

EU Declaration of Conformity

According to

EMC Directive 2014/30/EU

For the following

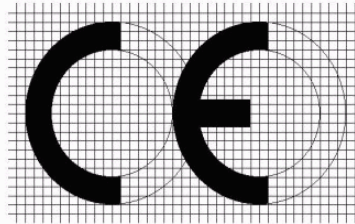
Product : NETWORK CAMERA
Model Name : DC-D2511FCR
Variant Model Name : DC-D1125FCR, NC-D2511FCR

Applicant : IDIS CO., LTD.
Address : 8-10, TECHNO 3-RO, YUSEONG-GU,
DAEJEON, KOREA

Manufactured at : IDIS CO., LTD.
Address : 8-10, TECHNO 3-RO, YUSEONG-GU,
DAEJEON, KOREA

The submitted sample of the above equipment has been tested for CE marking according to following European Directive and standards:

- Electromagnetic Compatibility Directive 2014/30/EU



The referred test report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the specified European Directive. This verification does not imply assessment of the production of the product.

The CE marking may be affixed if all relevant and effective European Directives with CE are applicable.

The standards relevant for the evaluation of EMC requirements are as follows:

Test Standards : EN 55032:2015 /A1:2020, Class A
EN 50130-4:2011 /A1:2014
EN IEC 61000-3-2:2019 /A1:2021,
IEC 61000-3-2:2018+A1:2020
EN 61000-3-3:2013 /A2:2021,
IEC 61000-3-3:2013+AMD1:2017+AMD2:2021

IDIS CO., LTD.

Date of issue: 2024-08-28

8-10, TECHNO 3-RO, YUSEONG-GU,
DAEJEON, KOREA

(Name and signature of authorized person)



TEST REPORT

<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea Tel: 82-70-5008-1021 Fax: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR24-SEC0184 Page (1) of (75)</p>	<p>eurofins KCTL</p>
<p>1. Client</p> <ul style="list-style-type: none"> ◦ Name : IDIS CO., LTD. ◦ Address : 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA ◦ Date of Receipt : 2024-07-18 <p>2. Use of Report : EU-Type Examination</p> <p>3. Name of Product / Model : NETWORK CAMERA / DC-D2511FCR</p> <p>4. Manufacturer / Country of Origin : IDIS CO., LTD. / Korea</p> <p>5. Date of Test : 2024-08-20 to 2024-08-22</p> <p>6. Location of Test : <input checked="" type="checkbox"/> Permanent Testing Lab <input type="checkbox"/> On Site Testing (Address: 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)</p> <p>7. Test method used : EN 55032:2015 /A1:2020, Class A EN 50130-4:2011 /A1:2014 EN IEC 61000-3-2:2019 /A1:2021, IEC 61000-3-2:2018+A1:2020 EN 61000-3-3:2013 /A2:2021, IEC 61000-3-3:2013+AMD1:2017+AMD2:2021</p> <p>8. Test Result : Refer to the test result in the test report</p>		
<p>Affirmation</p>	<p>Tested by </p> <p>Name : Seungkyun Yoo (Signature)</p>	<p>Technical Manager </p> <p>Name : Moonseop Cho (Signature)</p>
<p>2024-08-28</p>		
<p>Eurofins KCTL Co.,Ltd.</p>		
<p>As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.</p>		

REPORT REVISION HISTORY

Date	Revision	Page No
2024-08-28	Originally issued	-

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General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:


Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

Statement not required by the standard or client used for type testing

Contents

1. Applicant information	4
2. Laboratory information	5
3. Test system configuration.....	6
3.1 Operation environment.....	6
3.2 Measurement Uncertainty	7
3.3 Measurement Program.....	8
4. Description of EUT	9
4.1 General information.....	9
4.2 Product description.....	10
4.3 Auxiliary equipments	10
4.4 Test configuration	11
4.5 Operating conditions	13
5. Summary of test results	14
5.1 Summary of EMI emission test results.....	14
5.2 Summary of immunity test results	14
5.3 Performance criteria	15
6. Test results	17
6.1 Conducted Emission	17
6.2 Radiated Emission	26
6.3 Harmonics	37
6.4 Flicker.....	45
6.5 Electrostatic Discharge.....	49
6.6 Radio Frequency Electromagnetic Fields	54
6.7 Electric Fast Transient/BURST	59
6.8 Surge.....	63
6.9 Conducted Immunity	67
7. EUT photographs	72

<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea Tel: 82-70-5008-1021 Fax: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR24-SEC0184 Page (4) of (75)</p>	<p> KCTL</p>
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1. Applicant information

Applicant: IDIS CO., LTD.
Address: 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA

Manufacturer: IDIS CO., LTD.
Address: 8-10, TECHNO 3-RO, YUSEONG-GU, DAEJEON, KOREA



2. Laboratory information

Address

Eurofins KCTL Co.,Ltd. (Suwon Lab.)

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea

Telephone Number: 82 70 5008 1021

Facsimile Number: 82 505 299 8311

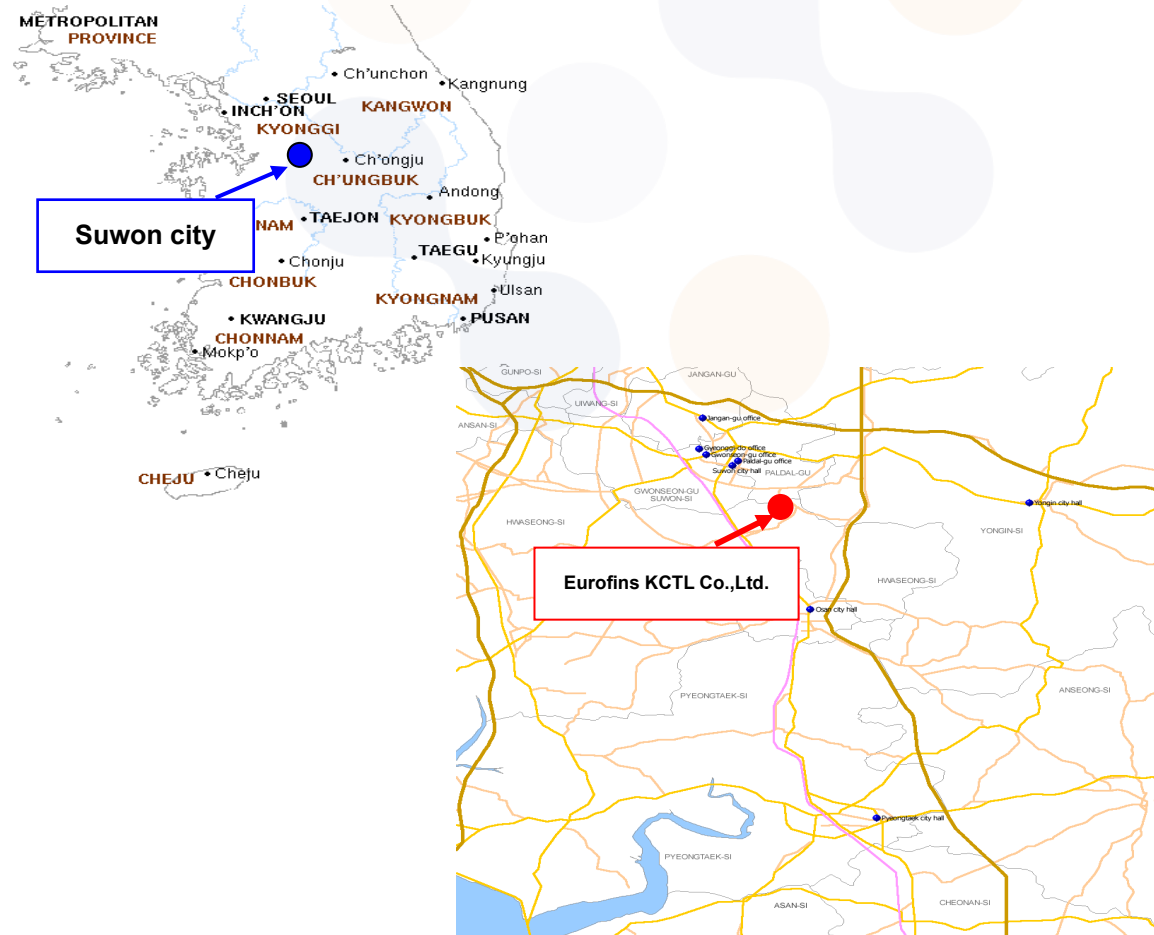
FCC Site Designation No: KR0040

VCCI Registration No. : R-20080, G-20078, C-20059, T-20056

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP



3. Test system configuration

3.1 Operation environment

	Temperature	Humidity	Pressure
Chamber 10 m(RE)	25.4 °C / 25.5 °C	41.1 % R.H. / 41.3 % R.H.	-
Shielded room(CE)	25.6 °C	40.9 % R.H.	-
Shielded room(ESD)	25.1 °C	39.9 % R.H.	100.4 kPa

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Radiated Emission	10 m Chamber
Harmonics current	EMI Test area
Voltage fluctuations and flickers	EMI Test area
Electrostatic discharge	Shielded Room
Radiated RF immunity	6F Fully anechoic chamber (3 m)
Electric Fast Transient/BURST	Shielded Room
Surge	Shielded Room
Conducted RF immunity	Shielded Room
Voltage dip/interruption	Shielded Room
Mains supply voltage variations	Shielded Room

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.

The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability. Based on CISPR 16-4-2, the measurement uncertainty level with a 95 % confidence level was applied.

Conducted Emission measurement (Confidence level about 95 %, $k = 2$)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz: 3.6 dB	
	150 kHz ~ 30 MHz: 3.1 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: 3.6 dB	
	150 kHz ~ 30 MHz: 3.1 dB	
Radiated Emission measurement (Confidence level about 95 %, $k = 2$)		
10 m Chamber (4F)	30 MHz ~ 1 000 MHz	3 m: 6.2 dB
		10 m: 5.0 dB
	1 GHz ~ 6 GHz	3 m: 5.5 dB
10 m Chamber (2F)	30 MHz ~ 1 000 MHz	3 m: 5.8 dB
		10 m: 4.5 dB
	1 GHz ~ 6 GHz	3 m: 5.3 dB
Radio Frequency Electromagnetic Fields (Confidence level about 95 %, $k = 2$)		
0.9 dB		
Disturbance Power Electromagnetic Fields (Confidence level about 95 %, $k = 2$)		
3.2 dB		

3.3 Measurement Program

These test items were performed by software programs;

Test item	Measurement Program		Used
Conducted Emission	EP5/CE_Ver 5.4.0(TOYO)		☒
Radiated Emission	2F	EP10/RE_Ver 2021.01.000 (TOYO)	☒
	4F	EP5/RE_Ver 5.11.10(TOYO)	
Harmonics current, Voltage fluctuations and flickers	IECSOFT v2_7(N4L)		☒
Radiated RF immunity	3F	EMC32_Version 10.20.01 (ROHDE & SCHWARZ)	☒
	6F	EMC32_Version 10.10.01 (ROHDE & SCHWARZ)	
Electrical Fast Transient/BURST, Surge, Voltage dip/interruption	6F(#1)	Tema3000 v4.3.0 (EMC PARTNER)	☒
	6F(#2)	Tema3000 v4.3.0 (EMC PARTNER)	
	3F(#3)	iec.control_Version 5.2.9 (EM TEST)	
Conducted RF immunity	6F(#1)	icd.control_V5.3.8(EM TEST)	☒
	3F(#2)	EMC32_Version 10.10.01 (ROHDE & SCHWARZ)	

4. Description of EUT

4.1 General information

Video	
Image sensor	1/2.8" SONY IMX335 Starvis CMOS Sensor
Max. Resolution	2704 x 2104
Scanning Mode	Progressive Scan
Lens Type	Fixed Lens
Focal Length	F=4.0mm (Optional 2.8mm)
Aperture	F=1.6
Iris Control	Fixed
Angular Field of View	4.0mm: 104.9°(D), 87.5°(H), 44.4°(V), 2.8mm: 134.45°(D), 113.74°(H), 61.5°(V)
Electronic Shutter Speed	Min. 1/100,000 sec ~ Max. 1/2 sec
Day and Night Mode	Auto / Day(Color) / Night(BW) / External
IR Distance	20 m
Auto White Balance Mode	Automatic, Manual
Noise Reduction	2DNR/3DNR
Backlight Correction	True WDR
Network	
Video Compression	H.265 Main profile, H.264(High, Main, Base line profile), MJPEG
SDK Support	API, ONVIF Profile S/T Compliant
Video Frame Rate	Up to 30fps@2592x1944p
Video Resolution	2592x1944, 2560x1920, 2048x1536, 1920x1440, 1600x1200, 1280x960, 800x600, 640x480, 480x360
Video Streaming (3 Streaming)	Simultaneously H.265 and MJPEG (Multi Streaming) or Simultaneously H.264 and MJPEG (Multi Streaming) Independent Frame Rate and Bandwidth Control, VBR/CBR Mode
Protocols	TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, FTP, UPnP, RTP, RTSP, RTCP, DHCP, ARP, Zeroconf
Security	Multi User Authority, IP Filtering, HTTPS
Ethernet	RJ45 (10/100BASE-T)
Event	
Event In	Onboot/Trigger/Network Loss/Motion/ AI Event
Event Out Notification	Network
Audio In/Out	Optional
Alarm In/Out	Optional
AI	
AI	Motion/Human detection/ Vehicle Detection
General	
Vandal Proof Casing	IK08
Outdoor Ready	IP67
Operation Temperature	-20°C ~ +50°C
Operation Humidity	0% ~ 95%
Electrical	
Power Source	PoE (IEEE 802.3af Class 2), DC12V
Power Consumption	Max 4.0W
Approval	CE, FCC
Mechanical	
Dimension	Surface Type: Ø82 x 52(H)mm, Flush Type: Ø94 x 25(H)mm

4.2 Product description

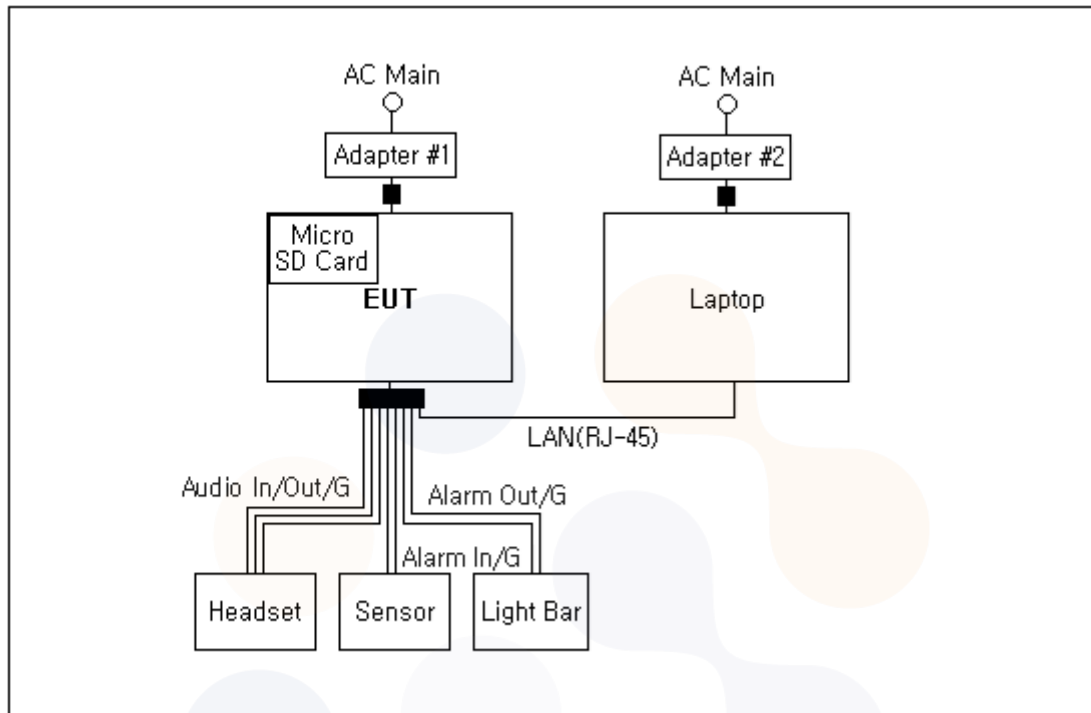
Type of product	NETWORK CAMERA
Model name (Basic)	DC-D2511FCR
Model name (Variant)	DC-D1125FCR, NC-D2511FCR
Difference	Buyel model names
Serial no	-
Testing voltage	EMI Test: 230 V, 50 Hz / PoE EMS Test: DC 12 V / PoE
Input rating	DC 12 V, PoE
Internal clock frequency	1 GHz
Note	<p>-It mentioned the worst case test one of the IR ON/IR OFF Mode. [IR OFF Mode]</p> <p>-This product is an device with a DC power port powered by an AC/DC power converter, so it is tested considering it as an AC mains power-using device.</p> <p>-The following accessories were not provided by the manufacturer.</p> <ol style="list-style-type: none"> 1) Adapter #1 2) PoE Switch

4.3 Auxiliary equipments

Type	Model / Part #	S/N	Manufacturer
Adapter #1	CS-1205000	-	-
Laptop	E470-DOS	PF-10DS49	Lenovo
Adapter #2	ADLX45NCC3A	8S5A10H03912C1SG 5BT0NH1	Lenovo
PoE Switch	-	-	-
Light Bar	DS-360	-	DAE MYUNG ELECTRONICS CO., LTD
Sensor	-	-	-
Headset	SHS-250V	-	SAMSUNG
Micro SD Card (64 GB)	-	-	-

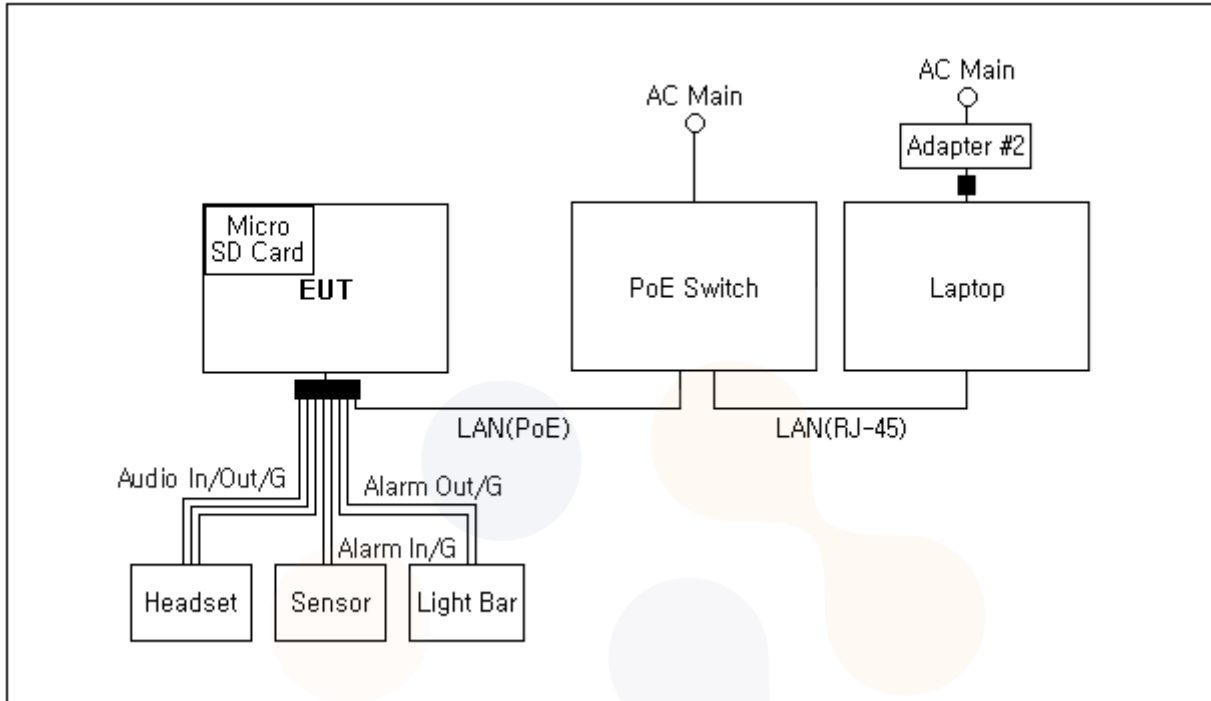
4.4 Test configuration

[Test #1]



	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT	Power	Adapter #1	-	1.5	Unshield (Core)
2		LAN(RJ-45)	Laptop	LAN(RJ-45)	3.0	Unshield (Core)
3		Alarm In/G	Sensor	-	3.0	Unshield (Core)
4		Alarm Out/G	Light Bar	-	3.0	Unshield (Core)
5		Audio In/Out/G	Headset	-	3.0	Unshield (Core)
6		Micro SD	Micro SD Card	-	Direct	-
7	Laptop	Power	Adapter #2	-	1.5	Unshield (Core)

[Test #2]



Power supplied from PoE Switch

	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT	LAN(PoE)	PoE Switch	LAN(PoE)	3.0	Unshield (Core)
2		Alarm In/G	Sensor	-	3.0	Unshield (Core)
3		Alarm Out/G	Light Bar	-	3.0	Unshield (Core)
4		Audio In/Out/G	Headset	-	3.0	Unshield (Core)
5		Micro SD	Micro SD Card	-	Direct	-
6	Laptop	Power	Adapter #2	-	1.5	Unshield (Core)
7		LAN(RJ-45)	PoE Switch	LAN(RJ-45)	1.0	Unshield

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
<p>Test #1 [Adapter]</p>	Supply power to the EUT to the Adapter #1, Check the real-time video using the web viewer of the Laptop.
	Check the alarm operation of the Alarm In/Out port using the Light Bar/Sensor.
	Check the operation of the Audio In/Out port using Headset.
	Check the task manager (Ethernet) data transmission throughput (Ping).
	Check the image stored on the Micro SD Card.
<p>Test #2 [PoE]</p>	Supply power to the EUT to the PoE Switch, Check the real-time video using the web viewer of the Laptop.
	Check the alarm operation of the Alarm In/Out port using the Light Bar/Sensor.
	Check the operation of the Audio In/Out port using Headset.
	Check the task manager (Ethernet) data transmission throughput (Ping).
	Check the image stored on the Micro SD Card.

Note: 2 types of powers are available for the product, that are Adapter, PoE.

Therefore, tests were performed for 2 different types of powers.

5. Summary of test results


5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
<input checked="" type="checkbox"/>	Conducted Emission	EN 55032:2015 /A1:2020, Class A	Refer to Section 6.1.4
<input checked="" type="checkbox"/>	Radiated Emission	EN 55032:2015 /A1:2020, Class A	Refer to Section 6.2.5
<input checked="" type="checkbox"/>	Harmonics current	EN IEC 61000-3-2:2019 /A1:2021, IEC 61000-3-2:2018+A1:2020	Refer to Section 6.3.4
<input checked="" type="checkbox"/>	Voltage fluctuations and flickers	EN 61000-3-3:2013 /A2:2021 IEC 61000-3-3:2013+AMD1:2017+AMD2:2021	Refer to Section 6.4.4

5.2 Summary of immunity test results

Applied	Test items	Test method	Result
EN 50130-4:2011 /A1:2014			
<input checked="" type="checkbox"/>	Electrostatic discharge	EN 61000-4-2:2009	Refer to Section 6.5.4
<input checked="" type="checkbox"/>	Radiated RF immunity	EN IEC 61000-4-3:2020	Refer to Section 6.6.4
<input checked="" type="checkbox"/>	Electrical Fast Transient/BURST	EN 61000-4-4:2012	Refer to Section 6.7.4
<input checked="" type="checkbox"/>	Surge	EN 61000-4-5:2014 /A1:2017	Refer to Section 6.8.4
<input checked="" type="checkbox"/>	Conducted RF immunity	EN 61000-4-6:2014 /AC:2015	Refer to Section 6.9.4
<input type="checkbox"/>	Voltage dip/interruption	EN IEC 61000-4-11:2020	N/A ^(Note1)
<input type="checkbox"/>	Mains supply voltage variations	EN 50130-4:2011 /A1:2014	N/A ^(Note1)

Note1) Not applicable because the product is supplied DC(PoE) power

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5.3 Performance criteria

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at 10 V/m, providing.


- (a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable setting etc.)
- (b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used;
and
- (c) there is no observable deterioration of the picture at 1 V/m.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the bursts is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test

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(see Clause 6), after the conditioning.

Slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of the surges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test (see Clause 6), after the conditioning.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change, and no such flickering of indicators occurs at $U_0 = 130 \text{ dB}\mu\text{V}$.

For components of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at $U_0 = 140 \text{ dB}\mu\text{V}$, providing

- (a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings, etc.)
- (b) at $U_0 = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used, and
- (c) there is no observable deterioration of the picture at $U_0 = 120 \text{ dB}\mu\text{V}$.

The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), after the conditioning.

Mains supply voltage variations

There shall be no damage, malfunction or change of status due to the different supply voltage conditions. The EUT shall meet the acceptance criteria for the functional test(see Clause 6), during the conditioning.

6. Test results

6.1 Conducted Emission

Testing voltage	230 V, 50 Hz / PoE		
Test facility	Shielded room (CE#1)		
Date	2024-08-20		
Temperature (°C)	25.6 °C	Humidity (% R.H.)	40.9 % R.H.

Both conducted lines are measured in Quasi-Peak and C/Average mode, including the worst-case data points for each tested configuration. The EUT measured in accordance with the methods described in standards.

6.1.1 Limits of conducted emission measurement

AC main

Frequency [MHz]	Resolution Bandwidth [kHz]	Class A (dB(μ V))		Class B (dB(μ V))	
		Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	9	79	66	66 ~ 56	56 ~ 46
0.5 ~ 5	9	73	60	56	46
5 ~ 30	9	73	60	60	50

Telecommunication

Frequency [MHz]	Resolution Bandwidth [kHz]	Class A Limits (dB(μ V))		Current Limits (dB(μ V))	
		Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	9	97 to 87	84 to 74	53 to 43	40 to 30
0.5 ~ 30	9	87	74	43	30
Frequency [MHz]	Resolution Bandwidth [kHz]	Class B Limits (dB(μ V))		Current Limits (dB(μ V))	
		Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	9	84 to 74	74 to 64	40 to 30	30 to 20
0.5 ~ 30	9	74	64	30	20

If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 seconds at each measurement frequency, the highest reading shall be recorded, with the exception of any brief isolated high reading (which shall be ignored).

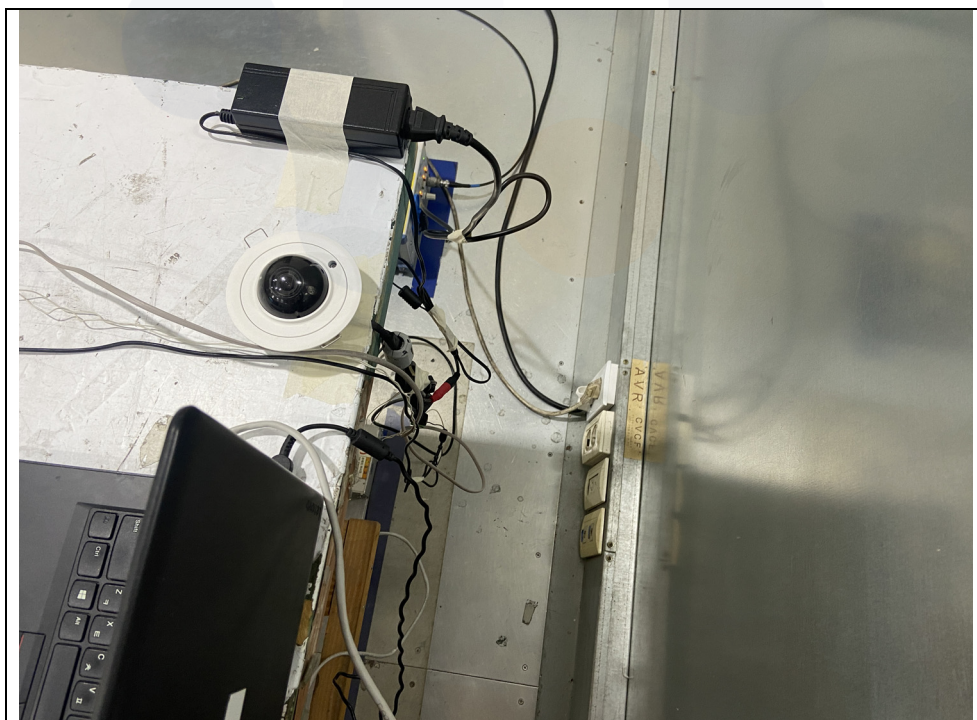
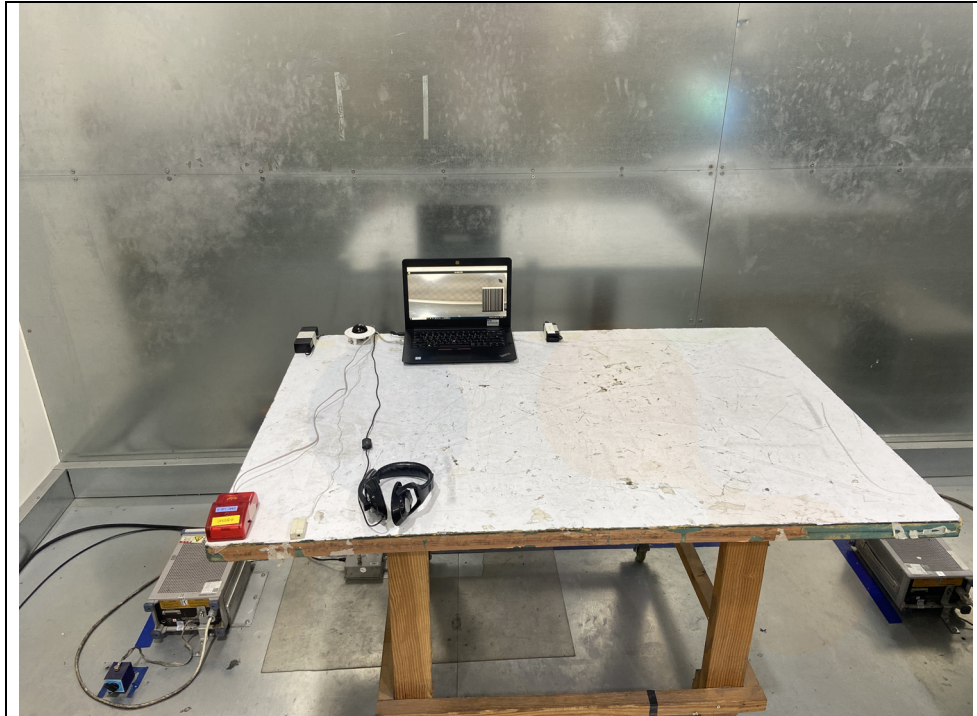
6.1.2 Used equipments

Date: 2024-08-20

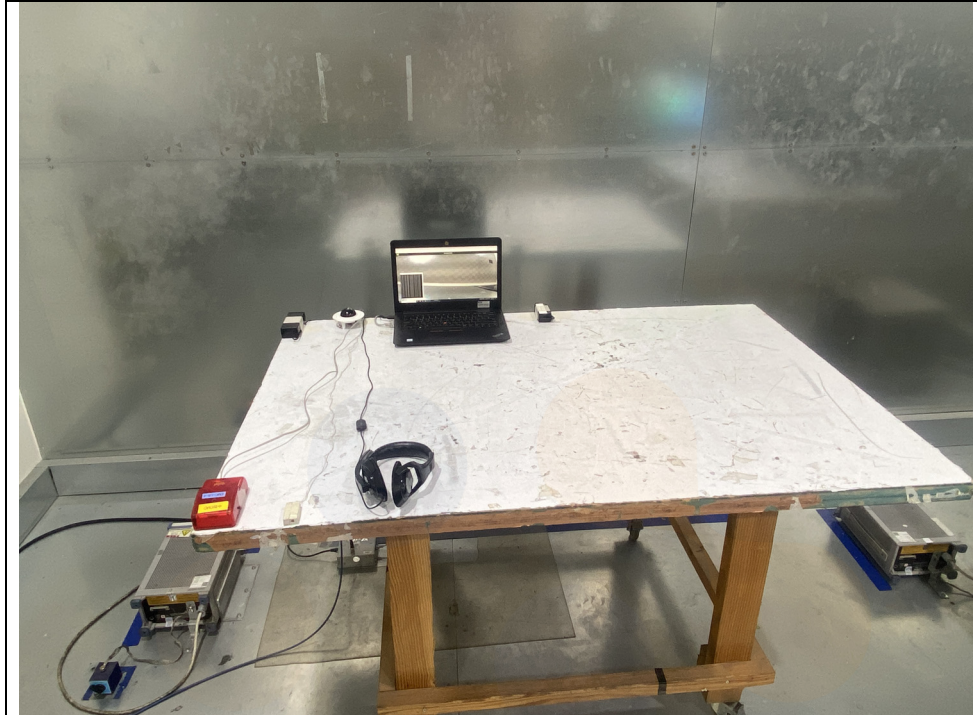
Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESCI 3	101408	R&S	2025.08.12	<input checked="" type="checkbox"/>
TWO-LINE V-NETWORK	ENV216	101358	R&S	2024.09.27	<input checked="" type="checkbox"/>
TWO-LINE V-NETWORK	ENV216	101352	R&S	2025.03.27	<input type="checkbox"/>
8-WIRE ISN CAT5	NTFM 8158 ISN CAT5	CAT5 8158 #138	SCHWARZBECK	2025.03.26	<input checked="" type="checkbox"/>

6.1.3 Photographs of test setup

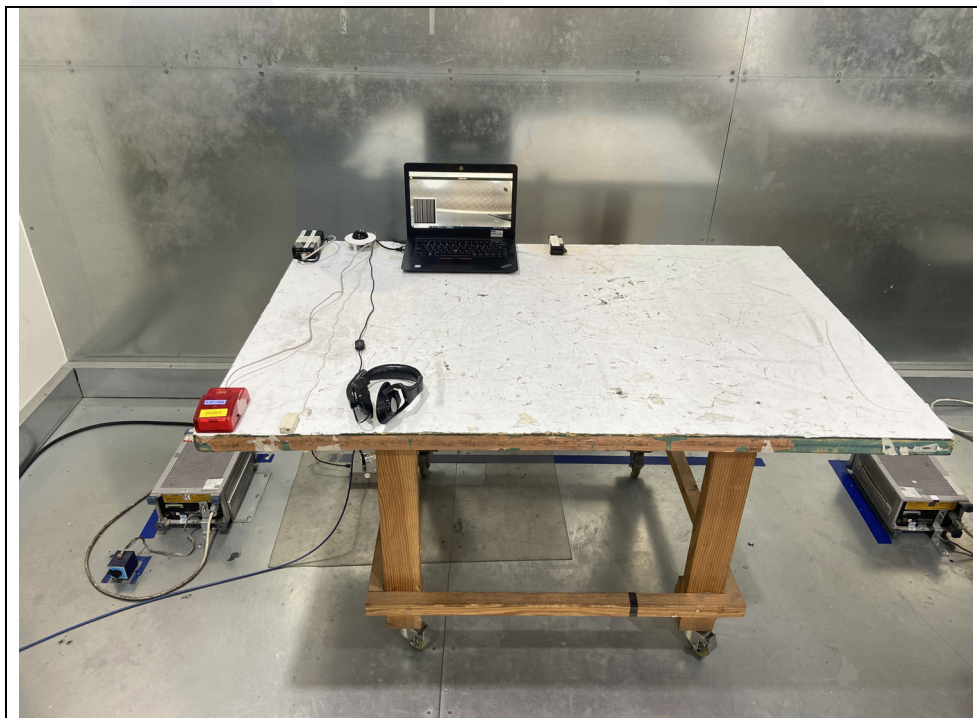
AC Main [Test #1]



Telecommunication [Test #1]

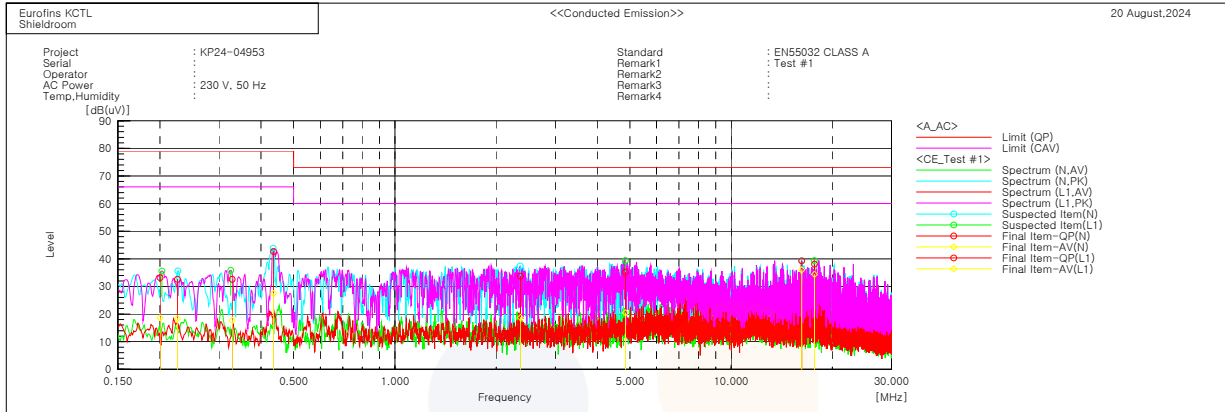


Telecommunication [Test #2]



6.1.4 Conducted emission measurement result

AC Main

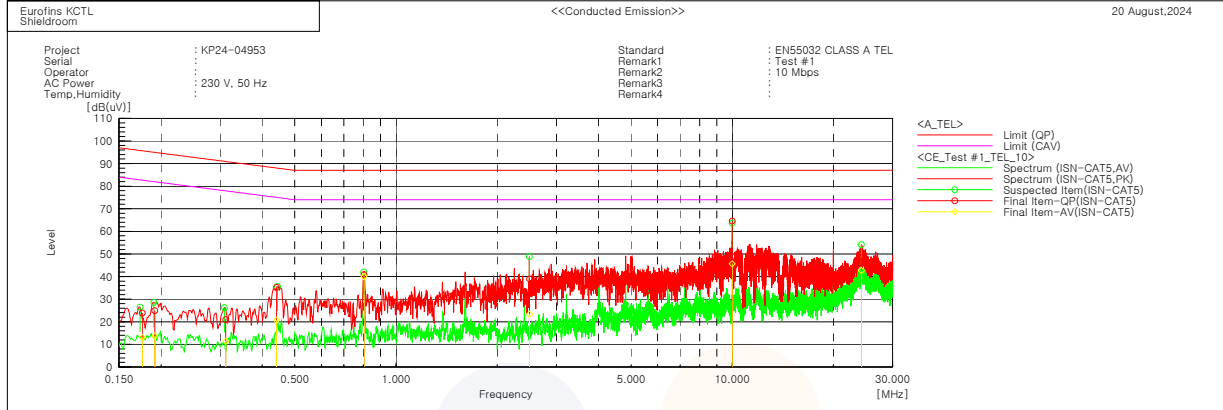


Final Result

--- N Phase ---										
No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c. f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.22559	22.9	8.6	9.7	32.6	18.3	79.0	66.0	46.4	47.7
2	0.43588	32.7	17.5	9.9	42.6	27.4	79.0	66.0	36.4	38.6
3	2.36156	23.8	8.8	9.9	33.7	18.7	73.0	60.0	39.3	41.3
4	16.22828	29.3	26.0	10.0	39.3	36.0	73.0	60.0	33.7	24.0

--- L1 Phase ---										
No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c. f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.20041	23.3	8.7	9.9	33.2	18.6	79.0	66.0	45.8	47.4
2	0.32799	22.9	8.1	9.7	32.6	17.8	79.0	66.0	46.4	48.2
3	4.84807	25.4	10.7	9.8	35.2	20.5	73.0	60.0	37.8	39.5
4	17.69478	28.1	24.4	10.0	38.1	34.4	73.0	60.0	34.9	25.6

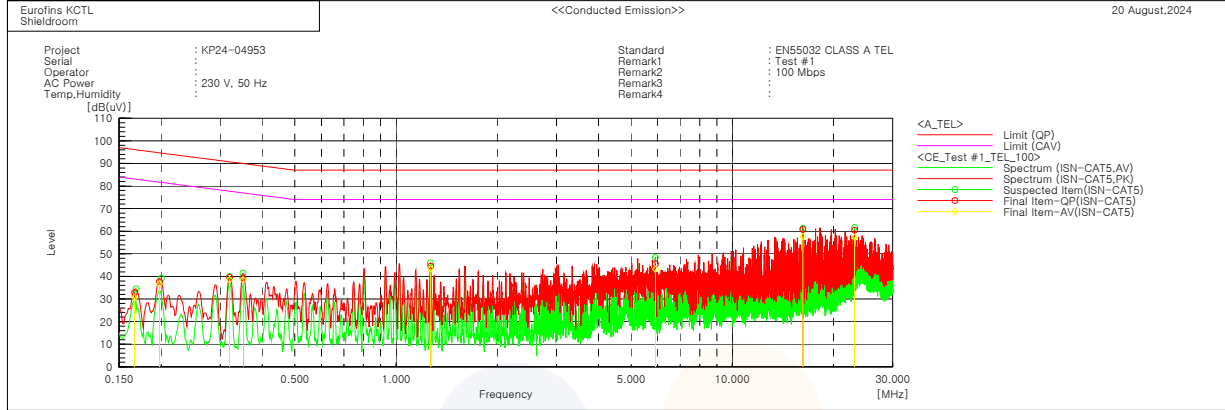
Telecommunication



Final Result

--- ISN-CAT5 Phase ---										
No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.17602	14.0	3.3	9.8	23.8	13.1	95.7	82.7	71.9	69.6
2	0.19163	15.2	3.9	9.7	24.9	13.6	95.0	82.0	70.1	68.4
3	0.31159	11.4	1.8	9.6	21.0	11.4	90.9	77.9	69.9	66.5
4	0.4415	25.6	11.0	9.6	35.2	20.6	88.0	75.0	52.8	54.4
5	0.80314	31.4	30.5	9.5	40.9	40.0	87.0	74.0	46.1	34.0
6	2.49513	29.4	13.9	9.5	38.9	23.4	87.0	74.0	48.1	50.6
7	9.99945	55.2	36.2	9.4	64.6	45.6	87.0	74.0	22.4	28.4
8	24.2185	38.8	33.1	9.6	48.4	42.7	87.0	74.0	38.6	31.3

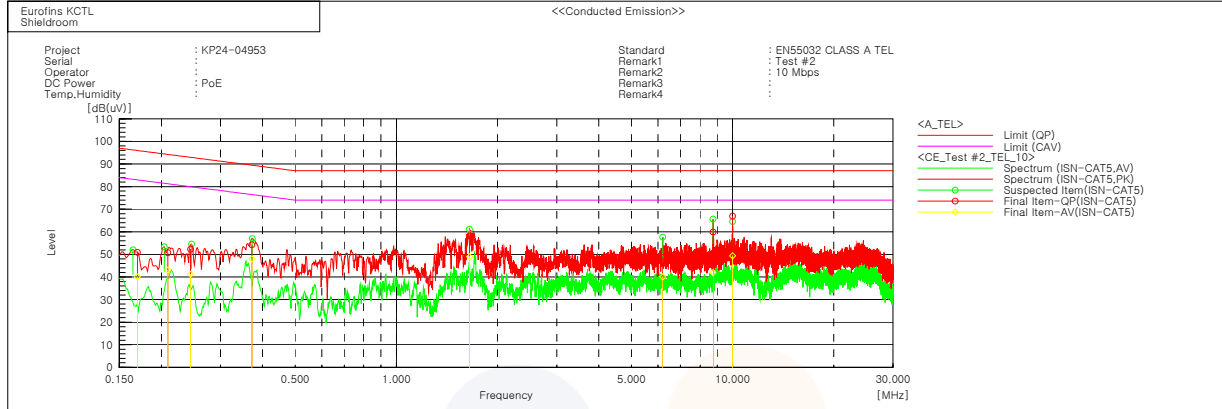
Telecommunication



Final Result

No.	Frequency [MHz]	ISN-CAT5 Phase		c. f [dB]	Result		Limit		Margin	
		Reading QP [dB(uV)]	Reading CAV [dB(uV)]		Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.16677	23.1	20.9	9.8	32.9	30.7	96.1	83.1	63.2	52.4
2	0.1978	28.0	27.0	9.7	37.7	36.7	94.7	81.7	57.0	45.0
3	0.32021	30.0	29.0	9.6	39.6	38.6	90.7	77.7	51.1	39.1
4	0.35046	29.7	28.8	9.6	39.3	38.4	90.0	77.0	50.7	38.6
5	1.26763	35.2	34.0	9.4	44.6	43.4	87.0	74.0	42.4	30.6
6	5.90792	36.2	33.8	9.4	45.6	43.2	87.0	74.0	41.4	30.8
7	16.22797	51.3	48.2	9.5	60.8	57.7	87.0	74.0	26.2	16.3
8	23.12826	51.0	47.7	9.5	60.5	57.2	87.0	74.0	26.5	16.8

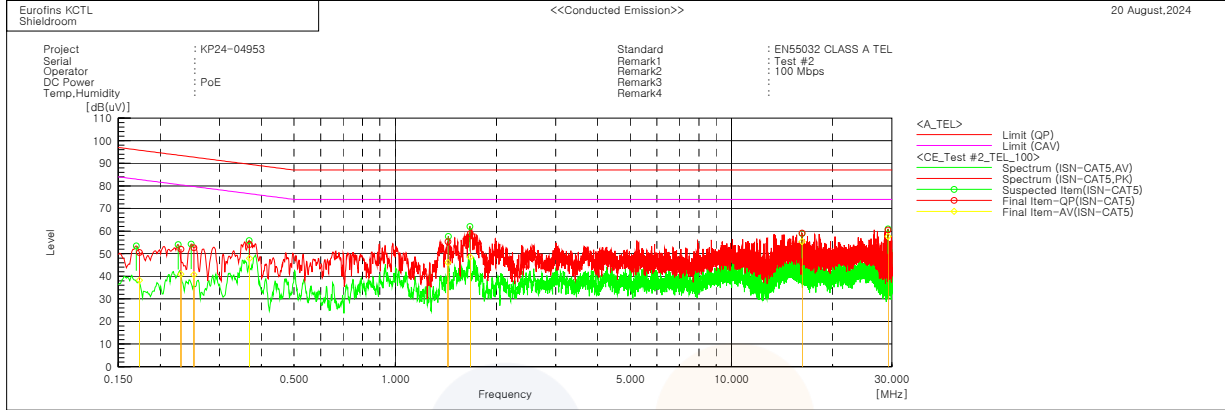
Telecommunication



Final Result

No.	Frequency [MHz]	ISN-CAT5 Phase		c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
		Reading QP [dB(uV)]	Reading CAV [dB(uV)]							
1	0.16977	41.1	30.2	9.8	50.9	40.0	96.0	83.0	45.1	43.0
2	0.20914	41.1	33.4	9.7	50.8	43.1	94.2	81.2	43.4	38.1
3	0.2445	42.6	31.5	9.7	52.3	41.2	92.9	79.9	40.6	38.7
4	0.37197	44.6	38.4	9.6	54.2	48.0	89.5	76.5	35.3	28.5
5	1.65196	48.8	39.6	9.4	58.2	49.0	87.0	74.0	28.8	25.0
6	6.19604	39.2	30.7	9.4	48.6	40.1	87.0	74.0	38.4	33.9
7	8.75003	50.5	32.5	9.4	59.9	41.9	87.0	74.0	27.1	32.1
8	10.00064	57.6	40.0	9.4	67.0	49.4	87.0	74.0	20.0	24.6

Telecommunication



Final Result

--- ISN-CAT5 Phase ---										
No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin QP	Margin CAV
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB]	[dB]
1	0.17336	40.7	28.4	9.8	50.5	38.2	95.8	82.8	45.3	44.6
2	0.23063	42.3	31.2	9.7	52.0	40.9	93.4	80.4	41.4	39.5
3	0.25196	42.9	31.0	9.7	52.6	40.7	92.7	79.7	40.1	39.0
4	0.36864	44.5	38.3	9.6	54.1	47.9	89.5	76.5	35.4	28.6
5	1.43499	45.9	36.7	9.4	55.3	46.1	87.0	74.0	31.7	27.9
6	1.67135	49.4	39.1	9.4	58.8	48.5	87.0	74.0	28.2	25.5
7	16.22766	49.6	45.8	9.5	59.1	55.3	87.0	74.0	27.9	18.7
8	29.23493	50.9	48.0	9.6	60.5	57.6	87.0	74.0	26.5	16.4

6.2 Radiated Emission

Testing voltage		230 V, 50 Hz / PoE		
Test facility		10 m Chamber (4F)		
Test distance		10 m, 3 m		
Date		2024-08-20		
10 m	Temperature (°C)	25.4 °C	Humidity (% R.H.)	41.1 % R.H.
3 m		25.5 °C		41.3 % R.H.

Of those emissions above ($L - 20$ dB), where L is the limit level in logarithmic units, record at least the emission levels and the frequencies of the six highest emissions.

The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin. All measurements were taken utilizing quasi-peak detection unless stated otherwise.

Below 1 GHz, Measurements were performed at an antenna to EUT distance of 10 or 3 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Above 1 GHz, Measurements were performed at an antenna to EUT distance of 3 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Below 1 GHz, peak detector function mode for prescan was used with resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz and sweep method.

The sweep time for prescan set below 200 ms up and final measurement with quasi-peak detector evaluated for suspected frequencies points, which are detected from prescan measurement.

Final measurements consisted of 3 steps.

First step, frequency fine tuning to find exact emission frequency.

Second step, rechecking to search for maximum height and azimuth for interference from EUT

In final step, there are conducted measuring with quasi-peak detector for points

which are detected from 1st step & 2nd step.

6.2.1 Limits of radiated emission measurement

Limits below 1 GHz

Frequency [MHz]	Measurement			Class A limits (dB(μV/m))	Class B limits (dB(μV/m))
	Facility	Distance m	Detector type / bandwidth		
30 ~ 230	OATS/SAC	10	Quasi Peak / 120 kHz	40	30
230 ~ 1 000				47	37
30 ~ 230		3		50	40
230 ~ 1 000				57	47

Limits above 1 GHz

Frequency [MHz]	Measurement			Class A limits (dB(μV/m))	Class B limits (dB(μV/m))
	Facility	Distance m	Detector type / bandwidth		
1 000 ~ 6 000	FSOATS	3	Average / 1 MHz	60	54
			Peak / 1 MHz	80	74

Measurements within 20 dB of the limit were then maximized by adjusting turntable position.

Final measurements were made using an C/Average detector.

Results checked manually and points close to the limit line were re-measured.

6.2.2 Used equipments

Date: 2024-08-20

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESR7	101078	R&S	2025.08.12	<input checked="" type="checkbox"/>
Bilog Antenna	CBL 6112D	37876	TESEQ	2025.05.25	<input checked="" type="checkbox"/>
AMPLIFIER	310N	293004	SONOMA	2025.08.12	<input checked="" type="checkbox"/>
ATTENUATOR	8491B	MY39270292	AGILENT	-	<input checked="" type="checkbox"/>
Antenna Mast	MA4640-XP-ET	-	Innco Systems	-	<input checked="" type="checkbox"/>
Turn Table	DT3000-2t	-	Innco Systems	-	<input checked="" type="checkbox"/>
PREAMPLIFIER	8449B	3008A01547	AGILENT	2025.06.13	<input checked="" type="checkbox"/>
DOUBLE RIDGED HORN ANTENNA	3115	00086706	ETS-LINDGREN	2024.11.02	<input checked="" type="checkbox"/>

6.2.3 Sample calculation

The field strength is calculated adding the antenna Factor, cable loss and, Antenna pad adding, subtracting the amplifier gain from the measured reading.

The sample calculation is as follow:

$$\text{Result} = \text{M.R} + \text{C.F}(\text{A.F} + \text{C.L} + 6 \text{ dB Att} - \text{A.G})$$

M.R = Meter Reading

C.F = Correction Factor

A.F = Antenna Factor

C.L = Cable Loss

A.G = Amplifier Gain

6 dB Att = 6 dB Attenuator

If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 6 dB, A.G 35 dB

The result is $30 + 12 + 5 + 6 - 35 = 18 \text{ dB}(\mu\text{V}/\text{m})$

Bilog Antenna and ATTENUATOR (6 dB) were calibrated together.

AV = CAV : Abbreviation of CISPR Average

6.2.4 Photographs of test setup

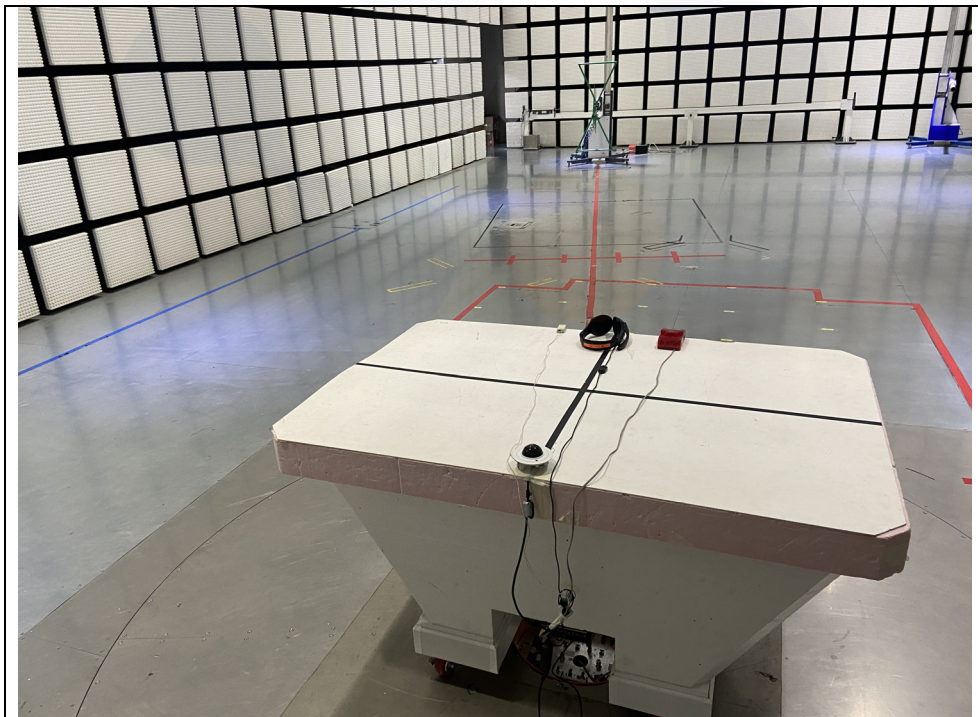
30 MHz ~ 1 GHz [Test #1]



1 GHz ~ 6 GHz [Test #1]



30 MHz ~ 1 GHz [Test #2]

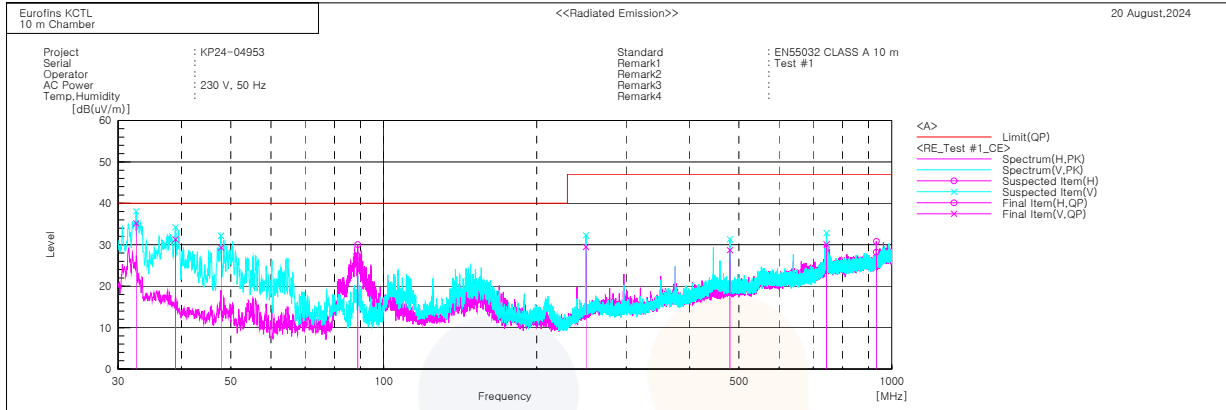


1 GHz ~ 6 GHz [Test #2]



6.2.5 Radiated emission measurement result

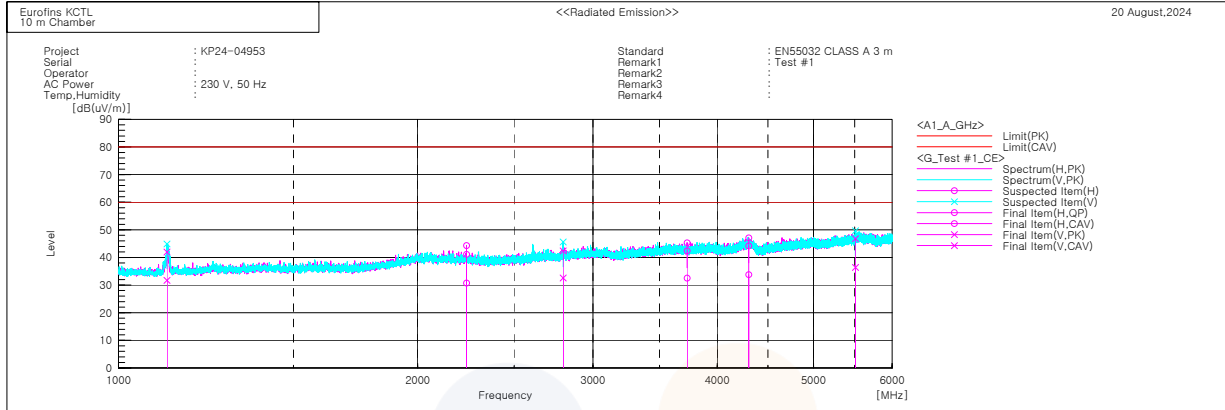
30 MHz ~ 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c. f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	32.571	V	39.3	-4.1	35.2	40.0	4.8	182.0	250.0
2	38.924	V	38.3	-7.0	31.3	40.0	8.7	136.0	192.0
3	47.826	V	40.2	-10.9	29.3	40.0	10.7	261.0	330.0
4	88.833	H	39.5	-12.2	27.3	40.0	12.7	384.0	302.0
5	250.007	V	35.9	-6.4	29.5	47.0	17.5	295.0	143.0
6	480.006	V	28.3	0.4	28.7	47.0	18.3	347.0	301.0
7	744.101	V	24.2	5.9	30.1	47.0	16.9	326.0	344.0
8	933.067	H	19.4	8.8	28.2	47.0	18.8	288.0	350.0

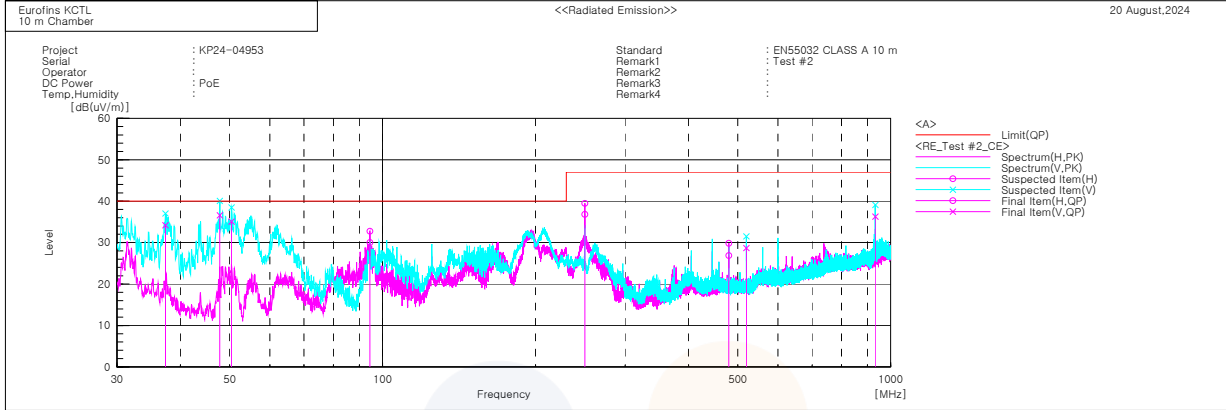
1 GHz ~ 6 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c. f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	1119.006	V	47.5	37.2	-5.5	42.0	31.7	80.0	60.0	38.0	28.3	358.0	188.0
2	2239.062	H	39.2	28.8	1.9	41.1	30.7	80.0	60.0	38.9	29.3	136.0	151.0
3	2799.840	V	38.8	29.0	3.6	42.4	32.6	80.0	60.0	37.6	27.4	166.0	216.0
4	3731.387	H	36.1	26.2	6.3	42.4	32.5	80.0	60.0	37.6	27.5	291.0	245.0
5	4303.665	H	35.3	24.9	8.9	44.2	33.8	80.0	60.0	35.8	26.2	205.0	155.0
6	5510.726	V	35.6	25.2	11.2	46.8	36.4	80.0	60.0	33.2	23.6	342.0	333.0

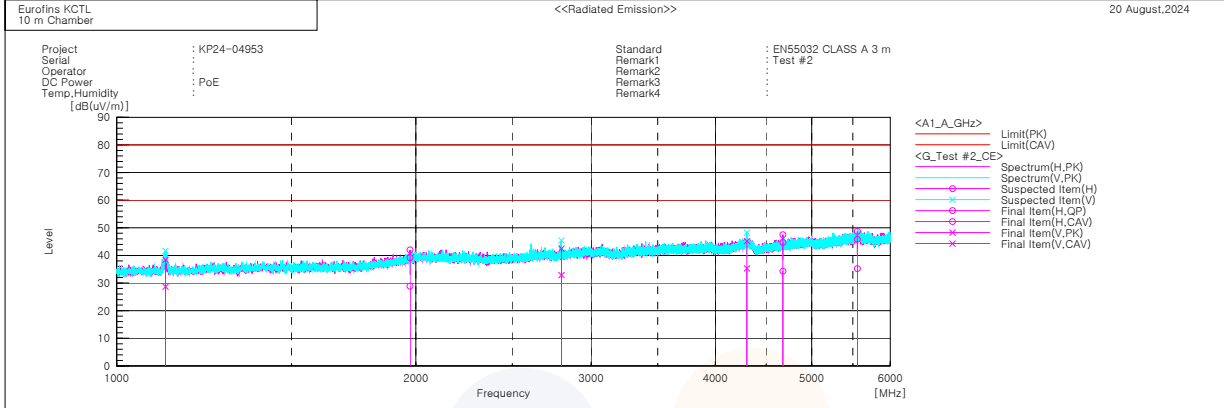
30 MHz ~ 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	37.372	V	40.2	-6.0	34.2	40.0	5.8	256.0	130.0
2	47.811	V	47.5	-10.9	36.6	40.0	3.4	335.0	328.0
3	50.420	V	47.3	-12.2	35.1	40.0	4.9	117.0	293.0
4	94.411	H	41.4	-11.4	30.0	40.0	10.0	358.0	261.0
5	250.007	H	43.2	-6.4	36.8	47.0	10.2	324.0	52.0
6	480.006	H	26.5	0.4	26.9	47.0	20.1	227.0	167.0
7	520.020	V	27.9	0.8	28.7	47.0	18.3	183.0	343.0
8	933.018	V	27.5	8.8	36.3	47.0	10.7	142.0	86.0

1 GHz ~ 6 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]
1	1119.756	V	43.9	34.2	-5.5	38.4	28.7	80.0	60.0	41.6	31.3	373.0	66.0
2	1972.549	H	37.9	27.6	1.3	39.2	28.9	80.0	60.0	40.8	31.1	108.0	15.0
3	2801.090	V	38.9	29.3	3.6	42.5	32.9	80.0	60.0	37.5	27.1	218.0	216.0
4	4304.165	V	36.3	26.4	8.9	45.2	35.3	80.0	60.0	34.8	24.7	159.0	311.0
5	4678.434	H	36.5	26.1	8.2	44.7	34.3	80.0	60.0	35.3	25.7	199.0	147.0
6	5559.478	H	34.2	23.6	11.6	45.8	35.2	80.0	60.0	34.2	24.8	329.0	47.0

6.3 Harmonics

Testing voltage	230 V, 50 Hz				
Test facility	EMI Test area(6F)				
Date	2024-08-22				
Temperature(°C)	26.2 °C	Humidity (% R.H.)	42.1 % R.H.	Pressure (kPa)	100.7 kPa

6.3.1 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 as belonging to Class B, C or D.

- Balanced three-phase equipment;
- Household appliances, excluding those specified as belonging to Class B, C or D;
- Vacuum cleaners;
- High pressure cleaners;
- Tools, excluding portable tools;
- Independent phase control dimmers;
- Audio equipment;
- Professional luminaires for stage lighting and studios.

NOTE 1 Equipment that can be shown to have a significant effect on the supply system might be reclassified in future edition of this document, taking into account the following factors:

- Number of pieces of equipment in use;
- Duration of use;
- Simultaneity of use;
- Power consumption;
- Harmonic spectrum, including phase

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 6.3.2 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).

NOTE 2 Class D limits are reserved for equipment that, by virtue of the factors listed in note 1, can be shown to have a pronounced effect on the public electricity supply system.



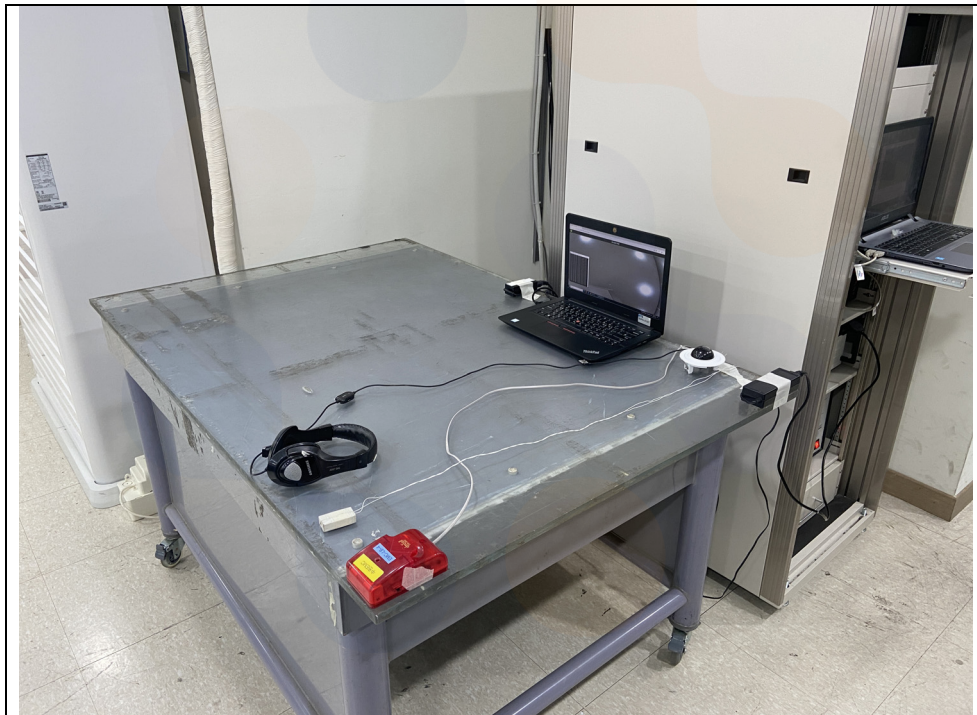
6.3.2 Used equipments

Date: 2024-08-22

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
AC POWER SOURCE	N4A06-M	91G-13467	N4L	2025.03.22	<input checked="" type="checkbox"/>
IMPEDANCE NETWORK	IMP161	91G-13380	N4L	2025.03.22	<input checked="" type="checkbox"/>
POWER ANALYZER	PPA5500	162-05729	N4L	2025.03.25	<input checked="" type="checkbox"/>



6.3.3 Photographs of test setup

[Test #1]

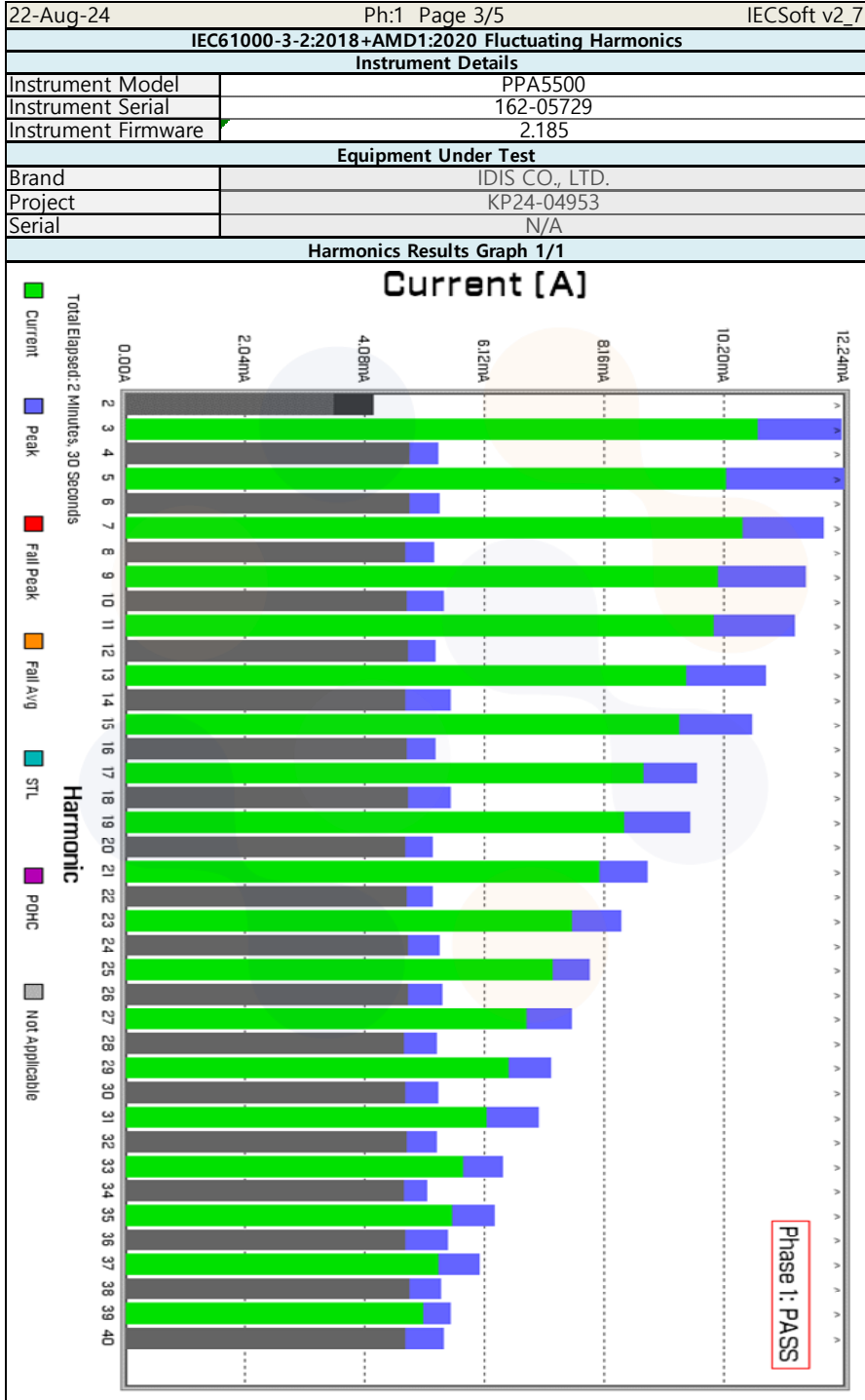


6.3.4 Measurement result

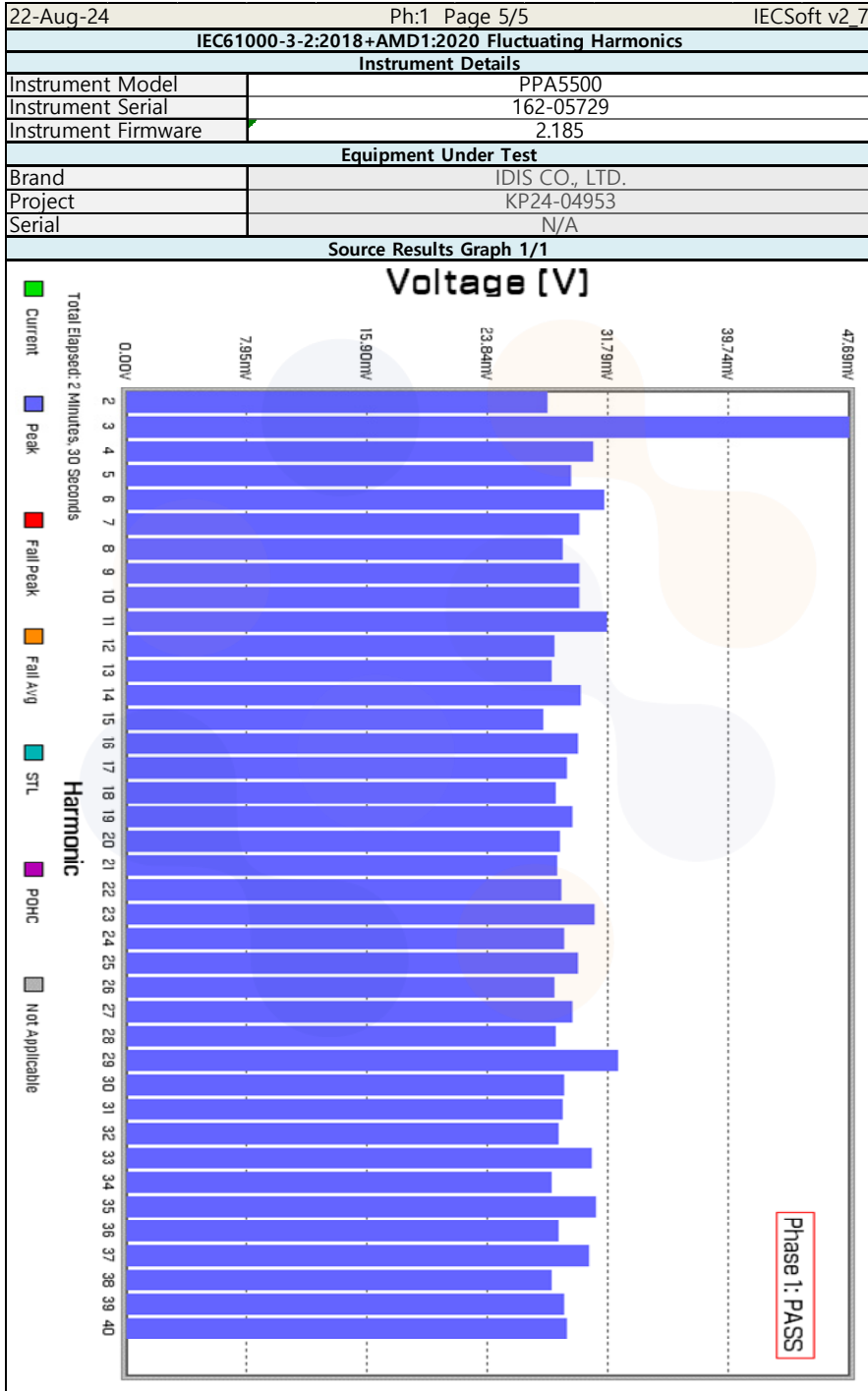
[Test #1]

22-Aug-24		Ph:1 Page 1/5		IECSoft v2.7	
		IEC61000-3-2:2018+AMD1:2020			
Fluctuating Harmonics					
Instrument Details					
Instrument Model	PPA5500				
Serial Number	162-05729				
Firmware Version	2.185				
N4L Calibration Date					
Instrument Version	Standard				
Source Details					
Source Model	N4A06				
Source Serial	91J-13467				
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	IDIS CO., LTD.				
Project	KP24-04953				
Serial	N/A				
Impedance Network ID	N/A				
Test Conditions					
	User Entered		Measured		
Rated Voltage	N/A		243.753V		
Rated Current	N/A		64.520mA		
Rated Frequency	N/A		50.000Hz		
Rated Power	N/A		2.260W		
Additional Test Information					
Measured Power Factor	0.144				
Max Current THD	86.14%				
Average THC	41.684mA				
Max Power	2.665W				
Max F.Current	52.057mA				
Average F.Current	51.302mA				
Minimum Current	100A				
Test Duration	2.5 minutes				
Additional Test Details					
Operator	N/A				
Lab Name	N/A				
Location	N/A				
Notes					
Signature					
Results	Test - N/A. Rated Power < 75W				
Test not applicable With the exception of lighting equipment section 7 of the IEC61000-3-2:2018+AMD1:2020 standard declares that no Harmonic current limits are specified for equipment with a rated power of 75W or less.					

22-Aug-24		Ph:1 Page 2/5			IECSoft v2_7		
IEC61000-3-2:2018+AMD1:2020 Fluctuating Harmonics							
Instrument Details							
Instrument Model	PPA5500						
Instrument Serial	162-05729						
Instrument Firmware	2.185						
Equipment Under Test							
Brand	IDIS CO., LTD.						
Project	KP24-04953						
Serial	N/A						
Extra Test Information							
Current THDG	80.53%						
	Average	Peak		Limit			
THC	41.684mA	44.549mA		N/A			
POHC (Clause C.2)	20.558mA	21.184mA		251.375mA			
Voltage Crest Factor	1.411	1.413		N/A			
Current Crest Factor	877.502m	1.58		N/A			
Harmonics Results 1/1							
Harmonic	Status	Avg (A)	Avg L(A)	Avg %ofL	Peak (A)	Peak L(A)	Peak %ofL
1	N/A	0.0513	N/A	N/A	0.05206	N/A	N/A
2	N/A	0.00356	N/A	N/A	0.00424	N/A	N/A
3	N/A	0.01077	N/A	N/A	0.01221	N/A	N/A
4	N/A	0.00484	N/A	N/A	0.00533	N/A	N/A
5	N/A	0.01023	N/A	N/A	0.01224	N/A	N/A
6	N/A	0.00483	N/A	N/A	0.00535	N/A	N/A
7	N/A	0.01052	N/A	N/A	0.01191	N/A	N/A
8	N/A	0.00477	N/A	N/A	0.00527	N/A	N/A
9	N/A	0.01009	N/A	N/A	0.01159	N/A	N/A
10	N/A	0.00479	N/A	N/A	0.00542	N/A	N/A
11	N/A	0.01002	N/A	N/A	0.0114	N/A	N/A
12	N/A	0.00482	N/A	N/A	0.0053	N/A	N/A
13	N/A	0.00957	N/A	N/A	0.01091	N/A	N/A
14	N/A	0.00478	N/A	N/A	0.00554	N/A	N/A
15	N/A	0.00943	N/A	N/A	0.01068	N/A	N/A
16	N/A	0.0048	N/A	N/A	0.0053	N/A	N/A
17	N/A	0.00883	N/A	N/A	0.00974	N/A	N/A
18	N/A	0.00481	N/A	N/A	0.00555	N/A	N/A
19	N/A	0.00849	N/A	N/A	0.00961	N/A	N/A
20	N/A	0.00477	N/A	N/A	0.00523	N/A	N/A
21	N/A	0.00807	N/A	N/A	0.00889	N/A	N/A
22	N/A	0.00479	N/A	N/A	0.00524	N/A	N/A
23	N/A	0.00761	N/A	N/A	0.00845	N/A	N/A
24	N/A	0.00482	N/A	N/A	0.00536	N/A	N/A
25	N/A	0.00728	N/A	N/A	0.0079	N/A	N/A
26	N/A	0.00482	N/A	N/A	0.00541	N/A	N/A
27	N/A	0.00684	N/A	N/A	0.00761	N/A	N/A
28	N/A	0.00476	N/A	N/A	0.00532	N/A	N/A
29	N/A	0.00653	N/A	N/A	0.00727	N/A	N/A
30	N/A	0.00476	N/A	N/A	0.00533	N/A	N/A
31	N/A	0.00616	N/A	N/A	0.00705	N/A	N/A
32	N/A	0.00479	N/A	N/A	0.00532	N/A	N/A
33	N/A	0.00576	N/A	N/A	0.00644	N/A	N/A
34	N/A	0.00474	N/A	N/A	0.00516	N/A	N/A
35	N/A	0.00558	N/A	N/A	0.00629	N/A	N/A
36	N/A	0.00478	N/A	N/A	0.00549	N/A	N/A
37	N/A	0.00533	N/A	N/A	0.00604	N/A	N/A
38	N/A	0.00484	N/A	N/A	0.00539	N/A	N/A
39	N/A	0.00509	N/A	N/A	0.00556	N/A	N/A
40	N/A	0.00476	N/A	N/A	0.00542	N/A	N/A



22-Aug-24		Ph:1 Page 4/5		IECSoft v2_7	
IEC61000-3-2:2018+AMD1:2020 Fluctuating Harmonics					
Instrument Details					
Instrument Model		PPA5500			
Instrument Serial		162-05729			
Instrument Firmware		2.185			
Equipment Under Test					
Brand		IDIS CO., LTD.			
Project		KP24-04953			
Serial		N/A			
Extra Test Information					
Voltage THDS		0.07%			
Source Results 1/1					
Harmonic	Status	Peak (V)	Average (V)	Limit (V)	
1	PASS	243.73	243.72	No Limit	
2	PASS	0.027856	0.022291	0.487505	
3	PASS	0.047688	0.041563	2.193773	
4	PASS	0.030859	0.025841	0.487505	
5	PASS	0.029373	0.024316	0.97501	
6	PASS	0.031567	0.025649	0.487505	
7	PASS	0.029925	0.023418	0.731258	
8	PASS	0.028868	0.023689	0.487505	
9	PASS	0.029912	0.024302	0.487505	
10	PASS	0.029894	0.023489	0.487505	
11	PASS	0.031714	0.026358	0.243753	
12	PASS	0.028258	0.022783	0.243753	
13	PASS	0.02809	0.02352	0.243753	
14	PASS	0.029982	0.023358	0.243753	
15	PASS	0.027574	0.023408	0.243753	
16	PASS	0.029828	0.023214	0.243753	
17	PASS	0.029123	0.023861	0.243753	
18	PASS	0.028322	0.023691	0.243753	
19	PASS	0.029471	0.02362	0.243753	
20	PASS	0.028672	0.023134	0.243753	
21	PASS	0.028501	0.024007	0.243753	
22	PASS	0.028691	0.023681	0.243753	
23	PASS	0.030924	0.024405	0.243753	
24	PASS	0.028925	0.023698	0.243753	
25	PASS	0.029859	0.023954	0.243753	
26	PASS	0.028236	0.023492	0.243753	
27	PASS	0.029495	0.023366	0.243753	
28	PASS	0.028376	0.023093	0.243753	
29	PASS	0.03252	0.025688	0.243753	
30	PASS	0.028932	0.023589	0.243753	
31	PASS	0.028784	0.023751	0.243753	
32	PASS	0.028506	0.023455	0.243753	
33	PASS	0.03076	0.024994	0.243753	
34	PASS	0.028134	0.022952	0.243753	
35	PASS	0.031015	0.025254	0.243753	
36	PASS	0.028556	0.023225	0.243753	
37	PASS	0.030591	0.023726	0.243753	
38	PASS	0.028105	0.023435	0.243753	
39	PASS	0.028921	0.024084	0.243753	
40	PASS	0.029095	0.023612	0.243753	



6.4 Flicker

Testing voltage	230 V, 50 Hz				
Test facility	EMI Test area(6F)				
Date	2024-08-22				
Temperature(°C)	26.2 °C	Humidity (% R.H.)	42.1 % R.H.	Pressure (kPa)	100.7 kPa

6.4.1 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_{ft} = 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.

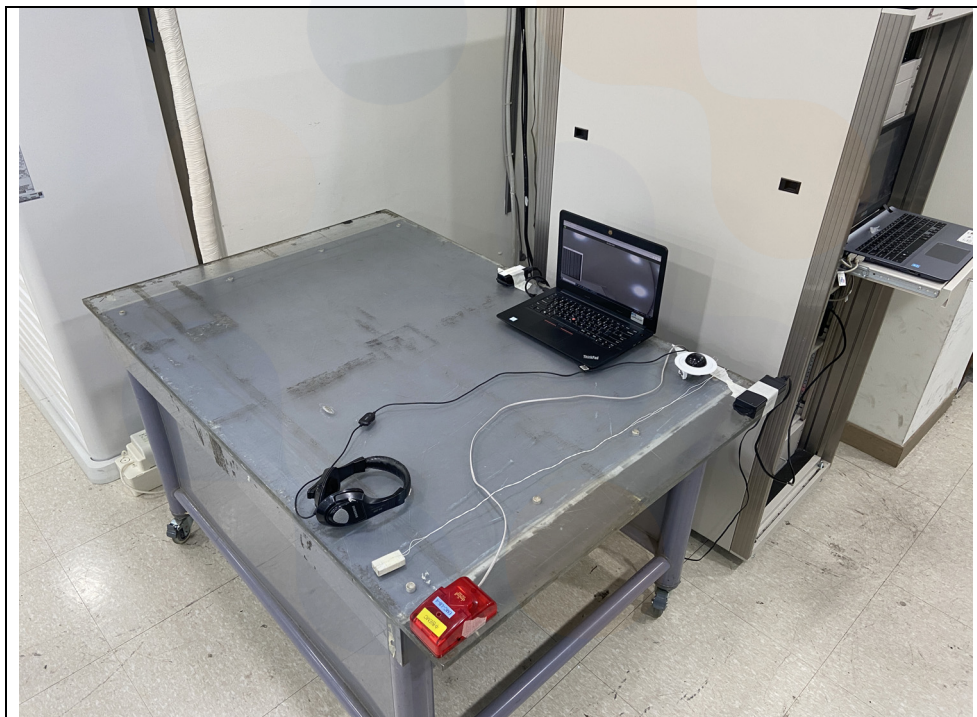
6.4.2 Used equipments

Date: 2024-08-22

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
AC POWER SOURCE	N4A06-M	91G-13467	N4L	2025.03.22	<input checked="" type="checkbox"/>
IMPEDANCE NETWORK	IMP161	91G-13380	N4L	2025.03.22	<input checked="" type="checkbox"/>
POWER ANALYZER	PPA5500	162-05729	N4L	2025.03.25	<input checked="" type="checkbox"/>



6.4.3 Photographs of test setup

[Test #1]

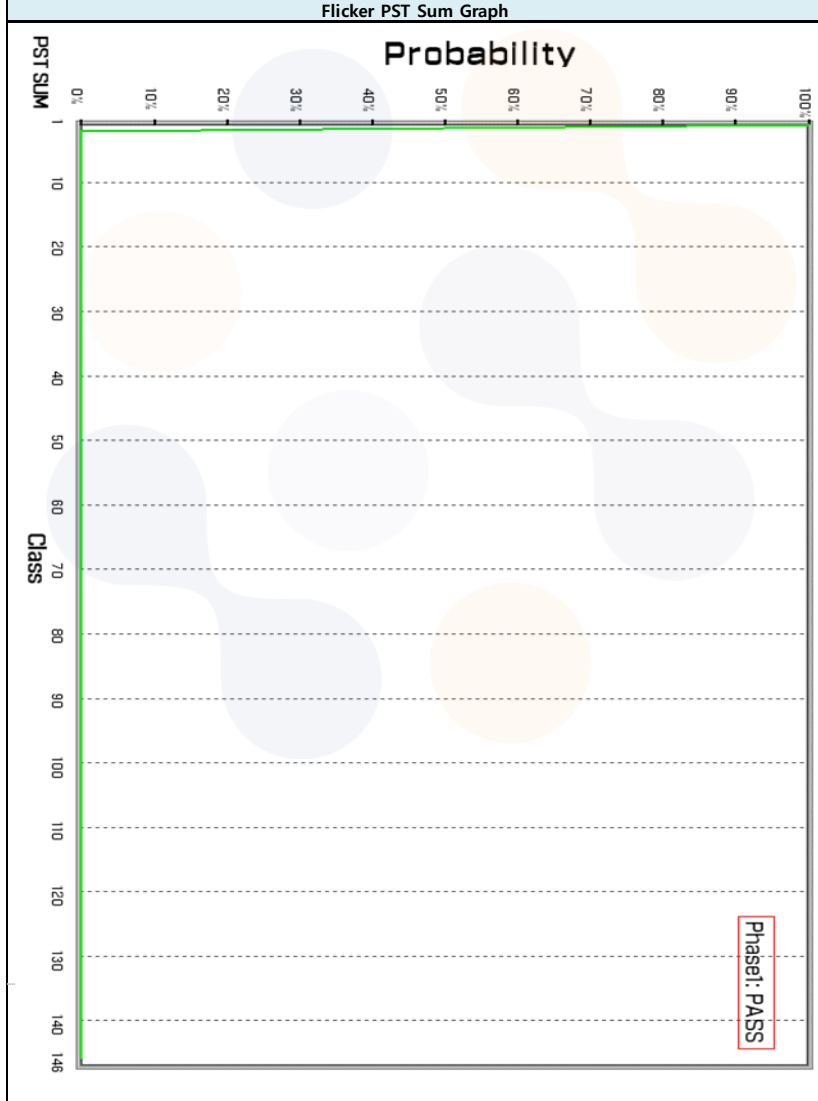


6.4.4 Measurement result

[Test #1]

22-Aug-24		Ph:1 Page 1/2		IECSoft v2.7	
		IEC61000-3-3:2013+AMD1:2017+AMD2:2021			
Flickermeter					
Instrument Details					
Instrument Model	PPA5500				
Serial Number	162-05729				
Firmware Version	2.185				
N4L Calibration Date					
Instrument Version	Standard				
Source Details					
Source Model	N4A06				
Source Serial	91J-13467				
Source Frequency	50.000Hz				
Source Voltage RMS	230.000V				
Test Settings					
Class	Voltage				
Mode	Normal (4.0%)				
Minimum Current	10A				
PST	10 minutes				
PLT	1 PSTs				
Equipment Under Test					
Brand	IDIS CO., LTD.				
Project	KP24-04953				
Serial	N/A				
Impedance Network ID	N/A				
Test Conditions					
	User Entered		Measured		
Rated Voltage	N/A		243.771V		
Rated Current	N/A		N/A		
Rated Frequency	N/A		50.000Hz		
Rated Power	N/A		N/A		
D max	0.0461% (Limit: 4.0%)				
T max	0.0000 s (Limit: 0.5 s)				
DC max	0.0072% (Limit: 3.3%)				
Additional Test Details					
Operator	N/A				
Lab Name	N/A				
Location	N/A				
Notes					
Signature					
Results	Phase1: PASS				

22-Aug-24		Ph:1 Page 2/2		IECSoft v2.7				
IEC61000-3-3:2013+AMD1:2017+AMD2:2021 Flickermeter								
Instrument Details								
Instrument Model	PPA5500							
Instrument Serial	162-05729							
Instrument Firmware	2.185							
Equipment Under Test								
Brand	IDIS CO., LTD.							
Project	KP24-04953							
Serial	N/A							
Flicker Test Results								
PST no.	Status	DC (%)	Dmax (%)	Tmax (s)	PST	PST Lim	PLT	PLT Lim
1	Phase1: PASS	0.00719	0.04612	0.00000	0.08226	1.00000	0.08226	0.65000



6.5 Electrostatic Discharge

Test level	<input checked="" type="checkbox"/> Contact: ± 6 kV <input checked="" type="checkbox"/> Air: ± 2 kV, ± 4 kV, ± 8 kV <input type="checkbox"/> HCP: ± 6 kV <input checked="" type="checkbox"/> VCP: ± 6 kV				
Discharge impedance	330 Ω / 150 pF				
Number of discharge (Each polarity)	<input checked="" type="checkbox"/> Contact: 10 <input checked="" type="checkbox"/> Air: 10 <input checked="" type="checkbox"/> HCP / VCP: 10				
Interval between discharges	1 s				
Testing voltage	DC 12 V / PoE				
Test facility	Shielded room (6F)				
Date	2024-08-20				
Temperature(°C)	25.1 °C	Humidity (% R.H.)	39.9 % R.H.	Pressure (kPa)	100.4 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.5.1 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 0.8 m above the reference grounded floor. A horizontal coupling plane (HCP) was placed on the table, and Connected to the reference plane via a 470 kΩ resistor located in each end (0.5 mm insulating support between EUT and HCP). In both cases a vertical coupling plane(VCP) OF 0.5 X 0.5 m was located 0.1 m from the EUT's sides. The VCP was connected to the reference plane in the same matter as the HCP.

6.5.2 Used equipments

Date: 2024-08-20

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
ESD SIMULATOR	ONYX30	188964	HAEFELY	2025.03.28	<input checked="" type="checkbox"/>
HCP	-	-	-	-	<input type="checkbox"/>
VCP	-	-	-	-	<input checked="" type="checkbox"/>

6.5.3 Photographs of test setup

[Test #1]





[Test #2]

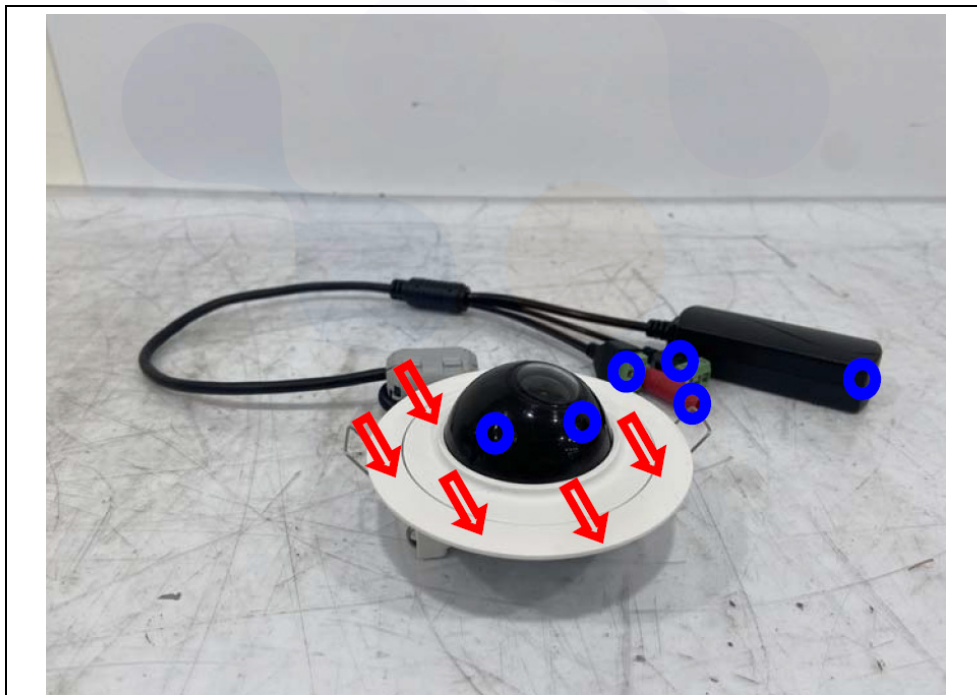
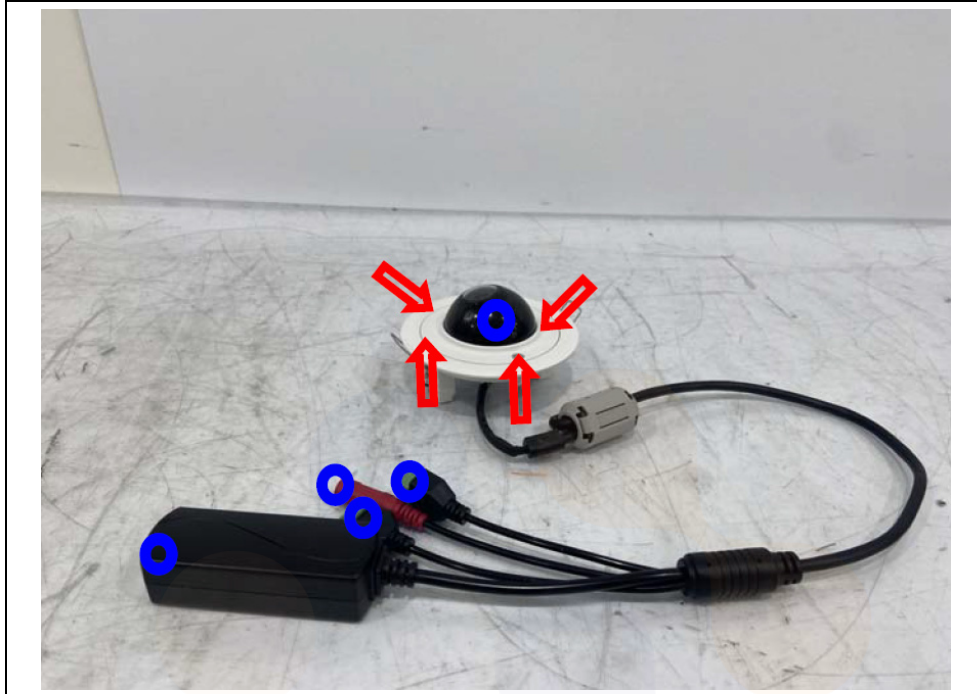


6.5.4 Measurement result

Electrostatic Discharge (Test Point)

Air discharge 
Contact discharge 





[Test #1, Test #2]

HCP/VCP discharge

Location(EUT)	Applied level (±)	Result
HCP (All 4 sides)	± 6 kV	-
VCP (All 4 sides)	± 6 kV	Pass

Contact discharge

Location(EUT)	Applied level (±)	Result
Front	± 6 kV	Pass
Rear	± 6 kV	Pass
Left	± 6 kV	Pass
Right	± 6 kV	Pass

Air discharge

Location(EUT)	Applied level (±)	Result
Front	± 2 kV, ± 4 kV, ± 8 kV	Pass
Rear	± 2 kV, ± 4 kV, ± 8 kV	Pass
Left	± 2 kV, ± 4 kV, ± 8 kV	Pass
Right	± 2 kV, ± 4 kV, ± 8 kV	Pass

6.6 Radio Frequency Electromagnetic Fields

Tested frequency	80 MHz ~ 1 GHz, 1 GHz ~ 2.7 GHz				
Test level & Modulation	1 V/m, 3 V/m, 10 V/m, 80 % Amplitude Modulation (1 kHz) 1 V/m, 3 V/m, 10 V/m, Pulse Modulation (1 Hz (0.5 s ON: 0.5s OFF))				
Frequency Step	1 % step				
Dwell time	3 s				
Distance	3 m from EUT to tip of antenna				
Testing voltage	DC 12 V / PoE				
Test facility	6F Fully anechoic chamber (3 m)				
Date	2024-08-21				
Temperature (°C)	25.5 °C	Humidity (% R.H.)	41.2 % R.H.	Pressure (kPa)	100.7 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.6.1 Measurement procedure

The test was performed at 3 m 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 0.8 m above the floor.

The EUT was tested all sides, horizontal and vertical polarization.

6.6.2 Used equipments

Date: 2024-08-21

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
POWER METER	PM2002	302852	AR	2025.03.21	<input checked="" type="checkbox"/>
POWER HEAD	PH2000	26872	AR	2025.03.21	<input checked="" type="checkbox"/>
POWER HEAD	PH2000	24889	AR	2025.03.21	<input checked="" type="checkbox"/>
DUAL DIRECTIOAL COUPLER	DC6180	303976	AR	2025.08.13	<input checked="" type="checkbox"/>
Dual Directional Coupler	DC7200A	0349434	AR	2025.03.21	<input checked="" type="checkbox"/>
Signal Generator	SMB100A	101737	R&S	2025.03.21	<input checked="" type="checkbox"/>
RF Power Amplifier	CBA 1G-300B	V2229-0817	TESEQ	-	<input checked="" type="checkbox"/>
RF Power Amplifier	100S1G6AB	0349688	AR	-	<input checked="" type="checkbox"/>
Broadband Ant.	LPDA-0803	130269	ETS-LINDGREN	-	<input checked="" type="checkbox"/>
Antenna master	-	-	ETS-LINDGREN	-	<input checked="" type="checkbox"/>
Antenna master	-	-	-	-	<input checked="" type="checkbox"/>
Stacked Log.-Per. Antenna 0.1 GHz - 9 GHz	STLP9149	9149-511	SCHWARZBECK	-	<input checked="" type="checkbox"/>

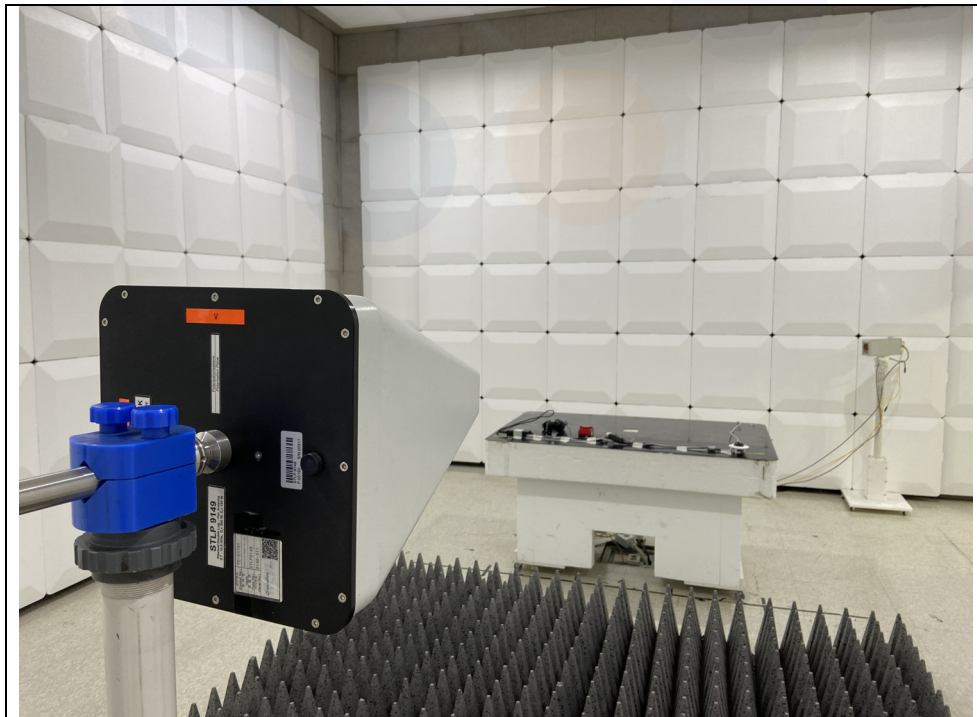
6.6.3 Photographs of test setup

[Test #1]

[80 MHz ~ 1 GHz]

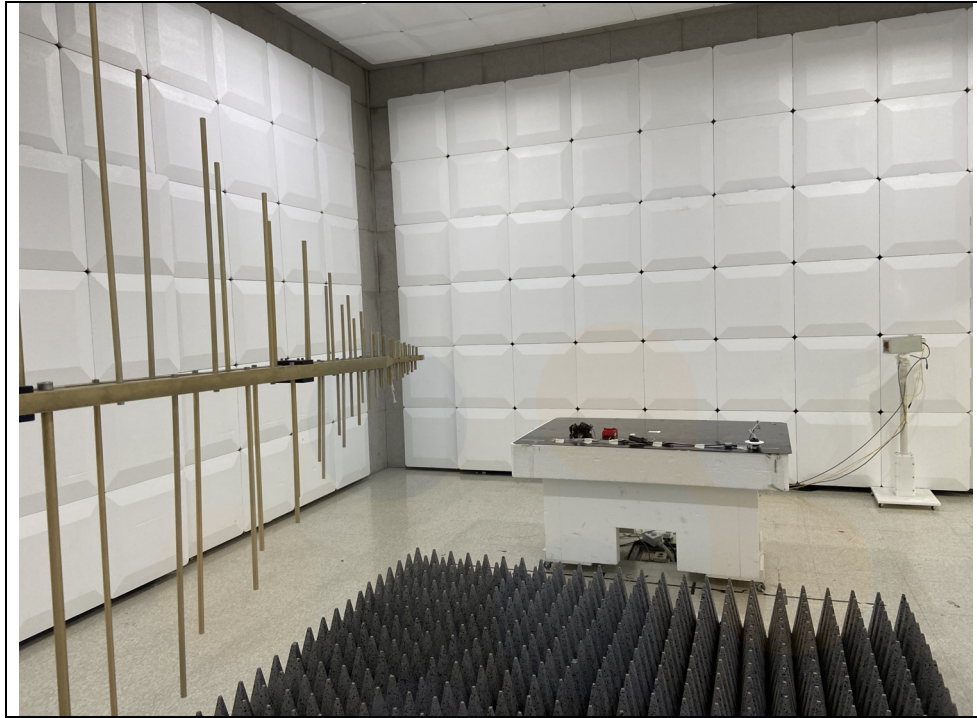


[1 GHz ~ 2.7 GHz]

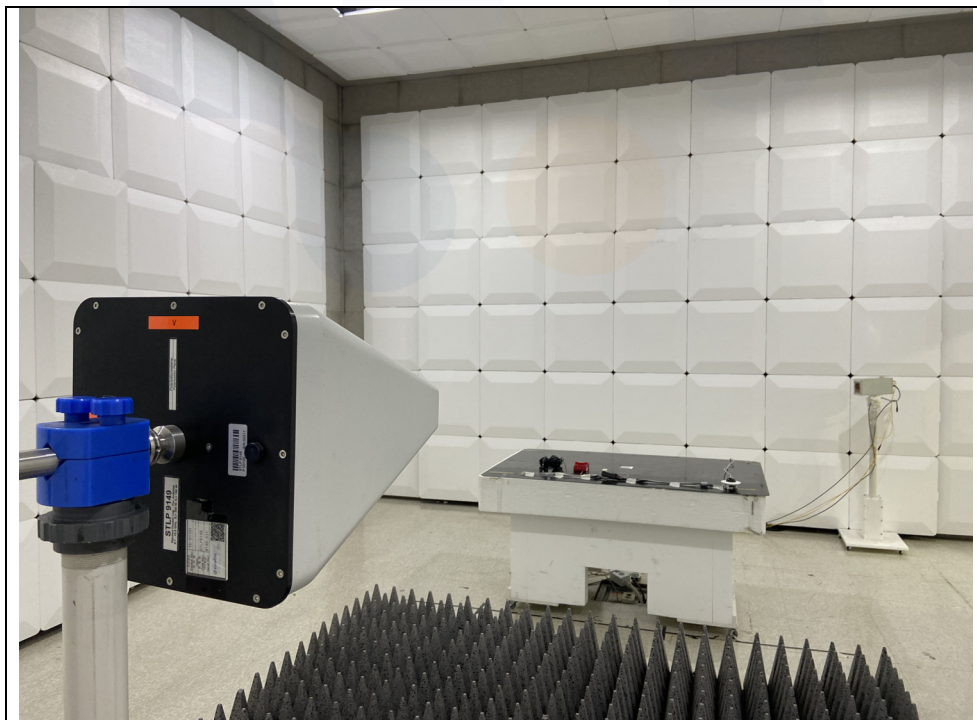


[Test #2]

[80 MHz ~ 1 GHz]



[1 GHz ~ 2.7 GHz]



6.6.4 Measurement result

[Test #1, Test #2]

Location(EUT)	Antenna polarization	Result
Front side	Horizontal	Pass
	Vertical	Pass
Rear side	Horizontal	Pass
	Vertical	Pass
Left side	Horizontal	Pass
	Vertical	Pass
Right side	Horizontal	Pass
	Vertical	Pass

6.7 Electric Fast Transient/BURST

Coupling	<input checked="" type="checkbox"/> DC 12 V <input checked="" type="checkbox"/> Signal: Clamp <input checked="" type="checkbox"/> Telecommunication: Clamp				
Test level	<input checked="" type="checkbox"/> DC 12 V: ± 1 kV Peak <input checked="" type="checkbox"/> Signal: ± 1 kV Peak <input checked="" type="checkbox"/> Telecommunication: ± 1 kV Peak				
Repetition frequency	100 kHz, Tr/Th = 5 / 50 ns				
Coupling time (Minimum)	60 s				
Testing voltage	DC 12 V / PoE				
Test facility	Shielded room (6F)				
Date	2024-08-22				
Temperature(°C)	26.3 °C	Humidity (% R.H.)	42.3 % R.H.	Pressure (kPa)	100.8 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.7.1 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 0.1 m above the ground 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.

6.7.2 Used equipments

Date: 2024-08-22

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMC IMMUNITY TEST SYSTEM	IMU-MGE	109937-1507	EMC PARTNER	2025.08.13	<input checked="" type="checkbox"/>
Capacitive Coupling clamp	CN-EFT1000	1828	EMC PARTNER	2025.04.26	<input checked="" type="checkbox"/>

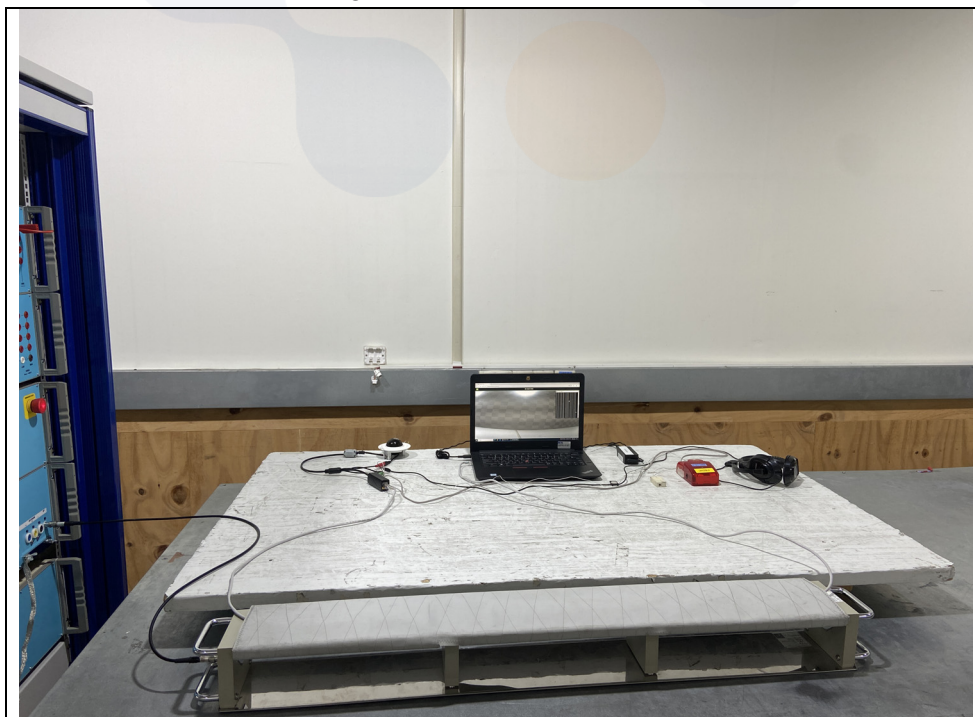
6.7.3 Photographs of test setup

[Test #1]

[DC Line]



[Signal, Telecommunication]



[Test #2]

[Signal, Telecommunication]



6.7.4 Measurement result

DC Line [Test #1]

Coupling point	(+)	(-)	Result
PLUS	+ 1 kV	- 1 kV	Pass
NEG	+ 1 kV	- 1 kV	Pass
PLUS-NEG	+ 1 kV	- 1 kV	Pass

Signal [Test #1, Test #2]

Coupling point	(+)	(-)	Result
Audio In/Out/G	+ 1 kV	- 1 kV	Pass
Alarm In/Out/G	+ 1 kV	- 1 kV	Pass

Telecommunication [Test #1, Test #2]

Coupling point	(+)	(-)	Result
LAN(PoE)	+ 1 kV	- 1 kV	Pass
LAN(RJ-45)	+ 1 kV	- 1 kV	Pass

6.8 Surge

Coupling	<input checked="" type="checkbox"/> DC 12 V: Direct <input checked="" type="checkbox"/> Signal: CDN <input checked="" type="checkbox"/> Telecommunication: CDN				
Test level	<input checked="" type="checkbox"/> DC 12 V: ± 0.5 kV, ± 1 kV <input checked="" type="checkbox"/> Signal: ± 0.5 kV, ± 1 kV <input checked="" type="checkbox"/> Telecommunication: ± 0.5 kV, ± 1 kV				
Coupling Impedance	<input type="checkbox"/> Differential mode: $18 \mu\text{F}$ <input checked="" type="checkbox"/> $40 \Omega + 0.5 \mu\text{F}$		<input type="checkbox"/> Common mode: $10 \Omega + 9 \mu\text{F}$ <input checked="" type="checkbox"/> Direct		
Surge pulse shape	Tr/Th = 1.2 / 50 μs				
Angles	0 °, 90 °, 180 °, 270 °				
Number of surge	5				
Coupling time	60 s				
Testing voltage	DC 12 V / PoE				
Test facility	Shielded room (6F)				
Date	2024-08-22				
Temperature (°C)	26.5 °C	Humidity (% R.H.)	42.6 % R.H.	Pressure (kPa)	100.6 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.8.1 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 & table top equipment, EUT was placed on a wooden table.

6.8.2 Used equipments

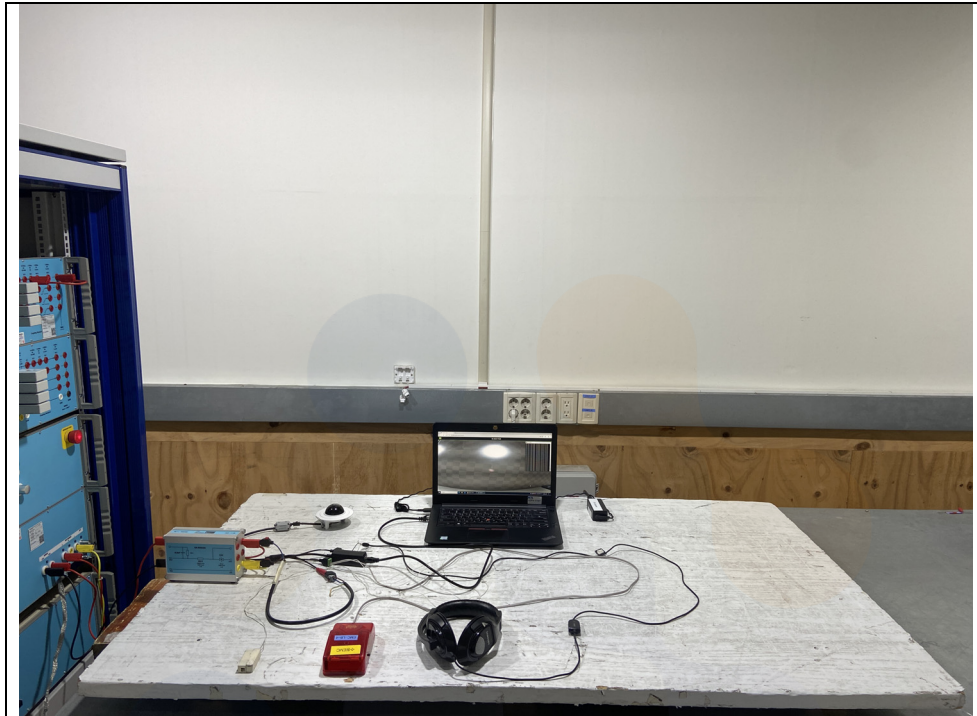
Date: 2024-08-22

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMC IMMUNITY TEST SYSTEM	IMU-MGE	109937-1507	EMC PARTNER	2025.08.13	<input checked="" type="checkbox"/>
COUPLER/DECOUPLER NETWORK	CDN-UTP8 ED3	1592	EMC PARTNER	2025.08.14	<input checked="" type="checkbox"/>
SURGE COUPLING NETWORK	CN-R40C05	1562	EMC PARTNER	2025.08.14	<input checked="" type="checkbox"/>

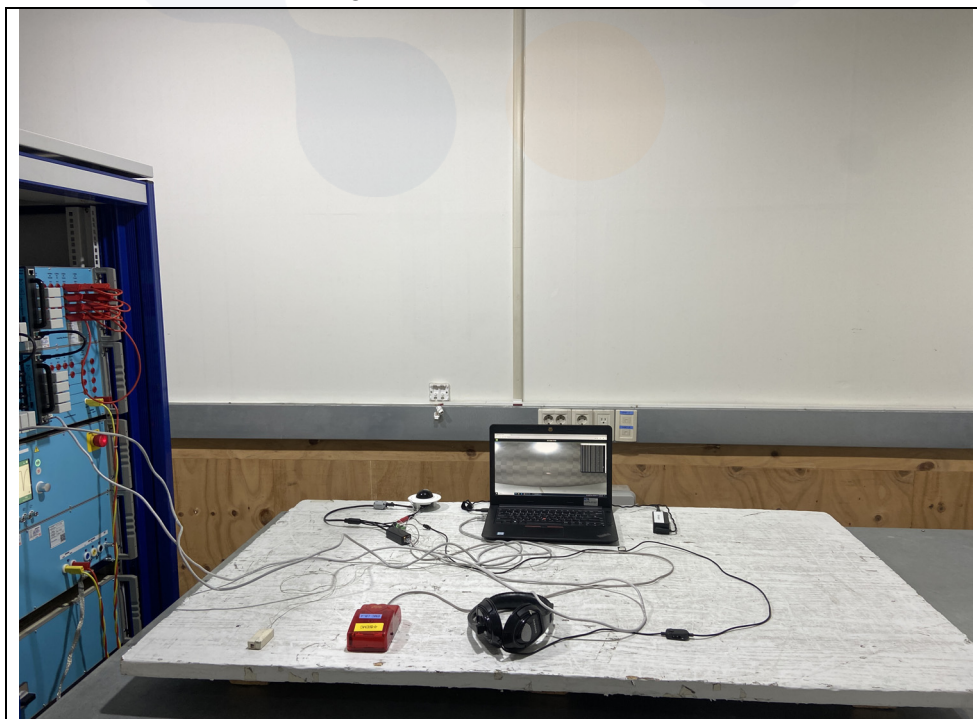
6.8.3 Photographs of test setup

[Test #1]

[DC Line]



[Signal, Telecommunication]



[Test #2]

[Signal, Telecommunication]



6.8.4 Measurement result

DC Line [Test #1]

Coupling point	(+)	(-)	Result
DC 12 V	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

Signal [Test #1, Test #2]

Coupling point	(+)	(-)	Result
Audio In/Out/G	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
Alarm In/Out/G	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

Telecommunication [Test #1, Test #2]

Coupling point	(+)	(-)	Result
LAN(PoE)	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass
LAN(RJ-45)	+ 0.5 kV, + 1 kV	- 0.5 kV, - 1 kV	Pass

6.9 Conducted Immunity

Tested frequency	0.15 MHz ~ 100 MHz				
Test level & Modulation	1 V/m, 3 V/m, 10 V/m, 80 % Amplitude Modulation (1 kHz) 1 V/m, 3 V/m, 10 V/m, Pulse Modulation (1 Hz (0.5 s ON: 0.5s OFF))				
Frequency Step	1 % step				
Dwell time	3 s				
Coupling method	<input checked="" type="checkbox"/> DC 12 V: CDN(M2) <input checked="" type="checkbox"/> Signal: Clamp <input checked="" type="checkbox"/> Telecommunication: CDN(T8-RJ45)				
Testing voltage	DC 12 V / PoE				
Test facility	Shielded room (6F)				
Date	2024-08-22				
Temperature(°C)	26.2 °C	Humidity (% R.H.)	41.7 % R.H.	Pressure (kPa)	100.5 kPa
Remarks	Pass -There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs.				

6.9.1 Measurement procedure

A ground reference plane was located on the floor.

The test was performed on a ground reference plane on a 0.1 m wooden table.

This test were performed using CDN for mains, clamp for signal and injection probe.

The frequency range was swept from 0.15 MHz to 80 MHz. This frequency range was Modulated with 1 kHz sine wave at 80 %.

The signal generators provided the modulated frequency at a 1 % step size.

The power and all network cable, I/O cables longer than 3 m length were tested.

6.9.2 Used equipments

Date: 2024-08-22

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
POWER SENSOR	RPR2006C	RPR2006C-2101024	RADITEQ	2025.08.13	<input checked="" type="checkbox"/>
POWER SENSOR	RPR2006C	RPR2006C-2101025	RADITEQ	2025.08.13	<input checked="" type="checkbox"/>
SIGNAL GENERATOR	RGN2400A	-	RADITEQ	2025.08.13	<input checked="" type="checkbox"/>
POWER AMPLIFIER	RPA0925A-075	AMP02-2101002	RADITEQ	2025.08.14	<input checked="" type="checkbox"/>
Attenuation	ATT6/80	P1402129094	EM TEST	2025.03.21	<input checked="" type="checkbox"/>
C.D.N	CDN M2/M3	P1402128648	EM TEST	2025.03.21	<input checked="" type="checkbox"/>
C.D.N	CDN T8 RJ45	P1404129872	EM TEST	2025.03.21	<input checked="" type="checkbox"/>
Electromagnetic Injection Clamp	EM101	36197	EM TEST	2025.03.25	<input checked="" type="checkbox"/>

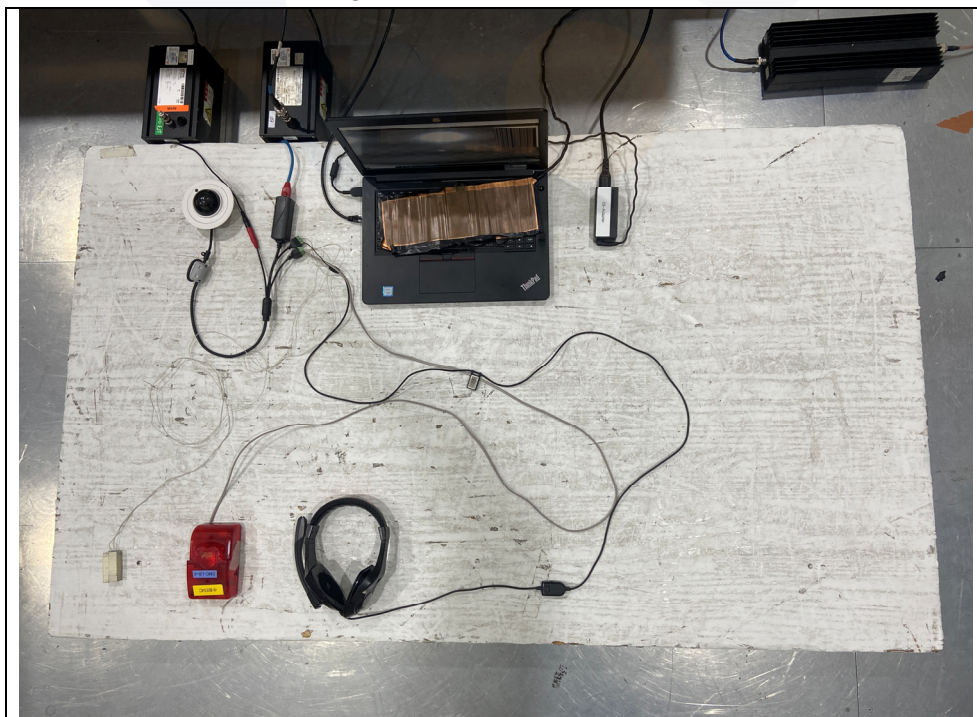
6.9.3 Photographs of test setup

[Test #1]

[DC Line]



[Signal, Telecommunication]



[Test #2]

[Signal, Telecommunication]



6.9.4 Measurement result

DC Line [Test #1]

Coupling point	Coupling method	Result
DC 12 V	CDN(M2)	Pass

Signal [Test #1, Test #2]

Coupling point	Coupling method	Result
Audio In/Out	Clamp	Pass
Alarm In/Out	Clamp	Pass

Telecommunication [Test #1, Test #2]

Coupling point	Coupling method	Result
LAN(PoE)	CDN(T8-RJ45)	Pass
LAN(RJ-45)	CDN(T8-RJ45)	Pass

7. EUT photographs

Front View



Rear View



Left View



Right View



Top View



Bottom View



Inside



-End-