EMC TEST REPORT

Test Report No.	:	KES-EM-21T1157
Date of Issue	:	Dec. 01, 2021
Product name	:	NETWORK CAMERA
Model/Type No.	:	TNV-7011RC
Variant Model	:	-
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. 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)
Equipment authorization	:	**Supplier's Declaration of Conformity**
Date of Receipt	:	Nov. 15, 2021
Test date	:	Nov. 18, 2021 ~ Nov. 19, 2021
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, 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
Dec. 01, 2021	KES-EM-21T1157	Issued

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1.0 General Product Description

Main Specifications of EUT are:

	TNV-7011RC
Video	
Imaging Device	1/2.8" CMOS
Resolution	2048x1536, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264/MJPEG: Max. 30fps at all resolutions
Min. Illumination	Color: 0.3 lux (F2.0, 1/30sec) B/W: 0 lux (F2.0, 1/30sec)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation
Lens	
Focal Length (Zoom Ratio)	2.8mm fixed focal
Max. Aperture Ratio	F2.0
Angular Field of View	H: 102° / V: 75° / D: 129°
Min. Object Distance	0.4m(1.31ft)
Focus Control	Manual
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	- / 30°~60° / -
Operational	
Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SSDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Support
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, polygonal zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Video Rotation	Flip, Mirror, 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
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Analytics, Network disconnect, Alarm input, Motion detection
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output DPTZ preset
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	10m(32.8ft)

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Network	
Ethernet	RJ-45(10/100BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
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 8/16/32/48KHz
Smart Codec	Manual(5ea area), WiseStream Ⅱ
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)
Protocol	IPv4, IPv6, 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)
Application Programming Interface	SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Edge Storage	Micro SD/SDHC/SDXC 1slot 256GB
Environmental & Electrical	
Operating Temperature / Humidity	-10℃~+55℃(+14℉~+131℉) / Less than 90% RH
Storage Temperature / Humidity	-50℃~+60℃(-58℉~+140℉) / Less than 90% RH
Certification	IP66, IP6K9K, IK10+
Input Voltage	PoE(IEEE802.3af, Class2), 12VDC
Power Consumption	PoE: Max 12W, typical 10.1W, 12VDC: Max. 11W, typical 8.6W
Mechanical	
Color / Material	White / Aluminium
RAL Code	RAL9003
Product dimensions / weight	Ø295.5x113.5mm(11.6x4.47") / 2.1kg (4.63lb)
DORI	
Detect	33.2m(108.82ft)
Observe	13.3m(43.53ft)
Recognize	6.6m(21.76ft)
Identify	3.3m(10.88ft)

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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 120 V, 60 Hz (DC Adapter) ☒ PoE (PoE Adapter)

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	TNV-7011RC	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	P95G001	9JM8HT2	DELL INC.	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
DC Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co., Ltd	-
Button Alarm	-	-	-	-
LED Alarm	PRO-SL	-	SENSOR PRO	-
LED Alarm Adapter	CS-1202000	-	-	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
SmartPhone	A1429	-	Apple	-
Micro SD Card	-	-	Sandisk	-
Mic	MP1000	-	-	-

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1.6 External I/O Cabling

■ DC Adapter Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	DC Jack (2 Pin)	DC Adapter	DC Jack (2 Pin)	1.2	U
	RJ-45 (LAN)	Notebook	RJ-45	3.0	U
	Alarm In (2 Pin)	Button Alarm	2 Pin	3.0	U
	Alarm Out (2 Pin)	LED Alarm	2 Pin	3.0	U
	Audio In (3.5 ㎜)	Mic	3.5 ㎜	1.5	U
	Audio Out (3.5 ㎜)	Speaker	3.5 ㎜	1.8	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
Notebook	3.5 ㎜	SmartPhone	3.5 ㎜	1.3	U
Notebook	DC Jack	Notebook Adapter	DC Jack	2.3	S
LED Alarm	DC Jack	LED Alarm Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

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■ PoE Adapter Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Adapter	RJ-45	3.0	U
	Alarm In (2 Pin)	Button Alarm	2 Pin	3.0	U
	Alarm Out (2 Pin)	LED Alarm	2 Pin	3.0	U
	Audio In (3.5 ㎜)	Mic	3.5 ㎜	1.5	U
	Audio Out (3.5 ㎜)	Speaker	3.5 ㎜	1.8	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
PoE Adapter	RJ-45 (LAN)	Notebook	RJ-45	1.0	U
Notebook	3.5 ㎜	SmartPhone	3.5 ㎜	1.3	U
Notebook	DC Jack	Notebook Adapter	DC Jack	2.3	S
LED Alarm	DC Jack	LED Alarm Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test Mode	operating
DC Adapter / PoE Adapter	Checked that the camera video output was working properly in the web viewer and used the ping test to verify that the network behavior was working properly. Check the normal operation of Button Alarm, LED Alarm through Web Viewer, Checked whether speaker to 1 kHz Tone is output normally.

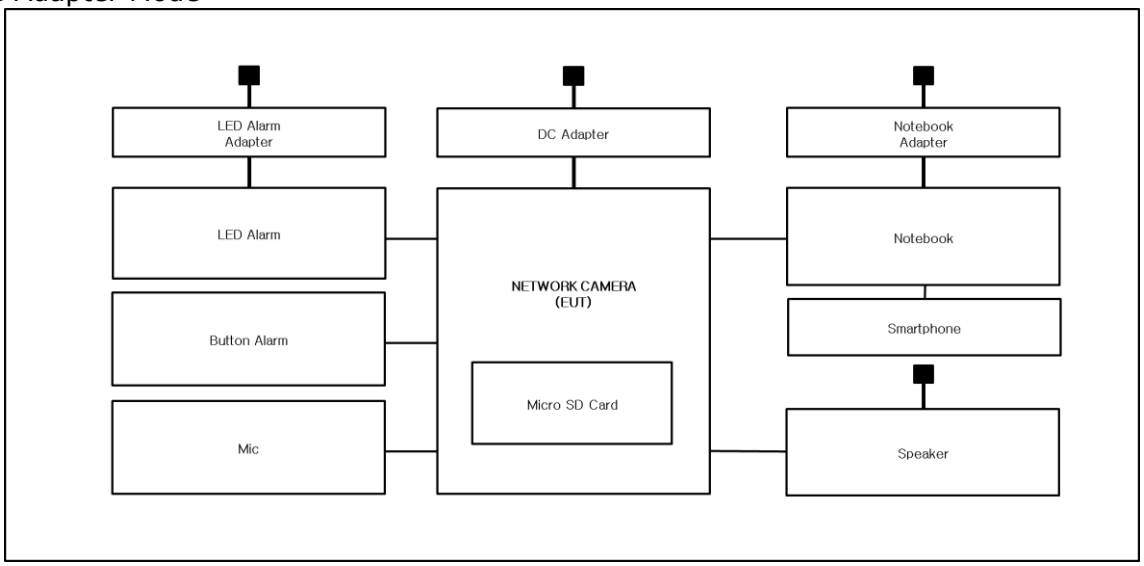
EUT Test operating S/W		
Name	**Version**	**Manufacture Company**
Web Viewer	-	Hanwha Techwin Co., Ltd.

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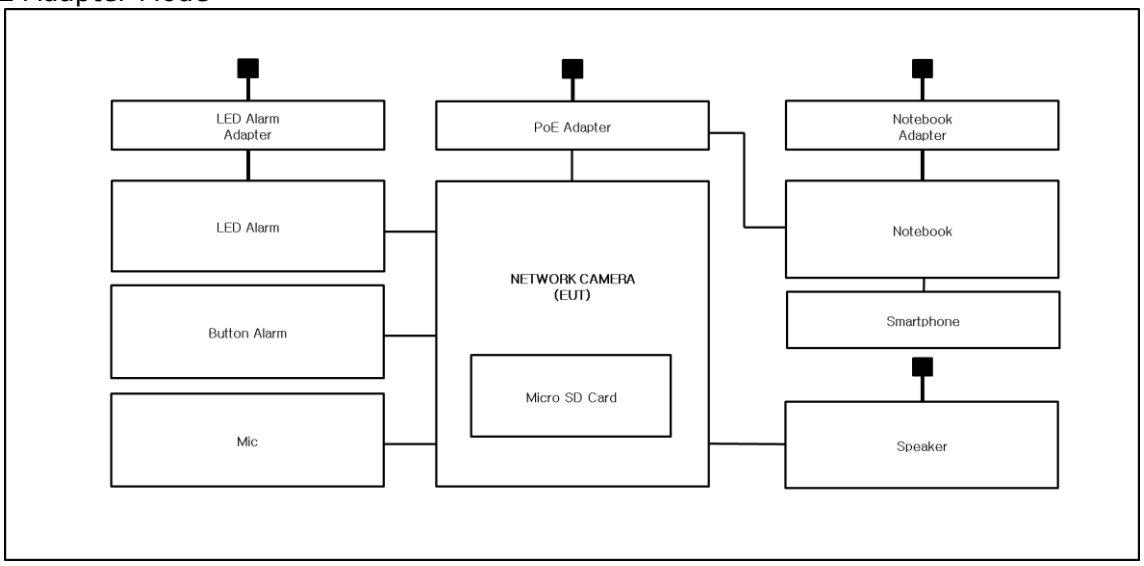
1.8 Configuration

■ AC Main
□ DC Main

■ DC Adapter Mode



■ PoE Adapter 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, Yeoju-si, Gyeonggi-do, 12658, Korea. 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 , 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-20056, C-20036, T-20040, G-20057
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 001633 0004

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☒ ANSI C63.4a-2017	☒ Class A	☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17	☐ Class A	☐ Class B
☒ ANSI C63.4a-2017	☒ Class A	☐ Class B

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2.1 Conducted Emissions at Mains Power Ports

Test Date
Nov. 18, 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: (22,9 ± 0,1) ℃
Relative Humidity: (43,9 ± 0,1) % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Nov. 19, 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, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions
Temperature: (22,9 ± 0,1) ℃
Relative Humidity: (43,6 ± 0,2) % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Nov. 19, 2021

Test Location
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
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	12, 29, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021

Test Conditions
Temperature: (22,9 ± 0,1) ℃
Relative Humidity: (43,6 ± 0,1) % R.H.

Frequency Range of Measurement
1 ㎓ to 5 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:
☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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APPENDIX A – TEST DATA

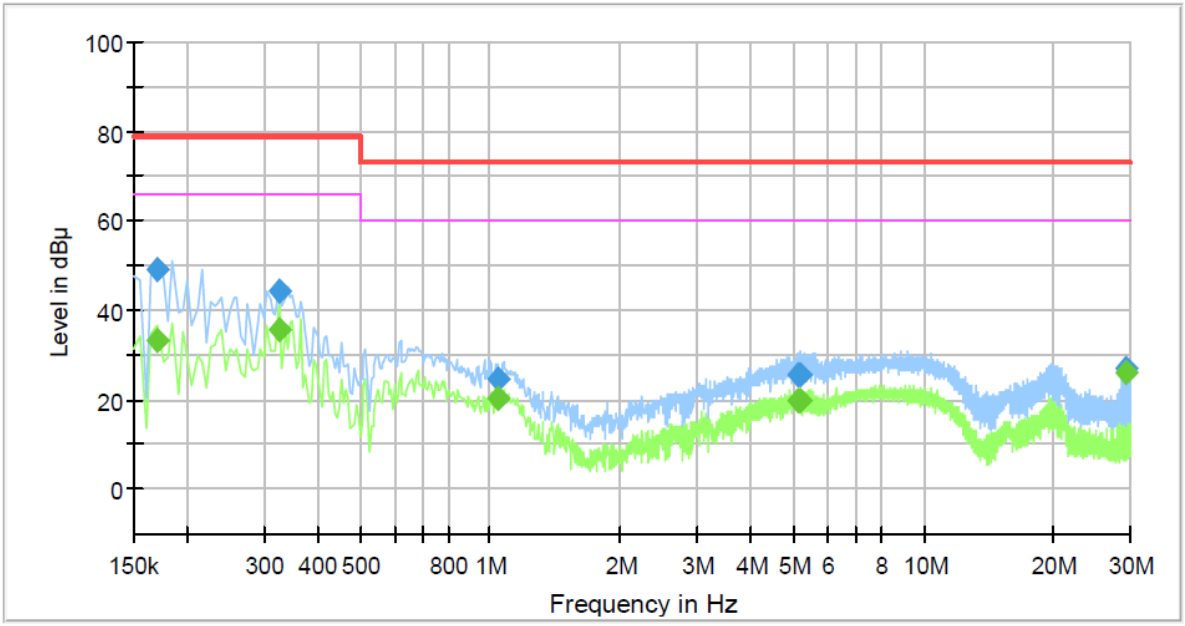
Conducted Emissions at Mains Power Ports

■ DC Adapter Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNV-7011RC
Phase:	
Mode:	DC Adapter
Operator Name:	KES



Final_Result

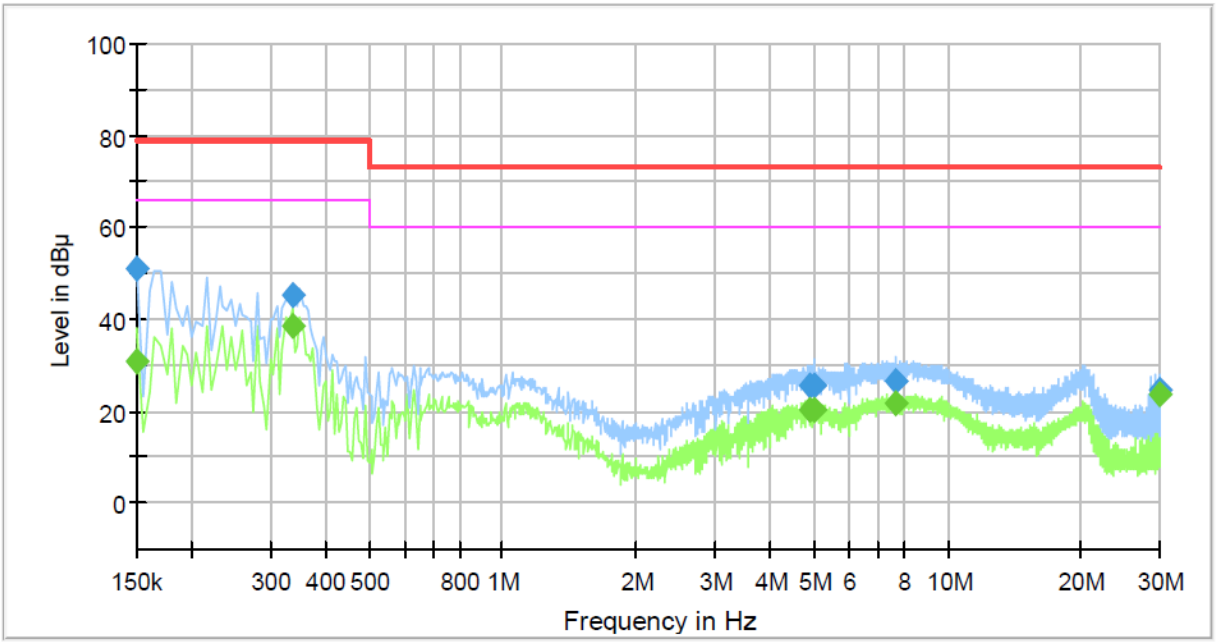
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	33.02	66.00	32.98	1000.0	9.000	L1	19.5
0.170000	49.22	---	79.00	29.78	1000.0	9.000	L1	19.5
0.325000	---	35.41	66.00	30.59	1000.0	9.000	L1	19.6
0.325000	44.11	---	79.00	34.89	1000.0	9.000	L1	19.6
1.035000	---	20.43	60.00	39.57	1000.0	9.000	L1	20.1
1.035000	24.79	---	73.00	48.21	1000.0	9.000	L1	20.1
5.125000	---	19.90	60.00	40.10	1000.0	9.000	L1	19.7
5.125000	25.52	---	73.00	47.48	1000.0	9.000	L1	19.7
5.205000	---	19.89	60.00	40.11	1000.0	9.000	L1	19.7
5.205000	25.64	---	73.00	47.36	1000.0	9.000	L1	19.7
29.235000	---	25.88	60.00	34.12	1000.0	9.000	L1	20.4
29.235000	27.06	---	73.00	45.94	1000.0	9.000	L1	20.4

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNV-7011RC
Phase:	
Mode:	DC Adapter
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	---	31.00	66.00	35.00	1000.0	9.000	N	19.4
0.150000	51.23	---	79.00	27.77	1000.0	9.000	N	19.4
0.335000	---	38.33	66.00	27.67	1000.0	9.000	N	19.6
0.335000	45.02	---	79.00	33.98	1000.0	9.000	N	19.6
4.900000	---	20.08	60.00	39.92	1000.0	9.000	N	19.7
4.900000	25.60	---	73.00	47.40	1000.0	9.000	N	19.7
5.000000	---	20.03	60.00	39.97	1000.0	9.000	N	19.7
5.000000	25.59	---	73.00	47.41	1000.0	9.000	N	19.7
7.620000	---	21.85	60.00	38.15	1000.0	9.000	N	19.6
7.620000	26.49	---	73.00	46.51	1000.0	9.000	N	19.6
29.905000	---	23.61	60.00	36.39	1000.0	9.000	N	20.4
29.905000	24.81	---	73.00	48.19	1000.0	9.000	N	20.4

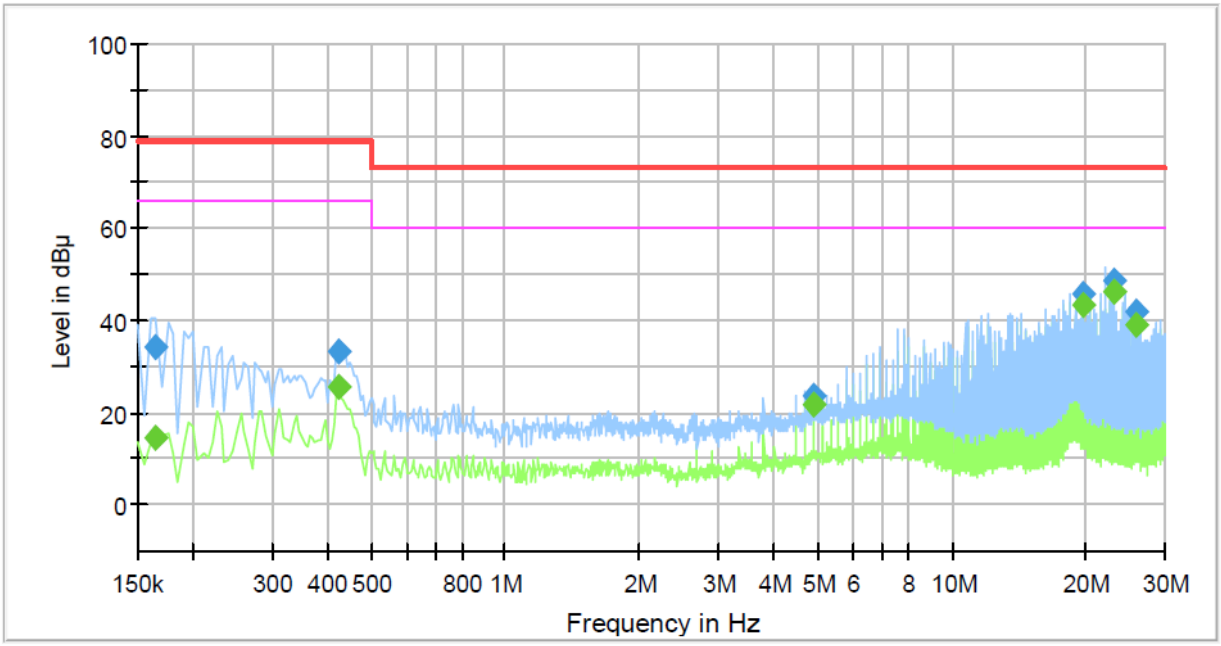
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■ PoE Adapter Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNV-7011RC
Phase:	
Mode:	PoE Adapter
Operator Name:	KES



Final_Result

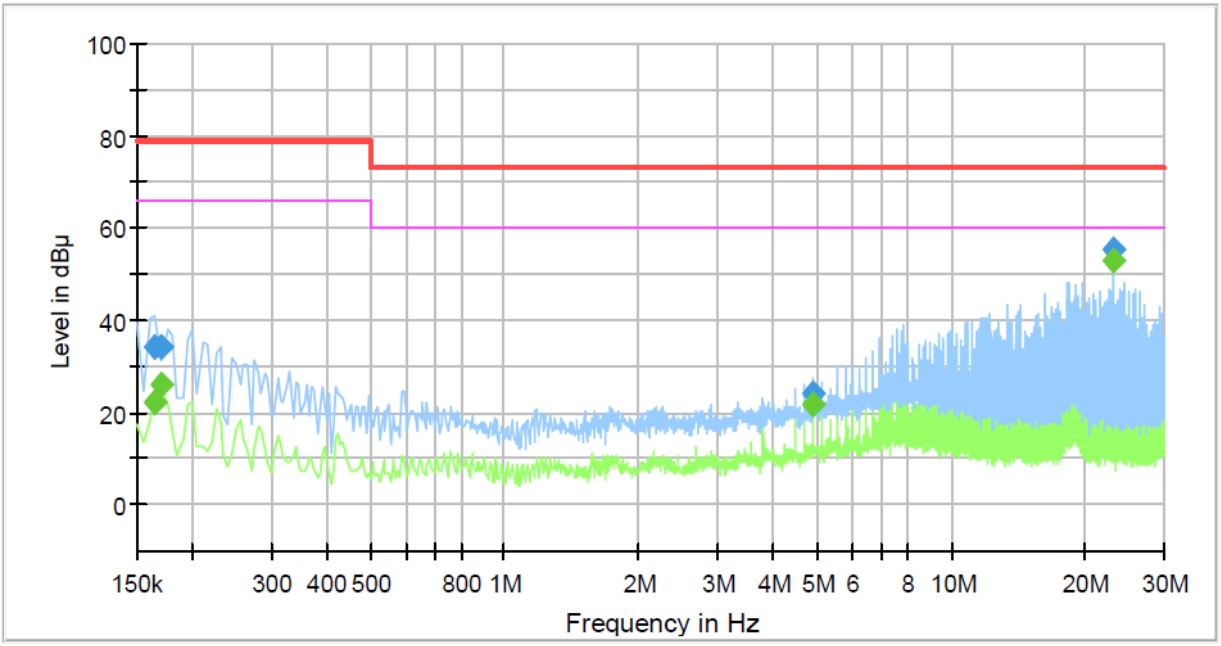
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	34.04	---	79.00	44.96	1000.0	9.000	L1	19.5
0.165000	---	14.54	66.00	51.46	1000.0	9.000	L1	19.5
0.425000	33.15	---	79.00	45.85	1000.0	9.000	L1	19.7
0.425000	---	25.48	66.00	40.52	1000.0	9.000	L1	19.7
4.905000	23.47	---	73.00	49.53	1000.0	9.000	L1	19.7
4.905000	---	21.82	60.00	38.18	1000.0	9.000	L1	19.7
19.710000	45.51	---	73.00	27.49	1000.0	9.000	L1	20.2
19.710000	---	43.41	60.00	16.59	1000.0	9.000	L1	20.2
23.130000	---	46.31	60.00	13.69	1000.0	9.000	L1	20.2
23.130000	48.75	---	73.00	24.25	1000.0	9.000	L1	20.2
25.875000	---	39.17	60.00	20.83	1000.0	9.000	L1	20.2
25.875000	41.86	---	73.00	31.14	1000.0	9.000	L1	20.2

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNV-7011RC
Phase:	
Mode:	PoE Adapter
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	---	22.34	66.00	43.66	1000.0	9.000	N	19.4
0.165000	34.19	---	79.00	44.81	1000.0	9.000	N	19.4
0.170000	---	25.84	66.00	40.16	1000.0	9.000	N	19.4
0.170000	34.31	---	79.00	44.69	1000.0	9.000	N	19.4
4.905000	---	21.79	60.00	38.21	1000.0	9.000	N	19.7
4.905000	24.12	---	73.00	48.88	1000.0	9.000	N	19.7
23.130000	---	52.76	60.00	7.24	1000.0	9.000	N	20.2
23.130000	55.22	---	73.00	17.78	1000.0	9.000	N	20.2

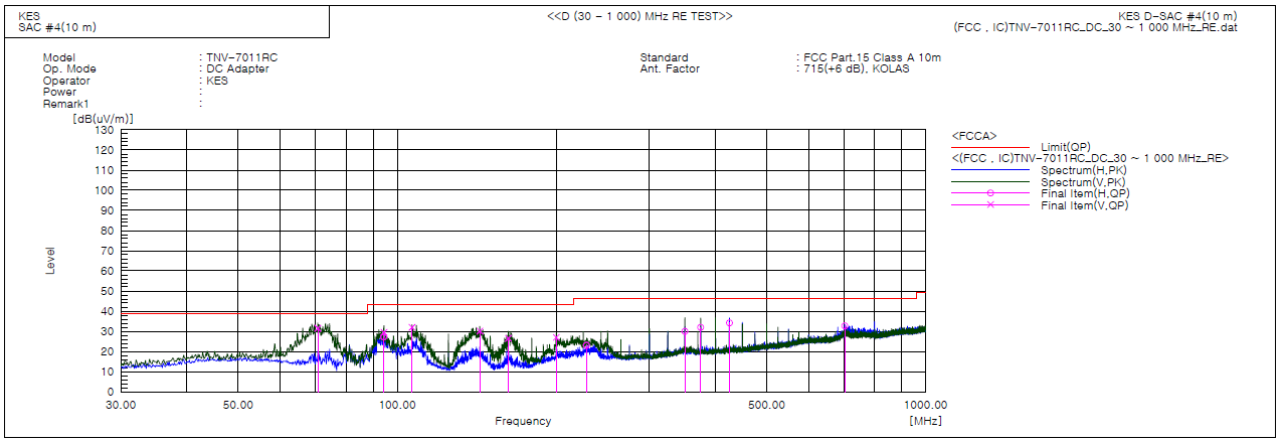
◆ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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Radiated Electric Field Emissions(Below 1 ㎓)

- 47 CFR Part 15, Subpart B

■ DC Adapter Mode

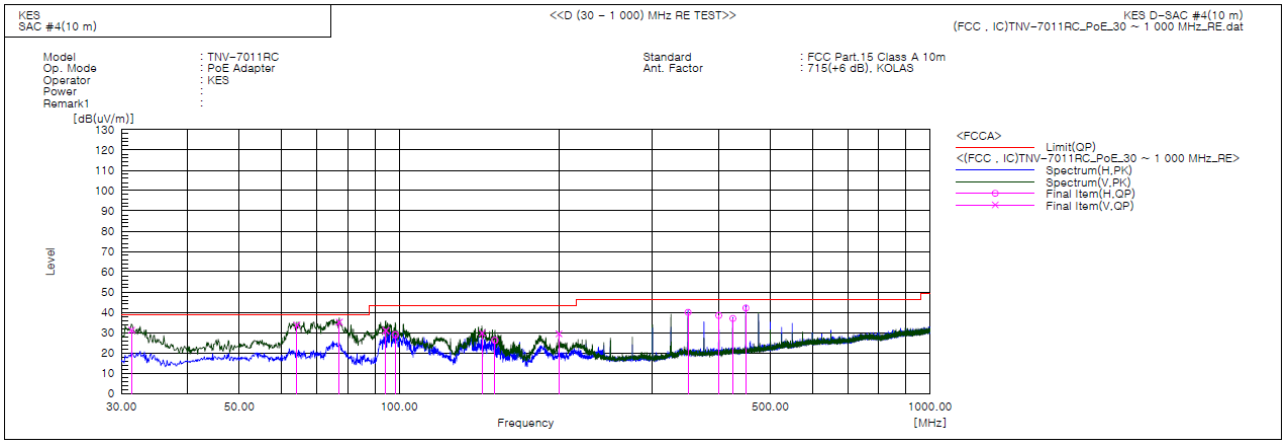


Final Result

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	70.740	V	56.7	-25.2	31.5	39.0	7.5	110.0	81.0	
2	94.263	H	50.9	-23.7	27.2	43.5	16.3	400.0	122.0	
3	94.399	V	53.2	-23.7	29.5	43.5	14.0	107.0	92.0	
4	106.630	V	54.4	-22.4	32.0	43.5	11.5	100.0	56.0	
5	143.259	V	55.5	-25.3	30.2	43.5	13.3	126.0	223.0	
6	162.277	V	51.1	-24.5	26.6	43.5	16.9	143.0	289.0	
7	199.993	V	47.8	-20.8	27.0	43.5	16.5	129.0	162.0	
8	228.001	H	43.1	-20.0	23.1	46.5	23.4	358.0	196.0	
9	349.979	H	45.4	-15.4	30.0	46.5	16.5	393.0	129.0	
10	374.956	H	46.9	-14.9	32.0	46.5	14.5	400.0	341.0	
11	425.033	H	48.0	-13.8	34.2	46.5	12.3	400.0	233.0	
12	702.453	H	40.1	-7.4	32.7	46.5	13.8	265.0	129.0	

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■ PoE Adapter Mode



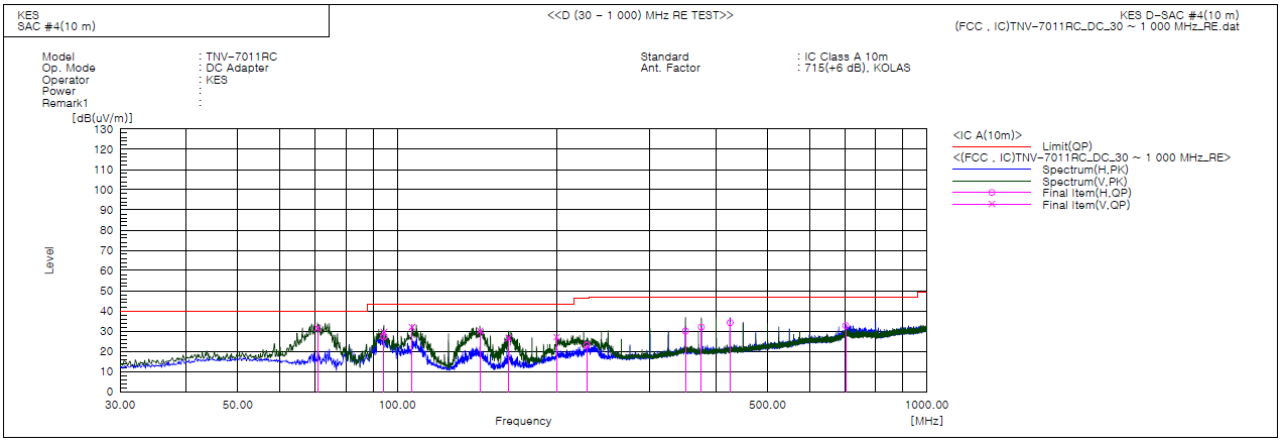
Final Result

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	31.355	V	56.5	-25.2	31.3	39.0	7.7	101.0	271.0	
2	64.196	V	56.8	-23.1	33.7	39.0	5.3	115.0	154.0	
3	77.166	V	62.7	-27.5	35.2	39.0	3.8	133.0	105.0	
4	94.393	V	54.7	-23.7	31.0	43.5	12.5	140.0	68.0	
5	98.385	H	51.8	-22.8	29.0	43.5	14.5	400.0	159.0	
6	143.261	V	55.1	-25.3	29.8	43.5	13.7	100.0	207.0	
7	151.493	H	51.3	-25.1	26.2	43.5	17.3	367.0	226.0	
8	199.993	V	50.2	-20.8	29.4	43.5	14.1	111.0	158.0	
9	349.979	H	55.4	-15.4	40.0	46.5	6.5	377.0	287.0	
10	400.055	H	52.7	-14.3	38.4	46.5	8.1	399.0	119.0	
11	425.033	H	50.8	-13.8	37.0	46.5	9.5	400.0	224.0	
12	450.016	H	55.3	-13.2	42.1	46.5	4.4	266.0	104.0	

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- IC Regulation ICES-003 Issue 7

■ DC Adapter Mode

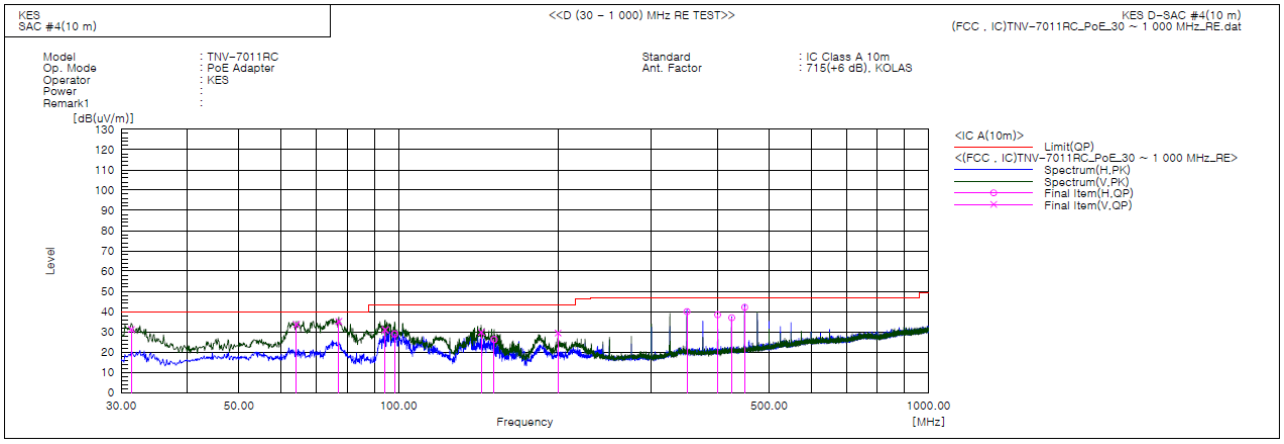


Final Result

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	70.740	V	56.7	-25.2	31.5	40.0	8.5	110.0	81.0	
2	94.263	H	50.9	-23.7	27.2	43.5	16.3	400.0	122.0	
3	94.399	V	53.2	-23.7	29.5	43.5	14.0	107.0	92.0	
4	106.630	V	54.4	-22.4	32.0	43.5	11.5	100.0	56.0	
5	143.259	V	55.5	-25.3	30.2	43.5	13.3	126.0	223.0	
6	162.277	V	51.1	-24.5	26.6	43.5	16.9	143.0	289.0	
7	199.993	V	47.8	-20.8	27.0	43.5	16.5	129.0	162.0	
8	228.001	H	43.1	-20.0	23.1	46.4	23.3	358.0	196.0	
9	349.979	H	45.4	-15.4	30.0	47.0	17.0	393.0	129.0	
10	374.956	H	46.9	-14.9	32.0	47.0	15.0	400.0	341.0	
11	425.033	H	48.0	-13.8	34.2	47.0	12.8	400.0	233.0	
12	702.453	H	40.1	-7.4	32.7	47.0	14.3	265.0	129.0	

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■ PoE Adapter Mode



Final Result

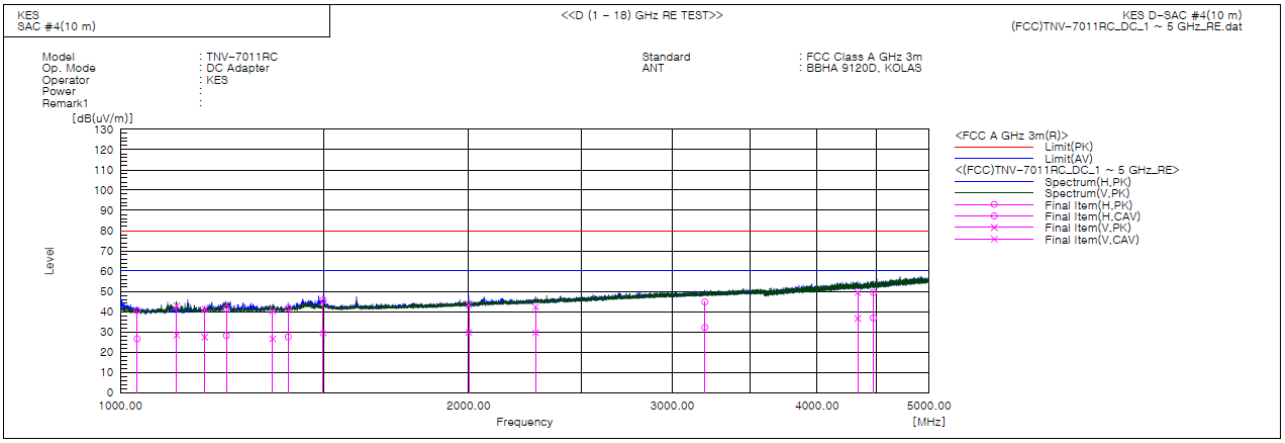
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	31.355	V	56.5	-25.2	31.3	40.0	8.7	101.0	271.0	
2	64.196	V	56.8	-23.1	33.7	40.0	6.3	115.0	154.0	
3	77.166	V	62.7	-27.5	35.2	40.0	4.8	133.0	105.0	
4	94.393	V	54.7	-23.7	31.0	43.5	12.5	140.0	68.0	
5	98.385	H	51.8	-22.8	29.0	43.5	14.5	400.0	159.0	
6	143.261	V	55.1	-25.3	29.8	43.5	13.7	100.0	207.0	
7	151.493	H	51.3	-25.1	26.2	43.5	17.3	367.0	226.0	
8	199.993	V	50.2	-20.8	29.4	43.5	14.1	111.0	158.0	
9	349.979	H	55.4	-15.4	40.0	47.0	7.0	377.0	287.0	
10	400.055	H	52.7	-14.3	38.4	47.0	8.6	399.0	119.0	
11	425.033	H	50.8	-13.8	37.0	47.0	10.0	400.0	224.0	
12	450.016	H	55.3	-13.2	42.1	47.0	4.9	2666.0	104.0	

♦ Calculation – SAC #4(10 m)
Result(QP) [dB(㎶/m)] = (Reading(QP)[dB(㎶)] + c.f[dB(1/m)]
Margin(QP)[dB] = Limit[dB(㎶/m)] - Result(QP) [dB(㎶/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 ㎓)

■ DC Adapter Mode

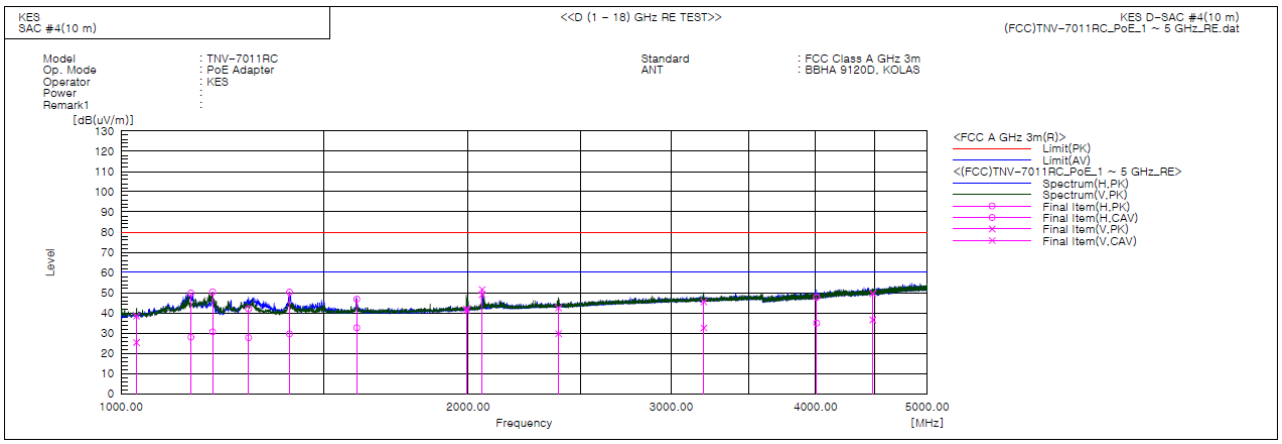


Final Result

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	1033.977	H	44.6	30.6	-4.0	40.6	26.6	80.0	60.0	39.4	33.4	400.0	283.0	
2	1118.777	V	46.2	31.8	-3.4	42.8	28.4	80.0	60.0	37.2	31.6	100.0	327.0	
3	1182.563	V	44.2	30.3	-2.9	41.3	27.4	80.0	60.0	38.7	32.6	144.0	294.0	
4	1234.559	H	44.2	30.7	-2.6	41.6	28.1	80.0	60.0	38.4	31.9	326.0	78.0	
5	1353.906	V	42.2	28.4	-1.8	40.4	26.6	80.0	60.0	39.6	33.4	127.0	27.0	
6	1396.432	H	43.3	29.1	-1.6	41.7	27.5	80.0	60.0	38.3	32.5	400.0	130.0	
7	1497.167	H	46.8	30.2	-1.0	45.8	29.2	80.0	60.0	34.2	30.8	378.0	90.0	
8	2000.096	V	41.6	28.1	1.6	43.2	29.7	80.0	60.0	36.8	30.3	119.0	75.0	
9	2284.705	V	39.2	26.3	3.2	42.4	29.5	80.0	60.0	37.6	30.5	100.0	231.0	
10	3200.606	H	37.3	24.7	7.5	44.8	32.2	80.0	60.0	35.2	27.8	380.0	149.0	
11	4338.519	V	36.7	23.9	12.7	49.4	36.6	80.0	60.0	30.6	23.4	121.0	205.0	
12	4475.429	H	36.3	23.7	13.2	49.5	36.9	80.0	60.0	30.5	23.1	297.0	268.0	

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■ PoE Adapter 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	1031.338	V	42.4	29.4	-4.0	38.4	25.4	80.0	60.0	41.6	34.6	106.0	86.0	
2	1149.591	H	53.0	31.2	-3.2	49.8	28.0	80.0	60.0	30.2	32.0	400.0	90.0	
3	1200.637	H	53.2	33.4	-2.8	50.4	30.6	80.0	60.0	29.6	29.4	394.0	86.0	
4	1290.117	H	44.1	30.0	-2.2	41.9	27.8	80.0	60.0	38.1	32.2	274.0	75.0	
5	1399.944	H	51.8	31.1	-1.5	50.3	29.6	80.0	60.0	29.7	30.4	400.0	249.0	
6	1600.861	H	47.2	33.0	-0.4	46.8	32.6	80.0	60.0	33.2	27.4	400.0	353.0	
7	1992.910	V	40.4	39.6	1.6	42.0	41.2	80.0	60.0	38.0	18.8	127.0	131.0	
8	2055.682	V	49.7	47.2	1.9	51.6	49.1	80.0	60.0	28.4	10.9	110.0	275.0	
9	2394.807	V	38.7	25.9	3.8	42.5	29.7	80.0	60.0	37.5	30.3	139.0	309.0	
10	3200.772	V	37.9	25.0	7.5	45.4	32.5	80.0	60.0	34.6	27.5	247.0	11.0	
11	4008.729	H	36.5	23.7	11.2	47.7	34.9	80.0	60.0	32.3	25.1	342.0	138.0	
12	4484.005	V	36.4	23.4	13.2	49.6	36.6	80.0	60.0	30.4	23.4	100.0	34.0	

♦ Calculation

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

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

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

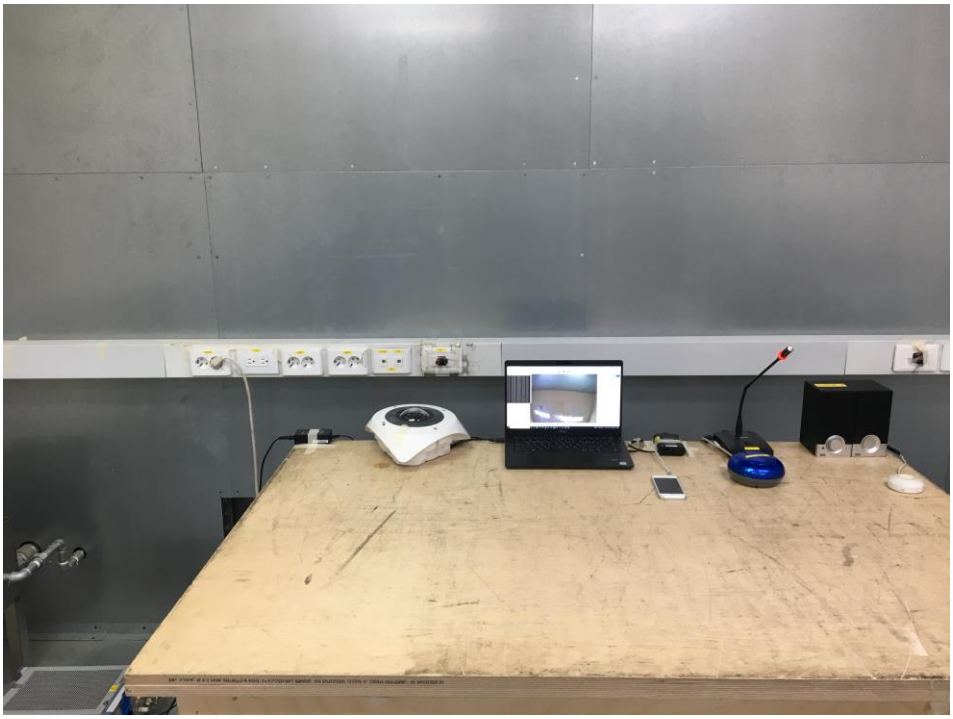
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

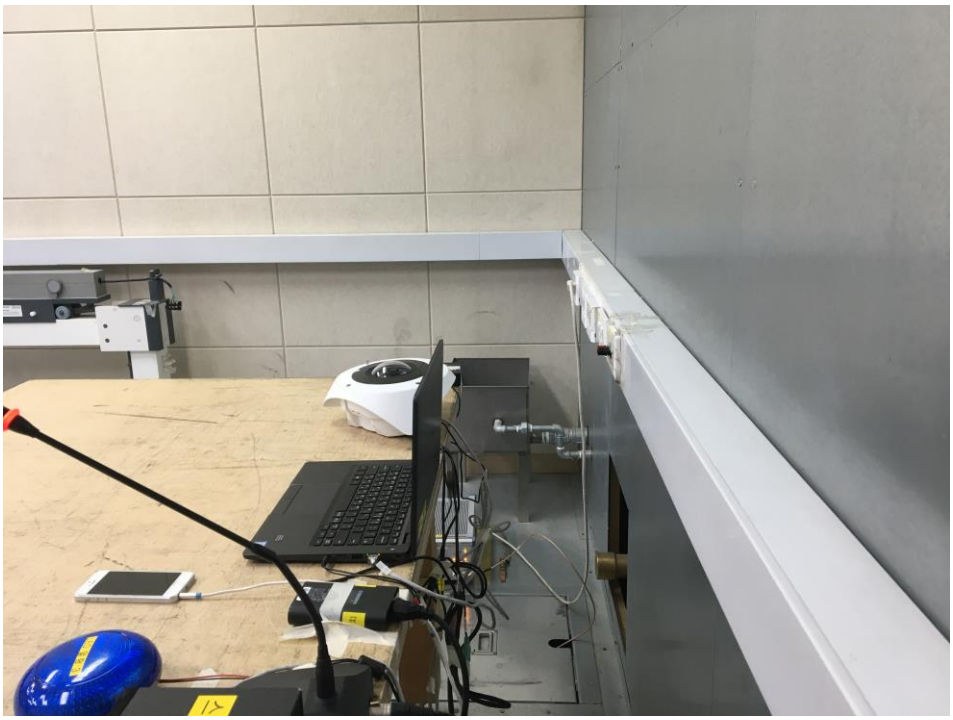
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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Adapter Mode

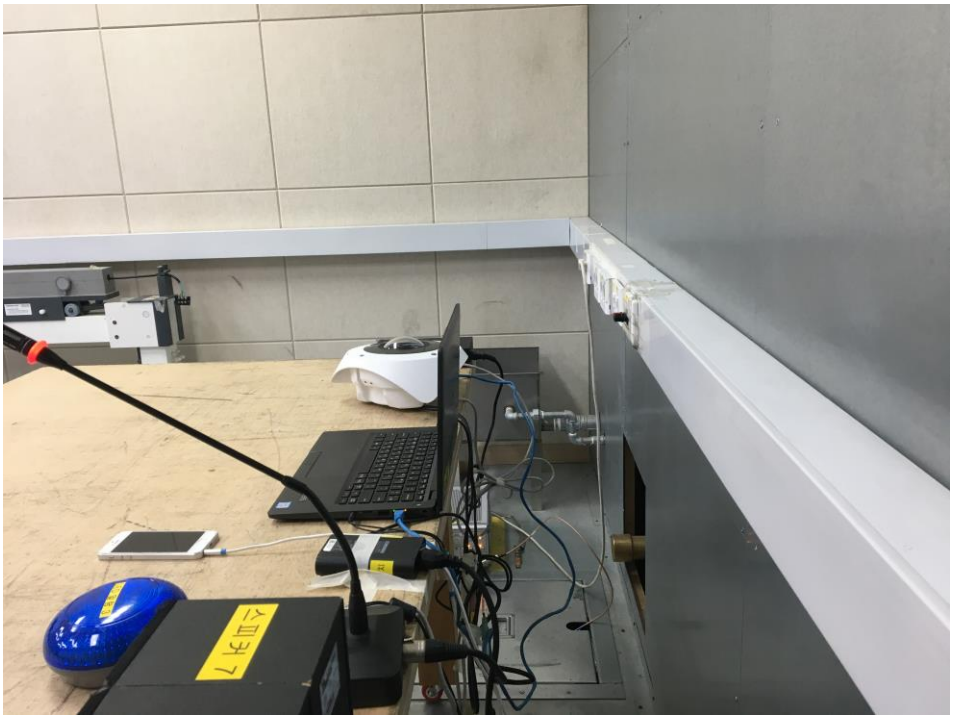




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■ PoE Adapter Mode

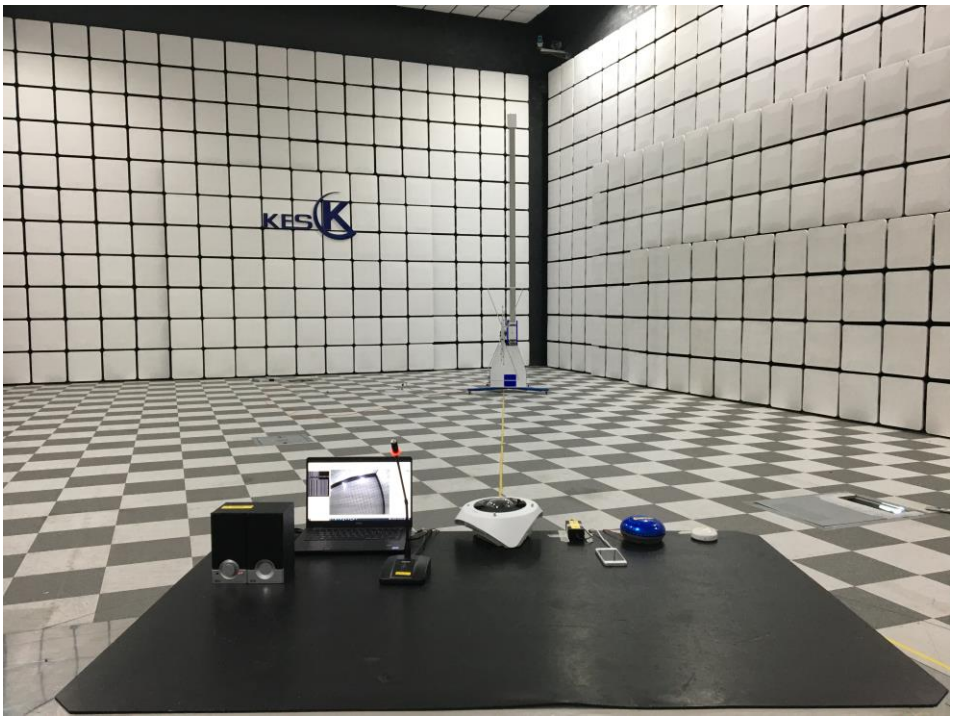


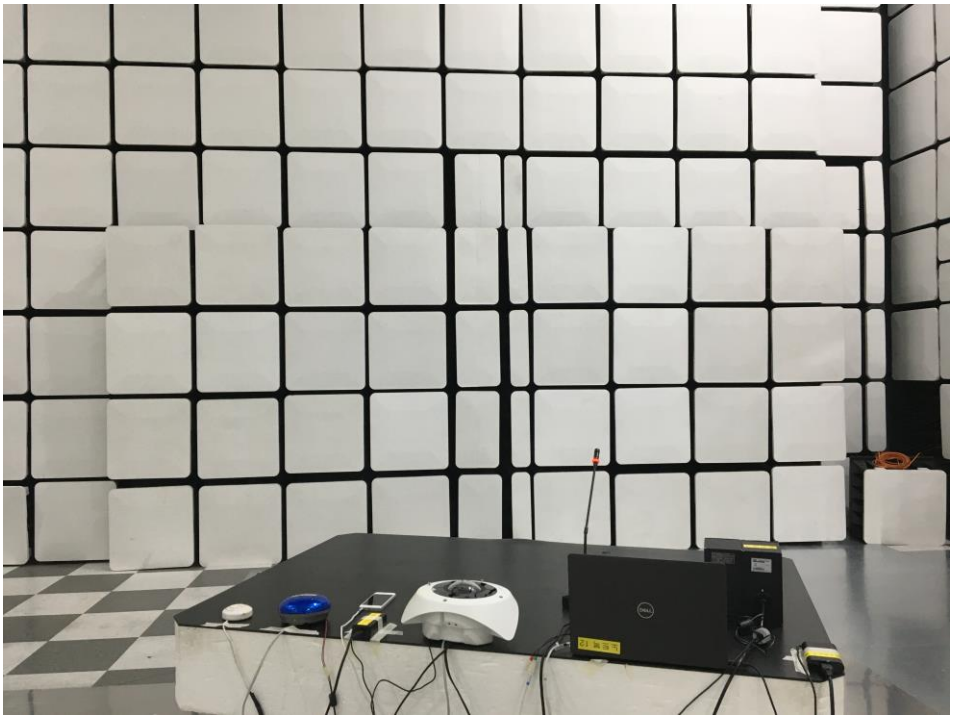


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Radiated Electric Field Emissions(Below 1 ㎓)

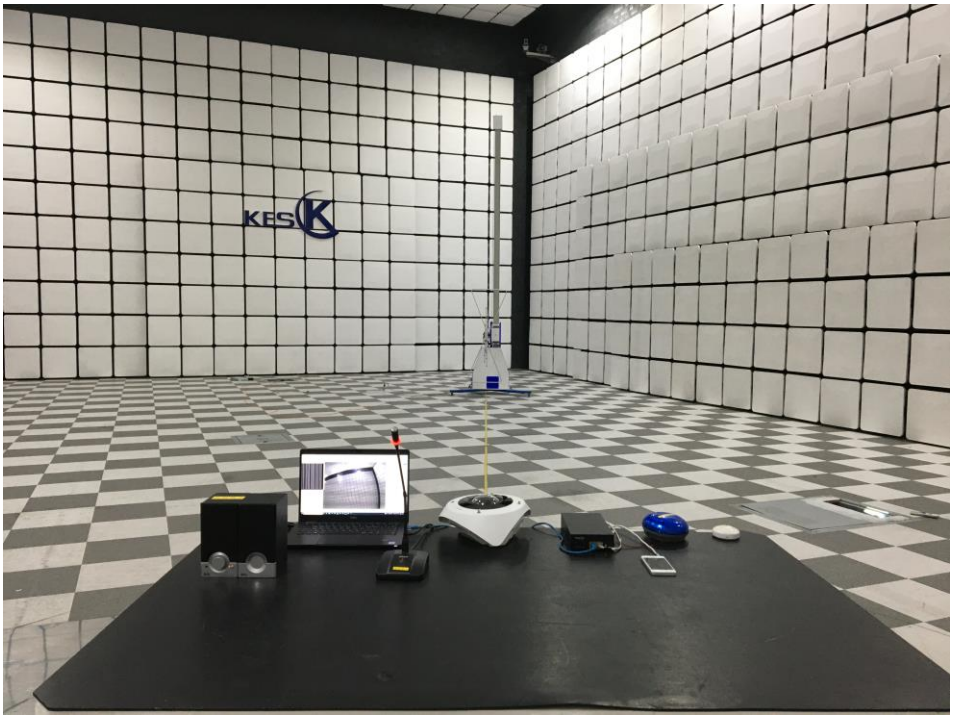
■ DC Adapter Mode

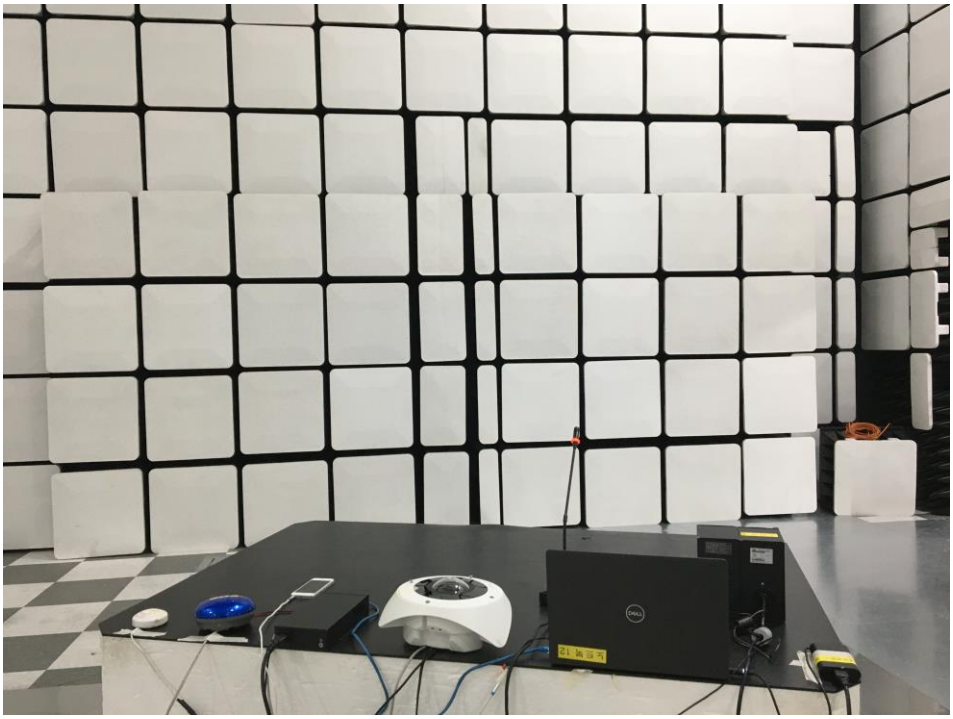




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■ PoE Adapter Mode

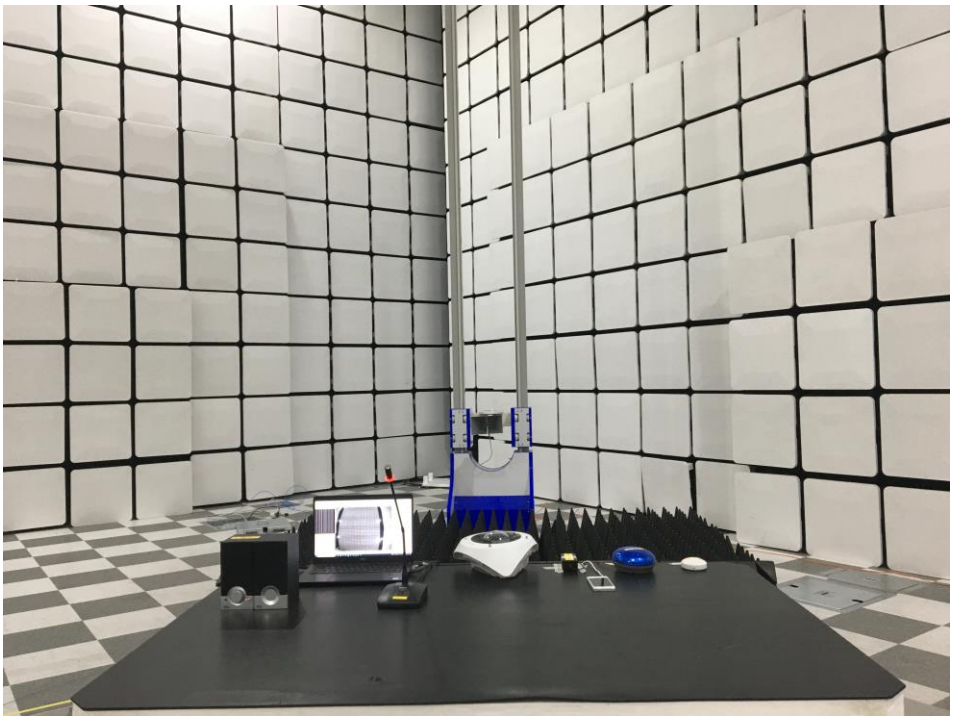


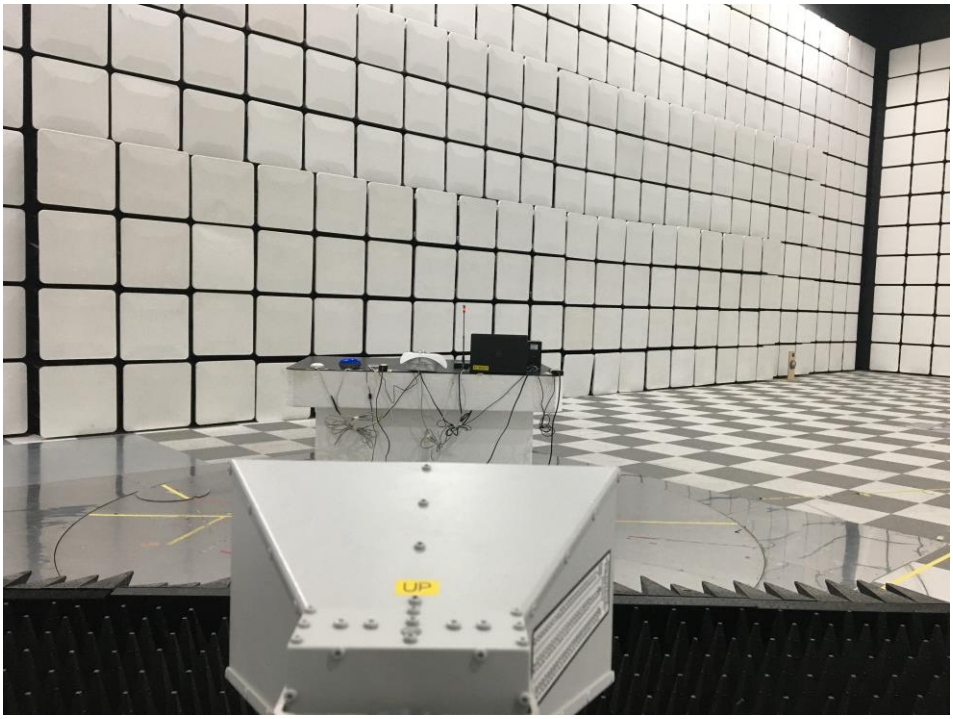


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Radiated Electric Field Emissions(Above 1 ㎓)

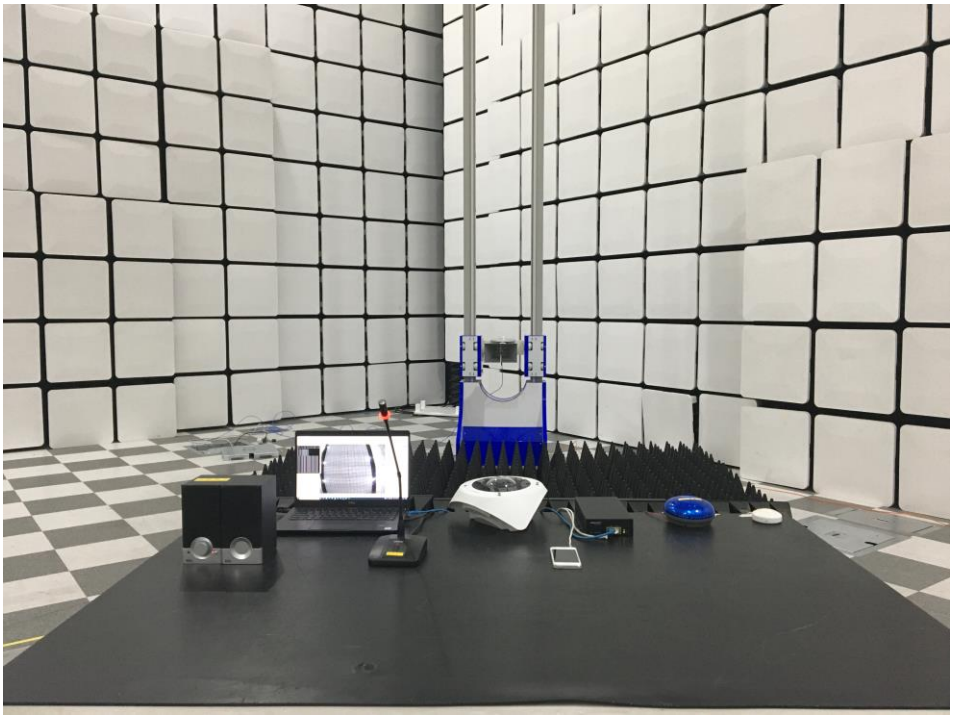
■ DC Adapter Mode

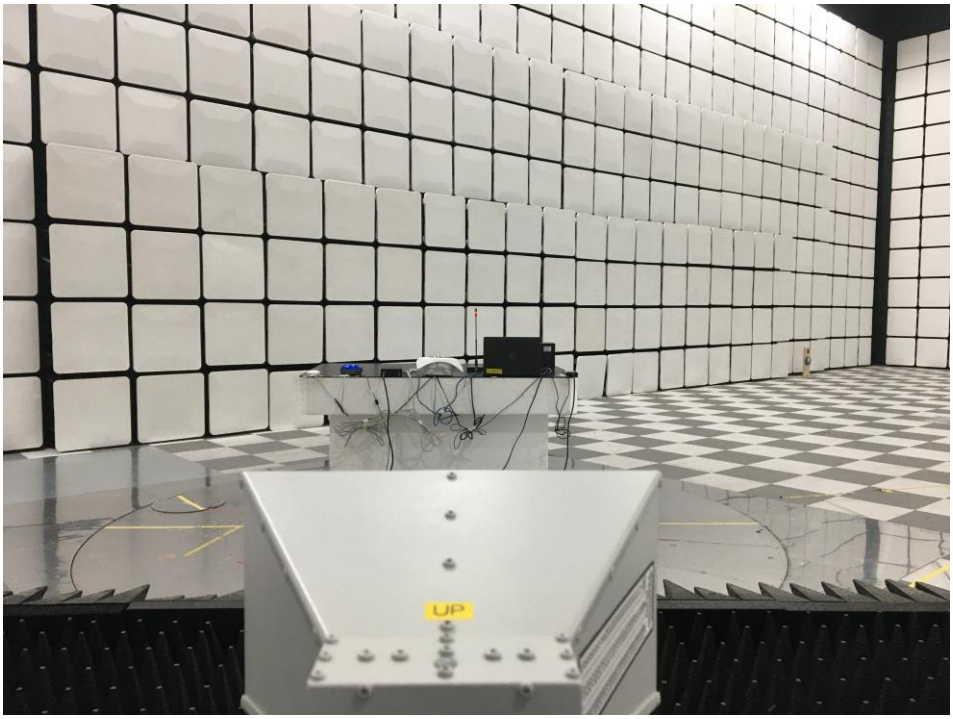




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■ PoE Adapter Mode





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EUT External Photographs

(Top)



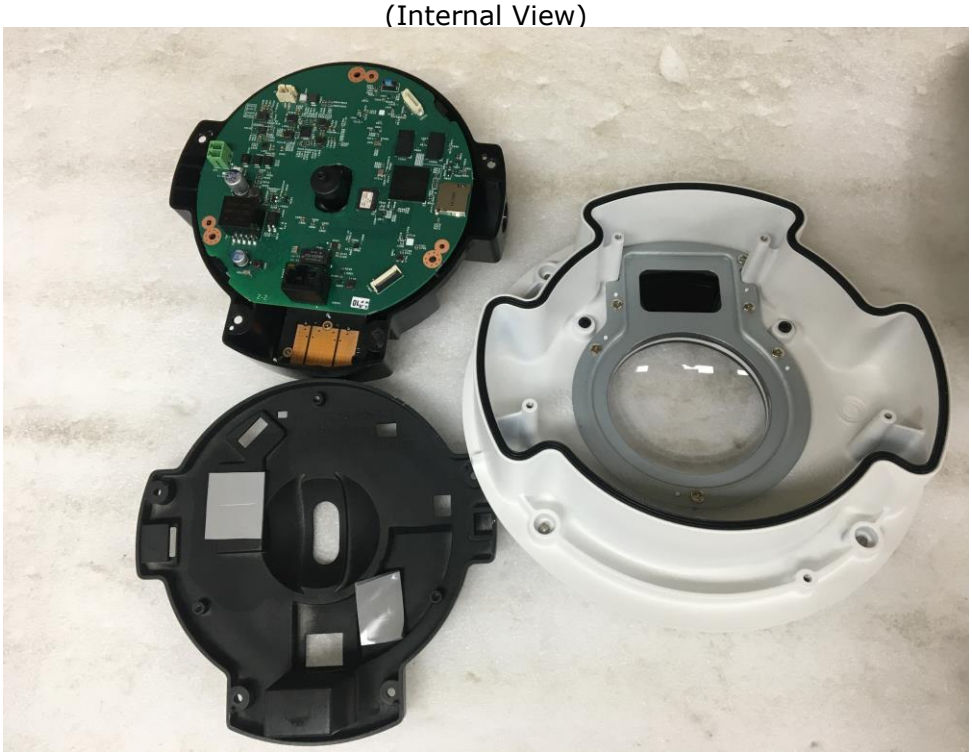
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EUT Internal Photographs

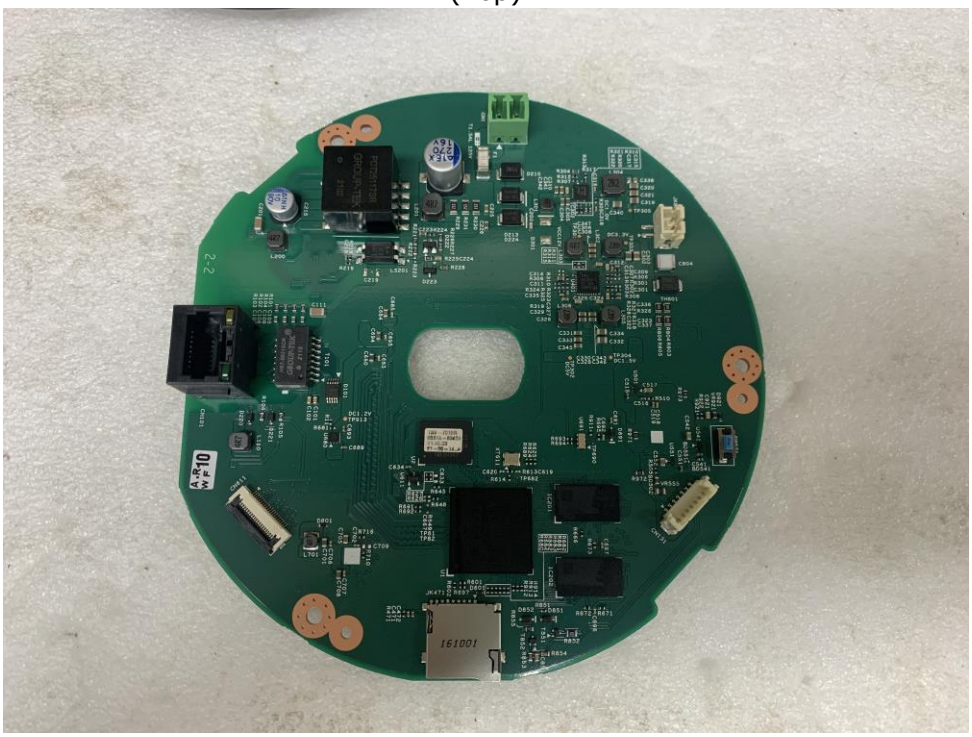
(Internal View)



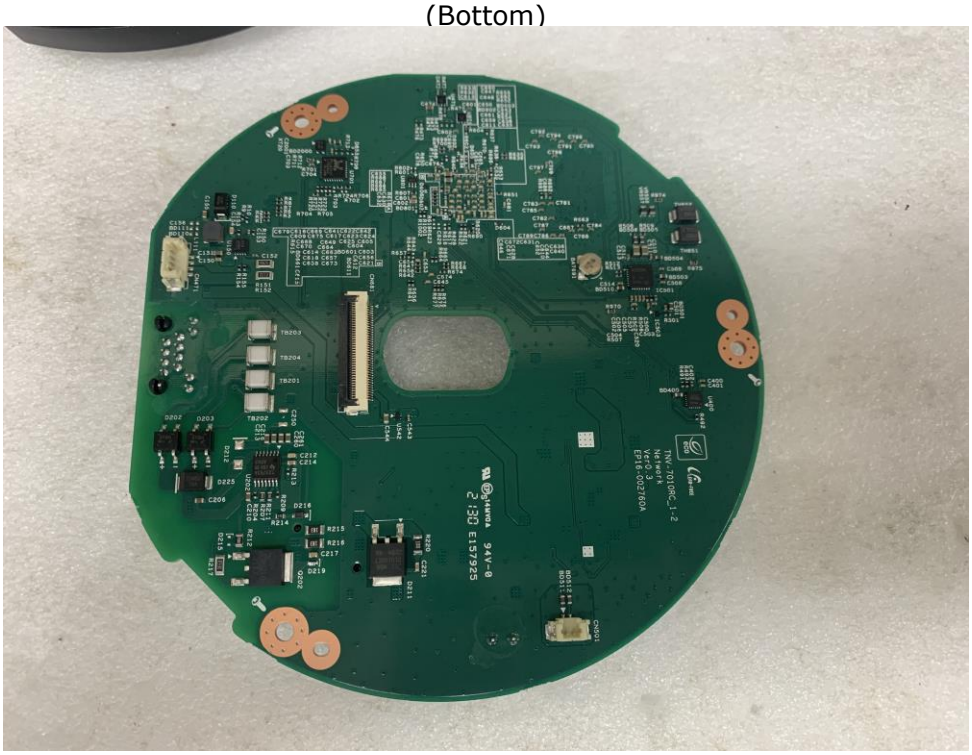
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EUT Internal View – Board 1

(Top)



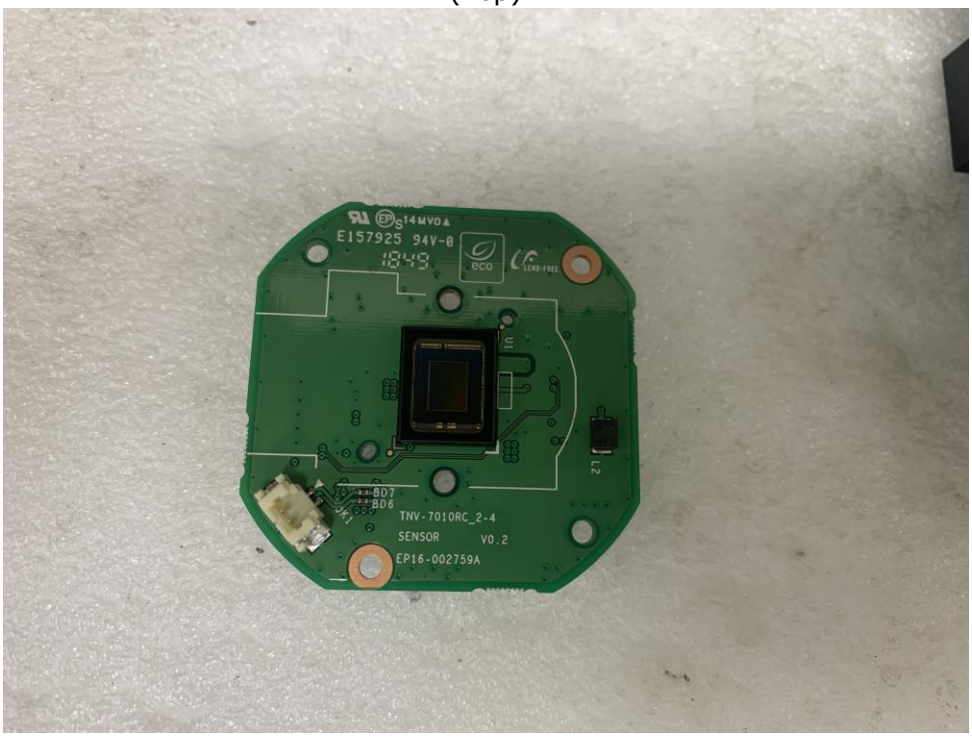
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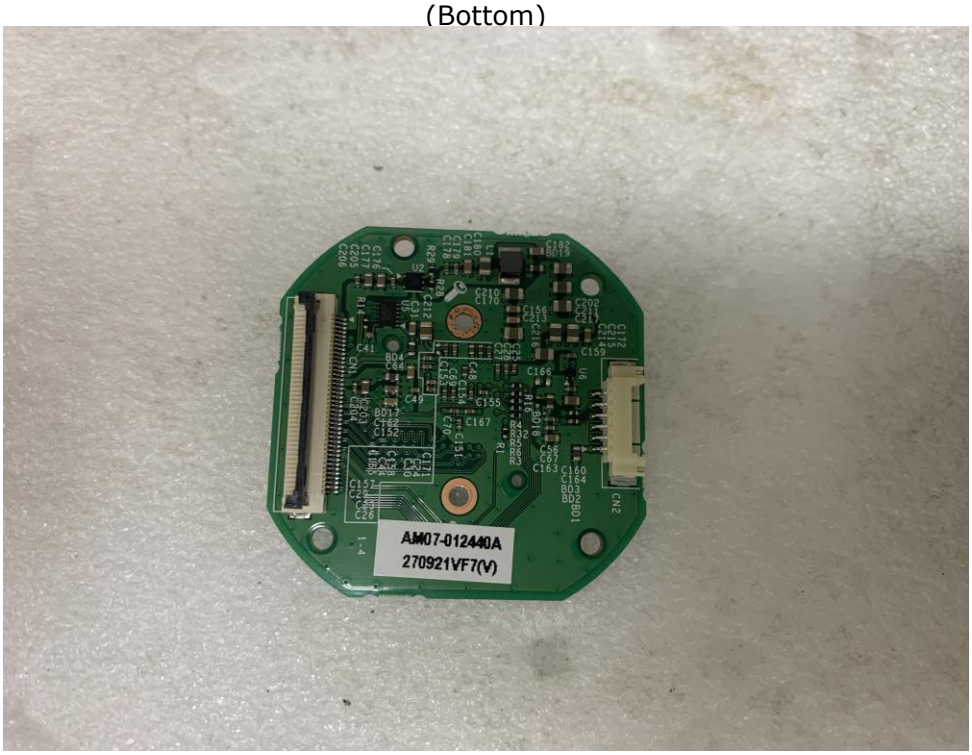
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EUT Internal View – Board 2

(Top)



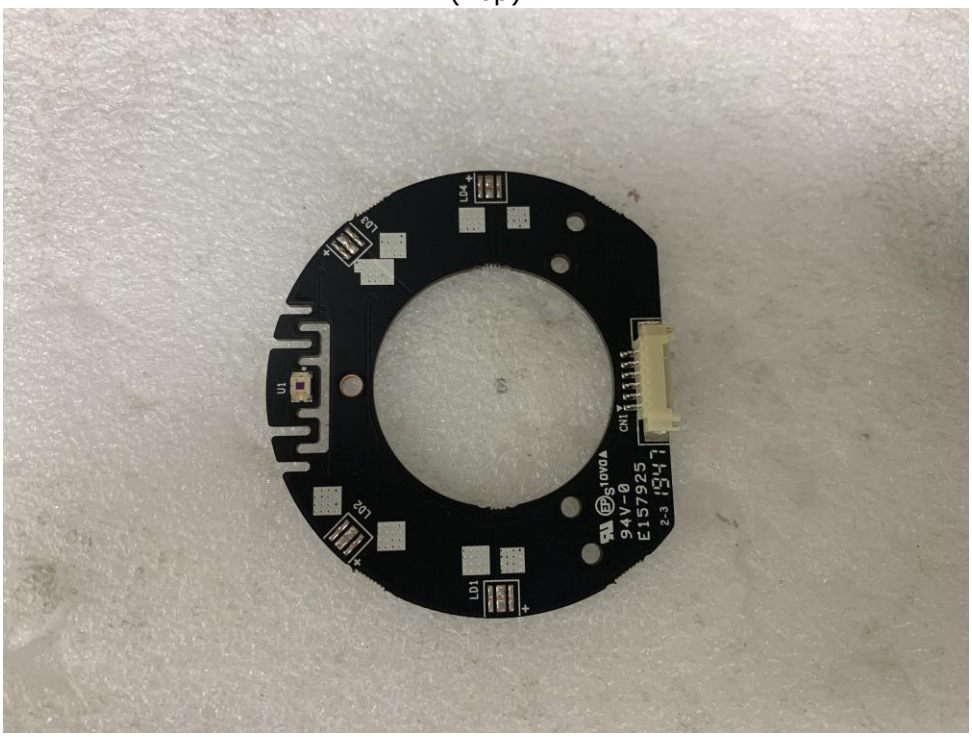
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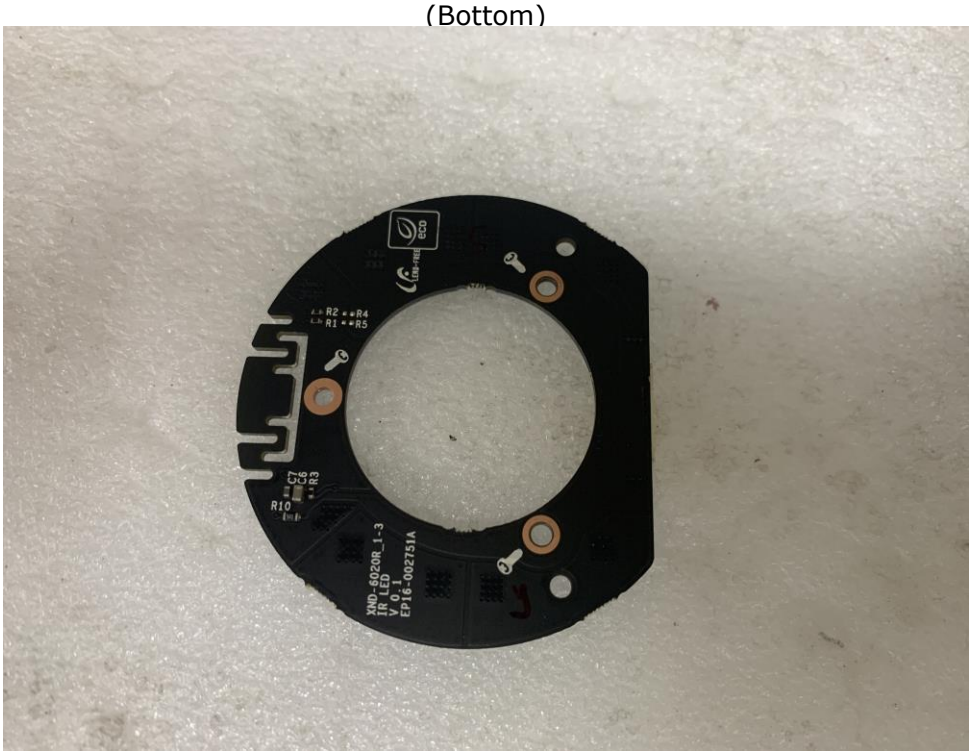
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EUT Internal View – Board 3

(Top)



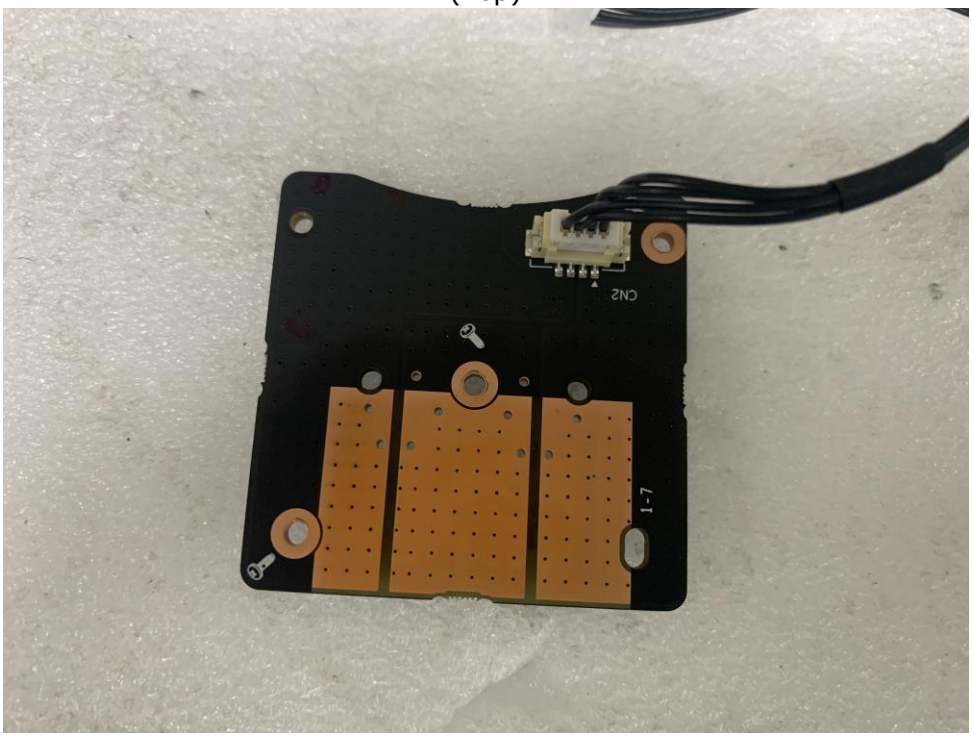
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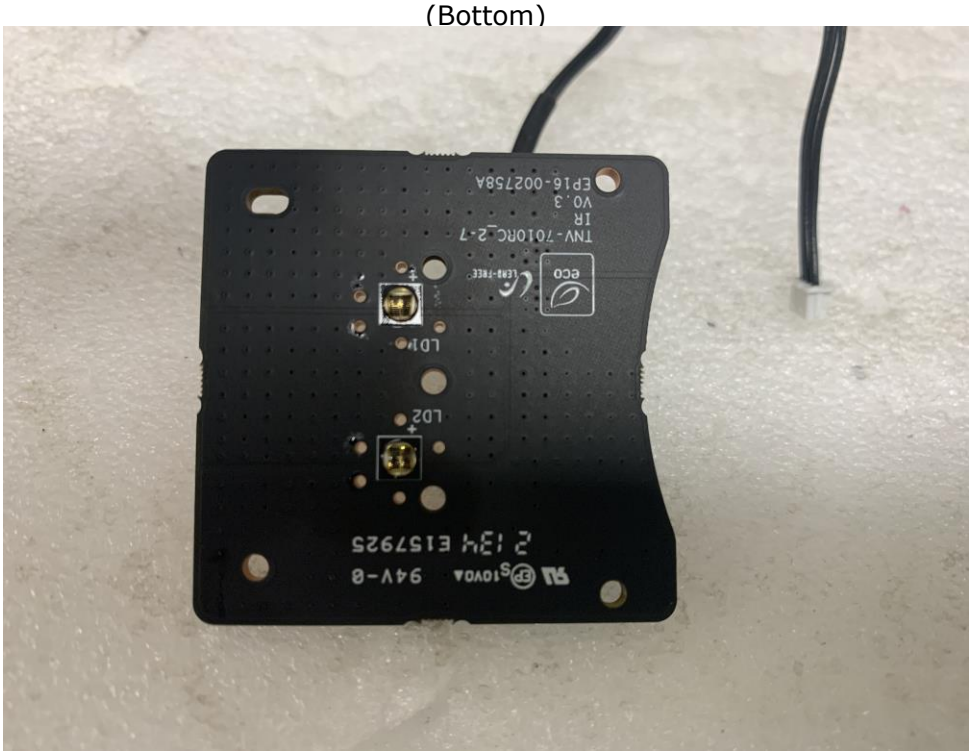
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EUT Internal View – Board 4

(Top)

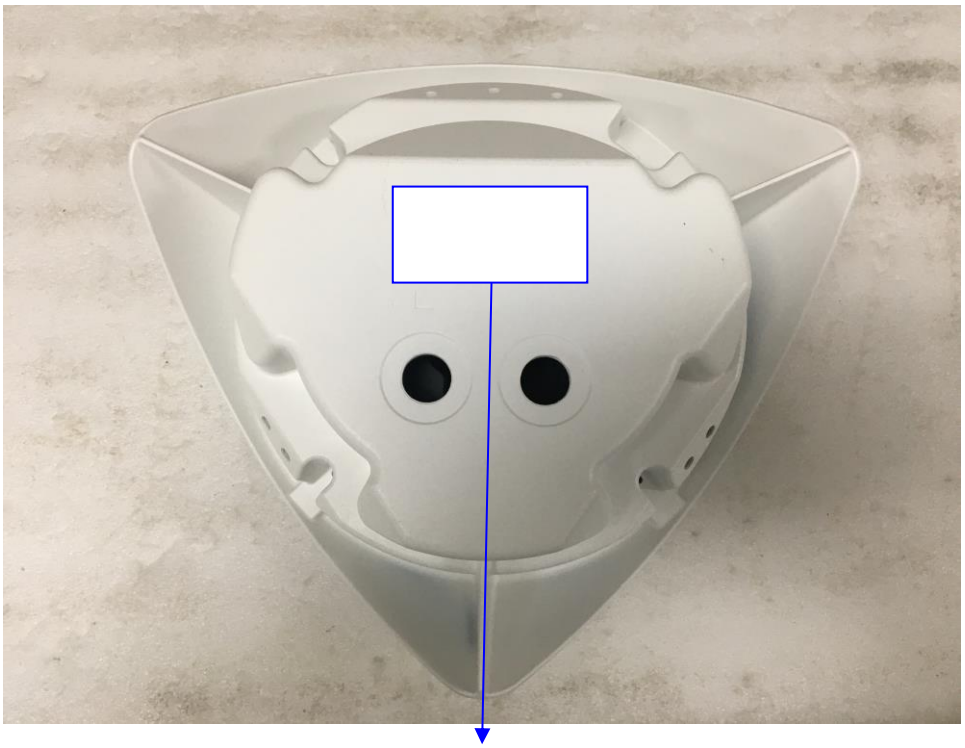


(Bottom)



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Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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