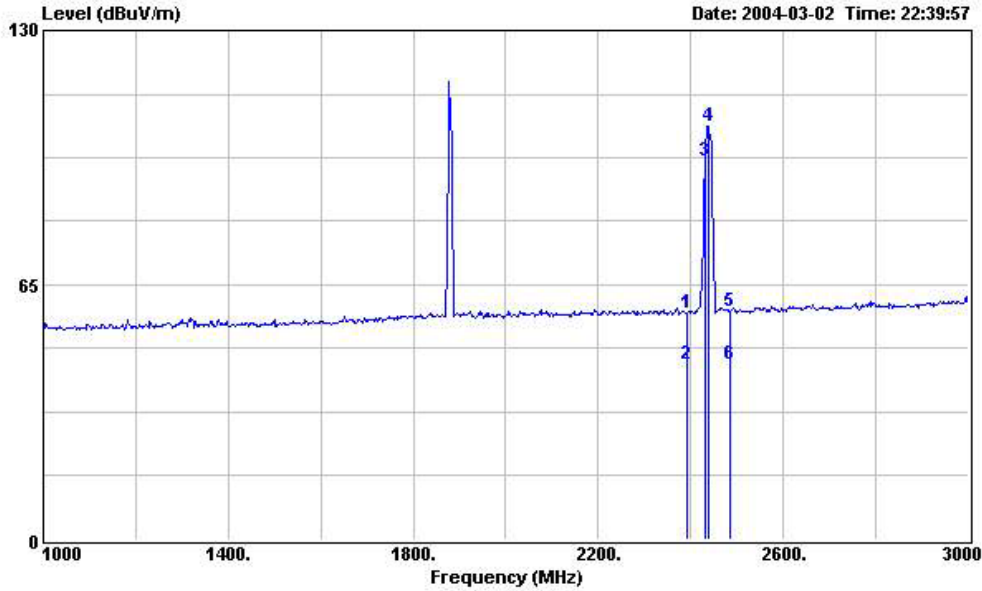


FCC TEST REPORT

Report No. : F422302

Test Mode: Mode 5
Vertical Polarization

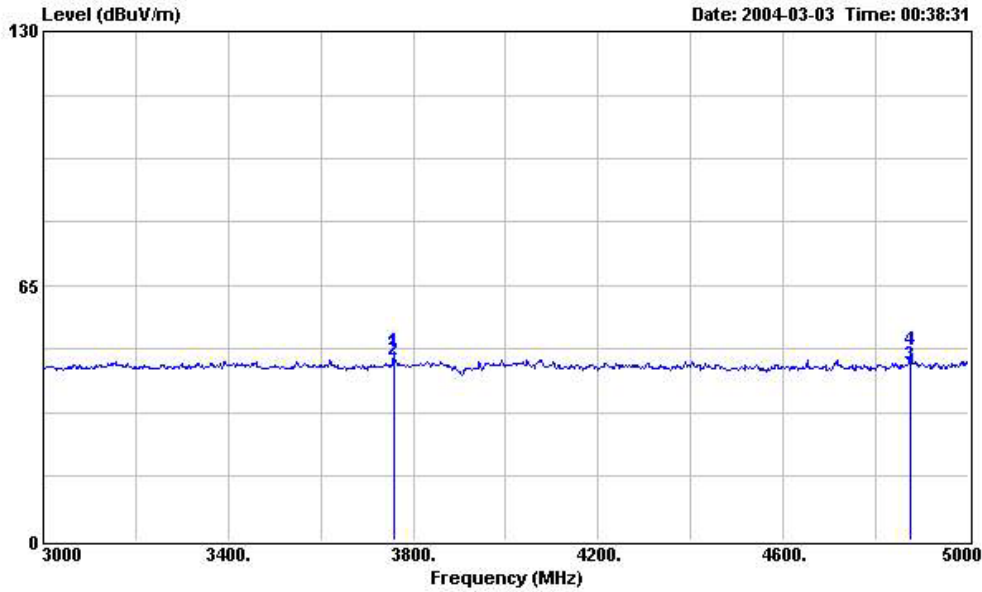


Site : site
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
Power : AC 110V / 60Hz
Model : 56W11
Memo : GSM1900 CH661 ;TX CH06 2437MHz

Line	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	2390.000	57.75	-----	-----	68.97	28.20	1.72	41.14	Peak
2	2390.000	44.81	-----	-----	56.03	28.20	1.72	41.14	Average
3	2432.000	96.48	-----	-----	107.60	28.29	1.76	41.17	Average
4	2438.000	105.52	-----	-----	116.63	28.30	1.76	41.17	Peak
5	2483.500	58.41	-----	-----	69.40	28.39	1.82	41.20	Peak
6	2483.500	44.91	-----	-----	55.90	28.39	1.82	41.20	Average

FCC TEST REPORT

Report No. : F422302



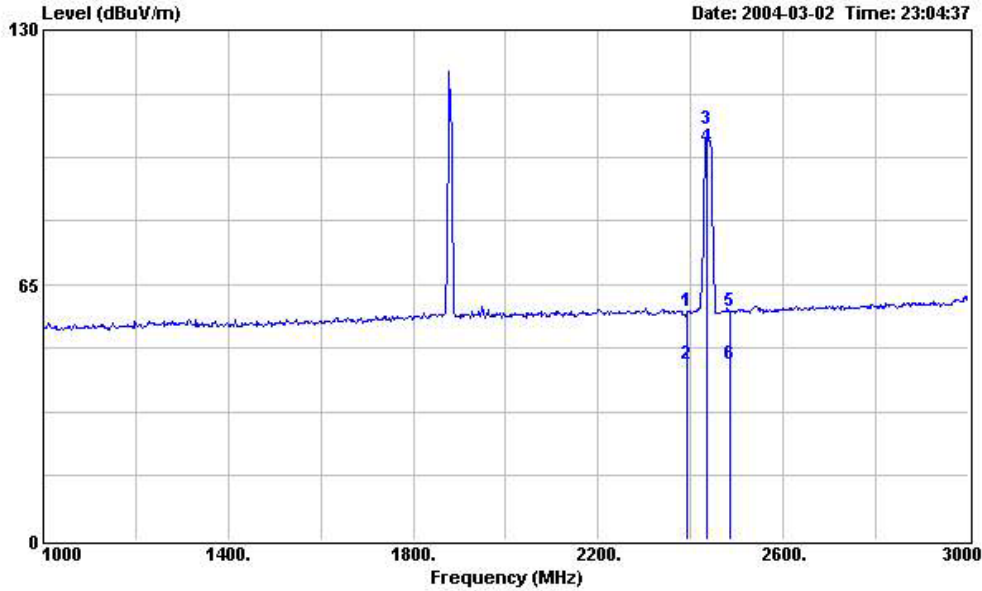
Site : site
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH06 2432MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	3758.000	48.12	-----	-----	55.75	31.96	1.82	41.41	Peak
2	3758.000	45.92	-----	-----	53.55	31.96	1.82	41.41	Average
3	4876.000	44.57	-----	-----	51.32	33.17	2.52	42.44	Average
4	4876.000	48.73	-----	-----	55.48	33.17	2.52	42.44	Peak

For 4.876GHz ~ 20GHz

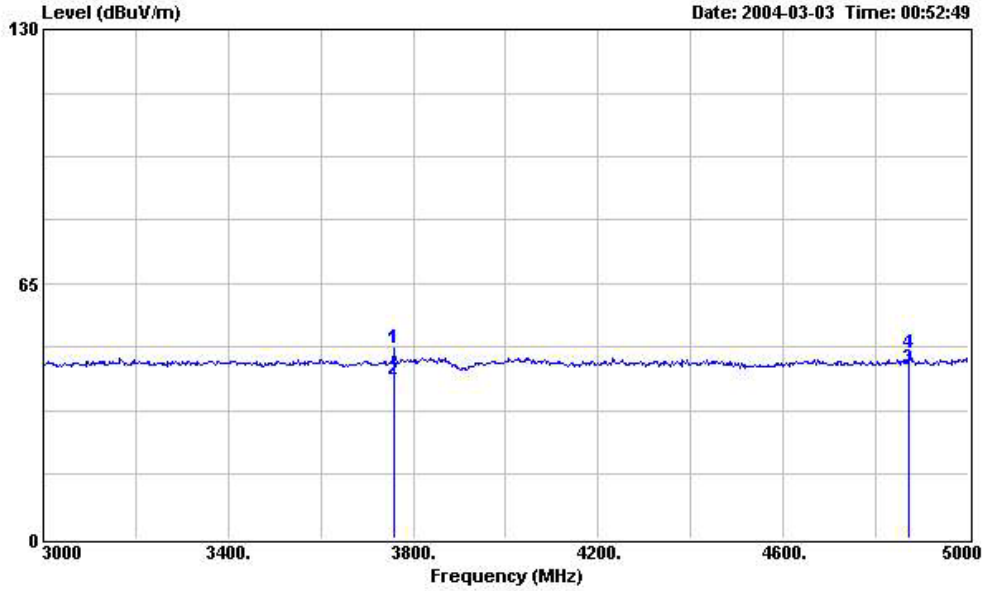
Frequency from 4876MHz to 20000MHz, the emission emitted by the EUT is too low to be measured

Test Mode: Mode 5
Horizontal Polarization



Site : site
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH06 2437MHz

	Over	Limit	Read	Probe	Cable	Preamp		
Freq	Level	Limit	Line	Level	Factor	Loss	Factor	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	2390.000	58.08	-----	69.30	28.20	1.72	41.14	Peak
2	2390.000	44.60	-----	55.82	28.20	1.72	41.14	Average
3	2436.000	104.57	-----	115.69	28.29	1.76	41.17	Peak
4	2436.000	99.95	-----	111.07	28.29	1.76	41.17	Average
5	2483.500	58.39	-----	69.38	28.39	1.82	41.20	Peak
6	2483.500	44.94	-----	55.93	28.39	1.82	41.20	Average



Site : site
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH06 2432MHz

No.	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	3758.000	48.61	-----	-----	56.24	31.96	1.82	41.41	Peak
2	3758.000	40.50	-----	-----	48.13	31.96	1.82	41.41	Average
3	4870.000	43.35	-----	-----	50.10	33.16	2.52	42.43	Average
4	4870.000	47.28	-----	-----	54.03	33.16	2.52	42.43	Peak

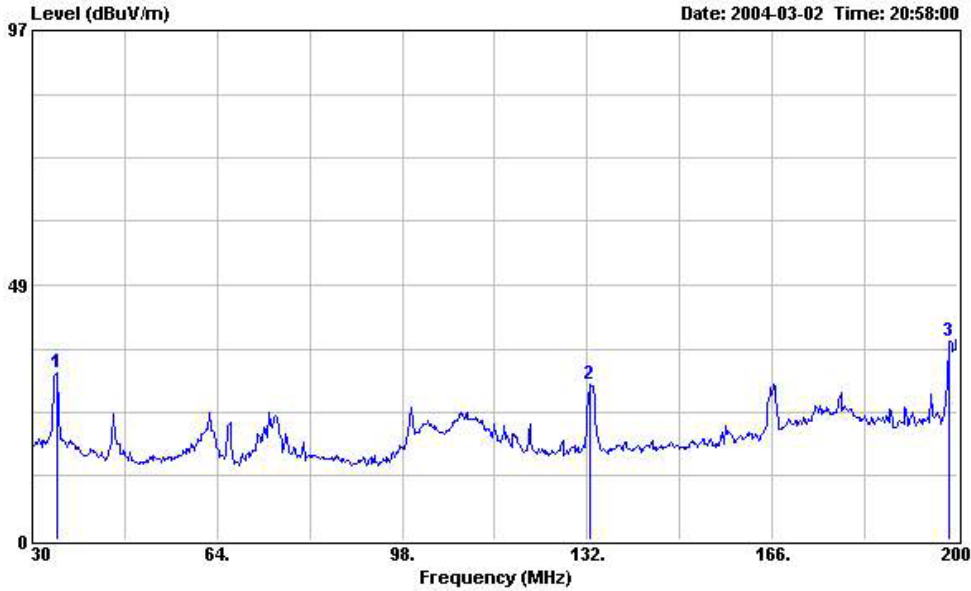
For 4.870GHz ~ 20GHz

Frequency from 4870MHz to 20000MHz, the emission emitted by the EUT is too low to be measured

FCC TEST REPORT

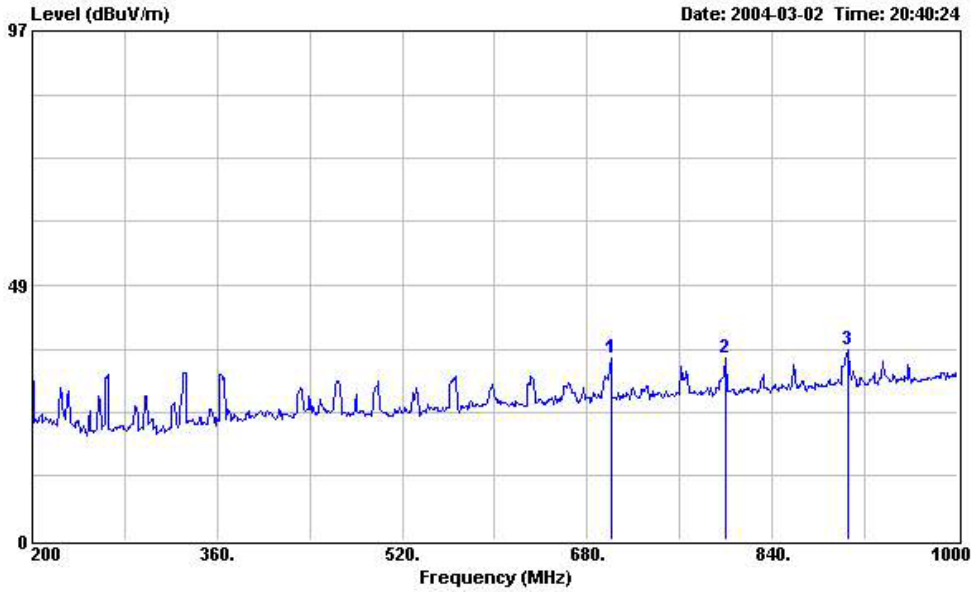
Report No. : F422302

Test Mode: Mode 6
Vertical Polarization



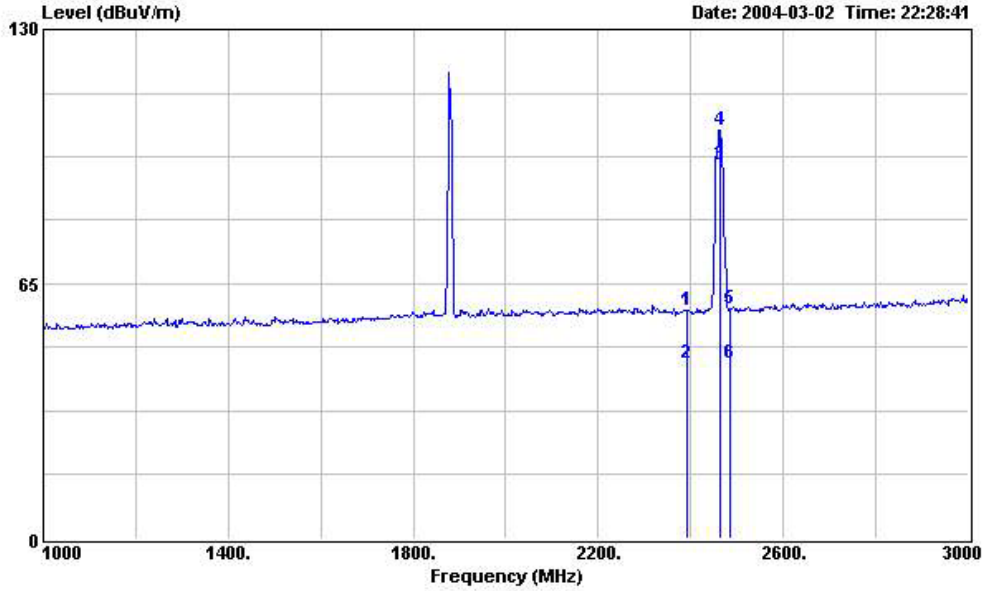
Site : site
Condition : 3m BIC-9124--301 VERTICAL
EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
Power : AC 110V / 60Hz
Model : 56W11
Memo : GSM1900 CH661 ;TX CH11 2462MHz

Peak	Freq MHz	Level dBuV/m	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB	dB	dB	
1	34.420	31.76	-----	-----	45.54	13.18	1.08	28.04	Peak
2	132.340	29.62	-----	-----	43.79	11.45	2.21	27.83	Peak
3	198.470	37.90	-----	-----	48.08	14.76	2.76	27.70	Peak



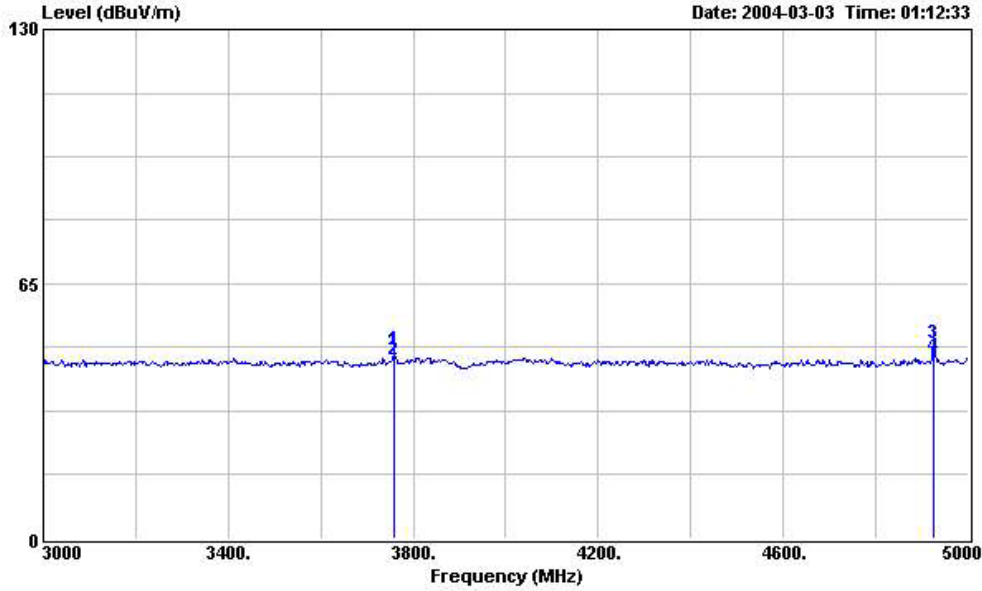
Site : site
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ; TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	700.800	34.52	-----	-----	38.06	19.80	5.36	28.70	Peak
2	800.000	34.78	-----	-----	37.26	20.38	5.94	28.80	Peak
3	905.600	36.22	-----	-----	36.86	21.16	6.49	28.29	Peak



Site : site
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH11 2462MHz

Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
		Limit	Line	Level	Factor	Loss	Factor	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	2390.000	58.25	-----	69.47	28.20	1.72	41.14	Peak
2	2390.000	44.74	-----	55.96	28.20	1.72	41.14	Average
3	2462.000	95.40	-----	106.44	28.35	1.79	41.18	Average
4	2462.000	104.20	-----	115.24	28.35	1.79	41.18	Peak
5	2483.500	58.71	-----	69.70	28.39	1.82	41.20	Peak
6	2483.500	44.83	-----	55.82	28.39	1.82	41.20	Average



Site : site
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH11 2462MHz

No.	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	3758.000	48.11	-----	-----	55.74	31.96	1.82	41.41	Peak
2	3758.000	45.60	-----	-----	53.23	31.96	1.82	41.41	Average
3	4926.000	49.96	-----	-----	56.72	33.28	2.47	42.51	Peak
4	4926.000	46.44	-----	-----	53.20	33.28	2.47	42.51	Average

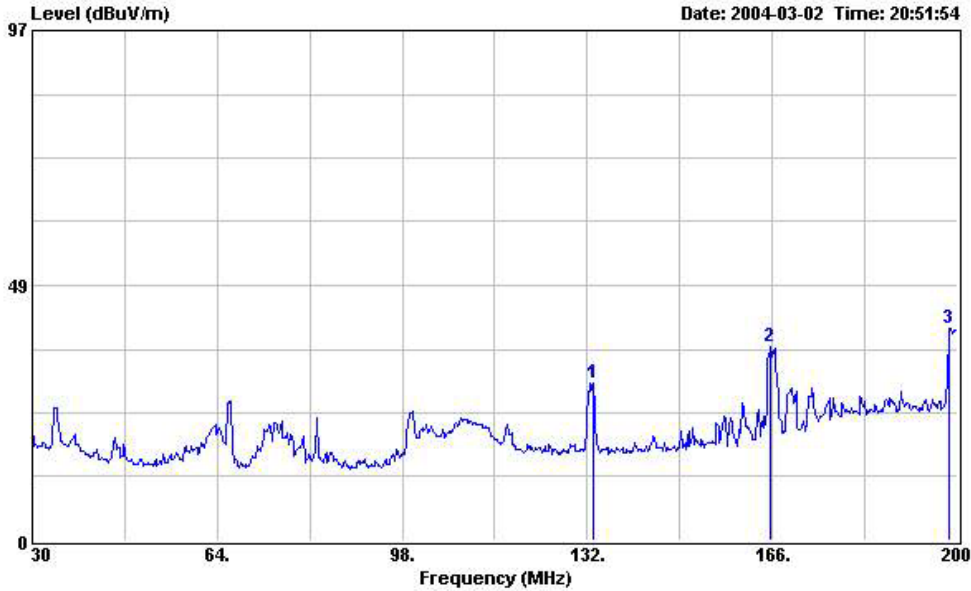
For 4.926GHz ~ 20GHz

Frequency from 4926MHz to 20000MHz, the emission emitted by the EUT is too low to be measured

FCC TEST REPORT

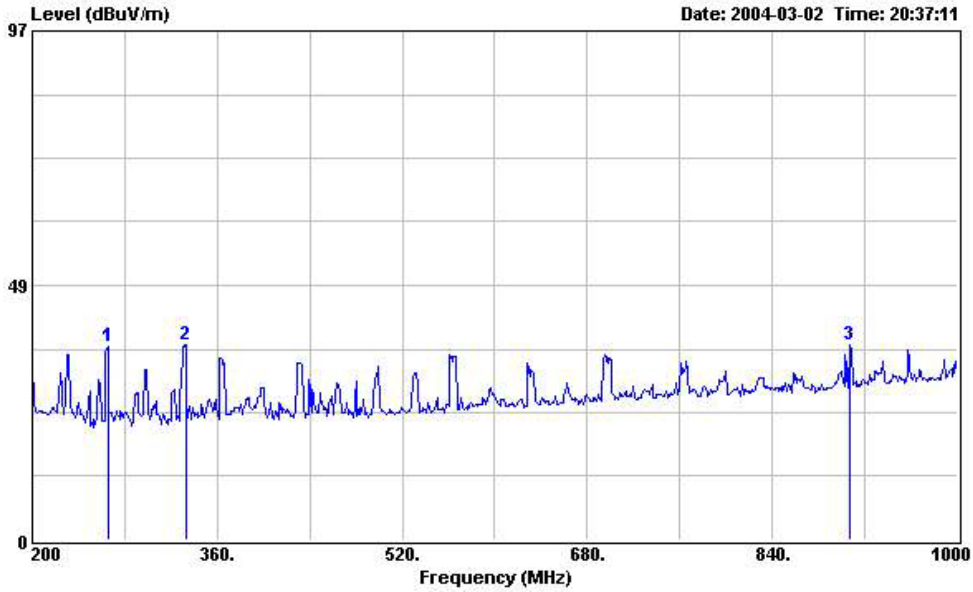
Report No. : F422302

Test Mode: Mode 6
Horizontal Polarization



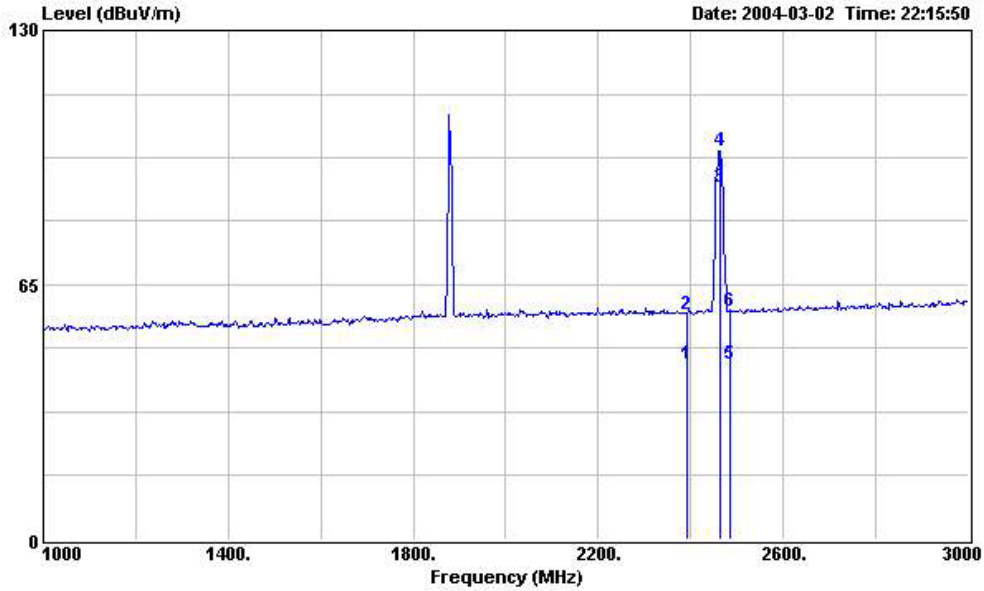
Site : site
Condition : 3m BIC-9124--301 HORIZONTAL
EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
Power : AC 110V / 60Hz
Model : 56W11
Memo : GSM1900 CH661 ;TX CH11 2462MHz

Line	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	133.020	30.01	-----	-----	44.11	11.48	2.25	27.83	Peak
2	165.660	36.92	-----	-----	49.24	13.01	2.44	27.77	Peak
3	198.470	40.43	-----	-----	50.61	14.76	2.76	27.70	Peak



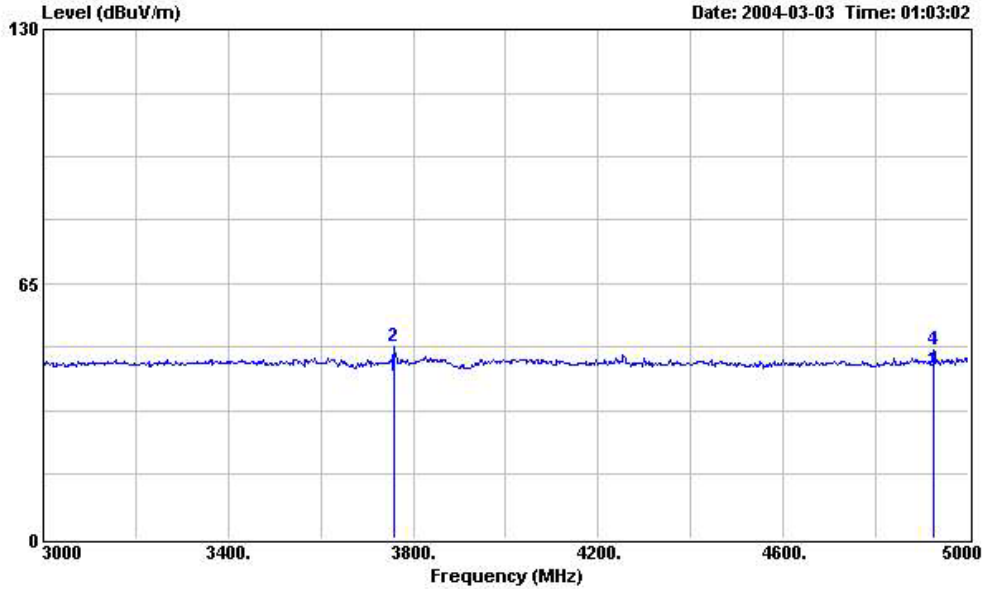
Site : site
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ; TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	265.600	36.87	-----	-----	48.48	12.50	3.33	27.44	Peak
2	332.800	37.16	-----	-----	46.09	14.97	3.56	27.46	Peak
3	906.400	37.18	-----	-----	37.88	21.18	6.41	28.29	Peak



Site : site
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH11 2462MHz

Line	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	2390.000	44.53	-----	-----	55.75	28.20	1.72	41.14	Average
2	2390.000	57.29	-----	-----	68.51	28.20	1.72	41.14	Peak
3	2462.000	89.85	-----	-----	100.89	28.35	1.79	41.18	Average
4	2462.000	99.08	-----	-----	110.12	28.35	1.79	41.18	Peak
5	2483.500	44.82	-----	-----	55.81	28.39	1.82	41.20	Average
6	2483.500	58.42	-----	-----	69.41	28.39	1.82	41.20	Peak



Site : site
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Tri Band GSM/WLAN (802.11b) PCMCIA Card
 Power : AC 110V / 60Hz
 Model : 56W11
 Memo : GSM1900 CH661 ;TX CH11 2462MHz

No.	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
			Limit	Line	Level	Factor	Loss	Factor	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	
1	3758.000	41.56	-----	-----	49.19	31.96	1.82	41.41	Average
2	3758.000	49.04	-----	-----	56.67	31.96	1.82	41.41	Peak
3	4926.000	42.55	-----	-----	49.31	33.28	2.47	42.51	Average
4	4926.000	48.00	-----	-----	54.76	33.28	2.47	42.51	Peak

For 4.926GHz ~ 20GHz

Frequency from 4926MHz to 20000MHz, the emission emitted by the EUT is too low to be measured

Name of Test: Frequency Stability (Temperature Variation)

Specification: 47 CFR 2.1055(a)(1)

Test Conditions: As Indicated

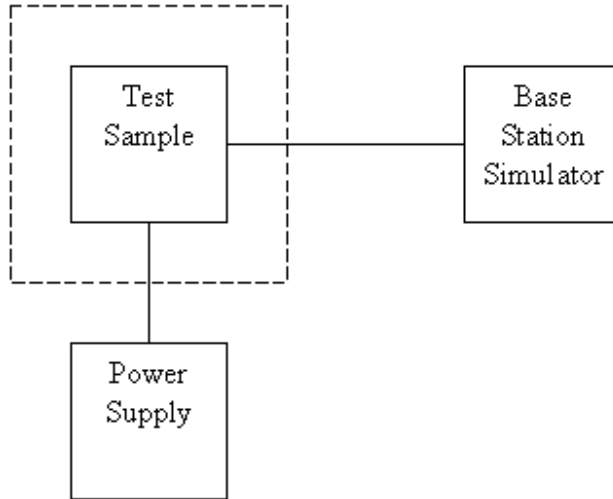
Test Equipment: As per previous page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Measurement Results: Attached

Transmitter Test Set-Up

Frequency Stability: Temperature Variation
Frequency Stability: Voltage Variation



Asset	Model Name	S/N
Temperature & Humidity Controller	P-9000	612
AC/DC Power Source	HPA-500W	HPA0100024
Base Station Simulator	CMU200	102278

FCC TEST REPORT

Report No. : F422302

Name of Test: Frequency Stability (Temperature Variation)

GSM/GPRS PCS BAND

GSM/GPRS850

Temperature(°C)	Change, Hz	Change, ppm
-30	78	0.09
-20	64	0.08
-10	46	0.05
0	43	0.05
10	39	0.05
20	37	0.04
30	43	0.05
40	42	0.05
50	47	0.06

GSM/GPRS1900

Temperature(°C)	Change, Hz	Change, ppm
-30	145	0.08
-20	114	0.06
-10	93	0.05
0	77	0.04
10	62	0.03
20	51	0.03
30	53	0.03
40	55	0.03
50	53	0.03

Name of Test: Frequency Stability (Voltage Variation)

Specification: 47 CFR 2.1055 (b)(1)

Test Equipment: As per previous page

Measurement Procedure

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

Results: Frequency Stability (Voltage Variation)

GSM/GPRS PCS BAND

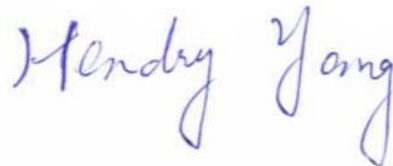
Nominal Value (Voltage) = 5.0

Voltage(Volt)	Change, Hz	Change, ppm
5	37	0.02
4.25	45	0.02
5.75	38	0.02

Nominal Value (Voltage) = 5.0

Voltage(Volt)	Change, Hz	Change, ppm
5	55	0.03
4.25	54	0.03
5.75	61	0.03

Limit: Must remain within authorized frequency block.



Performed By:

Hendry Yang

Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	15.35	1.01	1000	24.10	3.92
35	13.63	1.04	2000	27.40	5.66
40	11.11	1.09	3000	30.00	7.20
45	10.59	1.24	4000	32.60	9.36
50	6.47	1.43	5000	33.40	9.16
55	5.83	1.39	6000	34.20	10.70
60	5.18	1.59	7000	35.30	12.16
65	4.81	1.41	8000	36.90	13.12
70	4.43	1.43	9000	38.10	13.81
75	5.10	1.55	10000	39.00	14.83
80	5.91	1.56	11000	38.60	15.83
85	7.33	1.62	12000	39.50	17.11
90	8.74	1.41	13000	39.30	17.62
95	9.05	1.81	14000	41.60	18.37
100	9.36	1.68	15000	40.60	19.10
110	9.65	1.73	16000	37.20	19.72
120	9.97	1.79	17000	40.20	21.98
130	10.51	1.93	18000	48.90	21.22
140	10.32	2.06	19000	37.60	23.90
150	9.42	2.09	20000	37.30	24.07
160	8.09	2.12	21000	37.00	25.49
170	7.43	2.12	22000	38.00	24.92
180	7.60	2.12	23000	38.70	25.60
190	7.43	2.21	24000	38.60	25.70
200	7.26	2.29	25000	24.10	3.92
220	9.11	2.42	14000	27.40	5.66
240	10.88	2.54	15000	30.00	7.20
260	11.75	2.66	16000	32.60	9.36
280	11.55	2.76	17000	33.40	9.16
300	11.36	2.85	18000	34.20	10.70
320	12.03	3.10	19000	35.30	12.16
340	12.69	3.36	20000	36.90	13.12
360	13.33	3.49	21000	38.10	13.81
380	14.00	3.50	22000	39.00	14.83
400	14.63	3.51	23000	38.60	15.83
450	15.33	3.55	24000	39.50	17.11
500	16.03	3.81	25000	39.30	17.62
550	16.65	4.05			
600	17.29	4.23			
650	17.64	4.63			
700	18.00	4.74			
750	18.39	4.95			
800	18.79	5.06			
850	19.10	5.18			
900	19.42	5.40			
950	19.58	5.91			
1000	19.75	5.58			

List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m 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.

Uncertainty of Test Site

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch Receiver VSWR $\Gamma_1= 0.20$ Antenna VSWR $\Gamma_2= 0.23$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2)$	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

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 Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72				

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

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

END OF TEST REPORT

**Testimonial
and
Statement of Certification**

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certified by:

Daniel Lee 3/31/2004.

Daniel Lee