Certificate of Test

August 2006

Cherry GmbH

Product Type	: Wireless Keyboard
Model Number	: G258
Test Report Number	: 0607121 Rev. 1
Date of Test	: July 02, 2006- August 01, 2006

This Product was tested to the following standards at the laboratory of Global EMC Standard Tech. Corp., and found Compliance.

(N) NEMKO

R

200085-0

Standards: FCC Part 15 Subpart C Paragraph 15.249 ANSI C63.4: 2003

http://www.gestek.com.tw

hard

Sharon Chang, President

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Date: August 07, 2006

FC

GesTek EMC Lab

N0. 3, Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Lin Kou Hsiang, Taipei County, Taiwan, R.O.C. TEL:886-2-2603-5321 FAX:886-2-2603-5325 Test Report Application for Certification On Behalf Of

Cherry GmbH

EUT: Wireless Keyboard

Model Number: G258

FCC ID: GDDG258

Prepared for:

Cherry GmbH Cherrystrasse D91275 Auerbach/Opf. Germany

> Report By :Global EMC Standard Tech. Corp. No.3 Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Lin Kou Hsiang, Taipei County, Taiwan, R.O.C. Tel : 886-2-2603-5321 Fax : 886-2-2603-5325

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1. CERTIFICATION

Applicant

: Cherry GmbH

Applicant Address	: Cherrystrasse D91275 Auerbach/Opf. Germany
EUT Description	: Wireless Keyboard
Model Number	: G258
Serial Number	: N/A
Brand Name	: CHERRY
FCC ID	: GDDG258
Tested Power Supply	: Battery DC 2.2~3.2V
Manufacturer	: Sunrex Technology Corp.
Address	: No. 188-1, Chung Cheng Road., Ta Ya Shiang, Taichung Hsien,
	Taiwna, R.O.C.

MEASUREMENT PROCEDURES USED:

☑ CFR 47, Part 15 Radio Frequency Device Subpart C Intentional Radiators :2005

☑ ANSI C63.4 Methods of Measurements of Radio-Noise Emissions from Low- Voltage Electrical and Electronic Equipment in the range of 9kHz To 40GHz.
 2003

THE MEASUREMENT SHOWN IN THE ATTACHMENT WAS MADE IN ACCORDANCE WITH THE PROCEDURES INDICATED, AND THE MAXIMUM ENERGY EMITTED BY THE EQUIPMENT WAS FOUND TO BE WITHIN THE ABOVE LIMITS APPLICABLE.

Final Test Date

: <u>July 25, 2006</u> : August 01, 2006

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

Documented By :

Rini Chen / adm. Dept. Supervisor

Technical Reviewed By :

Shine Chang / eng. Dept. Su ervisor

Tested Bv :

Perry Lin / eng. Dept. Engineer

Approved By :

Tonny Lin FGeneral Manager

This test data shown below is traceable to National or international standard such as NIST/USA, etc. The laboratory's NVLAP accreditation in no way constitutes or implies product certification, approval, or endorsement by NVLAP or the United States government.

2. GENERAL INFORMATION

2.1 PRODUCTION DESCRIPTION

Product Name	: Wireless Keyboard
Model Number	: G258
Serial Number	: N/A
Brand Name	: CHERRY
FCC ID	: GDDG258
Modulation Type	: FHSS / GFSK
Antenna Type	: Printed on PCB
Frequencg Range	: 2.404G~2.467G
Channel Number	16 Channel
Channel Control	N/A
Working Voltage	: Battery DC 2.2~3.2V

Frequency of Each Channel:

Channel	Frequency 1	Frequency 2		
0	2404	2452		
1	2405	2453		
2	2406	2454		
3	2407	2455		
4	2408	2456		
5	2409	2457		
6	2410	2458		
7	2411	2458		
8	2412	2460		
9	2413	2461		
10	2414	2462		
11	2415	2463		
12	2416	2464		
13	2417	2465		
14	2418	2466		
15	2419	2467		

Note:

- 1. This device is a Wireless Keyboard included wireless transmition of keyboard and receiver. The test report is for transmitter.
- 2. This device is 16 channel and perform the test, then record on this report.
- 3. The antenna of EUT is printer on PCB and conform to FCC 15.203.
- 4. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
- 5. The device of receiver to accordance with Part 15 regulations and under Declaration of Conformity.

2.2 OPERATIONAL DESCRIPTION

This device is a Wireless Keyboard included wireless transmitter of keyboard and receiver. It is powered by Battery DC 3V.

This device is 16 channel with two frequency hopping carrier per each channel.

The channel control are seted by manufacturer and only one channel is used for end users. End users can not change channel by themselves.

The device is operated in 2.404 to 2.467GHz with FHSS / GFSK modulation.

The Receiver is USB interface and it is capable to receive signal from transmitter to control PC or notebook.

Another information please refer to users manual.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: Wireless Keyboard, M/N: G258			
Teet Mede	Mode 1		
Test Mode Continue Transmit			
Frequency	Channel 0: 2404MHz & 2452MHz		
	Channel 7: 2411MHz & 2459MHz		
	Channel 15: 2419MHz & 2467MHz		

2.4 SUMMARY OF TEST PROCEDURE AND TEST RESULTS

Test Item	Applied Standard Section	Test Resut	
Radistion Emission	15.209, ANSI C63.4 Section 8	Pass (refer to section 3.7)	
Peak Power Output	15.249(a), ANSI C63.4 Section 13 & Annex I	Pass (refer to section 3.7)	
Band Edge	15.249(d) , ANSI C63.4 Section 13 & Annex I	Pass (refer to section 4.6)	

2.5 CONFIGURATION OF THE TESTED SYSTEM

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Device	No.	Configuration		
		Model Number	: Latitude D600 PPO5L	
		BSMI ID	: R33002	
		Serial Number	: 11444680576	
		C.P.U	: Intel Pentium M 1.4G HZ	
		DDR	: PC2100 256MB	
		F.D.D	: N/A	
		H.D.D.	: Manufacturer : HITACHI 20.G	
			M/N: IC25N020ATMR04-0,	
			S/N:MRG157K1GJP9JH	
ΝΟΤΕΒΟΟΚ	DELL NB 2		BSMI ID:D33082	
NOTEBOOK	E	CD-ROM	: Manufacturer :DELL	
			M/N:6T980-A01	
		BATTERY	: Manufacturer :DELL Li-ion	
		MODULE	M/N:6Y270	
			RATING:14.8V 220mAh	
		AC ADAPTOR	: Manufacturer :DELL	
			M/N: PA-1650-05D	
			S/N:CN-05U092-71615-41K-58C3	
			INPUT:AC 100-240 V~1.5A 50-60HZ	
			Shielded, Undetachable, 2.5m	
Receiver		Manufacturer	: CHERRY	
Receiver		Model Number	: R200	

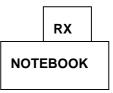
2.6 TEST FACILITY

Ambient conditions in the laboratory:

ITEMS	REQIORED			
TEMPERATURE (°C)	15-35			
HUMIDITY (%RH)	30-60			
BAROMETRIC PRESSURE (mbar)	860-1060			
FCC SITE DESCRIPTION	Aug. 10, 1995 /Aug. 25, 1998 File on			
	FCC Engineering Laboratory			
	Federal Communication Commission			
	7435 Oakland Mills Road			
	Columbia, MD 21046			
	Reference 31040/SIT1300F2			
NVLAP LAB. CODE	200085-0			
	United Stated Department of commerce			
	National Institute of Standards and Technology			
	National Voluntary Laboratory Accreditation Program			
	Accreditation on NVLAP effective through Sep. 30,2006			
	For CISPR 22, FCC Method and AS/NZS CISPR 22			
	Measurement.			
Chinese National Laboratory	Recognized by the Council of Chinese National			
Accreditation Certificate	Laboratory Accreditation and confirmed to meet the			
R.O.C.	requirements of ISO/IEC 17025 also has been			
	registered for fifteen items, and meet the requirements			
	of the Article 4 of Measures Governing the Recognition			
	both Approval of Designated Laboratory for			
	Commodities Inspection and has been registered for			
	four items within the field of Electrical Testing.			
	Registration No.: 1082			
	Registration on CNLA effective through April 30, 2006.			

2.7 TEST SETUP





2.8 EUT OPERATING CONDITIONS

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

- 1. Setup the EUT and simulators as shown on 2.7.
- 2. Turn on the power of all equipments.
- 3. The transmitter will transmit the signal continue.
- 4. Confirm the receiver is reveive signal continue.
- 5. Repeat the above steps.

3. RADIATION EMISSION DATA

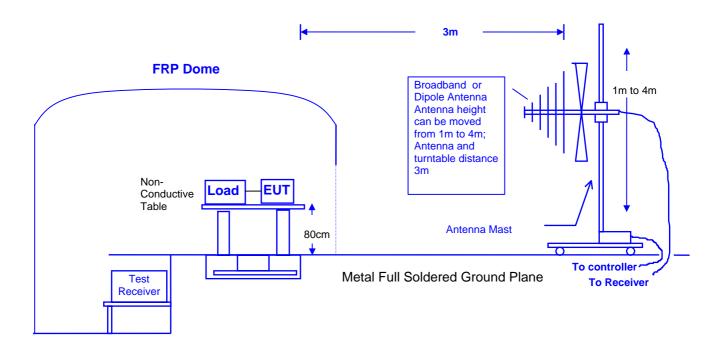
3.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests: Radiated test was performed on: Site #1 Site #2 Site #3 Site #4

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	01/19/06
2	Spectrum Analyzer	HP	E4407B	39240339	07/26/06
3	Power Meter	Rohde & Schwarz	NRVS	100666	04/07/06
4	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	04/07/06
5	Pre-Amplifier	HP	8449B	3008A01264	06/14/06
6	BILOG ANTENNA	SCHAFFNER	CBL6112B	2620	11/26/05
7	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/21/05
8	RF Cable	GesTek	N/A	GTK-E-A152-01	12/20/05
9	Open Site	GesTek	N/A	B1	11/22/05
10	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

3.2 OPEN TEST SITE SETUP DIAGRAM



3.3 RADIATED EMISSION LIMIT

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.

Frequency	Distance	Field Strength	
MHz	Meter	μV/M	dBµV/M
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

Remarks :

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

- 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.

Frequency	Distance	Field Strength of Fundamental		Field Strength of Harmonics	
MHz	Meter	μV/M	dBµV/M	μV/M	dBµV/M
902-928	3	50	94	500	54
2400-2483.5	3	50	94	500	54
5725-5875	3	50	94	500	54

Fundamental and Harmonics Emission Limits

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.

3.4 EUT CONFIGURATION

The equipment which is listed 2.6 are installed on Radiated Emission Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

3.5 OPERATING CONDITION OF EUT

Same as section 2.8.

3.6 RADIATED EMISSION DATA

The measurement range of radiated emission, which is from <u>30 MHz to 10 Harminics</u>, was investigated. All readings below 1GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Above 1GHz are peak and avg. values with a resolution bandwidth of 1MHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scans of the measurement range for all the test modes and then use test receiver for final measurement. Then the worst modes were reported the following data pages.

3.7 RADIATED EMISSIONS MEASUREMENT RESULTS 3.7.1 HARMONIC RADIATED EMISSIONS

Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
INO.	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	146.5800	38.72	-12.02	26.70	43.50	-16.80	QP
2	194.5100	36.88	-13.18	23.70	43.50	-19.80	QP
3	205.1700	38.99	-12.95	26.04	43.50	-17.46	QP
4	222.9700	41.37	-12.34	29.03	46.00	-16.97	QP
5	239.4700	38.47	-11.77	26.70	46.00	-19.30	QP
6	336.7800	40.01	-6.74	33.27	46.00	-12.73	QP

Remarks:

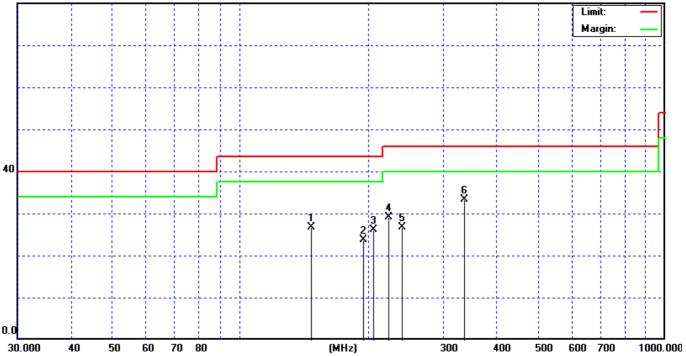
1. All Readings below 1GHz are Quasi-Peak.

2. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

3. Over Limit (Margin Value)=Measurement level-Limit value.

4. The " " means this data is worst-case Measurement level.

80.0 dBuV/m



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Date of Test	August 01, 2005	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
INO.	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Delector
1	139.5100	33.39	-11.64	21.75	43.50	-21.75	QP
2	193.8400	38.91	-13.19	25.72	43.50	-17.78	QP
3	203.7900	41.37	-13.00	28.37	43.50	-15.13	QP
4	237.1500	41.43	-11.85	29.58	46.00	-16.42	QP
5	338.1900	45.00	-6.70	38.30	46.00	-7.70	QP
6	356.7800	37.94	-6.15	31.79	46.00	-14.21	QP

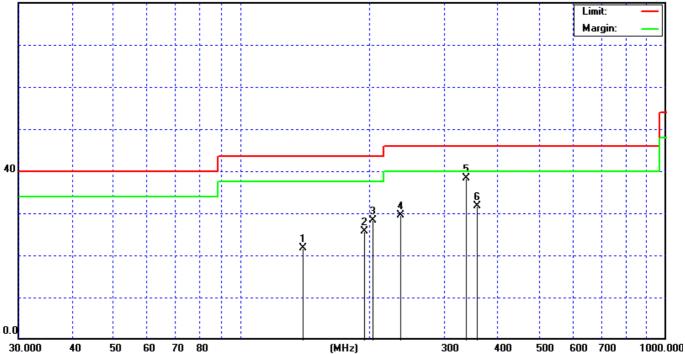
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3. Over Limit (Margin Value)=Measurement level-Limit value.

4. The " " means this data is worst-case Measurement level.

80.0 dBuV/m



Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
No.	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	145.2000	38.64	-11.94	26.70	43.50	-16.80	QP
2	192.9400	36.90	-13.20	23.70	43.50	-19.80	QP
3	206.8700	38.93	-12.89	26.04	43.50	-17.46	QP
4	222.1700	41.40	-12.37	29.03	46.00	-16.97	QP
5	238.6600	37.85	-11.80	26.05	46.00	-19.95	QP
6	337.1400	43.51	-6.73	36.78	46.00	-9.22	QP

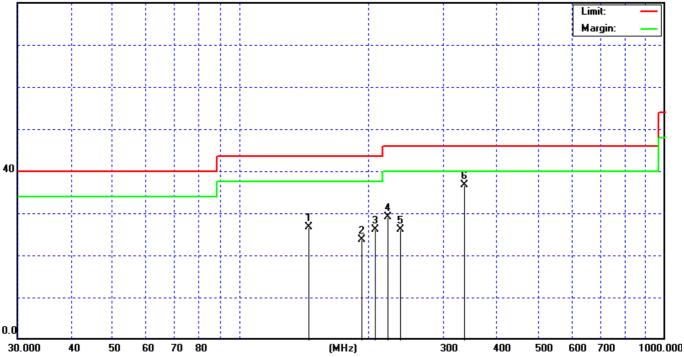
1. All Readings below 1GHz are Quasi-Peak.

2. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

3. Over Limit (Margin Value)=Measurement level-Limit value.

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80.0 dBu∀/m



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Date of Test	August 01, 2005	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
No.	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	143.7000	33.61	-11.86	21.75	43.50	-21.75	QP
2	195.4700	38.89	-13.17	25.72	43.50	-17.78	QP
3	203.4700	41.38	-13.01	28.37	43.50	-15.13	QP
4	240.1700	41.32	-11.74	29.58	46.00	-16.42	QP
5	337.1700	44.03	-6.73	37.30	46.00	-8.70	QP
6	352.7000	44.14	-6.27	37.87	46.00	-8.13	QP

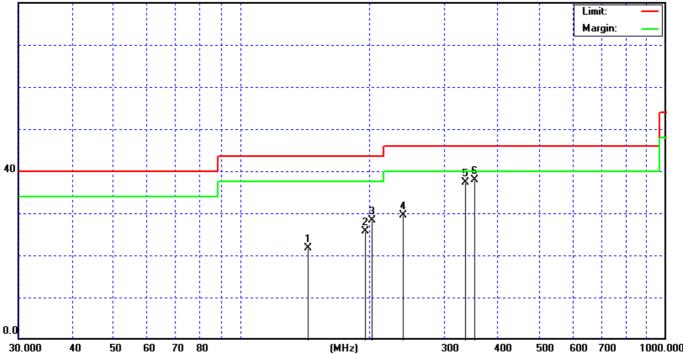
1. All Readings below 1GHz are Quasi-Peak.

2. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

3. Over Limit (Margin Value)=Measurement level-Limit value.

4. The " " means this data is worst-case Measurement level.

80.0 dBuV/m



Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
NO.	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	143.2500	38.54	-11.84	26.70	43.50	-16.80	QP
2	193.4176	36.89	-13.19	23.70	43.50	-19.80	QP
3	204.9800	39.00	-12.96	26.04	43.50	-17.46	QP
4	219.3000	41.50	-12.47	29.03	46.00	-16.97	QP
5	238.6600	38.50	-11.80	26.70	46.00	-19.30	QP
6	337.1400	40.00	-6.73	33.27	46.00	-12.73	QP

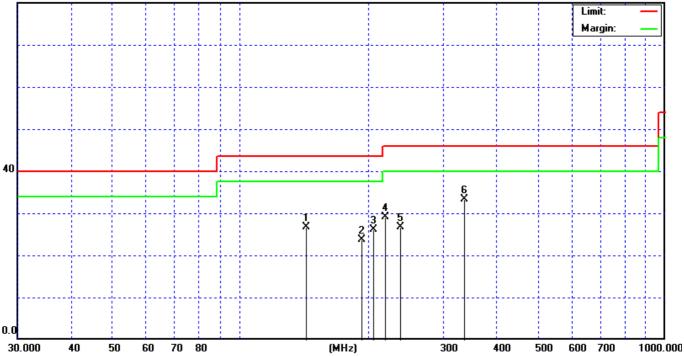
1. All Readings below 1GHz are Quasi-Peak.

2. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

3. Over Limit (Margin Value)=Measurement level-Limit value.

4. The " " means this data is worst-case Measurement level.

80.0 dBu∀/m



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Date of Test	August 01, 2005	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	59 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Vertical	Frequency Range	30-1000MHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
NO.	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	142.5200	33.54	-11.79	21.75	43.50	-21.75	QP
2	194.5600	38.90	-13.18	25.72	43.50	-17.78	QP
3	204.1200	41.36	-12.99	28.37	43.50	-15.13	QP
4	239.1400	41.36	-11.78	29.58	46.00	-16.42	QP
5	338.1900	43.01	-6.70	36.31	46.00	-9.69	QP
6	352.7000	37.61	-6.27	31.34	46.00	-14.66	QP

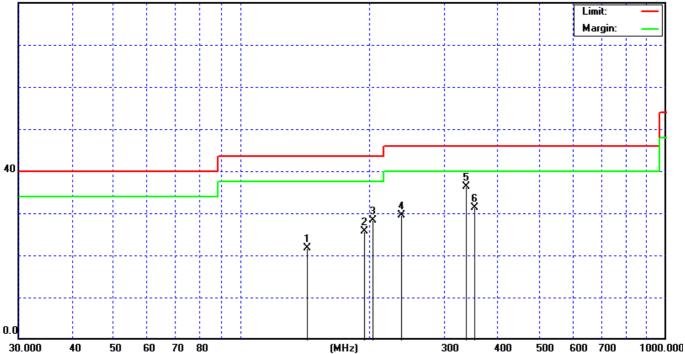
1. All Readings below 1GHz are Quasi-Peak.

2. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

3. Over Limit (Margin Value)=Measurement level-Limit value.

4. The " " means this data is worst-case Measurement level.

80.0 dBuV/m



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Date of Test	August 01, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
NO.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Delector
1	4810.0000	53.05	1.46	54.51	74.00	-19.49	peak
2	4900.0000	51.97	1.40	53.37	74.00	-20.63	peak
3	7212.0000	45.66	9.11	< 54.77	74.00	-19.23	peak
4	7356.0000	43.55	9.12	< 52.67	74.00	-21.33	peak
5	9616.0000	43.86	6.58	< 50.44	74.00	-23.56	peak
6	9808.0000	43.85	6.27	< 50.12	74.00	-23.88	peak

Average

No.	Frequency [MHz]	Peak Emission Level [dB(uV/m)]	Duty Cycle [dB]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4180.0000	54.51	-20	34.51	54.00	19.49
2	7212.0000	54.77	-20	34.77	54.00	19.23

Remark

- 1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
- 2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
- 3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).
- 4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
- 5. Correction Factor= Antenna Factor + Cable Loss Amplifier Factor
- 6. Margin Value=Emission level-Limit value.7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
- 8. The Duty Cycle is refer to section 5.
- 9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Date of Test	August 01, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
NO.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Delector
1	4810.0000	47.77	1.50	49.27	74.00	-24.73	peak
2	4900.0000	48.08	2.20	50.28	74.00	-23.72	peak
3	7212.0000	44.07	8.72	< 52.79	74.00	-21.21	peak
4	7356.0000	43.26	8.51	< 51.77	74.00	-22.23	peak
5	9616.0000	43.05	10.15	< 53.20	74.00	-20.80	peak
6	9808.0000	42.75	9.79	< 52.54	74.00	-21.46	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
NO.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Detector
1	4816.0000	53.36	1.46	54.82	74.00	-19.18	peak
2	4912.0000	52.22	1.39	53.61	74.00	-20.39	peak
3	7233.0000	44.91	9.35	< 54.26	74.00	-19.74	peak
4	7377.0000	44.78	9.05	< 53.83	74.00	-20.17	peak
5	9644.0000	43.23	6.69	< 49.92	74.00	-24.08	peak
6	9836.0000	43.19	5.86	< 49.05	74.00	-24.95	peak

Average

No.	Frequency [MHz]	Peak Emission Level [dB(uV/m)]	Duty Cycle [dB]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4816.0000	54.82	-20	34.82	54.00	19.18
2	7233.0000	54.26	-20	34.26	54.00	19.74

Remark

- 1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
- 2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.
- 3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).
- 4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
- 5. Correction Factor= Antenna Factor + Cable Loss Amplifier Factor
- 6. Margin Value=Emission level-Limit value.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.
- 8. The Duty Cycle is refer to section 5.
- 9. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
INO.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Delector
1	4816.0000	48.05	1.55	49.60	74.00	-24.40	peak
2	4912.0000	48.26	2.29	50.55	74.00	-23.45	peak
3	7233.0000	43.95	8.71	< 52.66	74.00	-21.34	peak
4	7377.0000	43.36	8.48	< 51.84	74.00	-22.16	peak
5	9644.0000	43.86	10.06	< 53.92	74.00	-20.08	peak
6	9836.0000	43.52	9.78	< 53.30	74.00	-20.70	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Horizontal	Frequency Range	Above 1GHz

No.	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
INO.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Detector
1	4840.0000	51.54	1.45	52.99	74.00	-21.01	peak
2	4928.0000	53.57	1.38	54.95	74.00	-19.05	peak
3	7257.0000	42.82	9.50	< 52.32	74.00	-21.68	peak
4	7401.0000	42.69	8.94	< 51.63	74.00	-22.37	peak
5	9676.0000	42.72	6.80	< 49.52	74.00	-24.48	peak
6	9868.0000	43.87	5.39	< 49.26	74.00	-24.74	peak

Average

No.	Frequency [MHz]	Peak Emission Level [dB(uV/m)]	Duty Cycle [dB]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4928.0000	54.95	-20	34.95	54.00	19.05

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Vertical	Frequency Range	Above 1GHz

No	Frequency	Reading Level	Factor	Measurement	Limit	Over Limit	Detector
No.	MHz	dBµV	dB	dBµV/m	dBµV/m	dB	Detector
1	4832.0000	48.62	1.68	50.30	74.00	-23.70	peak
2	4928.0000	50.41	2.41	52.82	74.00	-21.18	peak
3	7257.0000	42.42	8.68	< 51.10	74.00	-22.90	peak
4	7401.0000	42.56	8.43	< 50.99	74.00	-23.01	peak
5	9676.0000	42.71	9.97	< 52.68	74.00	-21.32	peak
6	9868.0000	43.64	9.78	< 53.42	74.00	-20.58	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

3.7.2 FUNDAMEDTAL RADIATED EMISSIONS

Date of Test	August 01, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Horizontal		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2403.8000	62.55	31.49	94.04	114.00	-19.96	peak
2	2452.0000	62.42	31.38	93.80	114.00	-20.20	peak

Average

No.	Frequency [MHz]	Peak Emission Level [dB(uV/m)]	Duty Cycle [dB]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2403.8	94.04	-20	74.04	94.00	19.96

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	August 01, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 0		
Antenna distance	3m at Vertical		

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2404.0000	48.17	24.57	72.74	114.00	-41.26	peak
2	2451.8000	47.13	23.79	70.92	114.00	-43.08	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Horizontal		

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2411.0000	61.43	31.47	92.90	114.00	-21.10	peak
2	2458.8000	61.14	31.36	92.50	114.00	-21.50	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Änalizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 7		
Antenna distance	3m at Vertical		

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2410.8000	46.58	24.46	71.04	114.00	-42.96	peak
2	2458.8000	44.70	23.68	68.38	114.00	-45.62	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Änalizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Horizontal		

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2419.0000	59.96	31.45	91.41	114.00	-22.59	peak
2	2467.0000	58.75	31.35	90.10	114.00	-23.90	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Änalizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

Date of Test	July 25, 2006	Temperature	25.6 deg/C
EUT	Wireless Keyboard	Humidity	63 %RH
Working Cond.	Channel 15		
Antenna distance	3m at Vertical		

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB	Detector
1	2418.8000	44.88	24.33	69.21	114.00	-44.79	peak
2	2467.0000	41.46	23.55	65.01	114.00	-48.99	peak

Remark

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Änalizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ, Span=100MHz.

3. AVG Emission=Peak Emission + Duty Cycle(Log Scale).

4. Measurement = Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

5. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

6. Margin Value=Emission level-Limit value.

7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

8. The Duty Cycle is refer to section 5.

4. BAND EDGE

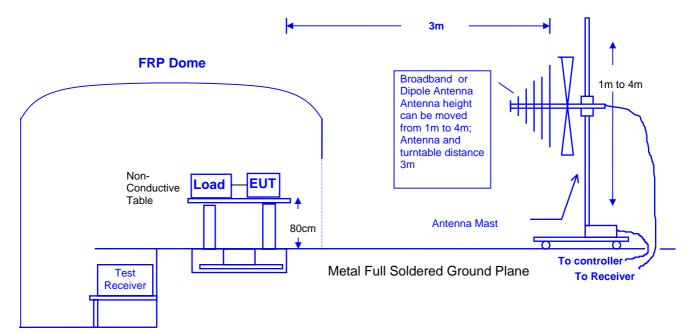
4.1 TEST EQUIPMENT

ltem	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	01/19/06
2	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	04/03/06
3	Spectrum Analyzer	HP	E4407B	39240339	07/26/06
4	Power Meter	Rohde & Schwarz	NRVS	100666	04/07/06
5	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	04/07/06
6	Pre-Amplifier	HP	8449B	3008A01264	06/14/06
7	BILOG ANTENNA	SCHAFFNER	CBL6112B	2620	11/26/05
8	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/21/05
9	RF Cable	GesTek	N/A	GTK-E-A152-01	12/20/05
10	Open Site	GesTek	N/A	B1	11/22/05
11	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

4.2 BLOCK DIAGRAM OF TEST SETUP

RF Radiated Measurement:



4.3 BAND EDGE LIMIT

In any 100KHz 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 50dB below that in the 100KHz 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 EUT CONFIGURATION

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 C63.4:2000 on radiated measurement.

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

4.5 OPERATING CONDITION OF EUT

Same as section 2.8.

4.6 TEST RELULT

Date of Test	Augsut 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	40 %RH
Working Cond.	TX Mode		
Antenna distance	3m at Horizontal	Test Band	Lower

Radiation Emission of Fundamental

Peak

Frequency	Reading Level	Correction Factor	Emission Level
[MHz]	[dB(uV)]	[dB/m]	[dB(uV/m)]
2403.8	62.55	31.49	94.04

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

- 2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
- 3. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
- 4. Correction Factor= Antenna Factor + Cable Loss Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (25.38)dB delta between carry power and maximum emission in restrict band 2400 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of $\underline{2400}$ MHz is $\underline{94.04}$ dBuV/m – $\underline{25.38}$ dB = $\underline{68.66}$ dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength × Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-42.49)dB

Average field strength of (2400)MHz is

(68.66) dBuV/m + (-20)dB = (48.66)dBuV/m which is under 54dBuV/m.

Remark:

Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	40 %RH
Working Cond.	TX Mode		
Antenna distance	3m at Vertical	Test Band	Lower

Radiation Emission of Fundamental

Peak

Frequency	Reading Level	Correction Factor	Emission Level
[MHz]	[dB(uV)]	[dB/m]	[dB(uV/m)]
2404	48.17	24.57	72.74

Remark:

 All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
 Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
 Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation)

4. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (25.38)dB delta between carry power and maximum emission in restrict band 2400 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2400 MHz is 72.74 dBuV/m – 25.38 dB = 47.36 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength × Duty Cycle

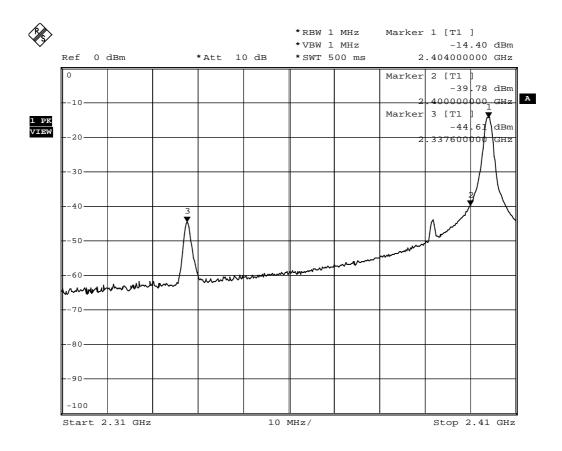
(20logAVG = 20logPeak + 20logDuty Cycle)

 $20\log Duty Cycle = (-42.49)dB$

Average field strength of (2400)MHz is

(47.36) dBuV/m + (-20)dB = (27.36)dBuV/m which is under 54dBuV/m.

Remark:



Date: 1.AUG.2006 16:06:06

Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	40 %RH
Working Cond.	TX Mode		
Antenna distance	3m at Horizontal	Test Band	Higher

Radiation Emission of Fundamental

Peak

Frequency	Reading Level	Correction Factor	Emission Level
[MHz]	[dB(uV)]	[dB/m]	[dB(uV/m)]
2467	58.75	31.35	90.1

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2. Spectrum Änalizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.

3. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).

4. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (28.43)dB delta between carry power and maximum emission in restrict band 2504.2 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of <u>2504.2</u> MHz is <u>90.1</u>dBuV/m – <u>28.43</u> dB = <u>61.67</u> dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength × Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-42.49)dB

Average field strength of (2504.2)MHz is

(61.67) dBuV/m + (-20)dB = (41.67)dBuV/m which is under 54dBuV/m.

Remark:

Date of Test	August 01, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	40 %RH
Working Cond.	TX Mode		
Antenna distance	3m at Vertical	Test Band	Higher

Radiation Emission of Fundamental

Peak

Frequency	Reading Level	Correction Factor	Emission Level
[MHz]	[dB(uV)]	[dB/m]	[dB(uV/m)]
2467	41.46	23.55	65.01

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.

2.

Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off 3. calculation)

4. Correction Factor= Antenna Factor + Cable Loss - Amplifier Factor

TEST Result

The band edge emission plot on next page are Peak and Average. The polt for peak is appear (28.43)dB delta between carry power and maximum emission in restrict band 2504.2 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2504.2 MHz is 65.01 dBuV/m - 28.43 dB = 36.58 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength × Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

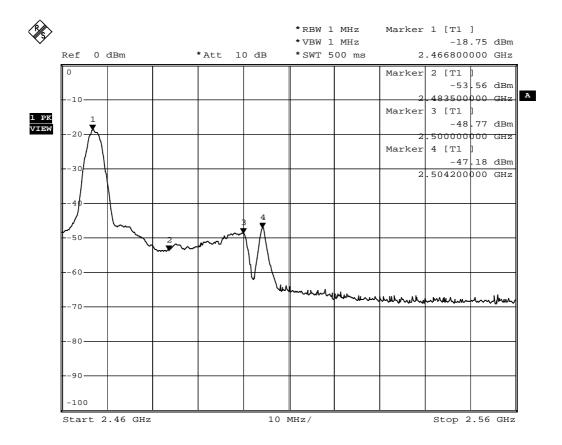
 $20\log Duty Cycle = (-42.49)dB$

Average field strength of (2504.2)MHz is

(36.58) dBuV/m + (-20)dB = (16.58)dBuV/m which is under 54dBuV/m.

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.



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5. DUTY CYCLE

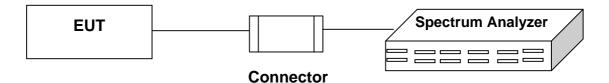
5.1 TEST EQUIPMENT

The following test equipments are used during the radiated emission tests:

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	04/03/06
2	Spectrum Analyzer	HP	E4407B	39240339	07/26/06

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

5.2 BLOCK DIAGRAM OF TEST SETUP



5.3 TEST RESULT

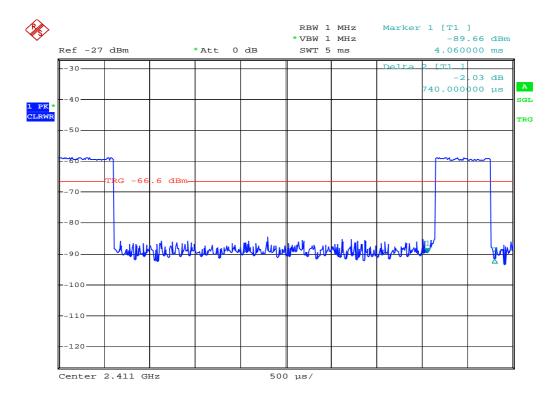
Date of Test	July 27, 2006	Temperature	25 deg/C
EUT	Wireless Keyboard	Humidity	40 %RH
Working Cond.	TX Mode		

Duty Cycle = Time on of one cycle / Totally time of one cycle

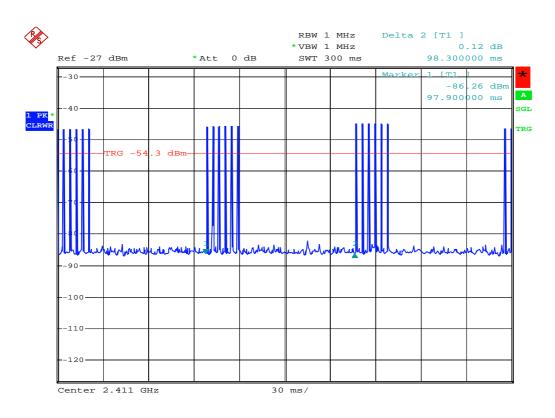
Frequency <u>2411</u> MHz Time on of one slot length = <u>740</u> (μ s) = <u>0.74</u> (msec) Time on of one cycle = <u>98.3</u> (msec) Totally time of one cycle = <u>98.3</u> (msec) Duty Cycle = <u>0.74</u> / <u>98.3</u> = <u>0.0075</u> <u>20</u> log <u>0.0075</u> = <u>-42.49</u> dB

Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.



Date: 27.JUL.2006 19:36:10



Date: 27.JUL.2006 19:19:26

6. PHOTOGRAPHS FOR TEST

6.1 TEST PHOTOGRAPHS FOR RADIATION

30-1000MHz







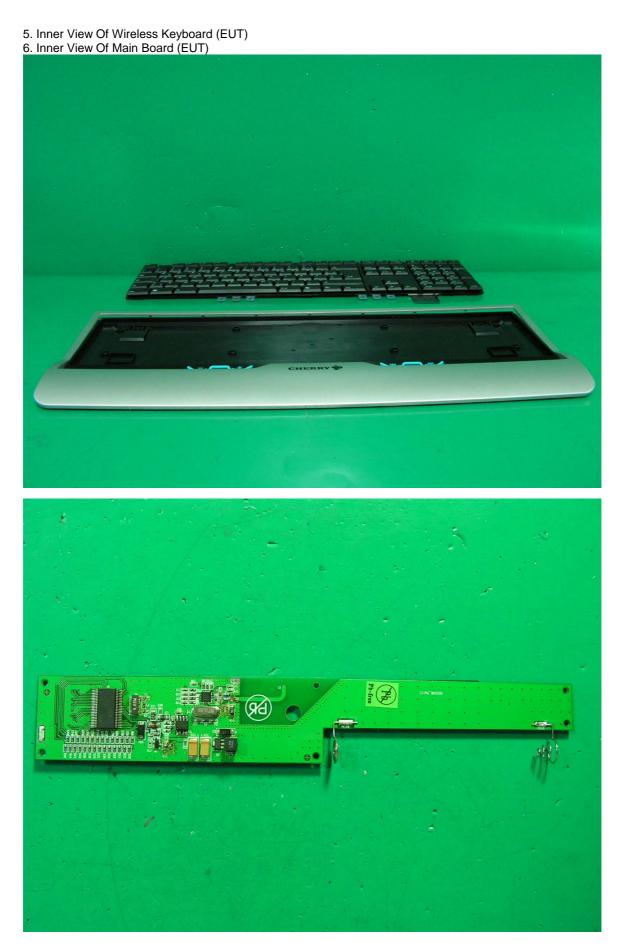
7. PHOTOGRAPHS FOR PRODUCT

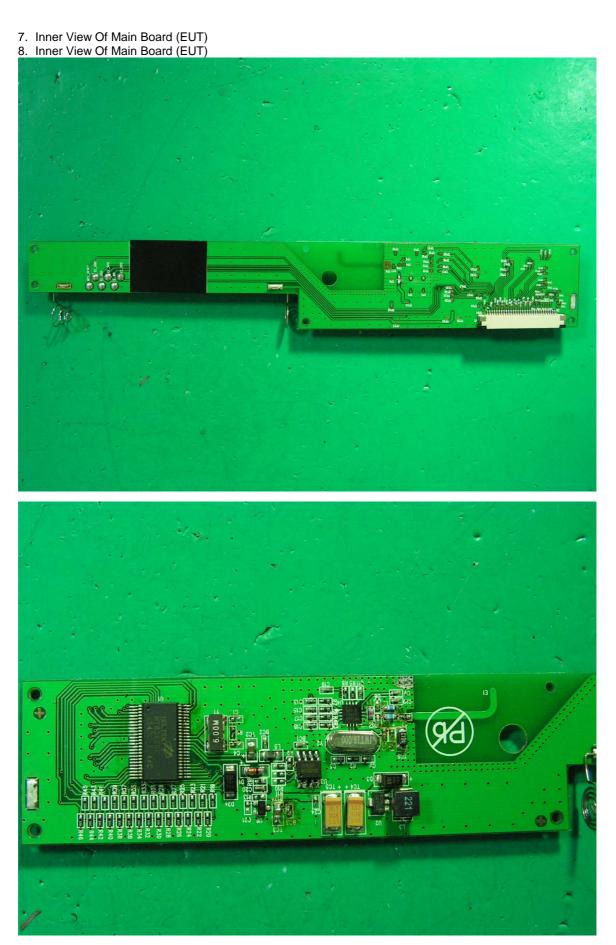
1. Front View Of Wireless Keyboard (EUT) 2. Back View Of Wireless Keyboard (EUT)

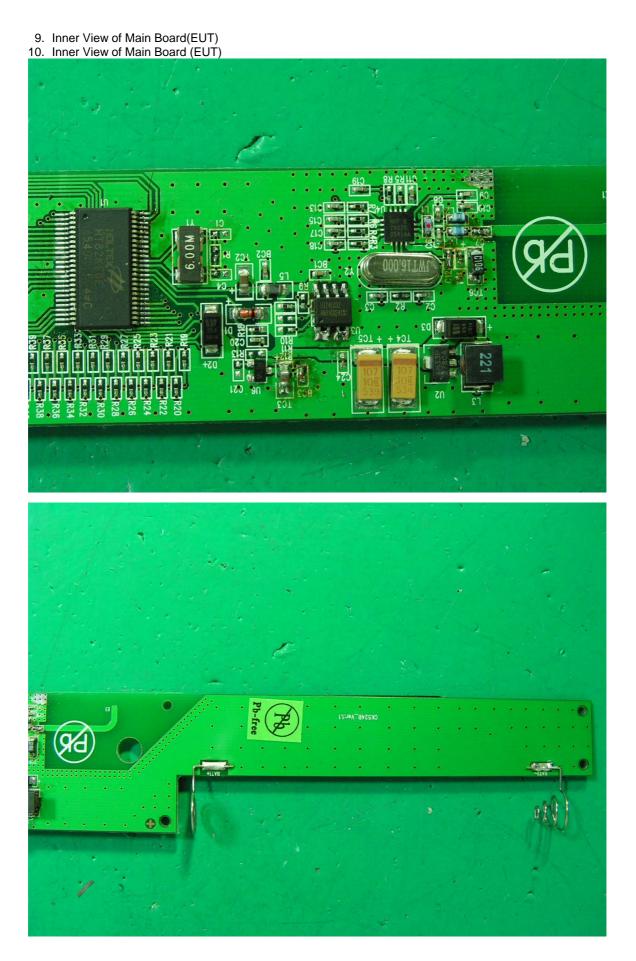












11. LABEL HERE



8. EMI REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.

Appendix A Circuit (Block) Diagram

(Shall be added by Applicant)

Appendix B

User Manual

(Shall be added by Applicant)