

# Partial FCC RF Test Report

APPLICANT : Huawei Technologies Co., Ltd.  
EQUIPMENT : HSPA Module  
HOST : Netbook computer (SAMOS)  
BRAND NAME : Huawei  
MODEL NAME : EM770U  
FCC ID : QISEM770U  
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)  
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 IV : 1712.4 MHz ~ 1752.6 MHz  
2112.4 MHz ~ 2152.6 MHz  
WCDMA Band II : 1852.4 ~ 1907.6 MHz /  
1932.4 ~ 1987.6 MHz

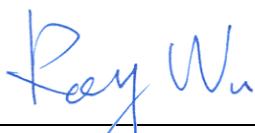
MAX. ERP/EIRP POWER : GSM850 (GPRS 8) : 0.38 W  
GSM850 (EDGE 8) : 0.11 W  
GSM1900 (GPRS 8) : 0.27 W  
GSM1900 (EDGE 8) : 0.12 W  
WCDMA Band V (RMC 12.2Kbps) : 0.03 W  
WCDMA Band IV (RMC 12.2Kbps) : 0.09 W  
WCDMA Band II (RMC 12.2Kbps) : 0.04 W

This is a partial report which is only valid combined with the WWAN Module (Brand name: Huawei / Model name: EM770U, FCC ID: QISEM770U) Report. The product was installed into Dell Notebook (Brand Name: DELL, Model Name: P04T-P04T001) during test.

The product was received on Oct. 23, 2009 and completely tested on Oct. 30, 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 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

SPORTON INTERNATIONAL INC.

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FCC ID : QISEM770U

Page Number : 1 of 35

Report Issued Date : Dec. 09, 2009

Report Version : Rev. 02



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### 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	PASS	-
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.2	§27.50(d)(2)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.2	§2.1053 §22.917(a) §24.238(a) §27.53(g)	RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-139 (6.5)	Field Strength of Spurious Radiation	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 10.07 dB at 5636.00 MHz



# **1 General Description**

## **1.1 Applicant**

**Huawei Technologies Co., Ltd.**  
Bantian, Longgang District Shenzhen, China

## **1.2 Manufacturer**

**Huawei Technologies Co., Ltd.**  
Bantian, Longgang District Shenzhen, China



### 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	HSPA Module
Brand Name	Huawei
Model Name	EM770U
FCC ID	QISEM770U
Host (Notebook)	Brand Name : DELL Model Name : P04T-P04T001 Antenna Type : Fixed Internal Antenna HW Version : 1.0 SW Version : A02(IBOS)
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band IV : 1710 MHz ~ 1755 MHz WCDMA Band II : 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 IV : 2110 MHz ~ 2155 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 32.49 dBm GSM1900 : 29.46 dBm WCDMA Band V : 22.24 dBm WCDMA Band IV : 22.37 dBm WCDMA Band II : 22.33 dBm
Maximum ERP/EIRP	GSM850 (GPRS 8) : 0.38 W (25.85 dBm) GSM850 (EDGE 8) : 0.11 W (20.44 dBm) GSM1900 (GPRS 8) : 0.27 W (24.38 dBm) GSM1900 (EDGE 8) : 0.12 W (20.75 dBm) WCDMA Band V (RMC 12.2Kbps) : 0.03 W (14.44 dBm) WCDMA Band IV (RMC 12.2Kbps) : 0.09 W (19.46 dBm) WCDMA Band II (RMC 12.2Kbps) : 0.04 W (16.26 dBm)
Module HW Version	MD64TCPU
Module SW Version	11.126.06.00.00
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK
EUT Stage	Production Unit

**Remark:**

1. For other wireless features of this EUT, the test report will be issued separately.
2. This test report recorded only product characteristics and test results of PCS Licensed Transmitter (PCB).

**List of Accessory for Host (Notebook):**

Specification of Accessory		
<b>AC Adapter</b>	<b>Brand Name</b>	PI ELECTRONICS (HONG KONG) LTD
	<b>Model Name</b>	AD6513
	<b>Power Rating</b>	I/P:100-240Vac, 50-60Hz, 1.0A; O/P: 19.0Vdc, 1.58A
	<b>DC Power Cord Type</b>	2.6 meter shielded cable without ferrite core
<b>Battery</b>	<b>Brand Name</b>	Dell
	<b>Model Name</b>	CMP3D
	<b>Power Rating</b>	11.1Vdc, 4.84Ah, 56Wh
	<b>Type</b>	Li-ion
<b>WLAN Module</b>	<b>Brand Name</b>	Broadcom
	<b>Model Name</b>	BCM94312HMG
<b>Bluetooth Module</b>	<b>Brand Name</b>	Broadcom
	<b>Model Name</b>	BCM92045MD_GEN

**Remark:** Please refer to the user's manual for more detailed information of host notebook (Brand Name: Dell / Model Name: P04T-P04T001).

## 1.4 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> 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	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC / IC Registration No.</b>
	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.
- ♦ 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ IC RSS-132 Issue 2
- ♦ IC RSS-133 Issue 5
- ♦ IC RSS-139 Issue 2

**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 and WCDMA Band V.
2. 30 MHz to 18000 MHz for WCDMA Band IV.
3. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	<ul style="list-style-type: none"> <li>■ GPRS 8 Link</li> <li>■ EDGE 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GPRS 8 Link</li> <li>■ EDGE 8 Link</li> </ul>
GSM 1900	<ul style="list-style-type: none"> <li>■ GPRS 8 Link</li> <li>■ EDGE 8 Link</li> </ul>	<ul style="list-style-type: none"> <li>■ GPRS 8 Link</li> <li>■ EDGE 8 Link</li> </ul>
WCDMA Band V	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>
WCDMA Band IV	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>
WCDMA Band II	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>	<ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>

**Remark:** Only the radiated emission of the WWAN module on the host notebook was performed in this report, and the conducted test cases can be referred to Huawei module report (FCC ID: QISEM770U).

**Note:** 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 band V, WCDMA band IV and WCDMA band II, only these modes were used for all tests.

The conducted power tables are as follows:

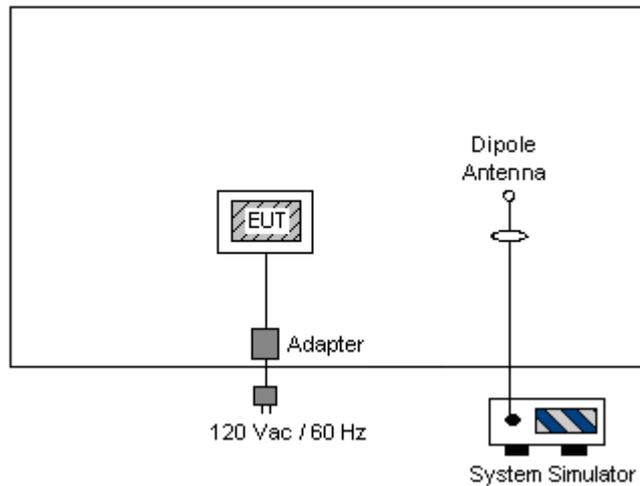
Conducted Power						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880	1909.8
GPRS 8	31.78	32.19	<b>32.49</b>	29.40	<b>29.46</b>	29.42
GPRS 10	28.89	29.09	29.88	27.48	27.56	27.54
GPRS 12	25.26	25.64	25.83	25.41	25.50	25.48
EGPRS 8	26.11	26.48	<b>26.74</b>	25.58	<b>25.65</b>	25.60
EGPRS 10	25.08	25.40	26.71	24.52	24.61	24.59
EGPRS 12	21.91	22.30	22.54	21.50	21.59	21.58

(\*Unit: dBm)

Conducted Power									
Band	WCDMA Band V			WCDMA Band IV			WCDMA Band II		
Tx Channel	4132	4182	4132	1312	1413	1513	4182	4132	4182
Frequency	826.4	836.4	846.6	1712.4	1732.6	1752.6	1852.4	1880	1907.6
RMC 12.2K	22.24	22.23	21.93	22.37	22.18	21.98	21.88	22.33	21.96
HSDPA Subtest-1	21.46	21.58	21.76	21.41	21.21	21.02	22.11	21.70	20.72
HSDPA Subtest-2	21.34	21.36	21.63	21.55	21.24	20.87	21.95	21.57	20.60
HSDPA Subtest-3	21.36	21.37	21.58	21.54	21.35	20.95	21.97	21.65	20.82
HSDPA Subtest-4	21.31	21.29	21.51	21.51	21.31	21.02	21.91	21.57	20.73
HSUPA Subtest-1	21.32	21.04	21.22	21.01	20.84	20.82	21.42	21.52	21.69
HSUPA Subtest-2	19.32	19.85	19.42	18.96	18.62	18.51	19.77	19.49	18.97
HSUPA Subtest-3	20.16	20.19	20.00	19.97	20.15	19.71	20.49	20.46	19.49
HSUPA Subtest-4	19.42	20.08	19.59	20.03	19.74	19.59	20.10	19.54	19.10
HSUPA Subtest-5	21.35	20.98	21.34	21.00	20.72	20.56	20.86	21.64	19.96

(\*Unit: dBm)

## 2.2 Connection Diagram of Test System



**Remark:** The EUT was 3G Module which was installed in the Host Notebook (Brand Name: Dell / Model Name: P04T-P04T001).

### 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. The EIRP of mobile transmitters are limited to 2 Watts for 1850~1910 MHz and 1 watt for 1710~1755 MHz.

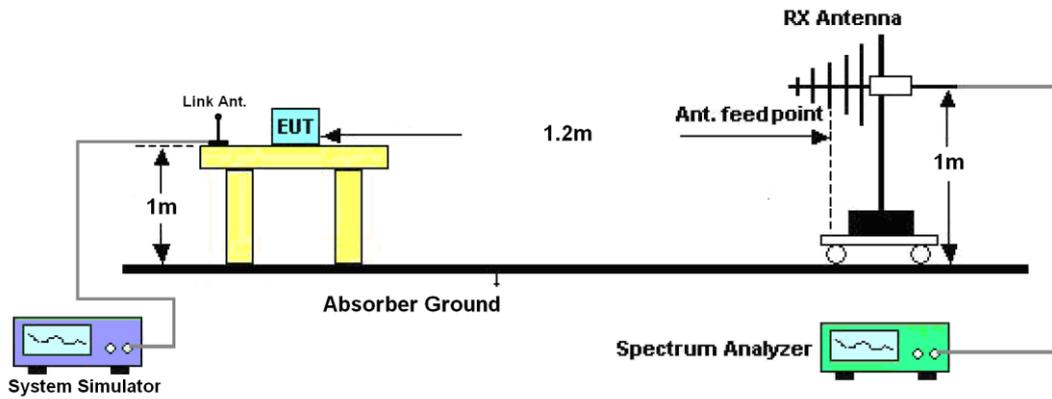
##### 3.1.2 Measuring Instruments

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.  $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$   
Ps (dBm) : Input power to substitution antenna.  
Gs (dBi or dBd) : Substitution antenna Gain.  
Et = Rt + AF  
Es = Rs + AF  
AF (dB/m) : Receive antenna factor  
Rt : The highest received signal in spectrum analyzer for EUT.  
Rs : 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	-25.86	-48.12	0.00	-1.08	21.18	0.13
836.40	-23.70	-48.28	0.00	-0.93	23.65	0.23
848.80	-21.74	-48.35	0.00	-0.76	25.85	0.38
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-27.48	-47.97	0.00	-1.08	19.41	0.09
836.40	-25.64	-48.01	0.00	-0.93	21.44	0.14
848.80	-23.43	-48.05	0.00	-0.76	23.86	0.24

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-31.27	-48.12	0.00	-1.08	15.77	0.04
836.40	-29.36	-48.28	0.00	-0.93	17.99	0.06
848.80	-27.15	-48.35	0.00	-0.76	20.44	0.11
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-32.62	-47.97	0.00	-1.08	14.27	0.03
836.40	-30.82	-48.01	0.00	-0.93	16.26	0.04
848.80	-28.44	-48.05	0.00	-0.76	18.85	0.08



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	-34.12	-48.12	0.00	-1.08	12.92	0.02
836.40	-33.89	-48.28	0.00	-0.93	13.46	0.02
846.60	-33.15	-48.35	0.00	-0.76	14.44	0.03
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-36.14	-47.97	0.00	-1.08	10.75	0.01
836.40	-36.21	-48.01	0.00	-0.93	10.87	0.01
846.60	-35.32	-48.05	0.00	-0.76	11.97	0.02



## 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	-29.46	-51.88	0.00	1.96	24.38	0.27
1880.00	-32.55	-52.99	0.00	2.00	22.44	0.18
1909.80	-34.56	-54.28	0.00	1.98	21.70	0.15
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-32.16	-52.13	0.00	1.96	21.93	0.16
1880.00	-36.08	-53.17	0.00	2.00	19.09	0.08
1909.80	-38.99	-54.13	0.00	1.98	17.12	0.05

GSM1900 (EDGE 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-33.09	-51.88	0.00	1.96	20.75	0.12
1880.00	-36.22	-52.99	0.00	2.00	18.77	0.08
1909.80	-38.12	-54.28	0.00	1.98	18.14	0.07
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-35.69	-52.13	0.00	1.96	18.40	0.07
1880.00	-39.53	-53.17	0.00	2.00	15.64	0.04
1909.80	-42.38	-54.13	0.00	1.98	13.73	0.02



WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1712.4	-34.38	-51.88	0.00	1.96	19.46	0.09
1732.6	-38.41	-52.99	0.00	2.00	16.58	0.05
1752.6	-40.99	-54.28	0.00	1.98	15.27	0.03
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1712.4	-38.98	-52.13	0.00	1.96	15.11	0.03
1732.6	-43.08	-53.17	0.00	2.00	12.09	0.02
1752.6	-44.48	-54.13	0.00	1.98	11.63	0.01

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	-37.58	-51.88	0.00	1.96	16.26	0.04
1880.00	-41.11	-52.99	0.00	2.00	13.88	0.02
1907.60	-42.64	-54.28	0.00	1.98	13.62	0.02
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-40.23	-52.13	0.00	1.96	13.86	0.02
1880.00	-44.73	-53.17	0.00	2.00	10.44	0.01
1907.60	-47.07	-54.13	0.00	1.98	9.04	0.01

## 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.

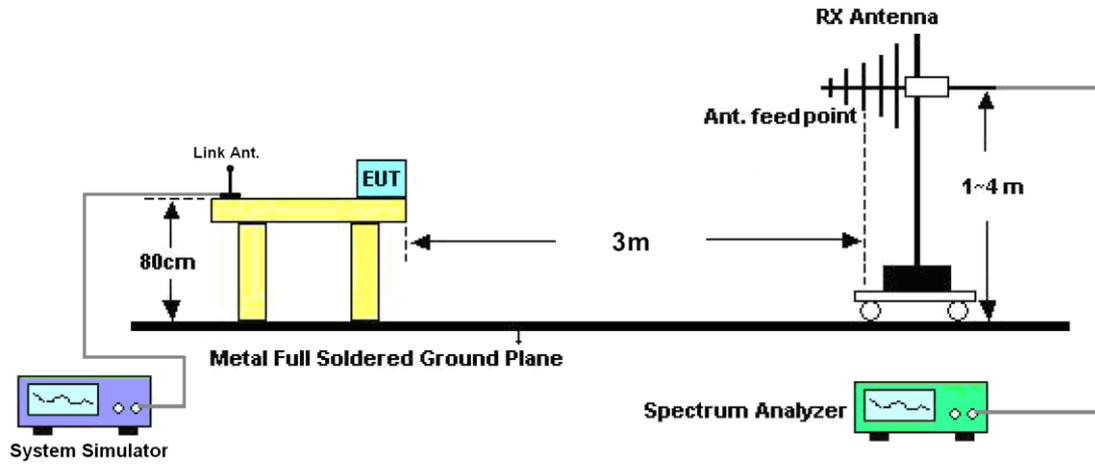
### 3.2.2 Measuring Instruments

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. 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.  $ERP \text{ (dBm)} = EIRP - 2.15$

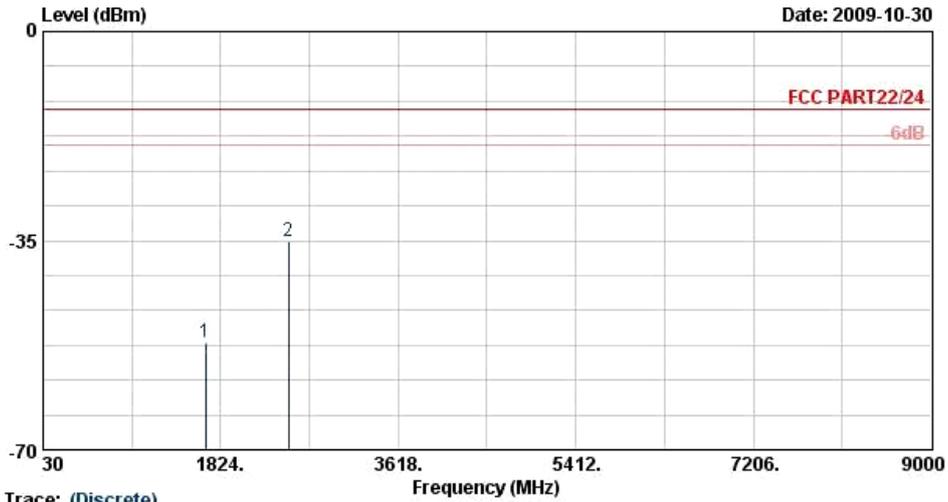
### 3.2.4 Test Setup





3.2.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	25~26°C
Test Mode :	GPRS 8 Link	Relative Humidity :	47~48%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

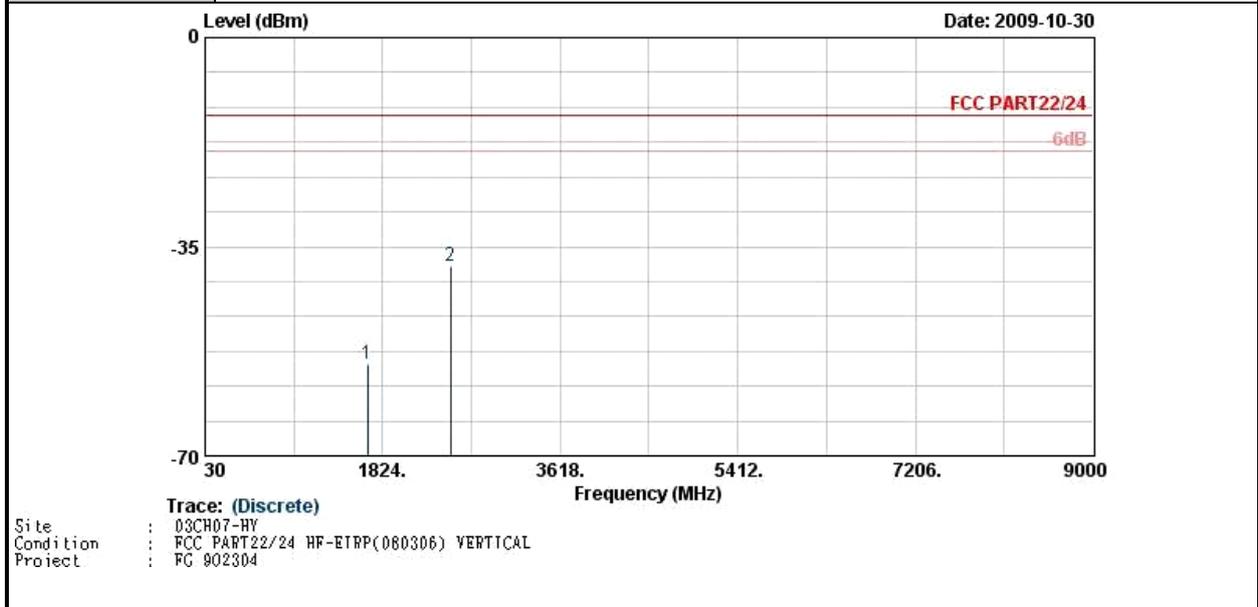


Trace: (Discrete)  
 Site : 03CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(060306) HORIZONTAL  
 Project : FG 902304

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	-52.15	-13	-39.15	-58.68	-52.00	3.39	5.39	H	Pass
2509	-35.22	-13	-22.22	-43.72	-35.48	3.71	6.12	H	Pass



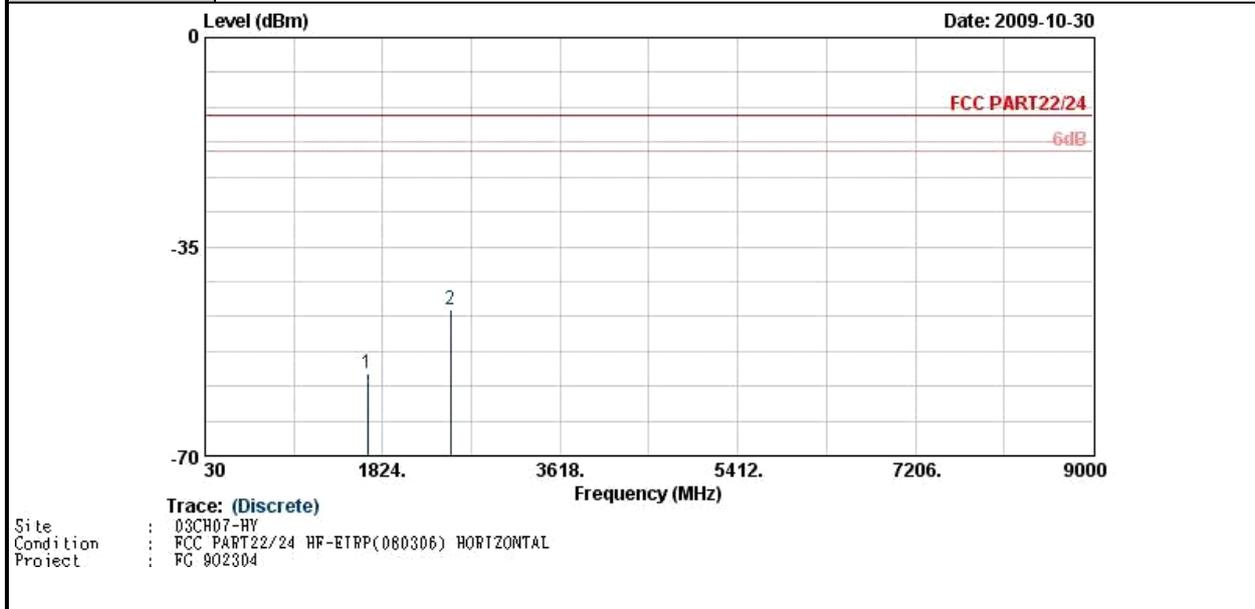
<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-54.67	-13	-41.67	-62.59	-54.52	3.39	5.39	V	Pass
2509	-38.36	-13	-25.36	-49.92	-38.62	3.71	6.12	V	Pass



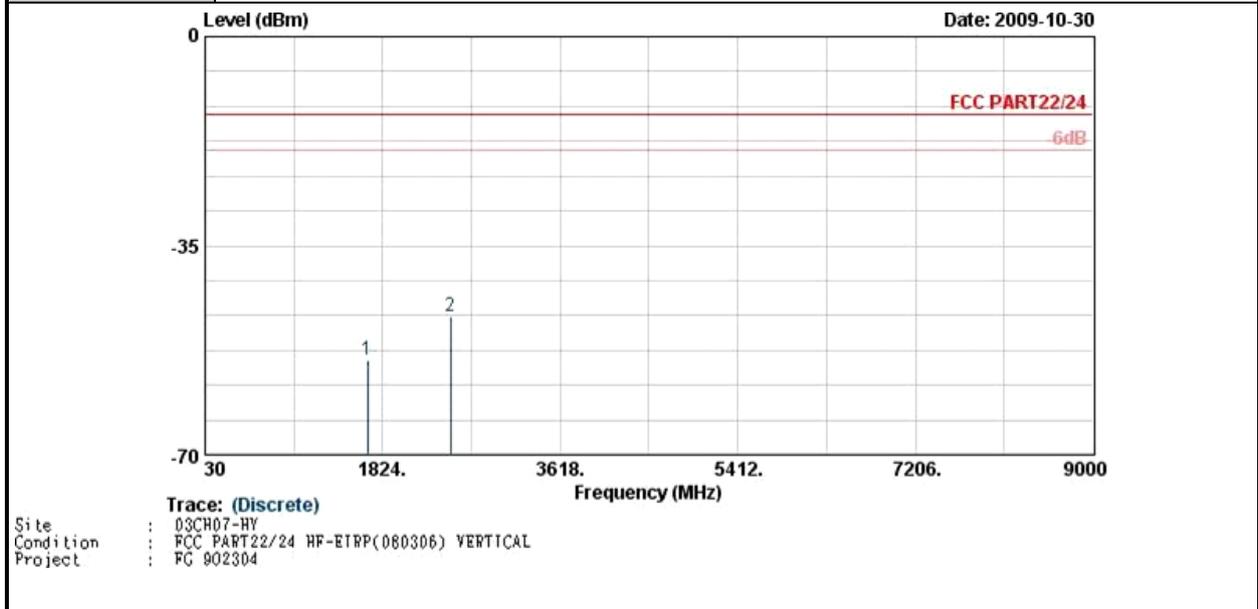
<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-56.15	-13	-43.15	-60.13	-56.00	3.39	5.39	H	Pass
2509	-45.64	-13	-32.64	-53.34	-45.90	3.71	6.12	H	Pass



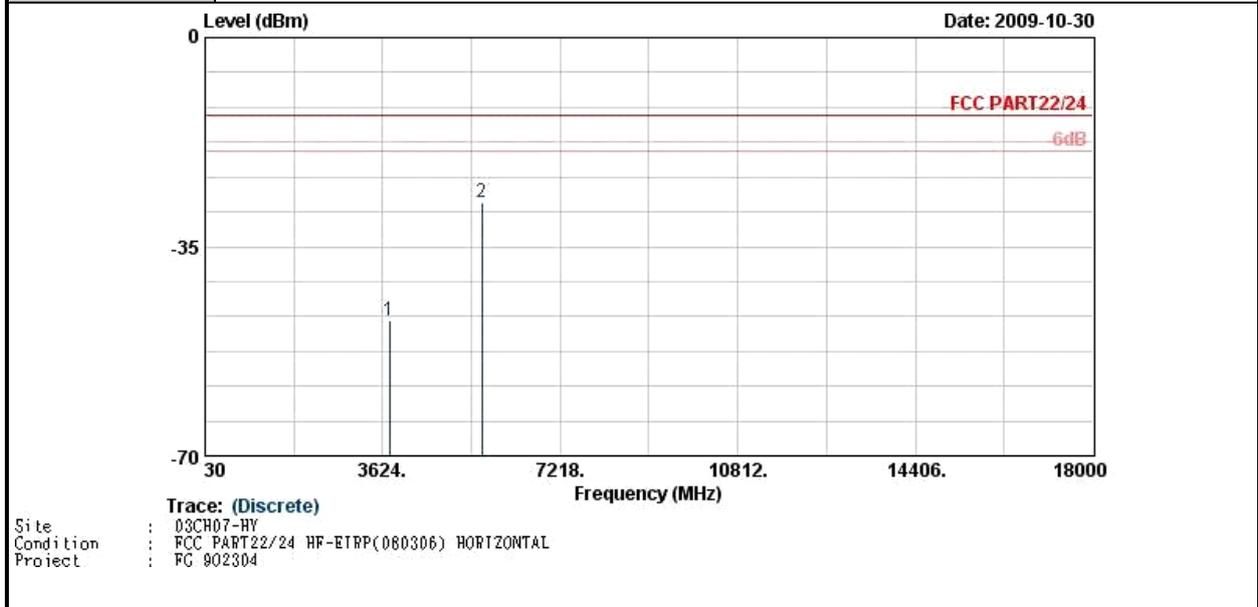
<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-54.23	-13	-41.23	-62.51	-54.08	3.39	5.39	V	Pass
2509	-46.89	-13	-33.89	-57.14	-47.15	3.71	6.12	V	Pass



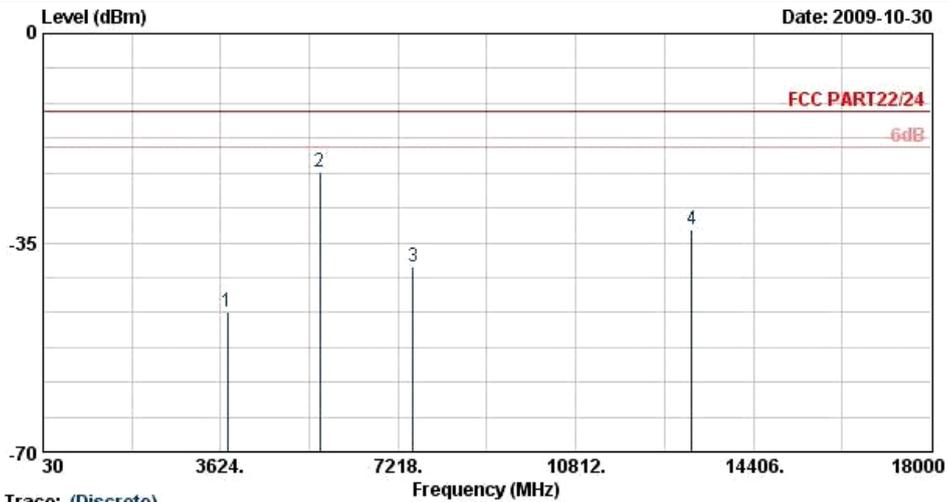
<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-47.32	-13	-34.32	-60.41	-49.84	4.88	7.40	H	Pass
5636	-27.55	-13	-14.55	-48.19	-30.81	5.55	8.81	H	Pass



<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

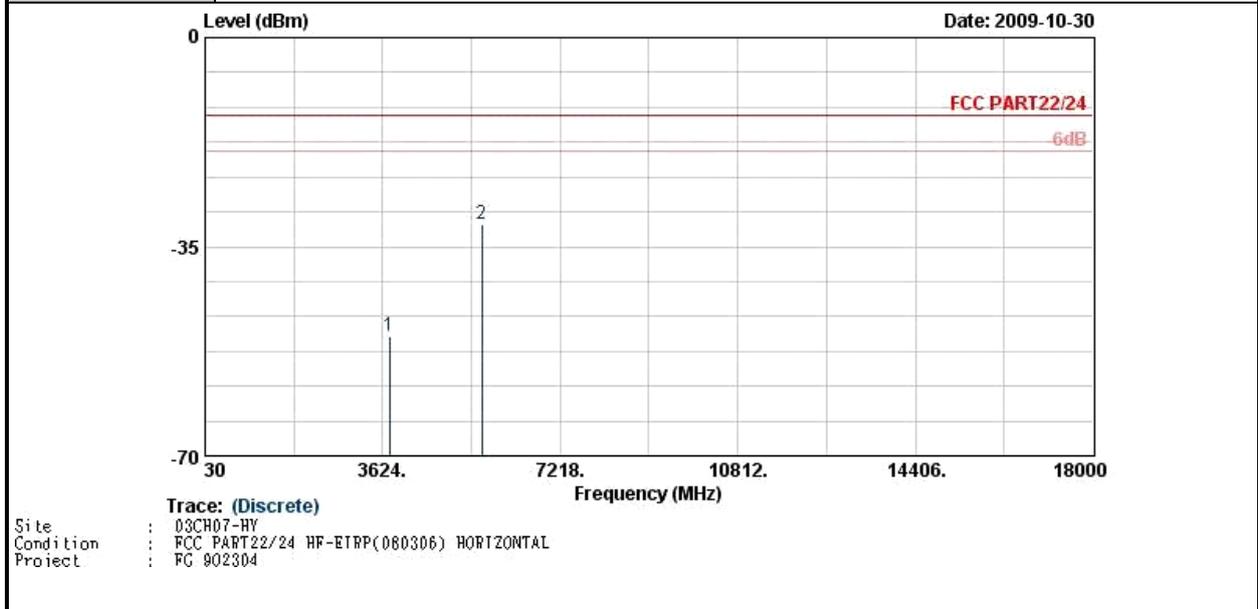


Site : 03CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(060306) VERTICAL  
 Project : FG 902304

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	-46.45	-13	-33.45	-61.88	-49.48	4.88	7.91	V	Pass
5636	-23.07	-13	-10.07	-44.95	-27.29	5.55	9.77	V	Pass
7520	-38.95	-13	-25.95	-65.00	-43.12	6.64	10.81	V	Pass
13156	-32.84	-13	-19.84	-63.28	-36.20	8.80	12.16	V	Pass



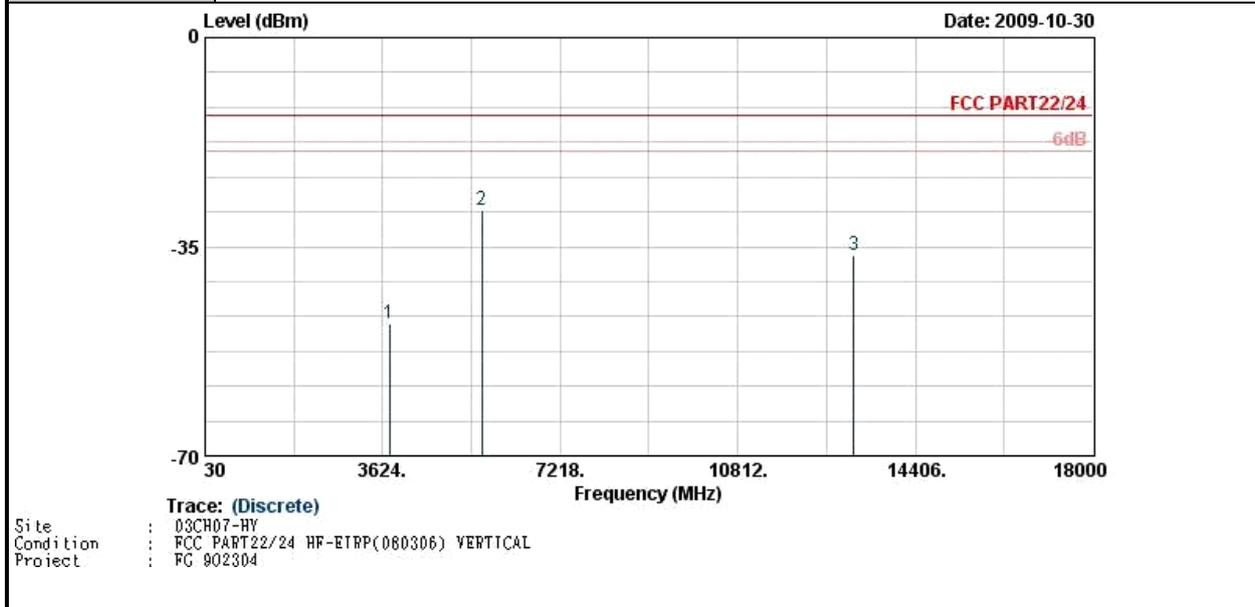
Band :	GSM1900	Temperature :	25~26°C
Test Mode :	EDGE 8 Link	Relative Humidity :	47~48%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-49.87	-13	-36.87	-62.26	-52.39	4.88	7.40	H	Pass
5636	-31.33	-13	-18.33	-51.80	-34.59	5.55	8.81	H	Pass



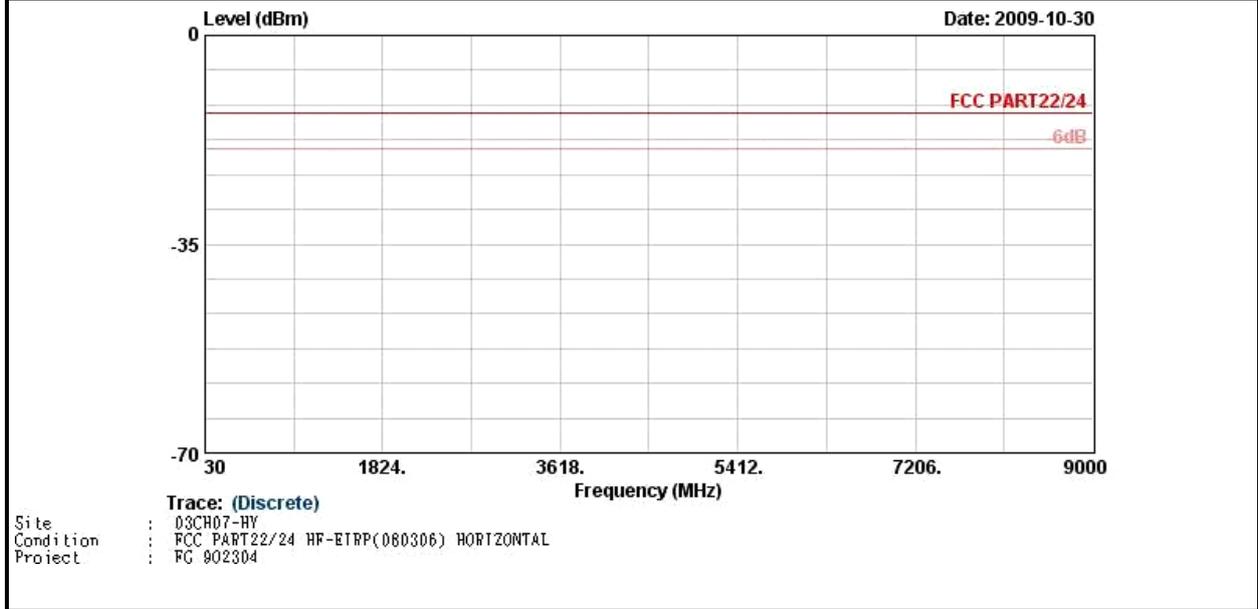
<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-47.87	-13	-34.87	-62.52	-50.9	4.88	7.91	V	Pass
5636	-28.89	-13	-15.89	-50.58	-33.11	5.55	9.77	V	Pass
13156	-36.31	-13	-23.31	-66.75	-39.67	8.80	12.16	V	Pass

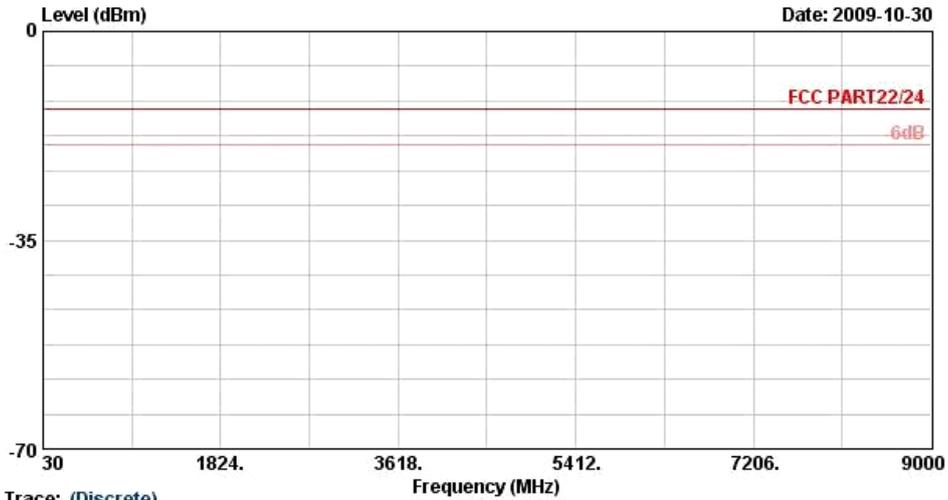


<b>Band :</b>	WCDMA Band V	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		





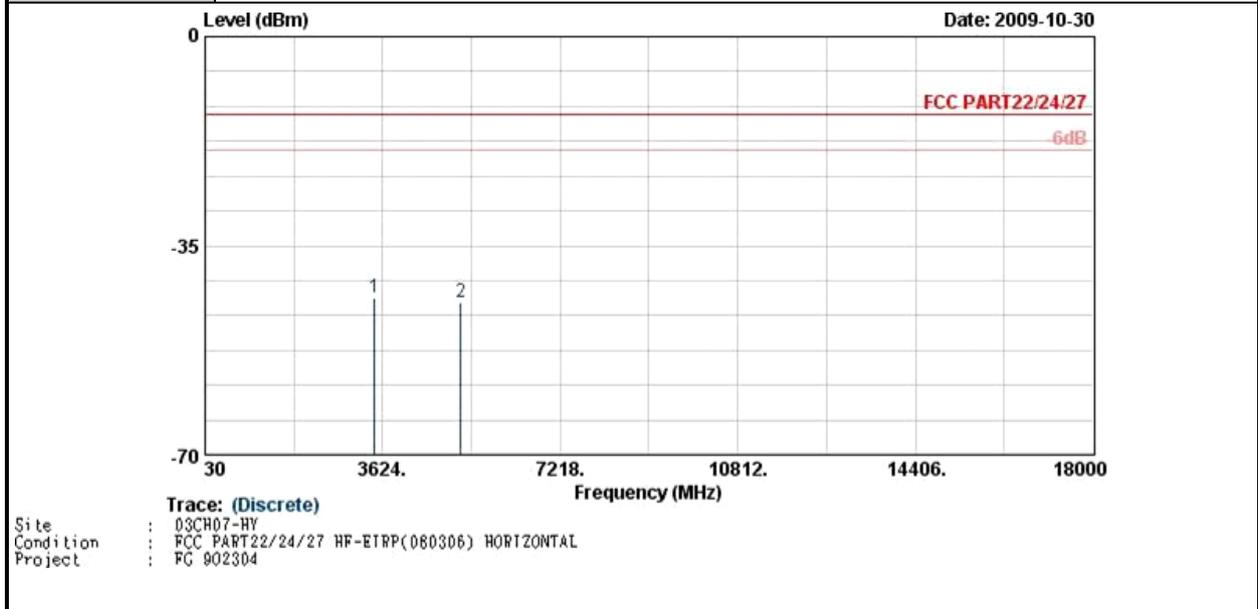
<b>Band :</b>	WCDMA Band V	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)  
Site : 03CH07-HY  
Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL  
Project : FG 902304



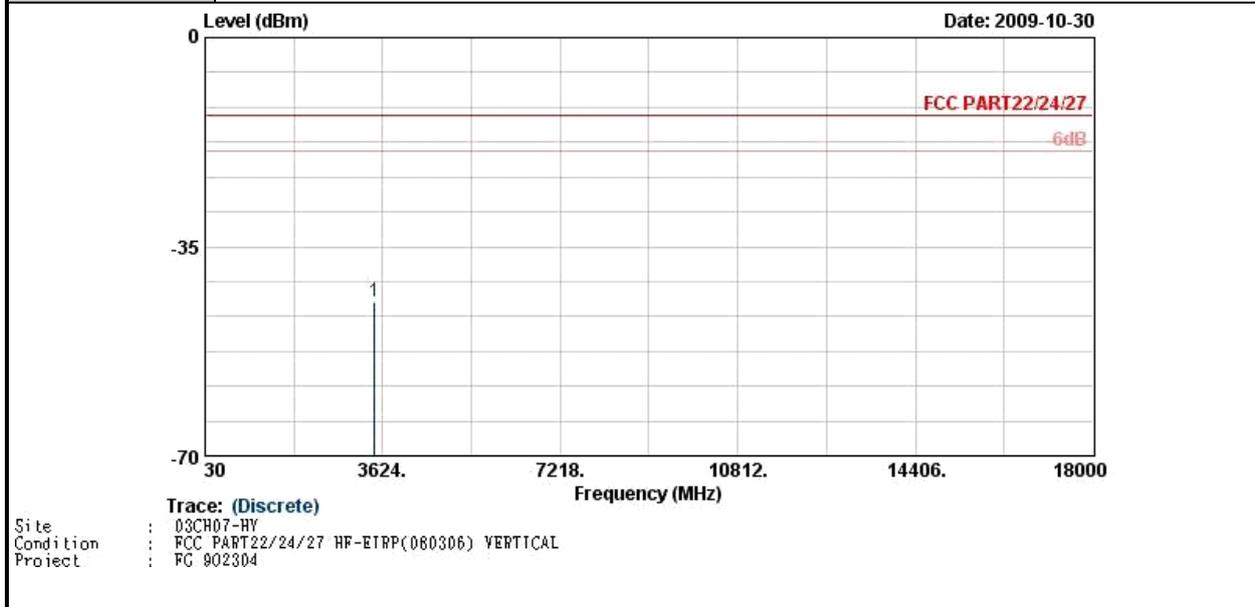
<b>Band :</b>	WCDMA Band IV	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3465	-43.80	-13	-30.80	-57.10	-47.63	4.48	8.31	H	Pass
5197	-44.53	-13	-31.53	-62.25	-49.17	5.332	9.98	H	Pass



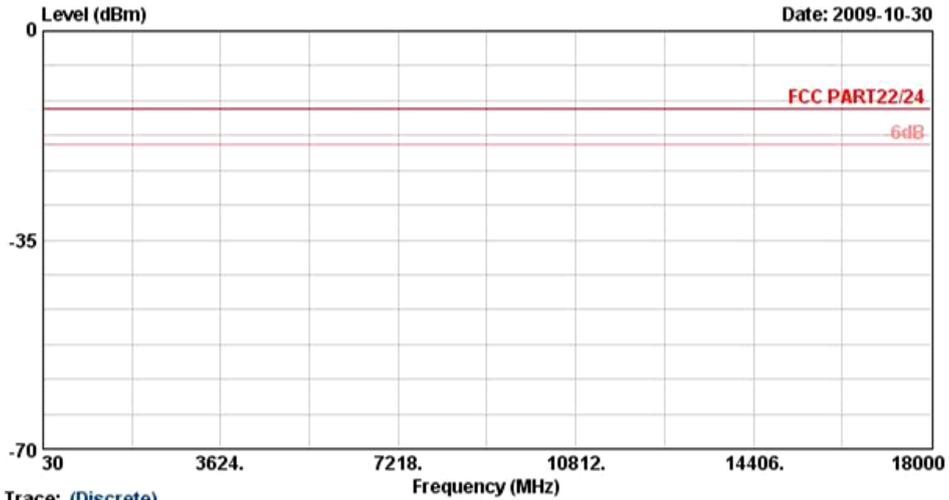
<b>Band :</b>	WCDMA Band IV	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3465	-44.31	-13	-31.31	-58.86	-48.14	4.48	8.31	V	Pass



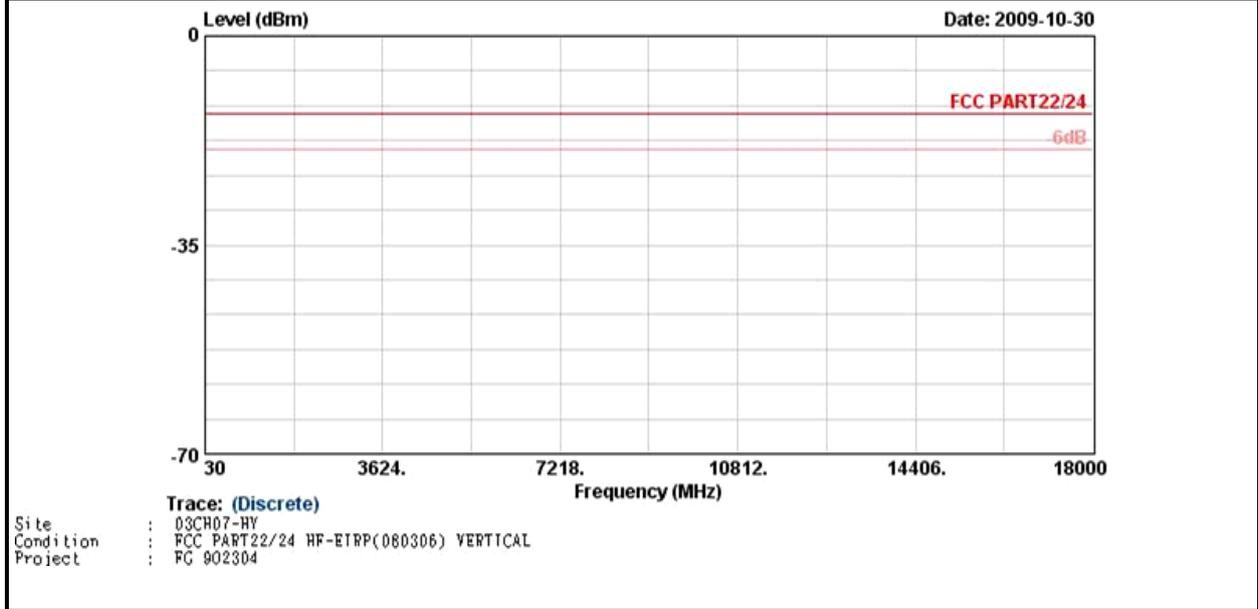
<b>Band :</b>	WCDMA Band II	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Site : 03CH07-HY  
Condition : FCC PART22/24 HF-ETRP(080306) HORIZONTAL  
Project : FG 902304



<b>Band :</b>	WCDMA Band II	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	47~48%
<b>Test Engineer :</b>	Kay Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		





### 4 List of Measuring Equipments

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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.54</b>		

### 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	$\pm 0.10$	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	$\pm 1.70$	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	$\pm 0.50$	Normal (k=2)	0.25	1	0.25
Receiver Correction	$\pm 2.00$	Rectangular	1.15	1	1.15
Antenna Factor Directional	$\pm 1.50$	Rectangular	0.87	1	0.87
Site Imperfection	$\pm 2.80$	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>4.72</b>				

## 6 Certification of TAF Accreditation



Certificate No. : L1190-090318

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 : March 18, 2009

Pl, total 19 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 EP9O2304 as below.