



## EMC TEST REPORT For VCCI

Test Report No. : KES-EM-22T0297-R1  
Date of Issue : Feb. 24, 2023  
Product name : DVR  
Model/Type No. : HRX-835A  
Variant Model : HRX-835  
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 : Mar. 02, 2022  
Test date : Mar. 15, 2022 ~ Mar. 16, 2022  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Hyun, Won  
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-22T0297-R1

Page (2) of (36)

**REPORT REVISION HISTORY**

| Date          | Test Report No.   | Revision History                                                     |
|---------------|-------------------|----------------------------------------------------------------------|
| Mar. 30, 2022 | KES-EM-22T0297    | Issued                                                               |
| Feb. 24, 2023 | KES-EM-22T0297-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 .....                              | 7  |
| 1.2                                                  | Variant Model Differences .....                             | 7  |
| 1.3                                                  | Device Modifications .....                                  | 7  |
| 1.4                                                  | Equipment Under Test.....                                   | 7  |
| 1.5                                                  | Support Equipments .....                                    | 8  |
| 1.6                                                  | External I/O Cabling .....                                  | 9  |
| 1.7                                                  | EUT Operating Mode(s) .....                                 | 10 |
| 1.8                                                  | Configuration.....                                          | 10 |
| 1.9                                                  | Remarks when standards applied .....                        | 11 |
| 1.10                                                 | Calibration Details of Equipment Used for Measurement ..... | 11 |
| 1.11                                                 | Test Facility .....                                         | 11 |
| 1.12                                                 | Laboratory Accreditations and Listings .....                | 11 |
| 2.0                                                  | Test Regulations.....                                       | 12 |
| 2.1                                                  | Conducted Emissions Mains Power Ports.....                  | 13 |
| 2.2                                                  | Conducted Emissions at Telecommunication Ports.....         | 14 |
| 2.3                                                  | Radiated Electric Field Emissions(Below 1 GHz) .....        | 15 |
| 2.4                                                  | Radiated Electric Field Emissions(Above 1 GHz) .....        | 16 |
| APPENDIX A – TEST DATA.....                          |                                                             | 17 |
| Conducted Emissions at Mains Power Ports.....        |                                                             | 17 |
| Conducted Emissions at Telecommunication Ports ..... |                                                             | 19 |
| 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:

|                    |                       |                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Display</b>     |                       |                                                                                                                                                                                                                                                                                                                                 |
| Analog camera      | Inputs                | 8CH(1Vp-p 75ohm, BNC)                                                                                                                                                                                                                                                                                                           |
|                    | Signal Type           | AHD(8MP, 5MP, 4MP, 1080p, 720p)<br>HDTVI(8MP, 5MP, 4MP, 1080p, 720p)<br>HDCVI(8MP, 5MP, 4MP, 1080p, 720p)<br>CVBS(NTSC/PAL)                                                                                                                                                                                                     |
| Network camera     | Inputs                | 2CH (Up to 10CH)                                                                                                                                                                                                                                                                                                                |
|                    | Resolution            | 8MP ~ CIF                                                                                                                                                                                                                                                                                                                       |
|                    | Protocols             | SUNAPI(Wisenet), ONVIF                                                                                                                                                                                                                                                                                                          |
| Live               | Local Display         | 1x HDMI, 1x VGA (Dual monitor)<br>HDMI: 3840 x 2160, 2560x1440, 1920x1080, 1280x1044,<br>1280x720 (Expand mode 1920x1080)<br>VGA: 1920x1080, 1280x1024, 1280x720 (Expand 1024*768)                                                                                                                                              |
|                    | Multi Screen Display  | [Local monitor] Dynamic layout/Sequence,<br>[Web] 1 / 4 / 9 / sequence                                                                                                                                                                                                                                                          |
|                    | Resolution            | [Analog Camera(NTSC/PAL)]<br>- 8MP(15/12fps), 5MP(20/12fps), 4MP(30/25fps),<br>2MP(30/25fps), 1MP(30/25fps), 960H(or 720H)(30/25fps) *<br>per CH<br>[Network Camera]<br>- Typ. 2MP(240fps)                                                                                                                                      |
| <b>Performance</b> |                       |                                                                                                                                                                                                                                                                                                                                 |
| Operating System   | Embedded              | Linux                                                                                                                                                                                                                                                                                                                           |
| Record             | Compression           | H.265, H.264, MJPEG                                                                                                                                                                                                                                                                                                             |
|                    | Record Rate(Analog)   | Analog Camera<br>(Main Stream) 8MP 8/8fps CH, 5M 12/12fps, 4M 15/12fps,<br>2M 30/25fps, 720p 30/25fps, 960H/640H<br>30/25fps(NTSC/PAL per CH)<br>(Sub Stream) 720p or higher : 640x368 full fps/CH, SD signal<br>: upto CIF full fps/CH<br>* The maximum recording frame rate depends on the frame<br>rate of the input camera. |
|                    | Recording Bandwidth   | Max. 80Mbps                                                                                                                                                                                                                                                                                                                     |
|                    | Resolution            | 8MP ~ CIF                                                                                                                                                                                                                                                                                                                       |
|                    | Event Trigger         | Alarm Input<br>Analog Camera : Video Loss, Motion Detection, Tampering<br>Network Camera : Camera Event (Sensor, MD, Video<br>analytics), VA event (Tampering, Enter / Exit, Passing, Virtual-<br>line, (Dis)Appear, Face Detection, Audio detection), Defocus<br>camera event, Dynamic camera event                            |
|                    | Event Action          | E-mail, PTZ preset, Alarm out, Buzzer, Monitor out                                                                                                                                                                                                                                                                              |
| Search & Play      | Playback Bandwidth    | Max. 32Mbps (10CH simultaneously)                                                                                                                                                                                                                                                                                               |
|                    | User                  | Max. 4 Users (Local 1, Remote 3)                                                                                                                                                                                                                                                                                                |
|                    | Simultaneous playback | 10CH(Local Monitor), 8Ch (CMS),<br>4Ch (Wisenet Mobile), 1Ch(Web)                                                                                                                                                                                                                                                               |
|                    | Fisheye Dewarping     | WEB / CMS                                                                                                                                                                                                                                                                                                                       |
|                    | Search Mode           | Date & Time (Calendar) / Event log list / Text search (POS),<br>Back up, Motion, Smart search (Virtual Line w/ direction, Enter<br>/ Exit) * All Search Included Preview Function<br>ARB search                                                                                                                                 |
|                    | Resolution            | 8MP ~ CIF                                                                                                                                                                                                                                                                                                                       |

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



# 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-22T0297-R1  
Page (5) of (36)

|                        |                     |                                                                                                                                                                                                                                                                                                                     |
|------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | Playback Control    | Fast Forward/Backward (x2,x4,x8,x16,x32,x64, x128, x256)<br>Slow Forward/Backward (x1/2,x1/4,x1/8)<br>※Move one step up/down                                                                                                                                                                                        |
|                        |                     |                                                                                                                                                                                                                                                                                                                     |
| Storage                | Supported HDD       | Up to 6TB                                                                                                                                                                                                                                                                                                           |
|                        | HDD Slot            | SATA 4ea(Max 24TB)                                                                                                                                                                                                                                                                                                  |
| Backup                 | File backup         | BU, EXE(Include Player), AVI(Webviewer only)                                                                                                                                                                                                                                                                        |
|                        | Function            | Max. 10 CH play, Date-time/title display                                                                                                                                                                                                                                                                            |
| <b>Network</b>         |                     |                                                                                                                                                                                                                                                                                                                     |
| 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                   |                     | Wisenet DDNS                                                                                                                                                                                                                                                                                                        |
| Transmission speed     |                     | Analog Camera<br>(Main Stream) 8MP 8/8fps CH, 5M 12/12fps, 4M 15/12fps, 2M 30/25fps, 720p 30/25fps, 960H/640H 30/25fps(NTSC/PAL per CH)<br>(Sub Stream) 720p or higher : 640x368 full fps/CH, SD signal : upto CIF full fps/CH<br>* The maximum recording frame rate depends on the frame rate of the input camera. |
| Transmission Bandwidth |                     | Max. 80Mbps                                                                                                                                                                                                                                                                                                         |
| Audio                  | Input/Output        | 8 Line in (RCA 4 Line, Option : Audio Extension Cable) / 1Line line out                                                                                                                                                                                                                                             |
|                        | Compression         | G.711 (N/W Cam G.711, 726)                                                                                                                                                                                                                                                                                          |
|                        | Audio Communication | 2-Way                                                                                                                                                                                                                                                                                                               |
| Max Remote Users       |                     | Search(3), Live Unicast(10), Multicast(20)                                                                                                                                                                                                                                                                          |
| Security               |                     | IP address filtering, User access log, 802.1x Authentication, Encryption (ID/PW, Recording, Transmission, Backup)<br>Device Certificate(Hanwha Techwin Root CA)                                                                                                                                                     |
| Web viewer             | Supported OS        | Windows 10, Mac OS 11 Big Sur and later                                                                                                                                                                                                                                                                             |
|                        | Supported browser   | Chrome v99 / Edge v99 /Safari v14.0.3 Higher (2022/03)                                                                                                                                                                                                                                                              |
| Viewer Software        |                     | SSM, Webviewer, SmartViewer, Wisenet Mobile Viewer, Wisenet Viewer<br>Support SDK/CGI(SUNAPI) for integration to 3rd party VMS                                                                                                                                                                                      |
| <b>Functions</b>       |                     |                                                                                                                                                                                                                                                                                                                     |
| Camera Setup           | Register            | Auto, Manual                                                                                                                                                                                                                                                                                                        |
|                        | Item                | None                                                                                                                                                                                                                                                                                                                |
| PTZ                    | Control             | Via GUI, Webviewer, SSM, SmartViewer, Wisenet Mobile Viewer, System Controller                                                                                                                                                                                                                                      |
|                        | Preset              | 300 presets                                                                                                                                                                                                                                                                                                         |
| Smart phone            | Support Model       | iOS, Android                                                                                                                                                                                                                                                                                                        |
|                        | Protocol Support    | RTP, RTSP, HTTP, CGI(SUNAPI)                                                                                                                                                                                                                                                                                        |
|                        | Control             | Live(8ch) : Multi-Profile Support<br>Playback(4Ch Multi Playback, Max 2MP)<br>Event push                                                                                                                                                                                                                            |
|                        | Max. Remote Users   | Search(3), Live Unicast(10)                                                                                                                                                                                                                                                                                         |
| Easy configuration     |                     | Setup Wizard (Language Date/Time, Password, Network, Auto Camera Configuration), P2P (QR code)                                                                                                                                                                                                                      |
| Coaxial Control        |                     | CVBS(Pelco-C)/AHD/CVI/TVI                                                                                                                                                                                                                                                                                           |

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



# 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-22T0297-R1  
Page (6) of (36)

| Interface             |           |                                                                                                                                                                                                                    |
|-----------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front                 | Indicator | LED(Status indicator) :<br>Power(1), HDD Action(1), Alarm(1), Record(1), Network(1), Backup(1)                                                                                                                     |
| Reset                 |           | Switch(1EA)                                                                                                                                                                                                        |
| HDMI                  |           | 1EA                                                                                                                                                                                                                |
| VGA                   |           | 1EA                                                                                                                                                                                                                |
| BNC                   |           | 8CH In / 1CH Out(Spot Output)                                                                                                                                                                                      |
| Ethernet              |           | RJ-45(10/100/1000BASE-T)                                                                                                                                                                                           |
| Alarm                 |           | In 8EA, Out 4EA<br>- Relay Out1(NO/NC/COM)<br>- Relay Out2~4(NO/COM)                                                                                                                                               |
| USB                   |           | 3EA(Front USB2.0 2a , Rear USB 3.0 1ea)                                                                                                                                                                            |
| Serial(Protocols)     |           | RS-485/422 (Samsung-T/Pelco-D/Pelco-p) * for PTZ                                                                                                                                                                   |
| Power inlet           |           | 1EA AC ( AC100~240V)                                                                                                                                                                                               |
| System                |           |                                                                                                                                                                                                                    |
| Log                   | Log List  | Max. 100,000 (System Log, Event Log each), (HRX-1632)                                                                                                                                                              |
| System Control        |           | Mouse, Webviewer, System Controller(SPC-7000, SPC-6000, 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 |
| Environmental         |           |                                                                                                                                                                                                                    |
| Operating Temperature |           | 0°C to +40°C(+32°F to +104°F)                                                                                                                                                                                      |
| Operating Humidity    |           | 20% ~ 85% RH                                                                                                                                                                                                       |
| Certification         |           | UL, CE, FCC, KC                                                                                                                                                                                                    |
| Electrical            |           |                                                                                                                                                                                                                    |
| Power Input           |           | 100~240 VAC±10%, 50/60 Hz                                                                                                                                                                                          |
| Power Consumption     |           | Max. 100W (6T HDD 4ea)                                                                                                                                                                                             |
| PoE Budget            |           | None                                                                                                                                                                                                               |
| Mechanical            |           |                                                                                                                                                                                                                    |
| Color / Material      |           | Black / Metal                                                                                                                                                                                                      |
| Dimension (WxHxD)     |           | 440 x 88 x 384.8mm(17.32" x 3.48" x 15.15")                                                                                                                                                                        |
| Weight                |           | Approx. 5.3Kg (4TB HDD 1ea)                                                                                                                                                                                        |

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



## 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-22T0297-R1  
Page (7) of (36)

### 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 100 V, 60 Hz

### 1.2 Variant Model Differences

Addition of derivative models for place of sale management.

### 1.3 Device Modifications

Not applicable

### 1.4 Equipment Under Test

| Description | Model Number | Serial Number | Manufacturer                                | Remarks |
|-------------|--------------|---------------|---------------------------------------------|---------|
| DVR         | HRX-835A     | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED | EUT     |
| Mouse       | MOKJUO       | 21H07051      | Primax Electronics Ltd.                     | -       |
| HDD         | ST2000VX012  | WFM17XFS      | SEAGATE                                     | 2 TB    |

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

**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-22T0297-R1

Page (8) of (36)

## 1.5 Support Equipments

| Description                      | Model Number    | Serial Number        | Manufacturer                                        | Remarks |
|----------------------------------|-----------------|----------------------|-----------------------------------------------------|---------|
| Notebook                         | P98F004         | 21599158359          | DELL INC.                                           | -       |
| Notebook Adapter                 | LA240PM190      | -                    | LITE-ON TECHNOLOGY<br>(CHANGZHOU)CO.,LTD.           | -       |
| Monitor 1                        | SMT-2232        | C95V67VF90002<br>5B  | Weihai Daewoo<br>Electronics Co., Ltd.              | -       |
| Monitor 2                        | SMT-2232        | C95V67VF90003<br>8B  | Weihai Daewoo<br>Electronics Co., Ltd.              | -       |
| Monitor 3                        | DELL E2222H DVT | 8221TCM10D001<br>03X | DELL INC.                                           | -       |
| Speaker                          | E5              | -                    | PreSonus®                                           | -       |
| Controller                       | SPC-1010        | C50E67WG10100<br>F   | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED         | -       |
| Controller Adapter               | -               | -                    | -                                                   | -       |
| Alarm                            | PRO-SL          | -                    | SENSOR PRO                                          | -       |
| ButtonAlarm                      | -               | -                    | -                                                   | -       |
| Camera                           | HCV-6070R       | -                    | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED         | -       |
| Camera Adapter                   | DAD12050DKA     | KTLSA10022-<br>8001  | (주)드림전자                                             | -       |
| NETWORK VIDEO<br>ENCODER         | SPE-410         | -                    | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED         | -       |
| NETWORK VIDEO<br>ENCODER Adapter | 2ACB022F        | -                    | Channel Well<br>Technology<br>(Guangzhou) Co., Ltd. | -       |
| USB Memory                       | -               | -                    | NOVOMATIC                                           | -       |

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 |
| DVR<br>(EUT)             | USB 2.0           | Mouse<br>(EUT)                      | USB       | 1.5         | U      |
|                          | RJ-45             | Notebook                            | RJ-45     | 4.0         | S      |
|                          | AUDIO IN          | Notebook                            | 3.5 mm    | 1.6         | U      |
|                          | Parallel Port     | Notebook                            | 3.5 mm    | 1.6         | U      |
|                          | BNC (SPOT)        | Monitor 1                           | BNC       | 3.5         | S      |
|                          | D-SUB             | Monitor 2                           | D-SUB     | 1.8         | S      |
|                          | HDMI              | Monitor 3                           | HDMI      | 2.0         | S      |
|                          | AUDIO OUT         | Speaker                             | RCA       | 2.8         | U      |
|                          | RS-485            | Controller                          | RS-485    | 4.0         | U      |
|                          | Alarm OUT         | Alarm                               | Alarm IN  | 3.0         | U      |
|                          | Alarm IN          | ButtonAlarm                         | Alarm OUT | 3.0         | U      |
|                          | BNC<br>(VIDEO IN) | NETWORK VIDEO<br>ENCODER            | BNC       | 10.0        | U      |
|                          | USB 3.0           | USB Memory                          | USB       | -           | -      |
| NETWORK VIDEO<br>ENCODER | BNC               | Camera                              | BNC       | 1.6         | U      |
| Notebook                 | DC Jack           | Notebook<br>Adapter                 | DC Jack   | 2.2         | S      |
| Controller               | DC Jack           | Controller<br>Adapter               | DC Jack   | 1.8         | U      |
| NETWORK VIDEO<br>ENCODER | 2 Pin             | NETWORK VIDEO<br>ENCODER<br>Adapter | 2 Pin     | 2.0         | U      |
| Camera                   | 2 Pin             | Camera Adapter                      | 2 Pin     | 1.8         | U      |

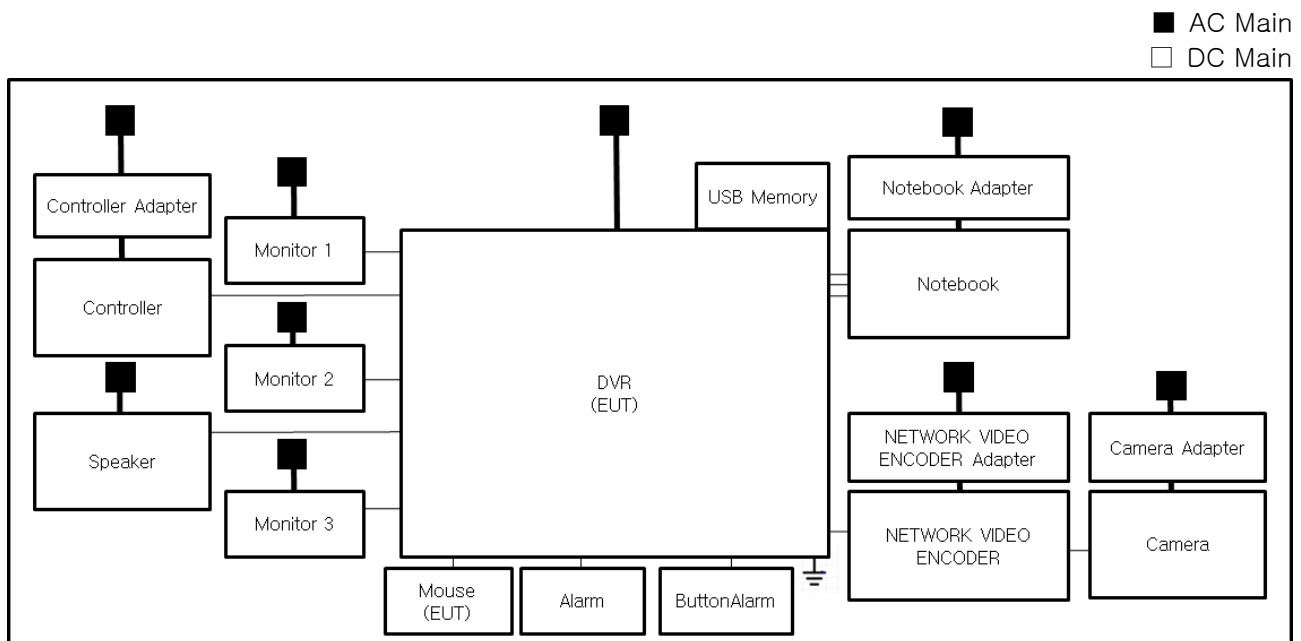
\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

| Test Mode      | operating                 |
|----------------|---------------------------|
| Operating Mode | EUT Monitoring, Ping Test |

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

## 1.8 Configuration



## 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)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>KR0100                                  |
| International | KOLAS   | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>KT489                                 |
| USA           | FCC     | 3 m & 10 m Semi-Anechoic Chamber<br>Conducted test site to perform FCC Part 15/18 measurements.                                         | <br>KR0100                                |
| Canada        | ISED    | 3 m & 10 m Semi-Anechoic Chamber and Conducted test site                                                                                | <br>23298                                 |
| JAPAN         | VCCI    | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)                                                                          | <br>C-20136, T-20137,<br>R-20181, G-20176 |
| Europe        | TÜV SÜD | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>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-22T0297-R1

Page (12) of (36)

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **VCCI-CISPR 32:2016**

☒ 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

**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-22T0297-R1

Page (13) of (36)

## 2.1 Conducted Emissions Mains Power Ports

**Test Date**

Mar. 15, 2022

**Test Location**

Electro wave Shieldroom #6

**Test Equipment**

| Used                                | Description       | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W      | EMC32        | R & S        | 9.12.00       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESR3         | R & S        | 101783        | 12, 28, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | 12, 27, 2022 |

**Test Conditions**

Temperature: (23,8 ± 0,1) °C

Relative Humidity: (42,1 ± 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.

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

## 2.2 Conducted Emissions at Telecommunication Ports

**Test Date**

Mar. 15, 2022

**Test Location**

Electro wave Shieldroom #6

**Test Equipment**

| Used                                | Description       | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W      | EMC32        | R & S        | 9.12.00       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESR3         | R & S        | 101783        | 12, 28, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | 12, 27, 2022 |
| <input type="checkbox"/>            | 8-WIRE ISN CAT3,5 | ENY81        | R & S        | 100174        | 12, 28, 2022 |
| <input checked="" type="checkbox"/> | ISN               | ISN S8       | SCHWARZBECK  | ISN-S8-0019   | 03, 07, 2023 |

**Test Conditions**

Temperature: (23,8 ± 0,1) °C

Relative Humidity: (42,1 ± 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

Mar. 15, 2022

### Test Location

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

### Test Equipment

| Used                                | Description              | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|--------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W             | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER        | ESU26        | R & S            | 100551        | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | AMPLIFIER                | SCU 01       | R & S            | 100603        | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | TRILOG-BROADBAND ANTENNA | VULB9163     | Schwarzbeck      | 715           | 12, 08, 2022 |
| <input checked="" type="checkbox"/> | ATTENUATOR               | 8491A        | HP               | 32173         | 03, 08, 2023 |

### Test Conditions

Temperature: (23,8 ± 0,1) °C  
Relative Humidity: (42,6 ± 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

### Remarks

See Appendix A for test data.

**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-22T0297-R1

Page (16) of (36)

## 2.4 Radiated Electric Field Emissions(Above 1 GHz)

**Test Date**

Mar. 16, 2022

**Test Location**

SEMI ANECHOIC CHAMBER #5

**Test Equipment**

| Used                                | Description       | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W      | EP5/RE       | TOYO Corporation | 6.0.120       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26        | Rohde & Schwarz  | 100552        | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | HORN ANTENNA      | BBHA 9120D   | SCHWARZBECK      | 9120D-1802    | 12, 16, 2022 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER      | 8449B        | HP               | 3008A00538    | 06, 21, 2022 |

**Test Conditions**

Temperature: (24,7 ± 0,2) °C

Relative Humidity: (48,1 ± 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.

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

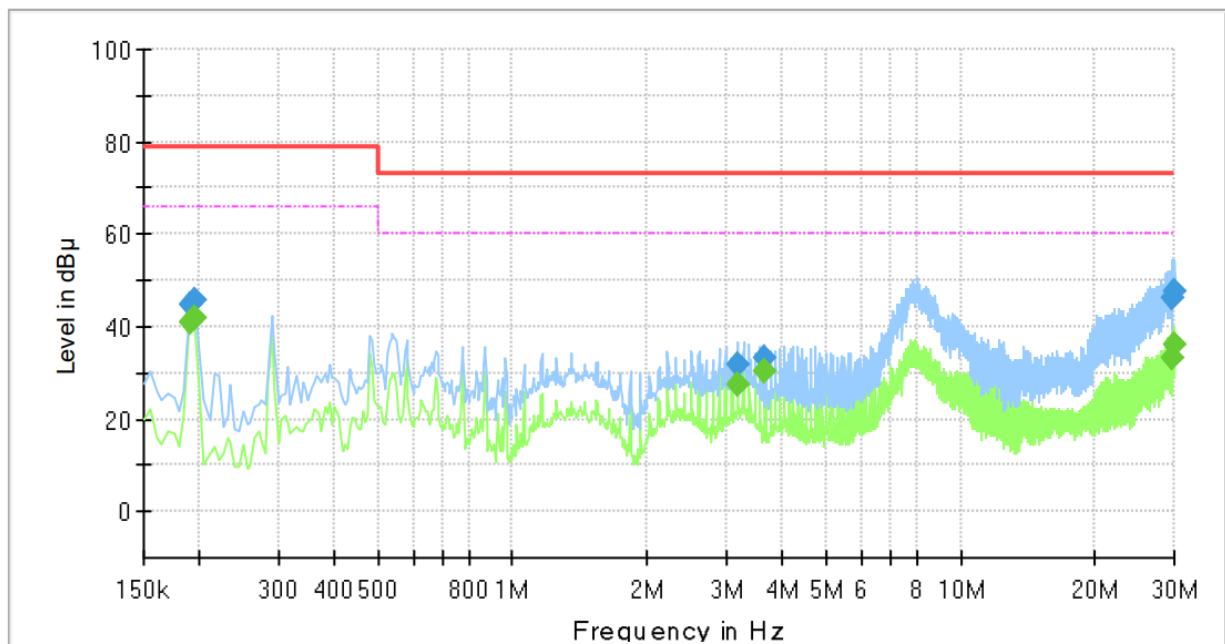
## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

HOT LINE

#### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | HRX-835A           |
| Phase:            |                    |
| Mode:             | H                  |
| Operator Name:    | KES                |



#### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.190000        | ---              | 40.99           | 66.00        | 25.01       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.190000        | 44.80            | ---             | 79.00        | 34.20       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.195000        | ---              | 41.89           | 66.00        | 24.11       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.195000        | 45.61            | ---             | 79.00        | 33.39       | 1000.0          | 9.000           | L1   | 19.4       |
| 3.185000        | ---              | 27.53           | 60.00        | 32.47       | 1000.0          | 9.000           | L1   | 20.1       |
| 3.185000        | 31.95            | ---             | 73.00        | 41.05       | 1000.0          | 9.000           | L1   | 20.1       |
| 3.665000        | ---              | 30.50           | 60.00        | 29.50       | 1000.0          | 9.000           | L1   | 20.0       |
| 3.665000        | 33.22            | ---             | 73.00        | 39.78       | 1000.0          | 9.000           | L1   | 20.0       |
| 29.635000       | ---              | 33.15           | 60.00        | 26.85       | 1000.0          | 9.000           | L1   | 20.3       |
| 29.635000       | 46.26            | ---             | 73.00        | 26.74       | 1000.0          | 9.000           | L1   | 20.3       |
| 29.980000       | ---              | 36.09           | 60.00        | 23.91       | 1000.0          | 9.000           | L1   | 20.3       |
| 29.980000       | 47.41            | ---             | 73.00        | 25.59       | 1000.0          | 9.000           | L1   | 20.3       |

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

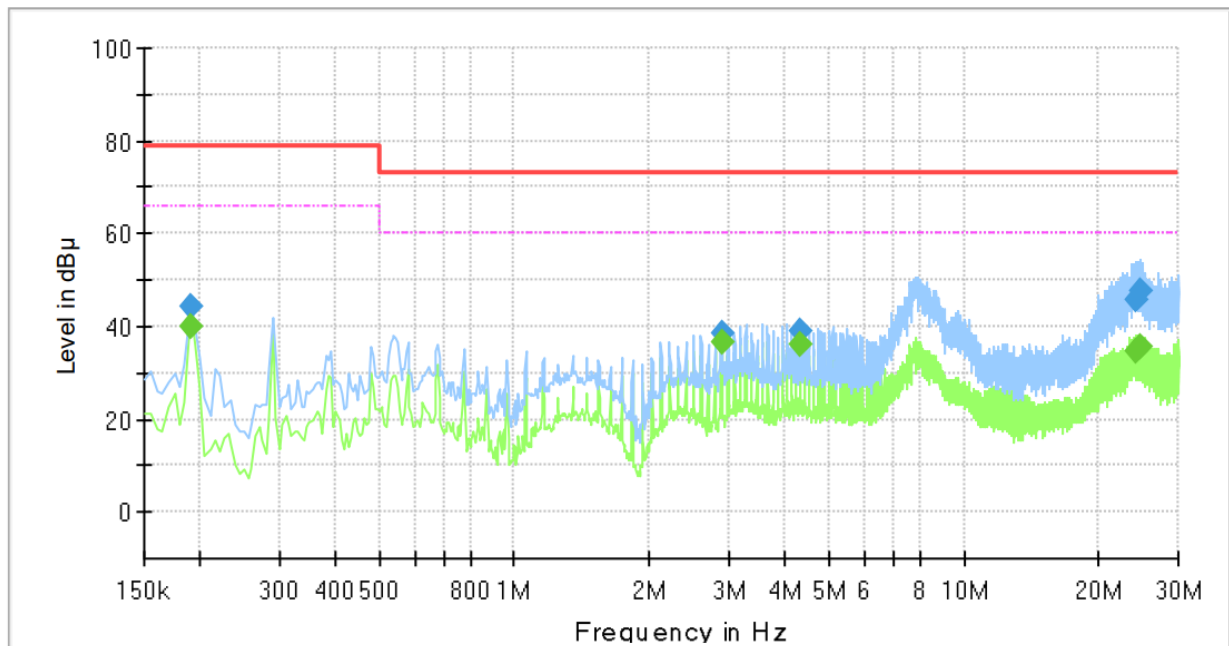
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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

## NEUTRAL LINE

## Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | HRX-835A           |
| Phase:            |                    |
| Mode:             | N                  |
| Operator Name:    | KES                |



## Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.190000        | ---              | 40.15           | 66.00        | 25.85       | 1000.0          | 9.000           | N    | 19.4       |
| 0.190000        | 44.28            | ---             | 79.00        | 34.72       | 1000.0          | 9.000           | N    | 19.4       |
| 2.890000        | ---              | 36.49           | 60.00        | 23.51       | 1000.0          | 9.000           | N    | 20.2       |
| 2.890000        | 38.72            | ---             | 73.00        | 34.28       | 1000.0          | 9.000           | N    | 20.2       |
| 4.335000        | ---              | 35.96           | 60.00        | 24.04       | 1000.0          | 9.000           | N    | 19.8       |
| 4.335000        | 38.87            | ---             | 73.00        | 34.13       | 1000.0          | 9.000           | N    | 19.8       |
| 24.080000       | ---              | 34.66           | 60.00        | 25.34       | 1000.0          | 9.000           | N    | 20.1       |
| 24.080000       | 45.66            | ---             | 73.00        | 27.34       | 1000.0          | 9.000           | N    | 20.1       |
| 24.740000       | ---              | 35.53           | 60.00        | 24.47       | 1000.0          | 9.000           | N    | 20.1       |
| 24.740000       | 47.71            | ---             | 73.00        | 25.29       | 1000.0          | 9.000           | N    | 20.1       |

### ◆ Calculation

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

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.

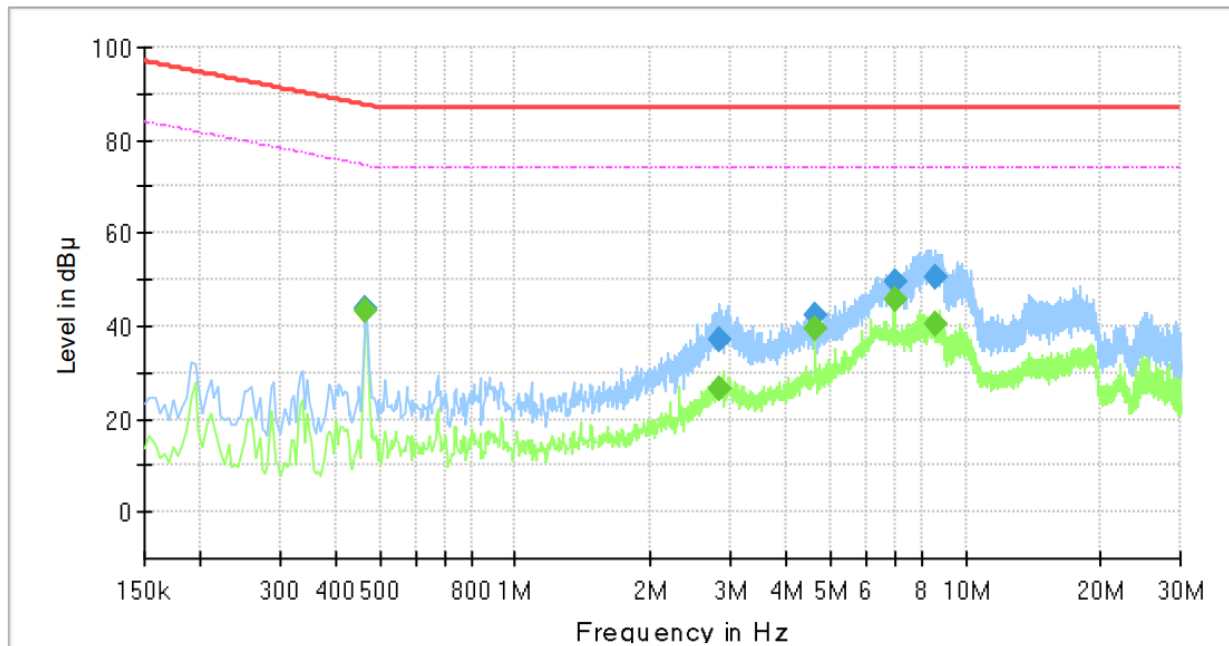
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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

## Conducted Emissions at Telecommunication Ports [1 000 Mbps]

### Common Information

Test Description: Telecommunication Emission  
Model No.: HRX-835A  
Mode :  
Speed : 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.466000        | ---              | 43.24           | 74.58        | 31.34       | 1000.0          | 9.000           | Single Line | 19.5       |
| 0.466000        | 43.67            | ---             | 87.58        | 43.91       | 1000.0          | 9.000           | Single Line | 19.5       |
| 2.830000        | ---              | 26.37           | 74.00        | 47.63       | 1000.0          | 9.000           | Single Line | 20.1       |
| 2.830000        | 36.84            | ---             | 87.00        | 50.16       | 1000.0          | 9.000           | Single Line | 20.1       |
| 4.626000        | ---              | 39.54           | 74.00        | 34.46       | 1000.0          | 9.000           | Single Line | 19.6       |
| 4.626000        | 42.57            | ---             | 87.00        | 44.43       | 1000.0          | 9.000           | Single Line | 19.6       |
| 6.942000        | ---              | 45.56           | 74.00        | 28.44       | 1000.0          | 9.000           | Single Line | 19.3       |
| 6.942000        | 49.71            | ---             | 87.00        | 37.29       | 1000.0          | 9.000           | Single Line | 19.3       |
| 8.546000        | ---              | 40.22           | 74.00        | 33.78       | 1000.0          | 9.000           | Single Line | 19.5       |
| 8.546000        | 50.64            | ---             | 87.00        | 36.36       | 1000.0          | 9.000           | Single Line | 19.5       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

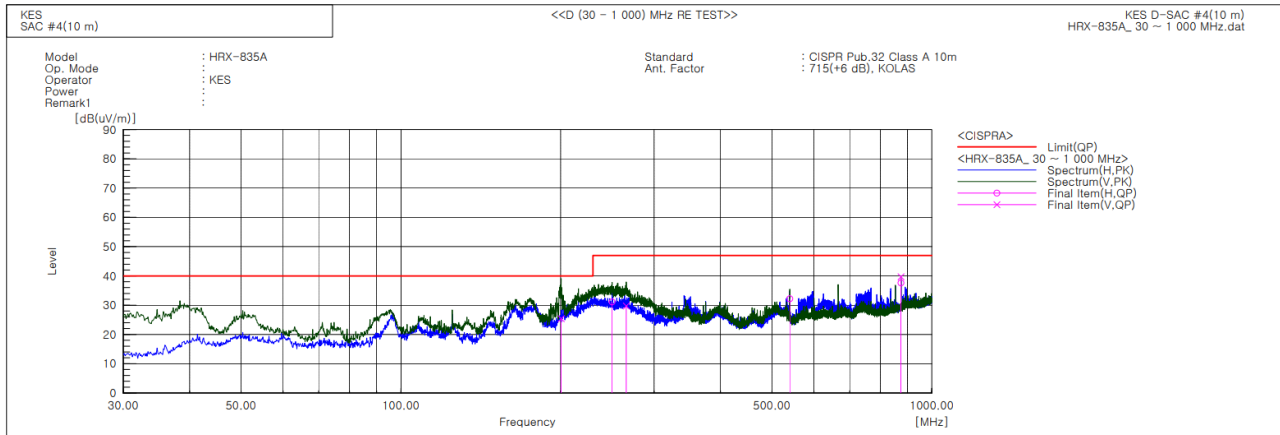
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

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)



### Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB(uV)] | c.f<br>[dB(1/m)] | Result<br>QP<br>[dB(uV/m)] | Limit<br>QP<br>[dB(uV/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|-----|--------------------|-----|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|--------|
| 1   | 200.356            | V   | 46.3                      | -20.9            | 25.4                       | 40.0                      | 14.6                 | 110.0          | 93.0           |        |
| 2   | 249.948            | H   | 50.4                      | -19.3            | 31.1                       | 47.0                      | 15.9                 | 400.0          | 78.0           |        |
| 3   | 265.831            | V   | 48.6                      | -18.9            | 29.7                       | 47.0                      | 17.3                 | 100.0          | 45.0           |        |
| 4   | 539.978            | H   | 42.8                      | -10.6            | 32.2                       | 47.0                      | 14.8                 | 392.0          | 236.0          |        |
| 5   | 874.984            | V   | 44.3                      | -4.6             | 39.7                       | 47.0                      | 7.3                  | 149.0          | 349.0          |        |
| 6   | 874.989            | H   | 42.2                      | -4.6             | 37.6                       | 47.0                      | 9.4                  | 385.0          | 344.0          |        |

### ◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss



## KES Co., Ltd.

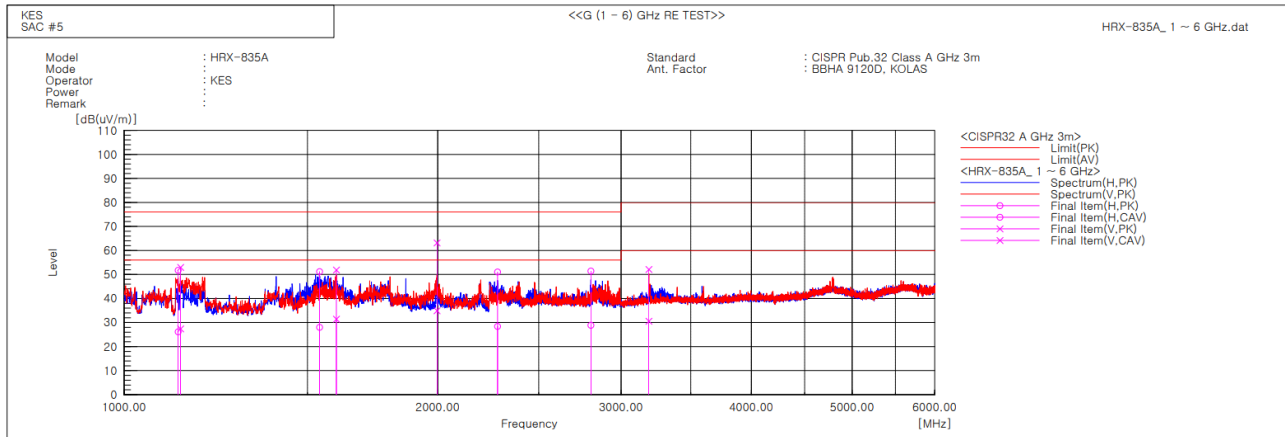
3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
www.kes.co.kr

Report No.:

KES-EM-22T0297-R1

Page (21) of (36)

## Radiated Electric Field Emissions(Above 1 GHz)



### Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(μV)] | Reading CAV [dB(μV)] | c.f [dB(1/m)] | Result PK [dB(μV/m)] | Result CAV [dB(μV/m)] | Limit PK [dB(μV/m)] | Limit AV [dB(μV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|--------|
| 1   | 1126.932        | H   | 58.7                | 33.1                 | -7.0          | 51.7                 | 26.1                  | 76.0                | 56.0                | 24.3           | 29.9            | 100.0       | 332.3       |        |
| 2   | 1133.124        | V   | 59.9                | 34.3                 | -6.9          | 53.0                 | 27.4                  | 76.0                | 56.0                | 23.0           | 28.6            | 100.0       | 352.1       |        |
| 3   | 1540.427        | H   | 56.0                | 32.8                 | -4.8          | 51.2                 | 28.0                  | 76.0                | 56.0                | 24.8           | 28.0            | 100.0       | 337.1       |        |
| 4   | 1598.479        | V   | 56.5                | 36.0                 | -4.6          | 51.9                 | 31.4                  | 76.0                | 56.0                | 24.1           | 24.6            | 100.0       | 137.4       |        |
| 5   | 1996.471        | V   | 66.1                | 37.8                 | -2.9          | 63.2                 | 34.9                  | 76.0                | 56.0                | 12.8           | 21.1            | 100.0       | 192.4       |        |
| 6   | 2283.004        | H   | 53.0                | 30.4                 | -2.0          | 51.0                 | 28.4                  | 76.0                | 56.0                | 25.0           | 27.6            | 100.0       | 56.9        |        |
| 7   | 2805.756        | H   | 51.0                | 28.5                 | 0.4           | 51.4                 | 28.9                  | 76.0                | 56.0                | 24.6           | 27.1            | 100.0       | 1.7         |        |
| 8   | 3189.810        | V   | 50.6                | 29.1                 | 1.5           | 52.1                 | 30.6                  | 80.0                | 60.0                | 27.9           | 29.4            | 100.0       | 35.1        |        |

### ◆ Calculation

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

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

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

## 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



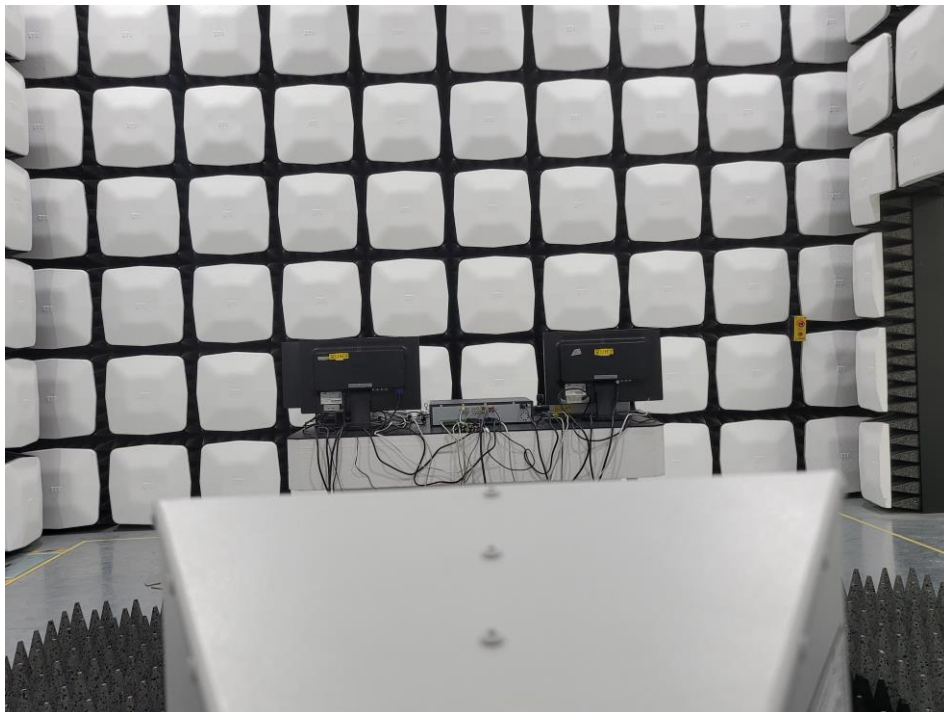
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.  
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.  
The authenticity of the test report, contact kes@kes.co.kr

## 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

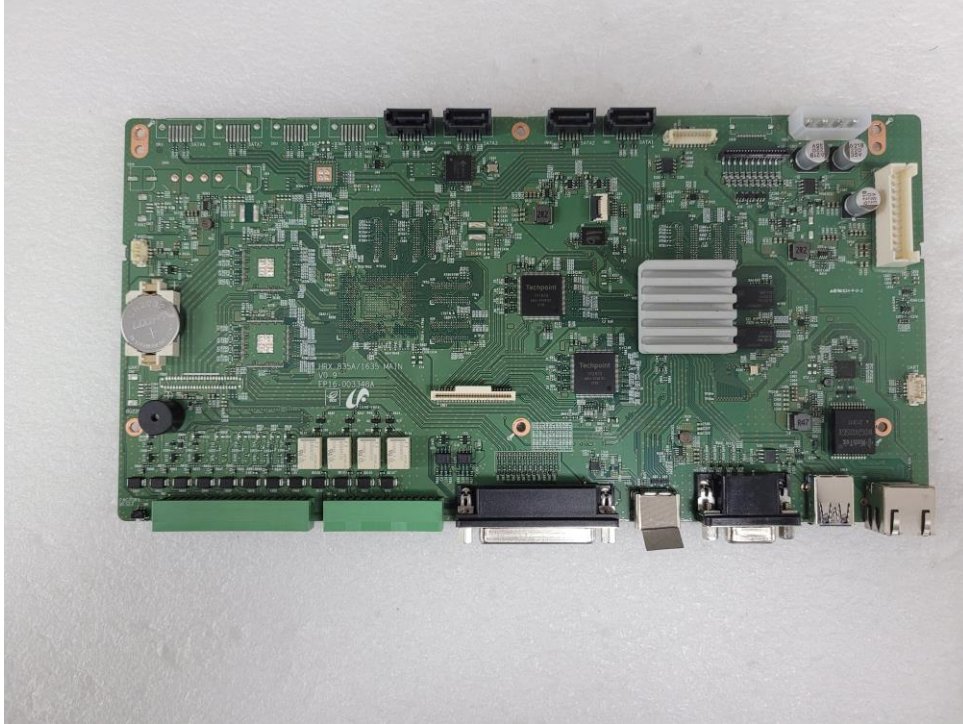
## EUT Internal Photographs

(Internal View)

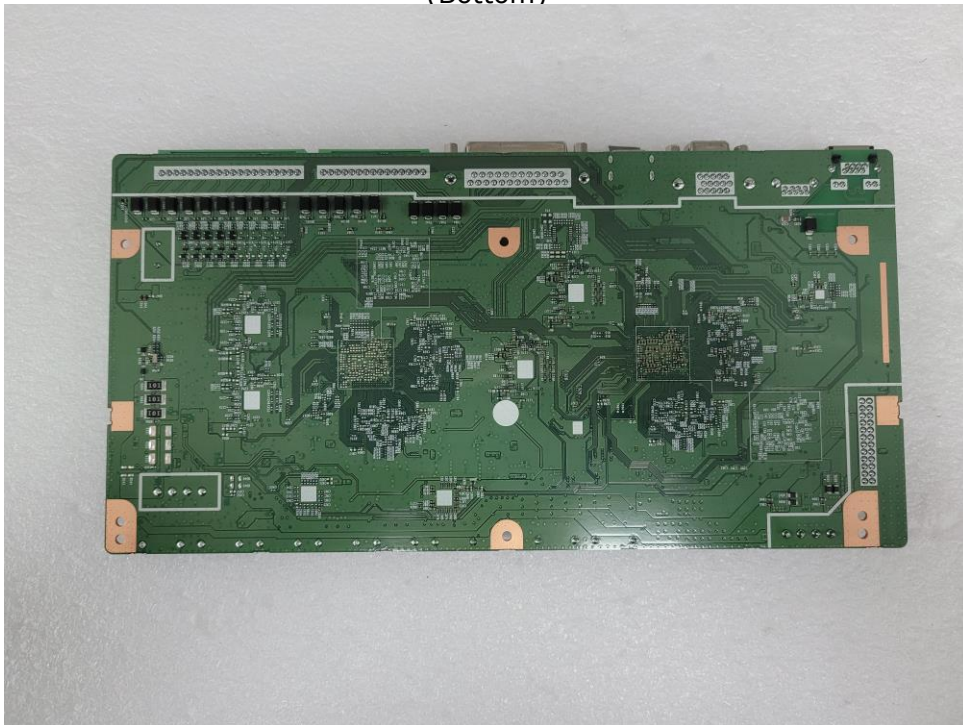


## EUT Internal View – Main Board

(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 – USB Board

(Top)



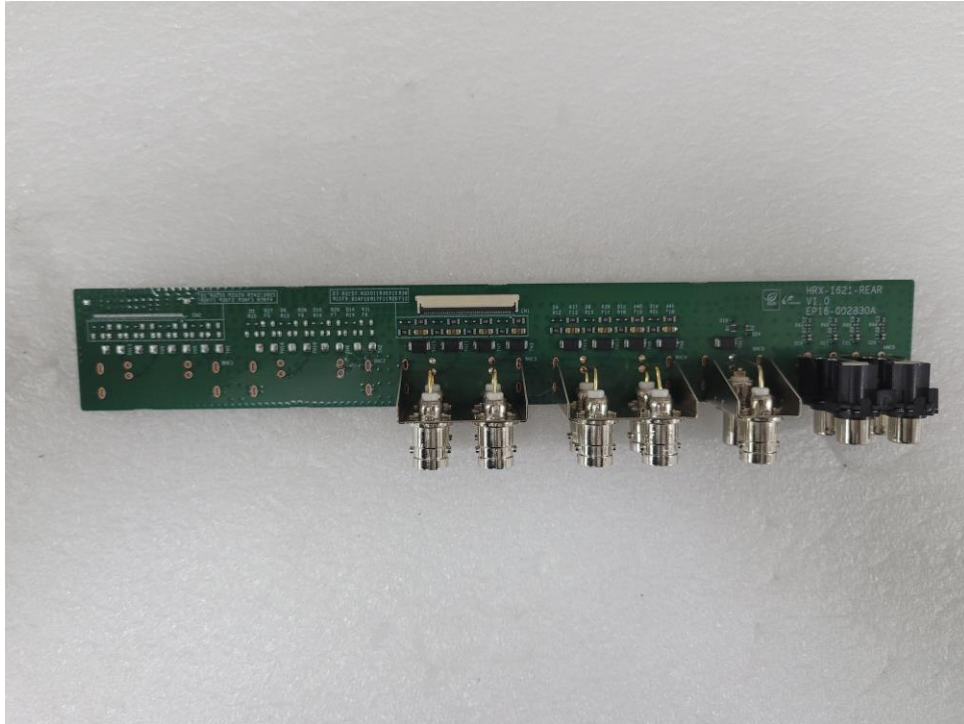
(Bottom)



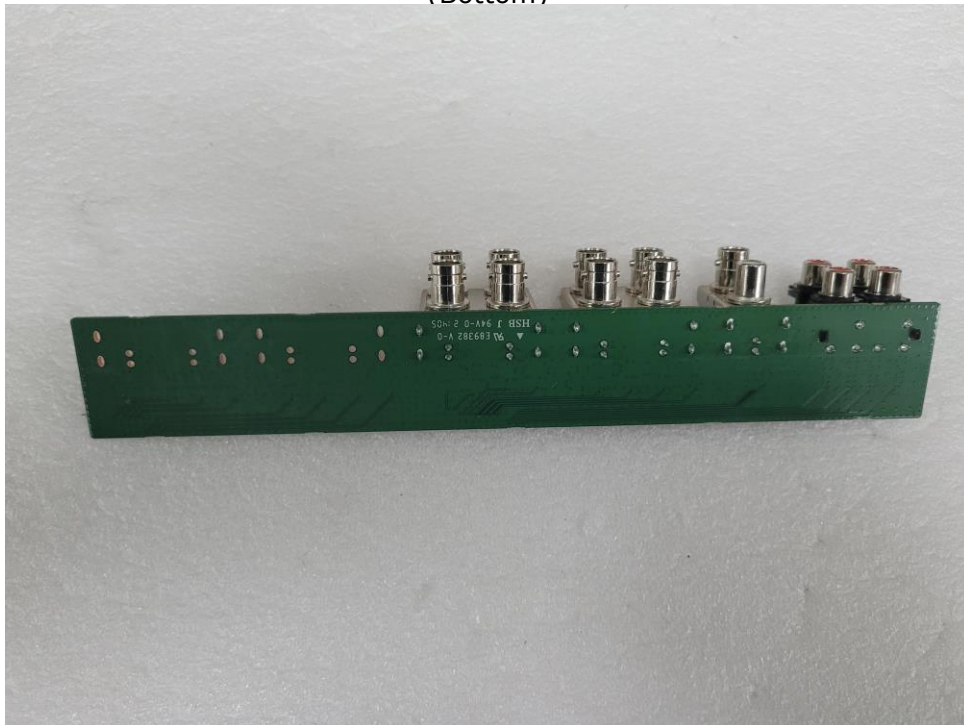
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.  
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.  
The authenticity of the test report, contact kes@kes.co.kr

## EUT Internal View – Board

(Top)



(Bottom)



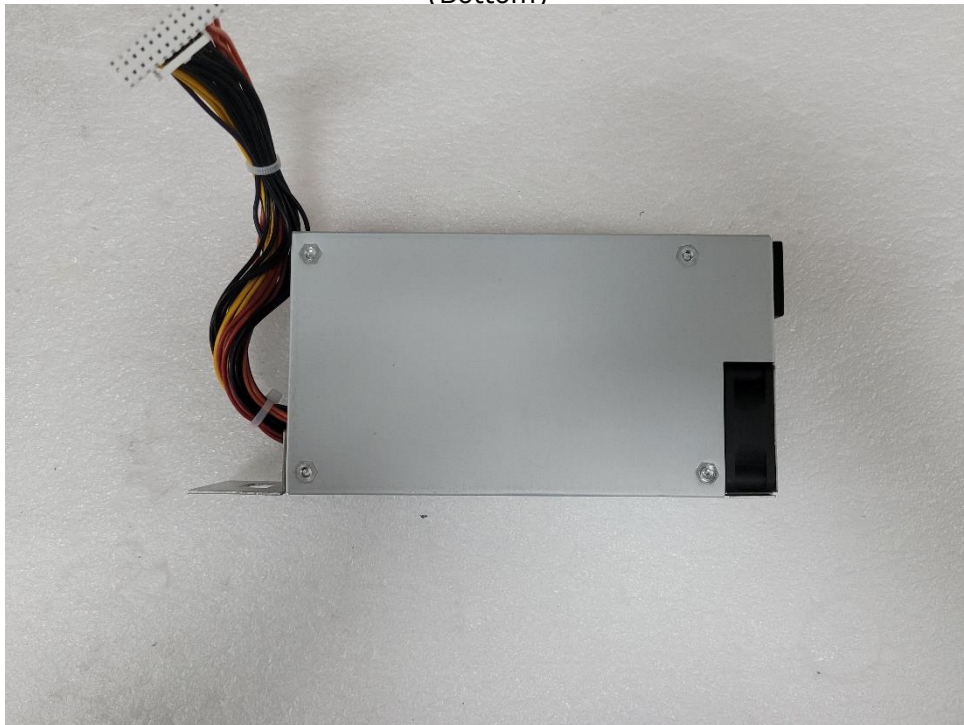
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.  
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.  
The authenticity of the test report, contact kes@kes.co.kr

## 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

## EUT Internal View – HDD

(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

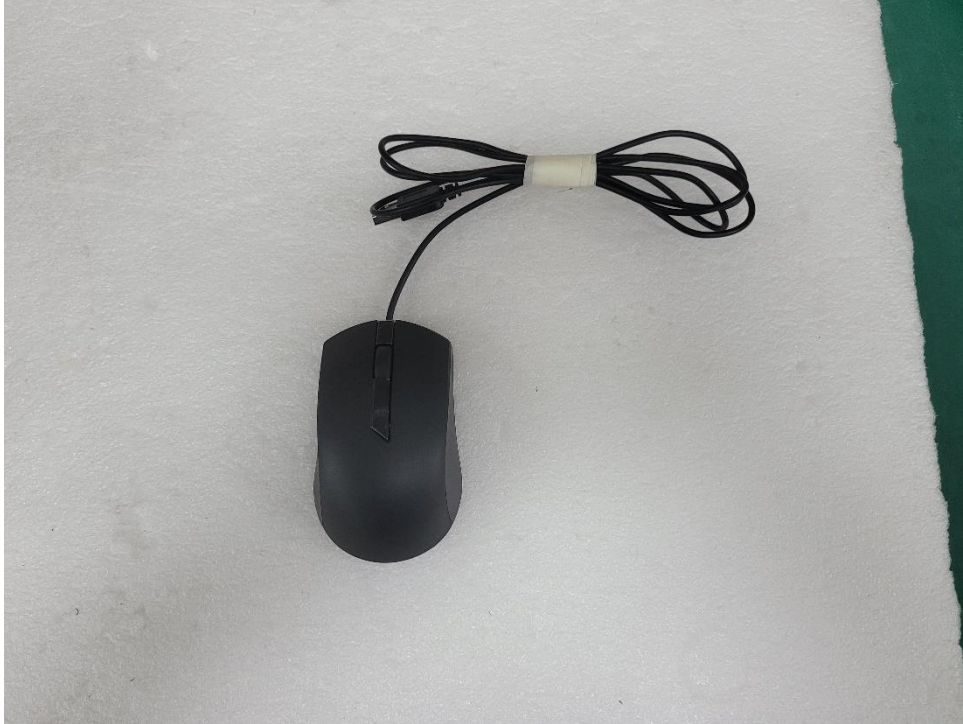
**EUT Internal View – HDD**

(label)



## EUT Internal View – Mouse

(Top)



(Bottom)



## EUT Internal View – Mouse

(label)



## Label Photographs



この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A