

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:	NVR
Model/Brand Name:	SRN-1673SN
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:	Samsung Techwin Co., Ltd.
Applicant Address:	84, Jeongdong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea
Manufacturer Name:	TIANJIN SAMSUNG TECHWIN OPTO- ELECTRONIC CO.,LTD.
Manufacturer Address:	No.11 Weiliu Road. Micro-Electronic Industrial Park Jingang Road Tianjin, 300385, China
Test Report Reference No.:	KES-E1-15T0060

NVR, Model SRN-1673SN 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-E1-15T0060

Date of Issue: 03. 11. 2015

Dong Hun, Jang
Technical Manager
Signature:



KES.Co., Ltd.

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EMI Test Report for FCC

DoC / Verification

Test Report No. : KES-E1-15T0060
Date of Issue : 03. 11. 2015
Description of Product : NVR
Model No. : SRN-1673SN
Variant Model : -
Applicant : Samsung Techwin Co., Ltd.
Applicant's Address : 84, Jeongdong-ro, Senogsan-gu, Changwon-si, Gyeongsangnam-do, Korea
Manufacturer : TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO.,LTD
Manufacturer's Address : No.11 Weiliu Road. Micro-Electronic Industrial Park Jingang Road Tianjin 300385, China
Standards : FCC Part 15 Subpart B
- Part 15.107(b) : Conducted Emission
- Part 15.109(b) : Radiated Emission
Date of Receipt : 02. 24. 2015
Test Date : 03. 04. 2015 - 03. 06. 2015
Test Results : ☒ Pass ☐ Fail

The test results relate only to the items tested.

Tested by:


Tae Yeon, Kim
Test Engineer

Reviewed by:


Dong Hun, Jang
Technical Manager



Testing Laboratories for Safety and RF Compliance
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Testing Laboratories for EMC Compliance
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1. General Information

1.1 Introduction

The EMI Test Report of Information Technology Equipment is prepared on behalf of named applicant in accordance with the ANSI C63.4-2009. The test results reported in this document relate only to the item that was tested.

The detailed description of the measurement facility was found to be in compliance with the requirement of Section 2.948 of the FCC Rules. The Federal Communications Commission has the reports on file and is listed under Registration Number. The scope of the accreditation covers the FCC Method - 47 CFR Part 15 or 18 of the Commission's Rules.

All measurements contained in this report were conducted in accordance with ANSI C63.4-2009. The instrumentation utilized for the measurements conforms with CISPR16 Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods. Some accessories are used to increase sensitivity and prevent overloading of the measuring instrument. Calibration checks are performed yearly on the instruments by a local calibration laboratories.

All radiated and conducted emission measurements are performed manually at KES Co., Ltd. (hereinafter referred to as "KES"), 473-29, Gayeo-ro, Yeosu-si, Gyeonggi-do, 469-803 Korea

The radiated emission measurements required by the FCC Rules were performed on 3 meter or 10 meter, Open Area Test Site, test range maintained by KES. Complete ANSI 63.4-2009 description and site attenuation measurement data records are maintained at the test facility and have been placed on file with the Federal Communications Commission. The power line conducted emission measurements were performed in a shielded enclosure also located at the same facility.

The KES EMC test facilities in Yeosu-si are designated testing laboratory according to ISO/IEC 17025 by Radio Research Agency(RRA), Korea Communications Commission.

1.2 Geographic location



KES Office Latitude : 37°23'54.59"N, Longitude : 126°58'14.66"E



KES OATS Latitude : 37°13'58.03"N, Longitude : 127°37'21.95"E

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1.3 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.	
KOREA	KCC	EMC (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	TUV_SUD	EMC EN 55011, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 55014-1, EN 61326 EN 50130-4, EN 55024, EN 55014-2 EN 61204-3, EN 60601-1-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11	

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1.4 Product Description

Samsung Techwin Co., Ltd., NVR , Model No: SRN-1673SN or the "E.U.T".

Main Specifications of EUT are

Network Camera	Inputs	Max. 16CH
	Resolution	CIF ~ 8MP
	F i s h - E y e	N/A
	Dewarping	
	Protocols	Samsung, ONVIF
Live	Local Display	HDMI/VGA
	Multi-Channel Display	[LocalMonitor]1/4/6/8/9/13/16/AutoSequence [Web]1/4/9/16/AutoSequence
	Performance	[LocalMonitor] 8MP(20fps) 5MP(30fps),3MP(50fps),2MP(150fps),720p(240fps),D1(480fps)
		[Web] 5MP(30fps),3MP(60fps),2MP(120fps),720p(240fps),D1(480fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.264, MJPEG
	R e c o r d i n g	80Mbps, 2MP 16camera real-time recording
	Bandwidth	
	Resolution	CIF ~ 8MP
	Type	Normal, Scheduled, Event (Pre/Post)
	Event Trigger	-AlarmInput(8) -VideoLoss -CameraEvent(Alarm-In,MD,VideoAnalytics) -VAEvent(Tampering,Enter/Exit,Passing(Virtual-Line,Appearing/Disappearing, Face Detection, Audio Detection)
	Event Action	e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out
Search & Play	P l a y b a c k	(32Mbps)
	Bandwidth	Max.3Users
	Performance	32Mbps
	Mode	Date&Time(Calendar) EventLoglist SmartSearch(PlaybackSearch,UpgradeAug.'15) TextSearch(POS)
	S i m u l t a n e o u s playback	[LocalMonitor]Upto16CH [Web,CMS]Upto16CH
	Resolution	CIF ~ 8MP
	F i s h - E y e	N/A
	Dewarping	

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	Playback Control	Fast Forward/Backward, Move one step up/down
Storage	Default Built-In	1TB
	Internal	4 SATA
	Hot Swap	No(Cold-Swap at Front)
	External(DAS)	1 e-SATA
	External(NAS, iSCSI)	N/A
	Max.Capacity	Internal (16TB=4x4TB)
	RAID	N/A
Backup	File backup	BU/EXE(USB), JPG/AVI(Web, CMS)
	Function	Max. 16CH Play, Date-Time/Title display
Sensor	I/O	8/4 (NO 3EA, NO/NC 1EA)
Audio	Input	16CH (network)
	Compression	G.711, G.726, AAC(16/48KHz)
	A u d i o	2-Way
	Communication	
Network		
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
DDNS		Samsung iPolis DDNS
Transmission Bandwidth		Max 160Mbps
Max Remote Users		Search(3) / Live unicast(10) / Live multicast(20)
IP Version		IPv4/v6
Security		UseraccessLog IPFiltering 802.1x Encryption(ID/PW,Recording,Transmission,Backup)
Language	GUI	(1)English,(2)French,(3)German,(4)Italian,(5)Spanish, (6)Russian,(7)Turkish,(8)Polish,(9)Dutch,(10)Swedish, (11)Czech,(12)Portuguese,(13)Danish,(14)Rumanian,(15)Serbian, (16)Croatian,(17)Hungarian,(18)Greek,(19)Norwegian,(20)Finnish, (21)Korean,(22)Chinese,(23)Japanese,(24)Thai
	Web	(1)English,(2)French,(3)German,(4)Italian,(5)Spanish, (6)Russian,(7)Turkish,(8)Polish,(9)Dutch,(10)Swedish, (11)Czech,(12)Portuguese,(13)Danish,(14)Rumanian,(15)Serbian, (16)Croatian,(17)Hungarian,(18)Greek,(19)Norwegian,(20)Finnish, (21)Korean,(22)Chinese,(23)Japanese(24)Thai
OS		Supported OS : Window XP(service pack 2 or above), Vista, 7, 8, Mac OS X(10.6 or above)
Web Browser		MicrosoftInternetExplorer(최신보안및버그패치적용된Ver.8~10,IE9 이상권장) MozillaFirefox(Ver.19.xorabove), GoogleChrome(Ver.26.xorabove), AppleSafari(최신보안및버그패치적용Ver.6.0.3)
Viewer Software	Type	SSM, Webviewer, Smart Viewer, iPolis Mobile Viewer
	CMS Support	Support SDK/CGI(SUNAPI)
Functions		
Camera Setup	Register	1) PnP mode 2) Manual

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	Setup Items	(1)IPAddress,AddProfileEdit,Bitrate,Compression,GOP,Quality (2)CameraEventSetup - MD - VA (Upgrade Aug. 2015) : Tampering, Enter/Exit, Passing(Virtual- Line), Appearing/Disappearing, Face Detection, Audio Detection) (3)VideoSetup(SimpleFocus,Brightness/Contrast,Flip/Mirror,IRIS, WDR, D&N, SSNR, Shutter, SSSDR, DIS)
Camera Control	PoE	1)MonitorPoEPowerconsumption 2)On/OffControlforeachPoEcamera 3)RemoteResetforeachPoEcamera
Easy Configuration		SetupWizard (Date/Time,Network,AutoCameraConfiguration)
Backup from SD Card in camera		Upgrade(Aug. 2015)
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	255
Smart phone	Support Model	Android / iOS
	Control	Live(4CH):(4DIV)CIFMonitoring (4/1DIV)1.3MPMonitoring Playback(1CH):Upto1.3MP
System Control	C o n t r o l Applications	Mouse, IR Remocon, Web, SPC-2000(USB Controller)
	S S M - V M Compatibility	N/A
Indicator/Interface		
Front	Indicator	PowerStatusLED1EA HDDActionLED1EA AlarmStatusLED1EA RecordStatusLED1EA NetworkActionLED1EA BackupLED1EA
	USB	2EA (Front 1EA, Rear 1EA)
	Power Switch	N/A
Connectors	VGA	1EA
	HDMI	1EA
	Audio	Out(1 EA, RCA, Line)
	DVD	N/A
	Serial	N/A
	Ethernet	■16EA(PoE,100Mbps) - 8 hPoE when 2 PoE ports aggregated to 1 port ■2EA(LAN/WAN,1Gbps) - LAN : Downlink to Camera/PoE Hub - WAN : Uplink to CMS
	Alarm	In(8EA,TerminalBlock) Out(4EA,TerminalBlock)
	Reset	Yes (Factory Reset, Alarm Reset)
Power Cord		Included
System		
Log	Log List	Max. 20000 (System Log, Event Log each)
Environmental		

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Operating Temperature / Humidity	+ 0°C to + 40°C	
Humidity	20% ~ 85%	
Electrical		
Power Input	100 ~ 240V AC	
Power Consumption	Set:66W(NVRw/4xHDD) PSE:Total200W (Average12.5WpereachPoEport)	
Mechanical		
Color / Material	Black / Metal	
Dimension (WxHxD)	440*88*384.8 (2U)	
Weight	5.6kg	
Accessories		
IR Remocon	Included	
Mouse	Included	
Viewer CD	Backup Viewer, Installation Manual	
IB	Included	
Power Cord	Included	
Power Adaptor	N/A	
Terminal Block	Included	
Standards		
Regulation	R82(France), EN50132	
Approvals	Safety	UL,KC
	EMC	CE, FCC, KCC, CCC, Gost-R

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1.5 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NVR	SRN-1673SN	-	TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO., LTD	EUT
Mouse	MOEIUOA	-	Dongguan Primax Electronic & Telecommunication Products Ltd.	

1.6 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor1	M1962DL	010NDTC5Z497	LG Electronics Nanjing Display Co., Ltd.	
Monitor2	I2269VWM	BEWD39A000147	L&T Display Technology(Fujian) LTD.	
Notebook	RT3290LE	5CD242B042	HP	
AC/DC ADaptor	Series PPP009L-E	WCNWVOA3U3G6FB	LITE-ON TECHNOLOGY (CHANGZHOU) Co., Ltd.	
Speaker	MS-760		MASS	
Ext.HDD	MDY-US2528	-	Q-DRIVER	
AC/DC ADaptor	SK02G-0500200K	-	Shenzhen Simsukian Electronics Technology Co., Ltd.	
POE CAMERA	SND-L6083R	-	SAMSUNG TECHWIN CO., LTD	
JIG1	-	-	-	
JIG2	SIE-0001 D0		SAMSUNG TECHWIN CO., LTD	

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1.7 External I/O Cabling

Start		End		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NVR	HDMI	Monitor1	DVI	1.0	Shielded
	D-SUB	Monitor2	D-SUB	1.5	Shielded
	POE CAMERA	POE Camera	RJ-45	3.0	Unshielded
	POE CAMERA (2-16)	Termination	OPEN	1.1	Unshielded
	RJ-45	Notebook	RJ-45	3.0	Unshielded
	USB	Mouse	USB	1.8	Shielded
	eSATA	Ext.HDD	eSATA	0.9	Unshielded
	RCA	Speaker	RCA	1.0	Unshielded
	ALARM	JIG1	WIRE	3.0	Unshielded
	ALARM	JIG2	WIRE	3.0	Unshielded

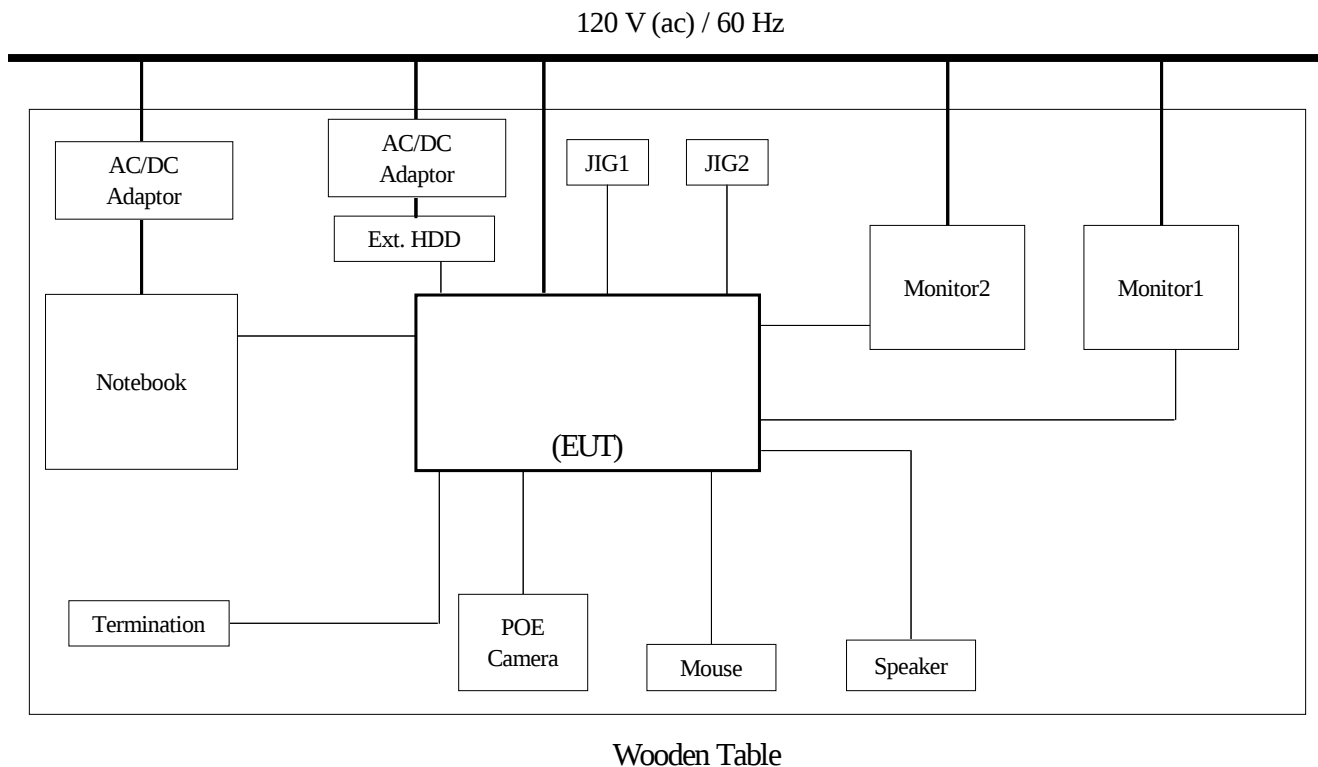
1.8 Special Accessories

As shown in section 1.10, all interface cables used for compliance testing are shielded as normally supplied or by use respective component manufacturers.

1.9 E.U.T Modifications

No modifications were made to the E.U.T in order to achieve and maintain compliance to the standards described in this report.

1.10 Configuration of Test System



※ Test Operating Mode

- Ping test
- Web view Monitoring
- Alarm test

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2. Summary of Tests

FCC Part Section(s)	Parameter	Test Condition	Status (note 1)
15.109(b)	Emission limits	Radiated	C
15.107(b)	Conducted limits	Conducted	C

Note 1 : C=Complies N/C=Not Complies N/T=Not Tested N/A=Not Applicable

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2.1 Conducted Emission Measurements

2.1.1 Test Methods

The power line conducted emission measurements were performed in a shielded enclosure, using the setup in accordance with ANSI C63.4-2009 conducted emission measurement procedure.

2.1.2 Test Equipments

Description	Manufacturer	Model Number	Serial Number	Cal. Due
EMI Receiver/Signal Analyzer	Narda S.T.S / PMM	PMM 9010F	020WW31006	04. 04. 2015
LISN	R&S	ENV216	101137	02. 10. 2016
LISN	EMCO	3810/2	2228	-
Electro wave Shieldroom	SEMITEC	-	-	-

2.1.3 Test Environments

Ambient Temperatures	Relative Humidity
see the data	see the data

2.1.4 Test Limits

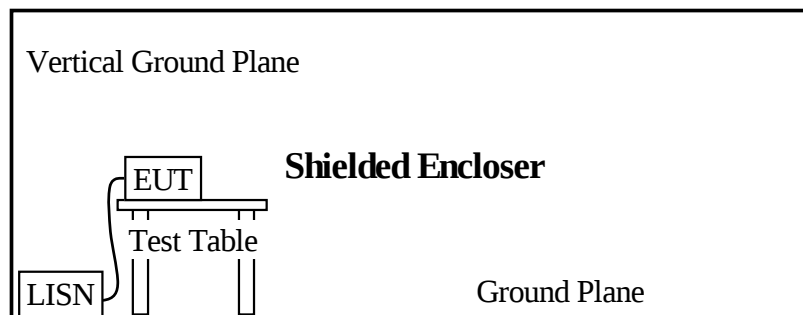
Frequency (MHz)	15.107 Conducted limits			
	Class B (dB μ V)		Class A (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	66.0 to 56.0	56.0 to 46.0	79.0	66.0
0.50 to 5.00	56.0	46.0	73.0	60.0
5.00 to 30.00	60.0	50.0	73.0	60.0

2.1.5 Test Procedure

Conducted emission levels were measured on each current-carrying line with the EMI TEST Receiver operating in the CISPR quasi-peak mode (or peak mode if applicable). The Receiver's 6 dB bandwidth was set to 9 kHz. The initial step in collecting conducted data is a EMI TEST Receiver peak scan of the measurement range. If the conducted emission exceed the average limit with the instrument set to the quasi-peak mode, the measurements are made in the average mode. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. Quasi-peak readings are distinguished with a "QP".

The conducted emission test was performed with the E.U.T exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the HOT side and NEUTRAL side, herein referred to as H and N, respectively.

2.1.6 Test Configuration



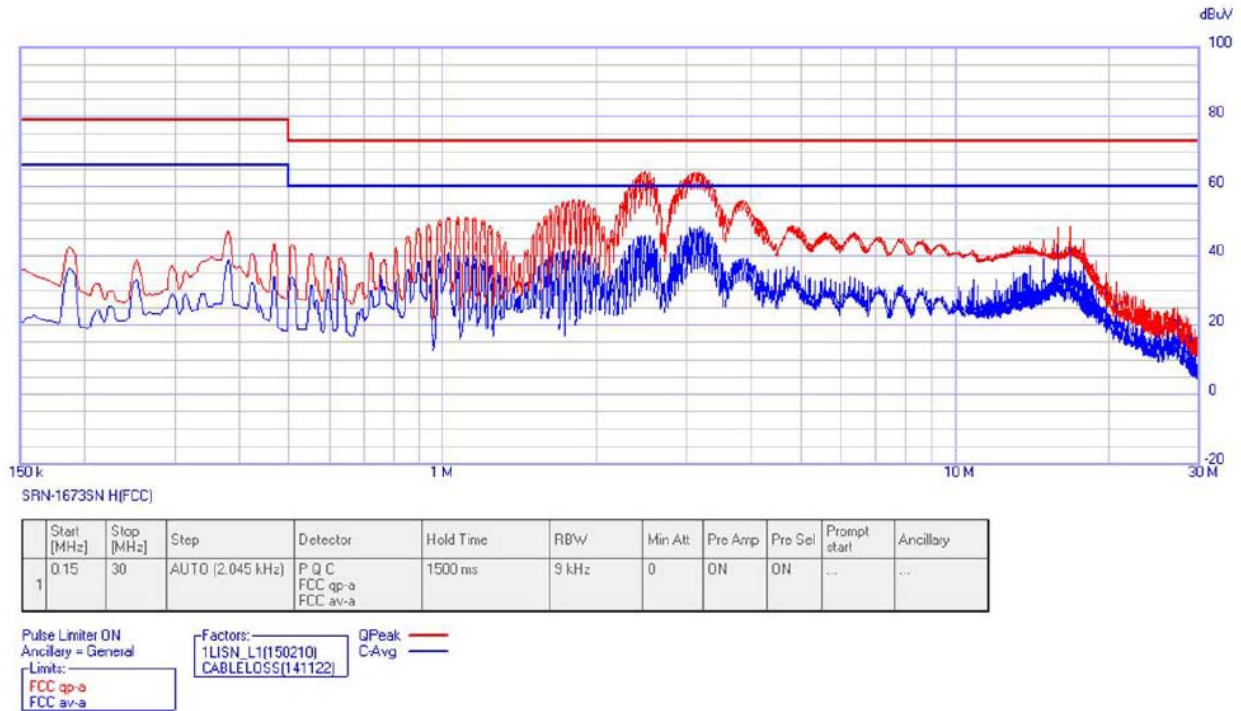
2.1.7 Test Results

According to the data in section 2.1.8, the E.U.T complied with the FCC Part 15 standards.



2.1.8 Test Data

Temperature: 23.4 °C Humidity: 33.7 % R.H. Test Date: 03.05.2015 Tested by: Tae Yeon Kim
Polarization: HOT



Frequency [MHz]	Q-Peak [dBμV]	Limit [dBμV]	Margin [dB]	C-Avg [dBμV]	Limit [dBμV]	Margin [dB]	Factor (LISN) [dB]	Factor (Cable Loss) [dB]
0.187	42.320	79.000	-36.680	36.180	66.000	-29.820	9.650	0.030
0.381	47.020	79.000	-31.980	38.980	66.000	-27.020	9.650	0.030
0.426	40.680	79.000	-38.320	32.200	66.000	-33.800	9.650	0.030
0.467	43.240	79.000	-35.760	33.960	66.000	-32.040	9.650	0.030
2.267	58.210	73.000	-14.790	41.400	60.000	-18.600	9.660	0.080
2.305	60.220	73.000	-12.780	43.010	60.000	-16.990	9.660	0.080
2.481	64.160	73.000	-8.840	46.030	60.000	-13.970	9.660	0.090
3.117	63.980	73.000	-9.020	47.780	60.000	-12.220	9.670	0.110

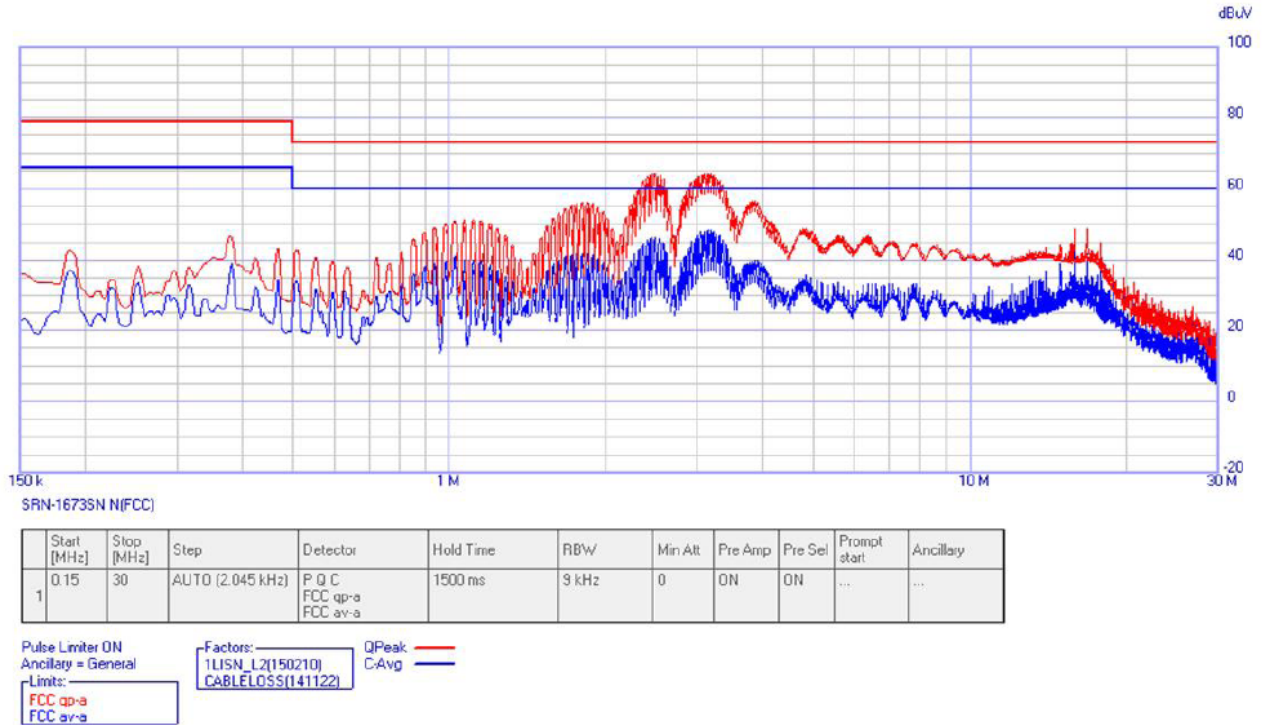


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Polarization: NEUTRAL



N

Frequency [MHz]	Q-Peak [dBμV]	Limit [dBμV]	Margin [dB]	C-Avg [dBμV]	Limit [dBμV]	Margin [dB]	Factor (LISN) [dB]	Factor (Cable Loss) [dB]
0.187	42.840	79.000	-36.160	37.070	66.000	-28.930	9.650	0.030
0.350	40.590	79.000	-38.410	25.340	66.000	-40.660	9.650	0.030
0.379	46.690	79.000	-32.310	37.750	66.000	-28.250	9.650	0.030
0.467	43.150	79.000	-35.850	34.110	66.000	-31.890	9.650	0.030
2.305	60.430	73.000	-12.570	43.120	60.000	-16.880	9.660	0.080
2.316	60.430	73.000	-12.570	43.120	60.000	-16.880	9.660	0.080
2.391	63.390	73.000	-9.610	45.470	60.000	-14.530	9.660	0.090
3.117	64.370	73.000	-8.630	48.200	60.000	-11.800	9.670	0.110

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2.2 Radiated Emission Measurements

2.2.1 Test Methods

The radiated emission measurements were performed in a Open Area Test Site (OATS) and 3 m full chamber, using the setup in accordance with ANSI C63.4-2009 radiated emission measurement procedure.

2.2.2 Test Equipments

Description	Manufacturer	Model Number	Serial Number	Cal. Due
EMI TEST Receiver	R & S	ESVS10	826008/014	04. 04. 2015
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-385	05. 09. 2015
OATS	KES	-	-	-
Antenna Mast	DAEIL EMC	-	-	-
Turn Table	DAEIL EMC	-	-	-
EMI TEST Receiver	R & S	ESR7	101190	08. 13. 2015
PREAMPLIFIER	8449B	H.P	3008A00538	07. 23. 2015
Double Ridged Horn Antenna	A-H-SYSTEM,INC	SAS-571	781	05. 13. 2015
RS Chamber (EMI 18GHz)	SEMITEC	-	-	-
Antenna Mast	AUDIX	-	-	-
Turn Table	AUDIX	-	-	-

2.2.3 Test Environments

Ambient Temperatures	Relative Humidity
see the data	see the data

2.2.4 Test Limits

Frequency (MHz)	15.109 Radiated emission limits			
	Class B @ 3 m		Class A @ 10 m	
	(dB μ V/m)	(μ V/m)	(dB μ V/m)	(μ V/m)
30 to 88	40.0	100	39.0	90
88 to 216	43.5	150	43.5	150
216 to 960	46.0	200	46.4	210
above 960	54.0	500	49.5	300

Frequency (MHz)	CISPR Publication 22			
	Class B @ 3 m (dB μ V/m)		Class A @ 3 m (dB μ V/m)	
	PK	AV	PK	AV
above 1 000	74	54	80	60

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2.2.5 Test Procedure

Before final measurements of radiated emission were made at the OATS, the E.U.T was scanned in semi-anechoic chamber in order to determine its emission spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the E.U.T's emission in amplitude, direction and frequency. This process was repeated during final radiated emission measurements at the OATS range, at each frequency, in order to ensure that maximum emissions amplitudes were attained.

The radiated emission test was performed with E.U.T exercise program loaded, and the emissions were scanned between 30 MHz to 1 000 MHz using a R&S ESVS10 EMI TEST Receiver and 1 000 MHz to 6 000 MHz using a spectrum analyzer. The EMI TEST Receiver's 6 dB bandwidth was set to 120 kHz and 1 MHz, and EMI TEST Receiver was operated in the CISPR quasi-peak detection mode. At each frequency, the E.U.T was rotated 360 degrees, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum emission levels. Measurements were taken using both HORIZONTAL and VERTICAL antenna polarization, herein referred to as H and V, respectively.

- above 1 GHz : Antenna height is fixed to 1.00 m

2.2.6 Field Strength Calculation

F.S = Field Strength

M.R = Meter Reading

A.F = Antenna Factor

C.L = Cable Loss

A.G= Amplifier Gain

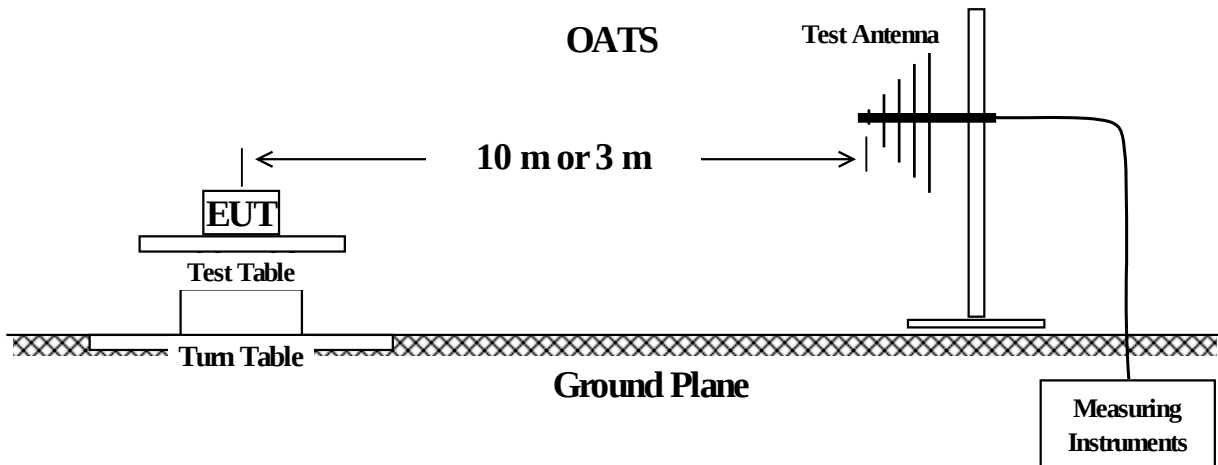
* Below 1 GHz : $F.S(dB\mu V/m) = M.R(dB\mu V) + [A.F(dB/m) + C.L(dB)]$

* Above 1 GHz : $F.S(dB\mu V/m) = M.R(dB\mu V) + [A.F(dB/m) + C.L(dB)] - A.G(dB)$

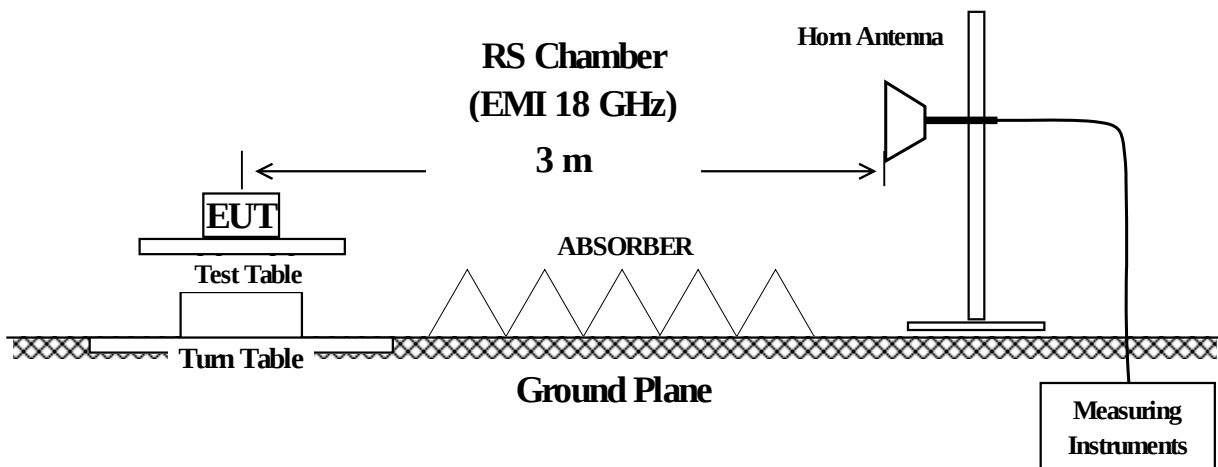
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2.2.7 Test Configuration

* Below 1 GHz



* Above 1 GHz



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2.2.8 Test Results

Below 1 GHz: According to the data in section 2.2.9, the E.U.T complied with the FCC 15.109 limits.

Above 1 GHz :According to the data in section 2.2.9, the E.U.T complied with the CISPR22 standards.

2.2.9 Test Data*** Below 1 GHz**

Temperature: 4.0 °C Humidity: 36.0 % R.H. Test Date: 03. 06. 2015 Tested by: Tae Yeon, Kim

Frequency (MHz)	Amplitude (dB μ V/m)	Antenna		Correction Factor		Corrected Amplitude (dB μ V/m)	Applicable Limit (dB μ V/m)	Margin (dB)
		Polar. (H/V)	Height (m)	Ant. (dB)	Cable (dB)			
60.210	18.100	V	1.000	13.100	1.800	33.000	39.000	6.000
185.630	24.100	H	4.000	11.190	3.280	38.570	43.500	4.930
249.980	27.900	V	1.000	11.750	3.870	43.520	46.400	2.880
259.890	24.000	H	4.000	12.080	3.970	40.050	46.400	6.350
334.100	26.300	V	1.000	14.140	4.640	45.080	46.400	1.320
334.110	23.000	H	3.950	14.140	4.640	41.780	46.400	4.620
482.640	21.200	V	1.000	17.370	5.780	44.350	46.400	2.050
624.990	11.400	V	1.000	19.910	6.740	38.050	46.400	8.350

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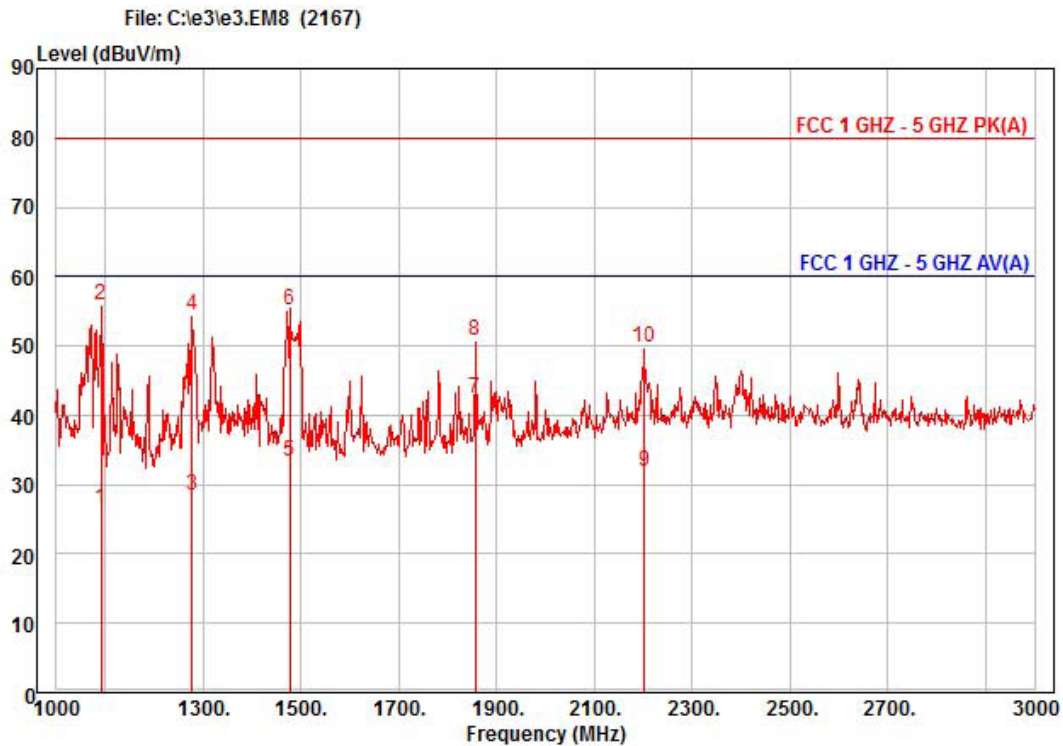
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* Above 1 GHz

Temperature: 20.1 °C Humidity: 36.0 % R.H. Test Date: 03.04. 2015 Tested by: Tae Yeon, Kim



Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN ANT (2014.03.10) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NVR
EUT : SNR-1673SN
Mode : FCC
Memo : (1 - 3) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1092.00	33.59	23.36	5.66	36.05	360	60.00	-33.44	horizontal	Average
2 pk	1092.00	63.03	23.36	5.66	36.05	360	80.00	-24.00	horizontal	Peak
3	1278.00	33.98	24.12	6.11	35.74	50	60.00	-31.53	horizontal	Average
4	1278.00	59.85	24.12	6.11	35.74	50	80.00	-25.66	horizontal	Peak
5	1478.00	37.14	24.93	6.60	35.40	39	60.00	-26.73	horizontal	Average
6	1478.00	59.14	24.93	6.60	35.40	39	80.00	-24.73	horizontal	Peak
7 pp	1856.00	42.32	27.28	7.51	34.77	321	60.00	-17.66	horizontal	Average
8	1856.00	50.80	27.28	7.51	34.77	321	80.00	-29.18	horizontal	Peak

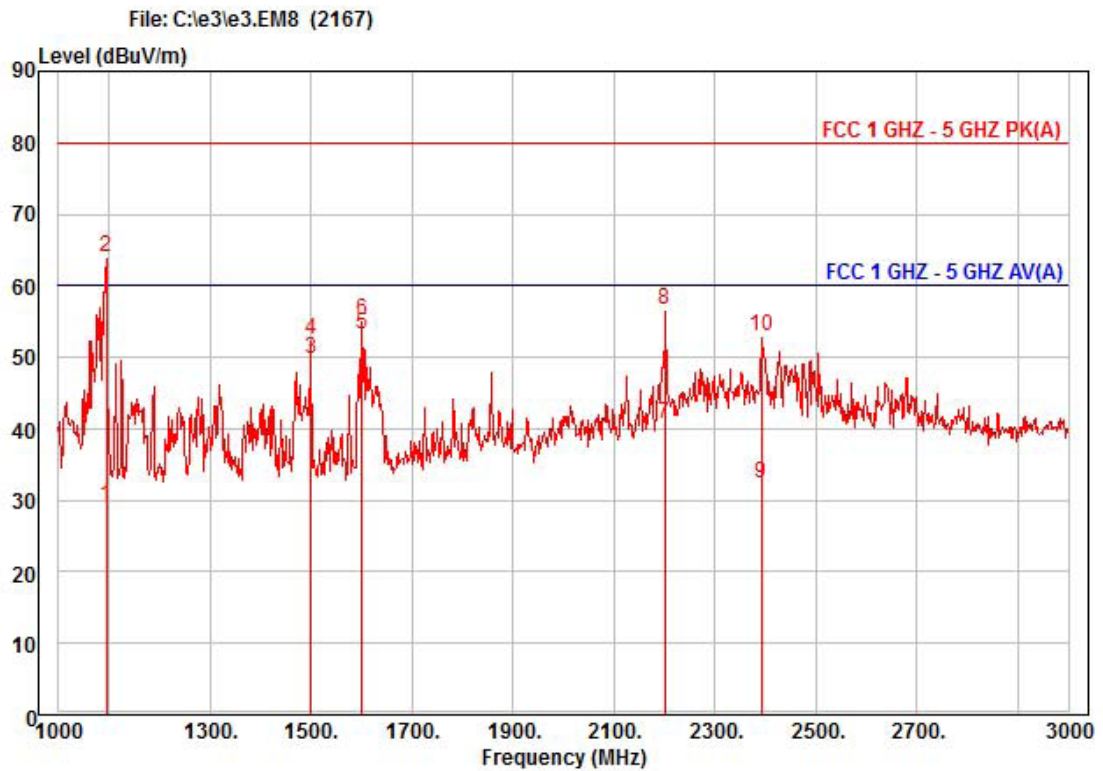
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Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN ANT (2014.03.10) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NVR
EUT : SNR-1673SN
Mode : FCC
Memo : (1 - 3) GHz

	Read Freq	Ant Level	Cable Factor	Preamp Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1094.00	36.22	23.37	5.67	36.04	350	60.00	-30.78	vertical	Average
2 pk	1094.00	70.97	23.37	5.67	36.04	350	80.00	-16.03	vertical	Peak
3	1500.00	53.42	25.02	6.65	35.36	206	60.00	-10.27	vertical	Average
4	1500.00	56.08	25.02	6.65	35.36	206	80.00	-27.61	vertical	Peak
5 pp	1600.00	55.78	25.65	6.89	35.20	166	60.00	-6.88	vertical	Average
6	1600.00	57.86	25.65	6.89	35.20	166	80.00	-24.80	vertical	Peak

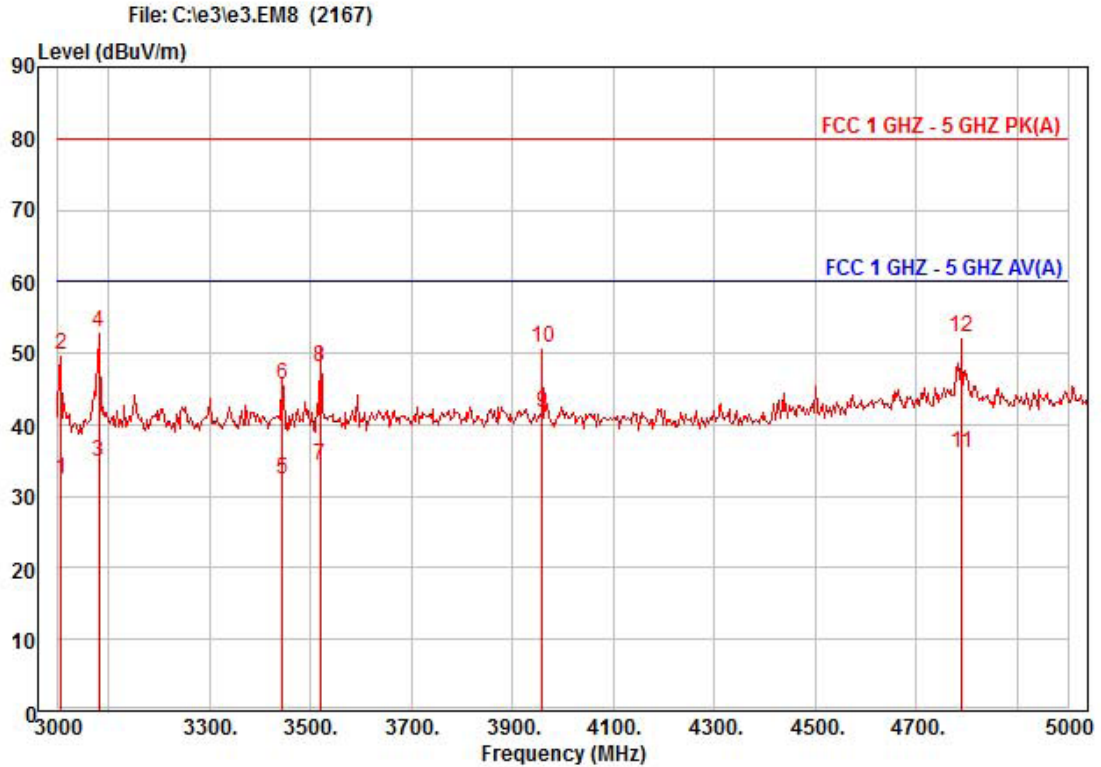
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Site : chamber
Condition: FCC 1 GHz - 5 GHz PK(A) 3m HORN ANT (2014.03.10) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NVR
EUT : SNR-1673SN
Mode : FCC
Memo : (3 - 6) GHz

	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	3006.00	25.90	30.25	9.97	33.85	134	60.00	-27.73	horizontal	Average
2	3006.00	43.53	30.25	9.97	33.85	134	80.00	-30.10	horizontal	Peak
3	3081.00	28.34	30.28	10.09	33.93	123	60.00	-25.22	horizontal	Average
4 pk	3081.00	46.46	30.28	10.09	33.93	123	80.00	-27.10	horizontal	Peak
5	3444.00	25.69	30.41	10.65	34.34	89	60.00	-27.59	horizontal	Average
6	3444.00	38.86	30.41	10.65	34.34	89	80.00	-34.42	horizontal	Peak
7	3519.00	27.52	30.49	10.77	34.43	177	60.00	-25.65	horizontal	Average
8	3519.00	41.32	30.49	10.77	34.43	177	80.00	-31.85	horizontal	Peak
9 pp	3960.00	33.35	31.80	11.46	34.92	174	60.00	-18.31	horizontal	Average
10	3960.00	42.52	31.80	11.46	34.92	174	80.00	-29.14	horizontal	Peak
11	4791.00	23.73	33.03	12.83	33.58	241	60.00	-23.99	horizontal	Average

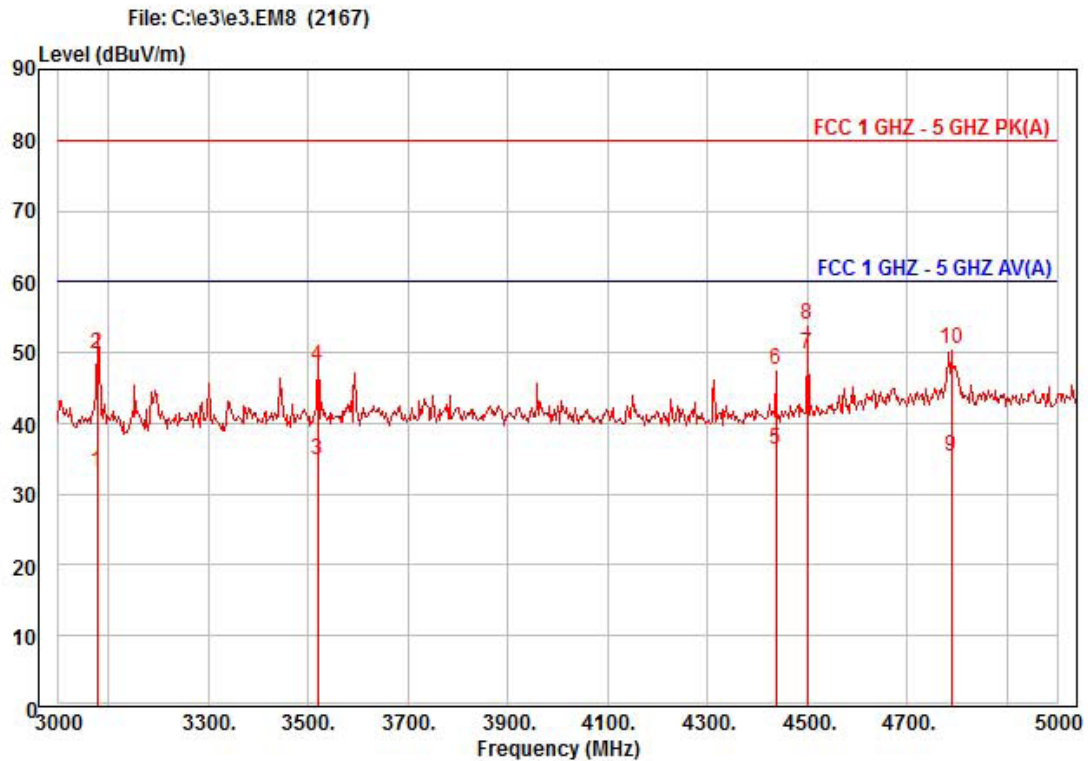
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Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN ANT (2014.03.10) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NVR
EUT : SNR-1673SN
Mode : FCC
Memo : (3 - 5) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preampl Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3078.00	26.65	30.28	10.08	33.93	60	60.00	-26.92	vertical	Average
2	3078.00	43.29	30.28	10.08	33.93	60	80.00	-30.28	vertical	Peak
3	3519.00	28.06	30.49	10.77	34.43	173	60.00	-25.11	vertical	Average
4	3519.00	41.15	30.49	10.77	34.43	173	80.00	-32.02	vertical	Peak
5	4437.00	26.13	32.02	12.24	34.20	162	60.00	-23.81	vertical	Average
6	4437.00	37.57	32.02	12.24	34.20	162	80.00	-32.37	vertical	Peak
7	4500.00	39.48	32.03	12.35	34.09	173	60.00	-10.23	vertical	Average

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3. Product Labelling Requirements

3.1 FCC Statement

Product shall be labelled the following statement on the user's manual:

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

Note : When the device is so small or for such use that it is not practicable to place the statement on it, the information shall be placed in prominent location in the instruction manual or pamphlet supplied to the user. However, the FCC identifier or unique identifier, as appropriate, must be displayed on the device.

4. Test Setup Photographs

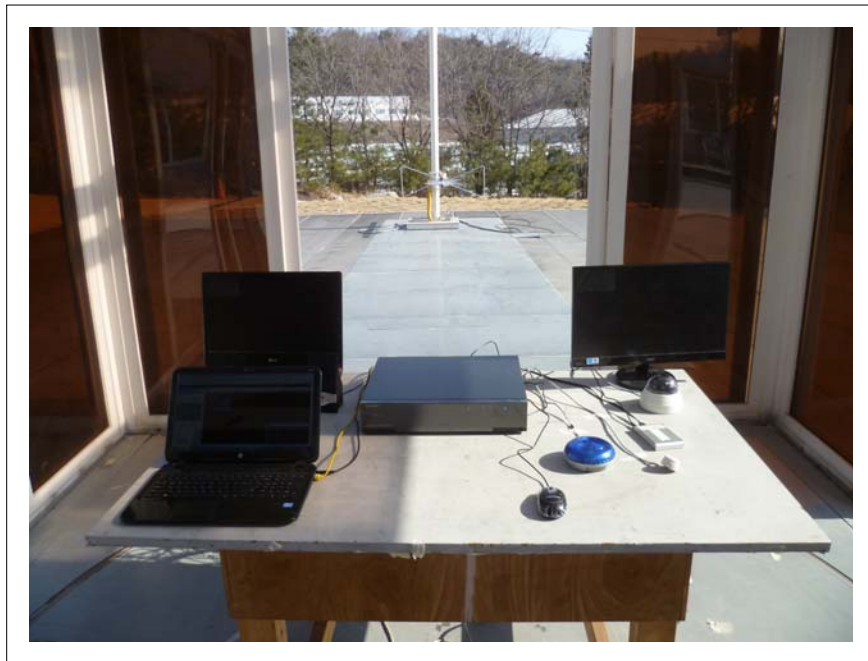
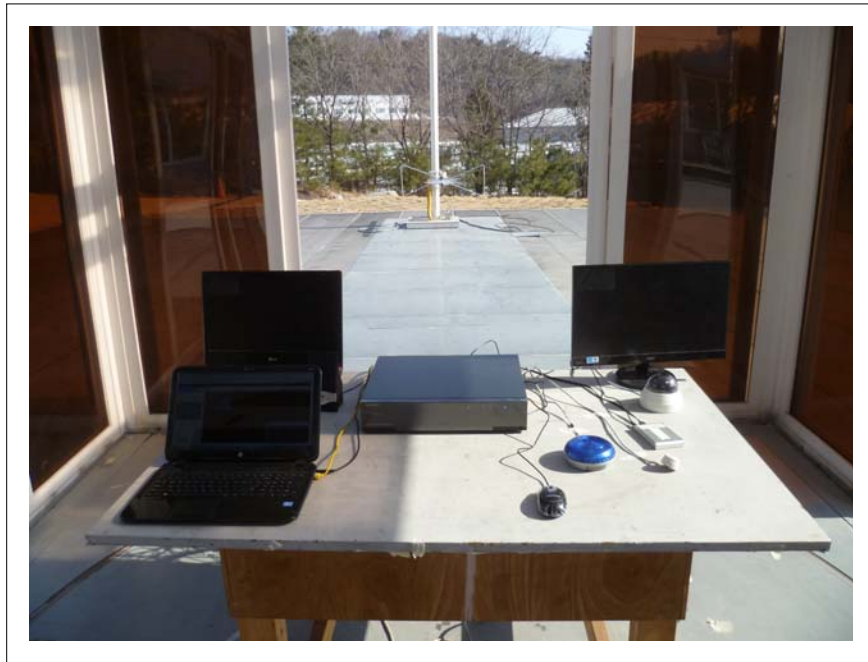
4.1 Conducted Emission



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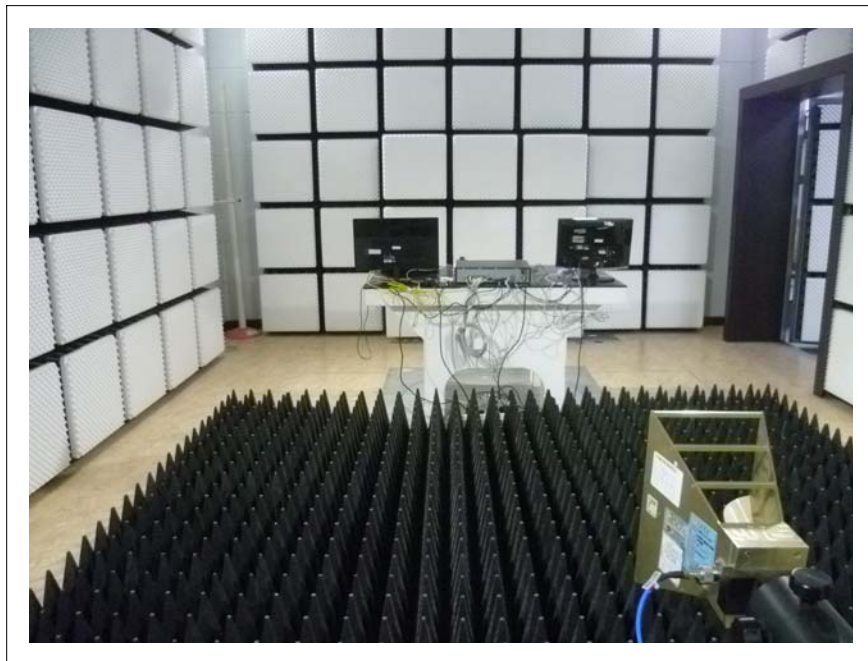
4.2 Radiated Emission

- Below 1 GHz



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- Above 1 GHz



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5. External Photographs

5.1 E.U.T: Front View

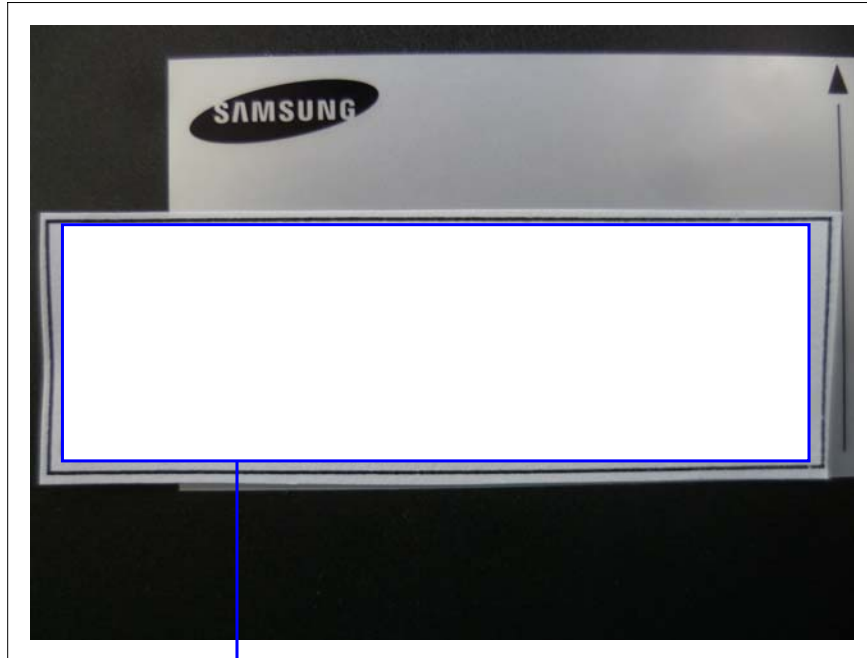


5.2 E.U.T: Rear View



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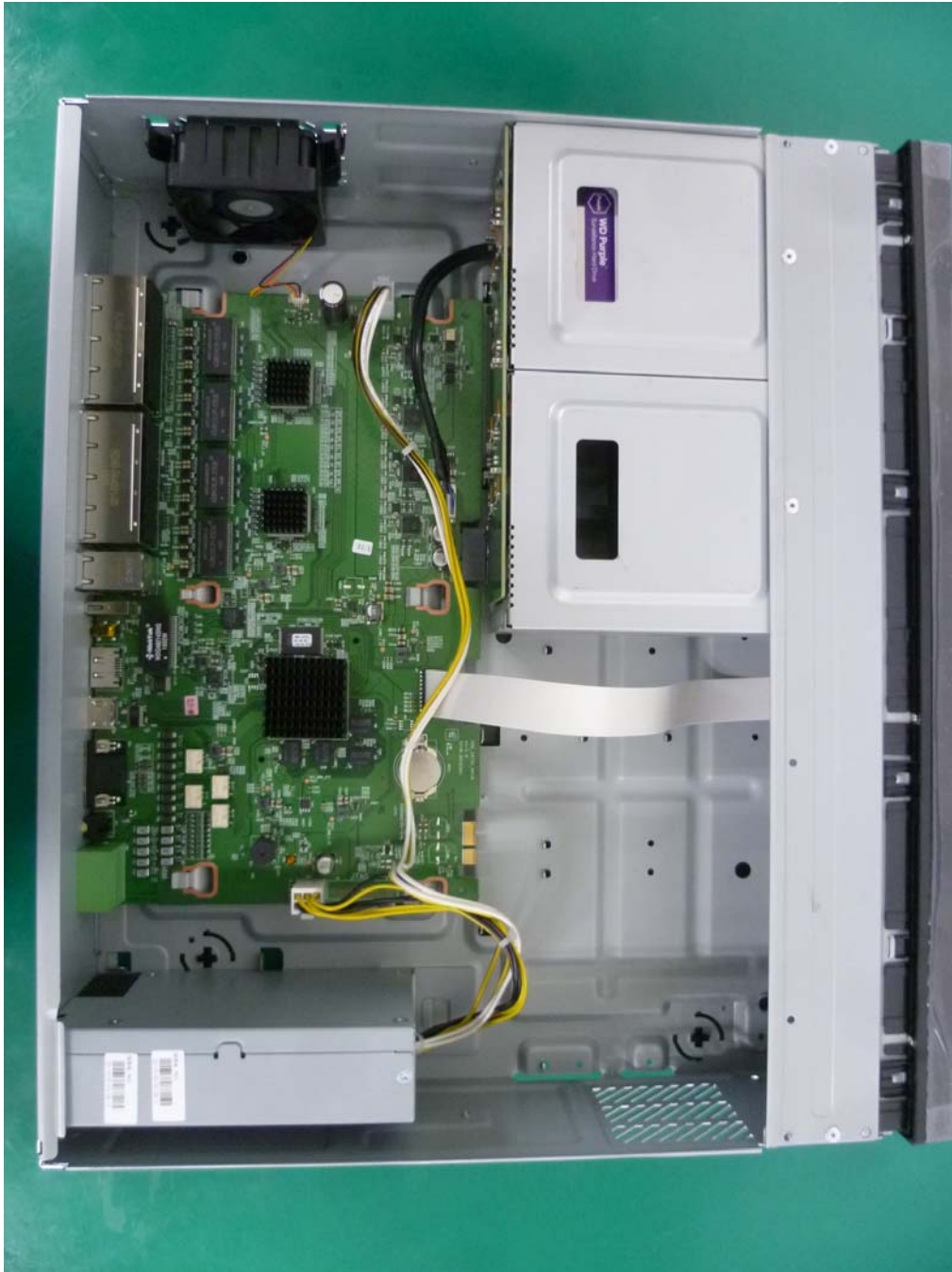
5.3 E.U.T: Label View (Location)



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

6. Internal Photographs

6.1 E.U.T: Internal View



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6.2 E.U.T: Internal View(Top) - Main Board



E.U.T: Internal View(Bottom) - Main Board



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6.3 E.U.T: Internal View(Top) - USB Board2



E.U.T: Internal View(Bottom) - Sub Board2



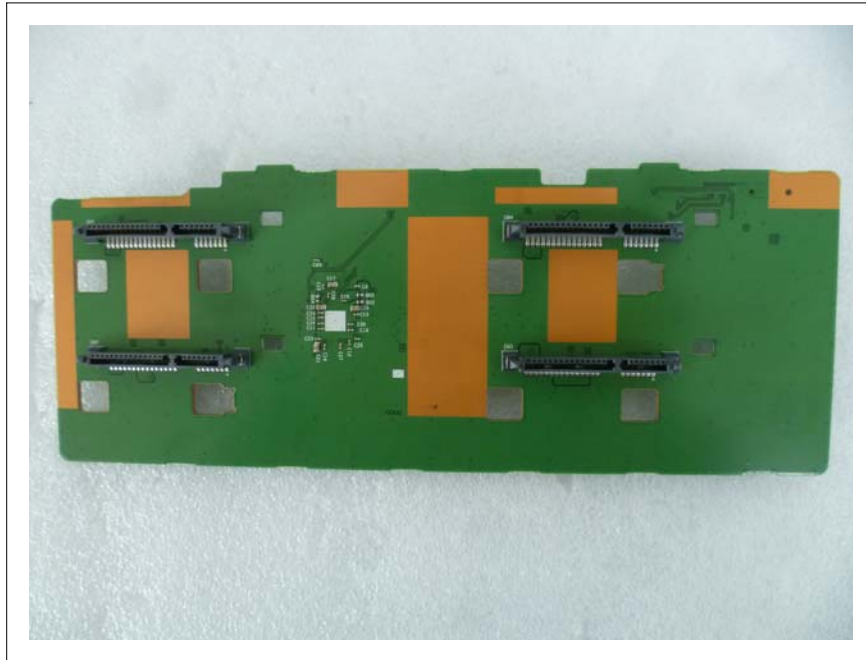
6.4 E.U.T: Internal View(Top) - LED Board



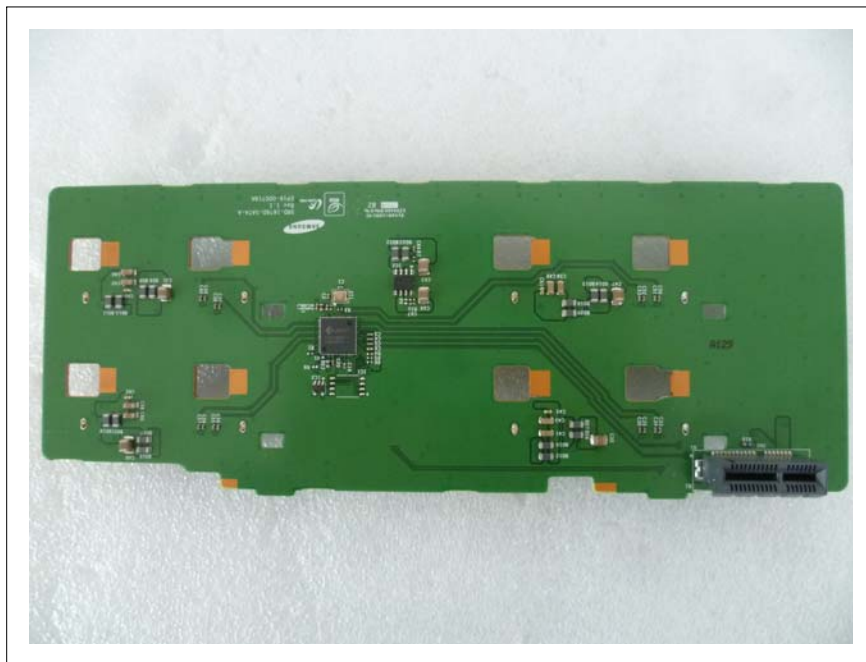
E.U.T: Internal View(Bottom) - LED Board



6.5 E.U.T: Internal View(Top) - HDD Slot Board



E.U.T: Internal View(Bottom) - HDD Slot Board



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6.6 E.U.T: Internal View(Top) - Power supply



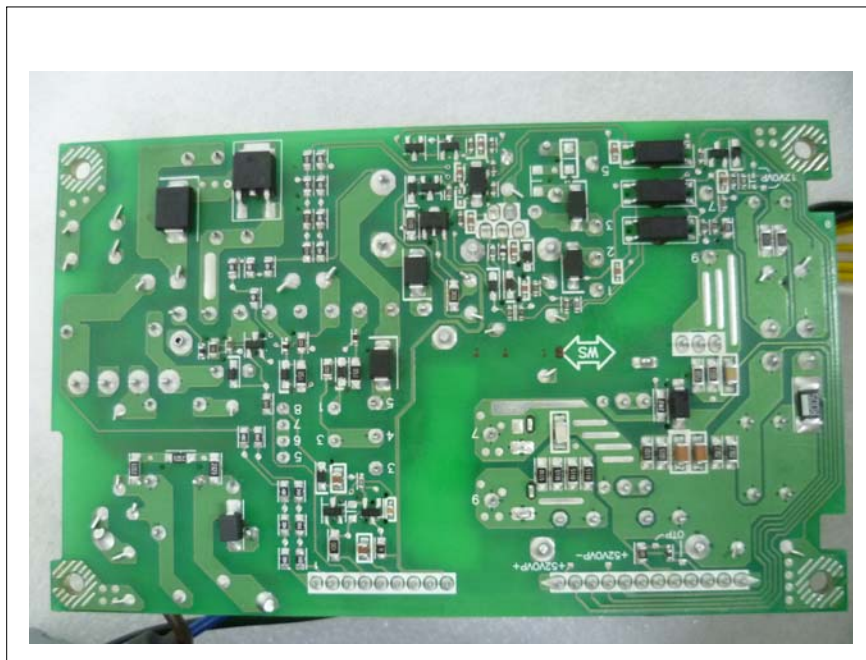
E.U.T: Internal View(Bottom) -Power supply



6.7E.U.T: Internal View(Top) - Power supply Main Board



E.U.T: Internal View(Bottom) - Power supply Main Board



6.8E.U.T: Internal View(Top) - HDD



E.U.T: Internal View(Bottom) - HDD



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Appendix A - Schematics/Block Diagram

Please see attached document(s).

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Appendix B - User's Manual

Please see attached document(s).

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