



EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0282-R3

Date of Issue : May. 15, 2019

Product name : NETWORK VIDEO RECORDER

Model/Type No. : PRN-4011

Variant Model : PRN-4011/DM, PRN-4011P/VDM, PRN-4011P2T

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 : Jun. 09, 2016

Test date : Jun. 24, 2016 – Jun. 28, 2016

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Il, Lee
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.



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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 29, 2016	KES-E1-16T0282	Issued
Jun. 19, 2017	KES-E1-16T0282-R1	Reissue due to manufacturer change and additional derivative model
Apr. 25, 2018	KES-E1-16T0282-R2	Re-issue due to manufacturer change
May. 15, 2019	KES-E1-16T0282-R3	Add a derived model

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1.0 General Product Description

Main Specifications of E.U.T are:

Model		DVR(6/28)
Display		
Network Camera	Inputs	Max. 64CH
	Resolution	CIF ~ 12MP
	Protocols	Samsung, ONVIF
Live	Local Display	1× HDMI / 1× VGA Dual Monitor
	Multi-Channel Display	[Local Monitor] 1 / 2V / 3V / 4 / 9 / 16 / 25 / 36 / 64 /Sequence [Web] 1 / 4 / 9 / 16 / 25 / 36 / 64 /Sequence
	Performance	[Local Monitor] - 12M (30fps). - 8.3M(120fps) - 720P(960fps) - D1(1920fps) [Web] - 12M (40fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 400Mbps(H.265 4K 64camera real-time recording) Max. 400Mbps(RAID-5/6 Mode) 300Mbps(iSCSI)
	Resolution	CIF ~ 12MP
	Type	Manual, Schedule(Continuous/Event), Event (Pre/Post)
	Event Trigger	- Alarm Input, - Video Loss, - Camera Event (Sensor, MD, Video Analytics) - Defocus Camera 별도 Event 처리
	Event Action	e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out

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Search & Play	Playback Bandwidth	32Mbps (16CH simultaneously)
	Performance	Max. 4 Users (Local 1, Remote 3)
	Mode	Date & Time(Calendar) Event Log list Text Search ARB Search Failover Search(N+1) Smart Search (본사/SSM 연동 포함) - Virtual Line w/ direction - Enter/Exit
	Simultaneous playback	Max. 16CH(Local Monitor, CMS)
	Resolution	CIF ~ 12MP
	Fisheye Dewarping	via Web / CMS
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
Storage	Internal HDD	12 (Hot Swap@RAID) Max 96TB(Non-RAID), Max 80TB(RAID-5)
	External	iSCSI storage(Max. 192TB, NVR 본체 포함) ① Promise VessRaid R2600
	RAID	6-HDD x 2 Array - 빌드: 없음, 리빌드: 320Mbps 저장 보장
Backup	File backup(Via Web)	BU/Exe(GUI), JPG/AVI(Network) NVR/SEC 포맷 순서 변경
	Function	Multi channel(Upto 16CH) Play, Date-Time/Title display
Sensor	I/O	4/4 (NO/NC Selectable)
Audio	Input	64 CH (network)
	Compression	G.711, G.726, AAC(16/48KHz)
	Audio Communication	2-Way
Network		
Interface		RJ-45, Gigabit Ethernet x4
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)
DDNS		Samsung iPolis DDNS
Transmission Bandwidth		300Mbps
Max Remote Users		Search (3), Live Unicast (10), Multicast (20)
IP Version		IPv4/v6

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Model		DVR(6/28)
Security		User access Log, IP Filtering, 802.1x, Encryption, 2Men-Rule
Language(24)		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
OS		Supported OS : Window XP(service pack 2 or above), Vista, 7, 8, 10, Mac OS X(10.7 or above)
Web Browser		Non-plugin Webviewer Supported Browser: Google Chrome 47, MS Edge 20 Plug-in Webviewer Supported Browser: MS Explore 11, Mozilla Firefox 43, Apple Safari 9 * Mac OS X only(신기능 지원 불가)
Viewer Software	Type	SSM, Webviewer, Smart Viewer, iPolis Mobile
	CMS Support	Support SDK/CGI(SUNAPI)
Smart phone	Support Model	I-Phone, Android
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)
	Control	Live(16ch) : Multi-Profile Support Playback(1ch)
	Max. Remote Users	Search (3), Live Unicast (10), Multicast (20)
Functions		
Camera Setup	Register	
	Setup Items	IP address, Add profile edit, Bitrate, Compression, GOP, Quality, Camera MD setup Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DIS), Fisheye Dewarping(by Web), Hallway View Setup, Camera Webpage
	PoE Power Control	
PTZ	Control	Via GUI, Webviewer, SPC-2000/6001
	Preset	255 Presets
Redundancy	Failover	N+1
	ARB	Yes
System Control		Mouse, Web, SPC-2000/6001 (Controller)

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Indication/Interface		
Front	Indicator	LED(Status indicator) : - SRN-4011 (18EA) HDD Action(12), RAID Status(1), Alarm(1), Power(1), Record(1), Backup(1), Network(1)
	Switch	Power Switch 1EA Key-Lock 1EA
Connectors	VGA	Sub : 1 EA (Support Live screen upto 16 div. mode)
	HDMI	Main : 1 EA (Both Support Live / PB / Setup) - Support upto 4K (3840 x 2160, Single Monitor Mode)
	Audio	Out(1EA, RCA, Line)
	Ethernet	RJ-45 4ea (LAN/WAN, 1Gbps) 1000M SFP 2ea (RJ45 2ea 겸용)
	Alarm	(1) In(4EA, Terminal Block) (2) Alarm Reset(1EA) (3) Out(4EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2~4(NO/COM)
	USB	2EA(Front 2)
	Storage	iSCSI
	Serial	RS-232C
	Reset	Switch(1EA)
	Power Cord	2EA AC Inlet
System		
Log	Log List	Max. 20000 (System Log, Event Log each)
Environmental		
Operating Temperature / Humidity		+0°C to +40°C(+32°F to +104°F)
Humidity		20% ~ 85% RH
Electrical		
Power		100 to 240 VAC ±10%; 50/60 Hz, 3~1.5A(Dual SMPS)
Power Consumption		225W(6T HDD 12EA 장착 기준)
PoE Budget		
Mechanical		
Color / Material		검정 / 메탈
Dimension (WxHxD)		436.0 x 132.0 x 450.0mm (3U)
Weight		약 10.7Kg(HDD 미포함)
Standards		
Approvals	Safety	UL, KC
	EMC	CE, FCC, CCC, Gost-R, KC

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1.1 Test Voltage & Frequency

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

Voltage ☐ 220 Vac ☒ 230 Vac ☐ 240 Vac ☐ PoE ☐ 12 Vdc

Frequency ☒ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Variant Model	Differences
PRN-4011/DM, PRN-4011P/VDM, PRN-4011P2T	Add derivative model for vendor management

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK VIDEO RECORDER	PRN-4011P	-	Hanwha Techwin (Tianjin) Co., Ltd.	E.U.T
3.5" SATA-III Hard Disk Drive	771945	-	WESTERN DIGITAL TECHNOLOGIES, INC.	-
SWITCHING POWER SUPPLY	DPS-500AB-9 F	IBLD1617000086	DELTA ELECTRONICS, INC.	-
SFP Module	SFP-LX	-	Shenzhen Gigalight Technology Co., LTD	-
MainBoard	-	-	-	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
monitor1	S24E370DL	ONTWHTPH200179Y	Samsung Eelectronics Co., Ltd.	-
monitor2	P2314Ht	CN-02XPJH-74445-57H-CW0S	WISTRON CORPORATION (Wistron Infocomm (Zhongshan) Corporation)	-
notebook	X56K	HN11N5151FJ0045W	HANSUNG Computer Co., Ltd.	-
notebook adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
speaker	BR10000A CUVE	SN128458795701	BEIJING EDIFIER HI-TECH GROUP.	-
Giga Ethernet Media Converter	SFC2000-SFP	-	SOL TECH	-
NETWORK CAMERA	SND-L6013RN	-	SAMSUNG TECHWIN CO., LTD.	-
PoE adapter	PD3001GC/AC	RD9356082016964200	Power Dsine	-
mouse	M-U0026	1505HS0687B8	Logitech	-
Alarm Jig	-	-	-	-

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK VIDEO RECORDER (E.U.T)	HDMI	monitor1	HDMI	1.4	S
	D-SUB	monitor2	D-SUB	1.7	S
	RJ-45	notebook	RJ-45	3.0	U
	USB	mouse	USB	1.8	U
	optical	Giga Ethernet Media Converter	optical	3.0	U
	Auodio Out	speaker	Audio Out	1.9	U
	Alarm	Alarm Jig	Alarm	3.0	U
	RJ-45	PoE adapter	RJ-45	1.9	U
	RJ-45	Giga Ethernet Media Converter	RJ-45	1.2	U

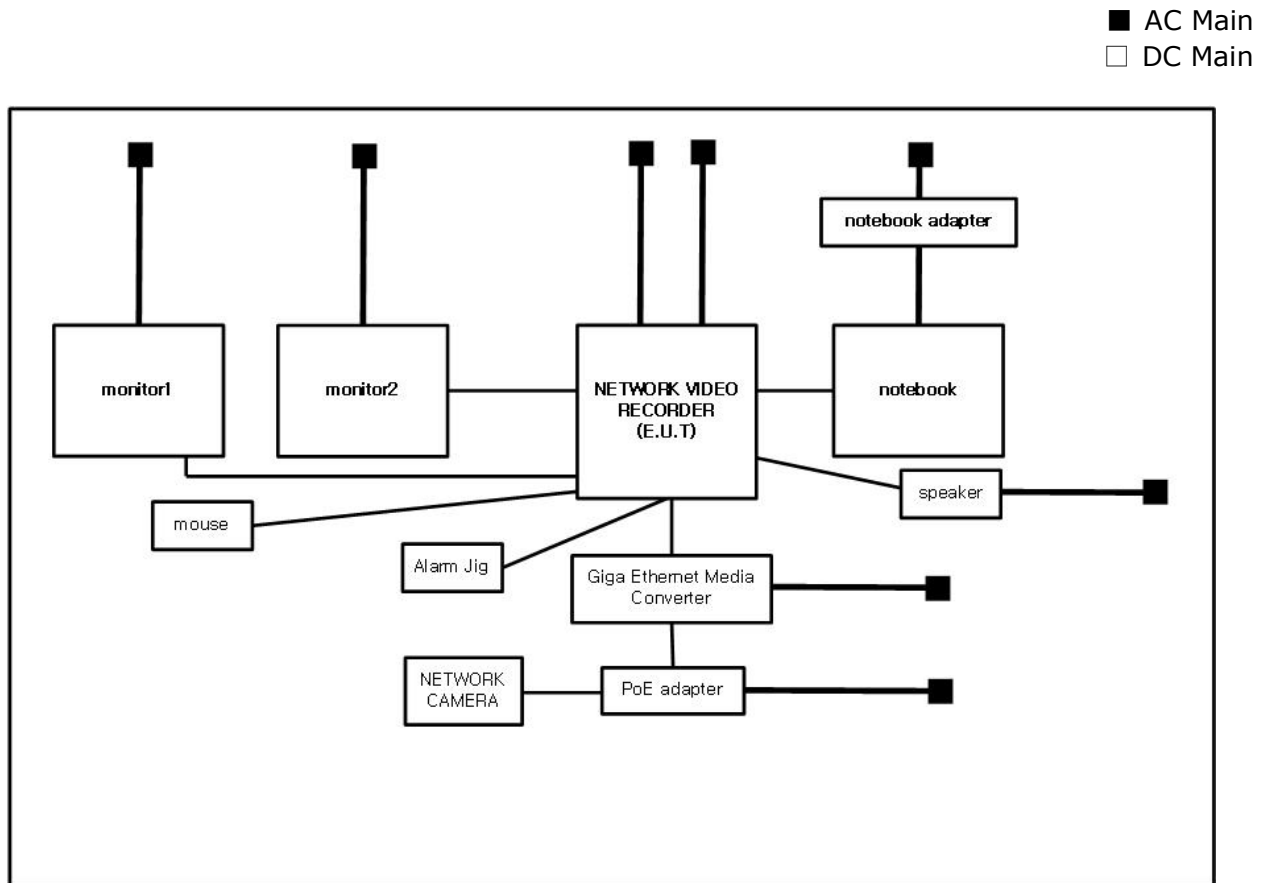
* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

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

Test mode	Normal operating
OP	MONITORING PING TEST

1.8 Configuration



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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. 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-4308, C-4798, T-2311, G-914
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 17 07 01633 001

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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/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☐ EN 61326-1:2013



-
- | | | |
|---|----------------------------------|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ 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

Jun. 25, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101783	05, 03, 2017
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 02, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 25,4 °C

Relative Humidity: 52,1 %

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

RemarksSee Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jun. 25, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101783	05, 03, 2017
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 02, 2017
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☒	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 25,4 °C

Relative Humidity: 52,1 %

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 25, 2016

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9163-715	04, 14, 2018
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	1070/1080	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 29,5 °C

Relative Humidity: 43,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 27, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	Semi Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 24,9 °C

Relative Humidity: 42,1 %

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.5 Harmonic Current Emissions

Test Date

Jun. 28, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	AC Source	ACS 500 N	EM TEST	V1024106760	08, 13, 2016
☒	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 13, 2016

Test Conditions

Temperature: 24,5 °C

Relative Humidity: 47,7 %

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
- ☐ Class B
- ☐ Class C(Below 25 W)
- ☐ Class C(Above 25 W)
- ☐ Class D

Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.6 Voltage Fluctuations and Flicker

Test Date

Jun. 28, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	AC Source	ACS 500 N	EM test	V1024106760	08, 13, 2016
☒	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 13, 2016

Test Conditions

Temperature: 24,5 °C

Relative Humidity: 47,7 %

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 +A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change,
and no such flickering of indicators oeuvres at $U = 130 \text{ dB}\mu\text{V}$.

For component of CCTV systems, where the status is monitored by observing the TV picture,
then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, providing:

- (a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings etc.)
- (b) at $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used; and
- (c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.

3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Jun. 26, 2016

Test Location

EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 24,4 °C
Relative Humidity: 46,1 %
Atmospheric Pressure: 98,8 kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

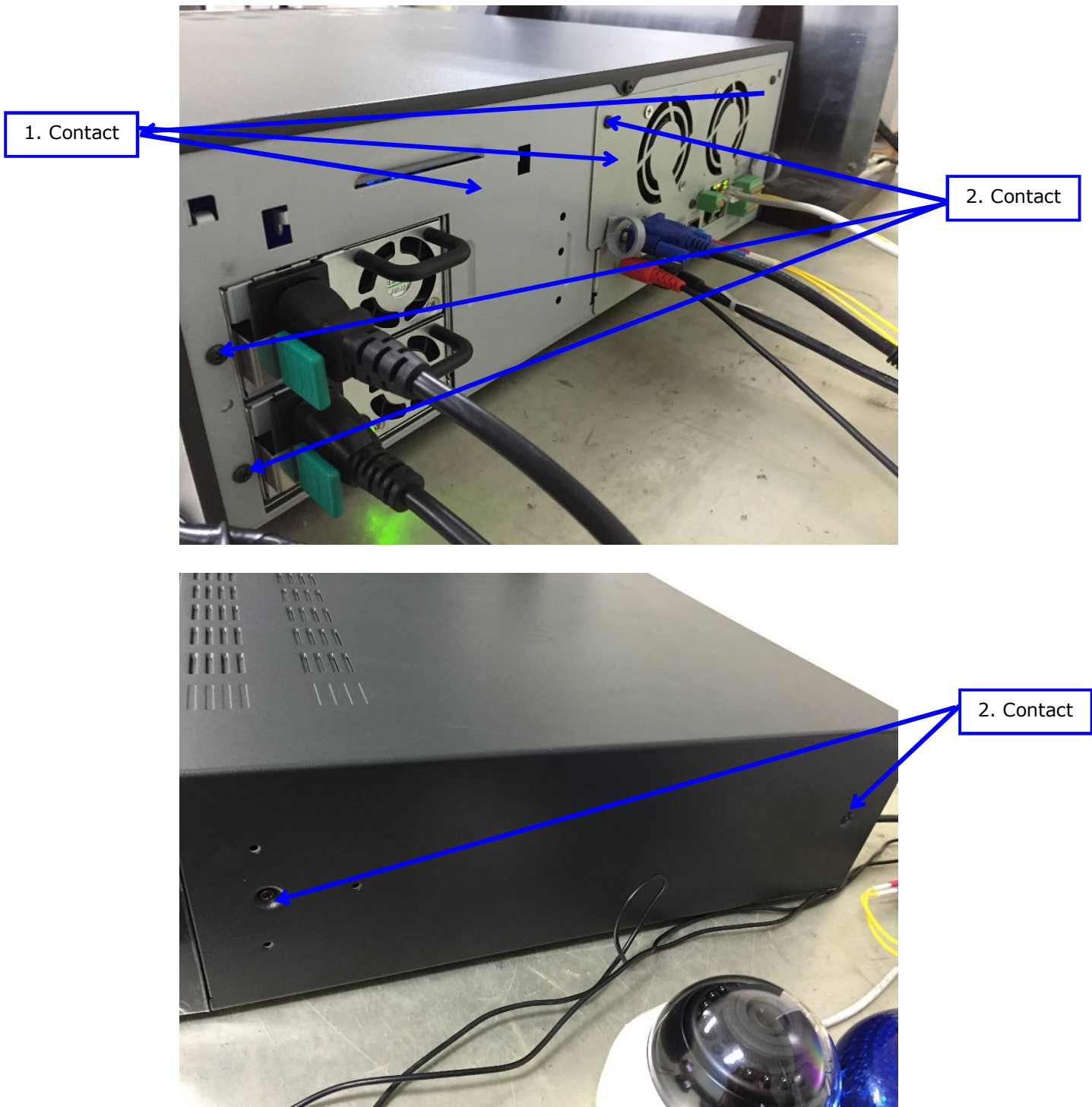
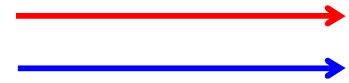
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

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Location of Discharge:

Air
Contact



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Test report No.:

KES-E1-16T0282-R3

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Test Data

Indirect Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	Enclosure	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

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

Remarks

PASS Required Performance Criteria.

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3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Jun. 24, 2016

Test Location

EMS-RS: ☐ Semi Anchoic Chamber #1 ☒ Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SIGNAL GENERATOR	SMB 100A	R&S	108252	08, 13, 2016
☒	BROADBAND AMPLIFIER	BBA100	R&S	101239	08, 13, 2016
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 13, 2016
☒	POWER METER	NRP2	R&S	103475	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102526	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102527	08, 13, 2016
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KyTelecom Co., Ltd.	KY150001	09, 25, 2016
☒	Semi Anchoic Chamber #2		SEMITEC	-	-

Test Conditions

Temperature: 23,6 °C
Relative Humidity: 52,1 %
Atmospheric Pressure: 99,7 kPa

Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

Test Data

Side Exposed	Observation	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Jun. 28, 2016

Test Location

EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Transient Test System	TRA3000F-S-D-V	EMC PARTNER AG	1524	03, 25, 2017
☒	MotorVariac	VAR-EXT1000	EMC PARTNER AG	1507	03, 25, 2017
☒	Capacitive Coupling Clamp	CN-EFT1000	EMC PARTNER AG	1528	03, 25, 2017

Test Conditions

Temperature: 24,7 °C
Relative Humidity: 45,8 %
Atmospheric Pressure: 98,9 kPa

Test Specifications

Pulse Amplitude & Polarity: (Power Lines)	☐ ± 1.0 kV ☐ ± 4.0 kV	☒ ± 2.0 kV
Pulse Amplitude & Polarity: (Signal Lines)	☐ ± 0.5 kV ☐ ± 2.0 kV	☒ ± 1.0 kV
Burst Period:	☒ 300 ms	☐ 2 s
Repetition Rate:	☐ 5 klz	☒ 100 klz
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	

Test Data

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

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

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

Test Date

Jun. 28, 2016

Test Location

EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	MotorVariac	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	CDN	CNV 508N1	EM TEST	P1551168979	04, 27, 2017

Test Conditions

Temperature: 24,5 °C
Relative Humidity: 47,7 %
Atmospheric Pressure: 99,1 kPa

Test Specifications

Power Lines

Source Impedance: 12 ohm for common mode and 2 ohm for differential mode

Surge Amplitude :

Common Mode
☒ (0,5 / 1,0 / 2,0) kV

Differential Mode
☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Signal Lines

Source Impedance: 42 ohm for common mode

Surge Amplitude: Common Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Test Data
☒ Line to Line – Differential Mode

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

☒ Line to Earth – Common Mode

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

Signal Lines
☒ Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45	Complied	Complied
Alarm	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results
☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Jun. 26, 2016

Test Location

EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	09, 25, 2016
☒	6Db Attenuator	ATT6	EM TEST	1208-34	08, 13, 2016
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 13, 2016
☐	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 13, 2016
☐	CDN	CDN-T4	EM TEST	0909-08	08, 13, 2016
☐	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 13, 2016
☐	CDN	CDN-AF2	EM TEST	0909-10	08, 13, 2016
☐	CDN	CDN-AF4	EM TEST	0909-11	08, 13, 2016
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017

Test Conditions

Temperature: 24,4 °C
Relative Humidity: 46,1 %
Atmospheric Pressure: 98,8 kPa

Test Specifications

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

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

Required Performance Criteria: ☒ Complied

Test Data

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
RJ-45	EM Injection Clamp	Complied
Alarm	EM Injection Clamp	Complied

Notes: CDN = Coupling Decoupling Network
 "blank" = Not performed

Observations:
 Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

Test Date

Jun. 15, 2016

Test Location

EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Transient Test System	TRA3000F-S-D-V	EMC PARTNER AG	1524	03, 25, 2017
☒	MotorVariac	VAR-EXT1000	EMC PARTNER AG	1507	03, 25, 2017

Test Conditions

Temperature: 24,7 °C
Relative Humidity: 45,8 %
Atmospheric Pressure: 98,9 kPa



Test Specifications & Observations/Remarks

Test Level	Duration [in period/ms (50 Hz)]	Results
☒ 20 % dip	☒ 250 /5000	<u>Complied</u>
☒ 30 % dip	☒ 25 /500	<u>Complied</u>
☒ 60 % dip	☒ 10 /200	<u>Complied</u>
☒ 100 % dip	☒ 250 /5000	<u>Complied</u>

- Voltage variations

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

Observations:

Complied – No degradation of function

Test Results

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

Remarks

PASS Required Performance Criteria.

APPENDIX A – TEST DATA

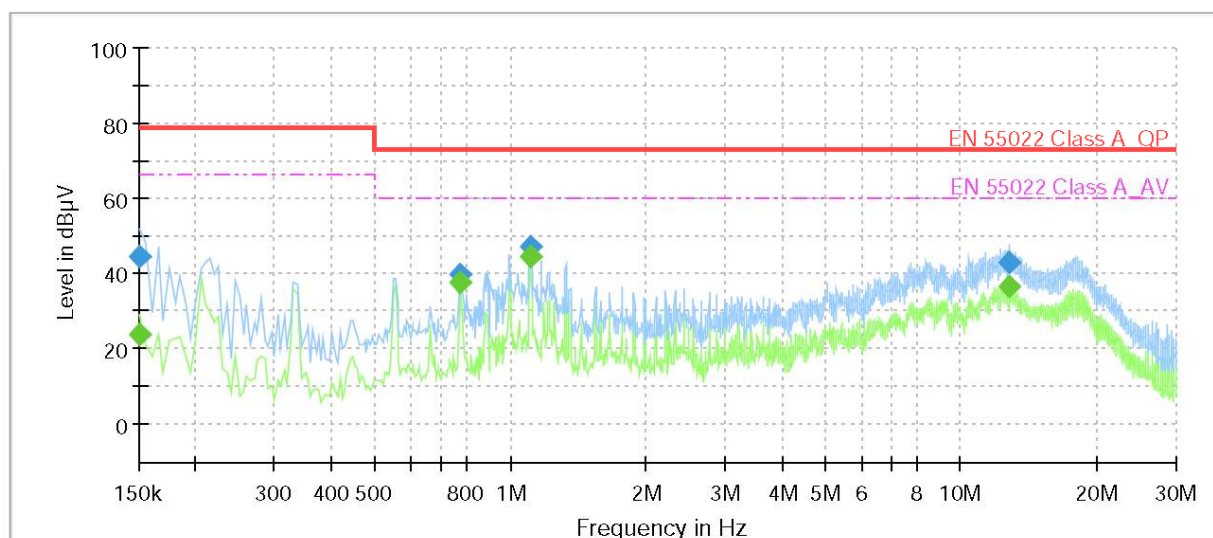
Conducted Emissions at Mains Power Ports

[HOT]

- P1

Common Information

Test Description:	Conducted Emission
Model No.:	PRN-4011P
Mode	P1
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	23.65	66.00	42.35	1000.0	9.000	L1	9.7
0.150000	44.61	---	79.00	34.39	1000.0	9.000	L1	9.7
0.775000	---	37.51	60.00	22.49	1000.0	9.000	L1	9.7
0.775000	39.65	---	73.00	33.35	1000.0	9.000	L1	9.7
1.105000	---	44.31	60.00	15.69	1000.0	9.000	L1	9.7
1.105000	47.08	---	73.00	25.92	1000.0	9.000	L1	9.7
12.810000	---	36.77	60.00	23.23	1000.0	9.000	L1	10.0
12.810000	42.88	---	73.00	30.12	1000.0	9.000	L1	10.0



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www.kes.co.kr

Test report No.:

KES-E1-16T0282-R3

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[NEUTRAL]

Common Information

Test Description:

Model No.:

Mode

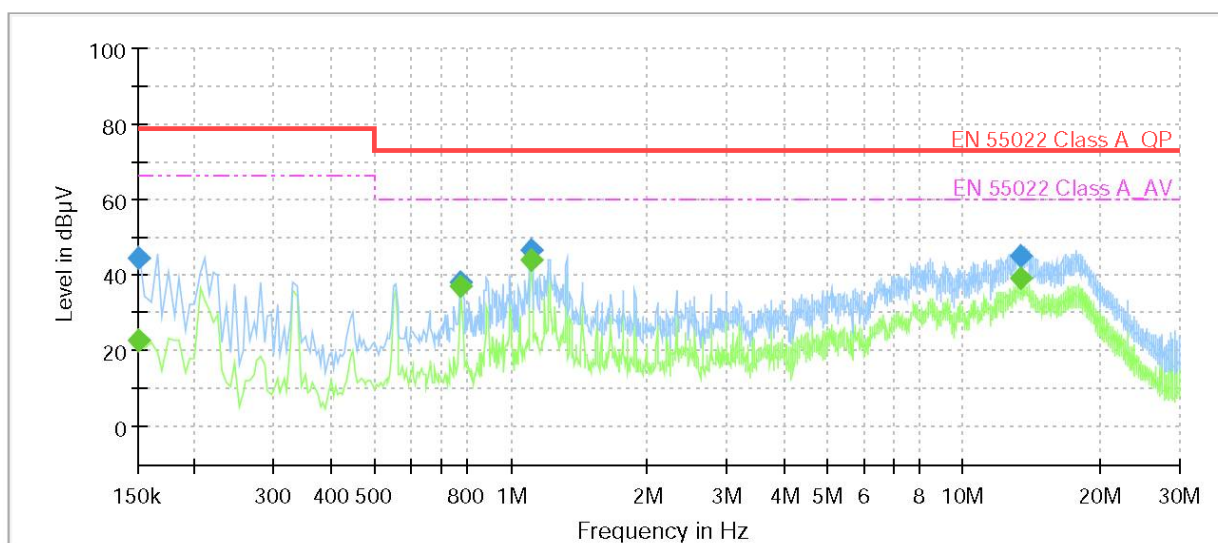
Operator Name:

Conducted Emission

PRN-4011P

P1

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	23.05	66.00	42.95	1000.0	9.000	N	9.6
0.150000	44.72	---	79.00	34.28	1000.0	9.000	N	9.6
0.775000	---	36.81	60.00	23.19	1000.0	9.000	N	9.7
0.775000	38.02	---	73.00	34.98	1000.0	9.000	N	9.7
1.105000	---	43.75	60.00	16.25	1000.0	9.000	N	9.7
1.105000	46.46	---	73.00	26.54	1000.0	9.000	N	9.7
13.360000	---	39.23	60.00	20.77	1000.0	9.000	N	10.1
13.360000	44.83	---	73.00	28.17	1000.0	9.000	N	10.1

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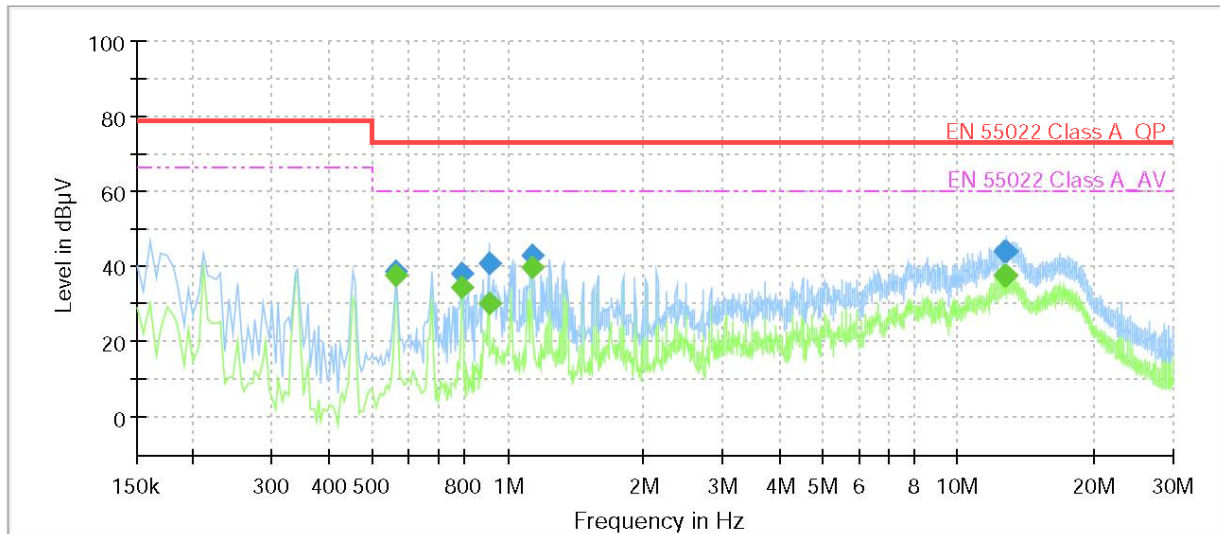
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Test report No.:
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- P2

Common Information

Test Description: Conducted Emission
Model No.: PRN-4011P
Mode: P2
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.565000	---	37.80	60.00	22.20	1000.0	9.000	L1	9.7
0.565000	38.53	---	73.00	34.47	1000.0	9.000	L1	9.7
0.790000	---	34.43	60.00	25.57	1000.0	9.000	L1	9.7
0.790000	38.33	---	73.00	34.67	1000.0	9.000	L1	9.7
0.905000	---	29.98	60.00	30.02	1000.0	9.000	L1	9.7
0.905000	41.02	---	73.00	31.98	1000.0	9.000	L1	9.7
1.130000	---	39.62	60.00	20.38	1000.0	9.000	L1	9.7
1.130000	42.98	---	73.00	30.02	1000.0	9.000	L1	9.7
12.685000	---	37.37	60.00	22.63	1000.0	9.000	L1	10.0
12.685000	44.18	---	73.00	28.82	1000.0	9.000	L1	10.0
12.745000	---	37.43	60.00	22.57	1000.0	9.000	L1	10.0
12.745000	43.72	---	73.00	29.28	1000.0	9.000	L1	10.0

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www.kes.co.kr

Test report No.:

KES-E1-16T0282-R3

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[NEUTRAL]

Common Information

Test Description:

Model No.:

Mode

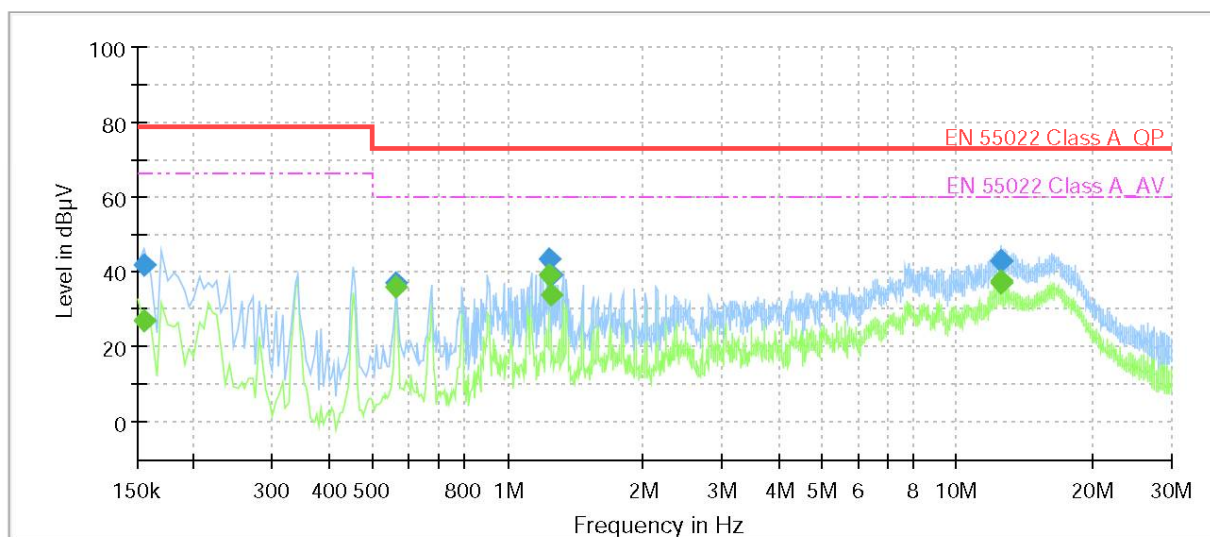
Operator Name:

Conducted Emission

PRN-4011P

P2

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	27.25	66.00	38.75	1000.0	9.000	N	9.6
0.155000	42.05	---	79.00	36.95	1000.0	9.000	N	9.6
0.565000	---	36.05	60.00	23.95	1000.0	9.000	N	9.7
0.565000	36.82	---	73.00	36.18	1000.0	9.000	N	9.7
1.240000	---	39.36	60.00	20.64	1000.0	9.000	N	9.7
1.240000	43.57	---	73.00	29.43	1000.0	9.000	N	9.7
1.245000	---	34.13	60.00	25.87	1000.0	9.000	N	9.7
1.245000	38.96	---	73.00	34.04	1000.0	9.000	N	9.7
12.500000	---	37.00	60.00	23.00	1000.0	9.000	N	10.0
12.500000	43.08	---	73.00	29.92	1000.0	9.000	N	10.0
12.505000	---	37.54	60.00	22.46	1000.0	9.000	N	10.0
12.505000	42.82	---	73.00	30.18	1000.0	9.000	N	10.0

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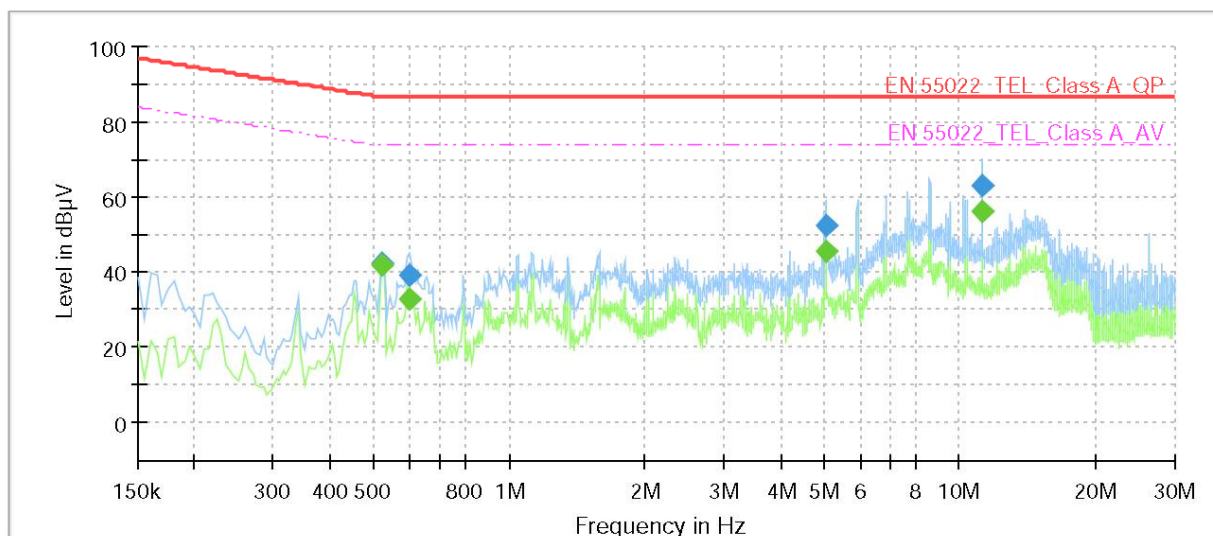


Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PRN-4011P
Mode: 10 Mbps
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.520000	---	41.87	74.00	32.13	1000.0	9.000	Single Line	10.0
0.520000	42.44	---	87.00	44.56	1000.0	9.000	Single Line	10.0
0.600000	---	32.62	74.00	41.38	1000.0	9.000	Single Line	9.9
0.600000	39.19	---	87.00	47.81	1000.0	9.000	Single Line	9.9
5.055000	---	45.70	74.00	28.30	1000.0	9.000	Single Line	9.9
5.055000	52.18	---	87.00	34.82	1000.0	9.000	Single Line	9.9
11.250000	---	56.23	74.00	17.77	1000.0	9.000	Single Line	10.1
11.250000	63.20	---	87.00	23.80	1000.0	9.000	Single Line	10.1



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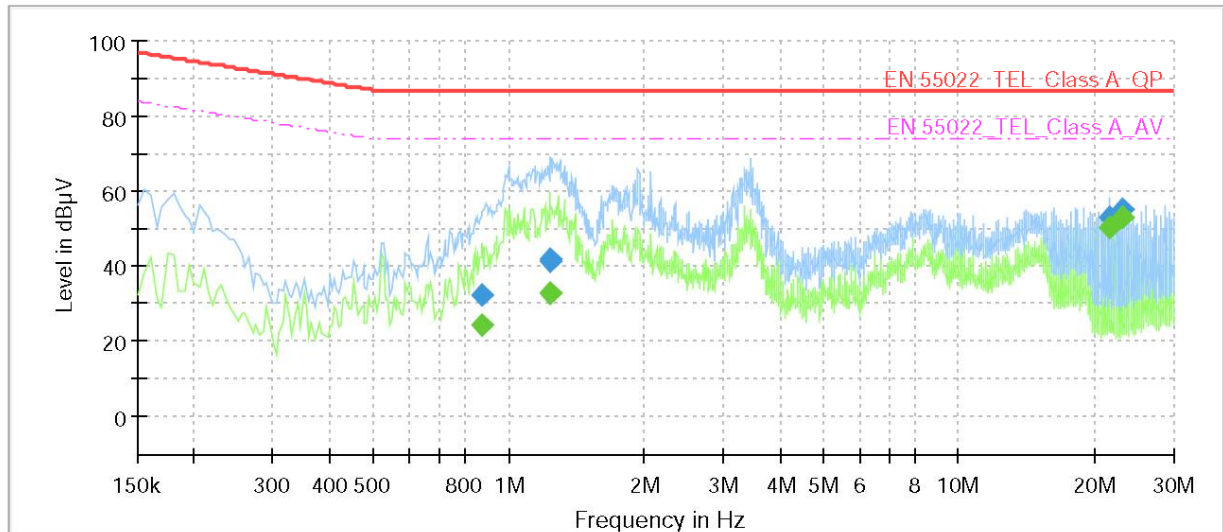
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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PRN-4011P
Mode: 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)
0.875000	---	24.53	74.00	49.47	1000.0	9.000	Single Line	9.4
0.875000	32.09	---	87.00	54.91	1000.0	9.000	Single Line	9.4
1.235000	---	33.05	74.00	40.95	1000.0	9.000	Single Line	9.3
1.235000	42.02	---	87.00	44.98	1000.0	9.000	Single Line	9.3
1.240000	---	33.09	74.00	40.91	1000.0	9.000	Single Line	9.3
1.240000	41.33	---	87.00	45.67	1000.0	9.000	Single Line	9.3
21.665000	---	50.11	74.00	23.89	1000.0	9.000	Single Line	9.5
21.665000	52.68	---	87.00	34.32	1000.0	9.000	Single Line	9.5
23.130000	---	52.70	74.00	21.30	1000.0	9.000	Single Line	9.5
23.130000	55.11	---	87.00	31.89	1000.0	9.000	Single Line	9.5

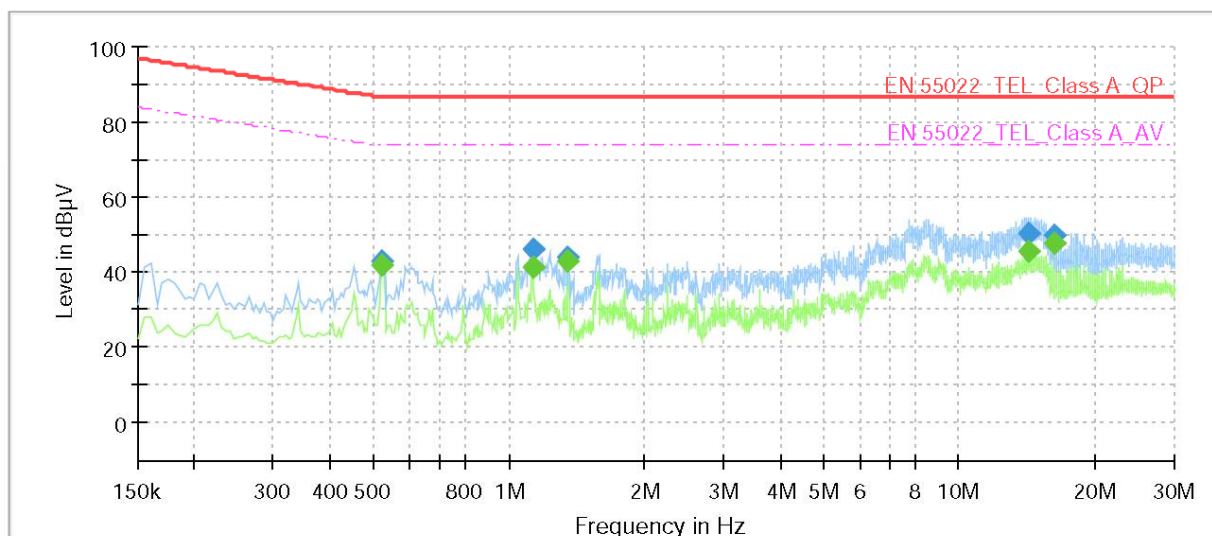
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[1000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PRN-4011P
Mode: 1000 Mbps
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.520000	---	41.97	74.00	32.03	1000.0	9.000	Single Line	9.4
0.520000	42.89	---	87.00	44.11	1000.0	9.000	Single Line	9.4
1.130000	---	41.09	74.00	32.91	1000.0	9.000	Single Line	9.2
1.130000	46.16	---	87.00	40.84	1000.0	9.000	Single Line	9.2
1.355000	---	42.87	74.00	31.13	1000.0	9.000	Single Line	9.2
1.355000	44.16	---	87.00	42.84	1000.0	9.000	Single Line	9.2
14.275000	---	45.35	74.00	28.65	1000.0	9.000	Single Line	9.5
14.275000	50.54	---	87.00	36.46	1000.0	9.000	Single Line	9.5
16.230000	---	47.57	74.00	26.43	1000.0	9.000	Single Line	9.5
16.230000	50.02	---	87.00	36.98	1000.0	9.000	Single Line	9.5

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Radiated Electric Field Emissions(Below 1 GHz)

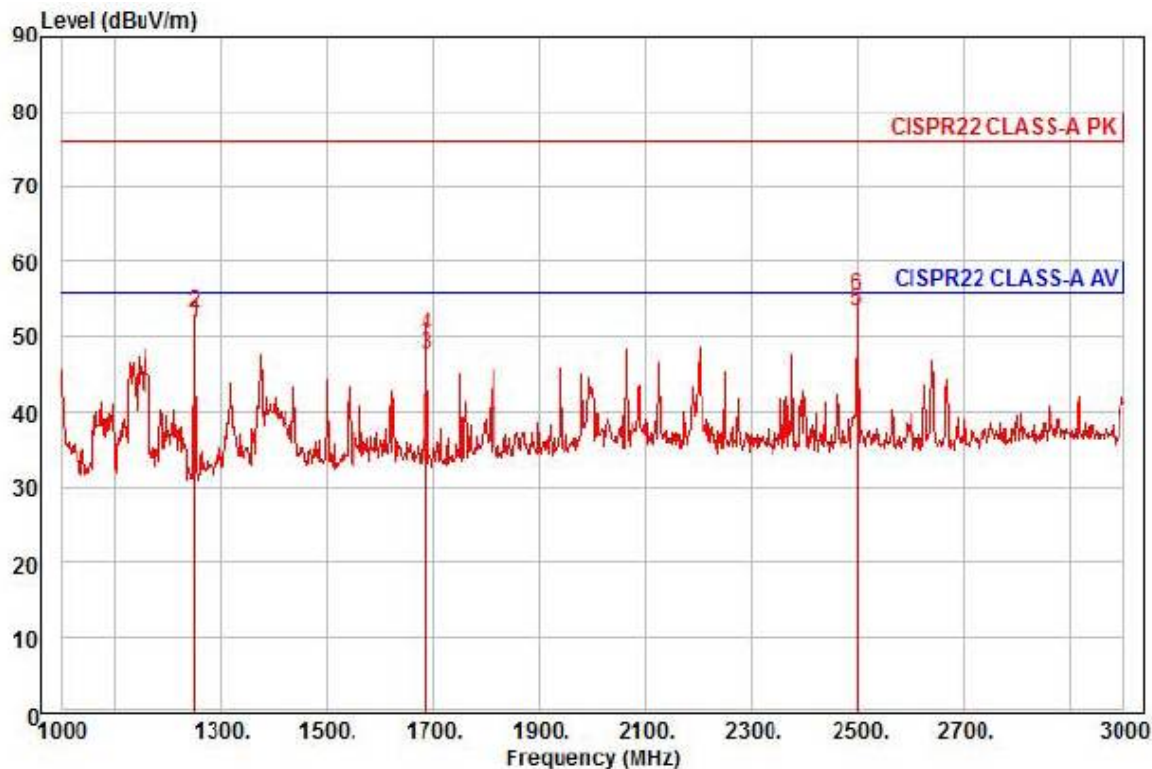
Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin [dB]
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	
148.49	12.59	V	1.00	8.17	2.46	23.22	40.00	16.78
224.76	15.46	H	4.00	12.00	3.10	30.56	40.00	9.44
300.26	13.49	H	3.90	13.41	3.71	30.61	47.00	16.39
399.87	16.45	V	1.00	15.57	4.22	36.24	47.00	10.76
450.76	12.66	H	4.00	16.45	4.59	33.70	47.00	13.30
474.99	14.44	V	1.00	16.87	4.77	36.08	47.00	10.92

* H : Horizontal, V : Vertical

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Radiated Electric Field Emissions(Above 1 GHz)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PRN-4011P
Mode :
Memo :

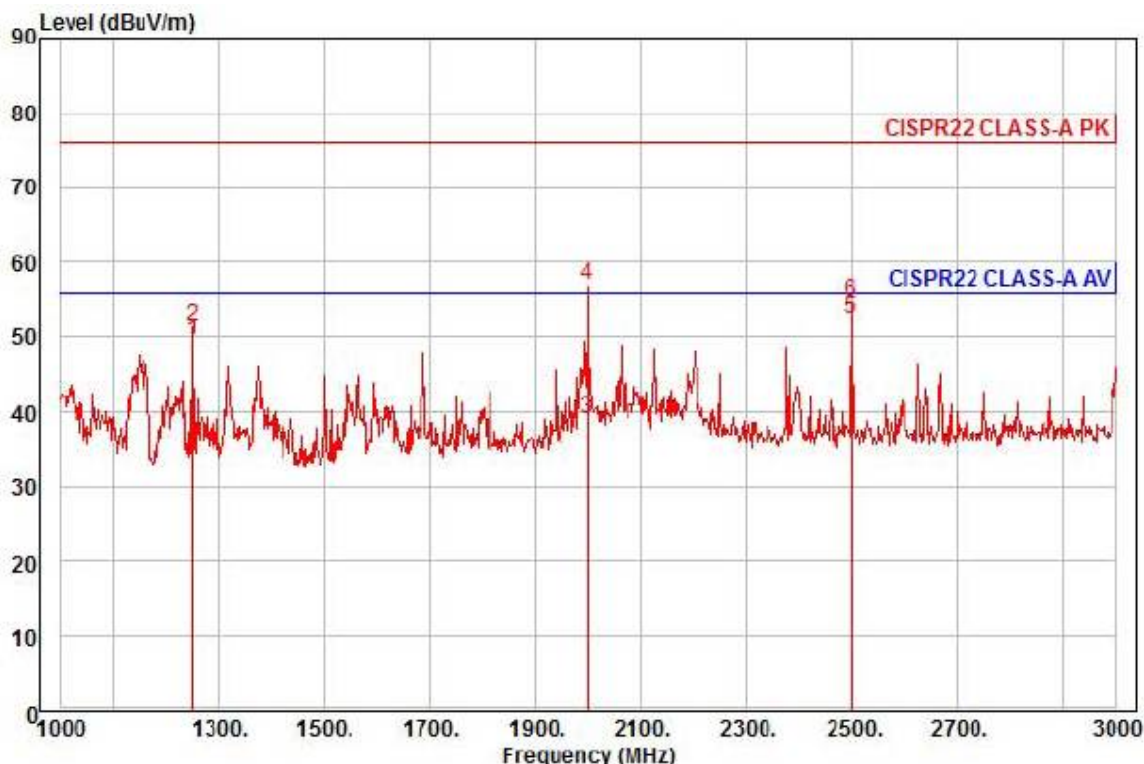
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1250.00	59.76	24.90	7.24	40.00	342	56.00	-4.10	horizontal	Average
2	1250.00	60.97	24.90	7.24	40.00	342	76.00	-22.89	horizontal	Peak
3	1688.00	52.19	26.64	8.49	39.78	287	56.00	-8.46	horizontal	Average
4	1688.00	54.90	26.64	8.49	39.78	287	76.00	-25.75	horizontal	Peak
5 pp	2500.00	54.09	29.10	10.12	39.92	171	56.00	-2.61	horizontal	Average
6 pk	2500.00	56.22	29.10	10.12	39.92	171	76.00	-20.48	horizontal	Peak



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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PRN-4011P
Mode :
Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1250.00	57.42	24.90	7.24	40.00	167	56.00	-6.44	vertical	Average
2	1250.00	59.26	24.90	7.24	40.00	167	76.00	-24.60	vertical	Peak
3	2000.00	41.30	27.88	9.35	39.63	164	56.00	-17.10	vertical	Average
4 pk	2000.00	59.36	27.88	9.35	39.63	164	76.00	-19.04	vertical	Peak
5 pp	2500.00	53.26	29.10	10.12	39.92	178	56.00	-3.44	vertical	Average
6	2500.00	55.26	29.10	10.12	39.92	178	76.00	-21.44	vertical	Peak

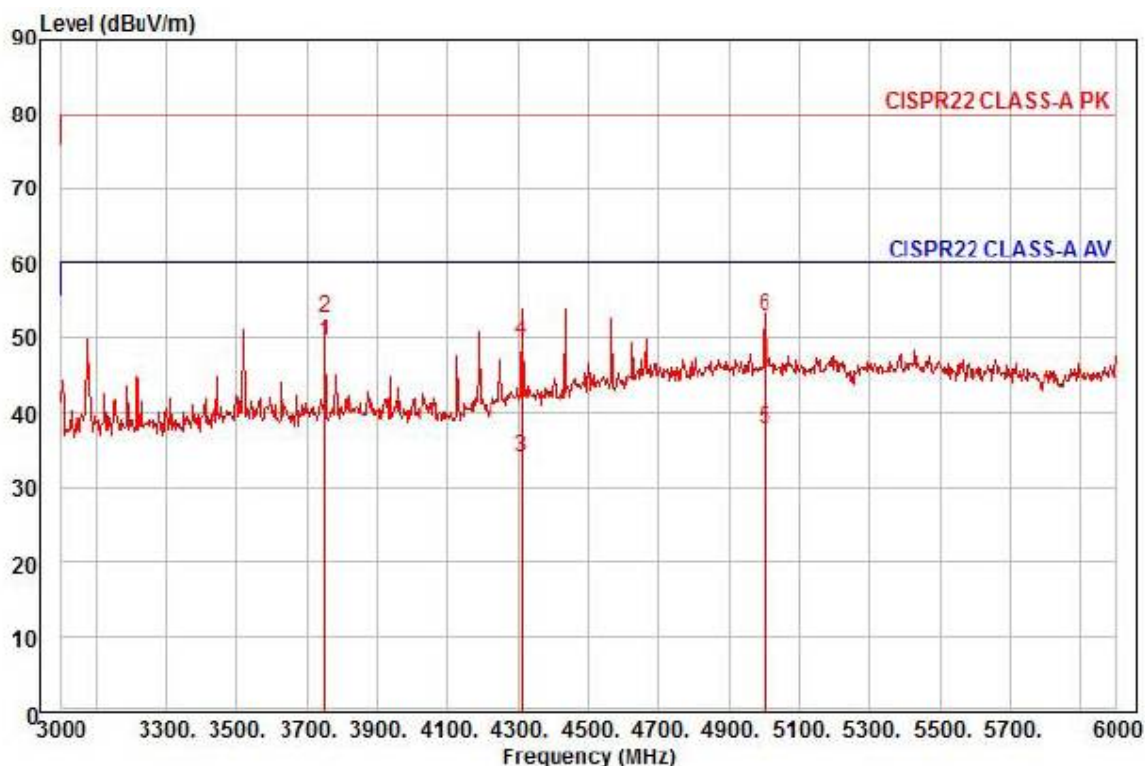
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PRN-4011P
Mode :
Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 pp	3750.00	45.21	31.59	13.01	40.36	303	60.00	-10.55	horizontal	Average
2	3750.00	48.46	31.59	13.01	40.36	303	80.00	-27.30	horizontal	Peak
3	4311.00	26.59	33.79	14.08	40.41	335	60.00	-25.95	horizontal	Average
4	4311.00	42.03	33.79	14.08	40.41	335	80.00	-30.51	horizontal	Peak
5	5001.00	25.14	37.72	15.33	40.41	200	60.00	-22.22	horizontal	Average
6 pk	5001.00	40.27	37.72	15.33	40.41	200	80.00	-27.09	horizontal	Peak

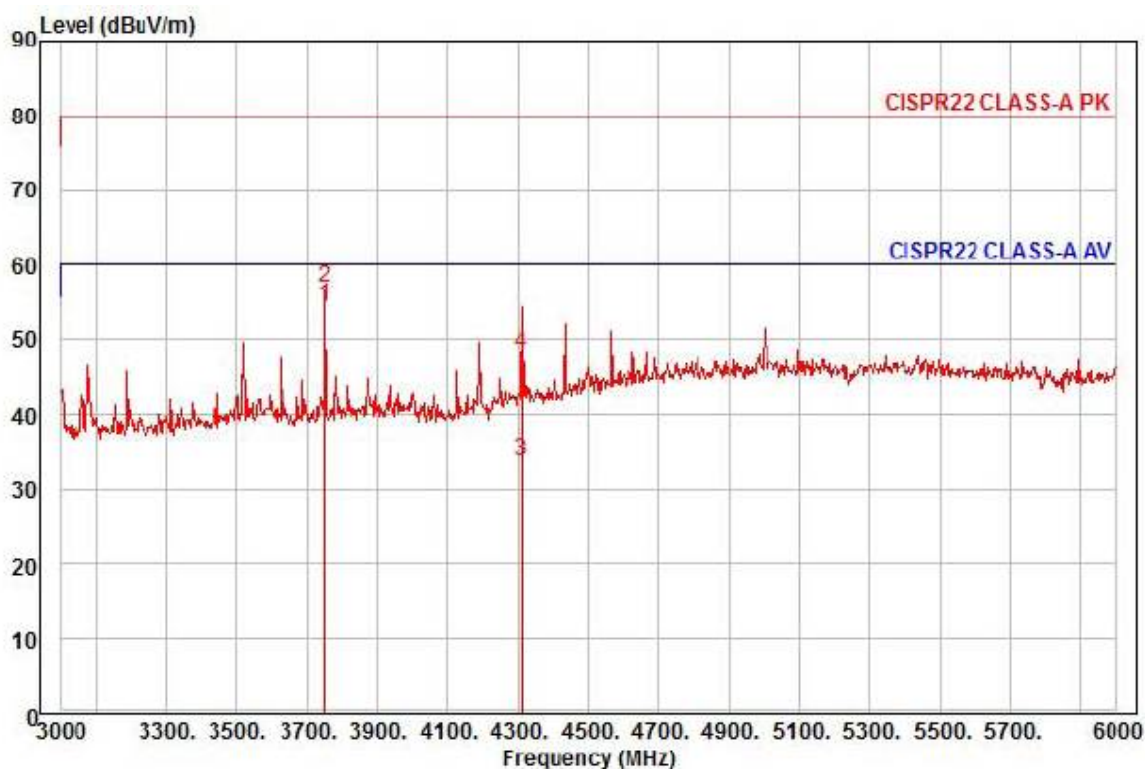
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PRN-4011P
Mode :
Memo :

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 pp	3750.00	50.11	31.59	13.01	40.36	183	60.00	-5.65	vertical	Average
2 pk	3750.00	52.61	31.59	13.01	40.36	183	80.00	-23.15	vertical	Peak
3	4311.00	26.31	33.79	14.08	40.41	348	60.00	-26.23	vertical	Average
4	4311.00	40.62	33.79	14.08	40.41	348	80.00	-31.92	vertical	Peak

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Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	177.315E-3			
2	387.394E-6			PASS
3	39.341E-3	1.710	2.30	PASS
4	208.795E-6			PASS
5	15.913E-3	1.396	1.14	PASS
6	231.184E-6			PASS
7	12.867E-3	1.671	770.00E-3	PASS
8	325.068E-6			PASS
9	12.779E-3	3.195	400.00E-3	PASS
10	278.894E-6			PASS
11	7.610E-3	2.306	330.00E-3	PASS
12	269.400E-6			PASS
13	6.398E-3	3.047	210.00E-3	PASS
14	260.773E-6			PASS
15	6.978E-3	4.652	150.00E-3	PASS
16	314.554E-6			PASS
17	3.967E-3			PASS
18	210.004E-6			PASS
19	4.146E-3			PASS
20	335.389E-6			PASS
21	4.200E-3			PASS
22	249.348E-6			PASS
23	3.237E-3			PASS
24	329.385E-6			PASS
25	4.488E-3			PASS
26	272.105E-6			PASS
27	4.420E-3			PASS
28	333.247E-6			PASS
29	3.021E-3			PASS
30	204.734E-6			PASS
31	3.283E-3			PASS
32	261.910E-6			PASS
33	2.966E-3			PASS
34	233.563E-6			PASS
35	2.486E-3			PASS
36	158.404E-6			PASS
37	2.835E-3			PASS
38	280.987E-6			PASS
39	1.983E-3			PASS
40	259.429E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test Data - Harmonics (continued)**Maximum harmonic current results**

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	177.820E-3			
2	880.241E-6			PASS
3	39.616E-3	1.148	3.45	PASS
4	402.000E-6			PASS
5	16.289E-3	0.953	1.71	PASS
6	584.795E-6			PASS
7	13.254E-3	1.147	1.15	PASS
8	695.895E-6			PASS
9	13.101E-3	2.183	600.00E-3	PASS
10	539.457E-6			PASS
11	8.213E-3	1.659	495.00E-3	PASS
12	694.165E-6			PASS
13	6.633E-3	2.106	315.00E-3	PASS
14	532.836E-6			PASS
15	7.165E-3	3.184	225.00E-3	PASS
16	652.756E-6			PASS
17	4.118E-3			PASS
18	321.159E-6			PASS
19	4.307E-3			PASS
20	539.920E-6			PASS
21	4.380E-3			PASS
22	437.035E-6			PASS
23	3.543E-3			PASS
24	561.140E-6			PASS
25	4.672E-3			PASS
26	445.782E-6			PASS
27	4.737E-3			PASS
28	671.585E-6			PASS
29	3.268E-3			PASS
30	308.147E-6			PASS
31	3.419E-3			PASS
32	529.237E-6			PASS
33	3.340E-3			PASS
34	378.458E-6			PASS
35	2.652E-3			PASS
36	231.586E-6			PASS
37	2.994E-3			PASS
38	401.626E-6			PASS
39	2.185E-3			PASS
40	418.036E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test Data - Voltage Fluctuations**Maximum Flicker results**

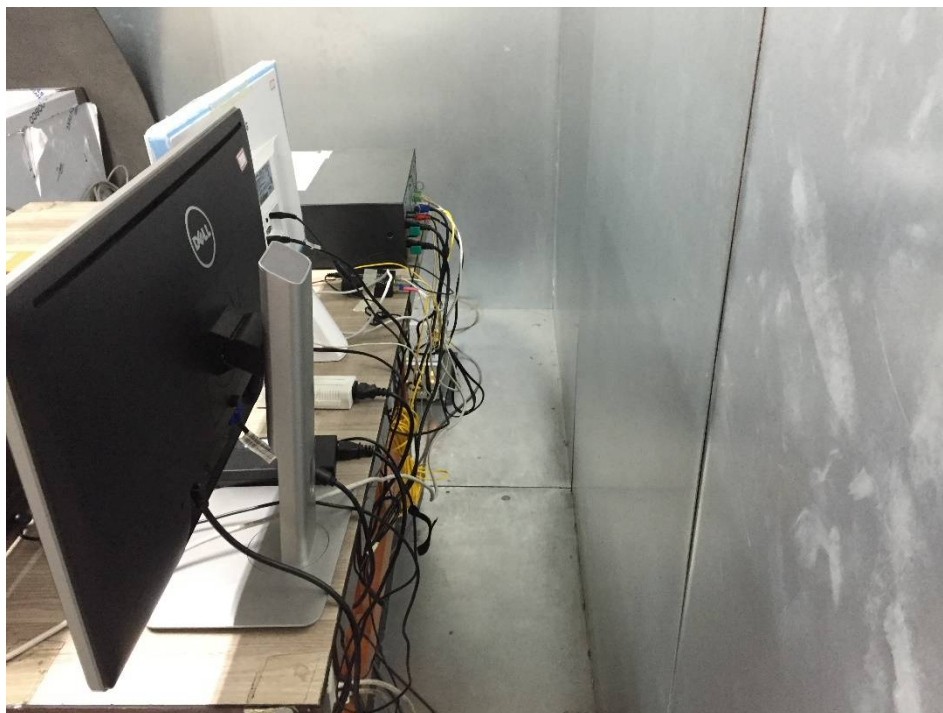
	EUT values	Limit	Result
Pst	0.062	1.00	PASS
Plt	0.062	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.033	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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Test Setup Photos and Configuration

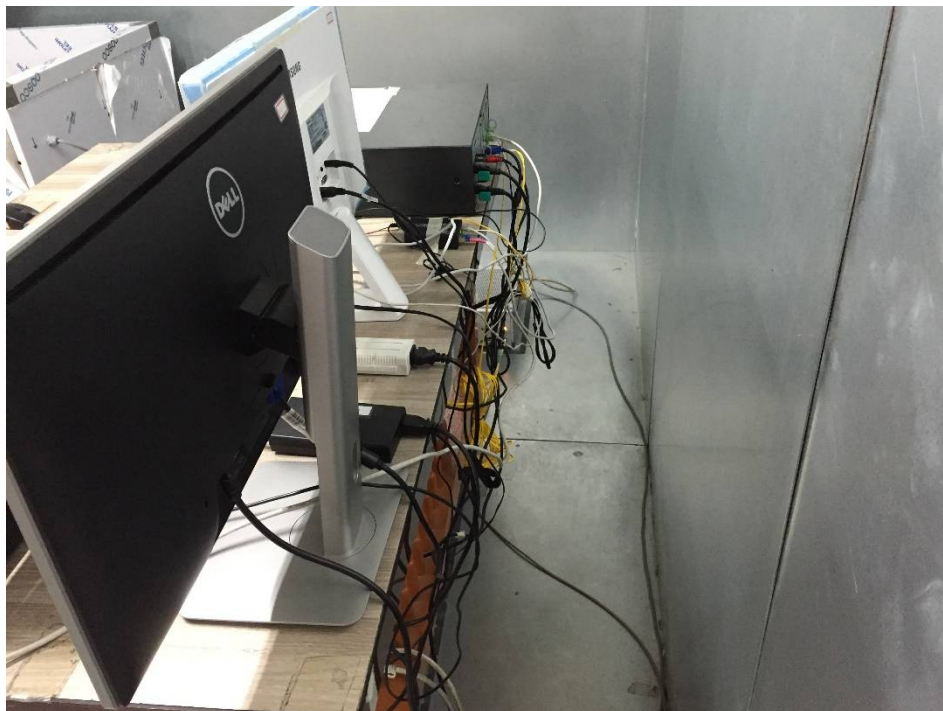
Conducted Voltage Emissions

- P1



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- P2



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Conducted Telecommunication Emissions



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Radiated Electric Field Emissions(Below 1 GHz)



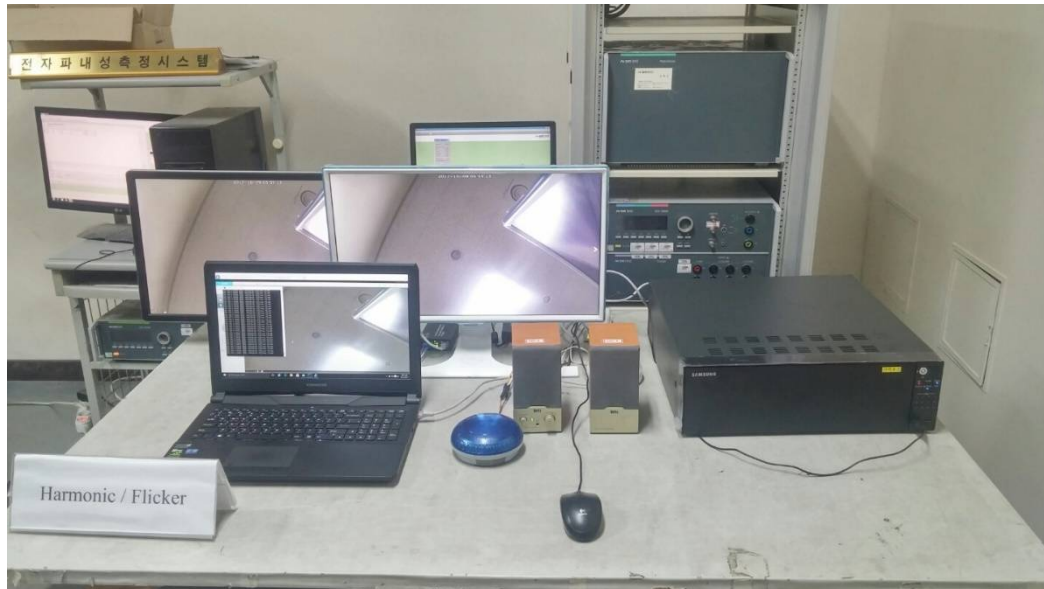
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Radiated Electric Field Emissions(Above 1 GHz)



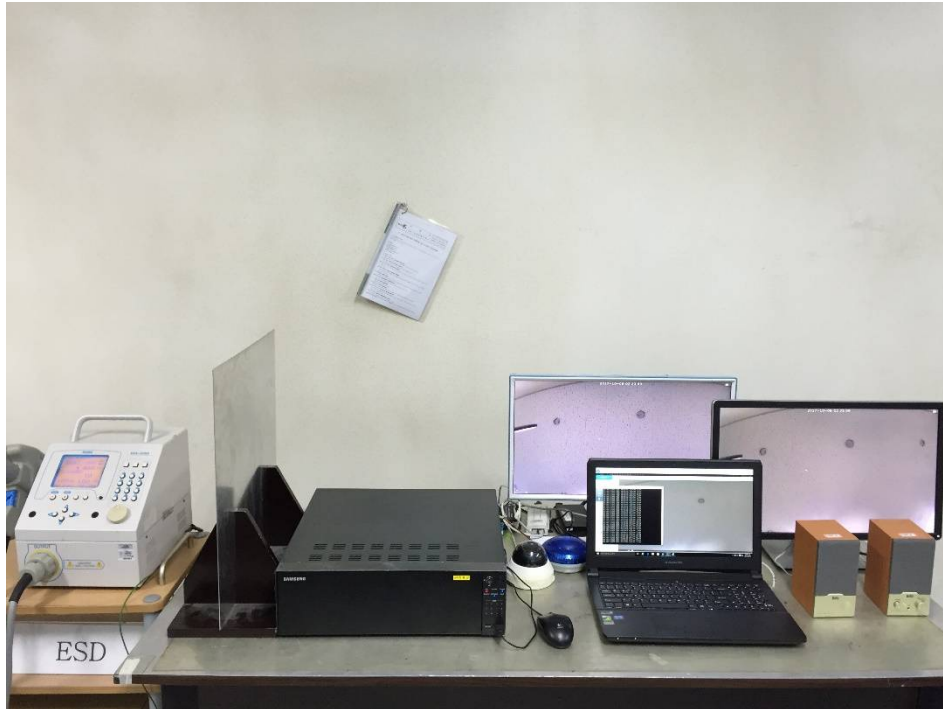
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Harmonic Current Emissions and Voltage Fluctuations and Flicker

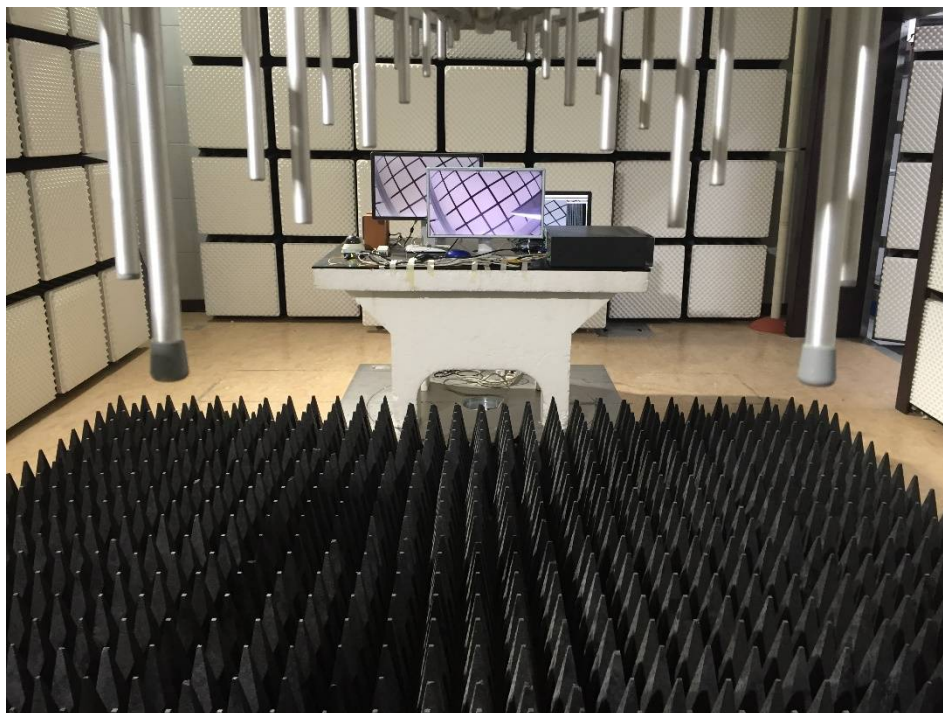


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Electrostatic Discharge

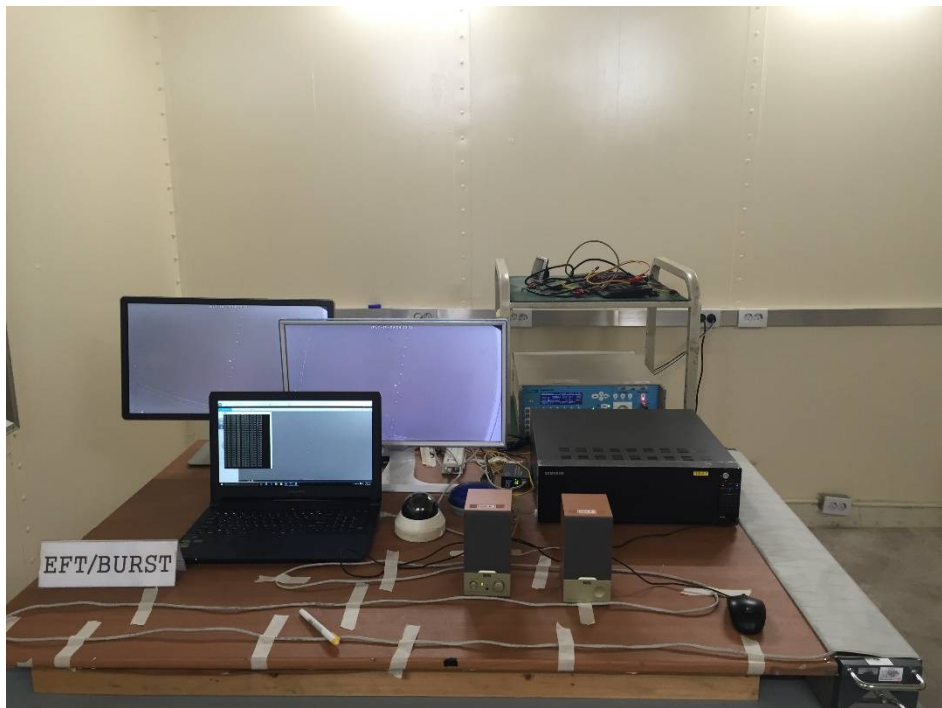


Radiated Electric Field Immunity



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Electrical Fast Transients/Bursts



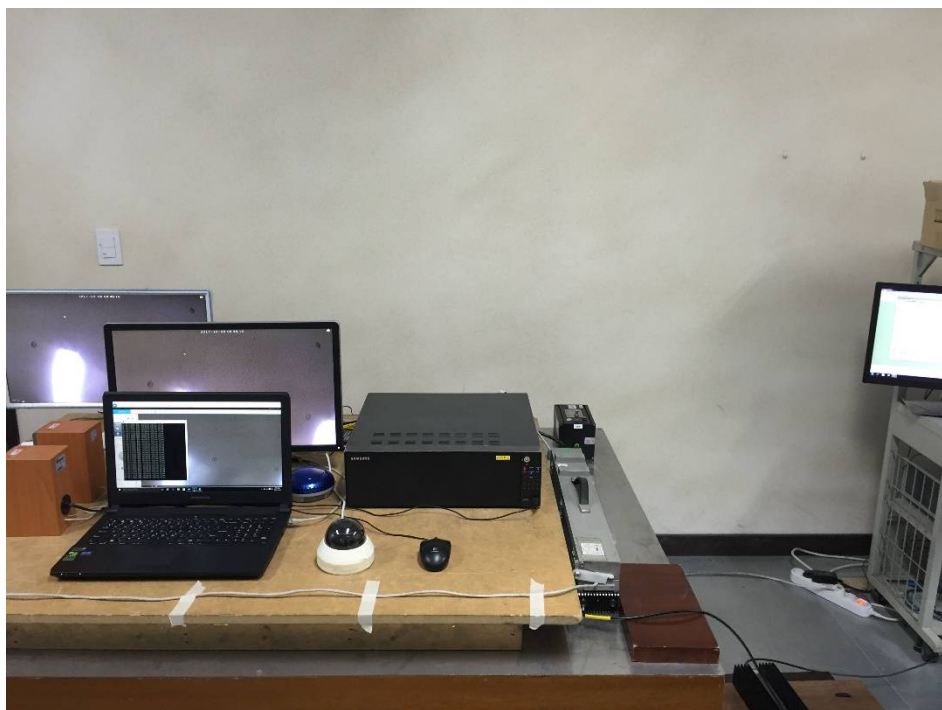
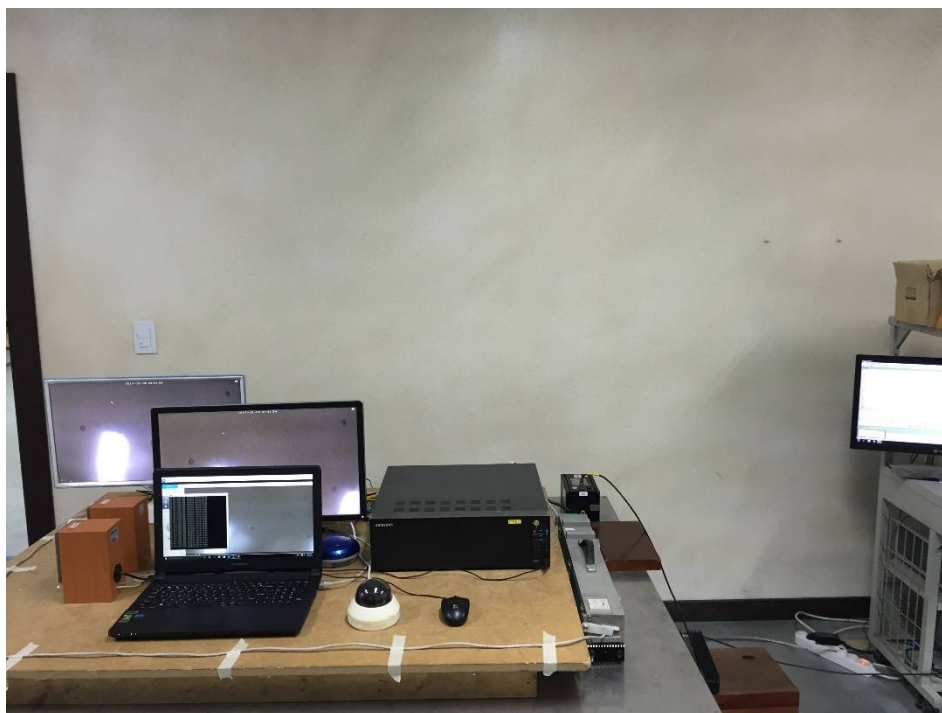
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Surge Transients



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Conducted Disturbance



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Voltage Dips and Short Interruptions



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)



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EUT Internal View – Main Board

(Top)



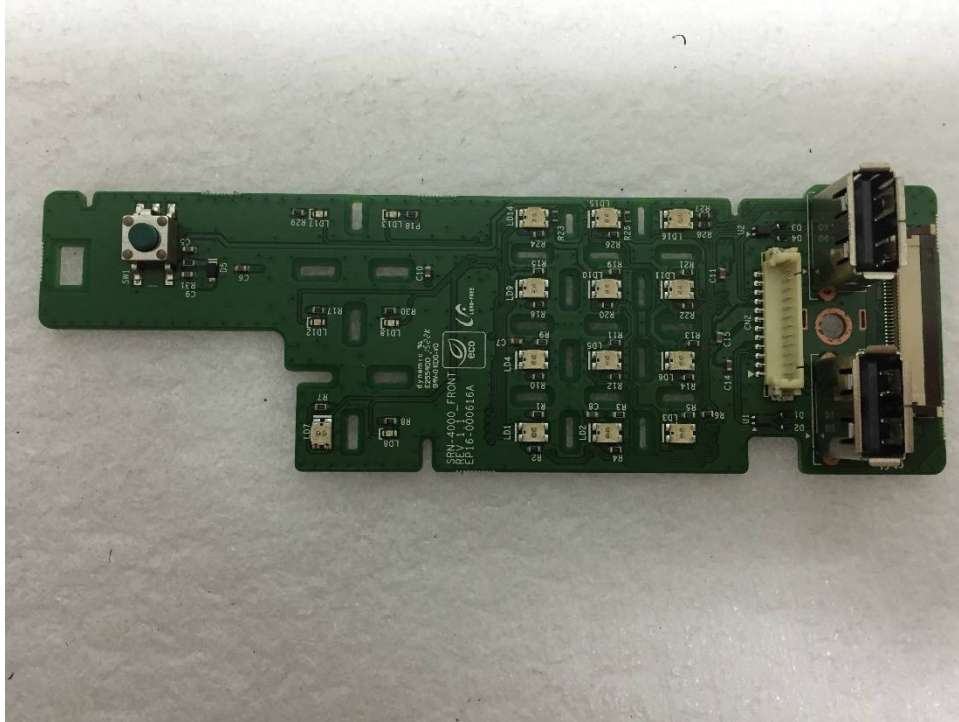
(Bottom)



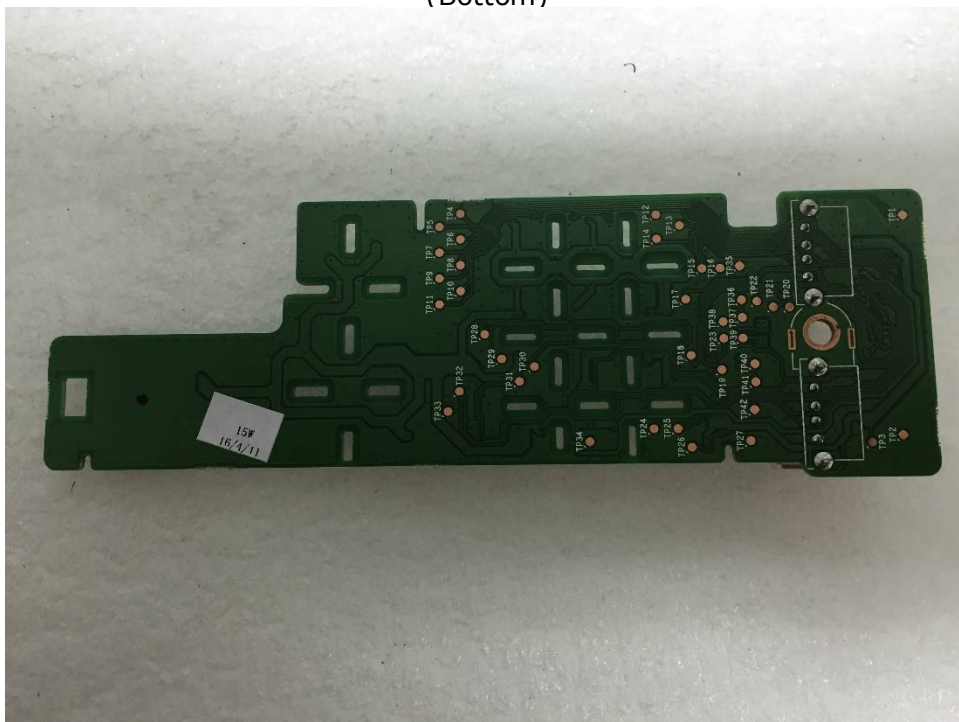
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EUT Internal View – Sub Board 1

(Top)



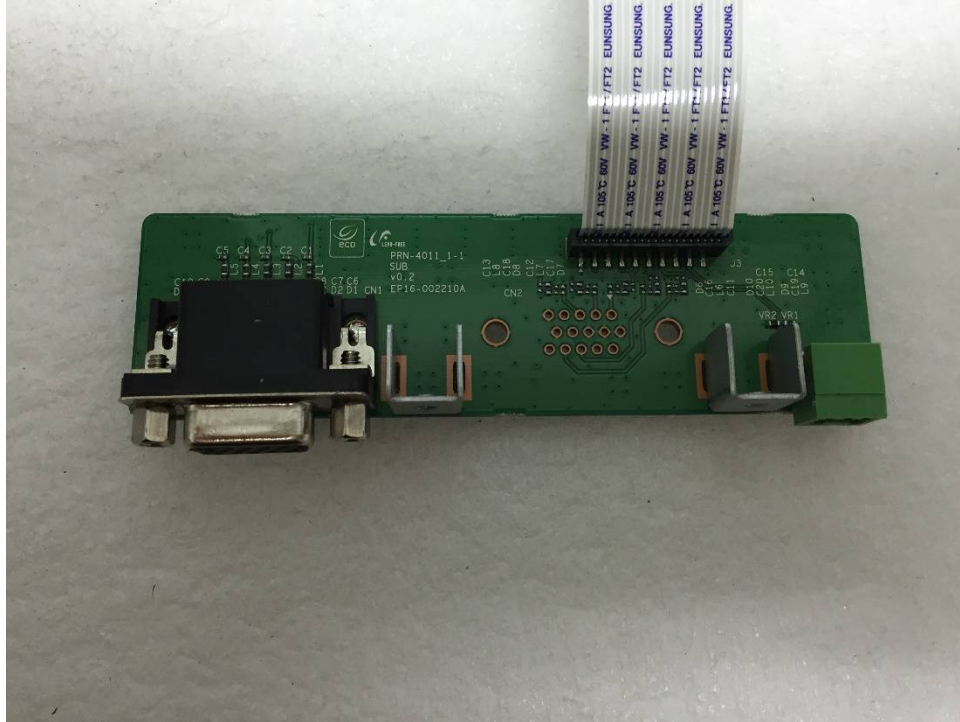
(Bottom)



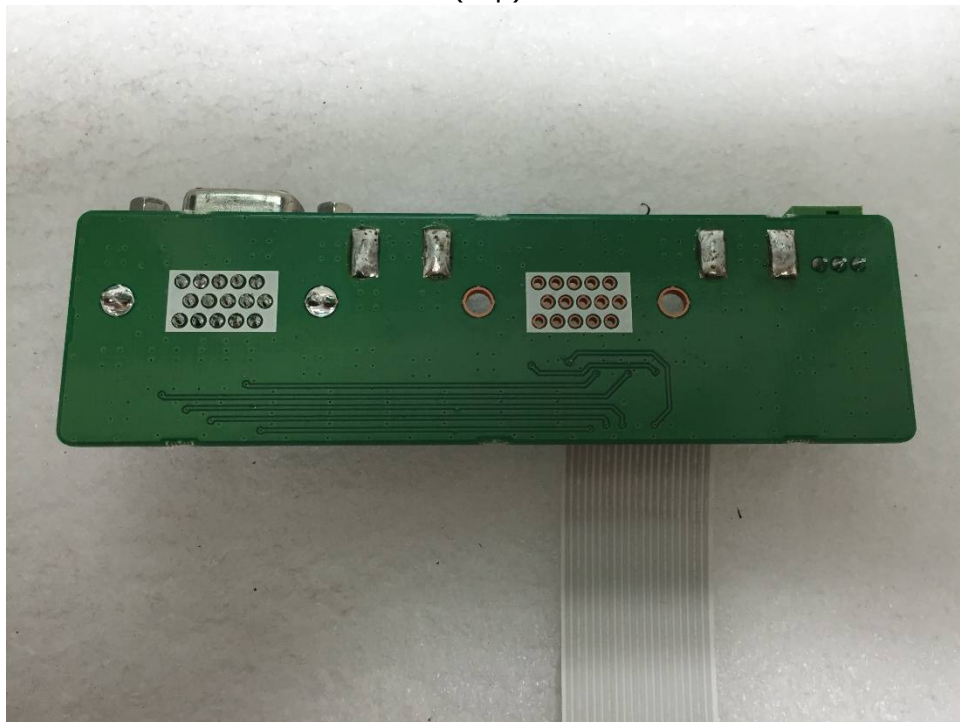
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EUT Internal View – Sub Board 2

(Top)



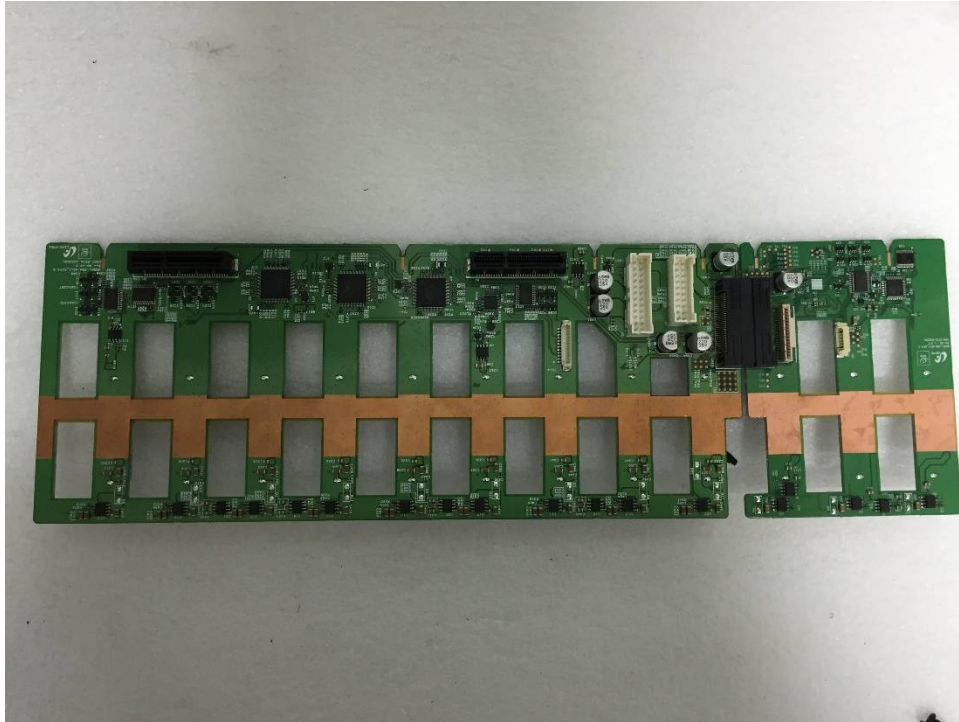
(Top)



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EUT Internal View – Sub Board 3

(Top)



(Bottom)



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Main Board EUT Internal View – HDD

(Top)



(Bottom)



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