Certificate of Test

March 2005

Sunrex Technology Corp.

Product Type	**: 2.4GHz Wireless Keyboard**
Model Number	**: RT 0415**
Test Report Number	**: GTK-0503018**
Date of Test	**: March 15, 2005- March 22, 2005**

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 B Paragraph 15.249
ANSI C63.4: 2001

http : //www.gestek.com.tw

Sharon Chang, President

Date: March 25, 2005

GesTek EMC Lab
N0. 3, Pau-Tou-Tsuo Valley, Chia-Pau Tsuen,
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200085-0

1082
ILAC MRA

Test Report Application for Certification

On Behalf Of

Sunrex Technology Corp.

EUT:
2.4GHz Wireless Keyboard

Model Number:
RT 0415

FCC ID:
J750415

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	: 2.4GHz Wireless Keyboard
Model Number	: RT 0415
Serial Number	: N/A
Brand Name	: SUNREX
FCC ID	: J750415
Tested Power Supply	: Battery 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 :2003
☑ **ANSI C63.4**	Methods of Measurements of Radio-Noise Emissions from Low- Voltage Electrical and Electronic Equipment in the range of 9kHz To 40GHz. 2001

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.

CNLA **1082** **ILAC MRA**

NVLAP® **200085-0**

Sample Received Date : **March 15, 2005**
Final Test Date : **March 22, 2005**

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
Rini Chen / adm. Dept. Supervisor

Test By :
Shine Chang / eng. Dept. Supervisor

Technical Reviewed By :
Shine Chang / eng. Dept. Supervisor

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 : 2.4GHz Wireless Keyboard
Model Number : RT 0415
Serial Number : N/A
Brand Name : SUNREX
FCC ID : J750415
Modulation Type : GFSK
Antenna Type : Printed on PCB
Frequencg Range : 2.420GHz
Channel Number 1 Channel
Channel Control Manual
Working Voltage : Battery DC 6V

Frequency of Each Channel:

Channel	Frequency (GHz)
1	2.420

Note:

1. This device is a 2.4GHz Wireless Keyboard included wireless transmition of keyboard and receiver. The test report is for transmitter.
2. This device is one 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 and record of measurment in test report that the report number is 0503018FCC DOC.

2.2 OPERATIONAL DESCRIPTION

This device is a 2.4GHz Wireless Keyboard included wireless transmitter of keyboard and receiver. It is powered by Battery DC 6V.
This device is only one channel and it is operated in 2.420GHz with GFSK modulation.
The Receiver is usb interface and it is capable to receive signal from transmitter to control PC or notebook.

2.3 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: 2.4GHz Wireless Keyboard, M/N: RT 0415	
Test Mode	**Mode 1**
Frequency	2.420 GHz

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:

Non-test equipment

2.6 TEST FACILITY

Ambient conditions in the laboratory:

ITEMS	REQIORED(IEC 68-1)	ACTUAL
TEMPERATURE (°C)	15-35	24-27
HUMIDITY (%RH)	25-75	50-65
BAROMETRIC PRESSURE (mbar)	860-1060	950-1000
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. 30,2005 For CISPR 22, FCC Method and AS/NZS CISPR 22 Measurement.	
Chinese National Laboratory Accreditation Certificate R.O.C. CNLA **1082** **ILAC MRA**	Recognized by the Council of Chinese National Laboratory Accreditation and confirmed to meet the 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:

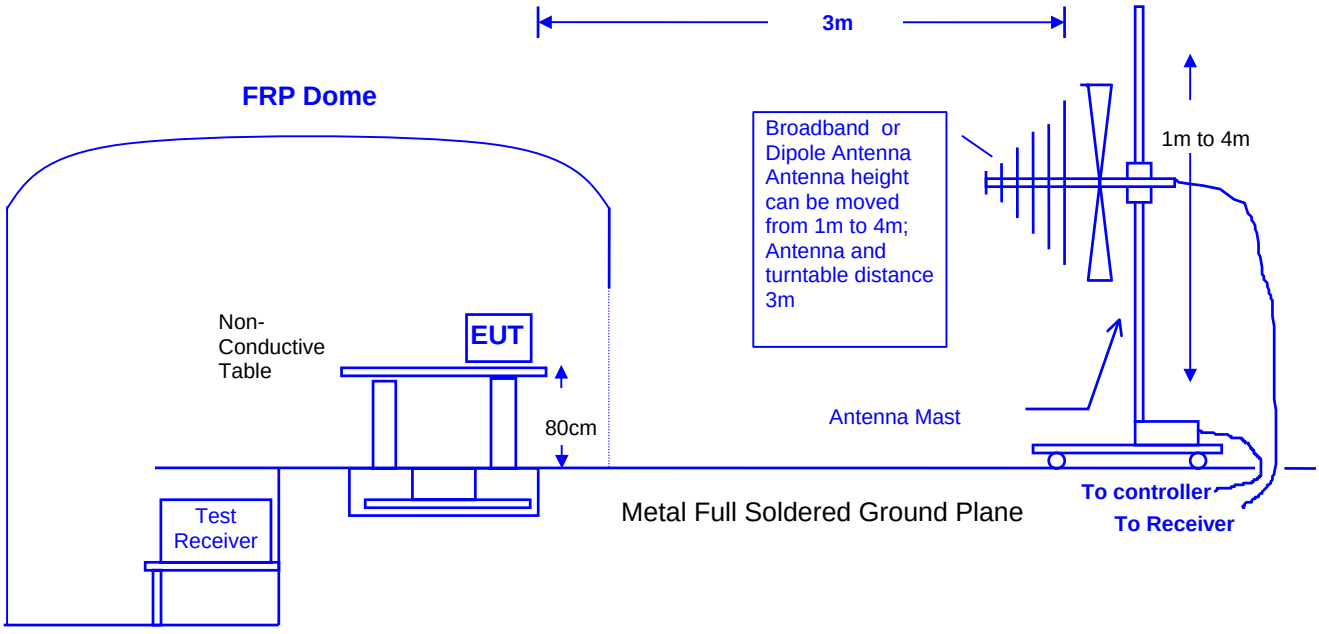
Radiated test was performed on: ☒Site #1 ☐Site #2 ☐Site #3 ☐Site #4

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESCS30	825022/003	06/26/04
2	Spectrum Analyzer	HP	E4407B	39240339	07/28/04
3	Power Meter	Rohde & Schwarz	NRVS	100666	04/29/04
4	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	04/29/04
5	Pre-Amplifier	HP	8449B	3008A01264	06/01/04
6	BILOG ANTENNA	SCHAFFNER	CBL6112B	2620	11/30/04
7	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/22/04
8	RF Cable	GesTek	N/A	GTK-E-A151-01	02/14/05
9	Open Site	GesTek	N/A	B1	11/23/04
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

Note: This is a reprehensive setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



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

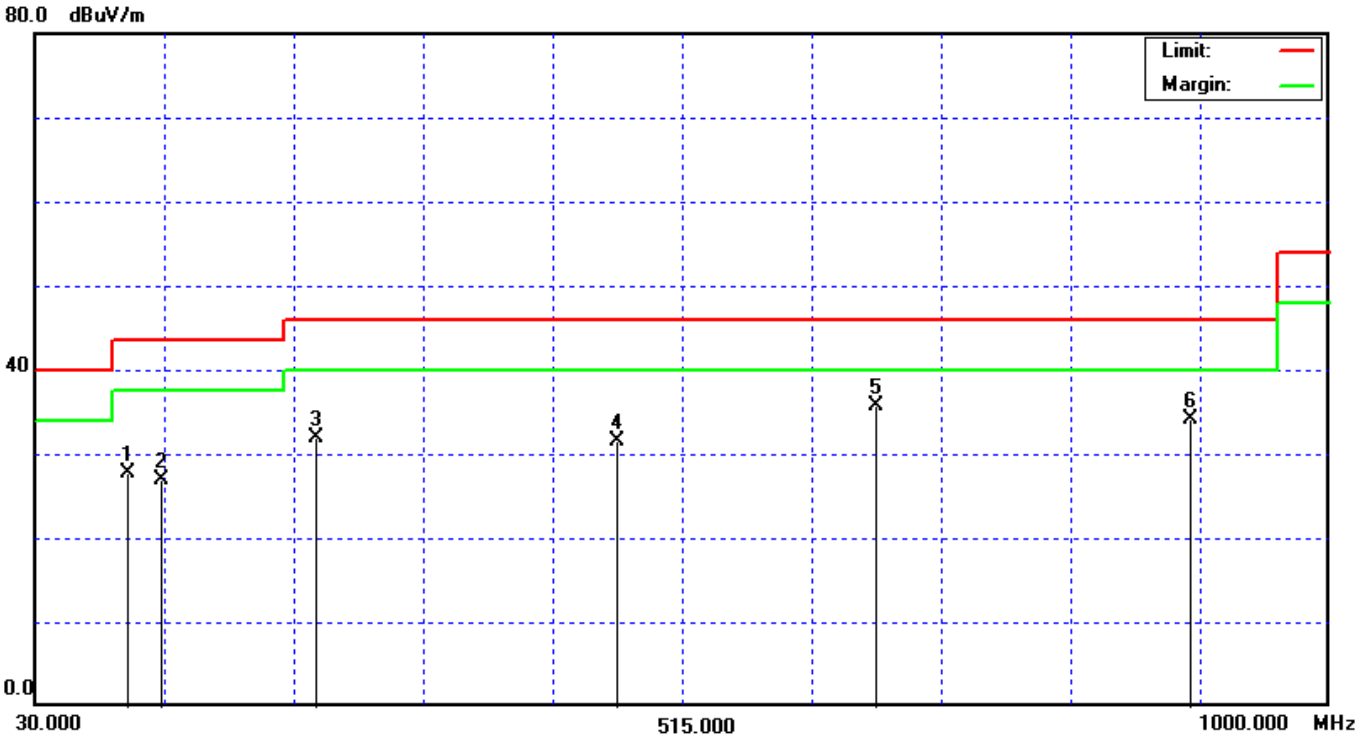
3.7.1 HARMONIC RADIATED EMISSIONS

Date of Test	March 22, 2005	**Temperature**	19 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	69 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBuV	Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over Limit dB	Detector
1	100.32	40.32	-12.62	27.7	43.5	-15.8	QP
2	122.35	37.98	-11.01	26.97	43.5	-16.53	QP
3	238.65	42.95	-11.02	31.93	46	-14.07	QP
4	466.35	36.54	-5.01	31.53	46	-14.47	QP
5	★ 658.92	36.95	-1.26	35.69	46	-10.31	QP
6	895.32	31.25	2.9	34.15	46	-11.85	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= 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.

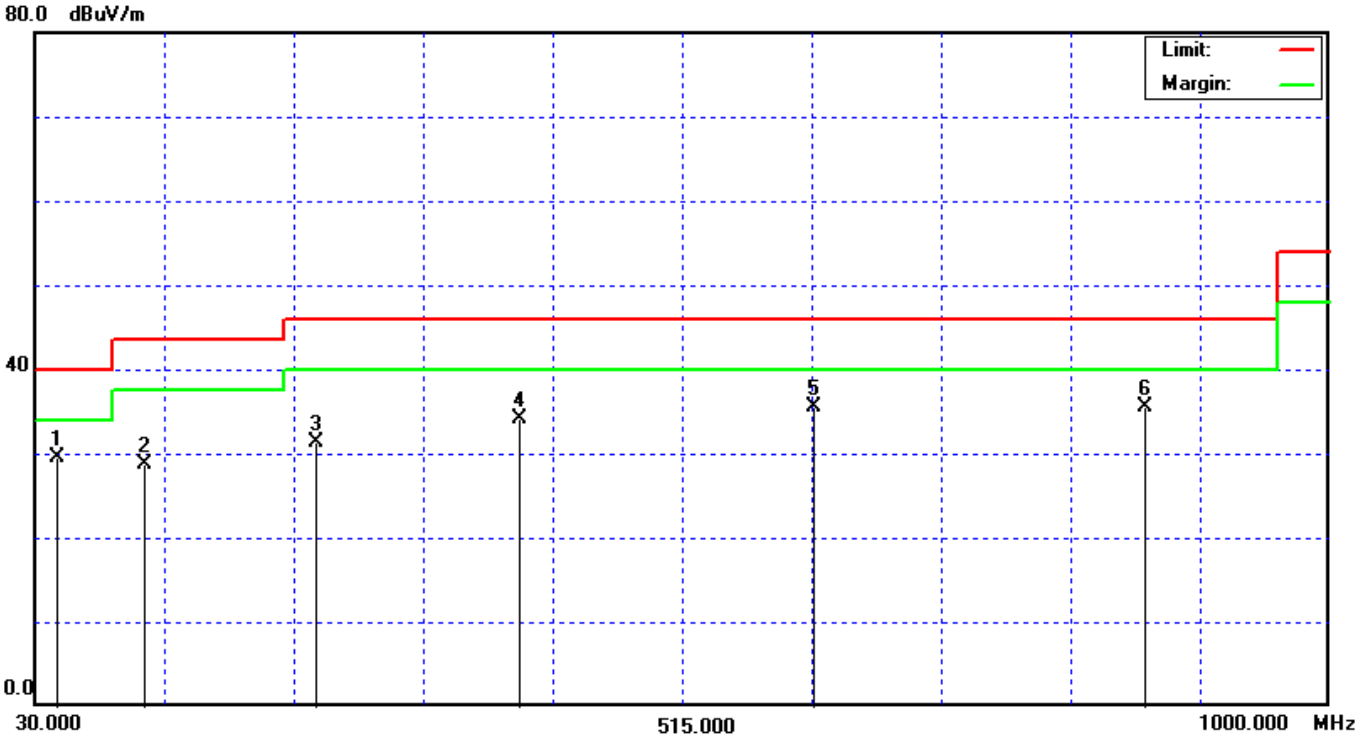


Date of Test	March 22, 2005	**Temperature**	19 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	69 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	30-1000MHz

No.	Frequency MHz	Reading Level dBuV	Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over Limit dB	Detector
1	44.562	42.32	-12.75	29.57	40	-10.43	QP
2	112.45	40.25	-11.64	28.61	43.5	-14.89	QP
3	238.65	42.34	-11.02	31.32	46	-14.68	QP
4	393.75	40.25	-6.11	34.14	46	-11.86	QP
5	★ 614.42	37.58	-1.99	35.59	46	-10.41	QP
6	859.47	33.15	2.35	35.5	46	-10.5	QP

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= 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.



Date of Test	March 15, 2005	**Temperature**	21 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4839.60	68.78	-1.31	67.47	74.00	-6.53
2	7260.34	52.86	7.76	60.62	74.00	-13.38
3	9679.44	54.88	12.81	67.69	74.00	-6.31
4	12100.01	49.31	15.47	< 64.78	74.00	-9.22
5	14519.84	48.94	22.23	< 71.17	74.00	-2.83

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	4839.60	67.47	-20	47.47	54.00	-6.53
2	7260.34	60.62	-20	40.62	54.00	-13.38
3	9679.44	67.69	-20	47.69	54.00	-6.31
4	12100.01	64.78	-20	<44.78	54.00	-9.22
5	14519.84	71.17	-20	<51.17	54.00	-2.83

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. Emission Level= 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	March 15, 2005	**Temperature**	21 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Channel 1	**Display Pattern**	H Pattern
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	4840.19	63.11	-1.89	61.31	74.00	-12.69
2	7260.25	54.14	7.49	61.63	74.00	-12.37
3	9679.31	52.69	13.62	66.31	74.00	-7.69
4	12100.08	49.68	14.81	< 64.49	74.00	-9.51
5	14519.35	48.84	22.19	< 71.03	74.00	-2.97

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	4840.19	61.31	-20	41.31	54	-12.69
2	7260.25	61.63	-20	41.63	54	-12.37
3	9679.31	66.31	-20	46.31	54	-7.69
4	12100.08	64.49	-20	<44.49	54	-9.51
5	14519.35	71.03	-20	<51.03	54	-2.97

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. Emission Level= 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.

3.7.2 FUNDAMEDTAL RADIATED EMISSIONS

Date of Test	March 15, 2005	**Temperature**	21 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Channel 1		
Antenna distance	3m at Horizontal		

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2419.88	62.92	35.71	98.63	114.00	-15.37

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	2419.92	98.63	-20	78.63	94.00	-15.37

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. Emission Level= 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	March 15, 2005	**Temperature**	21 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	60 %RH
Working Cond.	Channel 1		
Antenna distance	3m at Vertical		

Peak

No.	Frequency [MHz]	Reading Level [dB(uV)]	Correction Factor [dB/m]	Emission Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	2419.88	51.87	30.47	82.34	114.00	-31.66

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. Emission Level= 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.

4. BAND EDGE

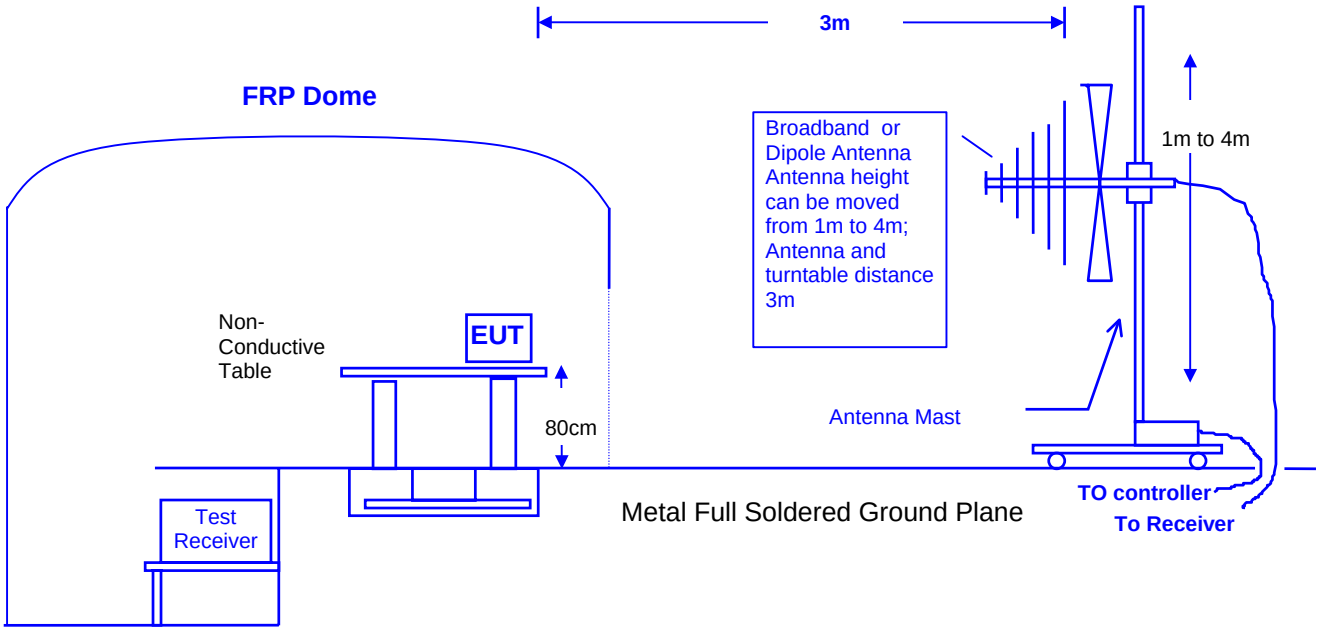
4.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	01/05/05
2	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	03/16/04
3	Spectrum Analyzer	HP	E4407B	39240339	07/28/04
4	Power Meter	Rohde & Schwarz	NRVS	100666	04/29/04
5	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	04/29/04
6	Pre-Amplifier	HP	8449B	3008A01264	06/01/04
7	BILOG ANTENNA	SCHAFFNER	CBL6112B	2620	11/30/04
8	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/22/04
9	RF Cable	GesTek	N/A	GTK-E-A151-01	02/14/05
10	Open Site	GesTek	N/A	B1	11/23/04
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 2.7.

4.6 TEST RELULT

Date of Test	March 16, 2005	**Temperature**	24 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	68 %RH
Working Cond.	Channel 1		
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)]
2419.88	62.92	35.71	98.63

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.
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 (26.66)dB delta between carry power and maximum emission in restrict band 2388.6 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2388.6 MHz is 98.63 dBuV/m – 26.66 dB = 71.97 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-33.55)dB

Average field strength of (2388.6)MHz is

(71.97) dBuV/m + (-20)dB = (51.97)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.

Date of Test	March 16, 2005	**Temperature**	24 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	68 %RH
Working Cond.	Channel 1		
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)]
2419.77	51.87	30.47	82.34

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 (26.66)dB delta between carry power and maximum emission in restrict band 2388.6 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2388.6 MHz is 82.34 dBuV/m – 26.66 dB = 55.68 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

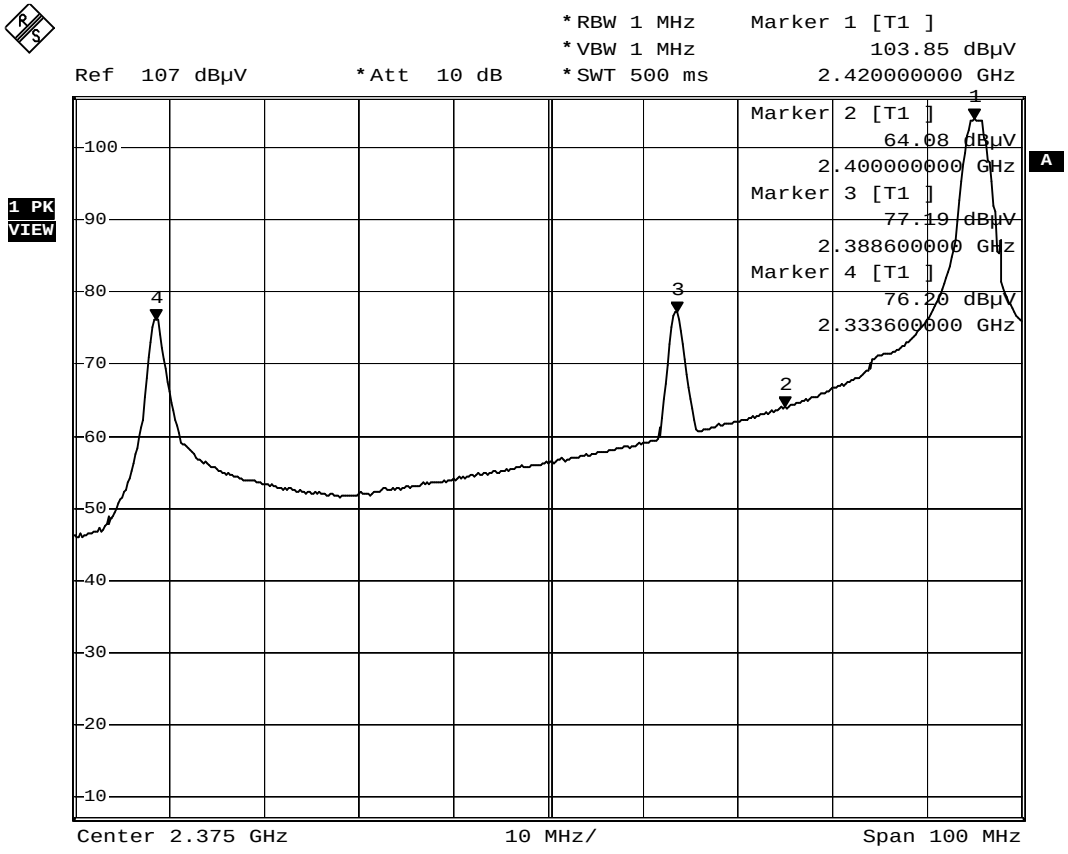
20logDuty Cycle = (-33.55)dB

Average field strength of (2388.6)MHz is

(55.68) dBuV/m + (-20)dB = (35.68)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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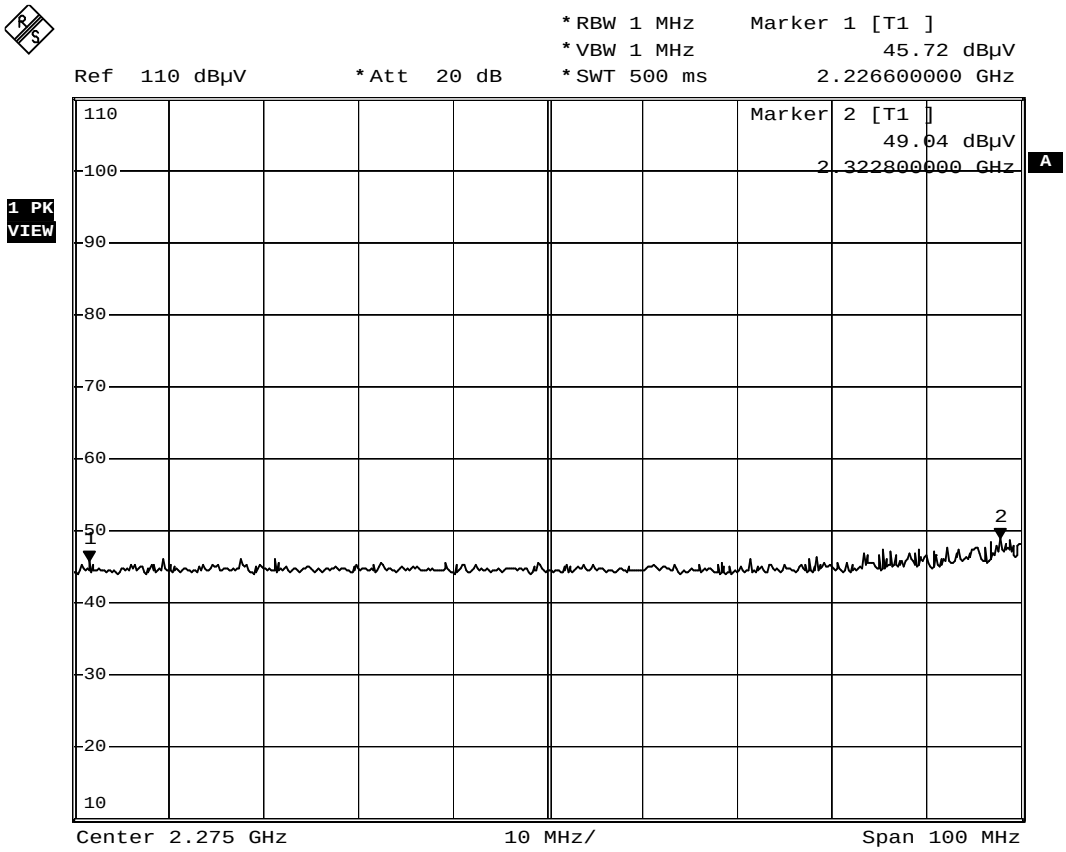


Date: 16.MAR.2005 15:52:35

Date of Test	March 16, 2005	**Temperature**	24 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	68 %RH
Working Cond.	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)]
2419.88	62.92	35.71	98.63

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.
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 (51.8)dB delta between carry power and maximum emission in restrict band 2500 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2500 MHz is 98.63 dBuV/m – 51.8 dB = 46.83 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ╳ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

20logDuty Cycle = (-33.55)dB

Average field strength of (2500)MHz is

(46.83) dBuV/m + (-20)dB = (26.83)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.

Date of Test	March 16, 2005	**Temperature**	24 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	68 %RH
Working Cond.	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)]
2419.77	51.87	30.47	82.34

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 (51.8)dB delta between carry power and maximum emission in restrict band 2500 MHz.

The above tables are list of fundamental emission test result.

Therefore, peak field strength of 2500 MHz is 82.34 dBuV/m – 51.8 dB = 30.54 dBuV/m which is under 74dBuV/m.

Average filed strength = Peak filed strength ㄨ Duty Cycle

(20logAVG = 20logPeak + 20logDuty Cycle)

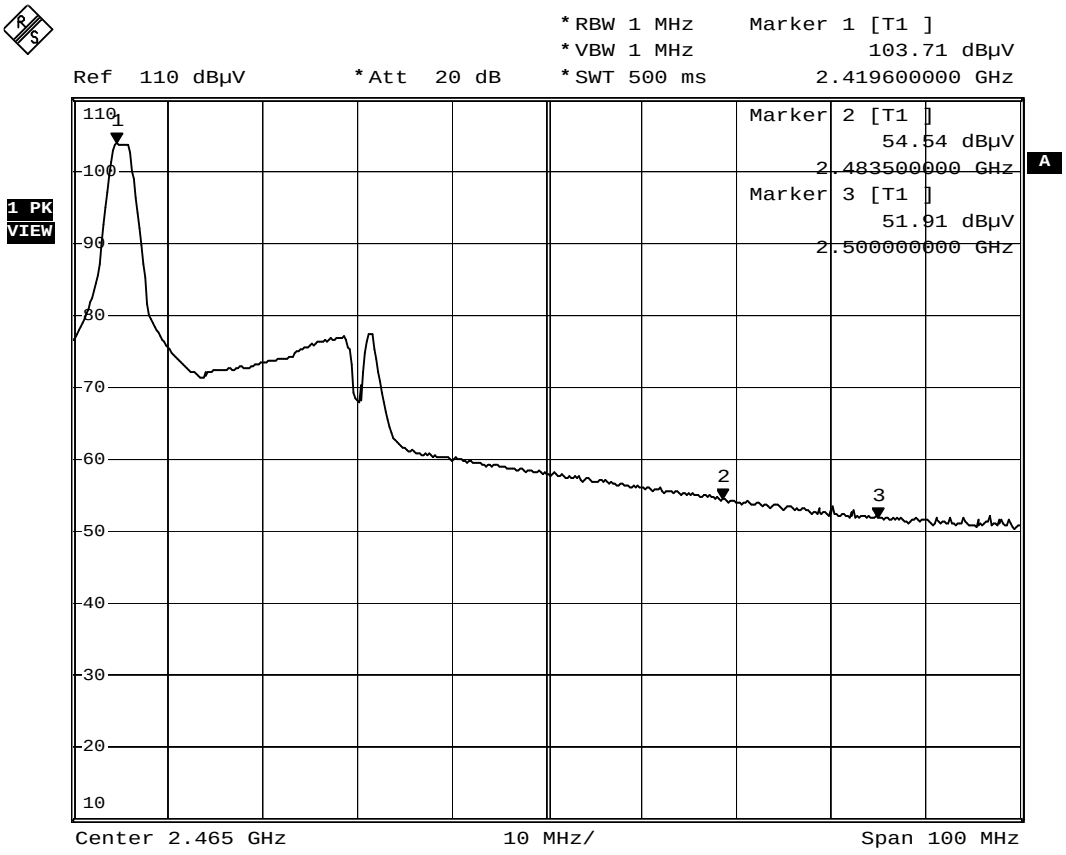
20logDuty Cycle = (-33.55)dB

Average field strength of (2500)MHz is

(30.54) dBuV/m + (-20)dB = (10.54)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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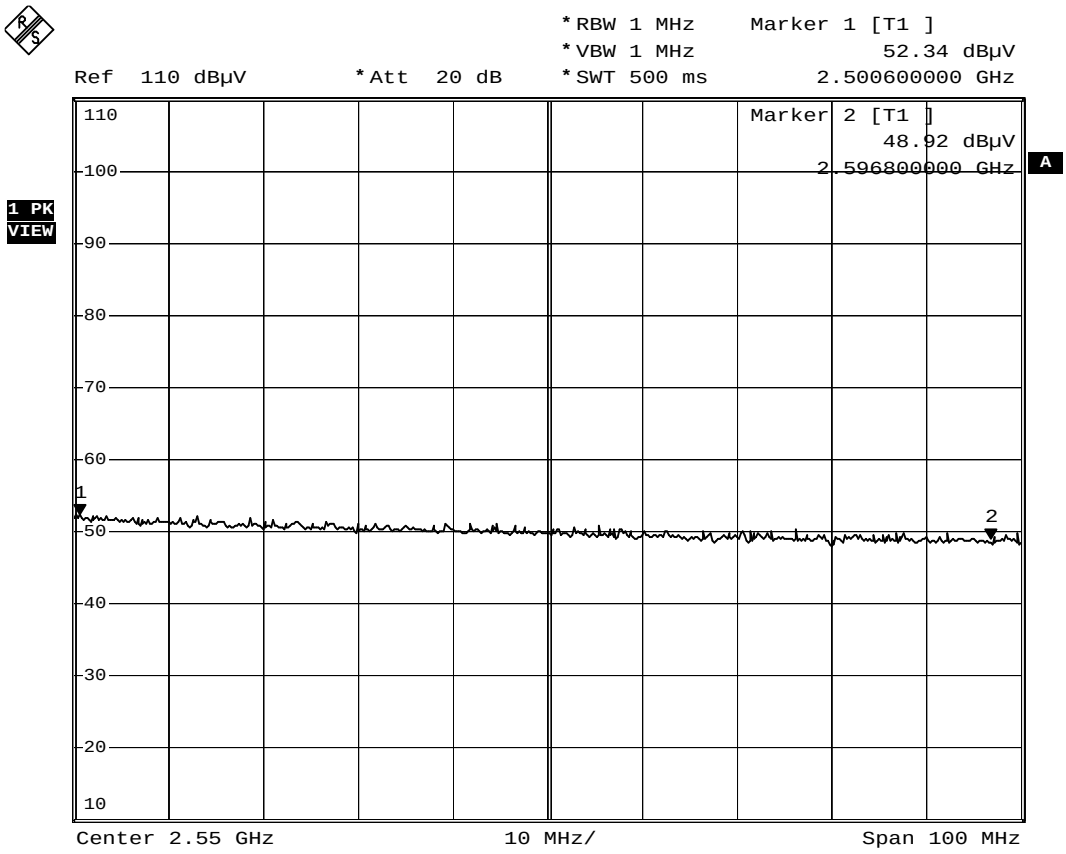


Date: 16.MAR.2005 15:46:39

5. DUTY CYCLE

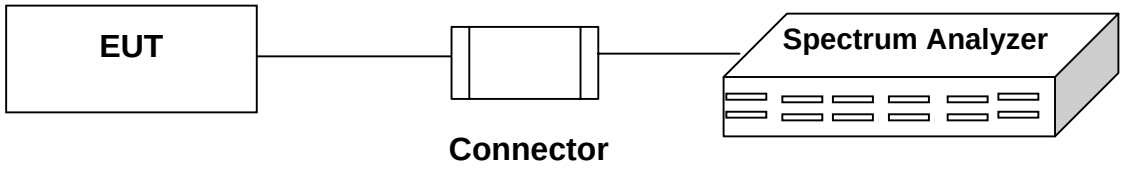
5.1 TEST EQUIPMENT

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	03/16/04
2	Spectrum Analyzer	HP	E4407B	39240339	07/28/04

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

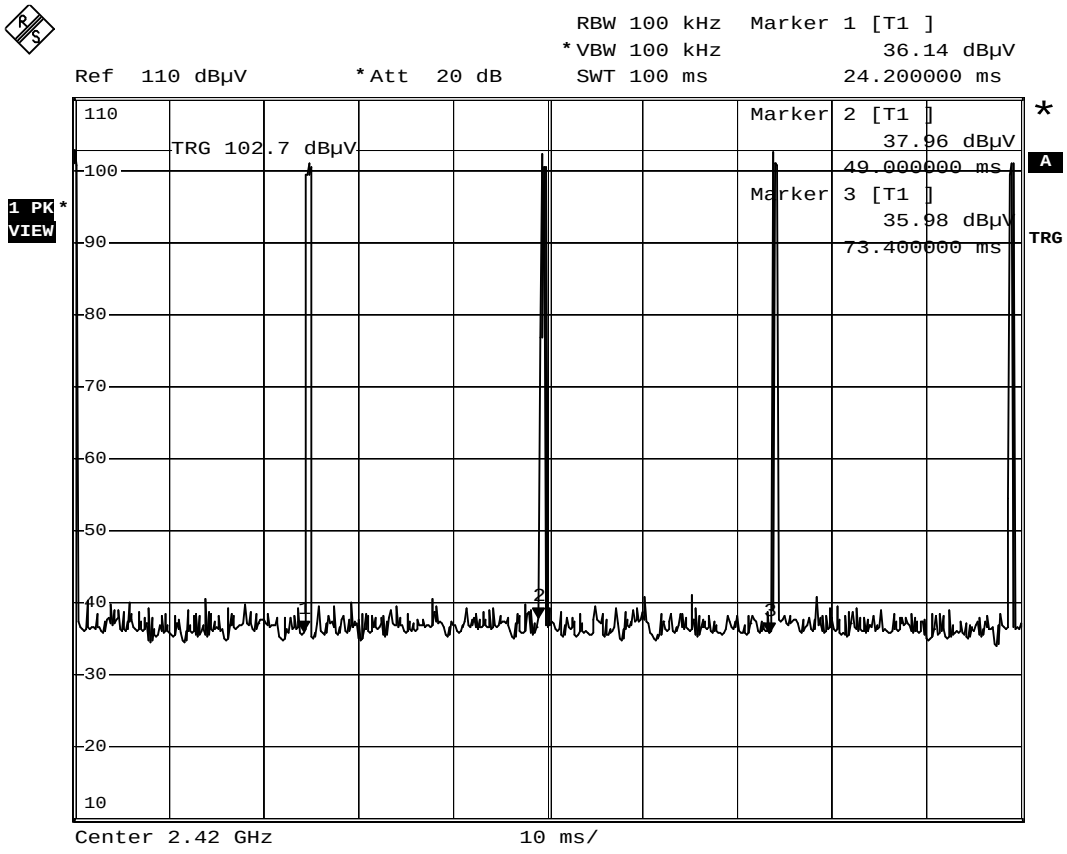
Date of Test	March 16, 2005	**Temperature**	24 deg/C
EUT	2.4GHz Wireless Keyboard	**Humidity**	68 %RH
Working Cond.	Channel 1		

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

Frequency _2420_MHz
Time on of one slot length＝ _530_ (μs)＝ _0.53_ (msec)
Time on of one cycle＝ _0.53_ (msec)
Totally time of one cycle＝ _24.8_ (msec)
Duty Cycle ＝ _0.53_ /_24.8_ ＝ _0.021_
_20_log_0.021_ = _-33.55_dB

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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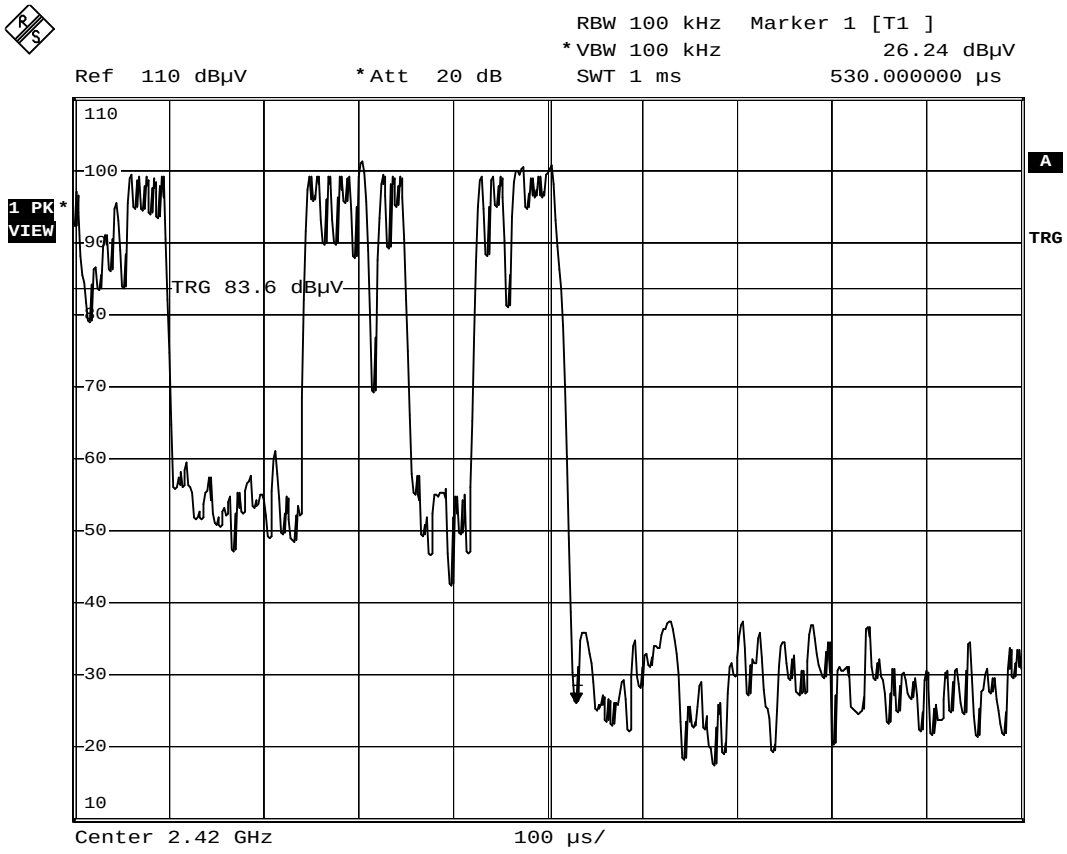


Date: 16.MAR.2005 13:55:35

6. PHOTOGRAPHS FOR TEST

6.1 TEST PHOTOGRAPHS FOR RADIATION

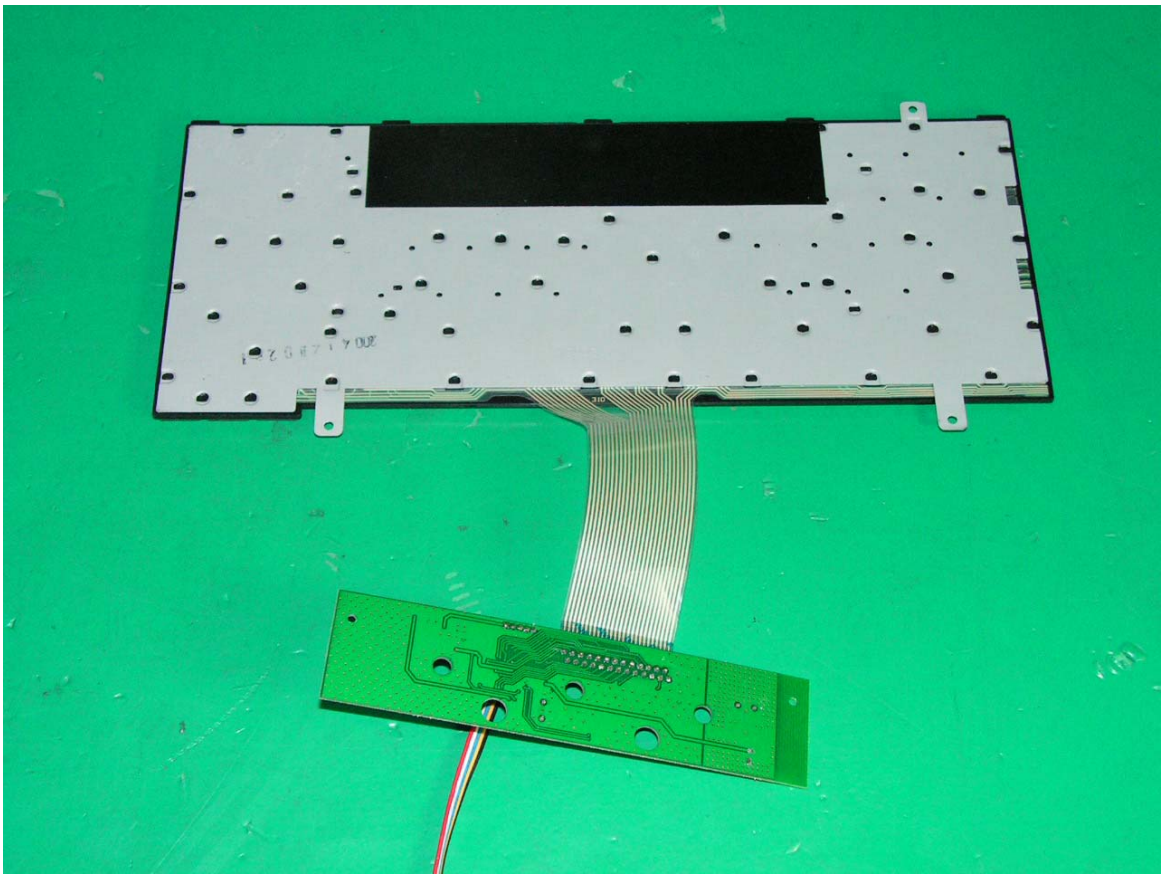
30-1000MHz

Above 1GHz

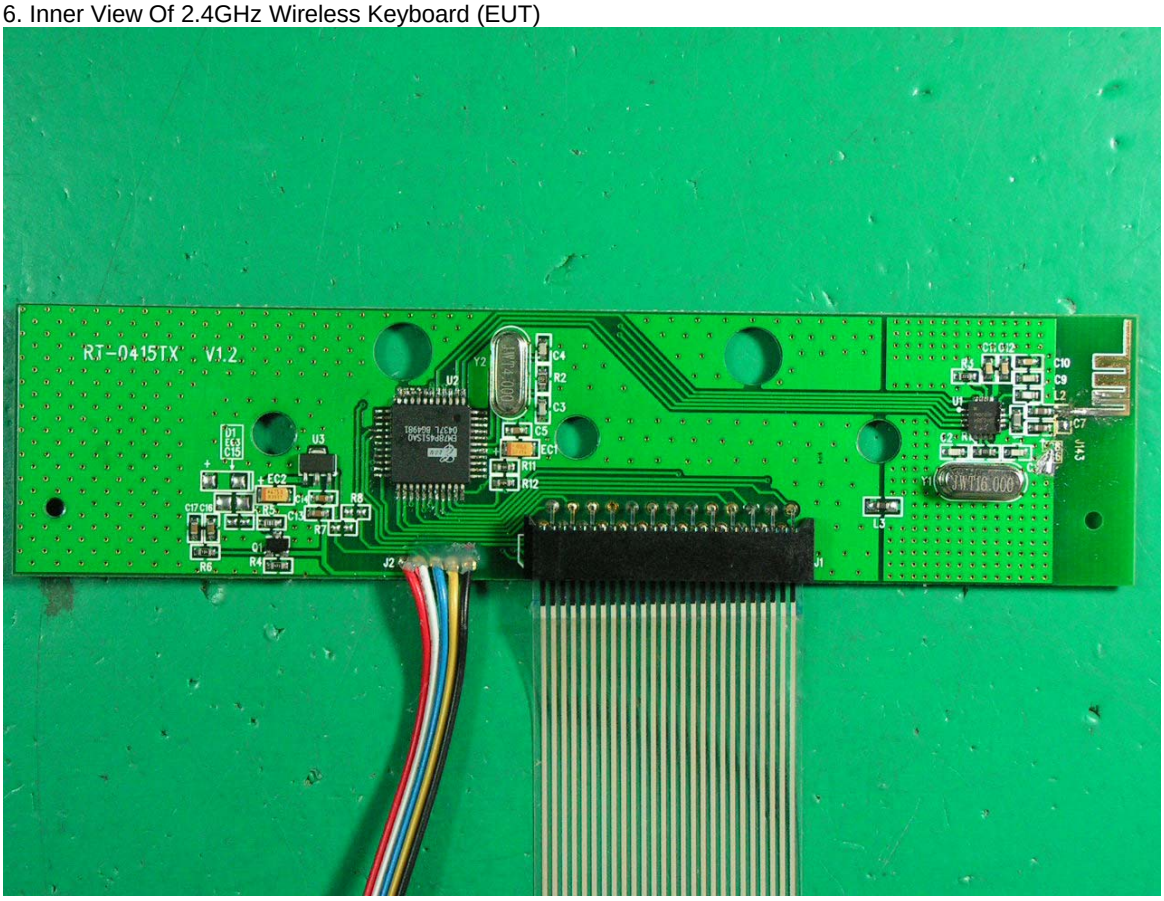
7. PHOTOGRAPHS FOR PRODUCT

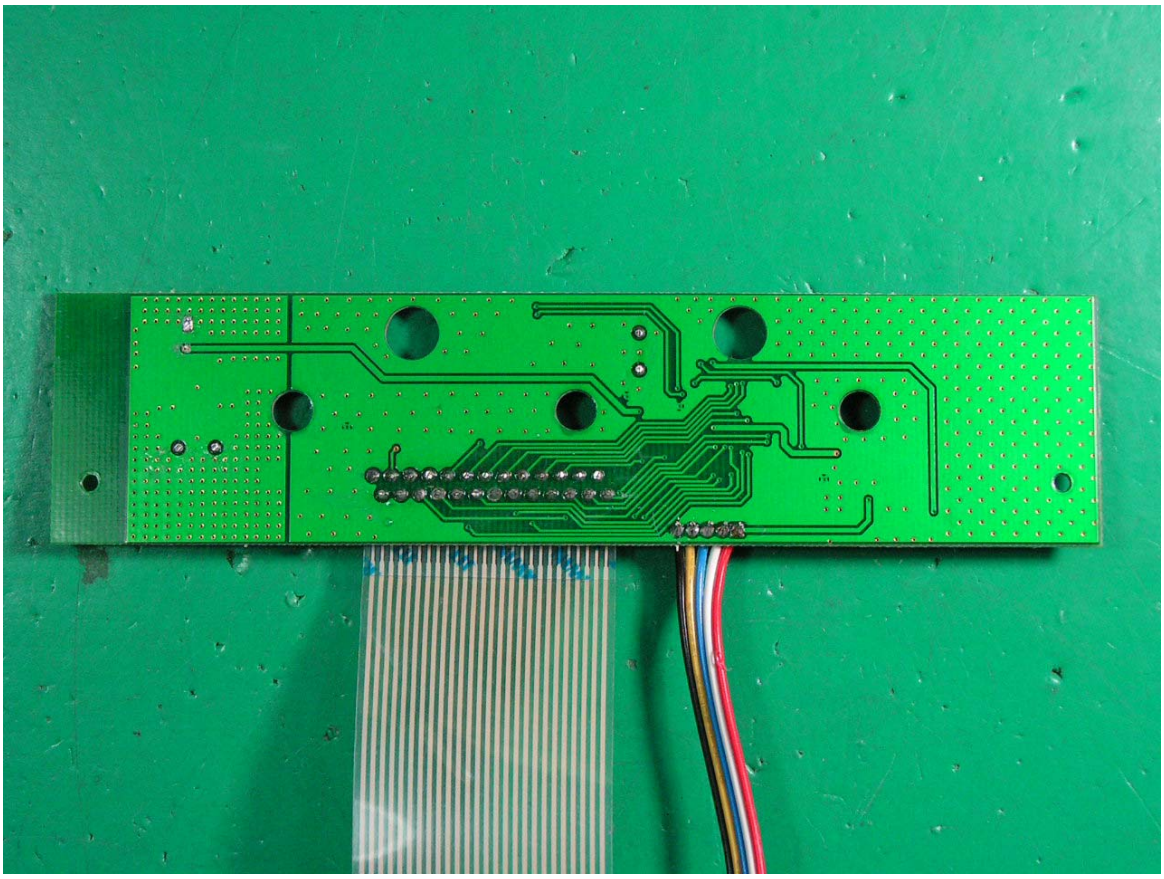
1. Front View Of 2.4GHz Wireless Keyboard (EUT)
2. Back View Of 2.4GHz Wireless Keyboard (EUT)

3. Inner View Of 2.4GHz Wireless Keyboard (EUT)
4. Inner View Of 2.4GHz Wireless Keyboard (EUT)

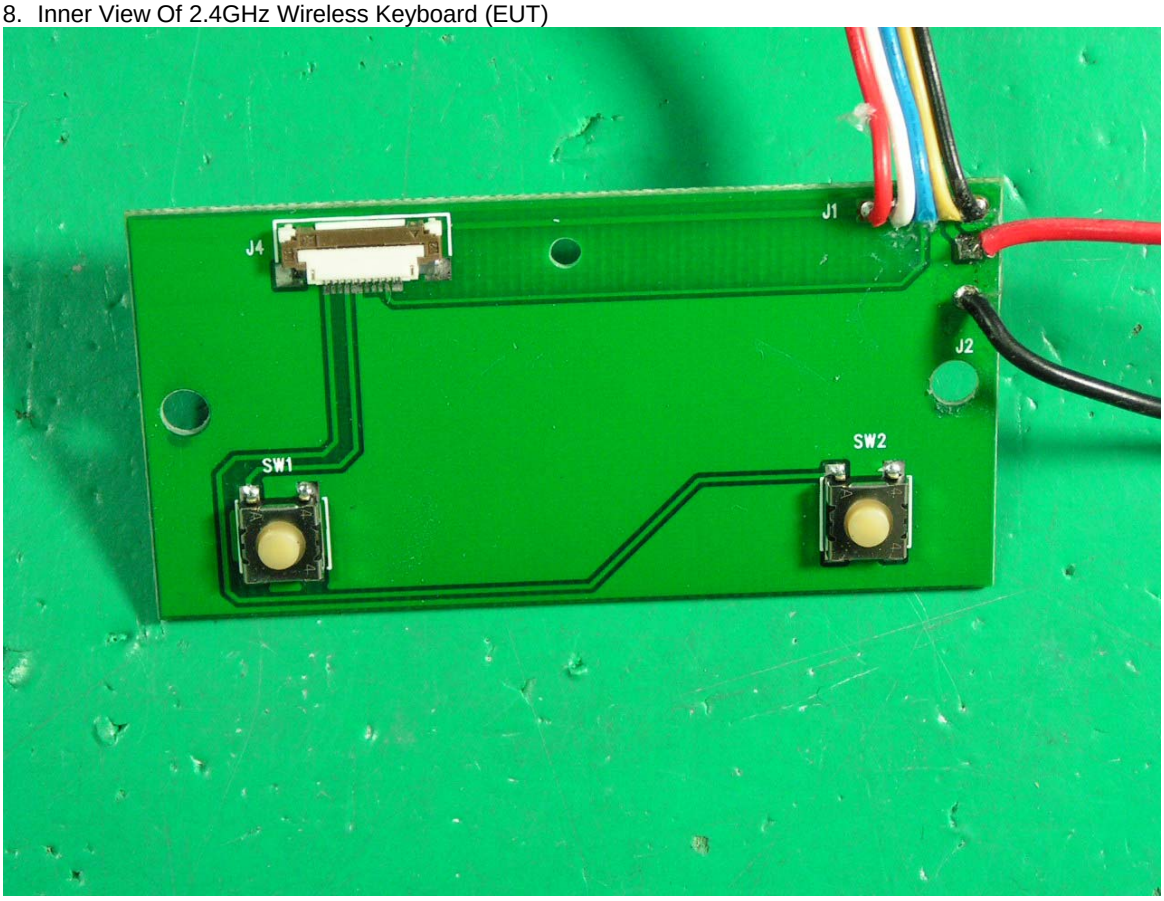


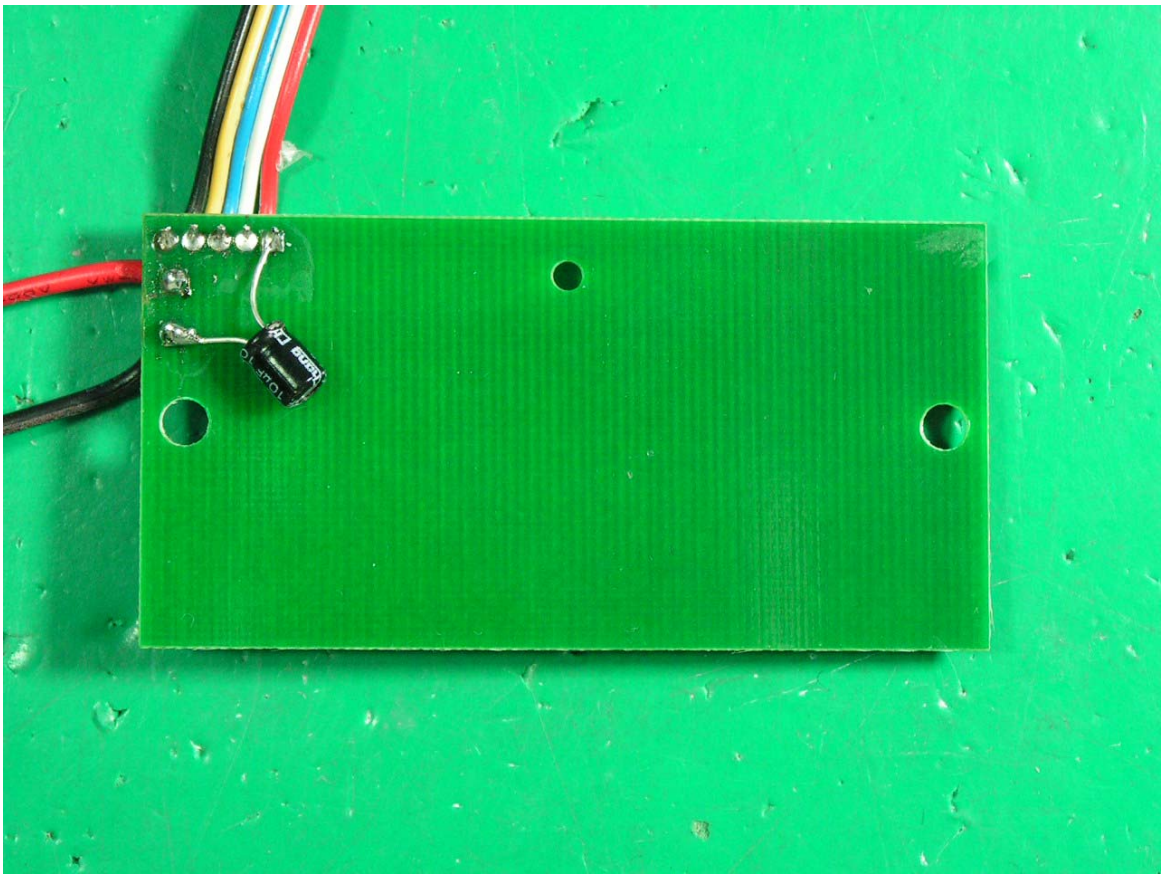
5. Inner View Of 2.4GHz Wireless Keyboard (EUT)
6. Inner View Of 2.4GHz Wireless Keyboard (EUT)



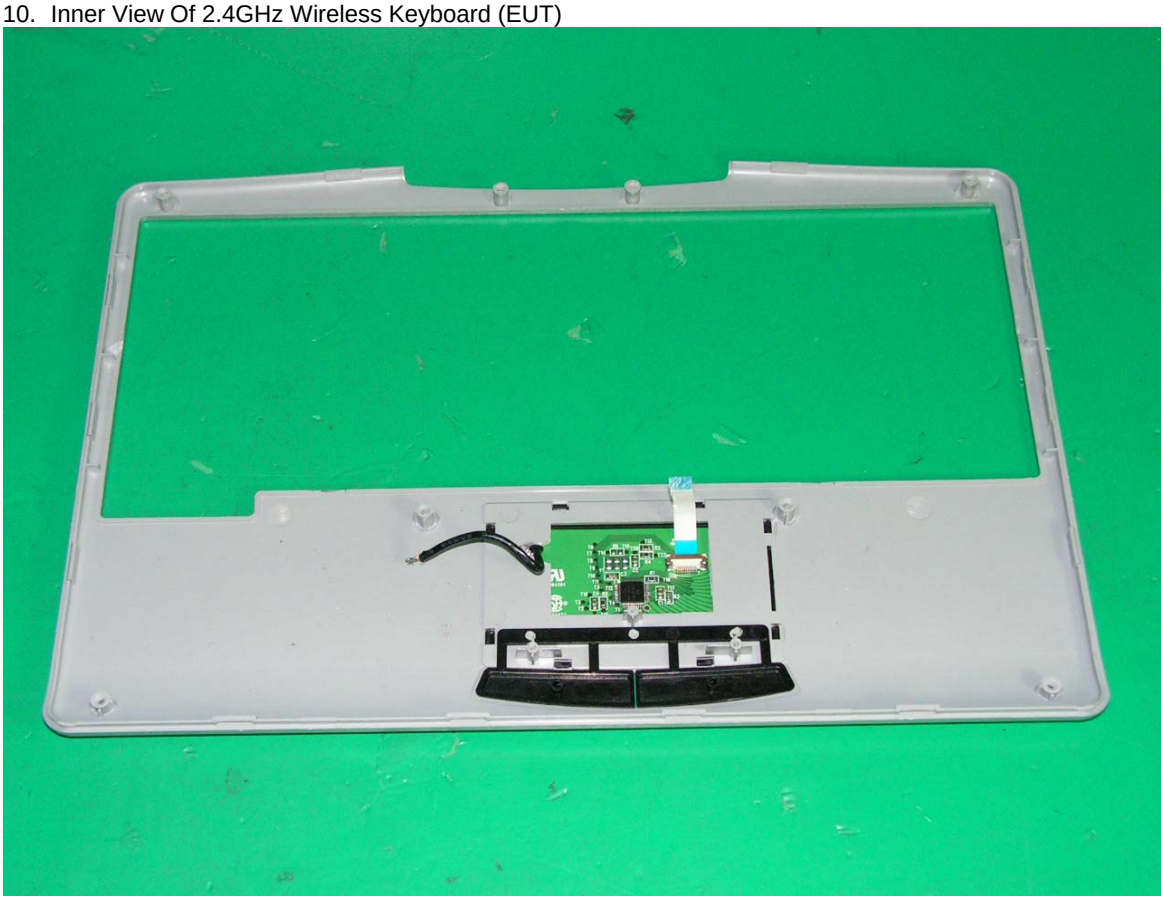


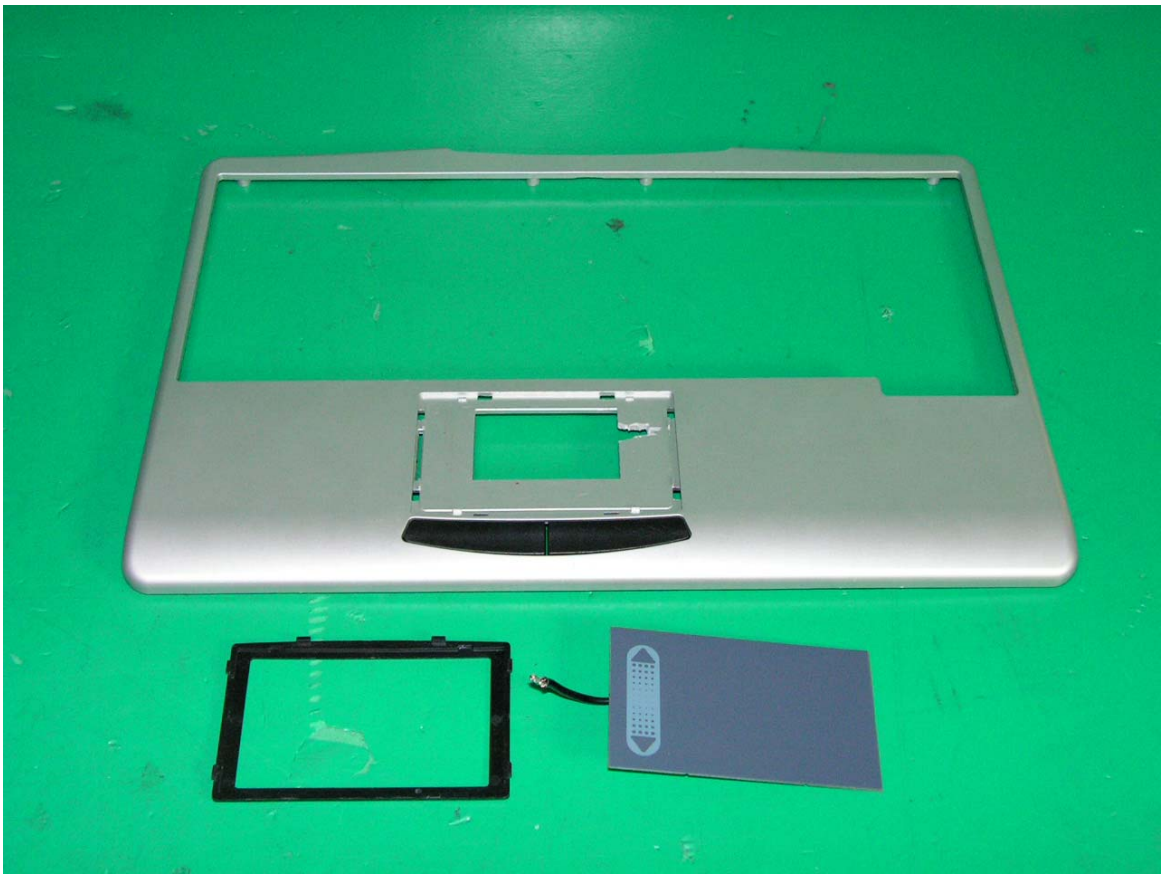
7. Inner View Of 2.4GHz Wireless Keyboard (EUT)
8. Inner View Of 2.4GHz Wireless Keyboard (EUT)



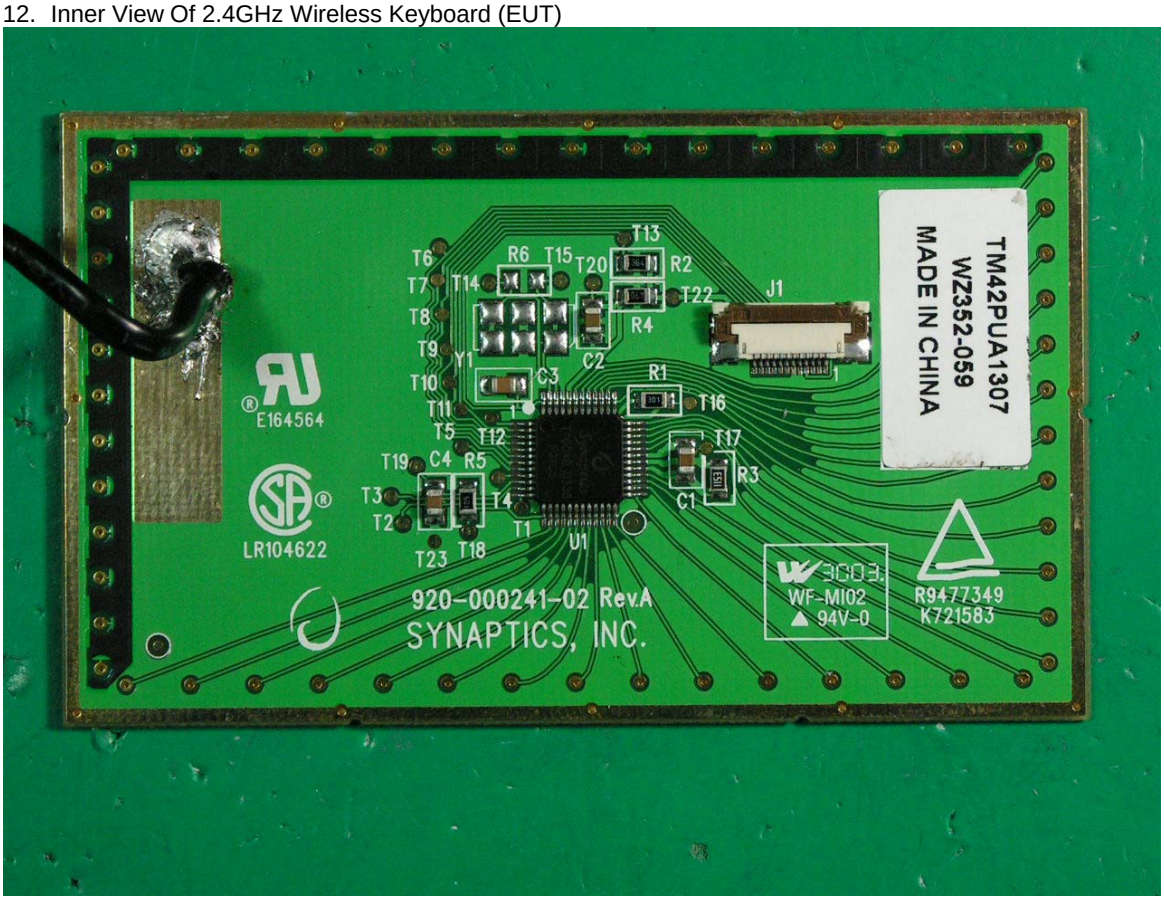


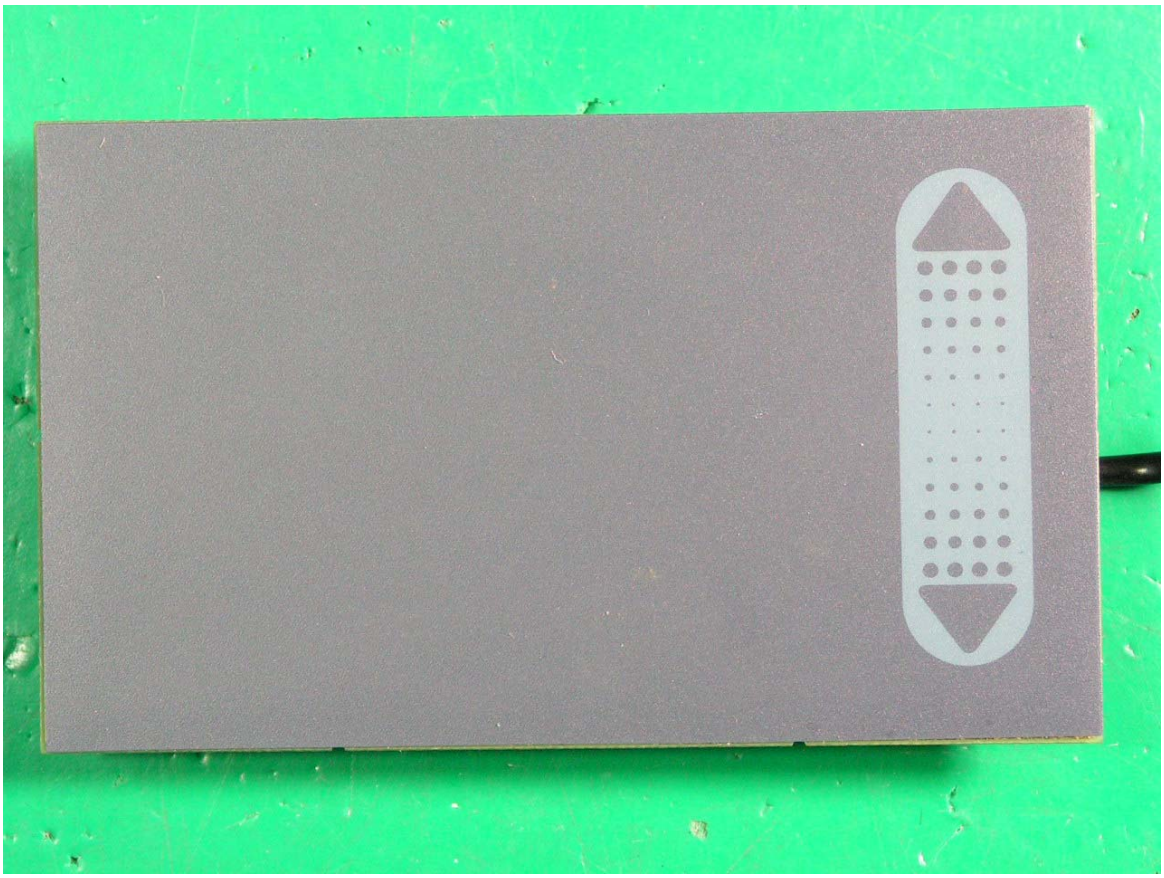
9. Inner View Of 2.4GHz Wireless Keyboard (EUT)
10. Inner View Of 2.4GHz Wireless Keyboard (EUT)





11. Inner View Of 2.4GHz Wireless Keyboard (EUT)
12. Inner View Of 2.4GHz Wireless Keyboard (EUT)





13. 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)