

FCC PART 15B

MEASUREMENT AND TEST REPORT

FOR

Shenzhen StarWorth Manufacturing Co., Ltd

Building No.27 Chentian Industrial Estate, Xixiang Bao'an, Shenzhen, China

FCC ID: COQSWNTS30I

Report Concerns: Original Report	Equipment Type: Netbook
Model:	<u>SW-I10-03</u>
Report No.:	<u>STR12038087I-2</u>
Test Date:	<u>2012-03-08 to 2012-03-17</u>
Issue Date:	<u>2012-03-22</u>
Tested By:	<u>Silin Chen / Engineer</u> <i>Silin chen</i>
Reviewed By:	<u>Lahm Peng / EMC Manager</u> <i>Lahm peng</i>
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen StarWorth Manufacturing Co., Ltd
Address of applicant: Building No.27 Chentian Industrial Estate, Xixiang Bao'an,
Shenzhen, China

Manufacturer: Shenzhen StarWorth Manufacturing Co., Ltd
Address of manufacturer: Building No.27 Chentian Industrial Estate, Xixiang Bao'an,
Shenzhen, China

General Description of E.U.T

Items	Description
EUT Description:	Netbook
Trade Name:	/
Model No.:	SW-I10-03
Add Models:	SW-I10-04-1, SW-I10-N03
Power Supply:	Input 100-240V/50/60Hz Output 19V DC Adaptor DC 11.1V Battery
Adaptor Model:	SW-I10-03
Rated Voltage:	Battery DC 11.1V
Battery Capacity:	4400mAh
For more information refer to the circuit diagram form and the user's manual.	

The test data is gathered from a production sample, provided by the manufacturer. The others models listed in the report have different appearance only of SW-I10-03 without circuit and electronic construction changed, declared by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen StarWorth Manufacturing Co., Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in

the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
LCD Display	Lenovo	LXM-L17AB	4M0233274805856
Mouse	DELL	MOC5UO	/
Keyboard	DELL	SK-8115	/
Headphone	DH	DH-805	/

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1.2	Unshielded	Without Core
DC Cable	1.2	Unshielded	With Core

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. §15.107 (a)- CONDUCTED EMISSION

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2011-12-20	2012-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2011-12-20	2012-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2011-12-20	2012-12-19

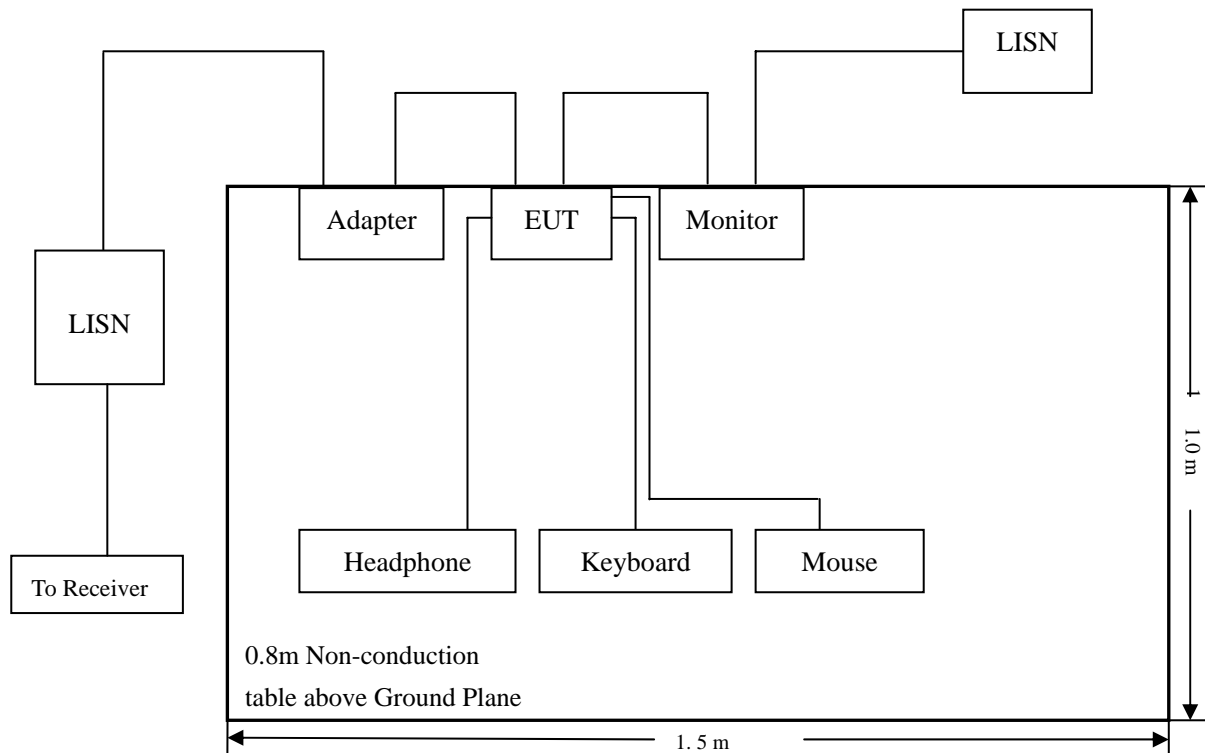
3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Limit.

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

The spacing between the peripherals was 10 cm.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

3.6 Test Receiver Setup

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

Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

3.7 Summary of Test Results/Plots

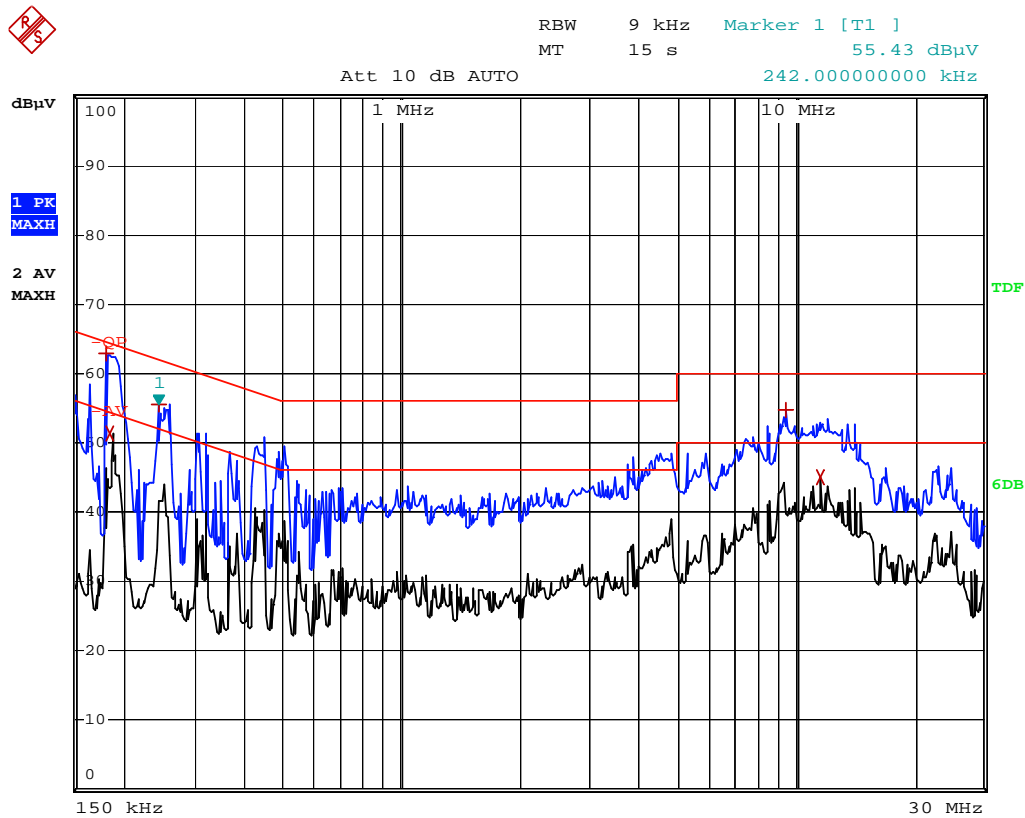
According to the data in section 3.8, the EUT complied with the FCC Part 15B Conducted margin for a Class B device, with the *worst* margin reading of:

-0.94 dB μ V at 0.182 MHz in the Neutral, QP Detector, 0.15-30MHz

3.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

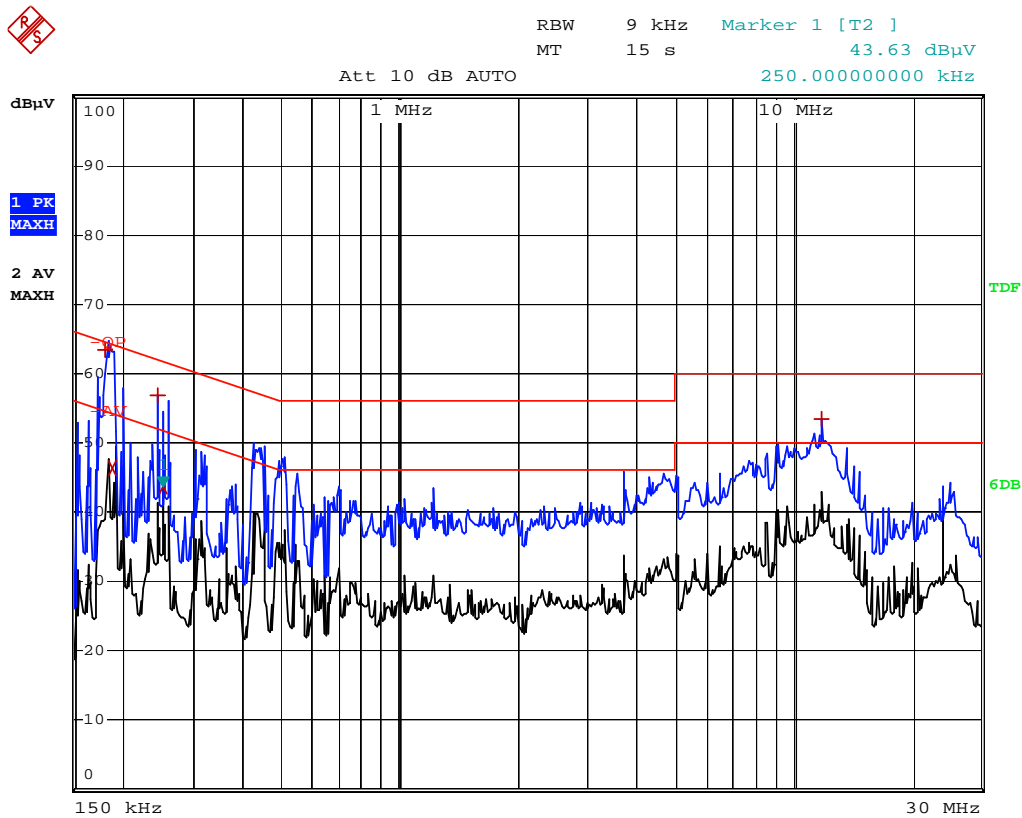
Conducted Disturbance
EUT: Netbook
M/N: SW-I10-03
Operating Condition: Charging and Playing
Test Specification: Line
Comment: AC 120V/60Hz/AdaptorDC 19V



EDIT PEAK LIST (Prescan Results)				
Trace1:		-QP		
Trace2:		-AV		
Trace3:		---		
TRACE		FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1	Quasi Peak	182 kHz	62.73	-1.65
2	Average	186 kHz	51.37	-2.83
1	Max Peak	242 kHz	55.43	-6.59
1	Max Peak	9.43 MHz	54.72	-5.27
2	Average	11.538 MHz	45.10	-4.89

Plot of Conducted Emissions Test Data

Conducted Disturbance
EUT: Netbook
M/N: SW-I10-03
Operating Condition: Charging and Playing
Test Specification: Neutral
Comment: AC 120V/60Hz/AdaptorDC 19V



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	182 kHz	63.45	-0.94
2 Average	190 kHz	46.45	-7.58
1 Max Peak	242 kHz	56.86	-5.16
2 Average	250 kHz	43.62	-8.12
1 Max Peak	11.802 MHz	53.52	-6.47

4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

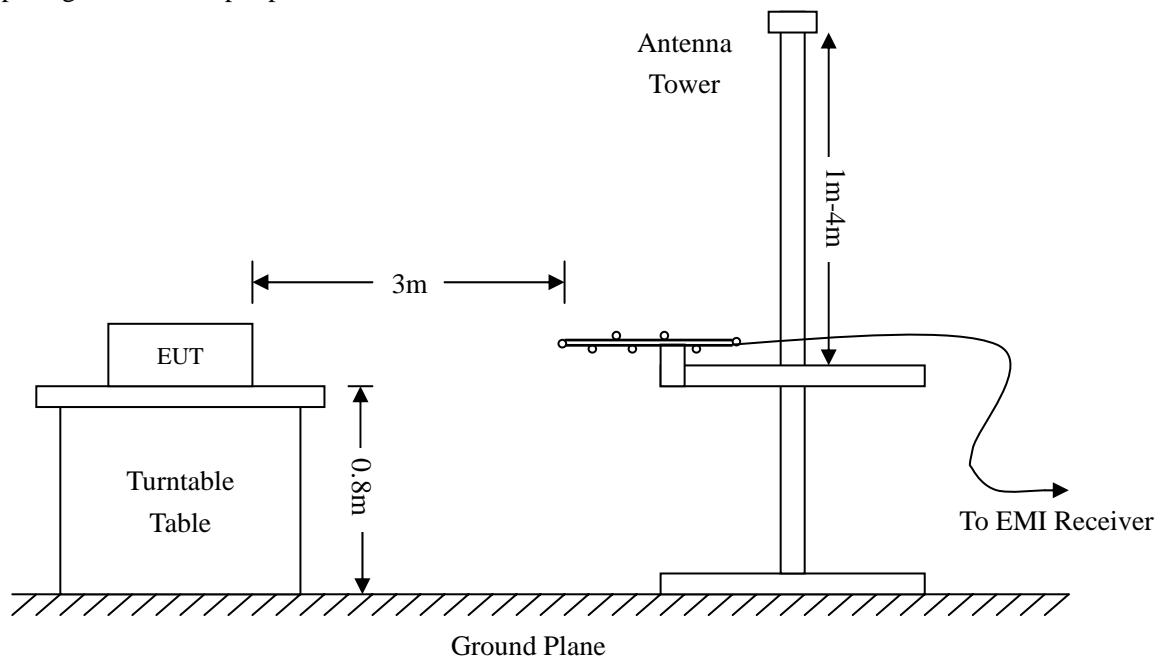
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2011-12-20	2012-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2011-12-20	2012-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2011-12-20	2012-12-19
RF Switch	EM	EMSW18	SW060023	2011-12-20	2012-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2011-12-20	2012-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2011-12-20	2012-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 and FCC Part 15.109 Limit.

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

The spacing between the peripherals was 10 cm.



4.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

4.6 Environmental Conditions

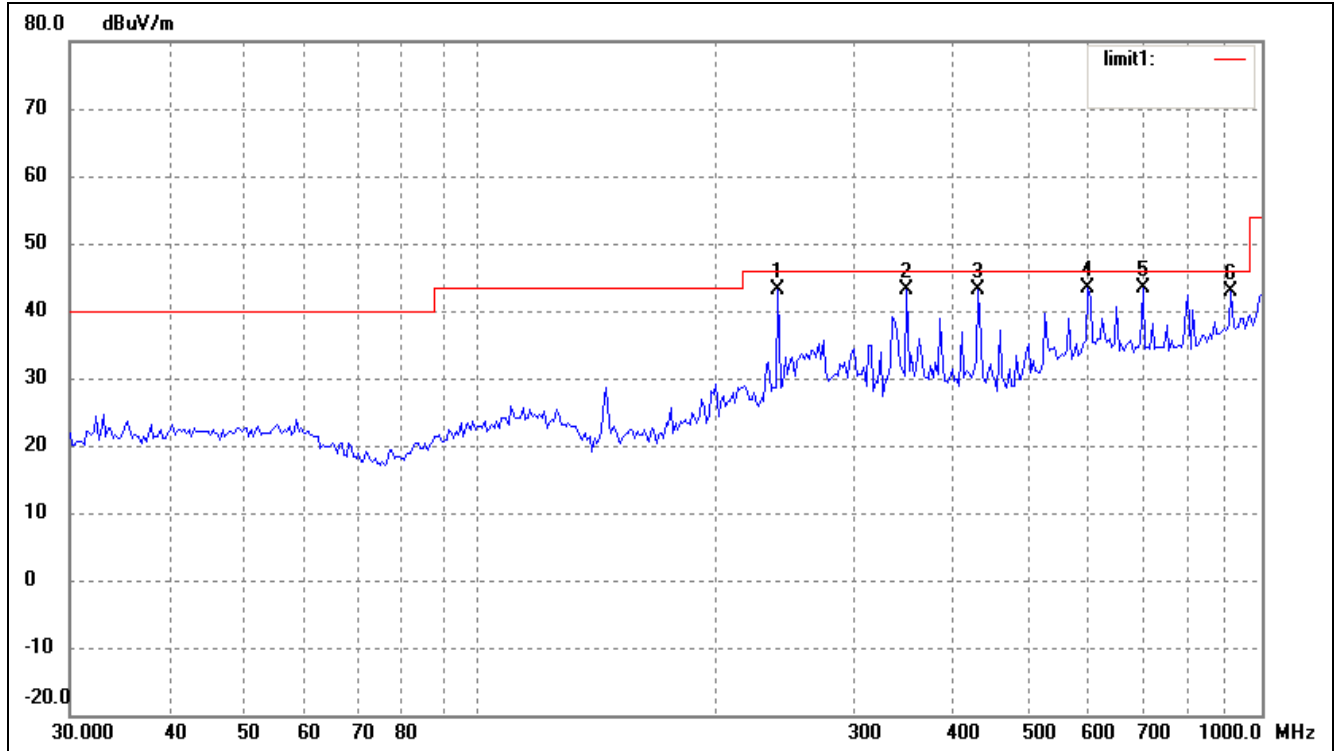
Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15B Class B standards, and had the worst margin of:

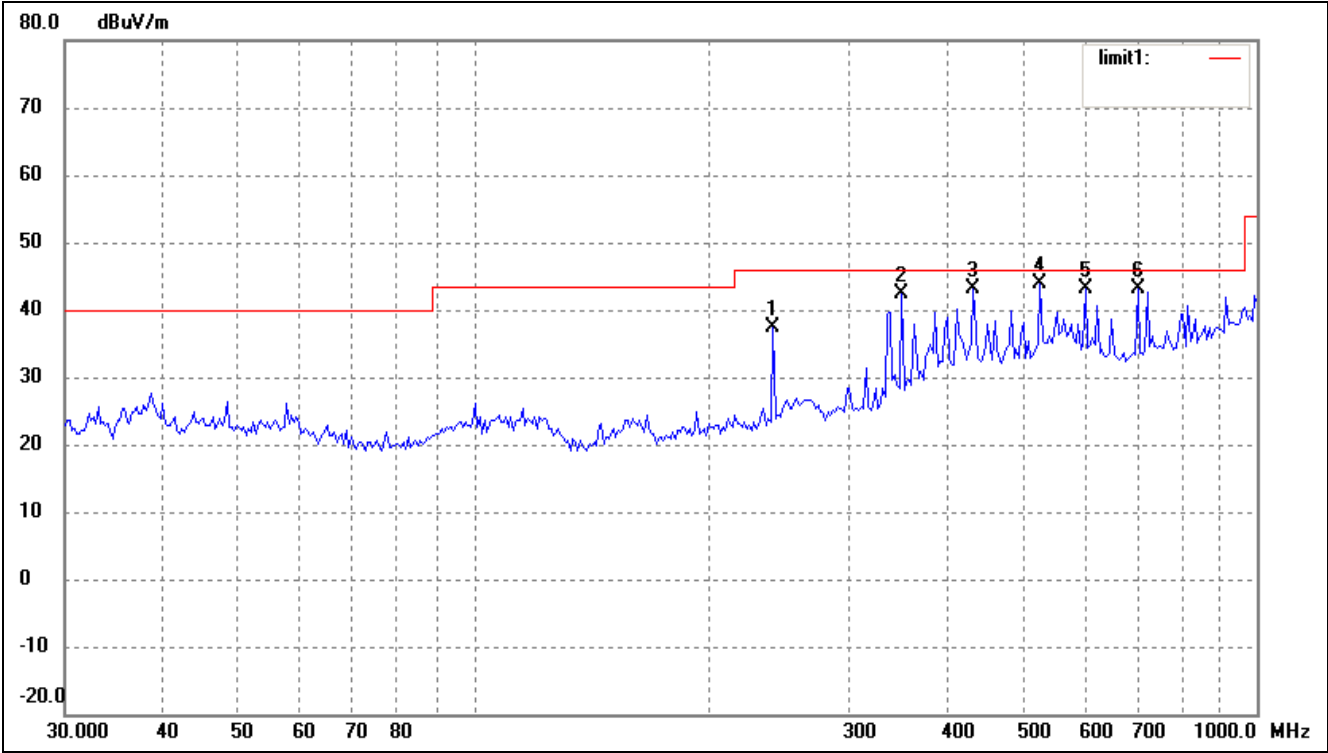
-2.16 dBμV at 528.2458 MHz in the Vertical polarization, 9 kHz to 5 GHz, 3Meters

Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

Plot of Radiation Emissions Test Data (30MHz to 1GHz)*Radiated Disturbance**EUT: Netbook**M/N: SW-I10-03**Operating Condition: Charging and Playing**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz DC 19V Adaptor***Horizontal**

No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	240.8303	34.57	8.45	43.02	46.00	-2.98	360	100	peak
2	351.7078	32.47	10.70	43.17	46.00	-2.83	360	100	peak
3	434.0650	31.26	11.93	43.19	46.00	-2.81	360	100	peak
4	599.3212	26.64	16.65	43.29	46.00	-2.71	360	100	peak
5	704.2260	25.75	17.56	43.31	46.00	-2.69	360	100	peak
6	912.8619	21.77	21.14	42.91	46.00	-3.09	360	100	peak

Vertical

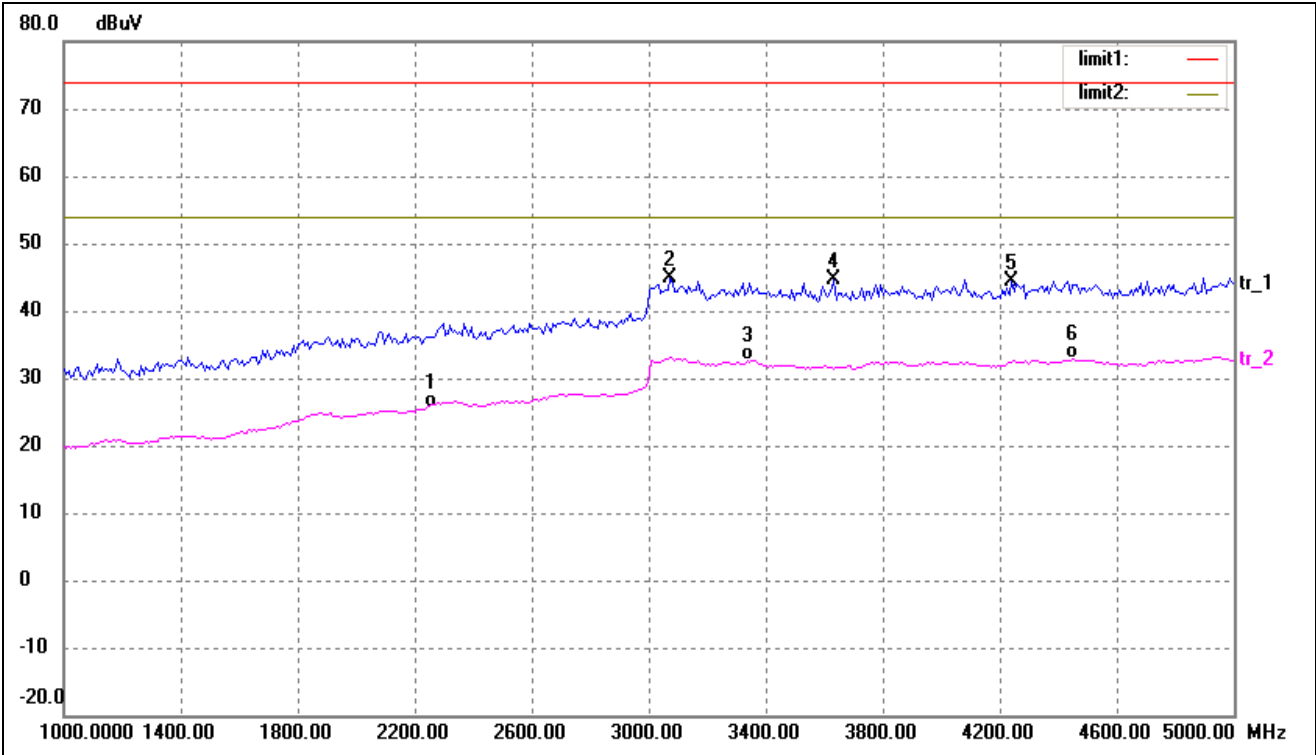


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	240.8303	28.98	8.45	37.43	46.00	-8.57	360	100	peak
2	351.7078	31.69	10.70	42.39	46.00	-3.61	360	100	peak
3	434.0650	31.31	11.93	43.24	46.00	-2.76	360	100	peak
4	528.2458	28.78	15.06	43.84	46.00	-2.16	360	100	peak
5	603.5392	26.53	16.70	43.23	46.00	-2.77	360	100	peak
6	704.2260	25.49	17.56	43.05	46.00	-2.95	360	100	peak

Plot of Radiation Emissions Test Data (Above 1GHz)

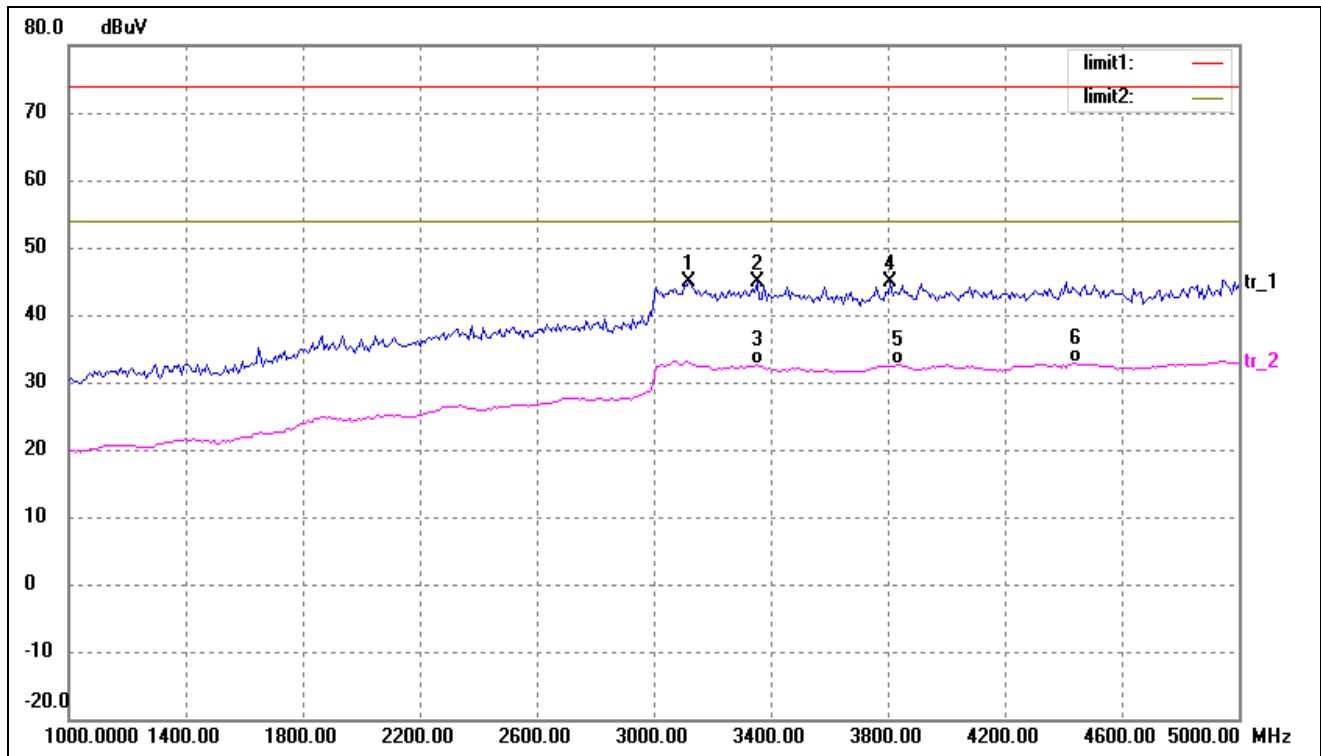
Radiated Disturbance
EUT: Netbook
M/N: SW-I10-03
Operating Condition: Charging and Playing
Test Specification: Horizontal & Vertical
Comment: AC 120V/60Hz DC 19V Adapter

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	(°)	(cm)	
1	2240.000	33.22	-7.68	25.54	54.00	-28.46	360	100	AVG
2	3072.000	51.10	-6.20	44.90	74.00	-29.10	360	100	peak
3	3336.000	38.63	-6.01	32.62	54.00	-21.38	360	100	AVG
4	3632.000	50.48	-5.76	44.72	74.00	-29.28	360	100	peak
5	4240.000	49.56	-5.14	44.42	74.00	-29.58	360	100	peak
6	4448.000	37.72	-4.96	32.76	54.00	-21.24	360	100	AVG

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	3120.000	51.07	-6.17	44.90	74.00	-29.10	360	100	peak
2	3352.000	50.79	-6.00	44.79	74.00	-29.21	360	100	peak
3	3352.000	38.58	-6.00	32.58	54.00	-21.42	360	100	AVG
4	3808.000	50.42	-5.57	44.85	74.00	-29.15	360	100	peak
5	3832.000	38.26	-5.54	32.72	54.00	-21.28	360	100	AVG
6	4440.000	37.75	-4.97	32.78	54.00	-21.22	360	100	AVG

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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