Test Report

Product Name ： GSM Gateway

Model No. ： V100-VoIP, G100

FCC ID ： VLW-V100-G100

Applicant ： Soundwin Network Inc.

Address ： 10F-4, No. 295, Sec. 2, Kuangfu Rd., Hsinchu City, Taiwan

Date of Receipt ： 2007/07/24

Issued Date ： 2007/09/12

Report No. ： 077317R-HPUSP03V01

Test Report Certification

Issued Date : 2007/09/12
Report No. : 077317R-HPUSP03V01

QuieTek

Product Name	:	GSM Gateway
Applicant	:	Soundwin Network Inc.
Address	:	10F-4, No. 295, Sec. 2, Kuangfu Rd., Hsinchu City, Taiwan
Manufacturer	:	Soundwin Network Inc.
Model No.	:	V100-VoIP, G100
FCC ID	:	VLW-V100-G100
Rated Voltage	:	AC 230 V / 50 Hz
EUT Voltage	:	AC 230 V / 50 Hz
Trade Name	:	Soundwin
Applicable Standard	:	FCC CFR Title 47 Part 2, Part 22H
Test Result	:	Complied
Performed Location	:	Hsinchu EMC Laboratory N0. 75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C TEL:+886-3-592-8868 / FAX:+886-3-592-8859

Documented By : Carol Tsai

(Carol Tsai / Engineering Adm. Specialist)

Tested By : Sheena Huang

(Sheena Huang / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://tw.quietek.com/modules/enterprise/services.php?item=100
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0

Testing Laboratory 1313

LinKou Testing Laboratory :
No. 5, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

Testing Laboratory 0914

Reports from Both Laboratories Are Accepted by :

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1. General Information

1.1. EUT Description

Product Name	GSM Gateway
Trade Name	Soundwin
Model No.	V100-VoIP, G100
Tx Frequency Range	824.2MHz to 848.8MHz
Rx Frequency Range	869.2MHz to 893.8MHz
Channel Number	125
Type of Modulation	GMSK
Antenna Gain	4.29dBi
CD	1 Set
LAN Cable	Non-Shielded, 1m
Antenna Cable	Non-Shielded, 1m
Power Adapter	SUNNY, SYS1298-1812-W2 I/P: 100-240V / 1A max. / 30-40VA / 50-60Hz O/P: +12V / 1.5A Cable Out: Non-Shielded, 1.68m

Working Frequency of Each Channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
128	824.2 MHz	190	836.6MHz	251	848.8

Note:

1. This EUT is a GSM Gateway.
2. The different of the each model is shown as below:

Model Number	Description
V100-VoIP	FXS*1, PSTN Line *1 & GSM over VoIP GSM Gateway
G100	FXS*1, PSTN Line *1 &GSM Gateway

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: GSM850 Link
Final Test Mode	
RX	Mode 1: GSM850 Link

Note:

1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 077317R-ITUSP02V02, certified under Declaration of Conformity.

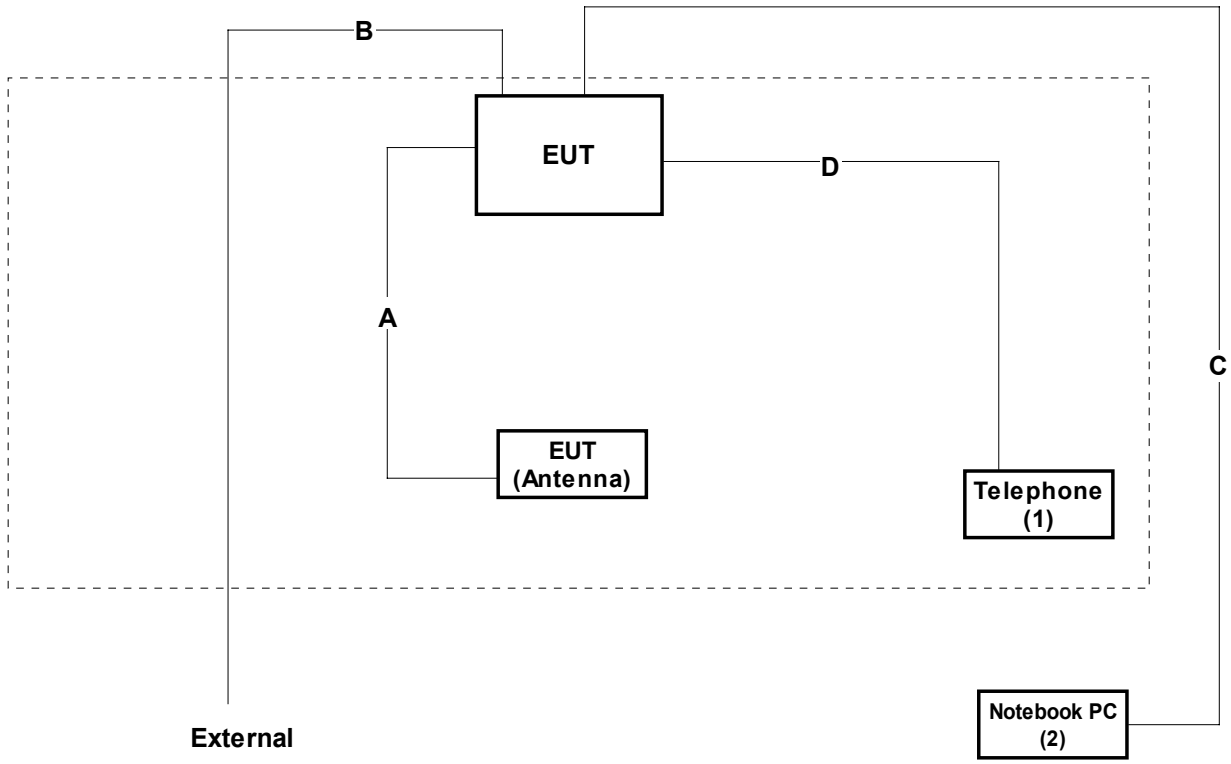
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Telephone	TENTEL	K-302	50721005000552	DoC	--
2	Notebook PC	DELL	LATITUDE D400	N/A		Non-Shielded, 1.7m, one ferrite core bonded

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Antenna Cable	Non-Shielded, 1m
B	Telephone Cable	Non-Shielded, 10m
C	LAN Cable	Non-Shielded, 10m
D	Telephone Cable	Non-Shielded, 1m

1.5. EUT Exercise Software

1	Setup the EUT and simulator as shown on 1.4.
2	Turn on the power of all equipments.
3	The EUT was set to communicate with CMU200.
4	Repeat the above procedure (3).

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Peak Output Power	FCC Part 22.913(a)(2) and Part 2.1046	Yes	No
Modulation Characteristic	FCC Part 2.1047(d)	Yes	No
Occupied Bandwidth	FCC Part 2.1049	Yes	No
Spurious Emission At Antenna Terminals (+/- 1MHz)	FCC Part 22.917(a) and Part 2.1049	Yes	No
Spurious Emission	FCC Part 22.917(b) and Part 2.1051, 2.1053	Yes	No
Frequency Stability Under Temperature & Voltage Variations	FCC Part 22.355 and 2.1055	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	950-1000

3. Peak Output Power

3.1. Test Equipment

The following test equipments are used during the RF power output tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒OATS 3	Test Receiver	R & S	ESCS 30 / 100122	Feb., 2007
	Universal Radio Communication Tester	R & S	CMU200 / 104846	May, 2007
	Spectrum Analyzer	R & S	R3162 / 120300652	Feb., 2007
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	Horn Antenna	ETS	3115 / 0005-6160	Jul., 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2007
	Horn Antenna	SCHWARZBECK	BBHA9120D/ BBHA9120D639	Jul., 2007
	Signal Generator	Anritsu	MG3694A/041902	Nov. 2007

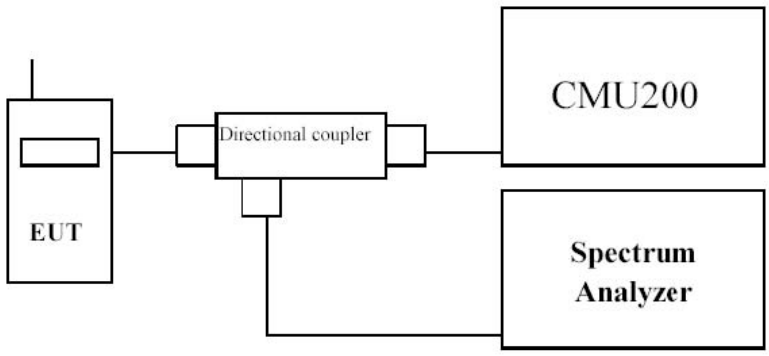
Note: 1. All equipments that need to be calibrated are with calibration period of 1 year.

2. “N/A” Ca1.Date is used to Pre-test, not final test.

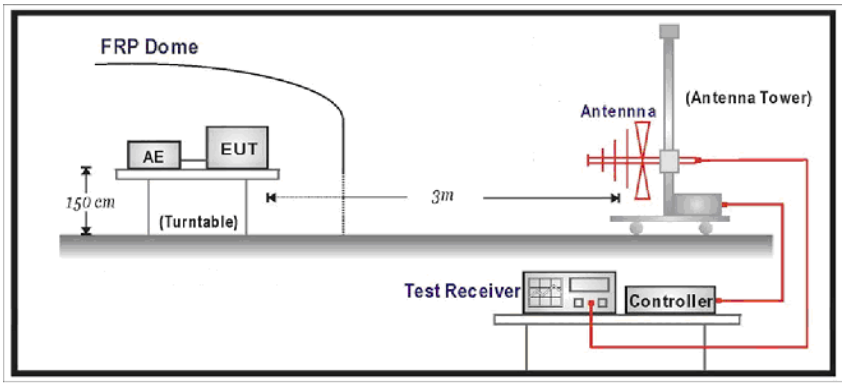
3. EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss。

3.2. Test Setup

Conducted Power Measurement:



Radiated Power Measurement:



3.3. Limit

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

3.4. Test Procedure

Conducted Power Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
c) EUT Communicate with CMU200, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c) The output of the test antenna shall be connected to the measuring receiver.
d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
h) The maximum signal level detected by the measuring receiver shall be noted.
i) The transmitter shall be replaced by a substitution antenna.
j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
k) The substitution antenna shall be connected to a calibrated signal generator.
l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the

transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

3.5. Uncertainty

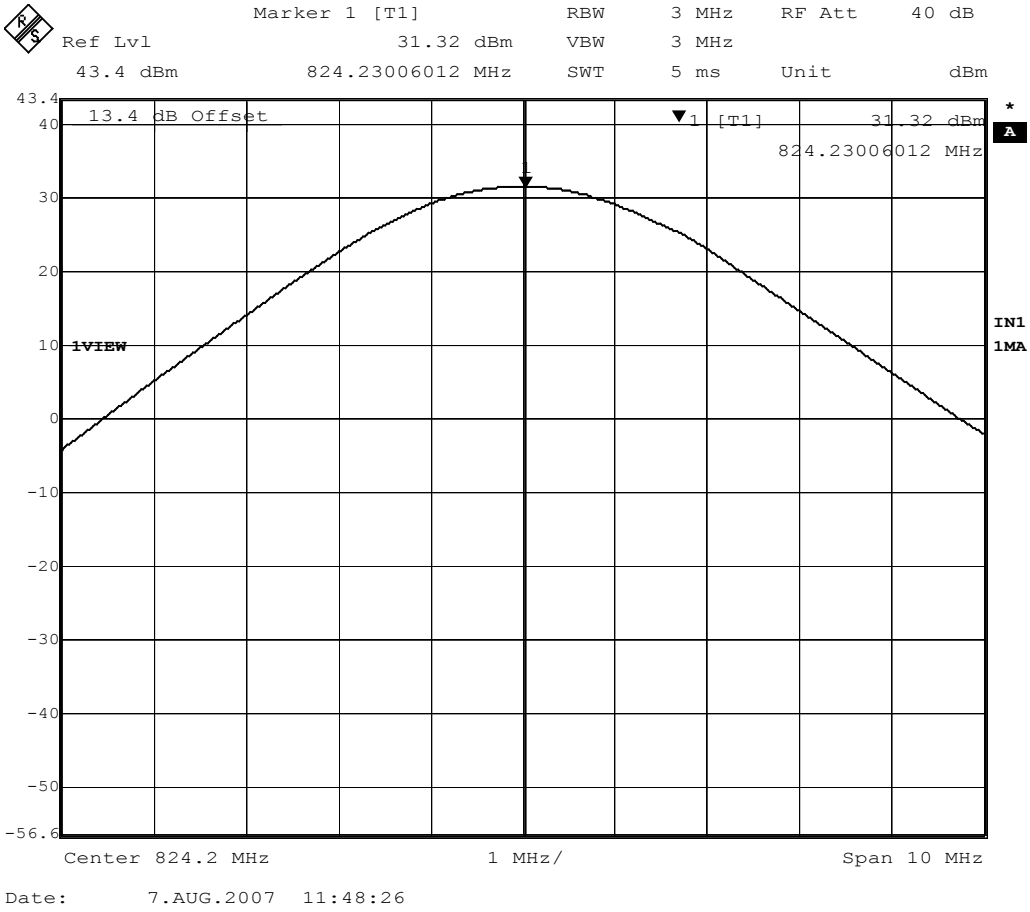
The measurement uncertainty is defined as for Conducted Power Measurement ± 1.2 dB, for Radiated Power Measurement ± 3.2 dB

3.6. Test Result

Product	GSM Gateway		
Test Item	Peak Output Power		
Test Mode	Mode 1: GSM850 Link		
Date of Test	2007/08/07	Test Site	OATS 3

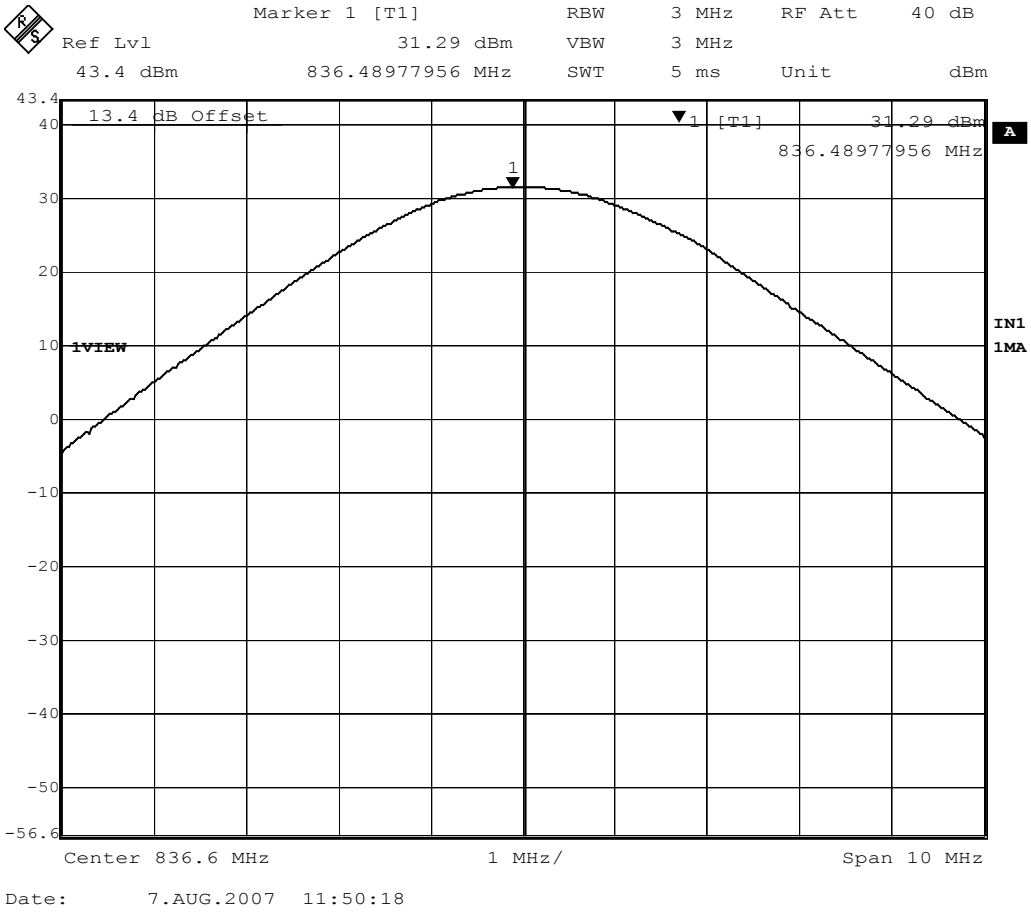
Frequency (MHz)	Conducted Output Power (dBm)
824.20	31.32

128 Channels



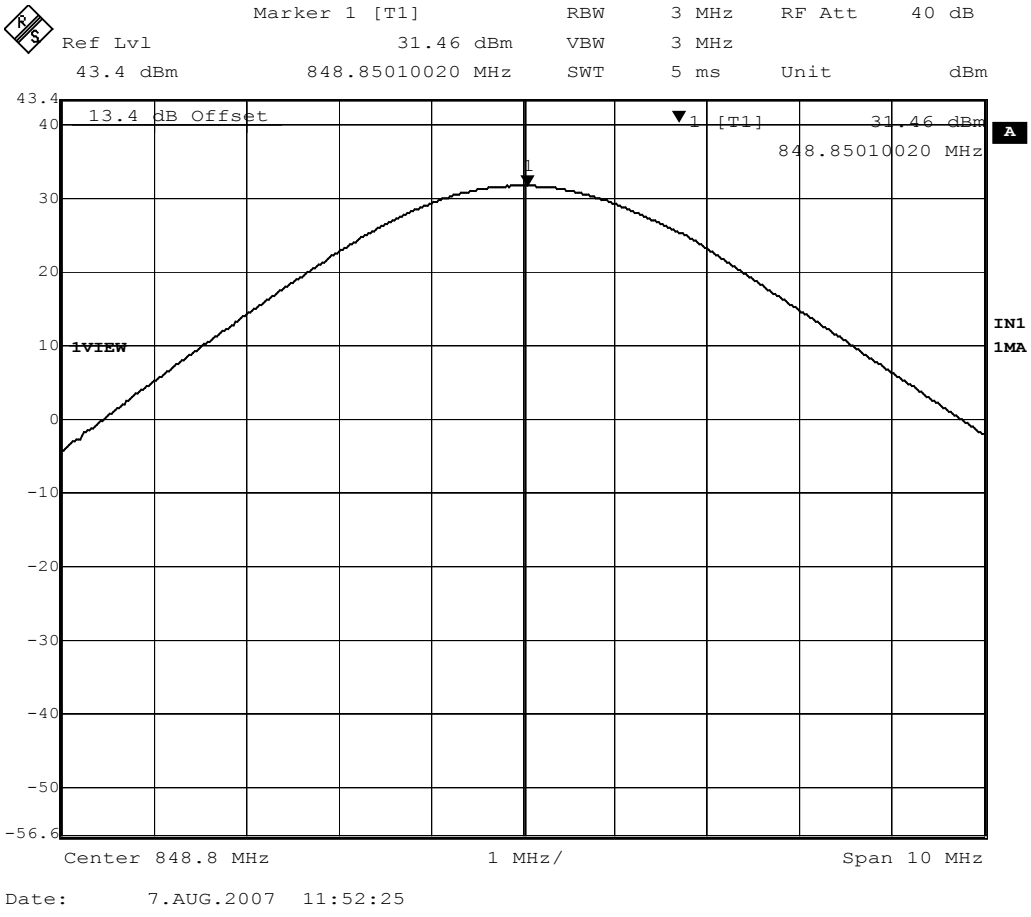
Frequency (MHz)	Conducted Output Power (dBm)
836.60	31.29

190 Channels

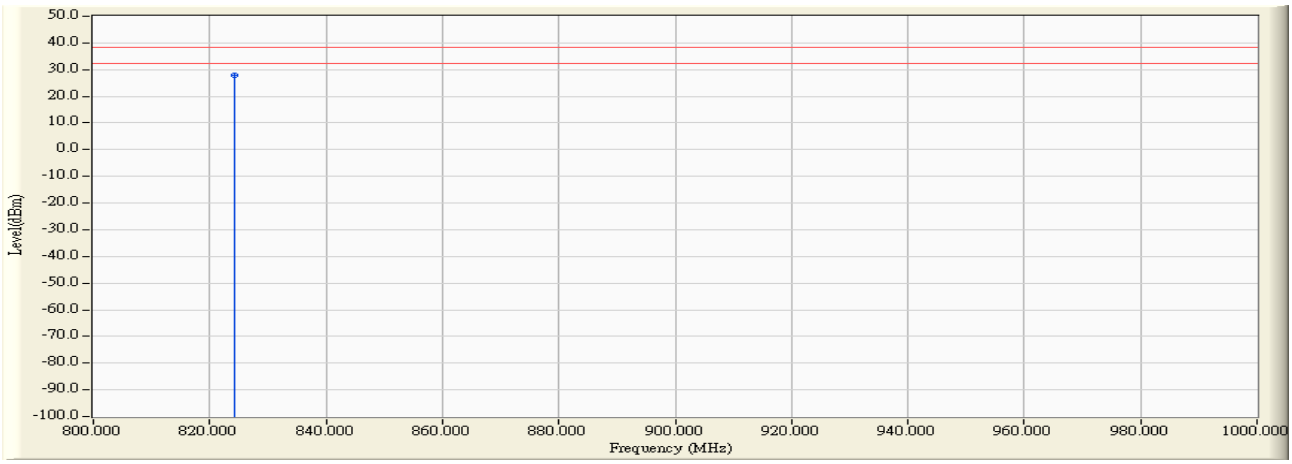


Frequency (MHz)	Conducted Output Power (dBm)
848.80	31.46

251 Channels



Site : Site 3	**Time : 2007/08/05 - 13:18**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(128)**



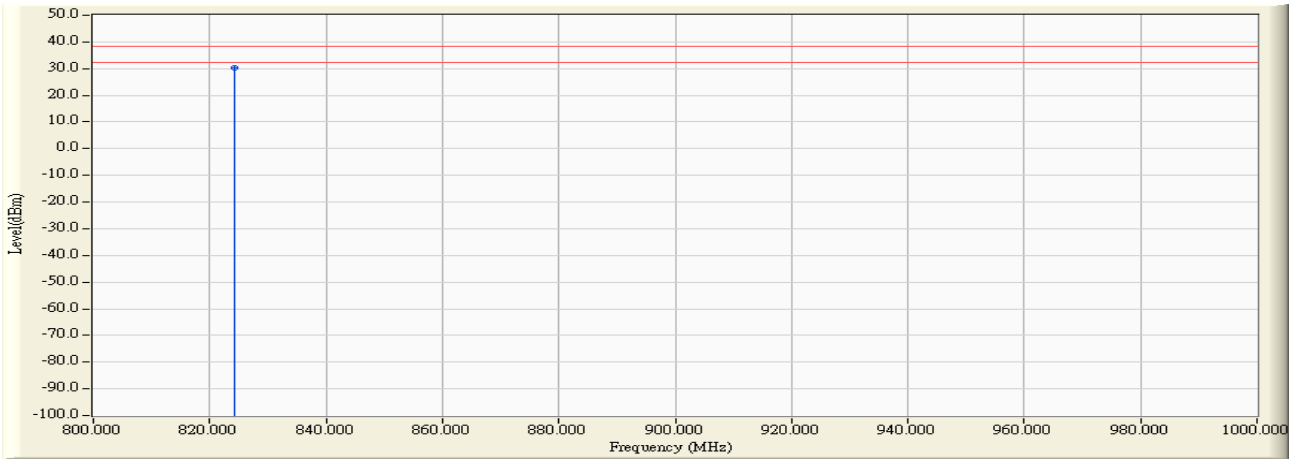
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	824.174	31.531	-3.640	27.891	-10.559	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Frequency (MHz)	EIRP (dBm)	ERP (dBm)
824.20	30.122	27.982

Site : Site 3	**Time : 2007/08/05 - 13:22**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(128)**

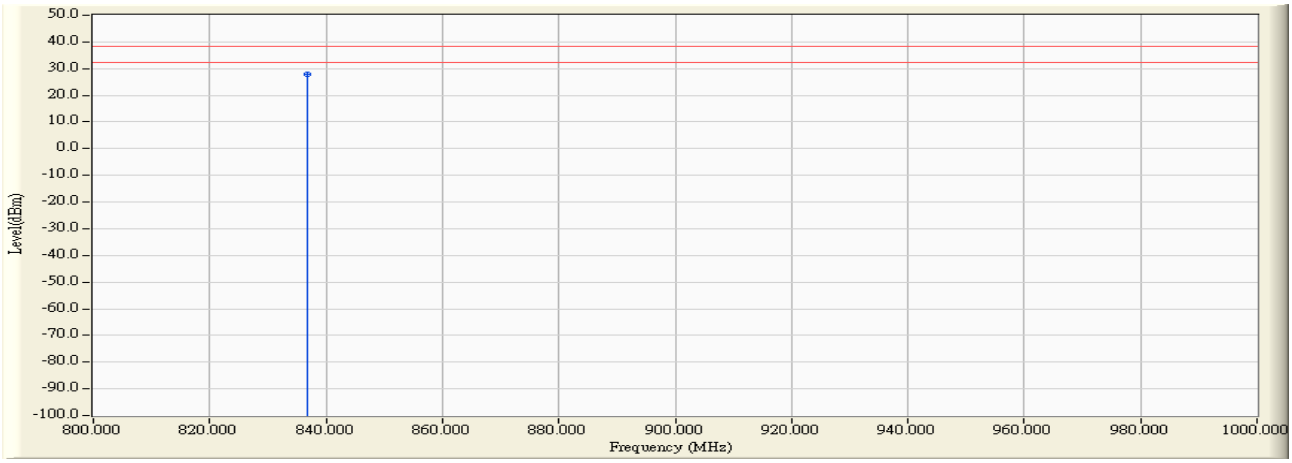


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	824.220	31.371	-1.250	30.122	-8.328	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/08/05 - 13:32**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(190)**



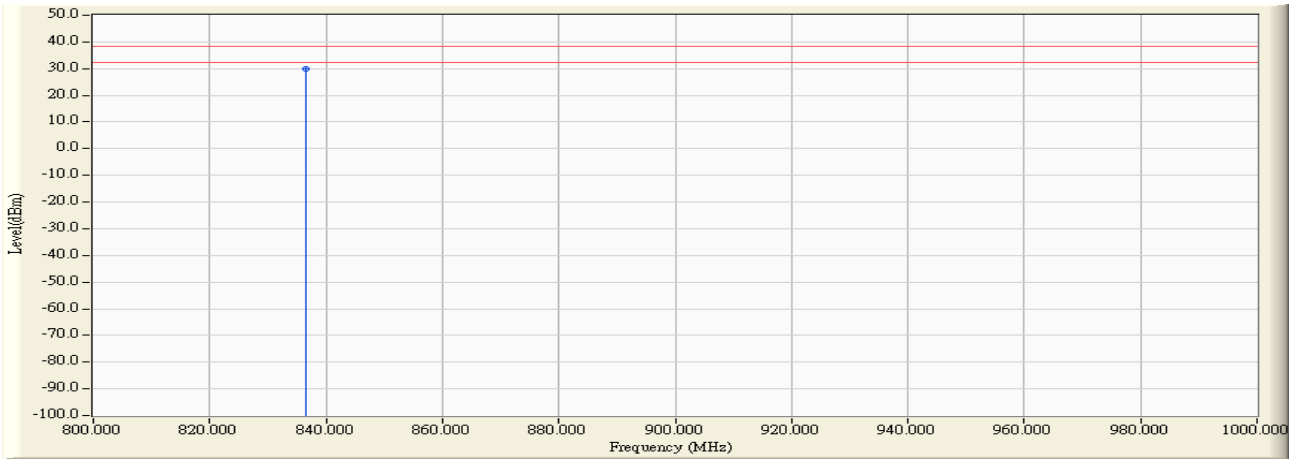
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	836.677	31.420	-3.630	27.790	-10.660	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Frequency (MHz)	EIRP (dBm)	ERP (dBm)
836.60	29.750	27.610

Site : Site 3	**Time : 2007/08/05 - 13:37**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(190)**

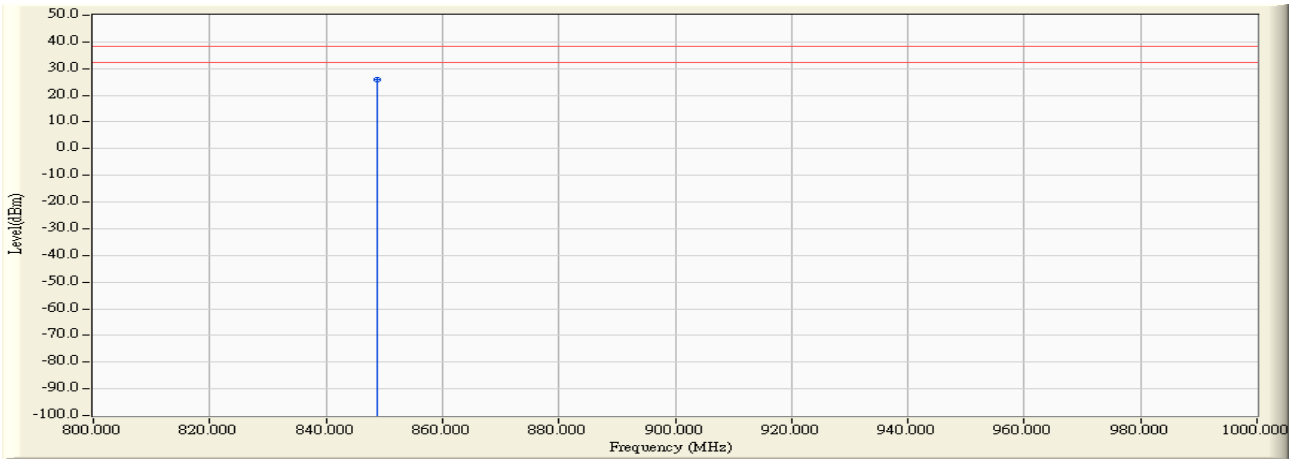


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	836.570	31.210	-1.460	29.750	-8.700	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/08/05 - 13:47**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(251)**



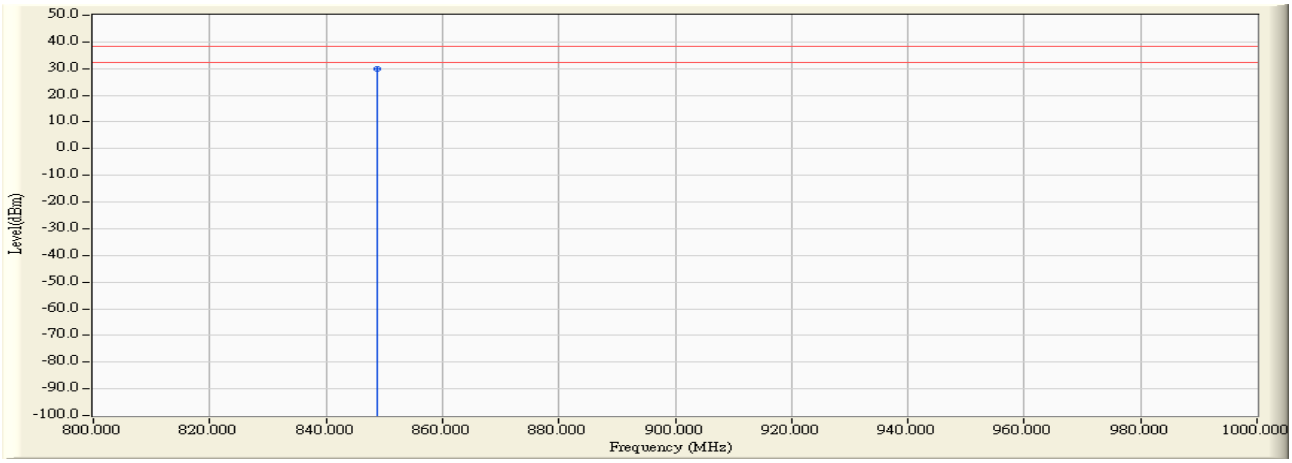
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	848.703	31.660	-5.930	25.730	-12.720	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Frequency (MHz)	EIRP (dBm)	ERP (dBm)
848.80	29.760	27.620

Site : Site 3	**Time : 2007/08/05 - 13:50**
Limit : FCC_PART22_F_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_30-1G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(251)**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	848.703	31.450	-1.690	29.760	-8.690	38.450	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

4. Conducted Emission

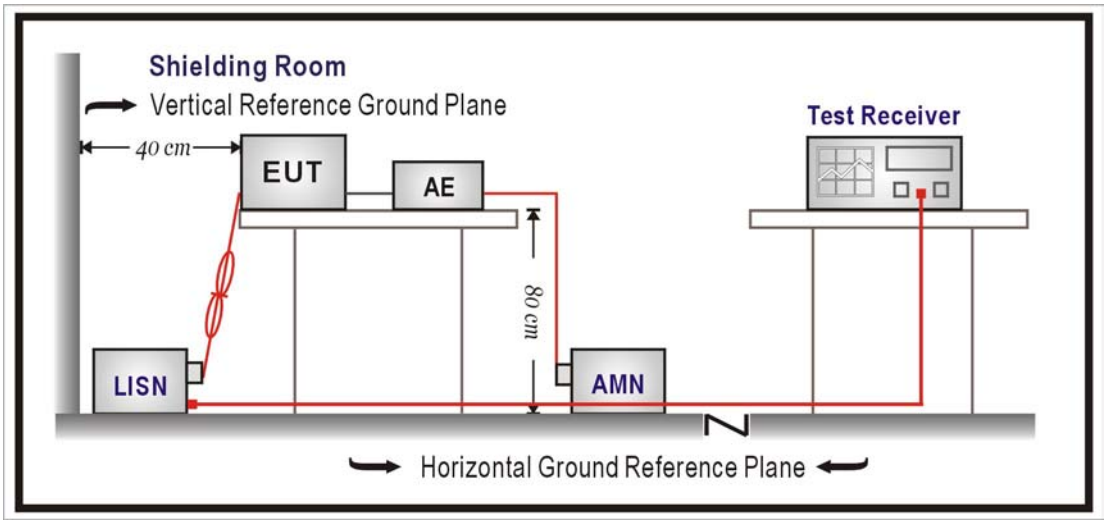
4.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2007	
2	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2007	Peripherals
3	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2007	EUT
4	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2007	
5	4-wire ISN	R & S	ENY41 / 837032/001	Feb., 2007	
6	Double 2-Wire ISN	R & S	ENY22 / 835354/008	Feb., 2007	
7	No.1 Shielded Room			N/A	

Note: All equipments are calibrated every one year.

4.2. Test Setup



4.3. Limit

Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

4.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.) Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

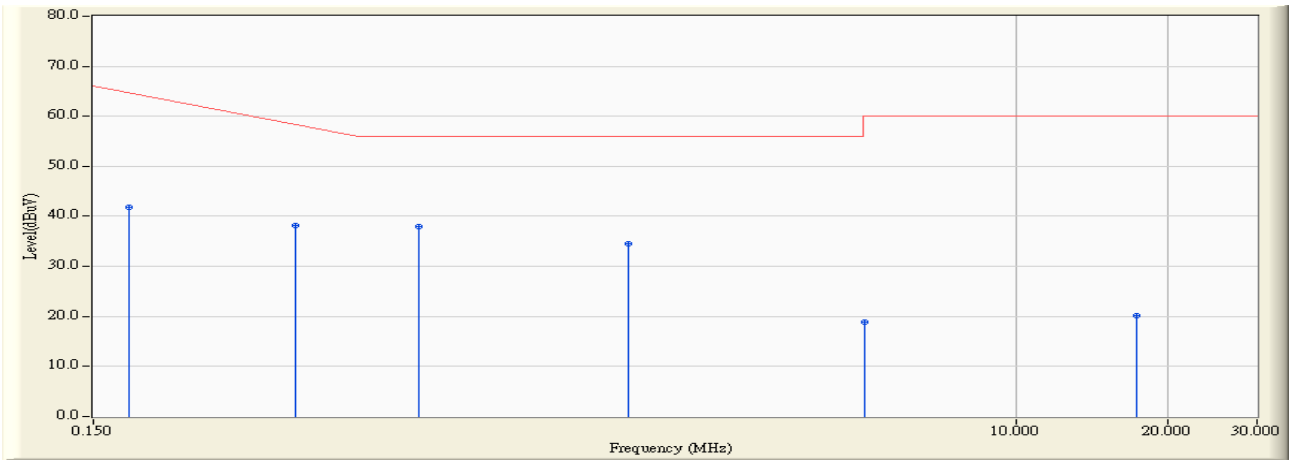
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

4.5. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

4.6. Test Result

Site : ShieldingRoom1	**Time : 2007/09/09 - 14:40**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : GSM Gateway	**Probe : SR1_LISN(16A) - Line1**
Power : AC 120V/60Hz	**Note : Mode 1: GSM850 Link**

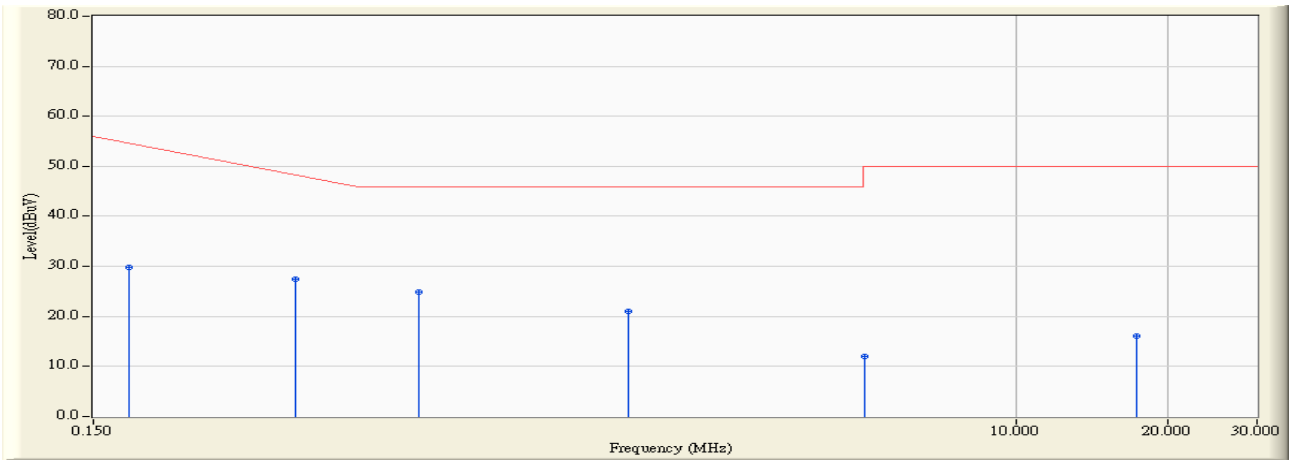


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.177	0.146	41.580	41.726	-23.503	65.229	QUASIPEAK
2		0.377	0.193	38.010	38.203	-21.311	59.514	QUASIPEAK
3	*	0.658	0.216	37.650	37.866	-18.134	56.000	QUASIPEAK
4		1.712	0.340	34.290	34.630	-21.370	56.000	QUASIPEAK
5		5.037	0.484	18.360	18.844	-41.156	60.000	QUASIPEAK
6		17.353	0.930	19.330	20.260	-39.740	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom1	**Time : 2007/09/09 - 14:40**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : GSM Gateway	**Probe : SR1_LISN(16A) - Line1**
Power : AC 120V/60Hz	**Note : Mode 1: GSM850 Link**

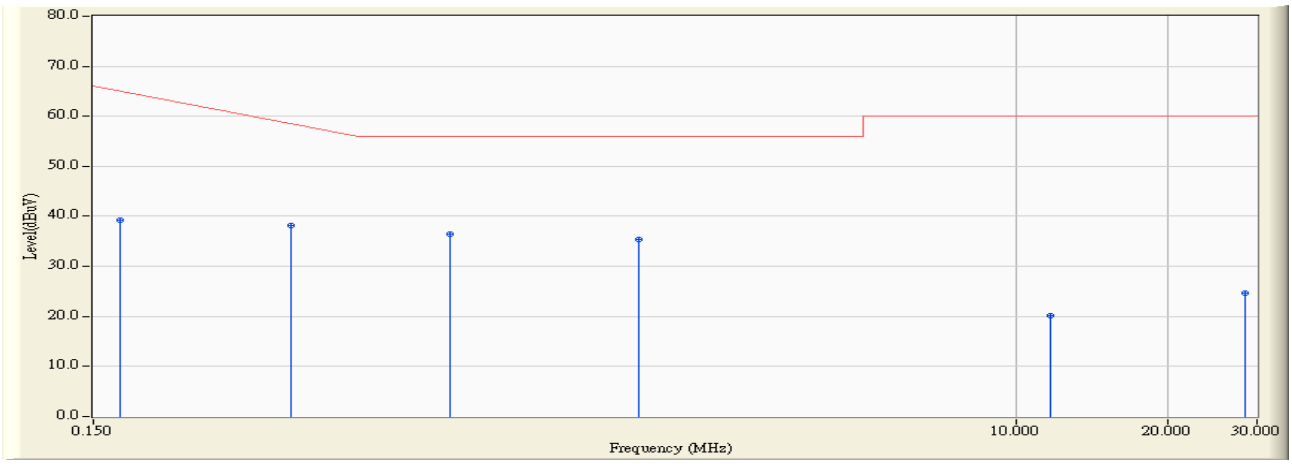


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.177	0.146	29.750	29.896	-25.333	55.229	AVERAGE
2		0.377	0.193	27.250	27.443	-22.071	49.514	AVERAGE
3	*	0.658	0.216	24.590	24.806	-21.194	46.000	AVERAGE
4		1.712	0.340	20.650	20.990	-25.010	46.000	AVERAGE
5		5.037	0.484	11.460	11.944	-38.056	50.000	AVERAGE
6		17.353	0.930	15.120	16.050	-33.950	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom1	**Time : 2007/09/09 - 14:41**
Limit : CISPR_B_00M_QP	**Margin : 0**
EUT : GSM Gateway	**Probe : SR1_LISN(16A) - Line2**
Power : AC 120V/60Hz	**Note : Mode 1: GSM850 Link**

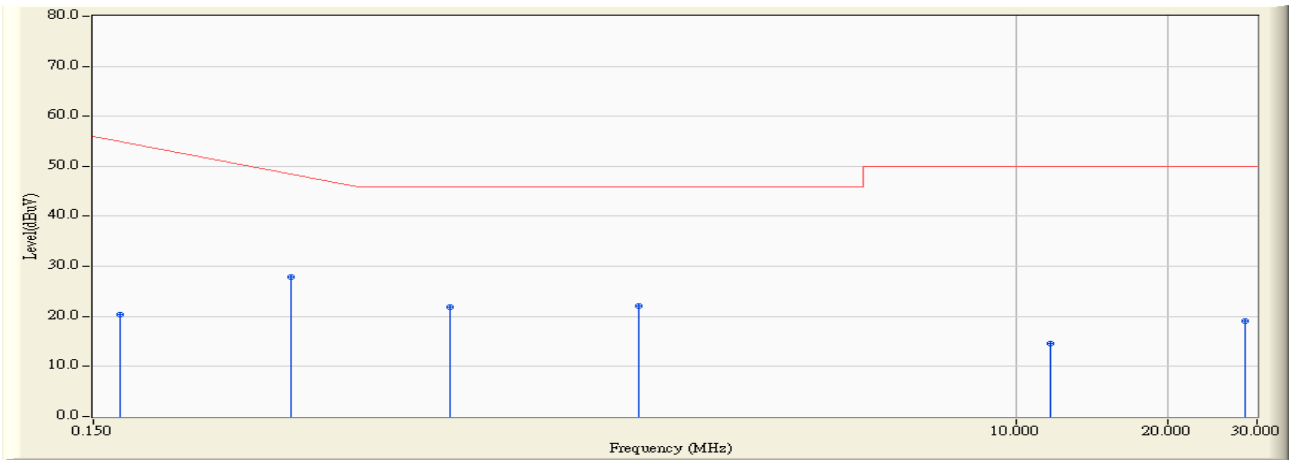


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.170	0.144	39.160	39.304	-26.125	65.429	QUASIPEAK
2		0.369	0.190	37.950	38.140	-21.603	59.743	QUASIPEAK
3	*	0.763	0.220	36.160	36.380	-19.620	56.000	QUASIPEAK
4		1.802	0.360	34.930	35.290	-20.710	56.000	QUASIPEAK
5		11.716	0.700	19.530	20.230	-39.770	60.000	QUASIPEAK
6		28.509	0.930	23.720	24.650	-35.350	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : ShieldingRoom1	**Time : 2007/09/09 - 14:41**
Limit : CISPR_B_00M_AV	**Margin : 0**
EUT : GSM Gateway	**Probe : SR1_LISN(16A) - Line2**
Power : AC 120V/60Hz	**Note : Mode 1: GSM850 Link**



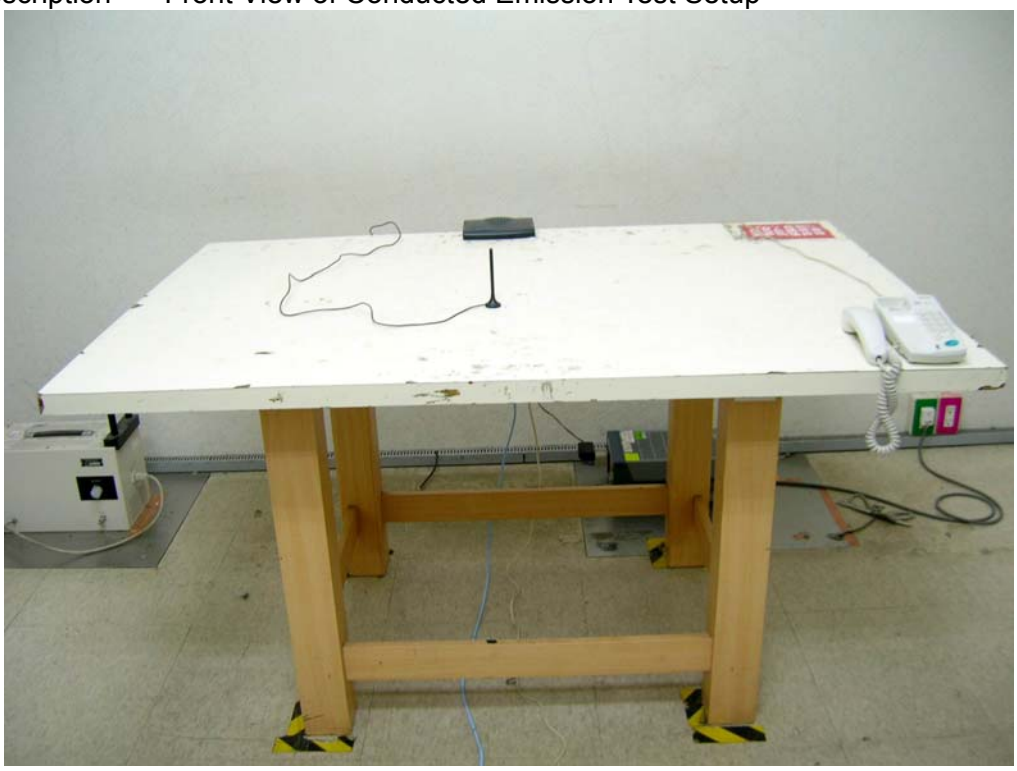
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.170	0.144	20.200	20.344	-35.085	55.429	AVERAGE
2	*	0.369	0.190	27.760	27.950	-21.793	49.743	AVERAGE
3		0.763	0.220	21.750	21.970	-24.030	46.000	AVERAGE
4		1.802	0.360	21.780	22.140	-23.860	46.000	AVERAGE
5		11.716	0.700	13.980	14.680	-35.320	50.000	AVERAGE
6		28.509	0.930	18.210	19.140	-30.860	50.000	AVERAGE

Note:

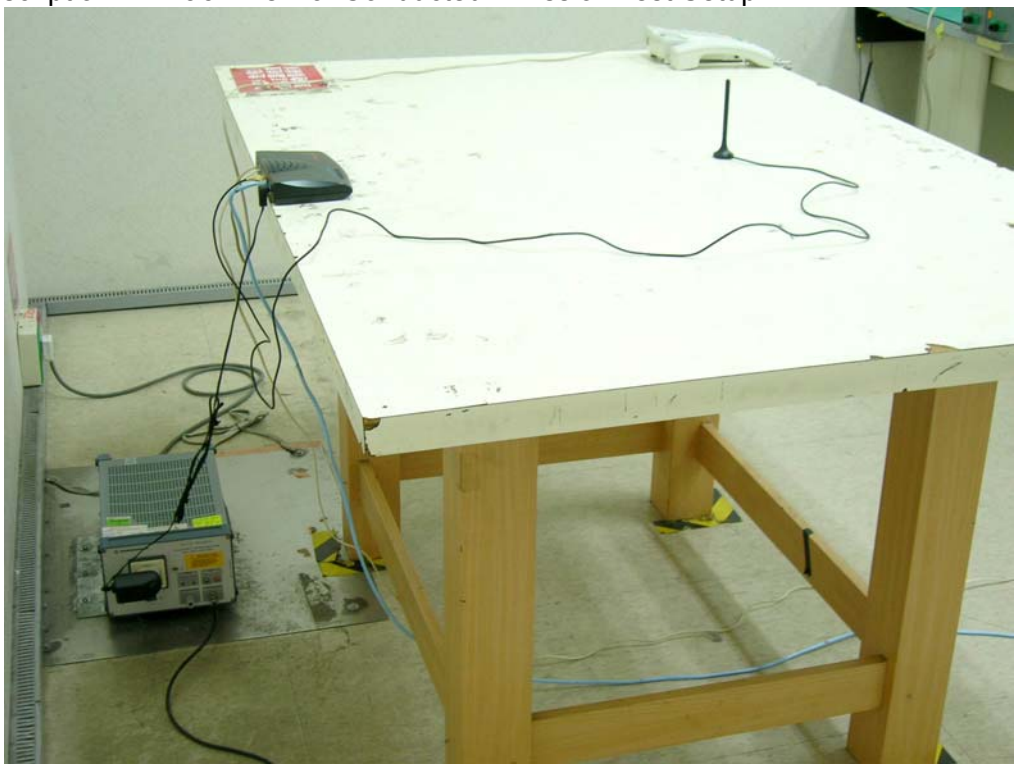
1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

4.7. Test Photo

Test Mode ： Mode 1: GSM850 Link
Description： Front View of Conducted Emission Test Setup



Test Mode ： Mode 1: GSM850 Link
Description： Back View of Conducted Emission Test Setup



5. Occupied Bandwidth

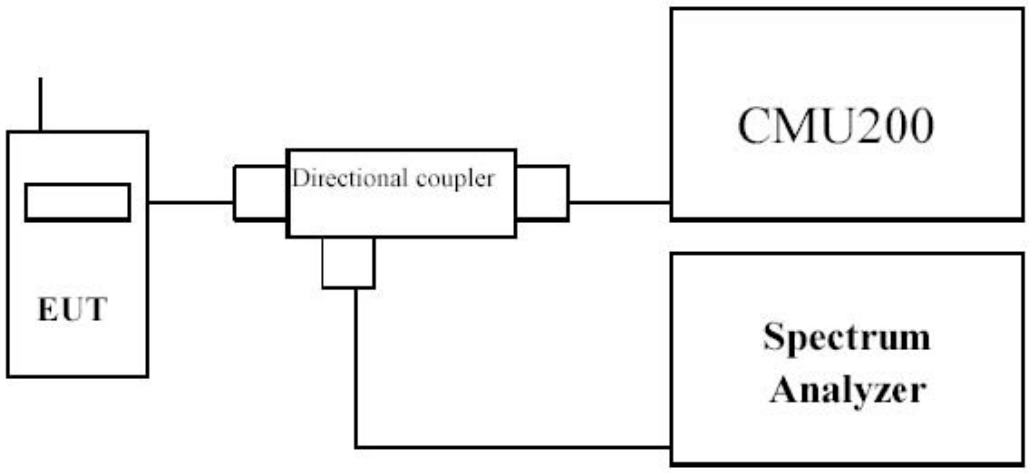
5.1. Test Equipment

The following test equipments are used during the RF power output tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	R3182 / 100803470	May, 2007
Universal Radio Communication Tester	R & S	CMU200 / 104846	May, 2007
Directional coupler	Agilent	87300C/3239A01864	N/A
Directional coupler	Agilent	778D-012/50550	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

5.2. Test Setup



5.3. Limit

N/A

5.4. Test Procedure

Using a resolution bandwidth of 3kHz and a video bandwidth of 10kHz, the -26dBc points were established and the emission bandwidth determined. The plots below show the resultant display from the Spectrum Analyzer.

5.5. Uncertainty

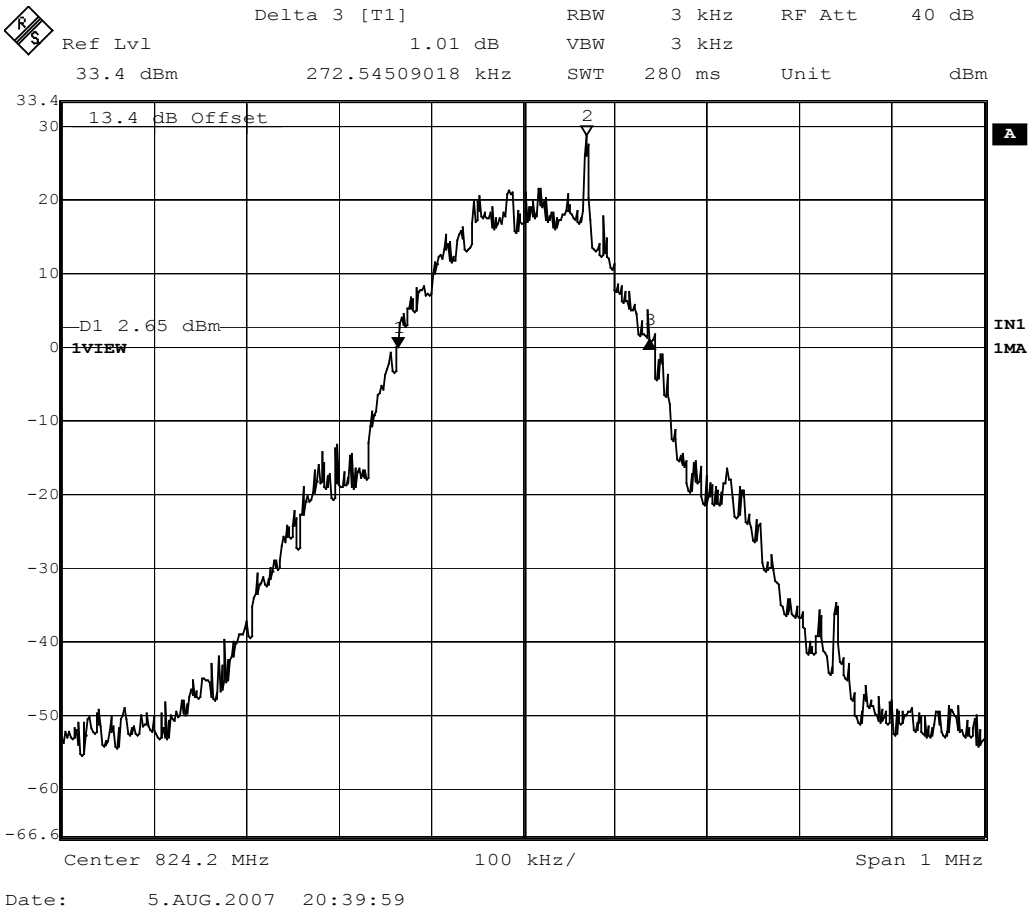
The measurement uncertainty is defined as ± 10 Hz

5.6. Test Result

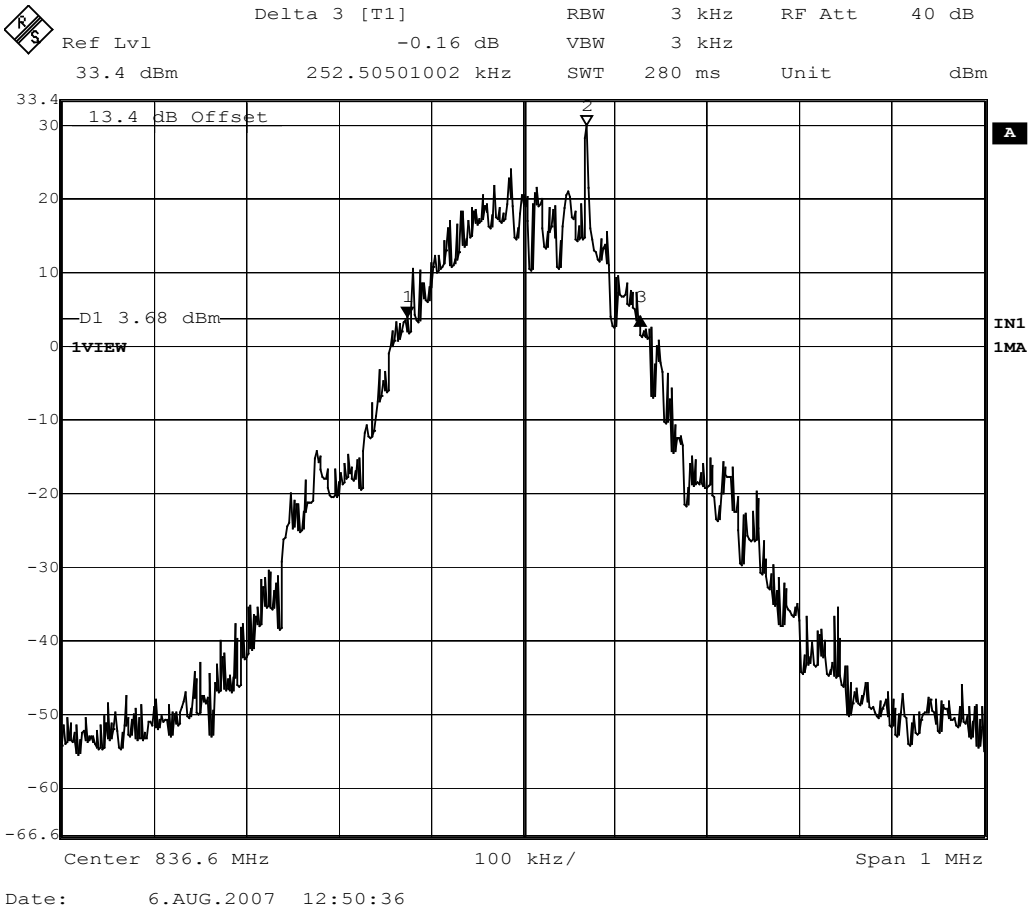
Product	GSM Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM850 Link (-26)		
Date of Test	2007/08/05	Test Site	CB4

Channel No.	Frequency (MHz)	Measurement of -26dB Bandwidth (kHz)
128	824.2	272.545
190	836.6	252.505
215	848.8	260.521

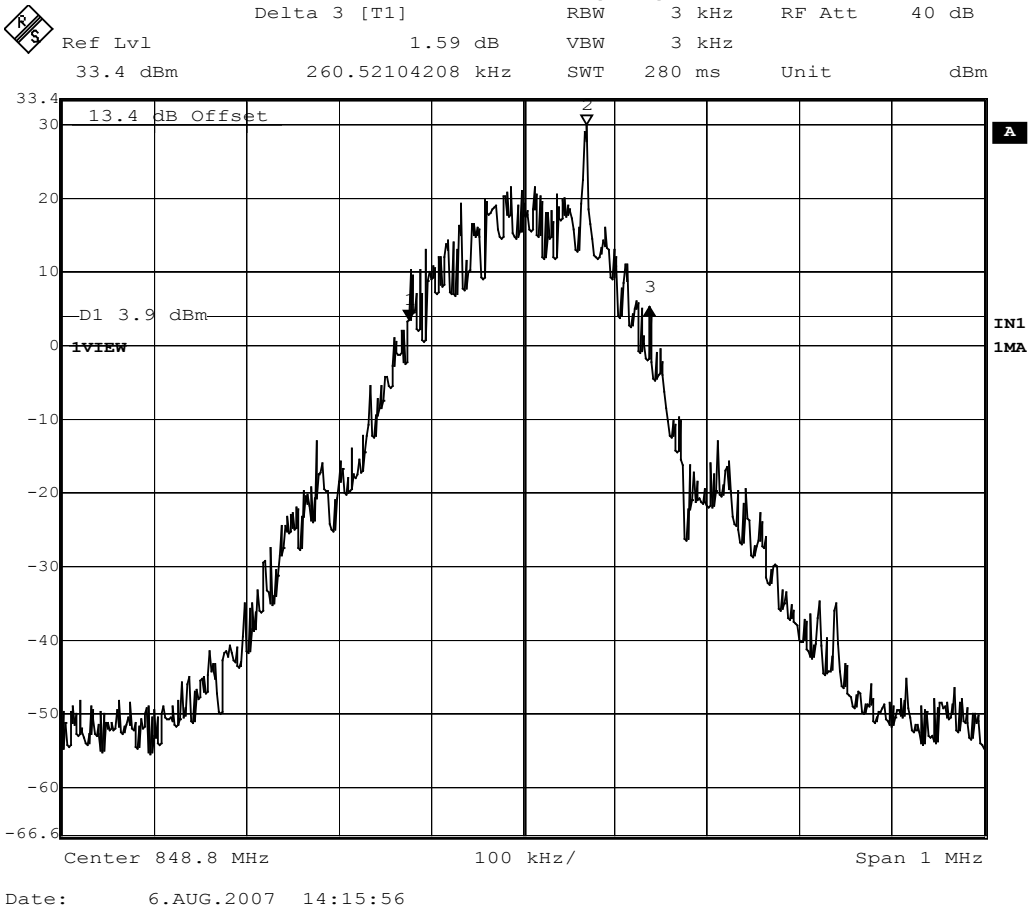
128 Channels (-26)



190 Channels (-26)



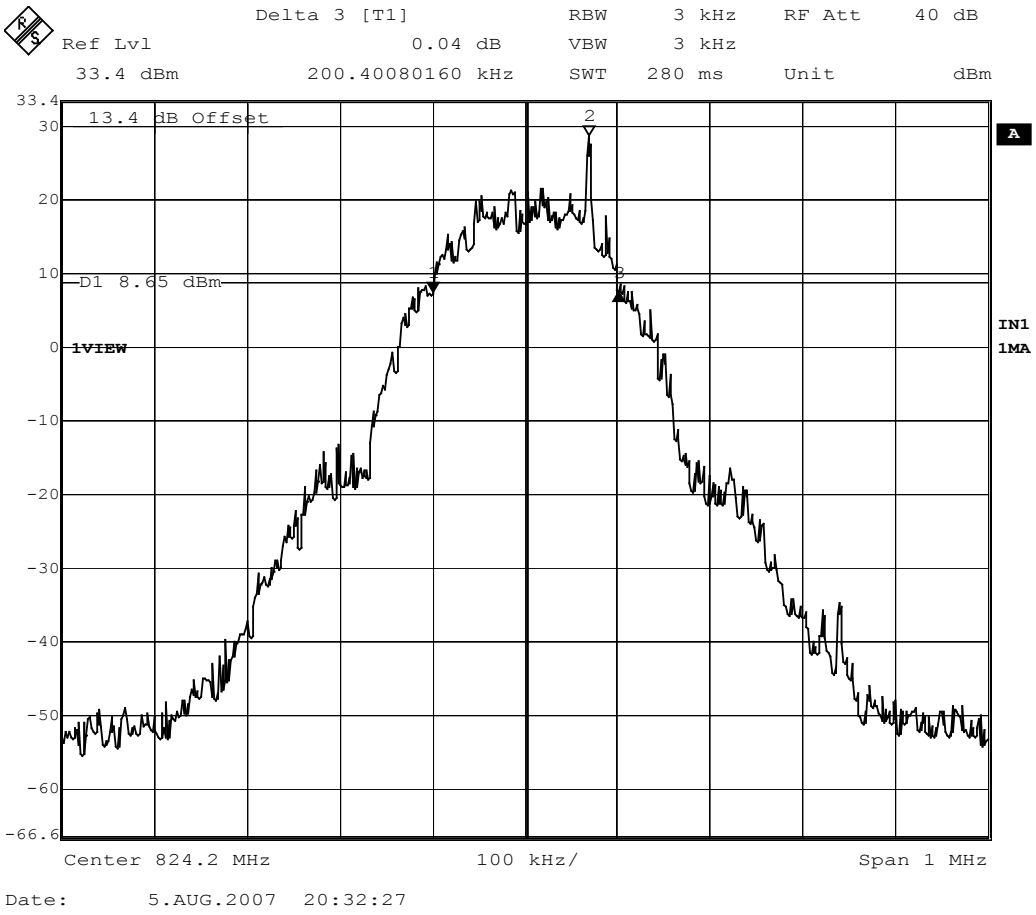
251 Channels (–26)



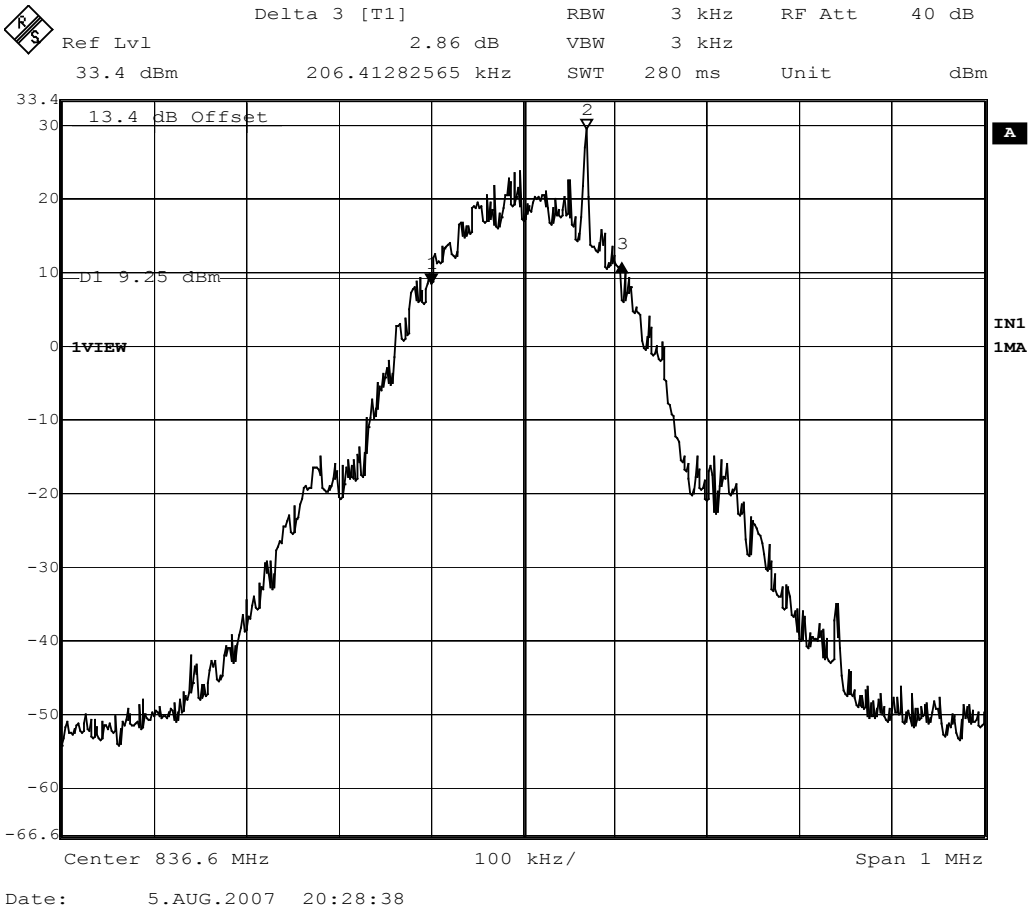
Product	GSM Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM850 Link (-20)		
Date of Test	2007/08/05	Test Site	CB4

Channel No.	Frequency (MHz)	Measurement of -20dB Bandwidth (kHz)
128	824.2	200.400
190	836.6	206.412
215	848.3	210.521

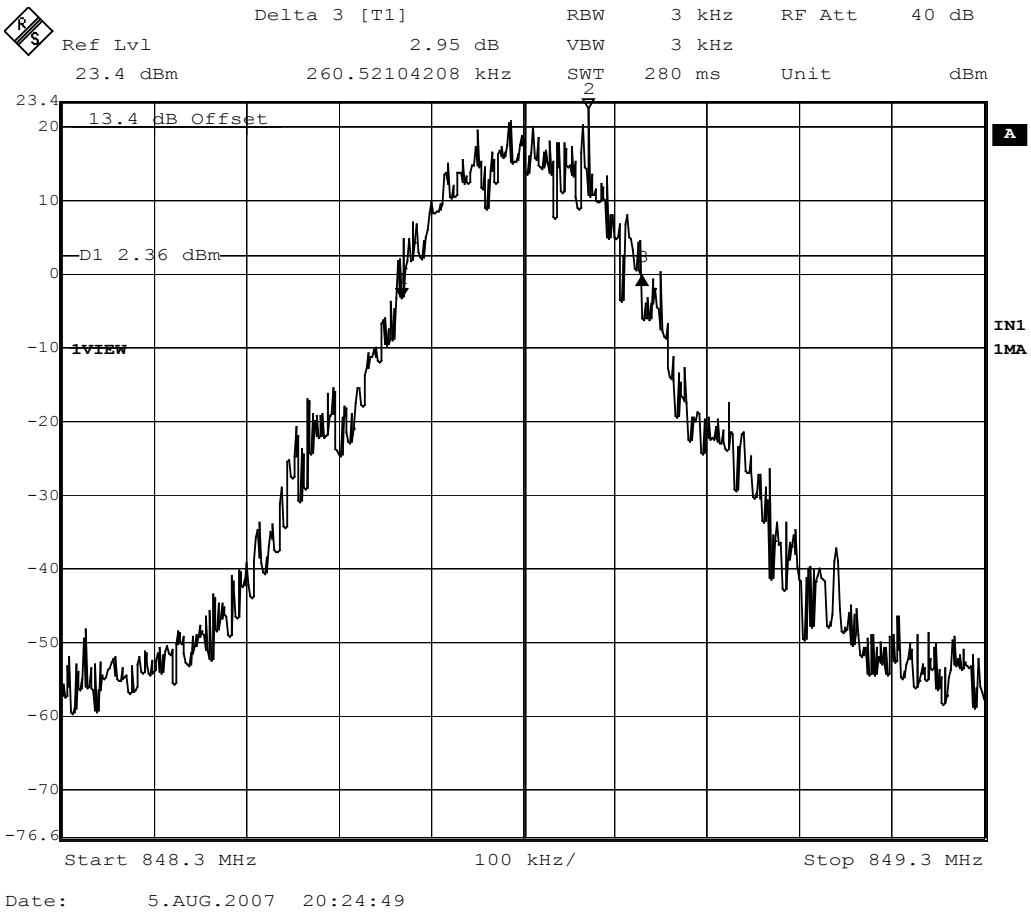
128 Channels (-20)



190 Channels (-20)



251 Channels (-20)



6. Spurious Emission At Antenna Terminals (+/- 1MHz)

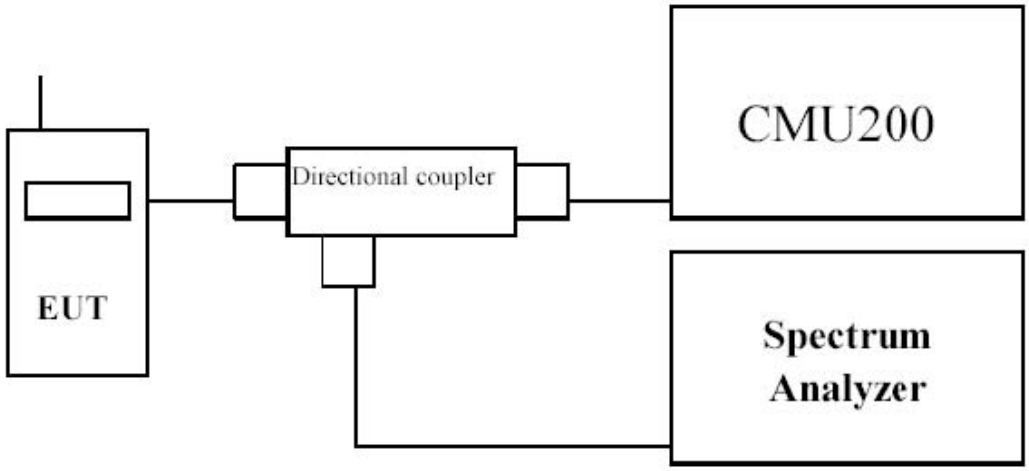
6.1. Test Equipment

The following test equipments are used during the RF power output tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP/ 100005	Oct., 2006
Universal Radio Communication Tester	R & S	CMU200 / 104846	May, 2007
Directional coupler	Agilent	87300C/3239A01864	N/A
Directional coupler	Agilent	778D-012/50550	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

6.2. Test Setup



6.3. Limit

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

6.4. Test Procedure

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

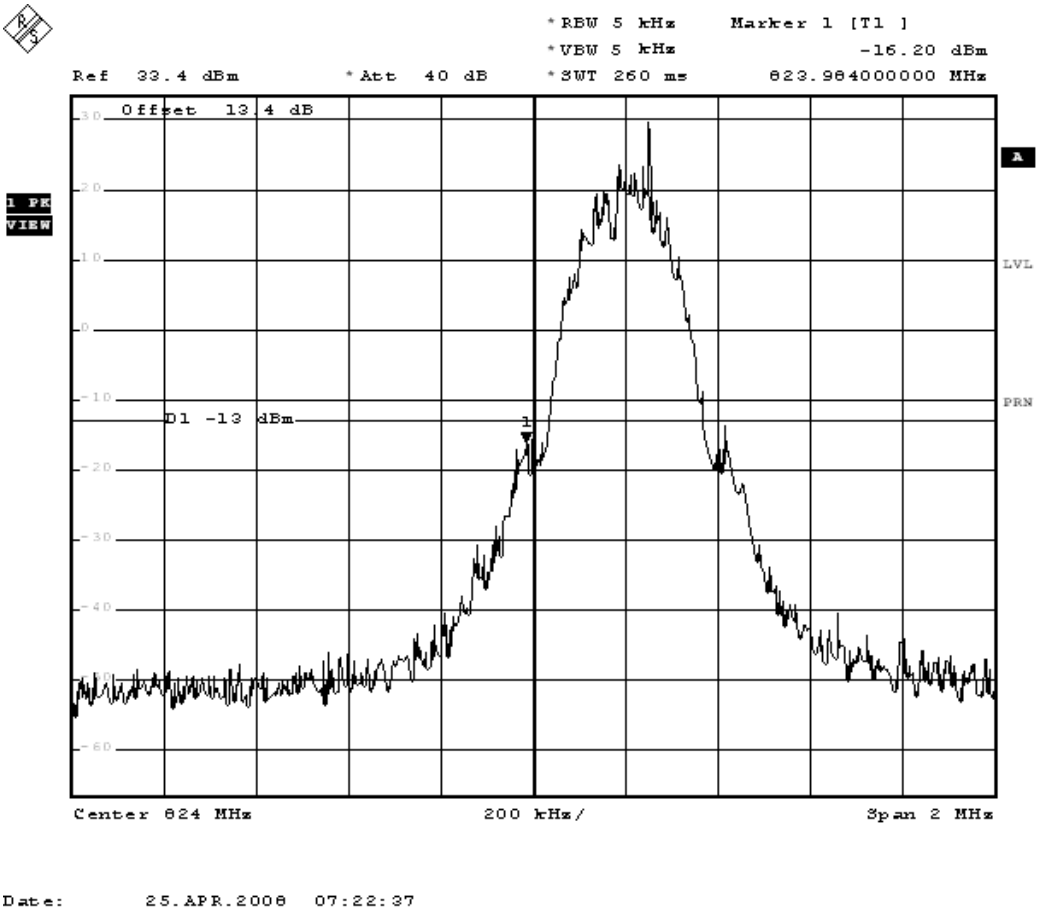
6.5. Uncertainty

The measurement uncertainty is defined as ± 1.2 dB.

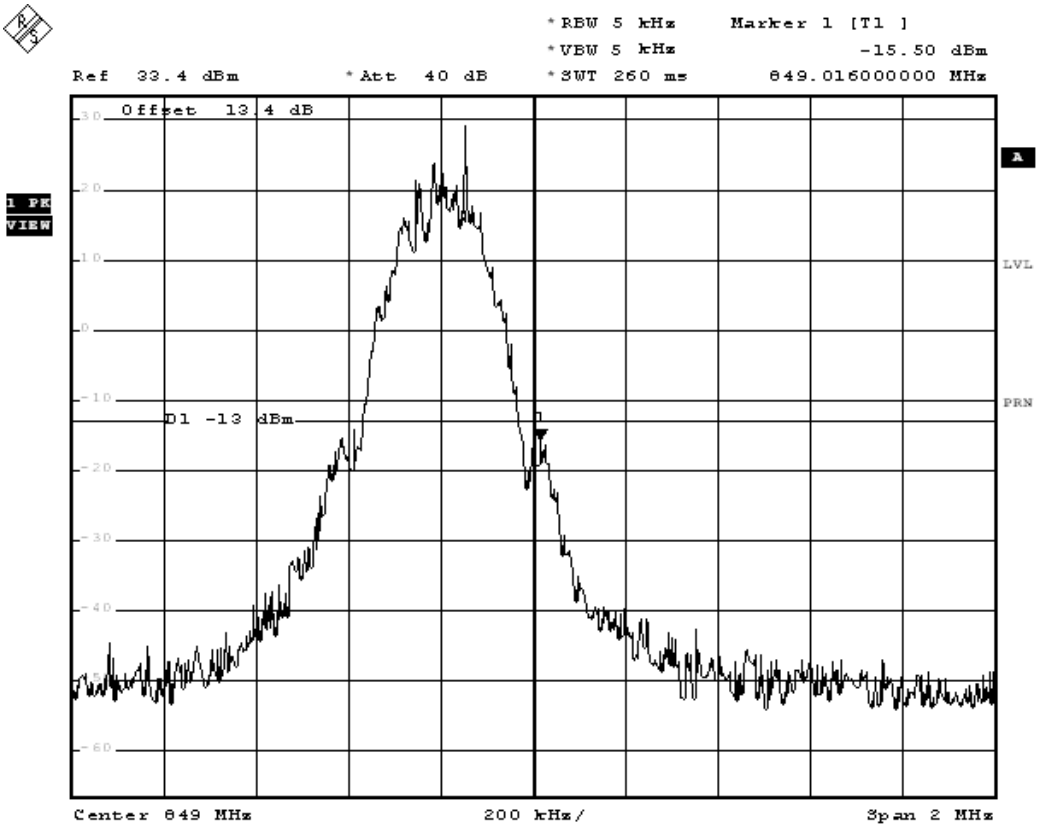
6.6. Test Result

Product	GSM Gateway		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 1: GSM850 Link		
Date of Test	2008/04/25	Test Site	CB4

128 Channels



251 Channels



7. Spurious Emission

7.1. Test Equipment

The following test equipments are used during the radiated emission test:

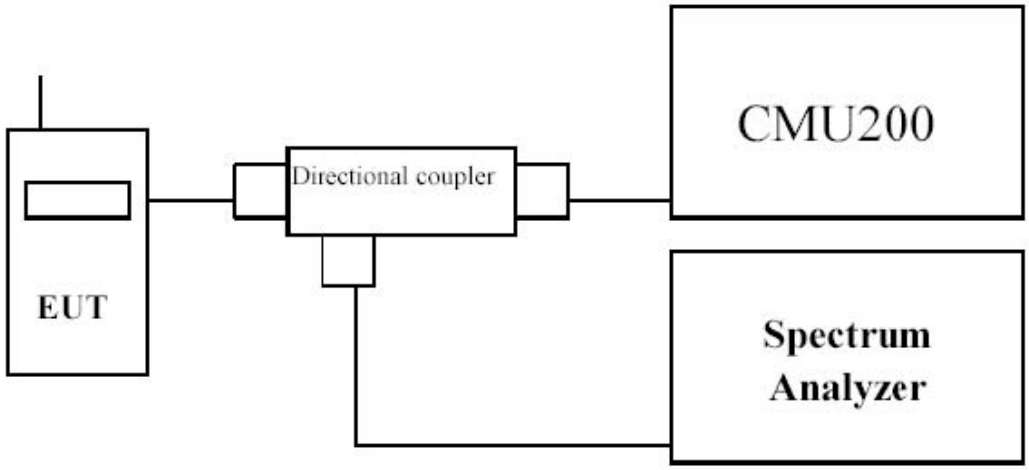
Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒OATS 3	Test Receiver	R & S	ESCS 30 / 100122	Feb., 2007
	Universal Radio Communication Tester	R & S	CMU200 / 104846	May, 2007
	Spectrum Analyzer	R & S	R3162 / 120300652	Feb., 2007
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	Horn Antenna	ETS	3115 / 0005-6160	Jul., 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2007
	Horn Antenna	SCHWARZBECK	BBHA9120D/ BBHA9120D639	Jul., 2007
	Signal Generator	Anritsu	MG3694A/041902	Nov. 2007

Note:

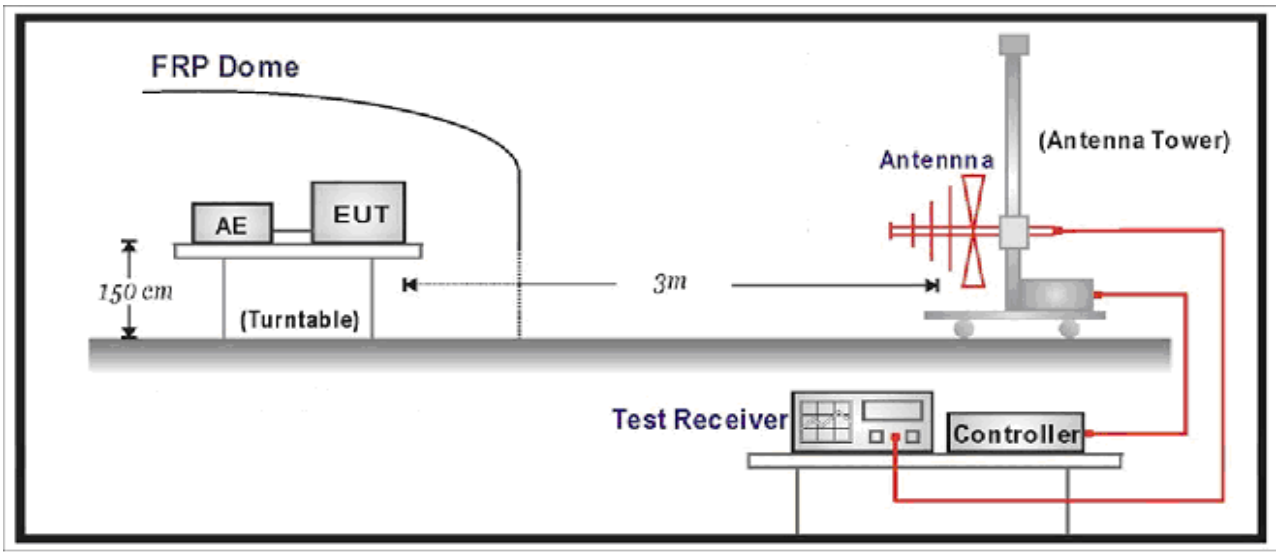
1. All equipments that need to be calibrated are with calibration period of 1 year.
2. “N/A” Ca1.Date is used to Pre-test, not final test.
3. EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss。

7.2. Test Setup

Conducted Spurious Measurement:



Radiated Spurious Measurement:



7.3. Limit

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

7.4. Test Procedure

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
c) EUT Communicate with CMU200, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10^{th} harmonic.

Radiated Spurious Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c) The output of the test antenna shall be connected to the measuring receiver.
d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
q) The maximum signal level detected by the measuring receiver shall be noted.
h) The transmitter shall be replaced by a substitution antenna.
i) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
j) The substitution antenna shall be connected to a calibrated signal generator.
k) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
l) The test antenna shall be raised and lowered through the specified range of height to

ensure that the maximum signal is received.

m) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

n) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

o) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

p) The frequency range was checked up to 10^{th} harmonic.

7.5. Uncertainty

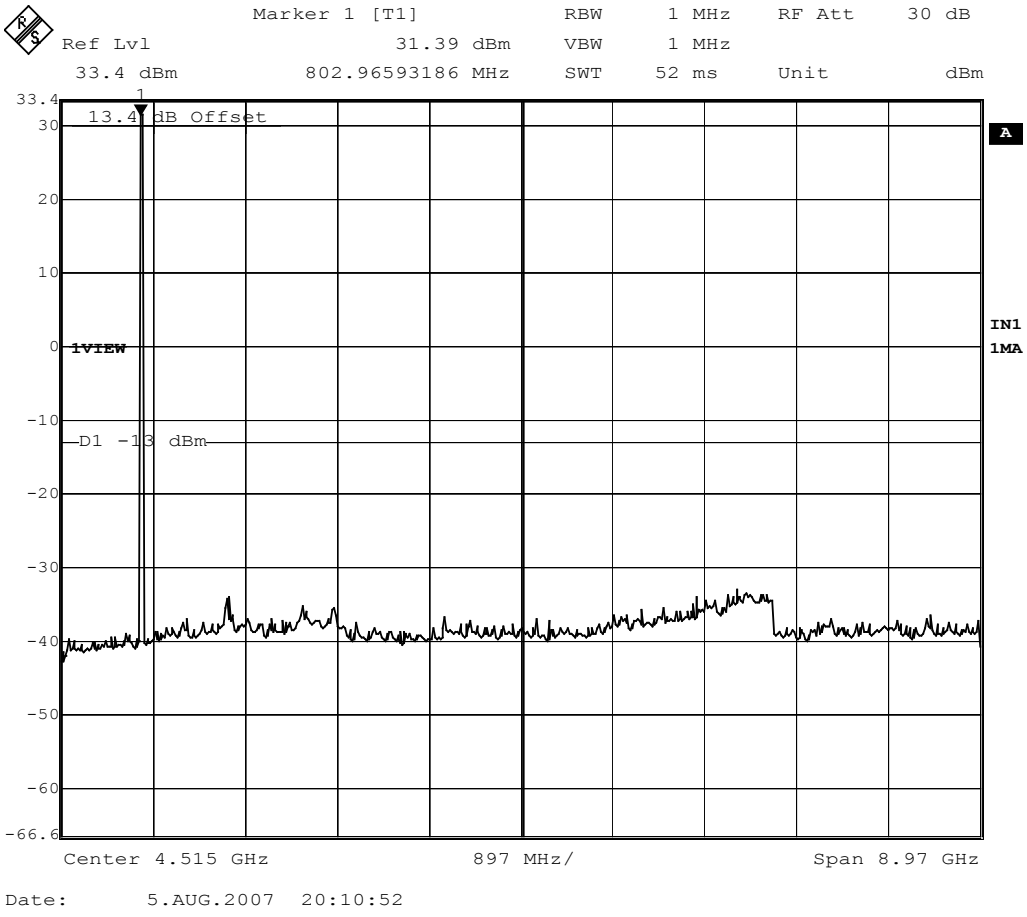
The measurement uncertainty is defined as for Conducted Power Measurement ± 1.2 dB, for Radiated Power Measurement ± 3.2 dB

7.6. Test Result

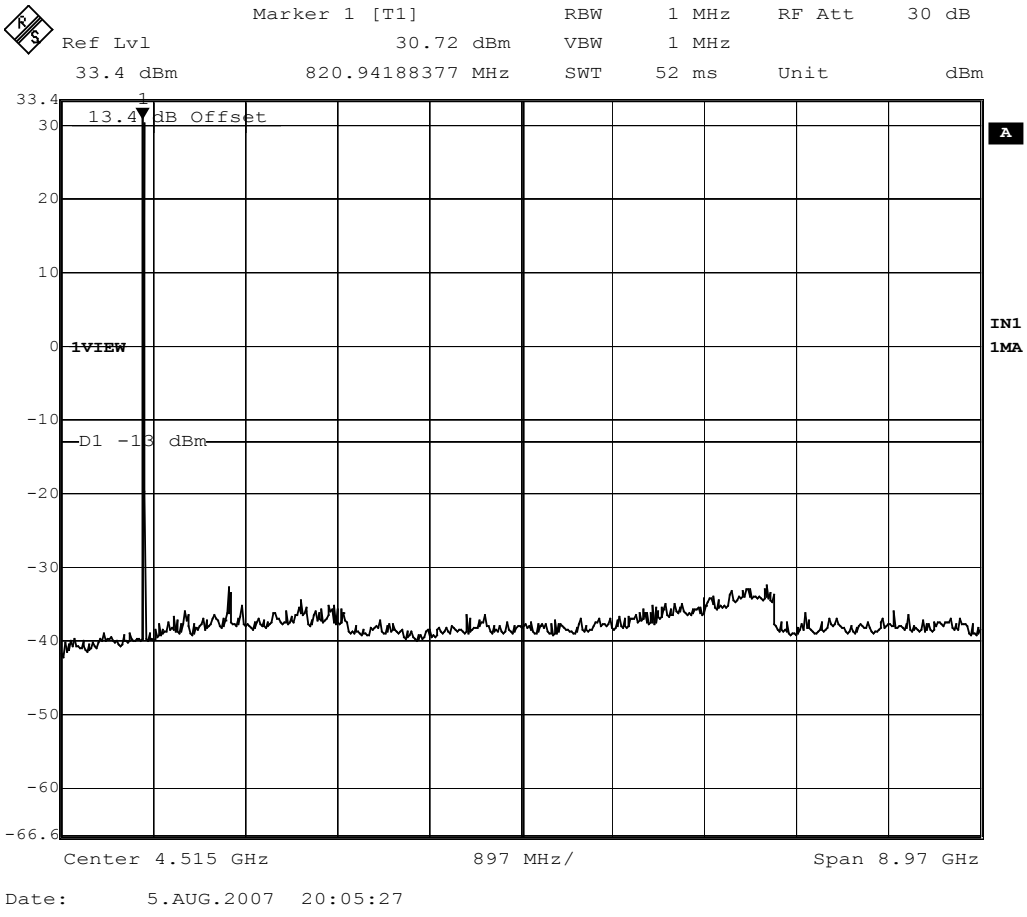
Product	GSM Gateway		
Test Item	Spurious Emission		
Test Mode	Mode 1: GSM850 Link		
Date of Test	2007/08/05	Test Site	Site 3

Conducted Test

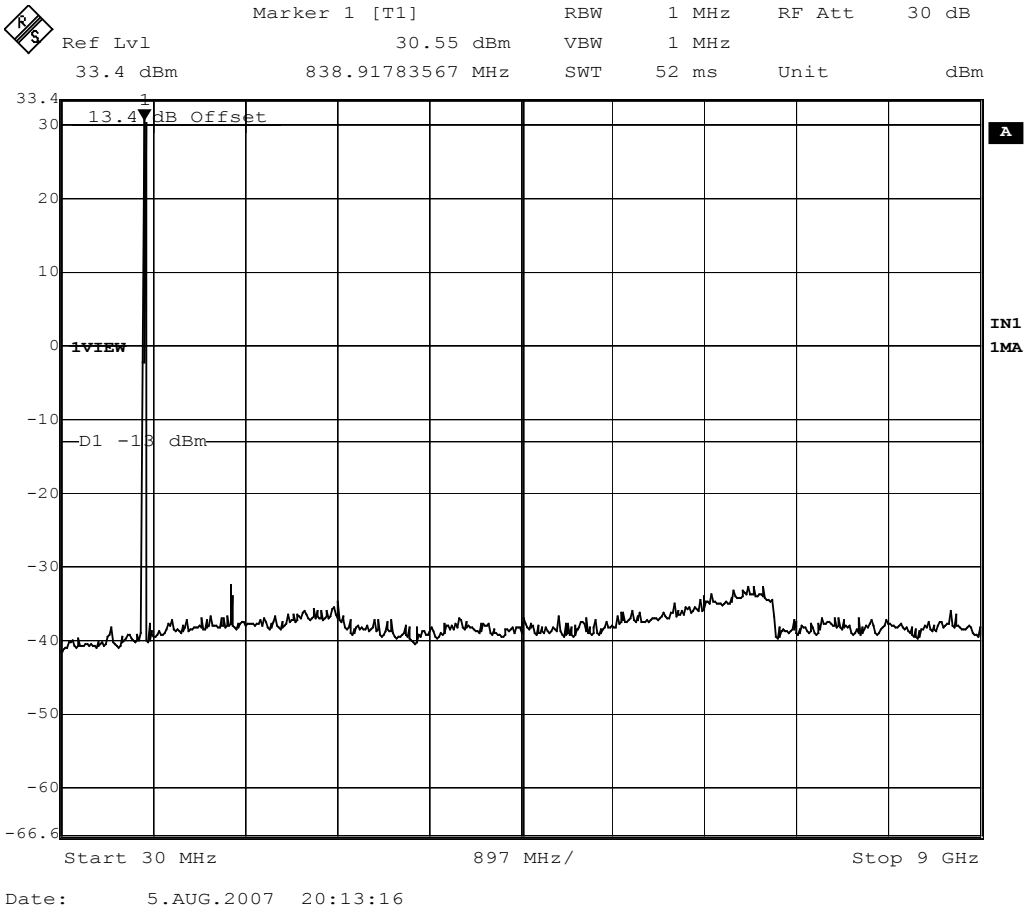
128 Channels



190 Channels

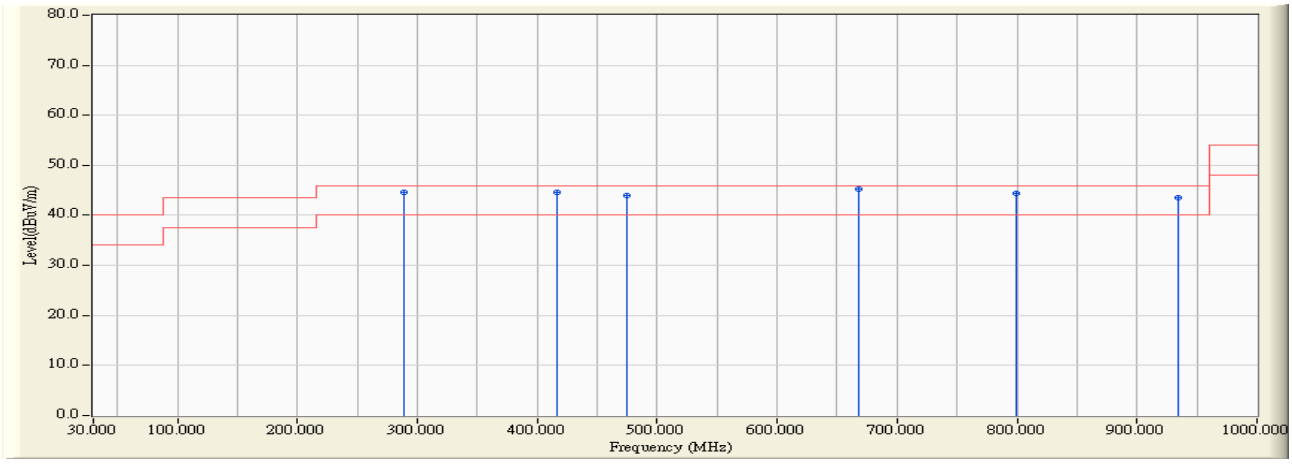


251 Channels



Radiated Test

Site : Site 3	**Time : 2007/09/10 - 14:38**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(128)-LINK**

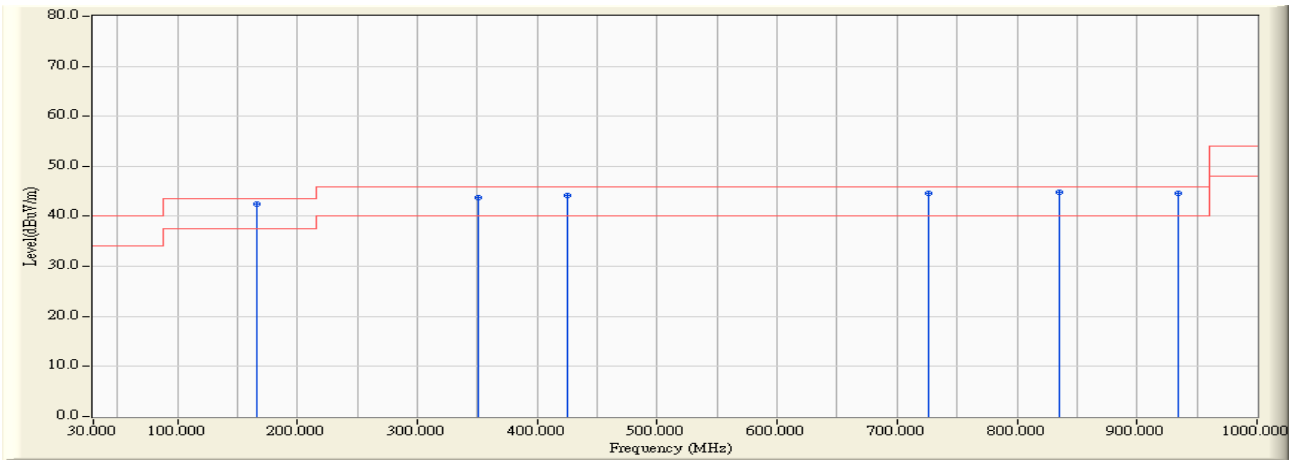


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		288.537	-6.646	51.232	44.586	-1.414	46.000	PEAK
2		416.834	-2.362	46.908	44.546	-1.454	46.000	PEAK
3		475.150	1.876	42.026	43.902	-2.098	46.000	PEAK
4	*	667.595	1.924	43.248	45.171	-0.829	46.000	PEAK
5		799.780	3.500	40.984	44.485	-1.515	46.000	PEAK
6		933.908	3.903	39.670	43.573	-2.427	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/09/10 - 14:37**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(128)-LINK**

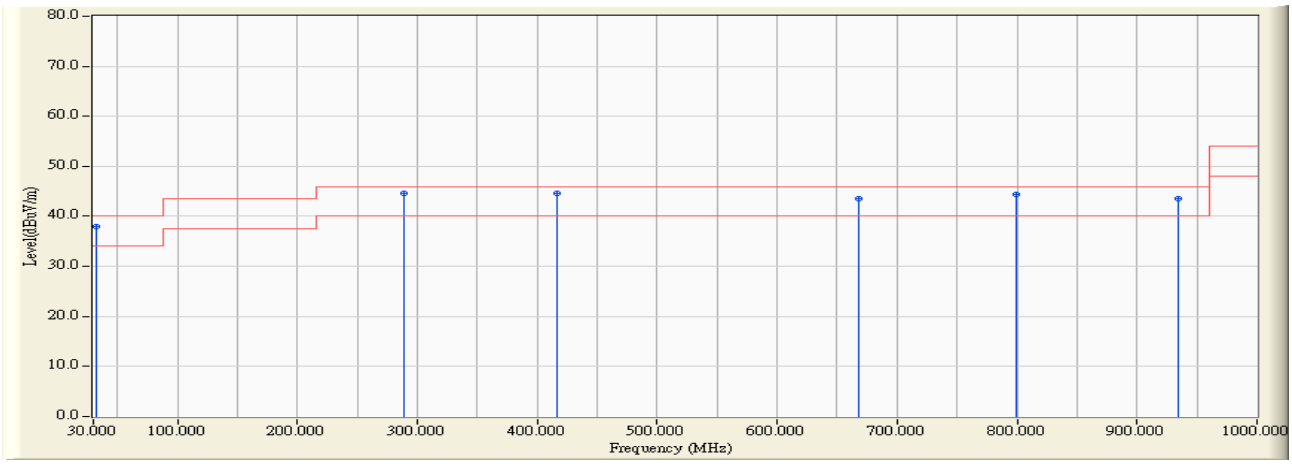


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	166.072	-5.583	48.090	42.507	-0.993	43.500	PEAK
2		350.741	-3.009	46.749	43.740	-2.260	46.000	PEAK
3		424.609	-2.203	46.353	44.150	-1.850	46.000	PEAK
4		725.912	2.500	42.144	44.644	-1.356	46.000	PEAK
5		834.770	4.185	40.551	44.736	-1.264	46.000	PEAK
6		933.908	7.251	37.401	44.652	-1.348	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/09/10 - 14:42**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850(189)-LINK**

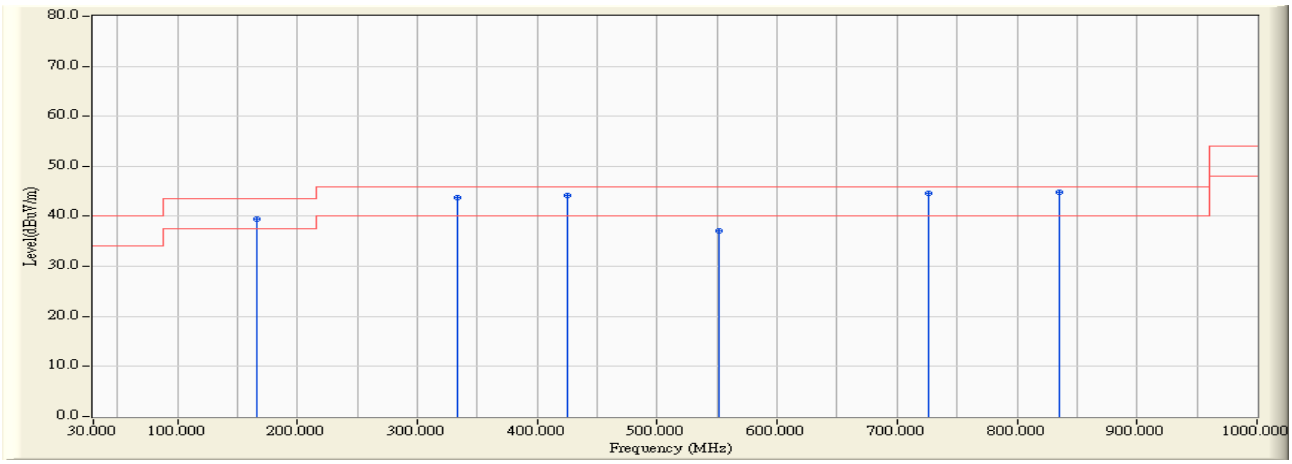


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		31.944	3.403	34.475	37.878	-2.122	40.000	PEAK
2	*	288.537	-6.646	51.232	44.586	-1.414	46.000	PEAK
3		416.834	-2.362	46.908	44.546	-1.454	46.000	PEAK
4		667.595	1.924	41.648	43.571	-2.429	46.000	PEAK
5		799.780	3.500	40.984	44.485	-1.515	46.000	PEAK
6		933.908	3.903	39.670	43.573	-2.427	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/09/10 - 14:41**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850(189)-LINK**

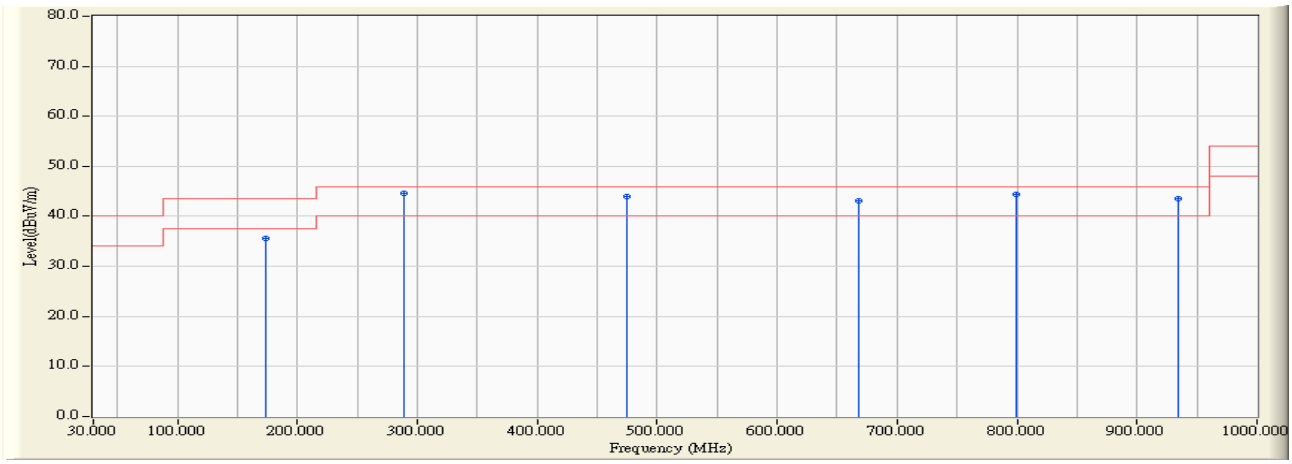


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		166.072	-5.583	44.990	39.407	-4.093	43.500	PEAK
2		333.246	-3.948	47.617	43.668	-2.332	46.000	PEAK
3		424.609	-2.203	46.353	44.150	-1.850	46.000	PEAK
4		550.962	-1.297	38.308	37.011	-8.989	46.000	PEAK
5		725.912	2.500	42.144	44.644	-1.356	46.000	PEAK
6	*	834.770	4.185	40.551	44.736	-1.264	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/09/10 - 14:50**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850(251)-LINK**

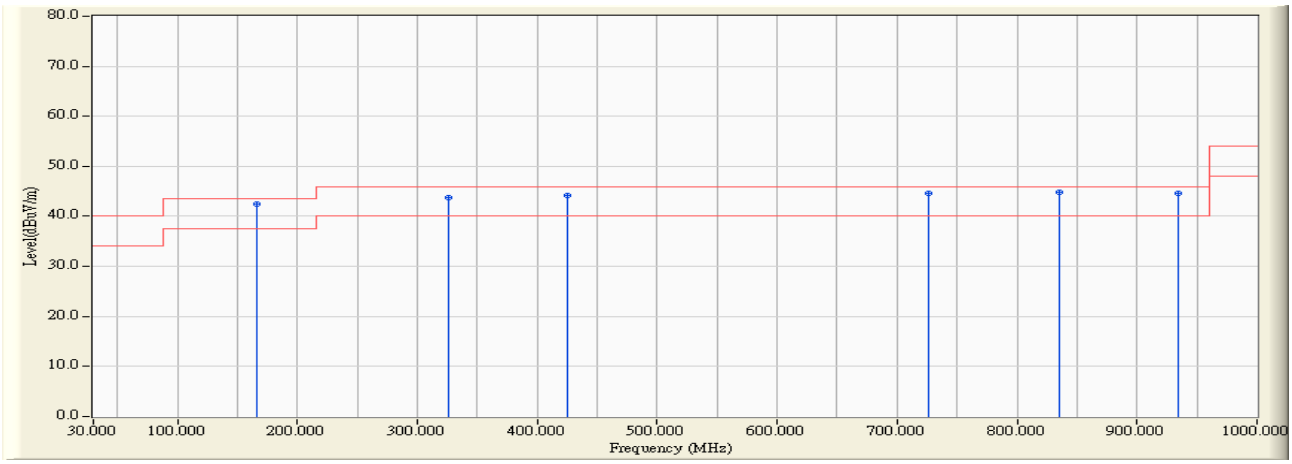


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		173.848	-14.660	50.250	35.590	-7.910	43.500	PEAK
2	*	288.537	-6.646	51.232	44.586	-1.414	46.000	PEAK
3		475.150	1.876	42.026	43.902	-2.098	46.000	PEAK
4		667.595	1.924	41.148	43.071	-2.929	46.000	PEAK
5		799.780	3.500	40.984	44.485	-1.515	46.000	PEAK
6		933.908	3.903	39.670	43.573	-2.427	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/09/10 - 14:49**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_RF_30-1G(200605) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850(251)-LINK**

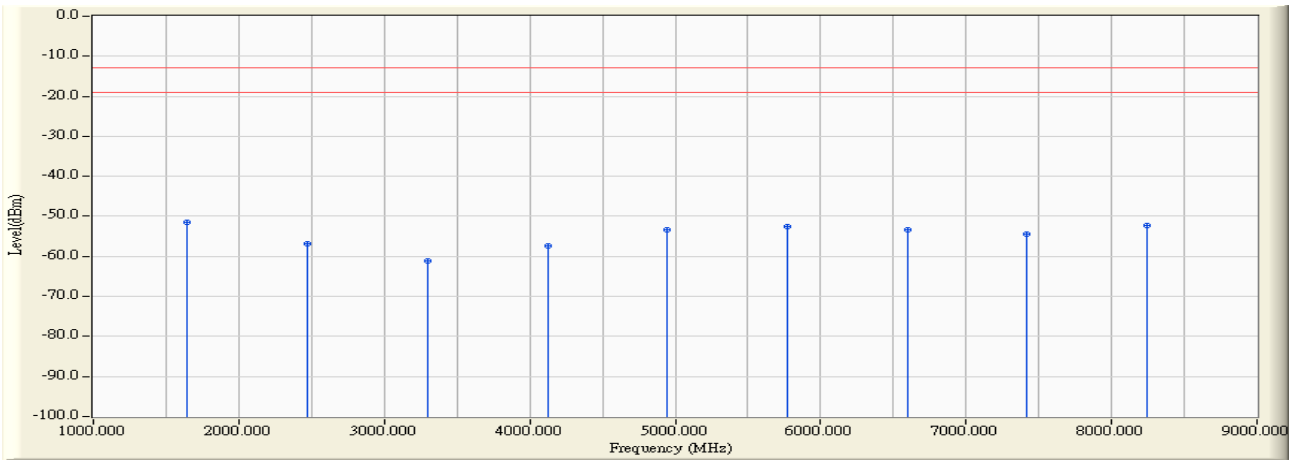


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	166.072	-5.583	48.090	42.507	-0.993	43.500	PEAK
2		325.471	-4.335	48.195	43.859	-2.141	46.000	PEAK
3		424.609	-2.203	46.353	44.150	-1.850	46.000	PEAK
4		725.912	2.500	42.144	44.644	-1.356	46.000	PEAK
5		834.770	4.185	40.551	44.736	-1.264	46.000	PEAK
6		933.908	7.251	37.401	44.652	-1.348	46.000	PEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 3	**Time : 2007/07/31 - 21:53**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(128) LINK**

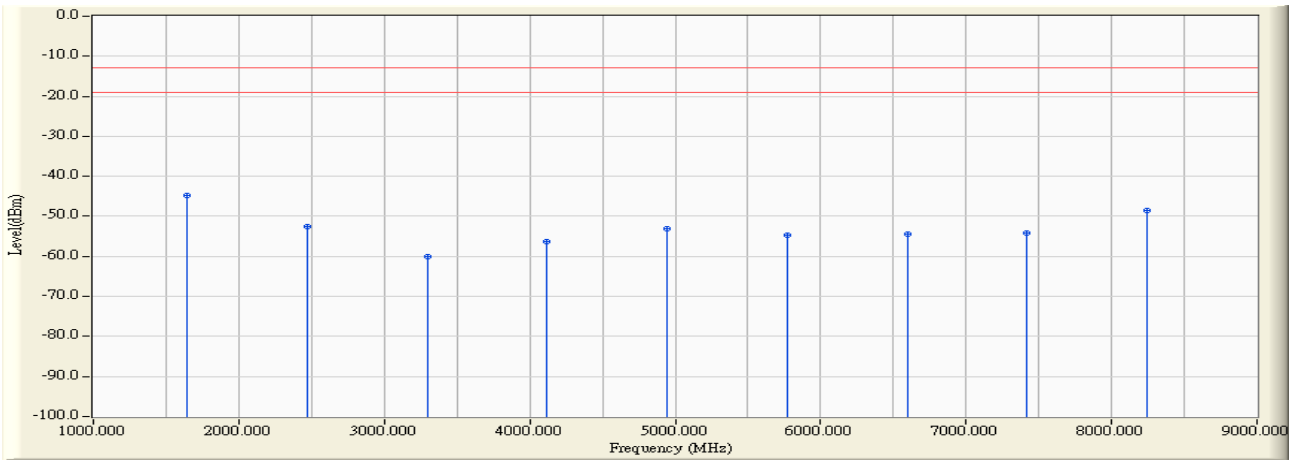


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1648.023	6.927	-58.300	-51.373	-38.373	-13.000	PEAK
2		2472.151	9.058	-65.870	-56.812	-43.812	-13.000	PEAK
3		3297.246	11.872	-72.930	-61.059	-48.059	-13.000	PEAK
4		4121.720	14.818	-72.180	-57.362	-44.362	-13.000	PEAK
5		4945.237	19.480	-72.790	-53.311	-40.311	-13.000	PEAK
6		5769.467	18.667	-71.080	-52.413	-39.413	-13.000	PEAK
7		6594.521	19.225	-72.620	-53.396	-40.396	-13.000	PEAK
8		7418.456	20.575	-74.970	-54.394	-41.394	-13.000	PEAK
9		8242.620	21.800	-74.090	-52.290	-39.290	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 3	**Time : 2007/07/31 - 21:55**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(128) LINK**

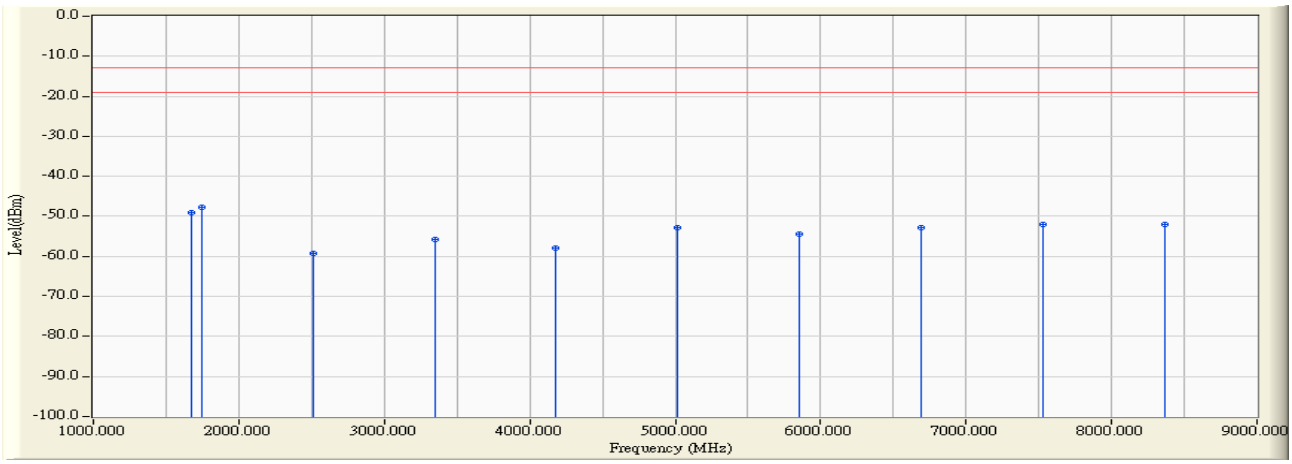


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1648.120	7.856	-52.690	-44.834	-31.834	-13.000	PEAK
2		2472.768	9.629	-62.060	-52.431	-39.431	-13.000	PEAK
3		3297.024	12.263	-72.250	-59.986	-46.986	-13.000	PEAK
4		4121.280	15.540	-71.800	-56.260	-43.260	-13.000	PEAK
5		4945.536	19.116	-72.190	-53.075	-40.075	-13.000	PEAK
6		5769.792	17.403	-72.190	-54.787	-41.787	-13.000	PEAK
7		6594.048	20.042	-74.340	-54.298	-41.298	-13.000	PEAK
8		7418.304	21.511	-75.800	-54.289	-41.289	-13.000	PEAK
9		8242.560	25.888	-74.390	-48.502	-35.502	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 3	**Time : 2007/07/31 - 21:57**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(189) LINK**

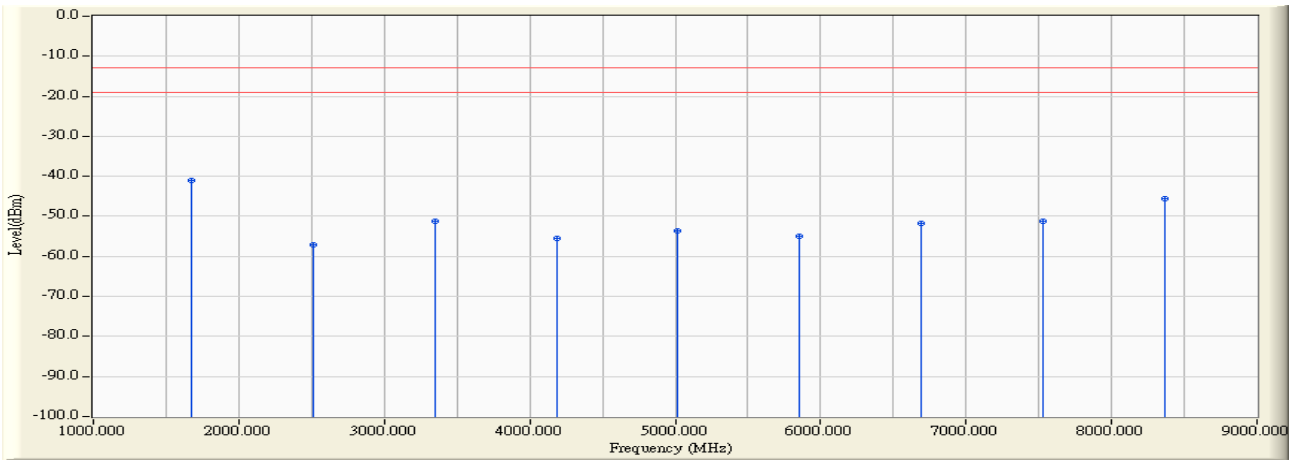


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1672.850	7.009	-55.980	-48.971	-35.971	-13.000	PEAK
2	*	1741.480	7.221	-55.060	-47.839	-34.839	-13.000	PEAK
3		2513.026	9.190	-68.430	-59.240	-46.240	-13.000	PEAK
4		3345.700	11.901	-67.660	-55.760	-42.760	-13.000	PEAK
5		4182.072	15.021	-72.980	-57.959	-44.959	-13.000	PEAK
6		5014.444	19.878	-72.660	-52.781	-39.781	-13.000	PEAK
7		5854.816	18.391	-72.730	-54.339	-41.339	-13.000	PEAK
8		6691.188	19.492	-72.360	-52.869	-39.869	-13.000	PEAK
9		7527.560	20.689	-72.580	-51.891	-38.891	-13.000	PEAK
10		8363.932	21.779	-73.770	-51.992	-38.992	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 3	**Time : 2007/07/31 - 21:59**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(189) LINK**

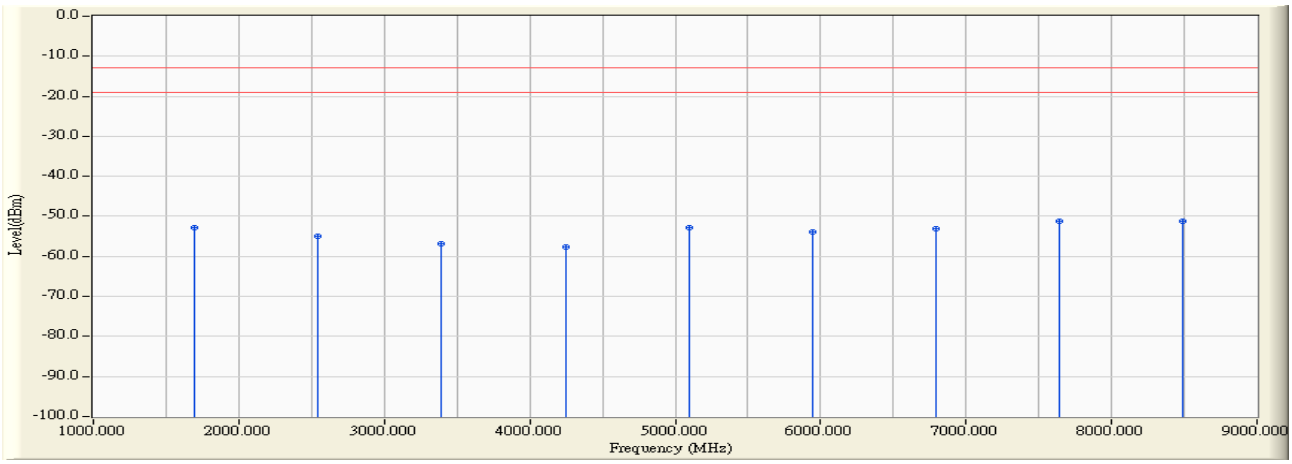


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1672.230	7.927	-49.030	-41.103	-28.103	-13.000	PEAK
2		2509.470	9.708	-66.860	-57.152	-44.152	-13.000	PEAK
3		3345.670	12.350	-63.620	-51.271	-38.271	-13.000	PEAK
4		4182.942	15.891	-71.460	-55.569	-42.569	-13.000	PEAK
5		5018.370	19.197	-72.920	-53.724	-40.724	-13.000	PEAK
6		5854.248	17.632	-72.510	-54.878	-41.878	-13.000	PEAK
7		6691.187	20.272	-71.890	-51.619	-38.619	-13.000	PEAK
8		7527.460	21.649	-72.880	-51.231	-38.231	-13.000	PEAK
9		8363.876	27.641	-73.140	-45.499	-32.499	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 3	**Time : 2007/07/31 - 22:00**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : 850MHz(251) LINK**

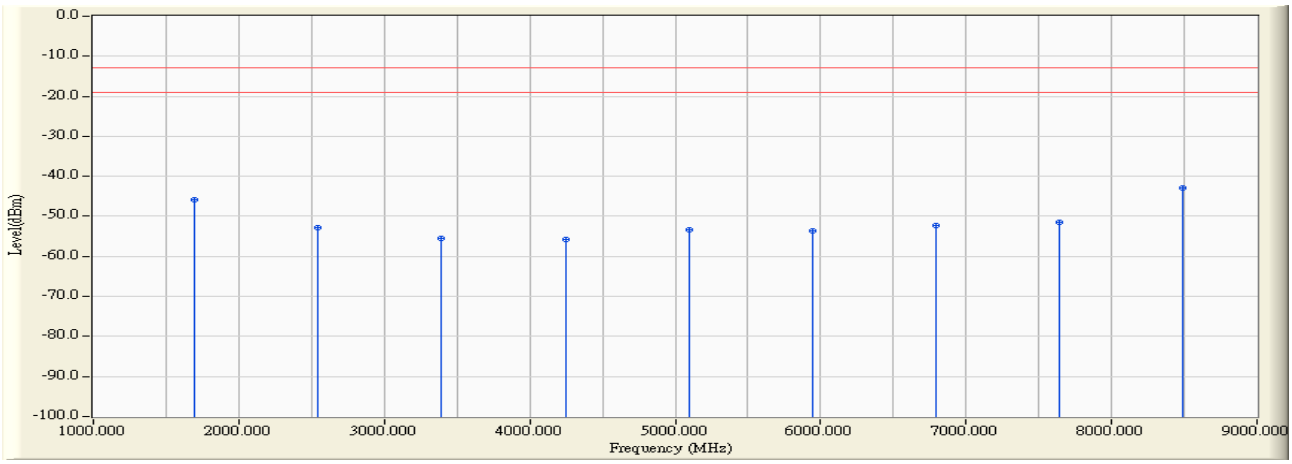


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1697.744	7.082	-59.930	-52.847	-39.847	-13.000	PEAK
2		2546.616	9.359	-64.430	-55.072	-42.072	-13.000	PEAK
3		3395.488	11.929	-68.780	-56.851	-43.851	-13.000	PEAK
4		4244.360	15.232	-72.830	-57.598	-44.598	-13.000	PEAK
5		5093.232	19.823	-72.550	-52.728	-39.728	-13.000	PEAK
6		5942.104	18.107	-72.110	-54.003	-41.003	-13.000	PEAK
7		6790.977	19.766	-72.970	-53.204	-40.204	-13.000	PEAK
8	*	7639.848	20.963	-72.120	-51.157	-38.157	-13.000	PEAK
9		8488.720	21.750	-73.050	-51.300	-38.300	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 3	**Time : 2007/07/31 - 22:02**
Limit : FCC_PART22(LINK)850_00M_PK	**Margin : 6**
EUT : GSM Gateway	**Probe : FCC_Replace_1-18G(200701) - VERTICAL**
Power : AC 120V/60Hz	**Note : 850MHz(251) LINK**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1697.237	8.010	-53.900	-45.889	-32.889	-13.000	PEAK
2		2546.760	9.859	-62.660	-52.801	-39.801	-13.000	PEAK
3		3395.488	12.447	-67.970	-55.523	-42.523	-13.000	PEAK
4		4244.580	16.237	-71.890	-55.653	-42.653	-13.000	PEAK
5		5093.191	18.800	-72.160	-53.360	-40.360	-13.000	PEAK
6		5942.194	17.876	-71.520	-53.644	-40.644	-13.000	PEAK
7		6790.877	20.515	-72.670	-52.154	-39.154	-13.000	PEAK
8		7639.846	21.827	-73.340	-51.513	-38.513	-13.000	PEAK
9	*	8488.690	29.438	-72.460	-43.022	-30.022	-13.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

8. Frequency Stability Under Temperature & Voltage Variations

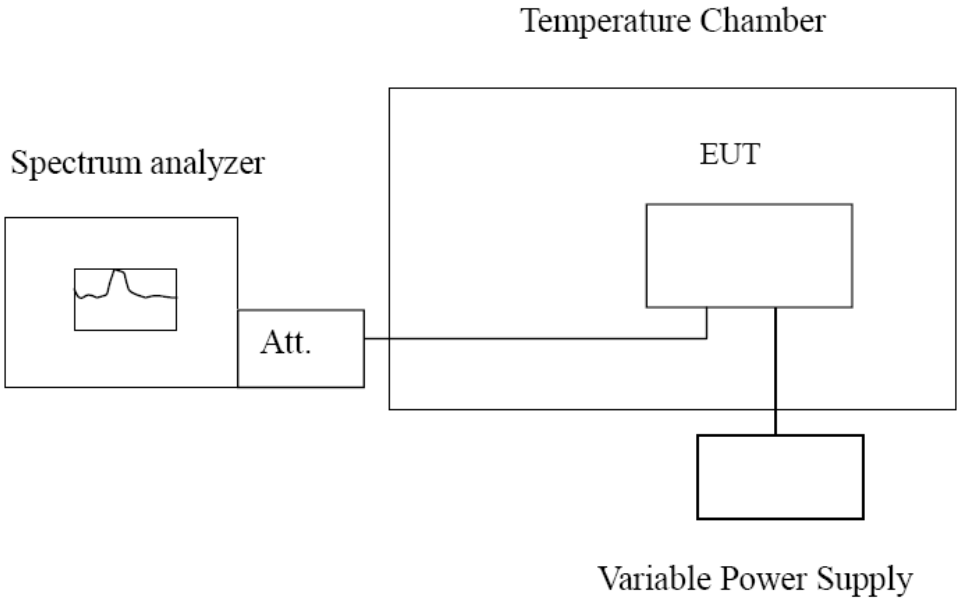
8.1. Test Equipment

The following test equipments are used during the RF power output tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP/ 100005	Oct., 2006
Universal Radio Communication Tester	R & S	CMU200 / 104846	May, 2007
Directional coupler	Agilent	87300C/3239A01864	N/A
Directional coupler	Agilent	778D-012/50550	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

8.2. Test Setup



8.3. Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Limit	< ± 2.5 ppm

8.4. Test Procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

8.5. Uncertainty

The measurement uncertainty is defined as ± 10 Hz.

8.6. Test Result

Product	GSM Gateway		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: GSM850 Link		
Date of Test	2007/08/05	Test Site	CB4

FREQUENCY STABILITY

Voltage (VDC)	Frequency Error	Frequency Error(ppm)
10.2	-15	0.017
13.8	21	0.025

AFC FREQ ERROR vs. TEMPERATURE

TEMPERATURE	Frequency Error(Hz)	Frequency Error (ppm)
-30	-10	0.011
-20	14	0.017
-10	15	0.018
0	-16	0.019
+10	-28	0.033
+20	-16	0.019
+30	24	0.028
+40	-13	0.015
+50	32	0.038