



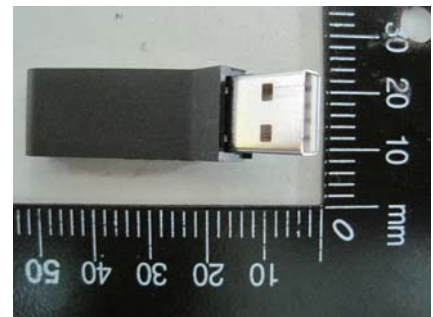
SPORTON International Inc.

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FCC EMC TEST REPORT

Applicant's company	Eleven Engineering Inc.
Applicant Address	10150-100 Street, Suite 900, Edmonton, Alberta, Canada T5J OP6
Manufacturer's company	Eleven Engineering Inc.
Manufacturer Address	10150-100 Street, Suite 900, Edmonton, Alberta, Canada T5J OP6

Product Name	SKAA USB TX
Brand Name	SKAA
Model Name	PL5561
Test Standard	47 CFR FCC Part 15 Subpart B
Classification of ITE	Class B
Received Date	Mar. 01, 2012
Final Test Date	Mar. 12, 2012
Submission Type	Original Equipment



Statement

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2009** and **47 CFR FCC Part 15 Subpart B**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



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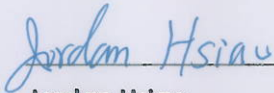
History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FD0D2902-01	Rev. 01	Initial issue of report	Apr. 20, 2012

1. CERTIFICATE OF COMPLIANCE

Product Name : SKAA USB TX
Brand Name : SKAA
Model Name : PL5561
Applicant : Eleven Engineering Inc.
Test Standard : 47 CFR FCC Part 15 Subpart B

Sporton International as requested by the applicant to evaluate the EMI performance of the product sample received on Mar. 01, 2012 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMI nature.



Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart B				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.107	AC Power Line Conducted Emissions	Complies	17.55 dB
4.2	15.109	Radiated Emissions	Complies	8.38 dB

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Radiated Emissions	±1.9dB	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Power Type	From Host System
Modulation	FHSS (FSK)
Frequency Range	2400 ~ 2483.5MHz
Channel Number	49
Channel Spacing	1.536 MHz
Channel Band Width (99%)	2228.65 kHz
Output Power	14.17 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3
<p>Remark:</p> <p>A channel palette of 49 channels, which are spaced by 1.536 MHz starting at 2403.585 MHz. From this palette, 20 channels are used by the system at any given moment. Upon startup the system beings to hop on 20 random channels. The hopping sequence is a pseudo random ordered list of the 20 channels, and is 20 elements long.</p> <p>20 hopping channels are always used at any given point in time. The system has a regular hopping rate of ranging from 100 hops per second to 1000 hops per second, and has a dwell time ranging between 1 ms to 10 ms. During normal operation all channels are used equally and transmissions never span more than 1 hop time. Every hop cycle contains a single transmission from the transmitter and receiver and no channels in the current list of 20 are skipped. This guarantees that all 20 channels are used equally on average, and that the total dwell time on any channel within the hop set is less than 0.4 s in any 8 s period.</p>	

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	PCB Antenna	NA	2.01

3.4. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
2400~2483.5MHz	1	2403.585 MHz
	2	2405.121 MHz
	3	2406.657 MHz
	:	:
	23	2483.913 MHz
	24	2440.449 MHz
	25	2441.985 MHz
	:	:
	47	2474.241 MHz
	48	2475.777 MHz
	49	2477.313 MHz

3.5. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Antenna
AC Power Line Conducted Emissions	Normal Use	-
Radiated Emissions	Normal Use	-

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH0-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	QDS-BRCM1005-D
Mouse	First Price	FP-M02	DoC
Ear phone	SHYARO CHI	MIC-04	N/A
Speaker	-	-	N/A
Speaker fixture	-	-	N/A
Speaker fixture power	-	-	N/A

3.8. EUT Operation during Test

An executive program, EMCTEST.EXE and Media player under WIN XP, which generates a complete line of continuously repeating " H " pattern was used as the test software.

The program was executed as follows:

- a. Turn on the power of all equipment.
- b. The NB sends " H " messages to the panel, and the panel displays " H " patterns on the screen.

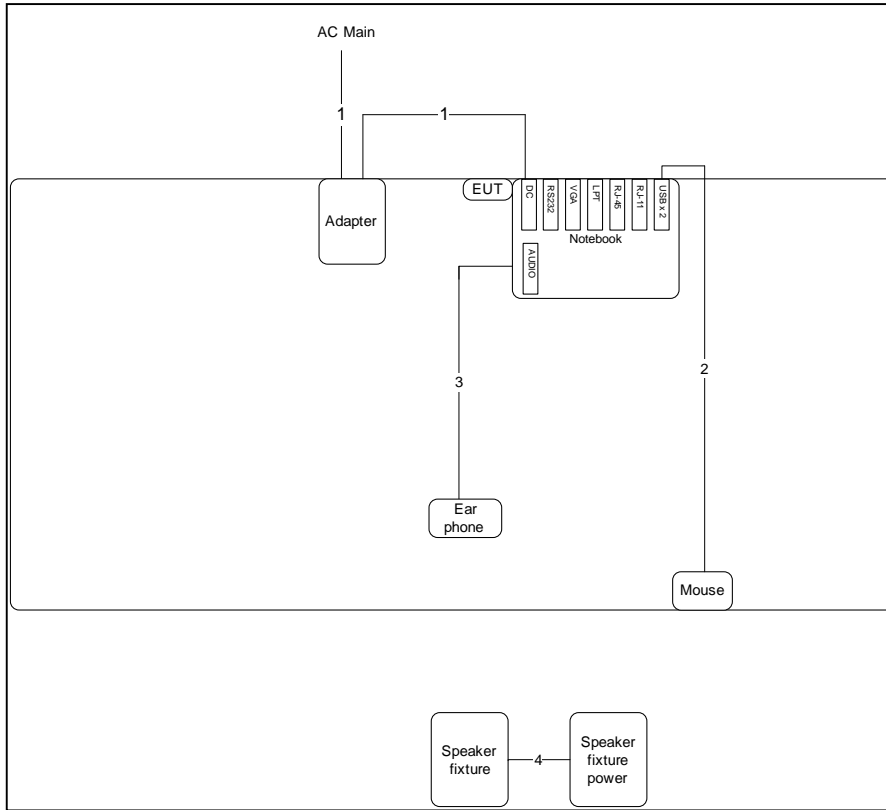
At the same time, the following programs were executed:

Executed "Media player" to play audio and video.

Repeat the steps from b.

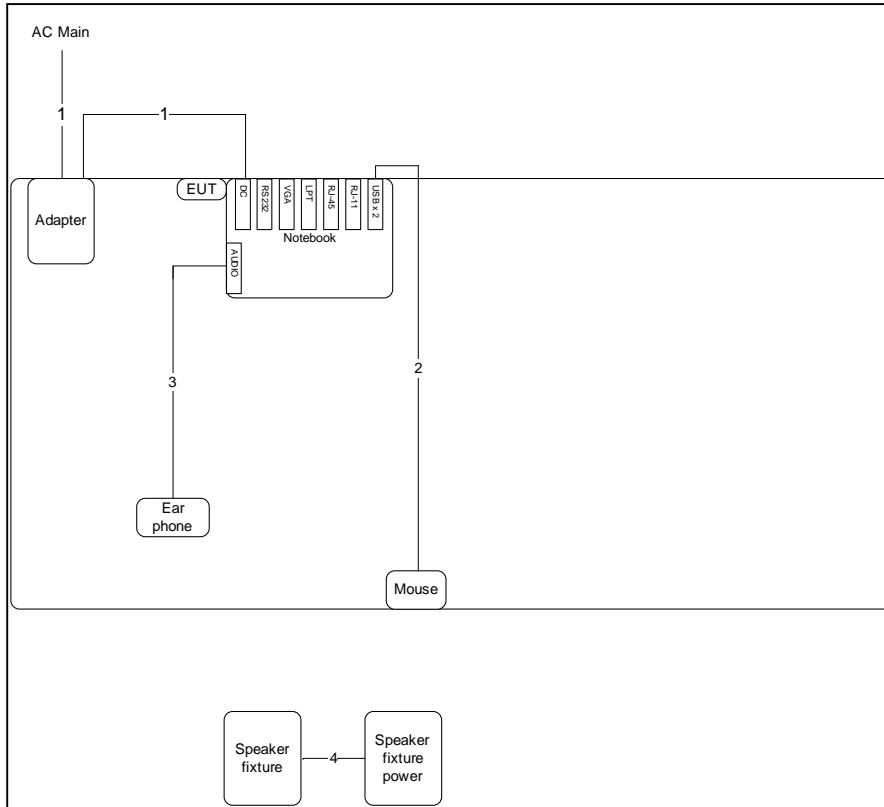
3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration



Item	Connection	Shield	Length
1	Power cable	No	2.6M
2	USB cable	Yes	1.8M
3	Ear phone cable	No	0.72 M
4	Speaker fixture power cable	No	0.11 M

3.9.2. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shield	Length
1	Power cable	No	2.6M
2	USB cable	Yes	1.8M
3	Ear phone cable	No	0.72 M
4	Speaker fixture power cable	No	0.11 M

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

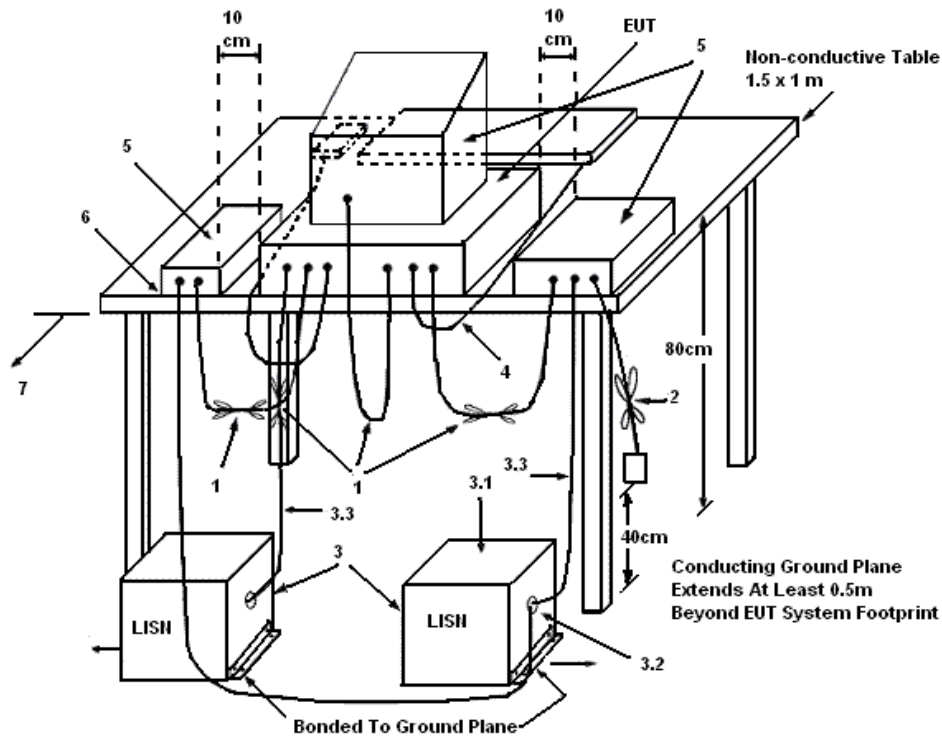
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

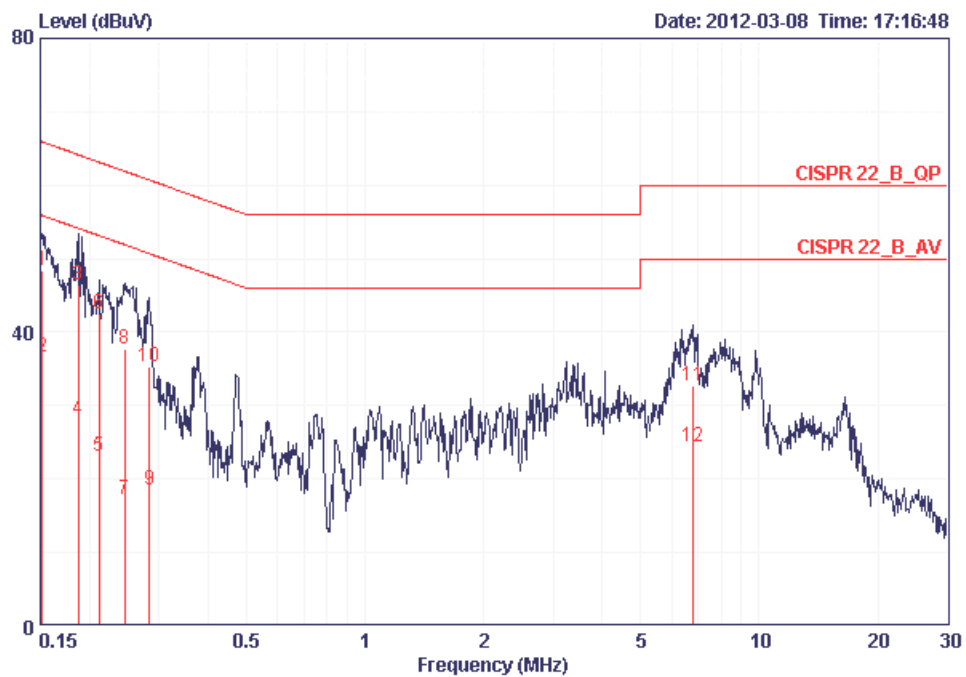
- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

There is no deviation with the original standard.

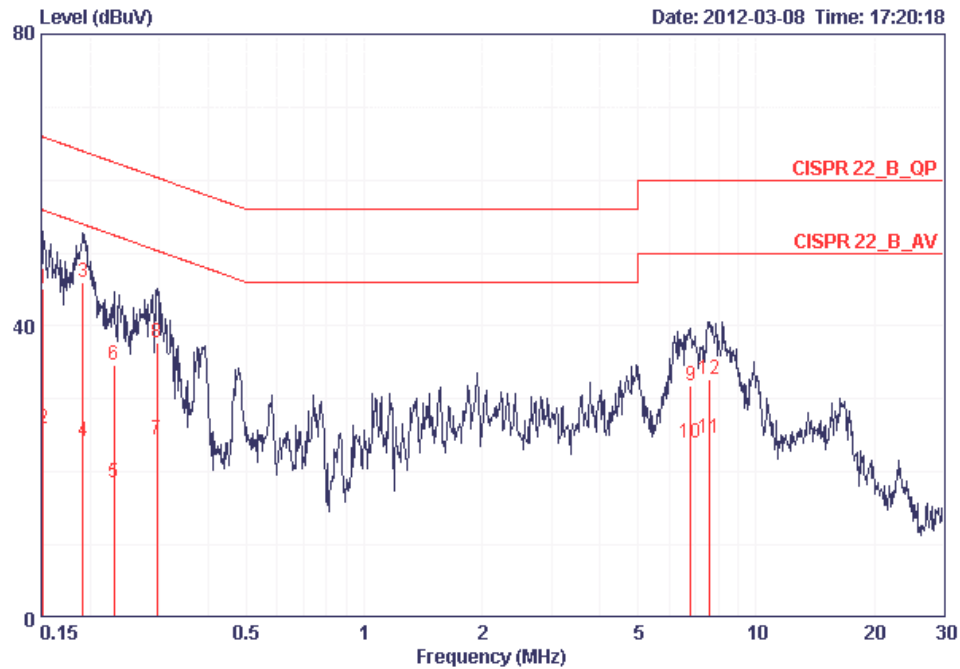
4.1.6. Results of AC Power Line Conducted Emissions Measurement

Temperature	20°C	Humidity	50%
Test Engineer	Sin Chang	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.15160	48.36	-17.55	65.91	48.09	0.07	0.20	QP
2	0.15160	36.64	-19.27	55.91	36.37	0.07	0.20	AVERAGE
3	0.18739	46.38	-17.78	64.15	46.12	0.06	0.20	QP
4	0.18739	28.07	-26.09	54.15	27.81	0.06	0.20	AVERAGE
5	0.21167	23.04	-30.10	53.14	22.79	0.05	0.20	AVERAGE
6	0.21167	42.55	-20.59	63.14	42.30	0.05	0.20	QP
7	0.24552	17.20	-34.70	51.91	16.96	0.04	0.20	AVERAGE
8	0.24552	37.78	-24.12	61.91	37.54	0.04	0.20	QP
9	0.28328	18.53	-32.19	50.72	18.29	0.04	0.20	AVERAGE
10	0.28328	35.36	-25.36	60.72	35.12	0.04	0.20	QP
11	6.805	32.65	-27.35	60.00	32.07	0.25	0.34	QP
12	6.805	24.49	-25.51	50.00	23.91	0.25	0.34	AVERAGE

Temperature	20°C	Humidity	50%
Test Engineer	Sin Chang	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15160	45.20	-20.71	65.91	44.90	0.10	0.20	QP
2	0.15160	25.88	-30.03	55.91	25.58	0.10	0.20	AVERAGE
3	0.19140	45.96	-18.01	63.98	45.68	0.08	0.20	QP
4	0.19140	24.14	-29.83	53.98	23.86	0.08	0.20	AVERAGE
5	0.23040	18.44	-34.00	52.44	18.16	0.08	0.20	AVERAGE
6	0.23040	34.61	-27.83	62.44	34.33	0.08	0.20	QP
7	0.29555	24.33	-26.03	50.37	24.06	0.07	0.20	AVERAGE
8	0.29555	37.68	-22.68	60.37	37.41	0.07	0.20	QP
9	6.805	31.83	-28.17	60.00	31.21	0.29	0.34	QP
10	6.805	24.02	-25.98	50.00	23.40	0.29	0.34	AVERAGE
11	7.606	24.72	-25.28	50.00	24.01	0.32	0.40	AVERAGE
12	7.606	32.80	-27.20	60.00	32.09	0.32	0.40	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Radiated Emissions Measurement

4.2.1. Limit

Measurements shall be made with a quasi-peak measuring receiver in the frequency range 30 MHz to 5th harmonic of highest frequency. The quasi-peak measuring receiver shall be in accordance with clause 2 of CISPR 16-1. Receivers with peak detectors shall be in accordance with clause 3 of CISPR 16-1, and shall have a 6 dB bandwidth in accordance with clause 2 of CISPR 16-1.

Frequency of Emission (MHz)	Field Strength QP Limit (dBuV/m) at 3m
30~88	40
88~216	43.5
216~960	46
Above 960	54

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

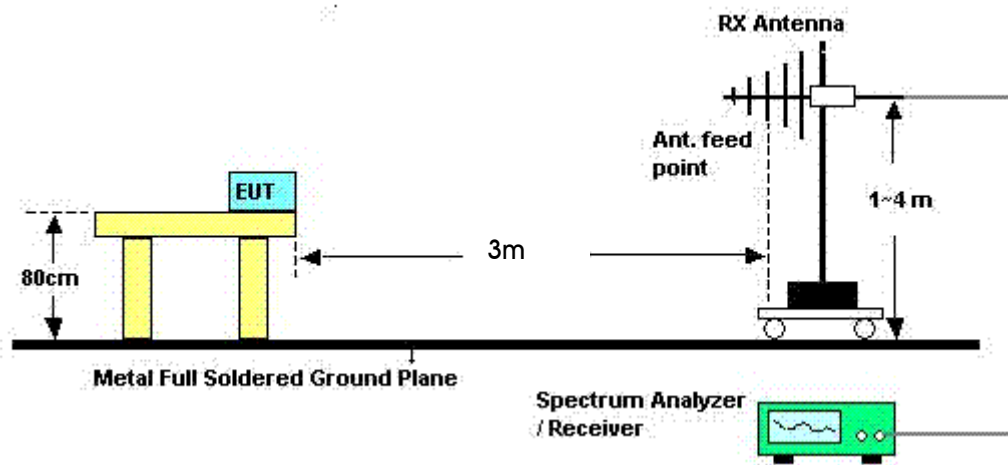
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Spectrum Parameter	Setting
Start Frequency	1000 MHz
Stop Frequency	5th harmonic of highest frequency
RB / VB	1 MHz / 1MHz for Peak

4.2.3. Test Procedures

1. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

4.2.4. Test Setup Layout



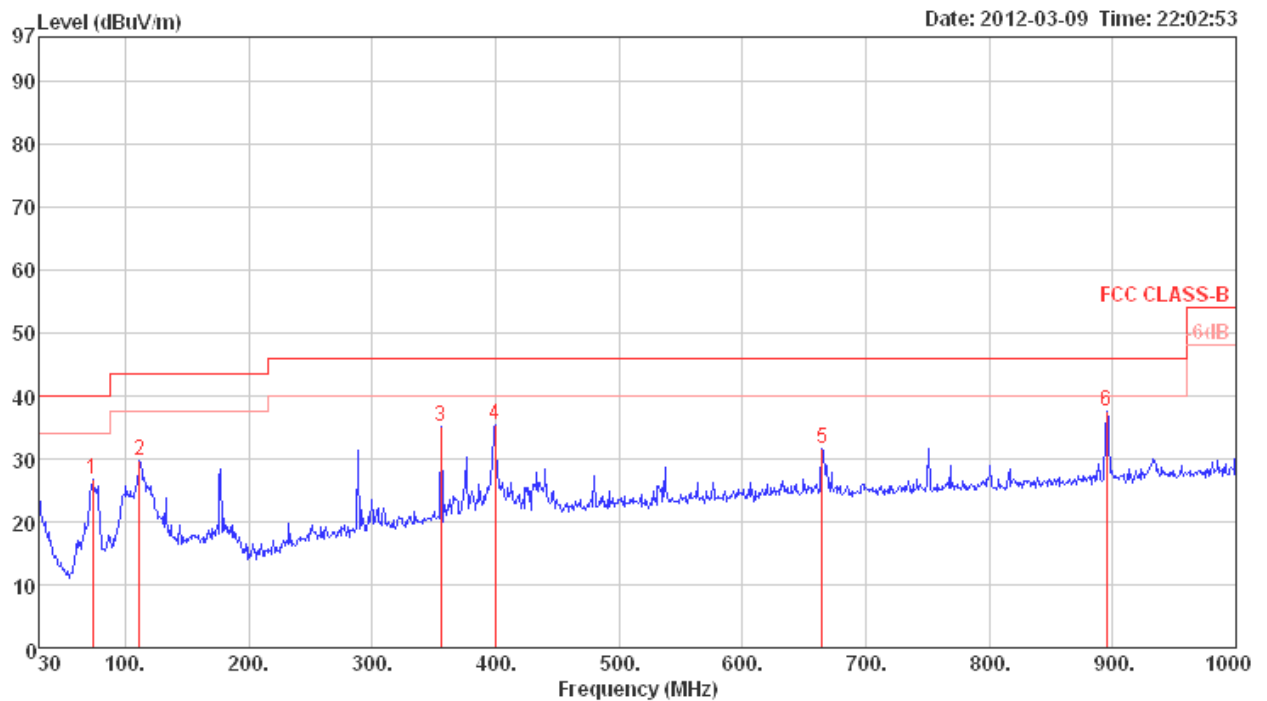
4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. Results of Radiated Emissions (30MHz~1GHz)

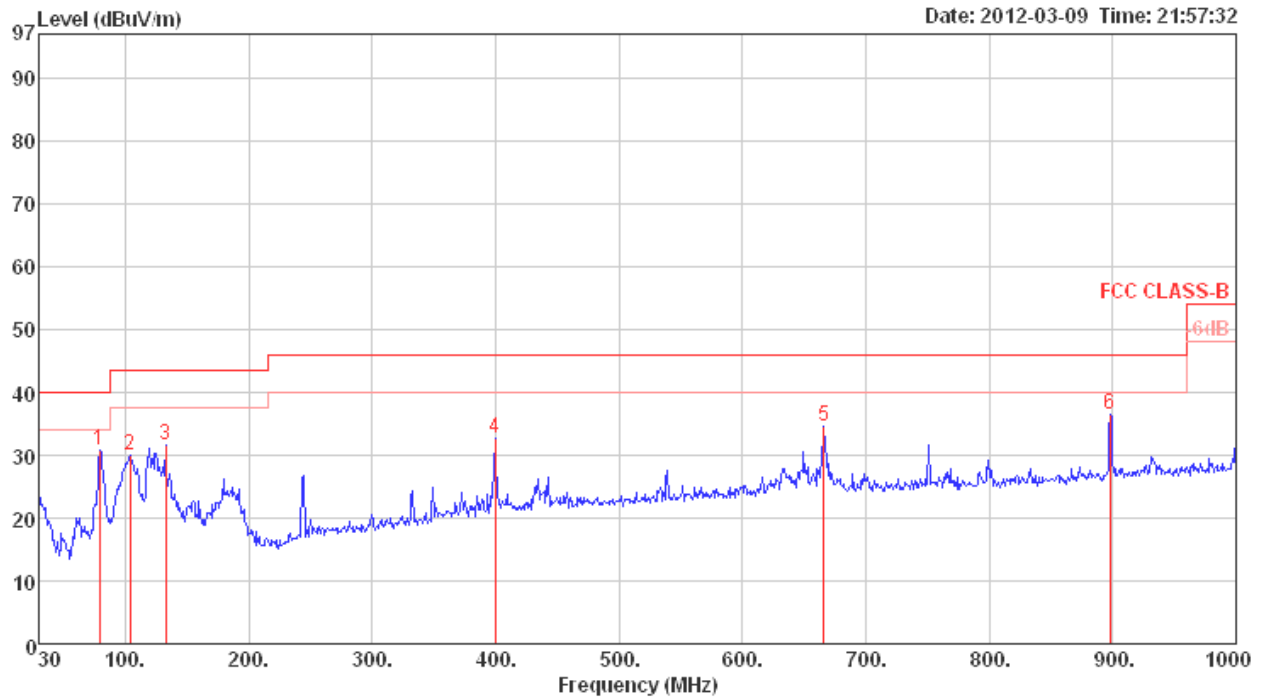
Temperature	20°C	Humidity	59%
Test Engineer	Wen Chao	Configurations	Normal Link

Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp		A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	73.65	26.80	40.00	-13.20	46.80	0.88	6.83	27.71	100	0	HORIZONTAL
2	111.48	29.60	43.50	-13.90	44.07	1.20	11.87	27.54	100	0	HORIZONTAL
3	355.92	35.07	46.00	-10.93	45.27	2.21	14.88	27.29	100	0	HORIZONTAL
4	399.57	35.30	46.00	-10.70	44.54	2.30	16.06	27.60	100	0	HORIZONTAL
5	664.38	31.71	46.00	-14.29	37.33	3.44	18.98	28.04	100	0	HORIZONTAL
6	895.24	37.62	46.00	-8.38	40.96	3.58	20.49	27.41	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp		A/Pos	T/Pos	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	Pol/Phase
1	79.47	30.68	40.00	-9.32	50.17	1.07	7.12	27.68	400	0	VERTICAL
2	103.72	30.02	43.50	-13.48	45.12	1.20	11.28	27.58	400	0	VERTICAL
3	132.82	31.65	43.50	-11.85	45.47	1.33	12.28	27.43	400	0	VERTICAL
4	399.57	32.71	46.00	-13.29	41.95	2.30	16.06	27.60	400	0	VERTICAL
5	666.32	34.49	46.00	-11.51	40.11	3.43	18.98	28.03	400	0	VERTICAL
6	898.15	36.38	46.00	-9.62	39.67	3.59	20.52	27.40	400	0	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.2.7. Results for Radiated Emissions (1GHz~5th harmonic of highest frequency)

Temperature	20°C	Humidity	59%
Test Engineer	Wen Chao	Configurations	Normal Link

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	1124.98	36.59	74.00	-37.41	46.57	1.86	35.90	24.06	223	100	Peak	HORIZONTAL
2 a	1125.00	28.44	54.00	-25.56	38.42	1.86	35.90	24.06	223	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 a	1125.00	33.36	54.00	-20.64	43.34	1.86	35.90	24.06	110	108	Average	VERTICAL
2 p	1125.13	38.74	74.00	-35.26	48.72	1.86	35.90	24.06	110	108	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Sep. 01, 2011	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Oct. 28, 2011	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Nov. 16, 2011	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K~30MHz	Jan. 04, 2012	Conduction (CO01-CB)
COND Cable	-	Cable	-	0.15MHz~30MHz	Dec. 04, 2011	Conduction (CO01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	-	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	-	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Oct. 17, 2011	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Oct. 08, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2011	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP	100304	9kHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 06, 2012	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2011	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)

Note: Calibration Interval of instruments listed above is one year.

Note: * Calibration Interval of instruments listed above is two year.

6. TEST LOCATION

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 886-2-2601-1640 FAX : 886-2-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 886-2-2631-4739 FAX : 886-2-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 886-2-8227-2020 FAX : 886-2-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 886-2-2794-8886 FAX : 886-2-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION



Certificate No. : L1190-091230

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2010 to January 09, 2013
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities

Jay-san Chen

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 30, 2009

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix