Certificate of Test

January 2008

Sunrex Technology Corp.

Product Type	**: Wireless Keyboard**
Model Number	**: RK503B**
Test Report Number	**: 0711018R-01**
Date of Test	**: November 27, 2007- December 12, 2007**

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

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

http : //www.gestek.com.tw

Sharon Chang, President

Date: January 04, 2008

GesTek EMC Lab
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NVLAP LAB CODE 200085-0

Test Report
Application for Certification
On Behalf Of

Sunrex Technology Corp.

EUT:
Wireless Keyboard

Model Number:
RK503B

FCC ID:
J75503B

Prepared for:
Sunrex Technology Corp.
No. 188-1, Chung Cheng Rd., Ta Ya Shiang, Taichung Hsien, Taiwan, R.O.C.

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.
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TABLE OF CONTENTS

1. CERTIFICATION

Applicant : Sunrex Technology Corp

EUT Description	: Wireless Keyboard
Model Number	: RK503B
Serial Number	: N/A
Brand Name	: Sunrex
FCC ID	: J75503B
Tested Power Supply	: DC 6V
Manufacturer	: Sunrex Technology Corp
Manufacturer Address	: No. 188-1, Chung Cheng Rd., Ta Ya Shiang, Taichung Hsien, Taiwan, R.O.C.

MEASUREMENT PROCEDURES USED:

☑ **CFR 47, Part 15**	Radio Frequency Device Subpart C Intentional Radiators :2007
☑ **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.

NVLAP LAB CODE 200085-0

Date of est : **November 27, 2007 – December 12, 2007**

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

Tested By :

John Wu / Eng. Dept. Engineer

Approved By :

Tonny Lin / General 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 : RK503B
Serial Number : N/A
Brand Name : Sunrex
FCC ID : J75503B
Modulation Type : GFSK
Antenna Type : Printed on PCB
Antenna Gain : 0 dBi
Frequencg Range : 2.407~2.477GHz
Channel Number : 5 Channel
Working Voltage : Battery 4.4-6.4V

Frequency of Each Channel:

Channel	Frequency (MHz)
1	2477
2	2438
3	2407
4	2472
5	2430

Note:
1. This device is transceiver of Wireless Keyboard included transmit and receive function. The test report is for transmitter.
2. This device is 5 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 receive function to accordance with Part 15 regulations and under Declaration of Conformity and record of measurment in test report that the report number is 0711018F-01.

2.2 OPERATIONAL DESCRIPTION

This device is transceiver of Wireless Keyboard included transmit and receive function.
The device can transmit signal to associate USB dongal and revice signal form USB dongal.
The device have 5 channel and operated in 2.407 to 2.477GHz with GFSK modulation.
Another information please refer to users manual.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: Wireless Keyboard, M/N: RK503B	
Test Mode	**Mode 1**
	Transmitter

2.4 SUMMARY OF TEST PROCEDURE AND TEST RESULTS

Test Item	Applied Standard Section	Test Resut
Conduction Emission	15.109,ANSI C63.4 Section 7	Pass (refer to section 3.7)
Radistion Emission	15.209, ANSI C63.4 Section 8	Pass (refer to section 4.7)
Peak Power Output	15.249(a), ANSI C63.4 Section 13 & Annex I	Pass (refer to section 4.7)
Band Edge	15.249(d) , ANSI C63.4 Section 13 & Annex I	Pass (refer to section 5.6)

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:

Non-test peripherals

2.6 TEST FACILITY

Ambient conditions in the laboratory:

ITEMS	Requirement
TEMPERATURE (°C)	10-40
HUMIDITY (%RH)	10-90
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, 2008 For CISPR 22, FCC Method and AS/NZS CISPR 22 Measurement.
Taiwan Accreditation Foundation (TAF)	Recognized by the Council of Taiwan Accreditation Foundation and confirmed to meet the requirements of ISO/IEC 17025. Registration No.: 1082 Registration on TAF effective through Sep. 19, 2009

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.

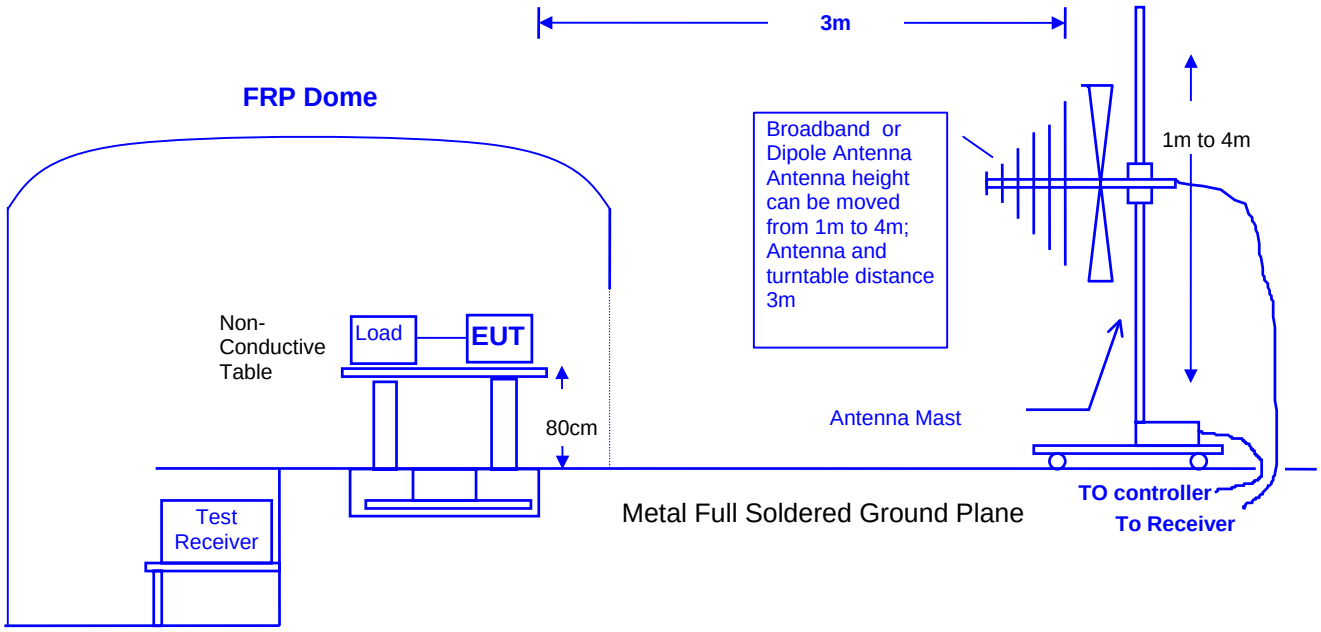
3. RADIATION EMISSION DATA

3.1 TEST EQUIPMENT

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

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal.
1	Test Receiver	R & S	ESCS30	825022/003	2008.05.25
2	Spectrum Analyzer	HP	8568B	N/A	2008.01.23
3	Spectrum Analyzer	HP	E4407B	US39240339	2008.08.06
4	Power Meter	Rohde & Schwarz	NRVS	100666	2008.04.03
5	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	836019-058	2008.04.03
6	Pre-Amplifier	EMV-Technik	PA303	N/A	2008.04.18
7	Pre-Amplifier	HP	8449B	3008A01263	2008.03.21
8	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-251	2008.03.09
9	HORN ANTENNA	SCHWARZBECK	BBHA 9120	D243	2007.12.24
10	CABLE	GTK	N/A	GTK-E-A152-01	2008.12.13
11	OPEN SITE	GTK	N/A	B1	2008.11.18
12	CHAMBER	GTK	N/A	A6	2008.11.30
13	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

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.

☒ **Fundamental and Harmonics Emission Limits**

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

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 2.7.

3.6 RADIATED EMISSION DATA

The measurement range of radiated emission, which is from **30 MHz to 10 Harminics,** 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

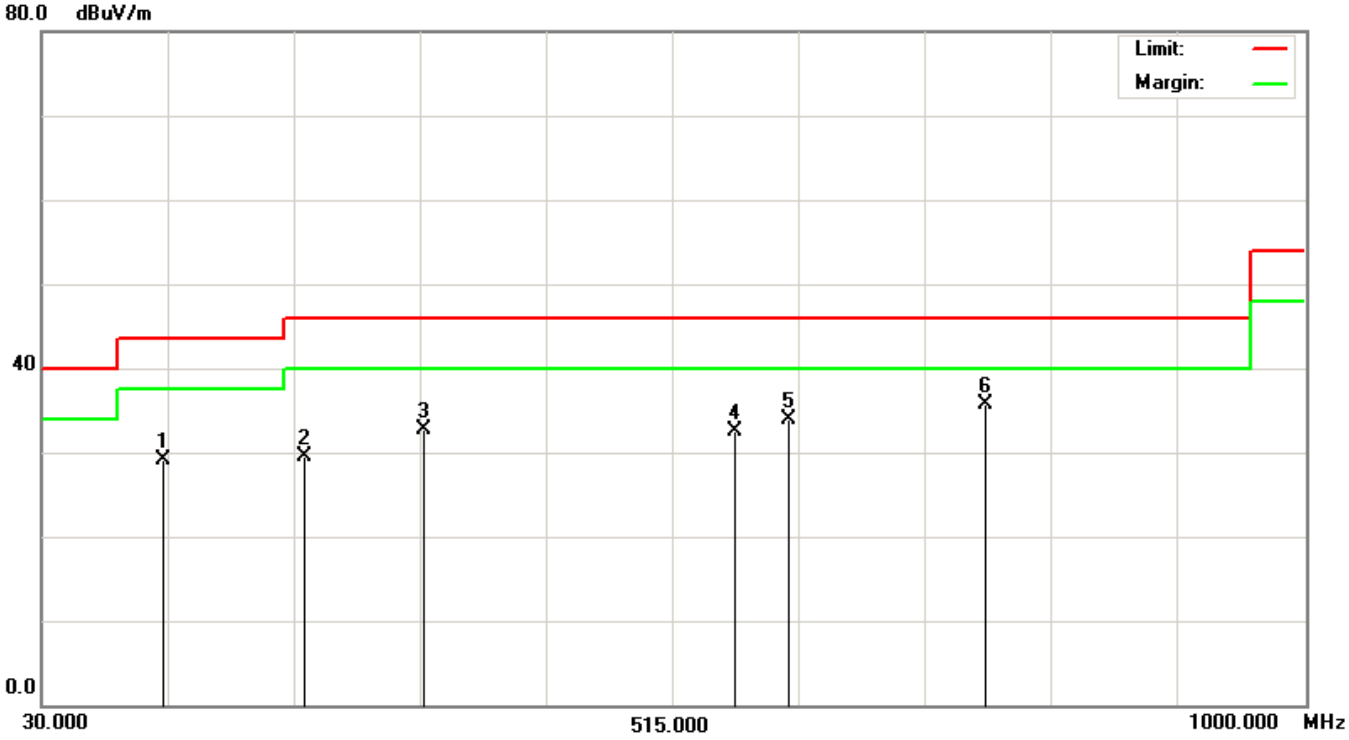
3.7.1 HARMONIC RADIATED EMISSIONS

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	123.1200	46.80	-17.69	29.11	43.50	-14.39	QP
2	231.7600	45.20	-15.75	29.45	46.00	-16.55	QP
3	323.9100	45.33	-12.65	32.68	46.00	-13.32	QP
4	563.5000	38.80	-6.29	32.51	46.00	-13.49	QP
5	605.2100	39.20	-5.34	33.86	46.00	-12.14	QP
6	★755.5600	38.80	-3.06	35.74	46.00	-10.26	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



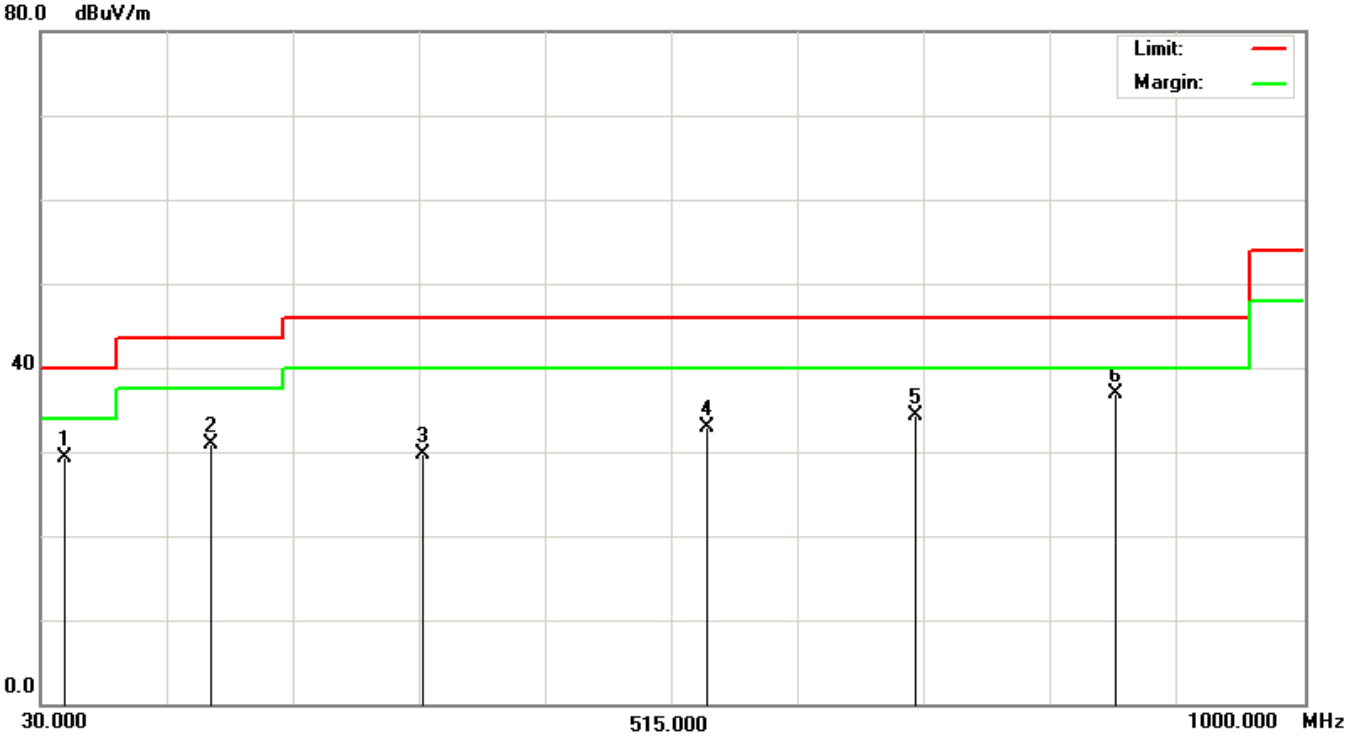
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	48.4300	44.00	-14.74	29.26	40.00	-10.74	QP
2	160.9500	45.20	-14.25	30.95	43.50	-12.55	QP
3	323.9100	42.40	-12.65	29.75	46.00	-16.25	QP
4	543.1300	39.60	-6.77	32.83	46.00	-13.17	QP
5	703.1800	38.30	-3.93	34.37	46.00	-11.63	QP
6	★857.4100	38.40	-1.50	36.90	46.00	-9.10	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



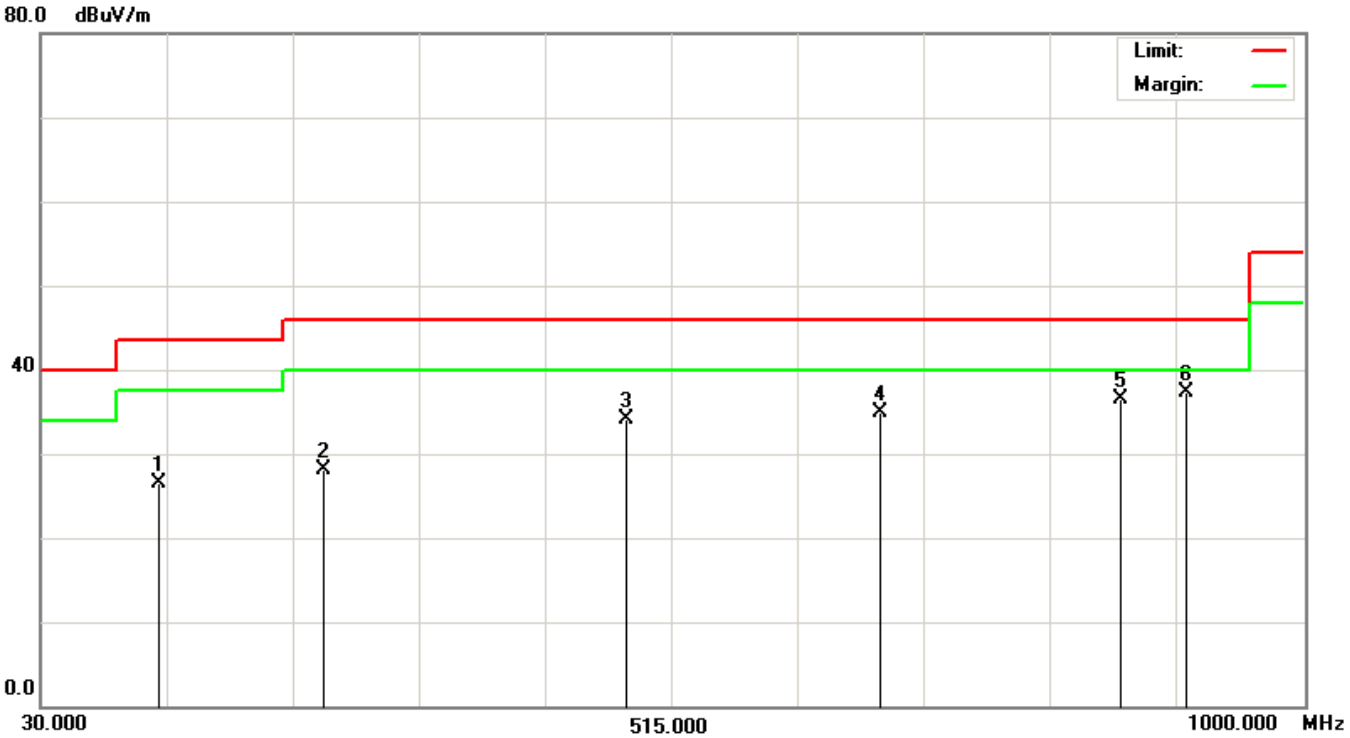
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 2	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	121.1800	44.40	-17.99	26.41	43.50	-17.09	QP
2	247.2800	43.60	-15.46	28.14	46.00	-17.86	QP
3	480.0800	42.40	-8.31	34.09	46.00	-11.91	QP
4	676.0200	39.20	-4.32	34.88	46.00	-11.12	QP
5	861.2900	38.00	-1.44	36.56	46.00	-9.44	QP
6	★910.7600	38.00	-0.79	37.21	46.00	-8.79	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



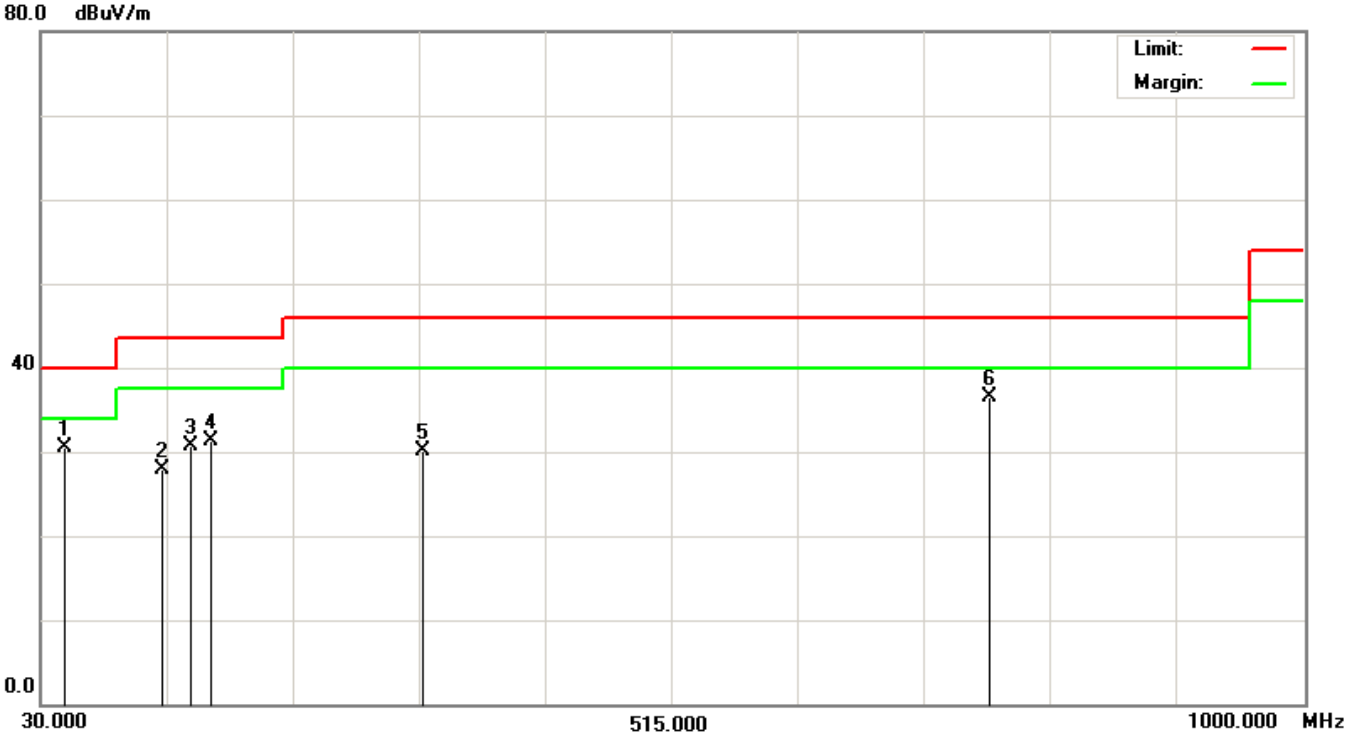
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 2	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	48.4300	45.20	-14.74	30.46	40.00	-9.54	QP
2	123.1200	45.60	-17.69	27.91	43.50	-15.59	QP
3	145.4300	45.40	-14.79	30.61	43.50	-12.89	QP
4	160.9500	45.60	-14.25	31.35	43.50	-12.15	QP
5	323.9100	42.80	-12.65	30.15	46.00	-15.85	QP
6	★759.4400	39.60	-3.00	36.60	46.00	-9.40	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



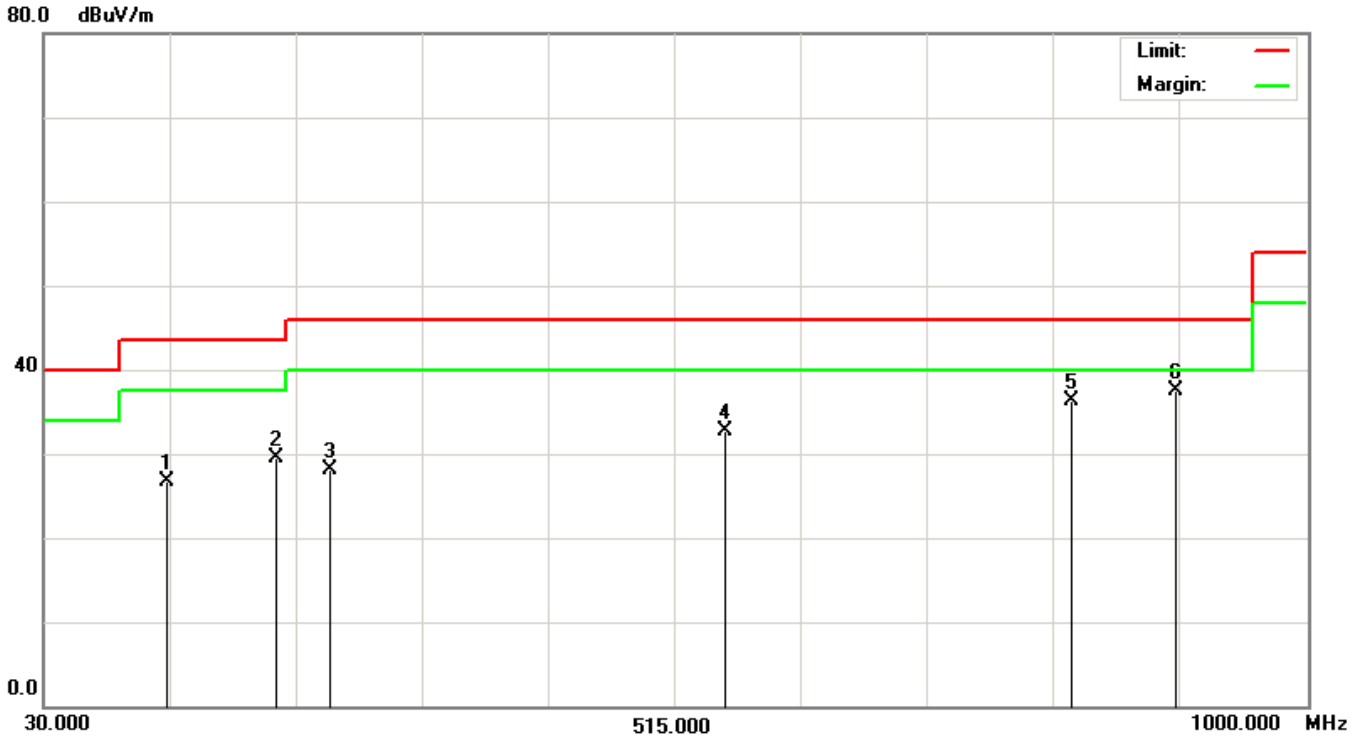
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 3	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	125.0600	44.00	-17.38	26.62	43.50	-16.88	QP
2	209.4500	45.60	-16.16	29.44	43.50	-14.06	QP
3	250.1900	43.60	-15.40	28.20	46.00	-17.80	QP
4	554.7700	39.20	-6.50	32.70	46.00	-13.30	QP
5	820.5500	38.30	-2.03	36.27	46.00	-9.73	QP
6	★901.0600	38.40	-0.87	37.53	46.00	-8.47	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



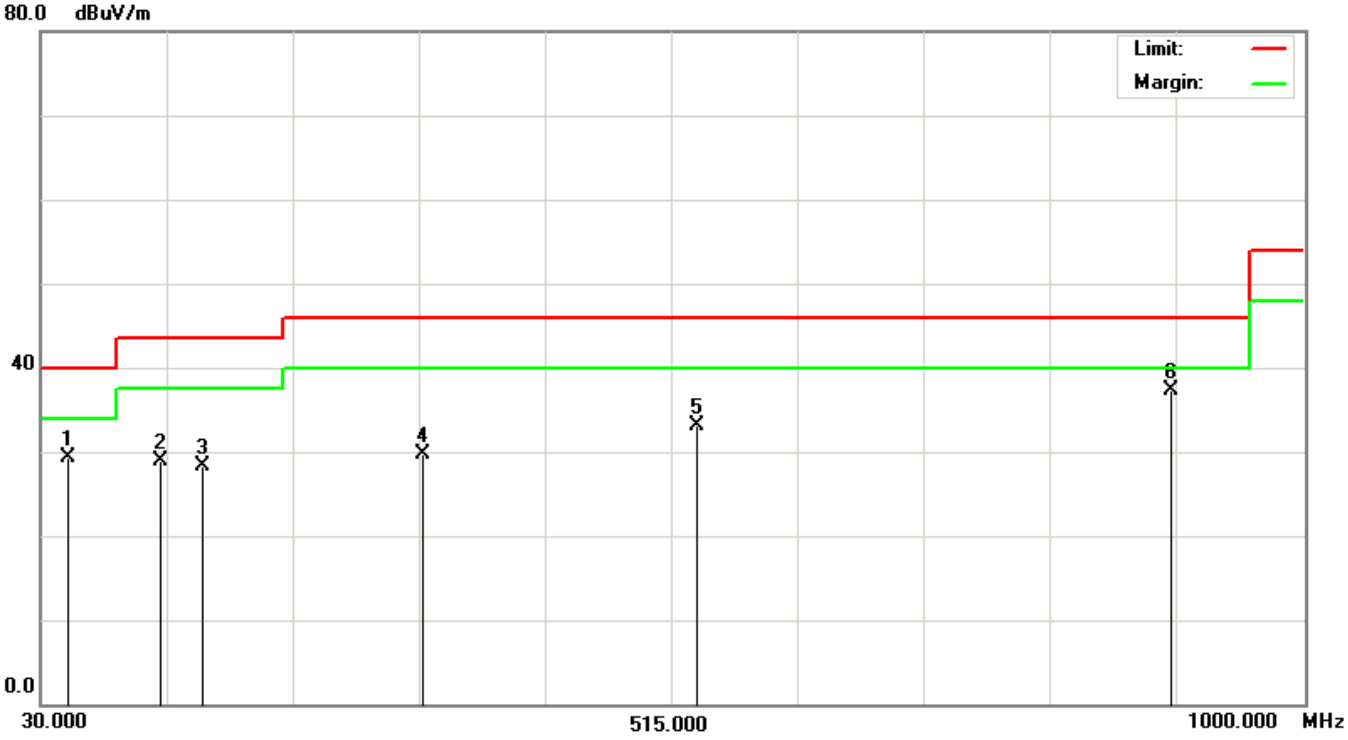
Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	December 04, 2007	**Temperature**	26 deg/C
EUT	Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Mode 1-Channel 3	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBμV	Factor dB	Measurement dBμV/m	Limit dBμV/m	Over Limit dB	Detector
1	51.3400	44.20	-14.89	29.31	40.00	-10.69	QP
2	122.1500	46.80	-17.84	28.96	43.50	-14.54	QP
3	154.1600	42.80	-14.43	28.37	43.50	-15.13	QP
4	323.9100	42.40	-12.65	29.75	46.00	-16.25	QP
5	534.4000	40.18	-6.98	33.20	46.00	-12.80	QP
6	★899.1200	38.22	-0.89	37.33	46.00	-8.67	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. Factor = antenna factor + cable loss – amplifier gain.
5. " ★ " means that this data is the worse case measurement level.
6. The emission level of other frequencies are very lower than the limit.



Remark: 1. The "Limit" in right-up corner in above diagram refers to Quasi-peak ; "Margin" refers to the data under 6dB.

Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4953.8000	56.88	1.35	58.23	74.00	-15.77
2	7431.0000	45.08	8.82	53.90	74.00	-20.10
3	9908.0000	43.80	4.80	48.60	74.00	-25.40
4	12385.0000	42.03	7.56	49.59	74.00	-24.41

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4953.80	58.23	-9.98	48.25	54.00	-5.75

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4954.1000	53.43	2.60	56.03	74.00	-17.97
2	7430.5000	47.16	8.38	55.54	74.00	-18.46
3	9908.0000	43.42	9.78	53.20	74.00	-20.80
4	12385.0000	42.60	10.25	52.85	74.00	-21.15

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4954.10	56.03	-9.98	46.05	54.00	-7.95
2	7430.50	55.54	-9.98	45.56	54.00	-8.44

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
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Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 2	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4876.0000	57.40	1.42	58.82	74.00	-15.18
2	7313.8000	46.97	9.28	56.25	74.00	-17.75
3	9752.0000	43.84	6.98	50.82	74.00	-23.18
4	12190.0000	41.28	11.61	52.89	74.00	-21.11

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4876.00	58.82	-9.98	48.84	54.00	-5.16
2	7313.80	56.25	-9.98	46.27	54.00	-7.73

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 2	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4876.0000	56.19	2.02	58.21	74.00	-15.79
2	7314.3000	49.78	8.57	58.35	74.00	-15.65
3	9752.0000	43.90	9.80	53.70	74.00	-20.30
4	12190.0000	39.38	14.05	53.43	74.00	-20.57

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4876.00	58.21	-9.98	48.23	54.00	-5.77
2	7314.30	58.35	-9.98	48.37	54.00	-5.63

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 3	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4813.9000	58.20	1.46	59.66	74.00	-14.34
2	7220.9000	48.04	9.21	57.25	74.00	-16.75
3	9628.0000	42.83	6.63	49.46	74.00	-24.54
4	12035.0000	39.01	14.53	53.54	74.00	-20.46

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4813.90	59.66	-9.98	49.68	54.00	-4.63
2	7220.90	57.25	-9.98	47.27	54.00	-6.73

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
10. The emission level of other frequencies are very lower than the limit.

Date of Test	November 27, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 3	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	4813.6000	57.61	1.53	59.14	74.00	-14.86
2	7220.3000	51.15	8.71	59.86	74.00	-14.14
3	9628.0000	43.48	10.12	53.60	74.00	-20.40
4	12035.0000	36.40	16.98	53.38	74.00	-20.62

Average

No.	Frequency MHz	Peak Measurement dB(uV/m)	Duty Cycle dB	Measurement dB(uV/m)	Limit dB(uV/m)	Margin dB
1	4813.60	59.14	-9.98	49.16	54.00	-4.84
2	7220.30	59.86	-9.98	49.88	54.00	-4.12

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.
10. The emission level of other frequencies are very lower than the limit.

3.7.2 FUNDAMEDTAL RADIATED EMISSIONS

Date of Test	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2476.700	59.30	31.32	90.62	114.00	-23.38

Date of Test	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2476.700	47.70	23.39	71.09	114.00	-42.91

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 2		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2438.000	58.66	31.41	90.07	114.00	-23.93

Date of Test	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 2		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2438.000	46.01	24.01	70.02	114.00	-43.98

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at **Horizontal**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2407.200	58.72	31.48	90.20	114.00	-23.80

Date of Test	December 12, 2007	**Temperature**	24.4 deg/C
EUT	Wireless Keyboard	**Humidity**	61 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at **Vertical**		

Peak

No.	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV/m	Limit dBµV/m	Over Limit dB
1	2406.800	46.54	24.52	71.06	114.00	-42.94

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 Measurement =Peak Measurement + Duty Cycle(Log Scale).
4. Measurement = Reading + Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Factor = antenna factor + cable loss – amplifier gain.
6. Over Limit (Margin Value)=Measurement 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.

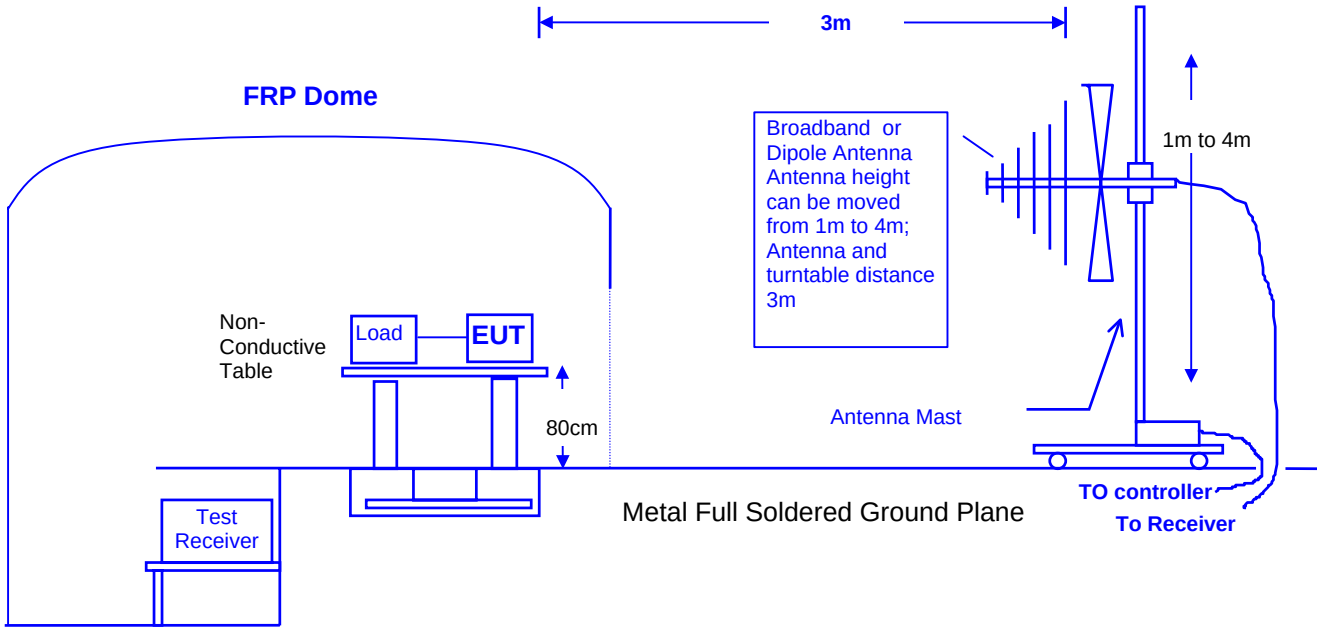
4. BAND EDGE

4.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal.
1	Test Receiver	R & S	ESCS30	825022/003	2008.05.25
2	Spectrum Analyzer	HP	E4407B	US39240339	2008.08.06
3	Power Meter	Rohde & Schwarz	NRVS	100666	2008.04.03
4	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	836019-058	2008.04.03
5	Pre-Amplifier	HP	8449B	3008A01263	2008.03.21
6	HORN ANTENNA	SCHWARZBECK	BBHA 9120	D243	2007.12.24
7	CABLE	GTK	N/A	GTK-E-A152-01	2008.12.13
8	OPEN SITE	GTK	N/A	B1	2008.11.18
9	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

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 2.7.

4.6 TEST RELULT

Date of Test	November 29, 2007	**Temperature**	22.4 deg/C
EUT	Wireless Keyboard	**Humidity**	45 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at **Horizontal**	**Test Band**	Lower

Radiation Emission of Fundamental

Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2407.20	58.72	31.48	90.20

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 (30.61)dB delta between carry power and maximum emission in 2400.0 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2400.0 MHz is 90.20 dBuV/m – 30.61dB = 59.59dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-9.98)dB

Average field strength of (2400.0)MHz is

(59.59) dBuV/m + (-9.98)dB = (49.61)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.

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	November 29, 2007	**Temperature**	22.4 deg/C
EUT	Wireless Keyboard	**Humidity**	45 %RH
Working Cond.	Mode 1-Channel 3		
Antenna distance	3m at **Vertical**	**Test Band**	Lower

Radiation Emission of Fundamental

Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2406.80	46.54	24.52	71.06

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 (30.61)dB delta between carry power and maximum emission in 2400.0 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2400.0 MHz is 71.06 dBuV/m – 30.61dB = 40.45dBuV/m which is under 74dBuV/m.

Remark:

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

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	November 29, 2007	**Temperature**	22.4 deg/C
EUT	Wireless Keyboard	**Humidity**	45 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at **Horizontal**	**Test Band**	Higher

Radiation Emission of Fundamental

Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2476.70	59.30	31.32	90.62

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 (32.70)dB delta between carry power and maximum emission in restrict band 2483.50 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2483.50 MHz is 90.62 dBuV/m – 32.70dB = 57.92dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-9.98)dB

Average field strength of (2483.50)MHz is

(57.92) dBuV/m + (-9.98)dB = (47.94)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.

The average measurement was not performed when the peak measured data under the limit of average detection.

Date of Test	November 29, 2007	**Temperature**	22.4 deg/C
EUT	Wireless Keyboard	**Humidity**	45 %RH
Working Cond.	Mode 1-Channel 1		
Antenna distance	3m at **Vertical**	**Test Band**	Higher

Radiation Emission of Fundamental

Peak

Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]
2476.70	47.70	23.39	71.09

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 (32.70)dB delta between carry power and maximum emission in restrict band 2483.5 MHz.

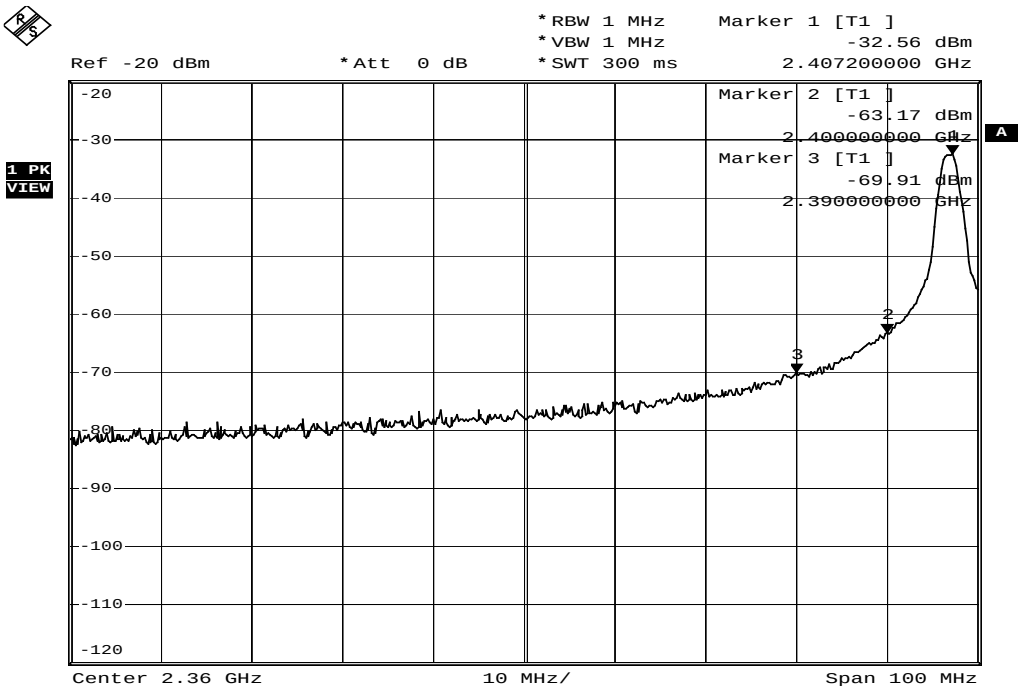
The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2483.5 MHz is 71.09 dBuV/m – 32.70dB = 38.39dBuV/m which is under 74dBuV/m.

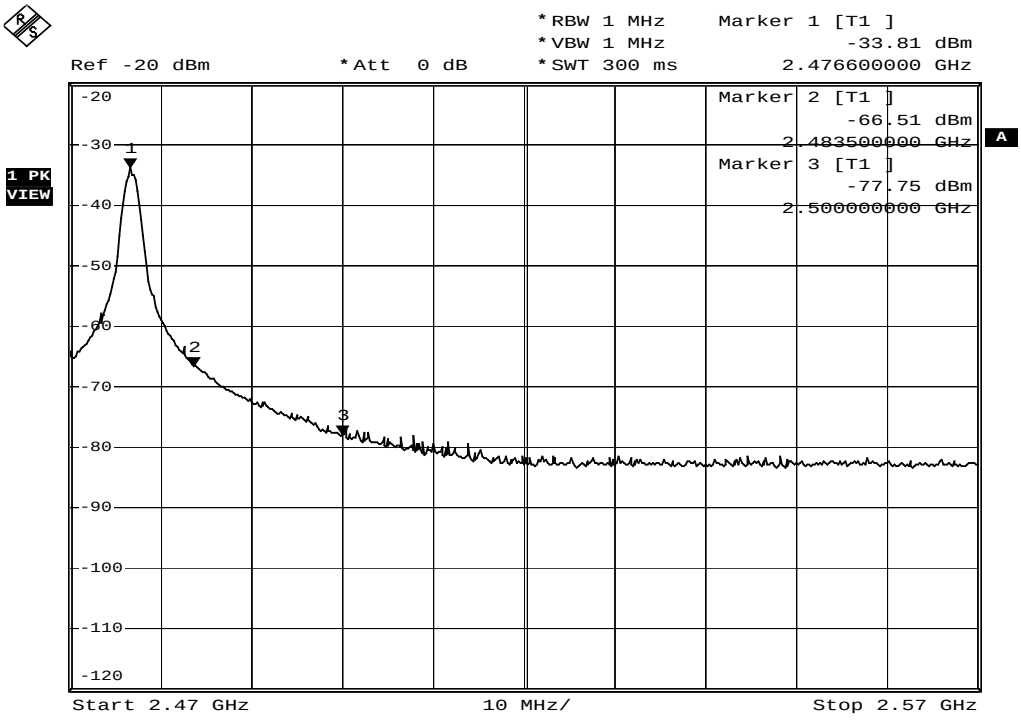
Remark:

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

The average measurement was not performed when the peak measured data under the limit of average detection.



Date: 27.DEC.2007 11:21:27



Date: 13.DEC.2007 10:57:27

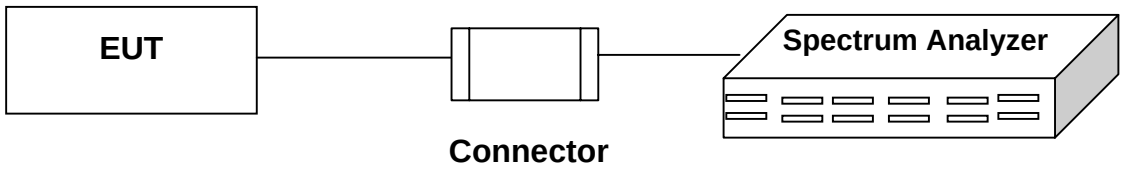
5. DUTY CYCLE

5.1 TEST EQUIPMENT

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

Item	Instrument	Manufacturer	Model	Serial No.	Next Cal.
1	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	2008.04.08
2	Spectrum Analyzer	HP	E4407B	US39240339	2008.08.06

5.2 BLOCK DIAGRAM OF TEST SETUP



5.3 TEST RESULT

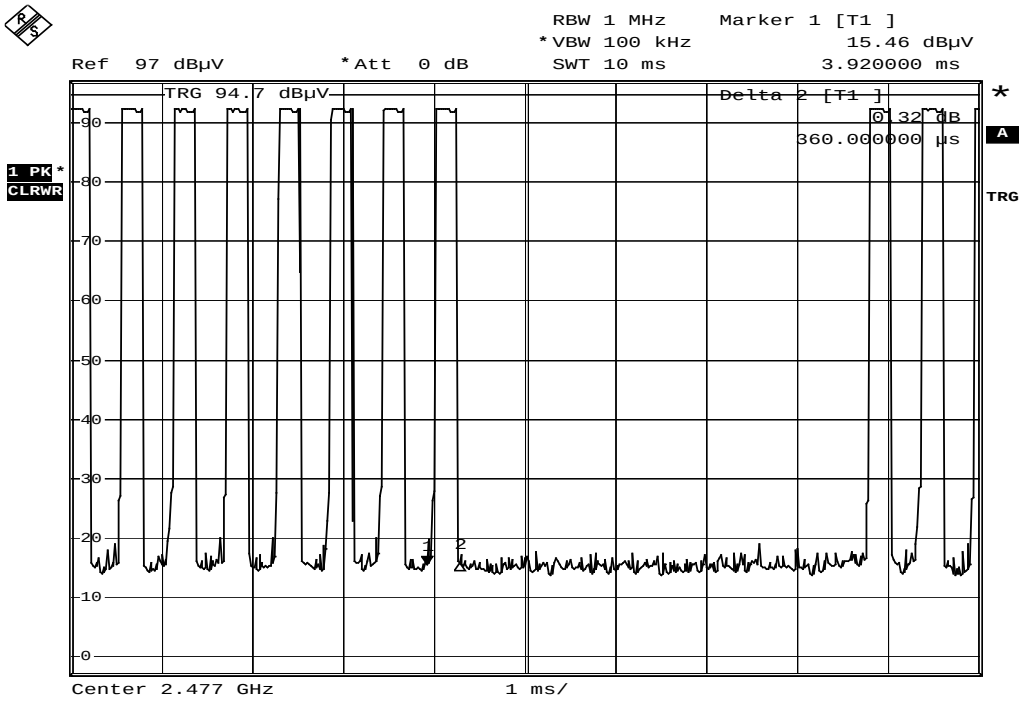
Date of Test	November 29, 2007	**Temperature**	22.4 deg/C
EUT	Wireless Keyboard	**Humidity**	45 %RH
Working Cond.	Mode 1-Channel 1		

Duty Cycle＝Time on of 100msec / 100 msec

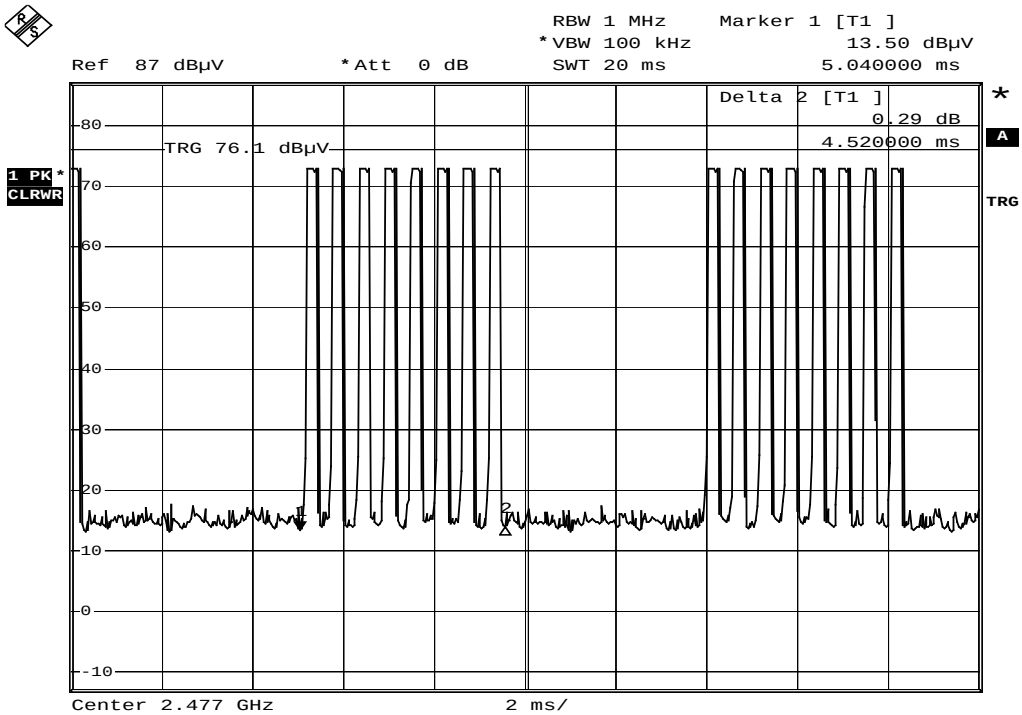
Frequency _2477_ MHz
Time on of one slot length＝ _360_ (μs)＝ _0.36_ (msec)
Time on of 100ms＝ _0.36_ ＸX 8 ＸX 11 = 31.68 (msec)
Duty Cycle ＝ _31.68_ / 100msec ＝ _0.3168_
_20_ log 0.3168 = _-9.98_ dB

Remark:

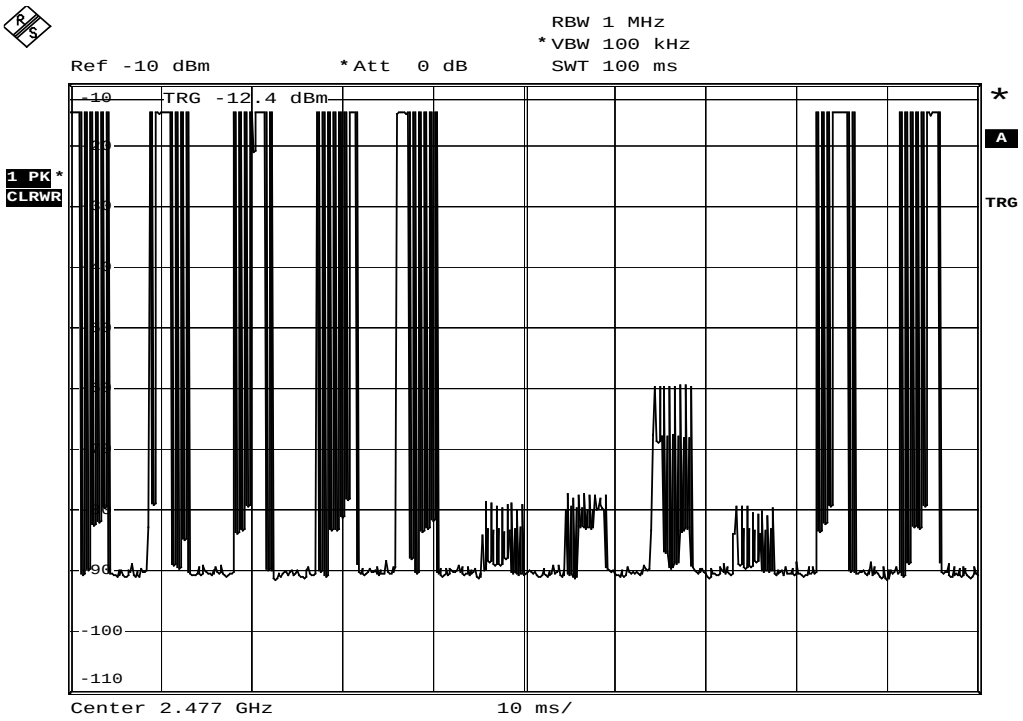
If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.



Date: 30.NOV.2007 14:33:17



Date: 6.DEC.2007 18:27:56

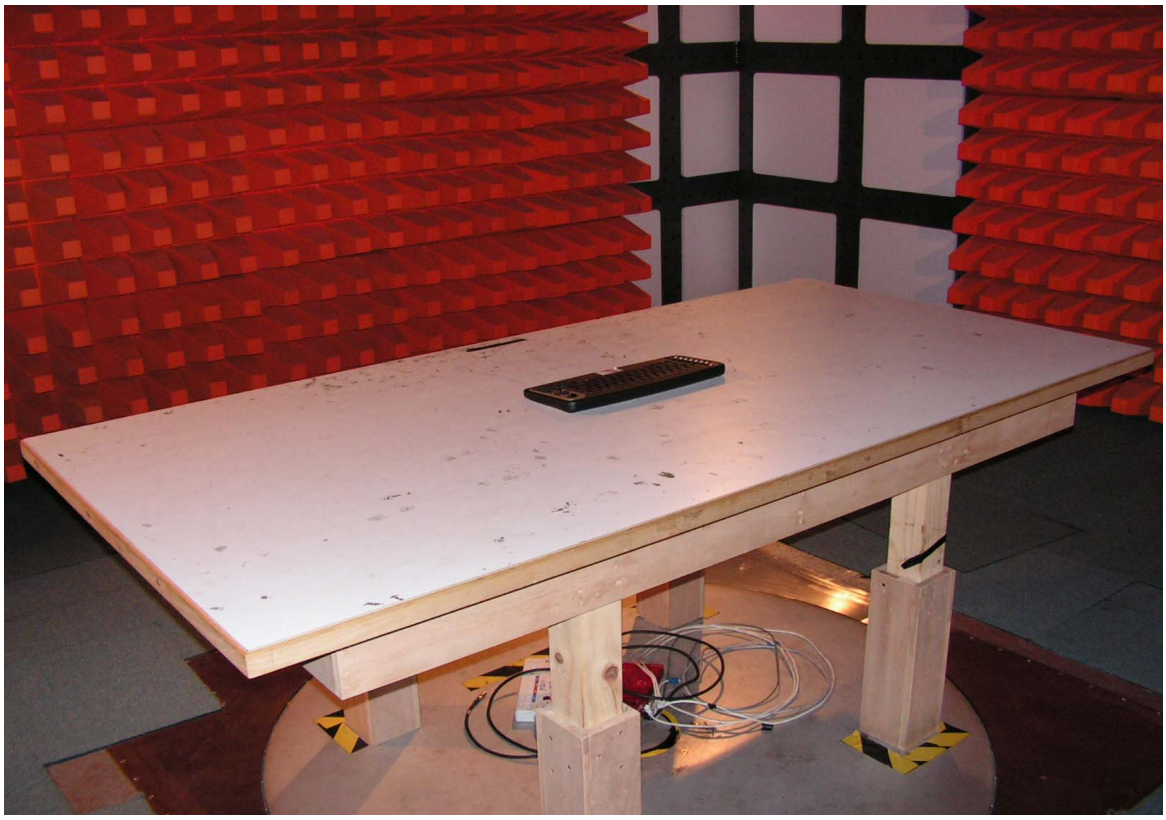


Date: 29.NOV.2007 13:37:06

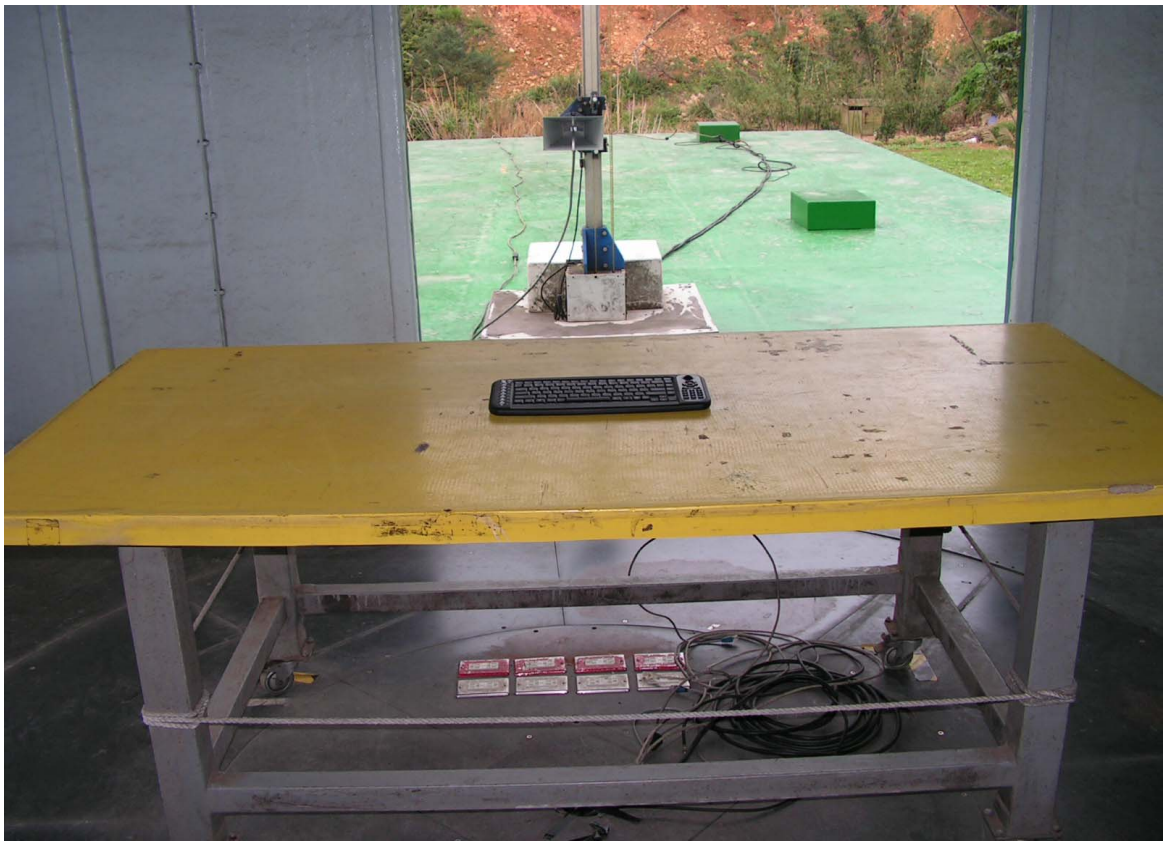
6. PHOTOGRAPHS FOR TEST

6.1 TEST PHOTOGRAPHS FOR RADIATION

30-1000MHz



Above 1GHz

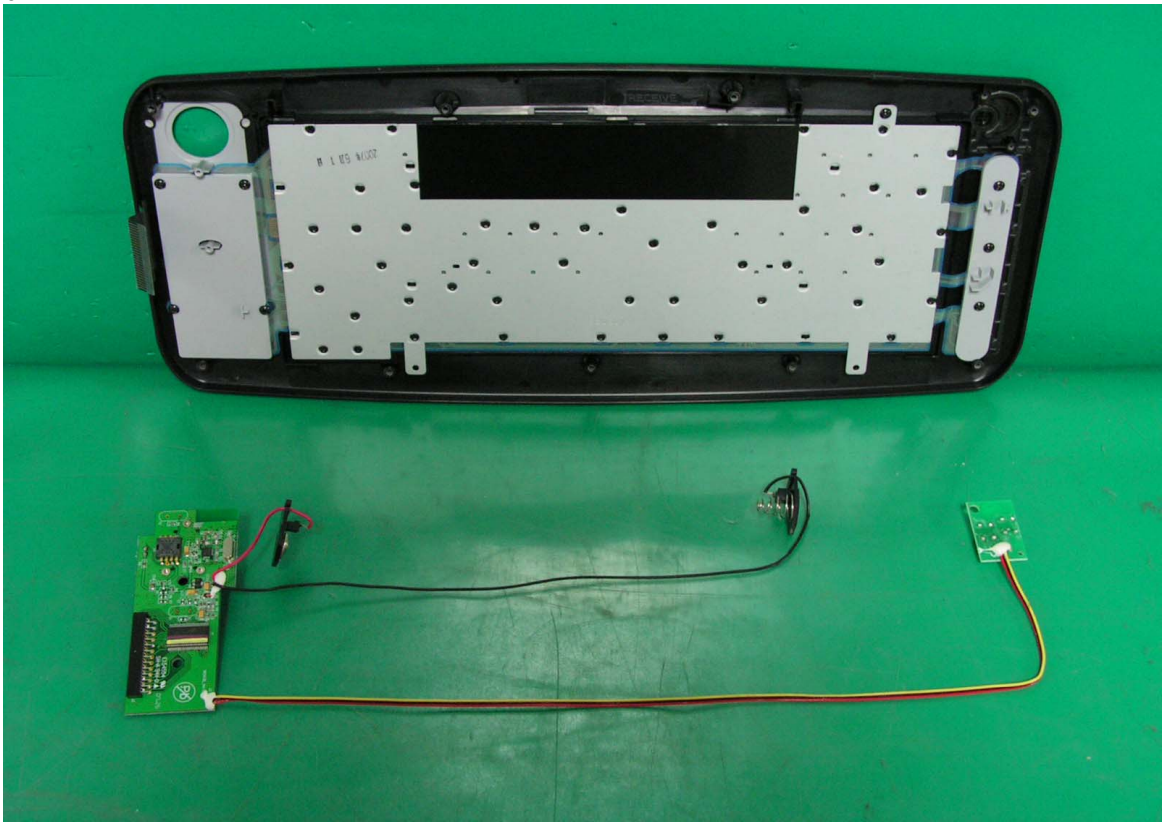


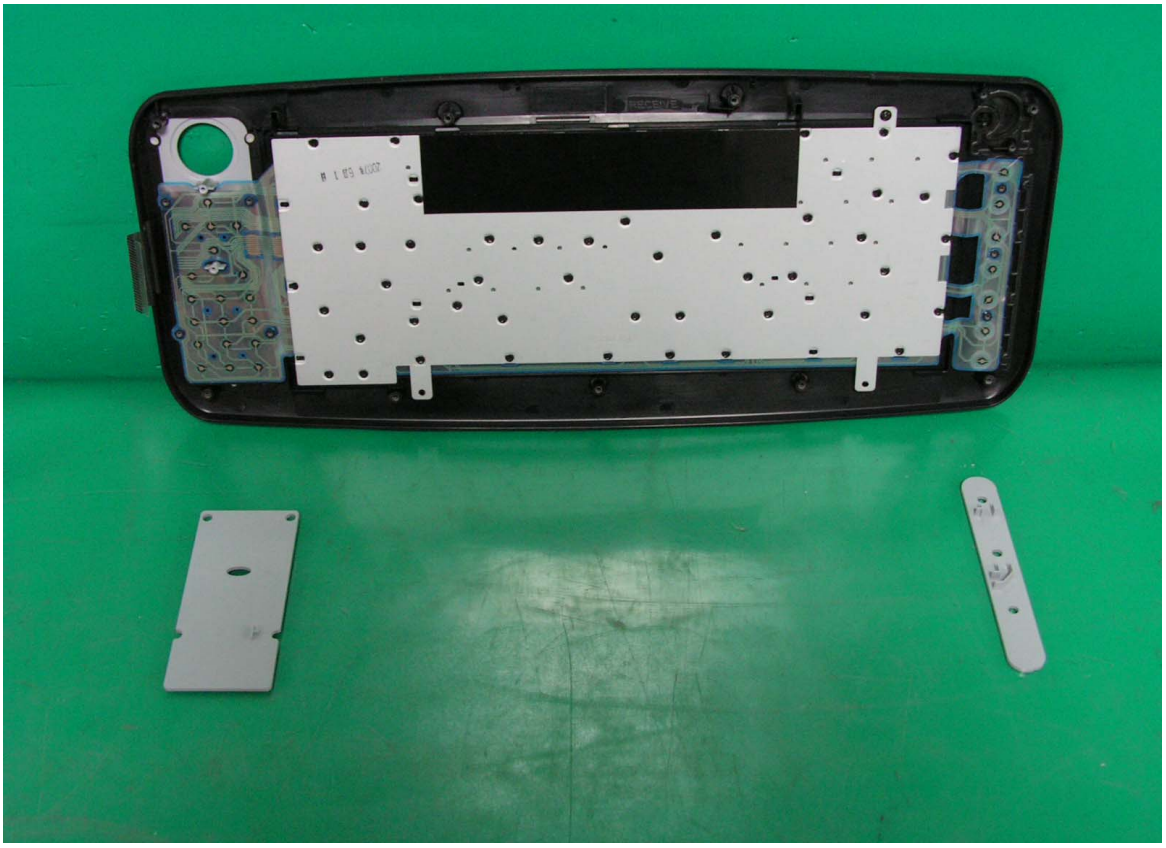
7. PHOTOGRAPHS FOR PRODUCT

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

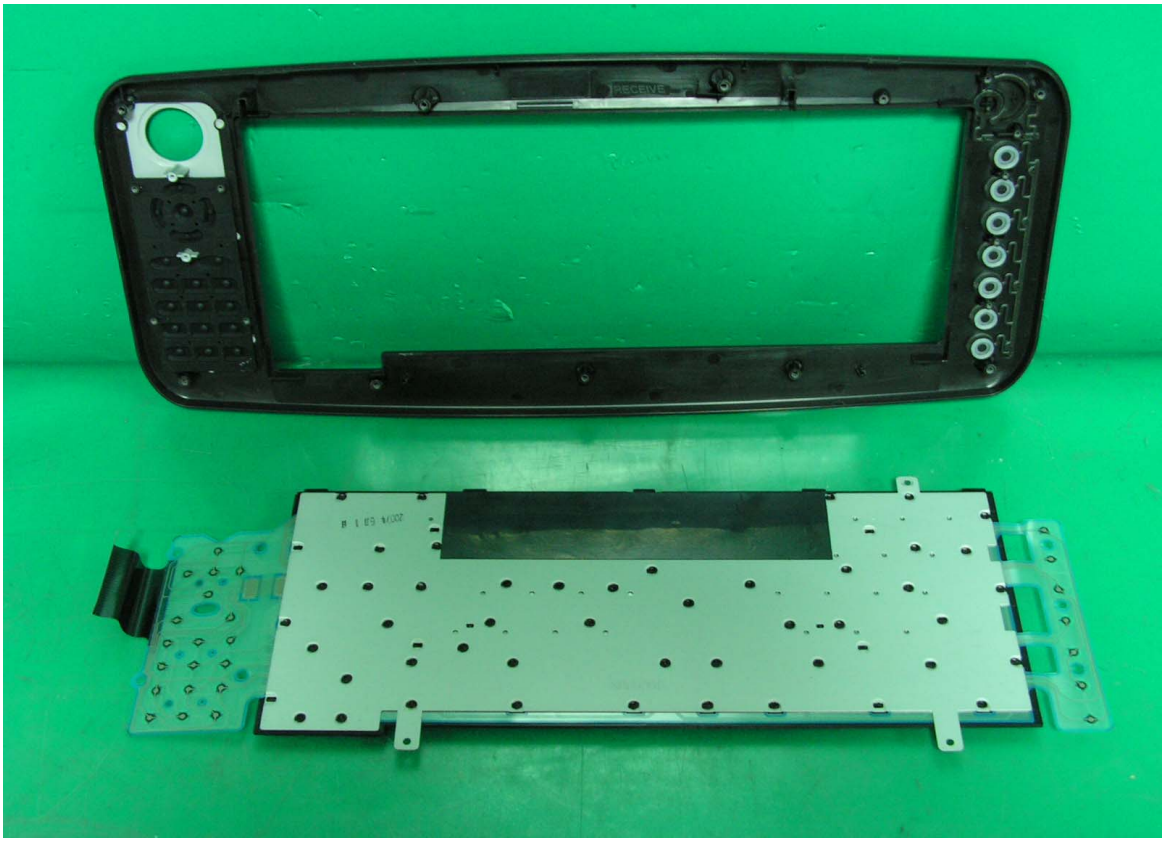
3. Label Here
4.

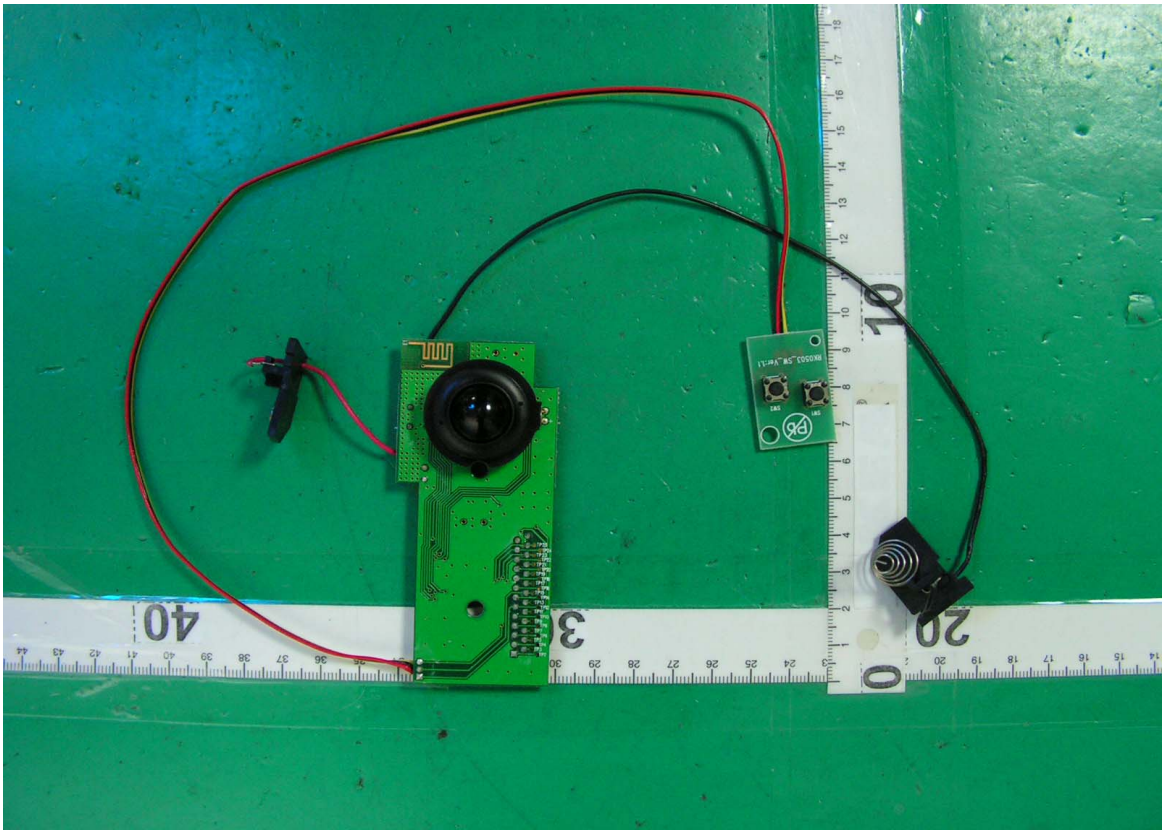
5.
6.



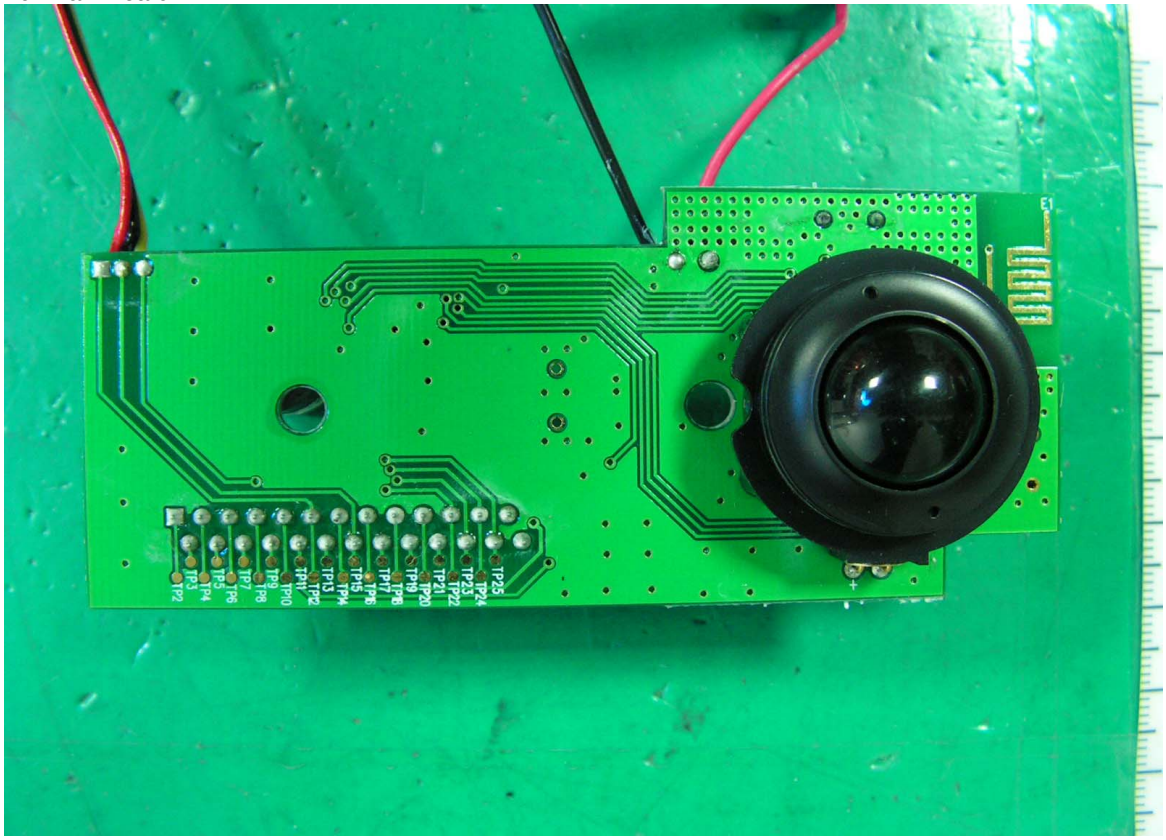


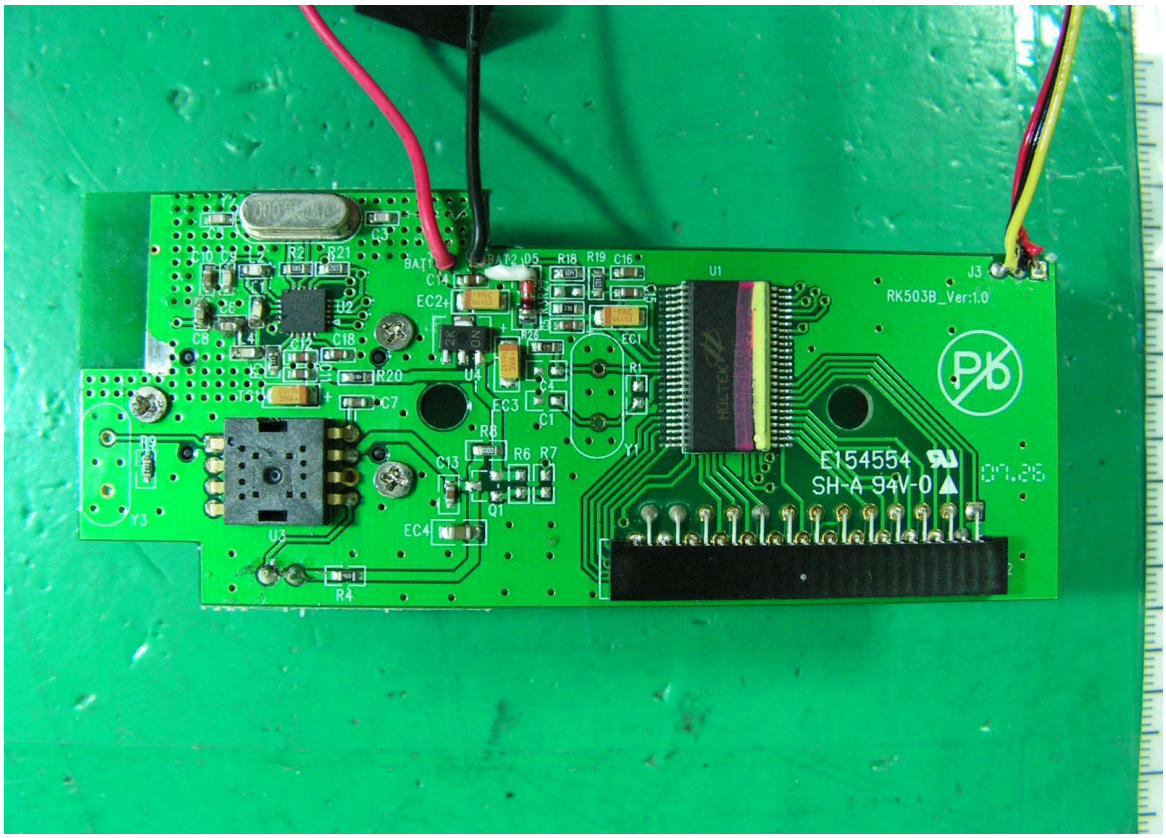
7.
8.



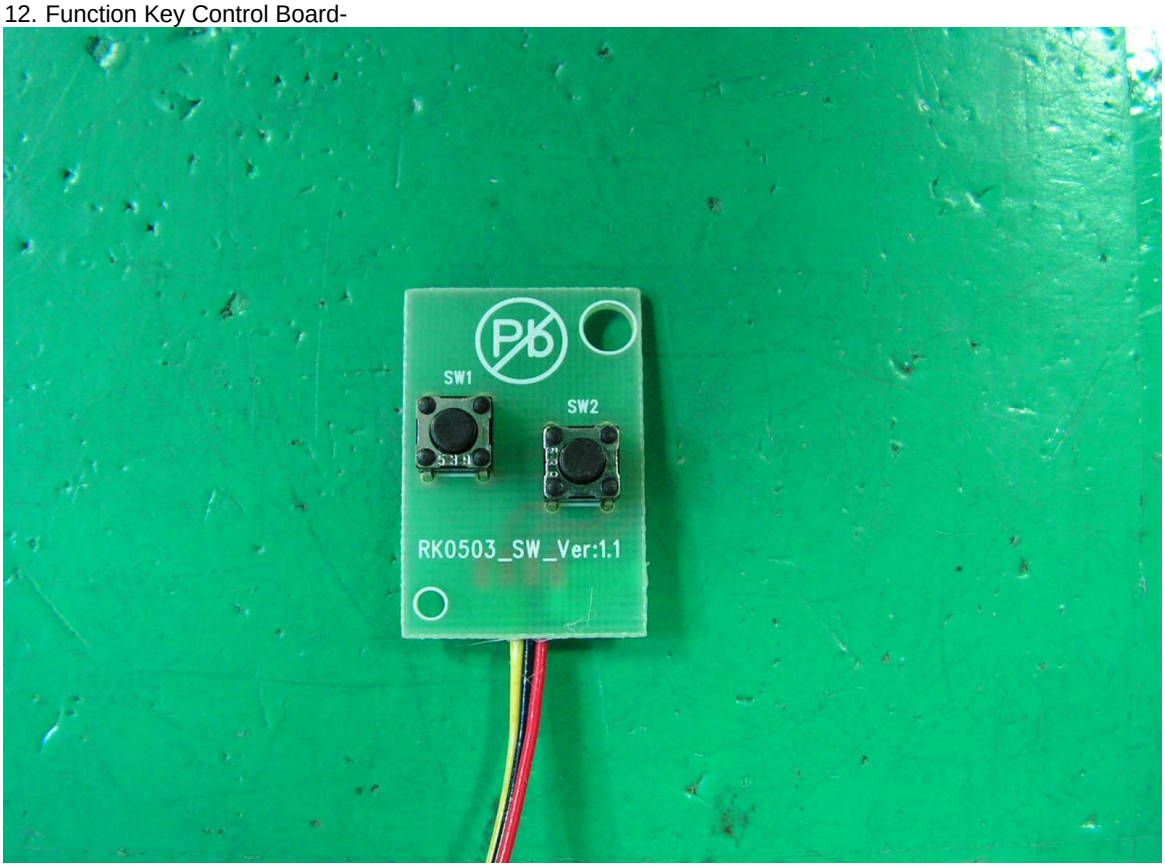


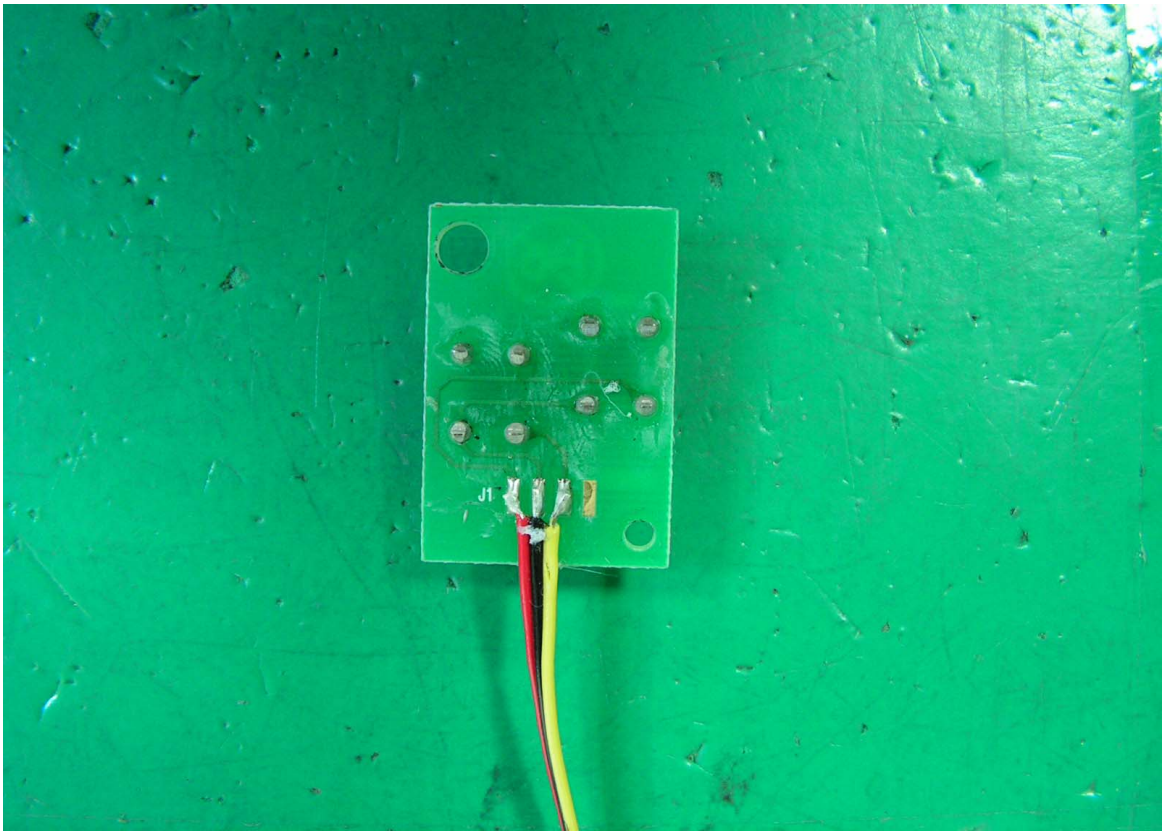
9. Main Board+
10. Main Board-



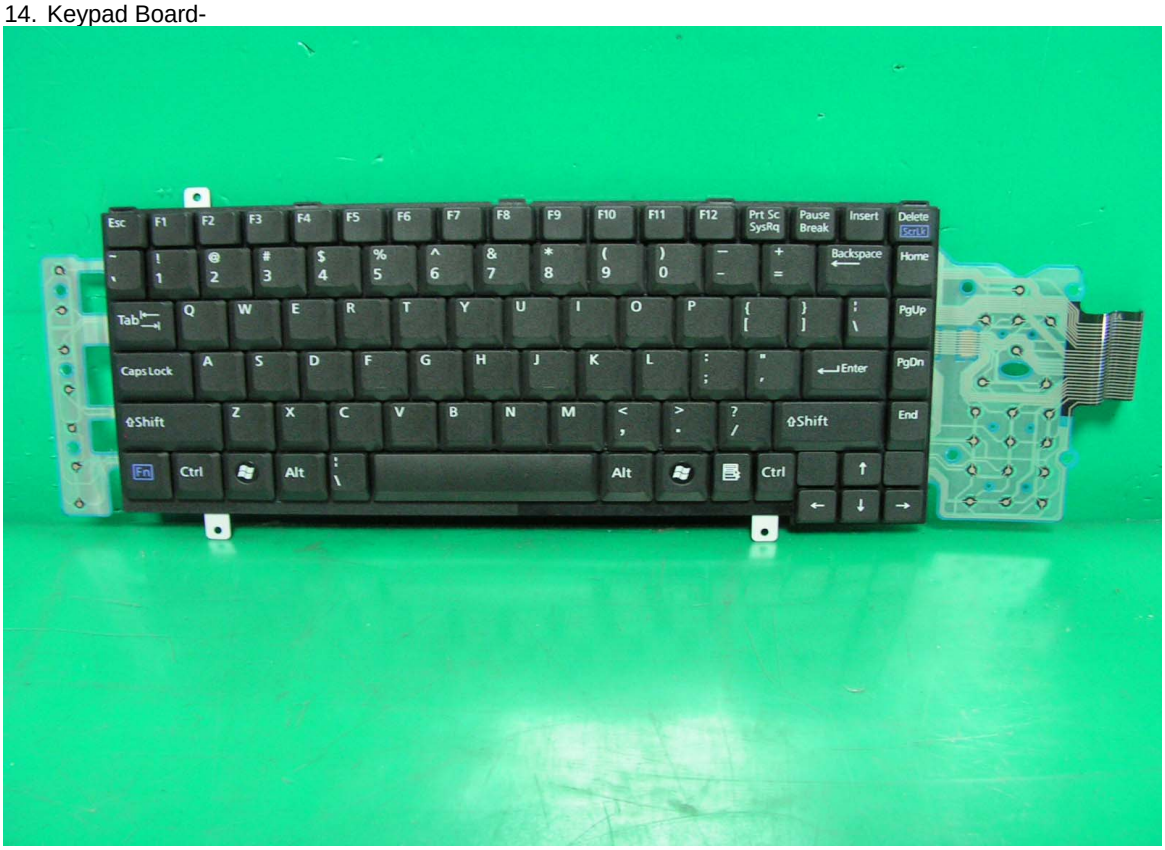


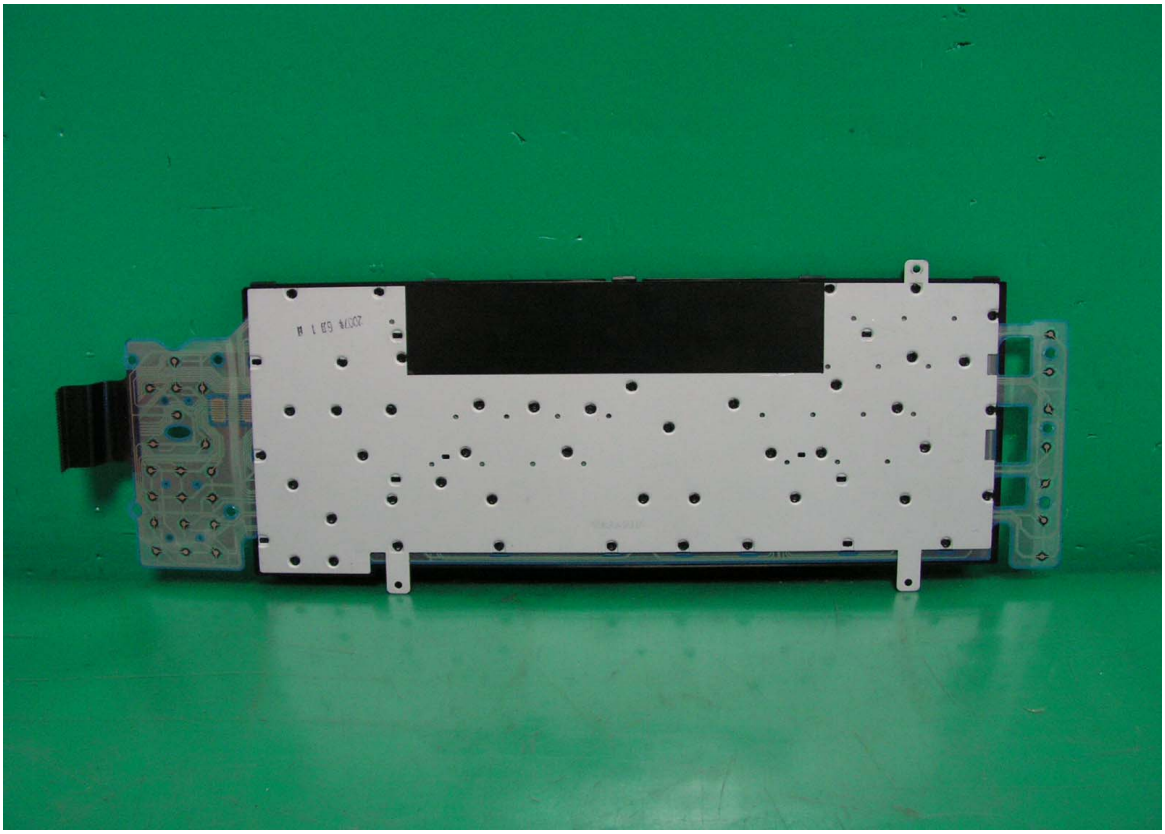
11. Function Key Control Board+
12. Function Key Control Board-





13. Keypad Board+
14. Keypad Board-





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)