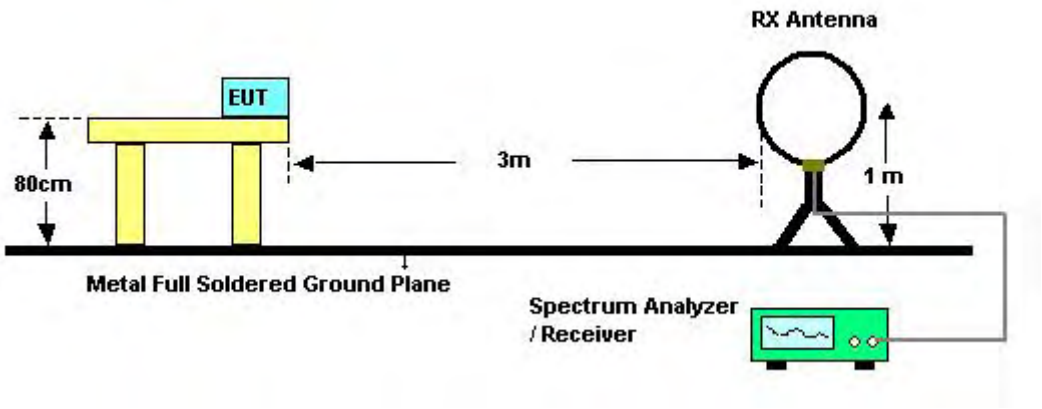
4.5.3. Test Procedures

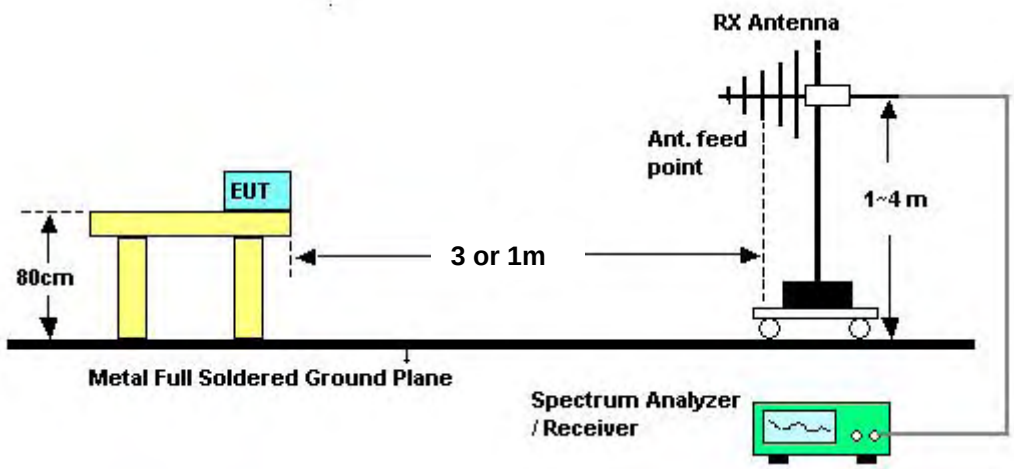
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g Channel 6 Ant. A + Ant. B

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

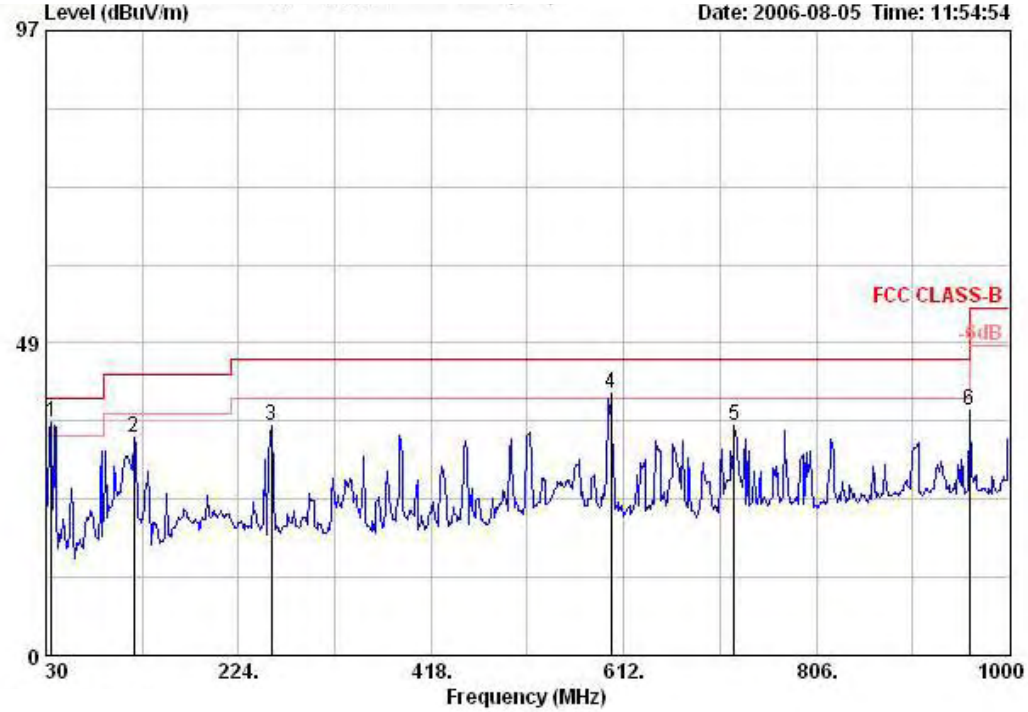
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.5.8. Results of Radiated Emissions (30MHz~1GHz)

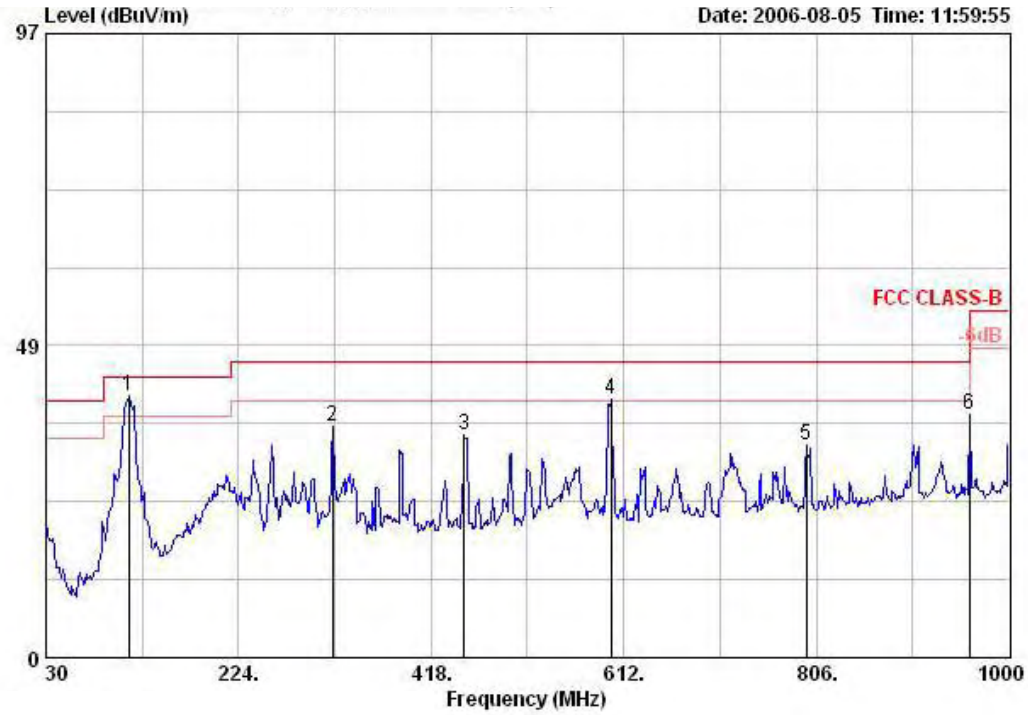
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g Channel 6 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	35.820	36.22	-3.78	40.00	16.50	0.51	29.78	48.99	Peak	---	---
2	118.270	33.93	-9.57	43.50	12.75	0.88	30.04	50.34	Peak	---	---
3	256.980	35.77	-10.23	46.00	13.67	1.26	30.10	50.94	Peak	---	---
4 !	599.390	40.63	-5.37	46.00	18.99	1.92	30.88	50.59	Peak	---	---
5	723.550	35.64	-10.36	46.00	19.89	2.14	30.25	43.86	Peak	---	---
6	960.230	38.18	-15.82	54.00	22.06	2.51	28.98	42.59	Peak	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	113.420	40.58	-2.92	43.50	12.61	0.86	30.06	57.17	Peak	---	---
2	319.060	35.86	-10.14	46.00	14.44	1.41	30.39	50.40	Peak	---	---
3	450.980	34.53	-11.47	46.00	17.21	1.68	30.47	46.11	Peak	---	---
4 !	599.390	40.19	-5.81	46.00	18.99	1.92	30.88	50.16	Peak	---	---
5	796.300	32.98	-13.02	46.00	20.65	2.25	30.12	40.20	Peak	---	---
6	960.230	37.73	-16.27	54.00	22.06	2.51	28.98	42.14	Peak	---	---

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

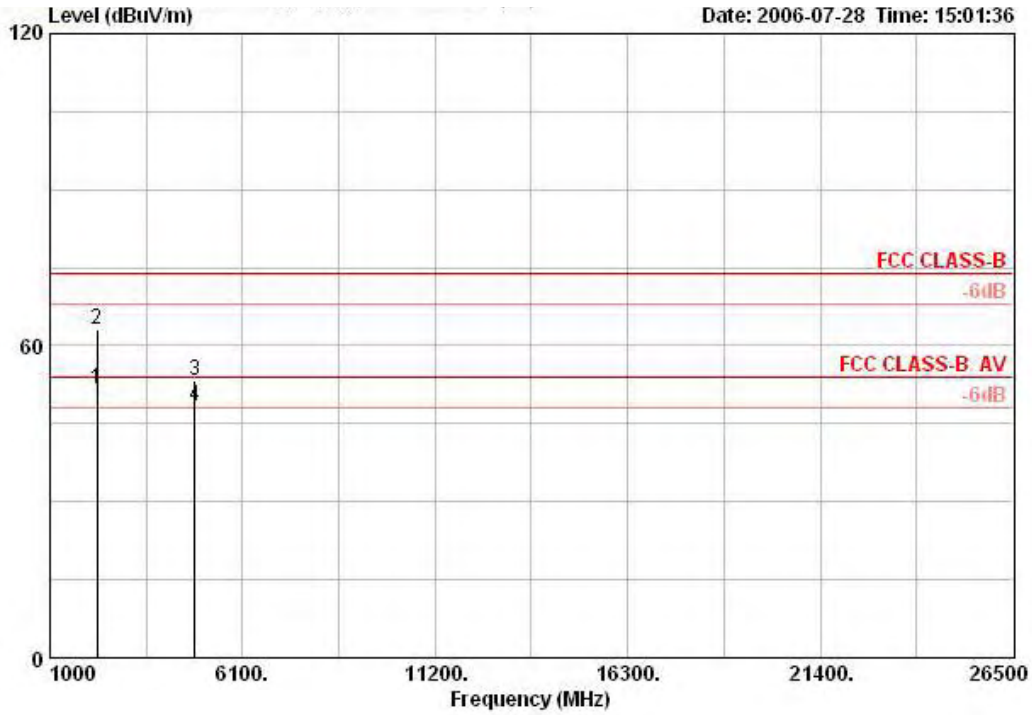
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

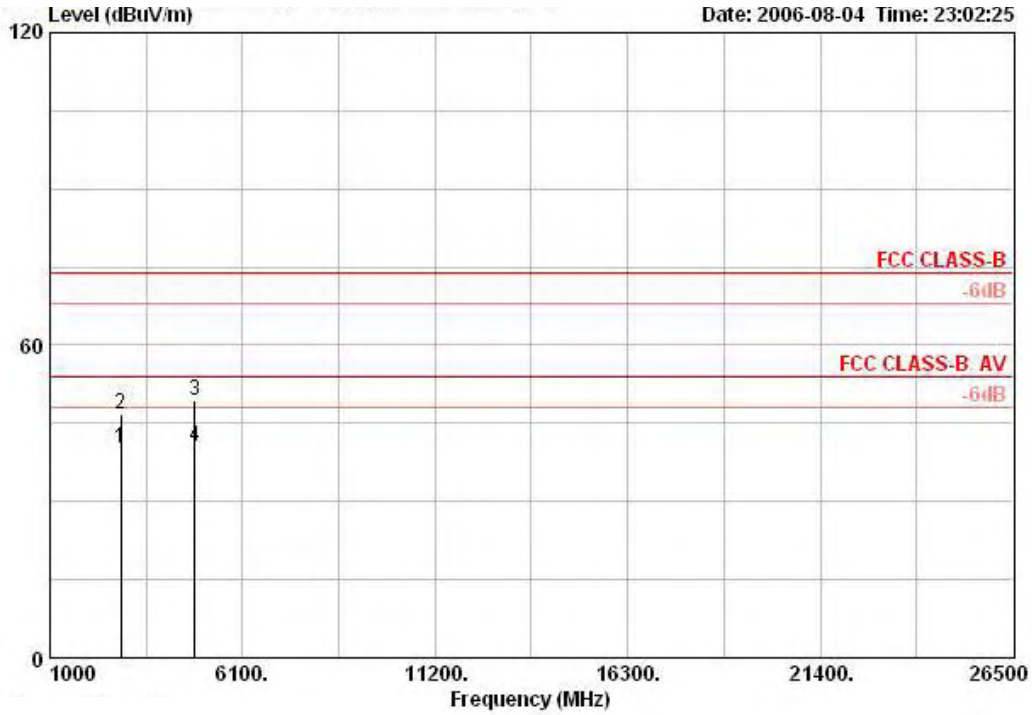
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 20MHz Channel 1 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2240.030	51.53	-2.47	54.00	27.73	2.49	33.50	54.81	AVERAGE	100	101
2	2240.390	63.08	-10.92	74.00	27.73	2.49	33.50	66.36	PEAK	100	101
3	4824.000	53.40	-20.60	74.00	33.22	4.68	33.24	48.74	PEAK	100	169
4 !	4824.050	48.54	-5.46	54.00	33.22	4.68	33.24	43.88	AVERAGE	100	169

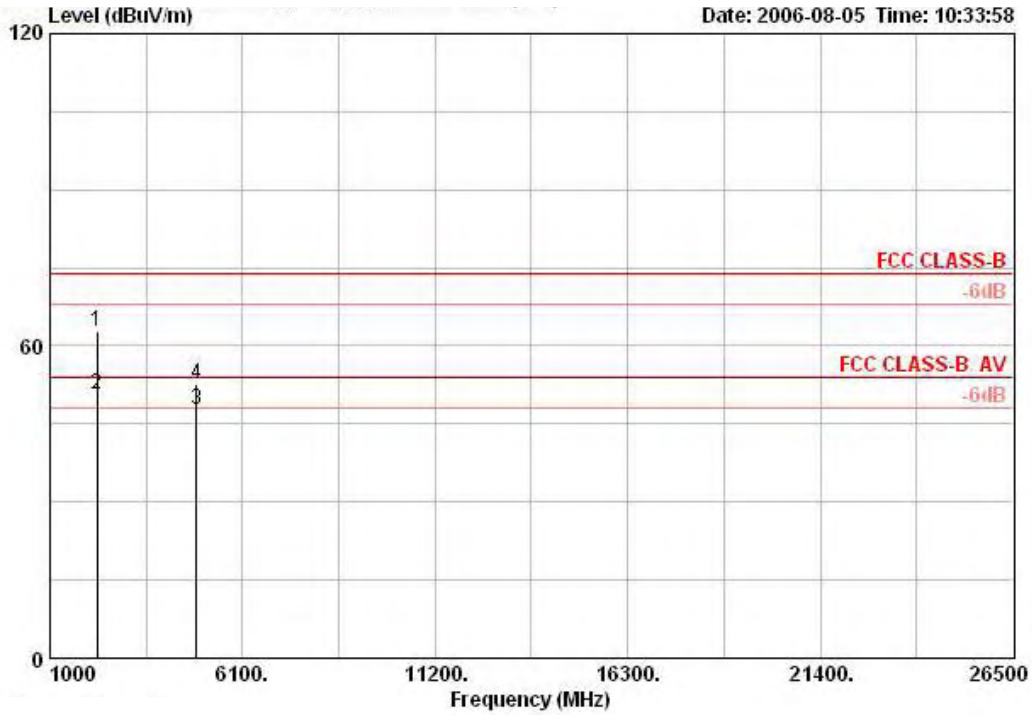
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.080	40.12	-13.88	54.00	29.78	2.78	33.66	41.21	AVERAGE	100	145
2	2880.220	46.83	-27.17	74.00	29.78	2.78	33.66	47.92	PEAK	100	145
3	4823.950	49.37	-24.63	74.00	33.22	4.68	33.24	44.71	PEAK	100	219
4	4823.970	40.61	-13.39	54.00	33.22	4.68	33.24	35.95	AVERAGE	100	219

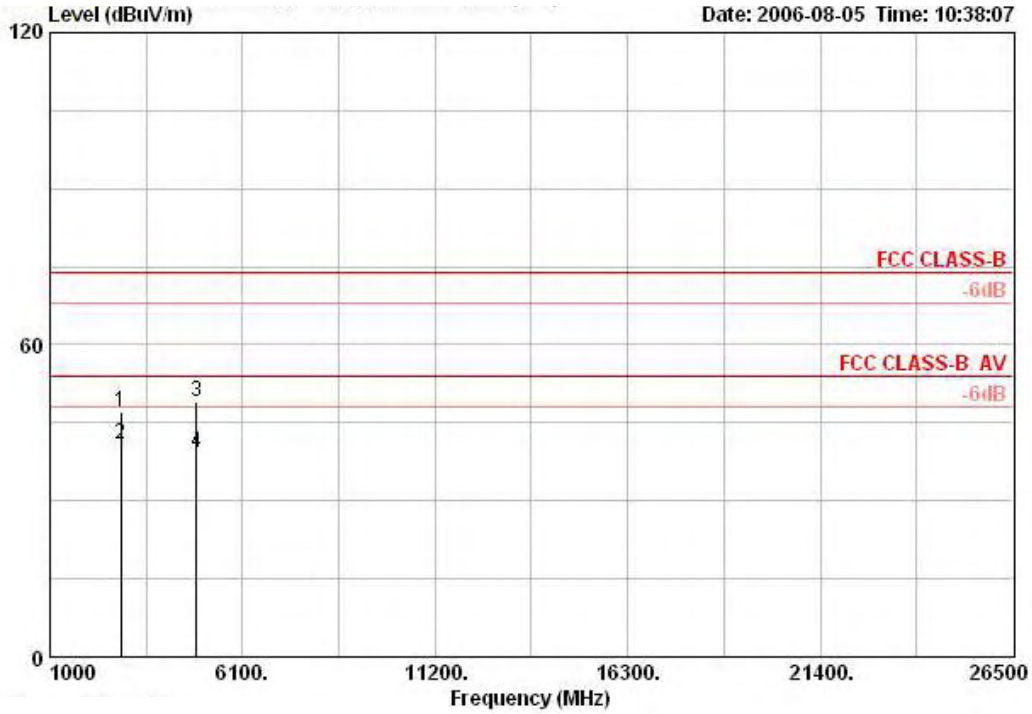
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 20MHz Channel 6 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2239.710	62.81	-11.19	74.00	27.73	2.49	33.50	66.09	PEAK	100	30
2 !	2240.100	50.62	-3.38	54.00	27.73	2.49	33.50	53.90	AVERAGE	100	30
3	4874.050	47.88	-6.12	54.00	33.33	4.69	33.23	43.08	AVERAGE	100	175
4	4874.090	52.78	-21.22	74.00	33.33	4.69	33.23	47.98	PEAK	100	175

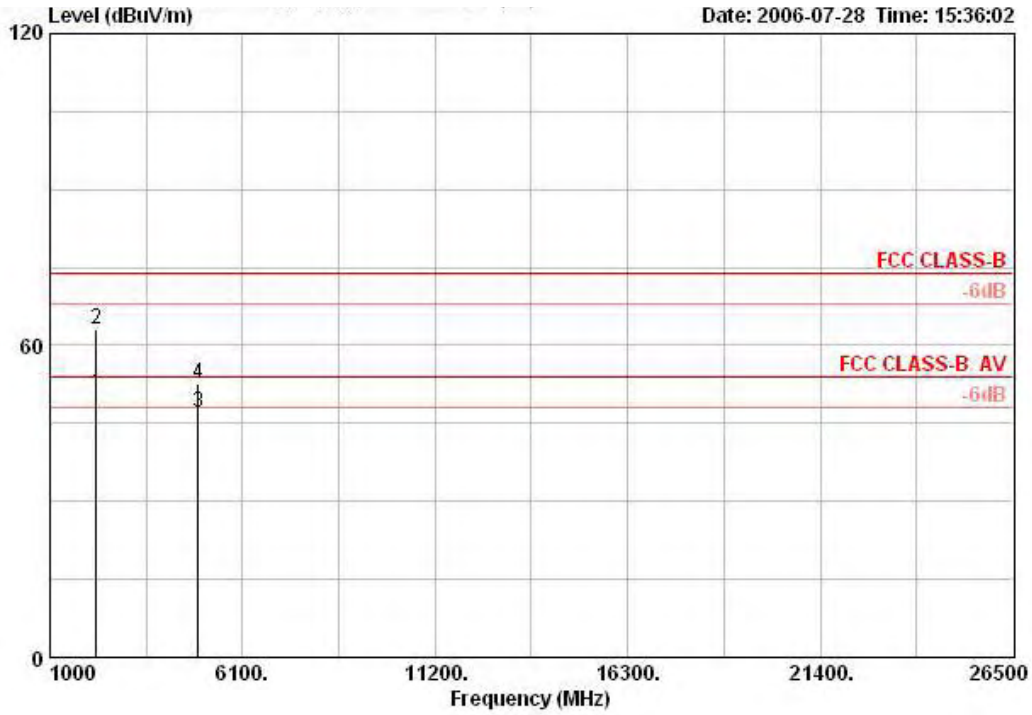
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.770	46.99	-27.01	74.00	29.78	2.78	33.66	48.09	PEAK	100	148
2	2880.100	40.99	-13.01	54.00	29.78	2.78	33.66	42.08	AVERAGE	100	148
3	4873.710	49.21	-24.79	74.00	33.33	4.69	33.23	44.40	PEAK	100	223
4	4874.120	39.28	-14.72	54.00	33.33	4.69	33.23	34.48	AVERAGE	100	223

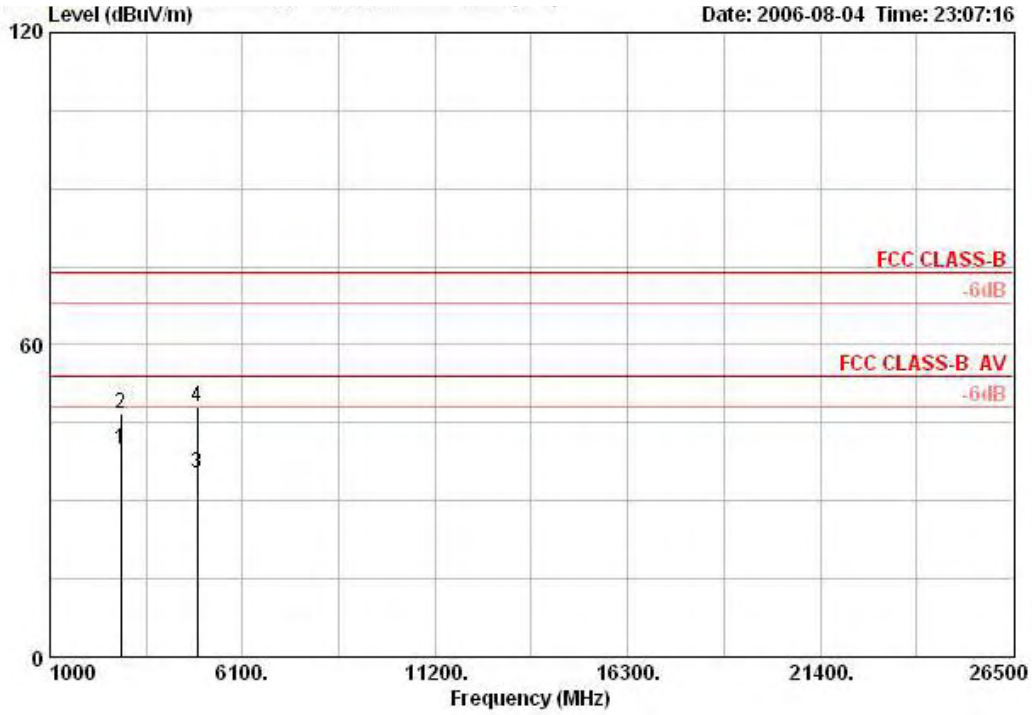
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 20MHz Channel 11 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2222.020	50.63	-3.37	54.00	27.68	2.47	33.50	53.98	AVERAGE	100	211
2	2224.160	63.19	-10.81	74.00	27.68	2.47	33.50	66.54	PEAK	100	211
3	4924.032	46.98	-7.02	54.00	33.45	4.73	33.22	42.02	AVERAGE	100	177
4	4924.072	52.78	-21.22	74.00	33.45	4.73	33.22	47.82	PEAK	100	177

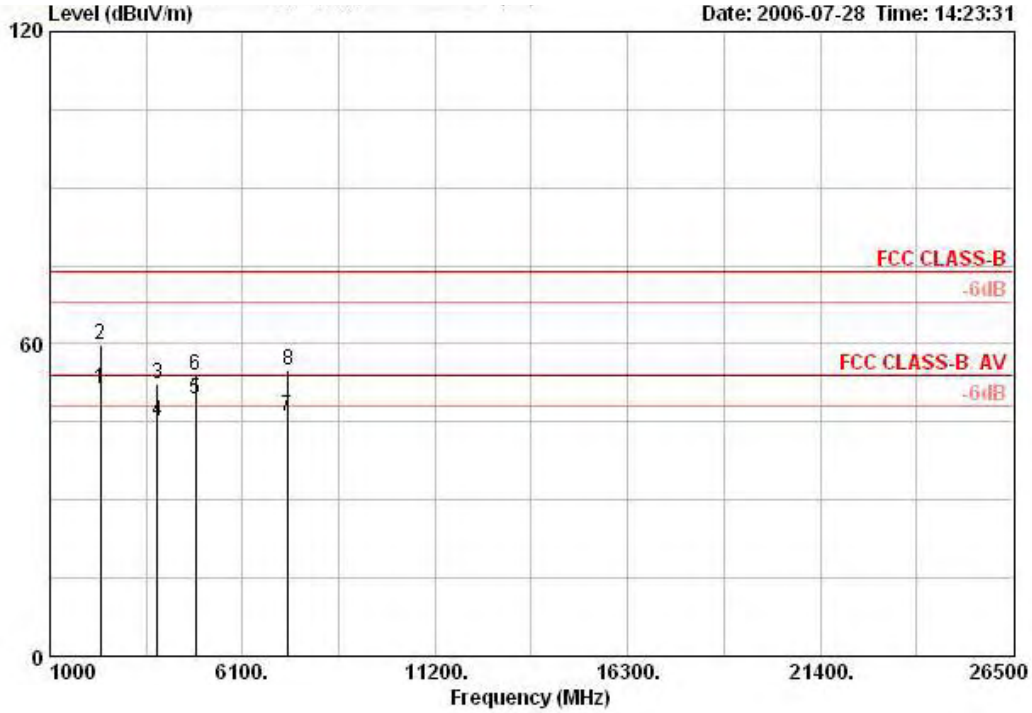
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.980	39.84	-14.16	54.00	29.78	2.78	33.66	40.94	AVERAGE	100	145
2	2880.200	46.83	-27.17	74.00	29.78	2.78	33.66	47.92	PEAK	100	145
3	4903.790	35.24	-18.76	54.00	33.41	4.71	33.22	30.34	AVERAGE	100	0
4	4906.200	48.16	-25.84	74.00	33.41	4.71	33.22	43.26	PEAK	100	0

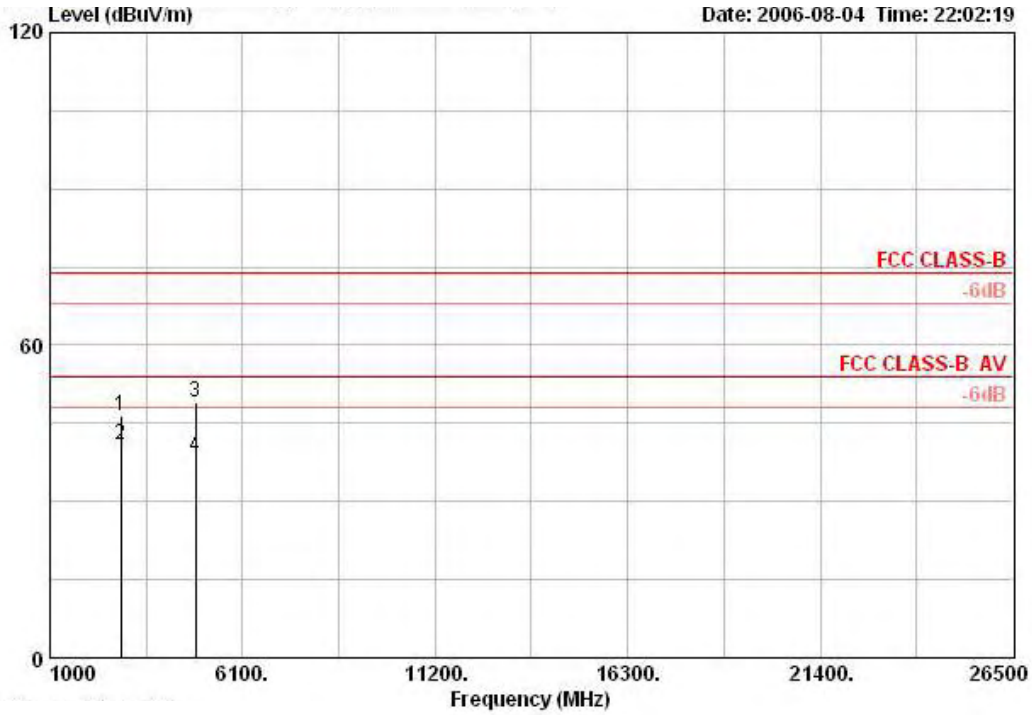
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 40MHz Channel 3(Lower) Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2347.140	51.49	-2.51	54.00	28.00	2.56	33.50	54.44	AVERAGE	100	216
2	2347.900	59.70	-14.30	74.00	28.00	2.56	33.50	62.65	PEAK	100	216
3	3840.090	52.43	-21.57	74.00	32.27	3.76	33.44	49.84	PEAK	100	202
4	3840.120	45.01	-8.99	54.00	32.27	3.76	33.44	42.42	AVERAGE	100	202
5 !	4864.010	49.40	-4.60	54.00	33.30	4.69	33.23	44.64	AVERAGE	100	168
6	4864.090	53.98	-20.02	74.00	33.30	4.69	33.23	49.22	PEAK	100	168
7	7295.240	45.95	-8.05	54.00	36.20	5.35	33.42	37.81	AVERAGE	8995	215
8	7296.880	54.82	-19.18	74.00	36.20	5.35	33.42	46.68	PEAK	100	215

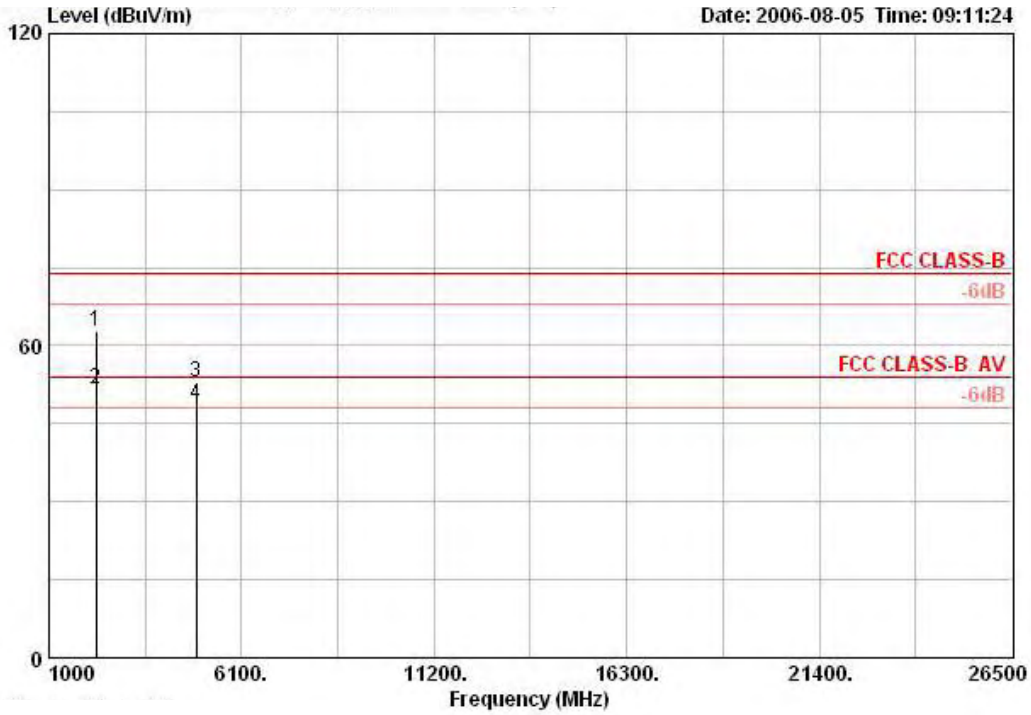
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.750	46.43	-27.57	74.00	29.78	2.78	33.66	47.52	PEAK	100	143
2	2880.050	40.78	-13.22	54.00	29.78	2.78	33.66	41.87	AVERAGE	100	143
3	4863.890	48.90	-25.10	74.00	33.30	4.69	33.23	44.14	PEAK	100	220
4	4863.910	38.74	-15.26	54.00	33.30	4.69	33.23	33.98	AVERAGE	100	220

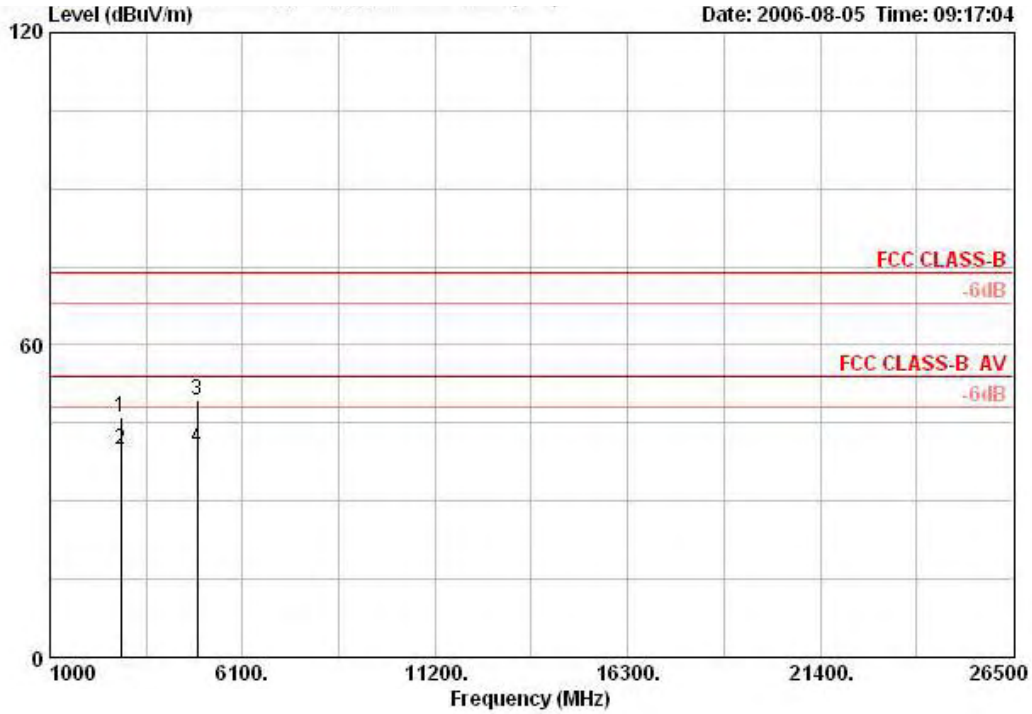
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 40MHz Channel 6(Lower) Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2239.890	62.81	-11.19	74.00	27.73	2.49	33.50	66.09	PEAK	100	259
2 @	2240.020	51.74	-2.26	54.00	27.73	2.49	33.50	55.02	AVERAGE	100	259
3	4893.960	52.81	-21.19	74.00	33.37	4.71	33.22	47.95	PEAK	100	171
4 !	4894.080	48.84	-5.16	54.00	33.37	4.71	33.22	43.98	AVERAGE	100	171

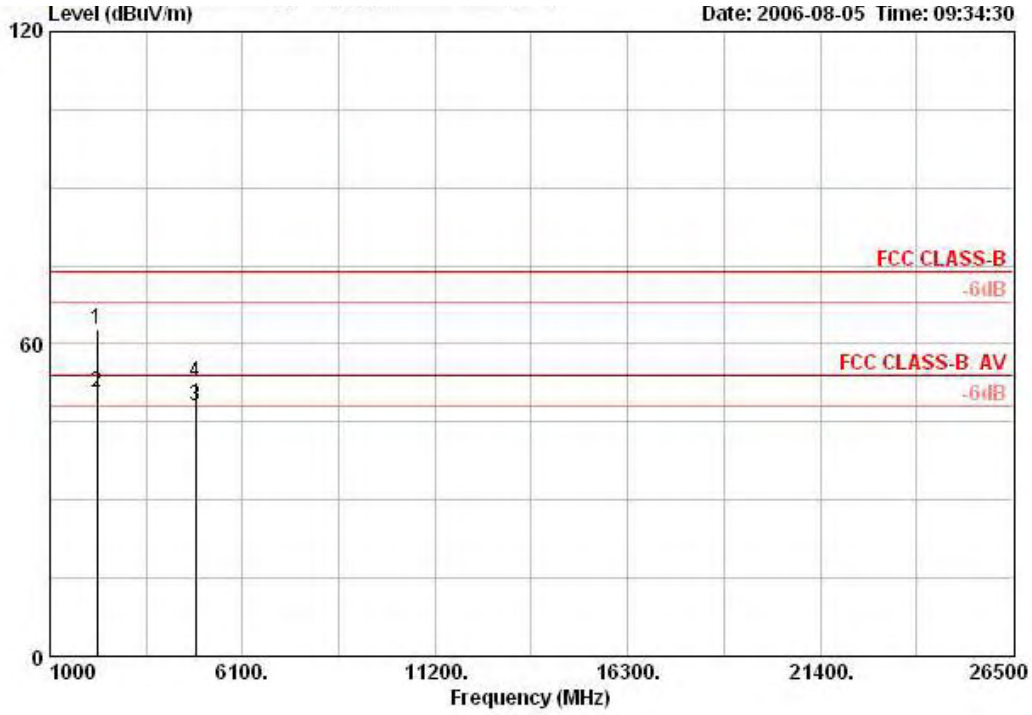
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.840	45.98	-28.02	74.00	29.78	2.78	33.66	47.07	PEAK	100	145
2	2880.040	40.05	-13.95	54.00	29.78	2.78	33.66	41.14	AVERAGE	100	145
3	4893.960	49.33	-24.67	74.00	33.37	4.71	33.22	44.47	PEAK	100	223
4	4894.040	40.19	-13.81	54.00	33.37	4.71	33.22	35.32	AVERAGE	100	223

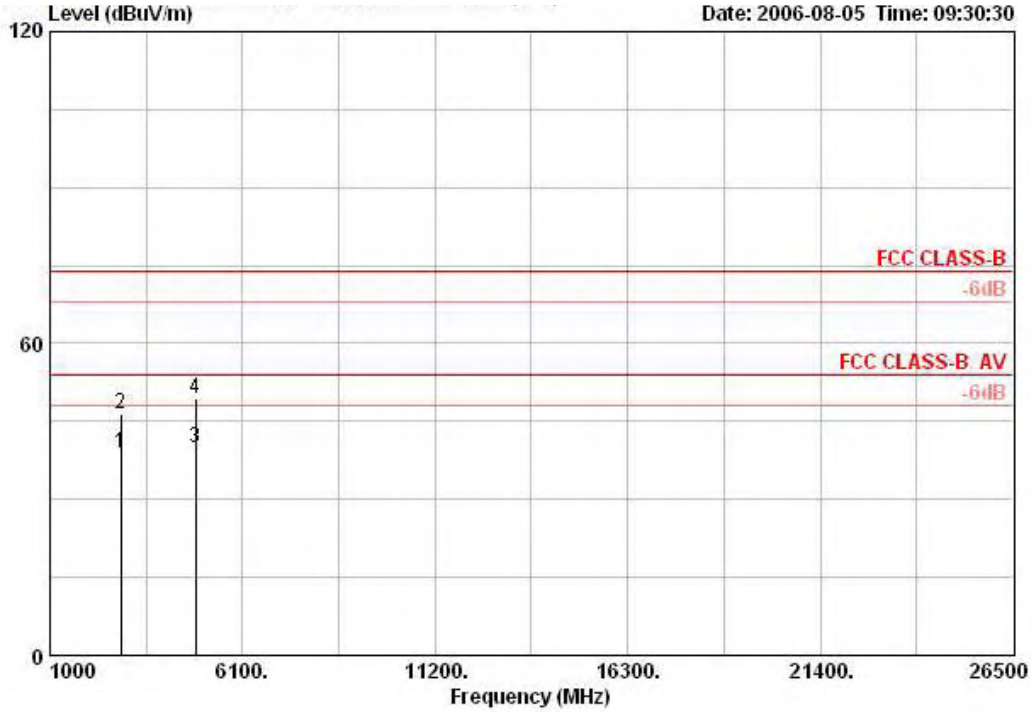
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 40MHz Channel 6(Upper) Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2239.840	62.62	-11.38	74.00	27.73	2.49	33.50	65.90	PEAK	100	259
2 !	2239.950	50.69	-3.31	54.00	27.73	2.49	33.50	53.97	AVERAGE	100	259
3	4853.980	47.93	-6.07	54.00	33.30	4.69	33.23	43.17	AVERAGE	100	179
4	4853.990	52.63	-21.37	74.00	33.30	4.69	33.23	47.87	PEAK	100	179

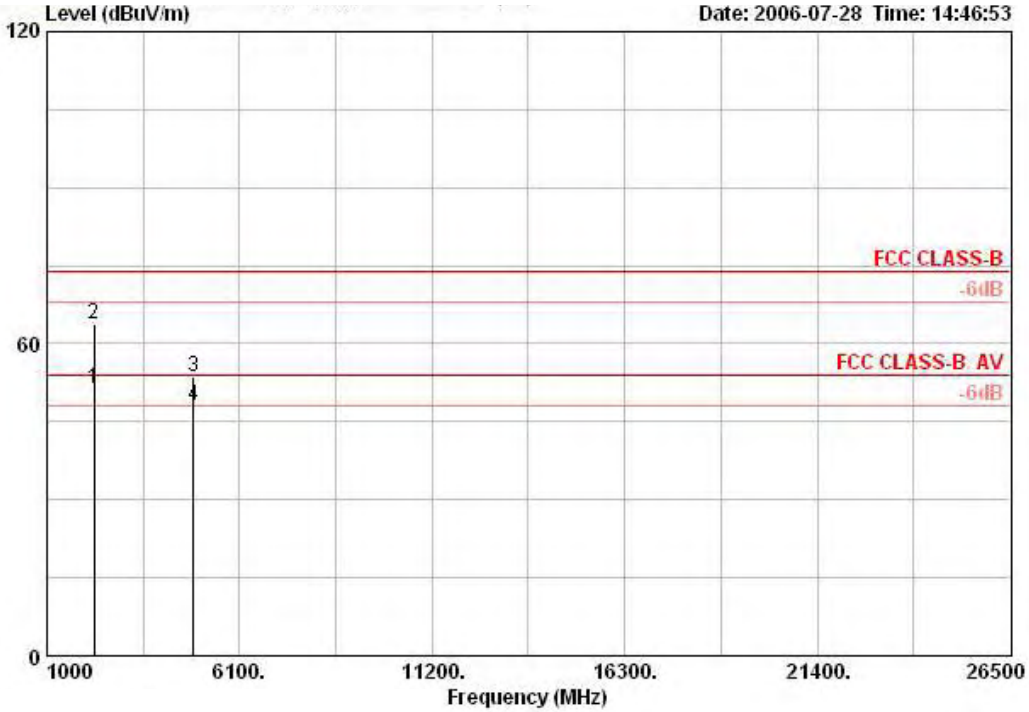
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.010	39.01	-14.99	54.00	29.78	2.78	33.66	40.10	AVERAGE	100	156
2	2880.100	46.47	-27.53	74.00	29.78	2.78	33.66	47.56	PEAK	100	156
3	4853.980	39.88	-14.12	54.00	33.30	4.69	33.23	35.12	AVERAGE	100	219
4	4854.160	49.49	-24.51	74.00	33.30	4.69	33.23	44.73	PEAK	100	219

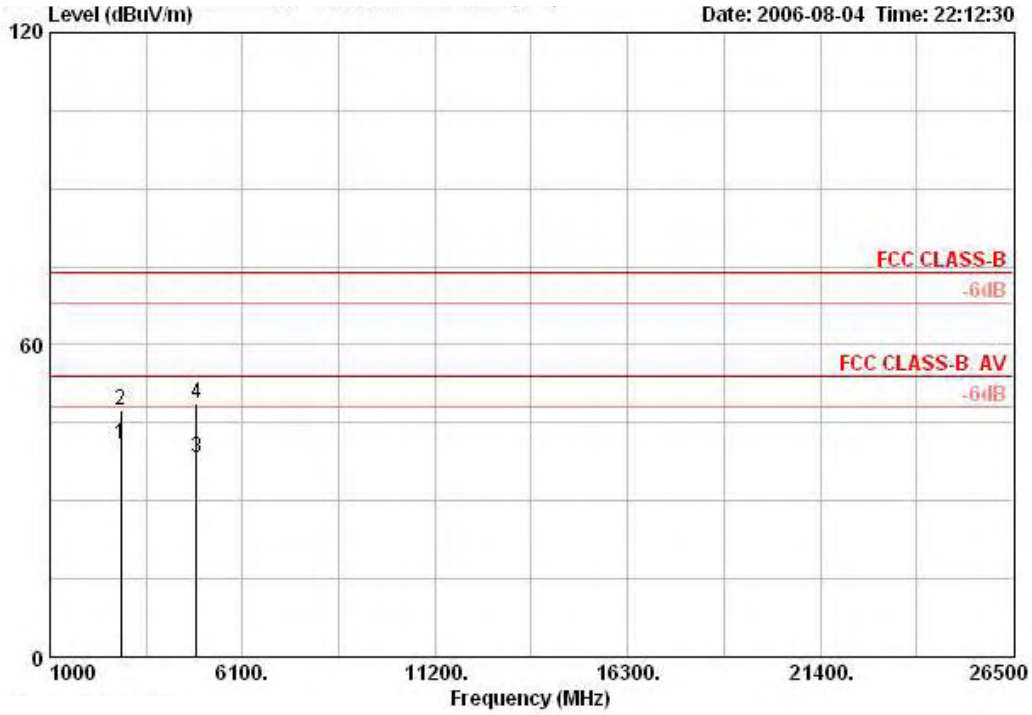
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 40MHz Channel 9(Upper) Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2240.000	51.43	-2.57	54.00	27.73	2.49	33.50	54.71	AVERAGE	100	99
2	2240.400	63.91	-10.09	74.00	27.73	2.49	33.50	67.20	PEAK	100	99
3	4883.990	53.60	-20.40	74.00	33.33	4.71	33.23	48.78	PEAK	100	176
4 !	4884.030	48.20	-5.80	54.00	33.33	4.71	33.23	43.38	AVERAGE	100	176

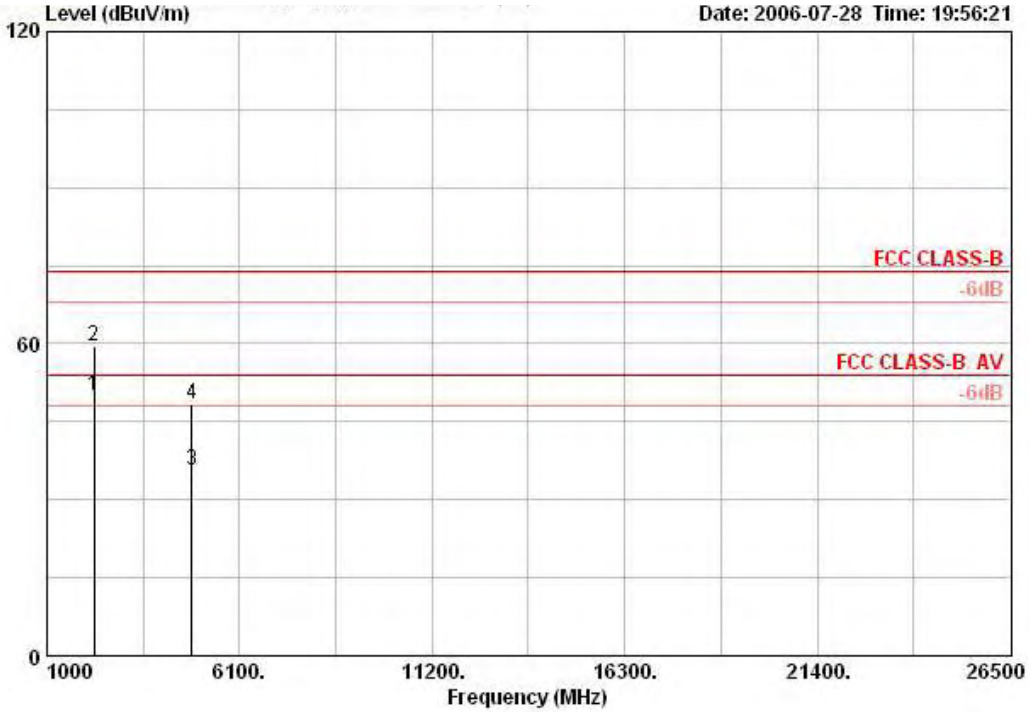
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.100	40.78	-13.22	54.00	29.78	2.78	33.66	41.88	AVERAGE	100	145
2	2880.110	47.29	-26.71	74.00	29.78	2.78	33.66	48.39	PEAK	100	145
3	4883.900	38.24	-15.76	54.00	33.33	4.71	33.23	33.42	AVERAGE	100	224
4	4884.090	48.83	-25.17	74.00	33.33	4.71	33.23	44.01	PEAK	100	224

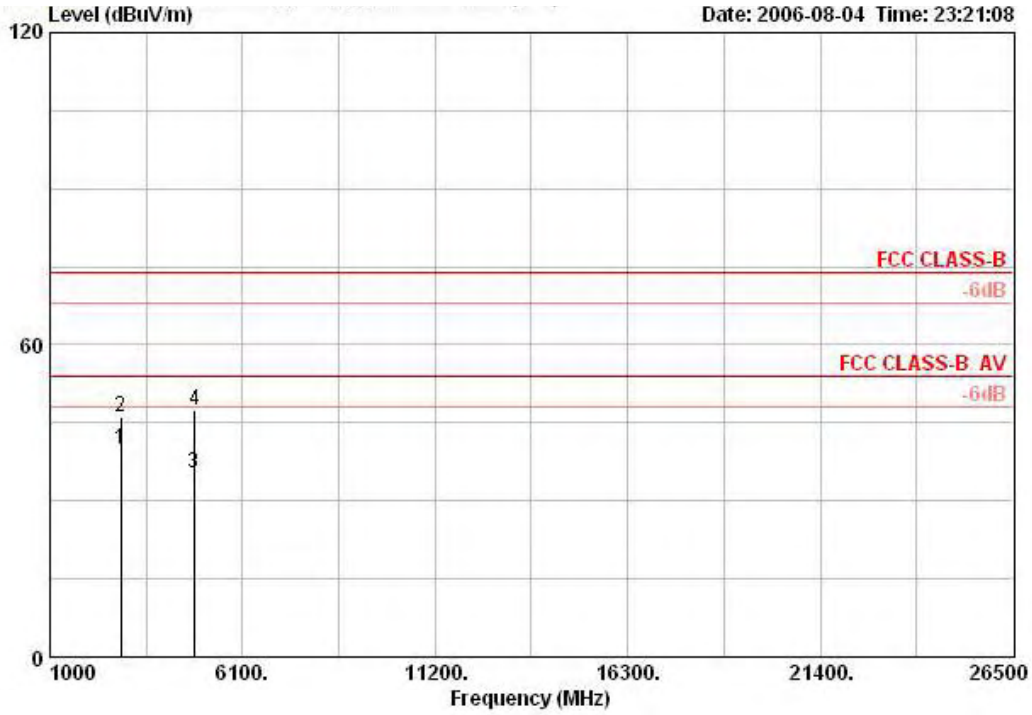
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 20MHz Channel 1 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2240.050	49.94	-4.06	54.00	27.73	2.49	33.50	53.22	AVERAGE	100	318
2	2240.710	59.65	-14.35	74.00	27.73	2.49	33.50	62.93	PEAK	100	318
3	4824.210	35.72	-18.28	54.00	33.22	4.68	33.24	31.06	AVERAGE	100	5
4	4825.040	48.49	-25.51	74.00	33.22	4.68	33.24	43.83	PEAK	100	5

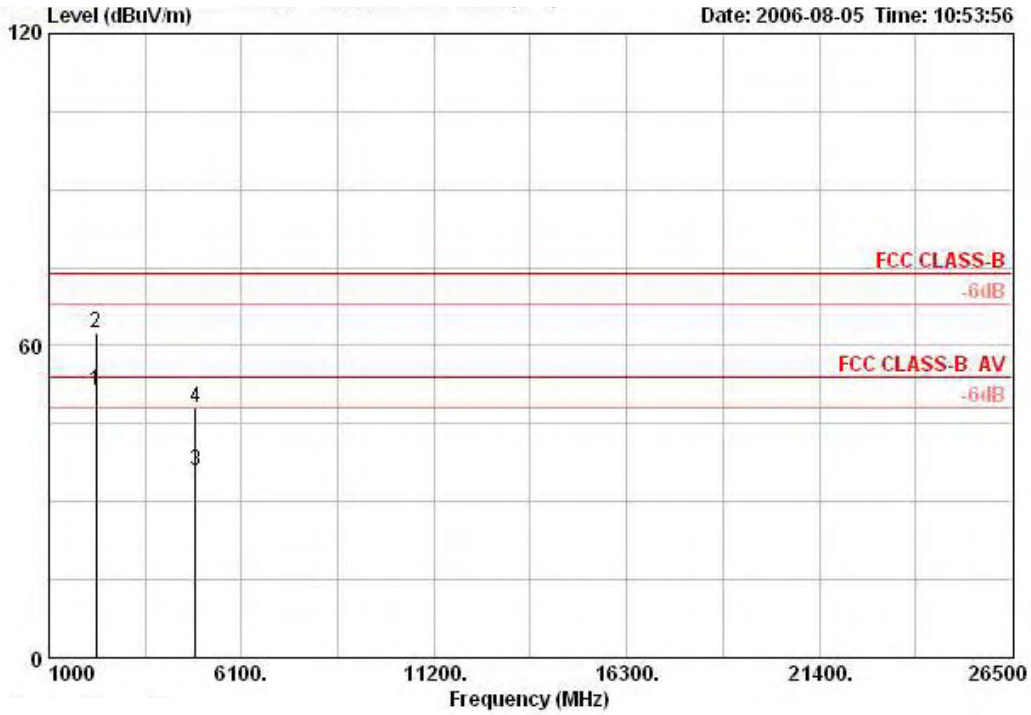
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.000	39.93	-14.07	54.00	29.78	2.78	33.66	41.03	AVERAGE	100	147
2	2880.220	46.11	-27.89	74.00	29.78	2.78	33.66	47.20	PEAK	100	147
3	4821.570	35.29	-18.71	54.00	33.22	4.68	33.24	30.63	AVERAGE	100	203
4	4823.600	47.56	-26.44	74.00	33.22	4.68	33.24	42.90	PEAK	100	203

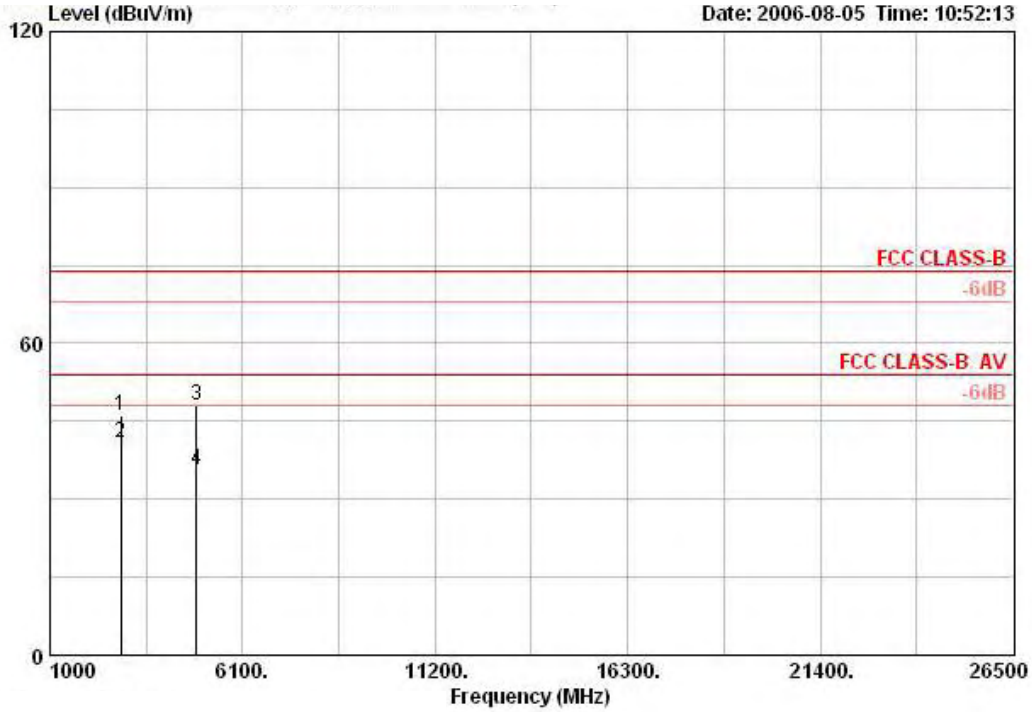
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 20MHz Channel 6 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2240.160	51.37	-2.63	54.00	27.73	2.49	33.50	54.65	AVERAGE	8995	257
2	2240.760	62.43	-11.57	74.00	27.73	2.49	33.50	65.72	PEAK	100	257
3	4872.560	35.83	-18.17	54.00	33.33	4.69	33.23	31.03	AVERAGE	100	284
4	4881.080	47.99	-26.01	74.00	33.33	4.71	33.23	43.17	PEAK	100	284

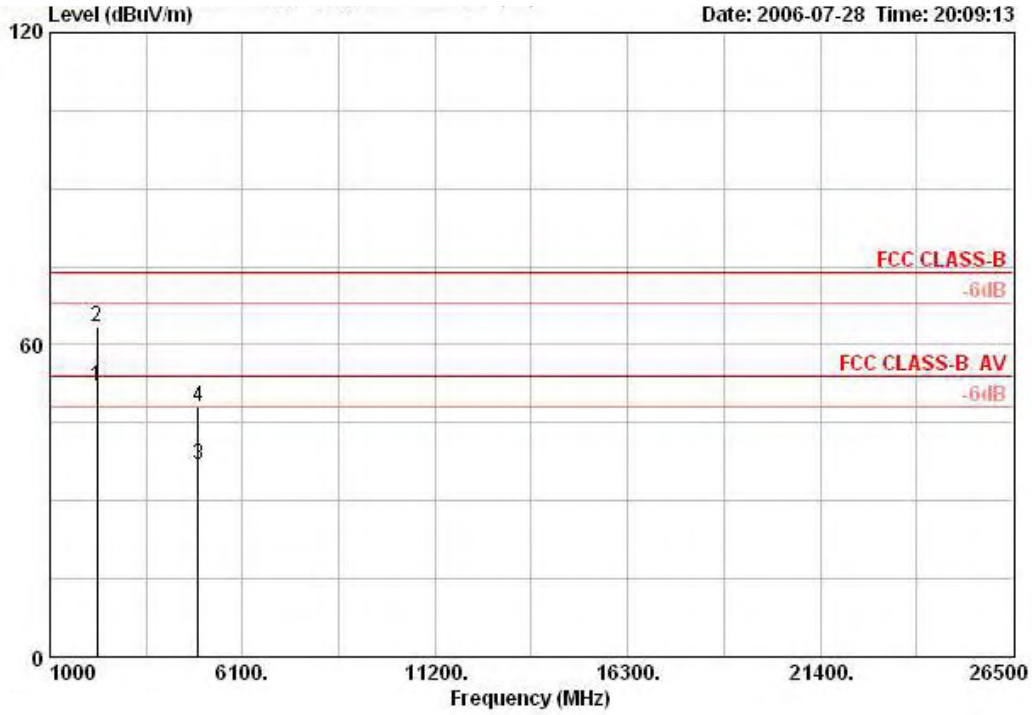
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.000	46.07	-27.93	74.00	29.78	2.78	33.66	47.16	PEAK	100	147
2	2880.040	40.89	-13.11	54.00	29.78	2.78	33.66	41.98	AVERAGE	100	147
3	4871.640	48.09	-25.91	74.00	33.33	4.69	33.23	43.29	PEAK	100	254
4	4874.000	35.59	-18.41	54.00	33.33	4.69	33.23	30.79	AVERAGE	100	254

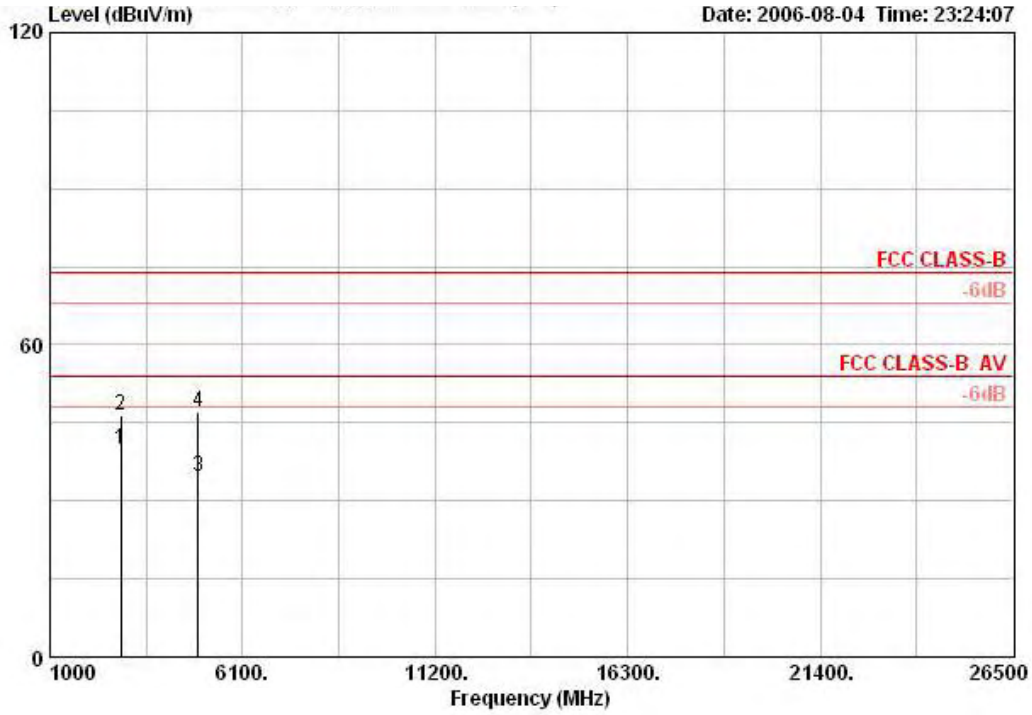
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 20MHz Channel 11 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2240.000	51.90	-2.10	54.00	27.73	2.49	33.50	55.18	AVERAGE	100	0
2	2240.050	63.59	-10.41	74.00	27.73	2.49	33.50	66.87	PEAK	100	0
3	4923.990	37.09	-16.91	54.00	33.45	4.73	33.22	32.13	AVERAGE	100	211
4	4924.240	48.11	-25.89	74.00	33.45	4.73	33.22	43.16	PEAK	100	211

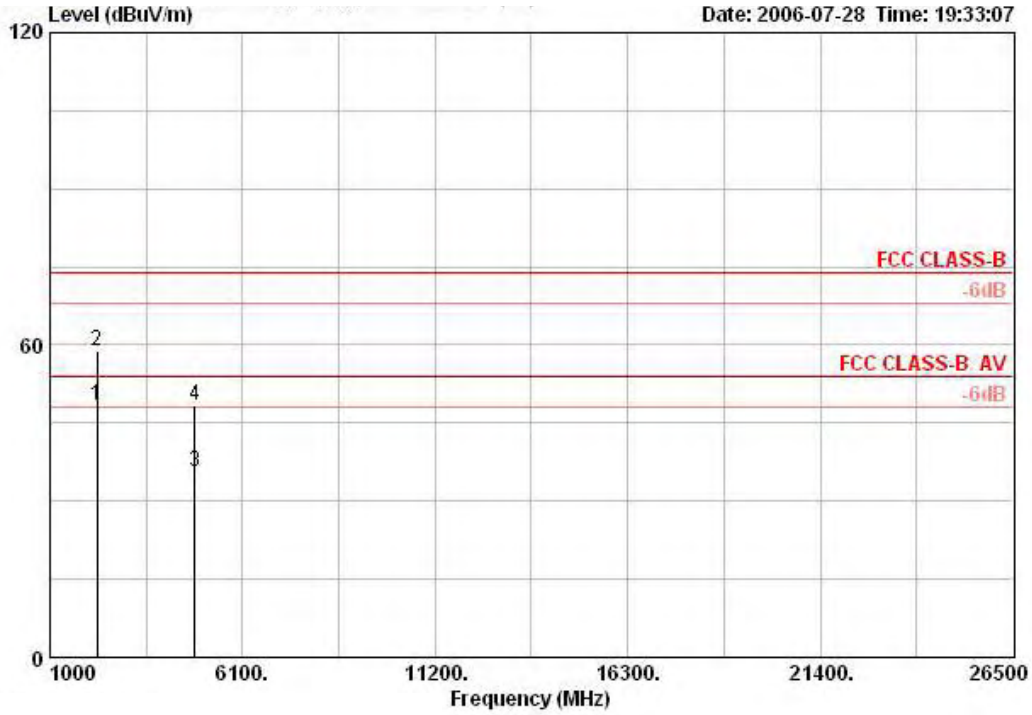
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.010	39.80	-14.20	54.00	29.78	2.78	33.66	40.89	AVERAGE	100	147
2	2880.120	46.36	-27.64	74.00	29.78	2.78	33.66	47.45	PEAK	100	147
3	4921.500	34.82	-19.18	54.00	33.45	4.73	33.22	29.86	AVERAGE	100	188
4	4925.330	47.11	-26.89	74.00	33.45	4.73	33.22	42.16	PEAK	100	188

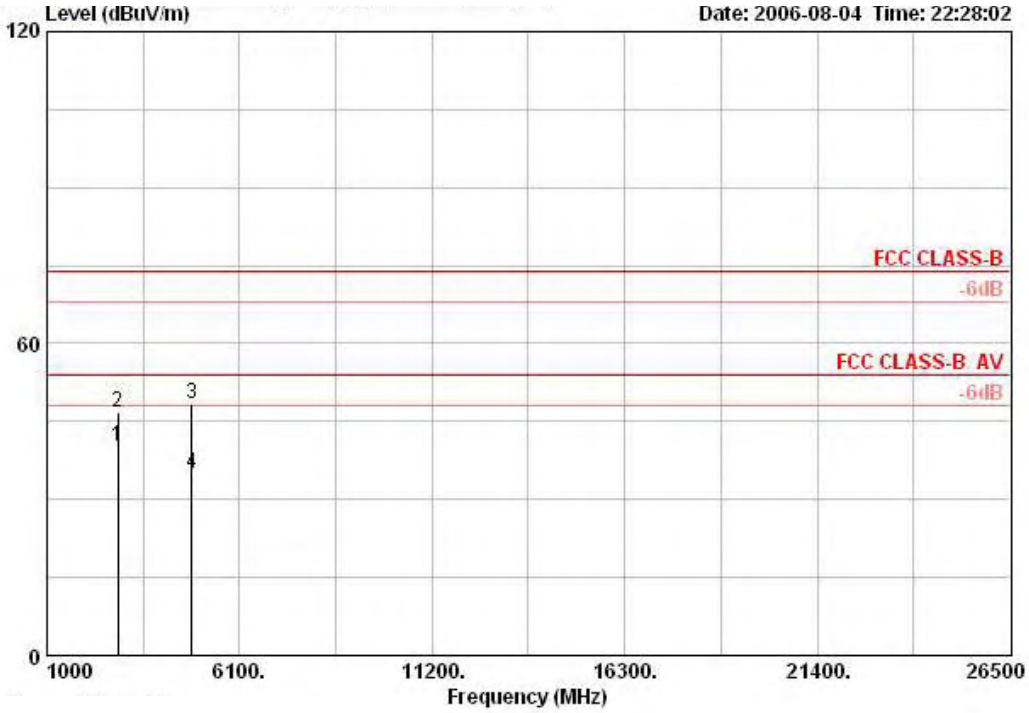
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 40MHz Channel 3 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2239.960	48.30	-5.70	54.00	27.73	2.49	33.50	51.58	AVERAGE	100	320
2	2240.460	58.73	-15.27	74.00	27.73	2.49	33.50	62.02	PEAK	100	320
3	4844.110	35.63	-18.37	54.00	33.26	4.69	33.23	30.91	AVERAGE	100	0
4	4844.130	48.31	-25.69	74.00	33.26	4.69	33.23	43.59	PEAK	100	0

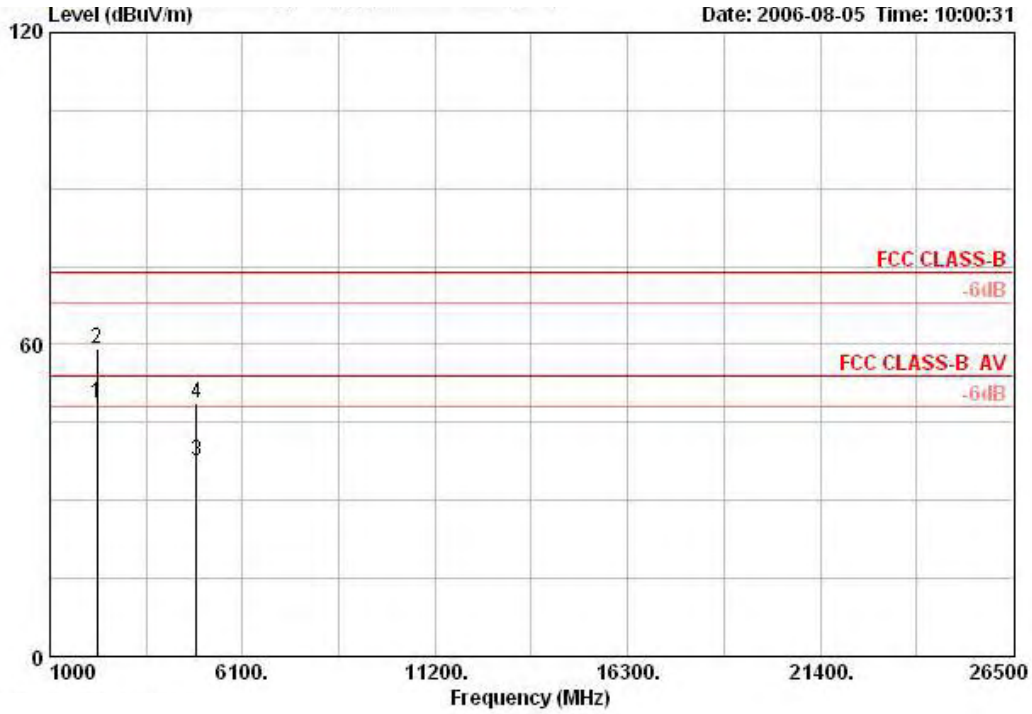
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2880.070	40.11	-13.89	54.00	29.78	2.78	33.66	41.21	AVERAGE	100	142
2	2880.200	46.73	-27.27	74.00	29.78	2.78	33.66	47.82	PEAK	100	142
3	4841.700	48.29	-25.71	74.00	33.26	4.69	33.23	43.57	PEAK	100	255
4	4844.270	35.14	-18.86	54.00	33.26	4.69	33.23	30.42	AVERAGE	100	255

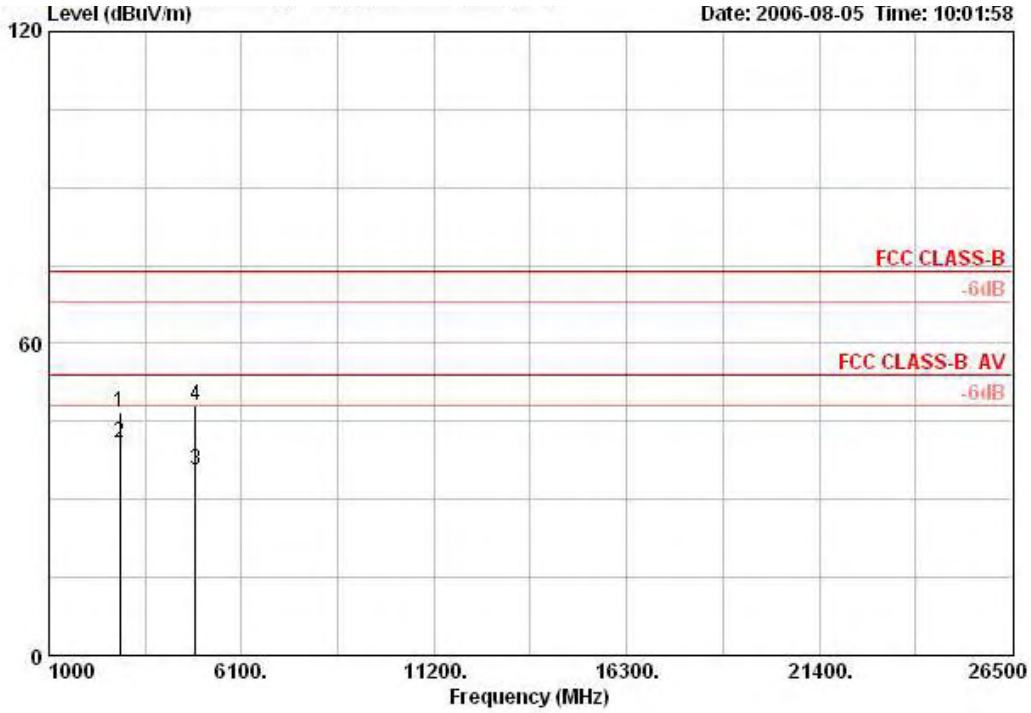
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 40MHz Channel 6 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2240.000	48.84	-5.16	54.00	27.73	2.49	33.50	52.13	AVERAGE	100	257
2	2240.260	59.22	-14.78	74.00	27.73	2.49	33.50	62.50	PEAK	100	257
3	4872.290	37.73	-16.27	54.00	33.33	4.69	33.23	32.92	AVERAGE	100	210
4	4875.470	48.83	-25.17	74.00	33.33	4.69	33.23	44.03	PEAK	100	210

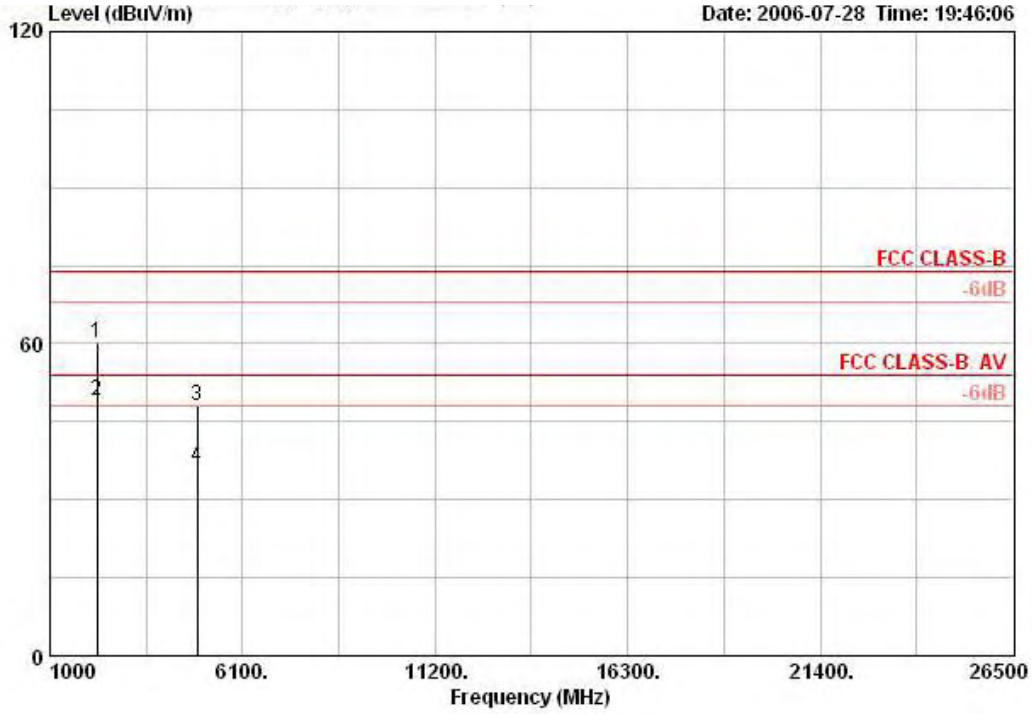
Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.940	46.91	-27.09	74.00	29.78	2.78	33.66	48.00	PEAK	100	145
2	2880.050	40.89	-13.11	54.00	29.78	2.78	33.66	41.99	AVERAGE	100	145
3	4874.780	35.60	-18.40	54.00	33.33	4.69	33.23	30.79	AVERAGE	100	223
4	4876.020	48.04	-25.96	74.00	33.33	4.69	33.23	43.24	PEAK	100	223

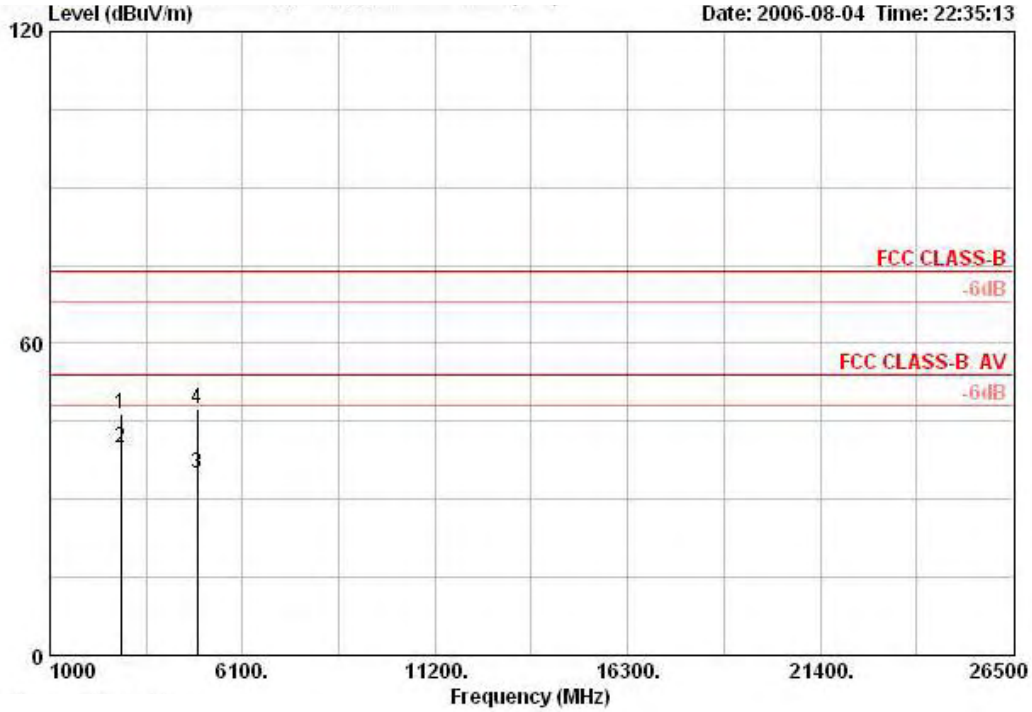
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 40MHz Channel 9 Ant. A + Ant. B

Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2240.030	60.27	-13.73	74.00	27.73	2.49	33.50	63.55	PEAK	100	152
2 !	2240.100	49.05	-4.95	54.00	27.73	2.49	33.50	52.33	AVERAGE	100	152
3	4902.810	48.09	-25.91	74.00	33.41	4.71	33.22	43.19	PEAK	100	252
4	4903.620	36.30	-17.70	54.00	33.41	4.71	33.22	31.40	AVERAGE	100	252

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2879.990	46.57	-27.43	74.00	29.78	2.78	33.66	47.67	PEAK	100	142
2	2880.090	40.00	-14.00	54.00	29.78	2.78	33.66	41.10	AVERAGE	100	142
3	4904.620	35.11	-18.89	54.00	33.41	4.71	33.22	30.21	AVERAGE	100	159
4	4906.480	47.57	-26.43	74.00	33.41	4.71	33.22	42.67	PEAK	100	159

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6. Band Edge Emissions Measurement

4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

4.6.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the freqeuncy range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

4.6.5. Test Deviation

There is no deviation with the original standard.

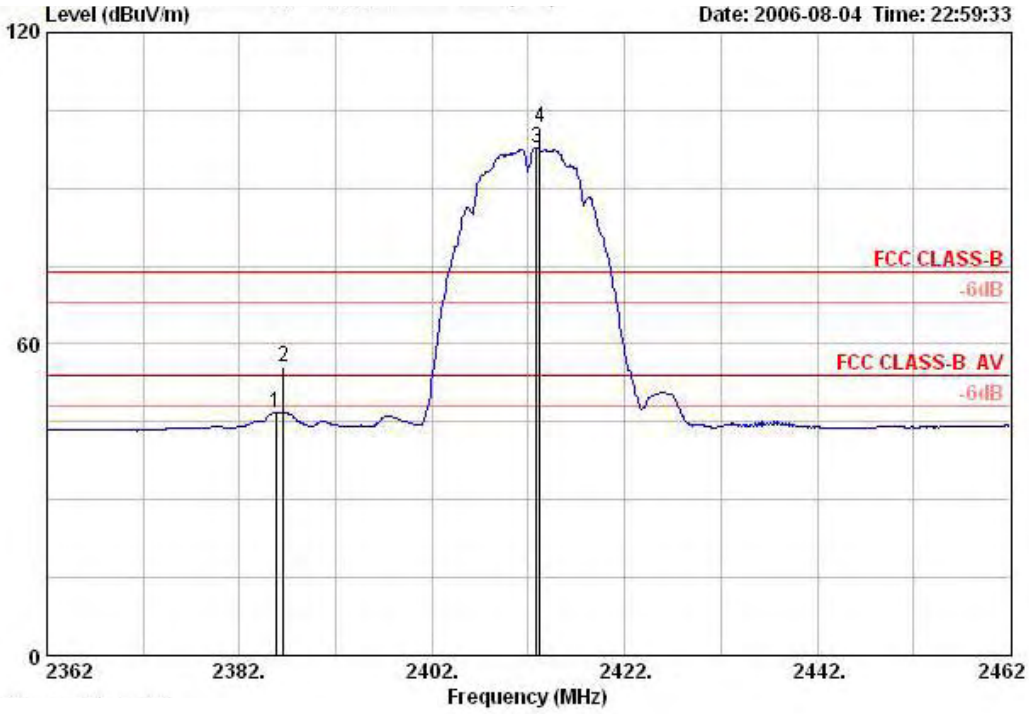
4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 20MHz Channel 1, 11 Ant. A + Ant. B

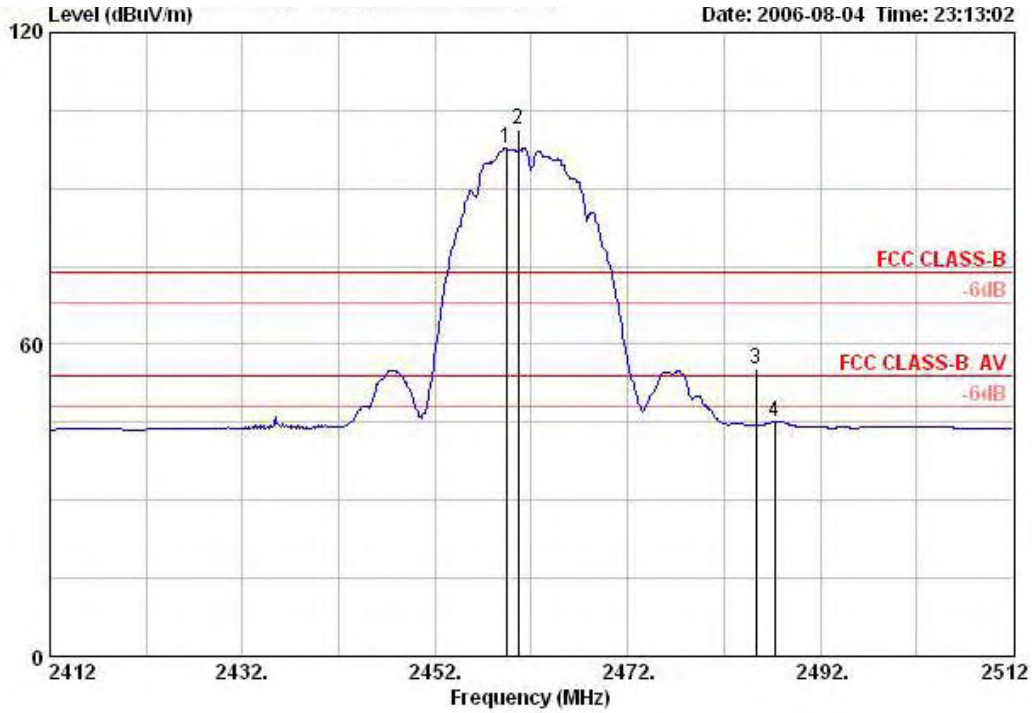
Channel 1



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	2385.800	46.90	-7.10	54.00	28.13	2.58	0.00	16.19	AVERAGE	100	63
2	2386.600	55.69	-18.31	74.00	28.13	2.58	0.00	24.98	PEAK	100	63
3 @	2412.800	97.78			28.18	2.58	0.00	67.03	AVERAGE	100	63
4 @	2413.200	101.64			28.18	2.58	0.00	70.89	PEAK	100	63

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 11

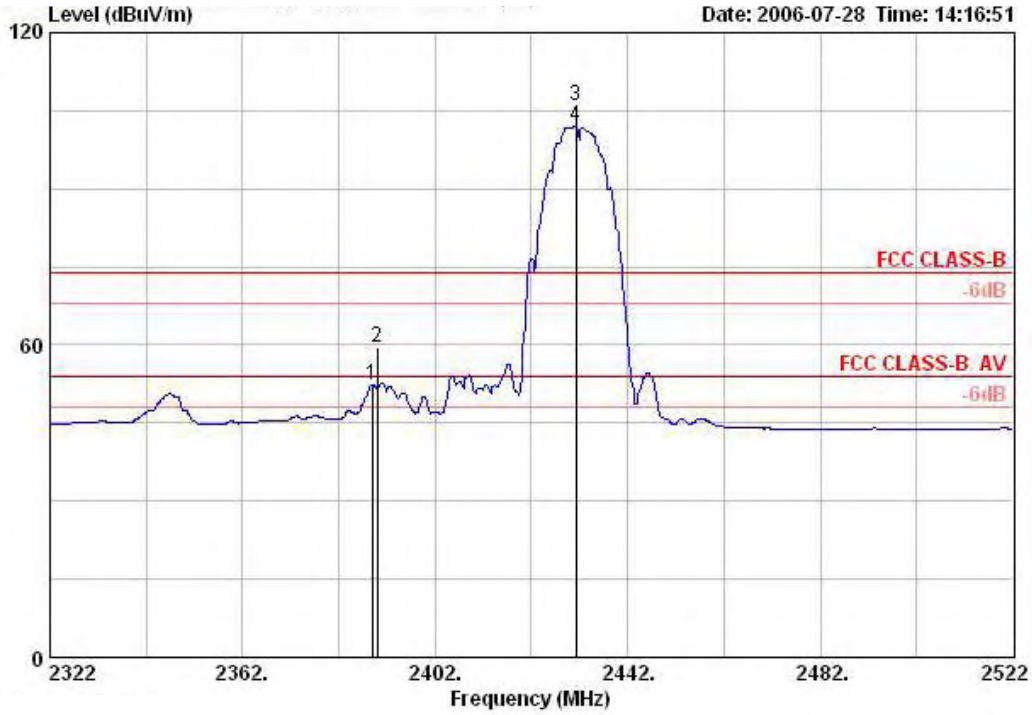


	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2459.400	97.73			28.31	2.60	0.00	66.82	AVERAGE	100	111
2 @	2460.600	101.43			28.31	2.60	0.00	70.53	PEAK	100	111
3	2485.300	55.21	-18.79	74.00	28.36	2.62	0.00	24.24	PEAK	100	111
4	2487.300	45.05	-8.95	54.00	28.36	2.62	0.00	14.07	AVERAGE	100	111

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11b 40MHz Channel 3, 9 Ant. A + Ant. B

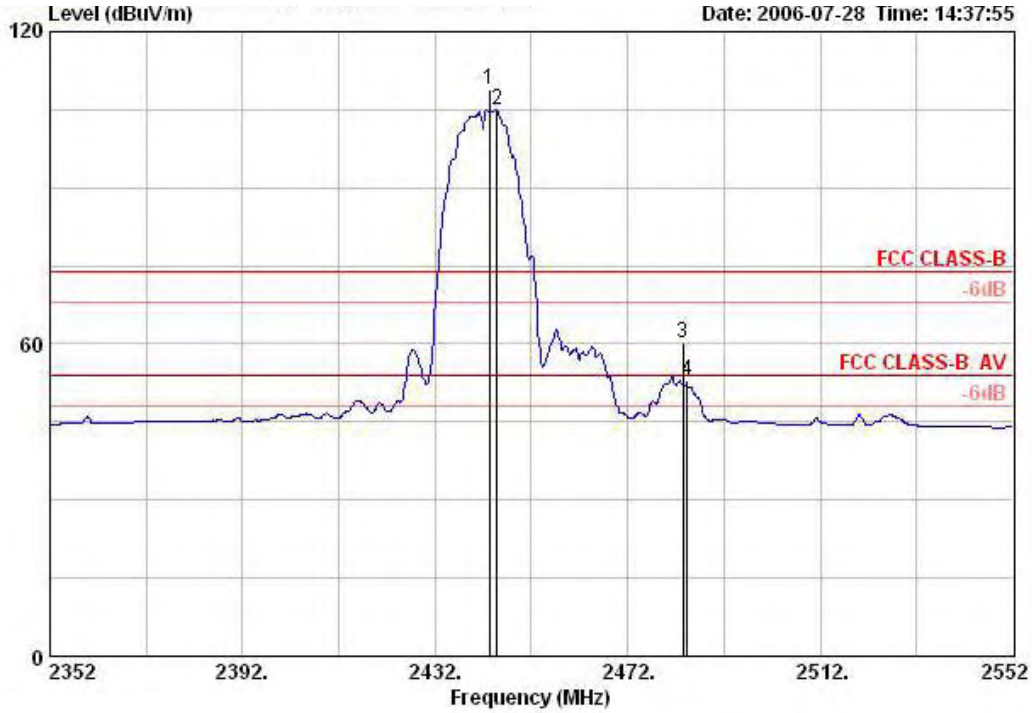
Channel 3



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	2388.900	52.27	-1.73	54.00	28.13	2.58	0.00	21.56	AVERAGE	100	203
2	2390.000	59.61	-14.39	74.00	28.13	2.58	0.00	28.90	PEAK	100	203
3 over	2431.200	105.87			28.22	2.60	0.00	75.05	PEAK	100	203
4 @	2431.200	102.16			28.22	2.60	0.00	71.34	AVERAGE	100	203

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 9

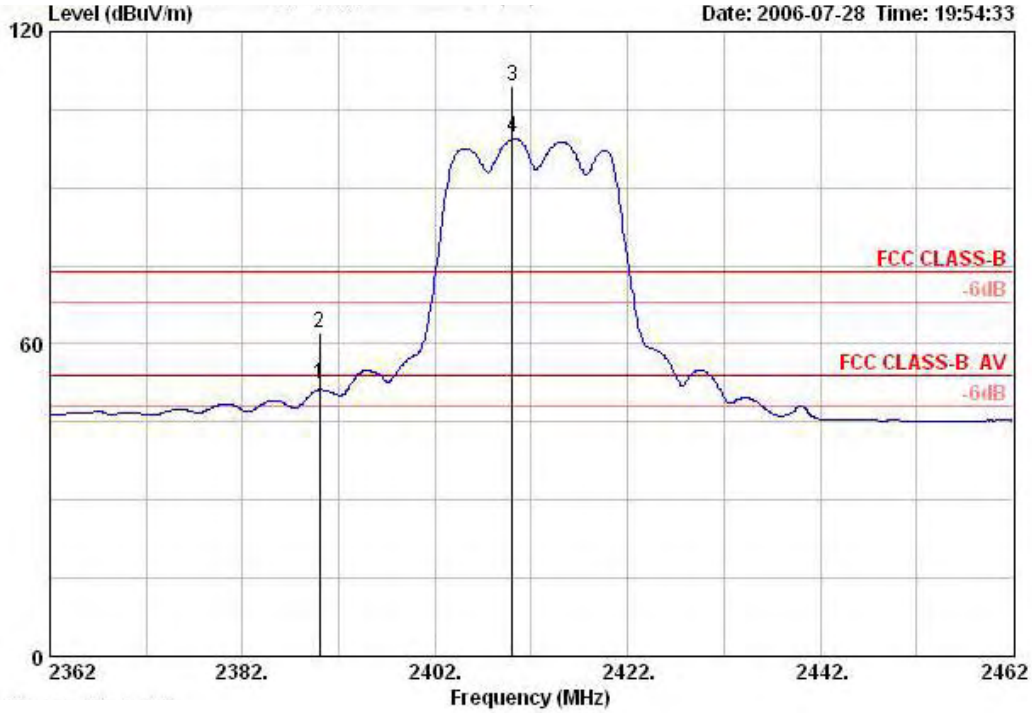


	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 over	2443.200	108.77			28.27	2.60	0.00	77.91	PEAK	100	256
2 @	2444.800	104.97			28.27	2.60	0.00	74.10	AVERAGE	100	256
3	2483.500	60.08	-13.92	74.00	28.36	2.62	0.00	29.10	PEAK	100	256
4 !	2484.300	52.88	-1.12	54.00	28.36	2.62	0.00	21.91	AVERAGE	100	256

Item 1, 2 are the fundamental frequency at 2452 MHz.

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 20MHz Channel 1, 11 Ant. A + Ant. B

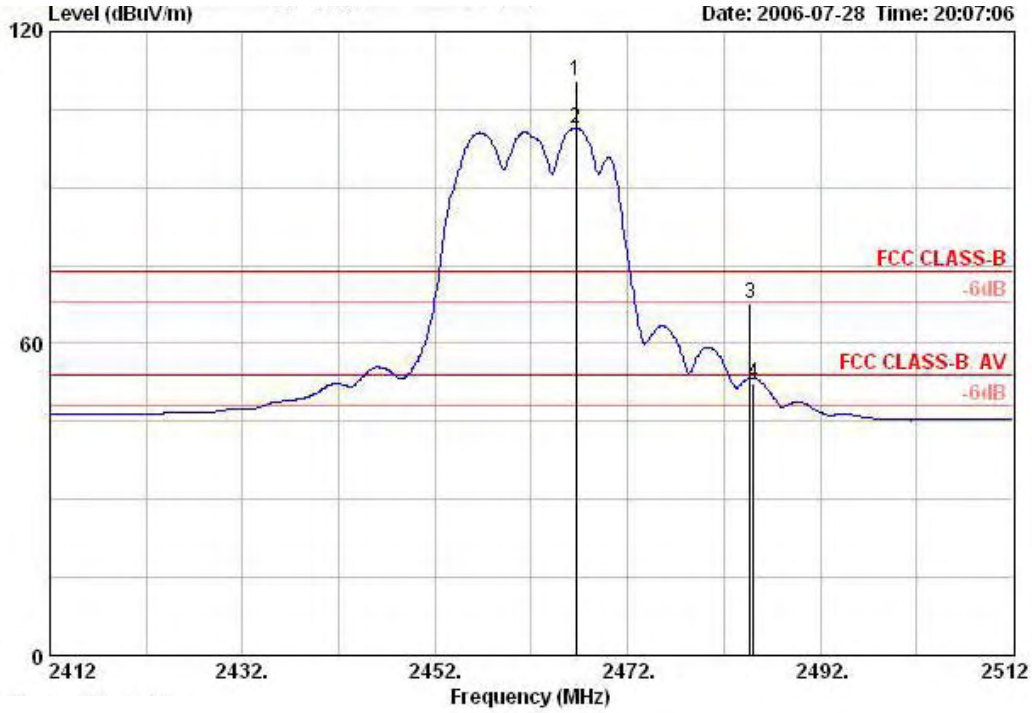
Channel 1



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2390.000	52.17	-1.83	54.00	28.13	2.58	0.00	21.46	AVERAGE	100	103
2	2390.000	62.04	-11.96	74.00	28.13	2.58	0.00	31.33	PEAK	100	103
3 @	2410.000	109.51			28.18	2.58	0.00	78.76	PEAK	100	103
4 @	2410.000	99.57			28.18	2.58	0.00	68.81	AVERAGE	100	103

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 11

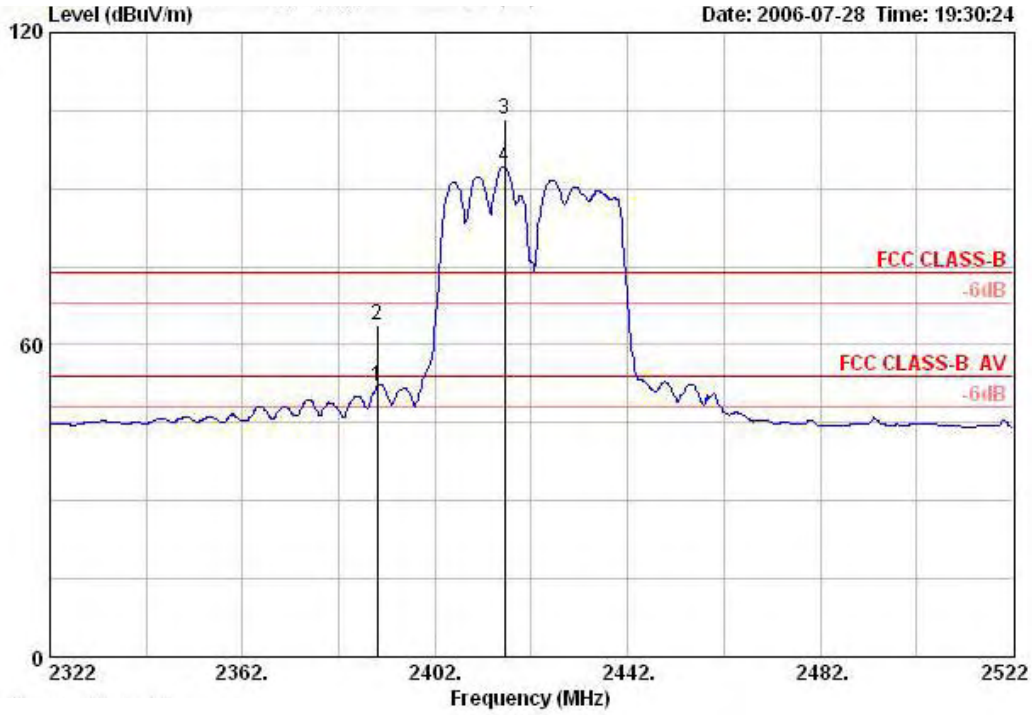


	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2466.600	110.44			28.31	2.62	0.00	79.51	PEAK	100	34
2 @	2466.600	101.41			28.31	2.62	0.00	70.48	AVERAGE	100	34
3	2484.700	67.63	-6.37	74.00	28.36	2.62	0.00	36.65	PEAK	100	34
4 @	2485.100	52.21	-1.79	54.00	28.36	2.62	0.00	21.24	AVERAGE	100	34

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11g 40MHz Channel 3, 9 Ant. A + Ant. B

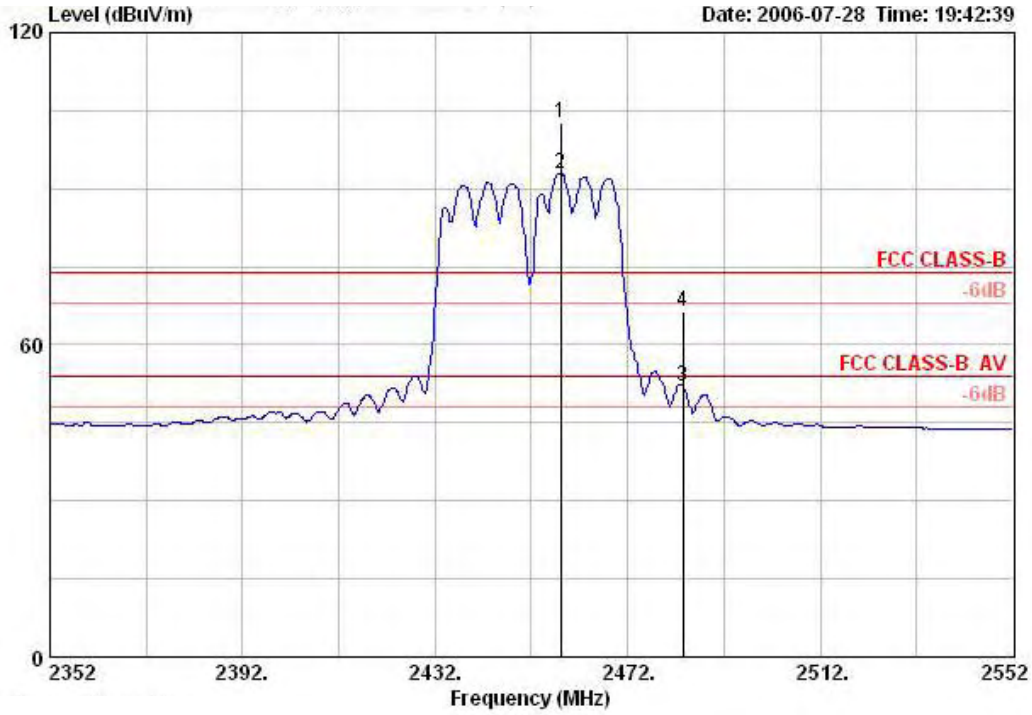
Channel 3



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2390.000	51.89	-2.11	54.00	28.13	2.58	0.00	21.18	AVERAGE	100	217
2	2390.000	63.69	-10.31	74.00	28.13	2.58	0.00	32.99	PEAK	100	217
3 @	2416.400	103.21			28.18	2.58	0.00	72.46	PEAK	100	217
4 @	2416.400	94.10			28.18	2.58	0.00	63.35	AVERAGE	100	217

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 9



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 @	2458.000	102.54			28.31	2.60	0.00	71.63	PEAK	100	320
2 @	2458.000	93.02			28.31	2.60	0.00	62.11	AVERAGE	100	320
3 @	2483.500	52.01	-1.99	54.00	28.36	2.62	0.00	21.03	AVERAGE	100	320
4	2483.500	66.43	-7.57	74.00	28.36	2.62	0.00	35.46	PEAK	100	320

Item 1, 2 are the fundamental frequency at 2452 MHz.

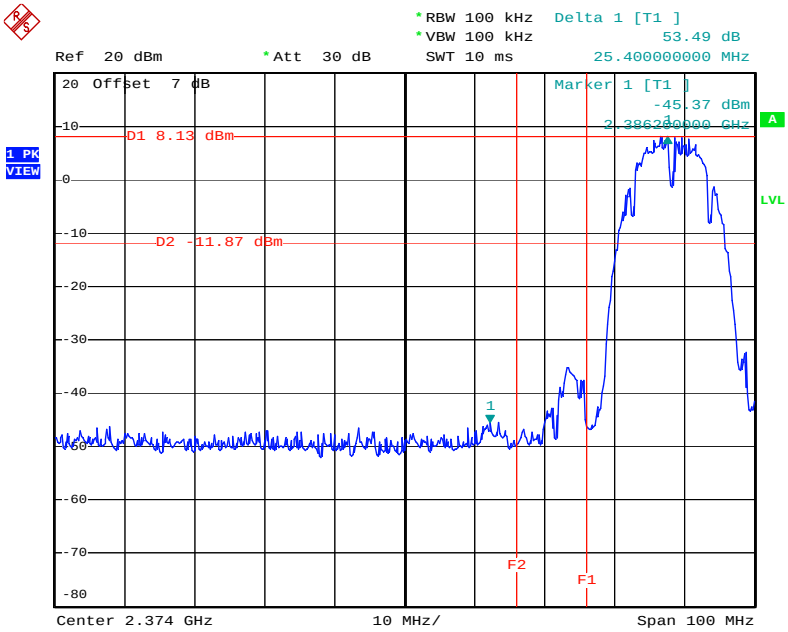
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

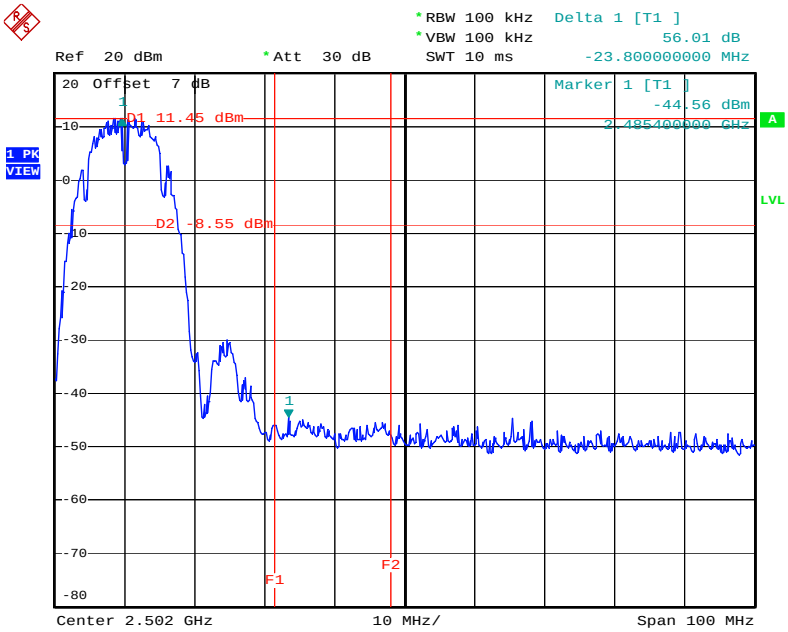
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11b 20MHz Ant. A + Ant. B / 2412 MHz



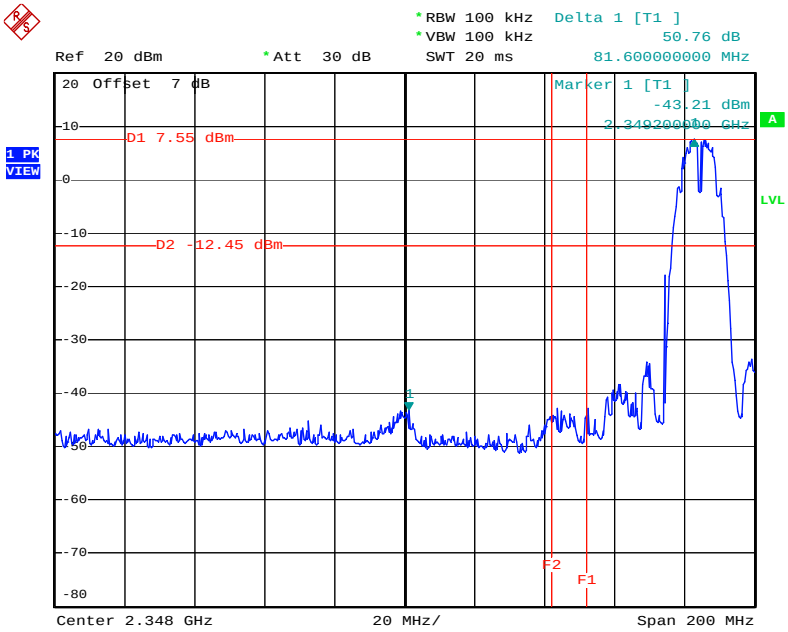
Date: 5.AUG.2006 09:15:24

High Band Edge Plot on Configuration IEEE 802.11b 20MHz Ant. A + Ant. B / 2462 MHz



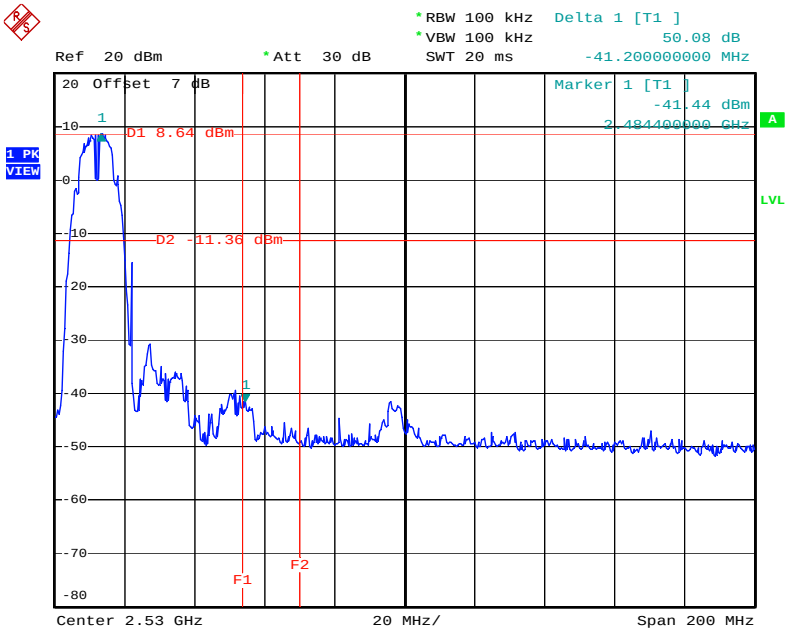
Date: 5.AUG.2006 09:20:33

Low Band Edge Plot on Configuration IEEE 802.11b 40MHz Ant. A + Ant. B / 2422 MHz



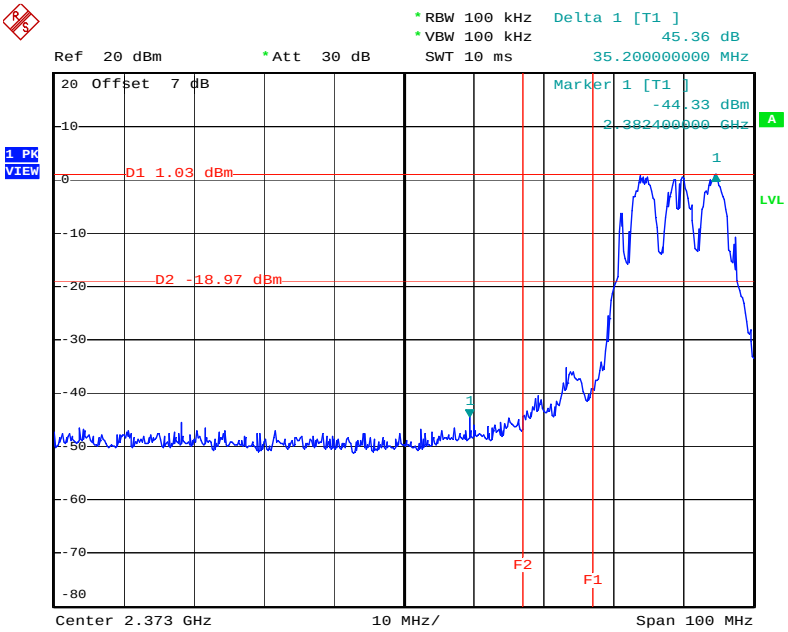
Date: 5.AUG.2006 09:01:00

High Band Edge Plot on Configuration IEEE 802.11b 40MHz Ant. A + Ant. B / 2452 MHz



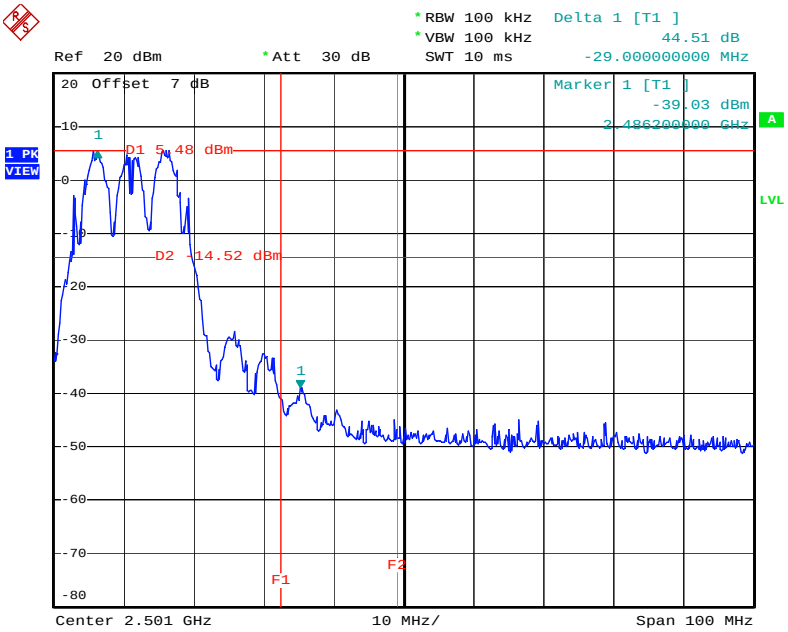
Date: 5.AUG.2006 09:10:54

Low Band Edge Plot on Configuration IEEE 802.11g 20MHz Ant. A + Ant. B / 2412 MHz



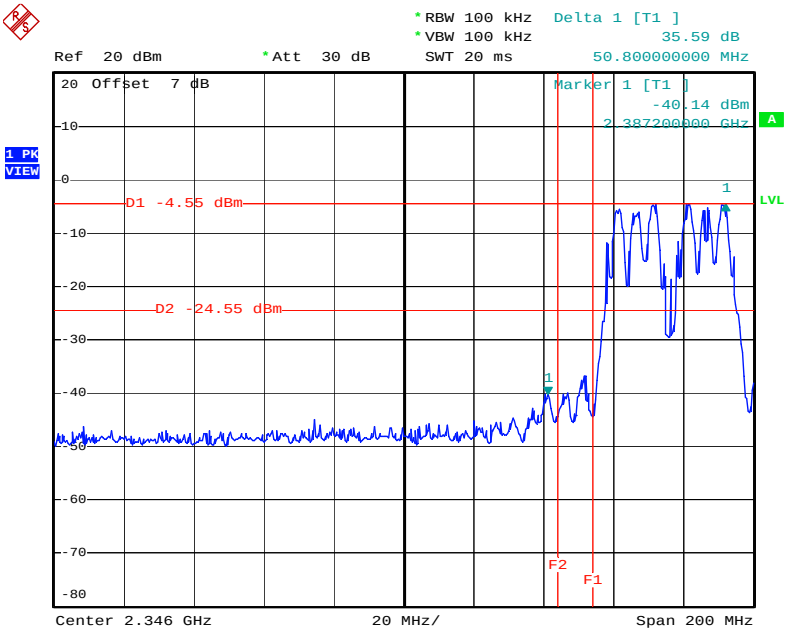
Date: 5.AUG.2006 08:25:40

High Band Edge Plot on Configuration IEEE 802.11g 20MHz Ant. A + Ant. B / 2462 MHz



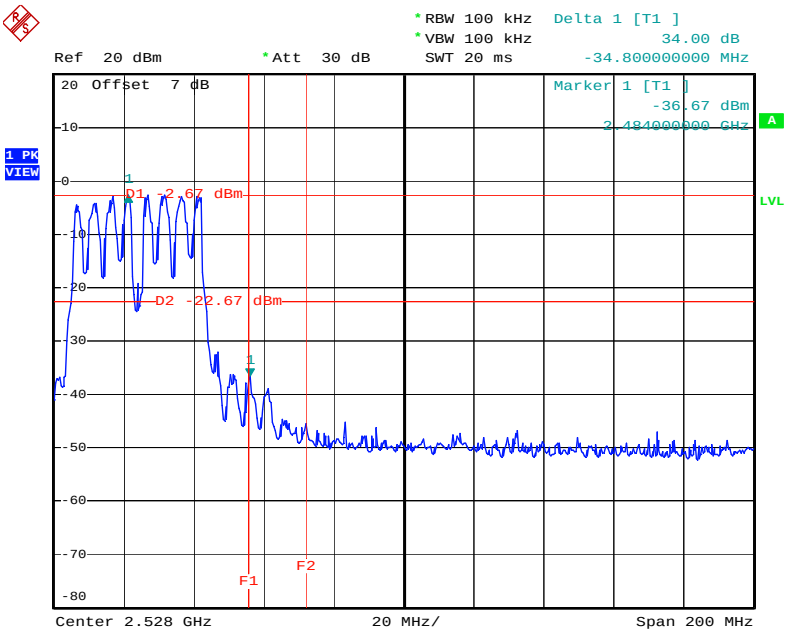
Date: 5.AUG.2006 08:30:56

Low Band Edge Plot on Configuration IEEE 802.11g 40MHz Ant. A + Ant. B / 2422 MHz



Date: 5.AUG.2006 08:35:51

High Band Edge Plot on Configuration IEEE 802.11g 40MHz Ant. A + Ant. B / 2452 MHz



Date: 5.AUG.2006 08:41:39

4.7. Antenna Requirements

4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report, antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 15, 2006	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	3565	9 kHz - 2 GHz	Jan. 18, 2006	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	May 29, 2006	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	923364	26.5 GHz - 40 GHz	Jan. 24, 2006*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004/040	9 kHZ - 40 GHz	Sep. 30, 2005	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 24, 2006	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6903	1GHz ~ 18GHz	Mar. 15, 2006	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	NCR	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec.02, 2005	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec.02, 2005	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 22, 2006	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Dec. 19, 2005	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9708-1839	9kHz – 30MHz	Mar. 18, 2006	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2006	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
Spectrum analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Nov. 26, 2005	Conducted (TH01-HY)
Power meter	R&S	NRVS	100764	DC ~ 40GHz	Jul, 20, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun, 10, 2006	Conducted (TH01-HY)
AC power source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Apr. 21, 2005*	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: Calibration Interval of instruments listed above is two year.

Note: NCR means Non-Calibration required.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
DC power source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Dec. 28, 2005	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2005	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 30, 2005	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 30, 2005	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Jun. 20, 2006	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Dec. 30, 2005	Conducted (TH01-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 16, 2006	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is two year.

6. SPORTON COMPANY PROFILE

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

6.1. Test Location

SHIJR	ADD	: 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	: 02-2696-2468
	FAX	: 02-2696-2255
HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	: 03-327-3456
	FAX	: 03-318-0055
LINKOU	ADD	: No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 02-2601-1640
	FAX	: 02-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 02-2631-4739
	FAX	: 02-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 02-8227-2020
	FAX	: 02-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 02-2794-8886
	FAX	: 02-2794-9777
JHUBEI	ADD	: No.8, Lane 728, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.
	TEL	: 03-656-9065
	FAX	: 03-656-9085

7. NVLAP CERTIFICATE OF ACCREDITATION

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 200079-0

Sporton International, Inc. Hwa Ya EMC Laboratory
Tao Yuan Hsien 333
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

2006-01-01 through 2006-12-31
Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2005-05-19)