



EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T0523-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XNB-9003
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 : Jun. 03, 2021
Test date : Jun. 16, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Kang Hyeon, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 30, 2021	KES-EM-21T0523	Issued
Feb. 24, 2023	KES-EM-21T0523-R1	Change the Applicant and manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.8" progressive CMOS
Resolution	3840x2160, 3328x1872, 3072x1728, 2592x1944, 2688x1520, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)
Min. Illumination	(TBD) Color: 0.04Lux(F1.3, 1/30sec) BW: 0.004Lux(F1.3, 1/30sec), 0Lux(IR LED on)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Lens	
Focus Control	Simple focus
Lens Type	DC auto iris, P-iris, Manual, I-CS
Mount Type	C mount, CS mount
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDR
Wide Dynamic Range	extremeWDR (120dB)
Digital Noise Reduction	WiseNRⅡ(Based on AI engine), SSNR V
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	32ea, Quadrangle zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic
Gain Control	Support

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White Balance	ATW / Narrow ATW / AWC / Manual / Indoor / Outdoor
LDC	Support (Fill/stretch mode)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec) Auto prefer shutter control(Based on AI engine)
Digital PTZ	Support
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	- Analytics events based on AI engine(NPU) : Object detection (Person/Face/Vehicle(car/truck/bus/bicycle/motorcycle)/Licence plate), IVA (Virtual line/Area, Enter/Exit, Loitering, direction, intrusion) - Analytics events : Defocus detection, Motion detection, Tampering, Fog detection, Audio detection, Sound classification, Shock detection, Appear/Disappear
Business Intelligence	Based on AI engine(NPU) : People counting, Queue management, Heatmap
Serial Interface	RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm I/O	2 configurable I/O ports
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP) - Audio clip playback - PTZ preset
Audio In	Selectable(mic in/line in/Built-in MIC) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
Network	
Ethernet	Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG

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Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStreamⅡ, WiseStreamⅢ(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles, 3 virtual channel support)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)
Security	TPM 2.0 (FIPS 140-2 level 2) HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2) Device Certificate(Hanwha Techwin Root CA, pre-installed) Secure by default certificate(TBD) Secure OS/Boot/Storage, Verify firmware forgery
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Greek, Hungarian
Edge Storage	Micro SD/SDHC/SDXC 2slot Max. 1TB (512GB * 2)

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Memory	4GB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-10 °C ~ 55°C(-14°F ~ +131°F) less than 95%RH(non-condensing)
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Input Voltage	PoE(IEEE802.3af, Class3), 12VDC(TBD)
Power Consumption	TBD Power redundancy failover(TBD)
Mechanical	
Color / Material	Black / Aluminum
RAL Code	None
Product Dimensions / Weight	81(W)x67(H)x165(D)mm(3.19x2.64x6.48"), 0.88kg(1.94 lb) (TBD)

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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.

☒ AC 240 V, 50 Hz ☒ PoE

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNB-9003	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	Channel Well Technology(Guangzhou) Co.,Ltd.	-
PoE INJECTOR	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd.	-
Notebook	ProBook4430s	-	HP	-
Notebook Adapter	SeriesPPP0009H	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Button alarm	-	-	-	-
Controller	SPC-1010	C50E67WG10100 F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhuasheng Power Technology Co.,Ltd.	-
Headset	MP1000	-	-	-
Micro SD Card	-	-	SanDisk	16 GB
Smartphone	A1367	C3TDG2JGDCP9	APPLE .Inc	-

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1.6 External I/O Cabling

■ DC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	Notebook	RJ-45	5.0	S
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button alarm	Alarm OUT	3.0	U
	RS-485	Controller	RS-485	3.0	U
	Audio OUT	Headset	Audio OUT	1.4	U
	Audio IN	Headset	Audio IN	1.4	U
	grounding	enclosure grounding	grounding	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smartphone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE INJECTOR	RJ-45 (PoE)	5.0	S
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button alarm	Alarm OUT	3.0	U
	Audio OUT	Headset	Audio OUT	1.4	U
	RS-485	Controller	RS-485	3.0	U
	Audio IN	Headset	Audio IN	1.4	U
	grounding	enclosure grounding	grounding	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	RJ-45 (LAN)	PoE INJECTOR	RJ-45 (LAN)	1.5	U
	3.5 mm	Smartphone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test Mode	operating
DC Mode	the test was conducted while checking the camera video output from the laptop and making sure that they operate normally while performing a ping test.
PoE Mode	

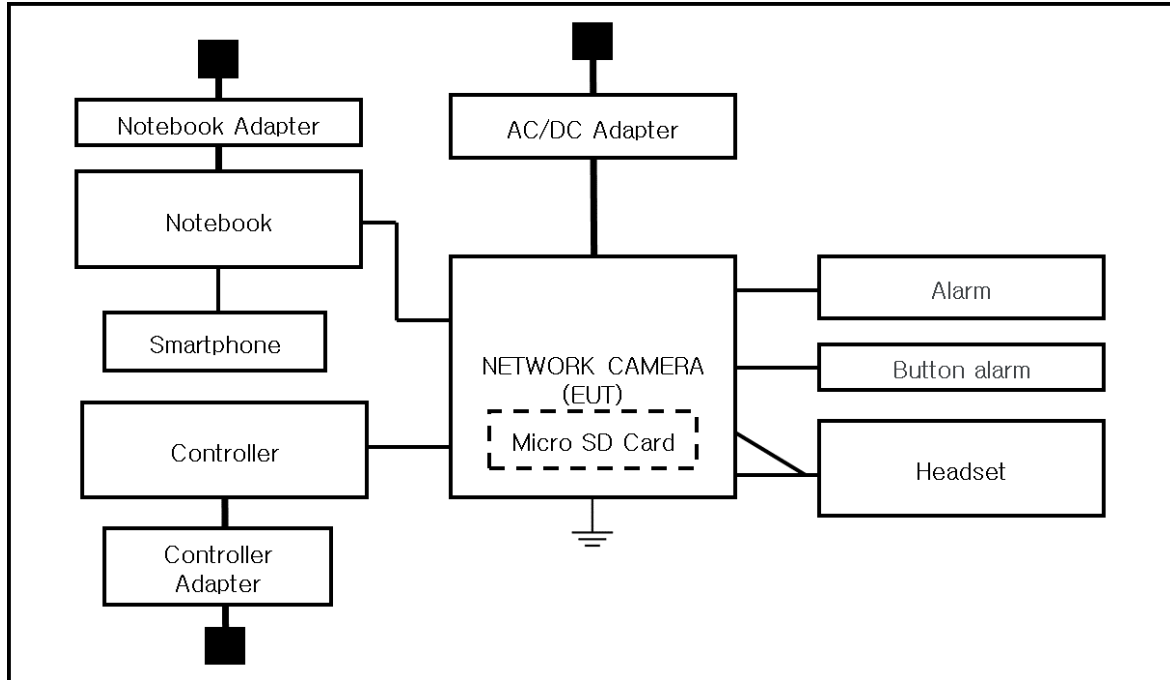
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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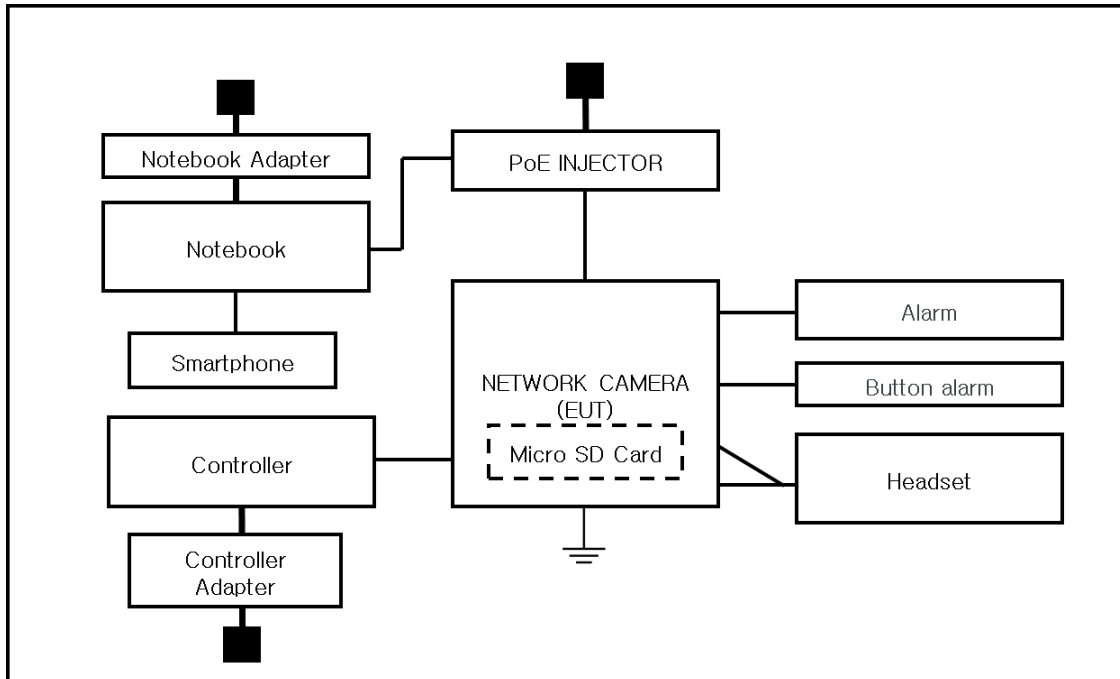
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

Micro USB, VIDEO port are for administrator use and are excluded from testing.

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

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

☐ Group 2

☐ Class A

☐ 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



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- | | | |
|--|---|----------------------------------|
| ☐ VCCI-CISPR 32:2016 | ☐ Class A | ☐ Class B |
| ☒ AS/NZS CISPR32:2015 | ☒ 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 at Mains Power Ports

Test Date

Jun. 16, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

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

Test Conditions

Temperature: (23,5 ± 0,3) °C

Relative Humidity: (45,2 ± 0,3) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jun. 16, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	12, 29, 2021
☐	CDN	CDNS502A	TESEQ	40431	

Test Conditions

Temperature: (23,8 ± 0,4) °C
Relative Humidity: (45,6 ± 0,3) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 16, 2021

Test Location

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

Test Equipment

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

Test Conditions

Temperature: (24,3 ± 0,6) °C

Relative Humidity: (47,0 ± 0,5) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 16, 2021

Test Location

SEMI ANECHOIC CHAMBER #3

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	ESR7	R & S	101190	08, 05, 2021
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (23,9 ± 0,4) °C

Relative Humidity: (46,9 ± 0,4) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



APPENDIX A – TEST DATA

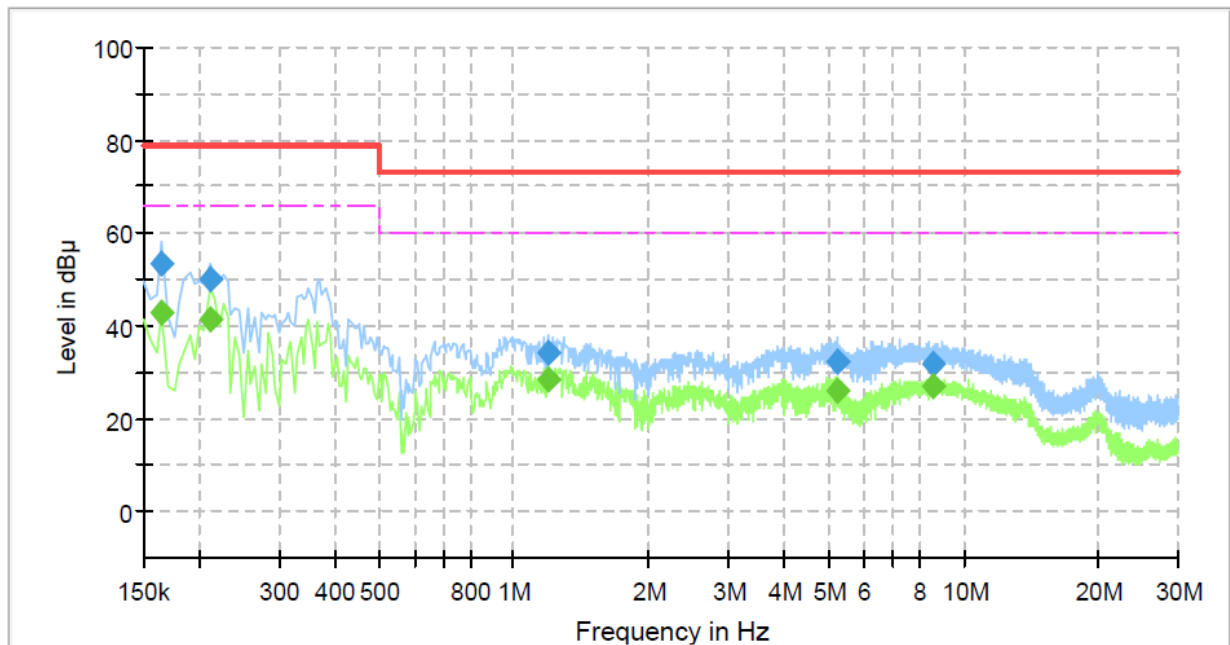
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNB-9003
Phase:	RCM
Mode:	DC
Operator Name:	KES



Final Result

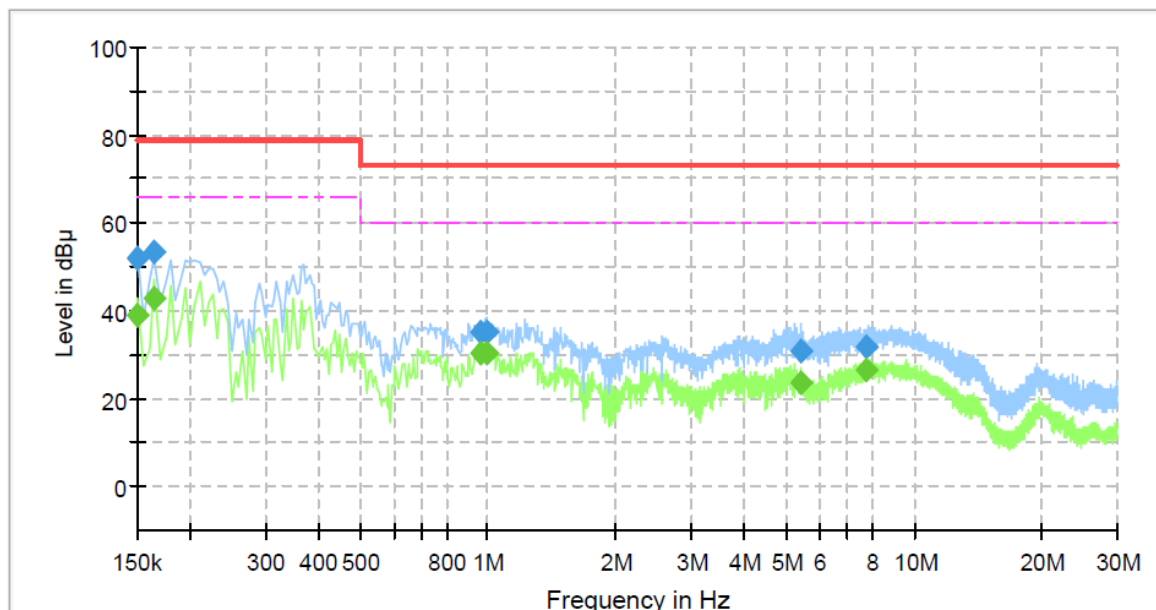
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	42.92	66.00	23.08	1000.0	9.000	L1	19.4
0.165000	53.31	---	79.00	25.69	1000.0	9.000	L1	19.4
0.210000	---	41.60	66.00	24.40	1000.0	9.000	L1	19.4
0.210000	49.86	---	79.00	29.14	1000.0	9.000	L1	19.4
1.190000	---	28.63	60.00	31.37	1000.0	9.000	L1	20.1
1.190000	34.00	---	73.00	39.00	1000.0	9.000	L1	20.1
5.265000	---	25.84	60.00	34.16	1000.0	9.000	L1	19.6
5.265000	32.51	---	73.00	40.49	1000.0	9.000	L1	19.6
8.540000	---	26.77	60.00	33.23	1000.0	9.000	L1	19.7
8.540000	31.88	---	73.00	41.12	1000.0	9.000	L1	19.7

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNB-9003
Phase:	RCM
Mode:	DC
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	39.10	66.00	26.90	1000.0	9.000	N	19.4
0.150000	52.16	---	79.00	26.84	1000.0	9.000	N	19.4
0.165000	---	43.04	66.00	22.96	1000.0	9.000	N	19.4
0.165000	53.32	---	79.00	25.68	1000.0	9.000	N	19.4
0.960000	---	30.23	60.00	29.77	1000.0	9.000	N	20.0
0.960000	35.07	---	73.00	37.93	1000.0	9.000	N	20.0
0.990000	---	30.27	60.00	29.73	1000.0	9.000	N	20.0
0.990000	35.08	---	73.00	37.92	1000.0	9.000	N	20.0
5.435000	---	23.68	60.00	36.32	1000.0	9.000	N	19.6
5.435000	30.85	---	73.00	42.15	1000.0	9.000	N	19.6
7.705000	---	26.62	60.00	33.38	1000.0	9.000	N	19.6
7.705000	32.01	---	73.00	40.99	1000.0	9.000	N	19.6

◆ 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))

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Report No.:

KES-EM-21T0523-R1

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Conducted Emissions at Telecommunication Ports

■ DC Mode

[1 000 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

XNB-9003

Mode :

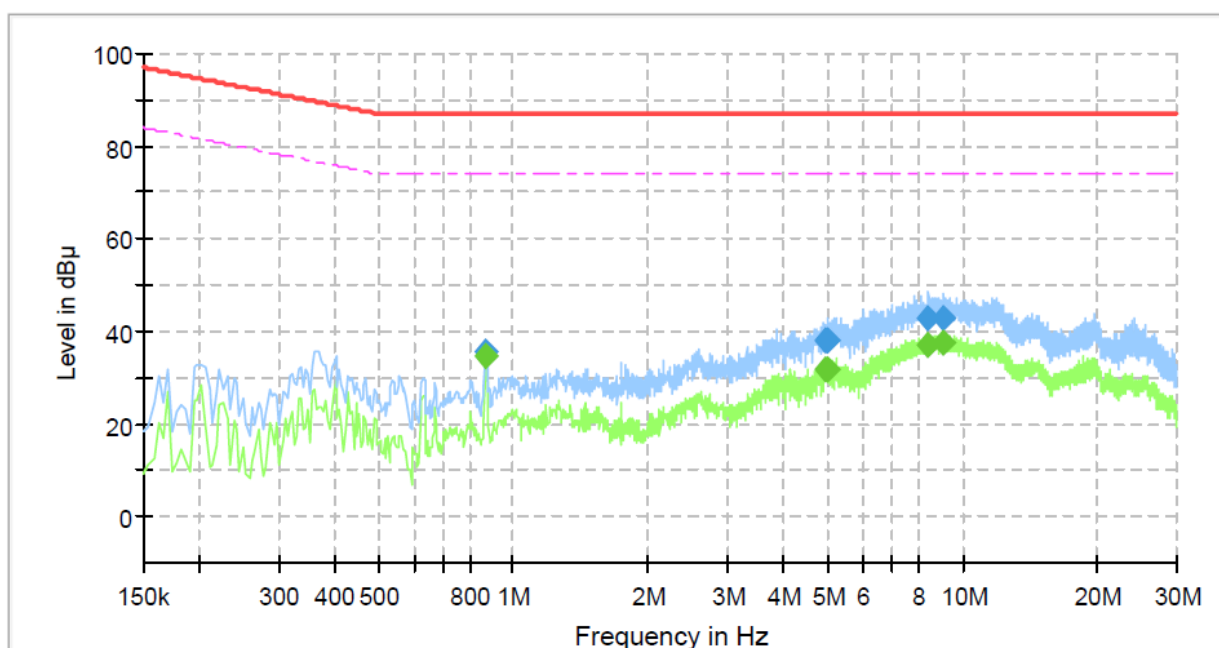
RCM

Speed :

DC 1000

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.870000	---	34.84	74.00	39.16	1000.0	9.000	Single Line	19.9
0.870000	35.70	---	87.00	51.30	1000.0	9.000	Single Line	19.9
4.982000	---	31.60	74.00	42.40	1000.0	9.000	Single Line	19.5
4.982000	37.95	---	87.00	49.05	1000.0	9.000	Single Line	19.5
5.002000	---	31.63	74.00	42.37	1000.0	9.000	Single Line	19.5
5.002000	38.00	---	87.00	49.00	1000.0	9.000	Single Line	19.5
8.418000	---	37.19	74.00	36.81	1000.0	9.000	Single Line	19.5
8.418000	42.72	---	87.00	44.28	1000.0	9.000	Single Line	19.5
9.046000	---	37.47	74.00	36.53	1000.0	9.000	Single Line	19.6
9.046000	42.96	---	87.00	44.04	1000.0	9.000	Single Line	19.6

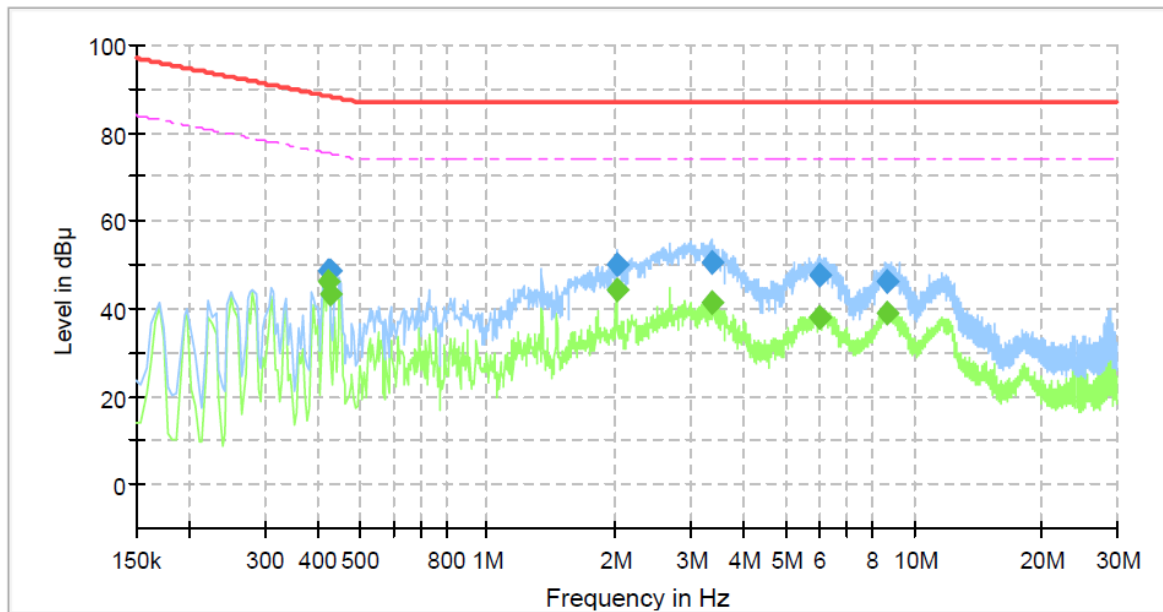
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PoE Mode
[1 000 Mbps]
Common Information

Test Description:	Telecommunication Emission
Model No.:	XNB-9003
Mode :	RCM
Speed :	PoE 1000
Operator Name:	KES


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.422000	---	46.01	75.41	29.40	1000.0	9.000	Single Line	19.6
0.422000	48.82	---	88.41	39.59	1000.0	9.000	Single Line	19.6
0.426000	---	43.45	75.33	31.88	1000.0	9.000	Single Line	19.6
0.426000	48.80	---	88.33	39.53	1000.0	9.000	Single Line	19.6
2.010000	---	44.09	74.00	29.91	1000.0	9.000	Single Line	20.2
2.010000	50.07	---	87.00	36.93	1000.0	9.000	Single Line	20.2
3.350000	---	41.31	74.00	32.69	1000.0	9.000	Single Line	19.9
3.350000	50.65	---	87.00	36.35	1000.0	9.000	Single Line	19.9
5.986000	---	38.27	74.00	35.73	1000.0	9.000	Single Line	19.4
5.986000	47.87	---	87.00	39.13	1000.0	9.000	Single Line	19.4
8.618000	---	38.88	74.00	35.12	1000.0	9.000	Single Line	19.5
8.618000	46.00	---	87.00	41.00	1000.0	9.000	Single Line	19.5

♦ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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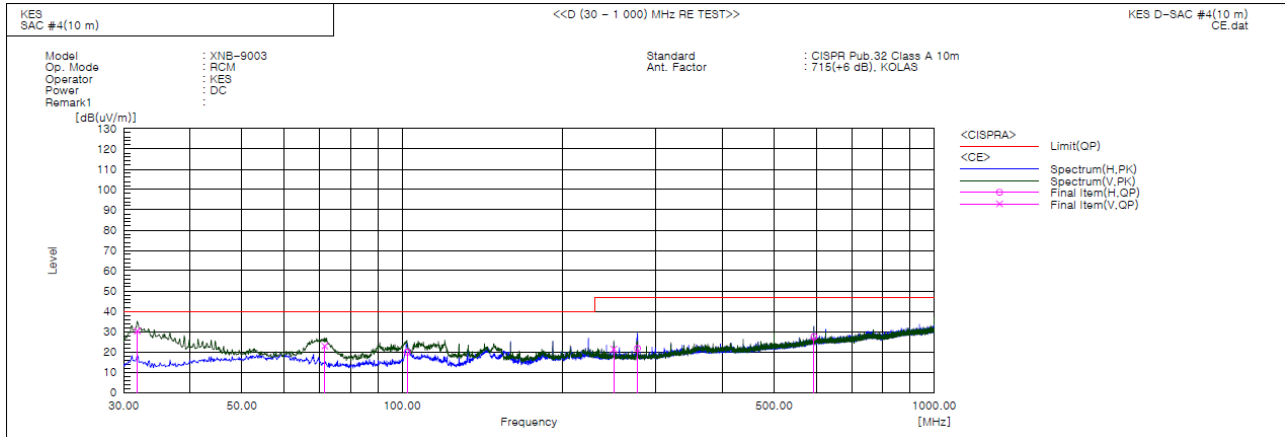
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC 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	31.819	V	55.4	-25.1	30.3	40.0	9.7	153.0	323.0	
2	71.589	V	48.4	-25.5	22.9	40.0	17.1	184.0	252.0	
3	102.265	H	42.4	-22.5	19.9	40.0	20.1	382.0	154.0	
4	249.948	V	40.5	-19.1	21.4	47.0	25.6	100.0	312.0	
5	276.986	H	40.3	-18.6	21.7	47.0	25.3	400.0	217.0	
6	594.055	H	36.1	-8.6	27.5	47.0	19.5	400.0	225.0	



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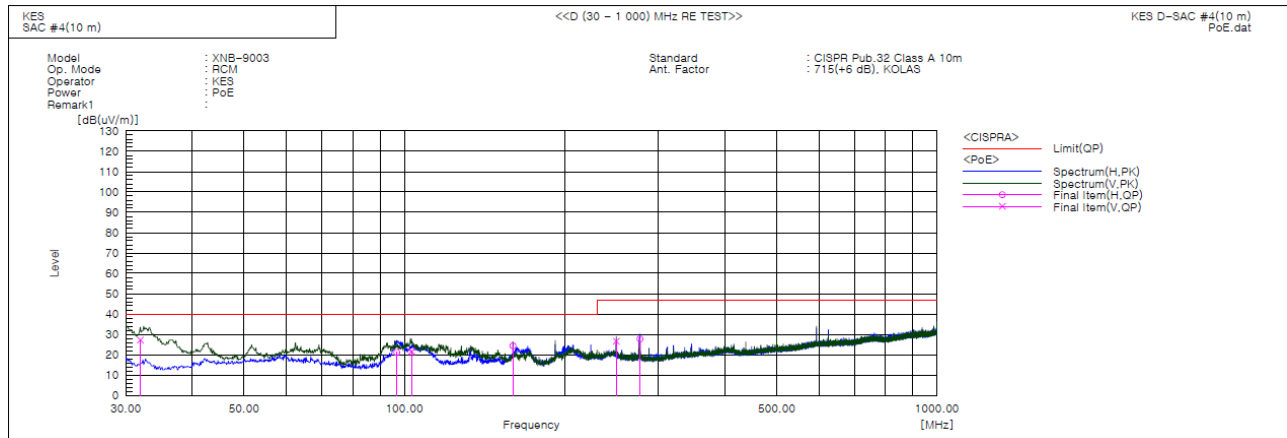
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www.kes.co.kr

Report No.:

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PoE 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	31.940	V	52.3	-25.1	27.2	40.0	12.8	100.0	301.0	
2	96.809	H	44.2	-23.1	21.1	40.0	18.9	400.0	338.0	
3	103.114	V	44.1	-22.5	21.6	40.0	18.4	400.0	79.0	
4	159.980	H	48.9	-24.5	24.4	40.0	15.6	400.0	145.0	
5	249.948	V	45.8	-19.1	26.7	47.0	20.3	100.0	301.0	
6	276.986	H	46.4	-18.6	27.8	47.0	19.2	400.0	19.0	

◆ Calculation

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

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

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

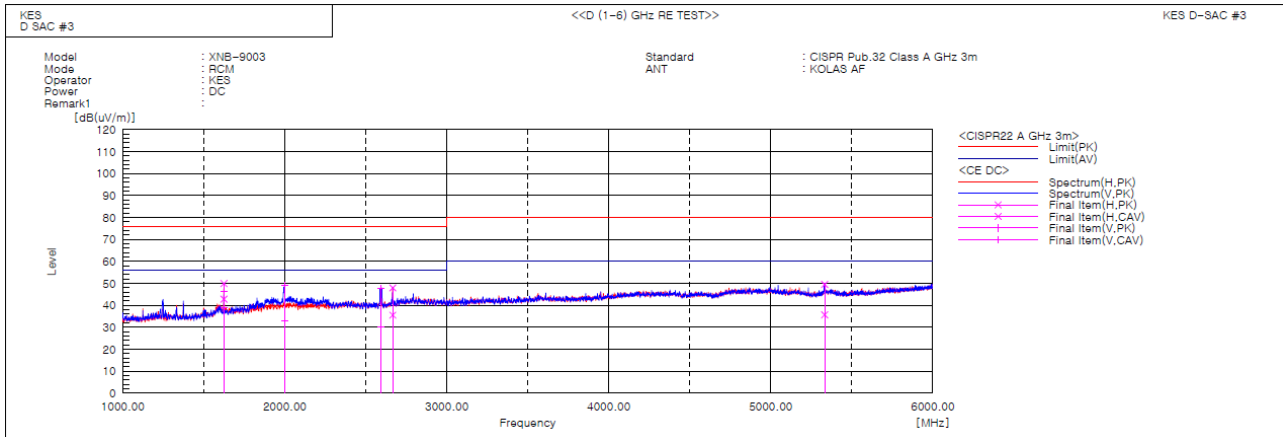
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode

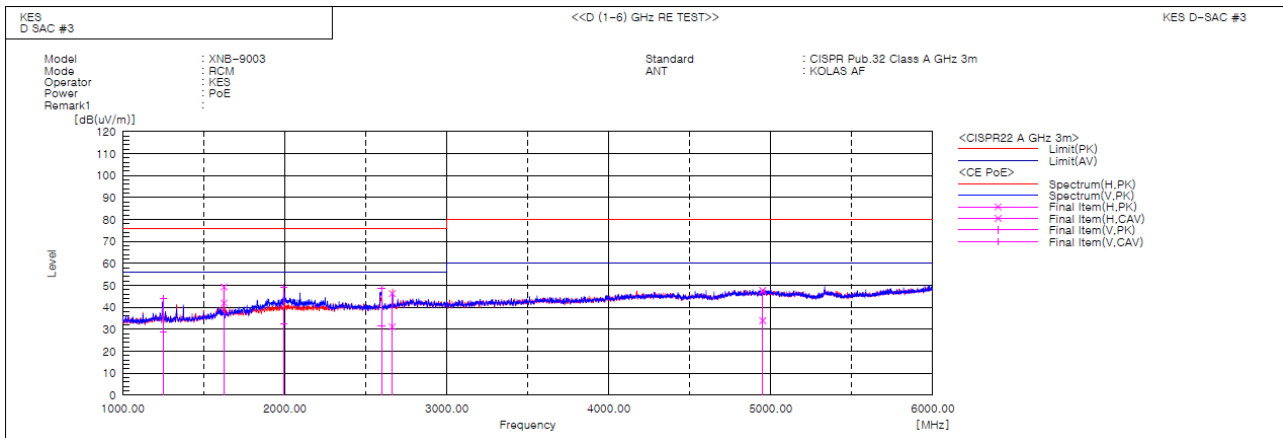


Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c. f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1624.870	H	54.9	47.8	-4.9	50.0	42.9	76.0	56.0	26.0	13.1	101.0	76.6	
2	1624.940	V	51.5	43.8	-4.9	46.6	38.9	76.0	56.0	29.4	17.1	101.0	18.3	
3	1998.249	V	49.9	33.5	-0.8	49.1	32.7	76.0	56.0	26.9	23.3	101.0	3.1	
4	2595.151	V	47.2	29.9	0.3	47.5	30.2	76.0	56.0	28.5	25.8	101.0	315.8	
5	2666.630	H	47.1	34.6	0.9	48.0	35.5	76.0	56.0	28.0	20.5	101.0	330.7	
6	5332.880	H	41.3	27.4	8.3	49.6	35.7	80.0	60.0	30.4	24.3	101.0	332.1	



PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1249.560	V	52.0	36.8	-8.0	44.0	28.8	76.0	56.0	32.0	27.2	101.0	218.0	
2	1625.110	H	54.2	46.8	-4.9	49.3	41.9	76.0	56.0	26.7	14.1	101.0	34.7	
3	1993.541	V	50.2	33.5	-0.9	49.3	32.6	76.0	56.0	26.7	23.4	101.0	359.5	
4	2597.230	V	48.2	31.1	0.3	48.5	31.4	76.0	56.0	27.5	24.6	101.0	307.9	
5	2664.270	H	45.5	30.4	0.8	46.3	31.2	76.0	56.0	29.7	24.8	101.0	318.4	
6	4950.282	H	38.7	25.0	9.0	47.7	34.0	80.0	60.0	32.3	26.0	101.0	85.2	

Calculation

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

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

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

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

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



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Conducted Emissions at Telecommunication Ports

■ DC Mode



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■ PoE Mode



Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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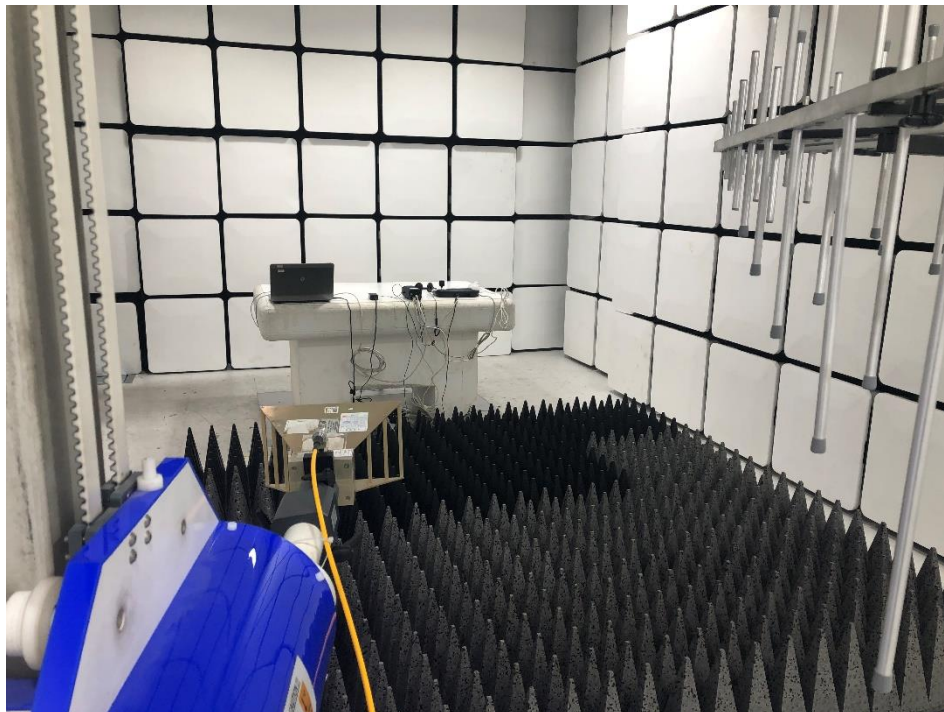
■ PoE Mode



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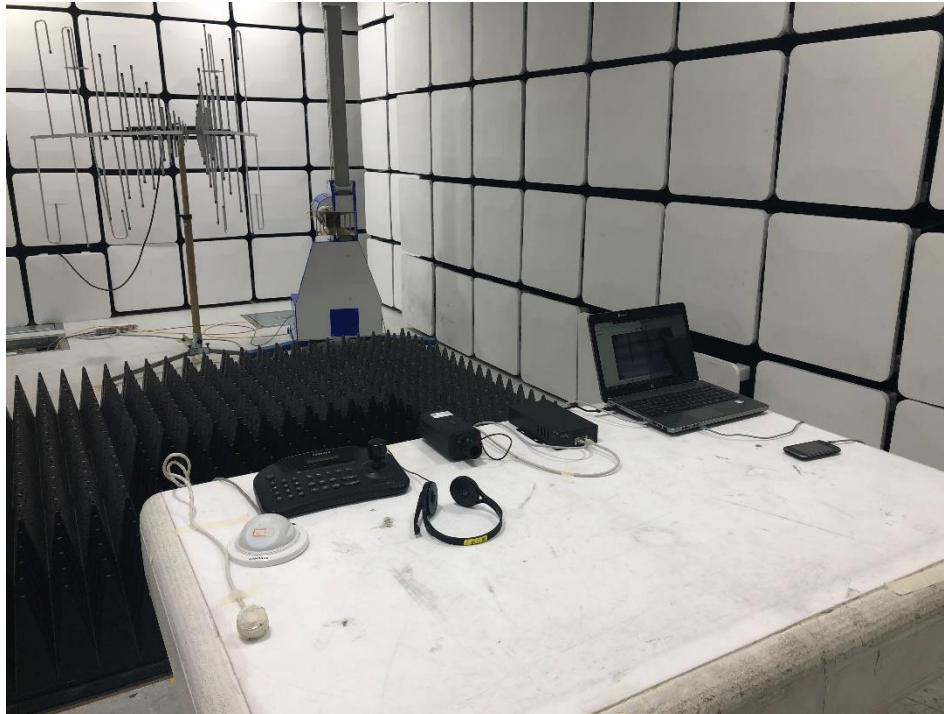
Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ PoE Mode



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EUT External Photographs

(Top)



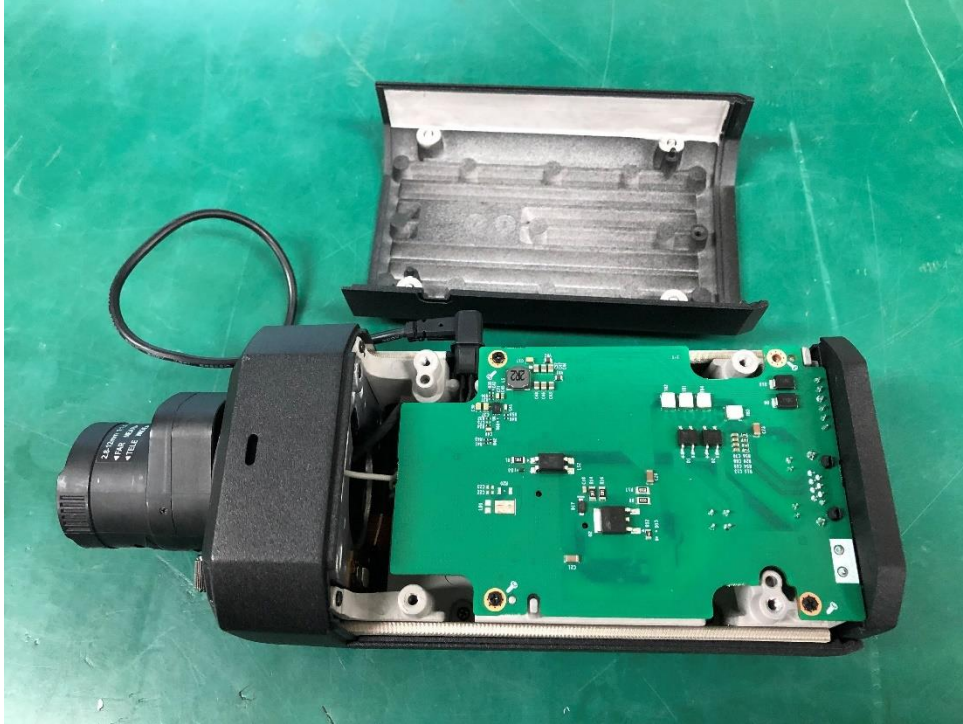
(Bottom)



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EUT Internal Photographs

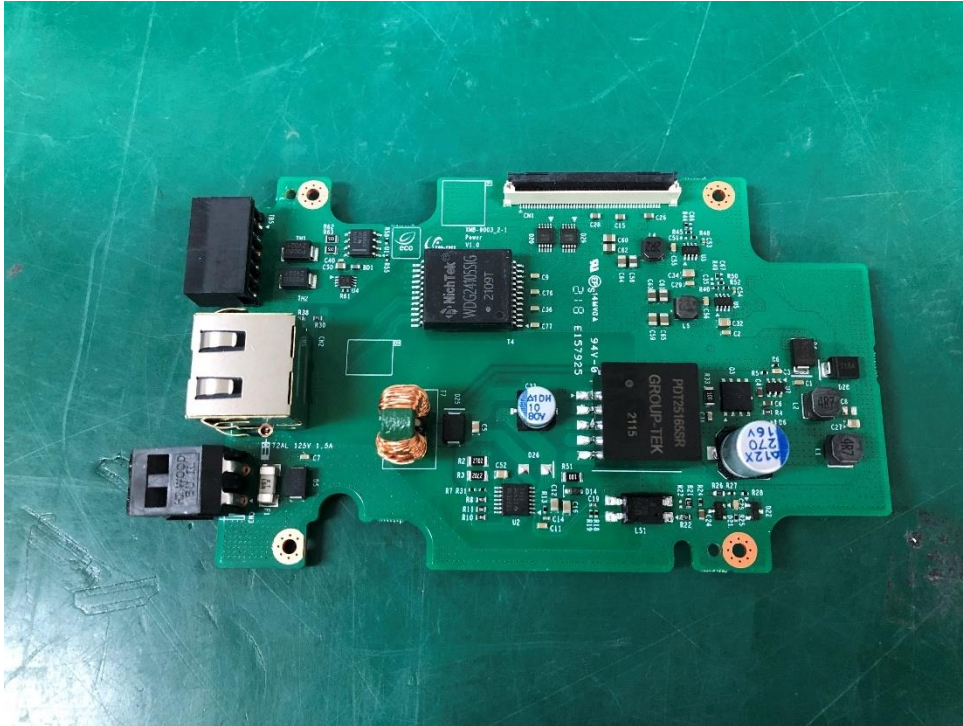
(Internal View)



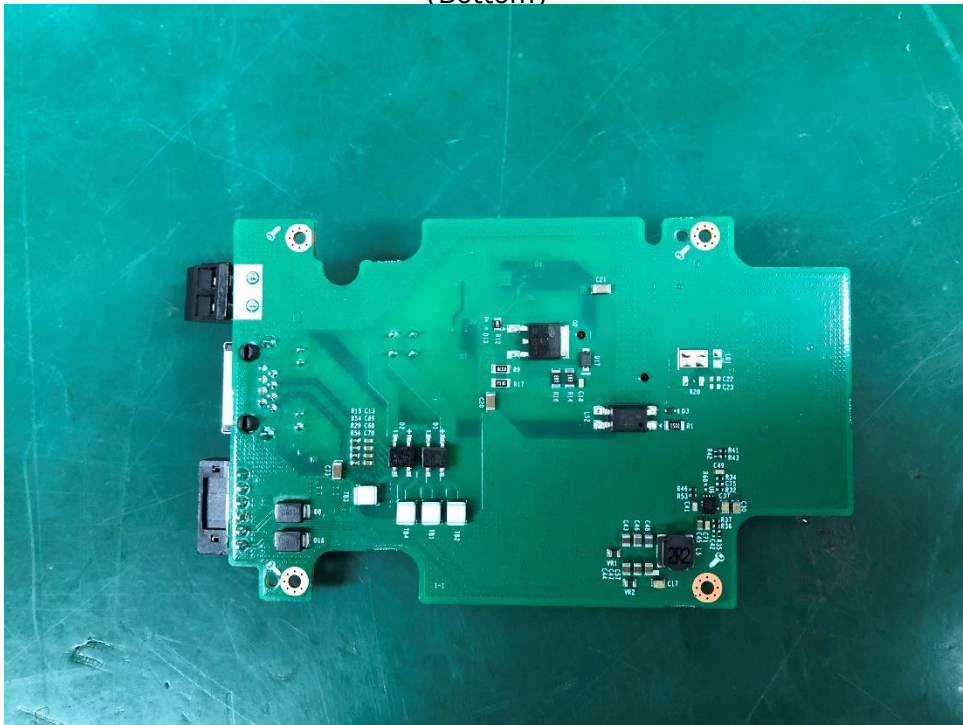
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EUT Internal View – Board 1

(Top)



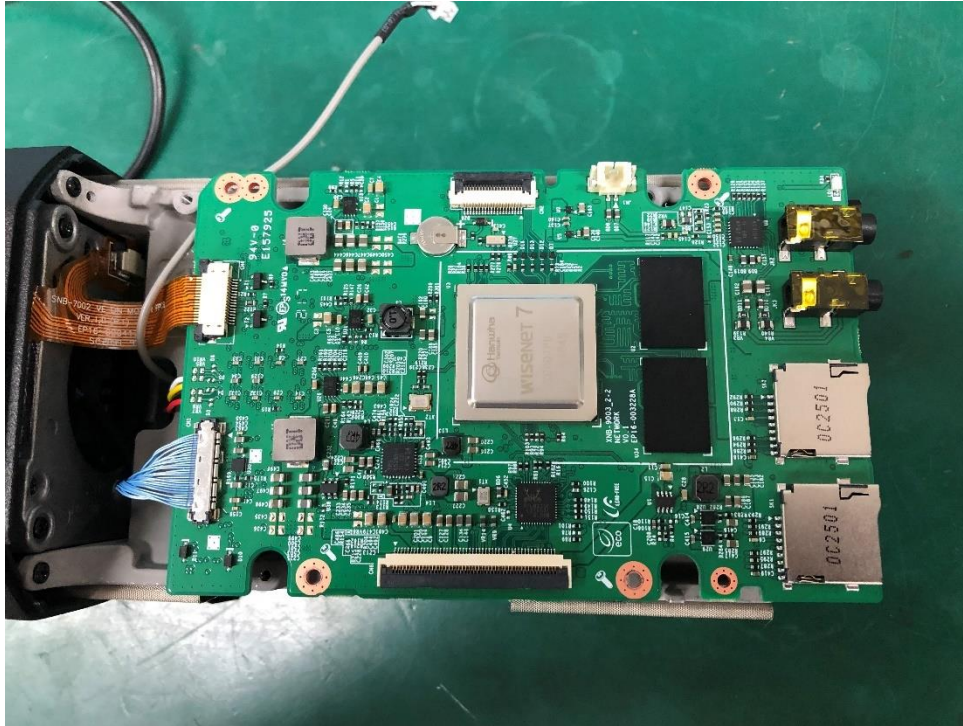
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EUT Internal View – Board 2

(Top)



(Bottom)



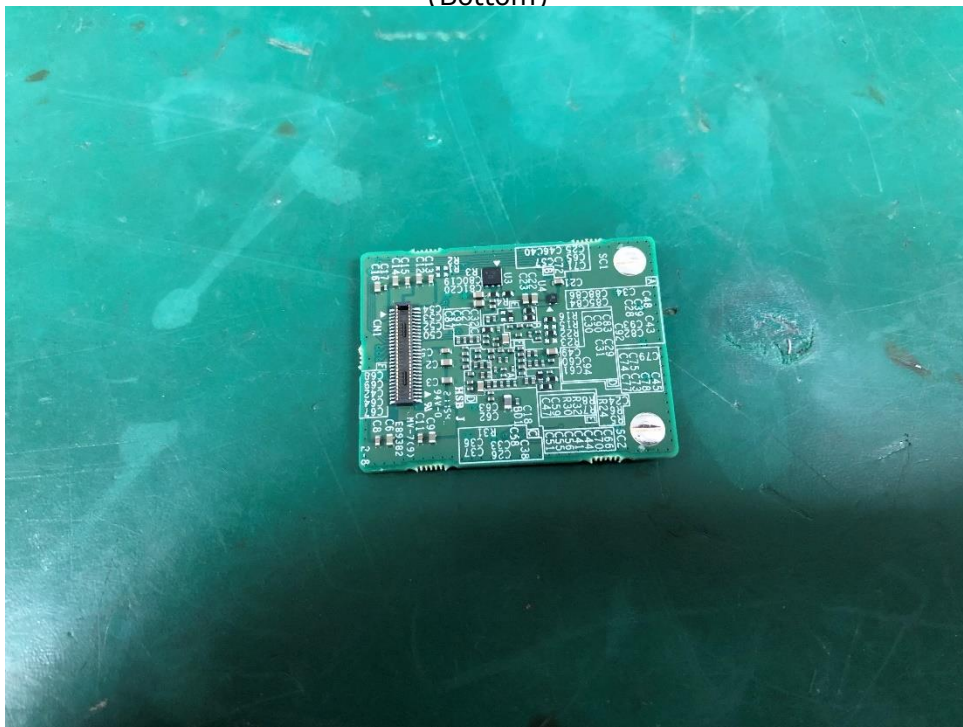
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EUT Internal View – Board 3

(Top)



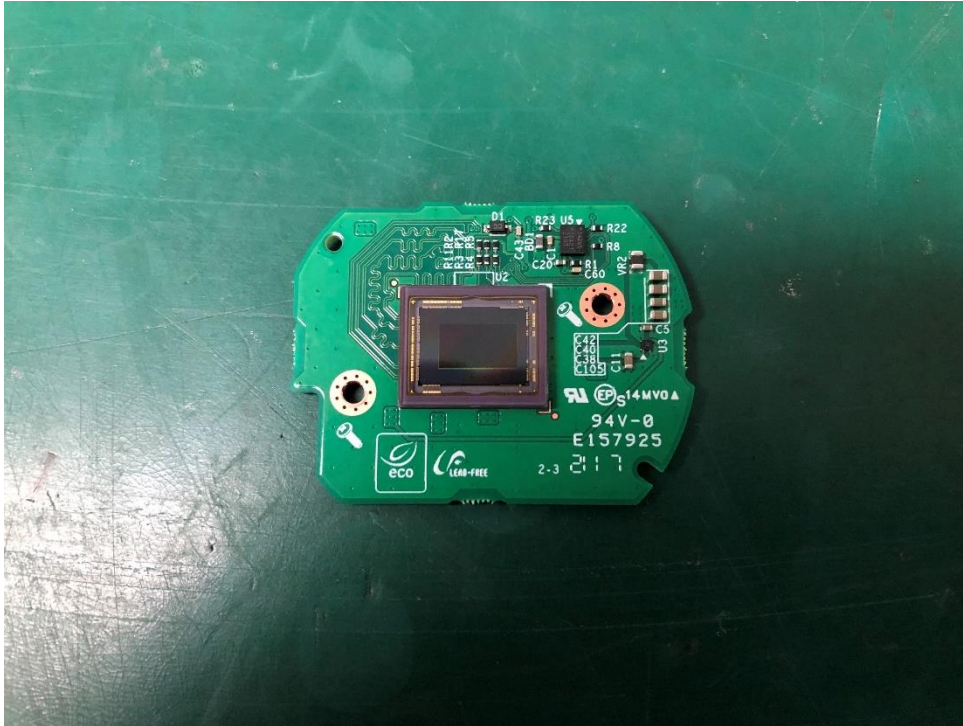
(Bottom)



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EUT Internal View – Board 4

(Top)



(Bottom)



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