



EMC TEST REPORT For RCM

Test Report No. : KES-EM-22T0524-R1
Date of Issue : Feb. 24, 2023
Product name : NVR
Model/Type No. : XRN-6410B2
Variant Model : XRN-3210B2
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Jun. 22, 2022
Test date : Jun. 22, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jae Won, Lee
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

**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

Report No.:

KES-EM-22T0524-R1

Page (2) of (37)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 29, 2022	KES-EM-22T0524	Issued
Feb. 24, 2023	KES-EM-22T0524-R1	Change the Applicant and manufacturer at the request of the customer

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	6
1.2	Variant Model Differences	6
1.3	Device Modifications	6
1.4	Equipment Under Test.....	6
1.5	Support Equipments	7
1.6	External I/O Cabling	8
1.7	EUT Operating Mode(s)	8
1.8	Configuration	9
1.9	Remarks when standards applied	10
1.10	Calibration Details of Equipment Used for Measurement	10
1.11	Test Facility	10
1.12	Laboratory Accreditations and Listings	10
2.0	Test Regulations.....	11
2.1	Conducted Emissions at Mains Power Ports	12
2.2	Conducted Emissions at Telecommunication Ports.....	13
2.3	Radiated Electric Field Emissions(Below 1 GHz)	14
2.4	Radiated Electric Field Emissions(Above 1 GHz)	15
APPENDIX A – TEST DATA.....		16
Conducted Emissions at Mains Power Ports.....		16
Conducted Emissions at Telecommunication Ports		18
Radiated Electric Field Emissions(Below 1 GHz)		20
Radiated Electric Field Emissions(Above 1 GHz).....		21
Test Setup Photos and Configuration		22
Conducted Emissions at Mains Power Ports.....		22
Conducted Emissions at Telecommunication Ports		23
Radiated Electric Field Emissions(Below 1 GHz)		24
Radiated Electric Field Emissions(Above 1 GHz).....		25
EUT External Photographs		26
EUT Internal Photographs		27



1.0 General Product Description

Main Specifications of EUT are:

Display		
Network camera	Inputs	Max. 64CH
	Resolution	32MP ~ CIF
	Protocols	SUNAPI, ONVIF
Decoding	Local Display	[Dual Display] HDMI 1: 3840x2160 (30Hz) HDMI 2: 1920x1080 (60Hz)
	Multi Screen Display	[Local Monitor] 1/ 2H/ 2V/ 3V/ 4/ 6/ 8/ 9/ 13/ 16/ 25/ 36/ 64/ Sequence [Web] 1/ 2H/ 2V/ 3V/ 4/ 6/ 8/ 9
	Resolution	32M(15fps, H.265 Only), 12M(30fps, H.265 Only), 8.3M(120fps), 1080p(480fps), 720P(960fps), D1(960fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 400Mbps
	Resolution	32MP ~ CIF
	Mode	Normal, Dual Stream, Schedule(Continuous/Event), Event(Pre/Post), Bookmark
	Event Trigger	Alarm Input, Video Loss, Camera Event(Sensor, MD, Video Analytics, Defocus, Audio), Dynamic Event
	Event Action	e-Mail, Event Push, PTZ Preset, Alarm Out, Buzzer, Monitor Out
Search & Play	Playback Bandwidth	Max. 32Mbps
	User	Max. 4 Users (Local 1, Remote 3)
	Simultaneous playback	Max. 112CH (Local 64CH, Remote 16CH per user)
	Fisheye Dewarping	CMS
	Mode	Date & Time(Calendar), Event list, Text Search, Smart Search
	Resolution	CIF ~ 32MP (Up to H.264 9MP, H.265 32MP)
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
Storage	Supported HDD	Up to 10TB
	HDD Slot	SATA 8es(Max. 80TB)
	External	iSCSI storage
Backup	File backup	BU/Exe(GUI), JPG/AVI(Network)
	Function	Multi channel(Up to 16CH) Play, Date-Time/Title display
Network		
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI (Server, Client)	
DDNS	Hanwha DDNS	
Transmission Bandwidth	Max. 400Mbps	
Audio	GUI	64 CH(network)
	Web	G.711, G.726, AAC(16/48KHz)
	Audio Communication	2-Way
Max Remote Users	Search(3), Live Unicast(10), Multicast(20)	
Security	IP address filtering, User access Log, 802.1x Encryption, Device certificate(Hanwha Techwin Root CA), Signed firmware	
Web viewer	Supported OS	Windows 10, macOS 10.13
	Supported browser	Google Chrome, Microsoft Edge, Mac Safari

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



Functions		
Camera Setup	Register	Auto, Manual
	Item	IP address, Add profile edit, Bitrate, Compression, GOP, Quality, Camera MD setup (4, 8 point polygon) Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DIS), Fisheye Dewarping Mode, Hallway View Setup, Camera Webpage
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	300 Presets
Smart phone	Support Model	IOS, Android
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)
	Control	Live 16CH(Multi-Profile Support), Playback 4CH
	Max Remote Users	Search(3), Live Unicast(10)
Redundancy	Fallover	N+1
	ARB	Support
Easy configuration		P2P(QR code)
Interface		
Front	Indicator	HDD, Alarm, Power, Record, Backup, Network
Storage		OK
Reset		OK
HDD Key Lock		OK
HDMI		2EA (Playback/Setup → HDMI1) HDMI1 : 3840x2160 30Hz HDMI2 : 1920x1080 60Hz
Audio		Out 1EA
Ethernet		RJ-45 3EA (LAN/WAN, 1Gbps)
Alarm		In 8EA, Out 4EA
USB		4EA(Front 2 x USB 2.0, Rear 2 x USB 3.0)
Power Inlet		AC 1EA
System		
Log	Log List	Max. 100,000 (System Log, Event Log each)
System Control		Mouse, Web, Controller (SPC-2000)
Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai, Vietnamese
Environmental		
Operating Temperature		0°C to +40°C (32°F to 104°F)
Operating Humidity		20% ~ 85% RH
Electrical		
Power Input		100 ~ 240 VAC ±10%; 50/60 Hz, 1.5A (Single SMPS)
Power Consumption		Max. 138W (with 10TB HDD 8EA)
Mechanical		
Color / Material		Black / Metal
Dimension (W×H×D)		438 x 86 x 434.9 mm
Weight		7.5Kg (16.5 lb, Except HDD)
Intelligent Analysis		
AI Search	Object Attribute	Compatible for Wisenet AI Camera

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



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.

☒ AC 240 V, 50 Hz

1.2 Variant Model Differences

Simple derivation addition by changing the number of channels.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NVR	XRN-6410B2	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	FSAK250J	-	Channel Well Technology (Guangzhou)co.,Ltd.	-
Main Board	EP16-003137D	-	-	-
CPU	INTEL PENTIUM G5400T SR3XB 3.10GHz	-	INTEL	-
RAM	8GB 1Rx8 PC4- 3200AA-UA2-11	-	SAMSUNG	8 GB x 2 EA
SSD	TS32GMTS800	-	Transcend	32 GB

**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

Report No.:

KES-EM-22T0524-R1

Page (7) of (37)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Camera	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Laptop	P95G001	8KM8HT2	DELL INC.	-
Laptop Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Monitor	DELL E2222H DVT	8221TCM10D001 03X	DELL INC.	-
Keyboard	ST-600	-	CAN TECHNOLOGY CO., LTD	-
Earphone	-	-	-	-
Alarm	-	-	-	-
Button alarm	-	-	-	-
HDD	ST4000VX000	-	Seagate	4000 GB
Smart phone	-	-	SAMSUNG	-
USB Memory1	-	-	Sandisk	32 GB
USB Memory2	-	-	Sandisk	32 GB

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NVR (EUT)	RJ-45 (LAN1)	PoE Adapter	RJ-45 (LAN1)	3.0	U
	RJ-45 (LAN2)	Laptop	RJ-45 (LAN2)	3.0	U
	USB	Mouse (EUT)	USB	1.4	U
	USB	USB Memory1	USB	-	-
	USB	USB Memory2	USB	-	-
	HDMI	Monitor	HDMI	1.5	S
	USB	Keyboard	USB	1.4	U
	grounding	grounding	grounding	1.2	-
	3.5mm	Earphone	3.5mm	1.5	U
	Alarm out	Alarm	Alarm in	3.0	U
	Alarm in	Button alarm	Alarm out	3.0	U
	SATA	HDD	SATA	0.2	U
PoE Adapter	RJ-45 (PoE)	Camera	RJ-45 (PoE)	3.0	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.6	U
	3.5 mm	Smart phone	3.5 mm	1.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

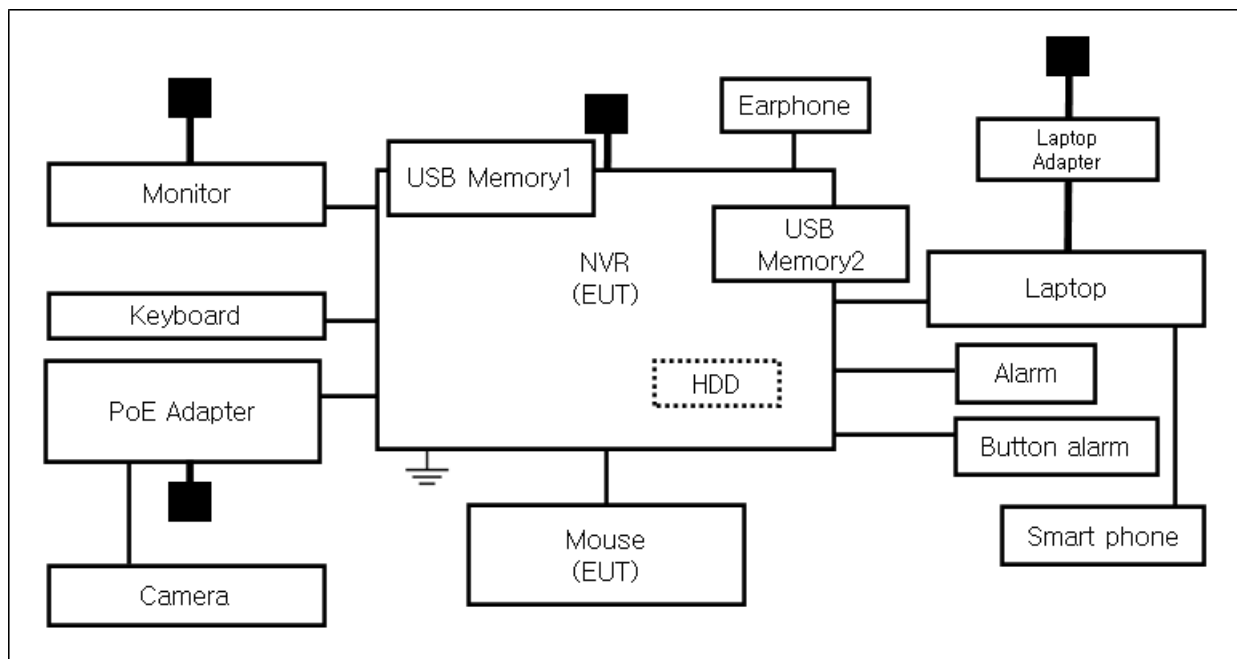
Test Mode	operating
Operation Mode	EUT Monitoring, Ping Test after testing, check if the recording is normally done on the HDD and USB Memory

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

1.8 Configuration

■ AC Main
 □ DC Main



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber 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 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
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004



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

Report No.:

KES-EM-22T0524-R1

Page (11) of (37)

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **AS/NZS CISPR32:2015**

☒ Class A

☐ Class B

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



2.1 Conducted Emissions at Mains Power Ports

Test Date

Jun. 22, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

Test Conditions

Temperature: (24,3 ± 0,1) °C

Relative Humidity: (44,5 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jun. 22, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 28, 2022
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 28, 2022

Test Conditions

Temperature: (24,3 ± 0,1) °C

Relative Humidity: (44,5 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 22, 2022

Test Location☐ OPEN AREA TEST SITE #2☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions

Temperature: (24,5 ± 0,1) °C

Relative Humidity: (44,3 ± 0,1) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 22, 2022

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	08, 03, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 01, 2023
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 03, 2023

Test Conditions

Temperature: (24,6 ± 0,1) °C

Relative Humidity: (44,5 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

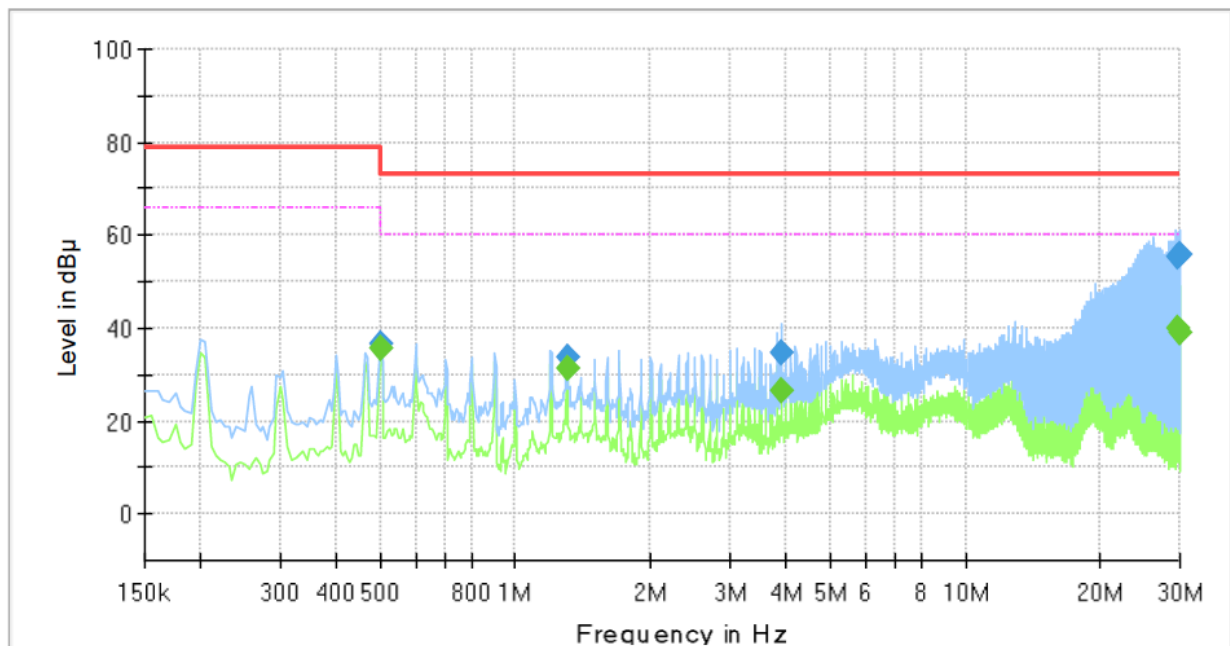
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XRN-6410B2
Phase:	L1
Mode:	
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.500000	---	35.50	60.00	24.50	1000.0	9.000	L1	19.7
0.500000	36.49	---	79.00	42.51	1000.0	9.000	L1	19.7
1.300000	---	31.29	60.00	28.71	1000.0	9.000	L1	20.2
1.300000	33.58	---	73.00	39.42	1000.0	9.000	L1	20.2
3.905000	---	26.43	60.00	33.57	1000.0	9.000	L1	19.9
3.905000	34.69	---	73.00	38.31	1000.0	9.000	L1	19.9
29.645000	---	39.77	60.00	20.23	1000.0	9.000	L1	20.3
29.645000	55.21	---	73.00	17.79	1000.0	9.000	L1	20.3
29.940000	---	39.18	60.00	20.82	1000.0	9.000	L1	20.3
29.940000	55.65	---	73.00	17.35	1000.0	9.000	L1	20.3

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

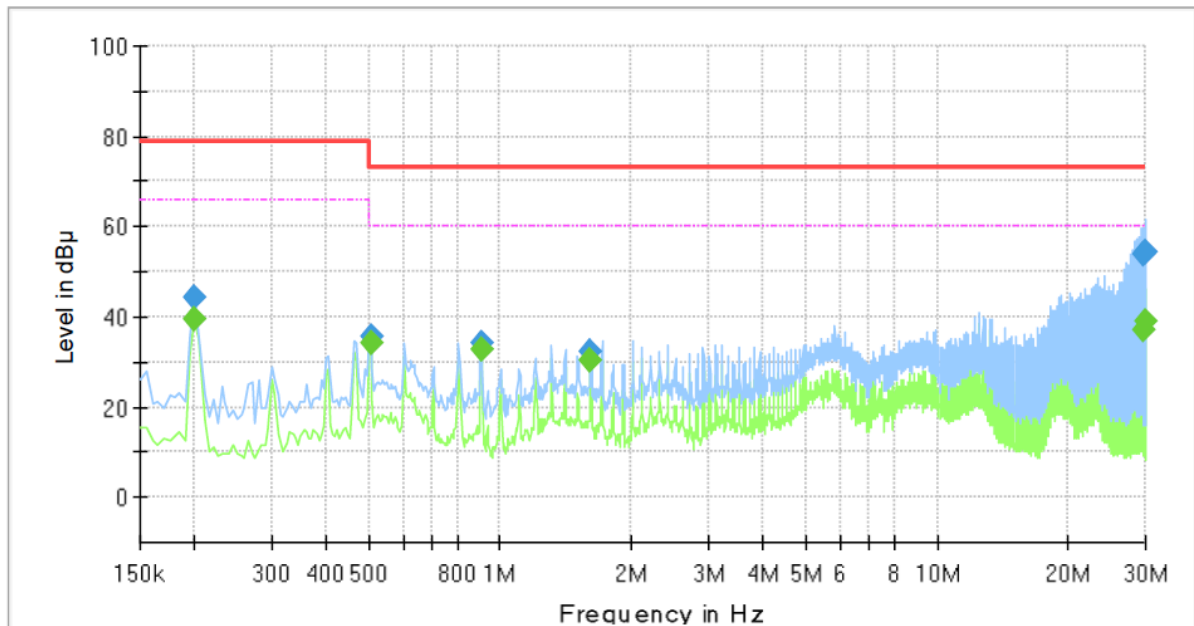
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr

NEUTRAL LINE

Common Information

Test Description: Conducted Emission
 Model No.: XRN-6410B2
 Phase: N
 Mode:
 Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.200000	---	39.34	66.00	26.66	1000.0	9.000	N	19.4
0.200000	44.37	---	79.00	34.63	1000.0	9.000	N	19.4
0.505000	---	34.01	60.00	25.99	1000.0	9.000	N	19.7
0.505000	35.70	---	73.00	37.30	1000.0	9.000	N	19.7
0.905000	---	32.96	60.00	27.04	1000.0	9.000	N	20.1
0.905000	34.25	---	73.00	38.75	1000.0	9.000	N	20.1
1.610000	---	30.17	60.00	29.83	1000.0	9.000	N	20.2
1.610000	32.26	---	73.00	40.74	1000.0	9.000	N	20.2
29.500000	---	37.28	60.00	22.72	1000.0	9.000	N	20.4
29.500000	54.12	---	73.00	18.88	1000.0	9.000	N	20.4
29.895000	---	38.88	60.00	21.12	1000.0	9.000	N	20.4
29.895000	54.16	---	73.00	18.84	1000.0	9.000	N	20.4

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr

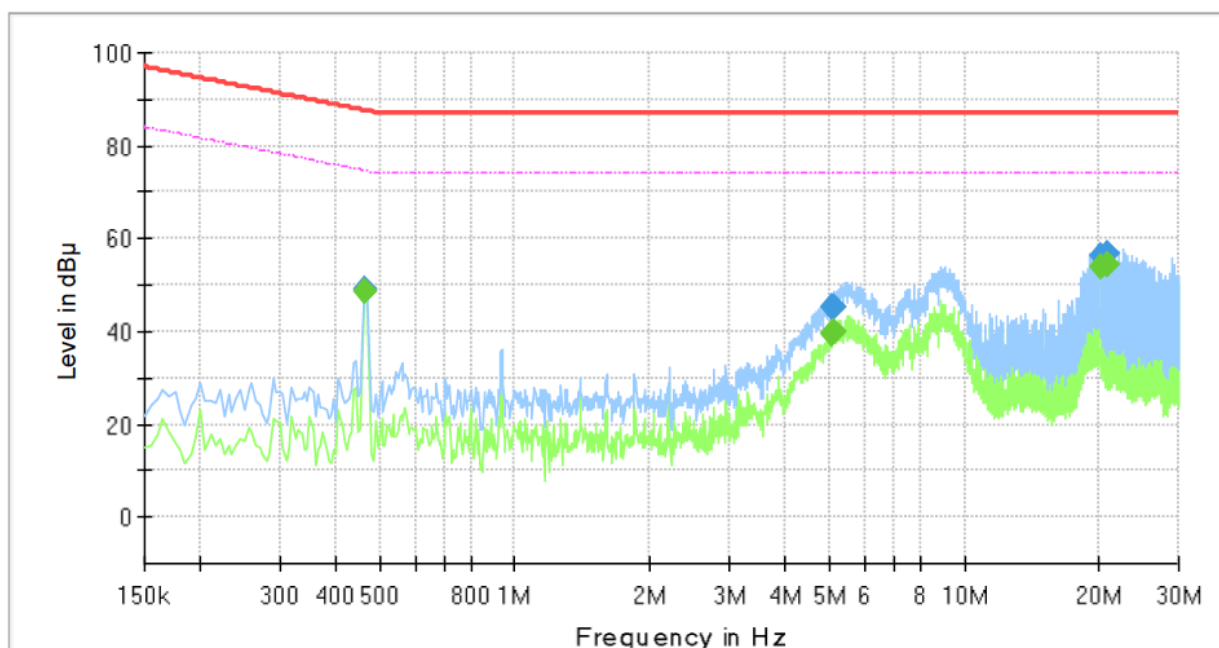
Conducted Emissions at Telecommunication Ports

■ LAN 1

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-6410B2
Mode :	LAN1_TEL 1 000 Mbps
Speed :	
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.465000	---	48.39	74.60	26.21	1000.0	9.000	Single Line	19.7
0.465000	49.26	---	87.60	38.34	1000.0	9.000	Single Line	19.7
5.065000	---	39.71	74.00	34.29	1000.0	9.000	Single Line	19.4
5.065000	45.25	---	87.00	41.75	1000.0	9.000	Single Line	19.4
5.105000	---	39.96	74.00	34.04	1000.0	9.000	Single Line	19.4
5.105000	45.42	---	87.00	41.58	1000.0	9.000	Single Line	19.4
20.180000	---	54.04	74.00	19.96	1000.0	9.000	Single Line	19.9
20.180000	56.26	---	87.00	30.74	1000.0	9.000	Single Line	19.9
20.860000	---	54.25	74.00	19.75	1000.0	9.000	Single Line	19.9
20.860000	56.67	---	87.00	30.33	1000.0	9.000	Single Line	19.9

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

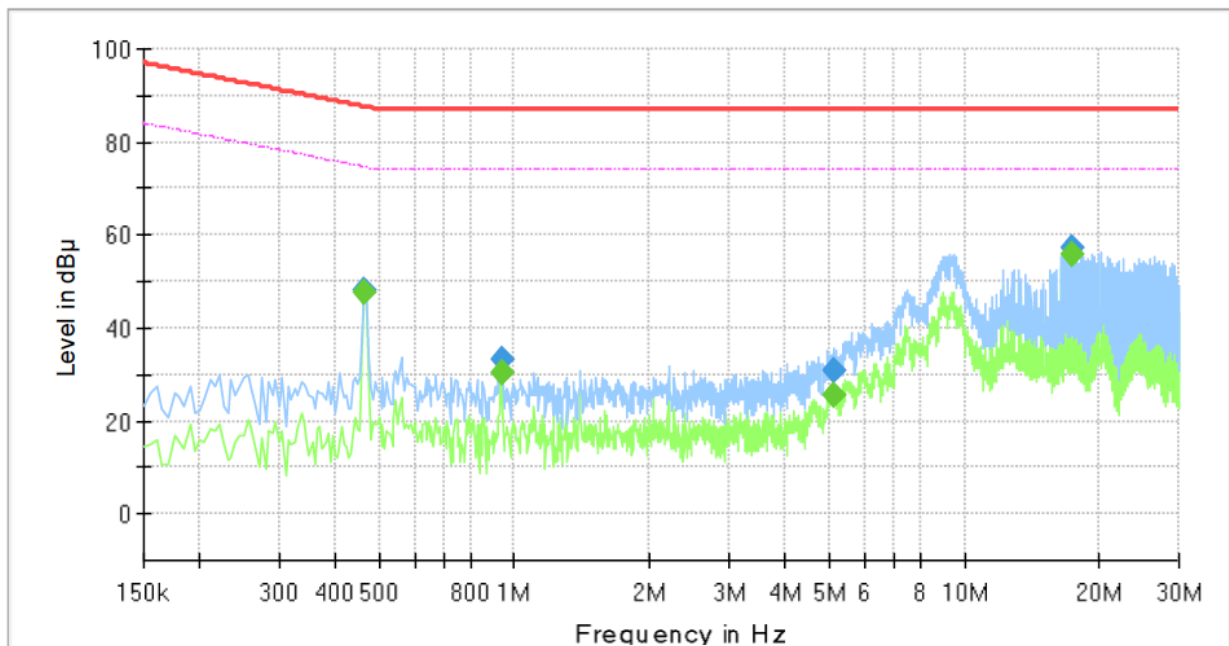
The authenticity of the test report, contact kes@kes.co.kr

■ LAN 2

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-6410B2
Mode :	LAN2_TEL 1 000 Mbps
Speed :	
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.465000	---	47.51	74.60	27.09	1000.0	9.000	Single Line	19.7
0.465000	48.32	---	87.60	39.28	1000.0	9.000	Single Line	19.7
0.935000	---	30.18	74.00	43.82	1000.0	9.000	Single Line	20.0
0.935000	33.20	---	87.00	53.80	1000.0	9.000	Single Line	20.0
5.110000	---	25.48	74.00	48.52	1000.0	9.000	Single Line	19.4
5.110000	30.93	---	87.00	56.07	1000.0	9.000	Single Line	19.4
17.460000	---	55.99	74.00	18.01	1000.0	9.000	Single Line	19.7
17.460000	57.36	---	87.00	29.64	1000.0	9.000	Single Line	19.7

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

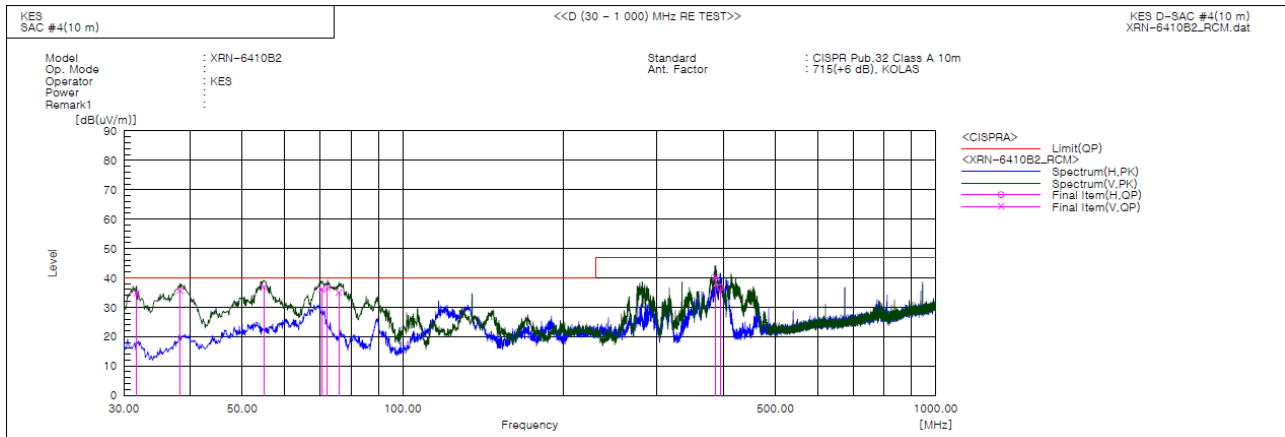
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



Radiated Electric Field Emissions(Below 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	31.698	V	59.9	-25.1	34.8	40.0	5.2	145.0	324.7	
2	38.245	V	59.2	-23.5	35.7	40.0	4.3	111.0	217.5	
3	54.856	V	58.3	-21.4	36.9	40.0	3.1	145.0	36.3	
4	70.498	V	61.2	-25.1	36.1	40.0	3.9	106.0	341.4	
5	72.316	V	62.4	-25.8	36.6	40.0	3.4	142.0	160.8	
6	75.954	V	62.3	-27.2	35.1	40.0	4.9	106.0	160.8	
7	386.596	V	54.7	-14.5	40.2	47.0	6.8	396.0	72.6	
8	394.599	H	51.0	-14.3	36.7	47.0	10.3	195.0	324.6	

◆ Calculation

Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

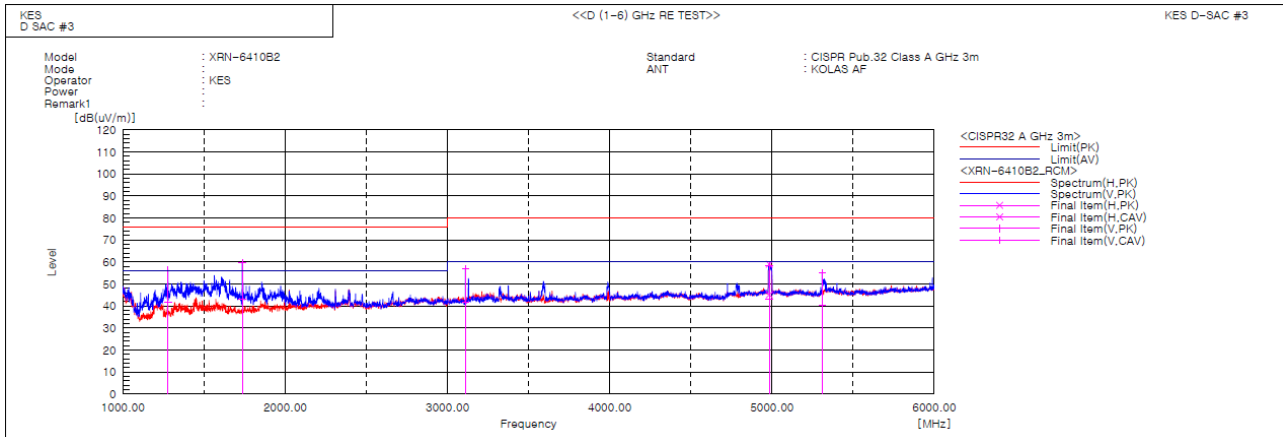
Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value



Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1278.053	V	63.8	49.4	-7.6	56.2	41.8	76.0	56.0	19.8	14.2	100.0	110.7	
2	1735.642	V	62.6	46.3	-3.0	59.6	43.3	76.0	56.0	16.4	12.7	100.0	105.6	
3	3111.753	V	54.3	39.2	2.6	56.9	41.8	80.0	60.0	23.1	18.2	100.0	72.2	
4	4983.086	V	49.4	34.2	9.0	58.4	43.2	80.0	60.0	21.6	16.8	100.0	126.6	
5	4983.863	H	50.0	36.2	9.0	59.0	45.2	80.0	60.0	21.0	14.8	100.0	66.7	
6	5310.097	V	46.0	31.1	9.2	55.2	40.3	80.0	60.0	24.8	19.7	100.0	225.4	

◆ Calculation

Result(PK/CAV) [dB(μ V/m)] = (Reading(PK/CAV)[dB(μ V)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ V/m)]

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Conducted Emissions at Telecommunication Ports



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Below 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Above 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT External Photographs

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal Photographs

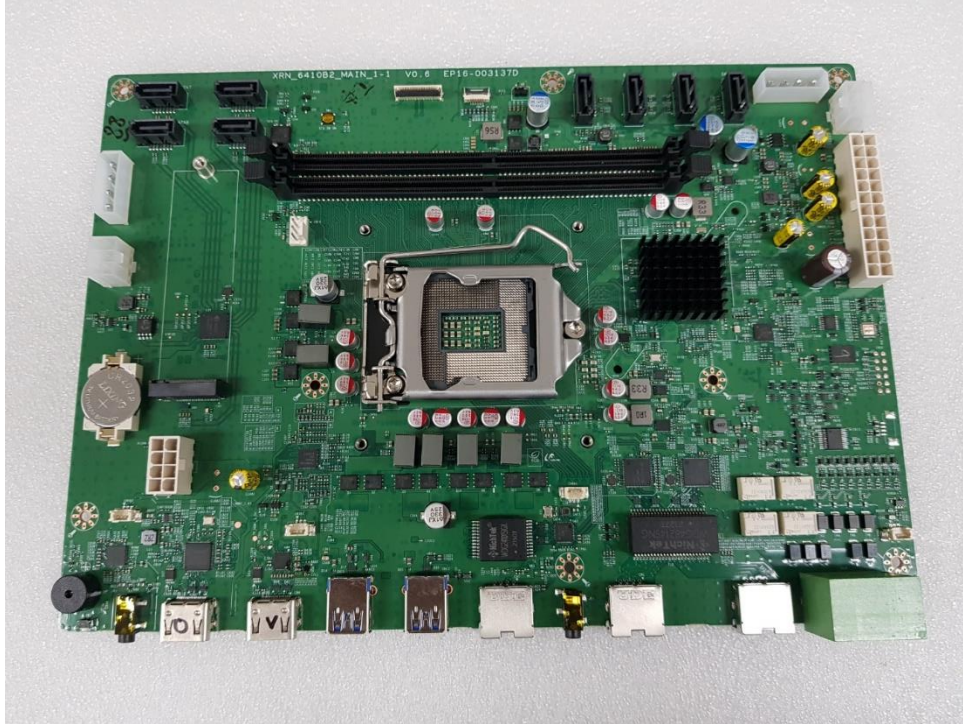
(Internal View)



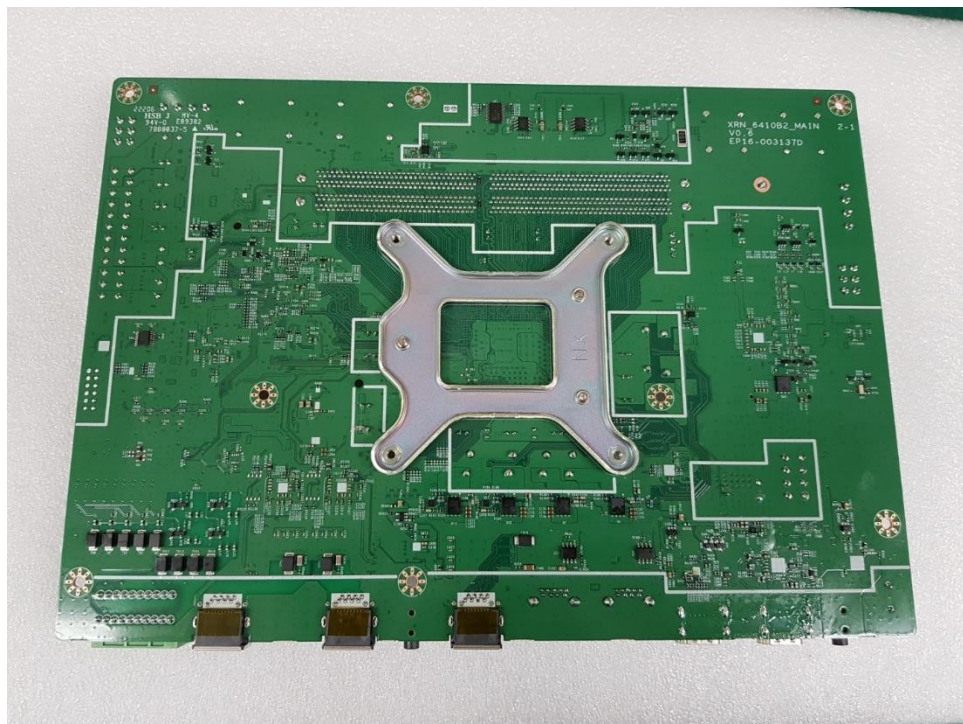
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Main Board

(Top)



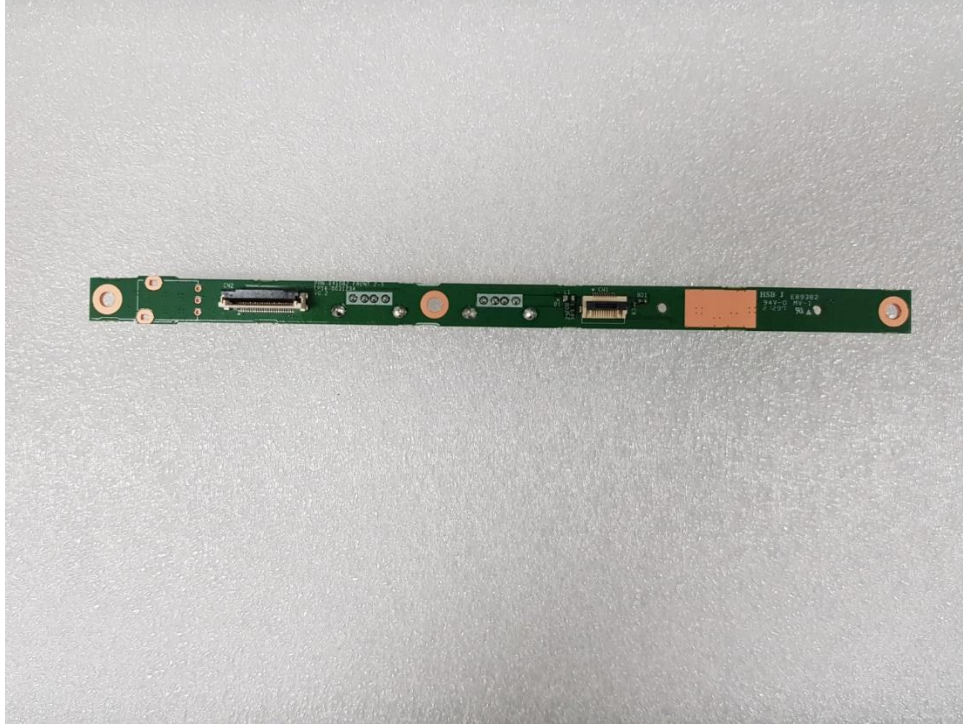
(Bottom)



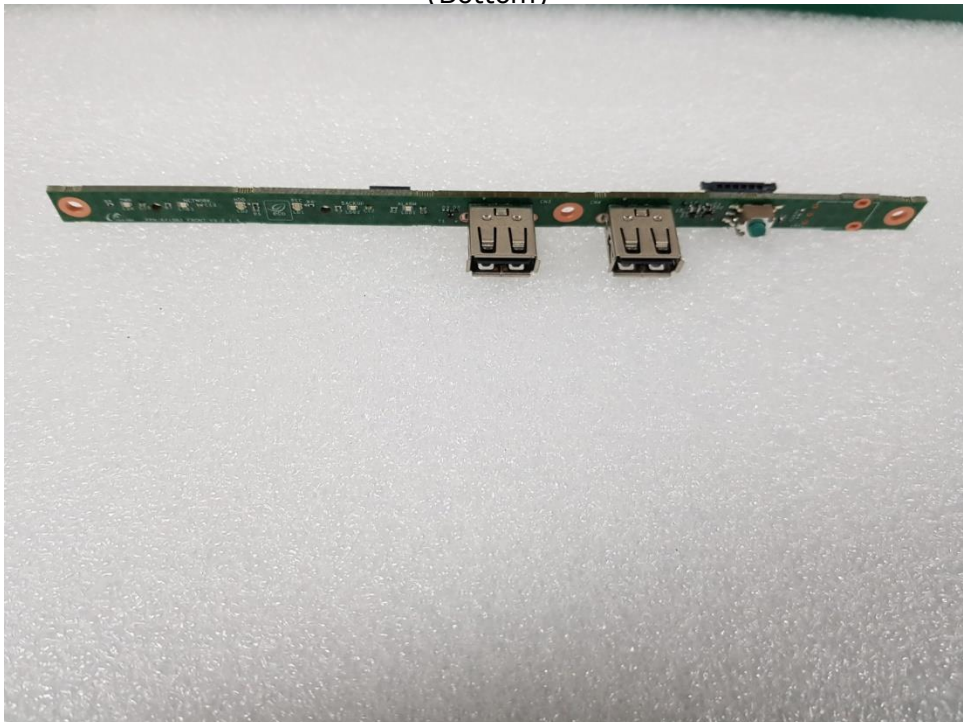
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sub Board

(Top)



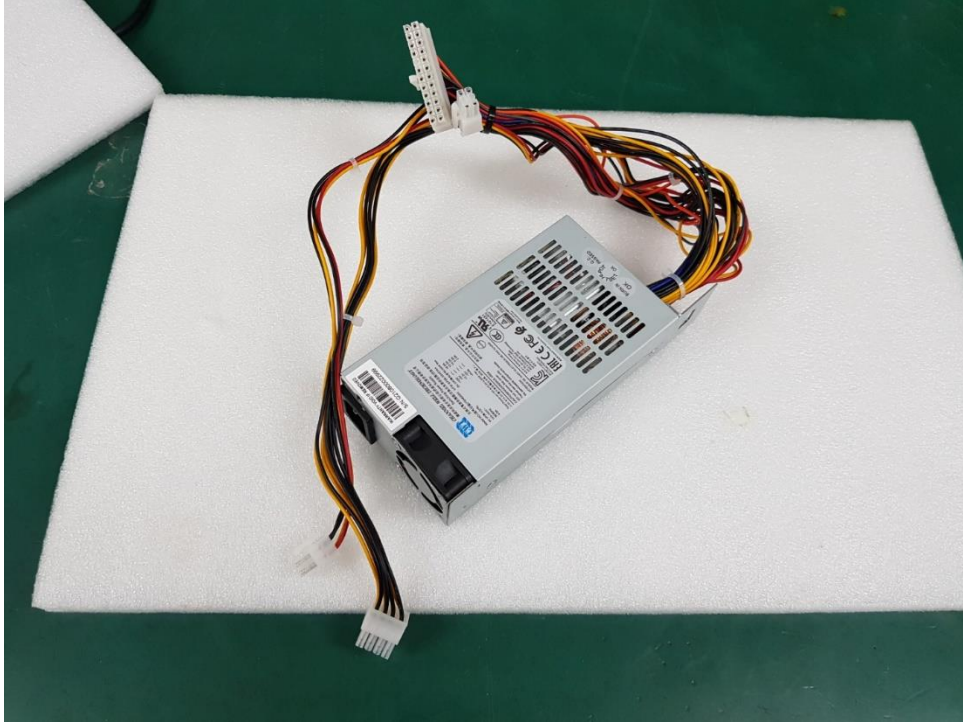
(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Power

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

(Label)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

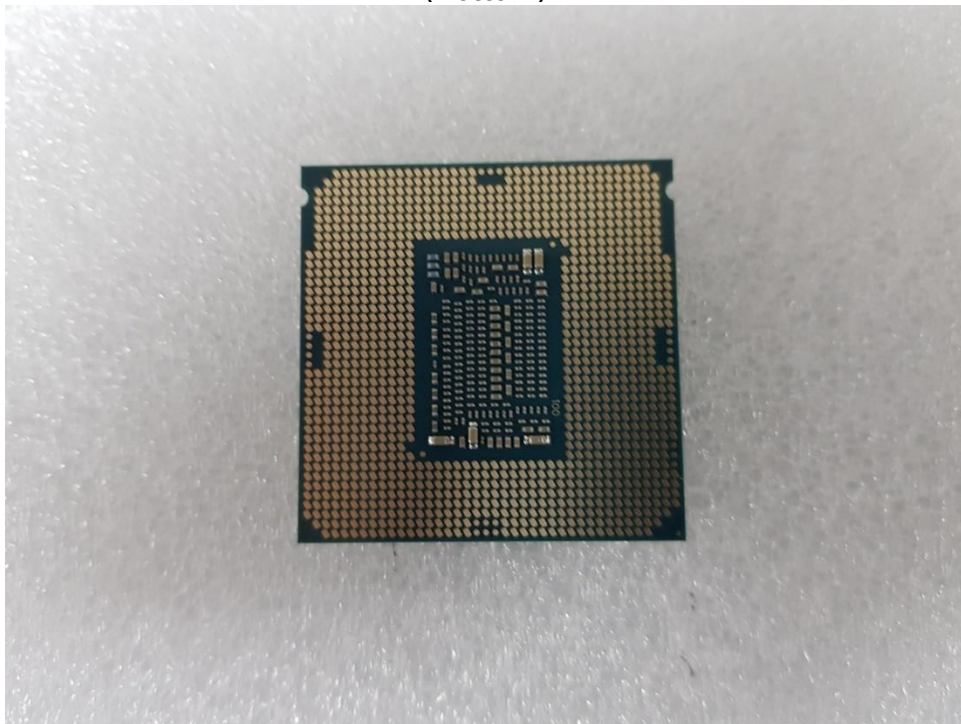
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – CPU

(Top)



(Bottom)



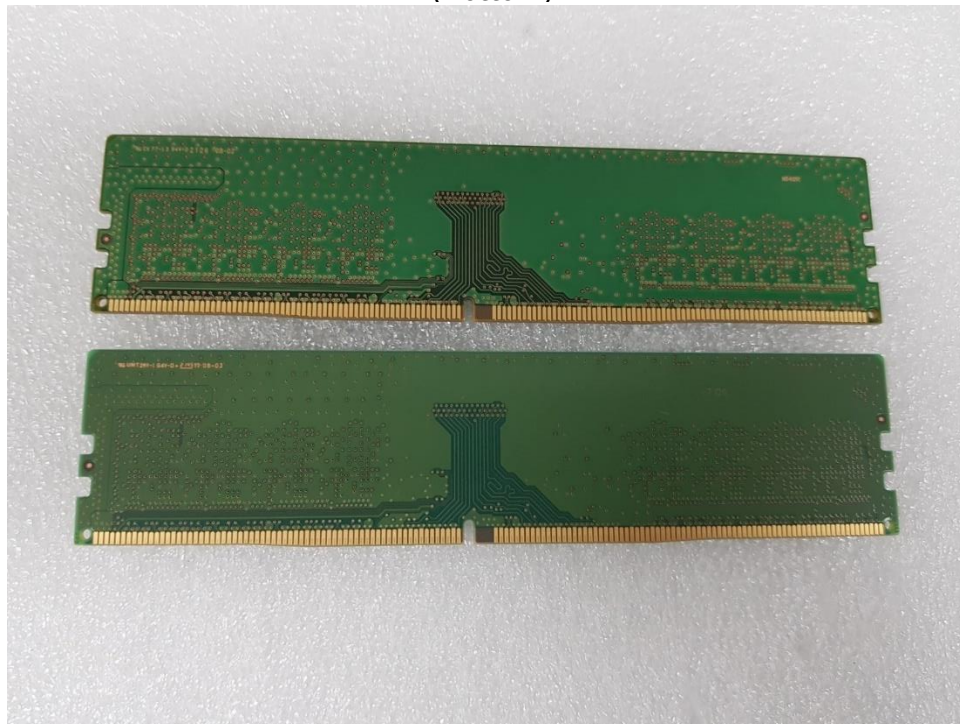
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – RAM x 2

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

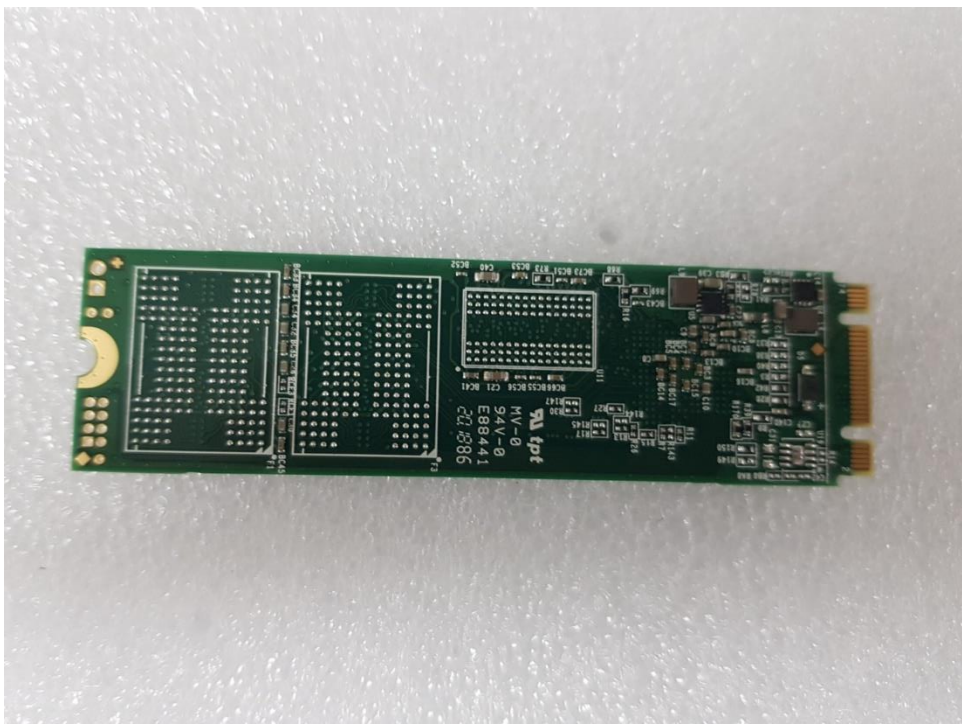
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – SSD

(Top)



(Bottom)



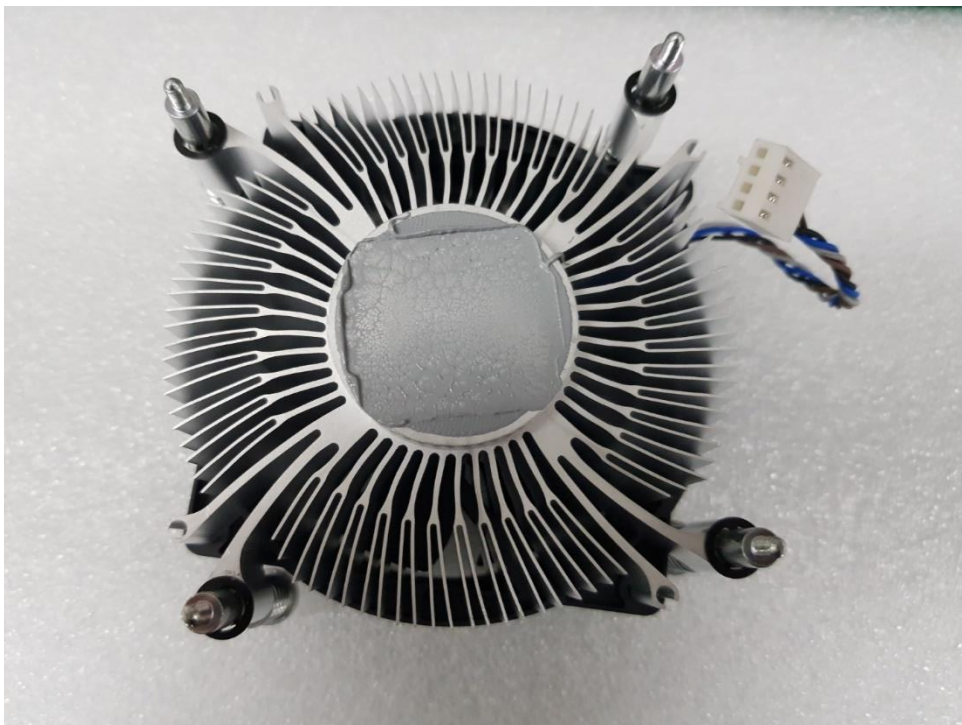
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – COOLER

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Mouse

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

(Label)

