



Test Report

Product Name : WLAN Keyboard

Model No. : FDC-6802

FCC ID. : JCKFDC-6802

Applicant : GIGA-BYTE TECHNOLOGY CO., LTD

Address : No. 6, Bau Chiang Road, Hsin-Tien, Taipei Hsien
231, Taiwan

Date of Receipt : 2005/08/30

Issued Date : 2005/09/07

Report No. : 059L012FI

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2005/09/07

Report No. : 059L012FI



Product Name : WLAN Keyboard

Applicant : GIGA-BYTE TECHNOLOGY CO., LTD

Address : No. 6, Bau Chiang Road, Hsin-Tien, Taipei Hsien 231,
Taiwan

Manufacturer : GIGA-BYTE TECHNOLOGY CO., LTD

Model No. : FDC-6802

FCC ID. : JCKFDC-6802

Rated Voltage : AC 120 V / 60 Hz

EUT Voltage : DC 3V (Battery)

Trade Name : GIGABYTE

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.249:2005

Test Result : Complied



The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Rita Huang
(Rita Huang)

Tested By : Tim Sung
(Tim Sung)

Approved By : Gene Chang
(Gene Chang)



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1. General Information

1.1. EUT Description

| | |
|--------------------|-----------------|
| Product Name | WLAN Keyboard |
| Trade Name | GIGABYTE |
| Model No. | FDC-6802 |
| Frequency Range | 2412MHz-2476MHz |
| Type of Modulation | GFSK |
| Channel Control | Manual |
| Antenna Type | Printed on PCB |

| | |
|---------------|---|
| Component | |
| Power Adapter | DELTA, ADP-180EB B Cable Out: Shielded, 1.8m with one ferrite core bonded. |

| Working Frequency of Each Channel | | | | | | | |
|-----------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 00 | 2466MHz | 01 | 2412MHz | 02 | 2424MHz | 03 | 2428MHz |
| 04 | 2440MHz | 05 | 2444MHz | 06 | 2456MHz | 07 | 2460MHz |
| 08 | 2472MHz | 09 | 2476MHz | 10 | 2418MHz | 11 | 2422MHz |
| 12 | 2434MHz | 13 | 2438MHz | 14 | 2450MHz | 15 | 2454MHz |

Note:

1. This device is a 2.4GHz WLAN Keyboard including a 2.4GHz transmitter.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
3. Regards to the frequency band operation; the lowest 、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 059L012F under Declaration of Conformity.

1.2. Operation Description

The EUT is WLAN Keyboard. The operation frequency is from 2.412GHz to 2.476GHz with GFSK modulation. Sixteen channels are selectable. The signal will be transmitted through 2.4 GHz GFSK signals to the receiver. DC 3V shall be provided for EUT operation.

1.3. Test Mode

QuieTek is verified the construction and function in typical operation. All the test modes are carried out in normal operation and defined as:

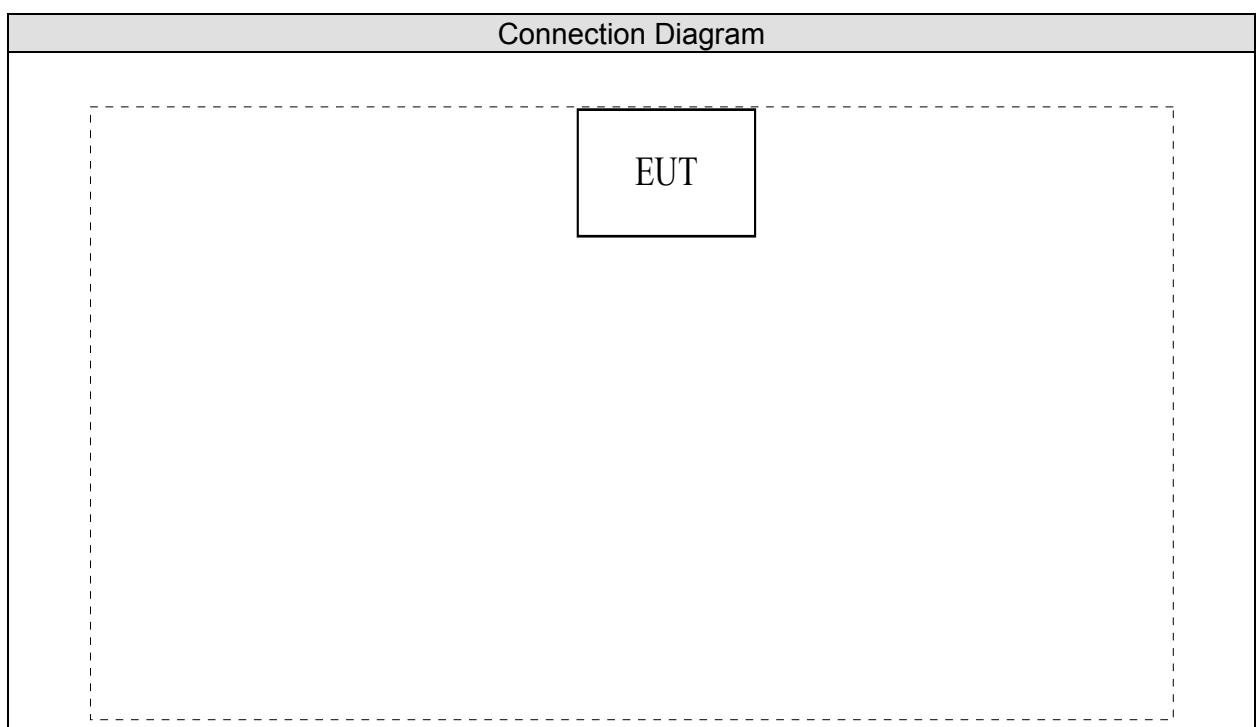
| | |
|-----------------|------------------|
| Pre-Test Mode | |
| EMI | Mode 1: Transmit |
| Final Test Mode | |
| TX | Mode 1: Transmit |

1.4. Tested System Details

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

| | Product | Manufacturer | Model No. | Serial No. | FCC ID | Power Cord |
|-----|---------|--------------|-----------|------------|--------|------------|
| (1) | N/A | N/A | N/A | N/A | N/A | N/A |

1.5. Configuration of tested System



1.6. EUT Exercise Software

| | |
|---|--|
| 1 | Install batteries of the EUT |
| 2 | Setup the EUT as shown in Section 1.4. |
| 3 | Press a key and hold. |
| 4 | The EUT continuously transmit the RF signal to the receiver. |

1.7. Test Facility

Ambient conditions in the laboratory:

| Items | Test Item | Required (IEC 68-1) | Actual |
|----------------------------|--|---------------------|----------|
| Temperature (°C) | FCC PART 15 C 15.207 Conducted Emission | 15 - 35 | 20 |
| Humidity (%RH) | | 25 - 75 | 55 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | FCC PART 15 C 15.249 Band Edge | 15 - 35 | 20 |
| Humidity (%RH) | | 25 - 75 | 65 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | FCC PART 15 C 15.249 Radiated Emission | 15 - 35 | 20 |
| Humidity (%RH) | | 25 - 75 | 65 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |

Site Description: June 22, 2001 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2



July 03, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com



2. Conducted Emission

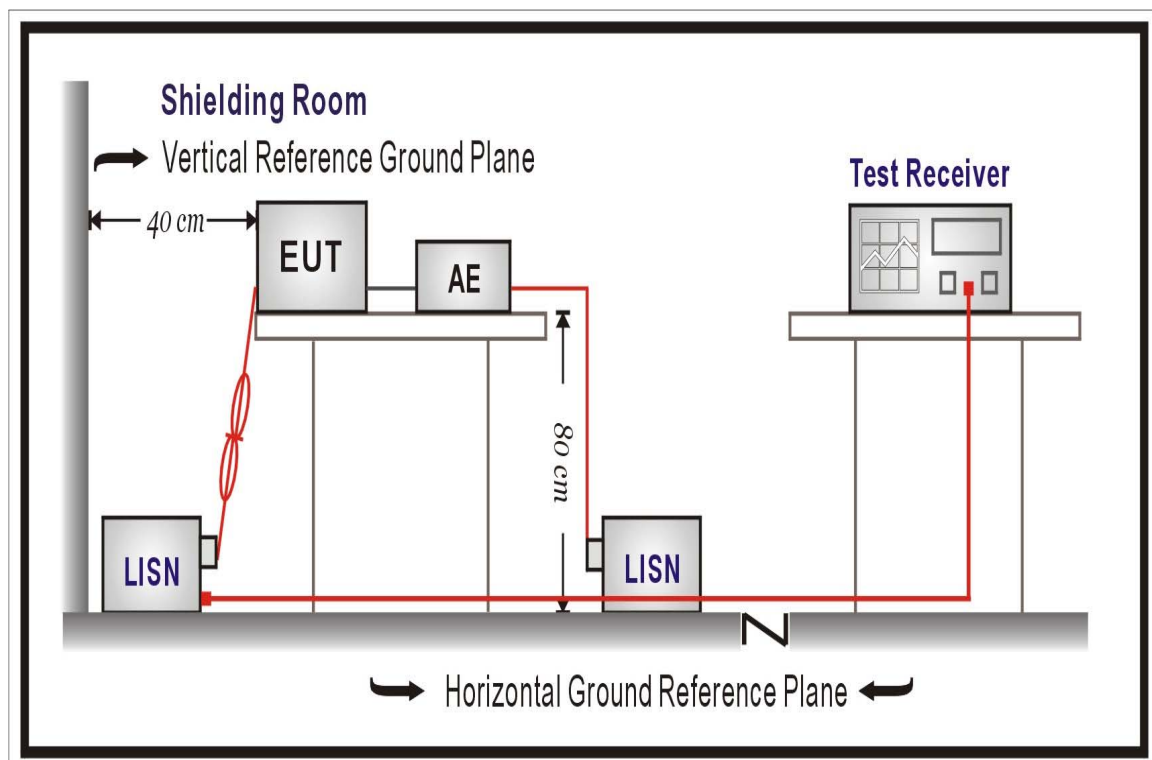
2.1. Test Equipment

The following test equipment are used during the test:

| Item | Instrument | Manufacturer | Type No./Serial No | Last Cal. | Remark |
|------|--------------------|--------------|----------------------|------------|-------------|
| 1 | Test Receiver | R & S | ESCS 30/838251/001 | Jan., 2005 | |
| 2 | L.I.S.N. | R & S | ESH3-Z5/836679/0023 | May, 2005 | EUT |
| 3 | L.I.S.N. | R & S | ENV 4200/833209/0023 | May, 2005 | Peripherals |
| 4 | Pulse Limiter | R & S | ESH3-Z2 | May, 2005 | |
| 5. | CDN | SCHAFFNER | ISNT400/16596 | Feb., 2005 | |
| 6 | No.2 Shielded Room | | | N/A | |

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

| FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV) | | |
|--|-------|-------|
| Frequency MHz | 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: 2003 on conducted measurement.

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

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2005

2.6. Test Result

The EUT is powered by batteries. This test item does not be performed.

3. Radiated Emission

3.1. Test Equipment

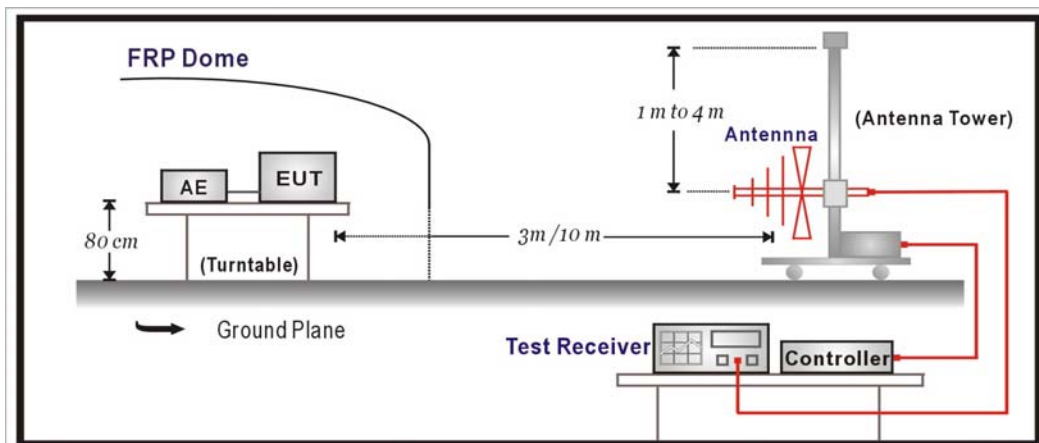
The following test equipment are used during the test:

| Test Site | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|-----------|-------------------|--------------|--------------------------|------------|
| ☒OATS 3 | Test Receiver | R & S | ESCS 30 / 100122 | Feb., 2005 |
| | Spectrum Analyzer | Advantest | R3162 / 120300652 | Feb., 2005 |
| | Pre-Amplifier | QTK | AP-025C / CHN-0202003 | May, 2005 |
| | Bilog Antenna | SCHAFFNER | CBL6112B / 2697 | May, 2005 |
| | Horn Antenna | ETS | 3115 / 0005-6160 | July, 2005 |
| | Pre-Amplifier | QTK | QTK-AMP-01 / 0001 | July, 2005 |

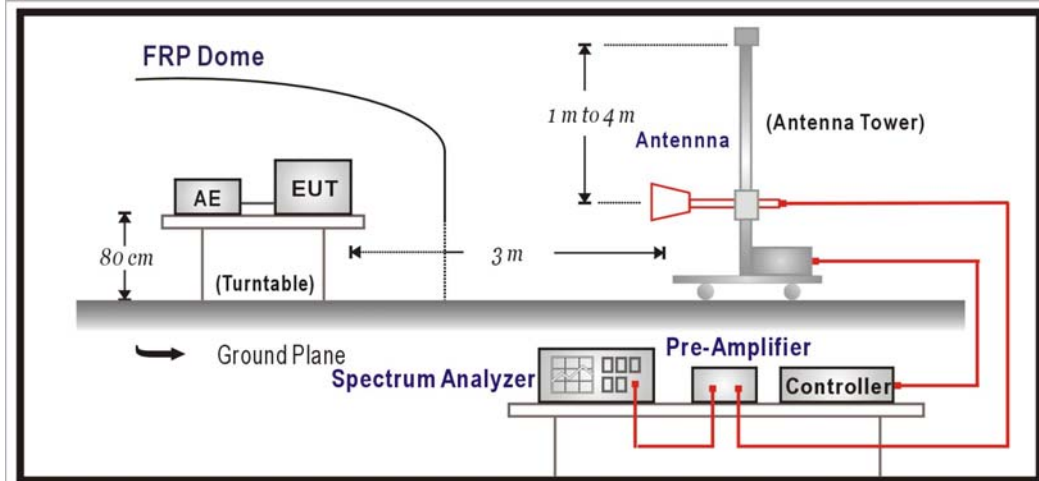
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limits

➤ Fundamental and Harmonics Emission Limits

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

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 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.
 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

➤ Spurious electric field strength limits

| FCC Part 15 Subpart C Paragraph 15.209 Limits | | | |
|---|------|--------|---------------------------------|
| Frequency MHz | uV/m | dBuV/m | Measurement distance (meter) |
| 1.705-30 | 30 | 29.5 | 30 |
| 30-88 | 100 | 40 | 3 |
| 88-216 | 150 | 43.5 | 3 |
| 216-960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. 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 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 C63.4:2003 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.209 and Paragraph 15.249: 2005

3.6. Test Result

| | | | |
|--------------|---------------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 1

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Horizontal

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2412.250 | 2.72 | 28.53 | 19.94 | 63.88 | 75.20 | 38.80 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 1

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Vertical

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2411.750 | 2.72 | 28.53 | 19.94 | 66.12 | 77.44 | 36.56 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2444MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 5

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Horizontal

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2444.000 | 2.74 | 28.63 | 19.97 | 62.88 | 74.28 | 39.72 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2444MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 5

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Vertical

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2444.000 | 2.74 | 28.63 | 19.97 | 66.52 | 77.92 | 36.08 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 9

| Frequency | Cable Loss | Probe Factor | PreAMP | Reading Level | Emission Level | Margin | Limit |
|-----------|------------|--------------|--------|---------------|----------------|--------|--------|
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Horizontal

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2475.750 | 2.75 | 28.66 | 20.01 | 67.00 | 78.40 | 35.60 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission (Fundamental) | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 9

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Fundamental Radiated Emission

Vertical

Peak

| | | | | | | | |
|----------|------|-------|-------|-------|-------|-------|--------|
| 2475.500 | 2.75 | 28.66 | 20.01 | 64.94 | 76.34 | 37.66 | 114.00 |
|----------|------|-------|-------|-------|-------|-------|--------|

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Probe Factor + Cable Loss.
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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 1

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-------------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Horizontal | | | | | | | |
| Peak | | | | | | | |
| 4824.000 | 3.86 | 33.64 | 20.08 | 44.98 | 62.41 | 11.59 | 74.00 |
| 7236.000 | 5.01 | 36.77 | 19.24 | 25.58 | 48.13 | 25.87 | 74.00 |
| 9648.000 | 6.20 | 38.35 | 16.77 | 25.67 | 53.46 | 20.54 | 74.00 |
| Average | | | | | | | |
| 4824.000 | 3.86 | 33.64 | 20.08 | 33.13 | 50.56 | 3.44 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 1

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Vertical | | | | | | | |
| Peak | | | | | | | |
| 4824.000 | 3.86 | 33.64 | 20.08 | 44.75 | 62.18 | 11.82 | 74.00 |
| 7236.000 | 5.01 | 36.77 | 19.24 | 25.67 | 48.22 | 25.78 | 74.00 |
| 9648.000 | 6.20 | 38.35 | 16.77 | 25.76 | 53.55 | 20.45 | 74.00 |
| Average | | | | | | | |
| 4824.000 | 3.86 | 33.64 | 20.08 | 32.60 | 50.03 | 3.97 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2444MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 5

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-------------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Horizontal | | | | | | | |
| Peak | | | | | | | |
| 4888.000 | 3.89 | 33.82 | 20.06 | 43.60 | 61.25 | 12.75 | 74.00 |
| 7332.000 | 5.05 | 37.02 | 18.92 | 25.04 | 48.19 | 25.81 | 74.00 |
| 9776.000 | 6.22 | 38.39 | 16.78 | 25.78 | 53.61 | 20.39 | 74.00 |
| Average | | | | | | | |
| 4888.000 | 3.89 | 33.82 | 20.06 | 32.57 | 50.22 | 3.78 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2444MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 5

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Vertical | | | | | | | |
| Peak | | | | | | | |
| 4888.000 | 3.89 | 33.82 | 20.06 | 44.71 | 62.36 | 11.64 | 74.00 |
| 7332.000 | 5.05 | 37.02 | 18.92 | 25.12 | 48.27 | 25.73 | 74.00 |
| 9776.000 | 6.22 | 38.39 | 16.78 | 25.83 | 53.66 | 20.34 | 74.00 |
| Average | | | | | | | |
| 4888.000 | 3.89 | 33.82 | 20.06 | 32.49 | 50.14 | 3.86 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 9

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-------------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Horizontal | | | | | | | |
| Peak | | | | | | | |
| 4952.000 | 3.93 | 33.95 | 20.05 | 44.50 | 62.33 | 11.67 | 74.00 |
| 7428.000 | 5.10 | 37.22 | 18.60 | 24.54 | 48.26 | 25.74 | 74.00 |
| 9904.000 | 6.27 | 38.49 | 16.86 | 25.82 | 53.72 | 20.28 | 74.00 |
| Average | | | | | | | |
| 4952.000 | 3.93 | 33.95 | 20.05 | 32.02 | 49.85 | 4.15 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 9

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |
| Vertical | | | | | | | |
| Peak | | | | | | | |
| 4952.000 | 3.93 | 33.95 | 20.05 | 44.63 | 62.46 | 11.54 | 74.00 |
| 7428.000 | 5.10 | 37.22 | 18.60 | 25.02 | 48.74 | 25.26 | 74.00 |
| 9904.000 | 6.27 | 38.49 | 16.86 | 25.94 | 53.84 | 20.16 | 74.00 |
| Average | | | | | | | |
| 4952.000 | 3.93 | 33.95 | 20.05 | 32.14 | 49.97 | 4.03 | 54.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
5. 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 | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 1

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

Horizontal

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|------|-------|-------|-------|
| 304.020 | 2.28 | 12.38 | 0.00 | 7.45 | 22.11 | 23.89 | 46.00 |
| 381.620 | 2.68 | 13.88 | 0.00 | 9.64 | 26.20 | 19.80 | 46.00 |
| 461.650 | 3.10 | 16.62 | 0.00 | 8.84 | 28.56 | 17.44 | 46.00 |
| 544.100 | 3.51 | 17.80 | 0.00 | 8.53 | 29.84 | 16.16 | 46.00 |
| 595.030 | 3.78 | 17.81 | 0.00 | 8.99 | 30.59 | 15.41 | 46.00 |
| * 745.380 | 4.55 | 18.37 | 0.00 | 8.43 | 31.36 | 14.64 | 46.00 |

Vertical

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|-------|-------|-------|-------|
| 333.120 | 2.43 | 12.61 | 0.00 | 10.31 | 25.36 | 20.64 | 46.00 |
| 524.700 | 3.42 | 16.79 | 0.00 | 7.65 | 27.86 | 18.14 | 46.00 |
| 595.030 | 3.78 | 19.68 | 0.00 | 5.34 | 28.80 | 17.20 | 46.00 |
| * 619.280 | 3.90 | 19.27 | 0.00 | 7.34 | 30.51 | 15.49 | 46.00 |
| 801.150 | 4.85 | 19.26 | 0.00 | 4.71 | 28.82 | 17.18 | 46.00 |
| 929.670 | 5.50 | 21.42 | 0.00 | 0.64 | 27.56 | 18.44 | 46.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ” means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.

| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2444MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 5

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| MHz | Loss | Factor | | Level | Level | | |
| | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |

=====

Horizontal

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|------|-------|-------|-------|
| 461.650 | 3.10 | 16.62 | 0.00 | 8.66 | 28.38 | 17.62 | 46.00 |
| 515.000 | 3.37 | 16.87 | 0.00 | 8.97 | 29.20 | 16.80 | 46.00 |
| 544.100 | 3.51 | 17.80 | 0.00 | 9.71 | 31.02 | 14.98 | 46.00 |
| 595.030 | 3.78 | 17.81 | 0.00 | 9.42 | 31.02 | 14.98 | 46.00 |
| 716.280 | 4.41 | 18.20 | 0.00 | 7.41 | 30.01 | 15.99 | 46.00 |
| * 825.400 | 4.96 | 19.25 | 0.00 | 8.46 | 32.67 | 13.33 | 46.00 |

Vertical

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|-------|-------|-------|-------|
| 177.930 | 1.63 | 8.28 | 0.00 | 13.30 | 23.21 | 20.29 | 43.50 |
| 257.950 | 2.04 | 12.77 | 0.00 | 8.15 | 22.97 | 23.03 | 46.00 |
| 284.620 | 2.18 | 12.24 | 0.00 | 9.24 | 23.66 | 22.34 | 46.00 |
| 333.120 | 2.43 | 12.61 | 0.00 | 10.50 | 25.55 | 20.45 | 46.00 |
| 595.030 | 3.78 | 19.68 | 0.00 | 5.80 | 29.26 | 16.74 | 46.00 |
| * 619.280 | 3.90 | 19.27 | 0.00 | 6.80 | 29.97 | 16.03 | 46.00 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * " means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.

| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Radiated Emission | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

Channel 9

| Frequency | Cable | Probe | PreAMP | Reading | Emission | Margin | Limit |
|-----------|-------|--------|--------|---------|----------|--------|--------|
| | Loss | Factor | | Level | Level | | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dB | dBuV/m |
| ===== | | | | | | | |

Horizontal

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|------|-------|-------|-------|
| 386.480 | 2.71 | 13.96 | 0.00 | 9.35 | 26.02 | 19.98 | 46.00 |
| 473.770 | 3.16 | 16.64 | 0.00 | 8.43 | 28.23 | 17.77 | 46.00 |
| 614.420 | 3.88 | 18.33 | 0.00 | 6.67 | 28.88 | 17.12 | 46.00 |
| 745.380 | 4.55 | 18.37 | 0.00 | 8.98 | 31.91 | 14.09 | 46.00 |
| 852.080 | 5.10 | 19.90 | 0.00 | 8.51 | 33.51 | 12.49 | 46.00 |
| * 929.670 | 5.50 | 20.31 | 0.00 | 7.84 | 33.66 | 12.34 | 46.00 |

Vertical

Quasi-Peak

| | | | | | | | |
|-----------|------|-------|------|-------|-------|-------|-------|
| 177.930 | 1.63 | 8.28 | 0.00 | 13.44 | 23.35 | 20.15 | 43.50 |
| 284.620 | 2.18 | 12.24 | 0.00 | 9.19 | 23.61 | 22.39 | 46.00 |
| 459.230 | 3.08 | 16.42 | 0.00 | 4.21 | 23.71 | 22.29 | 46.00 |
| * 619.280 | 3.90 | 19.27 | 0.00 | 7.03 | 30.20 | 15.80 | 46.00 |
| 752.650 | 4.59 | 20.66 | 0.00 | 3.07 | 28.33 | 17.67 | 46.00 |
| 818.120 | 4.93 | 18.87 | 0.00 | 5.46 | 29.26 | 16.74 | 46.00 |

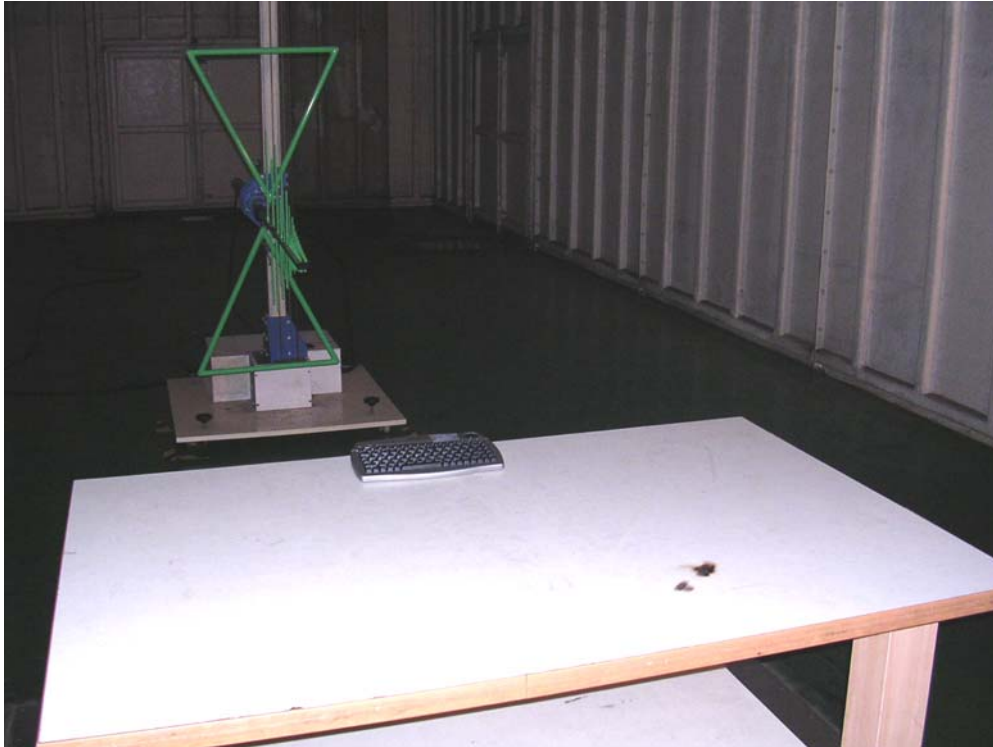
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ” means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.

3.7. Test Photo

Test Mode : Mode 1: Transmit

Description : Front View of Radiated Emission Test Setup



Test Mode : Mode 1: Transmit

Description : Back View of Radiated Emission Test Setup



Test Mode : Mode 1: Transmit

Description : Front View of Radiated Emission Test Setup (Horn)



4. Band Edge

4.1. Test Equipment

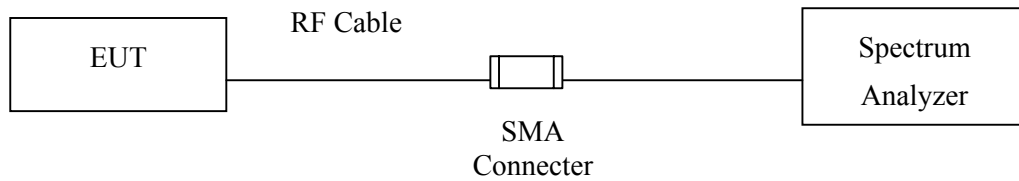
The following test equipment are used during the test:

| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|-------------------|--------------|----------------------|------------|
| X | Spectrum | HP | E4407B / US39440758 | May, 2005 |
| X | Test Receiver | R & S | ESCS 30 / 825442/14 | May, 2005 |
| X | Spectrum Analyzer | Advantest | R3261C / 71720140 | May, 2005 |
| X | Pre-Amplifier | HP | 8447D/3307A01812 | May, 2005 |
| X | Bilog Antenna | Chase | CBL6112B / 12452 | Sep., 2005 |
| X | Horn Antenna | EM | EM6917 / 103325 | May, 2005 |

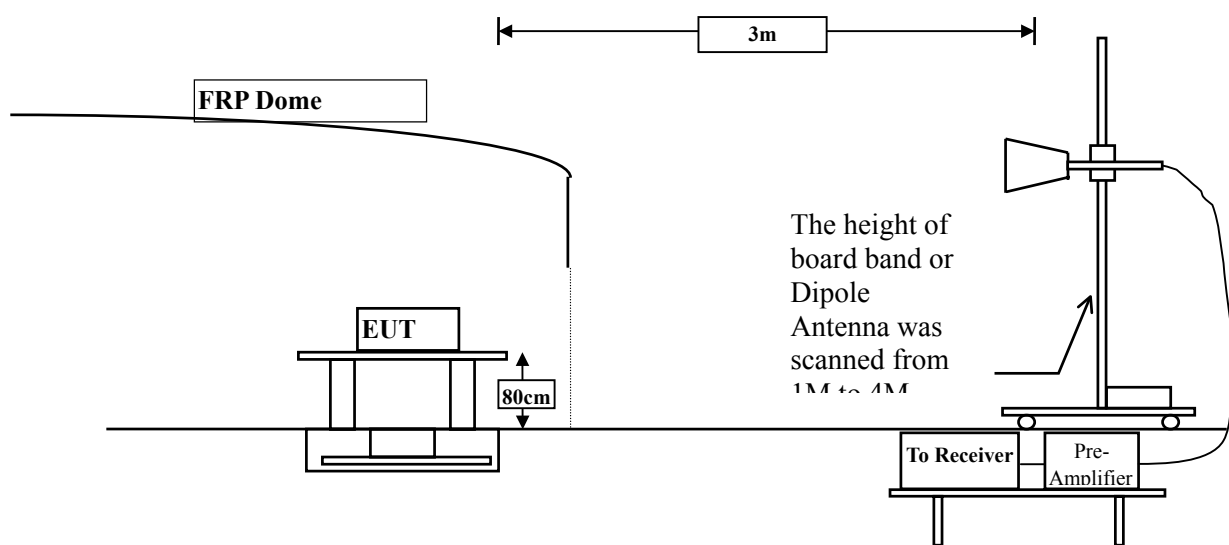
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

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 C63.4:2003 on radiated measurement.

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

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.249: 2005

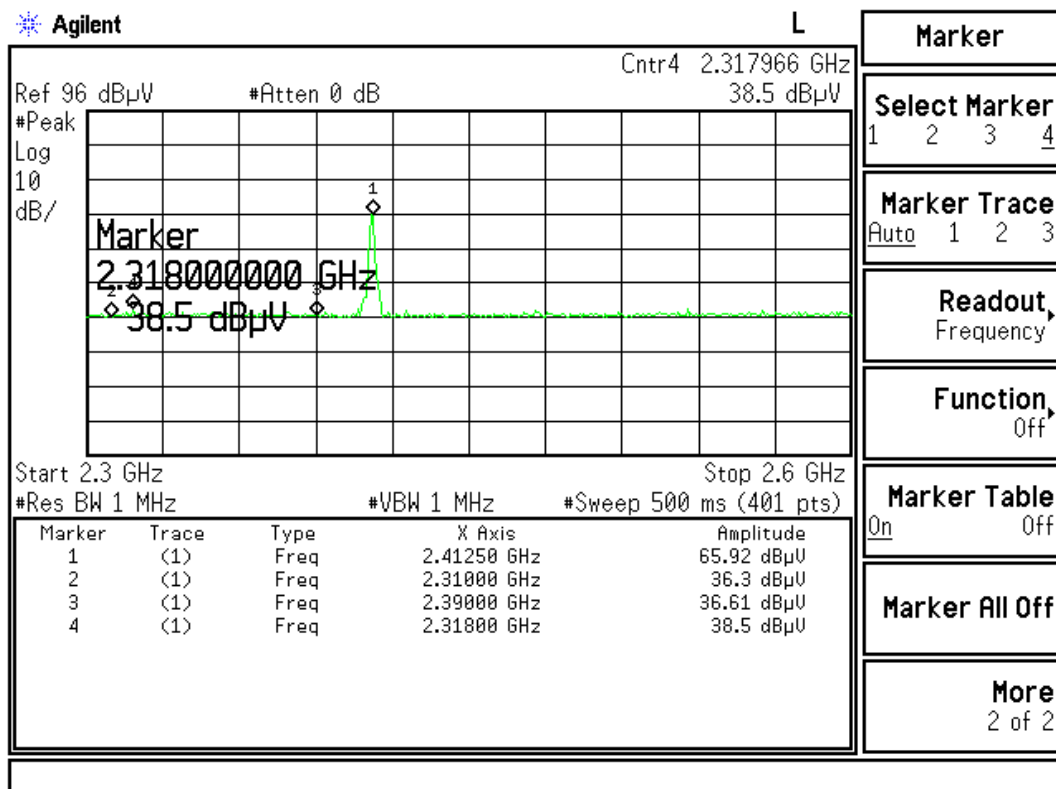
4.6. Test Result

| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Band Edge | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

RF Radiated Measurement (Horizontal):

| Channel No. | Frequency (MHz) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak) | 2318.000 | 38.50 | 49.69 | 74.00 | 54.00 | Pass |
| 1 (Average) | -- | -- | -- | 74.00 | 54.00 | Pass |

Figure Channel 1: (Horizontal)

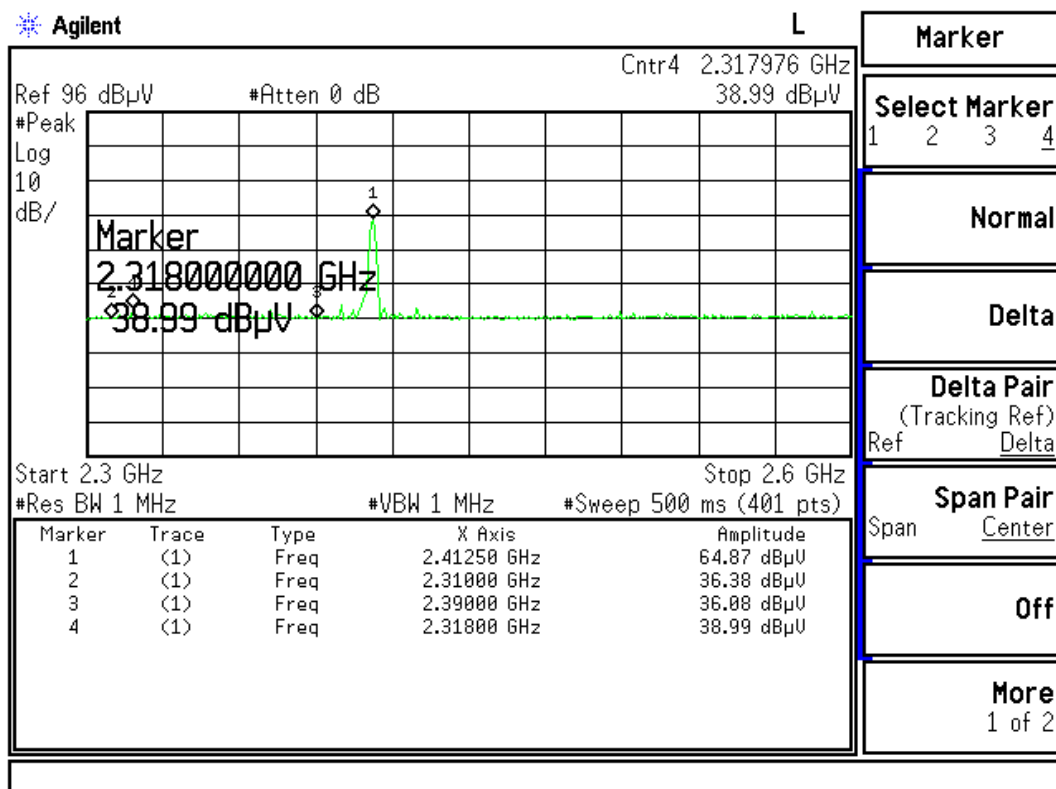


| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Band Edge | | |
| Test Mode | Mode 1: Transmit (2412MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

RF Radiated Measurement (Vertical):

| Channel No. | Frequency (MHz) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak) | 2318.000 | 38.99 | 50.18 | 74.00 | 54.00 | Pass |
| 1 (Average) | -- | -- | -- | 74.00 | 54.00 | Pass |

Figure Channel 1: (Vertical)

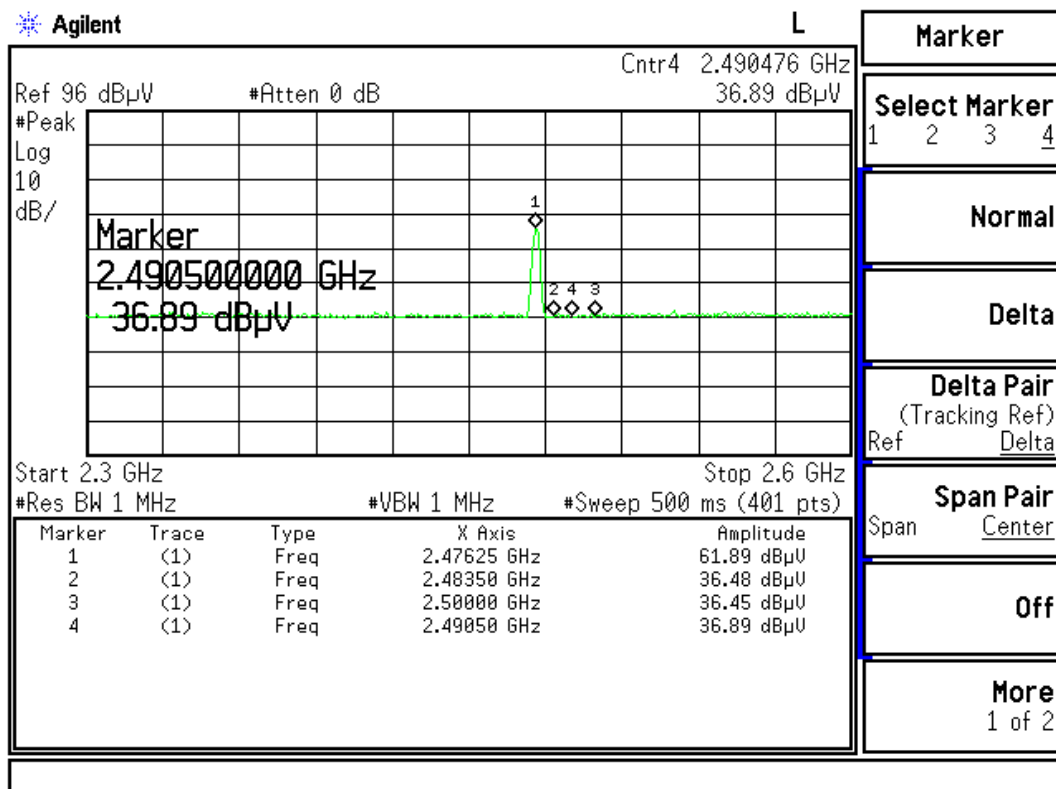


| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Band Edge | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

RF Radiated Measurement (Horizontal):

| Channel No. | Frequency (MHz) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 9 (Peak) | 2490.500 | 36.89 | 48.26 | 74.00 | 54.00 | Pass |
| 9 (Average) | -- | -- | -- | 74.00 | 54.00 | Pass |

Figure Channel 9: (Horizontal)

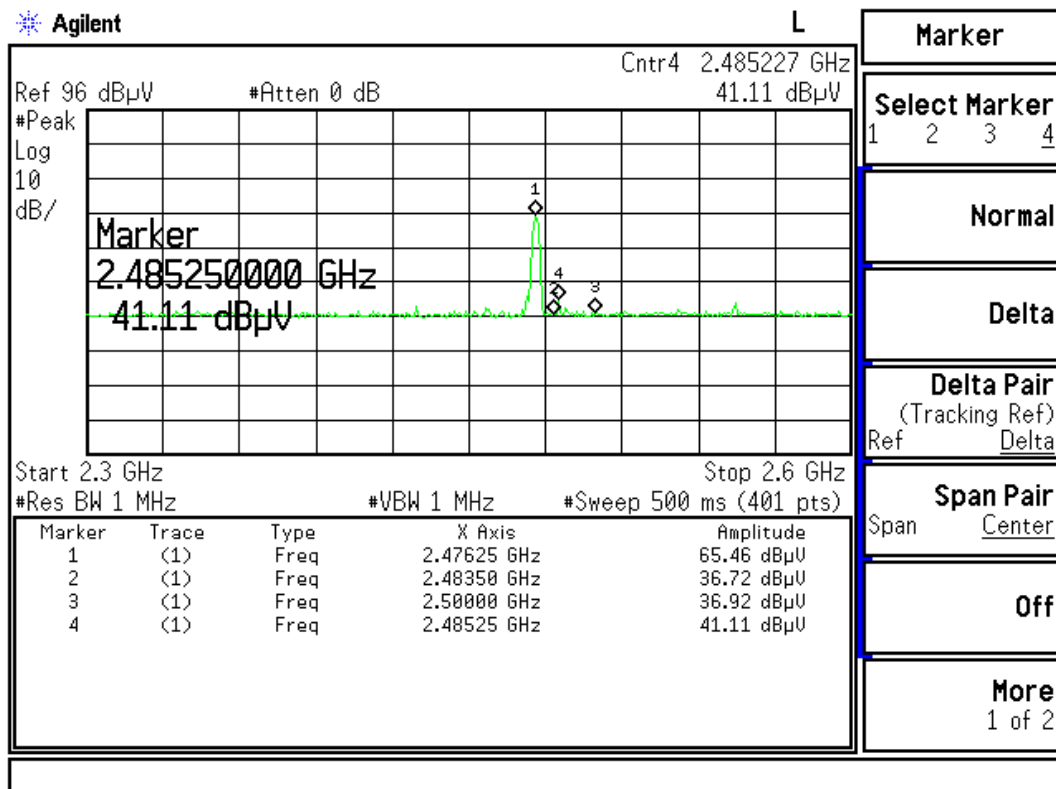


| | | | |
|--------------|----------------------------|-----------|-----------|
| Product | WLAN Keyboard | | |
| Test Item | Band Edge | | |
| Test Mode | Mode 1: Transmit (2476MHz) | | |
| Date of Test | 2005/09/01 | Test Site | No.3 OATS |

RF Radiated Measurement (Vertical):

| Channel No. | Frequency (MHz) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 9 (Peak) | 2485.250 | 41.11 | 52.48 | 74.00 | 54.00 | Pass |
| 9 (Average) | -- | -- | -- | 74.00 | 54.00 | Pass |

Figure Channel 9: (Vertical)



Attachement

➤ EUT Photograph

(1) EUT Photo



(2) EUT Photo



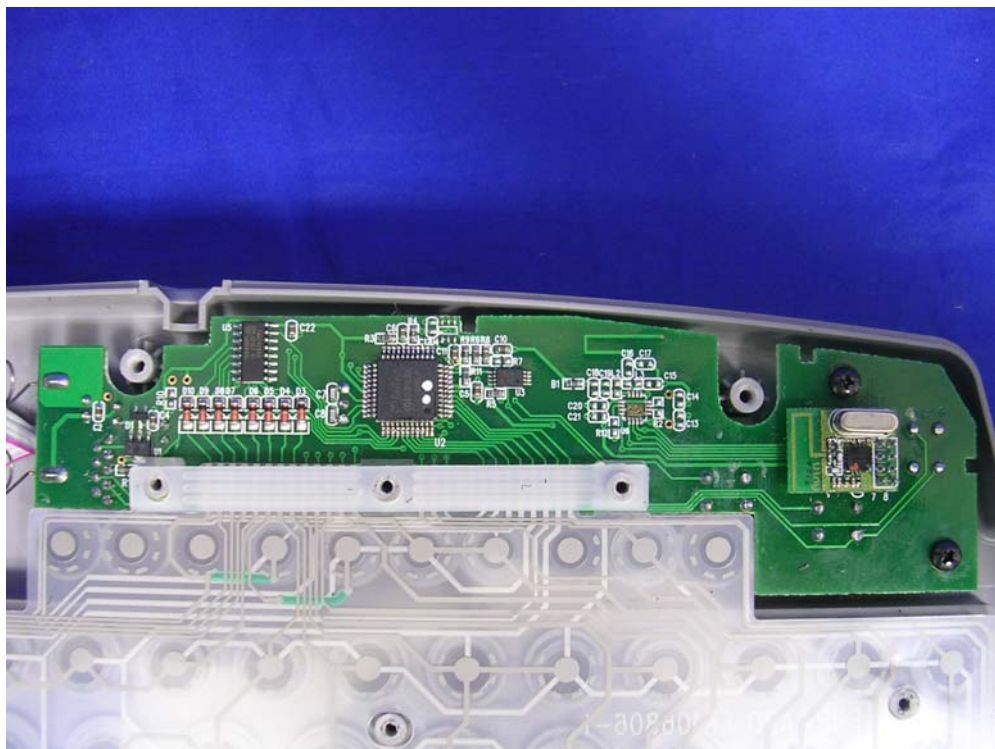
(3) EUT Photo



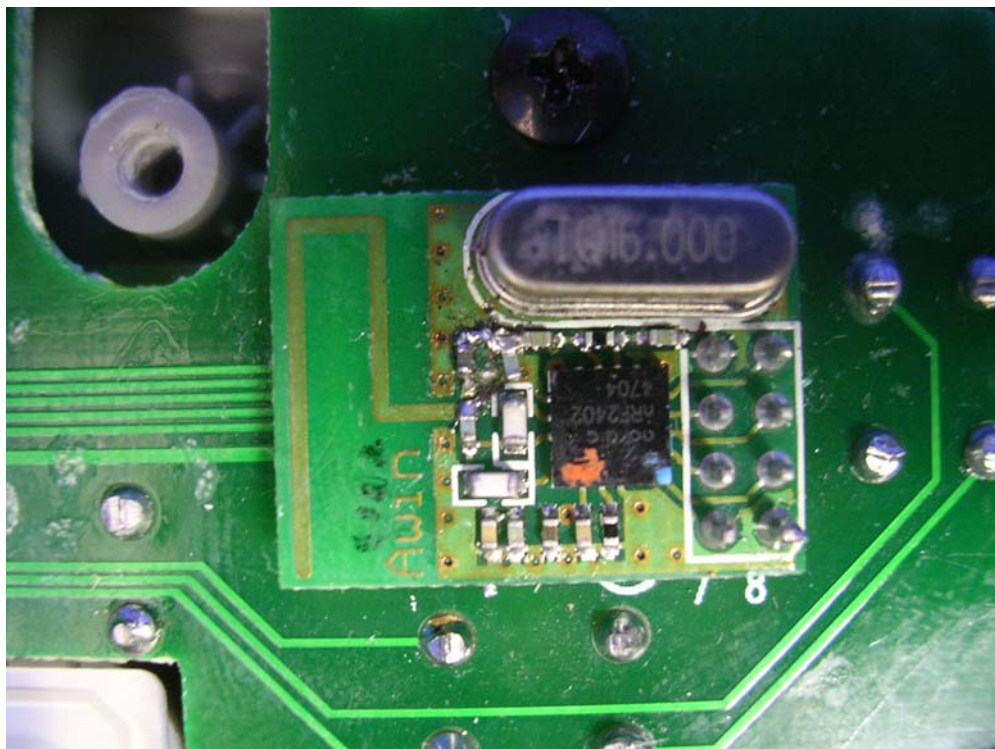
(4) EUT Photo



(5) EUT Photo



(6) EUT Photo



(7) EUT Photo

