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

TEST REPORT

For

High Tech Computer Corp.

ST20L

Model: ST20L

Trade Name: N/A

Prepared for

High Tech Computer Corp.
No. 23, Hsin Hua Rd.,
Taoyuan Hsien 330, Taiwan, R.O.C.

Prepared by

Compliance Certification Services Inc.
No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang,
Taoyuan Hsien, (338) Taiwan, R.O.C.
TEL: 886-3-324-0332
FAX: 886-3-324-5235

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1. TEST RESULT CERTIFICATION

Applicant: High Tech Computer Corp.
No. 23, Hsin Hua Rd.,
Taoyuan Hsien 330, Taiwan, R.O.C.

Equipment Under Test: ST20L

Model: ST20L

Trade Name: N/A

Date of Test: October 12 - 13, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC PART 22 SUBPART H AND PART 24 SUBPART E	No non-compliance noted

We hereby certify that:

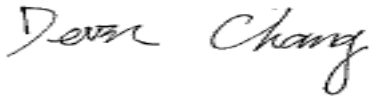
The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-1-1998 and the energy emitted by the sample EUT tested as described 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:

Harris W. Lai
Executive Vice President
Compliance Certification Services Inc.

Reviewed by:



Devin Chang
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	ST20L
Model Number	ST20L
Trade Name	N/A
Model Name Discrepancy	N/A
Power Supply	Model Number: ADP-5FH B I/P: AC 100-240, 0.2A, 50-60Hz O/P: DC 5.15V, 1A
Frequency Range	TX: 824 MHz – 849 MHz / 1850 MHz – 1910 MHz RX: 869 MHz – 894 MHz / 1930 MHz – 1989.8 MHz
Transmit Power	GSM 850: 33.75 dBm (Max) GSM 1900: 30.53 dBm (Max)
Cellular Phone Protocol	GSM (PCS), GPRS
Type of Emission	GSM 850: 248KGXW— GSM 1900: 257KGXW--
Antenna Gain	GSM 850: -0.62 dBi GSM 1900: -0.91dBi
Antenna Type	PIFA Antenna
Class II Permissive Change	1. The major changes filed under this application are the mechanical design and the material (plastic with coating) based on the marketing purpose. 2. The model name of the variant is changed as ST20L for identification.

Note: *This submittal(s) (test report) is intended for FCC ID: NM8TP 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 and FCC CFR 47, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

3.1EUT 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.

3.2EUT EXERCISE

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

3.3GENERAL 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.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 max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4.

3.4MODIFICATION

N/A

3.5DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode is programmed. Channel Low, Mid and High for each type and band with rated data rate are chosen for full testing.

The field strength of spurious radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis). The following data show only with the worst case setup.

The worst case of Y axis was reported.

4. 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.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☒ No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

☐ No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

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 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200600-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (Registration no: 93105 and 90471).

5.4TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	EN 55011, EN 55014-1, AS/NZS 1044, CNS 13783-1, EN 55022, CNS 13438, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, FCC OST/MP-5, AS/NZS CISPR 22, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11	NVLAP 200600-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	FC 93105, 90471
Japan	VCCI	4 3/10 meter Open Area Test Sites to perform conducted/radiated measurements	VCCI R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	N ELA 124a ELA 124b ELA 124c
Taiwan	CNLA	EN 300 328-1/2, EN 300 220-1/2/3, EN 300 440-1/2, EN 61000-3-2, EN 61000-3-3, 47 CFR FCC Part 15 Subpart C/D/E, EN 55013, CNS 13439, EN 55014-1, CNS 13783-1, EN 55022, CNS 13438, CISPR 22, AS/NZS 3548, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, IEEE Std 1528, FCC OET Bulletin, 65+Supplement C, EN50360, EN50361, EN50371, RSS102	CNLA 0363 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	Canada IC 3991-3 IC 3991-4

** No part of this report may be used to claim or imply product endorsement by NVLAP 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 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

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

7.1ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 22.913(b): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

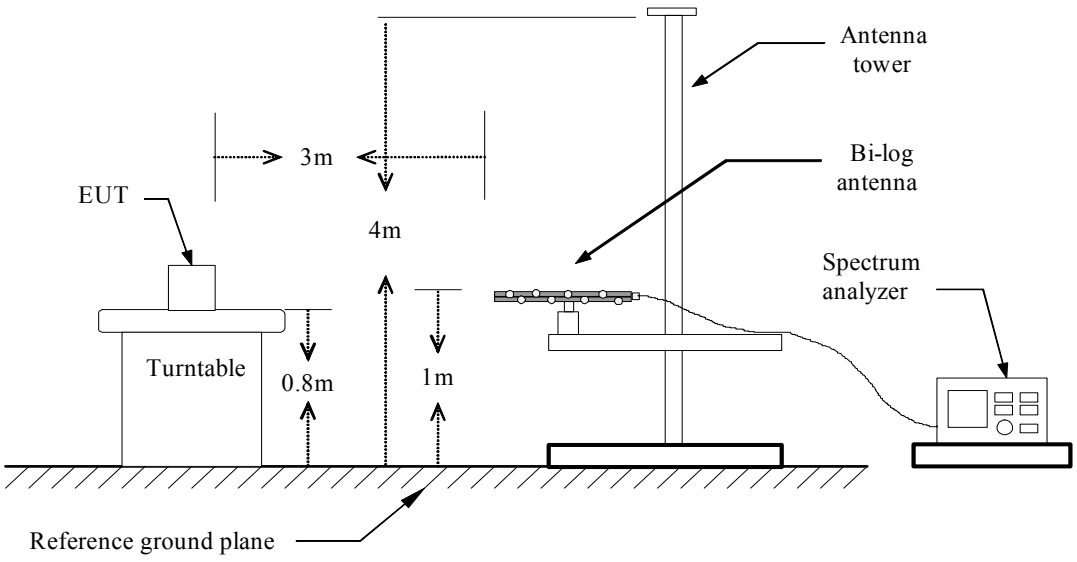
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

MEASUREMENT EQUIPMENT USED

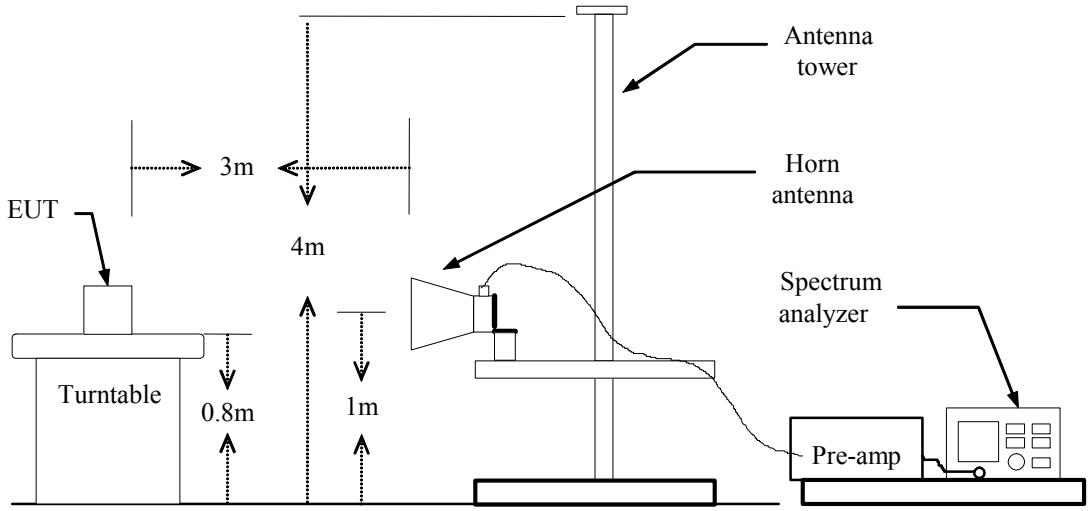
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/10/2005
Spectrum Analyzer	R&S	FSP30	100112	08/03/2005
Pre-Amplifier	HP	8447D	2944A09173	03/03/2005
Horn antenna	EMCO	3115	00022250	02/26/2005
Pre-Amplifier	HP	8449B	3008B00965	10/02/2005
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R
Controller	EMCO	2090	9709-1256	N.C.R
Site NSA	C&C	N/A	N/A	09/06/2005
S.G.	HP	83630B	3844A01022	01/14/2005
Substituted Horn	EMCO	3115	00022256	02/26/2005

TEST CONFIGURATION

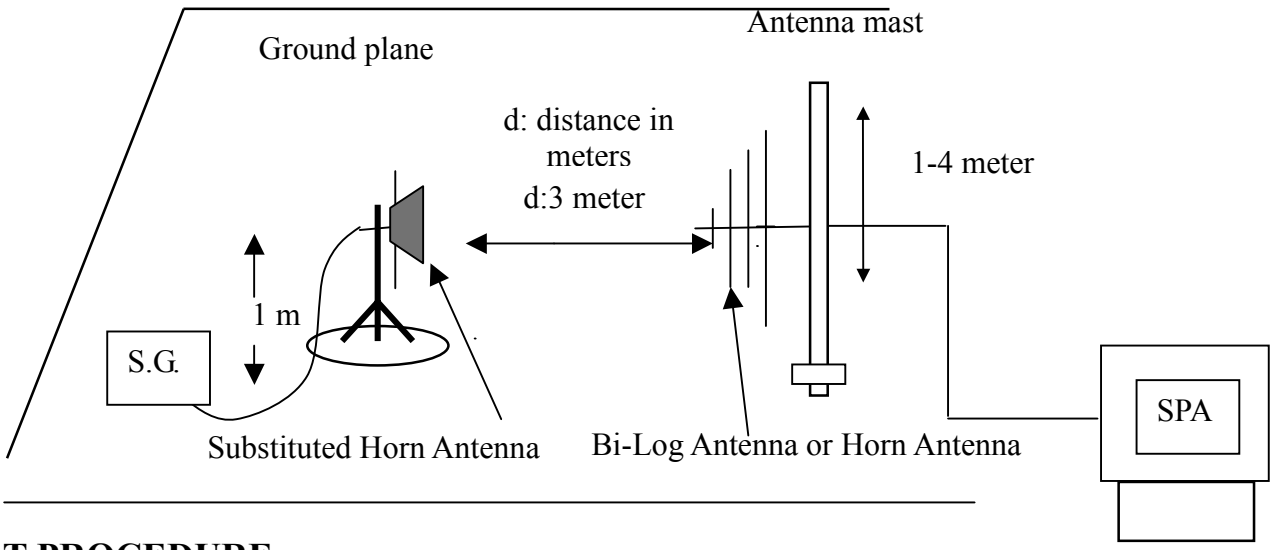
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 3MHz and the average bandwidth was set to 3MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

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

TEST RESULTS

No non-compliance noted.

GSM 850 Test Data

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	-6.53	V	28.92	3.55	-9.93	15.44	38.50	-23.06
		824.20	-0.19	H	35.08	3.55	-9.93	21.60	38.50	-16.9
	190	836.60	15.79	V	29.60	3.56	-9.96	16.08	38.50	-22.42
		836.60	0.62	H	36.11	3.56	-9.96	22.59	38.50	-15.91
	251	848.80	18.69	V	32.63	3.59	-9.99	19.05	38.50	-19.45
		848.80	2.20	H	37.75	3.59	-9.99	24.17	38.50	-14.33
Y	128	824.20	-13.18	V	22.27	3.55	-9.93	8.79	38.50	-29.71
		824.20	0.97	H	36.24	3.55	-9.93	22.76	38.50	-15.74
	190	836.60	11.09	V	24.90	3.56	-9.96	11.38	38.50	-27.12
		836.60	2.12	H	37.61	3.56	-9.96	24.09	38.50	-14.41
	251	848.80	26.45	V	40.39	3.59	-9.99	26.81	38.50	-11.69
		848.80	6.78	H	42.33	3.59	-9.99	28.75	38.50	-9.75
Z	128	824.20	-0.43	V	35.03	3.55	-9.93	21.55	38.50	-16.95
		824.20	-2.25	H	35.27	3.55	-9.93	21.79	38.50	-16.71
	190	836.60	24.78	V	38.59	3.56	-9.96	25.07	38.50	-13.43
		836.60	-8.42	H	27.07	3.56	-9.96	13.55	38.50	-24.95
	251	848.80	29.56	V	43.50	3.59	-9.99	29.92	38.50	-8.58
		848.80	27.85	H	41.20	3.59	-9.99	27.62	38.50	-10.88

GPRS 850 Test Data (Class 10)

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	128	824.20	13.22	V	26.67	3.55	-9.93	13.19	38.50	-25.31
		824.20	20.42	H	33.69	3.55	-9.93	20.21	38.50	-18.29
	190	836.60	13.14	V	26.95	3.56	-9.96	13.43	38.50	-25.07
		836.60	20.86	H	34.12	3.56	-9.96	20.59	38.50	-17.91
	251	848.80	14.09	V	28.04	3.59	-9.99	14.45	38.50	-24.05
		848.80	21.45	H	34.80	3.59	-9.99	21.22	38.50	-17.28
Y	128	824.20	6.16	V	19.61	3.55	-9.93	6.13	38.50	-32.37
		824.20	21.41	H	34.68	3.55	-9.93	21.20	38.50	-17.3
	190	836.60	7.11	V	20.92	3.56	-9.96	7.40	38.50	-31.1
		836.60	22.81	H	36.07	3.56	-9.96	22.54	38.50	-15.96
	251	848.80	7.65	V	21.60	3.59	-9.99	8.01	38.50	-30.49
		848.80	23.68	H	37.03	3.59	-9.99	23.45	38.50	-15.05
Z	128	824.20	21.34	V	34.79	3.55	-9.93	21.31	38.50	-17.19
		824.20	13.35	H	26.62	3.55	-9.93	13.14	38.50	-25.36
	190	836.60	22.56	V	36.37	3.56	-9.96	22.85	38.50	-15.65
		836.60	14.44	H	27.70	3.56	-9.96	14.17	38.50	-24.33
	251	848.80	23.48	V	37.43	3.59	-9.99	23.84	38.50	-14.66
		848.80	15.65	H	29.00	3.59	-9.99	15.42	38.50	-23.08

GSM 1900 Test Data

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	-5.89	V	19.40	5.43	6.19	20.16	33.00	-12.84
		1850.20	-1.93	H	23.24	5.43	6.19	24.00	33.00	-9.00
	661	1880.00	-5.32	V	20.08	5.48	6.20	20.80	33.00	-12.20
		1880.00	-1.04	H	24.24	5.48	6.20	24.96	33.00	-8.04
	810	1909.80	-4.05	V	21.44	5.52	6.21	22.13	33.00	-10.87
		1909.80	0.32	H	25.69	5.52	6.21	26.38	33.00	-6.62
Y	512	1850.20	-3.69	V	21.60	5.43	6.19	22.36	33.00	-10.64
		1850.20	-1.32	H	23.86	5.43	6.19	24.62	33.00	-8.38
	661	1880.00	-2.95	V	22.45	5.48	6.20	23.17	33.00	-9.83
		1880.00	-0.22	H	25.05	5.47	6.20	25.78	33.00	-7.22
	810	1909.80	-1.32	V	24.17	5.52	6.21	24.86	33.00	-8.14
		1909.80	0.82	H	26.20	5.52	6.21	26.89	33.00	-6.11
Z	512	1850.20	-2.73	V	22.56	5.43	6.19	23.32	33.00	-9.68
		1850.20	-4.89	H	20.29	5.43	6.19	21.05	33.00	-11.95
	661	1880.00	-1.55	V	23.85	5.48	6.20	24.57	33.00	-8.43
		1880.00	-4.20	H	21.09	5.48	6.20	21.81	33.00	-11.19
	810	1909.80	-0.98	V	24.52	5.52	6.21	25.21	33.00	-7.79
		1909.80	-2.25	H	23.12	5.52	6.21	23.81	33.00	-9.19

GPRS 1900 Test Data (Class 10)

EUT Pol.	Channel	Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
X	512	1850.20	15.43	V	18.73	5.43	6.19	19.49	33.00	-13.52
		1850.20	18.48	H	21.66	5.43	6.19	22.42	33.00	-10.58
	661	1880.00	16.39	V	19.76	5.47	6.20	20.49	33.00	-12.51
		1880.00	19.51	H	22.76	5.47	6.20	23.49	33.00	-9.51
	810	1909.80	17.86	V	21.33	5.52	6.21	22.02	33.00	-10.98
		1909.80	20.95	H	24.30	5.52	6.21	24.99	33.00	-8.01
Y	512	1850.20	16.61	V	19.87	5.41	6.19	20.64	33.00	-12.36
		1850.20	19.43	H	22.61	5.43	6.19	23.37	33.00	-9.63
	661	1880.00	18.34	V	21.71	5.47	6.20	22.44	33.00	-10.56
		1880.00	20.55	H	23.80	5.47	6.20	24.53	33.00	-8.47
	810	1909.80	19.99	V	23.49	5.54	6.21	24.17	33.00	-8.83
		1909.80	21.59	H	24.94	5.52	6.21	25.63	33.00	-7.37
Z	512	1850.20	15.92	V	19.22	5.43	6.19	19.98	33.00	-13.03
		1850.20	18.18	H	21.36	5.43	6.19	22.12	33.00	-10.88
	661	1880.00	17.31	V	20.71	5.48	6.20	21.43	33.00	-11.57
		1880.00	19.33	H	22.61	5.48	6.20	23.33	33.00	-9.67
	810	1909.80	18.44	V	21.91	5.52	6.21	22.60	33.00	-10.40
		1909.80	21.40	H	24.75	5.52	6.21	25.44	33.00	-7.56

7.2FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

LIMIT

According to FCC §2.1053

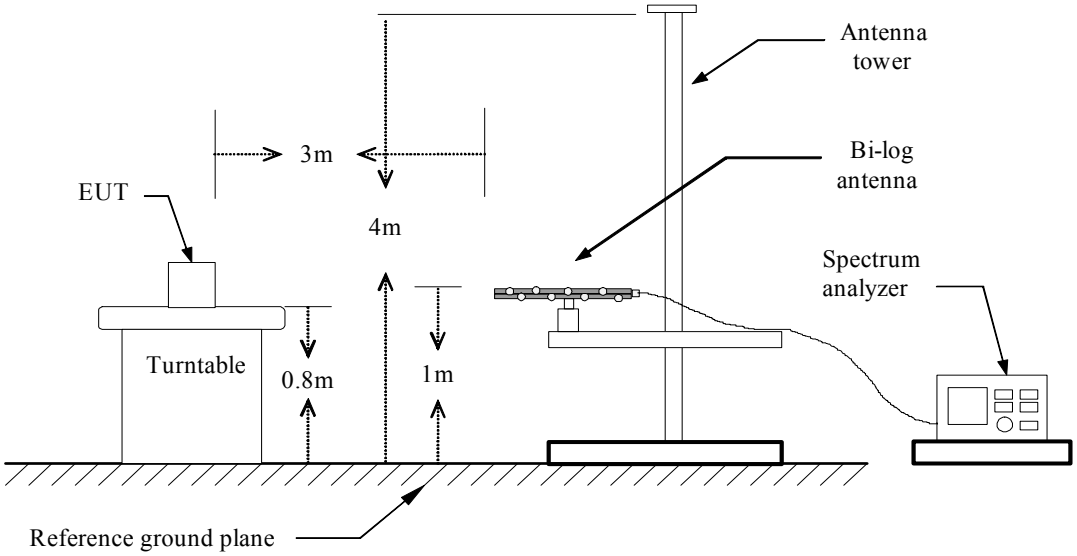
MEASUREMENT EQUIPMENT USED

Open Area Test Site # 3				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/10/2005
Spectrum Analyzer	R&S	FSP30	100112	08/03/2005
Pre-Amplifier	HP	8447D	2944A09173	03/03/2005
Bi-log Antenna	SCHWAZBECK	VULB9163	145	07/05/2005
Horn antenna	EMCO	3115	00022250	02/26/2005
Pre-Amplifier	HP	8449B	3008B00965	10/02/2005
Reject Filter	Micro-Tronics	HPM13194	003	04/27/2005
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R
Controller	EMCO	2090	9709-1256	N.C.R
Site NSA	C&C	N/A	N/A	09/06/2005
S.G.	HP	83630B	3844A01022	01/14/2005
Substituted Dipole	SCHWAZBECK	VHAP/UHAP	998 +999/ 981+982	06/12/2005
Substituted Horn	EMCO	3115	00022256	02/26/2005

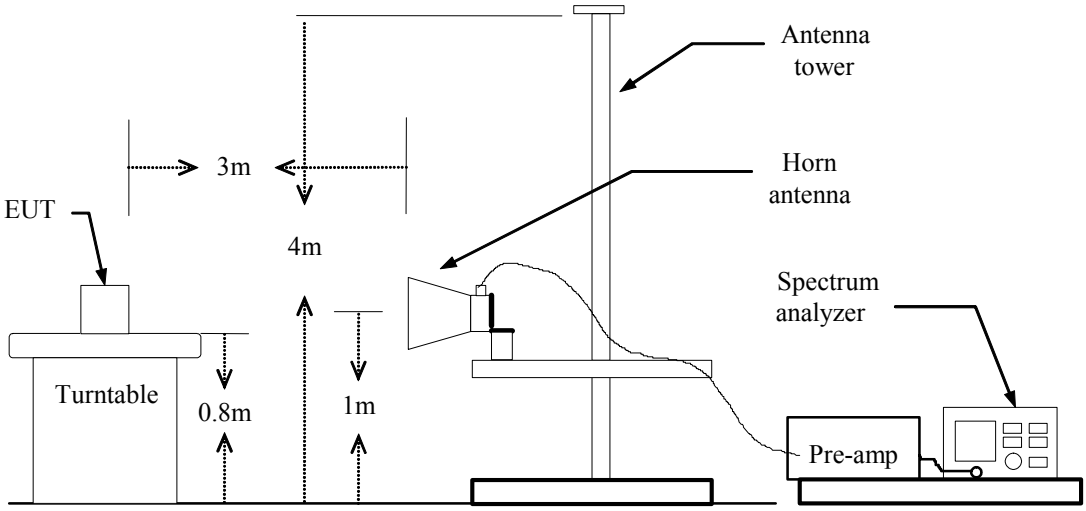
Remark: *Each piece of equipment is scheduled for calibration once a year.*

Test Configuration

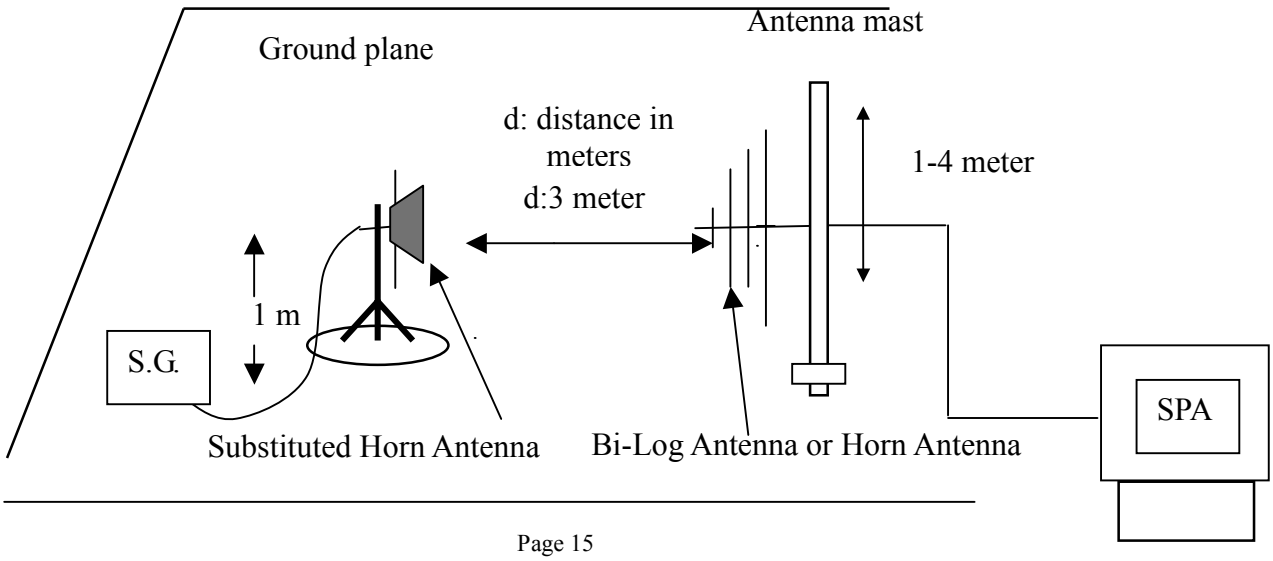
Below 1 GHz



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 (dBi) – 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

GSM 850 mode / Below 1GHz

No emissions to be recorded.
(Since no specific emission noted beyond the background noise floor)

Above 1GHz

Operation Mode: GSM 850 / TX / CH 128 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1648.00	-59.15	V	-55.56	5.07	6.11	-54.52	-13.00	-41.52
2472.00	-54.29	V	-47.83	6.42	7.28	-46.97	-13.00	-33.97
N/A								
1648.00	-52.4	H	-48.94	5.07	6.11	-47.90	-13.00	-34.90
2472.00	-55.33	H	-48.83	6.42	7.28	-47.97	-13.00	-34.97
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GSM 850 / TX / CH 190 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1674.00	-55.11	V	-51.42	5.12	6.12	-50.42	-13.00	-37.42
2510.00	-50.73	V	-44.12	6.49	7.35	-43.26	-13.00	-30.26
N/A								
1674.00	-48.96	H	-45.40	5.12	6.12	-44.40	-13.00	-31.40
2510.00	-56.33	H	-49.68	6.49	7.35	-48.82	-13.00	-35.82
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GSM 850 / TX / CH 251 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1698.00	-50.95	V	-47.18	5.16	6.13	-46.21	-13.00	-33.21
2546.00	-46.31	V	-39.55	6.53	7.34	-38.74	-13.00	-25.74
N/A								
1698.00	-45.41	H	-41.77	5.16	6.13	-40.80	-13.00	-27.80
2546.00	-51.78	H	-44.98	6.53	7.34	-44.17	-13.00	-31.17
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 850 / TX / CH 128 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1648.00	-58.95	V	-55.36	5.07	6.11	-54.32	-13.00	-41.32
2472.00	-55.46	V	-49.00	6.42	7.28	-48.14	-13.00	-35.14
N/A								
1648.00	-52.27	H	-48.81	5.07	6.11	-47.77	-13.00	-34.77
2472.00	-59.60	H	-53.10	6.42	7.28	-52.24	-13.00	-39.24
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 850 / TX / CH 190 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1674.00	-57.16	V	-53.47	5.12	6.12	-52.47	-13.00	-39.47
2510.00	-53.17	V	-46.56	6.49	7.35	-45.70	-13.00	-32.70
N/A								
1674.00	-49.73	H	-46.17	5.12	6.12	-45.17	-13.00	-32.17
2510.00	-54.78	H	-48.13	6.49	7.35	-47.27	-13.00	-34.27
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 850 / TX / CH 251 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
1698.00	-52.34	V	-48.57	5.16	6.13	-47.60	-13.00	-34.60
2546.00	-47.99	V	-41.23	6.53	7.34	-40.42	-13.00	-27.42
N/A								
1698.00	-47.22	H	-43.58	5.16	6.13	-42.61	-13.00	-29.61
2546.00	-54.13	H	-47.33	6.53	7.34	-46.52	-13.00	-33.52
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

PCS 1900 mode / Below 1GHz

No emissions to be recorded.
(Since no specific emission noted beyond the background noise floor)

Above 1GHz

Operation Mode: GSM 1900 / TX / CH 512 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3748.00	-63.28	V	-53.10	8.07	7.20	-53.97	-13.00	-40.97
9256.00	-61.68	V	-35.84	14.35	9.40	-40.79	-13.00	-27.79
12952.00	-60.05	V	-32.12	16.95	9.94	-39.13	-13.00	-26.13
N/A								
9256.00	-62.48	H	-37.14	14.35	9.40	-42.09	-13.00	-29.09
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GSM 1900 / TX / CH 661 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
3748.00	-63.28	V	-53.10	8.07	7.20	-53.97	-13.00	-40.97
9256.00	-61.68	V	-35.84	14.35	9.40	-40.79	-13.00	-27.79
12952.00	-60.05	V	-32.12	16.95	9.94	-39.13	-13.00	-26.13
N/A								
9256.00	-62.48	H	-37.14	14.35	9.40	-42.09	-13.00	-29.09
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GSM 1900 / TX / CH 810 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2120.00	-65.46	V	-60.23	5.88	6.51	-59.59	-13.00	-46.59
2894.00	-64.41	V	-56.01	7.08	7.27	-55.82	-13.00	-42.82
N/A								
2118.00	-64.7	H	-59.55	5.86	6.49	-58.92	-13.00	-45.92
2484.00	-64.48	H	-57.94	6.44	7.31	-57.07	-13.00	-44.07
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 1900 / TX / CH 512 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
N/A								
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 1900 / TX / CH 661 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2768.00	-63.8	V	-56.00	6.88	7.30	-55.58	-13.00	-42.58
N/A								
2850.00	-64.48	H	-56.30	7.02	7.28	-56.04	-13.00	-43.04
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Operation Mode: GPRS 1900 / TX / CH 810 / Y Mode **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2470.00	-63.65	V	-57.19	6.42	7.28	-56.33	-13.00	-43.33
N/A								
2680.00	-64.26	H	-56.85	6.75	7.31	-56.29	-13.00	-43.29
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*

Co-Location mode

Below 1GHz

No emissions to be recorded.
(Since no specific emission noted beyond the background noise floor)

Above 1GHz

Operation Mode: **GSM 1900 / TX / CH 810 / Y Mode + BT / Mid** **Test Date:** Oct. 12, 2004

Temperature: 25°C **Tested by:** Johnny Liu

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

Frequency (MHz)	Reading level (dBm)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant. Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2642.00	-64.11	V	-53.72	8.85	7.32	-55.25	-13.00	-42.25
N/A								
2690.00	-64.48	H	-53.79	9.00	7.31	-55.48	-13.00	-42.48
N/A								

Notes:

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 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.*
3. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.*
4. *Spectrum setting:*
   a. *Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.*
   b. *AV Setting 1GH z to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.*