

FCC Test Report

EQUIPMENT : 3G wireless Router

BRAND NAME : Longcheer
MODEL NAME : WR7310
FCC ID : WH7WR7310

STANDARD : 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

Report No.: FG932302-01

MAX. ERP/EIRP POWER : GSM850(GPRS) : 1.32 W

GSM850(EDGE): 0.37 W GSM1900(GPRS): 1.24 W GSM1900(EDGE): 0.60 W

WCDMA Band V (WCDMA): 0.27 W WCDMA Band II (HSDPA): 0.30 W

EMISSION DESIGNATOR : GSM: 244KGXW

EDGE: 240KG7W WCDMA: 4M18F9W

APPLICANT : Longcheer technology (Shanghai) Co., Ltd.

Buiding 1, No. 401, Caobao Rd., Xuhui District, Shanghai,

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P.R.China

The product sample received on Mar. 23, 2009 and completely tested on Mar. 24, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 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 (KUNSHAN) INC.

No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG932302-01	Rev. 01	Initial issue of report	Apr. 08, 2009

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result
3.1	§2.1046	N/A	Conducted Output Power	N/A	PASS
3.2	§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
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS
3.3	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Conducted Emission	< 43+10log ₁₀ (P[Watts])	PASS
3.6	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	< 43+10log ₁₀ (P[Watts])	PASS
3.7	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS

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General Description 1

1.1 Applicant

Longcheer technology (Shanghai) Co., Ltd.

Buiding 1, No. 401, Caobao Rd., Xuhui District, Shanghai, P.R.China

1.2 Manufacturer

Longcheer technology (Shanghai) Co., Ltd.

Buiding 1, No. 401, Caobao Rd., Xuhui District, Shanghai, P.R.China

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1.3 Feature of Equipment Under Test

Produ	Product Feature & Specification					
Equipment	3G wireless Router					
Brand Name	Longcheer					
Model Name	WR7310					
FCC ID	WH7WR7310					
	GSM850 : 824 MHz ~ 849 MHz					
	GSM1900 : 1850 MHz ~ 1910 MHz					
Tx Frequency	WCDMA Band V : 824 MHz ~ 849 MHz					
	WCDMA Band II: 1850 MHz ~ 1910 MHz					
	WLAN : 2400 MHz ~ 2483.5 MHz					
	GSM850 : 869 MHz ~ 894 MHz					
	GSM1900 : 1930 MHz ~ 1990 MHz					
Rx Frequency	WCDMA Band V : 869 MHz ~ 894 MHz					
	WCDMA Band II: 1930 MHz ~ 1990 MHz					
	WLAN : 2400 MHz ~ 2483.5 MHz					
	GSM850: 32.26 dBm (GPRS 8), 26.74 dBm (EDGE 8)					
Maximum Output Power to Antenna	GSM1900: 29.18 dBm (GPRS 8), 25.65 dBm (EDGE 8)					
Maximum Output Power to Antenna	WCDMA Band V: 23.31 dBm (WCDMA)					
	WCDMA Band II: 22.80 dBm (HSDPA)					
	GSM850(GPRS): 1.32 W (31.19 dBm)					
	GSM850(EDGE): 0.37 W (25.69 dBm)					
Maximum ERP/EIRP	GSM1900(GPRS) : 1.24 W (30.95 dBm)					
Maximum EXF/EIKF	GSM1900(EDGE): 0.60 W (27.76 dBm)					
	WCDMA Band V (WCDMA) : 0.27 W (24.38 dBm)					
	WCDMA Band II (HSDPA) : 0.30 W (24.70 dBm)					
Antenna Type	Fixed Internal Antenna					
HW Version	LRAMH92A6-1					
SW Version	LQA0009.1.2_MH92A					
	GSM / GPRS : GMSK					
	EDGE: 8PSK					
Type of Modulation	WCDMA: QPSK					
	HSDPA: QPSK / 16QAM					
	HSUPA : BPSK					
	GSM: 244KGXW					
Type of Emission	EDGE: 240KG7W					
	WCDMA: 4M18F9W					
EUT Stage	Identical Prototype					

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List of Accessory:

Specification of Accessory					
	Brand Name	AQUIL STAR			
	Model Name	ASSA2-052300			
AC Adapter	Dower Detine	I/P:100-240Vac, 50-60Hz, 0.68A;			
	Power Rating	O/P: 5.2Vdc, 3000mA			
	AC Power Cord Type	1.93 meter non-shielded cable with ferrite core			

Remark:

- The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- 2. For accessories equipped with this EUT, please refer to the appendix of the external photo.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.			
	No. 3-2, PingXiang Road, Kunshan, Ji	angsu Province, P.R.C.		
Test Site Location	TEL: +86-0512-5790-0158			
	FAX: +86-0512-5790-0958			
Test Site No.	Sporton	Site No.		
lest site NO.	TH01-KS	03CH01-KS		

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)
- ANSI C63.4-2003
- ANSI / TIA / EIA-603-C-2004
- IC RSS-132 Issue 2
- IC RSS-133 Issue 5

Remark:

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

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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

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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, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

- 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
- 30MHz to 19000 MHz for GSM1900 and WCDMA Band II. 2.

	Test Modes							
Band	Radiated TCs	Conducted TCs						
	■ GPRS Link	■ GSM Link						
GSM 850	■ EDGE Link	■ GPRS Link						
	■ GPRS Link + WLAN Link	■ EDGE Link						
	■ GPRS Link	■ GSM Link						
GSM 1900	■ EDGE Link	■ GPRS Link						
		■ EDGE Link						
	■ WCDMA Link	■ WCDMA Link						
WCDMA Band V	■ HSDPA Link	■ HSDPA Link						
	■ HSUPA Link	■ HSUPA Link						
	■ WCDMA Link	■ WCDMA Link						
WCDMA Band II	■ HSDPA Link	■ HSDPA Link						
	■ HSUPA Link	■ HSUPA Link						

Note: The maximum power levels are GPRS/EDGE multi-slot class 8 modes for GSM, RMC 12.2K mode for WCDMA band V, and HSDPA mode for WCDMA band II, only these modes used for all testing. The power levels lists are as follow:

Mode		GSM 850		GSM 1900			
Wode	128	189	251	512	661	810	
GSM	32.14	32.21	32.22	28.89	29.05	28.64	
GPRS 8	32.17	32.26	32.23	28.94	29.18	28.98	
GPRS 10	29.55	29.66	29.62	26.33	26.57	26.37	
GPRS 12	26.53	26.62	26.60	23.32	23.51	23.35	
EGPRS 8	26.60	26.73	26.74	25.47	25.65	25.48	
EGPRS 10	23.65	23.84	23.70	22.40	22.61	22.40	
EGPRS 12	21.61	21.74	21.72	21.41	21.56	21.39	

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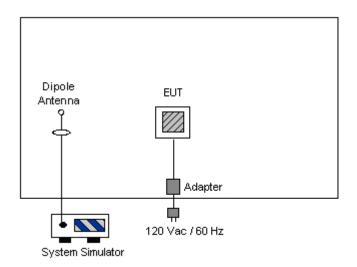
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WCDMA Band V WCDMA Band II Mode 4233 9262 9400 9538 4132 4182 **RMC 12.2K** 22.34 22.08 23.31 21.93 22.03 22.36 Subtest-1 22.39 22.03 23.18 22.02 21.94 22.36 Subtest-2 22.07 21.88 22.91 21.75 21.97 22.80 **HSDPA** Subtest-3 21.62 21.49 22.42 21.51 21.31 21.94 Subtest-4 21.66 21.32 22.44 21.25 21.37 22.37 Subtest-1 22.03 21.21 22.14 21.81 20.98 21.68 Subtest-2 19.59 19.43 20.47 20.09 19.67 20.47 **HSUPA** Subtest-3 20.64 20.39 21.52 21.04 20.67 19.98 19.90 20.97 Subtest-4 20.11 19.61 19.75 20.85 21.96 22.35 Subtest-5 21.88 21.56 21.85 22.32

2.2 Connection Diagram of Test System



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3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

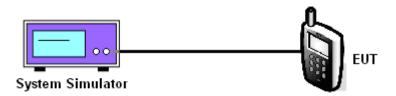
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

- 1. The transmitter output port was connected to base station.
- 2. Set EUT at maximum power through base station.
- 3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup



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3.1.5 Test Result of Conducted Output Power

Cellular Band							
Modes		Channel	Frequency	Conduct	ed Power		
Wiodes		Onamie	(MHz)	(dBm)	(Watts)		
		128 (Low)	824.2	32.17	1.65		
GPRS	8	189 (Mid)	836.4	32.26	1.68		
		251 (High)	848.8	32.23	1.67		
		128 (Low)	824.2	26.60	0.46		
EDGE	8	189 (Mid)	836.4	26.73	0.47		
EDGE 8		251 (High)	848.8	26.74	0.47		
		4132 (Low)	826.4	22.34	0.17		
	12.2k bps	4182 (Mid)	836.4	22.08	0.16		
		4233 (High)	846.6	23.31	0.21		
	HSDPA	4132 (Low)	826.4	22.39	0.17		
	Subtest-1	4182 (Mid)	836.4	22.03	0.16		
	Sublest-1	4233 (High)	846.6	23.18	0.21		
	LICDDA	4132 (Low)	826.4	22.07	0.16		
	HSDPA Subtest-2	4182 (Mid)	836.4	21.88	0.15		
	Sublest-2	4233 (High)	846.6	22.91	1.65 1.68 1.67 0.46 0.47 0.47 0.17 0.16 0.21 0.17 0.16 0.21 0.16 0.21 0.16		
	LICDDA	4132 (Low)	826.4	21.62			
	HSDPA	4182 (Mid)	836.4	21.49			
	Subtest-3	4233 (High)	846.6	22.42	0.17		
	LICDDA	4132 (Low)	826.4	21.66	(Watts) 1.65 1.68 1.67 0.46 0.47 0.17 0.16 0.21 0.17 0.16 0.21 0.15 0.20 0.15 0.14 0.17 0.15 0.14 0.17 0.16 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.17 0.15 0.14 0.18 0.16 0.13 0.16 0.09 0.09 0.11 0.11 0.11		
	HSDPA Subtest-4	4182 (Mid)	836.4	21.32			
WCDMA Band V	Sublest-4	4233 (High)	846.6	22.44	0.18		
VVCDIVIA Band V	HSUPA	4132 (Low)	826.4	22.03	0.16		
	Subtest-1	4182 (Mid)	836.4	21.21	0.13		
	Sublest-1	4233 (High)	846.6	22.14	0.16		
	HSUPA	4132 (Low)	826.4	19.59	0.09		
	Subtest-2	4182 (Mid)	836.4	19.43	0.09		
	Sublest-2	4233 (High)	846.6	20.47	0.11		
	HCLIDA	4132 (Low)	826.4	20.64	0.12		
	HSUPA Subtest-3	4182 (Mid)	836.4	20.39	0.11		
	Sublest-3	4233 (High)	846.6	21.52	0.14		
	HSUPA	4132 (Low)	826.4	20.11	0.10		
		4182 (Mid)	836.4	19.90	0.10		
	Subtest-4	4233 (High)	846.6	20.97	0.13		
	HOUDA	4132 (Low)	826.4	21.96	0.16		
	HSUPA	4182 (Mid)	836.4	21.88	0.15		
	Subtest-5	4233 (High)	846.6	22.35	0.17		

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PCS Band Frequency **Conducted Power Modes** Channel (MHz) (dBm) (Watts) 512 (Low) 1850.2 28.94 0.78 GPRS 8 661 (Mid) 1880.0 29.18 0.83 810 (High) 1909.8 28.98 0.79 512 (Low) 1850.2 25.47 0.35 EDGE 8 661 (Mid) 1880.0 25.65 0.37 810 (High) 1909.8 25.48 0.35 9262 (Low) 1852.4 21.93 0.16 12.2k bps 9400 (Mid) 22.03 0.16 1880.0 9538 (High) 1907.6 22.36 0.17 9262 (Low) 1852.4 22.02 0.16 **HSDPA** 9400 (Mid) 1880.0 21.94 0.16 Subtest-1 9538 (High) 1907.6 22.36 0.17 9262 (Low) 1852.4 21.75 0.15 **HSDPA** 9400 (Mid) 1880.0 21.97 0.16 Subtest-2 9538 (High) 1907.6 22.80 0.19 1852.4 0.14 9262 (Low) 21.51 **HSDPA** 9400 (Mid) 1880.0 21.31 0.14 Subtest-3 9538 (High) 1907.6 21.94 0.16 9262 (Low) 1852.4 21.25 0.13 **HSDPA** 9400 (Mid) 1880.0 21.37 0.14 Subtest-4 9538 (High) 1907.6 22.37 0.17 WCDMA Band II 9262 (Low) 1852.4 0.15 21.81 **HSUPA** 9400 (Mid) 1880.0 21.68 0.15 Subtest-1 20.98 9538 (High) 1907.6 0.13 9262 (Low) 1852.4 20.09 0.10 **HSUPA** 9400 (Mid) 1880.0 19.67 0.09 Subtest-2 9538 (High) 1907.6 20.47 0.11 9262 (Low) 1852.4 21.04 0.13 **HSUPA** 9400 (Mid) 1880.0 19.98 0.10 Subtest-3 9538 (High) 1907.6 20.67 0.12 9262 (Low) 1852.4 19.61 0.09 **HSUPA** 9400 (Mid) 1880.0 19.75 0.09 Subtest-4 9538 (High) 1907.6 20.85 0.12 9262 (Low) 1852.4 21.56 0.14 **HSUPA** 9400 (Mid) 1880.0 21.85 0.15 Subtest-5 1907.6 9538 (High) 22.32 0.17

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3.2 Effective Radiated Power and **Effective Isotropic Radiated Power Measurement**

3.2.1 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.

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

- 1. The EUT was placed on a 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.
- Taking the record of maximum ERP/EIRP. 5.
- A dipole antenna was substituted in place of the EUT and was driven by a signal generator. 6.
- 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 = Ps + Et - Es + Gs = Ps + Rt - Rs + Gs

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.

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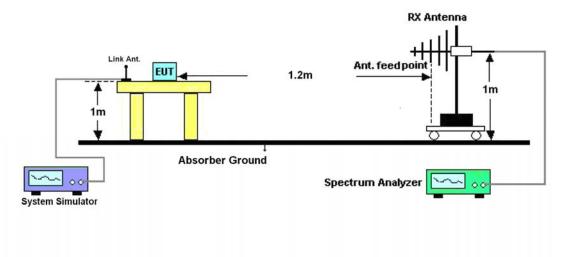
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3.2.4 Test Setup



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3.2.5 Test Result of ERP

	GSM850 (GPRS 8) Radiated Power ERP							
		Hoi	rizontal Polariza	tion				
Frequency	Frequency Rt Rs Ps Gs ERP ERP							
(MHz)	(dBm)	(dBm)	(dBm)	(dBd)	(dBm)	(W)		
824.2	-16.01	-48.12	0.00	-1.08	31.03	1.27		
836.4	-17.60	-48.28	0.00	-0.93	29.75	0.94		
848.8	-18.68	-48.35	0.00	-0.76	28.91	0.78		
		Ve	ertical Polarizati	on				
Frequency	Rt	Rs	Ps	Gs	ERP	ERP		
(MHz)	(dBm)	(dBm)	(dBm)	(dBd)	(dBm)	(W)		
824.2	-15.70	-47.97	0.00	-1.08	31.19	1.32		
836.4	-17.19	-48.01	0.00	-0.93	29.89	0.97		
848.8	-17.94	-48.05	0.00	-0.76	29.35	0.86		

GSM850 (EDGE 8) Radiated Power ERP									
	Horizontal Polarization								
Frequency Rt Rs Ps Gs ERP ERP (MHz) (dBm) (dBm) (dBd) (dBm) (W)									
824.2	-21.46	-48.12	0.00	-1.08	25.58	0.36			
836.4	-22.73	-48.28	0.00	-0.93	24.62	0.29			
848.8	-23.50	-48.35	0.00	-0.76	24.09	0.26			
		Ve	ertical Polarizati	on					
Frequency (MHz)									
824.2	-21.20	-47.97	0.00	-1.08	25.69	0.37			
836.4	-22.63	-48.01	0.00	-0.93	24.45	0.28			
848.8	-23.44	-48.05	0.00	-0.76	23.85	0.24			

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WCDMA Band V (WCDMA) Radiated Power ERP						
Horizontal Polarization						
Frequency	Rt	Rs	Ps	Gs	ERP	ERP
(MHz)	(dBm)	(dBm)	(dBm)	(dBd)	(dBm)	(W)
826.4	-22.66	-48.12	0.00	-1.08	24.38	0.27
836.4	-24.17	-48.28	0.00	-0.93	23.18	0.21
846.6	-25.21	-48.35	0.00	-0.76	22.38	0.17
		Ve	ertical Polarizati	on		
Frequency	Rt	Rs	Ps	Gs	ERP	ERP
(MHz)	(dBm)	(dBm)	(dBm)	(dBd)	(dBm)	(W)
826.4	-22.57	-47.97	0.00	-1.08	24.32	0.27
836.4	-24.07	-48.01	0.00	-0.93	23.01	0.20
846.6	-24.78	-48.05	0.00	-0.76	22.51	0.18

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3.2.6 Test Result of EIRP

		GSM1900 (GF	PRS 8) Radiate	d Power EIRP		
	Horizontal Polarization					
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.2	-25.74	-51.88	0.00	1.96	28.10	0.65
1880.0	-27.72	-52.99	0.00	2.00	27.27	0.53
1909.8	-30.02	-54.28	0.00	1.98	26.24	0.42
		Ve	ertical Polarizati	on		
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.2	-23.14	-52.13	0.00	1.96	30.95	1.24
1880.0	-24.84	-53.17	0.00	2.00	30.33	1.08
1909.8	-26.66	-54.13	0.00	1.98	29.45	0.88

	GSM1900 (EDGE 8) Radiated Power EIRP					
	Horizontal Polarization					
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.2	-28.97	-51.88	0.00	1.96	24.87	0.31
1880.0	-31.12	-52.99	0.00	2.00	23.87	0.24
1909.8	-33.09	-54.28	0.00	1.98	23.17	0.21
		Ve	ertical Polarizati	on		
Frequency	Rt	Rs	Ps	Gs	EIRP	EIRP
(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(W)
1850.2	-26.33	-52.13	0.00	1.96	27.76	0.60
1880.0	-27.86	-53.17	0.00	2.00	27.31	0.54
1909.8	-28.95	-54.13	0.00	1.98	27.16	0.52

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	WCDMA Band II (HSDPA) Radiated Power EIRP					
	Horizontal Polarization					
Frequency	Rt	Rs	Ps	Gs	EIRP	EIRP
(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(W)
1852.4	-32.67	-51.88	0.00	1.96	21.17	0.13
1880.0	-37.31	-52.99	0.00	2.00	17.68	0.06
1907.6	-37.84	-54.28	0.00	1.98	18.42	0.07
		Ve	ertical Polarizati	on		
Frequency	Rt	Rs	Ps	Gs	EIRP	EIRP
(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(W)
1852.4	-29.39	-52.13	0.00	1.96	24.70	0.30
1880.0	-32.91	-53.17	0.00	2.00	22.26	0.17
1907.6	-33.79	-54.13	0.00	1.98	22.32	0.17

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3.3 Occupied Bandwidth and Band Edge Measurement

3.3.1 Description of Occupied Bandwidth and Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

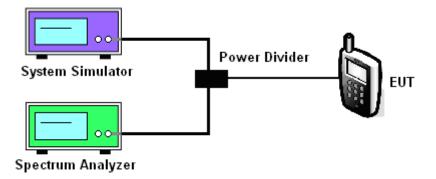
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

- 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- 2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.
- 3. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
- The RBW was replaced by 10 kHz, due to the spectrum analyzer IF-Filter including an excess 4. of the limit. A worst case correction factor of 10 log (1% BW/measurement RBW) was implemented.

3.3.4 Test Setup



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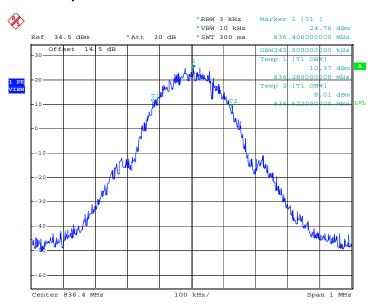
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3.3.5 Test Result (Plots) of Occupied Bandwidth

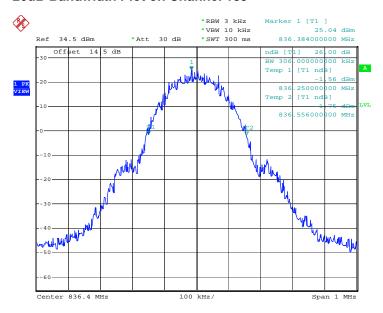
Band:	GSM 850	Power Stage :	High
Test Mode :	GPRS 8 Link		

99% Occupied Bandwidth Plot on Channel 189



Date: 22.MAR.2009 08:06:18

26dB Bandwidth Plot on Channel 189



Date: 22.MAR.2009 08:00:46

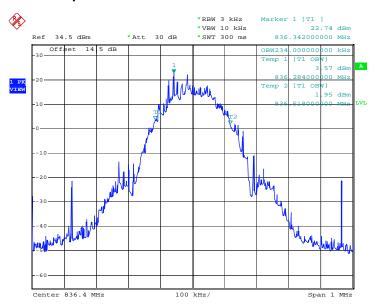
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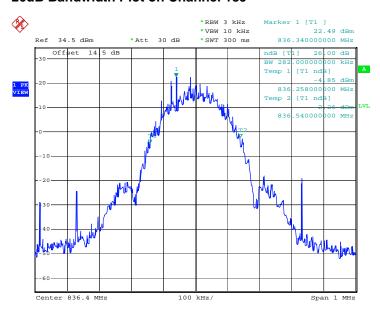
Band:	GSM 850	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 189



Date: 22.MAR.2009 09:33:45

26dB Bandwidth Plot on Channel 189



Date: 22.MAR.2009 08:50:52

SPORTON INTERNATIONAL (KUNSHAN) INC.

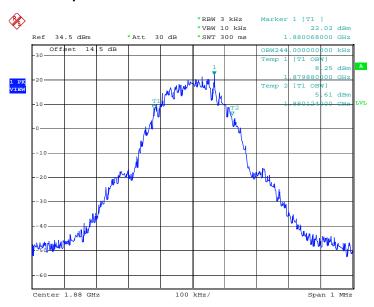
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Band: GSM 1900 Power Stage: High

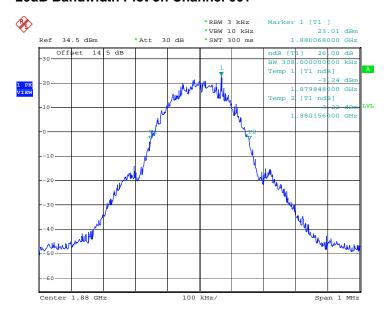
Test Mode: GPRS 8 Link

99% Occupied Bandwidth Plot on Channel 661



Date: 22.MAR.2009 09:59:50

26dB Bandwidth Plot on Channel 661



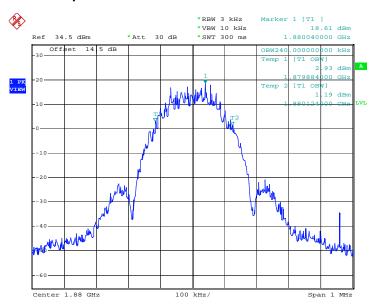
Date: 22.MAR.2009 09:50:54

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310



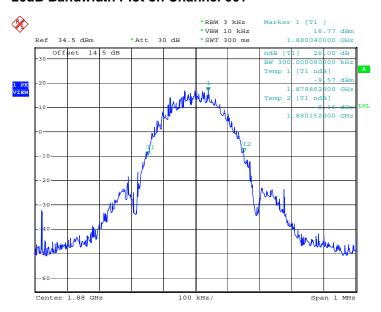
Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 661



Date: 22.MAR.2009 11:13:39

26dB Bandwidth Plot on Channel 661



Date: 22.MAR.2009 10:50:09

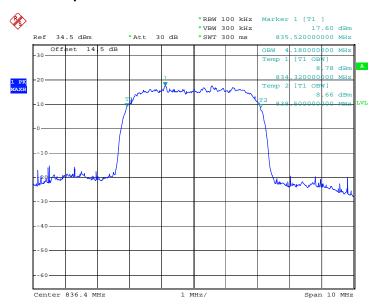
SPORTON INTERNATIONAL (KUNSHAN) INC.

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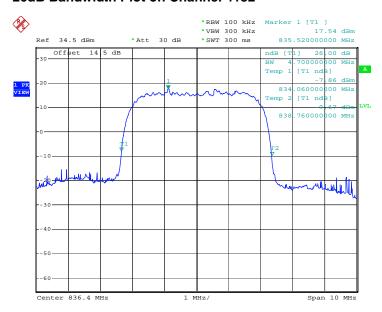
Band: WCDMA Band V Power Stage: High
Test Mode: WCDMA Link

99% Occupied Bandwidth Plot on Channel 4182



Date: 22.MAR.2009 12:07:55

26dB Bandwidth Plot on Channel 4182



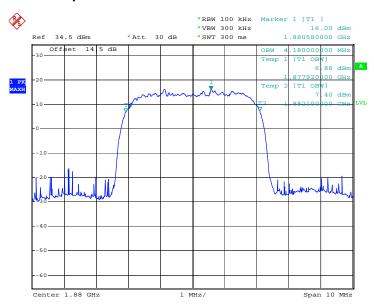
Date: 22.MAR.2009 11:58:02



Band: WCDMA Band II Power Stage: High

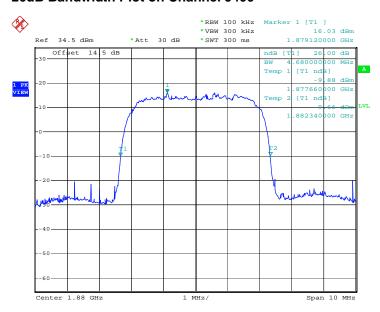
Test Mode: HSDPA Link

99% Occupied Bandwidth Plot on Channel 9400



Date: 23.MAR.2009 10:49:24

26dB Bandwidth Plot on Channel 9400



Date: 23.MAR.2009 10:41:21

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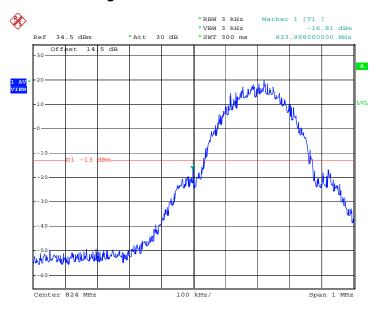
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3.3.6 Test Result (Plots) of Conducted Band Edges

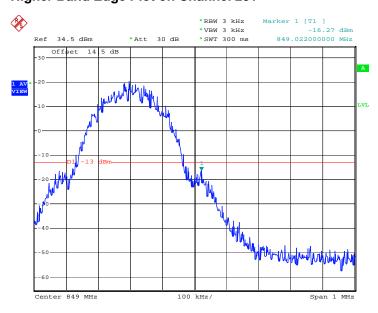
Band:	GSM850	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 128



Date: 22.MAR.2009 08:02:37

Higher Band Edge Plot on Channel 251



Date: 22.MAR.2009 08:03:31

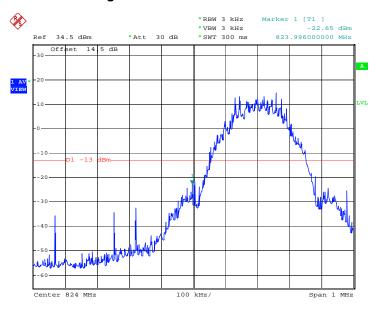
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310

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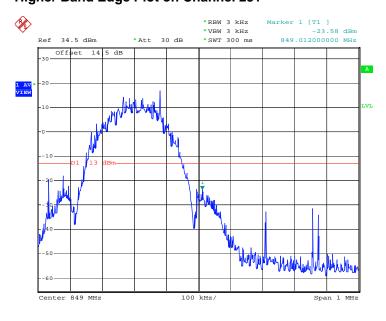
Band:	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 128



Date: 22.MAR.2009 08:54:13

Higher Band Edge Plot on Channel 251



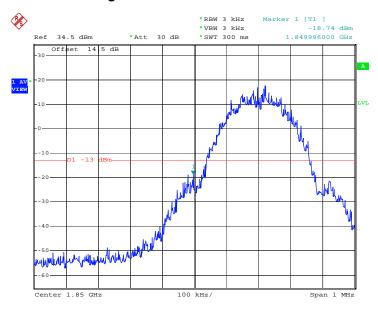
Date: 22.MAR.2009 08:55:59

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 28 of 79
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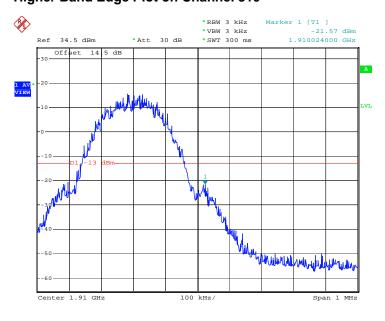
Band:	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 512



Date: 22.MAR.2009 09:53:32

Higher Band Edge Plot on Channel 810



Date: 22.MAR.2009 09:54:16

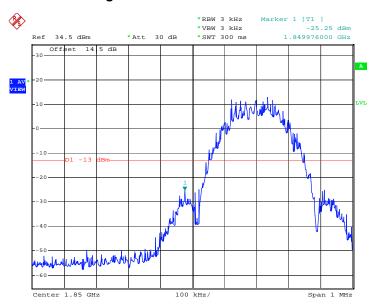
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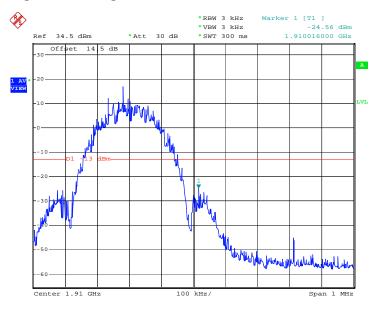
Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 512



Date: 22.MAR.2009 10:54:43

Higher Band Edge Plot on Channel 810



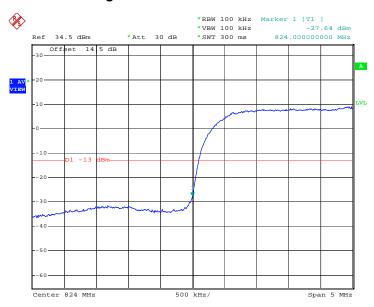
Date: 22.MAR.2009 10:55:31

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 30 of 79
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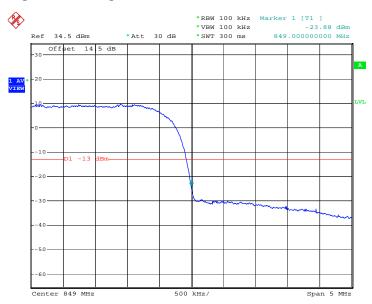
Band: WCDMA Band V Power Stage: High
Test Mode: WCDMA Link

Lower Band Edge Plot on Channel 4132



Date: 22.MAR.2009 12:02:29

Higher Band Edge Plot on Channel 4233



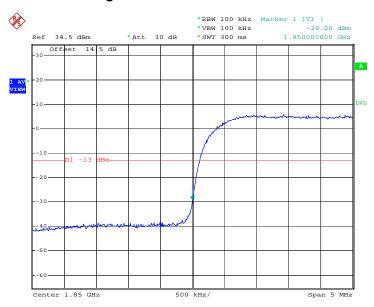
Date: 22.MAR.2009 12:03:07

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 31 of 79
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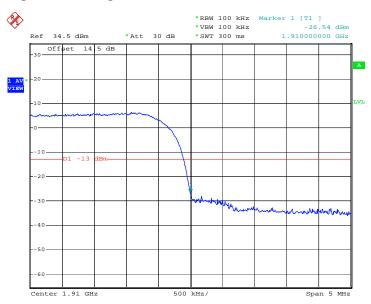
Band :	WCDMA Band II	Power Stage :	High
Test Mode :	HSDPA Link		

Lower Band Edge Plot on Channel 9262



Date: 23.MAR.2009 11:04:11

Higher Band Edge Plot on Channel 9538



Date: 23.MAR.2009 11:05:07

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3.4 Conducted Emission Measurement

3.4.1 Description of Conducted Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

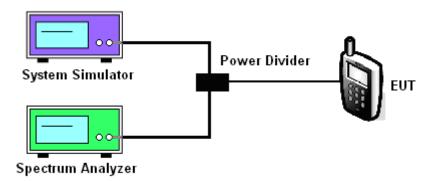
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

- 1. The EUT was connected to spectrum analyzer and base station via power divider.
- 2. The middle channel for the highest RF power within the transmitting frequency was measured.
- 3. The conducted spurious emission for the whole frequency range was taken.

3.4.4 Test Setup



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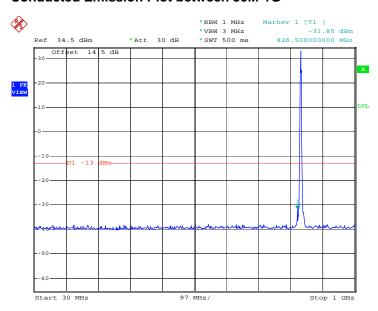
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 33 of 79
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3.4.5 Test Result (Plots) of Conducted Emission

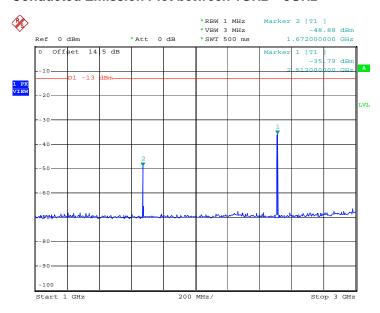
Band:	GSM850	Channel:	CH189
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30M-1G



Date: 29.MAR.2009 08:03:27

Conducted Emission Plot between 1GHz ~ 3GHz



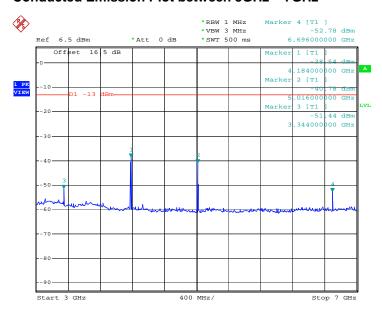
Date: 29.MAR.2009 08:06:39

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310

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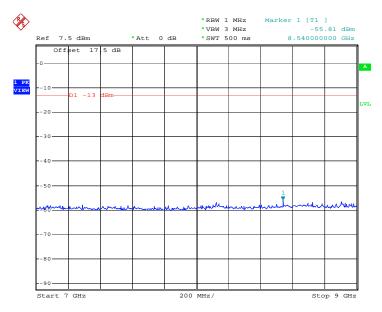


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 22.MAR.2009 08:26:14

Conducted Emission Plot between 7GHz ~ 9GHz



Date: 22.MAR.2009 08:27:16

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310

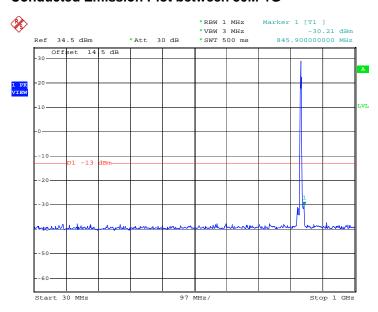
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Band: GSM850 Channel: CH189

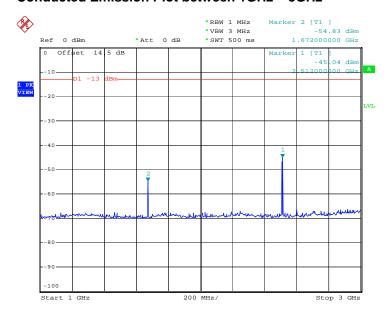
Test Mode: EDGE 8 Link

Conducted Emission Plot between 30M-1G



Date: 29.MAR.2009 08:01:41

Conducted Emission Plot between 1GHz ~ 3GHz



Date: 22.MAR.2009 08:41:07

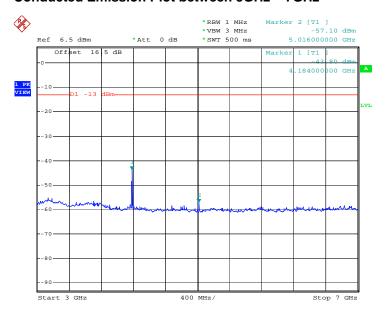
SPORTON INTERNATIONAL (KUNSHAN) INC.

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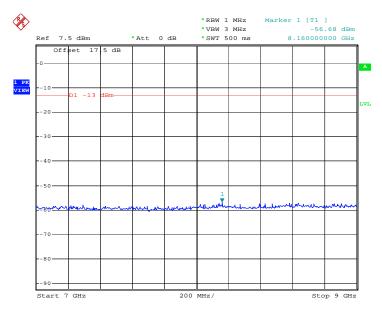
Report No.: FG932302-01

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 22.MAR.2009 08:34:58

Conducted Emission Plot between 7GHz ~ 9GHz



Date: 22.MAR.2009 08:33:44

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310

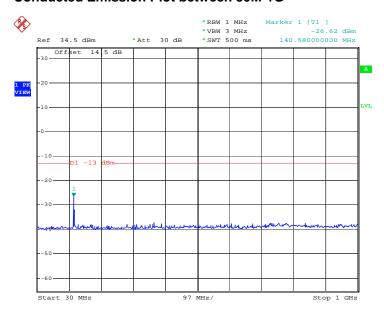
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 Band :
 GSM1900
 Channel :
 CH661

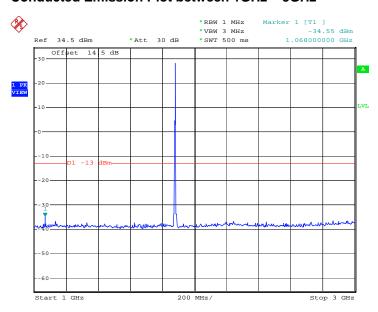
 Test Mode :
 GPRS 8 Link

Conducted Emission Plot between 30M-1G



Date: 22.MAR.2009 10:19:55

Conducted Emission Plot between 1GHz ~ 3GHz



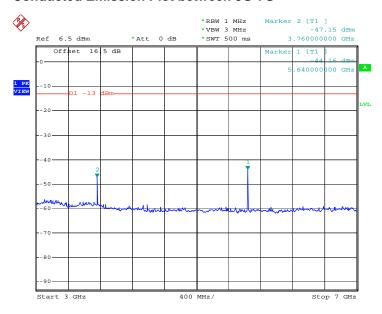
Date: 29.MAR.2009 08:11:06

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 38 of 79
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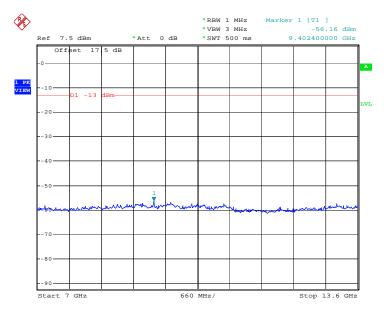
Report No.: FG932302-01

Conducted Emission Plot between 3G-7G



Date: 22.MAR.2009 10:28:37

Conducted Emission Plot between 7G-13.6G



Date: 22.MAR.2009 10:29:45

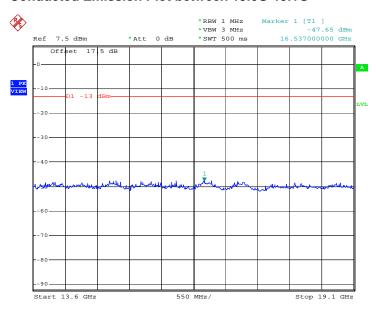
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Conducted Emission Plot between 13.6G-19.1G



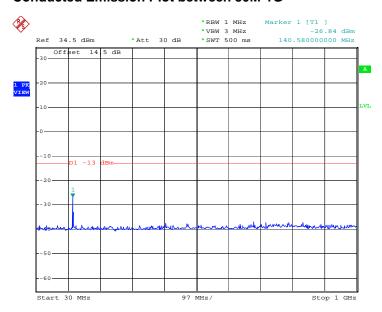
Date: 22.MAR.2009 10:30:19

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 40 of 79
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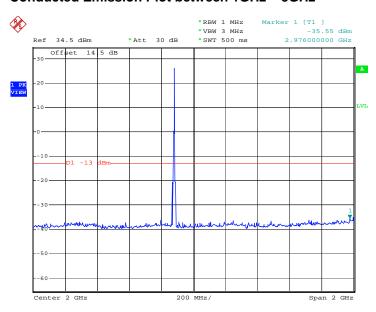
Band :	GSM1900	Channel:	CH661
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30M-1G



Date: 22.MAR.2009 10:43:49

Conducted Emission Plot between 1GHz ~ 3GHz



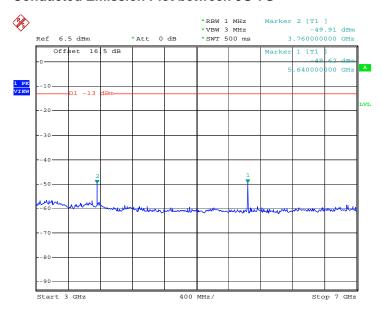
Date: 3.APR.2009 07:53:13

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: WH7WR7310 Page Number : 41 of 79
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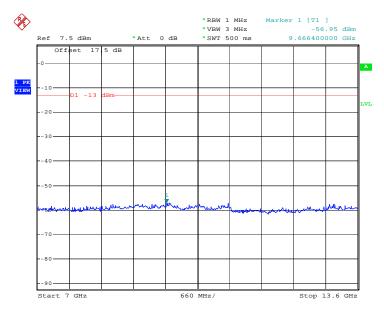
Report No.: FG932302-01

Conducted Emission Plot between 3G-7G



Date: 22.MAR.2009 10:41:30

Conducted Emission Plot between 7G-13.6G



Date: 22.MAR.2009 10:40:38

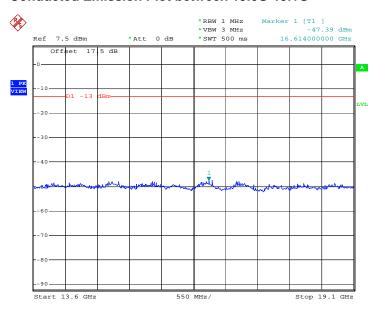
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Conducted Emission Plot between 13.6G-19.1G



Date: 22.MAR.2009 10:39:05

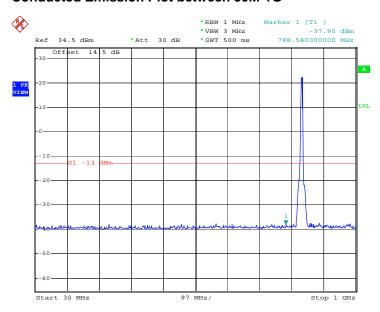
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 Band :
 WCDMA Band V
 Channel :
 CH4182

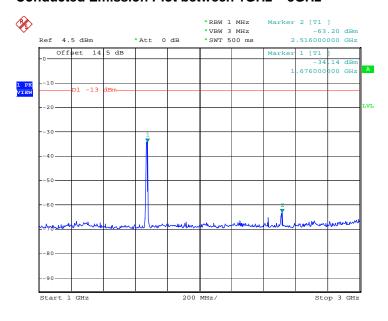
 Test Mode :
 WCDMA Link

Conducted Emission Plot between 30M-1G



Date: 29.MAR.2009 08:15:35

Conducted Emission Plot between 1GHz ~ 3GHz



Date: 23.MAR.2009 10:10:15

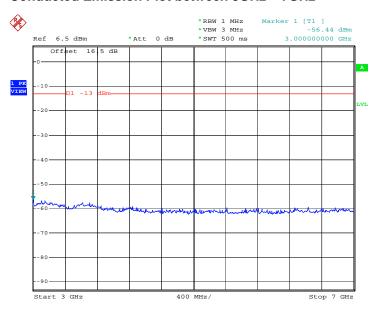
SPORTON INTERNATIONAL (KUNSHAN) INC.

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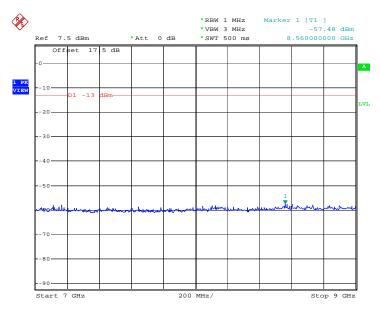
Report No. : FG932302-01

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 23.MAR.2009 10:11:27

Conducted Emission Plot between 7GHz ~ 9GHz



Date: 23.MAR.2009 10:35:58

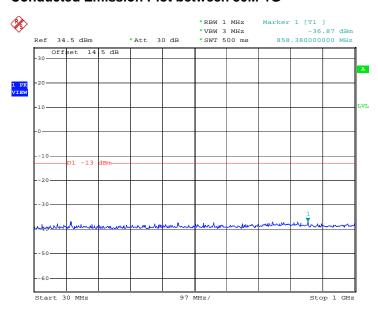
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Band: WCDMA Band II Channel: CH9400

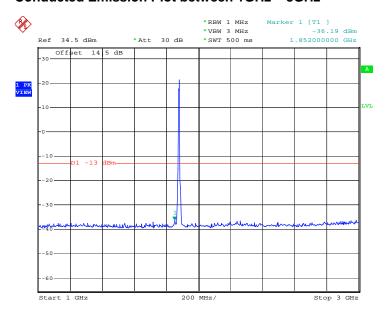
Test Mode: HSDPA Link

Conducted Emission Plot between 30M-1G



Date: 23.MAR.2009 11:29:08

Conducted Emission Plot between 1GHz ~ 3GHz



Date: 29.MAR.2009 08:14:01

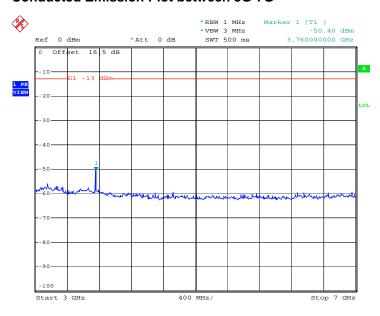
SPORTON INTERNATIONAL (KUNSHAN) INC.

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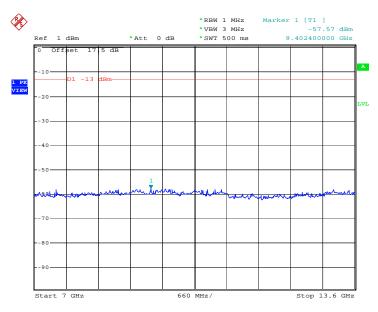
Report No.: FG932302-01

Conducted Emission Plot between 3G-7G



Date: 23.MAR.2009 11:32:33

Conducted Emission Plot between 7G-13.6G



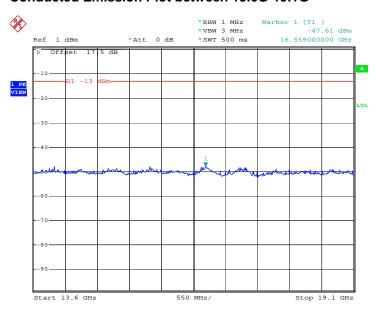
Date: 23.MAR.2009 11:33:35

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Conducted Emission Plot between 13.6G-19.1G



Date: 23.MAR.2009 11:34:21

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3.5 Field Strength of Spurious Radiation Measurement

3.5.1 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.

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

Test Procedures 3.5.3

- 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. Emission level (dBm) = output power + substitution Gain.

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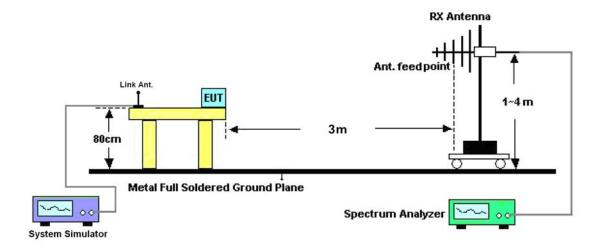
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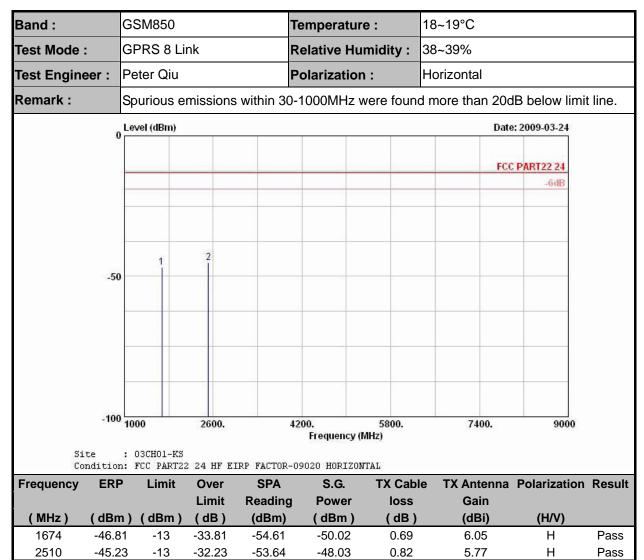
Report No.: FG932302-01

3.5.4 Test Setup



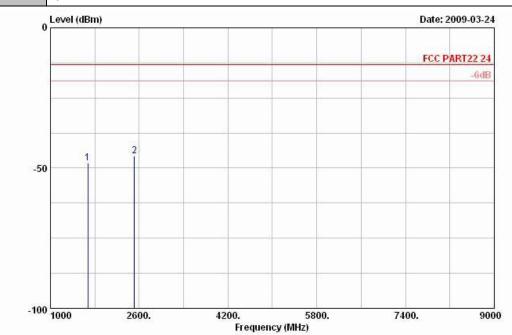
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3.5.5 Test Result of Field Strength of Spurious Radiated



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Band :	GSM850	Temperature :	18~19°C						
Test Mode :	GPRS 8 Link	Relative Humidity :	38~39%						
Test Engineer :	Peter Qiu	Polarization :	Vertical						
Remark :	purious emissions within 30-1000MHz were found more than 20dB below limit line.								

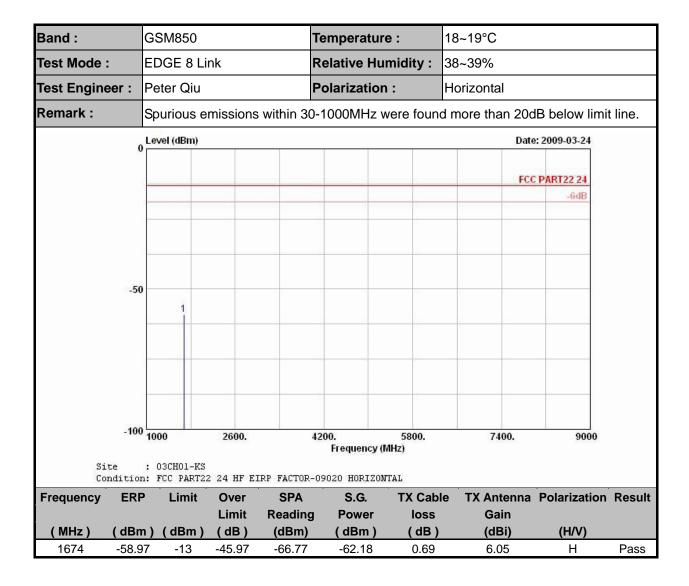


Site : 03CH01-KS Condition: FCC PART22 24 HF EIRP FACTOR-09020 VERTICAL

Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
1672	-48.18	-13	-35.18	-55.98	-51.39	0.69	6.05	V	Pass
2510	-45.81	-13	-32.81	-54.22	-48.61	0.82	5.77	V	Pass

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Band :	G	SM850			Temperatur	e:	18~19°C						
Test Mode :	E	DGE 8 Lir	nk		Relative Hu	midity:	38~39%						
Test Engineer	: P	eter Qiu			Polarization	າ :	Vertical						
Remark :	S	purious emissions within 30-1000MHz were found more than 20dB below lim											
	o L	Level (dBm) Date: 2009-03-24											
							FCC	PART22 24					
								-6dB					
	100		1										
	-50				10								
÷.	100 1	000	2600.		4200. Frequency (l	5800. MHz)	7400.	9000					
Site Condit		03CH01-KS FCC PART22	24 HF E	IRP FACTOR-	-09020 VERTICA	AL.							
Frequency E	RP	Limit	Over	SPA	S.G.	TX Cab		Polarization	Resul				
(MHz) (d	Bm)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)					
2510 -49	9.25	-13	-36.25	-57.66	-52.05	0.82	5.77	V	Pass				

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Band :	GSM1900			Temperatu	ıre :	18~19°C	
Test Mode :	GPRS 8 L	ink		Relative H	lumidity :	38~39%	
Test Engineer :	Peter Qiu			Polarizatio	on :	Horizontal	
Remark :	Spurious e	missions	within 3	0-1000MHz	were foun	d more than 20d	B below limit line
,	Level (dBm)					Date	: 2009-03-24
,						FCC	PART22 24
							-6dB
-50	0	1	2				
-100	1000	4400.		7800. Frequency	11200. / (MHz)	14600.	18000
Site Conditio	: 03CH01-KS n: FCC PART2		IRP FACTOR	-09020 HORIZ	ONTAL		
Frequency EIR	P Limit	Over	SPA	S.G.	TX Cab		Polarization Re
(MHz) (dBr	n) (dBm)	Limit (dB)	Reading (dBm)		loss (dB)	Gain (dBi)	(H/V)

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3760

5639

-48.18

-48.43

-13

-13

-35.18

-35.43

-61.89

-62.84

-56.11

-57.21

0.11

1.22

8.04

10.00

Н

Н

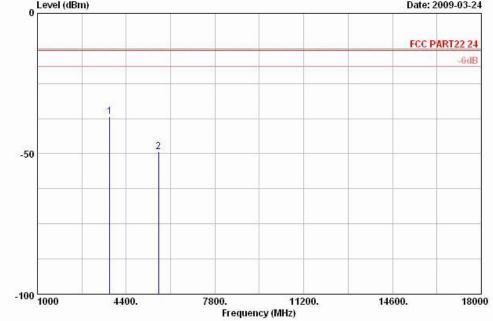
Pass

Pass

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Band :	GSM1900	Temperature :	18~19°C							
Test Mode :	GPRS 8 Link	Relative Humidity :	38~39%							
Test Engineer :	Peter Qiu	Polarization :	Vertical							
Remark :	Spurious emissions within 3	urious emissions within 30-1000MHz were found more than 20dB below limit line.								

0 Level (dBm) Date: 2009-03-24



Site : 03CH01-KS Condition: FCC PART22 24 HF EIRP FACTOR-09020 VERTICAL

Frequency	EIRP	Limit	Over Limit	SPA Reading	S.G. Power	TX Cable loss	TX Antenna Gain	Polarization	Result
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
3760	-36.90	-13	-23.90	-50.61	-44.83	0.11	8.04	V	Pass
5639	-49.39	-13	-36.39	-63.80	-58.17	1.22	10.00	V	Pass

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Band :	C	SM1900			Temperat	ure :	18~19°C						
Test Mode :	E	DGE 8 Lir	nk		Relative I	lumidity :	38~39%						
Test Engineer :	F	Peter Qiu	ter Qiu Polarization : Horizontal										
Remark :	S	Spurious er	purious emissions within 30-1000MHz were found more than 20dB below lim										
	o L	evel (dBm) Date: 2009-03-24											
1	"	FCC PART22 24											
								-6dB					
	ŀ												
-5	0		1										
	-												
	ľ												
-10	0 1	000	4400.		7800. Frequenc	11200. y (MHz)	14600.	18000					
Site Conditio		03CH01-KS FCC PART22	24 HF E	IRP FACTOR	-09020 HORI	ZONTAL							
Frequency EIR	P	Limit	Over	SPA	S.G.	TX Cab		Polarization	Result				
(MHz) (dB	m) (dBm)	Limit (dB)	Reading (dBm)	g Power (dBm		Gain (dBi)	(H/V)					
3760 -54.	85	-13	-41.85	-68.56		, ,	8.04	H	Pass				

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Band :		GSM1900			Temperatu	re:	18~19°C					
Test Mode :		EDGE 8 Li	nk		Relative Hu	umidity :	38~39%					
Test Enginee	r:	Peter Qiu			Polarizatio	n :	Vertical					
Remark :		Spurious e	urious emissions within 30-1000MHz were found more than 20dB below lim									
	0	Level (dBm)	vel (dBm) Date: 2009-03-24									
	Ü						FCC	C PART22 24				
								-6dB				
			1									
	-50	-										
	400											
	- 100	1000	4400.		7800. Frequency	11200. (MHz)	14600.	18000				
Site Cond		: 03CH01-KS	2 24 HF E	IRP FACTOR	-09020 VERTIC	'AL						
Frequency	EIRF	Limit	Over	SPA	S.G.	TX Cab		Polarization	Result			
			Limit	Reading	_	loss	Gain	(110.0)				
	dBm		(dB)	(dBm)		(dB)	(dBi)	(H/V)				
3760 -	43.6	1 -13	-30.61	-57.32	-51.54	0.11	8.04	V	Pass			

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FCC Test Report

nd :	WCDMA	Band V	Tempera	nture :	18~19°C		
st Mode :	WCDMA	Link	Relative	Humidity:	38~39%		
st Engineer :	Peter Qiu	ı	Polariza	tion :	Horizontal		
mark :	Spurious	emissions w	ithin 30-1000MI	Hz were foun	nd more than 20dE	B below lin	
(Level (dBm)				Date:	2009-03-24	
					FCCI	PART22 24	
						-6dB	
	1						
	Î						
-50	,						
-100	1000	2600.	4200. Frequei	5800. ncy (MHz)	7400.	9000	
Site	: 03CH01-F		96-97 (273-CP8,590)	ACCOUNT OF THE PARTY OF THE PAR			
			FACTOR-09020 HOR		Ja TV Amtours I	Dalarinatir	
equency ERI	P Limit		SPA S.G Reading Pow		ole TX Antenna I Gain	Polarizatio	

(dBm)

-32.71

(dB)

0.69

(dBi)

6.05

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(MHz)

1676

(dBm) (dBm)

-13

-29.50

(dB)

-16.50

(dBm)

-37.30

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(H/V)

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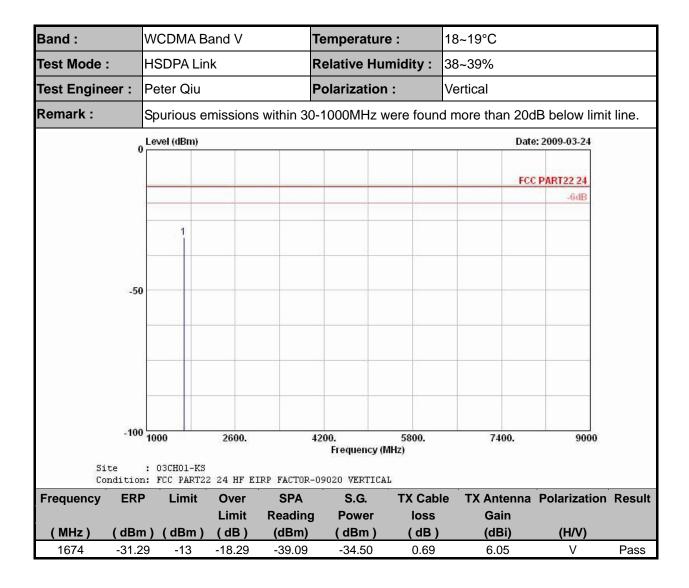
Pass

		DMA Band V Temperature : 18~19°C									
Test Mode:	VCDMA L	ink		Relative Humidity :		38~39%					
Test Engineer : P	Peter Qiu			Polarization	n :	Vertical					
Remark:	Spurious e	urious emissions within 30-1000MHz were found more than 20dB below limit									
0 -	evel (dBm)	vel (dBm) Date: 2009-03-24									
						FCC	PART22 24				
							-6dB				
	1										
				51							
-50 -											
-											
-100 <mark>1</mark>	1000	2600.		4200. Frequency (5800. MHz)	7400.	9000				
	03CH01-KS FCC PART22 24 HF EIRP FACTOR-09020 VERTICAL										
Frequency ERP	Limit	Over	SPA	S.G.	TX Cab		Polarization	Result			
(MI I=) (-IF) (dD)	Limit	Reading		loss	Gain	(110.0				
(MHz) (dBm) 1674 -32.77	, , , , ,	(dB) -19.77	(dBm) -40.57	(dBm) -35.98	(dB) 0.69	(dBi) 6.05	<u>(H/V)</u> ∨	Pass			

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Band :	WCDMA	Band V		Temperatui	re:	18~19°C						
Test Mode :	HSDPA	Link		Relative Hu	ımidity :	38~39%						
Test Engineer :	Peter Qi	u		Polarizatio	n :	Horizontal						
Remark :	Spurious	urious emissions within 30-1000MHz were found more than 20dB below lim										
	Level (dBm	evel (dBm) Date: 2009-03-24										
		FCC PART22 24										
	1						-6dB					
-5	0											
Site	: 03CH01-			4200. Frequency (7400.	9000					
Frequency ER	P Limi	t Over	SPA	S.G.	TX Cab		Polarization	Result				
(MHz) (dBı	n) (dBm	Limit n) (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)					
1676 -27.4			-35.21	-30.62	0.69	6.05	H	Pass				

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Band :	WCDMA	Band V		Temperatu	re:	18~19°C		
Test Mode :	HSUPA L	ink		Relative Hu	ımidity :	38~39%		
Test Engineer :	Peter Qiu	I		Polarizatio	n :	Horizontal		
Remark :	Spurious	emissions	within 30)-1000MHz	were foun	d more than 20d	dB below limi	t line.
7	Level (dBm)					Date	e: 2009-03-24	
,						FC	C PART22 24	
							-6dB	
	1							

-50								
-100	1000	2600.	J	4200. Frequency	5800. MHz)	7400.	9000	
Site Conditio	: 03CH01-K n: FCC PART		IRP FACTOR-	-09020 HORIZO				
Frequency ERI	P Limit	Over	SPA	S.G.	TX Cab		Polarization	Result
(MU=) (dD=	n \	Limit	Reading		loss	Gain	(11/1/)	
(MHz) (dB r 1676 -28.2) (dB) -15.28	(dBm) -36.08	(dBm)	(dB) 0.69	(dBi) 6.05	(H/V) H	Pass

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Band :	,	WCDMA B	and V		Temperatu	ıre :	18~19°C		
Test Mode :		HSUPA Lir	ık		Relative H	umidity :	38~39%		
Test Engineer :		Peter Qiu			Polarizatio	on :	Vertical		
Remark :	į	Spurious e	missions	within 3	0-1000MHz	were foun	d more than 20	dB below limi	t line.
	0	Level (dBm)					Dat	e: 2009-03-24	
	W						FC	C PART22 24	
	1							-6dB	
		1							
	50								
				7					
	3								
PAD	· · · · · · · · · · · · · · · · · · ·								
-1	00	1000	2600.		4200. Frequency	5800. / (MHz)	7400.	9000	
Site Conditi		: 03CH01-KS : FCC PART2:	2 24 HF E	IRP FACTOR	-09020 VERTI	CAL			
Frequency El	RP	Limit	Over	SPA	S.G.	TX Cab		Polarization	Result
(MHz) (dE	۲m) (dBm)	Limit (dB)	Reading (dBm)	_	loss (dB)	Gain (dBi)	(H/V)	
1674 -36		, , , ,	-23.13	-43.93		0.69	6.05	\ \	Pass

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Test Mode :	WCDMA	Link	F	Relative H	lumidity :	38~39%		
Test Engineer :	Peter Qiu		F	Polarizatio	on :	Horizontal		
Remark :	Spurious	emissions w	ithin 30-	-1000MHz	were foun	d more tha	n 20dB b	elow lim
(Level (dBm)						Date: 200	9-03-24
							FCC PAR	T22 24
								-6dB
-50)			1				
-100	1000	4400.	7	800. Frequency	11200.	146	00.	18000
Site	: 03CH01-K	s		ri equenci	(WICL)			
100 TO TO THE PARTY OF THE PART	: 03CH01-K n: FCC PART	S 22 24 HF EIRP	FACTOR-O)9020 HORIZ	ONTAL	<u>.</u>	<u>. </u>	
Frequency EIR	P Limit	Over Limit F	SPA Reading	S.G. Power	TX Cab loss	le TX Anto Gai	enna Pol	arizatio

(dBm)

-60.22

(dB)

1.55

(dBi)

12.96

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(MHz)

9407

(dBm) (dBm)

-13

-48.81

(dB)

-35.81

(dBm)

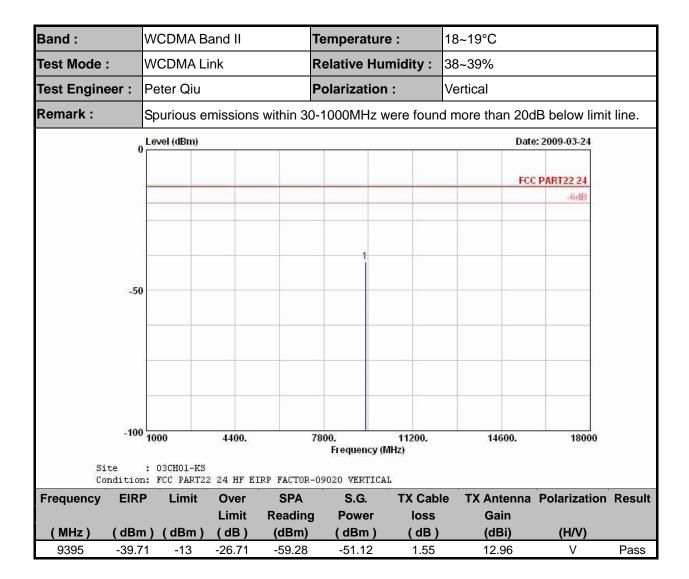
-68.38

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(H/V)

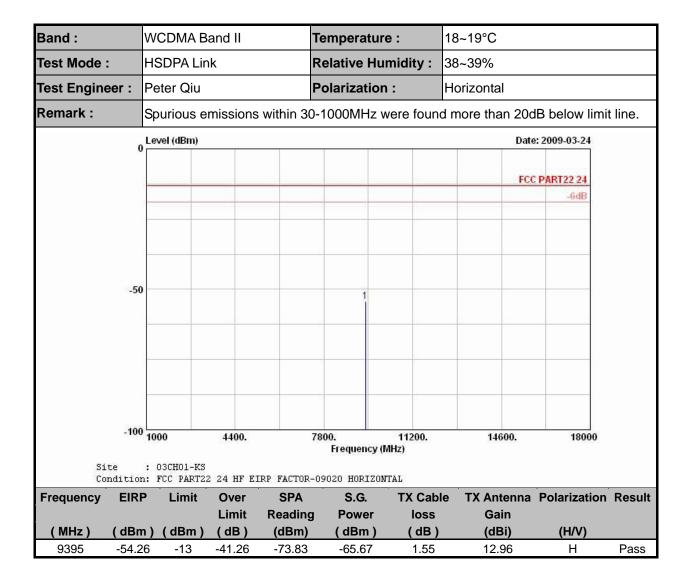
Н

Pass

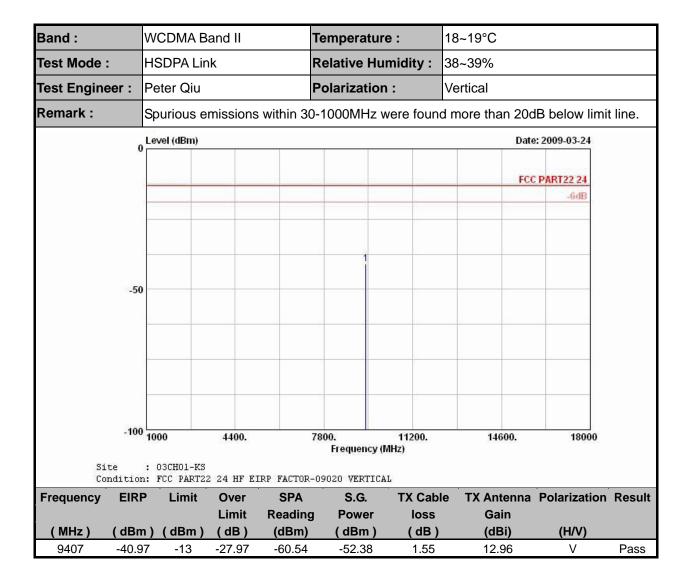


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Band :	WCDMA B	and II		Temperatu	re:	18~19°C			
Test Mode :	HSUPA Lin	k		Relative Humidity :		38~39%			
Test Engineer :	Peter Qiu			Polarization :		Horizontal			
Remark :	Spurious e	urious emissions within 30-1000MHz were found more than 20dB below lim							
0	Level (dBm)	rel (dBm) Date: 2009-03-24							
						FCC	PART22 24		
							-6dB		
-50				1					
					-				
-100	1000	4400.	97	7800.	11200.	14600.	18000		
				Frequency		peril.	(15.5.5.S)		
Site Condition	: 03CH01-KS n: FCC PART22	24 HF E	RP FACTOR	-09020 HORIZO	NTAL				
Frequency EIRF	P Limit	Over	SPA	S.G.	TX Cab		Polarization	Result	
(MU=) (dD=	a \ / al Dura \	Limit	Reading		loss	Gain	/ШЛЛ		
(MHz) (dBm 9407 -54.4		(dB) -41.40	(dBm) -73.97	(dBm)	(dB) 1.55	(dBi) 12.96	(H/V) H	Pass	

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Band :	WCDMA B	and II		Temperatui	re:	18~19°C			
Test Mode :	HSUPA Lin	ık		Relative Humidity :		38~39%			
Test Engineer :	Peter Qiu			Polarizatio	n :	: Vertical			
Remark :	Spurious e	urious emissions within 30-1000MHz were found more than 20dB below limi							
0	Level (dBm)	vel (dBm) Date: 2009-03-24							
						FCC	PART22 24		
							-6dB		
				1					
-50									
		7-							
-100	1000	4400.		7800. Frequency (11200. (MHz)	14600.	18000		
Site Condition	: 03CH01-KS n: FCC PART22	03CH01-KS FCC PART22 24 HF EIRP FACTOR-09020 VERTICAL							
Frequency EIRF	P Limit	Over	SPA	S.G.	TX Cab		Polarization	Result	
(MHz) (dBm	n) (dBm)	Limit (dB)	Reading (dBm)	g Power (dBm)	loss (dB)	Gain (dBi)	(H/V)		
9407 -41.6		-28.67	-61.24	-53.08	1.55	12.96	<u>(⊓/V)</u> ∨	Pass	

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Band :		3SM8	SM850 Temperature : 18~19°C										
Test Mode :	(GPRS Link + WLAN Link			Relative	Humidity		38~39%					
Test Engineer :	F	Peter	Qiu			Polarizat	ion :		Horizontal				
Remark :	Ş	Spuric	ous emi	ssions w	ithin 3	0-1000MH	lz were fo	unc	d more tha	ın 20dB	below I	imit line.	
	0 1	Level (dBm) Date: 2009-03-24											
	974									FCC P	ART22 24		
	-										-6dB		
	50	1 2											

Site : 03CH01-KS Condition: FCC PART22 24 HF EIRP FACTOR-09020 HORIZONTAL

5800.

Frequency	ERP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
1674	-47.95	-13	-34.95	-55.75	-51.16	0.69	6.05	Н	Pass
2510	-44.79	-13	-31.79	-53.20	-47.59	0.82	5.77	Н	Pass

Frequency (MHz)

15400.

20200.

25000

10600.

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Band :	GSM850	Temperature : 18~19°C						
Test Mode :	GPRS Lin	k + WLAI	N Link	Relative Hu	ımidity :	38~39%		
Test Engineer :	Peter Qiu			Polarizatio	n :	Vertical		
Remark :	Spurious 6	emissions	within 3	0-1000MHz	were found	d more than 20c	dB below limit	t line.
0	Level (dBm)					Date	e: 2009-03-24	
,						FCC	PART22 24	
						100	-6dB	
	2							
-50	1							
-100	1000	5800.		10600.	15400.	20200.	25000	
				Frequency (MHz)			
Site Condition	: 03CH01-K n: FCC PART2		IRP FACTOR	-09020 VERTIC	AL			
Frequency ERF	P Limit	Over	SPA	S.G.	TX Cabl		Polarization	Result
(MHz) (dBn	n) (dBm)	Limit (dB)	Reading (dBm)	g Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
1674 -48.4		-35.48	-56.28		0.69	6.05	\ \	Pass
2510 -44.2		-31.25	-52.66	-47.05	0.82	5.77	V	Pass

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3.6 Frequency Stability Measurement

3.6.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

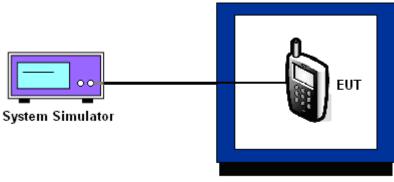
3.6.3 Test Procedures for Temperature Variation

- 1. The EUT was set up in the thermal chamber and connected with the base station.
- 2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
- If the EUT can not be turned on at -30°C, the testing lowest temperature will be raised in 10°C 4. step until the EUT can be turned on.

3.6.4 Test Procedures for Voltage Variation

- The EUT was placed in a temperature chamber at 25±5° C and connected with the base 1. station.
- 2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
- The variation in frequency was measured for the worst case. 3.

3.6.5 Test Setup



Thermal Chamber

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3.6.6 Test Result of Temperature Variation

Band :	GSM 850	Channel:	189
Limit (ppm):	2.5		

Townsuctives	GPF	RS 8	EDO		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-26	-0.03	-79	-0.09	
-20	-28	-0.03	-61	-0.07	
-10	-24	-0.03	-53	-0.06	
0	-25	-0.03	-35	-0.04	
10	-24	-0.03	37	0.04	PASS
20	34	0.04	34	0.04	
30	30	0.04	25	0.03	
40	-23	-0.03	16	0.02	
50	-27	-0.03	-33	-0.04	

Band :	GSM 1900	Channel:	661
Limit (ppm):	2.5		

Tamananatura	GPF	RS 8	EDGE 8		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-34	-0.02	-68	-0.04	
-20	-26	-0.01	-79	-0.04	
-10	-18	-0.01	-38	-0.02	
0	11	0.01	30	0.02	
10	-16	-0.01	18	0.01	PASS
20	-20	-0.01	23	0.01	
30	-36	-0.02	14	0.01	
40	-39	-0.02	24	0.01	
50	-77	-0.04	17	0.01	

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Band :	WCDMA Band V	Channel:	4182
Limit (ppm) :	2.5		

T	WCI	DMA	
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	13	0.02	
-20	-18	-0.02	
-10	-12	-0.01	
0	15	0.02	
10	18	0.02	PASS
20	21	0.02	
30	-12	-0.01	
40	14	0.02	
50	-19	-0.02	

Band :	WCDMA Band II	Channel:	9400
Limit (ppm):	2.5		

Tamananatana	нѕ	DPA	
Temperature (°C)			Result
-30	27	0.01	
-20	29	0.02	
-10	-31	-0.02	
0	-38	-0.02	
10	-32	-0.02	PASS
20	39	0.02	
30	24	0.01	
40	39	0.02	
50	34	0.02	

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3.6.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
		120	37.0	0.04		
	GPRS 8	102	-33.0	-0.04		
GSM 850		138	-33.0	-0.04		
CH189		120	36.0	0.04		
	EDGE 8	102	-34.0	-0.04		
		138	-59.0	-0.07		
	GPRS 8	120	-21.0	-0.01		
		102	-55.0	-0.03	2.5	PASS
GSM 1900		138	-70.0	-0.04		
CH661	EDGE 8	120	-23.0	-0.01		PASS
		102	10.0	0.01		
		138	-62.0	-0.03		
WCDMA Dand V		120	37.0	0.04		
WCDMA Band V CH4182	WCDMA	102	-33.0	-0.04		
C114102		138	-33.0	-0.04		
		120	33.0	0.02		
WCDMA Band II CH9400	HSDPA	102	34.0	0.02		
0110400		138	-33.0	-0.02		

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4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 08, 2008	Dec. 07, 2009	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Jun. 18, 2007	Jun. 17, 2009	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Jun. 12, 2007	Jun. 11, 2009	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-930701	N/A	Dec. 15, 2008	Dec. 14, 2009	Conducted (TH01-KS)
DC Power Supply	TOPWARD	3306D	N/A	N/A	N/A	N/A	Conducted (TH01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band/BT	Jan. 08, 2009	Jan. 07, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	ESCI	100534	9kHz – 2.75GHz	Dec. 08, 2008	Dec. 07, 2009	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 08, 2008	Dec. 07, 2009	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	75959	1GHz~18GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH01-KS)
Amplifier	Wireless	FPA6592G	600006	30MHz~2GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Aug. 29, 2007	Aug. 28, 2009	Radiation (03CH01-KS)

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5 Uncertainty of Evaluation

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

	Uncert		
Contribution	dB	Probability	$u(x_i)$
	dБ	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-shaped	0.28
Combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)		2.54	

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

	Uncerta	inty of x_i			$Ci*u(x_i)$
Contribution	dB	Probability Distribution	$u(x_i)$	Ci	$Ci \cdot u(x_i)$
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	4.72				

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6 Certification of TAF Accreditation



Certificate No. : 1.1190-081212

Report No.: FG932302-01

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 : Accreditation Program for Designated Testing Laboratory for Commodities Inspection

Accreditation Program for Telecommunication Equipment

Testing Laboratory

Accreditation Program for BSMI Mutual Recognition

Arrangment with Foreign Authorities

Jay-San Chen

President, Taiwan Accreditation Foundation

Date: December 12, 2008

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

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Appendix A. Photographs of EUT

Please refer to Sporton report number EP932302-01 as below.

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