



**FCC CFR47 PART 22 SUBPART H  
FCC CFR47 PART 24 SUBPART E**

**CERTIFICATION TEST REPORT  
FOR**

**Cellular/PCS GSM/GPRS/EDGE, PCS WCDMA Tablet with 802.11abgn, BT3.0**

**MODEL NUMBER: GT-P6200**

**FCC ID: A3LGTP6200**

**REPORT NUMBER: 11I14015-1**

**ISSUE DATE: OCTOBER 06, 2011**

*Prepared for*

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**NVLAP LAB CODE 200065-0**

Revision History

| Rev. | Issue<br>Date | Revisions     | Revised By |
|------|---------------|---------------|------------|
| ---  | 10/06/11      | Initial Issue | T. Chan    |

## TABLE OF CONTENTS

|                                                           |           |
|-----------------------------------------------------------|-----------|
| <b>1. ATTESTATION OF TEST RESULTS.....</b>                | <b>4</b>  |
| <b>2. TEST METHODOLOGY .....</b>                          | <b>5</b>  |
| <b>3. FACILITIES AND ACCREDITATION.....</b>               | <b>5</b>  |
| <b>4. CALIBRATION AND UNCERTAINTY .....</b>               | <b>5</b>  |
| 4.1. MEASURING INSTRUMENT CALIBRATION .....               | 5         |
| 4.2. SAMPLE CALCULATION.....                              | 5         |
| 4.3. MEASUREMENT UNCERTAINTY .....                        | 5         |
| <b>5. EQUIPMENT UNDER TEST .....</b>                      | <b>6</b>  |
| 5.1. DESCRIPTION OF EUT.....                              | 6         |
| 5.2. MAXIMUM OUTPUT POWER.....                            | 6         |
| 5.3. SOFTWARE AND FIRMWARE .....                          | 6         |
| 5.4. WORST-CASE CONFIGURATION AND MODE.....               | 7         |
| 5.5. DESCRIPTION OF TEST SETUP.....                       | 8         |
| <b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>            | <b>11</b> |
| <b>7. RF POWER OUTPUT VERIFICATION .....</b>              | <b>12</b> |
| 7.1. RF POWER OUTPUT FOR GSM MODE.....                    | 12        |
| 7.2. RF POWER OUTPUT FOR UMTS REL99.....                  | 14        |
| 7.3. RF POWER OUTPUT FOR UMTS Rel 6 HSDPA.....            | 15        |
| 7.4. RF POWER OUTPUT UMTS Rel 6 HSPA (HSDPA & HSUPA)..... | 17        |
| 7.5. RF POWER OUTPUT UMTS HSPA EVOLUTION (HSPA +) .....   | 19        |
| <b>8. CONDUCTED TEST RESULTS.....</b>                     | <b>20</b> |
| 8.1. OCCUPIED BANDWIDTH.....                              | 20        |
| 8.1. BAND EDGE .....                                      | 34        |
| 8.2. OUT OF BAND EMISSIONS .....                          | 41        |
| 8.3. FREQUENCY STABILITY .....                            | 54        |
| <b>9. RADIATED TEST RESULTS .....</b>                     | <b>58</b> |
| 9.1. RADIATED POWER (ERP & EIRP) .....                    | 58        |
| 9.1. FIELD STRENGTH OF SPURIOUS RADIATION .....           | 63        |
| <b>10. SETUP PHOTOS .....</b>                             | <b>70</b> |

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
416, MAETAN 3-DONG, YEONGTONG-GU  
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

**EUT DESCRIPTION:** Cellular/PCS GSM/GPRS/EDGE, PCS WCDMA Tablet with  
802.11abgn, BT3.0

**MODEL:** GT-P6200

**SERIAL NUMBER:** 02039

**DATE TESTED:** SEPTEMBER 15 – OCTOBER 05, 2011

| APPLICABLE STANDARDS |              |
|----------------------|--------------|
| STANDARD             | TEST RESULTS |
| FCC PART 22H AND 24E | Pass         |

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, and FCC CFR Part 24.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB     |
| Radiated Disturbance, 30 to 1000 MHz  | 4.94 dB     |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Cellular/PCS GSM/GPRS/EDGE, PCS WCDMA Tablet with 802.11abgn, BT3.0

The radio module is manufactured by Samsung.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted and ERP / EIRP output powers as follows:

Part 22 Cellular Band

| Frequency range (MHz) | Modulation | Conducted |        | ERP   |       |
|-----------------------|------------|-----------|--------|-------|-------|
|                       |            | dBm       | mW     | dBm   | mW    |
| 824.2 – 848.8         | GPRS       | 32.68     | 1853.5 | 26.64 | 461.3 |
| 824.2 – 848.8         | EGPRS      | 30.30     | 1071.5 | 24.92 | 310.5 |

Part 24 PCS Band

| Frequency range (MHz) | Modulation | Conducted |        | EIRP  |        |
|-----------------------|------------|-----------|--------|-------|--------|
|                       |            | dBm       | mW     | dBm   | mW     |
| 1850.2 – 1909.8       | GPRS       | 30.30     | 1071.5 | 31.42 | 1386.8 |
| 1850.2 – 1909.8       | EGPRS      | 29.21     | 833.7  | 30.16 | 1037.5 |

Part 24 WCDMA1900 Band

| Frequency range (MHz) | Modulation   | Conducted |       | EIRP  |       |
|-----------------------|--------------|-----------|-------|-------|-------|
|                       |              | dBm       | mW    | dBm   | mW    |
| 1852.4-1907.6         | UMTS, REL 99 | 26.63     | 460.3 | 27.96 | 625.2 |
| 1852.4-1907.6         | UMTS, HSDPA  | 27.18     | 522.4 | 28.16 | 654.6 |

### 5.3. SOFTWARE AND FIRMWARE

The EUT software installed during testing was HW Rev 1.2 SW: P6200.002.

The EUT is linked with Agilent 8960 Communication Test Set.

## **5.4. WORST-CASE CONFIGURATION AND MODE**

The worst-case channel for RF radiated emissions below 1GHz and AC conducted emissions are determined as the channel with the AC Power Adapter Source

Based on the investigation results, the highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst-case modes

- For Cellular and PCS band: GPRS and EGPRS
- For PCS band: UMTS, REL 99 and HSDPA Sub-set 2

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST |              |             |               |        |
|-----------------------------------|--------------|-------------|---------------|--------|
| Description                       | Manufacturer | Model       | Serial Number | FCC ID |
| AC Adapter                        | Samsung      | ETAOU10EBE  | SC3ZA16MS/7-E | DoC    |
| Headset                           | Samsung      | GH59-10443F | 2049          | NA     |

### I/O CABLES (CONDUCTED)

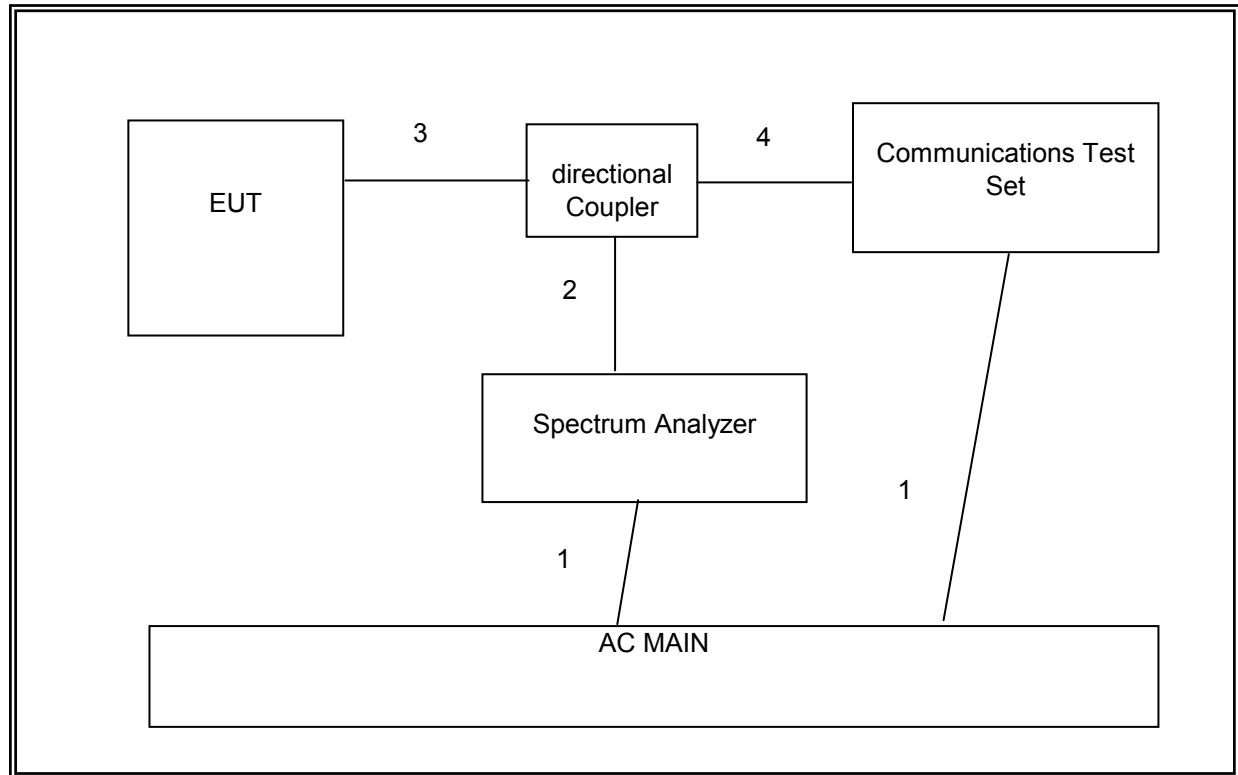
| I/O CABLE LIST |              |                      |                     |             |              |         |
|----------------|--------------|----------------------|---------------------|-------------|--------------|---------|
| Cable No.      | Port         | # of Identical Ports | Connector Type      | Cable Type  | Cable Length | Remarks |
| 1              | AC           | 2                    | 115VAC              | Un-shielded | 1.5m         | NA      |
| 2              | RF In/Out    | 1                    | Spectrum Analyzer   | Un-shielded | none         |         |
| 3              | Antenna Port | 1                    | Directional Coupler | Un-shielded | 1.7m         |         |
| 4              | RF In/Out    | 1                    | Test Set            | Un-shielded | 0.5m         | NA      |

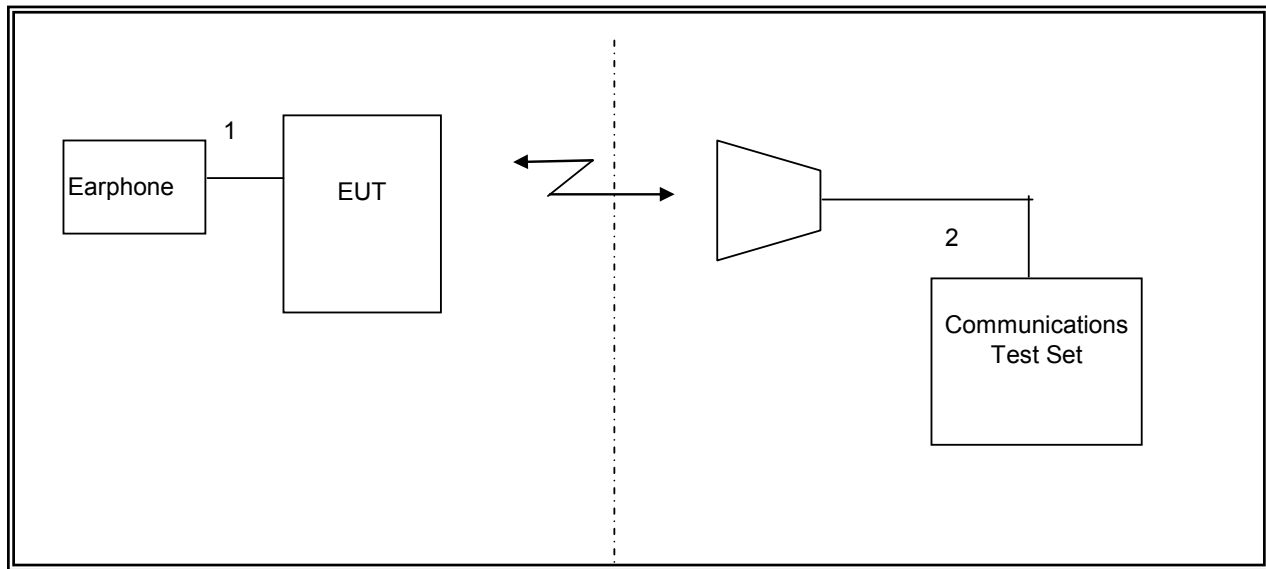
### I/O CABLES (RADIATED)

| I/O CABLE LIST |           |                      |                |             |              |         |
|----------------|-----------|----------------------|----------------|-------------|--------------|---------|
| Cable No.      | Port      | # of Identical Ports | Connector Type | Cable Type  | Cable Length | Remarks |
| 1              | Jack      | 1                    | Earphone       | Un-shielded | 1.5m         | NA      |
| 2              | RF In/Out | 1                    | Test Set       | Un-shielded | 2m           | NA      |

### TEST SETUP

The EUT is a stand alone device. A link is established between the EUT and the Agilent communications test set.

**SETUP DIAGRAM FOR RF CONDUCTED TESTS**

**SETUP DIAGRAM FOR RF RADIATED TESTS**

## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST                |                |              |        |          |
|------------------------------------|----------------|--------------|--------|----------|
| Description                        | Manufacturer   | Model        | Asset  | Cal Due  |
| Spectrum Analyzer, 44 GHz          | Agilent / HP   | E4446A       | C01159 | 05/11/12 |
| Antenna, Horn, 18 GHz              | EMCO           | 3115         | C00872 | 06/29/12 |
| Antenna, Bilog, 2 GHz              | Sunol Sciences | JB1          | C01011 | 07/16/12 |
| Preamplifier, 1300 MHz             | Agilent / HP   | 8447D        | C00885 | 01/27/12 |
| Preamplifier, 26.5 GHz             | Agilent / HP   | 8449B        | C01063 | 07/12/12 |
| Communication Test Set             | Agilent / HP   | E5515C       | C01086 | 06/17/12 |
| Temperature / Humidity Chamber     | Thermotron     | SE 600-10-10 | C00930 | 04/20/12 |
| Highpass Filter, 1.5 GHz           | Micro-Tronics  | HPM13193     | N02689 | CNR      |
| Highpass Filter, 2.7 GHz           | Micro-Tronics  | HPM13194     | N02687 | CNR      |
| Directional Coupler                | Krytar         | 1817         | N02656 | CNR      |
| Signal Generator, 20 GHz           | Agilent / HP   | 83732B       | C00774 | 07/14/12 |
| Antenna, Tuned Dipole 400~1000 MHz | ETS            | 3121C DB4    | C00993 | 07/16/12 |

## 7. RF POWER OUTPUT VERIFICATION

### 7.1. RF POWER OUTPUT FOR GSM MODE

#### TEST PROCEDURE

##### GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900  
 Press Connection control to choose the different menus  
 Press RESET > choose all to reset all settings  
 Connection Press Signal Off to turn off the signal and change settings  
 Network Support > GSM+GPRS or GSM+EGPRS  
 Main Service > Packet Data  
 Service selection > Test Mode A – Auto Slot Config. off  
 MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting  
     > Slot configuration > Uplink/Gamma  
     > 33 dBm for GPRS 850/900  
     > 27 dBm for EGPRS 850/900  
     > 30 dBm for GPRS1800/1900  
     > 26 dBm for EGPRS1800/1900  
 BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel  
 Frequency Offset > + 0 Hz  
 Mode > BCCH and TCH  
 BCCH Level > -85 dBm (May need to adjust if link is not stable)  
 BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]  
 Channel Type > Off  
 P0> 4 dB  
 Slot Config > Unchanged (if already set under MS Signal)  
 TCH > choose desired test channel  
 Hopping > Off  
 Main Timeslot > 3 (Default)  
 Network Coding Scheme > CS4 (GPRS) and MCS9 (EGPRS)  
 Bit Stream > 2E9-1PSR Bit Pattern  
 AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input  
 Connection Press Signal On to turn on the signal and change settings

#### RESULTS

**GPRS for Cell and PCS Band**

| Mode | Ch. | f (MHz) | 1 time slot  |         | 2 time slots |         |
|------|-----|---------|--------------|---------|--------------|---------|
|      |     |         | Peak         | Average | Peak         | Average |
| GPRS | 128 | 824.2   | 32.67        |         | 31.30        |         |
|      | 190 | 836.6   | <b>32.68</b> |         | 31.34        |         |
|      | 251 | 848.8   | 32.62        |         | 31.29        |         |
| GPRS | 512 | 1850.2  | <b>30.30</b> |         | 27.78        |         |
|      | 661 | 1880    | 30.20        |         | 27.76        |         |
|      | 810 | 1909.8  | 30.28        |         | 27.81        |         |

**EGPRS for Cell and PCS Band**

| Mode  | Ch. | f (MHz) | 1 time slot  |         | 2 time slots |         |
|-------|-----|---------|--------------|---------|--------------|---------|
|       |     |         | Peak         | Average | Peak         | Average |
| EGPRS | 128 | 824.2   | 30.25        |         | 30.20        |         |
|       | 190 | 836.6   | <b>30.30</b> |         | 30.30        |         |
|       | 251 | 848.8   | 30.17        |         | 30.10        |         |
| EGPRS | 512 | 1850.2  | 29.16        |         | 29.10        |         |
|       | 661 | 1880    | 29.11        |         | 29.10        |         |
|       | 810 | 1909.8  | <b>29.21</b> |         | 29.20        |         |

## 7.2. RF POWER OUTPUT FOR UMTS REL99

### TEST PROCEDURE

The following summary of these settings are illustrated below:

|                        |                         |                |
|------------------------|-------------------------|----------------|
| WCDMA General Settings | Mode                    | Rel99          |
|                        | Subtest                 | -              |
|                        | Loopback Mode           | Test Mode 1    |
|                        | Rel99 RMC               | 12.2kbps RMC   |
|                        | HSDPA FRC               | Not Applicable |
|                        | HSUPA Test              | Not Applicable |
|                        | Power Control Algorithm | Algorithm2     |
|                        | $\beta_c$               | Not Applicable |
|                        | $\beta_d$               | Not Applicable |
|                        | $\beta_{ec}$            | Not Applicable |
|                        | $\beta_c/\beta_d$       | 8/15           |
|                        | $\beta_{hs}$            | Not Applicable |
|                        | $\beta_{ed}$            | Not Applicable |

### RESULTS

| Band      | UL Ch | DL Ch | Frequency | Conducted output power (dBm) |              |
|-----------|-------|-------|-----------|------------------------------|--------------|
|           |       |       |           | Average                      | Peak         |
| UMTS 1900 | 9262  | 9662  | 1852.4    |                              | 26.40        |
|           | 9400  | 9800  | 1880.0    |                              | <b>26.63</b> |
|           | 9538  | 9938  | 1907.6    |                              | 26.37        |

### 7.3. RF POWER OUTPUT FOR UMTS Rel 6 HSDPA

#### TEST PROCEDURE

The following summary of these settings are illustrated below:

|                               | Mode                                 | Rel6 HSDPA     | Rel6 HSDPA | Rel6 HSDPA | Rel6 HSDPA |
|-------------------------------|--------------------------------------|----------------|------------|------------|------------|
|                               | Subtest                              | 1              | 2          | 3          | 4          |
| WCDMA<br>General<br>Settings  | Loopback Mode                        | Test Mode 1    |            |            |            |
|                               | Rel99 RMC                            | 12.2kbps RMC   |            |            |            |
|                               | HSDPA FRC                            | H-Set1         |            |            |            |
|                               | HSUPA Test                           | Not Applicable |            |            |            |
|                               | Power Control Algorithm              | Algorithm 2    |            |            |            |
|                               | $\beta_c$                            | 2/15           | 12/15      | 15/15      | 15/15      |
|                               | $\beta_d$                            | 15/15          | 15/15      | 8/15       | 4/15       |
|                               | $\beta_{ec}$                         | -              | -          | -          | -          |
|                               | $\beta_c/\beta_d$                    | 2/15           | 12/15      | 15/8       | 15/4       |
|                               | $\beta_{hs}$                         | 4/15           | 24/15      | 30/15      | 30/15      |
| HSDPA<br>Specific<br>Settings | $\beta_{ed}$                         | Not Applicable |            |            |            |
|                               | DACK                                 | 8              |            |            |            |
|                               | DNAK                                 | 8              |            |            |            |
|                               | DCQI                                 | 8              |            |            |            |
|                               | Ack-Nack repetition factor           | 3              |            |            |            |
|                               | CQI Feedback (Table 5.2B.4)          | 4ms            |            |            |            |
|                               | CQI Repetition Factor (Table 5.2B.4) | 2              |            |            |            |
|                               | $A_{hs} = \beta_{hs}/\beta_c$        | 30/15          |            |            |            |

**RESULT**

| Band                  | Subtest | UL Ch | DL Ch | Frequency | Conducted output power (dBm) |       |
|-----------------------|---------|-------|-------|-----------|------------------------------|-------|
|                       |         |       |       |           | Average                      | Peak  |
| UMTS1900<br>(Band II) | 1       | 9262  | 9662  | 1852.4    |                              | 26.40 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.45 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.50 |
|                       | 2       | 9262  | 9662  | 1852.4    |                              | 26.79 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 27.18 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.77 |
|                       | 3       | 9262  | 9662  | 1852.4    |                              | 26.98 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.93 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.85 |
|                       | 4       | 9262  | 9662  | 1852.4    |                              | 26.64 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.75 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.68 |

## 7.4. RF POWER OUTPUT UMTS Rel 6 HSPA (HSDPA & HSUPA)

### TEST PROCEDURE

The following summary of these settings are illustrated below:

|                               | Mode                                 | Rel6 HSUPA                                                                                                                                   | Rel6 HSUPA | Rel6 HSUPA                                            | Rel6 HSUPA | Rel6 HSUPA                                                                                                                                   |
|-------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                               | Subtest                              | 1                                                                                                                                            | 2          | 3                                                     | 4          | 5                                                                                                                                            |
| WCDMA<br>General<br>Settings  | Loopback Mode                        | Test Mode 1                                                                                                                                  |            |                                                       |            |                                                                                                                                              |
|                               | Rel99 RMC                            | 12.2kbps RMC                                                                                                                                 |            |                                                       |            |                                                                                                                                              |
|                               | HSDPA FRC                            | H-Set1                                                                                                                                       |            |                                                       |            |                                                                                                                                              |
|                               | HSUPA Test                           | HSUPA Loopback                                                                                                                               |            |                                                       |            |                                                                                                                                              |
|                               | Power Control Algorithm              | Algorithm2                                                                                                                                   |            |                                                       |            |                                                                                                                                              |
|                               | $\beta_c$                            | 11/15                                                                                                                                        | 6/15       | 15/15                                                 | 2/15       | 15/15                                                                                                                                        |
|                               | $\beta_d$                            | 15/15                                                                                                                                        | 15/15      | 9/15                                                  | 15/15      | 0                                                                                                                                            |
|                               | $\beta_{ec}$                         | 209/225                                                                                                                                      | 12/15      | 30/15                                                 | 2/15       | 5/15                                                                                                                                         |
|                               | $\beta_c/\beta_d$                    | 11/15                                                                                                                                        | 6/15       | 15/9                                                  | 2/15       | -                                                                                                                                            |
|                               | $\beta_{hs}$                         | 22/15                                                                                                                                        | 12/15      | 30/15                                                 | 4/15       | 5/15                                                                                                                                         |
| HSDPA<br>Specific<br>Settings | $\beta_{ed}$                         | 1309/225                                                                                                                                     | 94/75      | 47/15                                                 | 56/75      | 47/15                                                                                                                                        |
|                               | DACK                                 | 8                                                                                                                                            |            |                                                       |            |                                                                                                                                              |
|                               | DNAK                                 | 8                                                                                                                                            |            |                                                       |            |                                                                                                                                              |
|                               | DCQI                                 | 8                                                                                                                                            |            |                                                       |            |                                                                                                                                              |
|                               | Ack-Nack repetition factor           | 3                                                                                                                                            |            |                                                       |            |                                                                                                                                              |
|                               | CQI Feedback (Table 5.2B.4)          | 4ms                                                                                                                                          |            |                                                       |            |                                                                                                                                              |
|                               | CQI Repetition Factor (Table 5.2B.4) | 2                                                                                                                                            |            |                                                       |            |                                                                                                                                              |
| HSUPA<br>Specific<br>Settings | $A_{hs} = \beta_{hs}/\beta_c$        | 30/15                                                                                                                                        |            |                                                       |            |                                                                                                                                              |
|                               | D E-DPCCH                            | 6                                                                                                                                            | 8          | 8                                                     | 5          | 7                                                                                                                                            |
|                               | DHARQ                                | 0                                                                                                                                            | 0          | 0                                                     | 0          | 0                                                                                                                                            |
|                               | AG Index                             | 20                                                                                                                                           | 12         | 15                                                    | 17         | 12                                                                                                                                           |
|                               | ETFCI (from 34.121 Table C.11.1.3)   | 75                                                                                                                                           | 67         | 92                                                    | 71         | 67                                                                                                                                           |
|                               | Associated Max UL Data Rate kbps     | 242.1                                                                                                                                        | 174.9      | 482.8                                                 | 205.8      | 308.9                                                                                                                                        |
|                               | Reference E_TFCIs                    | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO 23<br>E-TFCI 75<br>E-TFCI PO 26<br>E-TFCI 81<br>E-TFCI PO 27 |            | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 92<br>E-TFCI PO 18 |            | E-TFCI 11<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO 23<br>E-TFCI 75<br>E-TFCI PO 26<br>E-TFCI 81<br>E-TFCI PO 27 |

### RESULTS

| Band                  | Subtest | UL Ch | DL Ch | Frequency | Conducted output power (dBm) |       |
|-----------------------|---------|-------|-------|-----------|------------------------------|-------|
|                       |         |       |       |           | Average                      | Peak  |
| UMTS1900<br>(Band II) | 1       | 9262  | 9662  | 1852.4    |                              | 25.51 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 25.02 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 25.57 |
|                       | 2       | 9262  | 9662  | 1852.4    |                              | 26.66 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.47 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.65 |
|                       | 3       | 9262  | 9662  | 1852.4    |                              | 26.57 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.61 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.51 |
|                       | 4       | 9262  | 9662  | 1852.4    |                              | 26.54 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.65 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.60 |
|                       | 5       | 9262  | 9662  | 1852.4    |                              | 26.26 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.07 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.04 |

## 7.5. RF POWER OUTPUT UMTS HSPA EVOLUTION (HSPA +)

### TEST PROCEDURE

The following summary of these settings are illustrated the 3GPP TS 34.121 HSPA + (64QAM):

| Mode                                 | HSPA +                                                                                 | HSPA + | HSPA + | HSPA + | HSPA + |
|--------------------------------------|----------------------------------------------------------------------------------------|--------|--------|--------|--------|
| Subtest                              | 1                                                                                      | 2      | 3      | 4      | 5      |
| Loopback Mode                        | Test Mode 1                                                                            |        |        |        |        |
| Fixed Reference Channel              | For Test TS34.121 6.3B                                                                 |        |        |        |        |
| H-Set8(64QAM)                        | For Test TS34.121 6.3B                                                                 |        |        |        |        |
| Integrity Protection                 | ON                                                                                     |        |        |        |        |
| Power Control Algorithm              | Algorithm2                                                                             |        |        |        |        |
| DPCH Timing Offset                   | 6                                                                                      |        |        |        |        |
| Channel Coding                       | E-DCH RF EST                                                                           |        |        |        |        |
| Output Level                         | -86                                                                                    |        |        |        |        |
| HPUPA Throughput                     | ON                                                                                     |        |        |        |        |
| HPUPA Throughput-# of Samples        | 15                                                                                     |        |        |        |        |
| Absolute Grant Value                 | 14                                                                                     |        |        |        |        |
| Number of E-TFCIs                    | 3                                                                                      |        |        |        |        |
| Beta C                               | 8                                                                                      |        |        |        |        |
| Beta D                               | 15                                                                                     |        |        |        |        |
| DACK                                 | 8                                                                                      |        |        |        |        |
| DNAK                                 | 8                                                                                      |        |        |        |        |
| DCQI                                 | 8                                                                                      |        |        |        |        |
| Ack-Nack repetition factor           | 3                                                                                      |        |        |        |        |
| CQI Feedback (Table 5.2B.4)          | 4ms                                                                                    |        |        |        |        |
| CQI Repetition Factor (Table 5.2B.4) | 2                                                                                      |        |        |        |        |
| Reference E_TFCIs                    | E-TFCI 105<br>E-TFCI PO 12<br>E-TFCI 116<br>E-TFCI PO 14<br>E-TFCI 127<br>E-TFCI PO 16 |        |        |        |        |
| Power Control Bit Pattern            | Inner Loop Power Control                                                               |        |        |        |        |
| Input Level                          | 16                                                                                     |        |        |        |        |
| Power Control Bit Pattern            | Alternate                                                                              |        |        |        |        |
| Power Control Bit Pattern            | 26                                                                                     |        |        |        |        |

### RESULTS

| Band                  | Subtest | UL Ch | DL Ch | Frequency | Conducted output power (dBm) |       |
|-----------------------|---------|-------|-------|-----------|------------------------------|-------|
|                       |         |       |       |           | Average                      | Peak  |
| UMTS1900<br>(Band II) | 1       | 9262  | 9662  | 1852.4    |                              | 26.34 |
|                       |         | 9400  | 9800  | 1880.0    |                              | 26.19 |
|                       |         | 9538  | 9938  | 1907.6    |                              | 26.10 |

## 8. CONDUCTED TEST RESULTS

### 8.1. OCCUPIED BANDWIDTH

#### RULE PART(S)

FCC: §2.1049

#### LIMITS

For reporting purposes only

#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

#### MODES TESTED

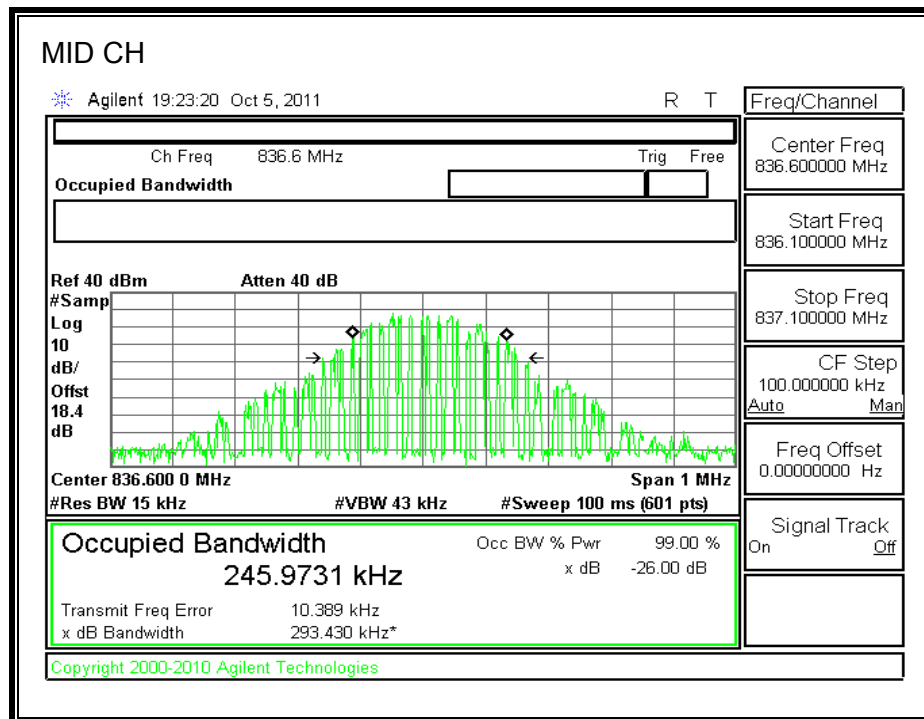
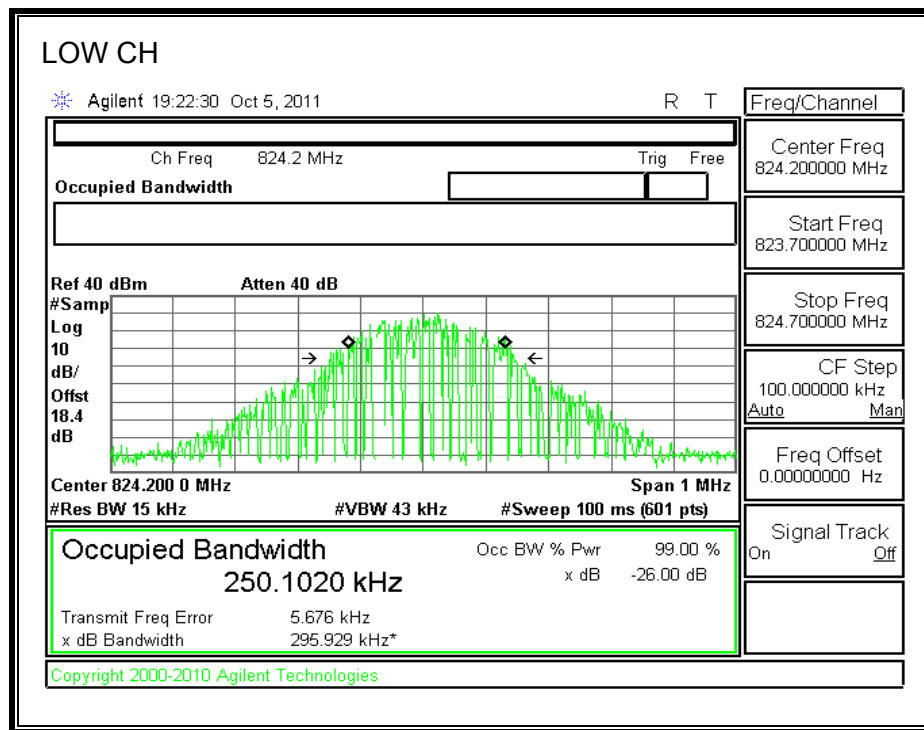
- GPRS and EGPRS
- UMTS, REL 99 and HSDPA

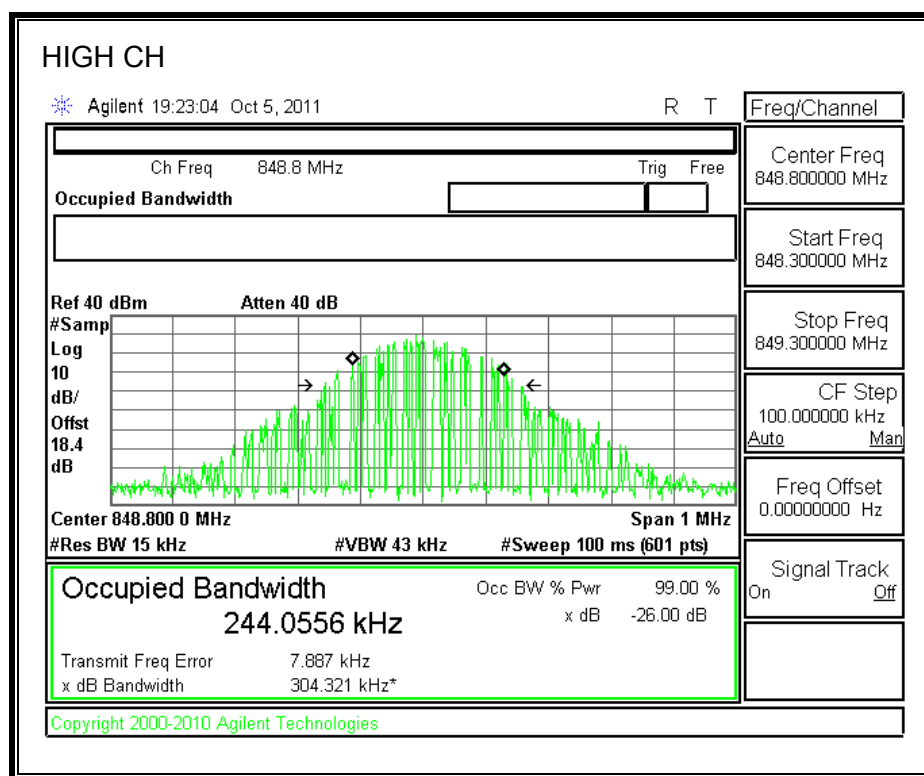
#### RESULTS

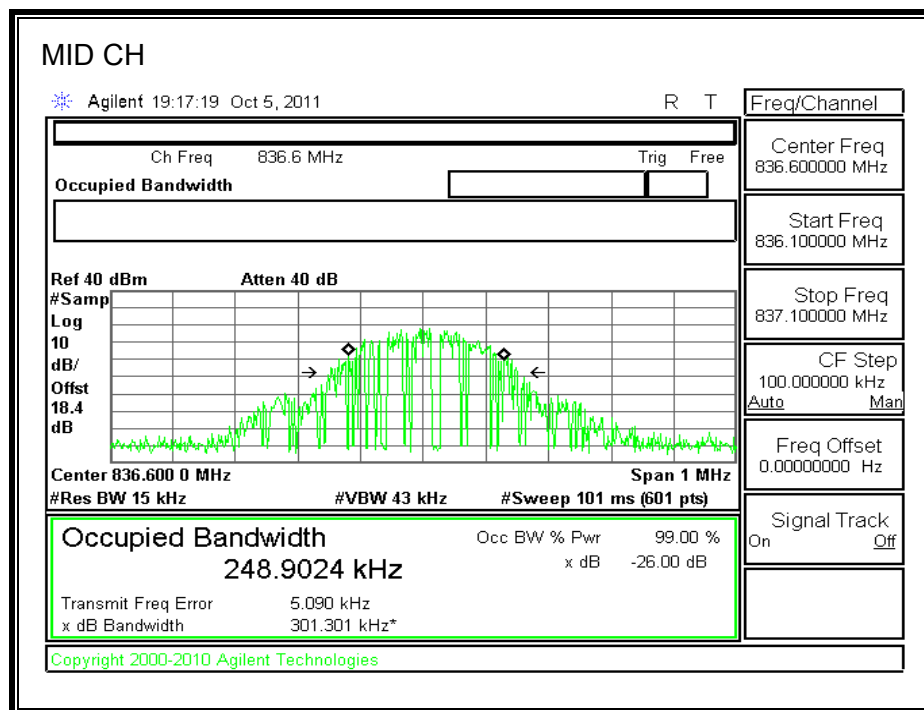
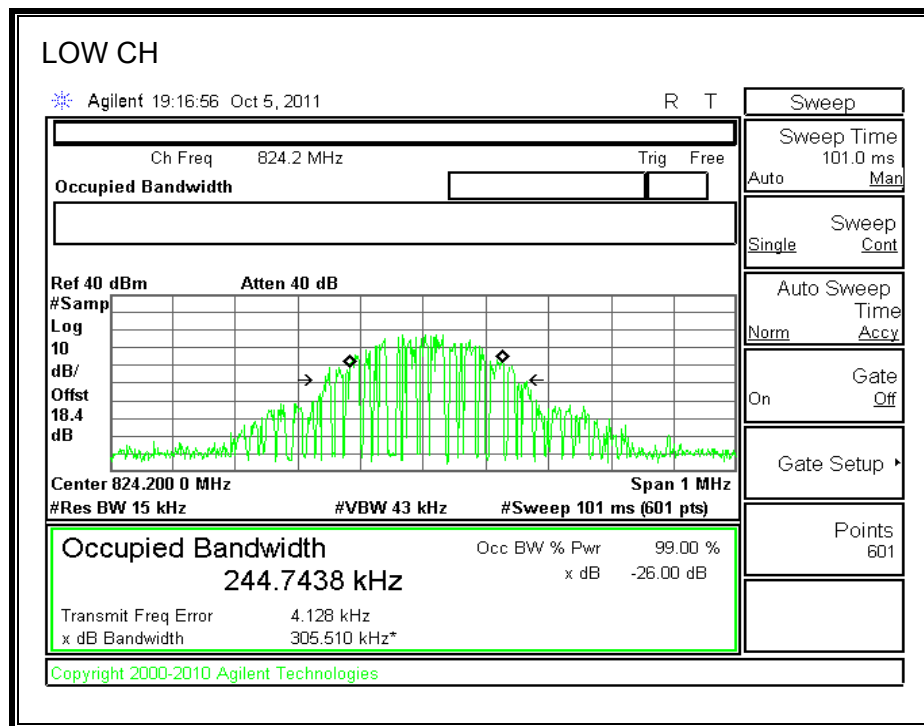
| Band     | Mode  | Channel | f (MHz) | 99% BW (kHz) | -26dB BW (kHz) |
|----------|-------|---------|---------|--------------|----------------|
| Cellular | GPRS  | 128     | 824.20  | 250.1020     | 295.929        |
|          |       | 190     | 836.60  | 245.9731     | 293.430        |
|          |       | 251     | 848.80  | 244.0556     | 304.321        |
| Cellular | EGPRS | 128     | 824.20  | 244.7438     | 305.510        |
|          |       | 190     | 836.60  | 248.9024     | 301.301        |
|          |       | 251     | 848.80  | 245.3190     | 283.648        |

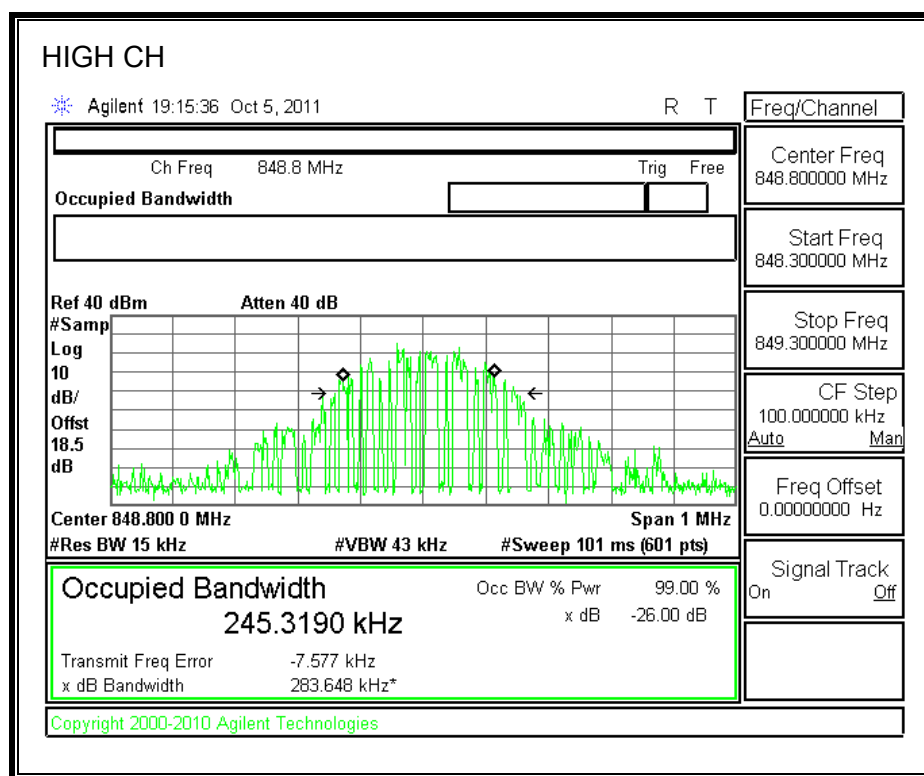
| Band | Mode  | Channel | f (MHz) | 99% BW (KHz) | -26dB BW (KHz) |
|------|-------|---------|---------|--------------|----------------|
| PCS  | GPRS  | 512     | 1850.2  | 257.8964     | 300.218        |
|      |       | 661     | 1880.0  | 248.6931     | 314.975        |
|      |       | 810     | 1909.8  | 245.3873     | 315.217        |
| PCS  | EGPRS | 512     | 1850.2  | 241.0012     | 299.416        |
|      |       | 661     | 1880.0  | 245.3048     | 306.877        |
|      |       | 810     | 1909.8  | 244.7318     | 312.047        |

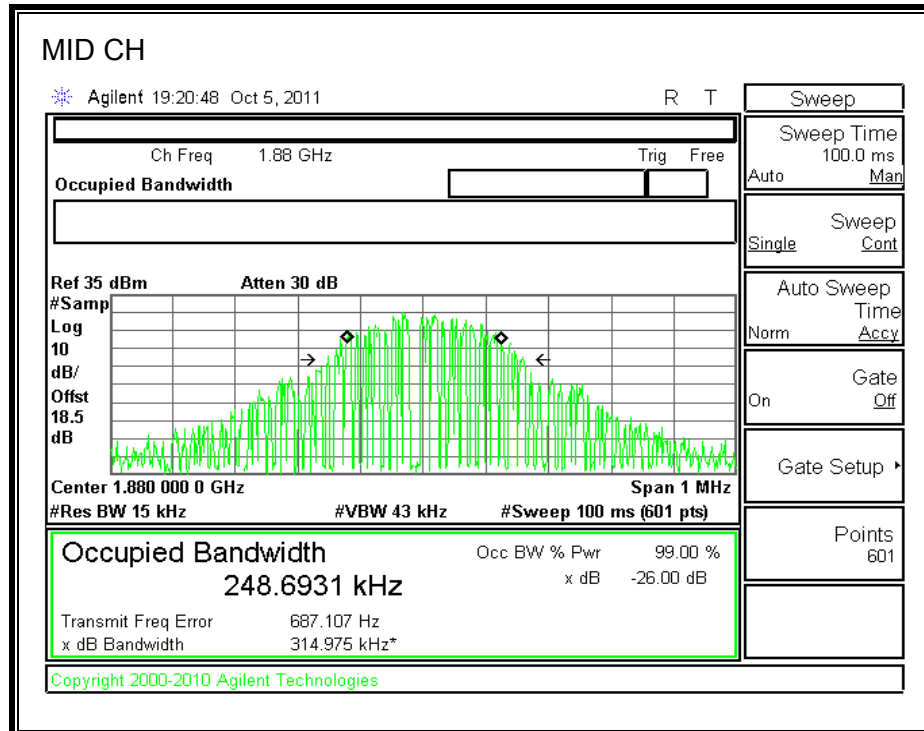
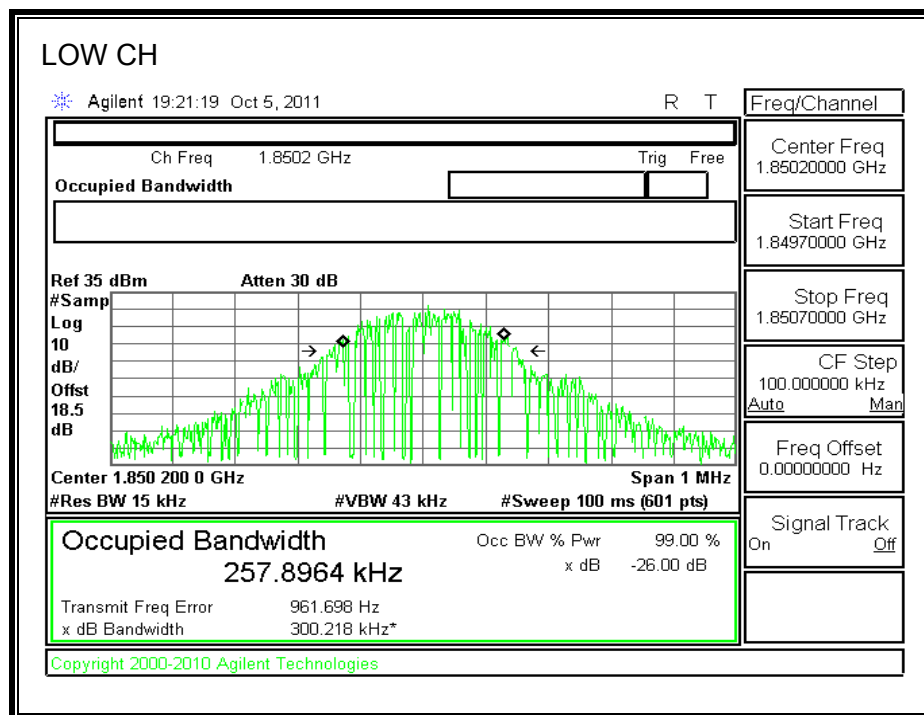
| Band | Mode            | Channel | f (MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|------|-----------------|---------|---------|--------------|----------------|
| PCS  | UMTS,<br>REL 99 | 9662    | 1852.4  | 4.0889       | 4.485          |
|      |                 | 9800    | 1880.0  | 4.0768       | 4.490          |
|      |                 | 9938    | 1907.6  | 4.0808       | 4.525          |
|      | UMTS,<br>HSDPA  | 9662    | 1852.4  | 4.0983       | 4.620          |
|      |                 | 9800    | 1880.0  | 4.0890       | 4.540          |
|      |                 | 9938    | 1907.6  | 4.1016       | 4.621          |

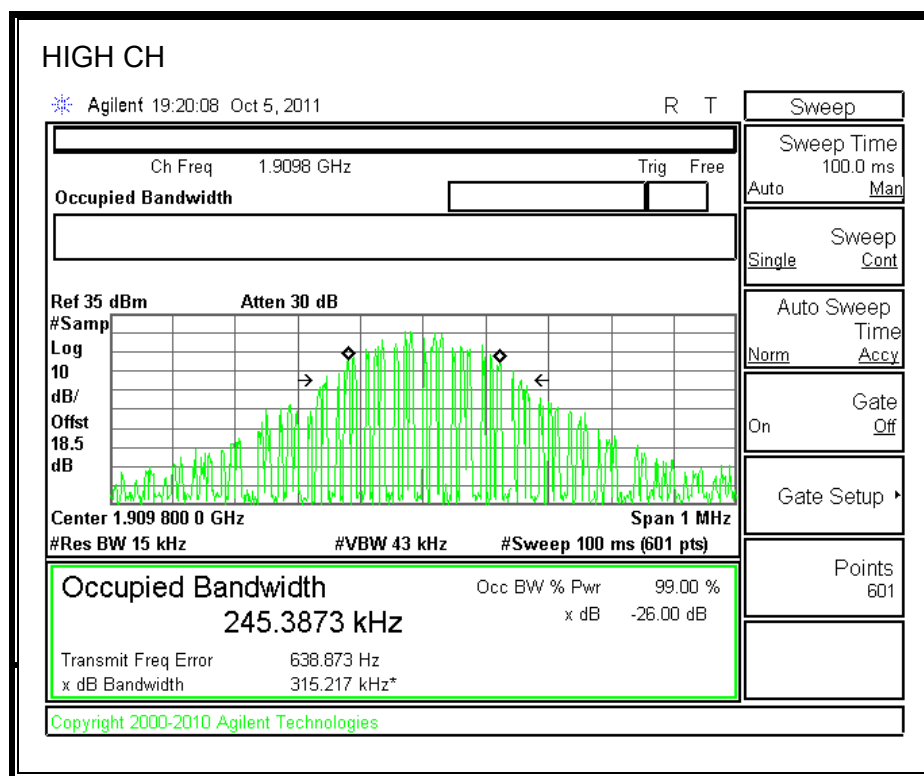
**GPRS Mode (Cellular Band)**

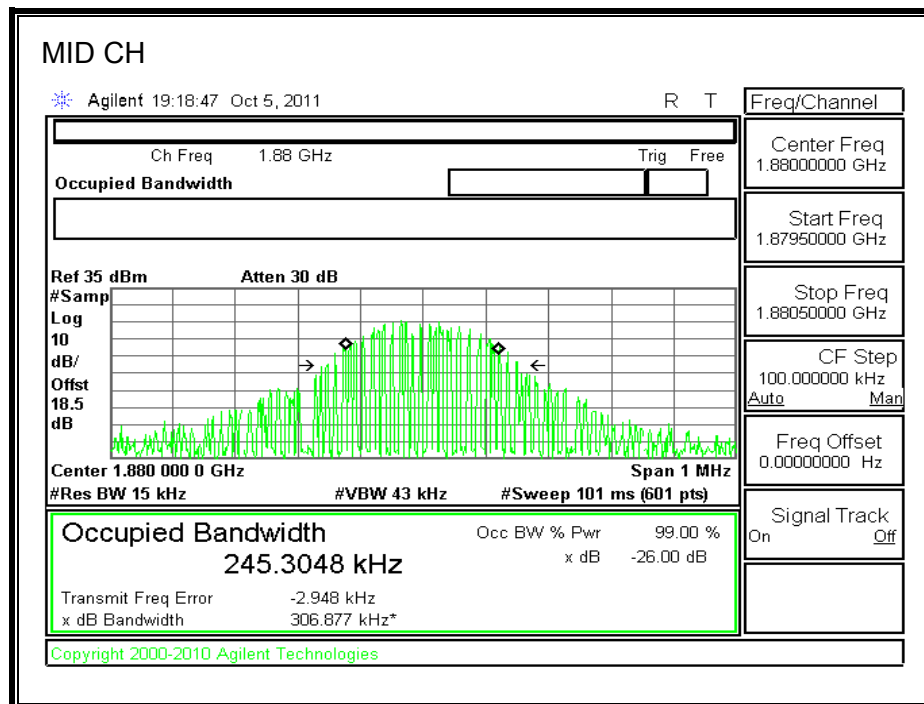
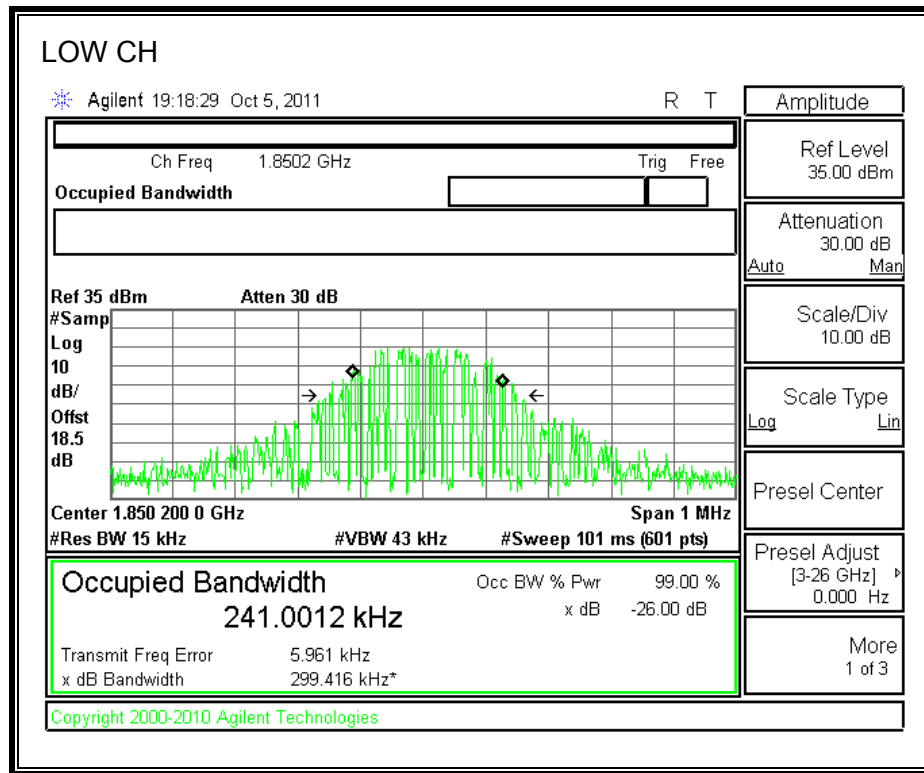


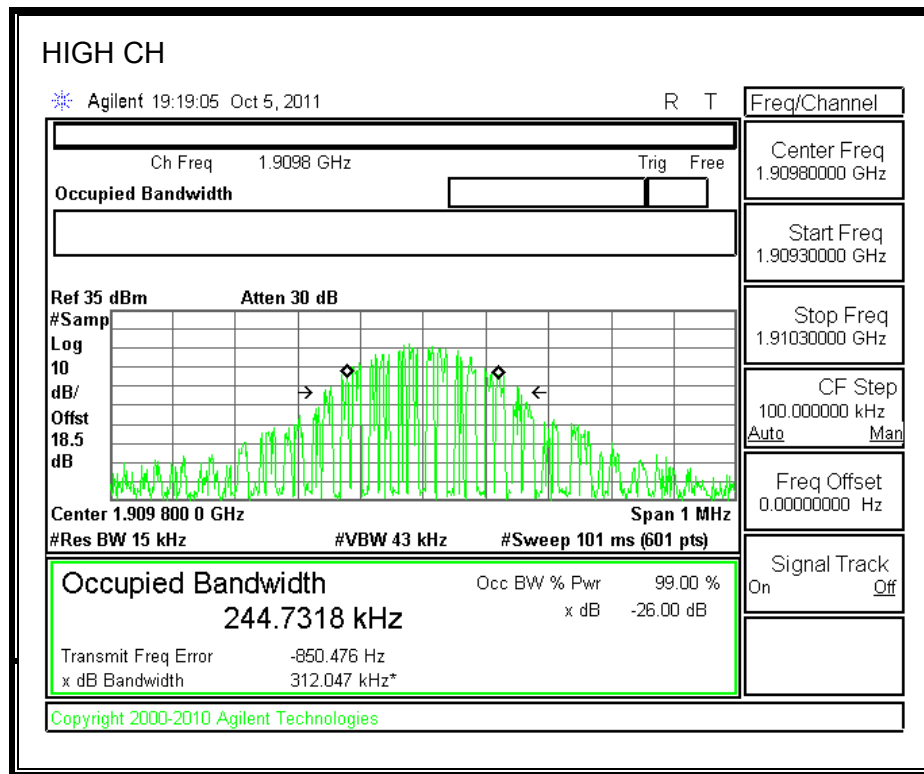
**EGPRS Mode (Cellular Band)**

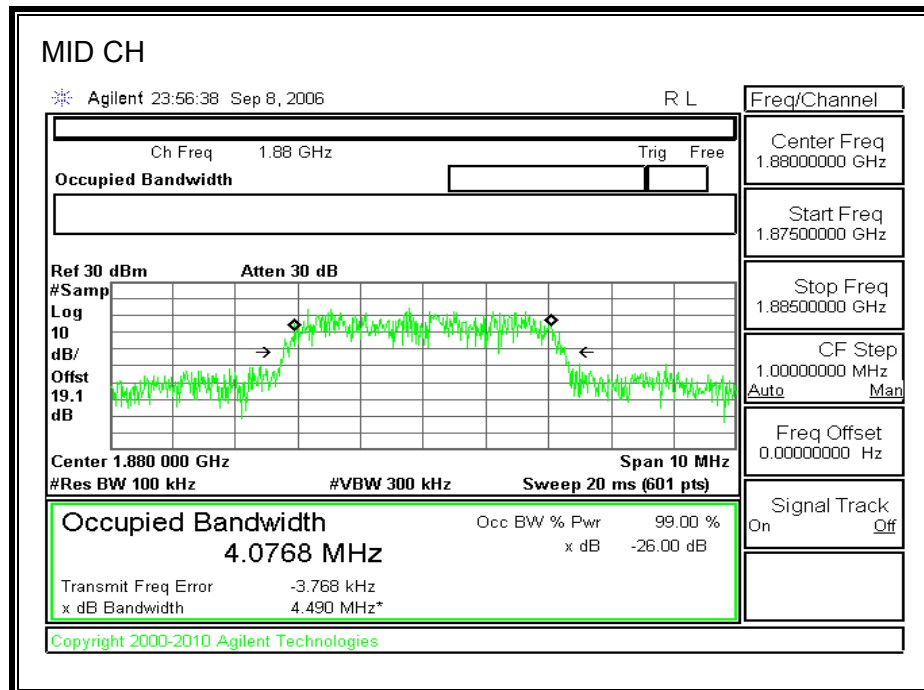
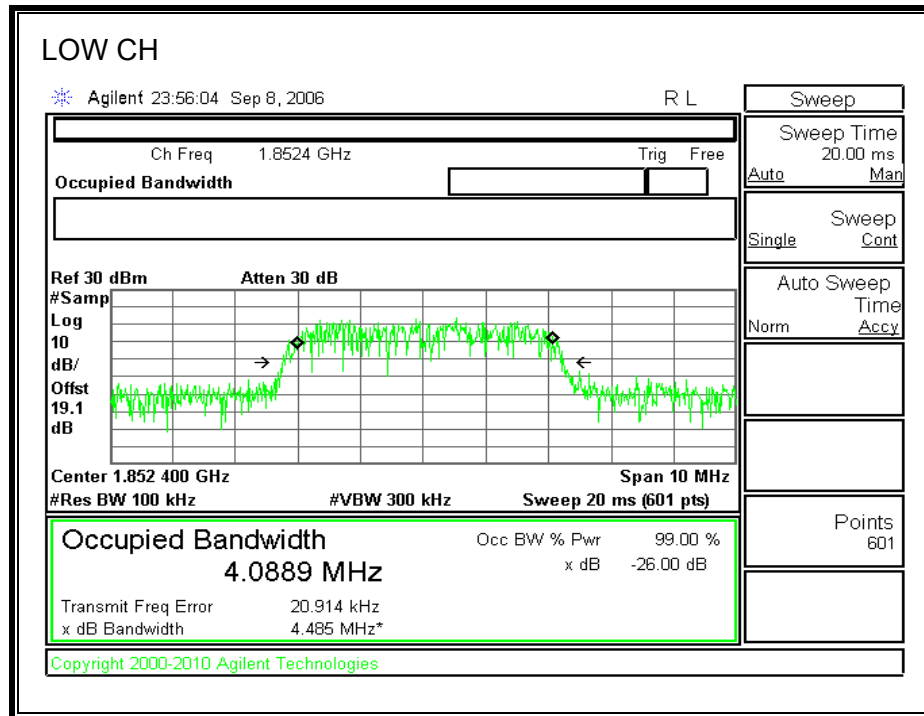


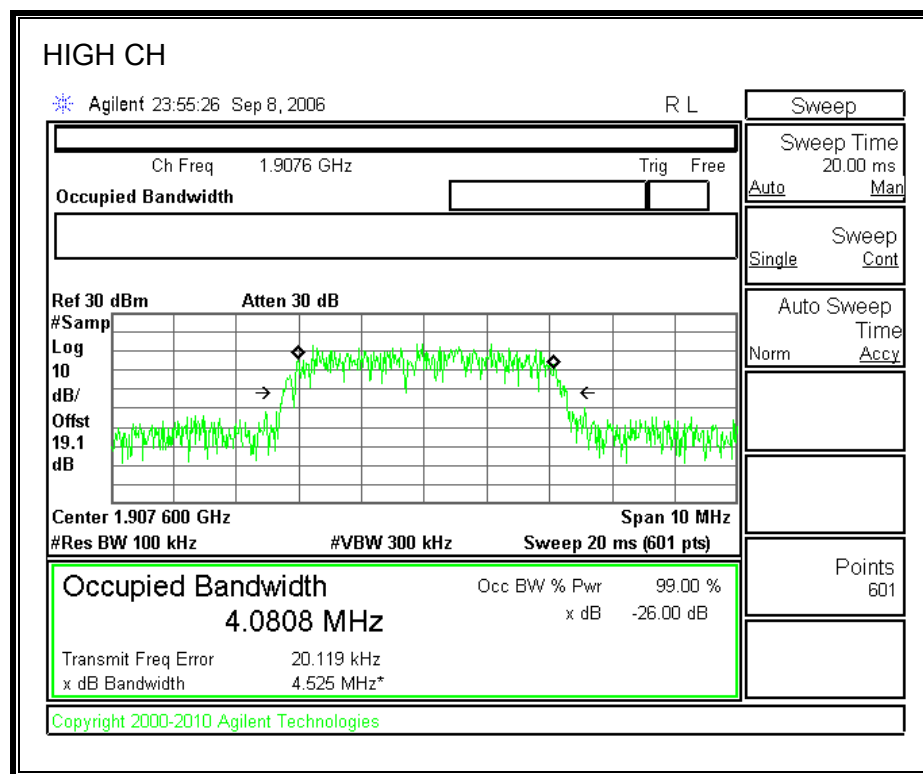
**GPRS Mode (PCS Band)**

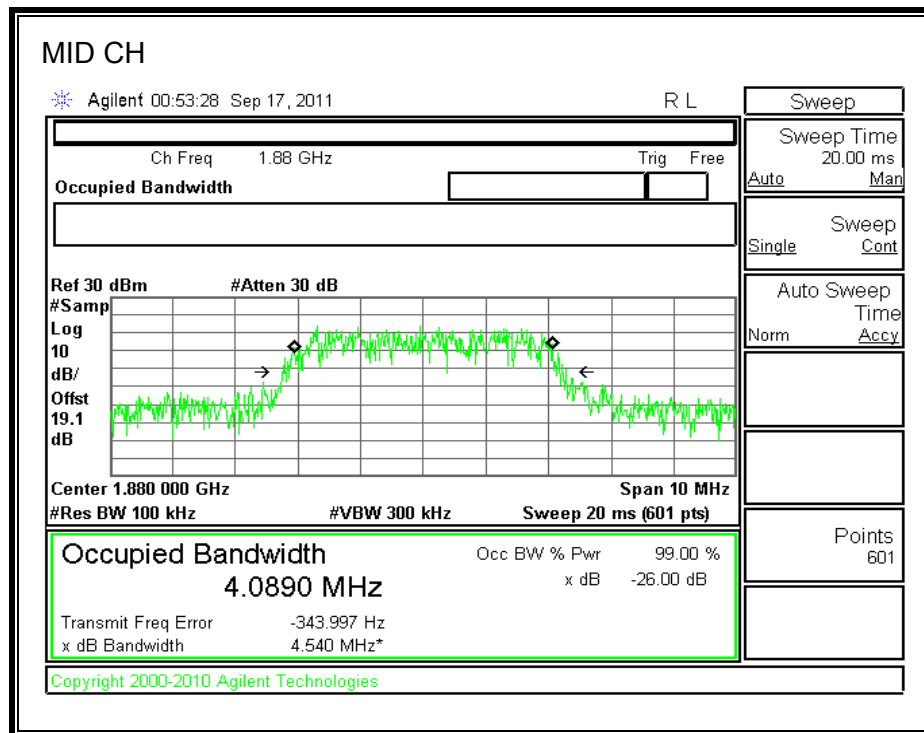
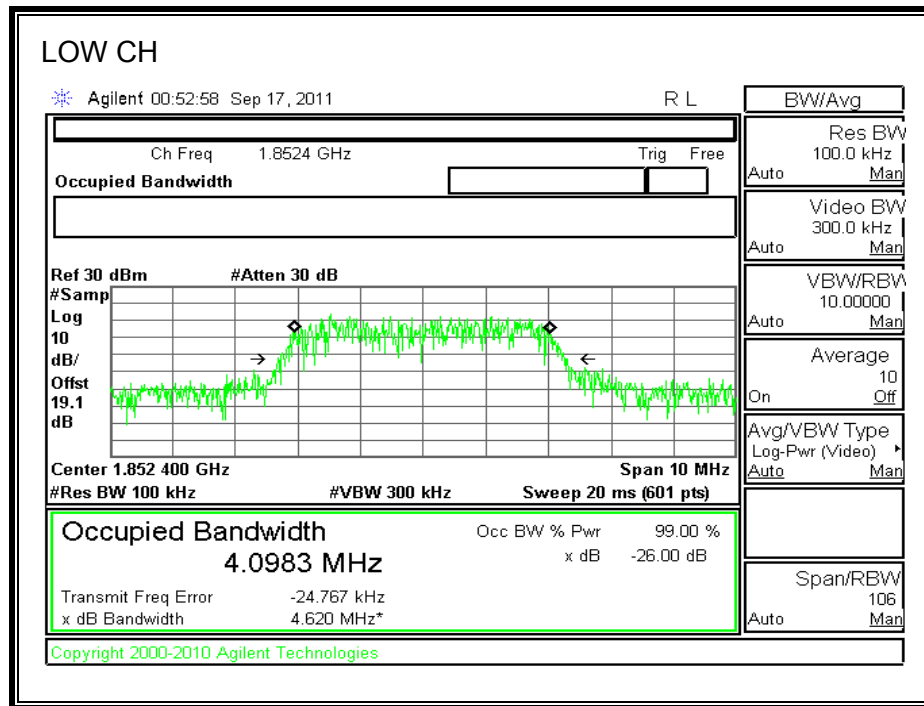


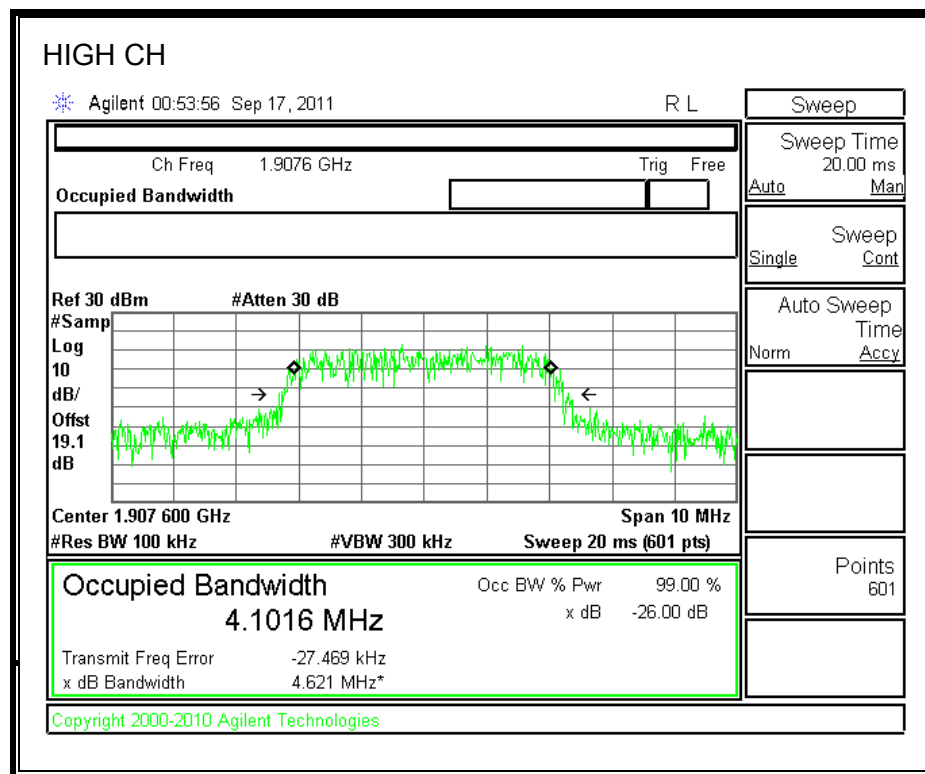
**EGPRS Mode (PCS Band)**



**WCDMA1900 REL 99**



**WCDMA1900 HSDPA**



## **8.1. BAND EDGE**

### **RULE PART(S)**

FCC: §22.359, 24.238

### **LIMITS**

The power of any emission 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 transmitter output was connected to a Agilent 8960 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

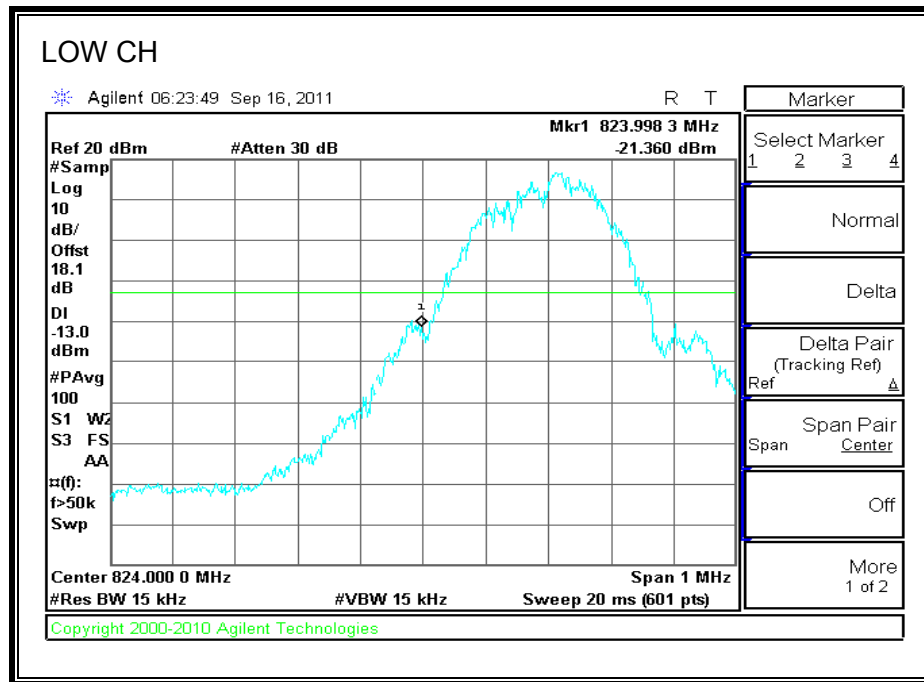
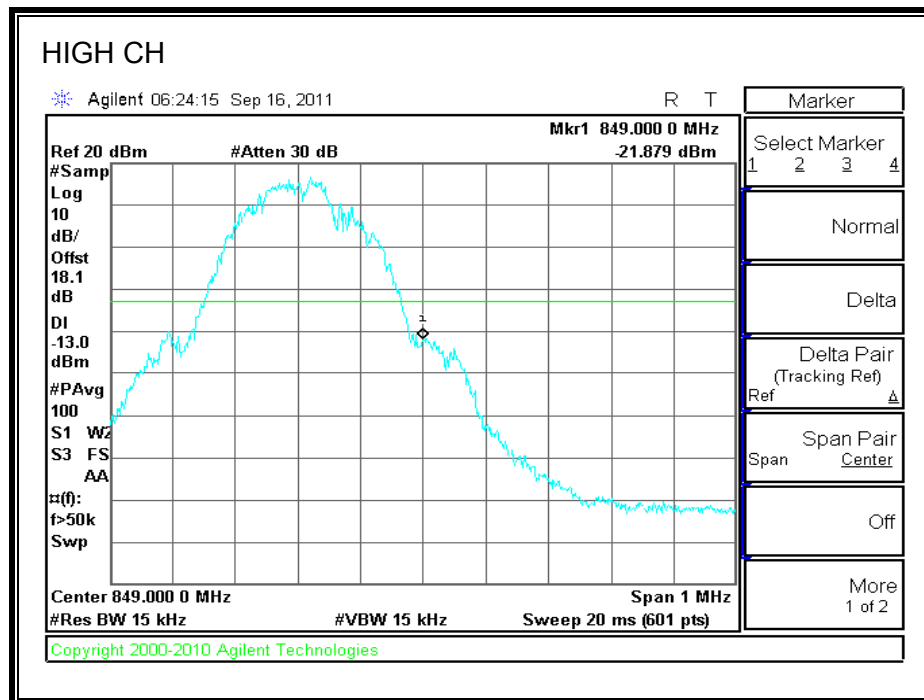
For each band edge measurement:

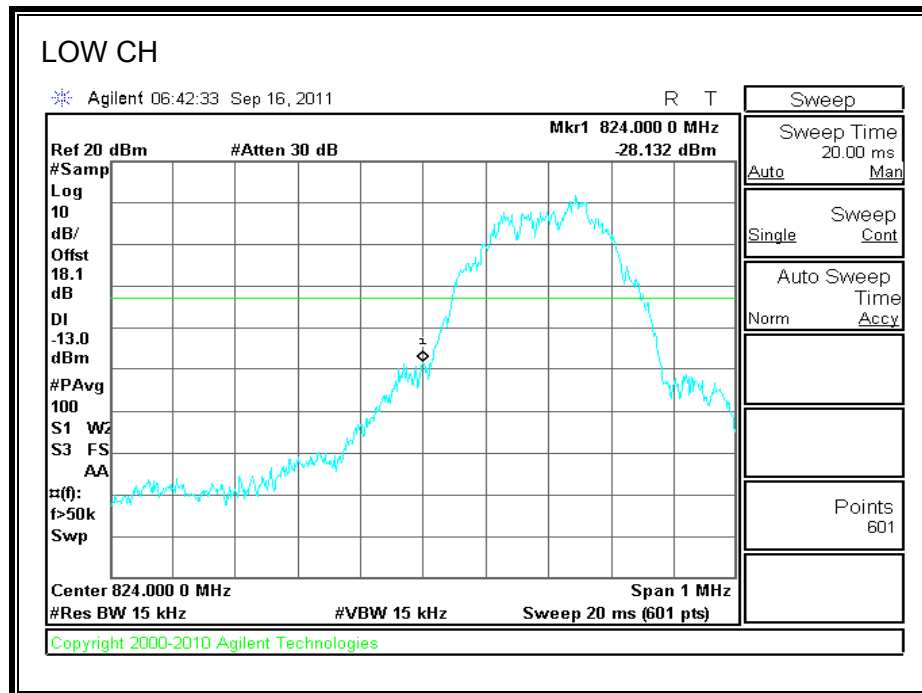
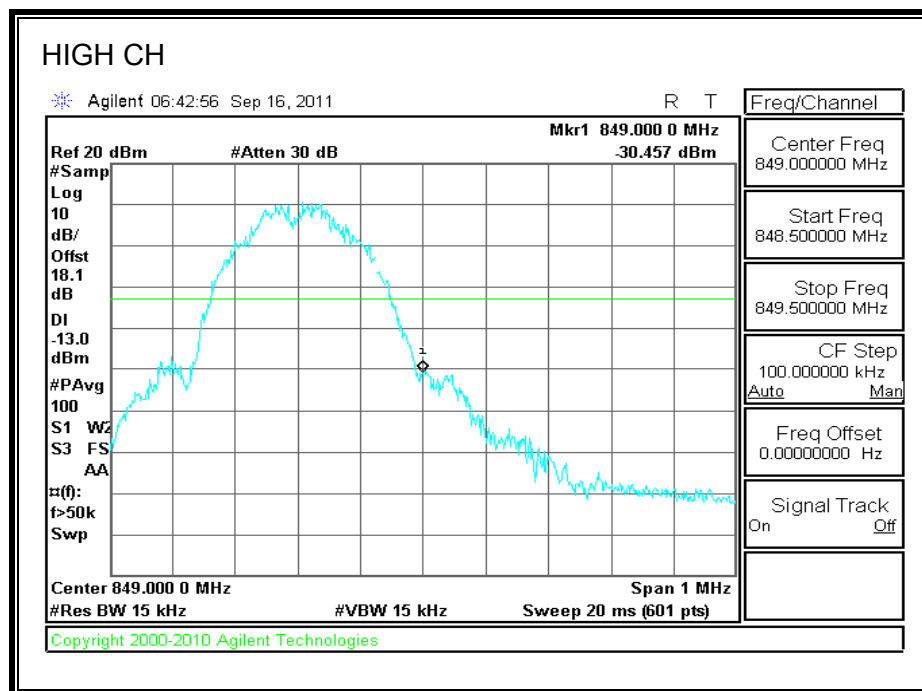
- Set the spectrum analyzer span to include the block edge frequency (824, 848, 1850, 1910MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

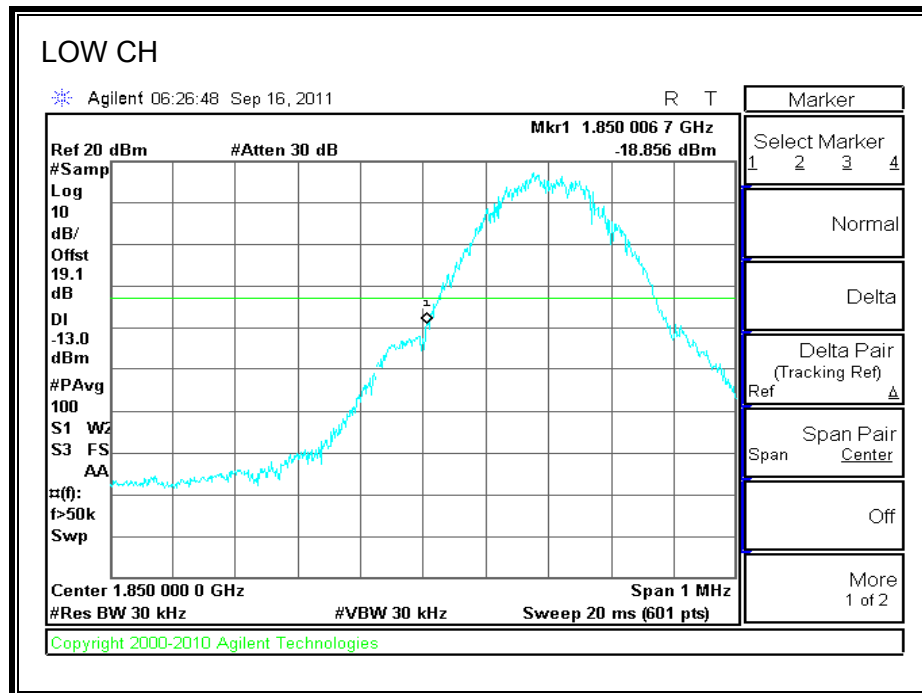
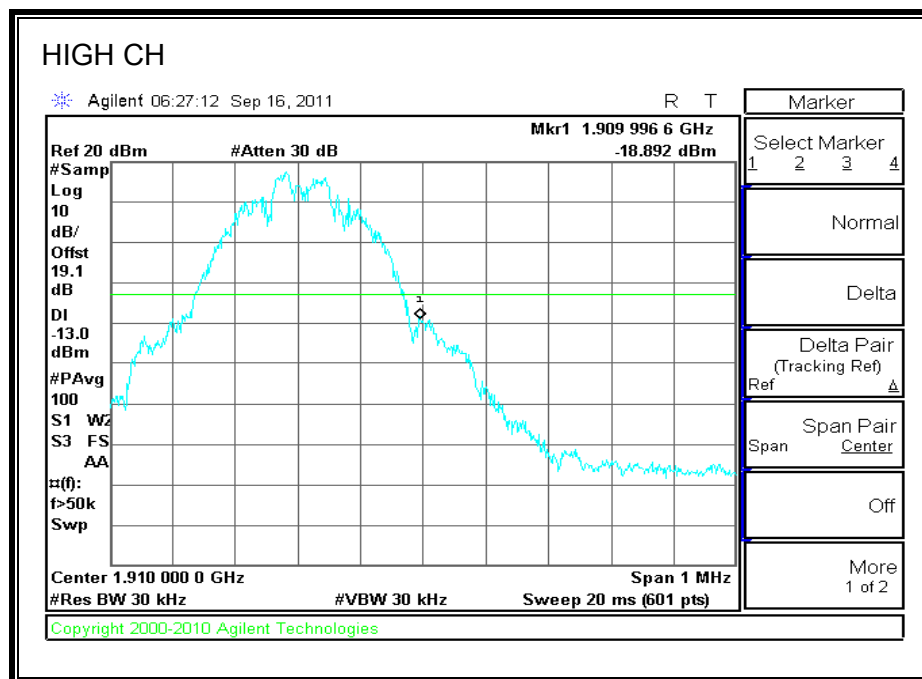
### **MODES TESTED**

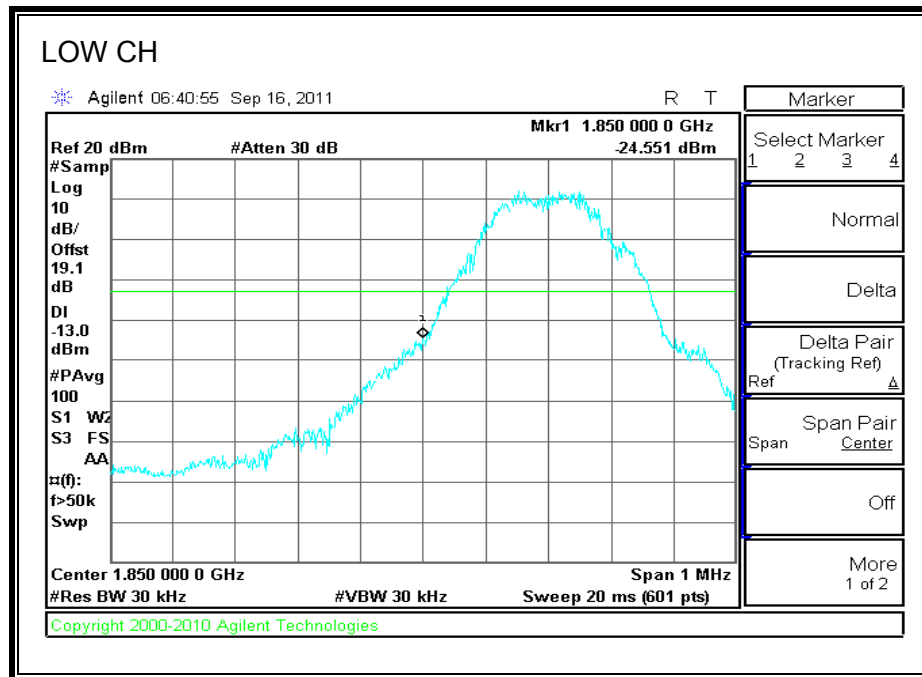
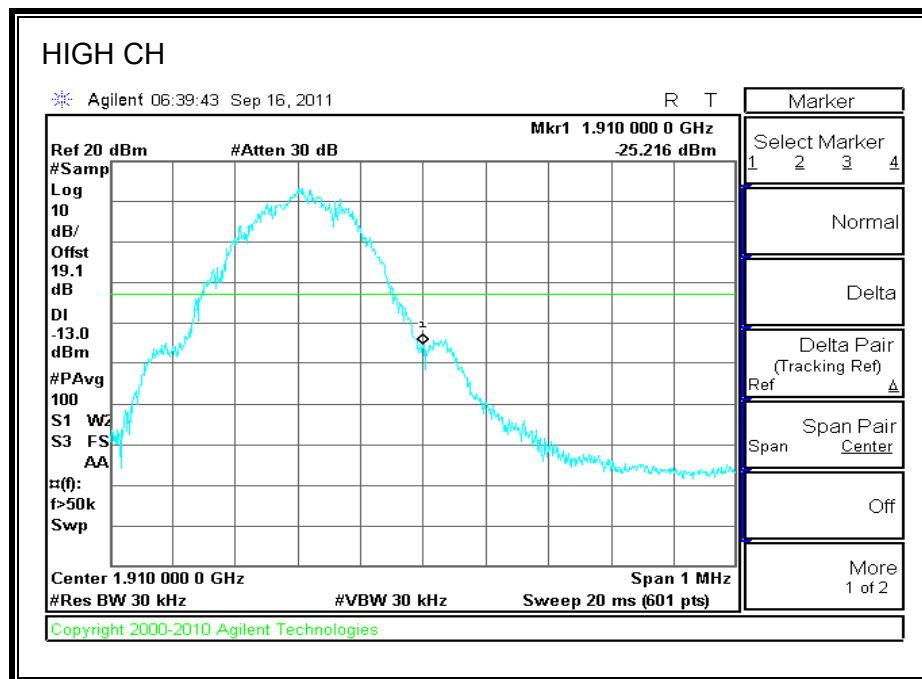
- GPRS and EGPRS
- UMTS, REL 99 and HSDPA

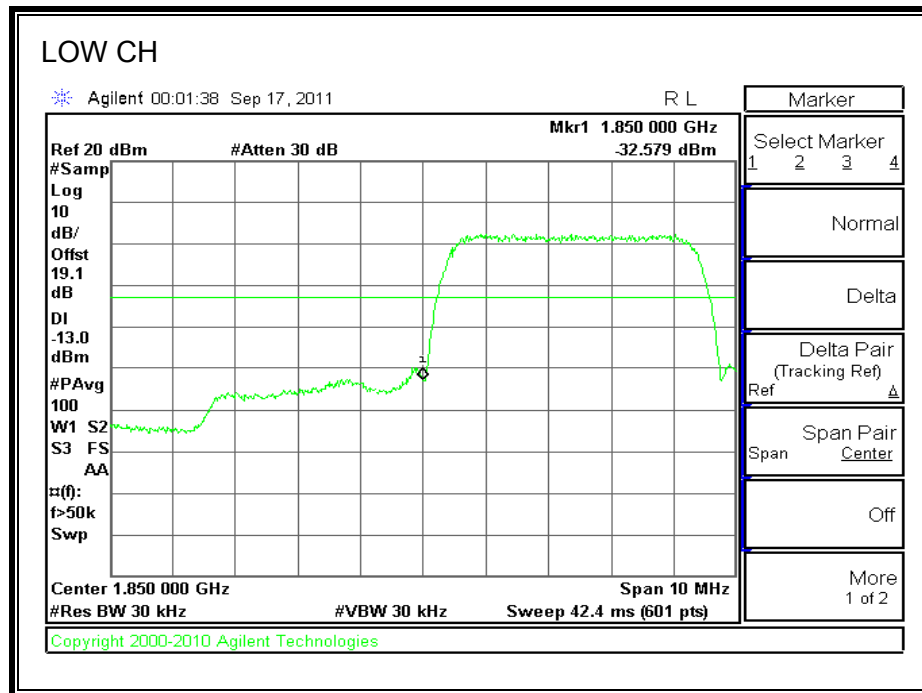
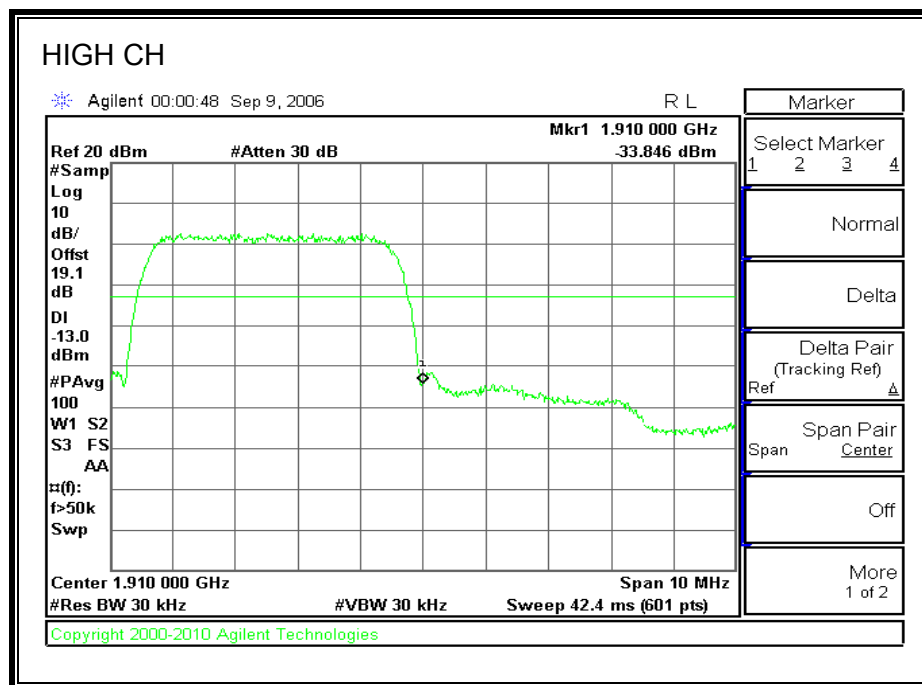
### **RESULTS**

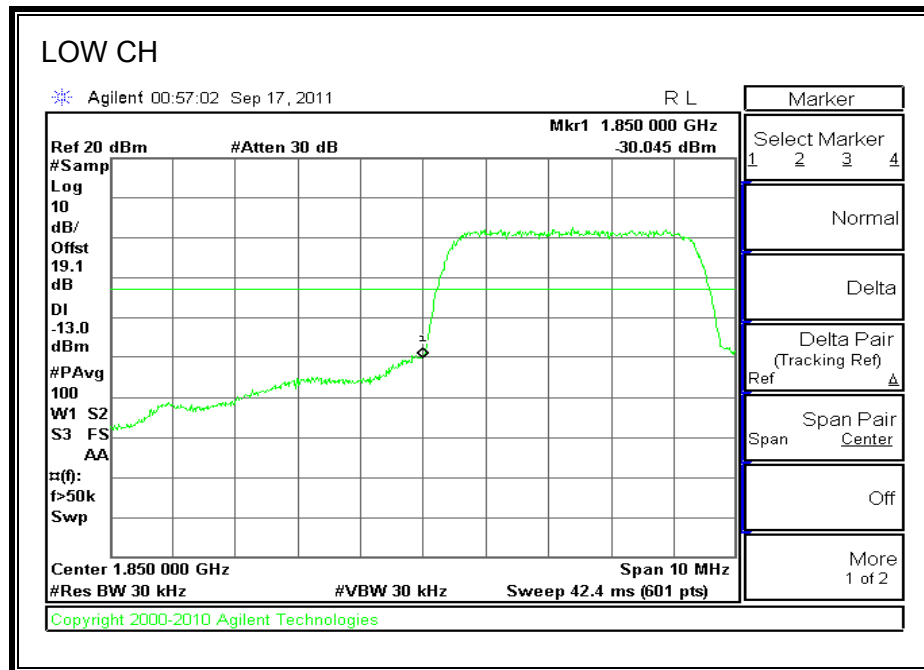
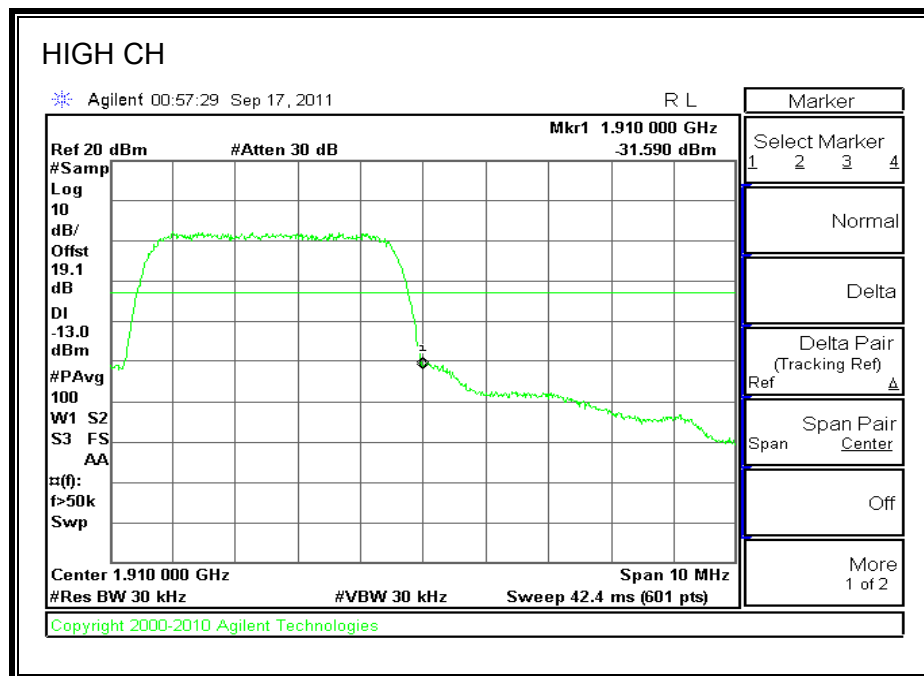
**GPRS Mode (Cellular Band)****Low Channel Band Edge****High Channel Band Edge**

**EGPRS Mode (Cellular Band)****Low Channel Band Edge****High Channel Band Edge**

**GPRS Mode (PCS Band)****Low Channel Band Edge****High Channel Band Edge**

**EGPRS Mode (PCS Band)****Low Channel Band Edge****High Channel Band Edge**

**WCDMA 1900 REL 99 (PCS Band)****Low Channel Band Edge****High Channel Band Edge**

**WCDMA 1900 HSDPA (PCS Band)****Low Channel Band Edge****High Channel Band Edge**

## **8.2. OUT OF BAND EMISSIONS**

### **RULE PART(S)**

FCC: §2.1051, §22.901, §22.917, §24.238

### **LIMITS**

The power of any emission 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 a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

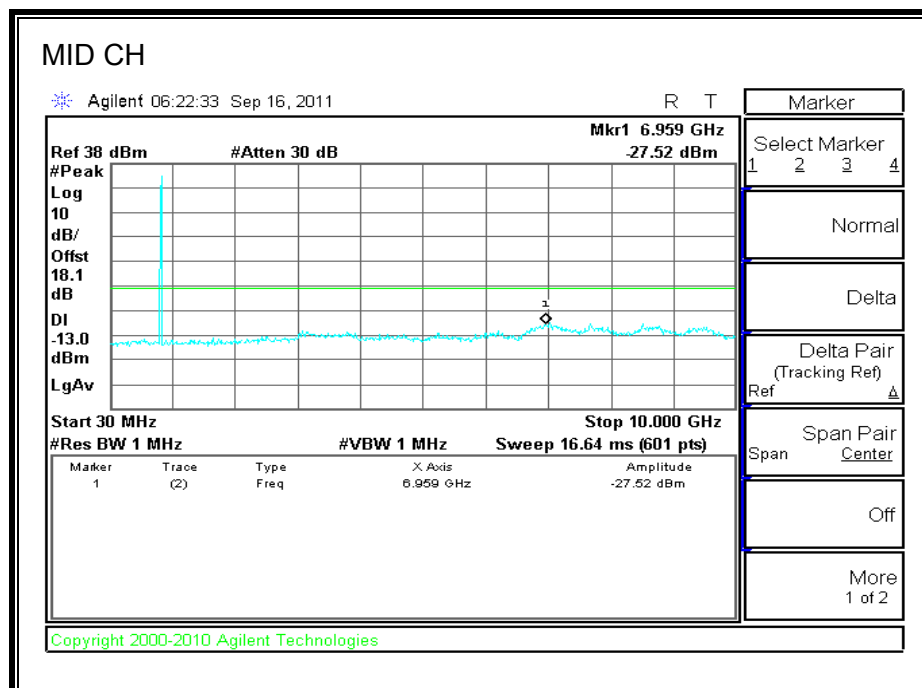
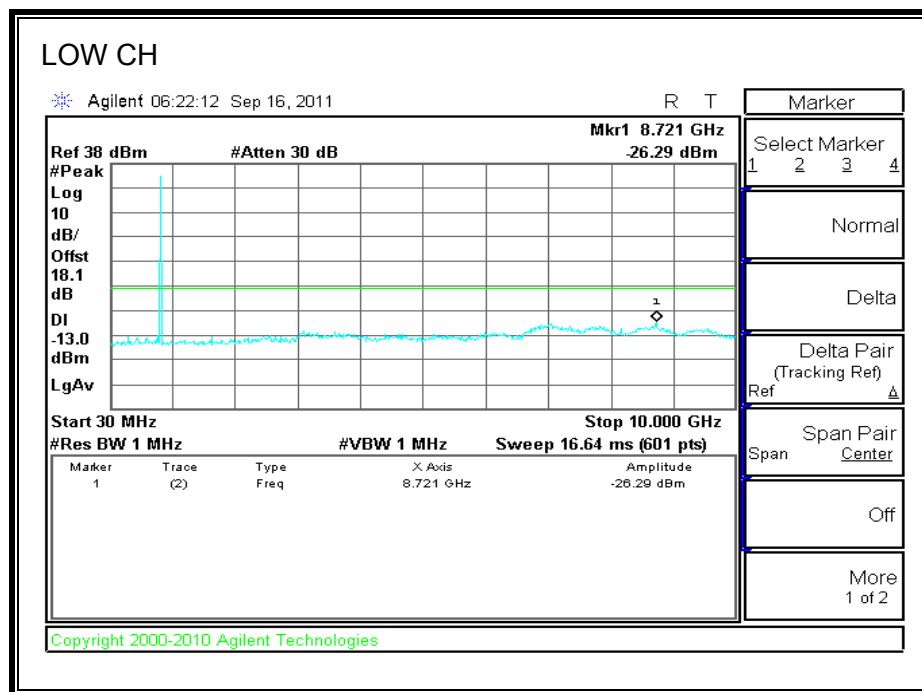
For each out of band emissions measurement:

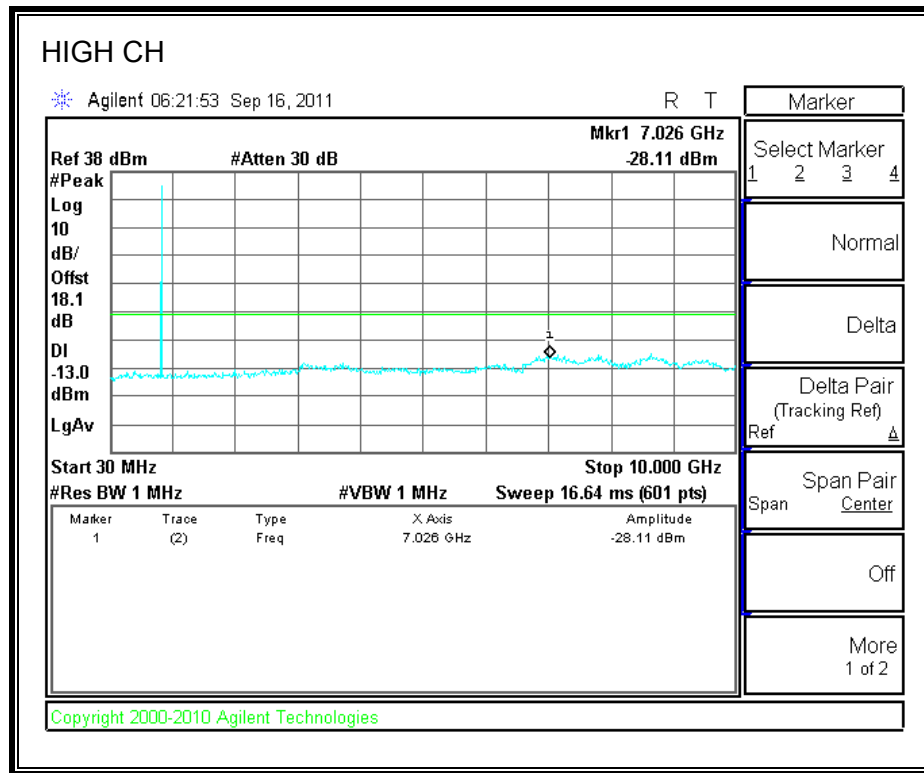
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

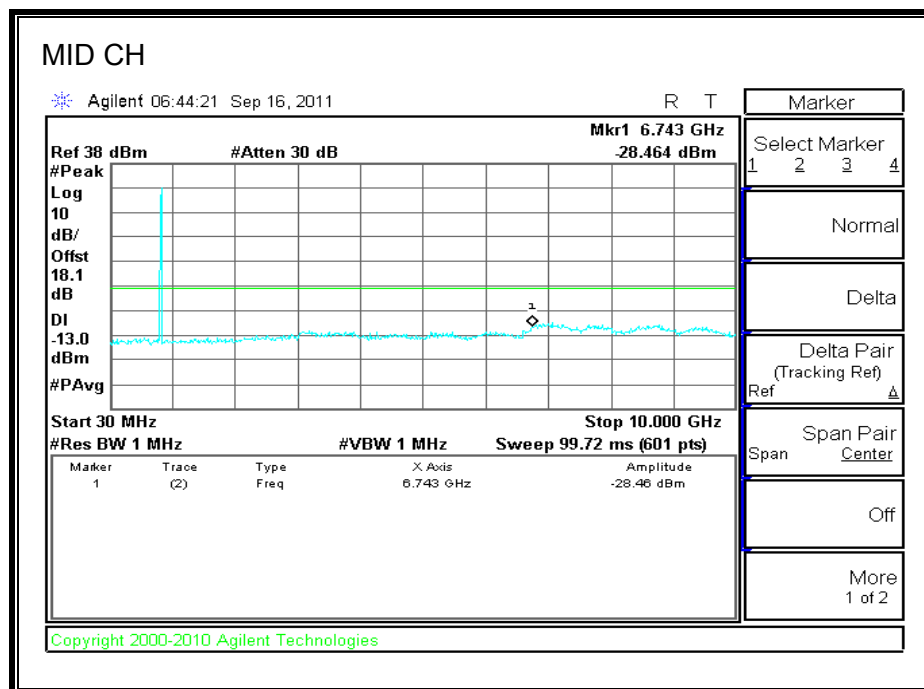
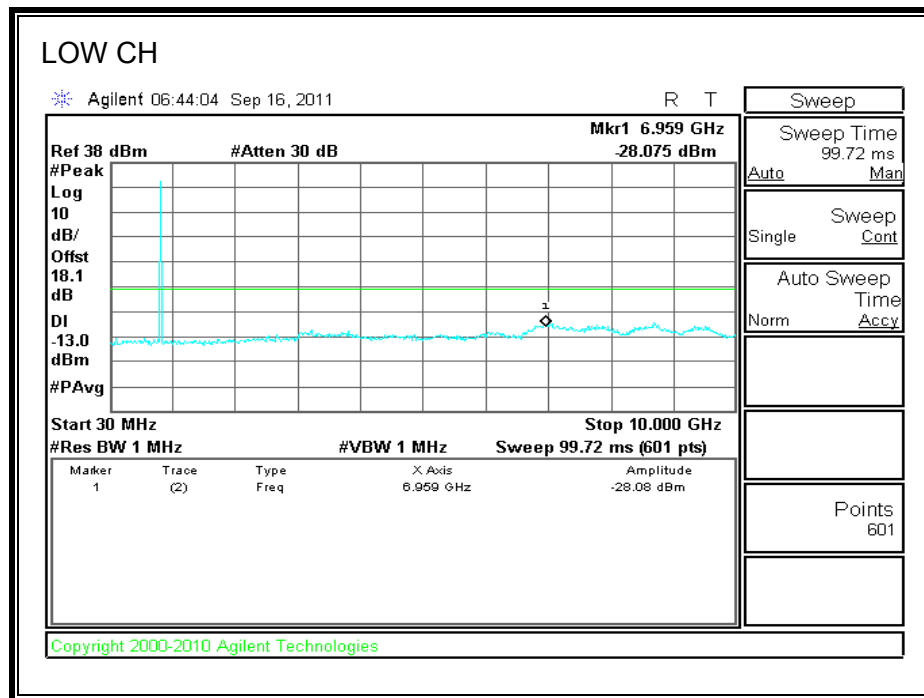
### **MODES TESTED**

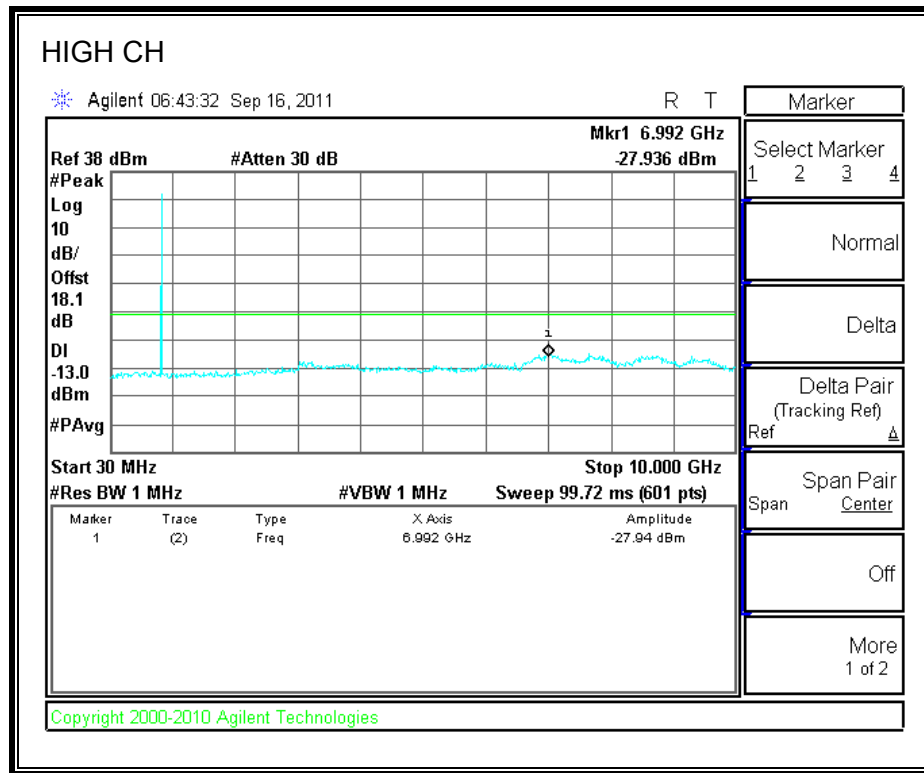
- GPRS and EGPRS
- UMTS, REL99 and HSDPA

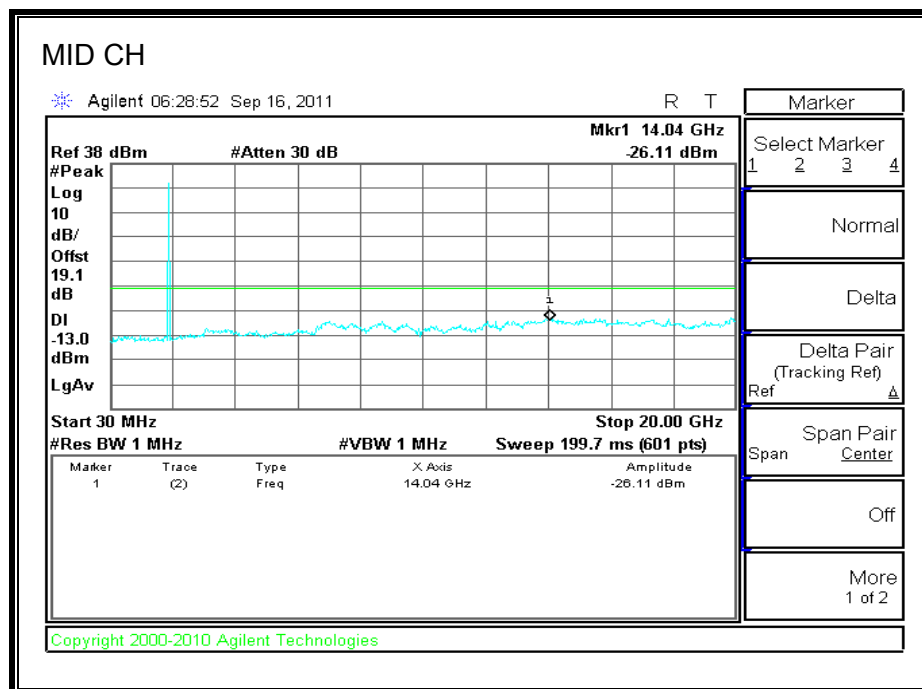
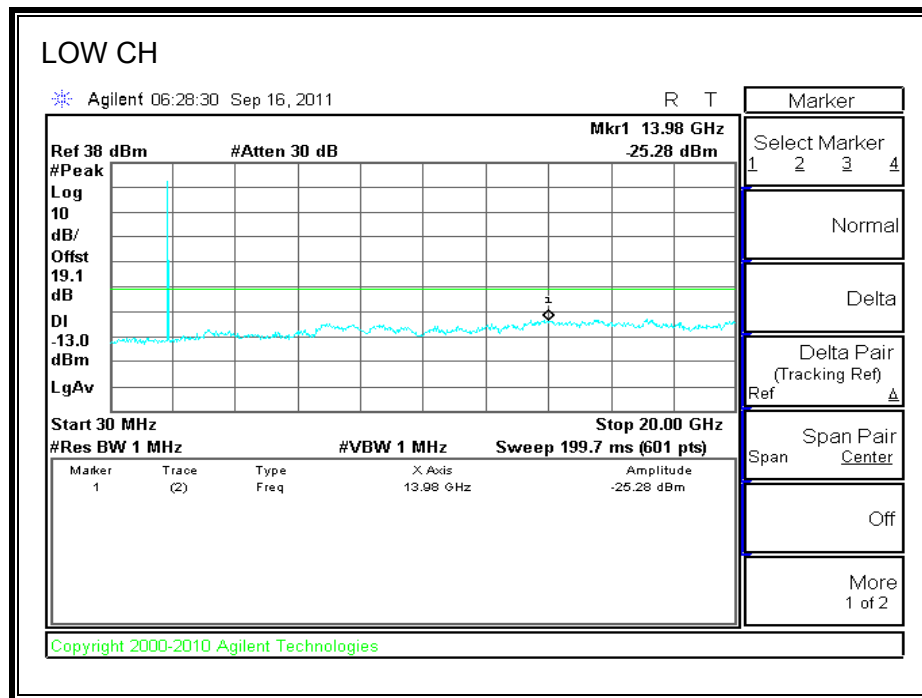
### **RESULTS**

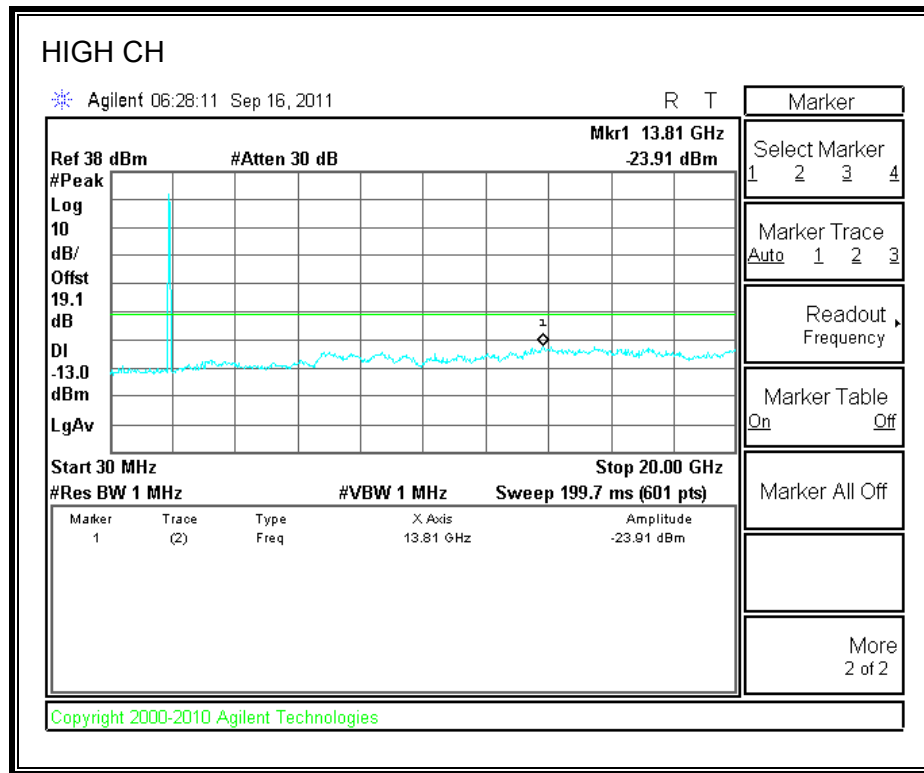
**GPRS Mode (Cellular Band)**

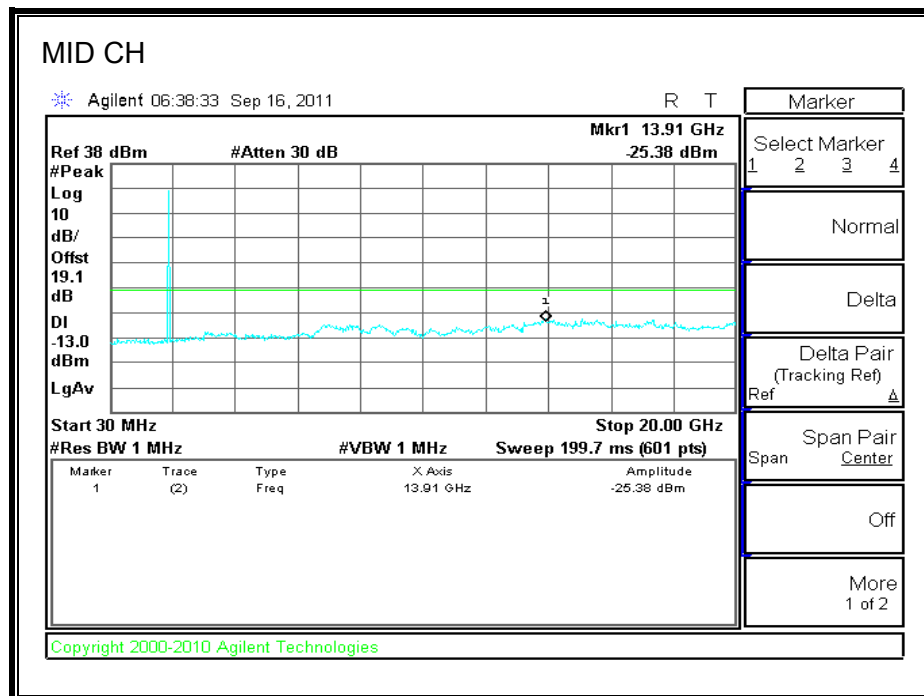
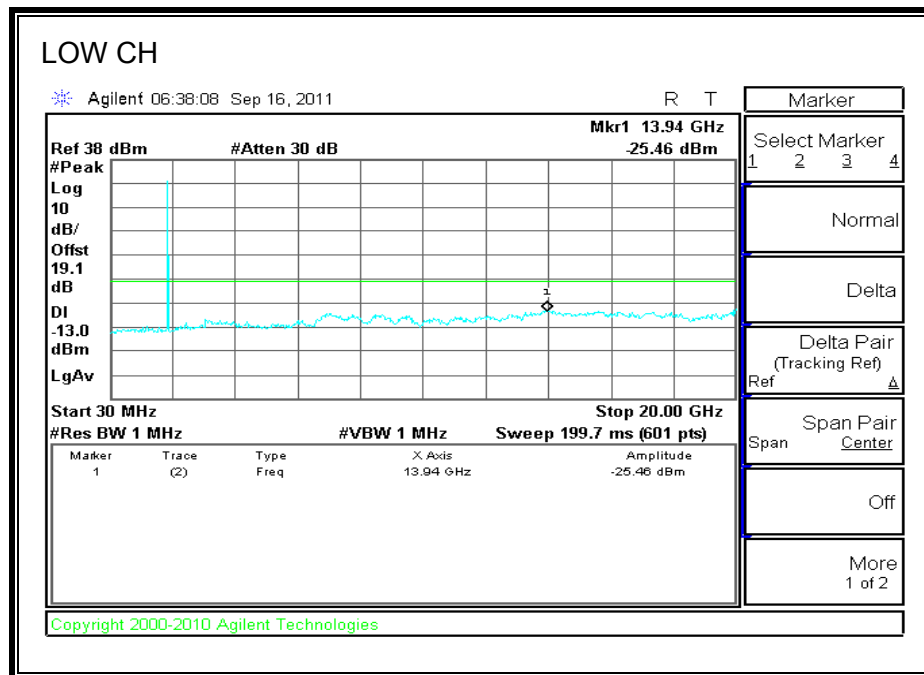


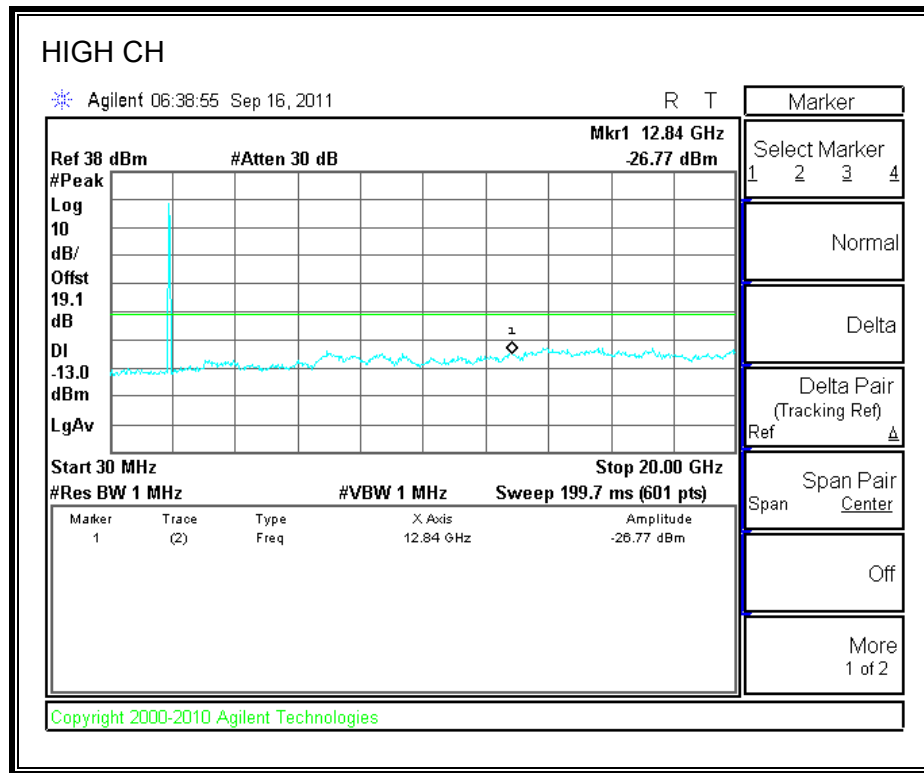
**EGPRS (Cellular Band)**

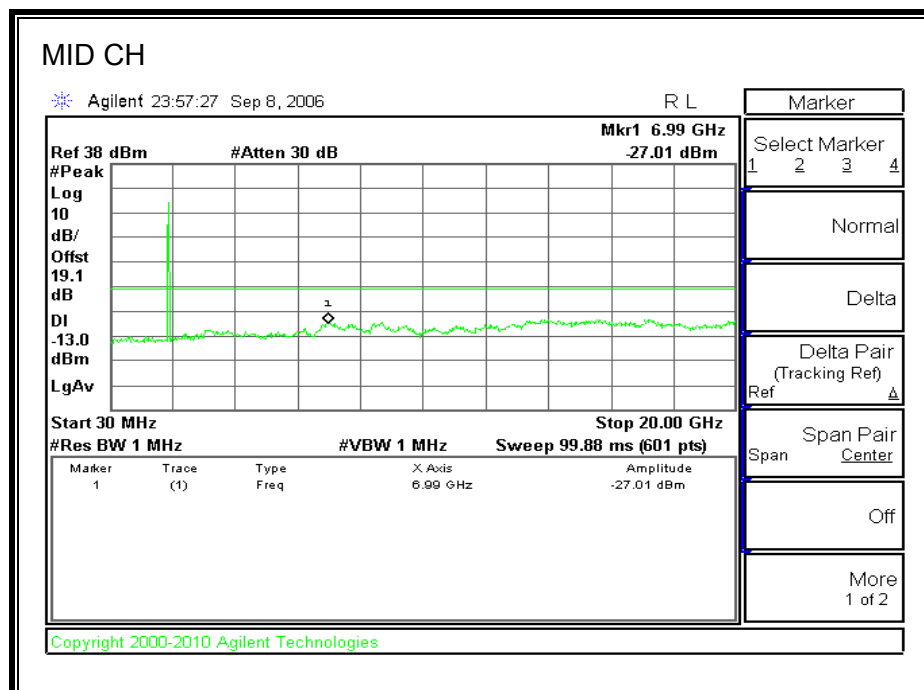
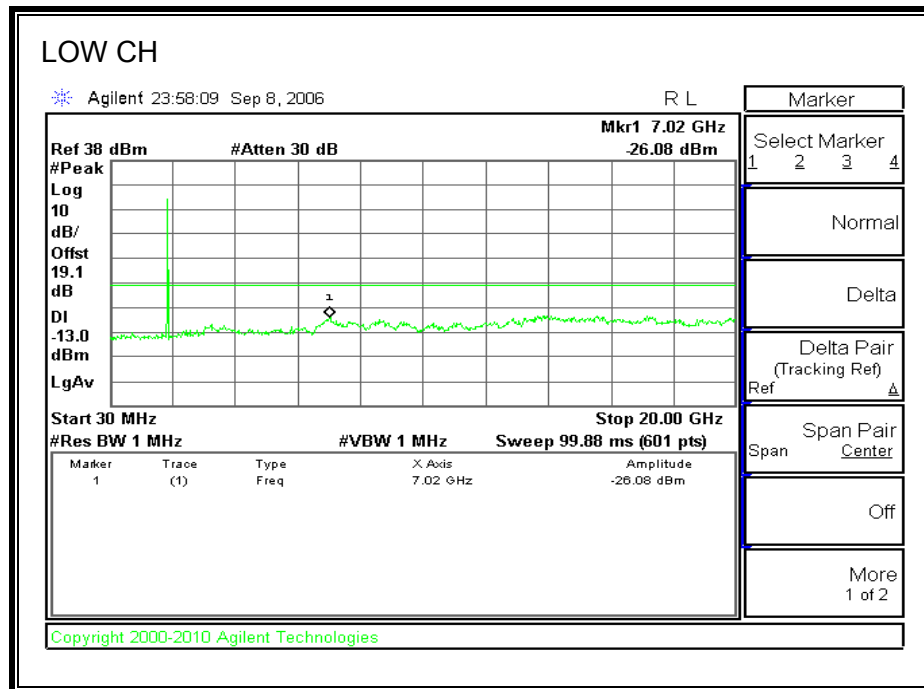


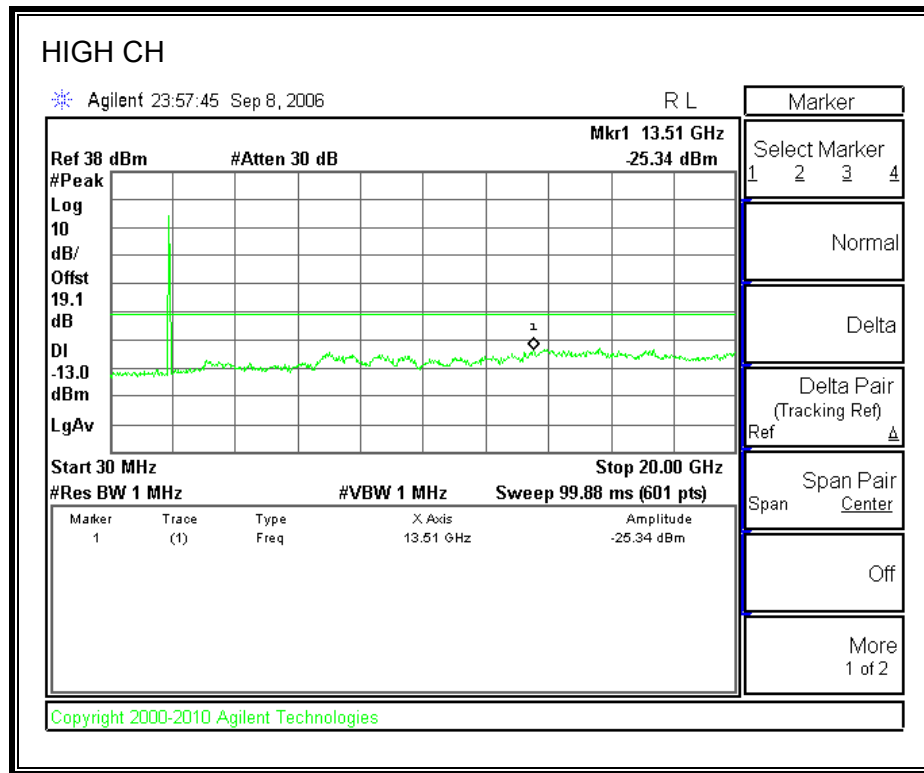
**GPRS Mode (PCS Band)**

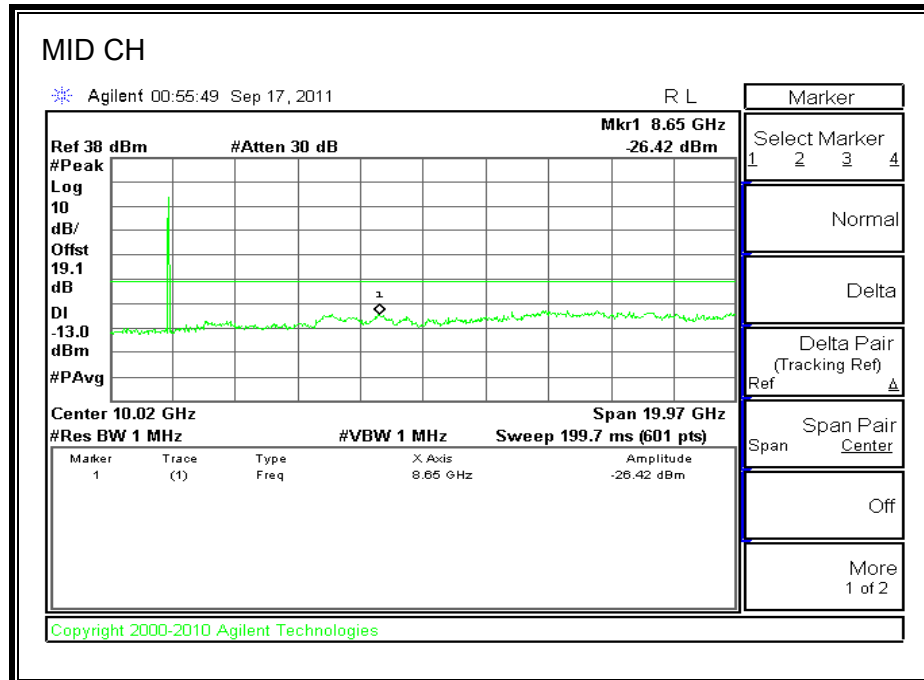
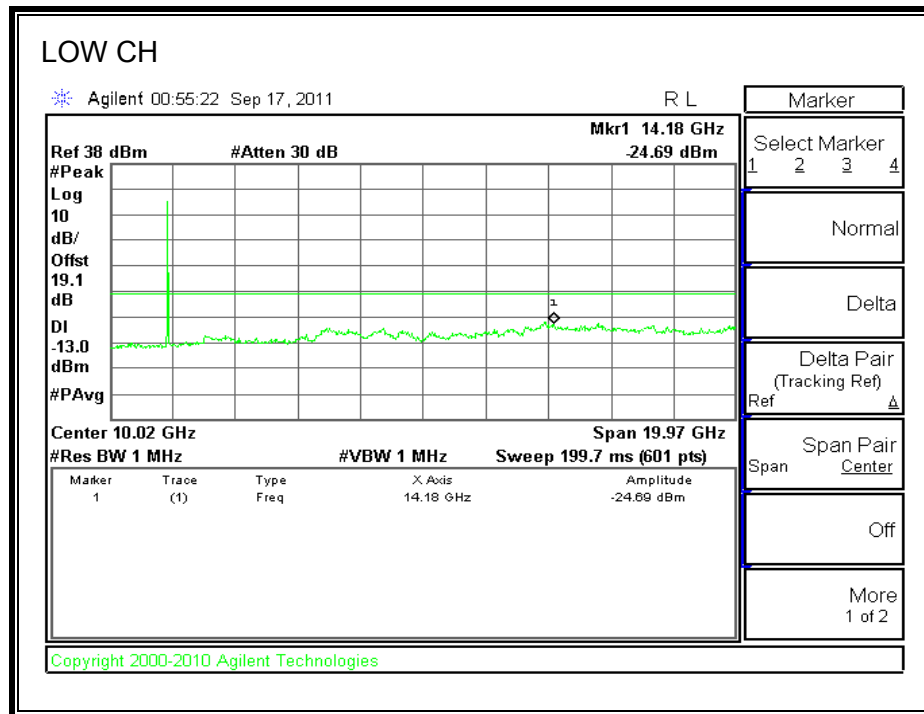


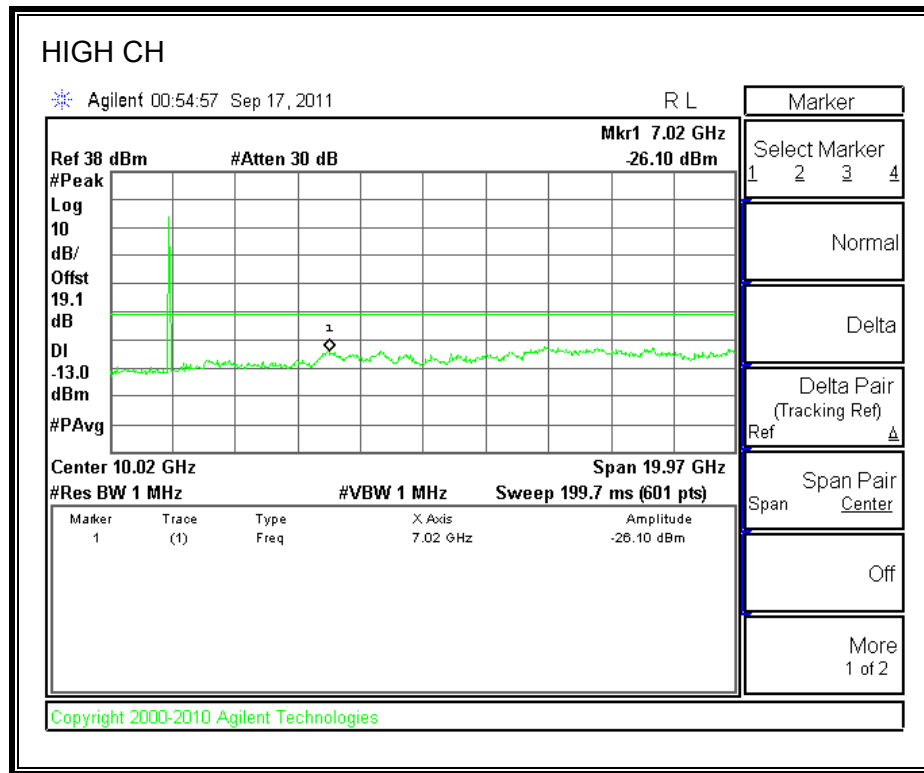
**EGPRS Mode (PCS Band)**



**WCDMA 1900 REL 99 (PCS Band)**



**WCDMA 1900 HSDPA (PCS Band)**



### 8.3. FREQUENCY STABILITY

#### RULE PART(S)

FCC: §2.1055, §22.355, §24.235

#### LIMITS

- §22.355 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.
- §24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### TEST PROCEDURE

Use Agilent 8960 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage = 3.70 Vdc (85% - 115%)

#### **Frequency Stability vs Temperature:**

The EUT is placed inside a temperature chamber. The temperature is set to  $20^{\circ}\text{C}$  and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until  $+50^{\circ}\text{C}$  is reached.

#### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

#### MODES TESTED

- GPRS and EGPRS
- UMTS, HSDPA

#### RESULTS

See the following pages

**CELL GSM – MID CHANNEL (GPRS)**

| Reference Frequency: CELL Mid Channel 836.60002298MHz @ 20°C    |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 2091.500 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| 3.70                                                            | 50                           | 836.6000131                                   | 0.0118        | 2.5         |
| 3.70                                                            | 40                           | 836.6000166                                   | 0.0077        | 2.5         |
| 3.70                                                            | 30                           | 836.6000195                                   | 0.0042        | 2.5         |
| <b>3.70</b>                                                     | <b>20</b>                    | <b>836.6000230</b>                            | <b>0.0000</b> | <b>2.5</b>  |
| 3.70                                                            | 10                           | 836.6000196                                   | 0.0041        | 2.5         |
| 3.70                                                            | 0                            | 836.6000177                                   | 0.0063        | 2.5         |
| 3.70                                                            | -10                          | 836.6000244                                   | -0.0016       | 2.5         |
| 3.70                                                            | -20                          | 836.6000305                                   | -0.0089       | 2.5         |
| 3.70                                                            | -30                          | 836.6000349                                   | -0.0143       | 2.5         |

| Reference Frequency: CELL Mid Channel 836.60002298MHz @ 20°C    |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 2091.500 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| <b>100%</b>                                                     | <b>20</b>                    | <b>836.6000230</b>                            | <b>0.0000</b> | <b>2.5</b>  |
| 85%                                                             | 20                           | 836.6000249                                   | -0.0023       | 2.5         |
| 115%                                                            | 20                           | 836.6000230                                   | 0.0000        | 2.5         |
| End Voltage ( 2.75)                                             | 20                           | 836.6000163                                   | 0.0080        | 2.5         |

**PCS, GSM – MID CHANNEL (GPRS)**

| Reference Frequency: PCS Mid Channel 1880.00002269MHz @ 20°C    |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| 3.70                                                            | 50                           | 1880.0000168                                  | 0.0031        | 2.5         |
| 3.70                                                            | 40                           | 1880.0000189                                  | 0.0020        | 2.5         |
| 3.70                                                            | 30                           | 1880.0000205                                  | 0.0012        | 2.5         |
| <b>3.70</b>                                                     | <b>20</b>                    | <b>1880.0000227</b>                           | <b>0.0000</b> | <b>2.5</b>  |
| 3.70                                                            | 10                           | 1880.0000207                                  | 0.0011        | 2.5         |
| 3.70                                                            | 0                            | 1880.0000182                                  | 0.0024        | 2.5         |
| 3.70                                                            | -10                          | 1880.0000235                                  | -0.0004       | 2.5         |
| 3.70                                                            | -20                          | 1880.0000257                                  | -0.0016       | 2.5         |
| 3.70                                                            | -30                          | 1880.0000275                                  | -0.0026       | 2.5         |

| Reference Frequency: PCS Mid Channel 1880.00002269Hz @ 20°C     |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| <b>100%</b>                                                     | <b>20</b>                    | <b>1880.0000227</b>                           | <b>0.0000</b> | <b>2.5</b>  |
| 85%                                                             | 20                           | 1879.9999687                                  | 0.0287        | 2.5         |
| 115%                                                            | 20                           | 1880.0000227                                  | 0.0000        | 2.5         |
| End Voltage ( 2.75)                                             | 20                           | 1880.0000207                                  | 0.0010        | 2.5         |

**CELL GSM – MID CHANNEL (EGPRS)**

| Reference Frequency: CELL Mid Channel 835.599982MHz @ 20°C      |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 2091.500 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| 3.70                                                            | 50                           | 836.6000135                                   | -0.0074       | 2.5         |
| 3.70                                                            | 40                           | 836.6000113                                   | -0.0047       | 2.5         |
| 3.70                                                            | 30                           | 836.6000096                                   | -0.0027       | 2.5         |
| <b>3.70</b>                                                     | <b>20</b>                    | <b>836.6000073</b>                            | <b>0.0000</b> | <b>2.5</b>  |
| 3.70                                                            | 10                           | 836.6000074                                   | -0.0001       | 2.5         |
| 3.70                                                            | 0                            | 836.6000074                                   | -0.0002       | 2.5         |
| 3.70                                                            | -10                          | 836.6000182                                   | -0.0131       | 2.5         |
| 3.70                                                            | -20                          | 836.6000294                                   | -0.0264       | 2.5         |
| 3.70                                                            | -30                          | 836.6000371                                   | -0.0356       | 2.5         |

| Reference Frequency: CELL Mid Channel 835.999982MHz @ 20°C      |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 2091.500 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| <b>100%</b>                                                     | <b>20</b>                    | <b>836.6000073</b>                            | <b>0.0000</b> | <b>2.5</b>  |
| 85%                                                             | 20                           | 836.6000163                                   | -0.0107       | 2.5         |
| 115%                                                            | 20                           | 836.6000187                                   | -0.0137       | 2.5         |
| End Voltage ( 2.75)                                             | 20                           | 836.6000225                                   | -0.0181       | 2.5         |

**PCS, GSM – MID CHANNEL (EGPRS)**

| Reference Frequency: PCS Mid Channel 1880.00002057MHz @ 20°C    |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| 3.70                                                            | 50                           | 1880.0000177                                  | 0.0015        | 2.5         |
| 3.70                                                            | 40                           | 1880.0000182                                  | 0.0012        | 2.5         |
| 3.70                                                            | 30                           | 1880.0000192                                  | 0.0007        | 2.5         |
| <b>3.70</b>                                                     | <b>20</b>                    | <b>1880.0000206</b>                           | <b>0.0000</b> | <b>2.5</b>  |
| 3.70                                                            | 10                           | 1880.0000206                                  | 0.0000        | 2.5         |
| 3.70                                                            | 0                            | 1880.0000206                                  | 0.0000        | 2.5         |
| 3.70                                                            | -10                          | 1880.0000212                                  | -0.0003       | 2.5         |
| 3.70                                                            | -20                          | 1880.0000231                                  | -0.0013       | 2.5         |
| 3.70                                                            | -30                          | 1880.0000247                                  | -0.0022       | 2.5         |

| Reference Frequency: PCS Mid Channel 1880.00002057Hz @ 20°C     |                              |                                               |               |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|---------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |               |             |
| Power Supply (Vdc)                                              | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse |               |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)   | Limit (ppm) |
| <b>100%</b>                                                     | <b>20</b>                    | <b>1880.0000206</b>                           | <b>0.0000</b> | <b>2.5</b>  |
| 85%                                                             | 20                           | 1880.0000177                                  | 0.0015        | 2.5         |
| 115%                                                            | 20                           | 1880.0000182                                  | 0.0012        | 2.5         |
| End Voltage ( 2.75)                                             | 20                           | 1880.0000192                                  | 0.0007        | 2.5         |

**PCS, UMTS, HSDPA – MID CHANNEL**

| Reference Frequency: PCS Mid Channel 1879.99998491MHz @ 20°C    |                              |                                               |                |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|----------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |                |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |                |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)    | Limit (ppm) |
| 3.70                                                            | 50                           | 1879.9999848                                  | 0.00004        | 2.5         |
| 3.70                                                            | 40                           | 1879.9999849                                  | 0.00002        | 2.5         |
| 3.70                                                            | 30                           | 1879.9999849                                  | 0.00001        | 2.5         |
| <b>3.70</b>                                                     | <b>20</b>                    | <b>1879.9999849</b>                           | <b>0.00000</b> | <b>2.5</b>  |
| 3.70                                                            | 10                           | 1879.9999852                                  | -0.00016       | 2.5         |
| 3.70                                                            | 0                            | 1879.9999855                                  | -0.00029       | 2.5         |
| 3.70                                                            | -10                          | 1879.9999849                                  | -0.00001       | 2.5         |
| 3.70                                                            | -20                          | 1879.9999842                                  | 0.00040        | 2.5         |
| 3.70                                                            | -30                          | 1879.9999835                                  | 0.00074        | 2.5         |

| Reference Frequency: PCS Mid Channel 1879.99998491Hz @ 20°C     |                              |                                               |                |             |
|-----------------------------------------------------------------|------------------------------|-----------------------------------------------|----------------|-------------|
| Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz |                              |                                               |                |             |
| Power Supply (Vdc)                                              | Environment Temperature (*C) | Frequency Deviation Measured with Time Elapse |                |             |
|                                                                 |                              | (MHz)                                         | Delta (ppm)    | Limit (ppm) |
| <b>100%</b>                                                     | <b>20</b>                    | <b>1879.999985</b>                            | <b>0.00000</b> | <b>2.5</b>  |
| 85%                                                             | 20                           | 1879.999985                                   | 0.00015        | 2.5         |
| 115%                                                            | 20                           | 1879.999984                                   | 0.00044        | 2.5         |
| End Voltage ( 2.75)                                             | 20                           | 1879.999976                                   | 0.00453        | 2.5         |

## 9. RADIATED TEST RESULTS

### 9.1. RADIATED POWER (ERP & EIRP)

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232

#### LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

#### TEST PROCEDURE

ANSI / TIA / EIA 603C

#### MODES TESTED

- GPRS and EGPRS
- UMTS, REL 99 and HSDPA

#### RESULTS

| Mode  | Channel | f (MHz) | ERP   |        |
|-------|---------|---------|-------|--------|
|       |         |         | dBm   | mW     |
| GPRS  | 128     | 824.20  | 25.42 | 348.34 |
|       | 190     | 836.60  | 26.64 | 461.32 |
|       | 251     | 848.80  | 26.19 | 415.91 |
| EGPRS | 128     | 824.20  | 24.92 | 310.46 |
|       | 190     | 836.60  | 23.14 | 206.06 |
|       | 251     | 848.80  | 23.61 | 229.61 |

| Mode  | Channel | f (MHz) | EIRP  |         |
|-------|---------|---------|-------|---------|
|       |         |         | dBm   | mW      |
| GPRS  | 512     | 1850.20 | 30.97 | 1250.26 |
|       | 661     | 1880.00 | 31.42 | 1386.76 |
|       | 810     | 1909.80 | 30.48 | 1116.86 |
| EGPRS | 512     | 1850.20 | 30.16 | 1037.53 |
|       | 661     | 1880.00 | 30.04 | 1009.25 |
|       | 810     | 1909.80 | 28.88 | 772.68  |

| Mode        | Channel | f (MHz) | EIRP  |        |
|-------------|---------|---------|-------|--------|
|             |         |         | dBm   | mW     |
| UMTS,REL 99 | 9662    | 1852.40 | 27.96 | 625.17 |
|             | 9800    | 1880.00 | 27.68 | 586.14 |
|             | 9938    | 1907.60 | 27.48 | 559.76 |
| UMTS, HSDPA | 4357    | 1852.40 | 28.16 | 654.64 |
|             | 4405    | 1880.00 | 27.63 | 579.43 |
|             | 4455    | 1907.60 | 27.48 | 559.76 |

**GPRS (Cellular Band)**

| High Frequency Substitution Measurement<br>Compliance Certification Services Chamber B |                         |                    |                    |                       |              |                |                |       |
|----------------------------------------------------------------------------------------|-------------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|
| <b>Company:</b>                                                                        | Samsung                 |                    |                    |                       |              |                |                |       |
| <b>Project #:</b>                                                                      | 11114015                |                    |                    |                       |              |                |                |       |
| <b>Date:</b>                                                                           | 09-17-11                |                    |                    |                       |              |                |                |       |
| <b>Test Engineer:</b>                                                                  | Chin Pang               |                    |                    |                       |              |                |                |       |
| <b>Configuration:</b>                                                                  | EUT with Earphone       |                    |                    |                       |              |                |                |       |
| <b>Mode:</b>                                                                           | TX, CELL BAND GPRS MODE |                    |                    |                       |              |                |                |       |
| <b>Test Equipment:</b>                                                                 |                         |                    |                    |                       |              |                |                |       |
| Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)    |                         |                    |                    |                       |              |                |                |       |
| Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.          |                         |                    |                    |                       |              |                |                |       |
| f<br>MHz                                                                               | SG reading<br>(dBm)     | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
| 824.20                                                                                 | 25.92                   | V                  | 0.5                | 0.0                   | 25.42        | 38.5           | -13.0          |       |
| 824.20                                                                                 | 23.85                   | H                  | 0.5                | 0.0                   | 23.35        | 38.5           | -15.1          |       |
| 836.60                                                                                 | 27.14                   | V                  | 0.5                | 0.0                   | 26.64        | 38.5           | -11.8          |       |
| 836.60                                                                                 | 20.20                   | H                  | 0.5                | 0.0                   | 19.70        | 38.5           | -18.8          |       |
| 848.80                                                                                 | 26.69                   | V                  | 0.5                | 0.0                   | 26.19        | 38.5           | -12.3          |       |
| 848.80                                                                                 | 24.67                   | H                  | 0.5                | 0.0                   | 24.17        | 38.5           | -14.3          |       |
| Rev. 3.17.11                                                                           |                         |                    |                    |                       |              |                |                |       |

**EGPRS (Cellular Band)**

| High Frequency Substitution Measurement<br>Compliance Certification Services Chamber B |                          |                    |                    |                       |              |                |                |       |
|----------------------------------------------------------------------------------------|--------------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|
| <b>Company:</b>                                                                        | Samsung                  |                    |                    |                       |              |                |                |       |
| <b>Project #:</b>                                                                      | 11114015                 |                    |                    |                       |              |                |                |       |
| <b>Date:</b>                                                                           | 09-17-11                 |                    |                    |                       |              |                |                |       |
| <b>Test Engineer:</b>                                                                  | Chin Pang                |                    |                    |                       |              |                |                |       |
| <b>Configuration:</b>                                                                  | EUT with Earphone        |                    |                    |                       |              |                |                |       |
| <b>Mode:</b>                                                                           | TX, CELL BAND EGPRS MODE |                    |                    |                       |              |                |                |       |
| <b>Test Equipment:</b>                                                                 |                          |                    |                    |                       |              |                |                |       |
| Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)    |                          |                    |                    |                       |              |                |                |       |
| Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.          |                          |                    |                    |                       |              |                |                |       |
| f<br>MHz                                                                               | SG reading<br>(dBm)      | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
| 824.20                                                                                 | 25.42                    | V                  | 0.5                | 0.0                   | 24.92        | 38.5           | -13.5          |       |
| 824.20                                                                                 | 22.25                    | H                  | 0.5                | 0.0                   | 21.75        | 38.5           | -16.7          |       |
| 836.60                                                                                 | 23.64                    | V                  | 0.5                | 0.0                   | 23.14        | 38.5           | -15.3          |       |
| 836.60                                                                                 | 20.80                    | H                  | 0.5                | 0.0                   | 20.30        | 38.5           | -18.2          |       |
| 848.80                                                                                 | 24.11                    | V                  | 0.5                | 0.0                   | 23.61        | 38.5           | -14.8          |       |
| 848.80                                                                                 | 23.97                    | H                  | 0.5                | 0.0                   | 23.47        | 38.5           | -15.0          |       |
| Rev. 3.17.11                                                                           |                          |                    |                    |                       |              |                |                |       |

**GPRS (PCS Band)**

| High Frequency Fundamental Measurement<br>Compliance Certification Services Chamber B |                     |                        |                    |                       |               |                |               |       |
|---------------------------------------------------------------------------------------|---------------------|------------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                       |                     | Samsung                |                    |                       |               |                |               |       |
| <b>Project #:</b>                                                                     |                     | 11114015               |                    |                       |               |                |               |       |
| <b>Date:</b>                                                                          |                     | 09-17-11               |                    |                       |               |                |               |       |
| <b>Test Engineer:</b>                                                                 |                     | Chin Pang              |                    |                       |               |                |               |       |
| <b>Configuration:</b>                                                                 |                     | EUT with Earphone      |                    |                       |               |                |               |       |
| <b>Mode:</b>                                                                          |                     | TX, PCS BAND GPRS MODE |                    |                       |               |                |               |       |
| <b>Test Equipment:</b>                                                                |                     |                        |                    |                       |               |                |               |       |
| Receiving: Horn T59, and Camber B SMA Cables                                          |                     |                        |                    |                       |               |                |               |       |
| Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse              |                     |                        |                    |                       |               |                |               |       |
| f<br>GHz                                                                              | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)     | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| 1.850                                                                                 | 23.8                | V                      | 0.85               | 8.01                  | 30.97         | 33.0           | -2.0          |       |
| 1.850                                                                                 | 15.5                | H                      | 0.85               | 8.01                  | 22.66         | 33.0           | -10.3         |       |
| 1.880                                                                                 | 24.1                | V                      | 0.85               | 8.13                  | 31.42         | 33.0           | -1.6          |       |
| 1.880                                                                                 | 15.0                | H                      | 0.85               | 8.13                  | 22.28         | 33.0           | -10.7         |       |
| 1.910                                                                                 | 23.2                | V                      | 0.85               | 8.13                  | 30.48         | 33.0           | -2.5          |       |
| 1.910                                                                                 | 14.6                | H                      | 0.85               | 8.13                  | 21.83         | 33.0           | -11.2         |       |
| Rev. 3.17.11                                                                          |                     |                        |                    |                       |               |                |               |       |

**EGPRS (PCS Band)**

| High Frequency Fundamental Measurement<br>Compliance Certification Services Chamber B |                     |                         |                    |                       |               |                |               |       |
|---------------------------------------------------------------------------------------|---------------------|-------------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                       |                     | Samsung                 |                    |                       |               |                |               |       |
| <b>Project #:</b>                                                                     |                     | 11114015                |                    |                       |               |                |               |       |
| <b>Date:</b>                                                                          |                     | 09-17-11                |                    |                       |               |                |               |       |
| <b>Test Engineer:</b>                                                                 |                     | Chin Pang               |                    |                       |               |                |               |       |
| <b>Configuration:</b>                                                                 |                     | EUT with Earphone       |                    |                       |               |                |               |       |
| <b>Mode:</b>                                                                          |                     | TX, PCS BAND EGPRS MODE |                    |                       |               |                |               |       |
| <b>Test Equipment:</b>                                                                |                     |                         |                    |                       |               |                |               |       |
| Receiving: Horn T59, and Camber B SMA Cables                                          |                     |                         |                    |                       |               |                |               |       |
| Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse              |                     |                         |                    |                       |               |                |               |       |
| f<br>GHz                                                                              | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)      | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| 1.850                                                                                 | 23.0                | V                       | 0.85               | 8.01                  | 30.16         | 33.0           | -2.8          |       |
| 1.850                                                                                 | 12.2                | H                       | 0.85               | 8.01                  | 19.36         | 33.0           | -13.6         |       |
| 1.880                                                                                 | 22.8                | V                       | 0.85               | 8.13                  | 30.04         | 33.0           | -3.0          |       |
| 1.880                                                                                 | 11.3                | H                       | 0.85               | 8.13                  | 18.58         | 33.0           | -14.4         |       |
| 1.910                                                                                 | 21.6                | V                       | 0.85               | 8.13                  | 28.88         | 33.0           | -4.1          |       |
| 1.910                                                                                 | 10.2                | H                       | 0.85               | 8.13                  | 17.43         | 33.0           | -15.6         |       |
| Rev. 3.17.11                                                                          |                     |                         |                    |                       |               |                |               |       |

**UMTS1900 REL 99**

| High Frequency Fundamental Measurement<br>Compliance Certification Services Chamber B |                       |                    |                    |                       |               |                |               |       |
|---------------------------------------------------------------------------------------|-----------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                       | Samsung               |                    |                    |                       |               |                |               |       |
| <b>Project #:</b>                                                                     | 11I14015              |                    |                    |                       |               |                |               |       |
| <b>Date:</b>                                                                          | 09-17-11              |                    |                    |                       |               |                |               |       |
| <b>Test Engineer:</b>                                                                 | Chin Pang             |                    |                    |                       |               |                |               |       |
| <b>Configuration:</b>                                                                 | EUT and Earphone      |                    |                    |                       |               |                |               |       |
| <b>Mode:</b>                                                                          | TX, WCDMA1900, Rel 99 |                    |                    |                       |               |                |               |       |
| <b>Test Equipment:</b>                                                                |                       |                    |                    |                       |               |                |               |       |
| Receiving: Horn T59, and Camber B SMA Cables                                          |                       |                    |                    |                       |               |                |               |       |
| Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse              |                       |                    |                    |                       |               |                |               |       |
| f<br>GHz                                                                              | SG reading<br>(dBm)   | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| 1.852                                                                                 | 20.8                  | V                  | 0.85               | 8.01                  | 27.96         | 33.0           | -5.0          |       |
| 1.852                                                                                 | 11.0                  | H                  | 0.85               | 8.01                  | 18.16         | 33.0           | -14.8         |       |
| 1.880                                                                                 | 20.4                  | V                  | 0.85               | 8.13                  | 27.68         | 33.0           | -5.3          |       |
| 1.880                                                                                 | 11.1                  | H                  | 0.85               | 8.13                  | 18.38         | 33.0           | -14.6         |       |
| 1.908                                                                                 | 20.2                  | V                  | 0.85               | 8.13                  | 27.48         | 33.0           | -5.5          |       |
| 1.908                                                                                 | 10.9                  | H                  | 0.85               | 8.13                  | 18.13         | 33.0           | -14.9         |       |
| Rev. 3.17.11                                                                          |                       |                    |                    |                       |               |                |               |       |

**UMTS1900 HSDPA**

| High Frequency Fundamental Measurement<br>Compliance Certification Services Chamber B |                      |                    |                    |                       |               |                |               |       |
|---------------------------------------------------------------------------------------|----------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                       | Samsung              |                    |                    |                       |               |                |               |       |
| <b>Project #:</b>                                                                     | 11I14015             |                    |                    |                       |               |                |               |       |
| <b>Date:</b>                                                                          | 09-17-11             |                    |                    |                       |               |                |               |       |
| <b>Test Engineer:</b>                                                                 | Chin Pang            |                    |                    |                       |               |                |               |       |
| <b>Configuration:</b>                                                                 | EUT and Earphone     |                    |                    |                       |               |                |               |       |
| <b>Mode:</b>                                                                          | TX, WCDMA1900, HSDPA |                    |                    |                       |               |                |               |       |
| <b>Test Equipment:</b>                                                                |                      |                    |                    |                       |               |                |               |       |
| Receiving: Horn T59, and Camber B SMA Cables                                          |                      |                    |                    |                       |               |                |               |       |
| Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse              |                      |                    |                    |                       |               |                |               |       |
| f<br>GHz                                                                              | SG reading<br>(dBm)  | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| 1.852                                                                                 | 21.0                 | V                  | 0.85               | 8.01                  | 28.16         | 33.0           | -4.8          |       |
| 1.852                                                                                 | 11.4                 | H                  | 0.85               | 8.01                  | 18.56         | 33.0           | -14.4         |       |
| 1.880                                                                                 | 20.4                 | V                  | 0.85               | 8.13                  | 27.63         | 33.0           | -5.4          |       |
| 1.880                                                                                 | 10.8                 | H                  | 0.85               | 8.13                  | 18.08         | 33.0           | -14.9         |       |
| 1.908                                                                                 | 20.2                 | V                  | 0.85               | 8.13                  | 27.48         | 33.0           | -5.5          |       |
| 1.908                                                                                 | 11.4                 | H                  | 0.85               | 8.13                  | 18.63         | 33.0           | -14.4         |       |
| Rev. 3.17.11                                                                          |                      |                    |                    |                       |               |                |               |       |

## 9.1. FIELD STRENGTH OF SPURIOUS RADIATION

### RULE PART(S)

FCC: §2.1053, §22.917, §24.238

### LIMIT

The power of any emission 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

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### MODES TESTED

- GPRS and EGPRS
- UMTS, REL 99 and HSDPA

### RESULTS

**GPRS (Cellular Band)**

| Compliance Certification Services<br>Above 1GHz High Frequency Substitution Measurement |                     |                                 |                 |                |                |               |                |               |       |
|-----------------------------------------------------------------------------------------|---------------------|---------------------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                         |                     | SAMSUNG                         |                 |                |                |               |                |               |       |
| <b>Project #:</b>                                                                       |                     | 11114015                        |                 |                |                |               |                |               |       |
| <b>Date:</b>                                                                            |                     | 09-23-11                        |                 |                |                |               |                |               |       |
| <b>Test Engineer:</b>                                                                   |                     | MENGISTU MEKURIA                |                 |                |                |               |                |               |       |
| <b>Configuration:</b>                                                                   |                     | EUT WITH HEADSET AND AC ADAPTER |                 |                |                |               |                |               |       |
| <b>Mode:</b>                                                                            |                     | TX, PCS GPRS MODE               |                 |                |                |               |                |               |       |
| <b>Chamber</b>                                                                          |                     | <b>Pre-amplifier</b>            |                 | <b>Filter</b>  |                | <b>Limit</b>  |                |               |       |
| 5m Chamber B                                                                            |                     | T144 8449B                      |                 | Filter 1       |                | Part 24       |                |               |       |
| f<br>GHz                                                                                | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)              | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| <b>LOW CHANNEL (824.2MHz)</b>                                                           |                     |                                 |                 |                |                |               |                |               |       |
| 1.648                                                                                   | -17.9               | V                               | 3.0             | 38.2           | 1.0            | -55.0         | -13.0          | -42.0         |       |
| 2.473                                                                                   | -18.0               | V                               | 3.0             | 37.5           | 1.0            | -54.5         | -13.0          | -41.5         |       |
| 1.648                                                                                   | -16.5               | H                               | 3.0             | 38.2           | 1.0            | -53.6         | -13.0          | -40.6         |       |
| 2.473                                                                                   | -22.4               | H                               | 3.0             | 37.5           | 1.0            | -58.9         | -13.0          | -45.9         |       |
| <b>MID CHANNEL (836.6 MHz)</b>                                                          |                     |                                 |                 |                |                |               |                |               |       |
| 1.673                                                                                   | -20.2               | V                               | 3.0             | 38.1           | 1.0            | -57.3         | -13.0          | -44.3         |       |
| 2.510                                                                                   | -15.4               | V                               | 3.0             | 37.5           | 1.0            | -51.9         | -13.0          | -38.9         |       |
| 1.673                                                                                   | -19.1               | H                               | 3.0             | 38.1           | 1.0            | -56.2         | -13.0          | -43.2         |       |
| 2.510                                                                                   | -19.9               | H                               | 3.0             | 37.5           | 1.0            | -56.3         | -13.0          | -43.3         |       |
| <b>HIGH CHANNEL (848.8 MHz)</b>                                                         |                     |                                 |                 |                |                |               |                |               |       |
| 1.698                                                                                   | -8.8                | V                               | 3.0             | 38.1           | 1.0            | -45.9         | -13.0          | -32.9         |       |
| 2.546                                                                                   | -16.0               | V                               | 3.0             | 37.5           | 1.0            | -52.4         | -13.0          | -39.4         |       |
| 1.698                                                                                   | -10.4               | H                               | 3.0             | 38.1           | 1.0            | -47.5         | -13.0          | -34.5         |       |
| 2.546                                                                                   | -18.5               | H                               | 3.0             | 37.5           | 1.0            | -54.9         | -13.0          | -41.9         |       |
| Rev. 03.03.09<br>Note: No other emissions were detected above the system noise floor.   |                     |                                 |                 |                |                |               |                |               |       |

**EGPRS (Cellular Band)**

| Compliance Certification Services<br>Above 1GHz High Frequency Substitution Measurement |                     |                                 |                 |                |                |               |                |               |       |
|-----------------------------------------------------------------------------------------|---------------------|---------------------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>Company:</b>                                                                         |                     | SAMSUNG                         |                 |                |                |               |                |               |       |
| <b>Project #:</b>                                                                       |                     | 11114015                        |                 |                |                |               |                |               |       |
| <b>Date:</b>                                                                            |                     | 09-23-11                        |                 |                |                |               |                |               |       |
| <b>Test Engineer:</b>                                                                   |                     | MENGISTU MEKURIA                |                 |                |                |               |                |               |       |
| <b>Configuration:</b>                                                                   |                     | EUT WITH HEADSET AND AC ADAPTER |                 |                |                |               |                |               |       |
| <b>Mode:</b>                                                                            |                     | TX, PCS EGPRS MODE              |                 |                |                |               |                |               |       |
| <b>Chamber</b>                                                                          |                     | <b>Pre-amplifier</b>            |                 | <b>Filter</b>  |                | <b>Limit</b>  |                |               |       |
| 5m Chamber B                                                                            |                     | T144 8449B                      |                 | Filter 1       |                | Part 24       |                |               |       |
| f<br>GHz                                                                                | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)              | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
| <b>LOW CHANNE (824.2MHz)</b>                                                            |                     |                                 |                 |                |                |               |                |               |       |
| 1.648                                                                                   | -16.6               | V                               | 3.0             | 38.2           | 1.0            | -53.8         | -13.0          | -40.8         |       |
| 2.473                                                                                   | -15.5               | V                               | 3.0             | 37.5           | 1.0            | -52.0         | -13.0          | -39.0         |       |
| 1.648                                                                                   | -15.2               | H                               | 3.0             | 38.2           | 1.0            | -52.4         | -13.0          | -39.4         |       |
| 2.473                                                                                   | -19.2               | H                               | 3.0             | 37.5           | 1.0            | -55.7         | -13.0          | -42.7         |       |
| <b>MID CHANNEL (836.6 MHz)</b>                                                          |                     |                                 |                 |                |                |               |                |               |       |
| 1.673                                                                                   | -13.6               | V                               | 3.0             | 38.1           | 1.0            | -50.7         | -13.0          | -37.7         |       |
| 2.510                                                                                   | -14.6               | V                               | 3.0             | 37.5           | 1.0            | -51.1         | -13.0          | -38.1         |       |
| 1.673                                                                                   | -13.0               | H                               | 3.0             | 38.1           | 1.0            | -50.1         | -13.0          | -37.1         |       |
| 2.510                                                                                   | -19.1               | H                               | 3.0             | 37.5           | 1.0            | -55.5         | -13.0          | -42.5         |       |
| <b>HIGH CHANNEL (848.8 MHz)</b>                                                         |                     |                                 |                 |                |                |               |                |               |       |
| 1.698                                                                                   | -7.4                | V                               | 3.0             | 38.1           | 1.0            | -44.5         | -13.0          | -31.5         |       |
| 2.546                                                                                   | -15.2               | V                               | 3.0             | 37.5           | 1.0            | -51.6         | -13.0          | -38.6         |       |
| 1.698                                                                                   | -8.1                | H                               | 3.0             | 38.1           | 1.0            | -45.2         | -13.0          | -32.2         |       |
| 2.546                                                                                   | -17.3               | H                               | 3.0             | 37.5           | 1.0            | -53.7         | -13.0          | -40.7         |       |
|                                                                                         |                     | H                               |                 |                |                |               |                |               |       |
|                                                                                         |                     | H                               |                 |                |                |               |                |               |       |
| Rev. 03.03.09                                                                           |                     |                                 |                 |                |                |               |                |               |       |
| Note: No other emissions were detected above the system noise floor.                    |                     |                                 |                 |                |                |               |                |               |       |

**GPRS (PCS Band)**

**Compliance Certification Services**  
**Above 1GHz High Frequency Substitution Measurement**

**Company:** SAMSUNG  
**Project #:** 11114015  
**Date:** 09-23-11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH HEADSET AND AC ADAPTER  
**Mode:** TX, PCS GPRS MODE

| Chamber      | Pre-amplifier | Filter   | Limit   |
|--------------|---------------|----------|---------|
| 5m Chamber B | T144 8449B    | Filter 1 | Part 24 |

| f<br>GHz                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------------------------------|---------------------|--------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>LOW CHANNEL (1850.2MHz)</b>   |                     |                    |                 |                |                |               |                |               |       |
| 3.700                            | -11.1               | V                  | 3.0             | 36.8           | 1.0            | -47.0         | -13.0          | -34.0         |       |
| 5.551                            | -14.2               | V                  | 3.0             | 36.3           | 1.0            | -49.5         | -13.0          | -36.5         |       |
| 9.251                            | -6.9                | V                  | 3.0             | 37.0           | 1.0            | -42.9         | -13.0          | -29.9         |       |
| 12.951                           | -12.7               | V                  | 3.0             | 36.0           | 1.0            | -47.8         | -13.0          | -34.8         |       |
| 3.700                            | -18.9               | H                  | 3.0             | 36.8           | 1.0            | -54.7         | -13.0          | -41.7         |       |
| 5.551                            | -16.7               | H                  | 3.0             | 36.3           | 1.0            | -51.9         | -13.0          | -38.9         |       |
| 9.251                            | -11.3               | H                  | 3.0             | 37.0           | 1.0            | -47.3         | -13.0          | -34.3         |       |
| <b>MID CHANNEL (1880.0 MHz)</b>  |                     |                    |                 |                |                |               |                |               |       |
| 3.760                            | -12.9               | V                  | 3.0             | 36.8           | 1.0            | -48.6         | -13.0          | -35.6         |       |
| 9.400                            | -5.1                | V                  | 3.0             | 37.0           | 1.0            | -41.2         | -13.0          | -28.2         |       |
| 13.160                           | -11.7               | V                  | 3.0             | 35.9           | 1.0            | -46.6         | -13.0          | -33.6         |       |
| 3.760                            | -15.2               | H                  | 3.0             | 36.8           | 1.0            | -51.0         | -13.0          | -38.0         |       |
| 5.640                            | -10.9               | H                  | 3.0             | 36.3           | 1.0            | -46.2         | -13.0          | -33.2         |       |
| 9.400                            | -13.0               | H                  | 3.0             | 37.0           | 1.0            | -49.1         | -13.0          | -36.1         |       |
| <b>HIGH CHANNEL (1909.8 MHz)</b> |                     |                    |                 |                |                |               |                |               |       |
| 3.820                            | -9.9                | V                  | 3.0             | 36.7           | 1.0            | -45.7         | -13.0          | -32.7         |       |
| 5.729                            | -14.7               | V                  | 3.0             | 36.3           | 1.0            | -50.0         | -13.0          | -37.0         |       |
| 9.549                            | -7.5                | H                  | 3.0             | 37.1           | 1.0            | -43.6         | -13.0          | -30.6         |       |
| 13.369                           | -11.3               | V                  | 3.0             | 35.8           | 1.0            | -46.1         | -13.0          | -33.1         |       |
| 3.820                            | -14.5               | H                  | 3.0             | 36.7           | 1.0            | -50.2         | -13.0          | -37.2         |       |
| 5.729                            | -9.6                | H                  | 3.0             | 36.3           | 1.0            | -44.9         | -13.0          | -31.9         |       |
| 9.549                            | -13.6               | V                  | 3.0             | 37.1           | 1.0            | -49.7         | -13.0          | -36.7         |       |
|                                  |                     | V                  |                 |                |                |               |                |               |       |
|                                  |                     | H                  |                 |                |                |               |                |               |       |

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

**EGPRS ( PCS Band)**

**Compliance Certification Services**  
**Above 1GHz High Frequency Substitution Measurement**

**Company:** SAMSUNG  
**Project #:** 11114015  
**Date:** 09-23-11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH HEADSET AND AC ADAPTER  
**Mode:** TX, PCS EGPRS MODE

| Chamber      | Pre-amplifier | Filter   | Limit   |
|--------------|---------------|----------|---------|
| 5m Chamber B | T144 8449B    | Filter 1 | Part 24 |

| f<br>GHz                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------------------------------|---------------------|--------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>LOW CHANNEL (1850.2MHz)</b>   |                     |                    |                 |                |                |               |                |               |       |
| 3.700                            | -17.4               | V                  | 3.0             | 36.8           | 1.0            | -53.3         | -13.0          | -40.3         |       |
| 5.551                            | -21.4               | V                  | 3.0             | 36.3           | 1.0            | -56.7         | -13.0          | -43.7         |       |
| 3.700                            | -21.5               | H                  | 3.0             | 36.8           | 1.0            | -57.3         | -13.0          | -44.3         |       |
| 5.551                            | -15.3               | H                  | 3.0             | 36.3           | 1.0            | -50.6         | -13.0          | -37.6         |       |
| <b>MID CHANNEL (1880.0 MHz)</b>  |                     |                    |                 |                |                |               |                |               |       |
| 3.760                            | -17.7               | V                  | 3.0             | 36.8           | 1.0            | -53.5         | -13.0          | -40.5         |       |
| 5.640                            | -16.9               | V                  | 3.0             | 36.3           | 1.0            | -52.2         | -13.0          | -39.2         |       |
| 3.760                            | -20.0               | H                  | 3.0             | 36.8           | 1.0            | -55.8         | -13.0          | -42.8         |       |
| 5.640                            | -11.8               | H                  | 3.0             | 36.3           | 1.0            | -47.1         | -13.0          | -34.1         |       |
| <b>HIGH CHANNEL (1909.8 MHz)</b> |                     |                    |                 |                |                |               |                |               |       |
| 3.820                            | -13.5               | V                  | 3.0             | 36.7           | 1.0            | -49.2         | -13.0          | -36.2         |       |
| 5.729                            | -20.8               | V                  | 3.0             | 36.3           | 1.0            | -56.1         | -13.0          | -43.1         |       |
| 3.820                            | -21.2               | H                  | 3.0             | 36.7           | 1.0            | -57.0         | -13.0          | -44.0         |       |
| 5.729                            | -19.2               | H                  | 3.0             | 36.3           | 1.0            | -54.5         | -13.0          | -41.5         |       |
|                                  |                     | H                  |                 |                |                |               |                |               |       |
|                                  |                     | H                  |                 |                |                |               |                |               |       |

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

**WCDMA REL 99 (PCS Band)**

**Compliance Certification Services**  
**Above 1GHz High Frequency Substitution Measurement**

**Company:** SAMSUNG  
**Project #:** 11114015  
**Date:** 09-23-11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH HEADSET AND AC ADAPTER  
**Mode:** TX, WCDMA1900 REL 99 MODE

| Chamber      | Pre-amplifier | Filter   | Limit   |
|--------------|---------------|----------|---------|
| 5m Chamber B | T144 8449B    | Filter 1 | Part 24 |

| f<br>GHz                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------------------------------|---------------------|--------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>LOW CHANNEL (1852.4MHz)</b>   |                     |                    |                 |                |                |               |                |               |       |
| 3.705                            | -22.5               | V                  | 3.0             | 36.8           | 1.0            | -58.3         | -13.0          | -45.3         |       |
| 5.557                            | -20.5               | V                  | 3.0             | 36.3           | 1.0            | -55.7         | -13.0          | -42.7         |       |
| 7.410                            | -14.5               | V                  | 3.0             | 36.6           | 1.0            | -50.0         | -13.0          | -37.0         |       |
| 9.262                            | -14.3               | V                  | 3.0             | 37.0           | 1.0            | -50.3         | -13.0          | -37.3         |       |
| 3.705                            | -22.5               | H                  | 3.0             | 36.8           | 1.0            | -58.3         | -13.0          | -45.3         |       |
| 5.557                            | -17.6               | H                  | 3.0             | 36.3           | 1.0            | -52.9         | -13.0          | -39.9         |       |
| 7.410                            | -11.5               | H                  | 3.0             | 36.6           | 1.0            | -47.0         | -13.0          | -34.0         |       |
| 9.262                            | -15.1               | H                  | 3.0             | 37.0           | 1.0            | -51.1         | -13.0          | -38.1         |       |
| <b>MID CHANNEL (1880.0 MHz)</b>  |                     |                    |                 |                |                |               |                |               |       |
| 3.760                            | -17.2               | V                  | 3.0             | 36.8           | 1.0            | -52.9         | -13.0          | -39.9         |       |
| 7.520                            | -16.7               | V                  | 3.0             | 36.6           | 1.0            | -52.3         | -13.0          | -39.3         |       |
| 3.760                            | -20.4               | H                  | 3.0             | 36.8           | 1.0            | -56.2         | -13.0          | -43.2         |       |
| 5.640                            | -18.3               | H                  | 3.0             | 36.3           | 1.0            | -53.6         | -13.0          | -40.6         |       |
| 7.520                            | -15.2               | H                  | 3.0             | 36.6           | 1.0            | -50.8         | -13.0          | -37.8         |       |
| <b>HIGH CHANNEL (1907.6 MHz)</b> |                     |                    |                 |                |                |               |                |               |       |
| 3.815                            | -17.0               | V                  | 3.0             | 36.7           | 1.0            | -52.7         | -13.0          | -39.7         |       |
| 7.630                            | -14.8               | H                  | 3.0             | 36.6           | 1.0            | -50.4         | -13.0          | -37.4         |       |
| 3.815                            | -22.0               | H                  | 3.0             | 36.7           | 1.0            | -57.7         | -13.0          | -44.7         |       |
| 5.723                            | -17.7               | H                  | 3.0             | 36.3           | 1.0            | -53.1         | -13.0          | -40.1         |       |
| 7.630                            | -15.5               | V                  | 3.0             | 36.6           | 1.0            | -51.1         | -13.0          | -38.1         |       |
|                                  |                     | H                  |                 |                |                |               |                |               |       |

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

**WCDMA HSDPA (PCS Band)**

**Compliance Certification Services**  
**Above 1GHz High Frequency Substitution Measurement**

**Company:** SAMSUNG  
**Project #:** 11114015  
**Date:** 09-23-11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH HEADSET AND AC ADAPTER  
**Mode:** TX, WCDMA1900, HSDPA MODE

| Chamber      | Pre-amplifier | Filter   | Limit   |
|--------------|---------------|----------|---------|
| 5m Chamber B | T144 8449B    | Filter 1 | Part 24 |

| f<br>GHz                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance<br>(m) | Preamp<br>(dB) | Filter<br>(dB) | EIRP<br>(dBm) | Limit<br>(dBm) | Delta<br>(dB) | Notes |
|----------------------------------|---------------------|--------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| <b>LOW CHANNE (1852.4MHz)</b>    |                     |                    |                 |                |                |               |                |               |       |
| 3.705                            | -20.8               | V                  | 3.0             | 36.8           | 1.0            | -56.6         | -13.0          | -43.6         |       |
| 5.557                            | -20.4               | V                  | 3.0             | 36.3           | 1.0            | -55.7         | -13.0          | -42.7         |       |
| 7.410                            | -15.6               | V                  | 3.0             | 36.6           | 1.0            | -51.1         | -13.0          | -38.1         |       |
| 9.262                            | -13.5               | V                  | 3.0             | 37.0           | 1.0            | -49.6         | -13.0          | -36.6         |       |
| 3.705                            | -22.3               | H                  | 3.0             | 36.8           | 1.0            | -58.1         | -13.0          | -45.1         |       |
| 5.557                            | -19.5               | H                  | 3.0             | 36.3           | 1.0            | -54.8         | -13.0          | -41.8         |       |
| 7.410                            | -11.9               | H                  | 3.0             | 36.6           | 1.0            | -47.4         | -13.0          | -34.4         |       |
| 9.262                            | -15.1               | H                  | 3.0             | 37.0           | 1.0            | -51.1         | -13.0          | -38.1         |       |
| <b>MID CHANNEL (1880.0 MHz)</b>  |                     |                    |                 |                |                |               |                |               |       |
| 3.760                            | -18.0               | V                  | 3.0             | 36.8           | 1.0            | -53.8         | -13.0          | -40.8         |       |
| 5.640                            | -21.0               | V                  | 3.0             | 36.3           | 1.0            | -56.3         | -13.0          | -43.3         |       |
| 7.520                            | -17.6               | V                  | 3.0             | 36.6           | 1.0            | -53.2         | -13.0          | -40.2         |       |
| 9.400                            | -15.8               | V                  | 3.0             | 37.0           | 1.0            | -51.8         | -13.0          | -38.8         |       |
| 3.760                            | -22.2               | H                  | 3.0             | 36.8           | 1.0            | -58.0         | -13.0          | -45.0         |       |
| 5.640                            | -20.1               | H                  | 3.0             | 36.3           | 1.0            | -55.4         | -13.0          | -42.4         |       |
| 7.520                            | -14.5               | H                  | 3.0             | 36.6           | 1.0            | -50.1         | -13.0          | -37.1         |       |
| 9.400                            | -14.6               | H                  | 3.0             | 37.0           | 1.0            | -50.7         | -13.0          | -37.7         |       |
| <b>HIGH CHANNEL (1907.6 MHz)</b> |                     |                    |                 |                |                |               |                |               |       |
| 3.815                            | -17.7               | V                  | 3.0             | 36.7           | 1.0            | -53.5         | -13.0          | -40.5         |       |
| 5.723                            | -19.5               | V                  | 3.0             | 36.3           | 1.0            | -54.8         | -13.0          | -41.8         |       |
| 7.630                            | -14.6               | H                  | 3.0             | 36.6           | 1.0            | -50.2         | -13.0          | -37.2         |       |
| 9.538                            | -13.0               | H                  | 3.0             | 37.1           | 1.0            | -49.1         | -13.0          | -36.1         |       |
| 3.815                            | -19.5               | H                  | 3.0             | 36.7           | 1.0            | -55.2         | -13.0          | -42.2         |       |
| 5.723                            | -17.2               | H                  | 3.0             | 36.3           | 1.0            | -52.5         | -13.0          | -39.5         |       |
| 7.630                            | -14.7               | V                  | 3.0             | 36.6           | 1.0            | -50.3         | -13.0          | -37.3         |       |
| 9.538                            | -16.3               | V                  | 3.0             | 37.1           | 1.0            | -52.4         | -13.0          | -39.4         |       |
|                                  |                     | H                  |                 |                |                |               |                |               |       |

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.