

Test Report No.10044048 001

Appendix D: Radiated and Mains Spurious Emission Data

(File: 10044048AppendixD)

Contents

Spurious Emissions, Fundamental and Band Edges 2

Spurious Emissions, TX Mode, 1-18G..... 12

Spurious Emissions, TX Mode, 18-26G..... 18

Spurious Emissions, TX Mode, 30M-1G 24

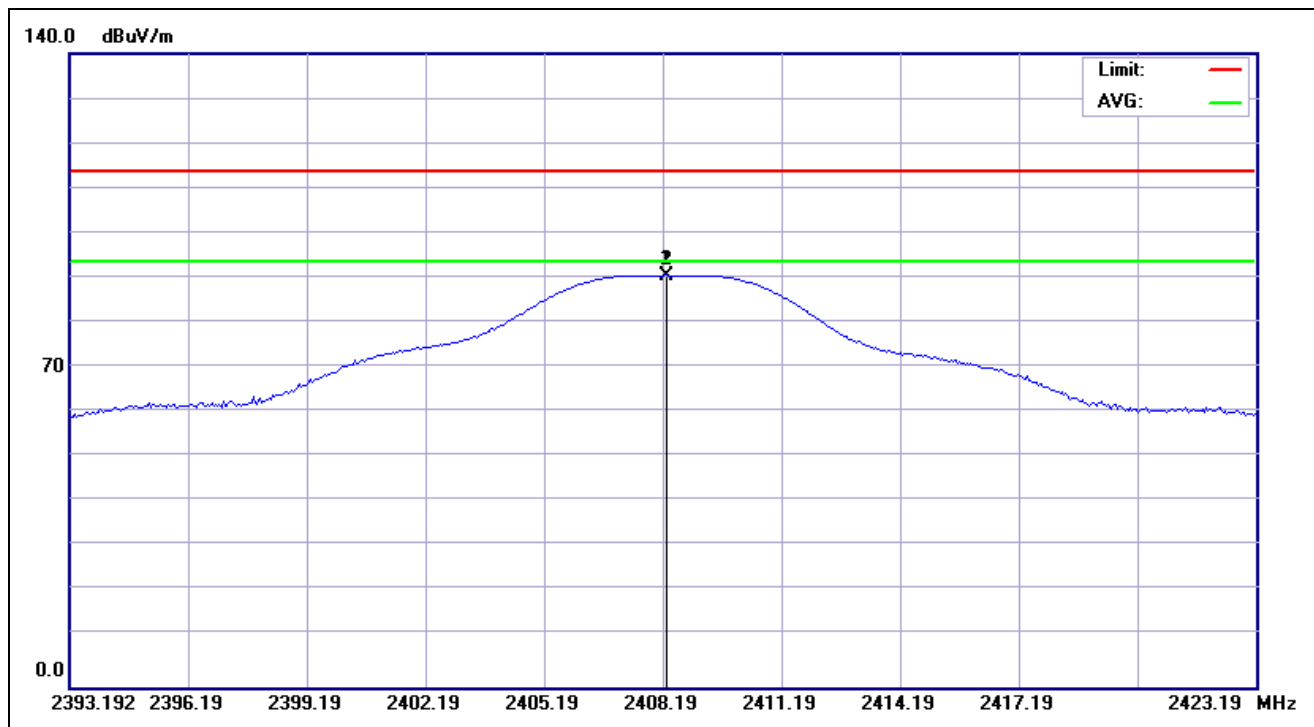
Spurious Emissions, Fundamental and Band Edges



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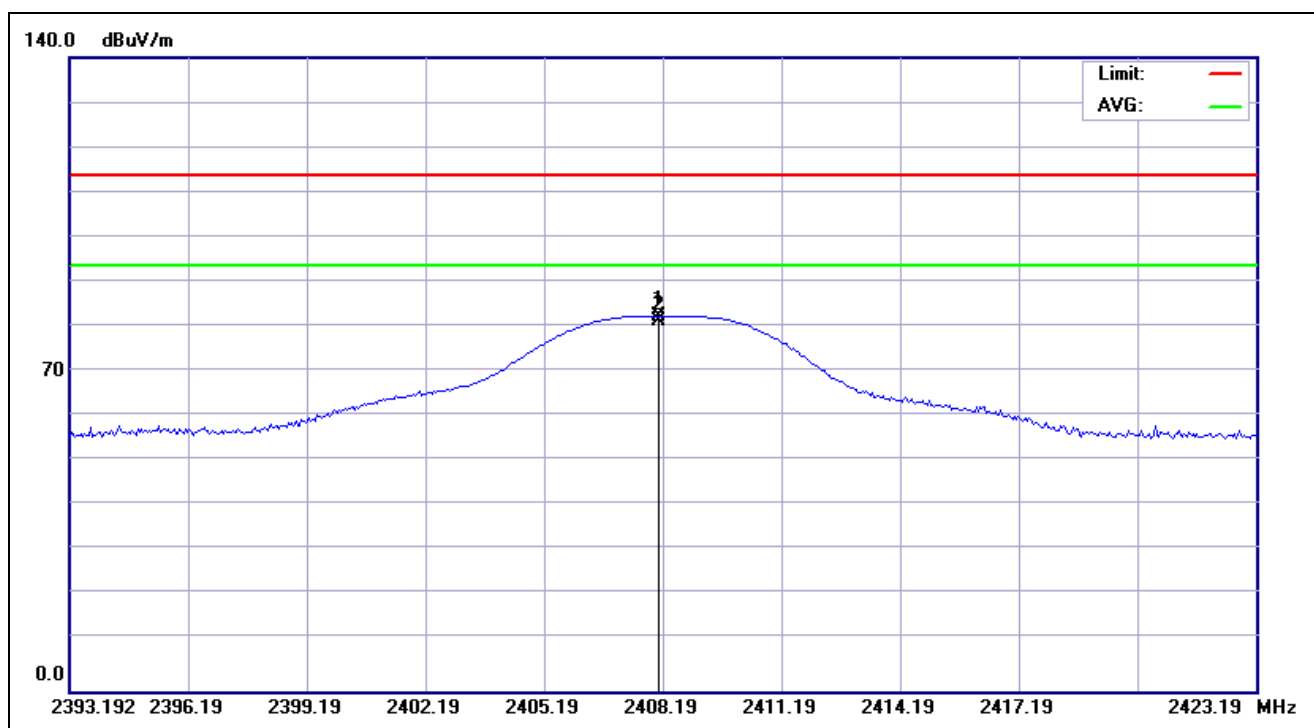
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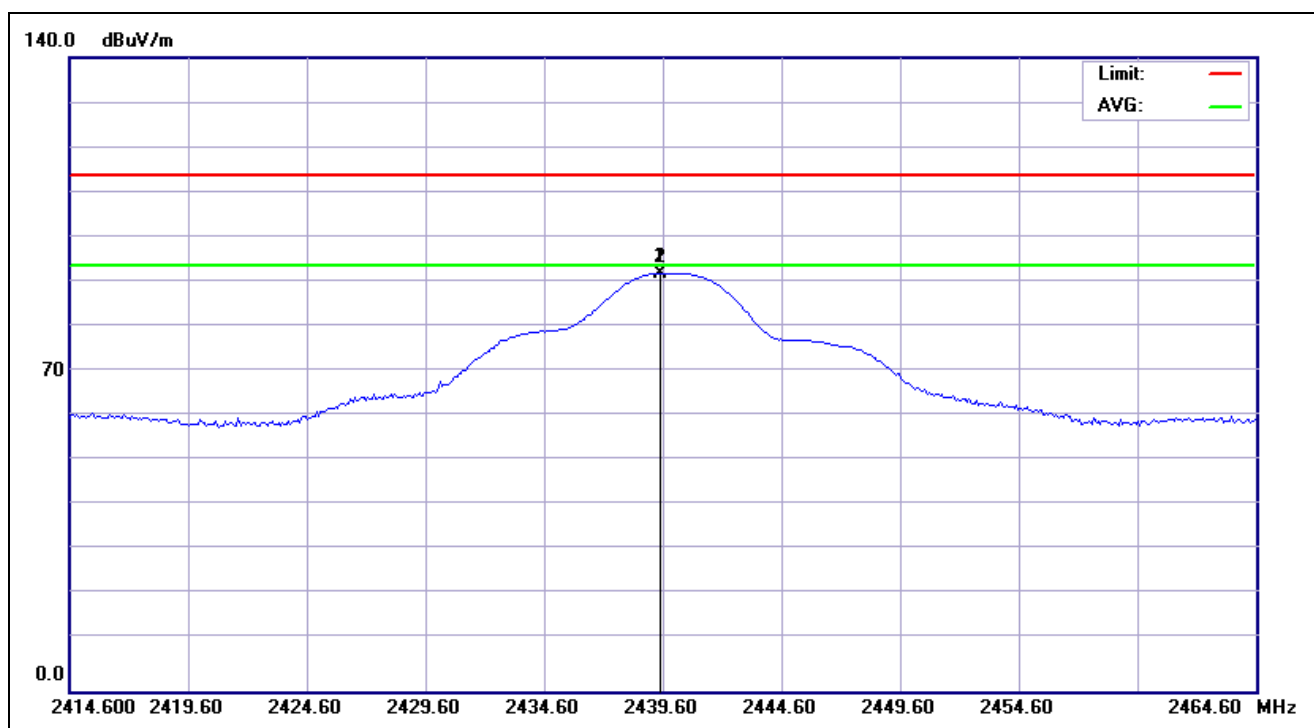
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Test Standard:	FCC 15.249_2.4-2.5G_3m PK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 10:18:12
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Low CH 2408MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2408.288	-8.18	99.18	91.00	114.00	-23.00	peak	125	360	
2	2408.288	-8.18	99.04	90.86	94.00	-3.14	AVG	125	360	



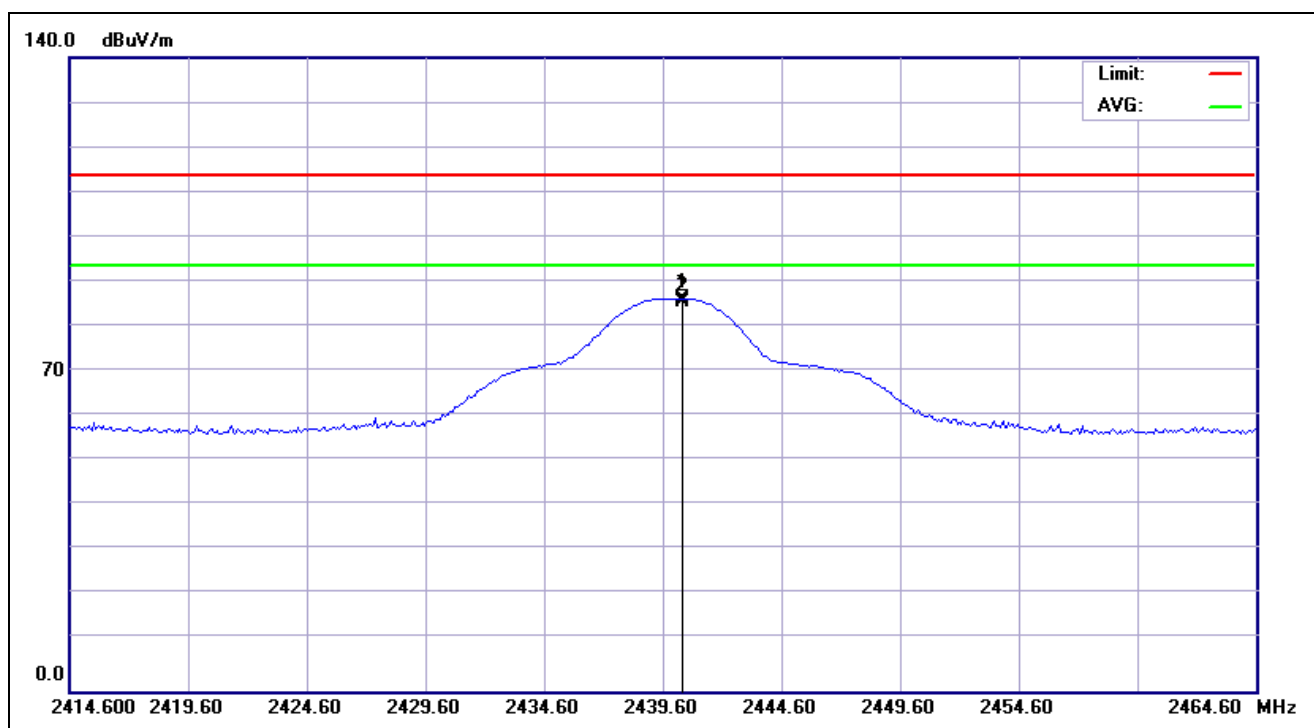
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Test item:	Radiation Emission	Test Time:	2013/10/15 10:24:17
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Low CH 2408MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2408.095	-8.18	91.07	82.89	114.00	-31.11	peak	356	36	
2	2408.095	-8.18	90.00	81.82	94.00	-12.18	AVG	356	36	



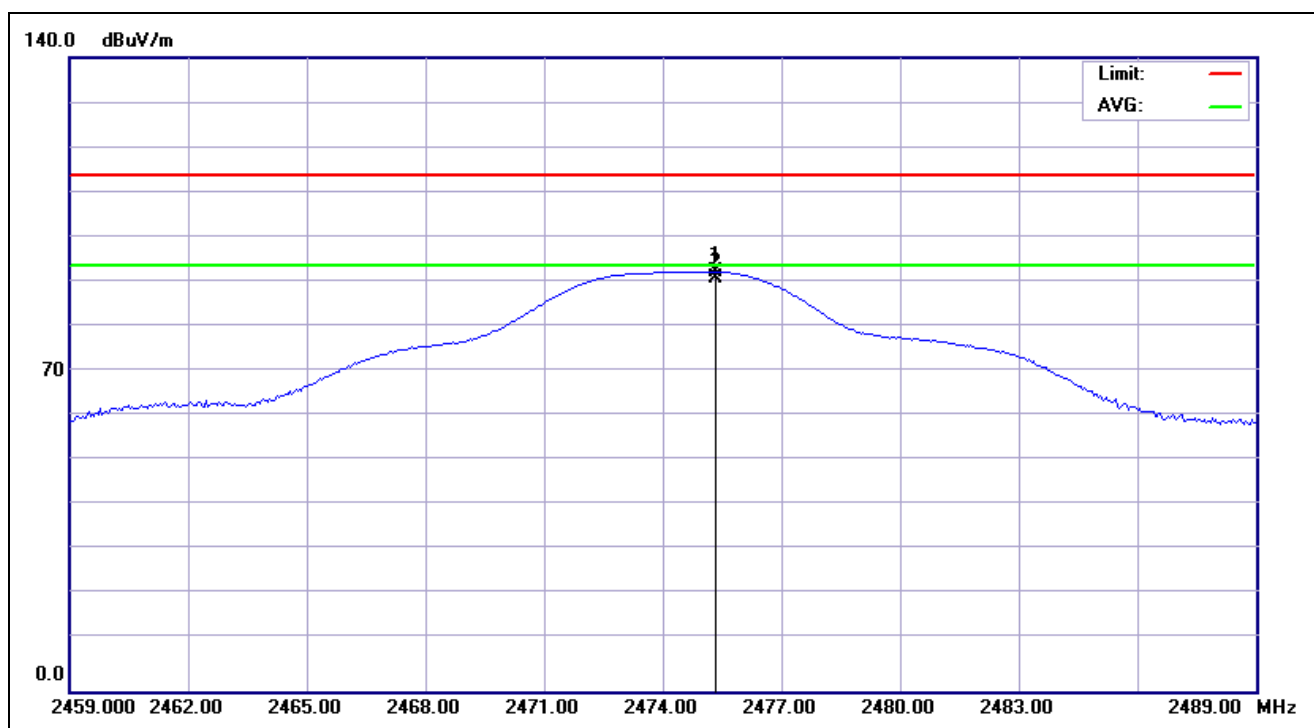
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Test Standard:	FCC 15.249_2.4-2.5G_3m PK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 09:39:06
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2439.520	-8.15	100.48	92.33	114.00	-21.67	peak	121	360	
2	2439.520	-8.15	100.25	92.10	94.00	-1.90	AVG	121	360	



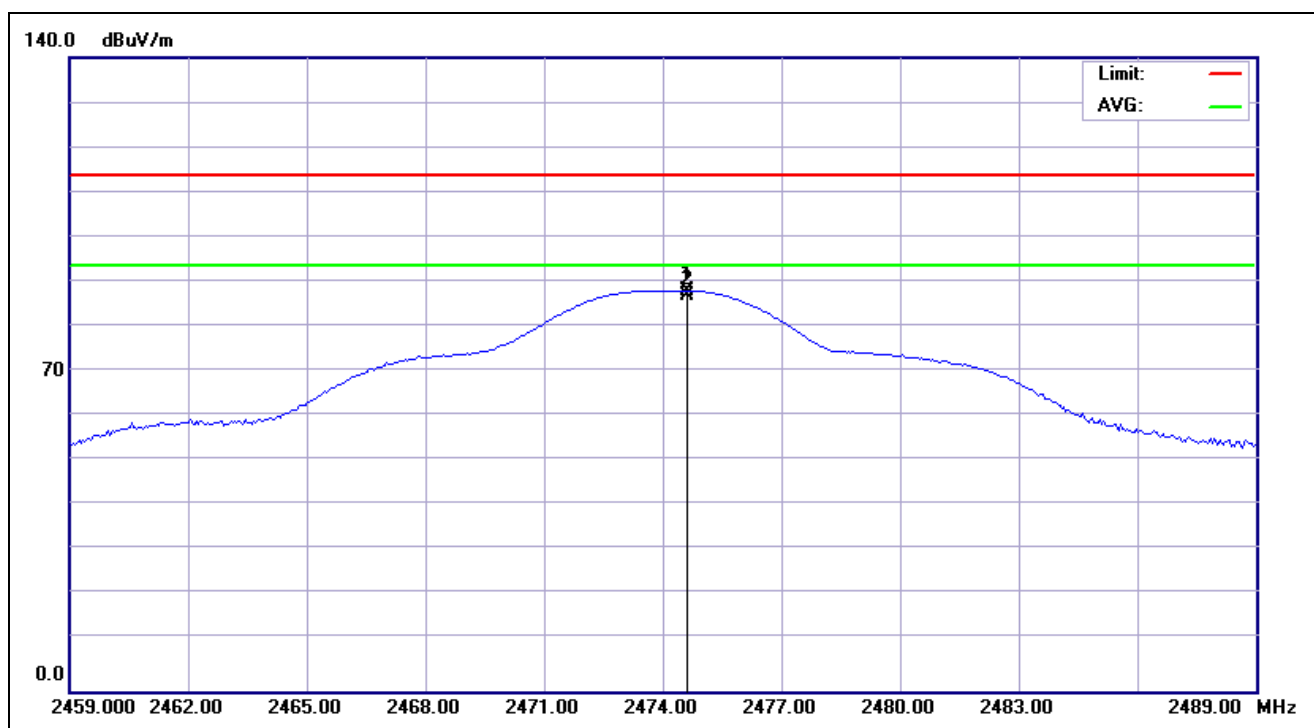
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Test Standard:	FCC 15.249_2.4-2.5G_3m PK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 09:52:53
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2440.401	-8.15	94.86	86.71	114.00	-27.29	peak	192	38	
2	2440.401	-8.15	93.91	85.76	94.00	-8.24	AVG	192	38	



Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC 15.249_2.4-2.5G_3m PK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 10:09:46
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2475.346	-8.11	100.76	92.65	114.00	-21.35	peak	124	121	
2	2475.346	-8.11	99.17	91.06	94.00	-2.94	AVG	124	121	

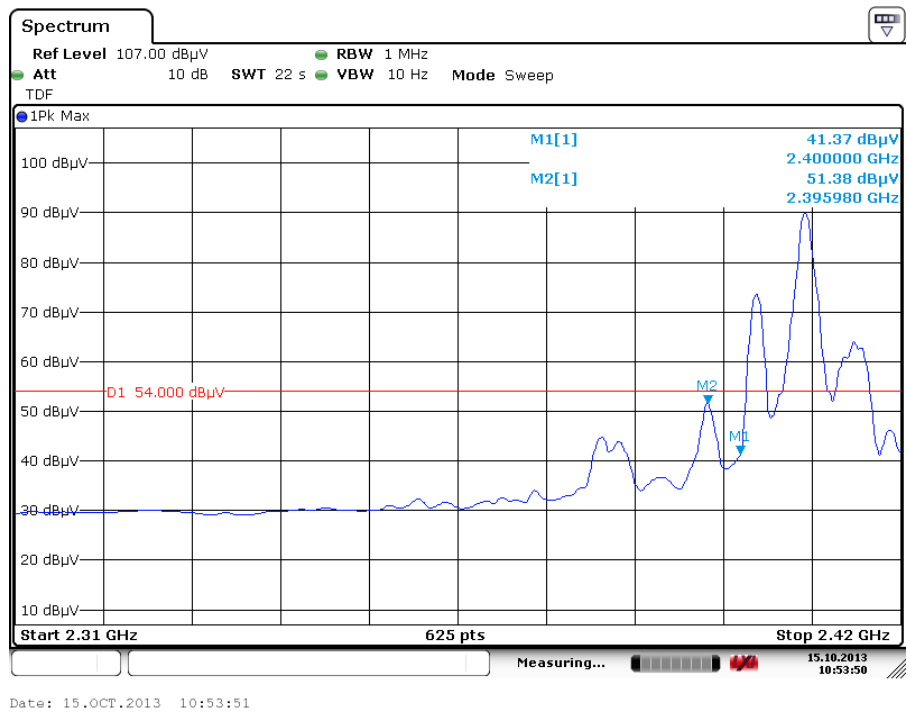
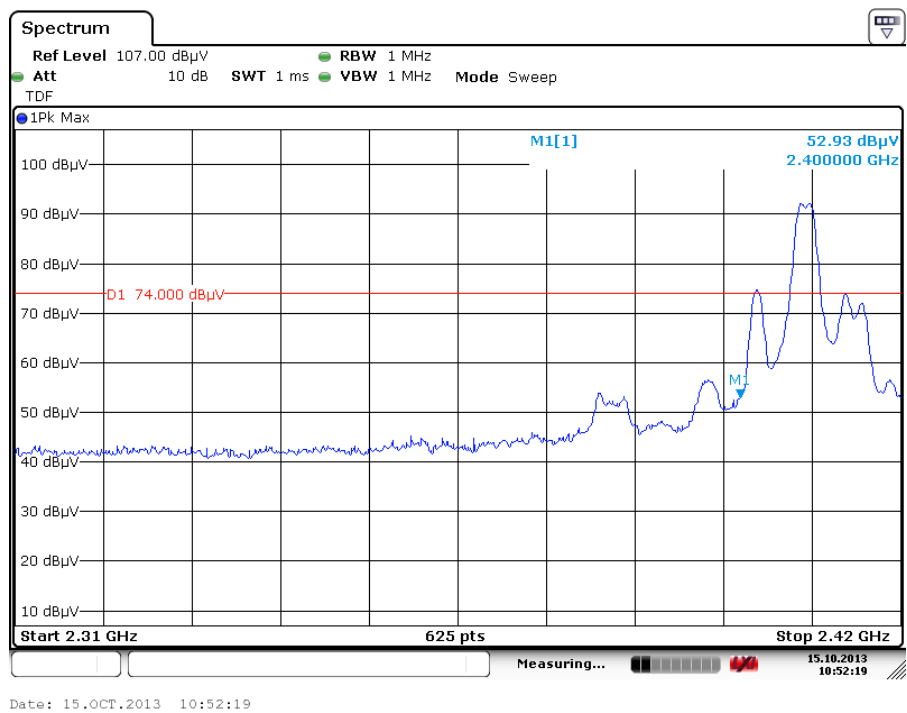


Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC 15.249_2.4-2.5G_3m PK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 10:01:56
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

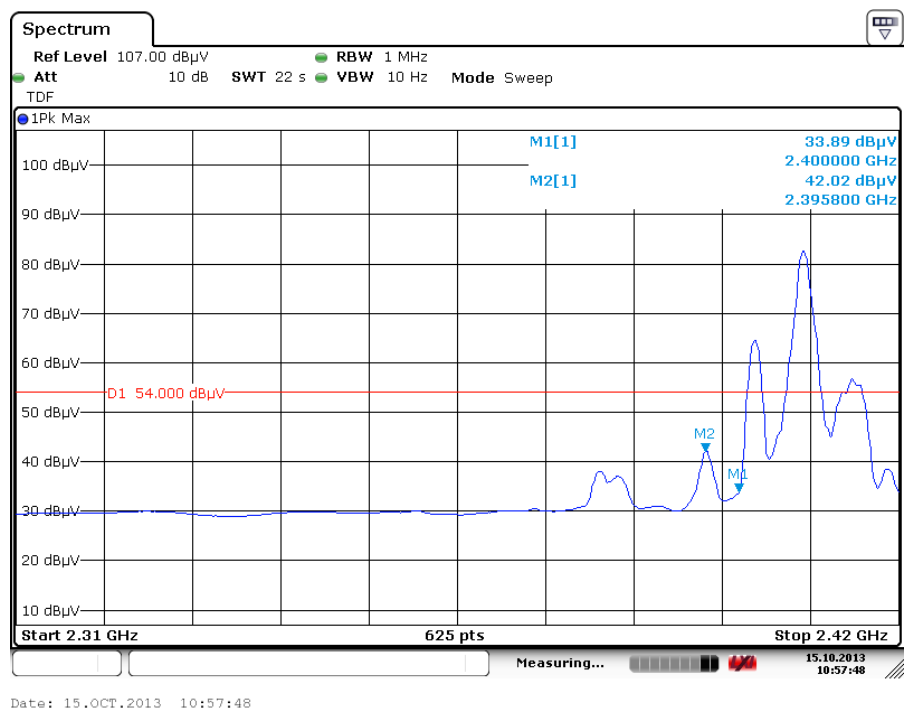
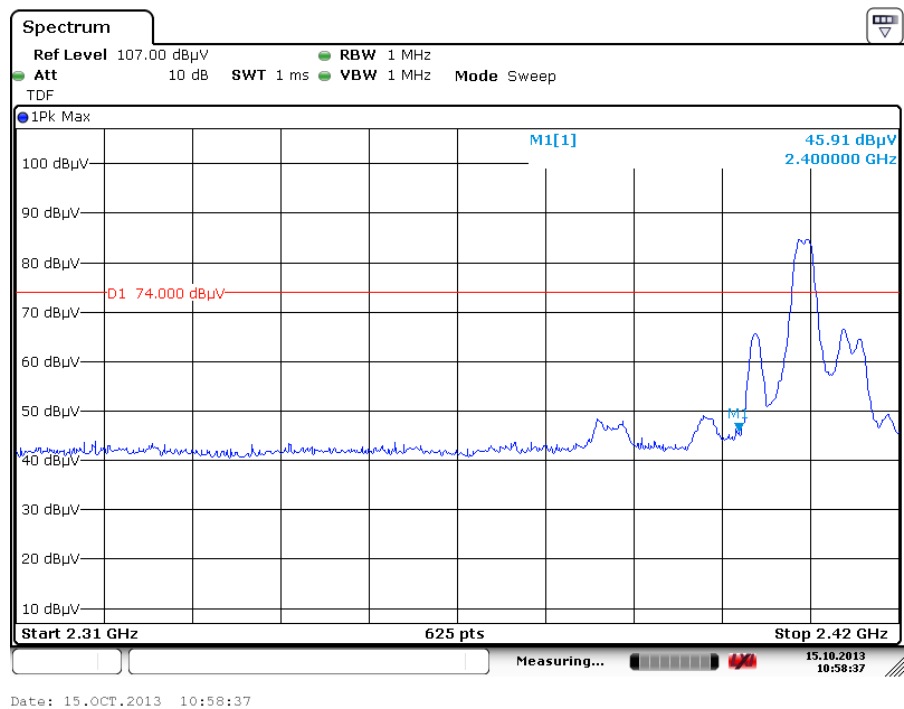
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	2474.625	-8.12	96.67	88.55	114.00	-25.45	peak	232	72	
2	2474.625	-8.12	95.49	87.37	94.00	-6.63	AVG	232	72	

Radiated Bandedge

Low Channel (Hor)

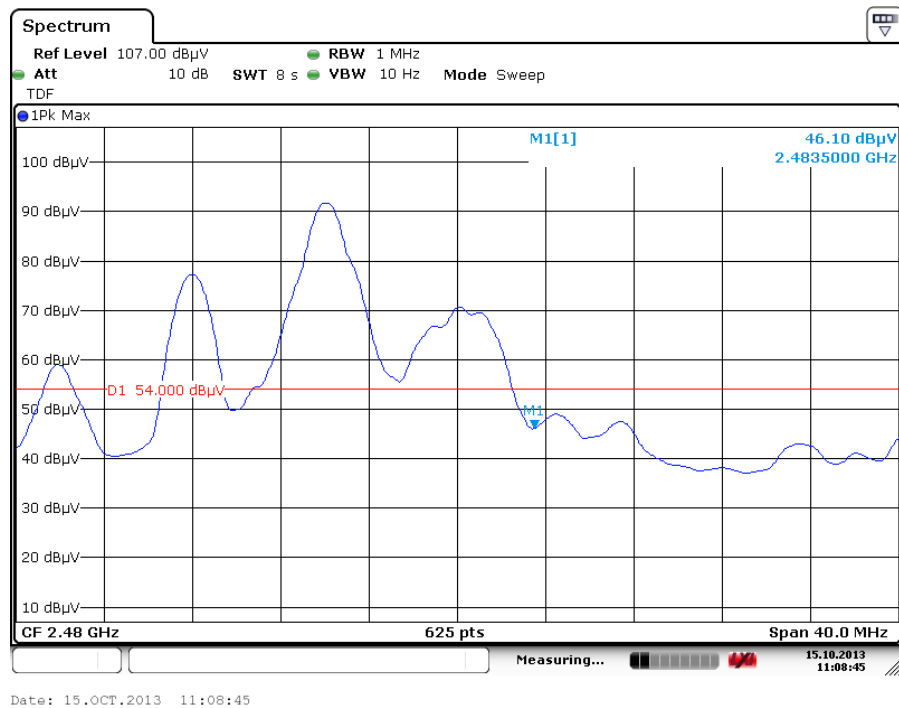
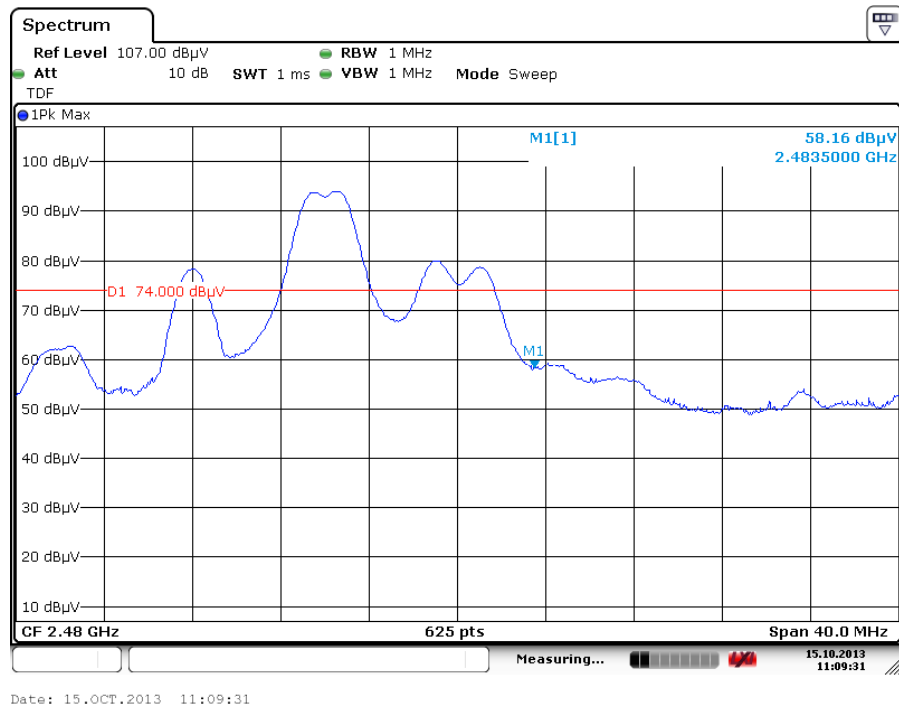


Low Channel (Ver)

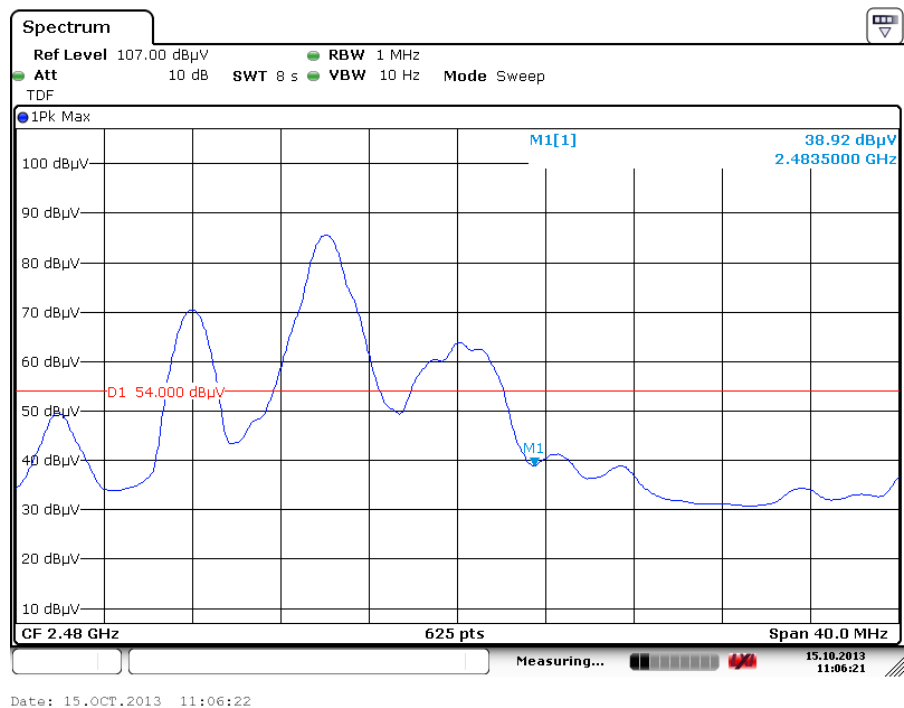
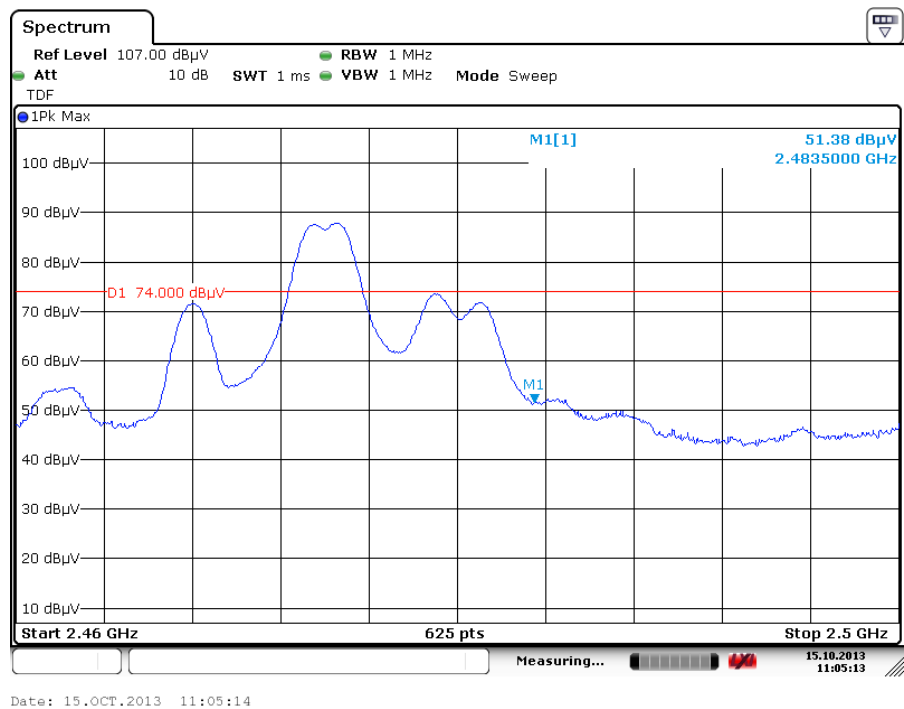


Spurious Emissions, Fundamental and Band Edges

High Channel (Hor)



High Channel (Ver)



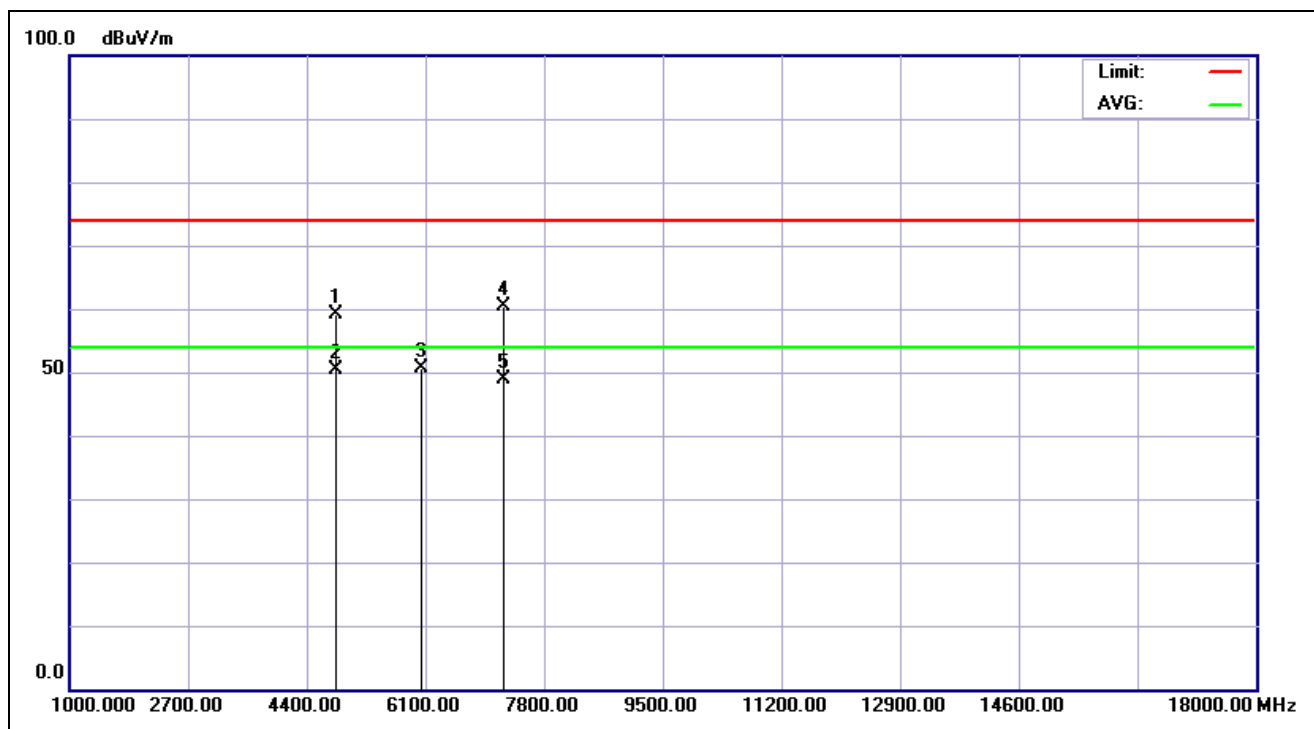
Spurious Emissions, TX Mode, 1-18G



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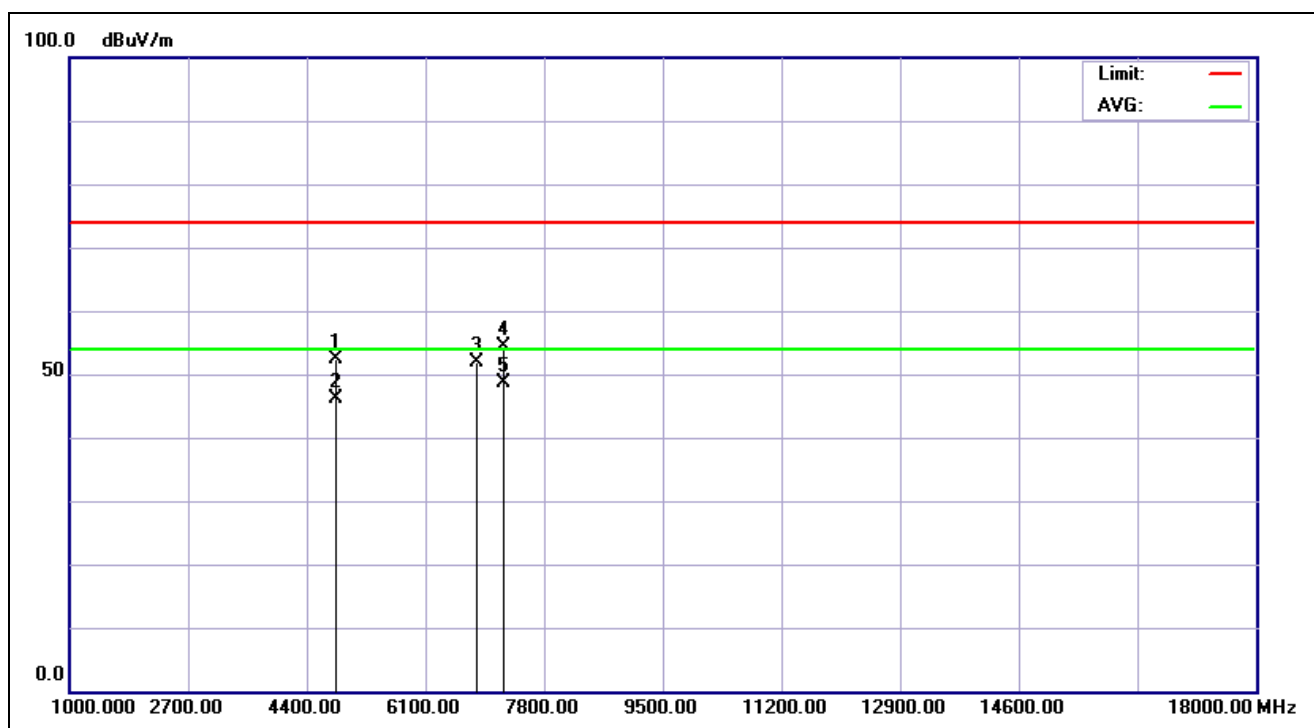
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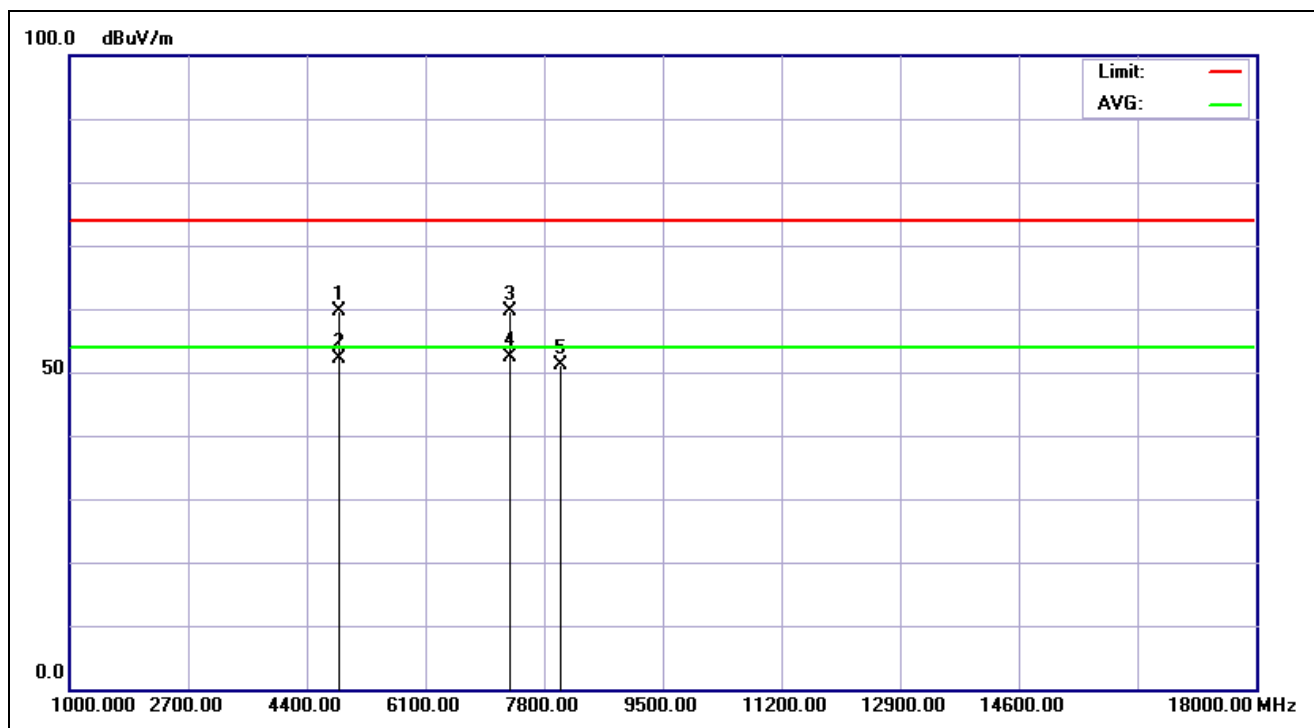
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 11:37:06
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Low CH 2408MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4814.102	-2.72	61.91	59.19	74.00	-14.81	peak	100	346	
2	4814.102	-2.72	53.21	50.49	54.00	-3.51	AVG	100	346	
3	6040.064	3.82	46.84	50.66	74.00	-23.34	peak	100	150	
4	7211.538	5.44	55.04	60.48	74.00	-13.52	peak	100	230	
5	7211.538	5.44	43.32	48.76	54.00	-5.24	AVG	100	230	



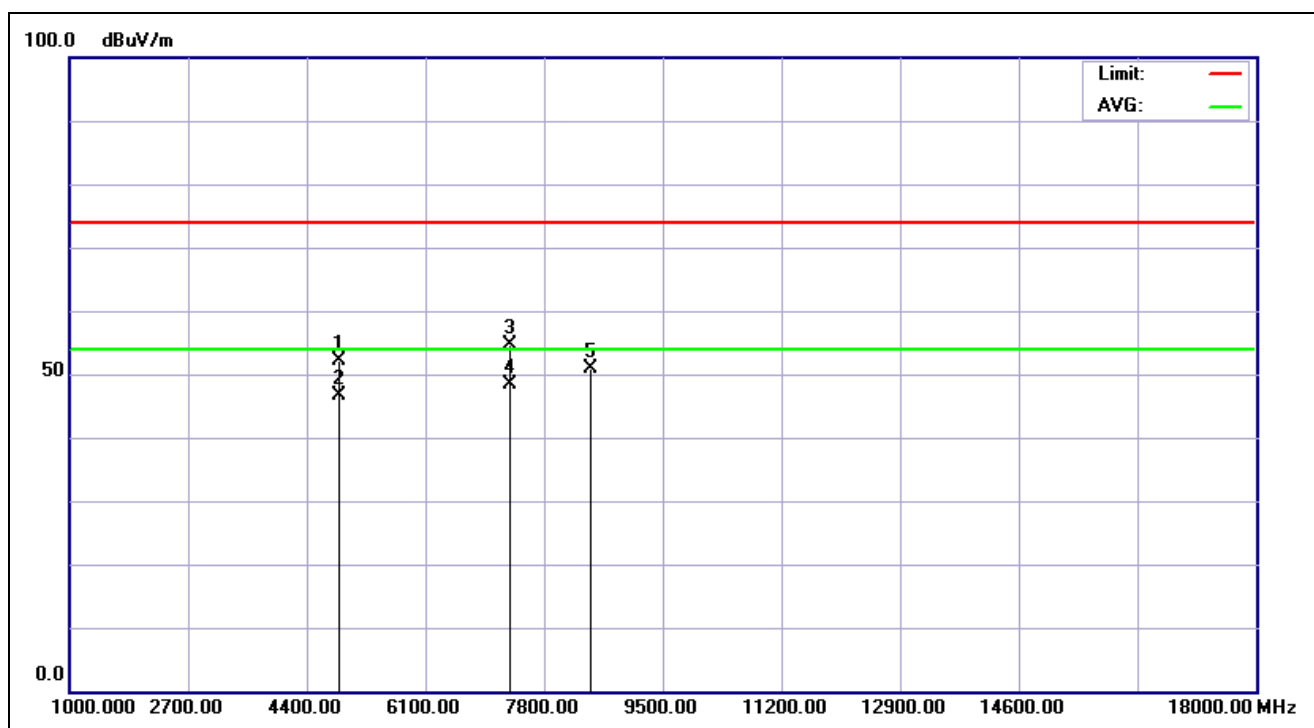
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 11:38:08
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Low CH 2408MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4814.103	-2.72	55.03	52.31	74.00	-21.69	peak	100	185	
2	4814.103	-2.72	48.73	46.01	54.00	-7.99	AVG	100	185	
3	6830.128	5.04	46.89	51.93	74.00	-22.07	peak	100	13	
4	7211.538	5.44	48.90	54.34	74.00	-19.66	peak	100	61	
5	7217.202	5.45	43.30	48.75	54.00	-5.25	AVG	100	61	



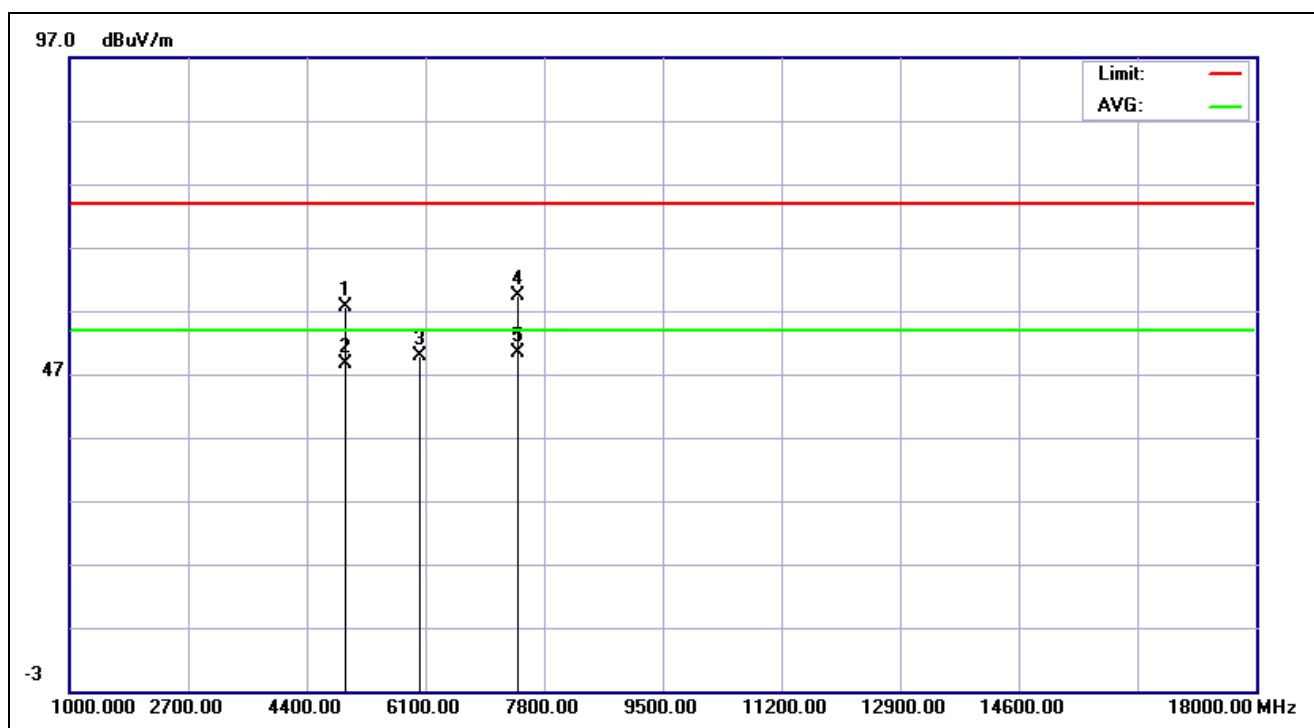
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 11:56:18
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4868.590	-2.57	62.30	59.73	74.00	-14.27	peak	100	352	
2	4868.590	-2.57	54.63	52.06	54.00	-1.94	AVG	100	352	
3	7320.513	5.74	53.99	59.73	74.00	-14.27	peak	100	224	
4	7320.513	5.74	46.52	52.26	54.00	-1.74	AVG	100	224	
5	8028.846	6.01	45.17	51.18	74.00	-22.82	peak	100	310	



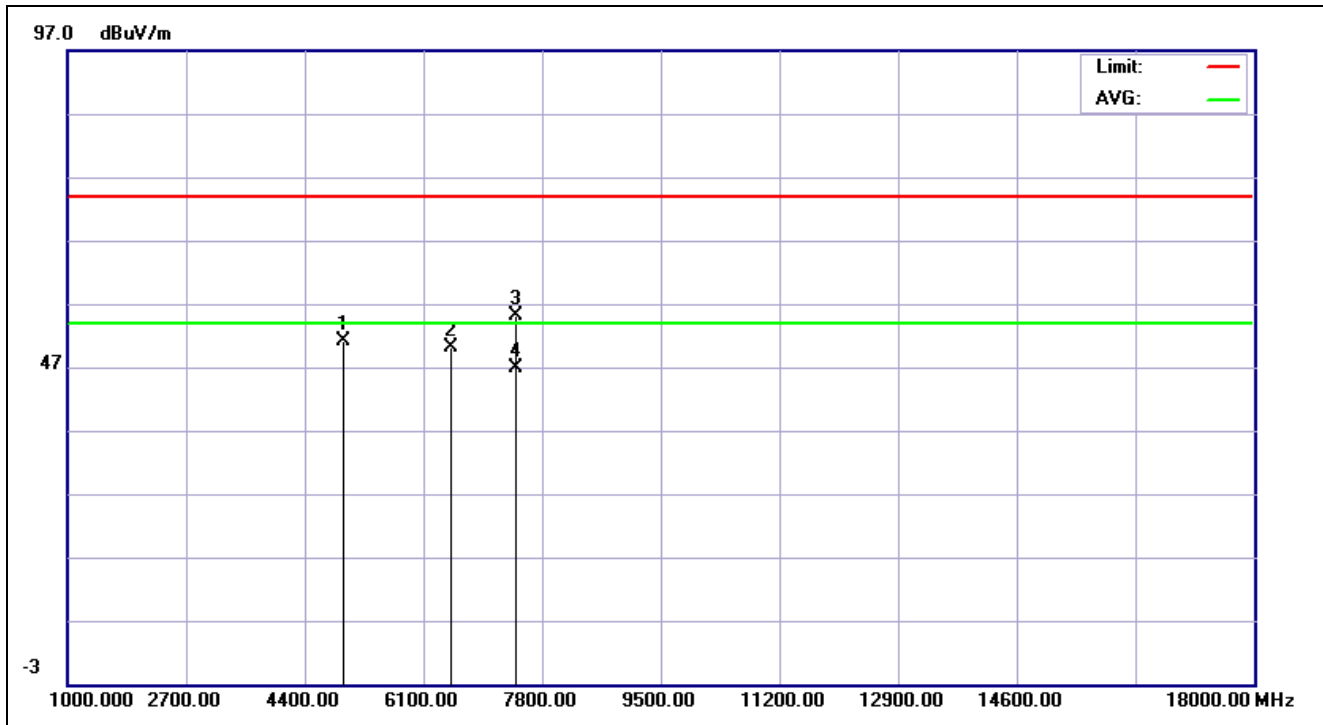
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Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 11:57:20
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4868.590	-2.57	54.59	52.02	74.00	-21.98	peak	100	165	
2	4868.590	-2.57	49.21	46.64	54.00	-7.36	AVG	100	165	
3	7320.513	5.74	48.83	54.57	74.00	-19.43	peak	100	53	
4	7320.513	5.74	42.70	48.44	54.00	-5.56	AVG	100	53	
5	8464.744	6.42	44.51	50.93	74.00	-23.07	peak	100	271	



Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 11:19:50
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4950.321	-2.36	60.09	57.73	74.00	-16.27	peak	100	354	
2	4950.321	-2.36	51.03	48.67	54.00	-5.33	AVG	100	354	
3	6012.821	3.72	46.21	49.93	74.00	-24.07	peak	100	360	
4	7429.487	6.05	53.22	59.27	74.00	-14.73	peak	100	38	
5	7429.487	6.05	44.40	50.45	54.00	-3.55	AVG	100	38	



Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 11:27:17
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	4950.320	-2.36	53.53	51.17	74.00	-22.83	peak	100	178	
2	6503.205	5.43	44.73	50.16	74.00	-23.84	peak	100	195	
3	7429.487	6.05	49.00	55.05	74.00	-18.95	peak	100	40	
4	7429.487	6.05	40.85	46.90	54.00	-7.10	AVG	100	40	

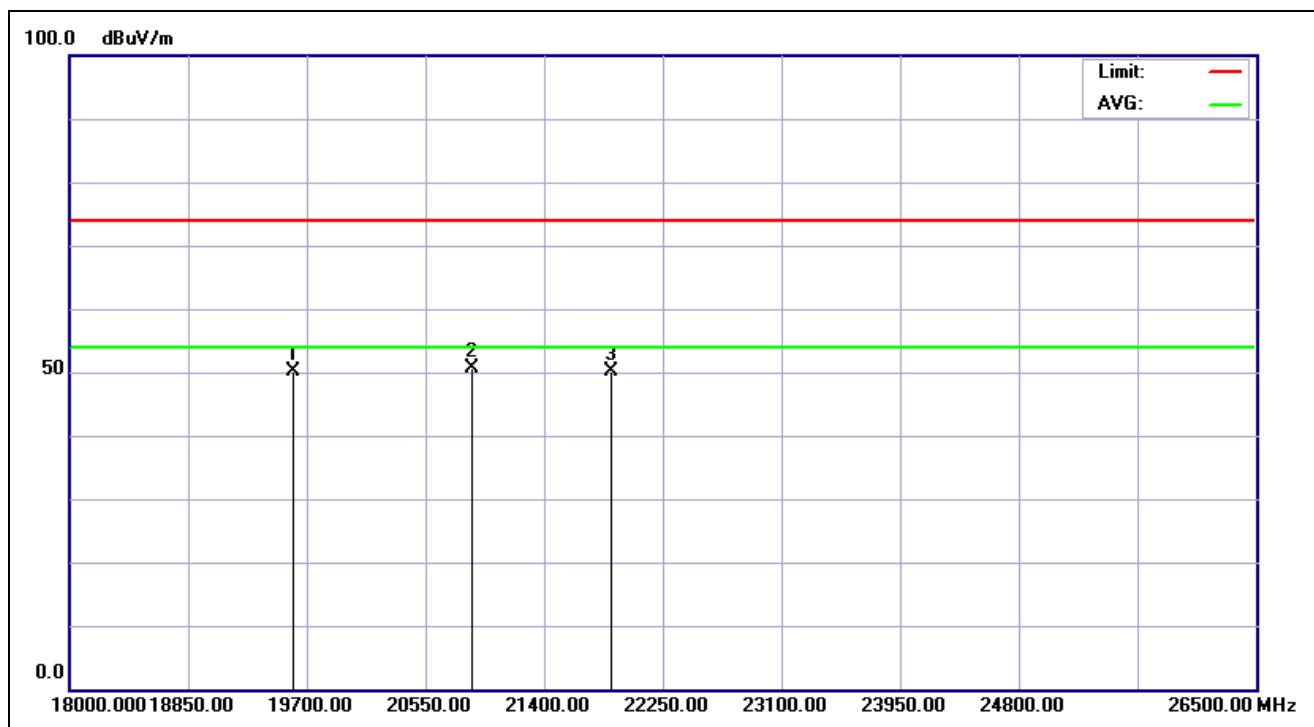
Spurious Emissions, TX Mode, 18-26G



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Service No.: NS-WLM1451-SV 20131015

Test Distance: 3m

Test Standard: FCC above 1G PEAK

Ant. Polarization: Horizontal

Test item: Radiation Emission

Test Time: 2013/10/15 13:17:05

Applicant: Acrox

Test Rating: Battery 1.5V

Product: 2.4GHz mouse

Temp.(°C)/Hum.(%): 22(°C)/57%

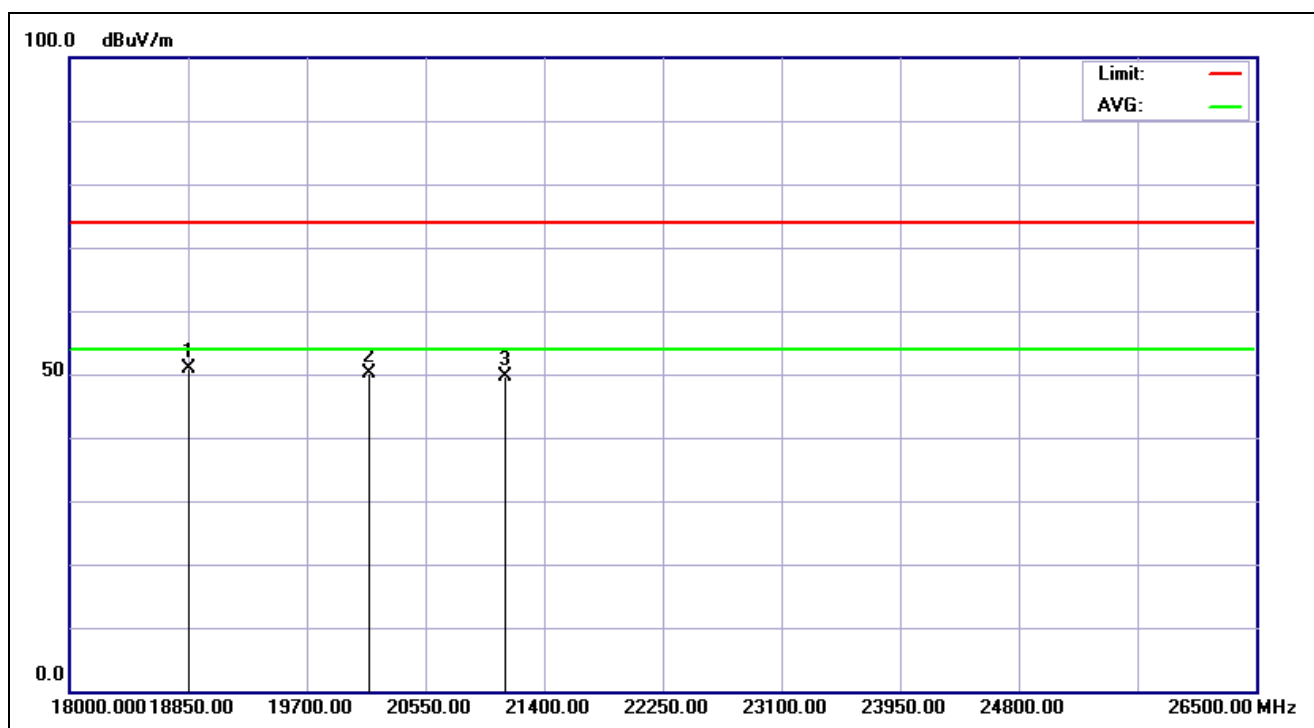
Model No.: NS-WLM1451-SV

Test Engineer: Webber Chung

Test Mode: Low CH 2408MHz

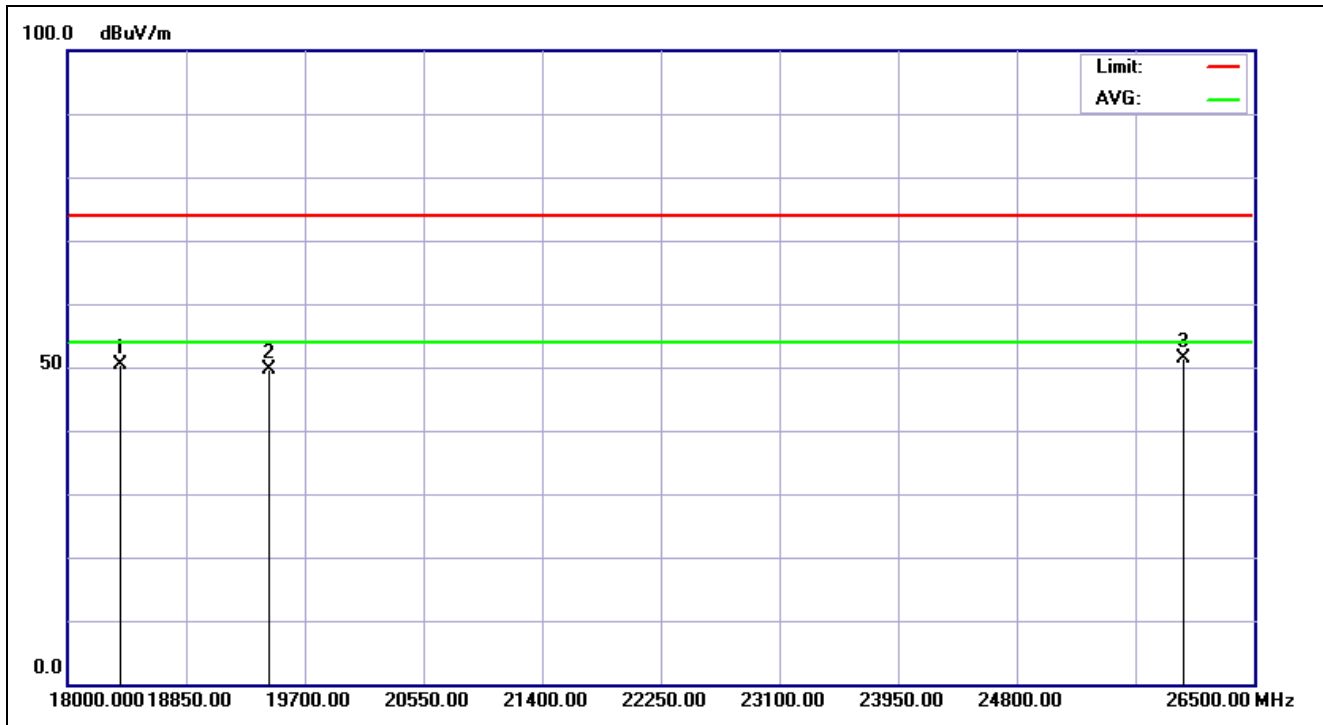
Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	19607.372	28.97	21.15	50.12	74.00	-23.88	peak	100	278	
2	20887.821	29.58	21.14	50.72	74.00	-23.28	peak	100	22	
3	21882.212	29.41	20.78	50.19	74.00	-23.81	peak	100	268	



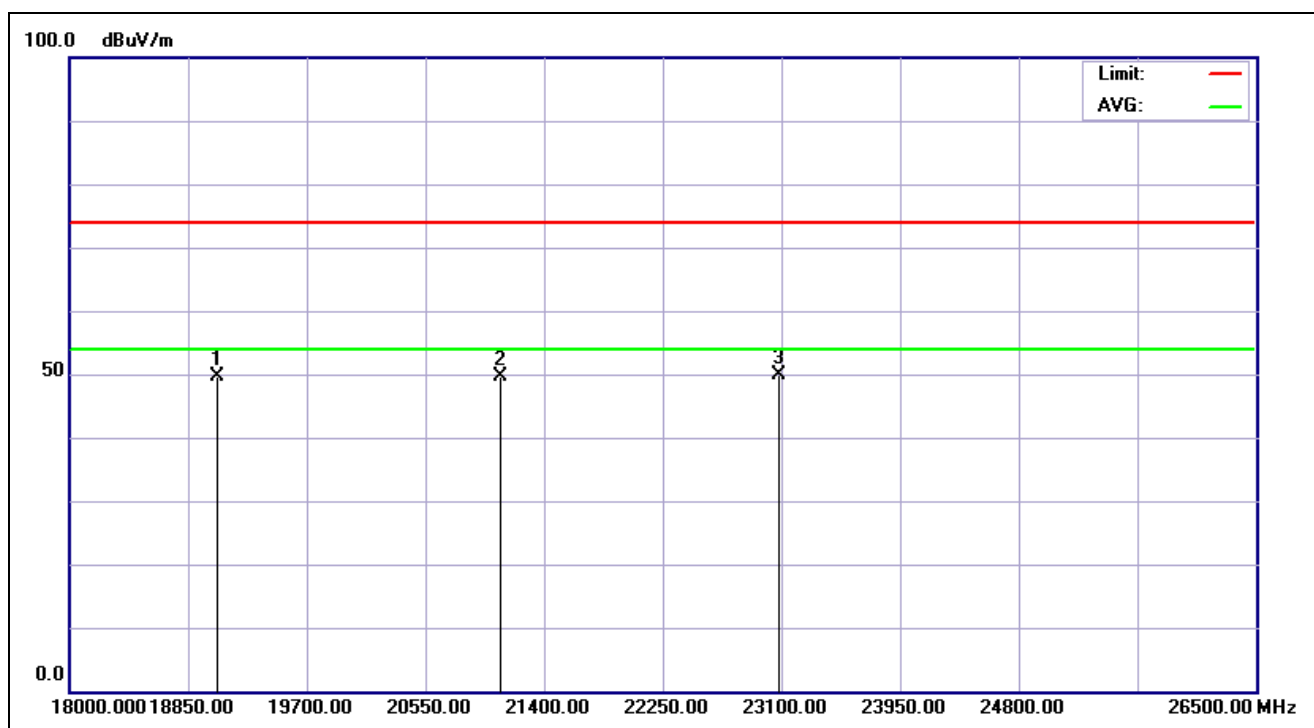
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 13:18:07
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%)	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Low CH 2408MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	18858.173	29.54	21.40	50.94	74.00	-23.06	peak	100	341	
2	20152.244	29.39	20.62	50.01	74.00	-23.99	peak	100	282	
3	21119.391	29.54	20.10	49.64	74.00	-24.36	peak	100	317	



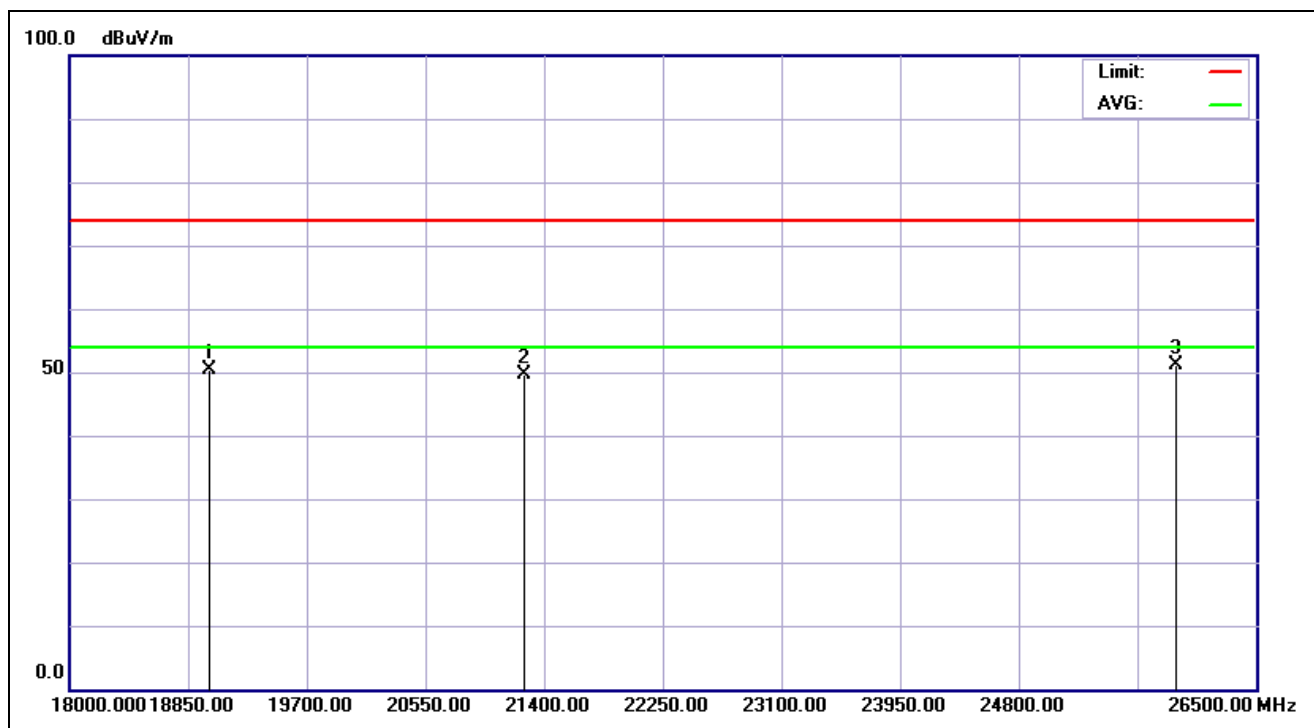
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 13:22:48
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	18381.410	28.49	21.88	50.37	74.00	-23.63	peak	100	358	
2	19443.910	28.99	20.67	49.66	74.00	-24.34	peak	100	115	
3	25995.994	32.29	18.98	51.27	74.00	-22.73	peak	100	229	



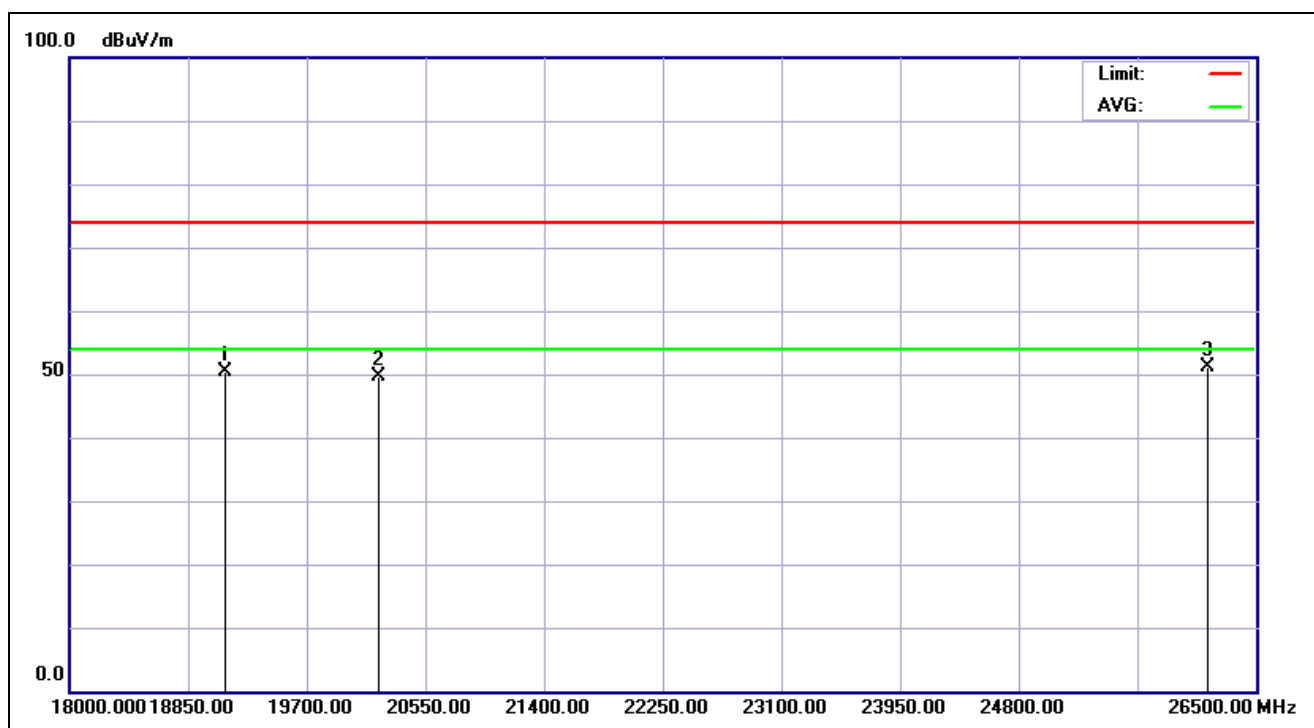
Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 13:23:50
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Mid CH 2440MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	19062.500	29.84	19.88	49.72	74.00	-24.28	peak	100	49	
2	21092.147	29.55	20.00	49.55	74.00	-24.45	peak	100	307	
3	23080.929	30.25	19.68	49.93	74.00	-24.07	peak	100	322	



Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2013/10/15 13:27:58
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	19008.013	29.96	20.48	50.44	74.00	-23.56	peak	100	86	
2	21255.609	29.51	20.23	49.74	74.00	-24.26	peak	100	224	
3	25927.885	32.08	19.02	51.10	74.00	-22.90	peak	100	312	



Service No.:	NS-WLM1451-SV 20131015	Test Distance:	3m
Test Standard:	FCC above 1G PEAK	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2013/10/15 13:29:00
Applicant:	Acrox	Test Rating:	Battery 1.5V
Product:	2.4GHz mouse	Temp.(°C)/Hum.(%):	22(°C)/57%
Model No.:	NS-WLM1451-SV	Test Engineer:	Webber Chung
Test Mode:	Hi CH 2474MHz		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	19116.987	29.72	20.60	50.32	74.00	-23.68	peak	100	248	
2	20220.353	29.43	20.22	49.65	74.00	-24.35	peak	100	328	
3	26159.455	32.05	18.99	51.04	74.00	-22.96	peak	100	251	

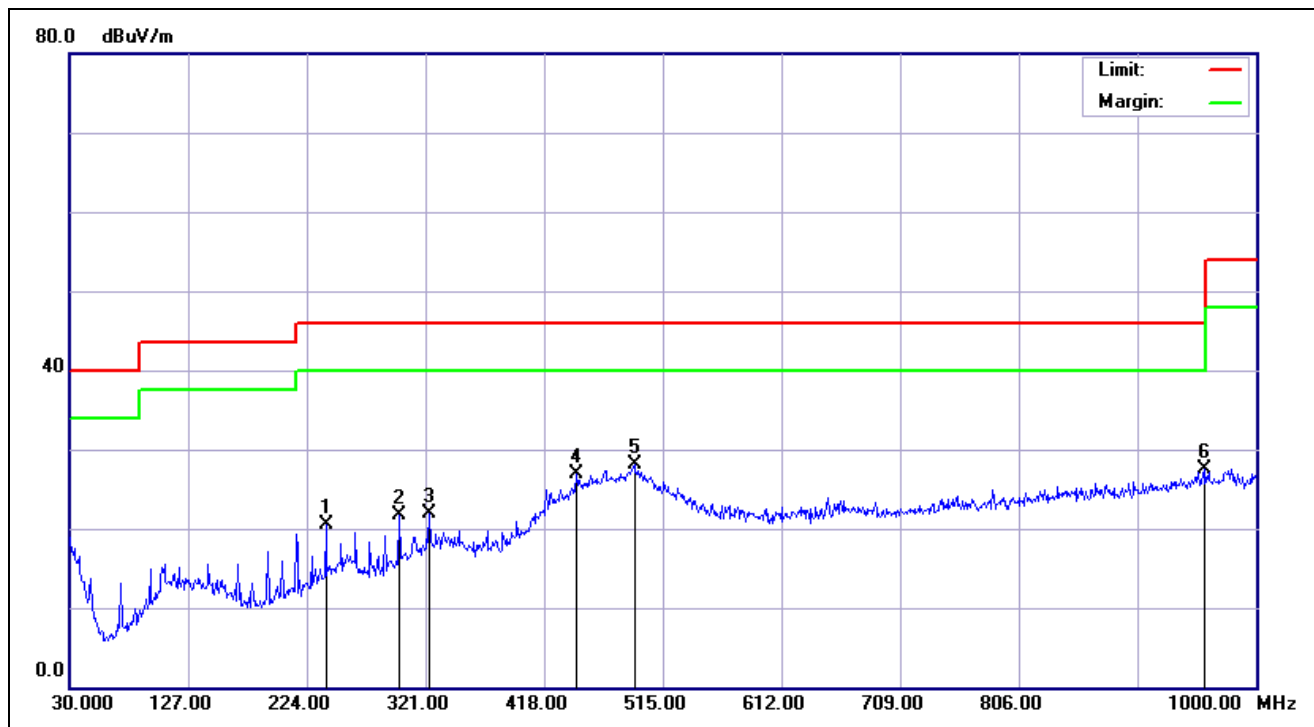
Spurious Emissions, TX Mode, 30M-1G



TUV Taiwan

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Service No.: NS-WLM1451-SV 20131015

Test Distance: 3m

Test Standard: FCC Class B 3M Radiation

Ant. Polarization: Horizontal

Test item: Radiation Emission

Test Time: 2013/10/15 09:18:11

Applicant: Acrox

Test Rating: Battery 1.5V

Product: 2.4GHz mouse

Temp.(°C)/Hum.(%): 22(°C)/57%

Model No.: NS-WLM1451-SV

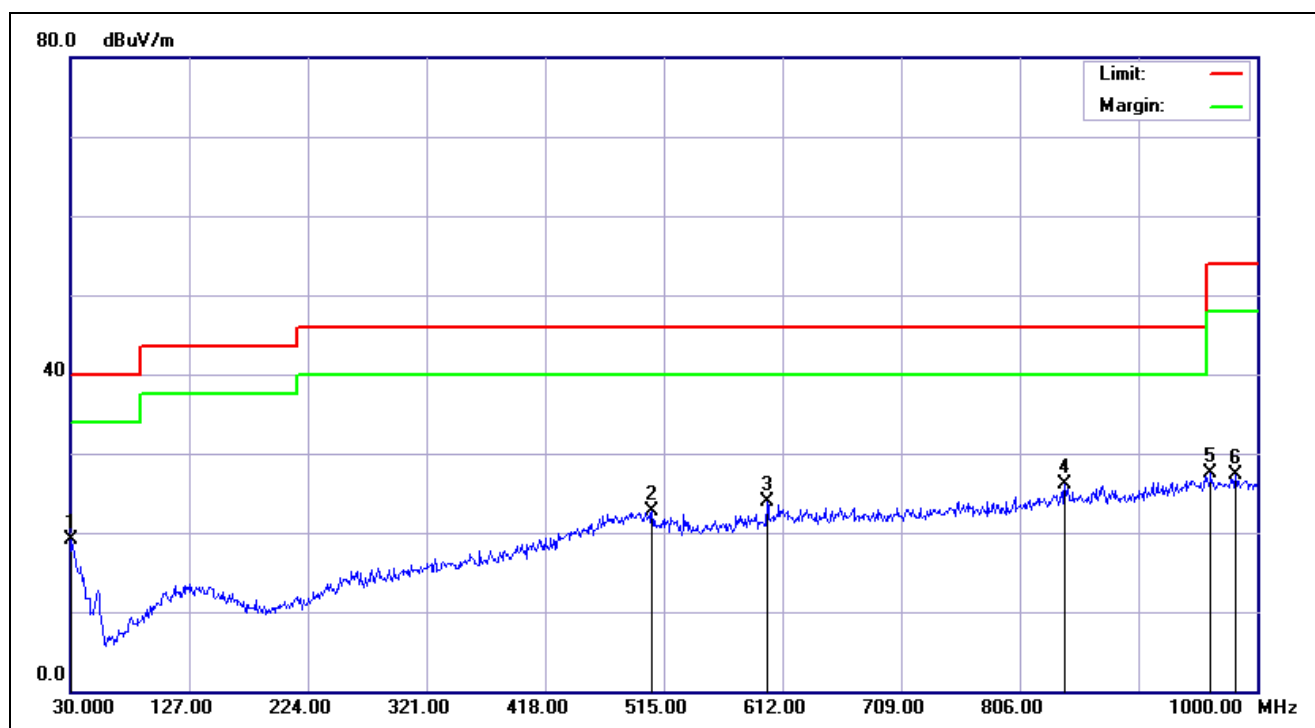
Test Engineer: Webber Chung

Test Mode: Middle CH 2440MHz

Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	239.5200	-12.74	33.18	20.44	46.00	-25.56	QP	200	360	
2	299.6600	-10.40	32.19	21.79	46.00	-24.21	QP	200	360	
3	323.9100	-9.97	31.80	21.83	46.00	-24.17	QP	200	360	
4	444.1899	-8.02	34.88	26.86	46.00	-19.14	QP	200	328	
5	491.7200	-7.41	35.52	28.11	46.00	-17.89	QP	200	131	
6	958.2899	-0.58	28.00	27.42	46.00	-18.58	QP	300	197	

Spurious Emissions, TX Mode, 30M-1G



Service No.: NS-WLM1451-SV 20131015

Test Distance: 3m

Test Standard: FCC Class B 3M Radiation

Ant. Polarization: Vertical

Test item: Radiation Emission

Test Time: 2013/10/15 09:23:06

Applicant: Acrox

Test Rating: Battery 1.5V

Product: 2.4GHz mouse

Temp.(°C)/Hum.(%): 22(°C)/57%

Model No.: NS-WLM1451-SV

Test Engineer: Webber Chung

Test Mode: Middle CH 2440MHz

Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	30.0000	-6.05	25.09	19.04	40.00	-20.96	QP	100	360	
2	505.3000	-7.26	29.91	22.65	46.00	-23.35	QP	200	261	
3	599.3899	-5.98	29.90	23.92	46.00	-22.08	QP	100	173	
4	842.8600	-2.63	28.74	26.11	46.00	-19.89	QP	400	38	
5	962.1699	-0.58	27.99	27.41	54.00	-26.59	QP	400	91	
6	982.5399	-0.61	27.84	27.23	54.00	-26.77	QP	400	168	