

TEST AND MEASUREMENT REPORT

For

Cellon Communications Technology (Shenzhen) Co., Ltd.

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Nanshan, Shenzhen, Guangdong, China 518057

FCC ID: T38UT2012

Report Type: Original Report	Product Type: GSM Dual Band Mobile Phone
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Report Number: R1002085-2224	
Report Date: 2010-02-26	
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* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “*” (Rev.2)

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1002085-2224	Original Report	2010-02-26

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report has been compiled on behalf of *Cellon Communications Technology (Shenzhen) Co., Ltd.* and their product model: C2012, FCC ID: T38UT2012 which is a GSM 850/1900 Mobile Phone.

**Note: The series products, model C2012, GLP138GT, GLP138SV, GLP138PA, GLP138AL and GLP138MX are electrical identical, C2012 has been selected to test, please refer to the product Similarity Declaration Letter provided by the manufacturer in Appendix A.*

1.2 Mechanical Description

The EUT measures approximately 92.3mm (L) x 436 mm (W) x 13.5 mm (H), and weighs approximately 64 g.

** The test data gathered are from typical production sample, serial number: R1002085-1 assigned by the BACL.*

1.3 EUT Photo



Additional Photos in Exhibit C

1.4 Objective

This type approval report is prepared on behalf of *Cellon Communications Technology (Shenzhen) Co., Ltd.* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for RF output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

1.5 Related Submittal(s)/Grant(s)

No Related Submittals

1.6 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Cellular Radiotelephone Service

Part 24 Subpart E - PCS

Applicable Standards: TIA/EIA 603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

Detailed instrumentation measurement uncertainties can be found in BACL Corp. report QAP-018.

1.8 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to TIA/EIA 603-C.

The final qualification test was performed with the EUT operating at normal mode.

2.2 EUT Exercise Software

An RFID simulation program was provided by the customer.

2.3 Equipment Modifications

No modifications were made to the EUT

2.4 Local Support Equipment

Manufacturer	Description	Model	Serial Number
R&S	Communication Analyzer	CMU200	103492
IBM	Laptop	T40	99-P3NY8

2.5 Internal Configurations of EUT

Manufacturer	Description	Model	Serial Number
Cellon Communications	PCB Board	C2011-US	21Bv21001112S73
Cellon Communications	Battery	TBR1238	N/A

2.6 Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
PCD	Power Supply	DSA-3RNA-05	CNR1218

3 SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1047	Modulation Characteristics	N/A*
§2.1053 §22.917 (a); §24.238 (a)	Field Strength of Spurious Radiation	Compliant
§2.1093	RF Exposure	Compliant **
§2.1046 §22.913; §24.232	RF Output Power	Compliant
§2.1049 §22.917 (a)(b); §24.238 (a)(b)	Occupied Bandwidth	Compliant
§2.1051, §22.917; §24.238 (b)	Spurious Emissions at Antenna Terminals	Compliant
§2.1055 §22.355; §24.235	Frequency Stability vs. Temperature Frequency Stability vs. Voltage	Compliant
§22.917; §24.238	Band Edge	Compliant

Note: *According to FCC §2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

** Please refer to SAR report.

4 FCC §2.1047 - MODULATION CHARACTERISTIC

4.1 Applicable Standard

According to FCC §2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

4.2 Results

N/A

5 FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

5.1 Applicable Standard

Requirements: FCC §2.1053, §22.917, §24.238.

5.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

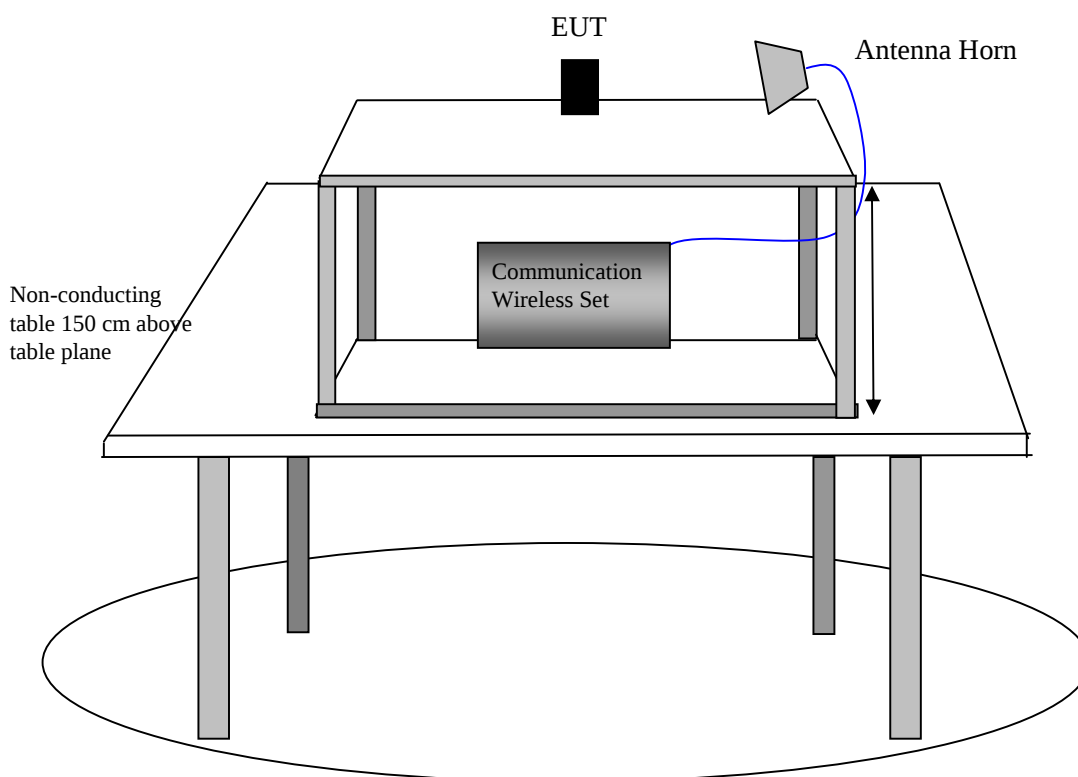
The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \log (\text{TX Power in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$

5.3 Test Setup Block Diagram for Radiated Emissions Tests



5.4 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
HP	Pre amplifier	8447D	2944A06639	2009-06-05
Sunol Science Corp.	Combination Antenna	JB1 Antenna	A020106-1	2009-04-17
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
A. H. Systems	Antenna, Horn	SAS-200/571	261	2009-09-23

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

5.5 Test Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

* Testing performed by Kevin Li on 2010-02-22 in 5 meter Chamber 3.

5.6 Summary of Test Results

Worst case reading as follows:

Mode: Transmitting		
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)
-17.51	2510	Vertical

5.7 Test Data

Run # 1: 30 MHz -10 GHz, Cellular Band, Low Channel (824.2 MHz)

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Cord. (dBi)	Cable Loss (dB)			
1294	48.81	190	178	V	1294	-60.72	9.2	1.0	-52.52	-13	-39.52
1294	48.52	232	142	H	1294	-59.21	9.2	1.0	-51.01	-13	-38.01
2510	65.02	217	171	V	2510	-38.7	9.53	1.34	-30.51	-13	-17.51
2510	58.17	189	100	H	2510	-45.54	9.53	1.34	-37.35	-13	-24.35
1400	53.98	171	238	V	1400	-55.42	8.11	0.83	-48.14	-13	-35.14
1400	56.02	237	250	H	1400	-53.09	8.11	0.83	-45.81	-13	-32.81

Run # 2: 30 MHz -20 GHz, PCS Band, Low Channel (1850.2 MHz)

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Cord. (dBi)	Cable Loss (dB)			
1250	58.1	267	118	V	1250	-48.47	8.6	1.16	-41.03	-13	-28.03
1250	58.06	172	210	H	1250	-44.78	8.6	1.16	-37.34	-13	-24.34
2510	65.02	217	171	V	2510	-38.7	9.53	1.34	-30.51	-13	-17.51
2510	58.17	189	100	H	2510	-45.54	9.53	1.34	-37.35	-13	-24.35
5640	54.82	0	250	V	5640	-47.1	10.6	1.83	-38.33	-13	-25.33
5640	49.45	44	148	H	5640	-51.23	10.6	1.83	-42.46	-13	-29.46

6 FCC §2.1046, §22.913(a) & §24.232 – RF OUTPUT POWER

6.1 Applicable Standard

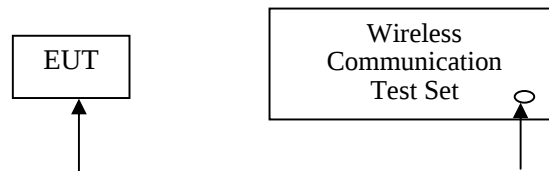
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (a), in no case may the peak output power of a base station transmitter exceed 2 watt.

6.2 Test Procedure

Conducted:

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.



Radiated (ERP and EIRP):

TIA-603-C section 2.2.17

6.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27
HP	Pre amplifier	8447D	2944A06639	2009-06-05
Sunol Science Corp.	Combination Antenna	JB1 Antenna	A020106-1	2009-04-17
A. H. Systems	Antenna, Horn	SAS-200/571	261	2009-09-23

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

6.4 Test Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

* Testing performed by Kevin Li on 2010-02-22 in RF site.

6.5 Summary of Test Results

Conducted Power

Radio Band	Radio Mode	Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)
Cellular	GSM	Low	824.2	32.86	1.932	38.45
		Middle	836.6	32.89	1.945	38.45
		High	848.8	33.08	2.032	38.45
PCS		Low	1850.2	29.83	0.962	33
		Middle	1880.0	29.52	0.895	33
		High	1909.8	29.72	0.938	33
Cellular	GPRS	Low	824.2	32.79	1.901	38.45
		Middle	836.6	32.53	1.791	38.45
		High	848.8	32.15	1.641	38.45
PCS		Low	1850.2	29.09	0.811	33
		Middle	1880.0	28.56	0.718	33
		High	1909.8	28.39	0.690	33

Radiated Power (ERP and EIRP)

GSM, Cellular Band Part 22H:

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord.	Cable Loss (dB)			
824.2	97.8	274	120	V	824.2	30.83	0	1	29.83	38.45	-8.62
824.2	98.16	22	100	H	824.2	31.12	0	1	30.12	38.45	-8.33
836.6	95.43	274	118	V	836.6	29.31	0	1	28.31	38.45	-10.14
836.6	97.61	0	162	H	836.6	29.1	0	1	28.10	38.45	-10.35
848.8	96.23	268	116	V	848.8	29.44	0	1	28.44	38.45	-10.01
848.8	98.2	0	180	H	848.8	28.89	0	1	27.89	38.45	-10.56

GSM, PCS Band Part 24E:

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord.	Cable Loss (dB)			
1850.2	79.52	166	152	V	1850.2	20.4	9.2	1	28.6	33	-4.4
1850.2	79.28	223	100	H	1850.2	19.24	9.2	1	27.44	33	-5.56
1880	78.03	207	150	V	1880	18.16	9.53	1.34	26.35	33	-6.65
1880	78.48	8	100	H	1880	17.81	9.53	1.34	26.00	33	-7
1909.8	79.15	215	125	V	1909.8	19.67	8.11	0.83	26.95	33	-6.05
1909.8	78.32	212	100	H	1909.8	18.98	8.11	0.83	26.26	33	-6.74

GPRS, Cellular Band Part 22H:

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)			
824.2	96.7	274	120	V	824.2	29.73	0	1	28.73	38.45	-9.72
824.2	97.69	0	100	H	824.2	30.65	0	1	29.65	38.45	-8.8
836.6	96.62	269	118	V	836.6	30.5	0	1	29.50	38.45	-8.95
836.6	97.42	0	185	H	836.6	28.91	0	1	27.91	38.45	-10.54
848.8	95.9	255	120	V	848.8	29.11	0	1	28.11	38.45	-10.34
848.8	97.72	0	138	H	848.8	28.41	0	1	27.41	38.45	-11.04

GPRS, PCS Band Part 24E:

Indicated		Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain Correction	Cable Loss (dB)			
1850.2	83.53	332	200	V	1850.2	18.41	9.2	1	26.61	33	-6.39
1850.2	82.59	178	134	H	1850.2	18.55	9.2	1	26.75	33	-6.25
1880	81.5	242	100	V	1880	17.63	9.53	1	26.16	33	-6.84
1880	82.34	217	100	H	1880	16.67	9.53	1	25.20	33	-7.8
1909.8	83.12	224	110	V	1909.8	19.64	8.11	1	26.75	33	-6.25
1909.8	82.54	210	152	H	1909.8	19.2	8.11	1	26.31	33	-6.69

7 FCC §2.1049, §22.917 & §24.238 - OCCUPIED BANDWIDTH

7.1 Applicable Standard

Requirements: FCC §2.1049, §22.917 and §24.238.

7.2 Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 3 kHz (Cellular /PCS) and the -26 dB bandwidth was recorded.

7.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

7.4 Test Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

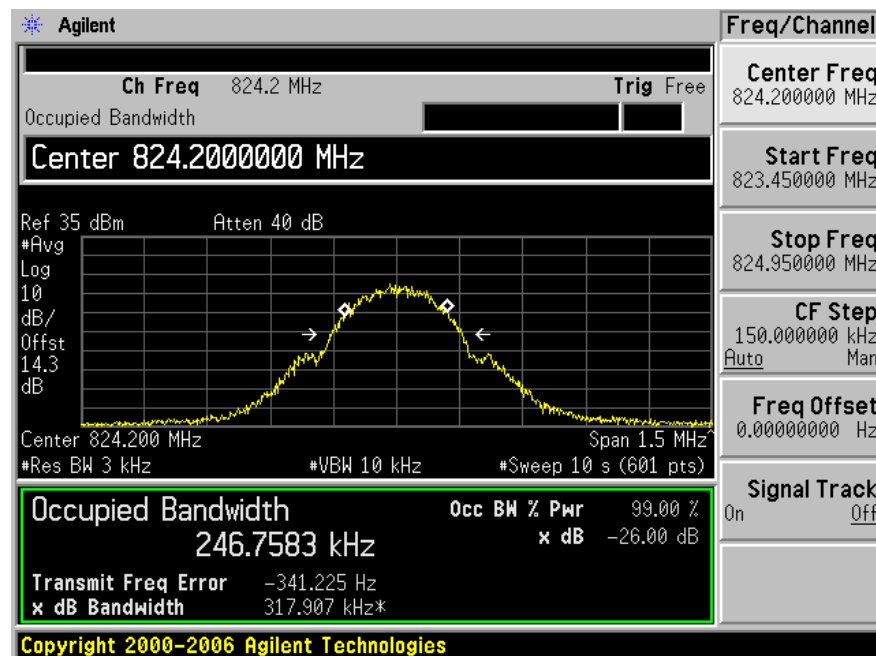
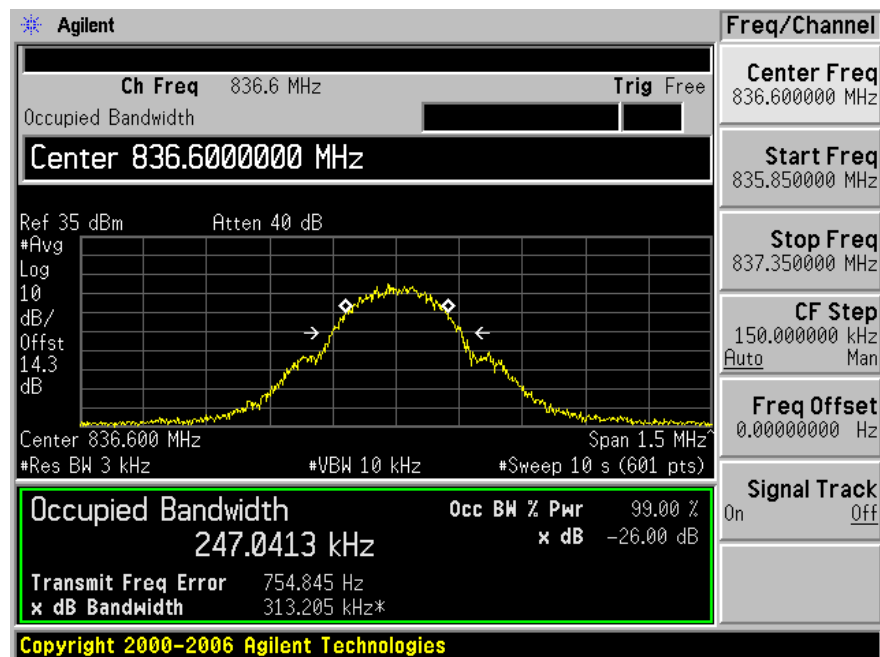
* Testing performed by Kevin Li on 2010-02-22 in RF Site.

7.5 Summary of Test Results

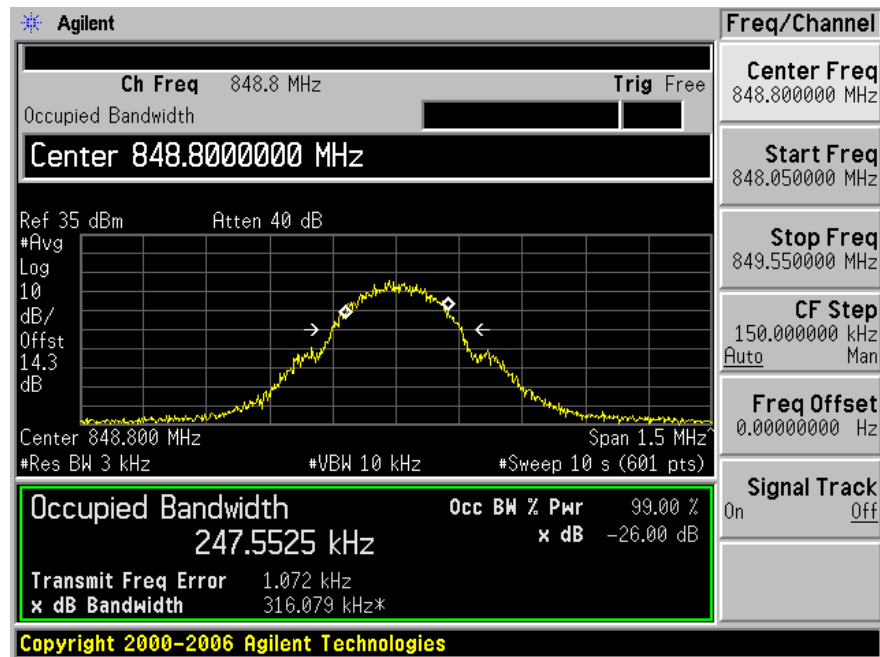
Radio Band	Radio Mode	Channel	Frequency (MHz)	26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Cellular	GSM	Low	824.2	318.0	246.8
		Middle	836.6	313.2	247.0
		High	848.8	316.1	247.6
PCS		Low	1850.2	316.2	247.7
		Middle	1880.0	315.7	247.2
		High	1909.8	318.4	249.3
Cellular	GPRS	Low	824.2	310.3	241.6
		Middle	836.6	305.1	240.0
		High	848.8	298.1	238.9
PCS		Low	1850.2	307.2	240.3
		Middle	1880.0	307.5	239.0
		High	1909.8	306.8	239.6

7.6 Test Data & Plots

Please refer to the following plots.

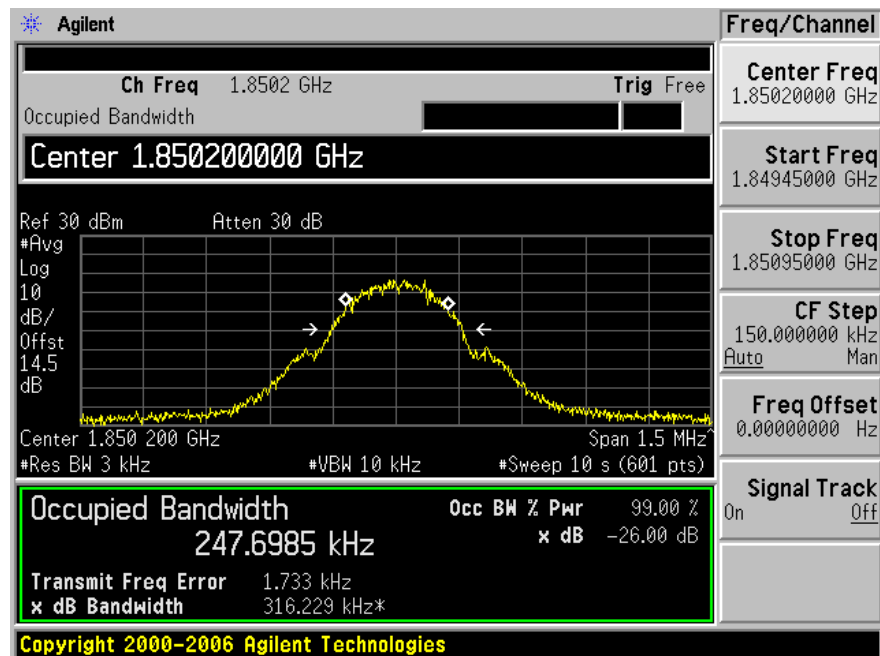
GSM, Cellular Band:**Low Channel****Middle Channel**

High Channel

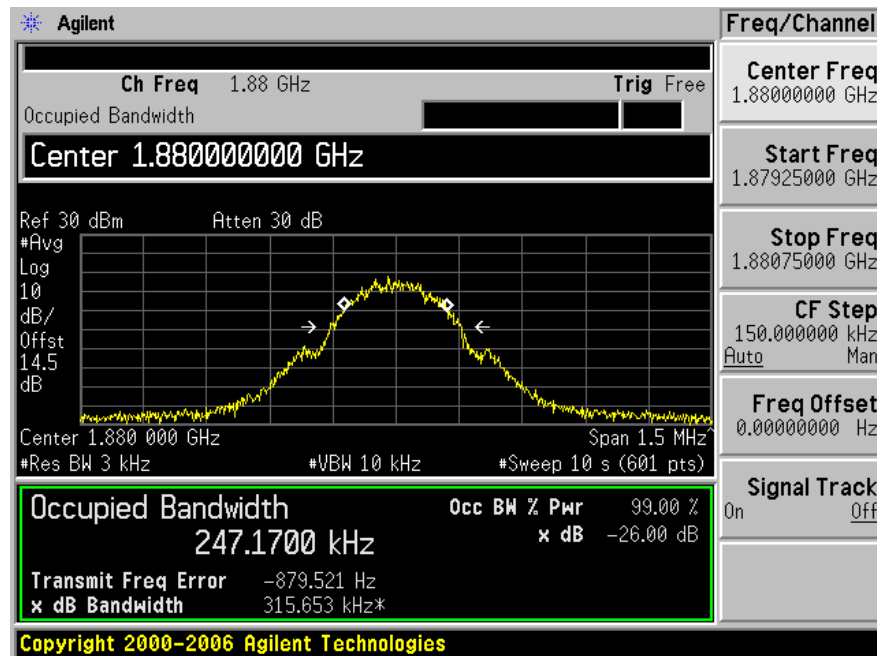


GSM, PCS Band:

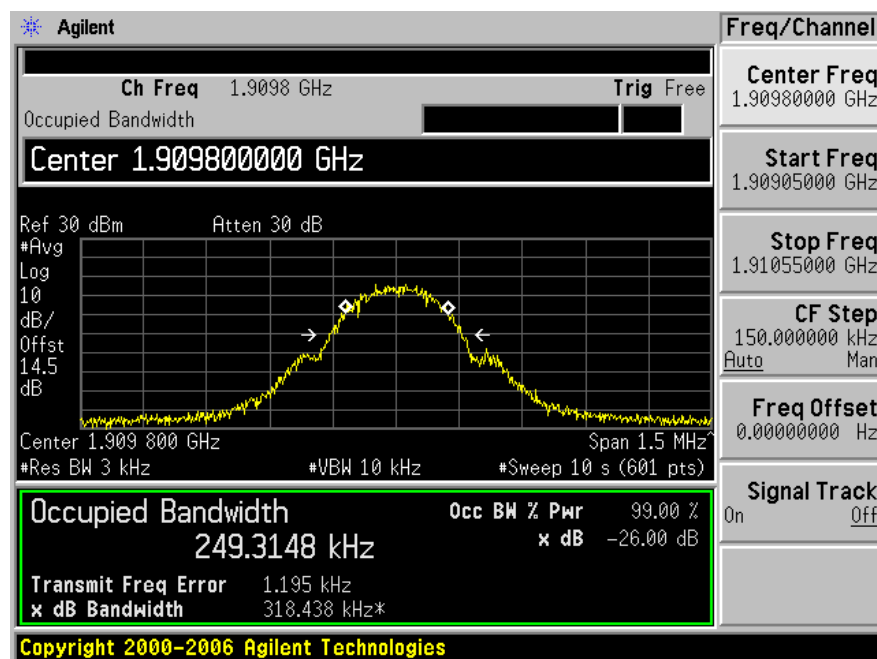
Low Channel

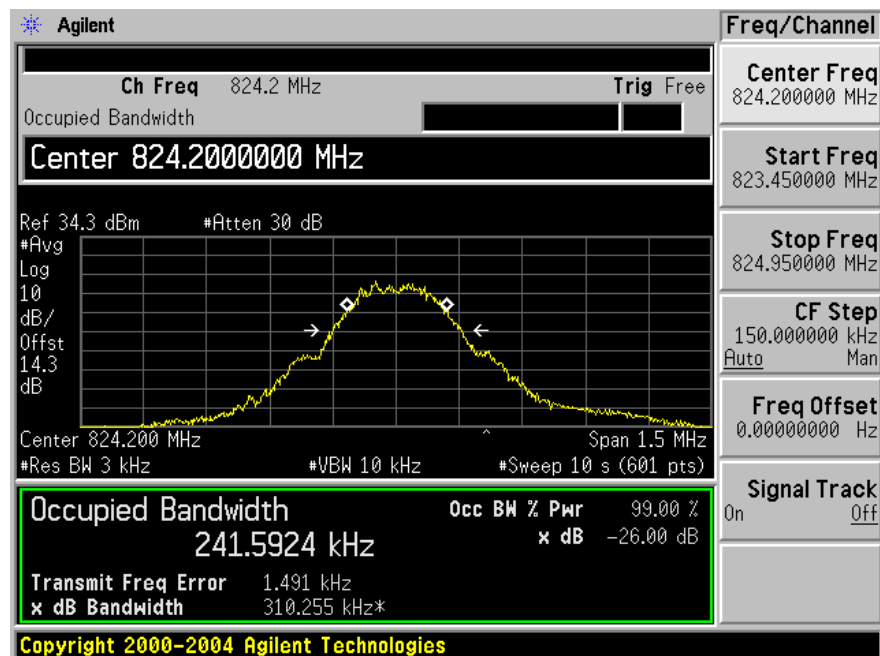
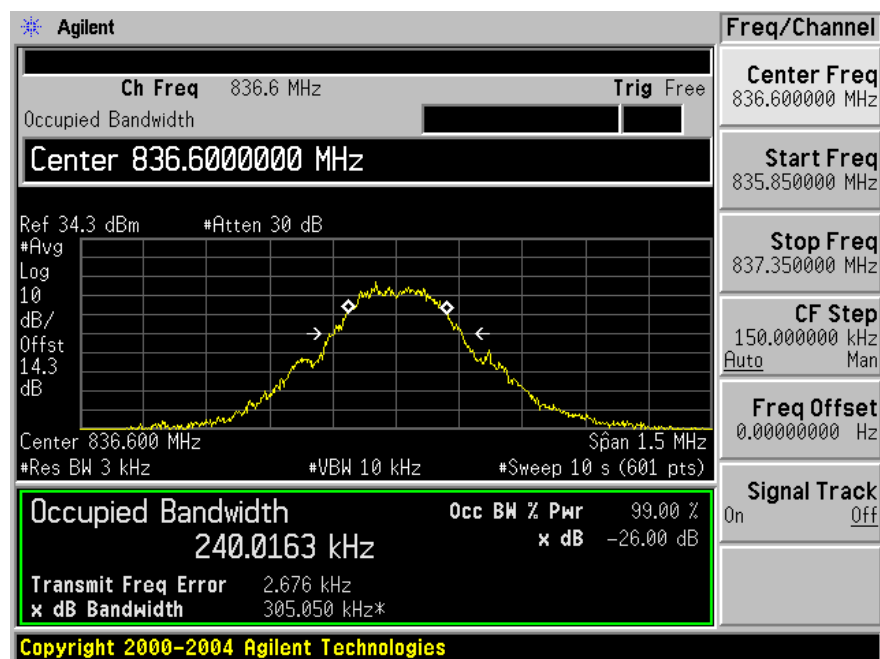


Middle Channel

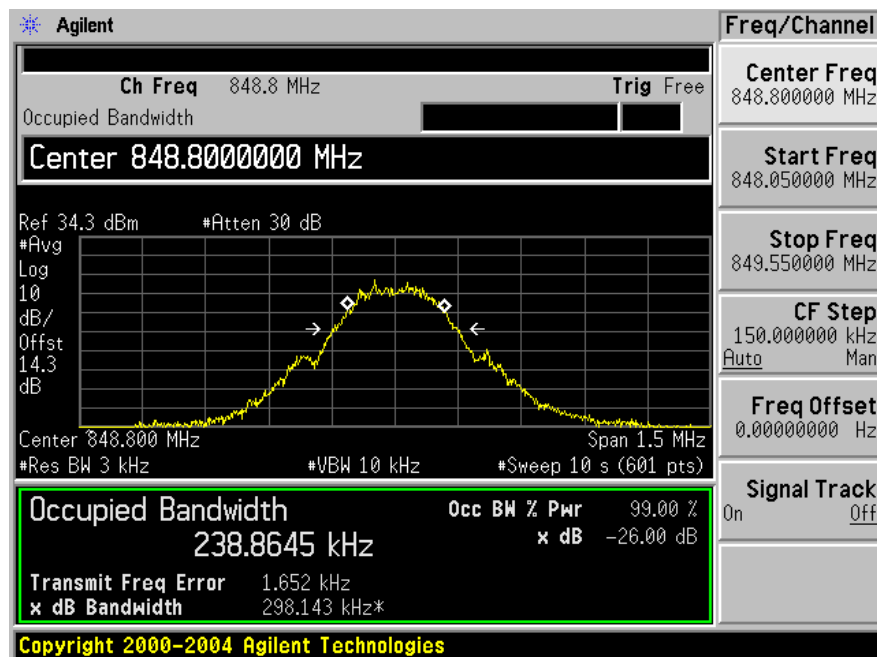


High Channel



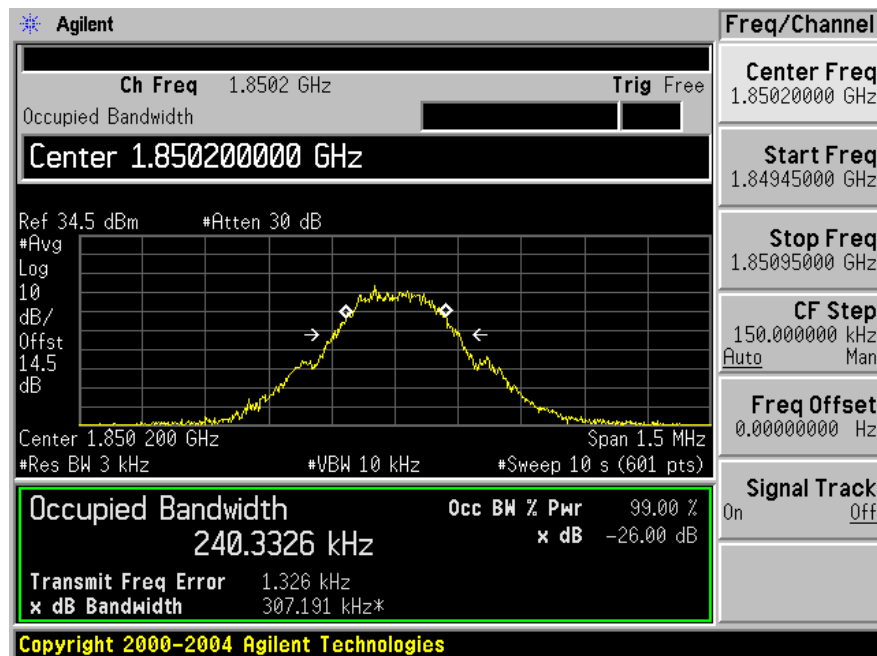
GPRS, Cellular Band:**Low Channel****Middle Channel**

High Channel

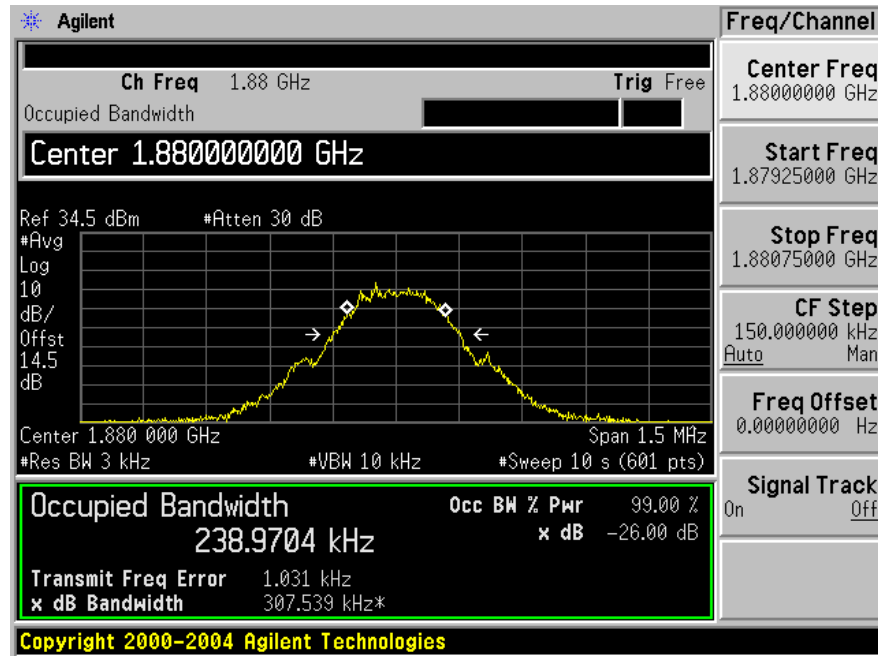


GPRS, PCS Band:

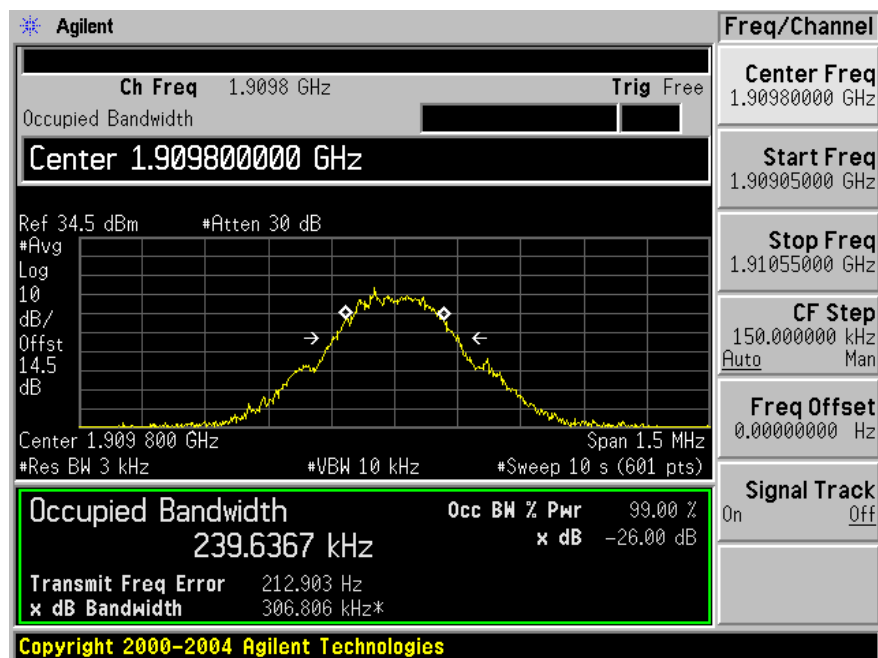
Low Channel



Middle Channel



High Channel



8 FCC §2.1051, §22.917 & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

8.1 Applicable Standard

Requirements: FCC §2.1051, §22.917 & §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1057.

8.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

8.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

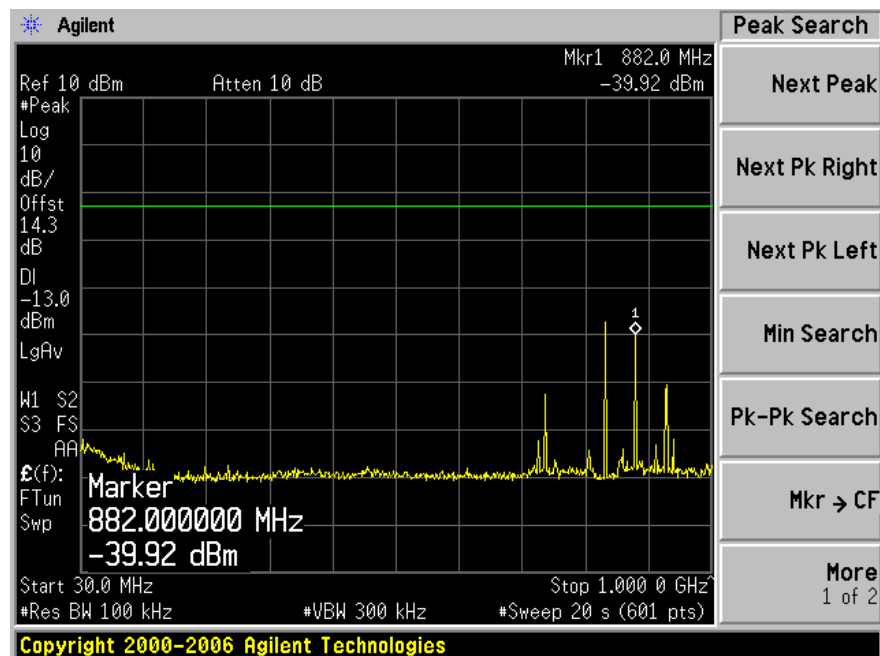
8.4 Test Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

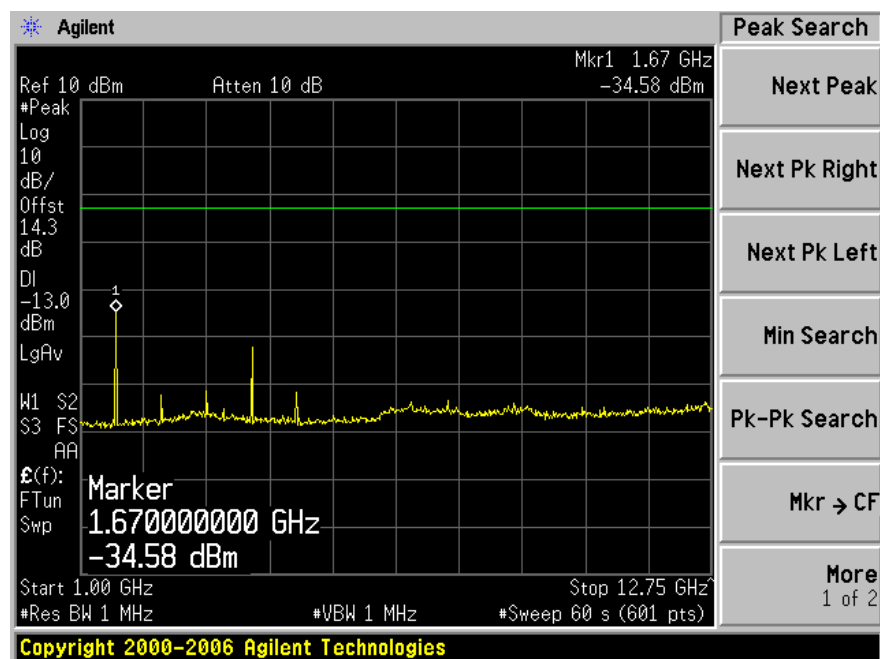
* Testing performed by Victor Zhang on 2010-02-21.

8.5 Test Results

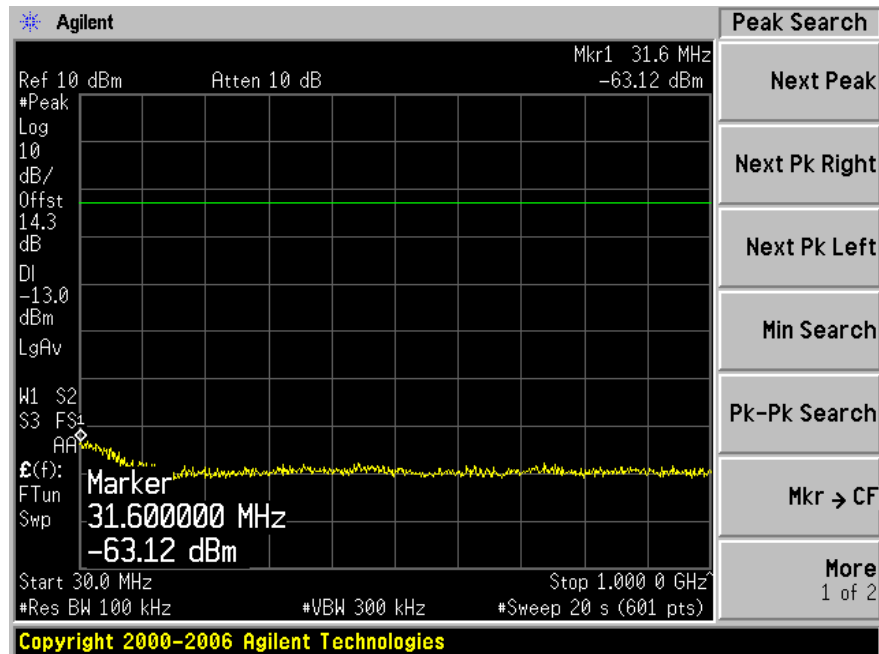
Please refer to the plots featured hereinafter

GSM, Cellular Band:**Middle Channel (f =836.6 MHz)**

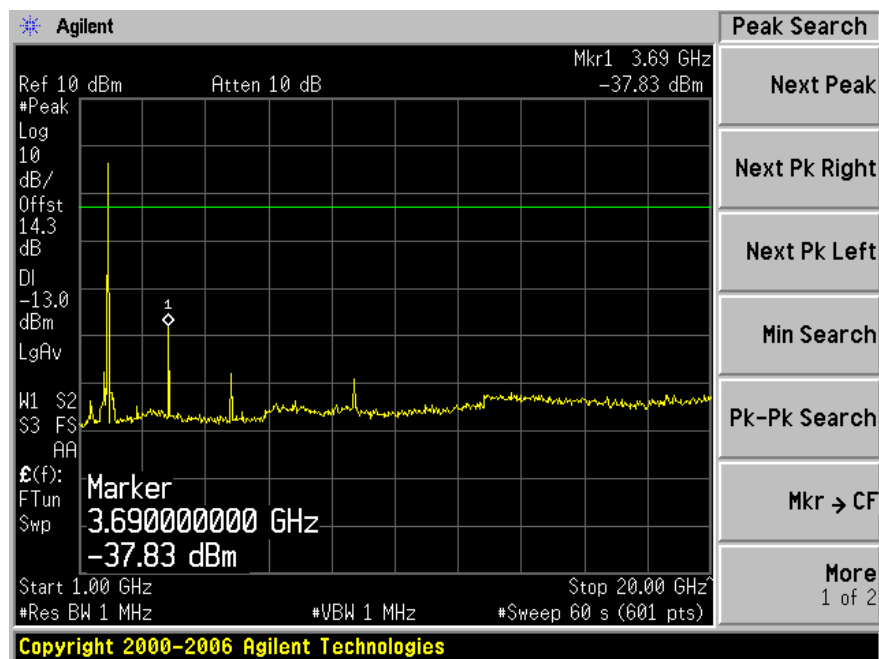
Plot 1a: 30 MHz – 1 GHz



Plot 2a: 1 – 12.75 GHz

GSM, PCS Band:**Low Channel (f = 1850.2 MHz)**

Plot 1d: 30 MHz – 1 GHz



Plot 2d: 1 – 20 GHz

9 FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

9.1 Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

9.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

9.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
ESPEC	Temp/Humidity chamber	ESL-4CA	18010	2009-12-15
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

9.4 Test Environmental Conditions

Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

* Testing performed by Kevin Li on 2010-02-22 in RF Site.

9.5 Test Results

Cellular Band:

1) Frequency Stability versus Temperature

Reference Frequency: 836.6 MHz, Limit: 2.5ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Error (ppm)
50	3.7	26.55	0.031736
40	3.7	26.80	0.032034
30	3.7	25.41	0.030373
20	3.7	24.39	0.029154
10	3.7	24.46	0.029237
0	3.7	23.68	0.028305
-10	3.7	23.25	0.027791
-20	3.7	22.89	0.027361
-30	3.7	22.63	0.027050

2) Frequency Stability versus Voltage

Reference Frequency: 836.6 MHz, Limit: 2.5ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Error (ppm)
20	3.5	25	0.029883
20	4.2	23	0.027492

PCS Band:

1) Frequency Stability versus Temperature

Reference Frequency: 1880 MHz, Limit: 2.5ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Error (ppm)
50	3.7	44.55	0.023697
40	3.7	44.12	0.023468
30	3.7	43.58	0.023181
20	3.7	41.24	0.021936
10	3.7	42.05	0.022367
0	3.7	42.36	0.022532
-10	3.7	41.02	0.021819
-20	3.7	39.98	0.021266
-30	3.7	38.52	0.020489

2) Frequency Stability versus Voltage

Reference Frequency: 1880MHz, Limit: 2.5ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Error (ppm)
20	3.5	42	0.02234
20	4.2	40	0.021277

10 FCC §22.917 & §24.238 – BAND EDGE

10.1 Applicable Standard

According to FCC §22.917, the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §24.238, the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

10.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.

10.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Communications Analyzer	8960	GB44051221	2009-04-23
Agilent	Spectrum Analyzer	E4440A	MY44303352	2009-04-27

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

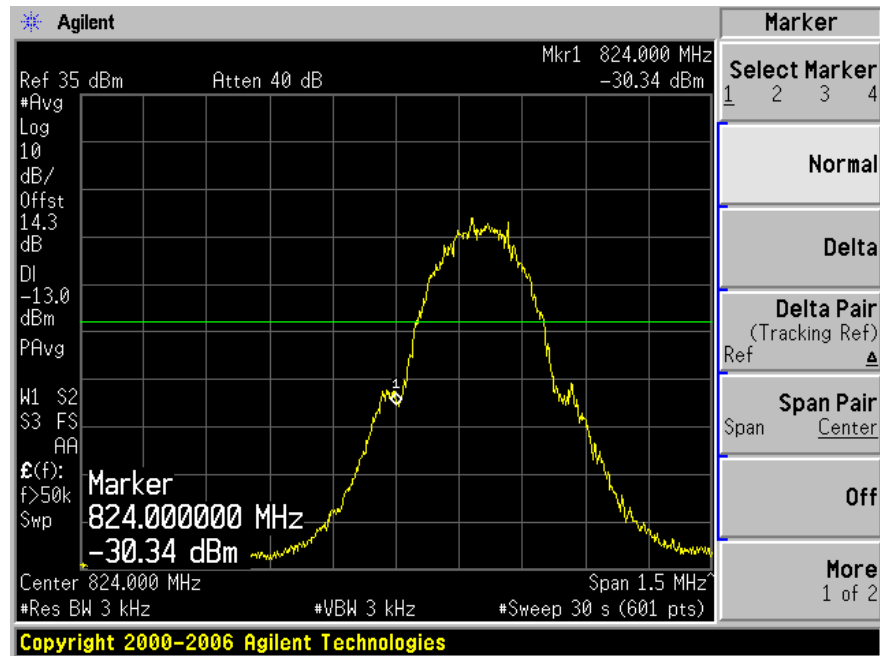
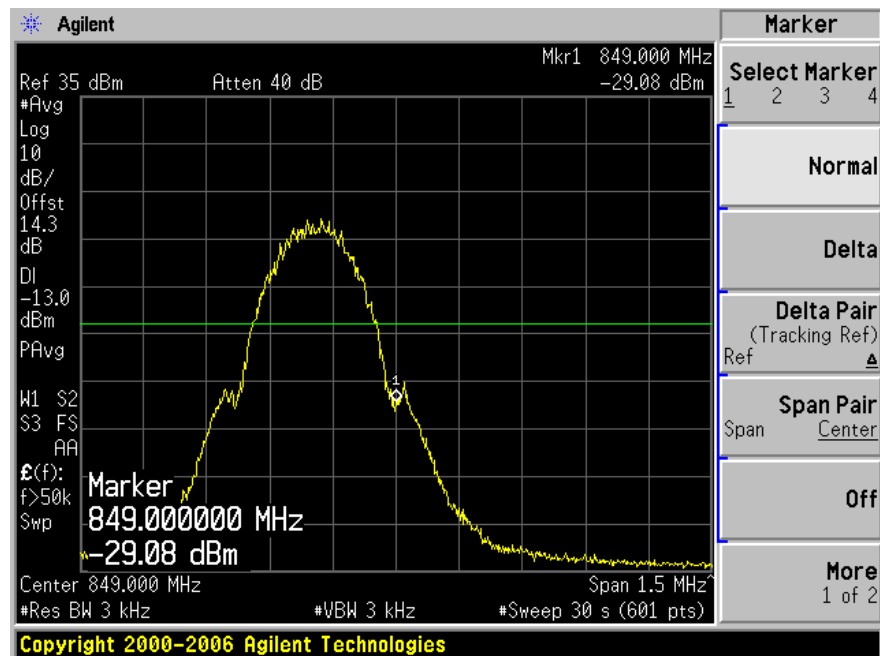
10.4 Test Environmental Conditions

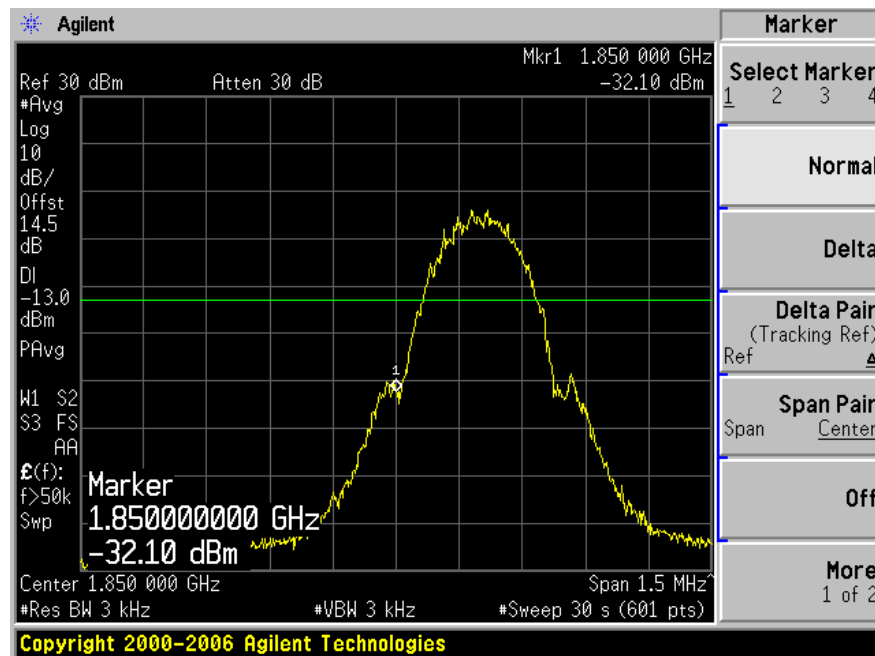
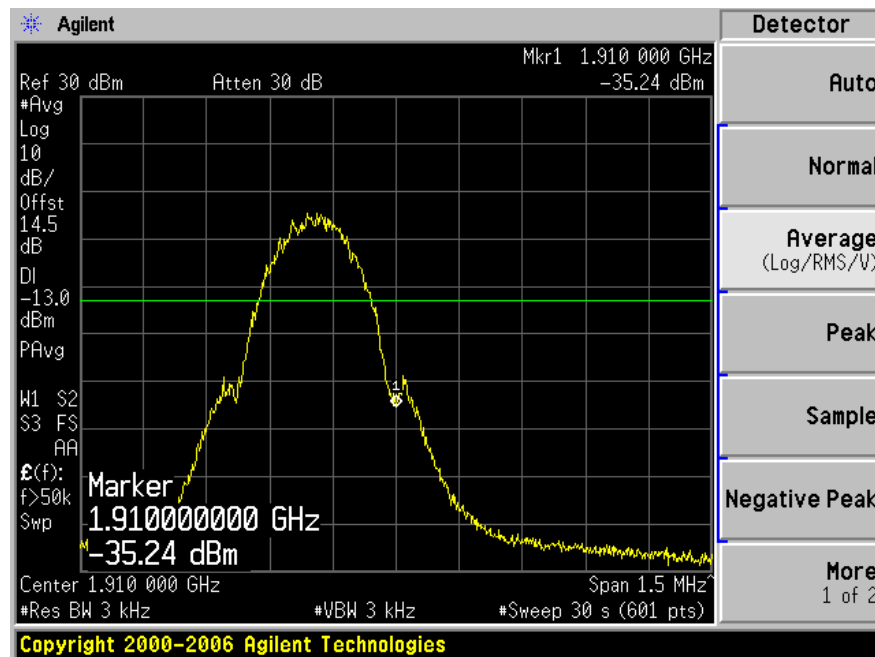
Temperature:	21 °C ~ 25 °C
Relative Humidity:	40 % ~ 60 %
ATM Pressure:	101.1kPa ~ 101.6kPa

* Testing performed by Victor Zhang on 2010-02-21 in RF site.

10.5 Test Results

Please refer to the following plots.

GSM, Cellular Band:**Lowest Channel****Highest Channel**

GSM, PCS Band:**Lowest Channel****Highest Channel**

11 FCC §1.1307 & §2.1093 - RF Exposure

11.1 Applicable Standard

According to §1.1307 and §2.1093.

11.2 Results

Please refer to SAR report released by BACL, report Number: R1002085-FCC-SAR.