# FCC CERTIFICATION On Behalf of Eastern Times Technology Co., Ltd.

2.4G Wireless Keyboard Model No.: ET-3788

FCC ID: TUVET-3788

Prepared for

Address

: Eastern Times Technology Co., Ltd.

Building D, Nan An Industry Park, Youganpu Village, Fenggang Town, Dongguan City, Guangdong, China

Prepared by Address

ACCURATE TECHNOLOGY CO. LTD

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Report Number : ATE20130898
Date of Test : May 7-17, 2013
Date of Report : May 17, 2013

#### **TABLE OF CONTENTS**

Test Report Certification   1.   GENERAL INFORMATION   4   1.1.   Description of Device (EUT)   4   1.2.   Description of Test Facility   4   1.3.   Measurement Uncertainty   5   5   5	Descri	Page	
1.1. Description of Device (EUT)       4         1.2. Description of Test Facility       4         1.3. Measurement Uncertainty       5         2. MEASURING DEVICE AND TEST EQUIPMENT       6         3. SUMMARY OF TEST RESULTS       7         4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A) 8         4.1. Block Diagram of Test Setup       8         4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.4. Test Procedure       20	Test R	Report Certification	
1.1. Description of Device (EUT)       4         1.2. Description of Test Facility       4         1.3. Measurement Uncertainty       5         2. MEASURING DEVICE AND TEST EQUIPMENT       6         3. SUMMARY OF TEST RESULTS       7         4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A) 8         4.1. Block Diagram of Test Setup       8         4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.4. Test Procedure       20	1. Gl	ENERAL INFORMATION	4
1.2. Description of Test Facility       4         1.3. Measurement Uncertainty       5         2. MEASURING DEVICE AND TEST EQUIPMENT       6         3. SUMMARY OF TEST RESULTS       7         4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A) 8       4.1. Block Diagram of Test Setup       8         4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
1.3. Measurement Uncertainty       52. MEASURING DEVICE AND TEST EQUIPMENT       66         3. SUMMARY OF TEST RESULTS       7         4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A) 8       4.1. Block Diagram of Test Setup       8         4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20		* · · · · · · · · · · · · · · · · · · ·	
3. SUMMARY OF TEST RESULTS	1.3.	<u>*</u>	
3. SUMMARY OF TEST RESULTS	2. M	EASURING DEVICE AND TEST EOUIPMENT	6
4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A) 8         4.1. Block Diagram of Test Setup.       8         4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup.       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
4.1.       Block Diagram of Test Setup.       8         4.2.       The Emission Limit       9         4.3.       Configuration of EUT on Measurement       9         4.4.       Operating Condition of EUT       9         4.5.       Test Procedure       10         4.6.       The Field Strength of Radiation Emission Measurement Results       11         5.       SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1.       Block Diagram of Test Setup.       14         5.2.       The Emission Limit For Section 15.249(d)       14         5.3.       EUT Configuration on Measurement       15         5.4.       Operating Condition of EUT       15         5.5.       Test Procedure       16         5.6.       The Emission Measurement Result       17         6.       BAND EDGES       20         6.1.       The Requirement       20         6.2.       EUT Configuration on Measurement       20         6.3.       Operating Condition of EUT       20         6.4.       Test Procedure       20			
4.2. The Emission Limit       9         4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			, ,
4.3. Configuration of EUT on Measurement       9         4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
4.4. Operating Condition of EUT       9         4.5. Test Procedure       10         4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
4.6. The Field Strength of Radiation Emission Measurement Results       11         5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20	4.4.		
5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)       14         5.1. Block Diagram of Test Setup.       14         5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20	4.5.	Test Procedure	10
5.1. Block Diagram of Test Setup	4.6.	The Field Strength of Radiation Emission Measurement Results	11
5.2. The Emission Limit For Section 15.249(d)       14         5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20	5. SF	PURIOUS RADIATED EMISSION FOR SECTION 15.249(D)	14
5.3. EUT Configuration on Measurement       15         5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20	5.1.	Block Diagram of Test Setup	14
5.4. Operating Condition of EUT       15         5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20	5.2.	The Emission Limit For Section 15.249(d)	14
5.5. Test Procedure       16         5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
5.6. The Emission Measurement Result       17         6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20		1 0	
6. BAND EDGES       20         6.1. The Requirement       20         6.2. EUT Configuration on Measurement       20         6.3. Operating Condition of EUT       20         6.4. Test Procedure       20			
6.1. The Requirement206.2. EUT Configuration on Measurement206.3. Operating Condition of EUT206.4. Test Procedure20			
6.2. EUT Configuration on Measurement206.3. Operating Condition of EUT206.4. Test Procedure20			
6.3. Operating Condition of EUT			
6.4. Test Procedure			
6.5 The Measurement Result	6.5.	The Measurement Result	
7. ANTENNA REQUIREMENT			
7.1. The Requirement		_	

APPENDIX I (TEST CURVES) (28 pages)

7.2.

## **Test Report Certification**

Applicant : Eastern Times Technology Co., Ltd.

Manufacturer : Eastern Times Technology Co., Ltd.

EUT Description : 2.4G Wireless Keyboard

(A) MODEL NO.: ET-3788

(B) POWER SUPPLY: 3V DC ("AAA" batteries  $2\times$ )

Measurement Procedure Used:

#### FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.4: 2009

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section15.249 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test :	May 7-17, 2013	
Prepared by :	Keny Cheng	
	(Kelly Cheng, Engineer)	
Approved & Authorized Signer :	Gentlin Manager	
	(Sean Liu, Manager)	

#### 1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT : 2.4G Wireless Keyboard

Model Number : ET-3788

Power Supply : 3V DC ( "AAA" batteries  $2 \times )$ 

Operate Frequency : 2408.000-2474.000MHz

Applicant : Eastern Times Technology Co., Ltd.

Address : Building D, Nan An Industry Park, Youganpu Village,

Fenggang Town, Dongguan City, Guangdong, China

Manufacturer : Eastern Times Technology Co., Ltd.

Address : Building D, Nan An Industry Park, Youganpu Village,

Fenggang Town, Dongguan City, Guangdong, China

Date of sample received: May 7, 2013

Date of Test : May 7-17, 2013

1.2.Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.

Science & Industry Park, Nanshan, Shenzhen, Guangdong

P.R. China

### 1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2

(Above 1GHz)

# 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment** 

Kind of equipment	Manufacturer	Type	S/N	Calibrated date	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 12, 2013	Jan. 11, 2014
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 12, 2013	Jan. 11, 2014
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 12, 2013	Jan. 11, 2014
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 12, 2013	Jan. 11, 2014
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Feb. 06, 2013	Feb. 05, 2014
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Feb. 06, 2013	Feb. 05, 2014
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Feb. 06, 2013	Feb. 05, 2014
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Feb. 06, 2013	Feb. 05, 2014
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 12, 2013	Jan. 11, 2014
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 12, 2013	Jan. 11, 2014

# 3. SUMMARY OF TEST RESULTS

FCC Rules	<b>Description of Test</b>	Result
Section 15.207	Conducted Emission	N/A
Section 15.249(a)	Fundamental and Harmonics Radiated Emission	Compliant
Section 15.249(d)	Spurious Radiated Emission	Compliant
Section 15.249(d)	Band Edge	Compliant
Section 15.203	Antenna Requirement	Compliant

Remark: "N/A" means "Not applicable".

# 4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR SECTION 15.249(A)

### 4.1.Block Diagram of Test Setup

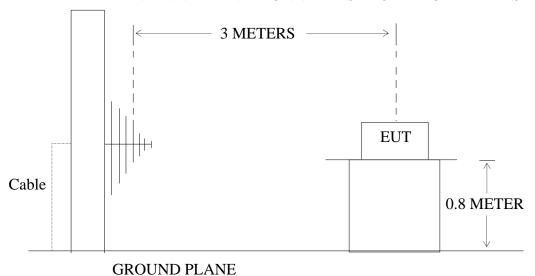
4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: 2.4G Wireless Keyboard)

4.1.2.Semi-Anechoic Chamber Test Setup Diagram

#### ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



(EUT: 2.4G Wireless Keyboard)

#### 4.2. The Emission Limit

4.2.1.For intentional radiators, According to section 15.249(a), Operation within the frequency band of 2.4 to 2.4835GHz, The fundamental field strength shall not exceed 94 dB $\mu$ V/m and the harmonics shall not exceed 54 dB $\mu$ V/m.

Fundamental	Field Strength of Fundamental	Field Strength of harmonics
Frequency	(millivolts/meter)	(microvolts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

4.2.2.According to section 15.249(e), as shown in section 15.35(b), the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

#### 4.3. Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1. 2.4G Wireless Keyboard (EUT)

Model Number : ET-3788 Serial Number : N/A

Manufacturer : Eastern Times Technology Co., Ltd.

#### 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT and simulator as shown as Section 4.1.
- 4.4.2. Turn on the power of all equipment.
- 4.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2408.000 2474.000 MHz MHz. We are select 2408.000MHz, 2440.000MHz, 2474.000MHz TX frequency to transmit.

#### 4.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz, and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

# 4.6. The Field Strength of Radiation Emission Measurement Results **PASS.**

Date of Test:May 13, 2013Temperature:25°CEUT:2.4G Wireless KeyboardHumidity:50%Model No.:ET-3788Power Supply:DC 3VTest Mode:TX 2408.000MHzTest Engineer:Star

#### **Fundamental Radiated Emissions**

Frequency	Reading(dBμV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2408.000	91.21	97.94	-7.44	83.77	90.50	94.00	114.00	-10.23	-23.50	Vertical
2408.000	94.16	100.22	-7.44	86.72	92.78	94.00	114.00	-7.28	-21.22	Horizontal

#### **Harmonics Radiated Emissions**

Frequency	Reading(dBμV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
7224.000	42.94	48.18	-3.01	45.95	51.19	54.00	74.00	-8.05	-22.81	Vertical
4816.000	40.11	45.56	-0.23	39.88	45.33	54.00	74.00	-14.12	-28.67	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2440.000MHz	Test Engineer:	Star

#### **Fundamental Radiated Emissions**

Frequency (MHz)	Reading(	dBμV/m	Factor(dB) Corr.			Limit(dBµV/m)		Margin(dB)		Polarization
	AV	PEAK	Con.	AV	PEAK	AV	PEAK	AV	PEAK	
2440.000	88.68	94.92	-7.36	81.32	87.56	94.00	114.00	-12.68	-26.44	Vertical
2440.000	91.42	97.88	-7.36	84.06	90.52	94.00	114.00	-9.94	-23.48	Horizontal

#### **Harmonics Radiated Emissions**

Frequency (MHz)	Reading(d	dBμV/m	Factor(dB) Corr.	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(WITIZ)	AV	PEAK	Con.	AV	PEAK	AV	PEAK	AV	PEAK	
7320.000	41.76	46.28	-3.24	45.00	49.52	94.00	114.00	-9.00	-24.48	Vertical
4880.000	39.76	45.15	-0.13	39.89	45.28	94.00	114.00	-14.11	-28.72	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

 $Result = Reading + Corrected \ Factor$ 

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2474.000MHz	Test Engineer:	Star

#### **Fundamental Radiated Emissions**

Frequency (MHz)	Reading(	dBμV/m	Factor(dB) Corr.	(dB) Result(dBµ		Limit(dBµV/m)		Margin(dB)		Polarization
(WILL)	AV	PEAK	Con.	AV	PEAK	AV	PEAK	AV	PEAK	
2474.000	87.67	94.28	-7.37	80.30	86.91	94.00	114.00	-13.70	-27.09	Vertical
2474.000	88.47	94.95	-7.37	81.10	87.58	94.00	114.00	-12.9	-26.42	Horizontal

#### **Harmonics Radiated Emissions**

Frequency (MHz)	Reading(	dBμV/m	Factor(dB) Corr.	Result(d	BμV/m)	Limit(d)	BμV/m)	Marg	in(dB)	Polarization
(WITIZ)	AV	PEAK	Con.	AV	PEAK	AV	PEAK	AV	PEAK	
7422.000	42.17	47.20	-3.57	45.74	50.77	94.00	114.00	-8.26	-23.23	Vertical
4948.000	38.10	42.36	-0.46	38.56	42.82	94.00	114.00	-15.44	-31.18	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

 $Result = Reading + Corrected \ Factor$ 

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

# 5. SPURIOUS RADIATED EMISSION FOR SECTION 15.249(D)

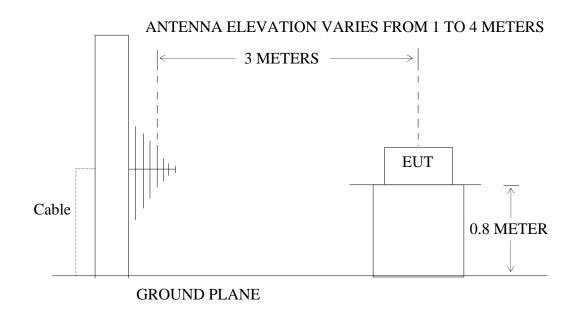
#### 5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: 2.4G Wireless Keyboard)

5.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: 2.4G Wireless Keyboard)

#### 5.2. The Emission Limit For Section 15.249(d)

5.2.1.Emission radiated outside of the specified frequency bands, except for harmonics, shall be comply with the general radiated emission limits in Section 15.209.

Radiation Emission Measurement Limits According to Section 15.209

	Limit						
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)	The final measuremen in band 9-90kHz, 110-490kHz and above 1000MHz is				
0.009 – 0.490	2400/F(kHz)	300	performed with Average detector.				

0.490 – 1.705	24000/F(kHz)	30	Except those frequency bands mention above, the
1.705 – 30.0	30	30	final measurement for frequencies below
30 - 88	100	3	1000MHz is performed with Quasi Peak detector.
88 - 216	150	3	
216 - 960	200	3	
Above 960	500	3	

#### 5.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1. 2.4G Wireless Keyboard (EUT)

Model Number : ET-3788 Serial Number : N/A

Manufacturer : Eastern Times Technology Co., Ltd.

#### 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2408.000 2474.000 MHz. We are select 2408.000MHz, 2440.000MHz, 2474.000MHz TX frequency to transmit.

#### 5.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

#### 5.6. The Emission Measurement Result

#### PASS.

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2408.000MHz	Test Engineer:	Star

#### Below 30MHz

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

#### 30MHz-25GHz

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

 $Result = Reading + Corrected \ Factor$ 

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2440.000MHz	Test Engineer:	Star

#### Below 30MHz

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

#### 30MHz-25GH

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2474.000MHz	Test Engineer:	Star

#### Below 30MHz

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

#### 30MHz-25GH

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

#### 6. BAND EDGES

#### 6.1.The Requirement

6.1.1.Band Edge from 2400MHz to 2483.5MHz. Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

#### 6.2.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.2.1. 2.4G Wireless Keyboard (EUT)

Model Number : ET-3788 Serial Number : N/A

Manufacturer : Eastern Times Technology Co., Ltd.

#### 6.3. Operating Condition of EUT

- 6.3.1. Setup the EUT and simulator as shown as Section 4.1.
- 6.3.2. Turn on the power of all equipment.
- 6.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2408.000-2474.000MHz MHz. We are select 2408.000MHz, 2474.000MHz TX frequency to transmit.

#### 6.4. Test Procedure

- 1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

#### 6.5. The Measurement Result

#### Pass.

Date of Test:May 13, 2013Temperature:25°CEUT:2.4G Wireless KeyboardHumidity:50%Model No.:ET-3788Power Supply:DC 3VTest Mode:TX 2408.000MHzTest Engineer:Star

Frequency	Reading(dBµV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2310.000	37.39	43.31	-7.81	29.58	35.50	54.00	74.00	-24.42	-38.50	Vertical
2385.575	48.98	53.83	-7.56	41.42	46.27	54.00	74.00	-12.58	-27.73	Vertical
2390.000	39.83	44.85	-7.53	32.30	37.32	54.00	74.00	-21.70	-36.68	Vertical
2310.000	38.93	43.35	-7.81	31.12	35.54	54.00	74.00	-22.88	-38.46	Horizontal
2382.469	48.60	48.60	-7.58	41.02	41.02	54.00	74.00	-12.98	-27.63	Horizontal
2390.000	40.36	45.70	-7.53	32.83	38.17	54.00	74.00	-21.17	-35.83	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	2.4G Wireless Keyboard	Humidity:	50%
Model No.:	ET-3788	Power Supply:	DC 3V
Test Mode:	TX 2474.000MHz	Test Engineer:	Star

Frequency	Reading(dBµV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	41.32	46.50	-7.37	33.95	39.13	54.00	74.00	-20.05	-34.87	Vertical
2488.141	42.57	47.53	-7.38	35.19	40.15	54.00	74.00	-18.81	-33.85	Vertical
2500.000	37.46	42.55	-7.40	30.06	35.15	54.00	74.00	-23.94	-38.85	Vertical
2483.500	43.14	47.37	-7.37	35.77	40.00	54.00	74.00	-18.23	-34.00	Horizontal
2488.457	43.76	48.51	-7.38	36.38	41.13	54.00	74.00	-17.62	-32.87	Horizontal
2500.000	38.63	43.33	-7.40	31.23	35.93	54.00	74.00	-22.77	-38.07	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

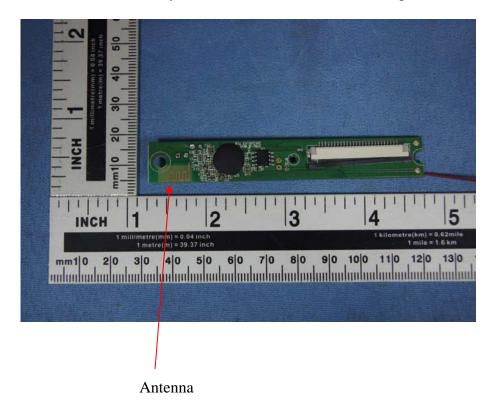
# 7. ANTENNA REQUIREMENT

### 7.1. The Requirement

7.1.1.According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### 7.2. Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement.



# APPENDIX I (Test Curves)



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4346

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

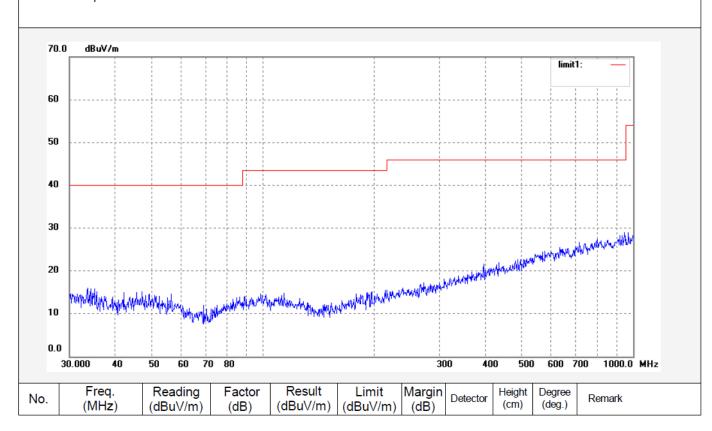
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 13/05/14/
Time: 9/45/10
Engineer Signature:
Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4347 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

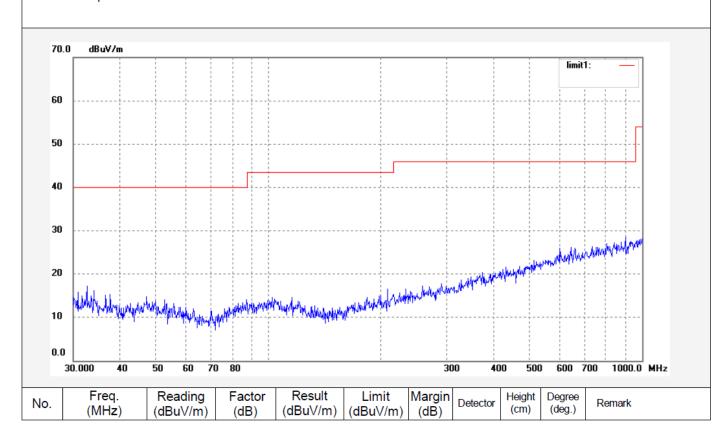
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 13/05/14/
Time: 9/48/25
Engineer Signature:
Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4322

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

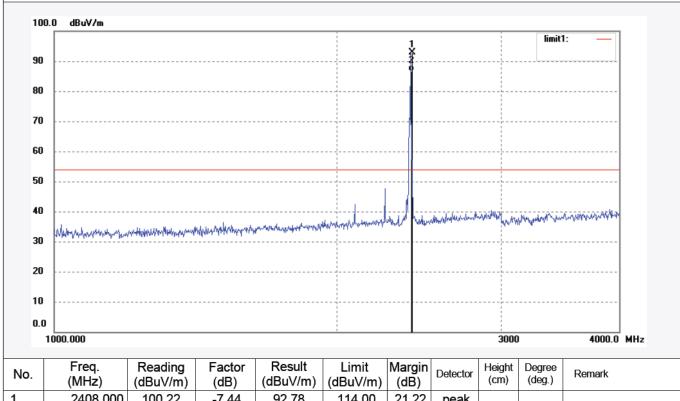
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Report No.:ATE20130898 Note:

Polarization: Horizontal Power Source: DC 3V

> Date: 2013-5-13 Time: 13:19:22 Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4323

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

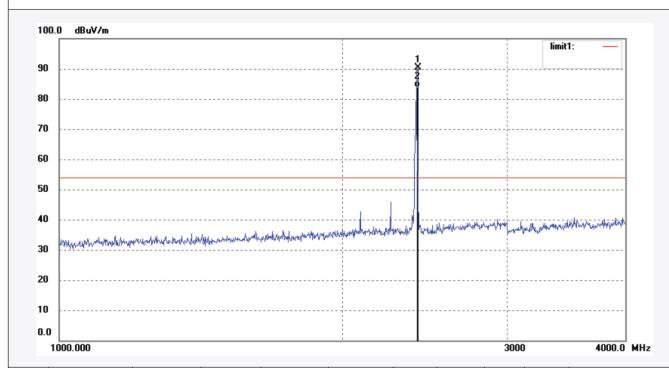
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 13:23:37 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)		Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2408.000	97.94	-7.44	90.50	114.00	23.50	peak			
2	2408.000	91.21	-7.44	83.77	94.00	10.23	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4329

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

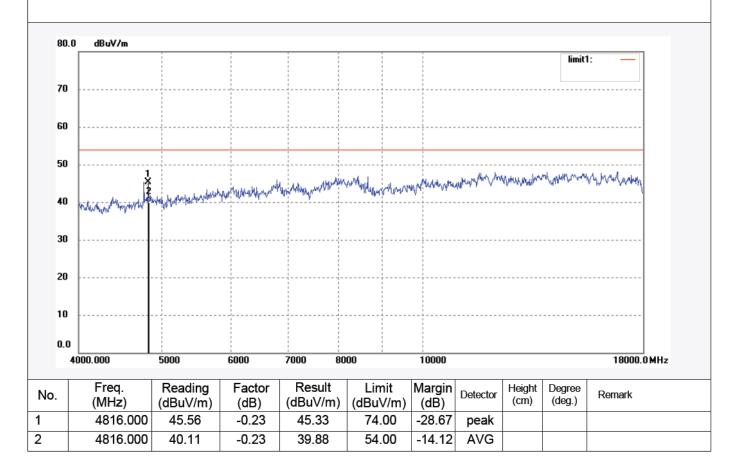
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13
Time: 13:43:44
Engineer Signature:
Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4328

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

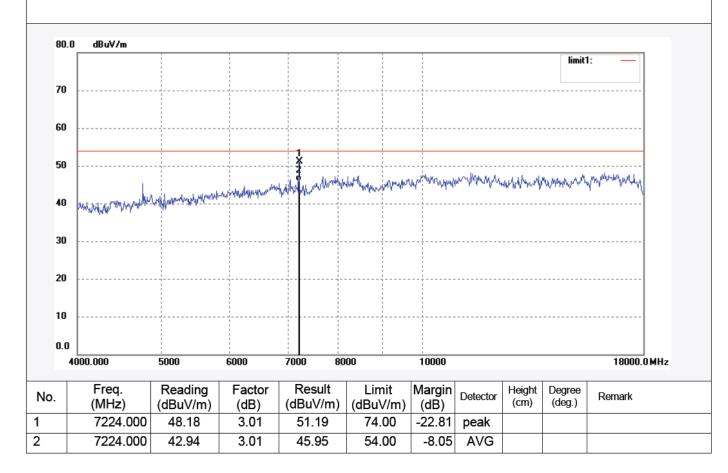
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13
Time: 13:39:31
Engineer Signature:
Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4304

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

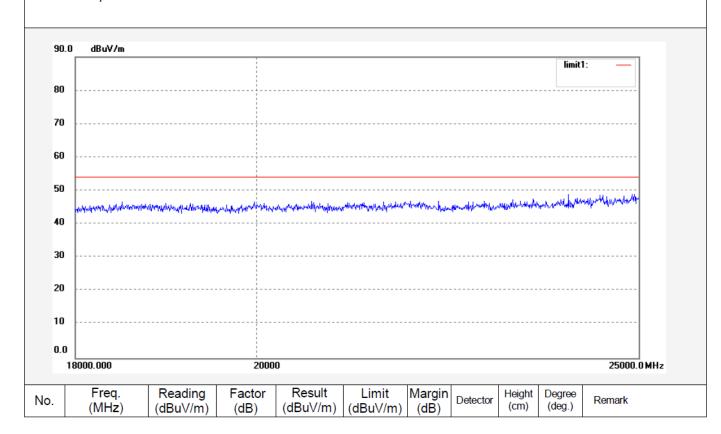
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 11:11:04 Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4305

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

Mode: TX 2408MHz Model: ET-3788

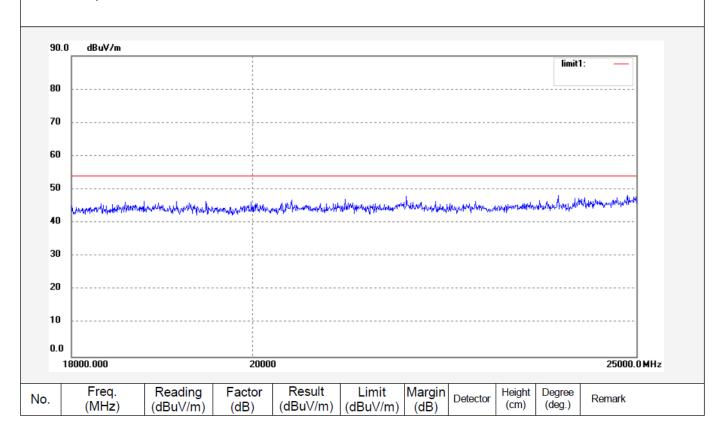
Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Power Source: DC 3V Date: 2013-5-13 Time: 11:14:33 Engineer Signature:

Polarization: Vertical

Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Horizontal

Polarization:

Date: 13/05/14/

Engineer Signature:

Time: 9/56/04

Distance: 3m

Power Source: DC 3V

Job No.: star #4349

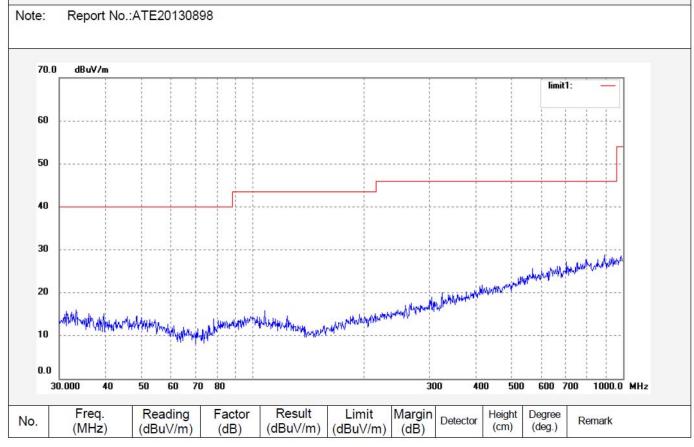
Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4348

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

Mode: TX 2440MHz Model: ET-3788

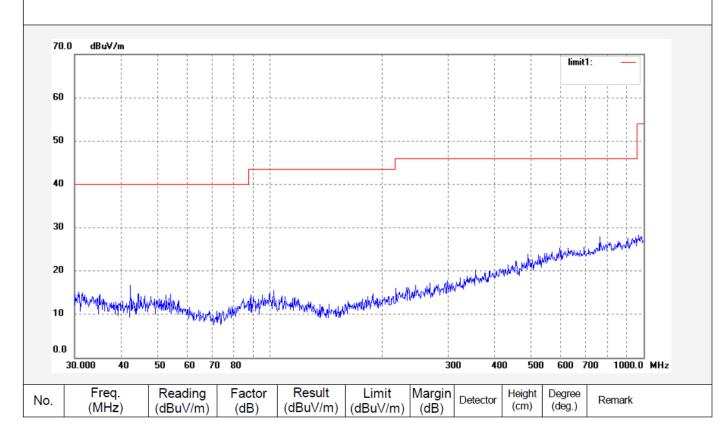
Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 13/05/14/ Time: 9/51/37

Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4325

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

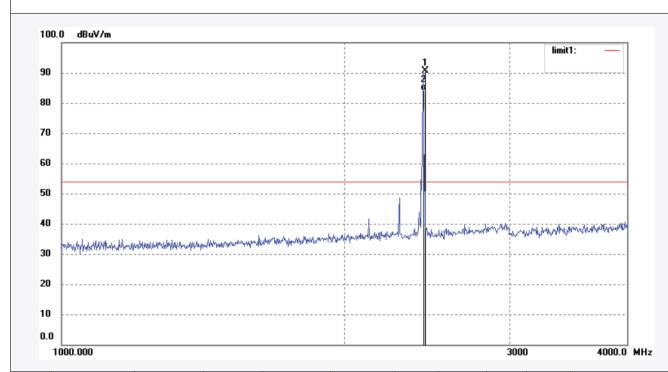
Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 13:29:08 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	97.88	-7.36	90.52	114.00	23.48	peak			
2	2440.000	91.42	-7.36	84.06	94.00	9.94	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4324

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

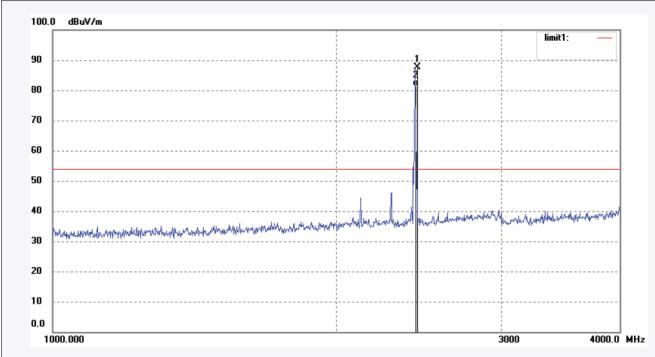
Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 13:26:48 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	94.92	-7.36	87.56	114.00	26.44	peak			
2	2440.000	88.68	-7.36	81.32	94.00	12.68	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4330

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

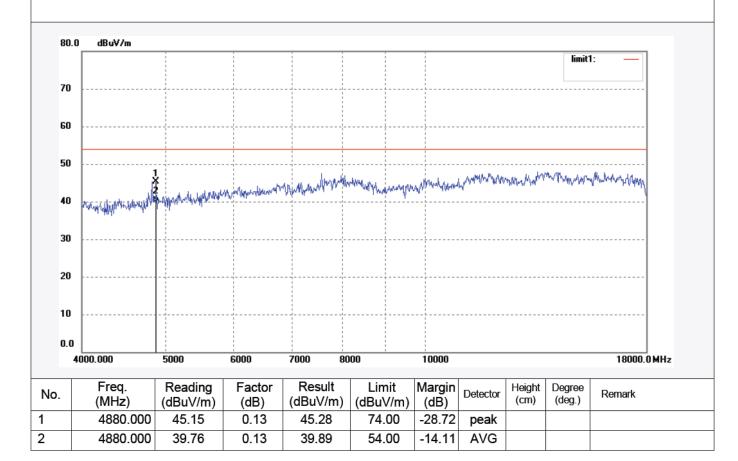
Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13
Time: 13:48:39
Engineer Signature:
Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: STAR #4331

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

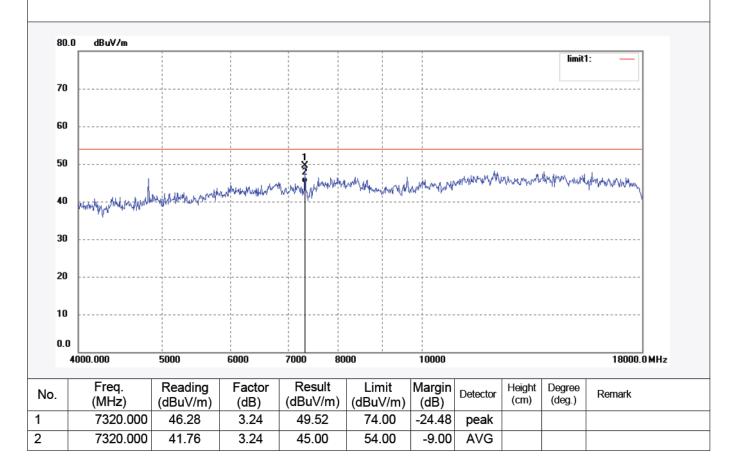
Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 13:52:57 Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4307

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 11:22:20 Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4306 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

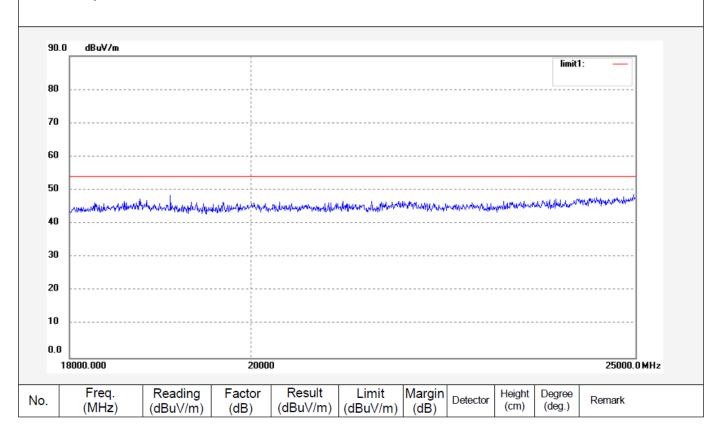
Mode: TX 2440MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 11:18:59 Engineer Signature: Distance: 3m





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: star #4350

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

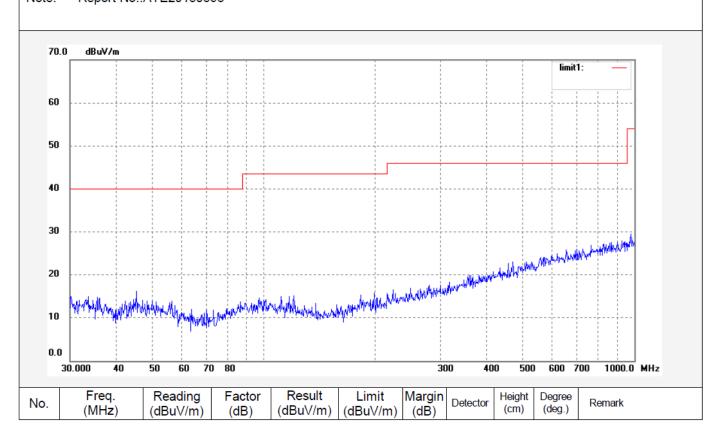
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 13/05/14/
Time: 9/59/17
Engineer Signature:
Distance: 3m





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Job No.: star #4351

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

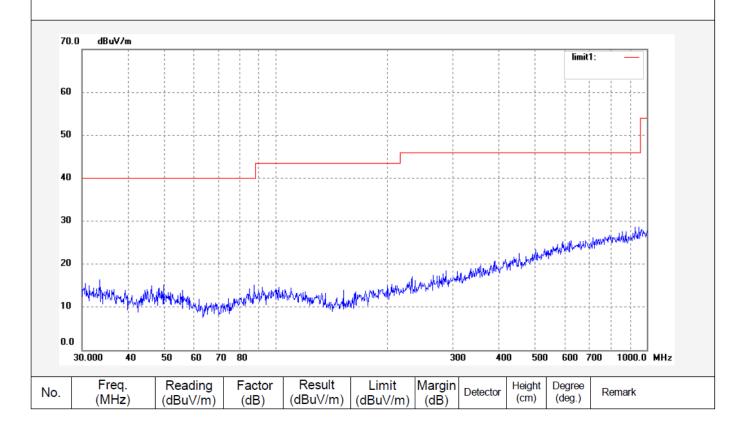
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 13/05/14/
Time: 10/04/32
Engineer Signature:
Distance: 3m





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Job No.: STAR #4326 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

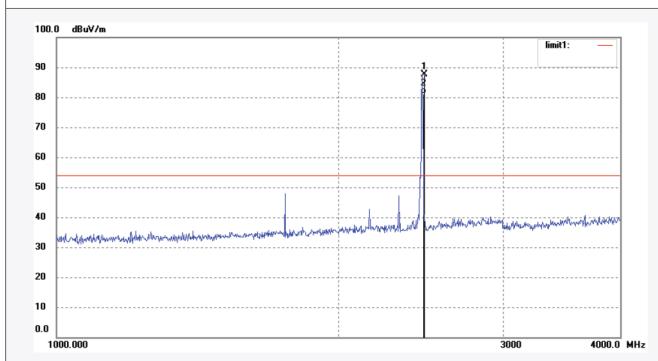
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 13:32:38 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2474.000	94.95	-7.37	87.58	114.00	26.42	peak			
2	2474.000	88.47	-7.37	81.10	94.00	12.9	AVG			



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Job No.: STAR #4327

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

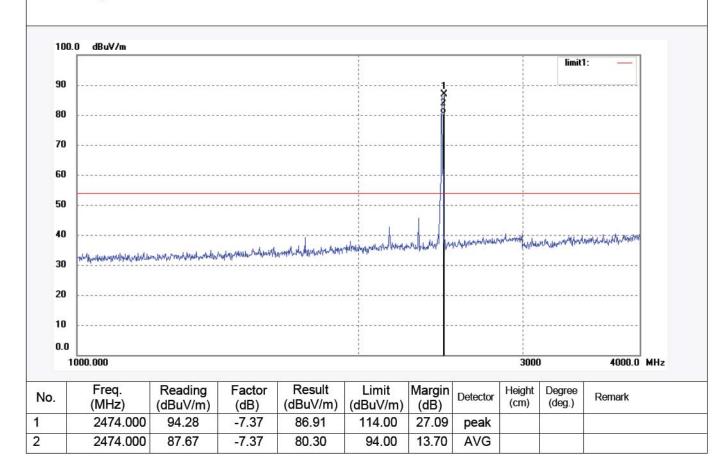
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13
Time: 13:35:57
Engineer Signature:
Distance: 3m





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Job No.: STAR #4333

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

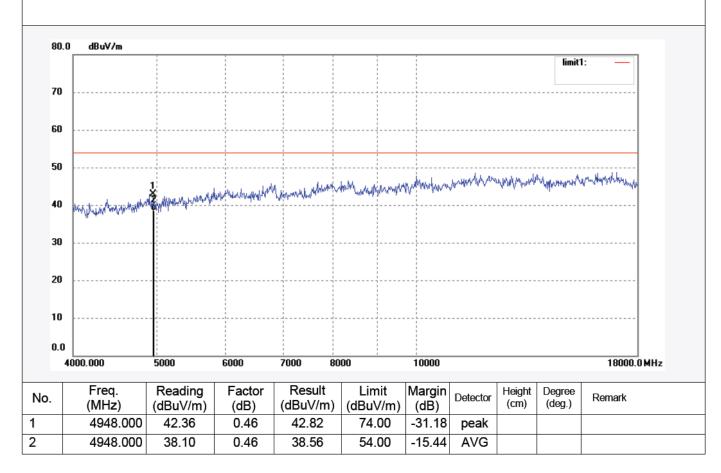
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 13:59:33 Engineer Signature: Distance: 3m





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Job No.: STAR #4332

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

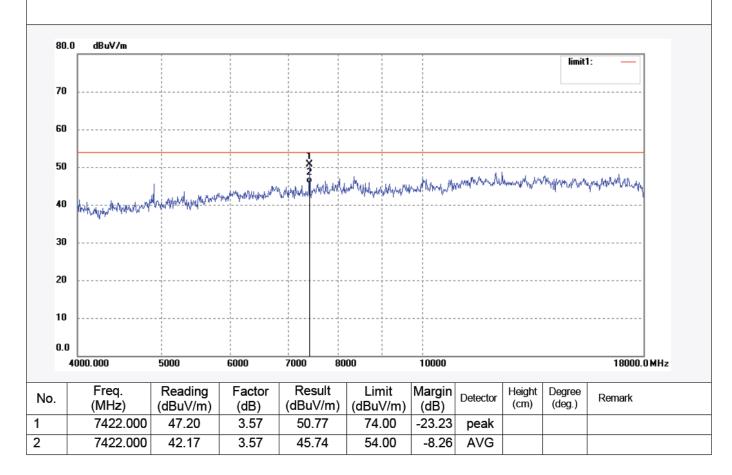
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 13:56:15 Engineer Signature: Distance: 3m





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Job No.: star #4307

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

Mode: TX 2440MHz Model: ET-3788

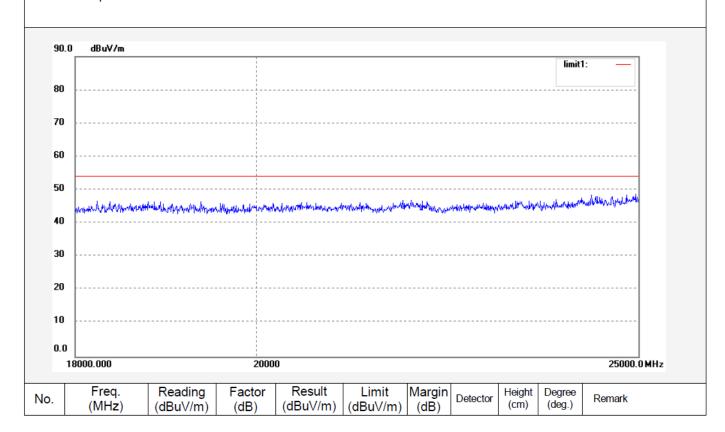
Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Power Source: DC 3V Date: 2013-5-13 Time: 11:22:20 Engineer Signature:

Polarization: Horizontal

Distance: 3m





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Job No.: star #4308

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

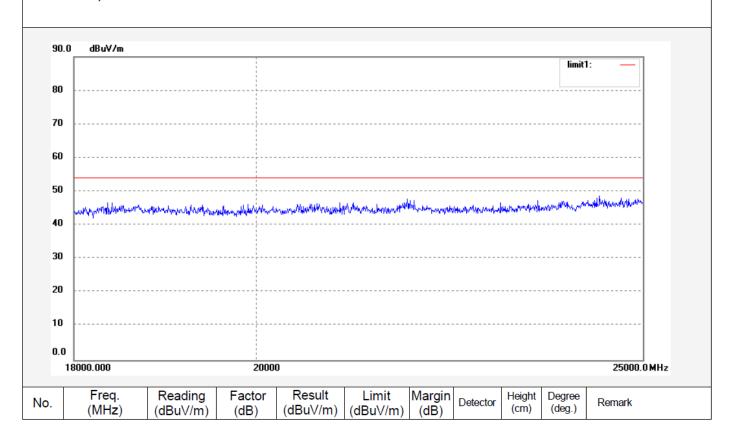
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 11:25:39 Engineer Signature: Distance: 3m





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Job No.: star #4310 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

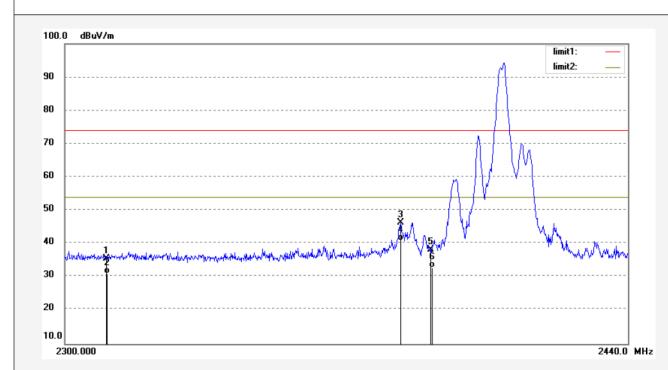
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 11:54:55 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	43.35	-7.81	35.54	74.00	-38.46	peak			
2	2310.000	38.93	-7.81	31.12	54.00	-22.88	AVG			
3	2382.469	53.95	-7.58	46.37	74.00	-27.63	peak			
4	2382.469	48.60	-7.58	41.02	54.00	-12.98	AVG			
5	2390.000	45.70	-7.53	38.17	74.00	-35.83	peak			
6	2390.000	40.36	-7.53	32.83	54.00	-21.17	AVG			



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Job No.: star #4311 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

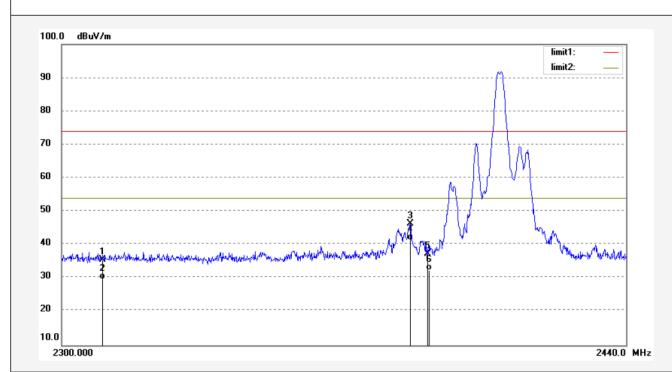
Mode: TX 2408MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 11:57:03 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	43.31	-7.81	35.50	74.00	-38.50	peak			
2	2310.000	37.39	-7.81	29.58	54.00	-24.42	AVG			
3	2385.575	53.83	-7.56	46.27	74.00	-27.73	peak			
4	2385.575	48.98	-7.56	41.42	54.00	-12.58	AVG			
5	2390.000	44.85	-7.53	37.32	74.00	-36.68	peak			
6	2390.000	39.83	-7.53	32.30	54.00	-21.70	AVG			



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Job No.: star #4313 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

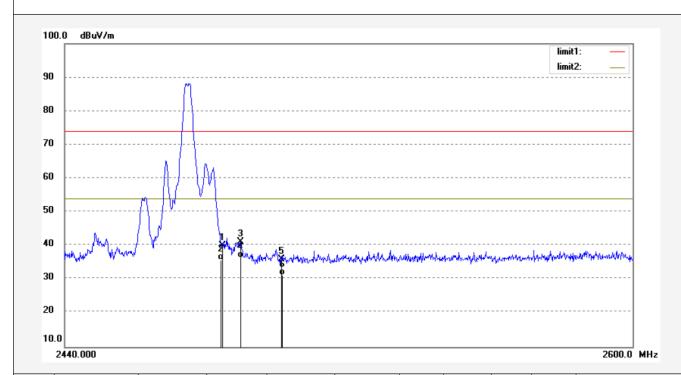
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Horizontal Power Source: DC 3V

Date: 2013-5-13 Time: 12:06:37 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.37	-7.37	40.00	74.00	-34.00	peak			
2	2483.500	43.14	-7.37	35.77	54.00	-18.23	AVG			
3	2488.457	48.51	-7.38	41.13	74.00	-32.87	peak			
4	2488.457	43.76	-7.38	36.38	54.00	-17.62	AVG			
5	2500.000	43.33	-7.40	35.93	74.00	-38.07	peak			
6	2500.000	38.63	-7.40	31.23	54.00	-22.77	AVG			



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Job No.: star #4312 Standard: FCC PK Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: 2.4G Wireless Keyboard

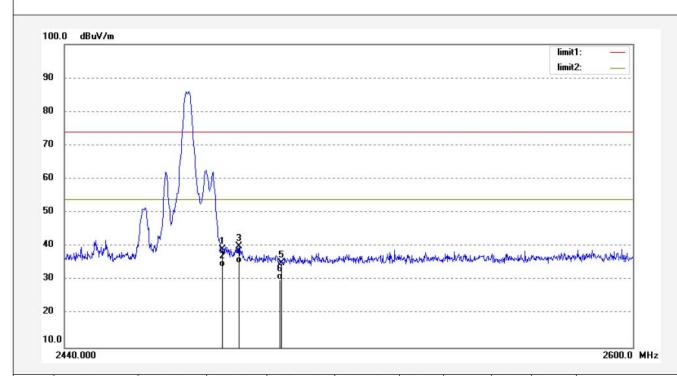
Mode: TX 2474MHz Model: ET-3788

Manufacturer: Eastern Times

Note: Report No.:ATE20130898

Polarization: Vertical Power Source: DC 3V

Date: 2013-5-13 Time: 12:02:24 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	46.50	-7.37	39.13	74.00	-34.87	peak			
2	2483.500	41.32	-7.37	33.95	54.00	-20.05	AVG			
3	2488.141	47.53	-7.38	40.15	74.00	-33.85	peak			
4	2488.141	42.57	-7.38	35.19	54.00	-18.81	AVG			
5	2500.000	42.55	-7.40	35.15	74.00	-38.85	peak			
6	2500.000	37.46	-7.40	30.06	54.00	-23.94	AVG			