



EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0510-R2

Date of Issue : May. 15, 2019

Product name : NETWORK CAMERA

Model/Type No. : PNP-9200RH

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488, KOREA

Manufacturer : 1. Hanwha Techwin (Tianjin) Co.,Ltd.
2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
3. D-TECH CO.,LTD.

Manufacturer Address : 1. No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
2. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do,
Korea (Suwon Industrial Complex)

Date of Receipt : Sep, 23, 2016

Test date : Oct, 03, 2016 – Oct. 06, 2016

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

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EMC Test Engineer

Reviewed by

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EMC Technical Manager

This test report is not related to KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Oct. 13, 2016	KES-E1-16T0510	Issued
Aug. 07, 2017	KES-E1-16T0510-R1	Re-issue due to manufacturer change
May. 15, 2019	KES-E1-16T0510-R2	Re-issue due to manufacturer change

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1.0 General Product Description

Main Specifications of E.U.T are:

Items		Description
Video	Imaging Device	1/2.5" 8M CMOS
	Total Pixels	3864(H) x 2202(V), 8.51M pixels
	Effective Pixels	3840(H) x 2160(V), 8.00M pixels
	Scanning System	Progressive Scan
	Min. Illumination	Color : 0.3 Lux/F1.6 (1/30sec, F1.8, 50IRE), 0.005 Lux (2sec, F1.8, 50IRE) Color : 0.1 Lux/F1.6 (1/30sec, F1.8, 30IRE), 0.0005 Lux (2sec, F1.8, 30IRE) B/W : 0 Lux (IR LED On)
	S / N Ratio	50dB
	Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
Lens	Focal Length (Zoom Ratio)	4.8mm ~ 96mm (20x)
	Max. Aperture Ratio	F1.8(Wide) / F3.6(Tele)
	Angular Field of View	H : 65.1°(Wide) ~ 3.8°(Tele) / V : 38.4°(Wide) ~ 2.2°(Tele)
	Min. Object Distance	1.5 m (3.28ft)
	Focus Control	AF / One-Shot AF / Manual
	Lens Type	DC Auto Iris / IR Corrected Lens
	Mount Type	Board-in type
Pan / Tilt / Rotate	Pan Range	360° Endless
	Pan Speed	Preset : 400°/sec, Manual : 0.024°/sec ~ 250°/sec
	Tilt Range	190° (-5° ~ 185°)
	Tilt Speed	Preset : 300°/sec, Manual : 0.024°/sec ~ 250°/sec
	Sequence	Preset (300ea), Swing, Group (6ea), Trace, Tour, Auto Run, Schedule
	Preset Accuracy	±0.2°
	Azimuth	Yes (E/W/S/N/NE/NW/SE/SW OSD)
Operational	Auto Tracking	Off / On
	IR LED	2ea
	Viewable Length	200m
	Camera Title	Off / On (Displayed up to 15 characters per line) - W/W : English/Numeric/Special Characters - Common : Multi-line (Max 6), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
	Day & Night	Auto (ICR) / Color / B/W
	Backlight Compensation	Off / BLC / WDR
	Wide Dynamic Range	120dB
	Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
	Digital Noise Reduction	SSNRIII (2D+3D Noise Filter) (Off / On)
	Digital Image Stabilization	Off / On
	Defog	Auto / Manual / Off
	Motion Detection	Off / On (4ea, Rectangular zones)
	Privacy Masking	Off / On (16ea, Rectangular zones) - Color : Grey/Green/Red/Blue/Black/White - Zoom ratio option for mask mode - Mosaic option mode
	Gain Control	Off / Low / Medium / High / Manual
	White Balance	ATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
	Digital Zoom	16x, area zoom function support digital zoom 2x



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Items		Description
Operational	Rotate Image	Flip : On/Off Mirror : On/Off
	Intelligent Video Analytics	Tampering, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection
	Alarm I/O	Input 4ea / Output 2ea (Relay type)
	Remote Control Interface	RS-485/422
	Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
	Audio out	Line out (3.5mm stereo mini jack), Max output Level : 1Vrms
	RS-485 Protocol	Samsung-T/E, Pelco-D/P, Panasonic, Honeywell, AD, Vicon, GE, BOSCH
	Alarm Triggers	Alarm Input, Motion Detection, Intelligent Video Analytics, Network Disconnect
	Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail • Local storage(SD/SDHC/SDXC) or NAS recording at Network disconnected & Event (Alarm Triggers) • External output • PTZ preset
Network	Ethernet	RJ-45 (10/100BASE-T) SFP (*only using SBP-302HF)
	Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High, Motion JPEG
	Resolution	3840x2160 / 2592x1944 / 2592x1464 / 1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 / 800x600 / 800x450 / 720x576 / 640x480 / 640x360 / 320x240 / 320x180
	Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions Motion JPEG : Max. 15fps at all resolutions
Items		Description
Network	Smart Codec	Manual Mode (area-based : 5EA) Face detection Mode
	Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
	Bitrate Control Method	H.264/H.265 : CBR or VBR, with WiseStream MJPEG : VBR
	Streaming Capability	Multiple Streaming (Up to 10 Profiles)
	Audio Compression Format	G.711 μ -law / G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC : 48Kbps at 16KHz
	Audio Communication	Bi-directional
	IP	IPv4, IPv6
	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)
	Streaming Method	Unicast / Multicast
	Max. User Access	20 users at Unicast Mode
	Edge Storage	SD/SDHC/SDXC(up to 128G) - motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording

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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 ☐ 220 Vac ☐ 230 Vac ☐ 240 Vac ☒ 24 Vac ☐ 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
NETWORK CAMERA	PNP-9200RH	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
NOTEBOOK	LG15N54	410NZET022292	LG Electronics Co., Ltd.	-
NOTEBOOK Adapter	ADP-90WH B	84ZW19F1557	DELTA ELECTRONICS(JIANGSU) LTD.	-
Speaker	BR10000A CUVE	SN128458795701	BEIJING EDIFIER HI-TECH GROUP.	-
Mobile Phone	A1688	-	Apple	-
Alarm Jig	-	-	-	-

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45(LAN)	Notebook	RJ-45(LAN)	4.0	U
	Audio In	Moblle Phone	Audio Out	1.2	U
	Audio Out	Speaker	Audio In	1.4	U
	Alarm	Alarm Jig	Alarm	3.0	U

* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

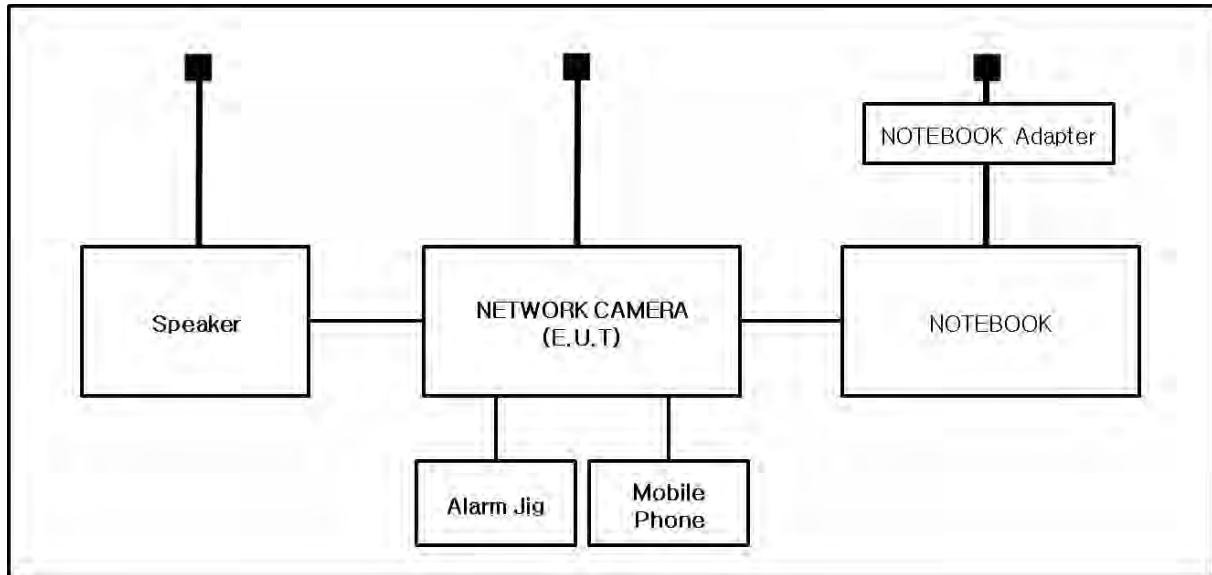
E.U.T Test operating S/W		
Name	Version	Manufacture Company
WebViewer	5.8	Hanwha Techwin Co., Ltd.

Test mode	Normal operating
OP	E.U.T Monitoring

- Input power condition during the measurements was 24 v (ac).

1.8 Configuration

■ AC Main
 □ DC Main



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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area 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, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
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
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001

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 55032:2012/AC:2013

☒ 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



- | | | |
|---|----------------------------------|----------------------------------|
| ☐ 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 | | |

2.1 Conducted Emissions at Mains Power Ports

Test Date

Oct, 05, 2016

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, 04, 2017
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	Electro wave Shieldroom	-	AONE SHIELD	-	-
☒	EMI Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 21,1 °C
Relative Humidity: 53,1 %

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

Oct, 05, 2016

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, 04, 2017
☒	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
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 21,1 °C

Relative Humidity: 53,1 %

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.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Oct, 05, 2016

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 ANT	VULB 9163	Schwarzbeck	9163-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: 21,5 °C

Relative Humidity: 75,0 %

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

Oct, 06, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	Semi Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-
☒	EMI Test S/W	e3	AUDIX	8.083b	-

Test Conditions

Temperature: 23,0 °C
Relative Humidity: 51,3 %

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.



2.5 Harmonic Current Emissions

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM TEST	V1024106760	08, 08, 2017
☐	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 08, 2017
☐	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

Test Conditions

Temperature: °C

Relative Humidity: %

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

Remarks

N/A : Because the E.U.T power is less than 75 W, limits are not specified.



2.6 Voltage Fluctuations and Flicker

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM test	V1024106760	08, 08, 2017
☐	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 08, 2017
☐	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

Test Conditions

Temperature: °C

Relative Humidity: %

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

N/A : Because the E.U.T power is 12 v (dc) power and 24 v (ac), limit are not specified.

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 61000-4-2:2009

Test Date

Oct, 03, 2016

Test Location

EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-
☒	EMS Test S/W	N/A	N/A	N/A	-

Test Conditions

Temperature: 22,1 °C
Relative Humidity: 51,8 %
Atmospheric Pressure: 99,3 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 ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

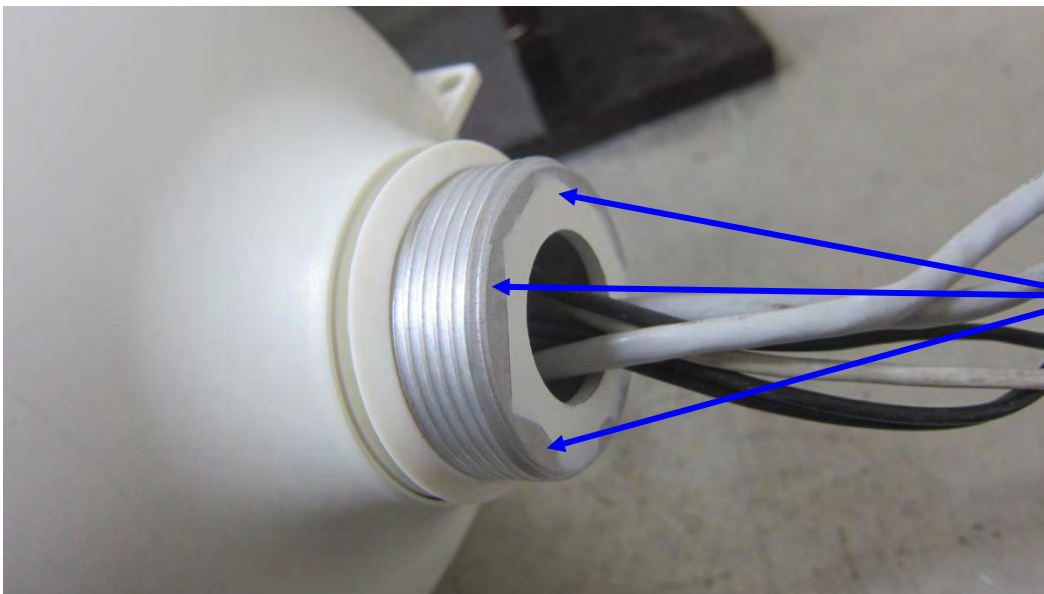
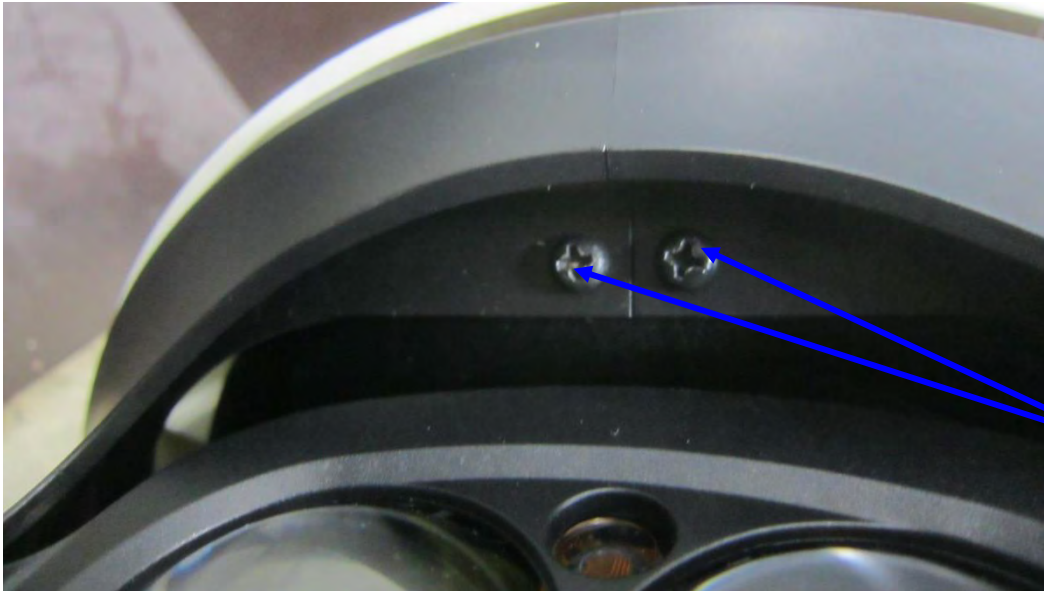
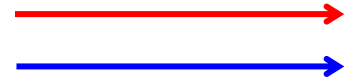
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

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The authenticity of the test report, contact shchoi@kes.co.kr

Location of Discharge:

Air
Contact



**KES Co., Ltd.**

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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-16T0510-R2
Page (22) of (66)

Test Data**Indirect Discharge**

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	E.U.T Screws	Contact Discharge	Complied	-
2	E.U.T Enclosure	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.

3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Oct, 06, 2016

Test Location

EMS-RS: ☐ Semi Anechoic Chamber #1

☒ Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 08, 2017
☒	BROADBAND AMPLIFIER	BBA100	Rohde & Schwarz	101239	08, 08, 2017
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 08, 2017
☒	POWER METER	NRP2	Rohde & Schwarz	103475	08, 08, 2017
☒	AVG POWER SENSOR	NRP-Z91	Rohde & Schwarz	102526	08, 08, 2017
☒	AVG POWER SENSOR	NRP-Z91	Rohde & Schwarz	102527	08, 08, 2017
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	Kytelecom Co., Ltd.	KY150001	08, 08, 2017
☒	Semi Anechoic Chamber #2	-	SEMITEC	-	-
☒	EMS Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 23,0 °C
Relative Humidity: 51,3 %
Atmospheric Pressure: 99,8 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

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 61000-4-4:2012

Test Date

Oct, 03, 2016

Test Location

EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	Capacitive Coupling Clamp	HFK	EM TEST	070925	06, 27, 2017
☒	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 22,1 °C
Relative Humidity: 51,8 %
Atmospheric Pressure: 99,3 kPa

Test Specifications

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

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

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
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
Alarm	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 61000-4-5:2014

Test Date

Oct, 03, 2016

Test Location

EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	CDN	CNV 508T5	EM TEST	P1549168422	04, 27, 2017
☒	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 22,1 °C
Relative Humidity: 51,8 %
Atmospheric Pressure: 99,3 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 angle

Angle: ☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity: ☒ Positive & Negative

Repetition 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) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Test Data
☒ 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	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45 (LAN)	Complied	Complied
Alarw	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 61000-4-6:2014

Test Date

Oct, 04, 2016

Test Location

EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	08, 08, 2017
☒	6 dB Attenuator	ATT6	EM TEST	1208-34	08, 08, 2017
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 08, 2017
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017
☒	EMS Test S/W	icd.control	EM TEST AG	5.3.7	-

Test Conditions

Temperature: 21,3 °C
Relative Humidity: 50,6 %
Atmospheric Pressure: 99,4 kPa

Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 10 kHz to 30 MHz
☐ 150 kHz to 230 MHz ☐ 10 kHz to 100 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

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N	CDN (☒ M2, ☐ M3)	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (LAN)	EM Injection Clamp	Complied
Alarm	EM Injection 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 61000-4-11:2004

Test Date

Oct, 03, 2016

Test Location

EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☐	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☐	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 22,1 °C

Relative Humidity: 51,8 %

Atmospheric Pressure: 99,3 kPa



Test Specifications & Observations/Remarks

(Test Voltage : AC 230 V, 50 Hz)

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 /5000	<u>Complied</u>
☒ 30 % dip	☒ 25 /500	<u>Complied</u>
☒ 60 % dip	☒ 10 /200	<u>Complied</u>
☒ 100 % dip	☒ 250 /5000	<u>Complied</u>

- Voltage variations

☒ Unom + 10 %	☒ 253 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Test Results

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

Remarks

PASS Required Performance Criteria.

- The test has been tested using the AC/DC Adapter.

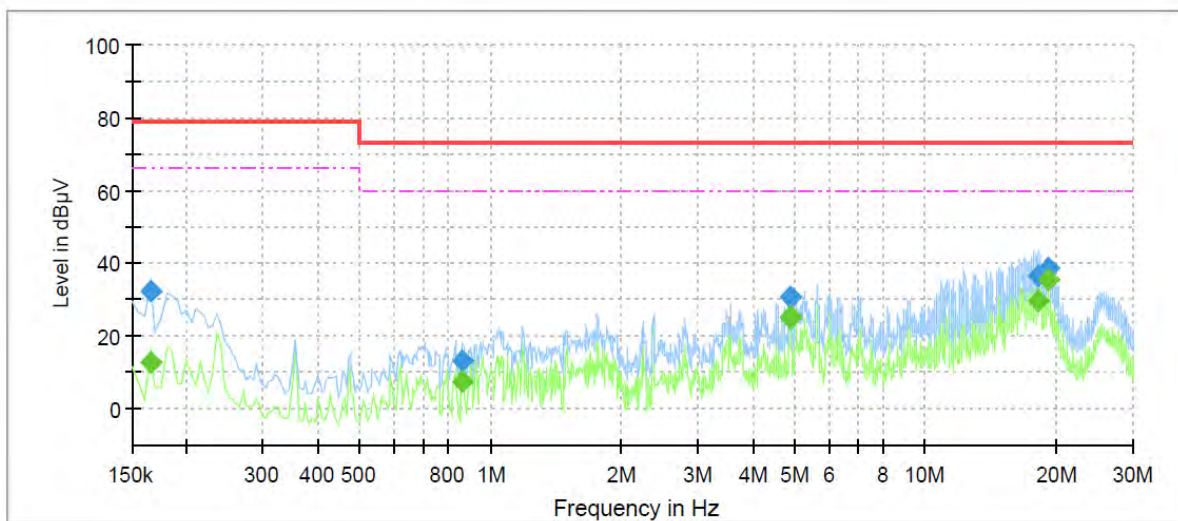
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: PNP-9200RHP
Mode:
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	12.99	66.00	53.01	1000.0	9.000	L1	9.7
0.165000	32.26	---	79.00	46.74	1000.0	9.000	L1	9.7
0.865000	---	7.71	60.00	52.29	1000.0	9.000	L1	9.9
0.865000	13.47	---	73.00	59.53	1000.0	9.000	L1	9.9
4.880000	---	25.08	60.00	34.92	1000.0	9.000	L1	10.0
4.880000	30.63	---	73.00	42.37	1000.0	9.000	L1	10.0
4.890000	---	25.44	60.00	34.56	1000.0	9.000	L1	10.0
4.890000	30.89	---	73.00	42.11	1000.0	9.000	L1	10.0
18.075000	---	29.49	60.00	30.51	1000.0	9.000	L1	10.1
18.075000	36.78	---	73.00	36.22	1000.0	9.000	L1	10.1
19.200000	---	35.72	60.00	24.28	1000.0	9.000	L1	10.2
19.200000	38.74	---	73.00	34.26	1000.0	9.000	L1	10.2

◆ 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)

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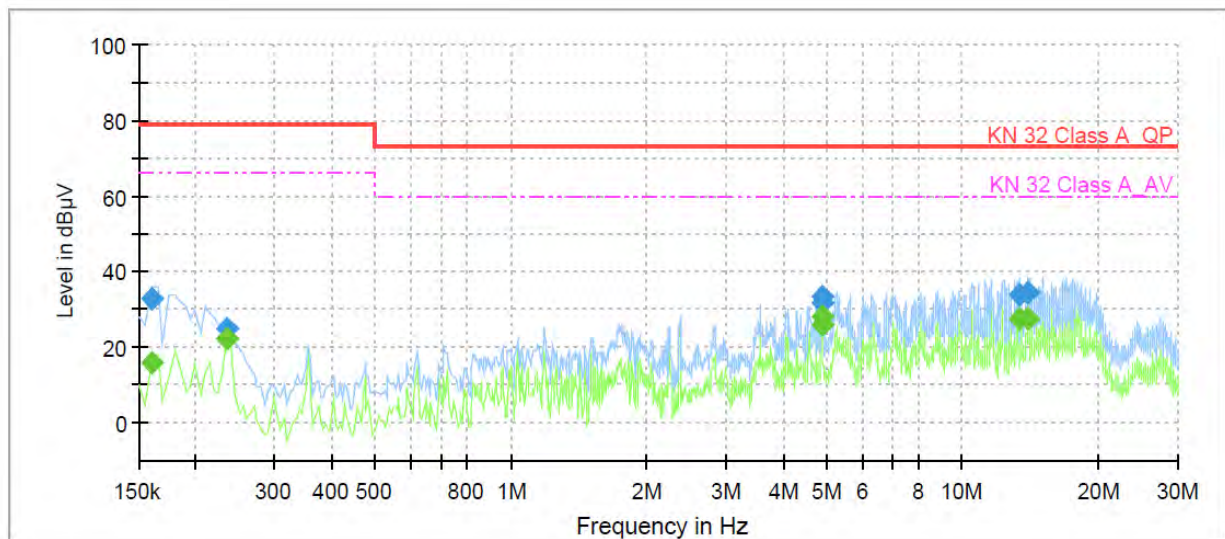
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact shchoi@kes.co.kr

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: PNP-9200RHP
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	15.92	66.00	50.08	1000.0	9.000	N	9.7
0.160000	32.58	---	79.00	46.42	1000.0	9.000	N	9.7
0.235000	---	22.39	66.00	43.61	1000.0	9.000	N	9.7
0.235000	25.02	---	79.00	53.98	1000.0	9.000	N	9.7
4.875000	---	25.75	60.00	34.25	1000.0	9.000	N	10.0
4.875000	31.92	---	73.00	41.08	1000.0	9.000	N	10.0
4.885000	---	28.33	60.00	31.67	1000.0	9.000	N	10.0
4.885000	33.36	---	73.00	39.64	1000.0	9.000	N	10.0
13.350000	---	27.39	60.00	32.61	1000.0	9.000	N	9.9
13.350000	33.91	---	73.00	39.09	1000.0	9.000	N	9.9
14.030000	---	27.48	60.00	32.52	1000.0	9.000	N	9.9
14.030000	34.16	---	73.00	38.84	1000.0	9.000	N	9.9

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

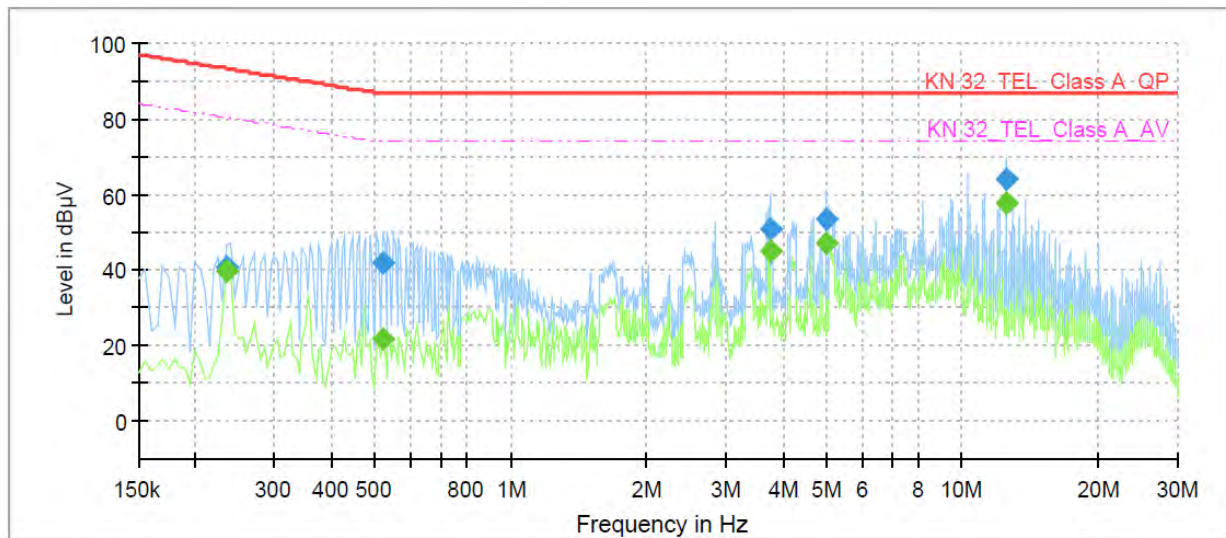
Corr. : Correction values (LISN FACTOR+ Cable Loss)

Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNP-9200RHP
Mode	10 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.235000	---	39.61	80.27	40.66	1000.0	9.000	Single Line	10.1
0.235000	40.63	---	93.27	52.64	1000.0	9.000	Single Line	10.1
0.520000	---	21.55	74.00	52.45	1000.0	9.000	Single Line	10.1
0.520000	41.78	---	87.00	45.22	1000.0	9.000	Single Line	10.1
3.745000	---	44.75	74.00	29.25	1000.0	9.000	Single Line	10.1
3.745000	50.56	---	87.00	36.44	1000.0	9.000	Single Line	10.1
5.000000	---	47.22	74.00	26.78	1000.0	9.000	Single Line	10.1
5.000000	53.22	---	87.00	33.78	1000.0	9.000	Single Line	10.1
12.500000	---	57.58	74.00	16.42	1000.0	9.000	Single Line	10.0
12.500000	63.88	---	87.00	23.12	1000.0	9.000	Single Line	10.0

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

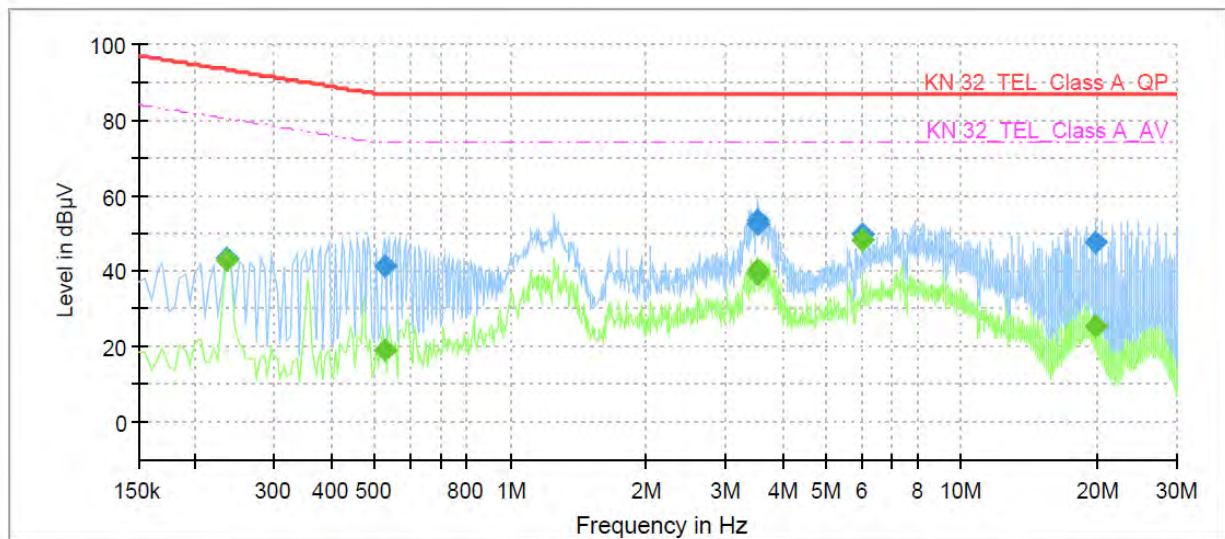
Reading Value : Not shown in the table.

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

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNP-9200RHP
Mode	100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.235000	---	42.99	80.27	37.28	1000.0	9.000	Single Line	9.6
0.235000	43.47	---	93.27	49.80	1000.0	9.000	Single Line	9.6
0.525000	---	19.13	74.00	54.87	1000.0	9.000	Single Line	9.6
0.525000	41.04	---	87.00	45.96	1000.0	9.000	Single Line	9.6
3.525000	---	40.24	74.00	33.76	1000.0	9.000	Single Line	9.6
3.525000	53.40	---	87.00	33.60	1000.0	9.000	Single Line	9.6
3.540000	---	39.00	74.00	35.00	1000.0	9.000	Single Line	9.6
3.540000	52.20	---	87.00	34.80	1000.0	9.000	Single Line	9.6
6.040000	---	48.21	74.00	25.79	1000.0	9.000	Single Line	9.6
6.040000	49.66	---	87.00	37.34	1000.0	9.000	Single Line	9.6
19.785000	---	25.61	74.00	48.39	1000.0	9.000	Single Line	9.5
19.785000	47.71	---	87.00	39.29	1000.0	9.000	Single Line	9.5

◆ 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)



Radiated Electric Field Emissions(Below 1 GHz)

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]
144.16	16.68	H	4.00	7.99	3.50	28.17	40.00	11.83
155.03	14.05	V	1.00	8.38	3.63	26.06	40.00	13.94
216.17	14.24	H	4.00	11.66	4.31	30.21	40.00	9.79
504.20	16.72	H	2.72	17.19	7.04	40.95	47.00	6.05
648.76	9.84	V	1.30	19.50	8.15	37.49	47.00	9.51
792.00	16.14	H	1.00	20.71	9.30	46.15	47.00	0.85

* H : Horizontal, V : Vertical

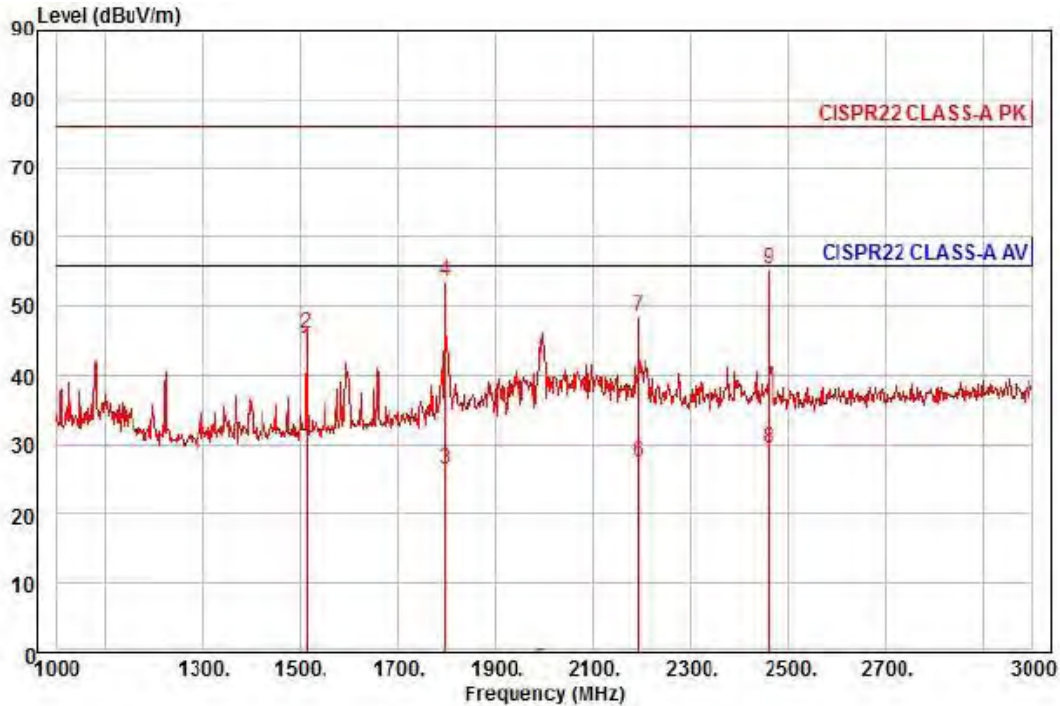
◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

Radiated Electric Field Emissions(Above 1 GHz)



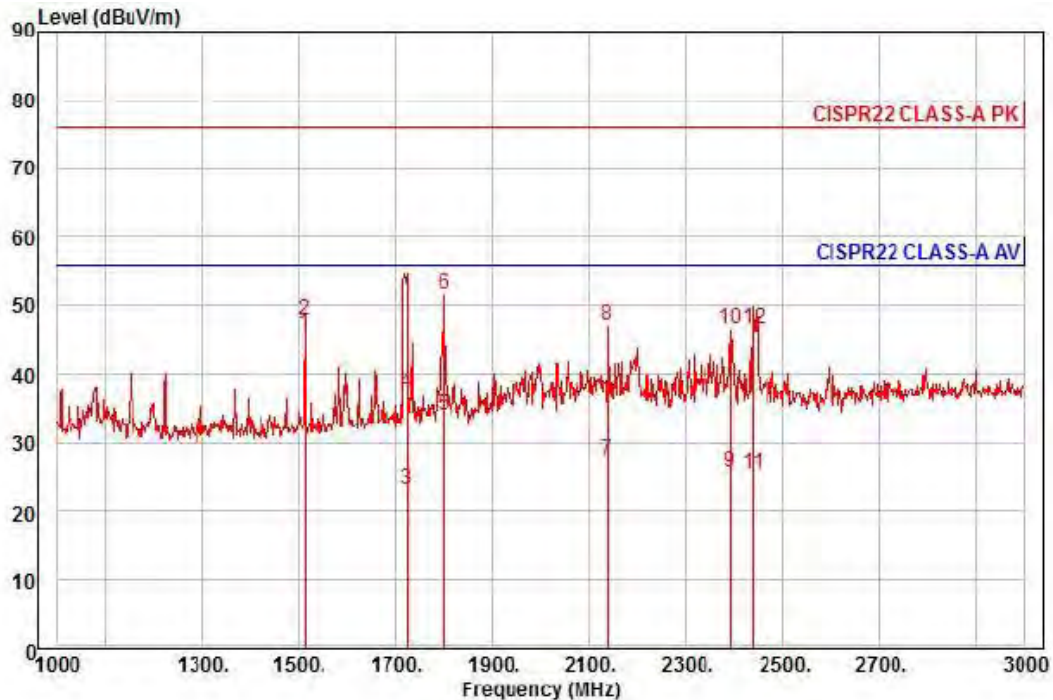
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNP-9200RHP
Mode :
Memo : 1 ~ 3 GHz

		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	pp	1512.00	49.70	25.94	8.05	39.87	137	56.00	-12.18	horizontal Average
2		1512.00	51.96	25.94	8.05	39.87	137	76.00	-29.92	horizontal Peak
3		1796.00	30.24	27.07	8.82	39.73	50	56.00	-29.60	horizontal Average
4		1796.00	57.44	27.07	8.82	39.73	50	76.00	-22.40	horizontal Peak
5		1996.00	0.00	27.86	9.33	39.63	203	76.00	-78.44	horizontal Peak
6		2192.00	29.18	28.35	9.78	39.74	41	56.00	-28.43	horizontal Average
7		2192.00	50.18	28.35	9.78	39.74	41	76.00	-27.43	horizontal Peak
8		2460.00	29.79	29.01	10.45	39.90	335	56.00	-26.65	horizontal Average
9	pk	2460.00	55.75	29.01	10.45	39.90	335	76.00	-20.69	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



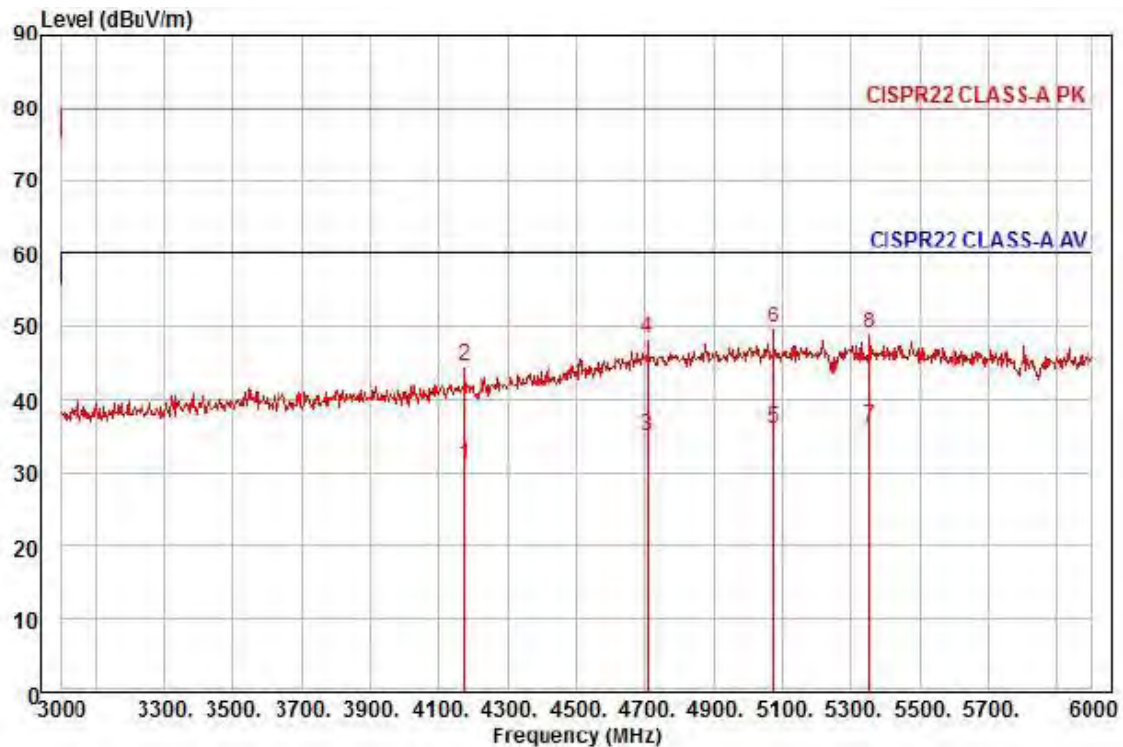
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNP-9200RHP
Mode :
Memo : 1 ~ 3 GHz

	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 pp	1512.00	51.65	25.94	8.05	39.87	87	56.00	-10.23	vertical Average
2	1512.00	53.65	25.94	8.05	39.87	87	76.00	-28.23	vertical Peak
3	1724.00	27.68	26.78	8.63	39.77	190	56.00	-32.68	vertical Average
4	1724.00	41.71	26.78	8.63	39.77	190	76.00	-38.65	vertical Peak
5	1800.00	37.88	27.09	8.83	39.73	215	56.00	-21.93	vertical Average
6 pk	1800.00	55.54	27.09	8.83	39.73	215	76.00	-24.27	vertical Peak
7	2138.00	29.19	28.22	9.66	39.71	149	56.00	-28.64	vertical Average
8	2138.00	48.79	28.22	9.66	39.71	149	76.00	-29.04	vertical Peak
9	2392.00	26.45	28.84	10.30	39.86	172	56.00	-30.27	vertical Average
10	2392.00	47.31	28.84	10.30	39.86	172	76.00	-29.41	vertical Peak
11	2440.00	25.93	28.96	10.41	39.89	143	56.00	-30.59	vertical Average
12	2440.00	46.99	28.96	10.41	39.89	143	76.00	-29.53	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



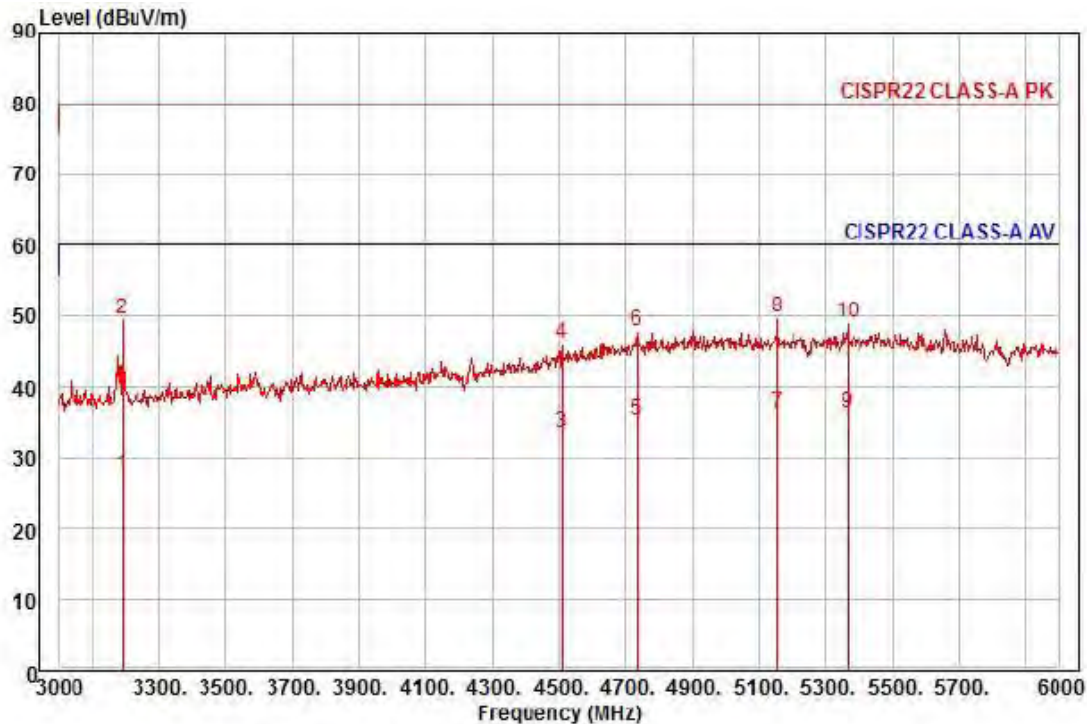
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNP-9200RHP
Mode :
Memo : 3 ~ 6 GHz

	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	4173.00	24.76	33.00	13.89	40.41	124	60.00	-28.76	horizontal	Average
2	4173.00	38.04	33.00	13.89	40.41	124	80.00	-35.48	horizontal	Peak
3	4707.00	24.55	36.05	14.89	40.41	322	60.00	-24.92	horizontal	Average
4	4707.00	37.66	36.05	14.89	40.41	322	80.00	-31.81	horizontal	Peak
5	5076.00	23.44	37.57	15.47	40.40	36	60.00	-23.92	horizontal	Average
6 pk	5076.00	37.15	37.57	15.47	40.40	36	60.00	-30.21	horizontal	Peak
7 pp	5352.00	23.58	37.01	15.96	40.36	348	60.00	-23.81	horizontal	Average
8	5352.00	36.46	37.01	15.96	40.36	348	80.00	-30.93	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 HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNP-9200RHP
Mode :
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	3189.00	25.06	30.65	12.04	40.25	203	60.00	-32.50	vertical	Average
2	3189.00	47.20	30.65	12.04	40.25	203	80.00	-30.36	vertical	Peak
3	4509.00	24.73	34.92	14.48	40.41	102	60.00	-26.28	vertical	Average
4	4509.00	37.22	34.92	14.48	40.41	102	80.00	-33.79	vertical	Peak
5	4734.00	24.49	36.20	14.95	40.41	344	60.00	-24.77	vertical	Average
6	4734.00	36.99	36.20	14.95	40.41	344	80.00	-32.27	vertical	Peak
7 pp	5154.00	23.68	37.41	15.62	40.39	119	60.00	-23.68	vertical	Average
8 pk	5154.00	37.17	37.41	15.62	40.39	119	80.00	-30.19	vertical	Peak
9	5364.00	23.63	36.98	15.98	40.36	96	60.00	-23.77	vertical	Average
10	5364.00	36.50	36.98	15.98	40.36	96	80.00	-30.90	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



Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	N/A			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

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.

**KES Co., Ltd.**

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Test report No.:
KES-E1-16T0510-R2
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Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	N/A			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

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.

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Test report No.:
KES-E1-16T0510-R2
Page (44) of (66)

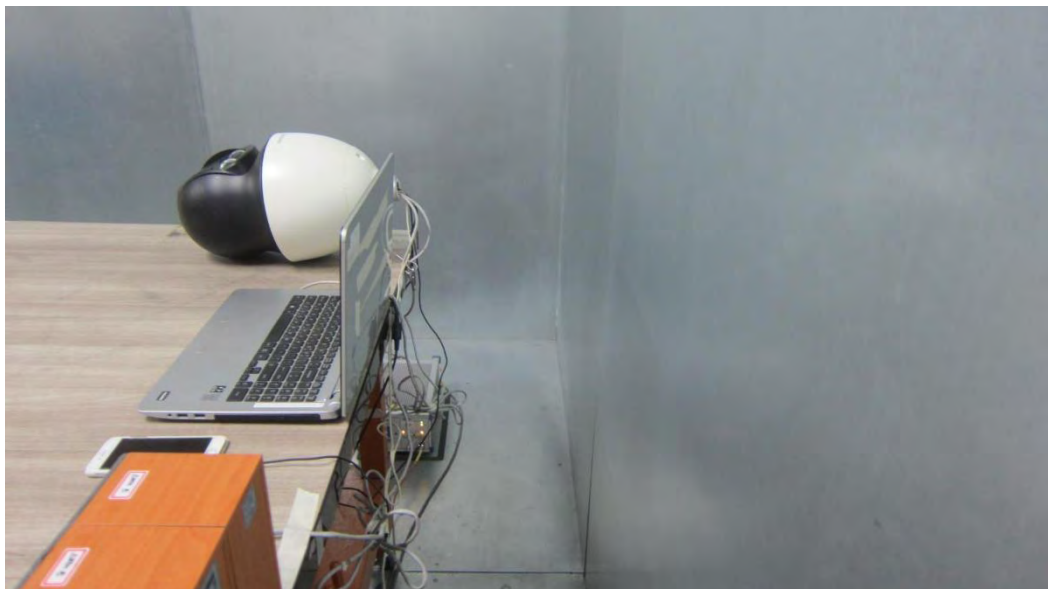
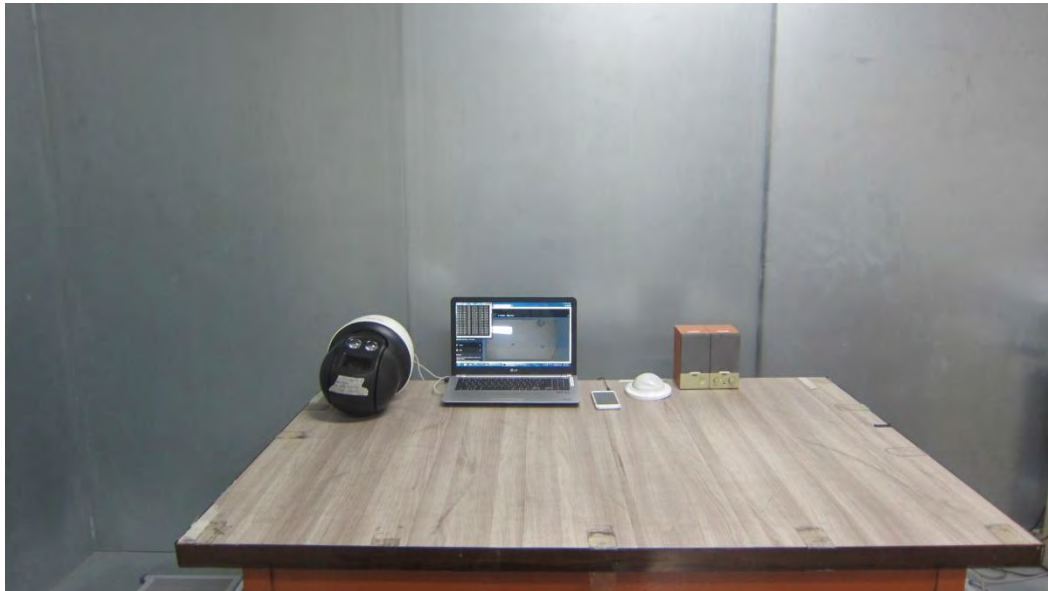
Test Data - Voltage Fluctuations**Maximum Flicker results**

	EUT values	Limit	Result
Pst	N/A		
Plt			
dc [%]			
dmax [%]			
Tmax [s]			

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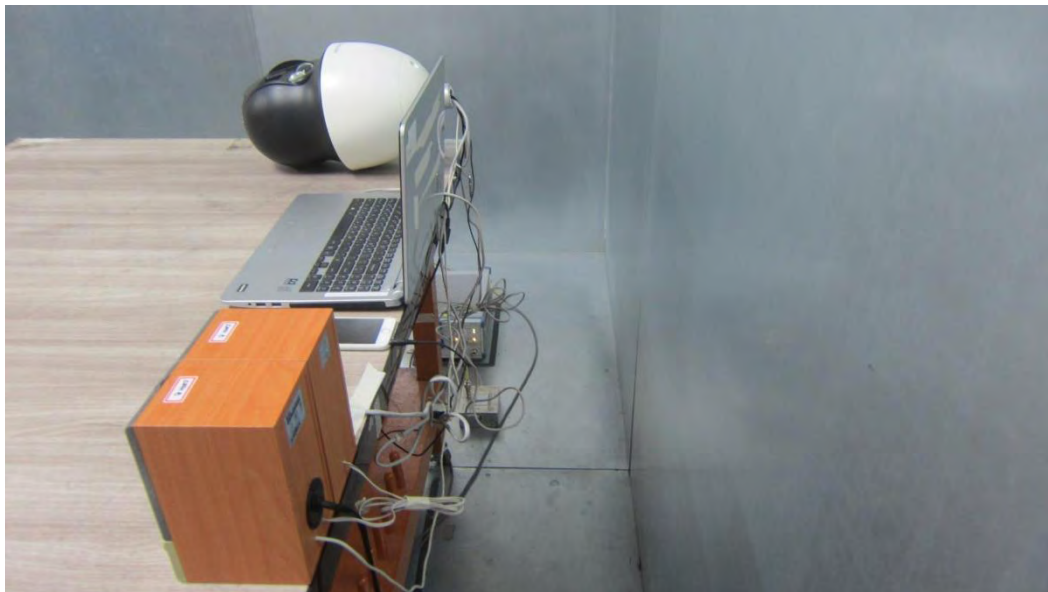
Test Setup Photos and Configuration

Conducted Voltage Emissions



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Conducted Telecommunication Emissions



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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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Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

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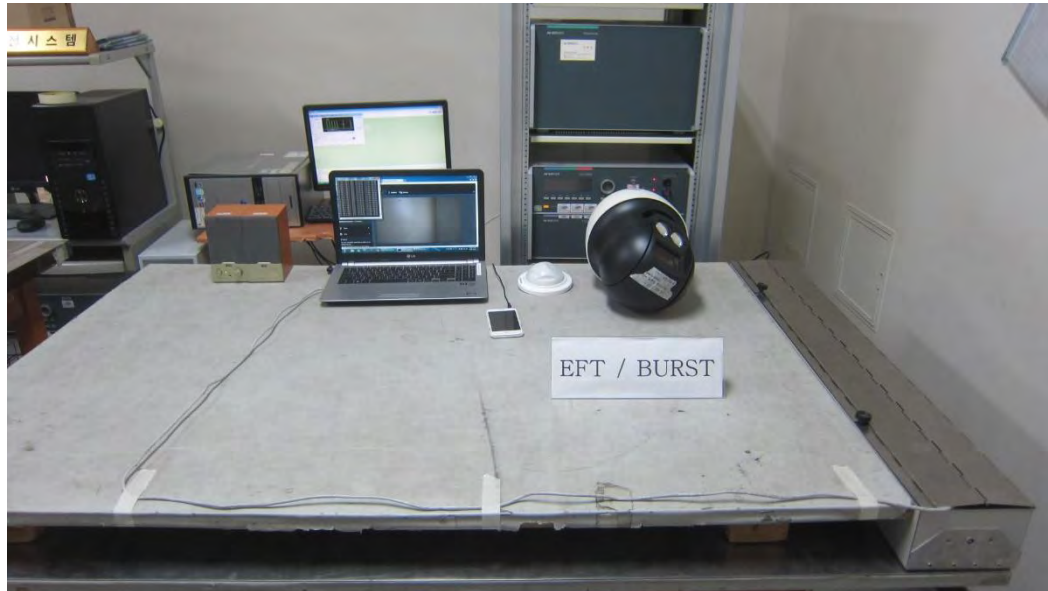
Electrostatic Discharge



Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



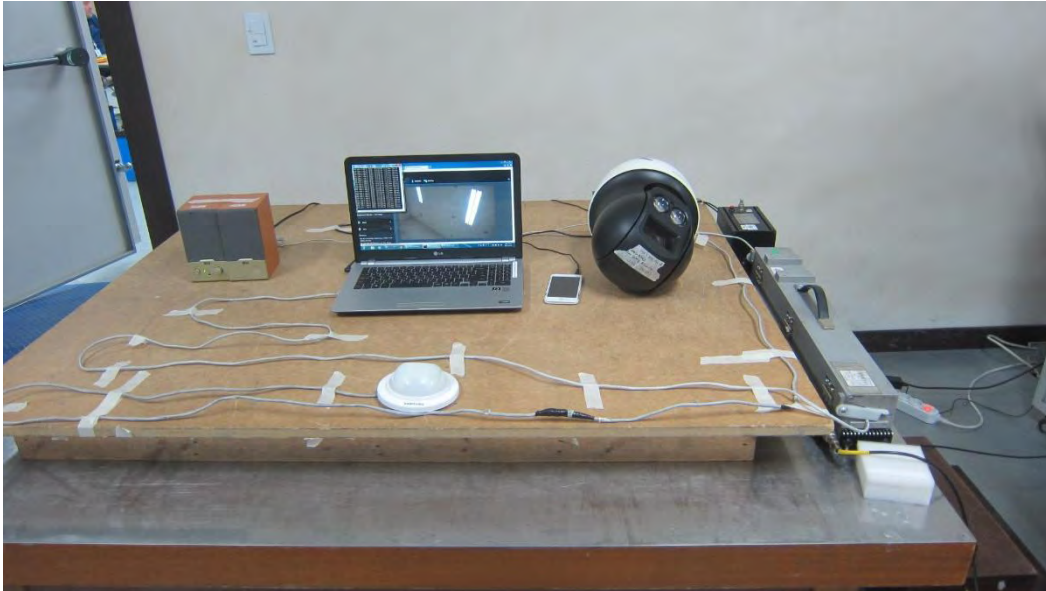
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Surge Transients



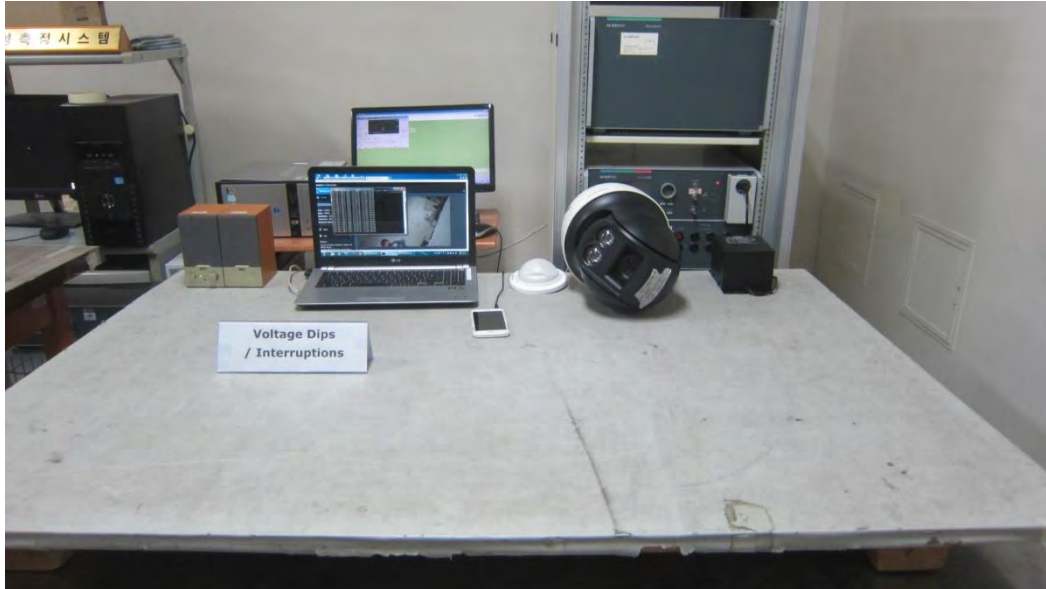
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Conducted Disturbance



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Voltage Dips and Short Interruptions



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EUT External Photographs

(Top)



(Bottom)



EUT Internal Photographs

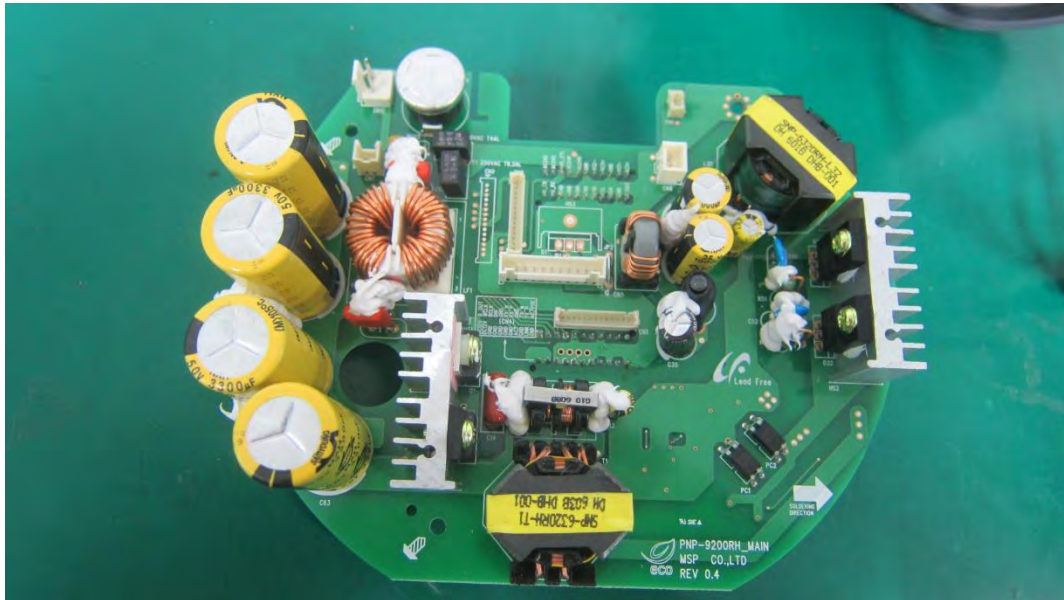
(Internal View)



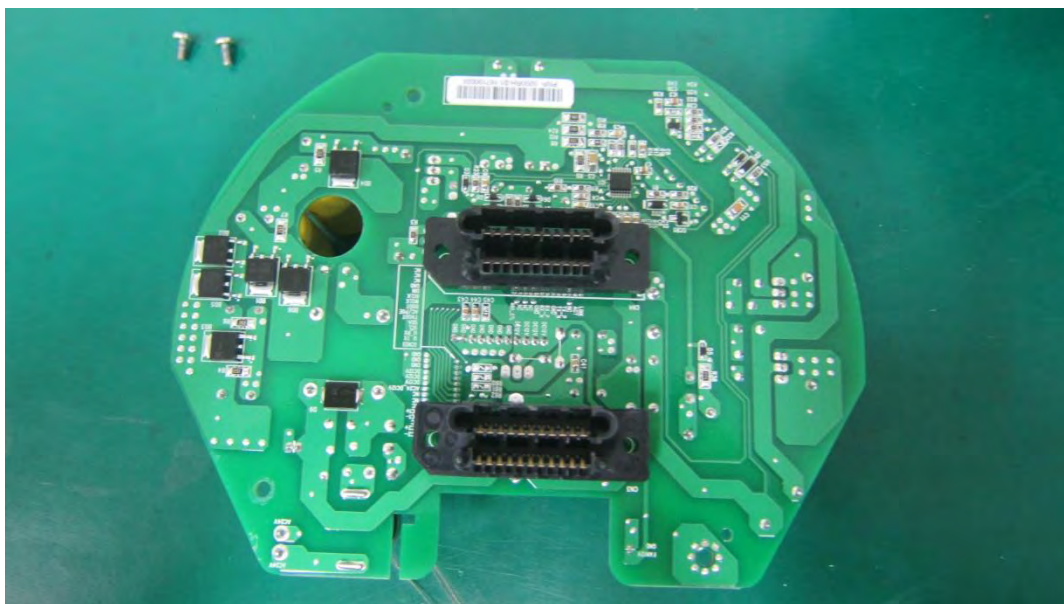
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EUT Internal View – Main board

(Top)



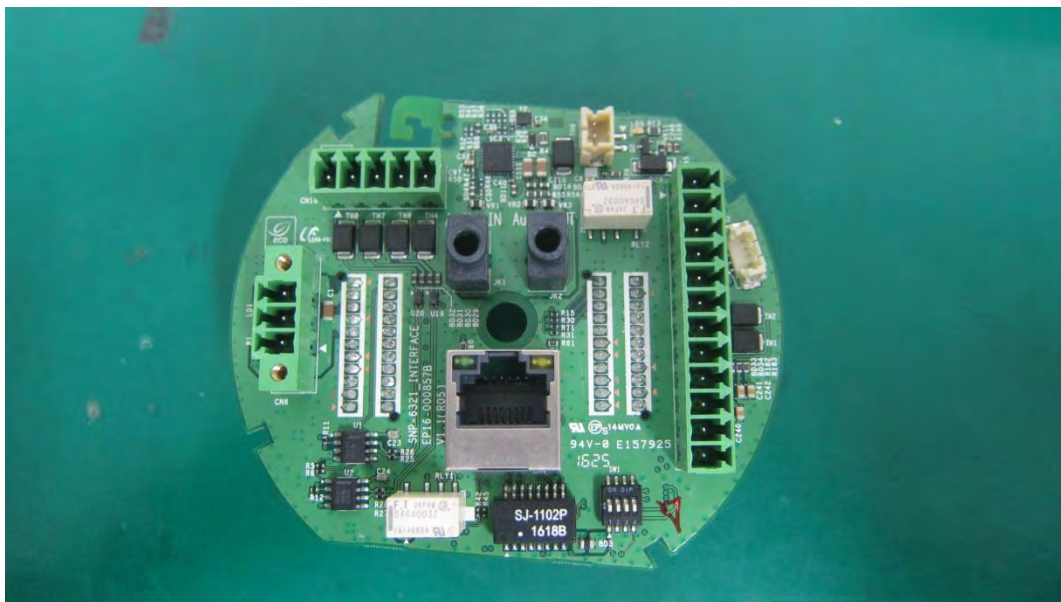
(Bottom)



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EUT Internal View – Sub Board 1

(Top)



(Bottom)



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EUT Internal View – Sub Board 2

(Top)



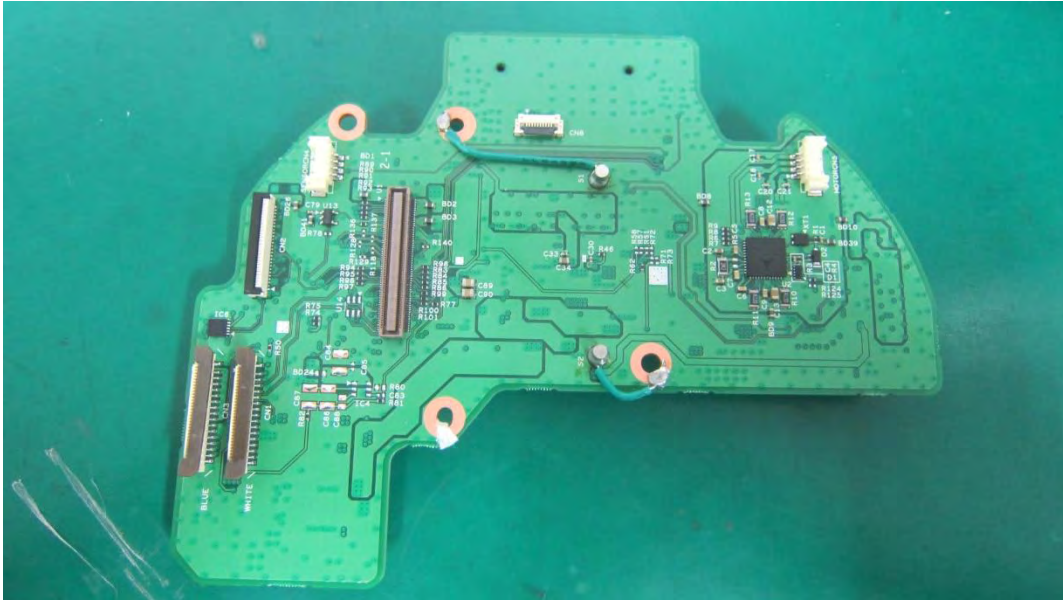
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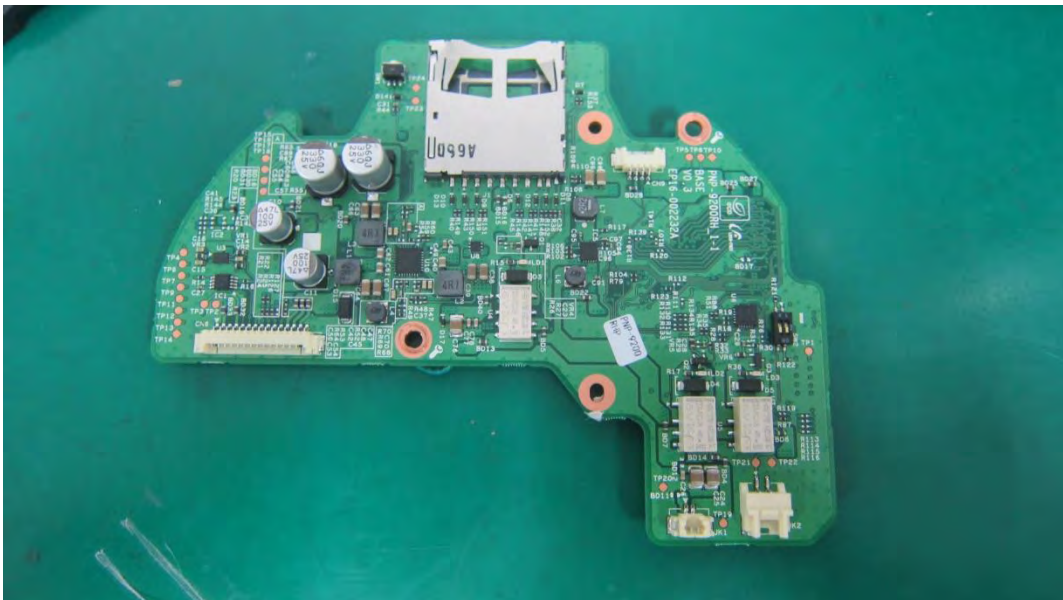
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EUT Internal View – Sub Board 3

(Top)



(Bottom)



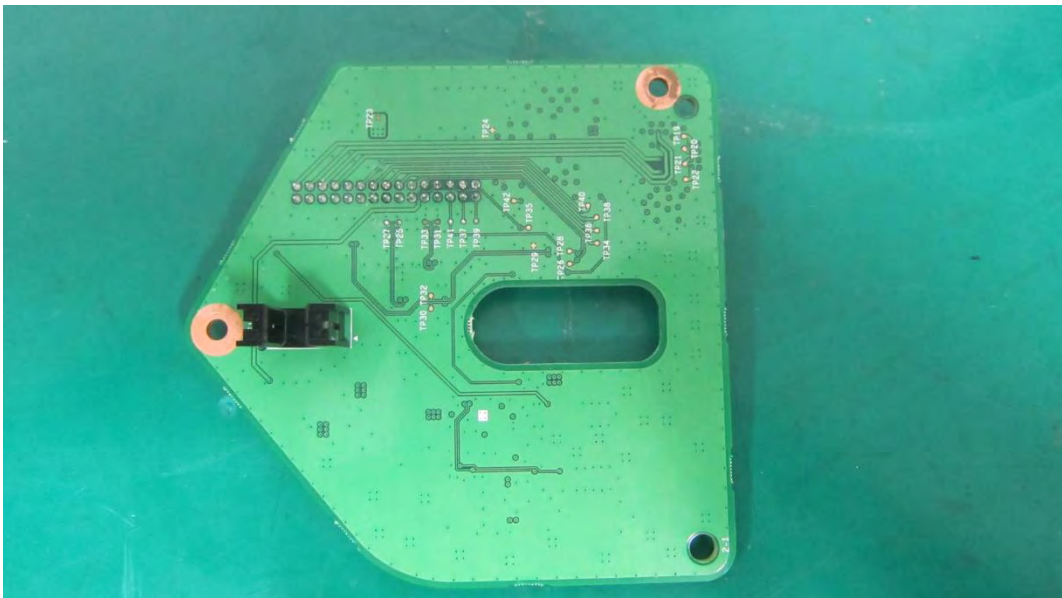
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EUT Internal View – Sub Board 4

(Top)



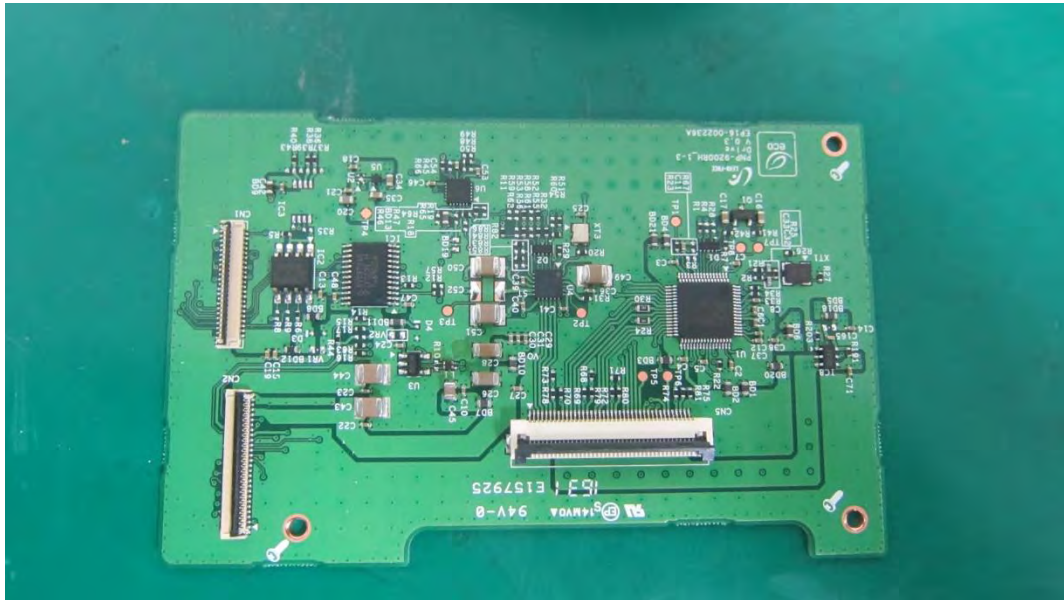
(Bottom)



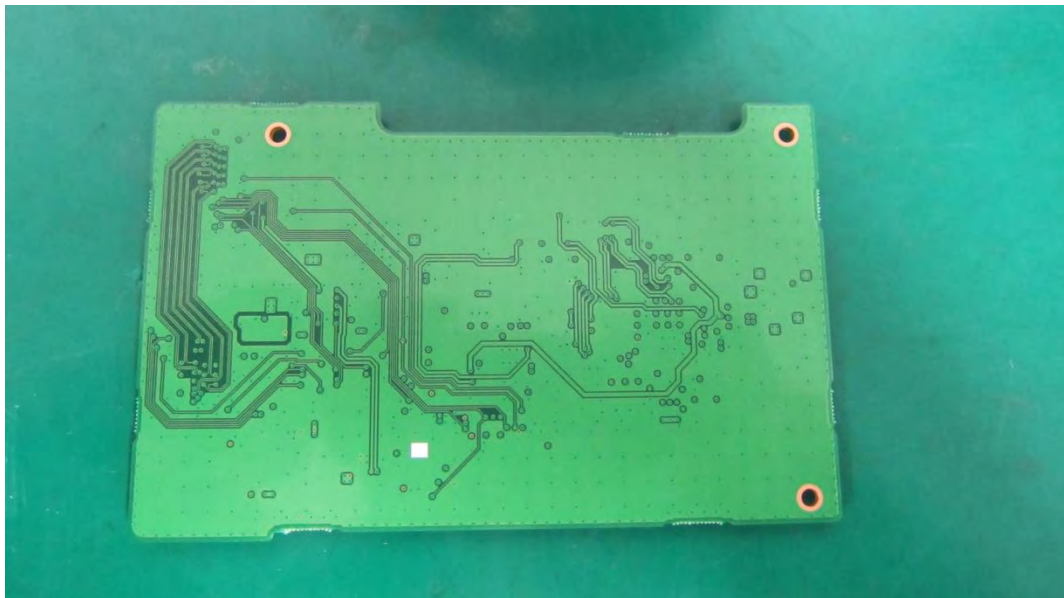
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EUT Internal View – Sub Board 5

(Top)



(Bottom)

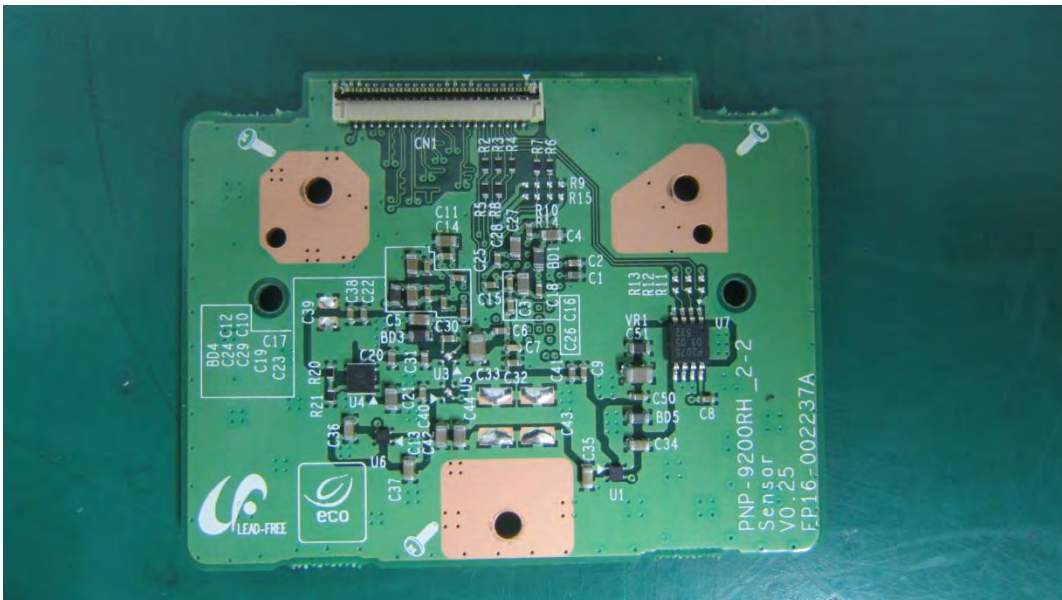


EUT Internal View – Sub Board 6

(Top)

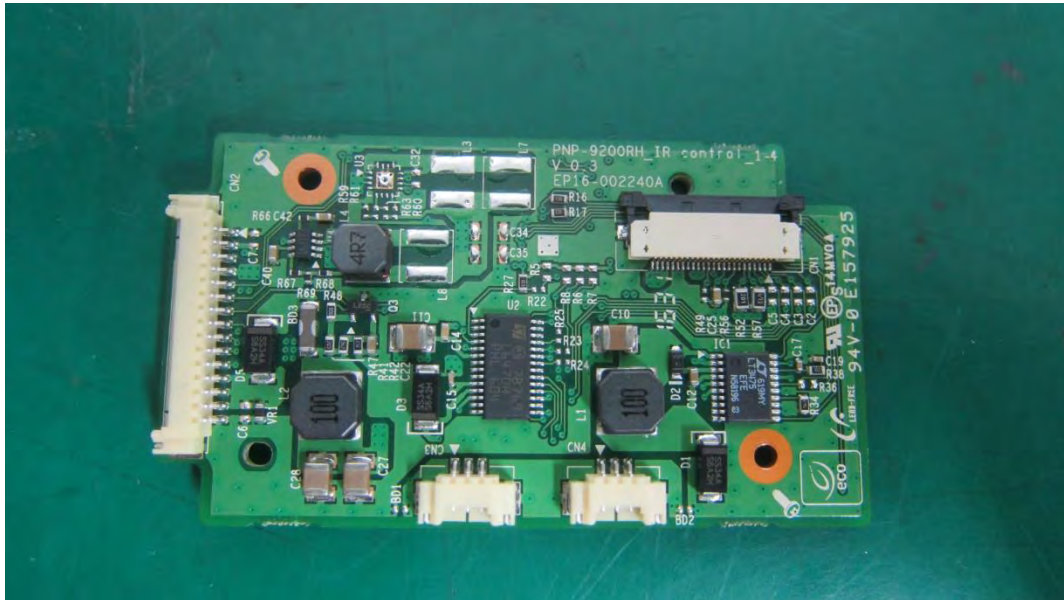


(Bottom)

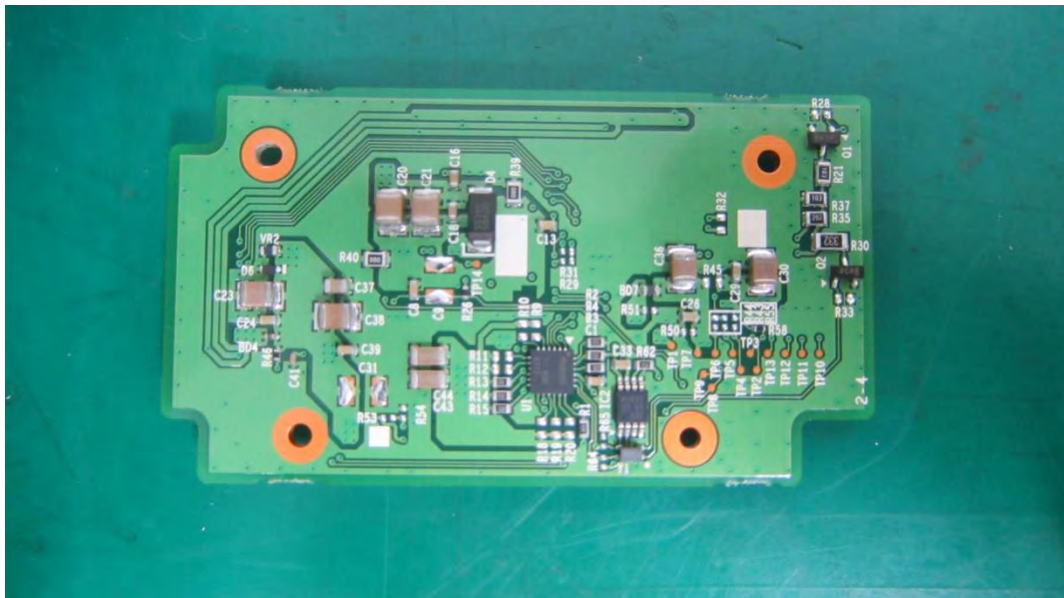


EUT Internal View – Sub Board 7

(Top)



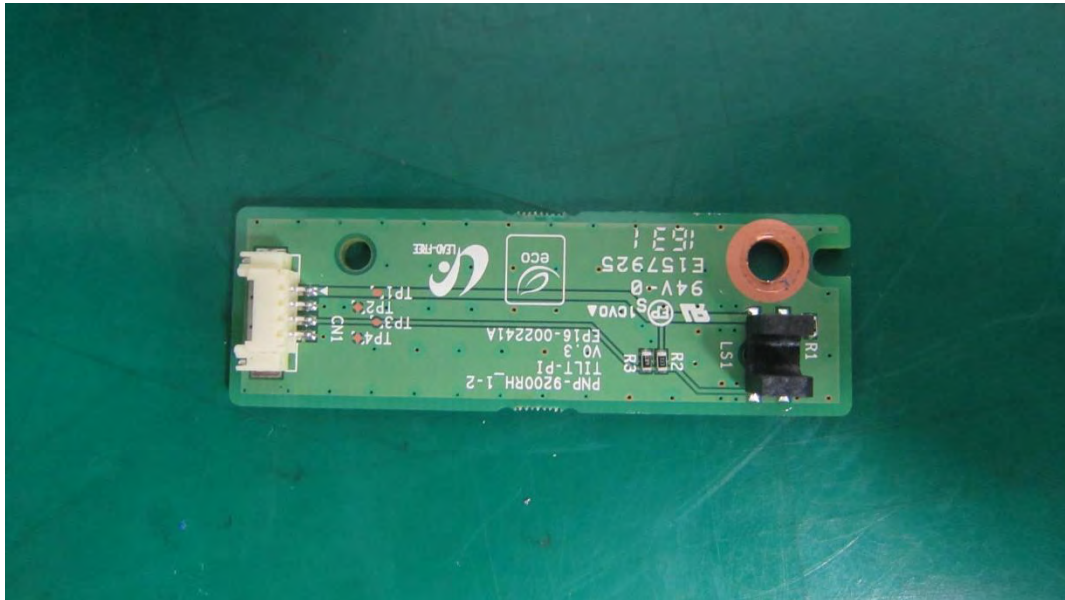
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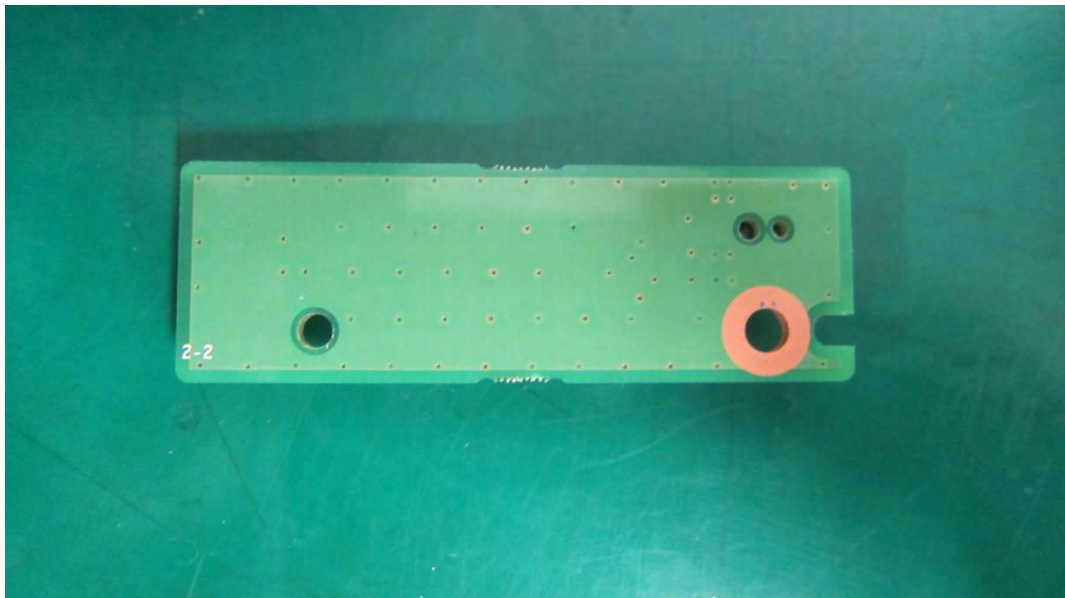
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EUT Internal View – Sub Board 8

(Top)



(Bottom)



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Label and Location



CCTV CAMERA

Model No : PNP-9200RH

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in China

