

VERIFICATION OF FCC PART 15 COMPLIANCE

*KES hereby verify that the subject product complies with all the
electromagnetic emission specified in the FCC Rule Part 15*

Product Description:	DVR
Model/Brand Name:	HRD-1642N
Variant Model:	-
FCC Rule Part(s):	FCC 47CFR Part 15 Subpart B Class A Part 15.107(b) & Part 15.109(b)
FCC Procedure:	Verification
Applicant Name:	Hanwha Techwin Co., Ltd.
Applicant Address:	1204, Changwon-daero, Seongsan-gu Changwon- si, Gyeongsangnam-do, Korea
Manufacturer Name:	Hanwha Techwin (Tianjin) Co.,Ltd.
Manufacturer Address:	No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, people's Republic of China.
Test Report Reference No.:	KES-E1-17T0191

DVR, Model **HRD-1642N** has been tested in accordance with the measurement procedures specified in FCC 47CFR Part 15 Subpart B class A and has been shown to be complied with the electromagnetic emission limits specified in FCC Rule Part 15 Subpart B class A. A testing of the sample product has been valid for the sample tested based on the reference test report, KES-E1 -17T0191

Date of Issue: 03. 02, 2017

Dong Hun, Jang
Technical Manager
Signature:



KES.Co., Ltd.

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EMC TEST REPORT For FCC

Test Report No. : KES-E1-17T0191

Date of Issue : Mar, 02, 2017

Product name : DVR

Model/Type No. : HRD-1642N

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 1204, Changwon-daero, Seongsan-gu Changwon-si,
Gyeongsangnam-do, Korea

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

Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, people's Republic of China.

Equipment authorization : ☐ Declaration of Conformity
☒ Verification
☐ Certification

Date of Receipt : Feb, 13, 2017

Test date : Feb, 20, 2017

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Young Suk, Song
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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Test report No.:
KES-E1-17T0191
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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 02, 2017	KES-E1-17T0191	Issued

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1.0 General Product Description

Main Specifications of EUT are:

HRD-1642		
Video	Inputs	16channel BNC : AHD(~4MP), TVI(~2MP), CVI(~2MP), NTSC/PAL
	Resolution	2560x1440, 1920 x 1080, 1280 x 720, 960 x 480, 704 x 480 / 960 x 576, 704 x 576
Live	Frame rate	480fps, 400fps
	Resolution	2560x1440, 1920 x 1080, 1280 x 720, 960 x 480, 704 x 480 / 960 x 576, 704 x 576
	Multi Screen display	1/4/7/9/13/16/18A/PIP/Sequence
Performance		
Operating System	Embedded	Linux
Recording	Compression	H.264, Wisestream
		NTSC : Up to 240fps@4MP / PAL : Up to 200fps@4MP
		-
	Record Rate(Analog)	NTSC : Up to 480fps@1920 x 1080 / PAL : Up to 400fps@1920 x 1080
		NTSC: Up to 480fps @ 1280 x 720, 928x480, 704x480, 704x240, 352x240
		PAL: Up to 400fps @ 1280 x 720, 928x576, 704x576, 704x288, 352x288
	Mode	Manual, Schedule (Continuous/Event), Event(Pre/Post), Time lapse (1~30 fps(N), 1~25fps(P))
	Event	Video Loss, Motion(Level 1~10), Alarm Input(16), Tampering(Level Low,Medium, High)
	Overwrite modes	Continuous
	Pre-alarm	Up to 30 sec (5, 10, 20, 30 Sec)
	Post-Alarm	Up to 8 hour (5, 10, 20, 30 sec, 1, 3, 5, 10, 20 min, 1, 2, 3, 4, 5, 6 hour)
Search & Playback	Search mode	Date/time, Event, Back up, POS(SD Signal only), Motion (* All Search Included Preview Function)
	Playback function	Fast Forward/Backward (x2,x4,x8,x16,x32,x64) * Backward Play with I-frame Only,
		Slow Forward/Backward (x1/2,x1/4,x1/8)
	Simultaneous playback	Step Forward/Backward * Backward Play with I-frame Only
Network(IPv4)		16CH(Local Monitor, CMS)
	Transmission speed	Record(Main) Stream) 4MP : 15fps/CH, 1080p/720p/WD1/4CIF/CIF : 30fps/CH(N), 25fps/CH(P)
	Transmission Bandwidth	Fast Forward/Backward (x2,x4,x8,x16,x32,x64) * Backward Play with I-frame Only,
	Bandwidth control	Slow Forward/Backward (x1/2,x1/4,x1/8)
	Stream	Step Forward/Backward * Backward Play with I-frame Only
	Remote users Maximum	16CH(Local Monitor, CMS)
	Protocol support	Record Stream and Network Stream Selectable (at monitoring Viewer)
		Search(3)/Live Unicast(10)/Live Multicast(20)
	Web Browser	TCP/IP,DHCP,PPPoE,SMTP,NTP,HTTP,DDNS,RTP,RTSP,SNMP,(SUNAPI 2017.07)
	Viewer Software	Windows OS : Internet Explorer 8, 9, 10, Firefox 3.8 or higher, Chrome 12 or higher
Smart phone		Mac OS : Safari 5 or higher, Firefox 3.8 or higher
	Platform	SSM, Webviewer, SmartViewer, iPOLiS mobile viewer, WiseNet Mobile (~7. 2017)
	Protocol support	Android, iOS
	Control	RTP, RTSP, HTTP,CGI(SUNAPI 2017.07)
Storage	Internal	Live(8ch) : Multi-Profile Support
	External (e-SATA Interface)	Playback(1ch)
	File Format (Back-up)	Remote users Maximum
Security	Search (3), Live Unicast (10), Multicast (20)	Search (3), Live Unicast (10), Multicast (20)
	Internal	Up to 8 SATA HDDs (0~8TB HDD)
Easy Configuration	External (e-SATA Interface)	e-SATA, USB(for Backup)
	File Format (Back-up)	BU(DVR Player), SEC(Include Player), AVI
Interface	Password Protection	1 Admin, 10 Group, 10 User per 1 Group
	Data Authentication	Watermark
Monitors	Easy Configuration	P2P (TUTK) (~7. 2017)
	VGA	1 VGA (1920x1080, 1280x1024, 1280x720)
	HDMI	1 HDMI (4K(3840 x 2160), 2K(2560 x 1440), 1920x1080, 1280x1024, 1280x720)
	Composite(Spot)	BNC(1CH) * Included OSD On Screen, Multi mode Support
Audio	Loop Outputs	-
	Inputs/Output	16CH line in (Built in 4CH, Option : Audio Extension Cable)/ 1CH line out
	Compression	G.711
Alarm	Sampling rate	8KHz
	Inputs/Outputs	Terminal 16 Inputs (NO/NC) / Terminal 4 relay Outputs (NO/NC), Rating : 30V DC/2A, 250V AC/0.25A
Connections	Remote notification	Notification via e-mail
	Ethernet	1 RJ45 10/100/1000 Base-T
	Serial interface	RS-485(Full Duplex) for PTZ, Samsung System Keyboard
	USB	1 ports(USB 3.0, Rear), 1 ports(USB 2.0, Front)
	e-SATA	2 External SATA ports
	Application Support	Mouse, Remote Controller,SPC-2000/7000 (RS-485 protocol)TBD
	Protocol support(RS-485)	Samsung-E/Samsung-T/Pelco-D/Pelco-p/Panasonic/ Phillips/ AD/ DIAMOND/ ERNA/ KALATEL/ VCL TP/VICON/ ELMO/GE
	Protocol support(Coaxial)	NTSC/PAL : Pelco-C (Coaxitron) AHD : ACP(AHD Coax Protocol)
General		
Electrical	Input Voltage/Current	100 ~ 240 VAC ±10%; 50/60 Hz
	Power consumption	smpps 250w
Environmental	Operating Temperature/Humidity	+0°C to +40°C (+32°F to +104°F) / 20% to 85% RH
Mechanical	Dimension (W x H x D)	W440 x H88 x D384.8(17.32" x 3.46" x 15.14")
	Weight (with hard disks)	5.885kg
Language		English, French, German, Spanish, Italian, Russian, Polish, Czech, Turkish, Netherlands
	GUI	Portuguese, Swedish, Danish, Rumania, Serbia, Croatia, Hungary, Greek, Finnish, Norwegian, Korean, Japanese, Chinese(Traditional), Thai, Taiwanese(25 Language)
	Web Browser	English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese(Simplified), Japanese, Thai

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1.1 Test Voltage & Frequency

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

Voltage ☐ 230 Vac ☒ 120 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
DVR	HRD-1642N	-	Hanwha Techwin (Tianjin) Co.,Ltd	E.U.T
Mouse 1	MOEIUOA	PMX-MMOEIUA	PRIMAX ELECTRONICS LTD.	-
Remote Controller	EP10-000329A	-	Samsung Techwin (Sta)	-
HDD	WD10PURX	WCC4J7TS2NSC	WD Purple	1TB
Switching Power Supply	FSP250-50GUB	-	FSP	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
MONITOR 1	W2261VT	005NDCRDV451	LG Electronics NanJing Display Co., Ltd	-
MONITOR 2	S24E370DL	ONTWHTPH200179Y	Samsung Electronics Co., Ltd	-
MONITOR 2 Adaptor	A3514_FPN	CN07BN4400832ASK28GCTR235 R.D	POWERNET Technologies Crop.	-
MONITOR 3	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Notebook	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adaptor	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
CAMERA x 16	SDC-8440BC	-	Hanwha Techwin (Tianjin) Co.,Ltd	-
CAMERA AC / DC Adapter 1	EO-1210	-	EO Electronics	-
CAMERA AC / DC Adapter 2	SW-15- 14401000-EK	-	SHENZHEN TOP- ASIA ELECTRONICS CO.,LTD	-
Speaker	BR-100A	-	Britz International Co., Ltd.	-
Microphone 1	CMK-303	-	CAMAC	-
Microphone 2	CMK-303	-	CAMAC	-
Mouse 2	SMB-400	0DJM010118	SEJIN ELECTRON INC.	-
External hard disk drives	MDY-US2528	-	Q-DRIVER	-
Alarm 1	-	-	-	-
Alarm 2	-	-	-	-

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
DVR (E.U.T)	RJ 45	Notebook	RJ 45	3.0	U
	D-SUB	MONITOR 1	D-SUB	1.5	S
	HDMI	MONITOR 2	HDMI	1.5	S
	BNC	MONITOR 3	BNC	3.0	S
	BNC x 16	CAMERA x 16	BNC x 16	10	S
	Audio out	Speaker	Audio in	1.4	U
	Audio in	Microphone 1	Audio out	1.2	U
	Audio in	Microphone 2	Audio out	1.7	U
	USB	Mouse 1	USB	1.2	U
	RS 232	Mouse 2	RS 232	1.4	U
	e sata	External hard disk drives	e sata	0.15	U
	2 Pin	Alarm 1	2 Pin	3.0	U
	2 Pin	Alarm 2	2 Pin	3.0	U

* Unshielded = U, Shielded = S

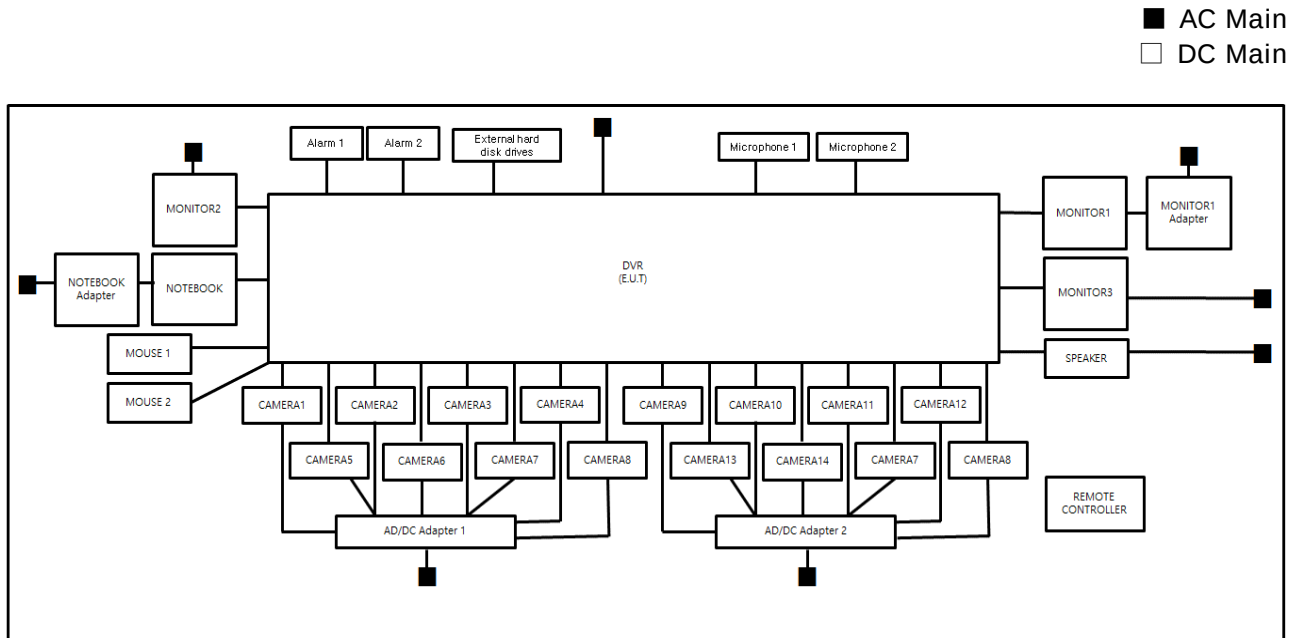
1.7 EUT Operating Mode(s)

Test mode	operating
AC 230 V	E.U.T Monitoring, Ping test, 1 kHz

E.U.T Test operating S/W		
Name	Version	Manufacture Company
SmartViewer	-	Hanwha Techwin Co., Ltd.

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1.8 Configuration



1.9 Calibration Details of Equipment Used for Measurement

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

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-4308, C-4798, T-2311, G-914
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2012

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



-
- | | | |
|--|---|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☒ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☒ ANSI C63.4-2014 | ☒ Class A | ☐ Class B |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
| ☐ MEDICAL – Directive 93/42/EEC | | |
| ☐ EN 60601-1-2 :2007 | | |
| ☐ 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

Feb, 20, 2017

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☒	Shield Room #3	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions

Temperature: 20,9 °C

Relative Humidity: 40,4 %

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb, 20, 2017

Test Location

☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESR3	R & S	101781	05, 03, 2017
☒	Trilog-Broadband ANT	VULB 9163	Schwarzbeck	715	04, 14, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: 2,1 °C
Relative Humidity: 42,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb, 20, 2017

Test Location

Semi Anechoic Chamber #1

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Log-Periodic Antenna	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2018
☒	EMI TEST Receiver	ESU26	R & S	100551	04, 18, 2017
☒	Preamplifier	SCU 18	R & S	102232	06, 29, 2017
☒	Semi Anechoic Chamber #1	-	KES	-	-
☒	Tilt Antenna Mast	TAM 4.0-E	matur	18100116	-
☒	Turn Table	DT 2000-1,5T	INN-CO	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: 23,1 °C

Relative Humidity: 34,0 %

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



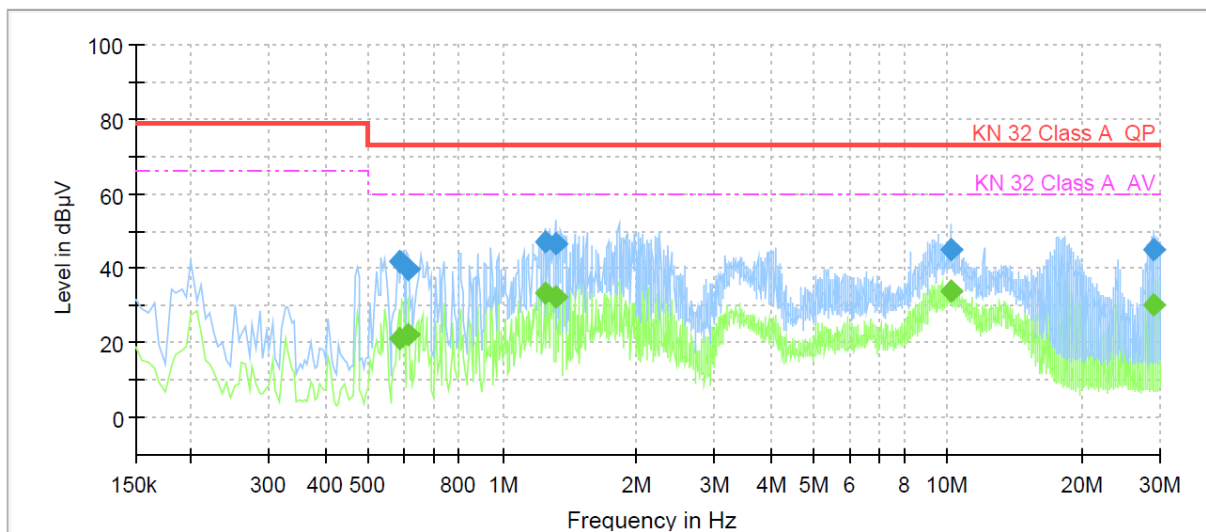
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: HRD-1642N
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.585000	---	21.36	60.00	38.64	1000.0	9.000	L1	20.5
0.585000	41.68	---	73.00	31.32	1000.0	9.000	L1	20.5
0.615000	---	22.36	60.00	37.64	1000.0	9.000	L1	20.4
0.615000	39.97	---	73.00	33.03	1000.0	9.000	L1	20.4
1.250000	---	33.58	60.00	26.42	1000.0	9.000	L1	20.0
1.250000	47.25	---	73.00	25.75	1000.0	9.000	L1	20.0
1.315000	---	32.08	60.00	27.92	1000.0	9.000	L1	20.0
1.315000	46.84	---	73.00	26.16	1000.0	9.000	L1	20.0
10.160000	---	33.67	60.00	26.33	1000.0	9.000	L1	19.9
10.160000	44.87	---	73.00	28.13	1000.0	9.000	L1	19.9
29.050000	---	30.39	60.00	29.61	1000.0	9.000	L1	20.3
29.050000	45.22	---	73.00	27.78	1000.0	9.000	L1	20.3

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

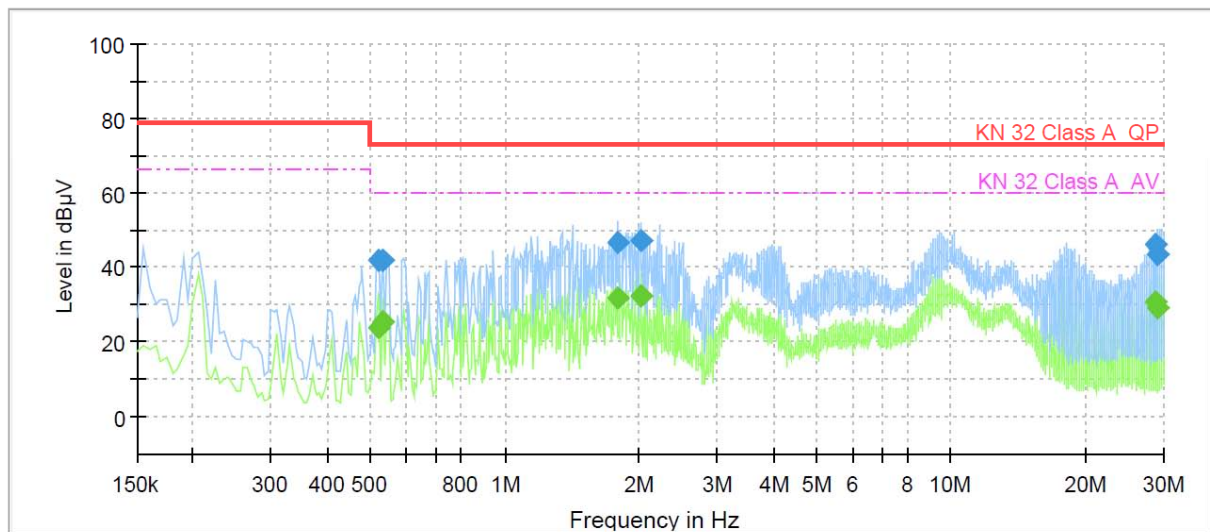
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: HRD-1642N
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.520000	---	23.66	60.00	36.34	1000.0	9.000	N	20.5
0.520000	41.82	---	73.00	31.18	1000.0	9.000	N	20.5
0.530000	---	25.59	60.00	34.41	1000.0	9.000	N	20.5
0.530000	42.09	---	73.00	30.91	1000.0	9.000	N	20.5
1.790000	---	31.94	60.00	28.06	1000.0	9.000	N	19.9
1.790000	46.64	---	73.00	26.36	1000.0	9.000	N	19.9
2.025000	---	32.38	60.00	27.62	1000.0	9.000	N	19.8
2.025000	47.09	---	73.00	25.91	1000.0	9.000	N	19.8
28.855000	---	30.64	60.00	29.36	1000.0	9.000	N	20.3
28.855000	46.15	---	73.00	26.85	1000.0	9.000	N	20.3
29.040000	---	28.97	60.00	31.03	1000.0	9.000	N	20.3
29.040000	43.55	---	73.00	29.45	1000.0	9.000	N	20.3

◆ 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))

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Radiated Electric Field Emissions(Below 1 GHz)

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
152.37	10.25	V	1.52	8.28	3.05	21.58	43.50	21.92
253.25	12.52	H	2.33	12.61	4.18	29.31	46.40	17.09
320.26	11.36	H	1.58	13.84	4.73	29.93	46.40	16.47
371.59	13.22	V	3.01	14.95	5.08	33.25	46.40	13.15
373.25	11.21	H	2.25	14.99	5.10	31.30	46.40	15.10
519.34	14.89	H	1.69	17.68	6.28	38.85	46.40	7.55
593.53	15.24	V	2.95	19.14	6.78	41.16	46.40	5.24
668.21	11.25	V	1.39	19.56	7.33	38.14	46.40	8.26

* H : Horizontal, V : Vertical

◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss



Radiated Electric Field Emissions(Above 1 GHz)

- PK

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	(H/V)	[m]	ANT. [dB /m]	Cable [dB]	AMP [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
2 584.000	52.390	V	2.210	28.050	5.180	44.040	41.580	80.000	38.420
2 654.000	53.020	H	2.360	28.340	5.220	44.070	42.510	80.000	37.490
2 964.000	52.220	H	3.010	29.640	5.340	44.190	43.010	80.000	36.990
2 966.000	51.740	V	1.220	29.650	5.340	44.190	42.540	80.000	37.460
4 601.000	46.460	H	2.010	32.500	6.820	44.270	41.510	80.000	38.490
4 779.000	49.750	V	1.280	32.820	6.980	44.300	45.250	80.000	34.750

- AV

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	(H/V)	[m]	ANT. [dB /m]	Cable [dB]	AMP [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
2 583.000	41.080	V	2.610	28.040	5.170	44.040	30.250	60.000	29.750
2 651.000	40.730	H	2.330	28.330	5.220	44.070	30.210	60.000	29.790
2 966.000	40.440	H	2.950	29.650	5.340	44.190	31.240	60.000	28.760
2 968.000	41.860	V	1.030	29.660	5.350	44.190	32.680	60.000	27.320
4 599.000	35.210	H	2.140	32.490	6.820	44.270	30.250	60.000	29.750
4 778.000	37.020	V	2.030	32.820	6.980	44.300	32.520	60.000	27.480

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB]) – Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

Test Setup Photos and Configuration

Conducted Voltage Emissions



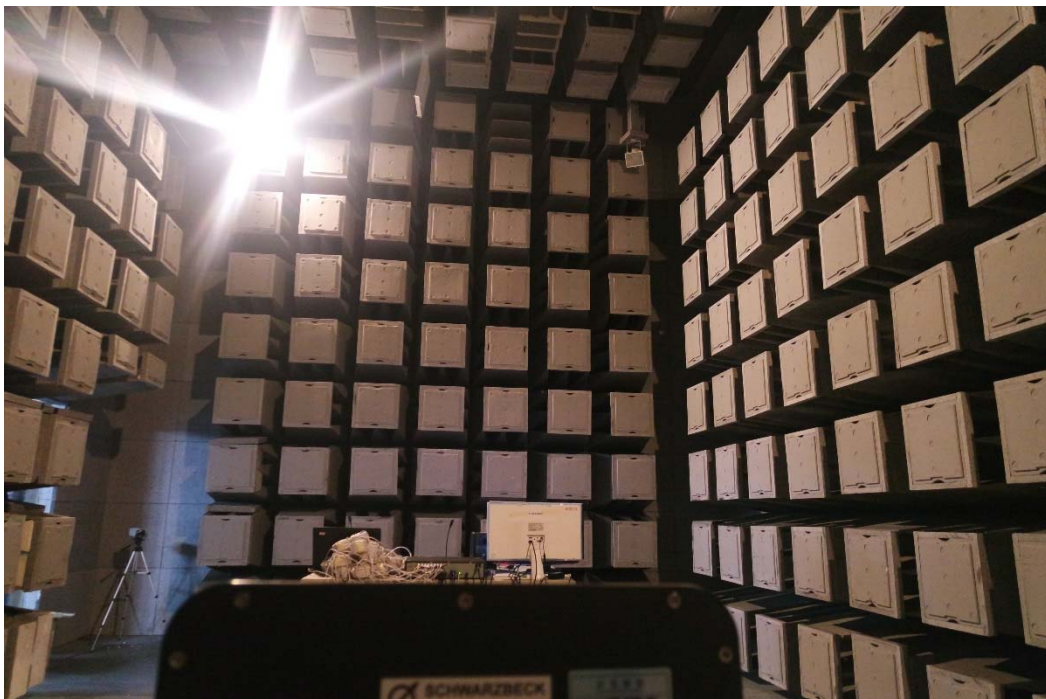
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

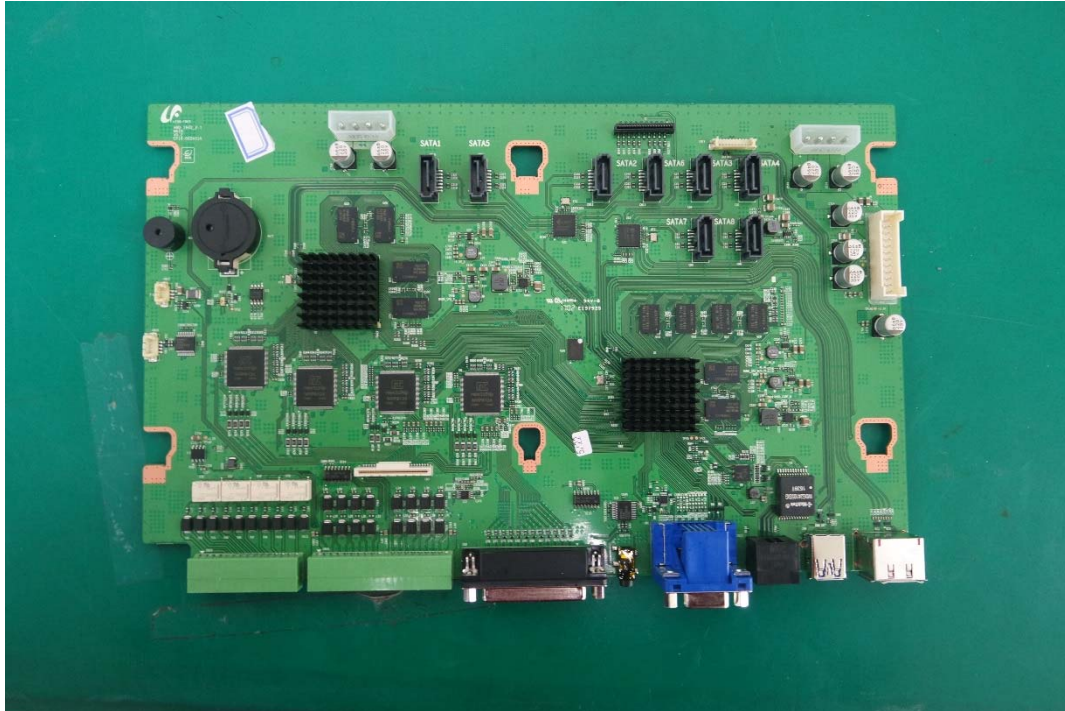
(Internal View)



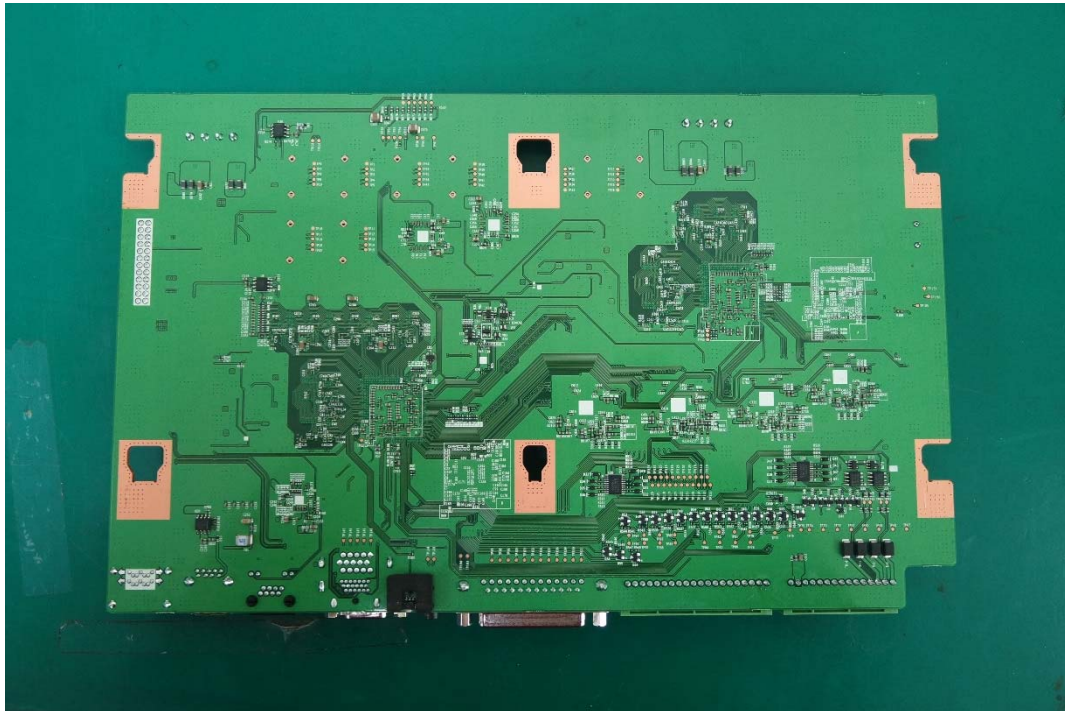
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EUT Internal View – Main Board

(Top)



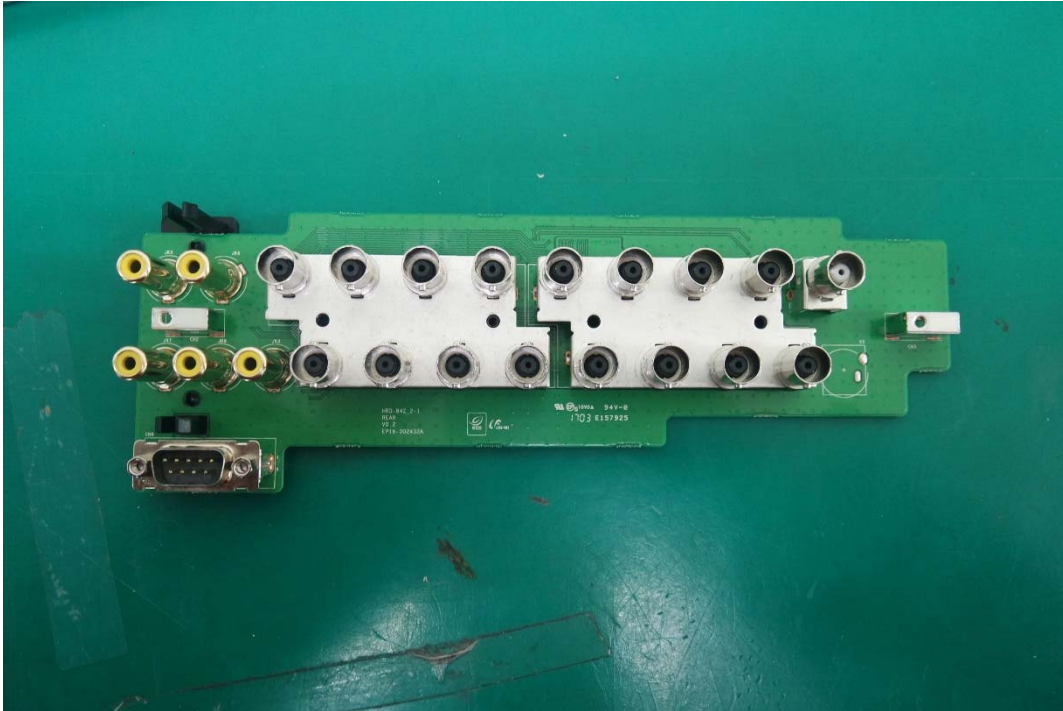
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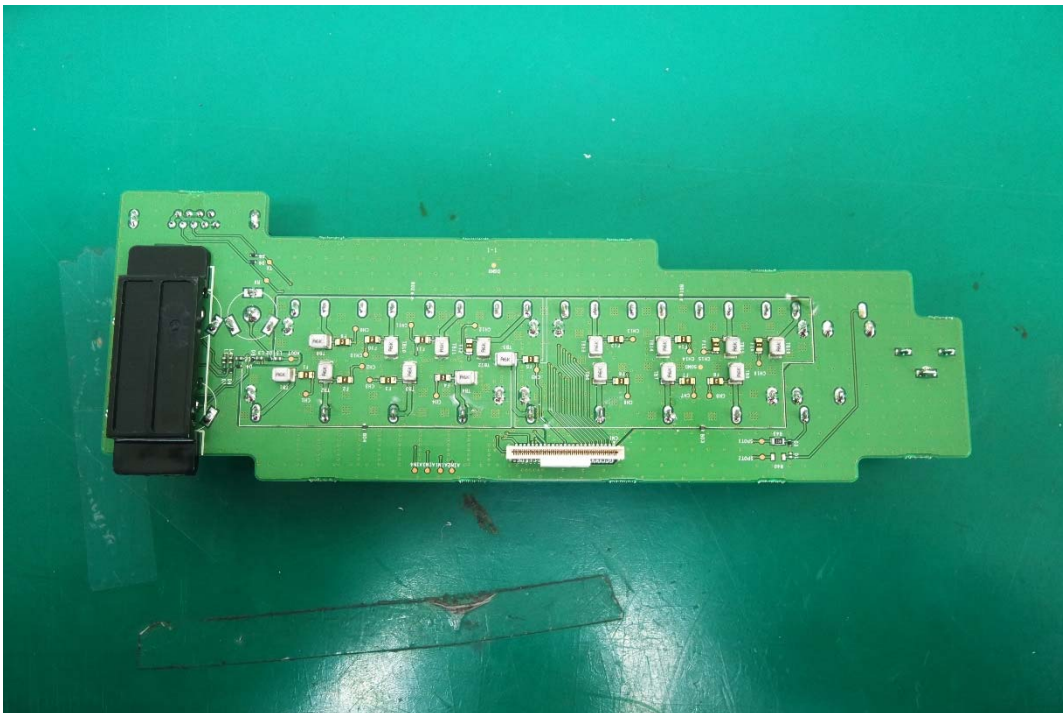
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EUT Internal View – Sub Board 1

(Top)



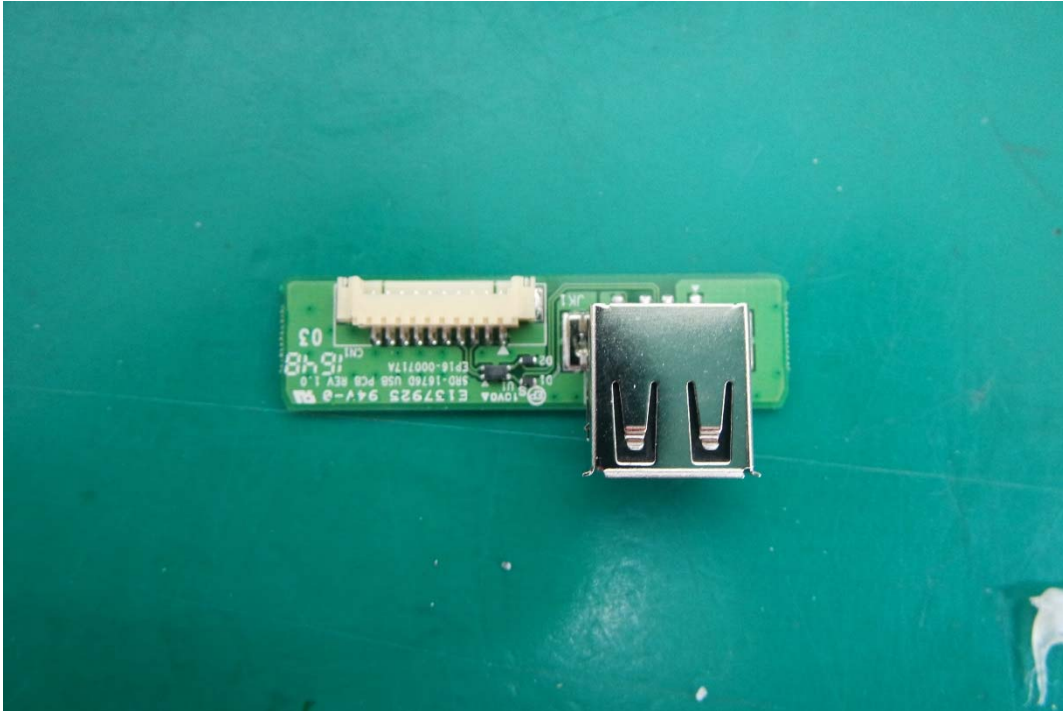
(Bottom)



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EUT Internal View – Sub Board 2

(Top)



(Bottom)



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EUT Internal View – Sub Board 3

(Top)



(Bottom)

N/A

Label Photographs



This device complies with part 15 of the FCC Rules. Operation in subject to the following two conditions: (1) This device Sep not cause harmful interference, and (2) this device must accept any interference received, including interference that Sep cause undesired operation.