



EMC TEST REPORT For RCM

Test Report No. : KES-E1-17T0533
Date of Issue : Aug. 16, 2017
Product name : CCTV CAMERA
Model/Type No. : HCD-6070RP
Variant Model : HCD-6080RP
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA,
Tianjin, 300385, People's Republic of China
Date of Receipt : Jul. 20, 2017
Test date : Aug. 07, 2017 ~ Aug. 08, 2017
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

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EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 16, 2017	KES-E1-17T0533	Issued

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1.0 General Product Description

Main Specifications of EUT are:

	HCD-6070RN	HCD-6070RP
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 : 0.2Lux (F1.4, 50IRE); 0.11Lux (F1.4, 30IRE) B/W : 0Lux(IR LED on)	
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
Pan / Tilt / Rotate		
Pan / Tilt / Rotate Range	0° ~ 350° / 0° ~ 67° / 0° ~ 355°	
Lens Type		
Focal Length (Zoom Ratio)	2.8 ~ 12mm (4.3x) varifocal	
Max. Aperture Ratio	F1.4	
Angular Field of View	H : 103.8°(Wide) ~ 32.4°(Tele) / V : 53.7°(Wide) ~ 18.4°(Tele) D : 121.9°(Wide) ~ 37.1°(Tele)	
Min. Object Distance	0.5m (1.64ft)	
Focus Control	Manual	
Lens Type	DC Auto Iris	
Mount Type	Board-in type	
Auto Back Focus(ABF)	-	
Operational		
IR LED		
Viewable length	20m (65.62ft)	
On Screen Display	Multi-language Support(16) English, Japanese, Spanish, French, Portuguese, Korean, German, Italian, Russian, Polish, Czech, Romanian, Serbian, Swedish, Danish, Turkish	
Camera Title	Off / On (Displayed 15 characters)	
Day & Night	Auto (ICR) / 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)	

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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
Remote control interface	Coaxial
Protocol	NTSC/PAL : Pelco-C (Coaxitron) AHD : 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	4.2W
Mechanical	
Color / Material	Ivory / Plastic
Dimension (WxHxD)	119.8*119.8*98.5mm
Weight	360G

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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 ☐ 240 Vac ☐ 100 Vac ☒ 24 Vac ☒ 12 Vdc ☐ PoE
Frequency ☒ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Structural Change Due to PCB Additions

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
CCTV CAMERA	HCD-6070RP	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
MONITOR	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-

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	BNC	4.0	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	BNC	4.0	U
	2 pin	Alarm	2 pin	3.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

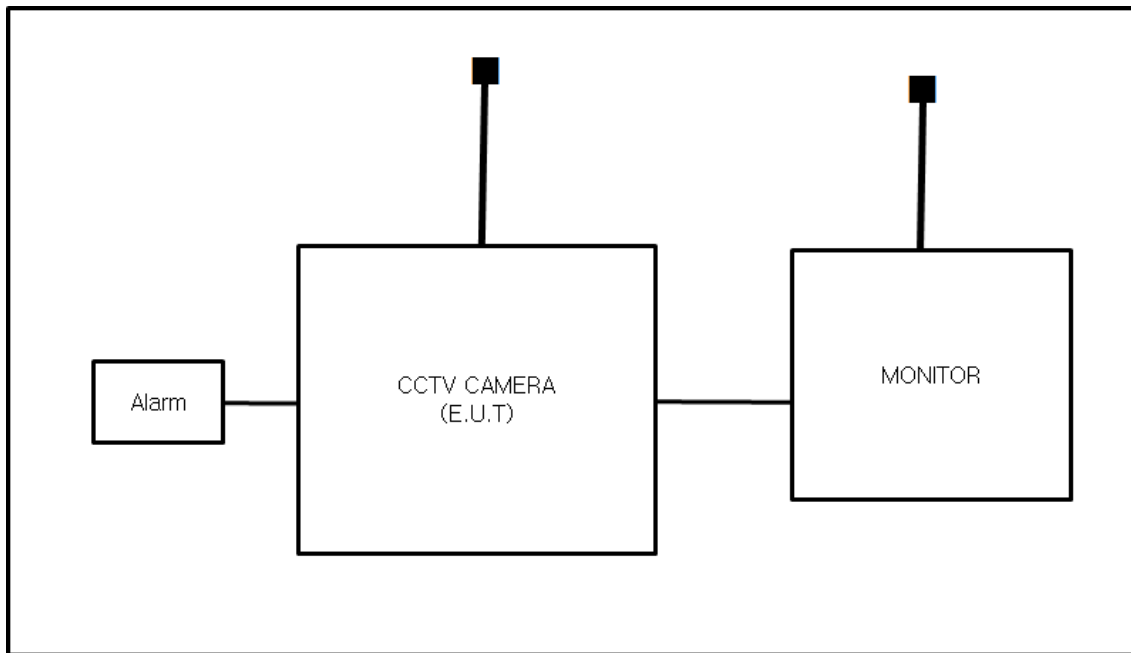
Test mode	operating
AC 24 V	E.U.T Monitoring
DC 12 V	E.U.T Monitoring

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

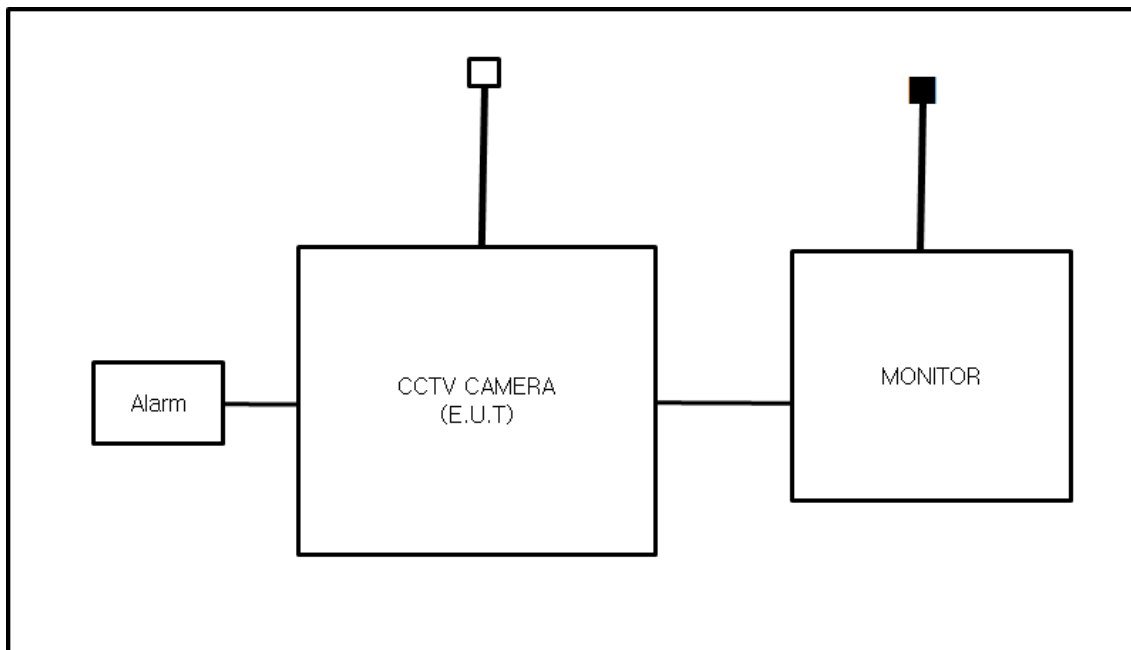
1.8 Configuration

■ AC Main
□ DC Main

- AC 24 V Mode



- DC 12 V Mode



1.9 Remarks when standards applied

- N/A

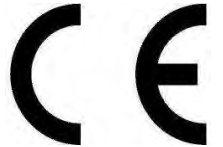
1.10 Calibration Details of Equipment Used for Measurement

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. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-4308, C-4798, T-2311, G-914
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	

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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 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



-
- | | | |
|---|---|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☒ AS/NZS CISPR 32:2013 | ☒ 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 | | |



2.1 Conducted Emissions at Mains Power Ports

Test Date

Aug. 07, 2017

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	101781	04, 27, 2018
☒	LISN	ENV216	R & S	101787	01, 11, 2018
☒	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 13, 2017

Test Conditions

Temperature: 24,6 °C
Relative Humidity: 54,8 %

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 S/W	EMC32	R & S	9.12.00	-
☐	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☐	LISN	ENV216	R & S	101137	02, 03, 2018
☐	LISN	ENV216	R & S	101786	04, 27, 2018
☐	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☐	8-WIRE ISN CAT3	CAT3 8158	SCHWARZBECK	8158-0019	03, 29, 2018
☐	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	03, 29, 2018
☐	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	08, 11, 2017

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

N/A

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Aug. 07, 2017

Test Location☐ OPEN AREA TEST SITE #1 ☒ SAC #4(10 m)**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	04, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	12, 13, 2017
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 25,1 °C

Relative Humidity: 44,0 %

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.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Aug. 07, 2017

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	e3	AUDIX	8.083b	-
☒	EMI TEST RECEIVER	ESU26	R & S	100552	04, 19, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01729	05, 31, 2018
☒	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2019

Test Conditions

Temperature: 23,3 °C

Relative Humidity: 40,8 %

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.

APPENDIX A – TEST DATA

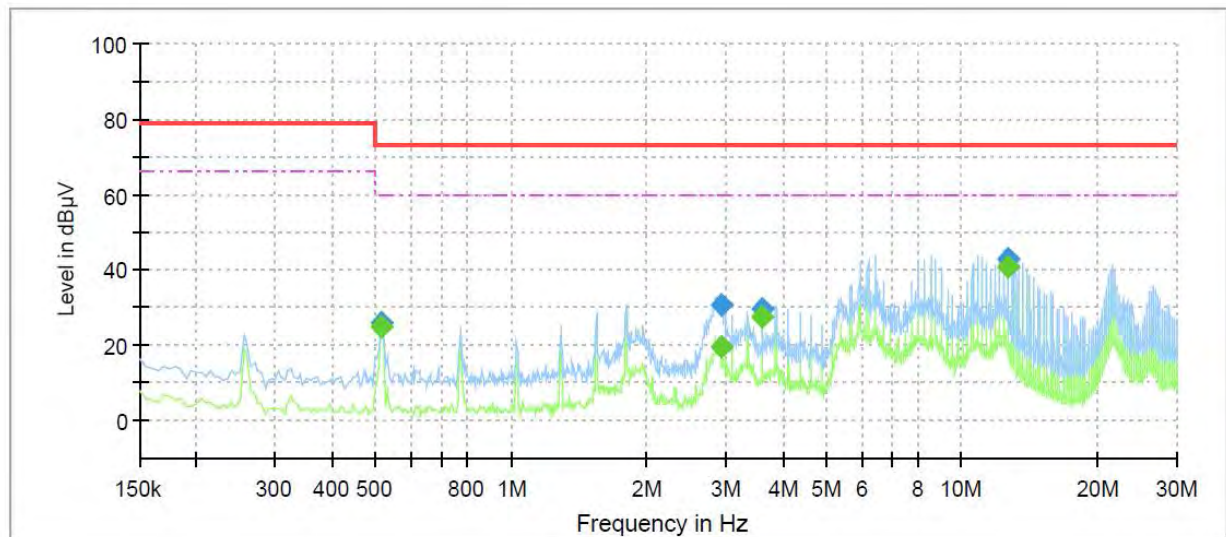
Conducted Emissions at Mains Power Ports

- AC 24 V Mode

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: HCD-6070RP
Mode: AC 24V_H
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.515000	---	24.75	60.00	35.25	1000.0	9.000	L1	19.7
0.515000	25.83	---	73.00	47.17	1000.0	9.000	L1	19.7
2.915000	---	19.41	60.00	40.59	1000.0	9.000	L1	20.2
2.915000	30.50	---	73.00	42.50	1000.0	9.000	L1	20.2
3.610000	---	27.64	60.00	32.36	1000.0	9.000	L1	20.0
3.610000	29.65	---	73.00	43.35	1000.0	9.000	L1	20.0
12.635000	---	40.69	60.00	19.31	1000.0	9.000	L1	20.2
12.635000	43.13	---	73.00	29.87	1000.0	9.000	L1	20.2

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

QuasiPeak / CAverage : The Final Value

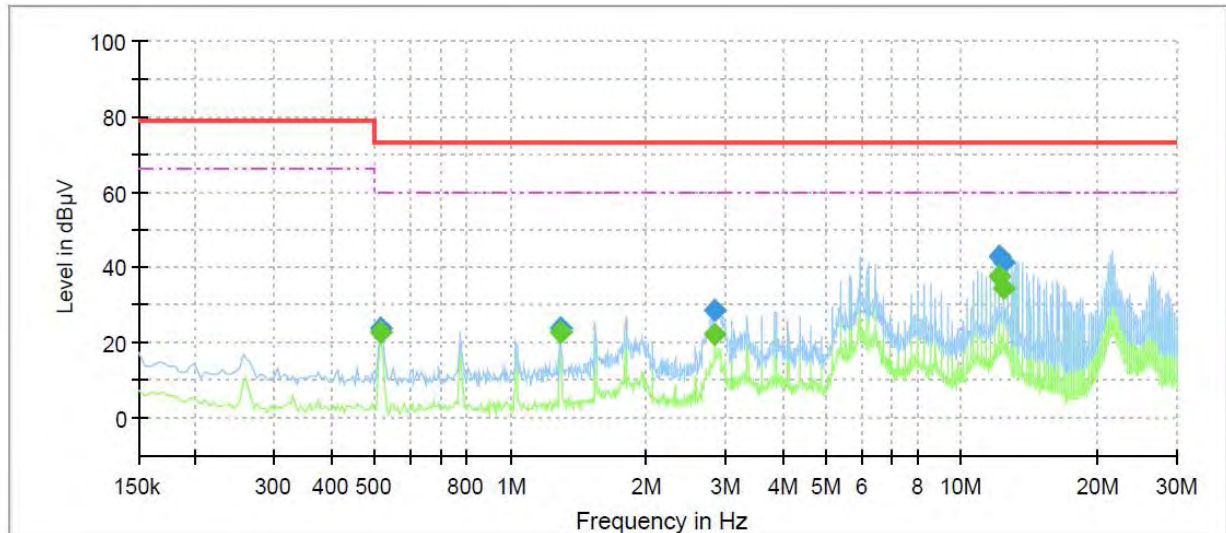
Reading Value : Not shown in the table.

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

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: HCD-6070RP
Mode: AC 24V_N
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.515000	---	22.70	60.00	37.30	1000.0	9.000	N	19.7
0.515000	23.78	---	73.00	49.22	1000.0	9.000	N	19.7
1.290000	---	22.78	60.00	37.22	1000.0	9.000	N	20.1
1.290000	24.02	---	73.00	48.98	1000.0	9.000	N	20.1
2.835000	---	22.05	60.00	37.95	1000.0	9.000	N	20.2
2.835000	28.53	---	73.00	44.47	1000.0	9.000	N	20.2
12.120000	---	37.36	60.00	22.64	1000.0	9.000	N	20.2
12.120000	42.84	---	73.00	30.16	1000.0	9.000	N	20.2
12.375000	---	34.25	60.00	25.75	1000.0	9.000	N	20.2
12.375000	41.25	---	73.00	31.75	1000.0	9.000	N	20.2

◆ 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

[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 + Pulse Limiter FACTOR))



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[100 Mbps]

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

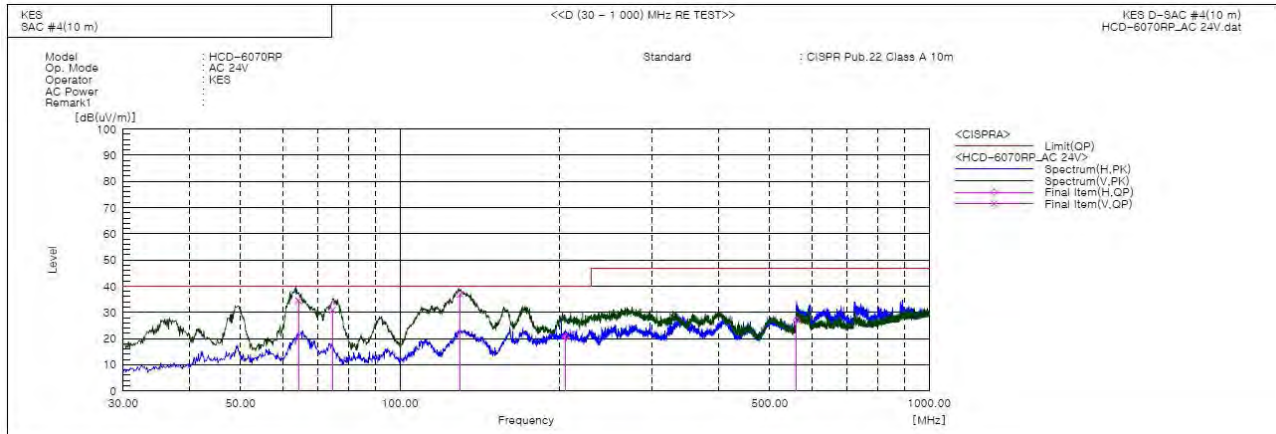
Reading Value : Not shown in the table.

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

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Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V 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	64.354	V	64.5	-30.1	34.4	40.0	5.6	164.0	352.0	
2	74.620	V	63.9	-33.0	30.9	40.0	9.1	100.0	142.0	
3	130.071	V	68.5	-31.7	36.8	40.0	3.2	101.0	148.0	
4	205.809	H	47.2	-26.6	20.6	40.0	19.4	336.0	325.0	
5	561.439	H	42.4	-15.3	27.1	47.0	19.9	400.0	329.0	

◆ 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: Marjin value



KES Co., Ltd.

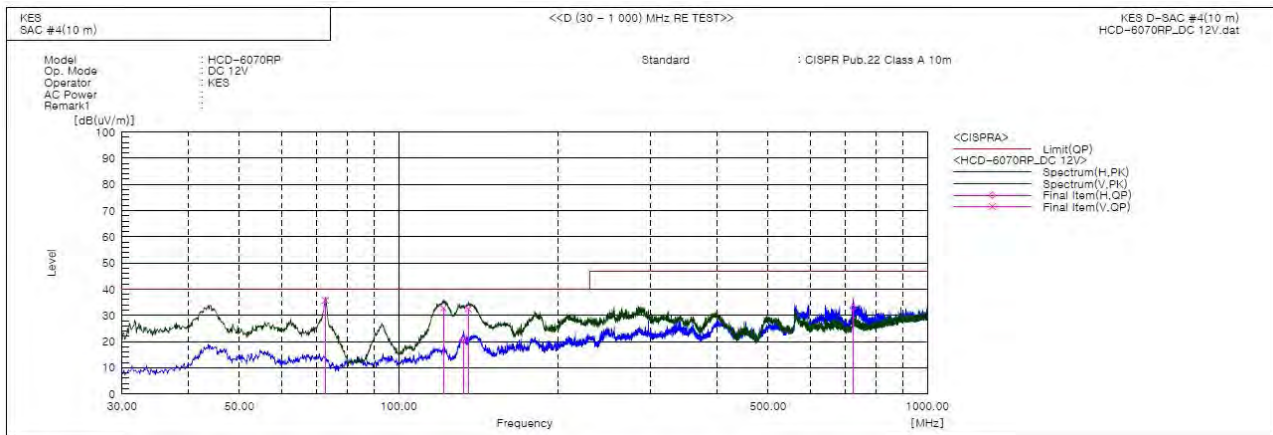
C-3701, Simin-daero 365-40,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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- DC 12 V Mode



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP [dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]	
1	72.722	V 68.4	-32.6	35.8	40.0	4.2	213.0	84.0	
2	121.544	V 63.8	-31.1	32.7	40.0	7.3	150.0	161.0	
3	132.699	H 52.3	-31.8	20.5	40.0	19.5	400.0	46.0	
4	135.488	V 64.2	-31.8	32.4	40.0	7.6	100.0	179.0	
5	724.156	H 46.1	-13.3	32.8	47.0	14.2	100.0	15.0	

◆ Calculation

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

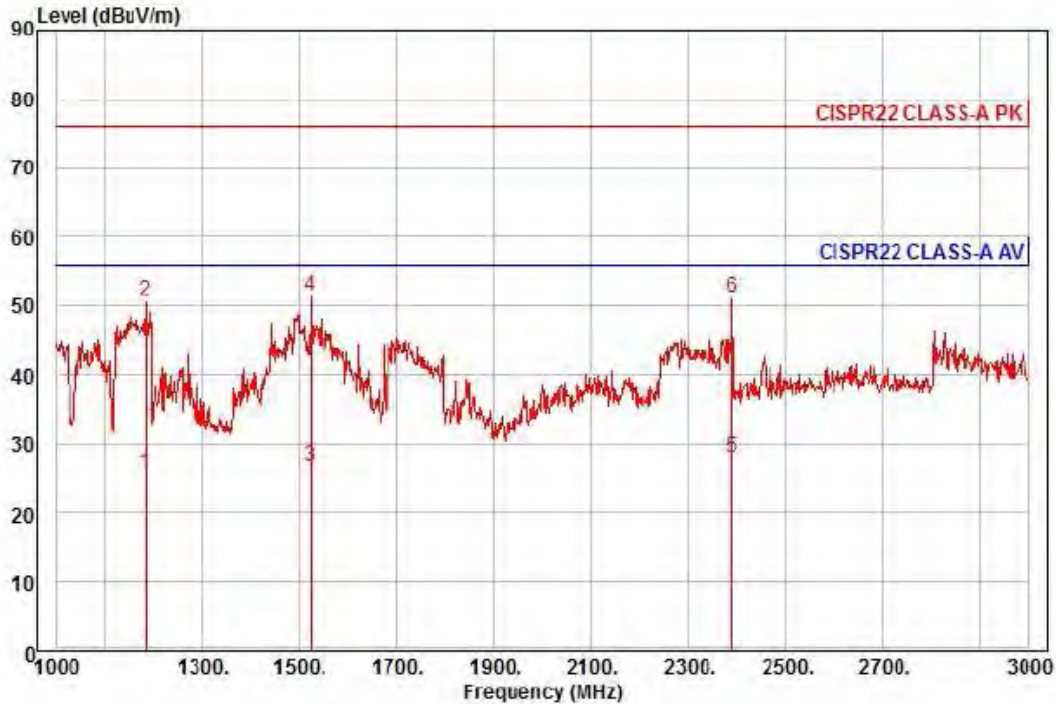
Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

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)

- AC 24 V Mode



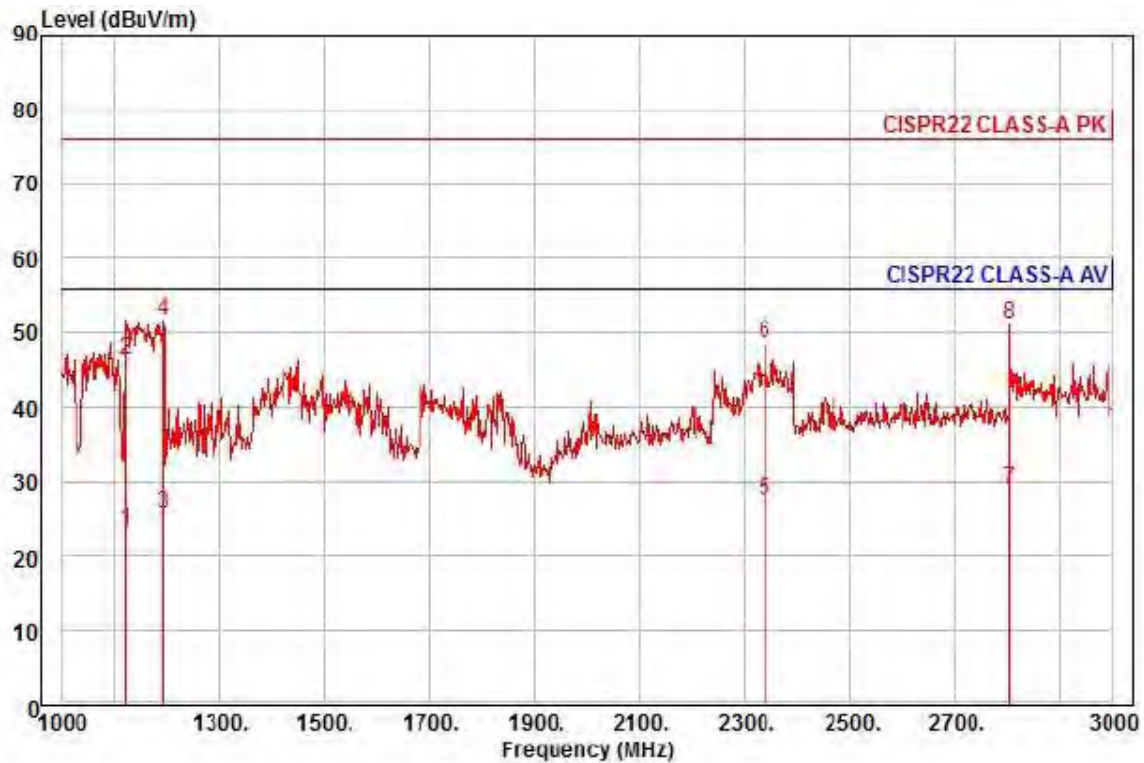
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCD-6070RP
Mode : AC 24V
Memo :

	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	1186.00	31.36	23.07	7.24	35.89	51	56.00	-30.22	horizontal	Average
2	1186.00	56.35	23.07	7.24	35.89	51	76.00	-25.23	horizontal	Peak
3	1522.00	29.98	24.11	8.28	35.60	297	56.00	-29.23	horizontal	Average
4 pp	1522.00	54.62	24.11	8.28	35.60	297	76.00	-24.59	horizontal	Peak
5 av	2390.00	25.50	27.20	10.57	35.32	39	56.00	-28.05	horizontal	Average
6	2390.00	48.78	27.20	10.57	35.32	39	76.00	-24.77	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, Read Level : Reading value, Ant Factor : ANT Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



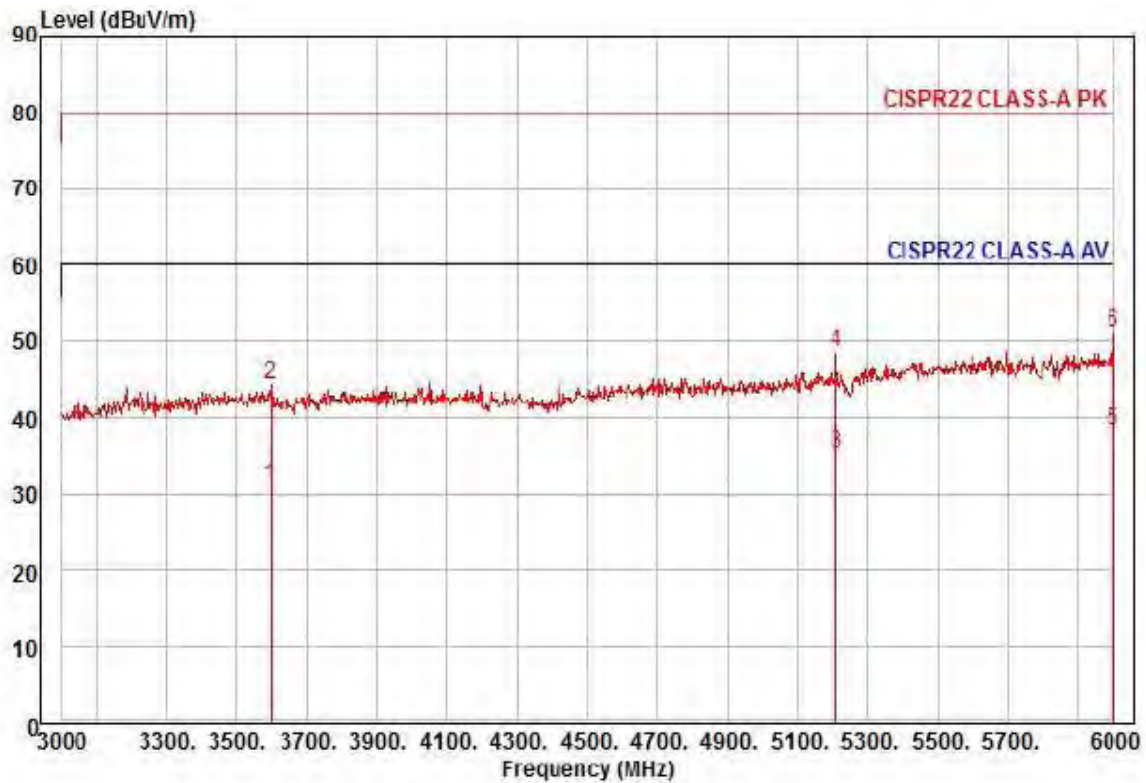
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCD-6070RP
Mode : AC 24V
Memo :

	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	1120.00	29.56	22.86	7.02	35.95	359	56.00	-32.51	vertical	Average
2	1120.00	52.31	22.86	7.02	35.95	359	76.00	-29.76	vertical	Peak
3	1194.00	31.36	23.09	7.26	35.89	9	56.00	-30.18	vertical	Average
4 pp	1194.00	57.35	23.09	7.26	35.89	9	76.00	-24.19	vertical	Peak
5	2338.00	25.39	27.04	10.45	35.30	37	56.00	-28.42	vertical	Average
6	2338.00	46.31	27.04	10.45	35.30	37	76.00	-27.50	vertical	Peak
7 av	2804.00	24.02	28.87	11.62	35.48	46	56.00	-26.97	vertical	Average
8	2804.00	46.20	28.87	11.62	35.48	46	76.00	-24.79	vertical	Peak

◆ Calculation

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

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



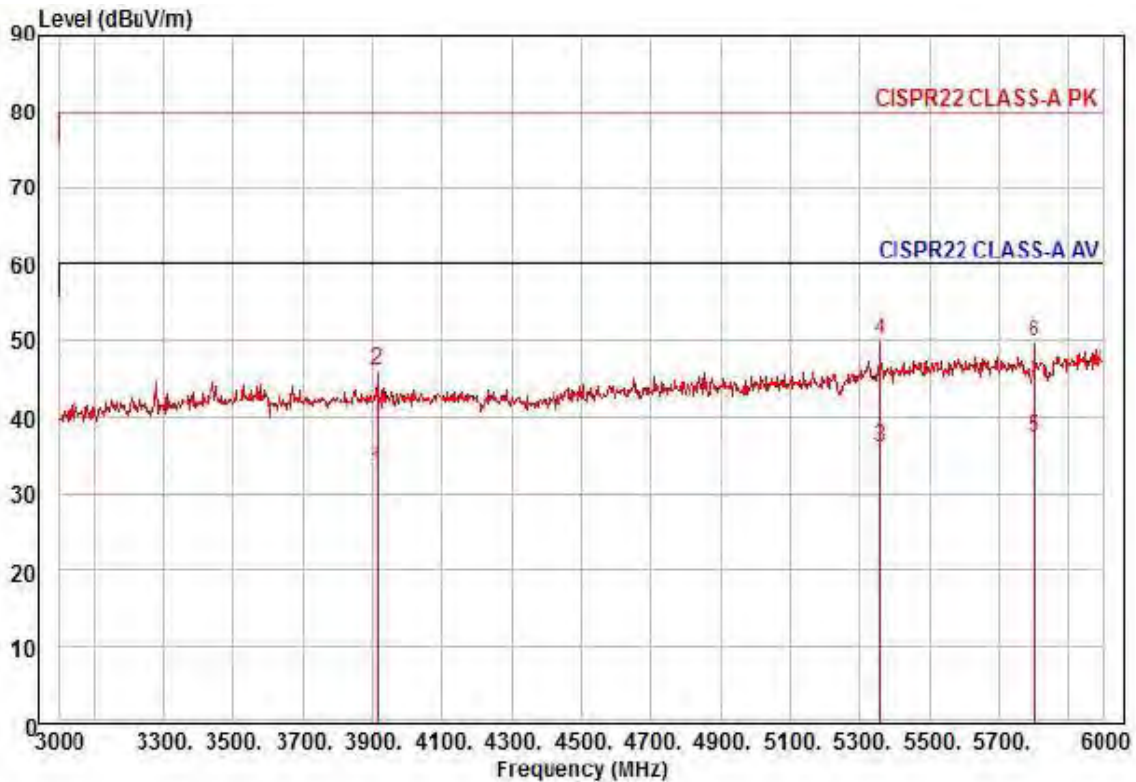
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCD-6070RP
Mode : AC 24V
Memo :

	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	3597.00	21.74	31.41	13.27	35.39	268	60.00	-28.97	horizontal Average
2	3597.00	35.12	31.41	13.27	35.39	268	80.00	-35.59	horizontal Peak
3	5211.00	20.56	34.24	16.09	35.64	202	60.00	-24.75	horizontal Average
4	5211.00	33.78	34.24	16.09	35.64	202	80.00	-31.53	horizontal Peak
5 pp	6000.00	20.18	36.12	17.64	35.69	326	60.00	-21.75	horizontal Average
6 pk	6000.00	33.07	36.12	17.64	35.69	326	80.00	-28.86	horizontal Peak

◆ Calculation

Over Limit [dB] = (Read Level[dB μ V] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB])
– Limit Line[dB μ V]

Over Limit : Margin, 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(RRA CAL 2017-05-18) vertical

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

Project :

Model : HCD-6070RP

Mode : AC 24V

Memo :

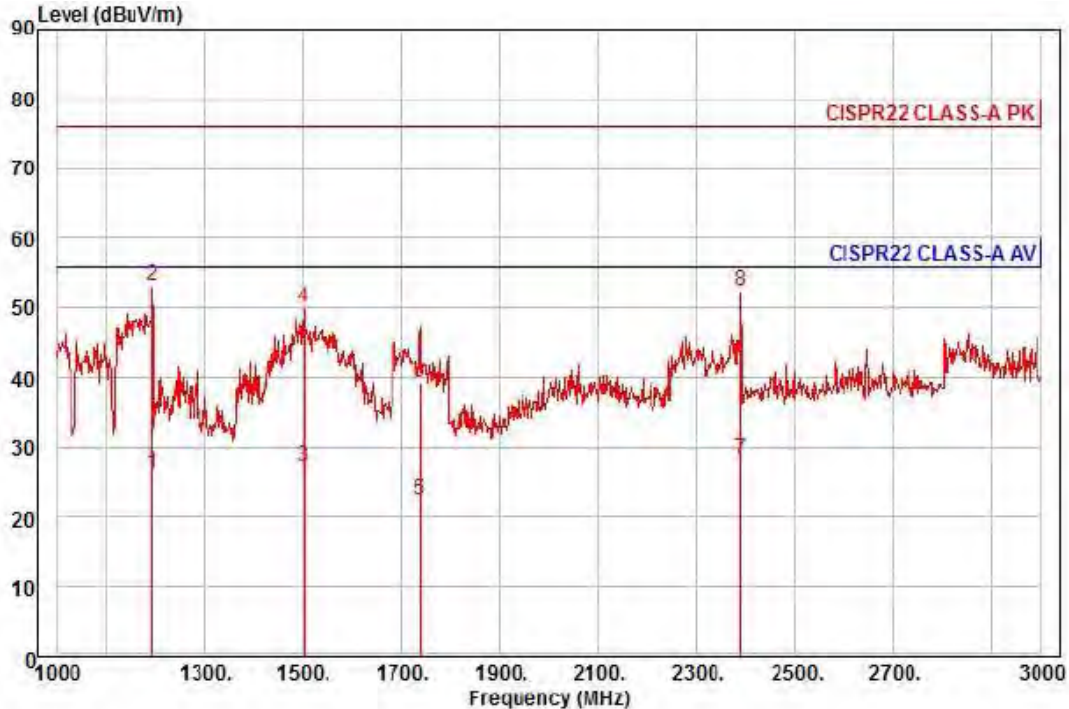
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
	3915.00	22.02	32.27	13.89	35.30	19	60.00	-27.12	vertical	Average
	3915.00	35.35	32.27	13.89	35.30	19	80.00	-33.79	vertical	Peak
	5358.00	20.58	34.81	16.37	35.65	78	60.00	-23.89	vertical	Average
pk	5358.00	34.57	34.81	16.37	35.65	78	80.00	-29.90	vertical	Peak
pp	5802.00	20.06	35.82	17.05	35.68	24	60.00	-22.75	vertical	Average
	5802.00	32.55	35.82	17.05	35.68	24	80.00	-30.26	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, 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(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

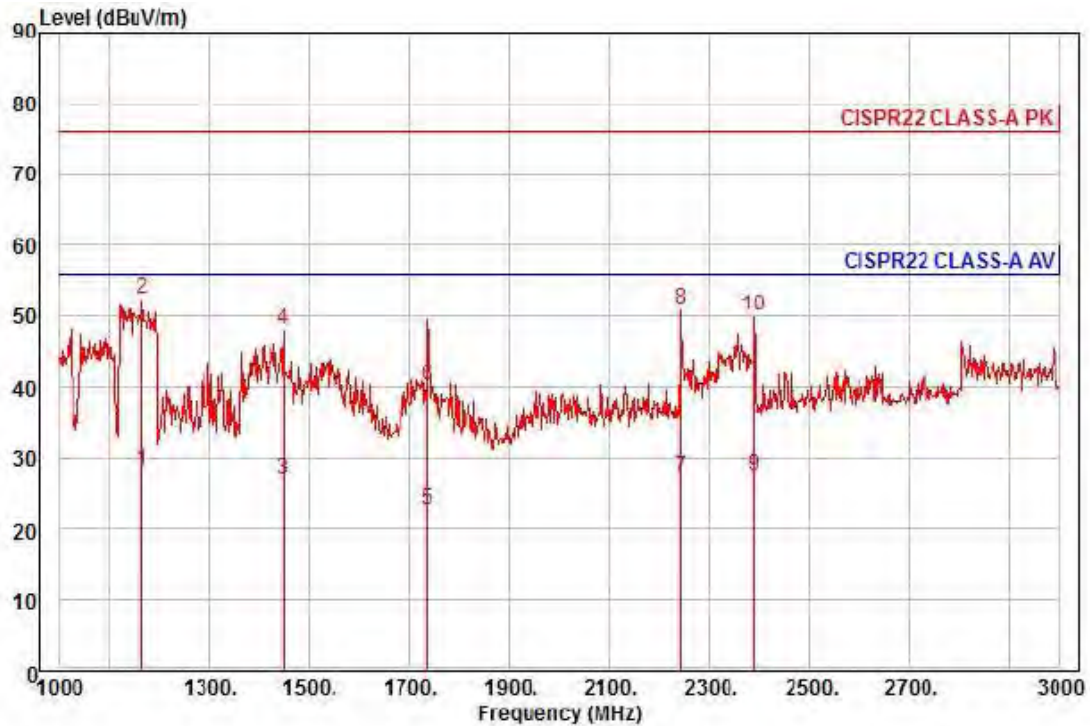
Project :
Model : HCD-6070RP
Mode : DC 12V
Memo :

	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	1194.00	31.75	23.09	7.26	35.89	50	56.00	-29.79	horizontal	Average
2 pp	1194.00	58.71	23.09	7.26	35.89	50	76.00	-22.83	horizontal	Peak
3	1502.00	30.55	24.03	8.22	35.61	54	56.00	-28.81	horizontal	Average
4	1502.00	53.50	24.03	8.22	35.61	54	76.00	-25.86	horizontal	Peak
5	1738.00	24.04	24.97	8.91	35.40	202	56.00	-33.48	horizontal	Average
6	1738.00	40.87	24.97	8.91	35.40	202	76.00	-36.65	horizontal	Peak
7 av	2390.00	25.78	27.20	10.57	35.32	42	56.00	-27.77	horizontal	Average
8	2390.00	50.02	27.20	10.57	35.32	42	76.00	-23.53	horizontal	Peak

◆ Calculation

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

Over Limit : Margin, 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(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : HCD-6070RP
Mode : DC 12V
Memo :

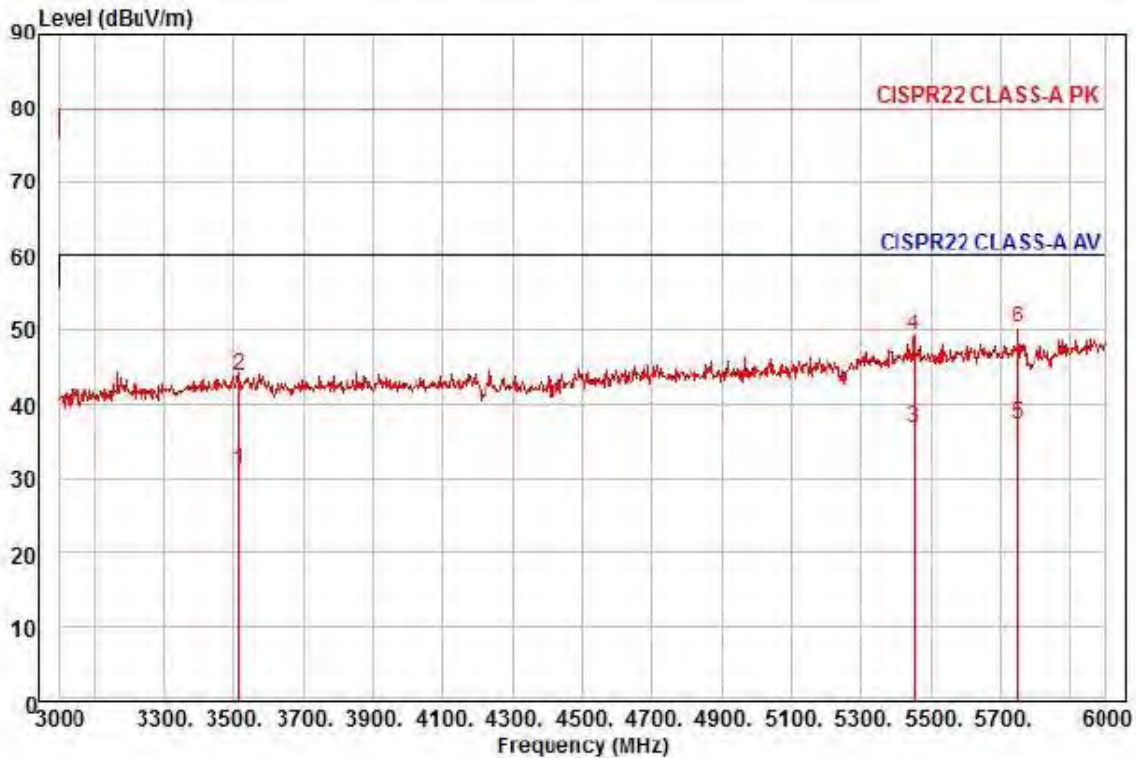
		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	av	1166.00	33.83	23.00	7.17	35.91	13	56.00	-27.91	vertical Average
2	pp	1166.00	58.24	23.00	7.17	35.91	13	76.00	-23.50	vertical Peak
3		1450.00	30.78	23.87	8.07	35.66	22	56.00	-28.94	vertical Average
4		1450.00	51.74	23.87	8.07	35.66	22	76.00	-27.98	vertical Peak
5		1736.00	24.38	24.96	8.90	35.40	86	56.00	-33.16	vertical Average
6		1736.00	41.74	24.96	8.90	35.40	86	76.00	-35.80	vertical Peak
7		2244.00	25.44	26.75	10.23	35.27	324	56.00	-28.85	vertical Average
8		2244.00	49.33	26.75	10.23	35.27	324	76.00	-24.96	vertical Peak
9		2390.00	25.04	27.20	10.57	35.32	63	56.00	-28.51	vertical Average
10		2390.00	47.70	27.20	10.57	35.32	63	76.00	-25.85	vertical Peak

◆ Calculation

Over Limit [dB] = (Read Level[dB μ V] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB])
– Limit Line[dB μ V]

Over Limit : Margin, 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(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : HCD-6070RP

Mode : DC 12V

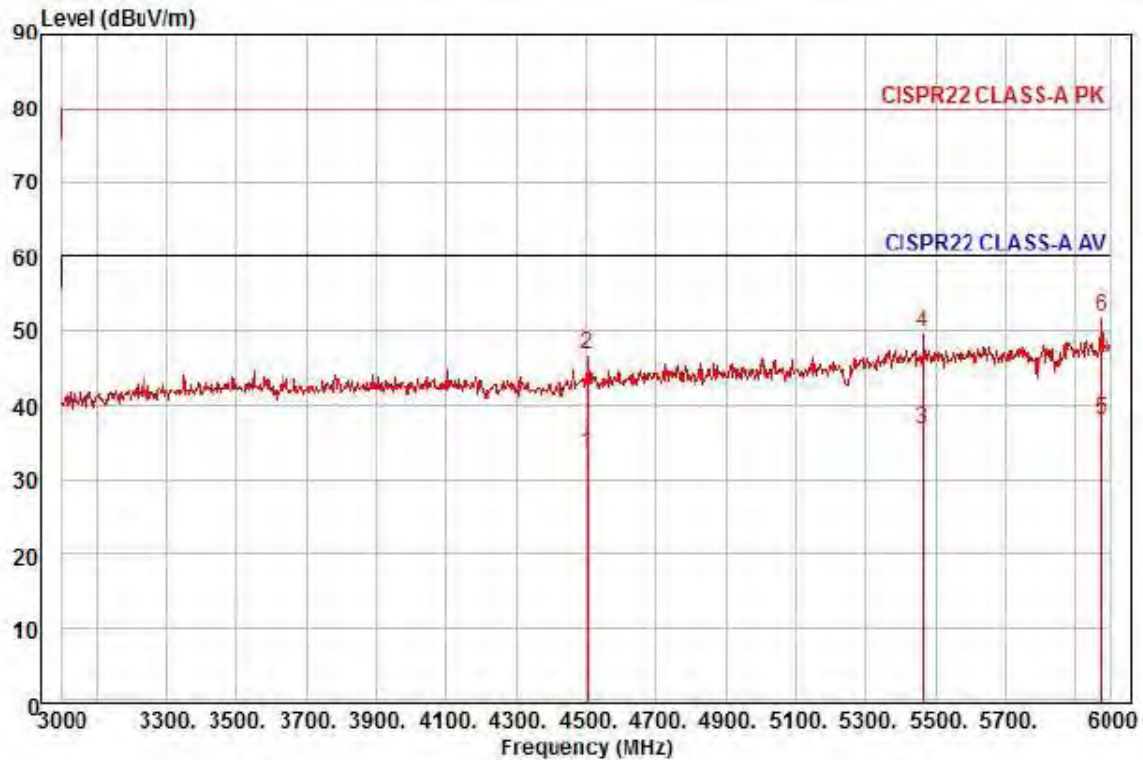
Memo :

	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	3516.00	22.20	31.19	13.17	35.42	50	60.00	-28.86	horizontal	Average
2	3516.00	34.89	31.19	13.17	35.42	50	80.00	-36.17	horizontal	Peak
3	5454.00	20.73	35.19	16.54	35.66	1	60.00	-23.20	horizontal	Average
4	5454.00	33.30	35.19	16.54	35.66	1	80.00	-30.63	horizontal	Peak
5 pp	5748.00	20.28	35.74	16.97	35.67	9	60.00	-22.68	horizontal	Average
6 pk	5748.00	33.14	35.74	16.97	35.67	9	80.00	-29.82	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dB μ V] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB]) – Limit Line[dB μ V]

Over Limit : Margin, 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(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : HCD-6070RP

Mode : DC 12V

Memo :

	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	4503.00	21.72	32.37	14.97	35.46	22	60.00	-26.40	vertical	Average
2	4503.00	34.90	32.37	14.97	35.46	22	80.00	-33.22	vertical	Peak
3	5463.00	20.72	35.22	16.55	35.66	171	60.00	-23.17	vertical	Average
4	5463.00	33.75	35.22	16.55	35.66	171	80.00	-30.14	vertical	Peak
5 pp	5973.00	20.18	36.08	17.56	35.69	102	60.00	-21.87	vertical	Average
6 pk	5973.00	33.94	36.08	17.56	35.69	102	80.00	-26.11	vertical	Peak

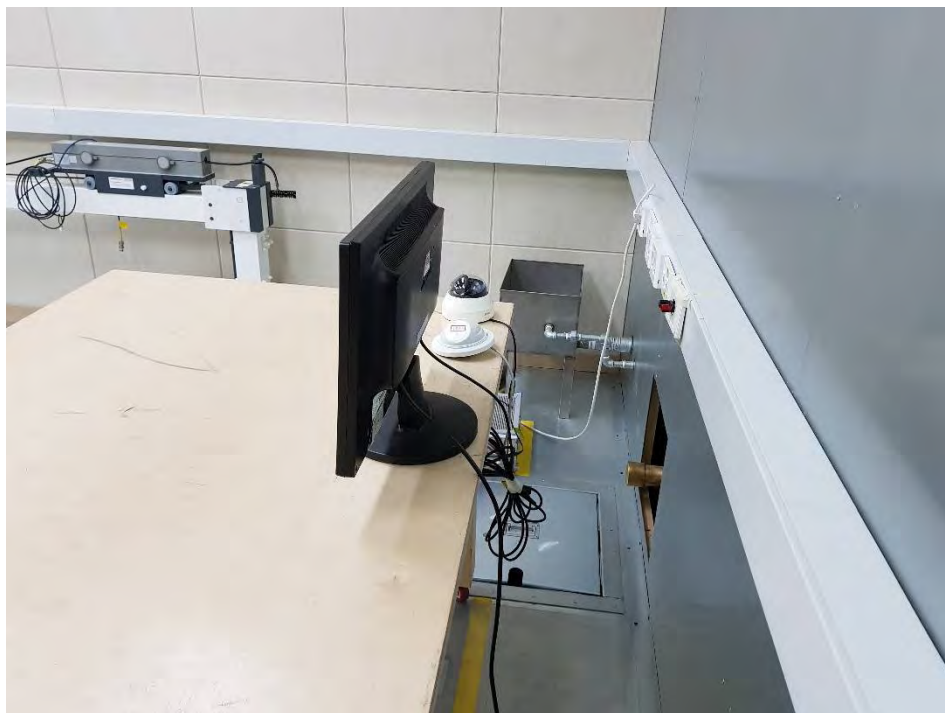
◆ Calculation

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

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

Test Setup Photos and Configuration

Conducted Voltage Emissions



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Test report No.:
KES-E1-17T0533
Page (31) of (38)

Conducted Telecommunication Emissions

N/A

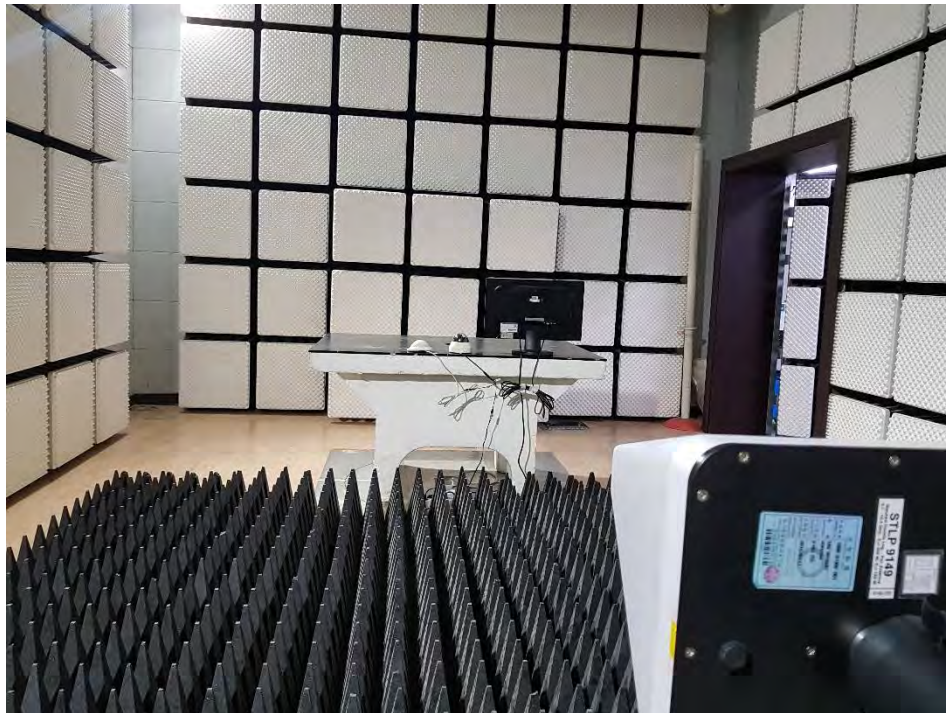
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



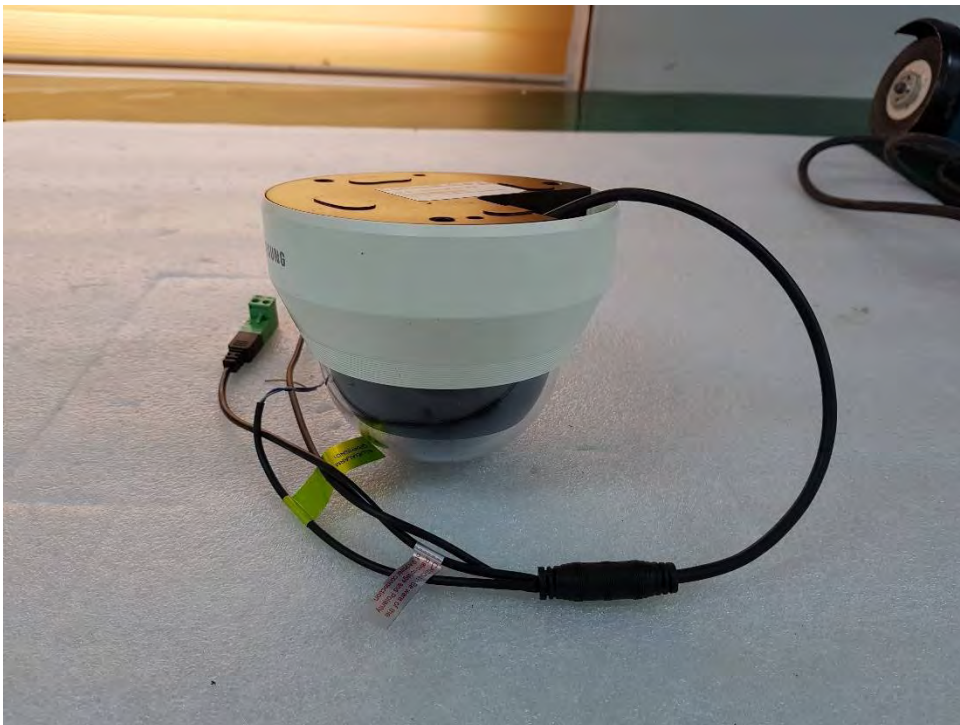
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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)



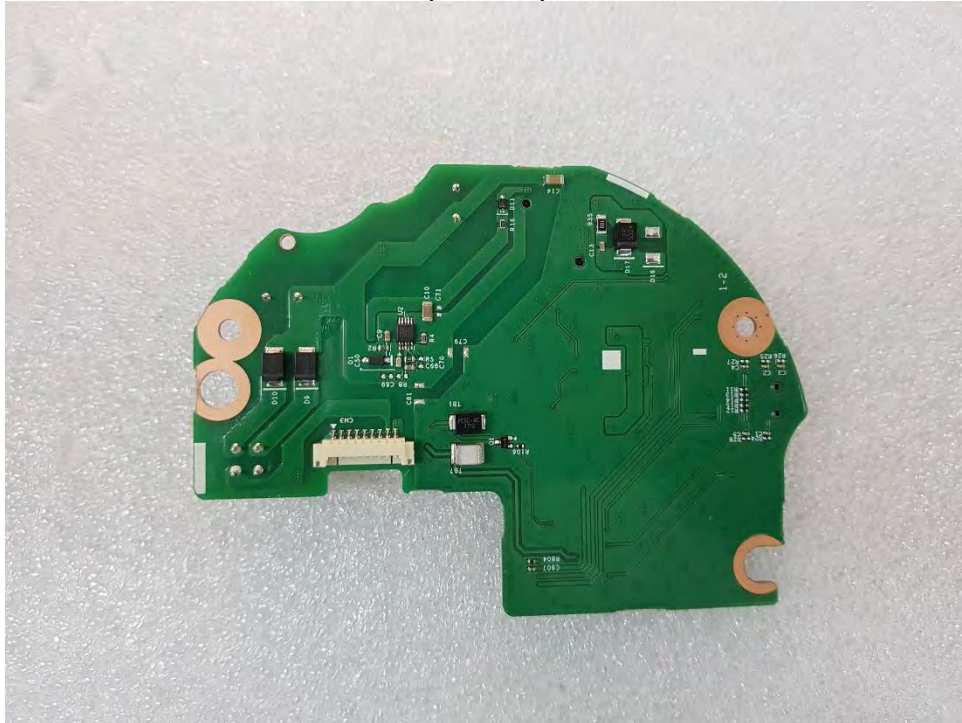
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EUT Internal View – board 1

(Top)



(Bottom)



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EUT Internal View – board 2

(Top)



(Bottom)



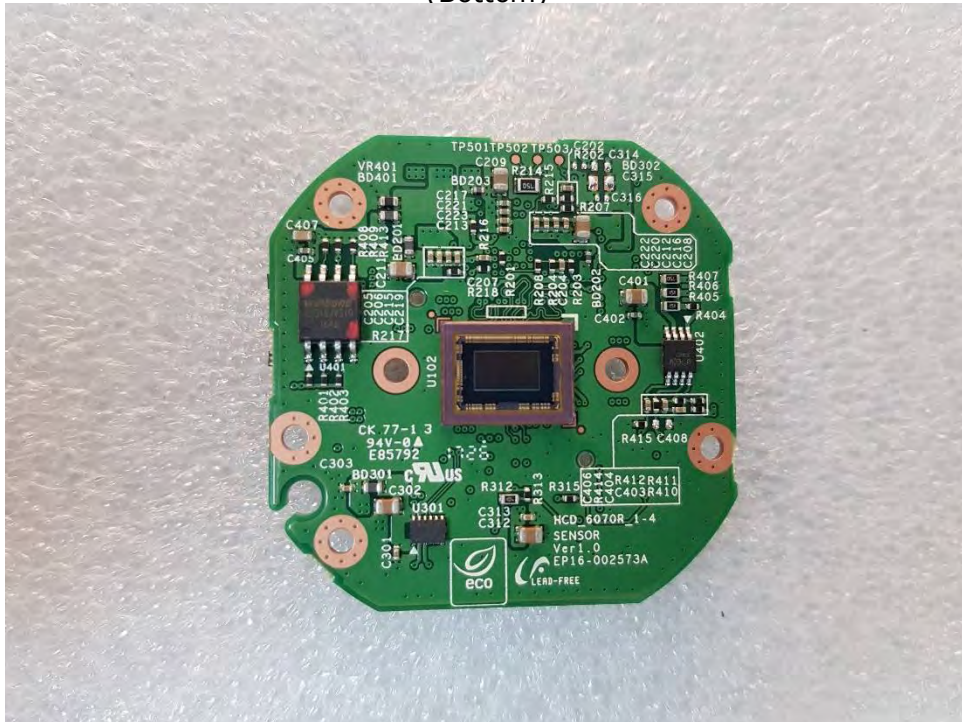
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EUT Internal View – board 3

(Top)



(Bottom)



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