SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Wistron NeWeb Corporation**
Applicant Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.
FCC ID	**NKRUWASLH1**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.

Product Name	Satellite Radio receiver Home Dock
Brand Name	Sirius
Model Name	SLH1
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.239
Test Freq. Range	88 ~ 108MHz
Receive Date	Jul. 4, 2006
Final Test Date	Aug. 11, 2006
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 C63.4-2003** and **47 CFR FCC Part 15 Subpart C**.
The test equipment used to perform the test is calibrated and traceable to NML/ROC.

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History of This Test Report

Original Issue Date: Aug. 17, 2006

Report No.: FR671326AA

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Satellite Radio receiver Home Dock
Brand Name	:	Sirius
Model Name	:	SLH1
Applicant	:	Wistron NeWeb Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.239

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jul. 4, 2006 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 EMC nature.

Prepared By:	Tested By:	Reviewed By:
Sharon Jiang 17.8.06	Steven Lu 17.8.2006	Wayne Hsu 17.8.06
Sharon Jiang / Specialist	Steven Lu / Engineer	Wayne Hsu

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	1.08 dB
4.2	15.239(b)	Field Strength of Fundamental Emissions	Complies	1.89 dB
4.3	15.239(a)	20dB Spectrum Bandwidth	Complies	-
4.4	15.239(c)	Radiated Emissions	Complies	6.12 dB
4.5	15.239(c)	Band Edge Emissions	Complies	2.27 dB
4.6	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.26dB	Confidence levels of 95%
Field Strength of Fundamental Emissions	±3.72dB	Confidence levels of 95%
20dB Spectrum Bandwidth	±6.25×10-7	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	±3.72dB	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	Low Power Communication Device (FM Transmitter)
Radio Type	Intentional Transmitter
Power Type	Power Adapter
Interface Type	DC IN / Line IN / Line OUT / USB / Antenna connect
Modulation	FM
Frequency Range	88 ~ 108MHz
Channel Number	100
Channel Band Width (99%)	74.00 kHz
Max. Field Strength	46.11 dBuV/m at 3m (Average)
Carrier Frequencies	Please refer to section 3.3
Antenna	Integrated (for FM transmitter)

3.2. Accessories

Power	Brand	Model	Rating
Adapter	DVE	DSA-15P-05 US 050125	Input: 100-240VAC, 50-60Hz, 0.5A Output: 5VDC, 2.5A
Others			
Cradle / USB Cable			

3.3. Table for Carrier Frequencies

Freqeuncy Band	Channel No.	Frequency
88 ~ 108MHz	1	88.1 MHz
	2	88.3 MHz
	:	:
	50	97.9 MHz
	51	98.1 MHz
	52	98.3 MHz
	:	:
	99	107.7 MHz
	100	107.9 MHz

3.4. 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	Channel	Antenna
AC Power Line Conducted Emissions	Normal operation	51	1
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX1	1/51/100	1
Radiated Emissions 9kHz~30MHz	Normal Operation	51	1
Radiated Emissions 30MHz~10th Harmonic	Normal Operation	1/51/100	1
Band Edge Emissions	CTX1	1/100	1

Note:

CTX1=Continuously transmitting and audio modulating content a range of 100 to 5000 Hz.

3.5. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	101377	IC 4088	-
CO04-HY	Conduction	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

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

Please refer section 6 for Test Site Address.

3.6. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	DoC
Printer	EPSON	LQ-300	DoC
Modem	ACEEX	DM-1414	IFAXDM1414
Main receiver	SIRIUS	SL100	NKRUWASLDKSP
Speaker	Dell	A125	DoC
iPod shuffle	Apple	iPod A1112	DoC

3.7. Table for Test Software Setting

An executive program, EMCTEST.EXE 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.

c. The NB sends " H " messages to the printer, then the printer prints them on the paper.

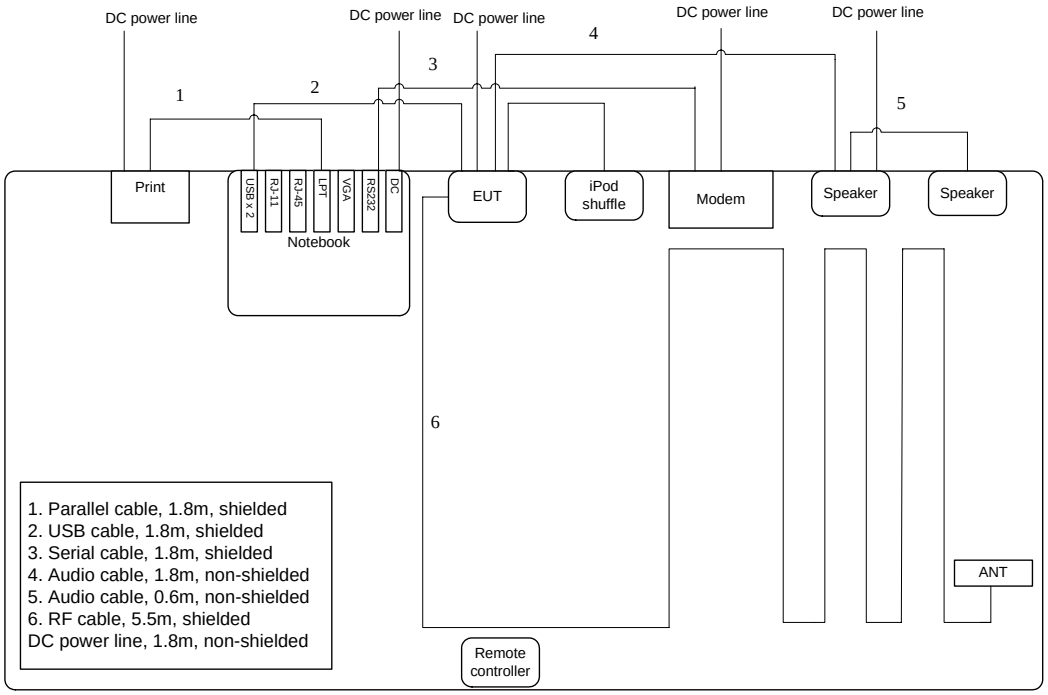
d. The NB sends " H " messages to the modem.

At the same time, the pogram "Ping.exe" was executed for transmitting and receiving data with the remote workstation, and PC/NB was operated with EUT in copy-add-earse sequence.

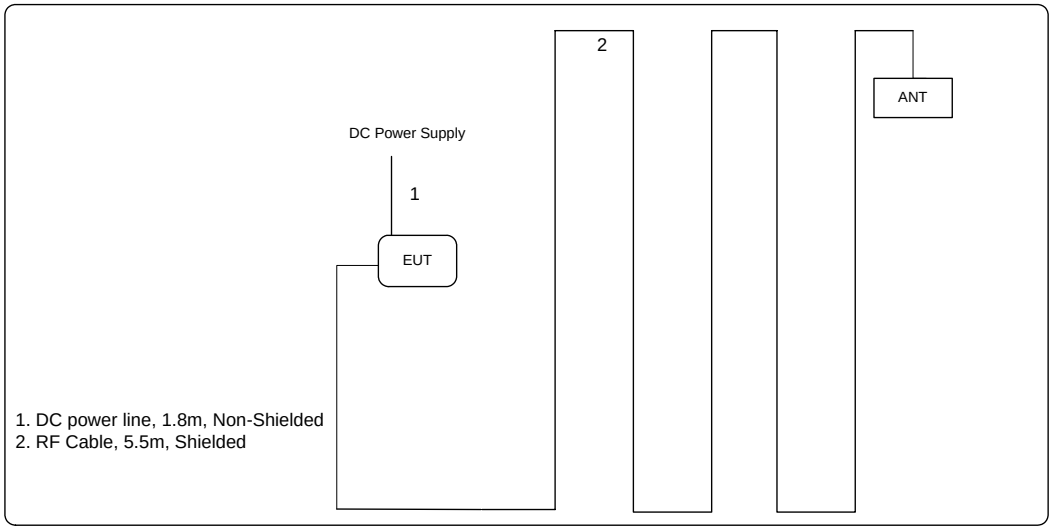
3.8. Test Configurations

3.8.1. Radiation Emissions Test Configuration

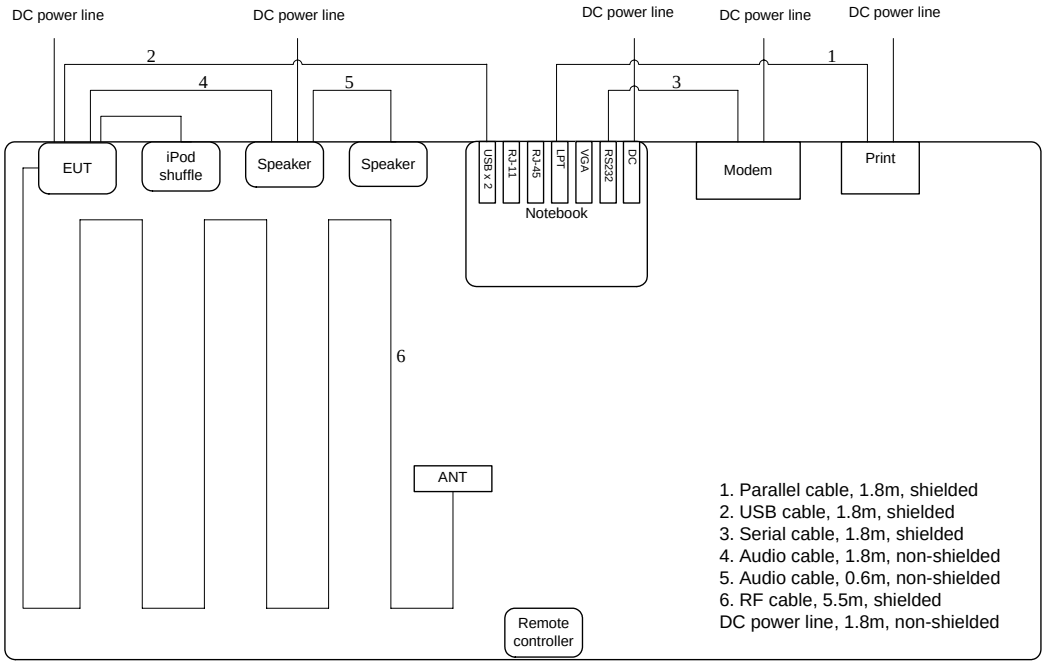
9KHz~1GHz (Normal Operation)



88~108MHz (CTX1)



3.8.2. AC Power Line Conduction Emissions Test Configuration



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

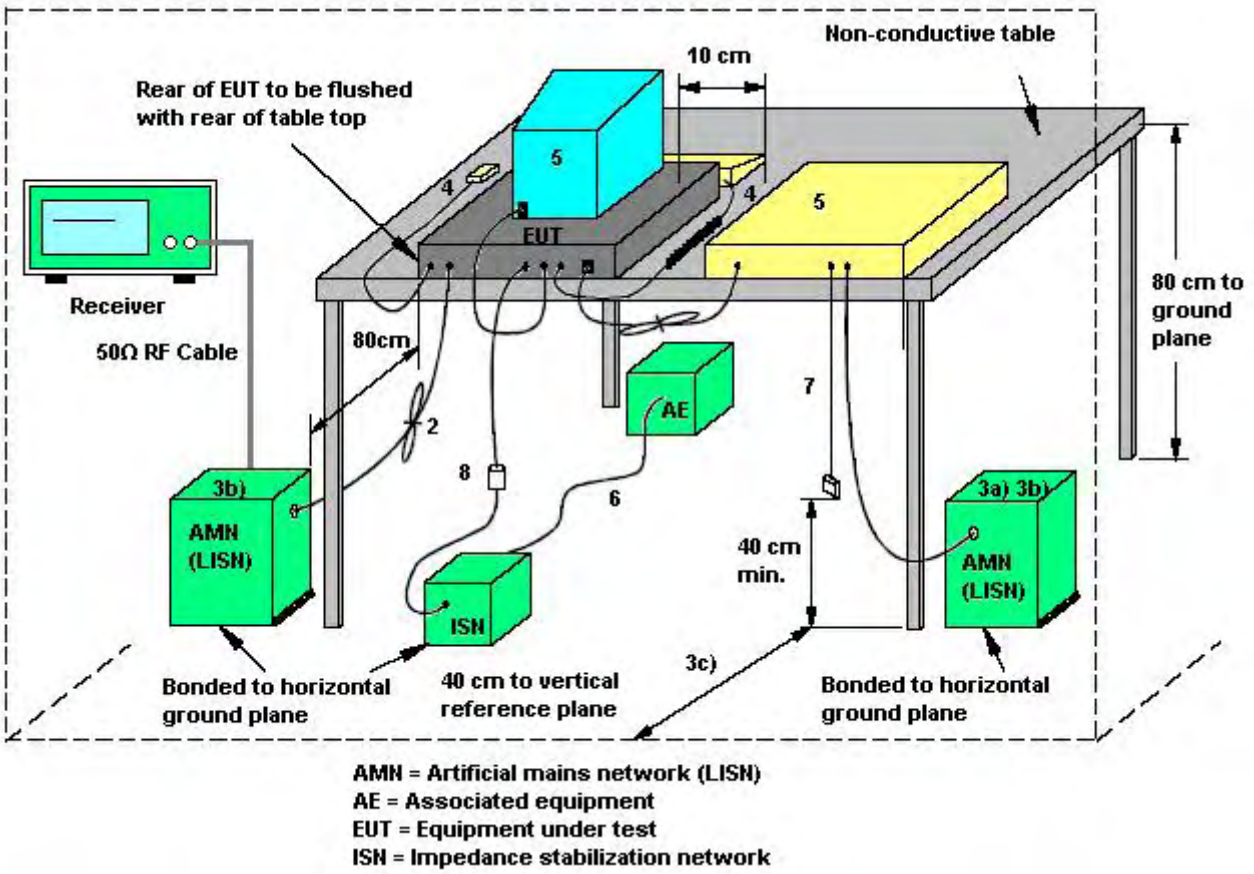
Please refer to section 5 in this report. The following table is the setting of the receiver.

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. Configure the EUT according to ANSI C63.4. 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



1. If cables, which hang closer than 40 cm to the horizontal metal groundplane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
2. Excess mains cord shall be bundled in the centre or shortened to appropriate length.
3. EUT is connected to one artificial mains network (AMN). All AMNs and ISNs may alternatively be connected to a vertical reference plane or metal wall.
4. All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
5. AMN and ISN are 80 cm from the EUT and at least 80 cm from other units and other metal planes.
6. Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
7. Cables of hand operated devices, such as keyboards, mouses, etc. shall be placed as for normal usage.
8. Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
9. I/O signal cable intended for external connection.
10. The end of the I/O signal cables which are not connected to an AE may be terminated, if required, using correct terminating impedance.
11. If used, the current probe shall be placed at 0,1 m from the ISN.

4.1.5. Test Deviation

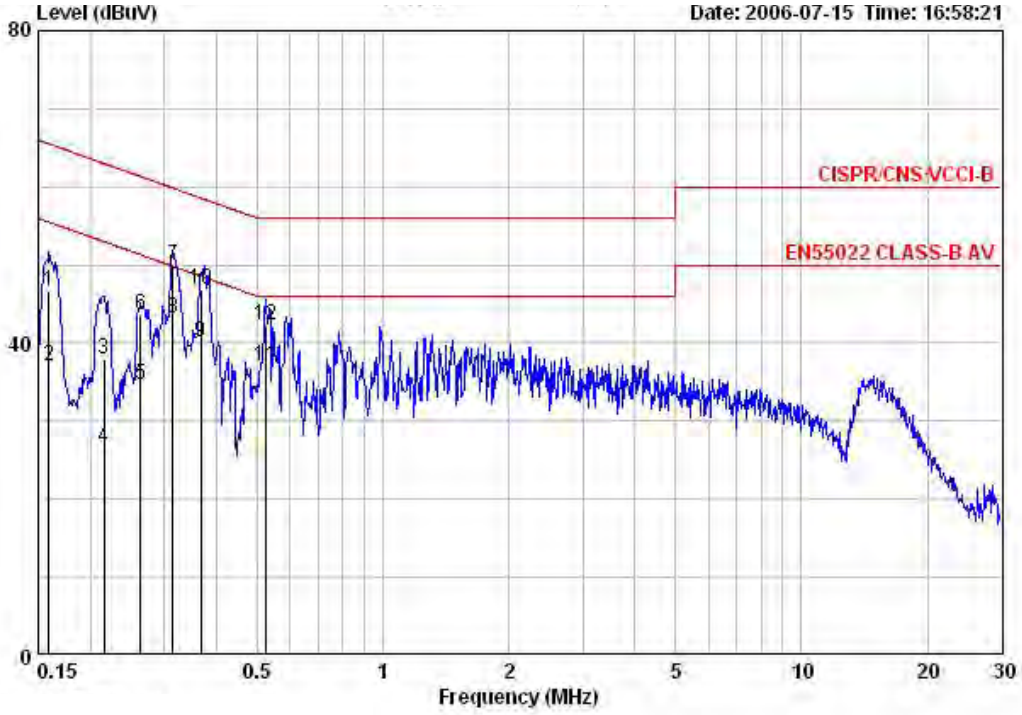
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

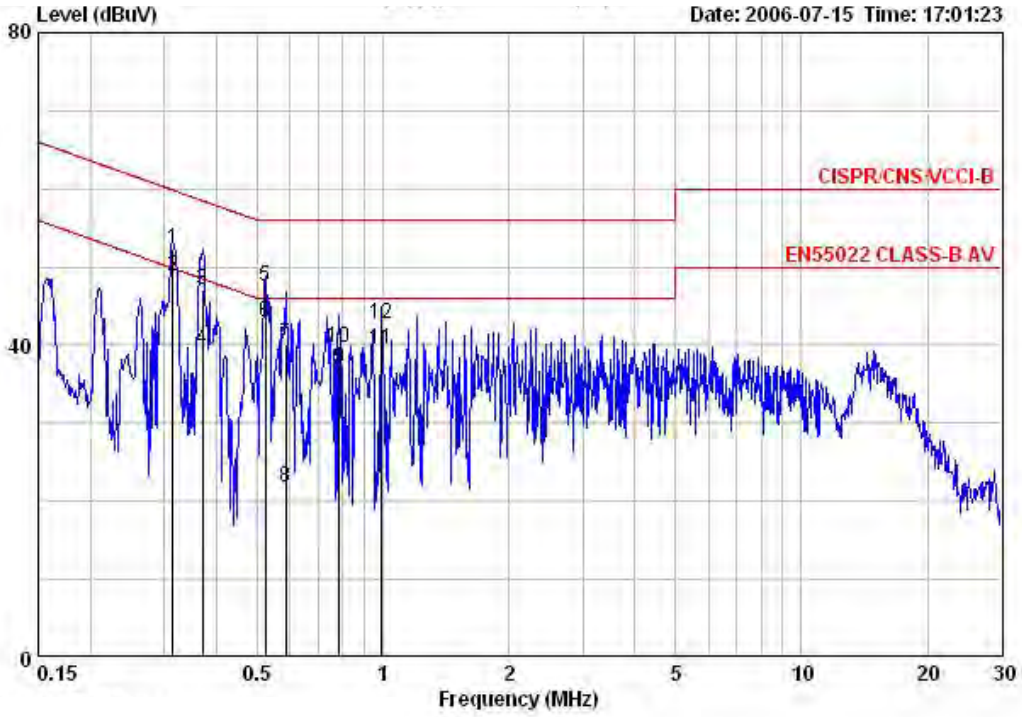
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Line
Configuration	Normal operation		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15900	46.54	-18.97	65.52	44.25	2.09	0.20	QP
2	0.15900	37.00	-18.51	55.52	34.71	2.09	0.20	AVERAGE
3	0.21506	37.84	-25.17	63.01	36.49	1.15	0.20	QP
4	0.21506	26.64	-26.37	53.01	25.29	1.15	0.20	AVERAGE
5	0.26303	34.70	-16.64	51.34	33.60	0.90	0.20	AVERAGE
6	0.26303	43.63	-17.71	61.34	42.53	0.90	0.20	QP
7 @	0.31495	49.83	-10.01	59.84	48.88	0.75	0.20	QP
8 @	0.31495	43.22	-6.62	49.84	42.27	0.75	0.20	AVERAGE
9 @	0.36662	40.14	-8.44	48.58	39.32	0.62	0.20	AVERAGE
10 @	0.36662	46.76	-11.82	58.58	45.94	0.62	0.20	QP
11 @	0.52376	37.09	-8.91	46.00	36.49	0.40	0.20	AVERAGE
12	0.52376	42.23	-13.77	56.00	41.63	0.40	0.20	QP

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Neutral
Configuration	Normal operation		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 @	0.31495	52.27	-7.57	59.84	51.42	0.65	0.20	QP
2 @	0.31495	48.76	-1.08	49.84	47.91	0.65	0.20	AVERAGE
3 @	0.37117	47.06	-11.41	58.47	46.36	0.50	0.20	QP
4 @	0.37117	39.37	-9.10	48.47	38.67	0.50	0.20	AVERAGE
5 @	0.52376	47.60	-8.40	56.00	47.10	0.30	0.20	QP
6 @	0.52376	42.92	-3.08	46.00	42.42	0.30	0.20	AVERAGE
7	0.58540	40.17	-15.83	56.00	39.67	0.30	0.20	QP
8	0.58540	21.76	-24.24	46.00	21.26	0.30	0.20	AVERAGE
9 @	0.78761	36.98	-9.02	46.00	36.48	0.30	0.20	AVERAGE
10	0.78761	39.78	-16.22	56.00	39.28	0.30	0.20	QP
11 @	0.99440	39.53	-6.47	46.00	39.08	0.25	0.20	AVERAGE
12	0.99440	42.78	-13.22	56.00	42.33	0.25	0.20	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Field Strength of Fundamental Emissions Measurement

4.2.1. Limit

The field strength of fundamental emissions shall comply with the following table.

Frequency Band (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
88~108	48 (Average)
88~108	68 (Peak)

4.2.2. Measuring Instruments and Setting

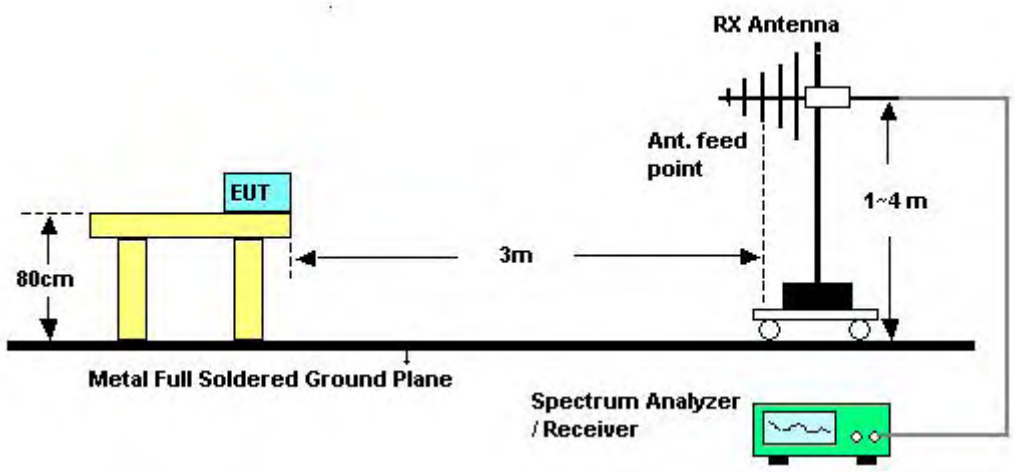
Please refer to section 5 in this report. The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	Auto
Center Frequency	Fundamental Frequency
RB	120 KHz
Detector	Peak / Average

4.2.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. 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. For Fundamental emissions, use the receiver to measure peak and average reading.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

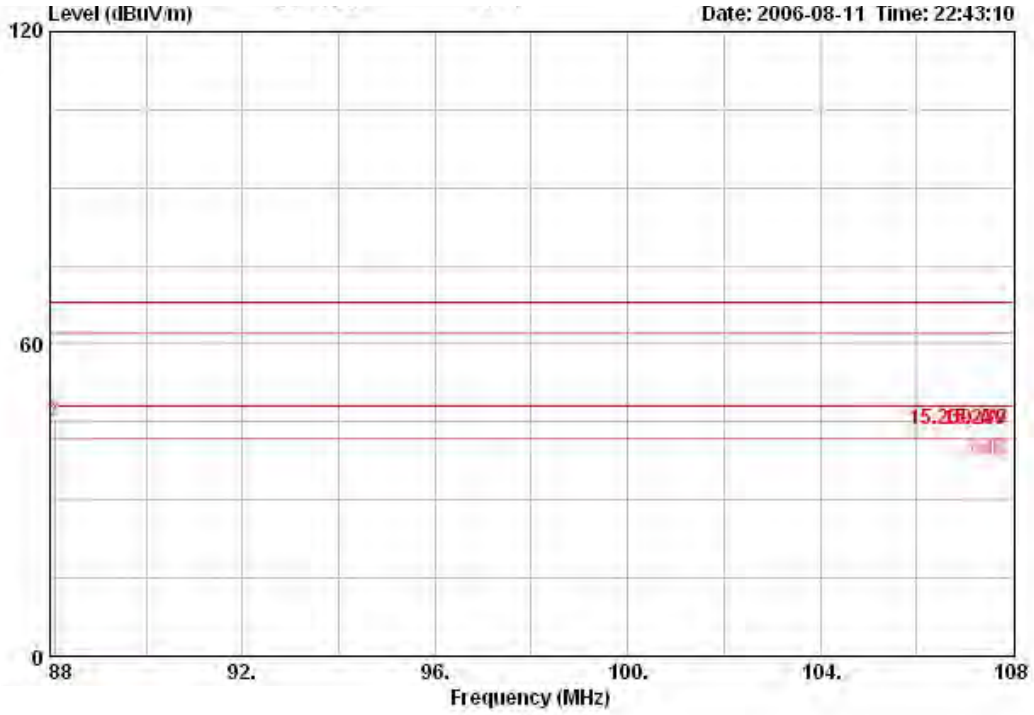
4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Field Strength of Fundamental Emissions

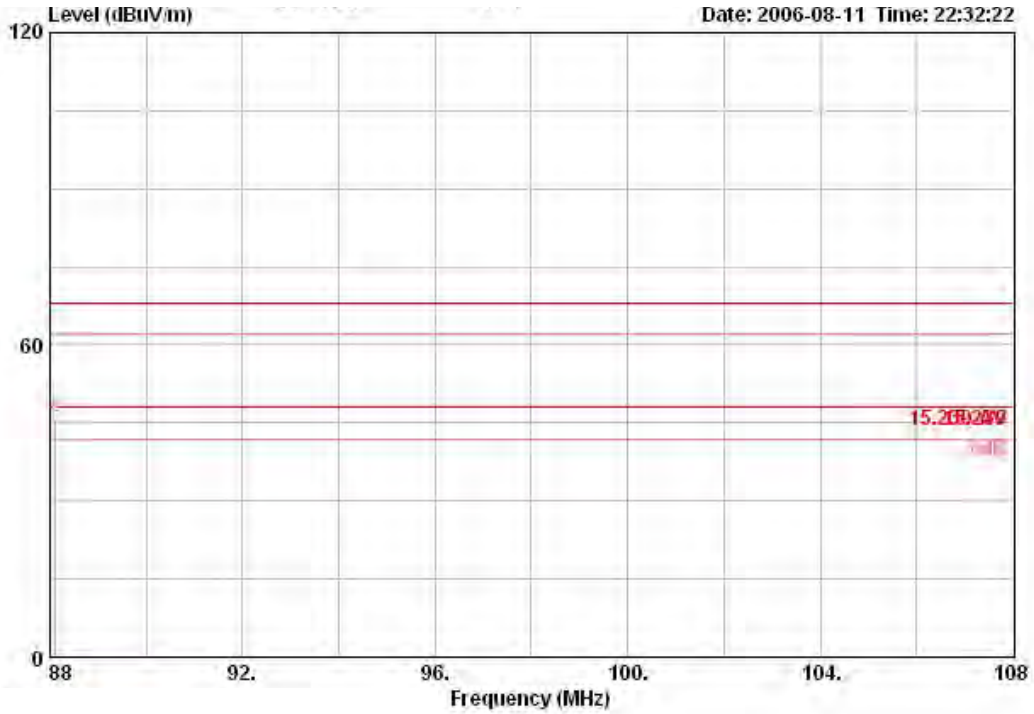
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	88.089	45.15	-2.85	48.00	8.98	0.76	30.05	65.46	AVERAGE	182	138
2	88.089	45.28	-22.72	68.00	8.98	0.76	30.05	65.59	PEAK	182	138

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	88.104	46.11	-1.89	48.00	8.98	0.76	30.05	66.42	AVERAGE	191	250
2	88.111	46.14	-21.86	68.00	8.98	0.76	30.05	66.45	PEAK	191	250

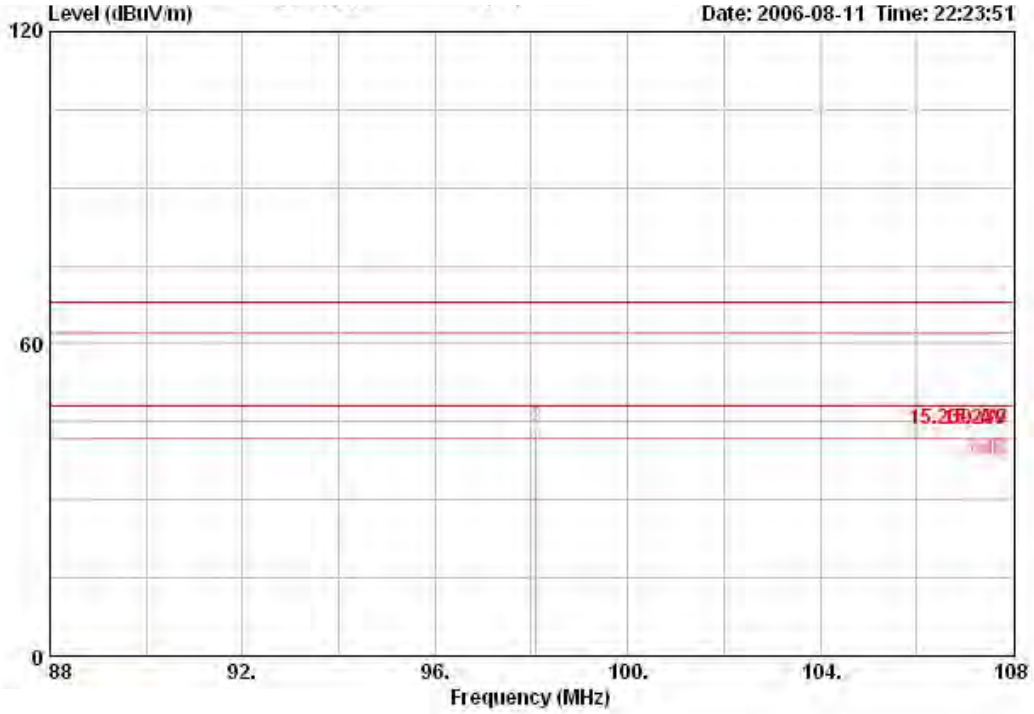
Note:

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

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

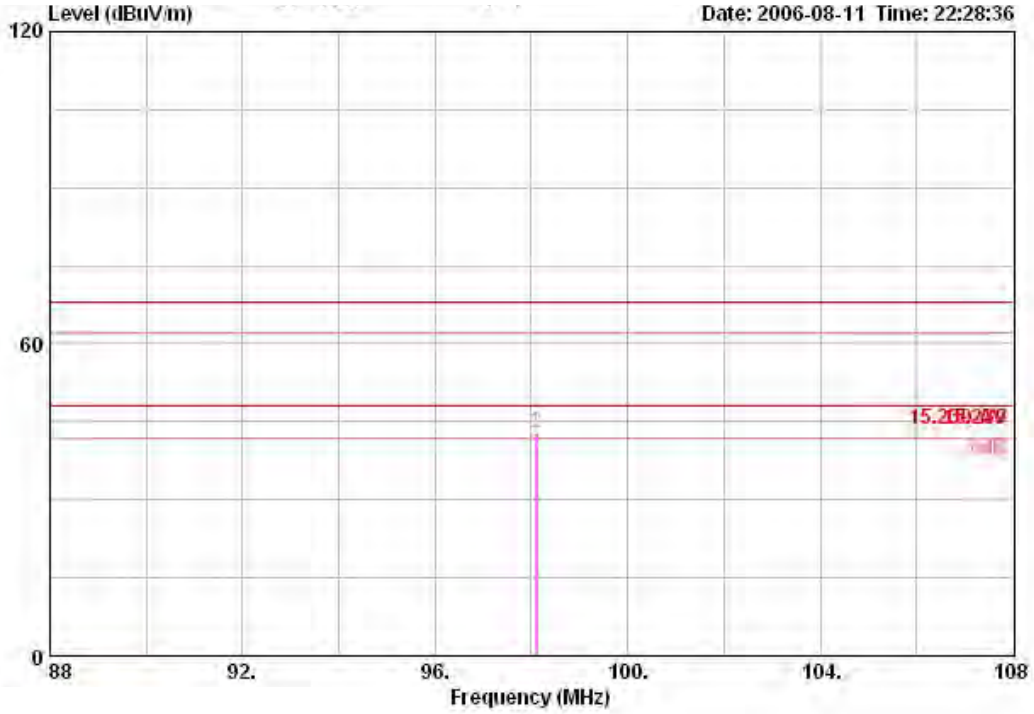
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 51

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	98.091	43.50	-4.50	48.00	10.82	0.80	30.10	61.98	AVERAGE	100	99
2	98.103	43.84	-24.16	68.00	10.82	0.80	30.10	62.32	PEAK	100	99

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	98.091	42.82	-5.18	48.00	10.82	0.80	30.10	61.30	AVERAGE	326	80
2	98.111	42.88	-25.12	68.00	10.82	0.80	30.10	61.36	PEAK	326	80

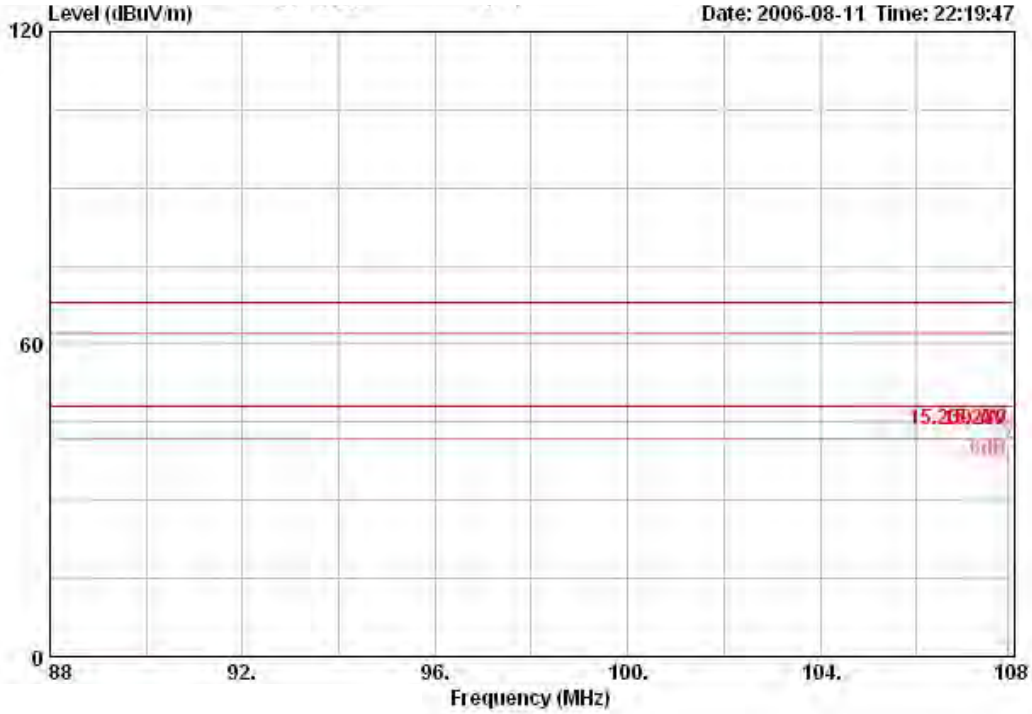
Note:

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

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

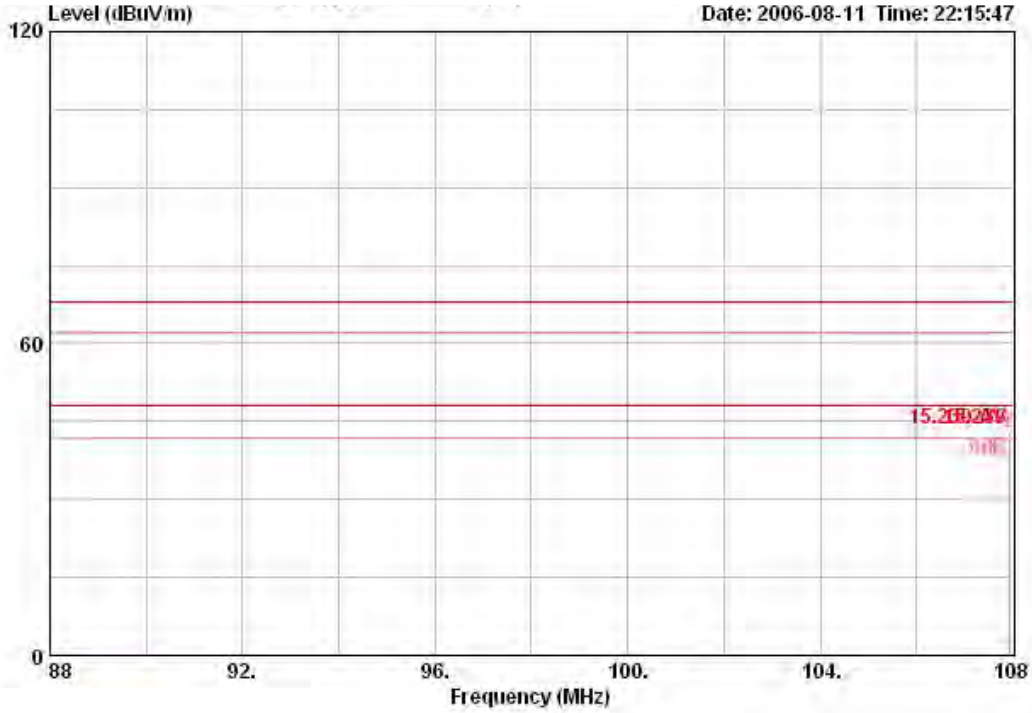
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 100

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	107.895	40.83	-7.17	48.00	12.24	0.83	30.07	57.83	AVERAGE	100	98
2	107.896	41.03	-26.97	68.00	12.24	0.83	30.07	58.03	PEAK	101	98

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	107.912	42.85	-5.15	48.00	12.24	0.83	30.07	59.85	AVERAGE	258	237
2	107.913	42.85	-25.15	68.00	12.24	0.83	30.07	59.85	PEAK	258	237

Note:

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

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

4.3. 20dB Spectrum Bandwidth Measurement

4.3.1. Limit

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

4.3.4. Test Setup Layout

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

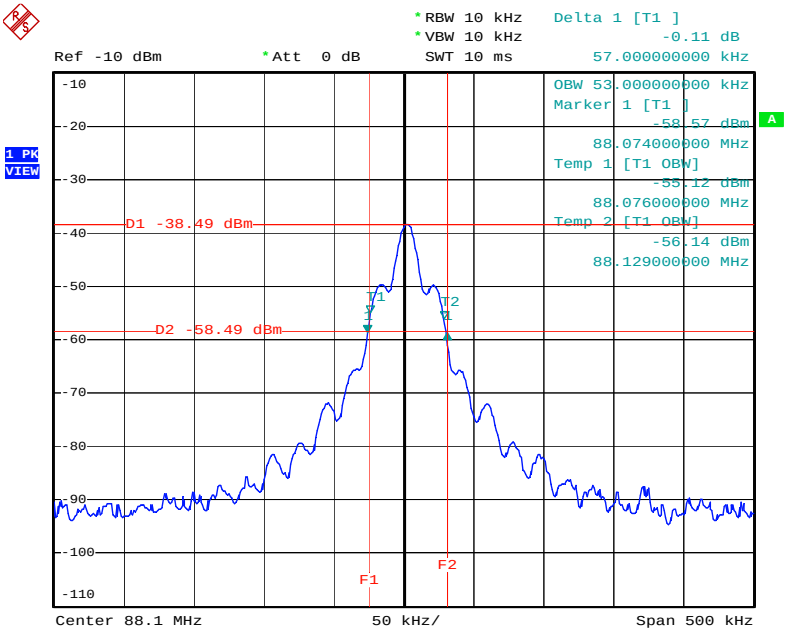
The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 20dB Spectrum Bandwidth

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1/51/100

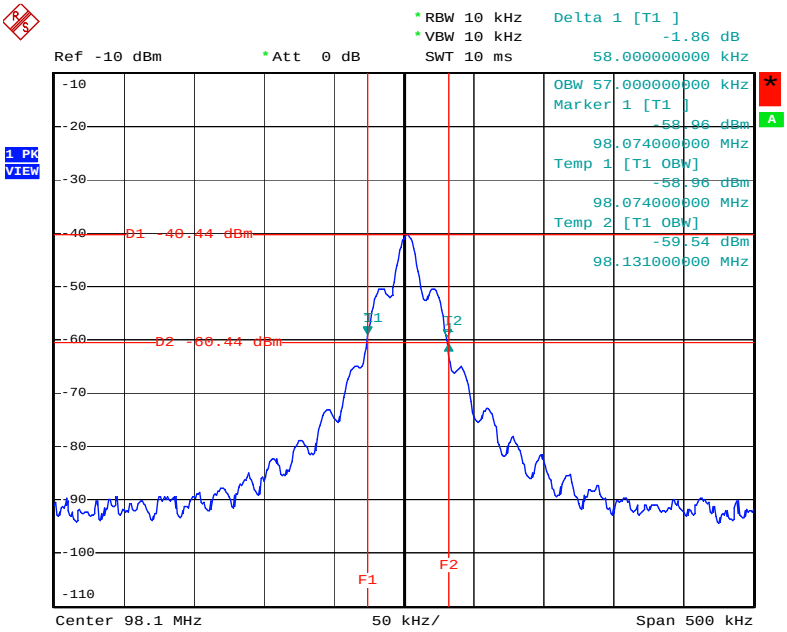
Frequency	20dB BW (kHz)	99% OBW (kHz)	Frequency range (MHz) $f_L > 88MHz$	Frequency range (MHz) $f_H < 108MHz$	Test Result
88.1 MHz	57.00	53.00	88.0740	-	Complies
98.1 MHz	58.00	57.00	-	-	Complies
107.9 MHz	77.00	74.00	-	107.9400	Complies

20 dB/99% Bandwidth Plot on 88.1 MHz



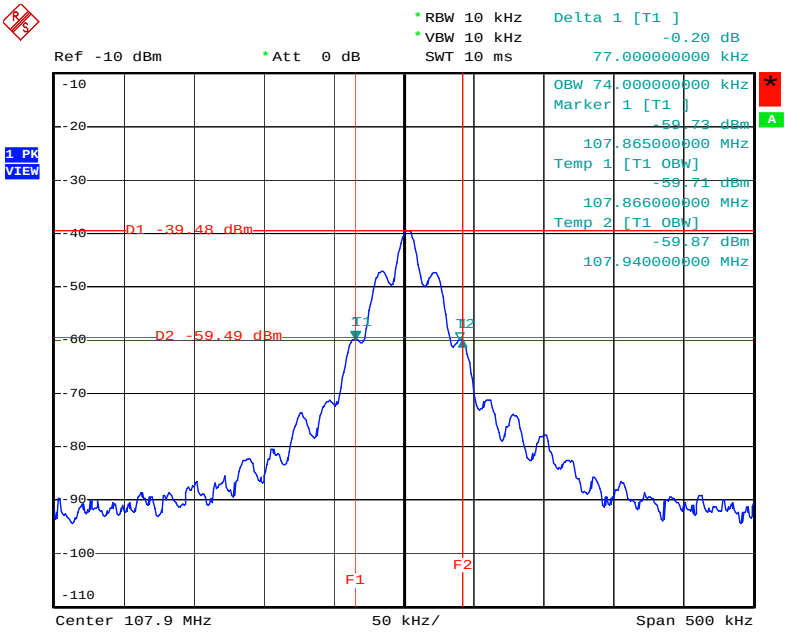
Date: 18.JUL.2006 16:18:00

20 dB/99% Bandwidth Plot on 98.1 MHz



Date: 18.JUL.2006 16:20:35

20 dB/99% Bandwidth Plot on 107.9 MHz



Date: 18.JUL.2006 16:21:36

4.4. Radiated Emissions Measurement

4.4.1. Limit

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emissions limits in Section 15.209(a)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.4.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.4.3. Test Procedures

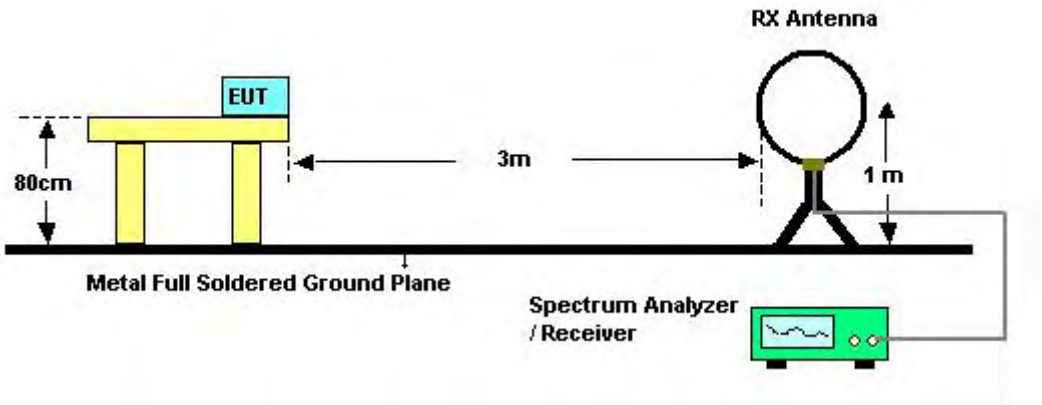
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

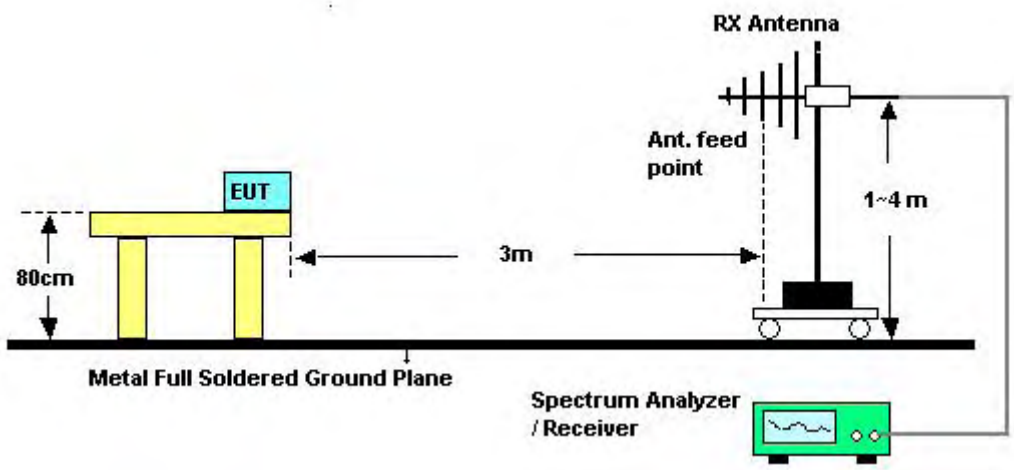
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.4.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 51

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

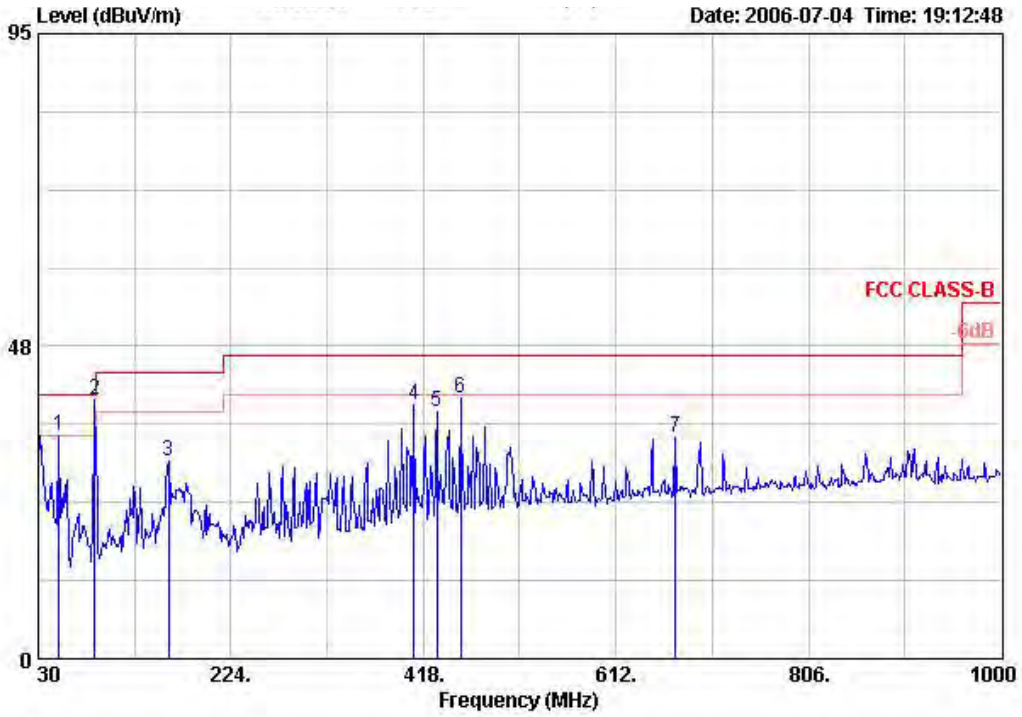
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.4.8. Results for Radiated Emissions (30MHz~10th Harmonic)

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

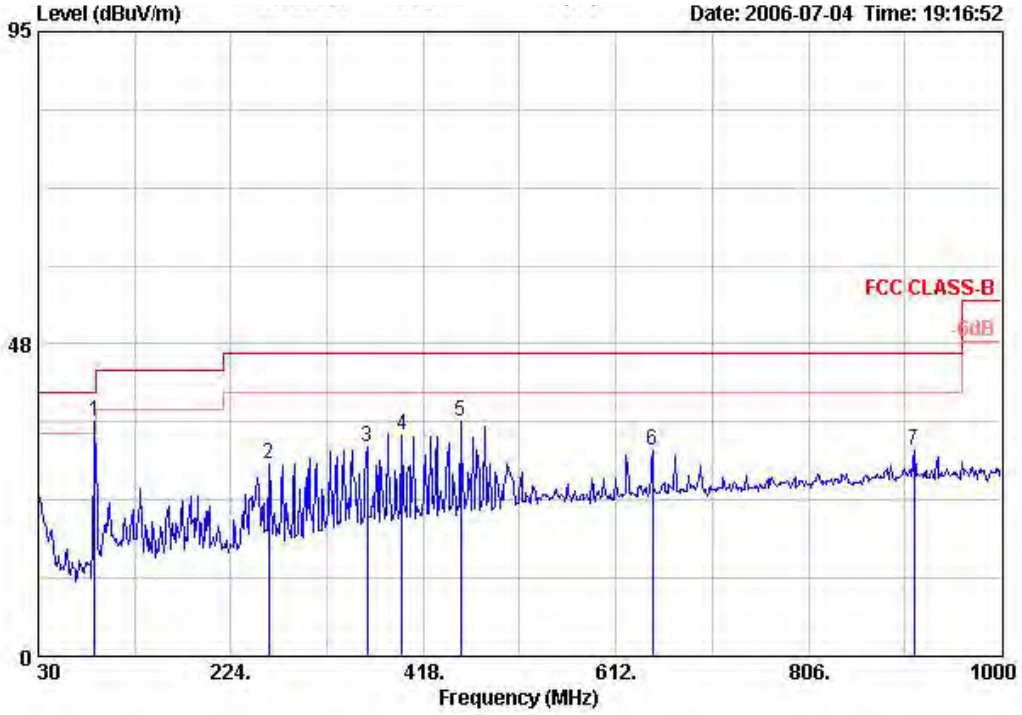
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	51.340	33.80	-6.20	40.00	55.52	8.94	1.17	31.83	Peak	VERTICAL	3
2 @	87.230	39.24			60.56	8.86	1.45	31.63	Peak	VERTICAL	3
3 @	160.950	30.15	-13.35	43.50	49.10	10.57	2.00	31.52	Peak	VERTICAL	3
4 @	408.300	38.53	-7.47	46.00	50.11	16.70	2.73	31.01	Peak	VERTICAL	3
5 @	431.580	37.42	-8.58	46.00	48.57	16.98	2.83	30.96	Peak	VERTICAL	3
6 @	455.830	39.66	-6.34	46.00	50.35	17.28	2.95	30.92	Peak	VERTICAL	3
7 @	672.140	33.58	-12.42	46.00	40.75	19.69	3.54	30.40	Peak	VERTICAL	3

Item 2 is fundamental frequency.

Horizontal

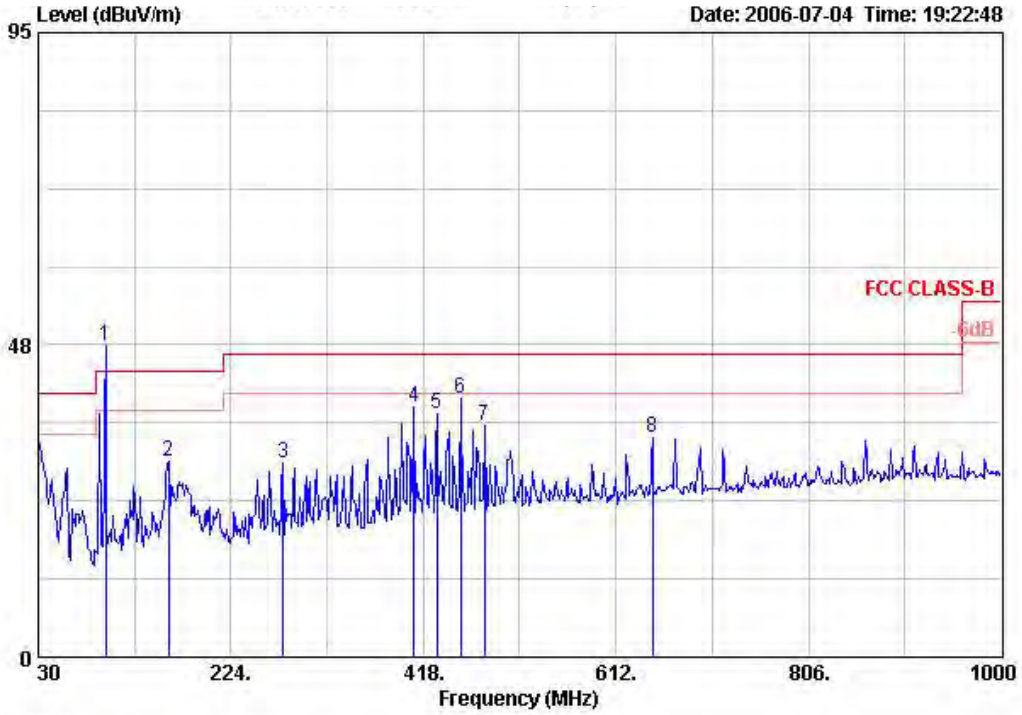


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	87.230	35.81			57.13	8.86	1.45	31.63	Peak	HORIZONTAL	3
2 @	261.830	29.36	-16.64	46.00	44.32	13.88	2.50	31.34	Peak	HORIZONTAL	3
3 @	361.740	31.94	-14.06	46.00	44.98	15.68	2.47	31.19	Peak	HORIZONTAL	3
4 @	396.660	33.71	-12.29	46.00	45.55	16.53	2.68	31.04	Peak	HORIZONTAL	3
5 @	455.830	35.74	-10.26	46.00	46.44	17.28	2.95	30.92	Peak	HORIZONTAL	3
6 @	648.860	31.26	-14.74	46.00	38.49	19.59	3.48	30.31	Peak	HORIZONTAL	3
7 @	912.700	31.21	-14.79	46.00	35.13	21.68	4.05	29.65	Peak	HORIZONTAL	3

Item 1 is fundamental frequency.

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 51

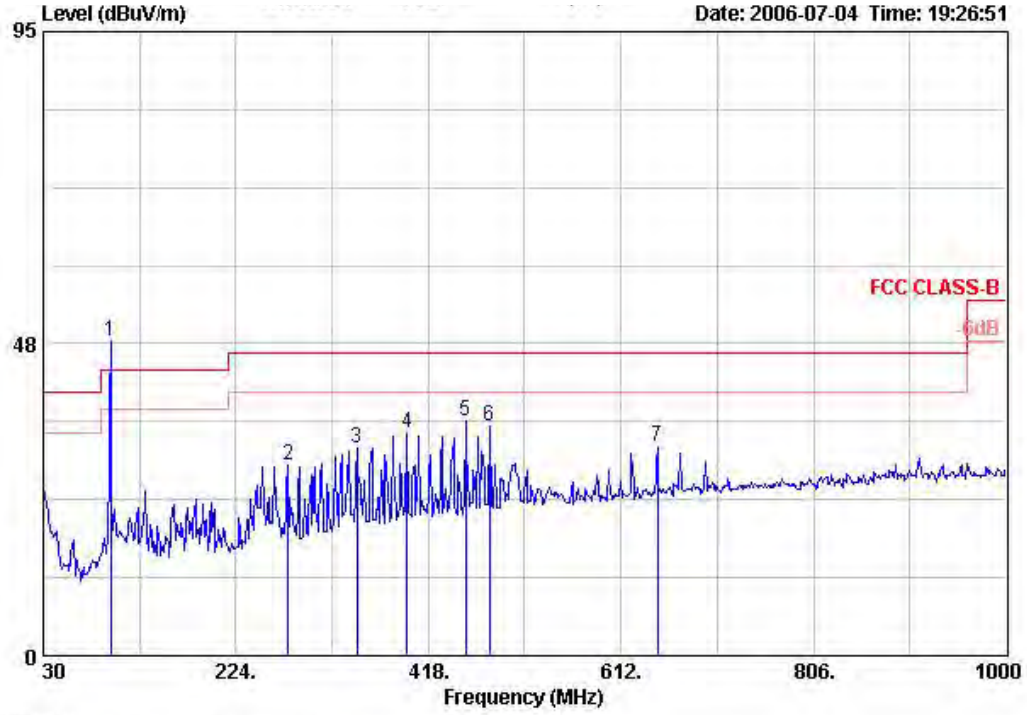
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	97.900	47.49			66.88	10.84	1.50	31.73	Peak	VERTICAL	3
2 @	160.950	29.73	-13.77	43.50	48.68	10.57	2.00	31.52	Peak	VERTICAL	3
3 @	276.380	29.40	-16.60	46.00	44.77	13.46	2.50	31.33	Peak	VERTICAL	3
4 @	408.300	38.14	-7.86	46.00	49.72	16.70	2.73	31.01	Peak	VERTICAL	3
5 @	431.580	36.97	-9.03	46.00	48.12	16.98	2.83	30.96	Peak	VERTICAL	3
6 @	455.830	39.32	-6.68	46.00	50.01	17.28	2.95	30.92	Peak	VERTICAL	3
7 @	479.110	35.33	-10.67	46.00	45.52	17.60	3.13	30.93	Peak	VERTICAL	3
8 @	648.860	33.42	-12.58	46.00	40.65	19.59	3.48	30.31	Peak	VERTICAL	3

Item 1 is fundamental frequency.

Horizontal

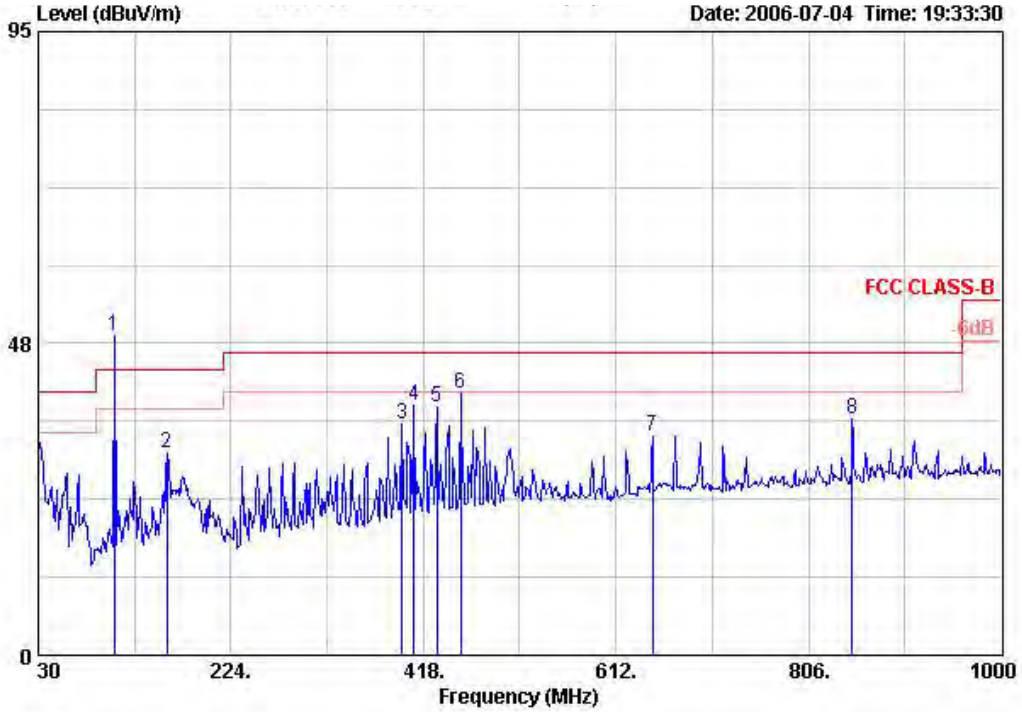


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	97.900	47.95			67.34	10.84	1.50	31.73	Peak	HORIZONTAL	3
2 @	276.380	29.12	-16.88	46.00	44.49	13.46	2.50	31.33	Peak	HORIZONTAL	3
3 @	346.220	31.49	-14.51	46.00	45.05	15.29	2.39	31.25	Peak	HORIZONTAL	3
4 @	396.660	33.82	-12.18	46.00	45.66	16.53	2.68	31.04	Peak	HORIZONTAL	3
5 @	455.830	35.74	-10.26	46.00	46.44	17.28	2.95	30.92	Peak	HORIZONTAL	3
6 @	479.110	34.92	-11.08	46.00	45.12	17.60	3.13	30.93	Peak	HORIZONTAL	3
7 @	648.860	31.77	-14.23	46.00	39.00	19.59	3.48	30.31	Peak	HORIZONTAL	3

Item 1 is fundamental frequency.

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 100

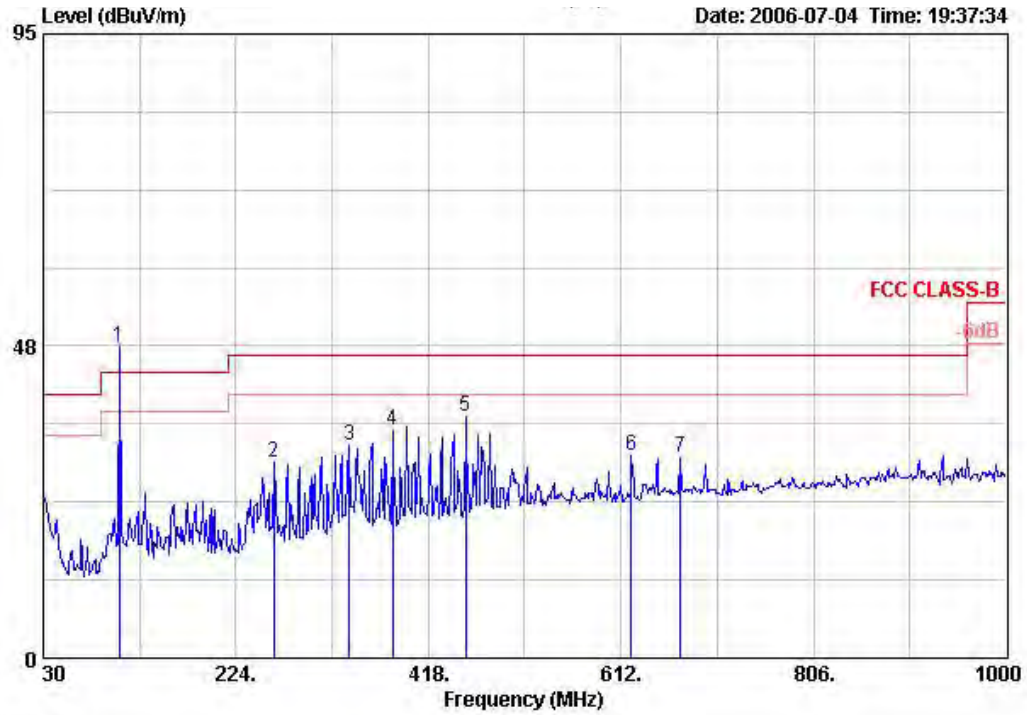
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	106.630	48.62			66.53	12.32	1.50	31.73	Peak	VERTICAL	3
2 @	159.980	30.72	-12.78	43.50	49.63	10.60	2.00	31.51	Peak	VERTICAL	3
3 @	396.660	35.33	-10.67	46.00	47.16	16.53	2.68	31.04	Peak	VERTICAL	3
4 @	408.300	38.10	-7.90	46.00	49.68	16.70	2.73	31.01	Peak	VERTICAL	3
5 @	431.580	37.91	-8.09	46.00	49.06	16.98	2.83	30.96	Peak	VERTICAL	3
6 @	455.830	39.88	-6.12	46.00	50.57	17.28	2.95	30.92	Peak	VERTICAL	3
7 @	648.860	33.40	-12.60	46.00	40.64	19.59	3.48	30.31	Peak	VERTICAL	3
8 @	849.650	36.10	-9.90	46.00	40.92	21.30	4.00	30.12	Peak	VERTICAL	3

Item 1 is fundamental frequency.

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	106.630	47.24			65.15	12.32	1.50	31.73	Peak	HORIZONTAL	3
2 @	261.830	29.84	-16.16	46.00	44.81	13.88	2.50	31.34	Peak	HORIZONTAL	3
3 @	338.460	32.26	-13.74	46.00	46.08	15.08	2.36	31.26	Peak	HORIZONTAL	3
4 @	382.110	34.58	-11.42	46.00	46.91	16.18	2.60	31.10	Peak	HORIZONTAL	3
5 @	455.830	36.69	-9.31	46.00	47.39	17.28	2.95	30.92	Peak	HORIZONTAL	3
6 @	622.670	30.77	-15.23	46.00	38.71	19.33	3.28	30.55	Peak	HORIZONTAL	3
7 @	672.140	30.54	-15.46	46.00	37.71	19.69	3.54	30.40	Peak	HORIZONTAL	3

Item 1 is fundamental frequency.

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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.

4.5. Band Edge Emissions Measurement

4.5.1. Limit

Band edge emissions outside of the frequency bands shown in below table.

Outside Frequency Band Edge	Limit (dBuV/m) at 3m
Below 88MHz	40.0 (QP)
Above 108MHz	43.5 (QP)

4.5.2. Measuring Instruments and Setting

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

Receiver Parameter	Setting
Center Frequency	Fundamental Frequency
RB	120 KHz
Detector	QP or Peak

4.5.3. Test Procedures

The test procedure is the same as section 4.2.3, only the freqeuncy range investigated is limited to 2MHz around bandedges.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.2.4

4.5.5. Test Deviation

There is no deviation with the original standard.

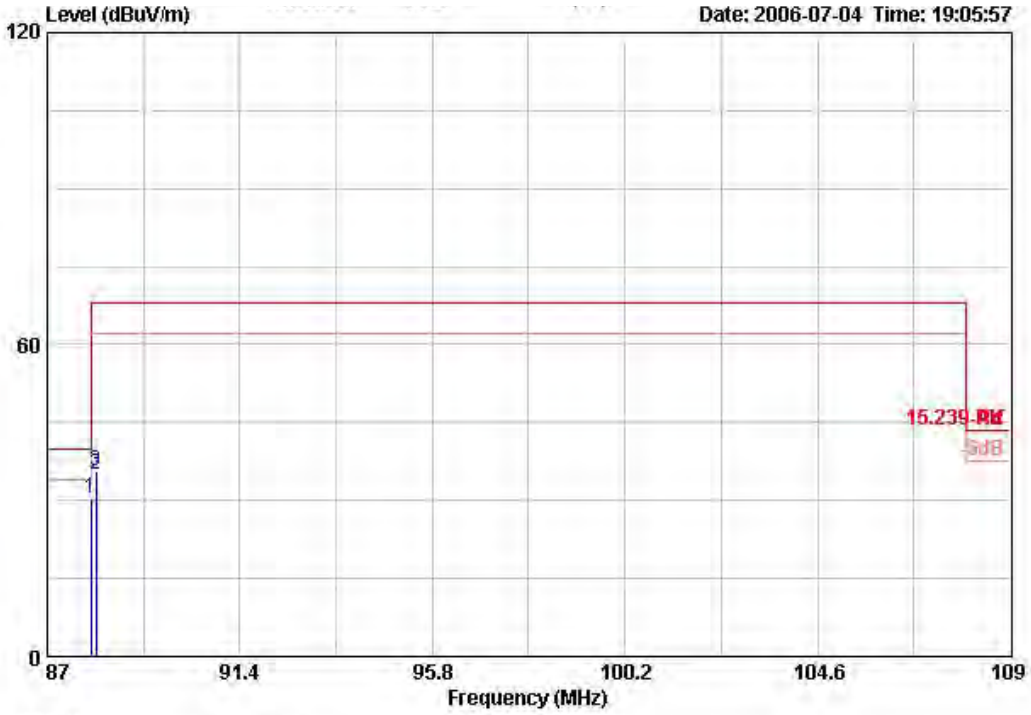
4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1, 100

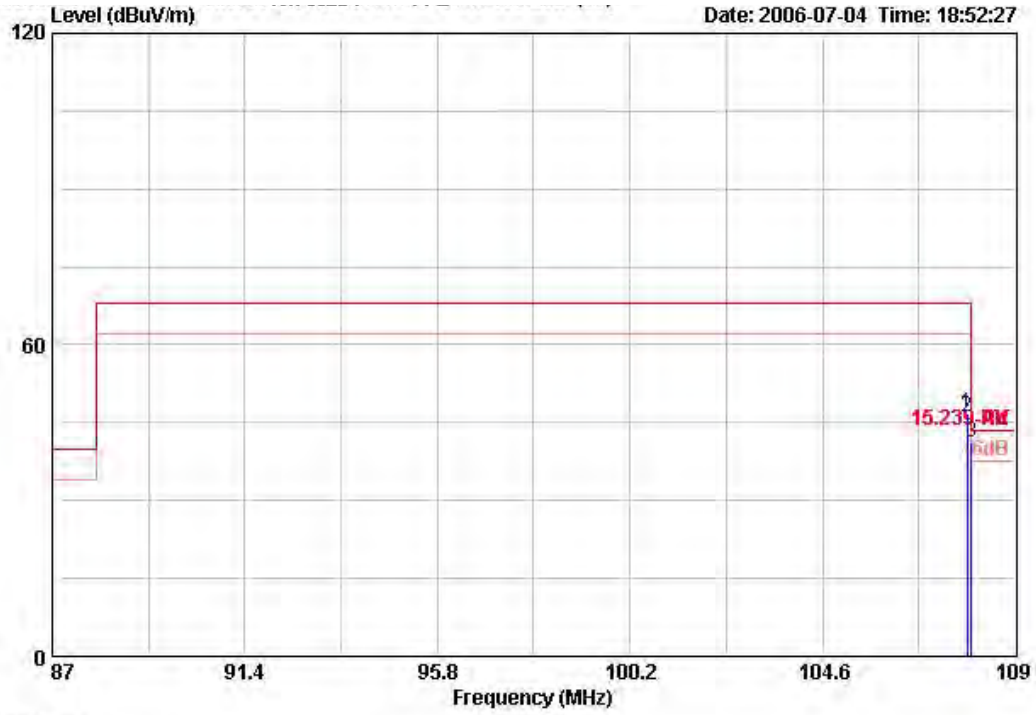
Channel 1



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	88.000	30.26	-9.74	40.00	51.43	8.98	1.45	31.60	QP	VERTICAL	3

Item 1 is Band Edge.

Channel 100



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
3 @	108.000	41.23	-2.27	43.50	59.26	12.20	1.50	31.73	QP	HORIZONTAL	3

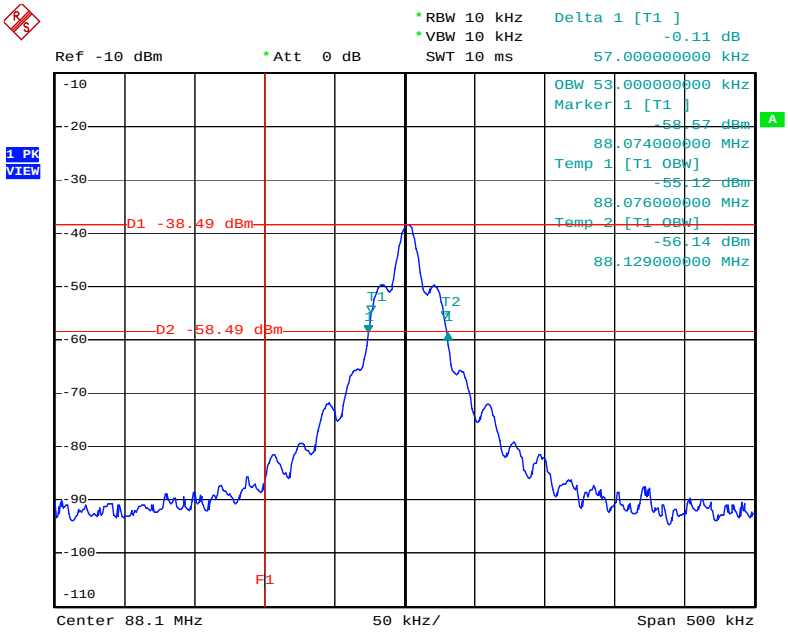
Item 3 is Band Edge.

Note:

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

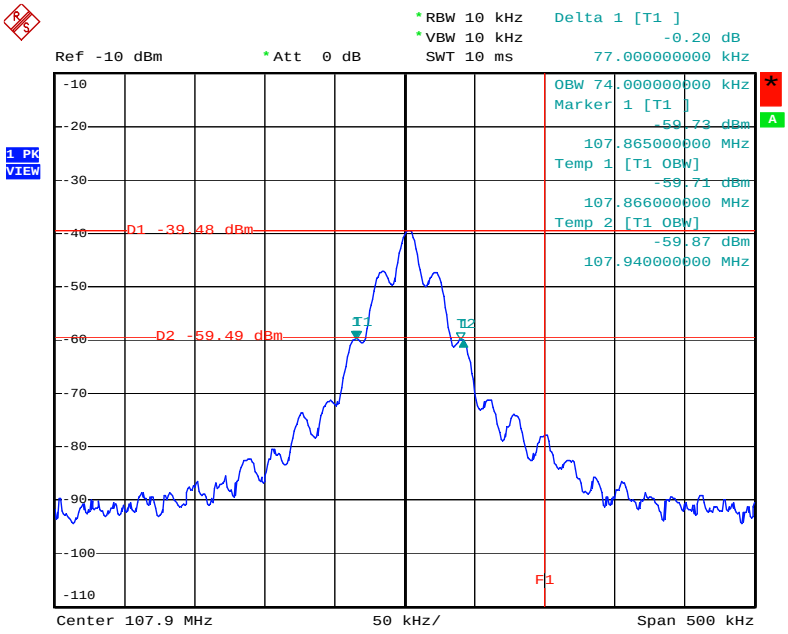
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Low Band Edge Plot on 88.1 MHz



Date: 18.JUL.2006 16:19:10

High Band Edge Plot on 107.9 MHz



Date: 18.JUL.2006 16:21:55

4.6. Antenna Requirements

4.6.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.6.2. Antenna Connector Construction

Please refer to section 3.1 in this test report, antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 15, 2006	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	3565	9 kHz - 2 GHz	Jan. 18, 2006	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	May 29, 2006	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	923364	26.5 GHz - 40 GHz	Jan. 24, 2006*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004/040	9 kHZ - 40 GHz	Sep. 30, 2005	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 24, 2006	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6903	1GHz ~ 18GHz	Mar. 15, 2006	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	NCR	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec.02, 2005	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec.02, 2005	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 22, 2006	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Dec. 19, 2005	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9708-1839	9kHz – 30MHz	Mar. 18, 2006	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2006	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
Spectrum analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Nov. 26, 2005	Conducted (TH01-HY)

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

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

Note: NCR means Non-Calibration required.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
AC power source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Apr. 21, 2005*	Conducted (TH01-HY)
DC power source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Dec. 28, 2005	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2005	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 30, 2005	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 30, 2005	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Jun. 20, 2006	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Dec. 30, 2005	Conducted (TH01-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 16, 2006	Conducted (TH01-HY)

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

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

6. SPORTON COMPANY PROFILE

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

6.1. Test Location

SHIJR	ADD	: 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	: 02-2696-2468
	FAX	: 02-2696-2255
HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	: 03-327-3456
	FAX	: 03-318-0055
LINKOU	ADD	: No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 02-2601-1640
	FAX	: 02-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 02-2631-4739
	FAX	: 02-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 02-8227-2020
	FAX	: 02-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 02-2794-8886
	FAX	: 02-2794-9777
JHUBEI	ADD	: No.8, Lane 728, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.
	TEL	: 03-656-9065
	FAX	: 03-656-9085