CERTIFICATE

Issued Date: Dec. 23, 2011
Report No. : 11C356R-ITCEP07V04

This is to certify that the following designated product

Product	:	**Serial ATA Flash Drive**
Trade name	:	**Apacer**
Model Number	:	**SAFD25M4**
Company Name	:	**Apacer Technology Inc.**

This product, which has been issued the test report listed as above in QuieTek Laboratory, is based on a single evaluation of one sample and confirmed to comply with the requirements of the following EMC standard.

EN 55022:2006+A1: 2007 Class B
EN 61000-3-2: 2006+A2: 2009
EN 61000-3-3: 2008

EN 55024: 1998+A1: 2001+A2: 2003
IEC 61000-4-2: 2008
IEC 61000-4-3: 2010
IEC 61000-4-4: 2011
IEC 61000-4-5: 2005
IEC 61000-4-6: 2008
IEC 61000-4-8: 2009
IEC 61000-4-11: 2004

TEST LABORATORY

Vincent Lin / Manager

Test Report

Product Name ： Serial ATA Flash Drive
Model No. ： SAFD25M4

Applicant ： Apacer Technology Inc.
Address ： 3F, No.83, Kur Wong Rd., Aspire Park, Lung Tan Hsiang,
Tao Yuan Hsien, Taiwan

Date of Receipt ： 2011/12/19
Issued Date ： 2011/12/23
Report No. ： 11C356R-ITCEP07V04
Report Version ： V1.0

Declaration of Conformity

We herewith confirm the following designated products to comply with the requirements set out in the Council Directive on the approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC) with applicable standards listed below.

Product : Serial ATA Flash Drive
Trade name : Apacer
Model Number : SAFD25M4
Applicable Harmonized Standards under Directive 2004/108/EC : EN 55022:2006+A1: 2007 Class B
EN 55024:1998+A1: 2001+A2: 2003
EN 61000-3-2: 2006+A2: 2009
EN 61000-3-3: 2008

Company Name :

Company Address :

Telephone : Facsimile :

Person in responsible for marking this declaration:

Name (Full Name) Title/ Department

Date Legal Signature

QTK® QuieTek Corporation

Accredited by NVLAP, TAF-CNLA, DNV, TUV, Nemko

Date: Dec. 23, 2011
QTK No.: 11C356R-ITCEP07V04

CE

Statement of Conformity

This statement is to certify that the designated product below.

Product : Serial ATA Flash Drive
Trade name : Apacer
Model Number : SAFD25M4
Company Name : Apacer Technology Inc.
Applicable Standards : EN 55022:2006+A1: 2007 Class B
EN 55024:1998+A1: 2001+A2: 2003
EN 61000-3-2: 2006+A2: 2009
EN 61000-3-3: 2008

One sample of the designated product has been tested and evaluated in our laboratory to find in compliance with the applicable standards above. The issued test report(s) show(s) it in detail.

Report Number : 11C356R-ITCEP07V04

TÜV DNV NEMKO NVLAP NVLAP Lab Code: 200533-0 ilac-MRA TAF Testing Laboratory 0914

TEST LABORATORY

Vincent Lin / Manager

The verification is based on a single evaluation of one sample of above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. Logo.

Test Report Certification

Issued Date : 2011/12/23
Report No. : 11C356R-ITCEP07V04

QuieTek

Product Name : Serial ATA Flash Drive
Applicant : Apacer Technology Inc.
Address : 3F, No.83, Kur Wong Rd., Aspire Park, Lung Tan Hsiang,
Tao Yuan Hsien, Taiwan
Manufacturer : Apacer Technology Inc.
Model No. : SAFD25M4
EUT Rated Voltage : Power by PC
EUT Test Voltage : AC 230 V / 50 Hz
Trade Name : Apacer
Applicable Standard : EN 55022: 2006+A1: 2007 Class B
EN 55024: 1998+A1: 2001+A2: 2003
EN 61000-3-2: 2006+A2: 2009
EN 61000-3-3: 2008
Test Result : Complied
Performed Location : Quietek Corporation (Linkou Laboratory)
No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan, R.O.C.
TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Reviewed By : JoJolee jung
(Engineer / Jojolee Jung)

Approved By :
(Manager / Vincent Lin)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C. : BSMI, NCC, TAF
Germany : TUV Rheinland
Norway : Nemko, DNV
USA : FCC, NVLAP
Japan : VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0
Testing Laboratory
1313

LinKou Testing Laboratory :

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0
Testing Laboratory
0914

Suzhou (China) Testing Laboratory :

No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou,China.
TEL : +86-512-6251-5088 / FAX : +86-512-6251-5098 E-Mail : service@quietek.com

NVLAP Lab Code : 200743-0
Testing Laboratory
1596

TABLE OF CONTENTS

Description Page

1. General Information

1.1. EUT Description

Product Name	Serial ATA Flash Drive
Trade Name	Apacer
Model No.	SAFD25M4

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: Normal Operation	
Final Test Mode	
Emission	Mode 1: Normal Operation
Immunity	Mode 1: Normal Operation

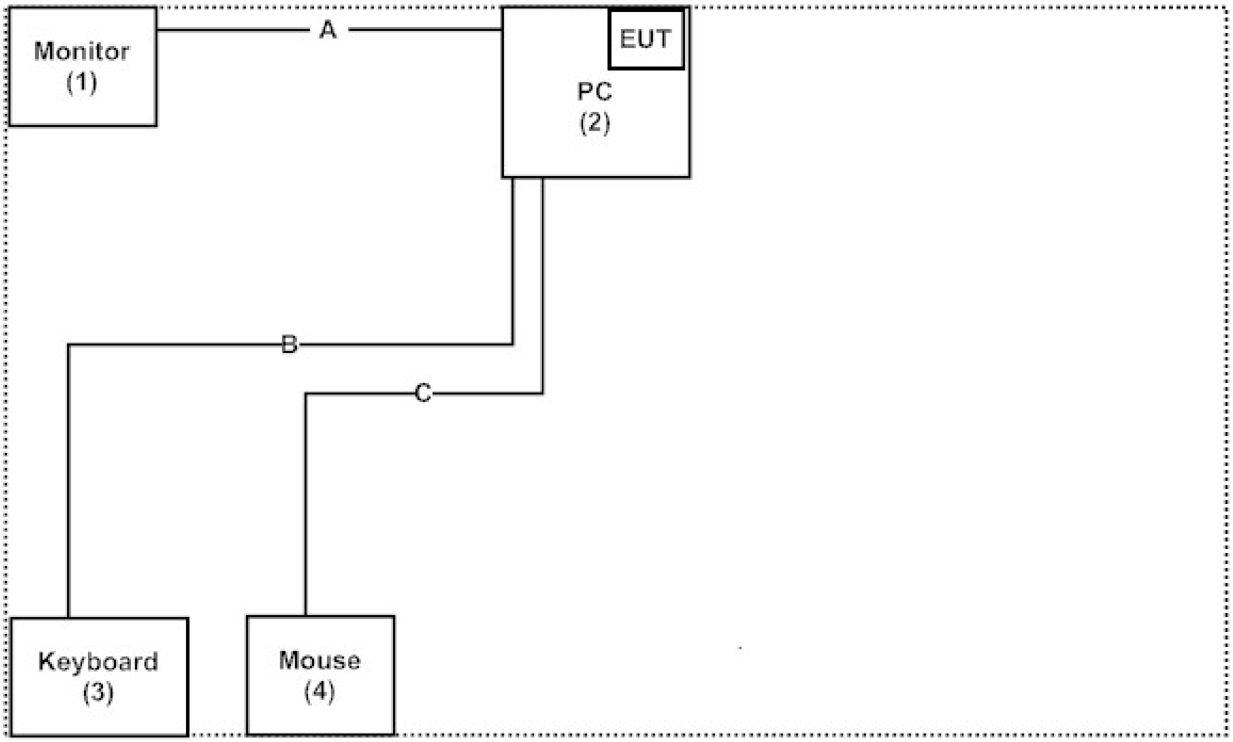
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Monitor (EMI)	DELL	U2410	CN-0J257M-728-01I-04PL	Non-Shielded, 1.8m
	Monitor (EMS)	LG	W2261VT	907YHZK07373	
2	PC	DELL	Vostro230	4R7Z62S	Non-Shielded, 1.8m
3	Keyboard (EMI)	COMPAQ	KB-0133	B55940FBUOE04B	N/A
	Keyboard (EMS)	Logitech	Y-SAH83	867893-0121	
4	Mouse	Logitech	M-SBM96B	810-000440	N/A

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	D-SUB Cable	Shielded, 1.8m, with two ferrite cores bonded.
B	Keyboard Cable	Shielded, 1.8m
C	Mouse Cable	Shielded, 1.8m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	All the features of the EUT operation normally.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	EN 55022:2006+A1: 2007	Yes	No
Impedance Stabilization Network	EN 55022:2006+A1: 2007	No	No
Radiated Emission	EN 55022:2006+A1: 2007	Yes	No
Power Harmonics	EN 61000-3-2: 2006+A2: 2009	Yes	No
Voltage Fluctuation and Flicker	EN 61000-3-3: 2008	Yes	No

Immunity			
Performed Item	Normative References	Test Performed	Deviation
Electrostatic Discharge	IEC 61000-4-2: 2008	Yes	No
Radiated susceptibility	IEC 61000-4-3: 2010	Yes	No
Electrical fast transient/burst	IEC 61000-4-4: 2011	Yes	No
Surge	IEC 61000-4-5: 2005	Yes	No
Conducted susceptibility	IEC 61000-4-6: 2008	Yes	No
Power frequency magnetic field	IEC 61000-4-8: 2009	Yes	No
Voltage dips and interruption	IEC 61000-4-11: 2004	Yes	No

2.2. List of Test Equipment

Conducted Emission / SR8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	838251/001	2011/06/02
LISN	R&S	ESH3-Z5	836679/020	2011/02/10
LISN	R&S	ENV216	100097	2011/04/07
Pulse Limiter	R&S	ESH3-Z2	100324	2011/09/23

Radiated Emission / Site2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2921	2011/01/24
EMI Test Receiver	R&S	ESCS 30	100123	2011/06/13
Pre-Amplifier	QTK	N/A	N/A	2011/07/07
Spectrum Analyzer	Advantest	R3162	01700040	2011/11/22
Site2 NSA	QTK	N/A	N/A	2011/07/05

Radiated Emission / CB7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	Agilent	E4440A	MY46185846	2011/12/12
Horn Antenna	Schwarzbeck	9120D	576	2011/11/14
Pre-Amplifier	QuieTek	AP-180C	CHM/071920	2011/07/12
CB7 VSWR	QTK	N/A	N/A	2011/08/25

Power Harmonics / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source(Harmonic)	Schaffner	NSG 1007	HK54148	2011/09/13
IEC1000-4-X Analyzer(Flicker)	Schaffner	CCN 1000-1	X7 1887	2011/09/13

Voltage Fluctuation and Flicker / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source(Harmonic)	Schaffner	NSG 1007	HK54148	2011/09/13
IEC1000-4-X Analyzer(Flicker)	Schaffner	CCN 1000-1	X7 1887	2011/09/13

Electrostatic Discharge / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
ESD Simulator System	Noiseken	TC-815R	ESS0929097	2011/06/16
Horizontal Coupling Plane(HCP)	QuieTek	HCP AL50	N/A	N/A
Vertical Coupling Plane(VCP)	QuieTek	VCP AL50	N/A	N/A

Radiated susceptibility / CB5

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AF-BOX	R&S	AF-BOX ACCUST	100007	N/A
Audio Analyzer	R&S	UPL 16	100137	2011/05/09
Biconilog Antenna	EMCO	3149	00071675	N/A
Directional Coupler	A&R	DC 6180	22735	N/A
Dual Microphone Supply	B&K	5935	2426784	2011/04/21
Mouth Simulator	B&K	4227	2439692	2011/04/21
Power Amplifier	A&R	30S1G3	309453	N/A

Power Amplifier	A&R	100W10000M7	A285000010	N/A
Power Amplifier	SCHAFFNER	CBA9413B	4020	N/A
Power Amplifier	AR	75A250A	0325371	N/A
Power Meter	R&S	NRVD(P.M)	100219	2011/05/09
Pre-Amplifier	A&R	150A220	23067	N/A
Probe Microphone	B&K	4182	2278070	2011/04/21
Signal Generator	R&S	SMT03	100170	2011/05/09

Electrical fast transient/burst / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
TRANSIENT TEST SYSTEM	EMC PARTNER	TRA2000IN6	1138	2011/11/30

Surge / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
TRANSIENT TEST SYSTEM	EMC PARTNER	TRA2000IN6	1138	2011/11/30

Conducted susceptibility / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Schaffner NSG 2070 RF-Generator	Schaffner	N/A	N/A	2011/04/07

Power frequency magnetic field / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Induction Coil Interface	Schaffner	INA 2141	6002	N/A
Magnetic Loop Coil	Schaffner	INA 702	160	N/A

Voltage dips and interruption / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
TRANSIENT TEST SYSTEM	EMC PARTNER	TRA2000IN6	1138	2011/11/30

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

Harmonic Current Emission

The measurement uncertainty is evaluated as 4.7 (mA/A).

Voltage Fluctuation and Flicker

The measurement uncertainty is evaluated as 0.27 (mV/V).

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 3.0 % and 3.8%.

Radiated susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical filed strength as being 3.57 dB.

Electrical fast transient/burst

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant EFT/Burst standards. The immunity test signal from the EFT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage, frequency and timing as being 4 %, and 2.5%.

Surge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in Surge testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant Surge standards. The immunity test signal from the Surge system meet the required specifications in IEC 61000-4-5 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 3.5 % and 0.1%.

Conducted susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 2.0 dB and 2.61 dB.

Power frequency magnetic field

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in PFM testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant PFM standards. The immunity test signal from the PFM system meet the required specifications in IEC 61000-4-8 through the calibration report with the calibrated uncertainty for the Gauss Meter to verify the output level of magnetic field strength as being 2.0 %.

Voltage dips and interruption

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in DIP testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the DIP system meet the required specifications in IEC 61000-4-11 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 3.5 % and 0.1%.

2.4. Test Environment

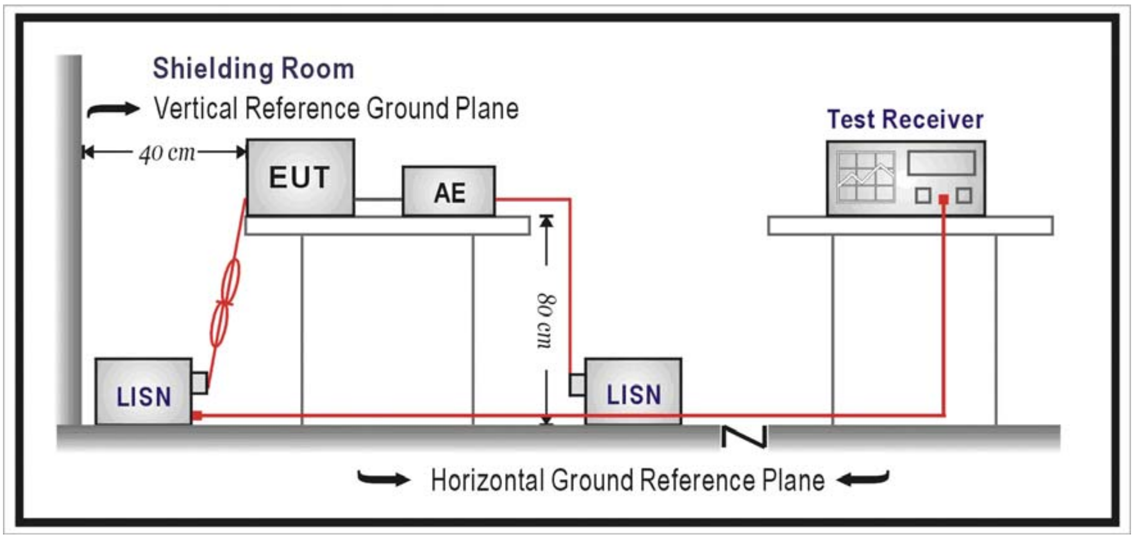
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	24
	Humidity (%RH)	25-75	57
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	16.9
	Humidity (%RH)	25-75	65
	Barometric pressure (mbar)	860-1060	950-1000
Electrostatic Discharge	Temperature (°C)	15-35	22
	Humidity (%RH)	30-60	50
	Barometric pressure (mbar)	860-1060	950-1000
Radiated susceptibility	Temperature (°C)	15-35	22
	Humidity (%RH)	25-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Electrical fast transient/burst	Temperature (°C)	15-35	22
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	950-1000
Surge	Temperature (°C)	15-35	22
	Humidity (%RH)	10-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Conducted susceptibility	Temperature (°C)	15-35	22
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	950-1000
Power frequency magnetic field	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Voltage dips and interruption	Temperature (°C)	15-35	22
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission (Main Terminals)

3.1. Test Specification

According to EMC Standard: EN 55022

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 – 46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

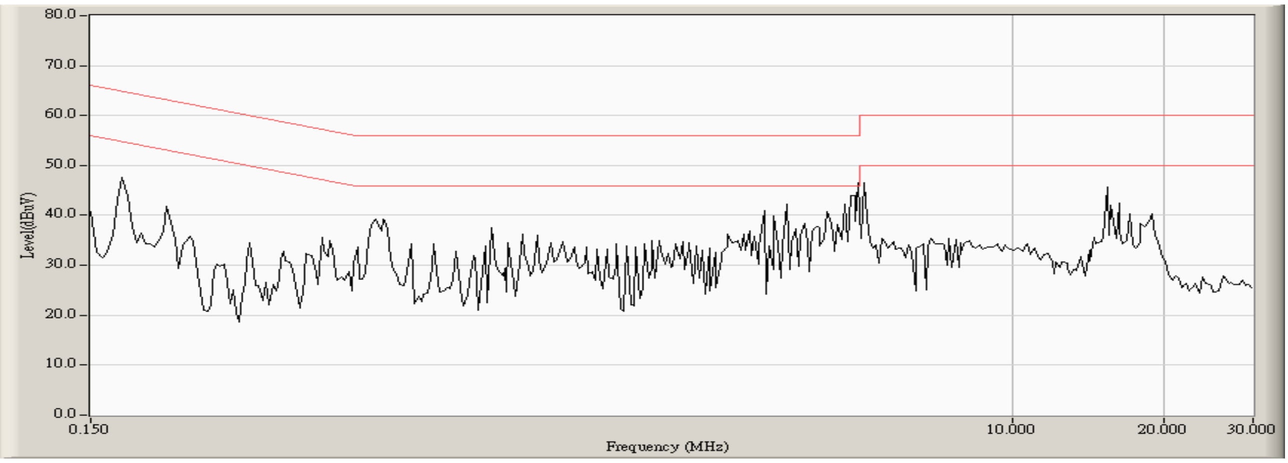
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

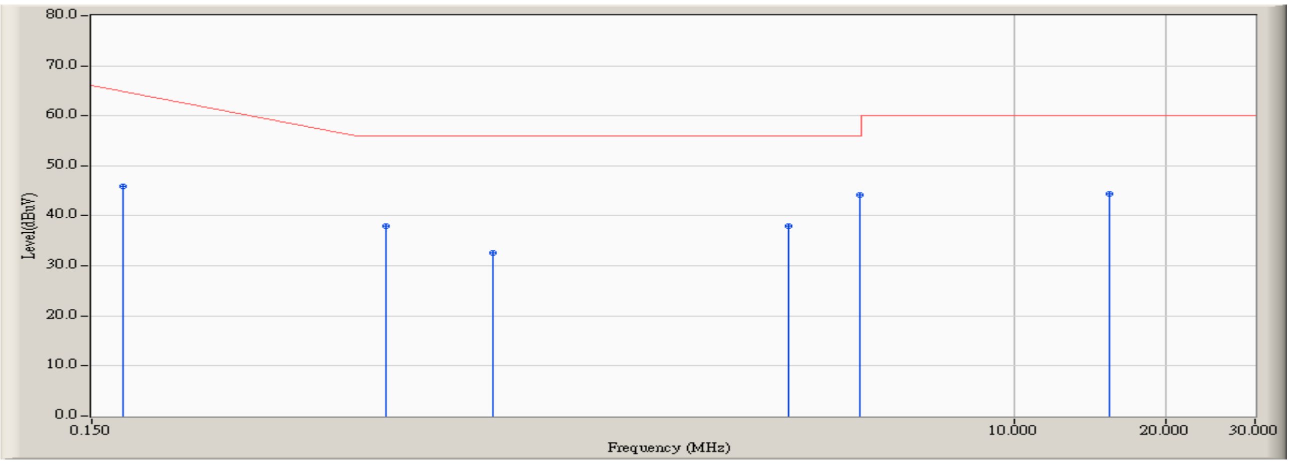
No deviation.

3.6. Test Result

Site : SR8	**Time : 2011/12/20 - 13:59**
Limit : CISPR_B_00M_QP	**Margin : 10**
EUT : Serial ATA Flash Drive	**Probe : ENV216_L1 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**



Site : SR8	**Time : 2011/12/20 - 14:01**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : Serial ATA Flash Drive	**Probe : ENV216_L1 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**

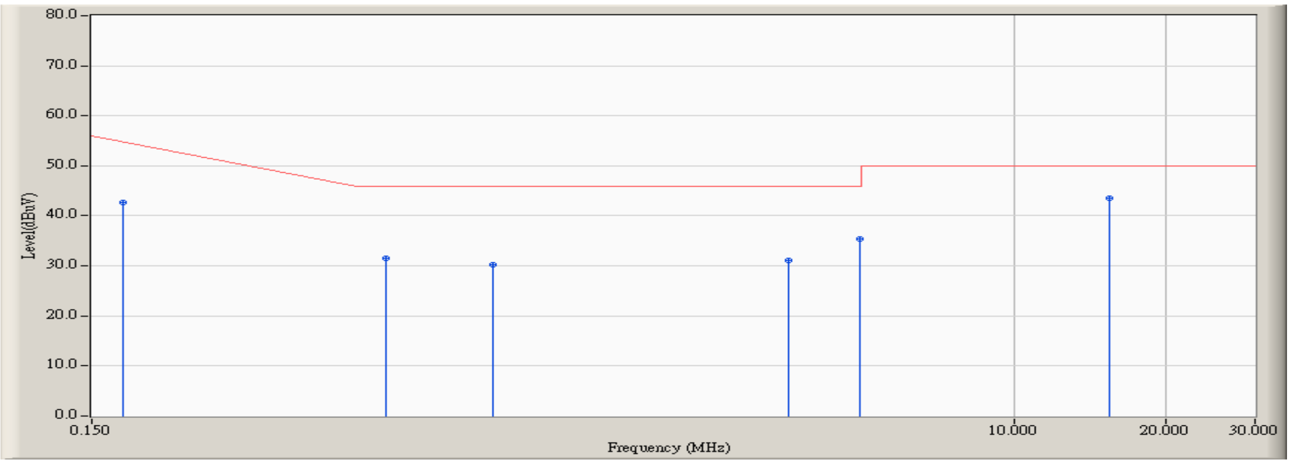


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.840	36.010	45.850	-19.493	65.343	QUASIPEAK
2		0.571	9.840	28.090	37.930	-18.070	56.000	QUASIPEAK
3		0.931	9.850	22.750	32.600	-23.400	56.000	QUASIPEAK
4		3.595	9.870	28.150	38.020	-17.980	56.000	QUASIPEAK
5	*	4.959	9.886	34.200	44.086	-11.914	56.000	QUASIPEAK
6		15.420	10.128	34.240	44.368	-15.632	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR8	**Time : 2011/12/20 - 14:01**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : Serial ATA Flash Drive	**Probe : ENV216_L1 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**

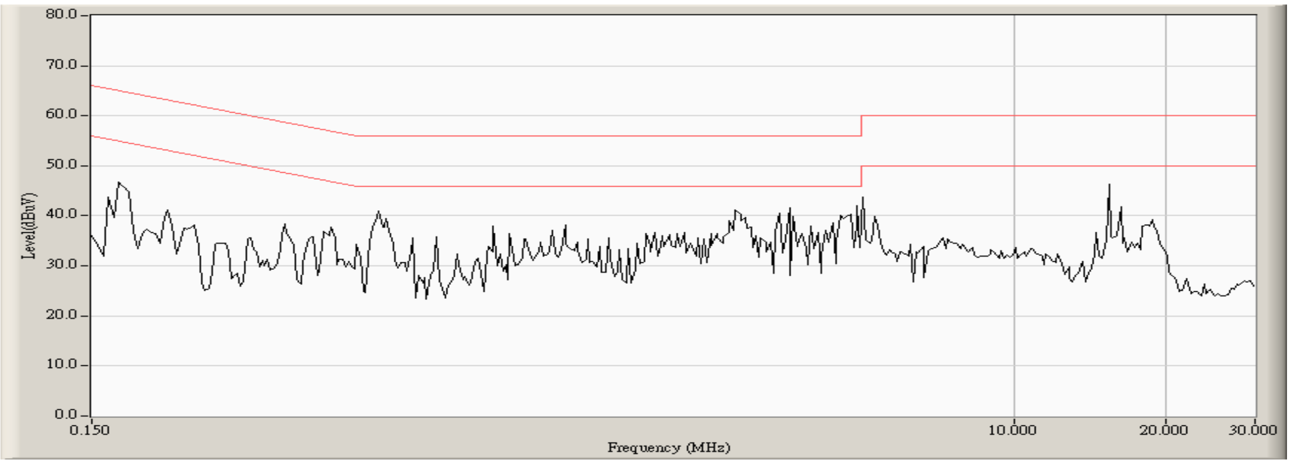


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.840	32.920	42.760	-12.583	55.343	AVERAGE
2		0.571	9.840	21.720	31.560	-14.440	46.000	AVERAGE
3		0.931	9.850	20.430	30.280	-15.720	46.000	AVERAGE
4		3.595	9.870	21.320	31.190	-14.810	46.000	AVERAGE
5		4.959	9.886	25.410	35.296	-10.704	46.000	AVERAGE
6	*	15.420	10.128	33.510	43.638	-6.362	50.000	AVERAGE

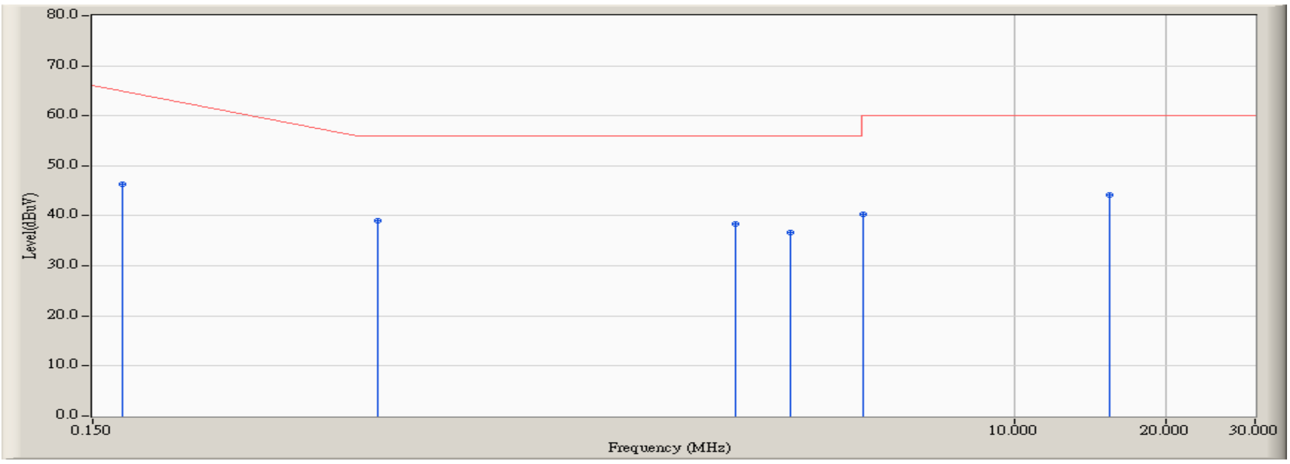
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR8	**Time : 2011/12/20 - 14:01**
Limit : CISPR_B_00M_QP	**Margin : 10**
EUT : Serial ATA Flash Drive	**Probe : ENV216_N - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**



Site : SR8	**Time : 2011/12/20 - 14:03**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : Serial ATA Flash Drive	**Probe : ENV216_N - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**

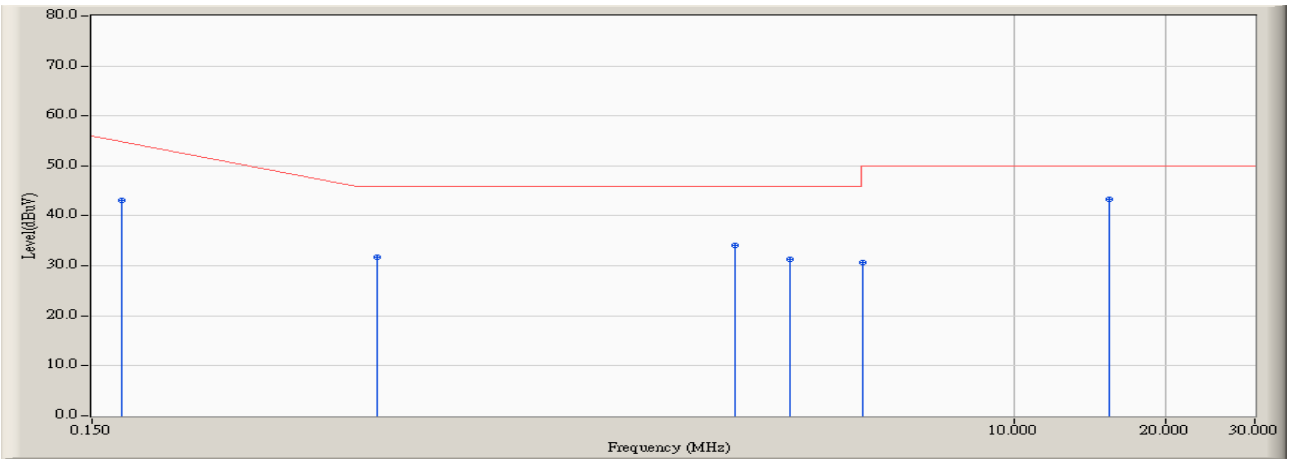


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.172	9.840	36.490	46.330	-19.041	65.371	QUASIPEAK
2		0.551	9.840	29.230	39.070	-16.930	56.000	QUASIPEAK
3		2.806	9.860	28.540	38.400	-17.600	56.000	QUASIPEAK
4		3.598	9.870	26.750	36.620	-19.380	56.000	QUASIPEAK
5		5.033	9.897	30.390	40.287	-19.713	60.000	QUASIPEAK
6	*	15.420	10.228	33.990	44.218	-15.782	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR8	**Time : 2011/12/20 - 14:03**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : Serial ATA Flash Drive	**Probe : ENV216_N - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.172	9.840	33.290	43.130	-12.241	55.371	AVERAGE
2		0.551	9.840	21.960	31.800	-14.200	46.000	AVERAGE
3		2.806	9.860	24.200	34.060	-11.940	46.000	AVERAGE
4		3.598	9.870	21.430	31.300	-14.700	46.000	AVERAGE
5		5.033	9.897	20.780	30.677	-19.323	50.000	AVERAGE
6	*	15.420	10.228	33.070	43.298	-6.702	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3.7. Test Photograph

Test Mode : Mode 1: Normal Operation

Description : Front View of Conducted Test

Test Mode : Mode 1: Normal Operation

Description : Back View of Conducted Test

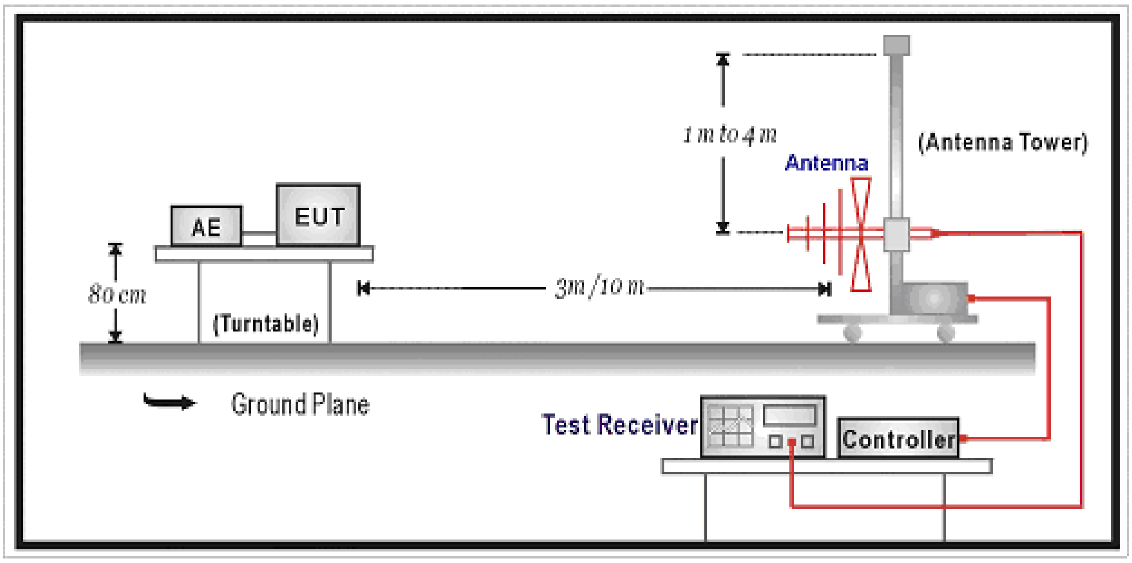
4. Radiated Emission

4.1. Test Specification

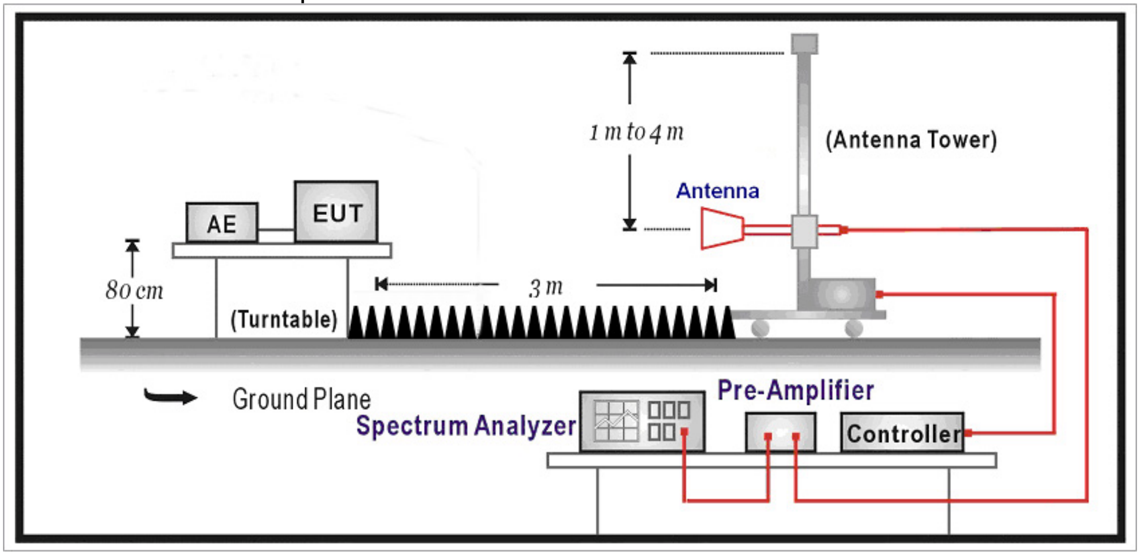
According to EMC Standard : EN 55022

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	30
230 – 1000	10	37

Limits			
Frequency (GHz)	Distance (m)	Peak (dBuV/m)	Average (dBuV/m)
1 – 3	3	70	50
3 – 6	3	74	54

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 6 GHz, whichever is lower

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3/10 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz and above 1GHz using a receiver bandwidth of 1MHz.

30MHz to1GHz Radiated was performed at an antenna to EUT distance of 10 meters.

Above1GHz Radiated was performed at an antenna to EUT distance of 3 meters.

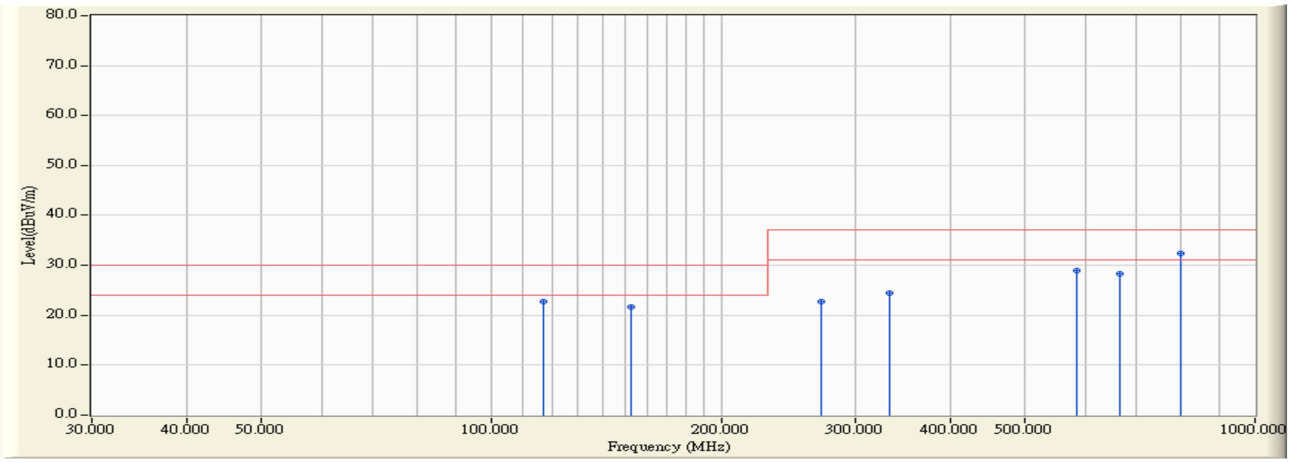
It is placed with absorb on the ground between EUT and Antenna.

4.5. Deviation from Test Standard

No deviation.

4.6. Test Result

Site : Site2	**Time : 2011/12/20 - 17:54**
Limit : CISPR_B_10M_QP	**Margin : 6**
EUT : Serial ATA Flash Drive	**Probe : Site2_CBL6112_10M_0726 - HORIZONTAL**
Power : AC 230V/50Hz	**Note : Mode 1**

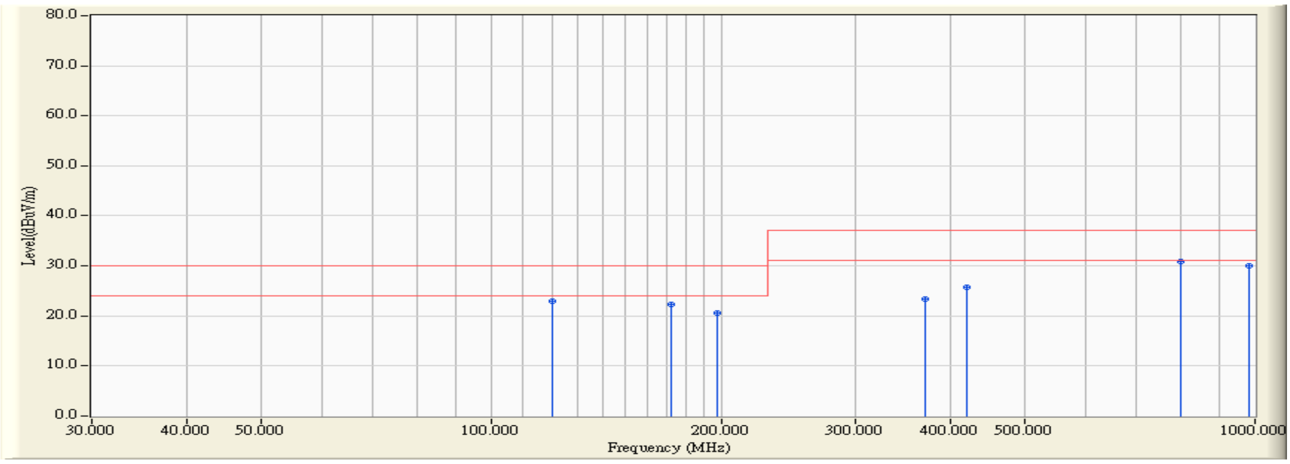


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		116.800	14.236	8.600	22.836	-7.164	30.000	QUASIPEAK
2		152.700	13.087	8.600	21.687	-8.313	30.000	QUASIPEAK
3		270.000	16.403	6.400	22.803	-14.197	37.000	QUASIPEAK
4		331.600	18.174	6.200	24.374	-12.626	37.000	QUASIPEAK
5		583.400	24.416	4.500	28.916	-8.084	37.000	QUASIPEAK
6		664.300	25.060	3.200	28.260	-8.740	37.000	QUASIPEAK
7	*	799.180	26.790	5.700	32.490	-4.510	37.000	QUASIPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site2	**Time : 2011/12/20 - 17:45**
Limit : CISPR_B_10M_QP	**Margin : 6**
EUT : Serial ATA Flash Drive	**Probe : Site2_CBL6112_10M_0726 - VERTICAL**
Power : AC 230V/50Hz	**Note : Mode 1**

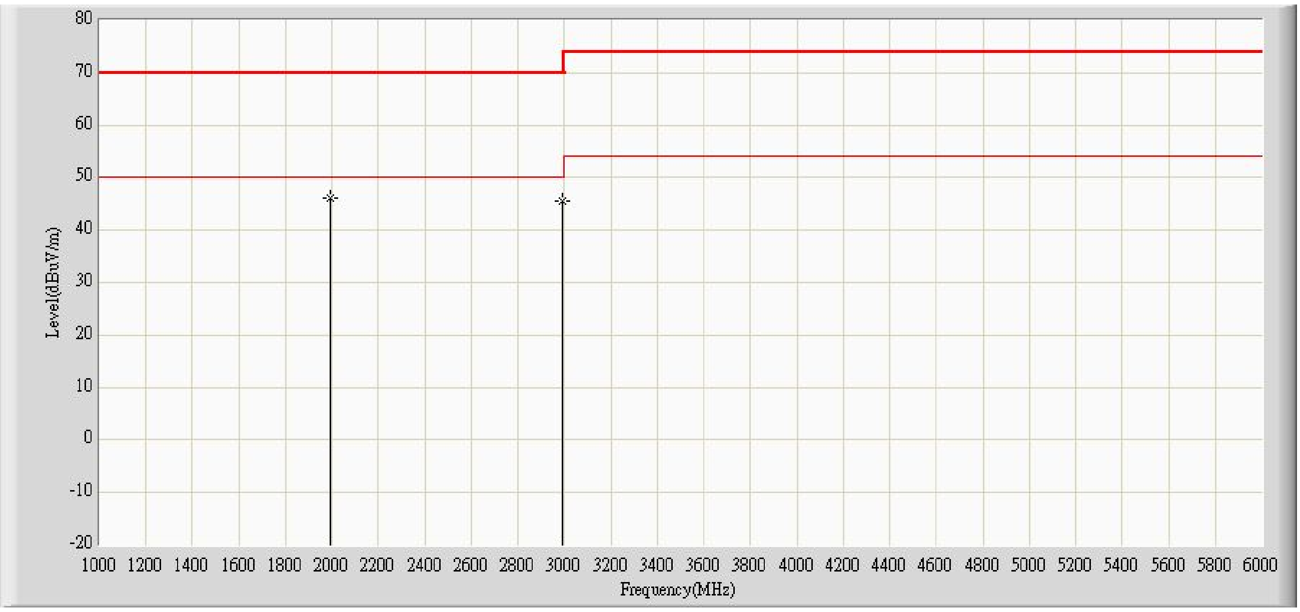


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		120.000	14.288	8.600	22.888	-7.112	30.000	QUASIPEAK
2		172.000	12.526	9.800	22.326	-7.674	30.000	QUASIPEAK
3		198.000	12.243	8.300	20.543	-9.457	30.000	QUASIPEAK
4		370.300	19.457	4.000	23.457	-13.543	37.000	QUASIPEAK
5		420.000	21.040	4.600	25.639	-11.361	37.000	QUASIPEAK
6	*	799.300	26.791	4.000	30.791	-6.209	37.000	QUASIPEAK
7		983.300	29.060	1.000	30.060	-6.940	37.000	QUASIPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site: CB7	Time: 2011/12/21 - 15:40
Limit: EN55022_B_(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_0325	Polarity: Horizontal
EUT: Serial ATA Flash Drive	Power: BY PC
Note: Mode 1	

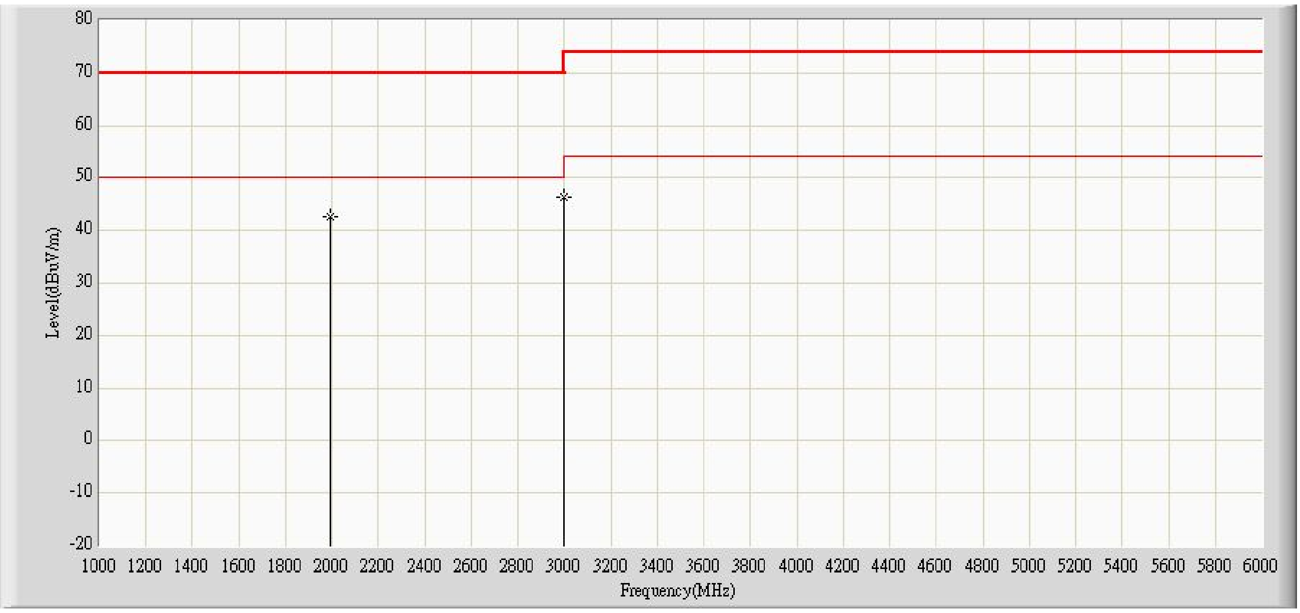


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	1990.000	45.963	48.164	-24.037	70.000	-2.200	PK
2			2994.000	45.511	44.295	-24.489	70.000	1.217	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2011/12/21 - 15:41
Limit: EN55022_B_(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_0325	Polarity: Vertical
EUT: Serial ATA Flash Drive	Power: BY PC
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1990.000	42.743	43.785	-27.257	70.000	-1.041	PK
2		*	2995.000	46.321	45.460	-23.679	70.000	0.861	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

4.7. Test Photograph

Test Mode : Mode 1: Normal Operation

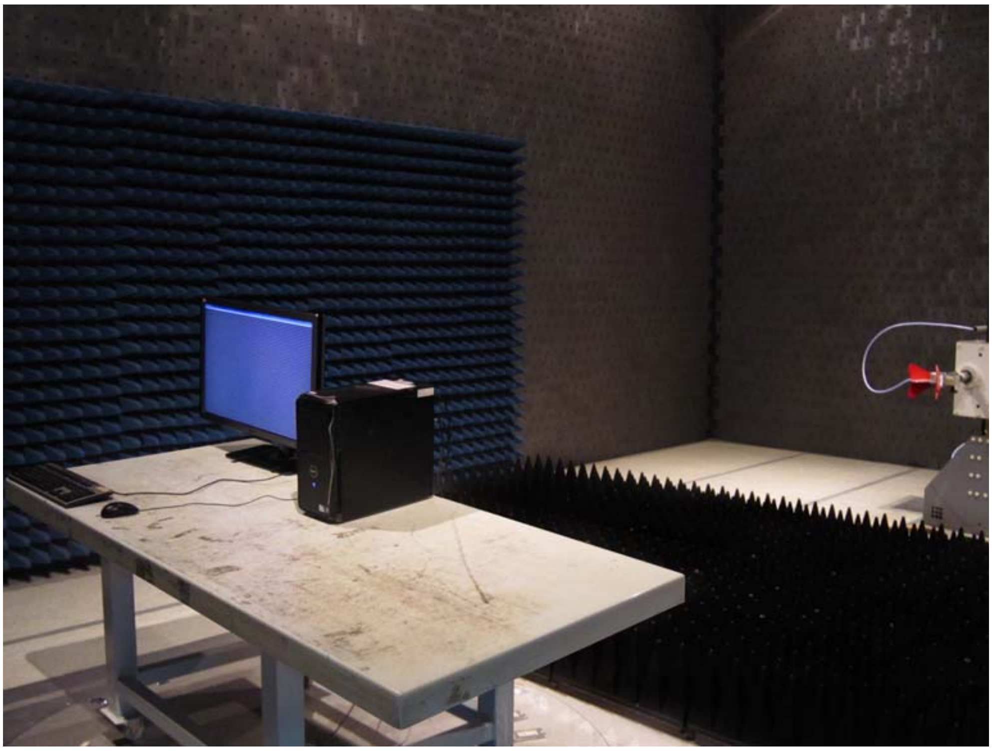
Description : Front View of Radiated Test

Test Mode : Mode 1: Normal Operation

Description : Back View of Radiated Test

Test Mode　: Mode 1: Normal Operation

Description　: Front View of High Frequency Radiated Test

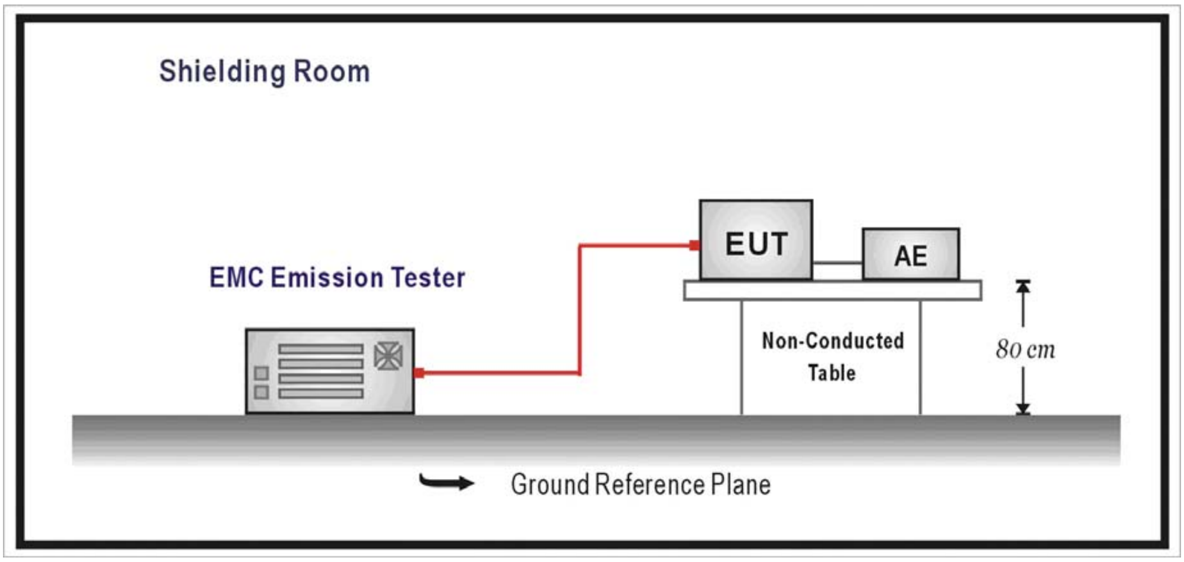


5. Harmonic Current Emission

5.1. Test Specification

According to EMC Standard : EN 61000-3-2

5.2. Test Setup



5.3. Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	8 ≤ n ≤ 40	0.23 * 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 * 15/n		

(b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

(c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \le n \le 39$ (odd harmonics only)	3
∗λ is the circuit power factor	

(d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
$11 \le n \le 39$ (odd harmonics only)	3.85/n	See limit of Class A

5.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

5.5. Deviation from Test Standard

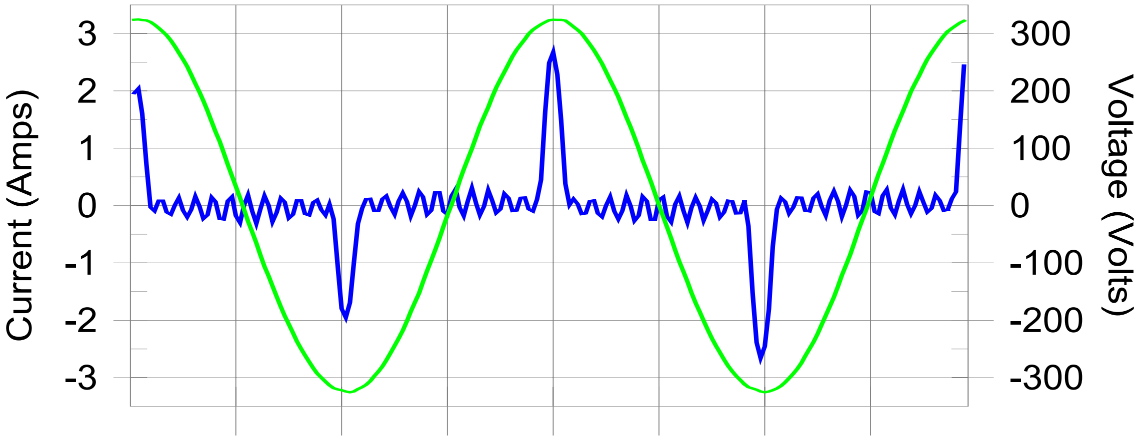
No deviation.

5.6. Test Result

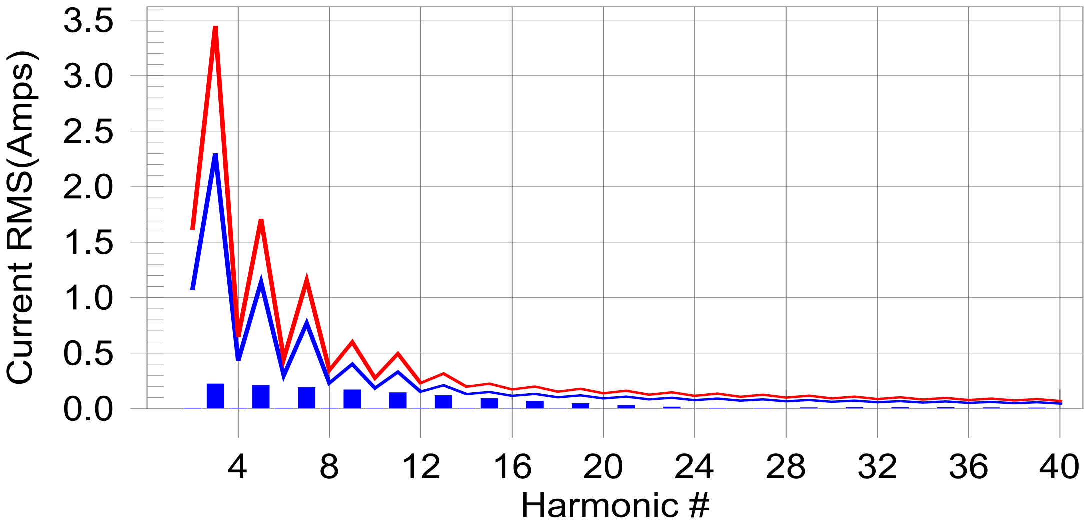
Product	Serial ATA Flash Drive		
Test Item	Power Harmonics		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonic was #15 with 59.49% of the limit.

Test Result: Pass Source qualification: Normal
THC(A): 0.44 I-THD(%): 196.37 POHC(A): 0.039 POHC Limit(A): 0.251
Highest parameter values during test:

V_RMS (Volts):	229.61	Frequency(Hz):	50.00
I_Peak (Amps):	2.850	I_RMS (Amps):	0.620
I_Fund (Amps):	0.235	Crest Factor:	5.224
Power (Watts):	63.3	Power Factor:	0.445

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.004	1.080	0.4	0.006	1.620	0.34	Pass
3	0.214	2.300	9.3	0.224	3.450	6.49	Pass
4	0.004	0.430	1.0	0.005	0.645	0.85	Pass
5	0.201	1.140	17.6	0.211	1.710	12.32	Pass
6	0.004	0.300	1.4	0.005	0.450	1.18	Pass
7	0.184	0.770	23.9	0.192	1.155	16.63	Pass
8	0.004	0.230	1.7	0.005	0.345	1.45	Pass
9	0.162	0.400	40.6	0.169	0.600	28.21	Pass
10	0.004	0.184	2.0	0.005	0.276	1.65	Pass
11	0.139	0.330	42.0	0.144	0.495	29.05	Pass
12	0.003	0.153	2.2	0.004	0.230	1.79	Pass
13	0.114	0.210	54.2	0.117	0.315	37.28	Pass
14	0.003	0.131	2.2	0.003	0.197	1.75	Pass
15	0.089	0.150	59.5	0.091	0.225	40.61	Pass
16	0.002	0.115	2.1	0.003	0.173	1.63	Pass
17	0.066	0.132	50.2	0.067	0.199	33.76	Pass
18	0.002	0.102	1.8	0.002	0.153	1.46	Pass
19	0.046	0.118	38.7	0.046	0.178	26.12	Pass
20	0.001	0.092	1.4	0.002	0.138	1.16	Pass
21	0.029	0.107	26.7	0.029	0.161	18.22	Pass
22	0.001	0.084	1.0	0.001	0.125	0.85	Pass
23	0.015	0.098	15.2	0.016	0.147	10.69	Pass
24	0.001	0.077	0.8	0.001	0.115	0.66	Pass
25	0.005	0.090	5.6	0.006	0.135	4.18	Pass
26	0.001	0.071	0.9	0.001	0.106	0.85	Pass
27	0.004	0.083	4.7	0.005	0.125	4.05	Pass
28	0.001	0.066	1.1	0.001	0.099	1.02	Pass
29	0.008	0.078	9.9	0.009	0.116	7.47	Pass
30	0.001	0.061	1.5	0.001	0.092	1.27	Pass
31	0.010	0.073	13.3	0.010	0.109	9.59	Pass
32	0.001	0.058	1.6	0.001	0.086	1.36	Pass
33	0.010	0.068	14.7	0.010	0.102	10.29	Pass
34	0.001	0.054	1.7	0.001	0.081	1.39	Pass
35	0.009	0.064	14.6	0.010	0.096	9.96	Pass
36	0.001	0.051	1.6	0.001	0.077	1.27	Pass
37	0.008	0.061	13.3	0.008	0.091	9.07	Pass
38	0.001	0.048	1.3	0.001	0.073	1.10	Pass
39	0.006	0.058	11.2	0.007	0.087	7.73	Pass
40	0.000	0.046	1.0	0.001	0.069	0.90	Pass

1.Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2:According to EN61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

5.7. Test Photograph

Test Mode : Mode 1: Normal Operation

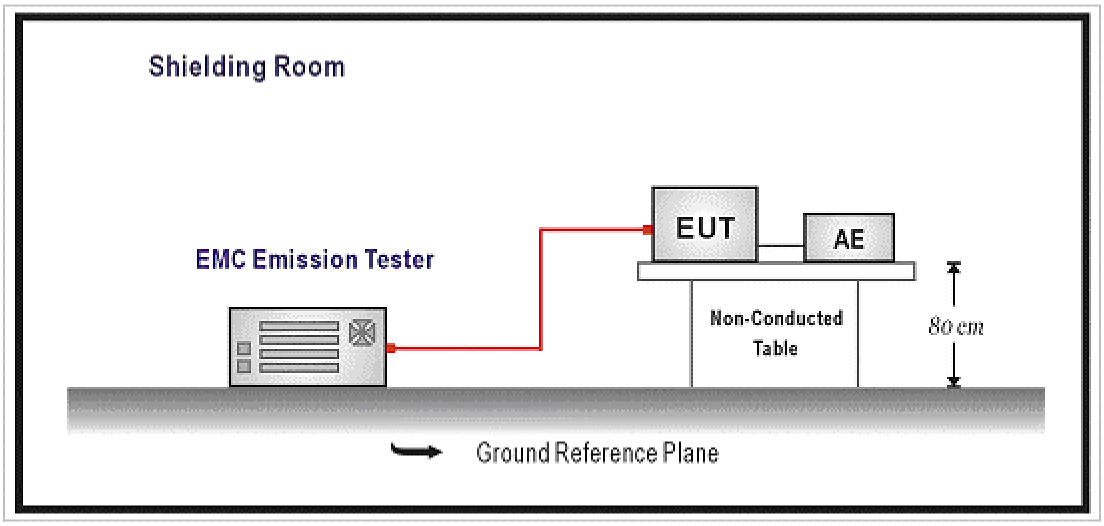
Description : Power Harmonics Test Setup

6. Voltage Fluctuation and Flicker

6.1. Test Specification

According to EMC Standard : EN 61000-3-3

6.2. Test Setup



6.3. Limit

The following limits apply:

— the value of P_{st} shall not be greater than 1.0;

— the value of P_{lt} shall not be greater than 0.65;

— the value of d(t) during a voltage change shall not exceed 3.3 ％ for more than 500 ms;

— the relative steady-state voltage change, d_c, shall not exceed 3.3 ％;

— the maximum relative voltage change, d_{max}, shall not exceed;

a) 4 ％ without additional conditions;

b) 6 ％ for equipment which is:

— switched manually, or

— switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

NOTE The cycling frequency will be further limited by the P_{st} and P_{1t} limit.

For example: a d_{max} of 6％producing a rectangular voltage change characteristic twice per hour will give a P_{1t} of about 0.65.

c) 7 ％ for equipment which is:

- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

P_{st} and P_{1t} requirements shall not be applied to voltage changes caused by manual switching.

6.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

6.5. Deviation from Test Standard

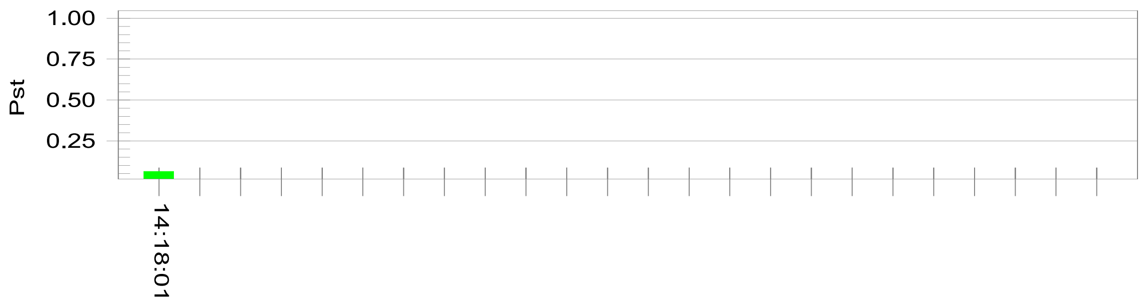
No deviation.

6.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Test Result: Pass Status: Test Completed

Pst_j and limit line European Limits



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.46			
Highest dt (%):	0.00	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

6.7. Test Photograph

Test Mode : Mode 1: Normal Operation

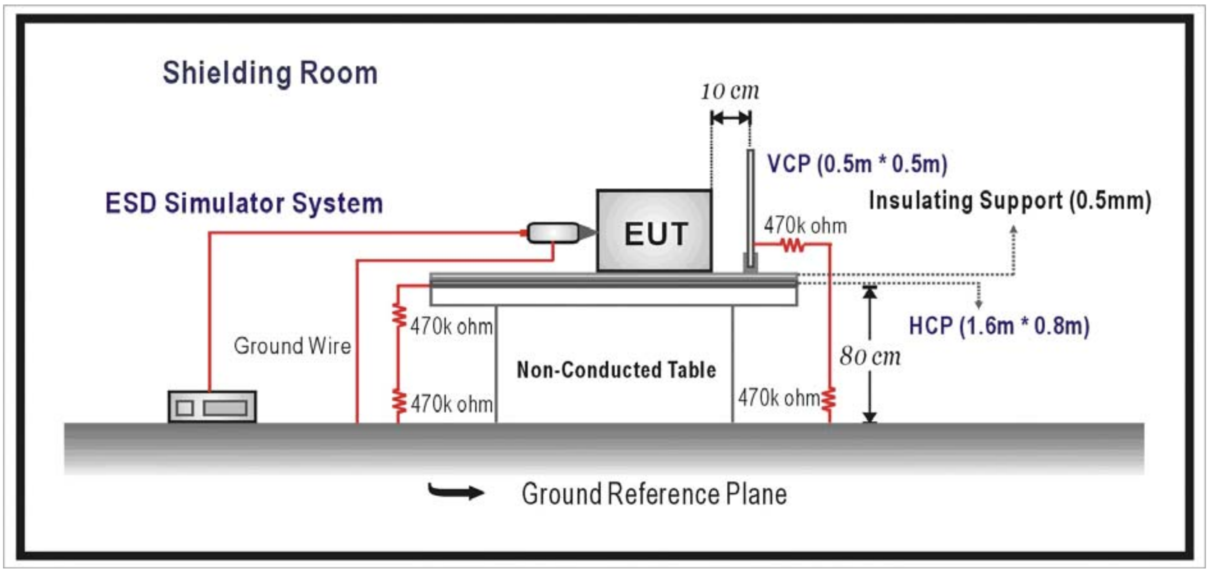
Description : Flicker Test Setup

7. Electrostatic Discharge

7.1. Test Specification

According to Standard: IEC 61000-4-2

7.2. Test Setup



7.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

7.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

7.5. Deviation from Test Standard

No deviation.

7.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Electrostatic Discharge		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.6 Shielded Room

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10 10	+8kV -8kV	B B	A A	Pass Pass
Contact Discharge	25 25	+4kV -4kV	B B	A A	Pass Pass
Indirect Discharge (HCP)	25 25	+4kV -4kV	B B	A A	Pass Pass
Indirect Discharge (VCP Front)	25 25	+4kV -4kV	B B	A A	Pass Pass
Indirect Discharge (VCP Left)	25 25	+4kV -4kV	B B	A A	Pass Pass
Indirect Discharge (VCP Back)	25 25	+4kV -4kV	B B	A A	Pass Pass
Indirect Discharge (VCP Right)	25 25	+4kV -4kV	B B	A A	Pass Pass

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

NR: No Requirement

- ☒ Meet criteria A: Operate as intended during and after the test
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied at least total 200 discharges at a minimum of four test points.

7.7. Test Photograph

Test Mode : Mode 1: Normal Operation

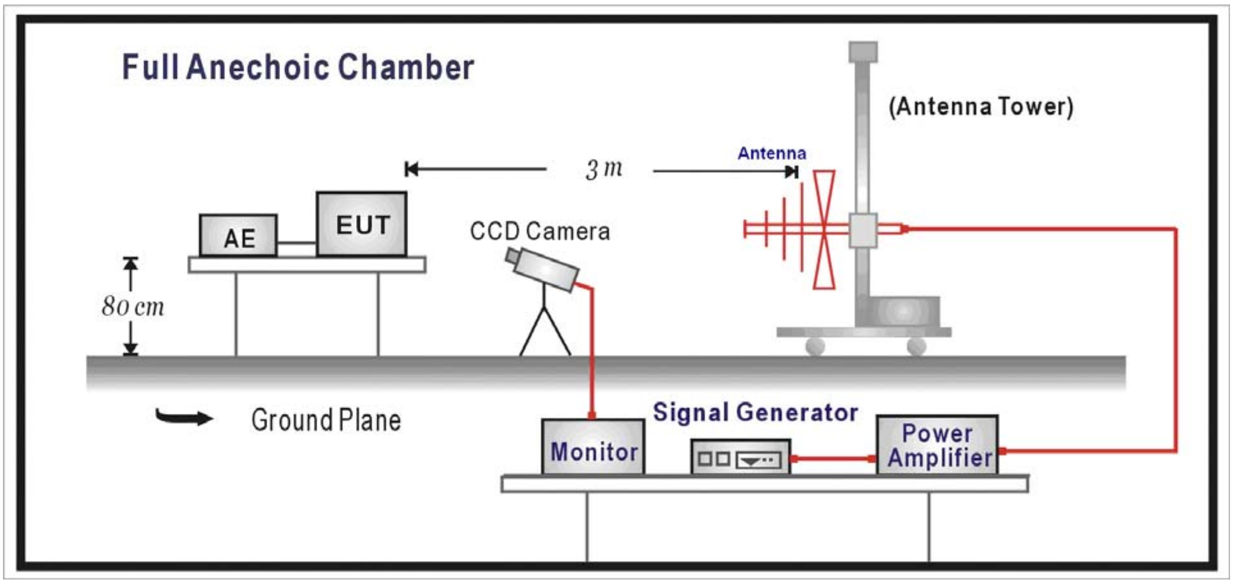
Description : ESD Test Setup

8. Radiated Susceptibility

8.1. Test Specification

According to Standard: IEC 61000-4-3

8.2. Test Setup



8.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Radio-Frequency Electromagnetic Field Amplitude Modulated	MHz V/m(Un-modulated, rms) % AM (1kHz)	80-1000 3 80	A

8.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD Serial ATA Flash Drive is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80MHz - 1000MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%
6.	The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

8.5. Deviation from Test Standard

No deviation.

8.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Radiated susceptibility		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	Chamber5

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	FRONT	H	3	A	A	PASS
80-1000	FRONT	V	3	A	A	PASS
80-1000	BACK	H	3	A	A	PASS
80-1000	BACK	V	3	A	A	PASS
80-1000	RIGHT	H	3	A	A	PASS
80-1000	RIGHT	V	3	A	A	PASS
80-1000	LEFT	H	3	A	A	PASS
80-1000	LEFT	V	3	A	A	PASS
80-1000	UP	H	3	A	A	PASS
80-1000	UP	V	3	A	A	PASS
80-1000	DOWN	H	3	A	A	PASS
80-1000	DOWN	V	3	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ There was no observable degradation in performance.
  ☐ EUT stopped operation and could / could not be reset by operator at _______ V/m at frequency _________MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

8.7. Test Photograph

Test Mode : Mode 1: Normal Operation

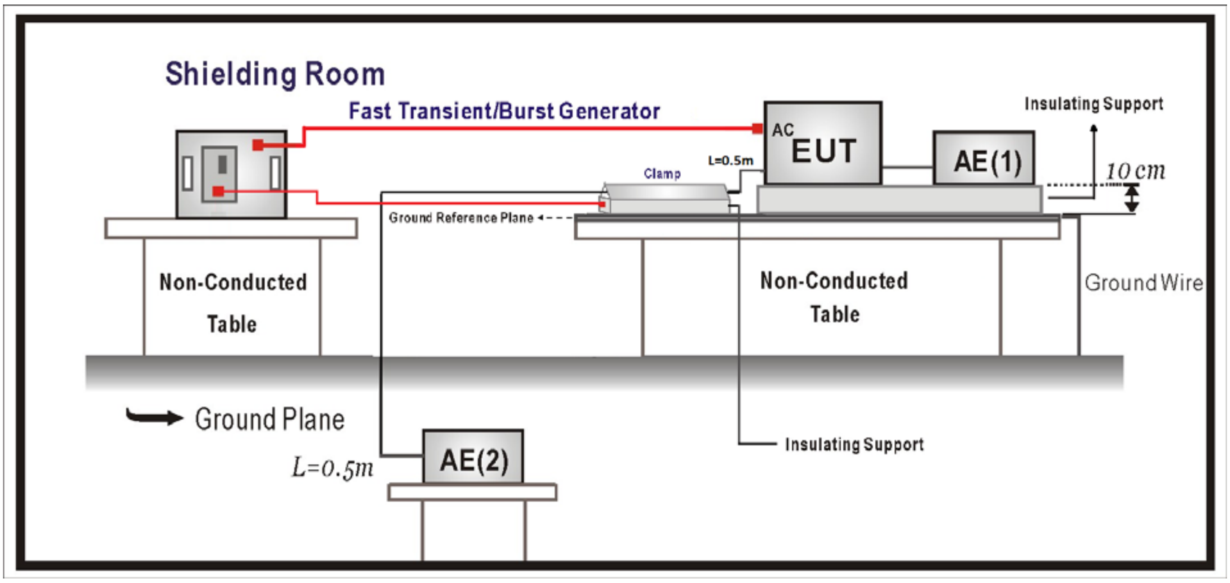
Description : Radiated Susceptibility Test Setup

9. Electrical Fast Transient/Burst

9.1. Test Specification

According to Standard : IEC 61000-4-4

9.2. Test Setup



9.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
I/O and communication ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input DC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input AC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±1 5/50 5	B

9.4. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.
The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

Test on I/O and communication ports:
The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

Test on power supply ports:
The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.
Each of the Line and Neutral conductors is impressed with burst noise for 1 minute.

The length of the signal and power lines between the coupling device and the EUT is 0.5m.

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N-PE	±	1kV	60	Direct	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at ______ kV of Line _____________.
☒ No false alarms or other malfunctions were observed during or after the test.

9.7. Test Photograph

Test Mode : Mode 1: Normal Operation

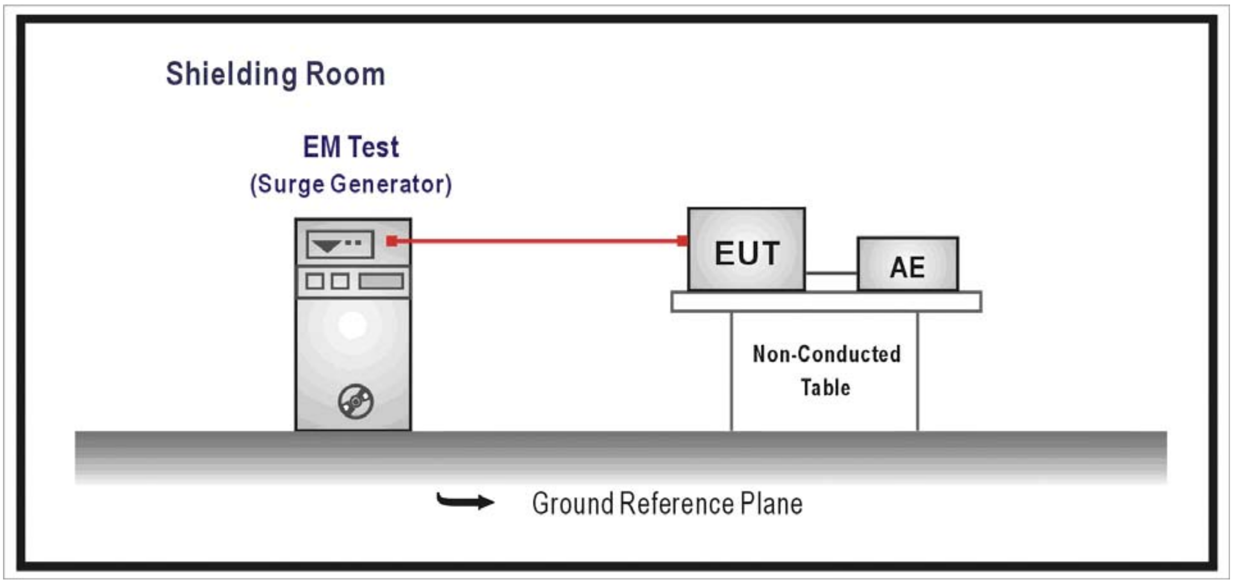
Description : EFT/B Test Setup

10. Surge

10.1. Test Specification

According to Standard : IEC 61000-4-5

10.2. Test Setup



10.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports(See 1) and 2))				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 1	B
Input DC Power Ports				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 0.5	B
AC Input and AC Output Power Ports				
	Surges Line to Line Line to Ground	Tr/Th us kV kV	1.2/50 (8/20) ± 1 ± 2	B

Notes:

1) Applicable only to ports which according to the manufacturer’s may directly to outdoor cables.
2) Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no immunity test shall be required.

10.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0^0, 90^0, 180^0, 270^0 and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Surge		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Inject Line	Polarity	Voltage kV	Angle	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	1kV	0	60	Direct	B	A	PASS
L-N	±	1kV	90	60	Direct	B	A	PASS
L-N	±	1kV	180	60	Direct	B	A	PASS
L-N	±	1kV	270	60	Direct	B	A	PASS
L-PE	±	2kV	0	60	Direct	B	A	PASS
L-PE	±	2kV	90	60	Direct	B	A	PASS
L-PE	±	2kV	180	60	Direct	B	A	PASS
L-PE	±	2kV	270	60	Direct	B	A	PASS
N-PE	±	2kV	0	60	Direct	B	A	PASS
N-PE	±	2kV	90	60	Direct	B	A	PASS
N-PE	±	2kV	180	60	Direct	B	A	PASS
N-PE	±	2kV	270	60	Direct	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at ______ kV of Line ______________.

☒ No false alarms or other malfunctions were observed during or after the test.

10.7. Test Photograph

Test Mode : Mode 1: Normal Operation

Description : SURGE Test Setup

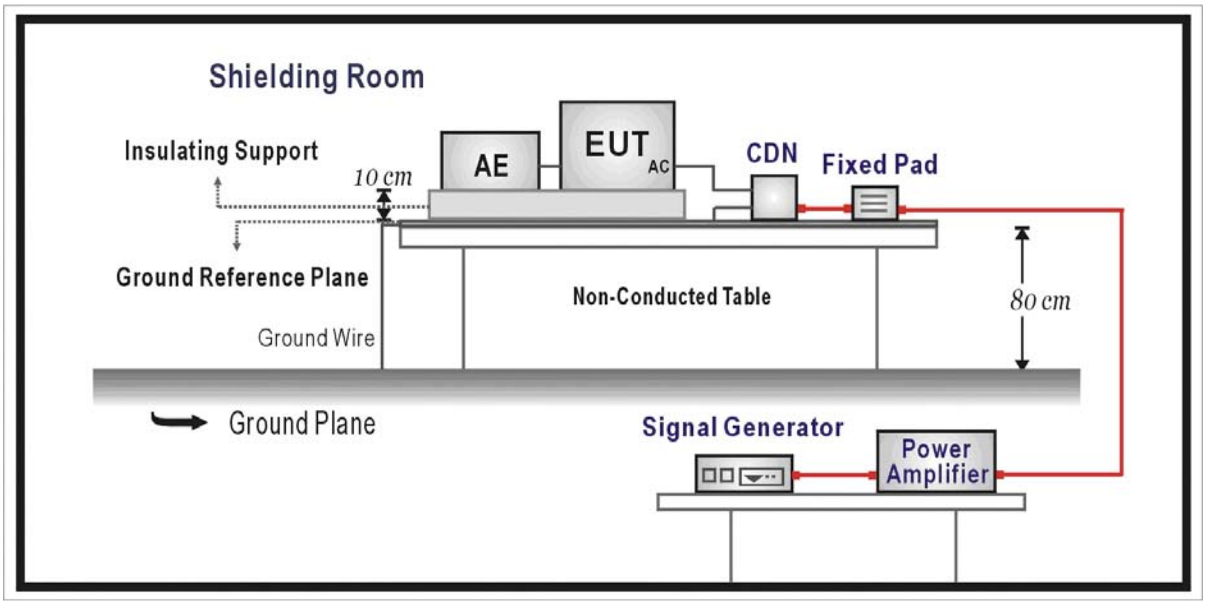
11. Conducted Susceptibility

11.1. Test Specification

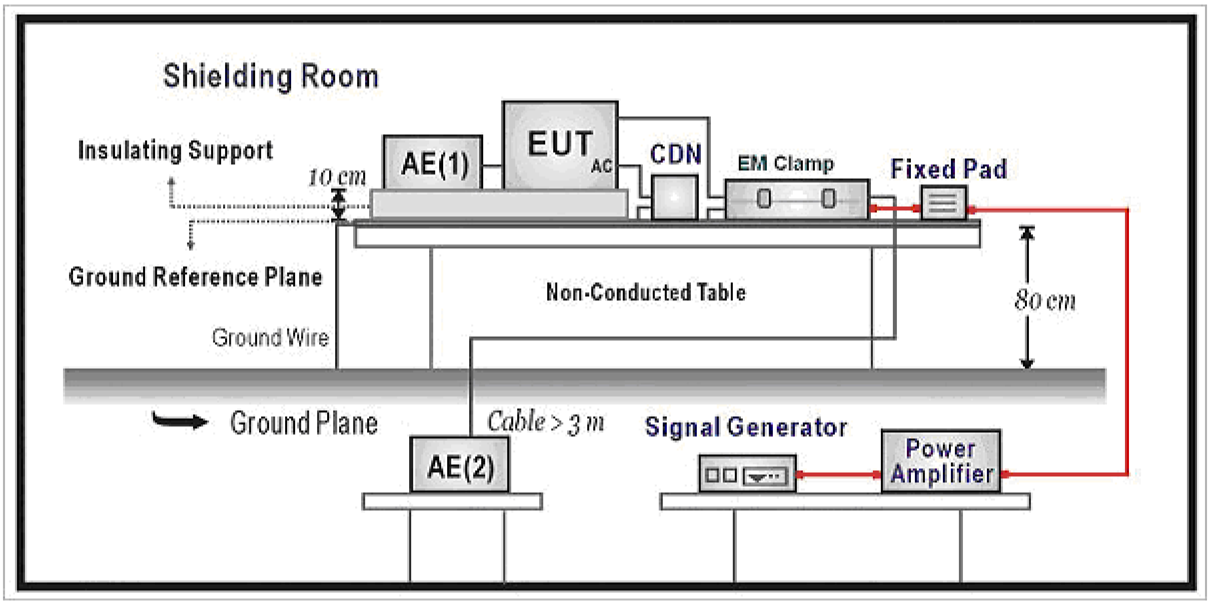
According to Standard : IEC 61000-4-6

11.2. Test Setup

CDN Inject Method



EM Clamp Inject Method



11.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input DC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input AC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

11.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.

For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	130dBuV(3V) Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15MHz – 80MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%
6.	The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Conducted susceptibility		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.6 Shielded Room

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	130 (3V)	CDN	AC IN	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.
  ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

11.7. Test Photograph

Test Mode : Mode 1: Normal Operation

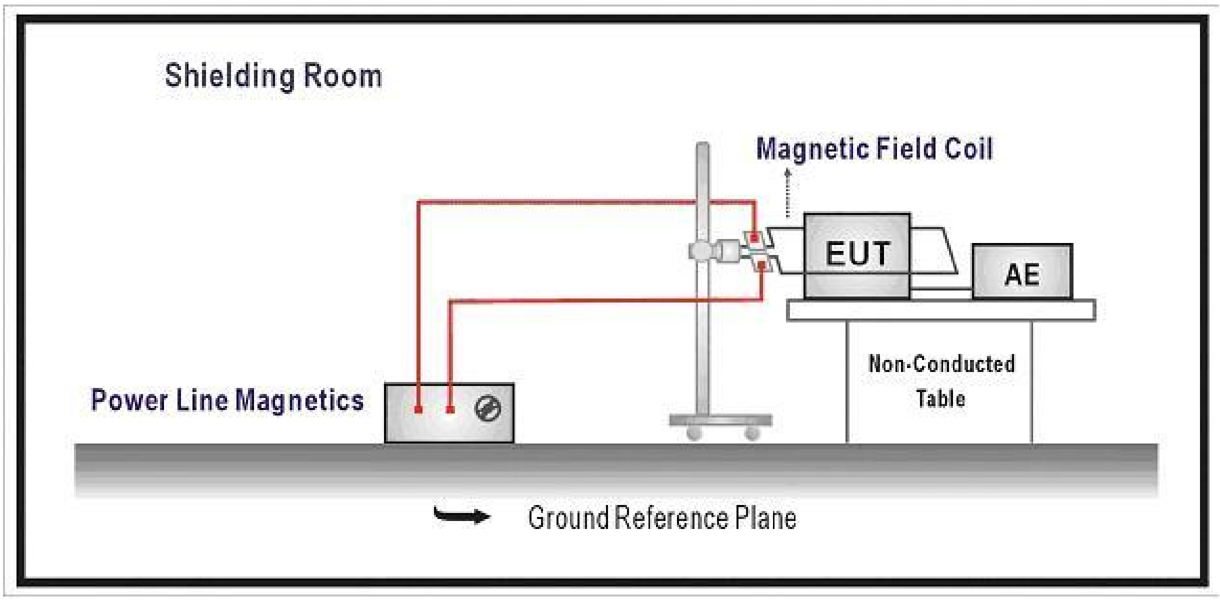
Description : Conducted Susceptibility Test Setup

12. Power Frequency Magnetic Field

12.1. Test Specification

According to Standard: IEC 61000-4-8

12.2. Test Setup



12.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Power-Frequency Magnetic Field	Hz A/m (r.m.s.)	50 1	A

12.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 10 minutes by the immersion method to the EUT. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Power frequency magnetic field		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	1	A	A	PASS
Y Orientation	50	1	A	A	PASS
Z Orientation	50	1	A	A	PASS

- ☒ Meet criteria A: Operate as intended during and after the test
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ______ kV of Line ______________.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

12.7. Test Photograph

Test Mode : Mode 1: Normal Operation

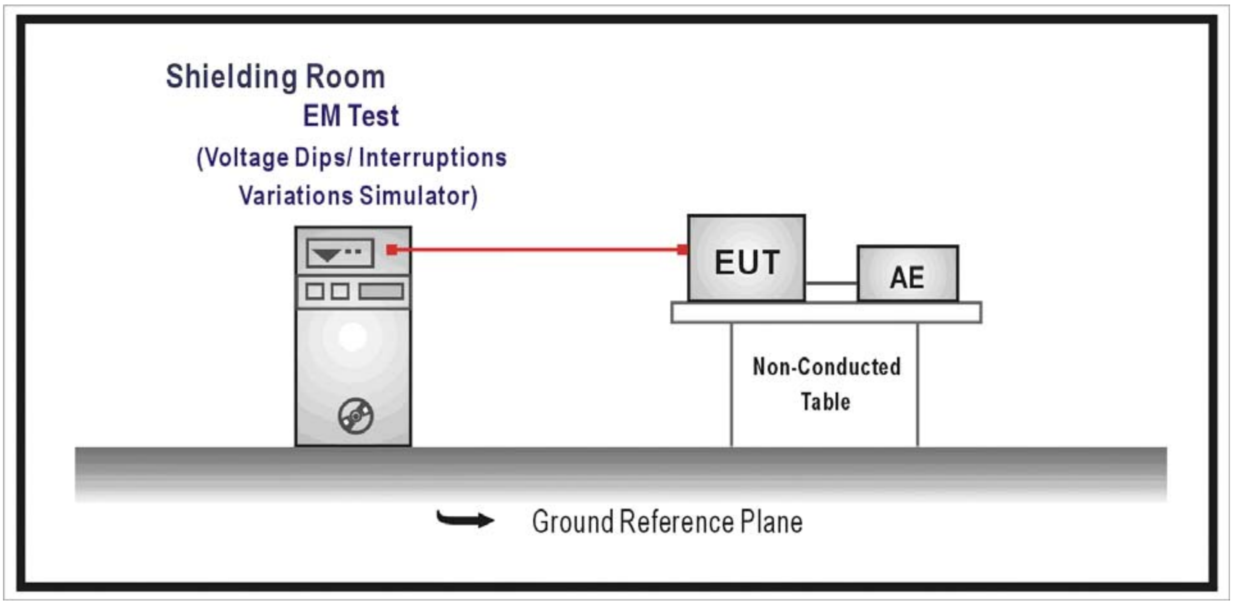
Description : Power Frequency Magnetic Field Test Setup

13. Voltage Dips and Interruption

13.1. Test Specification

According to Standard : IEC 61000-4-11

13.2. Test Setup



13.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input AC Power Ports				
	Voltage Dips	% Reduction Period	30 25	C
		% Reduction Period	>95 0.5	B
	Voltage Interruptions	% Reduction Period	> 95 250	C

13.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 25 Periods, for 95% voltage dip of supplied voltage and duration 0.5 Periods with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 250 Periods with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0^0, 45^0, 90^0 ,135^0 ,180^0 ,225^0, 270^0 ,315^0 of the voltage.

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Product	Serial ATA Flash Drive		
Test Item	Voltage dips and interruption		
Test Mode	Mode 1: Normal Operation		
Date of Test	2011/12/22	Test Site	No.3 Shielded Room

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	PASS
30	45	25	C	A	PASS
30	90	25	C	A	PASS
30	135	25	C	A	PASS
30	180	25	C	A	PASS
30	225	25	C	A	PASS
30	270	25	C	A	PASS
30	315	25	C	A	PASS
>95	0	0.5	B	A	PASS
>95	45	0.5	B	A	PASS
>95	90	0.5	B	A	PASS
>95	135	0.5	B	A	PASS
>95	180	0.5	B	A	PASS
>95	225	0.5	B	A	PASS
>95	270	0.5	B	A	PASS
>95	315	0.5	B	A	PASS
>95	0	250	C	C	PASS
>95	45	250	C	C	PASS
>95	90	250	C	C	PASS
>95	135	250	C	C	PASS
>95	180	250	C	C	PASS
>95	225	250	C	C	PASS
>95	270	250	C	C	PASS
>95	315	250	C	C	PASS

☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☒ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ The nominal voltage of EUT is 230V.
  ☐ EUT stopped operation and could / could not be reset by operator at ______ kV of Line ______________.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

13.7. Test Photograph

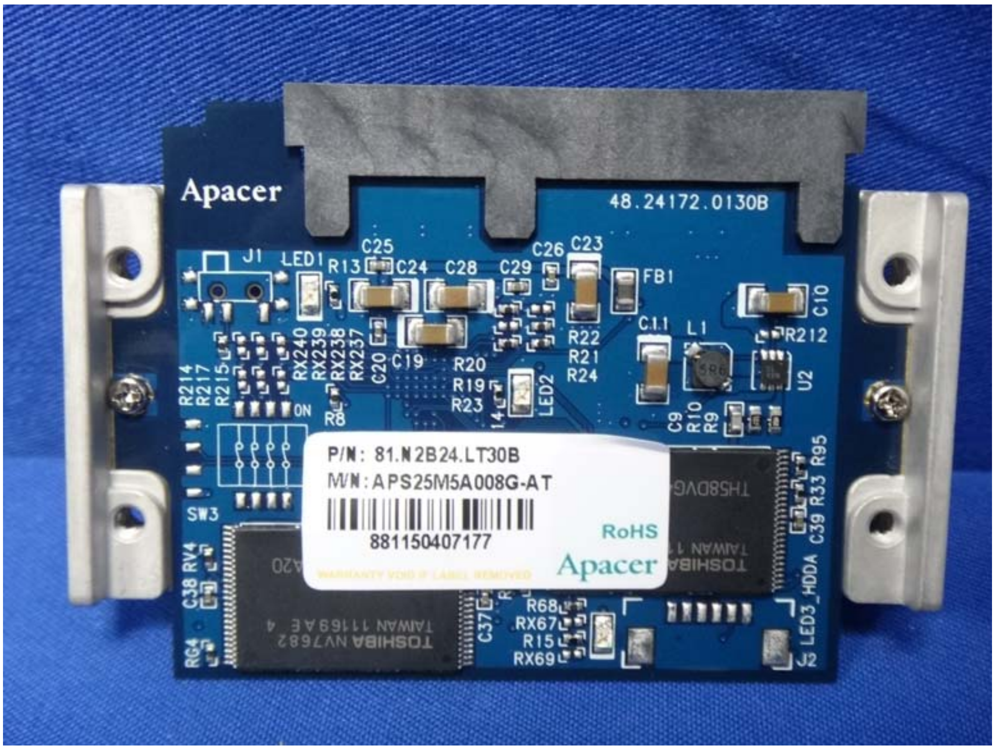
Test Mode : Mode 1: Normal Operation

Description : Voltage Dips Test Setup

14. Attachment

➢ EUT Photograph

(1) EUT Photo



(2) EUT Photo