



TEST REPORT



Report No. : KES-EM244149

Page 1 / 90

KES Co., Ltd.

#3002, #3503, #3701, 40, Simin-daero365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Republic of Korea

Tel : +82-31-425-6200, Fax : +82-31-341-3838

1. Client

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

2. Sample Description

Product name : IP Controller

Model/Type No. : NHP-P200

Variant Model : -

Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.

Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended Area, Nam Son Ward, Bac Ninh City, Bac Ninh Province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)

3. Date of Receipt : Nov. 27, 2024

4. Test date : Dec. 16, 2024 ~ Dec. 25, 2024

5. Date of Issue : Jan. 09, 2025

6. Test Results : In Compliance

Tested by

Reviewed by

Jae Won, Lee
EMC Test Engineer

Dae Jung, Choi
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
Jan. 09, 2025	KES-EM244149	Issued

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences	5
1.3	Device Modifications	5
1.4	Equipment Under Test	5
1.5	Support Equipments	5
1.6	External I/O Cabling.....	6
1.7	EUT Operating Mode(s).....	8
1.8	Configuration	9
1.9	Remarks when standards applied	11
1.10	Calibration Details of Equipment Used for Measurement	11
1.11	Test Facility	11
1.12	Laboratory Accreditations and Listings	12
2.0	Test Regulations	13
2.1	Conducted Emissions at Mains Power Ports.....	14
2.2	Conducted Emissions at Telecommunication Ports.....	15
2.3	Radiated Electric Field Emissions(Below 1 GHz).....	16
2.4	Radiated Electric Field Emissions(Above 1 GHz)	17
2.5	Harmonic Current Emissions	18
2.6	Voltage Fluctuations and Flicker.....	19
3.0	Criteria for compliance	20
3.1	Electrostatic Discharge	22
3.2	Radiated Electric Field Immunity	28
3.3	Electrical Fast Transients/Bursts	31
3.4	Surge Transients.....	35
3.5	Conducted Disturbance	39
3.6	Voltage Dips and Short Interruptions	42
APPENDIX A – TEST DATA		44
Conducted Emissions at Mains Power Ports		44
Conducted Emissions at Telecommunication Ports		50
Radiated Electric Field Emissions(Below 1 GHz)		53
Radiated Electric Field Emissions(Above 1 GHz).....		56
Harmonic Current Emissions and Voltage Fluctuations and Flicker		59
Test Setup Photos and Configuration.....		64
Conducted Emissions at Mains Power Ports		64
Conducted Emissions at Telecommunication Ports		65
Radiated Electric Field Emissions(Below 1 GHz)		68
Radiated Electric Field Emissions(Above 1 GHz).....		71
Harmonic Current Emissions and Voltage Fluctuations and Flicker		75
Electrostatic Discharge.....		76
Radiated Electric Field Immunity		77
Electrical Fast Transients/Bursts		79
Surge Transients		81
Conducted Disturbance.....		83
Voltage Dips and Short Interruptions.....		85
EUT External Photographs.....		87
EUT Internal Photographs		88



1.0 General Product Description

Main Specifications of EUT are:

Internal clock frequency : 1.1 GHz

Hardware	
Readers	2 OSDP/Wiegand Reader Port (capable of supporting 4 OSDP Readers or 2 Wiegand Readers)
Reader Port Specs	OSDP Protocol (v2.2), Legacy Wiegand Support 500mA @ 12VDC
General Purpose Inputs	9ea : 5 input (2ea Door Position , 2ea REX, 1ea Aux In) + 4 additional input (when OSDP is used) *5 supervised input port (2Door Position Switch, 2 REX, Aux In)
General Purpose Outputs	2 (Door Lock)
Door Output Specs	Dry/12VDC/24VDC Field selectable 30VDC @ Max 2A DRY, 12VDC @ Max 500mA WET, 24VDC @ Max 250mA WET
Dedicated Inputs	Housing tamper (built-in; removal of housing cover, removal from wall) 1 FAI for Power Drop
REX Power Output	12VDC @ Max 100mA (Power output for PIR sensor, REX button, etc.)
Memory	1GB DDR4, 8GB eMMC
Access	
Doors	2 Door
Credentials	50,000
Access Levels	50,000
Event History	250,000 (offline cache event)
Network	
Ethernet	RJ-45(10/100BASE-T)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, NTP, HTTP, HTTPS, SSL/TLS, SMTP, ICMP, IGMP, SNMP V3(MIB-2), ARP, DDNS, DNS, UPnP, Bonjour, LLDP
Data Security	SecureOS/Boot, Firmware verification, TPM with FIPS 140-2 Level 2
System Integration	
Application Programming Interface	ONVIF Profile A/C, SUNAPI (HTTP API), Wisenet OpenPlatform
Environmental & Electrical	
Operating Temperature / Humidity	-20°C~+60°C / 20-85% RH (non-condensing)
Storage Temperature / Humidity	-50°C~+60°C / Less than 95% RH
Input Voltage	PoE++, 12VDC / 24VDC
Power Consumption	PoE++ : 55W @ Max 0.75A, 12VDC @ Max 3.08A / 24VDC IN @ Max 1.54A
Mechanical	
Color / Material	White / Aluminum
Product dimensions / weight	184 x 184x 43(mm), 1.3kg
General	
Webpage Language	English, Korean
Included Accessories	Quick Guide, Wiring Guide
Warranty	5 years



1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 230 V, 50 Hz [AC/DC Adapter(DC 12 V)], AC 230 V, 50 Hz [AC/DC Adapter(DC 24 V)], PoE

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
IP Controller	NHP-P200	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter1	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
AC/DC Adapter2	GLS-150	-	-	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Laptop	LG15U47	-	Tech-Front (Chongqing) Computer Co., Ltd.	-
Laptop Adapter	A13-040N3A	-	CHICONY POWER TECHNOLOGY (Chongqing) CO., LTD.	-
Switch	-	-	-	-
Lock	-	-	Super Rock Co., Ltd.	-
Button	-	-	-	-
Card Reader	20K	-	ANATEL	-
Card	-	-	-	-



1.6 External I/O Cabling

■ #1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
IP Controller (EUT)	RJ-45(LAN)	Laptop	RJ-45(LAN)	3.5	U
	FAI	Switch	FAI	3.5	U
	DPS+OUT (4 Pin)	Lock	DPS+OUT (4 Pin)	3.5	U
	REX (4 Pin)	Button	REX (4 Pin)	3.5	U
	READER(6 Pin)	Card Reader	READER(6 Pin)	3.5	U
	DC IN(2 Pin)	AC/DC Adapter1	DC IN(2 Pin)	1.6	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
Card Reader	RFID	Card	RFID	-	-

* Unshielded=U, Shielded=S

■ #2

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
IP Controller (EUT)	RJ-45(LAN)	Laptop	RJ-45(LAN)	3.5	U
	FAI	Switch	FAI	3.5	U
	DPS+OUT (4 Pin)	Lock	DPS+OUT (4 Pin)	3.5	U
	REX (4 Pin)	Button	REX (4 Pin)	3.5	U
	READER(6 Pin)	Card Reader	READER(6 Pin)	3.5	U
	DC IN(2 Pin)	AC/DC Adapter2	DC IN(2 Pin)	1.6	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
Card Reader	RFID	Card	RFID	-	-

* Unshielded=U, Shielded=S



■ #3

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
IP Controller (EUT)	RJ-45(PoE)	PoE Adapter	RJ-45(PoE)	3.5	U
	FAI	Switch	FAI	3.5	U
	DPS+OUT (4 Pin)	Lock	DPS+OUT (4 Pin)	3.5	U
	REX (4 Pin)	Button	REX (4 Pin)	3.5	U
	READER(6 Pin)	Card Reader	READER(6 Pin)	3.5	U
PoE Adapter	RJ-45(LAN)	Laptop	RJ-45(LAN)	3.5	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
Card Reader	RFID	Card	RFID	-	-

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

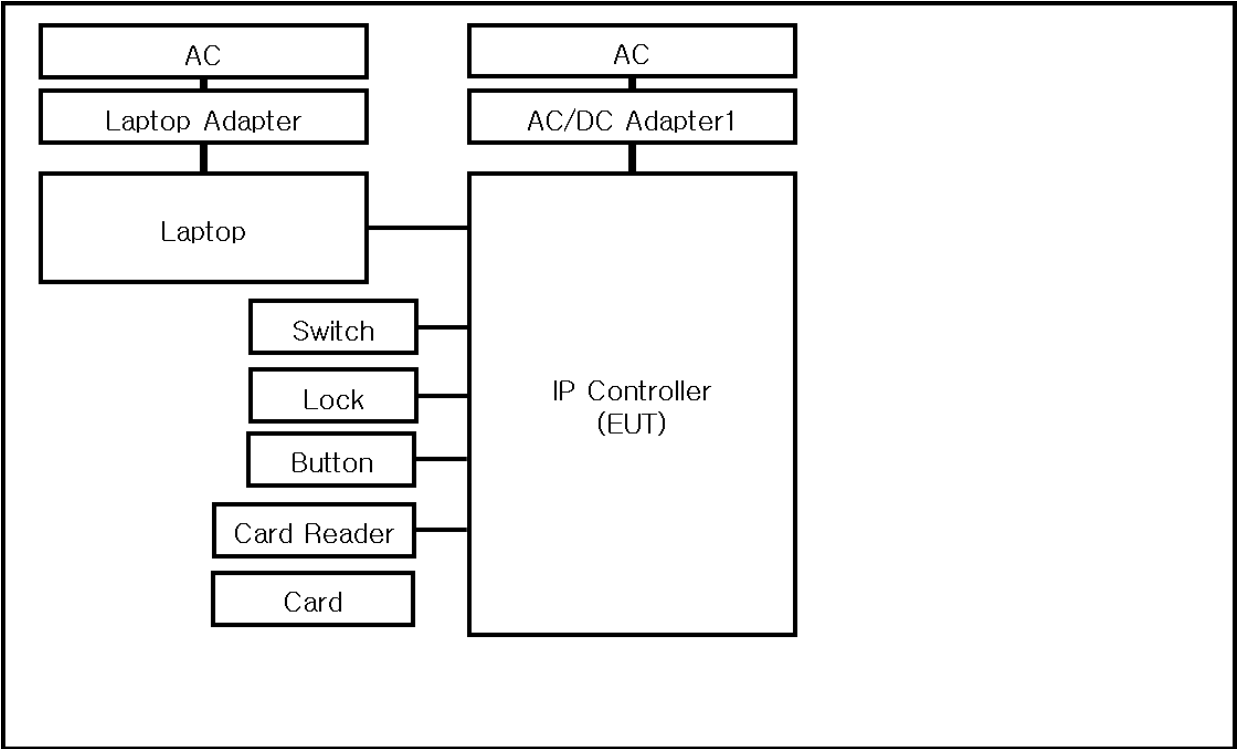
Dision	Mode name	Operating status
#1	DC 12 V	-After connecting the test equipment and DC power supply 1, 1. Run the web viewer on your laptop to check normal operation. 2. Check the network status by performing PingTest on your laptop. 3. Press the button to check normal operation and lock operation in the web viewer. 4. Recognize the card in the card reader and check normal operation and lock operation in the web viewer. 5. Open the switch and check normal operation and lock operation in the web viewer.
#2	DC 24 V	-After connecting the test equipment and DC power supply 2, 1. Run the web viewer on your laptop to check normal operation. 2. Check the network status by performing PingTest on your laptop. 3. Press the button to check normal operation and lock operation in the web viewer. 4. Recognize the card in the card reader and check normal operation and lock operation in the web viewer. 5. Open the switch and check normal operation and lock operation in the web viewer.
#3	PoE	- After connecting the test equipment and PoE adapter 1. Run the web viewer on your laptop to check normal operation. 2. Check the network status by performing PingTest on your laptop. 3. Press the button to check normal operation and lock operation in the web viewer. 4. Recognize the card in the card reader and check normal operation and lock operation in the web viewer. 5. Open the switch and check normal operation and lock operation in the web viewer.

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

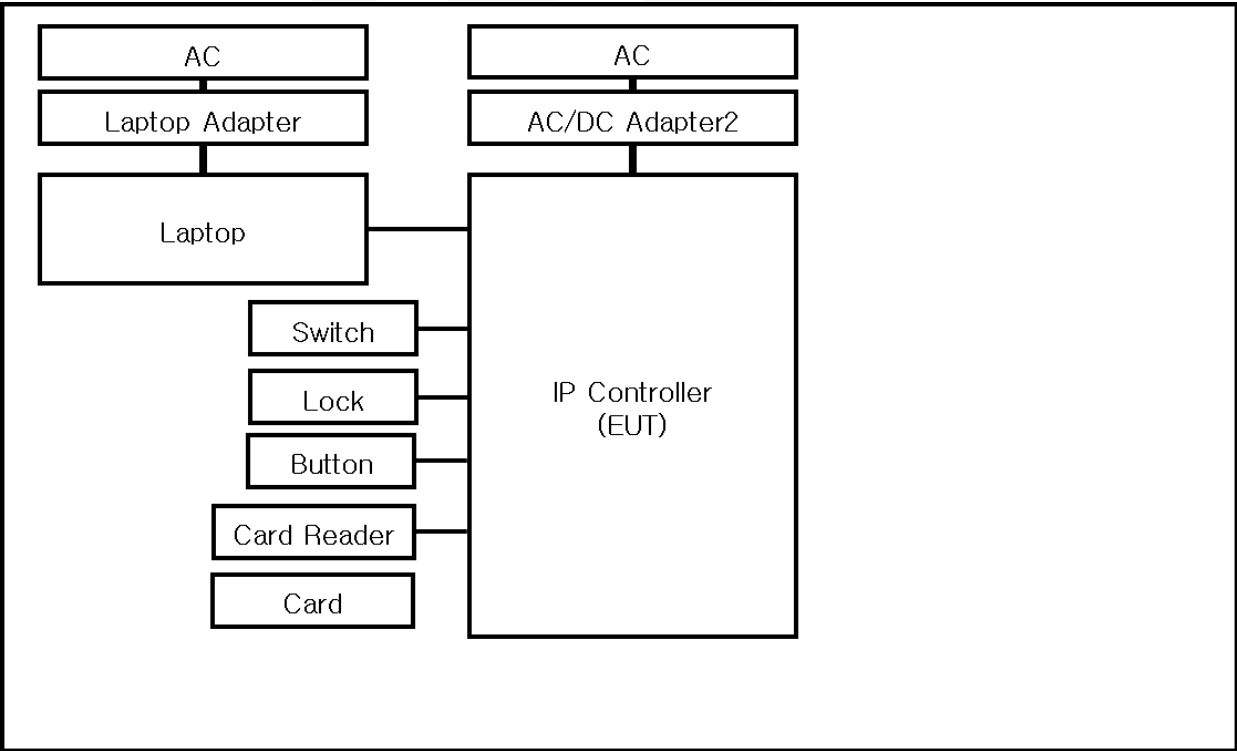


1.8 Configuration

■ #1

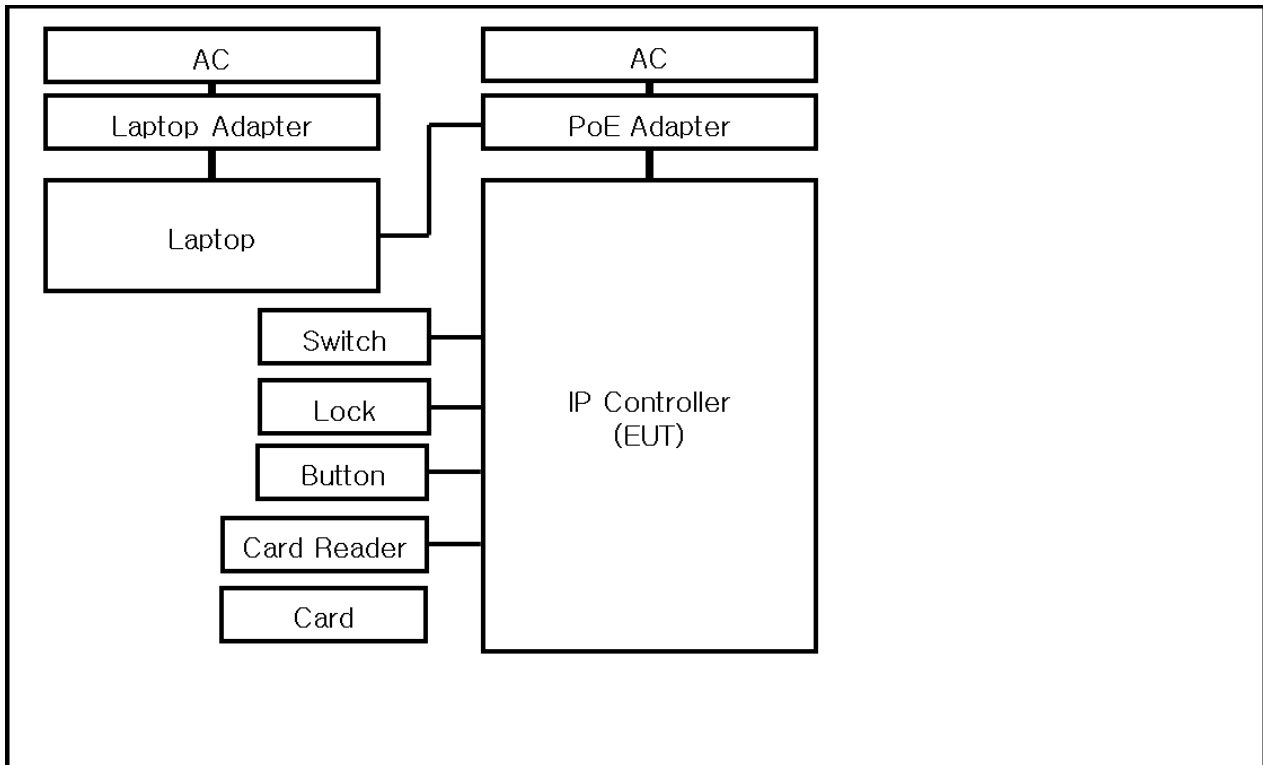


■ #2





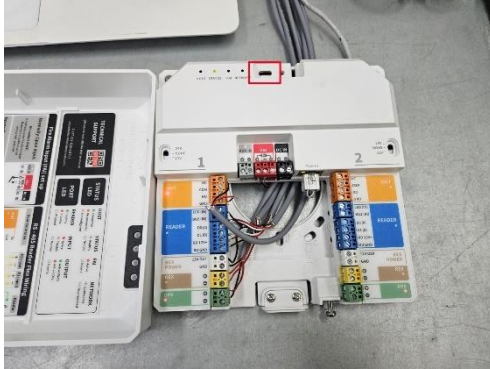
■ #3





1.9 Remarks when standards applied

- In PoE mode, the LAN port is regarded as a wired communication network port and power-related ports are not tested.
- USB Type-C port is not tested because it is for administrators.
- port picture for admin



1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019



1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0008



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021



2.1 Conducted Emissions at Mains Power Ports

Test Date

Dec. 17, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 10, 2025
☒	LISN	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025

Test Conditions

Temperature: (22,5 ± 0,1) °C

Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Dec. 17, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 10, 2025
☒	LISN	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 12, 2025
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101666	03, 06, 2025

Test Conditions

Temperature: (22,5 ± 0,1) °C

Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Dec. 16, 2024

Test Location☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	02, 13, 2025
☒	AMPLIFIER	SCU 01	R & S	100603	11, 06, 2025
☒	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	05, 09, 2026
☒	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	02, 13, 2025

Test Conditions

Temperature: (22,3 ± 0,1) °C

Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Dec. 18, 2024

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	02, 13, 2025
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 04, 2025
☒	PREAMPLIFIER	8449B	HP	3008A00538	04, 30, 2025
☒	ATTENUATOR	8491B	HP	23094	02, 13, 2025

Test Conditions

Temperature: (22,8 ± 0,1) °C

Relative Humidity: (45,9 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
-The Average of the test data is the cispr average result.



2.5 Harmonic Current Emissions

Test Date

Dec. 19, 2024

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 28, 2025
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,0 ± 0,1) °C

Relative Humidity: (46,2 ± 0,1) % R.H.

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.6 Voltage Fluctuations and Flicker

Test Date

Dec. 19, 2024

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 28, 2025
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,0 ± 0,6) °C

Relative Humidity: (46,2 ± 0,6) % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011/A1 :2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard:
Immunity requirements for components of fire, intruder and social alarm systems

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 is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

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 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 picture is allowed at 10 V/m, providing.

- (a) there is no permanent damage or change to 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.



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 discharge is permissible, providing

That there is no residual 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.

Conducted RF immunity

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 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 oeuvres at $U = 130 \text{ dB}\mu\text{V}$.

For component of CCTV systems, where the status is monitored by observing the TV picture, then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, 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 $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used; and
- (c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

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, after the conditioning.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2

Test Date

Dec. 19, 2024

Test Location

EMS-ESD: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	01, 30, 2025
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (22,6 ± 0,1) °C
Relative Humidity: (46,5 ± 0,1) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

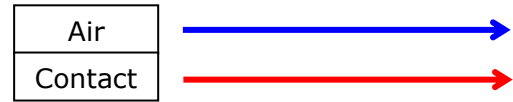
Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

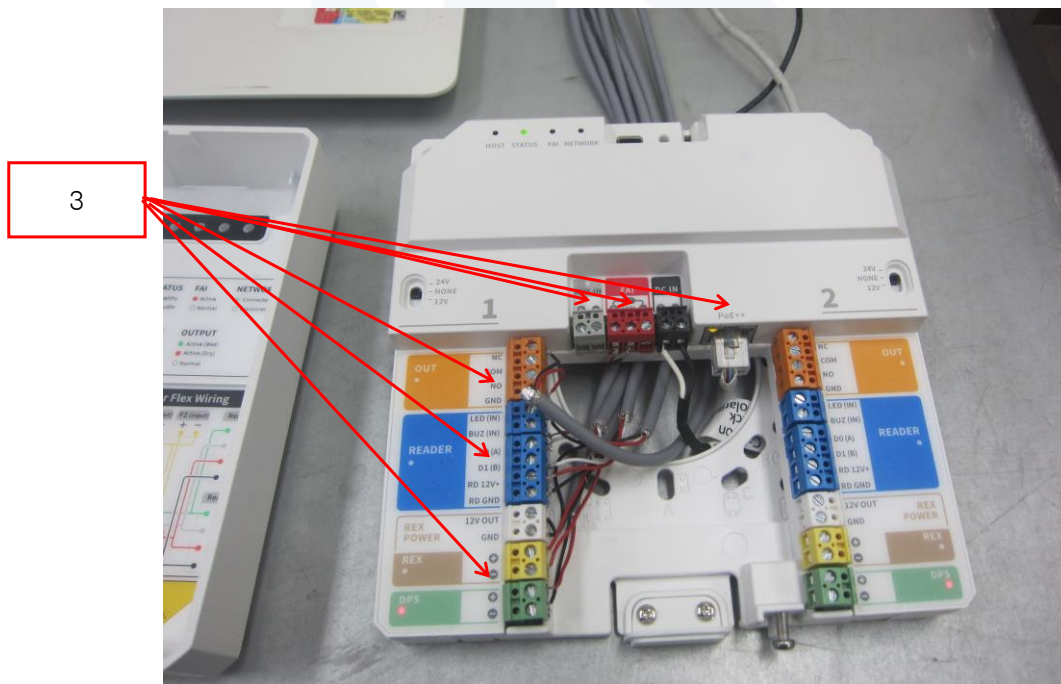
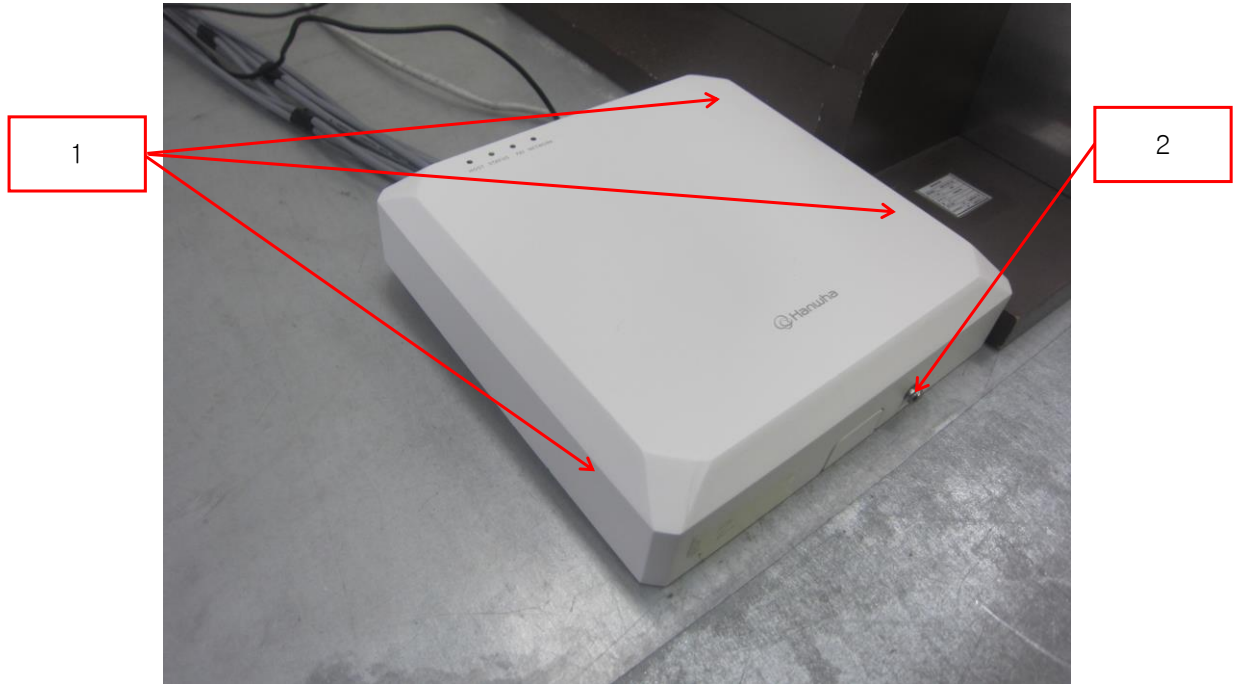
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

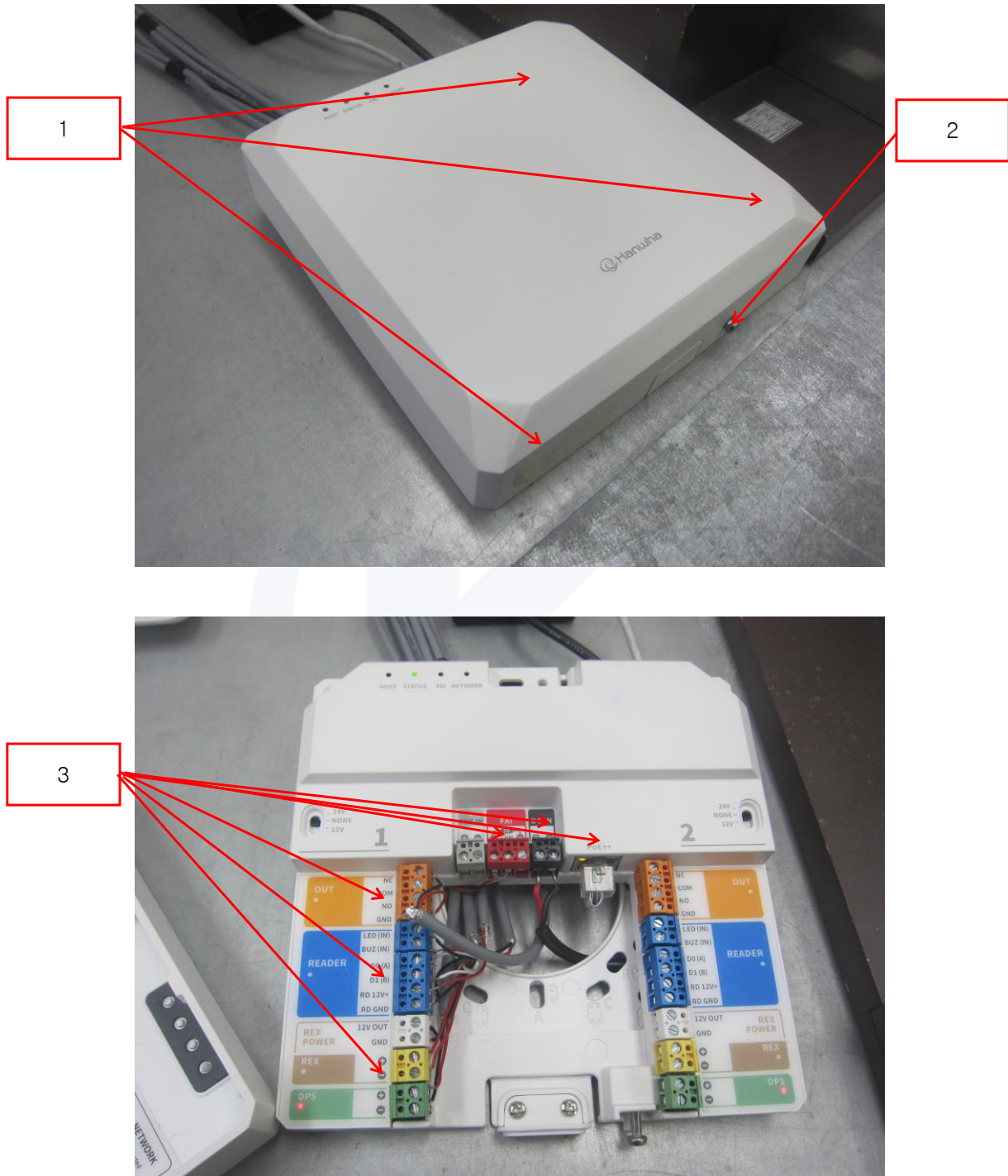


■ #1

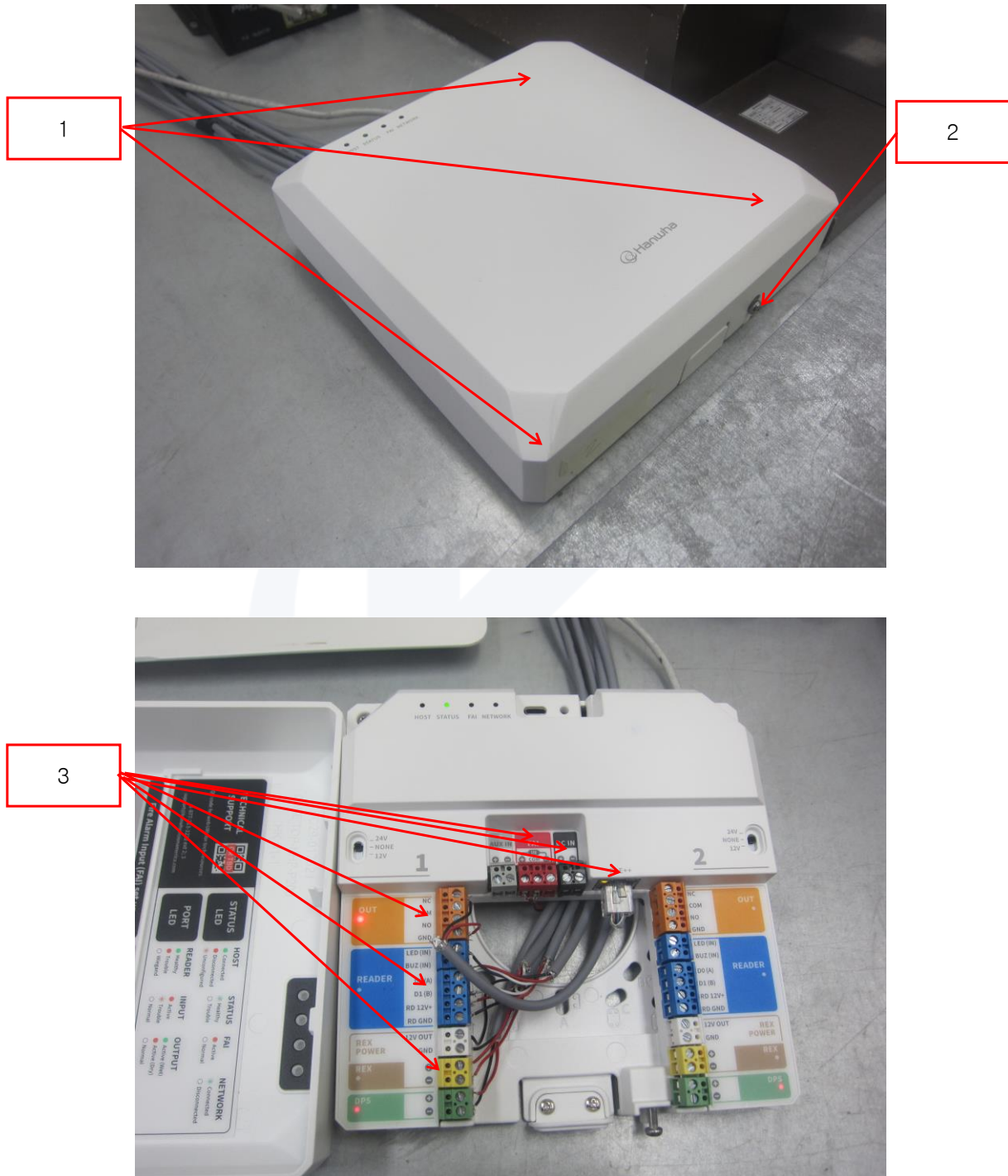




■ #2



■ #3



**Test Data****■ #1**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Around the Port	Contact Discharge	Complied	-

■ #2

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Around the Port	Contact Discharge	Complied	-

■ #3

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Around the Port	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function



Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

Do not test the surface and points of the product that can no longer be contacted after a fixed installation.





3.2 Radiated Electric Field Immunity

Reference Standard

EN IEC 61000-4-3

Test Date

Dec. 23, 2024

Test LocationEMS-RS: ☐ SEMI ANECHOIC CHAMBER #2☒ SEMI ANECHOIC CHAMBER #3**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	07, 29, 2025
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	02, 13, 2025
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	02, 13, 2025
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	02, 13, 2025
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 05, 2025

Test Conditions

Temperature: (23,2 ± 0,6) °C
Relative Humidity: (46,4 ± 0,6) % R.H.
Atmospheric Pressure: (100,2 ± 0,0) kPa



Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

**Test Data**

■ #1

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

■ #2

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

■ #3

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria



3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4

Test Date

Dec. 22, 2024

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 06, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 06, 2025

Test Conditions

Temperature: (22,4 ± 0,1) °C
Relative Humidity: (46,1 ± 0,1) % R.H.
Atmospheric Pressure: (100,7 ± 0,0) kPa

Test Specifications

Pulse Amplitude & Polarity:
(AC Power Lines) ☐ ± 1.0 kV ☒ ± 2.0 kV
☐ ± 4.0 kV

Pulse Amplitude & Polarity:
(Other supply / Signal Lines) ☐ ± 0.5 kV ☒ ± 1.0 kV
☐ ± 2.0 kV

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 kHz ☒ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

**Test Data**

■ #1

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L	Complied	Complied
N	Complied	Complied
L – N	Complied	Complied

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45(LAN)	Complied	Complied
FAI	Complied	Complied
DPS + OUT (4 Pin)	Complied	Complied
REX (4 Pin)	Complied	Complied
READER(6 Pin)	Complied	Complied



■ #2

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L	Complied	Complied
N	Complied	Complied
PE	Complied	Complied
L – N	Complied	Complied
L – PE	Complied	Complied
N – PE	Complied	Complied
L – N – PE	Complied	Complied

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45(LAN)	Complied	Complied
FAI	Complied	Complied
DPS + OUT (4 Pin)	Complied	Complied
REX (4 Pin)	Complied	Complied
READER(6 Pin)	Complied	Complied



■ #3

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45(PoE)	Complied	Complied
FAI	Complied	Complied
DPS + OUT (4 Pin)	Complied	Complied
REX (4 Pin)	Complied	Complied
READER(6 Pin)	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria



3.4 Surge Transients

Reference Standard

EN 61000-4-5

Test Date

Dec. 22, 2024

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 08, 2025

Test Conditions

Temperature: (22,5 ± 0,6) °C
Relative Humidity: (46,3 ± 0,6) % R.H.
Atmospheric Pressure: (100,6 ± 0,0) kPa

**Test Specifications****AC Power Lines**

Source Impedance: 12 ohm for common Mode and 2 ohm for differential Mode

Surge Amplitude : Common Mode
☒ (0,5 / 1,0 / 2,0) kV
Differential Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 surges per angleAngle: ☒ 0°, 90°, 180°, 270° (input a.c. power port)Polarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ Complied**Other supply / Signal Lines**

Source Impedance: 42 ohm for common Mode

Surge Amplitude: Common Mode
☒ (0,5 / 1,0) kVNumber of Surges: ☒ 5 SurgesPolarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ Complied

**Test Data**

■ #1

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	Complied	Complied

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45(LAN)	CDN	Complied	Complied
	LINE	Complied	Complied

■ #2

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	Complied	Complied
L – PE	Complied	Complied
N – PE	Complied	Complied

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45(LAN)	CDN	Complied	Complied
	LINE	Complied	Complied



■ #3

☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45(PoE)	CDN	Complied	Complied
	LINE	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6

Test Date

Dec. 25, 2024

Test Location

EMS-CS: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	7.2.0	-
☒	TEST SYSTEM FOR CONDUCTED AND RADIATED	NSG4070	TESEQ	65585	11, 18, 2025
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 06, 2025
☒	CDN	CDN M016	TESEQ	43694	11, 07, 2025
☒	CDN	CDN M016	TESEQ	43697	11, 07, 2025
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 08, 2025
☒	CDN	CDN T8RJ45	EM TEST	0909-09	07, 29, 2025

Test Conditions

Temperature: (22,4 ± 0,6) °C
Relative Humidity: (46,0 ± 0,6) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

Required Performance Criteria: ☒ Complied

**Test Data**

■ #1

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N	CDN	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45(LAN)	CDN	Complied
FAI	Clamp	Complied
DPS + OUT (4 Pin)	Clamp	Complied
REX (4 Pin)	Clamp	Complied
READER(6 Pin)	Clamp	Complied

■ #2

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N – PE	CDN	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45(LAN)	CDN	Complied
FAI	Clamp	Complied
DPS + OUT (4 Pin)	Clamp	Complied
REX (4 Pin)	Clamp	Complied
READER(6 Pin)	Clamp	Complied



■ #3

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45(PoE)	CDN	Complied
FAI	Clamp	Complied
DPS + OUT (4 Pin)	Clamp	Complied
REX (4 Pin)	Clamp	Complied
READER(6 Pin)	Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN IEC 61000-4-11

Test Date

Dec. 22, 2024

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025

Test Conditions

Temperature: (22,5 ± 0,1) °C
Relative Humidity: (46,3 ± 0,1) % R.H.
Atmospheric Pressure: (100,6 ± 0,0) kPa

**Test Specifications & Observations/Remarks**

■ #1

- Voltage Dips and Short Interruptions

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5 000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5 000	<u>Degradation</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

■ #2

- Voltage Dips and Short Interruptions

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5 000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5 000	<u>Degradation</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Degradation - See "Remarks "

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

RemarksPASS Required Performance Criteria.During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered without operator's intervention.



APPENDIX A – TEST DATA

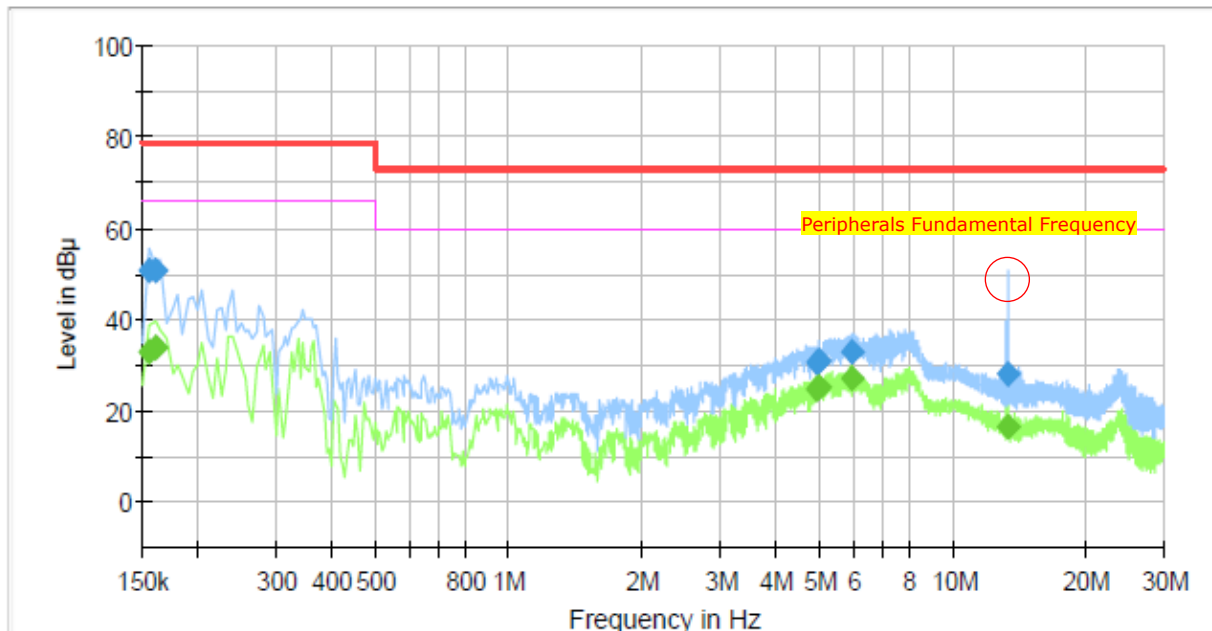
Conducted Emissions at Mains Power Ports

■ #1

[HOT]

Common Information

Test Description: Conducted Emission
Job No.: KES-EM244149
Phase: #1_L
Mode:
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	32.78	66.00	33.22	1000.0	9.000	L1	19.6
0.155000	50.84	---	79.00	28.16	1000.0	9.000	L1	19.6
0.160000	---	34.04	66.00	31.96	1000.0	9.000	L1	19.6
0.160000	50.74	---	79.00	28.26	1000.0	9.000	L1	19.6
4.970000	---	24.95	60.00	35.05	1000.0	9.000	L1	19.9
4.970000	30.73	---	73.00	42.27	1000.0	9.000	L1	19.9
5.030000	---	25.16	60.00	34.84	1000.0	9.000	L1	19.9
5.030000	30.90	---	73.00	42.10	1000.0	9.000	L1	19.9
5.960000	---	27.24	60.00	32.76	1000.0	9.000	L1	20.0
5.960000	32.96	---	73.00	40.04	1000.0	9.000	L1	20.0
13.560000	---	16.49	60.00	43.51	1000.0	9.000	L1	20.2
13.560000	28.17	---	73.00	44.83	1000.0	9.000	L1	20.2

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

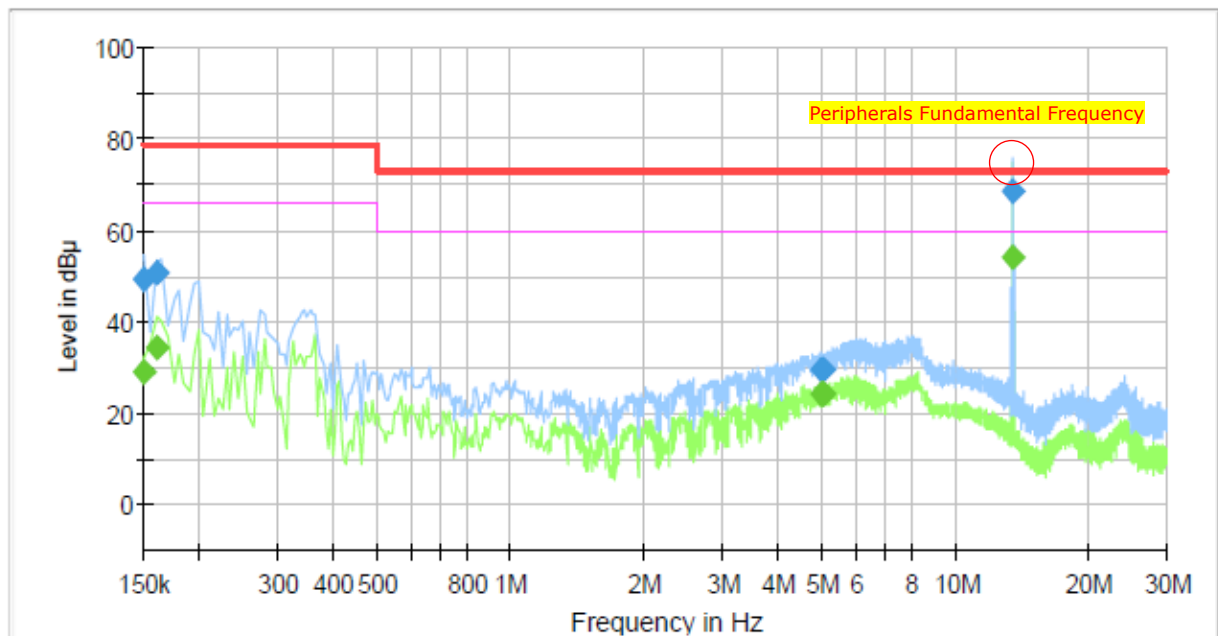
The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).



[NEUTRAL]

Common Information

Test Description: Conducted Emission
Job No.: KES-EM244149
Phase: #1_N
Mode:
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	29.00	66.00	37.00	1000.0	9.000	N	19.5
0.150000	49.37	---	79.00	29.63	1000.0	9.000	N	19.5
0.160000	---	34.35	66.00	31.65	1000.0	9.000	N	19.5
0.160000	50.96	---	79.00	28.04	1000.0	9.000	N	19.5
5.030000	---	24.29	60.00	35.71	1000.0	9.000	N	19.9
5.030000	29.56	---	73.00	43.44	1000.0	9.000	N	19.9
5.060000	---	24.18	60.00	35.82	1000.0	9.000	N	19.9
5.060000	29.62	---	73.00	43.38	1000.0	9.000	N	19.9
13.560000	---	54.06	60.00	5.94	1000.0	9.000	N	20.2
13.560000	68.62	---	73.00	4.38	1000.0	9.000	N	20.2

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

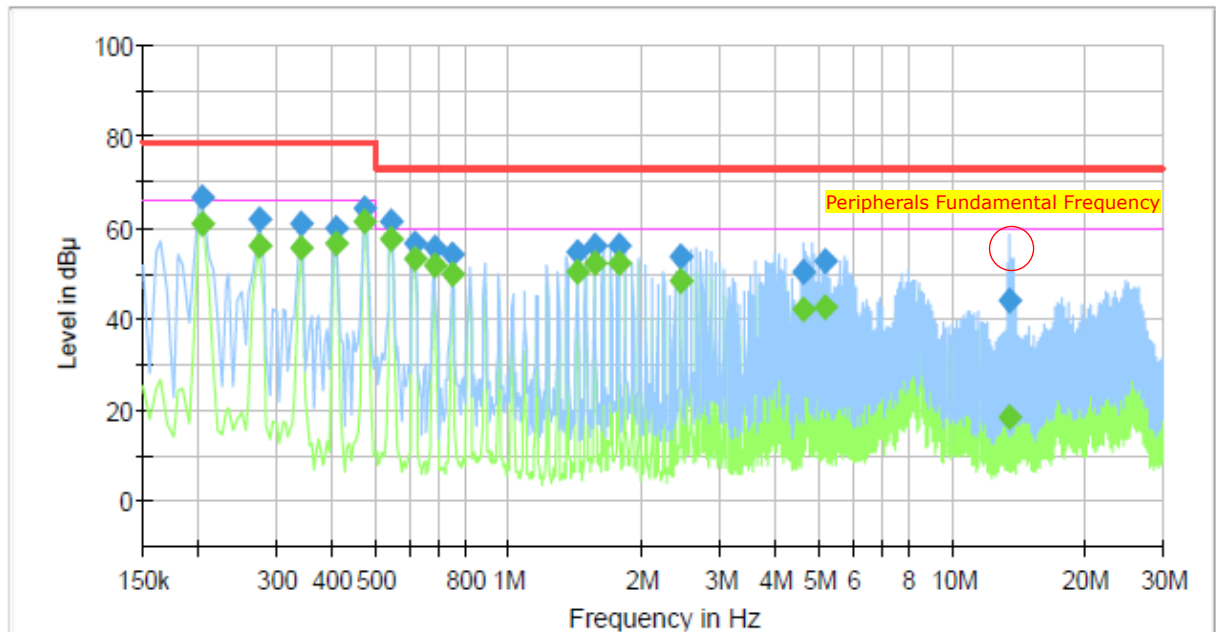


■ #2

[HOT]

Common Information

Test Description:	Conducted Emission
Job No.:	KES-EM244149
Phase:	#2_L
Mode:	
Operator Name:	KES





Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	61.06	66.00	4.94	1000.0	9.000	L1	19.6
0.205000	66.74	---	79.00	12.26	1000.0	9.000	L1	19.6
0.275000	61.71	---	79.00	17.29	1000.0	9.000	L1	19.6
0.275000	---	56.29	66.00	9.71	1000.0	9.000	L1	19.6
0.340000	---	55.54	66.00	10.46	1000.0	9.000	L1	19.6
0.340000	61.16	---	79.00	17.84	1000.0	9.000	L1	19.6
0.410000	---	56.61	66.00	9.39	1000.0	9.000	L1	19.6
0.410000	60.15	---	79.00	18.85	1000.0	9.000	L1	19.6
0.475000	---	61.27	66.00	4.73	1000.0	9.000	L1	19.6
0.475000	64.51	---	79.00	14.49	1000.0	9.000	L1	19.6
0.545000	---	57.44	60.00	2.56	1000.0	9.000	L1	19.6
0.545000	61.35	---	73.00	11.65	1000.0	9.000	L1	19.6
0.615000	---	53.25	60.00	6.75	1000.0	9.000	L1	19.6
0.615000	56.63	---	73.00	16.37	1000.0	9.000	L1	19.6
0.680000	55.58	---	73.00	17.42	1000.0	9.000	L1	19.6
0.680000	---	51.92	60.00	8.08	1000.0	9.000	L1	19.6
0.750000	---	50.04	60.00	9.96	1000.0	9.000	L1	19.6
0.750000	54.20	---	73.00	18.80	1000.0	9.000	L1	19.6
1.430000	---	50.36	60.00	9.64	1000.0	9.000	L1	19.7
1.430000	54.49	---	73.00	18.51	1000.0	9.000	L1	19.7
1.565000	56.31	---	73.00	16.69	1000.0	9.000	L1	19.7
1.565000	---	52.20	60.00	7.80	1000.0	9.000	L1	19.7
1.770000	---	52.05	60.00	7.95	1000.0	9.000	L1	19.7
1.770000	56.01	---	73.00	16.99	1000.0	9.000	L1	19.7
2.450000	53.66	---	73.00	19.34	1000.0	9.000	L1	19.7
2.450000	---	48.43	60.00	11.57	1000.0	9.000	L1	19.7
4.630000	50.35	---	73.00	22.65	1000.0	9.000	L1	19.9
4.630000	---	42.15	60.00	17.85	1000.0	9.000	L1	19.9
5.175000	---	42.67	60.00	17.33	1000.0	9.000	L1	19.9
5.175000	52.68	---	73.00	20.32	1000.0	9.000	L1	19.9
13.560000	---	18.46	60.00	41.54	1000.0	9.000	L1	20.2
13.560000	43.80	---	73.00	29.20	1000.0	9.000	L1	20.2

* Exclusion bands

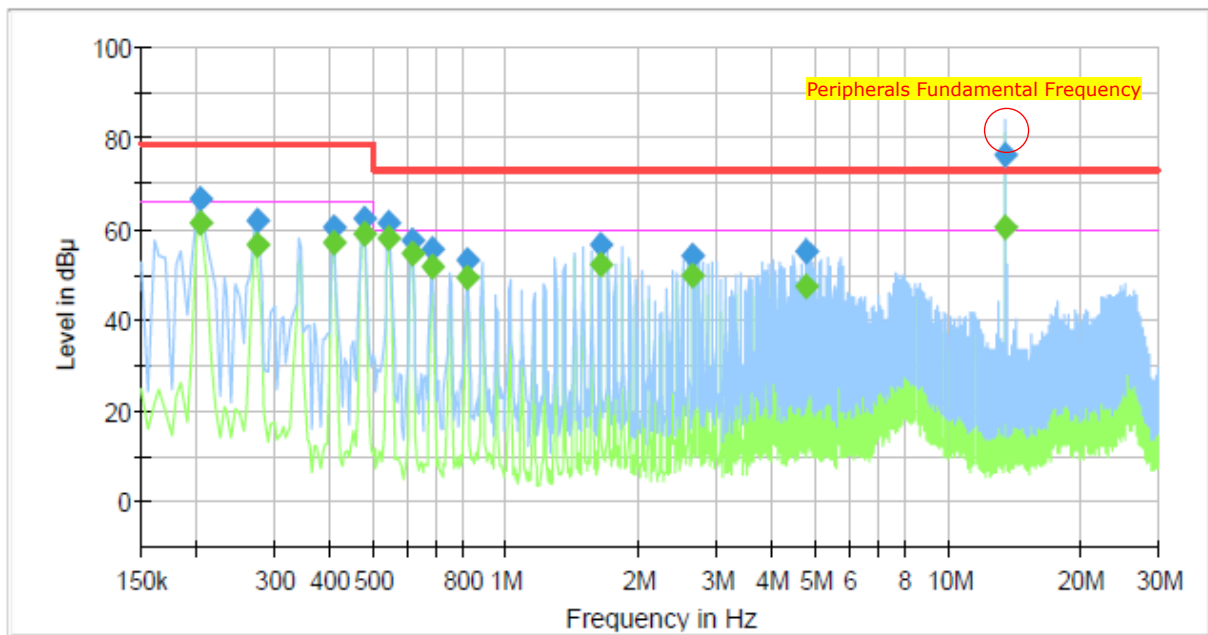
- Peripherals Fundamental Frequency: 13.56 MHz



[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Job No.:	KES-EM244149
Phase:	#2_N
Mode:	
Operator Name:	KES





Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	66.92	---	79.00	12.08	1000.0	9.000	N	19.5
0.205000	---	61.24	66.00	4.76	1000.0	9.000	N	19.5
0.275000	62.12	---	79.00	16.88	1000.0	9.000	N	19.5
0.275000	---	56.78	66.00	9.22	1000.0	9.000	N	19.5
0.410000	60.63	---	79.00	18.37	1000.0	9.000	N	19.6
0.410000	---	57.05	66.00	8.95	1000.0	9.000	N	19.6
0.480000	62.24	---	79.00	16.76	1000.0	9.000	N	19.6
0.480000	---	58.92	66.00	7.08	1000.0	9.000	N	19.6
0.545000	---	57.93	60.00	2.07	1000.0	9.000	N	19.6
0.545000	61.62	---	73.00	11.38	1000.0	9.000	N	19.6
0.615000	---	54.46	60.00	5.54	1000.0	9.000	N	19.6
0.615000	57.73	---	73.00	15.27	1000.0	9.000	N	19.6
0.680000	---	51.84	60.00	8.16	1000.0	9.000	N	19.6
0.680000	55.39	---	73.00	17.61	1000.0	9.000	N	19.6
0.820000	52.97	---	73.00	20.03	1000.0	9.000	N	19.6
0.820000	---	49.14	60.00	10.86	1000.0	9.000	N	19.6
1.635000	56.34	---	73.00	16.66	1000.0	9.000	N	19.7
1.635000	---	52.43	60.00	7.57	1000.0	9.000	N	19.7
2.655000	---	49.76	60.00	10.24	1000.0	9.000	N	19.7
2.655000	54.34	---	73.00	18.66	1000.0	9.000	N	19.7
4.770000	55.07	---	73.00	17.93	1000.0	9.000	N	19.9
4.770000	---	47.36	60.00	12.64	1000.0	9.000	N	19.9
13.560000	---	60.47	60.00	-0.47	1000.0	9.000	N	20.2
13.560000	76.33	---	73.00	-3.33	1000.0	9.000	N	20.2

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

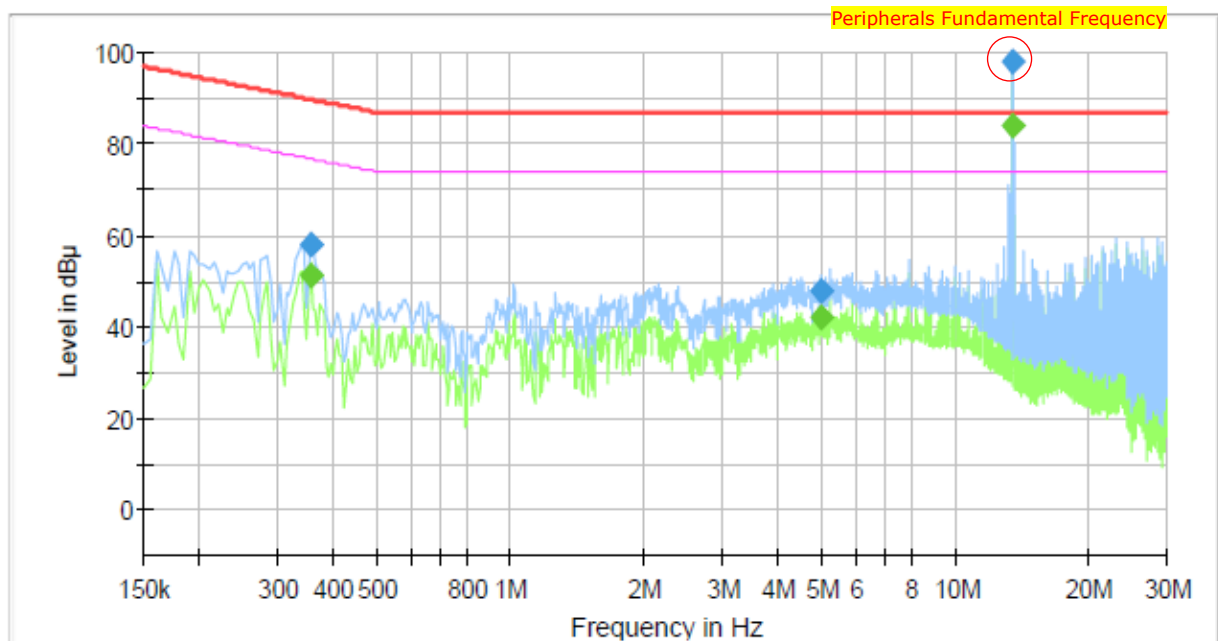
**Conducted Emissions at Telecommunication Ports**

■ #1

[1 00 Mbps]

Common Information

Test Description: Telecommunication Emission
Job No.: KES-EM244149
Mode : #1_TEL 100 Mbps
Speed :
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.355000	---	51.42	76.84	25.42	1000.0	9.000	Single Line	19.6
0.355000	58.02	---	89.84	31.82	1000.0	9.000	Single Line	19.6
5.025000	---	42.29	74.00	31.71	1000.0	9.000	Single Line	19.6
5.025000	47.66	---	87.00	39.34	1000.0	9.000	Single Line	19.6
13.560000	---	83.98	74.00	-9.98	1000.0	9.000	Single Line	19.8
13.560000	98.17	---	87.00	-11.17	1000.0	9.000	Single Line	19.8

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

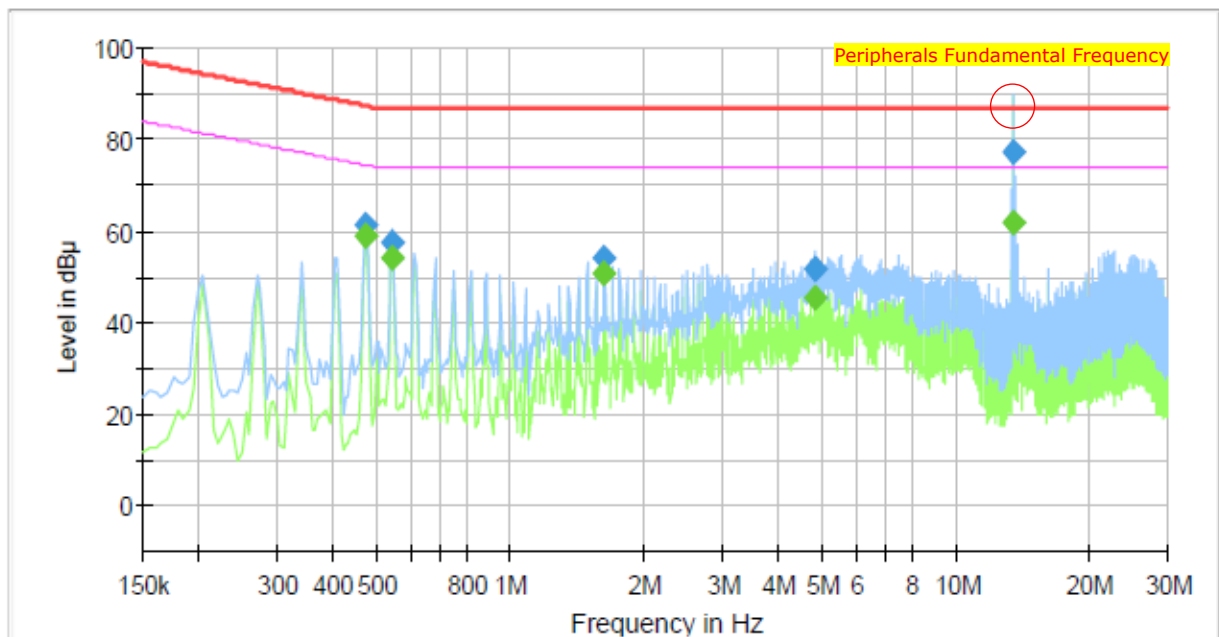


■ #2

[1 00 Mbps]

Common Information

Test Description: Telecommunication Emission
Job No.: KES-EM244149
Mode : #2_TEL 100 Mbps
Speed :
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.475000	---	58.96	74.43	15.47	1000.0	9.000	Single Line	19.6
0.475000	61.30	---	87.43	26.13	1000.0	9.000	Single Line	19.6
0.545000	---	54.14	74.00	19.86	1000.0	9.000	Single Line	19.5
0.545000	57.37	---	87.00	29.63	1000.0	9.000	Single Line	19.5
1.630000	---	50.98	74.00	23.02	1000.0	9.000	Single Line	19.5
1.630000	54.28	---	87.00	32.72	1000.0	9.000	Single Line	19.5
4.820000	---	45.54	74.00	28.46	1000.0	9.000	Single Line	19.6
4.820000	51.97	---	87.00	35.03	1000.0	9.000	Single Line	19.6
13.560000	---	62.08	74.00	11.92	1000.0	9.000	Single Line	19.8
13.560000	77.24	---	87.00	9.76	1000.0	9.000	Single Line	19.8

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

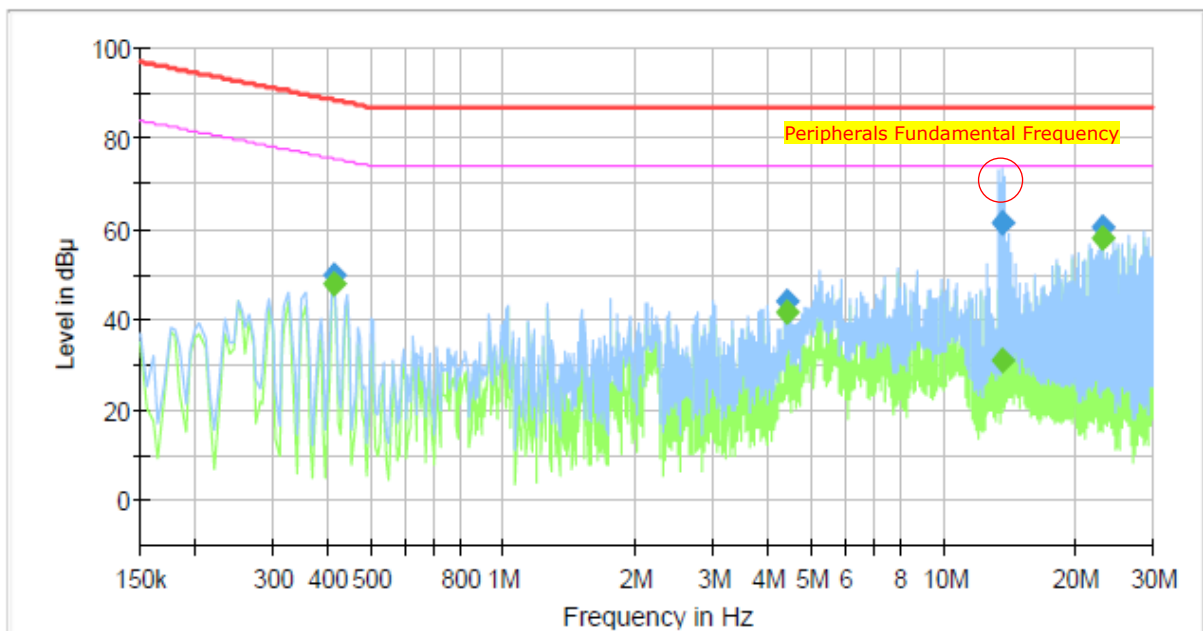


■ #3

[1 00 Mbps]

Common Information

Test Description: Telecommunication Emission
Job No.: KES-EM244149
Mode : #3_TEL 100 Mbps
Speed :
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.415000	---	47.98	75.55	27.57	1000.0	9.000	Single Line	19.6
0.415000	49.59	---	88.55	38.96	1000.0	9.000	Single Line	19.6
4.410000	---	41.39	74.00	32.61	1000.0	9.000	Single Line	19.6
4.410000	43.88	---	87.00	43.12	1000.0	9.000	Single Line	19.6
13.560000	---	31.11	74.00	42.89	1000.0	9.000	Single Line	19.8
13.560000	61.53	---	87.00	25.47	1000.0	9.000	Single Line	19.8
23.130000	---	57.82	74.00	16.18	1000.0	9.000	Single Line	20.1
23.130000	60.44	---	87.00	26.56	1000.0	9.000	Single Line	20.1

* Exclusion bands

- Peripherals Fundamental Frequency: 13.56 MHz

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

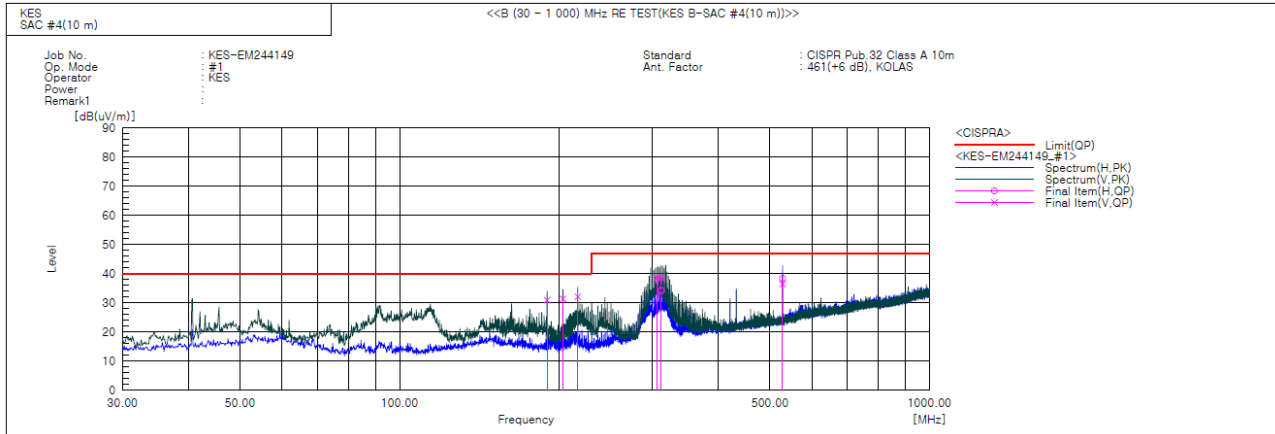
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Radiated Electric Field Emissions(Below 1 GHz)**

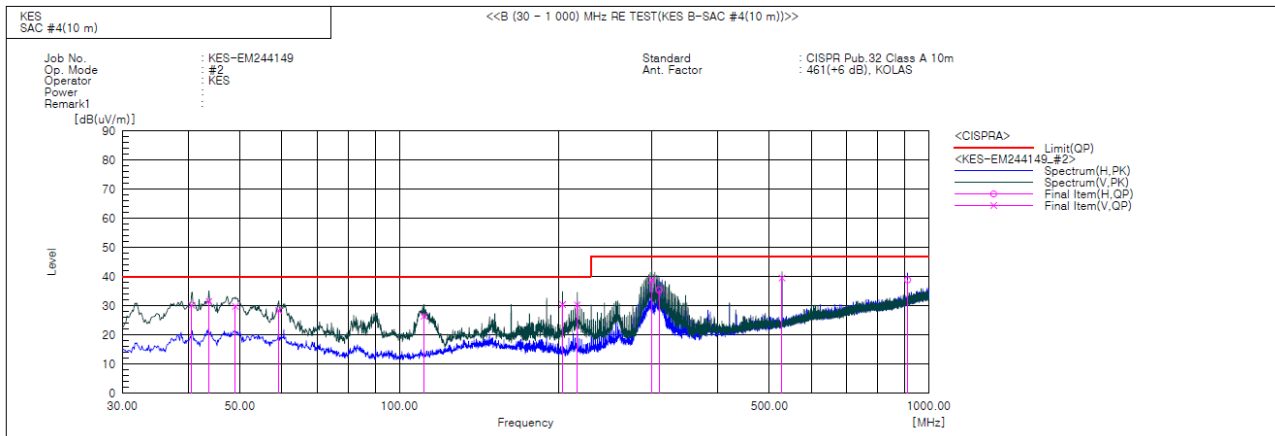
■ #1

**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]	Remark
1	189.808	V	52.7	-21.8	30.9	40.0	9.1	141.0	73.0	
2	203.388	V	53.3	-22.0	31.3	40.0	8.7	100.0	20.0	
3	216.968	V	53.6	-21.5	32.1	40.0	7.9	112.0	35.0	
4	305.844	V	55.5	-17.0	38.5	47.0	8.5	102.0	357.0	
5	311.785	V	55.4	-16.8	38.6	47.0	8.4	114.0	357.0	
6	311.785	H	51.0	-16.8	34.2	47.0	12.8	396.0	95.0	
7	527.974	V	46.1	-9.7	36.4	47.0	10.6	100.0	65.0	
8	527.974	H	48.0	-9.7	38.3	47.0	8.7	195.0	163.0	



■ #2

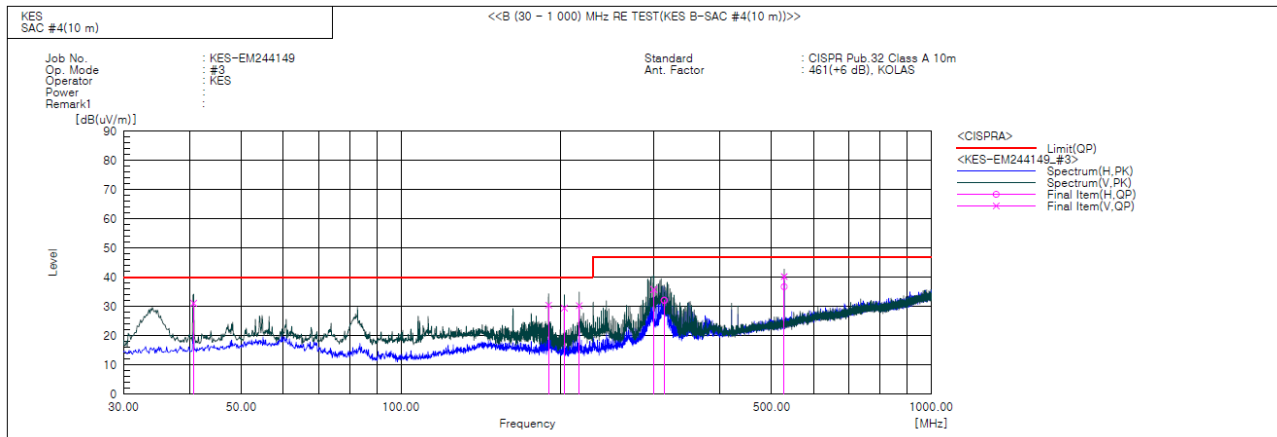


Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.549	V	52.1	-21.9	30.2	40.0	9.8	141.0	280.0	
2	43.701	V	53.1	-21.6	31.5	40.0	8.5	112.0	261.0	
3	49.036	V	50.9	-21.1	29.8	40.0	10.2	111.0	337.0	
4	59.221	V	49.8	-21.4	28.4	40.0	11.6	144.0	295.0	
5	111.359	V	49.9	-23.5	26.4	40.0	13.6	105.0	85.0	
6	203.388	V	52.4	-22.0	30.4	40.0	9.6	106.0	39.0	
7	216.968	V	51.8	-21.5	30.3	40.0	9.7	109.0	39.0	
8	299.903	V	56.0	-17.2	38.8	47.0	8.2	100.0	209.0	
9	309.845	H	52.2	-16.8	35.4	47.0	11.6	397.0	83.0	
10	527.974	V	49.2	-9.7	39.5	47.0	7.5	142.0	73.0	
11	912.094	H	40.3	-1.5	38.8	47.0	8.2	399.0	319.0	



■ #3



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.670	V	53.0	-21.9	31.1	40.0	8.9	141.0	87.0	
2	189.808	V	52.2	-21.8	30.4	40.0	9.6	144.0	69.0	
3	203.388	V	51.5	-22.0	29.5	40.0	10.5	147.0	31.0	
4	216.968	V	51.8	-21.5	30.3	40.0	9.7	142.0	72.0	
5	299.903	V	53.0	-17.2	35.8	47.0	11.2	106.0	193.0	
6	313.725	H	48.8	-16.7	32.1	47.0	14.9	195.0	101.0	
7	527.974	V	49.9	-9.7	40.2	47.0	6.8	106.0	13.0	
8	527.974	H	46.4	-9.7	36.7	47.0	10.3	396.0	90.0	

◆ Calculation

Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

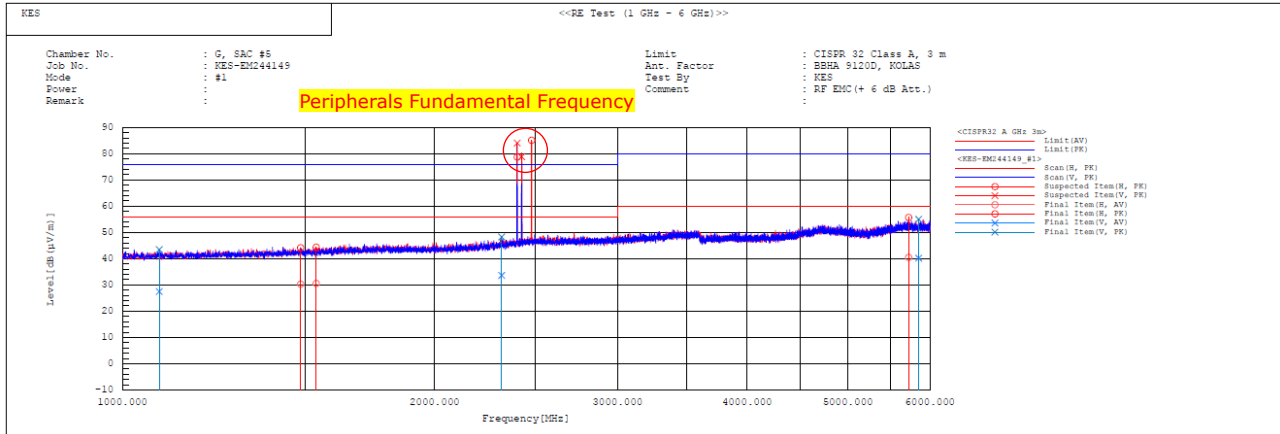
Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

**Radiated Electric Field Emissions(Above 1 GHz)**

■ #1

**Final Result**

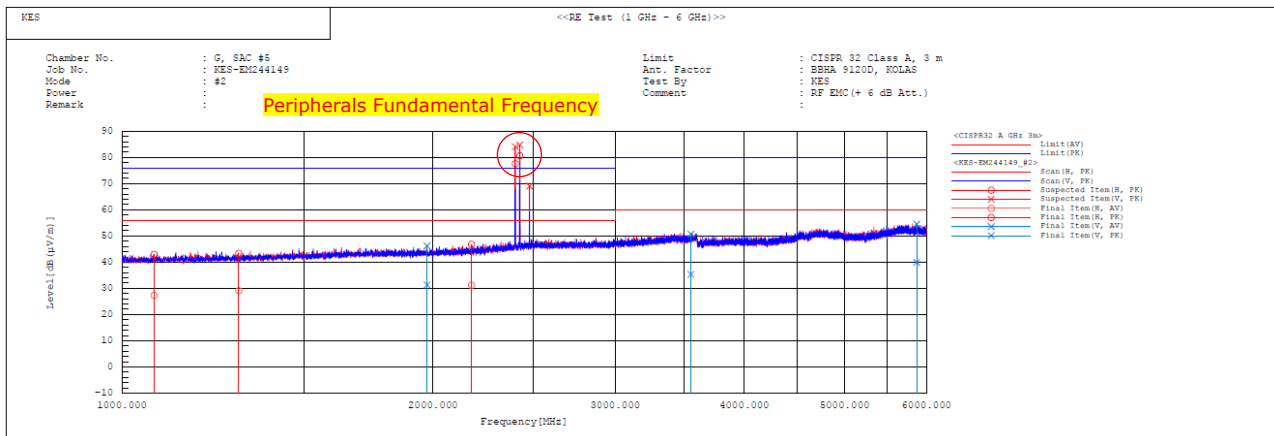
No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1085.459	V	29.7	44.7	-1.2	27.5	43.5	56.0	76.0	28.5	32.5	100.0	6.3	
2	1485.463	H	29.4	43.3	0.9	30.3	44.2	56.0	76.0	25.7	31.8	100.0	34.6	
3	1537.539	H	29.5	43.3	1.1	30.6	44.4	56.0	76.0	25.4	31.6	100.0	119.5	
4	2320.396	V	29.5	44.2	4.1	33.6	48.3	56.0	76.0	22.4	27.7	100.0	0.7	
5	5724.689	H	26.9	42.1	13.6	40.5	55.7	60.0	80.0	19.5	24.3	100.0	82.4	
6	5851.865	V	26.3	41.1	13.9	40.2	55.0	60.0	80.0	19.8	25.0	100.0	0.7	
7	2402.000	H	-----	-----	4.5	-----	-----	-----	-----	-----	-----	100.0	356.9	
8	2402.000	V	-----	-----	4.5	-----	-----	-----	-----	-----	-----	100.0	270.6	
9	2425.500	V	-----	-----	4.6	-----	-----	-----	-----	-----	-----	100.0	149.4	
10	2479.500	H	-----	-----	4.8	-----	-----	-----	-----	-----	-----	100.0	290.8	

* Exclusion bands

- Peripherals Fundamental Frequency: (2 402 ~ 2 480) MHz



#2



Final Result

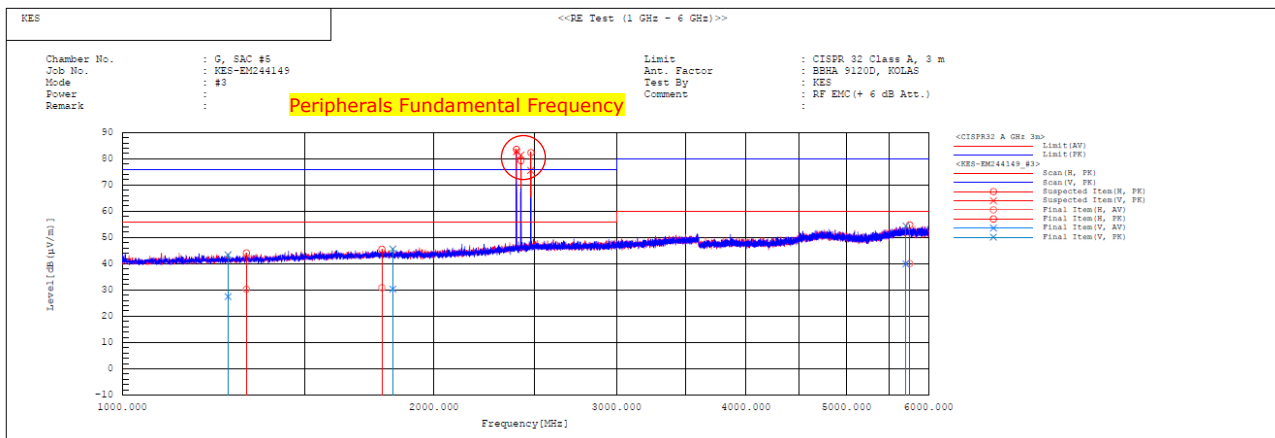
No.	Frequency	Pol	Reading AV	Reading PK	c.f	Result AV	Result PK	Limit AV	Limit PK	Margin AV	Margin PK	Height	Angle	Remark
	[MHz]		[dB (μV)]	[dB (μV)]	[dB (l/m)]	[dB (μV/m)]	[dB (μV/m)]	[dB (μV/m)]	[dB (μV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1074.587	H	28.6	44.3	-1.3	27.3	43.0	56.0	76.0	28.7	33.0	100.0	303.5	
2	1297.378	H	29.1	43.4	0.0	29.1	43.4	56.0	76.0	26.9	32.6	100.0	12.0	
3	1973.278	V	28.6	43.5	2.7	31.3	46.2	56.0	76.0	24.7	29.8	100.0	357.4	
4	2178.597	H	27.6	43.2	3.6	31.2	46.8	56.0	76.0	24.8	29.2	100.0	358.4	
5	3552.321	V	28.2	43.6	7.1	35.3	50.7	60.0	80.0	24.7	29.3	100.0	314.9	
6	5871.378	V	26.0	40.6	13.9	39.9	54.5	60.0	80.0	20.1	25.5	100.0	115.0	
7	2402.000	V	-----	-----	4.5	-----	-----	-----	-----	-----	-----	-----	100.0	326.2
8	2402.000	H	-----	-----	4.5	-----	-----	-----	-----	-----	-----	-----	100.0	132.5
9	2425.500	V	-----	-----	4.6	-----	-----	-----	-----	-----	-----	-----	100.0	253.5
10	2425.500	H	-----	-----	4.6	-----	-----	-----	-----	-----	-----	-----	100.0	32.9
11	2479.000	V	-----	-----	4.8	-----	-----	-----	-----	-----	-----	-----	100.0	2.6

* Exclusion bands

- Peripherals Fundamental Frequency: (2 402 ~ 2 480) MHz



■ #3



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/m)]	Result AV [dB (μV/m)]	Result PK [dB (μV/m)]	Limit AV [dB (μV/m)]	Limit PK [dB (μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1265.598	V	27.7	43.6	-0.2	27.5	43.4	56.0	76.0	28.5	32.6	100.0	90.5	
2	1317.985	H	30.2	44.0	0.1	30.3	44.1	56.0	76.0	25.7	31.9	100.0	172.7	
3	1781.116	H	28.9	43.5	2.0	30.9	45.5	56.0	76.0	25.1	30.5	100.0	359.4	
4	1825.008	V	28.1	43.4	2.2	30.3	45.6	56.0	76.0	25.7	30.4	100.0	340.9	
5	5707.468	V	26.4	40.9	13.5	39.9	54.4	60.0	80.0	20.1	25.6	100.0	238.4	
6	5754.857	H	26.5	41.2	13.6	40.1	54.8	60.0	80.0	19.9	25.2	100.0	358.8	
7	2402.000	V	-----	-----	4.5	-----	-----	-----	-----	-----	-----	100.0	109.7	
8	2402.000	H	-----	-----	4.5	-----	-----	-----	-----	-----	-----	100.0	1.0	
9	2425.500	V	-----	-----	4.6	-----	-----	-----	-----	-----	-----	100.0	309.4	
10	2425.500	H	-----	-----	4.6	-----	-----	-----	-----	-----	-----	100.0	359.4	
11	2479.500	V	-----	-----	4.8	-----	-----	-----	-----	-----	-----	100.0	100.5	
12	2480.000	H	-----	-----	4.8	-----	-----	-----	-----	-----	-----	100.0	232.1	

* Exclusion bands

- Peripherals Fundamental Frequency: (2 402 ~ 2 480) MHz

◆ Calculation

$$\text{Result(PK/CAV)} [\text{dB}(\mu\text{V/m})] = (\text{Reading(PK/CAV)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$
$$\text{Margin(PK/CAV)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V/m})] - \text{Result(PK/CAV)} [\text{dB}(\mu\text{V/m})]$$

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(PK/CAV) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

**Harmonic Current Emissions and Voltage Fluctuations and Flicker**

■ #1

Average harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.065			
2	0.001	0.117	1.080	n/a
3	0.058	2.531	2.300	PASS
4	0.002	0.393	0.430	n/a
5	0.058	5.060	1.140	PASS
6	0.002	0.514	0.300	n/a
7	0.056	7.315	0.770	PASS
8	0.002	0.663	0.230	n/a
9	0.052	12.934	0.400	PASS
10	0.001	0.717	0.184	n/a
11	0.048	14.396	0.330	PASS
12	0.001	0.857	0.153	n/a
13	0.043	20.690	0.210	PASS
14	0.001	1.099	0.131	n/a
15	0.039	25.861	0.150	PASS
16	0.001	1.226	0.115	n/a
17	0.034	25.741	0.132	PASS
18	0.001	1.354	0.102	n/a
19	0.030	25.004	0.118	PASS
20	0.001	1.504	0.092	n/a
21	0.025	15.770	0.161	PASS
22	0.001	1.725	0.084	n/a
23	0.021	14.345	0.147	PASS
24	0.001	1.869	0.077	n/a
25	0.018	12.995	0.135	PASS
26	0.001	1.979	0.071	n/a
27	0.015	11.818	0.125	PASS
28	0.001	2.146	0.066	n/a
29	0.013	10.830	0.116	PASS
30	0.001	2.240	0.061	n/a
31	0.011	10.320	0.109	PASS
32	0.001	2.400	0.058	n/a
33	0.010	10.042	0.102	PASS
34	0.001	2.327	0.054	n/a
35	0.010	10.433	0.096	PASS
36	0.001	2.449	0.051	n/a
37	0.010	10.603	0.091	PASS
38	0.001	2.415	0.048	n/a
39	0.009	10.759	0.087	PASS
40	0.001	2.443	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Harmonics (continued)

Maximum harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.066			
2	0.002	0.103	1.620	n/a
3	0.060	1.734	3.450	PASS
4	0.002	0.367	0.645	n/a
5	0.058	3.415	1.710	PASS
6	0.002	0.422	0.450	n/a
7	0.057	4.938	1.155	PASS
8	0.002	0.559	0.345	n/a
9	0.052	8.731	0.600	PASS
10	0.002	0.551	0.276	n/a
11	0.048	9.774	0.495	PASS
12	0.001	0.626	0.230	n/a
13	0.044	13.931	0.315	PASS
14	0.002	0.808	0.197	n/a
15	0.039	17.396	0.225	PASS
16	0.002	0.895	0.173	n/a
17	0.034	17.318	0.199	PASS
18	0.002	1.019	0.153	n/a
19	0.030	16.817	0.178	PASS
20	0.002	1.107	0.138	n/a
21	0.026	15.871	0.161	PASS
22	0.002	1.327	0.125	n/a
23	0.021	14.526	0.147	PASS
24	0.002	1.426	0.115	n/a
25	0.018	13.190	0.135	PASS
26	0.002	1.477	0.106	n/a
27	0.015	12.024	0.125	PASS
28	0.002	1.612	0.099	n/a
29	0.013	11.076	0.116	PASS
30	0.002	1.674	0.092	n/a
31	0.011	10.510	0.109	PASS
32	0.002	1.841	0.086	n/a
33	0.010	10.206	0.102	PASS
34	0.001	1.734	0.081	n/a
35	0.010	10.554	0.096	PASS
36	0.001	1.827	0.077	n/a
37	0.010	10.751	0.091	PASS
38	0.001	1.822	0.073	n/a
39	0.009	10.867	0.087	PASS
40	0.001	1.796	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



■ #2

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.047			
2	0.006	0.545	1.080	PASS
3	0.044	1.907	2.300	PASS
4	0.004	0.867	0.430	n/a
5	0.043	3.801	1.140	PASS
6	0.004	1.379	0.300	n/a
7	0.042	5.518	0.770	PASS
8	0.004	1.934	0.230	n/a
9	0.041	10.313	0.400	PASS
10	0.004	2.291	0.184	n/a
11	0.040	12.104	0.330	PASS
12	0.004	2.612	0.153	n/a
13	0.038	18.300	0.210	PASS
14	0.004	2.915	0.131	n/a
15	0.037	24.428	0.150	PASS
16	0.004	3.048	0.115	n/a
17	0.035	26.298	0.132	PASS
18	0.003	3.191	0.102	n/a
19	0.033	27.671	0.118	PASS
20	0.003	3.280	0.092	n/a
21	0.030	18.956	0.161	PASS
22	0.003	3.310	0.084	n/a
23	0.028	19.294	0.147	PASS
24	0.003	3.311	0.077	n/a
25	0.026	19.238	0.135	PASS
26	0.002	3.175	0.071	n/a
27	0.023	18.786	0.125	PASS
28	0.002	3.138	0.066	n/a
29	0.021	18.279	0.116	PASS
30	0.002	2.841	0.061	n/a
31	0.019	17.351	0.109	PASS
32	0.001	2.523	0.058	n/a
33	0.017	16.152	0.102	PASS
34	0.001	2.387	0.054	n/a
35	0.014	14.935	0.096	PASS
36	0.001	2.003	0.051	n/a
37	0.012	13.366	0.091	PASS
38	0.001	1.786	0.048	n/a
39	0.010	11.805	0.087	PASS
40	0.001	1.660	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Harmonics (continued)

Maximum harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.048			
2	0.007	0.453	1.620	PASS
3	0.045	1.305	3.450	PASS
4	0.006	0.923	0.645	PASS
5	0.045	2.614	1.710	PASS
6	0.006	1.255	0.450	PASS
7	0.044	3.786	1.155	PASS
8	0.005	1.493	0.345	PASS
9	0.042	7.057	0.600	PASS
10	0.005	1.794	0.276	n/a
11	0.041	8.312	0.495	PASS
12	0.005	2.026	0.230	n/a
13	0.040	12.545	0.315	PASS
14	0.004	2.262	0.197	n/a
15	0.038	16.721	0.225	PASS
16	0.004	2.382	0.173	n/a
17	0.036	17.914	0.199	PASS
18	0.004	2.449	0.153	n/a
19	0.034	18.914	0.178	PASS
20	0.004	2.559	0.138	n/a
21	0.031	19.329	0.161	PASS
22	0.003	2.606	0.125	n/a
23	0.029	19.647	0.147	PASS
24	0.003	2.598	0.115	n/a
25	0.026	19.611	0.135	PASS
26	0.003	2.562	0.106	n/a
27	0.024	19.082	0.125	PASS
28	0.003	2.560	0.099	n/a
29	0.022	18.504	0.116	PASS
30	0.002	2.276	0.092	n/a
31	0.019	17.503	0.109	PASS
32	0.002	2.036	0.086	n/a
33	0.017	16.283	0.102	PASS
34	0.002	1.998	0.081	n/a
35	0.015	15.073	0.096	PASS
36	0.001	1.613	0.077	n/a
37	0.012	13.465	0.091	PASS
38	0.001	1.510	0.073	n/a
39	0.010	11.959	0.087	PASS
40	0.001	1.543	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Voltage Fluctuations

■ #1

Maximum Flicker results

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

■ #2

Maximum Flicker results

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS



Test Setup Photos and Configuration

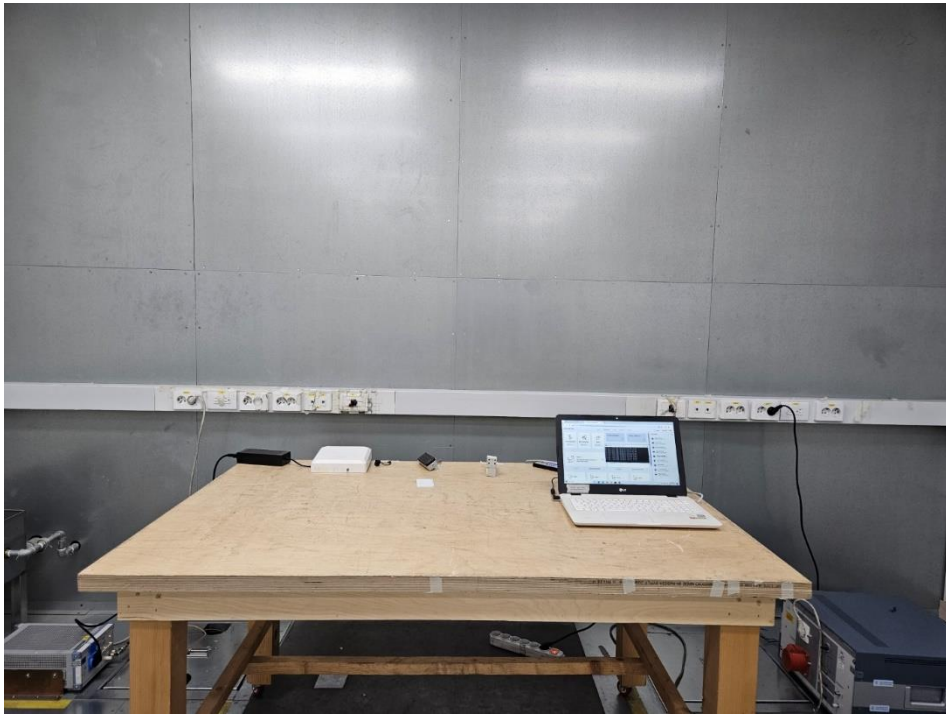
Conducted Emissions at Mains Power Ports

■ #1





■ #2





Conducted Emissions at Telecommunication Ports

■ #1





■ #2





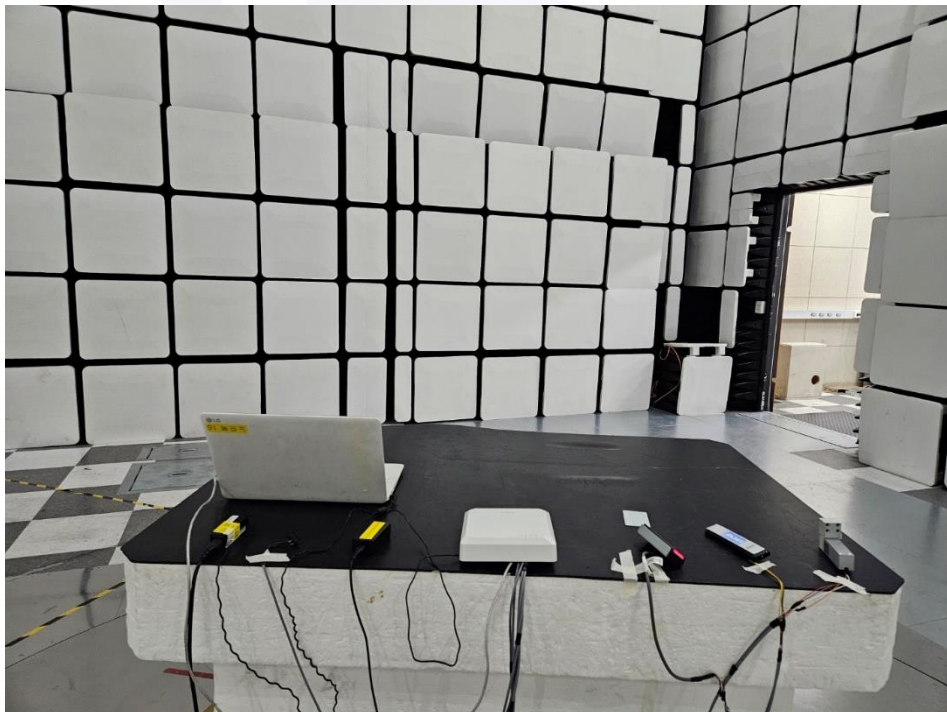
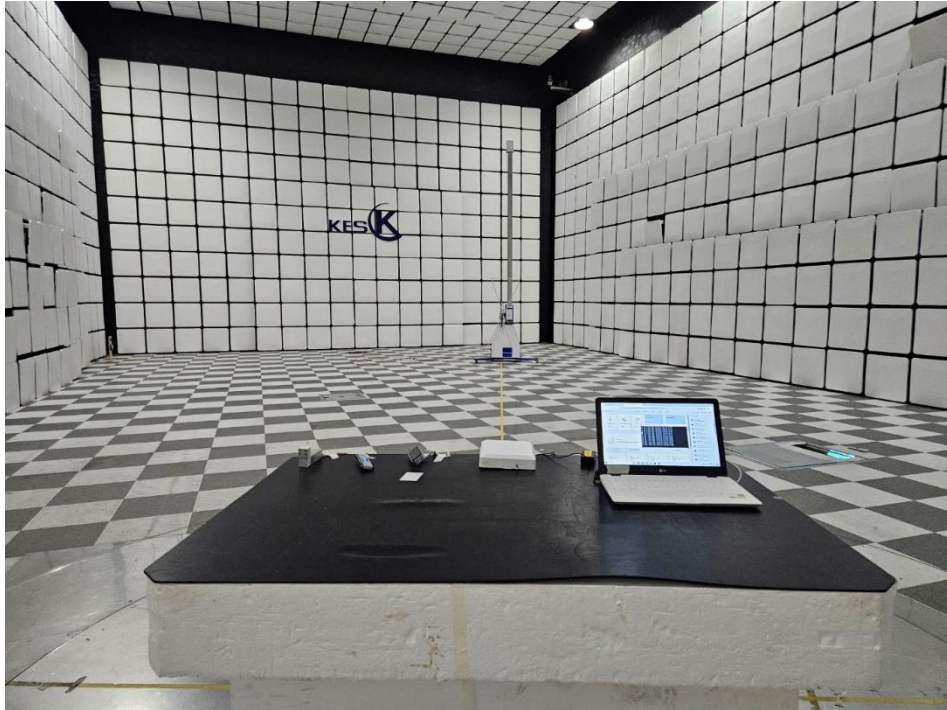
■ #3





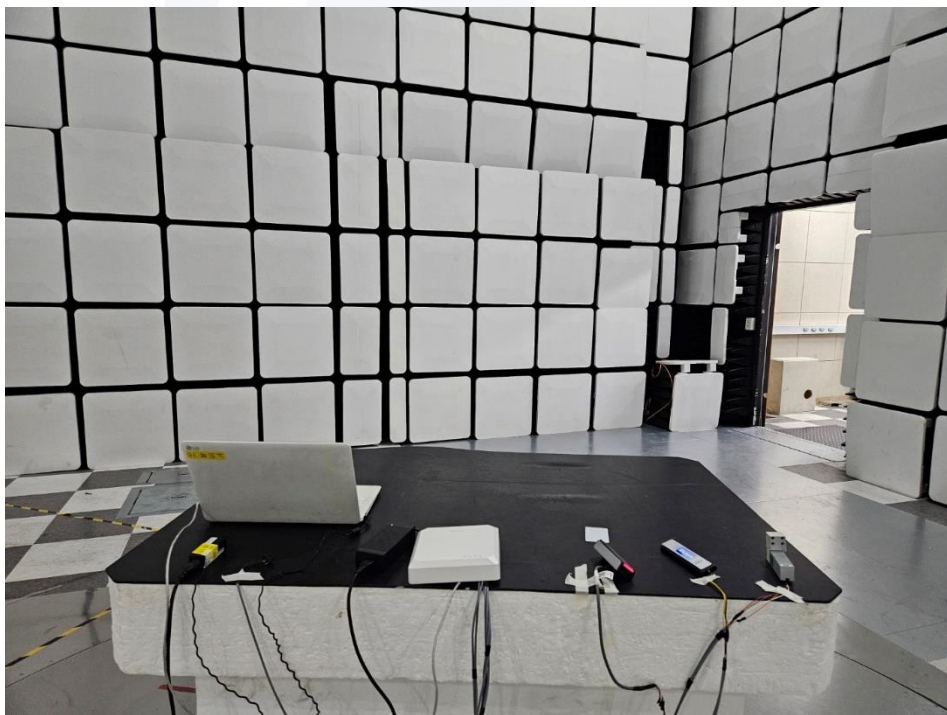
Radiated Electric Field Emissions(Below 1 GHz)

■ #1



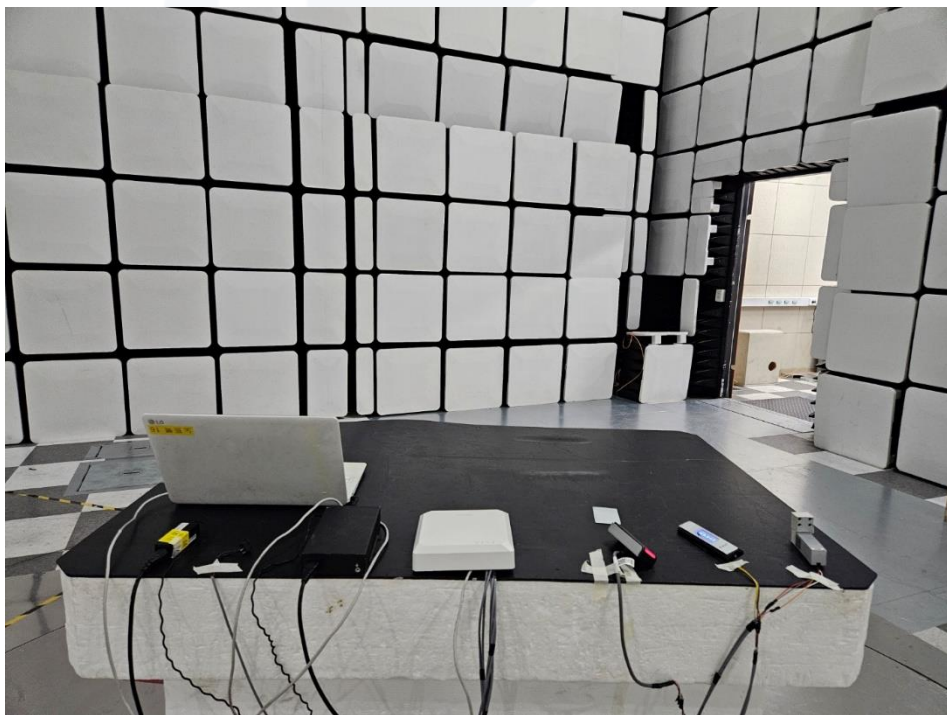
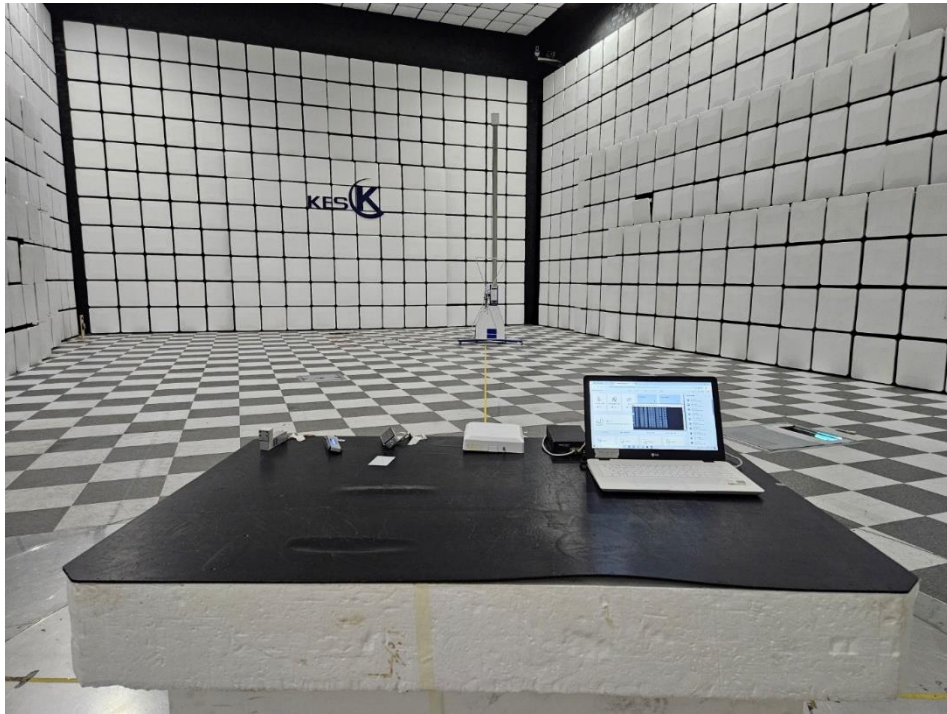


■ #2





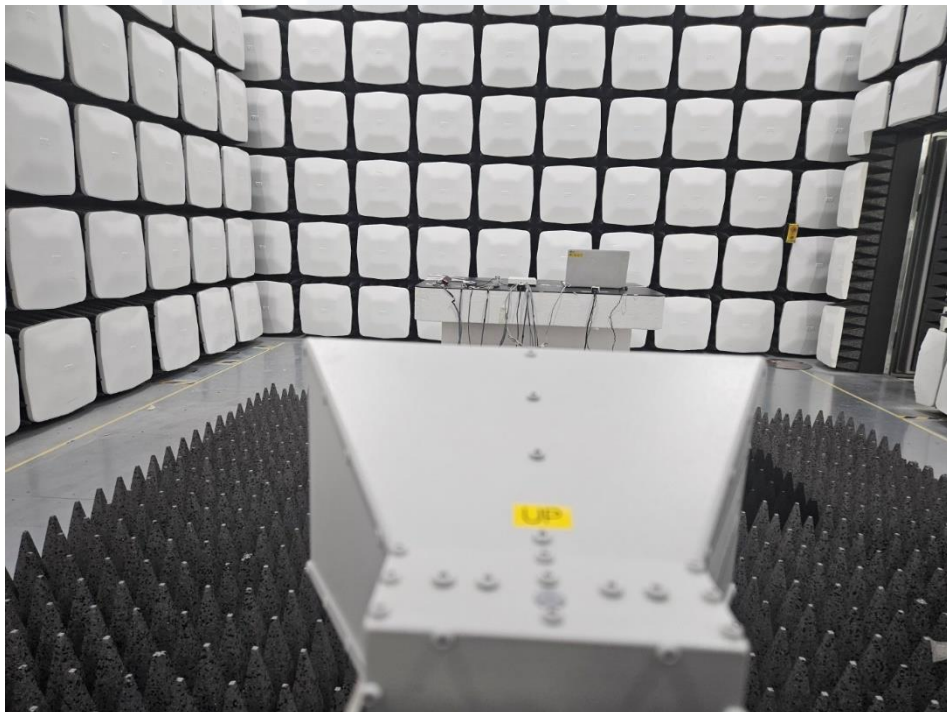
■ #3





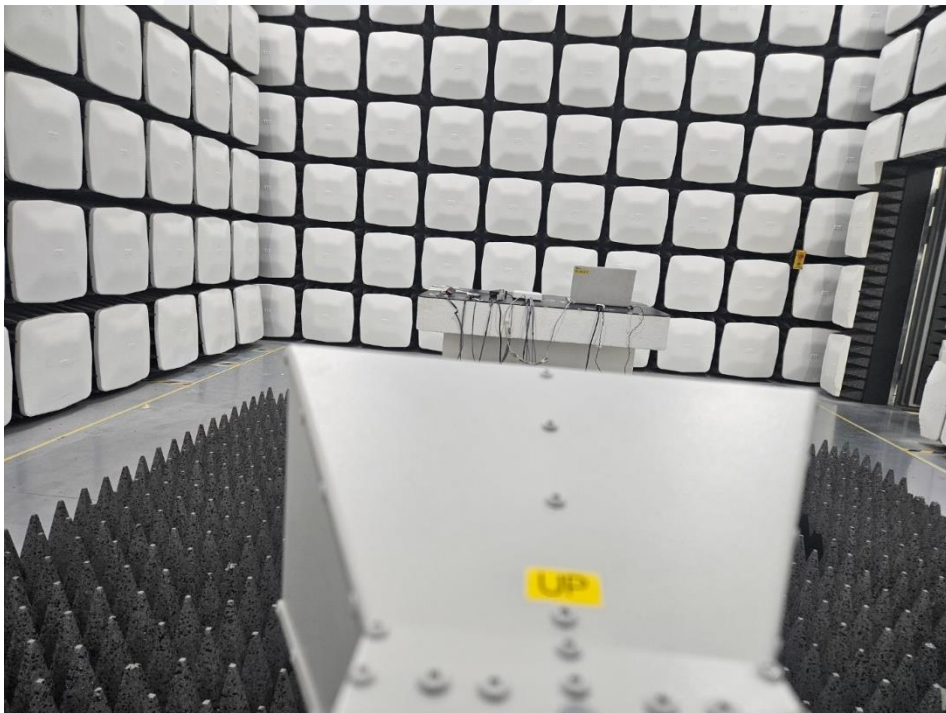
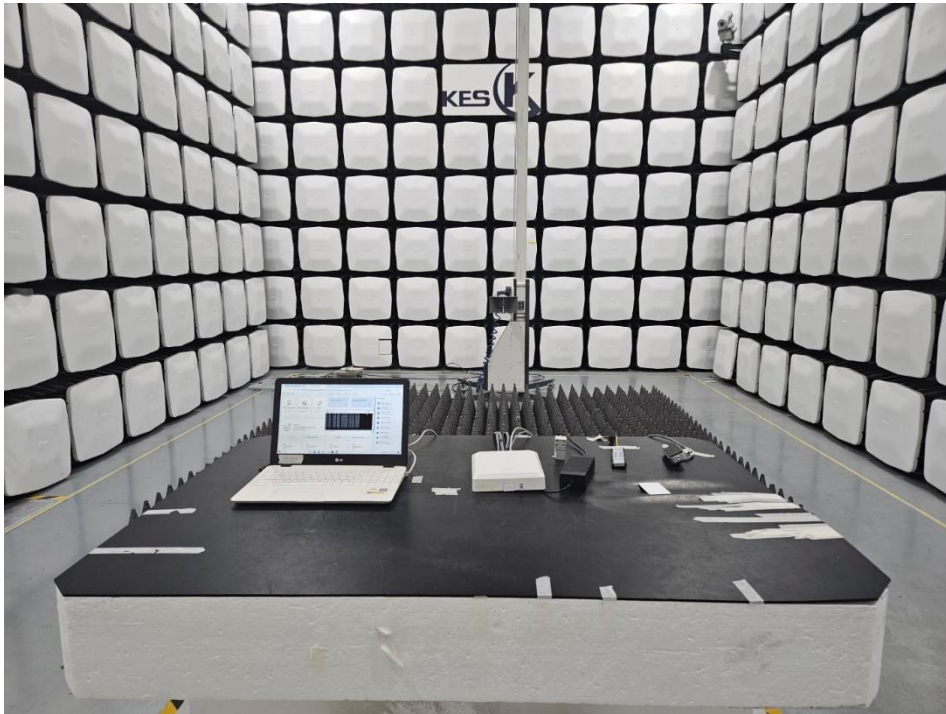
Radiated Electric Field Emissions(Above 1 GHz)

■ #1



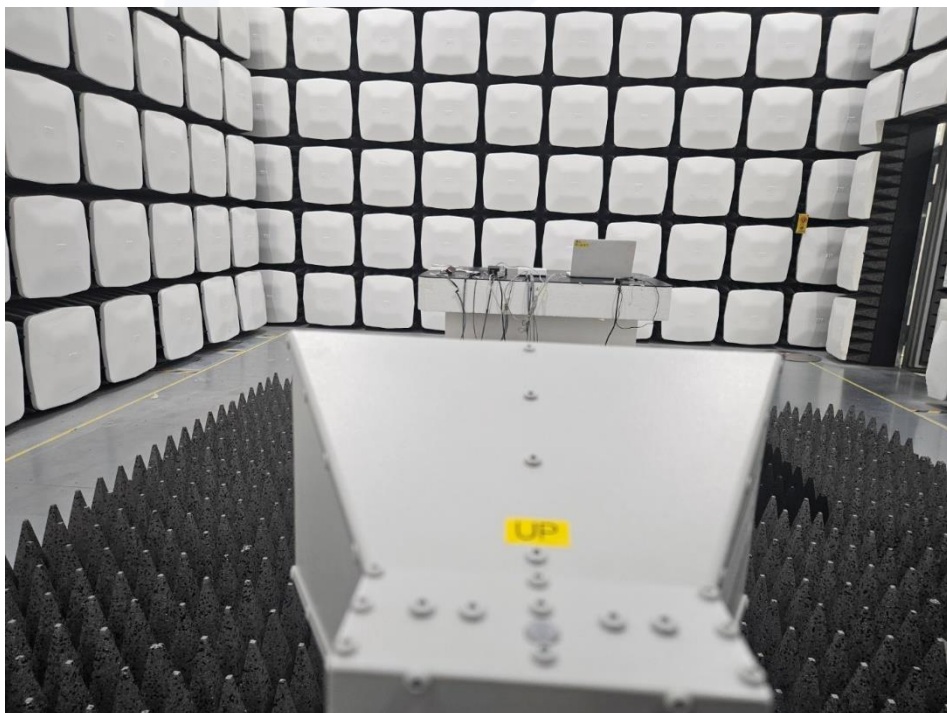
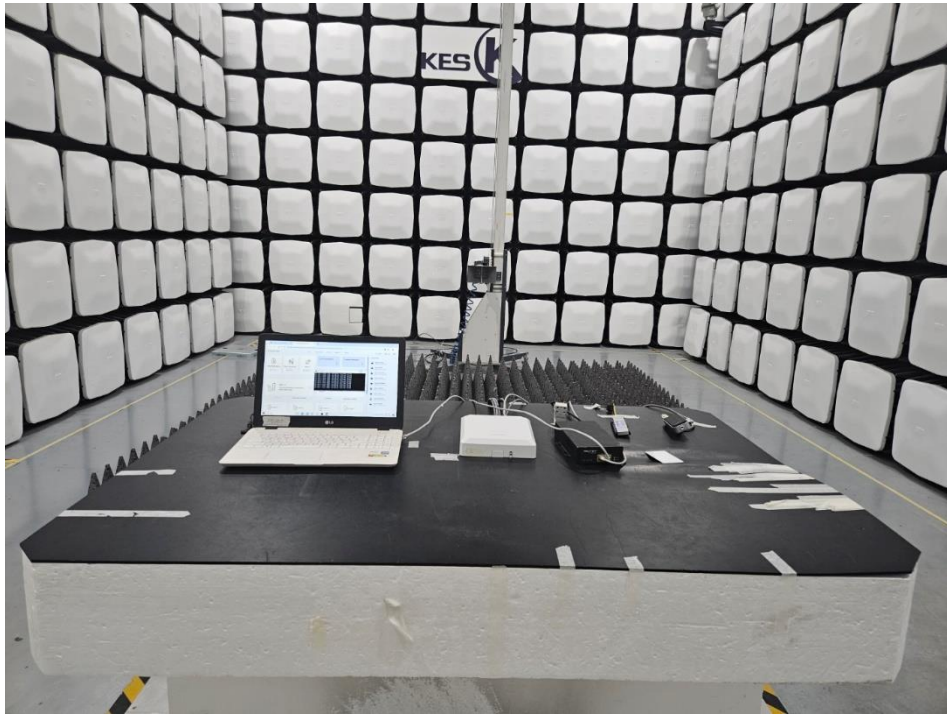


■ #2





■ #3





Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ #1



■ #2





Electrostatic Discharge

■ #1

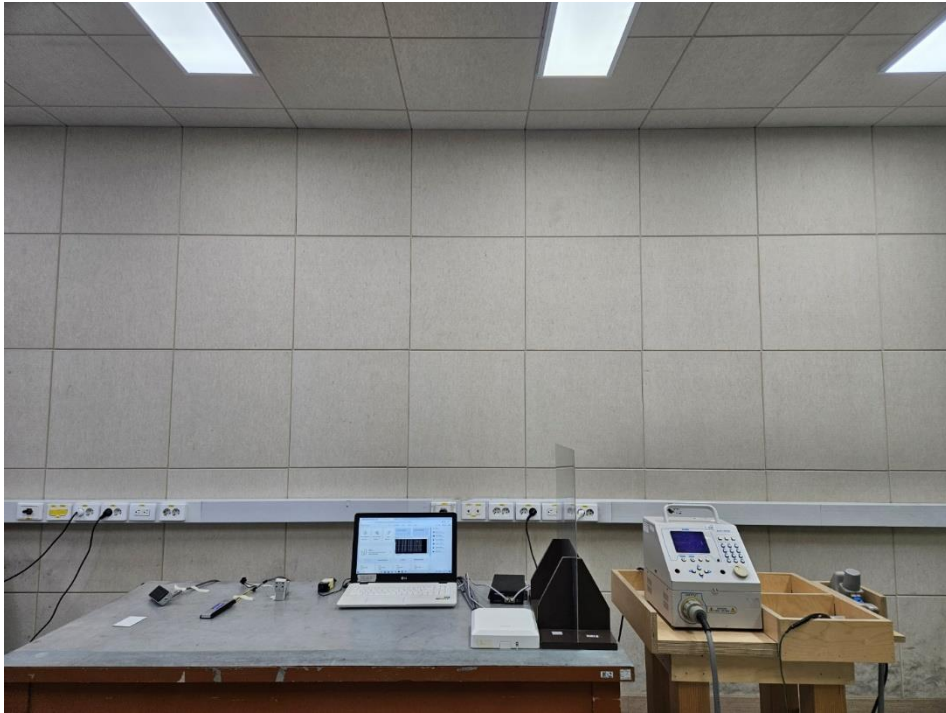


■ #2





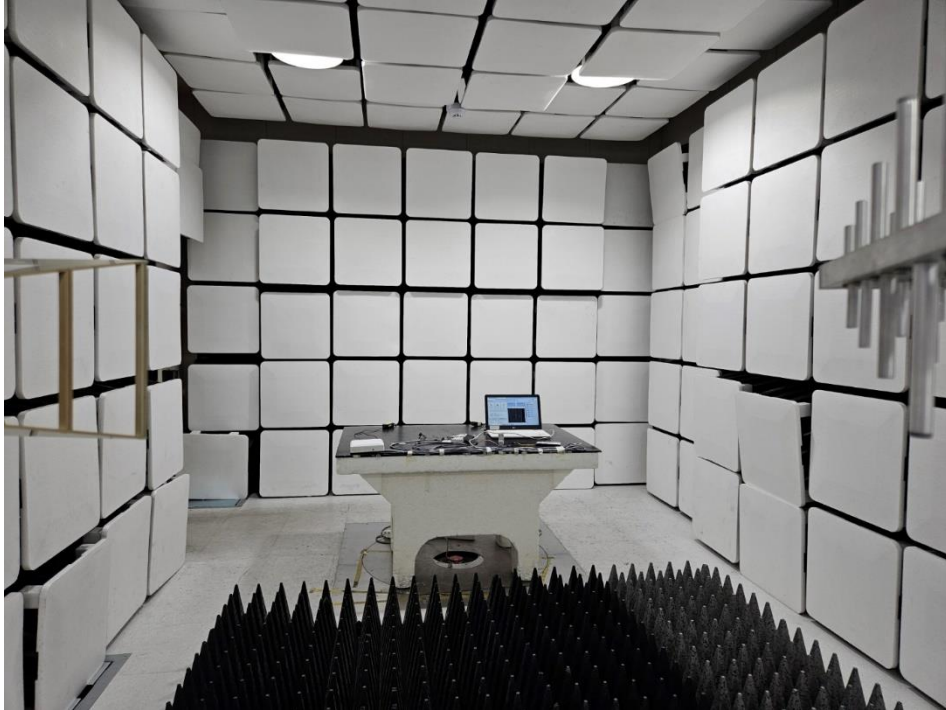
■ #3



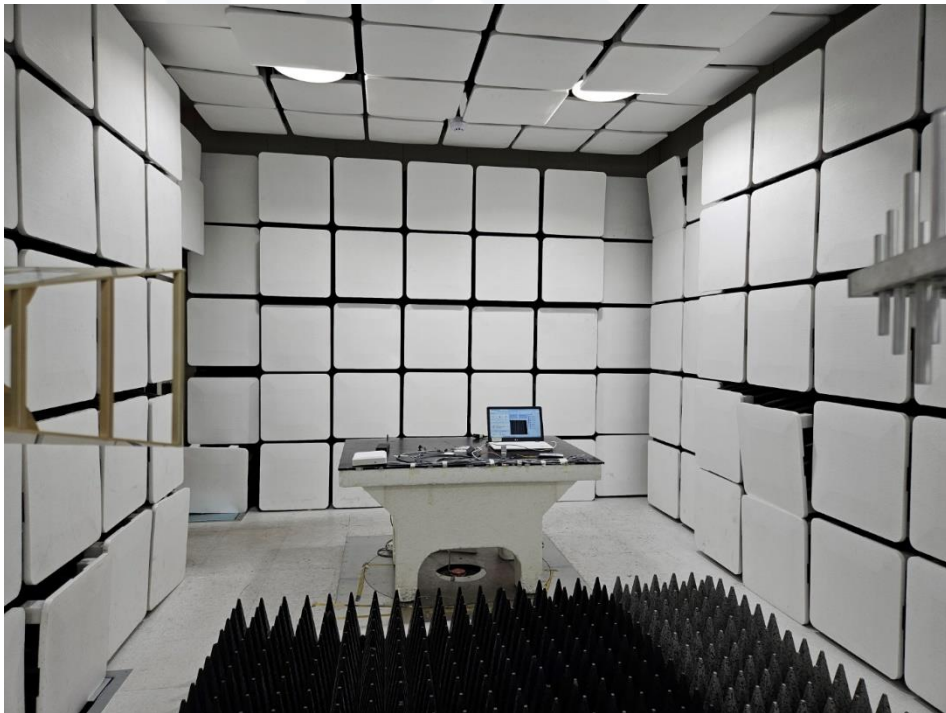


Radiated Electric Field Immunity

■ #1

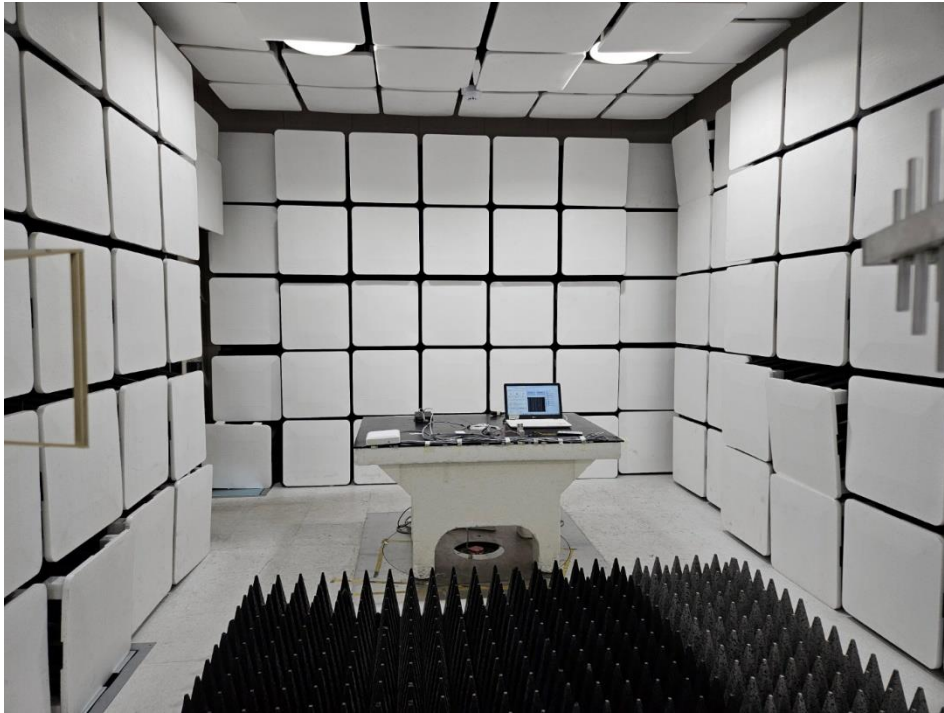


■ #2





■ #3





Electrical Fast Transients/Bursts

■ #1



■ #2





■ #3





Surge Transients

■ #1



■ #2





■ #3



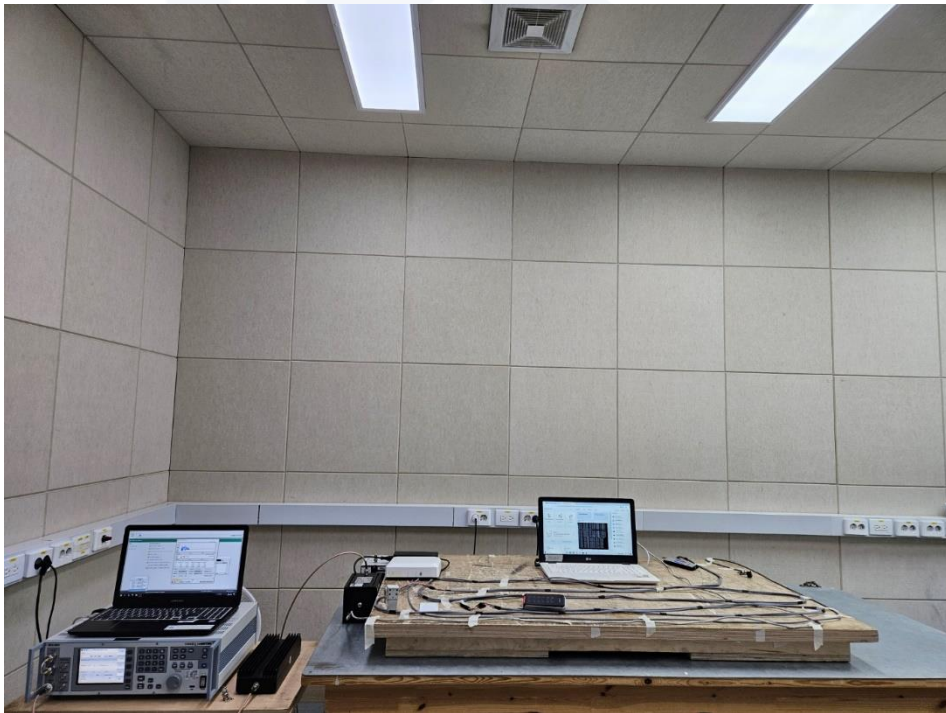


Conducted Disturbance

■ #1



■ #2





■ #3





Voltage Dips and Short Interruptions

■ #1



■ #2





EUT External Photographs

(Top)



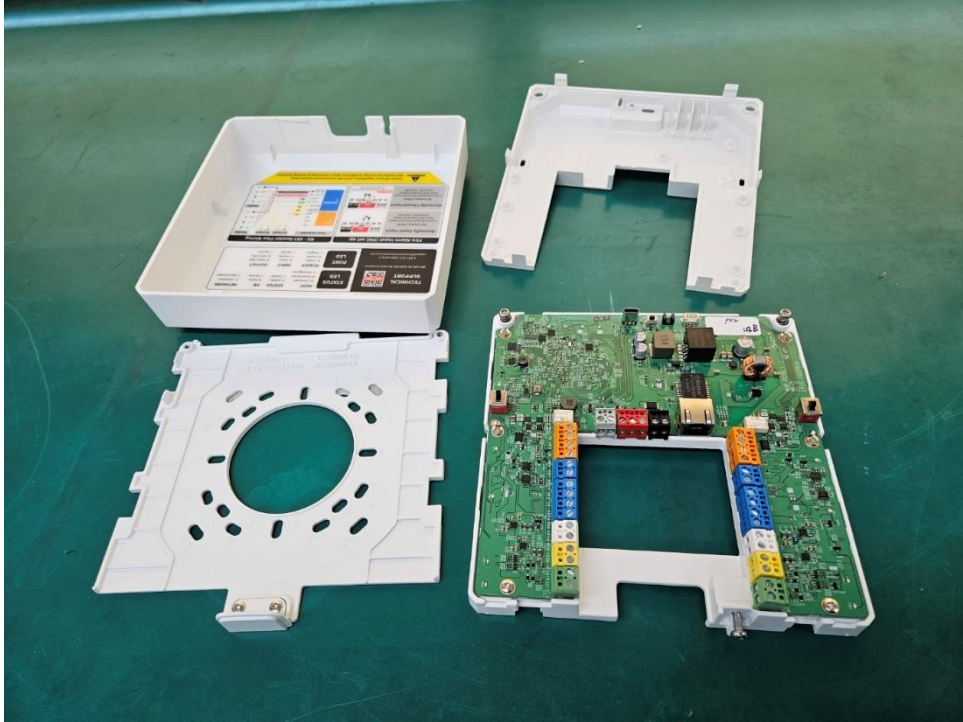
(Bottom)





EUT Internal Photographs

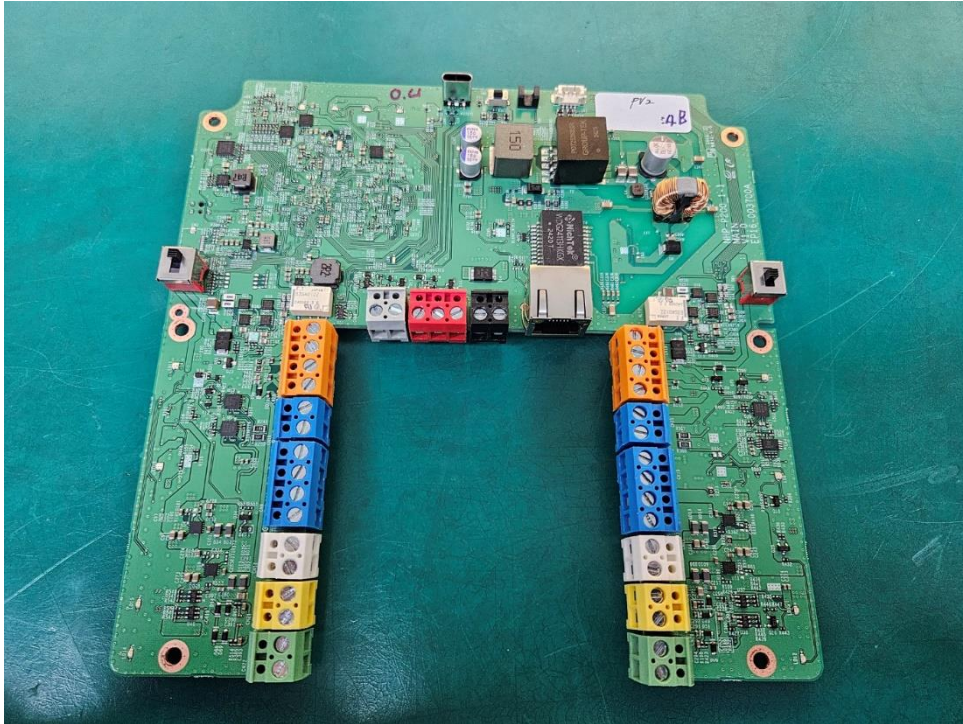
(Internal View)



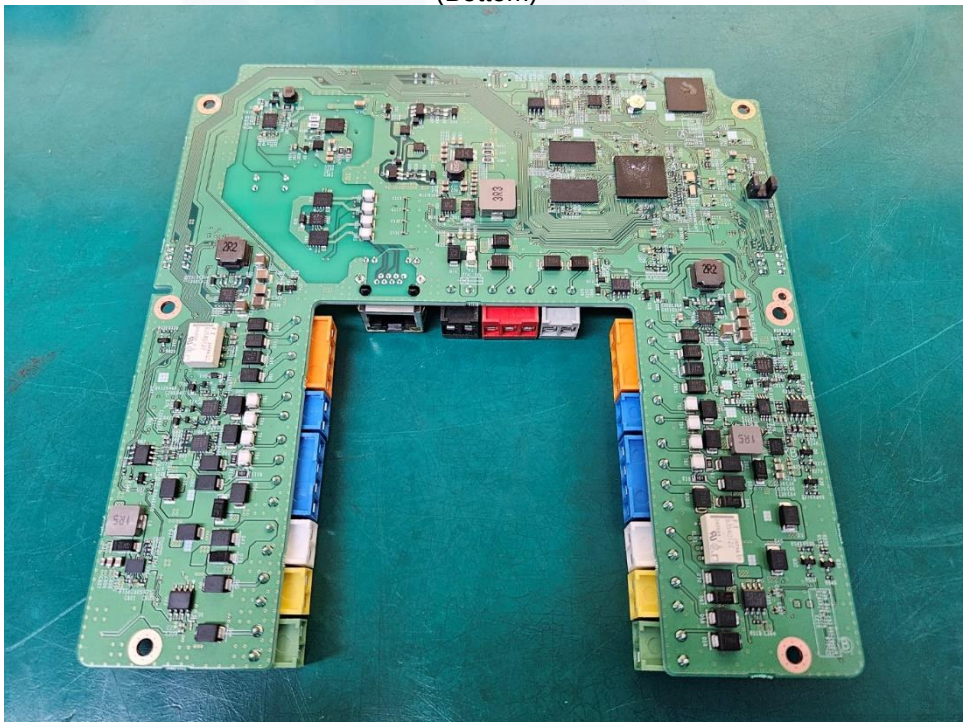


EUT Internal View – Board

(Top)



(Bottom)





Label and Location



IP Controller

Model No : NHP-P200

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam



The End.