



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

For

**Nexpro International Limitada**

San Jose-Goicoechea, Guadalupe, Barrio Tournon, Frente Al Hotel Villas Tournon, Oficinas Del  
Bufete Facio Y Canas, Costa Rica

**FCC ID: ZYPBADGER**

|  |  |
|--|--|
| <b>Report Type:</b><br>Original Report       | <b>Product Type:</b><br>Mobile Phone   |
| <b>Test Engineer:</b> Dean Liu               | <i>Dean Liu</i>  |
| <b>Report Number:</b> R1DG120704001-00C      |  |
| <b>Report Date:</b> 2012-07-16               |  |
| <b>Reviewed By:</b> Ivan Cao<br>EMC Engineer | <i>Ivan Cao</i>  |
| <b>Test Laboratory:</b>                      | Bay Area Compliance Laboratories Corp. (Shenzhen)<br>6/F, the 3rd Phase of WanLi Industrial Building,<br>ShiHua Road, FuTian Free Trade Zone<br>Shenzhen, Guangdong, China<br>Tel: +86-755-33320018<br>Fax: +86-755-33320008<br><a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a> |

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government.

\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>GENERAL INFORMATION.....</b>  | <b>4</b>  |
| PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....  | 4         |
| OBJECTIVE.....   | 4         |
| RELATED SUBMITTAL(S)/GRANT(S).....   | 4         |
| TEST METHODOLOGY.....  | 5         |
| TEST FACILITY.....   | 5         |
| <b>SYSTEM TEST CONFIGURATION.....</b>  | <b>6</b>  |
| JUSTIFICATION.....   | 6         |
| EQUIPMENT MODIFICATIONS.....   | 6         |
| SUPPORT EQUIPMENT LIST AND DETAILS.....  | 6         |
| CONFIGURATION OF TEST SETUP.....   | 6         |
| BLOCK DIAGRAM OF TEST SETUP.....   | 7         |
| <b>SUMMARY OF TEST RESULTS.....</b>  | <b>8</b>  |
| <b>FCC §1.1307 &amp; §2.1093 - RF EXPOSURE.....</b>  | <b>9</b>  |
| APPLICABLE STANDARD.....   | 9         |
| TEST RESULT.....   | 9         |
| <b>FCC §2.1047 - MODULATION CHARACTERISTIC.....</b>  | <b>10</b> |
| <b>FCC § 2.1046, § 22.913 (A) &amp; § 24.232 (C) - RF OUTPUT POWER.....</b>                    | <b>11</b> |
| APPLICABLE STANDARD.....   | 11        |
| TEST PROCEDURE.....  | 11        |
| TEST EQUIPMENT LIST AND DETAILS.....   | 11        |
| TEST DATA.....   | 12        |
| <b>FCC §2.1049, §22.917, §22.905 &amp; §24.238 - OCCUPIED BANDWIDTH.....</b>                   | <b>15</b> |
| APPLICABLE STANDARD.....   | 15        |
| TEST PROCEDURE.....  | 15        |
| TEST EQUIPMENT LIST AND DETAILS.....   | 15        |
| TEST DATA.....   | 15        |
| <b>FCC §2.1051, §22.917(A) &amp; §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....</b> | <b>19</b> |
| APPLICABLE STANDARD.....   | 19        |
| TEST PROCEDURE.....  | 19        |
| TEST EQUIPMENT LIST AND DETAILS.....   | 19        |
| TEST DATA.....   | 19        |
| <b>FCC §2.1053, §22.917 &amp; §24.238 - SPURIOUS RADIATED EMISSIONS.....</b>                   | <b>22</b> |
| APPLICABLE STANDARD.....   | 22        |
| TEST PROCEDURE.....  | 22        |
| TEST EQUIPMENT LIST AND DETAILS.....   | 22        |
| TEST DATA.....   | 23        |
| <b>FCC §22.917(A) &amp; §24.238(A) - BAND EDGES.....</b>                                       | <b>26</b> |
| APPLICABLE STANDARD.....   | 26        |
| TEST PROCEDURE.....  | 26        |
| TEST EQUIPMENT LIST AND DETAILS.....   | 26        |
| TEST DATA.....   | 26        |

**FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY.....32**  
APPLICABLE STANDARD .....32  
TEST PROCEDURE .....32  
TEST EQUIPMENT LIST AND DETAILS.....33  
TEST DATA .....33

## GENERAL INFORMATION

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

The *Nexpro International Limitada*'s product, model number: *Badger (FCC ID: ZYPBADGER)* (the "EUT") in this report was a *Badger*, named as Mobile Phone by BAACL corp. which was measured approximately: 11.0 cm (L) x 6.0cm (W) x 1.3cm (H), rated input voltage: DC 3.7V Lithium battery or DC 5.0V from adapter for charging.

#### Adapter Information:

Model No.: YW50;

Input: AC 100-240V, 50/60 Hz, 120mA

Output: 5.0V, 500mA

#### Frequency Range:

GSM 850: 824-849 MHz (Tx), 869-894 MHz (Rx)

PCS 1900: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)

WCDMA Band II: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)

WCDMA Band V: 824-849 MHz (Tx), 869-894 MHz (Rx)

Modulation Mode: GMSK (Cellular/PCS); QPSK/BPSK (WCDMA)  
GFSK, 8-DPSK,  $\pi/4$ -DQPSK (Bluetooth)

#### Transmitter Output Power:

GSM: 34.6dBm (ERP)

WCDMA Band V: 25.7 (ERP)

DCS: 29.6dBm (EIRP)

WCDMA Band II: 22.1 (EIRP)

Bluetooth: 10.43dBm (conducted)

*\* All measurement and test data in this report was gathered from production sample serial number: 120704001 (Assigned by BAACL, Dongguan). The EUT was received on 2012-07-04*

### Objective

This report is prepared on behalf of *Nexpro International Limitada* 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: ZYPBADGER.

FCC Part 15C DSS submission with FCC ID: ZYPBADGER.

## 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/ GPRS/ WCDMA V/ WCDMA II item test was performed with the EUT operating at testing mode.

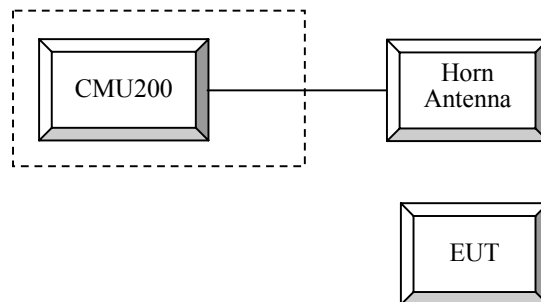
### Equipment Modifications

No modification was made to the EUT.

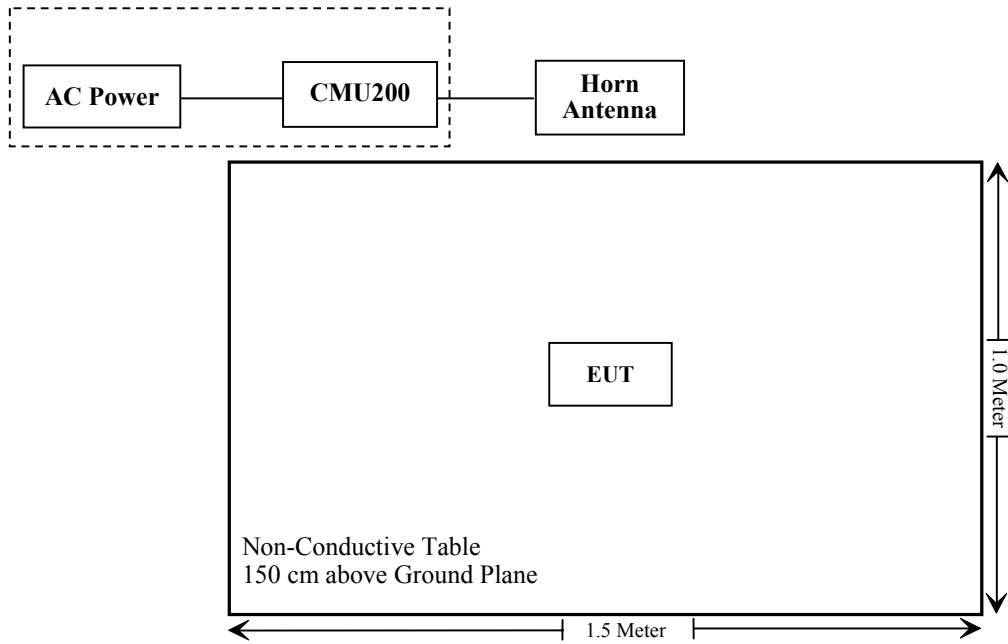
### Support Equipment List and Details

| Manufacturer    | Description                          | Model  | Serial Number |
|-----------------|--------------------------------------|--------|---------------|
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        |

### Configuration of Test Setup



**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

| <b>FCC Rules</b>                         | <b>Description of Test</b>   | <b>Result</b>  |
|--|--|----------------|
| §1.1307, §2.1093                         | RF Exposure (SAR)  | Compliance*    |
| §2.1046;<br>§ 22.913 (a); § 24.232 (c)   | RF Output Power  | Compliance     |
| § 2.1047                                 | Modulation Characteristics   | Not Applicable |
| § 2.1049; § 22.905<br>§ 22.917; § 24.238 | Occupied Bandwidth   | Compliance     |
| § 2.1051,<br>§ 22.917 (a); § 24.238 (a)  | Spurious Emissions at Antenna Terminal                                 | Compliance     |
| § 2.1053<br>§ 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<br>§ 22.355; § 24.235           | Frequency stability vs. temperature<br>Frequency stability vs. voltage | Compliance     |

Note: \* Please refer to SAR report released by BACL, report number: R1207165-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: R1207165-SAR

---

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

---

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

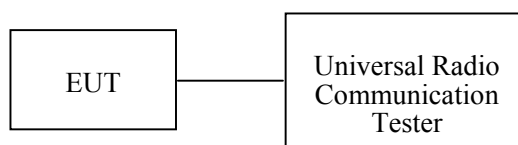
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

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 |
|-----------------|----------------------------------|------------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver                | ESCI       | 100224        | 2012-5-13        | 2012-5-12            |
| Rohde & Schwarz | Spectrum Analyzer                | FSEM       | 1079 8500     | 2011-10-9        | 2012-10-8            |
| Sunol Sciences  | Hybrid Antennas                  | JB3        | A060611-3     | 2012-3-16        | 2013-3-15            |
| Dayang          | Horn Antenna                     | OMCDH10180 | 10279001A     | 2011-8-22        | 2013-8-21            |
| EMCO            | Adjustable Dipole Antenna System | 3121C      | 9109-753      | N/A              | N/A                  |
| Dayang          | Horn Antenna                     | OMCDH10180 | 10279001B     | 2010-7-30        | 2015-7-29            |
| HP              | Signal Generator                 | 8648A      | 3426A00831    | 2011-10-9        | 2012-10-8            |
| Giga            | Signal Generator                 | 1026       | 320408        | 2012-3-15        | 2013-3-14            |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 Dean Liu on 2012-07-11.*

**Conducted Power**

**Cellular Band & PCS Band**

| Band     | Channel No. | Test Result(dBm) |                |                |                |                |
|----------|-------------|------------------|----------------|----------------|----------------|----------------|
|          |             | GSM              | GPRS 1 TX Slot | GPRS 2 TX Slot | GPRS 3 TX Slot | GPRS 4 TX Slot |
| Cellular | 128         | 31.95            | 31.93          | 29.07          | 28.12          | 27.05          |
|          | 190         | 32.40            | 31.78          | 28.9           | 27.92          | 26.83          |
|          | 251         | 32.26            | 31.64          | 28.73          | 27.75          | 26.59          |
| PCS      | 512         | 30.54            | 29.91          | 25.78          | 24.82          | 23.73          |
|          | 661         | 30.67            | 29.99          | 25.93          | 24.97          | 23.87          |
|          | 810         | 30.72            | 30.08          | 26.11          | 25.18          | 24.11          |

**WCDMA Band**

| Band       | Channel No. | Test Result(dBm) |
|------------|-------------|------------------|
| WCDMA 850  | 4132        | 22.57            |
|            | 4183        | 22.40            |
|            | 4233        | 22.49            |
| WCDMA 1900 | 9262        | 22.08            |
|            | 9400        | 21.99            |
|            | 9538        | 21.79            |

**ERP & EIRP**

**ERP for Cellular Band (Part 22H)**

| Frequency | Polar | S.A. Reading | S.G. Level | Antenna Gain | Cable Loss | Absolute Level | Limit |
|-----------|-------|--------------|------------|--------------|------------|----------------|-------|
|           | H/V   | dB $\mu$ V   | dBm        | dBd          | dB         | dBm            | dBm   |
| 824.2     | H     | 89.32        | 23.1       | 0.0          | 3.3        | 19.8           | 38.4  |
|           | V     | 104.11       | 37.9       | 0.0          | 3.3        | 34.6           | 38.4  |
| 836.6     | H     | 88.60        | 22.4       | 0.0          | 3.3        | 19.1           | 38.4  |
|           | V     | 103.52       | 37.3       | 0.0          | 3.3        | 34.0           | 38.4  |
| 848.8     | H     | 88.60        | 22.4       | 0.0          | 3.3        | 19.1           | 38.4  |
|           | V     | 102.51       | 36.3       | 0.0          | 3.3        | 33.0           | 38.4  |

**EIRP for PCS Band (Part 24E)**

| Frequency | 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   |
| 1850.2    | H     | 92.89        | 22.1       | 8.0          | 0.9        | 29.2           | 33.0  |
|           | V     | 90.93        | 28.1       | 8.0          | 0.9        | 27.2           | 33.0  |
| 1880.0    | H     | 92.69        | 21.9       | 8.0          | 0.9        | 29.0           | 33.0  |
|           | V     | 91.41        | 28.6       | 8.0          | 0.9        | 27.7           | 33.0  |
| 1909.8    | H     | 93.26        | 22.1       | 8.4          | 0.9        | 29.6           | 33.0  |
|           | V     | 91.61        | 28.8       | 8.4          | 0.9        | 27.9           | 33.0  |

**ERP for WCDMA 850 Band (Part 22H)**

| Frequency | Polar | S.A. Reading | S.G. Level | Antenna Gain | Cable Loss | Absolute Level | Limit |
|-----------|-------|--------------|------------|--------------|------------|----------------|-------|
|           | H/V   | dB $\mu$ V   | dBm        | dBd          | dB         | dBm            | dBm   |
| 826.4     | H     | 81.41        | 15.2       | 0.0          | 3.3        | 11.9           | 38.4  |
|           | V     | 93.16        | 27.0       | 0.0          | 3.3        | 23.7           | 38.4  |
| 836.6     | H     | 81.55        | 15.4       | 0.0          | 3.3        | 12.0           | 38.4  |
|           | V     | 95.16        | 29.0       | 0.0          | 3.3        | 25.7           | 38.4  |
| 846.6     | H     | 81.02        | 14.8       | 0.0          | 3.3        | 11.5           | 38.4  |
|           | V     | 94.42        | 28.2       | 0.0          | 3.3        | 24.9           | 38.4  |

**EIRP for WCDMA 1900 Band (Part 24E)**

| Frequency | Polar | S.A.<br>Reading | S.G.<br>Level | Antenna<br>Gain | Cable<br>Loss | Absolute<br>Level | Limit |
|-----------|-------|-----------------|---------------|-----------------|---------------|-------------------|-------|
|           | H/V   | dB $\mu$ V      | dBm           | dBi             | dB            | dBm               | dBm   |
| 1852.4    | H     | 85.51           | 14.7          | 8.0             | 0.9           | 21.8              | 33.0  |
|           | V     | 84.15           | 21.3          | 8.0             | 0.9           | 28.4              | 33.0  |
| 1880.0    | H     | 85.78           | 15.0          | 8.0             | 0.9           | 22.1              | 33.0  |
|           | V     | 83.34           | 20.5          | 8.0             | 0.9           | 27.6              | 33.0  |
| 1907.6    | H     | 84.89           | 13.7          | 8.4             | 0.9           | 21.2              | 33.0  |
|           | V     | 83.59           | 20.8          | 8.4             | 0.9           | 28.3              | 33.0  |

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

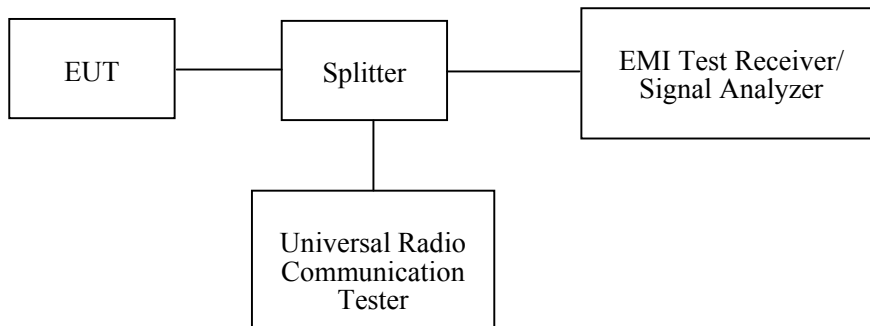
**Applicable Standard**

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) or 100 kHz (WCDMA) 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 | Spectrum Analyzer | FSP38 | 100478        | 2012-5-13        | 2013-5-12            |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 |

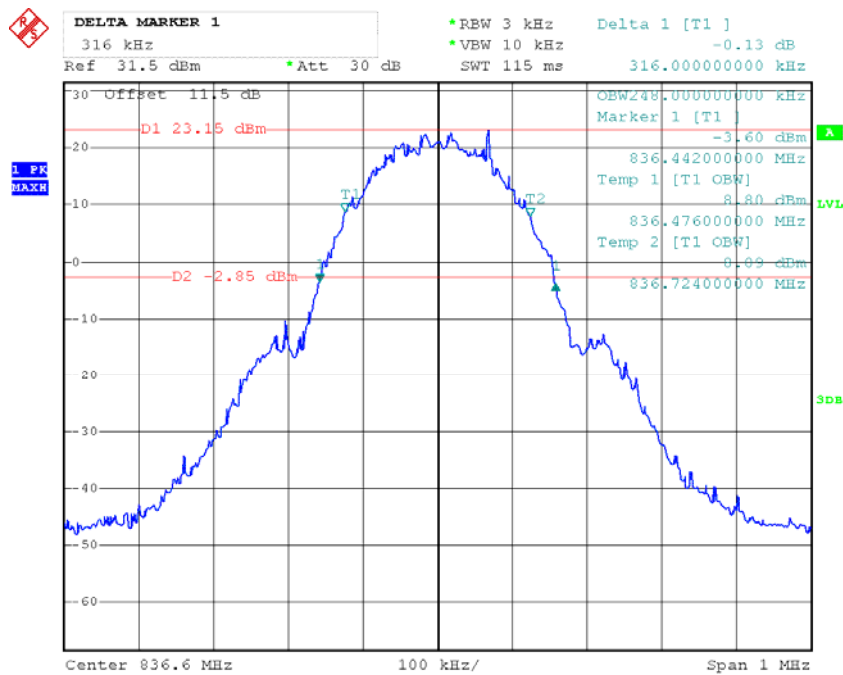
*The testing was performed by Dean Liu on 2012-07-05.*

Cellular Band & PCS Band

| Band     | Channel No. | 99% Occupied Bandwidth | 26 dB Occupied Bandwidth |
|----------|-------------|------------------------|--------------------------|
|          |             | kHz                    | kHz                      |
| Cellular | 190         | 248                    | 316                      |
| PCS      | 661         | 248                    | 318                      |

Please refer to the following plots.

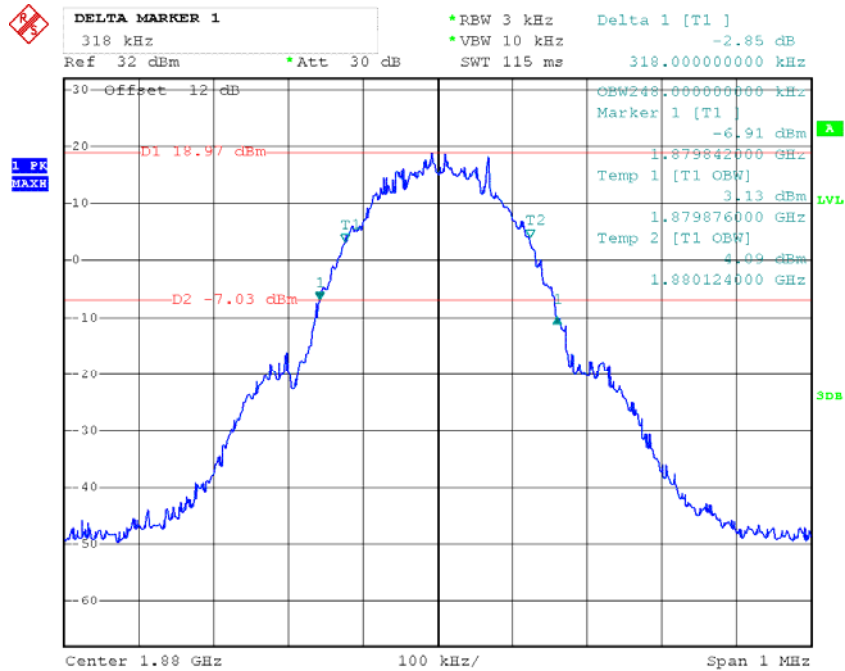
Cellular Band (Part 22H)



Date: 5.JUL.2012 17:33:49



PCS Band (Part 24E)



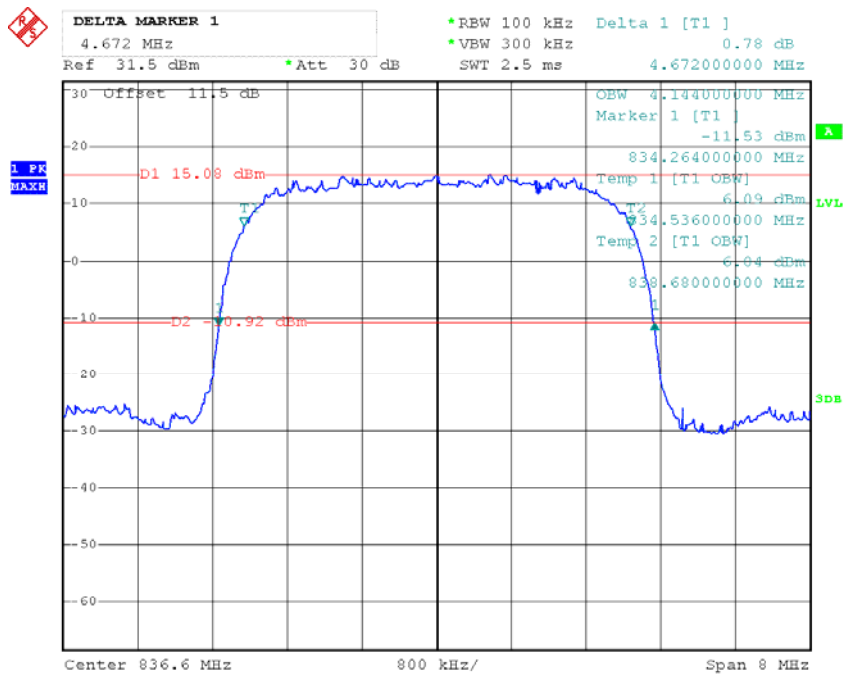
Date: 5.JUL.2012 17:49:42

WCDMA 850 Band & WCDMA 1900 Band

| Band       | Channel No. | 99% Occupied Bandwidth | 26 dB Occupied Bandwidth |
|------------|-------------|------------------------|--------------------------|
|            |             | kHz                    | kHz                      |
| WCDMA 850  | 4183        | 4144                   | 4672                     |
| WCDMA 1900 | 9400        | 4128                   | 4680                     |

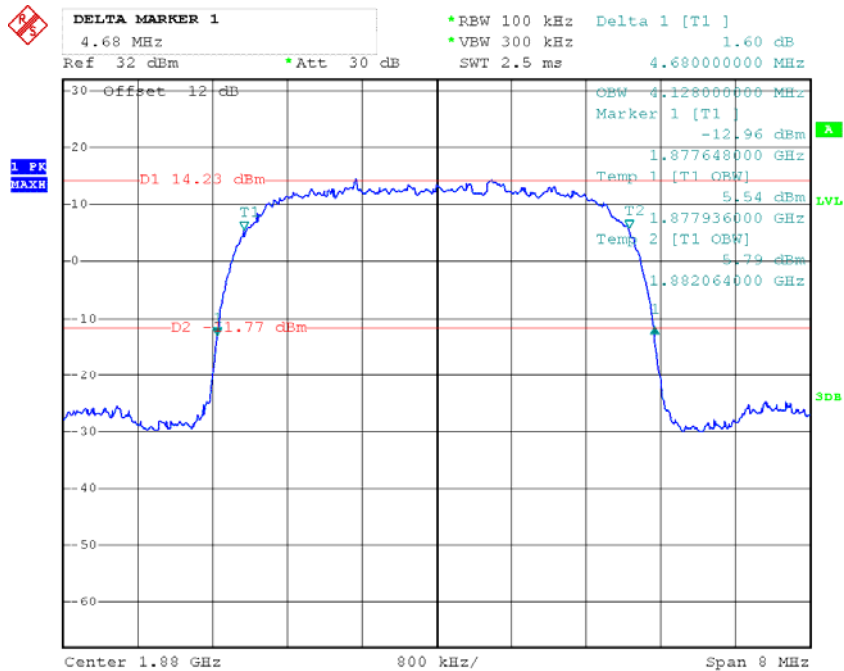
Please refer to the following plots.

WCDMA 850 Band (Part 22H)



Date: 5.JUL.2012 19:48:39

WCDMA 1900 Band (Part 24E)



Date: 5.JUL.2012 18:47:04

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

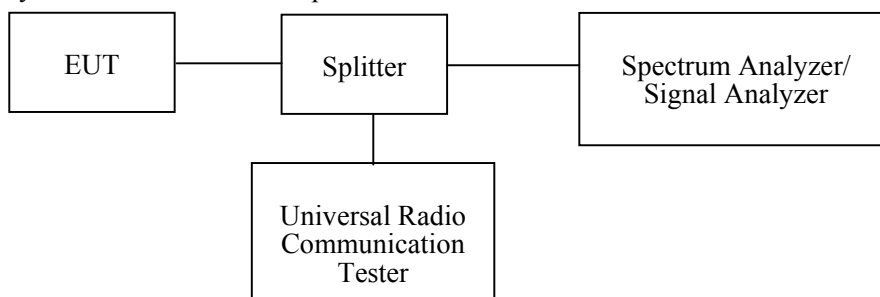
### Applicable Standard

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 1MHz. 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 | Spectrum Analyzer | FSEM  | 1079 8500     | 2011-10-9        | 2012-10-8            |
| Rohde & Schwarz | Spectrum Analyzer | FSP38 | 100478        | 2012-5-13        | 2013-5-12            |

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

### Test Data

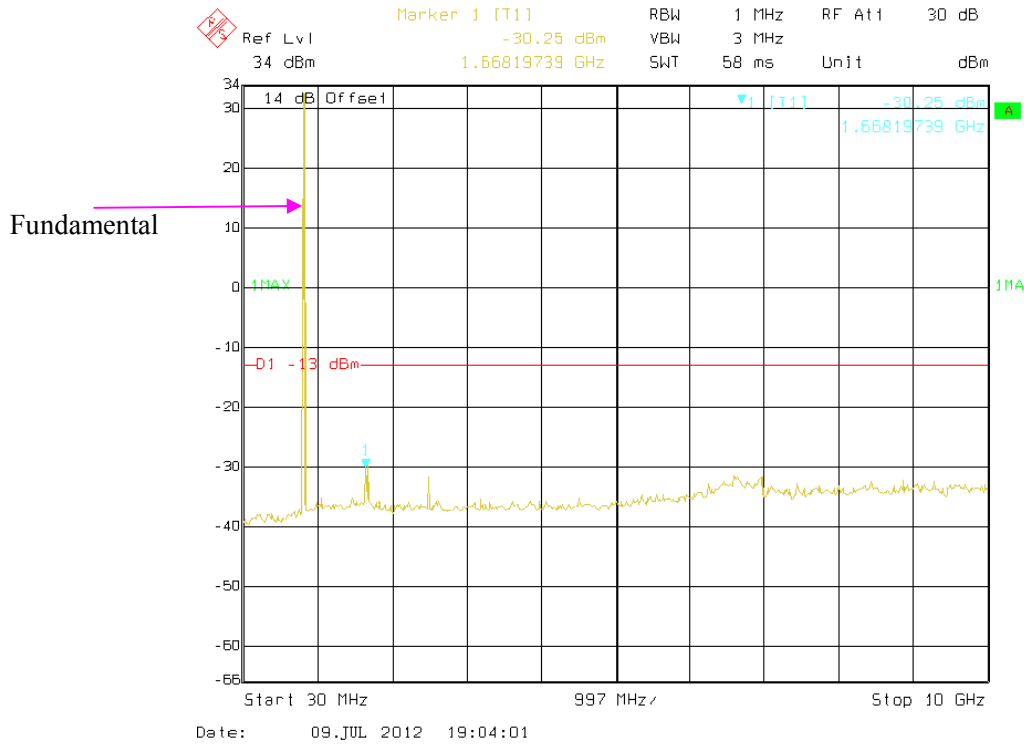
#### Environmental Conditions

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

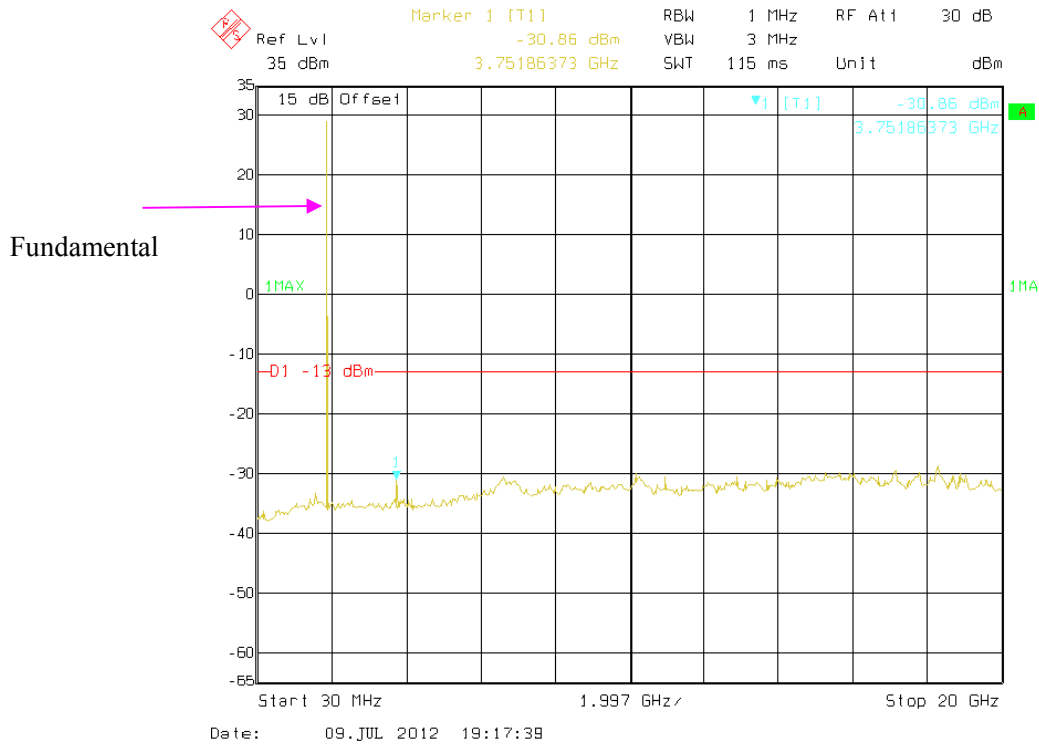
*The testing was performed by Dean Liu on 2012-07-09.*

Please refer to the following plots.

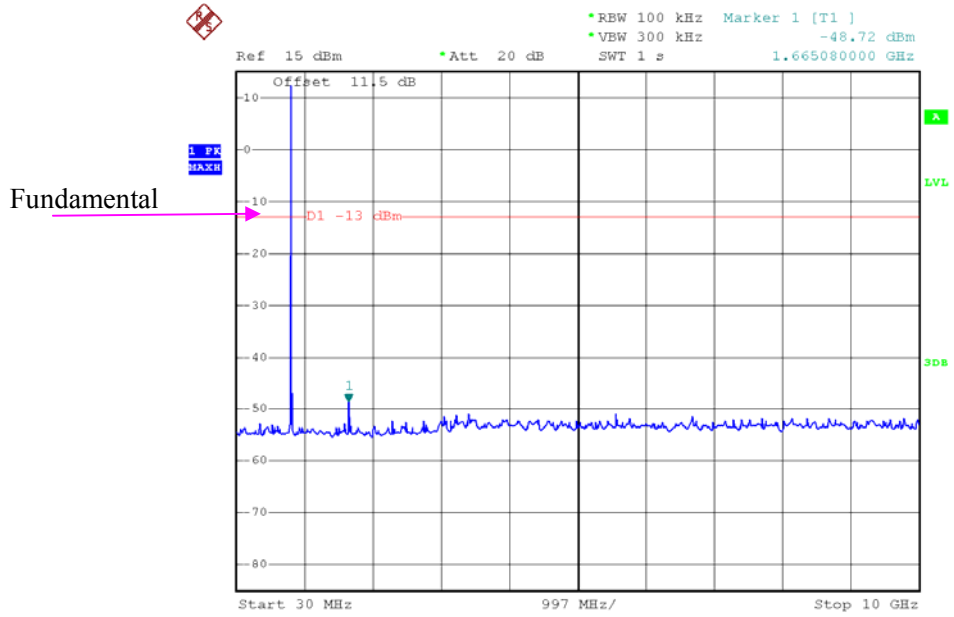
**Cellular Band (Part 22H) — Middle Channel**



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

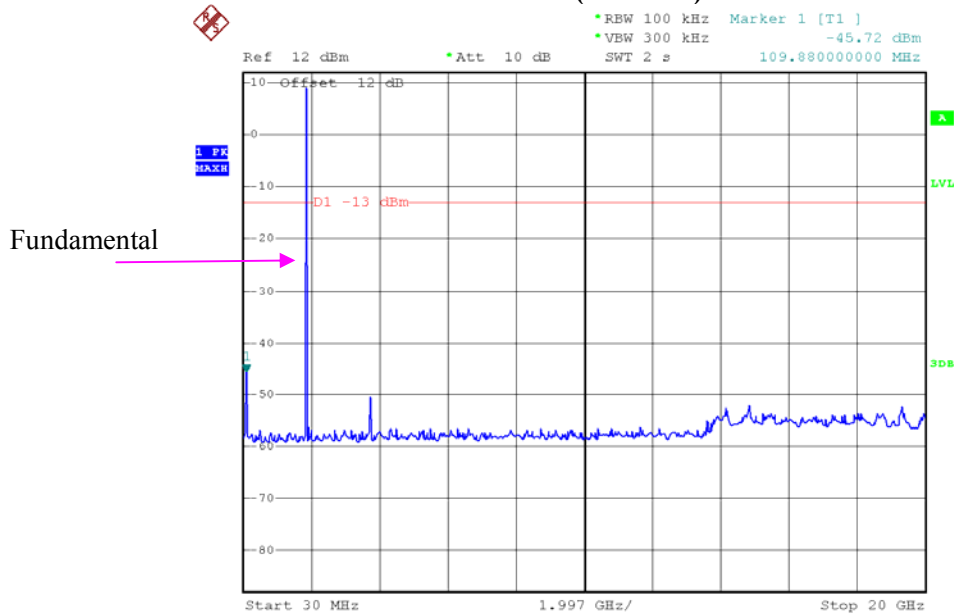


### WCDMA 850 Band (Part 22H) — Middle Channel



Date: 5.JUL.2012 18:20:25

### WCDMA 1900 Band (Part 24E) — Middle Channel



Date: 5.JUL.2012 18:27:46

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

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

### **Test Equipment List and Details**

| <b>Manufacturer</b> | <b>Description</b> | <b>Model</b> | <b>Serial Number</b> | <b>Calibration Date</b> | <b>Calibration Due Date</b> |
|---------------------|--------------------|--------------|----------------------|-------------------------|-----------------------------|
| Rohde & Schwarz     | EMI Test Receiver  | ESCI         | 100224               | 2012-5-13               | 2012-5-12                   |
| Rohde & Schwarz     | Spectrum Analyzer  | FSEM         | 1079 8500            | 2011-10-9               | 2012-10-8                   |
| Sunol Sciences      | Hybrid Antennas    | JB3          | A060611-3            | 2012-3-16               | 2013-3-15                   |
| Dayang              | Horn Antenna       | OMCDH1018    | 10279001A            | 2011-8-22               | 2013-8-21                   |
| EMCO                | Adjustable Dipole  | 3121C        | 9109-753             | N/A                     | N/A                         |
| Dayang              | Horn Antenna       | OMCDH1018    | 10279001B            | 2011-7-30               | 2013-7-29                   |
| HP                  | Signal Generator   | 8648A        | 3426A00831           | 2011-10-9               | 2012-10-8                   |
| Giga                | Signal Generator   | 1026         | 320408               | 2012-3-15               | 2013-3-14                   |
| HP                  | Pre-amplifier      | 8447E        | 2434A02181           | 2011-10-8               | 2012-10-7                   |
| mini-circuits       | Wideband Amplifier | ZVA-183-S+   | 96901149             | 2012-4-24               | 2013-4-23                   |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 Dean Liu on 2012-07-11.

EUT Operation Mode: Transmitting

**Cellular Band (Part 22H)****30 MHz-10 GHz**

| 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, <math>f_c = 824.2</math> MHz</b>    |       |             |            |              |            |                |       |        |
| 1648.400  | H     | 43.72       | -57.2      | 7.3          | 0.9        | -50.8          | -13.0 | 37.8   |
| 2472.600  | H     | 42.09       | -56.4      | 9.8          | 0.9        | -47.4          | -13.0 | 34.4   |
| 1648.400  | V     | 39.85       | -61.1      | 7.3          | 0.9        | -54.7          | -13.0 | 41.7   |
| 2472.600  | V     | 42.07       | -56.4      | 9.8          | 0.9        | -47.4          | -13.0 | 34.4   |
| <b>Middle Channel, <math>f_c = 836.6</math> MHz</b> |       |             |            |              |            |                |       |        |
| 1673.200  | H     | 41.01       | -59.9      | 7.3          | 0.9        | -53.5          | -13.0 | 40.5   |
| 2509.800  | H     | 43.25       | -55.5      | 10.1         | 0.9        | -46.3          | -13.0 | 33.3   |
| 1673.200  | V     | 42.93       | -58.0      | 7.3          | 0.9        | -51.6          | -13.0 | 38.6   |
| 2509.800  | V     | 44.25       | -54.5      | 10.1         | 0.9        | -45.3          | -13.0 | 32.3   |
| <b>High Channel, <math>f_c = 848.8</math> MHz</b>   |       |             |            |              |            |                |       |        |
| 1696.800  | H     | 41.01       | -59.9      | 7.3          | 0.9        | -53.5          | -13.0 | 40.5   |
| 2545.200  | H     | 41.69       | -57.1      | 10.1         | 0.9        | -47.8          | -13.0 | 34.8   |
| 1696.800  | V     | 39.43       | -61.5      | 7.3          | 0.9        | -55.1          | -13.0 | 42.1   |
| 2545.200  | V     | 41.65       | -57.1      | 10.1         | 0.9        | -47.9          | -13.0 | 34.9   |

## PCS Band (Part 24E)

## 30 MHz-20 GHz

| 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, <math>f_c = 1850.2</math> MHz</b>    |       |              |            |              |            |                |       |        |
| 3700.400   | H     | 53.82        | -42.2      | 10.0         | 1.1        | -33.4          | -13.0 | 20.4   |
| 5550.600   | H     | 43.22        | -51.0      | 11.3         | 1.5        | -41.2          | -13.0 | 28.2   |
| 3700.400   | V     | 52.39        | -43.7      | 10.0         | 1.1        | -34.8          | -13.0 | 21.8   |
| 5550.600   | V     | 46.95        | -47.3      | 11.3         | 1.5        | -37.5          | -13.0 | 24.5   |
| <b>Middle Channel, <math>f_c = 1880.0</math> MHz</b> |       |              |            |              |            |                |       |        |
| 3760.000   | H     | 54.65        | -41.4      | 10.0         | 1.1        | -32.5          | -13.0 | 19.5   |
| 5640.000   | H     | 39.01        | -55.1      | 11.2         | 1.5        | -45.4          | -13.0 | 32.4   |
| 3760.000   | V     | 50.66        | -45.4      | 10.0         | 1.1        | -36.5          | -13.0 | 23.5   |
| 5640.000   | V     | 47.61        | -46.5      | 11.2         | 1.5        | -36.8          | -13.0 | 23.8   |
| <b>High Channel, <math>f_c = 1909.8</math> MHz</b>   |       |              |            |              |            |                |       |        |
| 3819.600   | H     | 54.02        | -41.9      | 9.8          | 1.1        | -33.2          | -13.0 | 20.2   |
| 5729.400   | H     | 39.37        | -54.7      | 11.1         | 1.5        | -45.0          | -13.0 | 32.0   |
| 3819.600   | V     | 53.87        | -42.1      | 9.8          | 1.1        | -33.3          | -13.0 | 20.3   |
| 5729.400   | V     | 51.29        | -42.7      | 11.1         | 1.5        | -33.1          | -13.0 | 20.1   |

## WCDMA 850 Band (Part 22H)

## 30 MHz-10 GHz

| 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, <math>f_c = 826.4</math> MHz</b>    |       |              |            |              |            |                |       |        |
| 1652.800  | H     | 42.57        | -58.4      | 7.3          | 0.9        | -51.9          | -13.0 | 38.9   |
| 1652.800  | V     | 43.89        | -52.1      | 7.3          | 0.9        | -45.6          | -13.0 | 32.6   |
| 2479.200  | H     | 33.56        | -69.9      | 9.8          | 0.9        | -60.9          | -13.0 | 47.9   |
| 2479.200  | V     | 34.77        | -63.7      | 9.8          | 0.9        | -54.7          | -13.0 | 41.7   |
| <b>Middle Channel, <math>f_c = 836.6</math> MHz</b> |       |              |            |              |            |                |       |        |
| 1673.200  | H     | 41.01        | -59.9      | 7.3          | 0.9        | -53.5          | -13.0 | 40.5   |
| 1673.200  | V     | 42.93        | -53.0      | 7.3          | 0.9        | -46.6          | -13.0 | 33.6   |
| 2509.800  | H     | 31.24        | -72.5      | 10.1         | 0.9        | -63.3          | -13.0 | 50.3   |
| 2509.800  | V     | 32.59        | -66.2      | 10.1         | 0.9        | -56.9          | -13.0 | 43.9   |
| <b>High Channel, <math>f_c = 846.6</math> MHz</b>   |       |              |            |              |            |                |       |        |
| 1693.200  | H     | 42.96        | -58.0      | 7.3          | 0.9        | -51.5          | -13.0 | 38.5   |
| 1693.200  | V     | 43.54        | -52.4      | 7.3          | 0.9        | -46.0          | -13.0 | 33.0   |
| 2539.800  | H     | 32.86        | -70.9      | 10.1         | 0.9        | -61.6          | -13.0 | 48.6   |
| 2539.800  | V     | 34.36        | -64.4      | 10.1         | 0.9        | -55.1          | -13.0 | 42.1   |



**WCDMA 1900 Band (Part 24E)****30 MHz-20 GHz**

| 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 = 1852.4 MHz</b>    |       |              |            |              |            |                |       |        |
| 3704.800                               | H     | 59.62        | -36.4      | 10.0         | 1.1        | -27.6          | -13.0 | 14.6   |
| 3704.800                               | V     | 42.73        | -53.3      | 10.0         | 1.1        | -44.5          | -13.0 | 31.5   |
| 5557.200                               | H     | 53.46        | -40.8      | 11.3         | 1.5        | -30.9          | -13.0 | 17.9   |
| 5557.200                               | V     | 39.96        | -54.3      | 11.3         | 1.5        | -44.4          | -13.0 | 31.4   |
| <b>Middle Channel, fo = 1880.0 MHz</b> |       |              |            |              |            |                |       |        |
| 3760.000                               | H     | 58.14        | -37.9      | 10.0         | 1.1        | -29.0          | -13.0 | 16.0   |
| 5640.000                               | V     | 39.62        | -57.3      | 11.2         | 1.5        | -47.6          | -13.0 | 34.6   |
| 3760.000                               | H     | 52.16        | -41.1      | 10.0         | 1.1        | -32.2          | -13.0 | 19.2   |
| 5640.000                               | V     | 39.50        | -54.6      | 11.2         | 1.5        | -44.9          | -13.0 | 31.9   |
| <b>High Channel, fo = 1907.6 MHz</b>   |       |              |            |              |            |                |       |        |
| 3815.200                               | H     | 60.32        | -35.6      | 9.8          | 1.1        | -26.9          | -13.0 | 13.9   |
| 3815.200                               | V     | 42.69        | -53.3      | 9.8          | 1.1        | -44.5          | -13.0 | 31.5   |
| 5722.800                               | H     | 53.89        | -40.1      | 11.1         | 1.5        | -30.5          | -13.0 | 17.5   |
| 5722.800                               | V     | 44.56        | -49.5      | 11.1         | 1.5        | -39.8          | -13.0 | 26.8   |

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

### Applicable Standard

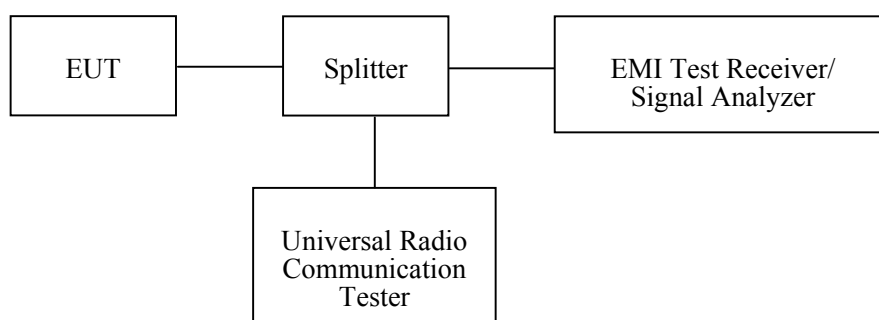
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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 |
|--------------|-------------------|-------|---------------|------------------|----------------------|
| BIZI         | Spectrum Analyzer | FSP38 | 100478        | 2012-5-13        | 2013-5-12            |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 Dean Liu on 2012-07-05.*

Please refer to the following tables and plots.

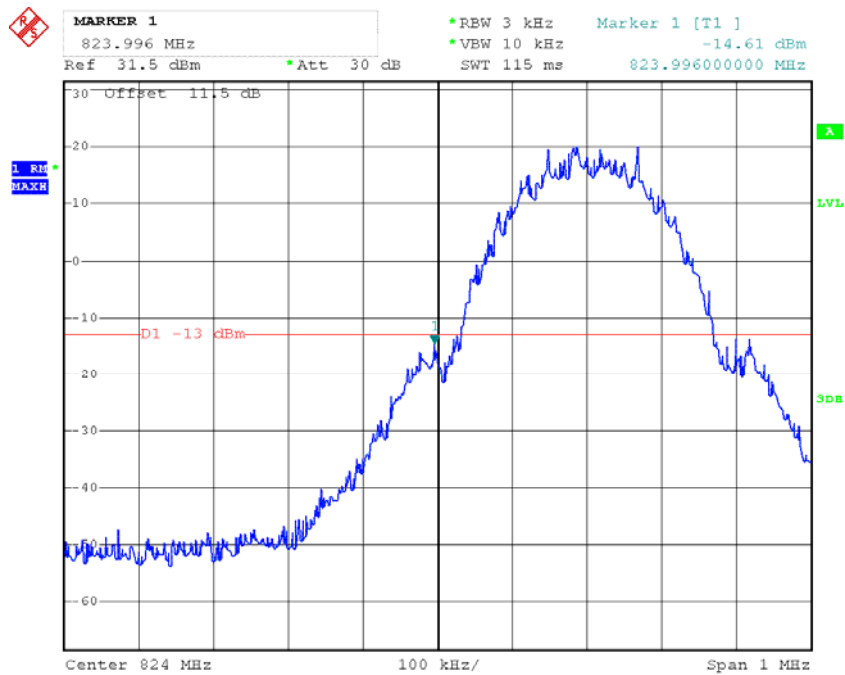
**Cellular Band (Part 22H)**

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 128             | -14.61         | -13         |
| 251             | -14.61         | -13         |

**PCS Band (Part 24E)**

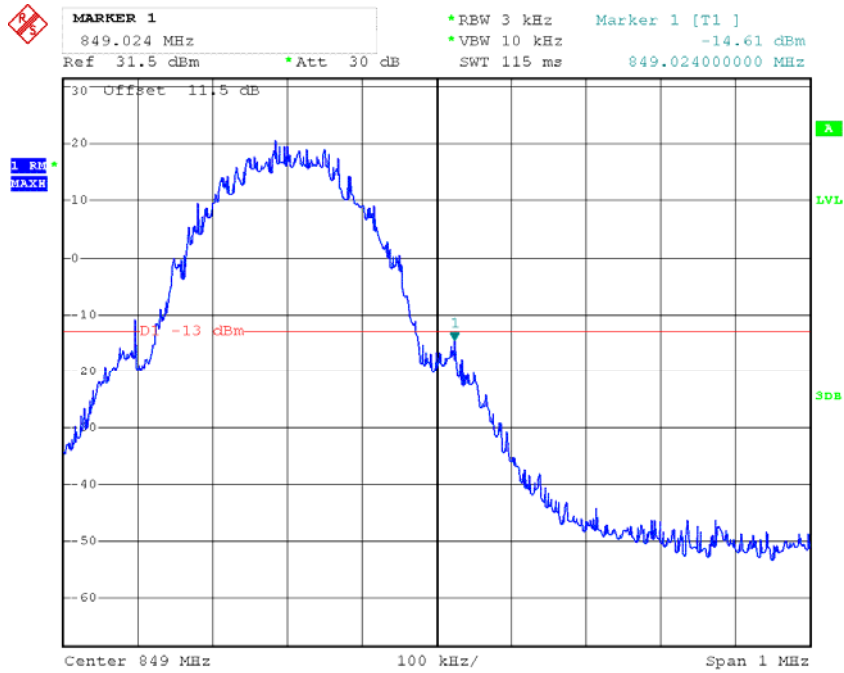
| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 512             | -20.74         | -13         |
| 810             | -18.12         | -13         |

**Cellular Band, Left Band Edge**



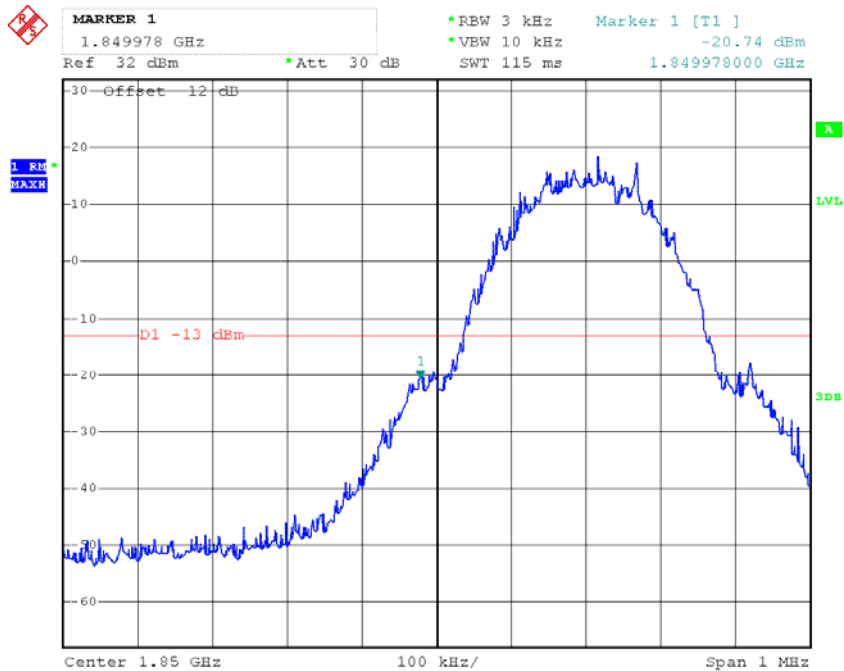
Date: 5.JUL.2012 17:36:17

### Cellular Band, Right Band Edge



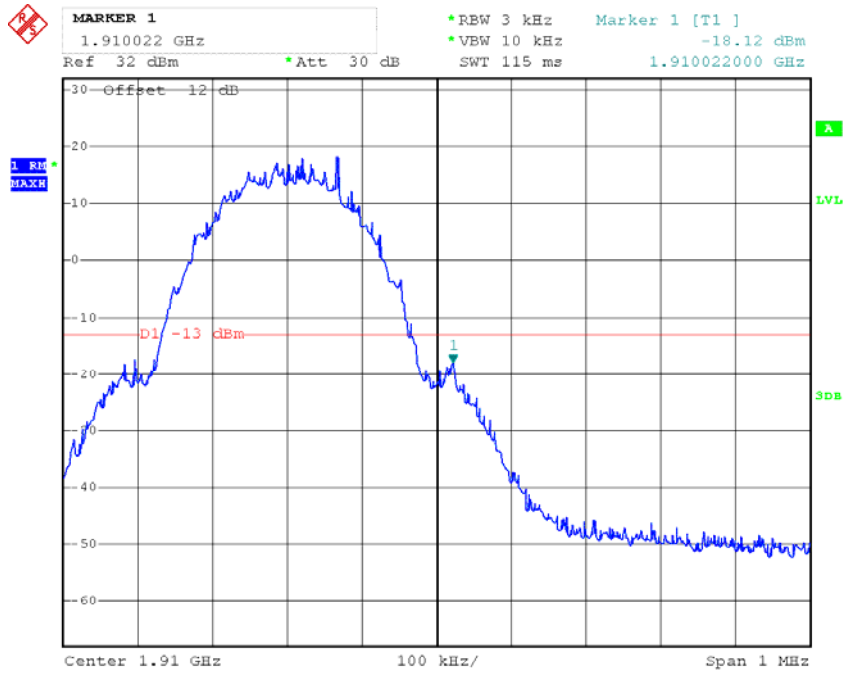
Date: 5.JUL.2012 17:35:30

### PCS Band, Left Band Edge



Date: 5.JUL.2012 17:51:23

**PCS Band, Right Band Edge**



Date: 5.JUL.2012 17:53:17

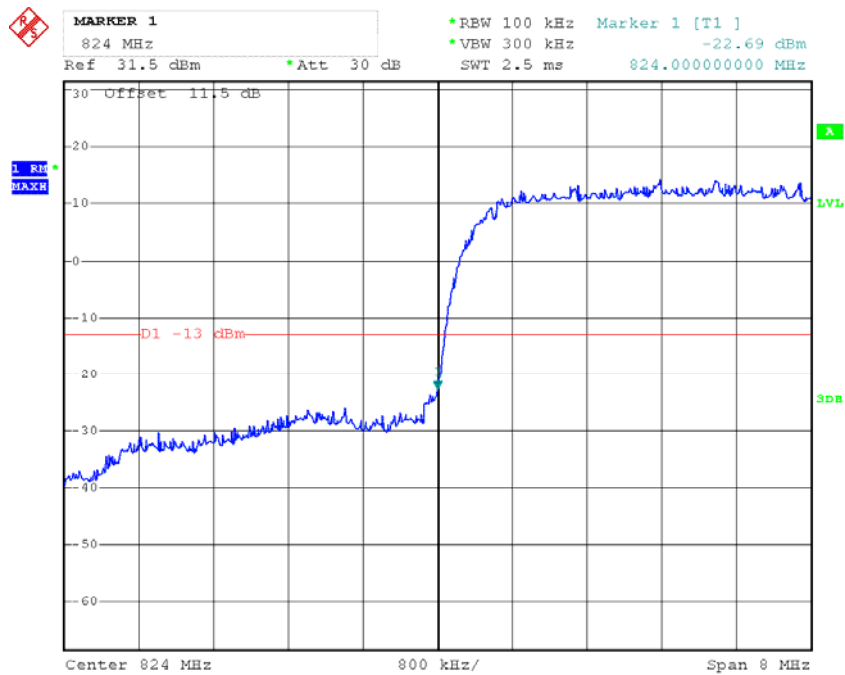
**WCDMA 850 Band (Part 22H)**

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 4132            | -22.69         | -13         |
| 4233            | -21.77         | -13         |

**WCDMA 1900 Band (Part 24E)**

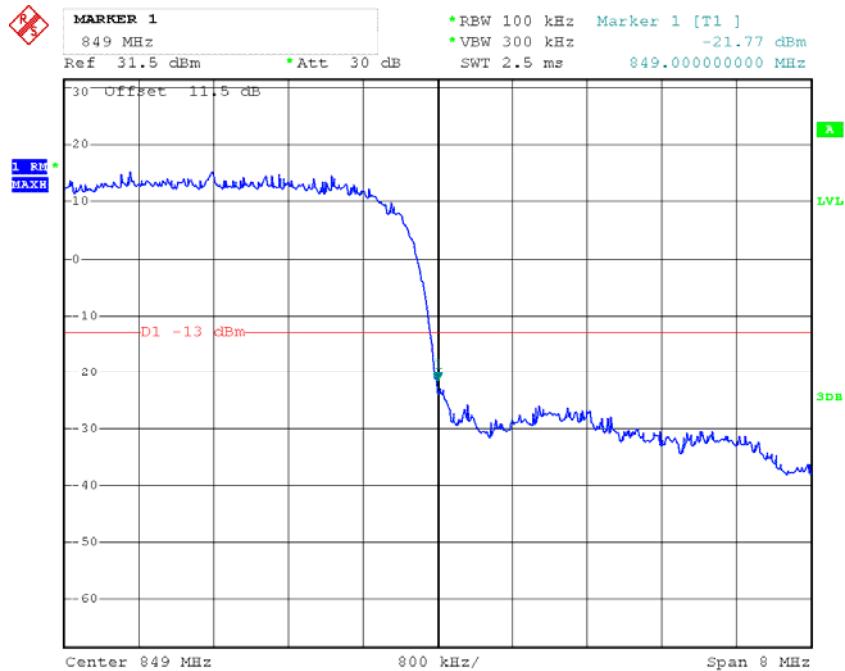
| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 9262            | -23.95         | -13         |
| 9538            | -23.55         | -13         |

### Cellular Band, Left Band Edge



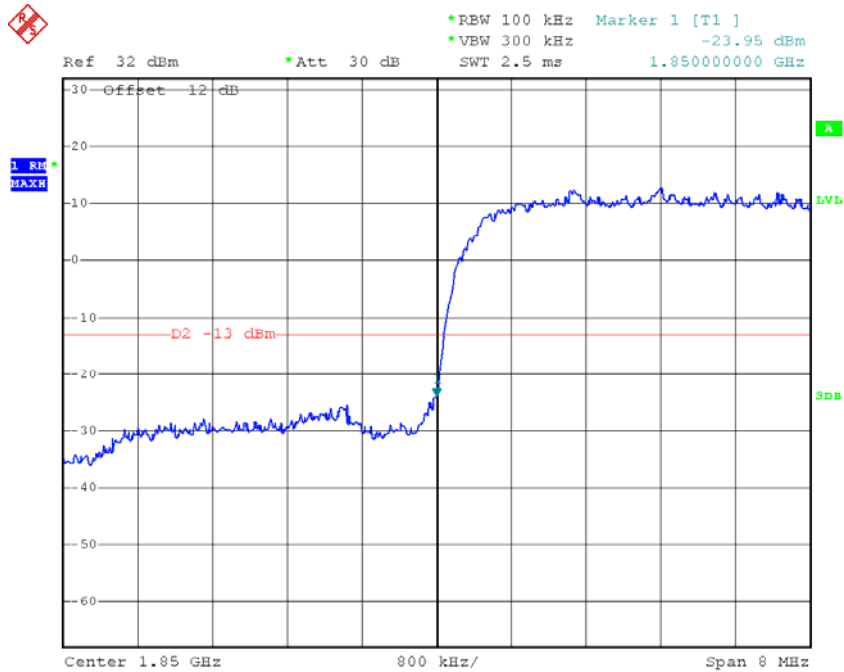
Date: 5.JUL.2012 19:49:55

### Cellular Band, Right Band Edge



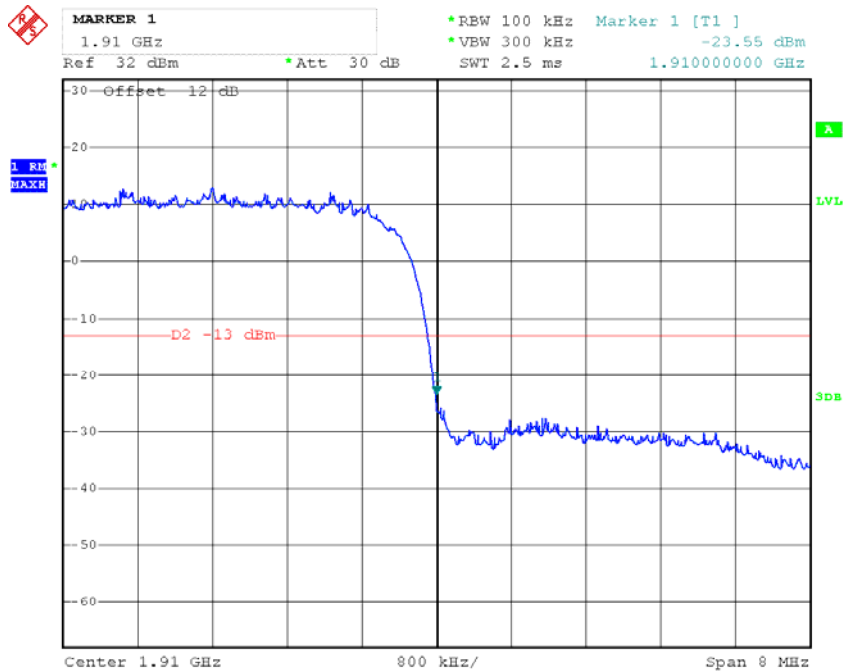
Date: 5.JUL.2012 19:50:36

**PCS Band, Left Band Edge**



Date: 5.JUL.2012 18:53:43

**PCS Band, Right Band Edge**



Date: 5.JUL.2012 18:55:30

**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                    |

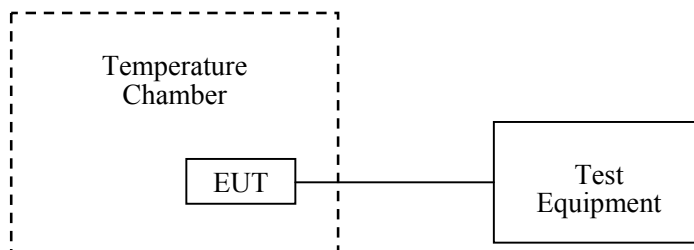
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

**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      | 2012-06-04       | 2013-06-03           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        | 2012-04-11       | 2013-04-10           |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 Dean Liu on 2012-07-11.*

**Cellular Band (Part 22H)**

| Middle Channel, $f_c = 836.6$ MHz |                        |                 |                 |       |
|-----------------------------------|------------------------|-----------------|-----------------|-------|
| Temperature                       | Voltage                | Frequency Error | Frequency Error | Limit |
| °C                                | $V_{DC}$               | Hz              | ppm             | ppm   |
| -30                               | 3.7                    | -26             | -0.031          | 2.5   |
| -20                               | 3.7                    | -23             | -0.027          | 2.5   |
| -10                               | 3.7                    | -28             | -0.033          | 2.5   |
| 0                                 | 3.7                    | -20             | -0.024          | 2.5   |
| 10                                | 3.7                    | -19             | -0.023          | 2.5   |
| 20                                | 3.7                    | -16             | -0.019          | 2.5   |
| 30                                | 3.7                    | -15             | -0.018          | 2.5   |
| 40                                | 3.7                    | -13             | -0.016          | 2.5   |
| 50                                | 3.7                    | -19             | -0.023          | 2.5   |
| 25                                | $V_{end\ point} = 3.6$ | -28             | -0.033          | 2.5   |

**PCS Band (Part 24E)**

| Middle Channel, $f_c = 1880.0$ MHz |                              |                 |                 |        |
|------------------------------------|------------------------------|-----------------|-----------------|--------|
| Temperature                        | Voltage                      | Frequency Error | Frequency Error | Result |
| °C                                 | V <sub>DC</sub>              | Hz              | ppm             |        |
| -30                                | 3.7                          | -10             | -0.018          | 2.5    |
| -20                                | 3.7                          | -9              | -0.017          | 2.5    |
| -10                                | 3.7                          | -6              | -0.016          | 2.5    |
| 0                                  | 3.7                          | -2              | -0.016          | 2.5    |
| 10                                 | 3.7                          | -4              | -0.015          | 2.5    |
| 20                                 | 3.7                          | -7              | -0.016          | 2.5    |
| 30                                 | 3.7                          | -5              | -0.014          | 2.5    |
| 40                                 | 3.7                          | -8              | -0.013          | 2.5    |
| 50                                 | 3.7                          | -11             | -0.015          | 2.5    |
| 25                                 | V <sub>end point</sub> = 3.6 | -15             | -0.019          | 2.5    |

**WCDMA 850 Band (Part 22H)**

| Middle Channel, $f_c = 836.6$ MHz |                              |                 |                 |       |
|-----------------------------------|------------------------------|-----------------|-----------------|-------|
| Temperature                       | Voltage                      | Frequency Error | Frequency Error | Limit |
| °C                                | V <sub>DC</sub>              | Hz              | ppm             | ppm   |
| -30                               | 3.7                          | -10             | -0.012          | 2.5   |
| -20                               | 3.7                          | -9              | -0.011          | 2.5   |
| -10                               | 3.7                          | -6              | -0.007          | 2.5   |
| 0                                 | 3.7                          | -2              | -0.002          | 2.5   |
| 10                                | 3.7                          | -4              | -0.005          | 2.5   |
| 20                                | 3.7                          | -7              | -0.008          | 2.5   |
| 30                                | 3.7                          | -5              | -0.006          | 2.5   |
| 40                                | 3.7                          | -8              | -0.010          | 2.5   |
| 50                                | 3.7                          | -11             | -0.013          | 2.5   |
| 25                                | V <sub>end point</sub> = 3.6 | -15             | -0.018          | 2.5   |

**WCDMA 1900 Band (Part 24E)**

| Middle Channel, $f_c = 1880.0$ MHz |                        |                 |                 |        |
|------------------------------------|------------------------|-----------------|-----------------|--------|
| Temperature                        | Voltage                | Frequency Error | Frequency Error | Result |
| °C                                 | $V_{DC}$               | Hz              | ppm             |        |
| -30                                | 3.7                    | -11             | -0.006          | Pass   |
| -20                                | 3.7                    | -10             | -0.005          | Pass   |
| -10                                | 3.7                    | -11             | -0.006          | Pass   |
| 0                                  | 3.7                    | -9              | -0.005          | Pass   |
| 10                                 | 3.7                    | -8              | -0.004          | Pass   |
| 20                                 | 3.7                    | -5              | -0.003          | Pass   |
| 30                                 | 3.7                    | -1              | -0.001          | Pass   |
| 40                                 | 3.7                    | -5              | -0.003          | Pass   |
| 50                                 | 3.7                    | -9              | -0.005          | Pass   |
| 25                                 | $V_{end\ point} = 3.6$ | -12             | -0.006          | Pass   |

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