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	**NKRUPAST401**
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 PnP Receiver
Brand Name	SIRIUS
Model Name	Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R), Starmate 4(ST4-TK1, ST4-TK1C, ST4-TK1R)
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	Nov. 18, 2006
Submission Type	Class II Change
Multiple Listing	Please refer to section 3.7

Statement

The device is only possible within the range 88.1-107.9MHz.
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.

Table of Contents

History of This Test Report

Original Issue Date: Nov. 20, 2006

Report No.: FR671325-03

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	**Satellite Radio PnP Receiver**
Brand Name	:	**SIRIUS**
Model Name	:	**Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R), Starmate 4(ST4-TK1, ST4-TK1C, ST4-TK1R)**
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 / 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**
-	15.207	AC Power Line Conducted Emissions	-	-
4.1	15.239(b)	Field Strength of Fundamental Emissions	Complies	0.89 dB
-	15.239(a)	20dB Spectrum Bandwidth	-	-
4.2	15.239(c)	Radiated Emissions	Complies	3.10 dB
-	15.239(c)	Band Edge Emissions	-	-
4.3	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 / Car charger
Interface Type (Car dock)	DC IN / Audio OUT / FM OUT / Antenna connect
Interface Type (Home dock)	DC IN / Audio OUT / Antenna connect
Modulation	FM
Frequency Range	88 ~ 108MHz
Channel Number	100
Max. Field Strength	47.11 dBuV/m at 3m(Average)
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3
Remark	The EUT could be used with either Home dock or Car dock. The Home dock and Car dock don't integrated with wireless schematic.

3.2. Accessories

Power	Brand	Model	Rating
Adapter	SIRIUS	EGH12~52015SPA	Input: 100~240VAC, 50~60Hz, 0.2A Output: 5.2VDC, 1.5A
Car charger	SIRIUS	CLA	Input: DC 9-16V Output: DC5.2V, 1.5A
Others			
Car dock / Home dock / Remote control			

3.3. Table for Filed Antenna

Ant.	Description
1	External (for FM transmitter) – connector: Audio Jack (2.5mm)

3.4. 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

3.5. 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	Channel	Ant.	Worse case
Field Strength of Fundamental Emissions	CTX1 / Home dock CTX1/ Car dock	1/51/100	1	Car dock
Radiated Emissions 9kHz~30MHz	CTX1 / Home dock CTX1/ Car dock	51	1	Car dock
Radiated Emissions 30MHz~10th Harmonic	CTX1 / Home dock CTX1/ Car dock	1/51/100	1	Car dock

Test Mode:

Mode 1: TX Antenna without bundle of cable(cable is S type), RX Antenna without bundle of cable

Mode 2: TX Antenna without bundle of cable(cable is S type), RX Antenna with bundle of cable

Mode 3: TX Antenna without bundle of cable(cable is Circuit type), RX Antenna without bundle of cable

Mode 4: TX Antenna without bundle of cable(cable is Circuit type), RX Antenna with bundle of cable

Due to Mode 2 generated the worst test result, so it was recorded in this report.

Note:

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

3.6. 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	-

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 Multiple Listing & Class II Change

The brand/model names in the following table are all refer to the idential product.

Discrepancy table		
Model Name	**LCM Color**	**Instant Replay**
Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R)	Amber	Without
Starmate 4(ST4-TK1, ST4-TK1C, ST4-TK1R)	Blue	With

This product is an extension of original one reported under Sporton project number: FR671325

Below is the table for the change of the product with respect to the original one.

Modifications	Description
Add 1 antennas	External (for FM transmitter) – connector: Audio Jack (2.5mm)

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Speaker	Dell	A125	DoC
Car battery	YUASA	YTX&A-BS	DOC

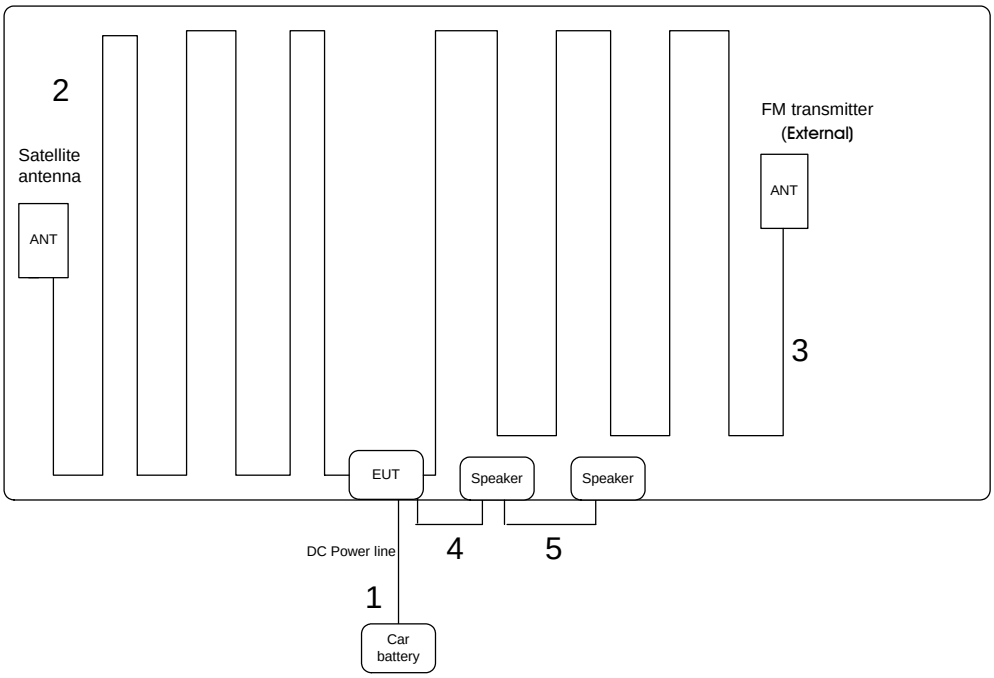
3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

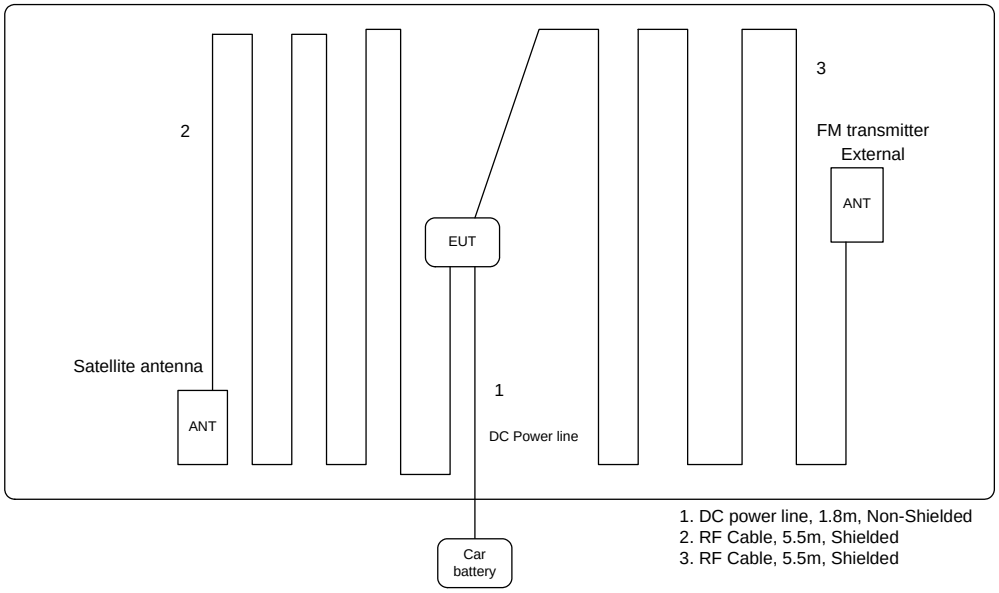
Test Mode 1

Test Configurations: 30MHz~1GHz

1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded
4.Audio cable, 1.8m, non-shielded
5.Audio cable, 0.6m, non-shielded



Test Configurations: 88~108MHz

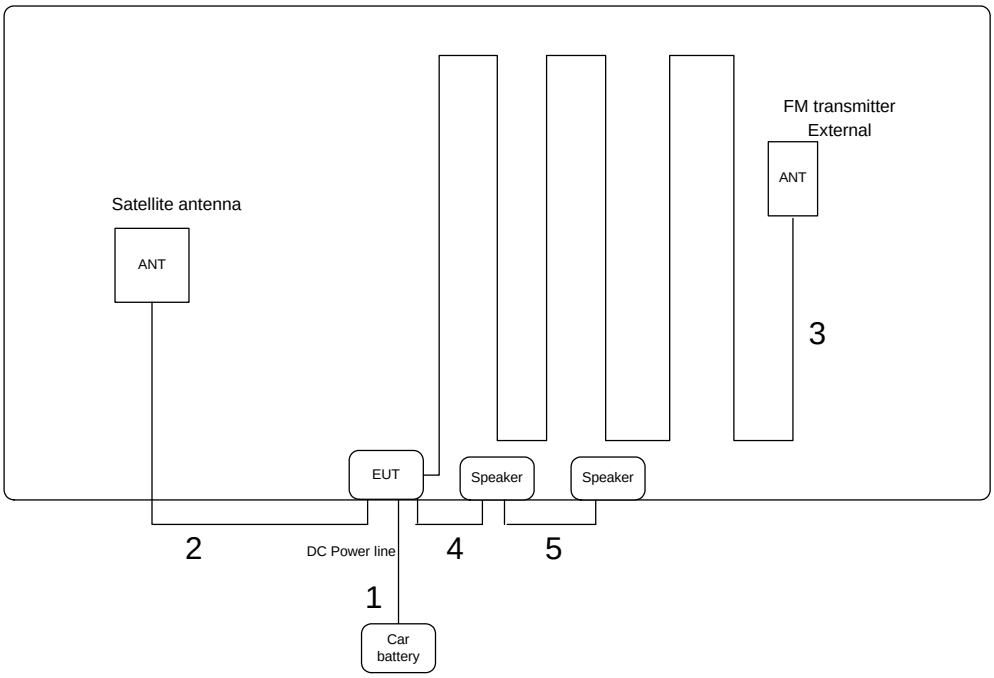


1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded

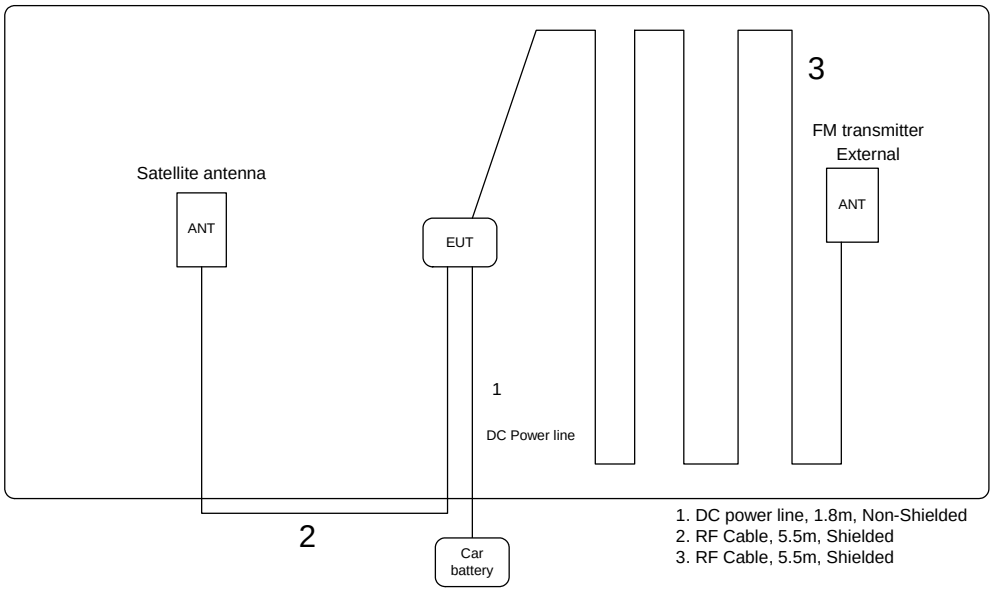
Test Mode 2

Test Configurations: 30MHz~1GHz

1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded
4.Audio cable, 1.8m, non-shielded
5.Audio cable, 0.6m, non-shielded



Test Configurations: 88~108MHz

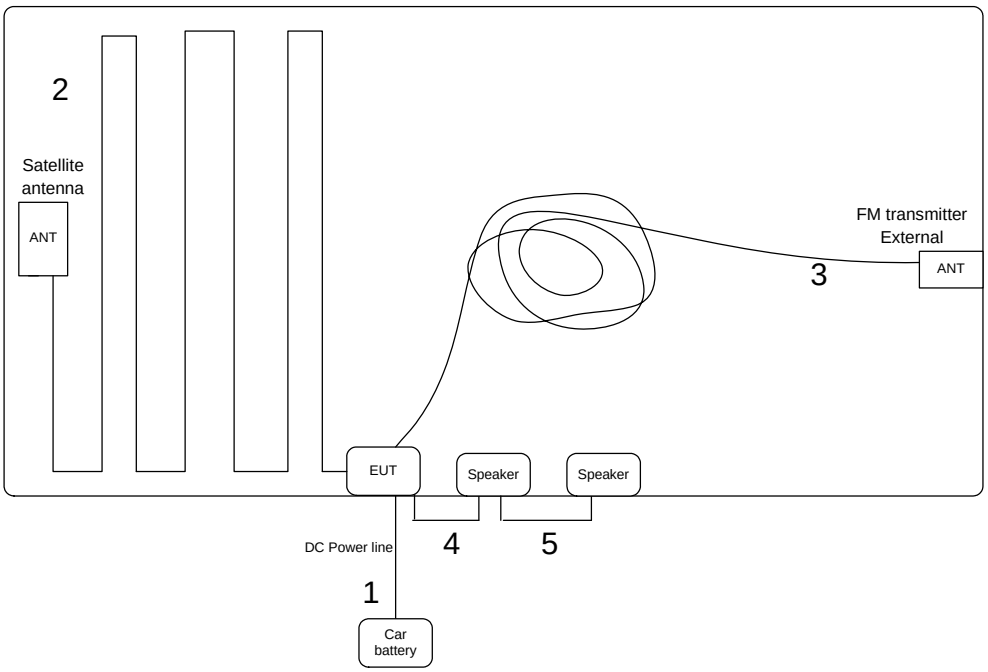


1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded

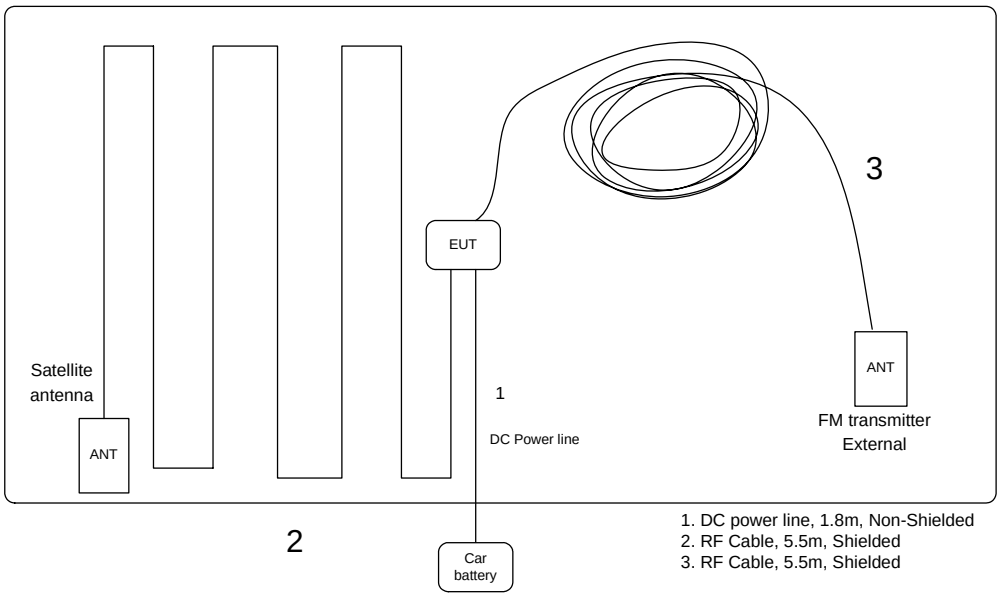
Test Mode 3

Test Configurations: 30MHz~1GHz

1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded
4.Audio cable, 1.8m, non-shielded
5.Audio cable, 0.6m, non-shielded



Test Configurations: 88~108MHz

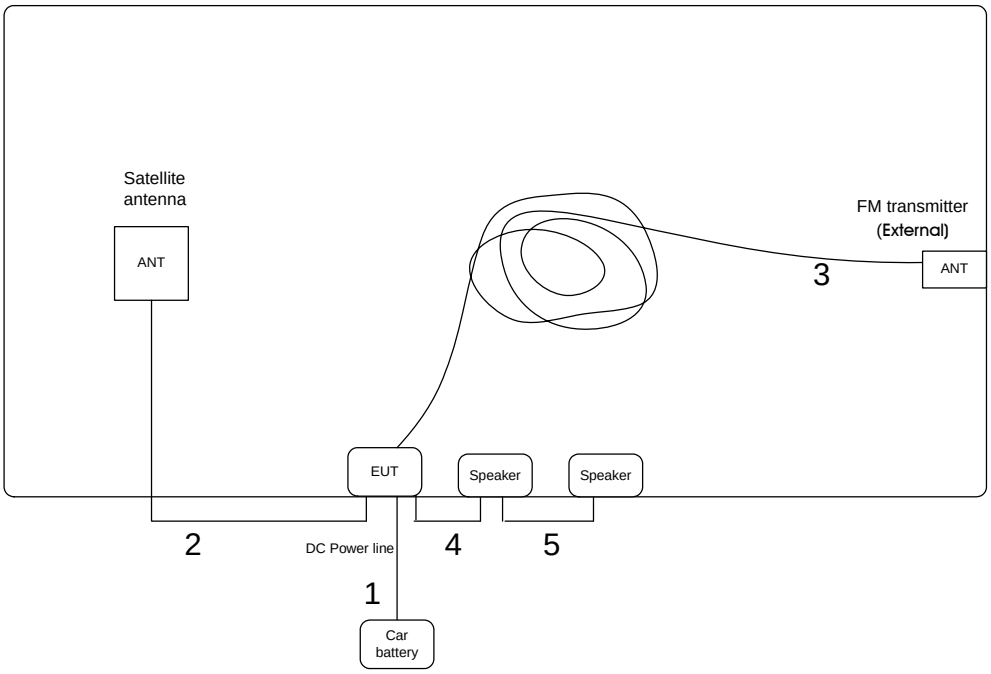


1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded

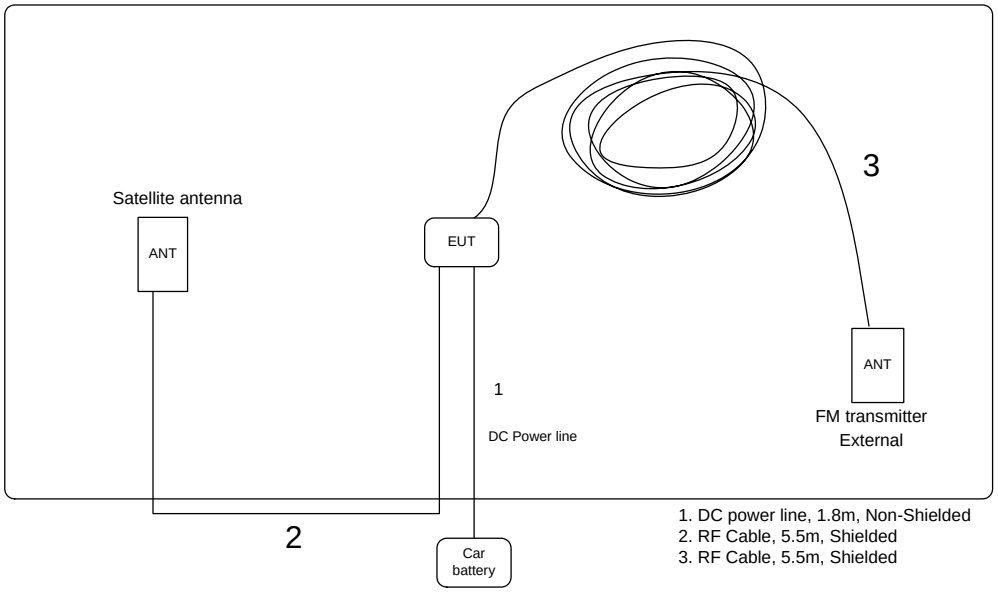
Test Mode 4

Test Configurations: 30MHz~1GHz

1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded
4.Audio cable, 1.8m, non-shielded
5.Audio cable, 0.6m, non-shielded



Test Configurations: 88~108MHz



1. DC power line, 1.8m, Non-Shielded
2. RF Cable, 5.5m, Shielded
3. RF Cable, 5.5m, Shielded

4. TEST RESULT

4.1. Field Strength of Fundamental Emissions Measurement

4.1.1. 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)

4.1.2. Measuring Instruments and Setting

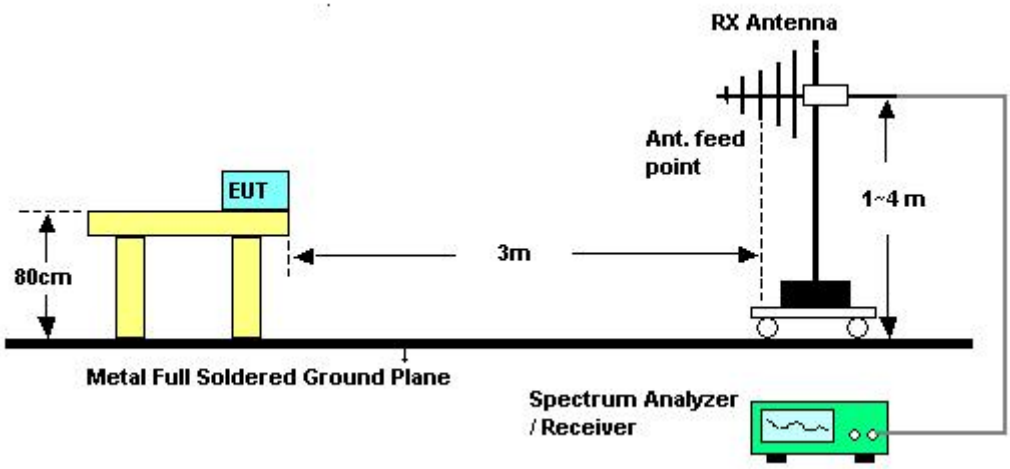
Please refer to section 5 in this report. The following table is the setting of the receiver.

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

4.1.3. 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.

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

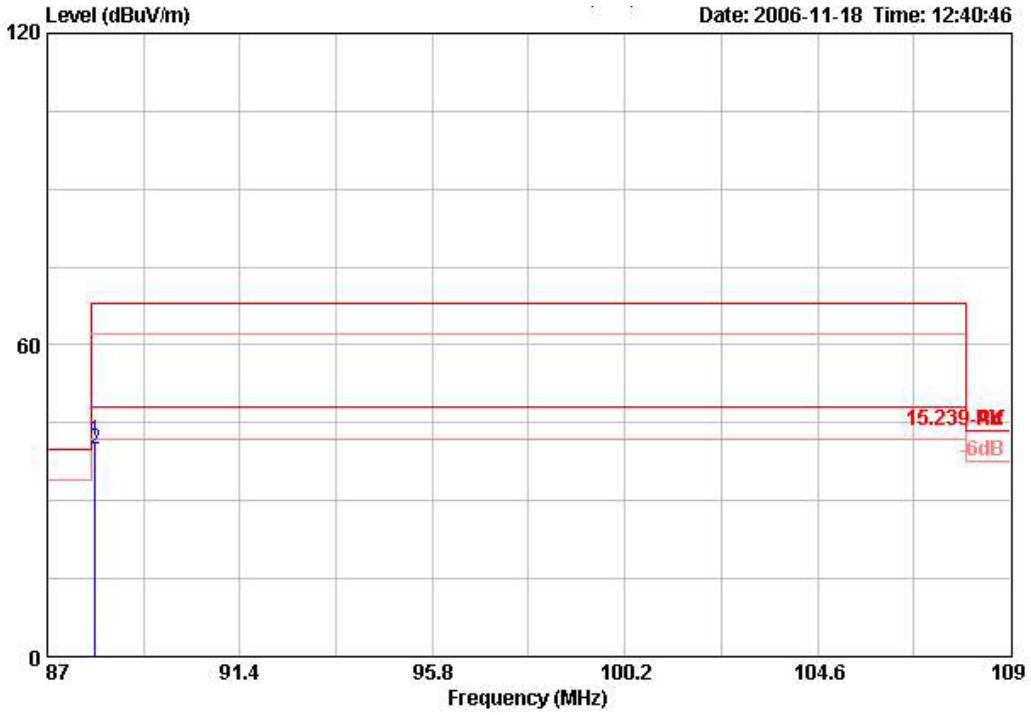
4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Field Strength of Fundamental Emissions

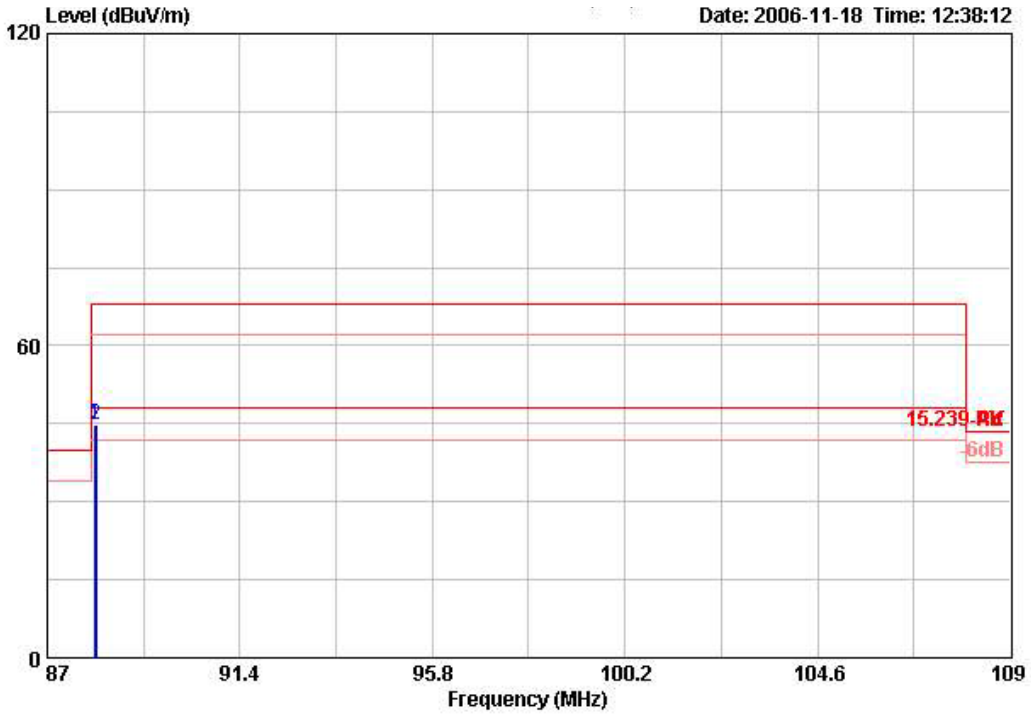
Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 1

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1	88.094	41.49	-26.51	68.00	62.61	1.45	31.60	PEAK	146	139	9.04
2	88.098	39.99	-8.01	48.00	61.10	1.45	31.60	AVERAGE	146	139	9.04

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 @	88.100	44.87	-3.13	48.00	65.98	1.45	31.60	AVERAGE	383	18	9.04
2	88.106	44.90	-23.10	68.00	66.01	1.45	31.60	PEAK	383	18	9.04

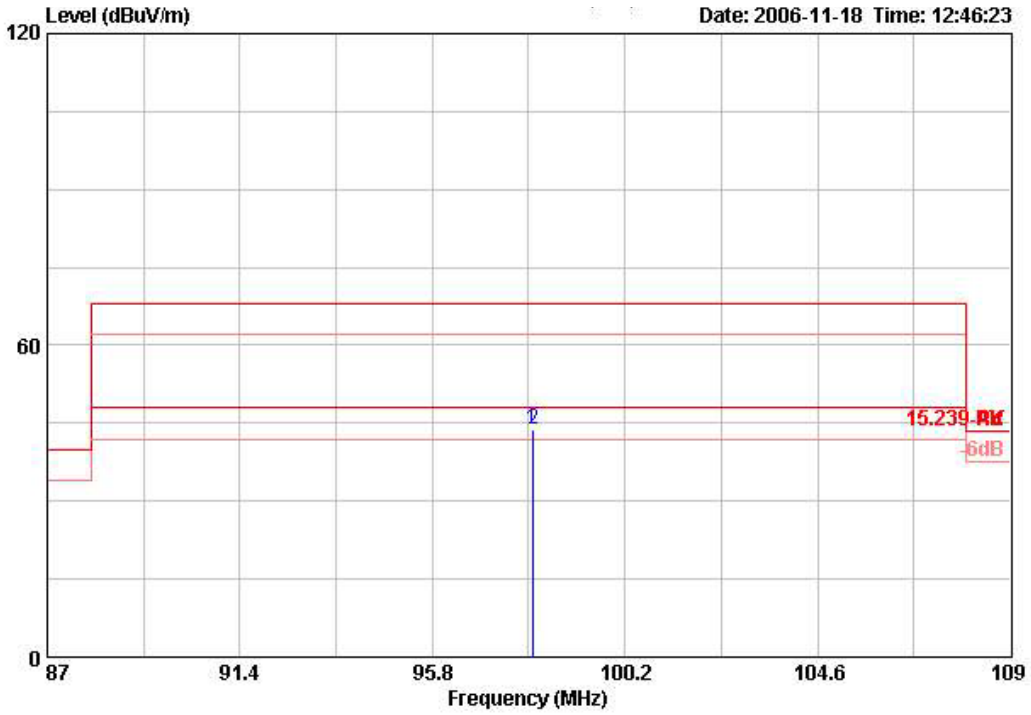
Note:

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

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

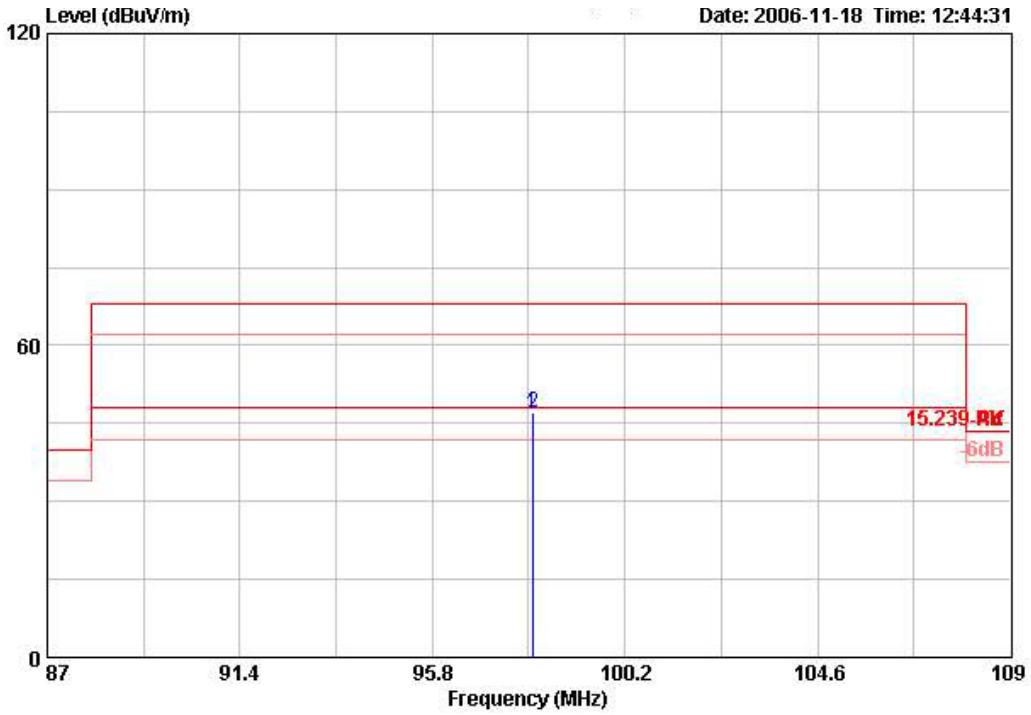
Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 51

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1	98.090	43.85	-24.15	68.00	63.24	1.50	31.73	PEAK	100	234	10.84
2 @	98.101	43.81	-4.19	48.00	63.20	1.50	31.73	AVERAGE	100	234	10.84

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1	98.091	46.72	-21.28	68.00	66.11	1.50	31.73	PEAK	211	198	10.84
2 @	98.101	47.11	-0.89	48.00	66.50	1.50	31.73	AVERAGE	211	198	10.84

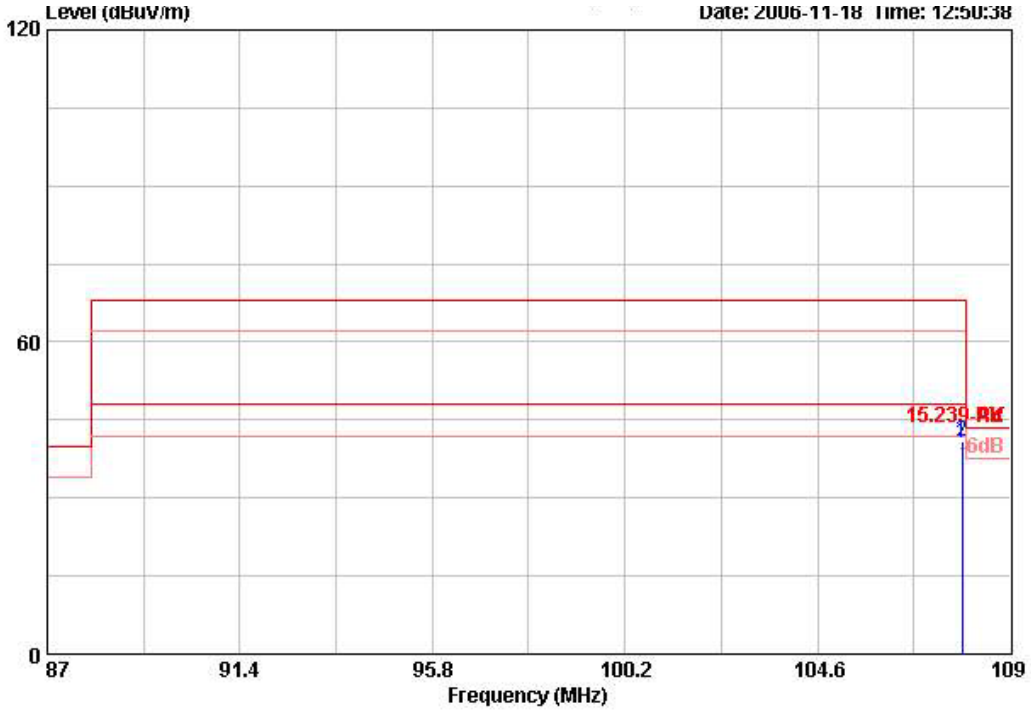
Note:

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

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

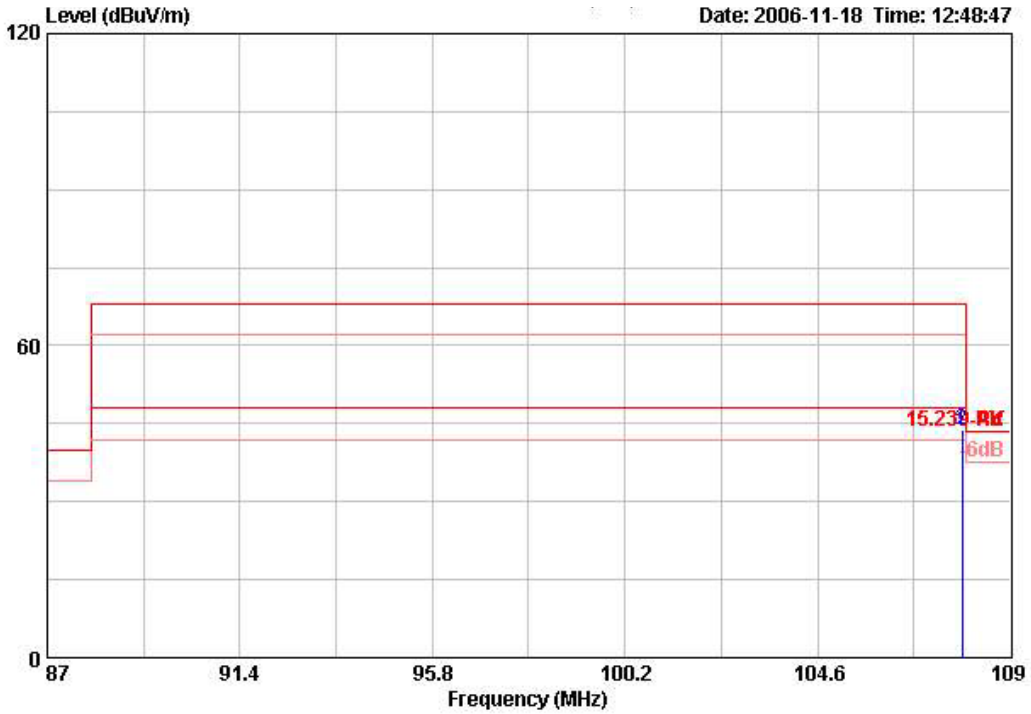
Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 100

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1	107.902	40.61	-7.39	48.00	58.36	1.50	31.73	AVERAGE	100	155	12.48
2	107.909	41.01	-26.99	68.00	58.76	1.50	31.73	PEAK	100	155	12.48

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 @	107.898	43.55	-4.45	48.00	61.30	1.50	31.73	AVERAGE	400	201	12.48
2	107.907	43.77	-24.23	68.00	61.52	1.50	31.73	PEAK	400	201	12.48

Note:

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

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

4.2. Radiated Emissions Measurement

4.2.1. 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

4.2.2. 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

4.2.3. Test Procedures

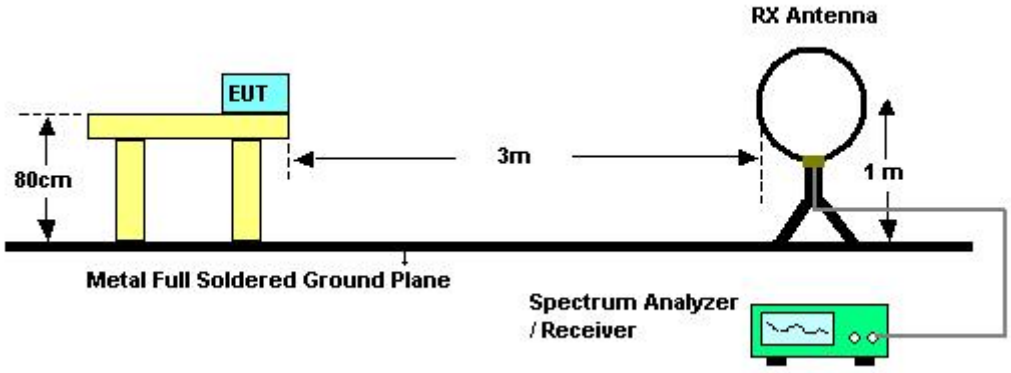
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

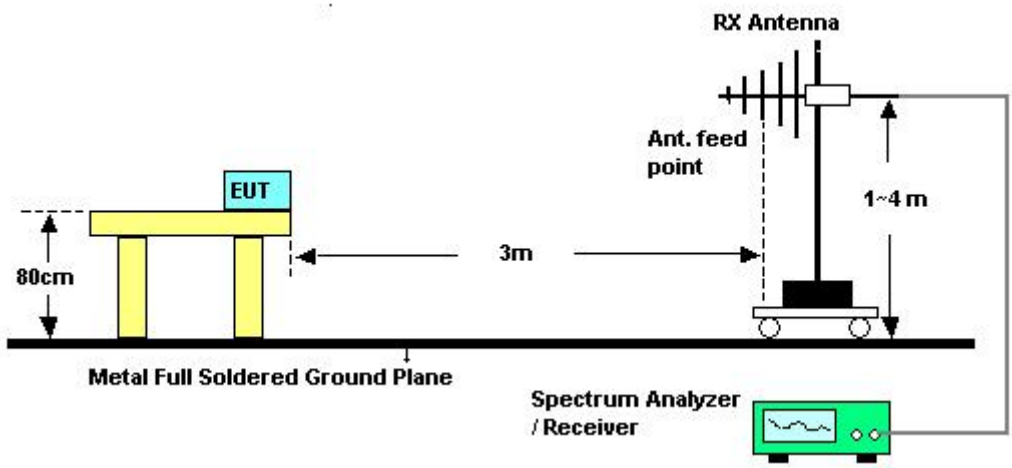
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. 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.

4.2.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	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.

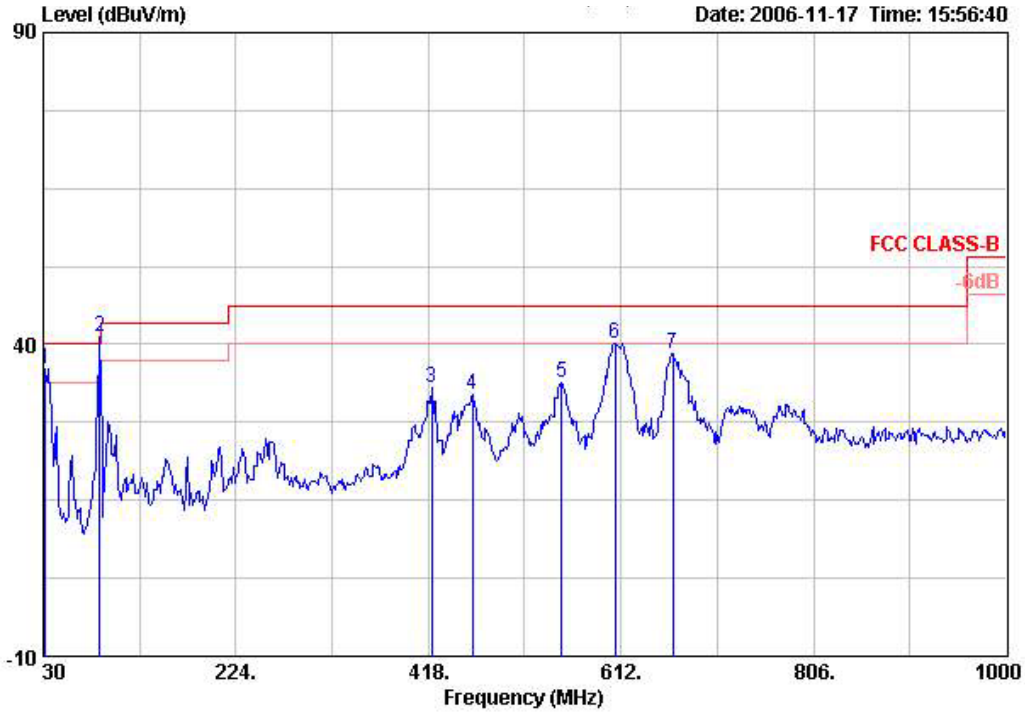
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 1

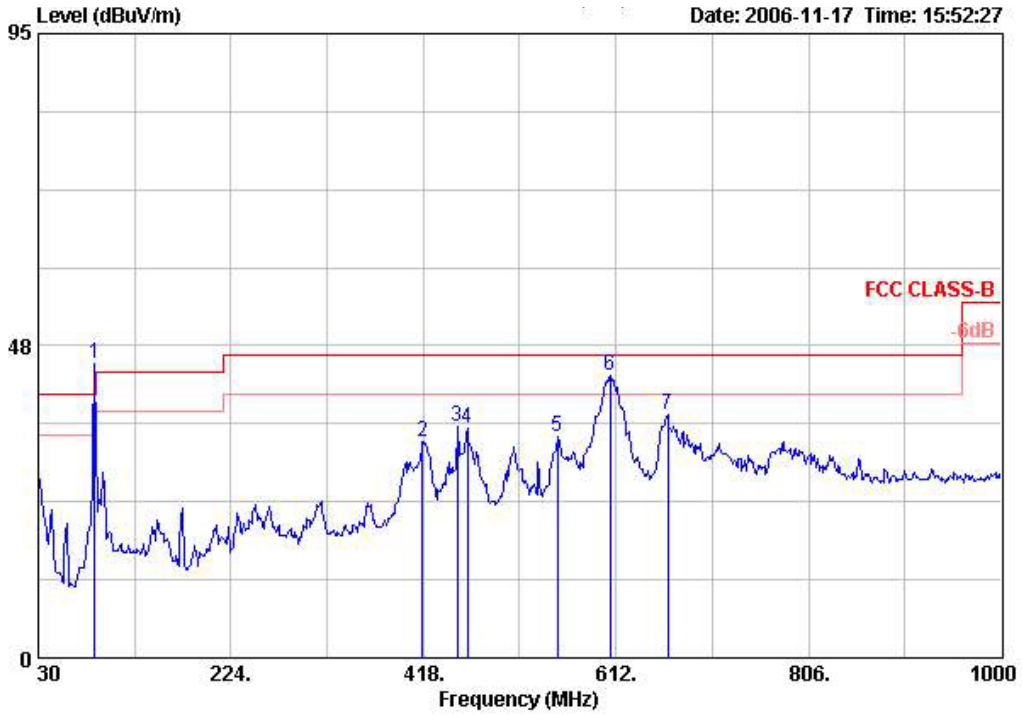
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 !	31.940	36.02	-3.98	40.00	48.10	0.93	31.67	Peak	---	---	18.66
2 @	87.230	41.21			62.53	1.45	31.63	Peak	---	---	8.86
3	420.910	33.00	-13.00	46.00	44.35	2.78	30.98	Peak	---	---	16.85
4	462.620	31.91	-14.09	46.00	42.45	3.01	30.93	Peak	---	---	17.38
5	551.860	33.94	-12.06	46.00	42.58	3.20	30.75	Peak	---	---	18.91
6 !	606.180	40.23	-5.77	46.00	48.63	3.15	30.70	Peak	---	---	19.16
7	664.380	38.59	-7.41	46.00	45.77	3.53	30.36	Peak	---	---	19.66

Item 2 is fundamental frequency.

Horizontal

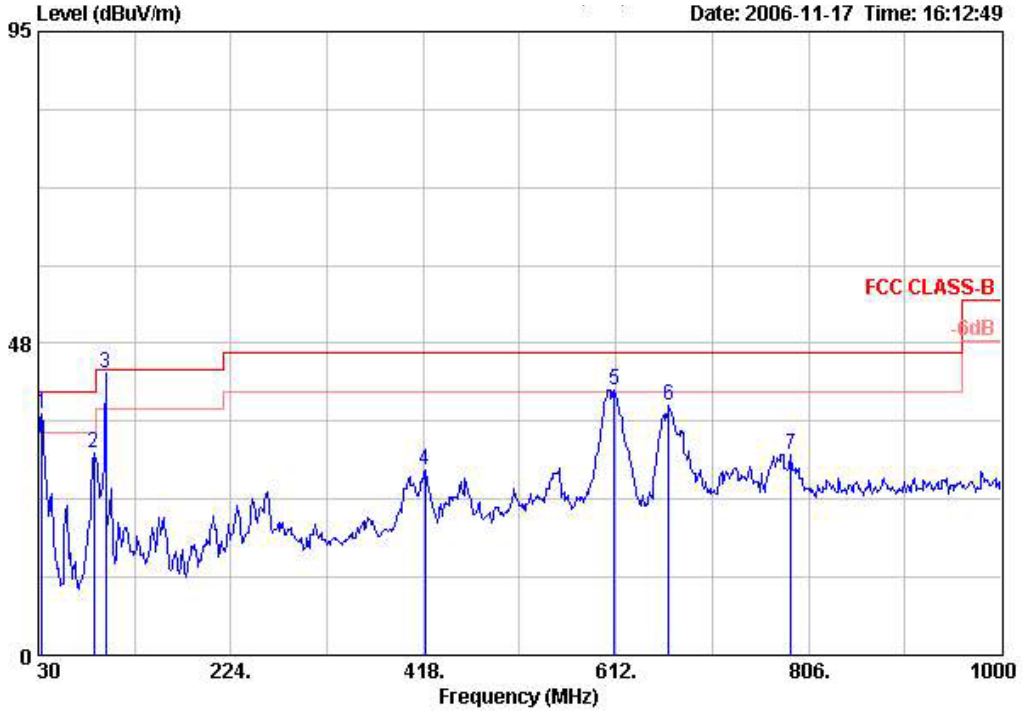


	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 @	87.230	44.91			66.23	1.45	31.63	Peak	---	---	8.86
2	417.030	32.93	-13.07	46.00	44.35	2.76	30.99	Peak	---	---	16.81
3	451.950	35.13	-10.87	46.00	45.90	2.92	30.92	Peak	---	---	17.23
4	462.620	34.96	-11.04	46.00	45.50	3.01	30.93	Peak	---	---	17.38
5	552.830	33.64	-12.36	46.00	42.28	3.20	30.75	Peak	---	---	18.91
6 !	606.180	42.90	-3.10	46.00	51.29	3.15	30.70	Peak	---	---	19.16
7	664.380	37.11	-8.89	46.00	44.29	3.53	30.36	Peak	---	---	19.66

Item 1 is fundamental frequency.

Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 51

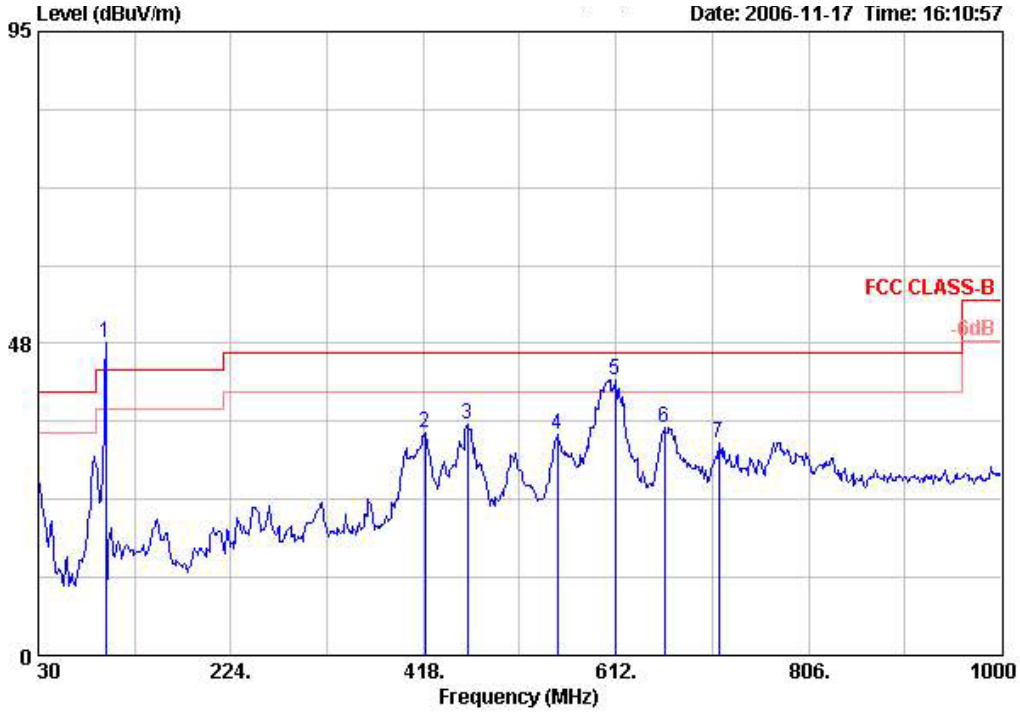
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 !	33.880	36.81	-3.19	40.00	50.20	1.07	31.68	Peak	---	---	17.22
2	86.260	30.69	-9.31	40.00	52.22	1.45	31.65	Peak	---	---	8.68
3 @	97.900	43.06			62.45	1.50	31.73	Peak	---	---	10.84
4	419.940	28.33	-17.67	46.00	39.69	2.78	30.99	Peak	---	---	16.84
5 !	610.060	40.38	-5.62	46.00	48.67	3.18	30.66	Peak	---	---	19.20
6	665.350	37.98	-8.02	46.00	45.16	3.53	30.37	Peak	---	---	19.66
7	788.540	30.58	-15.42	46.00	36.35	3.82	30.20	Peak	---	---	20.61

Item 3 is fundamental frequency.

Horizontal

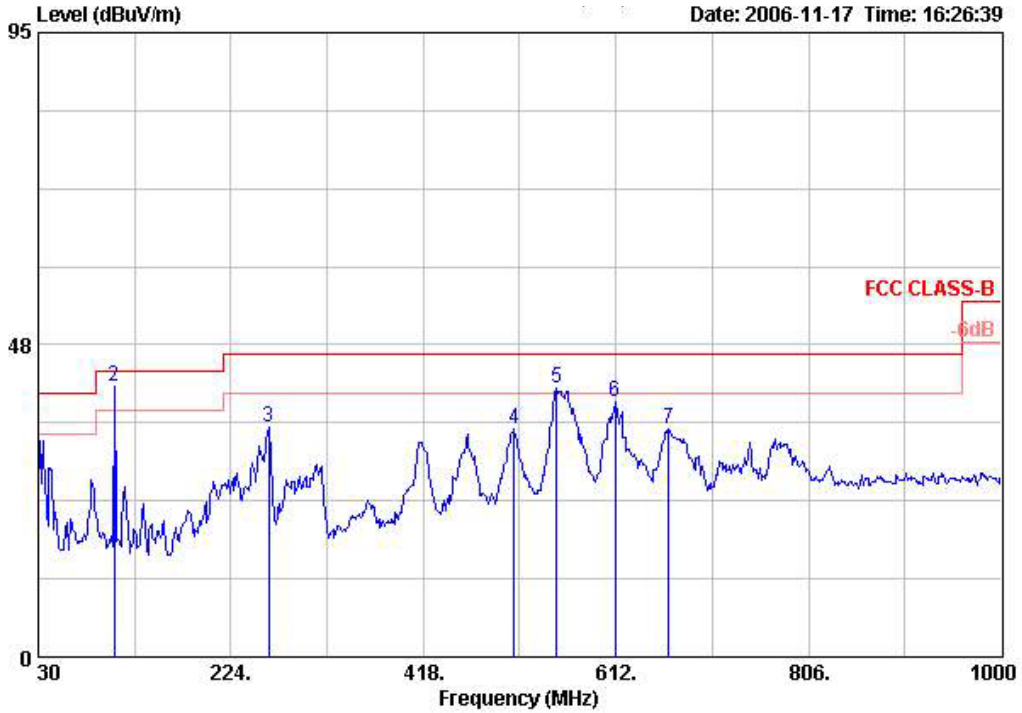


	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 @	97.900	47.54			66.93	1.50	31.73	Peak	---	---	10.84
2	419.940	33.86	-12.14	46.00	45.23	2.78	30.99	Peak	---	---	16.84
3	462.620	35.18	-10.82	46.00	45.72	3.01	30.93	Peak	---	---	17.38
4	552.830	33.59	-12.41	46.00	42.23	3.20	30.75	Peak	---	---	18.91
5 !	611.030	41.98	-4.02	46.00	50.24	3.19	30.65	Peak	---	---	19.21
6	660.500	34.74	-11.26	46.00	41.93	3.52	30.35	Peak	---	---	19.64
7	715.790	32.42	-13.58	46.00	39.21	3.70	30.44	Peak	---	---	19.96

Item 1 is fundamental frequency.

Temperature	24℃	Humidity	64%
Test Engineer	Jordan Hsiao	Configurations	Channel 100

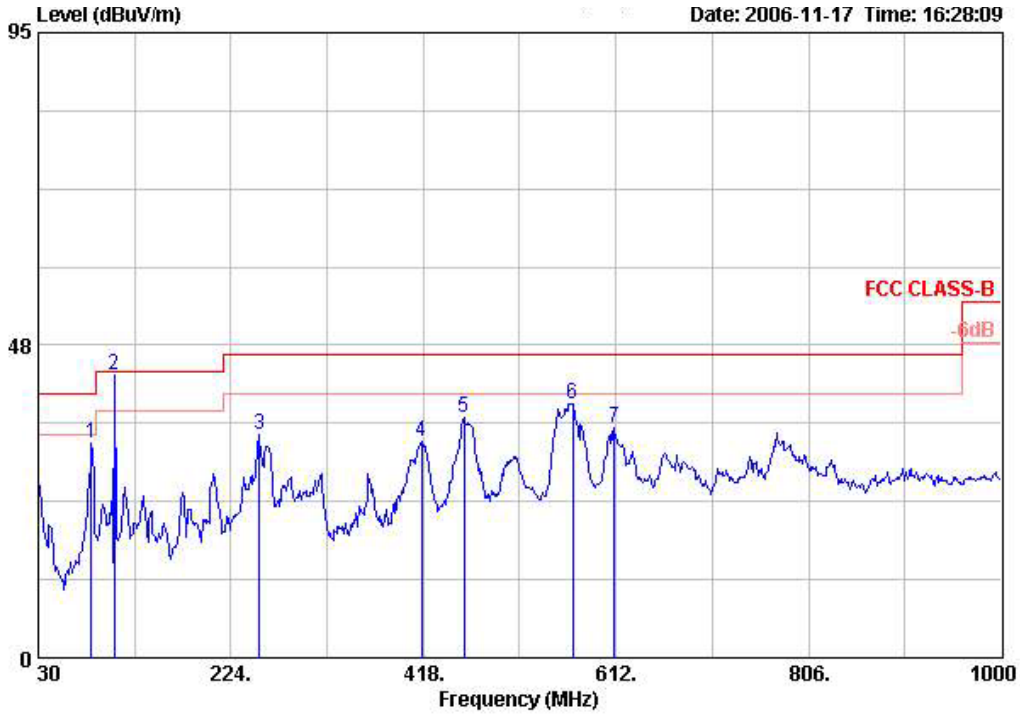
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1 !	30.000	35.96	-4.04	40.00	46.73	0.80	31.67	Peak	---	---	20.10
2 !	106.630	41.03			58.94	1.50	31.73	Peak	---	---	12.32
3	261.830	34.91	-11.09	46.00	49.87	2.50	31.34	Peak	---	---	13.88
4	509.180	34.66	-11.34	46.00	44.21	3.28	30.91	Peak	---	---	18.08
5 !	551.860	40.88	-5.12	46.00	49.53	3.20	30.75	Peak	---	---	18.91
6	611.030	38.72	-7.28	46.00	46.98	3.19	30.65	Peak	---	---	19.21
7	665.350	34.74	-11.26	46.00	41.91	3.53	30.37	Peak	---	---	19.66

Item 2 is fundamental frequency.

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Antenna Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		cm	deg	dB/m
1	83.350	32.50	-7.50	40.00	54.66	1.43	31.73	Peak	---	---	8.14
2 @	106.630	43.04			60.95	1.50	31.73	Peak	---	---	12.32
3	253.100	33.85	-12.15	46.00	49.55	2.42	31.35	Peak	---	---	13.23
4	416.060	32.94	-13.06	46.00	44.38	2.76	30.99	Peak	---	---	16.80
5	458.740	36.50	-9.50	46.00	47.13	2.98	30.92	Peak	---	---	17.32
6	568.350	38.68	-7.32	46.00	47.29	3.16	30.75	Peak	---	---	18.97
7	610.060	35.01	-10.99	46.00	43.30	3.18	30.66	Peak	---	---	19.20

Item 2 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.

4.3. Antenna Requirements

4.3.1. 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.

4.3.2. Antenna Connector Construction

Please refer to section 3.3 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	18667	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. 21, 2006	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)

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

*Calibration Interval of instruments listed above is two year.

NCR means Non-Calibration required.

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