

FCC PART 22H, 24E  
MEASUREMENT AND TEST REPORT

For

**Zonda Corporation, S.A. de C.V**

Schiller 329 Street, Chapultepec Morales, Zip Code 11560, Mexico City, Mexico

**FCC ID: YAUZMCK885**

|                                           |                                                                                                                                                                                                                              |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report    | <b>Product Type:</b><br>GSM Mobile Telephone                                                                                                                                                                                 |
| <b>Test Engineer:</b> Jimmy Xiao          | <i>Jimmy Xiao</i>                                                                                                                                                                                                            |
| <b>Report Number:</b> RSZ11021509-22H&24E |                                                                                                                                                                                                                              |
| <b>Report Date:</b> 2011-03-18            |                                                                                                                                                                                                                              |
| <b>Reviewed By:</b> EMC Engineer          | <i>Merry Zhao</i>                                                                                                                                                                                                            |
| <b>Prepared By:</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 |

**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, NIST, or any agency of the Federal Government.

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## GENERAL INFORMATION

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

The *Zonda Corporation, S.A. de C.V*'s product, model number: *ZMCK885 (FCC ID: YAUZMCK885)* or the "EUT" as referred to in this report is a *GSM Mobile Telephone*, which measures approximately: 11.1 cm (L) x 5.8 cm (W) x 1.1 cm (H), rated input voltage: DC 3.7V battery.

#### Frequency Range:

Cellular Band: 824-849MHz (Tx), 869-894MHz (Rx)  
PCS Band: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)  
Bluetooth: 2400-2483.5 MHz (Tx/Rx)

Modulation Mode: GMSK, 8PSK(GSM/PCS) ; GFSK(Bluetooth)

#### Transmitter Output Power:

Cellular Band: 33 dBm, PCS Band: 30 dBm, Bluetooth: 7 dBm

#### Adapter information:

Model: ETPCA-050050UYU7  
Input: 100-240 VAC, 50/60 Hz 0.2A  
Output: DC 5.0 V 500 mA

*\* All measurement and test data in this report was gathered from production sample serial number: 1102031 (Assigned by BACL, Shenzhen). The EUT was received on 2011-02-15.*

### Objective

This type approval report is prepared on behalf of *Zonda Corporation, S.A. de C.V* 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, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, band edge and radiated margin.

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

FCC Part 15.247 Bluetooth and Part 15B submission with FCC ID: YAUZMCK885.

### 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-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 are conducted met the measurement is  $\pm 0.96$  dB; the uncertainty of any radiation emission measurement is  $\pm 4.0$  dB.

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in 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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the 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

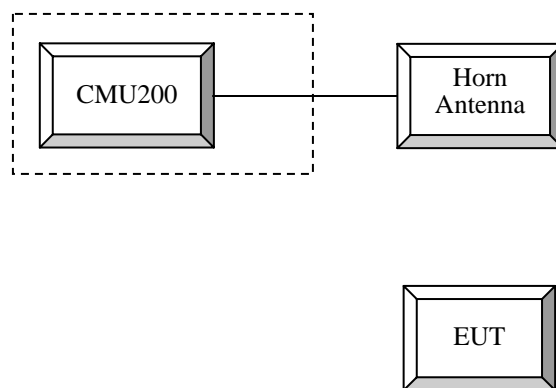
The EUT was configured for testing according to TIA/EIA-603-C.

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

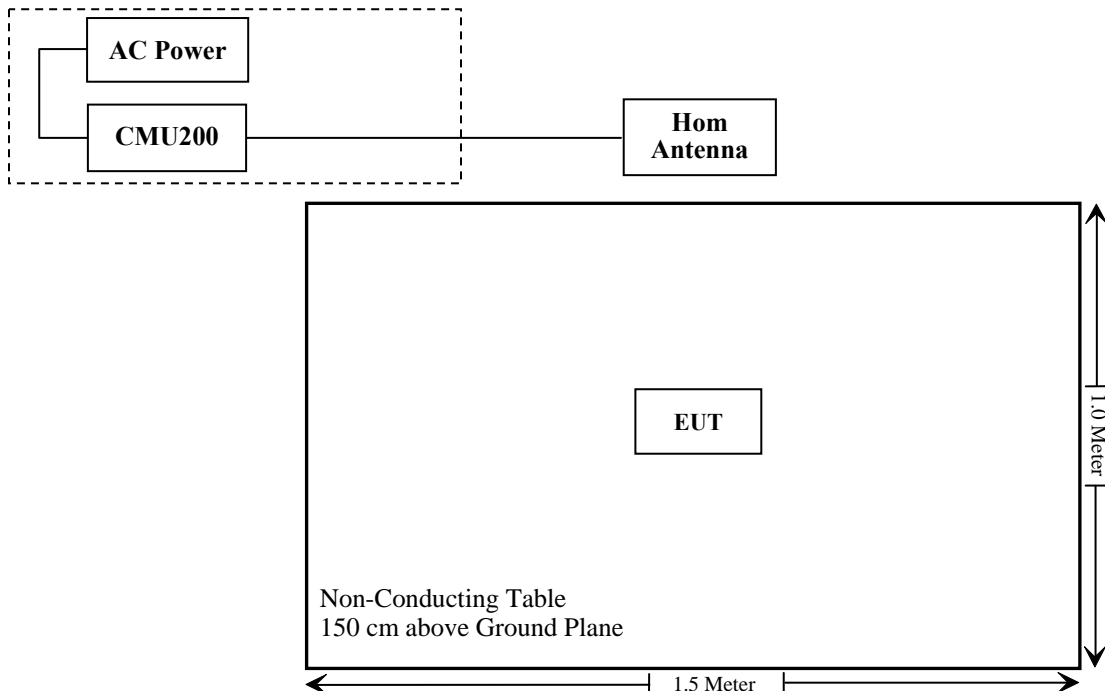
### Equipment Modifications

No modifications were made to the EUT.

### 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;<br>§22.913 (a); §24.232 (c) | RF Output Power                                                        | Compliance   |
| § 2.1047                             | Modulation Characteristics                                             | N/A          |
| §2.1049; §22.905<br>§22.917; §24.238 | 99% & -26 dB 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)             | Band Edge                                                              | Compliance   |
| §2.1055<br>§22.355; §24.235          | Frequency stability vs. temperature<br>Frequency stability vs. voltage | Compliance   |

Note: \* SAR report released by Beijing 7 Layers Huarui Communications Technology Co., Ltd. on 2011-02-18,  
Report Number: MCN\_ALPHA\_1101\_SAR

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

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### **Applicable Standard**

FCC §1.1307 and §2.1093.

### **Test Result**

#### **Compliance**

The EUT is a portable device, thus requires SAR evaluation; please refer to SAR Report: MCN\_ALPHA\_1101\_SAR. Released by Beijing 7 Layers Huarui Communications Technology Co., Ltd. on 2011-02-18.



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## **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

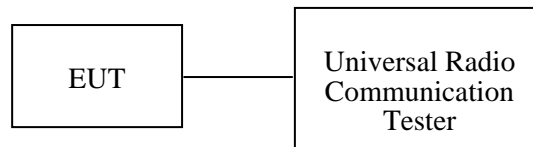
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

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 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       | 2010-05-05       | 2011-05-04           |
| Rohde & Schwarz | EMI Test Receiver                    | ESCI        | 100224        | 2010-11-24       | 2011-11-23           |
| Sunol Sciences  | Broadband Antenna                    | JB1         | A040904-1     | 2010-03-11       | 2011-03-11           |
| HP              | Signal Generator                     | HP8657A     | 2849U00982    | 2010-10-28       | 2011-10-27           |
| HP              | Synthesized Sweeper                  | 8341B       | 2624A00116    | 2010-11-07       | 2011-11-06           |
| COM POWER       | Dipole Antenna                       | AD-100      | 041000        | 2010-09-25       | 2011-09-25           |
| A.H. System     | Horn Antenna                         | SAS-200/571 | 135           | 2010-05-17       | 2011-05-17           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200      | 109038        | 2010-06-11       | 2011-06-10           |

**\* 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 Jimmy Xiao on 2011-02-24 to 2011-03-17.

**Conducted Power:**

## Cellular Band (Part 22H)

| Mode | Channel No. | Frequency (MHz) | Output Power (dBm) | Limit (dBm) |
|------|-------------|-----------------|--------------------|-------------|
| GSM  | 128         | 824.2           | 31.81              | 38.45       |
|      | 190         | 836.6           | 31.76              | 38.45       |
|      | 251         | 848.8           | 31.73              | 38.45       |

| Mode | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|------|------------|-----------------|--------------------|---------------|---------------|---------------|
|      |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| GPRS | 128        | 824.2           | 31.82              | 31.66         | 31.56         | 31.55         |
|      | 190        | 836.6           | 31.73              | 31.58         | 31.52         | 31.48         |
|      | 251        | 848.8           | 31.75              | 31.61         | 31.58         | 31.49         |

| Mode         | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|--------------|------------|-----------------|--------------------|---------------|---------------|---------------|
|              |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| EGPRS (GMSK) | 128        | 824.2           | 31.84              | 31.68         | 31.60         | 31.54         |
|              | 190        | 836.6           | 31.75              | 31.60         | 31.55         | 31.51         |
|              | 251        | 848.8           | 31.76              | 31.64         | 31.59         | 31.52         |

| Mode          | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|---------------|------------|-----------------|--------------------|---------------|---------------|---------------|
|               |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| EGPRS (8-PSK) | 128        | 824.2           | 27.45              | 27.22         | 27.15         | 26.95         |
|               | 190        | 836.6           | 27.26              | 27.08         | 26.99         | 26.85         |
|               | 251        | 848.8           | 27.21              | 27.07         | 26.94         | 26.84         |

## PCS Band (Part 24E)

| Mode | Channel No. | Frequency (MHz) | Output Power (dBm) | Limit (dBm) |
|------|-------------|-----------------|--------------------|-------------|
| GSM  | 512         | 1850.2          | 30.42              | 33          |
|      | 661         | 1880.0          | 30.09              | 33          |
|      | 810         | 1909.8          | 30.22              | 33          |

| Mode | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|------|------------|-----------------|--------------------|---------------|---------------|---------------|
|      |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| GPRS | 512        | 1850.2          | 30.36              | 30.34         | 30.32         | 30.30         |
|      | 661        | 1880.0          | 30.26              | 30.26         | 30.22         | 30.20         |
|      | 810        | 1909.8          | 30.28              | 30.27         | 30.20         | 30.15         |

| Mode         | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|--------------|------------|-----------------|--------------------|---------------|---------------|---------------|
|              |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| EGPRS (GMSK) | 512        | 1850.2          | 30.39              | 30.34         | 30.32         | 30.30         |
|              | 661        | 1880.0          | 30.27              | 30.26         | 30.25         | 30.22         |
|              | 810        | 1909.8          | 30.30              | 30.24         | 30.24         | 30.22         |

| Mode          | Channel No | Frequency (MHz) | Output Power (dBm) |               |               |               |
|---------------|------------|-----------------|--------------------|---------------|---------------|---------------|
|               |            |                 | 1 uplink slot      | 2 uplink slot | 3 uplink slot | 4 uplink slot |
| EGPRS (8-PSK) | 512        | 1850.2          | 26.41              | 25.90         | 25.81         | 25.58         |
|               | 661        | 1880.0          | 26.32              | 26.07         | 25.93         | 25.75         |
|               | 810        | 1909.8          | 26.39              | 26.17         | 25.99         | 25.83         |

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

GMSK:

| 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) |                               |                 |                      |                      |
| Low Channel     |                     |                    |              |             |                 |                  |                  |                               |                 |                      |                      |
| 824.2           | 98.83               | 250                | 1.5          | H           | 824.2           | 30.4             | H                | 0                             | 0.67            | 29.73                | 38.45                |
| 824.2           | 83.93               | 360                | 1.8          | V           | 824.2           | 13.8             | V                | 0                             | 0.67            | 13.13                | 38.45                |

8-PSK:

| 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) |                               |                 |                      |                      |
| Low Channel     |                     |                    |              |             |                 |                  |                  |                               |                 |                      |                      |
| 824.2           | 95.31               | 235                | 1.5          | H           | 824.2           | 26.8             | H                | 0                             | 0.67            | 26.13                | 38.45                |
| 824.2           | 80.10               | 247                | 1.5          | V           | 824.2           | 10.8             | V                | 0                             | 0.67            | 10.13                | 38.45                |

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

GMSK:

| Indicated       |                     | Table Angle Degree | Test Antenna |             | Substituted     |                  |                  | Antenna Gain Correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Part 24E Limit (dBm) |
|-----------------|---------------------|--------------------|--------------|-------------|-----------------|------------------|------------------|-------------------------------|-----------------|----------------------|----------------------|
| Frequency (MHz) | S.A. Reading (dBμV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | S.G. Level (dBm) | Ant. Polar (H/V) |                               |                 |                      |                      |
| Low Channel     |                     |                    |              |             |                 |                  |                  |                               |                 |                      |                      |
| 1850.2          | 91.17               | 145                | 1.6          | H           | 1850.2          | 21.1             | H                | 6.2                           | 1.10            | 26.20                | 33                   |
| 1850.2          | 85.12               | 210                | 1.8          | V           | 1850.2          | 15.6             | V                | 6.2                           | 1.10            | 20.70                | 33                   |

8-PSK:

| Indicated       |                     | Table Angle Degree | Test Antenna |             | Substituted     |                  |                  | Antenna Gain Correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Part 24E Limit (dBm) |
|-----------------|---------------------|--------------------|--------------|-------------|-----------------|------------------|------------------|-------------------------------|-----------------|----------------------|----------------------|
| Frequency (MHz) | S.A. Reading (dBμV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | S.G. Level (dBm) | Ant. Polar (H/V) |                               |                 |                      |                      |
| Low Channel     |                     |                    |              |             |                 |                  |                  |                               |                 |                      |                      |
| 1850.2          | 87.25               | 15                 | 1.5          | H           | 1850.2          | 17.1             | H                | 6.2                           | 1.10            | 24.20                | 33                   |
| 1850.2          | 81.25               | 220                | 1.5          | V           | 1850.2          | 11.6             | V                | 6.2                           | 1.10            | 16.70                | 33                   |

Note: The EUT was tested without the pre-amplifier.

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

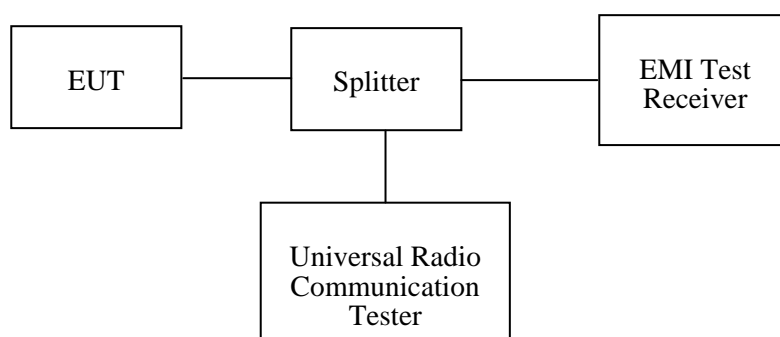
### Applicable Standards

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 30 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 | EMI Test Receiver                    | ESCI   | 100224        | 2010-11-24       | 2011-11-23           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        | 2010-06-11       | 2011-06-10           |

\* **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 Jimmy Xiao on 2011-02-19 to 2011-03-17.*

**GMSK:**

## Cellular Band (Part 22H)

| Channel No. | Frequency (MHz) | 99% Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|-------------|-----------------|---------------------|-----------------------|
| 190         | 836.6           | 246.0               | 332.0                 |

## PCS Band (Part 24E)

| Channel No. | Frequency (MHz) | 99% Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|-------------|-----------------|---------------------|-----------------------|
| 661         | 1880.0          | 248.0               | 334.0                 |

**8-PSK:**

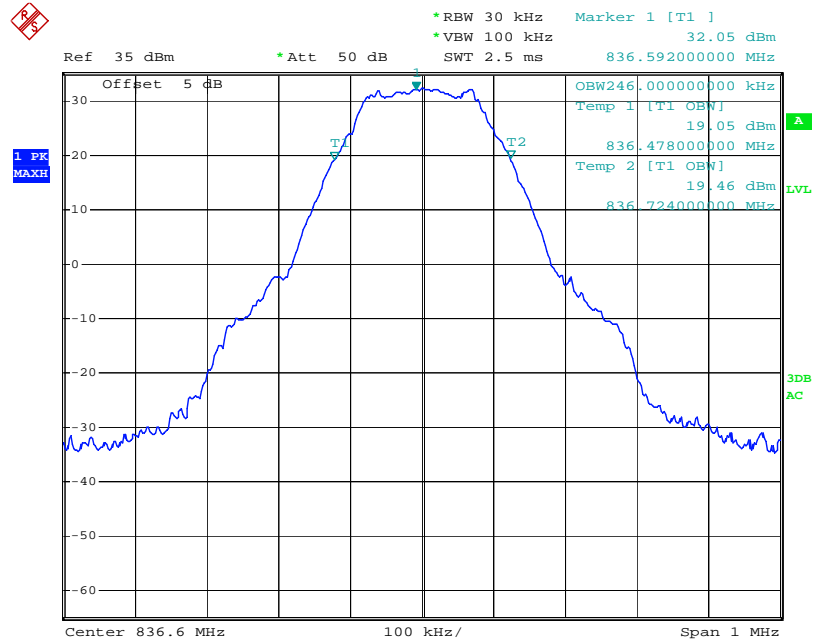
## Cellular Band (Part 22H)

| Channel No. | Frequency (MHz) | 99% Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|-------------|-----------------|---------------------|-----------------------|
| 190         | 836.6           | 260.0               | 334.0                 |

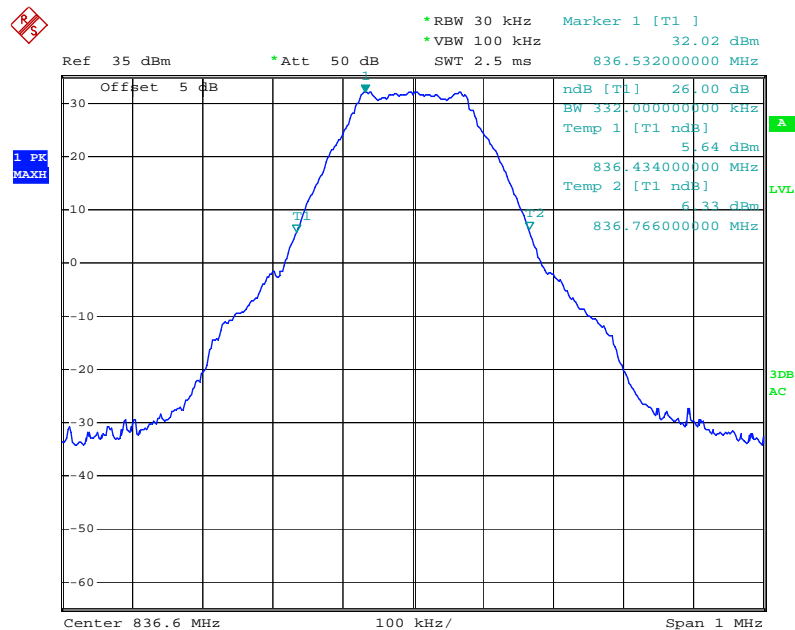
## PCS Band (Part 24E)

| Channel No. | Frequency (MHz) | 99% Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|-------------|-----------------|---------------------|-----------------------|
| 661         | 1880.0          | 256.0               | 338.0                 |

Please refer to the following plots.

**GMSK:****Cellular Band (Part 22H)****99% Occupied Bandwidth**

Date: 19.FEB.2011 14:50:14

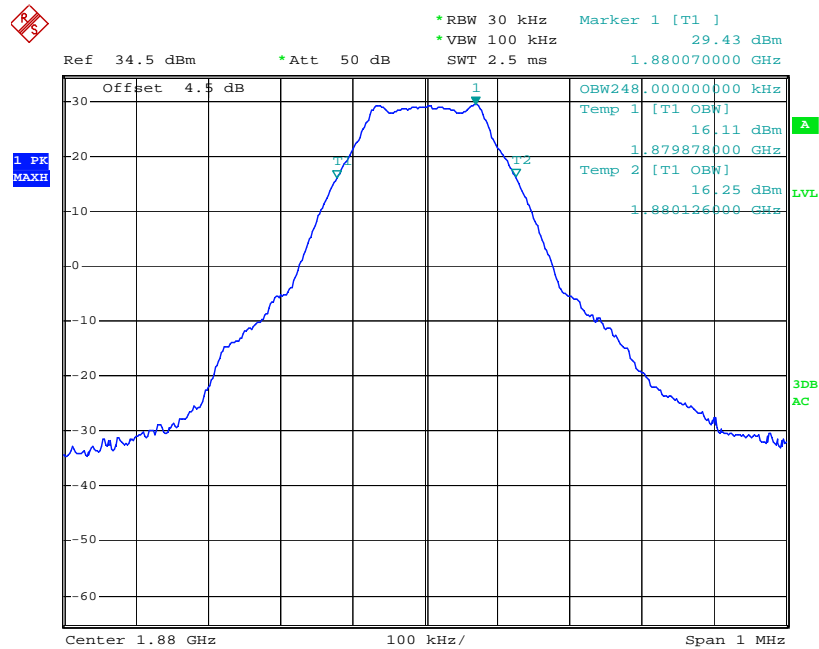
**26 dB Occupied Bandwidth**

Date: 19.FEB.2011 14:49:43



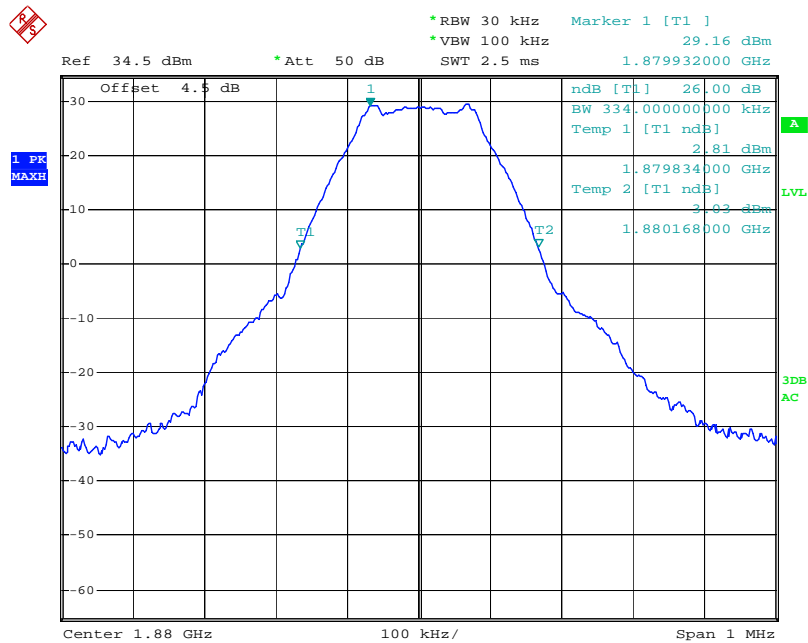
## PCS Band (Part 24E)

## 99% Occupied Bandwidth



Date: 19.FEB.2011 14:47:35

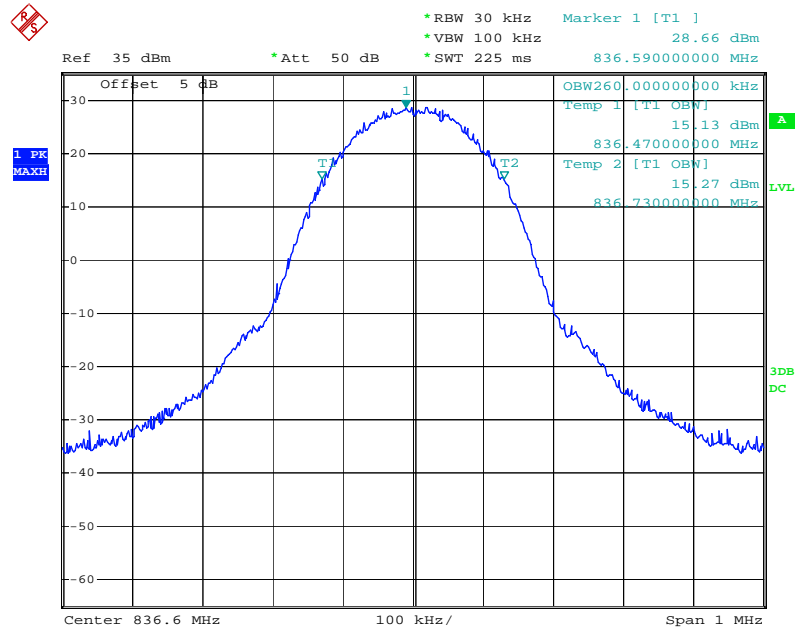
## 26 dB Occupied Bandwidth



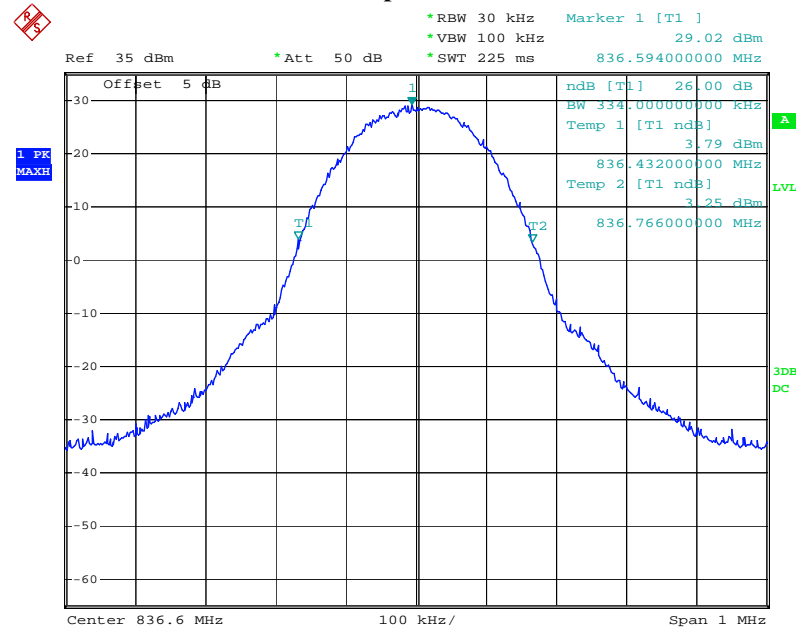
Date: 19.FEB.2011 14:48:20

**8-PSK:**

Cellular Band (Part 22H)

**99% Occupied Bandwidth**

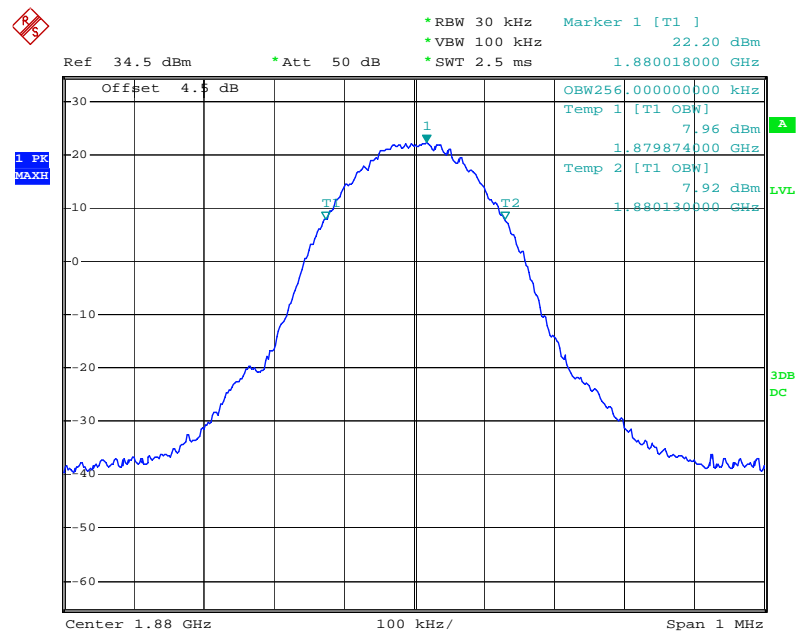
Date: 17.MAR.2011 21:51:49

**26 dB Occupied Bandwidth**

Date: 17.MAR.2011 21:51:04

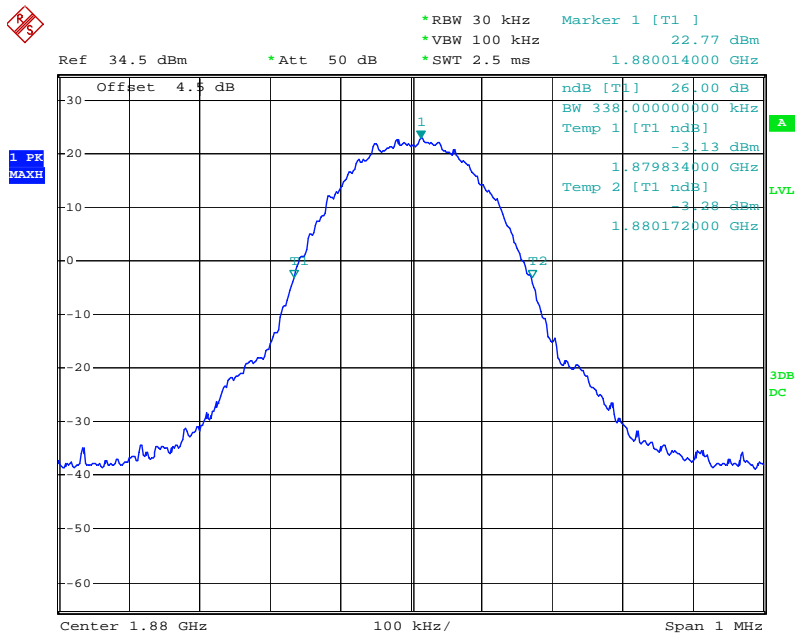
## PCS Band (Part 24E)

## 99% Occupied Bandwidth



Date: 17.MAR.2011 20:53:21

## 26 dB Occupied Bandwidth



Date: 17.MAR.2011 20:51:48

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

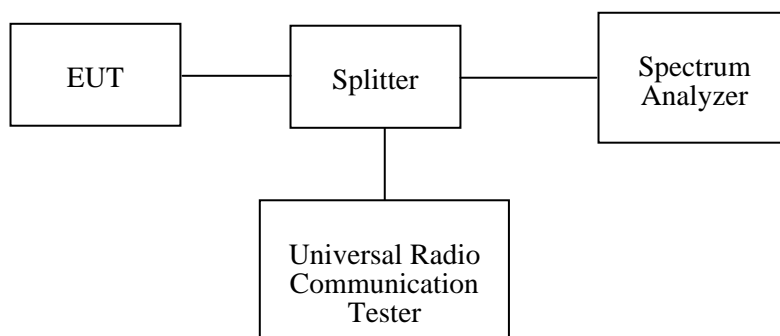
### Applicable Standards

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 100 kHz. 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 |
|-----------------|--------------------------------------|--------|---------------|------------------|----------------------|
| HP              | Spectrum Analyzer                    | 8593A  | 2919A00242    | 2010-07-08       | 2011-07-07           |
| Rohde & Schwarz | EMI Test Receiver                    | ESCI   | 100224        | 2010-11-24       | 2011-11-23           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        | 2010-06-11       | 2011-06-10           |

\* **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

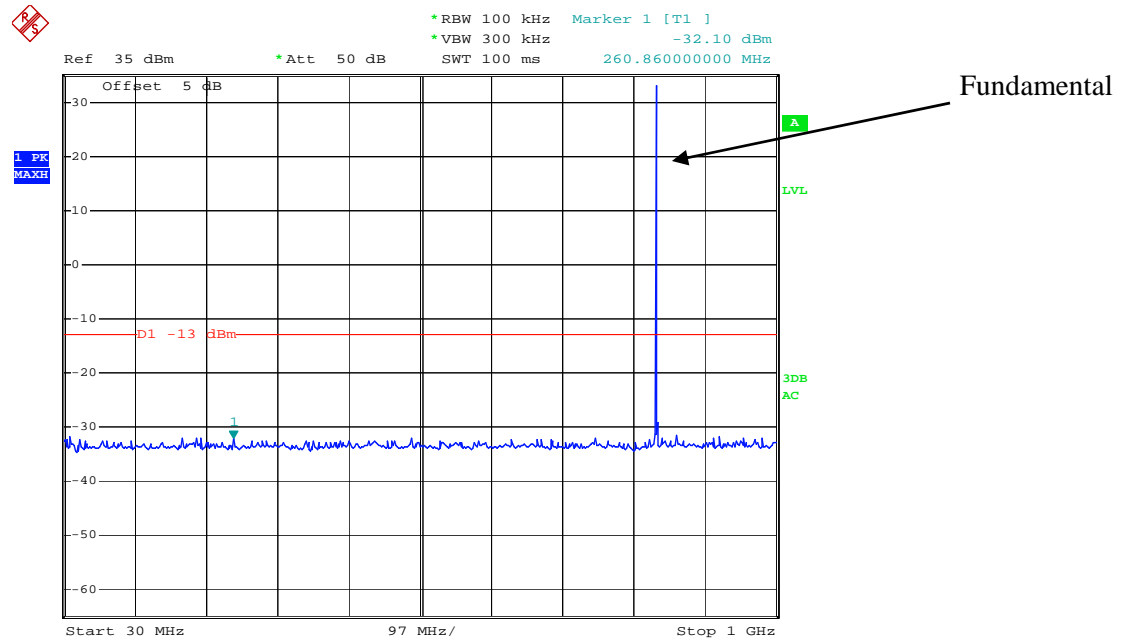
|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 56 %     |
| ATM Pressure:      | 100.0kPa |

The testing was performed by Jimmy Xiao on 2011-02-19.

Please refer to the following plots.

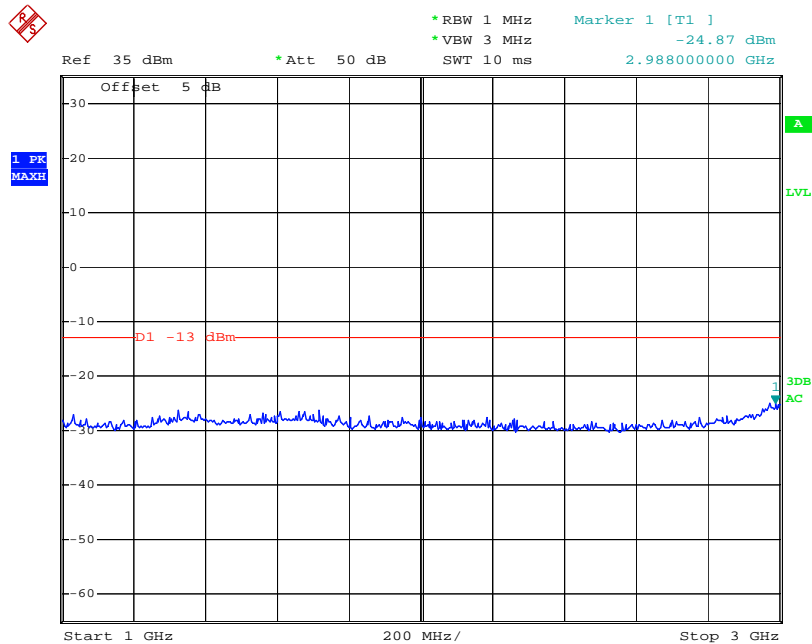
## Cellular Band (Part 22H)

## 30 – 1000 MHz - Middle Channel



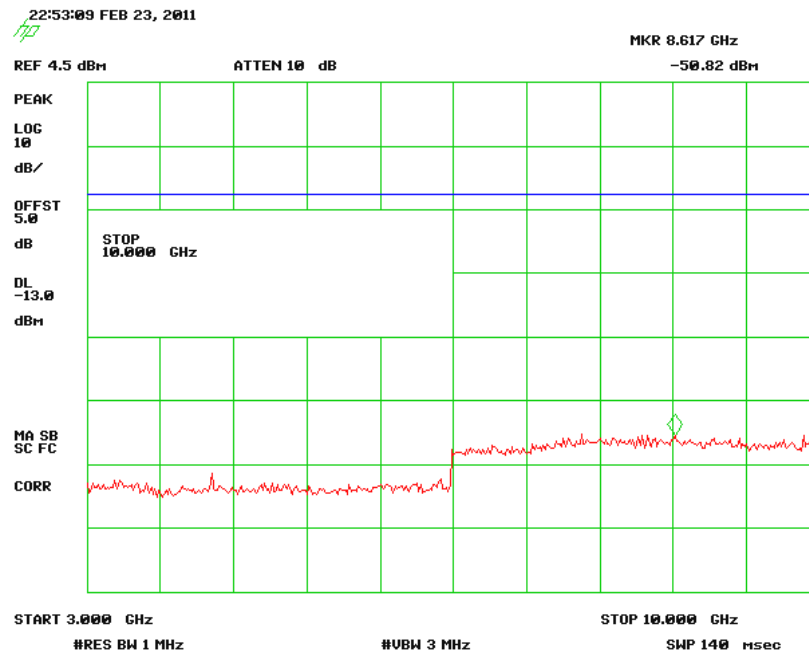
Date: 19.FEB.2011 14:30:07

## 1 – 3 GHz - Middle Channel



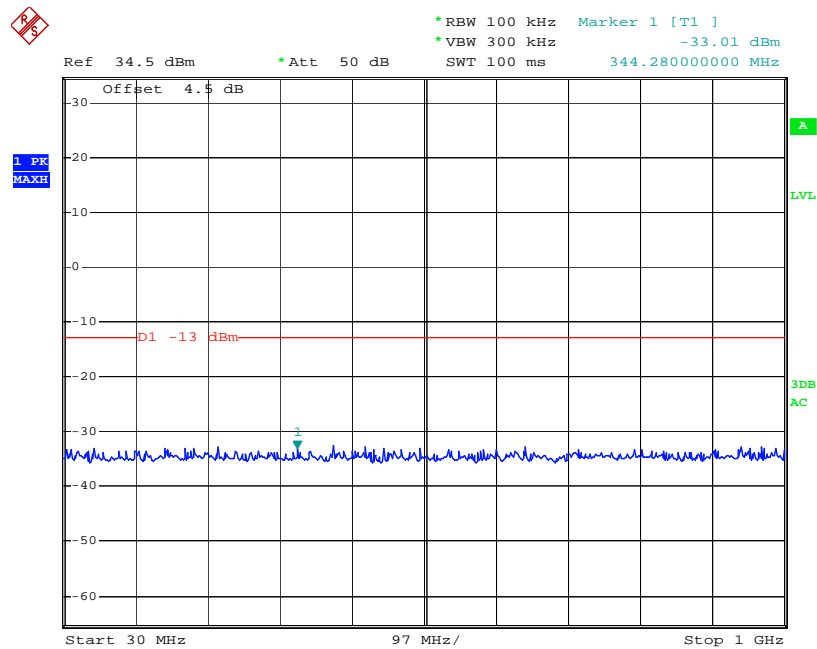
Date: 19.FEB.2011 14:31:12

## 3 – 10 GHz - Middle Channel



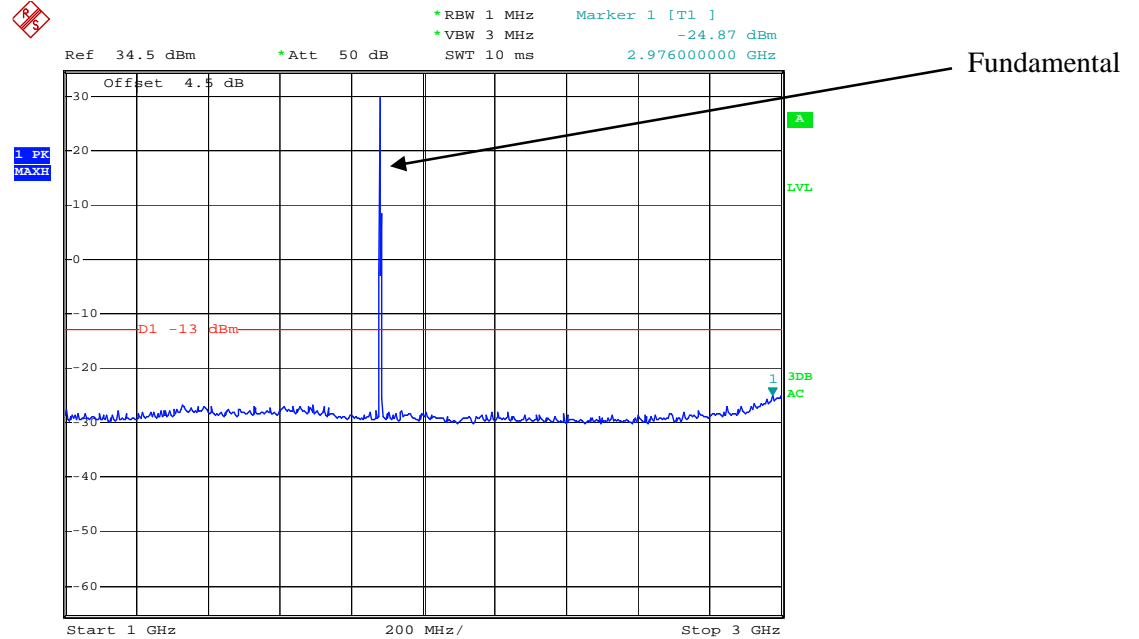
## PCS Band (Part24E)

## 30 – 1000 MHz - Middle Channel



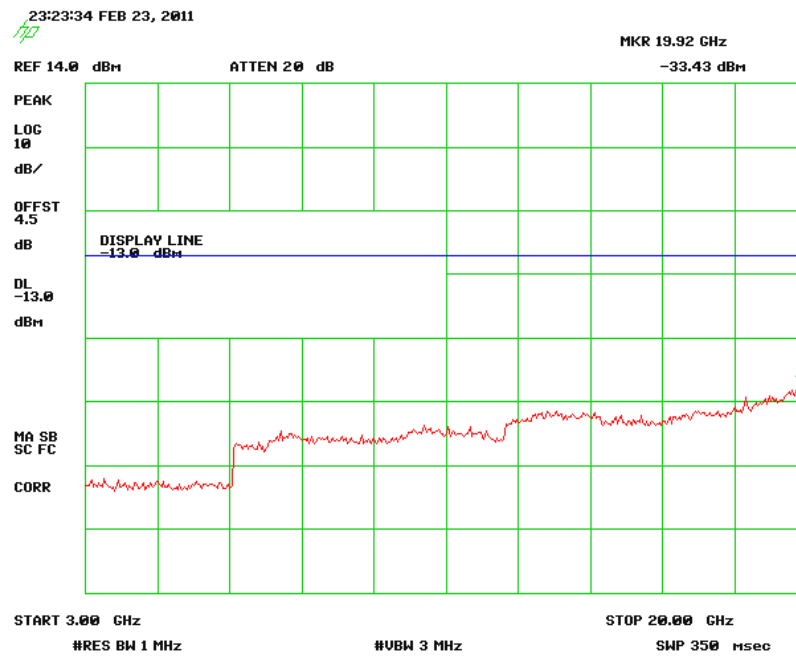
Date: 19.FEB.2011 14:36:26

## 1 - 3 GHz - Middle Channel



Date: 19.FEB.2011 14:35:11

## 3 - 20 GHz - Middle Channel



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

### Applicable Standards

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 =  $10 \lg (\text{TXpwr in Watts}/0.001)$  – 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       | 2010-05-05       | 2011-05-04           |
| Sunol Sciences  | Broadband Antenna                    | JB1         | A040904-1     | 2010-03-11       | 2011-03-11           |
| HP              | Spectrum Analyzer                    | 8593A       | -             | 2010-07-08       | 2011-07-07           |
| HP              | Amplifier                            | 2VA-213+    | T-E27H        | 2010-03-08       | 2011-03-07           |
| HP              | Signal Generator                     | HP8657A     | 2849U00982    | 2010-10-28       | 2011-10-27           |
| HP              | Amplifier                            | HP8447D     | 2944A09795    | 2010-08-02       | 2011-08-01           |
| HP              | Synthesized Sweeper                  | 8341B       | 2624A00116    | 2010-11-07       | 2011-11-06           |
| COM POWER       | Dipole Antenna                       | AD-100      | 041000        | 2010-09-25       | 2011-09-25           |
| A.H. System     | Horn Antenna                         | SAS-200/571 | 135           | 2010-05-17       | 2011-05-17           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200      | 109038        | 2010-06-11       | 2011-06-10           |

\* **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 Jimmy Xiao on 2011-02-25.

Test mode: Transmitting

**Cellular Band (Part 22H)**

| Indicated                  |                     | Table Angle Degree | Test Antenna |             | Substituted     |             |                 |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|----------------------------|---------------------|--------------------|--------------|-------------|-----------------|-------------|-----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz)            | S.A. Reading (dBμV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | Level (dBm) | Ant. Gain (dBd) | Cable Loss (dB) |                      |             |             |
| Middle Channel, Below 1GHz |                     |                    |              |             |                 |             |                 |                 |                      |             |             |
| 312.48                     | 42.36               | 258                | 1.5          | V           | 312.48          | -54.8       | 0               | 0.37            | -55.17               | -13         | 42.17       |
| 598.67                     | 44.57               | 49                 | 2.1          | H           | 598.67          | -56.7       | 0               | 0.57            | -57.27               | -13         | 44.27       |
| 246.79                     | 40.12               | 210                | 1.4          | V           | 246.79          | -59.2       | 0               | 0.31            | -59.51               | -13         | 46.51       |
| 668.49                     | 39.65               | 79                 | 2.4          | H           | 668.49          | -61.3       | 0               | 0.61            | -61.91               | -13         | 48.91       |

| Indicated                  |                     | Table Angle Degree | Test Antenna |             | Substituted     |             |                 |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|----------------------------|---------------------|--------------------|--------------|-------------|-----------------|-------------|-----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz)            | S.A. Reading (dBuV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | Level (dBm) | Ant. Gain (dBi) | Cable Loss (dB) |                      |             |             |
| Middle Channel, Above 1GHz |                     |                    |              |             |                 |             |                 |                 |                      |             |             |
| 1673.0                     | 50.67               | 210                | 1.5          | V           | 1673.0          | -48.5       | 6.2             | 0.94            | -43.24               | -13         | 30.24       |
| 1673.0                     | 47.78               | 150                | 1.4          | H           | 1673.0          | -53.5       | 6.2             | 0.94            | -48.24               | -13         | 35.24       |
| 3346.4                     | 38.93               | 230                | 1.6          | V           | 3346.4          | -55.3       | 6.7             | 1.39            | -49.99               | -13         | 36.99       |
| 2495.9                     | 39.17               | 0                  | 1.8          | V           | 2495.9          | -57.7       | 7.3             | 1.19            | -51.59               | -13         | 38.59       |
| 3346.4                     | 38.33               | 180                | 2.3          | H           | 3346.4          | -57.3       | 6.7             | 1.39            | -51.99               | -13         | 38.99       |
| 2495.9                     | 39.67               | 360                | 2.1          | H           | 2495.9          | -58.6       | 7.3             | 1.19            | -52.49               | -13         | 39.49       |

## PCS Band (Part 24E)

| Indicated                  |                     | Table Angle Degree | Test Antenna |             | Substituted     |             |                 |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|----------------------------|---------------------|--------------------|--------------|-------------|-----------------|-------------|-----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz)            | S.A. Reading (dBμV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | Level (dBm) | Ant. Gain (dBd) | Cable Loss (dB) |                      |             |             |
| Middle Channel, Below 1GHz |                     |                    |              |             |                 |             |                 |                 |                      |             |             |
| 363.47                     | 46.38               | 270                | 1.4          | V           | 363.47          | -50.7       | 0               | 0.42            | -51.12               | -13         | 38.12       |
| 612.45                     | 45.15               | 290                | 1.3          | H           | 612.45          | -55.9       | 0               | 0.57            | -56.47               | -13         | 43.47       |
| 289.36                     | 42.35               | 330                | 1.5          | V           | 289.36          | -57.1       | 0               | 0.35            | -57.45               | -13         | 44.45       |
| 712.87                     | 42.67               | 360                | 2.1          | H           | 712.87          | -58.7       | 0               | 0.63            | -59.33               | -13         | 46.33       |

| Indicated                  |                     | Table Angle Degree | Test Antenna |             | Substituted     |             |                 |                 | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|----------------------------|---------------------|--------------------|--------------|-------------|-----------------|-------------|-----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz)            | S.A. Reading (dBμV) |                    | Height (m)   | Polar (H/V) | Frequency (MHz) | Level (dBm) | Ant. Gain (dBi) | Cable Loss (dB) |                      |             |             |
| Middle Channel, Above 1GHz |                     |                    |              |             |                 |             |                 |                 |                      |             |             |
| 5640                       | 37.50               | 0                  | 2.1          | V           | 5640            | -52.6       | 8.3             | 1.76            | -46.06               | -13         | 33.06       |
| 3760                       | 42.67               | 180                | 1.4          | V           | 3760            | -51.5       | 6.9             | 1.47            | -46.07               | -13         | 33.07       |
| 5640                       | 37.13               | 336                | 1.8          | H           | 5640            | -55.1       | 8.3             | 1.76            | -48.56               | -13         | 35.56       |
| 3760                       | 40.69               | 210                | 1.5          | H           | 3760            | -55.6       | 6.9             | 1.47            | -50.17               | -13         | 37.17       |

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

### Applicable Standards

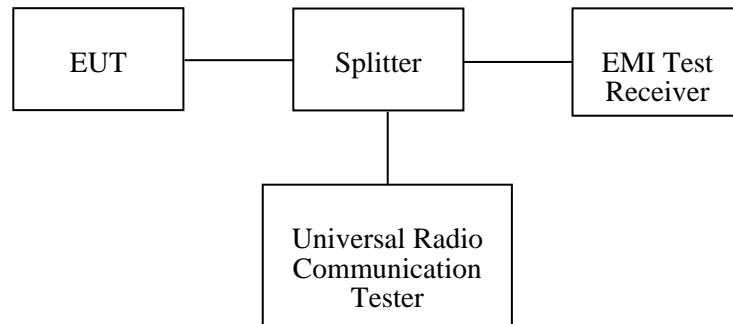
According to FCC §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC §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 10 kHz.



### Test Equipment List and Details

| Manufacturer    | Description                          | Model  | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|--------------------------------------|--------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver                    | ESCI   | 100224        | 2010-11-24       | 2011-11-23           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        | 2010-06-11       | 2011-06-10           |

**\* 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 Jimmy Xiao on 2011-02-19 to 2011-03-17.*

Please refer to the following tables and plots.

GMSK:

Cellular Band (Part 22H)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 823.996         | -15.56         | -13         |
| 849.020         | -14.50         | -13         |

PCS Band (Part 24E)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 1849.980        | -19.42         | -13         |
| 1910.020        | -16.66         | -13         |

8-PSK:

Cellular Band (Part 22H)

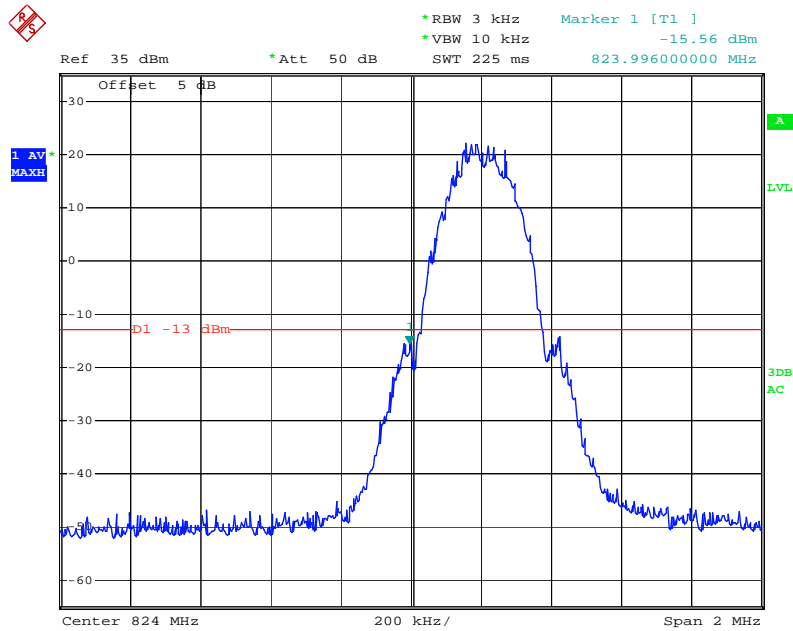
| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 823.964         | -24.77         | -13         |
| 849.016         | -26.57         | -13         |

PCS Band (Part 24E)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 1849.988        | -30.74         | -13         |
| 1910.008        | -33.41         | -13         |

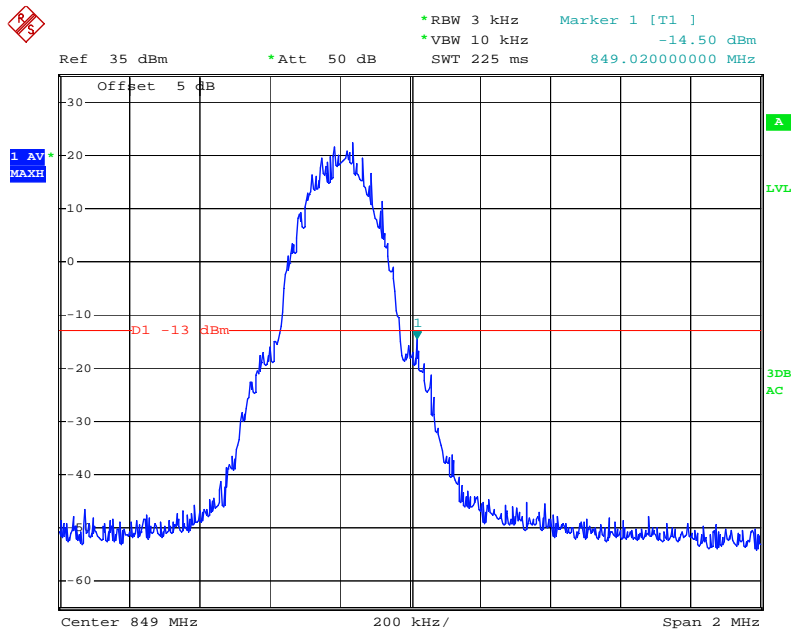
GMSK:

## Cellular Band, Lowest Channel



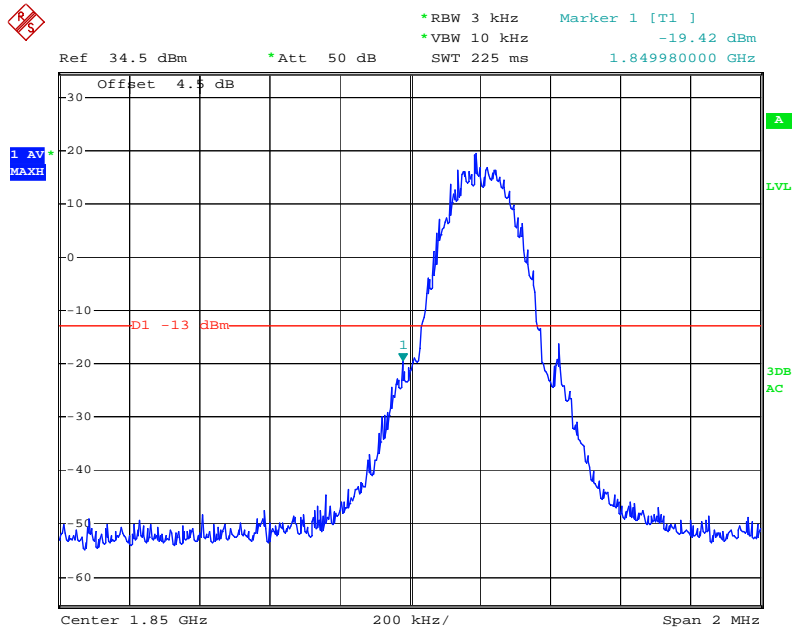
Date: 19.FEB.2011 15:01:52

## Cellular Band, Highest Channel



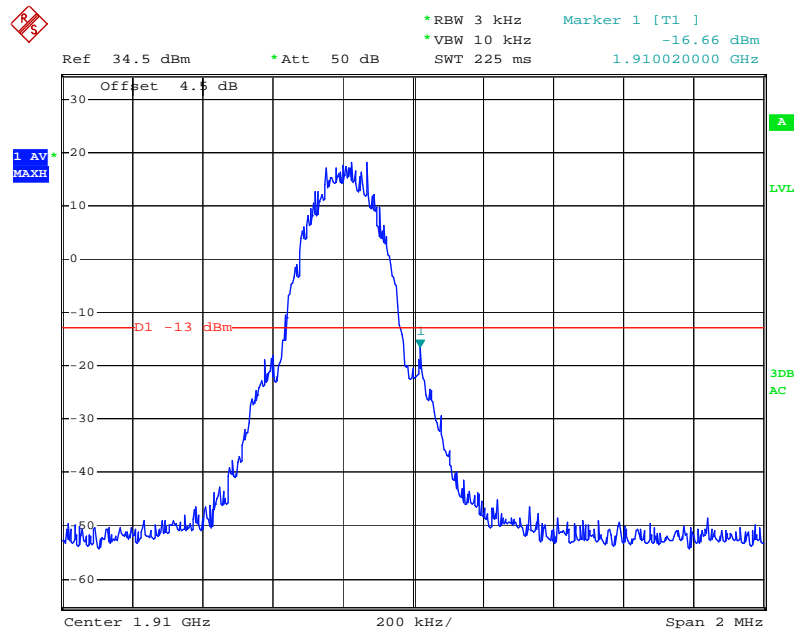
Date: 19.FEB.2011 15:03:17

## PCS Band, Lowest Channel



Date: 19.FEB.2011 15:04:52

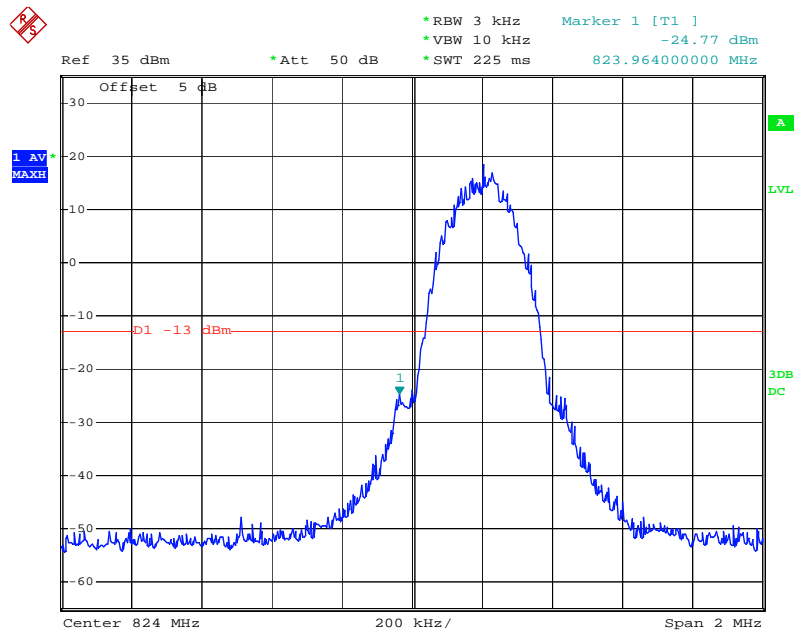
## PCS Band, Highest Channel



Date: 19.FEB.2011 15:06:00

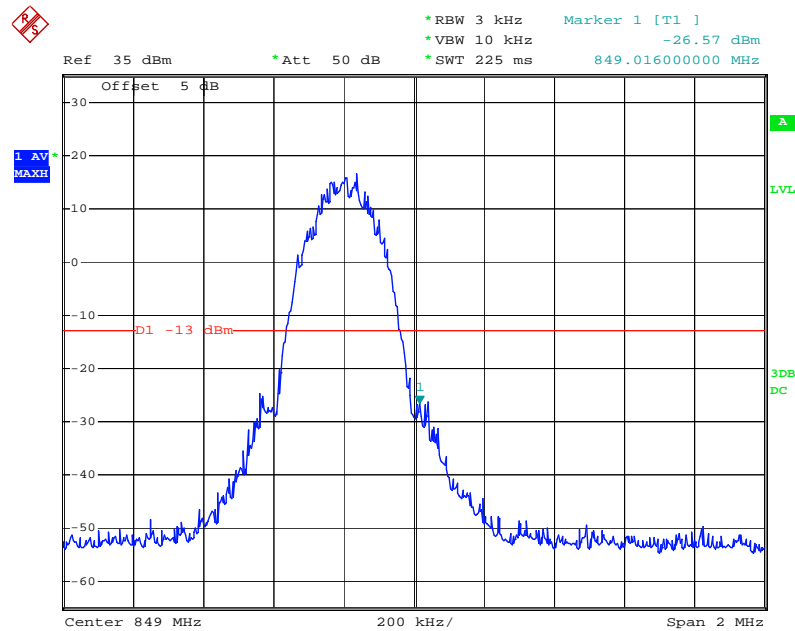
8-PSK:

## Cellular Band, Lowest Channel



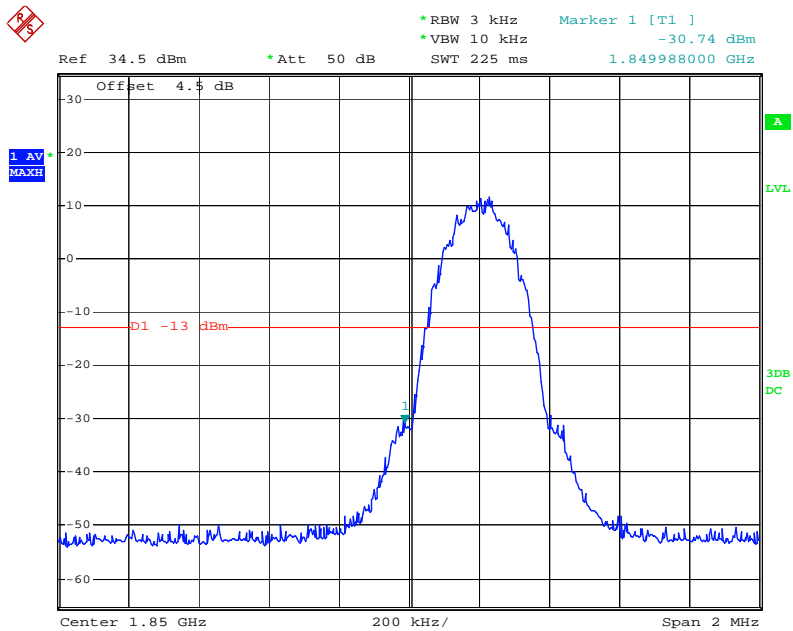
Date: 17.MAR.2011 21:47:51

## Cellular Band, Highest Channel



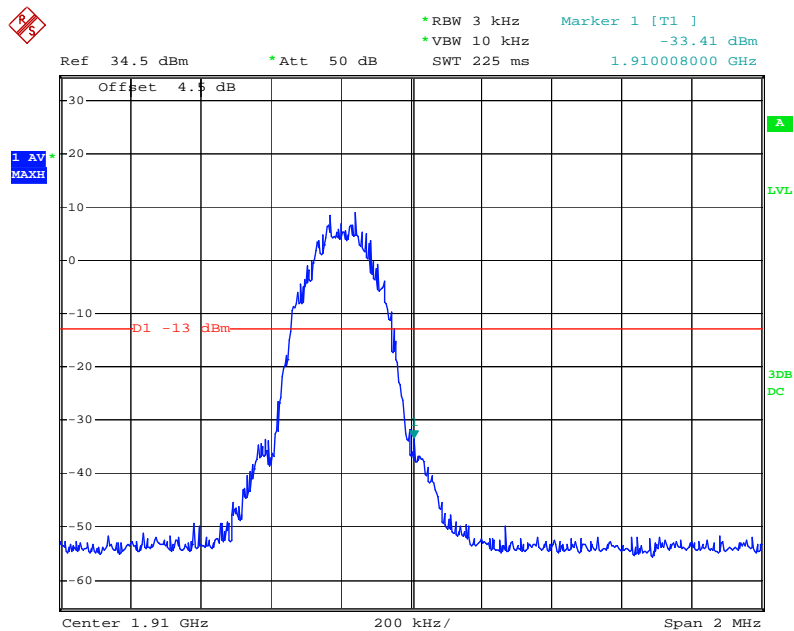
Date: 17.MAR.2011 21:49:15

## PCS Band, Lowest Channel



Date: 17.MAR.2011 21:15:08

## PCS Band, Highest Channel



Date: 17.MAR.2011 21:16:26



## 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                    |

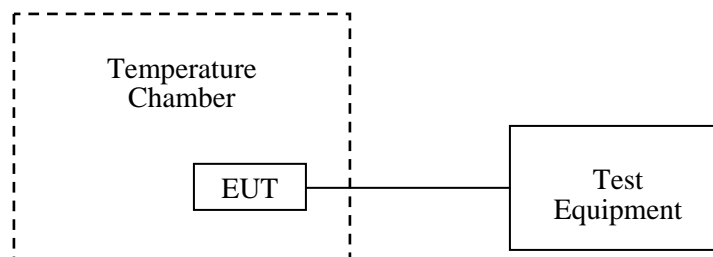
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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      | 2010-06-04       | 2011-06-03           |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 109038        | 2010-06-11       | 2011-06-10           |

\* **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 Jimmy Xiao on 2011-02-24 to 2011-03-17.

### GMSK:

Cellular Band (Part 22H)

| Middle Channel, $f_0 = 836.6$ MHz |                             |                      |                       |             |
|-----------------------------------|-----------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supplied ( $V_{DC}$ ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -20                               | 3.7V                        | -11                  | -0.013148             | 2.5         |
| -10                               |                             | -9                   | -0.010758             | 2.5         |
| 0                                 |                             | -13                  | -0.015539             | 2.5         |
| 10                                |                             | -10                  | -0.011953             | 2.5         |
| 20                                |                             | -8                   | -0.009563             | 2.5         |
| 25                                |                             | -9                   | -0.010758             | 2.5         |
| 30                                |                             | -7                   | -0.008367             | 2.5         |
| 40                                |                             | -11                  | -0.013148             | 2.5         |
| 50                                |                             | -9                   | -0.010758             | 2.5         |
| 55                                |                             | -6                   | -0.007172             | 2.5         |
| 25                                | V max.=4.2V                 | -15                  | -0.017930             | 2.5         |
|                                   | V min.= 3.5V                | -11                  | -0.013148             | 2.5         |

## PCS Band (Part 24E)

| Middle Channel, $f_o = 1880$ MHz |                             |                      |                       |        |
|----------------------------------|-----------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                 | Power Supplied ( $V_{DC}$ ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -20                              | 3.7V                        | -14                  | -0.007447             | pass   |
| -10                              |                             | -11                  | -0.005851             | pass   |
| 0                                |                             | -9                   | -0.004787             | pass   |
| 10                               |                             | -11                  | -0.005851             | pass   |
| 20                               |                             | -11                  | -0.005851             | pass   |
| 25                               |                             | -13                  | -0.006915             | pass   |
| 30                               |                             | -10                  | -0.005319             | pass   |
| 40                               |                             | -11                  | -0.005851             | pass   |
| 50                               |                             | -15                  | -0.007979             | pass   |
| 55                               |                             | -6                   | -0.003191             | pass   |
| 25                               | V max.=4.2V                 | -8                   | -0.004255             | pass   |
|                                  | V min.= 3.5V                | -14                  | -0.007447             | pass   |

## 8-PSK:

## Cellular Band (Part 22H)

| Middle Channel, $f_o = 836.6$ MHz |                             |                      |                       |             |
|-----------------------------------|-----------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supplied ( $V_{DC}$ ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -20                               | 3.7V                        | -6                   | -0.007172             | 2.5         |
| -10                               |                             | -9                   | -0.010758             | 2.5         |
| 0                                 |                             | -10                  | -0.011953             | 2.5         |
| 10                                |                             | -10                  | -0.011953             | 2.5         |
| 20                                |                             | -10                  | -0.011953             | 2.5         |
| 25                                |                             | -9                   | -0.010758             | 2.5         |
| 30                                |                             | -6                   | -0.007172             | 2.5         |
| 40                                |                             | -10                  | -0.011953             | 2.5         |
| 50                                |                             | -9                   | -0.010758             | 2.5         |
| 55                                |                             | -6                   | -0.007172             | 2.5         |
| 25                                | V max.=4.2V                 | -10                  | -0.011953             | 2.5         |
|                                   | V min.= 3.5V                | -6                   | -0.007172             | 2.5         |

## PCS Band (Part 24E)

| Middle Channel, $f_o = 1880$ MHz |                             |                      |                       |        |
|----------------------------------|-----------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                 | Power Supplied ( $V_{DC}$ ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -20                              | 3.7V                        | -11                  | -0.005851             | pass   |
| -10                              |                             | -8                   | -0.004255             | pass   |
| 0                                |                             | -9                   | -0.004787             | pass   |
| 10                               |                             | -11                  | -0.005851             | pass   |
| 20                               |                             | -15                  | -0.007979             | pass   |
| 25                               |                             | -13                  | -0.006915             | pass   |
| 30                               |                             | -8                   | -0.004255             | pass   |
| 40                               |                             | -11                  | -0.005851             | pass   |
| 50                               |                             | -15                  | -0.007979             | pass   |
| 55                               |                             | -6                   | -0.003191             | pass   |
| 25                               | V max.=4.2V                 | -8                   | -0.004255             | pass   |
|                                  | V min.= 3.5V                | -8                   | -0.004255             | pass   |

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