



Test Report

Product Name	WIRELESS HAND WRITE TOUCHPAD DEVICES
Model No.	DONGLE
FCC ID	Y5E-RF-DONGLE001

Applicant	YOMORE TECHNOLOGY CO.,LTD.
Address	12F-1, No.151, Chung Cheng 4 Road Cianjin District, Kaohsiung City

Date of Receipt	Jan. 12, 2011
Issued Date	Feb. 08, 2011
Report No.	111341R-RFUSP30V01
Report Version	V1.0

The test results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date: Feb. 08, 2011

Report No.: 111341R-RFUSP30V01



Product Name	WIRELESS HAND WRITE TOUCHPAD DEVICES
Applicant	YOMORE TECHNOLOGY CO.,LTD.
Address	12F-1, No.151, Chung Cheng 4 Road Cianjin District, Kaohsiung City
Manufacturer	5TOUCH TECHNOLOGY CO., LTD.
Model No.	DONGLE
EUT Rated Voltage	DC 5V (Power by USB)
EUT Test Voltage	AC 120V/ 60Hz
Trade Name	Yomore
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2009
Test Result	Complied



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Documented By :

A handwritten signature in blue ink that appears to read "Leven Huang".

(Senior Adm. Specialist / Leven Huang)



Tested By :

A handwritten signature in blue ink that appears to read "Sabrina Tsai".

(Engineer / Sabrina Tsai)



Approved By :

A handwritten signature in black ink that appears to read "Vincent Lin".

(Manager / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	WIRELESS HAND WRITE TOUCHPAD DEVICES
Trade Name	Yomore
Model No.	DONGLE
FCC ID	Y5E-RF-DONGLE001
Frequency Range	2402~2475MHz
Channel Control	Auto
Channel Separation	3MHz / 16MHz
Antenna Type	Chip
Channel Number	21
Type of Modulation	QPSK

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ACX	AT5020 -B2R8HAA	0 dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203

Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 01:	2418 MHz	Channel 02:	2421 MHz	Channel 03:	2424 MHz
Channel 04:	2427 MHz	Channel 05:	2430 MHz	Channel 06:	2433 MHz	Channel 07:	2436 MHz
Channel 08:	2439 MHz	Channel 09:	2442 MHz	Channel 10:	2445 MHz	Channel 11:	2448 MHz
Channel 12:	2451 MHz	Channel 13:	2454 MHz	Channel 14:	2457 MHz	Channel 15:	2460 MHz
Channel 16:	2463 MHz	Channel 17:	2466 MHz	Channel 18:	2469 MHz	Channel 19:	2472 MHz
Channel 20:	2475 MHz						

Note:

1. The EUT is a WIRELESS HAND WRITE TOUCHPAD DEVICES with a built-in 2.4GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.

1.2. Operational Description

The EUT is RF Dongle built-in 2.4GHz transceiver. The operation frequency is from 2402MHz to 2475MHz with QPSK modulation. The signal will be transmitted through 2.4GHz RF signal from the Chip antenna. DC 5V (Power by USB) shall be provided for EUT operation.

Part of a system that operates, Yo-pad must be used. Insert the RF Dongle into the computer, and configure channels before use. If a channel configuration succeeds, an ID will be added into the slot 1 in the upper left corner, and the first light in the Function Selection Area on Yo-pad host will be on.

Test Mode	Mode 1: Transmit
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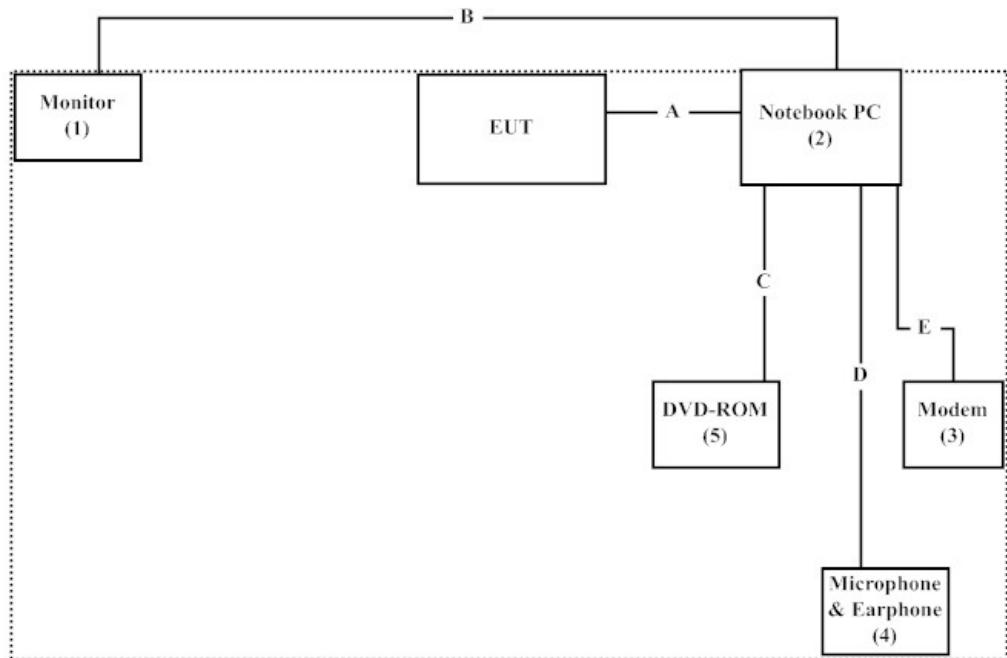
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Monitor	LG	W2261VT	907YHED07356	Non-Shielded, 1.8m
2	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
3	Modem	ACEEX	DM-1414	0102027537	Non-Shielded, 1.8m
4	Microphone & Earphone	PCHOME	N/A	N/A	N/A
5	DVD-ROM	Dell	PD01S	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 1.8m
B	VGA Cable	Shielded, 1.8m
C	USB Cable	Non-Shielded, 1m
D	Microphone & Earphone Cable	Non-Shielded, 1m
E	RS-232 Cable	Non-Shielded, 1.5m

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Execute “Presenter Test.exe” program on the Notebook.
- (3) Configure the test mode and the test channel
- (4) Press “RF Send” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195



Accreditation on NVLAP
NVLAP Lab Code: 200533-0



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FCC Accreditation Number: TW1014



2. Conducted Emission

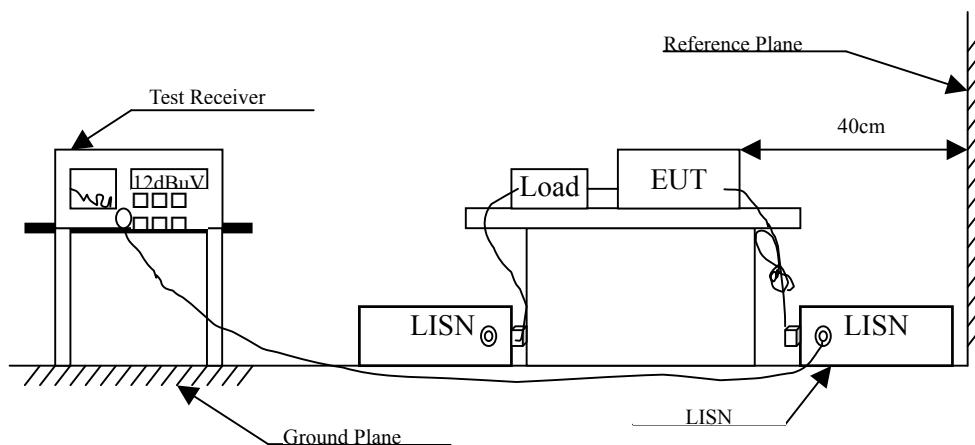
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2010	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2010	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2010	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2010	
5	No.1 Shielded Room				N/A

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 1: Transmit

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.180	9.726	42.280	52.006	-13.137	65.143
0.243	9.679	34.500	44.179	-19.164	63.343
0.302	9.650	29.880	39.530	-22.127	61.657
0.914	9.670	25.760	35.430	-20.570	56.000
2.241	9.680	24.640	34.320	-21.680	56.000
4.116	9.700	31.950	41.650	-14.350	56.000
Average					
0.180	9.726	36.340	46.066	-9.077	55.143
0.243	9.679	26.480	36.159	-17.184	53.343
0.302	9.650	24.000	33.650	-18.007	51.657
0.914	9.670	15.270	24.940	-21.060	46.000
2.241	9.680	22.570	32.250	-13.750	46.000
4.116	9.700	21.950	31.650	-14.350	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmit

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.180	9.733	41.510	51.243	-13.900	65.143
0.241	9.689	33.800	43.489	-19.911	63.400
0.302	9.660	28.490	38.150	-23.507	61.657
0.920	9.670	27.150	36.820	-19.180	56.000
2.119	9.680	25.110	34.790	-21.210	56.000
3.994	9.700	31.920	41.620	-14.380	56.000
Average					
0.180	9.733	35.990	45.723	-9.420	55.143
0.241	9.689	26.150	35.839	-17.561	53.400
0.302	9.660	23.210	32.870	-18.787	51.657
0.920	9.670	16.070	25.740	-20.260	46.000
2.119	9.680	22.820	32.500	-13.500	46.000
3.994	9.700	22.020	31.720	-14.280	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Radiated Emission

3.1. Test Equipment

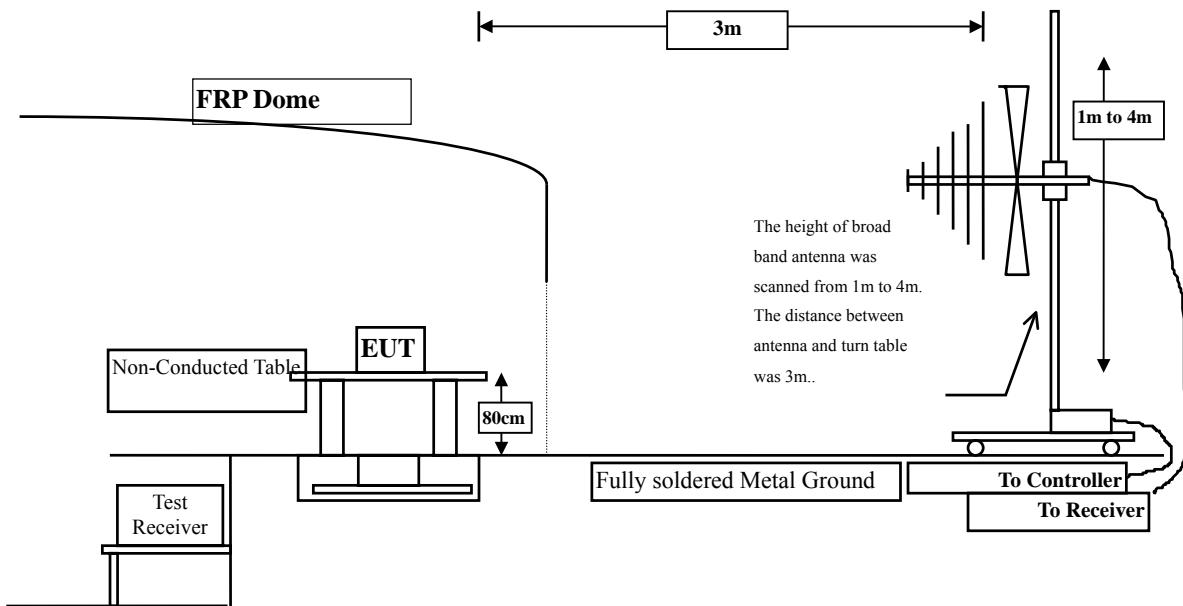
The following test equipment are used during the radiated emission test:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2010
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2010
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

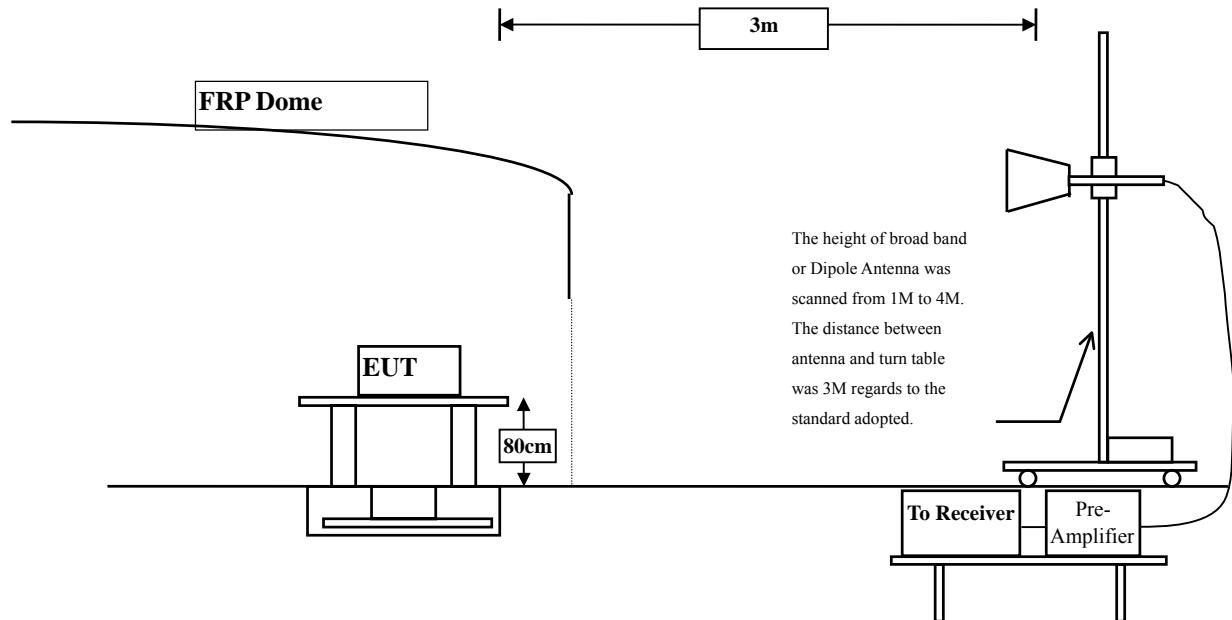
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



3.3. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBuV/m @3m)	(uV/m @3m)	(dBuV/m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested compliance to FCC 47CFR 15.249 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 30MHz - 10th Harmonic of fundamental was investigated.

3.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

3.6. Test Result of Radiated Emission

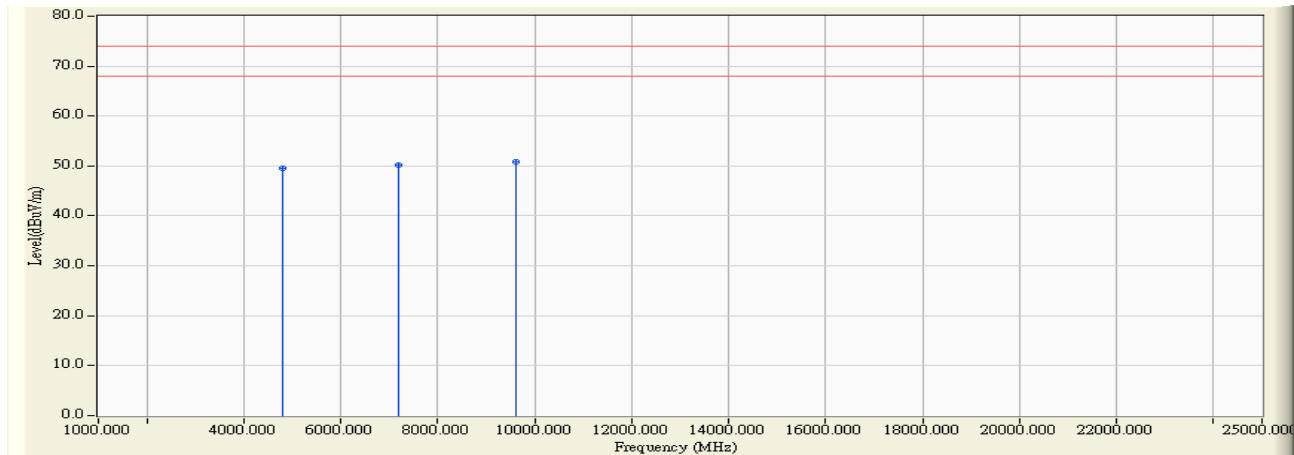
Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmit

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
2402.000	-1.073	78.540	77.468	-36.532	114.000
2445.000	-0.804	77.010	76.206	-37.794	114.000
2475.000	-0.612	76.630	76.018	-37.982	114.000
Average Detector:					
--					
Vertical					
Peak Detector:					
2402.000	-1.729	81.620	79.891	-34.109	114.000
2445.000	-1.521	80.310	78.789	-35.211	114.000
2475.000	-1.352	80.030	78.678	-35.322	114.000
Average Detector:					
--					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2402MHz)



Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
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Horizontal

Peak Detector:

4804.000	3.327	46.120	49.447	-24.553	74.000
7206.000	10.136	40.140	50.276	-23.724	74.000
9608.000	13.706	37.220	50.926	-23.074	74.000

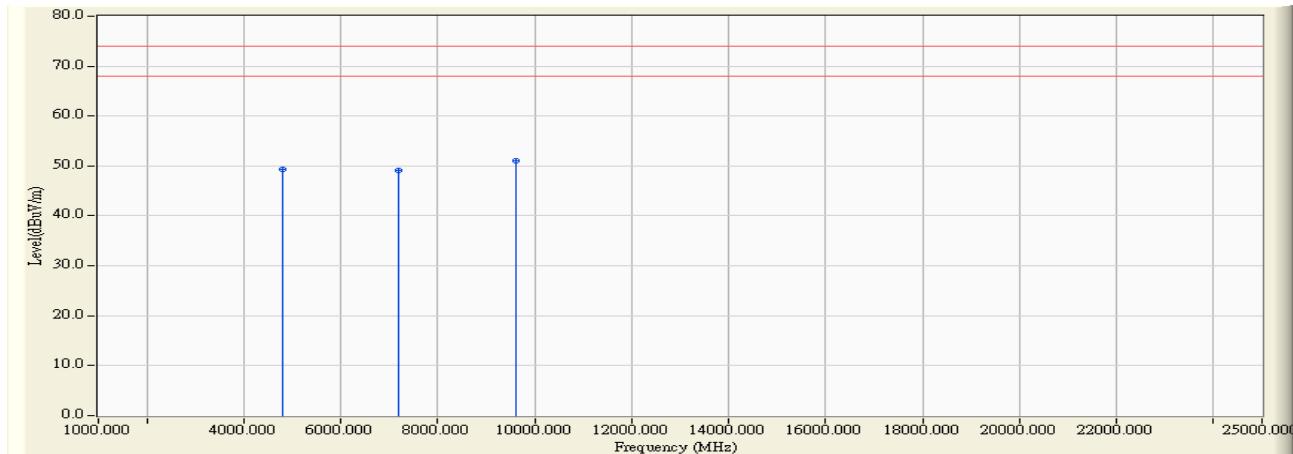
Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2402MHz)



Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Vertical

Peak Detector:

4804.000	6.638	42.790	49.427	-24.573	74.000
7206.000	11.005	38.010	49.015	-24.985	74.000
9608.000	14.103	36.840	50.943	-23.057	74.000

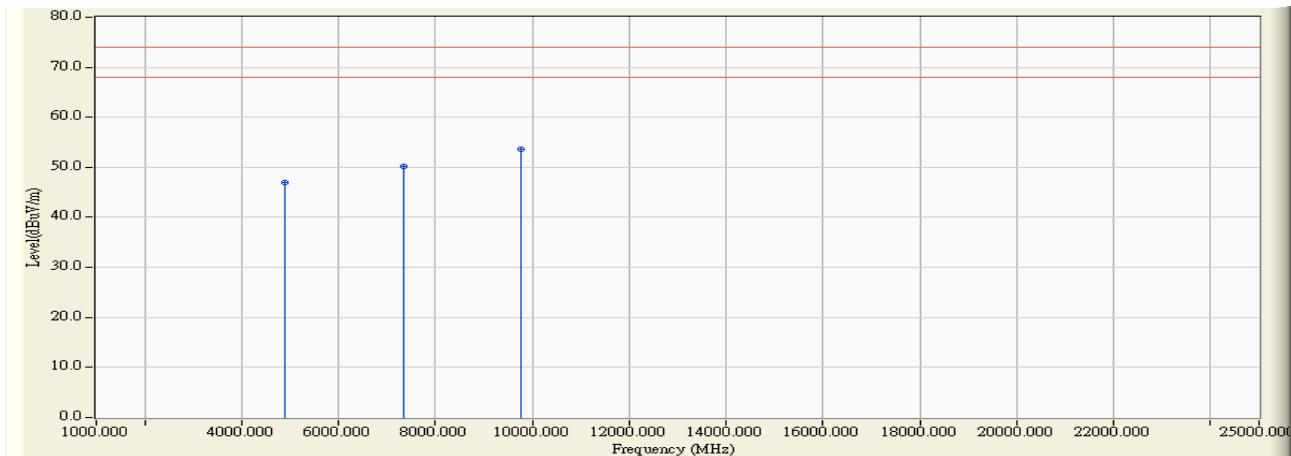
Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2445 MHz)



Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBuV/m

Horizontal

Peak Detector:

4890.000	2.967	44.090	47.057	-26.943	74.000
7335.000	11.899	38.260	50.160	-23.840	74.000
9780.000	12.490	41.030	53.520	-20.480	74.000

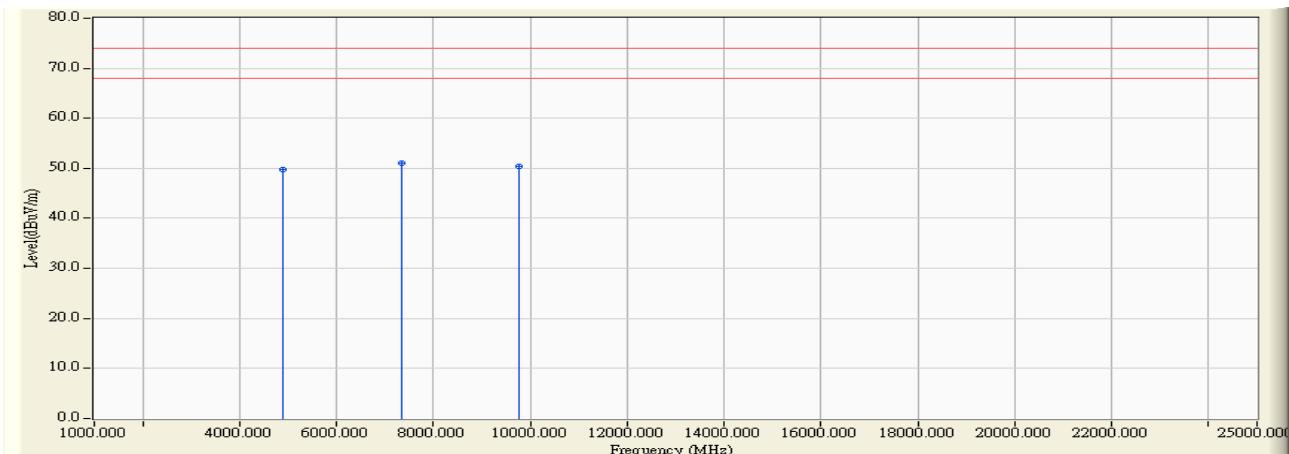
Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2445MHz)



Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Vertical					
Peak Detector:					
4890.000	5.617	44.180	49.797	-24.203	74.000
7335.000	12.827	38.290	51.117	-22.883	74.000
9780.000	12.930	37.510	50.440	-23.560	74.000

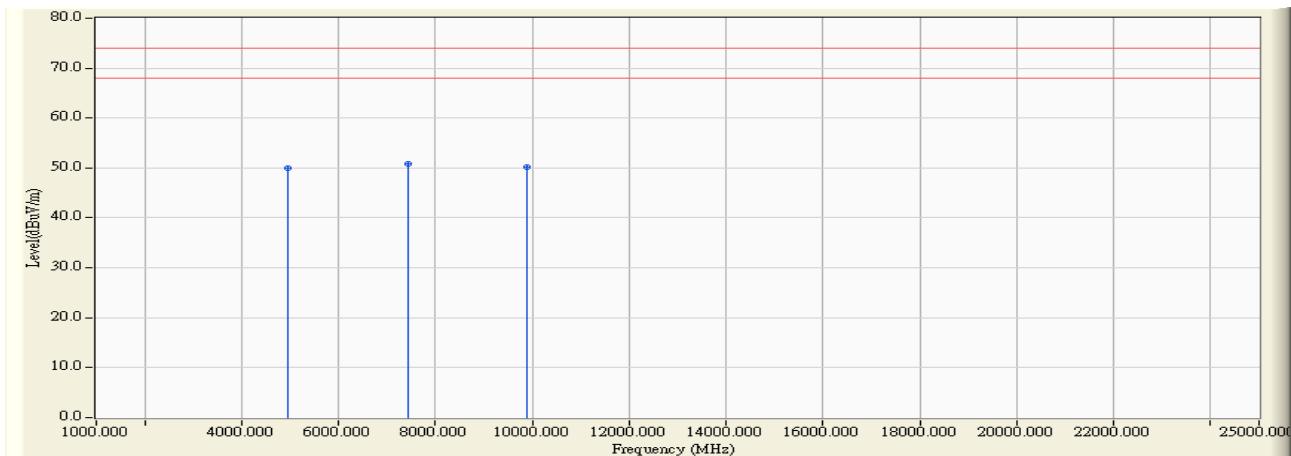
Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2475 MHz)



Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4950.000	2.789	47.220	50.008	-23.992	74.000
7425.000	12.425	38.420	50.845	-23.155	74.000
9900.000	13.328	36.950	50.278	-23.722	74.000

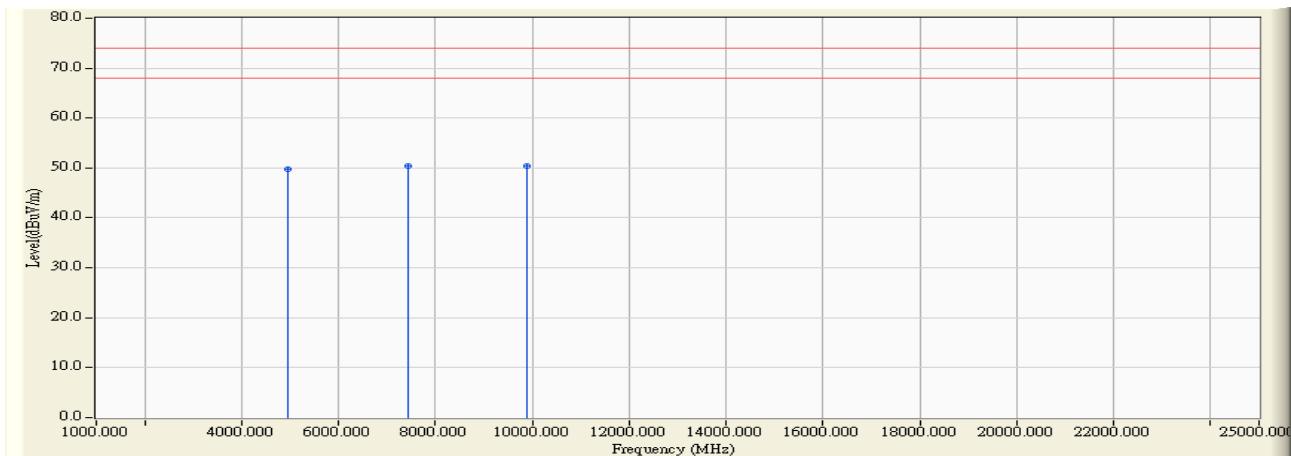
Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2475MHz)



Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Vertical

Peak Detector:

4950.000	5.549	44.280	49.828	-24.172	74.000
7425.000	13.405	37.060	50.465	-23.535	74.000
9900.000	13.921	36.510	50.431	-23.569	74.000

Average Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (2445 MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
119.240	2.106	36.785	38.891	-4.609	43.500
239.520	2.556	33.006	35.563	-10.437	46.000
443.220	3.149	27.264	30.413	-15.587	46.000
542.160	3.388	37.692	41.080	-4.920	46.000
749.740	3.877	27.483	31.360	-14.640	46.000
1000.000	3.946	34.620	38.566	-15.434	54.000
Vertical					
107.600	2.029	37.955	39.984	-3.516	43.500
191.020	2.347	39.159	41.506	-1.994	43.500
330.700	2.845	31.268	34.113	-11.887	46.000
542.160	3.388	33.744	37.132	-8.868	46.000
747.800	3.873	30.892	34.765	-11.235	46.000
998.060	3.943	35.826	39.769	-14.231	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Band Edge

4.1. Test Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

The following test equipments are used during the band edge tests:

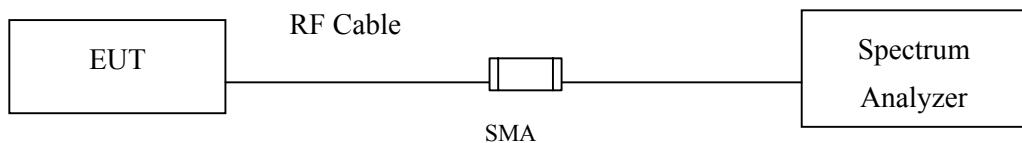
Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2010
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2010
	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2011
	X Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

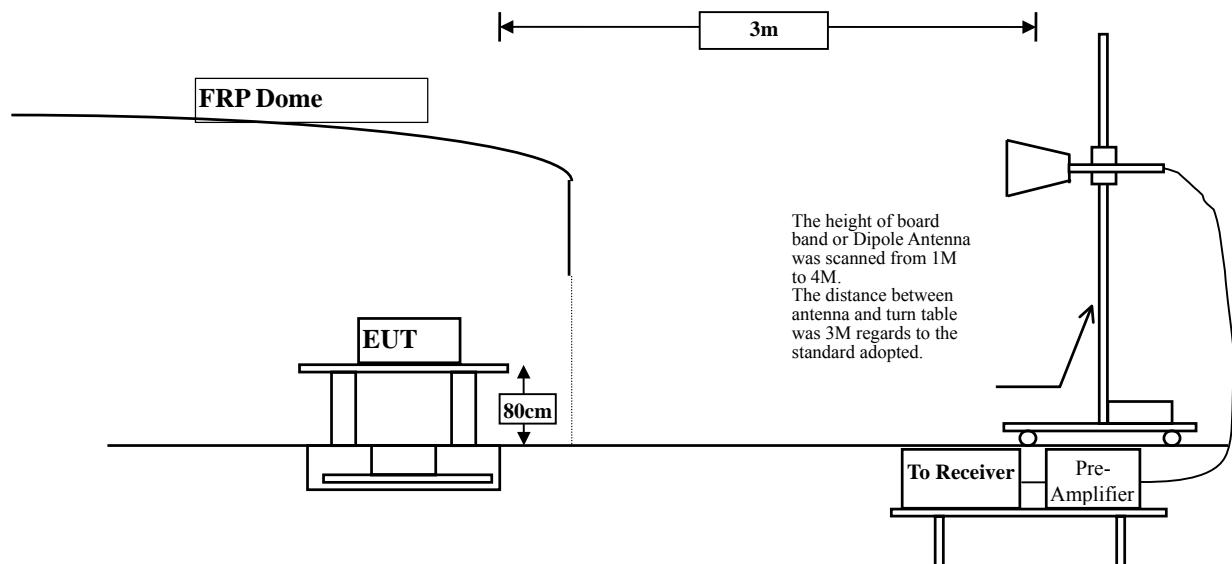
1. All equipments are calibrated every one year.
2. The test equipments marked by “X” are used to measure the final test results.

4.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



4.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

4.5. Uncertainty

Conducted is \pm 1.27 dB

Radiated is \pm 3.9 dB

4.6. Test Result of Band Edge

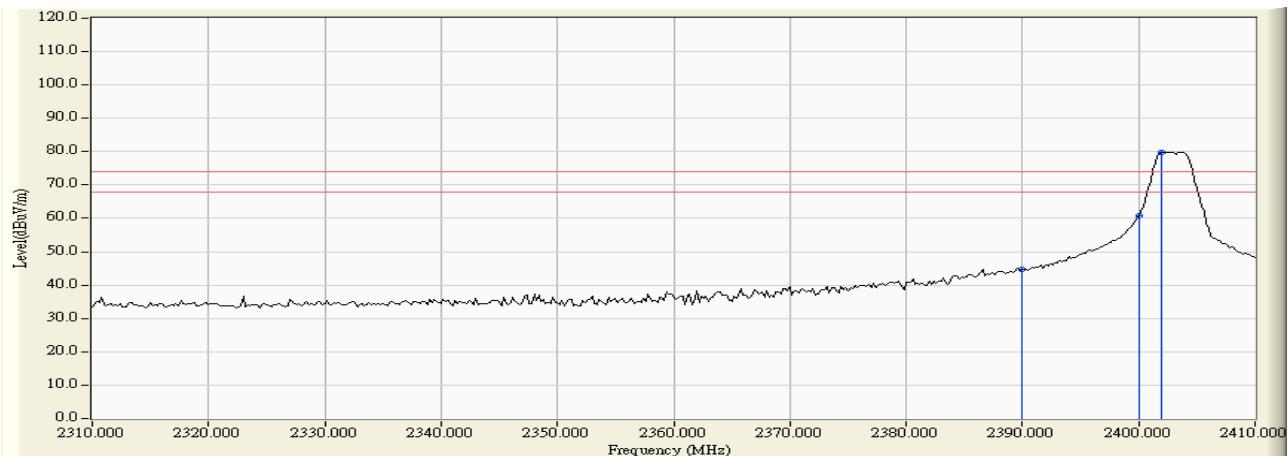
Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-1.131	45.876	44.745	74.00	54.00	Pass
00 (Peak)	2400.000	-1.084	61.775	60.692	74.00	54.00	Pass
00 (Peak)	2402.000	-1.073	80.814	79.742	--	--	--

Figure Channel 00:

Horizontal (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Average Detector:

Frequency	Peak Measurement	Duty Cycle Factor	Measurement Level	Margin	Limit	Result Pass
MHz	dB μ V/m	dB	dB μ V/m	dB	dB μ V/m	

Horizontal**Average Detector:**

2400	60.692	-12.167	48.525	-5.475	54.000	Pass
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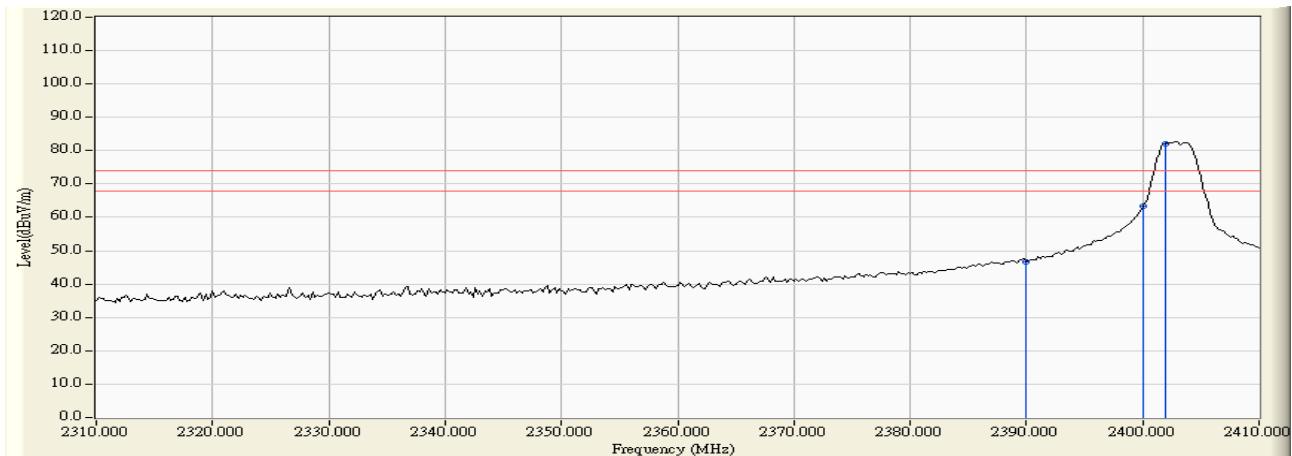
Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-1.725	48.466	46.741	74.00	54.00	Pass
00 (Peak)	2400.000	-1.733	65.151	63.419	74.00	54.00	Pass
00 (Peak)	2402.000	-1.729	83.895	82.166	--	--	--

Figure Channel 00:**Vertical (Peak)**

Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Average Detector:

Frequency	Peak Measurement	Duty Cycle Factor	Measurement Level	Margin	Limit	Result
MHz	dB μ V/m	dB	dB μ V/m	dB	dB μ V/m	Pass

Vertical**Average Detector:**

2400	63.419	-12.167	51.252	-2.748	54.000	Pass
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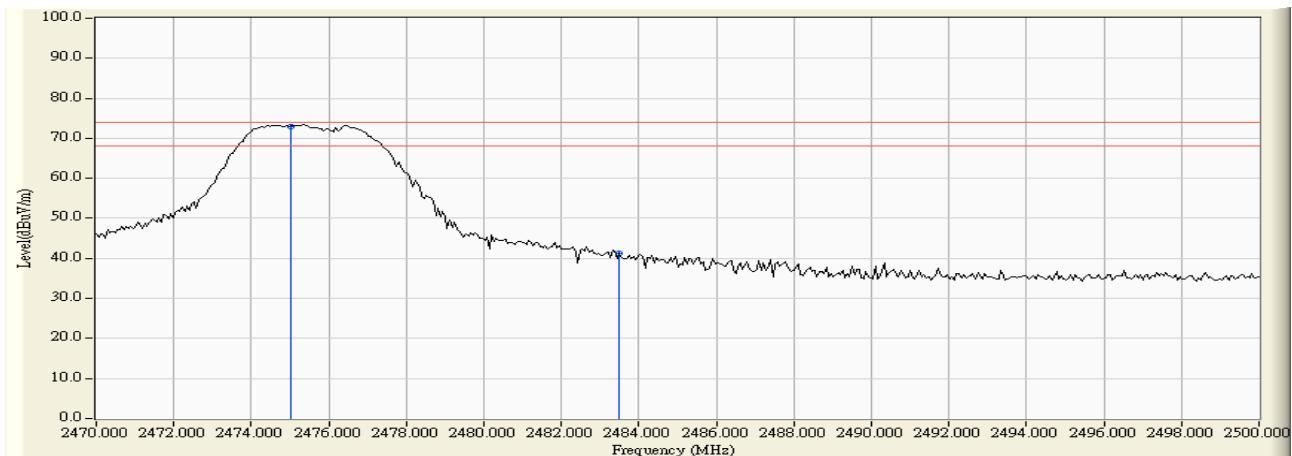
Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
20 (Peak)	2475.000	-0.612	73.633	73.021	--	--	--
20 (Peak)	2483.500	-0.558	41.765	41.207	74.00	54.00	Pass

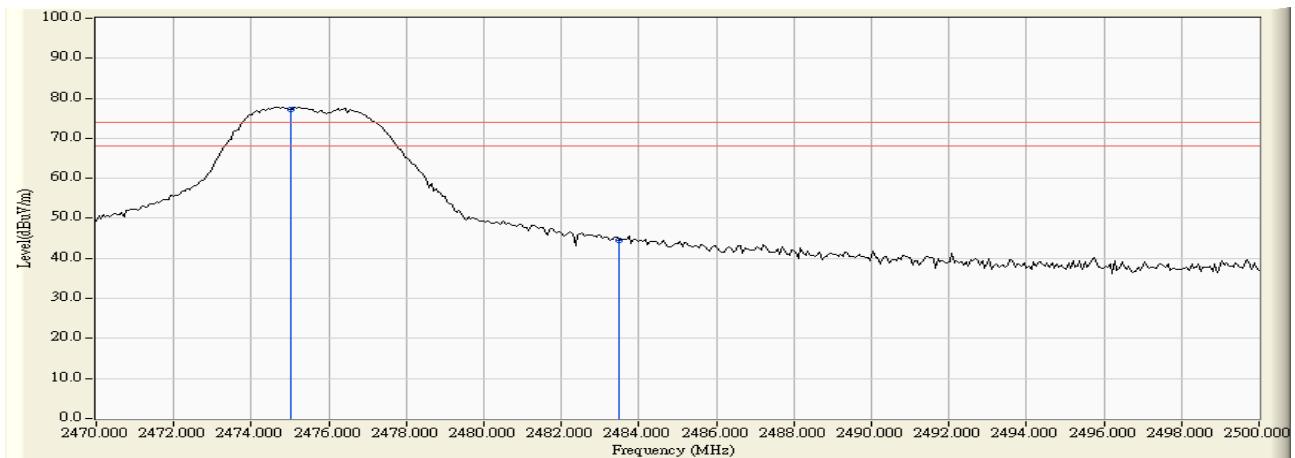
Figure Channel 20:
Horizontal (Peak)


Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
20 (Peak)	2475.000	-1.352	78.518	77.166	--	--	--
20 (Peak)	2483.500	-1.305	45.732	44.427	74.00	54.00	Pass

Figure Channel 20:**Vertical (Peak)**

Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

5. Duty Cycle

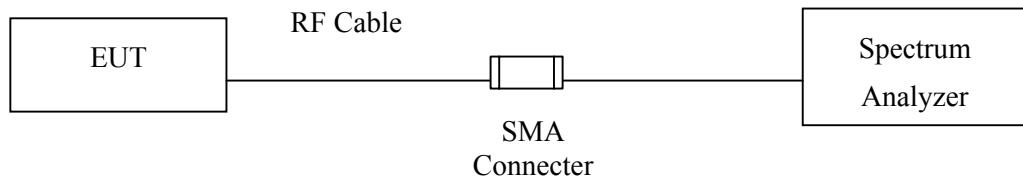
5.1. Test Equipment

The following test equipments are used during the band edge tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010

Note: 1. All equipments are calibrated every one year.
2. The test equipments marked by “X” are used to measure the final test results.

5.2. Test Setup

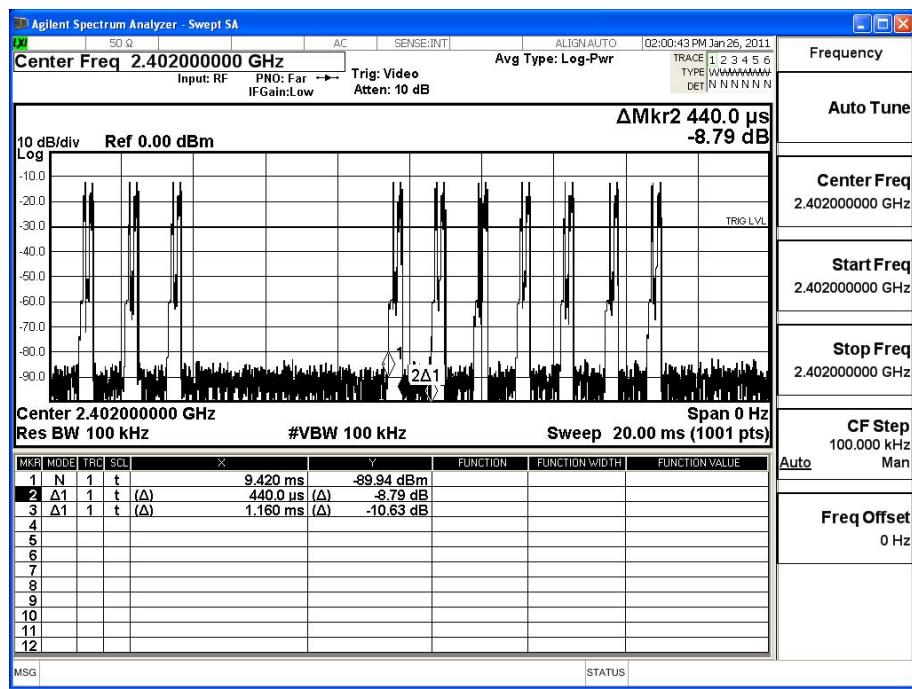
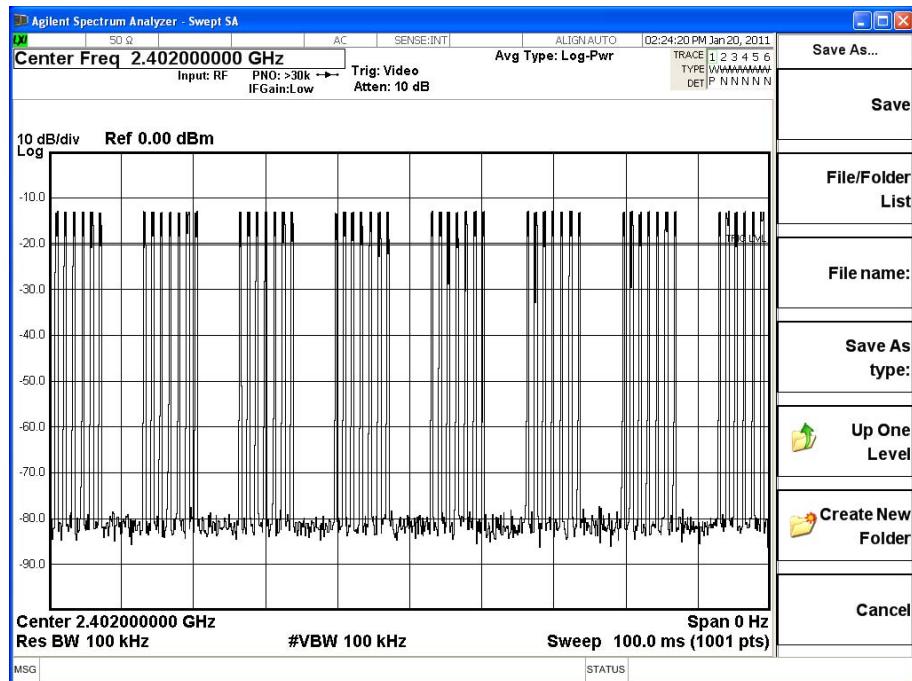


5.3. Uncertainty

± 150Hz

5.4. Test Result of Duty Cycle

Product : WIRELESS HAND WRITE TOUCHPAD DEVICES
 Test Item : Duty Cycle Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit



Time on of 100ms= 440us*56=24.64ms

Duty Cycle= 24.64ms / 100ms= 0.2464

Duty Cycle correction factor= 20 LOG 0.2464= -12.167 dB

Duty Cycle correction factor	-12.167	dB
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6. EMI Reduction Method During Compliance Testing

No modification was made during testing.