



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-18T0347

Date of Issue : Jun. 25, 2018

Product name : NETWORK CAMERA

Model/Type No. : PNM-9000VQ

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)

Equipment authorization : ☐ Declaration of Conformity
☒ Verification
☐ Certification

Date of Receipt : Jun. 08, 2018

Test date : Jun. 09, 2018

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Kang Hyeon, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

**KES Co., Ltd.**

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This test report is not related to KOLAS.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 25, 2018	KES-E1-18T0347	Issued

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1.0 General Product Description

Main Specifications of EUT are:

	PNM-9000VQ
Video	
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
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 (Electrical) / Color / B/W
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR
Wide Dynamic Range	150dB(2MP), 120dB(5MP)
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Off / Auto / Manual
Motion Detection	Off/ On(8ea, 8point Polygonal zones)
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)
Contrast	level adjustment
LDC	On/Off (5 levels with Min/Max)

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Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital Zoom	24X
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Video Analytics	Tampering, Loitering, Directional Detection, Fog&Dust Detection, Virtual Line, Enter/Exit, Appear / Disappear, Face Detection, Motion Detection
Network	
Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	[2MP] 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240 [5MP] 2560 x 1920, 2560 x 1440, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 720 x 576, 720 x 480, 640 x 480, 320 x 240
Max. Framerate	H.265/H.264 : 2M Max. 60fps, 5M 30fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
WiseStream II	Support
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 MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
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,

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	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 4slot (Each CH) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. Local PC for Instant Recording
Application Programming Interface	ONVIF Profile S SUNAPI(HTTP API)
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 54, MS Edge 38, Mozilla Firefox 49(Windows 64bit only) , Apple Safari 9 (Mac OS X only)

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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 ☐ 230 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	PNM-9000VQ	-	Hanwha Techwin (Tianjin) Co.,Ltd	EUT
POE Adaptor	PT-PSE109GBRO-A	PT1817220025	PROCET	-

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	ProBook4430s	-	HP	-
Notebook Adaptor	SeriesPPP0009H	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
5M LENS Module	SLA-5M3700Q	-	Hanwha Techwin (Tianjin) Co.,Ltd	1EA
5M LENS Module	SLA-5M4600Q	-	Hanwha Techwin (Tianjin) Co.,Ltd	1EA
5M LENS Module	SLA-5M7000Q	-	Hanwha Techwin (Tianjin) Co.,Ltd	2EA



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT) Notebook	RJ-45	POE Adaptor	RJ-45	4.0	U
	-	5M LENS Module	-	-	-
	-	5M LENS Module	-	-	-
	-	5M LENS Module	-	-	-
NETWORK CAMERA (EUT)	RJ-45	POE Adaptor	RJ-45	4.0	U

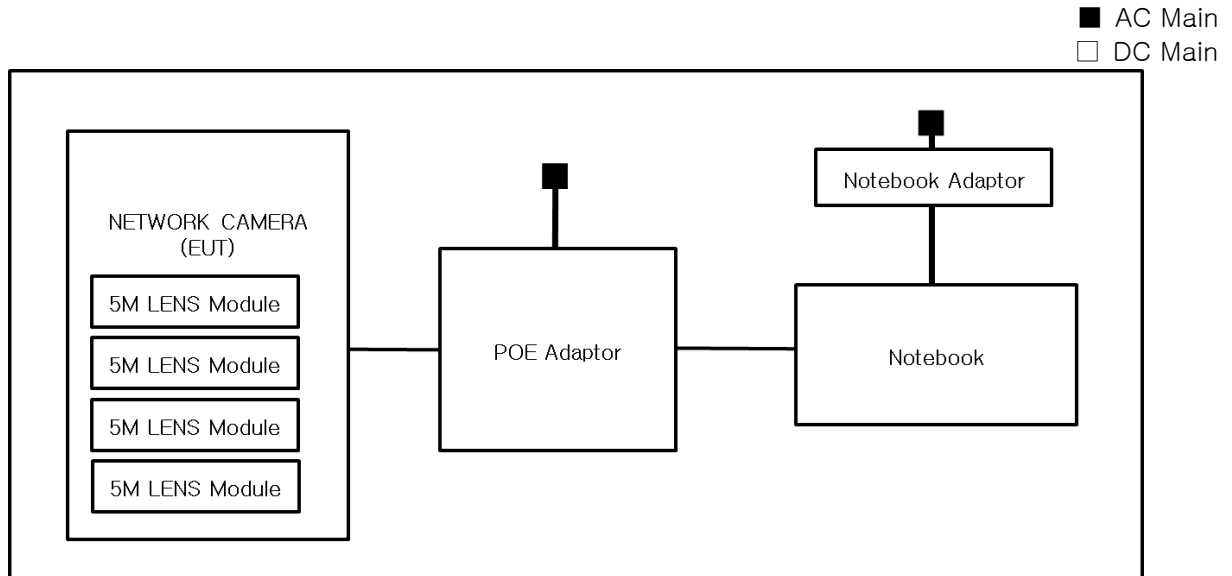
* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test mode	operating
PoE	EUT Monitoring, Ping Test

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

1.8 Configuration



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Aechoic 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-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic 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-Aechoic 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

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547 :2009

☐ EN 55032:2015

☐ 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



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- | | | |
|---|---|----------------------------------|
| ☒ 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 | | |

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2.1 Conducted Emissions Mains Power Ports

Test Date

Jun. 09, 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

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 48,7 % 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. 09. 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, 2019
☐	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	03, 22, 2019
☒	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	08, 10, 2018

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 48,7 % 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.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 09, 2018

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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test Conditions

Temperature: 25,2 °C
Relative Humidity: 57,8 % 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. 09, 2018

Test Location

SEMI ANECHOIC CHAMBER #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	e3	AUDIX	8.083b	-
☒	EMI TEST RECEIVER	ESU26	R & S	100552	04, 18, 2019
☒	PREAMPLIFIER	8449B	AGILENT	8008A01640	01, 11, 2019
☐	ATTENUATOR	8491A	HP	32173	03, 21, 2019
☒	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 18, 2019

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 48,7 % 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.



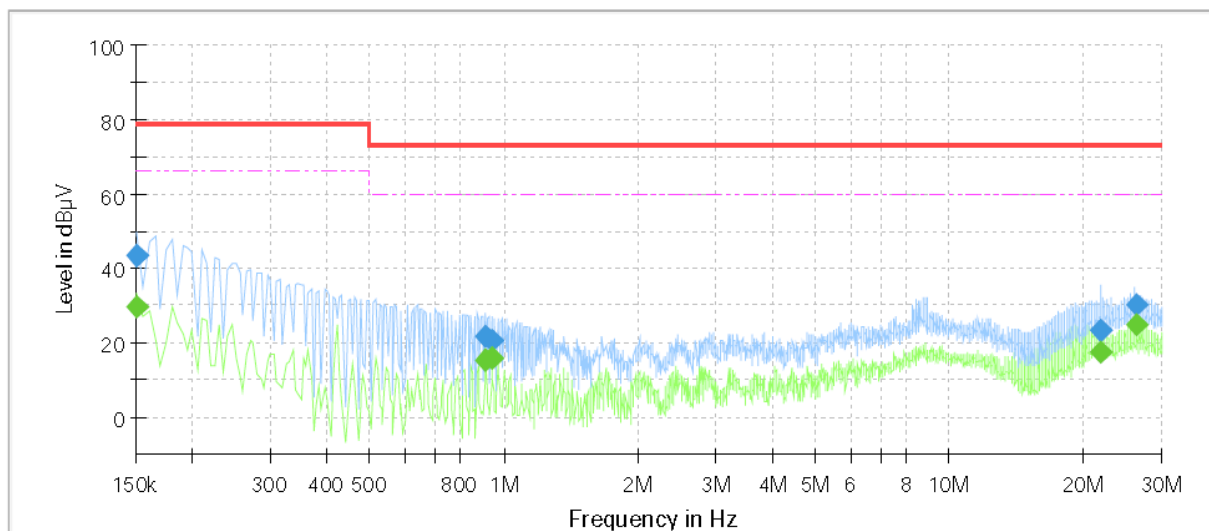
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description: Conducted Emission
Model No.: PNM-9000VQ
Mode: VCCI
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	---	29.60	66.00	36.40	1000.0	9.000	L1	9.6
0.150000	43.19	---	79.00	35.81	1000.0	9.000	L1	9.6
0.910000	---	15.50	60.00	44.50	1000.0	9.000	L1	10.0
0.910000	21.56	---	73.00	51.44	1000.0	9.000	L1	10.0
0.940000	---	16.00	60.00	44.00	1000.0	9.000	L1	10.0
0.940000	20.90	---	73.00	52.10	1000.0	9.000	L1	10.0
21.795000	---	17.66	60.00	42.34	1000.0	9.000	L1	10.4
21.795000	23.21	---	73.00	49.79	1000.0	9.000	L1	10.4
26.445000	---	24.86	60.00	35.14	1000.0	9.000	L1	10.2
26.445000	29.99	---	73.00	43.01	1000.0	9.000	L1	10.2



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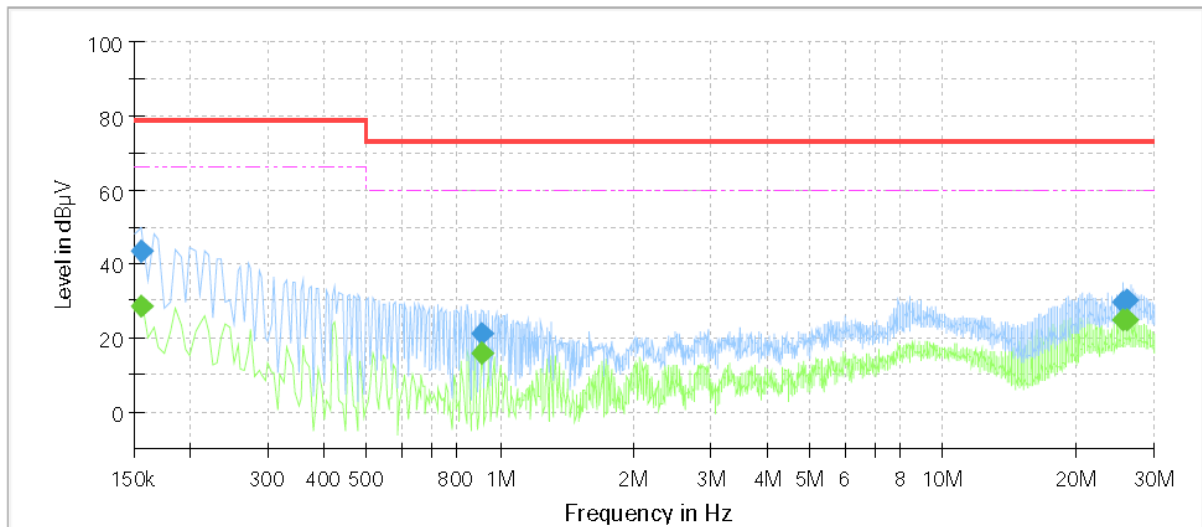
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NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: PNM-9000VQ
Mode: VCCI
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	28.64	66.00	37.36	1000.0	9.000	N	9.6
0.155000	43.48	---	79.00	35.52	1000.0	9.000	N	9.6
0.910000	---	15.66	60.00	44.34	1000.0	9.000	N	9.9
0.910000	20.99	---	73.00	52.01	1000.0	9.000	N	9.9
25.460000	---	24.87	60.00	35.13	1000.0	9.000	N	10.2
25.460000	29.91	---	73.00	43.09	1000.0	9.000	N	10.2
25.950000	---	24.80	60.00	35.20	1000.0	9.000	N	10.2
25.950000	29.93	---	73.00	43.07	1000.0	9.000	N	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 + Pulse Limiter FACTOR))

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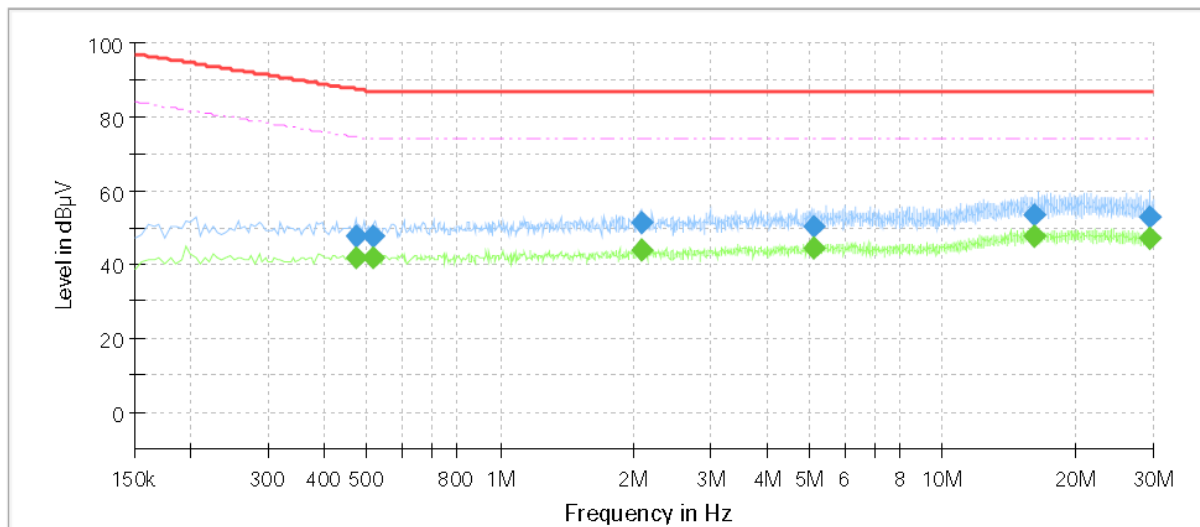
Conducted Emissions at Telecommunication Ports

- RJ-45(PoE)

[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNM-9000VQ
Mode: 10
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.470000	---	41.74	74.51	32.77	1000.0	9.000	Single Line	10.1
0.470000	47.53	---	87.51	39.98	1000.0	9.000	Single Line	10.1
0.515000	---	41.82	74.00	32.18	1000.0	9.000	Single Line	10.1
0.515000	47.50	---	87.00	39.50	1000.0	9.000	Single Line	10.1
2.080000	---	43.81	74.00	30.19	1000.0	9.000	Single Line	10.3
2.080000	51.09	---	87.00	35.91	1000.0	9.000	Single Line	10.3
5.100000	---	44.37	74.00	29.63	1000.0	9.000	Single Line	10.2
5.100000	50.19	---	87.00	36.81	1000.0	9.000	Single Line	10.2
16.110000	---	47.70	74.00	26.30	1000.0	9.000	Single Line	10.1
16.110000	53.47	---	87.00	33.53	1000.0	9.000	Single Line	10.1
29.215000	---	46.91	74.00	27.09	1000.0	9.000	Single Line	10.1
29.215000	52.75	---	87.00	34.25	1000.0	9.000	Single Line	10.1



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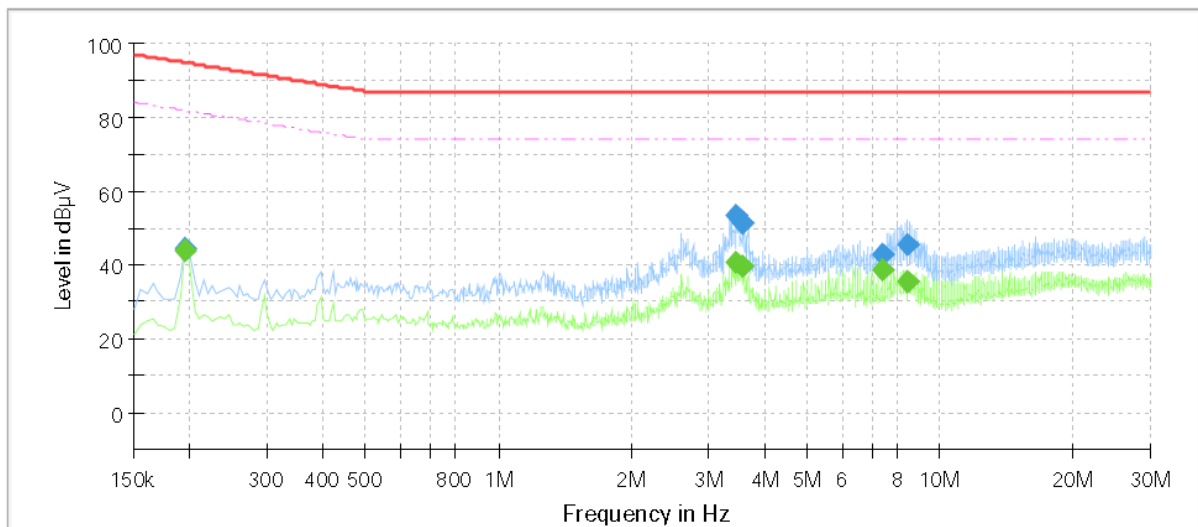
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[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNM-9000VQ
Mode: VCCI
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.195000	---	43.70	81.82	38.12	1000.0	9.000	Single Line	9.6
0.195000	44.31	---	94.82	50.51	1000.0	9.000	Single Line	9.6
3.445000	---	40.66	74.00	33.34	1000.0	9.000	Single Line	9.7
3.445000	53.30	---	87.00	33.70	1000.0	9.000	Single Line	9.7
3.555000	---	39.46	74.00	34.54	1000.0	9.000	Single Line	9.7
3.555000	51.15	---	87.00	35.85	1000.0	9.000	Single Line	9.7
7.375000	---	38.71	74.00	35.29	1000.0	9.000	Single Line	9.4
7.375000	42.93	---	87.00	44.07	1000.0	9.000	Single Line	9.4
8.445000	---	35.40	74.00	38.60	1000.0	9.000	Single Line	9.4
8.445000	45.40	---	87.00	41.60	1000.0	9.000	Single Line	9.4

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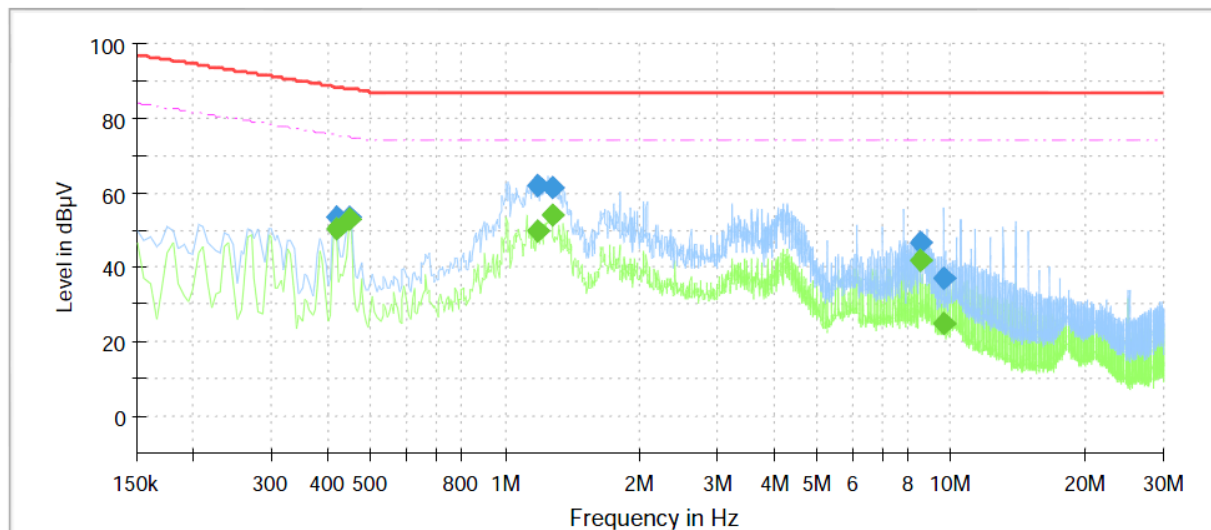
- RJ-45

[10 Mbps]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Telecommunication Emission
PNM-9000VQ
10 - 1
KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.420000	---	50.33	75.45	25.12	1000.0	9.000	Single Line	10.1
0.420000	53.32	---	88.45	35.13	1000.0	9.000	Single Line	10.1
0.445000	---	52.86	74.97	22.11	1000.0	9.000	Single Line	10.1
0.445000	53.63	---	87.97	34.34	1000.0	9.000	Single Line	10.1
1.180000	---	49.88	74.00	24.12	1000.0	9.000	Single Line	10.3
1.180000	62.14	---	87.00	24.86	1000.0	9.000	Single Line	10.3
1.270000	---	54.25	74.00	19.75	1000.0	9.000	Single Line	10.3
1.270000	61.65	---	87.00	25.35	1000.0	9.000	Single Line	10.3
8.540000	---	41.89	74.00	32.11	1000.0	9.000	Single Line	9.9
8.540000	46.58	---	87.00	40.42	1000.0	9.000	Single Line	9.9
9.670000	---	24.76	74.00	49.24	1000.0	9.000	Single Line	9.9
9.670000	36.92	---	87.00	50.08	1000.0	9.000	Single Line	9.9

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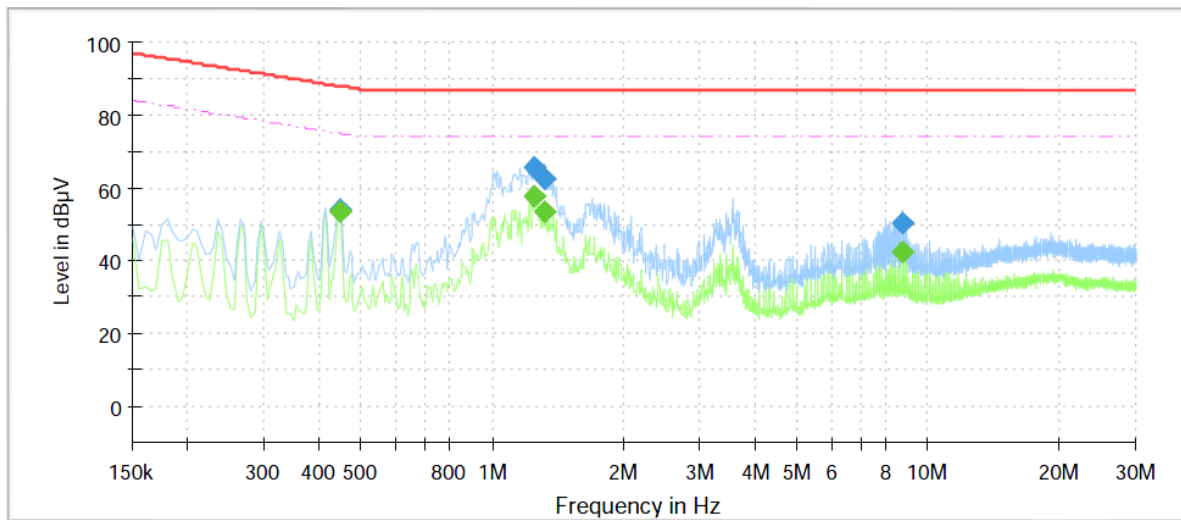
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[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNM-9000VQ
Mode: 1000 - 1
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.445000	---	53.53	74.97	21.44	1000.0	9.000	Single Line	9.5
0.445000	54.01	---	87.97	33.96	1000.0	9.000	Single Line	9.5
1.255000	---	57.83	74.00	16.17	1000.0	9.000	Single Line	9.7
1.255000	65.45	---	87.00	21.55	1000.0	9.000	Single Line	9.7
1.320000	---	53.22	74.00	20.78	1000.0	9.000	Single Line	9.7
1.320000	62.45	---	87.00	24.55	1000.0	9.000	Single Line	9.7
8.740000	---	42.62	74.00	31.38	1000.0	9.000	Single Line	9.4
8.740000	50.40	---	87.00	36.60	1000.0	9.000	Single Line	9.4

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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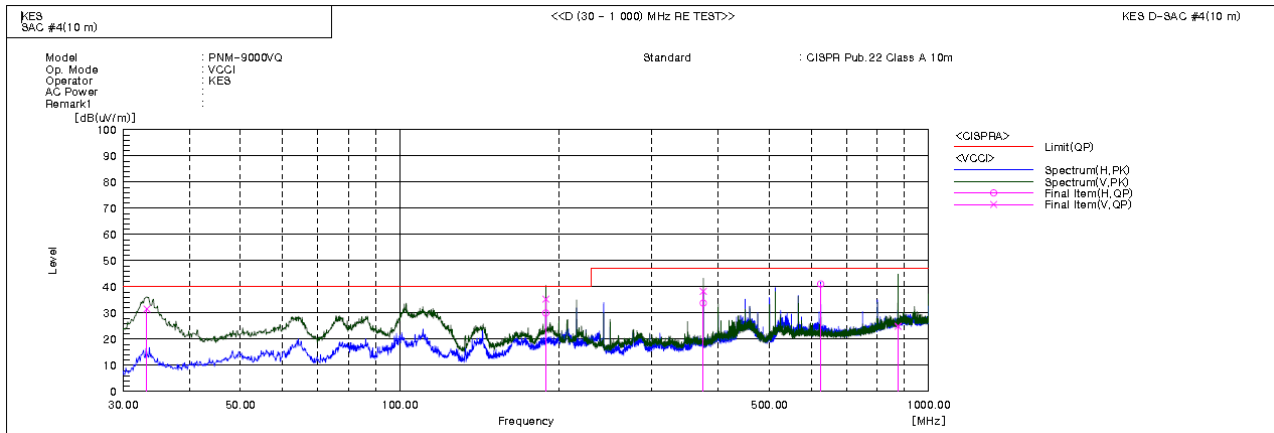


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Radiated Electric Field Emissions(Below 1 GHz)



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP	[dB(1/m)]	QP	QP	QP	[cm]	[deg]	
1	33.274	V 64.2	-32.6	31.6	40.0	8.4	150.0	30.0	
2	188.959	H 58.8	-28.8	30.0	40.0	10.0	400.0	192.0	
3	188.959	V 64.1	-28.8	35.3	40.0	4.7	100.0	26.0	
4	374.956	H 56.2	-22.4	33.8	47.0	13.2	200.0	95.0	
5	374.956	V 60.7	-22.4	38.3	47.0	8.7	100.0	204.0	
6	625.095	H 56.7	-15.6	41.1	47.0	5.9	100.0	206.0	
7	875.113	V 36.8	-11.9	24.9	47.0	22.1	150.0	121.0	

◆ Calculation

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

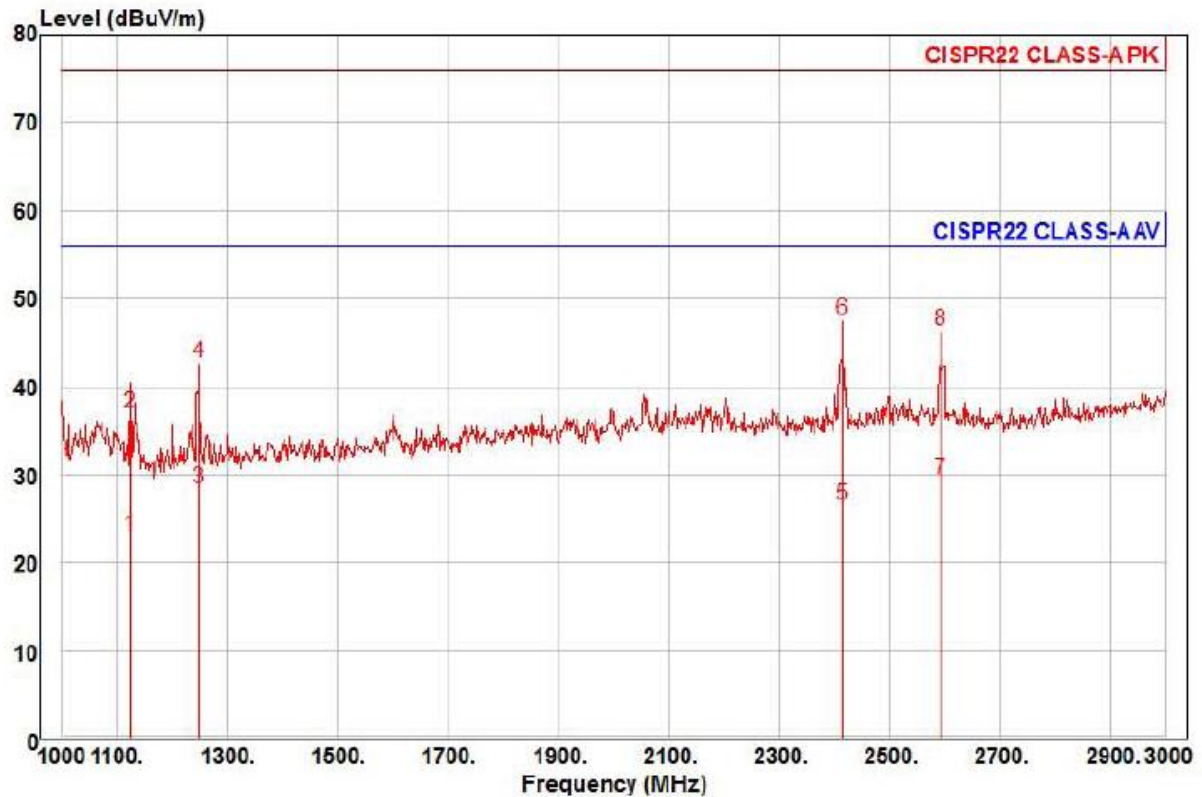
Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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Radiated Electric Field Emissions(Above 1 GHz)



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNM-9000VQ
Mode : VCCI
Memo : (1 ~ 3) GHz

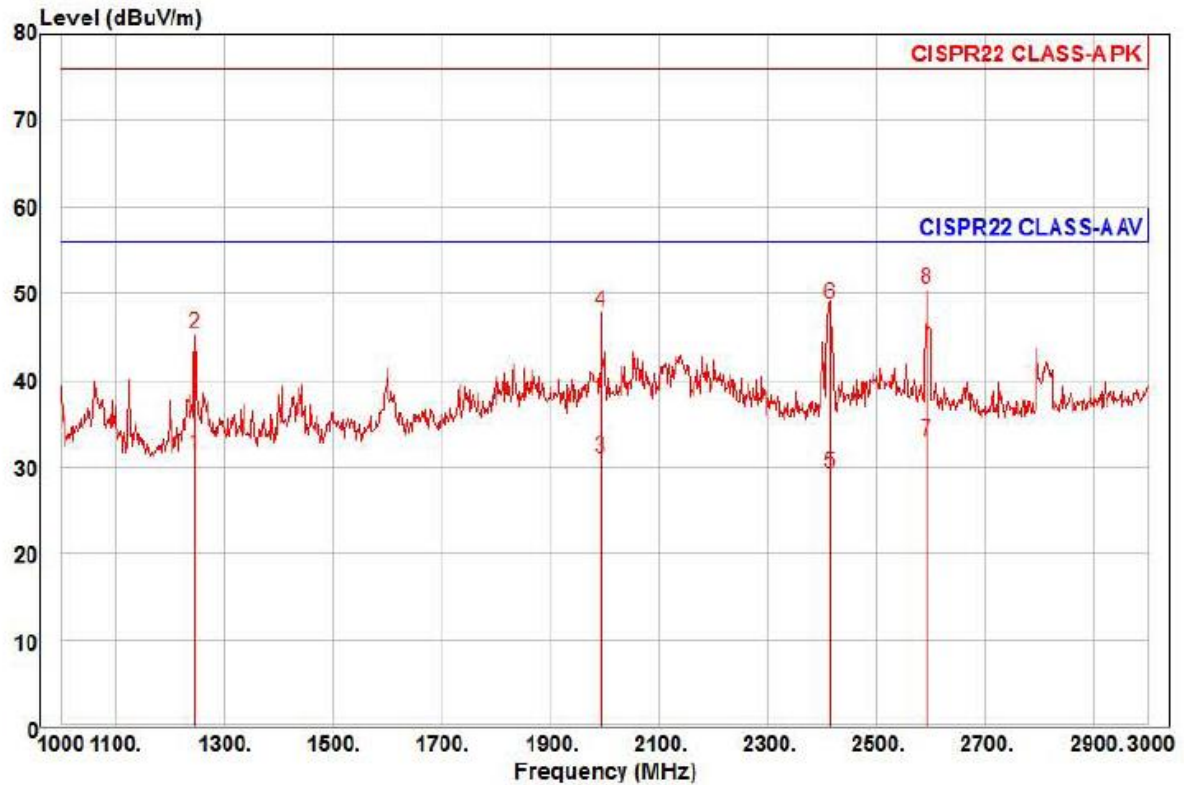
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1124.00	33.37	22.88	6.31	39.49	153	56.00	-32.93	horizontal	Average
2	1124.00	47.23	22.88	6.31	39.49	153	76.00	-39.07	horizontal	Peak
3	1248.00	37.48	23.25	6.66	39.01	204	56.00	-27.62	horizontal	Average
4	1248.00	51.85	23.25	6.66	39.01	204	76.00	-33.25	horizontal	Peak
5	2416.00	27.81	27.27	9.44	38.09	239	56.00	-29.57	horizontal	Average
6 pk	2416.00	48.98	27.27	9.44	38.09	239	76.00	-28.40	horizontal	Peak
7 pp	2592.00	29.76	27.94	9.84	38.07	54	56.00	-26.53	horizontal	Average
8	2592.00	46.60	27.94	9.84	38.07	54	76.00	-29.69	horizontal	Peak



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Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNM-9000VQ
Mode : VCCI
Memo : (1 ~ 3) 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	1246.00	40.52	23.25	6.66	39.02	179	56.00	-24.59	vertical	Average
2	1246.00	54.40	23.25	6.66	39.02	179	76.00	-30.71	vertical	Peak
3	1994.00	34.96	25.99	8.47	38.36	11	56.00	-24.94	vertical	Average
4	1994.00	51.89	25.99	8.47	38.36	11	76.00	-28.01	vertical	Peak
5	2414.00	30.66	27.27	9.43	38.10	93	56.00	-26.74	vertical	Average
6	2414.00	50.24	27.27	9.43	38.10	93	76.00	-27.16	vertical	Peak
7 pp	2592.00	33.25	27.94	9.84	38.07	230	56.00	-23.04	vertical	Average
8 pk	2592.00	50.77	27.94	9.84	38.07	230	76.00	-25.52	vertical	Peak

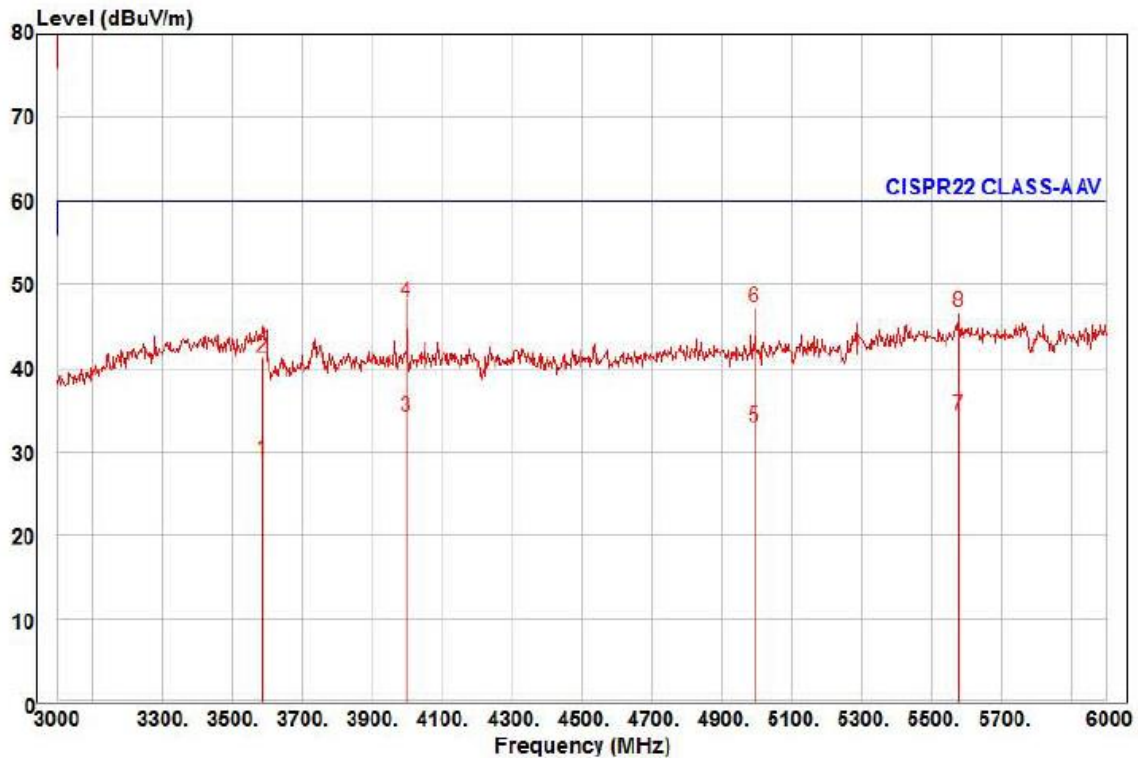
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Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNM-9000VQ
Mode : VCCI
Memo : (3 ~ 6) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3585.00	24.10	31.38	11.60	38.21	234	60.00	-31.13	horizontal	Average
2	3585.00	36.54	31.38	11.60	38.21	234	80.00	-38.69	horizontal	Peak
3	3999.00	27.28	32.50	12.19	37.84	339	60.00	-25.87	horizontal	Average
4 pk	3999.00	41.05	32.50	12.19	37.84	339	80.00	-32.10	horizontal	Peak
5	4995.00	23.94	33.40	13.63	38.06	122	60.00	-27.09	horizontal	Average
6	4995.00	38.34	33.40	13.63	38.06	122	80.00	-32.69	horizontal	Peak
7 pp	5577.00	22.22	35.49	14.71	38.16	181	60.00	-25.74	horizontal	Average
8	5577.00	34.69	35.49	14.71	38.16	181	80.00	-33.27	horizontal	Peak

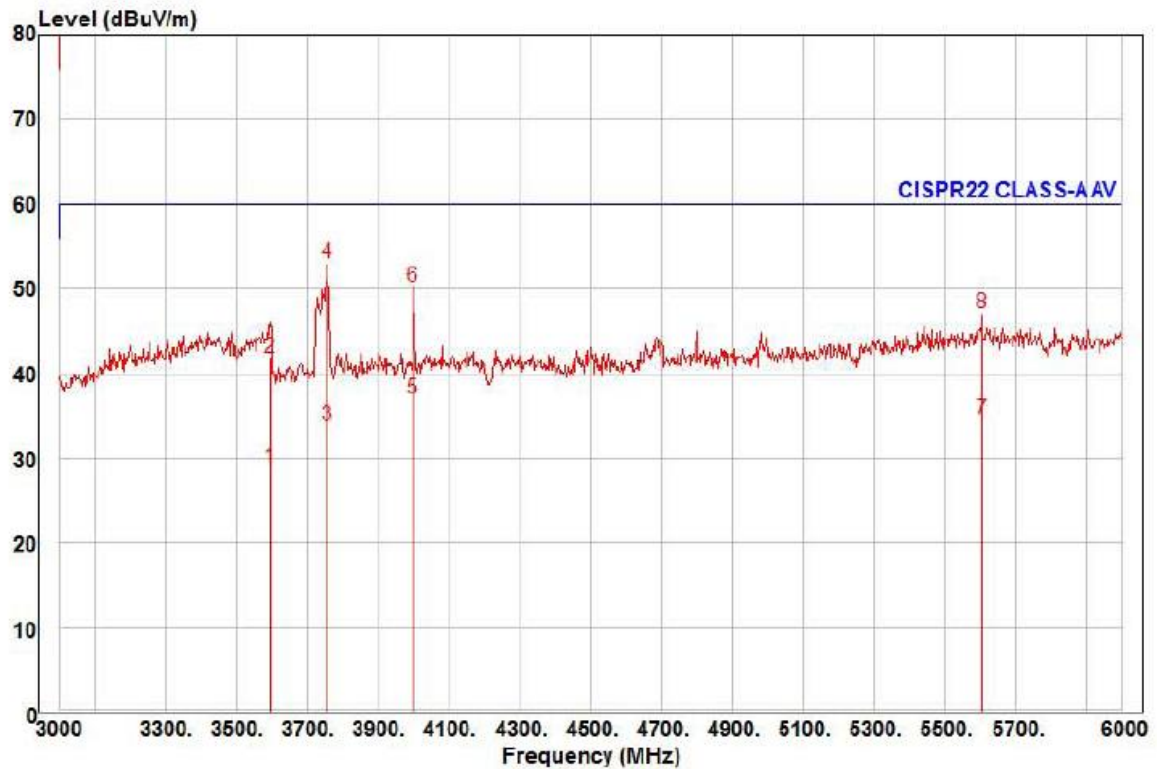
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Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNM-9000VQ
Mode : VCCI
Memo : (3 ~ 6) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3594.00	23.99	31.40	11.61	38.20	310	60.00	-31.20	vertical	Average
2	3594.00	37.07	31.40	11.61	38.20	310	80.00	-38.12	vertical	Peak
3	3756.00	28.21	31.84	11.79	38.05	21	60.00	-26.21	vertical	Average
4 pk	3756.00	47.35	31.84	11.79	38.05	21	80.00	-27.07	vertical	Peak
5 pp	3999.00	30.15	32.50	12.19	37.84	344	60.00	-23.00	vertical	Average
6	3999.00	43.31	32.50	12.19	37.84	344	80.00	-29.84	vertical	Peak
7	5604.00	22.32	35.53	14.76	38.17	257	60.00	-25.56	vertical	Average
8	5604.00	35.01	35.53	14.76	38.17	257	80.00	-32.87	vertical	Peak

◆ 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 Voltage Emissions



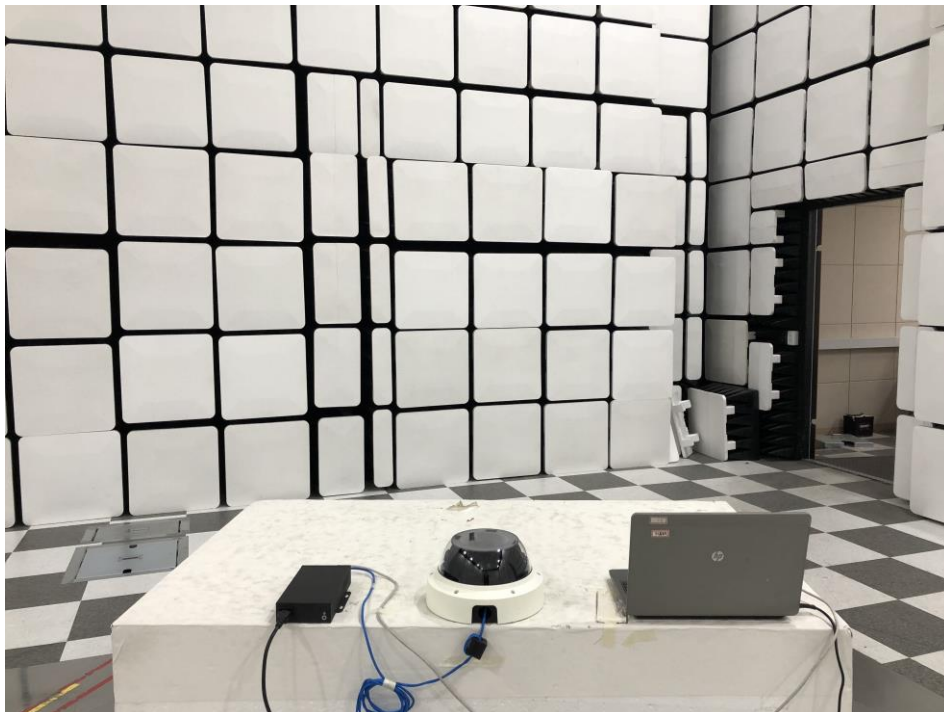
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Conducted Telecommunication Emissions



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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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EUT External Photographs

(Top)



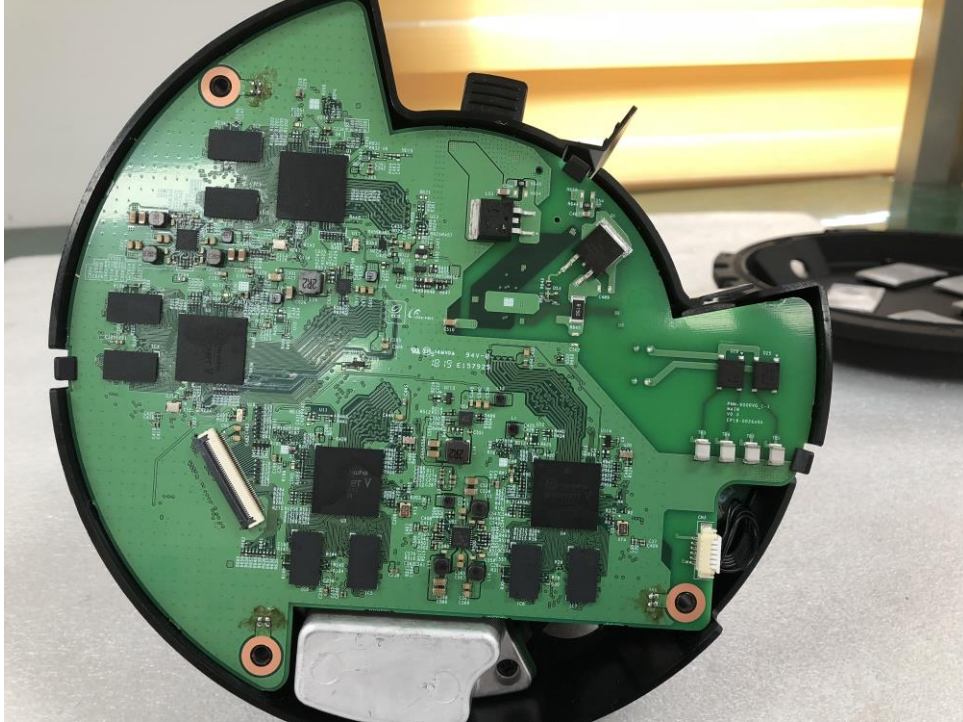
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EUT Internal Photographs

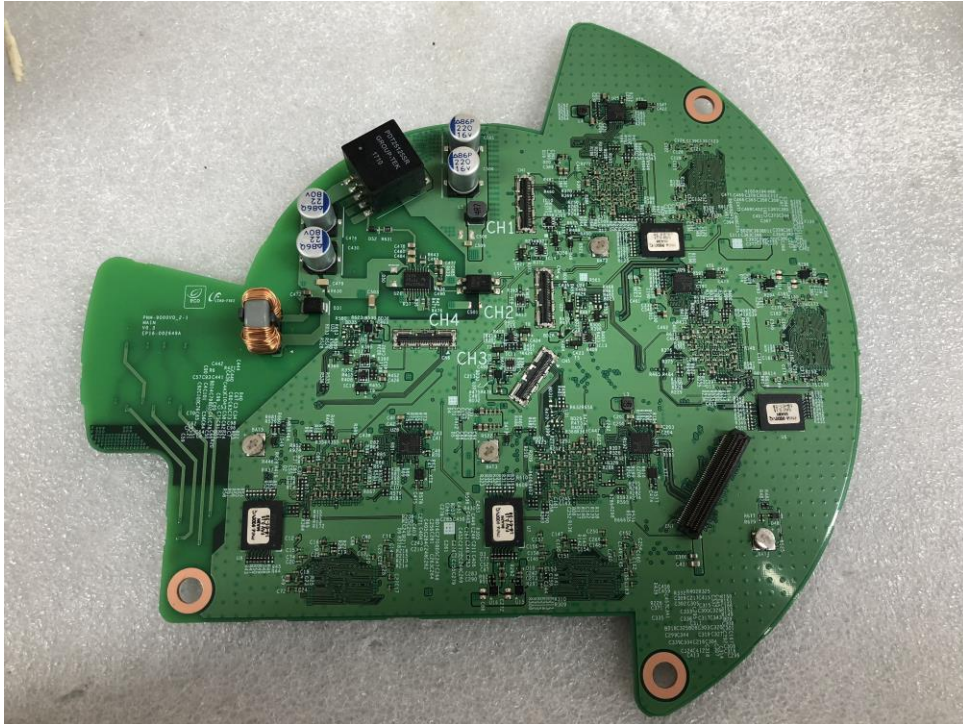
(Internal View)



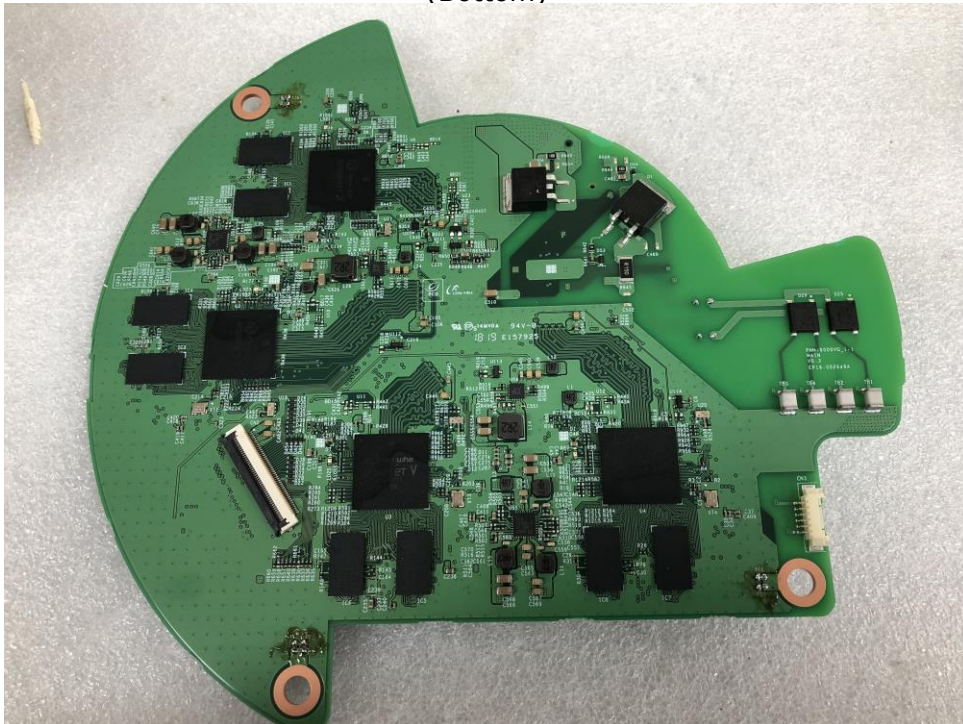
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EUT Internal View – Board 1

(Top)



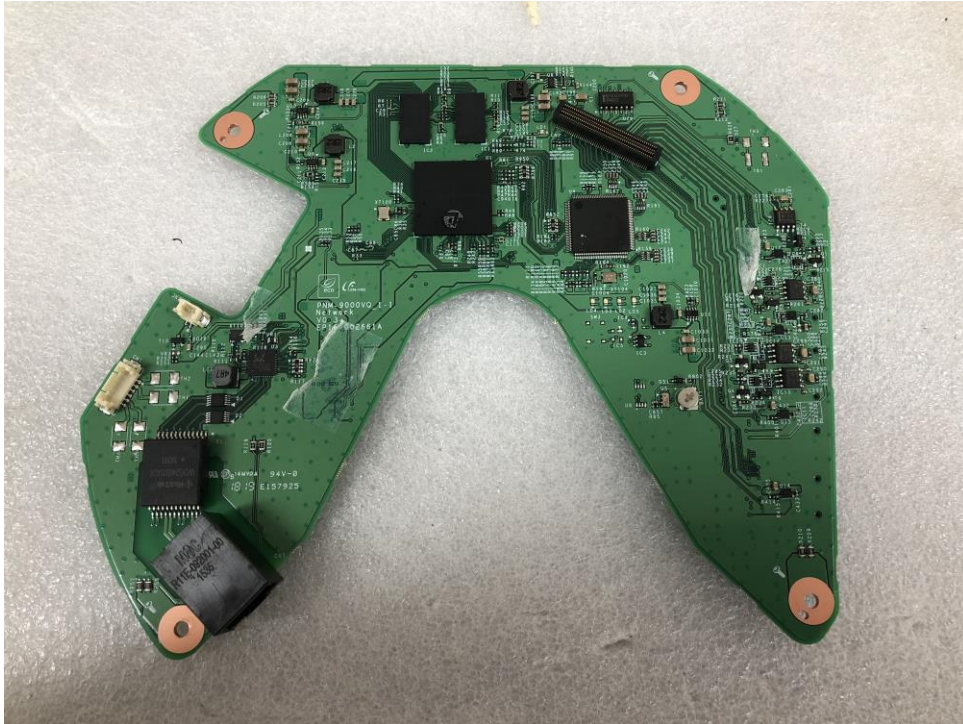
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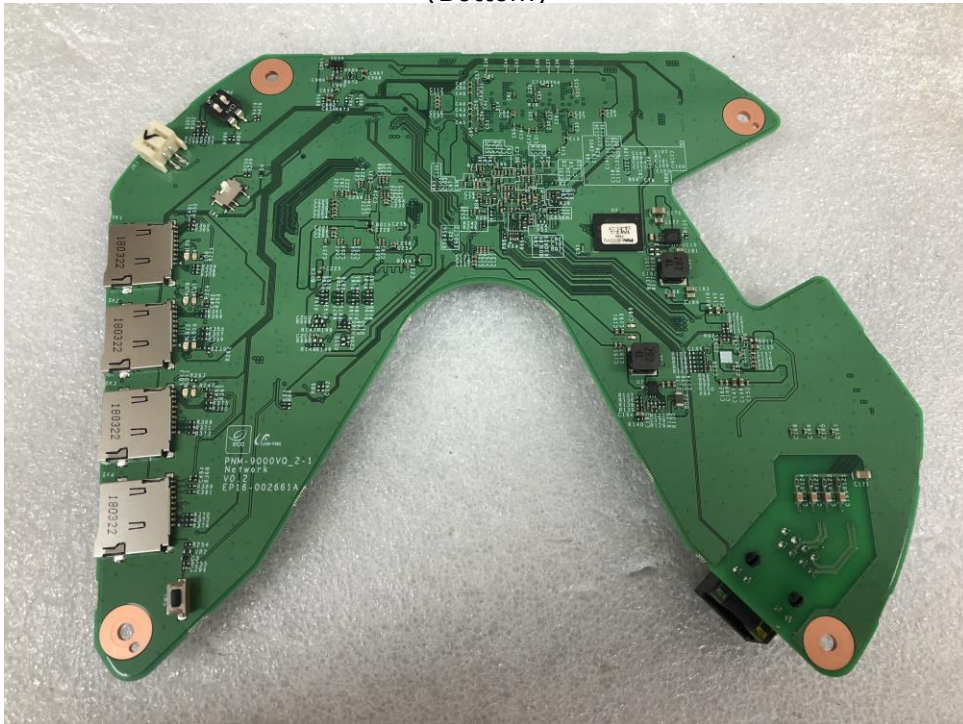
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EUT Internal View – Board 2

(Top)



(Bottom)



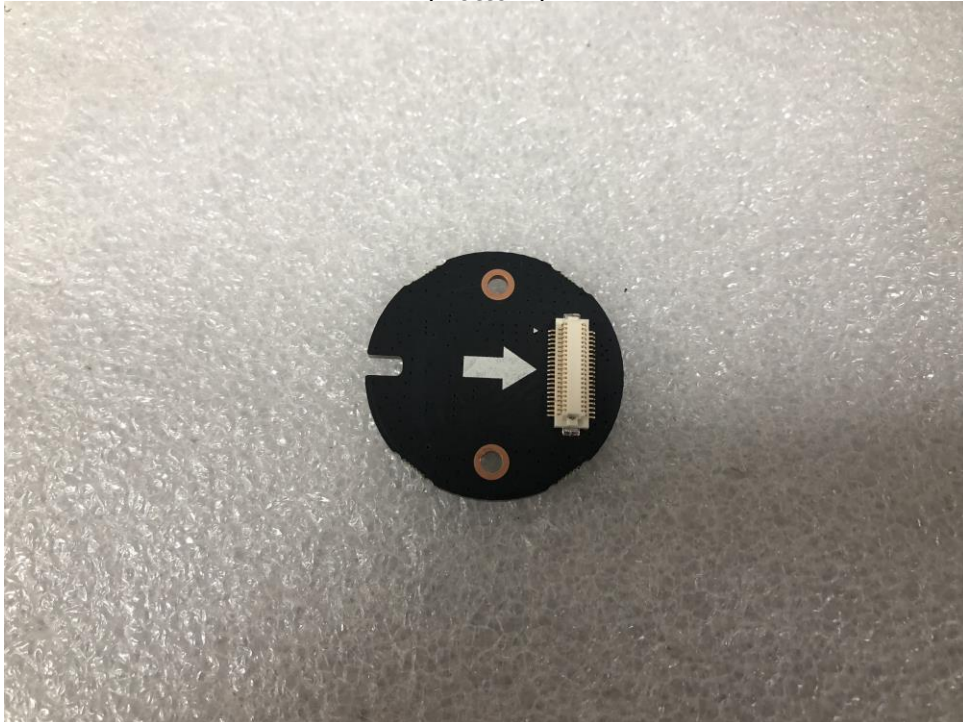
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EUT Internal View – Board 3

(Top)



(Bottom)



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