

FCC COMPLIANCE REPORT

for

Chuangfeng Electronics Co.,Ltd

Wireless Optical Mouse

Model Number: KM-1015SW

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

Prepared By : NS Technology Co., Ltd.
Address : Chenwu Industrial Zone, Houjie Town, Dongguan City,
Guangdong, China

Tel: +86-769-85935656

Fax: +86-769-85991080

Report Number : NSE-F09114079
Date of Test : Nov. 7,~ Nov. 15, 2009
Date of Report : Nov. 17, 2009






TABLE OF CONTENTS

Test Report Declaration		Page
1. GENERAL PRODUCT INFORMATION		4
1.1. Product Function		4
1.2. Description of Device (EUT)		4
1.3. Difference between Model Numbers		4
1.4. Independent Operation Modes		4
2. TEST SITES		5
2.1. Test Facilities		5
2.2. List of Test and Measurement Instruments		6
3. TEST SET-UP AND OPERATION MODES		7
3.1. Principle of Configuration Selection		7
3.2. Block Diagram of Test Set-up		7
3.3. Test Operation Mode and Test Software		7
3.4. Special Accessories and Auxiliary Equipment		7
3.5. Countermeasures to Achieve EMC Compliance		7
4. TEST SUMMARY		8
5. EMISSION TEST RESULTS		9
5.1. Radiated Emission		9
5.2. 20dB Bandwidth		25
5.3. Band Edge		32





NS Technology Co., Ltd.

Applicant:	Chuangfeng Electronics Co.,Ltd		
Address:	Huali Industrial Zone, Songbotang, Changping Town, Dongguan City, Guangdong, China		
Manufacturer:	Chuangfeng Electronics Co.,Ltd		
Address:	Huali Industrial Zone, Songbotang, Changping Town, Dongguan City, Guangdong, China		
E.U.T:	Wireless Optical Mouse		
Model Number:	KM-1015SW		
Trade Name:	-----	Operating Frequency:	2405MHz~2476MHz
Date of Receipt:	Nov. 6, 2009	Date of Test:	Nov. 7,~ Dec. 3, 2009
Test Specification:	FCC Part 15 Subpart C: July. 10, 2008 ANSI C63.4:2003		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.		
Issue Date: Dec. 4,2009			
Tested by:	Reviewed by:	Approved by:	
 <hr/>	 <hr/>	 <hr/>	
Jade/ Engineer	Iceman Hu / Supervisor	Steven Lee / Manager	
Other Aspects:	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	(MHz)
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	

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.

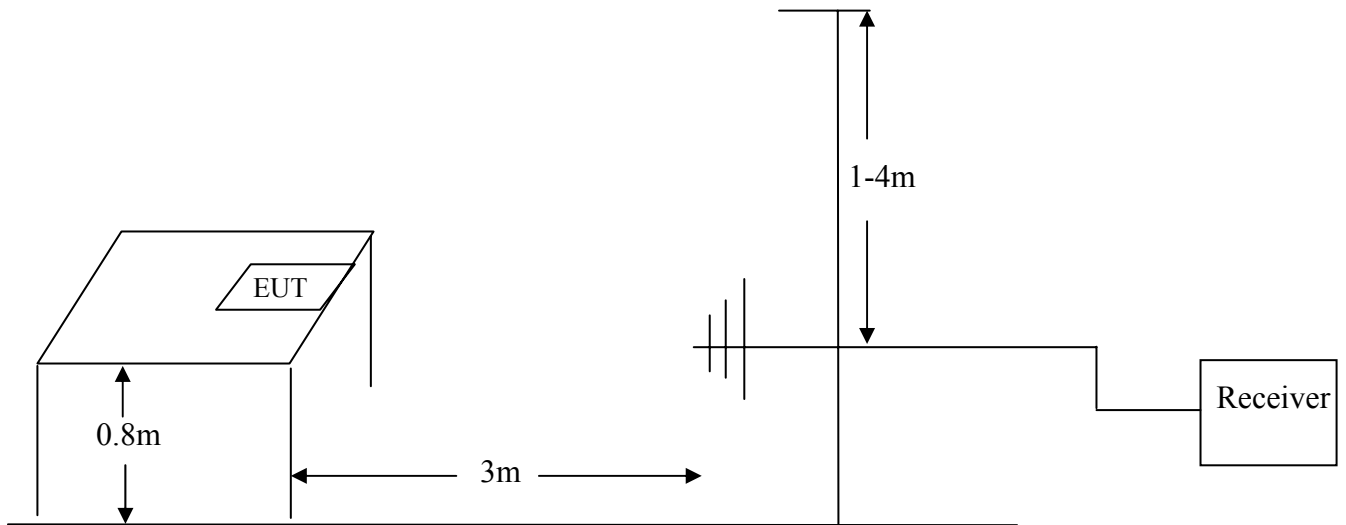
The EUT position(X. Y. Z) were checked and worse case was happened in Y position. So Y position was chose for find measurement.

The EUT was tested in Chamber Site.

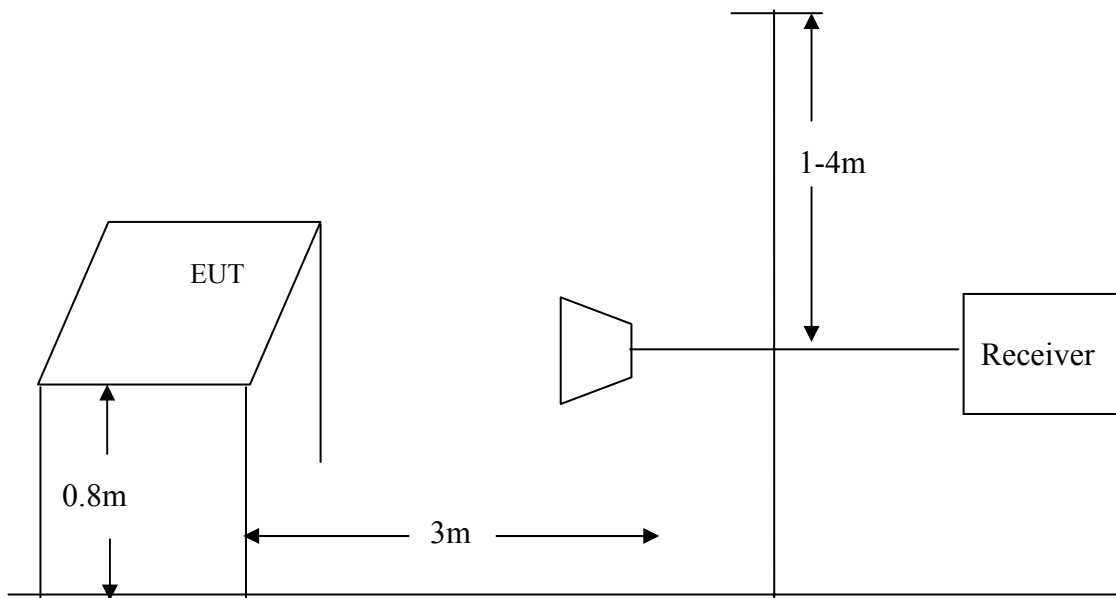


5.1.3. Test Setup Diagram

5.1.3.1. Frequency range: 30MHz-1000MHz



5.1.3.2. Frequency range: 1 GHz -25GHz



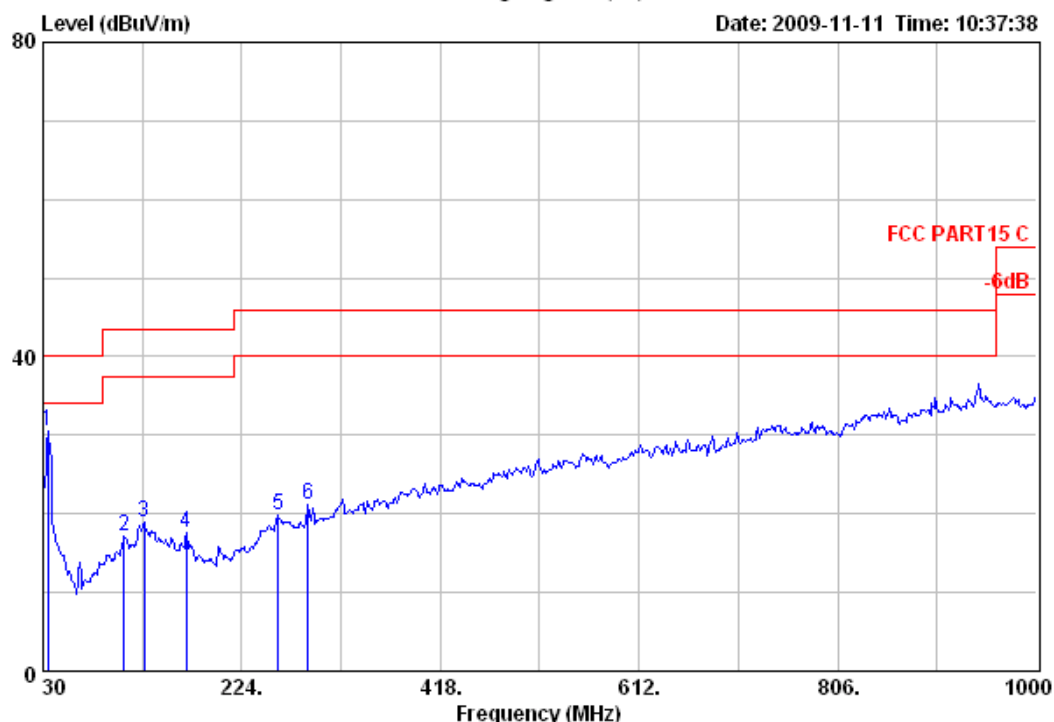
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 49

File: D:\Radiation data\C\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

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



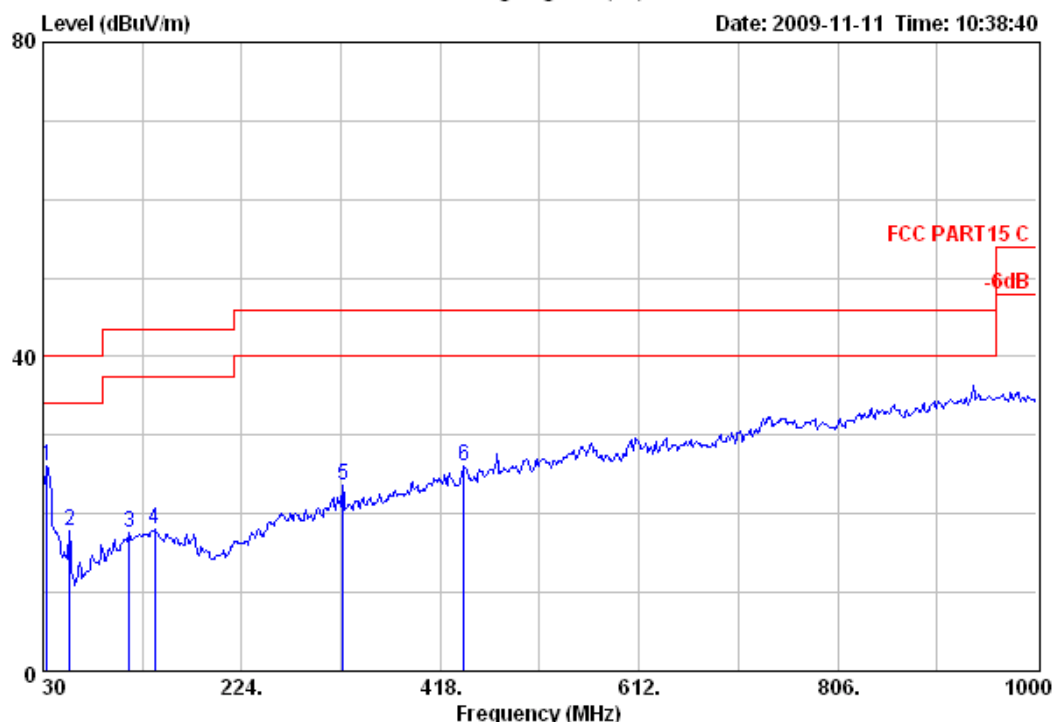
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 50

File: D:\Radiation data\C\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

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



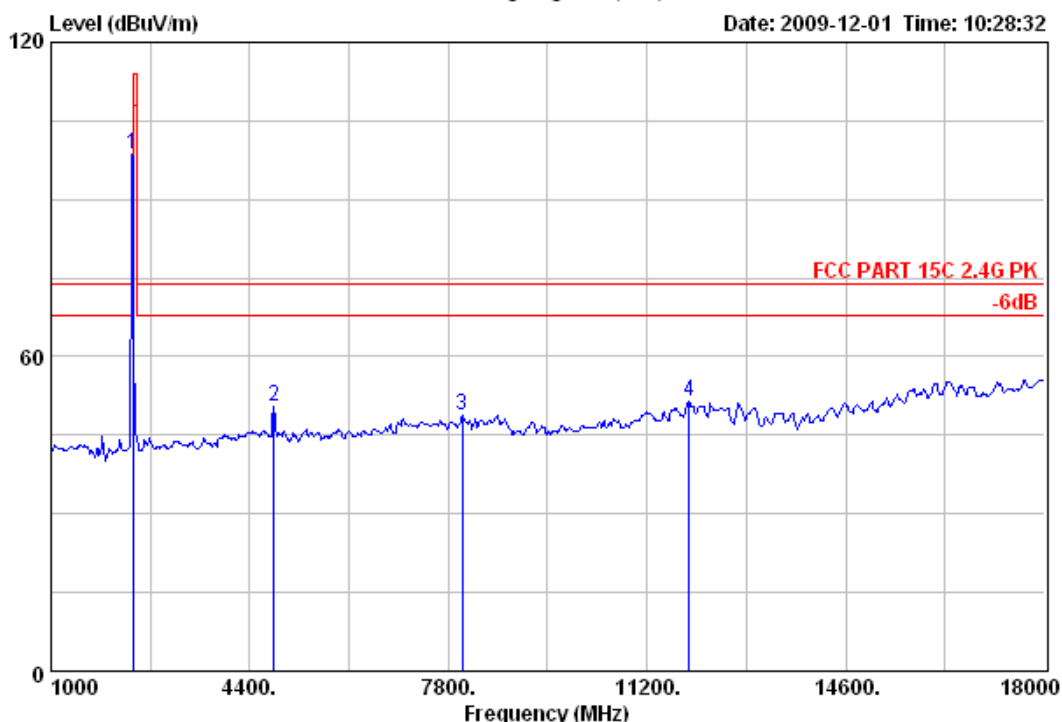
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 164

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(dB)
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



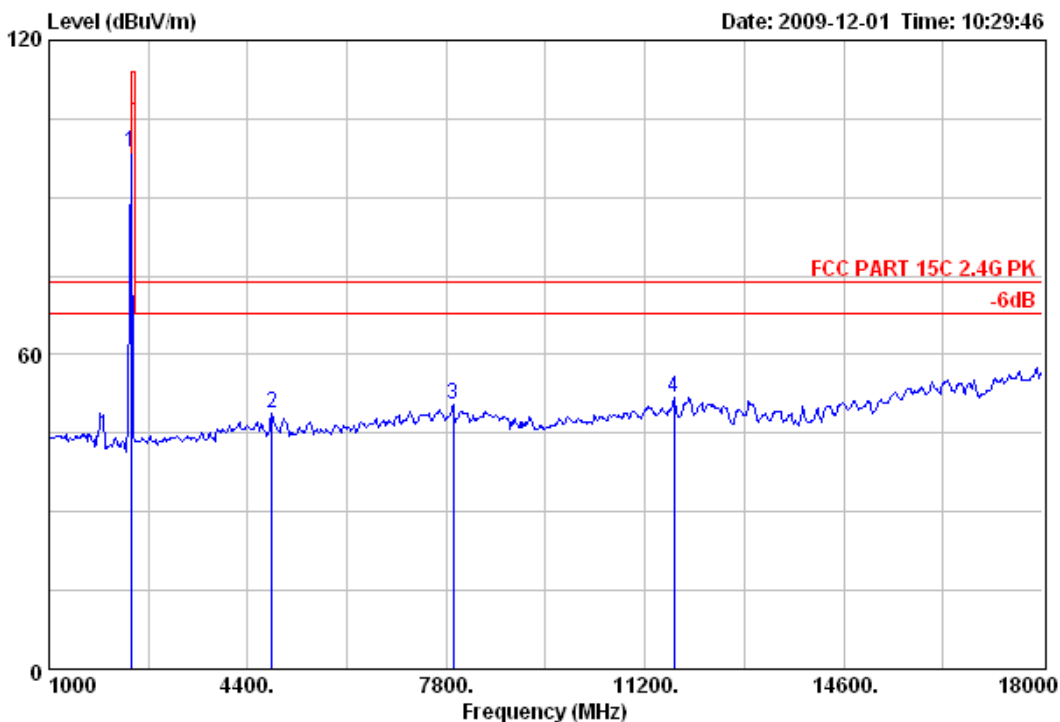
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 165

File: D:\Radiation data\C\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

	Emission			Margin	Reading	Ant.	Cable	Remark
	Freq.	Level	Limits			Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)			(dB)	(dB/m)	
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	11693.00	51.82	74.00	22.18	9.65	39.37	2.80	Peak



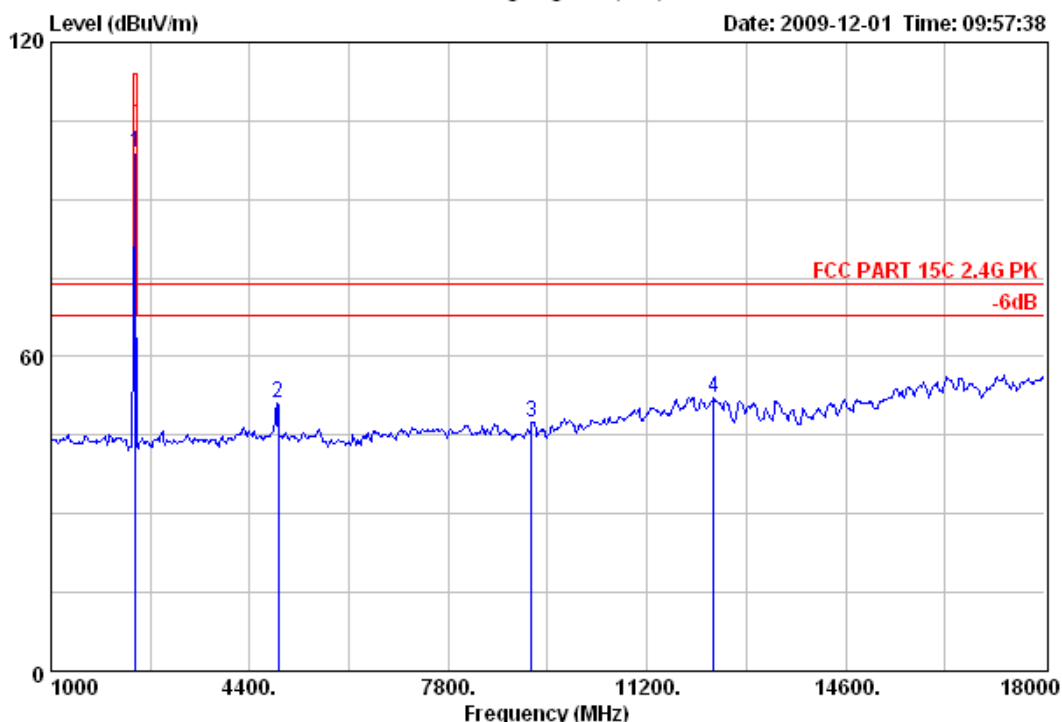
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 166

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(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	12339.00	52.20	74.00	21.80	9.42	39.94	2.84	Peak



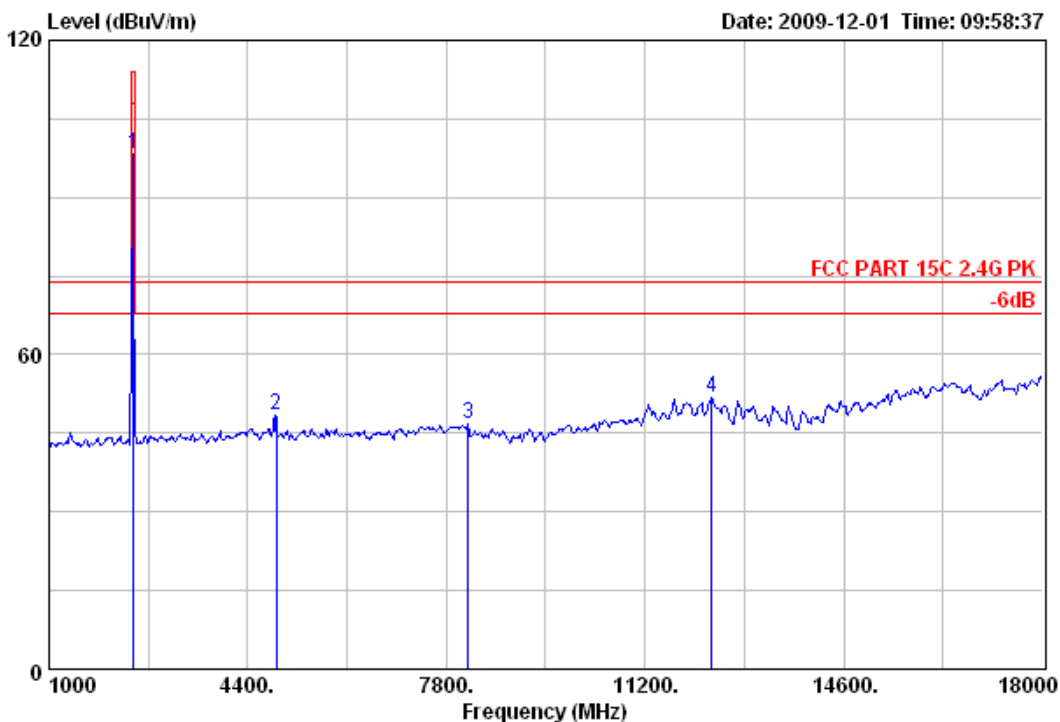
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 167

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(dB)
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



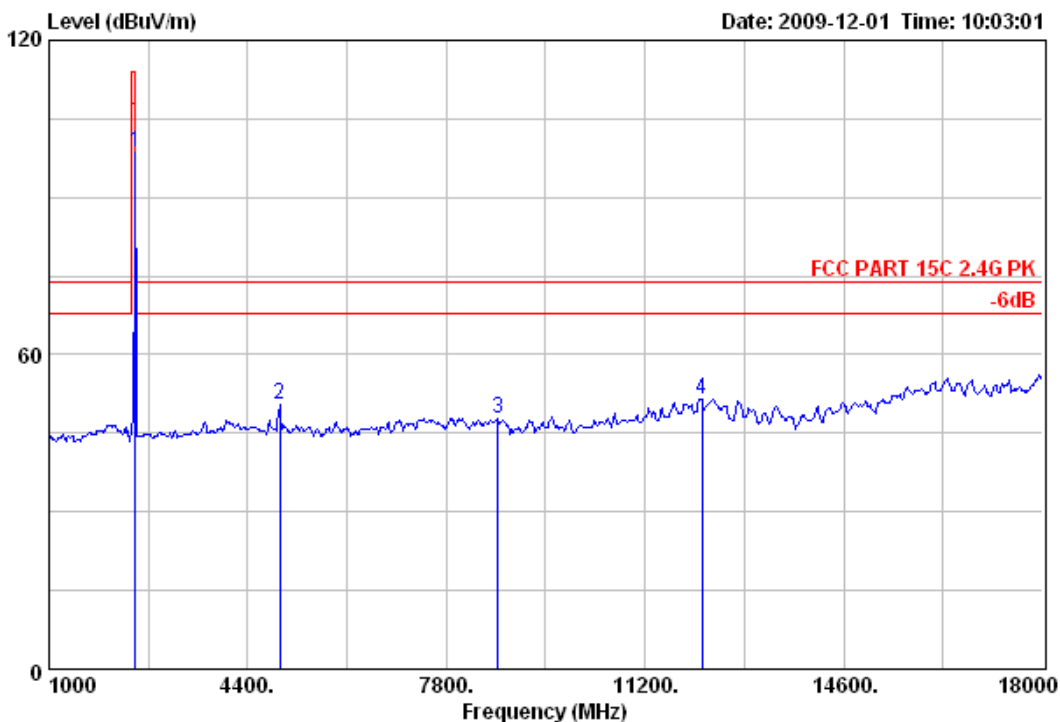
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 168

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(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



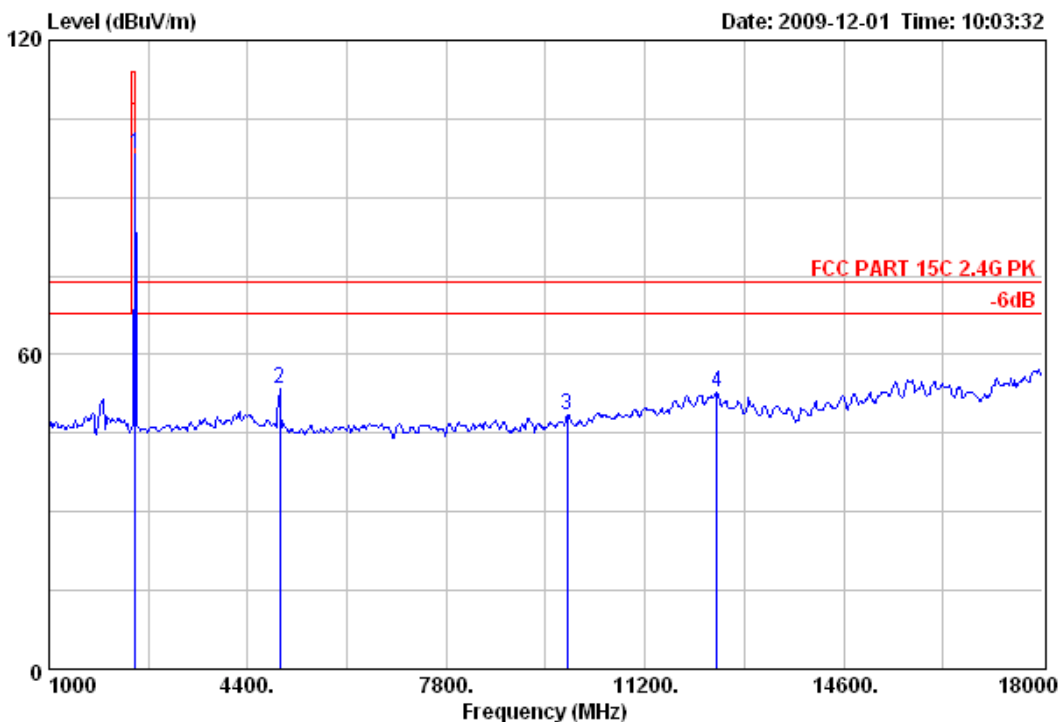
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 169

File: D:\Radiation data\C\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

	Emission			Margin	Reading	Ant.	Cable	Remark
	Freq.	Level	Limits			Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)			(dB)	(dBuV)	
1	2476.00	98.39	114.00	15.61	64.58	31.58	2.23	Peak
2	4952.00	53.39	74.00	20.61	16.33	34.67	2.39	Peak
3	9874.00	48.61	74.00	25.39	8.05	37.87	2.69	Peak
4	14242.00	52.88	74.00	21.12	10.06	39.97	2.85	Peak



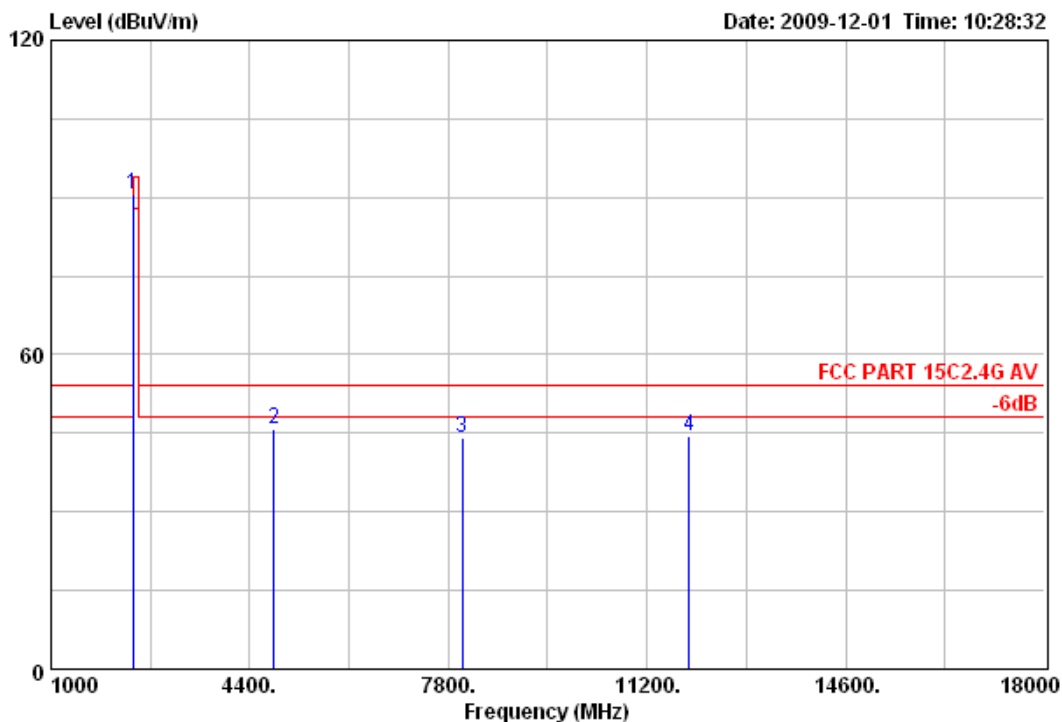
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 170

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

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



Test Site : 966 Chamber
Limit : FCC PART 15C2.4G 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

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



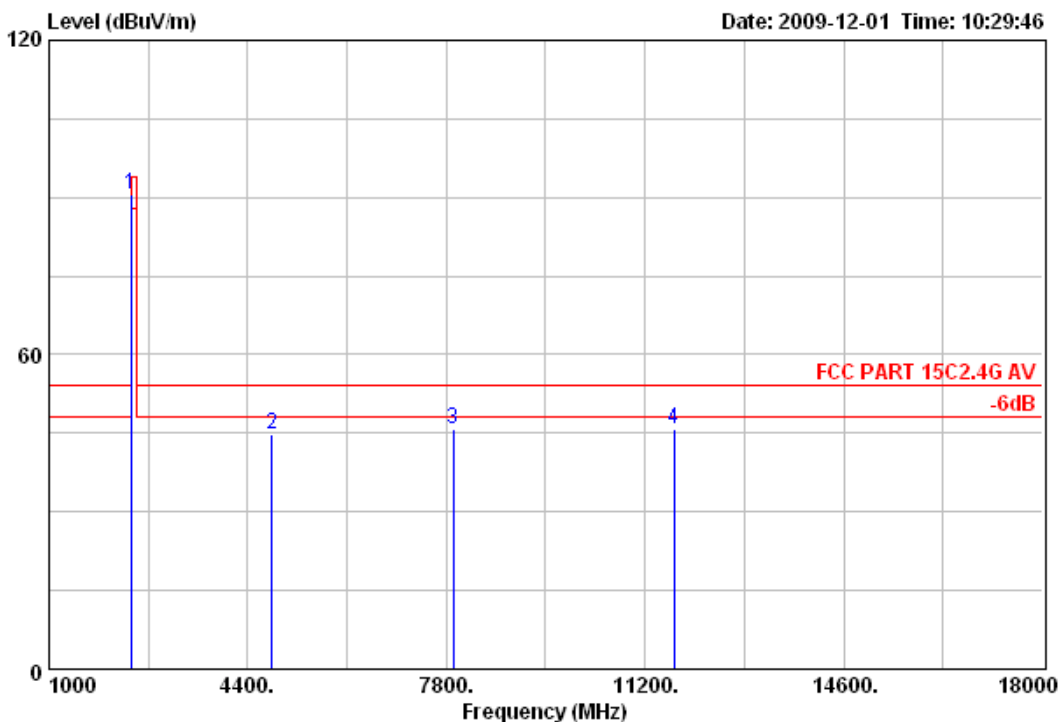
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 171

File: D:\Radiation data\C\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)	Emission		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant.	Cable	Remark
	Level (dBuV/m)					Factor (dB/m)	Loss (dB)	
1 2405.00	90.58		94.00	3.42	56.85	31.50	2.23	Average
2 4810.00	44.68		54.00	9.32	7.71	34.59	2.38	Average
3 7919.00	45.68		54.00	8.32	6.14	36.97	2.57	Average
4 11693.00	45.87		54.00	8.13	3.70	39.37	2.80	Average



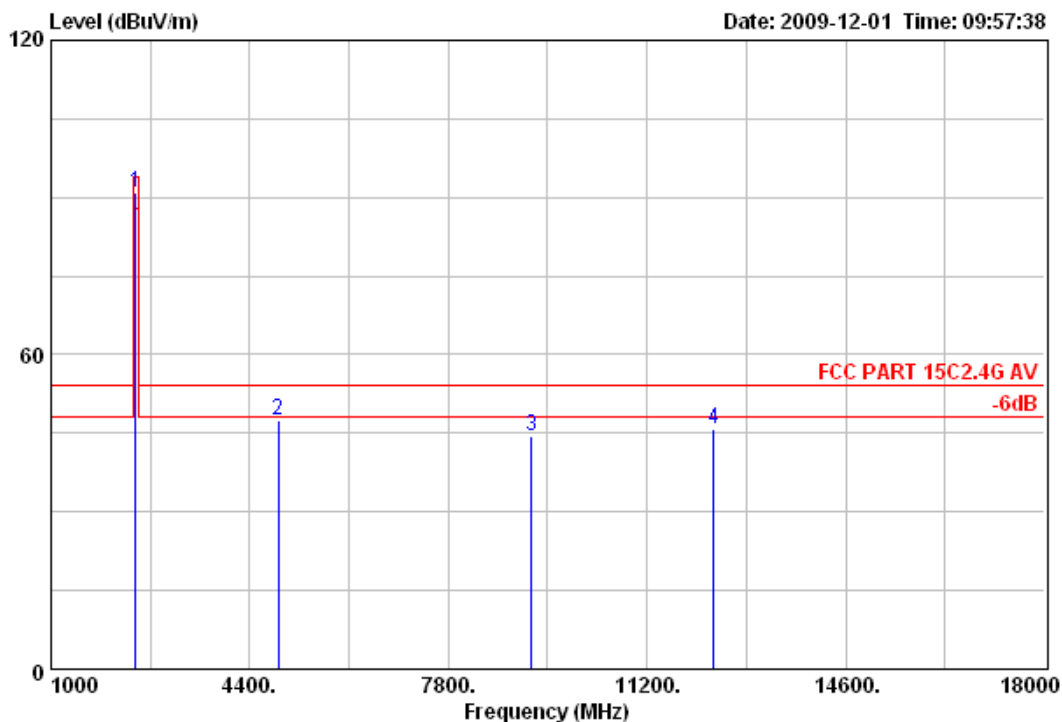
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 172

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

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



Test Site : 966 Chamber
Limit : FCC PART 15C2.4G 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		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant.	Cable	Remark
	Level (dBuV/m)					Factor (dB/m)	Loss (dB)	
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
412339.00	45.86		54.00	8.14	3.08	39.94	2.84	Average



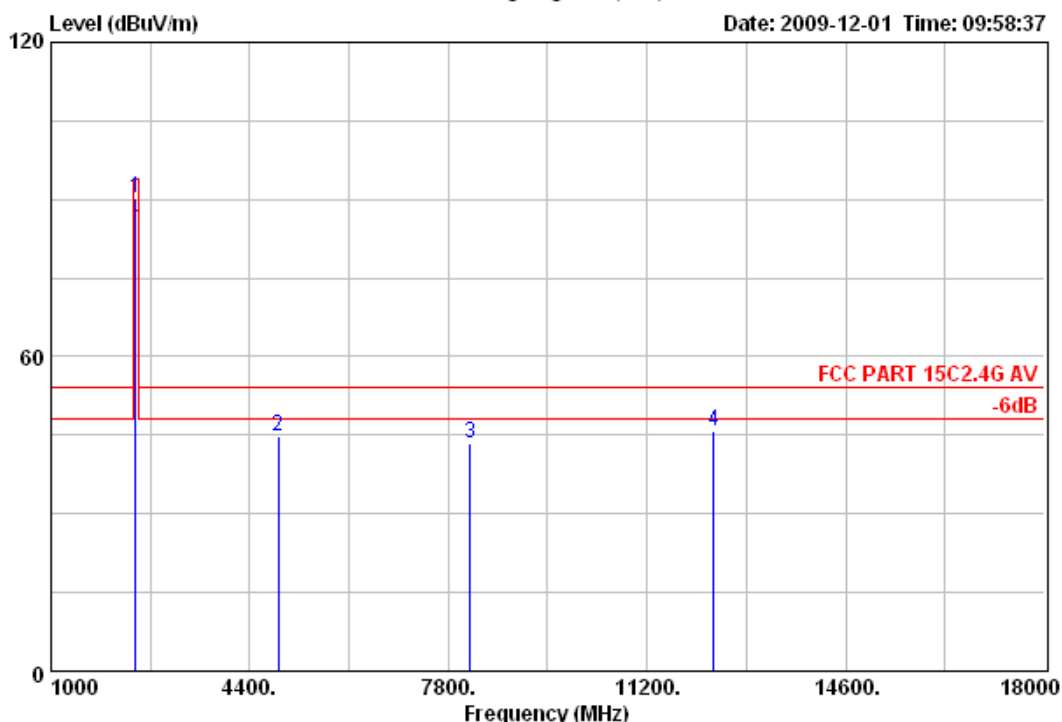
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 173

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(dB)
1	2442.00	90.24	94.00	3.76	56.47	31.54	2.23	Average
2	4884.00	44.75	54.00	9.25	7.75	34.62	2.38	Average
3	8174.00	43.58	54.00	10.42	4.03	36.96	2.59	Average
4	12339.00	45.72	54.00	8.28	2.94	39.94	2.84	Average



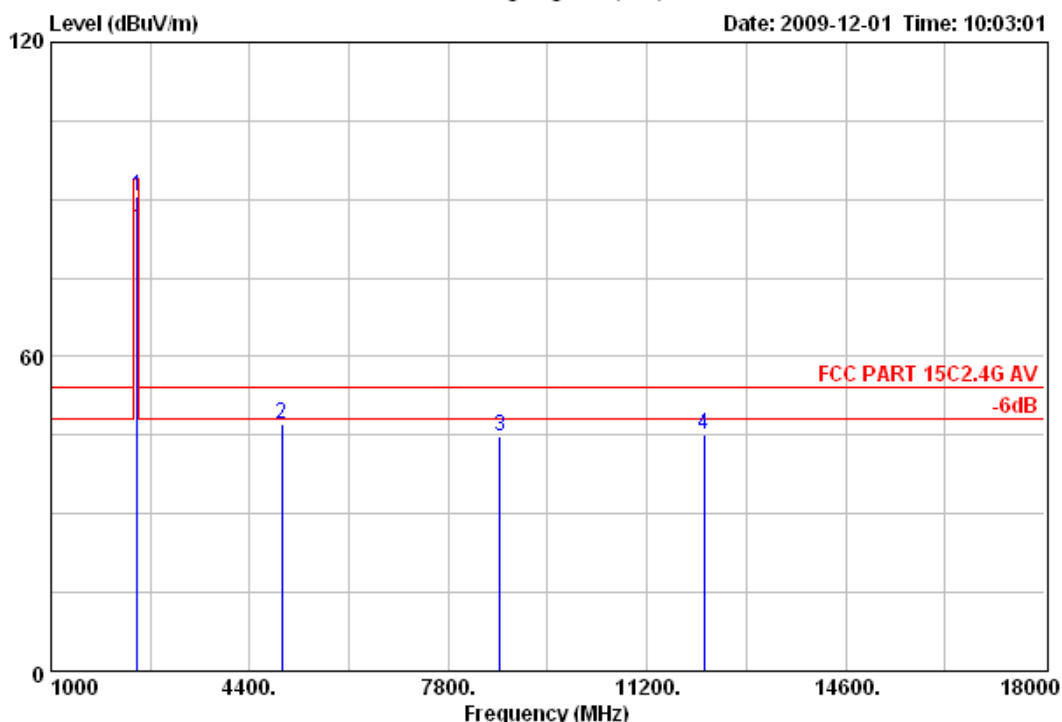
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 174

File: D:\Radiation data\C\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

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



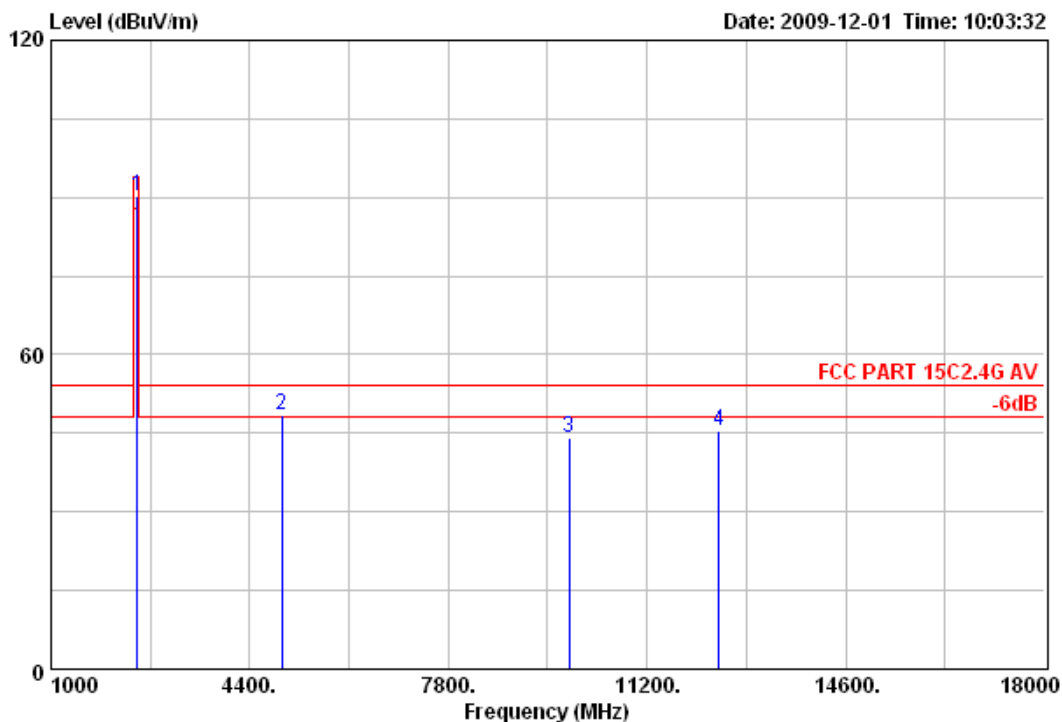
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 175

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

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



Test Site : 966 Chamber
Limit : FCC PART 15C2.4G 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)	Emission		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant.	Cable	Remark
	Level (dBuV/m)					Factor (dB/m)	Loss (dB)	
1 2476.00	90.39		94.00	3.61	56.58	31.58	2.23	Average
2 4952.00	48.63		54.00	5.37	11.57	34.67	2.39	Average
3 9874.00	44.26		54.00	9.74	3.70	37.87	2.69	Average
4 14242.00	45.37		54.00	8.63	2.55	39.97	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:

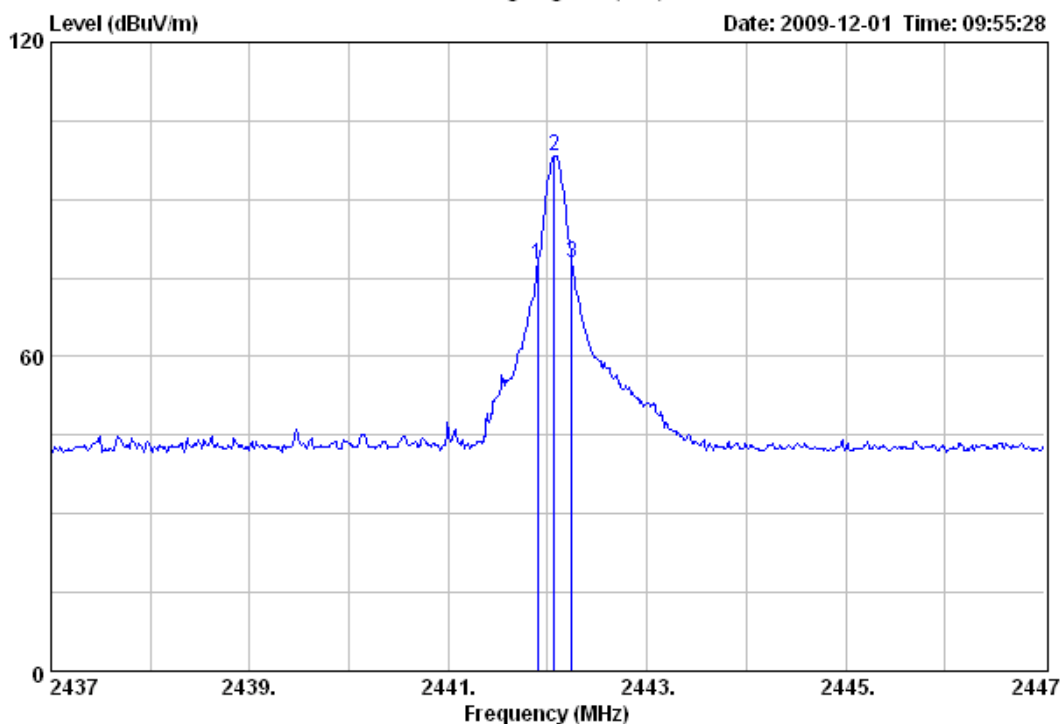
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 150

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor Loss (dB/m) (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



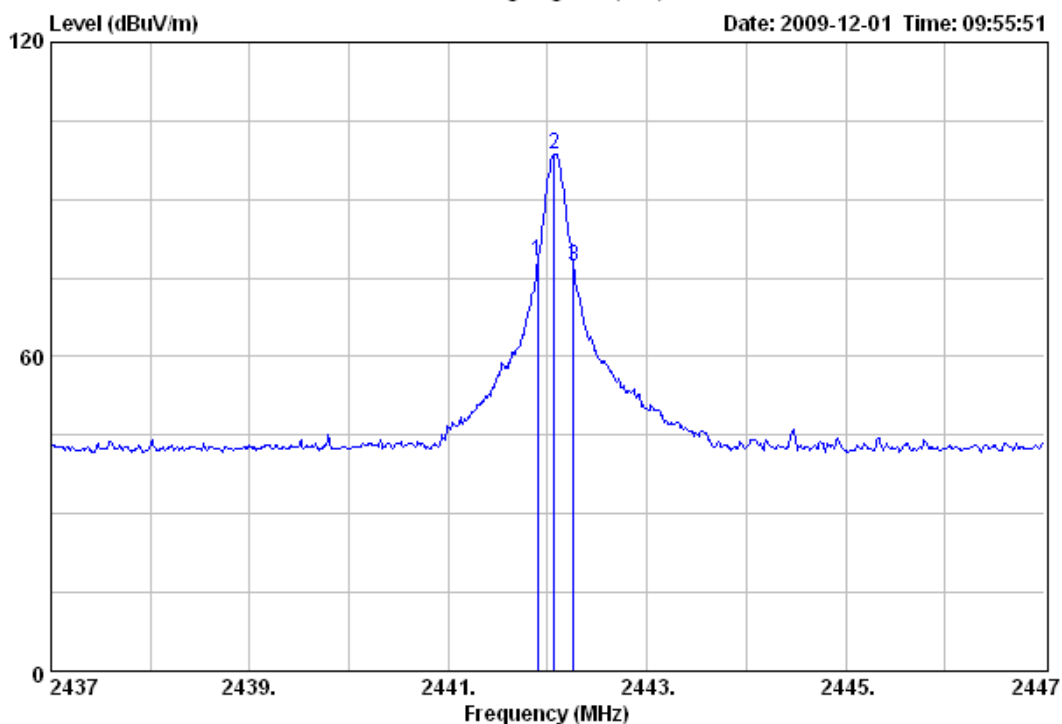
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 151

File: D:\Radiation data\C\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

	Emission				Ant. Factor (dB/m)	Cable Loss (dB)	Remark	
	Freq.	Level	Limits	Margin				
	(MHz)	(dBuV/m)	(dBuV/m)	(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



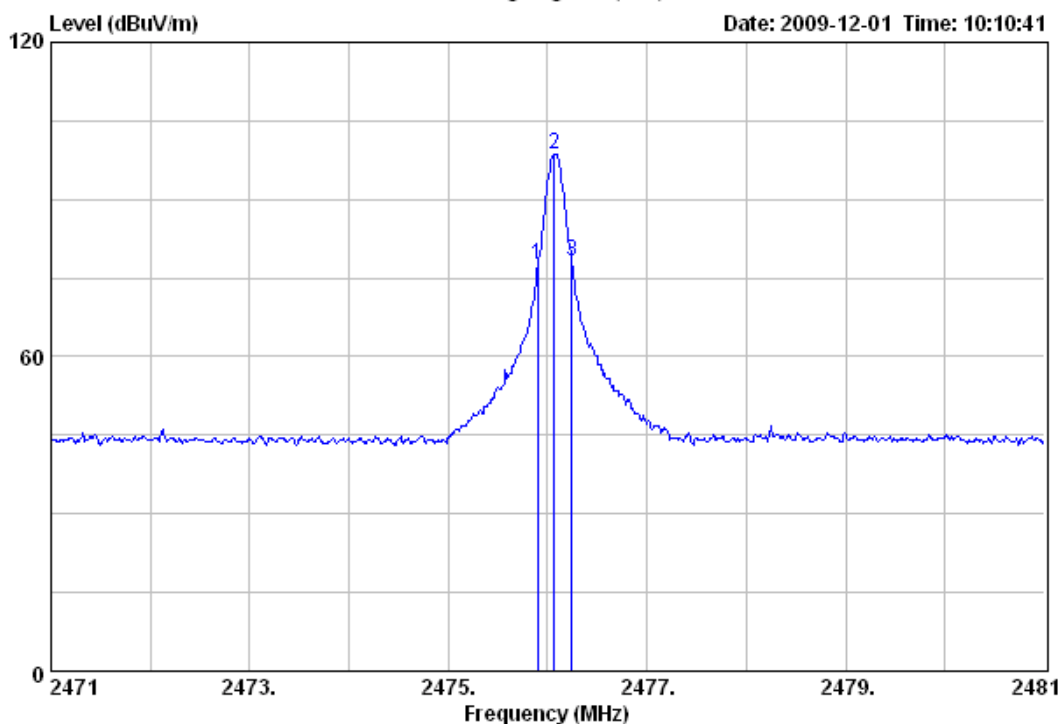
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 152

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor Loss (dB/m) (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



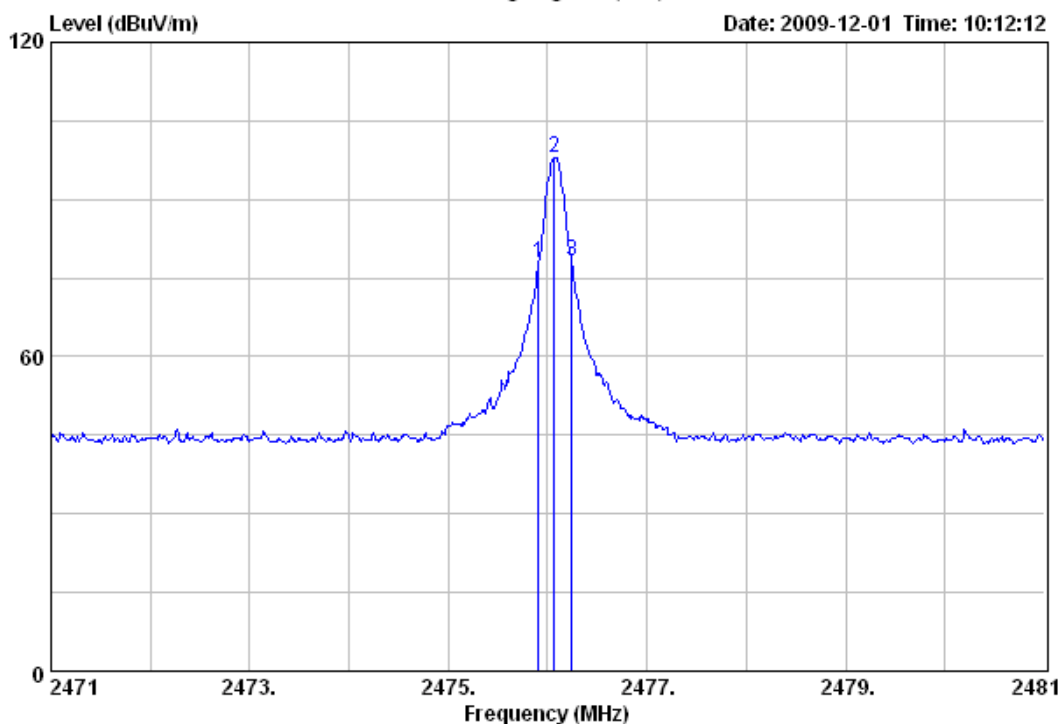
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 153

File: D:\Radiation data\C\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			Margin (dB)	Reading (dBuV)	Ant. Cable		Remark
	Level (dBuV/m)	Limits (dBuV/m)				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



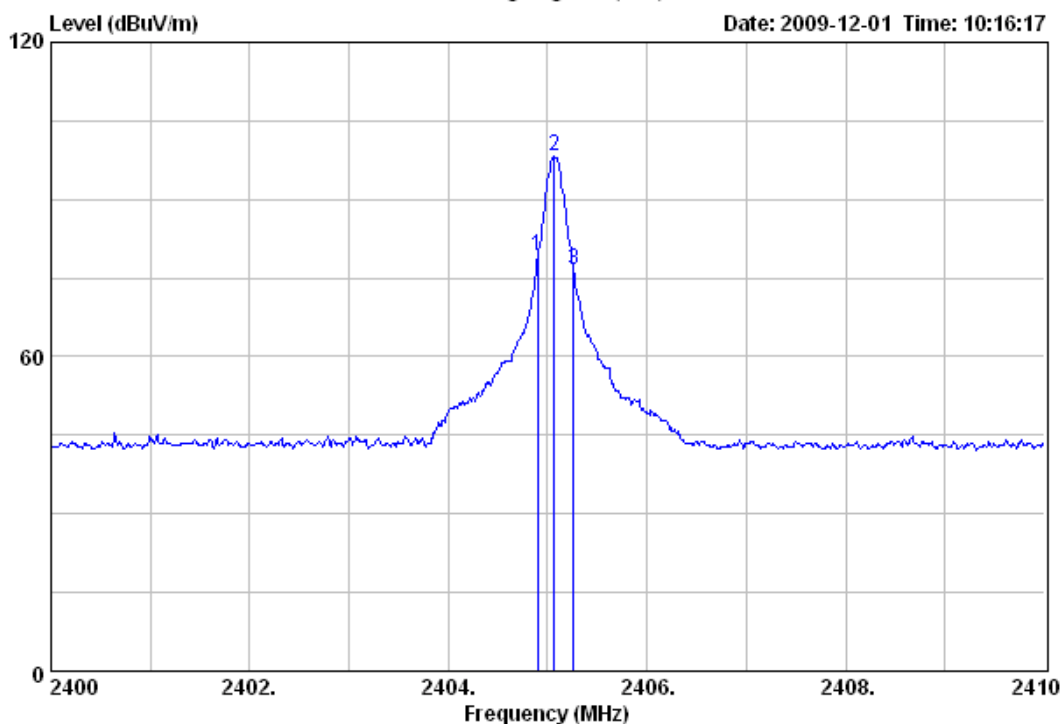
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 154

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark
	Freq. (MHz)	Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Reading (dBUV)	Factor Loss (dB/m) (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



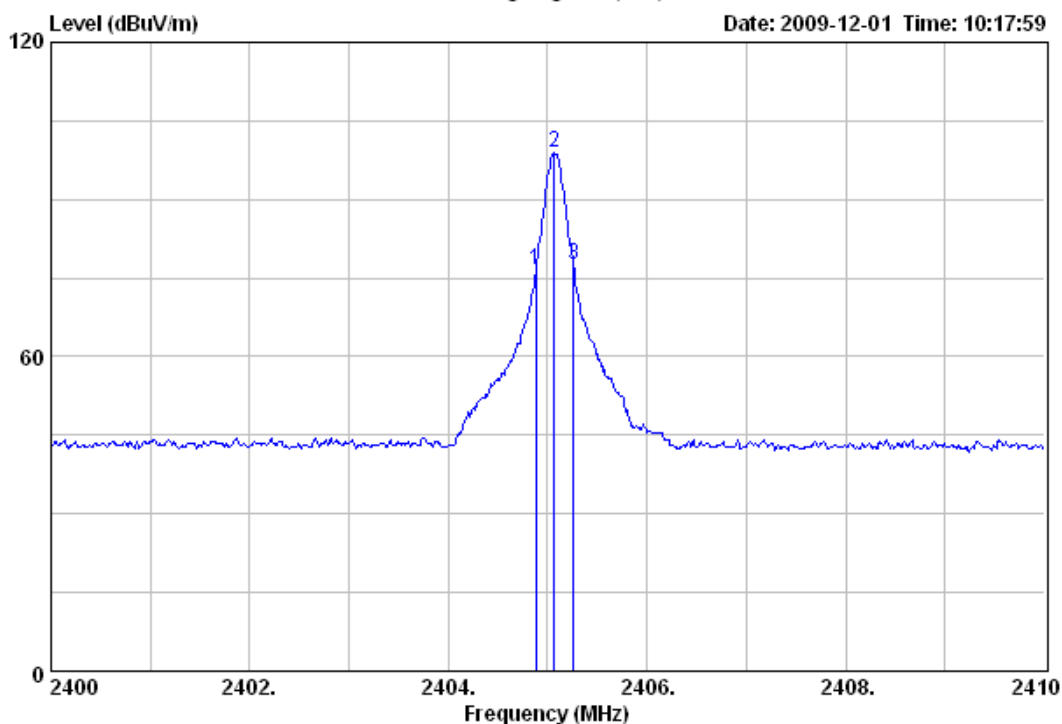
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 155

File: D:\Radiation data\C\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

	Emission				Ant. Cable		Remark
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	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

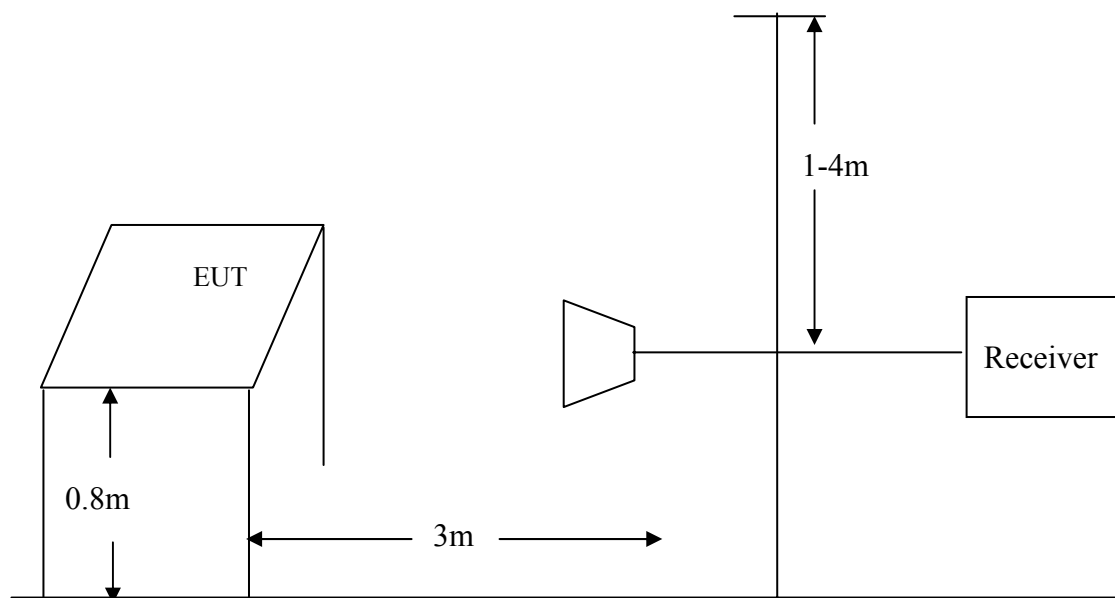
The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band above 1GHz, The measuring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

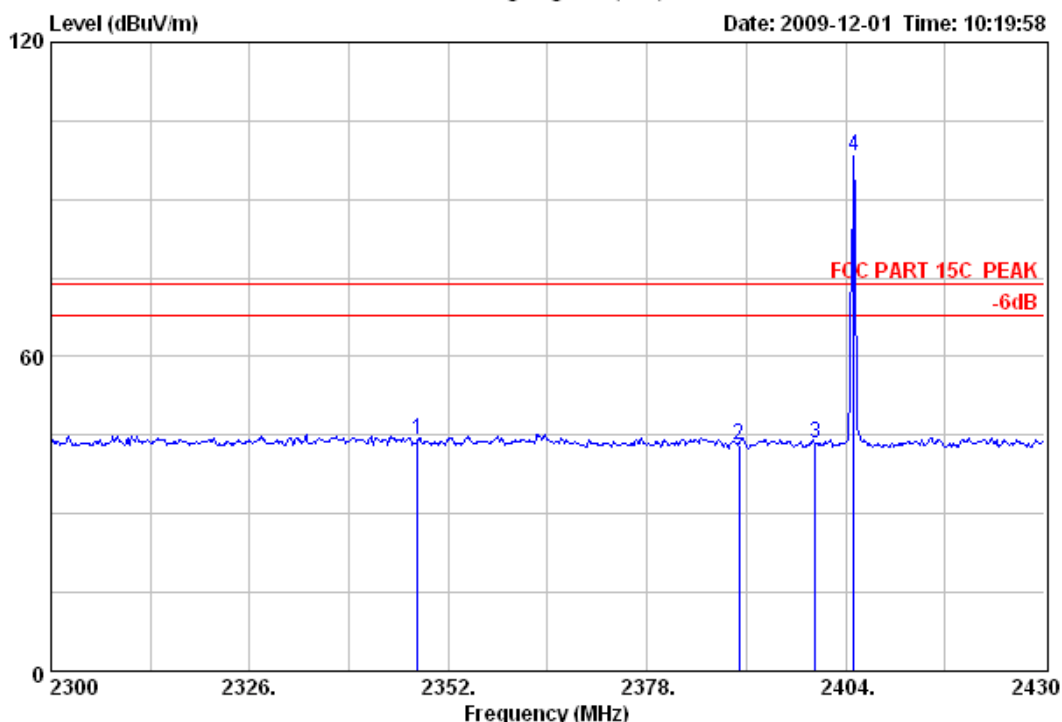
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 156

File: D:\Radiation data\C\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		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant.	Cable	Remark
		Level (dBuV/m)					Factor (dB/m)	Loss (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



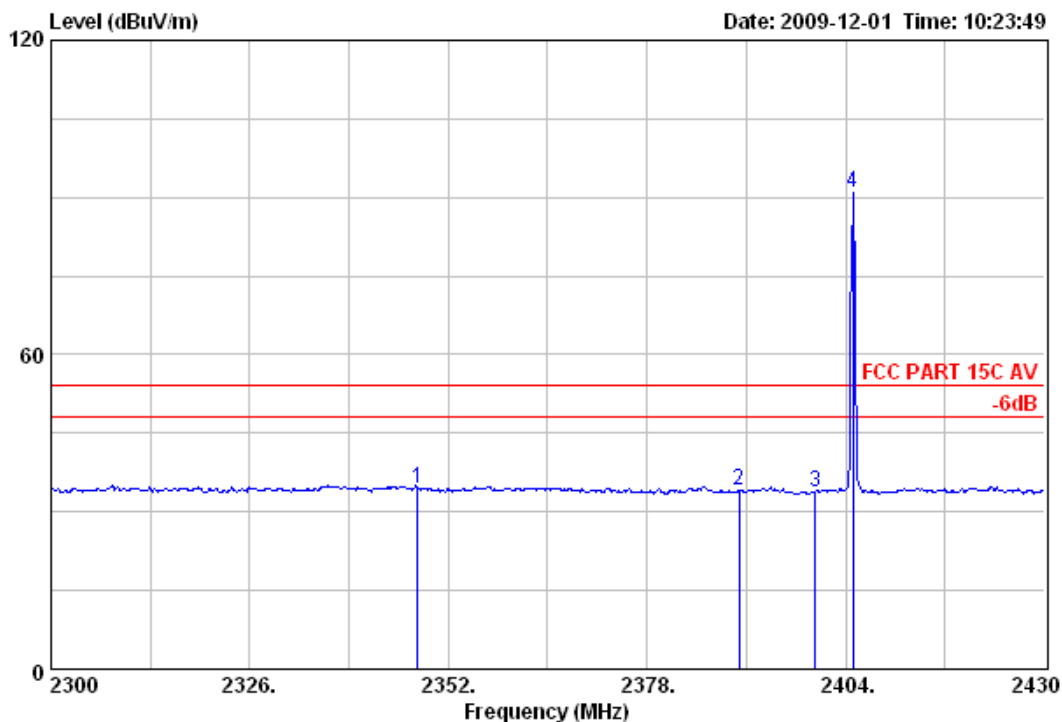
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 157

File: D:\Radiation data\C\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

	Emission			Margin	Reading	Ant. Cable		Remark
	Freq.	Level	Limits			Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
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



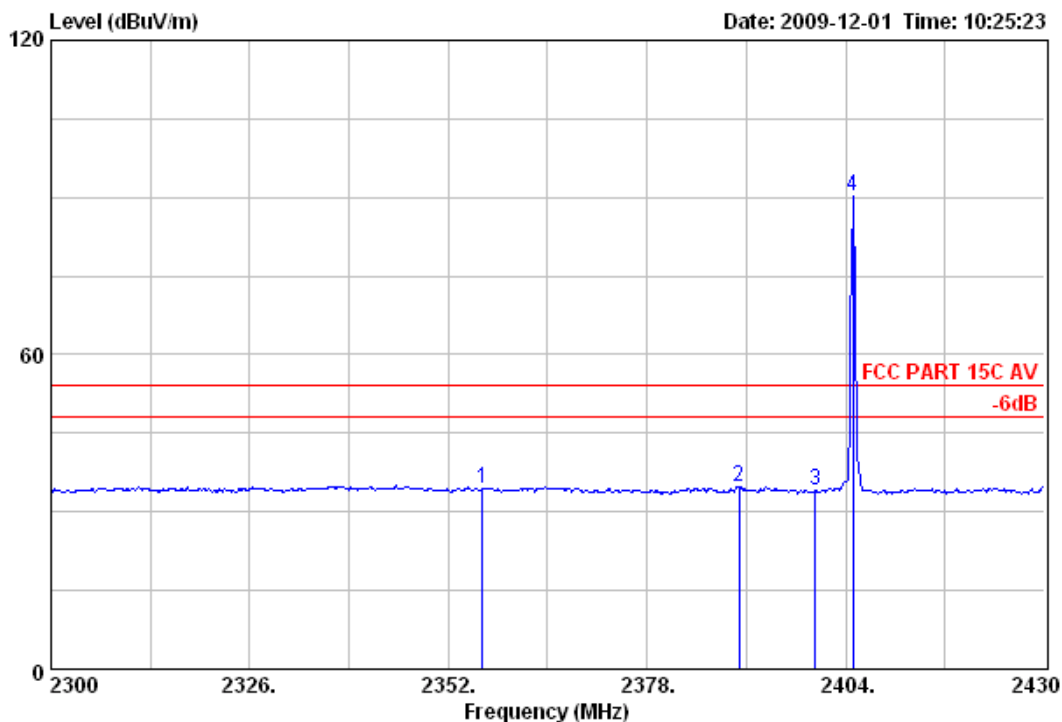
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 158

File: D:\Radiation data\C\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

	Emission			Margin	Reading	Ant.	Cable	Remark
	Freq.	Level	Limits			Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
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



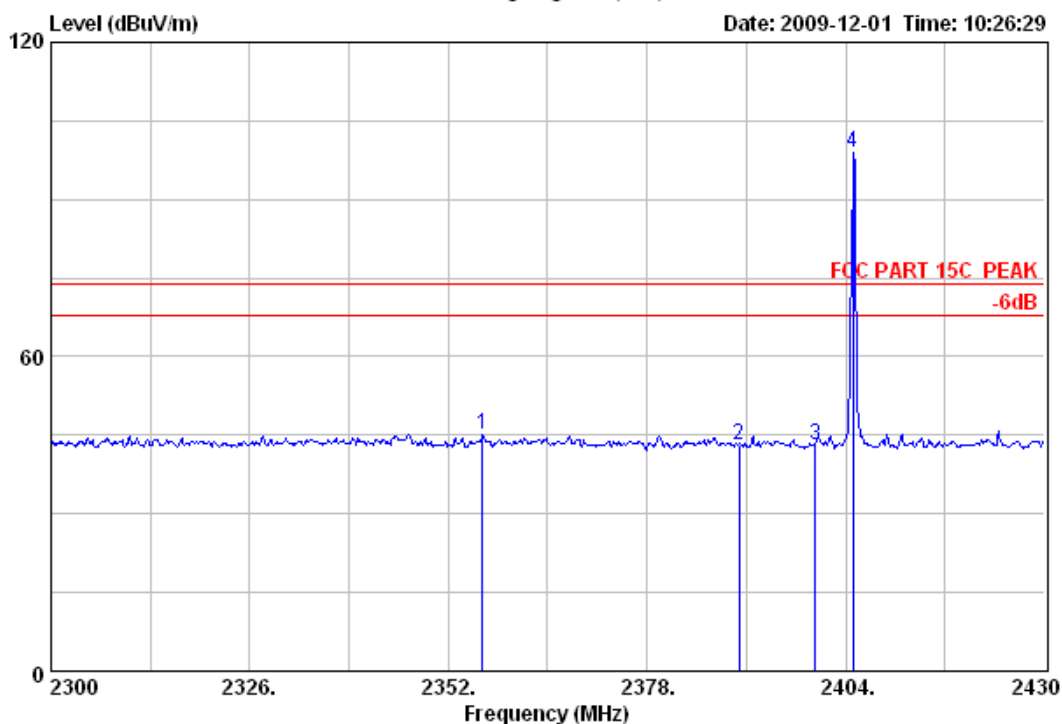
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 159

File: D:\Radiation data\C\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		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Cable		Remark
	Level (dBuV/m)					Factor (dB/m)	Loss (dB)	
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



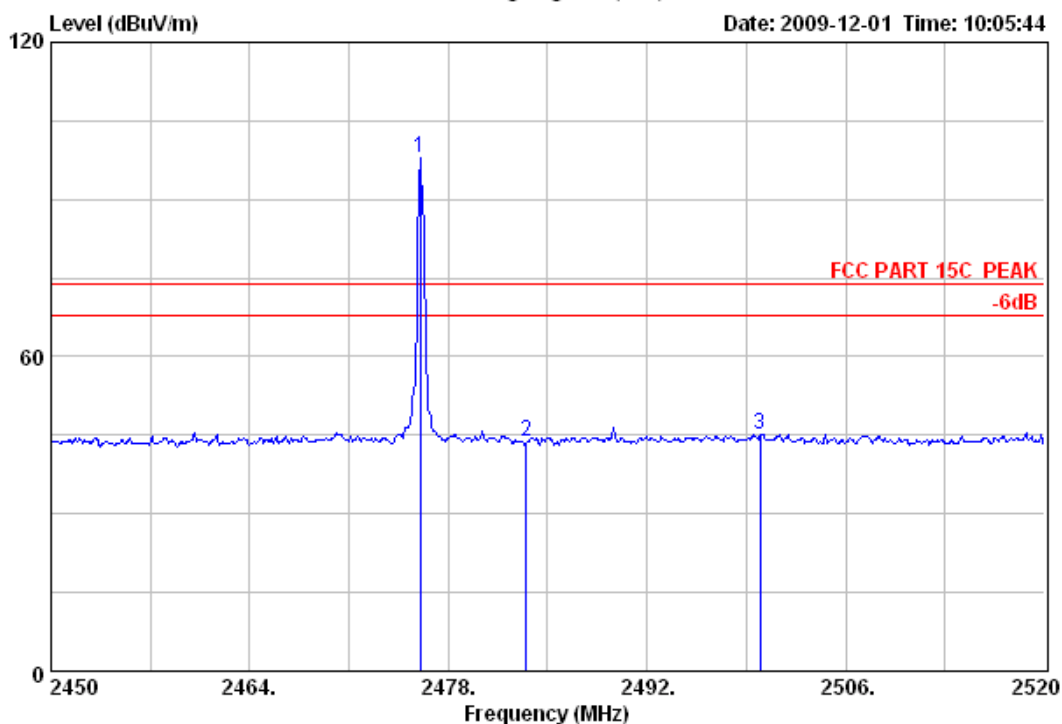
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 160

File: D:\Radiation data\C\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			Remark
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
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



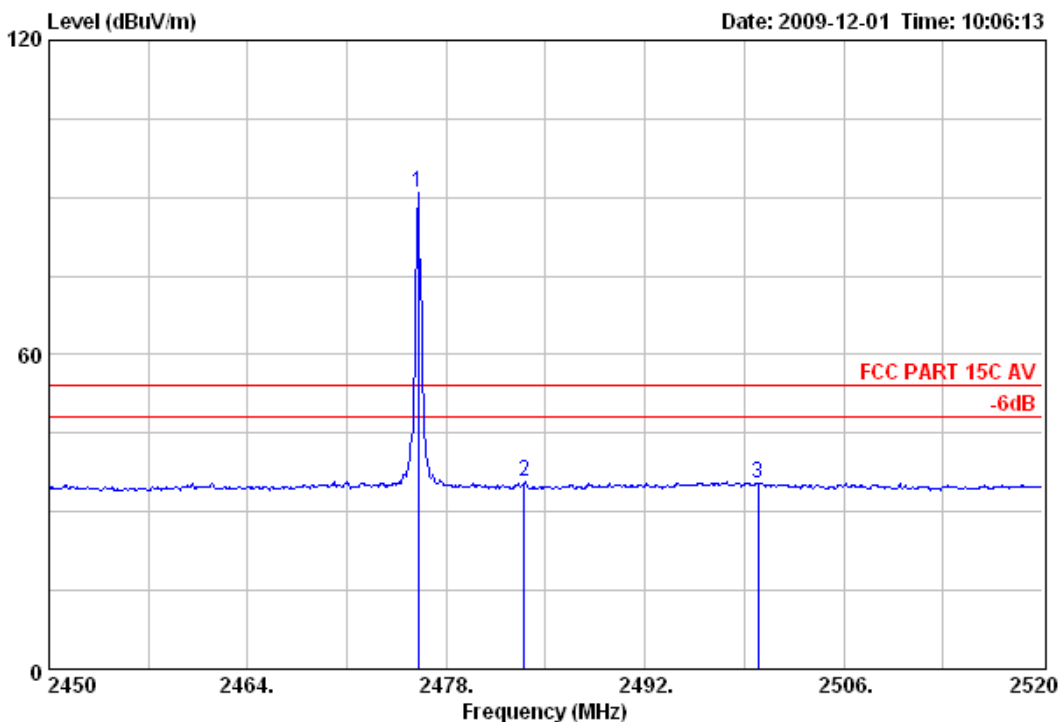
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 161

File: D:\Radiation data\C\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				Reading (dBuV)	Ant. Cable		Remark
	Freq.	Level	Limits	Margin		Factor	Loss	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dB/m)	(dB)	
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



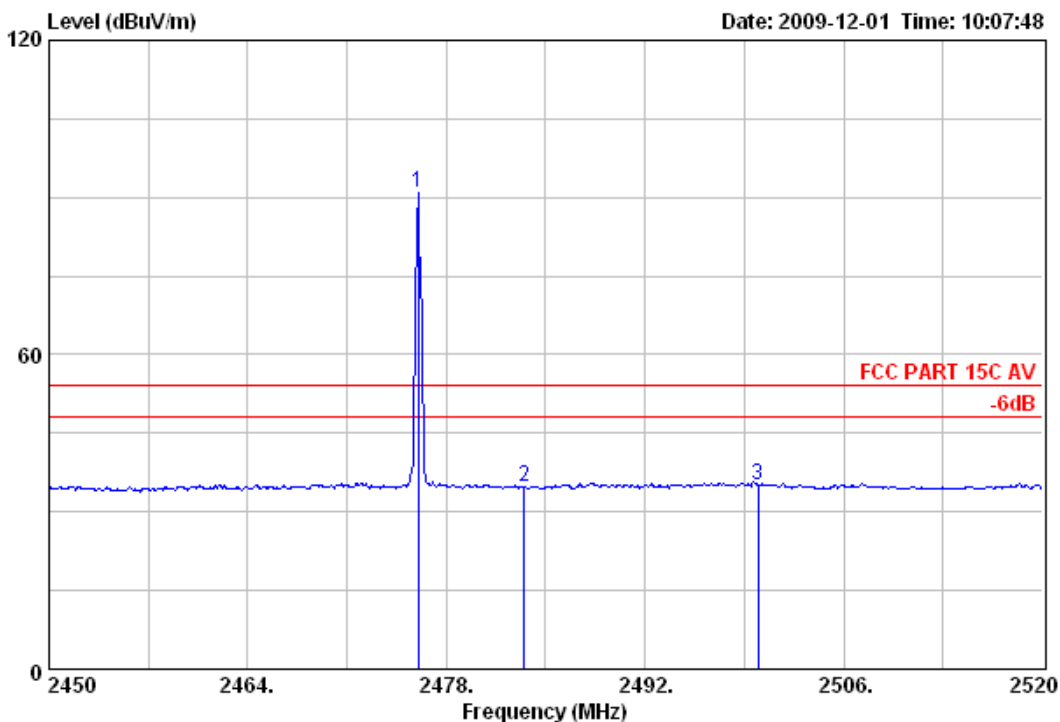
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 162

File: D:\Radiation data\C\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				Reading Factor (dB/m)	Ant. Cable		Remark
	Freq.	Level	Limits	Margin		Loss		
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		(dB)		
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



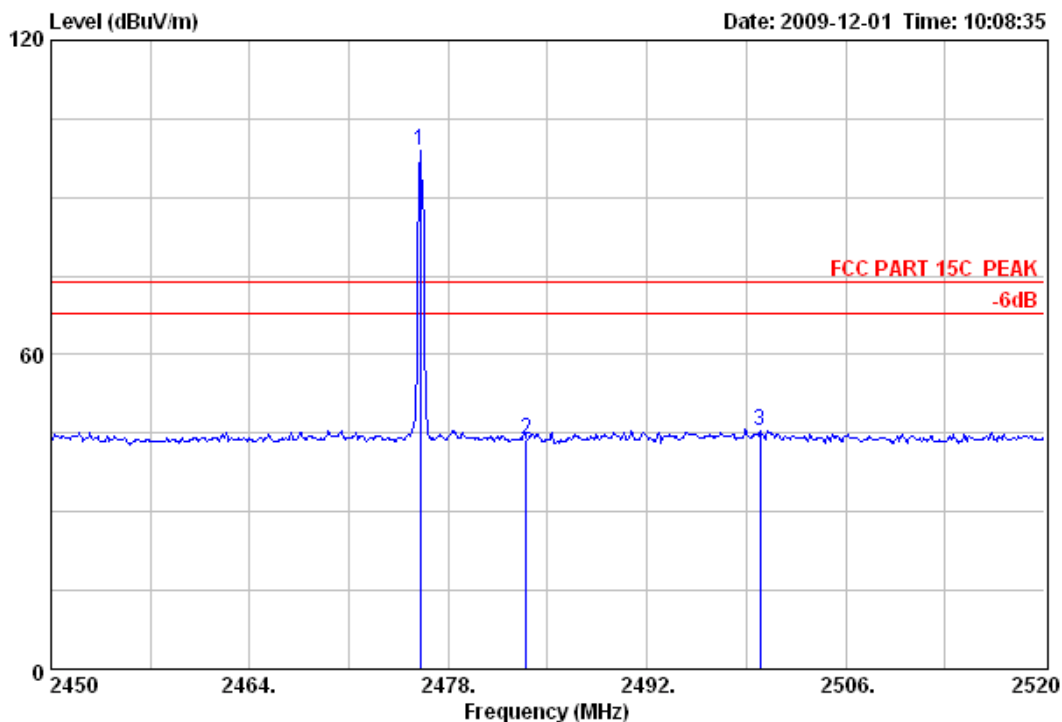
NS Technology

Chenwu Industrial Zone, Houjie Town,
Dongguan, Guangdong, China
Tel: +86-769-85935656
Fax: +86-769-85991080

Data: 163

File: D:\Radiation data\C\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		Remark	
	Freq.	Level	Limits	Margin	Reading	Factor		Loss
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)		(dB)
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

