



EMC TEST REPORT For CE

Test Report No. : KES-E1-17T0364
Date of Issue : Jun. 09, 2017
Product name : NETWORK CAMERA
Model/Type No. : SNF-8010P
Variant Model : SNF-8010VMP
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Hanwha Techwin (Tianjin) Co., Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial
Park, TEDA, Tianjin, 300385, People's Republic of China.
Date of Receipt : May. 31, 2017
Test date : Jun. 05, 2017 – Jun. 07, 2017
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jin Bae Lee
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 09, 2017	KES-E1-17T0364	Issued

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1.0 General Product Description

Main Specifications of E.U.T are:

Items		Description		
		SNF-8010	SNF-8010V	SNF-8010VM
Video	Imaging Device	1/1.8" 6M PS CMOS		
	Total Pixels	6M		
	Effective Pixels	5.3M(2560 x 2048)		
	Scanning System	Progressive		
	Min. Illumination	Color : 0.9 Lux (1/30sec, F2.5, 50IRE) Color : 0.015 Lux (2sec, F2.5, 30IRE) B/W : 0.09 Lux (1/30sec, F2.5, 50IRE) B/W : 0.0015 Lux (2sec, F2.5, 30IRE)		
	Video Out	CVBS : 1.0 Vp-p / 75Ω composite		
Lens	Focal Length (Zoom Ratio)	1.14mm(Fixed)		
	Max. Aperture Ratio	F2.5		
	Angular Field of View	H : 187°, V : 187°, D : 187°		
	Min. Object Distance	0.3M ~ Infinity		
	Focus Control	Manual		
	Lens Type	Fixed Lens		
	Mount Type	Board Type (M12)		
Operational	Camera Title	Displayed up to 45 characters		
	Day & Night	True D&N		
	Backlight Compensation	BLC		
	Wide Dynamic Range	60dB†		
	Digital Noise Reduction	SSNR (2D+3D Noise Filter)		



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Items	Description		
	SNF-8010	SNF-8010V	SNF-8010VM
Operational	Motion Detection	Off / On (4 ea)	
	Privacy Masking	Off / On (32ea)	
	Gain Control	Off / Low / Middle / High	
	White Balance	ATW / AWC / Manual / Indoor / Outdoor / Mercury	
	Electronic Shutter Speed	2 ~ 1/12,000 sec	
	Digital Zoom	16x, Digital PTZ(Preset, Group)	
	Flip / Mirror	Off / On	
	Intelligent Video Analytics	Tampering, Audio Detection, Face Detection * Coming : Heat map('14.Nov), People counting ('14.Nov)	
	Alarm I/O	Input 1ea / Output 1ea	
	Audio In	Built in Mic., External MIC	External MIC
	Audio out	Line out (3.5mm stereo mini jack)	
	Alarm Triggers	Motion detection, Tampering, Audio Detection, Alarm Input, Network Disconnection	
	Alarm events	File upload via FTP and E-Mail Notification via E-Mail, TCP and HTTP local storage(SD/SDHC/SDXC) recording at Network disconnected & Event (Alarm Triggers) External output	
	View Composition	Camera Side: 360 view, Single Panorama, Double Panorama, Quad view, Single Rectangle, [360 + 3Rectangle, Single Panorama + 2Rectangle] : Coming '14. Nov CMS Side: 360 view, Single Panorama, Double Panorama, Quad view, Single Rectangle, 360 + 3Rectangle, Single Panorama + 2Rectangle	

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Items		Description		
		SNF-8010	SNF-8010V	SNF-8010VM
Network	Ethernet	RJ-45 (10/100BASE-T) : Female Type		M12 Connector Type
	Video Compression Format	H.264 (MPEG-4 Part 10/AVC), Motion JPEG		
	Resolution	Fisheye (Original)	<5.3M Original> 2560x2048, 1920x1080, 1600x1200 1280x1024, 1280x960, 1280x720 1024x768, 800x600, 720x480 640x480, 320x240	
		Double Panorama Singla Panorama Quad Single rectangle	1. Single Rectangle 800x600, 640x480, 320x240 2. Quad View 1600x1200, 1280x960, 1024x768, 800x600, 640x480, 320x240 3. Double Panorama 2048x1536, 1600x1200, 1280x960, 1024x768, 800x600, 640x480, 320x240 4. Single Panaroma 2048x768, 1600x600, 1280x480, 1024x384, 800x300, 640x240, 320x120 5. 360 view + 3 Rectangle : Coming '14.Nov 1600x1200, 1280x960, 1024x768, 800x600, 640x480, 320x240 6. Single Panorama + 2 Rectangle : Coming '14.Nov 1600x1200, 1280x960, 1024x768, 800x600, 640x480, 320x240	
	Smart Codec	Support		
	Max. Framerate	H.264 : Max 20fps at all resolutions MJPEG : 10fps for all resolution		
	Video Quality Adjustment	H.264 : Compression Level, Target Bitrate Level Control MJPEG : Quality Level Control		

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Items	Description		
	SNF-8010	SNF-8010V	SNF-8010VM
Network	Bitrate Control Method	H.264 : CBR or VBR MJPEG : VBR	
	Streaming Capability	Multiple Streaming (Up to 10 Profiles)	
	Audio Compression Format	G.711 μ -law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC (16KHz/48KHz) (Coming '14. Sep)	
	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	
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication	
	Streaming Method	Unicast / Multicast	
	Max. User Access	15 users at Unicast Mode	
	Memory Slot	Micro SD/SDHC/SDXC - motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS	
	Application Programming Interface	ONVIF Profile S SUNAPI (Samsung Protocol) SVNP 1.2	



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Items		Description		
		SNF-8010	SNF-8010V	SNF-8010VM
Network	Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian, Dutch, Croatian, Hungarian, Greek, Norway, Finland		
	Web Viewer	Supported OS : Windows XP / VISTA / 7 / 8, MAC OS X 10.7 Supported Browser : Microsoft Internet Explorer (Ver. 8~11) Mozilla Firefox (Ver. 9~19) Google Chrome (Ver. 15~25) Apple Safari (Ver. 6.0.2(Mac OS X 10.8, 10.7 only), 5.1.7) * Mac OS X only		
	Central Management Software	Use Samsung Techwin Viewer (SSM, Smart Viewer, iPolis Mobile Viewer)		
Environmental	Operating Temperature / Humidity	Indoor : -25°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH TBD Outdoor: -25°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH TBD * Start up should be done at above -10°C		
	Storage Temperature / Humidity	Indoor : -30°C ~ +60°C(-22°F ~ +140°F) / Less than 90% RH Outdoor: -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	EN-61373, EN-50155	
Electrical	Input Voltage / Current	DC12V±10%,PoE(IEEE802.3af,Class3)		
	Power Consumption	TBD		
Mechanical	Color / Material	IVORY/Aluminum		
	Dimension (Ø x H)	Ø145.9 x H49.6mm	Ø145.9 x H62.4mm	
	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 ☐ 230Vac ☐ 100 Vac ☐ 24 Vac ☒ 12 Vdc ☒ PoE
Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

The Variant model is management model of each different sellers.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	SNF-8010P	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	X56K	HN11N5151FJ0045 W	HANSUNG	-
Notebook Adaptor	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
POE ADAPTOR	POE36U-1AT-R	-	PHIHONG	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
MIC	CMK-303	-	CAMAC	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Smart Phone	A1530	-	APPLE	-

1.6 External I/O Cabling

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	3.5 mm	Speaker	3.5 mm	1.6	U
	3.5 mm	MIC	3.5 mm	1.7	U
	3 Pin	Alarm	3 Pin	1.7	U
Notebook	3.5 mm	Smart Phone	3.5 mm	0.3	U

* Unshielded=U, Shielded=S

- POE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	POE ADAPTOR	RJ-45 (OUT)	3.0	U
	RJ-45	Notebook	RJ-45	3.0	U
	3.5 mm	Speaker	3.5 mm	1.6	U
	3.5 mm	MIC	3.5 mm	1.7	U
	3 Pin	Alarm	3 Pin	1.7	U
Notebook	RJ-45	POE ADAPTOR	RJ-45 (IN)	3.0	U
	3.5 mm	Smart Phone	3.5 mm	0.3	U

* Unshielded=U, Shielded=S



1.7 E.U.T Operating Mode(s)

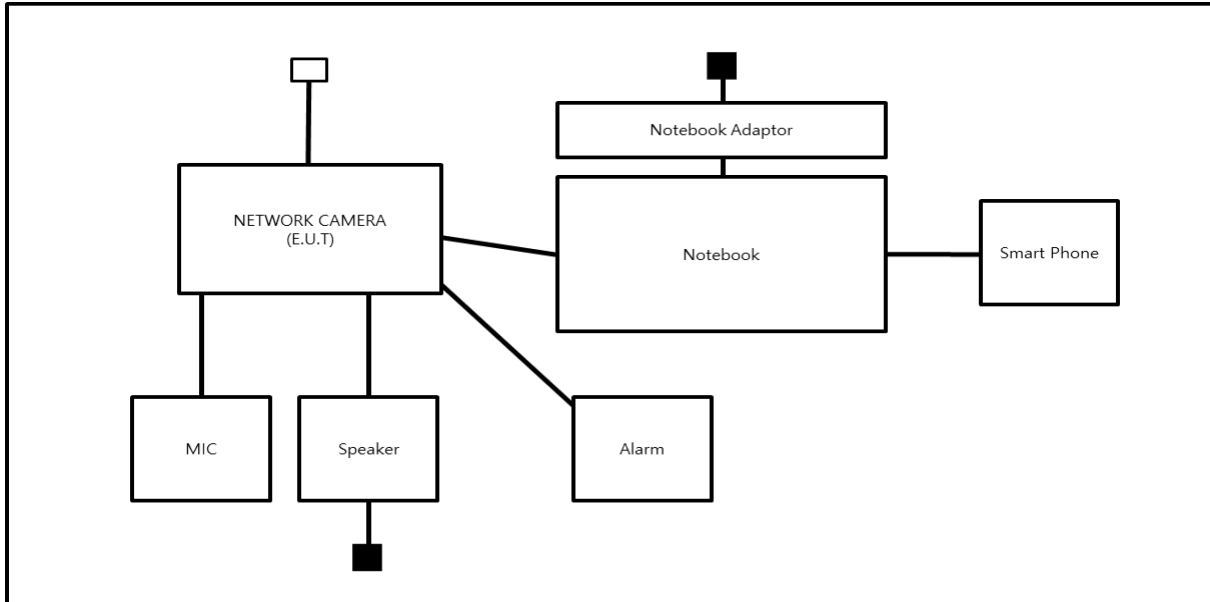
Test mode	operating
DC 12 V Mode	E.U.T Monitoring, Ping test, 1 kHz
POE Mode	E.U.T Monitoring, Ping test, 1 kHz

E.U.T Test operating S/W		
Name	Version	Manufacture Company
WebViewer	-	Hanwha Techwin Co., Ltd.

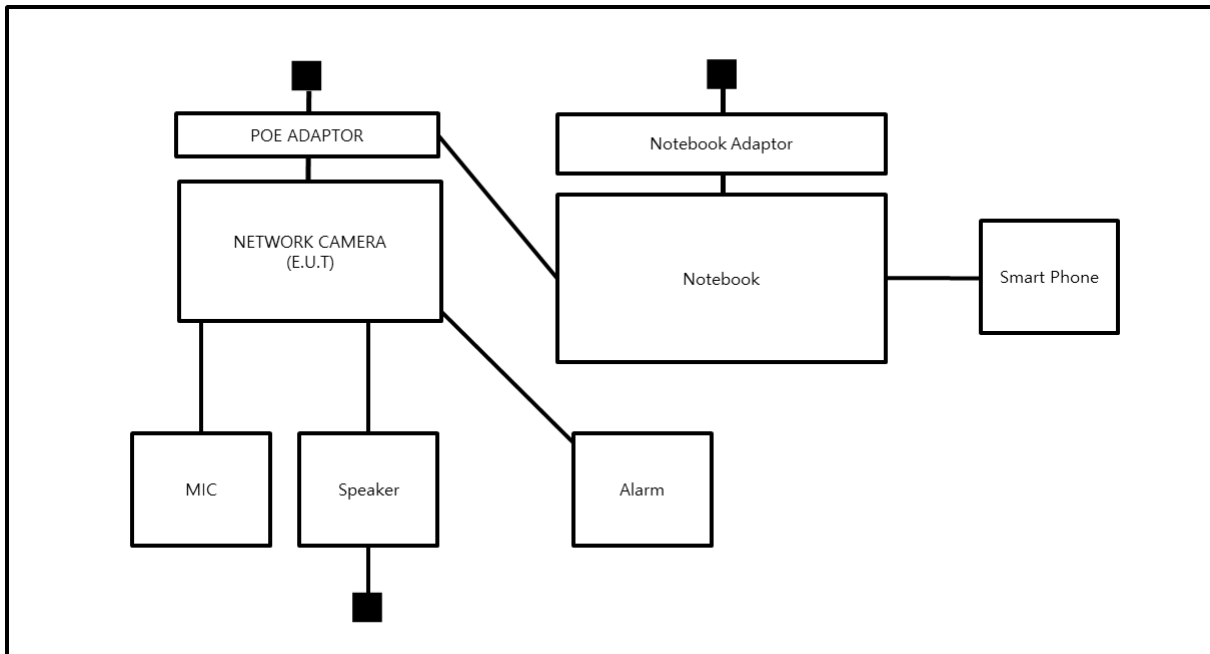
1.8 Configuration

■ AC Main
□ DC Main

- DC 12 V Mode



- POE Mode



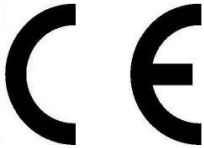
1.9 Calibration Details of Equipment Used for Measurement

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 473-21 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 55032:2012/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☐ 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 | | |
| ☐ 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 | | |



2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	EMC32	R & S	9.12.00	-
☐	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☐	LISN	ENV216	R & S	101137	02, 03, 2018
☐	LISN	ENV216	R & S	101786	04, 27, 2018
☐	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017

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

-

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jun. 06, 2017

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☒	8-WIRE ISN CAT3	CAT3 8158	SCHWARZBECK	8158-0019	03, 29, 2018
☒	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	03, 29, 2018
☐	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	08, 11, 2017

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 39,7 %

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. 05, 2017

Test Location

☒ OPEN AREA TEST SITE #2 ☐ SAC #4(10 m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	-	-	-	-
☒	EMI TEST RECEIVER	ESVS10	R & S	826008/014	04, 18, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test Conditions

Temperature: 27,3 °C
Relative Humidity: 31,0 %

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. 05, 2017

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, 19, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01729	05, 31, 2018
☒	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2018

Test Conditions

Temperature: 20,4 °C

Relative Humidity: 37,6 %

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.



2.5 Harmonic Current Emissions

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	dpa.control	EM TEST	5.4.8.0	-
☐	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2017
☐	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	08, 08, 2017

Test Conditions

Relative Humidity: °C
 %

Classification of Equipment for Harmonic Current Emissions

- ☐ Class A
- ☐ Class B
- ☐ Class C(Below 25 W)
- ☐ Class C(Above 25 W)
- ☐ Class D

Test Results

The requirements are:

- ☐ PASS
- ☐ NOT PASS
- ☒ NOT APPLICABLE

Remarks

-

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 Alarm systems-Part 4: Electromagnetic compatibility Product family
standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of discharge is permissible, providing
That there is no residual is permissible, providing that there is no residual change in the EUT or any
change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the application of discharge is permissible, providing
That there is no residual is permissible, providing that there is no residual change in the EUT or any
change in outputs, which could be interpreted by associated equipment as a change,
and no such flickering of indicators oeuvres at $U = 130 \text{ dB}\mu\text{V}$.

For component of CCTV systems, where the status is monitored by observing the TV picture,
then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, providing:

- (a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings etc.)
- (b) at $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could
still be used; and
- (c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.
Flickering of an indicator during the conditioning is permissible, providing that there is no residual
change in the EUT or any change in outputs, which could be interpreted by associated equipment
as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Jun. 07, 2017

Test Location

EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	-	-	-	-
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2018
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 21,7 °C
Relative Humidity: 40,0 %
Atmospheric Pressure: 99,9 kPa



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Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

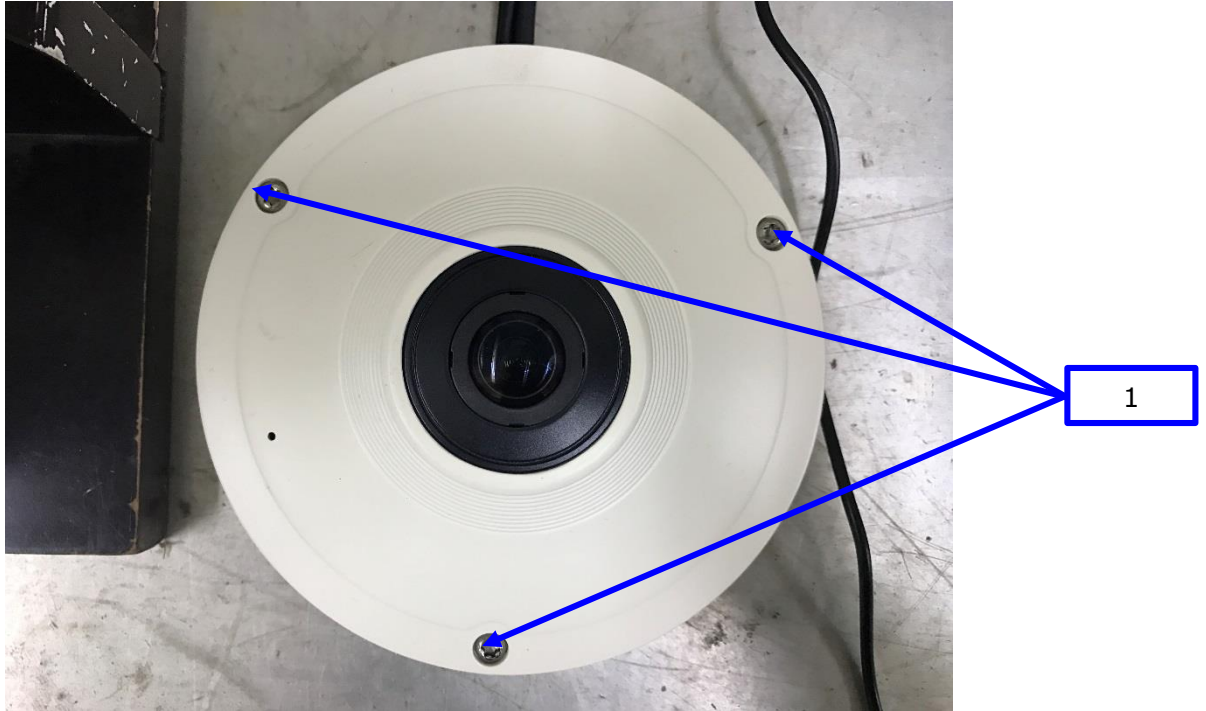
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact



**Test Data****- DC 12 V Mode****Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Screw	Contact Discharge	Complied	-

- POE Mode**Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Screw	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.



3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Jun. 06, 2017

Test Location

EMS-RS: ☒ SEMI ANECHOIC CHAMBER #2 ☐ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	KTI_RS2012	KOREA TECHNOLOGY INSTITUTE CO., LTD	2.1.1	-
☒	SIGNAL GENERATOR	ESG-3000A	HP	US37040210	11, 01, 2017
☒	AMPLIFIER	ITA0300-200	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA0750-200	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA1500-100	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA2500-100	Infinitech	-	11, 01, 2017
☒	POWER METER	E4419B	Agilent	MY45101506	06, 27, 2017
☒	AVERAGE POWER SENSOR	E9301A	Agilent	-	06, 27, 2017
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41495698	11, 17, 2017
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 D	SCHWARZBECK	9128D038	-
☐	MICROPHONE	MP201	BSWA	520963	11, 11, 2017
☐	SOUND ACOUSTIC TESTER	TST-1000	TESTEK	150045	11, 08, 2017

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 39,7 %
Atmospheric Pressure: 99,6 kPa



Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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Test Data

- DC 12 V Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

- POE Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Jun. 07, 2017

Test Location

EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.0.9.0	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	070925	06, 27, 2017

Test Conditions

Temperature: 21,7 °C
Relative Humidity: 40,0 %
Atmospheric Pressure: 99,9 kPa

Test Specifications

Pulse Amplitude & Polarity: (AC Power Lines)	☐ ± 1.0 kV ☐ ± 4.0 kV	☐ ± 2.0 kV
Pulse Amplitude & Polarity: (Other supply / Signal Lines)	☐ ± 0.5 kV ☐ ± 2.0 kV	☒ ± 1.0 kV
Burst Period:	☒ 300 ms	☐ 2 s
Repetition Rate:	☐ 5 kHz	☒ 100 kHz
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	



Test Data

- DC 12 V Mode

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L1 – L2	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm	Complied	Complied



- POE Mode

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.



3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

Test Date

Jun. 07, 2017

Test Location

EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.0.9.0	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	CDN	CNV 508N1	EM TEST	P1551168979	04, 26, 2018

Test Conditions

Temperature: 21,7 °C
Relative Humidity: 40,0 %
Atmospheric Pressure: 99,9 kPa



Test Specifications

AC Power Lines

Source Impedance: 12 ohm for common mode and 2 ohm for differential mode

Surge Amplitude : Common Mode
☐ (0,5 / 1,0 / 2,0) kV
Differential Mode
☐ (0,5 / 1,0) kV

Number of Surges: ☐ 5 surges per angle

Angle: ☐ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity: ☐ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☐ Complied

Other supply / Signal Lines

Source Impedance: 42 ohm for common mode

Surge Amplitude: Common Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied



Test Data

- DC 12 V Mode

☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	-	-
L – PE	-	-
N – PE	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45	Complied	Complied

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- POE Mode

☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	-	-
L – PE	-	-
N – PE	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Jun. 07, 2017

Test Location

EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.11	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 28, 2017
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 28, 2017
☒	CDN	CDN M016	TESEQ	43694	11, 28, 2017
☒	CDN	CDN T800	TESEQ	42800	11, 28, 2017
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 30, 2017
☐	MICROPHONE	MP201	BSWA	520963	11, 11, 2017
☐	SOUND ACOUSTIC TESTER	TST-1000	TESTEK	150045	11, 08, 2017

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 36,2 %
Atmospheric Pressure: 99,9 kPa



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Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

Required Performance Criteria: ☒ Complied

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Test Data

- DC 12 V mode

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L1 – L2	CDN	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm	EM Injection Clamp	Complied



- POE mode

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm	EM Injection Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

Test Date

N/A

Test Location

EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMS Test S/W	iec.control	EM TEST	5.0.9.0	-
☐	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☐	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 27, 2017

Test Conditions

Temperature: °C
Relative Humidity: %
Atmospheric Pressure: kPa



Test Specifications & Observations/Remarks

(Test Voltage : 50 Hz)

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☐ 20 % dip	☐ 250 / 5000	_____
☐ 30 % dip	☐ 25 / 500	_____
☐ 60 % dip	☐ 10 / 200	_____
☐ 100 % dip	☐ 250 / 5000	_____

- Voltage variations

☐ Unom + 10 %	☐ 253.0 V (ac)	_____
☐ Unom - 15 %	☐ 195.5 V (ac)	_____

Observations:

Complied – No degradation of function

Test Results

- ☐ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☒ NOT APPLICABLE

Remarks

-



APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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[NEUTRAL]

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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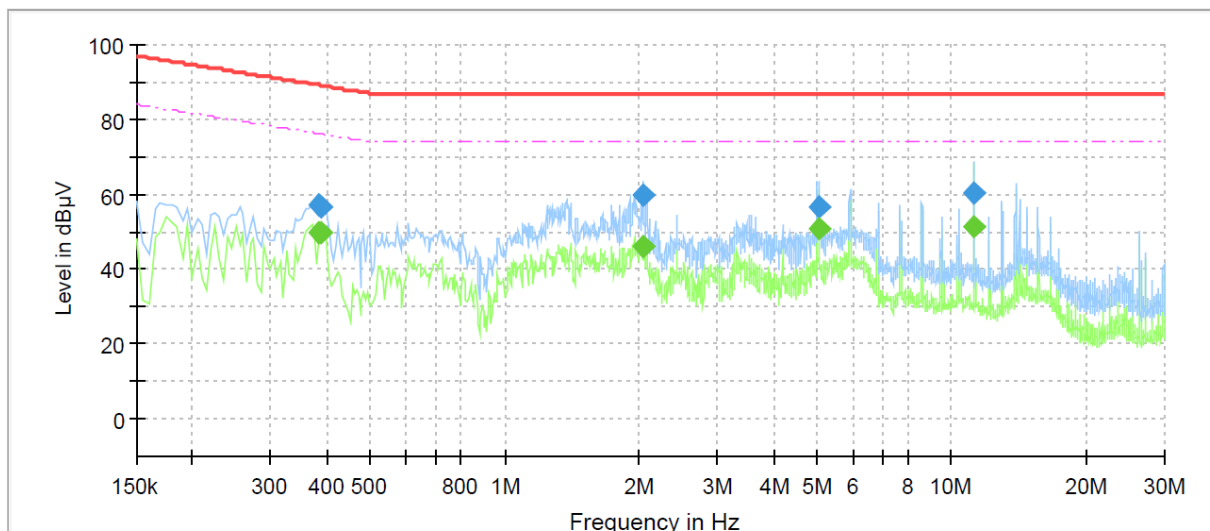
Conducted Emissions at Telecommunication Ports

- DC 12 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SNF-8010P
Mode	DC 12 V _ 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)
0.385000	---	49.77	76.17	26.40	1000.0	9.000	Single Line	21.1
0.385000	57.14	---	89.17	32.03	1000.0	9.000	Single Line	21.1
0.390000	---	49.89	76.06	26.17	1000.0	9.000	Single Line	21.0
0.390000	56.81	---	89.06	32.25	1000.0	9.000	Single Line	21.0
2.040000	---	45.85	74.00	28.15	1000.0	9.000	Single Line	19.9
2.040000	59.70	---	87.00	27.30	1000.0	9.000	Single Line	19.9
5.055000	---	50.86	74.00	23.14	1000.0	9.000	Single Line	19.8
5.055000	56.63	---	87.00	30.37	1000.0	9.000	Single Line	19.8
11.250000	---	51.52	74.00	22.48	1000.0	9.000	Single Line	20.0
11.250000	60.58	---	87.00	26.42	1000.0	9.000	Single Line	20.0

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

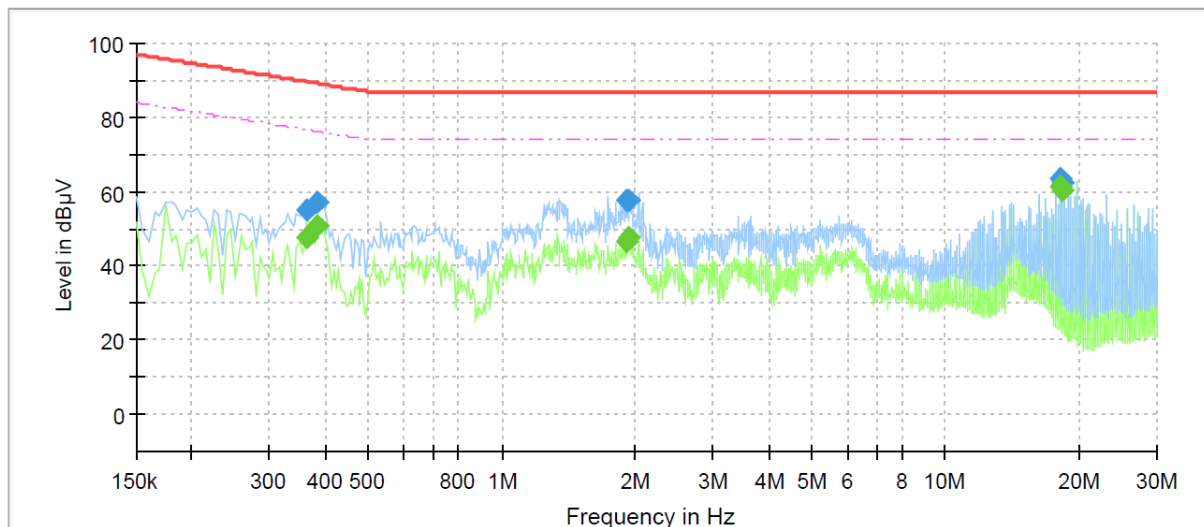
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: SNF-8010P
Mode: DC 12 V _ 100 Mbps
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.365000	---	47.63	76.61	28.98	1000.0	9.000	Single Line	20.6
0.365000	54.79	---	89.61	34.82	1000.0	9.000	Single Line	20.6
0.385000	---	50.78	76.17	25.39	1000.0	9.000	Single Line	20.6
0.385000	57.32	---	89.17	31.85	1000.0	9.000	Single Line	20.6
1.905000	---	46.70	74.00	27.30	1000.0	9.000	Single Line	19.5
1.905000	57.55	---	87.00	29.45	1000.0	9.000	Single Line	19.5
1.940000	---	47.78	74.00	26.22	1000.0	9.000	Single Line	19.5
1.940000	57.64	---	87.00	29.36	1000.0	9.000	Single Line	19.5
18.245000	---	61.37	74.00	12.63	1000.0	9.000	Single Line	19.6
18.245000	63.60	---	87.00	23.40	1000.0	9.000	Single Line	19.6
18.305000	---	60.42	74.00	13.58	1000.0	9.000	Single Line	19.6
18.305000	62.59	---	87.00	24.41	1000.0	9.000	Single Line	19.6

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

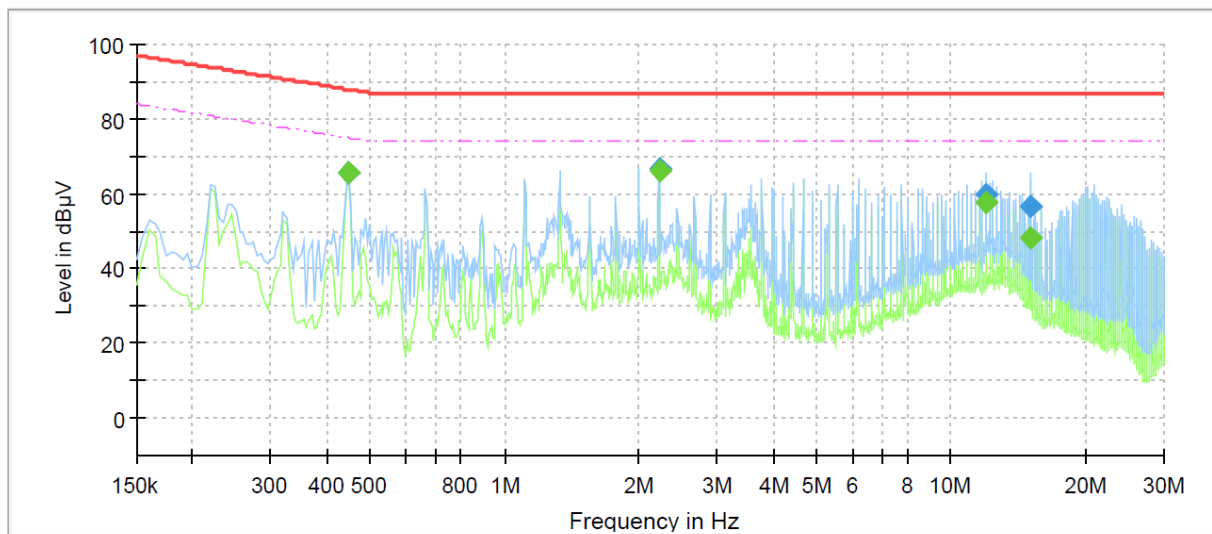
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

- POE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SNF-8010P
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)
0.445000	---	65.55	74.97	9.42	1000.0	9.000	Single Line	20.9
0.445000	65.57	---	87.97	22.40	1000.0	9.000	Single Line	20.9
2.220000	---	66.32	74.00	7.68	1000.0	9.000	Single Line	19.9
2.220000	66.51	---	87.00	20.49	1000.0	9.000	Single Line	19.9
11.995000	---	57.64	74.00	16.36	1000.0	9.000	Single Line	20.0
11.995000	60.07	---	87.00	26.93	1000.0	9.000	Single Line	20.0
15.000000	---	48.13	74.00	25.87	1000.0	9.000	Single Line	20.1
15.000000	56.38	---	87.00	30.62	1000.0	9.000	Single Line	20.1

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

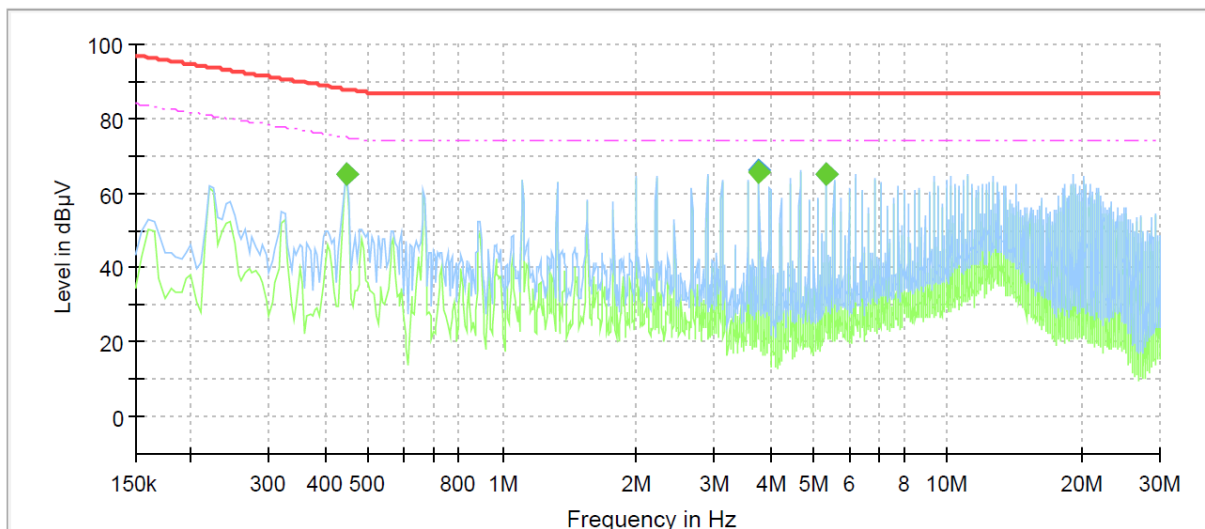
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: SNF-8010P
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)
0.445000	---	65.19	74.97	9.78	1000.0	9.000	Single Line	20.4
0.445000	65.22	---	87.97	22.75	1000.0	9.000	Single Line	20.4
3.775000	---	65.81	74.00	8.19	1000.0	9.000	Single Line	19.3
3.775000	65.92	---	87.00	21.08	1000.0	9.000	Single Line	19.3
5.330000	---	65.05	74.00	8.95	1000.0	9.000	Single Line	19.3
5.330000	65.34	---	87.00	21.66	1000.0	9.000	Single Line	19.3

◆ 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))

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

- DC 12 V 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]
296.74	16.50	H	4.00	13.36	4.08	33.94	47.00	13.06
371.40	13.90	V	1.15	14.98	4.40	33.28	47.00	13.72
445.15	17.10	H	4.00	16.40	5.07	38.57	47.00	8.43
519.84	17.20	V	1.19	17.74	5.36	40.30	47.00	6.70
594.54	10.20	H	3.84	19.21	5.84	35.25	47.00	11.75
593.51	11.20	V	1.19	19.19	5.83	36.22	47.00	10.78

* H : Horizontal, V : Vertical

◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

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- POE Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
42.82	21.40	V	1.00	12.62	1.58	35.60	40.00	4.40
138.04	11.90	H	4.00	7.67	2.65	22.22	40.00	17.78
296.74	17.80	H	3.82	13.36	4.08	35.24	47.00	11.76
371.91	8.20	V	1.46	14.99	4.40	27.59	47.00	19.41
445.15	16.10	H	3.75	16.40	5.07	37.57	47.00	9.43
519.84	17.20	V	1.28	17.74	5.36	40.30	47.00	6.70

* H : Horizontal, V : Vertical

◆ Calculation

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

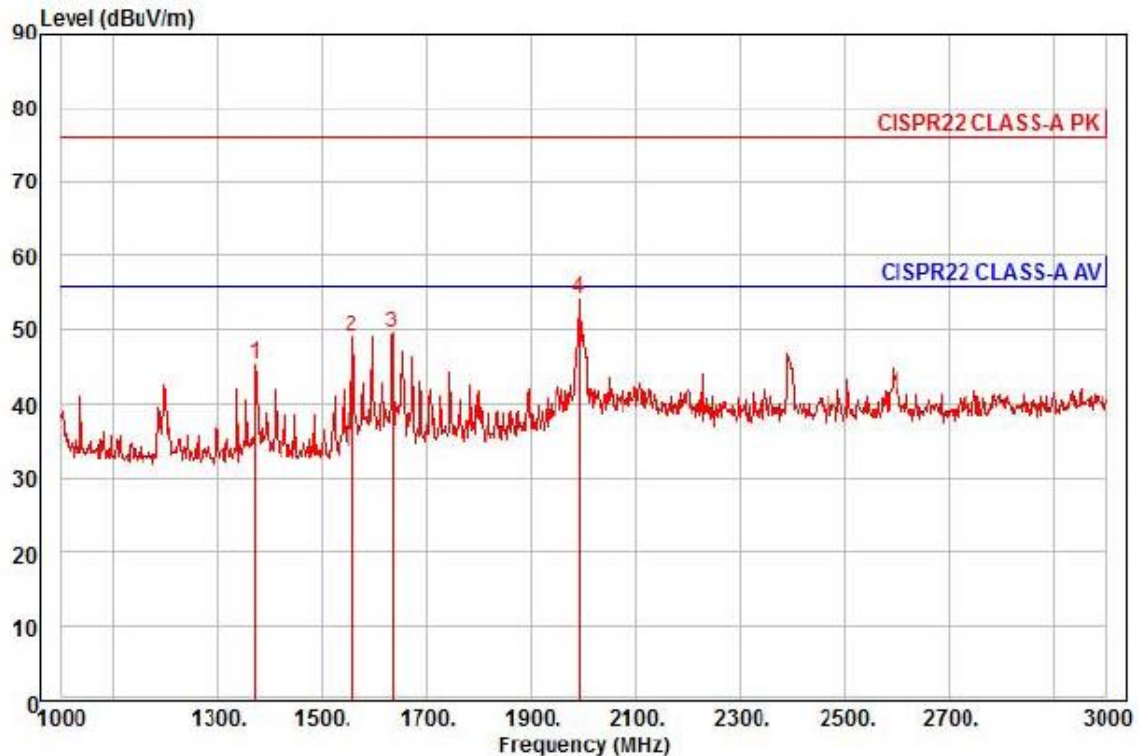
Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V mode



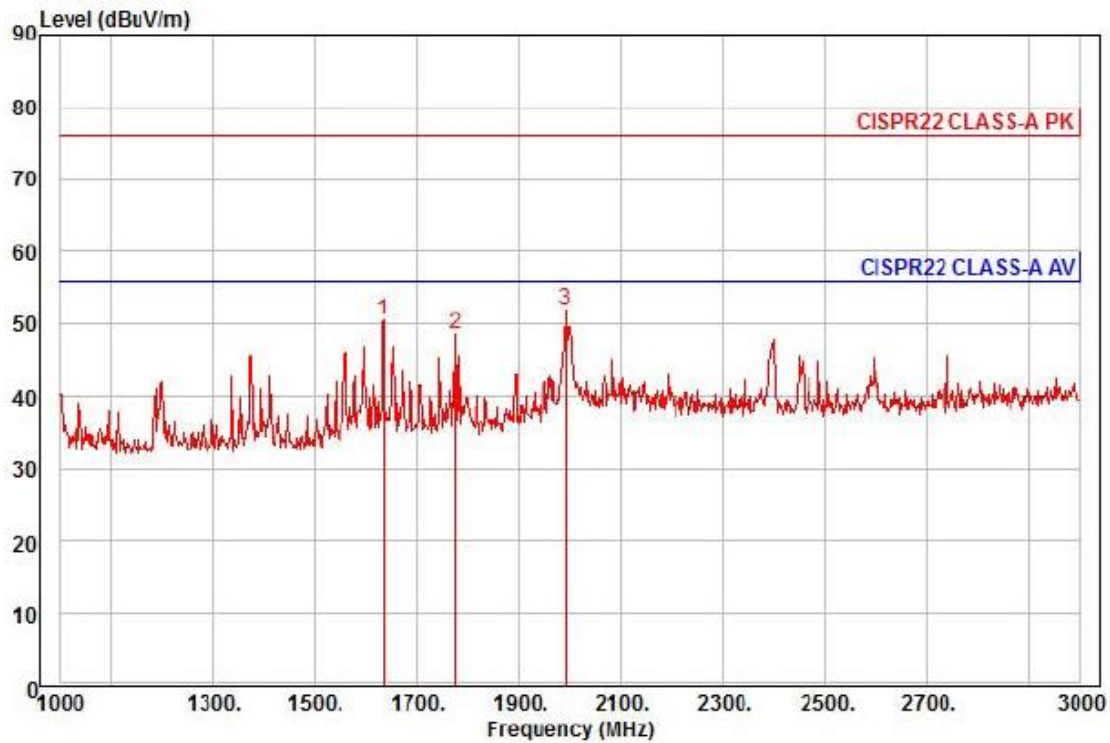
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : DC 12 V
Memo :

	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	1372.00	49.72	23.63	7.64	35.73	210	76.00	-30.74	horizontal	Peak
2	1558.00	52.29	24.25	8.19	35.56	190	76.00	-26.83	horizontal	Peak
3	1634.00	51.97	24.55	8.40	35.50	6	76.00	-26.58	horizontal	Peak
4 pp	1992.00	54.18	25.98	9.32	35.18	328	76.00	-21.70	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



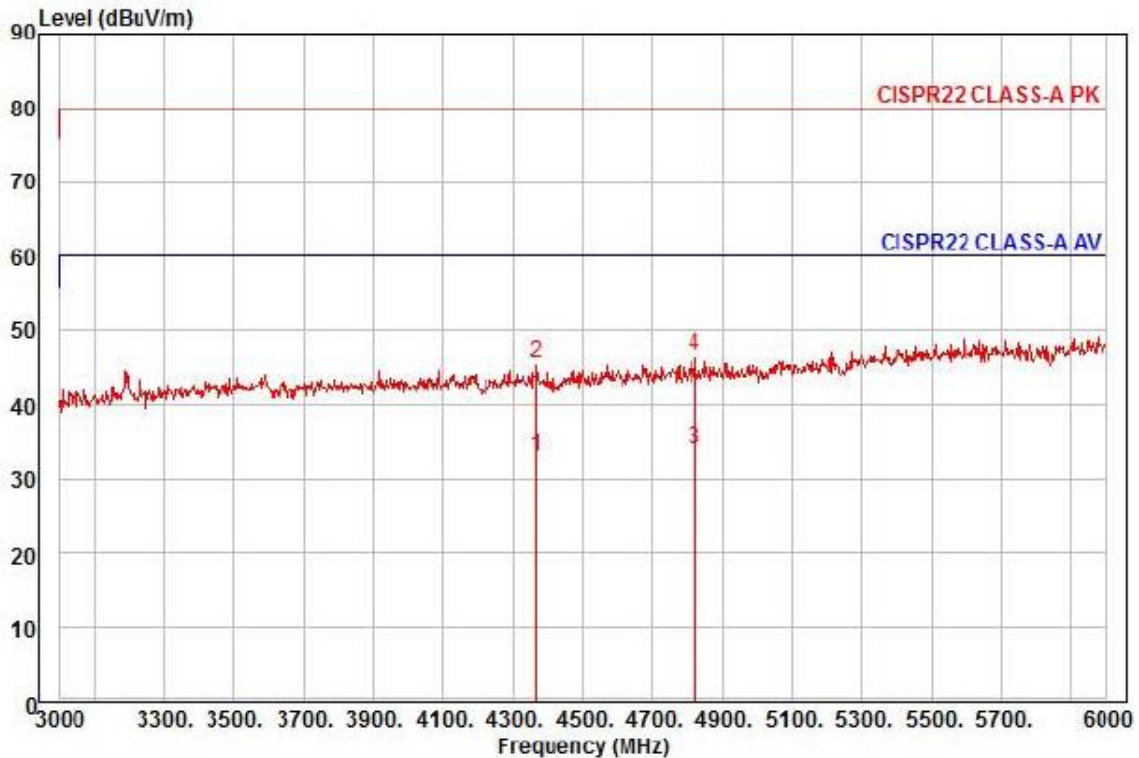
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : DC 12 V
Memo :

	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	1634.00	53.06	24.55	8.40	35.50	4	76.00	-25.49	vertical	Peak
2	1774.00	50.07	25.11	8.76	35.37	252	76.00	-27.43	vertical	Peak
3 pp	1992.00	51.89	25.98	9.32	35.18	336	76.00	-23.99	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : DC 12 V
Memo :

	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	4365.00	21.87	32.40	14.21	35.41	162	80.00	-46.93	horizontal	Average
2	4365.00	34.38	32.40	14.21	35.41	162	80.00	-34.42	horizontal	Peak
3 av	4821.00	21.43	33.03	15.12	35.57	139	80.00	-45.99	horizontal	Average
4 pp	4821.00	34.08	33.03	15.12	35.57	139	80.00	-33.34	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

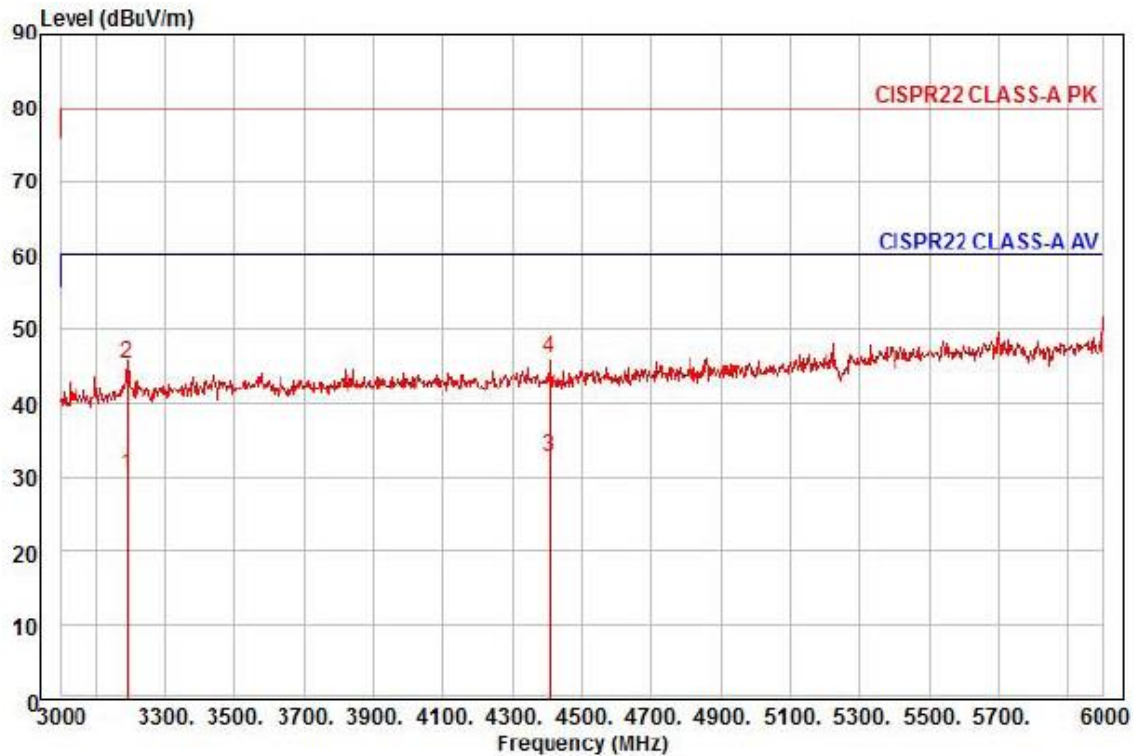
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



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Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : DC 12 V
Memo :

	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	3189.00	23.71	30.27	12.04	35.51	130	80.00	-49.49	vertical	Average
2	3189.00	38.67	30.27	12.04	35.51	130	80.00	-34.53	vertical	Peak
3 av	4404.00	21.64	32.39	14.28	35.42	64	80.00	-47.11	vertical	Average
4 pp	4404.00	34.90	32.39	14.28	35.42	64	80.00	-33.85	vertical	Peak

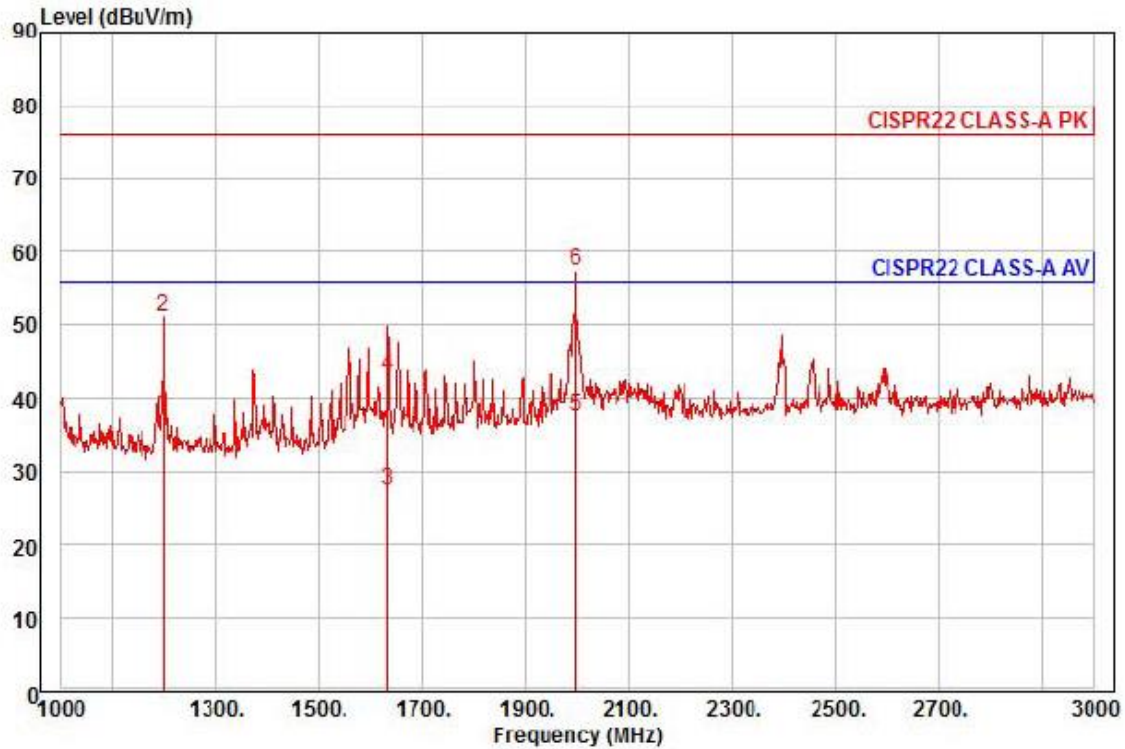
◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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- POE Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : POE
Memo :

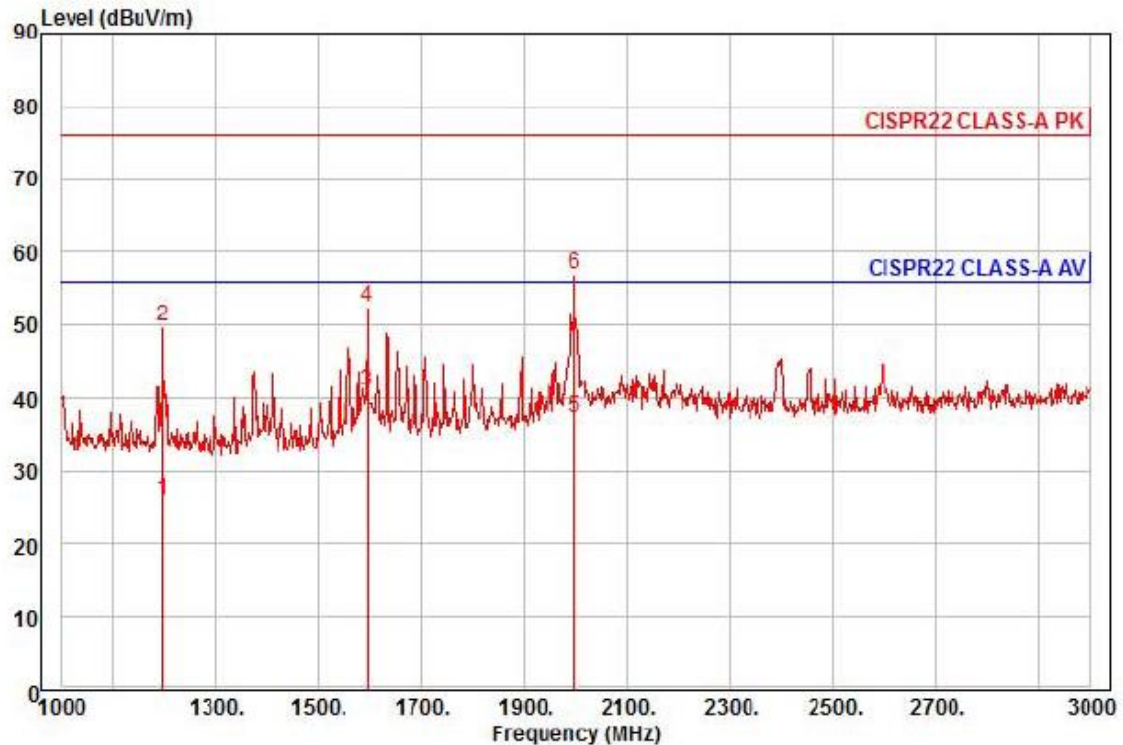
		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	av	1200.00	43.44	23.11	7.14	35.88	68	76.00	-38.19	horizontal Average
2		1200.00	56.98	23.11	7.14	35.88	68	76.00	-24.65	horizontal Peak
3		1632.00	30.14	24.55	8.39	35.50	193	76.00	-48.42	horizontal Average
4		1632.00	45.69	24.55	8.39	35.50	193	76.00	-32.87	horizontal Peak
5		1998.00	37.35	26.00	9.33	35.17	336	76.00	-38.49	horizontal Average
6	pp	1998.00	57.23	26.00	9.33	35.17	336	76.00	-18.61	horizontal Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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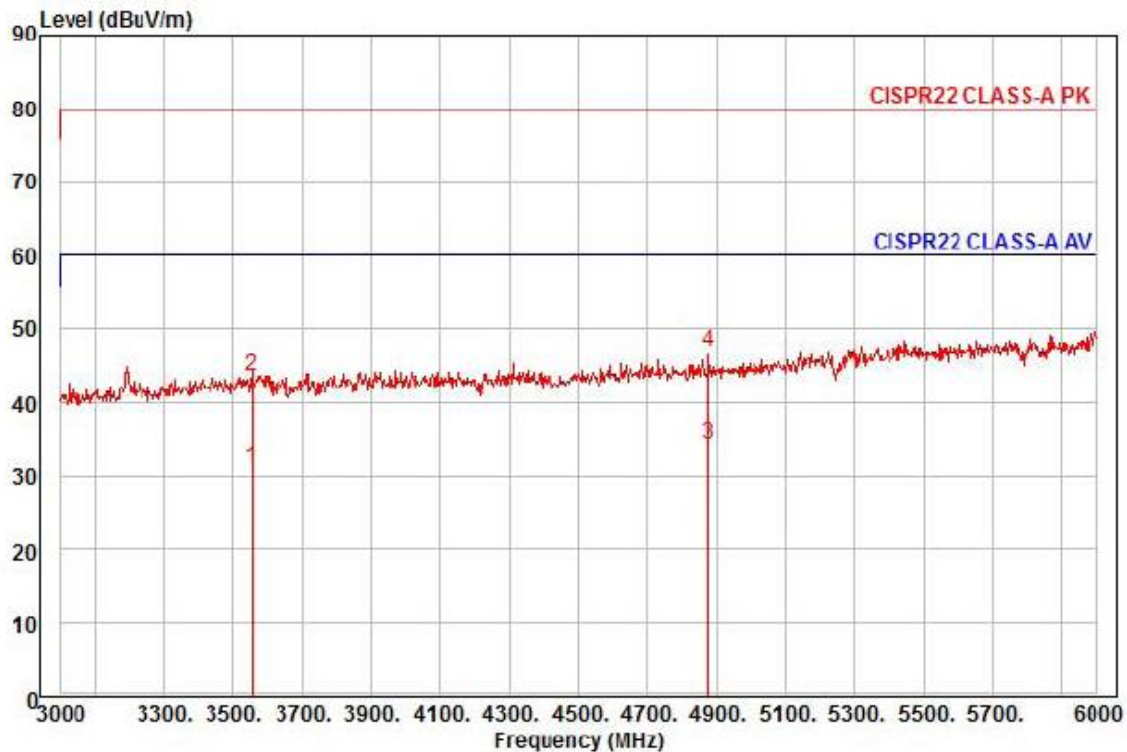
Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : POE
Memo :

	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	1198.00	31.70	23.10	7.13	35.88	331	76.00	-49.95	vertical	Average
2	1198.00	55.39	23.10	7.13	35.88	331	76.00	-26.26	vertical	Peak
3 av	1596.00	43.89	24.40	8.30	35.53	151	76.00	-34.94	vertical	Average
4	1596.00	55.29	24.40	8.30	35.53	151	76.00	-23.54	vertical	Peak
5	1998.00	37.03	26.00	9.33	35.17	347	76.00	-38.81	vertical	Average
6 pp	1998.00	56.79	26.00	9.33	35.17	347	76.00	-19.05	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber

Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : SNF-8010P

Mode : POE

Memo :

	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	3555.00	22.52	31.30	12.72	35.40	232	80.00	-48.86	horizontal	Average
2	3555.00	35.14	31.30	12.72	35.40	232	80.00	-36.24	horizontal	Peak
3 av	4878.00	21.57	33.15	15.18	35.59	279	80.00	-45.69	horizontal	Average
4 pp	4878.00	34.18	33.15	15.18	35.59	279	80.00	-33.08	horizontal	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

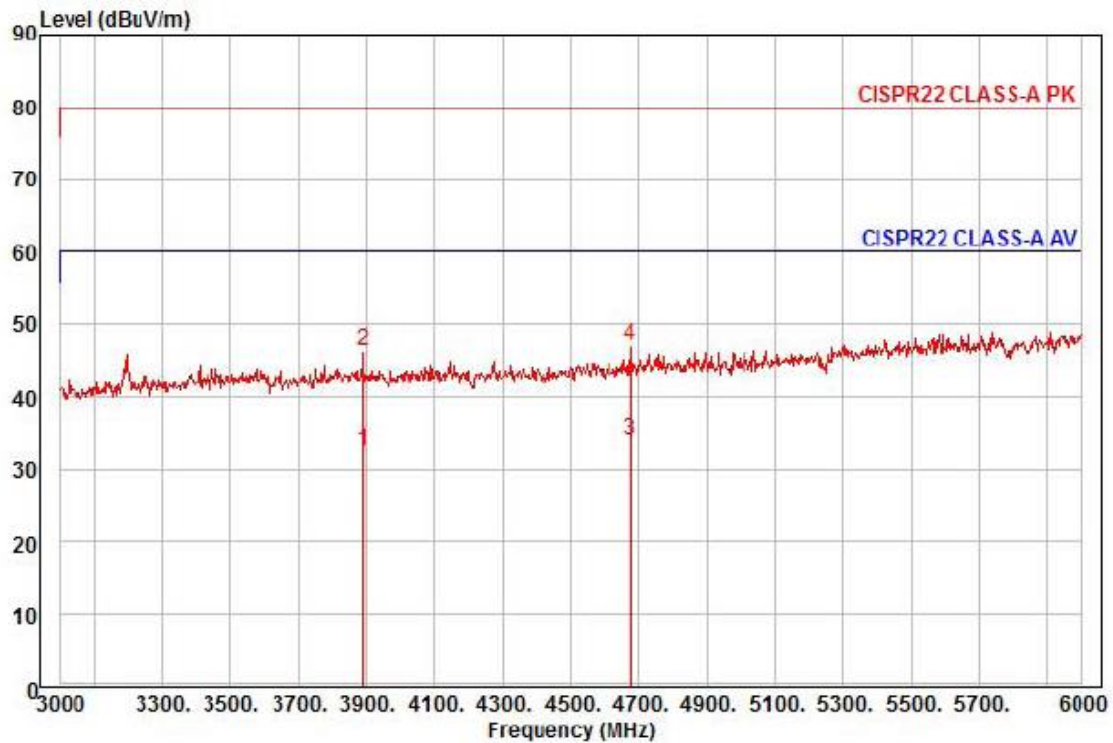
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



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Site : chamber
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SNF-8010P
Mode : POE
Memo :

	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	3891.00	22.45	32.21	13.36	35.31	17	80.00	-47.29	vertical	Average
2	3891.00	36.01	32.21	13.36	35.31	17	80.00	-33.73	vertical	Peak
3 av	4677.00	21.94	32.73	14.83	35.52	319	80.00	-46.02	vertical	Average
4 pp	4677.00	35.07	32.73	14.83	35.52	319	80.00	-32.89	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Test Data - Voltage Fluctuations

Maximum Flicker results

	EUT values	Limit	Result
Pst	N/A		
Plt			
dc [%]			
dmax [%]			
Tmax [s]			



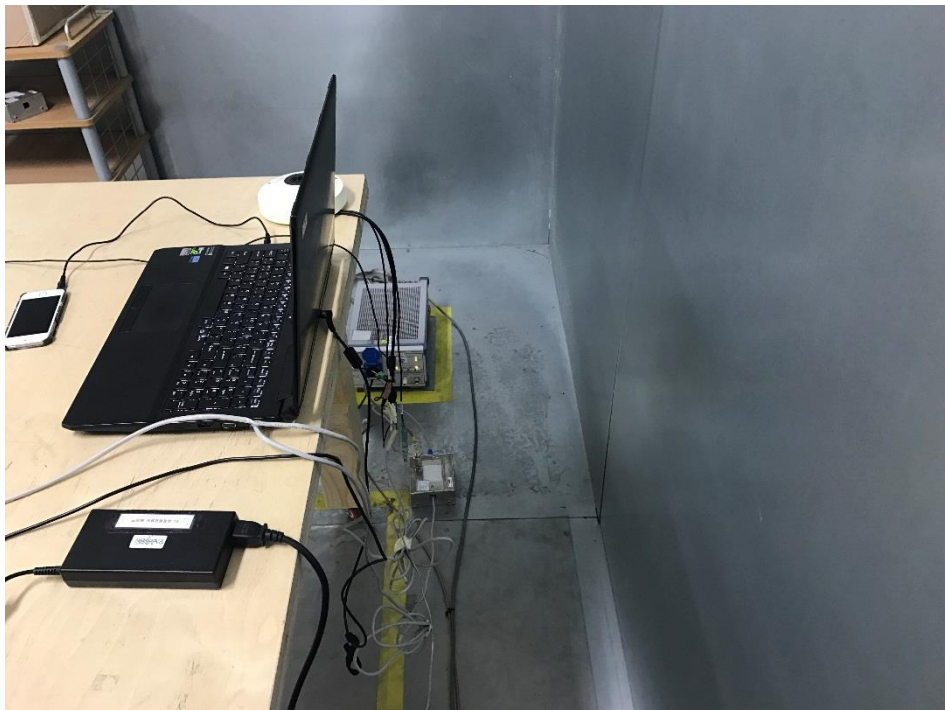
Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

Conducted Telecommunication Emissions



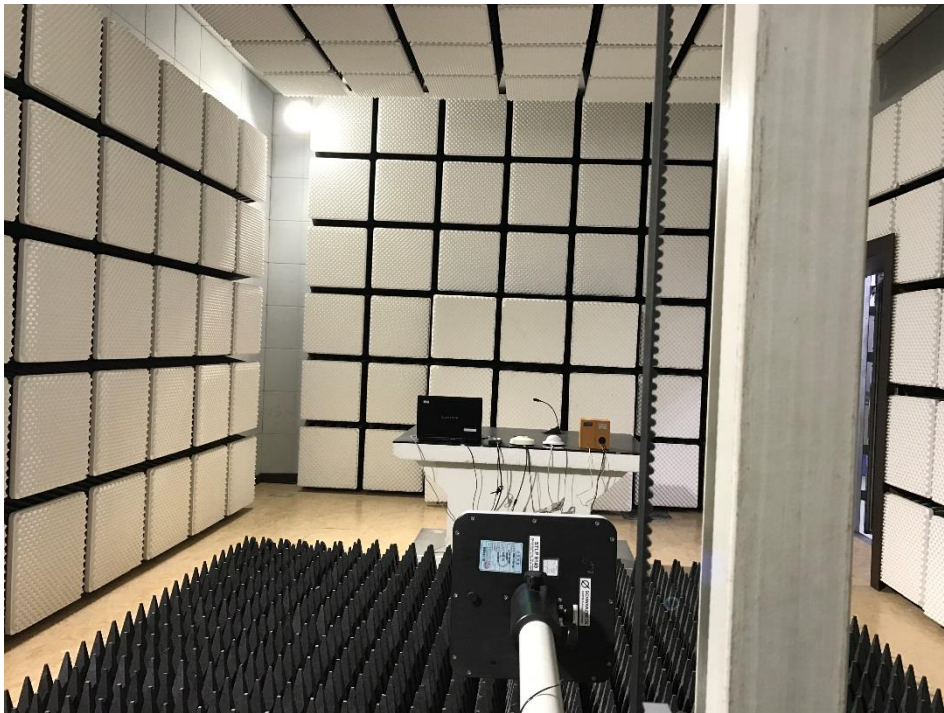
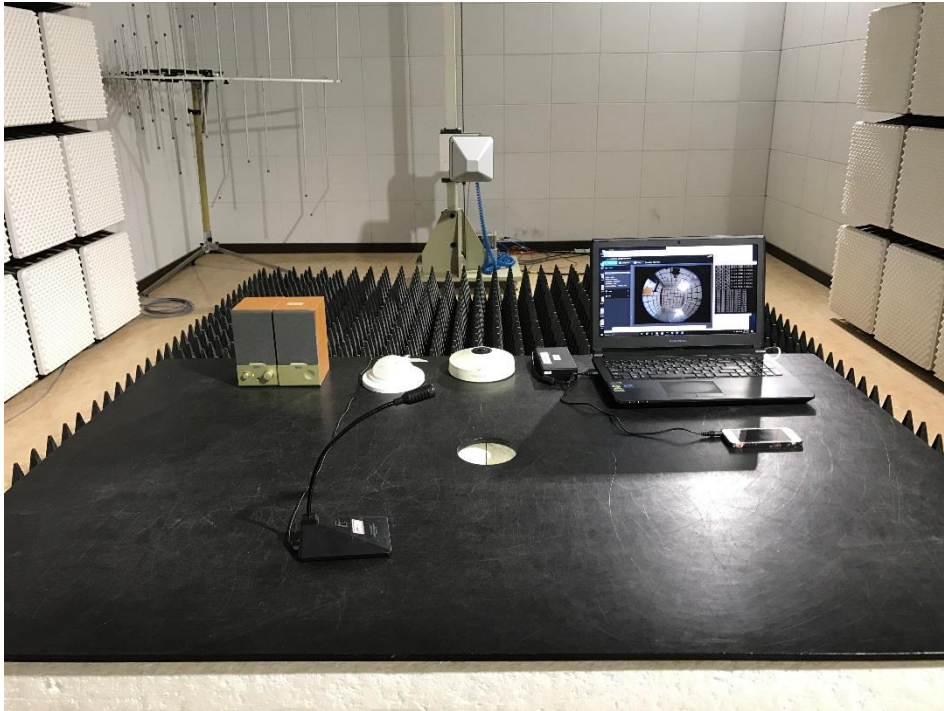
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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Harmonic Current Emissions and Voltage Fluctuations and Flicker

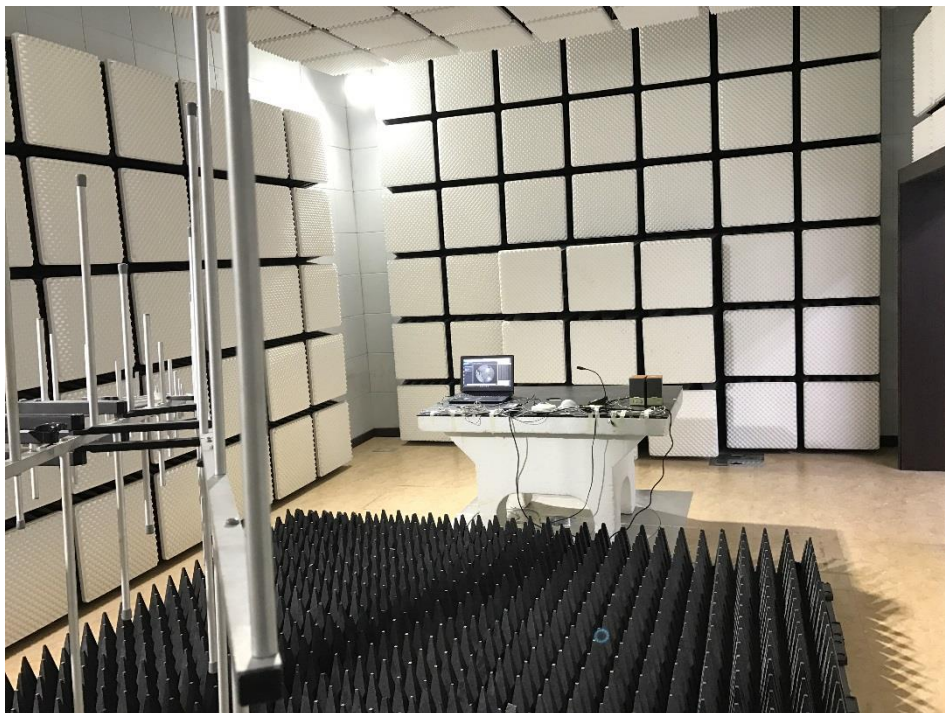
N/A

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Electrostatic Discharge

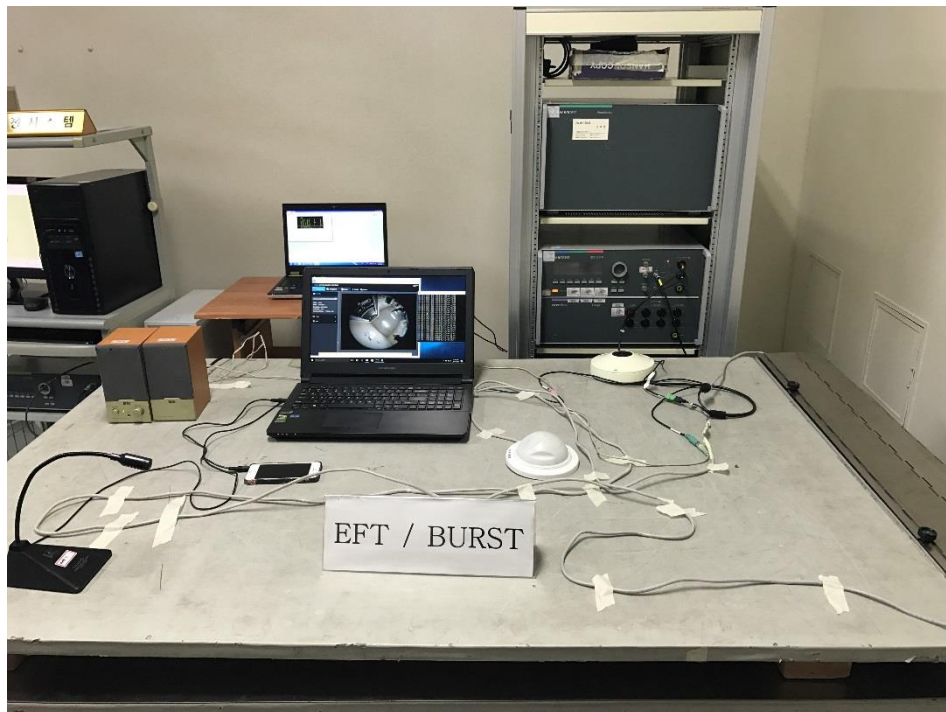
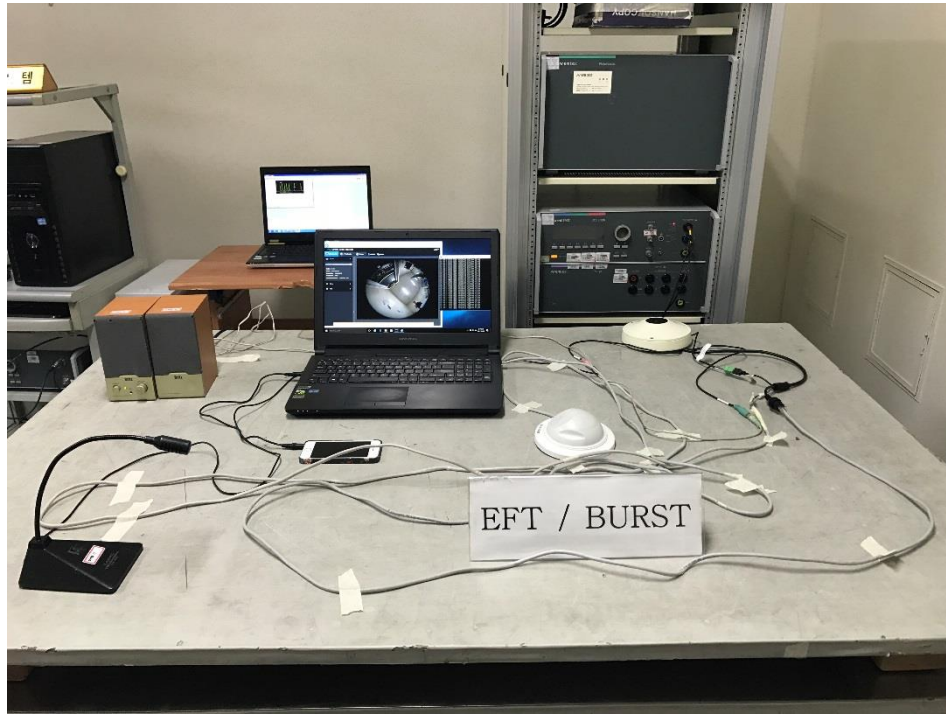


Radiated Electric Field Immunity



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Electrical Fast Transients/Bursts



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Surge Transients



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Conducted Disturbance



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Voltage Dips and Short Interruptions

N/A

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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

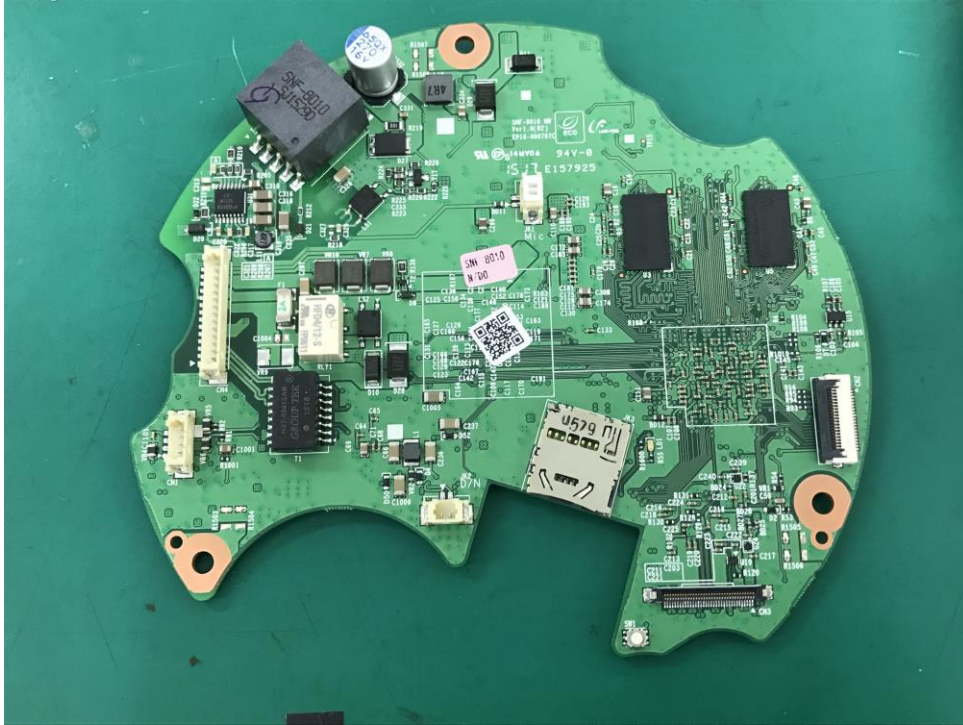
(Internal View)



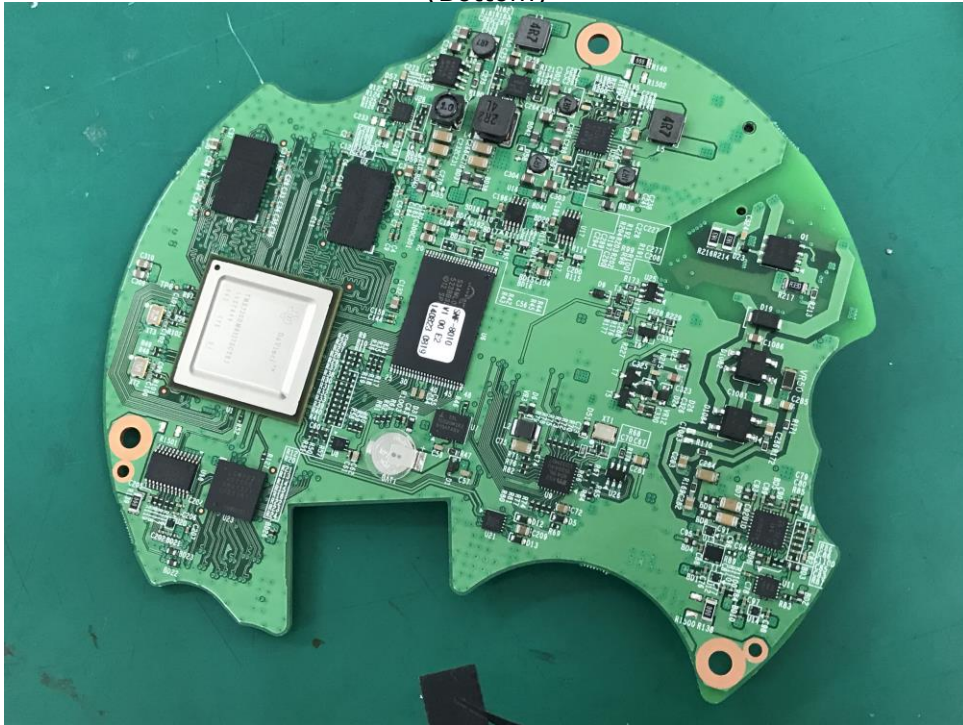
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EUT Internal View – Board 1

(Top)



(Bottom)



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EUT Internal View – Board 2

(Top)

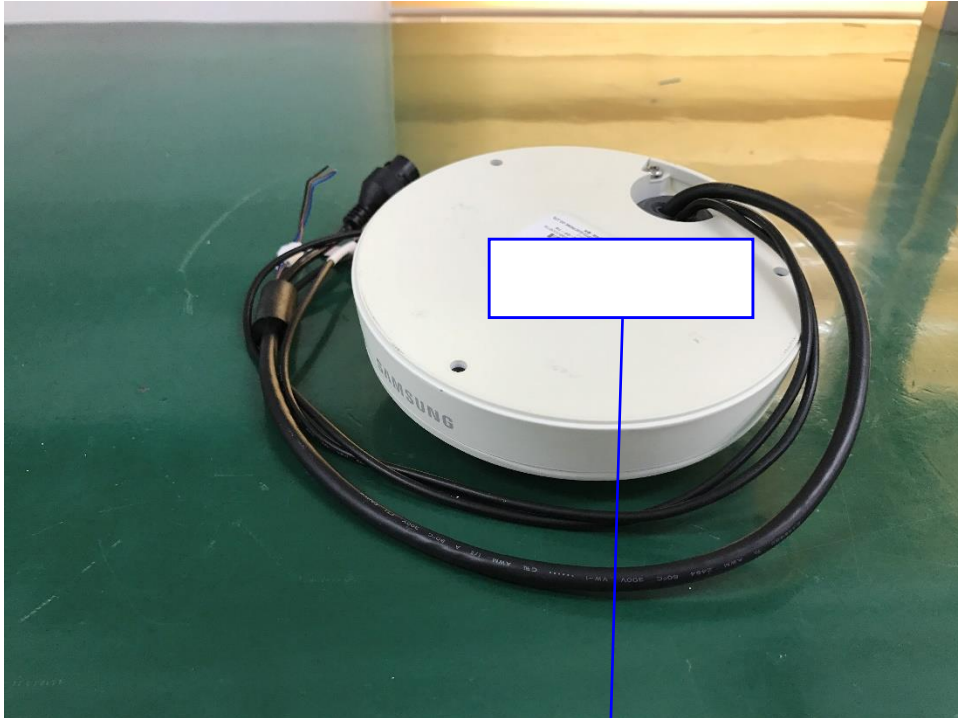


(Bottom)



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Label and Location



NETWORK CAMERA

Model No : SNF-8010P

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in China

