



EMC TEST REPORT For RCM

Test Report No. : KES-E1-18T0629-R1
Date of Issue : Feb. 24, 2023
Product name : Network Camera
Model/Type No. : XND-8081FZ
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 : Nov. 02, 2018
Test date : Nov. 09, 2018 ~ Nov. 10, 2018
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Hyun, Won
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.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Nov. 15, 2018	KES-E1-18T0629	Issued
Feb. 24, 2023	KES-E1-18T0629-R1	Change the Applicant, Applicant addresss and manufacturer, manufacturer address at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.8" 6M CMOS
Total Pixels	3096(H) x 2094(V)
Effective Pixels	2616(H) x 1976(V)
Scanning System	Progressive Scan
Min. Illumination	Color : 0.07 Lux(F1.2, 1./30sec) B/W : 0.007 Lux (F1.2, 1./30sec)
S / N Ratio	50dB
Video Out	USB : Micro USB type B, 1280x720, for installation
Lens	
Focal Length (Zoom Ratio)	3.6~9.4mm(2.6x) motorized varifocal
Max. Aperture Ratio	Max. F1.2
Angular Field of View	H: 100.2°, V: 72.7°, D: 132.0° H: 38.7°, V: 29.0°, D: 48.6°
Min. Object Distance	0.5m (1.64ft)
Focus Control	Simple focus(Motorized V/F) / Manual, Remote control via network (Manual, Simple focus)
Lens Type	DC Auto Iris, P-iris
Mount Type	Board-in type
Pan / Tilt / Rotate	
Pan / Tilt / Rotate range	±175° / 0~90° / ±175°
PTR control	Remote adjustment (Max. 200 cycles)
Operational	
Camera Title	Off / On (Displayed up to 85 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC, WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On (built-in Gyro Sensor)
Defog	Auto / Manual / Off
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic



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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium))
LDC	On/Off (5 levels with Min/Max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital PTZ	24X, Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification, Shock detection, Heatmap, People counting, Queue management, Audio Playback on event
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers External output
Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out, Max output level: 1 Vrms
Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Form	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , MJPEG
Resolution	2560 x 1920, 2560 x 1440, 1920x1080, 1600 x 1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions MJPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
WiseStreamII	Support
Video Quality Adjustmer	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264/H.265 : CBR or VBR MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
Audio Compression Form	G.711 u-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC : 48Kbps at 8/16/32/48KHz
Audio Communication	Bi-dierctional (2-Way)
IP	IPv4, IPv6

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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	Micro SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. - NAS(Network Attached Storage), Local PC for Instant Recording
Application Programming	ONVIF Profile S/G SUNAPI(HTTP API) Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	Supported OS : Windows 7, 8, 10, Mac OS X 10.10, 10.11, 10.12 Non-plugin Webviewer - Supported Browser : Google Chrome 56, MS Edge 39, Mozilla Firefox 56 (Window 64bit only), Apple Safari 10 (Mac OS X only) Plug-In Webviewer - Supported Browser : MS Explore 11, Apple Safari 10 (Mac OS X only)
Central Management Software	SmartViewer, SSM
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP52, Plenum rate
Vandal Resistance	-
Electrical	
Input Voltage / Current	Power redundancy 12VDC $\pm$ 10%, PoE(IEEE802.3af, Class3)
Power Consumption	DC : Max 8.5W, PoE : Max 10W
Mechanical	
Color / Material	TBD / Aluminum
Dimension (ØxH)	Ø 205 x 150mm
Weight	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.

Voltage ☐ 240 Vac ☐ 100 Vac ☐ 24 Vac ☒ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Network Camera	XND-8081FZ	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adaptor	PD-3001GC/AC	RD935608201696 4200	Power Dsine	-
Notebook	LG15N54	410NZET022292	LG Electronics	-
Notebook Adaptor	PA-1900-08	9702591703	Dongguang Lite Power 2nd Plant	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	CMK-303	-	CAMAC	-
Alarm 1	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm 2	-	-	-	-
Micro SD Card	-	-	SanDisk	4 GB
Cellular phone	LG-SU760	108KPQJ0186212	LG Electronics	-



1.6 External I/O Cabling

■ DC 12 V MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	Notebook	RJ-45	3.0	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.7	U
	Alarm Out	Alarm 1	Alarm In	3.0	U
	Alarm In	Alarm 2	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Cellular phone	3.5 mm	0.6	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 Adaptor	RJ-45	3.0	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.7	U
	Alarm Out	Alarm 1	Alarm In	3.0	U
	Alarm In	Alarm 2	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Cellular phone	3.5 mm	0.6	U
	RJ-45	PoE Adaptor	RJ-45	3.0	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test mode	operating
DC 12 V	EUT Monitoring, Ping Test
PoE	EUT Monitoring, Ping Test

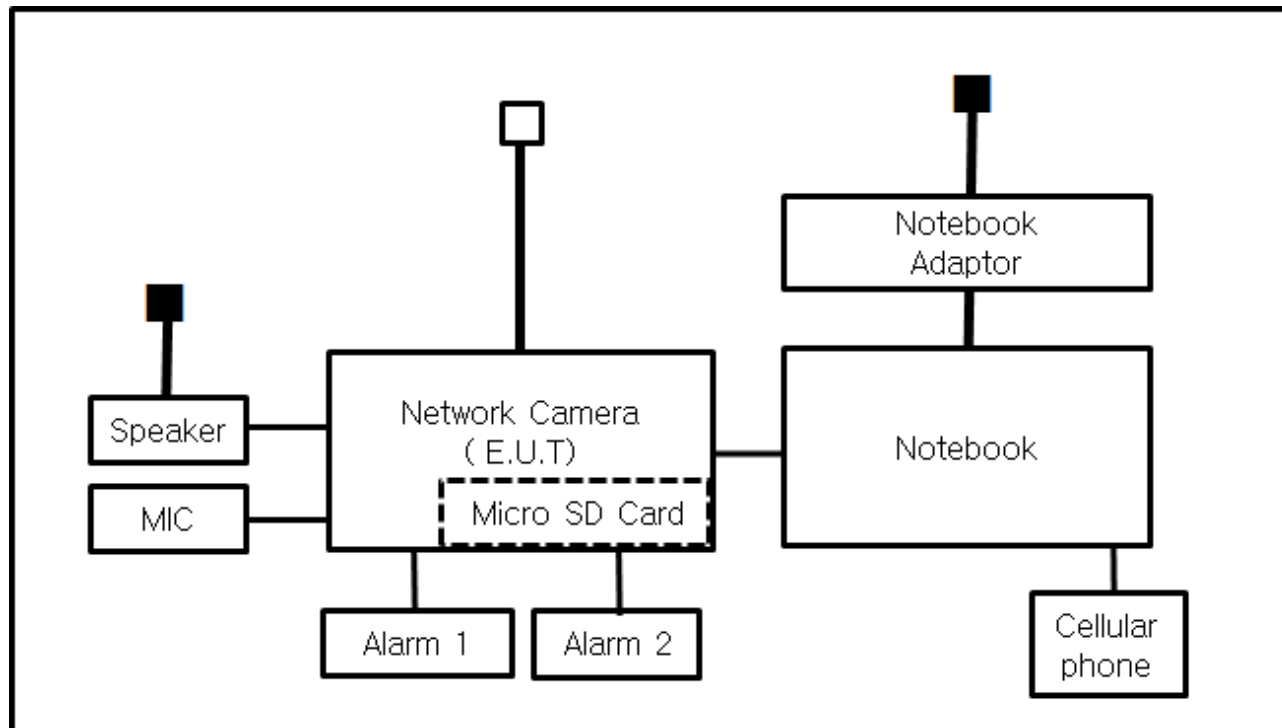
EUT Test operating S/W		
Name	Version	Manufacture Company
WebViewer	-	Hanwha Vision Co., Ltd

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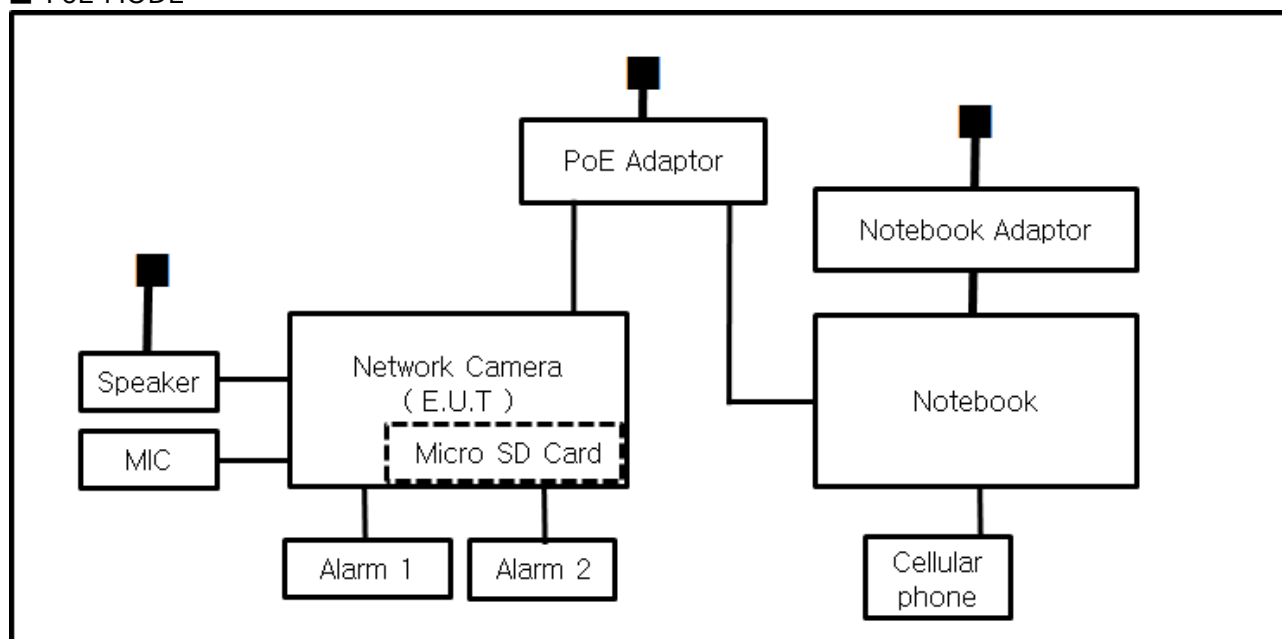
1.8 Configuration

■ AC Main
 □ DC Main

■ DC 12 V MODE



■ PoE MODE



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1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

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

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

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☐ **VCCI V-3 / 2015.04**☐ 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

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	101781	04, 25, 2019
☐	LISN	ENV216	R & S	101787	01, 05, 2019
☐	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018

Test Conditions

Temperature:

°C

Relative Humidity:

% 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

N/A: It is not tested apply because it is powered by DC and PoE.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Nov. 10, 2018

Test Location

Electro wave Shieldroom #3

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, 25, 2019
☒	LISN	ENV216	R & S	101137	01, 31, 2019
☒	LISN	ENV216	R & S	101786	04, 25, 2019
☒	8-WIRE ISN CAT3	CAT3 8158	SCHWARZBECK	8158-0019	03, 22, 2018
☒	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	03, 22, 2019
☐	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	08, 10, 2019

Test ConditionsTemperature: 23,2 °C
Relative Humidity: 53,0 % R.H.**Frequency Range of Measurement**

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 10, 2018

Test Location☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test ConditionsTemperature: 21,4 °C
Relative Humidity: 54,1 % R.H.**Frequency Range of Measurement**

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 09, 2018

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, 06, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2019
☐	ATTENUATOR	8491A	HP	35496	03, 21, 2019
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 22,8 °C
Relative Humidity: 53,8 % 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

Remarks

See Appendix A for test data.



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

N/A

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NEUTRAL LINE

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

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Conducted Emissions at Telecommunication Ports

■ DC 12 V MODE

[10 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

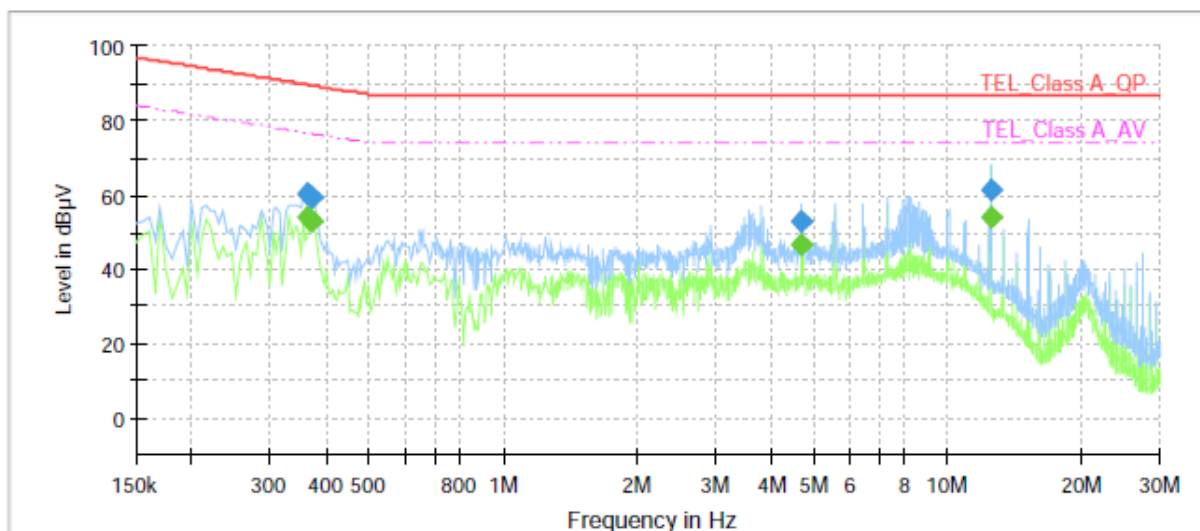
XND-8081FZ

Mode

DC_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)
0.365000	---	54.21	76.61	22.40	1000.0	9.000	Single Line	10.1
0.365000	60.09	---	89.61	29.52	1000.0	9.000	Single Line	10.1
0.370000	---	52.96	76.50	23.54	1000.0	9.000	Single Line	10.1
0.370000	59.43	---	89.50	30.07	1000.0	9.000	Single Line	10.1
4.675000	---	46.59	74.00	27.41	1000.0	9.000	Single Line	10.2
4.675000	53.02	---	87.00	33.98	1000.0	9.000	Single Line	10.2
12.500000	---	53.75	74.00	20.25	1000.0	9.000	Single Line	10.0
12.500000	61.15	---	87.00	25.85	1000.0	9.000	Single Line	10.0

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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

Report No.:

KES-E1-18T0629-R1

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[100 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

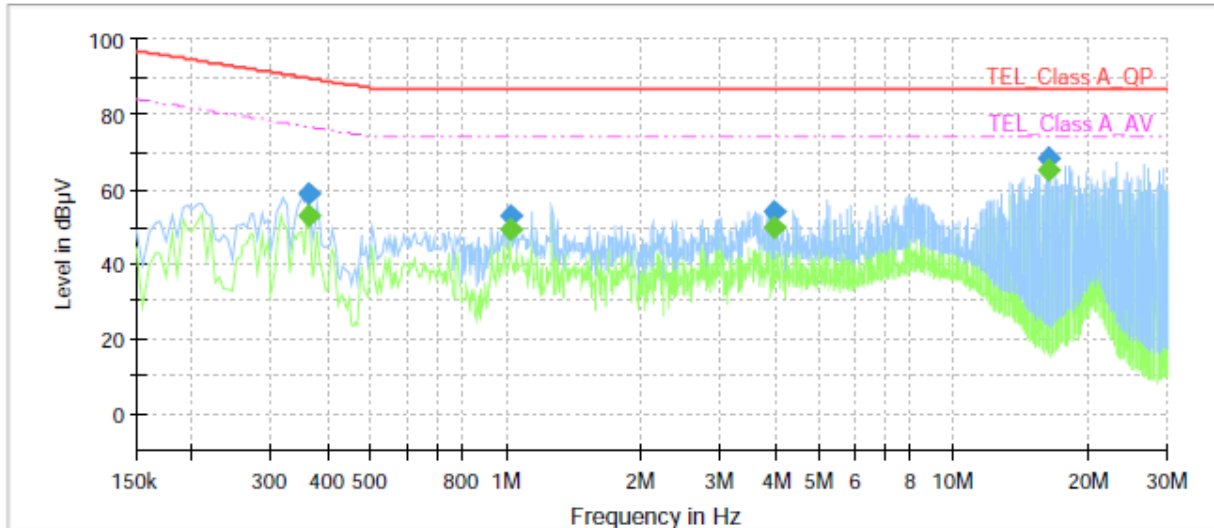
XND-8081FZ

Mode

DC_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)
0.365000	---	52.80	76.61	23.81	1000.0	9.000	Single Line	9.6
0.365000	58.58	---	89.61	31.03	1000.0	9.000	Single Line	9.6
1.025000	---	49.30	74.00	24.70	1000.0	9.000	Single Line	9.8
1.025000	53.03	---	87.00	33.97	1000.0	9.000	Single Line	9.8
3.955000	---	49.88	74.00	24.12	1000.0	9.000	Single Line	9.7
3.955000	53.88	---	87.00	33.12	1000.0	9.000	Single Line	9.7
16.230000	---	65.07	74.00	8.93	1000.0	9.000	Single Line	9.7
16.230000	68.34	---	87.00	18.66	1000.0	9.000	Single Line	9.7

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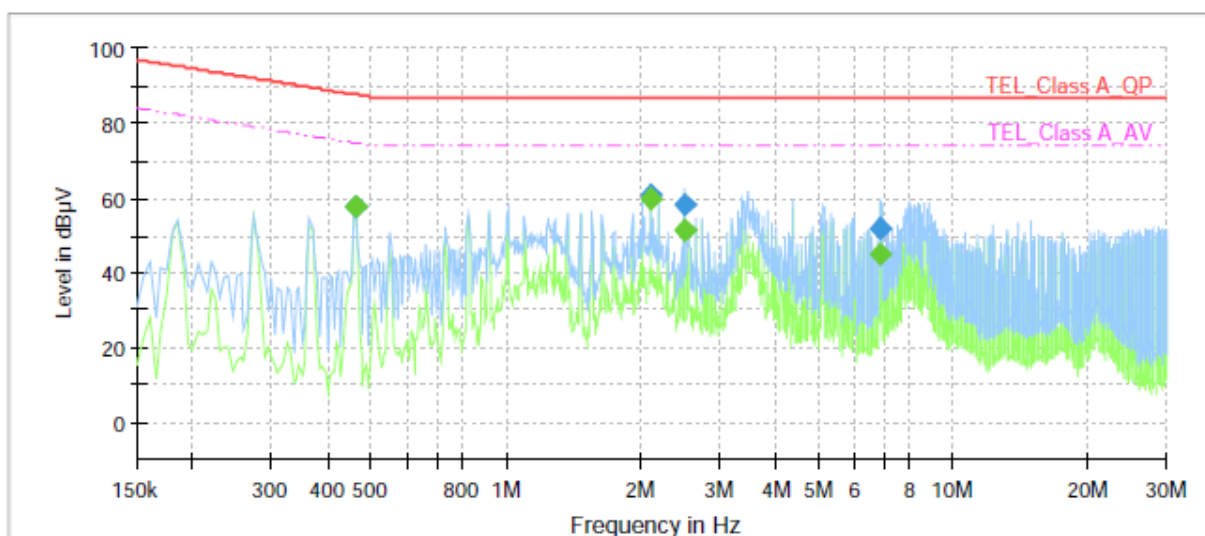
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■ PoE MODE

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XND-8081FZ
Mode	PoE_ 10 Mbps
Operator Name:	KES

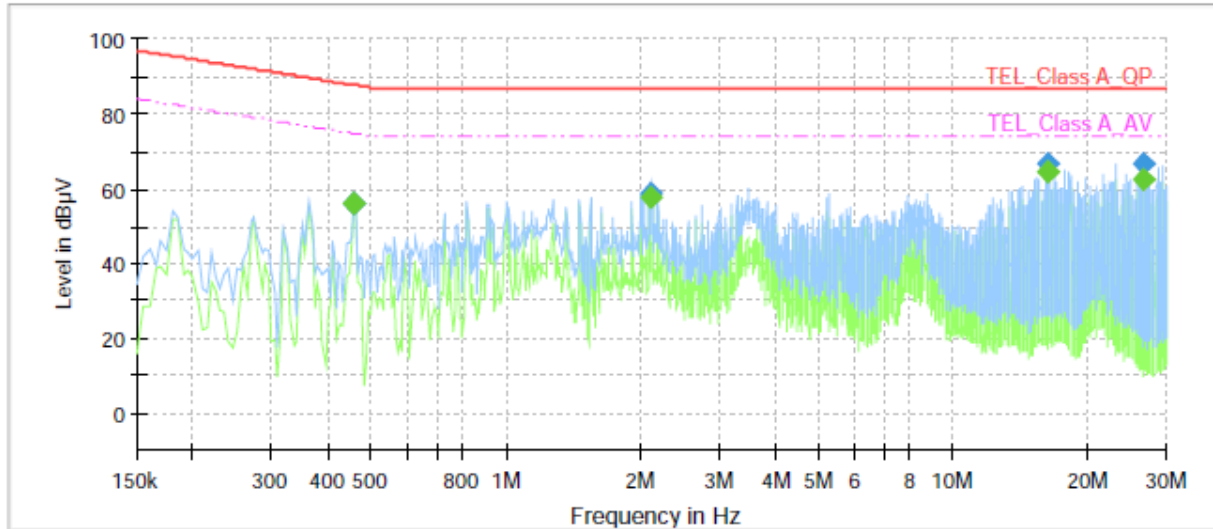


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.460000	---	57.88	74.69	16.81	1000.0	9.000	Single Line	10.1
0.460000	57.91	---	87.69	29.78	1000.0	9.000	Single Line	10.1
2.110000	---	60.00	74.00	14.00	1000.0	9.000	Single Line	10.3
2.110000	60.74	---	87.00	26.26	1000.0	9.000	Single Line	10.3
2.500000	---	51.57	74.00	22.43	1000.0	9.000	Single Line	10.3
2.500000	58.20	---	87.00	28.80	1000.0	9.000	Single Line	10.3
6.900000	---	45.02	74.00	28.98	1000.0	9.000	Single Line	10.0
6.900000	52.11	---	87.00	34.89	1000.0	9.000	Single Line	10.0

[100 Mbps]
Common Information

Test Description:	Telecommunication Emission
Model No.:	XND-8081FZ
Mode	PoE_ 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)
0.455000	---	56.20	74.78	18.58	1000.0	9.000	Single Line	9.6
0.455000	56.29	---	87.78	31.49	1000.0	9.000	Single Line	9.6
2.100000	---	57.61	74.00	16.39	1000.0	9.000	Single Line	9.8
2.100000	58.59	---	87.00	28.41	1000.0	9.000	Single Line	9.8
16.230000	---	64.56	74.00	9.44	1000.0	9.000	Single Line	9.7
16.230000	66.85	---	87.00	20.15	1000.0	9.000	Single Line	9.7
26.610000	---	62.57	74.00	11.43	1000.0	9.000	Single Line	9.5
26.610000	66.44	---	87.00	20.56	1000.0	9.000	Single Line	9.5

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



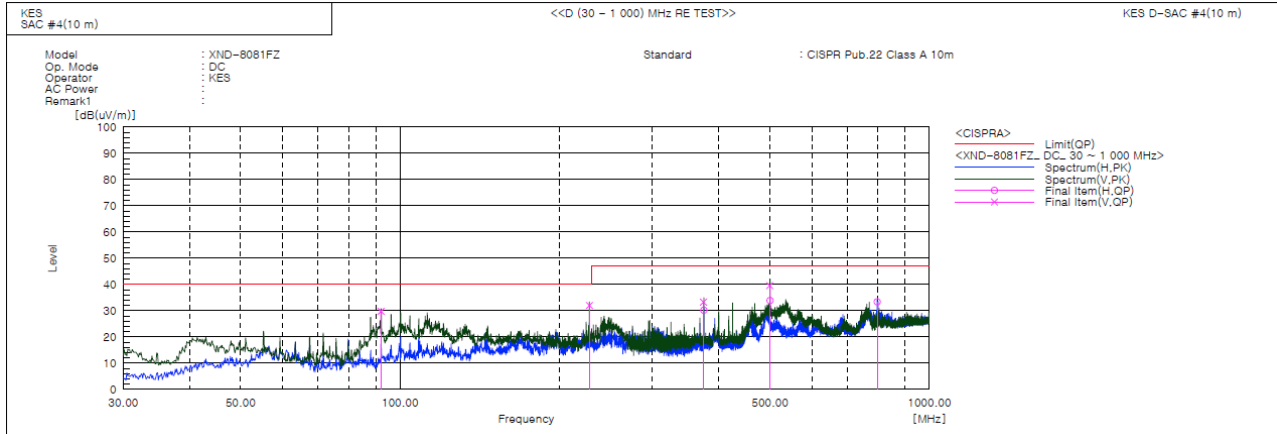
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC 12 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	92.080	V	60.1	-30.3	29.8	40.0	10.2	102.0	213.0	
2	228.001	V	58.9	-26.9	32.0	40.0	8.0	116.0	10.0	
3	374.256	V	55.6	-22.3	33.3	47.0	13.7	135.0	158.0	
4	374.956	H	52.5	-22.3	30.2	47.0	16.8	369.0	250.0	
5	499.217	V	58.4	-18.8	39.6	47.0	7.4	233.0	193.0	
6	500.086	H	52.7	-18.8	33.9	47.0	13.1	347.0	91.0	
7	796.906	H	47.5	-14.1	33.4	47.0	13.6	318.0	330.0	

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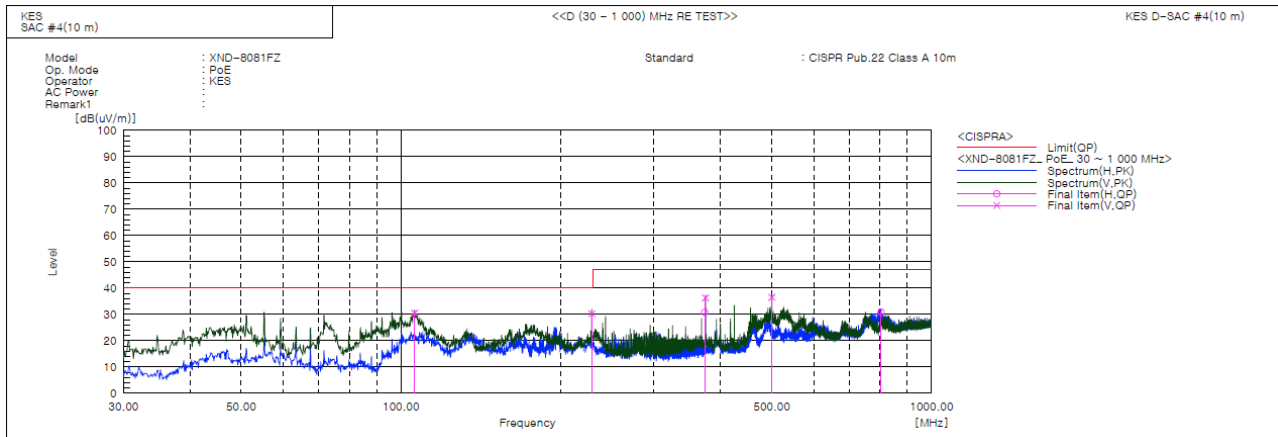
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■ PoE MODE



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	106.145	V 59.8	-29.3	30.5	40.0	9.5	145.0	110.0	
2	228.971	V 57.2	-26.9	30.3	40.0	9.7	172.0	169.0	
3	373.856	H 53.1	-22.3	30.8	47.0	16.2	386.0	183.0	
4	374.956	V 58.6	-22.3	36.3	47.0	10.7	201.0	62.0	
5	499.965	V 55.3	-18.8	36.5	47.0	10.5	113.0	182.0	
6	803.575	H 44.8	-13.9	30.9	47.0	16.1	374.0	314.0	

◆ Calculation

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

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

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

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

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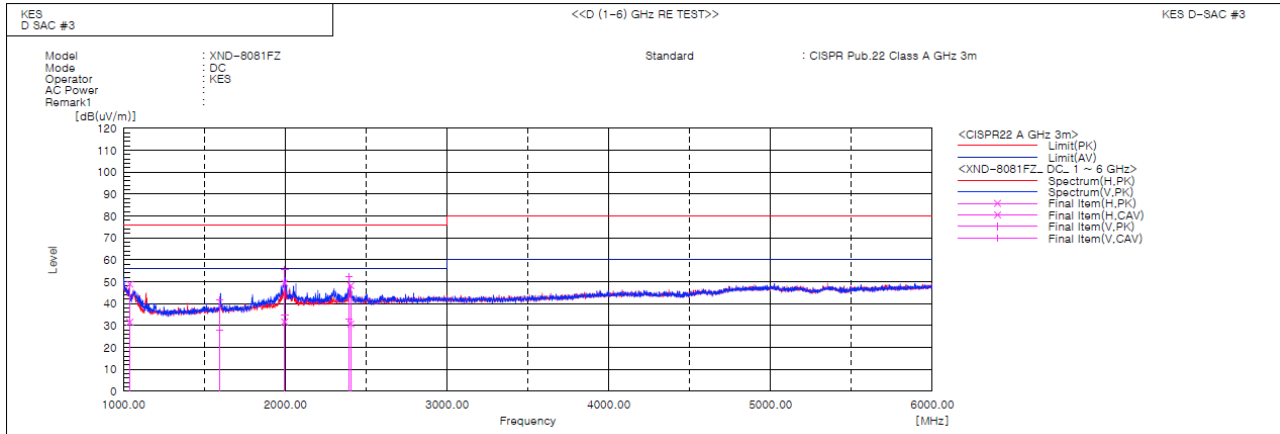
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Radiated Electric Field Emissions(Above 1 GHz)

■ DC 12 V 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	1038.854	H	56.7	39.4	-7.8	48.9	31.6	76.0	56.0	27.1	24.4	100.0	48.4	
2	1595.651	V	46.7	32.9	-5.0	41.7	27.9	76.0	56.0	34.3	28.1	100.0	158.8	
3	1995.521	H	51.5	33.8	-2.1	49.4	31.7	76.0	56.0	26.6	24.3	100.0	228.7	
4	1997.221	V	57.5	36.9	-2.1	55.4	34.8	76.0	56.0	20.6	21.2	100.0	129.5	
5	2392.451	V	52.6	33.2	-0.4	52.2	32.8	76.0	56.0	23.8	23.2	100.0	31.9	
6	2404.509	H	48.6	31.2	-0.4	48.2	30.8	76.0	56.0	27.8	25.2	100.0	28.2	

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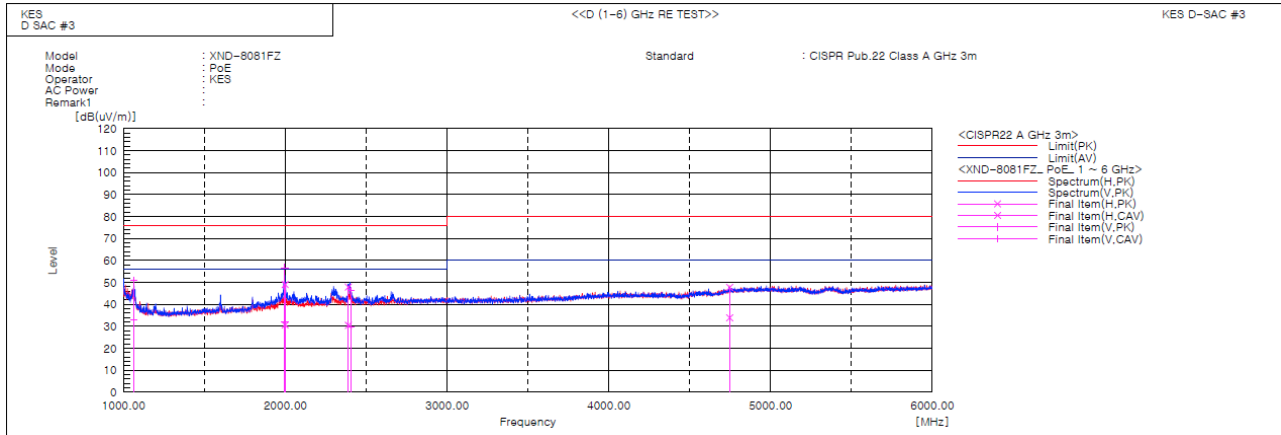
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■ PoE MODE



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	1064.920	V	58.5	40.5	-7.7	50.8	32.8	76.0	56.0	25.2	23.2	100.0	245.6	
2	1997.290	V	58.8	34.1	-2.1	56.7	32.0	76.0	56.0	19.3	24.0	100.0	357.2	
3	1998.980	H	51.2	32.8	-2.1	49.1	30.7	76.0	56.0	26.9	25.3	100.0	220.0	
4	2389.531	H	48.3	30.9	-0.4	47.9	30.5	76.0	56.0	28.1	25.5	100.0	84.7	
5	2407.748	V	46.8	30.2	-0.3	46.5	29.9	76.0	56.0	29.5	26.1	100.0	53.3	
6	4747.679	H	40.5	26.7	7.2	47.7	33.9	80.0	60.0	32.3	26.1	100.0	3.4	

◆ Calculation

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

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

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

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

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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

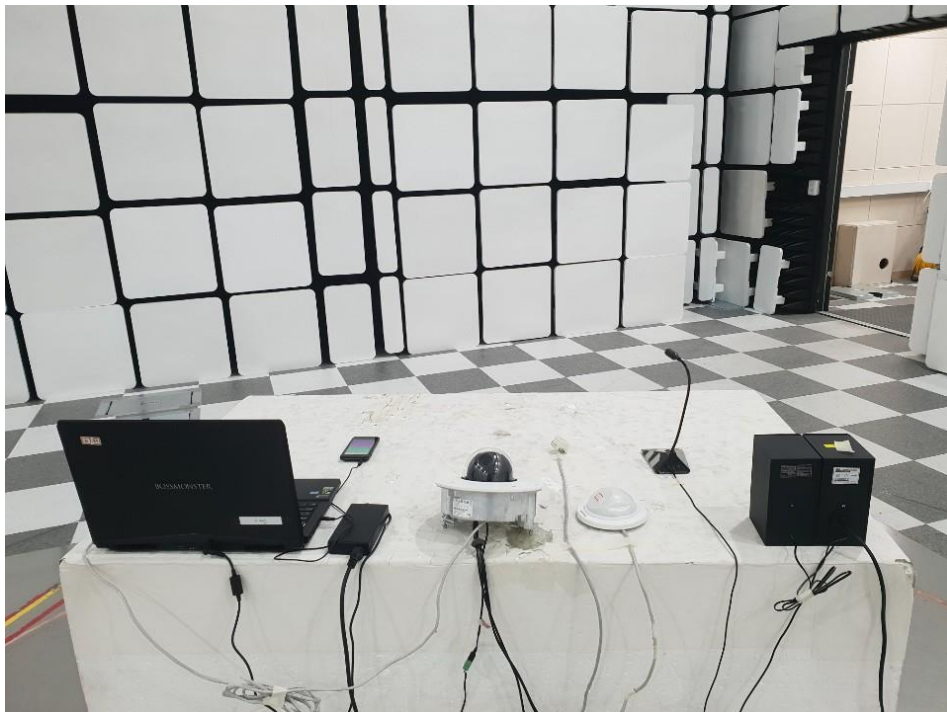
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Conducted Telecommunication Emissions



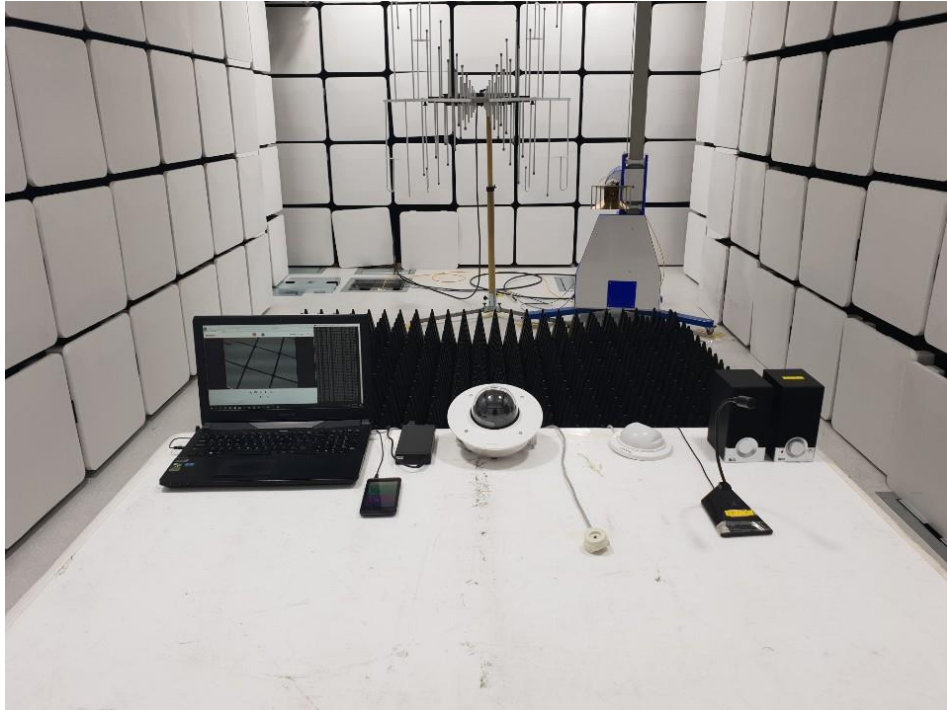
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



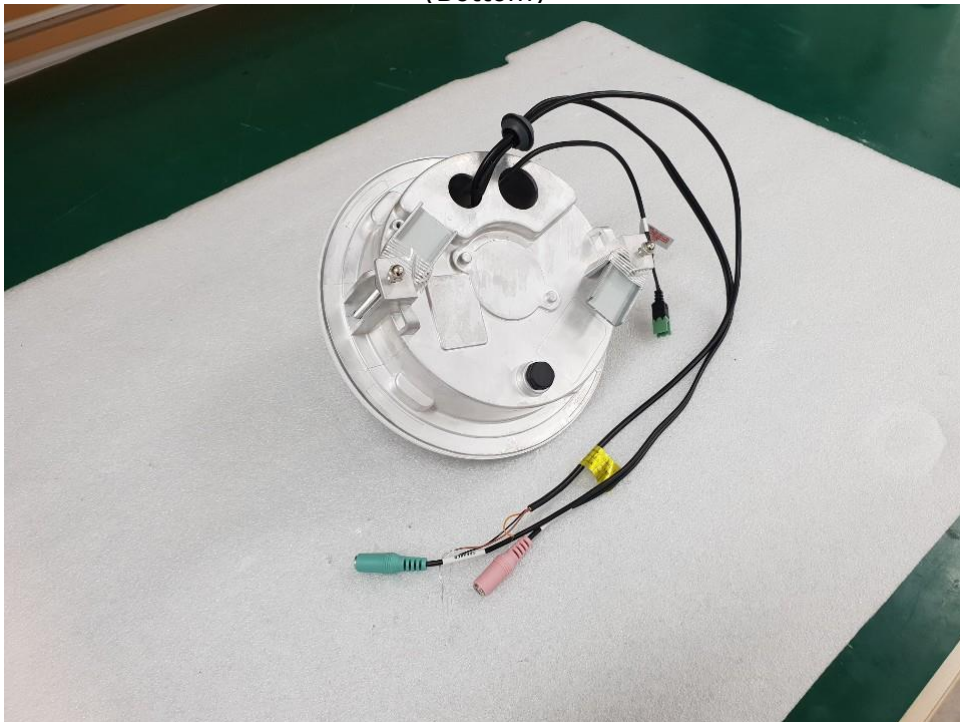
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EUT External Photographs

(Top)

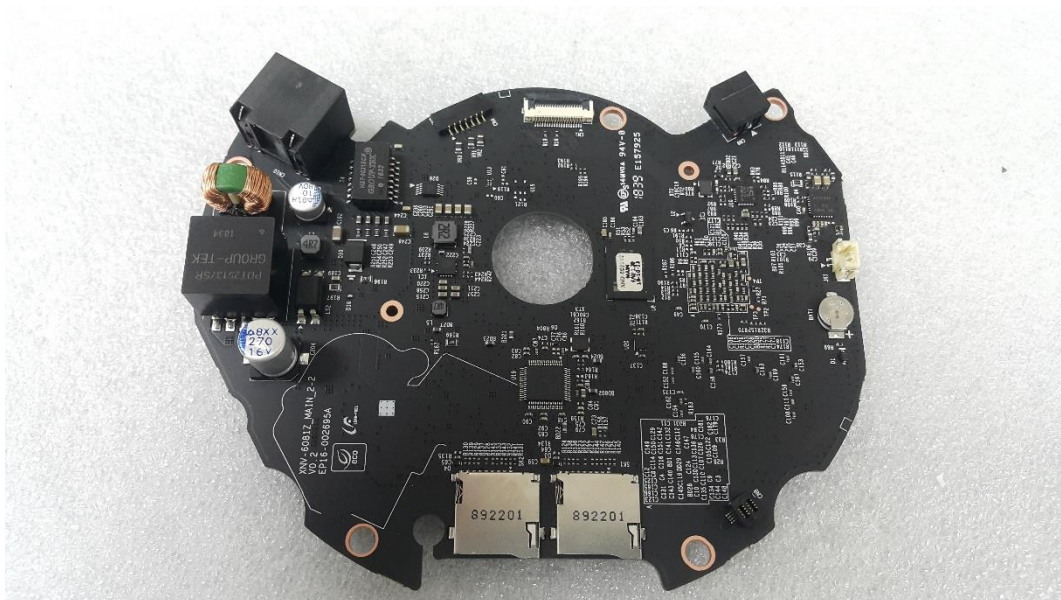


(Bottom)

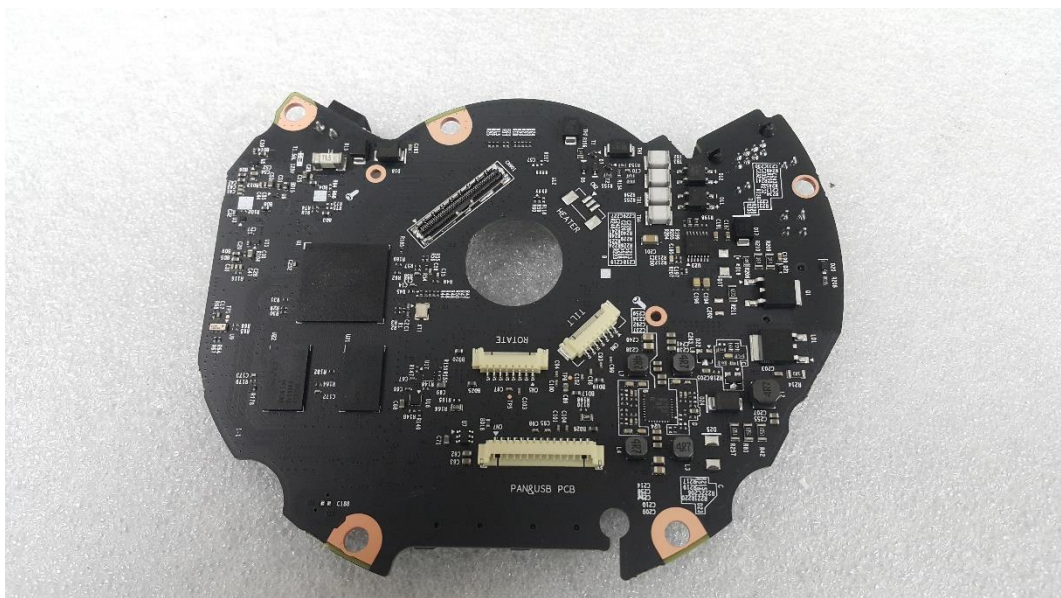


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EUT Internal View – Main Board (Top)

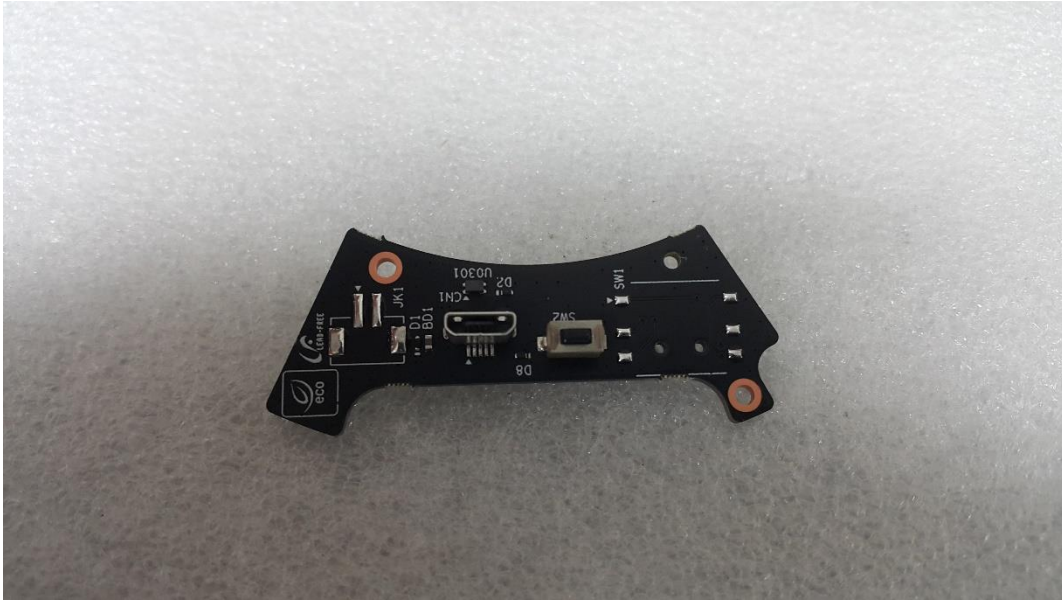


(Bottom)

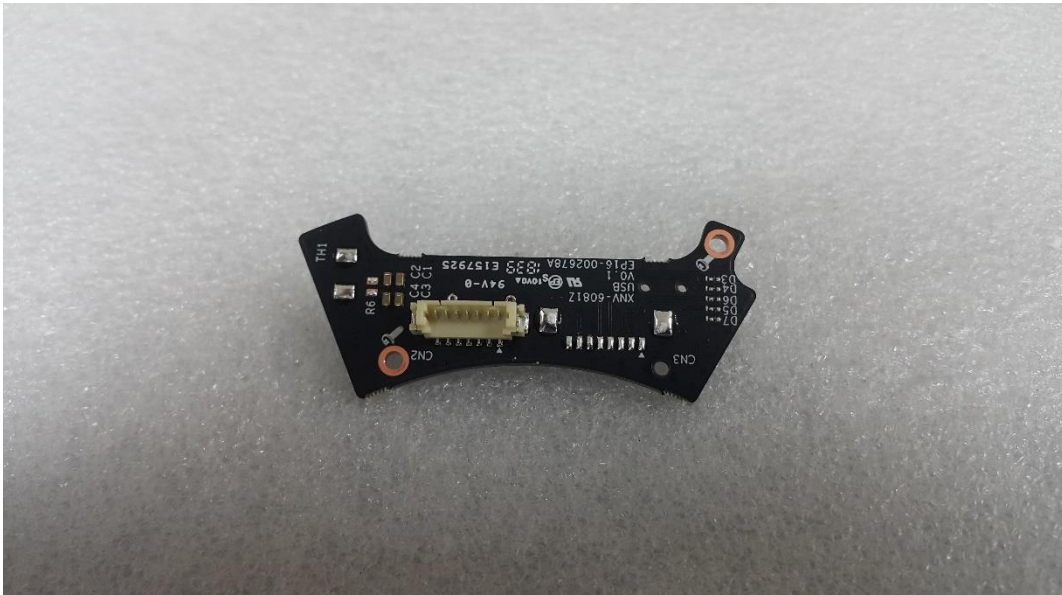


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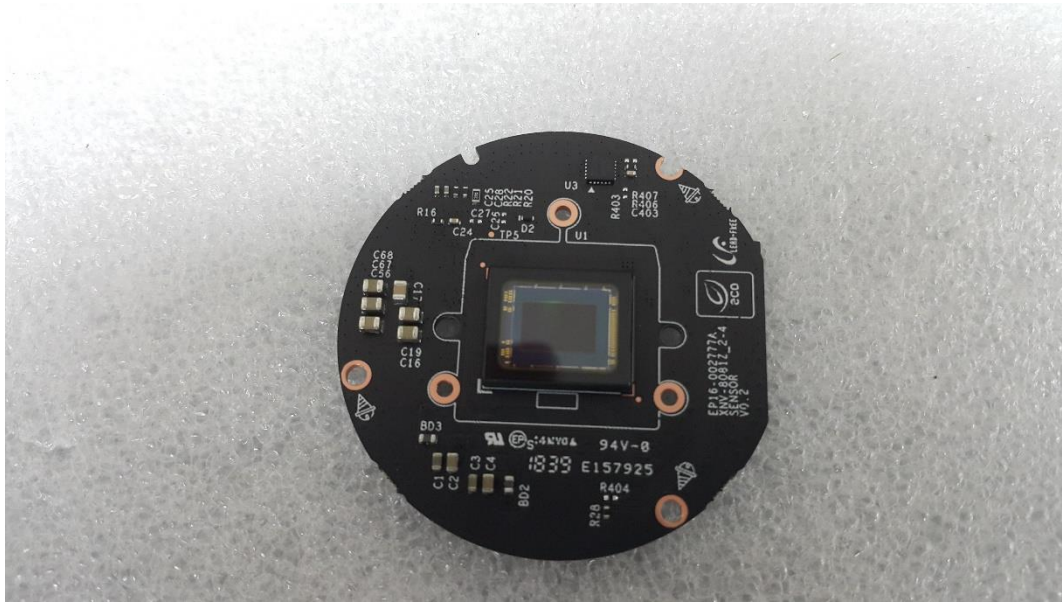
EUT Internal View – IO Board (Top)



(Bottom)



EUT Internal View – LENS Board (Top)



(Bottom)

