EMC TEST REPORT For RCM

Test Report No.	:	KES-E1-19T0466
Date of Issue	:	Aug. 13, 2019
Product name	:	Pentabrid DVR (Digital Video Recoder)
Model/Type No.	:	HRX-821P
Variant Model	:	-
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
Manufacturer	:	1. HANWHA TECHWIN(TIANJIN) CO., LTD 2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. 3. D-TECH CO.,LTD.
Manufacturer Address	:	1. No.11 Weiliu Rd,Micro-Electronic Industrial Park, TEDA,Tianjin, 300385,People's Republic of China 2. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)
Date of Receipt	:	Jul. 25, 2019
Test date	:	Aug. 06, 2019 ~ Aug. 07, 2019
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Min Seong, Kim
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.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 13, 2019	KES-E1-19T0466	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video			
Video Input	Analog Camera	Input	16CH, 1Vp-p 75ohm, BNC
		Signal Type	AHD(8MP, 5MP, 4MP, 1080p, 720p) HDTVI(8MP, 5MP, 4MP, 1080p, 720p) HDCVI(5MP, 4MP, 1080p, 720p) CVBS (NTSC/PAL)
	Network Camera	Input	2CH (up to 10CH)
		Resolution	CIF ~ 8MP
		Protocols	SUNAPI(Wisenet), ONVIF
Live	Local Display		1x HDMI, 1x VGA dual monitor
Operating System	Embedded		Linux
Recording	Compression		H.265, H.264, MJPEG
	Record Rate(Analog)		- Analog Camera(NTSC/PAL) (Main Stream) 8MP 8/8fps CH, 5M 12/12fps CH, 4M 15/12fps CH, 2M 30/25fps CH, 720p 30/25fps/CH, SD 30/25fps/CH (Sub Stream) HD: 640x360 full fps/CH, SD: upto SD full fps/CH *The maximum recording frame rate depends on the frame rate of the input camera.
	Mode		Manual, Schedule (Continuous/Event), Event(Pre/Post), Dual Track
	Event Trigger		Alarm Input Analog Camera Video Loss, Motion Detection,Tampering Network Camera Camera Event (Sensor, MD, Video analytics), VA event (Tampering, Enter / Exit, Passing, Virtual- line, (Dis)Appear, Face Detection, Audio detection), Defocus camera event
	Event Action		E-mail, PTZ preset, Alarm out, Buzzer, Monitor out
	Overwrite modes		Overwrite On/Off

Search & Playback	Performance		Max. 4 users (Set 1, Remote 3)
	Resolution		CIF ~ 8MP
	Playback Control		Fast Forward/Backward (x2,x4,x8,x16,x32,x64, x128, x256) Slow Forward/Backward (x1/2,x1/4,x1/8) ※Move one step up/down
	Internal		**Up to 4 SATA HDDs,** **Max.6TB/HDD(TBD)**
Storage	External		USB(for Backup)
	File Format		BU(DVR Player), SEC(Set, Include Player), AVI(Webviewer only)
NETWORK			
Protocol support			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)
Max. Remote users			Search (3), Live Unicast (10), Multicast (20)
Security			IPv4/v6
Security			IP address filtering, User access log, 802.1x Authentication, Encryption (ID/PW, Recording, Transmission, Backup)
OS			Supported OS : Window XP (Service pack 2 or above), Vista, 7, 8, 10, Mac OS X (10.7 or above)
Web Browser			Google Chrome 47 or above, MS Edge 20 or above, Safari 9 or above *support Plug-in free Web
Viewer Software			SSM, Webviewer, SmartViewer, Wisenet Mobile Viewer
CMS Support			SDK/CGI(SUNAPI)
Function			
Easy Configuration			Setup Wizard (Language Date/Time, Password, Network, Auto Camera Configuration), P2P (QR code)
ARB (Auto Recovery Backup)			support
PTZ	Control/Preset		Via GUI & RS-485, Webviewer, SPC-7000 / 300 presets
Smart phone	OS / Protocol support		Android , iOS, RTP, RTSP, HTTP, CGI(SUNAPI)
	Control		Live(8ch) : Multi-Profile Support Playback(1ch, Max. 2MP) Event push
System Control			Mouse, IR Remocon, Web, SPC-7000

INDICATOR / INTERFACE		
Front	Indicator	Power status LED 1ea, HDD Action LED 1ea, Alarm Status LED 1ea Record status LED 1ea, Network Action LED 1ea, Backup LED 1ea
Monitors	Mode	
	HDMI	1 HDMI (4K(3840 x 2160), 2K(2560 x 1440), 1920x1080, 1280x1024, 1280x720)
	VGA	1 VGA (1920x1080, 1280x1024, 1280x720)
	Composite(Spot)	BNC(1CH) ※ Included OSD On Screen, Single, Multi, Auto Change mode Support
Audio	Inputs/Output	8~~CH~~ line in (Built in 4~~CH~~, Option : Audio Extension Cable)/ 1~~CH~~ line out
	Compression	G.711
	Sampling rate	8KHz
Alarm	Inputs/Outputs	Terminal 8 Inputs (NO/NC) / Terminal 4 relay Outputs (NO/NC & NO) MAX DC18V, 2A, Typical DC12V, 2A
Ethernet		1 RJ45 10/100/1000 Base-T
USB		1 ports(USB 3.0, Rear), 1 ports(USB 2.0, Front)
Serial		RS-485(Full Duplex) for PTZ, Samsung System Keyboard
Coaxia Control		Support (CVBS and AHD/CVI/TVI)
Reset		Yes(Factory Reset, Alarm Reset)
General		
Electrical	Input Voltage/Current	100 ~ 240 VAC ±10%; 50/60 Hz
	Power consumption	(TBD) Max. W
Environmental	Operating Temperature/Humidity	+0°C to +40°C (+32°F to +104°F) / 20% to 85% RH
Mechanical	Color / Material	Black / Metal
	Dimension (W x H x D)	(TBD) W440 x H88 x D384.8(17.32" x 3.46" x 15.15")
	Weight (with hard disks)	TBD kg

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage ☒ 240 Vac ☐ 100 Vac ☐ 24 Vac ☐ 12 Vdc ☐ PoE

Frequency ☒ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Pentabrid DVR (Digital Video Recoder)	HRX-821P	-	HANWHA TECHWIN(TIANJIN) CO., LTD	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
HDD	WD40PUEX-64N96Y0	-	Western Digital	4 TB

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Camera	SDC-79446BF	-	HANWHA TECHWIN(TIANJIN) CO., LTD	-
Camera Adapter	FSP-060-DIBAN2	-	Zhonghan Electronics(Shenzhen) Co., Ltd.	-
Monitor 1	SMT-2233	ZC6U67VH500194D	Weihai Daewoo Electronics Co., Ltd.	-
Monitor 2	SMT-2232	C95V67VF900038B	Weihai Daewoo Electronics Co., Ltd.	-
Monitor 3	SMT-2232	C95V67VF900015Y	Weihai Daewoo Electronics Co., Ltd.	-
Notebook	NT730U3E	JJRE91CF200065A	Samsung Electronics	-
Notebook Adapter	PA-1600-66	AD-6019P	LITEON	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
MIC	CMK-303	-	CAMAC	-
Controller	SPC-1010	C50E67WG10100F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhuasheng Power Technology Co.,Ltd.	-
Alarm	-	-	-	-
Button Alarm	-	-	-	-
USB Memory	-	-	SONY	16 GB

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
Pentabrid DVR (Digital Video Recoder) (EUT)	VIDEO IN	Camera	BNC	10.0	U
	HDMI	Monitor 1	HDMI	1.5	S
	VGA OUT	Monitor 2	D-SUB	1.5	S
	SPOT	Monitor 3	BNC	3.0	S
	NETWORK	Notebook	RJ-45	3.0	U
	AUDIO OUT	Speaker	RCA	1.6	U
	AUDIO IN	MIC	RCA	1.6	U
	RS-485	Controller	RS-485	10.0	U
	Alarm Out	Alarm	Alarm In	10.0	U
	Alarm In	Button Alarm	Alarm Out	10.0	U
	USB 2.0	Mouse	USB	1.3	U
	USB 3.0	USB Memory	USB	-	-

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

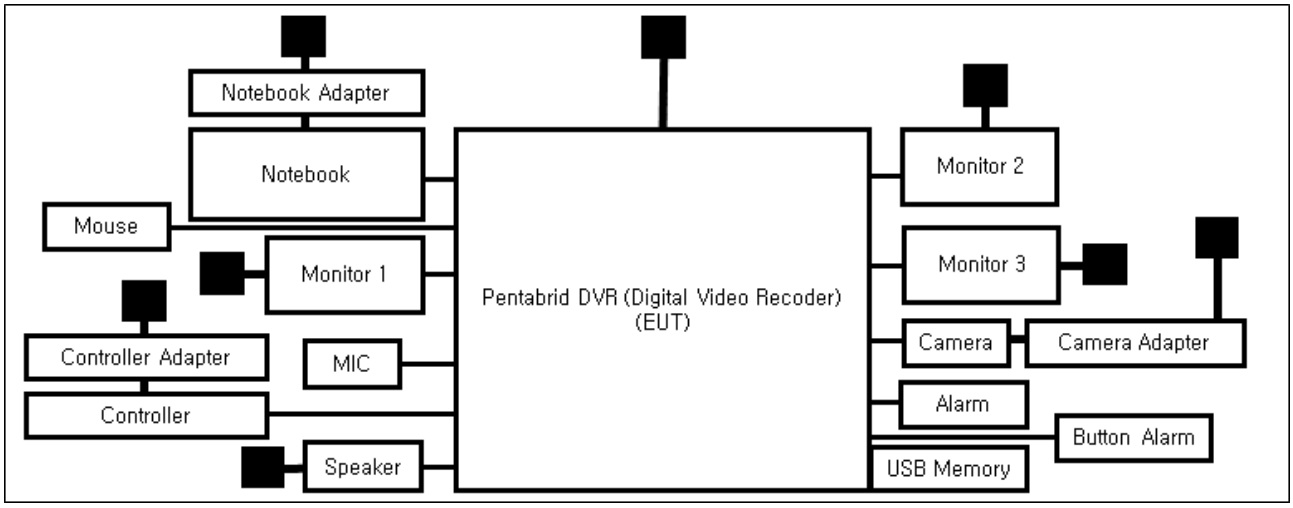
Test mode	operating
OP	EUT Monitoring, Ping Test

EUT Test operating S/W		
Name	**Version**	**Manufacture Company**
WebViewer	-	Hanwha Techwin Co., Ltd.

- The eSATA port is not tested because it is not used.

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, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	**RRA**	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
International	**KOLAS**	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KT489
USA	**FCC**	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	KR0100
Canada	**ISED**	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	23298-1
JAPAN	**VCCI**	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	R-20056, C-20036, T-20040, G-20057
Europe	**TÜV SÜD**	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	CARAT 001633 0003

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010 ☐ Group 1 ☐ Class A ☐ Group 2 ☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015 ☐ Class A ☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

☐ **VCCI-CISPR 32:2016**	☐ Class A	☐ Class B
☒ **AS/NZS CISPR32:2015**	☒ Class A	☐ Class B
☐ **47 CFR Part 15, Subpart B**		
☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☐ ANSI C63.4-2009		
☐ **IC Regulation ICES-003 : 2016**		
☐ CAN/CSA CISPR 22-10	☐ Class A	☐ Class B
☐ ANSI C63.4-2014		

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

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

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions at Mains Power Ports

Test Date
Aug. 06, 2019

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	101781	04, 22, 2020
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 22, 2020
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019

Test Conditions
Temperature: 25,4 ℃
Relative Humidity: 53,9 % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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
Aug. 06, 2019

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	101781	04, 22, 2020
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 22, 2020
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2020
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2020

Test Conditions
Temperature: 25,4 ℃
Relative Humidity: 53,9 % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Aug. 06, 2019

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

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	04, 09, 2020
☒	AMPLIFIER	SCU 01	R & S	100603	11, 26, 2019
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
☒	ATTENUATOR	8491A	HP	32173	03, 11, 2020

Test Conditions
Temperature: 24,4 ℃
Relative Humidity: 52,9 % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Aug. 07, 2019

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, 06, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 27, 2020
☐	ATTENUATOR	8491A	HP	35496	03, 11, 2020
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 12, 2021

Test Conditions
Temperature: 24,2 ℃
Relative Humidity: 54,2 % R.H.

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

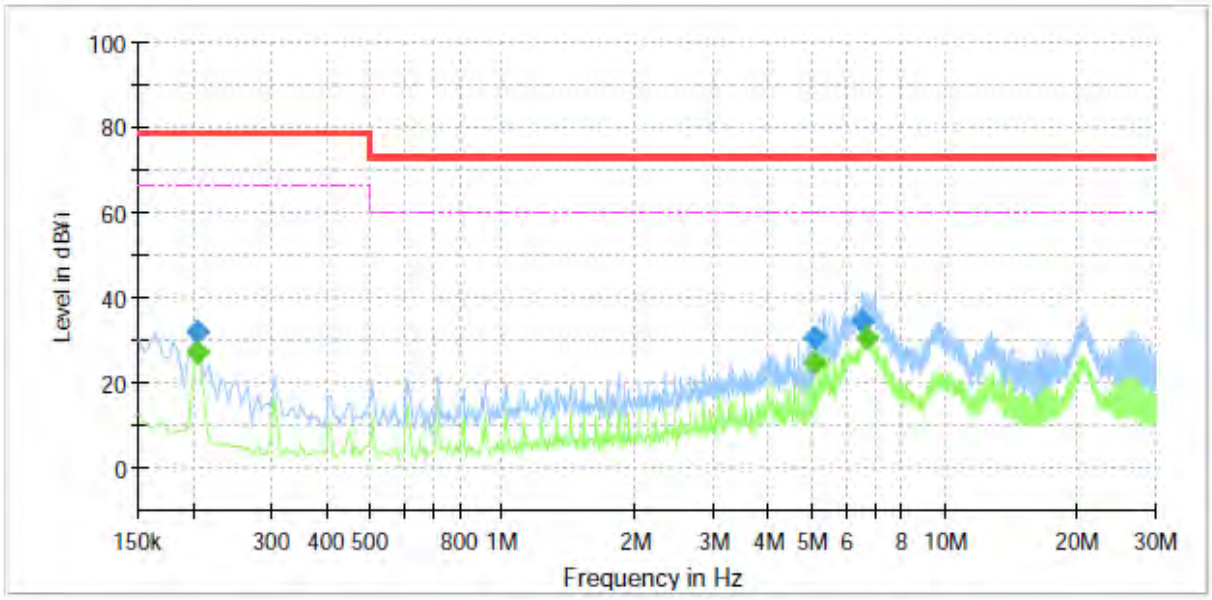
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	HRX-821P
Phase:	
Mode:	H
Operator Name:	KES



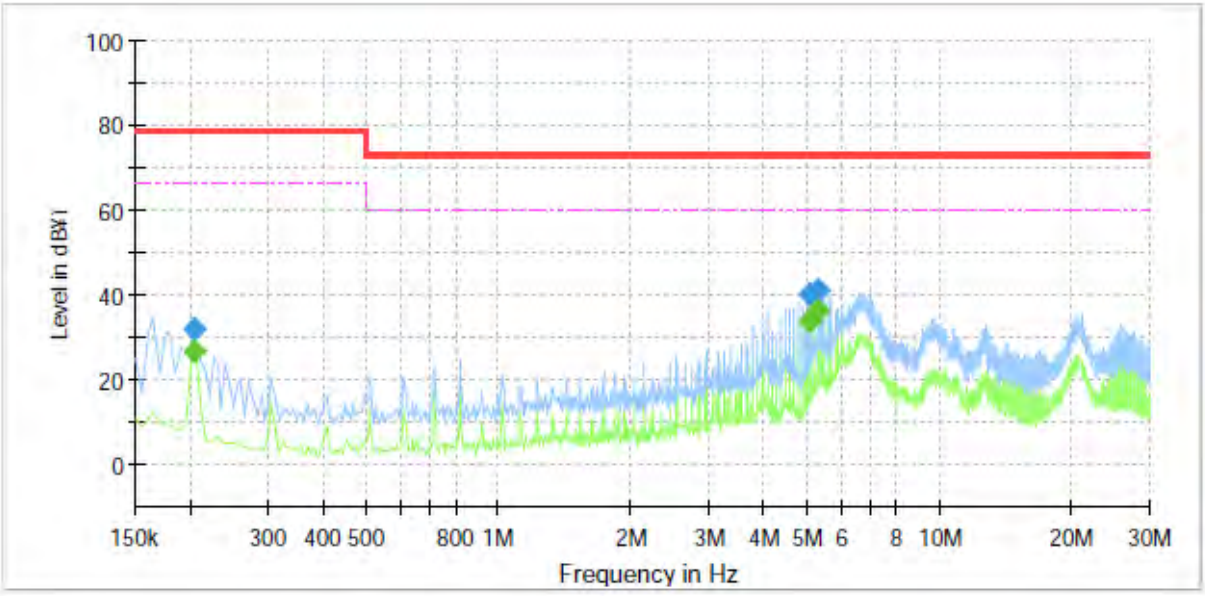
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	27.36	66.00	38.64	1000.0	9.000	L1	19.5
0.205000	31.87	---	79.00	47.13	1000.0	9.000	L1	19.5
5.090000	---	24.96	60.00	35.04	1000.0	9.000	L1	19.6
5.090000	30.34	---	73.00	42.66	1000.0	9.000	L1	19.6
6.500000	---	30.29	60.00	29.71	1000.0	9.000	L1	19.9
6.500000	34.15	---	73.00	38.85	1000.0	9.000	L1	19.9

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	HRX-821P
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)
0.205000	---	26.89	66.00	39.11	1000.0	9.000	N	19.5
0.205000	31.90	---	79.00	47.10	1000.0	9.000	N	19.5
5.095000	---	33.80	60.00	26.20	1000.0	9.000	N	19.7
5.095000	39.98	---	73.00	33.02	1000.0	9.000	N	19.7
5.300000	---	36.40	60.00	23.60	1000.0	9.000	N	19.7
5.300000	41.34	---	73.00	31.66	1000.0	9.000	N	19.7

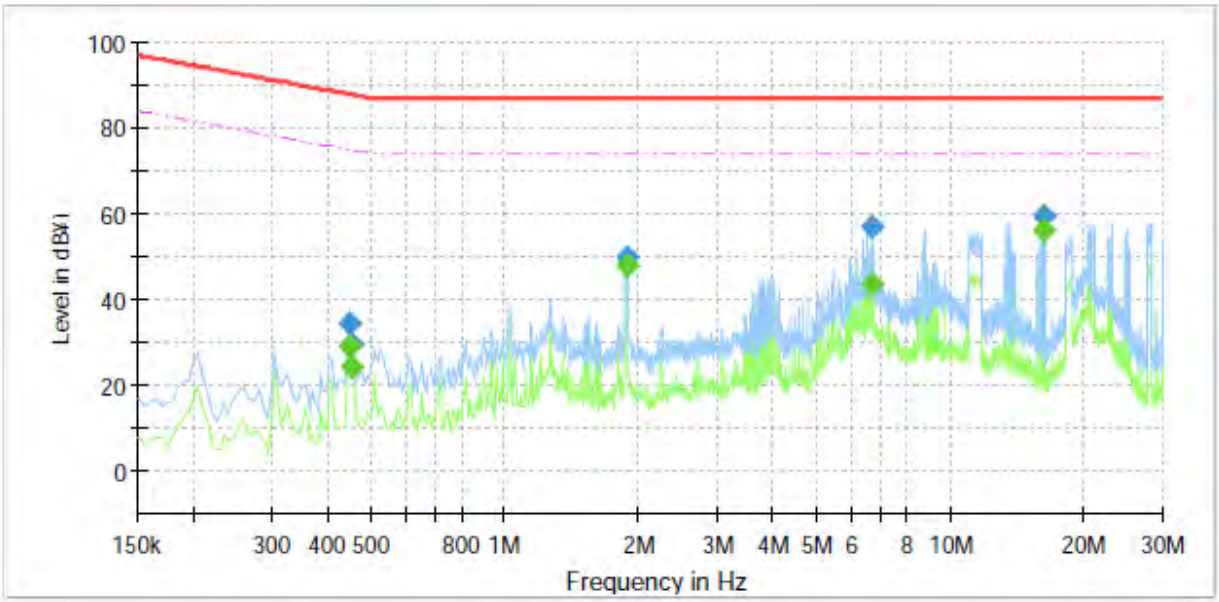
♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	HRX-821P
Mode :	
Speed :	10 Mbps
Operator Name:	KES



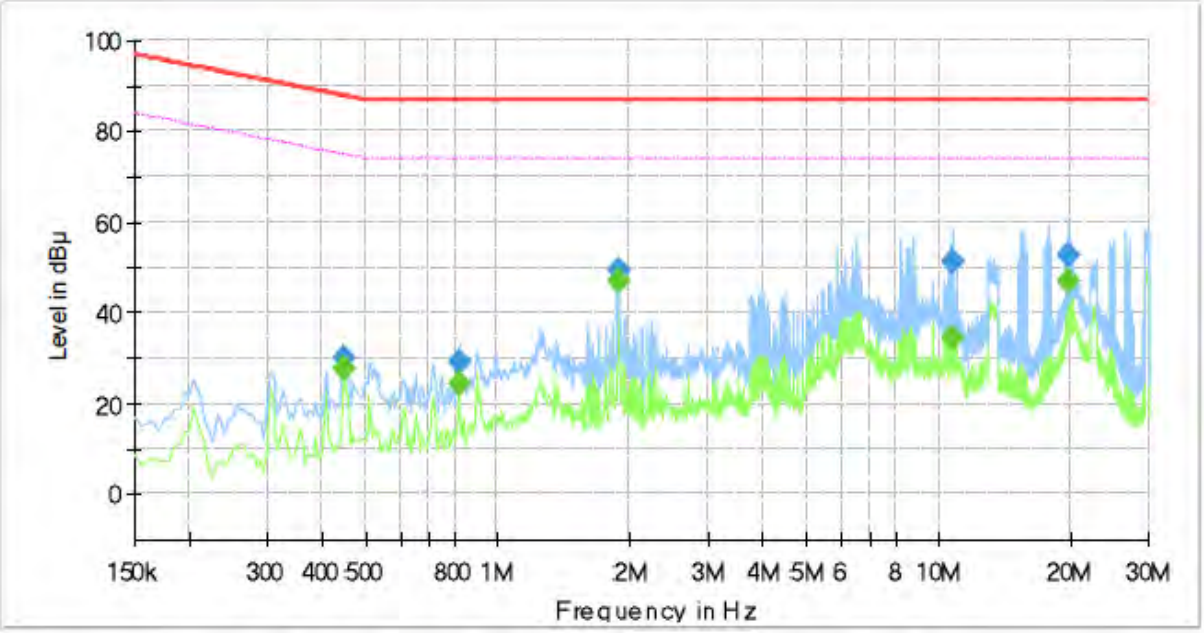
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	---	28.90	74.88	45.98	1000.0	9.000	Single Line	20.0
0.450000	34.49	---	87.88	53.39	1000.0	9.000	Single Line	20.0
0.455000	---	24.28	74.78	50.50	1000.0	9.000	Single Line	20.0
0.455000	29.45	---	87.78	58.33	1000.0	9.000	Single Line	20.0
1.875000	---	47.92	74.00	26.08	1000.0	9.000	Single Line	20.5
1.875000	49.79	---	87.00	37.21	1000.0	9.000	Single Line	20.5
6.700000	---	43.37	74.00	30.63	1000.0	9.000	Single Line	19.8
6.700000	56.93	---	87.00	30.07	1000.0	9.000	Single Line	19.8
16.225000	---	56.13	74.00	17.87	1000.0	9.000	Single Line	20.3
16.225000	59.69	---	87.00	27.31	1000.0	9.000	Single Line	20.3

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	HRX-821P
Mode :	
Speed :	100 Mbps
Operator Name:	KES



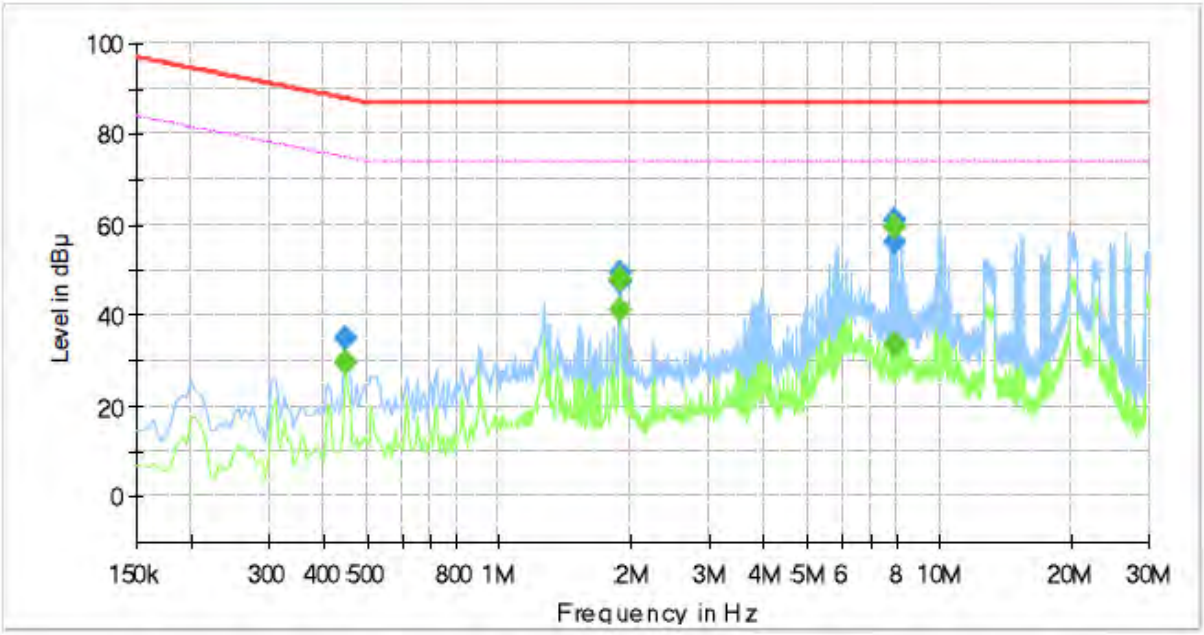
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	---	28.72	74.88	46.16	1000.0	9.000	Single Line	20.0
0.450000	29.25	---	87.88	58.63	1000.0	9.000	Single Line	20.0
0.815000	---	25.44	74.00	48.56	1000.0	9.000	Single Line	20.3
0.815000	28.95	---	87.00	58.05	1000.0	9.000	Single Line	20.3
1.880000	---	46.88	74.00	27.12	1000.0	9.000	Single Line	20.5
1.880000	50.52	---	87.00	36.48	1000.0	9.000	Single Line	20.5
10.795000	---	35.00	74.00	39.00	1000.0	9.000	Single Line	20.0
10.795000	51.11	---	87.00	35.89	1000.0	9.000	Single Line	20.0
19.710000	---	46.72	74.00	27.28	1000.0	9.000	Single Line	20.4
19.710000	53.66	---	87.00	33.34	1000.0	9.000	Single Line	20.4

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	HRX-821P
Mode :	
Speed :	1 000 Mbps
Operator Name:	KES

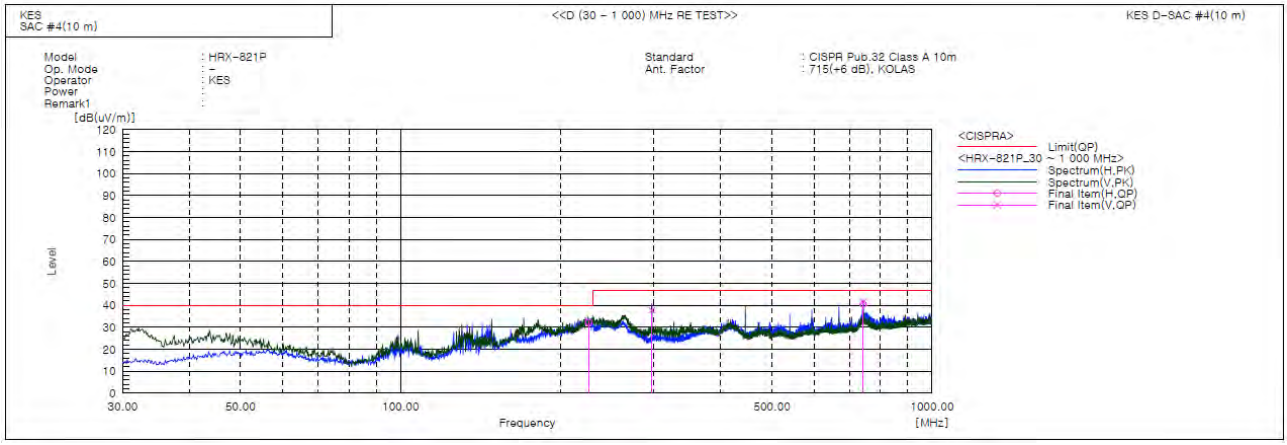


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	---	29.70	74.88	45.18	1000.0	9.000	Single Line	19.9
0.450000	34.68	---	87.88	53.20	1000.0	9.000	Single Line	19.9
1.880000	---	47.67	74.00	26.33	1000.0	9.000	Single Line	20.3
1.880000	49.19	---	87.00	37.81	1000.0	9.000	Single Line	20.3
1.885000	---	40.90	74.00	33.10	1000.0	9.000	Single Line	20.3
1.885000	47.56	---	87.00	39.44	1000.0	9.000	Single Line	20.3
7.920000	---	33.56	74.00	40.44	1000.0	9.000	Single Line	19.9
7.920000	56.02	---	87.00	30.98	1000.0	9.000	Single Line	19.9
7.925000	---	59.42	74.00	14.58	1000.0	9.000	Single Line	19.9
7.925000	60.75	---	87.00	26.25	1000.0	9.000	Single Line	19.9

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Radiated Electric Field Emissions(Below 1 ㎓)



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	225.940	H	52.7	-20.4	32.3	40.0	7.7	400.0	133.0	
2	296.993	V	56.5	-18.7	37.8	47.0	9.2	121.0	178.0	
3	742.465	V	49.0	-7.4	41.6	47.0	5.4	284.0	197.0	
4	742.472	H	47.9	-7.4	40.5	47.0	6.5	331.0	31.0	

♦ Calculation

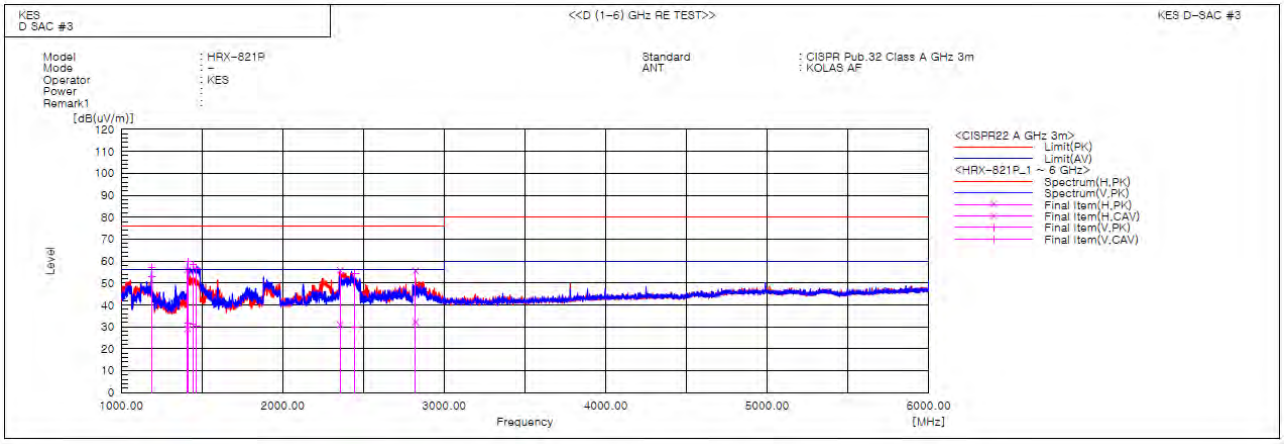
Result(QP) [dB(㎶/m)] = (Reading(QP)[dB(㎶)] + c.f[dB(1/m)]

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



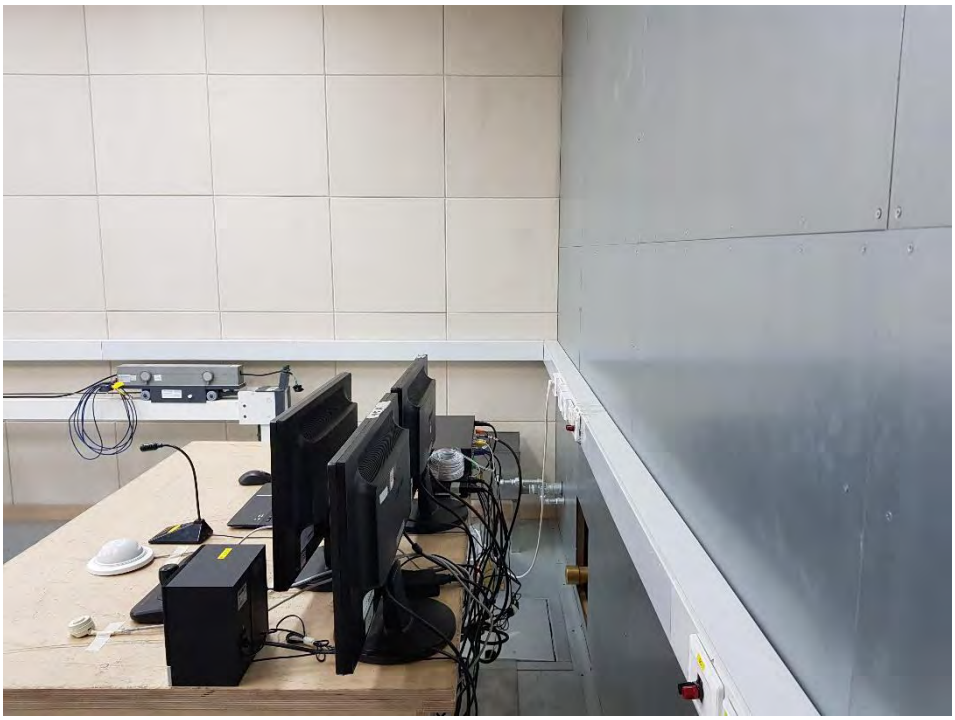
Final Result

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	1188.050	V	65.5	61.6	-8.6	56.9	53.0	76.0	56.0	19.1	3.0	100.0	11.2	
2	1410.693	H	63.2	36.2	-7.1	56.1	29.1	76.0	56.0	19.9	26.9	100.0	63.0	
3	1411.070	V	67.1	38.6	-7.1	60.0	31.5	76.0	56.0	16.0	24.5	100.0	28.1	
4	1445.871	V	65.1	37.9	-6.9	58.2	31.0	76.0	56.0	17.8	25.0	100.0	22.2	
5	1467.024	V	63.5	36.8	-6.7	56.8	30.1	76.0	56.0	19.2	25.9	100.0	353.0	
6	2354.619	H	56.6	31.8	-0.8	55.8	31.0	76.0	56.0	20.2	25.0	100.0	78.7	
7	2447.416	V	54.5	30.2	-0.4	54.1	29.8	76.0	56.0	21.9	26.2	100.0	55.2	
8	2821.760	H	54.7	31.3	0.8	55.5	32.1	76.0	56.0	20.5	23.9	100.0	39.5	

♦ Calculation
Result(PK/CAV) [㏈(㎶/m)] = (Reading(PK/CAV)[㏈(㎶)] + c.f[㏈(1/m)]
Margin(PK/CAV)[㏈] = Limit[㏈(㎶/m)] - Result(PK/CAV) [㏈(㎶/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

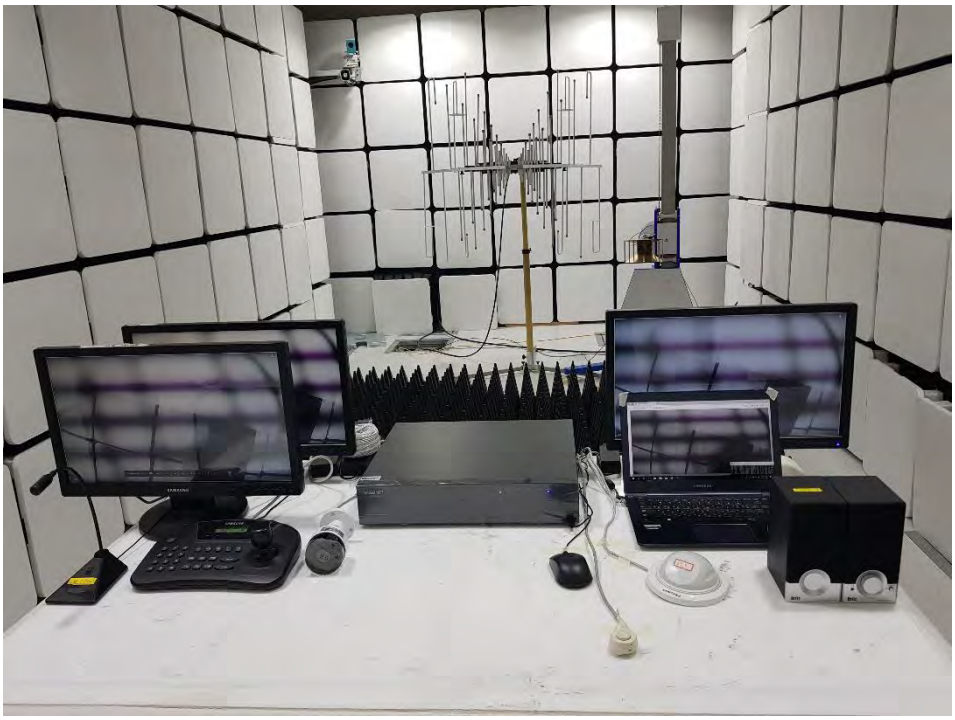
Conducted Voltage Emissions



Conducted Telecommunication Emissions

Radiated Electric Field Emissions(Below 1 ㎓)

Radiated Electric Field Emissions(Above 1 ㎓)



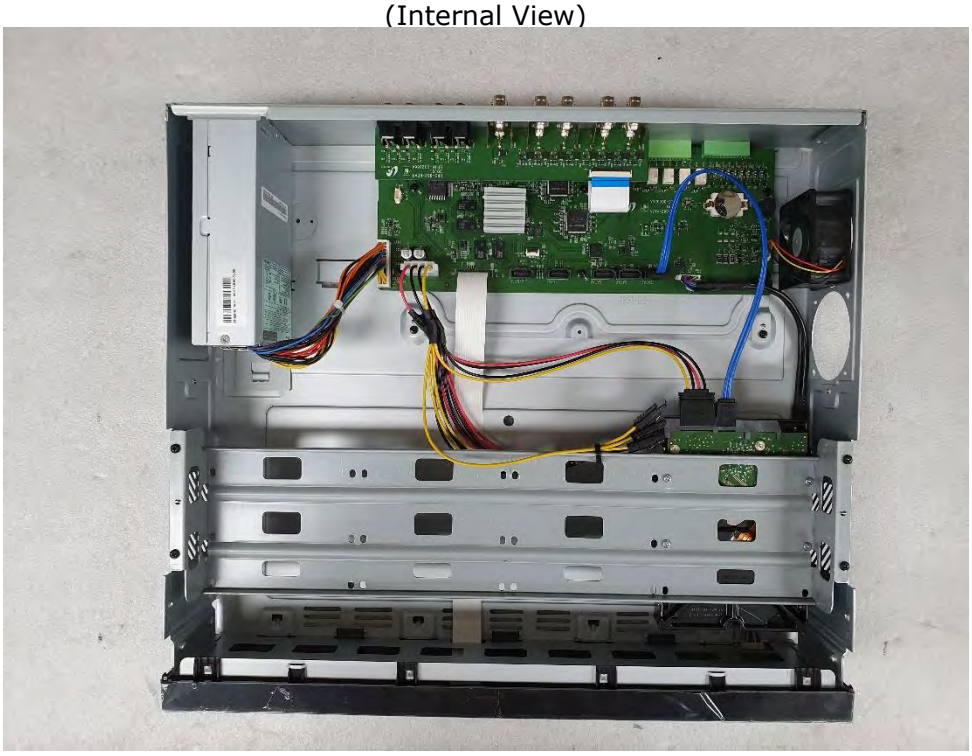
EUT External Photographs

(Top)

(Bottom)

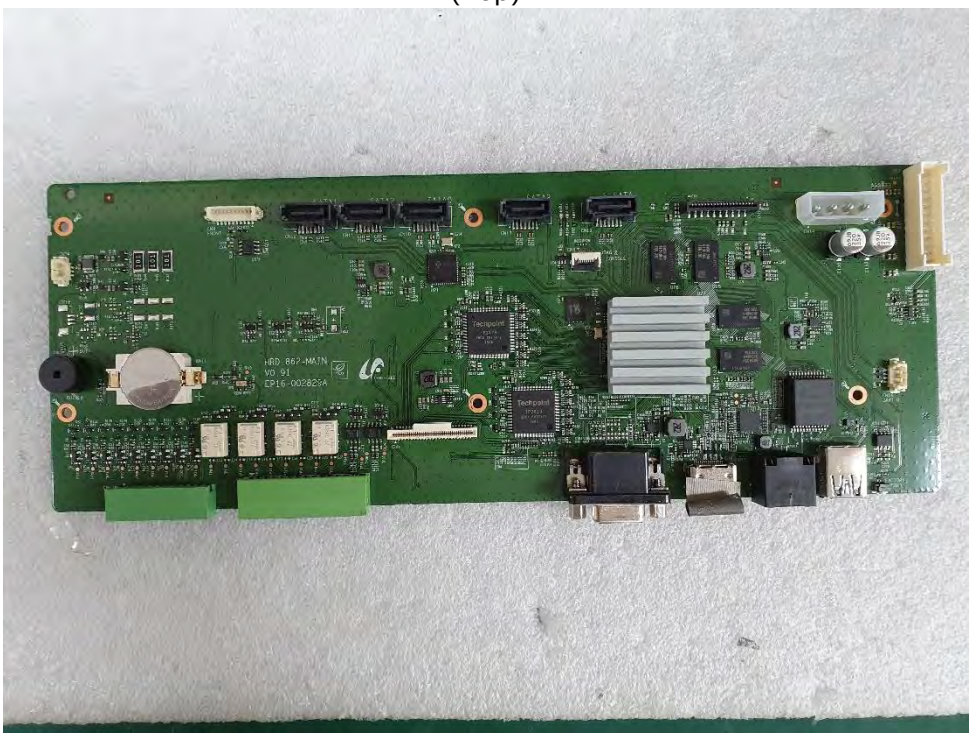
EUT Internal Photographs

(Internal View)

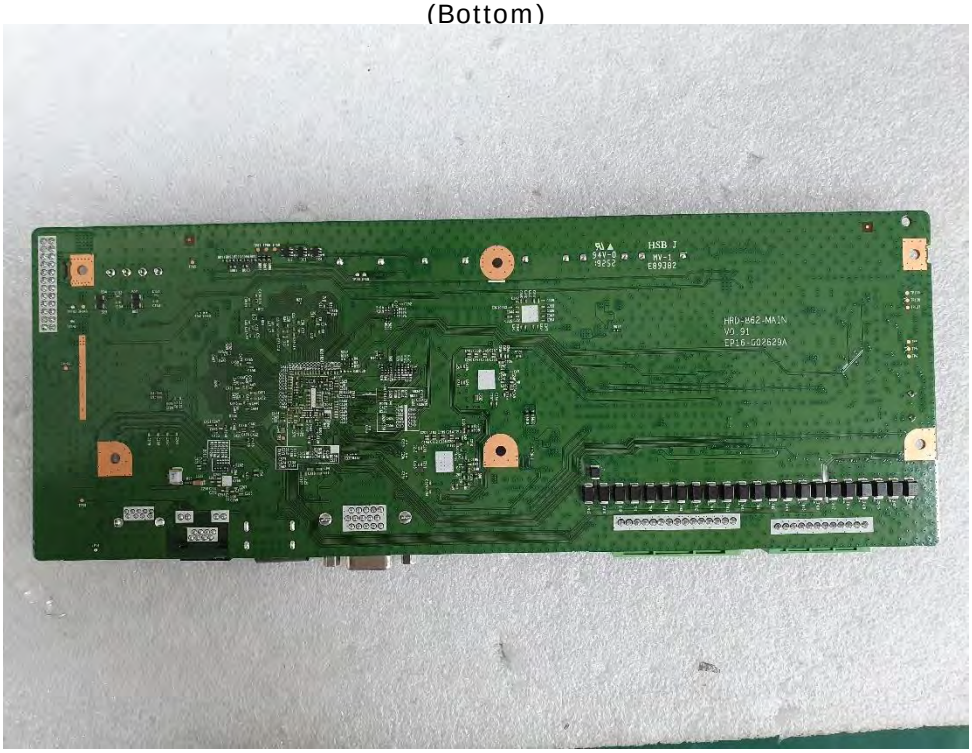


EUT Internal View – Main Board

(Top)

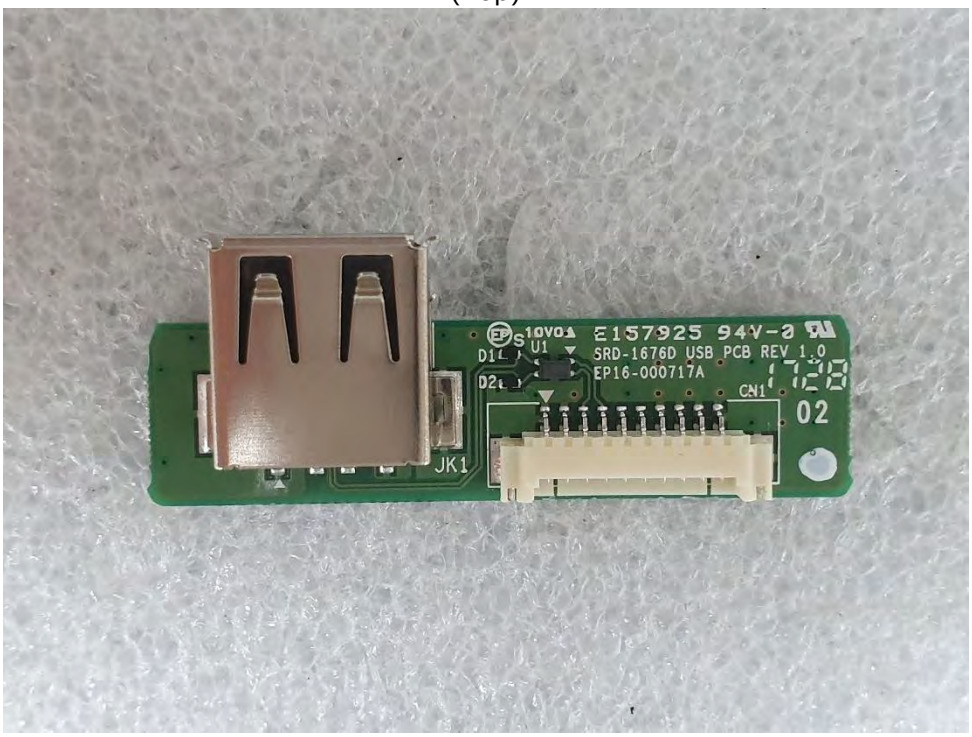


(Bottom)

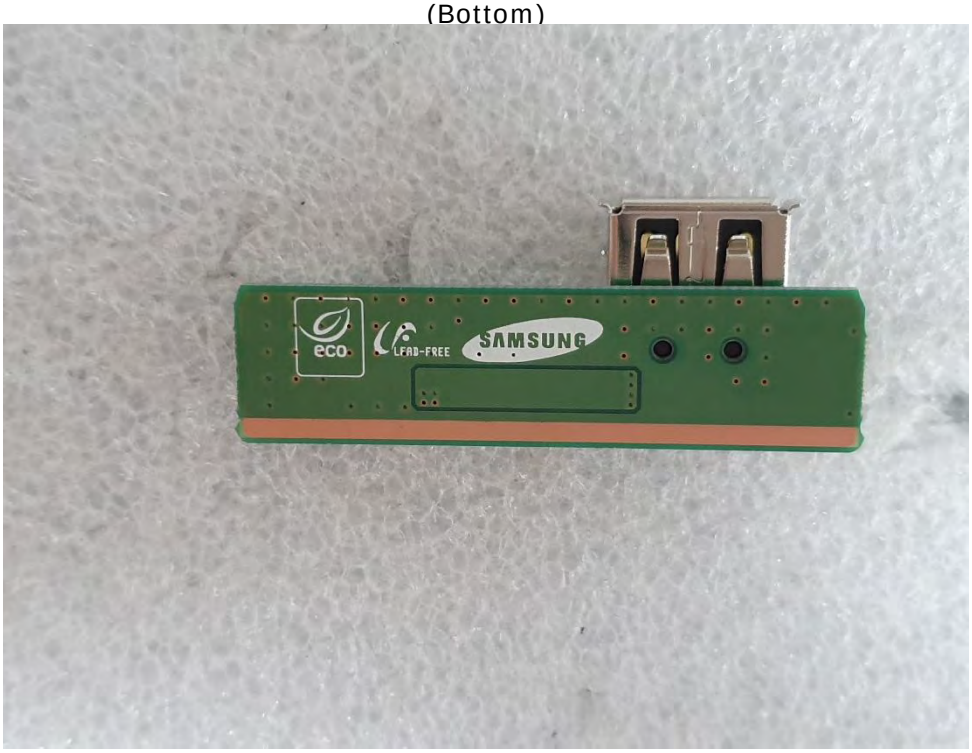


EUT Internal View – Sub Board 1

(Top)

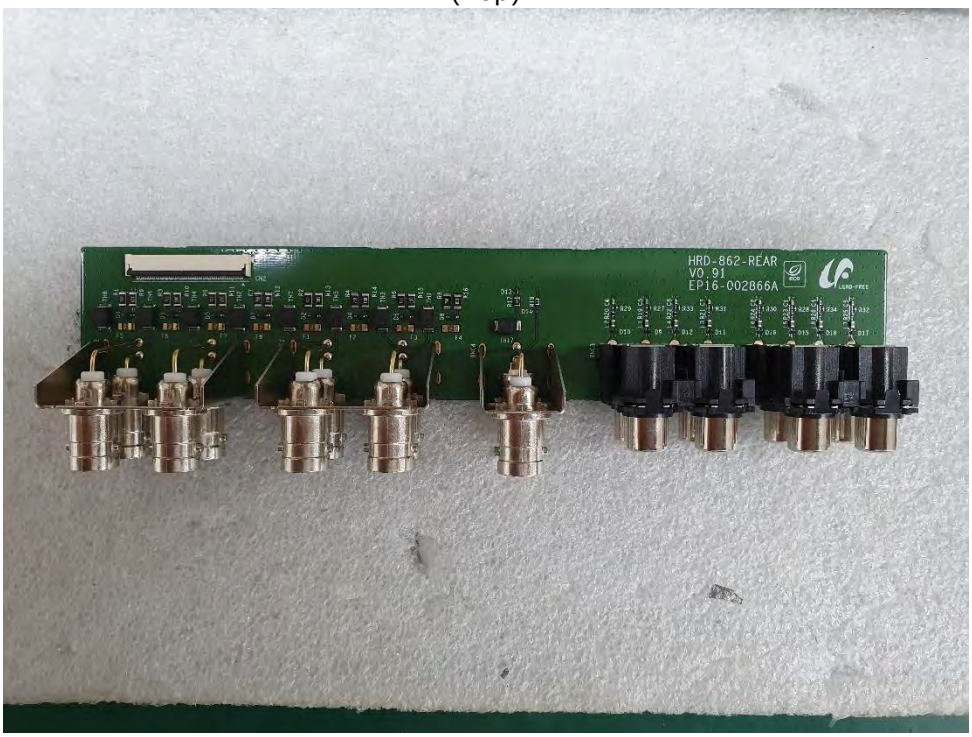


(Bottom)



EUT Internal View – Sub Board 2

(Top)



(Bottom)

EUT Internal View – Sub Board 3

(Top)