATOR	compact NX5	EM Test	P1725200197	2026.05.07	☒
Motorized Variac	variac NX1-260-16	EM Test	P1745207277	-	☒

6.7.3 Test data

Test Specification : EN 61000-4-5:2006

Location of Coupling (AC cable Length : 1.2 m)
☒ AC Power ☐ Signal Lines ☐ Telecommunication line

Test level
☒ Power ☒ Line to Line : ±0.5/1 kV ☒ Line to Ground : ±0.5/1/2 kV
☐ Signal Line :
☐ Tel. line :

Surge Pulse Shape : Tr / Th = 1.2 / 50

Test mode
- AC Power : L1 – L2 - PE
-Signal Line :

Coupling Impedance
☒ 18uF : Line to Line ☐ 10 Ω+9uF : Line to Ground ☐ 40Ω+0.1uF ☐ 18uF : Tel line
☐ 40Ω+0.5uF

Coupling Time : > 1 min

Number of Surge : 5 F

Angle : ☐0 ☒90 ☐180 ☒270

Test Results

☒ Complied ☐ Not complied

Coupling Point (AC)	Polarity	Levels (kV)	Results (criterion)
L1 – L2	±	0.5/1 (kV)	A
L1 – PE	±	0.5/1/2 (kV)	A
L2 - PE	±	0.5/1/2 (kV)	A

- There was no change of operation status during above testing.

-

6.8 Conducted Immunity

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Environmental Conditions

Temperature	(23.6 ℃)
Humidity	(38.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.27

6.8.1 Measurement procedure

A ground reference plane was located on the floor.
The EUT was isolated 0.1 m isolating support.
The ground plane was connected to floor reference ground plane via low impedance connection.
This test were Performed using CDN for mains, clamp for signal and injection probe.

6.8.2 Used equipments

Equipment	Model no.	Manufacturer	Serial no.	Next Cal. date	Used
Conducted Susceptibility software	ICD.CONTROL VER 6.1.3	AMETEK CTS GmbH	-	-	☒
CS GENERATOR	NSG 4070	TESEQ	48185	2026.01.06	☒
Attenuator (6dB)	ATN 6150	TESEQ	17091901	2026.06.25	☒
CDN	M016	TESEQ	49312	2026.06.25	☒
EM Injection Clamp	F-2031-23MM	FCC	091219	2026.04.29	☒
CDN	F-801-M3-16A	FCC	091282	2026.05.07	☒
Audio Acoustic Tester	TST-1000	TESTEK	150068-A	2026.11.07	☐
Impedance Box	TIB-R1	TESTEK	150059-R	-	☐

6.8.3 Test Data

Test Specification : EN 61000-4-6:2009

Frequency Range

Frequency (MHz)	Voltage Level (r.m.s.) (V)
0.15 to 10	3
10 to 30	3 to 1
30 to 80	1

Location of Coupling (AC cable Length : 0.3 m)
☒ Power ☒ Signal Lines ☐Telecommunication line

Modulation
☒ AM : 1kHz, 80%
☐ PM : 1Hz (0.5 s ON : 0.5 s OFF)

Frequency step
☒ log 1% step ☐ log 3% step ☐ log 5% step

Dwell Time
☐ 3 s ☐ 2 s ☒ 1 s

Audio output function
☒ Possible ☐ Impossible

Test Results
☒ Complied ☐ Not complied

Coupling Point (AC)	Coupling Method	Results (criterion)
POWER	CDN (M3)	A

Coupling Point (Signal)	Coupling Method	Results (criterion)
LAN CABLE	EM Injection Clamp	A

Comment :

- There was no change of operation status during above testing.

6.9 Magnetic field Immunity

Environmental Conditions

Temperature	(℃)
Humidity	(% R.H.)
Test Area	EMC Test Room
Test date	-

6.9.1 Measurement procedure

The test was performed on a ground reference plane (GRP) on a 0.1m wooden table.
The EUT was isolated 10 cm isolating support.
The ground plane was connected to floor reference ground plane via low impedance connection.
The test generator was placed 3m distance from the induction coil. The generator was connected reference ground plane.
Preliminary verification of equipment performances was carried out prior to applying the test magnetic field. The field was applied to the EUT horizontal, vertical polarization.

6.9.2 Used equipments

Equipment	Model No.	Manufacturer	Serial No.	Next Cal. date	Used
IMMUNITY TEST SOFTWARE	IEC.CONTROL VER 9.2.2	AMETEK CTS GmbH	-	-	☐
MULTIFUNCTIONAL TEST GENERATOR	compact NX5	EM Test	P1725200197	2026.05.07	☐
Motorized Variac	variac NX1-260-16	EM Test	P1745207277	-	☐
Current transformer	MC 2630	EM Test	P1730202035	2026.06.25	☐
Magnetic field coil	MS 100N	EM Test	P1730202035	2026.06.25	☐

6.9.3 Test data

Test specification : EN 61000-4-8:2010

Magnetic field strength : ☐ 1A/m ☐ 3A/m ☐ 30A/m

Frequency : ☐ 50Hz ☐ 60Hz

Polarization : ☐ Horizontal ☐ Vertical

Coupling time : 60S≥

Positions	Test level	Results (criterion)
X	A/m	-
Y	A/m	-
Z	A/m	-

Comment :

- Not Applicable.

6.10 Dips and Interruptions

Environmental Conditions

Temperature	(23.8 ℃)
Humidity	(37.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.26

6.10.1 Measurement procedure

The dips/interruption test is only applicable to AC mains.
The dips/interruptions were applied at zero crossing.

6.10.2 Used equipments

Equipment	Model no.	Manufacturer	Serial no.	Next Cal. date	Used
IMMUNITY TEST SOFTWARE	IEC.CONTROL VER 9.2.2	AMETEK CTS GmbH	-	-	☒
MULTIFUNCTIONAL TEST GENERATOR	compact NX5	EM Test	P1725200197	2026.05.07	☒
Motorized Variac	variac NX1-260-16	EM Test	P1745207277	-	☒

6.10.3 Test data

Test specification : EN 61000-4-11:2004

Normal Voltage / Frequency :	☐ 115Vac / 50Hz		☒ 230Vac / 50Hz
	☐ 100Vac / 50Hz		☐ 240Vac / 60Hz
	☐ 100Vac / 60Hz		☐ 240Vac / 50Hz
	☐ Dips (40%)		
	☒ Dips (70%)		
	☒ Dips (> 95%)		
	☒ Interruption (> 95%)		
Event time :	☒ 25P	☒ 0.5P	☒250P
	☒ 1P	☐ 10P	☐ 12P
	☐ 300P	☐ 30P	☐ 50P
Phase	☐ 0	☐ 180	

Test results

☒ Complied ☐ Not complied

Test Level (%UT)	Dip / Int. (%UT)	Duration / Period	Results (criterion)
0%	100%	0.5 Period	A
0%	100%	1.0 Period	A
70%	30%	25 Period	A
0%	100%	250 Period	C

Comment :
- When the pc is turned off during authorization the EUT turns off, but when the PC is restarted after authorization, the EUT operates normally. (250 Period)
- There was no change of operation status during above testing.

6.11 Harmonics

Environmental Conditions

Temperature	(23.7 ℃)
Humidity	(37.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.24

6.11.1 Measurement procedure

The equipment is supplied in series with shunt(s) Rm or current transformer(s) from a source having the same nominal voltage and frequency as the rated supply voltage and frequency of the equipment.
Measurements shall be made under normal load, or conditions for adequate heat discharge, and under normal operating conditions.

User′s operation controls or automatic programmers shall be set to produce the maximum harmonic component, for each successive harmonic component in turn. For the purpose of harmonic current limitation, equipment is classified as follows :

Class A : Equipment not specified in one of the three other Classes shall be considered as Class A equipment.
- Balanced three-phase equipment;
- Household appliances excluding equipment identified as Class D;
- Tools excluding portable tools;
- Dimmers for incandescent lamps;
- Audio equipment.

Class B : Portable tools; Arc welding equipment which is not professional equipment.
Class C : Lighting equipment.
Class D : Equipment having a specified power according to 6.2.2 less than or equal to 600 w, of the following types:
- Personal computers and personal computer monitors;
- Television receivers.
- refrigerators and freezers having one or more variable-speed drives to control compressor motor(s).

6.11.2 Used equipments

Equipment	Model no.	Manufacturer.	Serial no.	Next Cal. date	Used
PROGRAMMABLE AC POWER SOURCE	N4A06	Newtons4th Ltd.	91J-13186	2025.12.30	☒
Precision Power Analyzer	PPA5511	Newtons4th Ltd	162-05556	2025.12.23	☒
Impedance Network	IMP161	Newtons4th Ltd	91G-13185	2026.12.30	☒

6.11.3 Test data

Test results

☒ Complied ☐ Not complied

[HARMONICS]

24th August 2025 - 21:52:08 Ph:1 Page 1/3 IECSoft v2_7

N4L

IEC61000-3-2:2019+AMD1:2021

Fluctuating Harmonics

EMCLabs

Instrument Details	
Instrument Model	PPA5511
Serial Number	162-05556
Firmware Version	2.185
N4L Calibration Date	23th December 2024
Instrument Version	Standard
Source Details	
Source Model	N4A06
Source Serial	91J-13186
Source Frequency	50.000Hz
Source Voltage RMS	230.000V
Source Settling Time	10.0 s
Test Settings	
Class	Class A
Mode	Measured
Equipment Under Test	
Brand	N/A
Model	N/A
Serial	N/A
Impedance Network ID	N/A

Test Conditions	User Entered	Measured
Rated Voltage	N/A	229.181V
Rated Current	N/A	133.171mA
Rated Frequency	N/A	50.000Hz
Rated Power	N/A	3.584W

Additional Test Information	
Measured Power Factor	0.117
Max Current THD	33.04%
Average THC	38.939mA
Max Power	3.605W
Max F.Current	122.351mA
Average F.Current	121.384mA
Minimum Current	100A
Additional Test Details	
Operator	N/A
Lab Name	N/A
Location	N/A
Notes	
Signature	
Results	**Phase 1: PASS**

6.12 Flicker

Environmental Conditions

Temperature	(23.7 °C)
Humidity	(37.0 % R.H.)
Test Area	EMC Test Room
Test date	2025.08.24

6.12.1 Measurement procedure

EUT was connected to the power analyzer system.
Measurement was performed to obtain the desired flicker parameters.
The measuring time depends on which parameters are to be measured.
P_{lt} = 2 h
P_{st} = 10 min
Controls and automatic programs shall be set to produce the most unfavorable sequence of voltage changes, using only those combinations of controls and programs are mentioned by the manufacturer in the instruction manual.

6.12.2 Used equipments

Equipment	Model no.	Manufacturer.	Serial no.	Next Cal. date	Used
PROGRAMMABLE AC POWER SOURCE	N4A06	Newtons4th Ltd.	91J-13186	2025.12.30	☒
Precision Power Analyzer	PPA5511	Newtons4th Ltd	162-05556	2025.12.23	☒
Impedance Network	IMP161	Newtons4th Ltd	91G-13185	2026.12.30	☒

6.12.3 Test data

[Flicker]

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IEC61000-3-3:2013+AMD1:2019

Flickermeter

Instrument Details	
Instrument Model	PPA5511
Serial Number	162-05556
Firmware Version	2.185
N4L Calibration Date	23th December 2024
Instrument Version	Standard
Source Details	
Source Model	N4A06
Source Serial	91J-13186
Source Frequency	50.000Hz
Source Voltage RMS	230.000V
Test Settings	
Class	Voltage
Mode	Normal (4.0%)
Minimum Current	10A
PST	10 minutes
PLT	12 PSTs
Equipment Under Test	
Brand	N/A
Model	N/A
Serial	N/A
Impedance Network ID	N/A

Test Conditions		
	User Entered	Measured
Rated Voltage	N/A	229.195V
Rated Current	N/A	N/A
Rated Frequency	N/A	50.000Hz
Rated Power	N/A	N/A
D max	0.1842% (Limit: 4.0%)	
T max	0.0000 s (Limit: 0.5 s)	
DC max	0.0202% (Limit: 3.3%)	

Additional Test Details	
Operator	N/A
Lab Name	N/A
Location	N/A
Notes	
Signature	
Results	**Phase1: PASS**

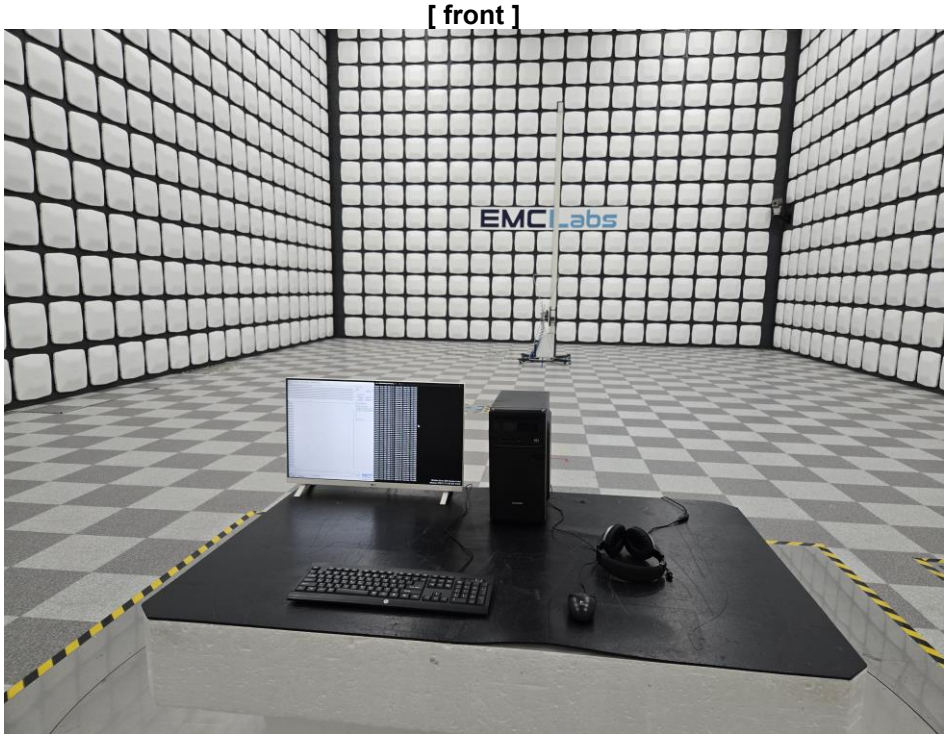
Test results

☒ Complied ☐ Not complied

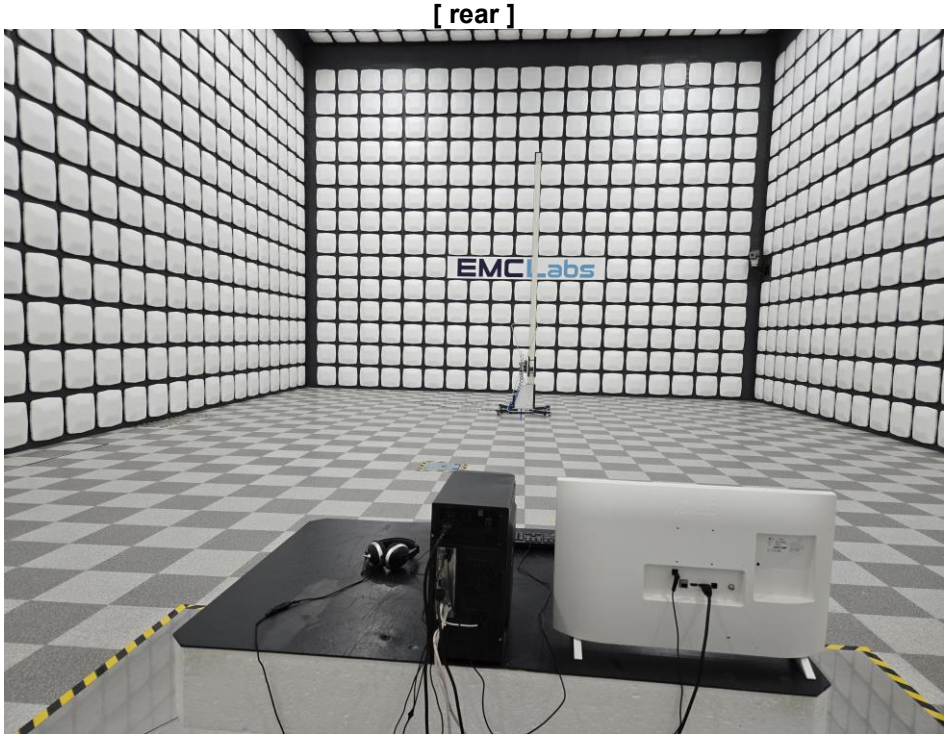
7. Test Photographs

Radiated Emission (Below 1GHz)

[front]



[rear]



Radiated Emission (Above 1GHz)

[front]

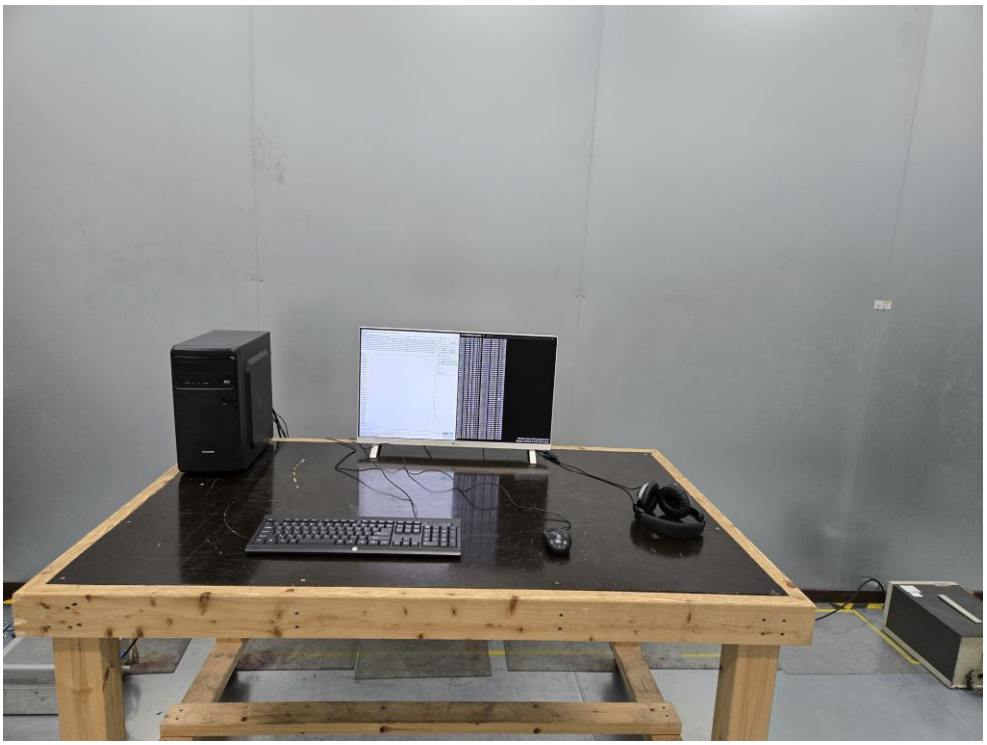
N/S

[rear]

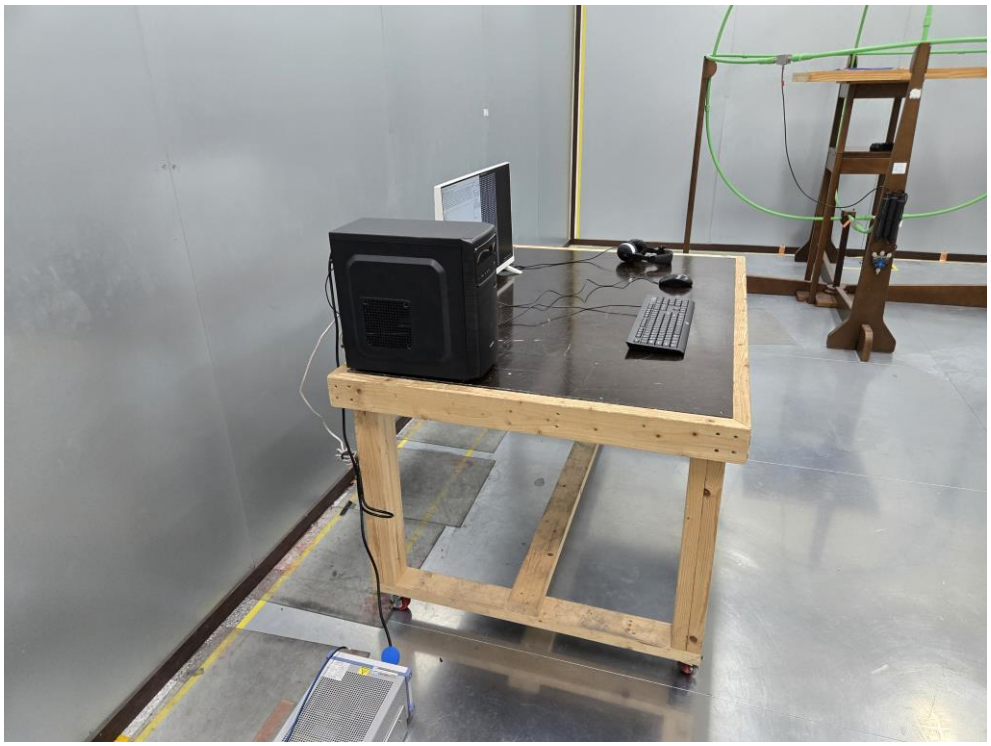
N/S

Conducted Emission (Main Power)

[front]

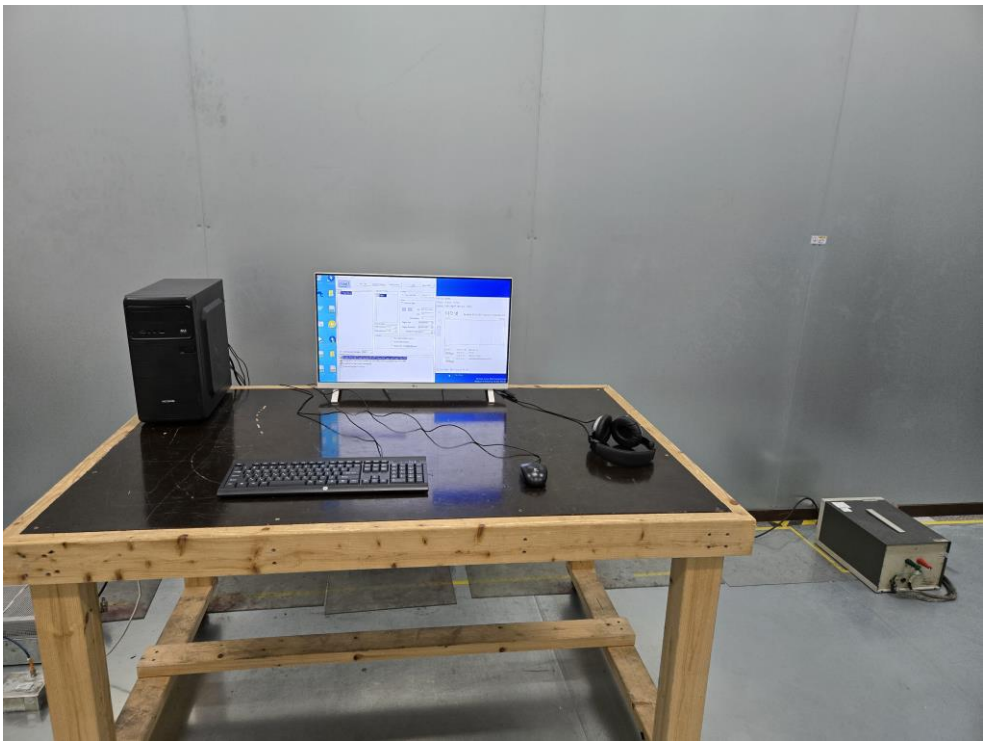


[rear]

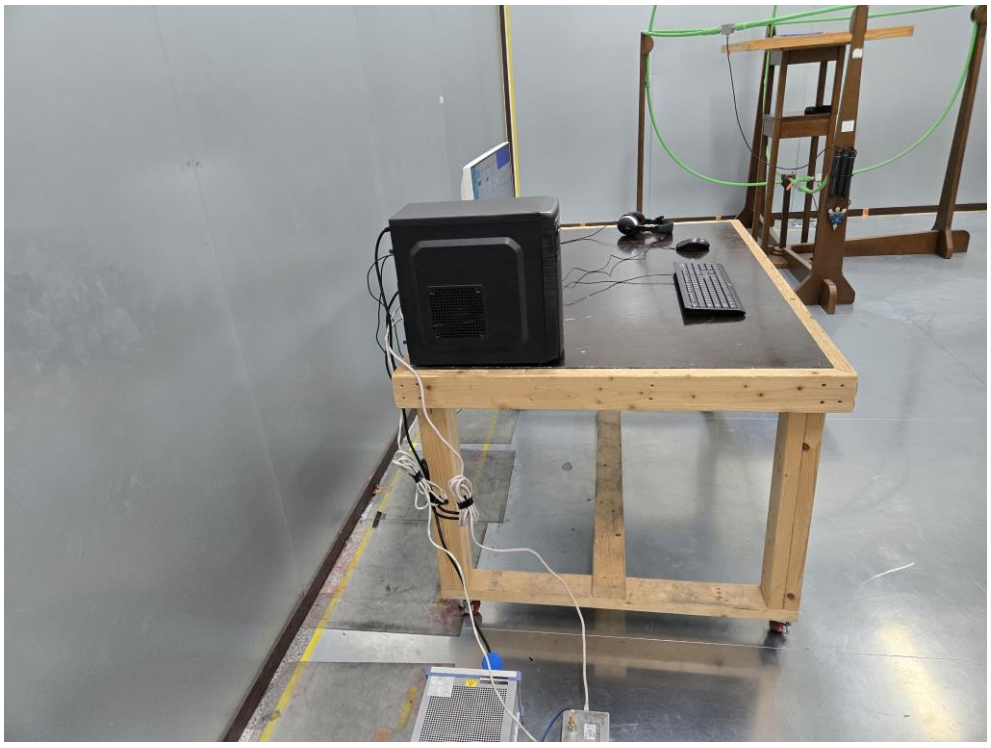


Conducted Emission (Telecommunications Power)

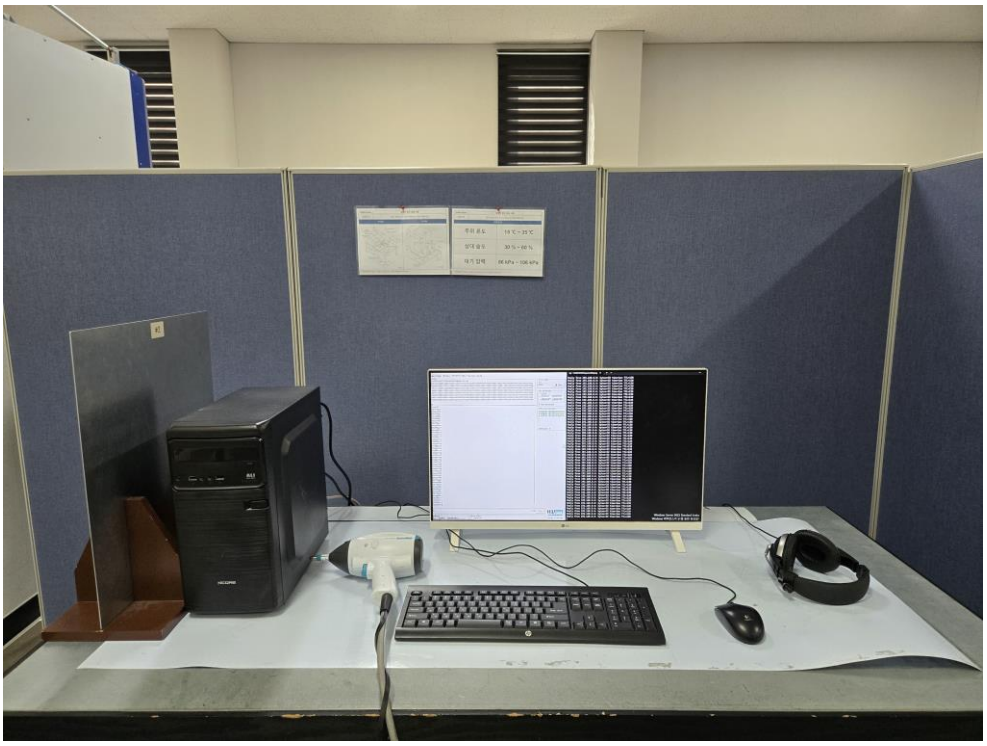
[Front]



[Rear]

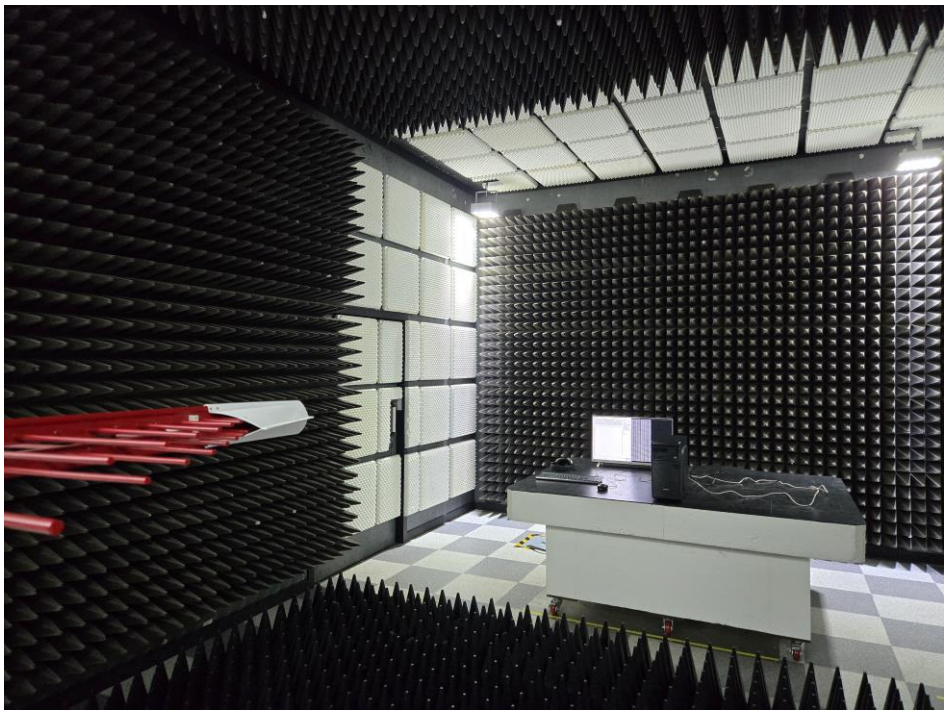


Electrostatic Discharge

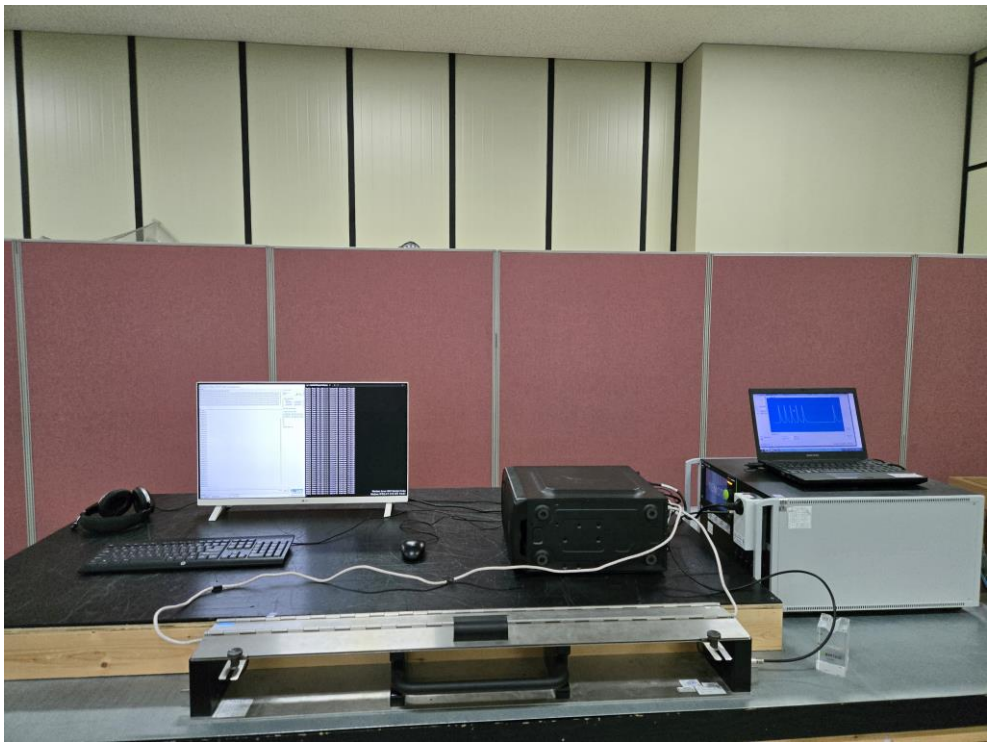


Radio frequency electromagnetic field

[80 ㎒ to 1 ㎓, Spot Frequency]

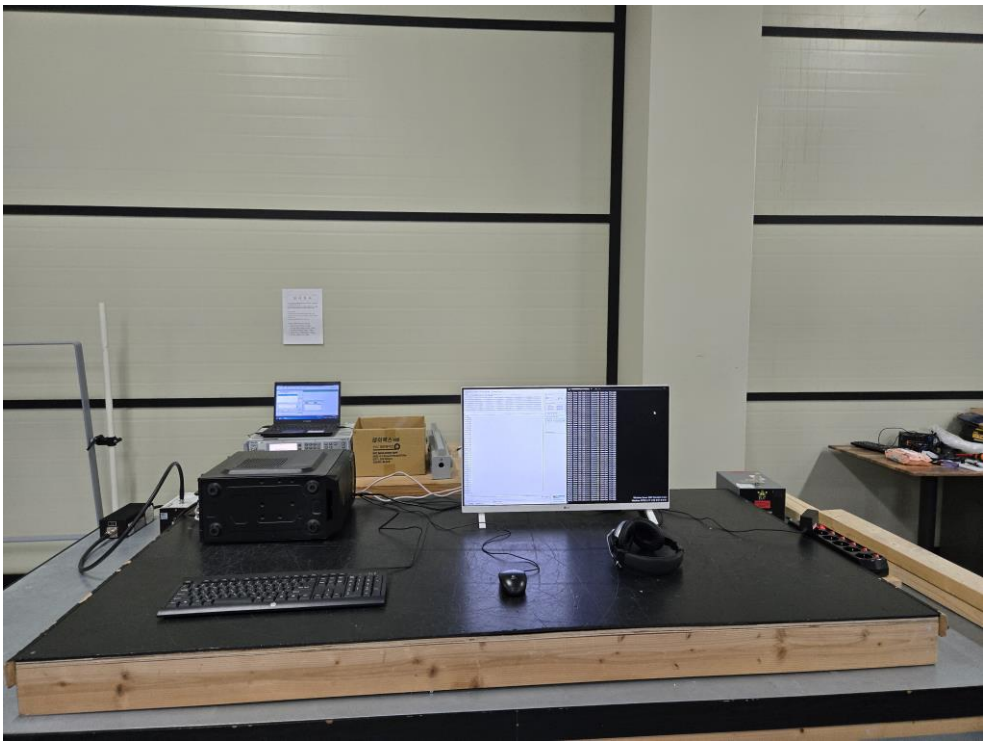


Electric Fast Transient, Surge, DIP/INT



Conducted Immunity

[POWER PORT]

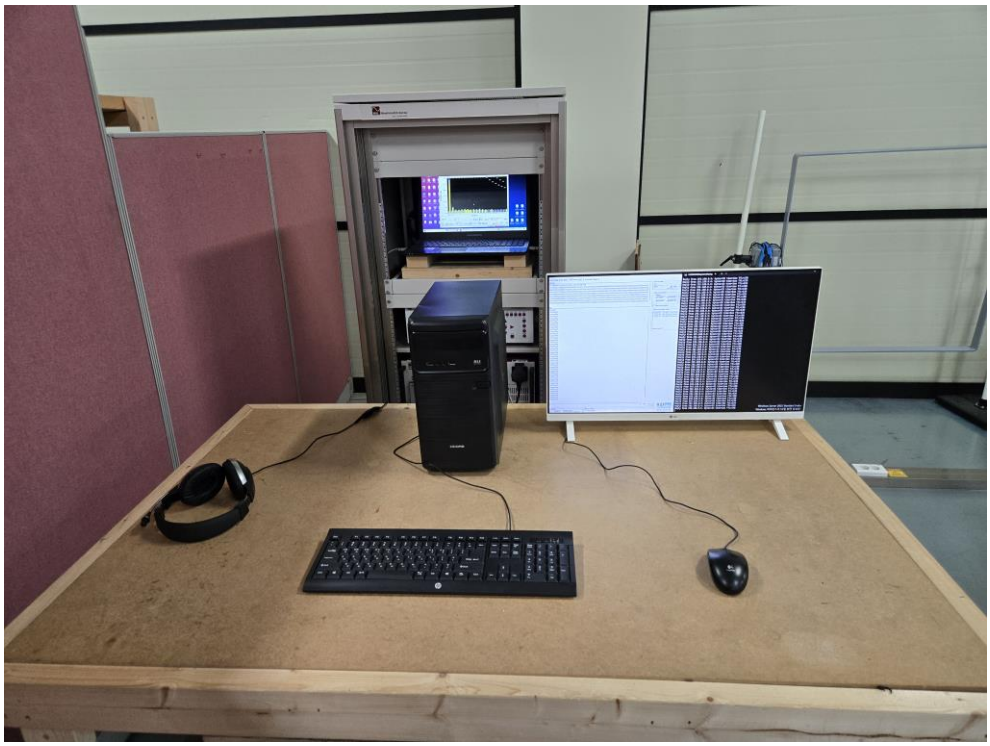


[DATA PORT]

Magnetic field Immunity

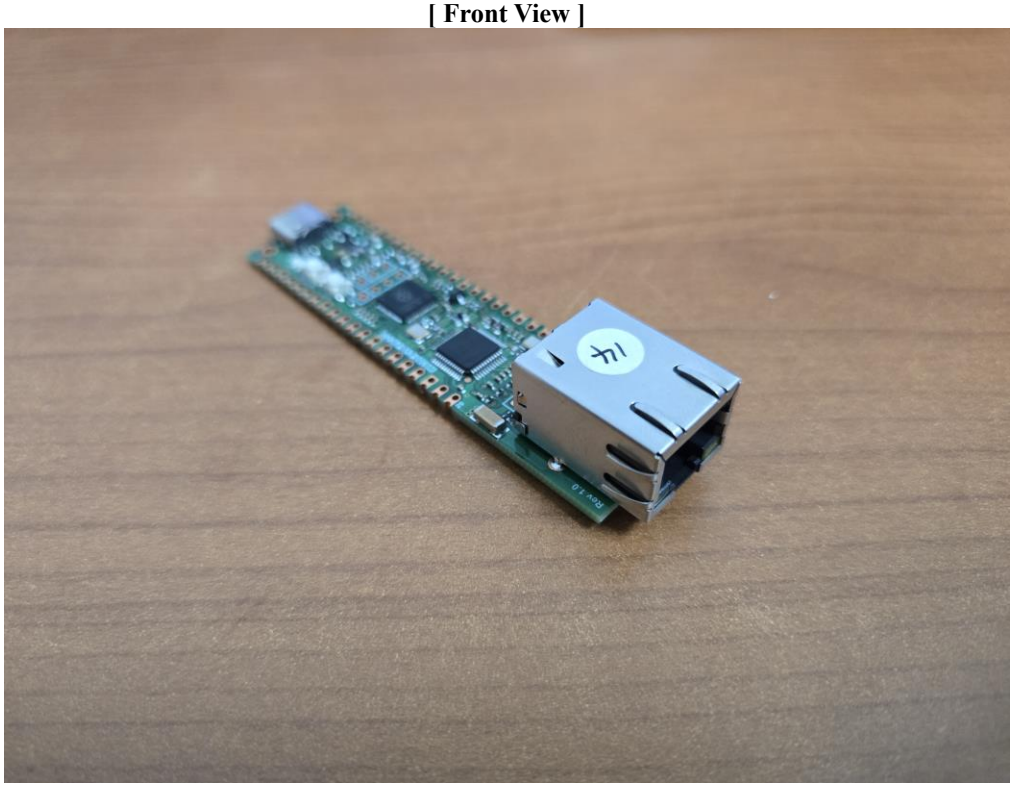
N/A

Harmonics & Flicker

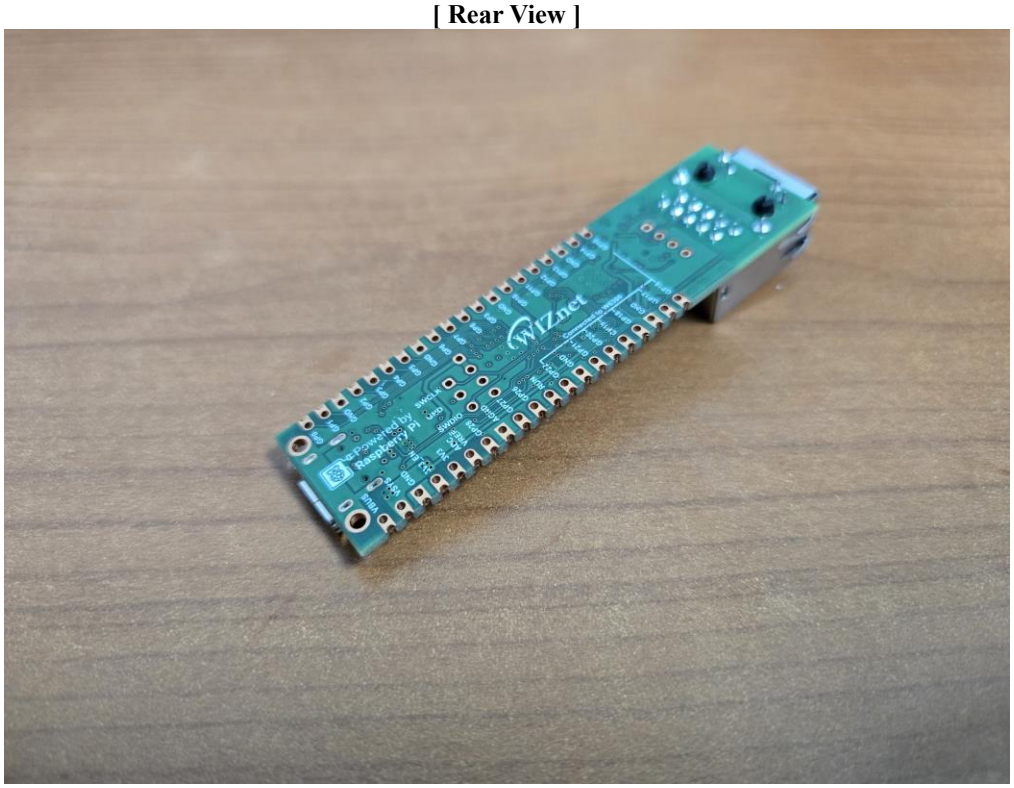


8. E.U.T. Photographs

[Front View]

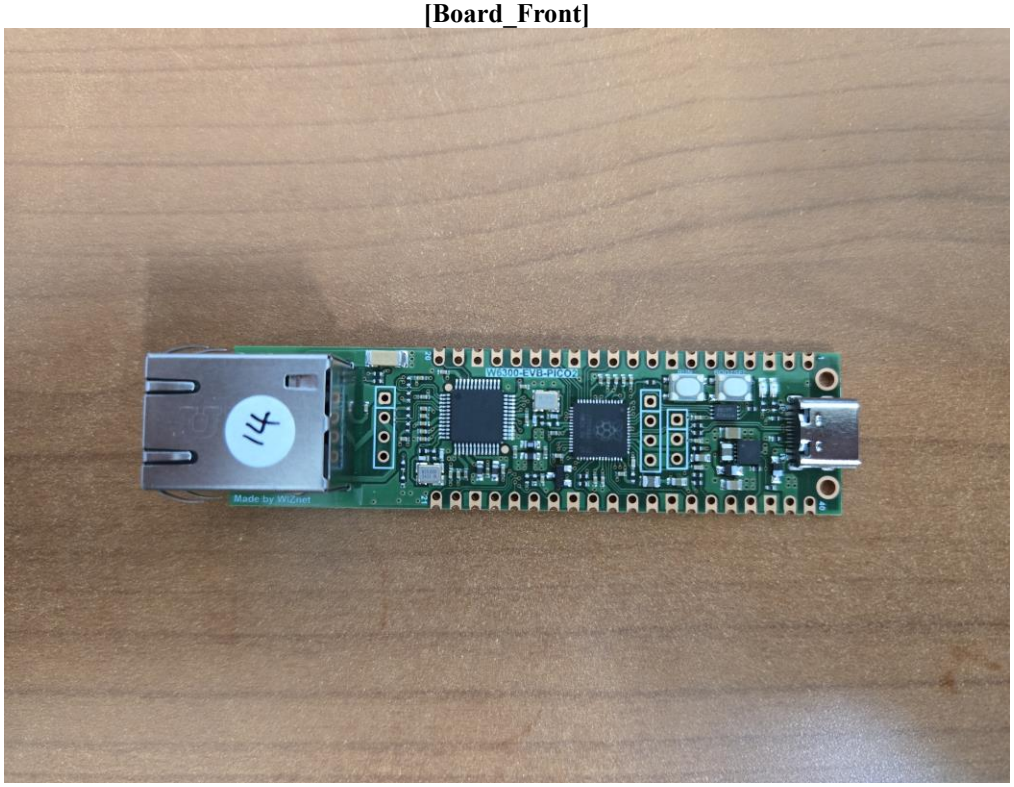


[Rear View]

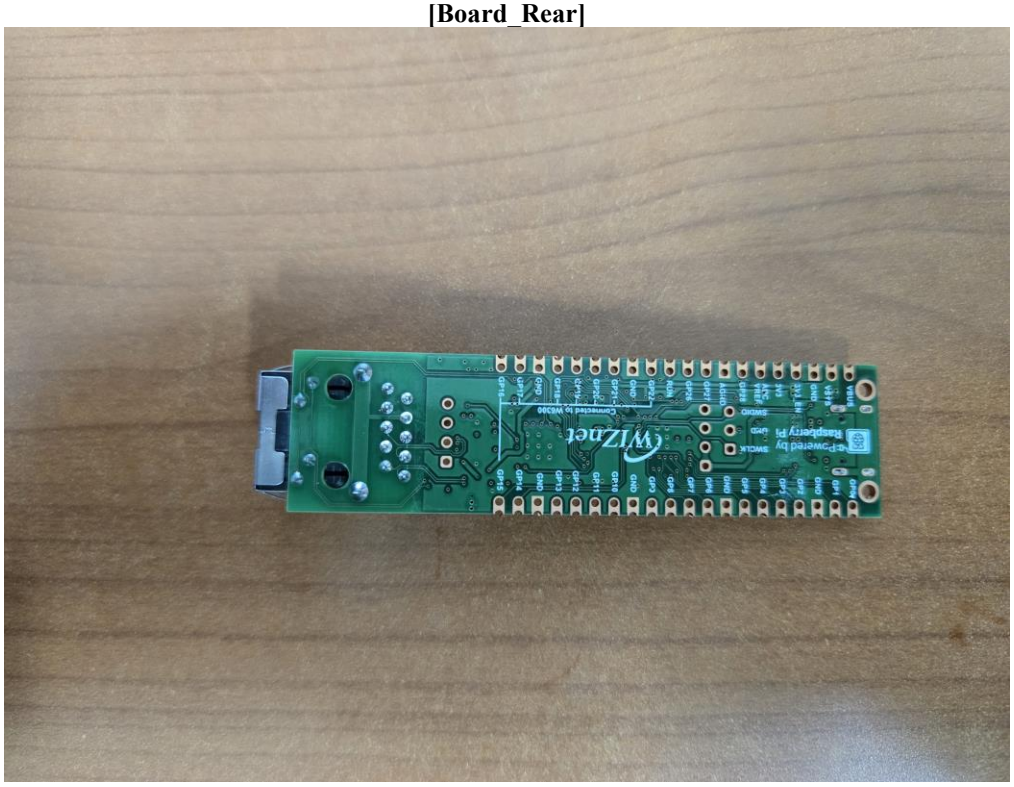


[Inside View]

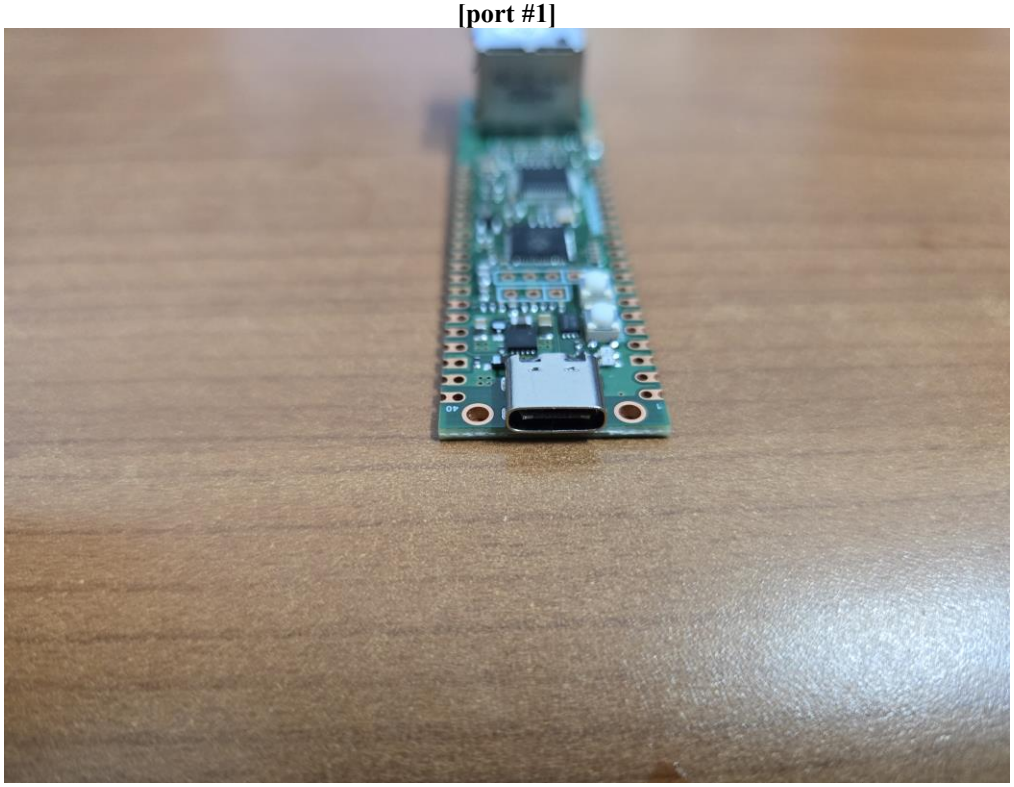
[Board_Front]



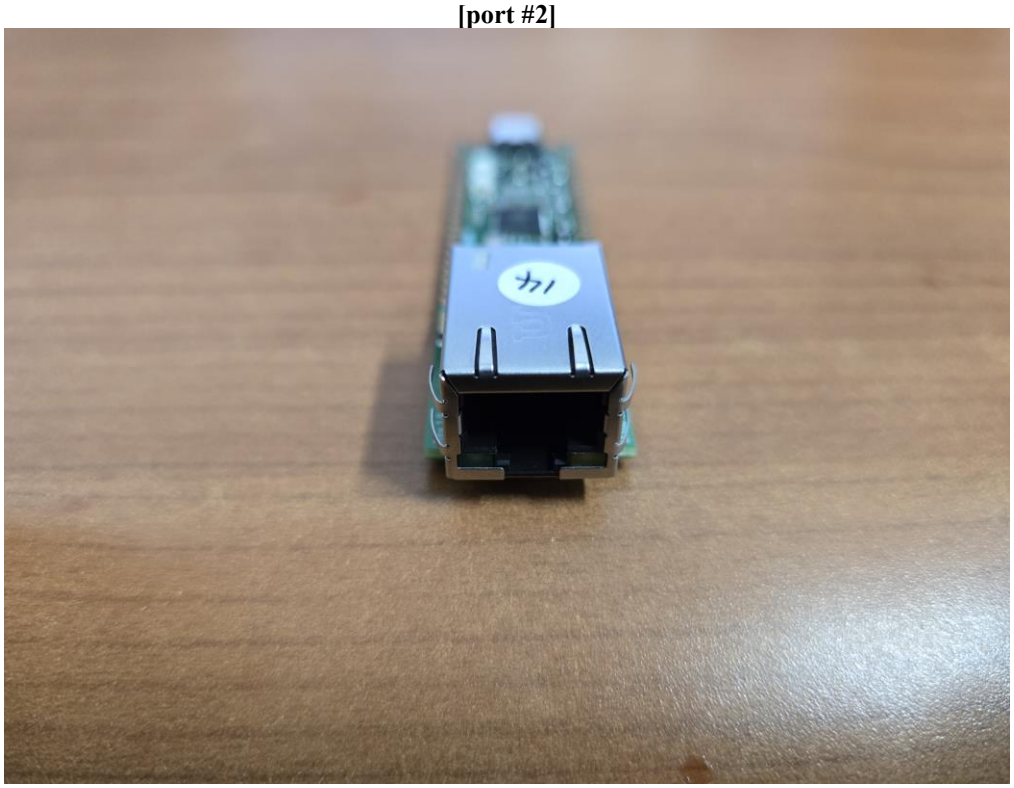
[Board_Rear]



[port #1]



[port #2]



-THE END-