

## FCC COMPLIANCE REPORT

for

Chuangfeng Electronics Co.,Ltd

Wireless Optical Mouse

Model Number: KM-1015SW

Prepared for : Chuangfeng Electronics Co.,Ltd  
Address : Huali Industrial Zone, Songbotang, Changping Town, Dongguan  
Address : City, Guangdong, China

Prepared By : NS Technology Co., Ltd.  
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Report Number : NSE-F09114079  
Date of Test : Nov. 7,~ Nov. 15, 2009  
Date of Report : Nov. 17, 2009



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# NS Technology Co., Ltd.

<b>Applicant:</b>	Chuangfeng Electronics Co.,Ltd		
<b>Address:</b>	Huali Industrial Zone, Songbotang, Changping Town, Dongguan City, Guangdong, China		
<b>Manufacturer:</b>	Chuangfeng Electronics Co.,Ltd		
<b>Address:</b>	Huali Industrial Zone, Songbotang, Changping Town, Dongguan City, Guangdong, China		
<b>E.U.T:</b>	Wireless Optical Mouse		
<b>Model Number:</b>	KM-1015SW		
<b>Trade Name:</b>	-----	<b>Operating Frequency:</b>	2405MHz~2476MHz
<b>Date of Receipt:</b>	Nov. 6, 2009	<b>Date of Test:</b>	Nov. 7,~ Dec. 3, 2009
<b>Test Specification:</b>	FCC Part 15 Subpart C: July. 10, 2008 ANSI C63.4:2003		
<b>Test Result:</b>	The equipment under test was found to be compliance with the requirements of the standards applied.		
<b>Issue Date: Dec. 4,2009</b>			
Tested by:	Reviewed by:	Approved by:	
			
Jade/ Engineer	Iceman Hu / Supervisor	Steven Lee / Manager	
<b>Other Aspects:</b> None.			
Abbreviations: OK/P=passed      fail/F=failed      n.a/N=not applicable      E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of NS Technology Co., Ltd.			



# 1. GENERAL PRODUCT INFORMATION

## 1.1. Product Function

Details please refer to Technical Construction Form and User Manual.

## 1.2. Description of Device (EUT)

E.U.T. : Wireless Optical Mouse  
 Model No. : KM-1015SW  
 Operating Frequency : 2405~2476MHz  
 Number of Channels : 32 channels hopping with 2 group form 2.405GHz ~ 2.476GHz.  
 Type of Modulation : GFSK  
 Antenna Type : Integral  
 System Input Voltage : Nominal Voltage: DC 1.5V  
 Temperature Range(Operating) : 0 ~+ 40°C

Channel frequency:

Frequency Group1		Frequency Group2	Unit
2407	2442	2405	2443
2408	2447	2406	2444
2412	2451	2409	2446
2414	2452	2410	2448
2417	2457	2411	2449
2420	2458	2413	2453
2421	2459	2415	2455
2422	2460	2416	2456
2427	2461	2418	2462
2428	2465	2419	2463
2431	2468	2423	2464
2435	2469	2425	2466
2436	2472	2429	2467
2437	2473	2430	2470
2438	2475	2432	2471
2439	2476	2434	2474

(MHz)

## 1.3. Difference between Model Numbers

## 1.4. Independent Operation Modes

The basic operation modes are:

- 1.4.1. Low Channel TX 2405MHz
- 1.4.2. Middle Channel TX 2442MHz
- 1.4.3.; High Channel TX 2476MHz



## 2. TEST SITES

### 2.1. Test Facilities

EMC Lab : Certificated by TUV Rheinland, Germany.  
Date of registration: July 28, 2003

Certificated by FCC, USA  
Registration No.: 502831  
Date of registration: February 09, 2009

Certificated by VCCI, Japan  
Registration No.: R-2527 & C-2770  
Date of registration: March 23, 2007

Certificated by CNAL, CHINA  
Registration No.: L1744  
Date of registration: November 25, 2004

Certificated by Intertek ETL SEMKO  
Registration No.: TMP-013  
Date of registration: June 11, 2005

Certificated by TUV/PS, Hong Kong  
Date of registration: December 1, 2005

Certificated by Industry Canada  
Registration No.: 5936A  
Date of registration: March 4, 2009

Certificated by ATCB, America  
Date of registration: August 03, 2006

Name of Firm : NS Technology Co., Ltd.

Site Location : Chenwu Industrial Zone, Houjie Town, Dongguan City, Guangdong, China



## 2.2. List of Test and Measurement Instruments

### 2.2.1. For radiated emission test (30MHz-1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESCS30	100340	May 31,09	May 31,10
Spectrum Analyzer	HP	8593E	3448U00806	May 31,09	May 31,10
Bilog Antenna	Teseq	CBL 6111D	25758	Oct. 27,09	Oct. 27,10
Signal Amplifier	Agilent	8447D	2944A10488	May 2,09	May 2,10
50Ω Coaxial Switch	ANRITSU	MP59B	6200530577	May 2,09	May 2,10
RF Cable	IMRO	IMRO-400	966 Cable 1#	May 2,09	May 2,10
RF Cable	DRAKA	M17/84-RG 223	966 Cable 2#	May 2,09	May 2,10

### 2.2.2. For radiated emission test(1GHz-25GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	HP	8593E	3448U00806	May 31,09	May 31,10
Horn Antenna	EMCO	3117	00062558	Jan. 19,09	Jan. 19,11
Signal Amplifier	BURGEON	PEC-38-30M18G -12-SFF	NSEMC001	May 31,09	May 31,11
RF Cable	DRAKA	M06/25-RG102	966Cable 3#24G	May 2,09	May 2,10

### 2.2.3. For Band edge compliance and 20dB bandwidth test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESCS30	100340	May 31,09	May 31,10
Spectrum Analyzer	HP	8593E	3448U00806	May 31,09	May 31,10
Bilog Antenna	Teseq	CBL 6111D	25758	Oct. 27,09	Oct. 27,10
Signal Amplifier	Agilent	8447D	2944A10488	May 2,09	May 2,10
50Ω Coaxial Switch	ANRITSU	MP59B	6200530577	May 2,09	May 2,10
RF Cable	IMRO	IMRO-400	966 Cable 1#	May 2,09	May 2,10
RF Cable	DRAKA	M17/84-RG 223	966 Cable 2#	May 2,09	May 2,10



### 3. TEST SET-UP AND OPERATION MODES

#### 3.1. Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its highest possible radiated level. The test modes were adapted accordingly in reference to the Operating Instructions.

#### 3.2. Block Diagram of Test Set-up

System Diagram of Connections Between EUT and Simulators



(EUT : Wireless Optical Mouse)

#### 3.3. Test Operation Mode and Test Software

Refer to clause 1.4

#### 3.4. Special Accessories and Auxiliary Equipment

None.

#### 3.5. Countermeasures to Achieve EMC Compliance

None.



## 4. TEST SUMMARY

### Test items and result lists

No.	Item	Standard	Results
1	Conduction Emission Test	FCC Part15C: 15.209 ANSI C63.4-2003	N/A
2	Radiated Emission Test	FCC Part15C: 15.249 ANSI C63.4-2003	PASS
3	Band Edge Compliance Test	FCC Part15: 15.249	PASS
4	20dB Bandwidth Test	FCC Part 15: 15.215	PASS

**Note:** N/A is an abbreviation for Not Applicable.



## 5. EMISSION TEST RESULTS

### 5.1. Radiated Emission

#### 5.1.1. Test limits

- 1) FCC part 15C section 15.209
- 2) FCC part 15C section 15.249(a)

#### 5.1.2. Test procedure

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band of 30MHz to 1GHz, The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna (calibrated by dipole antenna) was used as a receiving antenna. At the frequency band of 1GHz to 25GHz, The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used as a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 120 kHz and 300kHz for Quasi-peak detection at frequency below 1GHz.

The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 1MHz for Peak detection at frequency above 1GHz.

For Average measurement at frequency above 1GHz. The resolution bandwidth of the test receiver was 1MHz ; due to the shortest pulse width T is 116us, according the video bandwidth should not smaller than  $1/T$ , so the video bandwidth is 10Hz.

In 18GHz to 25GHz, The EUT was checked by Horn ANT . But the test result is background.

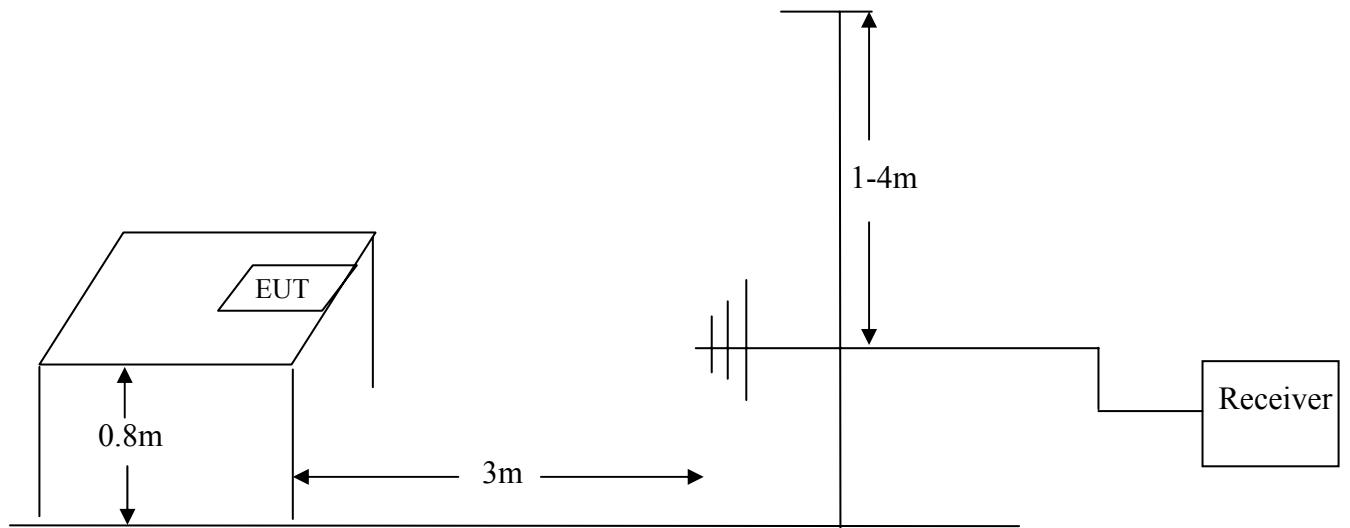
The EUT position(X, Y, Z) were checked and worse case was happened in Y position. So Y position was chose for find measurement.

The EUT was tested in Chamber Site.

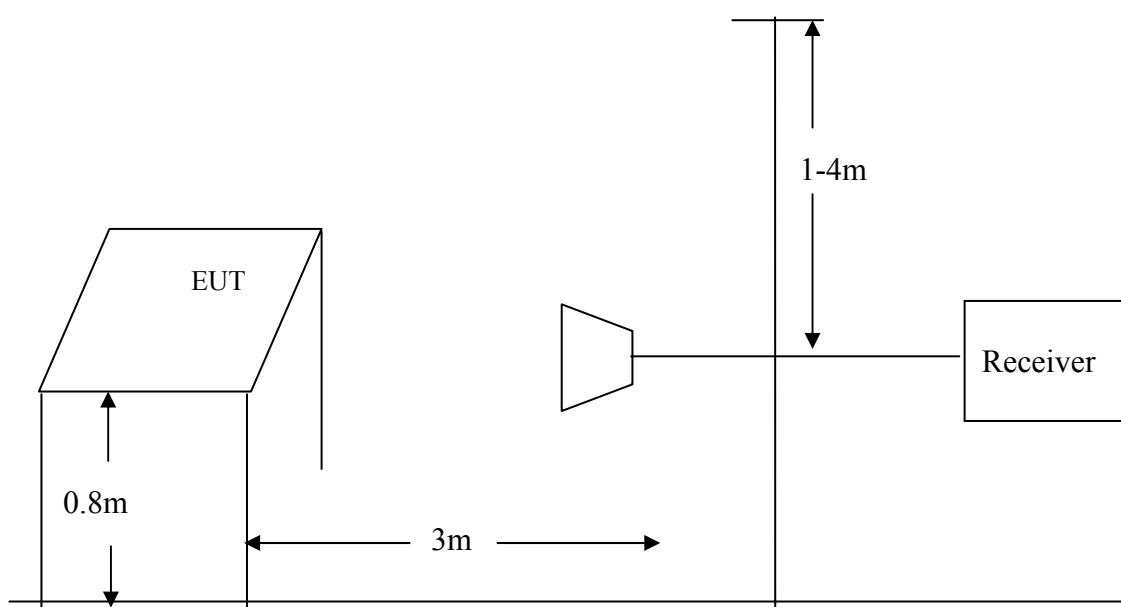


### 5.1.3. Test Setup Diagram

#### 5.1.3.1. Frequency range: 30MHz-1000MHz



#### 5.1.3.2. Frequency range: 1 GHz -25GHz



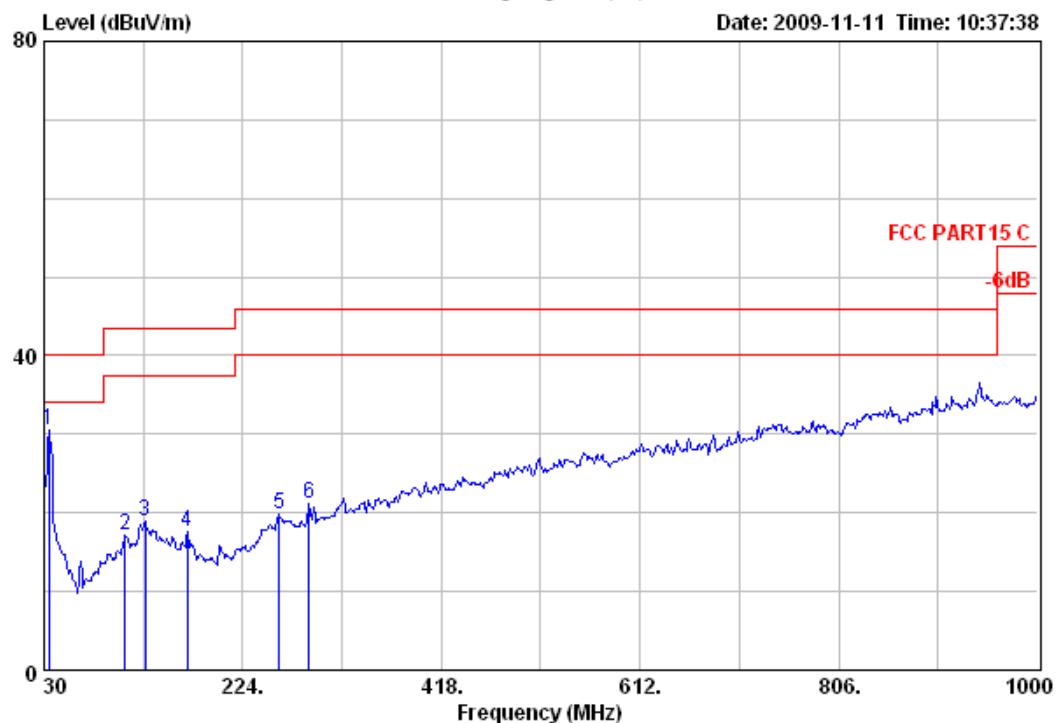
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Data: 49

File: D:\Radiation data\Chuangfeng.EMI (91)

Date: 2009-11-11 Time: 10:37:38



Test Site : 966 Chamber  
 Limit : FCC PART15 C  
 Dis. / Ant. : 3m 25758-3 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode

Freq. (MHz)	Emission			Margin (dB)	Reading (dBuV)	Ant. Factor (dBuV)	Cable Loss (dB/m)	Remark
	Level (dBuV/m)	Limits (dBuV/m)	Ant. Loss (dB)					
1 34.85	30.43	40.00	9.57	11.84	11.84	18.00	0.59	QP
2 109.54	17.13	43.50	26.37	4.83	11.20	11.20	1.10	QP
3 128.94	19.05	43.50	24.45	5.89	11.96	11.96	1.20	QP
4 169.68	17.69	43.50	25.81	6.19	10.10	10.10	1.40	QP
5 259.89	19.92	46.00	26.08	4.69	13.50	13.50	1.73	QP
6 288.99	21.10	46.00	24.90	6.02	13.24	13.24	1.84	QP



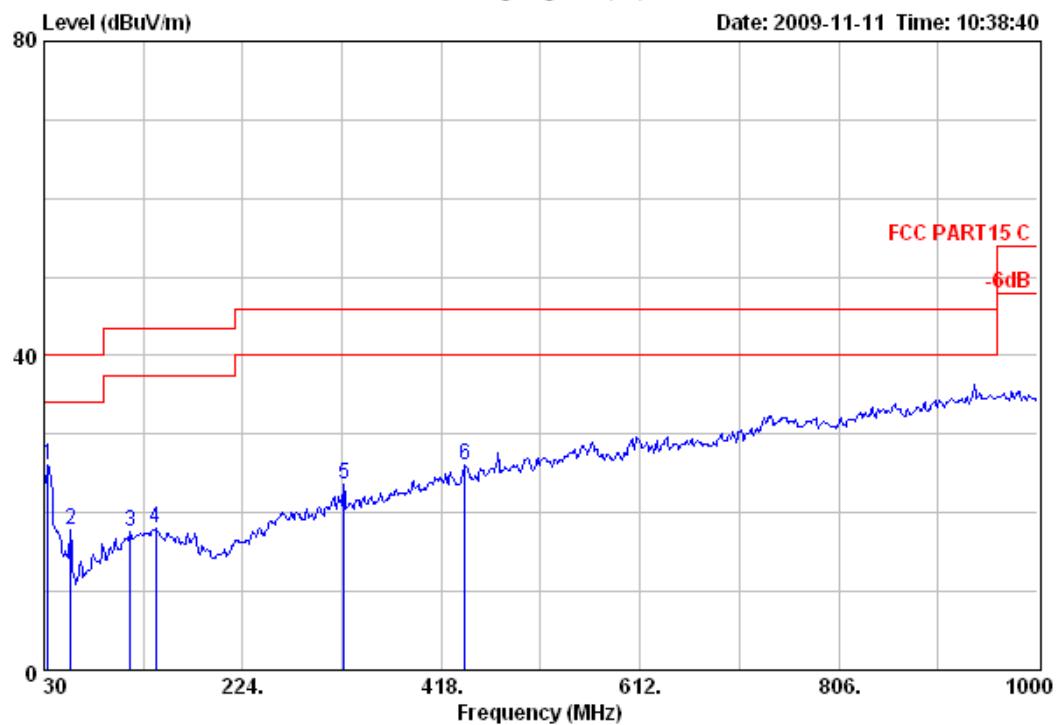
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Data: 50

File: D:\Radiation data\Chuangfeng.EMI (91)

Date: 2009-11-11 Time: 10:38:40



Test Site : 966 Chamber  
 Limit : FCC PART15 C  
 Dis. / Ant. : 3m 25758-3 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode

Freq. (MHz)	Emission			Margin (dB)	Reading (dBuV)	Ant. Factor (dBuV)	Cable Loss (dB/m)	Remark
	Level (dBuV/m)	Limits (dBuV/m)	Ant. Loss (dB)					
1 33.88	26.03	40.00	13.97	6.84	18.60	0.59	0.59	QP
2 56.19	17.85	40.00	22.15	10.10	7.04	0.71	0.71	QP
3 114.39	17.60	43.50	25.90	5.09	11.40	1.11	1.11	QP
4 138.64	17.95	43.50	25.55	4.52	12.18	1.25	1.25	QP
5 322.94	23.67	46.00	22.33	7.55	14.15	1.97	1.97	QP
6 441.28	26.07	46.00	19.93	6.40	17.41	2.26	2.26	QP



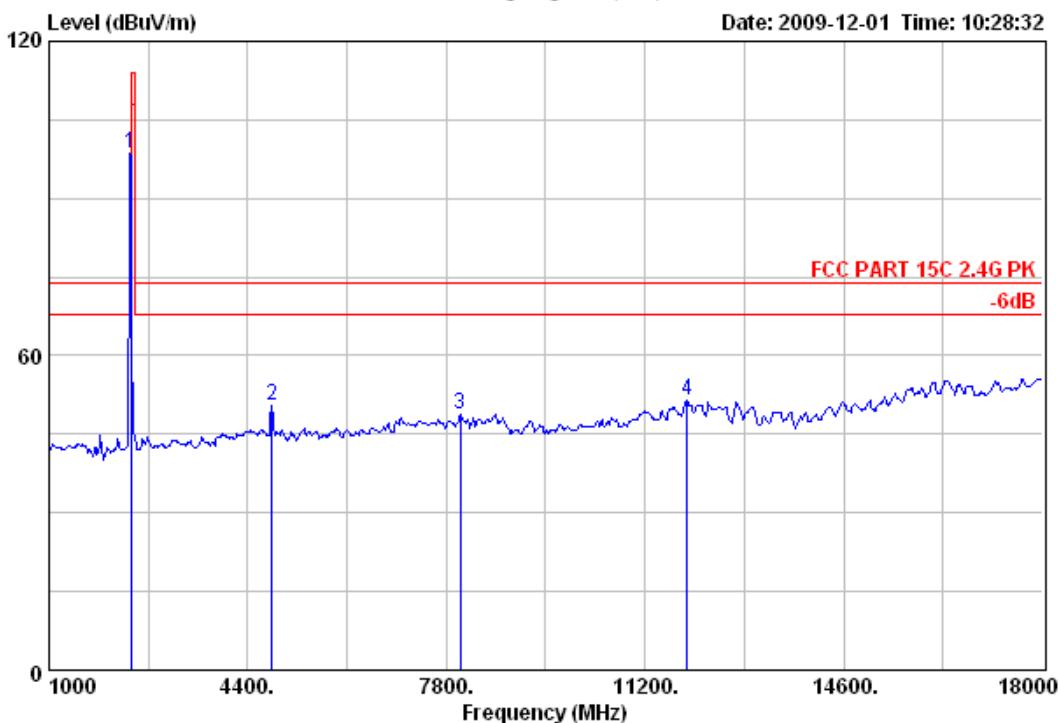
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Data: 164

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:28:32



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2405.00	98.60	114.00	15.40	64.87	31.50	2.23	Peak
2 4810.00	50.54	74.00	23.46	13.57	34.59	2.38	Peak
3 8038.00	48.91	74.00	25.09	9.34	36.99	2.58	Peak
4 11914.00	51.53	74.00	22.47	9.04	39.67	2.82	Peak



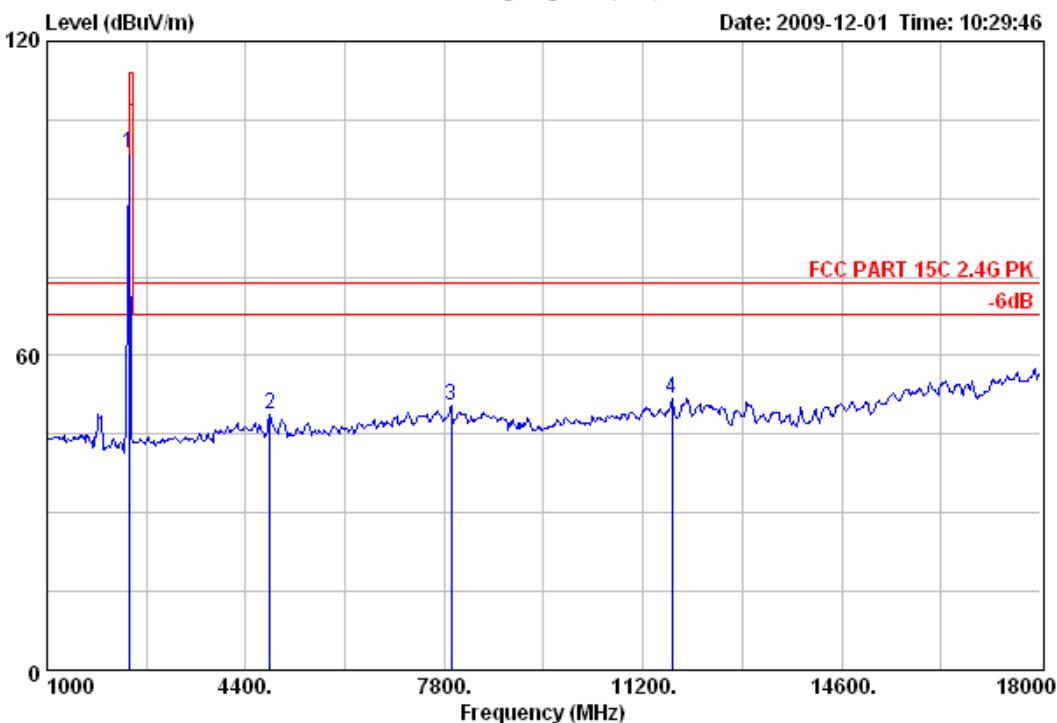
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Data: 165

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:29:46



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2405.00	98.63	114.00	15.37	64.90	31.50	2.23	Peak
2 4810.00	48.69	74.00	25.31	11.72	34.59	2.38	Peak
3 7919.00	50.38	74.00	23.62	10.84	36.97	2.57	Peak
4 411693.00	51.82	74.00	22.18	9.65	39.37	2.80	Peak



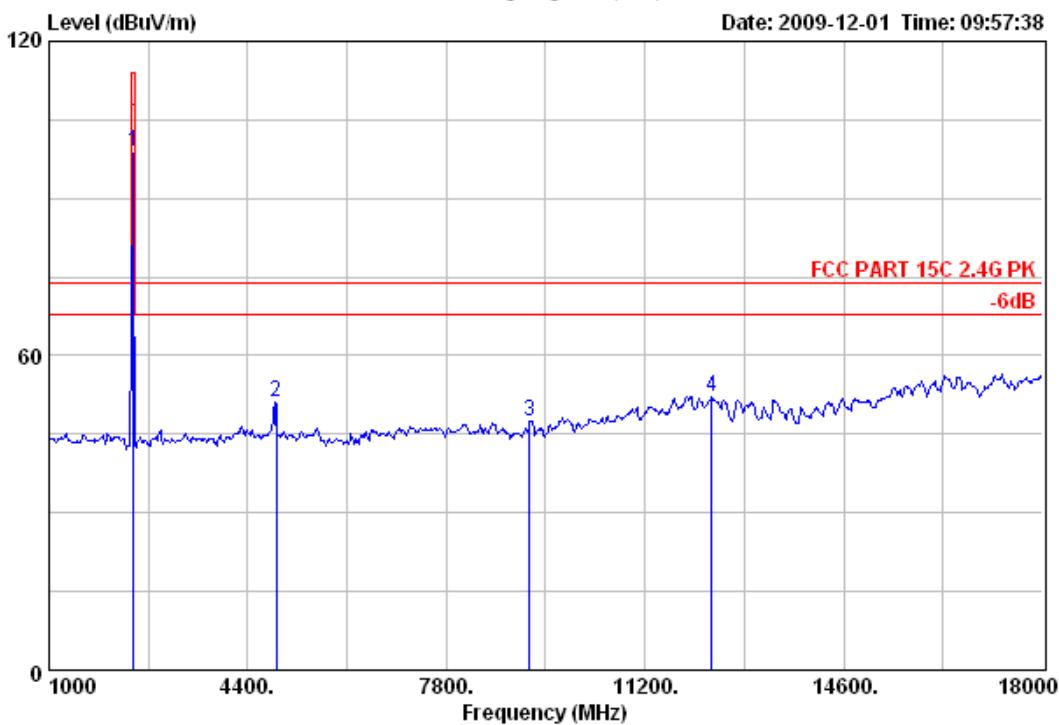
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Data: 166

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:57:38



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Emission			Ant. Reading (dBuV)	Cable Loss (dB/m)	Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)			
1 2442.00	98.97	114.00	15.03	65.20	31.54	2.23 Peak
2 4884.00	51.21	74.00	22.79	14.21	34.62	2.38 Peak
3 9228.00	47.58	74.00	26.42	7.65	37.28	2.65 Peak
4 412339.00	52.20	74.00	21.80	9.42	39.94	2.84 Peak



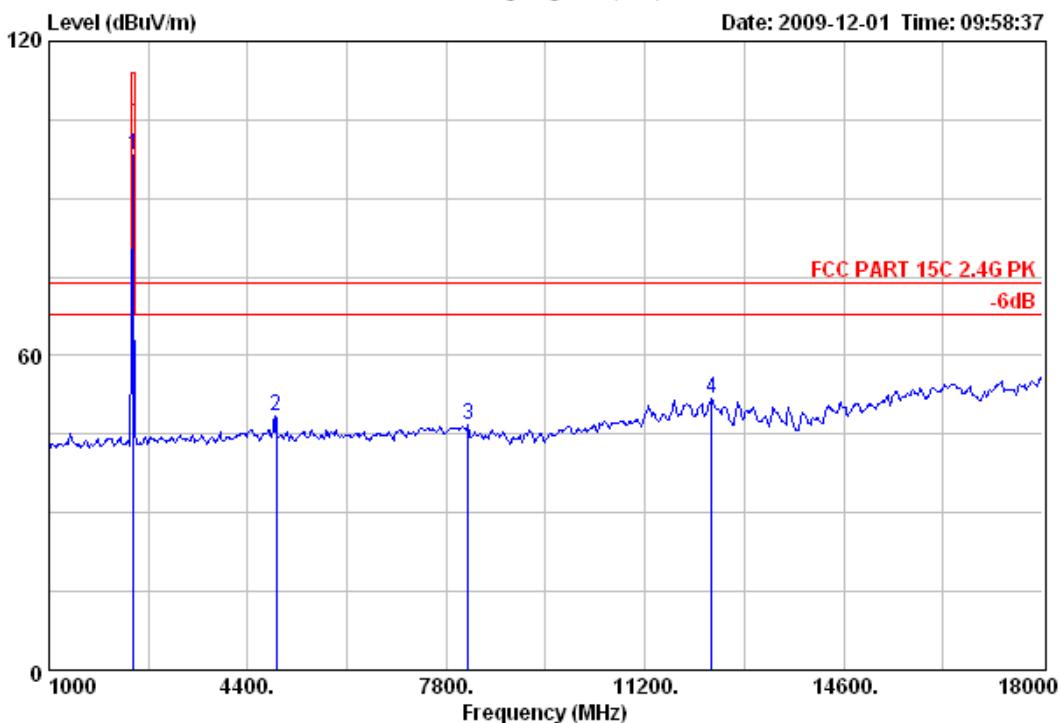
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Data: 167

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:58:37



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2442.00	98.25	114.00	15.75	64.48	31.54	2.23	Peak
2 4884.00	48.47	74.00	25.53	11.47	34.62	2.38	Peak
3 8174.00	46.74	74.00	27.26	7.19	36.96	2.59	Peak
4 12339.00	51.86	74.00	22.14	9.08	39.94	2.84	Peak



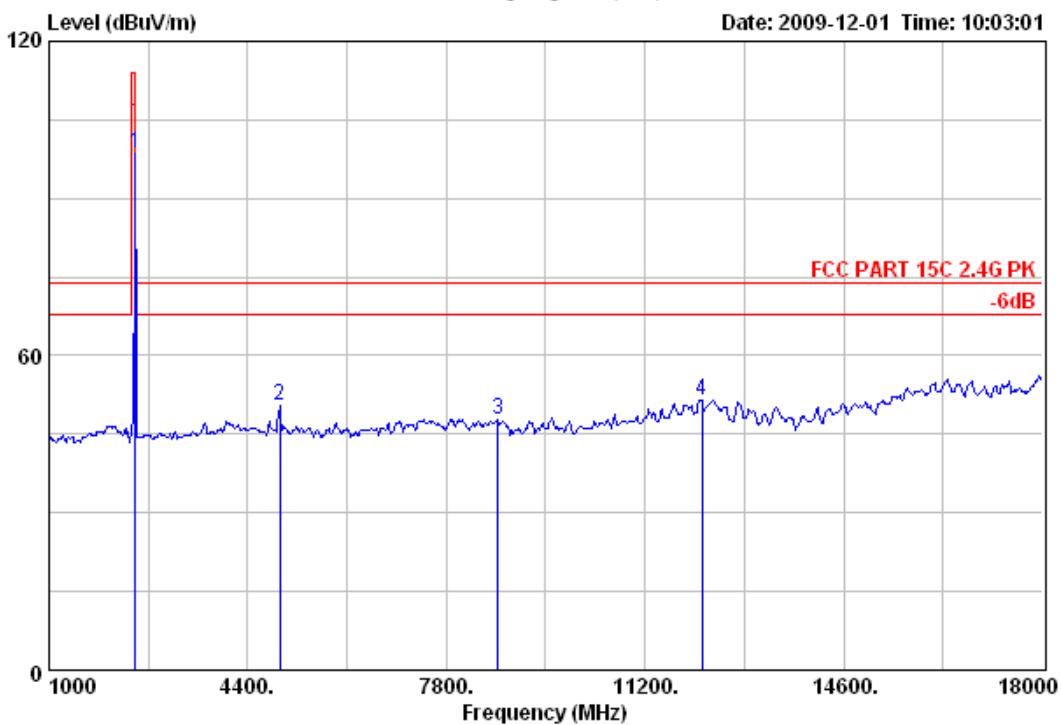
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Data: 168

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:03:01



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Emission			Ant. Reading (dBuV)	Cable Factor (dB)	Loss (dB/m)	Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)				
1 2476.00	98.74	114.00	15.26	64.93	31.58	2.23	Peak
2 4952.00	50.52	74.00	23.48	13.46	34.67	2.39	Peak
3 8684.00	47.80	74.00	26.20	8.21	36.97	2.62	Peak
4 12169.00	51.54	74.00	22.46	8.84	39.87	2.83	Peak



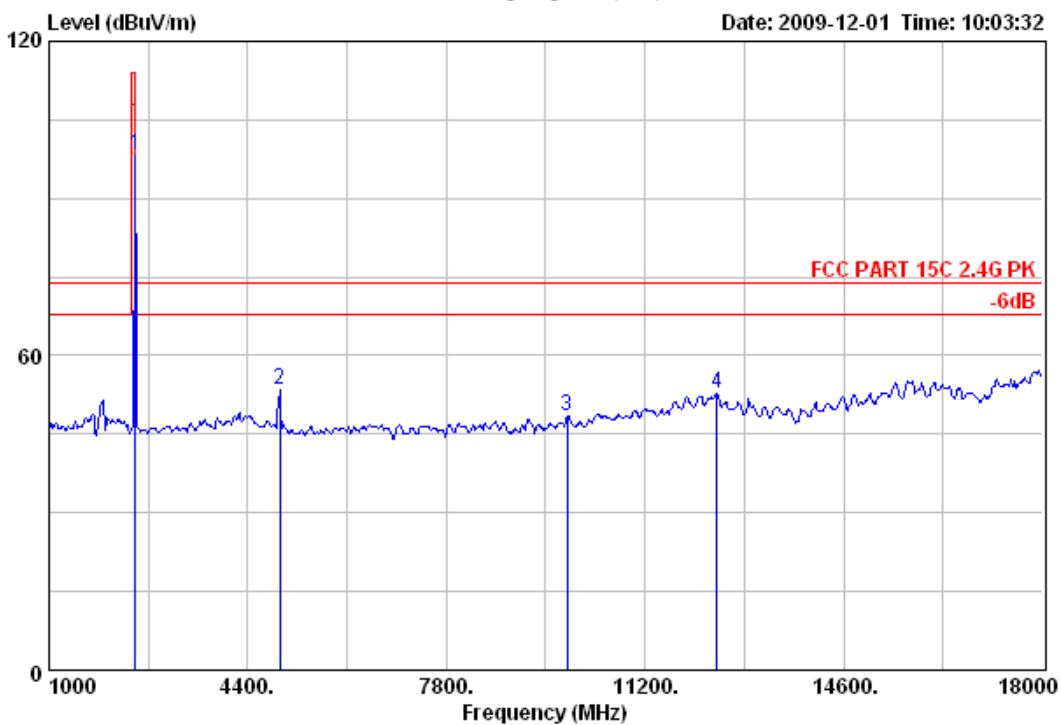
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Data: 169

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:03:32



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G PK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Emission			Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)					
1 2476.00	98.39	114.00	15.61	64.58	31.58	2.23	2.23	Peak
2 4952.00	53.39	74.00	20.61	16.33	34.67	2.39	2.39	Peak
3 9874.00	48.61	74.00	25.39	8.05	37.87	2.69	2.69	Peak
4 412424.00	52.88	74.00	21.12	10.06	39.97	2.85	2.85	Peak



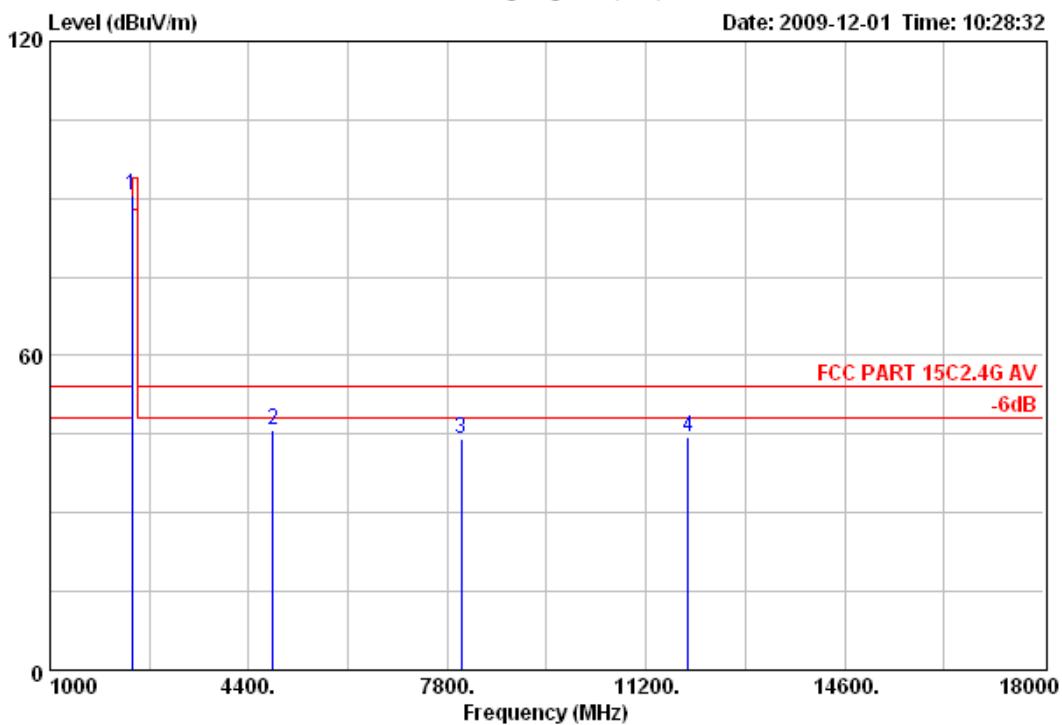
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Data: 170

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:28:32



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Level (dBuV/m)	Emission		Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
		Limits (dBuV/m)	Margin (dB)					
1 2405.00	90.60	94.00	3.40	56.87	31.50	2.23	2.23	Average
2 4810.00	45.63	54.00	8.37	8.66	34.59	2.38	2.38	Average
3 8038.00	44.06	54.00	9.94	4.49	36.99	2.58	2.58	Average
4 11914.00	44.29	54.00	9.71	1.80	39.67	2.82	2.82	Average



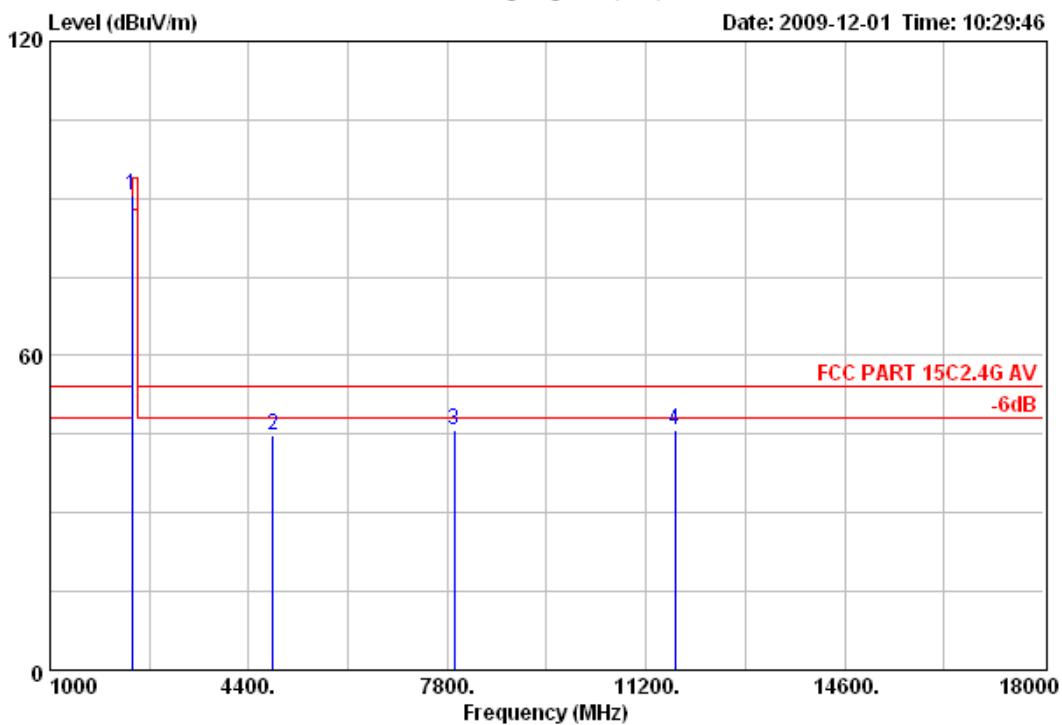
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Data: 171

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:29:46



Test Site : 966 Chamber  
 Limit : FCC PART 15C2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Level (dBuV/m)	Emission		Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
		Limits (dBuV/m)	Margin (dB)					
1 2405.00	90.58	94.00	3.42	56.85	31.50	2.23	2.23	Average
2 4810.00	44.68	54.00	9.32	7.71	34.59	2.38	2.38	Average
3 7919.00	45.68	54.00	8.32	6.14	36.97	2.57	2.57	Average
4 411693.00	45.87	54.00	8.13	3.70	39.37	2.80	2.80	Average



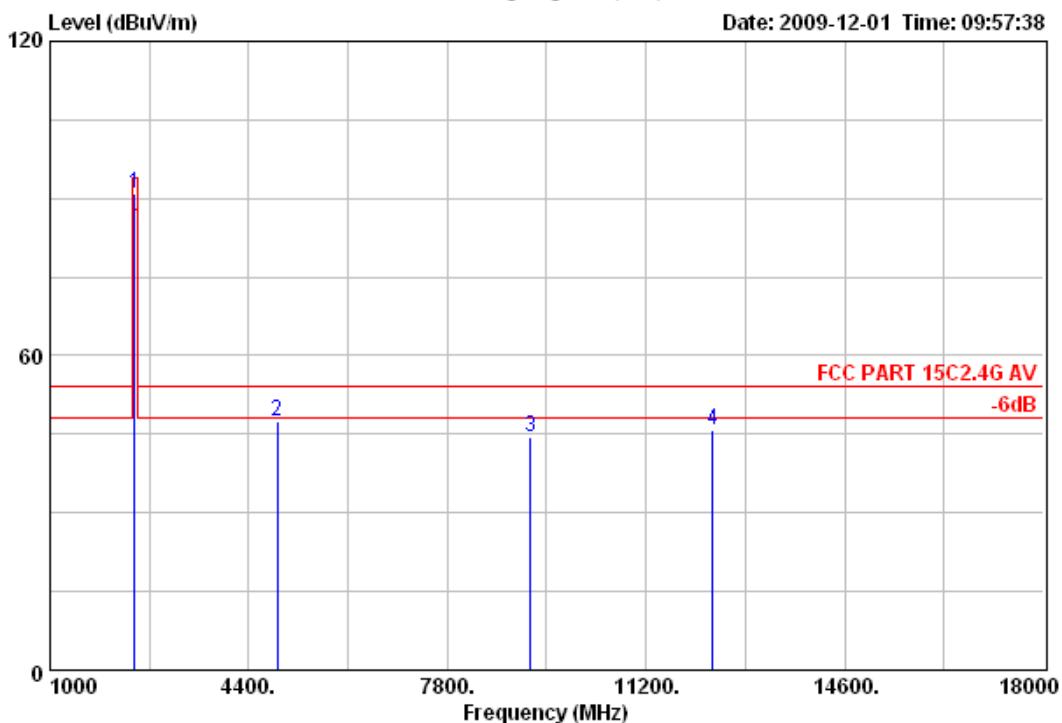
## NS Technology

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Dongguan, Guangdong, China  
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Data: 172

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:57:38



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2442.00	90.89	94.00	3.11	57.12	31.54	2.23	Average
2 4884.00	47.63	54.00	6.37	10.63	34.62	2.38	Average
3 9228.00	44.52	54.00	9.48	4.59	37.28	2.65	Average
4 41233.90	45.86	54.00	8.14	3.08	39.94	2.84	Average



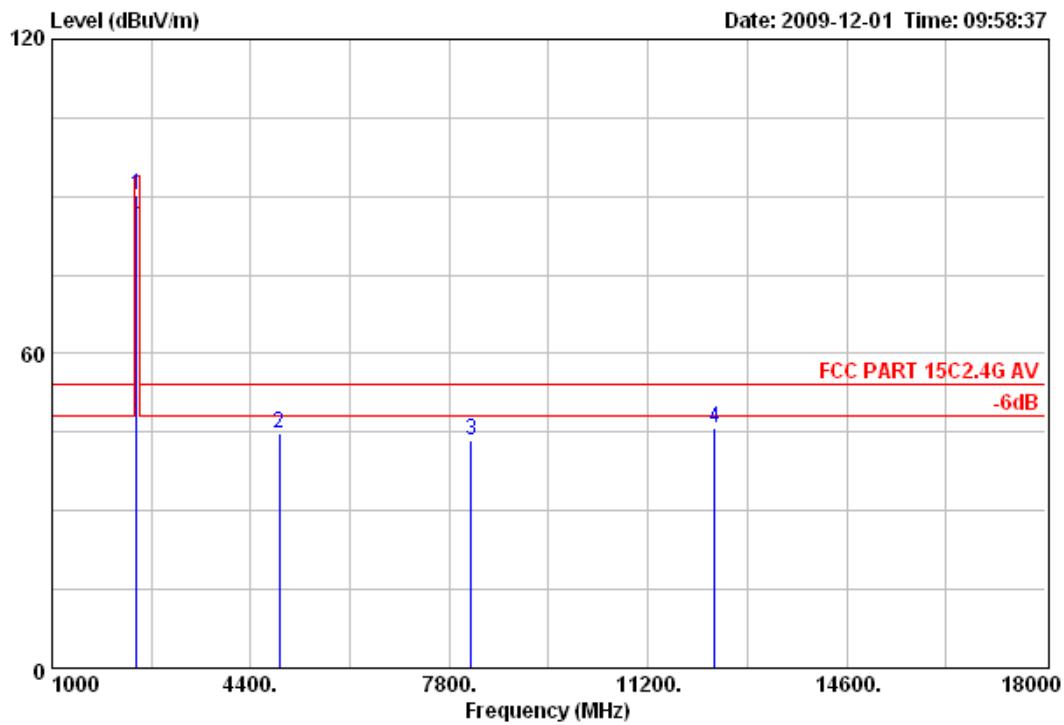
## NS Technology

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Dongguan, Guangdong, China  
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Fax: +86-769-85991080

Data: 173

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:58:37



Test Site : 966 Chamber  
 Limit : FCC PART 15C2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Level (dBuV/m)	Emission		Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
		Limits (dBuV/m)	Margin (dB)					
1 2442.00	90.24	94.00	3.76	56.47	31.54	2.23	2.23	Average
2 4884.00	44.75	54.00	9.25	7.75	34.62	2.38	2.38	Average
3 8174.00	43.58	54.00	10.42	4.03	36.96	2.59	2.59	Average
4 41233.90	45.72	54.00	8.28	2.94	39.94	2.84	2.84	Average



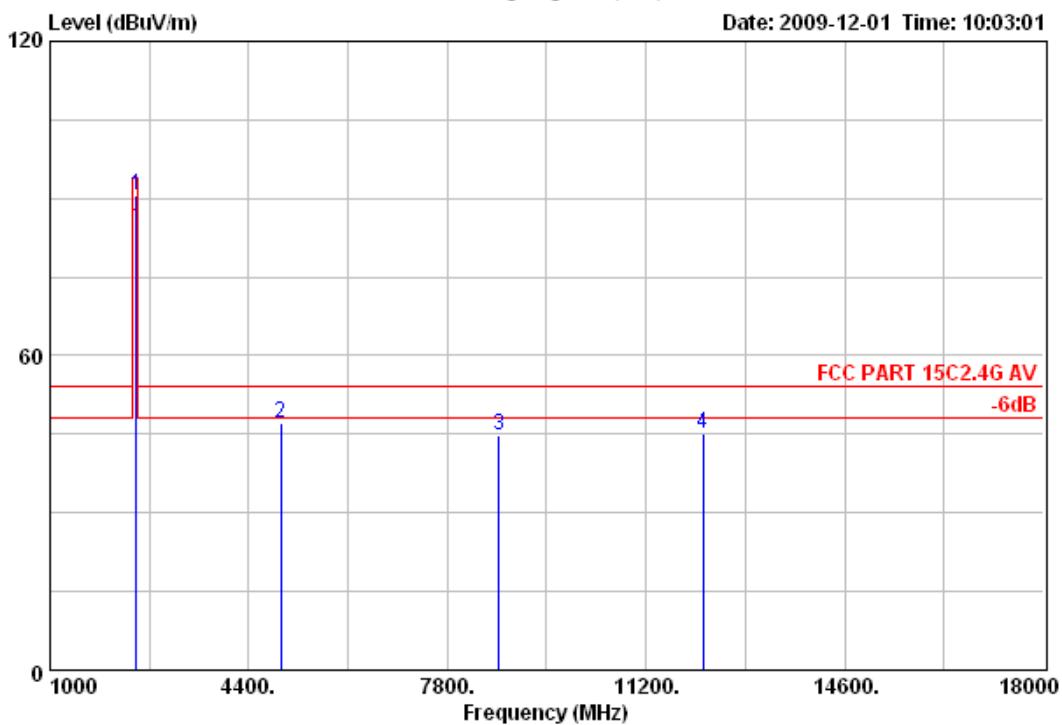
## NS Technology

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Fax: +86-769-85991080

Data: 174

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:03:01



Test Site : 966 Chamber  
 Limit : FCC PART 15C2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Level (dBuV/m)	Emission		Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
		Limits (dBuV/m)	Margin (dB)					
1 2476.00	90.73	94.00	3.27	56.92	31.58	2.23	2.23	Average
2 4952.00	47.25	54.00	6.75	10.19	34.67	2.39	2.39	Average
3 8684.00	44.95	54.00	9.05	5.36	36.97	2.62	2.62	Average
4 12169.00	45.29	54.00	8.71	2.59	39.87	2.83	2.83	Average



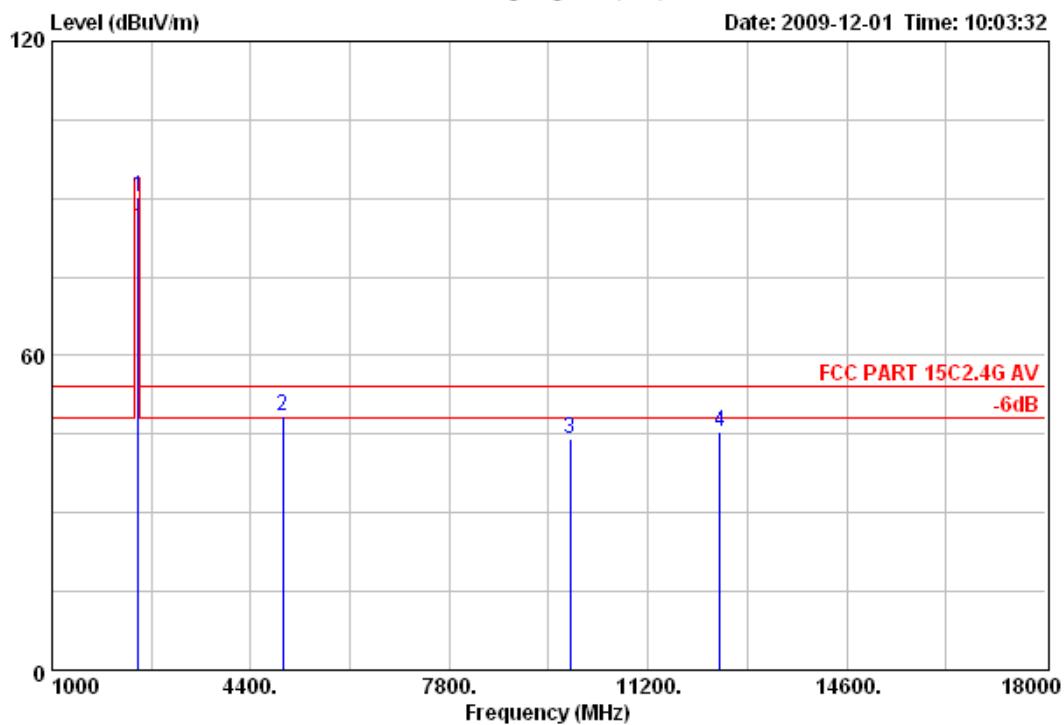
## NS Technology

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Data: 175

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:03:32



Test Site : 966 Chamber  
 Limit : FCC PART 15C 2.4G AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Level (dBuV/m)	Emission		Margin (dB)	Reading (dBuV)	Ant. Factor	Cable Loss (dB/m)	Remark
		Limits (dBuV/m)	Margin (dB)					
1 2476.00	90.39	94.00	3.61	56.58	31.58	2.23	2.23	Average
2 4952.00	48.63	54.00	5.37	11.57	34.67	2.39	2.39	Average
3 9874.00	44.26	54.00	9.74	3.70	37.87	2.69	2.69	Average
4 12424.00	45.37	54.00	8.63	2.55	39.97	2.85	2.85	Average



## 5.2. 20dB Bandwidth

### 5.2.1. Test limits

No requirement.

### 5.2.2. Test procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Connect EUT RF output port to the spectrum analyzer through an RF attenuator.
3. Set SA Center Frequency = Operation frequency, RBW=120kHz, VBW=300kHz.
4. Set SA trace max hold, then view.

### 5.2.3. Test result

#### Pass

Test Polarization	Frequency MHz	20dB bandwidth MHz
Horizontal	2405	0.36
Vertical	2405	0.38
Horizontal	2442	0.36
Vertical	2442	0.34
Horizontal	2476	0.33
Vertical	2476	0.34

The test plots as following:



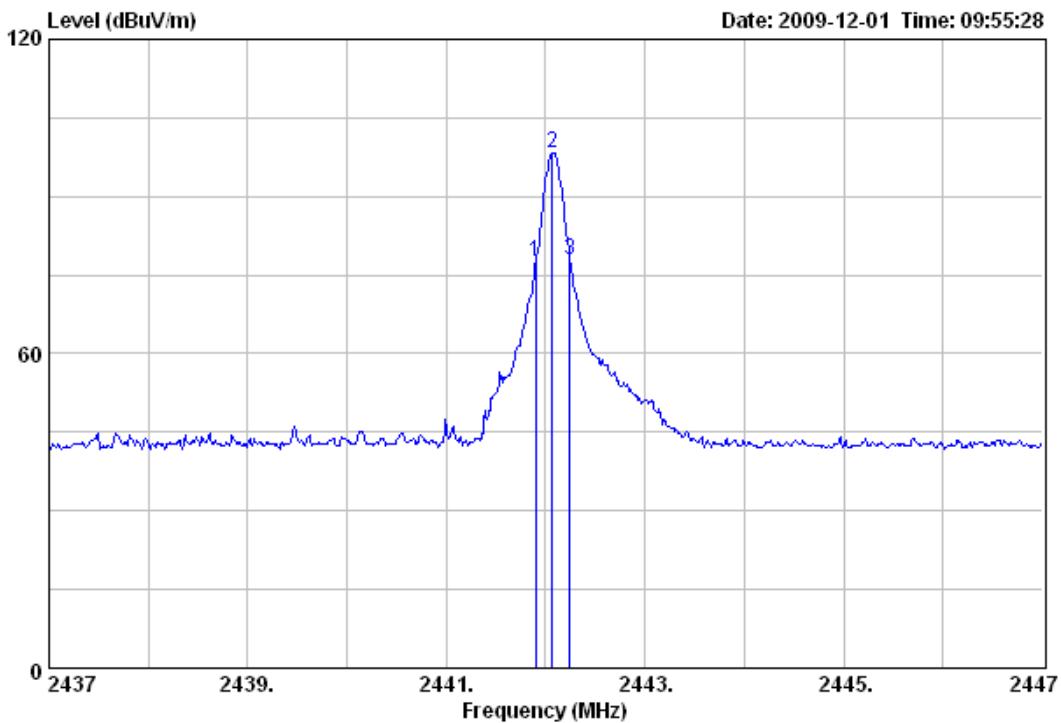
## NS Technology

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Data: 150

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:55:28



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Emission			Ant. Cable			Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	
1 2441.90	77.59	/	/	43.82	31.54	2.23	Peak
2 2442.07	98.35	/	/	64.58	31.54	2.23	Peak
3 2442.24	78.00	/	/	44.23	31.54	2.23	Peak



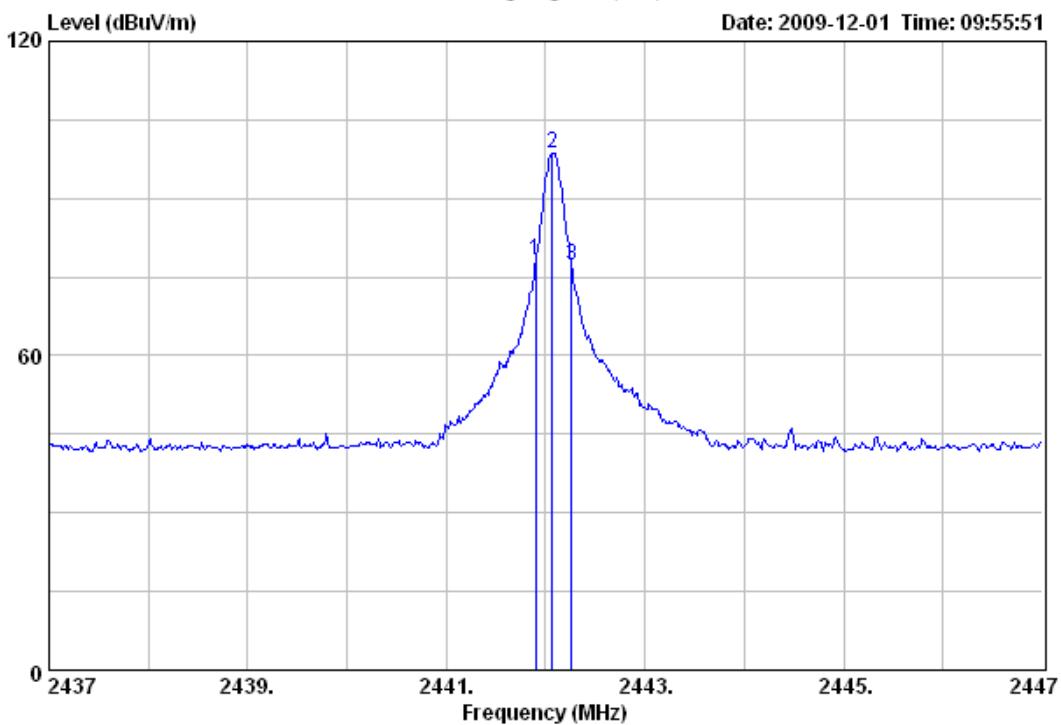
## NS Technology

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Tel: +86-769-85935656  
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Data: 151

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 09:55:51



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2442MHz

Freq. (MHz)	Emission			Ant. Cable			Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	
1 2441.90	78.21	/	/	44.44	31.54	2.23	Peak
2 2442.07	98.56	/	/	64.79	31.54	2.23	Peak
3 2442.26	77.27	/	/	43.50	31.54	2.23	Peak



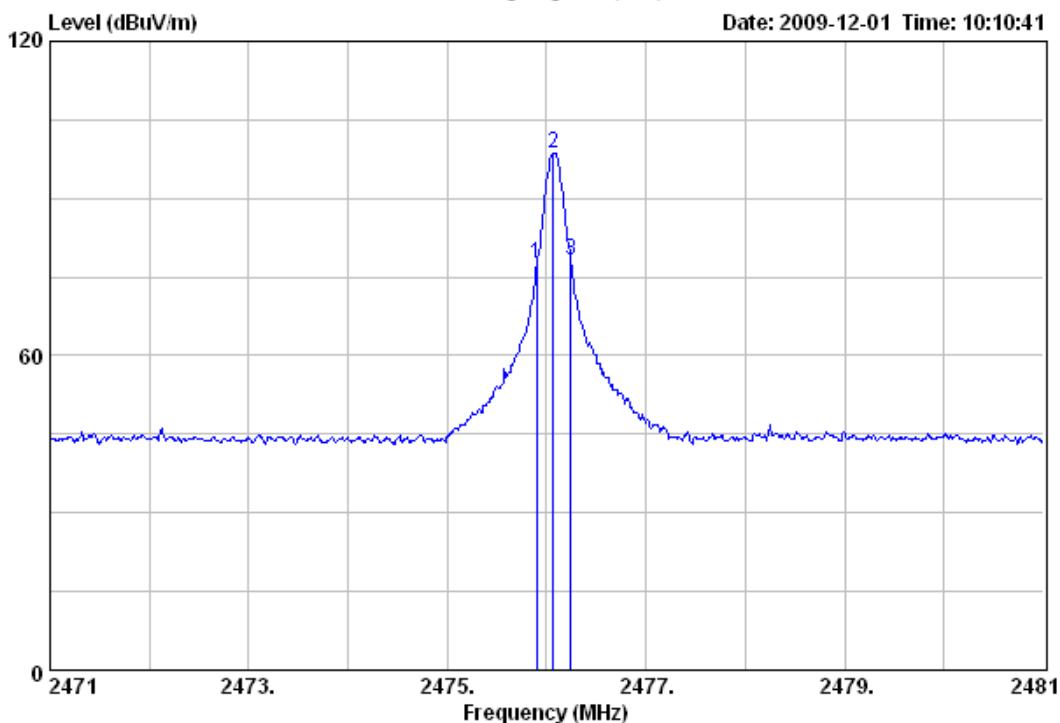
## NS Technology

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Data: 152

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:10:41



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Emission			Ant. Cable			Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	
1 2475.90	77.64	/	/	43.83	31.58	2.23	Peak
2 2476.07	98.57	/	/	64.76	31.58	2.23	Peak
3 2476.24	78.28	/	/	44.47	31.58	2.23	Peak



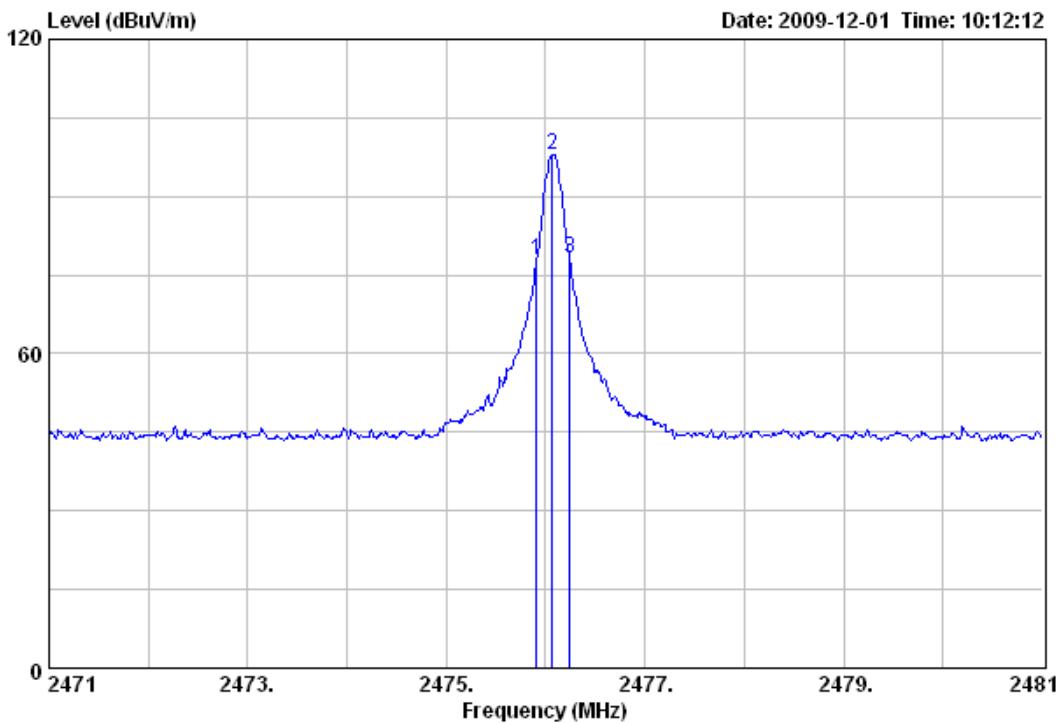
## NS Technology

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Data: 153

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:12:12



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Freq. (MHz)	Emission			Ant. Cable			Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	
1 2475.91	77.93	/	/	44.12	31.58	2.23	Peak
2 2476.07	98.07	/	/	64.26	31.58	2.23	Peak
3 2476.24	78.18	/	/	44.37	31.58	2.23	Peak



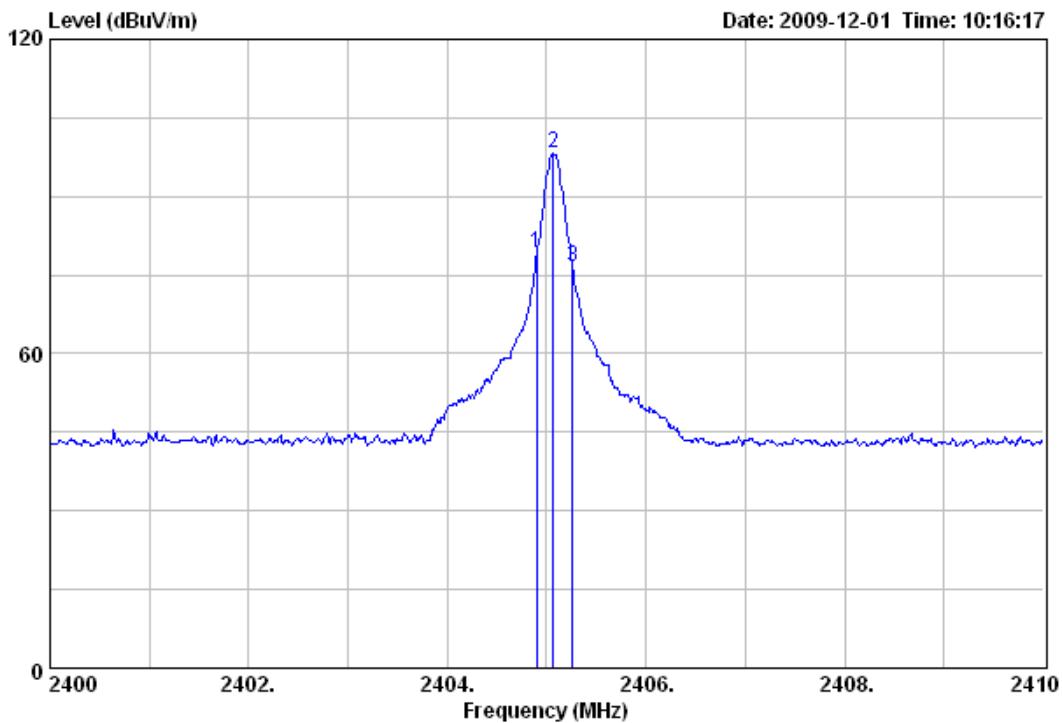
## NS Technology

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Fax: +86-769-85991080

Data: 154

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:16:17



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable			Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	
1 2404.90	79.07	/	/	45.34	31.50	2.23	Peak
2 2405.07	98.16	/	/	64.43	31.50	2.23	Peak
3 2405.26	76.55	/	/	42.82	31.50	2.23	Peak



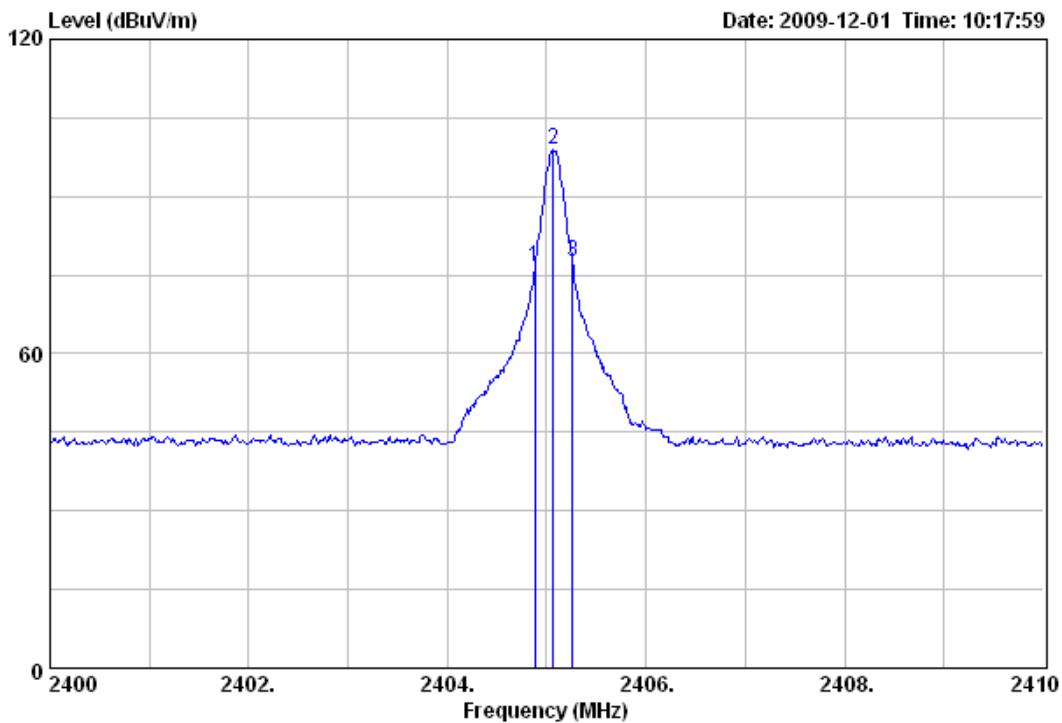
## NS Technology

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Data: 155

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:17:59



Test Site : 966 Chamber  
 Limit :  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable				Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)		
1 2404.88	76.39	/	/	42.66	31.50	2.23	Peak	
2 2405.07	98.82	/	/	65.09	31.50	2.23	Peak	
3 2405.26	77.71	/	/	43.98	31.50	2.23	Peak	



## 5.3. Band Edge

### 5.3.1. Test limits

Emissions 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.

### 5.3.2. Test procedure

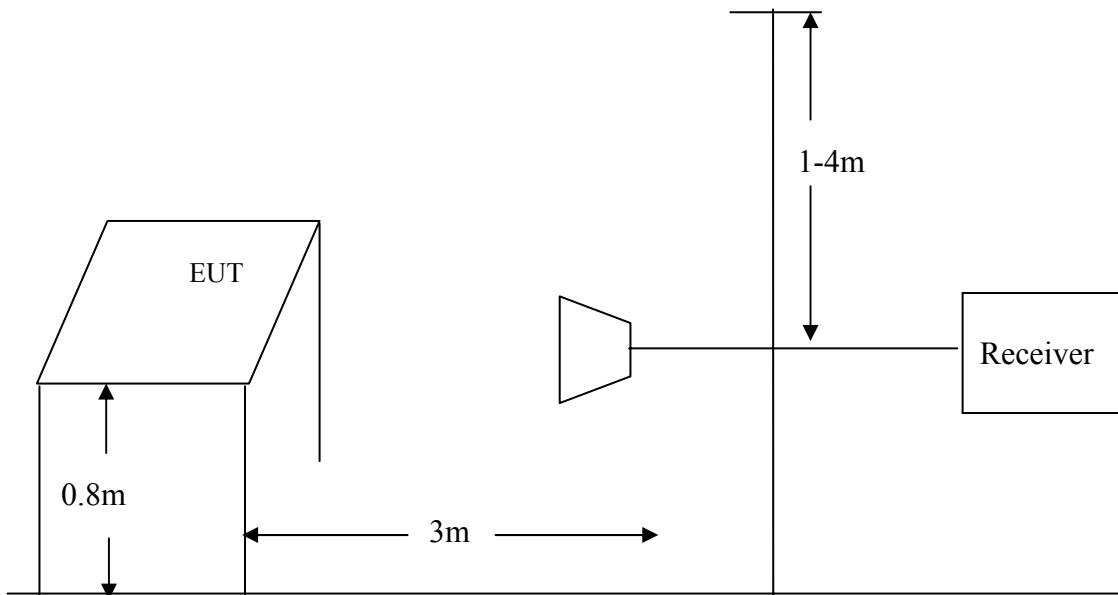
The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band above 1GHz, The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used was a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 1MHz for Peak detection at frequency above 1GHz.

The EUT position(X, Y, Z) were checked and worse case was happened in Y position. So Y position was chose for find measurement.

The EUT was tested in Chamber Site.

### 5.3.3. Test Setup Diagram



### 5.3.4. Test result

**PASS.**

The test plots as following:



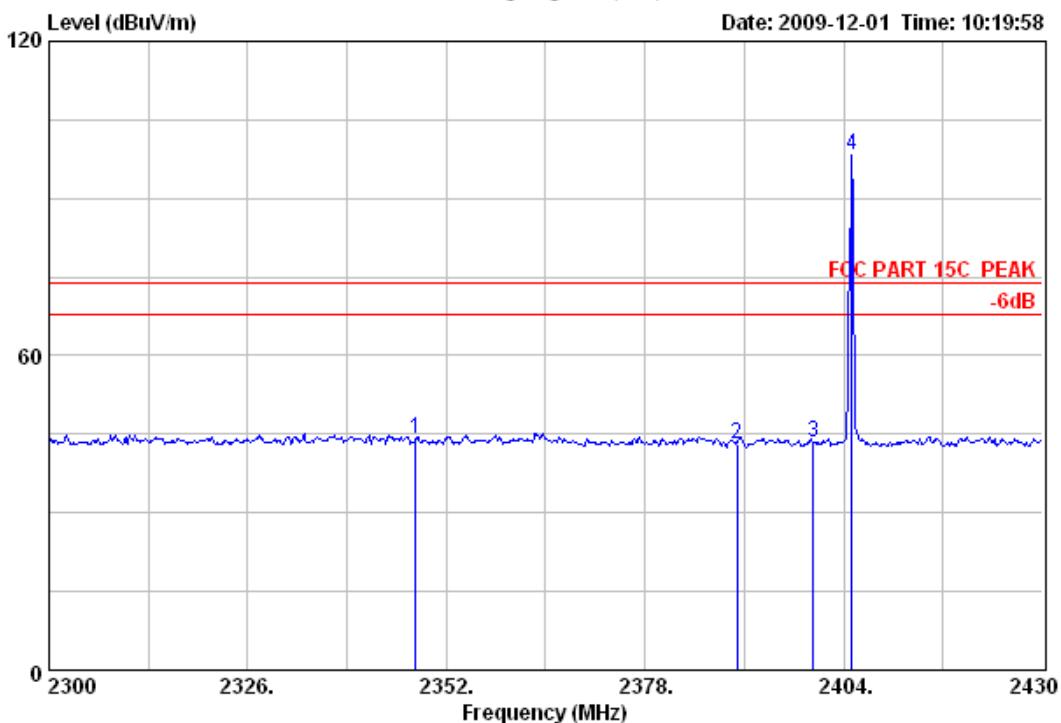
## NS Technology

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Data: 156

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:19:58



Test Site : 966 Chamber  
 Limit : FCC PART 15C PEAK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable				Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	(dB)	
1 2347.97	44.12	74.00	29.88	10.45	31.45	2.22	Peak	
2 2390.00	43.22	74.00	30.78	9.52	31.48	2.22	Peak	
3 2400.00	43.56	74.00	30.44	9.83	31.50	2.23	Peak	
4 2405.04	98.38	74.00	-24.38	64.65	31.50	2.23	Peak	



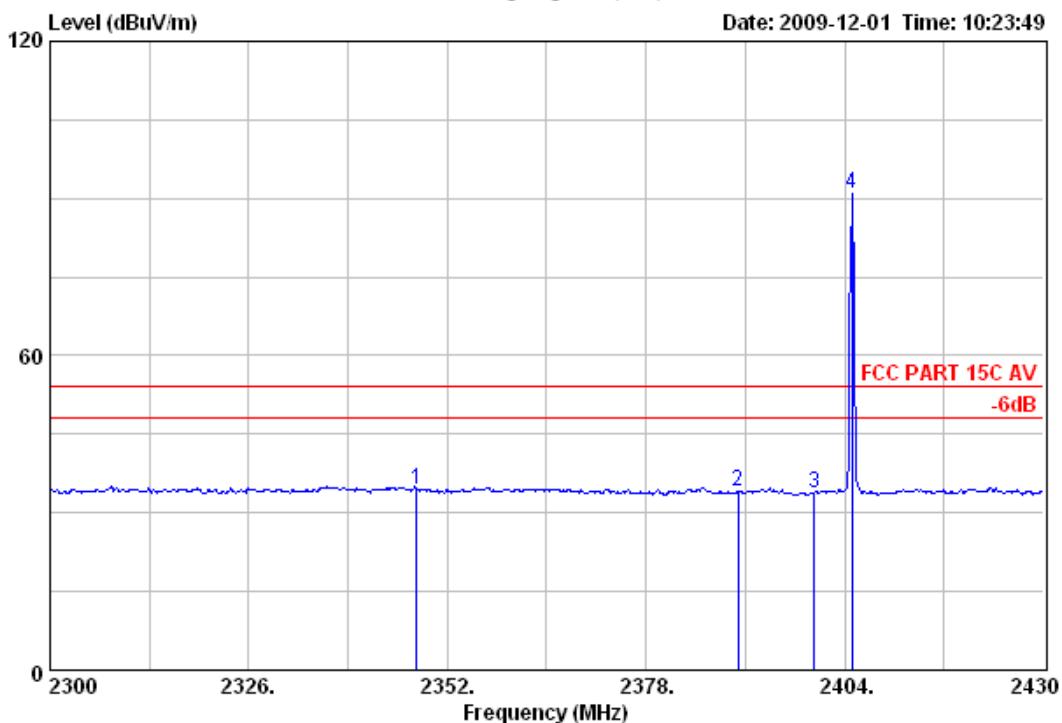
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Data: 157

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:23:49



Test Site : 966 Chamber  
 Limit : FCC PART 15C AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2347.97	34.53	54.00	19.47	0.86	31.45	2.22	Average
2 2390.00	34.01	54.00	19.99	0.31	31.48	2.22	Average
3 2400.00	33.91	54.00	20.09	0.18	31.50	2.23	Average
4 2404.91	90.97	54.00	-36.97	57.24	31.50	2.23	Average



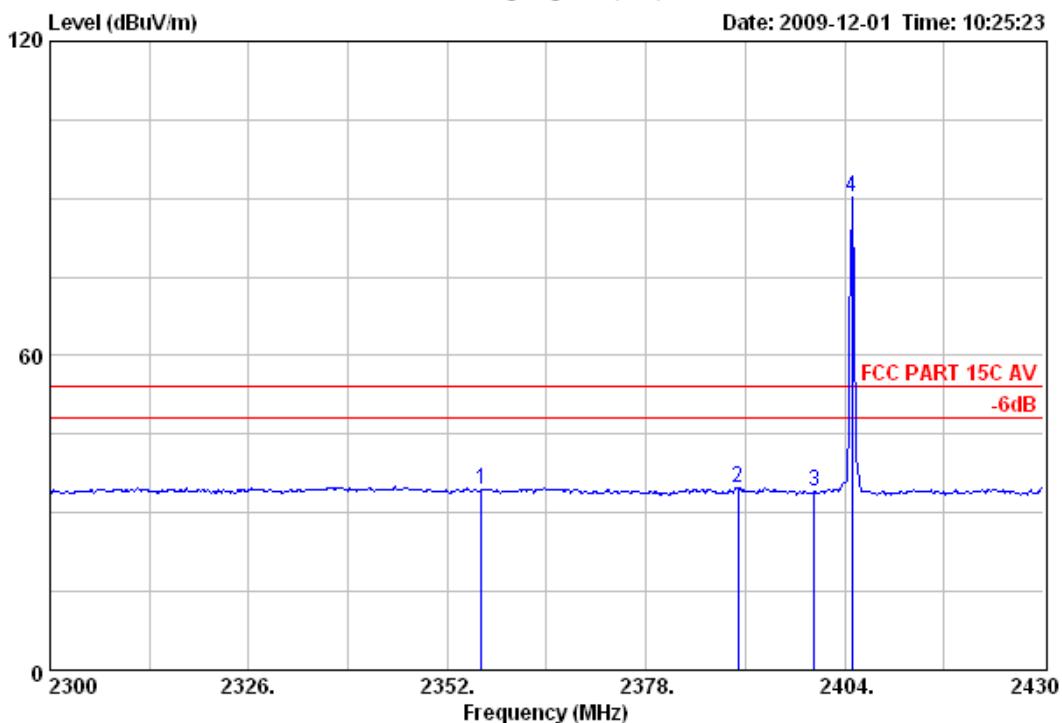
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Data: 158

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:25:23



Test Site : 966 Chamber  
 Limit : FCC PART 15C AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable			
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2356.42	34.29	54.00	19.71	0.62	31.45	2.22	Average
2 2390.00	34.71	54.00	19.29	1.01	31.48	2.22	Average
3 2400.00	34.06	54.00	19.94	0.33	31.50	2.23	Average
4 2404.91	90.20	54.00	-36.20	56.47	31.50	2.23	Average



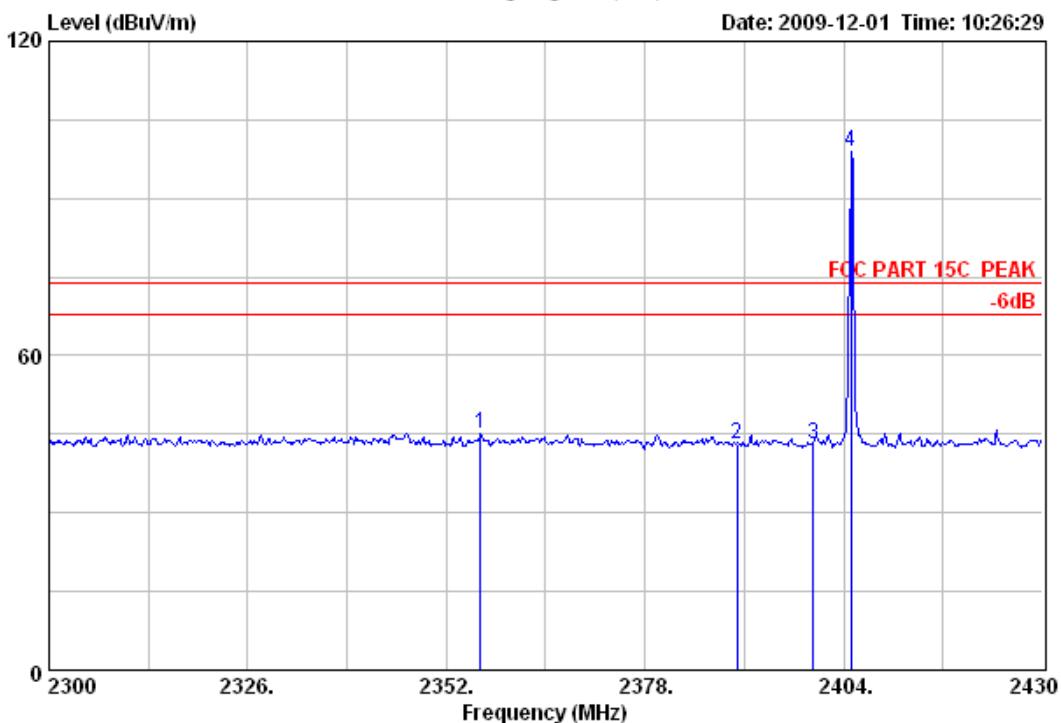
## NS Technology

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Data: 159

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:26:29



Test Site : 966 Chamber  
 Limit : FCC PART 15C PEAK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2405MHz

Freq. (MHz)	Emission			Ant. Cable				Remark
	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)		
1 2356.42	45.24	74.00	28.76	11.57	31.45	2.22	Peak	
2 2390.00	43.24	74.00	30.76	9.54	31.48	2.22	Peak	
3 2400.00	43.08	74.00	30.92	9.35	31.50	2.23	Peak	
4 2404.91	98.96	74.00	-24.96	65.23	31.50	2.23	Peak	



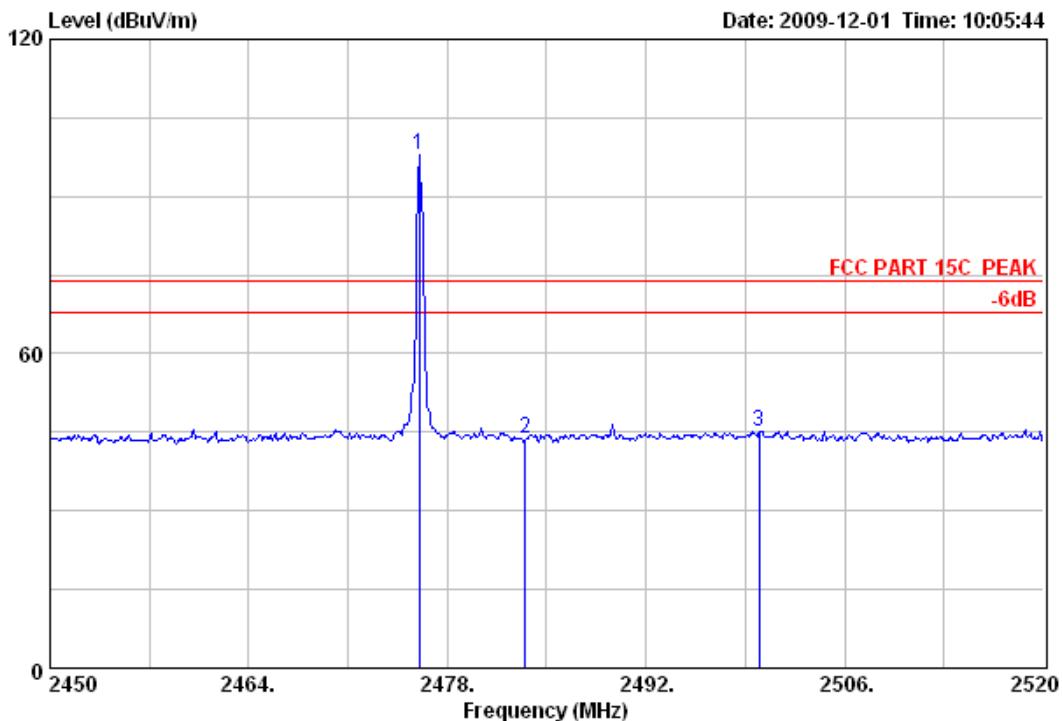
## NS Technology

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Data: 160

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:05:44



Test Site : 966 Chamber  
 Limit : FCC PART 15C PEAK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Emission				Ant. Cable			
Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2476.04	98.02	74.00	-24.02	64.21	31.58	2.23	Peak
2 2483.50	43.74	74.00	30.26	9.93	31.58	2.23	Peak
3 2500.00	45.24	74.00	28.76	11.41	31.60	2.23	Peak



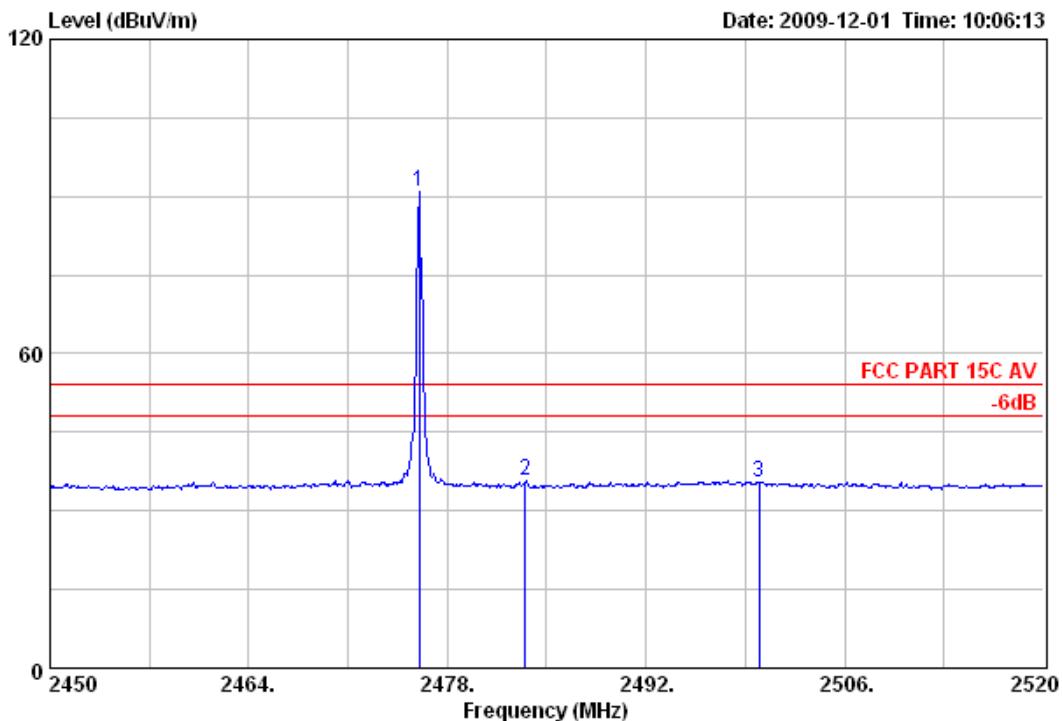
## NS Technology

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Fax: +86-769-85991080

Data: 161

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:06:13



Test Site : 966 Chamber  
 Limit : FCC PART 15C AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: HORIZONTAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Emission				Ant.	Cable		
Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB)	Loss (dB/m)	Remark
1 2476.04	90.87	54.00	-36.87	57.06	31.58	2.23	Average
2 2483.50	35.90	54.00	18.10	2.09	31.58	2.23	Average
3 2500.00	35.30	54.00	18.70	1.47	31.60	2.23	Average



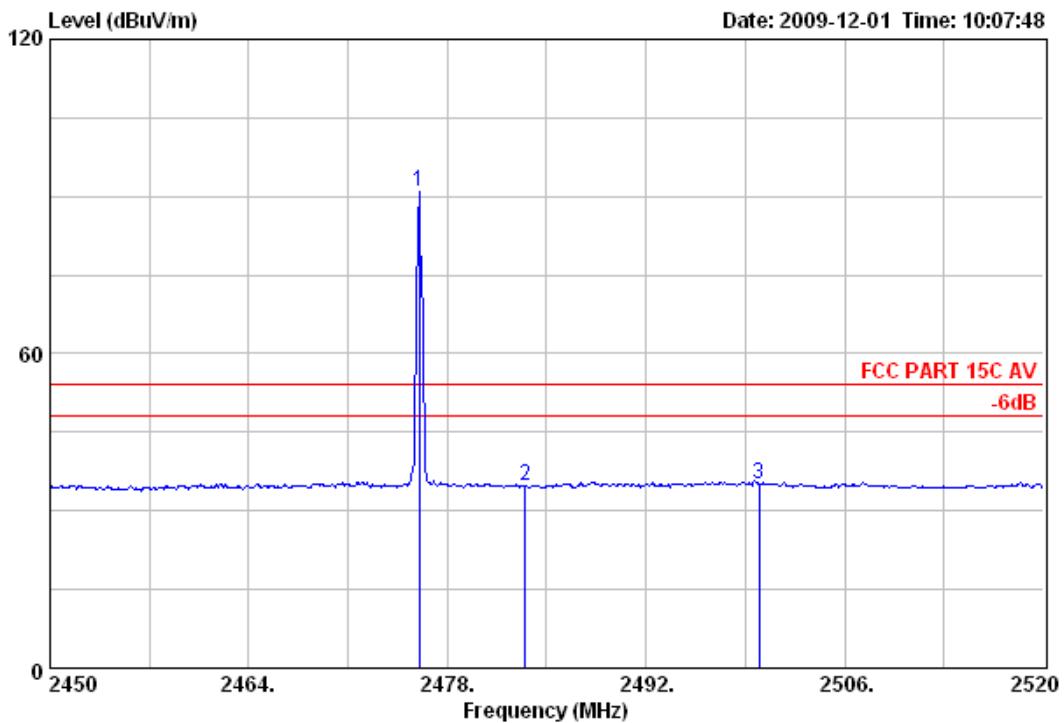
## NS Technology

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Data: 162

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:07:48



Test Site : 966 Chamber  
 Limit : FCC PART 15C AV  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Emission				Ant. Cable			
Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
-----							
1 2476.04	90.92	54.00	-36.92	57.11	31.58	2.23	Average
2 2483.50	34.61	54.00	19.39	0.80	31.58	2.23	Average
3 2500.00	35.11	54.00	18.89	1.28	31.60	2.23	Average



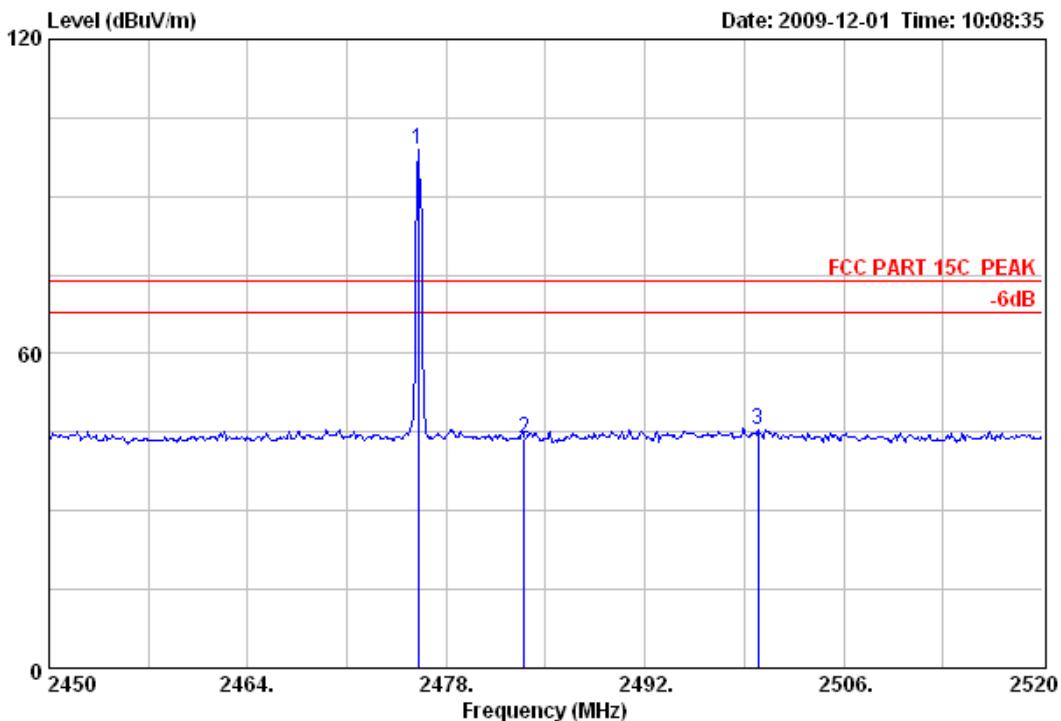
## NS Technology

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Data: 163

File: D:\Radiation data\Chuangfeng.EMI (221)

Date: 2009-12-01 Time: 10:08:35



Test Site : 966 Chamber  
 Limit : FCC PART 15C PEAK  
 Dis. / Ant. : 3m 3117 Ant. Pol.: VERTICAL  
 EUT : Wireless Optical Mouse  
 M/N : KM-1015SW  
 Power : DC 1.5V  
 Test Engineer : Jade  
 Comment : Temp.:25.2'C Humi.:55%  
 Test Mode : TX Mode 2476MHz

Emission				Ant. Cable			
Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor	Loss (dB/m)	Remark
1 2476.04	98.92	74.00	-24.92	65.11	31.58	2.23	Peak
2 2483.50	43.73	74.00	30.27	9.92	31.58	2.23	Peak
3 2500.00	45.51	74.00	28.49	11.68	31.60	2.23	Peak

