

FCC PART 15B

MEASUREMENT AND TEST REPORT

For

**Storage Appliance Corporation**

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Toronto, ON, Canada, L4B 3K1

**FCC ID: YK3SACMALATA1**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Clickfree C23 3.5
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<b>Report Number:</b> RXM10122151	
<b>Report Date:</b> 2011-01-11	
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, NIST, or any agency of the Federal Government.

\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE .....	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST FACILITY .....	3
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>5</b>
JUSTIFICATION .....	5
EQUIPMENT MODIFICATIONS .....	5
HOST SYSTEM CONFIGURATION LIST AND DETAILS .....	5
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS .....	5
EXTERNAL I/O CABLE.....	6
CONFIGURATION OF TEST SETUP .....	6
BLOCK DIAGRAM OF TEST SETUP .....	7
<b>SUMMARY OF TEST RESULTS.....</b>	<b>8</b>
<b>FCC§15.107 – AC LINE CONDUCTED EMISSIONS.....</b>	<b>9</b>
MEASUREMENT UNCERTAINTY .....	9
EUT SETUP.....	9
EMI TEST RECEIVER SETUP.....	10
TEST EQUIPMENT LIST AND DETAILS.....	10
TEST PROCEDURE .....	10
TEST RESULTS SUMMARY .....	10
TEST DATA .....	11
<b>FCC §15.109 - RADIATED SPURIOUS EMISSIONS .....</b>	<b>13</b>
MEASUREMENT UNCERTAINTY .....	13
EUT SETUP.....	13
EMI TEST RECEIVER SETUP.....	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST PROCEDURE .....	14
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	14
TEST RESULTS SUMMARY .....	15
TEST DATA .....	15
<b>DECLARATION LETTER .....</b>	<b>17</b>

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## GENERAL INFORMATION

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### Product Description for Equipment Under Test (EUT)

The *Storage Appliance Corporation's* product, model number: *HD20373(FCC ID:YK3SACMALATA1)* or the "EUT" as referred to in this report is a *Clickfree C23 3.5*, which measures approximately: 17.0 cm (L) x17.0 cm (W) x 3.5 cm (H), DC 12V from adapter. The highest operating frequency is 25 MHz.

#### Adapter Information:

Model: KSAS0241200200HU

Input: 100-240V 50/60Hz 0.6A

Output: 12V 2.0A

*\* All measurement and test data in this report was gathered from production sample serial number: 1012009 (Assigned by BACL, Shenzhen). The EUT was received on 2011-01-05.*

*\*Note: The series products, model HD20373, HD2037N3, HD15373, HD1537N3, HD10373, HD1037N3, HD5373, HD537N3, all of them are electrically identical, only their model name have differences, we selected model HD20373 to fully tested, for detail, please refer to the Declaration Letter provided by the manufacture.*

### Objective

The following test report is prepared on behalf of *Storage Appliance Corporation* in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC Part 15B.

### Related Submittal(s)/Grant(s)

No related submittal(s).

### Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### Equipment Modifications

No modification was made to the unit tested.

### Host System Configuration List and Details

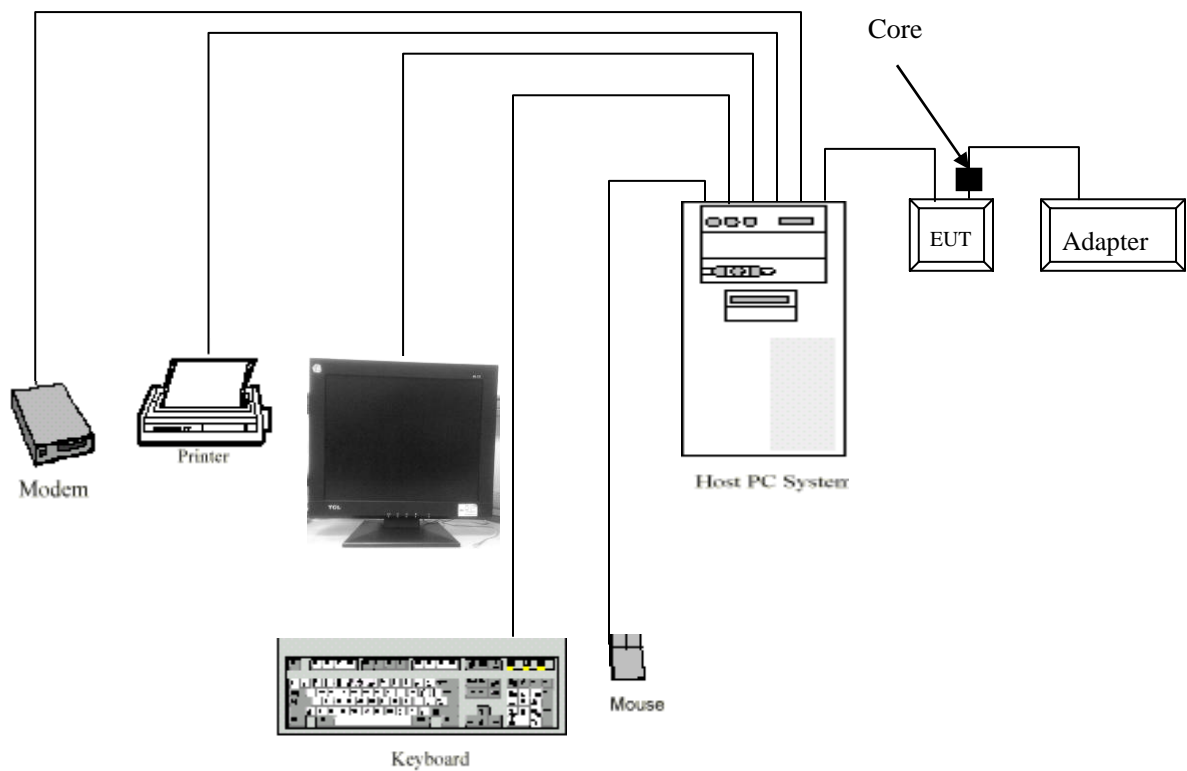
Manufacturer	Device Name	Model	Serial Number	FCC ID
DELL	Motherboard	OWC297	CN-OWC297-70821-566-02BR	DOC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E8NBM	DOC
Seagate	Hard Disk	ST340014A	5JXK3NAD	DOC
DELL	3.5' Floppy	N/A	CN-0N8893-69802-54Q-02OZ	DOC
Lite-ON	CD-Rom	LTN-489S	N/A	DOC
Intel	CPU	Celeron D-2533	N/A	DOC
ProMOS	Memory	V826632K24SATG-C0	0525-K1933700	DOC
Intel	Ethernet	PRO 10/100 VE	N/A	DOC

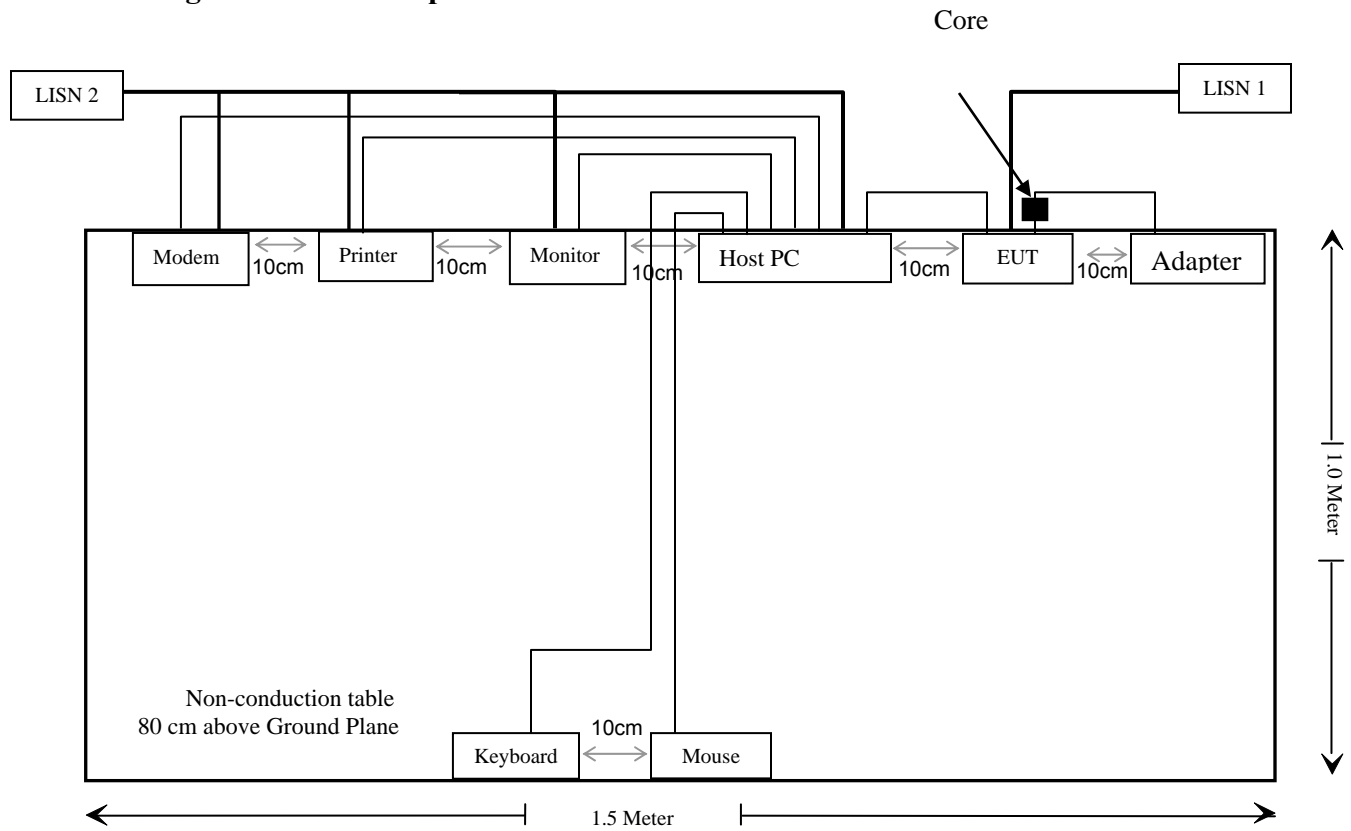
### Local Support Equipment List and Details

Manufacturer	Device Name	Model	Serial Number	FCC ID
DELL	System PC	1#	N/A	DOC
HP	Laser Jet5L	C3941A	JPTVOB2337	DOC
SAST	Modem	AEM-2100	0293	DOC
DELL	LCD Monitor1#	E178WFPC	CN-OWY564-64180-7C4-2SQH	DOC
DELL	Mouse 1#	MOC5UO	G1B0096D	DOC
DELL	Keyboard 1#	L100	CNORH656658907BL04TY	DOC

**External I/O Cable**

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.5	K/B/Host PC	K/B
Shielded Detachable Mouse Cable	1.5	Mouse/Host PC	Mouse
Shielded Detachable Printer Cable	1.2	Parallel/Host PC	Printer
Shielded Detachable Serial Cable	1.2	Serial/Host PC	Modem
Shielded Detachable VGA Cable	1.5	VGA/Host PC	Monitor
Shielded Un-detachable USB Cable	0.88	EUT	Host PC
Unshielded Detachable DC Cable with a core	1.4	EUT	Adapter
Unshielded Detachable AC Cable	1.2	Adapter	LISN

**Configuration of Test Setup**

**Block Diagram of Test Setup**

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**SUMMARY OF TEST RESULTS**

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FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance



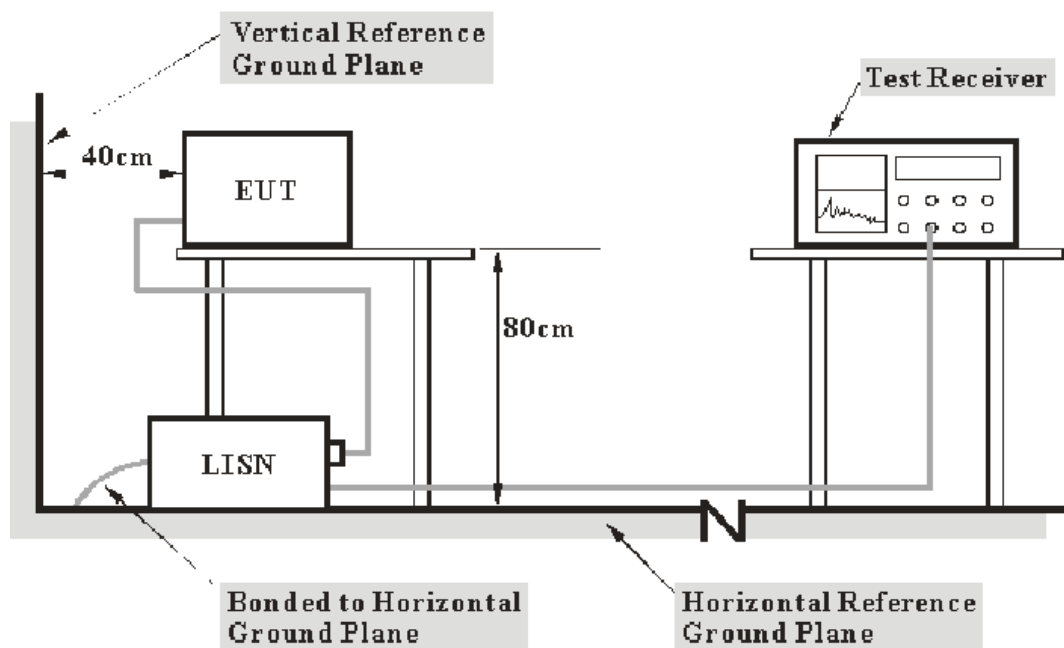
## FCC§15.107 – AC LINE CONDUCTED EMISSIONS

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. is  $\pm 2.4$  dB (k=2, 95% level of confidence).

### EUT Setup



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<i><b>Frequency Range</b></i>	<i><b>IF B/W</b></i>
150 kHz – 30 MHz	9 kHz

## Test Equipment List and Details

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2010-03-03	2011-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2010-03-09	2011-03-08
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN, and other support equipment were connected to the outlet of the second LISN

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, Class B, with the worst margin reading of:

**6.99 dB at 0.460 MHz in the Neutral conductor mode, Ave**

## Test Data

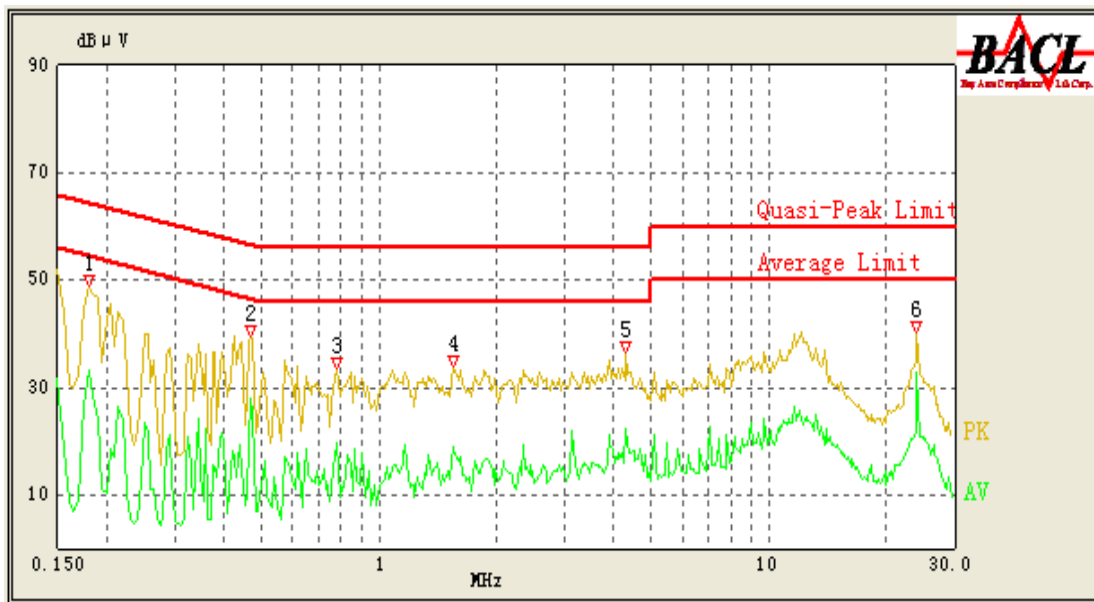
### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Andy Xiong on 2010-12-25.

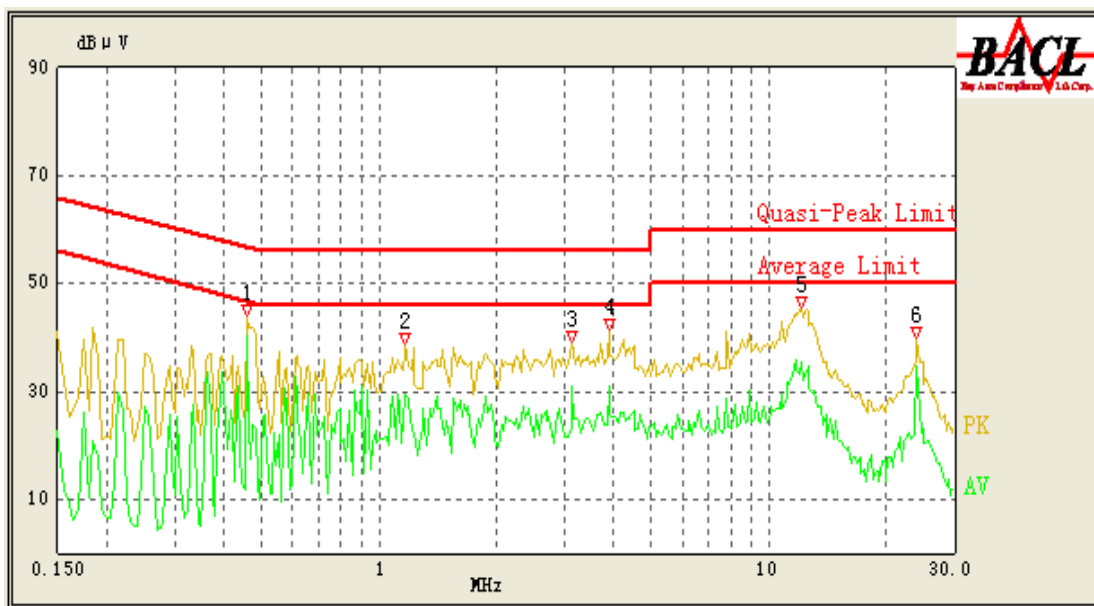
Test Mode: Downloading

120 V, 60 Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/Ave/QP)
23.990	32.82	10.16	50.00	17.18	Ave
0.470	28.10	10.17	46.86	18.76	Ave
0.470	36.91	10.17	56.86	19.95	QP
0.180	43.38	10.08	65.14	21.76	QP
0.180	33.22	10.08	55.14	21.92	Ave
23.990	36.43	10.16	60.00	23.57	QP
4.290	22.28	10.10	46.00	23.72	Ave
0.780	19.57	10.14	46.00	26.43	Ave
1.560	18.77	10.16	46.00	27.23	Ave
1.560	28.22	10.16	56.00	27.78	QP
0.780	27.70	10.14	56.00	28.30	QP
4.290	23.83	10.10	56.00	32.17	QP

## 120 V, 60 Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/Ave/QP)
0.460	40.15	10.16	47.14	6.99	Ave
12.080	35.30	10.12	50.00	14.70	Ave
3.115	30.82	10.14	46.00	15.18	Ave
3.895	30.81	10.11	46.00	15.19	Ave
23.990	34.59	10.16	50.00	15.41	Ave
0.460	41.22	10.16	57.14	15.92	QP
1.170	29.29	10.12	46.00	16.71	Ave
12.080	40.85	10.12	60.00	19.15	QP
3.895	36.56	10.11	56.00	19.44	QP
3.115	35.91	10.14	56.00	20.09	QP
1.170	33.84	10.12	56.00	22.16	QP
23.990	37.81	10.16	60.00	22.19	QP

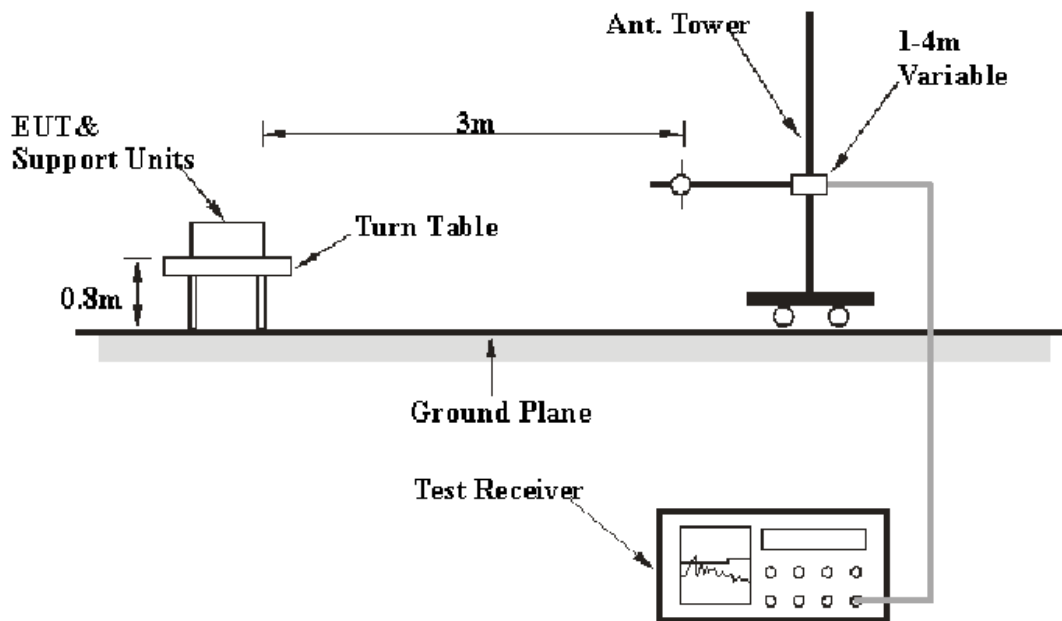
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. is  $\pm 4.0$  dB (k=2, 95% level of confidence).

### EUT Setup



The radiated emission tests were performed in the 3 meters chamber A test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109, Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30MHz – 1000 MHz	100 kHz	300 kHz	QP

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-24	2011-11-23
HP	Amplifier	HP8447E	1937A01046	2010-08-02	2011-08-01
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2010-05-04	2011-05-03

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

For the radiated emissions test, the adapter and other support equipments were connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in Quasi-peak detection mode.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

**3.1 dB at 349.999 MHz in the Horizontal polarization**

## Test Data

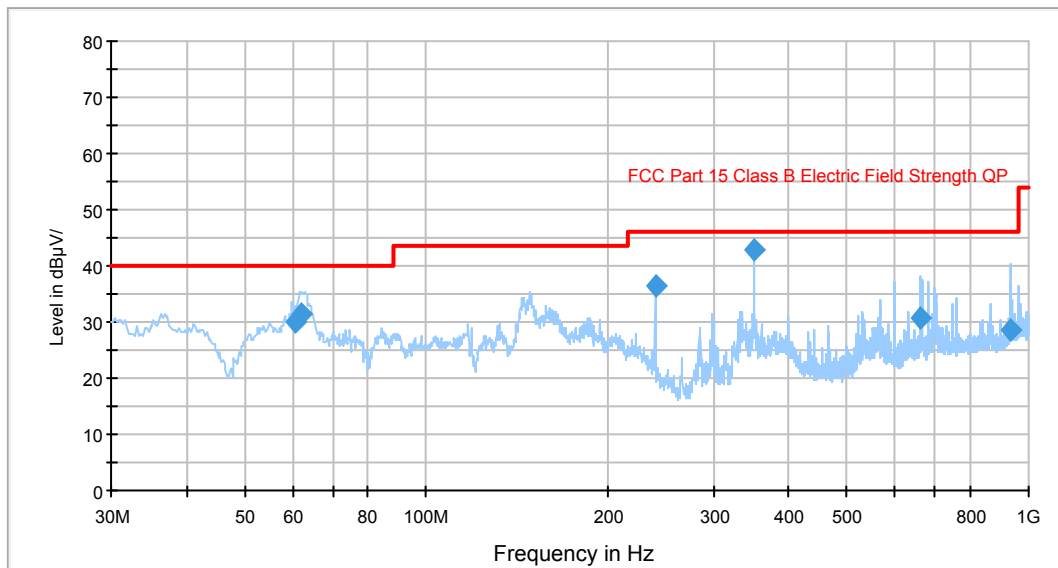
### Environmental Conditions

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Andy Xiong on 2010-12-25.*

*Test mode: Downloading*

Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
349.999000	42.9	100.0	H	77.0	-11.1	46.0	3.1*
62.031500	31.3	100.0	V	208.0	-18.6	40.0	8.7
240.149250	36.4	170.0	H	156.0	-13.7	46.0	9.6
60.550750	29.9	100.0	V	196.0	-18.6	40.0	10.1
663.403500	30.7	201.0	H	0.0	-4.3	46.0	15.3
933.209750	28.7	165.0	H	26.0	0.2	46.0	17.3

Note: \* Within measurement uncertainty.



## DECLARATION LETTER

Storage Appliance Corporation

Company Address: Suite 115 115-30 West Beaver Creek Road, Toronto, ON, Canada, L4B 3K1  
Tel: +1.416.484.0009 ex 273

### Product Similarity Declaration

To

We, Storage Appliance Corporation, hereby declare that our Clickfree C23 3.5  
Model Number : HD2037N3, HD15373, HD1537N3, HD10373, HD1037N3,  
HD5373, HD537N3, are identical with the model number HD20373 that was certified  
by BACL They are the same circuit and PCB layout , except model

Please contact me if you have any question.

Signature: 

Print Name: 林飞翔/Eason Lin

Title:

Date:

\*\*\*\*\* END OF REPORT \*\*\*\*\*