

FCC PART 22H, PART 24E  
MEASUREMENT AND TEST REPORT

For

**VeryKool USA Inc**

4350 Executive Dr.100 San Diego, CA 92121

**FCC ID:WA6I123**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Mobile phone
<b>Test Engineer:</b> <u>Bin Jiang</u>	<i>Bin Jiang</i>
<b>Report Number:</b> <u>RSZ120426001-00C</u>	
<b>Report Date:</b> <u>2012-05-16</u>	
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\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *VeryKool USA Inc*'s product, model number: *i123(FCC ID: WA6I123)* (the "EUT") in this report was a *Mobile phone*, which was measured approximately: 10.5cm (L) x 4.5cm (W) x 1.0cm (H), rated input voltage: DC 3.7V Lithium battery or DC 5.0V from adapter for charging.

Adapter Information: verykool  
Model:NBT-050B-B050UA  
Input:100V-240VAC,50/60Hz,0.2A  
Output:DC5.0V,500mA

#### Frequency Range:

GSM850: 824-849 MHz (Tx), 869-894 MHz (Rx)  
PCS 1900: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)  
BT:2400-2483.5MHz

*\* All measurement and test data in this report was gathered from production sample serial number: i12308C000001 (Assigned by Applicant). The EUT was received on 2012-04-23.*

### Objective

This report is prepared on behalf of *VeryKool USA Inc* 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 output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

### Related Submittal(s)/Grant(s)

FCC Part 15B JBP submission with FCC ID: WA6I123.  
FCC Part 15C DSS submission with FCC ID: WA6I123.

## 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 - Public Mobile Services  
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-D-2010, ANSI C63.4-2009.

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

The uncertainty of any RF tests which use conducted method measurement is  $\pm 0.96$  dB, the uncertainty of any radiation on emissions measurement is  $\pm 4.0$  dB

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The GSM/PCS item test was performed with the EUT operating at testing mode.

The GPRS item test was performed with the EUT operating at testing mode.

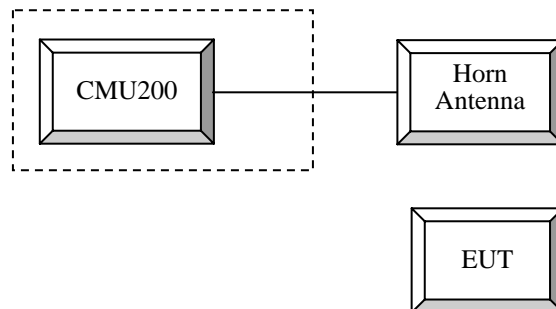
### Equipment Modifications

No modification was made to the EUT.

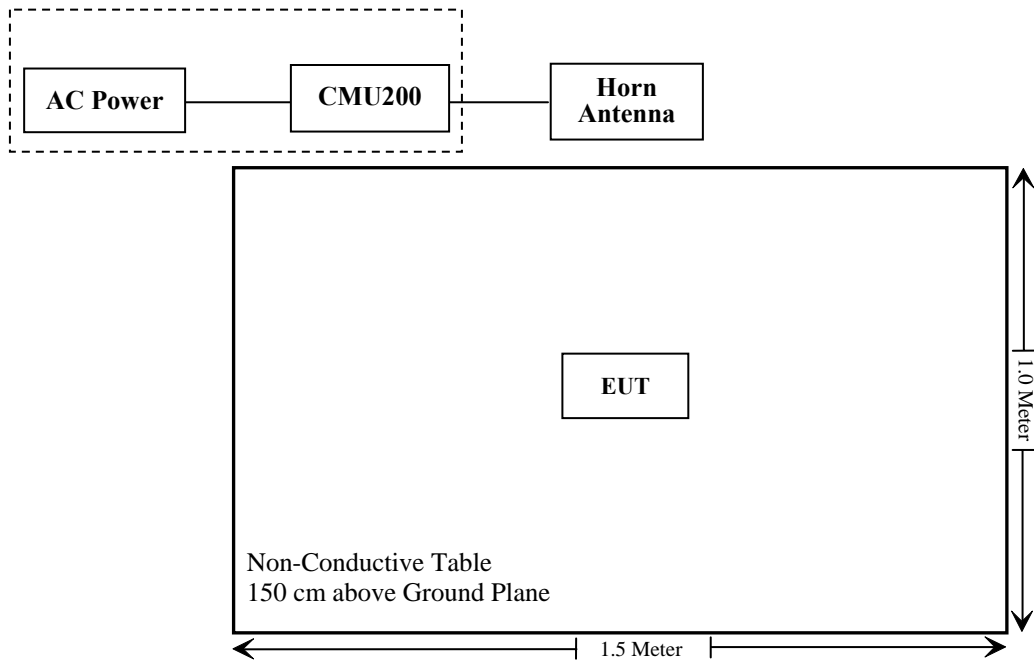
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Universal Radio Communication Tester	CMU200	109038

### Configuration of Test Setup



### Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307, §2.1093	RF Exposure (SAR)	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238	Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a); § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliance
§ 2.1055 § 22.355; § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: \* Please refer to SAR report released by BACL, report number: RSZ120426001-20



## **FCC §1.1307 & §2.1093 - RF EXPOSURE**

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### **Applicable Standard**

FCC§1.1307 and §2.1093.

### **Test Result**

Compliance, please refer to the SAR report: R12051511.

## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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

## FCC § 2.1046, § 22.913 (a) & § 24.232 (c) - RF OUTPUT POWER

### Applicable Standard

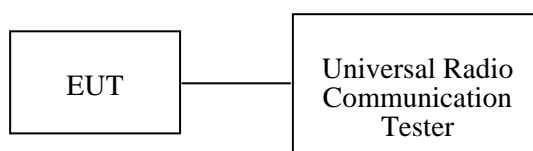
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

### Test Procedure

#### Conducted method:

The RF output of the transmitter was connected to Universal Radio Communication Tester through sufficient attenuation.



#### Radiated method:

ANSI/TIA 603-D section 2.2.17

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
HP	Signal Generator	HP8657A	3217A04699	2011-12-19	2012-12-18
HP	Synthesized Sweeper	8341B	2624A00116	2011-06-11	2012-06-10
COM POWER	Dipole Antenna	AD-100	041000	2012-02-11	2013-02-10
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2013-02-10

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0kPa

*The testing was performed by Bin Jiang on 2012-04-28.*

**Conducted Power****Cellular Band (Part 22H)**

<b>Mode</b>	<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Output Power (dBm)</b>	<b>Limit (dBm)</b>
GSM	128	824.2	31.44	38.45
	190	836.6	31.50	38.45
	251	848.8	31.44	38.45

**PCS Band (Part 24E)**

<b>Mode</b>	<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Output Power (dBm)</b>	<b>Limit (dBm)</b>
GSM	512	1850.2	28.30	33
	661	1880.0	28.30	33
	810	1909.8	28.16	33

## ERP &amp; EIRP

## ERP for Cellular Band (Part 22H)

## GSM Mode

Channel No.	Polar	S.A. Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit
	H/V	dB $\mu$ V	dBm	dBd	dB	dBm	dBm
128	H	88.43	31.57	0.00	1.26	30.31	38.4
	V	95.32	24.68	0.00	1.26	23.42	38.4
190	H	88.25	31.75	0.00	1.66	30.09	38.4
	V	95.37	24.63	0.00	1.66	22.97	38.4
251	H	87.64	32.36	0.00	1.83	30.53	38.4
	V	93.55	26.45	0.00	1.83	24.62	38.4

## EIRP for PCS Band (Part 24E)

## GSM Mode

Channel No.	Polar	S.A. Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit
	H/V	dB $\mu$ V	dBm	dB $i$	dB	dBm	dBm
512	H	83.11	24.40	7.30	2.61	29.09	33.0
	V	84.02	21.00	7.30	2.61	25.69	33.0
661	H	85.14	24.86	7.30	3.13	29.03	33.0
	V	83.94	21.25	7.30	3.13	25.42	33.0
810	H	85.60	24.20	7.30	3.32	28.18	33.0
	V	83.59	20.45	7.30	3.32	24.43	33.0

## FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

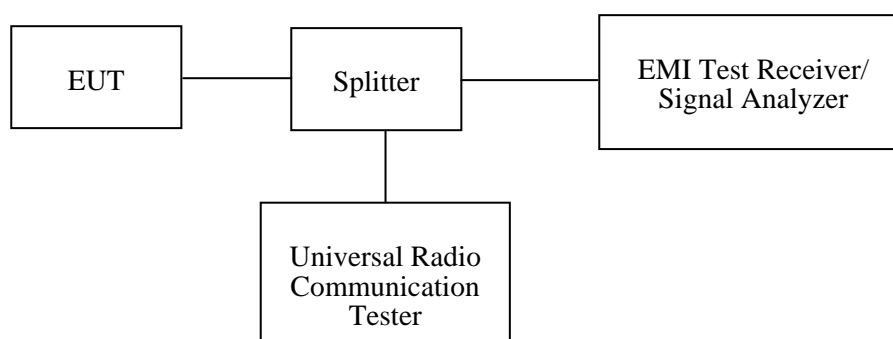
### Applicable Standard

FCC §2.1049, §22.917, §22.905 and §24.238.

### 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 & 99% bandwidth was recorded.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

### Test Data

#### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

*The testing was performed by Bin Jiang on 2012-04-28*

Cellular Band (Part 22H)

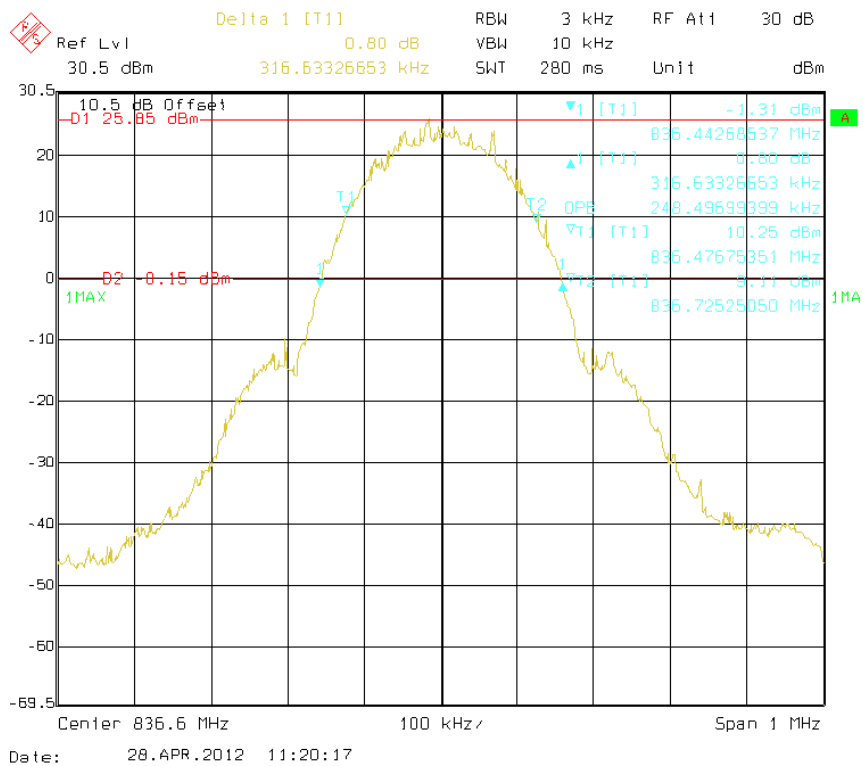
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
190	836.6	248.496	316.633

PCS Band (Part 24E)

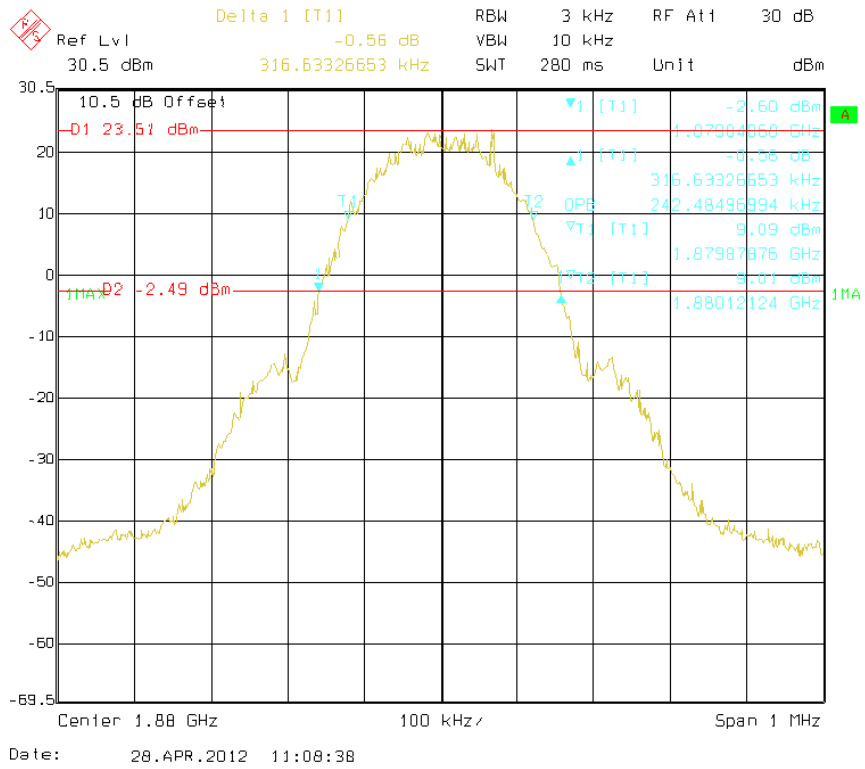
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
661	1880	242.484	316.633

Please refer to the following plots.

Cellular Band (Part 22H)



PCS Band (Part 24E)





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

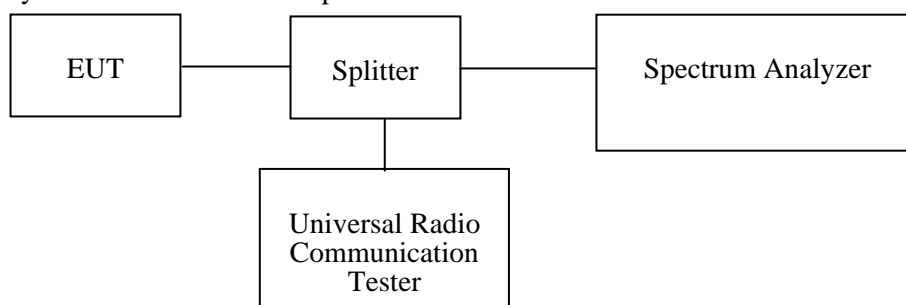
### Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

### 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 100kHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

### Test Data

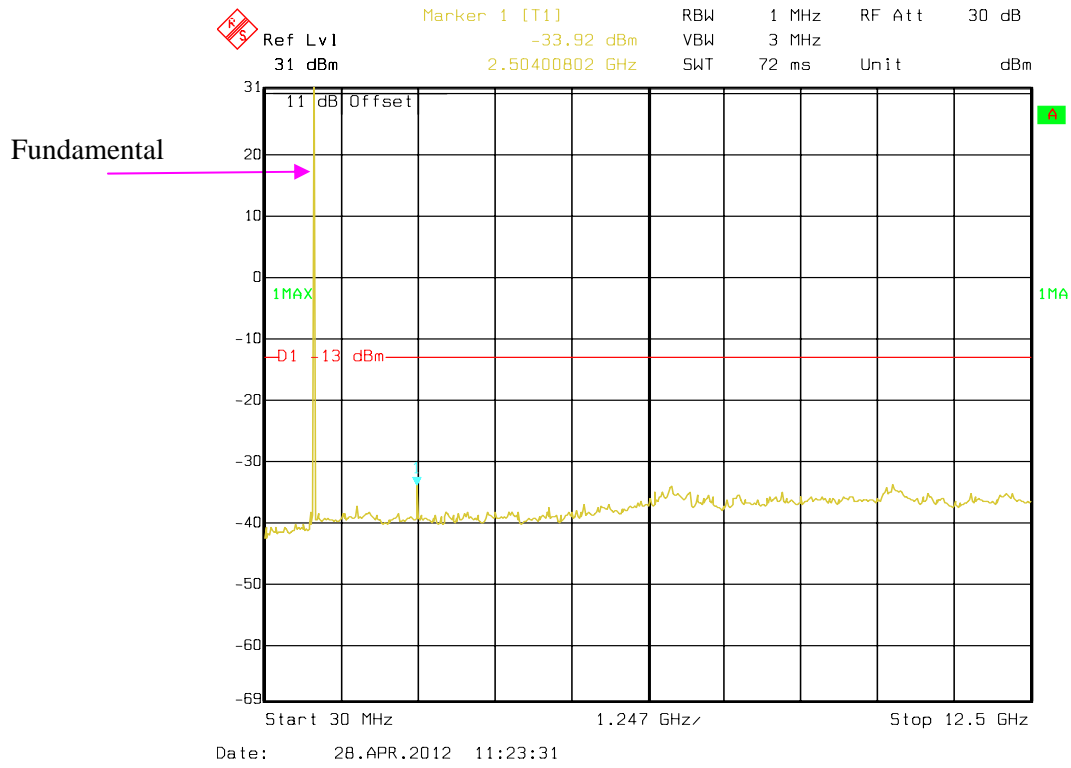
#### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

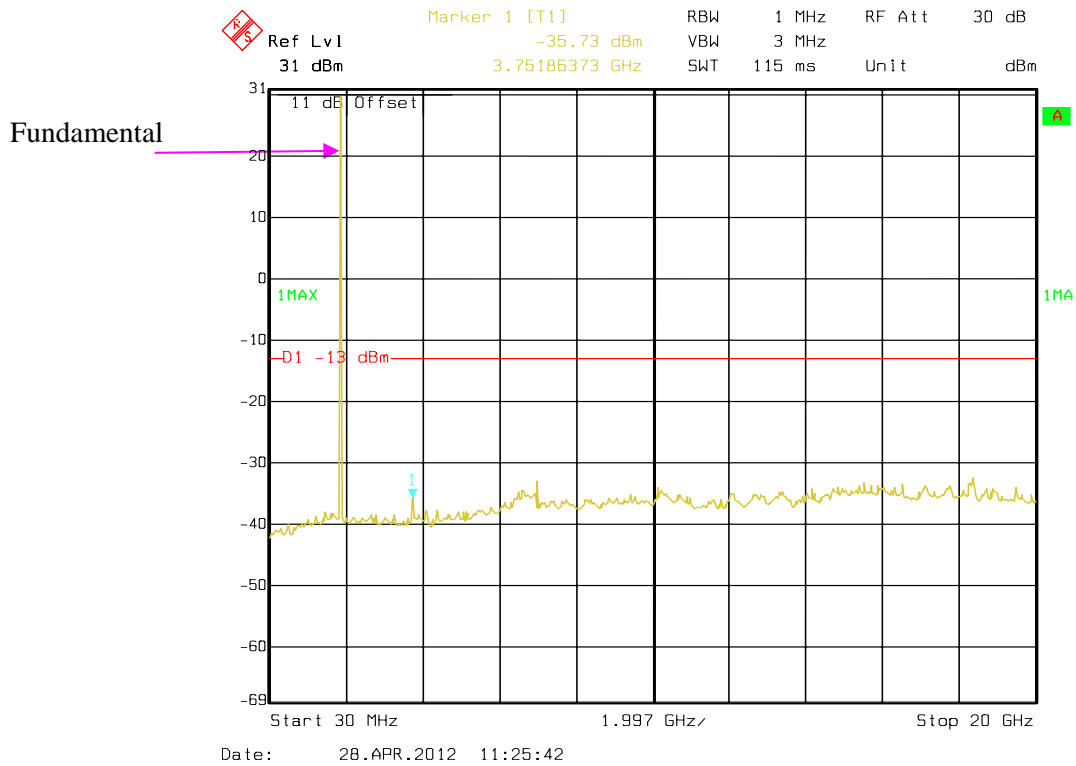
*The testing was performed by Bin Jiang on 2012-04-28.*

Please refer to the following plots.

**Cellular Band (Part 22H) — Middle Channel**



**PCS Band (Part 24E) — Middle Channel**



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

### Applicable Standard

FCC § 2.1053, §22.917 and § 24.238.

### 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 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log<sub>10</sub> (power out in Watts)

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-1	2012-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23
DUCOMMUN Technologies	Pre-amp	ALN-09173030-01	991396-01	2011-11-24	2012-11-23
HP	Signal Generator	HP8657A	3217A04699	2011-12-19	2012-12-18
HP	Amplifier	HP8447E	1937A01046	2011-11-24	2012-11-23
HP	Synthesized Sweeper	8341B	2624A00116	2011-06-11	2012-06-10
COM POWER	Dipole Antenna	AD-100	041000	N/A	N/A
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2013-02-10
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-1	2012-11-30

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0kPa

The testing was performed by Bin Jiang on 2012-04-28.

EUT Operation Mode: Transmitting

**Cellular Band (Part 22H)**

Frequency	Polar	S.A Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dB $\mu$ V	dBm	dBd/dBi	dB	dBm	dBm	dB
<b>Low Channel, fo = 824.2 MHz</b>								
1647.55	V	53.22	-43.8	7.3	0.9	-37.3	-13	24.3
1647.53	H	51.24	-45.8	7.3	0.9	-39.3	-13	26.3
2473.11	V	48.08	-48.9	9.8	0.9	-40	-13	27
2473.16	H	45.36	-51.6	9.8	0.9	-42.7	-13	29.7
<b>Middle Channel, fo = 836.6 MHz</b>								
1677.58	V	53.62	-43.7	7.3	0.9	-37.2	-13	24.2
1677.63	H	52.41	-44.9	7.3	0.9	-38.4	-13	25.4
2516.032	V	48.57	-48.7	10.1	0.9	-39.5	-13	26.5
2516.032	H	47.14	-50.2	10.1	0.9	-40.9	-13	27.9
<b>High Channel, fo = 848.8 MHz</b>								
1696.58	V	53.17	-44.1	7.3	0.9	-37.7	-13	24.7
1696.54	H	52.38	-44.9	7.3	0.9	-38.5	-13	25.5
2544.31	V	47.52	-49.8	10.1	0.9	-40.5	-13	27.5
2544.22	H	46.35	-51	10.1	0.9	-41.7	-13	28.7

Note: No emissions were detected below 1GHz

**PCS Band (Part 24E)**

Frequency	Polar	S.A. Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dB $\mu$ V	dBm	dBd/dBi	dB	dBm	dBm	dB
<b>Low Channel, fo = 1850.2 MHz</b>								
3700.524	V	62.86	-34.4	10	1.1	-25.6	-13	12.6
3700.542	H	61.51	-35.8	10	1.1	-26.9	-13	13.9
5550.408	V	51.83	-45.5	11.3	1.5	-35.7	-13	22.7
5550.417	H	50.44	-46.9	11.3	1.5	-37	-13	24
<b>Low Channel, fo = 1880.0 MHz</b>								
2506.7	V	65.22	-32.1	10.1	0.9	-22.8	-13	9.8
2506.58	H	63.12	-34.2	10.1	0.9	-24.9	-13	11.9
3760.009	V	61.49	-35.8	10	1.1	-26.9	-13	13.9
3760.105	H	60.57	-36.7	10	1.1	-27.9	-13	14.9
<b>Low Channel, fo = 1909.8 MHz</b>								
3819.603	V	63.8	-33.5	9.8	1.1	-24.7	-13	11.7
3819.59	H	61.66	-35.6	9.8	1.1	-26.9	-13	13.9
5729.61	V	53.84	-43.5	11.1	1.5	-33.8	-13	20.8
5729.607	H	49.37	-47.9	11.1	1.5	-38.3	-13	25.3

*Note: No emissions were detected below 1GHz.*

## FCC §22.917(a) & §24.238(a) - BAND EDGES

### Applicable Standard

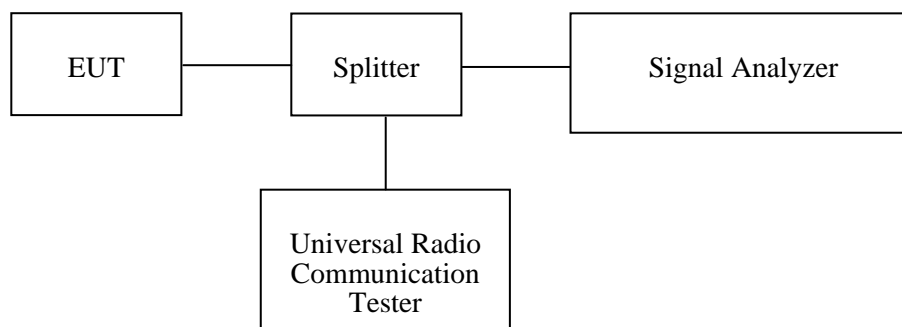
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), 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.

### 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 3 kHz.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

### Test Data

#### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

*The testing was performed by Bin Jiang on 2012-04-28*

Please refer to the following tables and plots.

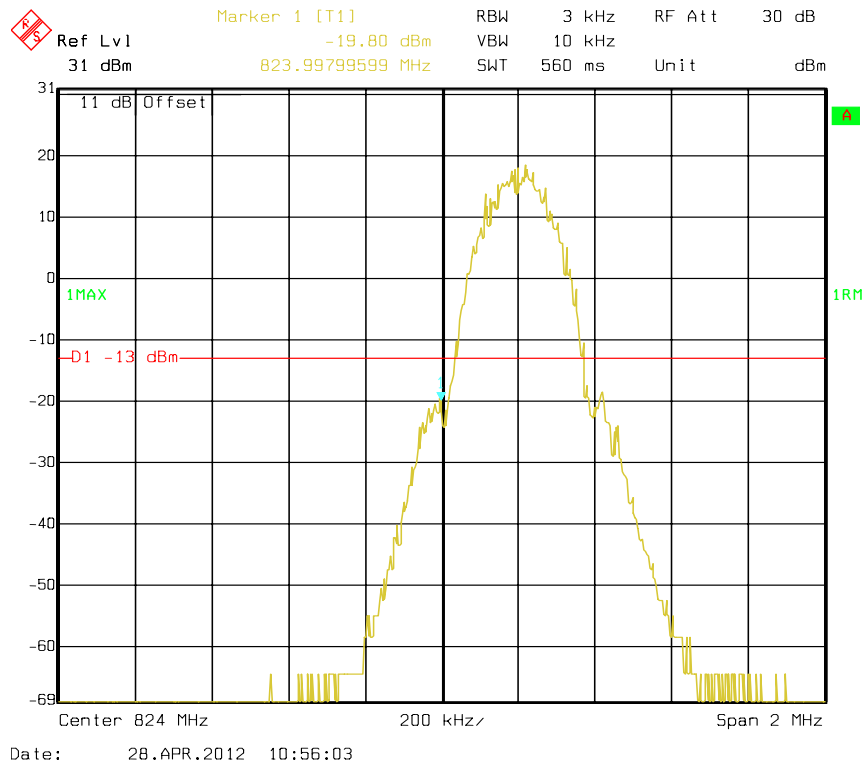
**Cellular Band (Part 22H)**

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.981	-19.8	-13
849.023	-16.4	-13

**PCS Band (Part 24E)**

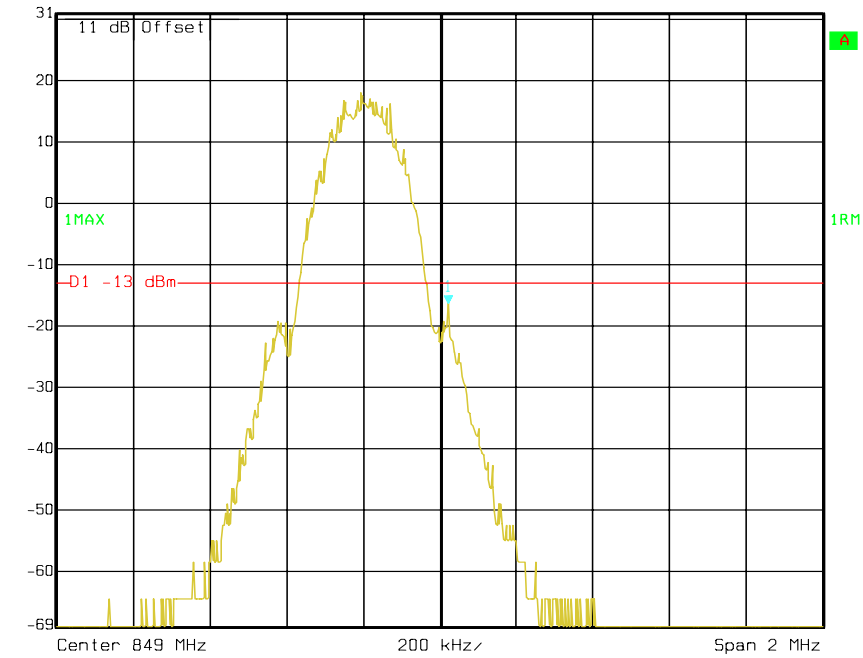
Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.997	-22.98	-13
1910.021	-22.63	-13

**Cellular Band, Left Band Edge**




### Cellular Band, Right Band Edge

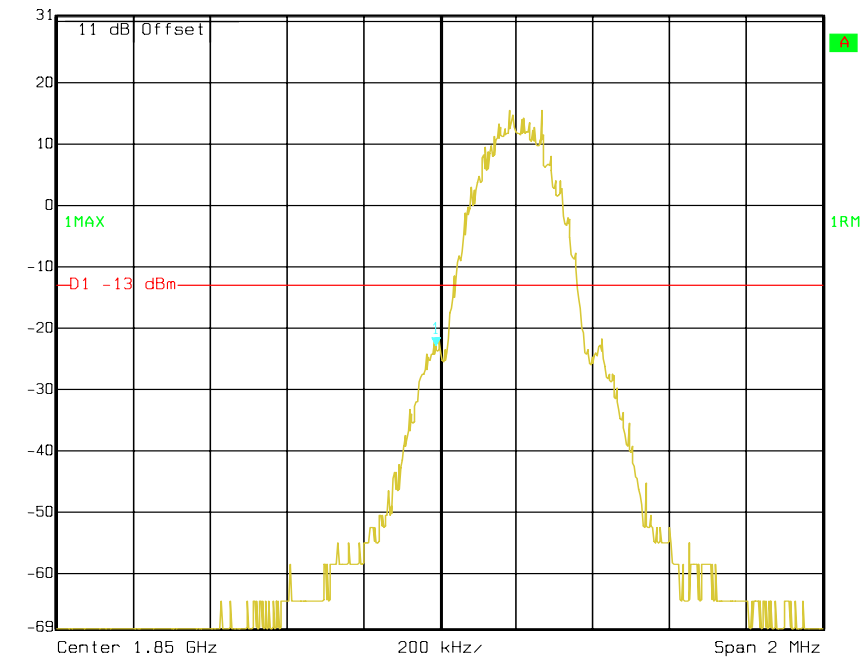
	Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	30 dB
	31 dBm	-16.40 dBm 849.02204409 MHz	VBW	10 kHz	SWT	560 ms



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### PCS Band, Left Band Edge

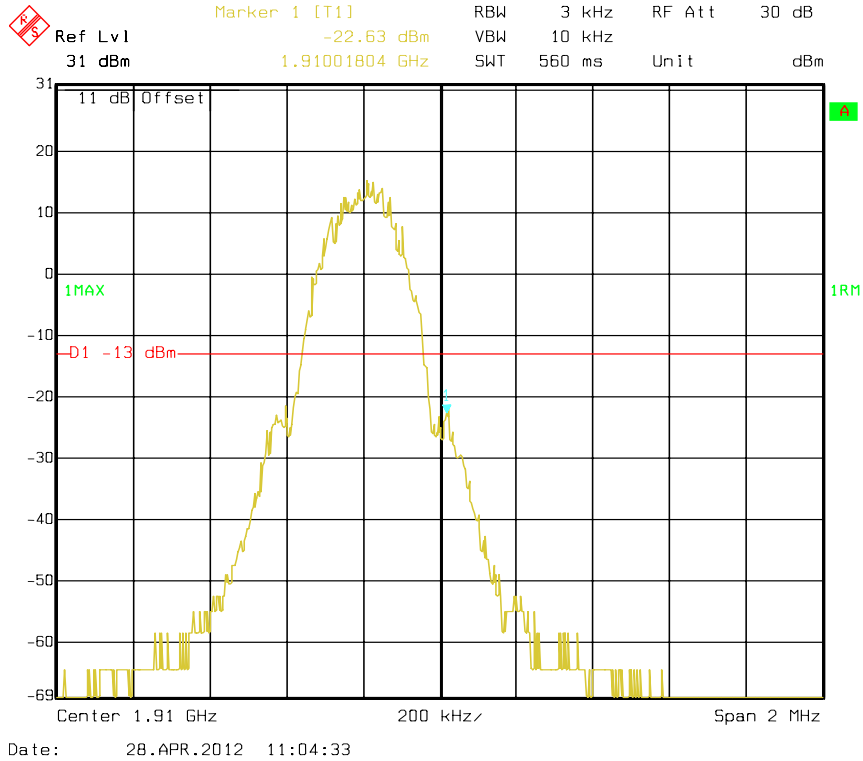
	Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	30 dB
	31 dBm	-22.98 dBm 1.84998998 GHz	VBW	10 kHz	SWT	560 ms



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### PCS Band, Right Band Edge



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

### Applicable Standard

FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

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

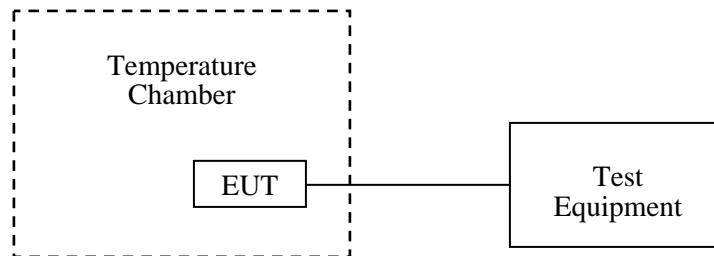
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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.



## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2011-06-04	2012-06-03
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2011-12-16	2012-12-15

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Data

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Bin Jiang on 2012-04-28.

### Cellular Band (Part 22H)

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7V	-9	-0.0108	2.5
-20		-10	-0.0120	2.5
-10		-7	-0.0096	2.5
0		-8	-0.0072	2.5
10		-6	-0.0120	2.5
20		-10	-0.0108	2.5
30		-9	-0.0096	2.5
40		-8	-0.0096	2.5
50		-8	-0.0084	2.5
20		V <sub>end point</sub> = 3.6V	-10	-0.0120

**PCS Band (Part 24E)**

Middle Channel, $f_o = 1880.0\text{MHz}$				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7V	40	0.0213	pass
-20		25	0.0133	pass
-10		32	0.0170	pass
0		32	0.0170	pass
10		36	0.0191	pass
20		38	0.0202	pass
30		39	0.0207	pass
40		37	0.0197	pass
50		28	0.0149	pass
20	V <sub>end point</sub> = 3.6V	29	0.0154	pass

\*\*\*\*\* END OF REPORT \*\*\*\*\*