



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0328
Date of Issue : Jul. 08, 2016
Product name : NETWORK CAMERA
7
Model/Type No. : PNF-9010RVN
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Tianjin Samsung Techwin Opto-Electronic Co., Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA,
Tianjin, 300385, People's Republic of China
Date of Receipt : Jun. 09, 2016
Test date : Jun. 22, 2016 - Jun. 28, 2016
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

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EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

**KES Co., Ltd.**

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KES-E1-16T0328
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REPORT REVISION HISTORY

Date	Revision	Page No
Jul. 08, 2016	KES-E1-16T0328	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.7"
Total Pixels	4168x3062
Effective Pixels	2992x2992
Scanning System	Progressive
Min. Illumination	Color : 0.7Lux(F2.8, 30IRE) B/W : 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0Vpp DIP connector type
Lens	
Focal Length (Zoom Ratio)	1.98mm
Max. Aperture Ratio	F2.8
Angular Field of View	H : 180° / V : 180° / D : 180°
Min. Object Distance	0.3m ~ Infinity
Focus Control	ABF
Lens Type	Fixed Lens
Mount Type	Board Type (M12)
Operational	
Viewable Length	15m
Camera Title	Off / On (Displayed up to 20 characters per line) - 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	True D&N
Backlight Compensation	BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
Digital Noise Reduction	DNR(2D+3D Noise Filter), Function Name : SSNR
Digital Image Stabilization	Not support
Defog	Support
Motion Detection	Off / On (8ea Polygonal zones)
Privacy Masking	Off / On (16ea Polygonal zones)
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (Included Mercury)
Electronic Shutter Speed	2 ~ 1/12,000 sec
Digital Zoom	16x, Digital PTZ(Preset, Group)
Flip / Mirror	Off / On
Intelligent Video Analytics	Tampering(Scene Change), People counting, Heatmap, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection
Alarm I/O	Input 1ea / Output 1ea
Audio In	Line in/out Built-in Mic
Audio out	Line out
Alarm Triggers	Motion detection, Tampering, Audio Detection, Alarm Input, Network-Disconnection, Defocus detection

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Alarm events		File upload via FTP and E-Mail Notification via E-Mail, TCP and HTTP local storage(SD/SDHC/SDXC) or NAS recording at Event (Alarm Triggers) External output
View Composition		<Camera Side> 360 source view 180° Panorama 360° Panorama Double Panorama 360+4 PTZ view 180+4 PTZ view Quad PTZ view View 1/2/3/4 360+8 PTZ view
Network		
Ethernet		RJ-45 (10/100BASE-T)
Video Compression Format		H.265 / H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolution	Original View	Max 12MP TBD
	Dewarped View	Max 9M
Max. Framera	H.265	12M 20fps, 9M 25fps
	H.264	12M 20fps, 9M 25fps
	MJPEG	Max 15fps at all resolutions
Smart Codec		Wise Stream
Video Quality Adjustment		H.264/H.265 : Target Bitrate Level Control MJPEG : Quality Level Control
Bitrate Control Method		H.264/H.265 : CBR or VBR Motion JPEG : VBR
Streaming Capability		Multiple Streaming (Up to 10 profiles)
Audio Compression Format		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
Audio Communication		Bi-directional
IP		IPv4, IPv6
Protocol		TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, SIP
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 (128GB) - motion Images recorded in the SDX/SDHC/SD memory card can be downloaded. NAS(Network Attached Storage) Local PC
Application Programming Interface		ONVIF Profile S/G SUNAPI(HTTP API) v2.0 Samsung techwin open platrom
Webpage Language		English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungary, Greek

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Web Viewer	Supported OS: Windows 7, 8, 10, Mac OS X 10.8. 10.9. 10.10. 10.11 Non-plugin Webviewer Supported Browser: Google Chrome 47, MS Edge 20 Support Codec : Video : H.264, MJPEG (MAX 1M 15FPS) Audio : G.711 Plug-in Webviewer Supported Browser : MS Explore 11 , Mozilla Firefox 43 , Apple Safari 9 * Mac OS X only
Central Management Software	SSM, Smart Viewer
Pixel counter	support (plug-in viewer only)
Environmental	
Operating Temperature / Humidity	SNF-9010RV : -40°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH TBD * Startup should be done at above -20°C
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
Standard Certification	UL, CE, FCC, RoHS, Gost, KC, EN61373, EN50155, EN50121, NEMA 4X, VCCI, C-TICK
Electrical	
Input Voltage / Current	DC12V±10%,PoE(IEEE802.3af,Class3)
Power Consumption	DC12V: TBD, PoE: TBD
Mechanical	
Color / Material	Ivory/Metal
Dimension (WxHxD)	TBD
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 ☐ 100 Vac ☐ 110 Vac ☐ 120 Vac ☒ PoE ☒ 12 Vdc
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	PNF-9010RVN	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	RP-PEG048I	-	REPOTEC	-
Notebook	HP ProBook 4430s	CNU2084CVW	HP	-
Notebook Adapter	Series PPP00H	F12921201063695	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
Monitor	SMT-2232	C95V67VF900038B	Weihai Daewoo Electronics Co., Ltd.	-
Speaker	BR10000A CUVE	SN128458950887	BEIJING EDIFIER HI-TECH GROUP.	-
Alarm Jig	-	-	-	-
Mobile Phone	A1688	-	Apple	-

1.6 External I/O Cabling

- 12 V (dc) Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45(LAN)	Notebook	RJ-45(LAN)	3.0	U
	BNC	Monitor	BNC	4.0	S
	Audio In	Mobile Phone	Audio Out	1.7	U
	Audio Out	Speaker	Audio In	1.6	U
	Alarm	Alarm Jig	Alarm	3.0	U

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45(PoE)	PoE Adapter	RJ-45(PoE)	3.5	U
PoE Adapter	RJ-45(LAN)	Notebook	RJ-45(LAN)	1.7	U
NETWORK CAMERA (E.U.T)	BNC	Monitor	BNC	4.0	S
	Audio In	Mobile Phone	Audio Out	1.7	U
	Audio Out	Speaker	Audio In	1.6	U
	Alarm	Alarm Jig	Alarm	3.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

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

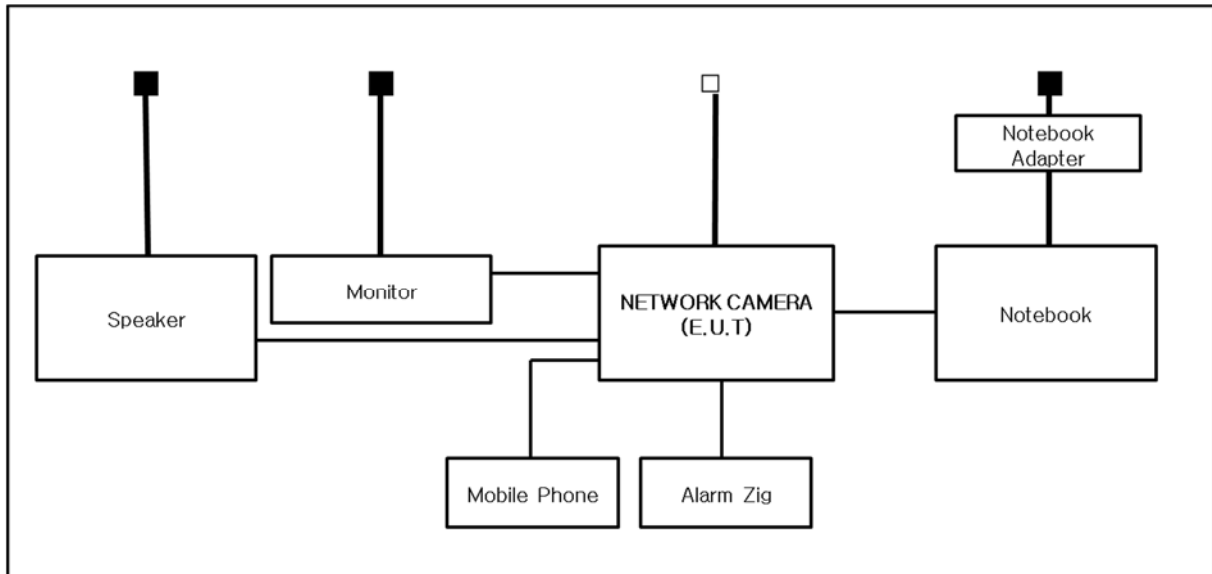
Test mode	Normal operating
OP	MONITORING PING TEST

* Input power condition during the measurements was 12 v (dc) , PoE

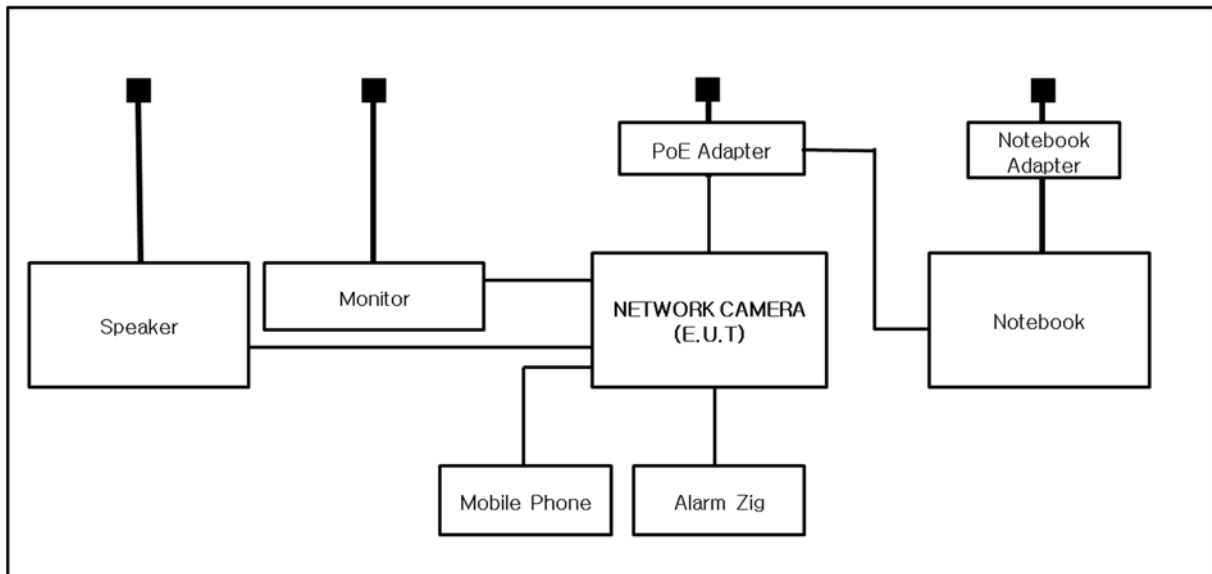
1.8 Configuration

■ AC Main
□ DC Main

- 12 V (dc) Mode



- PoE Mode



1.9 Calibration Details of Equipment Used for Measurement

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

1.10 Test Facility

The measurement facility is located at 473-29 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
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
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☐ EN 55022:2010

☐ 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



☒ **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**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☐ ANSI C63.4-2014

☐ **RE- Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

☐ Equipment for fixed use

☐ Equipment for vehicular use

☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002



2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☐	LISN	ENV216	R & S	101137	02, 04, 2017
☐	LISN	ENV216	R & S	101786	05, 02, 2017
☐	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: °C
Relative Humidity: %

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

Because the E.U.T power is 12 V (dc) power and PoE, limits are not specified

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jun. 28, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 04, 2017
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 24,5 °C

Relative Humidity: 47,7 %

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. 27, 2016

Test Location

☒ Open Area Test Site #1 ☐ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Trilog-Broadband ANT	VULB 9163	Schwarzbeck	9163-715	04, 14, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	1070/1080	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 30,5 °C
Relative Humidity: 43,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 22, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

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

Test Conditions

Temperature: 23,8 °C
Relative Humidity: 43,6 %

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]

N/A



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[NEUTRAL]

N/A

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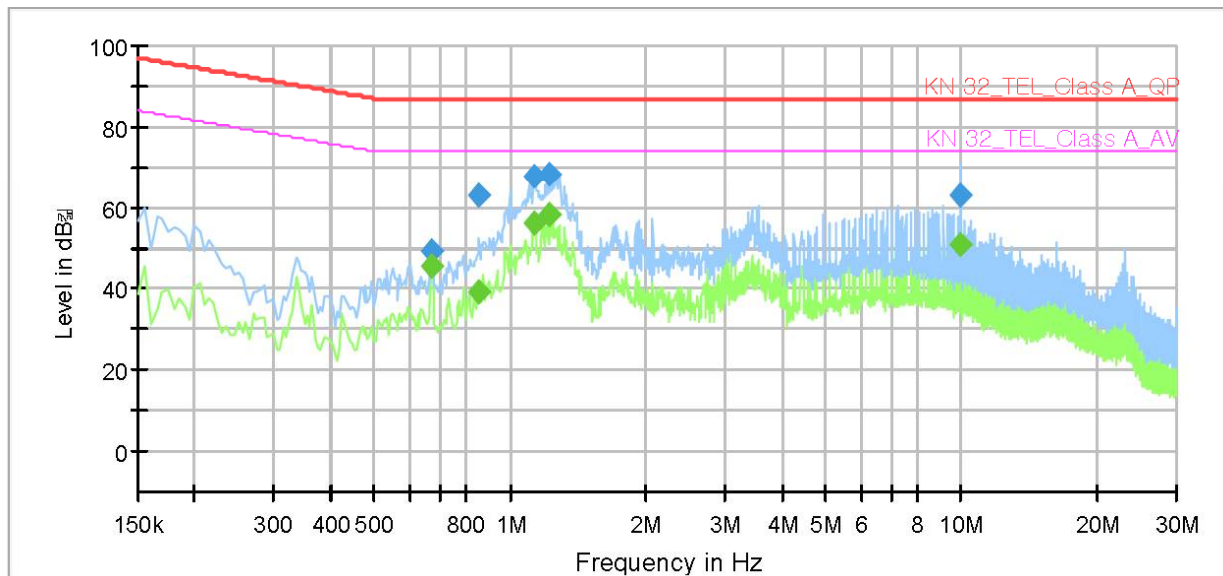
Conducted Emissions at Telecommunication Ports

- 12 V (dc) Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNF-9010RVN
Mode	10 Mbps
Operator Name:	KES



Final Result

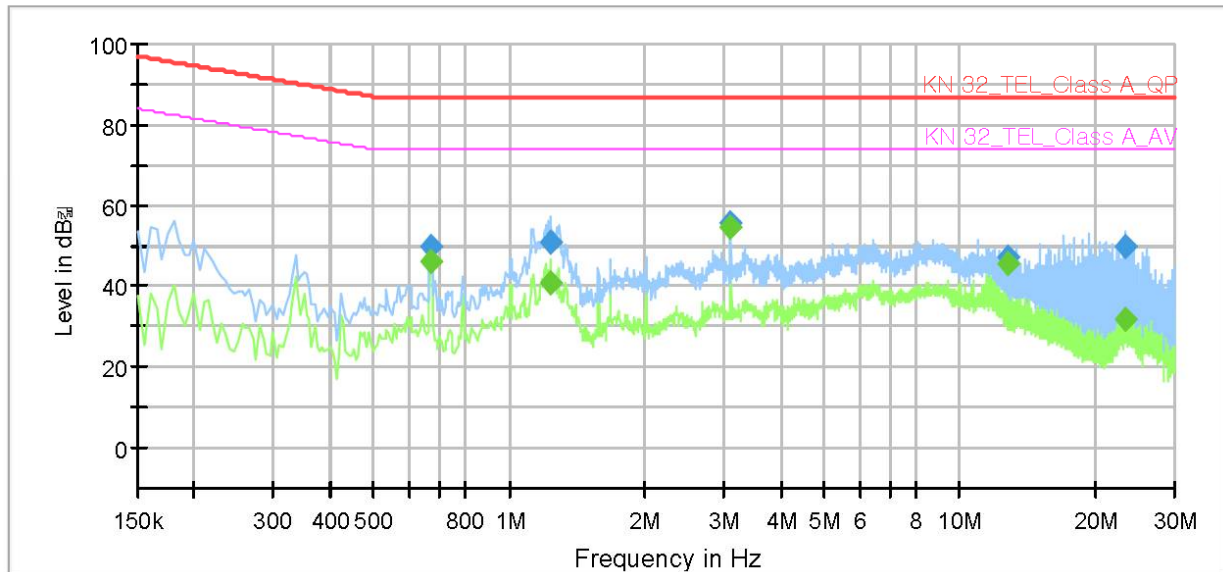
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	--	45.58	74.00	28.42	1000.0	9.000	Single Line	9.9
0.670000	49.10	--	87.00	37.90	1000.0	9.000	Single Line	9.9
0.855000	--	39.09	74.00	34.91	1000.0	9.000	Single Line	9.9
0.855000	62.75	--	87.00	24.25	1000.0	9.000	Single Line	9.9
1.130000	--	56.32	74.00	17.68	1000.0	9.000	Single Line	9.9
1.130000	67.68	--	87.00	19.32	1000.0	9.000	Single Line	9.9
1.225000	--	58.17	74.00	15.83	1000.0	9.000	Single Line	9.8
1.225000	68.23	--	87.00	18.77	1000.0	9.000	Single Line	9.8
10.000000	--	51.04	74.00	22.96	1000.0	9.000	Single Line	10.1
10.000000	63.02	--	87.00	23.98	1000.0	9.000	Single Line	10.1



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNF-9010RVN
Mode: 100 Mbps
Operator Name: KES



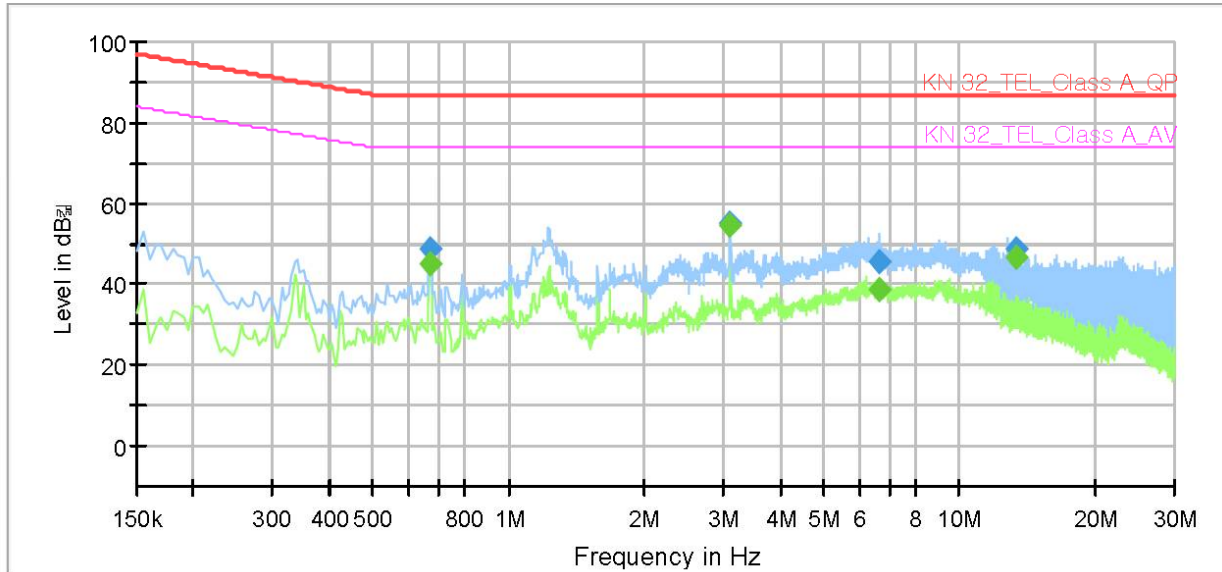
Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	--	45.80	74.00	28.20	1000.0	9.000	Single Line	9.4
0.670000	49.62	--	87.00	37.38	1000.0	9.000	Single Line	9.4
1.235000	--	40.77	74.00	33.23	1000.0	9.000	Single Line	9.3
1.235000	50.71	--	87.00	36.29	1000.0	9.000	Single Line	9.3
3.100000	--	54.65	74.00	19.35	1000.0	9.000	Single Line	9.3
3.100000	55.51	--	87.00	31.49	1000.0	9.000	Single Line	9.3
12.810000	--	45.42	74.00	28.58	1000.0	9.000	Single Line	9.6
12.810000	47.16	--	87.00	39.84	1000.0	9.000	Single Line	9.6
23.325000	--	31.73	74.00	42.27	1000.0	9.000	Single Line	9.5
23.325000	49.82	--	87.00	37.18	1000.0	9.000	Single Line	9.5

[1000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNF-9010RVN
Mode: 1 000 Mbps
Operator Name: KES



Final_Result

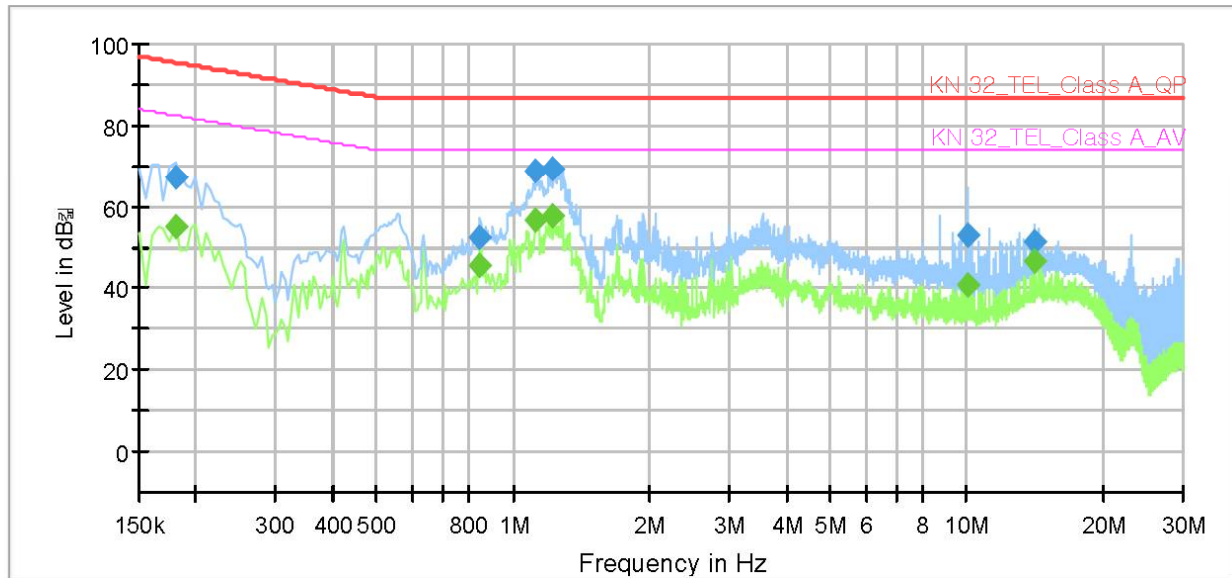
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	--	45.20	74.00	28.80	1000.0	9.000	Single Line	9.3
0.670000	48.86	--	87.00	38.14	1000.0	9.000	Single Line	9.3
3.100000	--	54.30	74.00	19.70	1000.0	9.000	Single Line	9.2
3.100000	55.23	--	87.00	31.77	1000.0	9.000	Single Line	9.2
6.655000	--	38.43	74.00	35.57	1000.0	9.000	Single Line	9.3
6.655000	45.45	--	87.00	41.55	1000.0	9.000	Single Line	9.3
13.420000	--	46.83	74.00	27.17	1000.0	9.000	Single Line	9.5
13.420000	48.50	--	87.00	38.50	1000.0	9.000	Single Line	9.5

- PoE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNF-9010RVN
Mode	PoE 10 Mbps
Operator Name:	KES



Final Result

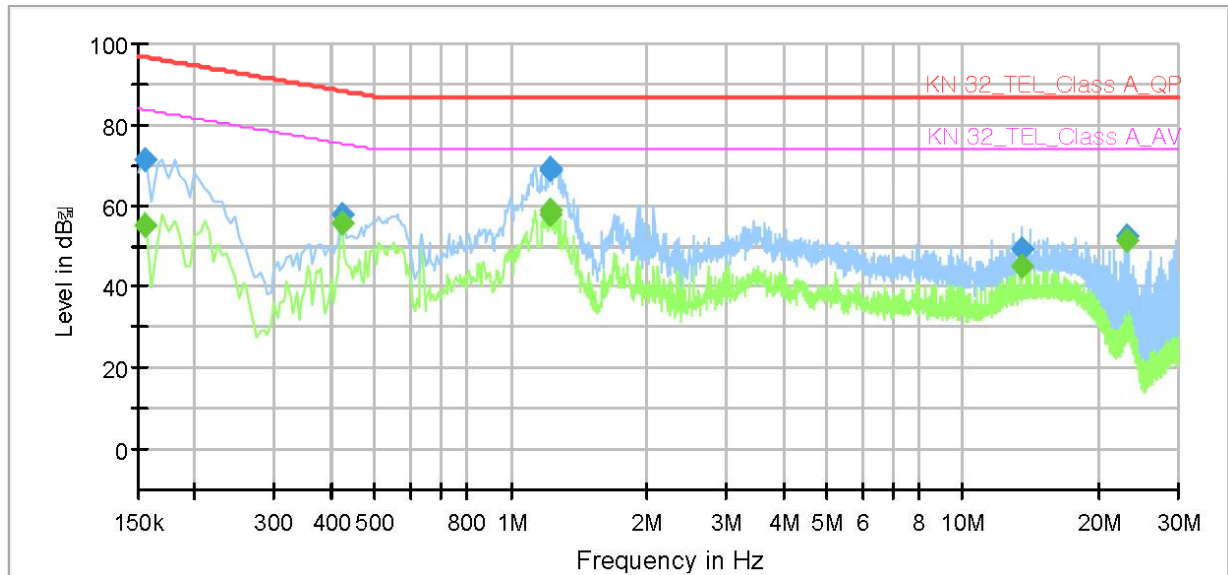
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.180000	--	54.81	82.49	27.68	1000.0	9.000	Single Line	10.1
0.180000	67.40	--	95.49	28.09	1000.0	9.000	Single Line	10.1
0.845000	--	45.49	74.00	28.51	1000.0	9.000	Single Line	9.9
0.845000	52.31	--	87.00	34.69	1000.0	9.000	Single Line	9.9
1.125000	--	56.79	74.00	17.21	1000.0	9.000	Single Line	9.9
1.125000	68.99	--	87.00	18.01	1000.0	9.000	Single Line	9.9
1.220000	--	57.84	74.00	16.16	1000.0	9.000	Single Line	9.8
1.220000	69.09	--	87.00	17.91	1000.0	9.000	Single Line	9.8
10.020000	--	41.00	74.00	33.00	1000.0	9.000	Single Line	10.1
10.020000	53.07	--	87.00	33.93	1000.0	9.000	Single Line	10.1
14.185000	--	46.47	74.00	27.53	1000.0	9.000	Single Line	10.1
14.185000	51.42	--	87.00	35.58	1000.0	9.000	Single Line	10.1



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNF-9010RVN
Mode: PoE 100 Mbps
Operator Name: KES



Final_Result

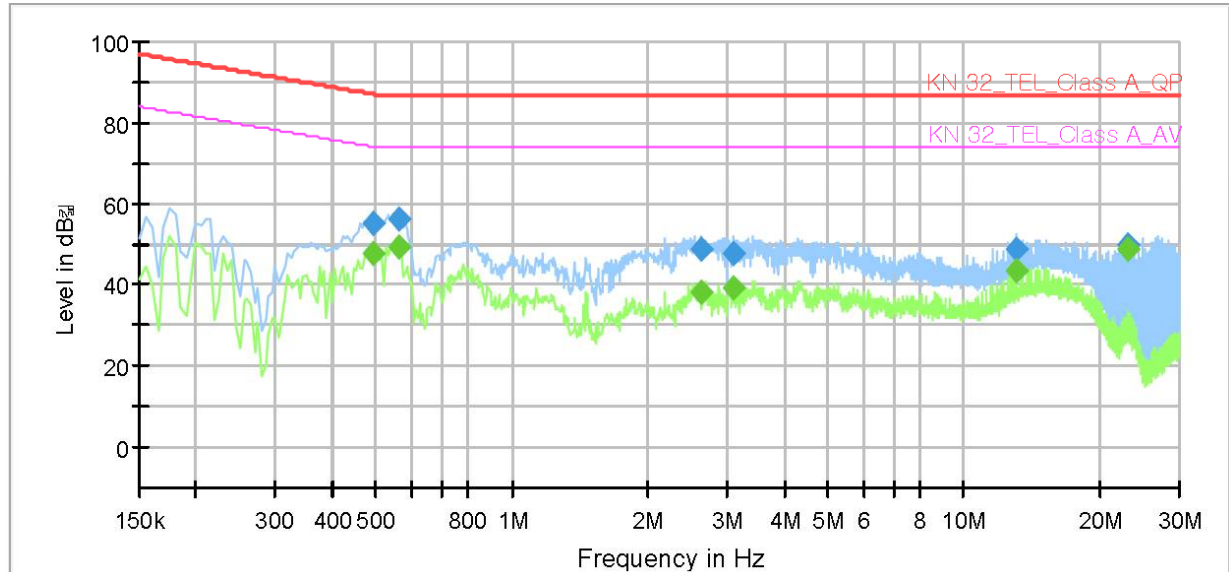
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	55.24	83.73	28.49	1000.0	9.000	Single Line	9.6
0.155000	71.51	---	96.73	25.22	1000.0	9.000	Single Line	9.6
0.425000	---	55.70	75.35	19.65	1000.0	9.000	Single Line	9.5
0.425000	57.63	---	88.35	30.72	1000.0	9.000	Single Line	9.5
1.220000	---	58.94	74.00	15.06	1000.0	9.000	Single Line	9.3
1.220000	69.34	---	87.00	17.66	1000.0	9.000	Single Line	9.3
1.225000	---	57.80	74.00	16.20	1000.0	9.000	Single Line	9.3
1.225000	68.69	---	87.00	18.31	1000.0	9.000	Single Line	9.3
13.550000	---	45.06	74.00	28.94	1000.0	9.000	Single Line	9.6
13.550000	49.48	---	87.00	37.52	1000.0	9.000	Single Line	9.6
23.130000	---	51.54	74.00	22.46	1000.0	9.000	Single Line	9.5
23.130000	52.58	---	87.00	34.42	1000.0	9.000	Single Line	9.5



[1000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNF-9010RVN
Mode: PoE 1 000 Mbps
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.495000	—	47.87	74.08	26.21	1000.0	9.000	Single Line	9.4
0.495000	55.12	—	87.08	31.96	1000.0	9.000	Single Line	9.4
0.565000	—	49.25	74.00	24.75	1000.0	9.000	Single Line	9.3
0.565000	55.98	—	87.00	31.02	1000.0	9.000	Single Line	9.3
2.615000	—	38.30	74.00	35.70	1000.0	9.000	Single Line	9.2
2.615000	48.83	—	87.00	38.17	1000.0	9.000	Single Line	9.2
3.100000	—	39.34	74.00	34.66	1000.0	9.000	Single Line	9.2
3.100000	47.75	—	87.00	39.25	1000.0	9.000	Single Line	9.2
13.125000	—	43.66	74.00	30.34	1000.0	9.000	Single Line	9.5
13.125000	48.81	—	87.00	38.19	1000.0	9.000	Single Line	9.5
23.130000	—	48.63	74.00	25.37	1000.0	9.000	Single Line	9.4
23.130000	49.83	—	87.00	37.17	1000.0	9.000	Single Line	9.4

**Radiated Electric Field Emissions(Below 1 GHz)**

- 12 V (dc) Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
360.55	21.81	V	1.10	14.71	3.96	40.48	47.00	6.52
432.29	13.56	H	3.50	16.13	4.46	34.15	47.00	12.85
450.71	11.52	V	1.10	16.45	4.59	32.56	47.00	14.44
504.01	18.56	V	1.20	17.38	4.97	40.91	47.00	6.09
576.04	9.04	H	2.70	18.80	5.42	33.26	47.00	13.74
648.53	14.26	H	2.90	19.48	5.77	39.51	47.00	7.49

* H : Horizontal, V : Vertical

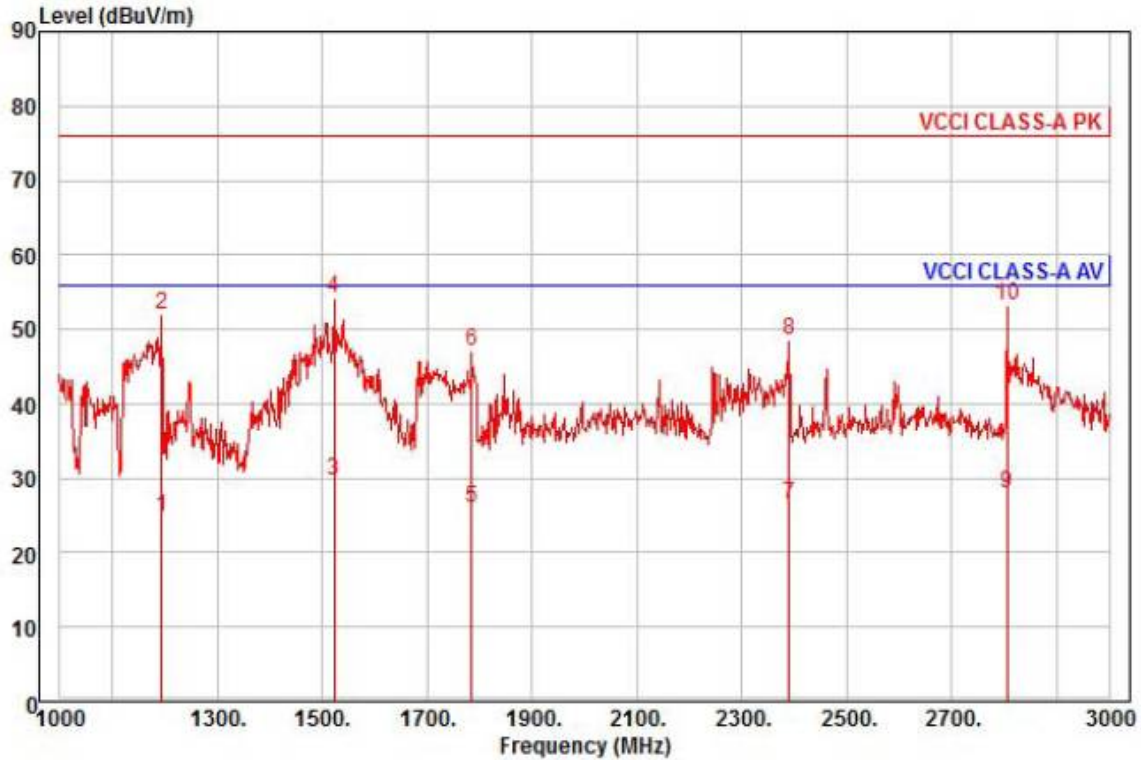
- PoE Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
155.12	19.76	H	3.90	8.35	2.56	30.67	40.00	9.33
360.57	21.59	H	4.00	14.71	3.96	40.26	47.00	6.74
432.33	14.56	V	1.10	16.13	4.46	35.15	47.00	11.85
450.18	18.69	H	3.50	16.44	4.59	39.72	47.00	7.28
504.00	18.93	V	1.00	17.38	4.97	41.28	47.00	5.72
648.62	13.50	H	3.20	19.48	5.77	38.75	47.00	8.25

* H : Horizontal, V : Vertical

Radiated Electric Field Emissions(Above 1 GHz)

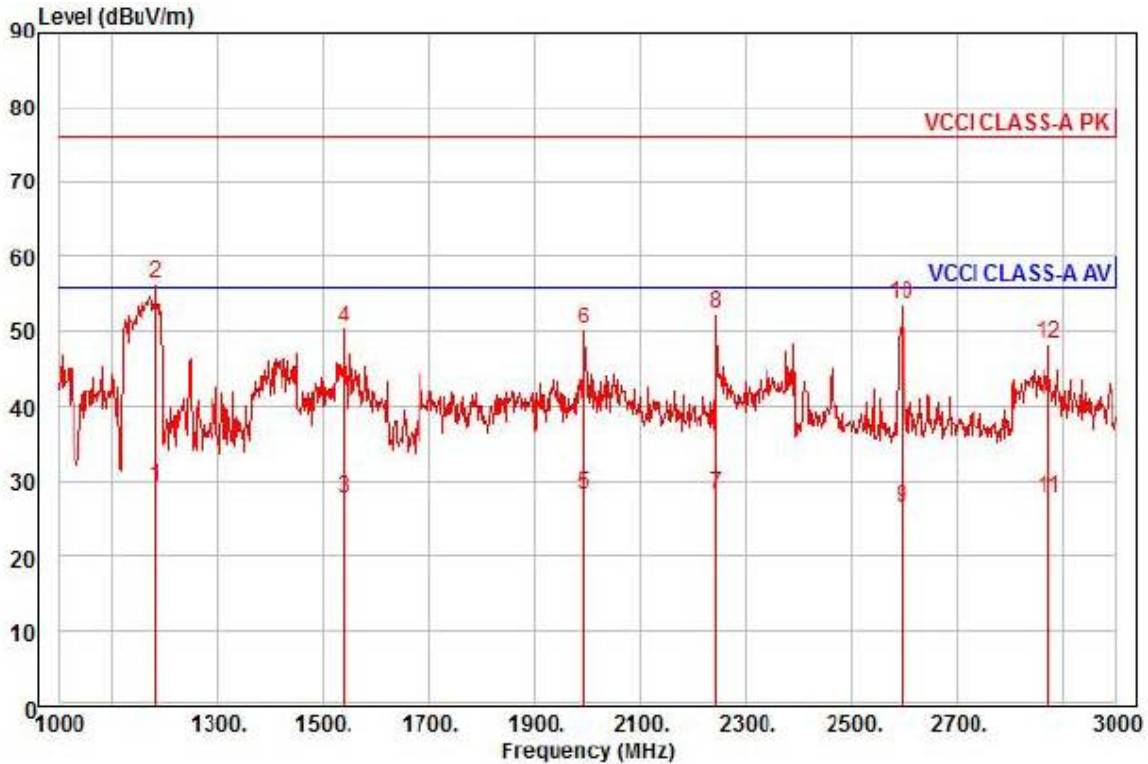
- 12 V (dc) Mode



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : DC 12 V
Memo : 1 ~ 3 GHz

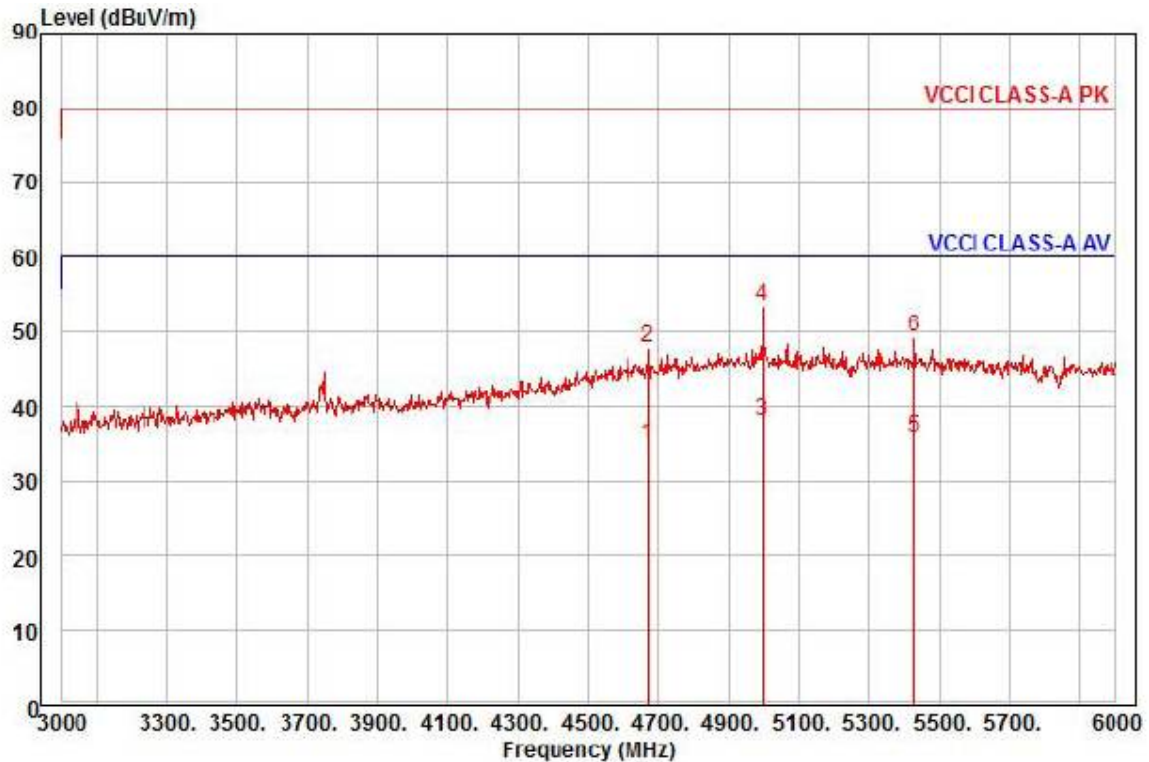
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1194.00	32.93	24.68	7.07	40.02	324	56.00	-31.34	horizontal	Average
2	1194.00	60.34	24.68	7.07	40.02	324	76.00	-23.93	horizontal	Peak
3 av	1522.00	35.46	25.98	8.02	39.86	298	56.00	-26.40	horizontal	Average
4 pp	1522.00	60.14	25.98	8.02	39.86	298	76.00	-21.72	horizontal	Peak
5	1786.00	29.82	27.03	8.76	39.73	338	56.00	-30.12	horizontal	Average
6	1786.00	51.05	27.03	8.76	39.73	338	76.00	-28.89	horizontal	Peak
7	2390.00	27.45	28.84	9.95	39.86	342	56.00	-29.62	horizontal	Average
8	2390.00	49.71	28.84	9.95	39.86	342	76.00	-27.36	horizontal	Peak
9	2806.00	27.49	29.85	10.76	40.10	292	56.00	-28.00	horizontal	Average
10	2806.00	52.73	29.85	10.76	40.10	292	76.00	-22.76	horizontal	Peak

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Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : DC 12 V
Memo : 1 ~ 3 GHz

		Read Freq	Ant 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	av	1184.00	37.61	24.64	7.04	40.03	6	56.00	-26.74	vertical	Average
2	pp	1184.00	64.66	24.64	7.04	40.03	6	76.00	-19.69	vertical	Peak
3		1538.00	33.47	26.05	8.07	39.86	338	56.00	-28.27	vertical	Average
4		1538.00	56.14	26.05	8.07	39.86	338	76.00	-25.60	vertical	Peak
5		1994.00	30.70	27.86	9.33	39.63	350	56.00	-27.74	vertical	Average
6		1994.00	52.83	27.86	9.33	39.63	350	76.00	-25.61	vertical	Peak
7		2244.00	29.75	28.48	9.72	39.77	312	56.00	-27.82	vertical	Average
8		2244.00	54.02	28.48	9.72	39.77	312	76.00	-23.55	vertical	Peak
9		2596.00	26.94	29.34	10.26	39.98	222	56.00	-29.44	vertical	Average
10		2596.00	54.02	29.34	10.26	39.98	222	76.00	-22.36	vertical	Peak
11		2874.00	26.94	30.02	10.92	40.14	303	56.00	-28.26	vertical	Average
12		2874.00	47.49	30.02	10.92	40.14	303	76.00	-27.71	vertical	Peak



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : DC 12 V
Memo : 3 ~ 6 GHz

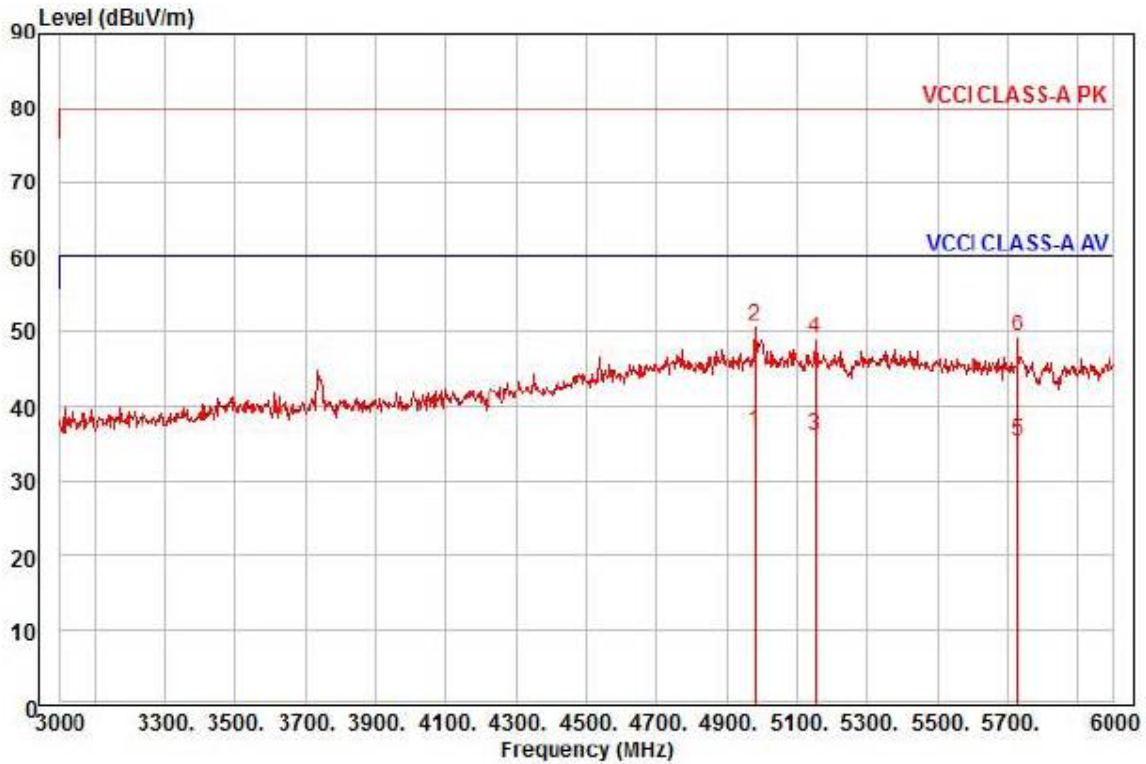
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4671.00	24.70	35.84	14.74	40.41	178	60.00	-25.13	horizontal	Average
2	4671.00	37.74	35.84	14.74	40.41	178	80.00	-32.09	horizontal	Peak
3 pp	4995.00	25.43	37.69	15.32	40.41	146	60.00	-21.97	horizontal	Average
4 pk	4995.00	40.87	37.69	15.32	40.41	146	80.00	-26.53	horizontal	Peak
5	5430.00	23.55	36.85	15.84	40.35	79	60.00	-24.11	horizontal	Average
6	5430.00	36.84	36.85	15.84	40.35	79	80.00	-30.82	horizontal	Peak



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Test report No.:
KES-E1-16T0328
Page (29) of (46)

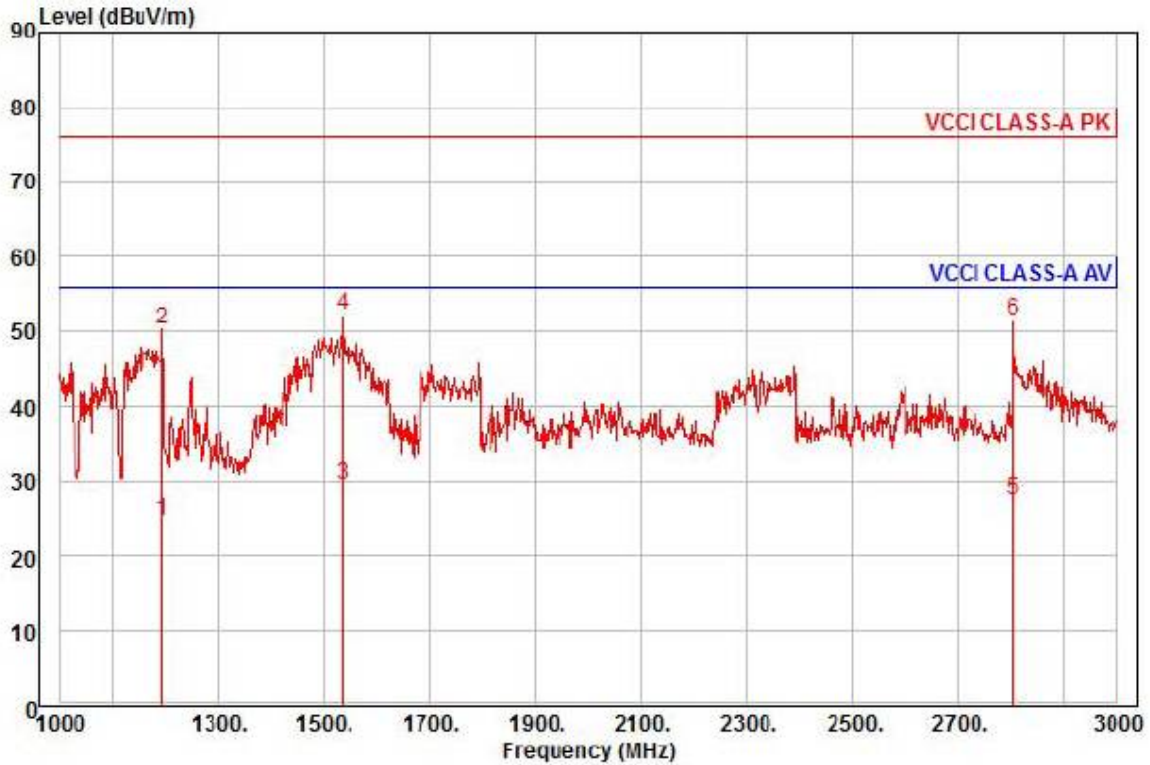


Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : DC 12 V
Memo : 3 ~ 6 GHz

		Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	pp	4980.00	23.94	37.61	15.29	40.41	262	60.00	-23.57	vertical	Average
2	pk	4980.00	38.38	37.61	15.29	40.41	262	80.00	-29.13	vertical	Peak
3		5151.00	23.49	37.41	15.51	40.39	230	60.00	-23.98	vertical	Average
4		5151.00	36.52	37.41	15.51	40.39	230	80.00	-30.95	vertical	Peak
5		5727.00	23.10	36.25	16.35	40.31	85	60.00	-24.61	vertical	Average
6		5727.00	36.95	36.25	16.35	40.31	85	80.00	-30.76	vertical	Peak

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- PoE Mode



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : PoE
Memo : 1 ~ 3 GHz

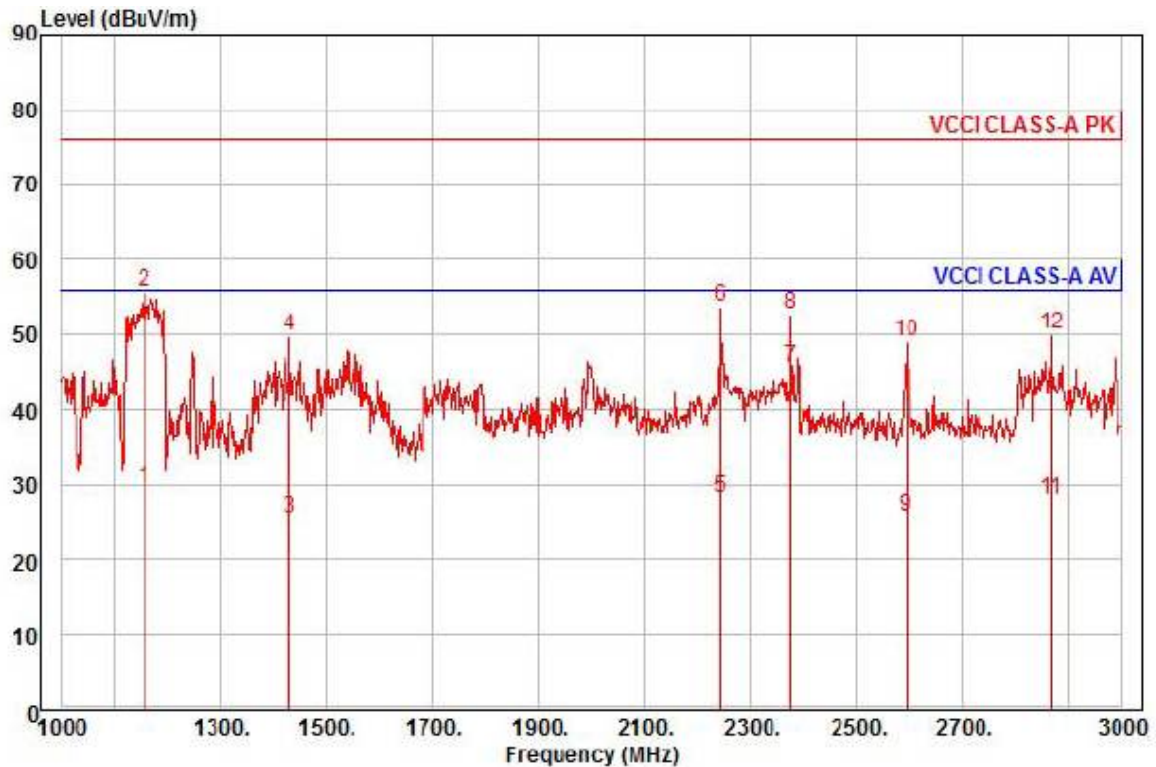
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1194.00	33.12	24.68	7.07	40.02	310	56.00	-31.15	horizontal	Average
2	1194.00	58.63	24.68	7.07	40.02	310	76.00	-25.64	horizontal	Peak
3 av	1534.00	35.11	26.03	8.06	39.86	287	56.00	-26.66	horizontal	Average
4 pp	1534.00	57.95	26.03	8.06	39.86	287	76.00	-23.82	horizontal	Peak
5	2804.00	26.85	29.85	10.75	40.10	299	56.00	-28.65	horizontal	Average
6	2804.00	50.92	29.85	10.75	40.10	299	76.00	-24.58	horizontal	Peak



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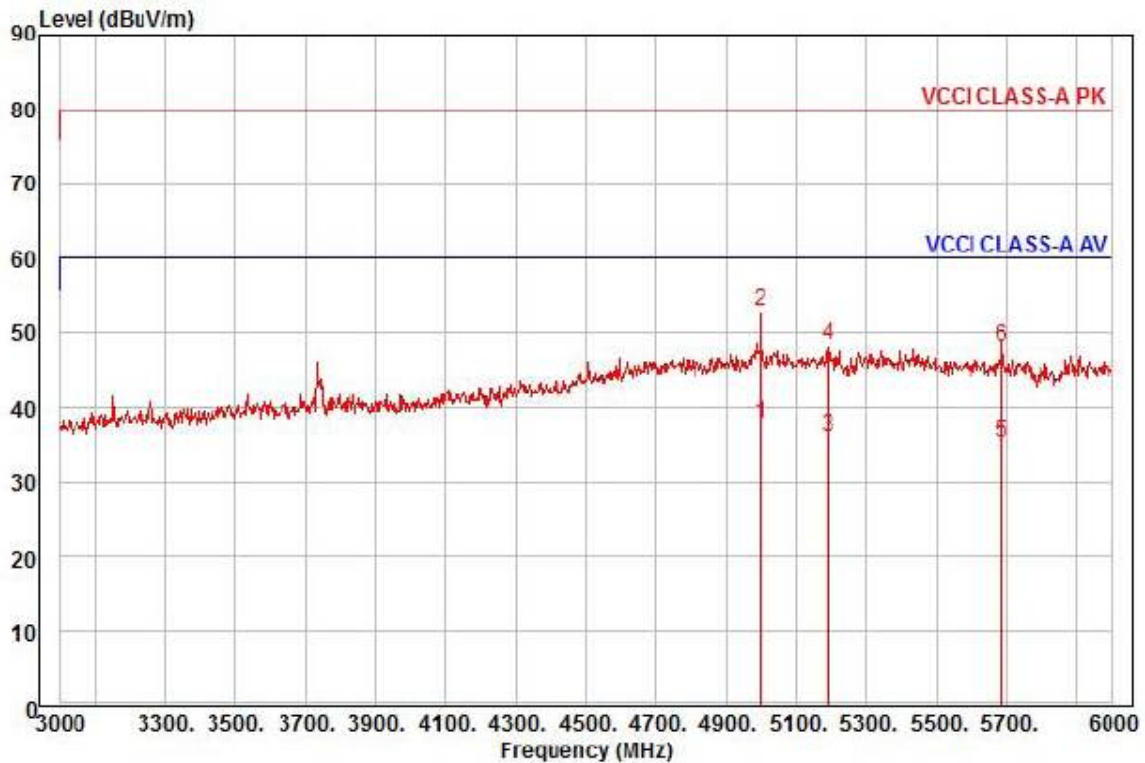
Test report No.:
KES-E1-16T0328
Page (31) of (46)



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : PoE
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	1158.00	37.84	24.54	6.97	40.04	360	56.00	-26.69	vertical	Average
2 pk	1158.00	64.20	24.54	6.97	40.04	360	76.00	-20.33	vertical	Peak
3	1430.00	32.13	25.62	7.76	39.91	9	56.00	-30.40	vertical	Average
4	1430.00	56.22	25.62	7.76	39.91	9	76.00	-26.31	vertical	Peak
5	2244.00	29.68	28.48	9.72	39.77	309	56.00	-27.89	vertical	Average
6	2244.00	55.27	28.48	9.72	39.77	309	76.00	-22.30	vertical	Peak
7 pp	2376.00	46.63	28.80	9.93	39.85	219	56.00	-10.49	vertical	Average
8	2376.00	53.85	28.80	9.93	39.85	219	76.00	-23.27	vertical	Peak
9	2594.00	26.12	29.34	10.26	39.97	27	56.00	-30.25	vertical	Average
10	2594.00	49.30	29.34	10.26	39.97	27	76.00	-27.07	vertical	Peak
11	2868.00	27.27	30.01	10.91	40.13	297	56.00	-27.94	vertical	Average
12	2868.00	49.13	30.01	10.91	40.13	297	76.00	-26.08	vertical	Peak

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Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : PoE
Memo : 3 ~ 6 GHz

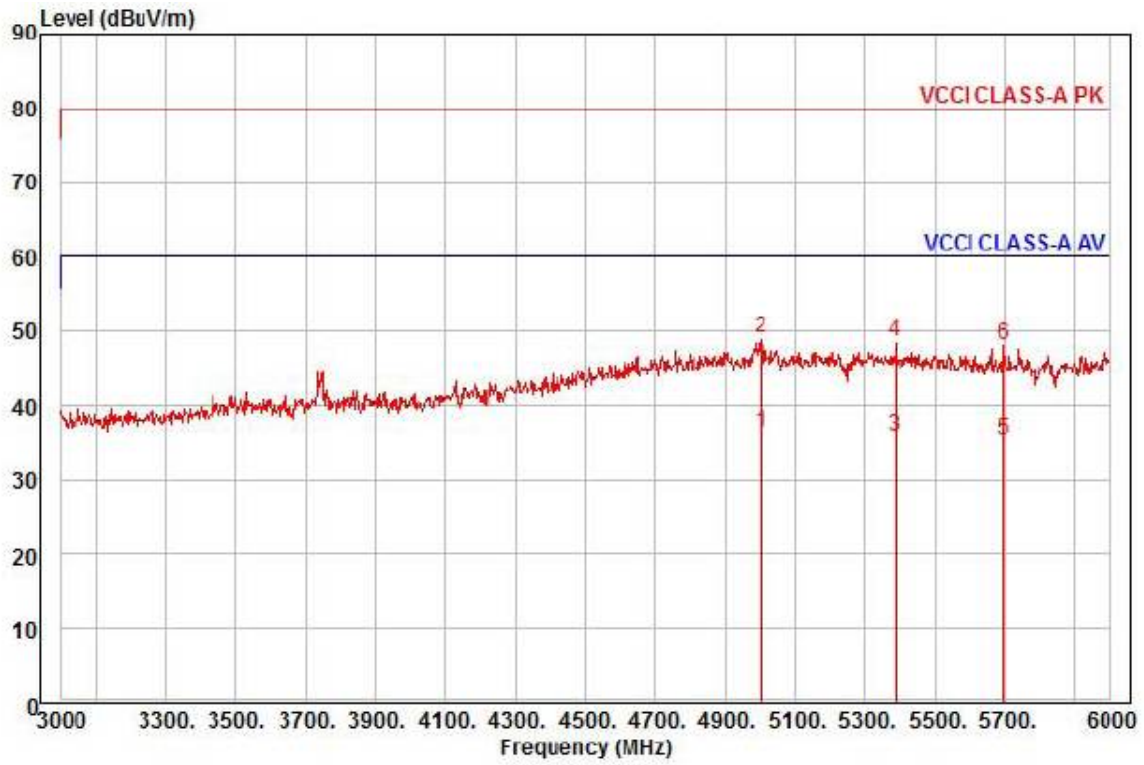
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 pp	4998.00	25.17	37.71	15.33	40.41	121	60.00	-22.20	horizontal	Average
2 pk	4998.00	40.36	37.71	15.33	40.41	121	80.00	-27.01	horizontal	Peak
3	5190.00	23.47	37.34	15.55	40.38	38	60.00	-24.02	horizontal	Average
4	5190.00	35.82	37.34	15.55	40.38	38	80.00	-31.67	horizontal	Peak
5	5685.00	23.05	36.34	16.27	40.31	190	60.00	-24.65	horizontal	Average
6	5685.00	35.79	36.34	16.27	40.31	190	80.00	-31.91	horizontal	Peak



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www.kes.co.kr

Test report No.:
KES-E1-16T0328
Page (33) of (46)



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK CAMERA
Model : PNF-9010RVN
Mode : PoE
Memo : 3 ~ 6 GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	pp	5001.00	23.67	37.72	15.33	40.41	141	60.00	-23.69 vertical	Average
2	pk	5001.00	36.53	37.72	15.33	40.41	141	80.00	-30.83 vertical	Peak
3		5385.00	23.50	36.94	15.78	40.36	89	60.00	-24.14 vertical	Average
4		5385.00	36.20	36.94	15.78	40.36	89	80.00	-31.44 vertical	Peak
5		5697.00	23.03	36.31	16.29	40.31	52	60.00	-24.68 vertical	Average
6		5697.00	35.73	36.31	16.29	40.31	52	80.00	-31.98 vertical	Peak

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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

Conducted Telecommunication Emissions

- 12 V (dc) Mode



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- PoE Mode



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Radiated Electric Field Emissions(Below 1 GHz)

- 12 V (dc) Mode



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- PoE Mode



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Radiated Electric Field Emissions(Above 1 GHz)

- 12 V (dc) Mode



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- PoE Mode



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

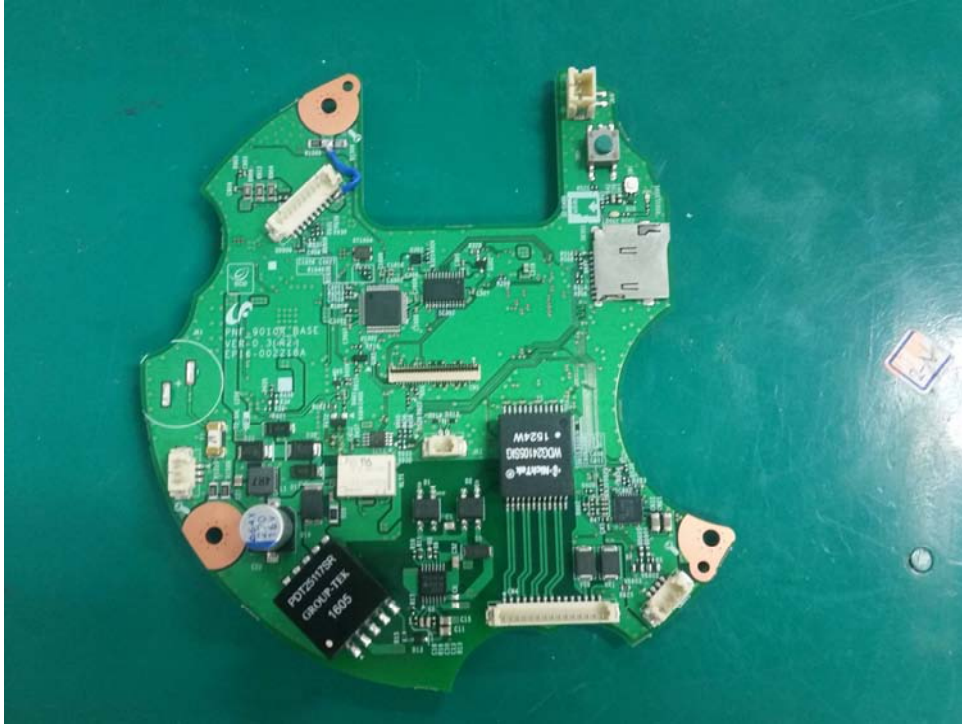
(Internal View)



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EUT Internal View – Main Board

(Top)



(Bottom)



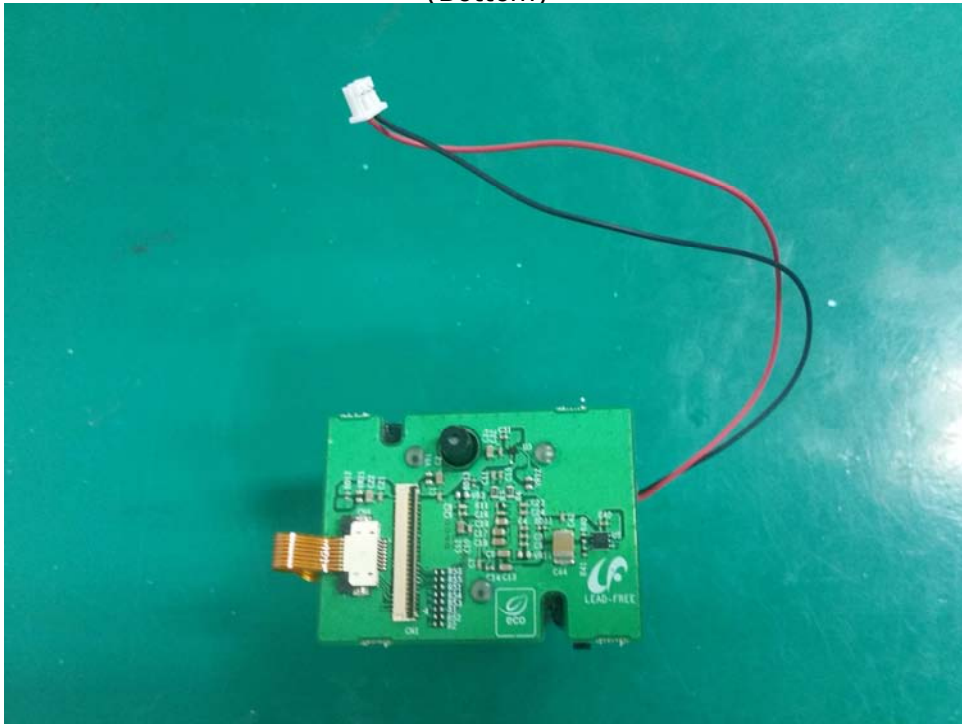
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EUT Internal View – Lens Board

(Top)



(Bottom)



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EUT Internal View – IR Board

(Top)



(Bottom)



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EUT Internal View – Sub Board

(Top)



(Bottom)



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