

7. Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defined in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

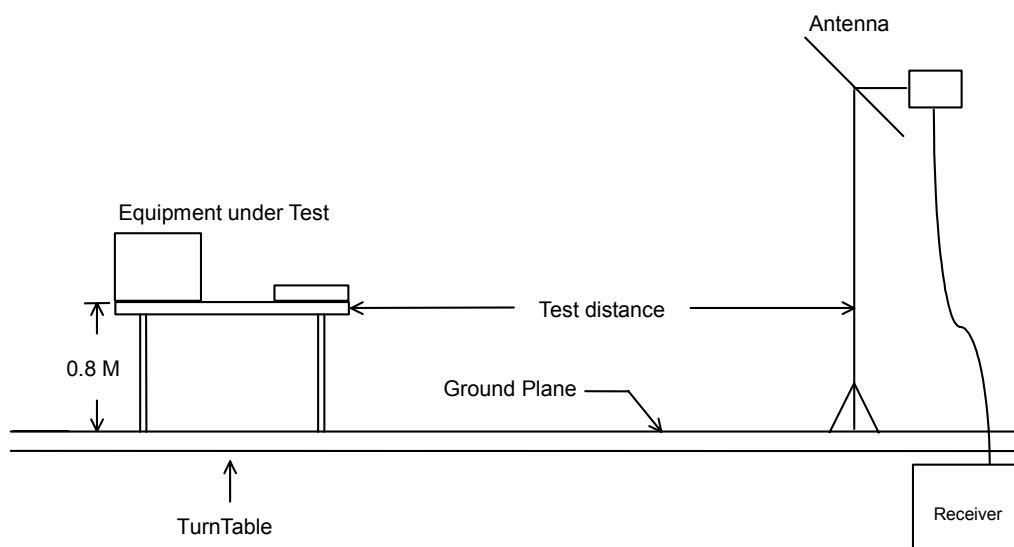
7.1. Major Measuring Instruments

● Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz
● Amplifier	(HP8447D)
RF Gain	30 dB
Signal Input	100 MHz to 1.3 GHz
● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	25 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 kHz to 40 GHz
● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	30MHz
Stop Frequency	1 GHz
Resolution Bandwidth	120 KHz
Video Bandwidth	300KHz
Signal Input	9 kHz to 40 GHz

7.2. Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average 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.

7.3. Typical Test Setup Layout of Radiated Emission



7.4. Test Result of Radiated Emission

7.4.1 Test Mode: Mode 1

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH01 2412MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2348.000	29.95	-24.05	54.00	41.27	28.12	1.68	41.12	Average	---	---
2	2348.000	53.46	-20.54	74.00	64.78	28.12	1.68	41.12	Peak	---	---
3 X	2414.000	88.50	34.50	54.00	99.67	28.25	1.74	41.16	Average	---	---
4 X	2414.000	100.16	26.16	74.00	111.33	28.25	1.74	41.16	Peak	---	---
5	2483.500	52.48	-21.52	74.00	63.47	28.39	1.82	41.20	Peak	---	---
6	2483.500	33.22	-20.78	54.00	44.21	28.39	1.82	41.20	Average	---	---
7	3214.000	46.32	-27.68	74.00	54.89	30.52	2.15	41.24	Peak	---	---
8	3214.000	43.00	-11.00	54.00	51.57	30.52	2.15	41.24	Average	---	---
9	4822.000	38.89	-15.11	54.00	45.73	33.06	2.47	42.37	Average	---	---
10	4822.000	50.94	-23.06	74.00	57.78	33.06	2.47	42.37	Peak	---	---
11	6434.000	58.87	-15.13	74.00	65.01	34.29	2.87	43.30	Peak	---	---
12 !	6434.000	52.88	-1.12	54.00	59.02	34.29	2.87	43.30	Average	---	---
13	7238.000	63.02	-10.98	74.00	67.00	35.88	2.84	42.70	Peak	118	342
14 !	7238.000	53.49	-0.51	54.00	57.47	35.88	2.84	42.70	Average	118	342
15	9646.000	62.16	-11.84	74.00	60.06	38.24	3.70	39.84	Peak	---	---
16 !	9646.000	53.43	-0.57	54.00	51.33	38.24	3.70	39.84	Average	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11b TX CH01 2412MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2310.000	54.58	-19.42	74.00	65.88	28.04	1.75	41.09	Peak	---	---
2	2310.000	44.86	-9.14	54.00	56.16	28.04	1.75	41.09	Average	---	---
3 X	2414.000	95.81	41.81	54.00	106.98	28.25	1.74	41.16	Average	---	---
4 X	2414.000	108.63	34.63	74.00	119.80	28.25	1.74	41.16	Peak	---	---
5	2483.500	52.99	-21.01	74.00	63.98	28.39	1.82	41.20	Peak	---	---
6 !	2483.500	50.66	-3.34	54.00	61.65	28.39	1.82	41.20	Average	---	---
7	2510.000	55.08	-18.92	74.00	65.95	28.47	1.86	41.20	Peak	---	---
8	2510.000	41.53	-12.47	54.00	52.40	28.47	1.86	41.20	Average	---	---
9	3214.000	47.93	-26.07	74.00	56.50	30.52	2.15	41.24	Peak	---	---
10	3214.000	44.64	-9.36	54.00	53.21	30.52	2.15	41.24	Average	---	---
11	4828.000	52.64	-21.36	74.00	59.45	33.08	2.49	42.38	Peak	---	---
12	4828.000	41.62	-12.38	54.00	48.43	33.08	2.49	42.38	Average	---	---
13 !	6434.000	52.61	-1.39	54.00	58.75	34.29	2.87	43.30	Average	---	---
14	6434.000	57.69	-16.31	74.00	63.83	34.29	2.87	43.30	Peak	---	---
15 !	7238.000	53.33	-0.67	54.00	57.31	35.88	2.84	42.70	Average	125	345
16	7238.000	60.75	-13.25	74.00	64.73	35.88	2.84	42.70	Peak	125	345
17 !	9646.000	53.26	-0.74	54.00	51.16	38.24	3.70	39.84	Average	---	---
18	9646.000	60.60	-13.40	74.00	58.50	38.24	3.70	39.84	Peak	---	---

For 9.646GHz ~ 25GHz

Frequency from 9646MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

FCC TEST REPORT

Report No. :F413115

■ Field strength of fundamental and harmonics

Frequency	Antenna	Cable	Reading	Limits	Emission	Level	Margin	Detect
Polarity	Factor	Loss						
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
2414.000	V	28.25	1.74	70.17	-	100.16	-	Peak
2414.000	V	28.25	1.74	58.51	-	88.50	-	AV
2414.000	H	28.25	1.74	78.64	-	108.63	-	Peak
2414.000	H	28.25	1.74	65.82	-	95.81	-	AV
4822.000	V	33.06	2.47	15.41	74.00	50.94	-	Peak
4822.000	V	33.06	2.47	3.36	54.00	38.89	-	AV
7238.000	V	35.88	2.84	24.30	74.00	63.02	-	Peak
7238.000	V	35.88	2.84	14.77	54.00	53.49	-	AV
4828.000	H	33.08	2.49	17.07	74.00	52.64	-	Peak
4828.000	H	33.08	2.49	6.05	54.00	41.62	-	AV
7238.000	H	33.08	2.84	24.83	74.00	60.75	-	Peak
7238.000	H	33.08	2.84	17.41	54.00	53.33	-	AV
9646.000	V	38.24	3.70	20.22	74.00	62.16	-	Peak
9646.000	V	38.24	3.70	11.49	54.00	53.43	-	AV
12060.000	V/H	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : 

Jay

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TEL : 886-2-2696-2468

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FCC ID : Q87-WPCI54G

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7.4.2 Test Mode: Mode 2

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH06 2437MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2380.000	49.34	-24.66	74.00	60.58	28.18	1.71	41.13	Peak	---	---
2	2380.000	31.96	-22.04	54.00	43.20	28.18	1.71	41.13	Average	---	---
3 X	2436.000	92.33	38.33	54.00	103.45	28.29	1.76	41.17	Average	---	---
4 X	2436.000	104.63	30.63	74.00	115.75	28.29	1.76	41.17	Peak	---	---
5	2500.000	48.57	-25.43	74.00	59.48	28.44	1.85	41.20	Peak	---	---
6	2500.000	33.67	-20.33	54.00	44.58	28.44	1.85	41.20	Average	---	---
7	3246.000	46.31	-27.69	74.00	54.83	30.60	2.13	41.25	Peak	---	---
8	3246.000	41.71	-12.29	54.00	50.23	30.60	2.13	41.25	Average	---	---
9	4876.000	42.23	-11.77	54.00	48.98	33.17	2.52	42.44	Average	---	---
10	4876.000	54.51	-19.49	74.00	61.26	33.17	2.52	42.44	Peak	---	---
11	6497.000	58.40	-15.60	74.00	64.45	34.30	2.94	43.29	Peak	---	---
12 !	6497.000	52.84	-1.16	54.00	58.89	34.30	2.94	43.29	Average	---	---
13	7310.000	63.27	-10.73	74.00	66.55	36.04	3.30	42.62	Peak	111	334
14 !	7310.000	53.60	-0.40	54.00	56.88	36.04	3.30	42.62	Average	111	334
15	9748.000	64.94	-9.06	74.00	62.50	38.47	3.71	39.74	Peak	---	---
16 !	9748.000	53.43	-0.57	54.00	50.99	38.47	3.71	39.74	Average	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11b TX CH06 2437MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2334.000	56.00	-18.00	74.00	67.32	28.09	1.70	41.11	Peak	---	---
2	2334.000	46.98	-7.02	54.00	58.30	28.09	1.70	41.11	Average	---	---
3 X	2436.000	96.08	42.08	54.00	107.20	28.29	1.76	41.17	Average	---	---
4 X	2436.000	108.73	34.73	74.00	119.85	28.29	1.76	41.17	Peak	---	---
5 !	2483.500	68.40	-5.60	74.00	79.39	28.39	1.82	41.20	Peak	---	---
6	2483.500	42.66	-11.34	54.00	53.65	28.39	1.82	41.20	Average	---	---
7	2540.000	39.57	-14.43	54.00	50.33	28.56	1.88	41.20	Average	---	---
8	2540.000	52.51	-21.49	74.00	63.27	28.56	1.88	41.20	Peak	---	---
9	3246.000	52.03	-21.97	74.00	60.55	30.60	2.13	41.25	Peak	---	---
10	3246.000	45.86	-8.14	54.00	54.38	30.60	2.13	41.25	Average	---	---
11	4876.000	45.88	-8.12	54.00	52.63	33.17	2.52	42.44	Average	---	---
12	4876.000	58.01	-15.99	74.00	64.76	33.17	2.52	42.44	Peak	---	---
13 !	6497.000	52.64	-1.36	54.00	58.69	34.30	2.94	43.29	Average	---	---
14	6497.000	58.91	-15.09	74.00	64.96	34.30	2.94	43.29	Peak	---	---
15 !	7310.000	53.68	-0.32	54.00	56.96	36.04	3.30	42.62	Average	134	334
16	7310.000	66.61	-7.39	74.00	69.89	36.04	3.30	42.62	Peak	134	334
17	9748.000	62.40	-11.60	74.00	59.96	38.47	3.71	39.74	Peak	---	---
18 !	9748.000	53.21	-0.79	54.00	50.77	38.47	3.71	39.74	Average	---	---

For 9.748GHz ~ 25GHz

Frequency from 9748MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency	Antenna	Cable	Reading	Limits	Emission	Level	Margin	Detect
Polarity	Factor	Loss						
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
2436.000	V	28.29	1.76	74.58	-	104.63	-	Peak
2436.000	V	28.29	1.76	62.28	-	92.33	-	AV
2436.000	H	28.29	1.76	78.68	-	108.73	-	Peak
2436.000	H	28.29	1.76	66.03	-	96.08	-	AV
4876.000	V	33.17	2.52	18.82	74.00	54.51	-	Peak
4876.000	V	33.17	2.52	6.54	54.00	42.23	-	AV
7310.000	V	36.04	3.30	23.93	74.00	63.27	-	Peak
7310.000	V	36.04	3.30	14.26	54.00	53.60	-	AV
4876.000	H	33.17	2.52	22.32	74.00	58.01	-	Peak
4876.000	H	33.17	2.52	10.19	54.00	45.88	-	AV
7310.000	H	36.04	3.30	27.27	74.00	66.61	-	Peak
7310.000	H	36.04	3.30	14.34	54.00	53.68	-	AV
9748.000	V	38.47	3.71	22.76	74.00	64.94	-	Peak
9748.000	V	38.47	3.71	11.25	54.00	53.43	-	AV
12060.000	V/H	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : 

Jay

7.4.3 Test Mode: Mode 3

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m BIC-9124--301 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH11 2462MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	35.780	30.41	-9.59	40.00	44.62	12.79	1.03	28.03	Peak	121	348
2	95.790	24.06	-19.44	43.50	40.86	9.43	1.68	27.91	Peak	---	---
3	123.670	26.82	-16.68	43.50	41.82	10.87	1.98	27.85	Peak	---	---

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m LOG-9111-221 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH11 2462MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	564.000	32.67	-13.33	46.00	39.14	18.11	4.18	28.76	Peak	---	---
2	749.600	35.81	-10.19	46.00	39.71	20.01	4.84	28.75	Peak	105	344
3	928.800	33.96	-12.04	46.00	35.29	21.51	5.43	28.27	Peak	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m BIC-9124--301 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11b TX CH11 2462MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	97.830	26.07	-17.43	43.50	42.64	9.60	1.73	27.90	Peak	---	---
2	123.670	27.13	-16.37	43.50	42.13	10.87	1.98	27.85	Peak	117	328
3	144.070	27.27	-16.23	43.50	40.96	12.00	2.12	27.81	Peak	---	---

Site : 03CH03-HY
Condition : FCC CLASS-B 3m LOG-9111-221 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11b TX CH11 2462MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	332.800	31.63	-14.37	46.00	40.96	14.97	3.16	27.46	Peak	103	346
2	396.800	30.39	-15.61	46.00	38.98	15.73	3.46	27.78	Peak	---	---
3	749.600	29.83	-16.17	46.00	33.73	20.01	4.84	28.75	Peak	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH11 2462MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2358.000	45.76	-28.24	74.00	57.05	28.14	1.69	41.12	Peak	---	---
2	2358.000	38.40	-15.60	54.00	49.69	28.14	1.69	41.12	Average	---	---
3 X	2462.000	105.27	31.27	74.00	116.31	28.35	1.79	41.18	Peak	---	---
4 X	2462.000	93.86	39.86	54.00	104.90	28.35	1.79	41.18	Average	---	---
5	2486.000	66.02	-7.98	74.00	77.00	28.40	1.82	41.20	Peak	---	---
6 !	2486.000	50.97	-3.03	54.00	61.95	28.40	1.82	41.20	Average	---	---
7	2534.000	47.65	-26.35	74.00	58.44	28.54	1.87	41.20	Peak	---	---
8	2534.000	39.40	-14.60	54.00	50.23	28.51	1.86	41.20	Average	---	---
9	3278.000	50.52	-23.48	74.00	58.91	30.68	2.19	41.26	Peak	---	---
10	3278.000	47.64	-6.36	54.00	56.03	30.68	2.19	41.26	Average	---	---
11	4924.000	61.42	-12.58	74.00	68.19	33.27	2.47	42.51	Peak	---	---
12 !	4924.000	48.55	-5.45	54.00	55.32	33.27	2.47	42.51	Average	---	---
13 !	6566.000	52.74	-1.26	54.00	58.36	34.43	3.20	43.25	Average	---	---
14	6566.000	58.13	-15.87	74.00	63.75	34.43	3.20	43.25	Peak	---	---
15 !	7385.000	53.63	-0.37	54.00	57.16	36.25	2.77	42.55	Average	119	346
16	7385.000	60.52	-13.48	74.00	64.05	36.25	2.77	42.55	Peak	119	346
17 !	9852.000	53.47	-0.53	54.00	50.47	38.70	3.94	39.64	Average	---	---
18	9852.000	62.24	-11.76	74.00	59.24	38.70	3.94	39.64	Peak	---	---

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11b TX CH11 2462MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2358.000	55.10	-18.90	74.00	66.39	28.14	1.69	41.12	Peak	---	---
2	2358.000	43.86	-10.14	54.00	55.15	28.14	1.69	41.12	Average	---	---
3 X	2462.000	95.76	41.76	54.00	106.80	28.35	1.79	41.18	Average	---	---
4 X	2462.000	107.98	33.98	74.00	119.02	28.35	1.79	41.18	Peak	---	---
6 !	2483.500	50.98	-3.02	54.00	61.97	28.39	1.82	41.20	Average	---	---
7	3278.000	54.65	-19.35	74.00	63.04	30.68	2.19	41.26	Peak	---	---
8 !	3278.000	49.33	-4.67	54.00	57.72	30.68	2.19	41.26	Average	---	---
9 !	4926.000	52.00	-2.00	54.00	58.76	33.28	2.47	42.51	Average	---	---
10	4926.000	64.79	-9.21	74.00	71.55	33.28	2.47	42.51	Peak	---	---
11	6566.000	58.19	-15.81	74.00	63.81	34.43	3.20	43.25	Peak	---	---
12 !	6566.000	52.64	-1.36	54.00	58.26	34.43	3.20	43.25	Average	---	---
13	7385.000	59.81	-14.19	74.00	63.29	36.25	2.79	42.52	Peak	---	---
14 !	7385.000	53.29	-0.71	54.00	56.77	36.25	2.79	42.52	Average	---	---
15	9846.000	60.70	-13.30	74.00	57.69	38.70	3.96	39.65	Peak	129	346
16 !	9846.000	53.37	-0.63	54.00	50.36	38.70	3.96	39.65	Average	129	346

For 9.846GHz ~ 25GHz

Frequency from 9846MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : Q87-WPCI54G

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Issued Date : Mar. 19, 2004

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2462.000	V	28.35	1.79	75.13	-	105.27	-	-	Peak
2462.000	V	28.35	1.79	63.72	-	93.86	-	-	AV
2462.000	H	28.35	1.79	77.84	-	107.98	-	-	Peak
2462.000	H	28.35	1.79	65.62	-	95.76	-	-	AV
4924.000	V	33.27	2.47	12.81	54.00	48.55	-	-5.45	Peak
4924.000	V	33.27	2.47	25.68	74.00	61.42	-	-12.58	AV
7385.000	V	36.25	2.77	21.50	74.00	60.52	-	-13.48	Peak
7385.000	V	36.25	2.77	14.61	54.00	53.63	-	-0.37	AV
4926.000	H	33.28	2.47	29.04	74.00	64.79	-	-9.21	Peak
4926.000	H	33.28	2.47	16.25	54.00	52.00	-	-2.00	AV
7385.000	H	36.25	2.79	20.77	74.00	59.81	-	-14.19	Peak
7385.000	H	36.25	2.79	14.25	54.00	53.29	-	-0.71	AV
9852.000	V	38.70	3.94	19.60	74.00	62.24	-	-11.76	Peak
9852.000	V	38.70	3.94	10.83	54.00	53.47	-	-0.53	AV
12060.000	V/H	-	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : 

Jay

7.4.4 Test Mode: Mode 4

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH01 2412MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2310.000	35.07	-18.93	54.00	46.37	28.04	1.75	41.09	Average	---	---
2	2310.000	47.06	-26.94	74.00	58.36	28.04	1.75	41.09	Peak	---	---
3	2390.000	39.49	-14.51	54.00	50.71	28.20	1.72	41.14	Average	---	---
4	2390.000	69.95	-4.05	74.00	81.17	28.20	1.72	41.14	Peak	---	---
5	2420.000	100.54	26.54	74.00	111.69	28.26	1.75	41.16	Peak	---	---
6	2420.000	61.29	7.29	54.00	72.44	28.26	1.75	41.16	Average	---	---
7	2483.500	32.09	-21.91	54.00	43.08	28.39	1.82	41.20	Average	---	---
8	2483.500	46.97	-27.03	74.00	57.96	28.39	1.82	41.20	Peak	---	---
9	2510.000	48.38	-25.62	74.00	59.25	28.47	1.86	41.20	Peak	---	---
10	2510.000	32.64	-21.36	54.00	43.51	28.47	1.86	41.20	Average	---	---
11	3622.000	33.49	-20.51	54.00	41.24	31.57	2.03	41.35	Average	---	---
12	3622.000	47.11	-26.89	74.00	54.86	31.57	2.03	41.35	Peak	---	---
13	4828.000	36.92	-17.08	54.00	43.73	33.08	2.49	42.38	Average	---	---
14	4828.000	52.49	-21.51	74.00	59.30	33.08	2.49	42.38	Peak	---	---
15	6029.000	53.55	-20.45	74.00	59.88	34.21	2.76	43.30	Peak	---	---
16	6029.000	37.64	-16.36	54.00	43.97	34.21	2.76	43.30	Average	---	---
17	6434.000	51.86	-2.14	54.00	58.00	34.29	2.87	43.30	Average	---	---
18	6434.000	56.05	-17.95	74.00	62.19	34.29	2.87	43.30	Peak	---	---
19	7250.000	63.06	-10.94	74.00	66.83	35.92	3.00	42.69	Peak	---	---
20	7250.000	44.54	-9.46	54.00	48.31	35.92	3.00	42.69	Average	---	---
21	9646.000	53.72	-0.28	54.00	51.72	38.20	3.65	39.85	Average	124	334
22	9646.000	58.98	-15.02	74.00	56.98	38.20	3.65	39.85	Peak	124	334

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11g TX CH01 2412MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
2	! 2390.000	50.82	-3.18	54.00	62.04	28.20	1.72	41.14	Average	---	---
3	X 2414.000	106.94	32.94	74.00	118.11	28.25	1.74	41.16	Peak	---	---
4	X 2414.000	67.43	13.43	54.00	78.63	28.23	1.73	41.16	Average	---	---
5	! 2483.500	68.05	-5.95	74.00	79.04	28.39	1.82	41.20	Peak	---	---
6	2483.500	38.96	-15.04	54.00	49.95	28.39	1.82	41.20	Average	---	---
7	3214.000	44.93	-9.07	54.00	53.50	30.52	2.15	41.24	Average	---	---
8	3214.000	49.03	-24.97	74.00	57.60	30.52	2.15	41.24	Peak	---	---
9	3622.000	37.67	-16.33	54.00	45.42	31.57	2.03	41.35	Average	---	---
10	3622.000	55.02	-18.98	74.00	62.77	31.57	2.03	41.35	Peak	---	---
11	4836.000	35.98	-18.02	54.00	42.76	33.09	2.52	42.39	Average	---	---
12	4836.000	50.84	-23.16	74.00	57.62	33.09	2.52	42.39	Peak	---	---
13	6026.000	54.36	-19.64	74.00	60.70	34.21	2.75	43.30	Peak	---	---
14	6026.000	37.88	-16.12	54.00	44.22	34.21	2.75	43.30	Average	---	---
15	6434.000	56.77	-17.23	74.00	62.91	34.29	2.87	43.30	Peak	---	---
16	! 6434.000	52.30	-1.70	54.00	58.44	34.29	2.87	43.30	Average	---	---
17	7241.000	45.07	-8.93	54.00	48.93	35.90	2.94	42.70	Average	---	---
18	7241.000	64.54	-9.46	74.00	68.40	35.90	2.94	42.70	Peak	---	---
19	! 9646.000	53.39	-0.61	54.00	51.39	38.20	3.65	39.85	Average	121	327
20	9646.000	56.40	-17.60	74.00	54.40	38.20	3.65	39.85	Peak	121	327

For 9.646GHz ~ 25GHz

Frequency from 9646MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency	Antenna	Cable	Reading	Limits	Emission	Level	Margin	Detect
Polarity	Factor	Loss						
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
2420.000	V	28.26	1.75	70.53	-	100.54	-	Peak
2420.000	V	28.26	1.75	31.28	-	61.29	-	Av
2414.000	H	28.25	1.74	76.95	-	106.94	-	Peak
2414.000	H	28.23	1.73	37.47	-	67.43	-	Av
4828.000	V	33.08	2.49	16.92	74.00	52.49	-	Peak
4828.000	V	33.08	2.49	1.35	54.00	36.92	-	AV
7250.000	V	35.92	3.00	24.14	74.00	63.06	-	Peak
7250.000	V	35.92	3.00	5.62	54.00	44.54	-	AV
9646.000	V	38.20	3.65	17.13	74.00	58.98	-	Peak
9646.000	V	38.20	3.65	11.87	54.00	53.72	-	AV
4836.000	H	33.09	2.52	15.23	74.00	50.84	-	Peak
4836.000	H	33.09	2.52	0.37	54.00	35.98	-	AV
7241.000	H	35.90	2.94	25.70	74.00	64.54	-	Peak
7241.000	H	35.90	2.94	6.23	54.00	45.07	-	AV
9646.000	H	38.20	3.65	14.55	74.00	56.40	-	Peak
9646.000	H	38.20	3.65	11.54	54.00	53.39	-	AV
12060.000	V/H	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : 

Jay

7.4.5 Test Mode: Mode 5

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH06 2437MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2334.000	48.01	-25.99	74.00	59.33	28.09	1.70	41.11	Peak	---	---
2	2334.000	36.04	-17.96	54.00	47.36	28.09	1.70	41.11	Average	---	---
3	2390.000	51.43	-22.57	74.00	62.65	28.20	1.72	41.14	Peak	---	---
4	2390.000	31.14	-22.86	54.00	42.36	28.20	1.72	41.14	Average	---	---
5 X	2436.000	62.15	8.15	54.00	73.27	28.29	1.76	41.17	Average	---	---
6 X	2436.000	103.11	29.11	74.00	114.23	28.29	1.76	41.17	Peak	---	---
7	2483.500	54.68	-19.32	74.00	65.67	28.39	1.82	41.20	Peak	---	---
8	2483.500	33.57	-20.43	54.00	44.56	28.39	1.82	41.20	Average	---	---
9	4876.000	55.20	-18.80	74.00	61.95	33.17	2.52	42.44	Peak	---	---
10	4876.000	38.05	-15.95	54.00	44.80	33.17	2.52	42.44	Average	---	---
11	6497.000	57.73	-16.27	74.00	63.81	34.30	2.92	43.30	Peak	114	351
12 !	6497.000	52.68	-1.32	54.00	58.76	34.30	2.92	43.30	Average	114	351
13	7310.000	47.32	-6.68	54.00	50.71	36.07	3.15	42.61	Average	---	---
14	7310.000	67.61	-6.39	74.00	71.00	36.07	3.15	42.61	Peak	---	---
15	9748.000	60.35	-13.65	74.00	57.91	38.47	3.71	39.74	Peak	---	---
16 !	9748.000	52.14	-1.86	54.00	49.70	38.47	3.71	39.74	Average	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11g TX CH06 2437MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
2	2390.000	45.27	-8.73	54.00	56.49	28.20	1.72	41.14	Average	---	---
3 X	2438.000	64.37	10.37	54.00	75.48	28.30	1.76	41.17	Average	---	---
4 X	2438.000	107.03	33.03	74.00	118.14	28.30	1.76	41.17	Peak	---	---
6	2483.500	45.59	-8.41	54.00	56.58	28.39	1.82	41.20	Average	---	---
7	3246.000	49.76	-24.24	74.00	58.28	30.60	2.13	41.25	Peak	---	---
8	3246.000	44.69	-9.31	54.00	53.21	30.60	2.13	41.25	Average	---	---
9	4876.000	39.68	-14.32	54.00	46.43	33.17	2.52	42.44	Average	---	---
10	4876.000	57.59	-16.41	74.00	64.34	33.17	2.52	42.44	Peak	---	---
11	6497.000	56.46	-17.54	74.00	62.51	34.30	2.94	43.29	Peak	---	---
12 !	6497.000	50.64	-3.36	54.00	56.69	34.30	2.94	43.29	Average	---	---
13	7310.000	45.96	-8.04	54.00	49.35	36.07	3.15	42.61	Average	---	---
14	7310.000	63.64	-10.36	74.00	67.03	36.07	3.15	42.61	Peak	---	---
15	9748.000	59.26	-14.74	74.00	56.80	38.43	3.81	39.78	Peak	127	334
16 !	9748.000	53.90	-0.10	54.00	51.44	38.43	3.81	39.78	Average	127	334

For 9.748GHz ~ 25GHz

Frequency from 9748MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency	Antenna	Cable	Reading	Limits	Emission	Level	Margin	Detect
Polarity	Factor	Loss						
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
2436.000	V	28.29	1.76	73.06	-	103.11	-	Peak
2436.000	V	28.29	1.76	32.10	-	62.15	-	Av
2438.000	H	28.30	1.76	76.97	-	107.03	-	Peak
2438.000	H	28.30	1.76	34.31	-	64.37	-	Av
4876.000	V	33.17	2.52	19.51	74.00	55.20	-	Peak
4876.000	V	33.17	2.52	2.36	54.00	38.05	-	AV
7310.000	V	36.07	3.15	28.39	74.00	67.61	-	Peak
7310.000	V	36.07	3.15	8.10	54.00	47.32	-	AV
9748.000	V	38.47	3.71	18.17	74.00	60.35	-	Peak
9748.000	V	38.47	3.71	9.96	54.00	52.14	-	AV
4876.000	H	33.17	2.52	21.90	74.00	57.59	-	Peak
4876.000	H	33.17	2.52	3.99	54.00	39.68	-	AV
7310.000	H	36.07	3.15	24.42	74.00	63.64	-	Peak
7310.000	H	36.07	3.15	6.74	54.00	45.96	-	AV
9748.000	H	38.43	3.81	17.02	74.00	59.26	-	Peak
9748.000	H	38.43	3.81	11.66	54.00	53.90	-	AV
12060.000	V/H	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamplifier Factor

Test Engineer : 
Jay

7.4.6 Test Mode: Mode 6

- Test Distance : 3 m
- Temperature : 26°C
- Relative Humidity :50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test that passed at minimum margin was marked by the frame in the following table.

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m BIC-9124--301 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH11 2462MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	35.100	30.12	-9.88	40.00	44.12	13.02	1.02	28.04	Peak	113	342
2	97.150	24.08	-19.42	43.50	40.73	9.54	1.71	27.90	Peak	---	---
3	123.670	26.86	-16.64	43.50	41.86	10.87	1.98	27.85	Peak	---	---

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m LOG-9111-221 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH11 2462MHz
 F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	566.400	33.00	-13.00	46.00	39.42	18.17	4.18	28.77	Peak	---	---
2	749.600	35.33	-10.67	46.00	39.23	20.01	4.84	28.75	Peak	105	349
3	928.800	33.60	-12.40	46.00	34.93	21.51	5.43	28.27	Peak	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
Condition : FCC CLASS-B 3m BIC-9124--301 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11g TX CH11 2462MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	97.830	26.30	-17.20	43.50	42.87	9.60	1.73	27.90	Peak	---	---
2	123.670	26.90	-16.60	43.50	41.90	10.87	1.98	27.85	Peak	---	---
3	144.070	27.53	-15.97	43.50	41.22	12.00	2.12	27.81	Peak	109	329

Site : 03CH03-HY
Condition : FCC CLASS-B 3m LOG-9111-221 HORIZONTAL
EUT : IEEE802.11g WLAN Card
Power : AC 110V / 60Hz
Model :
Memo : 11g TX CH11 2462MHz
F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	330.400	31.45	-14.55	46.00	40.89	14.86	3.15	27.45	Peak	104	344
2	397.600	31.44	-14.56	46.00	40.03	15.74	3.46	27.79	Peak	---	---
3	749.600	31.33	-14.67	46.00	35.23	20.01	4.84	28.75	Peak	---	---

FCC TEST REPORT

Report No. :F413115

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 VERTICAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH11 2462MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2358.000	46.27	-27.73	74.00	57.56	28.14	1.69	41.12	Peak	---	---
2	2358.000	35.28	-18.72	54.00	46.57	28.14	1.69	41.12	Average	---	---
3	X 2462.000	62.62	8.62	54.00	73.66	28.35	1.79	41.18	Average	---	---
4	X 2462.000	103.68	29.68	74.00	114.72	28.35	1.79	41.18	Peak	---	---
6	2483.500	45.39	-8.61	54.00	56.38	28.39	1.82	41.20	Average	---	---
7	3278.000	49.06	-24.94	74.00	57.45	30.68	2.19	41.26	Peak	---	---
8	3278.000	45.95	-8.05	54.00	54.34	30.68	2.19	41.26	Average	---	---
9	4924.000	40.53	-13.47	54.00	47.30	33.27	2.47	42.51	Average	---	---
10	4924.000	58.50	-15.50	74.00	65.27	33.27	2.47	42.51	Peak	---	---
11	6566.000	56.85	-17.15	74.00	62.47	34.43	3.20	43.25	Peak	---	---
12	6566.000	52.33	-1.67	54.00	57.95	34.43	3.20	43.25	Average	---	---
13	7394.000	48.10	-5.90	54.00	51.52	36.27	2.82	42.51	Average	---	---
14	7394.000	68.56	-5.44	74.00	71.98	36.27	2.82	42.51	Peak	---	---
15	9860.000	59.55	-14.45	74.00	56.54	38.70	3.96	39.65	Peak	124	339
16	9860.000	53.95	-0.05	54.00	50.94	38.70	3.96	39.65	Average	124	339

Site : 03CH03-HY
 Condition : FCC CLASS-B 3m HORN-ANT-6741 HORIZONTAL
 EUT : IEEE802.11g WLAN Card
 Power : AC 110V / 60Hz
 Model :
 Memo : 11g TX CH11 2462MHz
 : F413115

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	2390.000	69.14	-4.86	74.00	80.36	28.20	1.72	41.14	Peak	---	---
2	2390.000	39.73	-14.27	54.00	50.95	28.20	1.72	41.14	Average	---	---
3	X 2460.000	107.33	33.33	74.00	118.39	28.34	1.78	41.18	Peak	---	---
4	X 2460.000	64.51	10.51	54.00	75.57	28.34	1.78	41.18	Average	---	---
6	2500.000	48.89	-5.11	54.00	59.80	28.44	1.85	41.20	Average	---	---
7	3278.000	52.31	-21.69	74.00	60.70	30.68	2.19	41.26	Peak	---	---
8	3278.000	49.13	-4.87	54.00	57.52	30.68	2.19	41.26	Average	---	---
9	4932.000	42.32	-11.68	54.00	49.09	33.29	2.46	42.52	Average	---	---
10	4932.000	62.05	-11.95	74.00	68.82	33.29	2.46	42.52	Peak	---	---
11	6566.000	58.56	-15.44	74.00	64.18	34.43	3.20	43.25	Peak	---	---
12	6566.000	52.61	-1.39	54.00	58.23	34.43	3.20	43.25	Average	---	---
13	7385.000	64.59	-9.41	74.00	68.07	36.25	2.79	42.52	Peak	---	---
14	7385.000	44.42	-9.58	54.00	47.90	36.25	2.79	42.52	Average	---	---
15	9852.000	59.57	-14.43	74.00	56.56	38.70	3.96	39.65	Peak	121	337
16	9852.000	53.86	-0.14	54.00	50.85	38.70	3.96	39.65	Average	121	337

For 9.852GHz ~ 25GHz

Frequency from 9852MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

SPORTON International Inc.

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FCC ID : Q87-WPCI54G

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Issued Date : Mar. 19, 2004

■ Field strength of fundamental and harmonics

Frequency	Antenna	Cable	Reading	Limits	Emission	Level	Margin	Detect
Polarity	Factor	Loss						
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
2462.000	V	28.35	1.79	73.54	-	103.68	-	Peak
2462.000	V	28.35	1.79	32.48	-	62.62	-	Av
2460.000	H	28.34	1.78	77.21	-	107.33	-	Peak
2460.000	H	28.34	1.78	34.39	-	64.51	-	Av
4924.000	V	33.27	2.47	22.76	74.00	58.50	-15.50	Peak
4924.000	V	33.27	2.47	4.79	54.00	40.53	-13.47	AV
7394.000	V	36.27	2.82	29.47	74.00	68.56	-5.44	Peak
7394.000	V	36.27	2.82	9.01	54.00	48.10	-5.90	AV
9860.000	V	38.70	3.96	16.89	74.00	59.55	-14.45	Peak
9860.000	V	38.70	3.96	11.29	54.00	53.95	-0.05	AV
4932.000	H	33.29	2.46	26.30	74.00	62.05	-11.95	Peak
4932.000	H	33.29	2.46	6.57	54.00	42.32	-11.68	AV
7385.000	H	36.25	2.79	25.55	74.00	64.59	-9.41	Peak
7385.000	H	36.25	2.79	5.38	54.00	44.42	-9.58	AV
9852.000	H	38.70	3.96	16.91	74.00	59.57	-14.43	Peak
9852.000	H	38.70	3.96	11.20	54.00	53.86	-0.14	AV
12060.000	V/H	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : 

Jay

8. Antenna Requirements

The EUT use a 6.22dBi Dipole antenna with reverse SMA connector. It is considered to meet antenna requirement of FCC.

8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

8.2. Antenna Connected Construction

The antenna used in this product is a Dipole antenna with reverse SMA connector.

9. RF Exposure

FCC Rules and Regulations Part 1.1307,1.1310,2.1091,2.1093:

RF Exposure Compliance

9.1. Limit For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

F=frequency in MHz

*Plane-wave equivalent power density

9.2. MPE Calculations

Power Density =Pd (mW/cm²) = EIRP/4 π d²

EIRP = P · G

P=Peak output power (mW)

G=Antenna numeric gain (numeric)

d=Separation distance (cm)

Because the EUT belongs to General Population/ Uncontrolled Exposure, the limit of power density is 1.0 mW/cm².

Channel NO.	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure at d=20cm (mW/cm ²)	Limit (mW/cm ²)
Channel 01	6.22	4.19	17.93	62.09	0.05	1
Channel 06	6.22	4.19	17.7	58.88	0.05	1
Channel 11	6.22	4.19	18.11	64.71	0.05	1

➤ The worst case of MPE is 802.11g mode.

9.3. FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm during normal operation.

10. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 12, 2003	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001-008	9 KHz – 30 MHz	Apr. 30, 2003	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001-009	9 KHz – 30 MHz	Apr. 30, 2003	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Dec. 24, 2003	Conduction (CO01-HY)
50 ohm BNC type Terminal	NOBLE	50ohm	TM013	50 ohm	Apr. 24, 2003	Conduction (CO01-HY)

※ Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 23, 2003	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz –200MHz	Jul. 24, 2003	Radiation (03CH03-HY)
Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz -1GHz	Jul. 24, 2003	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Dec. 03, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	3115	6741	1GHz – 18GHz	Apr. 08, 2003	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)
Horn Antenna	Schwarzbeck	BBHA9170	154	15GHz~40GHz	Jun. 02, 2003	Radiation (03CH03-HY)
RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Dec. 05, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

※ Calibration Interval of Horn Antenna, BBHA9170, is three years.

11. Uncertainty Measurement

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch Receiver VSWR Γ_1 = LISN VSWR Γ_2 = Uncertainty= $20\log(1-\Gamma_1\Gamma_2)$	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

$$U = \sqrt{\{(1/2)^2 + (0.3/2)^2 + (2^2 + 0.5^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}} = 2.2 \text{ for 10m test distance}$$

$$U = \sqrt{\{(1/2)^2 + (0.3/2)^2 + (2^2 + 3^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}} = 2.7 \text{ for 3m test distance}$$

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.15	Normal(k=2)	0.08
Antenna factor calibration	1.12	Normal(k=2)	0.56
Cable loss calibration	0.12	Normal(k=2)	0.06
Pre Amplifier Gain calibration	0.13	Normal(k=2)	0.07
RCV/SPA specification	2.5	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1	Rectangular	0.29
Site imperfection	2.1	Rectangular	1.21
Mismatch Receiver VSWR Γ_1 = 0.20 Antenna VSWR Γ_2 = 0.23 Uncertainty= $20\log(1-\Gamma_1\Gamma_2)$	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.58		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	3.16		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	± 0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	± 1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	± 0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty $U_c(y)$	2.36				
Measuring uncertainty for a level of confidence of 95% $U = 2U_c(y)$	4.72				

$$U = \sqrt{\{(0.3/2)^2 + (2^2 + 1.5^2 + 0.2^2)/3 + (0.2)^2/2\}} = 1.66$$