



EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0154-R6

Date of Issue : Jul. 17. 2019

Product name : NETWORK VIDEO RECORDER

Model/Type No. : XRN-2010

Variant Model : XRN-3010, XRN-2010P/DM, XRN-3010P/DM, XRN-2010-1T,
XRN-1610A, XRN-2010A, XRN-3010A, XRN-3010-2T,
XRN-3010/VDM

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 : Mar. 25, 2016

Test date : Mar. 28, 2016 – Apr. 04, 2016

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

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EMC Test Engineer

Reviewed by

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EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Apr. 07, 2016	KES-E1-16T0154	Issued
Dec. 13, 2016	KES-E1-16T0154-R1	Adding Variant model
Jun. 19, 2017	KES-E1-16T0154-R2	Reissue due to manufacturer change and additional derivative model
Jun. 29, 2018	KES-E1-16T0154-R3	Re-issue due to manufacturer change
Oct. 29, 2018	KES-E1-16T0154-R4	Reissue due to additional derivative model
Nov. 27, 2018	KES-E1-16T0154-R5	Reissue due to additional derivative model
Jul. 17, 2019	KES-E1-16T0154-R6	Reissue due to additional derivative model

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1.0 General Product Description

Main Specifications of E.U.T are:

단계		DVR
Model		XRN-2010
Display		
Network Camera	Inputs	Max. 32CH
	Resolution	CIF ~ 12MP
	Protocols	Samsung, ONVIF
Live	Local Display	1x HDMI / 1x VGA
	Multi-Channel Display	[Local Monitor] 1 / 2V / 3V / 4 / 6 / 8 / 9 / 13 / 16 / 25 / 36 / Sequence [Web] 1 / 2V / 3V / 4 / 6 / 9 / 16 / 25 / 36 / Sequenc
	Performance	[Local Monitor] - 12M (30fps) - 8.3M (120fps) - 720P (960fps) - D1 (1920fps) [Web] TBD
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 250Mbps (2MP 32camera real-time recording)
	Resolution	CIF ~ 12MP
	Type	Manual, Schedule (Continuous/Event), Event (Pre/Post)
	Event Trigger	Alarm Input, Video Loss, Camera Event (Sensor, MD, Video Analytics)
Search & Play	Event Action	e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out
	Playback Bandwidth	32Mbps (16CH simultaneously)
	Performance	Max. 4 Users (Local 1, Remote 3)
	Mode	Date & Time (Calendar) / Event Log list / Text Search
	Simultaneous playback	Max. 16CH (Local Monitor, CMS)
Storage	Resolution	CIF ~ 12MP
	Fisheye Dewarping	Remote Viewer (CMS, WEB)
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
	Built-In	0TB ~ 8TB
	Internal HDD	8 (Max 48TB)
Backup	External	ISCSI storage (Max. 384TB) ① Promise VessRaid R2600
	RAID	N/A
	File backup (Via Web)	BU/Exe (GUI), JPG/AVI (Network)
Sensor	Function	Multi channel (Upto 16CH) Play, Date-Time/Title display
	I/O	8/4 (NO/NC Selectable)
Audio	Input	32 CH (network)
	Compression	G.711, G.726, AAC (16/48KHz)
Audio Communication		2-Way
Network		
Interface		RJ-45, Gigabit Ethernet x2
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI (Server, Client)
DDNS		Samsung IPollis DDNS
Transmission Bandwidth		☞ - 512Mbps (ISCSI Off), 256Mbps (ISCSI On)
Max Remote Users		Search (3), Live Unicast (10), Multicast (20)
IP Version		IPv4/v6
Security		User access Log, IP Filtering, 802.1x, Encryption
Language (24)		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai
OS		Supported OS : Vista, 7, 8, 10, Mac OS X (10.7 or above)
Web Browser		MS IE, Google Chrome, Mac Safari, Firefox

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단계		DVR
Model		XRN-2010
Viewer Software	Type	SSM, Webviewer, Smart Viewer, iPolis Mobile
	CMS Support	Support SDK/CGI
Smart phone	Support Model	I-Phone, Android
	Protocol Support	RTP, RTSP, HTTP, CGI
	Control	Live(16ch) : Multi-Profile Support Playback(1ch)
	Max. Remote Users	Search (3), Live Unicast (10), Multicast (20)
Functions		
Camera Setup	Register	Auto, Manual
	Setup Items	IP address, Add profile edit, Bitrate, Compression, GOP, Quality, Camera MD setup Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DIS), Fisheye Dewarping, Hallway View Setup, Camera Web
	PoE Power Control	N/A
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	255 Presets
Redundancy	Failover	N+1
	ARB	Yes
System Control		Mouse, Web, SPC-2000 (Controller)
Indicator/Interface		
Front	Indicator	LED(Status indicator) : - SRN-2000 (8개) ① HDD Action(1), ② Alarm(1), ③ Power(1), ④ Record(1), ⑤ Backup(1), ⑥ Network(1)
	Switch	N/A
Connectors	VGA	1 EA (Support Live screen upto 16 div. mode)
	HDMI	1 EA (Both Support Live / PB / Setup) - Support upto 4K (3840 x 2160)
	Audio	Out(1EA, RCA, Line)
	Ethernet	RJ-45 2ea (LAN/WAN, 1Gbps)
	Alarm	(1) In(8EA, Terminal Block) (2) Alarm Reset(1EA) (3) Out(4EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2~4(NO/COM)
	USB	2EA(Front 1, Rear 1(USB3.0))
	Storage	1 e-SATA
	Serial	RS-232C
	Reset	Switch(1EA)
	Power Cord	1EA AC Inlet
System		
Log	Log List	Max. 20000 (System Log, Event Log each)
Environmental		
Operating Temperature / Humidity		+0°C to +40°C(+32°F to +104°F)
Humidity		20% ~ 85% RH
Electrical		
Power		100 to 240 VAC ±10%; 50/60 Hz, 4~1.5A
Power Consumption		Normal 90W, MAX200W
PoE Budget		N/A
Mechanical		
Color / Material		Black / Metal
Dimension (WxHxD)		440*88*384.8
Weight		5.38kg
Standards		
Approvals	Safety	UL, KC
	EMC	CE, FCC, CCC, Gost-R, KC

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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 ☐ 24 Vac ☐ PoE
Frequency ☒ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Variant Model	Difference
XRN-3010	That by distribution channel management model.
XRN-2010P/DM, XRN-3010P/DM, XRN-2010-1T, XRN-1610A, XRN-2010A, XRN-3010A, XRN-3010-2T, XRN-3010/VDM	Customer-specific management model

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK VIDEO RECORDER	XRN-2010	-	HANWHA TECHWIN (TIANJIN) CO., LTD	E.U.T
HDD	ST1000VM002	-	Seagate	1 TB
Switching Power Supply	FSP250-50GUB	-	FSP GROUP INC.	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	NT63025J	JK9091EF400142M	Samsung Electronics Co., Ltd	-
Notebook Adapter	A13-040N2A	CN60BA4400313AD0N843 KO200	Chicony Power Technology (suzhou)Co., Ltd.	-
Mouse 1	SMB-400	0DJM010118	SEJIN ELECTRON INC.	-
Monitor 1	SMT-2232	C95V67VF900038B	Weihai Daewoo Electronics Co., Ltd.	-
Monitor 2	HSTND-7041-L	6CM6020YQQ	HP Inc.	-
NETWORK CAMERA	SND-E5031R	ZBUM67ZG101007H	Hanwha Techwin Co., Ltd.	-
Adapter 1	PA-1041-0	-	DONGGUANG LITE POWER 2ND PLANT	-
Speaker	MS-760		MASS	-
Mouse	YTOP-589	-	Hanwha Techwin Co., Ltd.	-
External Hard drive	NEXT-652DC	1207230749	YCN	-
Adapter 2	GT-41062-1805-T3	-	GlobTek, Inc.	-
HDD	Diamond Max Plus9	Y41P45KE	Maxtor	-
USB 3.0 Memoery	-	-	-	-

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK VIDEO RECORDER (E.U.T)	HDMI	Monitor 1	HDMI	1.5	S
	D-SUB	Monitor 2	D-SUB	1.4	S
	RJ-45(LAN) (Notebook)	Notebook	RJ-45(LAN)	3.0	U
	RJ-45(LAN) (NETWORK CAMERA)	NETWORK CAMERA	RJ-45(LAN)	3.0	U
	RS-232	Mouse 1	RS-232	2.2	U
	USB 3.0	USB 3.0 Memoery	USB 3.0	-	-
	USB	Mouse 2	USB	1.3	U
	ALARM	Impedance Terminating	-	-	-
	eSATA	External Hard drive	eSATA	1.1	U

* Unshielded=U, Shielded=S

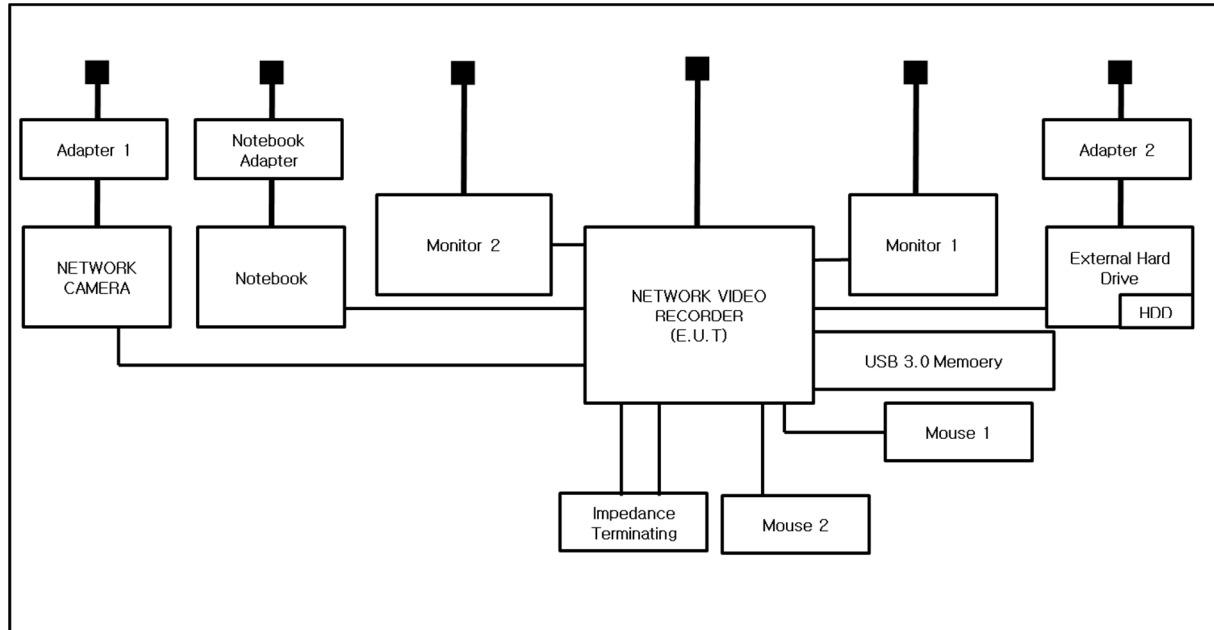
1.7 E.U.T Operating Mode(s)

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

Test mode	Normal operating
OP	MONITORING Network ping test

1.8 Configuration

■ AC Main
 □ DC Main



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 C63.4:2014 and CISPR 16-1-4:2012.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Accreditation No
KOREA	RRA	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ 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

Apr. 04, 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, 06, 2016
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 06, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 24.1 °C

Relative Humidity: 39.2 %

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Apr. 04, 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, 06, 2016
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 06, 2016
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☒	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 24.1 °C

Relative Humidity: 39.2 %

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

Mar. 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, 06, 2016
☒	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: 19.2 °C

Relative Humidity: 32.0 %

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

Mar. 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	100552	05, 06, 2016
☒	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: 25.3 °C
Relative Humidity: 42.1 %

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

Mar. 30, 2016

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: 25.1 °C

Relative Humidity: 41.2 %

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

See Appendix A for test data.



2.6 Voltage Fluctuations and Flicker

Test Date

Mar. 30, 2016

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: 25.1 °C
Relative Humidity: 41.2 %

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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

Mar. 28, 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: 24.3 °C
Relative Humidity: 41.5 %
Atmospheric Pressure: 100,3 kPa

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 ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

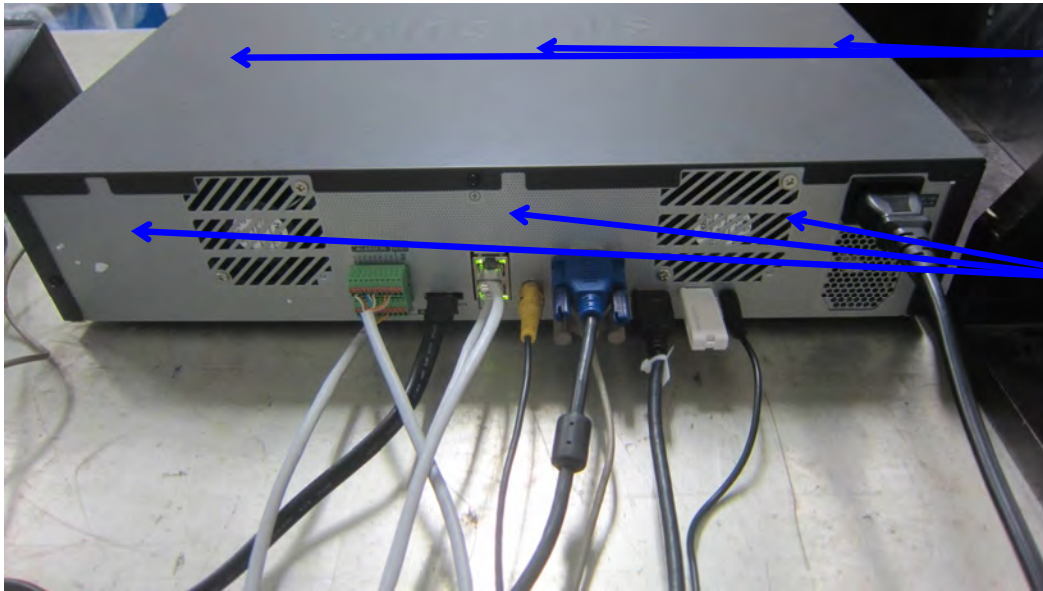
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

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Location of Discharge:

Air
Contact



1. Contact

2. Contact

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Test report No.:
KES-E1-16T0154-R6
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Test Data

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	EUT side	Contact Discharge	Complied	-
2	EUT back side	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

Apr. 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	-
☒	Semi Anchoic Chamber #2		SEMITEC	-	-

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Test report No.:

KES-E1-16T0154-R6

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Test Conditions

Temperature: 25,8 °C
Relative Humidity: 42,4 %
Atmospheric Pressure: 100,1 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**

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

Mar. 30, 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: 25.1 °C
Relative Humidity: 41.2 %
Atmospheric Pressure: 100.3 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 klz ☒ 100 klz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

Test Data

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

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
L – N – PE	Complied	Complied

☐ 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(LAN)(Notebook)	Complied	Complied
RJ-45(LAN)(Network Camera)	Complied	Complied

Note: “Blank” = Not performed

Observations:

- A – No degradation of function
- B – Distortion/Error of function (self-recoverable)
- C – Loss 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

Mar. 30, 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	P1530162238	01, 25, 2017

Test Conditions

Temperature: 25.1 °C
Relative Humidity: 41.2 %
Atmospheric Pressure: 100,3 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
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

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

☒ Line to Line – Differential Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
L – N	Complied	Complied

☒ Line to Earth – Common Mode

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

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45(LAN)(Notebook)	Complied	Complied
RJ-45(LAN)(Network Camera)	Complied	Complied

Note: "Blank" = Not performed

Observations:

- A – No degradation of function
- B – Distortion/Error of function (self-recoverable)
- C – Loss 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

Mar. 29, 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: 24.5 °C
Relative Humidity: 40.7 %
Atmospheric Pressure: 100.1 kPa

Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 10 kHz to 30 MHz
☐ 150 kHz to 230 MHz ☐ 10 kHz to 100 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

Test Data

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45(LAN)(Notebook)	Complied	Complied
RJ-45(LAN)(Network Camera)	Complied	Complied

Notes: CDN = Coupling Decoupling Network
 EMC = Electro Magnetic Clamp
 "blank" = Not performed

Observations:

A – No degradation of function
 B – Distortion/Error of function (self-recoverable)
 C – Loss 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

Mar. 30, 2016

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: 25.1 °C
Relative Humidity: 41.2 %
Atmospheric Pressure: 100.3 kPa



Test Specifications & Observations/Remarks

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

- Voltage variations

☒ Unom + 10 %	☒ 253 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

- A - No response observed from E.U.T
- B - Unit shuts down then automatically restarts when full voltage is restored.
- C - Unit shuts down then manually restarts when full voltage is restored or Loss of function.

Test Results

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

Remarks

PASS Required Performance Criteria.

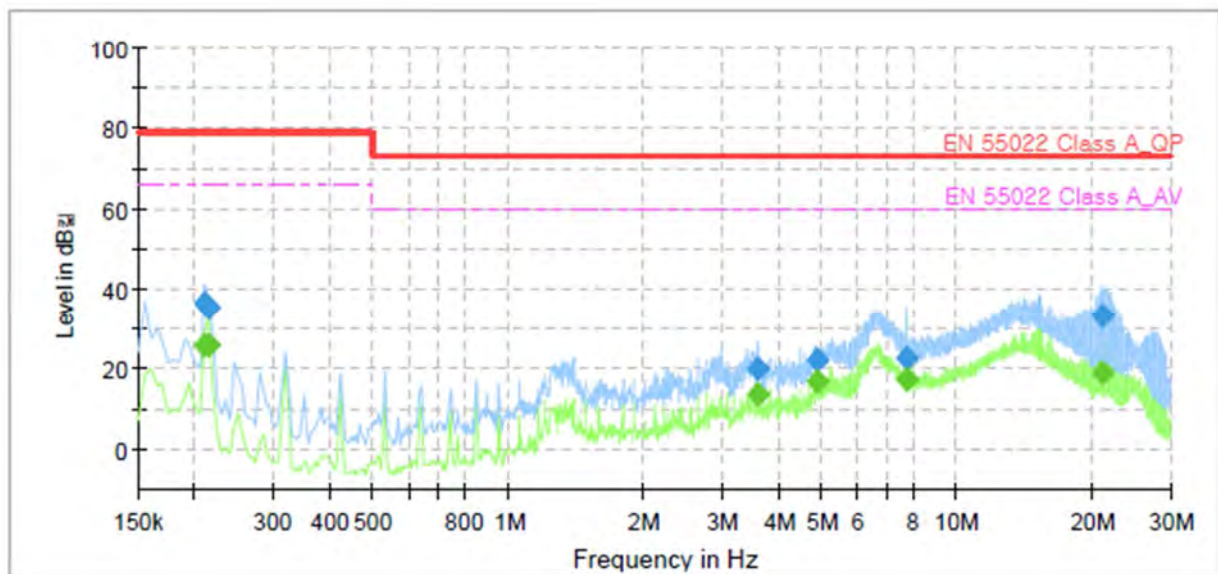
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: XRN-2010P
Mode:
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμ)	CAverage (dBμ)	Limit (dBμ)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	---	25.75	66.00	40.25	1000.0	9.000	L1	9.7
0.210000	36.47	---	79.00	42.53	1000.0	9.000	L1	9.7
0.215000	---	25.87	66.00	40.13	1000.0	9.000	L1	9.7
0.215000	35.72	---	79.00	43.28	1000.0	9.000	L1	9.7
3.620000	---	13.54	60.00	46.46	1000.0	9.000	L1	9.8
3.620000	20.40	---	73.00	52.60	1000.0	9.000	L1	9.8
4.870000	---	16.71	60.00	43.29	1000.0	9.000	L1	9.8
4.870000	22.17	---	73.00	50.83	1000.0	9.000	L1	9.8
7.715000	---	17.28	60.00	42.72	1000.0	9.000	L1	9.9
7.715000	23.02	---	73.00	49.98	1000.0	9.000	L1	9.9
21.155000	---	18.97	60.00	41.03	1000.0	9.000	L1	10.2
21.155000	33.12	---	73.00	39.88	1000.0	9.000	L1	10.2

[NEUTRAL]

Common Information

Test Description:

Conducted Emission

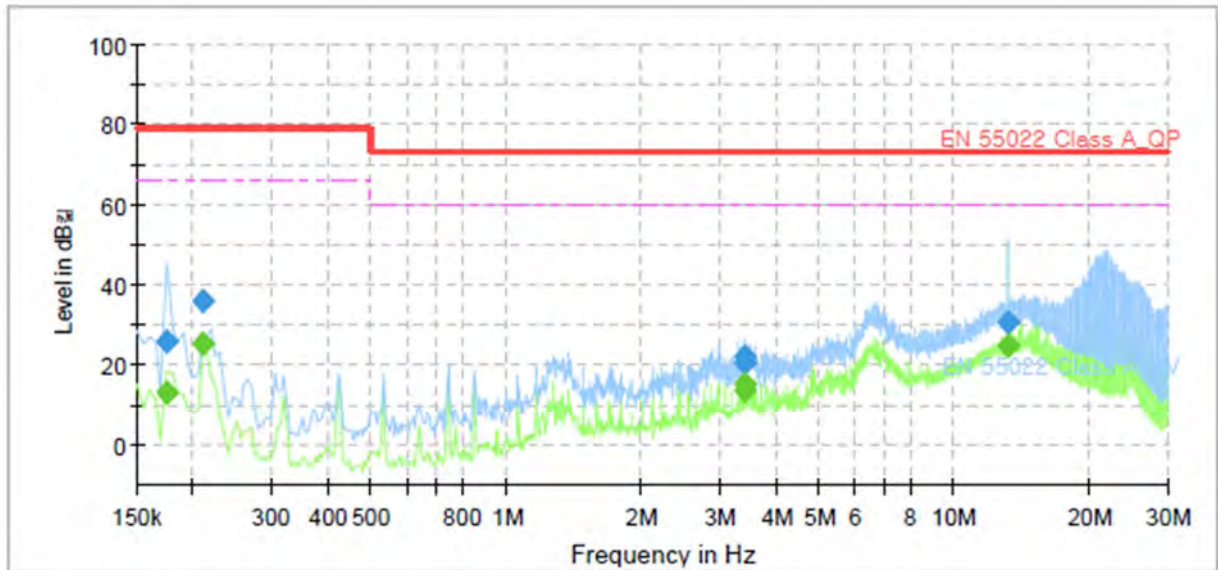
Model No.:

XRN-2010P

Mode

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμ)	CAverage (dBμ)	Limit (dBμ)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.175000	---	13.53	66.00	52.47	1000.0	9.000	N	9.6
0.175000	25.85	---	79.00	53.15	1000.0	9.000	N	9.6
0.210000	---	25.23	66.00	40.77	1000.0	9.000	N	9.6
0.210000	35.85	---	79.00	43.15	1000.0	9.000	N	9.6
3.400000	---	13.84	60.00	46.16	1000.0	9.000	N	9.7
3.400000	20.80	---	73.00	52.20	1000.0	9.000	N	9.7
3.405000	---	15.54	60.00	44.46	1000.0	9.000	N	9.7
3.405000	22.34	---	73.00	50.66	1000.0	9.000	N	9.7
13.210000	---	24.98	60.00	35.02	1000.0	9.000	N	10.1
13.210000	30.72	---	73.00	42.28	1000.0	9.000	N	10.1

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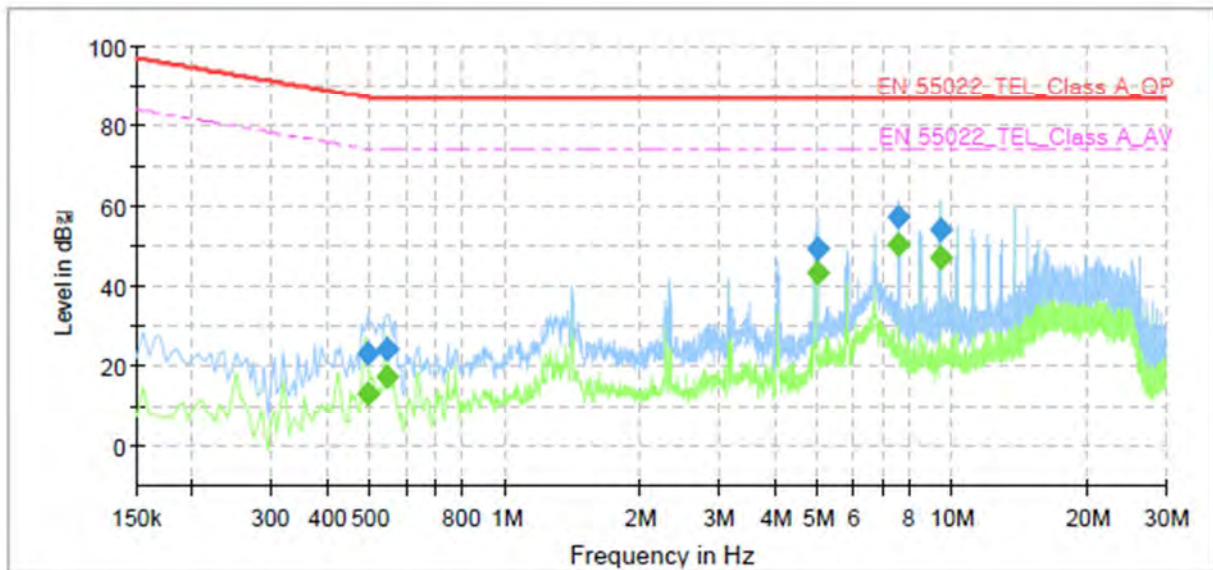
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Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-2010P
Mode	10 Mbps
Operator Name:	KES



Final Result

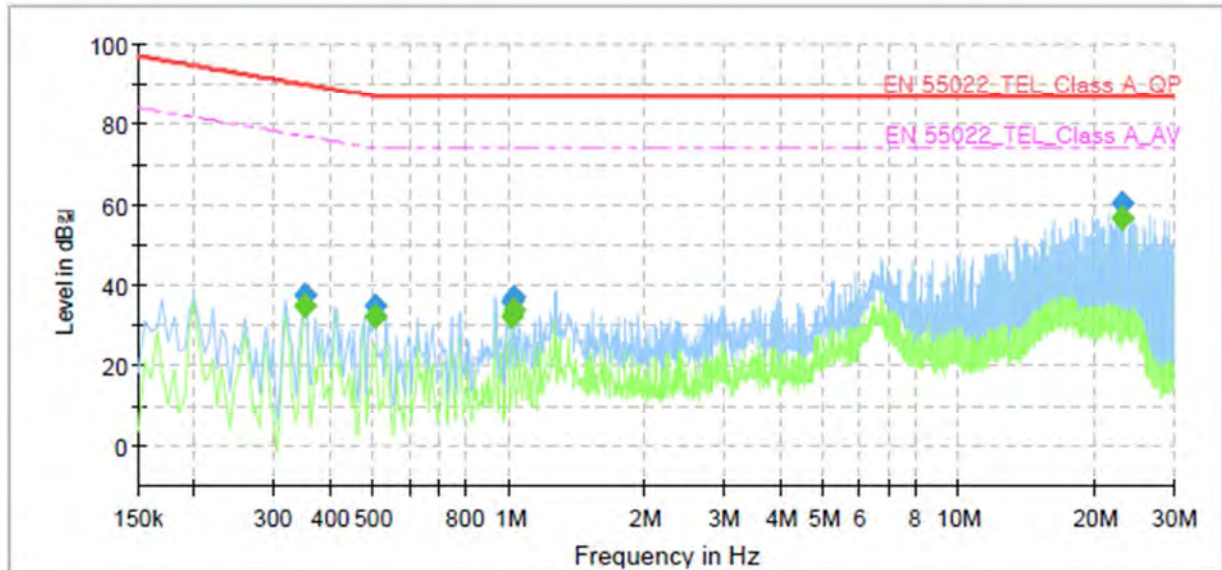
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.495000	---	13.08	74.08	61.00	1000.0	9.000	Single Line	10.0
0.495000	23.28	---	87.08	63.80	1000.0	9.000	Single Line	10.0
0.545000	---	17.33	74.00	56.67	1000.0	9.000	Single Line	9.9
0.545000	24.34	---	87.00	62.66	1000.0	9.000	Single Line	9.9
5.000000	---	43.16	74.00	30.84	1000.0	9.000	Single Line	9.9
5.000000	49.41	---	87.00	37.59	1000.0	9.000	Single Line	9.9
7.555000	---	50.34	74.00	23.66	1000.0	9.000	Single Line	10.0
7.555000	57.05	---	87.00	29.95	1000.0	9.000	Single Line	10.0
9.400000	---	47.34	74.00	26.66	1000.0	9.000	Single Line	10.1
9.400000	54.25	---	87.00	32.75	1000.0	9.000	Single Line	10.1

[100 Mbps]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Telecommunication Emission
XRN-2010P
100 Mbps
KES



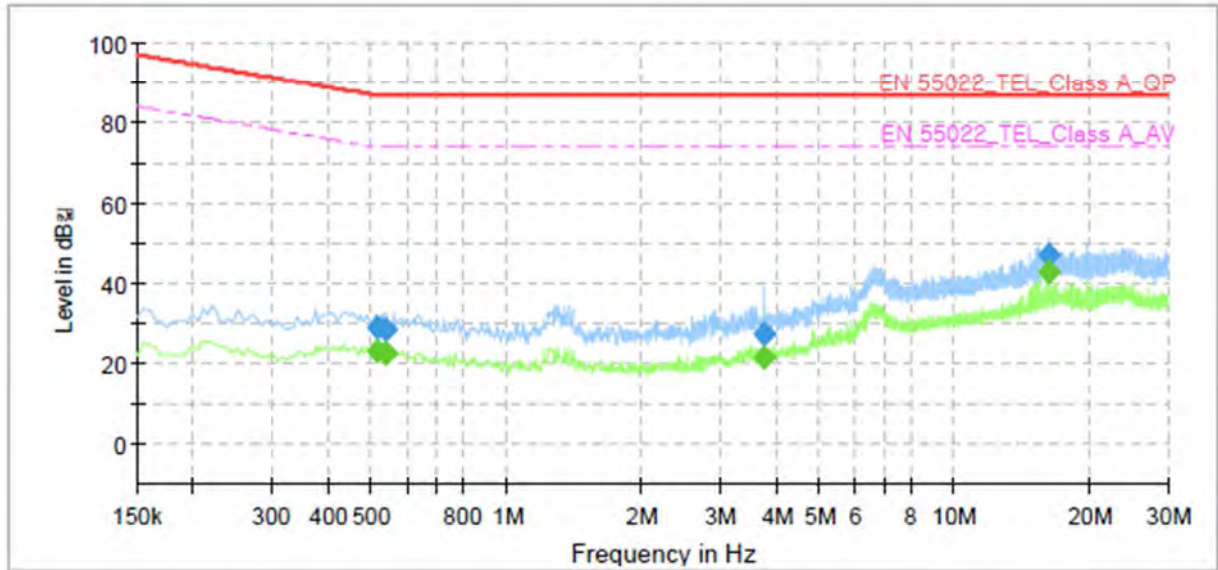
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.350000	---	35.16	76.96	41.80	1000.0	9.000	Single Line	9.5
0.350000	37.43	---	89.96	52.53	1000.0	9.000	Single Line	9.5
0.505000	---	32.36	74.00	41.64	1000.0	9.000	Single Line	9.5
0.505000	34.93	---	87.00	52.07	1000.0	9.000	Single Line	9.5
1.020000	---	32.37	74.00	41.63	1000.0	9.000	Single Line	9.4
1.020000	35.93	---	87.00	51.07	1000.0	9.000	Single Line	9.4
1.025000	---	33.69	74.00	40.31	1000.0	9.000	Single Line	9.4
1.025000	37.07	---	87.00	49.93	1000.0	9.000	Single Line	9.4
23.130000	---	56.73	74.00	17.27	1000.0	9.000	Single Line	9.5
23.130000	60.54	---	87.00	26.46	1000.0	9.000	Single Line	9.5

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-2010P
Mode	1 000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.515000	---	23.35	74.00	50.65	1000.0	9.000	Single Line	9.4
0.515000	29.14	---	87.00	57.86	1000.0	9.000	Single Line	9.4
0.540000	---	23.02	74.00	50.98	1000.0	9.000	Single Line	9.3
0.540000	28.66	---	87.00	58.34	1000.0	9.000	Single Line	9.3
3.770000	---	21.74	74.00	52.26	1000.0	9.000	Single Line	9.2
3.770000	27.50	---	87.00	59.50	1000.0	9.000	Single Line	9.2
16.225000	---	42.73	74.00	31.27	1000.0	9.000	Single Line	9.5
16.225000	46.89	---	87.00	40.11	1000.0	9.000	Single Line	9.5

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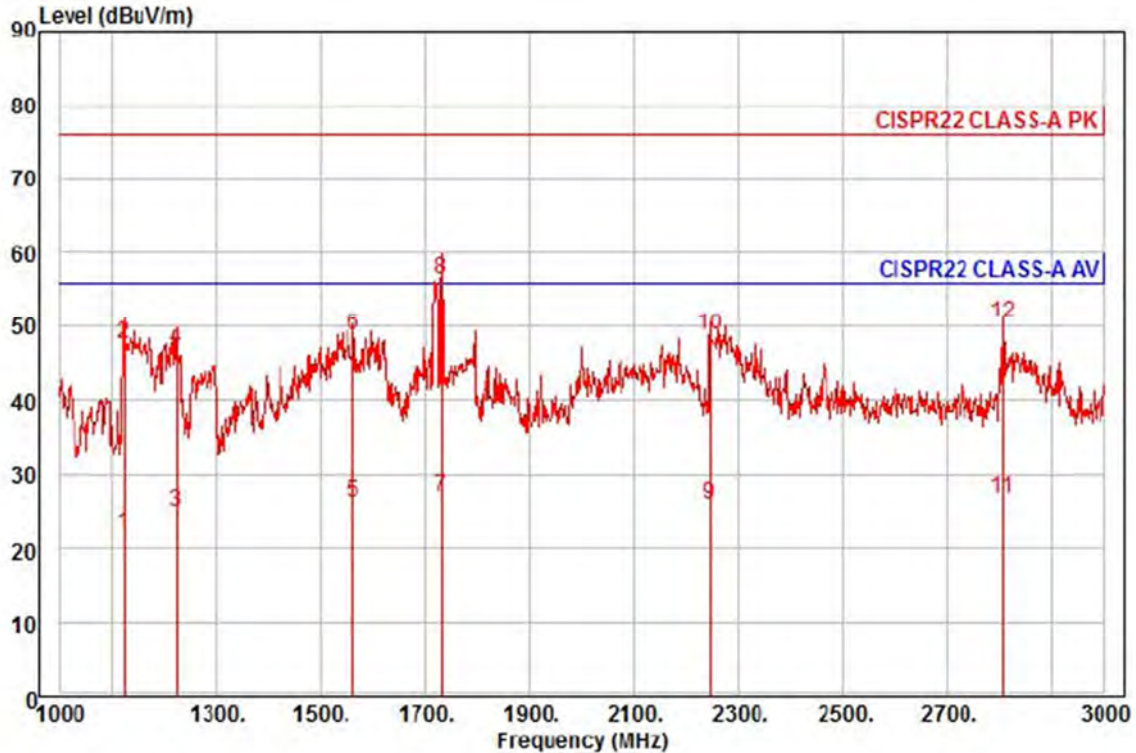
Radiated Electric Field Emissions(Below 1 GHz)

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]
48.32	16.38	V	1.00	13.87	1.43	31.68	40.00	8.32
148.26	18.76	V	1.10	8.14	2.76	29.66	40.00	10.34
248.11	21.22	H	4.00	12.37	3.78	37.37	47.00	9.63
392.54	11.72	V	1.00	15.53	4.98	32.23	47.00	14.77
400.36	19.63	V	1.00	15.71	5.04	40.38	47.00	6.62
600.05	16.53	H	3.00	19.30	6.32	42.15	47.00	4.85

* H : Horizontal, V : Vertical

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Radiated Electric Field Emissions(Above 1 GHz)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2010P
Mode :
Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1122.00	30.86	24.39	6.86	40.06	8	56.00	-33.95	horizontal	Average
2	1122.00	56.33	24.39	6.86	40.06	8	76.00	-28.48	horizontal	Peak
3	1224.00	32.99	24.80	7.16	40.01	8	56.00	-31.06	horizontal	Average
4	1224.00	54.89	24.80	7.16	40.01	8	76.00	-29.16	horizontal	Peak
5	1562.00	31.74	26.14	8.14	39.84	48	56.00	-29.82	horizontal	Average
6	1562.00	54.29	26.14	8.14	39.84	48	76.00	-27.27	horizontal	Peak
7 av	1732.00	31.38	26.82	8.61	39.76	83	56.00	-28.95	horizontal	Average
8 pp	1732.00	60.83	26.82	8.61	39.76	83	76.00	-19.50	horizontal	Peak
9	2246.00	27.47	28.48	9.73	39.77	83	56.00	-30.09	horizontal	Average
10	2246.00	50.42	28.48	9.73	39.77	83	76.00	-27.14	horizontal	Peak
11	2806.00	26.10	29.85	10.76	40.10	63	56.00	-29.39	horizontal	Average
12	2806.00	49.95	29.85	10.76	40.10	63	76.00	-25.54	horizontal	Peak

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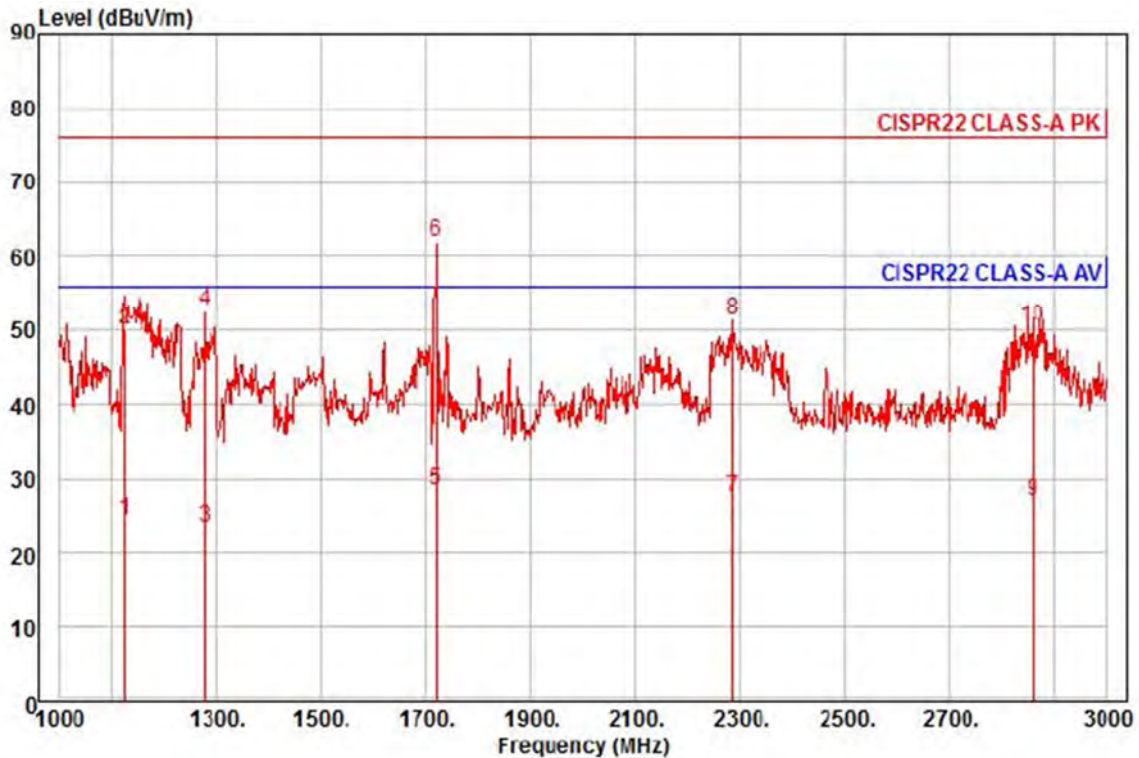
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Test report No.:

KES-E1-16T0154-R6

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2010P
Mode :
Memo : 1 ~ 3 GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1124.00	33.41	24.40	6.87	40.06	1	56.00	-31.38	vertical	Average
2	1124.00	58.94	24.40	6.87	40.06	1	76.00	-25.85	vertical	Peak
3	1278.00	31.16	25.01	7.32	39.98	27	56.00	-32.49	vertical	Average
4	1278.00	60.47	25.01	7.32	39.98	27	76.00	-23.18	vertical	Peak
5 av	1720.00	32.98	26.77	8.58	39.77	198	56.00	-27.44	vertical	Average
6 pp	1720.00	66.46	26.77	8.58	39.77	198	76.00	-13.96	vertical	Peak
7	2286.00	29.02	28.58	9.79	39.80	18	56.00	-28.41	vertical	Average
8	2286.00	52.96	28.58	9.79	39.80	18	76.00	-24.47	vertical	Peak
9	2860.00	26.11	29.99	10.89	40.13	32	56.00	-29.14	vertical	Average
10	2860.00	49.83	29.99	10.89	40.13	32	76.00	-25.42	vertical	Peak

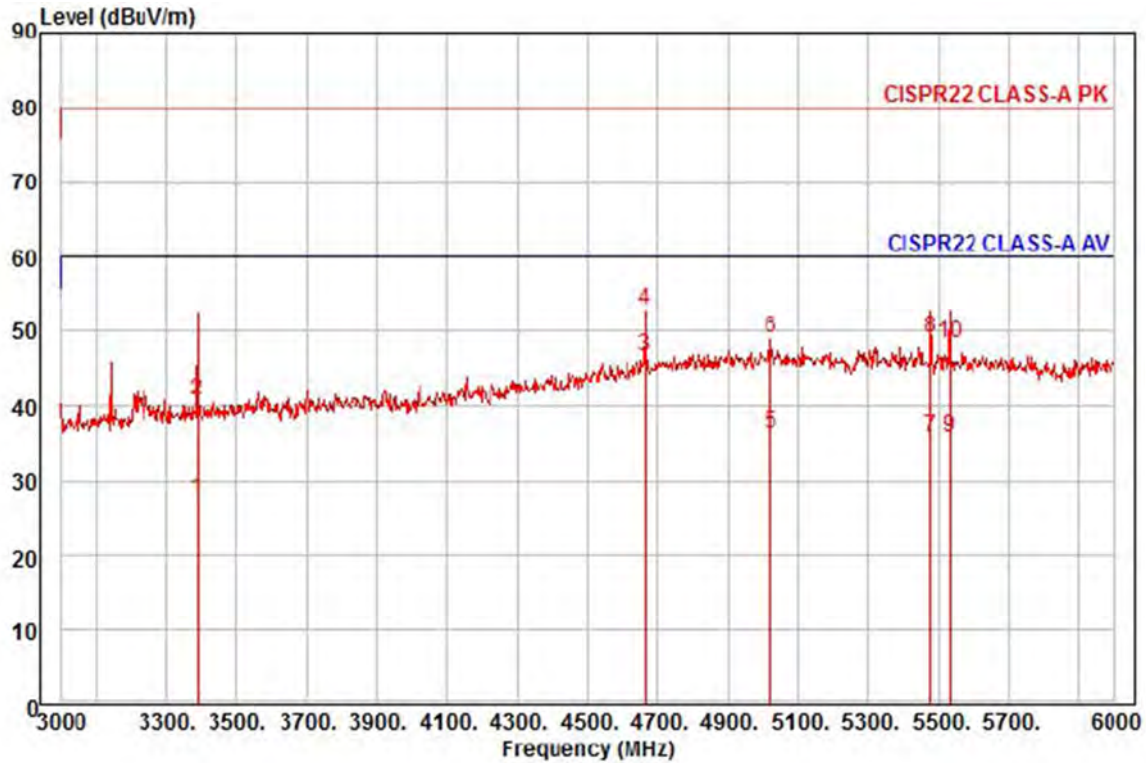
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Test report No.:
KES-E1-16T0154-R6
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2010P
Mode :
Memo : 3 ~ 6 GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3387.00	24.58	30.98	12.22	40.29	270	60.00	-32.51	horizontal	Average
2	3387.00	37.68	30.98	12.22	40.29	270	80.00	-39.41	horizontal	Peak
3 pp	4665.00	36.38	35.81	14.73	40.41	308	60.00	-13.49	horizontal	Average
4 pk	4665.00	42.75	35.81	14.73	40.41	308	80.00	-27.12	horizontal	Peak
5	5022.00	23.67	37.68	15.36	40.41	216	60.00	-23.70	horizontal	Average
6	5022.00	36.41	37.68	15.36	40.41	216	80.00	-30.96	horizontal	Peak
7	5478.00	23.47	36.75	15.89	40.34	150	60.00	-24.23	horizontal	Average
8	5478.00	36.82	36.75	15.89	40.34	150	80.00	-30.88	horizontal	Peak
9	5532.00	23.44	36.65	15.98	40.34	150	60.00	-24.27	horizontal	Average
10	5532.00	36.09	36.65	15.98	40.34	150	80.00	-31.62	horizontal	Peak

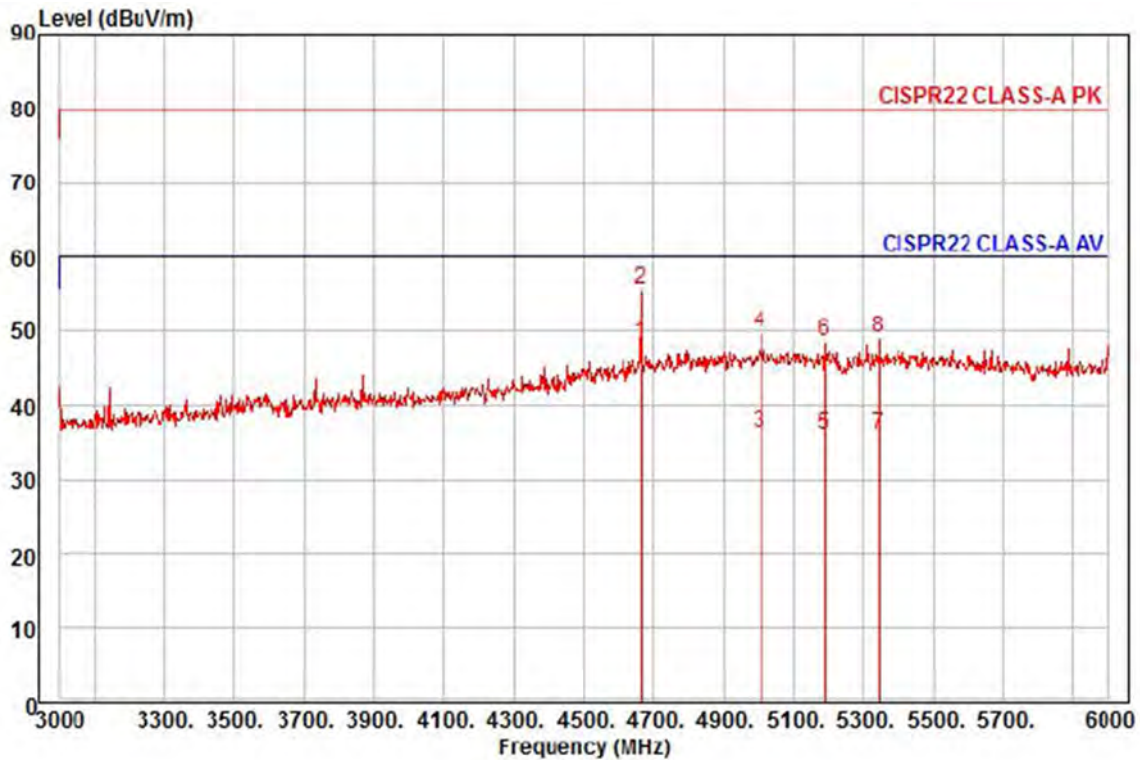
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Test report No.:
KES-E1-16T0154-R6
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2010P
Mode :
Memo : 3 ~ 6 GHz

		Read Freq	Ant Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	pp	4665.00	38.22	35.81	14.73	40.41	360	60.00	-11.65	vertical	Average
2	pk	4665.00	45.53	35.81	14.73	40.41	360	80.00	-24.34	vertical	Peak
3		5004.00	23.66	37.71	15.33	40.41	358	60.00	-23.71	vertical	Average
4		5004.00	37.06	37.71	15.33	40.41	358	80.00	-30.31	vertical	Peak
5		5187.00	23.53	37.34	15.55	40.38	140	60.00	-23.96	vertical	Average
6		5187.00	36.12	37.34	15.55	40.38	140	80.00	-31.37	vertical	Peak
7		5343.00	23.63	37.03	15.73	40.36	78	60.00	-23.97	vertical	Average
8		5343.00	36.63	37.03	15.73	40.36	78	80.00	-30.97	vertical	Peak

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Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	111.715E-3			
2	8.173E-3	0.841	972.00E-3	PASS
3	75.315E-3	3.638	2.07	PASS
4	2.861E-3			PASS
5	15.927E-3	1.552	1.03	PASS
6	1.142E-3			PASS
7	4.223E-3			PASS
8	1.575E-3			PASS
9	8.148E-3	2.263	360.00E-3	PASS
10	1.033E-3			PASS
11	9.116E-3	3.069	297.00E-3	PASS
12	1.237E-3			PASS
13	5.448E-3	2.883	189.00E-3	PASS
14	1.008E-3			PASS
15	2.666E-3			PASS
16	1.091E-3			PASS
17	2.664E-3			PASS
18	1.072E-3			PASS
19	1.550E-3			PASS
20	808.240E-6			PASS
21	2.284E-3			PASS
22	586.664E-6			PASS
23	2.498E-3			PASS
24	624.992E-6			PASS
25	1.371E-3			PASS
26	608.209E-6			PASS
27	893.941E-6			PASS
28	587.458E-6			PASS
29	410.556E-6			PASS
30	369.749E-6			PASS
31	466.188E-6			PASS
32	532.261E-6			PASS
33	539.850E-6			PASS
34	345.986E-6			PASS
35	673.180E-6			PASS
36	453.615E-6			PASS
37	578.524E-6			PASS
38	300.124E-6			PASS
39	591.617E-6			PASS
40	399.623E-6			PASS

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Test report No.:
KES-E1-16T0154-R6
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Test Data - Harmonics (continued)**Maximum harmonic current results**

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	116.086E-3			
2	19.538E-3	0.905	2.16	PASS
3	90.916E-3	1.976	4.60	PASS
4	8.506E-3	0.989	860.00E-3	PASS
5	27.483E-3	1.205	2.28	PASS
6	3.839E-3			PASS
7	6.135E-3	0.398	1.54	PASS
8	5.857E-3	1.273	460.00E-3	PASS
9	13.796E-3	1.724	800.00E-3	PASS
10	1.916E-3			PASS
11	10.637E-3	1.612	660.00E-3	PASS
12	3.461E-3			PASS
13	6.299E-3	1.500	420.00E-3	PASS
14	2.084E-3			PASS
15	4.428E-3			PASS
16	3.491E-3			PASS
17	3.303E-3			PASS
18	2.804E-3			PASS
19	2.286E-3			PASS
20	3.153E-3			PASS
21	2.821E-3			PASS
22	2.367E-3			PASS
23	3.926E-3			PASS
24	1.183E-3			PASS
25	2.528E-3			PASS
26	2.223E-3			PASS
27	1.280E-3			PASS
28	1.693E-3			PASS
29	1.050E-3			PASS
30	830.959E-6			PASS
31	807.156E-6			PASS
32	1.960E-3			PASS
33	1.459E-3			PASS
34	1.106E-3			PASS
35	1.165E-3			PASS
36	1.372E-3			PASS
37	798.474E-6			PASS
38	897.920E-6			PASS
39	984.776E-6			PASS
40	591.108E-6			PASS

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Test Data - Voltage Fluctuations

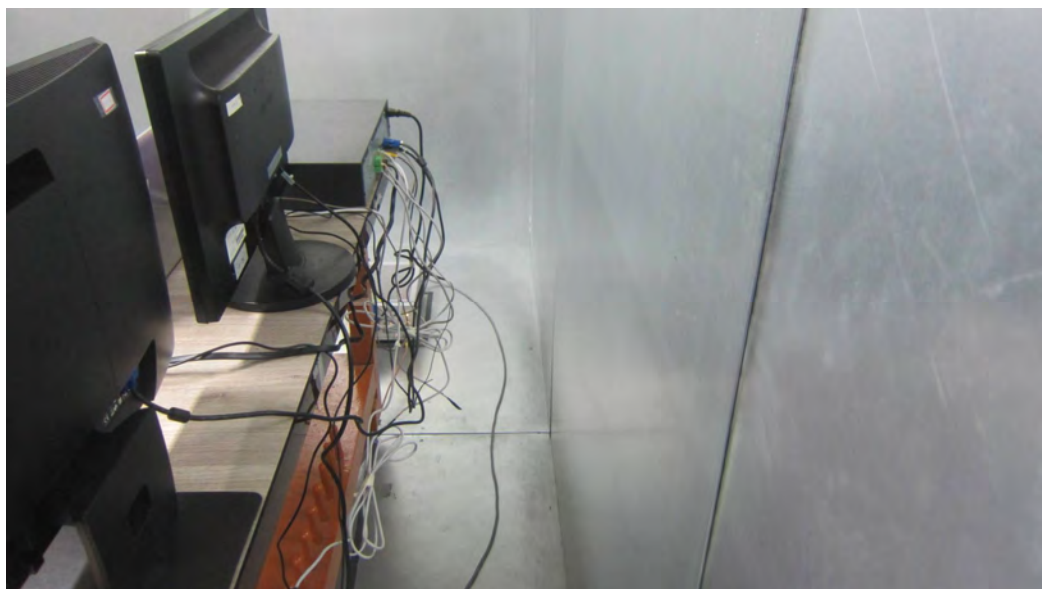
Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.013	3.30	PASS
dmax [%]	0.078	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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Test Setup Photos and Configuration

Conducted Voltage Emissions



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Conducted Telecommunication Emissions



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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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Harmonic Current Emissions and Voltage Fluctuations and Flicker

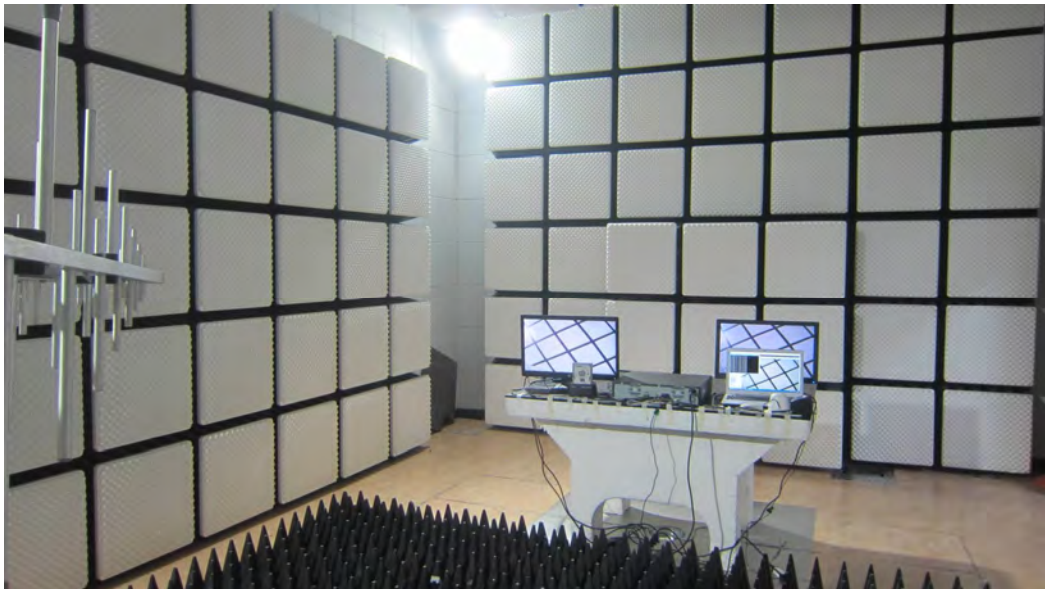


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Electrostatic Discharge



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



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EUT External Photographs

(Top)

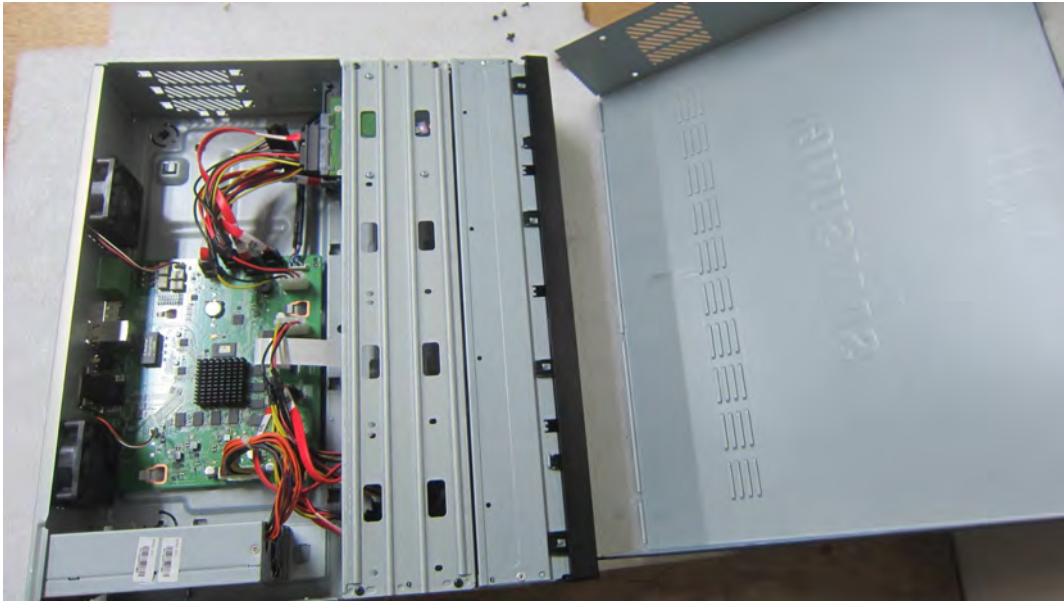


(Bottom)



EUT Internal Photographs

(Internal View)



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Main Board EUT Internal View – Main Board

(Top)



(Bottom)



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Main Board EUT Internal View – Sub Board

(Top)



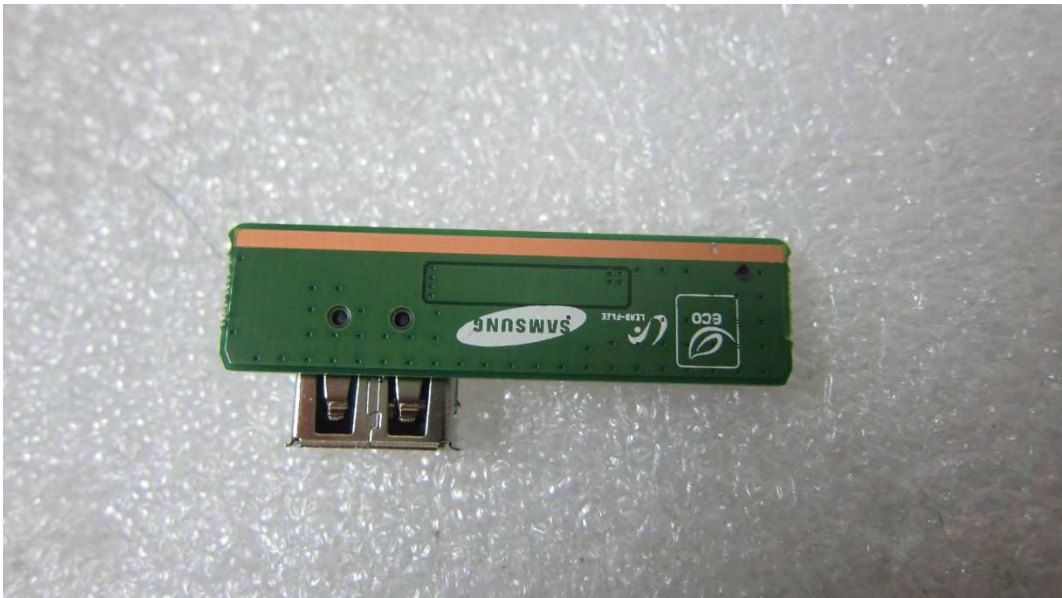
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Main Board EUT Internal View – USB Board

(Top)

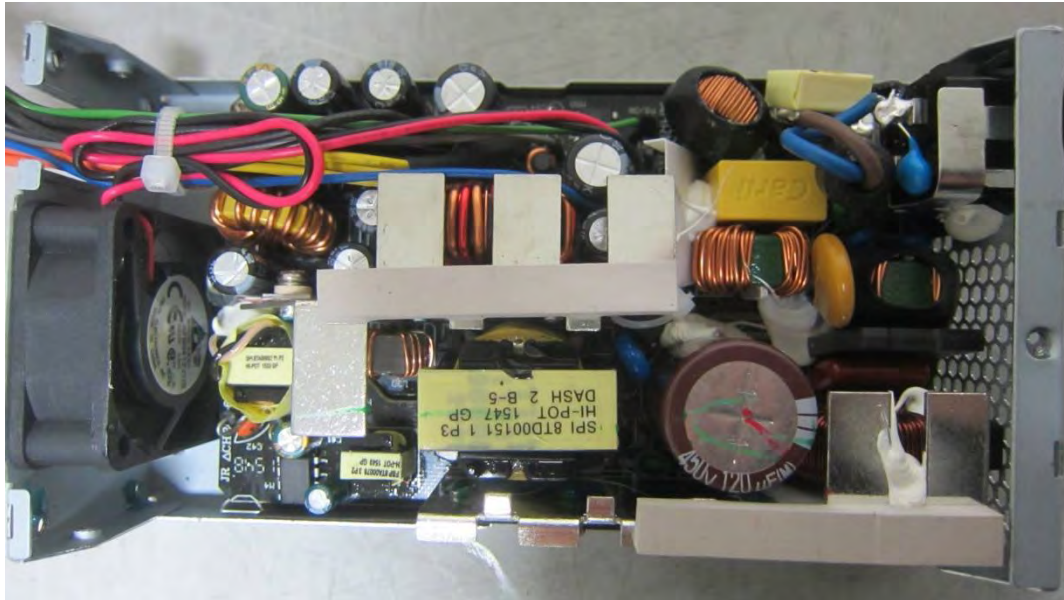


(Bottom)



Main Board EUT Internal View – Power Main Board

(Top)



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Main Board EUT Internal View – HDD

(Top)



(Bottom)



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Main Board EUT Internal View – POWER

(Top)



(Bottom)



Label and Location



NETWORK VIDEO RECORDER

Model No : XRN-2010

Manufacturer : HANWHA TECHWIN(TIANJIN)CO., LTD

Made in China

