

FCC PART 22H

MEASUREMENT AND TEST REPORT

For

VERYKOOL USA INC.

4350 Executive Dr. #100, San Diego, CA 92121, USA

FCC ID: WA6CD611

Report Type: Original Report	Product Type: CDMA 1xRTT Mobile Phone
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Report Number: <u>RSZ111129003-00</u>	
Report Date: <u>2012-01-19</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

Product Description for Equipment under Test (EUT)

The *VERYKOOL USA INC.*'s product, model number: *CD611 (FCC ID: WA6CD611)* (the "EUT") in this report was a CDMA 1xRTT Mobile Phone operates in Cellular band, which was measured approximately: 100 mm (W) x 55 mm (W) x 13 mm (H), rated input voltage: DC 3.7V Lithium battery.

Frequency Range:

CDMA Cellular Band: 824.70-848.31 MHz (TX), 869.70-893.31 MHz (RX)

Modulation Mode: QPSK (CDMA Cellular Band)

Transmitter Output Power: 24.43 dBm (Conducted); 23.46 dBm (ERP)

** All measurement and test data in this report was gathered from production sample serial number: CD611201112050001 (Assigned by the applicant). The EUT was received on 2011-11-10.*

Objective

This report is prepared on behalf of *VERYKOOL USA INC.* in accordance with Part 2-Subpart J, Part 22-Subpart H of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

No related submittal(s).

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

Applicable Standards: TIA/EIA 603-C, 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 ± 0.96 dB, the uncertainty of any radiation on emissions measurement is ± 4.0 dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 December 06, 2010. 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.: 382179. 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-C.

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

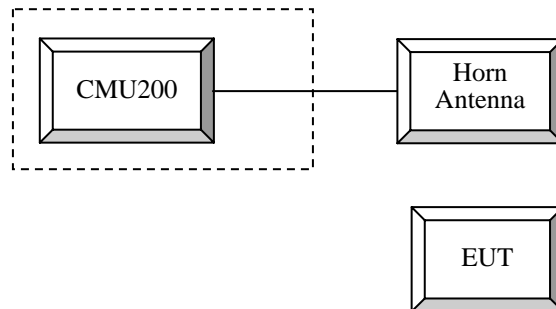
Equipment Modifications

No modification was made to the EUT.

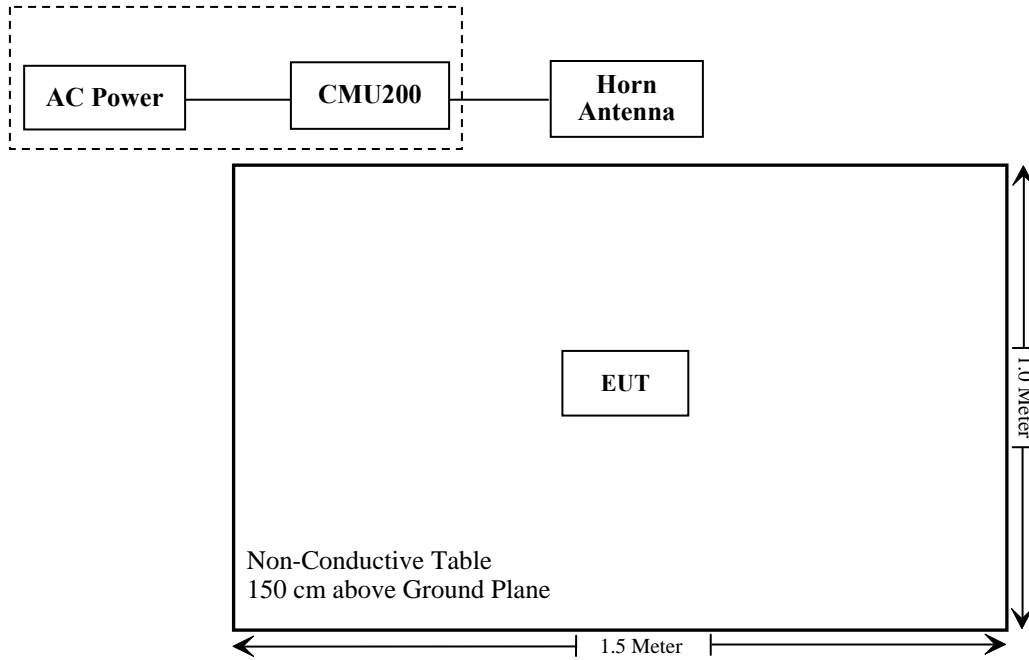
Support Equipment List and Details

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)	RF Output Power	Compliance
§2.1047	Modulation Characteristics	Not Applicable
§2.1049; §22.905 §22.917	Occupied Bandwidth	Compliance
§2.1051, §22.917 (a)	Spurious Emissions at Antenna Terminal	Compliance
§2.1053, §22.917 (a)	Field Strength of Spurious Radiation	Compliance
§22.917 (a)	Out of band emission, Band Edge	Compliance
§2.1055; §22.355	Frequency Stability	Compliance

Note: * Please refer to SAR report released by BACL, report number: R1201113-SAR

FCC §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC §1.1307 and §2.1093.

Test Result

Compliance, please refer to the SAR report: R1201113-SAR

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC §2.1046, §22.913 (a) - RF OUTPUT POWER

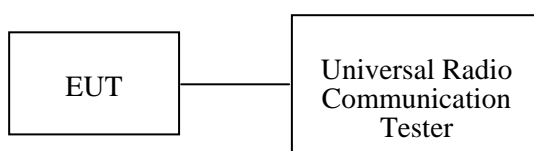
Applicable Standard

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

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-C 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	A052604	2011-05-05	2012-05-04
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
HP	Signal Generator	HP8657A	2849U00982	2011-10-28	2012-10-27
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2011-11-07	2012-11-06
COM POWER	Dipole Antenna	AD-100	041000	2011-09-25	2012-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2011-05-17	2012-05-17

* **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 Brown Lu on 2011-12-13.

1) Conducted Power

Mode	#	Test Case		Conducted Output Power (dBm)		
		FWD RC/TAP	REV RC/TAP	CH 1013	CH 384	CH 777
1xRTT	1	RC1	RC1 (SO2)	24.18	24.39	23.84
	2	RC1	RC1 (SO55)	23.81	24.00	23.83
	3	RC3	RC3 (SO55)	24.19	24.43	23.91
	4	RC3	RC3 (SO2)	23.85	24.06	23.87

2) ERP

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBd)	Cable Loss (dB)	Absolute Level (dBm)	Part 22H Limit (dBm)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Polar (H/V)				
Middle Channel											
836.52	91.65	188	2.5	H	836.52	23.02	H	0	0.7	22.32	38.45
836.52	93.22	304	2.2	V	836.52	24.16	V	0	0.7	23.46	38.45

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

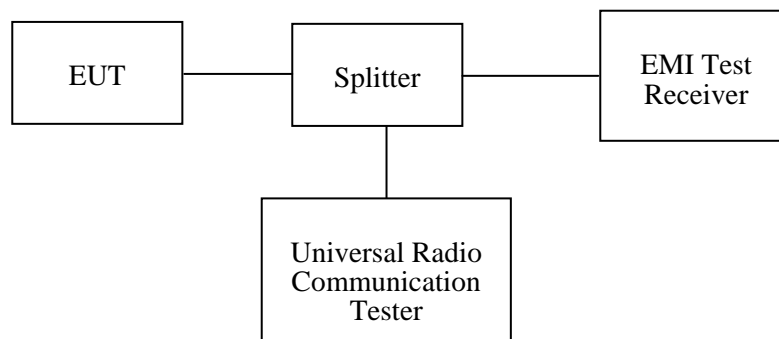
Applicable Standard

FCC §2.1049, §22.917 and §22.905

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 30 kHz 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	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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

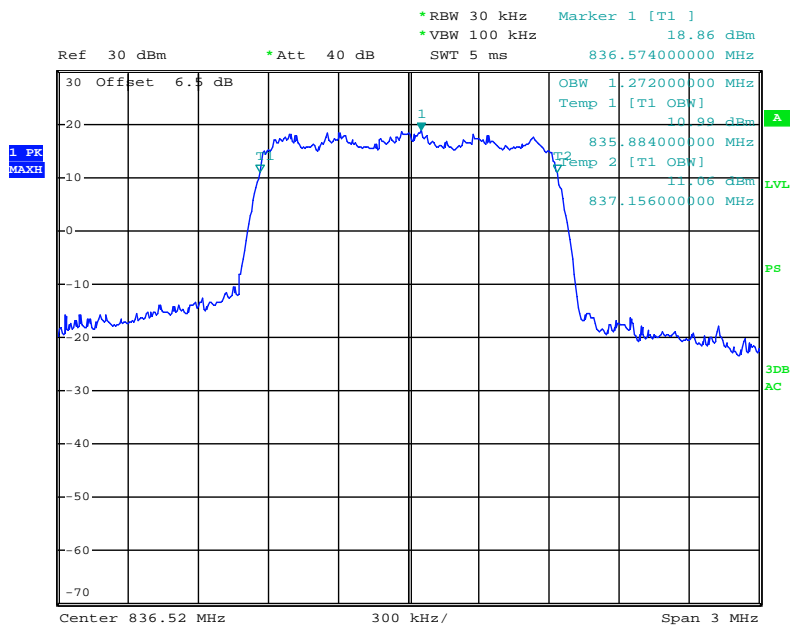
Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Brown Lu on 2011-12-13.

Please refer to the following table and plots:

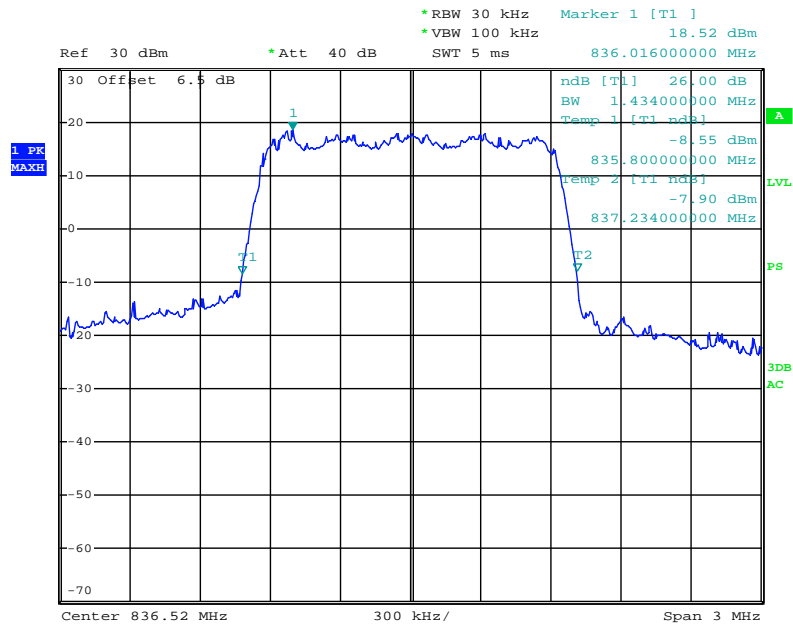
Channel No.	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
384 (Middle)	836.52	1272	1434

99% Emission Bandwidth



Date: 13.DEC.2011 20:52:25

26 dB Emission Bandwidth



Date: 13.DEC.2011 20:55:02

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

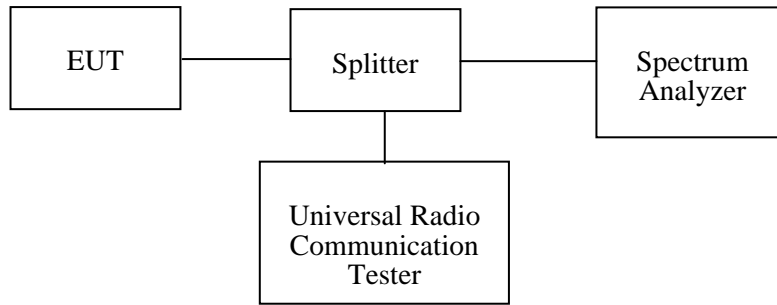
Applicable Standard

FCC §2.1051 and §22.917(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 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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

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

The testing was performed by Brown Lu on 2011-12-20.

Please refer to the following plots.

FCC §2.1053 & §22.917 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053 and §22.917

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 = $10 \lg(\text{TXpwr in Watts}/0.001)$ – the absolute level

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
HP	Signal Generator	HP8657A	2849U00982	2011-10-28	2012-10-27
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2011-11-07	2012-11-06
COM POWER	Dipole Antenna	AD-100	041000	2011-09-25	2012-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2011-05-17	2012-05-17
Electro-Mechanics	Horn Antenna	3116	9510-2270	2011-10-11	2012-10-10

* **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**

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

The testing was performed by Brown Lu on 2011-12-13.

EUT Operation Mode: Transmitting

Radiated Spurious Emissions in 30 MHz-10 GHz

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dB μ V)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain (dB)	Cable Loss (dB)			
Middle Channel, f = 836.52 MHz											
1674	67.09	360	1.8	V	1674	-34.3	6.2	0.98	-29.08	-13	16.08
1674	65.58	180	1.5	H	1674	-39.5	6.2	0.98	-34.28	-13	21.28
2106	44.25	180	1.5	V	2106	-52.1	6.5	1.08	-46.68	-13	33.68
3346	37.56	102	1.6	V	3346	-55.1	6.7	1.37	-49.77	-13	36.77
2106	42.87	270	1.7	H	2106	-55.9	6.5	1.08	-50.48	-13	37.48
456.51	46.25	213	1.6	V	456.51	-51.6	0	0.46	-52.06	-13	39.06
2509	41.04	220	1.3	V	2509	-57.6	7.3	1.20	-51.50	-13	38.50
3346	35.48	90	2.0	H	3346	-58.7	6.7	1.37	-53.37	-13	40.37
208.12	46.87	122	1.5	V	208.12	-53.5	0	0.30	-53.80	-13	40.80
456.51	44.34	249	1.2	H	456.51	-55.4	0	0.46	-55.86	-13	42.86
2509	39.65	20	2.5	H	2509	-61.4	7.3	1.20	-55.30	-13	42.30
208.12	44.21	187	1.4	H	208.12	-58.1	0	0.30	-58.40	-13	45.40

FCC §22.917(a) - BAND EDGES

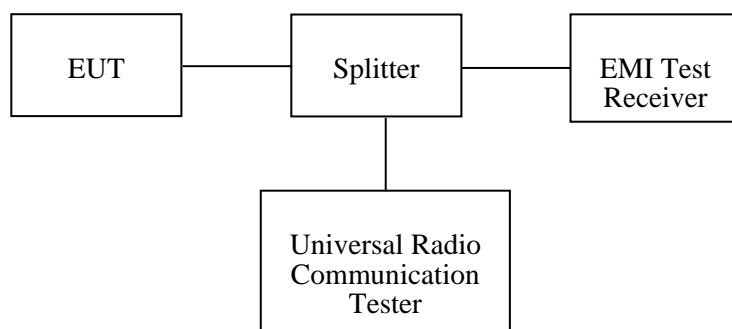
Applicable Standard

According to FCC §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.

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	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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

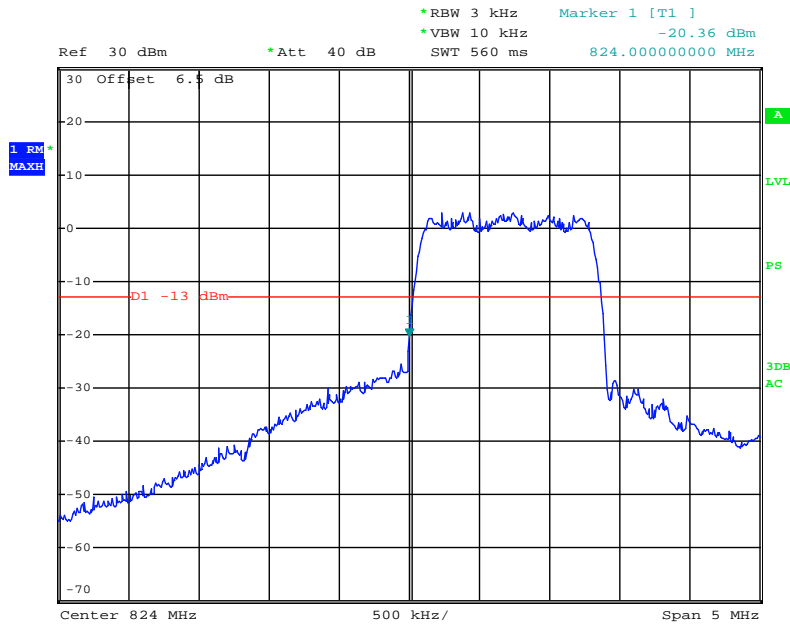
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Brown Lu on 2011-12-13.

Please refer to the following tables and plots.

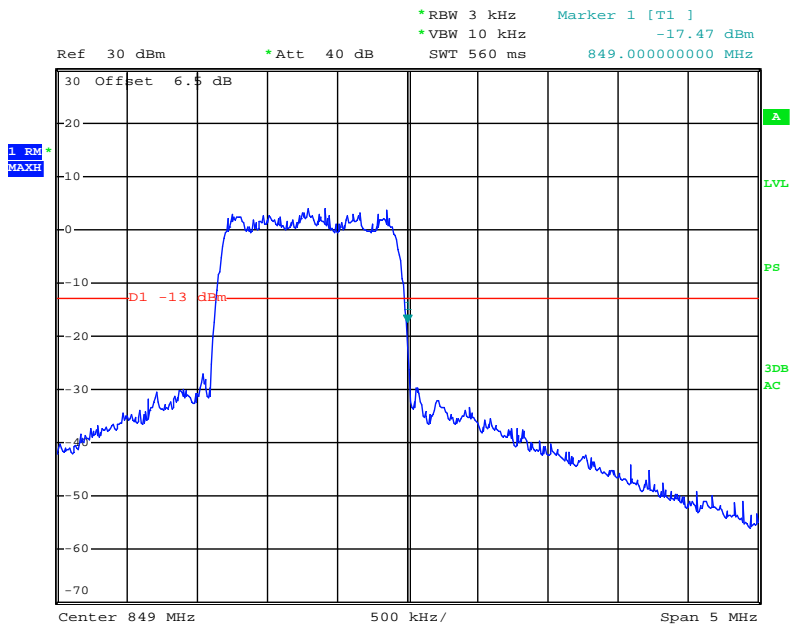
Frequency (MHz)	Band Edge Emission (dBm)	Limit (dBm)
824.0	-20.36	-13
849.0	-17.47	-13

Cellular Band, Left Band Edge



Date: 13.DEC.2011 20:57:57

Cellular Band, Right Band Edge



Date: 13.DEC.2011 20:57:04

FCC §2.1055 & §22.355 - FREQUENCY STABILITY

Applicable Standard

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

According to FCC §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

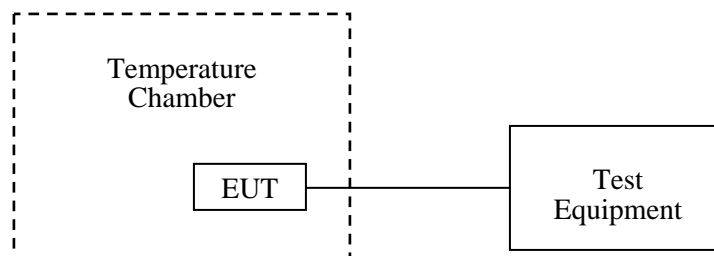
Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

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	109038	2011-04-11	2012-04-10

* **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**

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

The testing was performed by Brown Lu on 2011-12-13.

Middle Channel, $f_0 = 836.52$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	18	0.02152	2.5
-20		16	0.01913	2.5
-10		15	0.01793	2.5
0		13	0.01554	2.5
10		12	0.01435	2.5
20		10	0.01195	2.5
30		12	0.01434	2.5
40		11	0.01315	2.5
50		14	0.01674	2.5
25		4.2	13	0.01554
	3.5	11	0.01315	2.5

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