



EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0239-R2
Date of Issue : May. 15, 2019
Product name : NETWORK CAMERA
Model/Type No. : QNO-6020R
Variant Model : QNO-6030R, QNO-6010R
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)
Date of Receipt : May. 23, 2016
Test date : May. 31, 2016 – Jun. 02, 2016
Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Young-Suk, Song
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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**KES Co., Ltd.**

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

Test report No.:

KES-E1-16T0239-R2

Page (2) of (77)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 07, 2016	KES-E1-16T0239	Issued
Jun. 27, 2017	KES-E1-16T0239-R1	Re-issue due to manufacturer change
May. 15, 2019	KES-E1-16T0239-R2	Changed customer's address, factory addition, variant model addition and application standard due to customer request.

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TABLE OF CONTENTS

1.0	General Product Description	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences	5
1.3	Device Modifications	5
1.4	Equipment Under Test	5
1.5	Support Equipments	5
1.6	External I/O Cabling	6
1.7	E.U.T Operating Mode(s)	6
1.8	Configuration	7
1.9	Calibration Details of Equipment Used for Measurement	8
1.10	Test Facility	8
1.11	Laboratory Accreditations and Listings	8
2.0	Test Regulations	9
2.1	Conducted Emissions at Mains Power Ports	11
2.2	Conducted Emissions at Telecommunication Ports	12
2.3	Radiated Electric Field Emissions(Below 1 GHz)	13
2.4	Radiated Electric Field Emissions(Above 1 GHz)	14
2.5	Harmonic Current Emissions	15
2.6	Voltage Fluctuations and Flicker	16
3.0	Criteria for compliance	17
3.1	Electrostatic Discharge	19
3.2	Radiated Electric Field Immunity	22
3.3	Electrical Fast Transients/Bursts	25
3.4	Surge Transients	28
3.5	Conducted Disturbance	31
3.6	Voltage Dips and Short Interruptions	34
APPENDIX A – TEST DATA		36
Conducted Emissions at Mains Power Ports		36
Conducted Emissions at Telecommunication Ports		38
Radiated Electric Field Emissions(Below 1 GHz)		42
Radiated Electric Field Emissions(Above 1 GHz)		43
Harmonic Current Emissions and Voltage Fluctuations and Flicker		51
Test Setup Photos and Configuration		54
Conducted Voltage Emissions		54
Conducted Telecommunication Emissions		55
Radiated Electric Field Emissions(Below 1 GHz)		57
Radiated Electric Field Emissions(Above 1 GHz)		59
Harmonic Current Emissions and Voltage Fluctuations and Flicker		61
Electrostatic Discharge		62
Radiated Electric Field Immunity		63
Electrical Fast Transients/Bursts		64
Surge Transients		66
Conducted Disturbance		67
Voltage Dips and Short Interruptions		69
EUT External Photographs		70
EUT Internal Photographs		71



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
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Test report No.:

KES-E1-16T0239-R2

Page (4) of (77)

1.0 General Product Description

Main Specifications of E.U.T are:

Video		Network	
Imaging Device	1/2.9" 2.19M CMOS	Ethernet	RJ-45 (10/100BASE-T)
Total Pixels	2,000(H) x 1,121(V)	Video Compression Format	H.265, H.264, MJPEG
Effective Pixels	1,984(H) x 1,105(V)	Resolution	1920x1080/ 1280x1024/ 1280x960/ 1280x720/ 1024x768/ 800x600/ 720x576/ 720x480/ 640x480/ 320x240
Scanning System	Progressive	Max. Framerate	H.265 : Max 30fps at all resolutions H.264 : Max 30fps at all resolutions MJPEG : Max 15fps @ all resolution.
Min. Illumination	Color : 0.15Lux, B/W : 0Lux	Smart codec	Wise Stream
Lens		Video Quality Ajustment	H.265 : Target Bitrate Level Control H.264 : Target Bitrate Level Control MJPEG : Quality Level Control
Focal Length (Zoom Ratio)	Fixed 3.6mm		
Max. Aperture Ratio	F1.8	Bitrate control method	H.265 : CBR or VBR H.264 : CBR or VBR MJPEG : VBR
Angular Field of View	H 86.48° / V 46.22° / D 102.44°		
Min. Object Distance	-	Streaming Capability	Multiple Streaming(Up to 3 Profiles)
Lens Type	Fixed	Audio I/O	Line In
Mount Type	Board type	Audio Compression Format	G.711 u-law /G.726 Selectable G.726(ADPCM) : 8KHz, G.711 : 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
Operational		Audio Communication	Uni-directional
IR Viewable Length	30m	IP	IPv4, IPv6
Camera Title	Off / On (Displayed up to 20 characters per line)	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
	- W/W : English/Numeric/Special Characters		
	- China : English/Numeric/Special/Chinese Characters	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication
	- Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution		
	Day & Night	True Day & Night	Streaming Method
Backlight Compensation	Off / BLC	Max. User Access	6 users at Unicast Mode
Wide Dynamic Range	120dB	Edge storage	Micro SD/SDHC/SDXC Max 128G, NAS - Motion images recorded in the SD memory card can be downloaded - Manual recording at Local PC
Digital Noise Reduction	SSNR(Off / On)		
Motion Detection	Off / On (4ea polygon zones)	Application Programming Inte	ONVIF Profile S, G SUNAPI(HTTP API)
Privacy Masking	Off / On (6ea rectangler zones)		
Gain Control	Off / Low / Middle / High	Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Danish, Portuguese, Turkish, Polish, Czech, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Finnish, Norwegian
White Balance	ATW / AWC / Manual / Indoor / Outdoor		
LDC(Lens distortion control)	On/Off (5 levels with Min/Max)	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
Electronic Shutter Speed	Minimum / Maximum / Anti flicker		
Flip / Mirror	Flip / Mirror / Hallway view	Central Management Software	SmartViewer
Intelligent Video Analytics	Motion Detection with metadata, Tampering, Defocus	Pixel Counter	Support (plug-in viewer only)
Alarm I/O		Environmental	
Alarm Triggers	Input 1 / Output 1	Operating Temperature / Humidity	-30°C ~ +55°C / Less than 90% RH * Start up should be done at above -20°C
		Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Alarm Events	Motion detection, Tampering Detection, SD card error, NAS error, Alarm input, Defocus detection	Ingress Protection	IP66
		Vandal Resistance	IK10
		Electrical	
		Input Voltage / Current	PoE(IEEE802.3af, Class3), DC 12V
		Power Consumption	Max.6.6W(PoE), Max.5.5W(DC12V)
		Mechanical	
		Color / Material	Gray / Metal
		Dimension (WxHxD)	670.0x246mm
		Weight	730g

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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 ☐ 220 Vac ☐ 230 Vac ☐ 240 Vac ☒ PoE ☒ 12 Vdc

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Variant Model	Remarks
QNO-6030R	Focus Length differences
QNO-6010R	

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QNO-6020R	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE	ANY4805C-LT1	15030100002	ANY ELECTRONICS CO., LTD.	-
Notebook	ProBook4430s	-	HP	-
Notebook adapter	SeriesPPP0009H	-	Chicony Power Technology (suzhou)Co., Ltd.	-
Alarm	SIE-0001 DO	C54167JB601268 F	SAMSUNG TECHWIN CO., LTD.	-
Mike	-	-	-	-

1.6 External I / O Cabling

- DC 12V Mode

Start		END		Cable Spec.	
Description	I / O Port	Description	I / O Port	Length	Shield
NETWORK CAMERA (E.U.T)	Alarm IN	Alarm	Alarm IN	3.0	U
	RJ-45	Notebook	RJ-45	4.0	U

- PoE Mode

Start		END		Cable Spec.	
Description	I / O Port	Description	I / O Port	Length	Shield
NETWORK CAMERA (E.U.T)	Alarm IN	Alarm	Alarm IN	3.0	U
	RJ-45	PoE	RJ-45	4.0	U
PoE	RJ-45	Notebook	RJ-45	4.0	U

* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

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

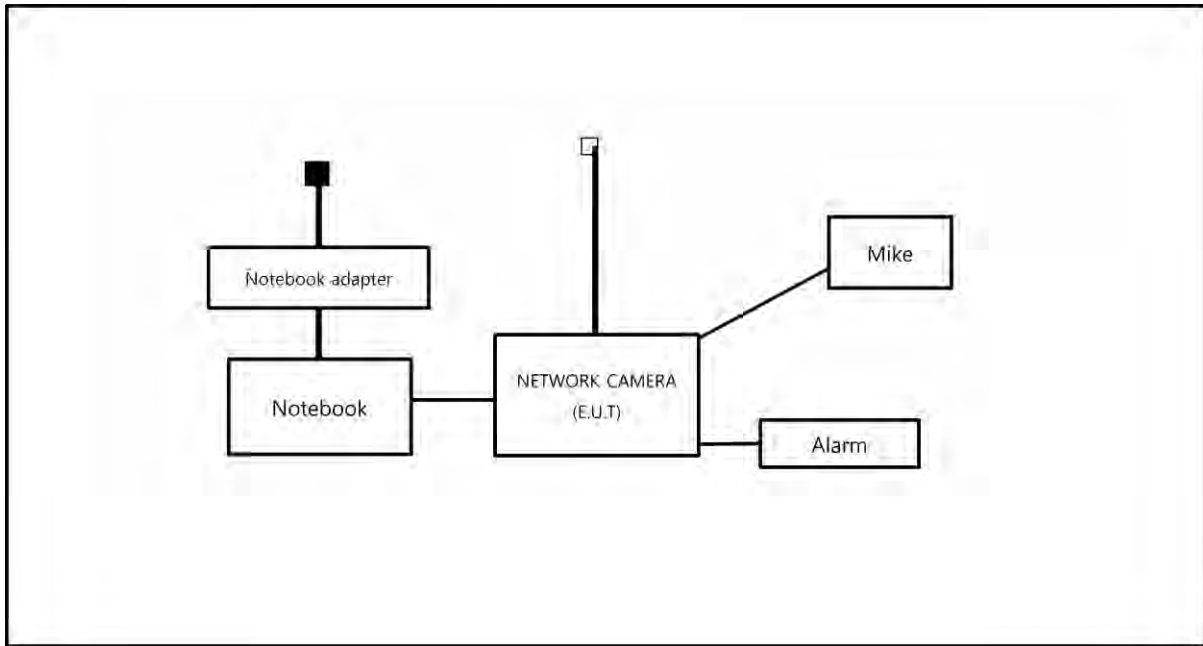
Test mode	Normal operating
OP	MONITORING Network ping test

- Input power condition during the measurements was 12 V (dc) , PoE

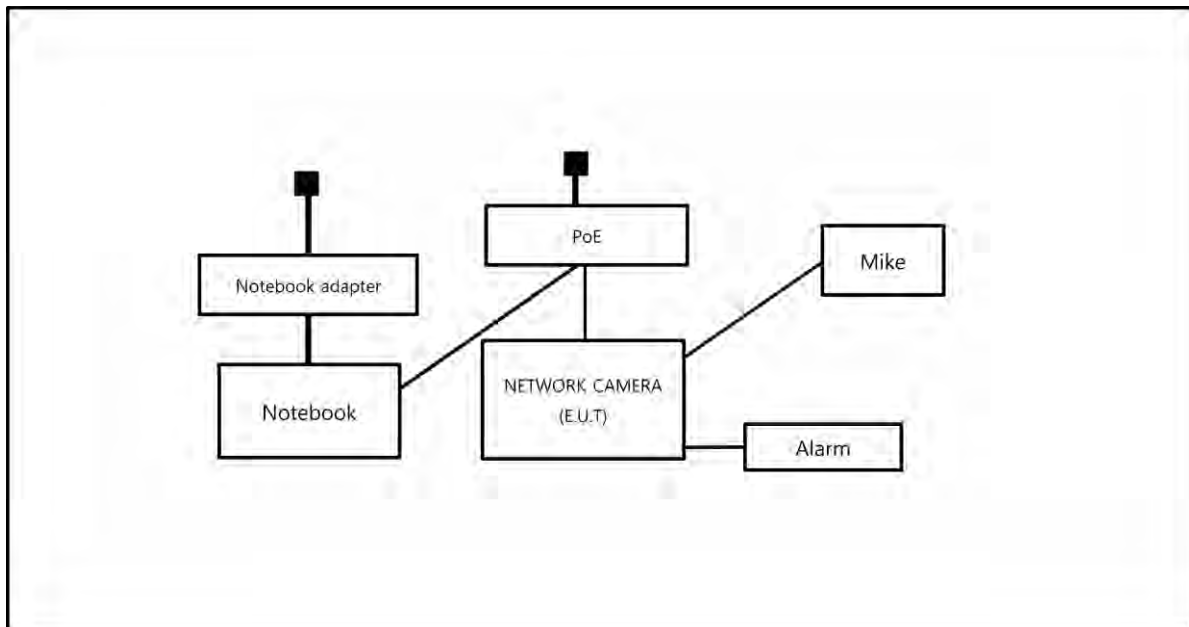
1.8 Configuration

■ AC Main
 □ DC Main

- DC 12V 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, Yeoju-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

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-4308, C-4798, T-2311, G-914
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 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
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☒ EN 55032:2012/AC:2013

☒ 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 / 2013.04

☐ Class A

☐ Class B

☐ AS / NZS CISPR22:2009 +A1:2010

☐ Class A

☐ Class B

☐ 47 CFR Part 15, Subpart B / ANSI C63.4-2009

☐ Class A

☐ Class B

☐ IC Regulation ICES-003 : 2012
/ ANSI C63.4-2014

☐ Class A

☐ Class B

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B



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3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Test report No.:
KES-E1-16T0239-R2
Page (10) of (77)

☐ **R&TTE – Directive 1999 / 5 / EC**

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

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2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test 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

May. 31, 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: 26,4 °C

Relative Humidity: 48,5 %

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

May. 31, 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	ESR3	R&S	101781	05, 03, 2017
☒	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 27,0 °C

Relative Humidity: 45,0 %

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

May. 31, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100551	04, 18, 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: 26,4 °C

Relative Humidity: 48,5 %

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
☐	AC Source	ACS 500 N	EM TEST	V1024106760	08, 13, 2016
☐	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 13, 2016

Test Conditions

Temperature: °C

Relative Humidity: %

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

Because the E.U.T power is less than 75 W, limits are not specified.



2.6 Voltage Fluctuations and Flicker

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM test	V1024106760	08, 13, 2016
☐	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 13, 2016

Test Conditions

Temperature: °C

Relative Humidity: %

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

Because the E.U.T power is 12 V (dc) power and PoE.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 +A1:2014 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. 02, 2016

Test Location

EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 27,3 °C

Relative Humidity: 46,4 %

Atmospheric Pressure: 98,9 kPa

Test SpecificationsDischarge 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

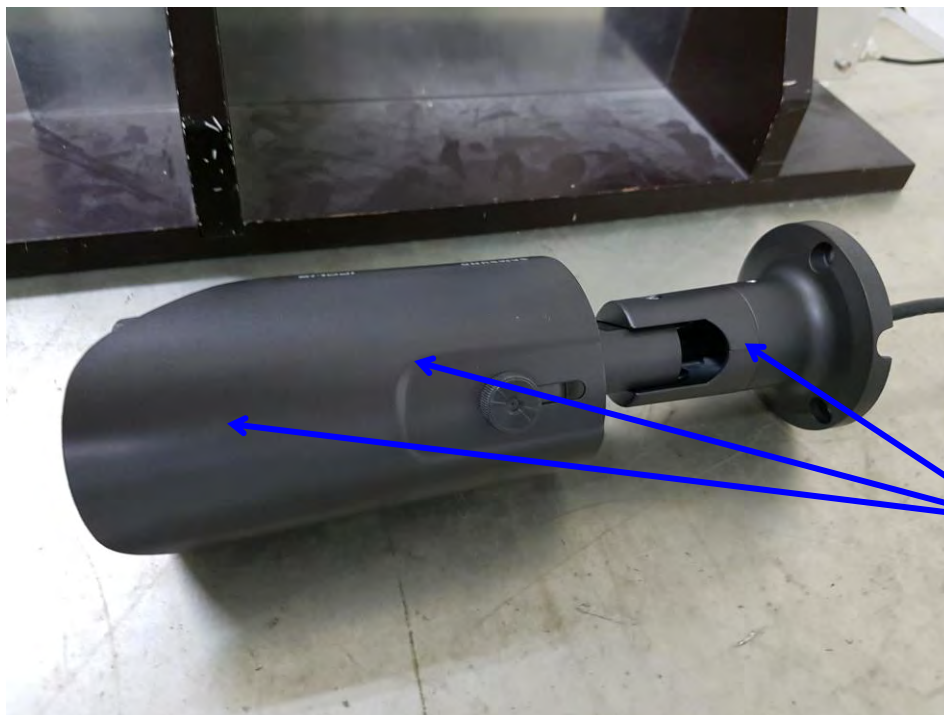
Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling planeRequired Performance Criteria: ☒ Complied

Location of Discharge:

- DC 12V, PoE Mode

Air
Contact



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KES-E1-16T0239-R2

Page (21) of (77)

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

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

Direct Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	Enclosure	Contact Discharge	Complied	-

- PoE Mode**Indirect Discharge**

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

Direct Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	Enclosure	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.

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3.2 Radiated Electric Field Immunity

Reference Standard

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

Test Date

Jun. 01, 2016

Test Location

EMS-RS: ☐ Semi Anchoic Chamber #1

☒ Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SIGNAL GENERATOR	SMB 100A	R&S	108252	08, 13, 2016
☒	BROADBAND AMPLIFIER	BBA100	R&S	101239	08, 13, 2016
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 13, 2016
☒	POWER METER	NRP2	R&S	103475	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102526	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102527	08, 13, 2016
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KyTelecom Co., Ltd.	KY150001	09, 25, 2016
☒	Semi Anchoic Chamber #2		SEMITEC	-	-

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Test report No.:

KES-E1-16T0239-R2

Page (23) of (77)

Test Conditions

Temperature: 26,9 °C
Relative Humidity: 47,1 %
Atmospheric Pressure: 98,5 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 % stepDwell Time: ☒ 1 s ☐ 3 s# of Sides Radiated: ☒ 4Required Performance Criteria: ☒ Complied**Test Data**

- DC 12V Mode

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

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KES-E1-16T0239-R2

Page (24) of (77)

- PoE Mode

Side Exposed	Observation	
	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.

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3.3 Electrical Fast Transients / Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Jun. 01, 2016

Test Location

EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	Capacitive Coupling Clamp	HFK	EM TEST	070925	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

Test Conditions

Temperature: 26,9 °C
Relative Humidity: 47,1 %
Atmospheric Pressure: 98,5 kPa

Test Specifications

Pulse Amplitude & Polarity:
(Power Lines) ☒ ± 1.0 kV ☐ ± 2.0 kV
☐ ± 4.0 kV

Pulse Amplitude & Polarity:
(Signal Lines) ☐ ± 0.5 kV ☒ ± 1.0 kV
☐ ± 2.0 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 12V 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)
L - N	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

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

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Test report No.:

KES-E1-16T0239-R2

Page (27) of (77)

- 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)
Alarm	Complied	Complied
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.

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3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

Test Date

Jun. 01, 2016

Test Location

EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☒	CDN	CNV 508T5	EM TEST	P1549168422	04, 27, 2017

Test Conditions

Temperature: 26,9 °C
Relative Humidity: 47,1 %
Atmospheric Pressure: 98,5 kPa

Test Specifications

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

Signal lines

☒ (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

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Test report No.:

KES-E1-16T0239-R2

Page (29) of (77)

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 12V Mode

☐ Line to Line – Differential Mode

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

☐ 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)
Alarm	Complied	Complied
RJ-45	Complied	Complied

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KES-E1-16T0239-R2

Page (30) of (77)

- PoE Mode☐ Line to Line – Differential Mode

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

☐ 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)
Alarm	Complied	Complied
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 61000-4-6:2009

Test Date

Jun. 02, 2016

Test Location

EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	09, 25, 2016
☒	6dB Attenuator	ATT6	EM TEST	1208-34	08, 13, 2016
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 13, 2016
☐	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 13, 2016
☐	CDN	CDN-T4	EM TEST	0909-08	08, 13, 2016
☐	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 13, 2016
☐	CDN	CDN-AF2	EM TEST	0909-10	08, 13, 2016
☐	CDN	CDN-AF4	EM TEST	0909-11	08, 13, 2016
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017

Test Conditions

Temperature: 27,3 °C

Relative Humidity: 46,4 %

Atmospheric Pressure: 98,9 kPa

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KES-E1-16T0239-R2

Page (32) of (77)

Test Specifications

Frequency range:

☒ 150 kHz to 100 MHz
☐ 150 kHz to 230 MHz

☐ 10 kHz to 30 MHz
☐ 10 kHz to 100 MHz

Voltage Level:

☐ 1 Vrms
☒ 10 Vrms

☐ 3 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**Test Data**

- DC 12V Mode

☐ Input a.c. power ports

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

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation
L - N	CDN (☒ M2, ☐ M3)	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
Alarm	EM Injection Clamp	Complied
RJ-45	EM Injection Clamp	Complied

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Page (33) of (77)

- PoE Mode☐ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
Alarm	EM Injection Clamp	Complied
RJ-45	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 61000-4-6:2009

Test Date

N/A

Test Location

EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☐	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

Test Conditions

Temperature: °C

Relative Humidity: %

Atmospheric Pressure: kPa

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Test report No.:

KES-E1-16T0239-R2

Page (35) of (77)

Test Specifications & Observations / Remarks

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

- Voltage variations

☐ Unom + 10 %	☐ 253 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

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



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Page (36) of (77)

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

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Page (37) of (77)

[NEUTRAL]

N/A

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Conducted Emissions at Telecommunication Ports

- DC 12V Mode

[10 Mbps]

Common Information

Test Description:

Model No.:

Mode

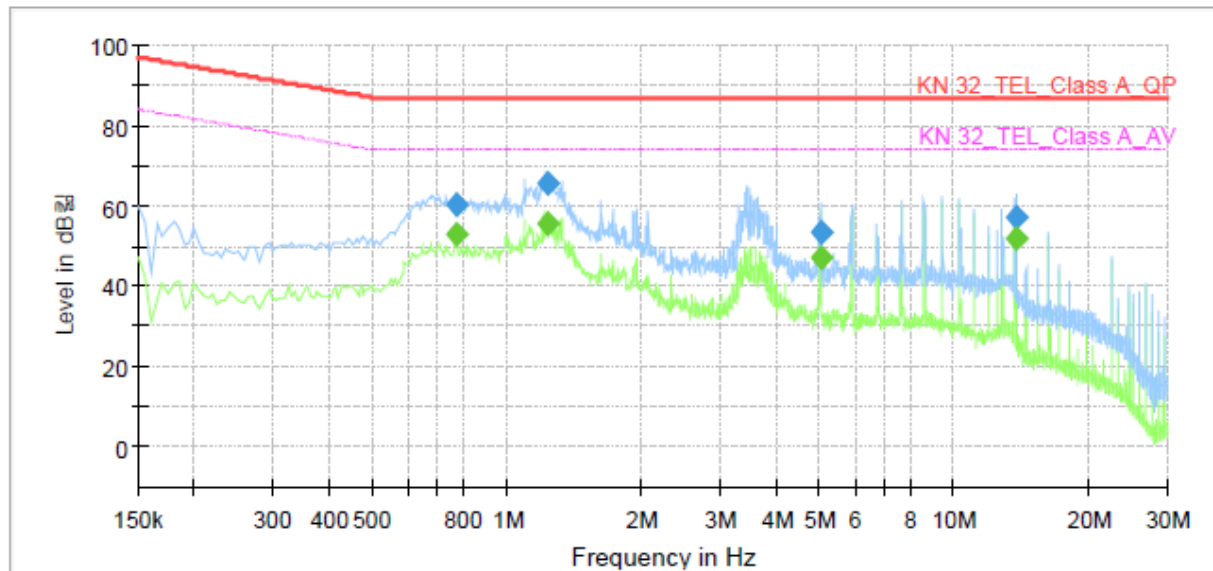
Operator Name:

Telecommunication Emission

QNO-6020RP

DC 12V_10 Mbps

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.770000	---	53.19	74.00	20.81	1000.0	9.000	Single Line	9.9
0.770000	60.19	---	87.00	26.81	1000.0	9.000	Single Line	9.9
1.235000	---	55.55	74.00	18.45	1000.0	9.000	Single Line	9.8
1.235000	65.71	---	87.00	21.29	1000.0	9.000	Single Line	9.8
5.055000	---	46.92	74.00	27.08	1000.0	9.000	Single Line	9.9
5.055000	53.55	---	87.00	33.45	1000.0	9.000	Single Line	9.9
13.750000	---	51.91	74.00	22.09	1000.0	9.000	Single Line	10.1
13.750000	57.36	---	87.00	29.64	1000.0	9.000	Single Line	10.1

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Test report No.:

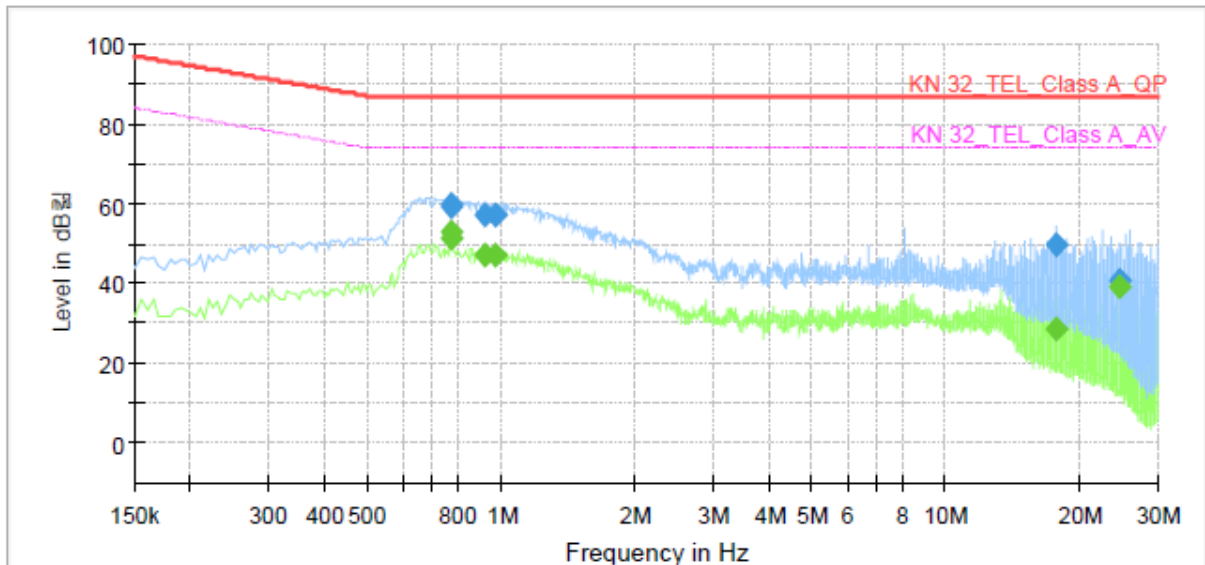
KES-E1-16T0239-R2

Page (39) of (77)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: QNO-6020RP
Mode: DC 12V_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)
0.770000	---	52.76	74.00	21.24	1000.0	9.000	Single Line	9.4
0.770000	59.68	---	87.00	27.32	1000.0	9.000	Single Line	9.4
0.775000	---	51.45	74.00	22.55	1000.0	9.000	Single Line	9.4
0.775000	59.06	---	87.00	27.94	1000.0	9.000	Single Line	9.4
0.915000	---	47.03	74.00	26.97	1000.0	9.000	Single Line	9.4
0.915000	57.34	---	87.00	29.66	1000.0	9.000	Single Line	9.4
0.975000	---	47.21	74.00	26.79	1000.0	9.000	Single Line	9.4
0.975000	57.31	---	87.00	29.69	1000.0	9.000	Single Line	9.4
17.830000	---	28.39	74.00	45.61	1000.0	9.000	Single Line	9.5
17.830000	49.90	---	87.00	37.10	1000.0	9.000	Single Line	9.5
24.575000	---	39.41	74.00	34.59	1000.0	9.000	Single Line	9.4
24.575000	40.53	---	87.00	46.47	1000.0	9.000	Single Line	9.4

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- PoE Mode

[10 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

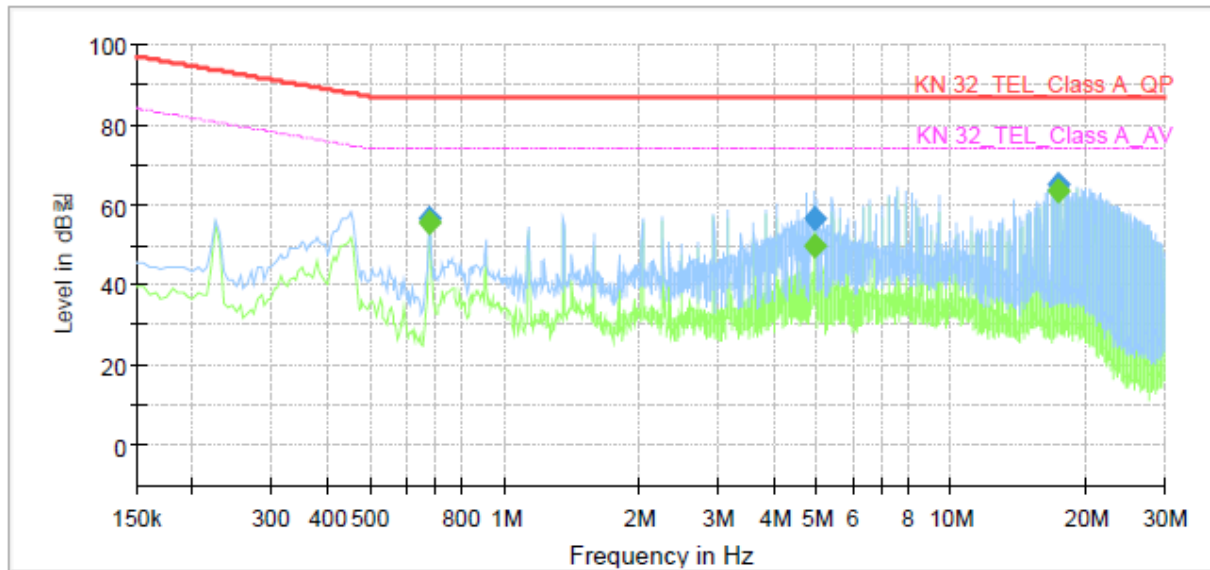
QNO-6020RP

Mode

PoE_10 Mbps

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBm)	CAverage (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.680000	---	55.59	74.00	18.41	1000.0	9.000	Single Line	9.9
0.680000	56.62	---	87.00	30.38	1000.0	9.000	Single Line	9.9
4.945000	---	49.82	74.00	24.18	1000.0	9.000	Single Line	9.9
4.945000	56.79	---	87.00	30.21	1000.0	9.000	Single Line	9.9
17.410000	---	63.63	74.00	10.37	1000.0	9.000	Single Line	10.1
17.410000	64.96	---	87.00	22.04	1000.0	9.000	Single Line	10.1

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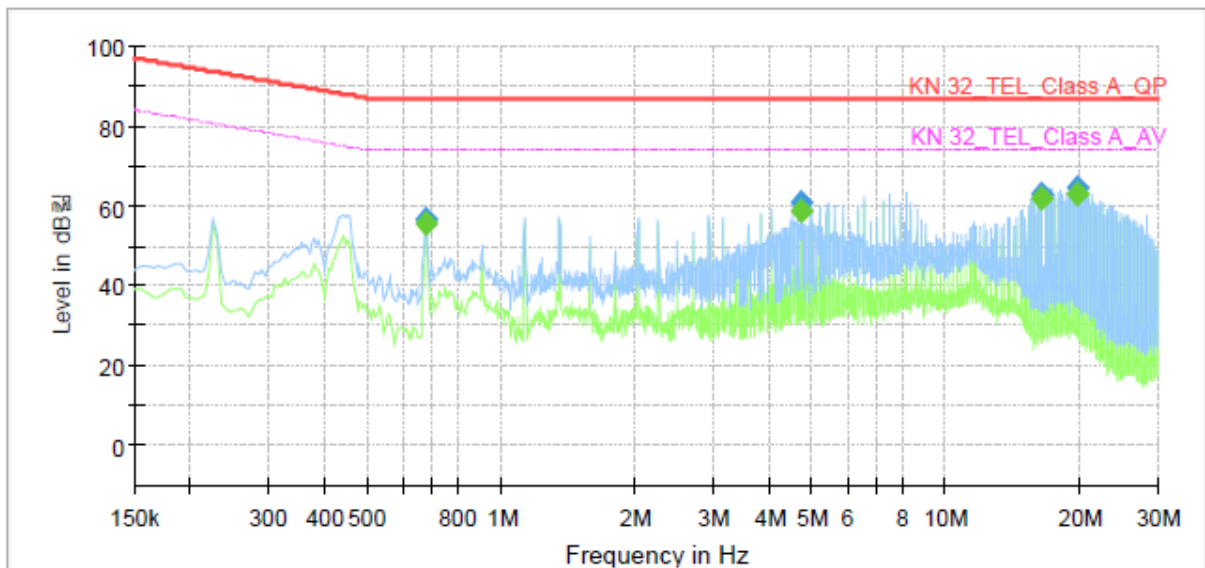
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[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: QNO-6020RP
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)
0.680000	---	55.40	74.00	18.60	1000.0	9.000	Single Line	9.4
0.680000	56.56	---	87.00	30.44	1000.0	9.000	Single Line	9.4
4.750000	---	58.96	74.00	15.04	1000.0	9.000	Single Line	9.4
4.750000	60.81	---	87.00	26.19	1000.0	9.000	Single Line	9.4
16.510000	---	62.01	74.00	11.99	1000.0	9.000	Single Line	9.6
16.510000	63.20	---	87.00	23.80	1000.0	9.000	Single Line	9.6
19.900000	---	63.23	74.00	10.77	1000.0	9.000	Single Line	9.5
19.900000	64.36	---	87.00	22.64	1000.0	9.000	Single Line	9.5

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

- DC 12V 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]
149.60	15.33	V	1.00	8.19	2.77	26.29	40.00	13.71
222.73	21.13	H	3.80	11.80	3.51	36.44	40.00	3.56
223.01	16.19	V	1.00	11.81	3.51	31.51	40.00	8.49
259.52	15.96	H	4.00	12.59	3.88	32.43	47.00	14.57
297.32	10.89	V	1.00	13.33	4.19	28.41	47.00	18.59
519.78	11.37	H	4.00	17.54	5.86	34.77	47.00	12.23

* H : Horizontal, V : Vertical

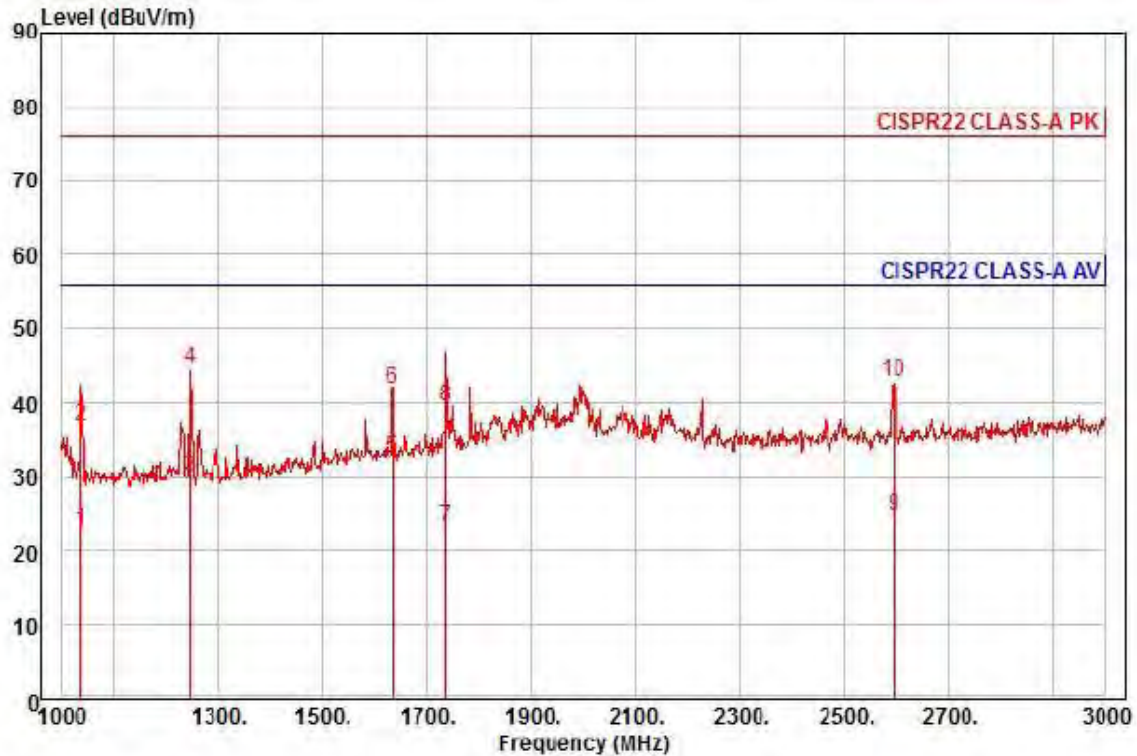
- PoE Mode

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]
48.14	16.44	V	1.00	13.86	1.42	31.72	40.00	8.28
222.74	21.23	H	3.93	11.80	3.51	36.54	40.00	3.46
223.05	20.32	V	1.00	11.81	3.51	35.64	40.00	4.36
297.61	14.48	H	4.00	13.33	4.19	32.00	47.00	15.00
519.49	13.71	V	1.00	17.53	5.86	37.10	47.00	9.90
631.09	8.53	H	4.00	19.42	6.61	34.56	47.00	12.44

* H : Horizontal, V : Vertical

Radiated Electric Field Emissions(Above 1 GHz)

- DC 12V Mode



Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal

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

Project :

Model : QNO-6020RP

Mode : DC 12V

Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1038.00	32.29	24.06	6.62	40.10	273	56.00	-33.13	horizontal	Average
2	1038.00	46.12	24.06	6.62	40.10	273	76.00	-39.30	horizontal	Peak
3	1246.00	37.85	24.89	7.22	40.00	136	56.00	-26.04	horizontal	Average
4 pk	1246.00	52.48	24.89	7.22	40.00	136	76.00	-31.41	horizontal	Peak
5 pp	1634.00	37.69	26.43	8.34	39.81	345	56.00	-23.35	horizontal	Average
6	1634.00	46.97	26.43	8.34	39.81	345	76.00	-34.07	horizontal	Peak
7	1736.00	27.56	26.83	8.62	39.76	267	56.00	-32.75	horizontal	Average
8	1736.00	43.70	26.83	8.62	39.76	267	76.00	-36.61	horizontal	Peak
9	2596.00	25.08	29.34	10.26	39.98	225	56.00	-31.30	horizontal	Average
10	2596.00	43.21	29.34	10.26	39.98	225	76.00	-33.17	horizontal	Peak

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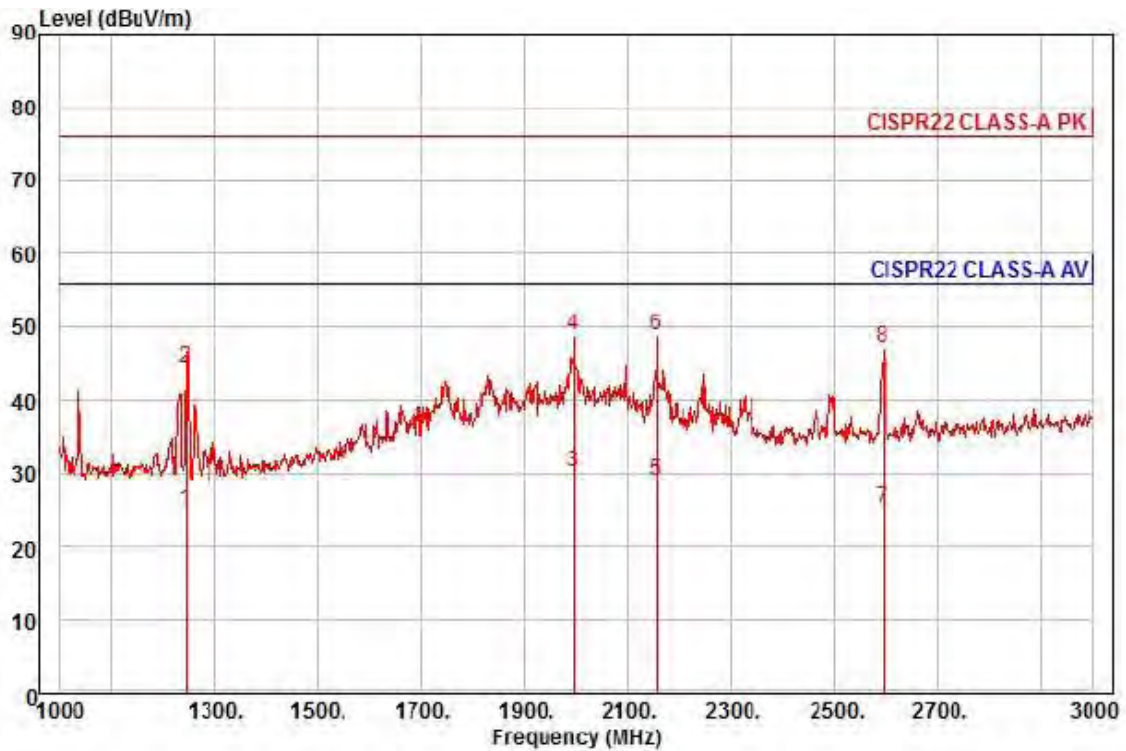
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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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KES-E1-16T0239-R2
Page (44) of (77)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
Mode : DC 12V
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	1244.00	32.98	24.88	7.22	40.00	183	56.00	-30.92	vertical	Average
2	1244.00	52.18	24.88	7.22	40.00	183	76.00	-31.72	vertical	Peak
3 pp	1996.00	32.49	27.86	9.34	39.63	194	56.00	-25.94	vertical	Average
4	1996.00	51.15	27.86	9.34	39.63	194	76.00	-27.28	vertical	Peak
5	2156.00	30.79	28.26	9.59	39.72	73	56.00	-27.08	vertical	Average
6 pk	2156.00	50.71	28.26	9.59	39.72	73	76.00	-27.16	vertical	Peak
7	2594.00	25.73	29.34	10.26	39.97	166	56.00	-30.64	vertical	Average
8	2594.00	47.43	29.34	10.26	39.97	166	76.00	-28.94	vertical	Peak

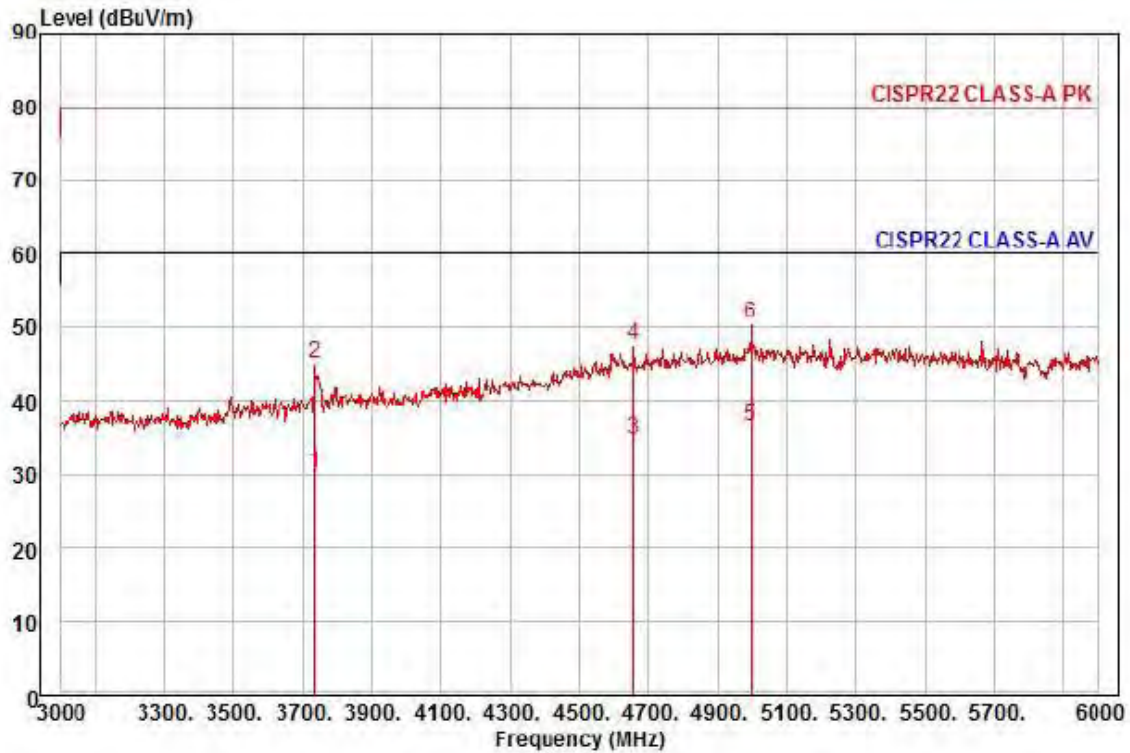
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Test report No.:
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Page (45) of (77)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
Mode : DC 12V
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	3735.00	25.88	31.56	12.98	40.36	98	60.00	-29.94	horizontal	Average
2	3735.00	40.92	31.56	12.98	40.36	98	80.00	-34.90	horizontal	Peak
3	4659.00	24.65	35.77	14.72	40.41	53	60.00	-25.27	horizontal	Average
4	4659.00	37.54	35.77	14.72	40.41	53	80.00	-32.38	horizontal	Peak
5 pp	4995.00	23.95	37.69	15.32	40.41	190	60.00	-23.45	horizontal	Average
6 pk	4995.00	37.87	37.69	15.32	40.41	190	80.00	-29.53	horizontal	Peak

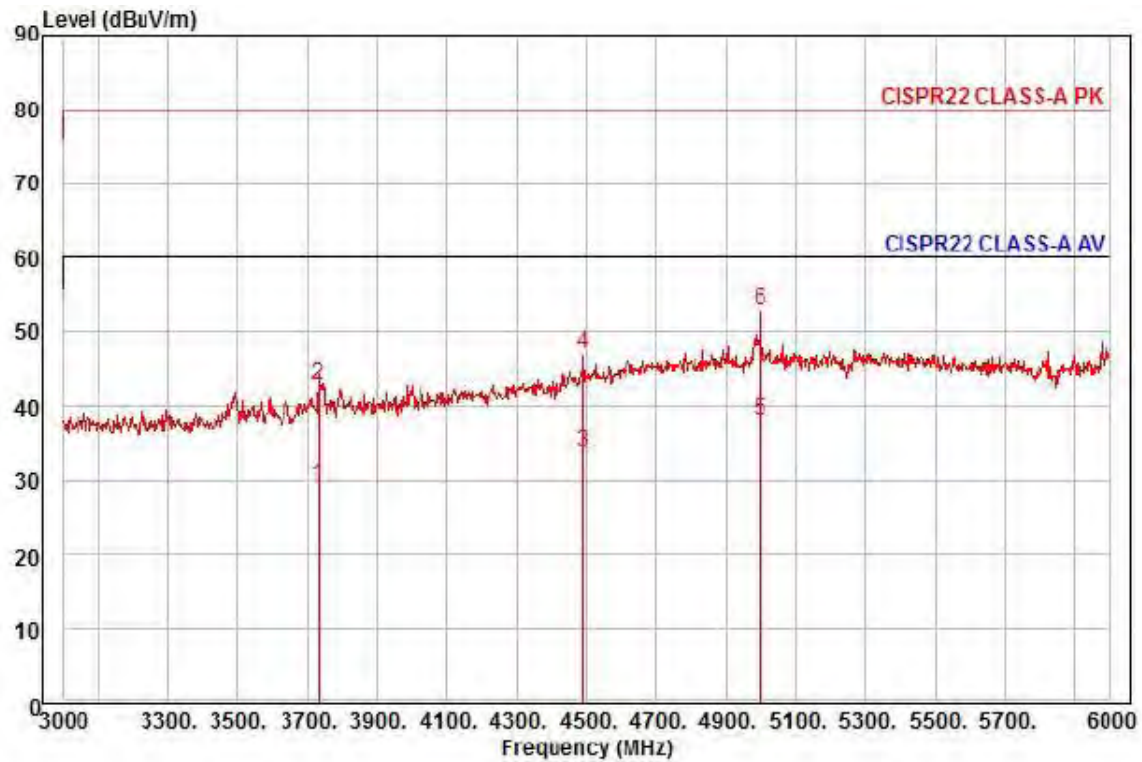
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KES-E1-16T0239-R2
Page (46) of (77)

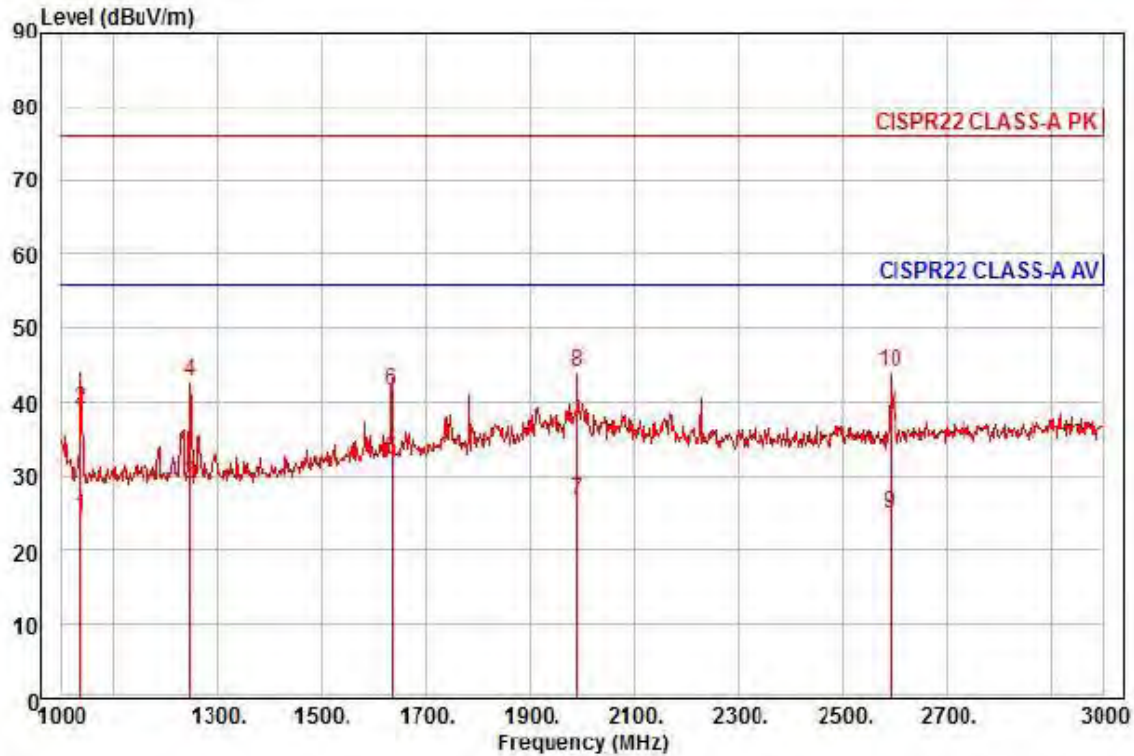


Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
Mode : DC 12V
Memo :

	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	3732.00	25.10	31.56	12.97	40.36	144	60.00	-30.73	vertical	Average
2	3732.00	38.63	31.56	12.97	40.36	144	80.00	-37.20	vertical	Peak
3	4491.00	25.10	34.81	14.41	40.41	262	60.00	-26.09	vertical	Average
4	4491.00	38.28	34.81	14.41	40.41	262	80.00	-32.91	vertical	Peak
5 pp	4998.00	25.33	37.71	15.33	40.41	68	60.00	-22.04	vertical	Average
6 pk	4998.00	40.44	37.71	15.33	40.41	68	80.00	-26.93	vertical	Peak

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- PoE Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
Mode : PoE
Memo :

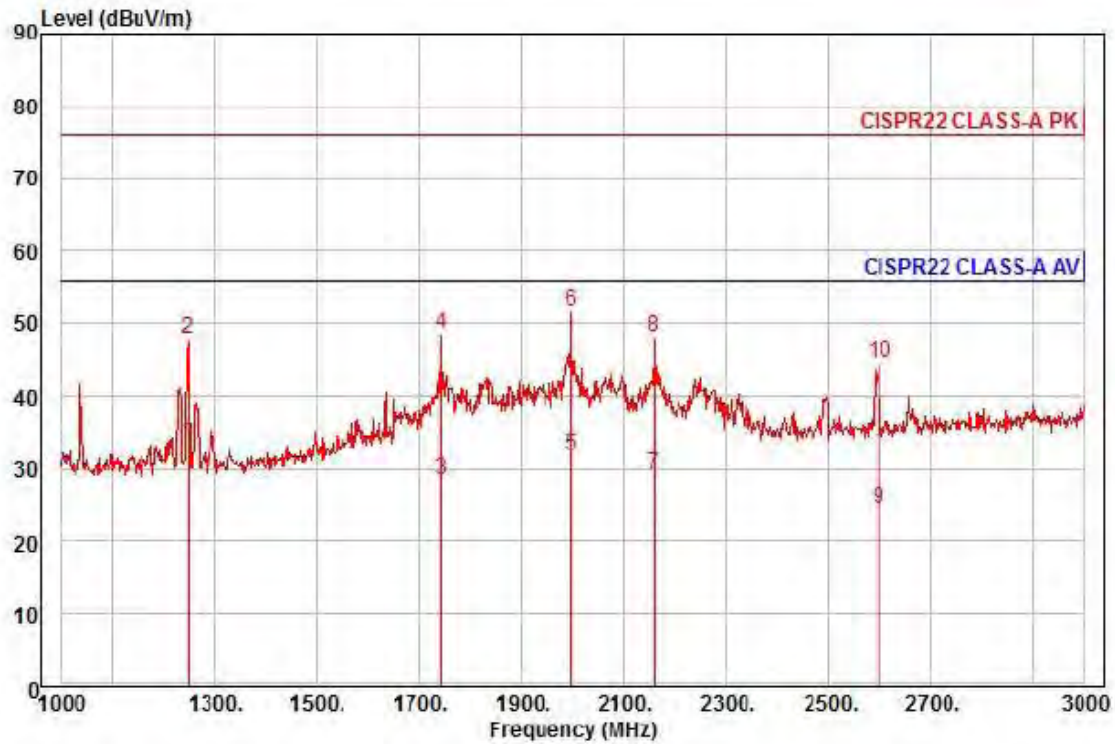
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1038.00	33.98	24.06	6.62	40.10	154	56.00	-31.44	horizontal	Average
2	1038.00	48.39	24.06	6.62	40.10	154	76.00	-37.03	horizontal	Peak
3	1246.00	36.75	24.89	7.22	40.00	247	56.00	-27.14	horizontal	Average
4	1246.00	50.89	24.89	7.22	40.00	247	76.00	-33.00	horizontal	Peak
5 pp	1634.00	37.29	26.43	8.34	39.81	331	56.00	-23.75	horizontal	Average
6	1634.00	46.67	26.43	8.34	39.81	331	76.00	-34.37	horizontal	Peak
7	1990.00	29.17	27.84	9.32	39.63	261	56.00	-29.30	horizontal	Average
8 pk	1990.00	46.72	27.84	9.32	39.63	261	76.00	-31.75	horizontal	Peak
9	2590.00	25.42	29.33	10.25	39.97	223	56.00	-30.97	horizontal	Average
10	2590.00	44.50	29.33	10.25	39.97	223	76.00	-31.89	horizontal	Peak



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KES-E1-16T0239-R2
Page (48) of (77)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
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 pp	1248.00	41.41	24.89	7.23	40.00	181	56.00	-22.47	vertical	Average
2	1248.00	55.69	24.89	7.23	40.00	181	76.00	-28.19	vertical	Peak
3	1744.00	32.81	26.86	8.65	39.76	80	56.00	-27.44	vertical	Average
4	1744.00	52.89	26.86	8.65	39.76	80	76.00	-27.36	vertical	Peak
5	1998.00	34.35	27.87	9.34	39.63	353	56.00	-24.07	vertical	Average
6 pk	1998.00	54.11	27.87	9.34	39.63	353	76.00	-24.31	vertical	Peak
7	2160.00	31.14	28.27	9.60	39.72	74	56.00	-26.71	vertical	Average
8	2160.00	49.83	28.27	9.60	39.72	74	76.00	-28.02	vertical	Peak
9	2600.00	24.97	29.35	10.27	39.98	234	56.00	-31.39	vertical	Average
10	2600.00	44.91	29.35	10.27	39.98	234	76.00	-31.45	vertical	Peak

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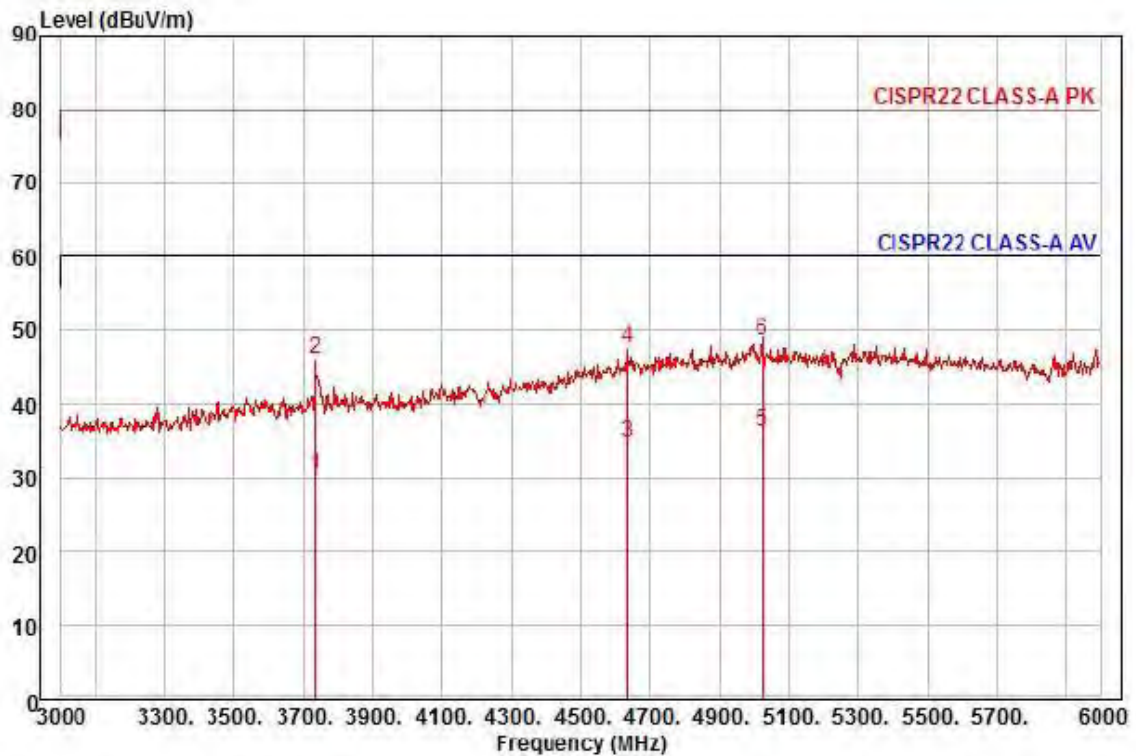
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Test report No.:

KES-E1-16T0239-R2

Page (49) of (77)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
Mode : PoE
Memo :

	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	3735.00	26.27	31.56	12.98	40.36	119	60.00	-29.55	horizontal	Average
2	3735.00	41.91	31.56	12.98	40.36	119	80.00	-33.91	horizontal	Peak
3	4638.00	24.82	35.65	14.68	40.41	206	60.00	-25.26	horizontal	Average
4	4638.00	37.59	35.65	14.68	40.41	206	80.00	-32.49	horizontal	Peak
5 pp	5025.00	23.61	37.67	15.36	40.41	193	60.00	-23.77	horizontal	Average
6 pk	5025.00	35.97	37.67	15.36	40.41	193	80.00	-31.41	horizontal	Peak

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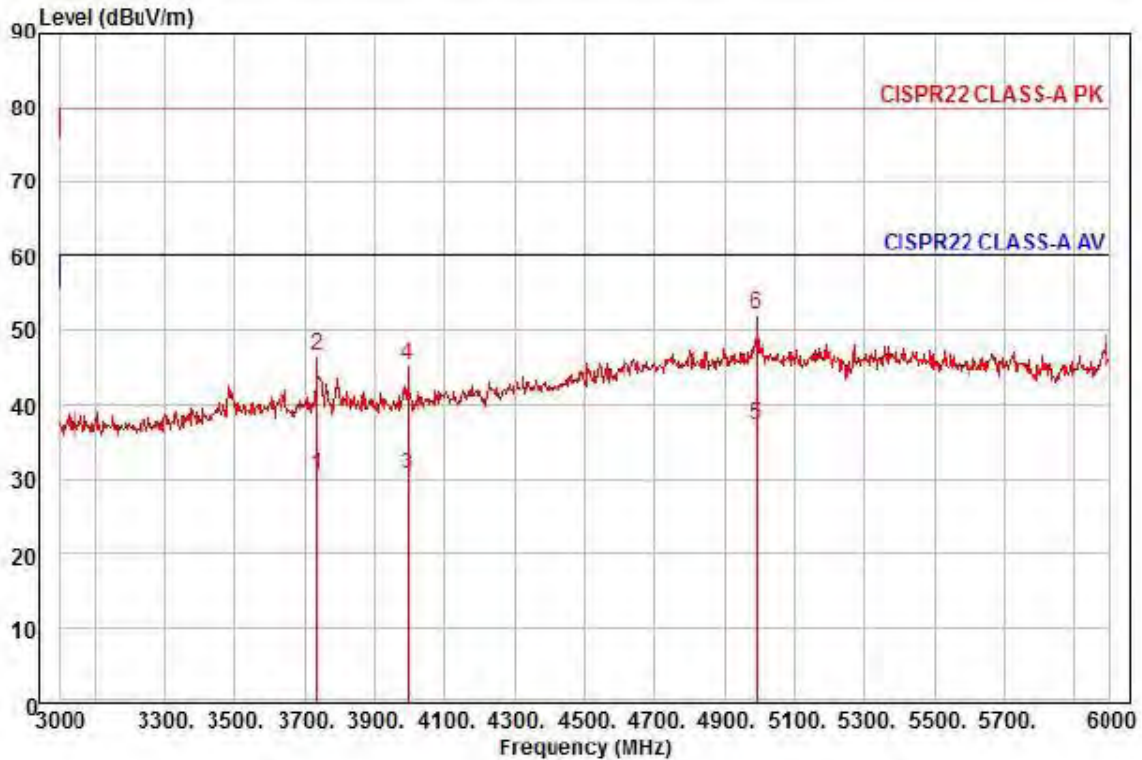
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KES-E1-16T0239-R2

Page (50) of (77)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QNO-6020RP
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	3735.00	26.46	31.56	12.98	40.36	36	60.00	-29.36	vertical Average
2	3735.00	42.37	31.56	12.98	40.36	36	80.00	-33.45	vertical Peak
3	3993.00	25.58	32.00	13.50	40.41	42	60.00	-29.33	vertical Average
4	3993.00	40.16	32.00	13.50	40.41	42	80.00	-34.75	vertical Peak
5 pp	4989.00	24.77	37.66	15.31	40.41	70	60.00	-22.67	vertical Average
6 pk	4989.00	39.79	37.66	15.31	40.41	70	80.00	-27.65	vertical Peak

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Page (51) of (77)

Harmonic Current Emissions and Voltage Fluctuations and Flicker**Average harmonic current results**

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	N/A			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
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Page (52) of (77)

Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	N/A			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
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40				

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Page (53) of (77)

Test Data - Voltage Fluctuations

Maximum Flicker results

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

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Test report No.:
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Page (54) of (77)

Test Setup Photos and Configuration

Conducted Voltage Emissions

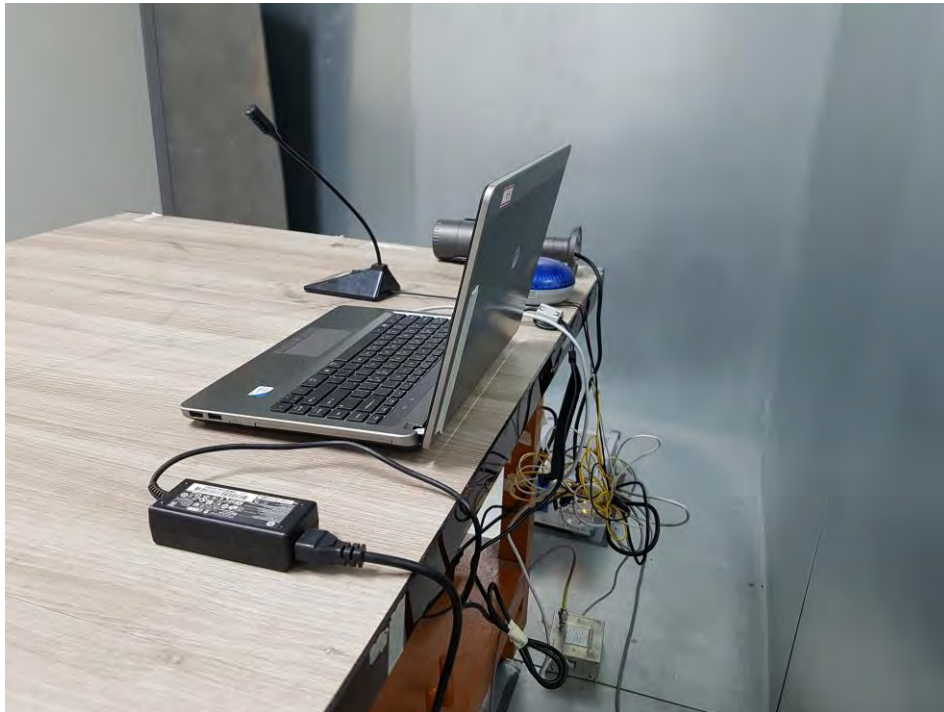
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N/A

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Conducted Telecommunication Emissions

- DC 12V Mode



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- PoE Mode



Radiated Electric Field Emissions(Below 1 GHz)

- DC 12V Mode



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- PoE Mode



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Radiated Electric Field Emissions(Above 1 GHz)

- DC 12V Mode



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- PoE Mode



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Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

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Electrostatic Discharge

- DC 12V Mode



- PoE Mode



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Radiated Electric Field Immunity

- DC 12V Mode



- PoE Mode



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Electrical Fast Transients / Bursts

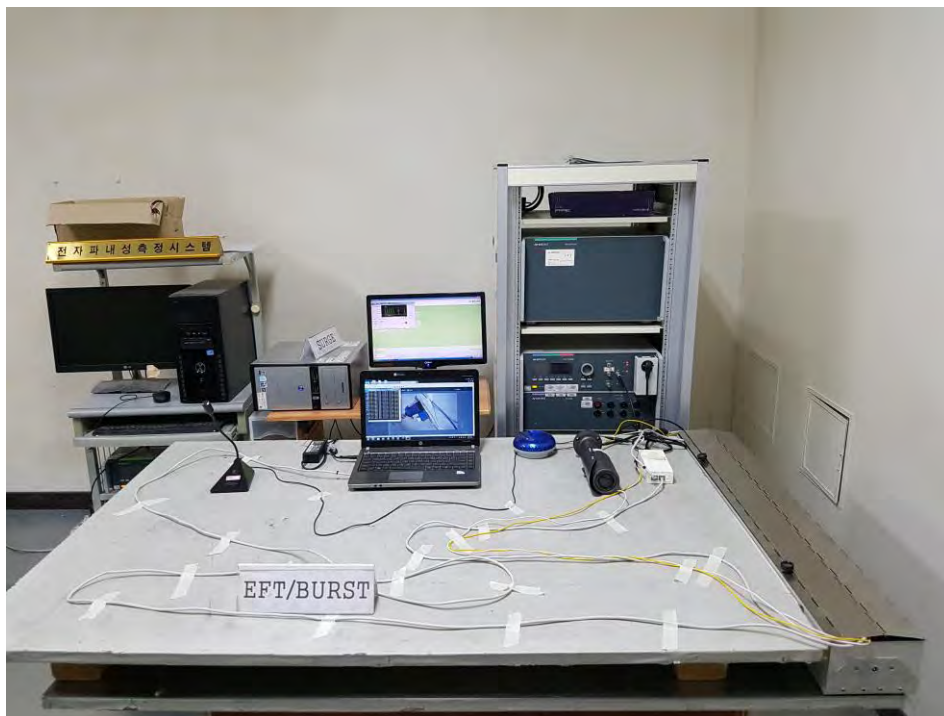
- DC 12V Mode



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- PoE Mode

N/A



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Surge Transients

- DC 12V Mode



- PoE Mode



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Conducted Disturbance

- DC 12V Mode



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- PoE Mode

N/A



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KES Co., Ltd.

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

Test report No.:
KES-E1-16T0239-R2
Page (69) of (77)

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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Main Board EUT Internal View – Board 1

(Top)



(Bottom)



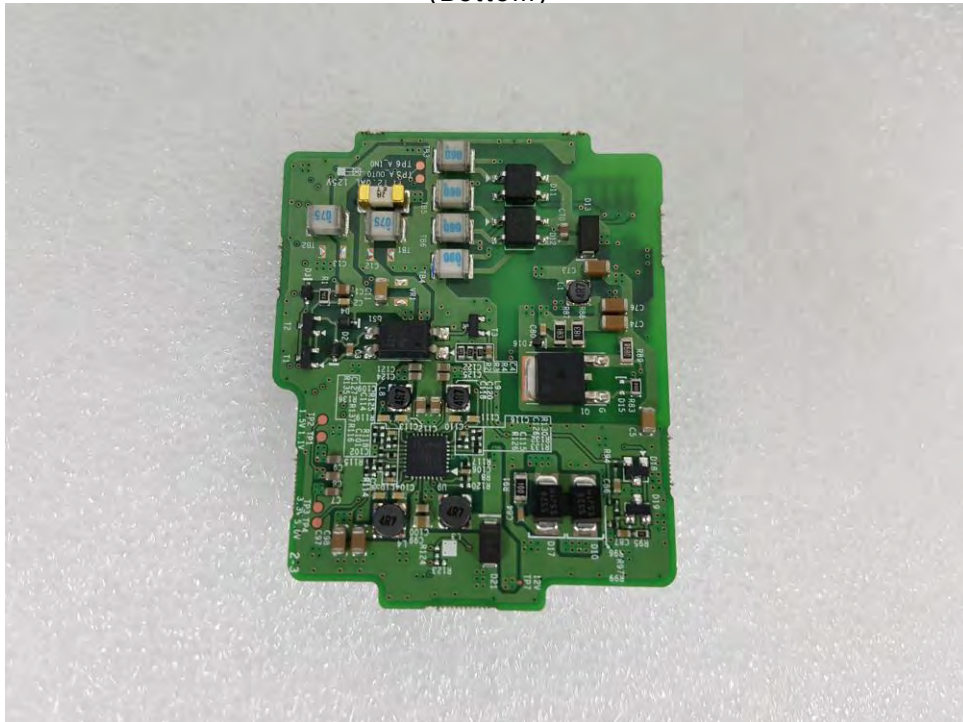
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Main Board EUT Internal View – Board 2

(Top)



(Bottom)



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Main Board EUT Internal View – Board 3

(Top)



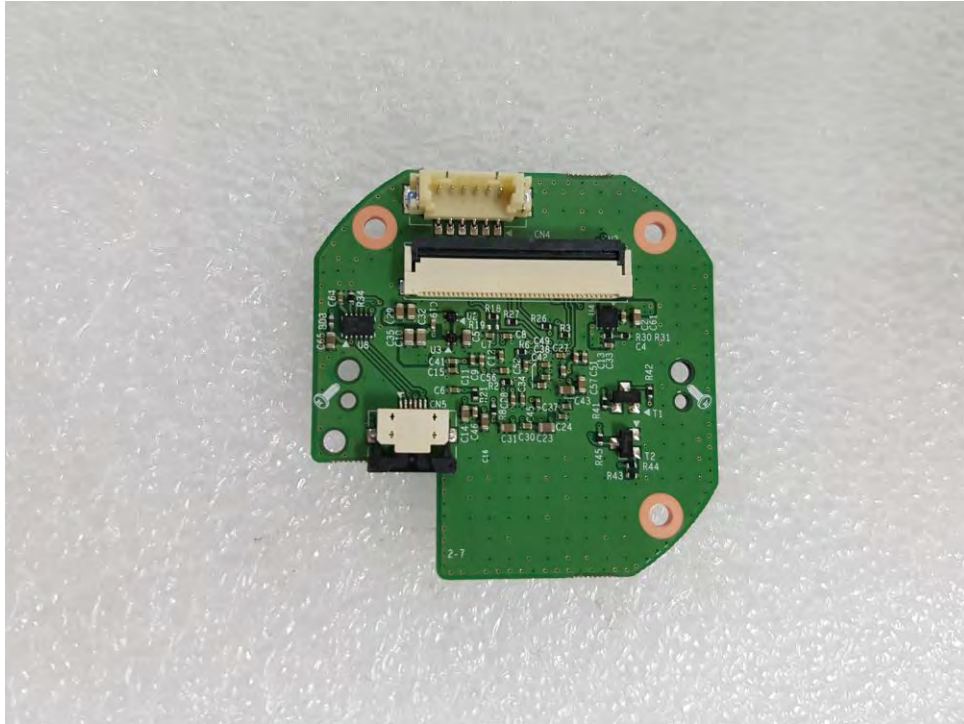
(Bottom)



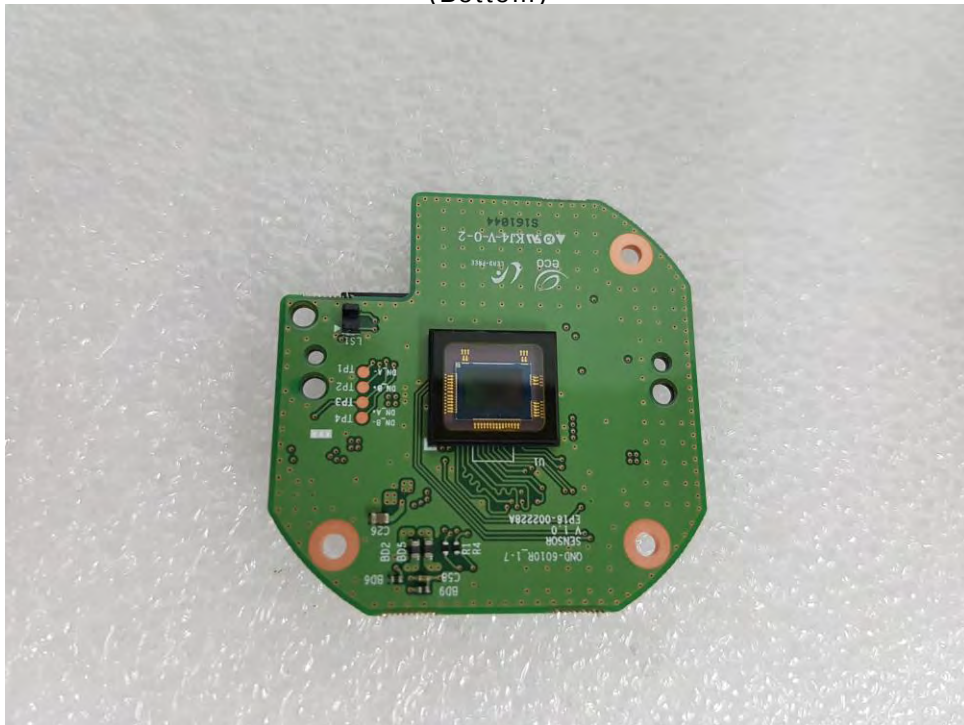
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Main Board EUT Internal View – Board 4

(Top)



(Bottom)



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Main Board EUT Internal View – Camera

(Top)



(Bottom)



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Label and Location



NETWORK CAMERA

Model No : QNO-6020R

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

Made in China