FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart C § 15.231

Equipment	:	**RF transceiver module**
Model No.	:	**CWMDP01**
Brand Name	:	**Model Rectifier Corp**
Filing Type	:	**New Application**
Applicant	:	**Model Rectifier Corp.** 80 Newfield Avenue Edison, New Jersey 08837 USA
FCC ID	:	**BTQ170495**
Manufacturer	:	**Model Rectifier Corp.** 80 Newfield Avenue Edison, New Jersey 08837 USA
Received Date	:	Mar. 27, 2007
Test Date	:	Apr. 20, 2007

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.

Lab Code: 200079-0

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Table of Contents

1. SUMMARY OF THE TEST RESULT 2

2. GENERAL INFORMATION 3

2.1. Product Details 3
2.2. Table for Test Modes 3
2.3. Table for Testing Locations 3
2.4. Table for Supporting Units 3
2.5. Test Configurations 4

3. TEST RESULT 5

3.1. AC Power Line Conducted Emissions Measurement 5
3.2. Field Strength of Fundamental Emissions Measurement 9
3.3. 20dB Spectrum Bandwidth Measurement 12
3.4. De-activating Time / Operation Restriction Measurement 14
3.5. Radiated Emissions Measurement 17
3.6. Antenna Requirements 25

4. LIST OF MEASURING EQUIPMENTS 26

5. TEST LOCATION 27

6. NVLAP CERTIFICATE OF ACCREDITATION 28

APPENDIX A. TEST PHOTOS ..... A1 ~ A7

APPENDIX B. PHOTOGRAPHS OF EUT ..... B1 ~ B3

History of This Test Report

Original Issue Date: Apr. 23, 2007

Report No.: FR732717

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart C

Equipment	:	RF transceiver module
Model No.	:	CWMDP01
Brand Name	:	Model Rectifier Corp
Applicant	:	**Model Rectifier Corp.** 80 Newfield Avenue Edison, New Jersey 08837 USA

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 27, 2007 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.

Wayne Hsu

1. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
3.1	15.207	AC Power Line Conducted Emissions	Complies	29.39 dB
3.2	15.231(b)	Field Strength of Fundamental Emissions	Complies	37.25 dB
3.3	15.231(c)	20dB Spectrum Bandwidth	Complies	-
3.4	15.231(a)	De-activating Time / Operation Restriction	Complies	-
3.5	15.231(b)	Radiated Emissions	Complies	14.66 dB
3.6	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Field Strength of Fundamental Emissions	±1.9dB	Confidence levels of 95%
20dB Spectrum Bandwidth	$\pm 8.5 \times 10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

2. GENERAL INFORMATION

2.1. Product Details

Items	Description
Operation Type	A manually operated transmitter
Modulation	FSK
Channel Number	1
Channel Band Width (99%)	344.00 kHz
Max. Field Strength	43.54 dBuV/m at 3m (Average)
Carrier Frequencies	433.92 MHz (CH 1)
Antenna	Fix Antenna

2.2. 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	Receiver	1	1
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX	1	1
De-activating Time	Normal Use	1	NA
Radiated Emissions 9kHz~30MHz Radiated Emissions 9kHz~10^{th} Harmonic Band Edge Emissions	CTX	1	1

Note: CTX=continuously transmitting

2.3. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH02-HY	SAC	Hwa Ya	101377	IC 4088	-
CO04-HY	Conduction	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

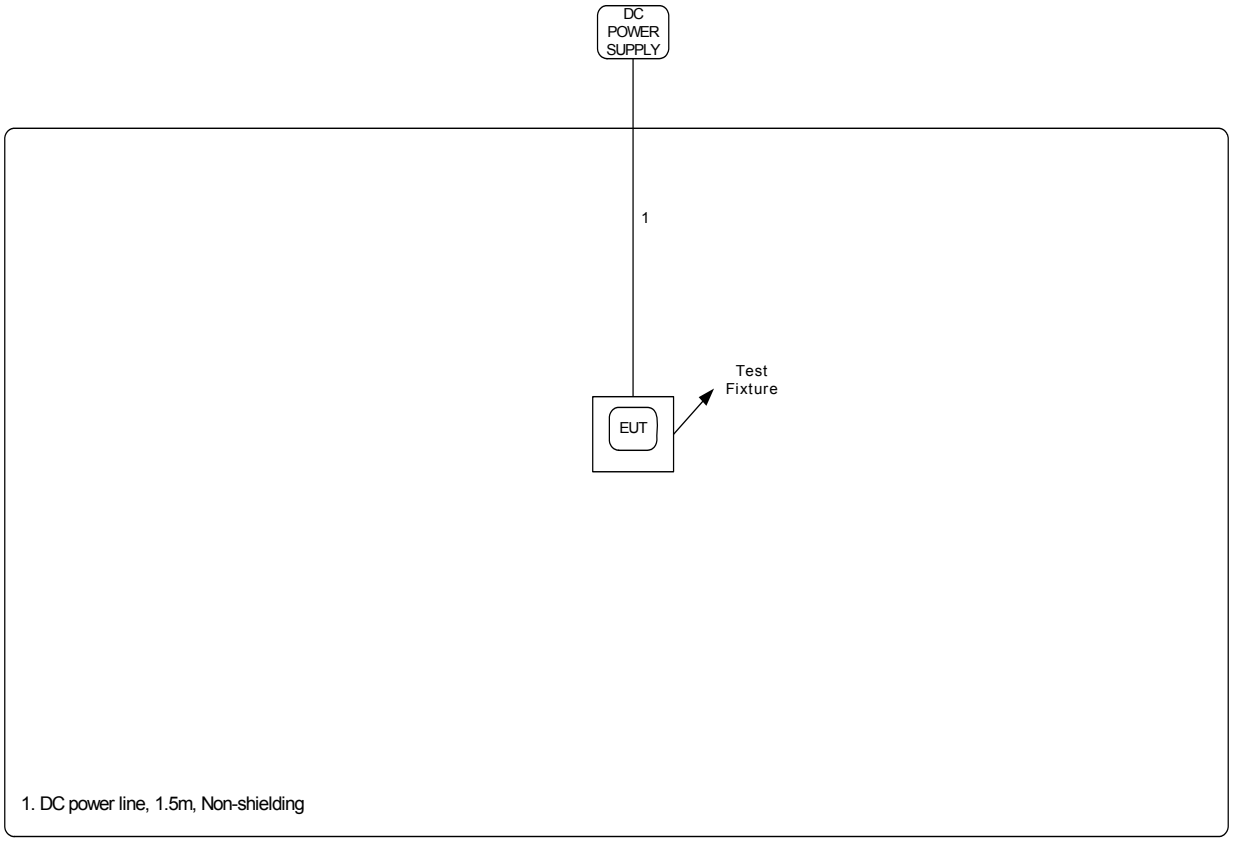
Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

2.4. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
DC Source	GW	GPC-6030D	-
Test Fixture	-	-	-

2.5. Test Configurations

2.5.1. Radiation Emissions Test Configuration



3. TEST RESULT

3.1. AC Power Line Conducted Emissions Measurement

3.1.1. 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

3.1.2. Measuring Instruments and Setting

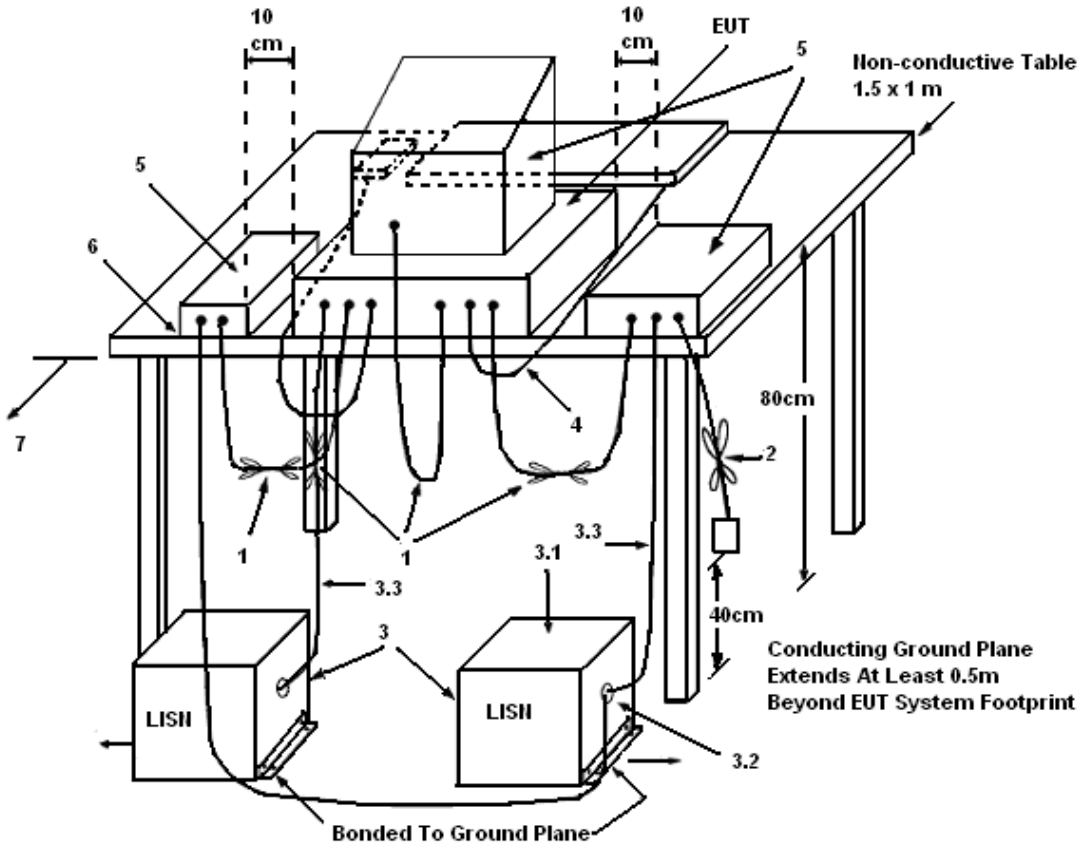
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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

3.1.3. 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.

3.1.4. 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.

3.1.5. Test Deviation

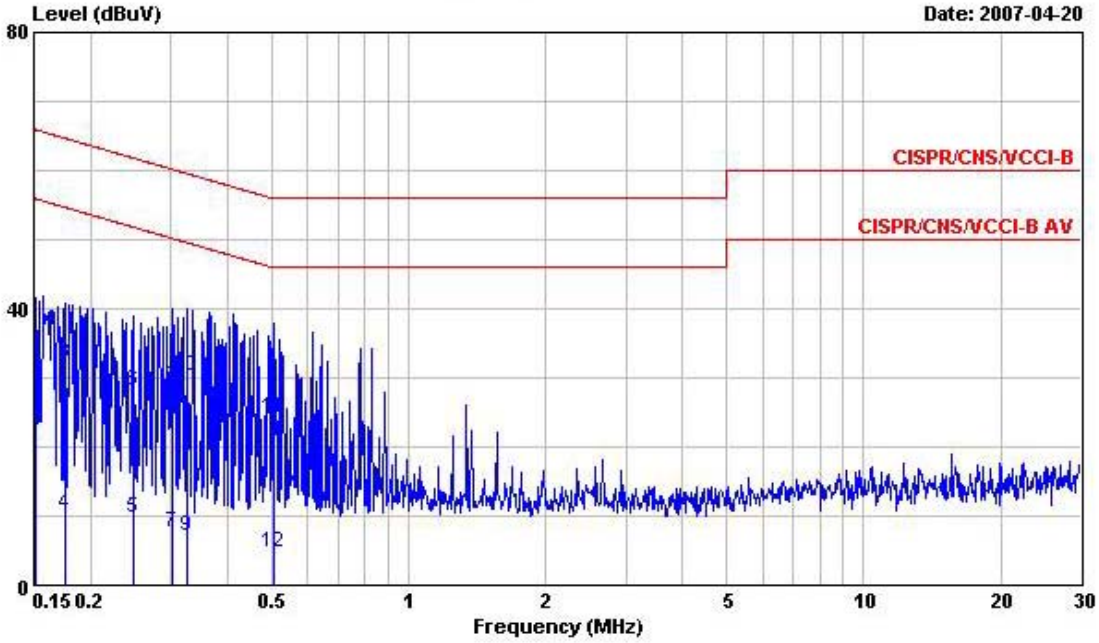
There is no deviation with the original standard.

3.1.6. EUT Operation during Test

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

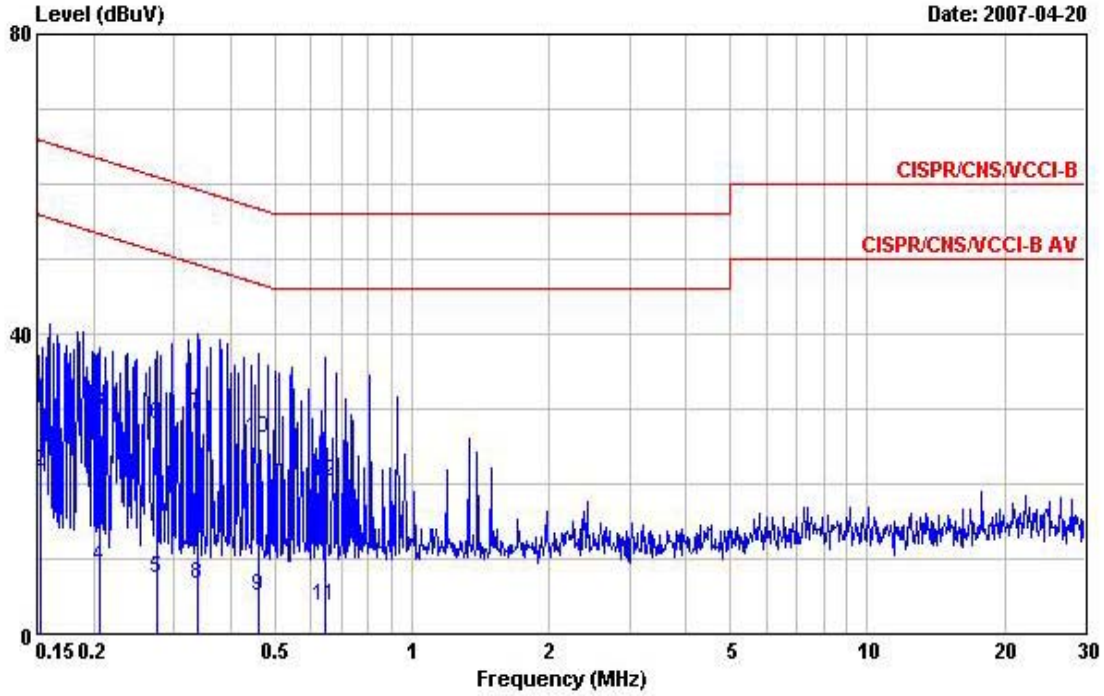
3.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	28℃	**Humidity**	41%
Test Engineer	Ted	**Phase**	Line
Configuration	Receiver Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1513050	21.32	-34.61	55.93	20.52	0.10	0.70	Average
2	0.1513050	33.68	-32.25	65.93	32.88	0.10	0.70	QP
3	0.1758420	32.13	-32.55	64.68	31.44	0.10	0.59	QP
4	0.1758420	10.37	-44.31	54.68	9.68	0.10	0.59	Average
5	0.2481360	9.76	-42.06	51.82	9.16	0.10	0.50	Average
6	0.2481360	28.07	-33.75	61.82	27.47	0.10	0.50	QP
7	0.3034790	7.62	-42.53	50.15	7.12	0.10	0.40	Average
8	0.3034790	28.81	-31.34	60.15	28.31	0.10	0.40	QP
9	0.3251190	7.20	-42.37	49.57	6.70	0.10	0.40	Average
10	@0.3251190	30.18	-29.39	59.57	29.68	0.10	0.40	QP
11	0.5073740	24.29	-31.71	56.00	23.77	0.10	0.42	QP
12	0.5073740	4.76	-41.24	46.00	4.24	0.10	0.42	Average

Temperature	28℃	**Humidity**	41%
Test Engineer	Ted	**Phase**	Neutral
Configuration	Receiver Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1522170	34.11	-31.77	65.88	33.32	0.10	0.69	QP
2	0.1522170	21.62	-34.26	55.88	20.83	0.10	0.69	Average
3	0.2061360	29.38	-33.98	63.36	28.78	0.10	0.50	QP
4	0.2061360	8.96	-44.40	53.36	8.36	0.10	0.50	Average
5	0.2758730	7.27	-43.67	50.94	6.72	0.10	0.45	Average
6	0.2758730	27.97	-32.97	60.94	27.42	0.10	0.45	QP
7	0.3374030	29.11	-30.16	59.27	28.61	0.10	0.40	QP
8	0.3374030	6.66	-42.61	49.27	6.16	0.10	0.40	Average
9	0.4612220	4.96	-41.71	46.67	4.38	0.10	0.48	Average
10	0.4612220	25.95	-30.72	56.67	25.37	0.10	0.48	QP
11	0.6474040	3.69	-42.31	46.00	3.19	0.10	0.40	Average
12	0.6474040	20.20	-35.80	56.00	19.70	0.10	0.40	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

3.2. Field Strength of Fundamental Emissions Measurement

3.2.1. Limit

Devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(a). The field strength of emissions from intentional radiators at 3 meters operated under this Section shall not exceed the following:

Frequency Band (MHz)	Fundamental Emissions Limit (uV/m) at 3m
40.66-40.70	2250
70-130	1250
130-174	1250-3750(**)
174-260	3750
260-470	3750-12500(**)
Above 470	12500

**1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1) for the band 130 - 174 MHz, μV/m at 3 meters = 56.81818X(operating frequency, MHz) - 6136.3636;

(2) for the band 260 - 470 MHz, μV/m at 3 meters = 41.6667X(operating frequency, MHz) - 7083.3333.

So the field strength of emission limits have been calculated in below table.

Carrier Frequency (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
433.92 MHz	80.8 (Average)
433.92 MHz	100.8 (Peak)

3.2.2. Measuring Instruments and Setting

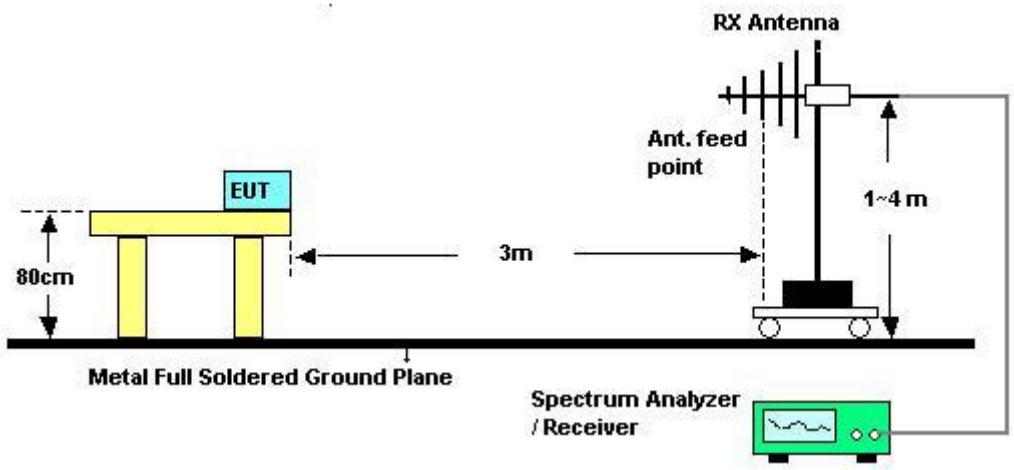
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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

3.2.3. 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.

3.2.4. Test Setup Layout



3.2.5. Test Deviation

There is no deviation with the original standard.

3.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.2.7. Test Result of Field Strength of Fundamental Emissions

Temperature	23℃	**Humidity**	56%
Test Engineer	Duncan	**Configurations**	Channel 1

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Read Level (dBuV)	Cable Loss (dB)	Remark
434.05 MHz	48.58	-52.21	100.79	58.67	4.05	Peak
434.05 MHz	43.54	-37.25	80.79	53.63	4.05	Average

Note:

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

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

3.3. 20dB Spectrum Bandwidth Measurement

3.3.1. Limit

The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. So the emission bandwidth limits have been calcuated in below table.

Fundamental Frequency	20dB Bandwidth Limits (MHz)
433.92 MHz	1.08

3.3.2. Measuring Instruments and Setting

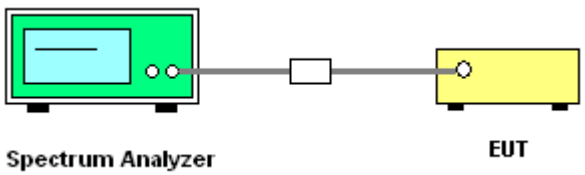
Please refer to section 4 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

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

3.3.3. 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.

3.3.4. Test Setup Layout



3.3.5. Test Deviation

There is no deviation with the original standard.

3.3.6. EUT Operation during Test

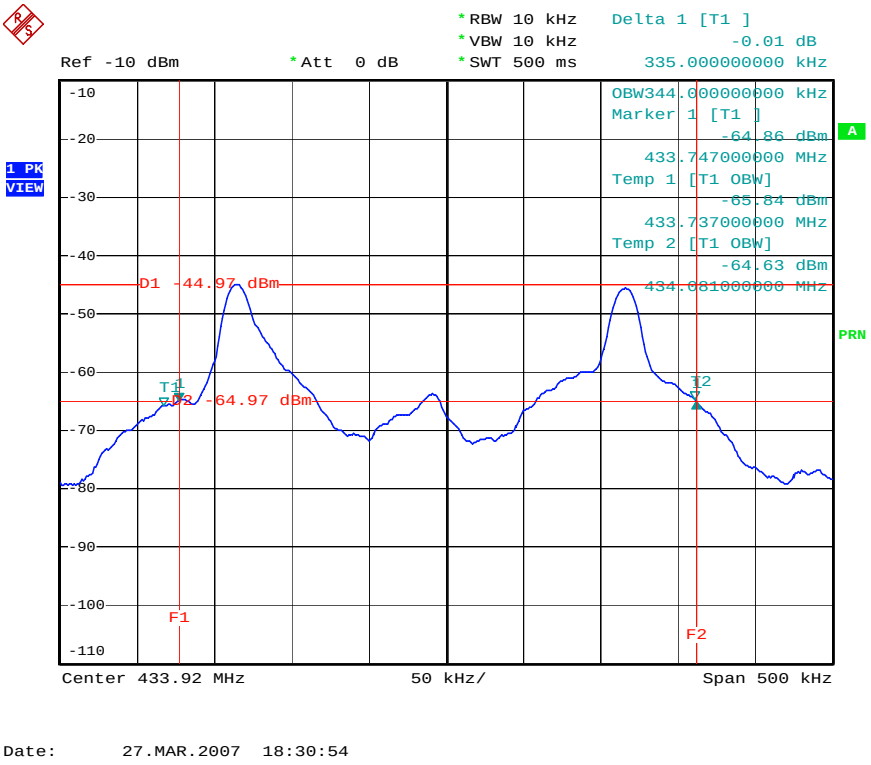
The EUT was programmed to be in continuously transmitting mode.

3.3.7. Test Result of 20dB Spectrum Bandwidth

Temperature	28℃	**Humidity**	60%
Test Engineer	Murphy	**Configurations**	Channel 1

Frequency	20dB BW (kHz)	99% OBW (kHz)	Limits (MHz)	Test Result
433.92 MHz	335.00	344.00	1.08	**Complies**

20 dB/99% Bandwidth Plot on 433.92 MHz



3.4. De-activating Time / Operation Restriction Measurement

3.4.1. Limit

A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds is permitted).

3.4.2. Measuring Instruments and Setting

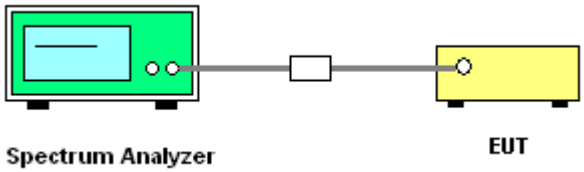
Please refer to section 4 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1000 kHz
VB	1000 kHz
Detector	Peak
Trace	Single Trigger
Attenuation	Auto

3.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
6. Measure the maximum de-activating time of the EUT .

3.4.4. Test Setup Layout



3.4.5. Test Deviation

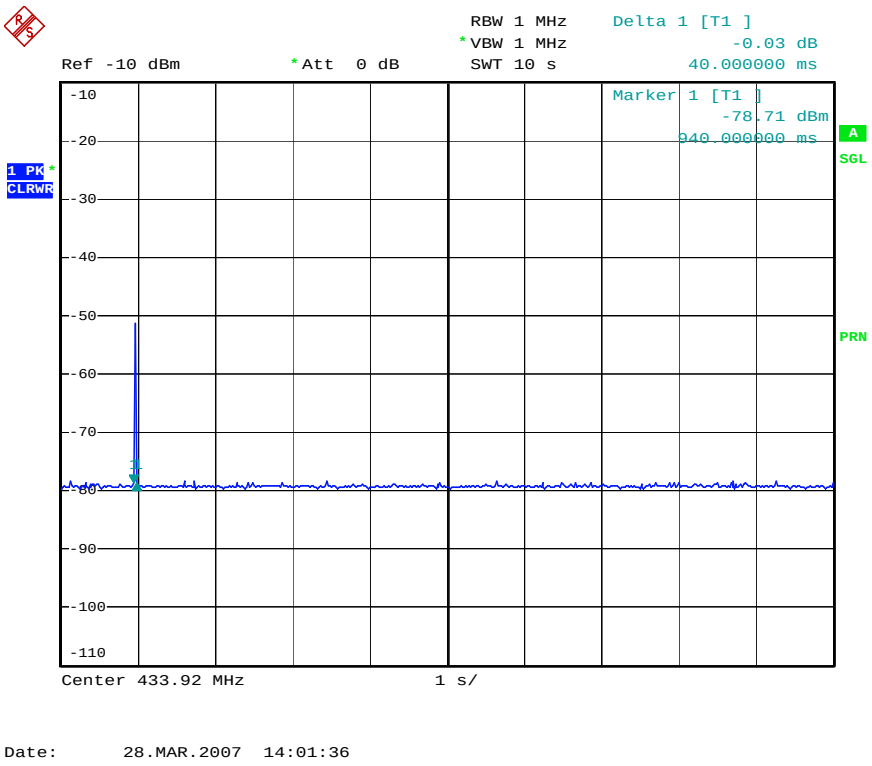
There is no deviation with the original standard.

3.4.6. EUT Operation during Test

The EUT is in normal operation and released manually.

3.4.7. Test Result of De-activating Time

Temperature	28℃	**Humidity**	60%
Test Engineer	Murphy	**Configurations**	Channel 1



The EUT is de-activated immediately after being released.

3.4.8. Test Result of Operation Restriction

Periodic Operation Restriction	Applicable	Declared by applicant	Test performance	Passed
The transmitter is used for				
☐ security or safety applications ☒ other applications		☒		
The transmitter is operated				
☒ manually ☐ automatically		☒		
Periodic operation according to				
☒ 47 CFR FCC Part 15 Subpart C 15.231(a)				
Only control signals are sent and there is on continuous transmission.	☒	☒	☐	☒
(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.	☒	☐	☒	☒
(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.	☐	☐	☐	☐
(3) Periodic transmissions at regular predetermined intervals are ☐ not permitted ☐ permitted with total transmission time of two seconds per hour or less (for polling or supervision transmission to determine system integrity of transmitters used in security or safety applications)	☐	☐	☐	☐
☐ 47 CFR FCC Part 15 Subpart C 15.231(e)				
The device is provided with a means for automatically limiting operation so that the duration of each transmissions is not greater than one second and the silent period between transmissions is at least 30 times the duration of the transmission but in no case less than 10 seconds.	☐	☐	☐	☐

Note: Result may be based on the applicant declaration (i.e. no test is performed). However, in this casethere is no vertification by the test laboratory.

3.5. Radiated Emissions Measurement

3.5.1. Limit

Devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(a). The field strength of emissions from intentional radiators at 3 meters operated under this Section shall not exceed the following:

Frequency Band (MHz)	Spurious Emissions Limit (uV/m) at 3m
40.66-40.70	225
70-130	125
130-174	125-375(**)
174-260	375
260-470	375-1250(**)
Above 470	1250

**1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1) for the band 130 - 174 MHz, μV/m at 3 meters = 56.81818ˣ(operating frequency, MHz) - 6136.3636;

(2) for the band 260 - 470 MHz, μV/m at 3 meters = 41.6667ˣ(operating frequency, MHz) - 7083.3333.

(3)The maximum permitted unwanted emissions level is 20 dB below the maximum permitted fundamental level. In addition field strength of any emissions which appear inside of the restriction 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

3.5.2. Measuring Instruments and Setting

Please refer to section 4 of equipments list 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 (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100KHz / 100KHz for peak

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

3.5.3. Test Procedures

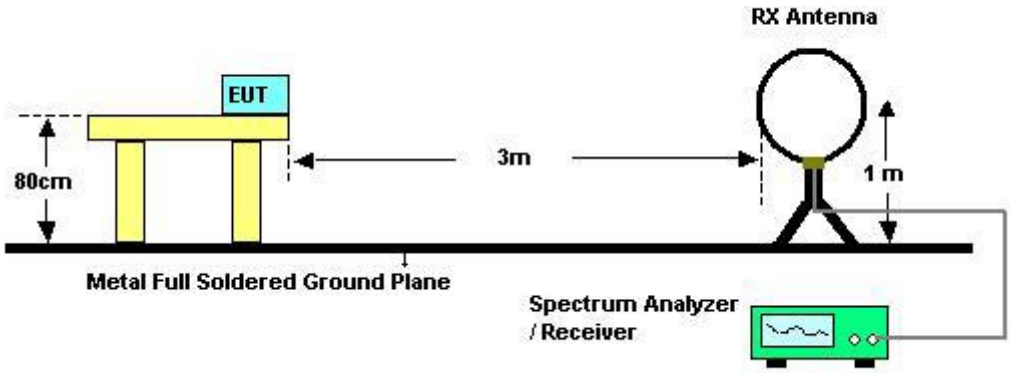
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

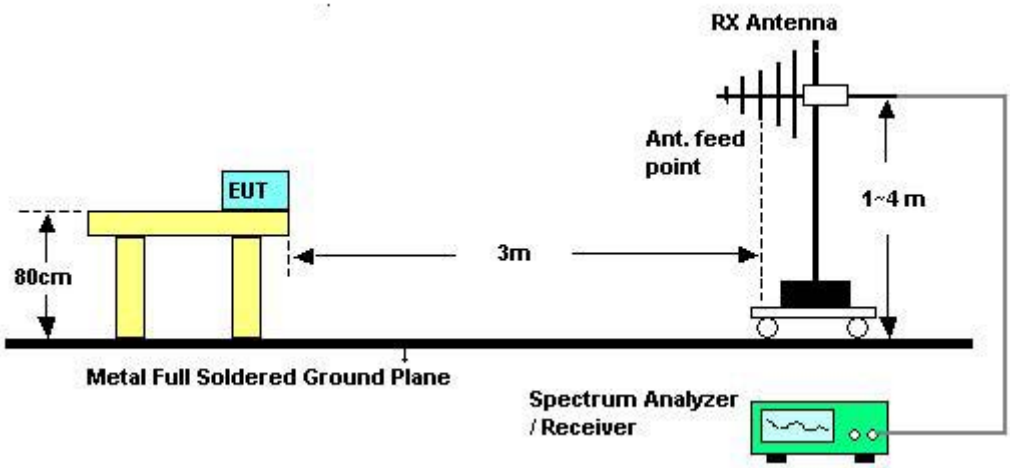
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For 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.

3.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.5.5. Test Deviation

There is no deviation with the original standard.

3.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	23℃	**Humidity**	56%
Test Engineer	Duncan	**Configurations**	Channel 1

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.

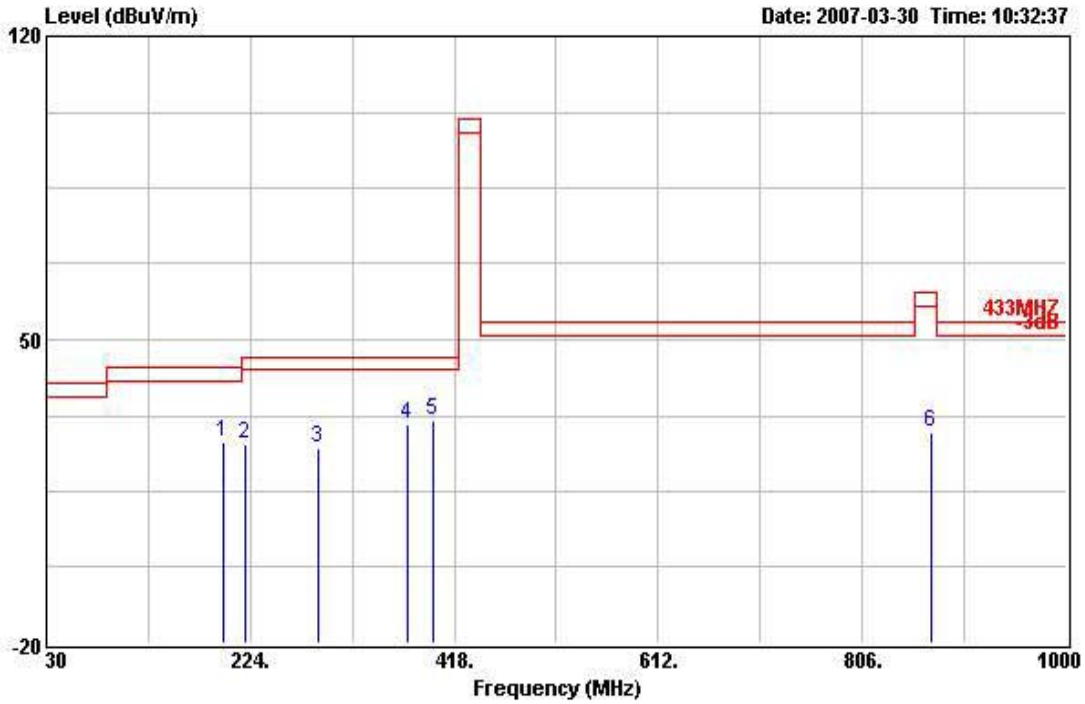
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

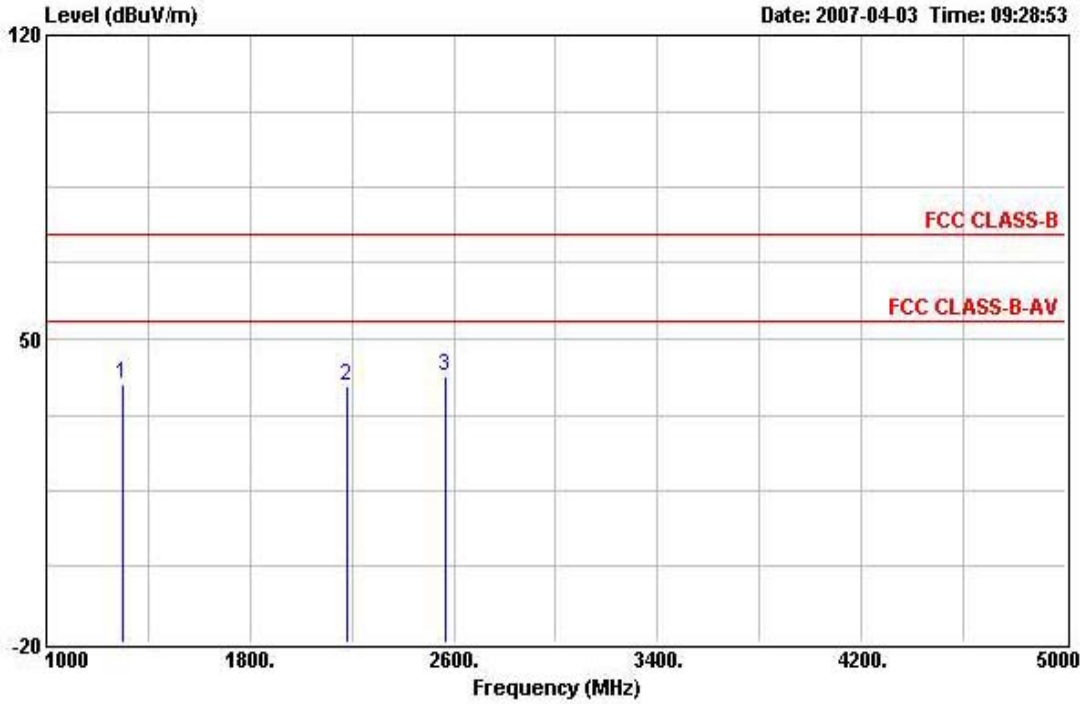
3.5.8. Results for Radiated Emissions (30MHz~5th harmonic)

Temperature	23℃	Humidity	56%
Test Engineer	Duncan	Configurations	Channel 1

Horizontal

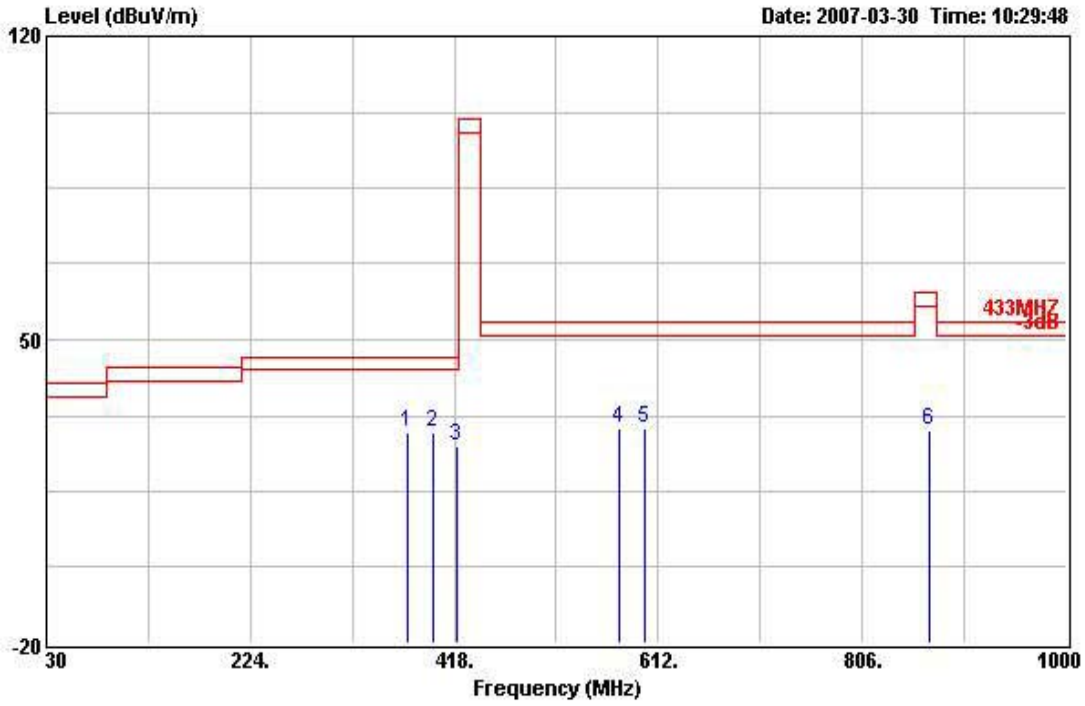


	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB		cm	deg
1	198.780	26.44	-17.06	43.50	43.01	2.75	Peak	---	---
2	219.150	25.82	-20.18	46.00	41.48	2.92	Peak	---	---
3	288.020	25.19	-20.81	46.00	38.56	3.51	Peak	---	---
4	374.350	30.63	-15.37	46.00	42.14	3.88	Peak	---	---
5	397.630	31.34	-14.66	46.00	42.57	3.76	Peak	---	---
6	870.990	28.62	-32.17	60.79	31.67	5.64	Peak	---	---

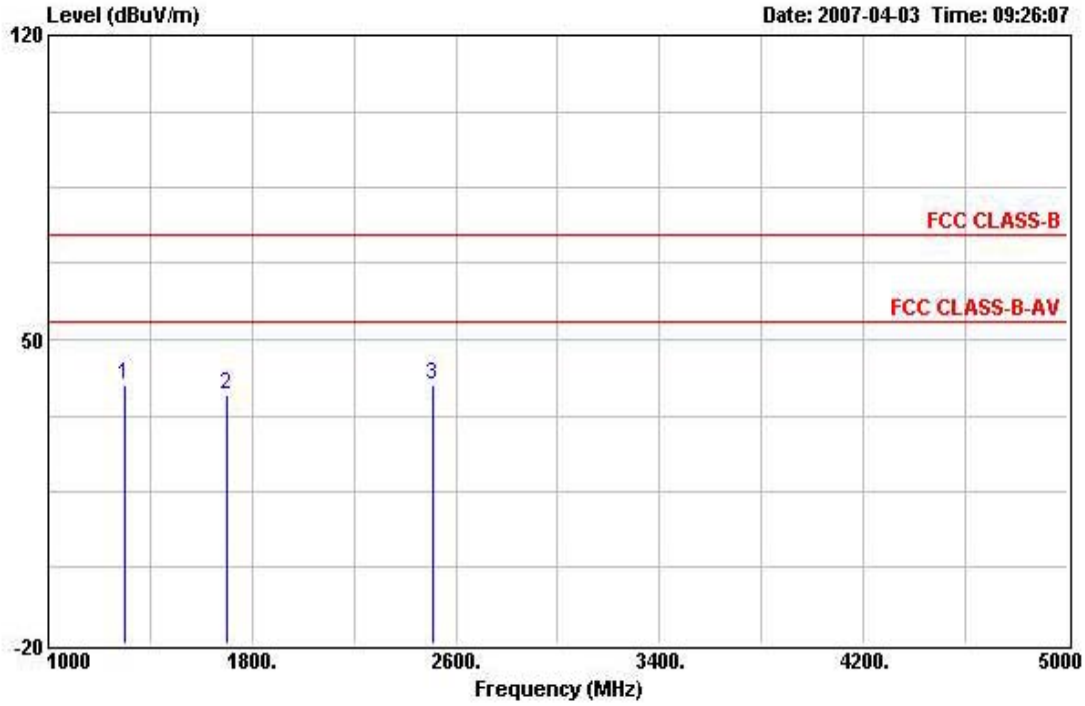


	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB		cm	deg
1	1300.000	39.75	-34.25	74.00	39.46	1.65	Peak	---	---
2	2184.000	39.27	-34.73	74.00	34.89	2.06	Peak	---	---
3	2568.000	41.52	-32.48	74.00	36.56	2.16	Peak	---	---

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB		cm	deg
1	374.350	28.67	-17.33	46.00	40.18	3.88	Peak	---	---
2	397.630	28.51	-17.49	46.00	39.74	3.76	Peak	---	---
3	419.940	25.53	-20.47	46.00	36.19	3.82	Peak	---	---
4	575.140	29.33	-24.67	54.00	35.03	4.53	Peak	---	---
5	598.420	29.32	-24.68	54.00	34.52	4.29	Peak	---	---
6	870.020	29.07	-31.72	60.79	32.11	5.65	Peak	---	---



	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB		cm	deg
1	1300.000	39.69	-34.31	74.00	39.40	1.65	Peak	---	---
2	1700.000	37.16	-36.84	74.00	35.37	1.87	Peak	---	---
3	2508.000	39.77	-34.23	74.00	34.86	2.12	Peak	---	---

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.

3.6. Antenna Requirements

3.6.1. 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.

3.6.2. Antenna Connector Construction

Please refer to section 2.1 in this test report, antenna connector complied with the requirements.

4. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Dec. 17, 2006	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100764	DC ~ 40GHz	Jul. 20, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 40GHz	Jul. 20, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun. 10, 2006	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 03, 2007	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 02, 2006	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2006	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2006	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Jun. 20, 2006	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 07, 2007	Conducted (TH01-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 16, 2006	Conducted (TH01-HY)
EMC Receiver	R&S	ESCS 30	100359	9kHz – 2.75GHz	Mar. 01, 2007	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 31, 2007	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2007	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)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz - 1 GHz 3m	May 19, 2006	Radiation (03CH02-HY)
Amplifier	ADVANTEST	BB525C	CH300001	9 kHz - 2 GHz	Nov 21, 2006	Radiation (03CH02-HY)
Spectrum Analyzer	R&S	FSP40	100305/040	9 kHz - 40GHz	Dec. 15, 2006	Radiation (03CH02-HY)
Receiver	SCHAFFNER	SCR3501	416	9 kHz - 1 GHz	Feb. 15, 2007	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz - 2 GHz	Nov. 28, 2006	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0 - 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 m - 4 m	N/A	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB020	30 MHz - 1 GHz	Dec. 02, 2006	Radiation (03CH02-HY)

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

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)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH02-HY)

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

5. 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

6. NVLAP CERTIFICATE OF ACCREDITATION

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200079-0

Sporton International, Inc. Hwa Ya EMC Laboratory
Tao Yuan Hsien 333
TAIWAN

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).

2007-01-01 through 2007-12-31
Effective dates

Sally S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2006-09-13)