FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E
(Class II Permissive Change)

TEST REPORT

For

Gobi2000 PCI Express Mini Card

Model: GOBI2000

Trade Name: Qualcomm

Issued to

Qualcomm Incorporated
5775 Morehouse Dr.San Diego, CA 92121, U.S.A

Issued by

Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)
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Testing Laboratory
1309

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1. TEST RESULT CERTIFICATION

Applicant:	Qualcomm Incorporated 5775 Morehouse Dr.San Diego, CA 92121, U.S.A
Equipment Under Test:	Gobi2000 PCI Express Mini Card
Trade Name:	Qualcomm
Model Number:	GOBI2000
Date of Test:	October 24 ~ November 12, 2009

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 22 Subpart H & Part 24 Subpart E	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C: 2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 Subpart H and PART 24 Subpart E.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Gobi2000 PCI Express Mini Card
Trade Name	Qualcomm
Model Number	GOBI2000
Model Discrepancy	N/A
Power Supply	Powered by host device
Frequency Range	GPRS / EDGE: 850: 824 ~ 849 MHz GPRS / EDGE: 1900: 1850 ~ 1910 MHz
Modulation Technique	GPRS: GMSK
Antenna Gain	GPRS 850 MHz: -2.53 dBi GPRS 1900 MHz: -0.34 dBi
Antenna Type	PIFA Antenna
Class II Permissive Change	Add portable category for the Lenovo Bixby platform Product name: Notebook Computer / Brand name: Lenovo Model: 2957XXXX , 20027 XXXX(X=0~9, A~Z or blank)

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **J9CGOBI2000-L** filing to comply with Part 22 and Part 24 of the FCC 47 CFR Rules.*

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4: 2003, TIA/EIA-603-C: 2004 and FCC CFR 47, Part 2, PART 22 SUBPART H AND PART 24 SUBPART E

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.

3.4 DESCRIPTION OF TEST MODES

The EUT (model: GOBI2000) had been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

EUT staying in continuous transmitting mode was programmed.

GPRS 850:
Channel Low (CH128), Channel Mid (CH190) and Channel High (CH251) were chosen for full testing.

GPRS 1900:
Channel Low (CH512), Channel Mid (CH661) and Channel High (CH810) were chosen for full testing.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	02/23/2010
Power Meter	Agilent	E4416A	GB41291611	04/05/2010
Power Sensor	Agilent	E9327A	US40441097	06/18/2010
Temp. / Humidity Chamber	Terchy	MHG-150LF	930619	08/05/2010
DC Power Source	Agilent	E3640A	MY40001774	01/09/2010

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	09/09/2010
Test Receiver	Rohde & Schwarz	ESCI	100064	11/30/2009
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	06/18/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/27/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC MRA: TW1039 IC: IC 2324G-1/-2	10/17/2010 11/04/2010
Reject Filter	Micro-Tronics	HPM13194	003	04/23/2010
S.G.	HP	83630B	3844A01022	04/16/2010
Substituted Dipole	Schwazbeck	VHAP/UHAP	998 +999/ 981+982	06/08/2010
Substituted Horn	EMCO	3115	00022257	12/16/2009
Test S/W	LABVIEW (V 6.1)			

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver 9kHz-30MHz	Rohde & Schwarz	ESHS30	828144/003	11/18/2009
Two-Line V-Network 9kHz-30MHz	Schaffner	NNB41	03/10013	06/10/2010
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/08/2010
Test S/W	LABVIEW (V 6.1)			

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/-2.81
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	+/-3.7046
3M Semi Anechoic Chamber / Above 1GHz	+/-3.0958

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	Samsung	710V	GS17H9NXA05864E	FCC DoC	VGA Cable: Shielded, 1.8m with two cores	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2	USB Mouse	Logitech	M-UAG96B	HC8500L	FCC DoC	Shielded, 1.8m	N/A
3	Multimedia Earphone	Labtec	Axis-301	N/A	FCC DoC	Unshielded, 1.8m*2	N/A
4	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-43b0006	FCC DoC	Shielded, 1.8m	N/A
5	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-43b0007	FCC DoC	Shielded, 1.8m	N/A
6	SIM Card	N/A	N/A	N/A	N/A	N/A	N/A
7	8960 Series 10 Wireless Communication test set (Remote)	Agilent	E5515C	GB44051665	N/A	N/A	Unshielded, 1.8m

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

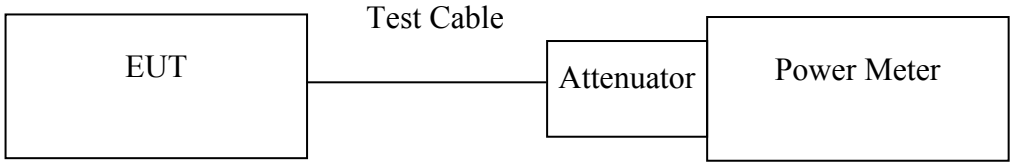
7. FCC PART 22 & 24 REQUIREMENTS

7.1 AVERAGE POWER

LIMIT

For reporting purposes only.

Test Configuration



Remark: *Measurement setup for testing on Antenna connector*

TEST PROCEDURE

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

TEST RESULTS

No non-compliance noted.

TEST RESULTS

No non-compliance noted.

Test Data

Test Mode	CH	Frequency (MHz)	Average Power (dBm)
GPRS 850 (Class 10)	128	824.20	26.33
	190	836.60	26.26
	251	848.80	26.19

Test Mode	CH	Frequency (MHz)	Average Power (dBm)
GPRS 1900 (Class 10)	512	1850.20	22.89
	661	1880.00	23.15
	810	1910.00	22.99

Remark: *The value of factor includes both the loss of cable and external attenuator*

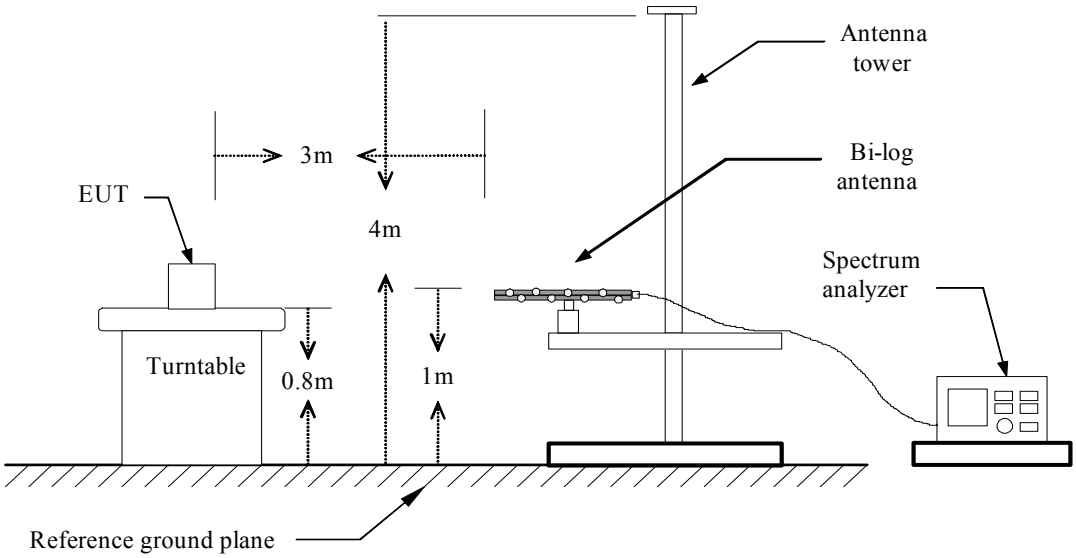
7.2 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

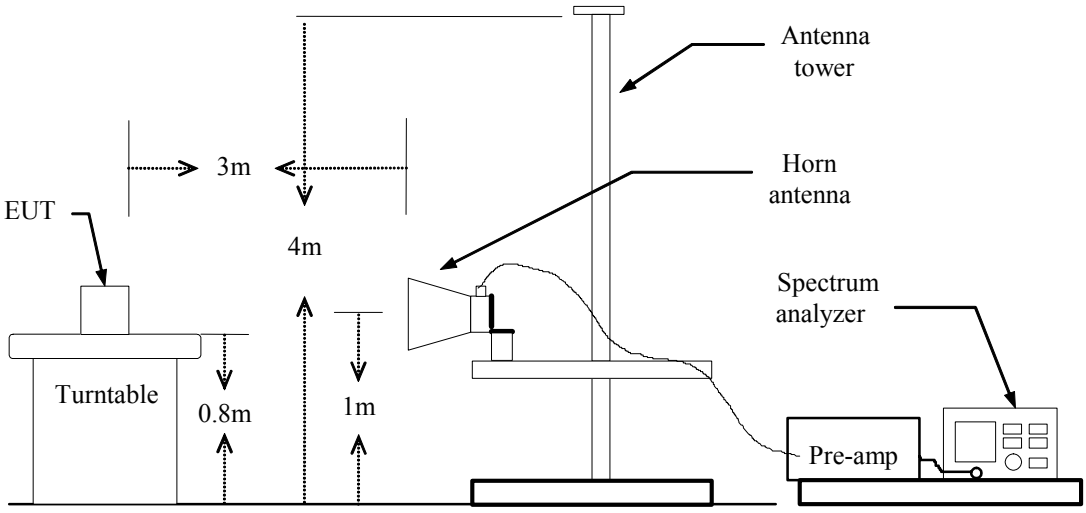
According to FCC §2.1053

Test Configuration

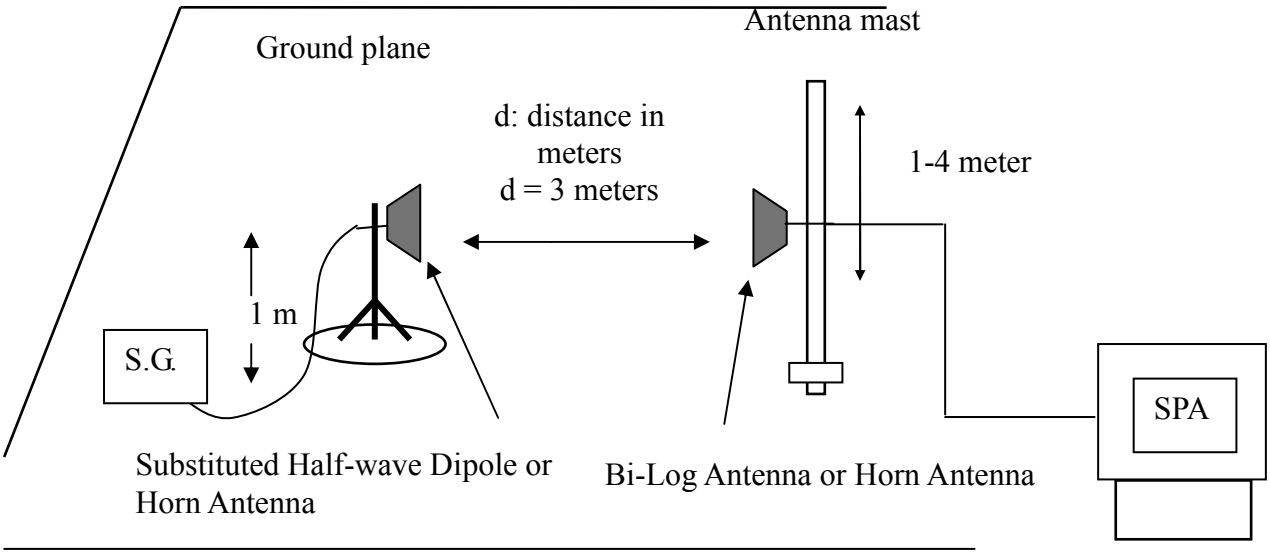
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURE

The EUT was placed on a non-conductive, the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

TEST RESULTS

Refer to the attached tabular data sheets.

Radiated Spurious Emission Measurement Result

Below 1GHz

Operation Mode: GPRS 850 / TX / CH 128 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
30.00	V	-45.90	-17.65	-63.55	-13.00	-50.55
99.84	V	-46.31	-17.68	-63.99	-13.00	-50.99
315.18	V	-51.55	-13.50	-65.05	-13.00	-52.05
367.56	V	-48.81	-12.62	-61.43	-13.00	-48.43
419.94	V	-54.58	-10.37	-64.95	-13.00	-51.95
630.43	V	-55.22	-6.49	-61.71	-13.00	-48.71
314.21	H	-53.18	-13.70	-66.89	-13.00	-53.89
366.59	H	-50.44	-12.51	-62.95	-13.00	-49.95
408.30	H	-53.68	-10.59	-64.26	-13.00	-51.26
577.08	H	-59.22	-7.57	-66.80	-13.00	-53.80
627.52	H	-54.11	-6.55	-60.66	-13.00	-47.66
682.81	H	-60.48	-6.12	-66.60	-13.00	-53.60

Remark:

1. *The emission behaviour belongs to narrowband spurious emission.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 850 / TX / CH 190 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
130.88	V	-46.94	-12.34	-59.27	-13.00	-46.27
314.21	V	-50.27	-13.51	-63.77	-13.00	-50.77
366.59	V	-46.37	-12.63	-59.00	-13.00	-46.00
418.97	V	-53.55	-10.41	-63.96	-13.00	-50.96
627.52	V	-55.59	-6.55	-62.13	-13.00	-49.13
967.02	V	-61.67	-3.05	-64.72	-13.00	-51.72
130.88	H	-47.18	-13.66	-60.85	-13.00	-47.85
366.59	H	-50.82	-12.51	-63.33	-13.00	-50.33
419.94	H	-55.64	-10.10	-65.74	-13.00	-52.74
452.92	H	-57.44	-9.64	-67.08	-13.00	-54.08
628.49	H	-55.11	-6.53	-61.64	-13.00	-48.64
967.02	H	-60.84	-3.10	-63.94	-13.00	-50.94

Remark:

1. *The emission behaviour belongs to narrowband spurious emission.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 850 / TX / CH 251 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
130.88	V	-57.08	-12.34	-69.41	-13.00	-56.41
314.21	V	-49.77	-13.51	-63.27	-13.00	-50.27
367.56	V	-48.45	-12.62	-61.06	-13.00	-48.06
418.97	V	-53.00	-10.41	-63.41	-13.00	-50.41
628.49	V	-54.20	-6.53	-60.73	-13.00	-47.73
682.81	V	-58.13	-6.38	-64.51	-13.00	-51.51
157.07	H	-56.56	-13.86	-70.43	-13.00	-57.43
315.18	H	-50.81	-13.68	-64.49	-13.00	-51.49
366.59	H	-50.18	-12.51	-62.68	-13.00	-49.68
418.97	H	-55.80	-10.14	-65.95	-13.00	-52.95
627.52	H	-51.58	-6.55	-58.13	-13.00	-45.13
679.90	H	-60.30	-6.11	-66.42	-13.00	-53.42

Remark:

1. *The emission behaviour belongs to narrowband spurious emission.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 512 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
30.00	V	-44.91	-17.65	-62.56	-13.00	-49.56
315.18	V	-50.84	-13.50	-64.34	-13.00	-51.34
367.56	V	-48.97	-12.62	-61.59	-13.00	-48.59
418.97	V	-56.00	-10.41	-66.41	-13.00	-53.41
628.49	V	-56.08	-6.53	-62.60	-13.00	-49.60
682.81	V	-57.85	-6.38	-64.24	-13.00	-51.24
30.00	H	-41.36	-18.60	-59.96	-13.00	-46.96
367.56	H	-51.50	-12.48	-63.98	-13.00	-50.98
419.94	H	-56.05	-10.10	-66.15	-13.00	-53.15
472.32	H	-56.88	-8.86	-65.75	-13.00	-52.75
522.76	H	-54.77	-8.14	-62.91	-13.00	-49.91
630.43	H	-53.15	-6.50	-59.65	-13.00	-46.65

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 661 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
314.21	V	-51.62	-13.51	-65.13	-13.00	-52.13
367.56	V	-48.33	-12.62	-60.94	-13.00	-47.94
418.97	V	-54.23	-10.41	-64.64	-13.00	-51.64
575.14	V	-56.82	-7.89	-64.70	-13.00	-51.70
630.43	V	-55.84	-6.49	-62.32	-13.00	-49.32
682.81	V	-58.09	-6.38	-64.48	-13.00	-51.48
315.18	H	-51.69	-13.68	-65.38	-13.00	-52.38
366.59	H	-51.48	-12.51	-63.98	-13.00	-50.98
419.94	H	-54.85	-10.10	-64.95	-13.00	-51.95
470.38	H	-56.13	-8.94	-65.08	-13.00	-52.08
578.05	H	-54.08	-7.57	-61.65	-13.00	-48.65
630.43	H	-53.48	-6.50	-59.98	-13.00	-46.98

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 810 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
315.18	V	-51.46	-13.50	-64.96	-13.00	-51.96
366.59	V	-48.97	-12.63	-61.60	-13.00	-48.60
418.97	V	-54.98	-10.41	-65.39	-13.00	-52.39
472.32	V	-55.15	-9.13	-64.29	-13.00	-51.29
630.43	V	-55.51	-6.49	-62.00	-13.00	-49.00
682.81	V	-56.59	-6.38	-62.98	-13.00	-49.98
315.18	H	-51.66	-13.68	-65.34	-13.00	-52.34
367.56	H	-50.05	-12.48	-62.53	-13.00	-49.53
418.97	H	-53.87	-10.14	-64.01	-13.00	-51.01
524.70	H	-57.12	-8.13	-65.25	-13.00	-52.25
576.11	H	-58.13	-7.58	-65.71	-13.00	-52.71
627.52	H	-55.71	-6.55	-62.26	-13.00	-49.26

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Above 1GHz

Operation Mode: GPRS 850 / TX / CH 128 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1651.00	V	-43.11	0.69	-42.42	-13.00	-29.42
2470.00	V	-40.93	3.49	-37.44	-13.00	-24.44
N/A						
1651.00	H	-39.47	0.80	-38.67	-13.00	-25.67
2470.00	H	-54.97	3.78	-51.20	-13.00	-38.20
3296.00	H	-60.10	6.27	-53.83	-13.00	-40.83
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 850 / TX / CH 190 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1672.00	V	-43.22	0.73	-42.48	-13.00	-29.48
2512.00	V	-51.99	3.66	-48.33	-13.00	-35.33
3345.00	V	-58.48	5.63	-52.85	-13.00	-39.85
N/A						
1672.00	H	-37.34	0.84	-36.50	-13.00	-23.50
2512.00	H	-53.85	3.96	-49.90	-13.00	-36.90
3345.00	H	-56.84	6.41	-50.43	-13.00	-37.43
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 850 / TX / CH 251 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1700.00	V	-42.72	0.79	-41.93	-13.00	-28.93
2547.00	V	-54.90	3.77	-51.13	-13.00	-38.13
3394.00	V	-55.32	5.70	-49.62	-13.00	-36.62
N/A						
1700.00	H	-36.76	0.90	-35.85	-13.00	-22.85
2547.00	H	-52.30	4.06	-48.24	-13.00	-35.24
3394.00	H	-54.35	6.55	-47.81	-13.00	-34.81
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 512 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5641.00	V	-54.80	9.94	-44.86	-13.00	-31.86
N/A						
5641.00	H	-54.29	10.28	-44.01	-13.00	-31.01
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 661 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
5641.00	V	-54.80	9.94	-44.86	-13.00	-31.86
N/A						
5641.00	H	-54.29	10.28	-44.01	-13.00	-31.01
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

Operation Mode: GPRS 1900 / TX / CH 810 **Test Date:** October 25, 2009

Temperature: 25°C **Tested by:** Mark Yang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Antenna Polarization (V/H)	Reading (dBm)	Correction Factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3191.00	V	-60.49	5.43	-55.07	-13.00	-42.07
5732.00	V	-54.71	9.96	-44.75	-13.00	-31.75
N/A						
5732.00	H	-53.99	10.31	-43.68	-13.00	-30.68
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

7.3 POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Operation Mode:	Normal Link	**Test Date:**	November 12, 2009
Temperature:	22°C	**Tested by:**	Ming Chen
Humidity:	45% RH		

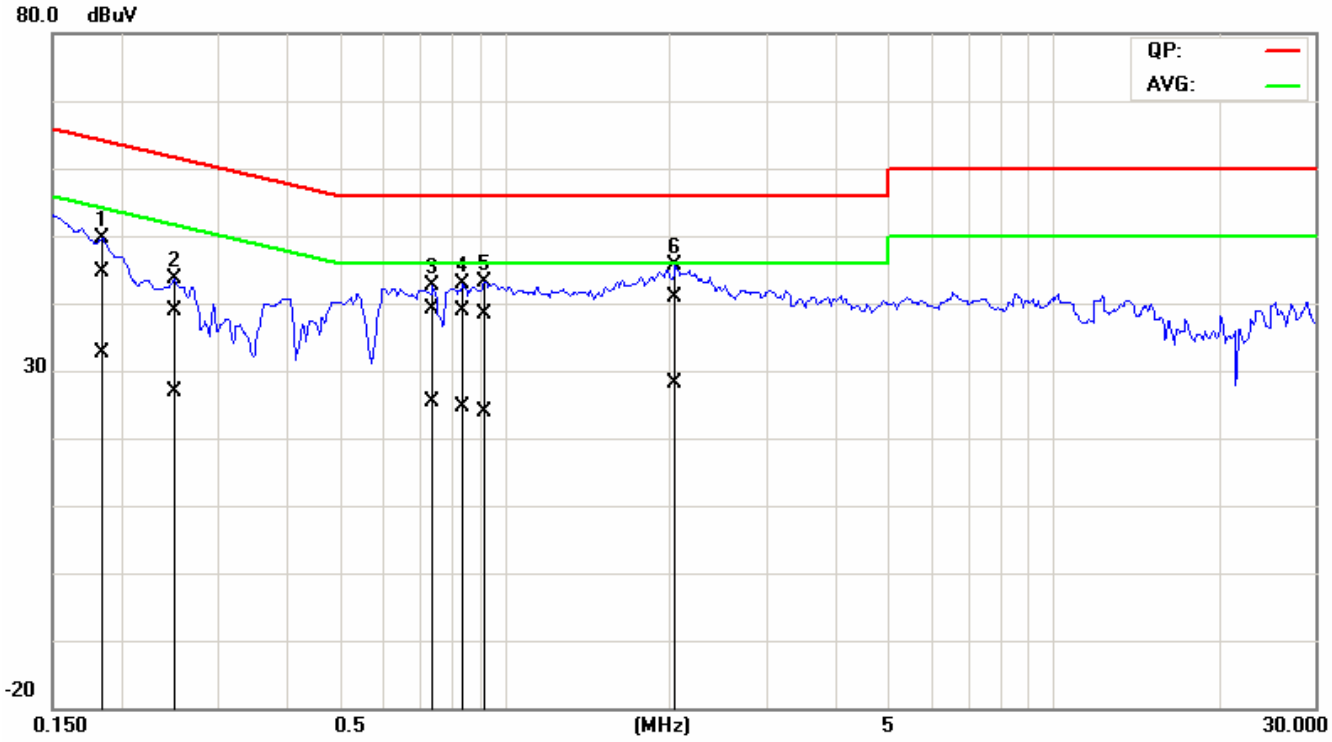
Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1850	44.50	32.50	0.10	44.60	32.60	64.26	54.26	-19.66	-21.66	L1
0.2500	38.92	26.82	0.08	39.00	26.90	61.76	51.76	-22.76	-24.86	L1
0.7400	39.14	25.44	0.06	39.20	25.50	56.00	46.00	-16.80	-20.50	L1
0.8400	38.75	24.65	0.05	38.80	24.70	56.00	46.00	-17.20	-21.30	L1
0.9200	38.35	23.95	0.05	38.40	24.00	56.00	46.00	-17.60	-22.00	L1
2.0500	40.94	28.14	0.06	41.00	28.20	56.00	46.00	-15.00	-17.80	L1
0.1750	42.58	22.68	0.12	42.70	22.80	64.72	54.72	-22.02	-31.92	L2
0.5900	37.82	22.32	0.08	37.90	22.40	56.00	46.00	-18.10	-23.60	L2
0.9550	38.72	24.62	0.08	38.80	24.70	56.00	46.00	-17.20	-21.30	L2
2.0500	40.32	27.82	0.08	40.40	27.90	56.00	46.00	-15.60	-18.10	L2
2.2550	39.52	28.82	0.08	39.60	28.90	56.00	46.00	-16.40	-17.10	L2
3.0050	36.92	25.22	0.08	37.00	25.30	56.00	46.00	-19.00	-20.70	L2

Remark:

1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*
5. *"-" means Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.*

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)