

# Partial FCC RF Test Report

APPLICANT : Getac Technology Corporation  
EQUIPMENT : Notebook PC  
BRAND NAME : Getac  
MODEL NAME : S400  
FCC ID : QYLS400G  
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) : 0.64 W  
GSM850 (EDGE 8) : 0.22 W  
GSM1900 (GPRS 8) : 0.63 W  
GSM1900 (EDGE 8) : 0.29 W  
WCDMA Band V (RMC 12.2Kbps) : 0.14 W  
WCDMA Band II (RMC 12.2Kbps) : 0.23 W  
CDMA2000 BC0 (1xRTT) : 0.14 W  
CDMA2000 BC1 (1xRTT) : 0.18 W

This is a partial report which is only valid combined with the Integrated WWAN Module (Brand name: QUALCOMM / Model name: Gobi2000, FCC ID: J9CGOBI2000) Report.

The product was received on Aug. 17, 2010 and completely tested on Aug. 31, 2010. 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:



Anderson Chiu / Deputy 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.



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant..... 5

    1.2 Manufacturer ..... 5

    1.3 Feature of Equipment Under Test..... 6

    1.4 Testing Site..... 7

    1.5 Applied Standards ..... 7

    1.6 Ancillary Equipment List..... 7

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 8**

    2.1 Test Mode..... 8

    2.2 Connection Diagram of Test System ..... 10

**3 TEST RESULT..... 11**

    3.1 Effective Radiated Power and Effective Isotropic Radiated Power Measurement ..... 11

    3.2 Field Strength of Spurious Radiation Measurement ..... 17

**4 LIST OF MEASURING EQUIPMENT ..... 35**

**5 UNCERTAINTY OF EVALUATION ..... 36**

**APPENDIX A. PHOTOGRAPHS OF EUT**

**APPENDIX B. SETUP PHOTOGRAPHS**





### 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	-
3.1	§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 14.97 dB at 2509.00 MHz



# **1 General Description**

## **1.1 Applicant**

**Getac Technology Corporation**

5F., Building A, No. 209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

## **1.2 Manufacturer**

**GeTAC Technology(Kunshan)Co., LTD.**

No. 269, 2nd Road, Export Processing Zone, Changjiang South Road, Kunshan, Jiangsu, P.R.C.

### 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Notebook PC
Brand Name	Getac
Model Name	S400
FCC ID	QYLS400G
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 : 31.77 dBm GSM1900 : 29.34 dBm WCDMA Band V : 23.70 dBm WCDMA Band II : 23.56 dBm CDMA2000 BC0 : 24.49 dBm CDMA2000 BC1 : 24.64 dBm
Maximum ERP/EIRP	GSM850 (GPRS 8) : 0.64 W (28.06 dBm) GSM850 (EDGE 8) : 0.22 W (23.45 dBm) GSM1900 (GPRS 8) : 0.63 W (27.97 dBm) GSM1900 (EDGE 8) : 0.29 W (24.61 dBm) WCDMA Band V (RMC 12.2Kbps) : 0.14 W (21.43 dBm) WCDMA Band II (RMC 12.2Kbps) : 0.23 W (23.55 dBm) CDMA2000 BC0 (1xRTT) : 0.14 W (21.43 dBm) CDMA2000 BC1 (1xRTT) : 0.18 W (22.56 dBm)
Antenna Type	Fixed Internal Antenna
HW Version	R0B
SW Version	R005J
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK CDMA2000 : QPSK
EUT Stage	Identical Prototype

**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).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



### 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.
- ♦ 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	<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>
WCDMA Band V	<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>
CDMA2000 BC0	<ul style="list-style-type: none"> <li>■ 1xRTT Link Mode</li> </ul>
CDMA2000 BC1	<ul style="list-style-type: none"> <li>■ 1xRTT Link Mode</li> </ul>

**Note:**

1. 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 and WCDMA band II, 1xRTT RC3+SO32 mode for CDMA2000 BC0, and 1xRTT RC1+SO55 mode CDMA2000 BC1 on QPSK Link; only these modes were used for all tests.
2. Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.
3. Only the radiated emission, ERP, and EIRP of the WWAN module were performed in this report, and the conducted test cases can be referred to QUALCOMM module report (FCC ID: J9CGOBI2000).





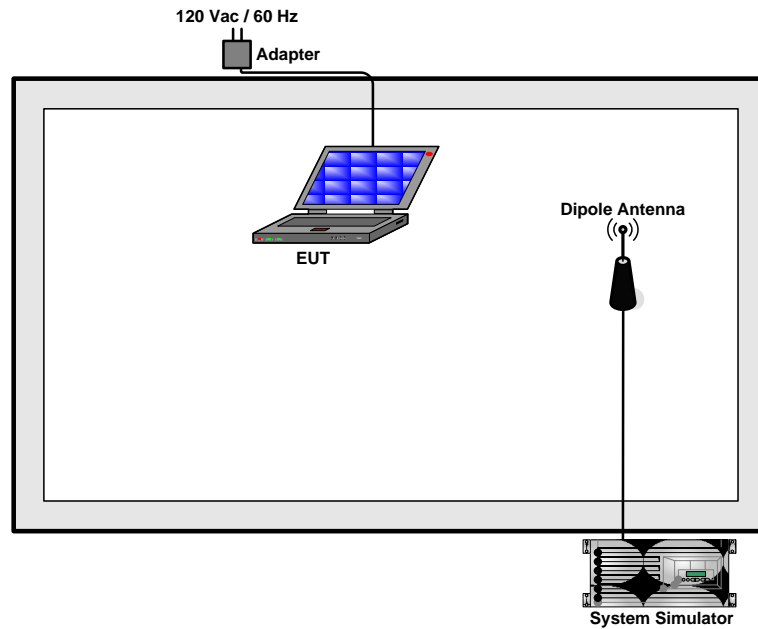
The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
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	31.77	31.73	31.56	29.34	29.24	29.09
GPRS 10	31.70	31.67	31.52	29.33	29.21	29.06
EGPRS 8	27.32	27.28	27.10	25.94	25.81	25.88
EGPRS 10	27.31	27.26	27.10	25.89	25.79	25.65

Conducted Power (*Unit: dBm)						
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	23.48	23.70	23.25	23.35	23.56	23.38

Conducted Power (*Unit: dBm)						
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 RC1+S055	24.36	24.47	24.17	24.52	24.64	23.96
1xRTT RC3+S055	24.19	24.36	24.01	24.44	24.63	23.81
1xRTT RC3+S032	24.24	24.49	24.18	24.55	24.62	23.95
1xRTT RC3+S032(+SCH)	24.28	24.46	24.23	24.48	24.61	23.82
1xEVDO RTAP 9.6K	24.28	24.46	24.23	24.48	24.61	23.82
1xEVDO RTAP 153.6K	24.33	24.33	24.03	24.42	24.58	23.75
1xEVDO RETAP 4096K	23.84	23.78	23.46	23.97	24.12	23.36

## 2.2 Connection Diagram of Test System





### 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.

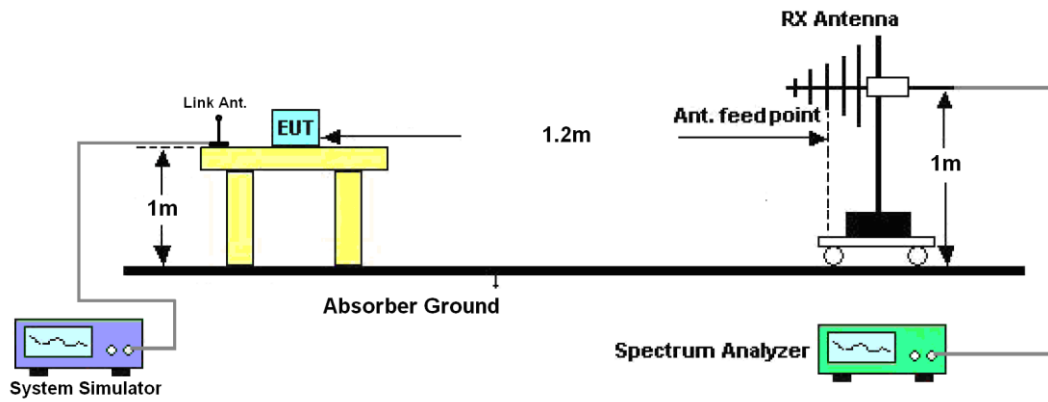
##### 3.1.2 Measuring Instruments

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.  $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$   
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	-18.98	-48.12	0.00	-1.08	28.06	0.64
836.40	-20.49	-48.28	0.00	-0.93	26.86	0.49
848.80	-21.40	-48.35	0.00	-0.76	26.19	0.42
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-20.73	-47.97	0.00	-1.08	26.16	0.41
836.40	-22.11	-48.01	0.00	-0.93	24.97	0.31
848.80	-22.81	-48.05	0.00	-0.76	24.48	0.28

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-23.59	-48.12	0.00	-1.08	23.45	0.22
836.40	-24.95	-48.28	0.00	-0.93	22.40	0.17
848.80	-25.89	-48.35	0.00	-0.76	21.70	0.15
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-25.42	-47.97	0.00	-1.08	21.47	0.14
836.40	-26.63	-48.01	0.00	-0.93	20.45	0.11
848.80	-27.27	-48.05	0.00	-0.76	20.02	0.10



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	-25.61	-48.12	0.00	-1.08	21.43	0.14
836.40	-27.03	-48.28	0.00	-0.93	20.32	0.11
846.60	-28.33	-48.35	0.00	-0.76	19.26	0.08
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-27.53	-47.97	0.00	-1.08	19.36	0.09
836.40	-28.65	-48.01	0.00	-0.93	18.43	0.07
846.60	-29.77	-48.05	0.00	-0.76	17.52	0.06

CDMA2000 BC0 1xRTT_RC3+SO32 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-25.61	-48.12	0.00	-1.08	21.43	0.14
836.52	-27.19	-48.28	0.00	-0.93	20.16	0.10
848.31	-28.74	-48.35	0.00	-0.76	18.85	0.08
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-27.44	-47.97	0.00	-1.08	19.45	0.09
836.52	-28.91	-48.01	0.00	-0.93	18.17	0.07
848.31	-29.99	-48.05	0.00	-0.76	17.30	0.05



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	-27.03	-51.88	0.00	1.96	26.81	0.48
1880.00	-29.30	-52.99	0.00	2.00	25.69	0.37
1909.80	-30.01	-54.28	0.00	1.98	26.25	0.42
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-26.12	-52.13	0.00	1.96	27.97	0.63
1880.00	-28.93	-53.17	0.00	2.00	26.24	0.42
1909.80	-29.21	-54.13	0.00	1.98	26.90	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	-30.50	-51.88	0.00	1.96	23.34	0.22
1880.00	-32.81	-52.99	0.00	2.00	22.18	0.17
1909.80	-33.46	-54.28	0.00	1.98	22.80	0.19
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-29.48	-52.13	0.00	1.96	24.61	0.29
1880.00	-32.38	-53.17	0.00	2.00	22.79	0.19
1909.80	-32.72	-54.13	0.00	1.98	23.39	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	-31.47	-51.88	0.00	1.96	22.37	0.17
1880.00	-33.18	-52.99	0.00	2.00	21.81	0.15
1907.60	-35.55	-54.28	0.00	1.98	20.71	0.12
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-30.54	-52.13	0.00	1.96	23.55	0.23
1880.00	-32.84	-53.17	0.00	2.00	22.33	0.17
1907.60	-34.97	-54.13	0.00	1.98	21.14	0.13

CDMA2000 BC1 1xRTT_RC1+SO55 Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-31.82	-51.88	0.00	1.96	22.02	0.16
1880.00	-33.81	-52.99	0.00	2.00	21.18	0.13
1908.75	-36.44	-54.28	0.00	1.98	19.82	0.10
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-31.53	-52.13	0.00	1.96	22.56	0.18
1880.00	-33.59	-53.17	0.00	2.00	21.58	0.14
1908.75	-35.60	-54.13	0.00	1.98	20.51	0.11





## **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.

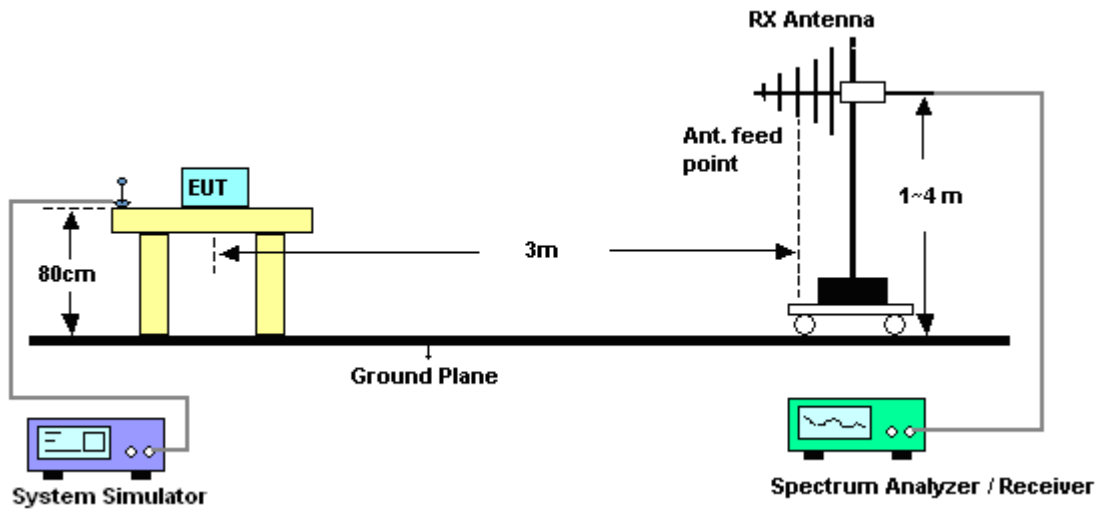
### **3.2.2 Measuring Instruments**

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

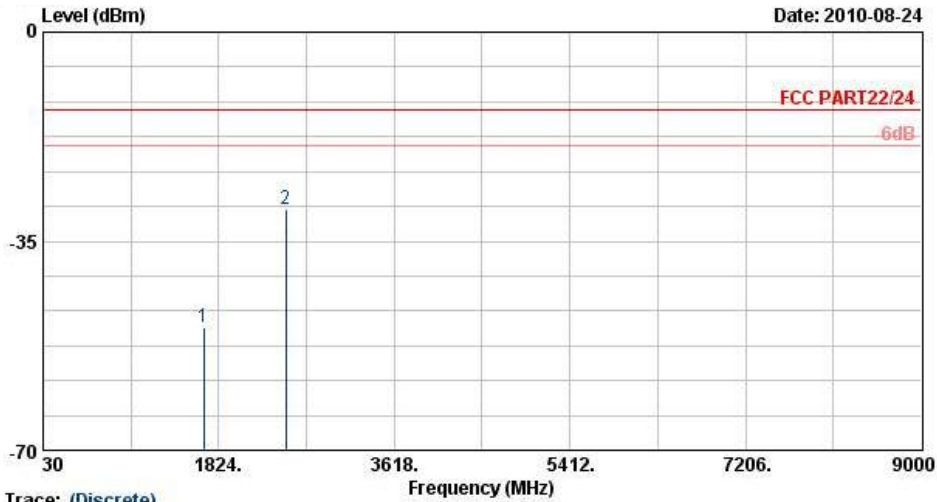
### 3.2.4 Test Setup





3.2.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	25~26°C
Test Mode :	GPRS 8 Link	Relative Humidity :	46~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

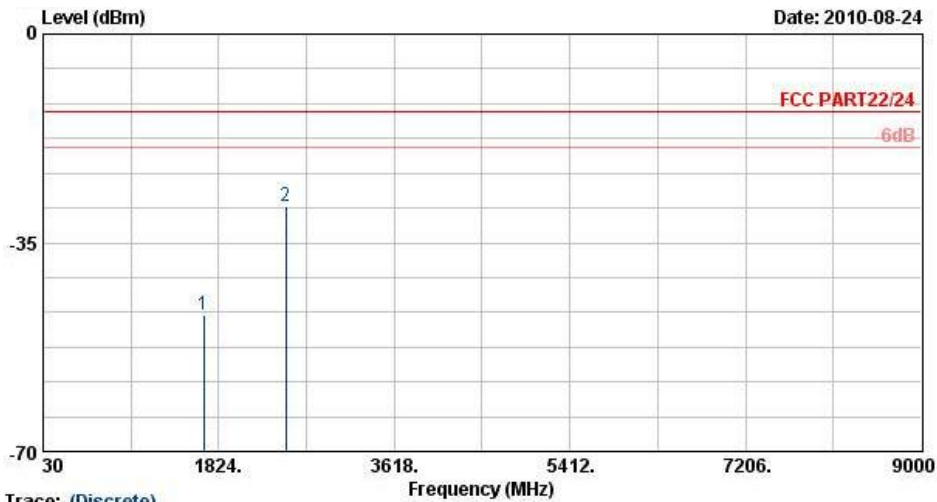


Trace: (Discrete)  
 Site : 03CH07-RY  
 Condition : FCC PART22/24 HF-ETRP(080306) HORIZONTAL  
 Project : RG 081715-01

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	-49.45	-13	-36.45	-58.34	-51.17	1.62	5.49	H	Pass
2509	-29.58	-13	-16.58	-42.19	-31.55	2.1	6.22	H	Pass



<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

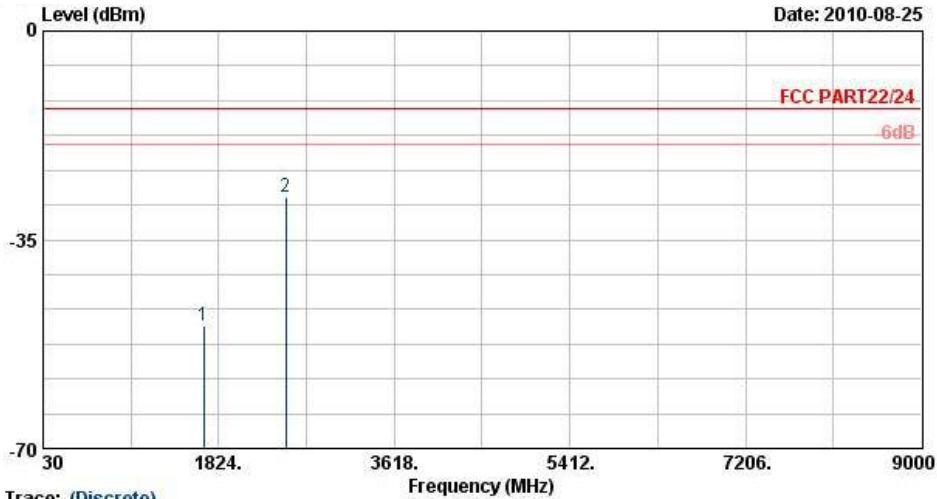


Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL  
 Project : FG 081715-01

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	-47.04	-13	-34.04	-57.52	-48.76	1.62	5.49	V	Pass
2509	-28.91	-13	-15.91	-42.03	-30.88	2.1	6.22	V	Pass



<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

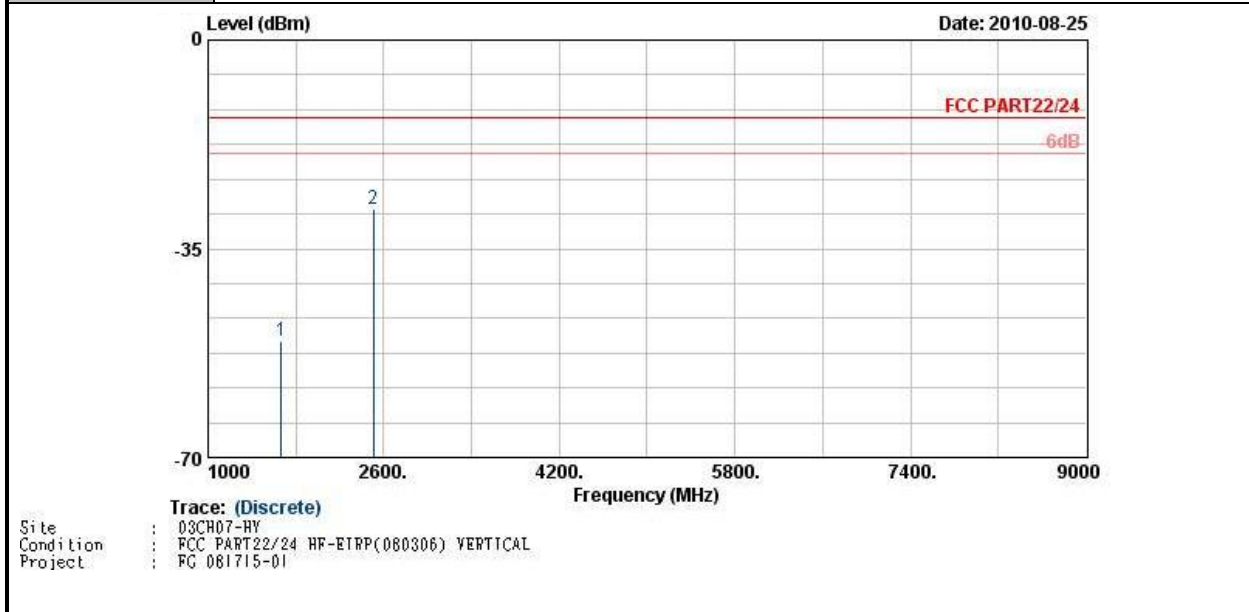


Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) HORIZONTAL  
 Project : FG 081715-01

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	-49.53	-13	-36.53	-58.21	-51.25	1.62	5.49	H	Pass
2509	-27.97	-13	-14.97	-41.01	-29.94	2.1	6.22	H	Pass



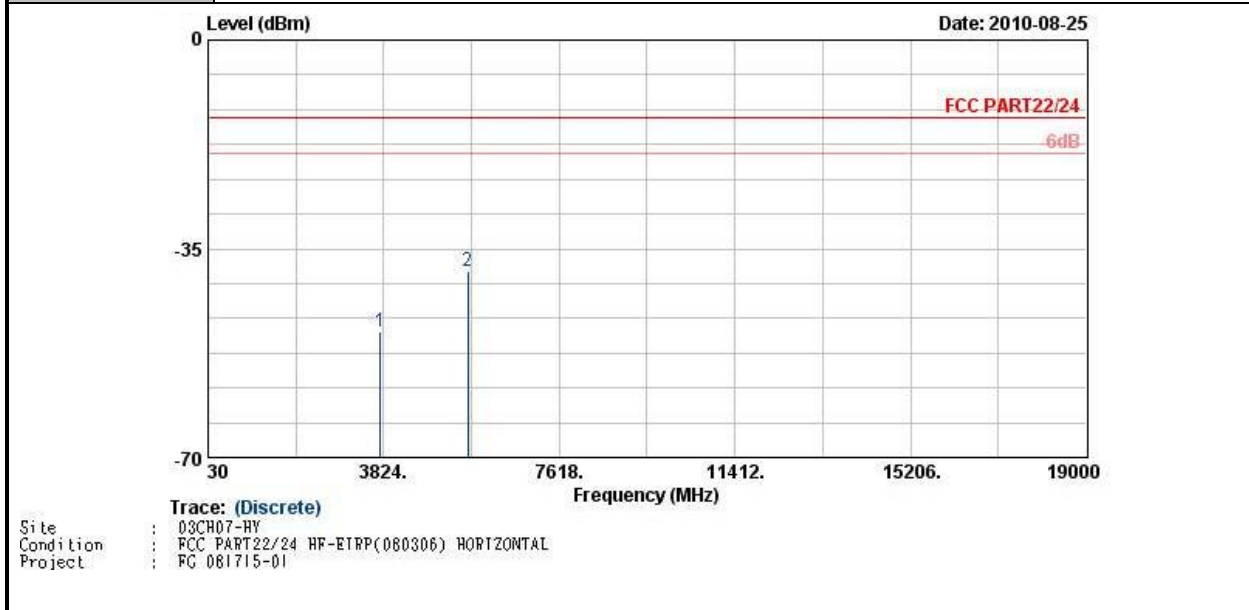
<b>Band :</b>	GSM850	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-50.42	-13	-37.42	-61.02	-52.14	1.62	5.49	V	Pass
2509	-28.38	-13	-15.38	-42.54	-30.35	2.1	6.22	V	Pass



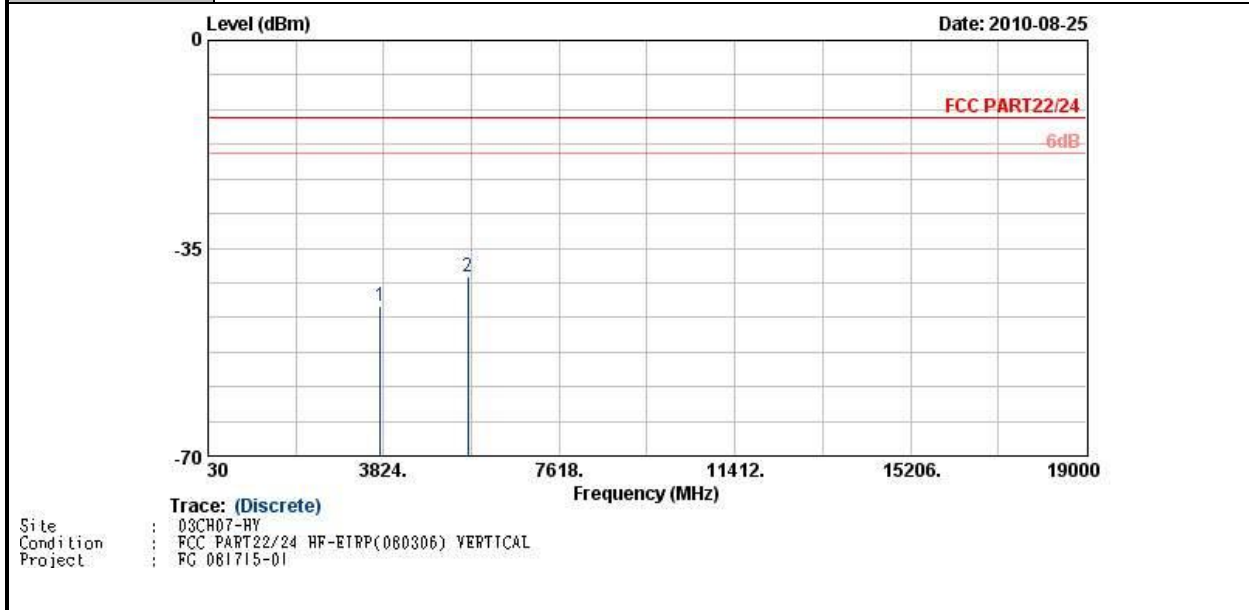
<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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	-48.93	-13	-35.93	-63.38	-55.23	2.51	8.81	H	Pass
5636	-38.88	-13	-25.88	-59.59	-46.59	2.99	10.70	H	Pass



<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	GPRS 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

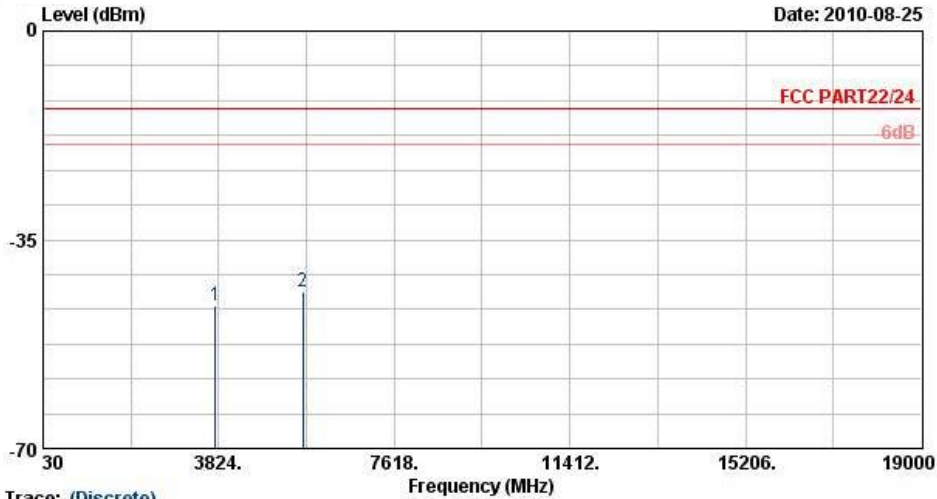


Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading ( dBm )	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain ( dBi )	Polarization ( H/V )	Result
3760	-44.86	-13	-31.86	-60.88	-51.16	2.51	8.81	V	Pass
5636	-39.94	-13	-26.94	-59.75	-47.65	2.99	10.70	V	Pass





<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

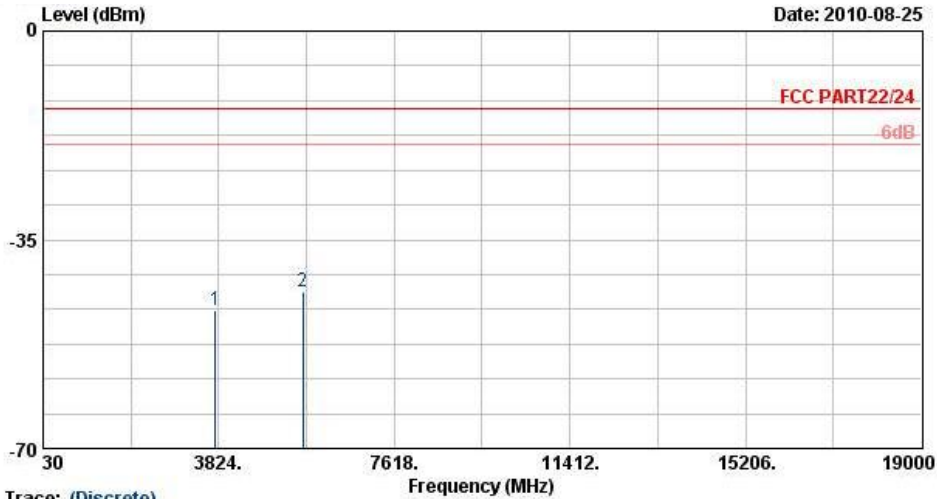


Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-EIRP(080306) HORIZONTAL  
 Project : FG 081715-01

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	-45.97	-13	-32.97	-60.96	-52.27	2.51	8.81	H	Pass
5636	-43.65	-13	-30.65	-64.66	-51.36	2.99	10.70	H	Pass



<b>Band :</b>	GSM1900	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	EDGE 8 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

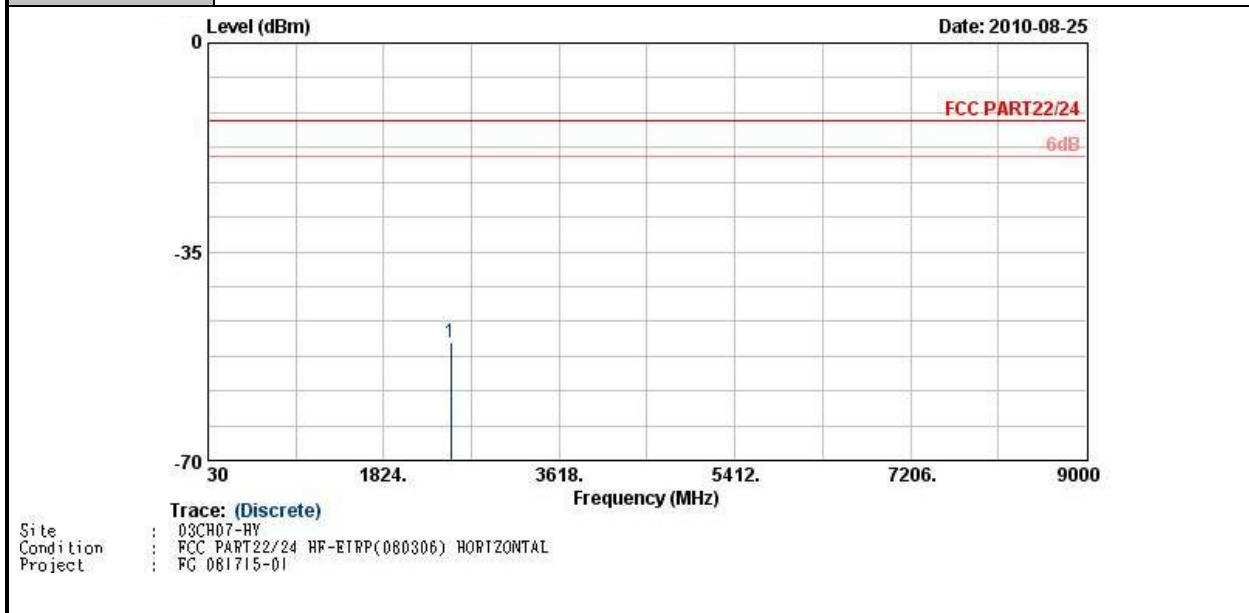


Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-EIRP(080306) VERTICAL  
 Project : FG 081715-01

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	-46.75	-13	-33.75	-62.38	-53.05	2.51	8.81	V	Pass
5636	-43.77	-13	-30.77	-63.77	-51.48	2.99	10.70	V	Pass



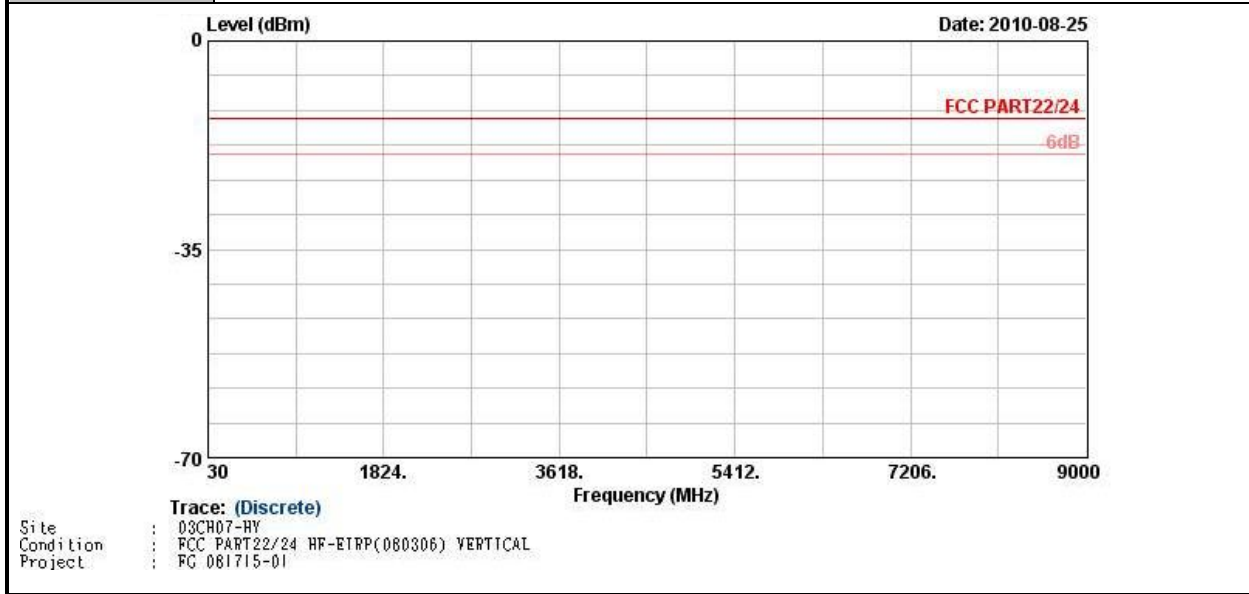
<b>Band :</b>	WCDMA Band V	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
2509	-50.30	-13	-37.30	-63.1	-52.27	2.1	6.22	H	Pass

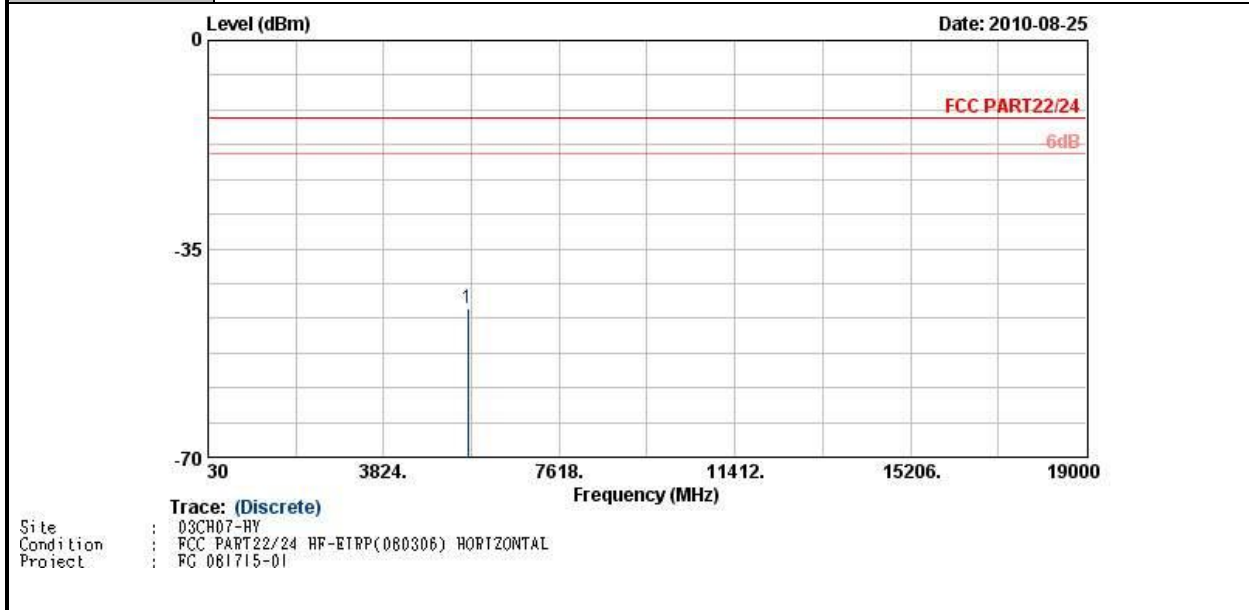


<b>Band :</b>	WCDMA Band V	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		





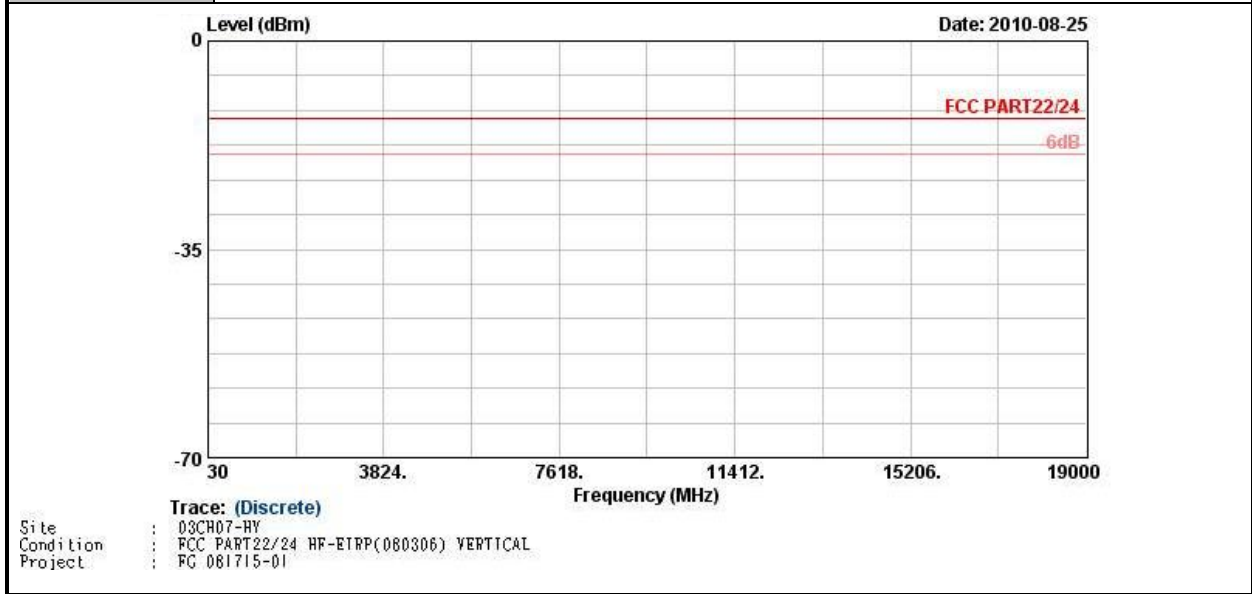
<b>Band :</b>	WCDMA Band II	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
5636	-44.93	-13	-31.93	-65.47	-52.64	2.99	10.70	H	Pass

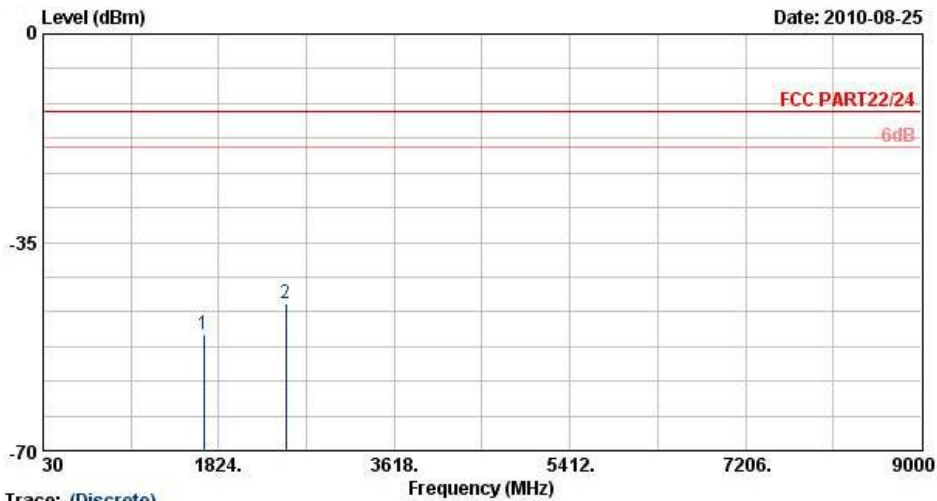


<b>Band :</b>	WCDMA Band II	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	RMC 12.2Kbps Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line. 2. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		





<b>Band :</b>	CDMA2000 BC0	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	1xRTT_RC3+SO32 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

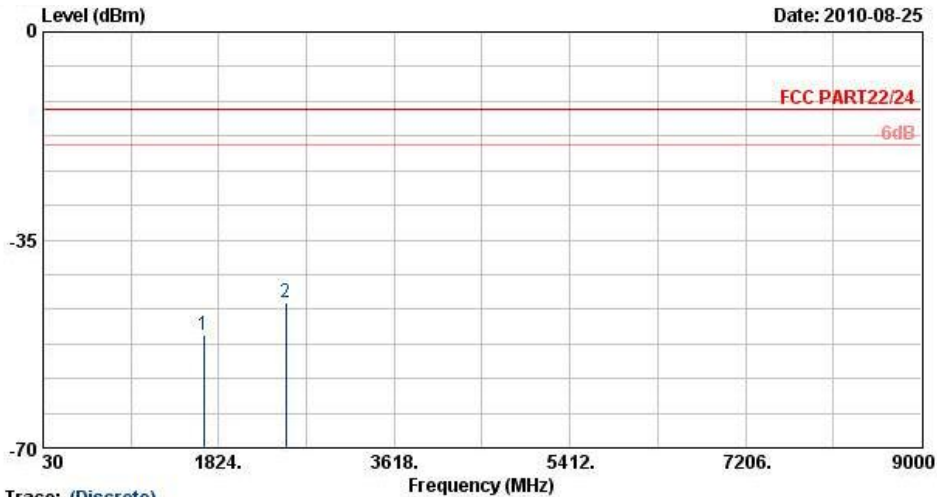


Trace: (Discrete)  
 Site : 03CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) HORIZONTAL  
 Project : FG 081715-01

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	-50.43	-13	-37.43	-58.63	-52.15	1.62	5.49	H	Pass
2509	-45.37	-13	-32.37	-58.39	-47.34	2.1	6.22	H	Pass



<b>Band :</b>	CDMA2000 BC0	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	1xRTT_RC3+SO32 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



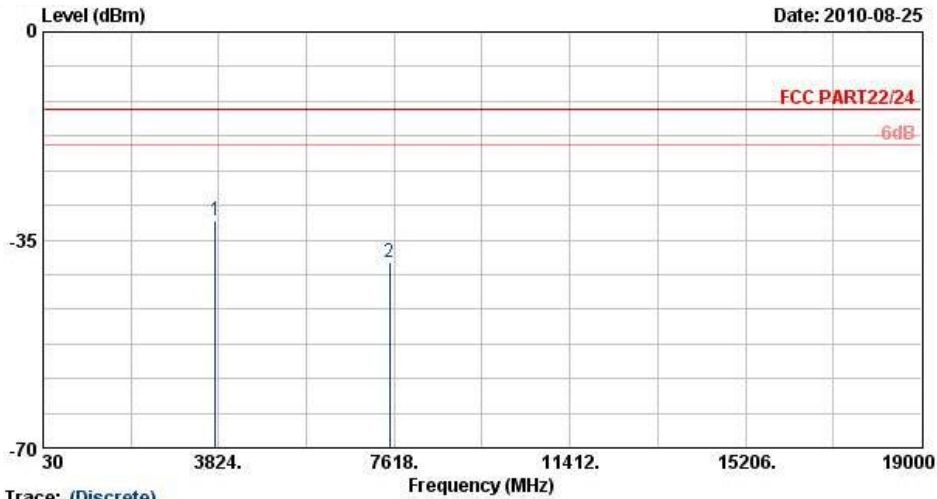
Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL  
 Project : FG 081715-01

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	-50.89	-13	-37.89	-61.45	-52.61	1.62	5.49	V	Pass
2509	-45.45	-13	-32.45	-58.94	-47.42	2.1	6.22	V	Pass





<b>Band :</b>	CDMA2000 BC1	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	1xRTT_RC1+SO55 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

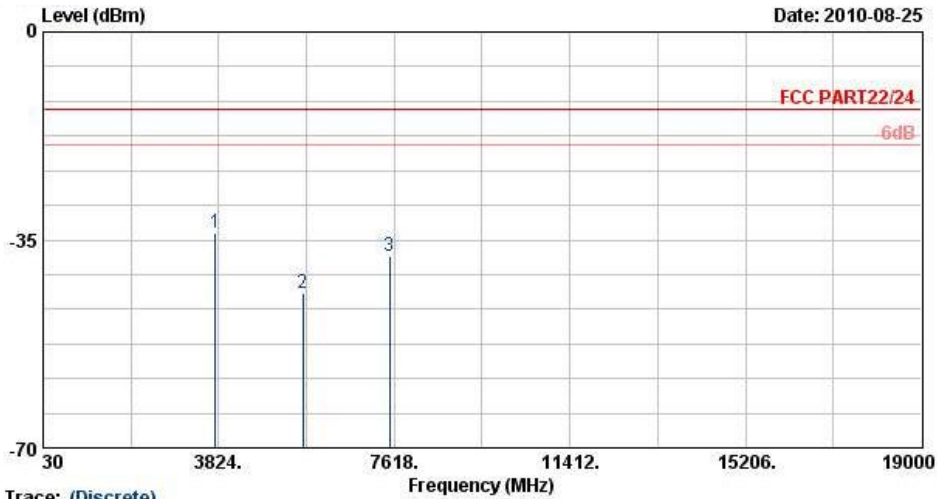


Site : 03CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) HORIZONTAL  
 Project : FG 081715-01

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	-31.75	-13	-18.75	-46.54	-38.05	2.51	8.81	H	Pass
7520	-38.71	-13	-25.71	-65.27	-47.24	3.59	12.12	H	Pass



<b>Band :</b>	CDMA2000 BC1	<b>Temperature :</b>	25~26°C
<b>Test Mode :</b>	1xRTT_RC1+SO55 Link	<b>Relative Humidity :</b>	46~47%
<b>Test Engineer :</b>	David Yang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Trace: (Discrete)  
 Site : 08CH07-HY  
 Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL  
 Project : FG 081715-01

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	-33.93	-13	-20.93	-50.17	-40.23	2.51	8.81	V	Pass
5636	-43.86	-13	-30.86	-64.52	-51.57	2.99	10.70	V	Pass
7520	-37.64	-13	-24.64	-64.48	-46.17	3.59	12.12	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	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	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>				



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP081715-01 as below.