FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart C § 15.247

Equipment	:	**HANDHELD COMPUTER**
Model No.	:	**MODAT-200**
Brand Name	:	**iEi**
Filing Type	:	**New Application**
Applicant	:	**ICP Electronics Inc.** 3F,No.22,Chung-HsingRd.,Shi-ChiCity.Taipei Hsien,221,Taiwan,R.O.C.
FCC ID	:	**RFHMODAT-200**
Manufacturer	:	**ICP Electronics Inc.** 2-5F,No.22,Chung-HsingRd.,Shi-ChiCity.Taipei Hsien,221,Taiwan,R.O.C.
Received Date	:	Dec. 21, 2010
Final Test Date	:	Mar. 08, 2011

Statement

Test result included is only for the Bluetooth part of the product.

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.

SPORTON International Inc.

No.52 Hwa Ya 1st Rd, Hwa Ya Technology Park, Kwei-Shan Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

Table of Contents

History of This Test Report

Original Issue Date: Mar. 08, 2011

Report No.: FR0D2020AD

■ 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 § 15.247

Equipment	:	HANDHELD COMPUTER
Model No.	:	MODAT-200
Brand Name	:	iEi
Applicant	:	ICP Electronics Inc. 3F,No.22,Chung-HsingRd.,Shi-ChiCity. Taipei Hsien,221,Taiwan,R.O.C.

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 21, 2010 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 2011.3.8

Wayne Hsu / Vice Manager

SPORTON International Inc.

No.52 Hwa Ya 1st Rd, Hwa Ya Technology Park, Kwei-Shan Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

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	18.34 dB
3.2	15.247(b)(1)	Peak Output Power	Complies	25.91 dB
3.3	15.247(a)(1)	Hopping Channel Separation	Complies	-
3.4	15.247(b)(1)	Number of Hopping Frequency	Complies	-
3.5	15.247(a)(1)	Dwell Time	Complies	-
3.6	15.247(d)	Radiated Emissions	Complies	3.12 dB
3.7	15.247(d)	Band Edge Emissions	Complies	5.54 dB
3.8	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Peak Output Power	±0.8dB	Confidence levels of 95%
Hopping Channel Separation	$\pm 8.5\times10^{-8}$	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 / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±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

Only the radio detail of Bluetooth is shown in this report. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Power Type	+5V from Adapter
Modulation	FHSS (GFSK/ π/4-DQPSK/ 8DPSK)
Data Rate (Mbps)	GFSK: 1/ π/4-DQPSK: 2/ 8DPSK: 3
Frequency Range	2400 ~ 2483.5MHz
Channel Number	79
Channel Band Width (99%)	1.178 MHz
Conducted Output Power	4.09 dBm

2.2 Accessories

Power	Brand	Model	Rating
AC Adaptor	OEM	ADS005A-B 050100	INPUT : 100-240V ~ 50/60Hz 0.2A OUTPUT : +5V 1.0A
Other			
USB Cable / Earphone with Microphone / Stylus / Docking / Leather Protective Bag / Hand Strap			

2.3 Table for Filed Antenna

Ant.	Antenna Type	Connector	Gain (dBi)	Remark
A	PIFA Antenna	Fixed on Board	0.90	TX/RX

2.4 Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
2400~2483.5MHz	0	2402 MHz
	1	2403 MHz
	:	:
	38	2440 MHz
	39	2441 MHz
	40	2442 MHz
	:	:
	77	2479 MHz
	78	2480 MHz

2.5 Test Manner

a. The following test mode was for conducted test:

Mode 1. ADAPTER+ DOCKING + Bluetooth + WIFI+H+WIN MEDIA(Speaker)
Mode 2. LINK PC(USB)(COPY SD)+ Bluetooth +WIFI+H+WIN MEDIA(Headset)
Mode 3. ADAPTER+ Bluetooth +WIFI+H+WIN MEDIA(Speaker)
Mode 4. ADAPTER+ Bluetooth +WIFI+H+WIN MEDIA(Headset)
For conduction test, the worse case of test is mode 4.

b. The following test mode was for radiated(Below 1GHz) test:

Mode 1. USB Link + Adapter Mode
Mode 2. USB Link + Notebook Mode

2.6 Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. 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	Data Rate	Channel
AC Power Conducted Emissions	Mode 4	Auto	-
Max. Conducted Output Power	GFSK/ π/4-DQPSK/ 8DPSK	1 Mbps/ 2 Mbps/ 3 Mbps	0/39/78
Hopping Channel Separation	8DPSK	3 Mbps	0~1/39~40/77 ~78
Number of Hopping Frequency	8DPSK	3 Mbps	0~78
Dwell Time	DH1/DH3/DH5	3 Mbps	0/39/78
Radiated Emissions Below 1GHz	Mode 1 / Mode 2	Auto	-
Radiated Emissions Above 1GHz	GFSK	1 Mbps	0/39/78
Fundamental Emissions	GFSK/ π/4-DQPSK/ 8DPSK	1 Mbps/ 2 Mbps/ 3 Mbps	0/39/78
Band Edge Emissions	8DPSK	3 Mbps	0/78

2.7 Table for Testing Locations

Test Site No.	Site Category	Location
CO01-NH	Conduction	Hwa Ya
TH01-HY	OVEN Room	Hwa Ya
03CH02-HY	SAC	Hwa Ya

Semi Anechoic Chamber (SAC).

2.8 Table for Supporting Units

Support Unit	Brand	Model	FCC ID	Remark
Earphone with Microphone	-	-	-	Conducted
SD Card	Sandisk	2G	N/A	
Mouse	Microsoft	1004	DoC	Radiated
Modem	ACEEX	DM1414	DoC	
Notebook	DELL	E5500	DoC	

Note：The Earphone with Microphone provides is by customer.

2.9 Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters of Bluetooth

Test Software Version	MFGUI for wlan		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Parameters (1Mbps)	Default	Default	Default
Power Parameters (2Mbps)	Default	Default	Default
Power Parameters (3Mbps)	Default	Default	Default

2.10 EUT Operation during Test

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 reads the test program from the hard disk drive and runs it.
c. The NB sends signal messages to the modem.
d. The NB sends "H" messages to the panel and displays "H" patterns on the screen.
e. Repeat the steps from c to d.

At the same time, the following programs were executed:

- Executed “Media player” to play music to Earphone with Microphone.

Only Radiated used:

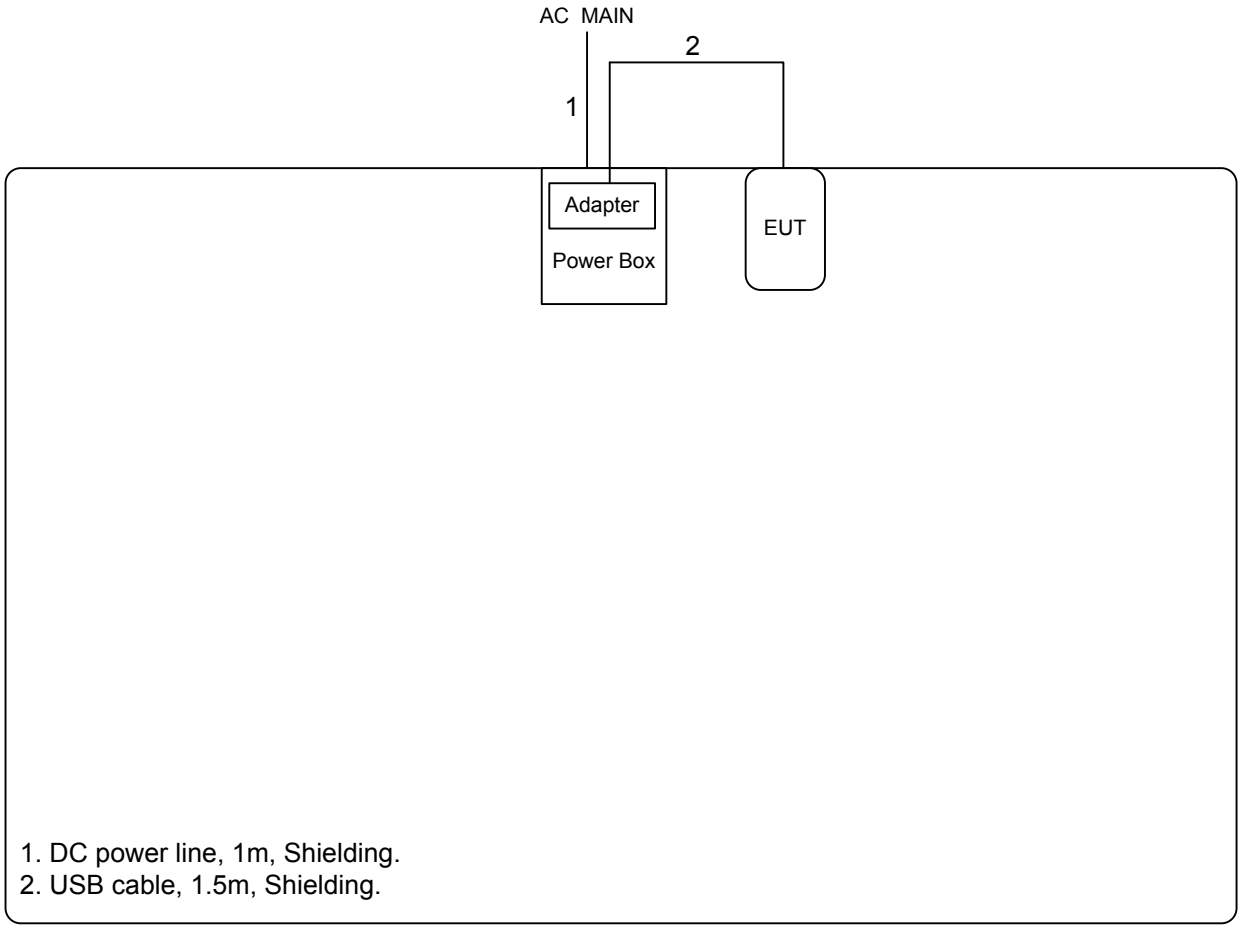
- Executed “MFGUI for wlan” to keep transmitting signals at fixed frequency.

2.11 Test Configurations

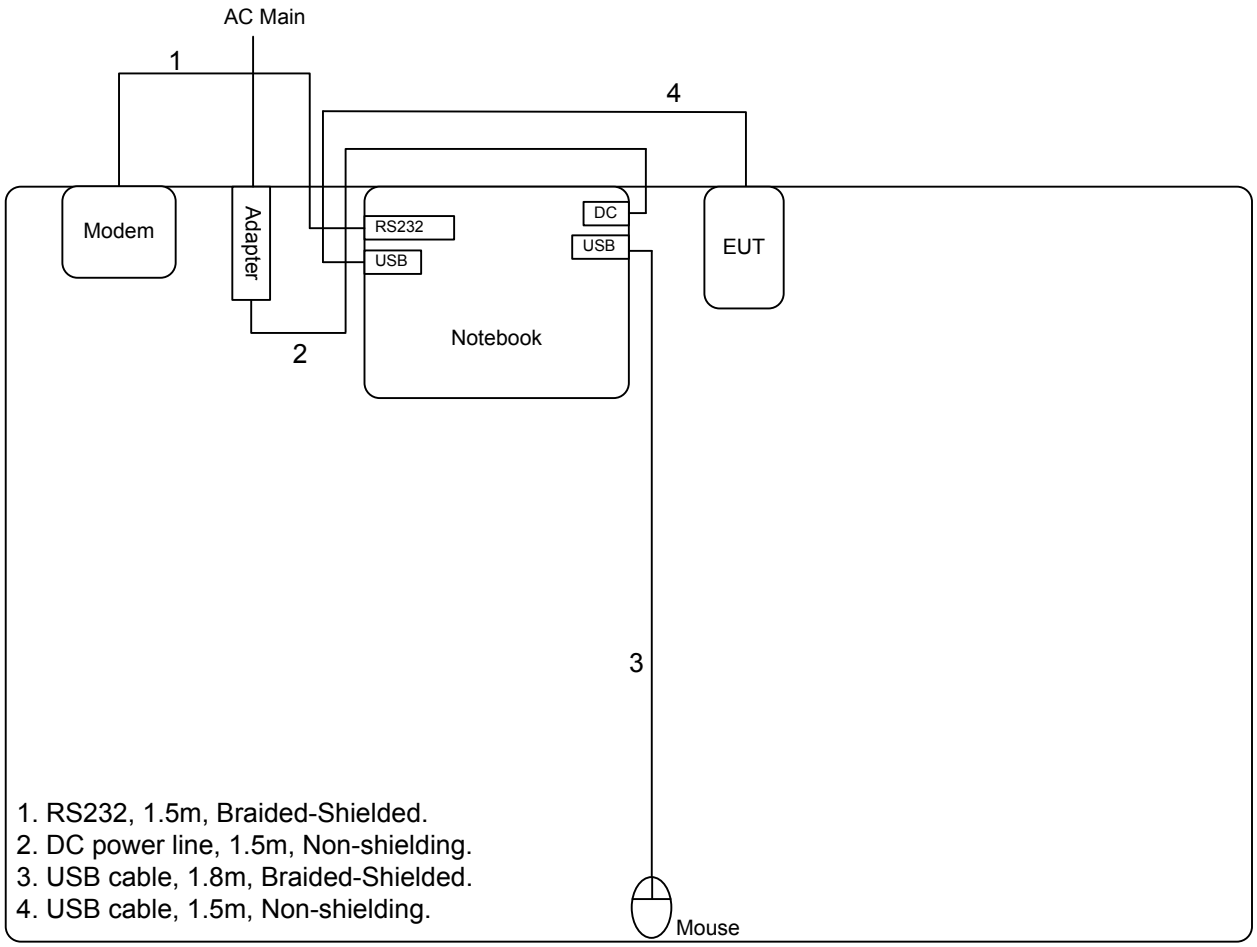
2.11.1 Radiation Emissions Test Configuration

For radiated emissions 9kHz~1GHz

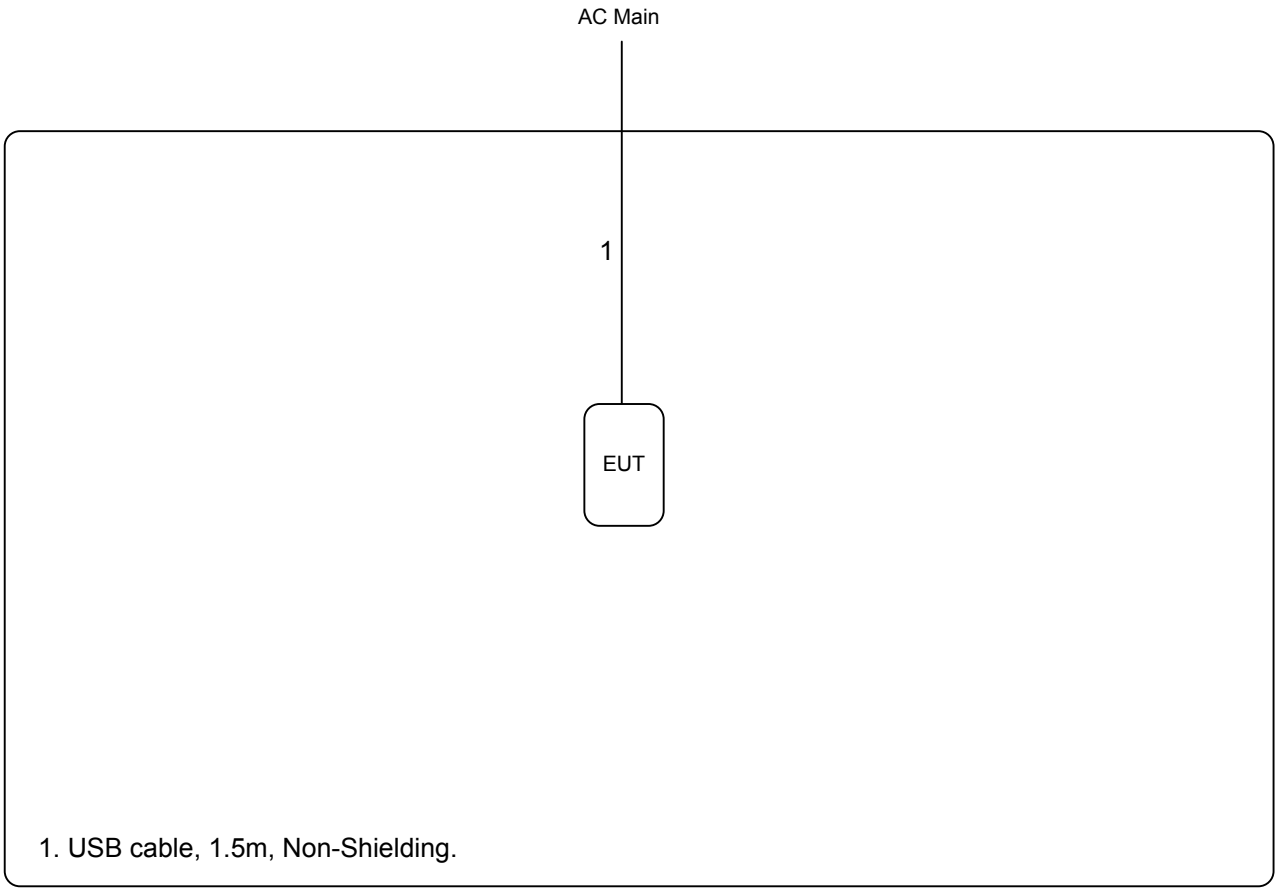
Mode 1



Mode 2


AC Main
1
4
Modem
Adapter
RS232
USB
DC
USB
EUT
Notebook
2
3
1. RS232, 1.5m, Braided-Shielded.
2. DC power line, 1.5m, Non-shielding.
3. USB cable, 1.8m, Braided-Shielded.
4. USB cable, 1.5m, Non-shielding.
Mouse

For radiated emissions above 1GHz



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.

Class B

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

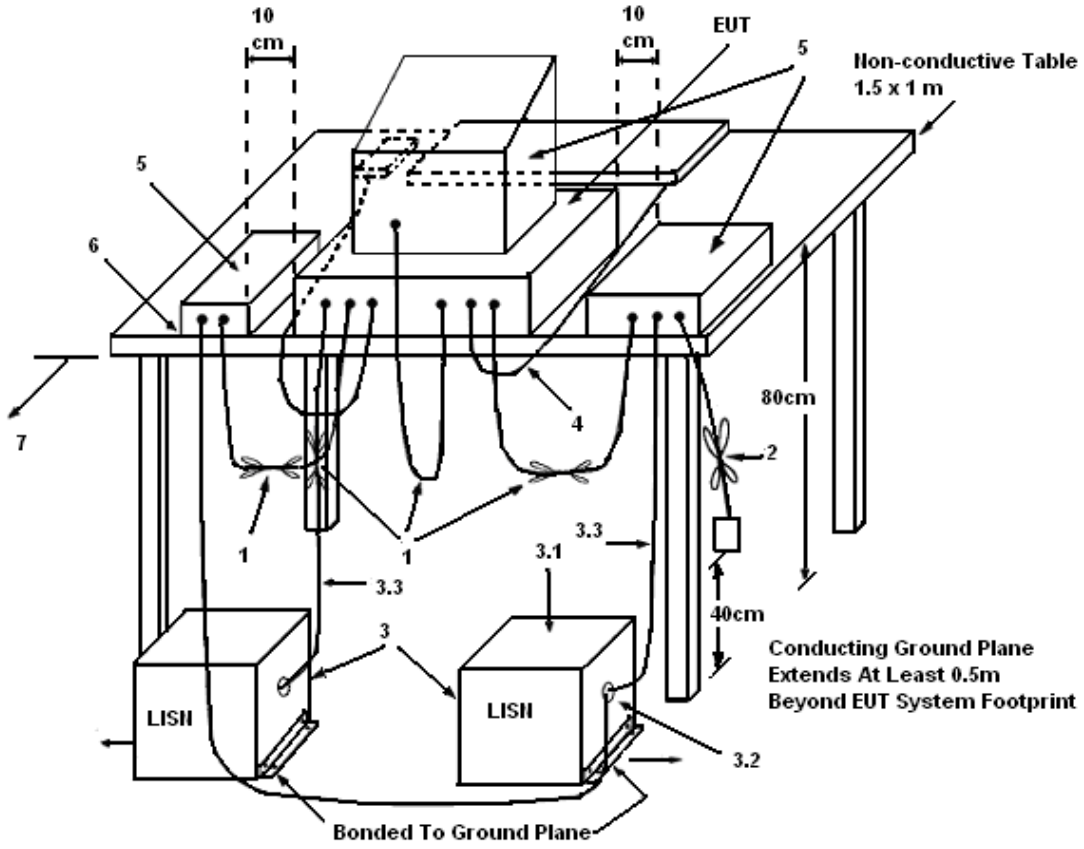
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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. The EUT warm up about 15 minutes then start test.
2. 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.
3. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. 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.

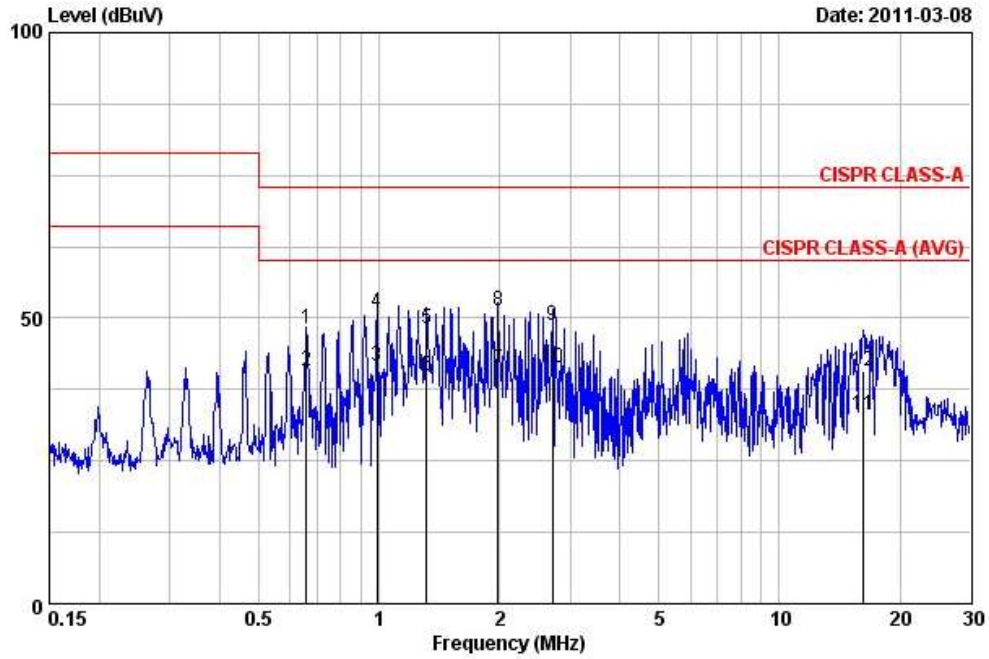
3.1.6 EUT Operation during Test

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

3.1.7 Results of AC Power Line Conducted Emissions Measurement

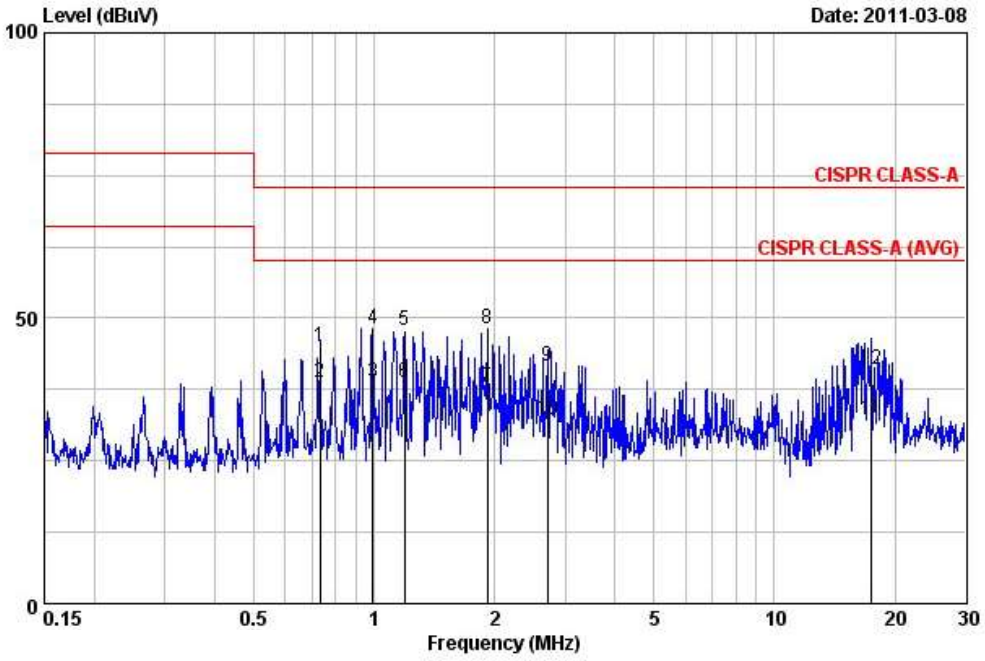
Final Test Date	Mar. 08, 2011	**Test Site No.**	CO01-NH
Temperature	24℃	**Humidity**	55%
Test Engineer	Eddie	**Configuration**	Mode 4

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.658	48.03	-24.97	73.00	37.88	10.05	0.10	QP
2 @	0.658	40.81	-19.19	60.00	30.66	10.05	0.10	AVERAGE
3 @	0.989	41.66	-18.34	60.00	31.51	10.05	0.10	AVERAGE
4	0.989	50.93	-22.07	73.00	40.78	10.05	0.10	QP
5	1.317	48.26	-24.74	73.00	38.06	10.06	0.14	QP
6 @	1.317	39.88	-20.12	60.00	29.68	10.06	0.14	AVERAGE
7 @	1.980	41.12	-18.88	60.00	30.85	10.07	0.20	AVERAGE
8	1.980	51.15	-21.85	73.00	40.88	10.07	0.20	QP
9	2.707	48.59	-24.41	73.00	38.31	10.08	0.20	QP
10 @	2.707	41.21	-18.79	60.00	30.93	10.08	0.20	AVERAGE
11	16.140	32.91	-27.09	60.00	22.41	10.28	0.23	AVERAGE
12	16.140	40.85	-32.15	73.00	30.35	10.28	0.23	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.731	44.99	-28.01	73.00	34.90	9.99	0.10	QP
2	0.731	38.67	-21.33	60.00	28.58	9.99	0.10	AVERAGE
3 @	0.994	38.73	-21.27	60.00	28.64	9.99	0.10	AVERAGE
4	0.994	48.01	-24.99	73.00	37.92	9.99	0.10	QP
5	1.191	47.88	-25.12	73.00	37.76	9.99	0.12	QP
6	1.191	38.63	-21.37	60.00	28.51	9.99	0.12	AVERAGE
7	1.918	37.92	-22.08	60.00	27.72	10.01	0.19	AVERAGE
8	1.918	48.08	-24.92	73.00	37.88	10.01	0.19	QP
9	2.707	41.57	-31.43	73.00	31.35	10.02	0.20	QP
10	2.707	32.15	-27.85	60.00	21.93	10.02	0.20	AVERAGE
11	17.475	32.19	-27.81	60.00	21.69	10.25	0.25	AVERAGE
12	17.475	40.91	-32.09	73.00	30.41	10.25	0.25	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

3.2 Peak Output Power Measurement

3.2.1 Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceeds 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

3.2.2 Measuring Instruments and Setting

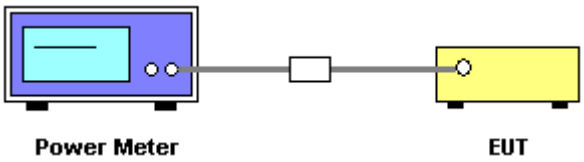
Please refer to section 4 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s
Used Peak Sensor	MA2411B

3.2.3 Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

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 Maximum Peak Output Power

Final Test Date	Feb. 23, 2011	**Test Site No.**	TH01-HY
Temperature	25℃	**Humidity**	62%
Test Engineer	Ian	**Configurations**	GFSK / π/4-DQPSK / 8DPSK

1Mbps

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
0	2402 MHz	3.33	30.00	**Complies**
39	2441 MHz	4.05	30.00	**Complies**
78	2480 MHz	4.07	30.00	**Complies**

2Mbps

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
0	2402 MHz	3.36	30.00	**Complies**
39	2441 MHz	4.02	30.00	**Complies**
78	2480 MHz	4.09	30.00	**Complies**

3Mbps

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
0	2402 MHz	3.34	30.00	**Complies**
39	2441 MHz	4.00	30.00	**Complies**
78	2480 MHz	4.03	30.00	**Complies**

3.3 Hopping Channel Separation Measurement

3.3.1 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

3.3.2 Measuring Instruments and Setting

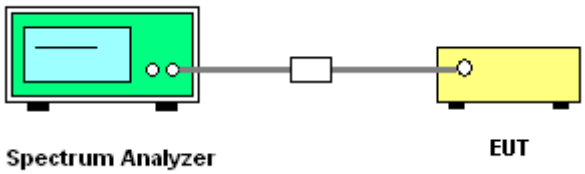
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.3.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized for 20 dB bandwidth measurement.
3. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized for channel separation measurement.

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.

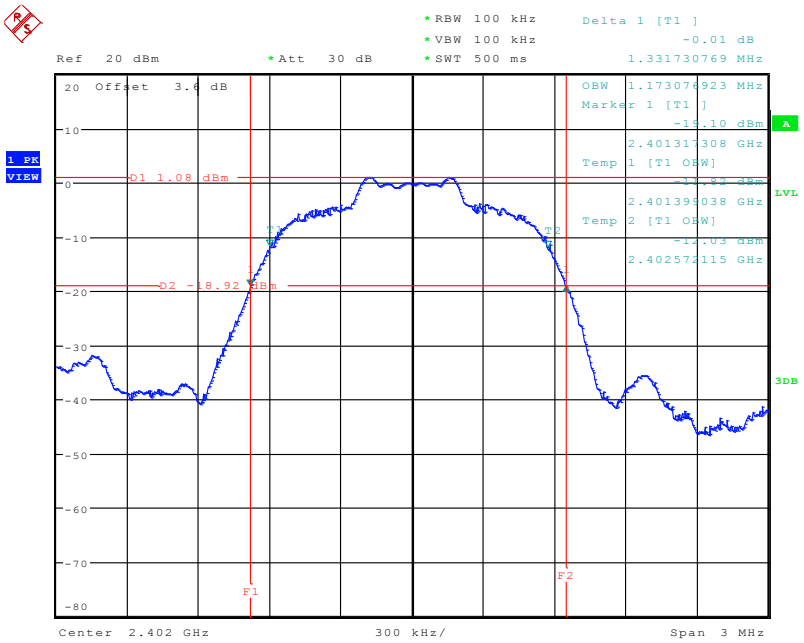
3.3.7 Test Result of Hopping Channel Separation

Final Test Date	Feb. 23, 2011	**Test Site No.**	TH01-HY
Temperature	25℃	**Humidity**	62%
Test Engineer	Ian	**Configurations**	8DPSK

Frequency	Ch. Separation (MHz)	20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Result
2402 MHz	1.000	1.332	1.173	**Complies**
2441 MHz	1.000	1.337	1.178	**Complies**
2480 MHz	1.000	1.337	1.178	**Complies**

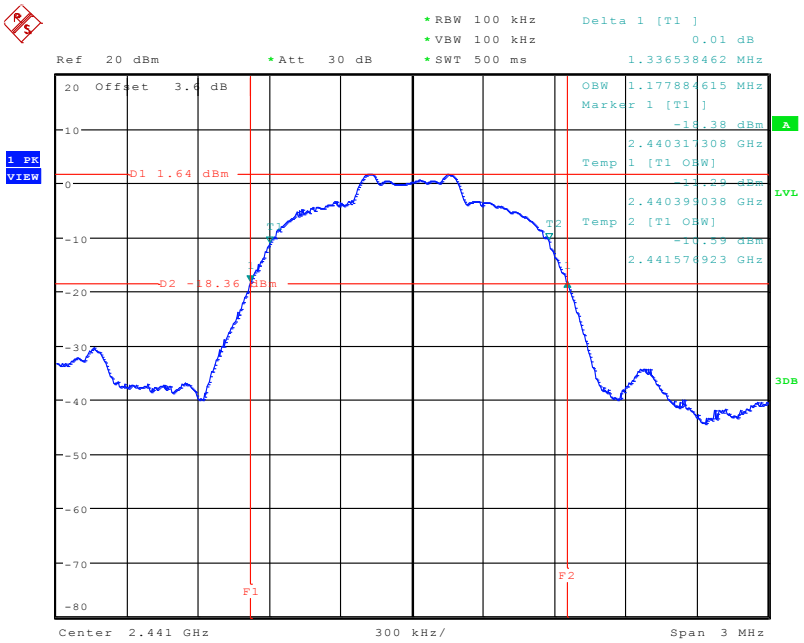
Ch. Separation Limits: >2/3 of 20dB bandwidth

20 dB Bandwidth Plot on Channel 0 / 2402 MHz



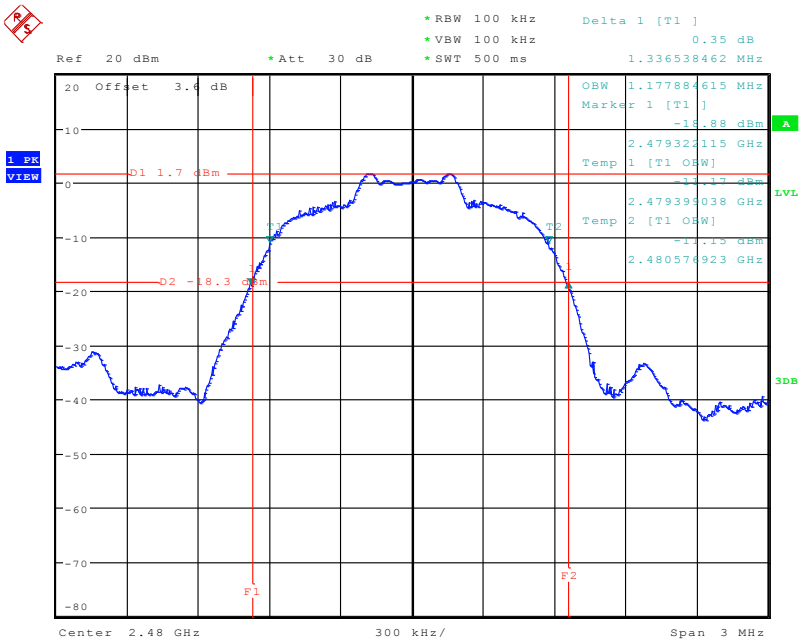
Date: 23.FEB.2011 19:44:31

20 dB Bandwidth Plot on Channel 39 / 2441 MHz



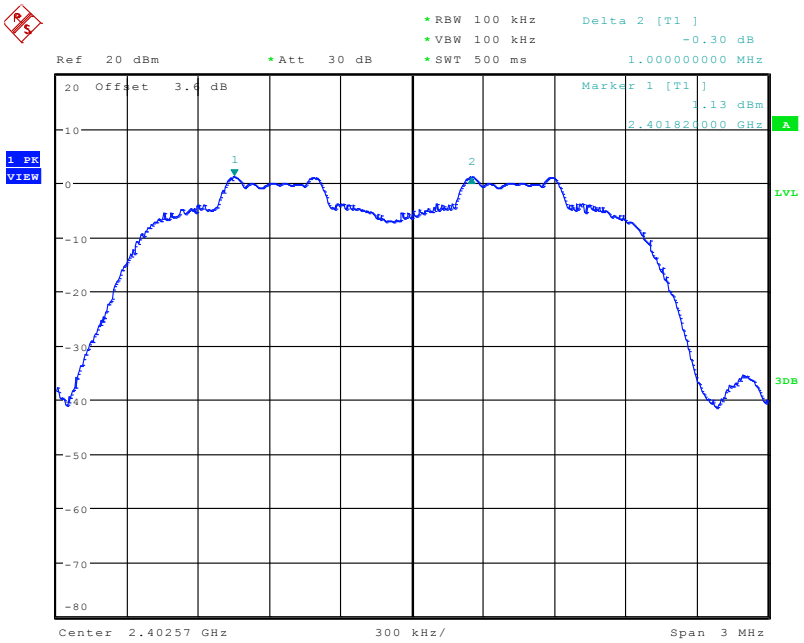
Date: 23.FEB.2011 19:55:37

20 dB Bandwidth Plot on Channel 78 / 2480 MHz



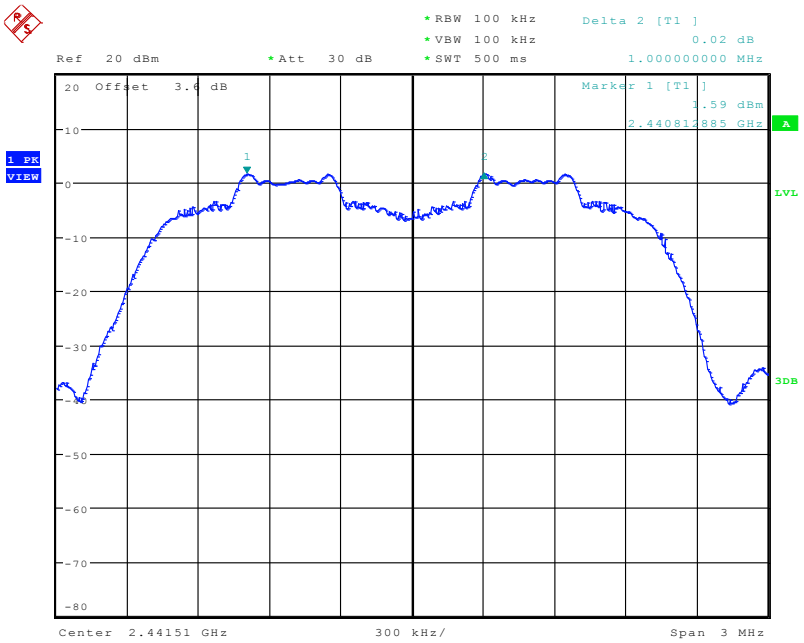
Date: 23.FEB.2011 20:00:18

Channel Separation Plot on Channel 0~1 / 2402 MHz ~ 2403 MHz



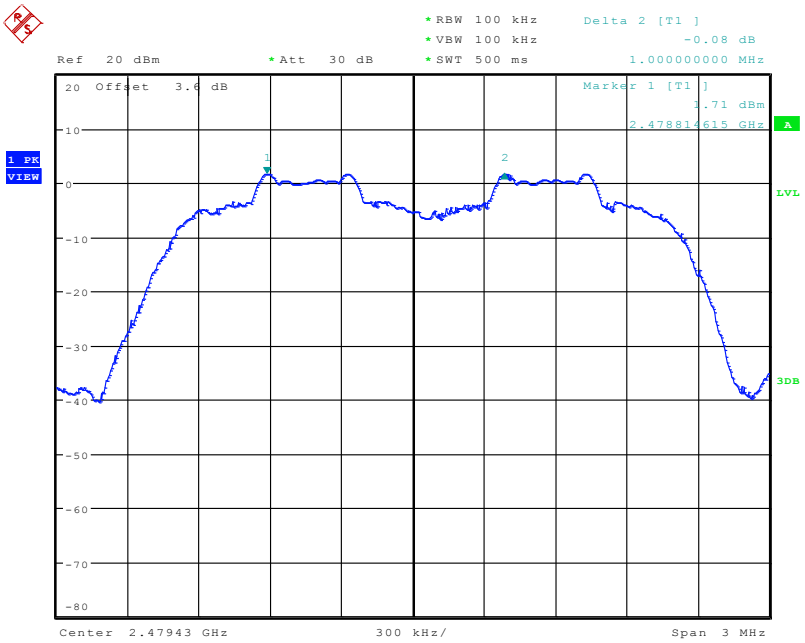
Date: 23.FEB.2011 19:50:02

Channel Separation Plot on Channel 39~40 / 2441 MHz ~ 2442 MHz



Date: 23.FEB.2011 19:57:46

Channel Separation Plot on Channel 77~78 / 2479 MHz ~ 2480 MHz



Date: 23.FEB.2011 20:14:27

3.4 Number of Hopping Frequency Measurement

3.4.1 Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels.

3.4.2 Measuring Instruments and Setting

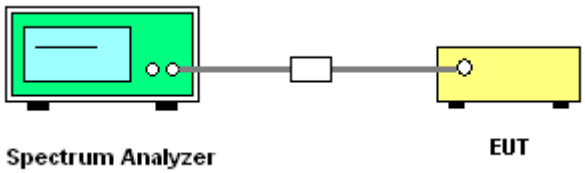
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized.
3. Observe frequency hopping in 2400MHz~2483.5MHz, there are at least 75 non-overlapping channels.

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

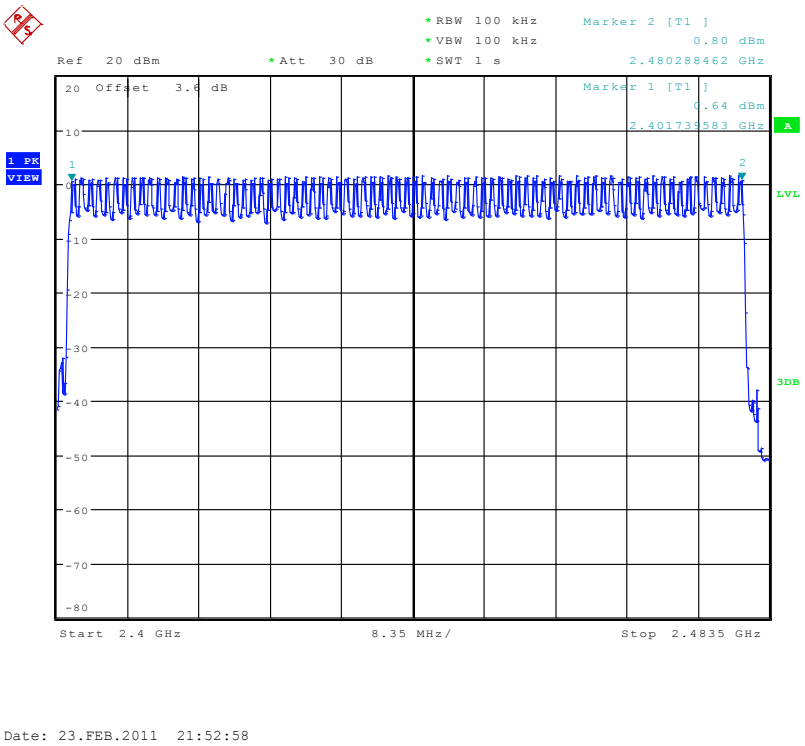
The EUT was programmed to be in continuously transmitting mode.

3.4.7 Test Result of Number of Hopping Frequency

Final Test Date	Feb. 23, 2011	Test Site No.	TH01-HY
Temperature	25℃	Humidity	62%
Test Engineer	Ian	Configurations	8DPSK

Modulation Type	Channel No.	Frequency (MHz)	Hopping Ch. (Channels)	Min. Limit (Channels)	Test Result
8DPSK	0 ~ 78	2402 ~ 2480	79	75	**Complies**

Number of Hopping Channel Plot on Channel 0~78 / 2402 MHz ~ 2480 MHz



3.5 Dwell Time Measurement

3.5.1 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

3.5.2 Measuring Instruments and Setting

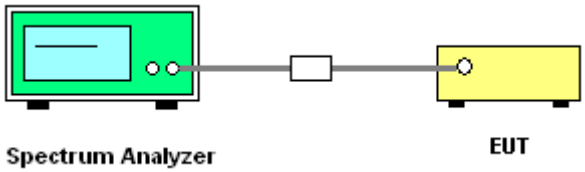
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 MHz
Detector	Peak
Trace	Single Trigger

3.5.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
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 time duration of one single pulse.
7. Set the EUT for DH5, DH3 and DH1 packet transmitting.
8. Measure the maximum time duration of one single pulse.
9. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds
10. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 5.06 x 31.6 = 160 within 31.6 seconds.
11. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.

3.5.4 Test Setup Layout



3.5.5 Test Deviation

There is no deviation with the original standard.

3.5.6 EUT Operation during Test

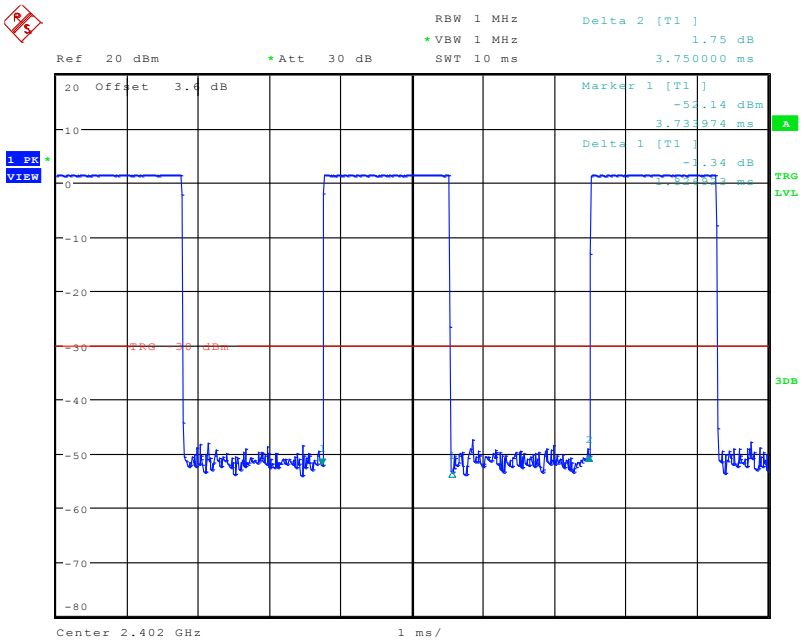
The EUT was programmed to be in continuously transmitting mode.

3.5.7 Test Result of Dwell Time

Final Test Date	Feb. 23, 2011	**Test Site No.**	TH01-HY
Temperature	25℃	**Humidity**	62%
Test Engineer	Ian	**Configurations**	8DPSK 3DH1/3DH3/3DH5

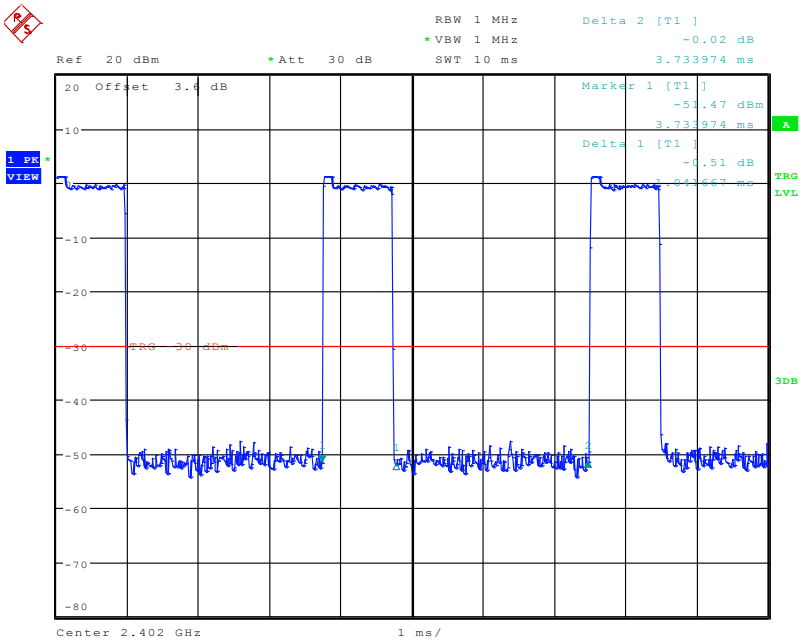
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402 MHz	1.8269	0.1949	0.4000	**Complies**
DH3	2402 MHz	1.0417	0.1667	0.4000	**Complies**
DH1	2402 MHz	0.8013	0.2564	0.4000	**Complies**
DH5	2441 MHz	1.8590	0.1983	0.4000	**Complies**
DH3	2441 MHz	1.0737	0.1718	0.4000	**Complies**
DH1	2441 MHz	0.7532	0.2410	0.4000	**Complies**
DH5	2480 MHz	1.8269	0.1949	0.4000	**Complies**
DH3	2480 MHz	1.0256	0.1641	0.4000	**Complies**
DH1	2480 MHz	0.7692	0.2462	0.4000	**Complies**

DH5 Dwell Time Plot on Channel 0 / 2402 MHz



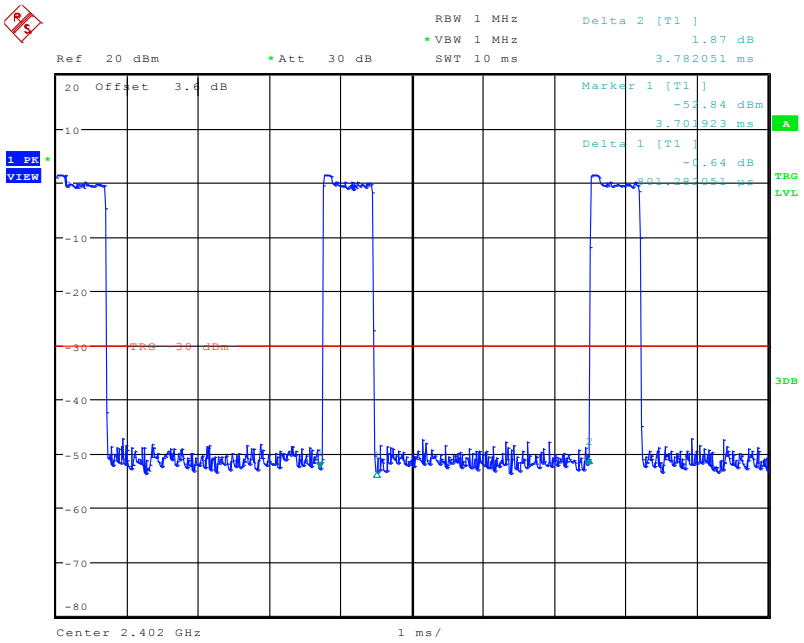
Date: 23.FEB.2011 20:55:58

DH3 Dwell Time Plot on Channel 0 / 2402 MHz



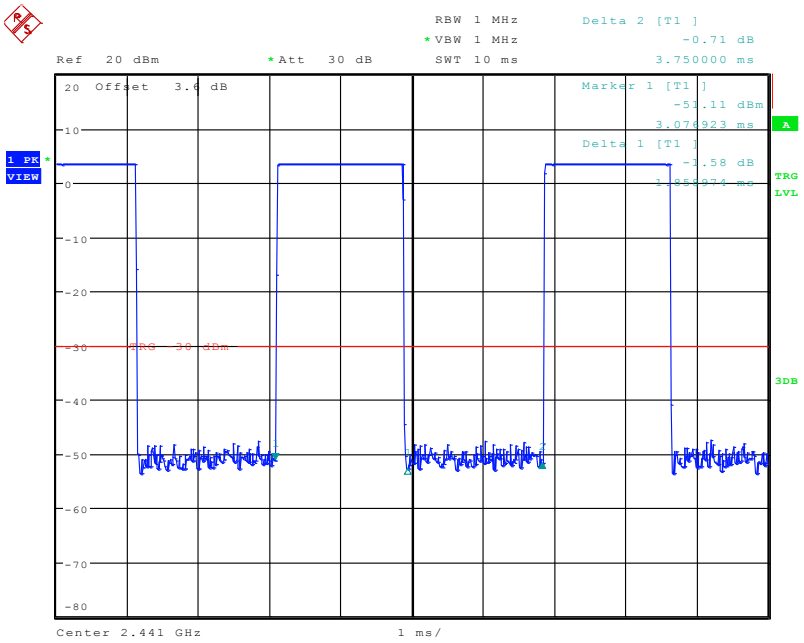
Date: 23.FEB.2011 18:09:25

DH1 Dwell Time Plot on Channel 0 / 2402 MHz



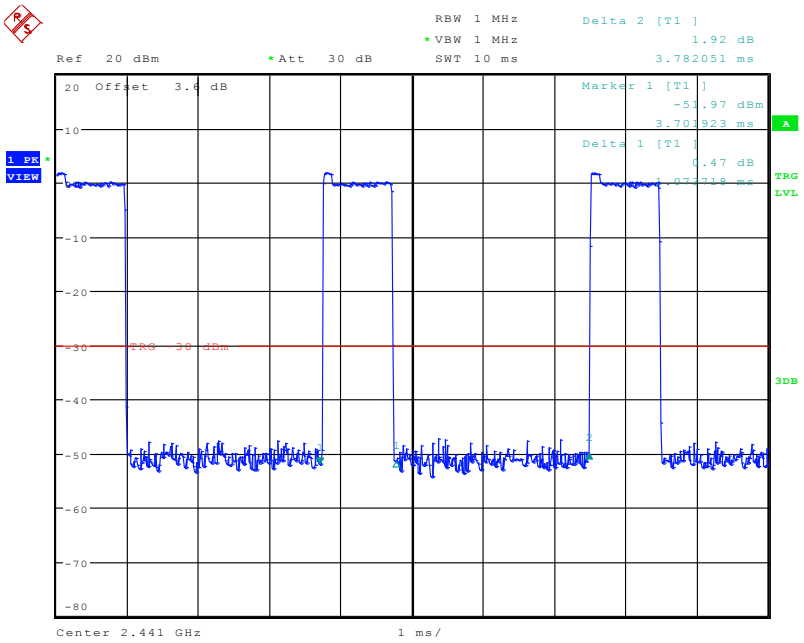
Date: 23.FEB.2011 18:01:08

DH5 Dwell Time Plot on Channel 39 / 2441 MHz



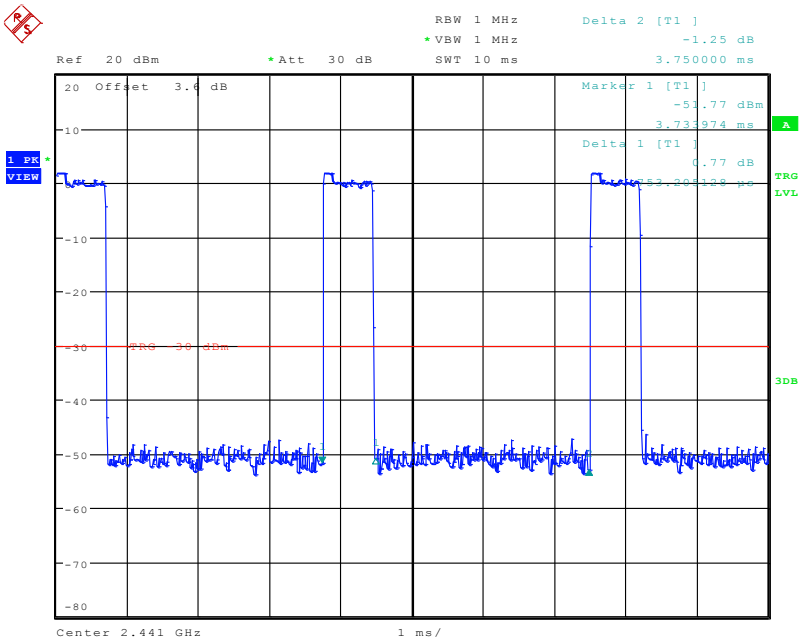
Date: 23.FEB.2011 18:19:32

DH3 Dwell Time Plot on Channel 39 / 2441 MHz



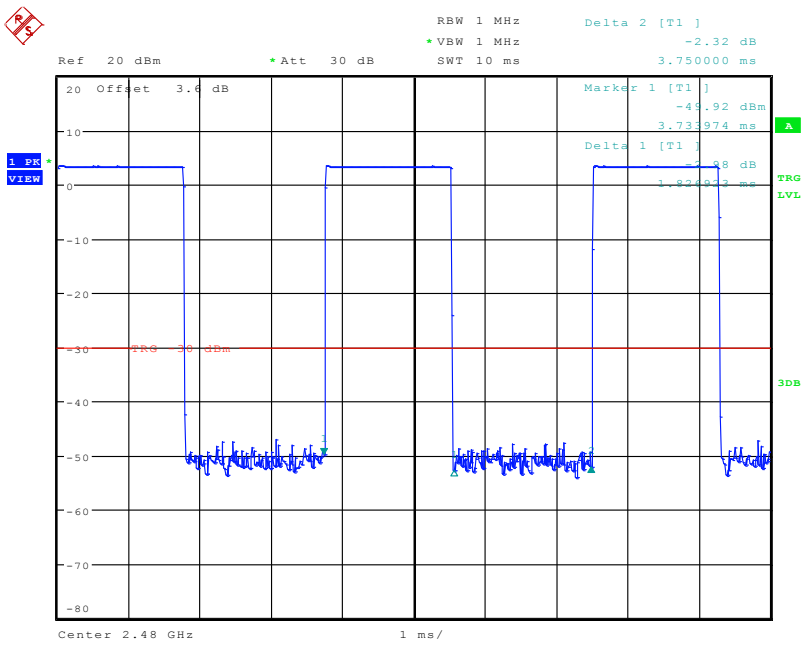
Date: 23.FEB.2011 18:11:26

DH1 Dwell Time Plot on Channel 39 / 2441 MHz



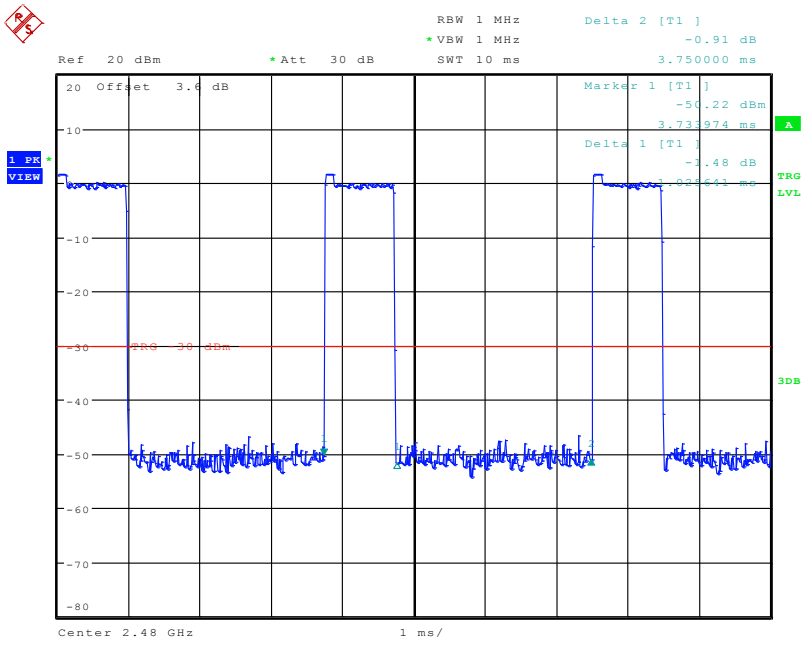
Date: 23.FEB.2011 18:03:22

DH5 Dwell Time Plot on Channel 78 / 2480 MHz



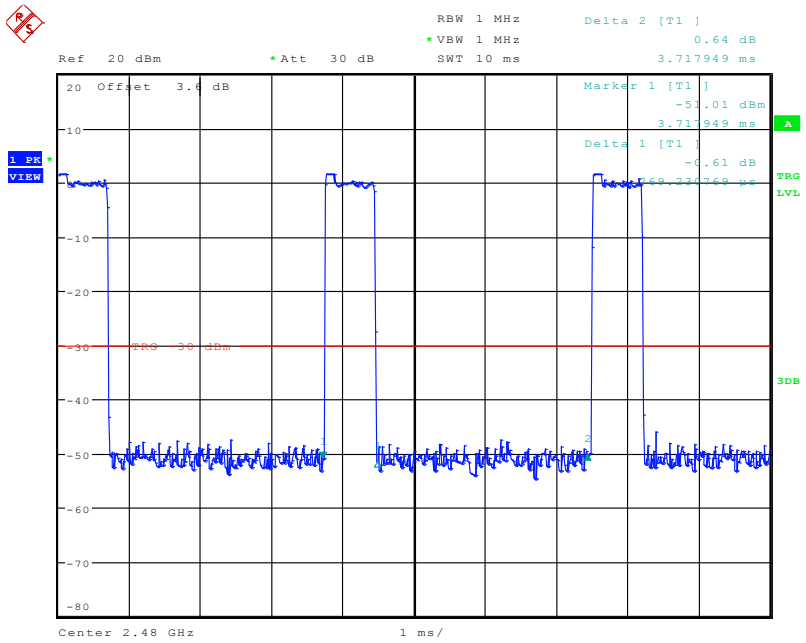
Date: 23.FEB.2011 18:21:05

DH3 Dwell Time Plot on Channel 78 / 2480 MHz



Date: 23.FEB.2011 18:13:08

DH1 Dwell Time Plot on Channel 78 / 2480 MHz



Date: 23.FEB.2011 18:06:09

3.6 Radiated Emissions Measurement

3.6.1 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

3.6.2 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)	1MHz / 1MHz for peak

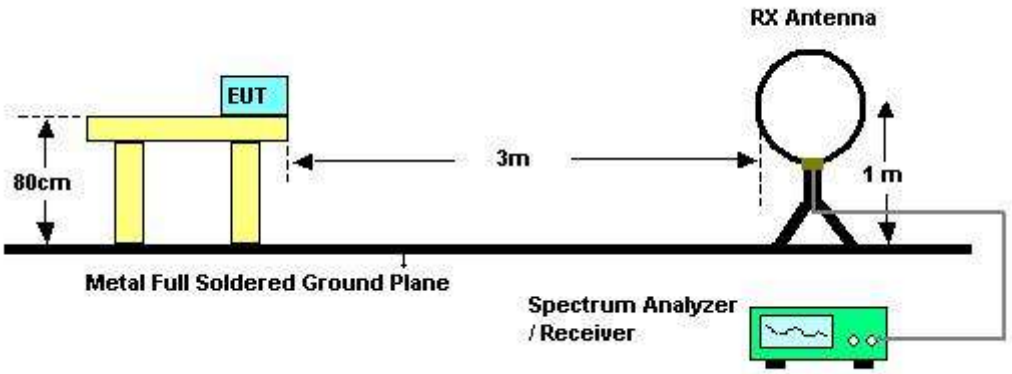
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.6.3 Test Procedures

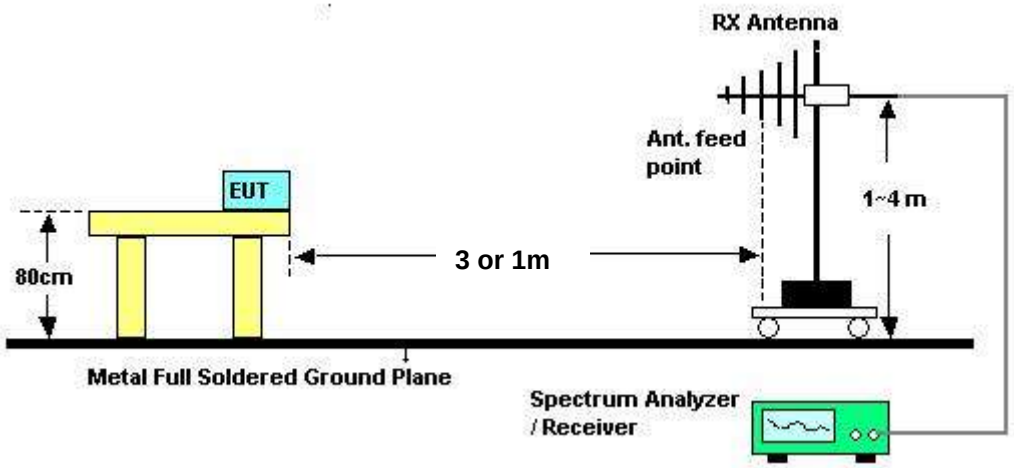
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

3.6.4 Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

3.6.5 Test Deviation

There is no deviation with the original standard.

3.6.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Final Test Date	Jan. 18, 2011	**Test Site No.**	03CH02-HY
Temperature	21.7℃	**Humidity**	53%
Test Engineer	Daniel		

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 20dB below the permissible value has no need to be reported.

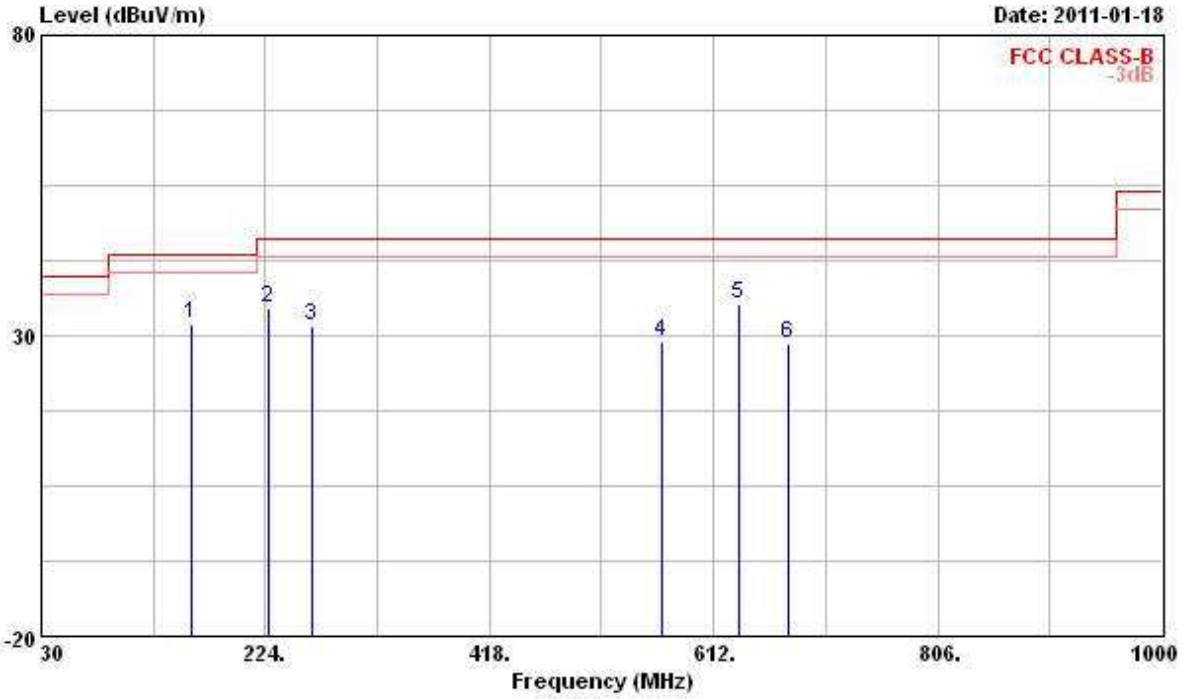
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.6.8 Results of Radiated Emissions (30MHz~1GHz)

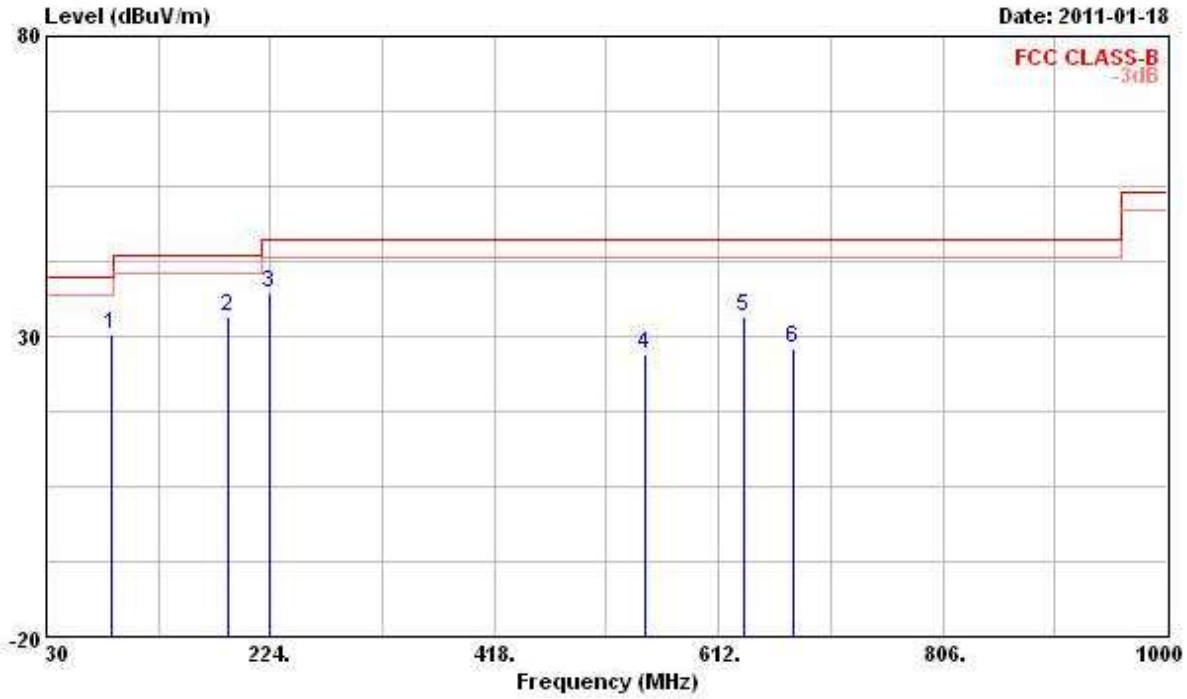
Final Test Date	Jan. 18, 2011	Test Site No.	03CH02-HY
Temperature	21.7℃	Humidity	53%
Test Engineer	Daniel	Configuration	Mode 1

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	159.980	32.03	-11.47	43.50	46.76	10.55	2.09	27.37	Peak
2 @	225.940	34.75	-11.25	46.00	46.96	12.21	2.51	26.93	Peak
3 @	264.740	31.59	-14.41	46.00	42.44	13.21	2.75	26.81	Peak
4 @	567.380	28.90	-17.10	46.00	33.98	19.22	3.86	28.16	Peak
5 @	634.310	35.41	-10.59	46.00	39.63	19.72	4.18	28.12	Peak
6 @	676.990	28.72	-17.28	46.00	33.29	19.15	4.32	28.04	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	86.260	30.42	-9.58	40.00	47.94	8.73	1.46	27.71	Peak
2 @	187.140	33.18	-10.32	43.50	47.72	10.41	2.24	27.19	Peak
3 @	223.030	37.10	-8.90	46.00	49.45	12.11	2.49	26.95	Peak
4	548.950	26.99	-19.01	46.00	32.68	18.69	3.78	28.16	Peak
5 @	634.310	33.20	-12.80	46.00	37.42	19.72	4.18	28.12	Peak
6 @	676.990	28.12	-17.88	46.00	32.69	19.15	4.32	28.04	Peak

Note:

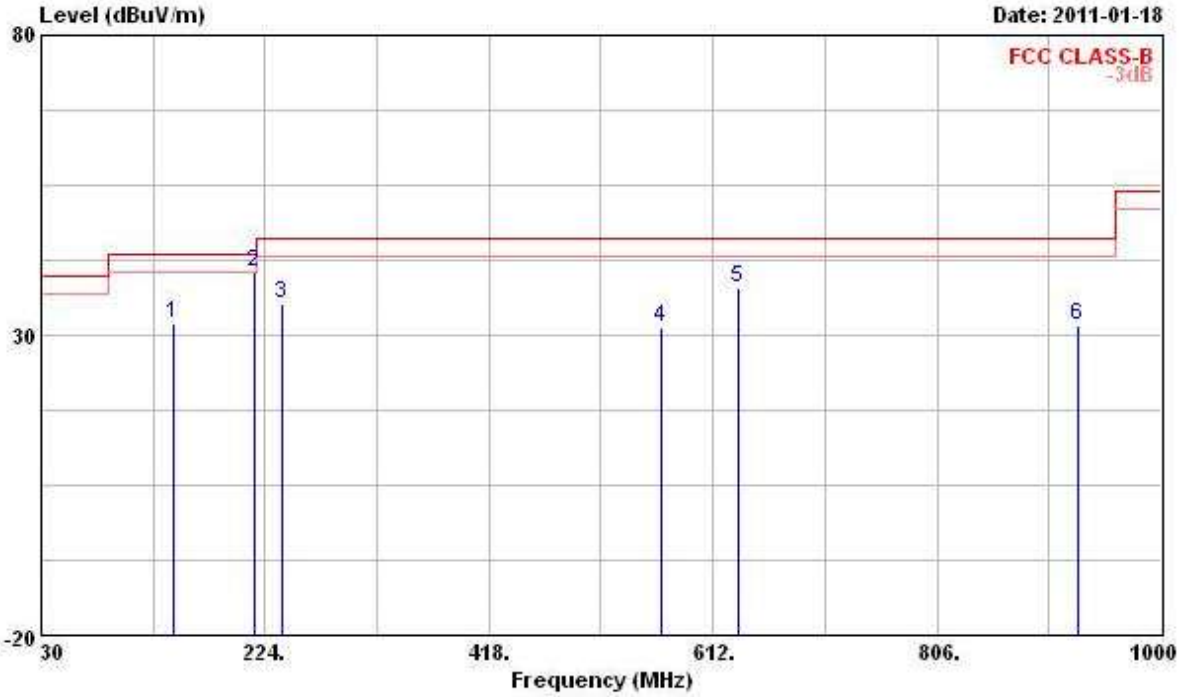
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

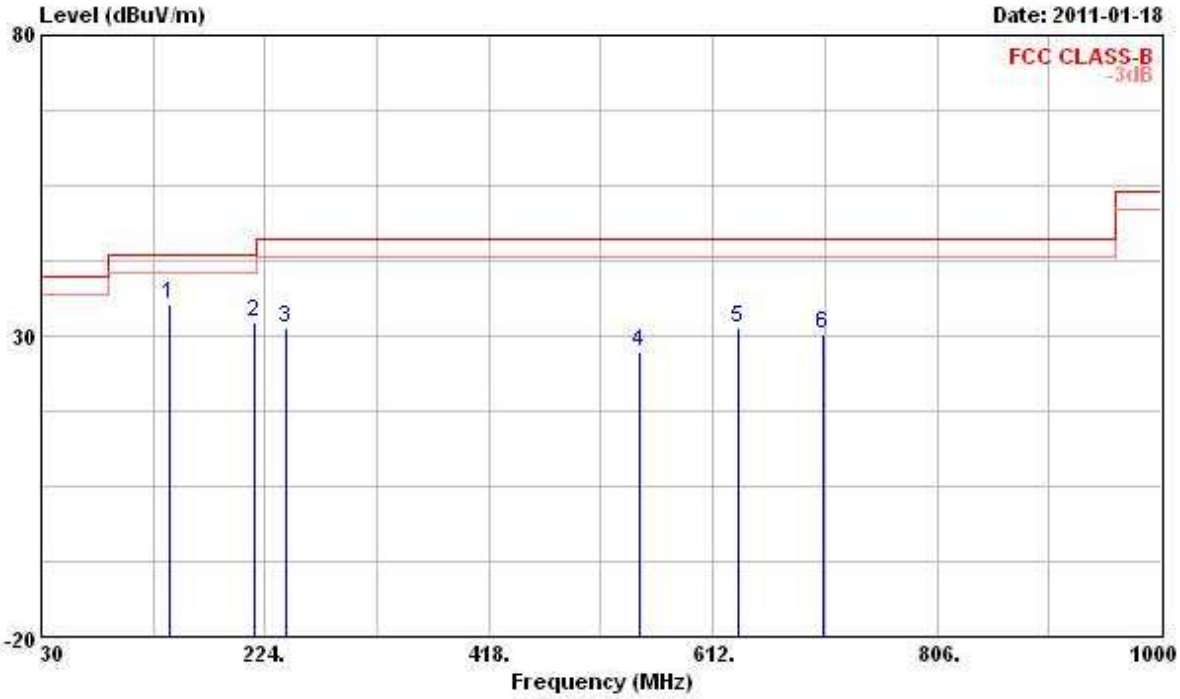
Final Test Date	Jan. 18, 2011	**Test Site No.**	03CH02-HY
Temperature	21.7℃	**Humidity**	53%
Test Engineer	Daniel	**Configuration**	Mode 2

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	144.460	32.11	-11.39	43.50	46.17	11.40	1.99	27.45	Peak
2 @	214.300	40.38	-3.12	43.50	53.11	11.83	2.43	26.99	Peak
3 @	238.550	35.33	-10.67	46.00	46.98	12.62	2.60	26.87	Peak
4 @	567.380	31.44	-14.56	46.00	36.52	19.22	3.86	28.16	Peak
5 @	634.310	37.80	-8.20	46.00	42.02	19.72	4.18	28.12	Peak
6 @	928.220	31.68	-14.32	46.00	33.09	20.73	5.13	27.27	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	140.580	35.27	-8.23	43.50	48.89	11.90	1.95	27.47	Peak
2 @	214.300	32.45	-11.05	43.50	45.18	11.83	2.43	26.99	Peak
3 @	242.430	31.35	-14.65	46.00	42.82	12.75	2.63	26.85	Peak
4 @	548.950	27.42	-18.58	46.00	33.11	18.69	3.78	28.16	Peak
5 @	634.310	31.26	-14.74	46.00	35.48	19.72	4.18	28.12	Peak
6 @	708.030	30.28	-15.72	46.00	34.88	18.97	4.41	27.98	Peak

Note:

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

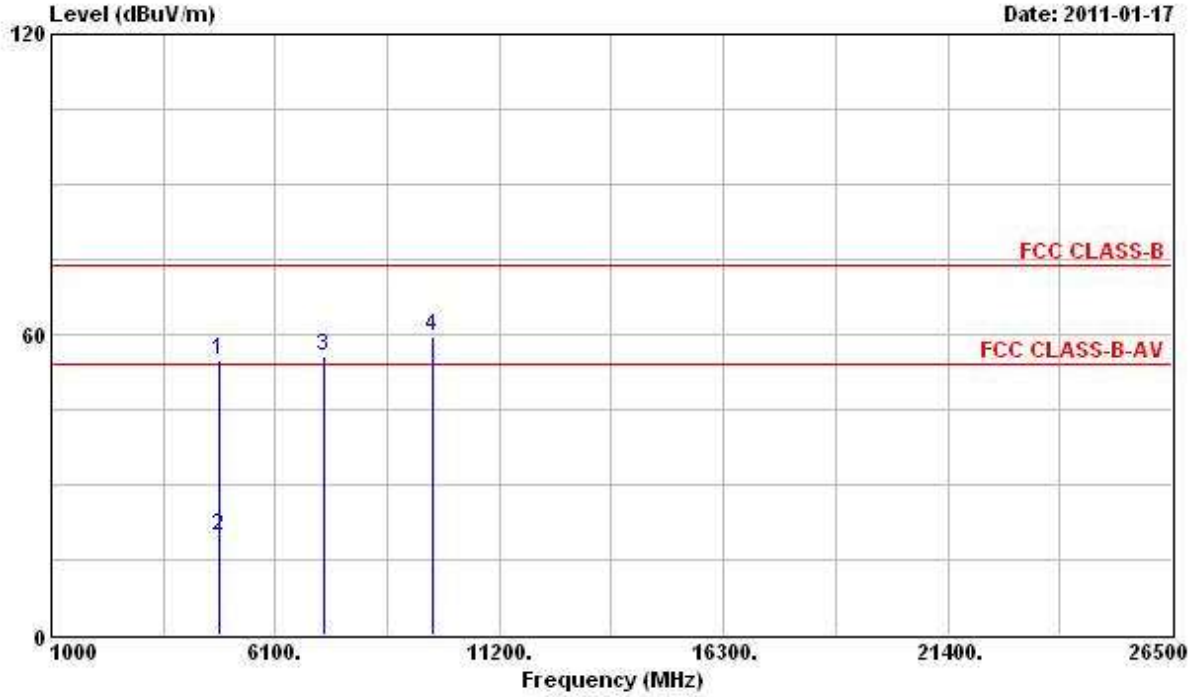
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

3.6.9 Results for Radiated Emissions (1GHz~10th Harmonic)

Final Test Date	Jan. 17, 2011	Test Site No.	03CH02-HY
Temperature	21.7℃	Humidity	53%
Test Engineer	Daniel	Configurations	Channel 0

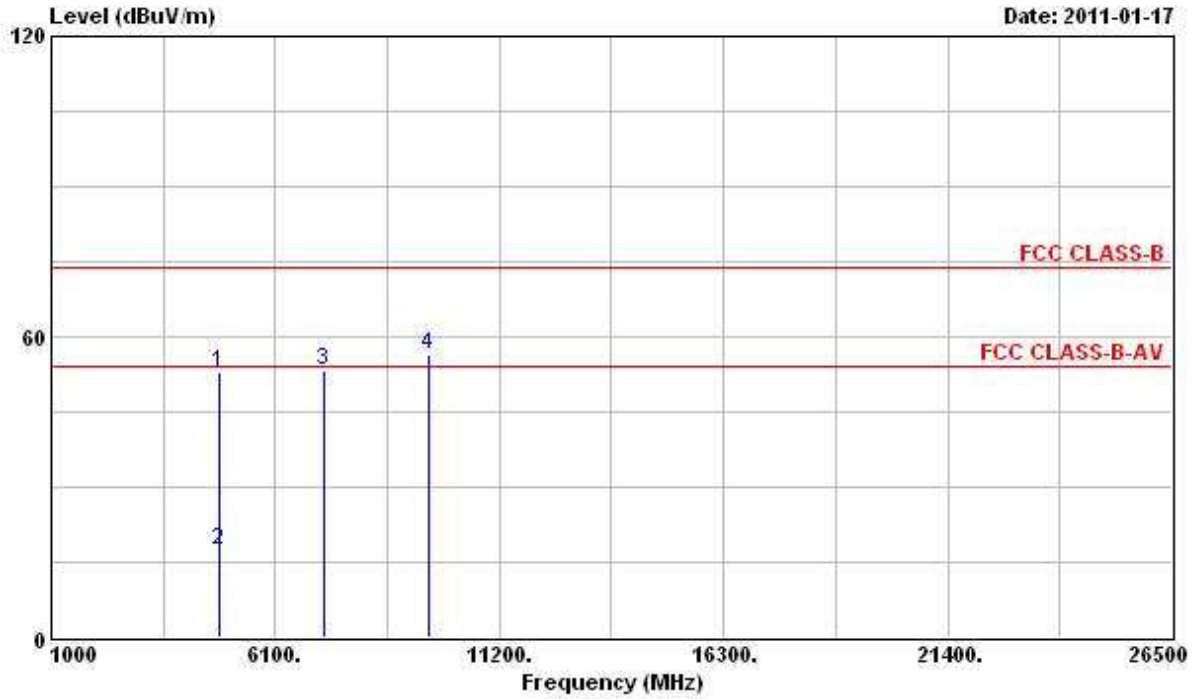
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4804.000	54.84	-19.16	74.00	49.08	35.73	4.58	34.55	Peak
2	4804.000	19.66	-34.34	54.00	13.90	35.73	4.58	34.55	Average
3 @	7206.000	55.69			46.52	37.84	5.62	34.29	Peak
4 @	9688.000	59.49			48.31	39.43	6.35	34.60	Peak

Note: The items 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical

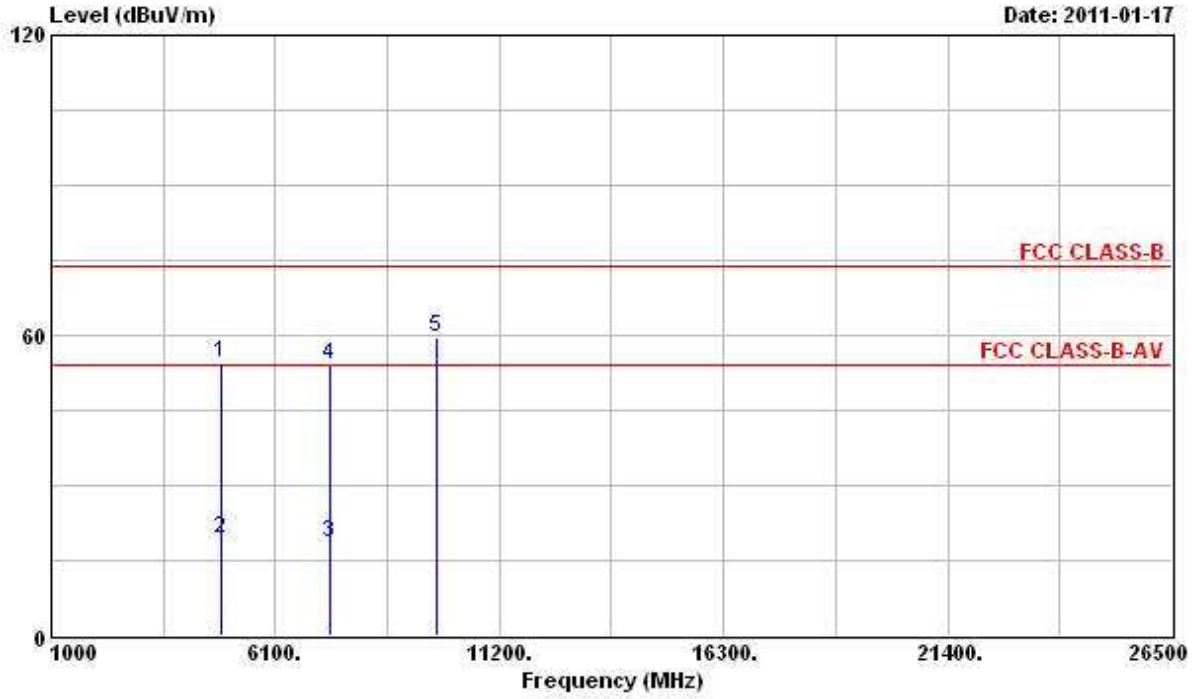


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4804.000	52.71	-21.29	74.00	47.57	35.11	4.58	34.55	Peak
2	4804.000	17.53	-36.47	54.00	12.39	35.11	4.58	34.55	Average
3	7206.000	53.29			45.08	36.88	5.62	34.29	Peak
4 @	9608.000	56.46			46.24	38.52	6.34	34.64	Peak

Note: The items 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Final Test Date	Jan. 17, 2011	**Test Site No.**	03CH02-HY
Temperature	21.7℃	**Humidity**	53%
Test Engineer	Daniel	**Configurations**	Channel 39

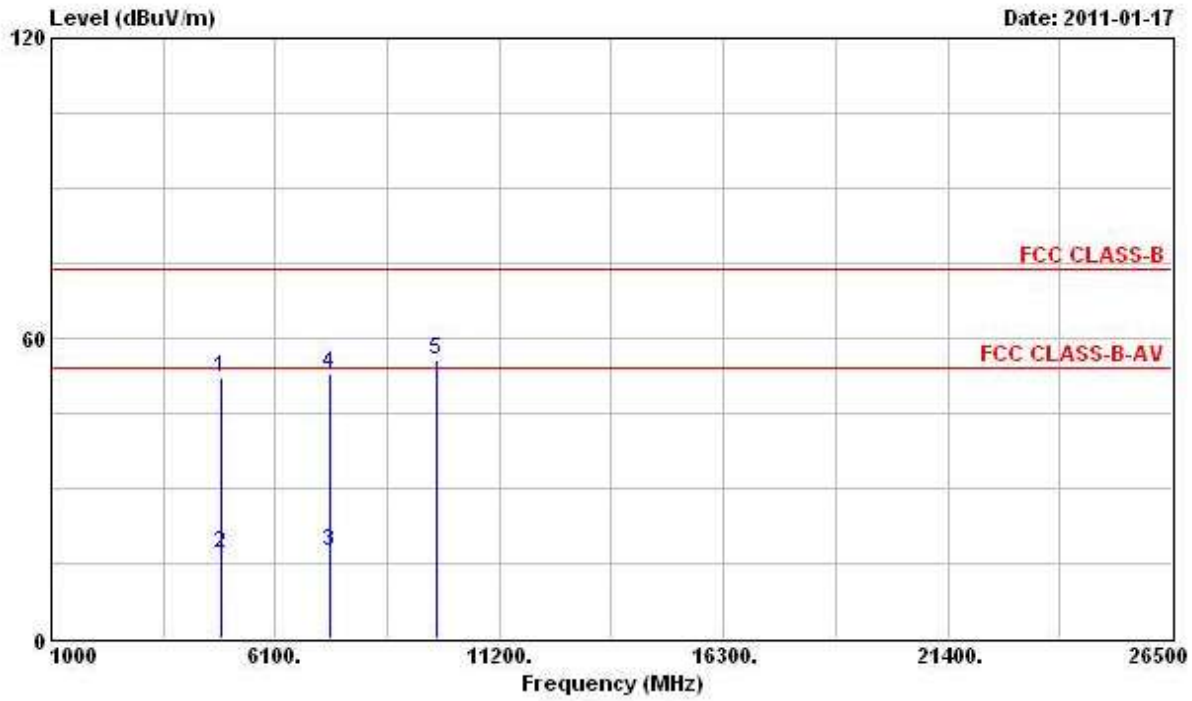
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4882.000	54.55	-19.45	74.00	48.53	35.83	4.64	34.45	Peak
2	4882.000	19.37	-34.63	54.00	13.35	35.83	4.64	34.45	Average
3	7323.000	18.73	-35.27	54.00	9.51	37.87	5.64	34.29	Average
4	7323.000	53.91	-20.09	74.00	44.69	37.87	5.64	34.29	Peak
5 @	9764.000	59.47			48.15	39.53	6.36	34.57	Peak

Note: The item 5 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical

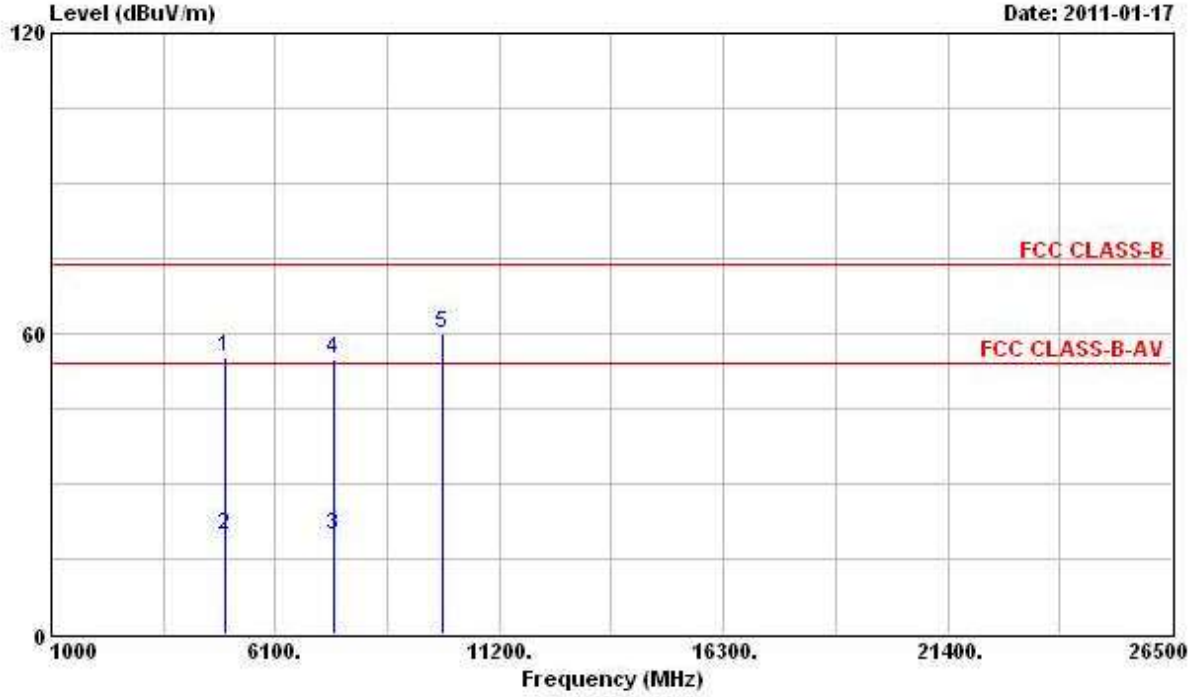


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4882.000	52.15	-21.85	74.00	46.78	35.18	4.64	34.45	Peak
2	4882.000	16.97	-37.03	54.00	11.60	35.18	4.64	34.45	Average
3	7323.000	17.54	-36.46	54.00	9.26	36.93	5.64	34.29	Average
4	7323.000	52.72	-21.28	74.00	44.44	36.93	5.64	34.29	Peak
5 @	9764.000	55.50			44.98	38.73	6.36	34.57	Peak

Note: The item 5 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Final Test Date	Jan. 17, 2011	Test Site No.	03CH02-HY
Temperature	21.7℃	Humidity	53%
Test Engineer	Daniel	Configurations	Channel 78

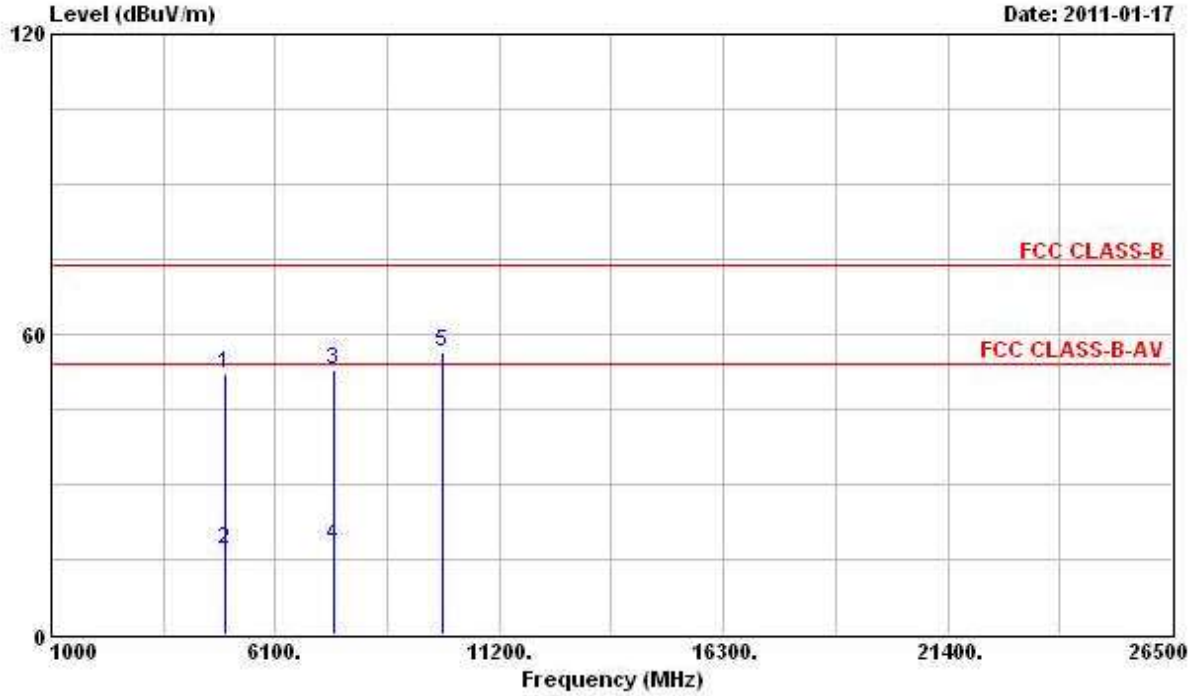
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4960.000	55.09	-18.91	74.00	48.78	35.95	4.71	34.35	Peak
2	4960.000	19.91	-34.09	54.00	13.60	35.95	4.71	34.35	Average
3	7440.000	19.57	-34.43	54.00	10.32	37.89	5.65	34.29	Average
4	7440.000	54.75	-19.25	74.00	45.50	37.89	5.65	34.29	Peak
5 @	9920.000	59.86			48.26	39.72	6.39	34.51	Peak

Note: The item 5 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4960.000	52.10	-21.90	74.00	46.47	35.27	4.71	34.35	Peak
2	4960.000	16.92	-37.08	54.00	11.29	35.27	4.71	34.35	Average
3	7440.000	52.86	-21.14	74.00	44.52	36.98	5.65	34.29	Peak
4	7440.000	17.68	-36.32	54.00	9.34	36.98	5.65	34.29	Average
5 @	9920.000	56.39			45.59	38.92	6.39	34.51	Peak

Note: The item 5 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

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

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

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

3.7 Band Edge and Fundamental Emissions Measurement

3.7.1 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

3.7.2 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 Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz /1MHz for Peak

3.7.3 Test Procedures

1. The test procedure is the same as section 3.5.3, only the frequency range investigated is limited to 100MHz around band edges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

3.7.4 Test Setup Layout

This test setup layout is the same as that shown in section 3.6.4.

3.7.5 Test Deviation

There is no deviation with the original standard.

3.7.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.7.7 Test Result of Band Edge and Fundamental Emissions

Final Test Date	Jan. 17, 2011	Test Site No.	03CH02-HY
Temperature	21.7℃	Humidity	53%
Test Engineer	Daniel	Configurations	Channel 0, 39, 78

1Mbps

Channel 0

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	@ 2348.380	60.66	-13.34	74.00	26.09	31.58	2.99	0.00	Peak
2	@ 2401.770	68.44			33.63	31.79	3.02	0.00	Peak
1	@ 2319.500	48.13	-5.87	54.00	13.66	31.51	2.96	0.00	Average
2	@ 2401.770	64.92			30.11	31.79	3.02	0.00	Average

The item 2 is Fundamental Emissions.

Channel 39

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	@ 2441.100	72.47			37.43	31.99	3.05	0.00	Peak
1	@ 2441.100	69.94			34.90	31.99	3.05	0.00	Average

The item 1 is Fundamental Emissions.

Channel 78

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	@ 2479.860	76.71			41.50	32.13	3.08	0.00	Peak
2	@ 2488.410	60.35	-13.65	74.00	25.07	32.20	3.08	0.00	Peak
1	@ 2480.050	74.64			39.43	32.13	3.08	0.00	Average
2	@ 2483.500	48.46	-5.54	54.00	13.25	32.13	3.08	0.00	Average

The item 1 is Fundamental Emissions.

Note:

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

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

2Mbps

Channel 0

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2338.500	60.67	-13.33	74.00	26.13	31.58	2.96	0.00	Peak
2 @	2402.340	67.33			32.52	31.79	3.02	0.00	Peak
1 @	2321.780	48.15	-5.85	54.00	13.68	31.51	2.96	0.00	Average
2 @	2401.770	59.75			24.94	31.79	3.02	0.00	Average

The item 2 is Fundamental Emissions.

Channel 39

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2441.100	70.21			35.17	31.99	3.05	0.00	Peak
1 @	2441.100	63.56			28.52	31.99	3.05	0.00	Average

The item 1 is Fundamental Emissions.

Channel 78

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2480.050	75.32			40.11	32.13	3.08	0.00	Peak
2 @	2490.690	60.80	-13.20	74.00	25.52	32.20	3.08	0.00	Peak
1 @	2480.050	69.16			33.95	32.13	3.08	0.00	Average
2 @	2487.460	48.41	-5.59	54.00	13.20	32.13	3.08	0.00	Average

The item 1 is Fundamental Emissions.

Note:

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

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

3Mbps

Channel 0

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2349.330	60.29	-13.71	74.00	25.72	31.58	2.99	0.00	Peak
2 @	2401.770	66.96			32.15	31.79	3.02	0.00	Peak
1 @	2322.730	48.13	-5.87	54.00	13.66	31.51	2.96	0.00	Average
2 @	2401.770	59.46			24.65	31.79	3.02	0.00	Average

The item 2 is Fundamental Emissions.

Channel 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2441.100	70.79			35.75	31.99	3.05	0.00	Peak
1 @	2441.100	64.02			28.98	31.99	3.05	0.00	Average

The item 1 is Fundamental Emissions.

Channel 78

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	2480.050	74.77			39.56	32.13	3.08	0.00	Peak
2 @	2488.410	60.32	-13.68	74.00	25.04	32.20	3.08	0.00	Peak
1 @	2480.050	68.67			33.46	32.13	3.08	0.00	Average
2 @	2483.500	48.40	-5.60	54.00	13.19	32.13	3.08	0.00	Average

The item 1 is Fundamental Emissions.

Note:

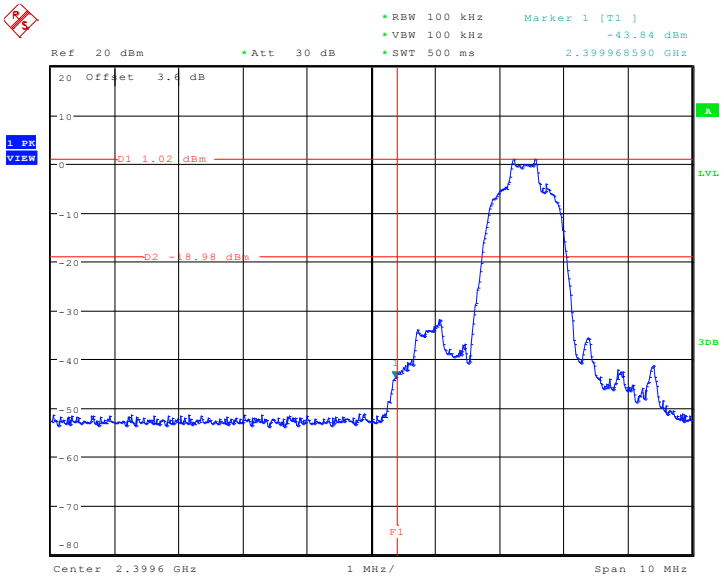
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

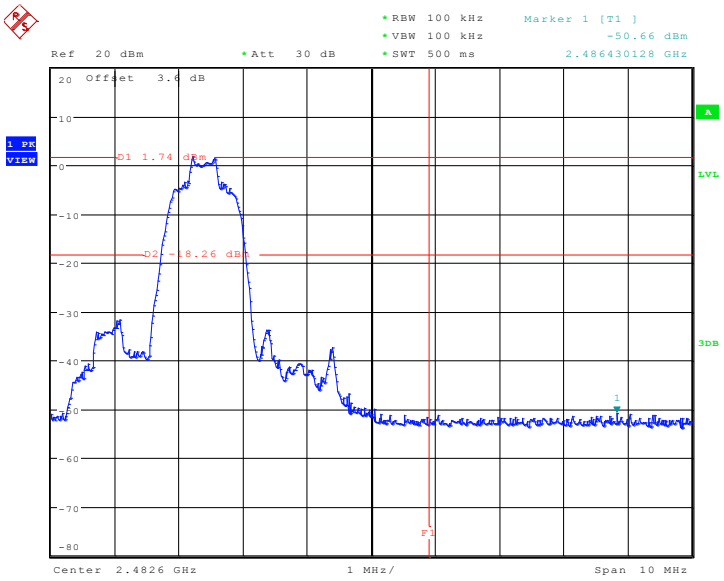
For Emission not in Restricted Band

Final Test Date	Feb. 23, 2011	**Test Site No.**	TH01-HY
Temperature	25℃	**Humidity**	62%
Test Engineer	Ian	**Configurations**	8DPSK

Low Band Edge Plot on Channel 0 / 2402 MHz



High Band Edge Plot on Channel 78 / 2480 MHz



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connector Construction

Please refer to section 2.3 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
Receiver	R&S	ESCS 30	100357	9 kHz - 2.75 GHz	Nov. 16, 2010	Conduction (CO01-NH)
LISN	SCHAFFNER	NNB41	04/10153	9kHz – 30MHz	Nov. 16, 2010	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	N/A	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz – 30MHz	Dec. 14, 2010	Conduction (CO01-NH)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Jan. 06, 2011	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Apr. 16, 2010	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Oct. 22, 2010	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 02, 2010	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 02, 2010	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 30, 2010	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	Jan. 06, 2011	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	Jan. 06, 2011	Conducted (TH01-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	Jul. 26, 2010*	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100305/040	9 kHz - 40GHz	Feb. 02, 2010	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz - 1 GHz 3m	May 01, 2010	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100 kHz – 1.3 GHz	Jul. 23, 2010	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz – 26.5 GHz	Jul. 23, 2010	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz~18GHz	Nov. 11, 2010	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Feb. 26, 2010	Radiation (03CH02-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX106	03CH02-HY	1GHz~40GHz	Feb. 26, 2010	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz - 2 GHz	Oct. 16, 2010	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)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 29, 2010*	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	: 886-2-2696-2468
	FAX	: 886-2-2696-2255
HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	: 886-3-327-3456
	FAX	: 886-3-318-0055
LINKOU	ADD	: No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 886-2-2601-1640
	FAX	: 886-2-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 886-2-2631-4739
	FAX	: 886-2-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 886-2-8227-2020
	FAX	: 886-2-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 886-2-2794-8886
	FAX	: 886-2-2794-9777
JHUBEI	ADD	: No.8, Lane 728, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	: 886-3-656-9065
	FAX	: 886-3-656-9085

6 TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-100529

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

Certificate of Accreditation

This is to certify that

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

is accredited in respect of laboratory

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

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : May 29, 2010

P1, total 23 pages

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