



EMC TEST REPORT For C-TICK

Test Report No. : KES-E1-17T0180-R1
Date of Issue : Feb. 24, 2023
Product name : CCTV CAMERA
Model/Type No. : HCB-6001
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
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 commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Feb. 06, 7016
Test date : Feb. 23, 2017
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**
Reviewed by

Tested by

Min Seong, Kim
EMC Test Engineer

Dong-Hun, Jang
EMC Technical Manager

Tested by Young Suk, Song
(Retries person)
Proxy signature : Min Seong, Kim

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
Feb. 28, 2017	KES-E1-17T0180	Issued
Feb. 24, 2023	KES-E1-17T0180-R1	Change the Model/Type No., Applicant, Applicant Address, Manufacturer and Manufacturer Address at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/2.8" 2M CMOS
Total Pixels	1,945(H) x 1,109(V) 2.16M pixels
Effective Pixels	1,945(H) x 1,097(V) 2.13M pixels
Scanning System	Progressive Scan
Min. Illumination	Color : 0.04Lux (F1.2)
S / N Ratio	52dB (AGC off, Weight on)
Video Output	BNC(AHD / TVI / CVI / CVBS Selectable)
Resolution	1920 x 1080
Max. Framerate	30fps @1080p 25fps @1080p
Lens Type	
Focal Length (Zoom Ratio)	-
Max. Aperture Ratio	-
Angular Field of View	-
Min. Object Distance	-
Focus Control	Simple focus / Manual, Button control(Manual Simple focus, Day&Night)
Lens Type	Manual / DC auto Iris
Mount Type	C/CS
Auto Back Focus(ABF)	-
Operational	
IR LED	-
Viewable length	-
On Screen Display	Multi-language Support(16)
Camera Title	Off / On (Displayed 15 characters)
Day & Night	Auto (ICR) / External / Color / B/W
Backlight Compensation	Off / User BLC / HLC
Wide Dynamic Range	120dB
Contrast Enhancement	-
Digital Noise Reduction	SSNR4 (Off / On)
Defog	AUTO / MANUAL / OFF
Digital Image Stabilization	Not support
Motion Detection	Off / On(4 zones)
Privacy Masking	Off / On (4zones rectangle)
Gain Control	Off / Low / Middle / High / Very High
White Balance	ATW / Outdoor / Indoor / Manual / AWC (1,800K° ~ 10,500K°)
LDC (Lens Distortion Correction)	Not support
Electronic Shutter Speed	1sec~ 1/12,000sec
Digital Zoom	Not support
Reverse	Off / H-Rev / V-Rev / HV-Rev
Profile	Basic, Day & Night, Backlight, ITS, Indoor, User
Intelligent Video Analytics	Not support
Alarm	MD output 1, External D/N 1
Remote control interface	Coaxial, RS-485
Protocol	Coax : ACP(AHD Coax Protocol)
Video Transmission Distance	500m(5C2V Coaxial Cable)
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C (+14°F ~ +131°F) / Less than 90% RH
Ingress Protection	-
Vandal Resistance	-
Electrical	
Input Voltage/Current	Dual (24VAC±10% & 12VDC±10%)
Power Consumption	Max. 3.5W
Mechanical	
Color / Material	Ivory / Plastic Black/Metal
Dimension (WxHxD)	133.4*73*67.2
Weight	287g

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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.

Voltage ☐ 100 Vac ☐ 110 Vac ☒ 24 Vac ☒ 12 Vdc ☐ PoE
Frequency ☒ 50 Hz ☐ 60 Hz ☐ 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
CCTV CAMERA	HCB-6001	-	HANWHA VISION VIETNAM COMPANY LIMITED	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
MONITOR	M1950DM	108KCLH4W536	LG Electronics Co., Ltd.	-
MONITOR Adapter	PA-1650-68	OCOGN612314034864	LITE-ON TECHNOLOGY CORPORATION	-
LENS	GL-D50V500CS	-	Honeywell	-
Alarm	-	-	-	-



1.6 External I/O Cabling

- AC 24 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
CCTV CAMERA (E.U.T)	BNC	MONITOR	Component	3.0	S
	IRIS	LENZ	IRIS	0.1	U
	2 Pin	Alarm	2 Pin	3.0	U

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
CCTV CAMERA (E.U.T)	BNC	MONITOR	Component	3.0	S
	IRIS	LENZ	IRIS	0.1	U
	2 Pin	Alarm	2 Pin	3.0	U

* Unshielded = U, Shielded = S

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1.7 EUT Operating Mode(s)

Test mode	operating
AC 24 V, DC 12 V	E.U.T Monitoring

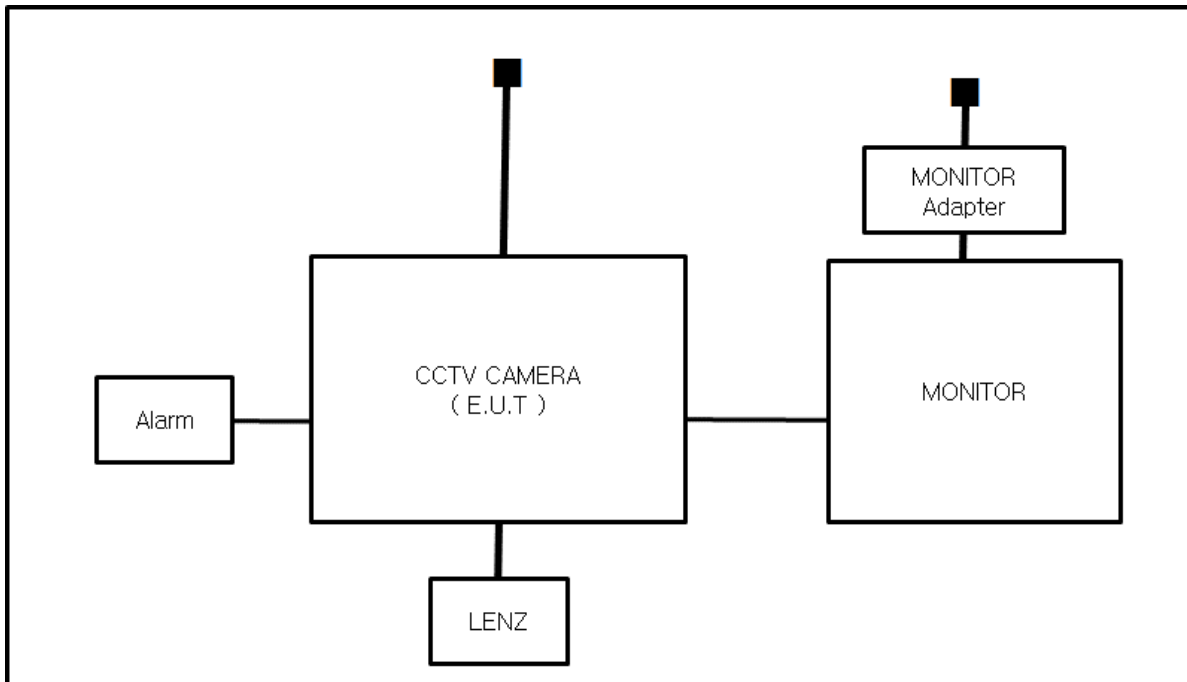
E.U.T Test operating S/W		
Name	Version	Manufacture Company
-	-	-

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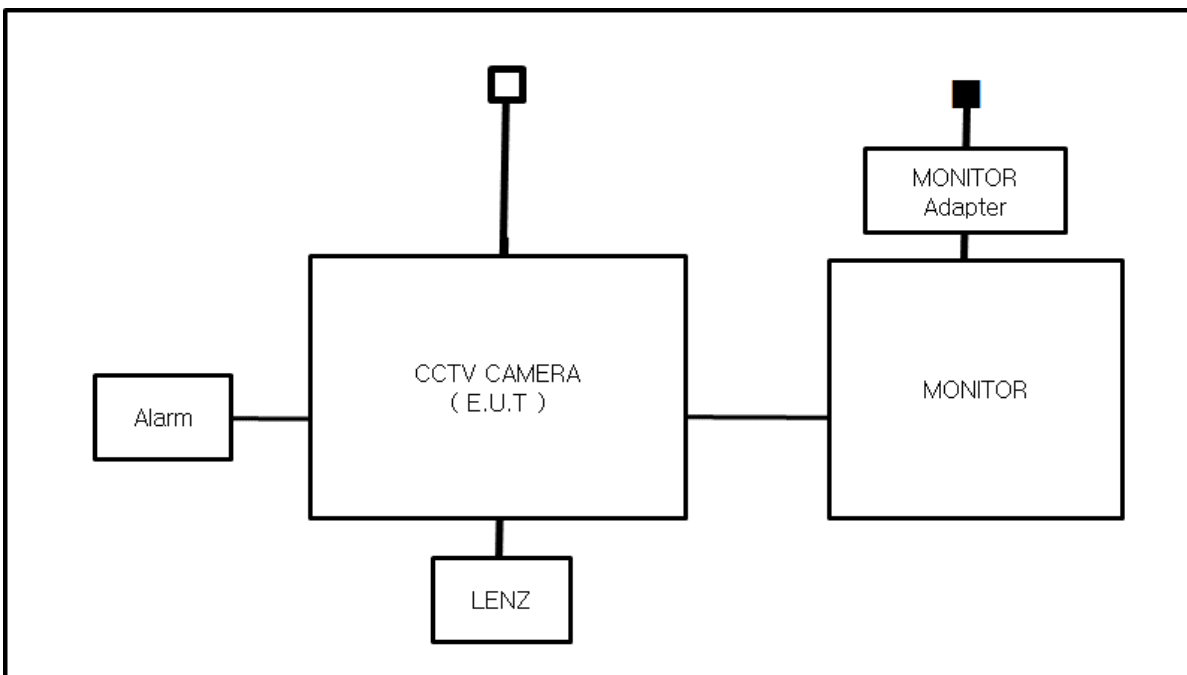
1.8 Configuration

■ AC Main
 □ DC Main

- AC 24 V Mode



- DC 12 V Mode



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1.9 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.

1.10 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

1.11 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

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547 :2009

☐ EN 55022:2010

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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☐ **VCCI V-3 / 2015.04**

☐ Class A

☐ Class B

☒ **AS/NZS CISPR22:2009 +A1:2010**

☒ Class A

☐ Class B

☐ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☐ ANSI C63.4-2009

☐ **IC Regulation ICES-003 : 2016**

☐ CAN/CSA CISPR 22-10

☐ Class A

☐ Class B

☐ ANSI C63.4-2014

☐ **RE- Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

☐ Equipment for fixed use

☐ Equipment for vehicular use

☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

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2.1 Conducted Emissions Mains Power Ports

Test Date

Feb, 23, 2017

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☒	Shield Room #3	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions

Temperature: 22,2 °C
Relative Humidity: 39,7 %

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

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☐	LISN	ENV216	R & S	101137	02, 03, 2018
☐	LISN	ENV216	R & S	101786	05, 02, 2017
☐	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☐	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 11, 2017
☐	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☐	Shield Room #3	-	SEMITEC	-	-
☐	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions

Temperature: °C

Relative Humidity: %

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

Remarks

None, Telecommunication Port. Test is not applicable.

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb, 23, 2017

Test Location

☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESR3	R & S	101781	05, 03, 2017
☒	Trilog-Broadband Antenna	VULB9163	Schwarzbeck	715	04, 14, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: -2.4 °C
Relative Humidity: 60,0 %

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

Remarks

See Appendix A for test data.

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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb, 23, 2017

Test Location

Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Log-Periodic Antenna	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2017
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 14, 2017
☒	Semi Anechoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-
☒	EMI Test S/W	e3	AUDIX	8.083b	-

Test Conditions

Temperature: 22,2 °C

Relative Humidity: 39,7 %

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

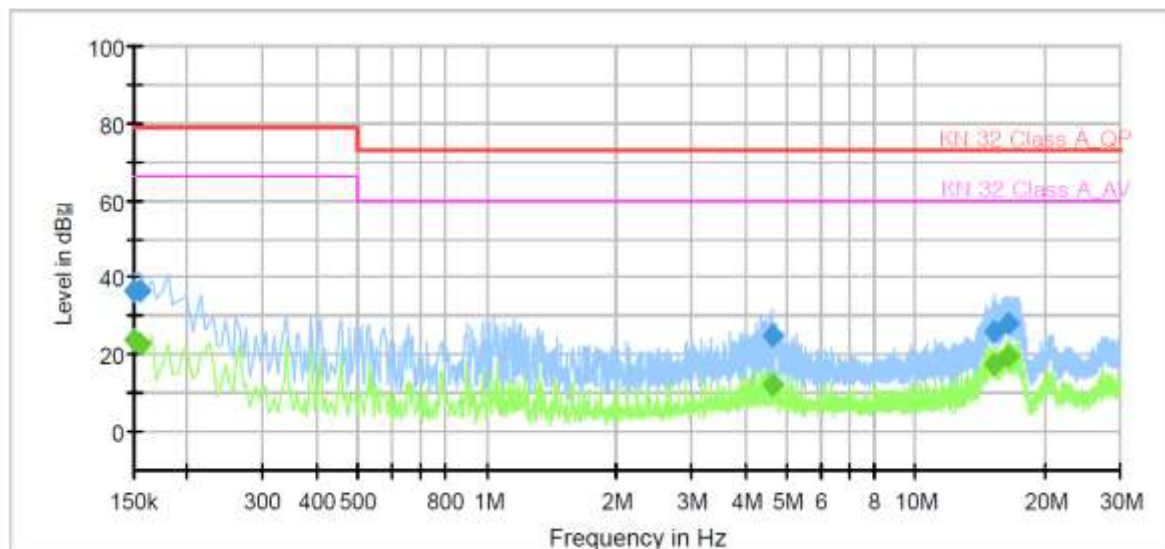
[HOT]

- AC 24 V Mode

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Conducted Emission
HCB-6001P
AC 24 V_H
KES



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	23.59	66.00	42.41	1000.0	9.000	L1	21.1
0.150000	36.56	---	79.00	42.44	1000.0	9.000	L1	21.1
0.155000	---	22.94	66.00	43.06	1000.0	9.000	L1	21.0
0.155000	36.37	---	79.00	42.63	1000.0	9.000	L1	21.0
4.610000	---	12.12	60.00	47.88	1000.0	9.000	L1	19.7
4.610000	25.03	---	73.00	47.97	1000.0	9.000	L1	19.7
15.180000	---	17.46	60.00	42.54	1000.0	9.000	L1	20.1
15.180000	25.85	---	73.00	47.15	1000.0	9.000	L1	20.1
16.435000	---	19.50	60.00	40.50	1000.0	9.000	L1	20.1
16.435000	28.31	---	73.00	44.69	1000.0	9.000	L1	20.1

◆ 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)

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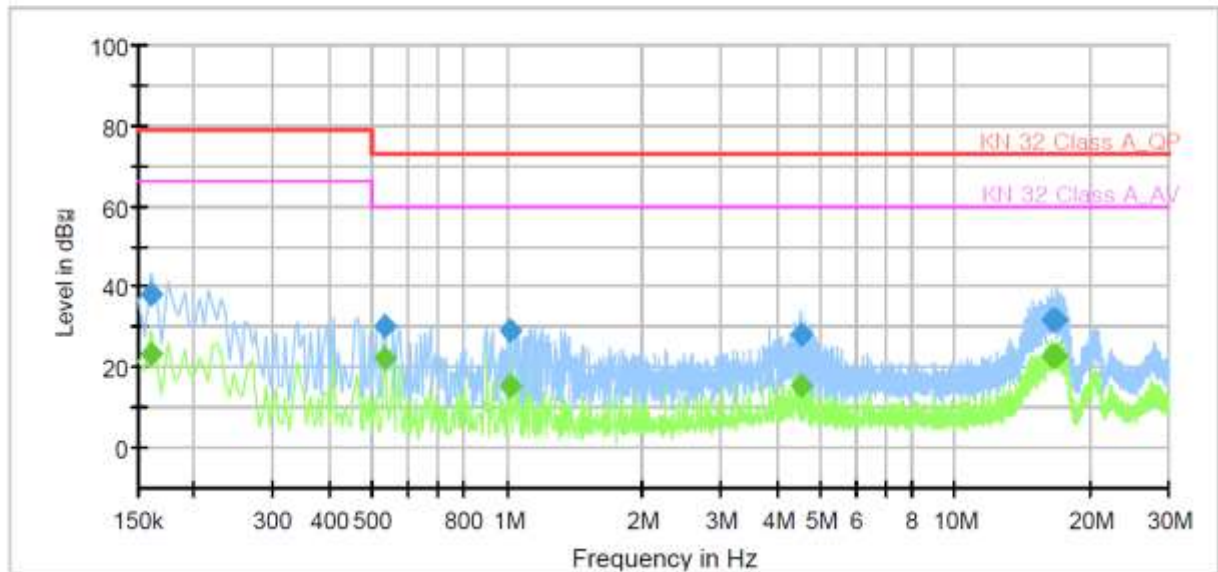
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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	HCB-6001P
Mode	AC 24 V_N
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	23.48	66.00	42.52	1000.0	9.000	N	21.0
0.160000	38.32	---	79.00	40.68	1000.0	9.000	N	21.0
0.535000	---	22.02	60.00	37.98	1000.0	9.000	N	20.5
0.535000	30.37	---	73.00	42.63	1000.0	9.000	N	20.5
1.015000	---	15.62	60.00	44.38	1000.0	9.000	N	20.1
1.015000	29.21	---	73.00	43.79	1000.0	9.000	N	20.1
4.510000	---	15.25	60.00	44.75	1000.0	9.000	N	19.7
4.510000	28.30	---	73.00	44.70	1000.0	9.000	N	19.7
16.480000	---	22.91	60.00	37.09	1000.0	9.000	N	20.1
16.480000	31.70	---	73.00	41.30	1000.0	9.000	N	20.1
16.845000	---	22.86	60.00	37.14	1000.0	9.000	N	20.1
16.845000	31.85	---	73.00	41.15	1000.0	9.000	N	20.1

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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Conducted Emissions at Telecommunication Ports

[10 Mbps]

N/A

◆ 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)

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[100 Mbps]

N/A

◆ 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)

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Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
161.93	12.62	H	2.35	8.58	3.17	24.37	40.00	15.63
216.00	17.04	H	2.14	11.82	3.73	32.59	40.00	7.41
216.23	15.36	V	2.94	11.82	3.73	30.91	40.00	9.09
262.74	10.96	V	3.14	12.77	4.27	28.00	47.00	19.00
334.44	12.24	V	2.33	14.15	4.81	31.20	47.00	15.80
334.48	10.28	H	1.09	14.15	4.81	29.24	47.00	17.76

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dB μ V] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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- DC 12 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
216.24	12.36	V	1.25	11.82	3.73	27.91	40.00	12.09
266.63	10.97	V	3.01	12.83	4.30	28.10	47.00	18.90
266.64	10.25	H	1.28	12.83	4.30	27.38	47.00	19.62
334.15	17.11	H	1.95	14.14	4.81	36.06	47.00	10.94
334.49	14.94	V	2.69	14.15	4.81	33.90	47.00	13.10
446.14	13.22	H	1.96	16.37	6.00	35.59	47.00	11.41

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dBμV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

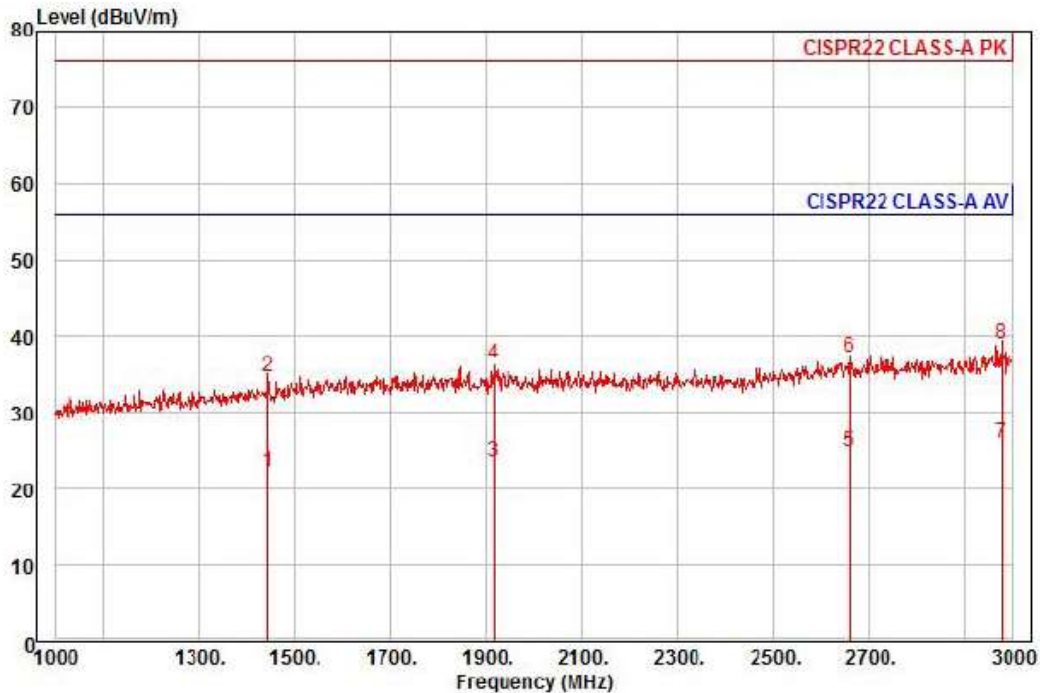
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Radiated Electric Field Emissions(Above 1 GHz)

- AC 24 V Mode



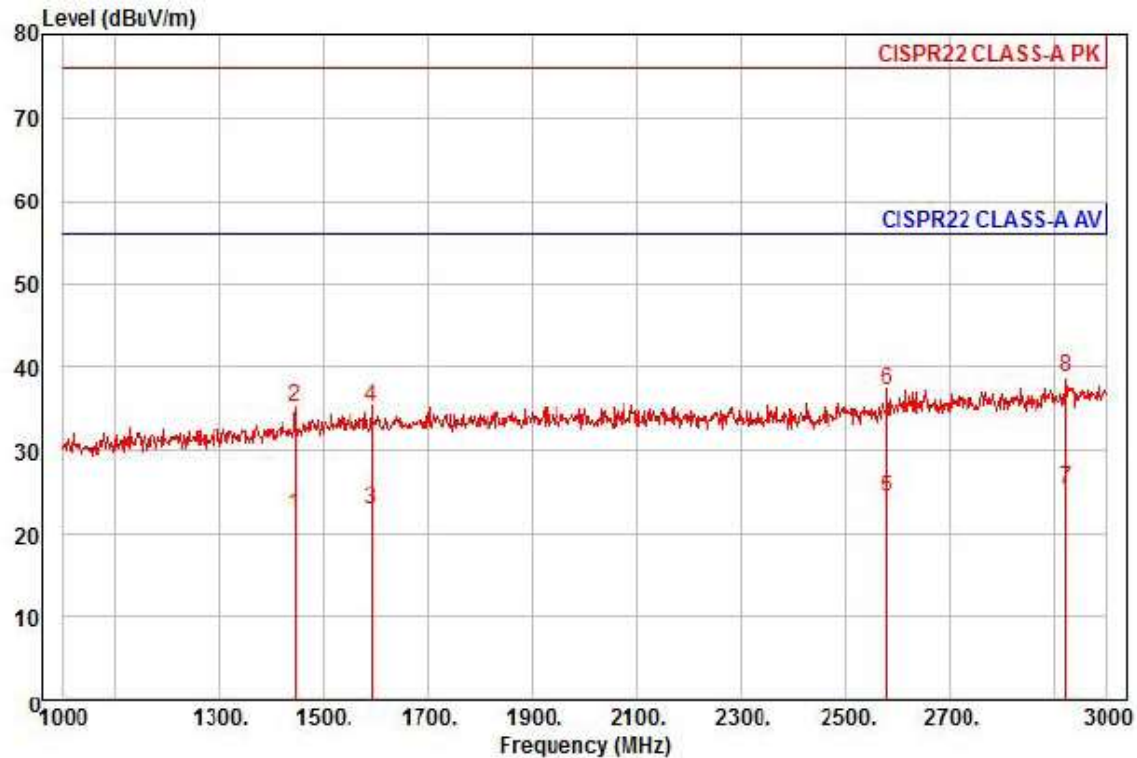
Site : chamber
 Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) horizontal
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
 Project :
 Model : HCB-6001P
 Mode : AC 24 V
 Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1444.00	30.08	23.44	7.85	39.15	342	56.00	-33.78	horizontal	Average
2	1444.00	42.51	23.44	7.85	39.15	342	76.00	-41.35	horizontal	Peak
3	1916.00	28.44	25.30	9.12	39.37	102	56.00	-32.51	horizontal	Average
4	1916.00	41.36	25.30	9.12	39.37	102	76.00	-39.59	horizontal	Peak
5	2660.00	25.32	28.28	10.89	39.72	238	56.00	-31.23	horizontal	Average
6	2660.00	37.88	28.28	10.89	39.72	238	76.00	-38.67	horizontal	Peak
7 pp	2976.00	24.77	29.68	11.64	40.08	104	56.00	-29.99	horizontal	Average
8 pk	2976.00	37.85	29.68	11.64	40.08	104	76.00	-36.91	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
 Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber

Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : HCB-6001P

Mode : AC 24 V

Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1446.00	30.02	23.45	7.86	39.15	26	56.00	-33.82	vertical	Average
2	1446.00	43.05	23.45	7.86	39.15	26	76.00	-40.79	vertical	Peak
3	1592.00	29.71	24.14	8.29	39.22	159	56.00	-33.08	vertical	Average
4	1592.00	42.16	24.14	8.29	39.22	159	76.00	-40.63	vertical	Peak
5	2578.00	25.35	27.92	10.70	39.62	84	56.00	-31.65	vertical	Average
6	2578.00	38.23	27.92	10.70	39.62	84	76.00	-38.77	vertical	Peak
7 pp	2922.00	24.61	29.44	11.52	40.02	138	56.00	-30.45	vertical	Average
8 pk	2922.00	37.78	29.44	11.52	40.02	138	76.00	-37.28	vertical	Peak

◆ Calculation

$$\text{Over Limit [dB]} = (\text{Read Level [dBuV]} + \text{Ant Factor [dB/m]} + \text{Cable Loss [dB]} - \text{Preamp Factor [dB]}) - \text{Limit Line [dBuV]}$$

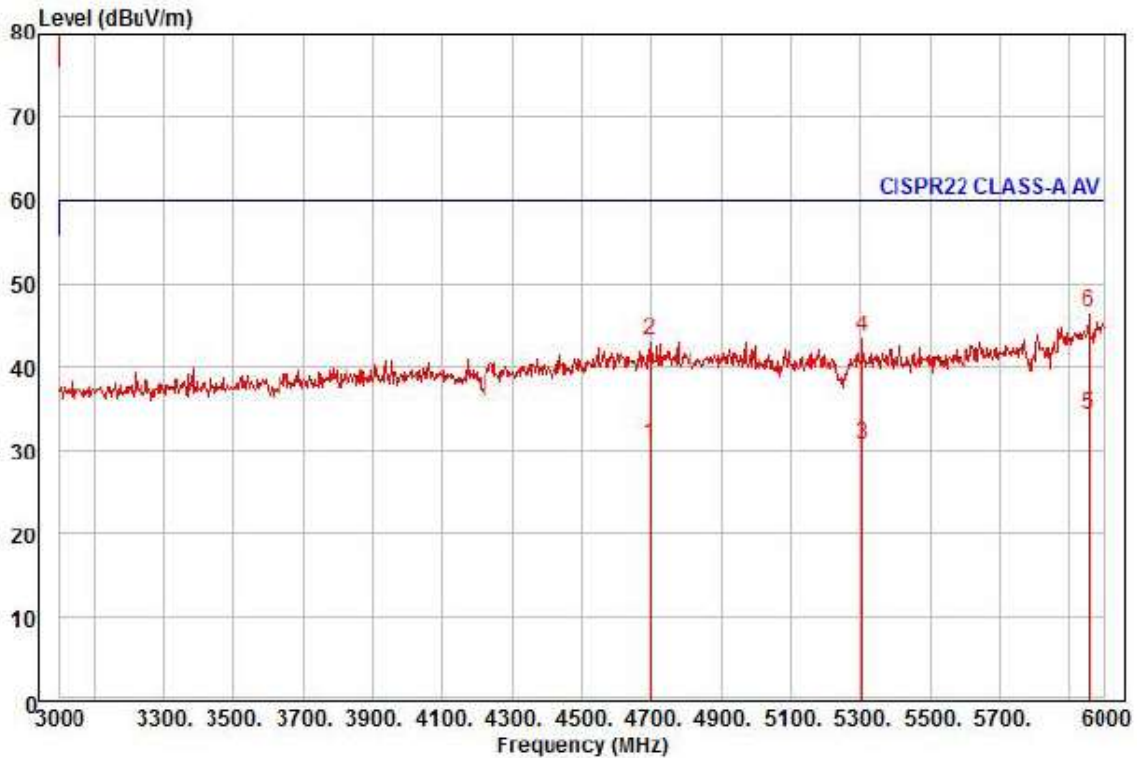
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber

Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : HCB-6001P

Mode : AC 24 V

Memo : 3 ~ 6 GHz

	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4698.00	23.43	32.97	14.87	40.57	344	60.00	-29.30	horizontal Average
2	4698.00	35.83	32.97	14.87	40.57	344	80.00	-36.90	horizontal Peak
3	5304.00	22.28	33.42	15.88	40.77	114	60.00	-29.19	horizontal Average
4	5304.00	35.01	33.42	15.88	40.77	114	80.00	-36.46	horizontal Peak
5 pp	5955.00	21.34	36.28	16.99	40.49	106	60.00	-25.88	horizontal Average
6 pk	5955.00	33.92	36.28	16.99	40.49	106	80.00	-33.30	horizontal Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

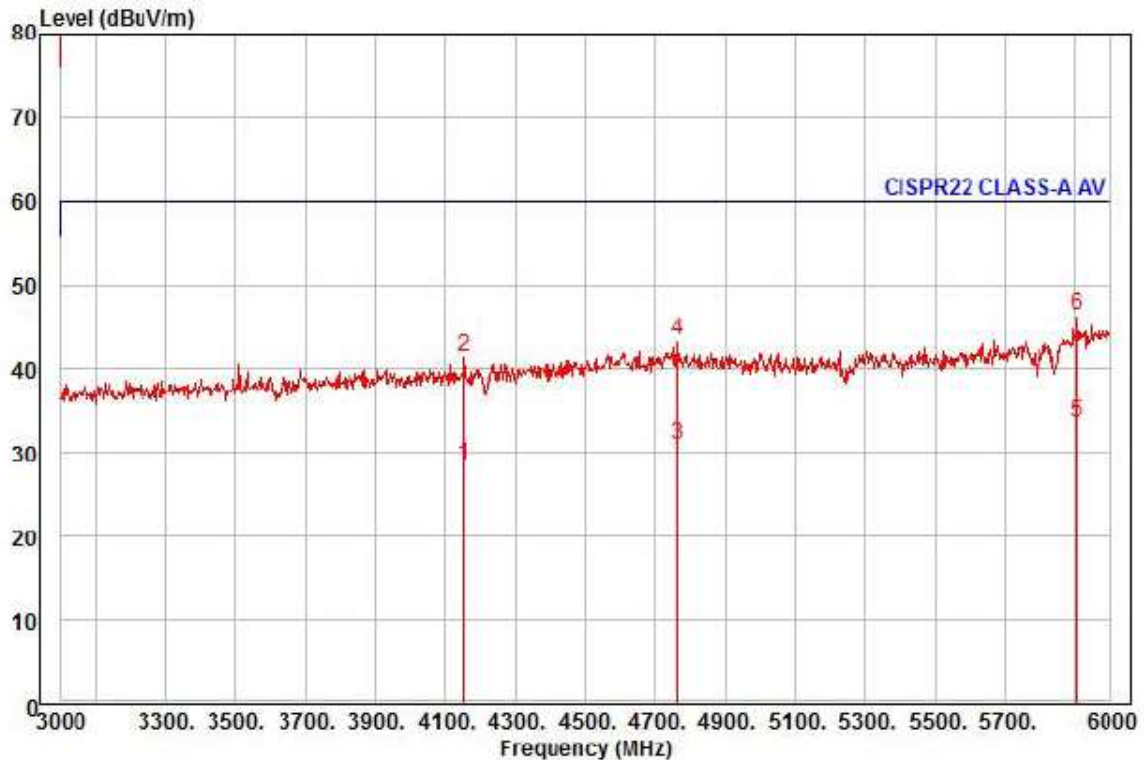
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCB-6001P
Mode : AC 24 V
Memo : 3 ~ 6 GHz

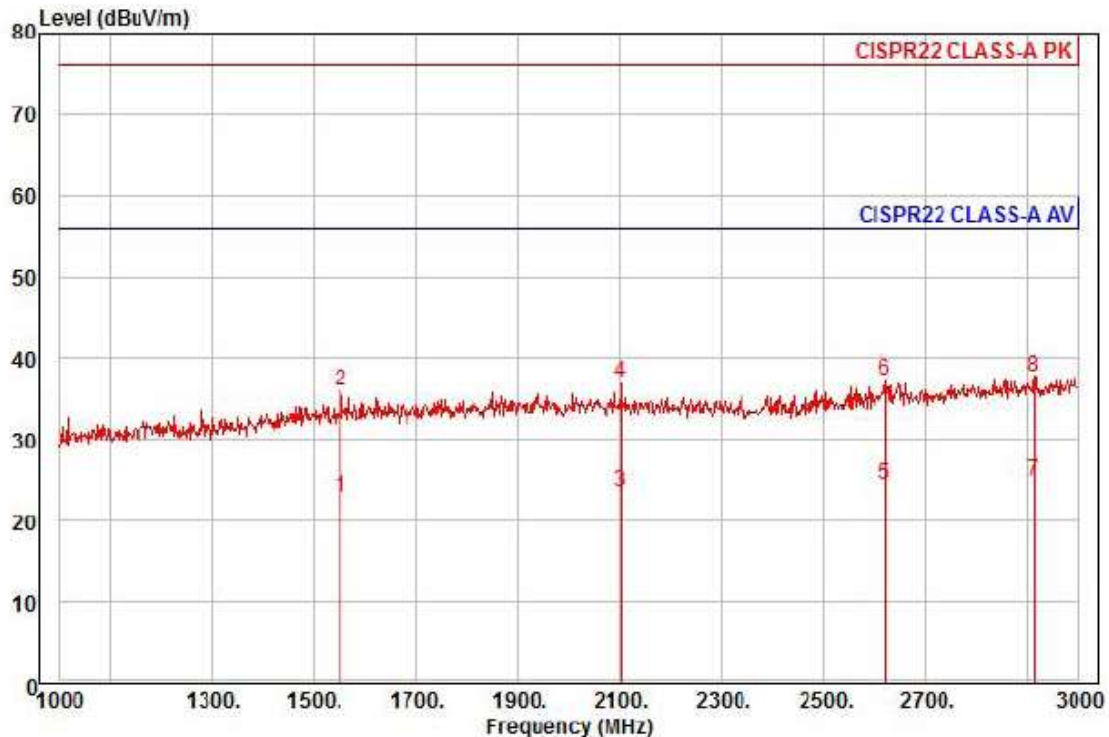
	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4152.00	23.68	31.82	13.85	40.72	339	60.00	-31.37	vertical
2	4152.00	36.50	31.82	13.85	40.72	339	80.00	-38.55	vertical
3	4761.00	23.50	33.02	15.01	40.51	73	60.00	-28.98	vertical
4	4761.00	35.87	33.02	15.01	40.51	73	80.00	-36.61	vertical
5 pp	5904.00	21.25	35.97	16.90	40.56	348	60.00	-26.44	vertical
6 pk	5904.00	34.11	35.97	16.90	40.56	348	80.00	-33.58	vertical

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

- DC 12 V Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCB-6001P
Mode : DC 12 V
Memo : 1 ~ 3 GHz

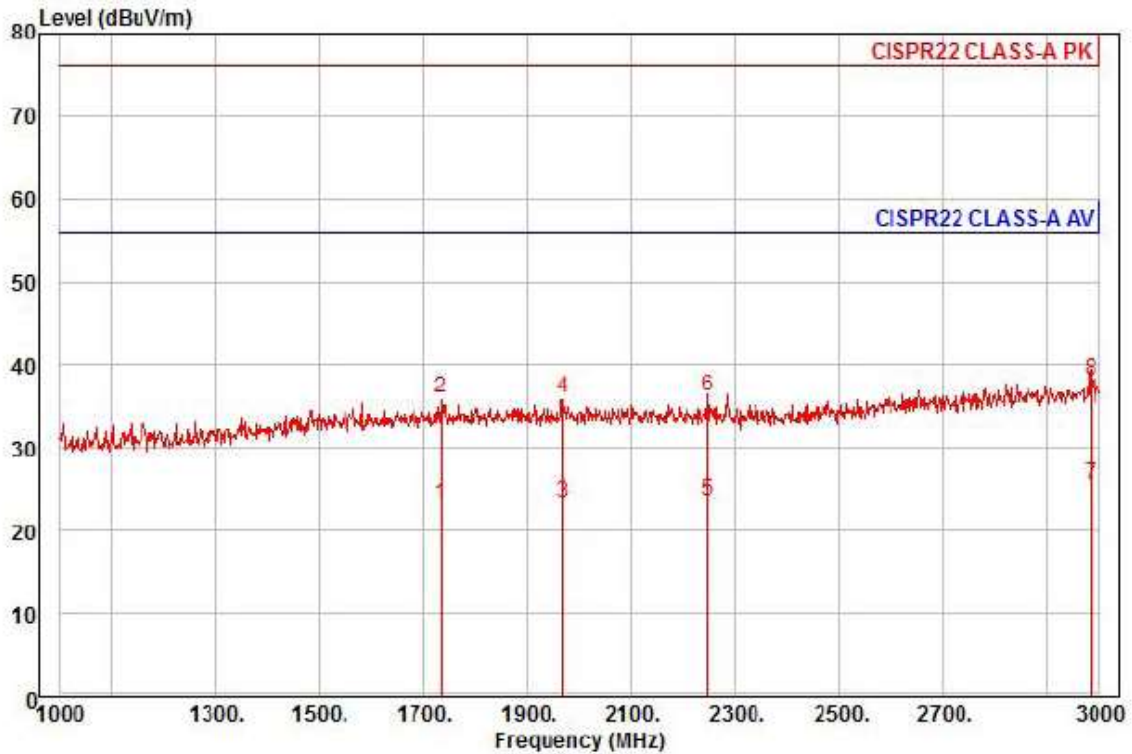
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1552.00	29.87	24.00	8.17	39.20	178	56.00	-33.16	horizontal	Average
2	1552.00	43.10	24.00	8.17	39.20	178	76.00	-39.93	horizontal	Peak
3	2104.00	27.28	26.01	9.58	39.41	273	56.00	-32.54	horizontal	Average
4	2104.00	40.94	26.01	9.58	39.41	273	76.00	-38.88	horizontal	Peak
5	2622.00	25.16	28.11	10.80	39.68	323	56.00	-31.61	horizontal	Average
6	2622.00	38.10	28.11	10.80	39.68	323	76.00	-38.67	horizontal	Peak
7 pp	2914.00	23.87	29.41	11.50	40.01	147	56.00	-31.23	horizontal	Average
8 pk	2914.00	36.73	29.41	11.50	40.01	147	76.00	-38.37	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber

Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : HCB-6001P

Mode : DC 12 V

Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1734.00	29.01	24.65	8.66	39.29	53	56.00	-32.97	vertical	Average
2	1734.00	42.00	24.65	8.66	39.29	53	76.00	-39.98	vertical	Peak
3	1970.00	27.97	25.49	9.26	39.40	42	56.00	-32.68	vertical	Average
4	1970.00	40.71	25.49	9.26	39.40	42	76.00	-39.94	vertical	Peak
5	2248.00	26.39	26.58	9.93	39.42	31	56.00	-32.52	vertical	Average
6	2248.00	39.02	26.58	9.93	39.42	31	76.00	-39.89	vertical	Peak
7 pp	2986.00	24.19	29.73	11.67	40.09	90	56.00	-30.50	vertical	Average
8 pk	2986.00	36.89	29.73	11.67	40.09	90	76.00	-37.80	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

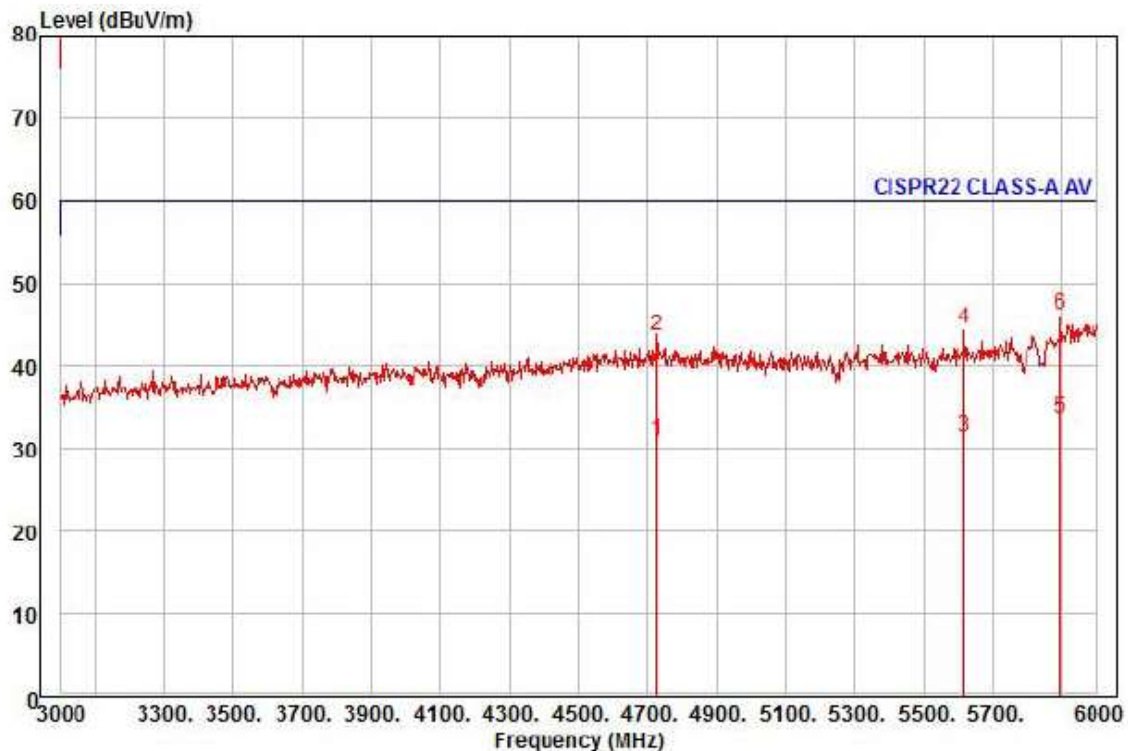
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCB-6001P
Mode : DC 12 V
Memo : 3 ~ 6 GHz

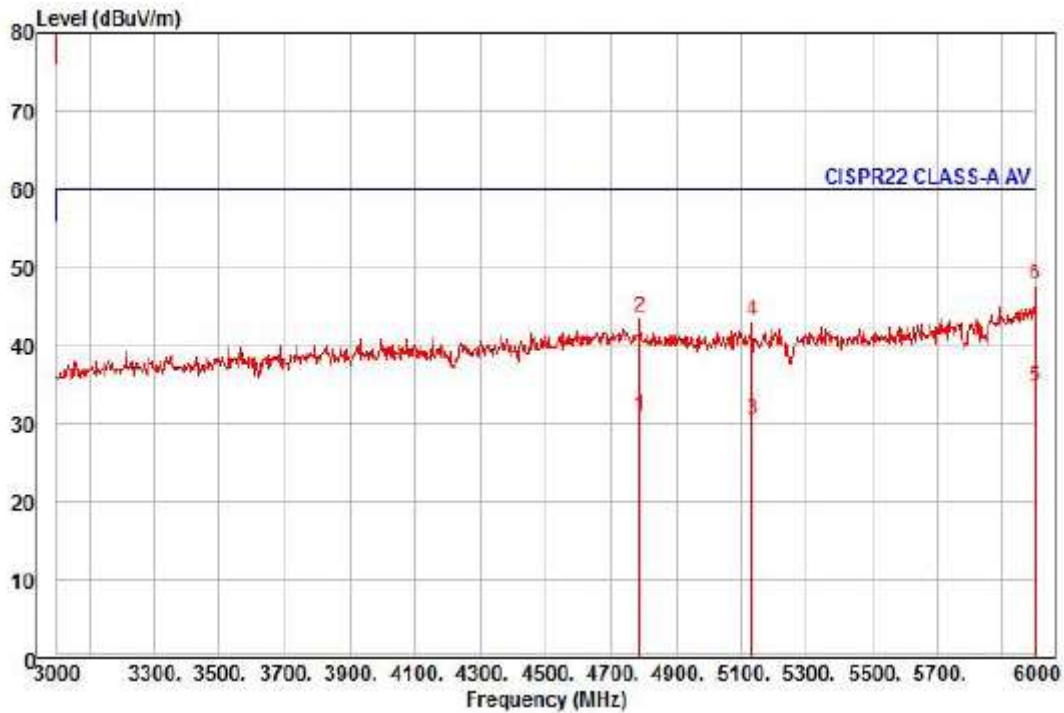
	Read Freq	Ant Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4725.00	23.61	32.99	14.93	40.55	234	60.00	-29.02	horizontal	Average
2	4725.00	36.20	32.99	14.93	40.55	234	80.00	-36.43	horizontal	Peak
3	5619.00	21.75	34.26	16.38	40.94	152	60.00	-28.55	horizontal	Average
4	5619.00	34.84	34.26	16.38	40.94	152	80.00	-35.46	horizontal	Peak
5 pp	5895.00	21.27	35.92	16.88	40.57	110	60.00	-26.50	horizontal	Average
6 pk	5895.00	33.90	35.92	16.88	40.57	110	80.00	-33.87	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(9149-255,2016-05-17) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCB-6001P
Mode : DC 12 V
Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4788.00	23.24	33.05	15.07	40.48	331	60.00	-29.12	vertical	Average
2	4788.00	35.87	33.05	15.07	40.48	331	80.00	-36.49	vertical	Peak
3	5133.00	22.19	33.31	15.58	40.49	317	60.00	-29.41	vertical	Average
4	5133.00	34.68	33.31	15.58	40.49	317	80.00	-36.92	vertical	Peak
5 pp	6000.00	21.51	36.55	17.07	40.43	304	60.00	-25.30	vertical	Average
6 pk	6000.00	34.54	36.55	17.07	40.43	304	80.00	-32.27	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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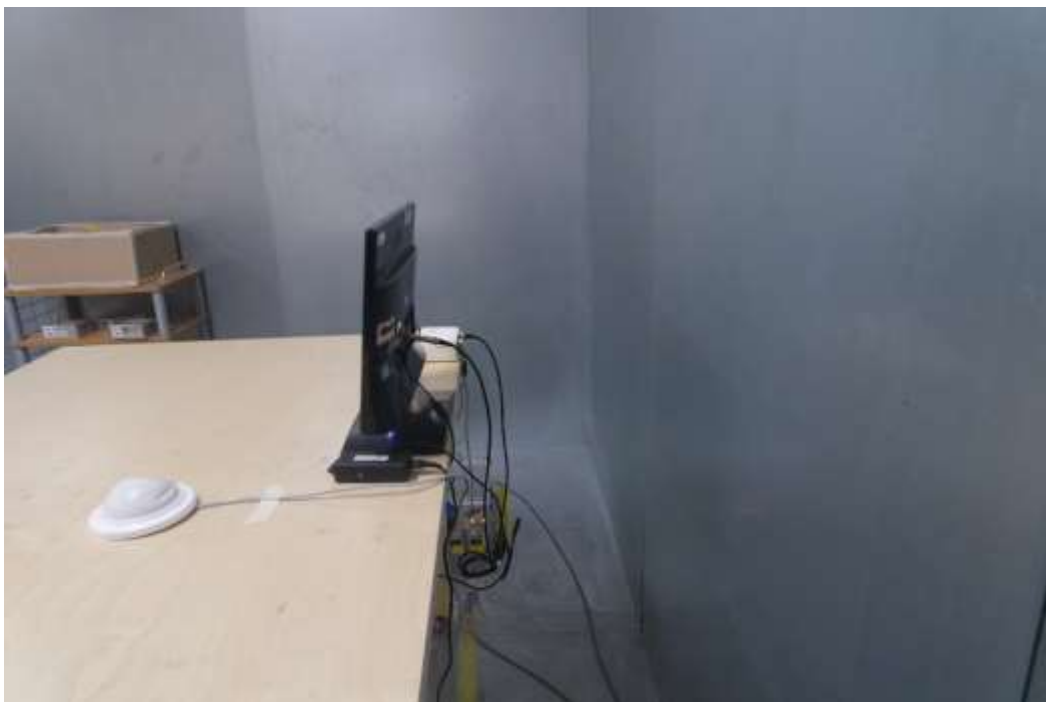
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Test Setup Photos and Configuration

Conducted Voltage Emissions

- AC 24 V Mode



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www.kes.co.kr

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Conducted Telecommunication Emissions

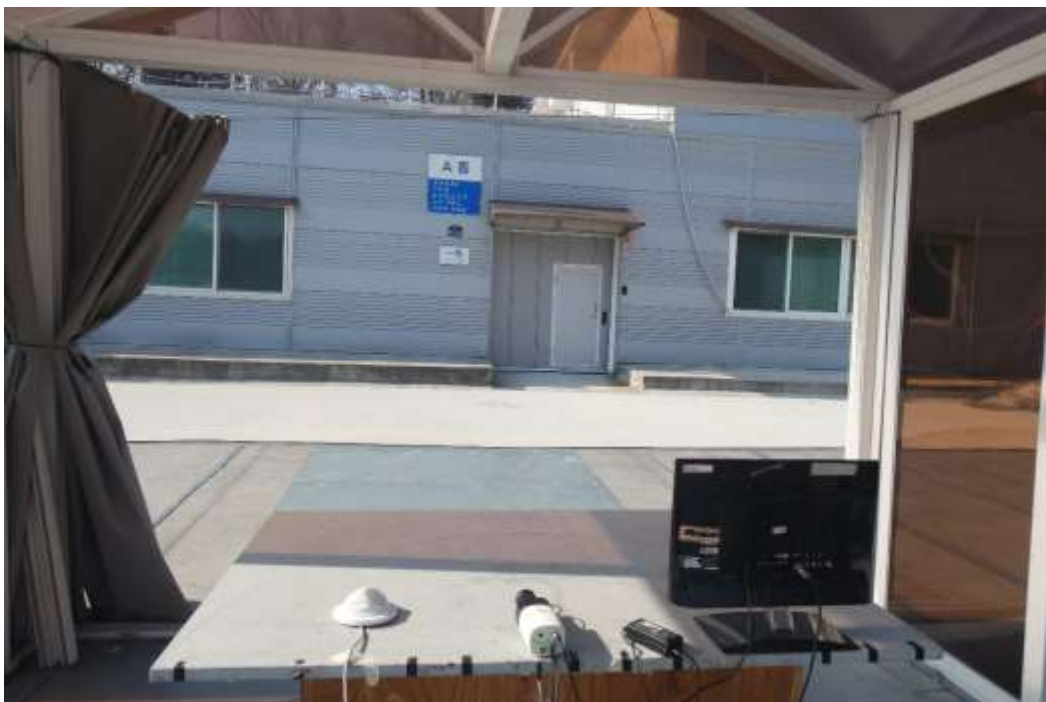
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N/A

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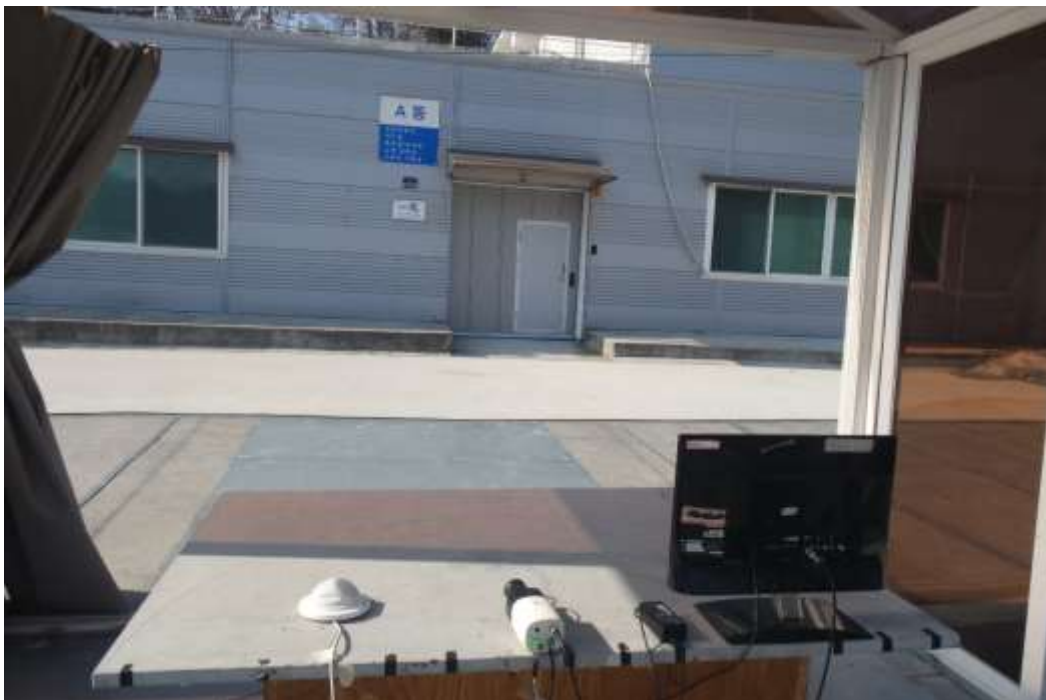
Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V Mode



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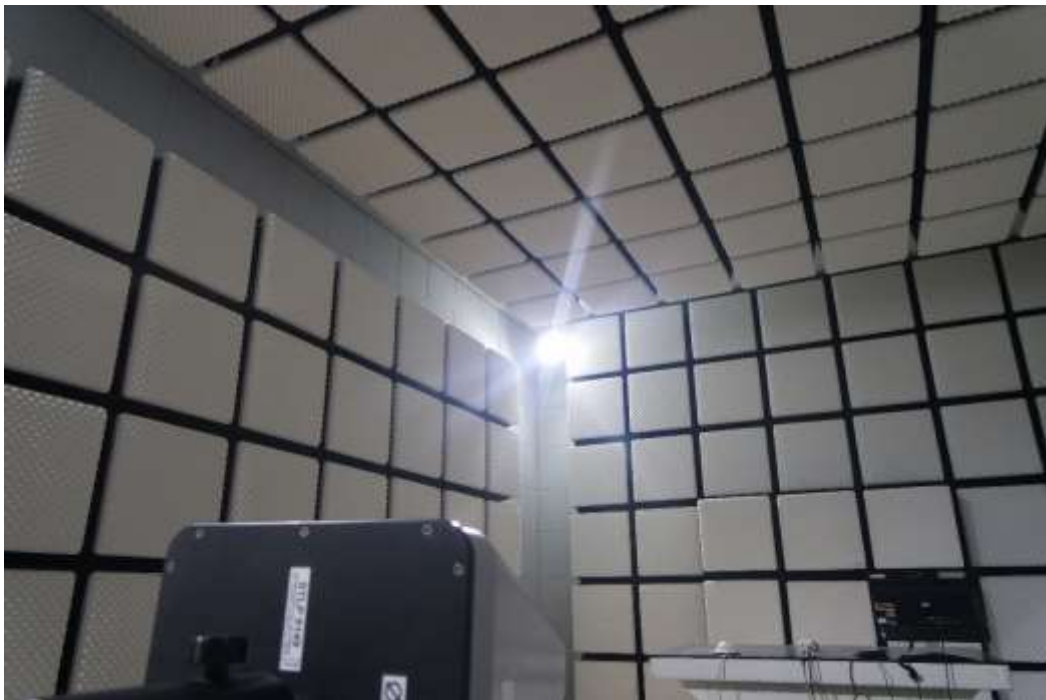
- DC 12 V Mode



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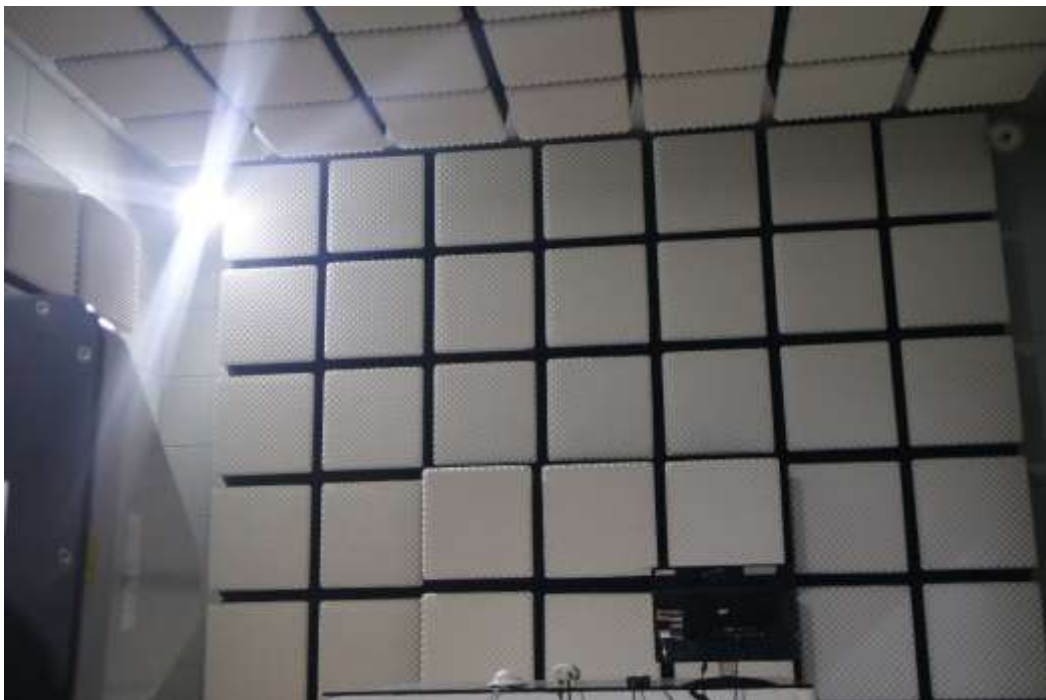
Radiated Electric Field Emissions(Above 1 GHz)

- AC 24 V Mode



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- DC 12 V Mode



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EUT External Photographs

(Top)



(Bottom)



EUT Internal Photographs

(Internal View)



EUT Internal View – Sub Board 1

(Top)



(Bottom)



EUT Internal View – Lens Board 1

(Top)



(Bottom)



EUT Internal View – Main Board 1

(Top)



(Bottom)



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EUT Internal View – Board 1

(Top)



(Bottom)

