

**KES Co., Ltd.**

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Report No.:

KES-EM-21T1079-R2

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EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T1079-R2
Date of Issue : Feb. 24, 2023
Product name : AUDIO SERVER
Model/Type No. : SPA-S1000
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : Inter-M Corporation
Manufacturer Address : 73, Hwahap-ro 1402beon-gil, Yangju-si, Gyeonggi-do
Date of Receipt : May. 25, 2021
Test date : Jul. 04, 2021 ~ Jul. 06, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jun Soo, Jung
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Nov. 10, 2021	KES-EM-21T1079	Issued
Jan. 27, 2023	KES-EM-21T1079-R1	Change Manufacturer
Feb. 24, 2023	KES-EM-21T1079-R2	Change the Applicant at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

WISEnet AMS	Specification	SPA-S1000
Product	Type	Network Audio Server
MIC Input	Input Sensitivity	
	Frequency Response	
Line Output	Output Level	
	Frequency Response	
	THD + N Ratio	-
	S/N Ratio (20Hz HPF, 20kHz LPF)	-
Power Amp	Output Power (8Ω, 1kHz Sine wave)	-
	Frequency Response (1W, 8Ω)	-
	S/N Ratio (20Hz HPF, 20kHz LPF)	-
Network	Ethernet	100/1000 Base-T
Memory	External Memory (Micro SD)	-
Contact	Contact Input	-
	Contact Output	-
	(Rating : 1A DC 30V, 0.3A AC 125V)	-
General	Operating Temperature	-10 ~ 40°C (14°F ~ 104°F)
	Operating Humidity	10~100% RH Non-condensing
	IP code	-
	Weight	3.02kg
	Size	482(W)×44(H)×280(D)mm
	Color	Black
	Certificate	EMC : KN 32/ 35, EN 55032/ 55035, FCC Part 15, Subpart B Safety : K 60950-1, EN 60950-1, CSA/UL 60950-1
Power	PoE PoE+	120-240V, 50/60Hz, 10W DC 24V, 350mA
Audio	Built-in microphone	-
	Audio Compression	-
Speaker	Speaker Component	-
	Max. Sound Pressure Level (PoE : 7 Watt)	-
	Max. Sound Pressure Level (PoE+ : 15 Watt)	-
	Max. Power (Peak)	-
	Frequency Response	-
	Sensitivity (1Watt)	-
	Coverage Pattern	-
Amplifier	Amplifier	-
Network	Security	Password protection : admin,setup,user,guest (sha-2, Digest authentication, User access log) Digest authentication, User access log
	Supported Protocols	IPv4, HTTP, Bonjour, DNS, NTP, TCP, UDP, DHCP, ARP, SSH, ICMP, Network Bonding
System Integration	API (Application Programming Interface)	Web Rest API
	Multi-source Dynamic PA control	TBD
	Voice Announcement	-
	VoIP	-
	TTS	-
	Intelligent Audio	-
	Event Triggers	-
	Functional Monitoring	Connection verification, Built-in system logging
	Supported OS	Windows : Windows 10 MAC : Catalina 10.15.4 ↑ , Big Sur 11.1 ↑
	Supported Web viewer	Chrome Version : 91.0.4472.114 ↑



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 240 V, 50 Hz

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
AUDIO SERVER	SPA-S1000	-	Inter-M Corporation	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC / DC Adapter	RQ-12024Fb	RQ6-43390	LOADUS	-
Notebook	P95G001	9JM8HT2	WINSTRON CORPORATION.	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZHOU)CO.,LTD.	-
PoE Switch	-	-	REPOTEC CO., LTD.	-
CEILING SPEAKER	SPA-C110B	-	Inter-M Corporation	-
CEILING SPEAKER	SPA-C100B	-	Inter-M Corporation	-
WALL SPEAKER	SPA-W100B	-	Inter-M Corporation	-
Speaker	E5	-	PreSonus®	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm button	-	-	-	-

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1.6 External I/O Cabling

■ AC MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
AUDIO SERVER (EUT)	RJ-45	PoE Switch	RJ-45	20.0	U
PoE Switch	RJ-45	Notebook	RJ-45	3.0	U
	RJ-45	CEILING SPEAKER	RJ-45	20.0	U
	RJ-45	CEILING SPEAKER	RJ-45	20.0	U
	RJ-45	WALL SPEAKER	RJ-45	20.0	U
CEILING SPEAKER	Alarm	Alarm	Alarm	3.0	U
	Alarm	Alarm button	Alarm	3.0	U
	2 pin	Speaker	XLR	3.0	U
Notebook	DC Jack	Notebook Adapter	Line Out	1.5	U

* Unshielded=U, Shielded=S

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■ AC / DC Adapter MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
AUDIO SERVER (EUT)	DC IN	AC / DC Adapter	Line OUT	1.5	U
	RJ-45	PoE Switch	RJ-45	20.0	U
PoE Switch	RJ-45	Notebook	RJ-45	3.0	U
	RJ-45	CEILING SPEAKER	RJ-45	20.0	U
	RJ-45	CEILING SPEAKER	RJ-45	20.0	U
	RJ-45	WALL SPEAKER	RJ-45	20.0	U
CEILING SPEAKER	Alarm	Alarm	Alarm	3.0	U
	Alarm	Alarm button	Alarm	3.0	U
	2 pin	Speaker	XLR	3.0	U
Notebook	DC Jack	Notebook Adapter	Line Out	1.5	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test Mode	operating
AC, AC / DC Adapter MODE	1. After placing the EUT and peripheral devices as shown in the layout below, run a PING test on a laptop connected to the EUT to check if it is connected normally. 2. After accessing the EUT's web page from the laptop, 1 kHz tone source was entered to verify that the speakers' sound was output properly.

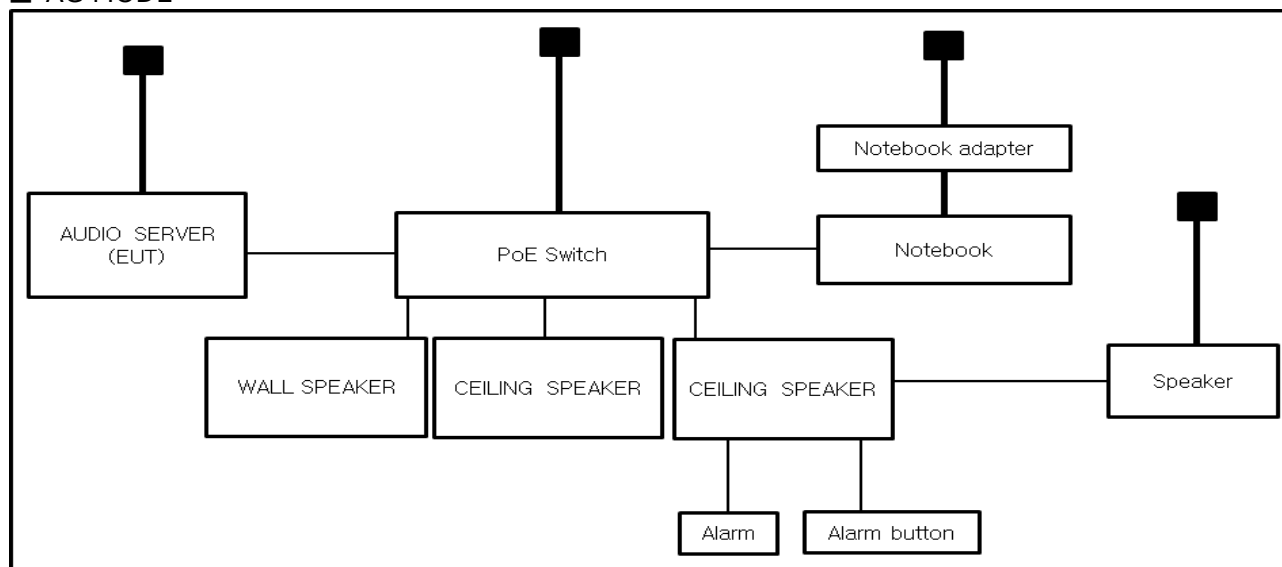
EUT Test operating S/W		
Name	Version	Manufacture Company
-	-	-

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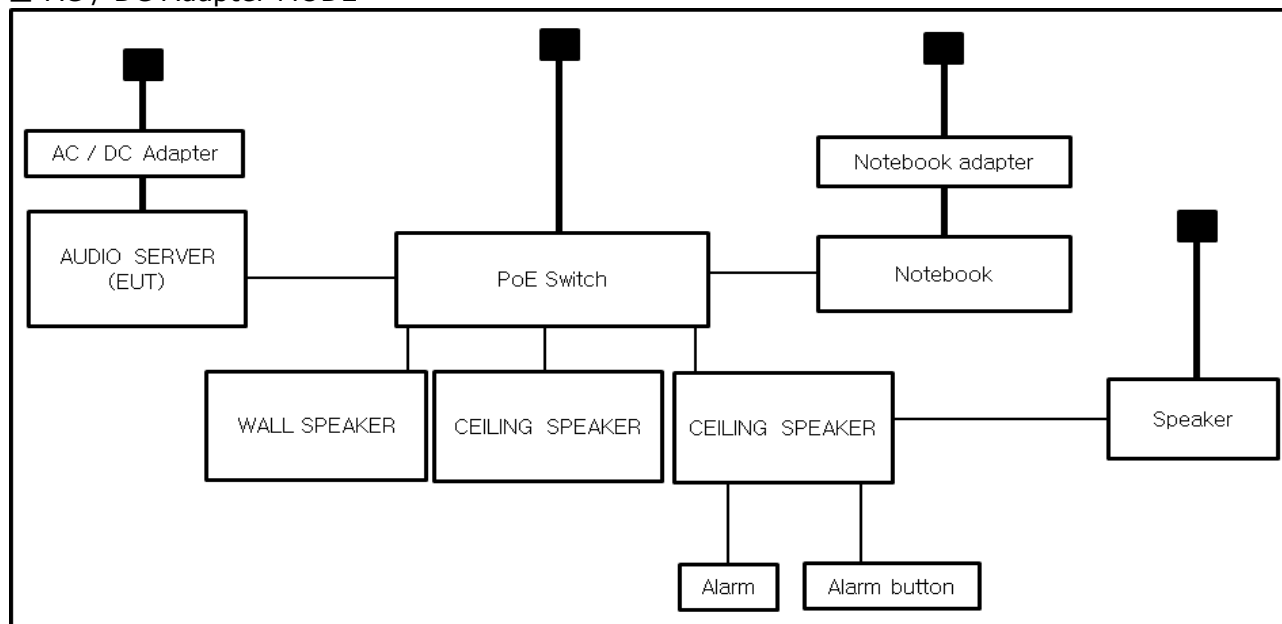
1.8 Configuration

■ AC Main
 □ DC Main

■ AC MODE



■ AC / DC Adapter MODE



1.9 Remarks when standards applied

N/A







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, Yeosu-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 0004



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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **AS/NZS CISPR32:2015**

☒ Class A

☐ Class B

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Jul. 04, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: (24,9 ± 0,1) °C

Relative Humidity: (46,8 ± 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.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jul. 04, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
<input checked="" type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 30, 2021
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021
<input type="checkbox"/>	CDN	CDNS502A	TESEQ	40431	12, 29, 2021

Test Conditions

Temperature: (24,9 ± 0,1) °C

Relative Humidity: (46,8 ± 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.

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jul. 04, 2021

Test Location☐ OPEN AREA TEST SITE #2☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2022
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: (24,6 ± 0,1) °C

Relative Humidity: (47,2 ± 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.

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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jul. 06, 2021

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR7	R & S	101190	08, 03, 2022
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2022
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (24,7 ± 0,1) °C

Relative Humidity: (46,9 ± 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

RemarksSee Appendix A for test data.

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APPENDIX A – TEST DATA

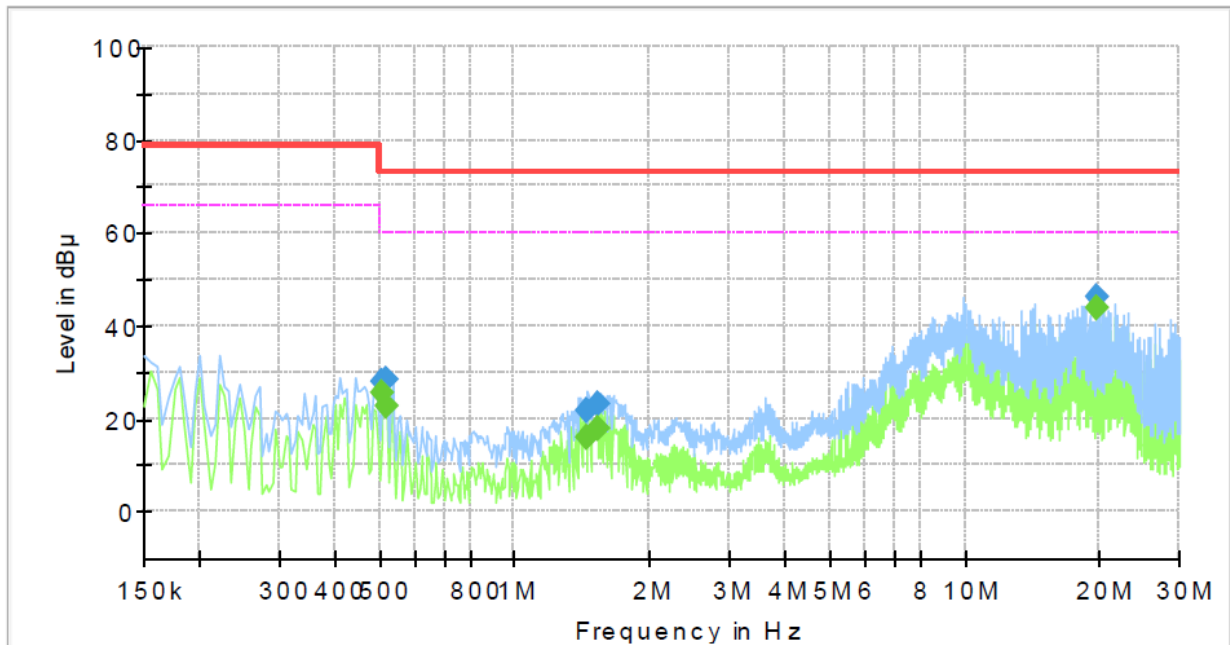
Conducted Emissions at Mains Power Ports

■ AC MODE

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SPA-S1000
Phase:	L1
Mode:	AC
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.510000	---	25.66	60.00	34.34	1000.0	9.000	L1	19.7
0.510000	27.80	---	73.00	45.20	1000.0	9.000	L1	19.7
0.520000	---	22.64	60.00	37.36	1000.0	9.000	L1	19.7
0.520000	28.43	---	73.00	44.57	1000.0	9.000	L1	19.7
1.455000	---	15.82	60.00	44.18	1000.0	9.000	L1	20.2
1.455000	21.81	---	73.00	51.19	1000.0	9.000	L1	20.2
1.525000	---	17.75	60.00	42.25	1000.0	9.000	L1	20.2
1.525000	22.91	---	73.00	50.09	1000.0	9.000	L1	20.2
19.710000	---	43.96	60.00	16.04	1000.0	9.000	L1	20.1
19.710000	46.15	---	73.00	26.85	1000.0	9.000	L1	20.1

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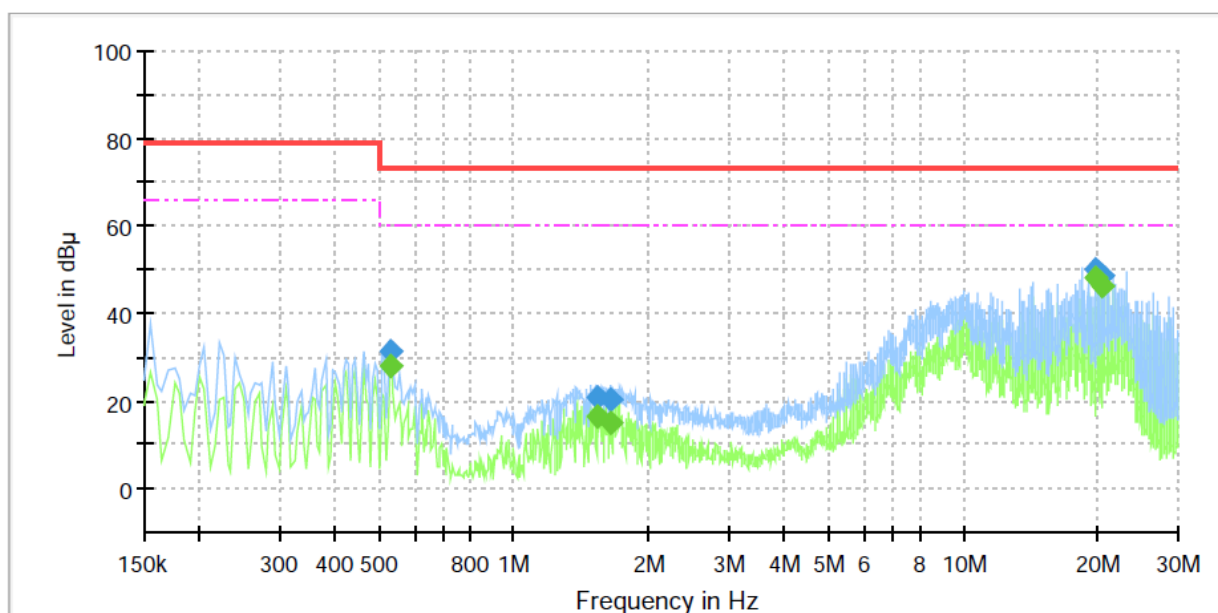
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SPA-S1000
Phase:	N
Mode:	AC
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.530000	---	27.87	60.00	32.13	1000.0	9.000	N	19.7
0.530000	31.50	---	73.00	41.50	1000.0	9.000	N	19.7
1.530000	---	16.22	60.00	43.78	1000.0	9.000	N	20.2
1.530000	20.71	---	73.00	52.29	1000.0	9.000	N	20.2
1.635000	---	14.86	60.00	45.14	1000.0	9.000	N	20.2
1.635000	20.40	---	73.00	52.60	1000.0	9.000	N	20.2
19.710000	---	48.14	60.00	11.86	1000.0	9.000	N	20.1
19.710000	50.21	---	73.00	22.79	1000.0	9.000	N	20.1
20.320000	---	46.39	60.00	13.61	1000.0	9.000	N	20.1
20.320000	48.51	---	73.00	24.49	1000.0	9.000	N	20.1



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■ AC / DC Adapter MODE

HOT LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

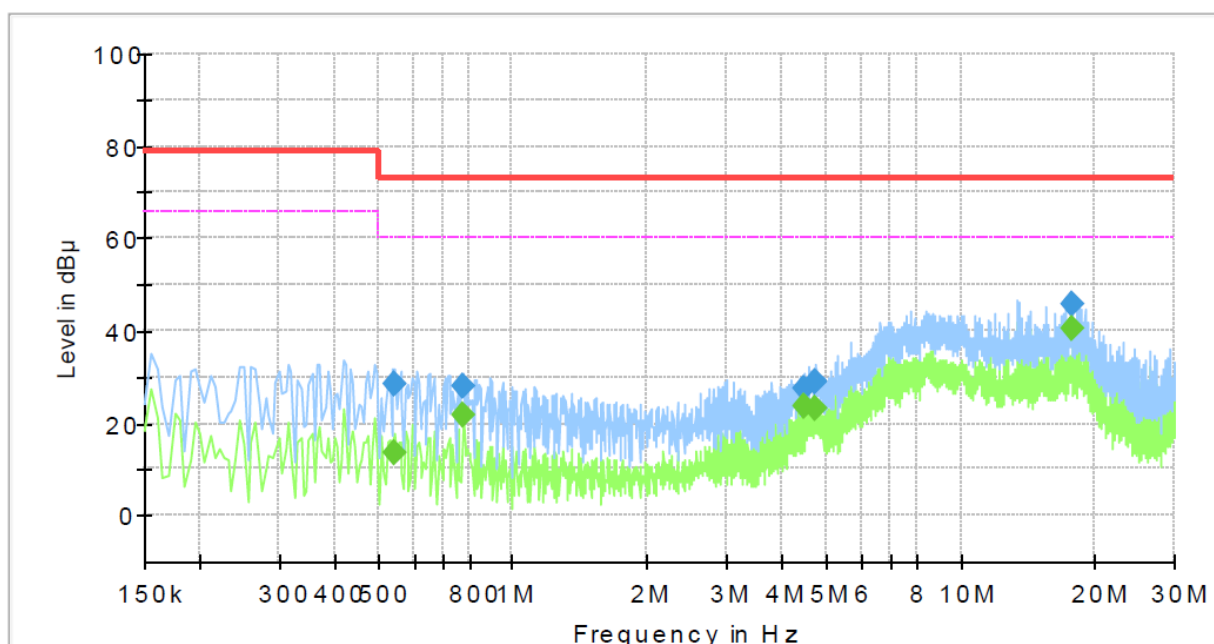
Conducted Emission

SPA-S1000

L1

AC / DC Adapter

KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.545000	28.50	---	73.00	44.50	1000.0	9.000	L1	19.8
0.545000	---	13.44	60.00	46.56	1000.0	9.000	L1	19.8
0.775000	28.09	---	73.00	44.91	1000.0	9.000	L1	20.0
0.775000	---	21.48	60.00	38.52	1000.0	9.000	L1	20.0
4.455000	27.34	---	73.00	45.66	1000.0	9.000	L1	19.8
4.455000	---	23.39	60.00	36.61	1000.0	9.000	L1	19.8
4.720000	28.92	---	73.00	44.08	1000.0	9.000	L1	19.7
4.720000	---	23.19	60.00	36.81	1000.0	9.000	L1	19.7
17.695000	45.57	---	73.00	27.43	1000.0	9.000	L1	20.0
17.695000	---	40.47	60.00	19.53	1000.0	9.000	L1	20.0

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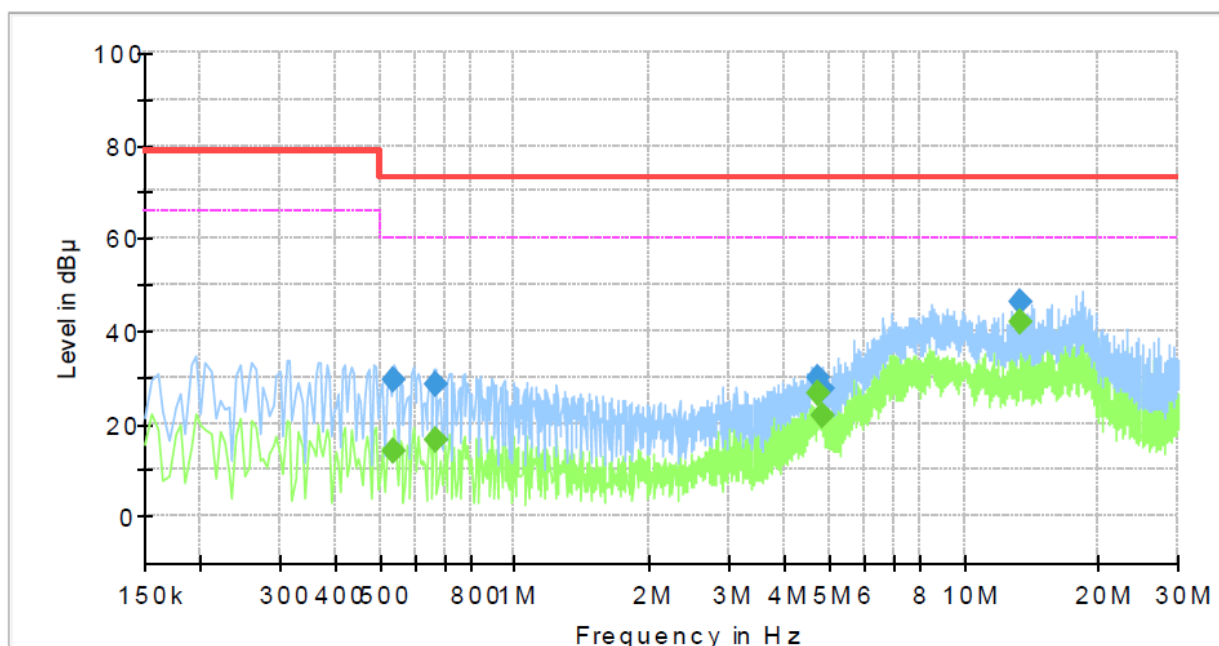
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SPA-S1000
Phase:	N
Mode:	AC / DC Adapter
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.540000	---	14.09	60.00	45.91	1000.0	9.000	N	19.7
0.540000	29.32	---	73.00	43.68	1000.0	9.000	N	19.7
0.665000	---	16.20	60.00	43.80	1000.0	9.000	N	19.9
0.665000	28.47	---	73.00	44.53	1000.0	9.000	N	19.9
4.730000	---	26.51	60.00	33.49	1000.0	9.000	N	19.7
4.730000	30.08	---	73.00	42.92	1000.0	9.000	N	19.7
4.830000	---	21.86	60.00	38.14	1000.0	9.000	N	19.7
4.830000	27.58	---	73.00	45.42	1000.0	9.000	N	19.7
13.420000	---	41.70	60.00	18.30	1000.0	9.000	N	19.9
13.420000	46.26	---	73.00	26.74	1000.0	9.000	N	19.9

◆ 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 (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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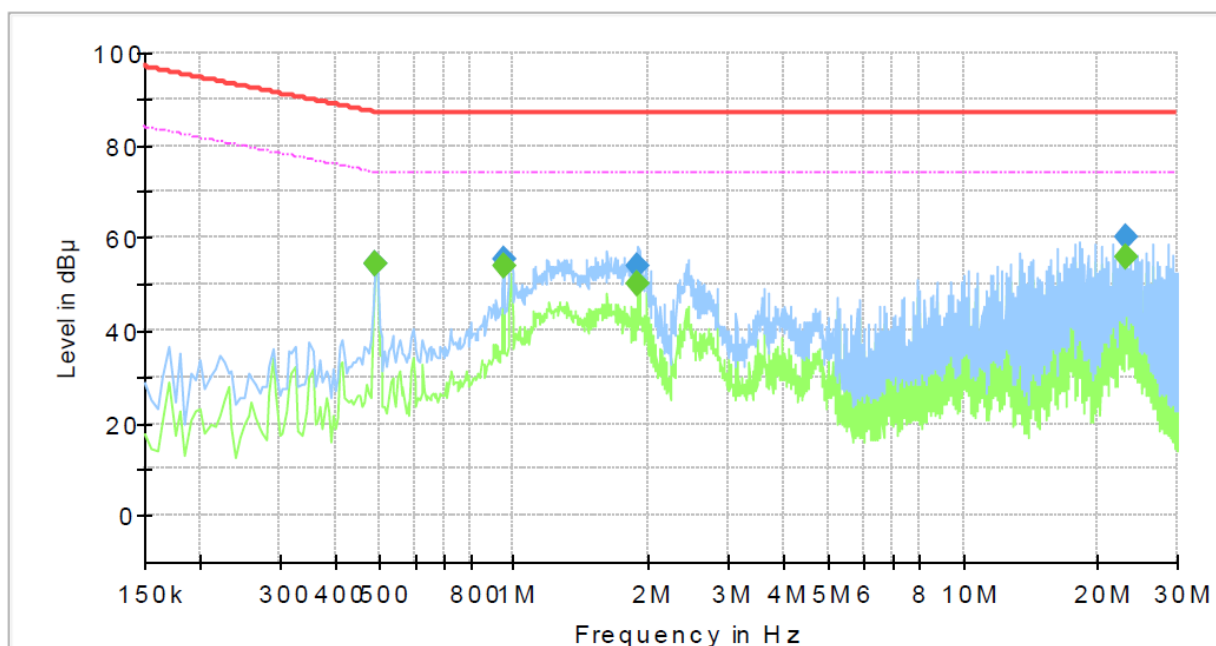
Conducted Emissions at Telecommunication Ports

■ AC MODE

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPA-S1000
Mode :	AC
Speed :	1 000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.490000	---	54.37	74.17	19.80	1000.0	9.000	Single Line	19.8
0.490000	54.48	---	87.17	32.69	1000.0	9.000	Single Line	19.8
0.945000	---	54.05	74.00	19.95	1000.0	9.000	Single Line	20.0
0.945000	55.20	---	87.00	31.80	1000.0	9.000	Single Line	20.0
1.890000	---	50.05	74.00	23.95	1000.0	9.000	Single Line	20.2
1.890000	54.05	---	87.00	32.95	1000.0	9.000	Single Line	20.2
23.130000	---	55.90	74.00	18.10	1000.0	9.000	Single Line	20.1
23.130000	59.98	---	87.00	27.02	1000.0	9.000	Single Line	20.1

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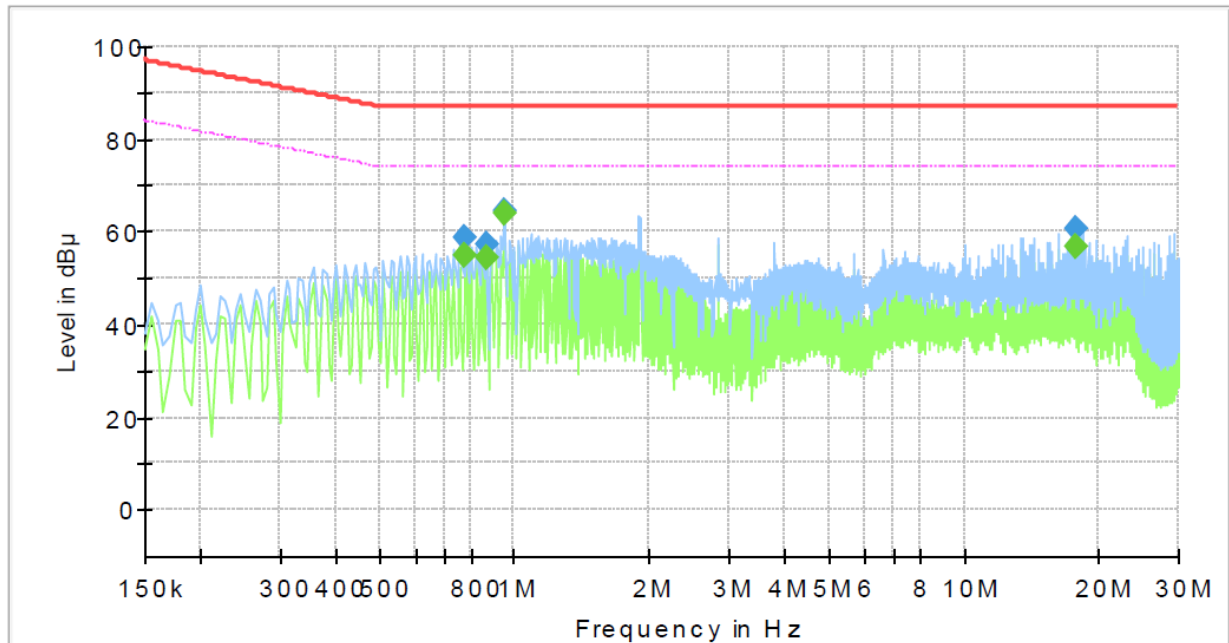
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■ AC / DC Adapter MODE

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPA-S1000
Mode :	AC / DC Adapter
Speed :	1 000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.775000	---	55.05	74.00	18.95	1000.0	9.000	Single Line	20.0
0.775000	58.59	---	87.00	28.41	1000.0	9.000	Single Line	20.0
0.865000	---	54.44	74.00	19.56	1000.0	9.000	Single Line	20.0
0.865000	57.41	---	87.00	29.59	1000.0	9.000	Single Line	20.0
0.945000	---	63.96	74.00	10.04	1000.0	9.000	Single Line	20.0
0.945000	64.39	---	87.00	22.61	1000.0	9.000	Single Line	20.0
17.695000	---	56.80	74.00	17.20	1000.0	9.000	Single Line	19.8
17.695000	60.55	---	87.00	26.45	1000.0	9.000	Single Line	19.8

◆ 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 (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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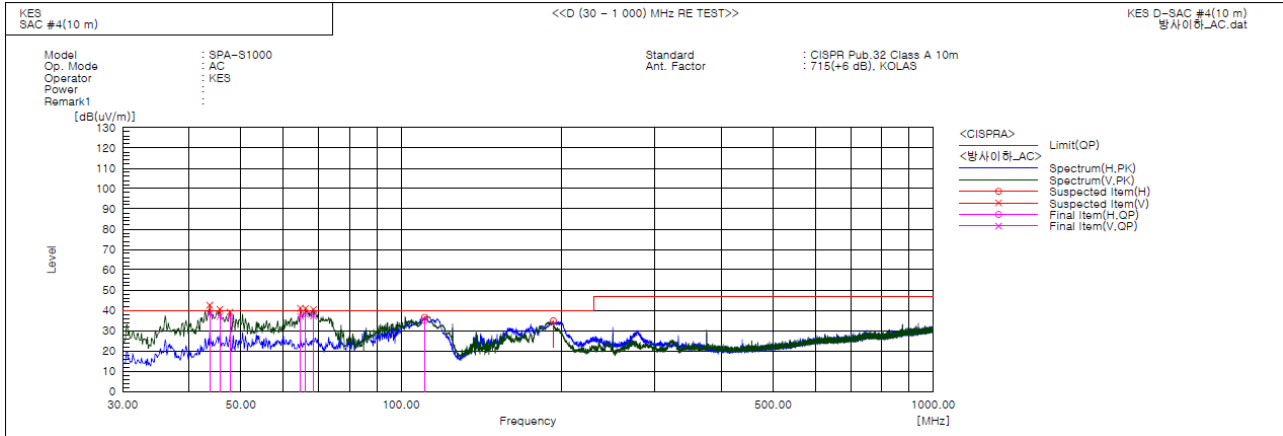
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KES-EM-21T1079-R2

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Radiated Electric Field Emissions(Below 1 GHz)

■ AC MODE



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	43.701	V	59.8	-21.6	38.2	40.0	1.8	102.0	122.0	
2	45.641	V	58.4	-21.4	37.0	40.0	3.0	108.0	44.0	
3	47.703	V	57.8	-21.2	36.6	40.0	3.4	100.0	92.0	
4	64.678	V	60.3	-23.2	37.1	40.0	2.9	102.0	122.0	
5	66.133	V	61.5	-23.6	37.9	40.0	2.1	143.0	161.0	
6	68.436	V	61.5	-24.3	37.2	40.0	2.8	109.0	157.0	
7	110.753	H	57.3	-22.3	35.0	40.0	5.0	400.0	16.0	

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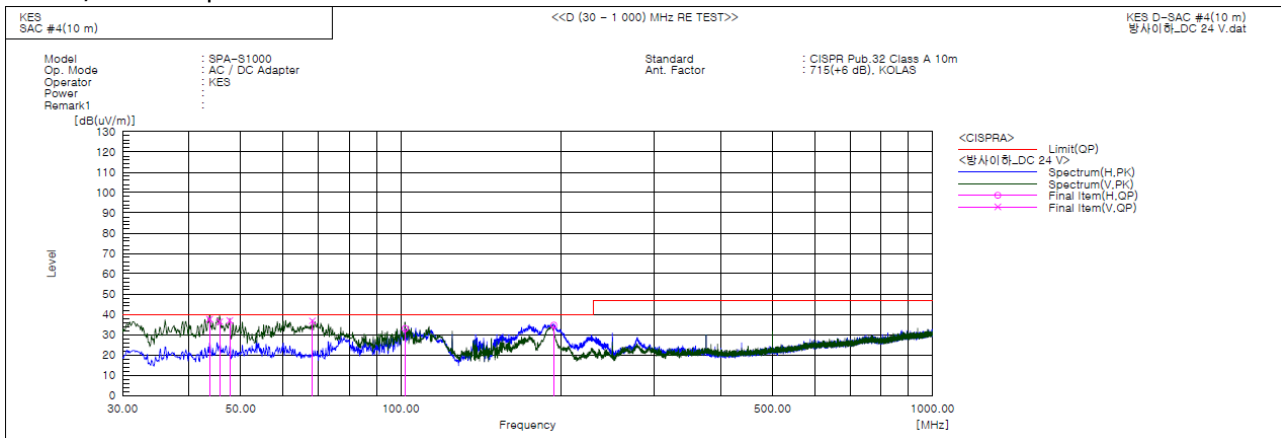
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AC / DC Adapter MODE



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	43.701	V	59.2	-21.6	37.6	40.0	2.4	100.0	45.0	
2	45.641	V	57.8	-21.4	36.4	40.0	3.6	107.0	295.0	
3	47.703	V	58.2	-21.2	37.0	40.0	3.0	102.0	157.0	
4	68.194	V	61.0	-24.2	36.8	40.0	3.2	104.0	112.0	
5	101.901	H	55.5	-22.5	33.0	40.0	7.0	400.0	284.0	
6	194.051	H	56.0	-21.3	34.7	40.0	5.3	398.0	356.0	

◆ 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



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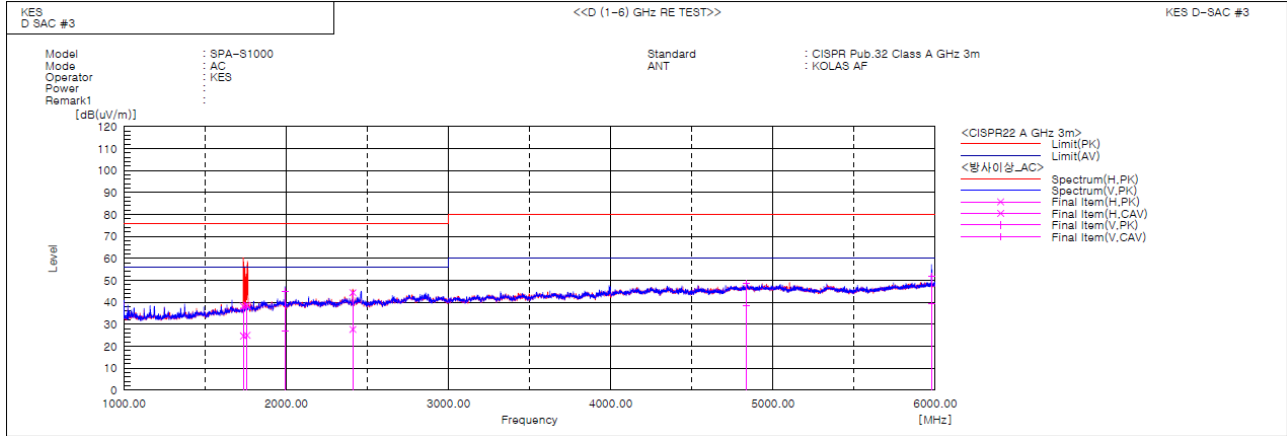
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Radiated Electric Field Emissions(Above 1 GHz)

AC MODE



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]	Remark
1	1737.365	H	41.9	28.4	-3.7	38.2	24.7	76.0	56.0	37.8	31.3	100.0	325.1	
2	1758.695	H	42.0	28.4	-3.4	38.6	25.0	76.0	56.0	37.4	31.0	100.0	2.8	
3	1993.392	V	45.7	28.0	-0.9	44.8	27.1	76.0	56.0	31.2	28.9	100.0	204.4	
4	2411.173	H	44.2	27.5	0.2	44.4	27.7	76.0	56.0	31.6	28.3	100.0	290.8	
5	4836.603	V	40.0	29.9	8.6	48.6	38.5	80.0	60.0	31.4	21.5	100.0	357.4	
6	5977.095	V	41.1	28.8	10.8	51.9	39.6	80.0	60.0	28.1	20.4	100.0	71.6	

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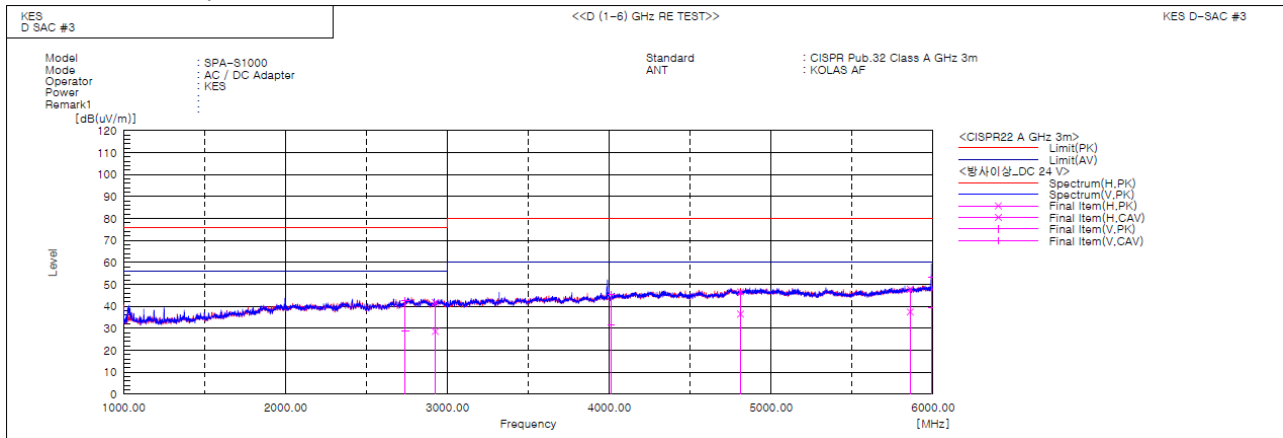
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AC / DC Adapter MODE



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]	Remark
1	2740.443	V	40.8	27.1	1.9	42.7	29.0	76.0	56.0	33.3	27.0	100.0	169.2	
2	2925.776	H	39.8	26.6	2.0	41.8	28.6	76.0	56.0	34.2	27.4	100.0	108.3	
3	4010.386	V	39.6	25.9	5.7	45.3	31.6	80.0	60.0	34.7	28.4	100.0	183.7	
4	4810.593	H	38.0	27.9	8.6	46.6	36.5	80.0	60.0	33.4	23.5	100.0	357.9	
5	5859.113	H	37.6	27.3	10.2	47.8	37.5	80.0	60.0	32.2	22.5	100.0	118.4	
6	5990.766	V	42.5	28.6	10.8	53.3	39.4	80.0	60.0	26.7	20.6	100.0	25.2	

Calculation

Result(PK/CAV) [dB(μ V/m)] = (Reading(PK/CAV)[dB(μ V)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ V/m)]

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

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

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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ AC MODE



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■ AC / DC Adapter MODE

Conducted Emissions at Telecommunication Ports

■ AC MODE

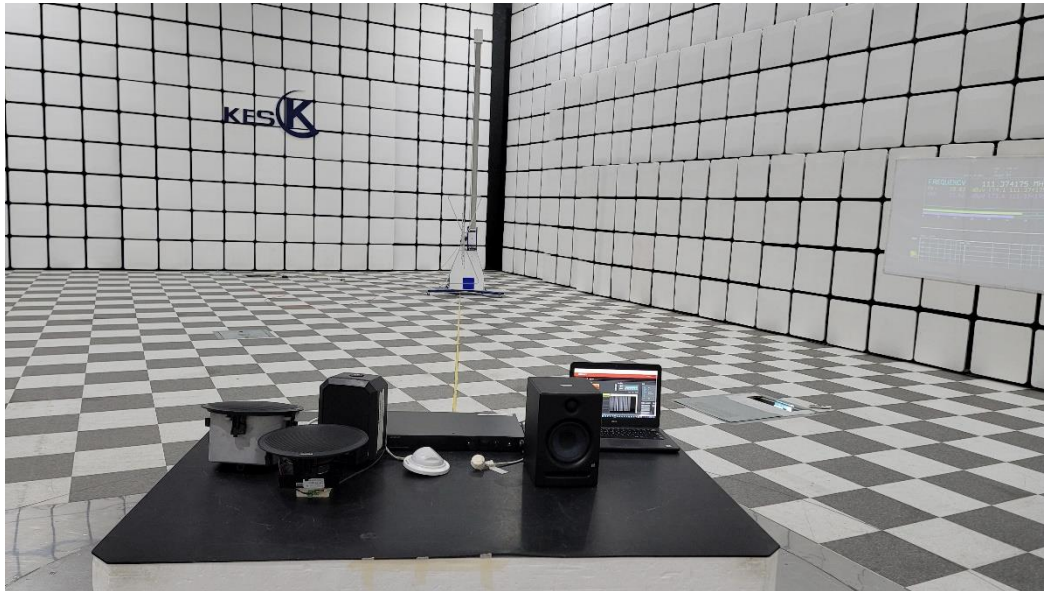


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■ AC / DC Adapter MODE

Radiated Electric Field Emissions(Below 1 GHz)

■ AC MODE

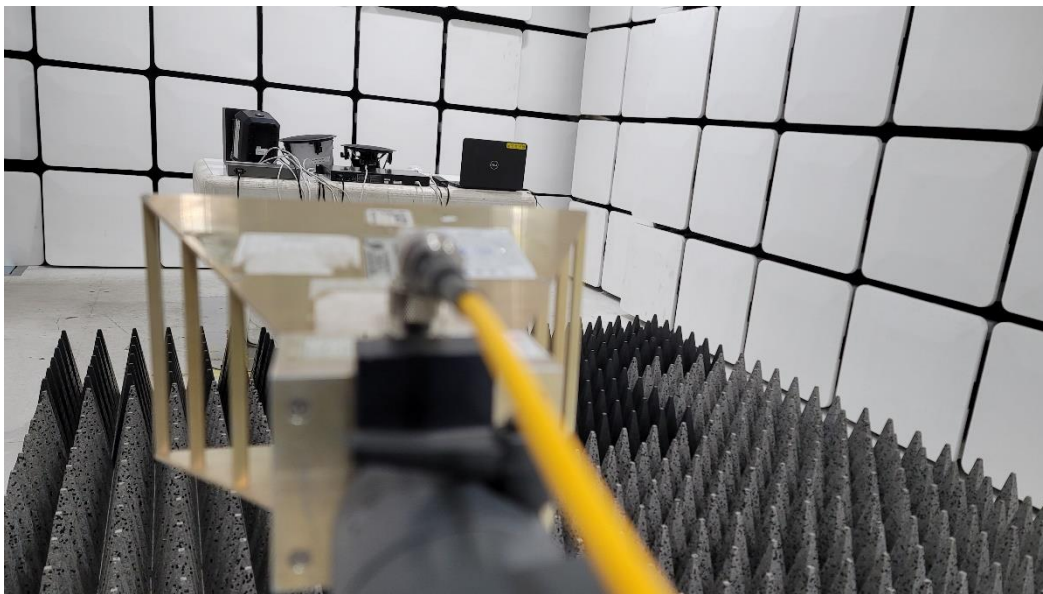


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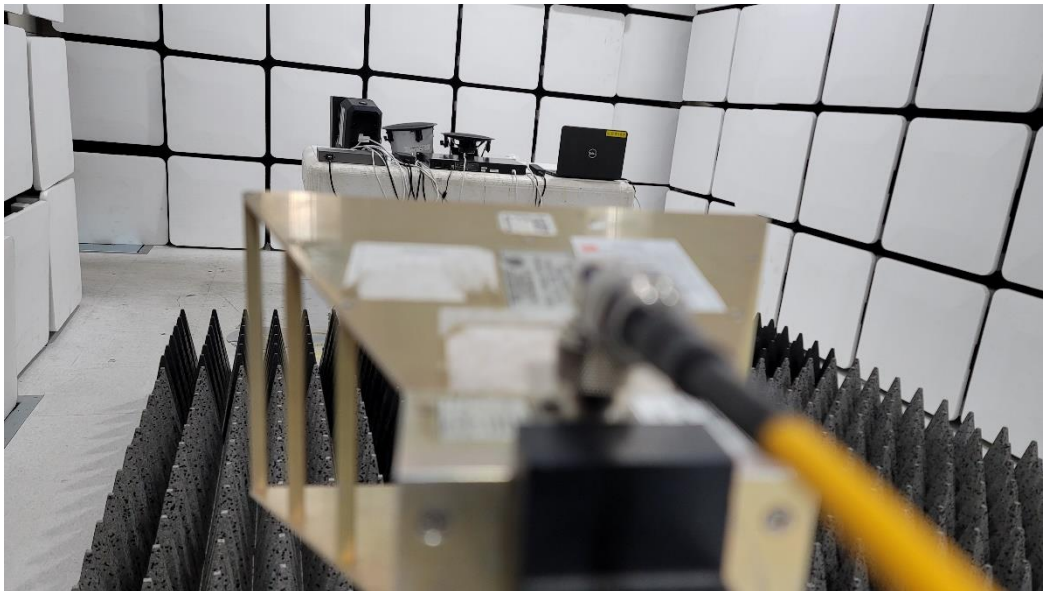
■ AC / DC Adapter MODE

Radiated Electric Field Emissions(Above 1 GHz)

■ AC MODE



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■ AC / DC Adapter MODE

EUT External Photographs

(Top)



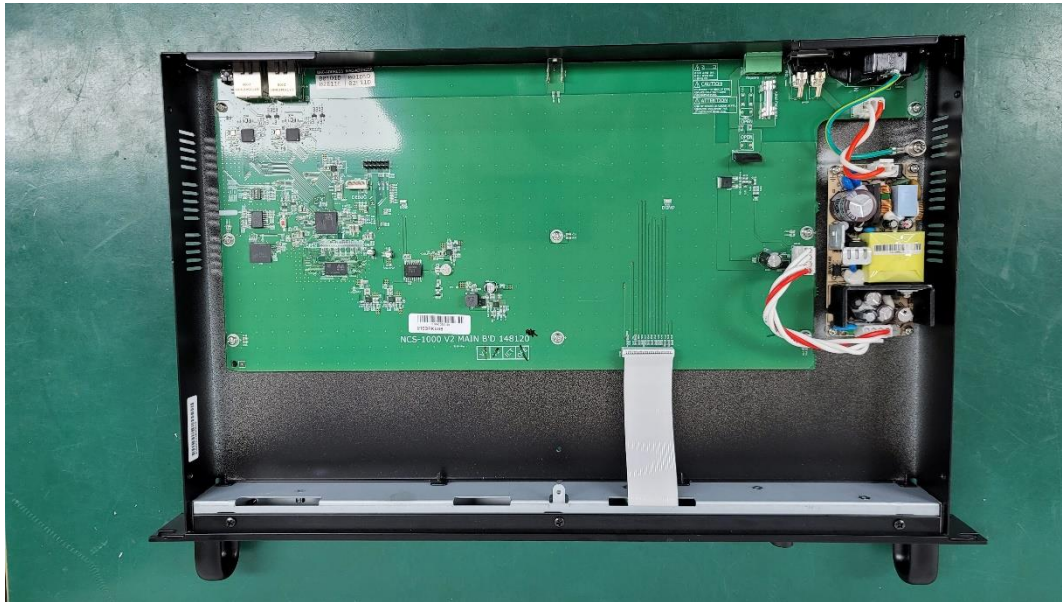
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EUT Internal Photographs

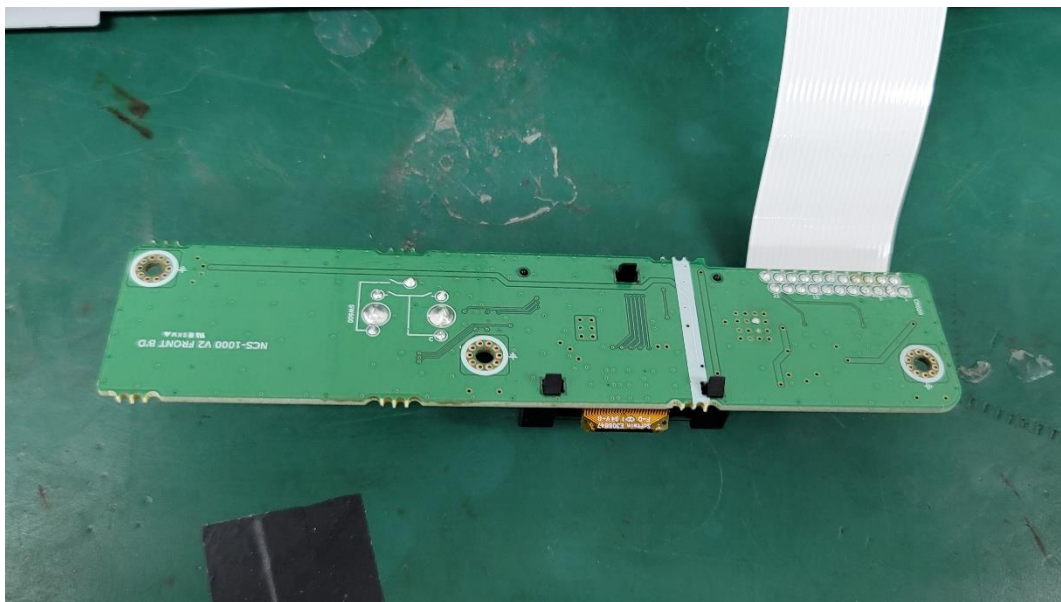
(Internal View)



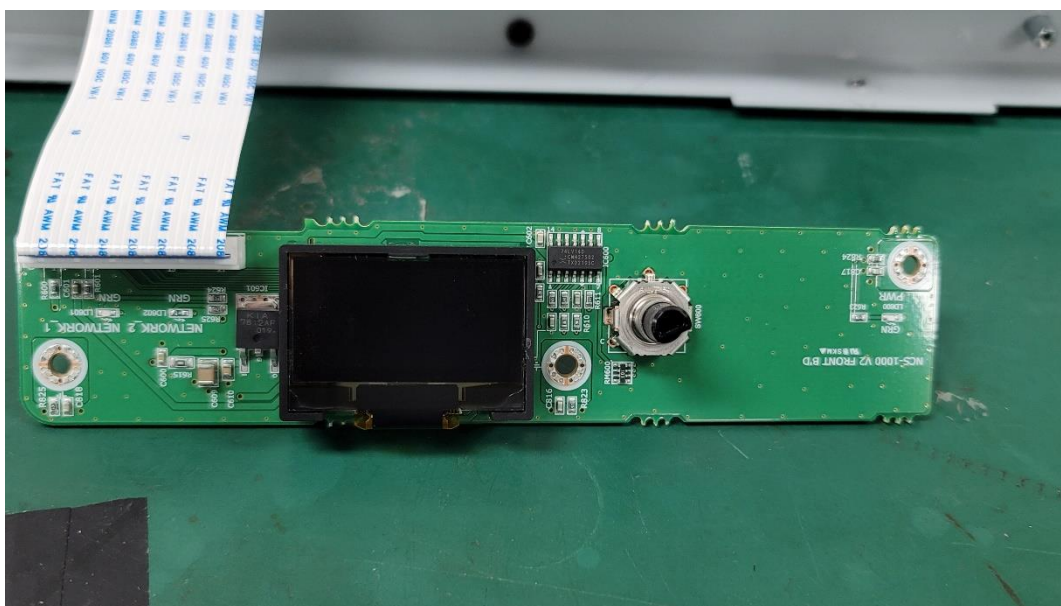
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EUT Internal View – Board 1

(Top)



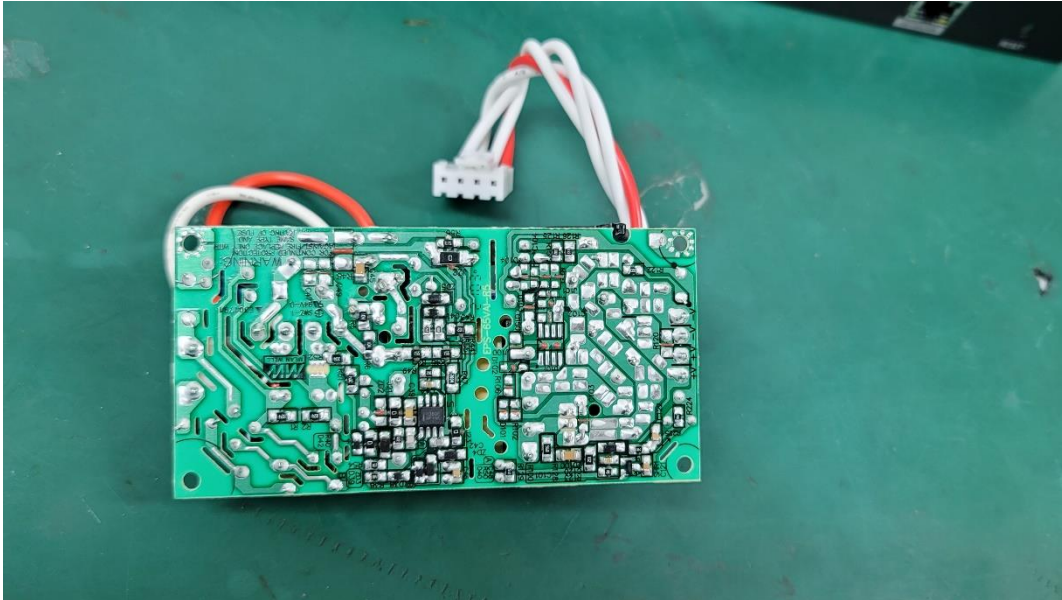
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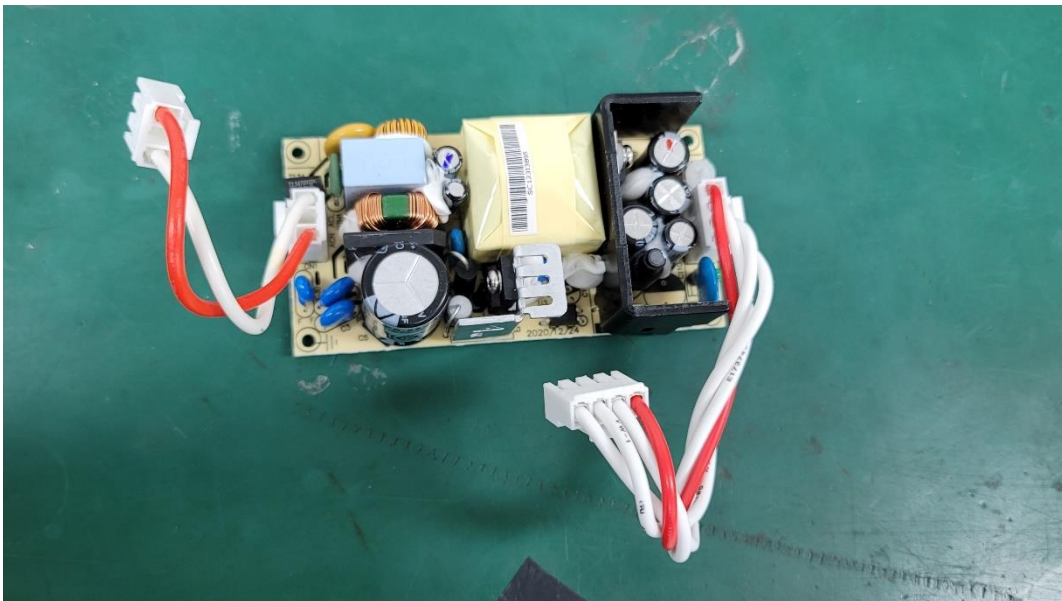
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EUT Internal View – Board 2

(Top)



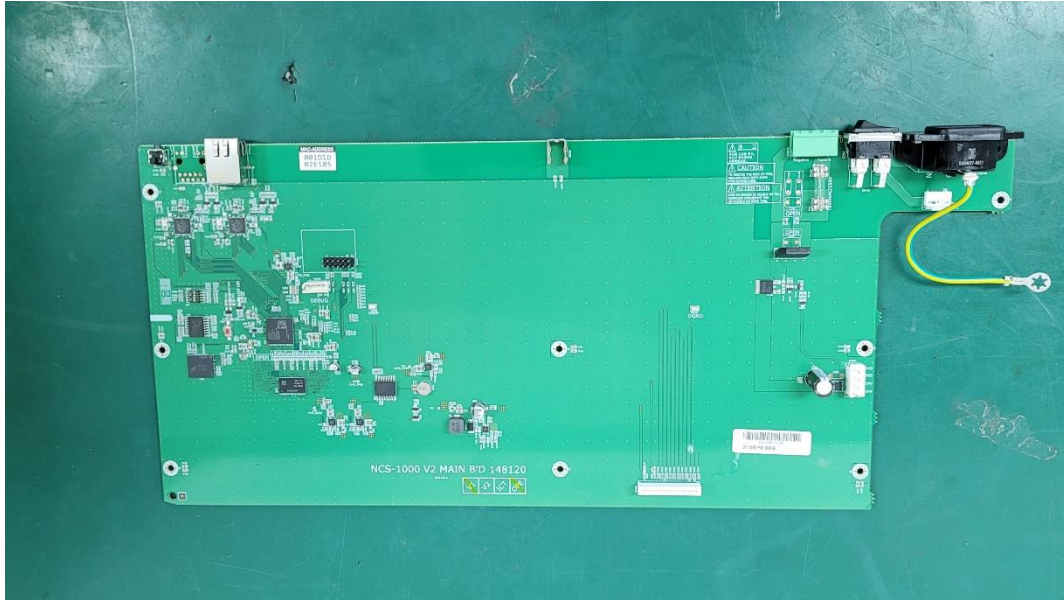
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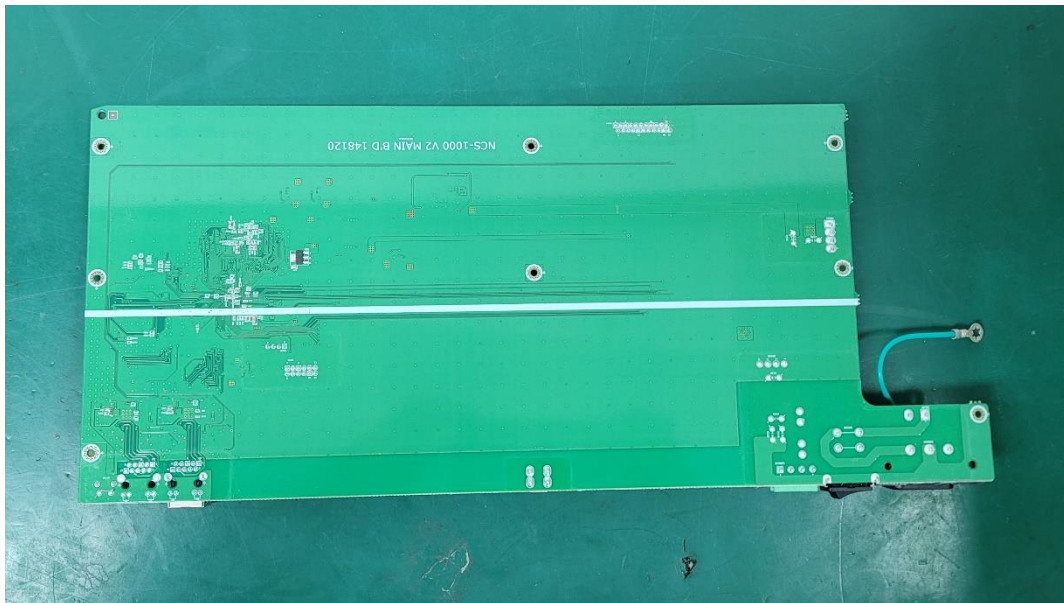
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EUT Internal View – Board 3

(Top)



(Bottom)



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