

Partial FCC RF Test Report

APPLICANT : QUALCOMM Incorporated
EQUIPMENT : Gobi2000 PCI Express mini card
BRAND NAME : Qualcomm
MODEL NAME : Gobi2000
FCC ID : J9CGOBI2000
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter (PCB)
Tx/Rx FREQUENCY RANGE : GSM850 : 824.2 ~ 848.8 MHz /
869.2 ~ 893.8 MHz
GSM1900 : 1850.2 ~ 1909.8 MHz /
1930.2 ~ 1989.8 MHz
WCDMA Band V : 826.4 ~ 846.6 MHz /
871.4 ~ 891.6 MHz
WCDMA Band II : 1852.4 ~ 1907.6 MHz /
1932.4 ~ 1987.6 MHz
CDMA2000 BC0 : 824.70 ~ 848.31 MHz /
869.70 ~ 893.31 MHz
CDMA2000 BC1 : 1851.25 ~ 1908.75 MHz /
1931.25 ~ 1988.75 MHz

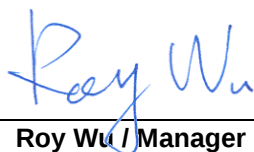
MAX. ERP/EIRP POWER : GSM850 (GPRS 8) : 0.70 W
GSM850 (EDGE 8) : 0.25 W
GSM1900 (GPRS 8) : 0.85 W
GSM1900 (EDGE 8) : 0.40 W
WCDMA Band V (RMC 12.2Kbps) : 0.14 W
WCDMA Band II (RMC 12.2Kbps) : 0.39 W
CDMA2000 BC0 : 0.13 W
CDMA2000 BC1 : 0.43 W

This is a partial report which is only valid combined with the Integrated WWAN Module Report. The product was installed into Notebook Computer (Brand Name: SONY / Model Name: PCG-2121** (*=0~9, A~Z or blank)) during the test.

The product was received on Oct. 02, 2009 and completely tested on Oct. 15, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:


Roy Wu / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG9O0204	Rev. 01	Initial issue of report	Nov. 11, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts for FCC (<6.3 Watts for IC)	PASS	-
3.1	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.2	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	< $43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 16.50 dB at 3760.0 MHz



1 General Description

1.1 Applicant

QUALCOMM Incorporated

5775 Morehouse Drive, San Diego, CA 92121-1714, U.S.A.

1.2 Manufacturer

QUALCOMM Incorporated

5775 Morehouse Drive, San Diego, CA 92121-1714, U.S.A.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Gobi2000 PCI Express mini card
Brand Name	Qualcomm
Model Name	Gobi2000
FCC ID	J9CGOBI2000
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz CDMA2000 BC0 : 824 MHz ~ 849 MHz CDMA2000 BC1 : 1850 MHz ~ 1910 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz CDMA2000 BC0 : 869 MHz ~ 894 MHz CDMA2000 BC1 : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 31.82 dBm GSM1900 : 29.27 dBm WCDMA Band V : 24.65 dBm WCDMA Band II : 25.08 dBm CDMA2000 BC0 : 24.37 dBm CDMA2000 BC1 : 24.90 dBm
Maximum ERP/EIRP	GSM850 (GPRS 8) : 0.70 W (28.45 dBm) GSM850 (EDGE 8) : 0.25 W (23.98 dBm) GSM1900 (GPRS 8) : 0.85 W (29.31 dBm) GSM1900 (EDGE 8) : 0.40 W (26.05 dBm) WCDMA Band V (RMC 12.2Kbps) : 0.14 W (21.58 dBm) WCDMA Band II (RMC 12.2Kbps) : 0.39 W (25.86 dBm) CDMA2000 BC0 : 0.13 W (21.21 dBm) CDMA2000 BC1 : 0.43 W (26.37 dBm)
Antenna Type	PIFA Antenna
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK CDMA2000 : QPSK
EUT Stage	Identical Prototype

Remark: This test report recorded only product characteristics and test results of PCS Licensed Transmitter (PCB).

List of Accessory for Host (Notebook Computer):

Specification of Accessory		
AC Adapter	Brand Name	SONY
	Model Name	VGP-AC19V39
	Power Rating	I/P:100-240Vac, 50-60Hz, 1.0A; O/P: 19.5Vdc, 2.0A
	AC Power Cord Type	1.8 meter shielded cable without ferrite core
Battery 1	Brand Name	SONY
	Model Name	VGP-BPL18
	Power Rating	10.8Vdc, 5200mAh, 57Wh
	Type	Li-ion
Battery 2	Brand Name	SONY
	Model Name	VGP-BPS18
	Power Rating	11.1dc, 2100mAh, 24Wh
	Type	Li-ion
WWAN Module	Brand Name	Qualcomm
	Model Name	Gobi 2000
	FCC ID	J9CGOBI2000
	IC	2723A-GOBI2000
WLAN Module	Brand Name	Atheros
	Model Name	AR5B95
	FCC ID	PPD-AR5B95
	IC	4104A-AR5B95
Bluetooth Module	Brand Name	Honhai
	Model Name	T77H114
	FCC ID	MCLT77H114
	IC	2878D-T77H114

Remark: The above information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description of the host (Notebook Computer).

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	FCC / IC Registration No.
	03CH07-HY	TW1022 / 4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- ♦ FCC 47 CFR Part 2, 22(H), 24(E)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ IC RSS-132 Issue 2
- ♦ IC RSS-133 Issue 5

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850, WCDMA Band V, and CDMA2000 BC0.
2. 30 MHz to 19000 MHz for GSM1900, WCDMA Band II, and CDMA2000 BC1.

Test Modes	
Band	Radiated TCs
GSM 850	■ GPRS 8 Link ■ EDGE 8 Link
GSM 1900	■ GPRS 8 Link ■ EDGE 8 Link ■ GPRS 8 Link + 802.11b Tx CH11
WCDMA Band V	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link
CDMA2000 BC0	■ 1xRTT FCH+SCH_RC3 Link Mode
CDMA2000 BC1	■ 1xRTT FCH+SCH_RC3 Link Mode

Note:

1. Only the radiated spurious emission (RSE) and ERP/EIRP tests of Qualcomm / Gobi 2000 on the host (notebook computer) were performed in this report, and the conducted test cases can be referred to integrated the WWAN Module (Brand Name: Qualcomm / Model Name: Gobi 2000, FCC ID: J9CGOBI2000) Report.
2. The maximum power levels are GPRS multi-slot class 8 mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA, and 1xRTT RC3+SO55 mode for CDMA2000; only these modes were used for all tests.

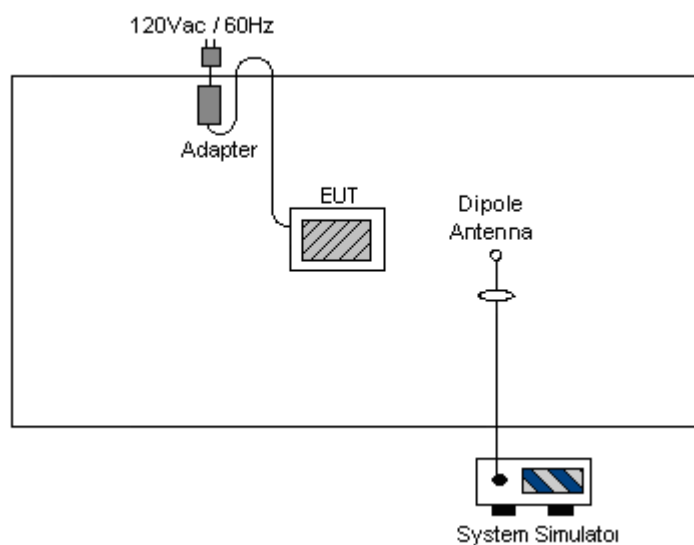
The conducted power tables are as follows:

Conducted Power (*Unit: dBm / Peak)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GPRS 8	31.82	31.66	31.38	29.13	29.24	29.27
GPRS 10	31.75	31.60	31.33	29.07	29.20	29.23
EGPRS 8	27.36	27.24	27.03	25.71	25.84	25.91
EGPRS 10	27.31	27.20	26.99	25.67	25.80	25.88

Conducted Power (*Unit: dBm / Average)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
RMC 12.2K	24.65	24.65	24.55	24.46	25.08	24.48
HSDPA Subtest-1	24.41	24.50	24.50	24.36	24.94	24.45
HSDPA Subtest-2	24.21	24.36	24.31	24.40	24.89	24.32
HSDPA Subtest-3	23.80	23.71	23.64	24.02	24.64	24.02
HSDPA Subtest-4	23.62	23.72	23.77	23.97	24.60	23.89
HSUPA Subtest-1	23.90	23.57	23.92	23.83	24.39	23.56
HSUPA Subtest-2	22.49	22.17	22.43	22.78	22.97	22.81
HSUPA Subtest-3	22.63	22.91	22.94	23.21	23.43	23.03
HSUPA Subtest-4	22.51	22.89	22.49	22.97	23.65	22.78
HSUPA Subtest-5	24.27	23.58	23.94	24.17	24.61	23.55

Conducted Power (*Unit: dBm / Average)						
Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT FCH_RC1+SO55	24.35	24.32	24.19	24.29	24.80	24.27
1xRTT FCH_RC3+SO55	24.37	24.35	24.28	24.38	24.90	24.27
1xRTT FCH+SCH_RC3+SO32	24.37	24.34	24.2	24.28	24.81	24.27
1xEV-DO RTAP 9.6K	24.17	24.03	23.97	23.98	24.51	23.81
1xEV-DO RTAP 38.4K	24.21	24.17	24.02	23.96	24.54	23.90
1xEV-DO RTAP 153.6K	24.31	24.20	24.07	24.08	24.62	24.02
1xEV-DO RETAP 128K	23.98	23.80	23.75	23.65	24.25	23.49
1xEV-DO RETAP 2048K	24.01	24.04	23.82	23.78	24.43	23.70
1xEV-DO RETAP 4096K	23.96	23.88	23.66	23.71	24.26	23.60
1xEV-DO RETAP 12288K	23.87	23.89	23.71	23.77	24.34	23.70

2.2 Connection Diagram of Test System



Note: The EUT is a WWAN module which was installed into the host Notebook Computer (Brand Name: SONY / Model Name: PCG-2121** (*=0~9, A~Z or blank)) during the test.

3 Test Result

3.1 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.1.1 Description of the ERP/EIRP Measurement

ERP/EIRP is measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

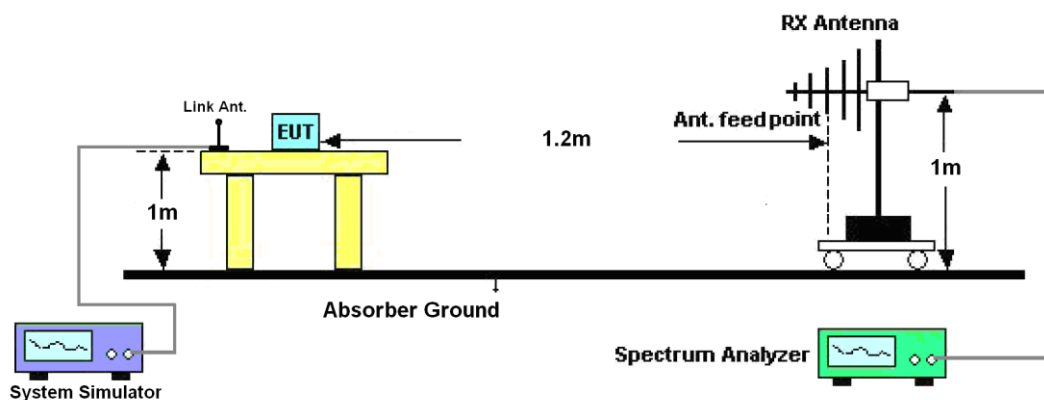
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The EUT was placed on a turntable with 1.0 meter height in a fully anechoic chamber.
2. The EUT was set at 1.2 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiated power.
4. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$
 P_s (dBm) : Input power to substitution antenna.
 G_s (dBi or dBd) : Substitution antenna Gain.
 $E_t = R_t + AF$
 $E_s = R_s + AF$
 AF (dB/m) : Receive antenna factor
 R_t : The highest received signal in spectrum analyzer for EUT.
 R_s : The highest received signal in spectrum analyzer for substitution antenna.

3.1.4 Test Setup



3.1.5 Test Result of ERP

GSM850 (GPRS 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-18.59	-48.12	0.00	-1.08	28.45	0.70
836.40	-19.15	-48.28	0.00	-0.93	28.20	0.66
848.80	-19.46	-48.35	0.00	-0.76	28.13	0.65
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-19.07	-47.97	0.00	-1.08	27.82	0.61
836.40	-19.84	-48.01	0.00	-0.93	27.24	0.53
848.80	-19.91	-48.05	0.00	-0.76	27.38	0.55

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-23.06	-48.12	0.00	-1.08	23.98	0.25
836.40	-23.53	-48.28	0.00	-0.93	23.82	0.24
848.80	-23.91	-48.35	0.00	-0.76	23.68	0.23
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-23.51	-47.97	0.00	-1.08	23.38	0.22
836.40	-24.23	-48.01	0.00	-0.93	22.85	0.19
848.80	-24.29	-48.05	0.00	-0.76	23.00	0.20

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-25.46	-48.12	0.00	-1.08	21.58	0.14
836.40	-25.79	-48.28	0.00	-0.93	21.56	0.14
846.60	-26.54	-48.35	0.00	-0.76	21.05	0.13
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-25.99	-47.97	0.00	-1.08	20.90	0.12
836.40	-26.30	-48.01	0.00	-0.93	20.78	0.12
846.60	-26.90	-48.05	0.00	-0.76	20.39	0.11

CDMA2000 Cellular 1xRTT_FCH+SCH_RC3 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-25.83	-48.12	0.00	-1.08	21.21	0.13
836.52	-26.31	-48.28	0.00	-0.93	21.04	0.13
848.31	-27.29	-48.35	0.00	-0.76	20.30	0.11
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-26.12	-47.97	0.00	-1.08	20.77	0.12
836.52	-26.69	-48.01	0.00	-0.93	20.39	0.11
848.31	-27.32	-48.05	0.00	-0.76	19.97	0.10

3.1.6 Test Result of EIRP

GSM1900 (GPRS 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-24.70	-51.88	0.00	1.96	29.14	0.82
1880.00	-26.39	-52.99	0.00	2.00	28.60	0.72
1909.80	-26.95	-54.28	0.00	1.98	29.31	0.85
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-25.29	-52.13	0.00	1.96	28.80	0.76
1880.00	-27.94	-53.17	0.00	2.00	27.23	0.53
1909.80	-29.20	-54.13	0.00	1.98	26.91	0.49

GSM1900 (EDGE 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.79	-51.88	0.00	1.96	26.05	0.40
1880.00	-29.43	-52.99	0.00	2.00	25.56	0.36
1909.80	-30.27	-54.28	0.00	1.98	25.99	0.40
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-28.14	-52.13	0.00	1.96	25.95	0.39
1880.00	-31.02	-53.17	0.00	2.00	24.15	0.26
1909.80	-32.59	-54.13	0.00	1.98	23.52	0.22

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-29.36	-51.88	0.00	1.96	24.48	0.28
1880.00	-29.57	-52.99	0.00	2.00	25.42	0.35
1907.60	-30.40	-54.28	0.00	1.98	25.86	0.39
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-29.88	-52.13	0.00	1.96	24.21	0.26
1880.00	-31.16	-53.17	0.00	2.00	24.01	0.25
1907.60	-33.00	-54.13	0.00	1.98	23.11	0.20

CDMA2000 PCS 1xRTT_FCH+SCH_RC3 Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-29.16	-51.88	0.00	1.96	24.68	0.29
1880.00	-29.58	-52.99	0.00	2.00	25.41	0.35
1908.75	-29.89	-54.28	0.00	1.98	26.37	0.43
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-29.67	-52.13	0.00	1.96	24.42	0.28
1880.00	-31.39	-53.17	0.00	2.00	23.78	0.24
1908.75	-33.07	-54.13	0.00	1.98	23.04	0.20

3.2 Field Strength of Spurious Radiation Measurement

3.2.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

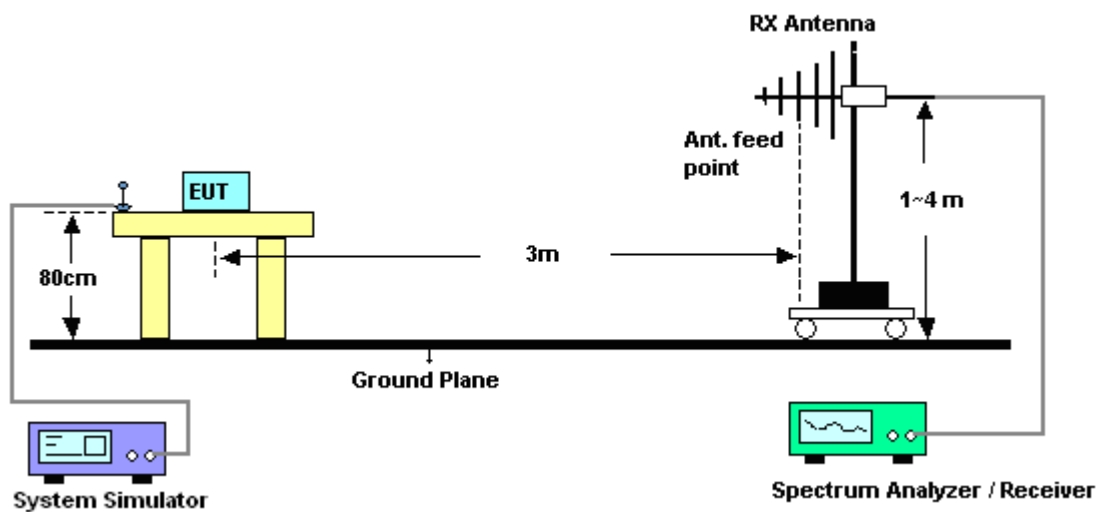
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

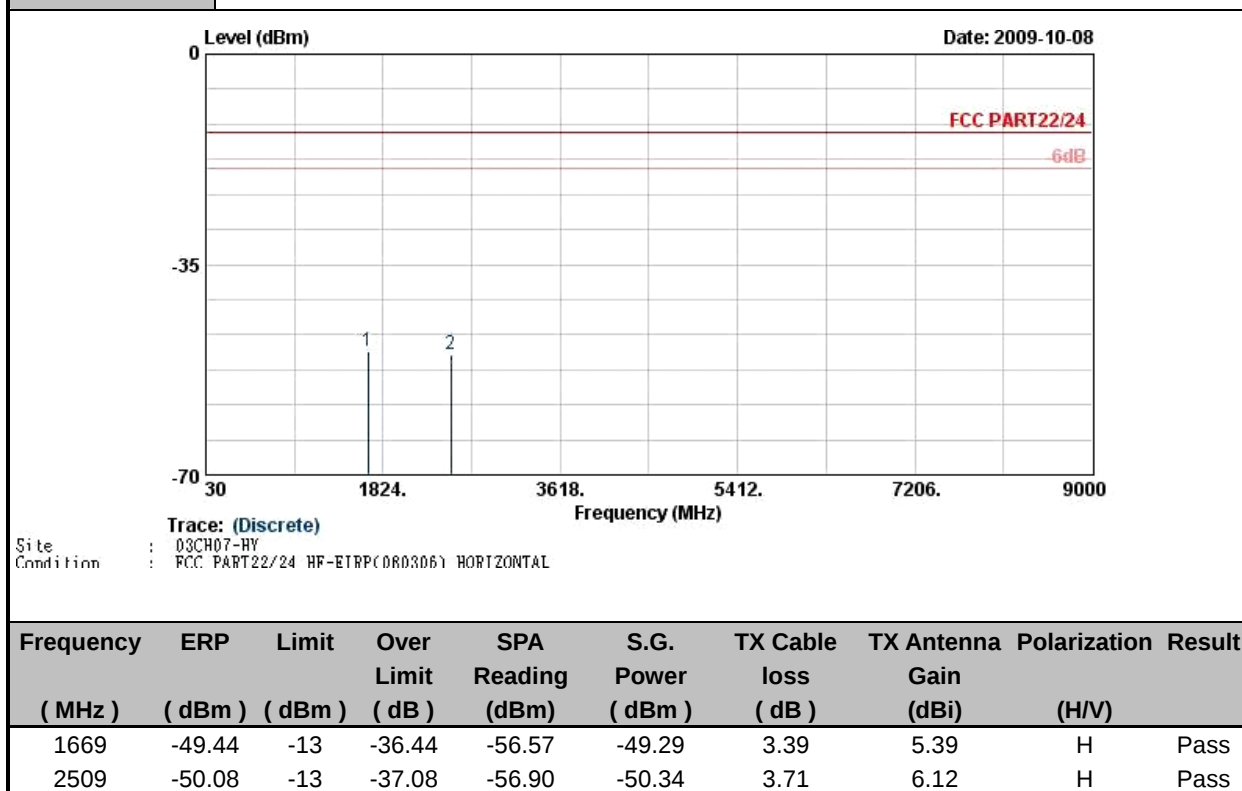
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$

3.2.4 Test Setup



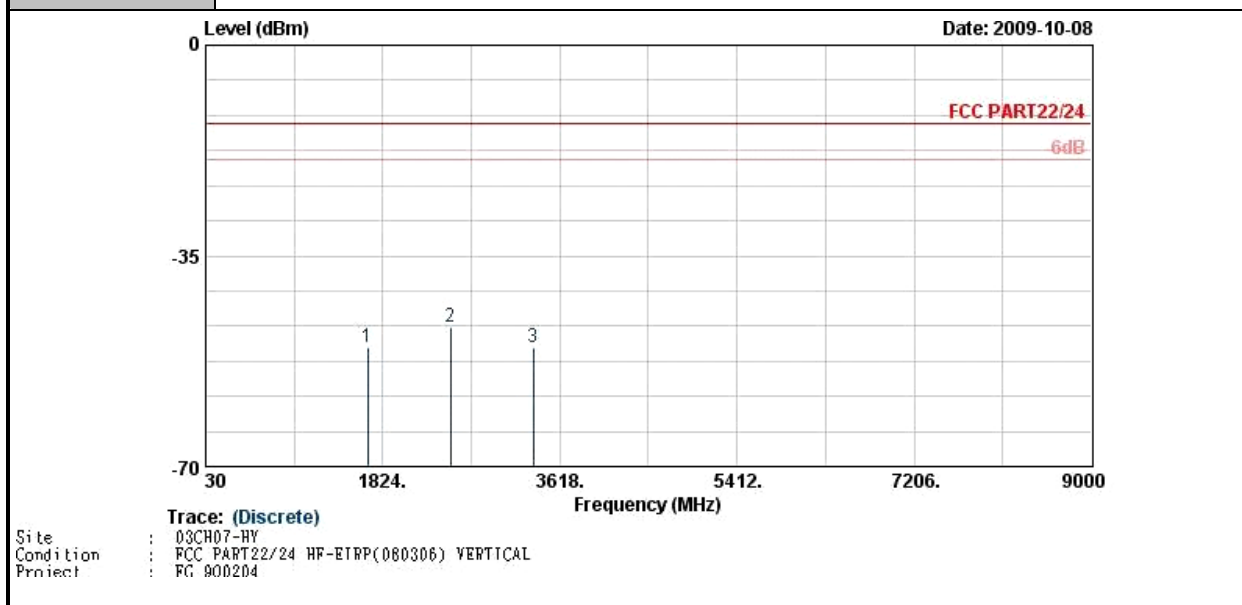
3.2.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	29~30°C
Test Mode :	GPRS 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



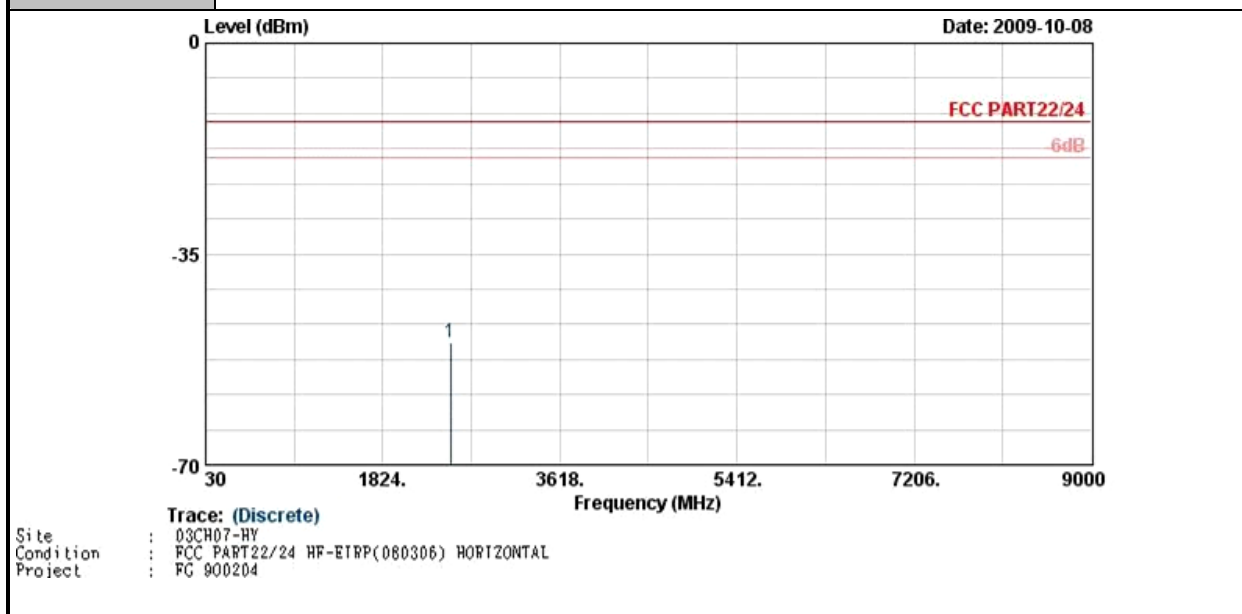


Band :	GSM850	Temperature :	29~30°C
Test Mode :	GPRS 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-50.32	-13	-37.32	-56.77	-50.17	3.39	5.39	V	Pass
2509	-46.92	-13	-33.92	-57.13	-47.18	3.71	6.12	V	Pass
3346	-50.23	-13	-37.23	-62.08	-52.95	3.13	8.00	V	Pass

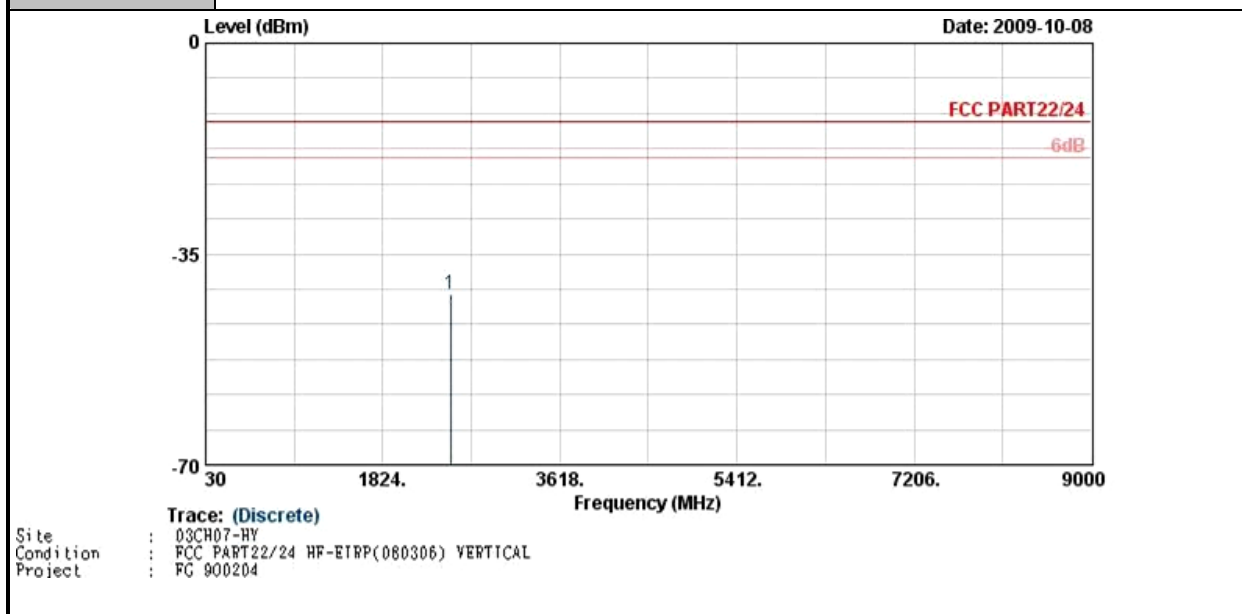
Band :	GSM850	Temperature :	29~30°C
Test Mode :	EDGE 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2509	-49.68	-13	-36.68	-56.51	-49.94	3.71	6.12	H	Pass



Band :	GSM850	Temperature :	29~30°C
Test Mode :	EDGE 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2509	-41.62	-13	-28.62	-52.99	-41.88	3.71	6.12	V	Pass

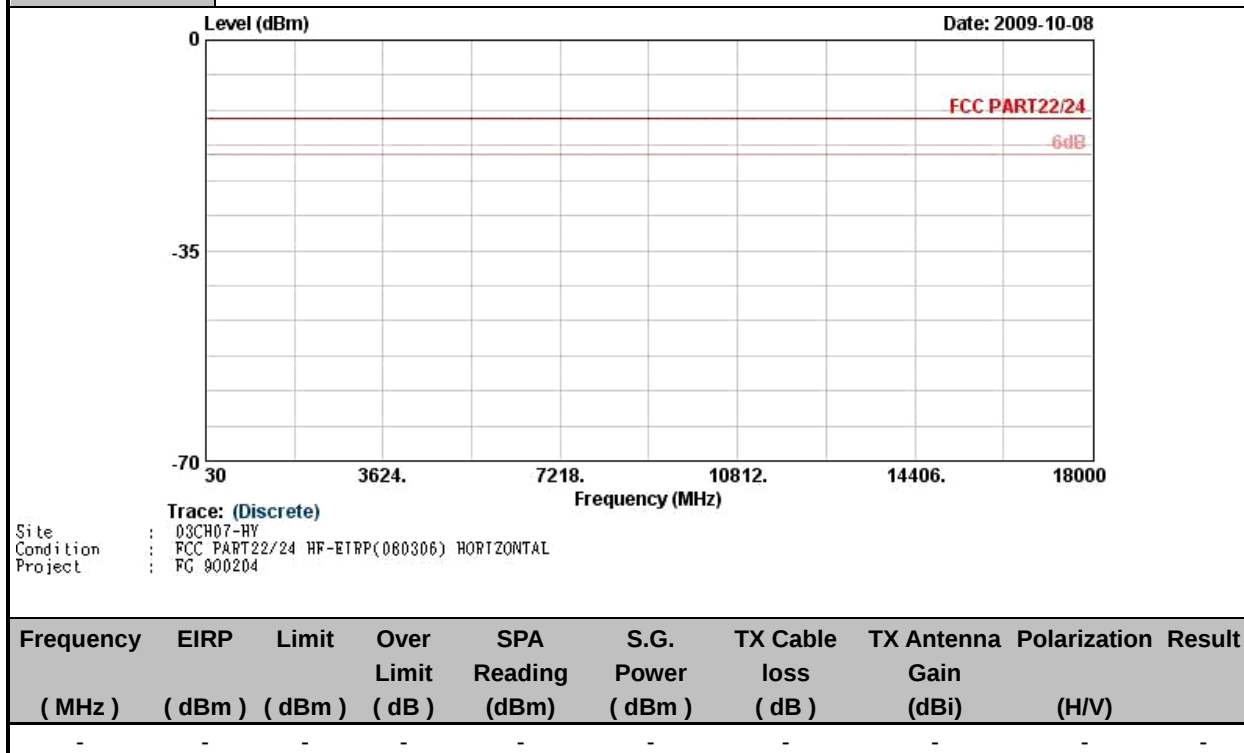


Band :	GSM1900	Temperature :	29~30℃
Test Mode :	GPRS 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		
Level (dBm) 0 -35 -70			

Band :	GSM1900	Temperature :	29~30℃
Test Mode :	GPRS 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		
Level (dBm) 0 -35 -70 </			



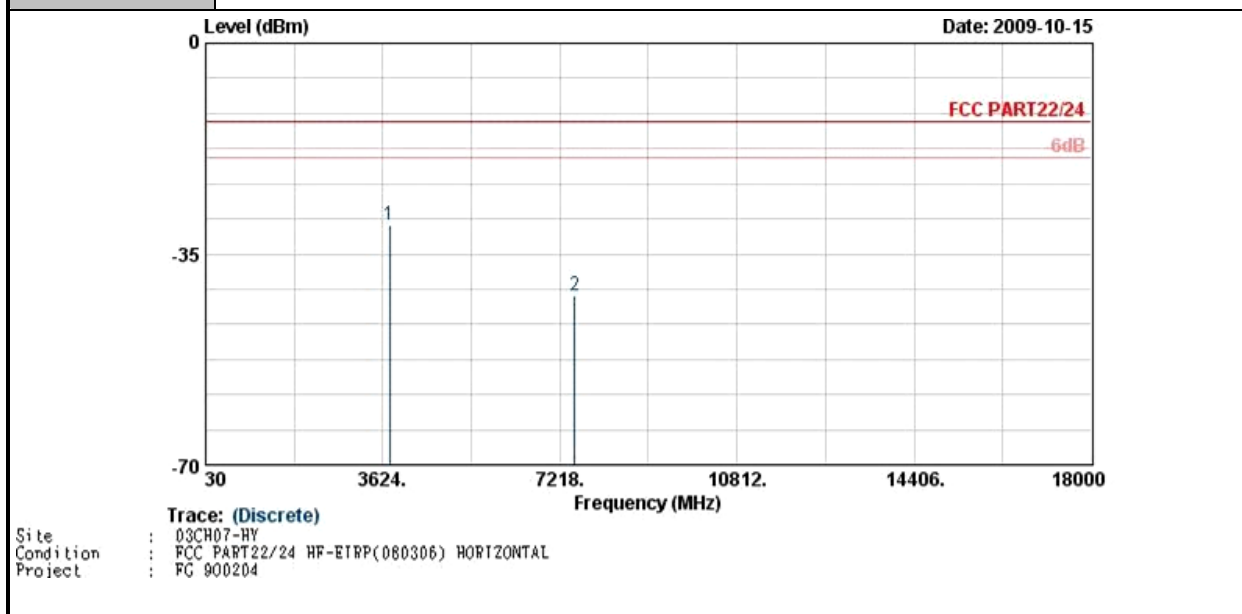
Band :	GSM1900	Temperature :	29~30°C
Test Mode :	EDGE 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		





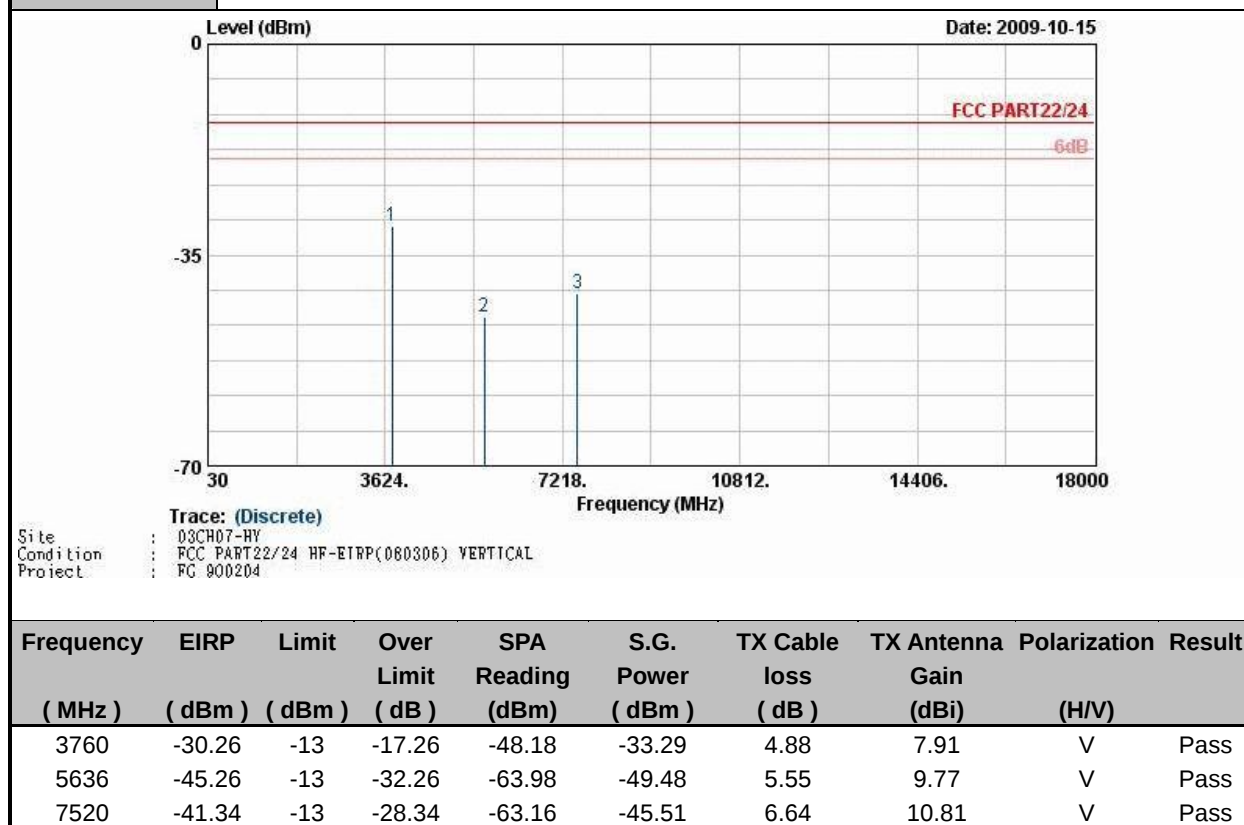
Band :	GSM1900	Temperature :	29~30℃
Test Mode :	EDGE 8 Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		
Level (dBm) 0 -35 -70 <			

Band :	GSM1900	Temperature :	29~30°C
Test Mode :	GPRS 8 Link + 802.11b Tx CH11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



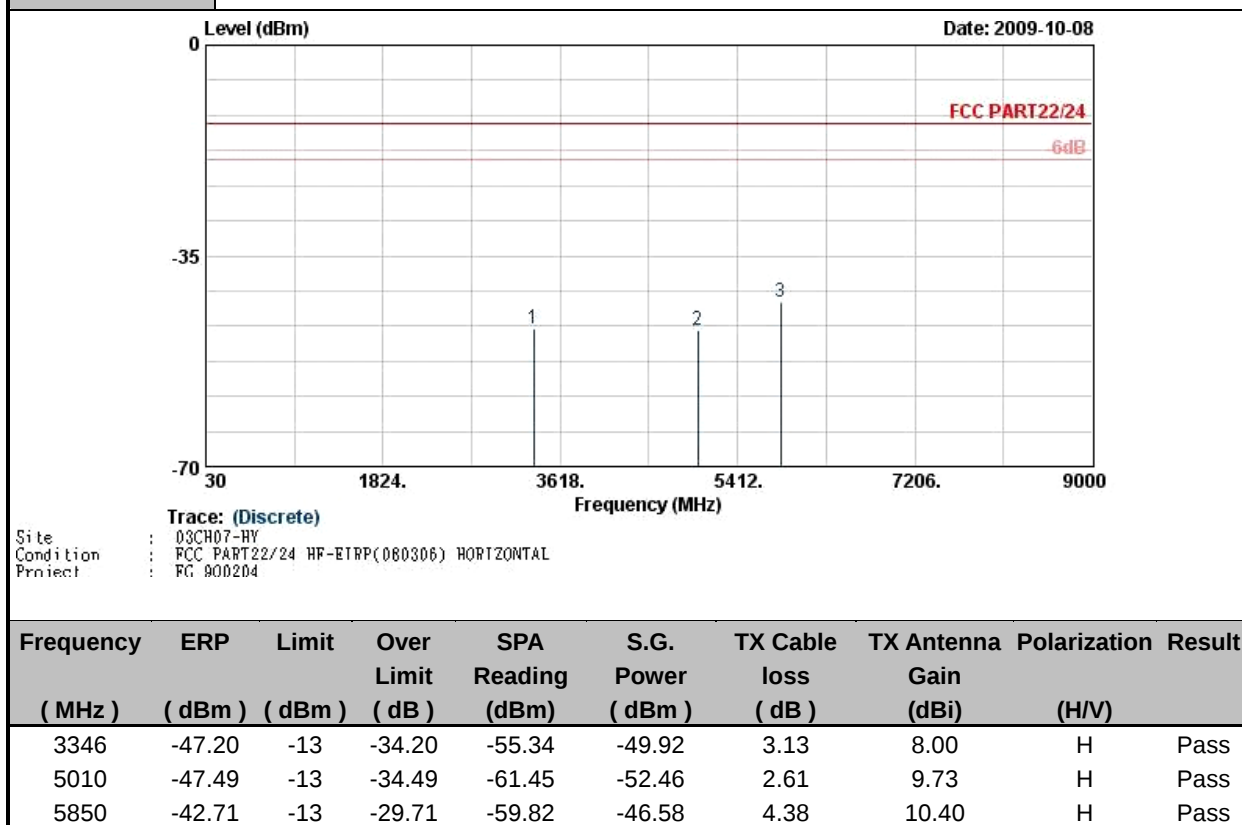
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-30.06	-13	-17.06	-45.46	-33.09	4.88	7.91	H	Pass
7520	-41.96	-13	-28.96	-63.87	-46.13	6.64	10.81	H	Pass

Band :	GSM1900	Temperature :	29~30°C
Test Mode :	GPRS 8 Link + 802.11b Tx CH11	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



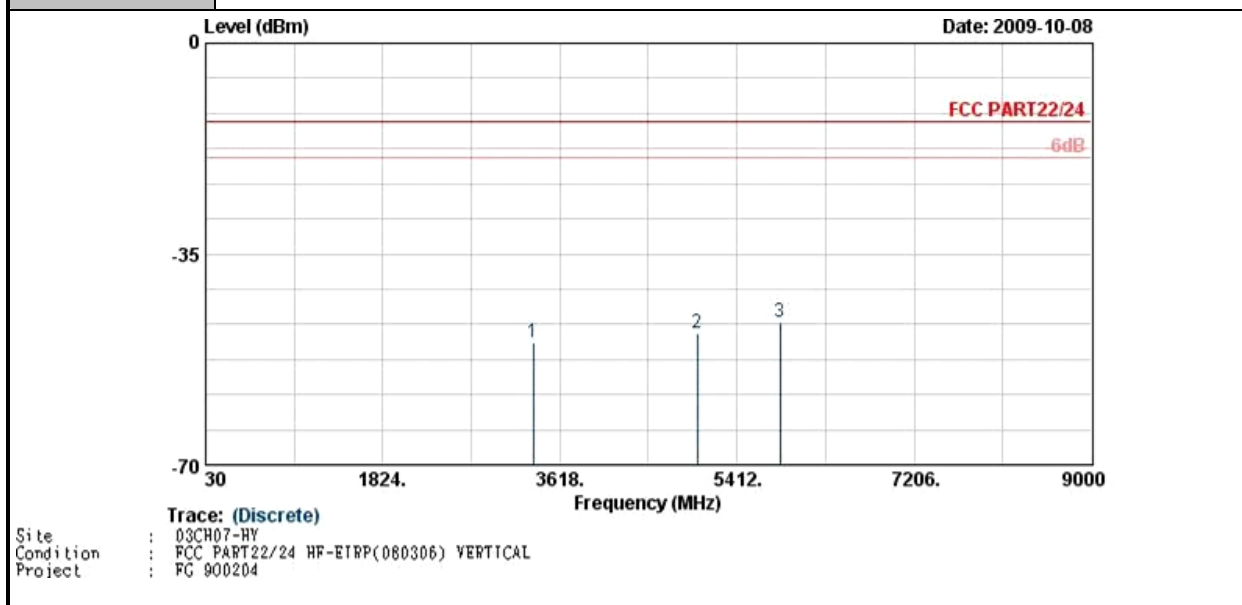


Band :	WCDMA Band V	Temperature :	29~30°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



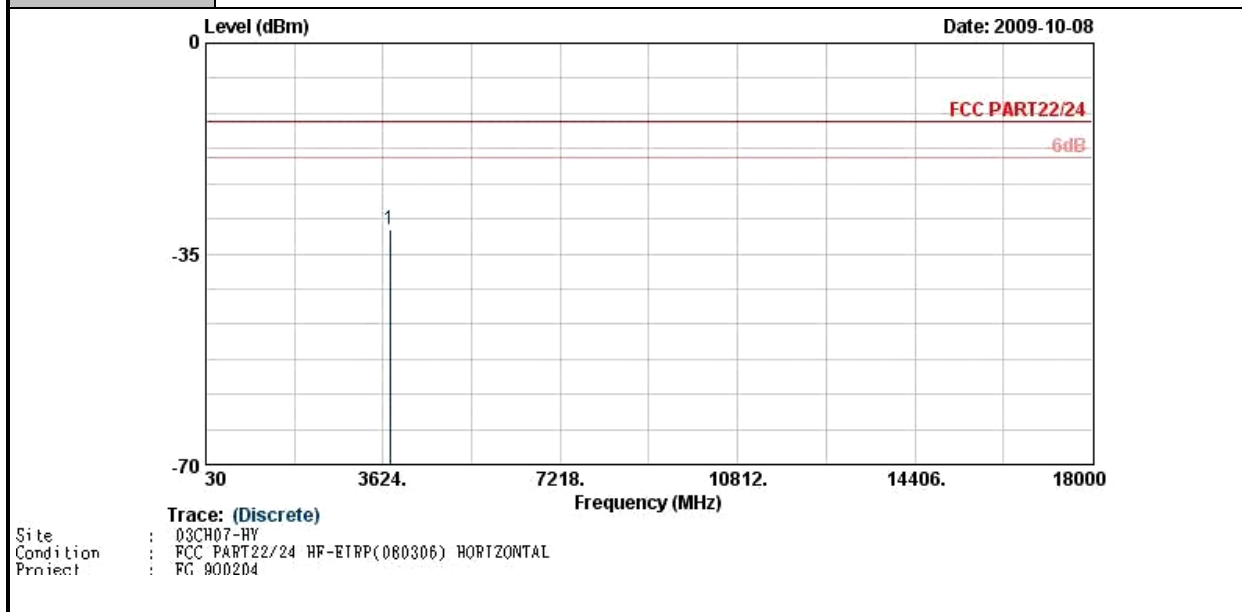


Band :	WCDMA Band V	Temperature :	29~30°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



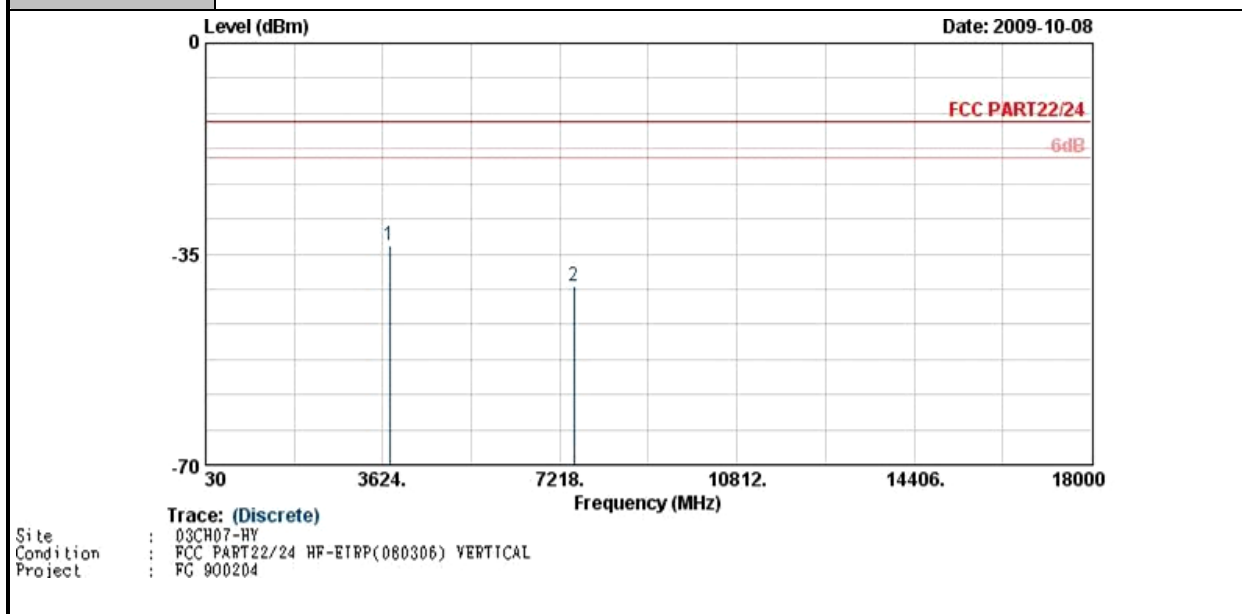
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3346	-49.79	-13	-36.79	-59.64	-52.51	3.13	8.00	V	Pass
5010	-48.26	-13	-35.26	-62.26	-53.23	2.61	9.73	V	Pass
5850	-46.41	-13	-33.41	-60.93	-50.28	4.38	10.40	V	Pass

Band :	WCDMA Band II	Temperature :	29~30°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-31.09	-13	-18.09	-46.58	-34.12	4.88	7.91	H	Pass

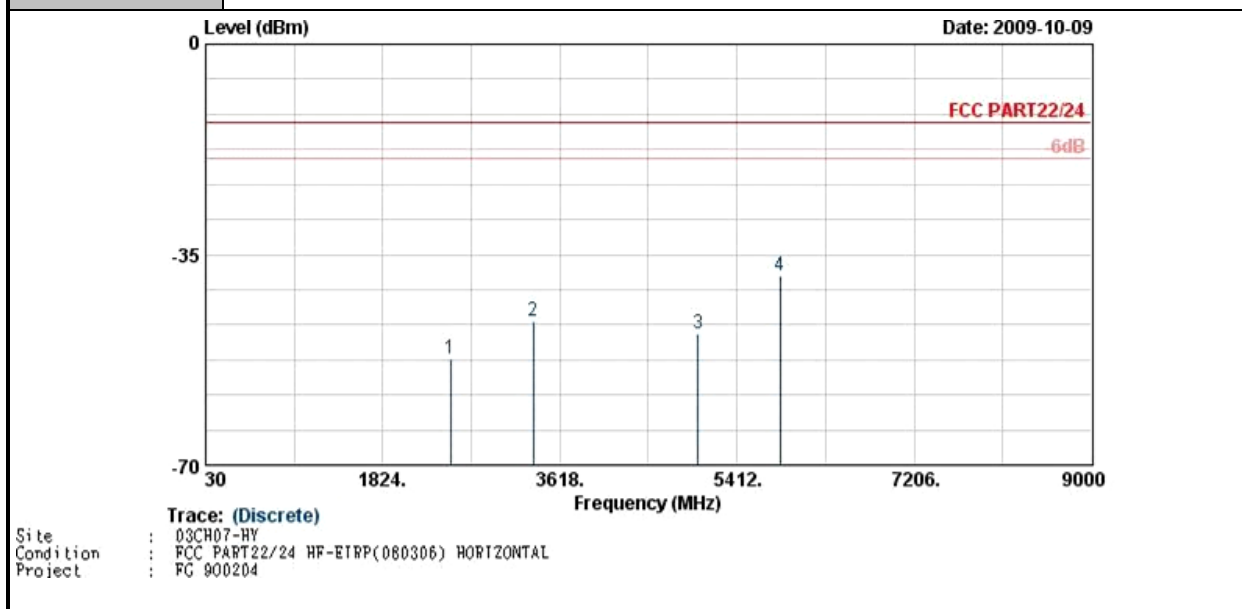
Band :	WCDMA Band II	Temperature :	29~30°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-33.52	-13	-20.52	-51.18	-36.55	4.88	7.91	V	Pass
7508	-40.35	-13	-27.35	-64.97	-44.52	6.64	10.81	V	Pass

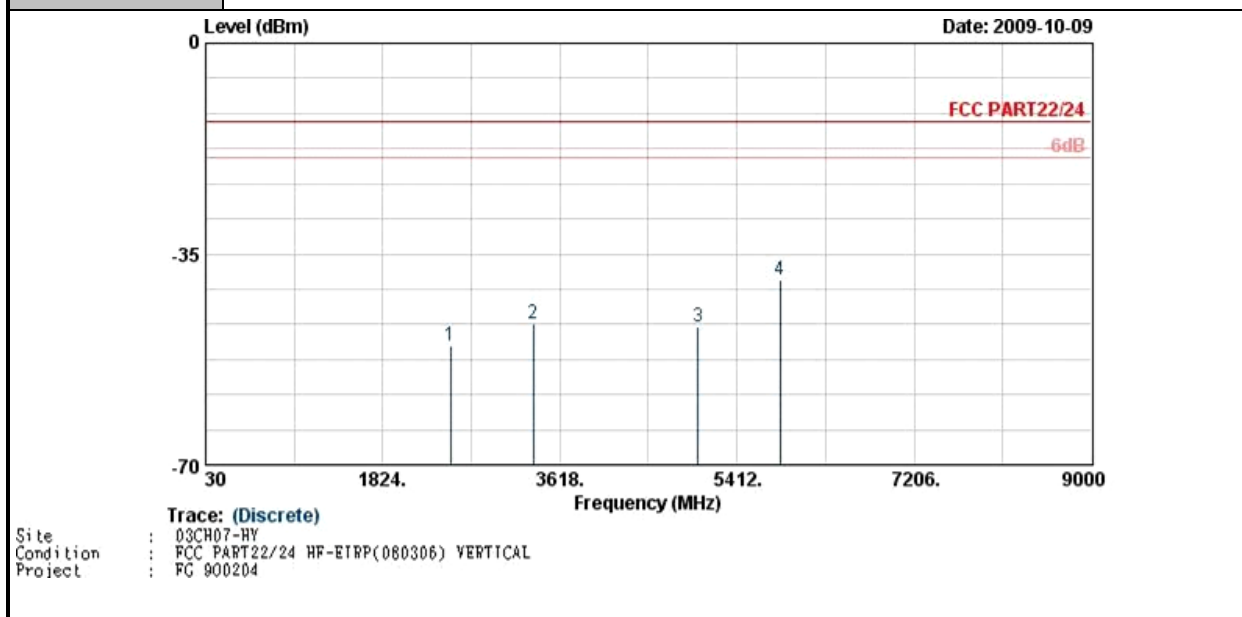


Band :	CDMA2000 BC0	Temperature :	29~30°C
Test Mode :	1xRTT_FCH+SCH_RC3	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2509	-52.41	-13	-39.41	-62.55	-52.67	3.71	6.12	H	Pass
3346	-46.14	-13	-33.14	-54.49	-48.86	3.13	8.00	H	Pass
5015	-48.26	-13	-35.26	-63.02	-53.23	2.61	9.73	H	Pass
5850	-38.42	-13	-25.42	-55.99	-42.29	4.38	10.40	H	Pass

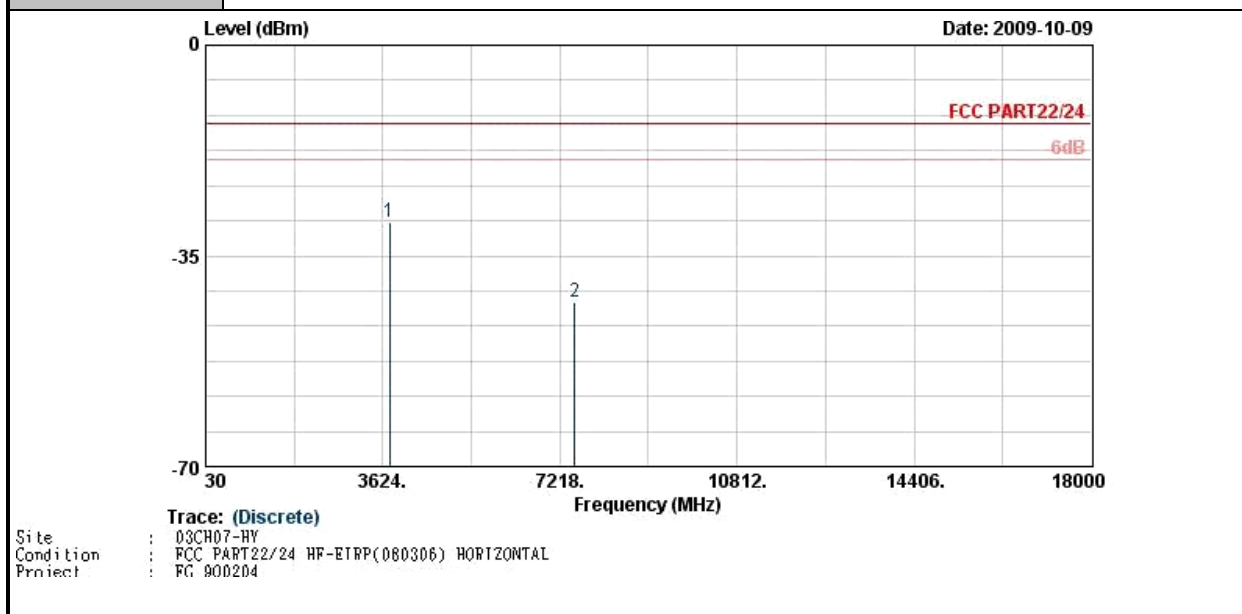
Band :	CDMA2000 BC0	Temperature :	29~30°C
Test Mode :	1xRTT_FCH+SCH_RC3	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2509	-50.27	-13	-37.27	-60.86	-50.53	3.71	6.12	V	Pass
3345	-46.70	-13	-33.70	-57.52	-49.42	3.13	8.00	V	Pass
5015	-47.09	-13	-34.09	-62.00	-52.06	2.61	9.73	V	Pass
5850	-39.20	-13	-26.20	-57.32	-43.07	4.38	10.40	V	Pass

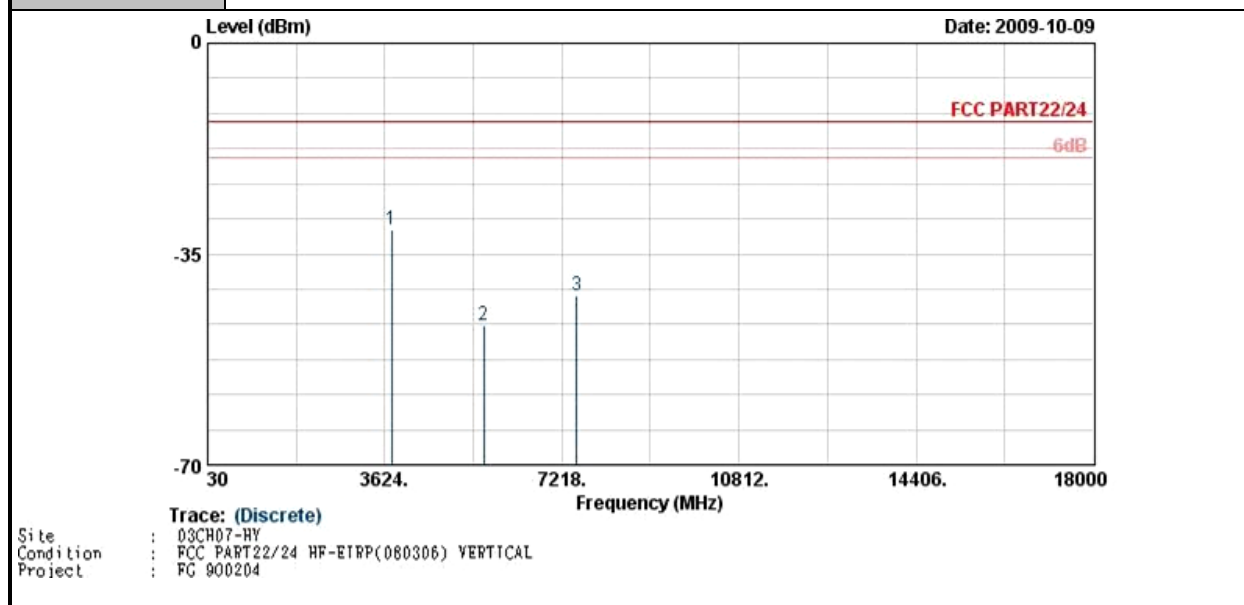


Band :	CDMA2000 BC1	Temperature :	29~30°C
Test Mode :	1xRTT_FCH+SCH_RC3	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-29.50	-13	-16.50	-44.96	-32.53	4.88	7.91	H	Pass
7520	-42.74	-13	-29.74	-64.44	-46.91	6.64	10.81	H	Pass

Band :	CDMA2000 BC1	Temperature :	29~30°C
Test Mode :	1xRTT_FCH+SCH_RC3	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-30.86	-13	-17.86	-48.78	-33.89	4.88	7.91	V	Pass
5636	-46.87	-13	-33.87	-65.08	-51.09	5.55	9.77	V	Pass
7520	-41.94	-13	-28.94	-63.84	-46.11	6.64	10.81	V	Pass

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	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 = $20\log(1-\Gamma_1\Gamma_2)$	+0.34 / -0.35	U-Shape	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				

6 Certification of TAF Accreditation



Certificate No. : L1190-090417

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : April 17, 2009

P1, total 20 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Appendix A. Photographs of EUT

Please refer to Sporton report number EP9O0204A as below.