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<http://www.digitalemc.com>

**CERTIFICATE OF COMPLIANCE**  
**FCC Part 22 & 24 Certification**

Dates of Tests: April 23 ~ 30, 2007  
 Test Report S/N:DR50110705A  
 Test Site : DIGITAL EMC CO., LTD.

FCC ID.

**NPQI170**

APPLICANT

**Telian Corporation**

|                             |          |  |
|-----------------------------|----------|--|
| <b>Classification</b>       | <b>:</b> | <b>Licensed Portable Transmitter Held to Ear (PCE)</b>                       |
| <b>FCC Rule Part(s)</b>     | <b>:</b> | <b>§22(H), §24(E), §2</b>  |
| <b>EUT Type</b>             | <b>:</b> | <b>GSM850 / PCS1900 Dual Band GPRS Terminal<br/>with Bluetooth Equipment</b> |
| <b>Model name</b>           | <b>:</b> | <b>i170</b>  |
| <b>Add model name</b>       | <b>:</b> | <b>MGQ3180C</b>  |
| <b>Brand name</b>           | <b>:</b> | <b>Very Kool</b>   |
| <b>Serial number</b>        | <b>:</b> | <b>Identical prototype</b>   |
| <b>TX Frequency Range</b>   | <b>:</b> | <b>824.2 ~ 848.8 MHz (GSM850) / 1850.2 ~ 1909.8 MHz (PCS1900)</b>            |
| <b>RX Frequency Range</b>   | <b>:</b> | <b>869.2 ~ 893.8 MHz (GSM850) / 1930.2 ~ 1989.8 MHz (PCS1900)</b>            |
| <b>Max. RF Output Power</b> | <b>:</b> | <b>0.456 W ERP GSM850</b>  |
|                             | <b>:</b> | <b>0.981 W EIRP PCS1900</b>  |
| <b>Max. SAR Measurement</b> | <b>:</b> | <b>0.558 mW/g GSM850 Head SAR // 0.515 mW/g GSM850 GPRS Body SAR</b>         |
|                             | <b>:</b> | <b>0.839 mW/g PCS1900 Head SAR // 0.833 mW/g PCS1900 GPRS Body SAR</b>       |
| <b>Date of Issue</b>        | <b>:</b> | <b>May 7, 2007</b>   |

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## TABLE OF CONTENTS

---

|   |                               |
|---|-------------------------------|
| <b>ATTACHMENT</b>                               | <b>CONFIDENTIALITY LETTER</b> |
| <b>ATTACHMENT</b>                               | <b>AUTHORIZATION LETTER</b>   |
| <b>ATTACHMENT</b>                               | <b>TEST REPORT</b>            |
| <b>1 SCOPE</b>                                  |                               |
| <b>2 INTRODUCTION</b>                           |                               |
| <b>3 TEST REPORT</b>                            |                               |
| <b>3.1 SUMMARY OF TEST</b>                      |                               |
| <b>3.2 POWER OUTPUT</b>                         |                               |
| <b>3.3 OCCUPIED BANDWIDTH</b>                   |                               |
| <b>3.4 OCCUPIED BANDWIDTH EMISSION LIMIT</b>    |                               |
| <b>3.5 SPURIOUS EMISSION AT ANT. TERMINAL</b>   |                               |
| <b>3.6 FIELD STRENGTH OF SPURIOUS RADIATION</b> |                               |
| <b>3.7 FREQUENCY STABILITY</b>                  |                               |
| <b>4 TEST EQUIPMENT</b>                         |                               |
| <b>5 EMISSION DESIGNATOR</b>                    |                               |
| <b>6 CONCLUSION</b>                             |                               |
| <br>  |                               |
| <b>ATTACHMENT</b> : PART LOCATION               |                               |
| <b>ATTACHMENT</b> : FCC ID LABEL & LOCATION     |                               |
| <b>ATTACHMENT</b> : TEST SETUP PHOTOGRAPHS      |                               |
| <b>ATTACHMENT</b> : EXTERNAL PHOTOGRAPHS        |                               |
| <b>ATTACHMENT</b> : INTERNAL PHOTOGRAPHS        |                               |
| <b>ATTACHMENT</b> : BLOCK DIAGRAM(S)            |                               |
| <b>ATTACHMENT</b> : SCHEMATIC DIAGRAM(S)        |                               |
| <b>ATTACHMENT</b> : OPERATIONAL DESCRIPTION     |                               |
| <b>ATTACHMENT</b> : PARTS LIST                  |                               |
| <b>ATTACHMENT</b> : USER'S MANUAL               |                               |
| <b>ATTACHMENT</b> : SAR TEST REPORT             |                               |
| <b>ATTACHMENT</b> : SAR VALIDATION PLOTS        |                               |
| <b>ATTACHMENT</b> : SAR TEST PLOTS              |                               |
| <b>ATTACHMENT</b> : SAR TEST SETUP PHOTOGRAPHS  |                               |
| <b>ATTACHMENT</b> : PROBE CALIBRATION           |                               |
| <b>ATTACHMENT</b> : DIPOLE CALIBRATION          |                               |

# MEASUREMENT REPORT

## 1. Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

## §2.1033 General Information

**Applicant: Telian Corporation**

**Address: 5<sup>th</sup> FL. Namjeun Bldg, 53-3 Haan-Dong, Kwangmyung-Si, Kyunggi-Do, Korea**

**Attention: Wayne Hwang (Senior Manager)**

- FCC ID: **NPQI170**
- Quantity: The pre-product
- Tx Freq. Range: 824.2 ~ 848.8 MHz (GSM850) / 1850.2 ~ 1909.8 MHz (PCS1900)
- Rx Freq. Range: 869.2 ~ 893.8 MHz (GSM850) / 1930.2 ~ 1989.8 MHz (PCS1900)
- Max. Power Rating: 0.456W ERP GSM850  
0.981W EIRP PCS1900
- FCC Classification(s): Licensed Portable Transmitter Held to Ear (PCE)
- Equipment (EUT) Type: GSM850 / PCS1900 Dual Band Terminal Equipment
- Modulation(s): GMSK
- Frequency Tolerance: ± 0.00025 % (2.5ppm)
- FCC Rule Part(s): §22(H), §24(E), §2
- Dates of Tests: April 23 ~ 30, 2007
- Place of Tests: DIGITAL EMC
- Test Report S/N: DR50110705A

## 2. General Information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

<http://www.digitalemc.com> E-mail : demc@unitel.co.kr

Tel: +82-31-321-2664 Fax: +82-31-321-1664

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”. This laboratory is accredited by NVLAP for NVLAP Lab. Code : 200559-0.

**Test operator:** engineer

La Wong

May 7, 2007

**Report Reviewed By:** manager

Amy

May 7, 2007 Harvey Sung   
Data Name Signature

Ordering party:

Company name : Telian Corporation  
Address : 5th FL, Namjeun Bldg , 53-3 , Haan-Dong,  
Zipcode : 423-060  
City/town : Kwangmyung-Si City, Kyonggi do  
Country : KOREA  
Date of order : April 5, 2007

### 3. Test Report

#### 3.1 Summary of test

| FCC Part<br>Section(s)           | Parameter                            | Status<br>(note 1) |
|----------------------------------|--------------------------------------|--------------------|
| 22.913(a) / 24.232(b),<br>2.1046 | Power Output                         | C                  |
| 22.917 / 24.238,<br>2.1049(h)(i) | Occupied Bandwidth                   | C                  |
| 22.917(b) / 24.238(b)            | Emission Bandwidth                   | C                  |
| 22.917 / 24.238<br>2.1051        | Emission Limits Transmitter          | C                  |
| 2.1053 (a)                       | Field Strength of Spurious Radiation | C                  |
| 2.1055                           | Frequency Stability                  | C                  |

Note 1: C= Complies    NC=Not Complies    NT=Not Tested    NA=Not Applicable

The sample was tested according to the following specification:

FCC Parts §22(H), §24(E), §2; ANSI C-63.4-2003

## 3.2 Power Output

FCC ID : **NPQI170**  
Specification : 47 CFR 2.1046 (a)  
Tested Frequency : 824.2MHz, 836.6MHz and 848.8MHz for GSM850  
1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900

### **Measurement Procedure:**

- During the process of testing, the EUT was controlled via Radio Communication tester to ensure max. Power transmission and proper modulation.
- Power output was measured at the RF output terminals when the transmitter is adjusted in accordance with Communication tester (or the tune-up procedure).

## Measurement Data:

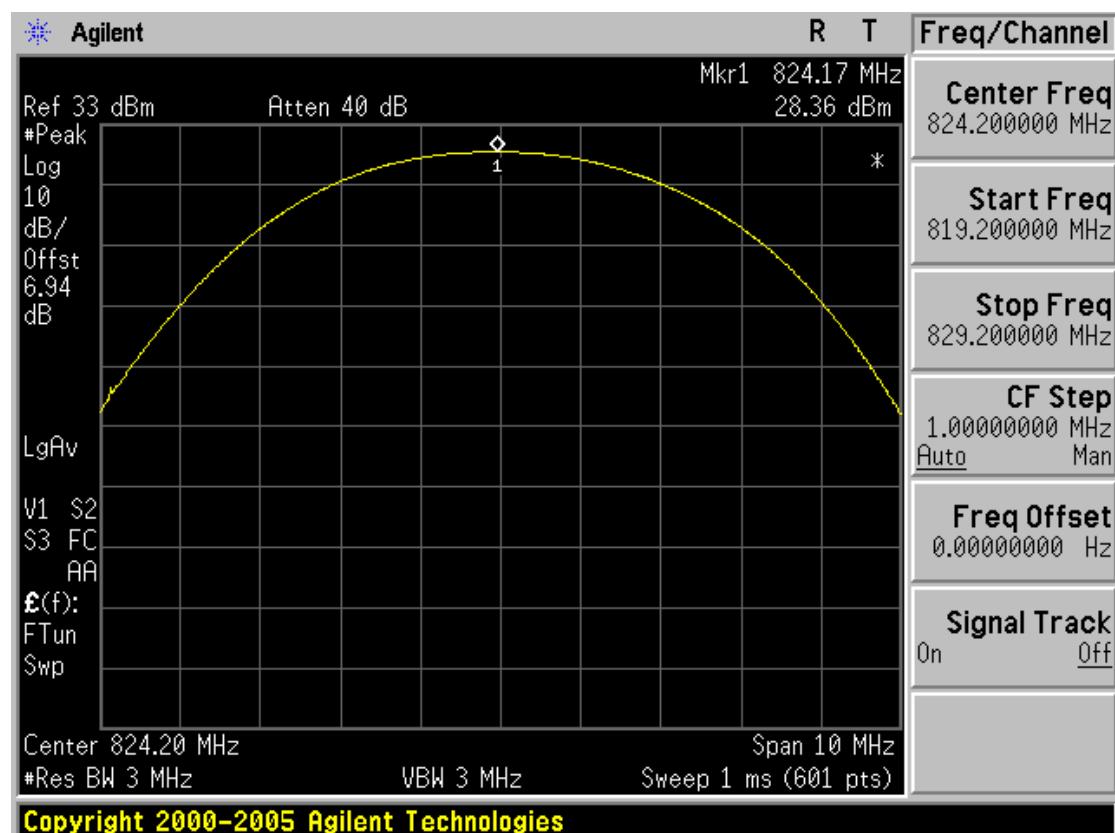
## GSM850

| Channel | Frequency (MHz) | TEST CONDITIONS |              | Power Step: 5 |
|---------|-----------------|-----------------|--------------|---------------|
|         |                 | (dBm)           |              |               |
| 128     | 824.2           |                 | <b>28.36</b> |               |
| 190     | 836.6           |                 | <b>28.32</b> |               |
| 251     | 848.8           |                 | <b>28.20</b> |               |

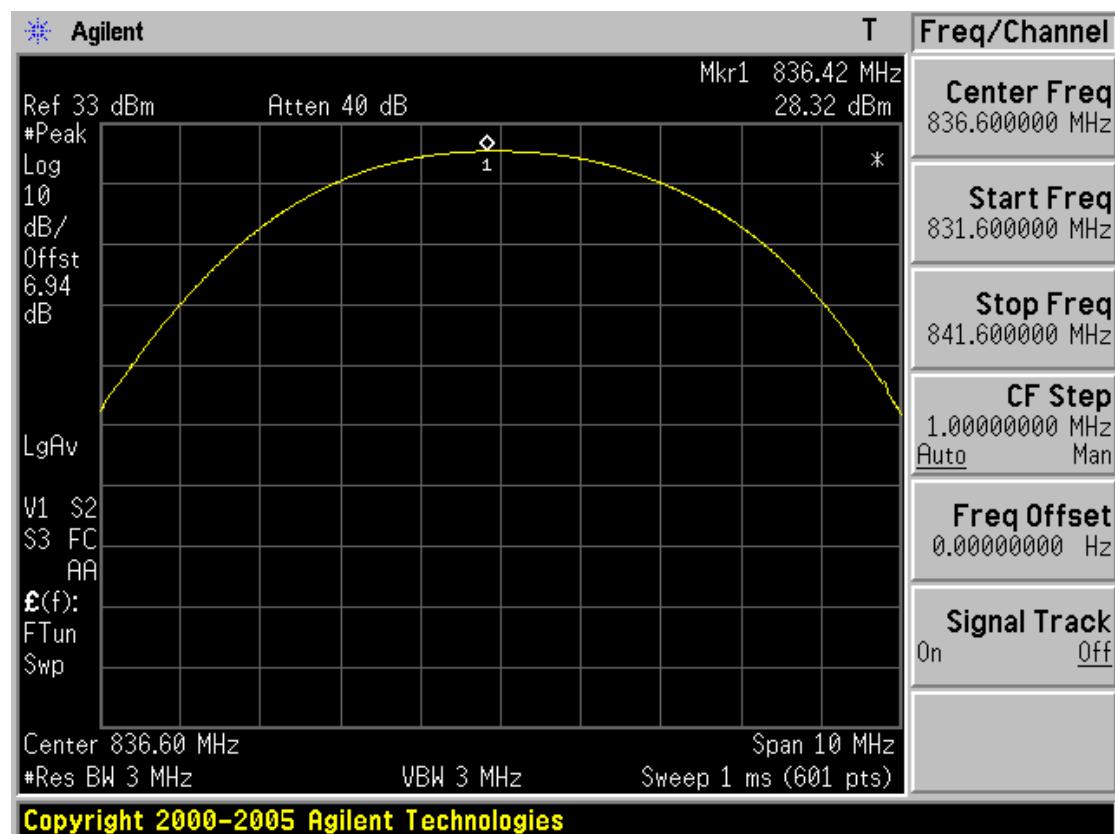
## PCS1900

| Channel | Frequency<br>(MHz) | TEST CONDITIONS |              |
|---------|--------------------|-----------------|--------------|
|         |                    | Power Step: 0   |              |
| 512     | 1850.2             |                 | <b>29.22</b> |
| 661     | 1880.0             |                 | <b>29.16</b> |
| 810     | 1909.8             |                 | <b>29.15</b> |

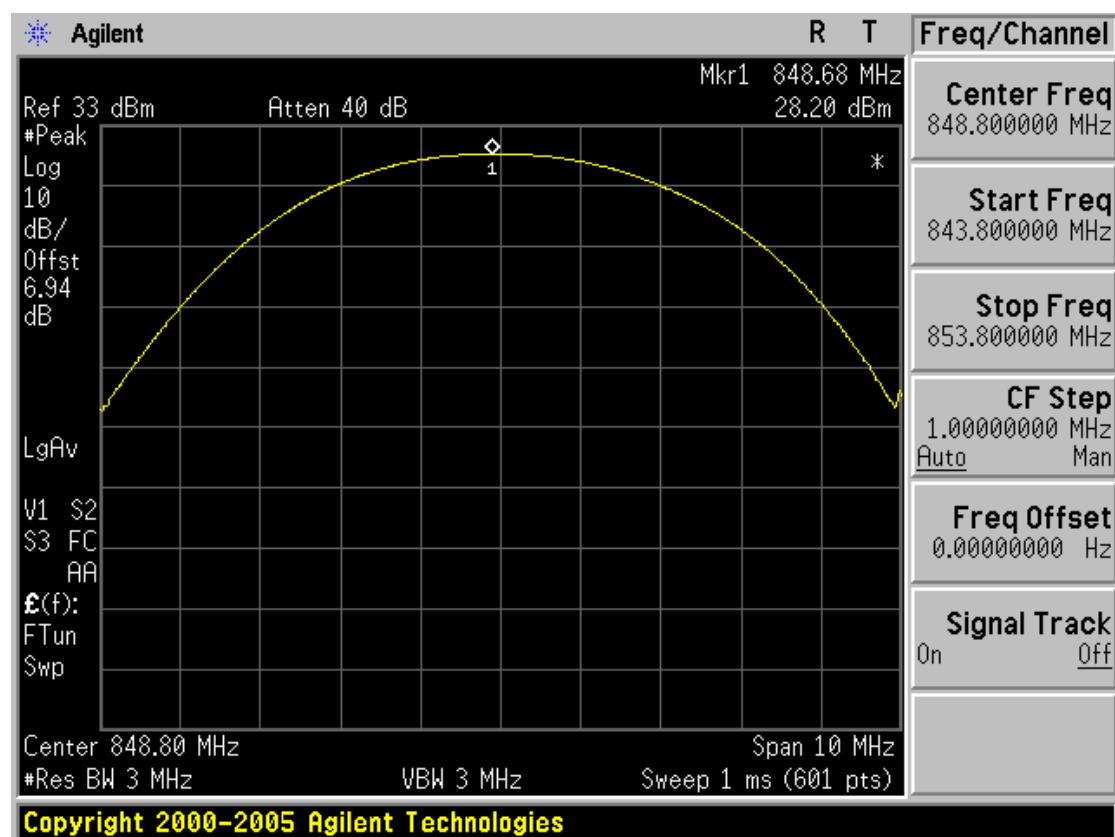
## POWER OUT. GSM850 Ch.128



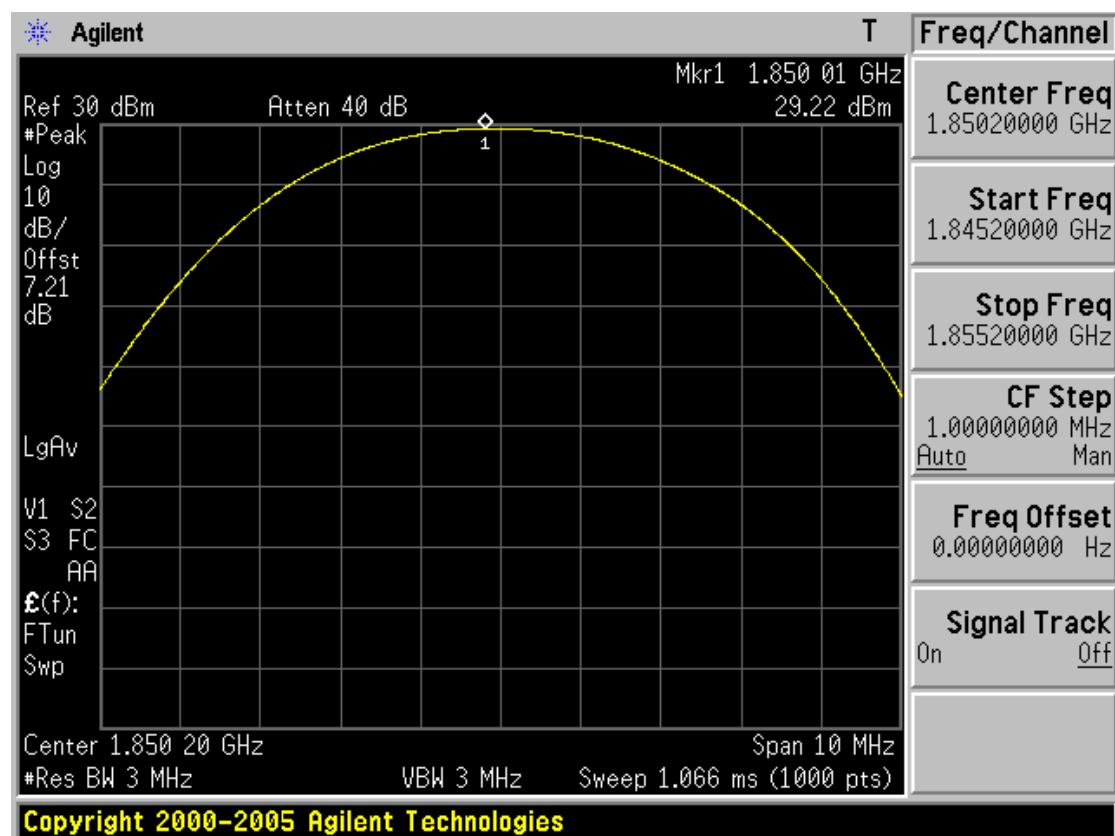
## POWER OUT. GSM850 Ch.190



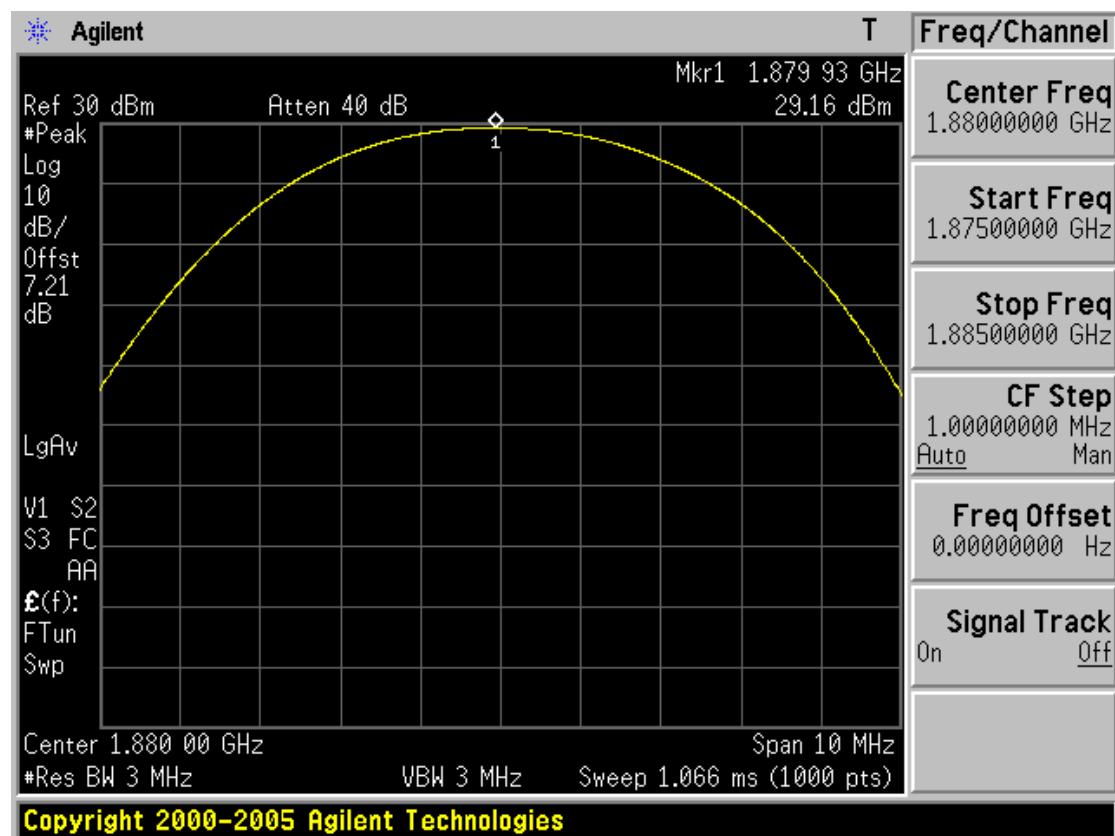
## POWER OUT. GSM850 Ch.251



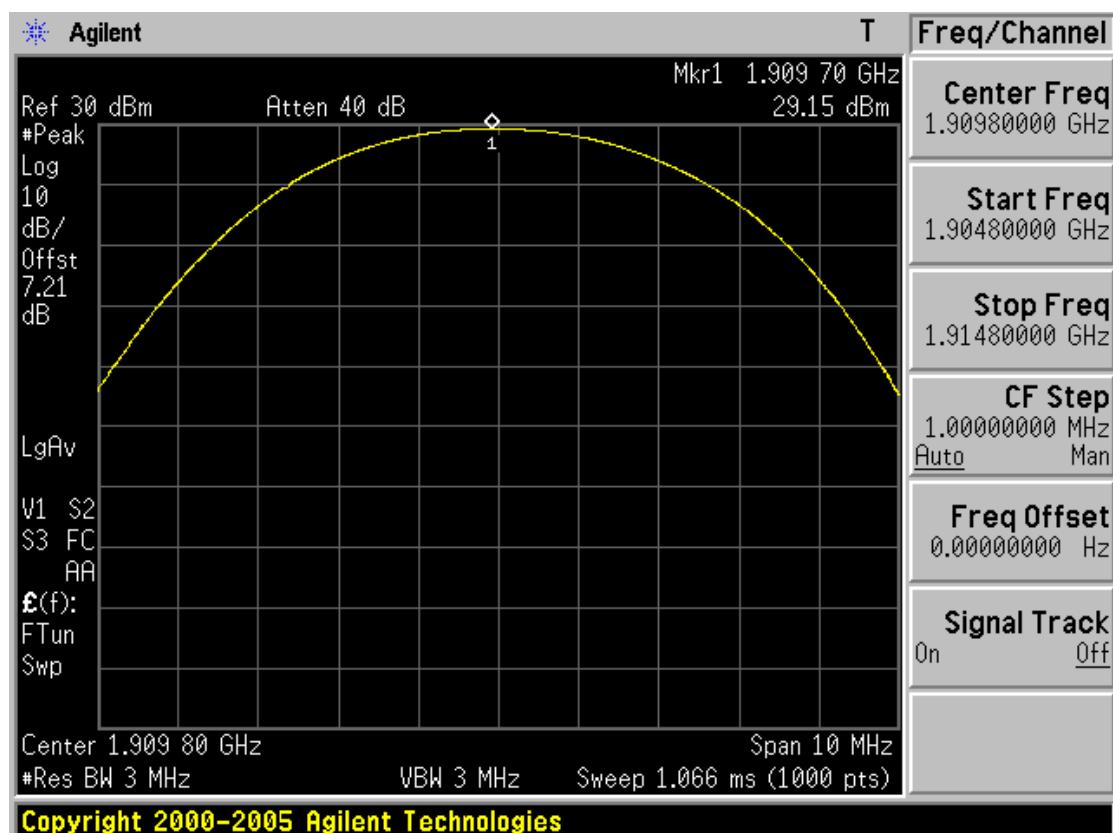
## POWER OUT. PCS1900 Ch.512



## POWER OUT. PCS1900 Ch.661



## POWER OUT. PCS1900 Ch.810



**ERP (GSM850)**

FCC ID : **NPQI170**  
 Specification : 47 CFR 22.913(a)  
 Tested Frequency : 824.2MHz, 836.6MHz and 848.8MHz for GSM850  
 RBW=VBW : 3MHz

**Measurement Procedure:**

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C 2004

The EUT was placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

**Measurement Data:**

| Channel | Frequency (MHz) | TEST CONDITIONS  |            |              | Power Step: 5 |                |
|---------|-----------------|------------------|------------|--------------|---------------|----------------|
|         |                 | Ref. level (dBm) | Pol. (H/V) | ERP (dBm)    | ERP (W)       | Power Supply   |
| 128     | <b>824.2</b>    | <b>-10.88</b>    | <b>H</b>   | <b>26.59</b> | <b>0.456</b>  | <b>Battery</b> |
| 190     | 836.6           | -10.80           | H          | 26.48        | 0.445         | Battery        |
| 251     | 848.8           | -10.96           | H          | 26.32        | 0.429         | Battery        |

**EIRP (PCS1900)**

|                  |   |  |
|------------------|---|--|
| FCC ID           | : | NPQI170  |
| Specification    | : | 47 CFR 24.232(b)                               |
| Tested Frequency | : | 1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900 |
| RBW=VBW          | : | 3MHz   |

**Measurement Procedure:**Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C 2004

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

**Measurement Data:**

| Channel    | Frequency<br>(MHz) | TEST CONDITIONS     |               |             |               | Power Step: 0 |                |
|------------|--------------------|---------------------|---------------|-------------|---------------|---------------|----------------|
|            |                    | Ref. level<br>(dBm) | Pol.<br>(H/V) | ANT<br>GAIN | EIRP<br>(dBm) | EIRP<br>(W)   | Battery        |
| 512        | 1850.2             | -16.44              | H             | 8.42        | 28.70         | 0.741         | Battery        |
| <b>661</b> | <b>1880.0</b>      | <b>-14.36</b>       | <b>H</b>      | <b>8.50</b> | <b>29.92</b>  | <b>0.981</b>  | <b>Battery</b> |
| 810        | 1909.8             | -15.20              | H             | 8.57        | 28.87         | 0.772         | Battery        |

### 3.3 Occupied Bandwidth

FCC ID : **NPQI170**  
 Specification : 47 CFR 2.1049 (h)(i)  
 Tested Frequency : 824.2MHz, 836.6MHz and 848.8MHz for GSM850  
                           1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900

#### Measurement Procedure:

- The 99% power bandwidth was measured with a calibrated spectrum analyzer.
- Spectrum analyzer plots are included on the following pages.

#### Measurement Data:

##### GSM850

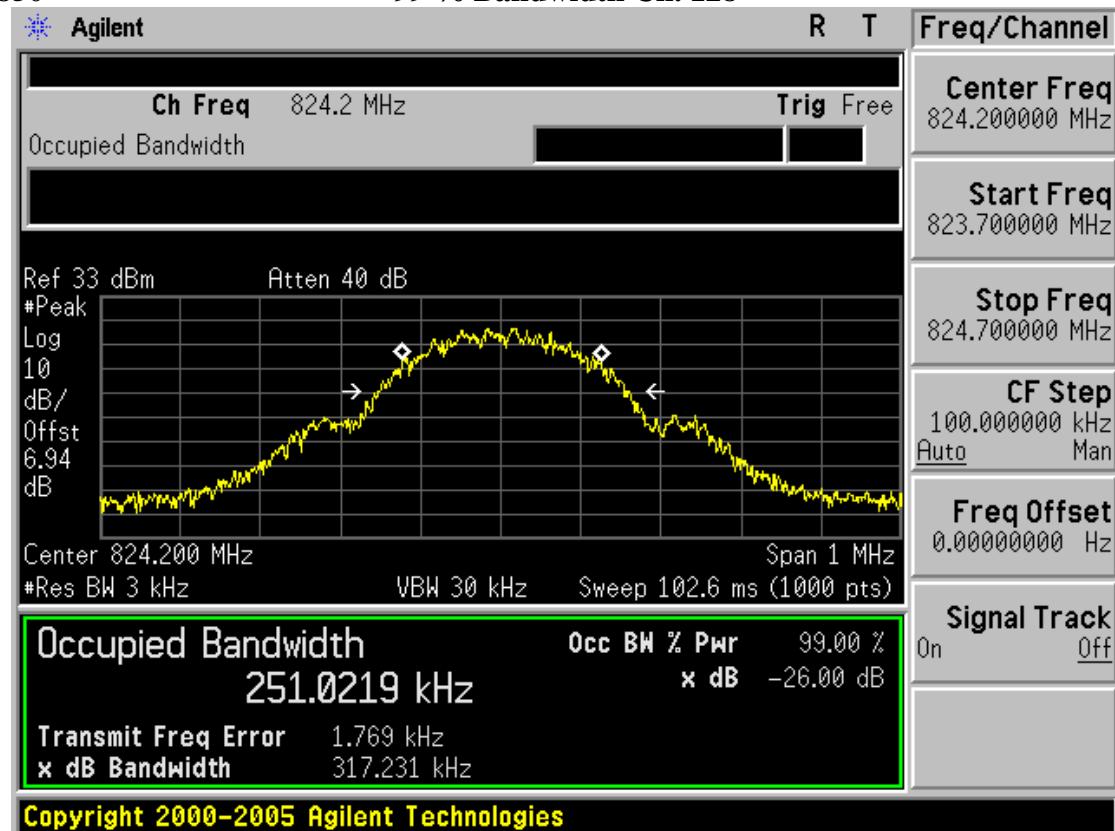
| Channel | Frequency<br>(MHz) | 99% Bandwidth |                 |
|---------|--------------------|---------------|-----------------|
|         |                    | (kHz)         |                 |
| 128     | 824.2              |               | <b>251.0219</b> |
| 190     | 836.6              |               | <b>250.4286</b> |
| 251     | 848.8              |               | <b>243.8853</b> |

##### PCS1900

| Channel | Frequency<br>(MHz) | 99% Bandwidth |                 |
|---------|--------------------|---------------|-----------------|
|         |                    | (kHz)         |                 |
| 512     | 1850.2             |               | <b>253.3586</b> |
| 661     | 1880.0             |               | <b>252.8298</b> |
| 810     | 1909.8             |               | <b>247.3988</b> |

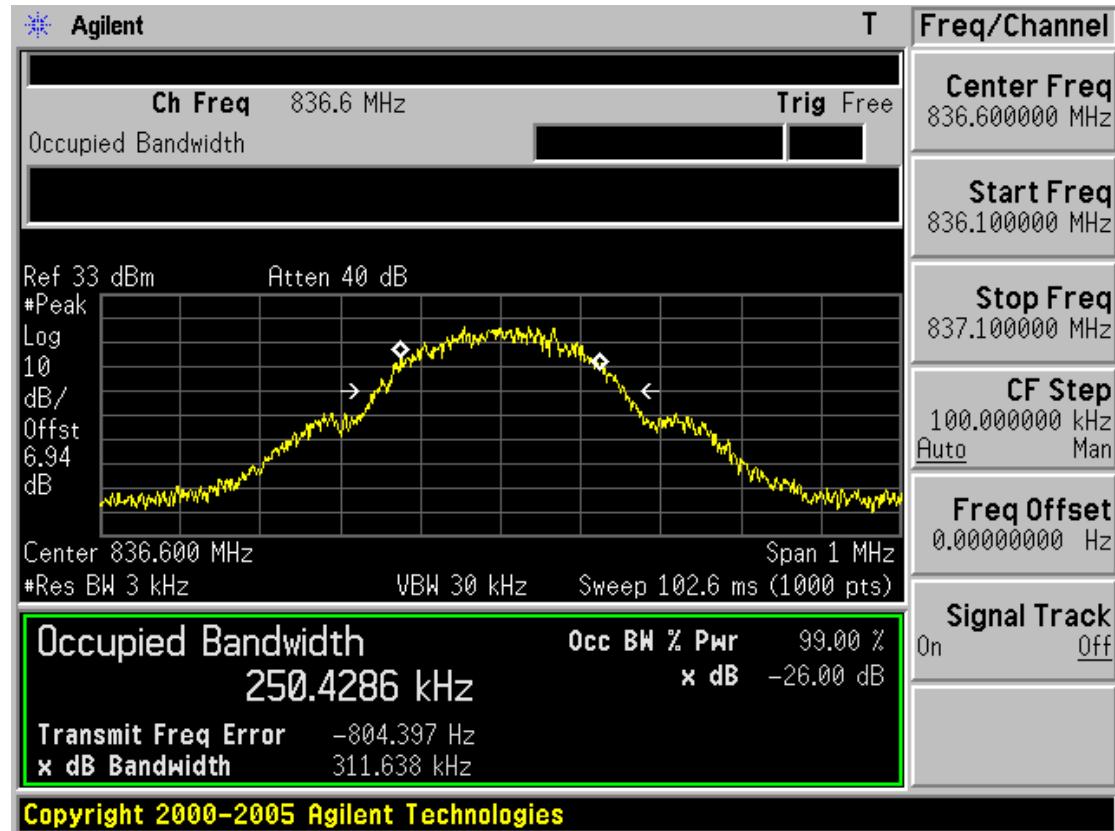
## GSM850

## 99 % Bandwidth Ch. 128



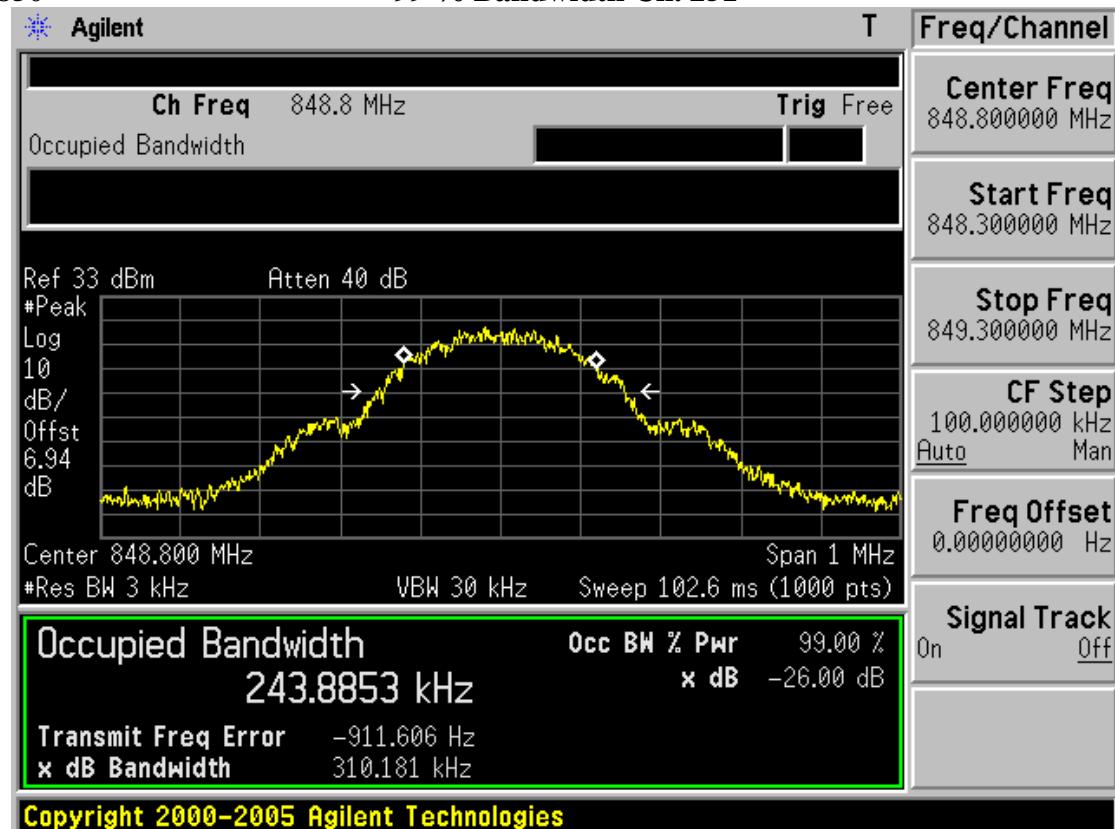
## GSM850

## 99 % Bandwidth Ch. 190



GSM850

99 % Bandwidth Ch. 251



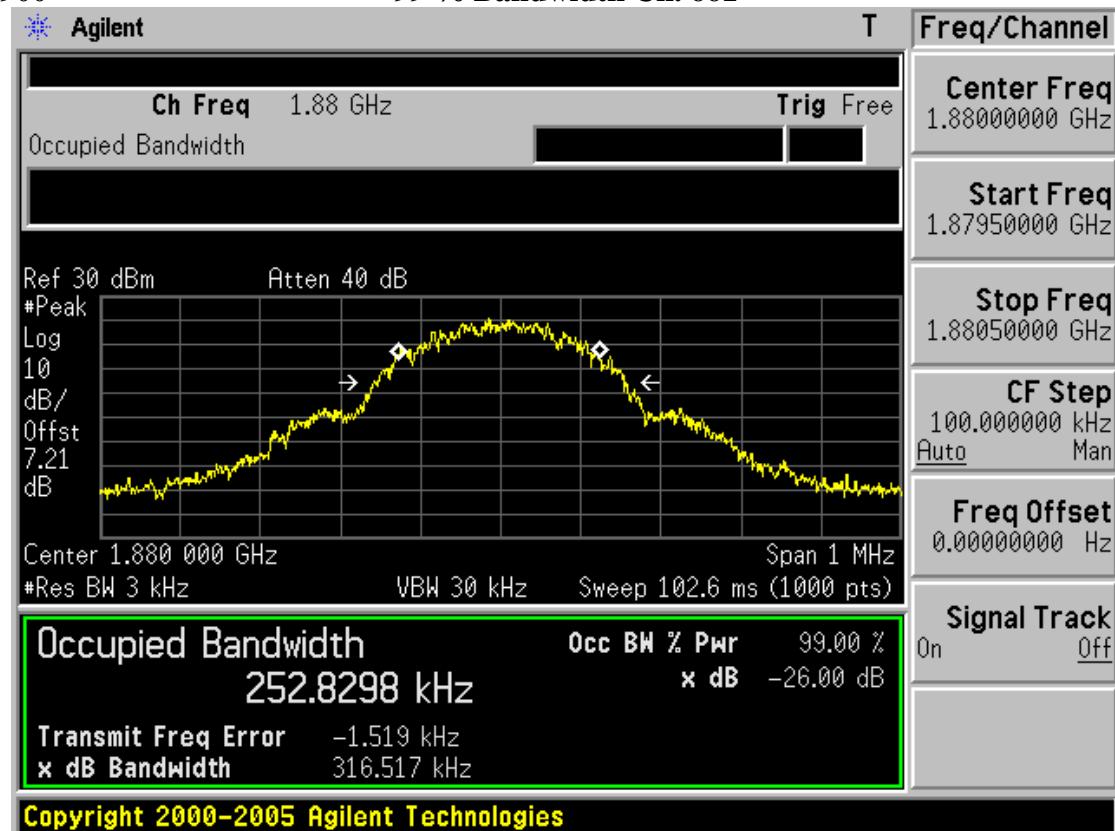
PCS1900

99 % Bandwidth Ch. 512



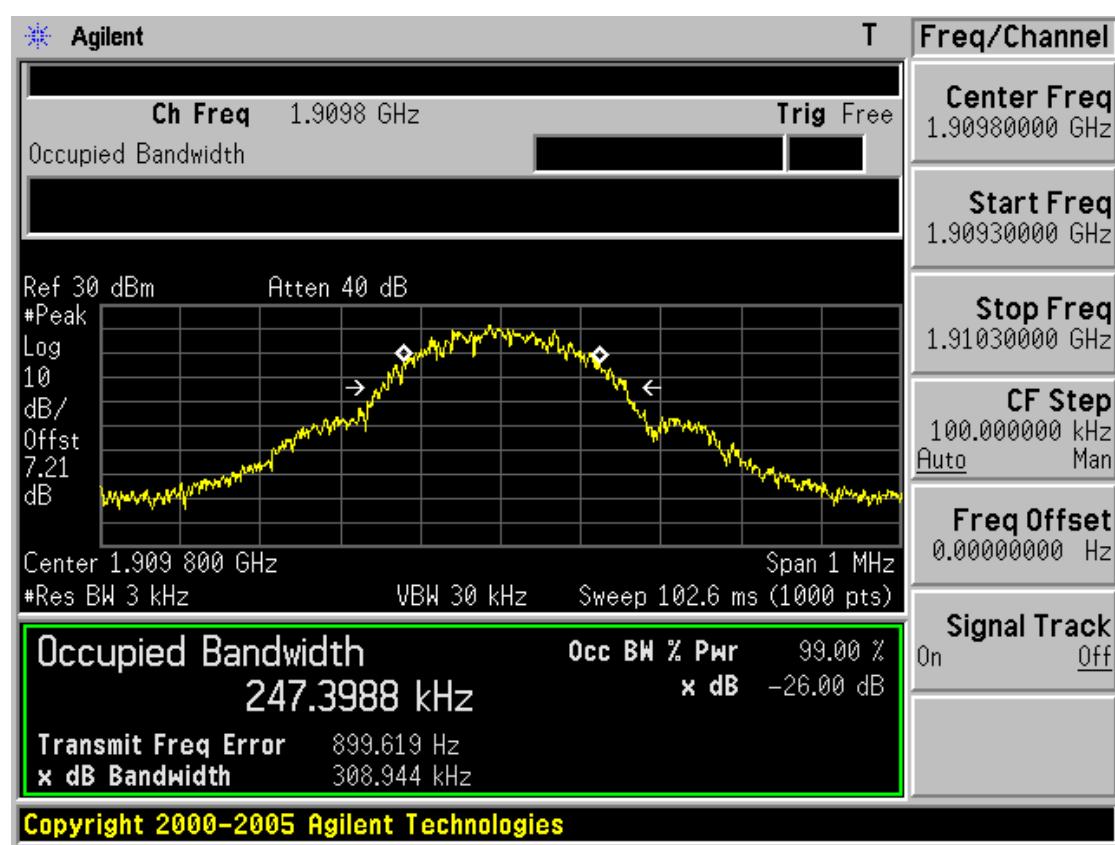
## PCS1900

## 99 % Bandwidth Ch. 661



## PCS1900

## 99 % Bandwidth Ch. 810



### 3.4 Occupied Bandwidth Emission Limit

FCC ID : **NPQI170**  
Specification : 47 CFR 24.238(b)  
Tested Frequency : 824.2MHz, 836.6MHz and 848.8MHz for GSM850  
1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900

### Measurement Procedure:

- (a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43+10\log(P)$  dB.
- (b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of  $1\text{MHz}$  or greater. However, in the  $1\text{MHz}$  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. 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 emission are attenuated at least  $26\text{dB}$  below the transmitter power.
- (c) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.
- Spectrum analyzer plots are included on the following pages.

## Measurement Data:

## GSM850

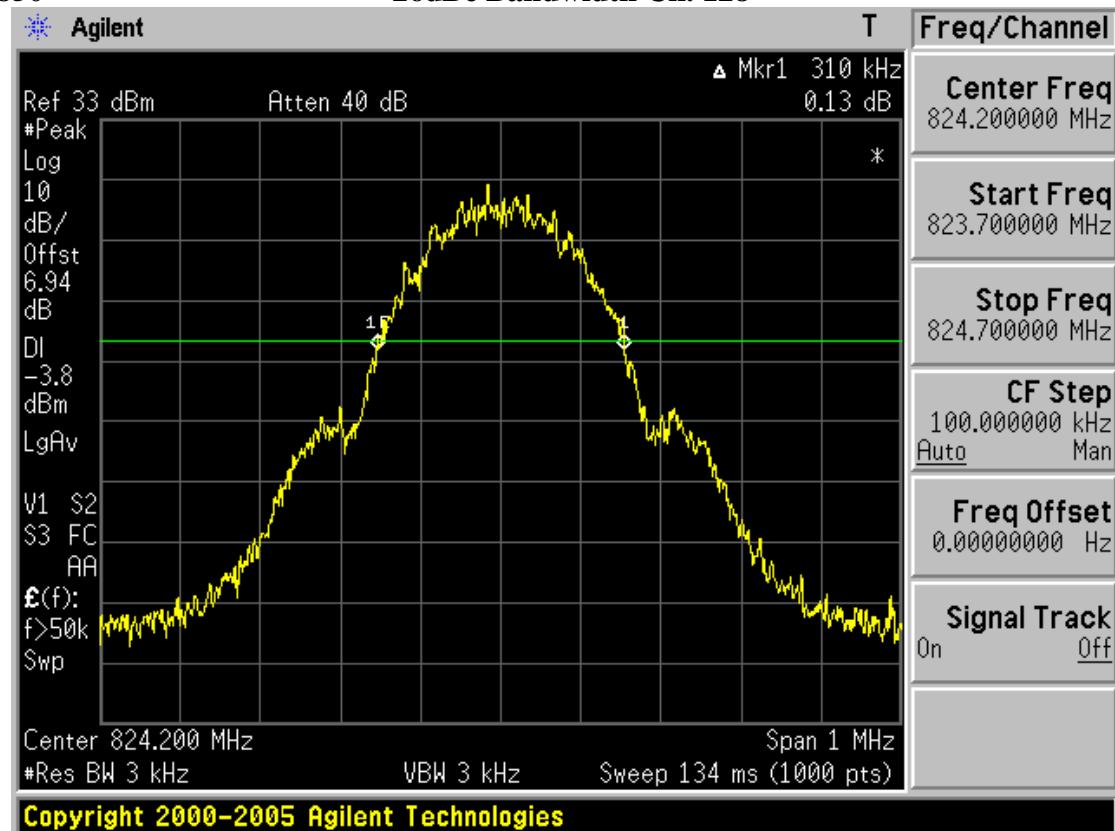
| Channel | Frequency<br>(MHz) | -26dBc Bandwidth |            |
|---------|--------------------|------------------|------------|
|         |                    | (kHz)            |            |
| 128     | 824.2              |                  | <b>310</b> |
| 190     | 836.6              |                  | <b>312</b> |
| 251     | 848.8              |                  | <b>311</b> |

**PCS1900**

| Channel | Frequency<br>(MHz) | -26dBc Bandwidth |            |
|---------|--------------------|------------------|------------|
|         |                    | (kHz)            |            |
| 512     | 1850.2             |                  | <b>312</b> |
| 661     | 1880.0             |                  | <b>323</b> |
| 810     | 1909.8             |                  | <b>323</b> |

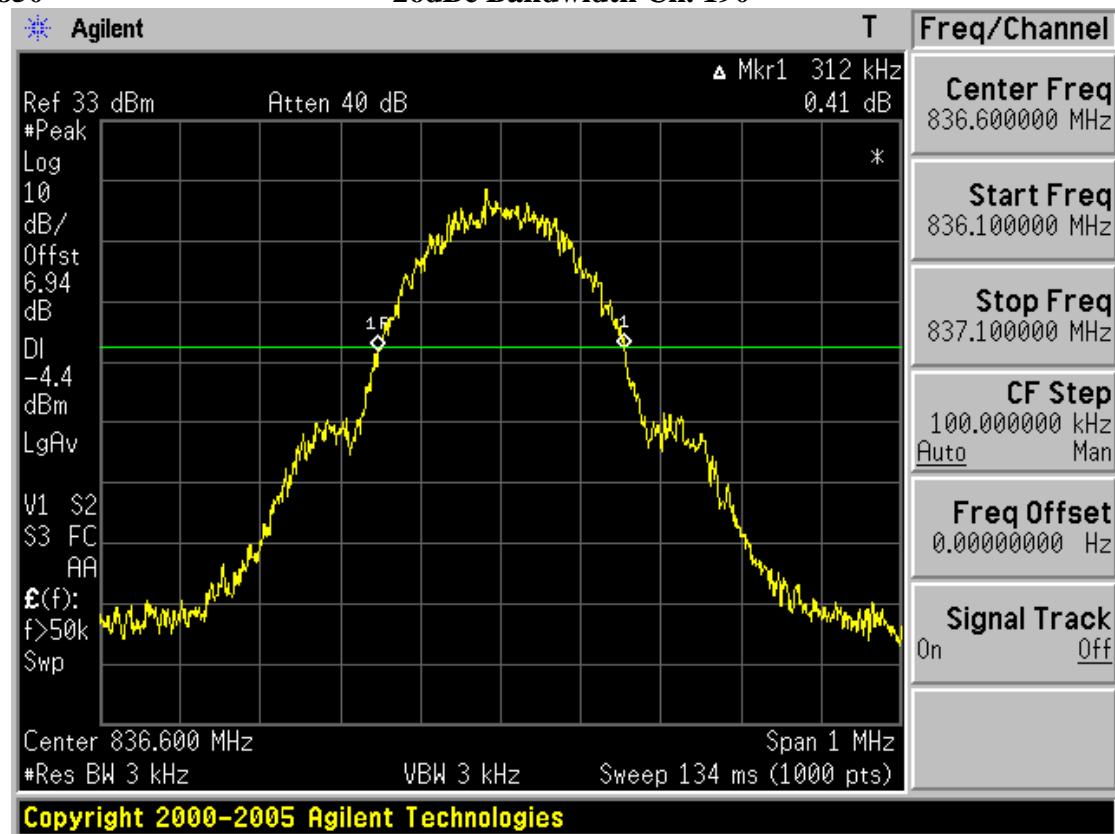
## GSM850

## -26dBc Bandwidth Ch. 128



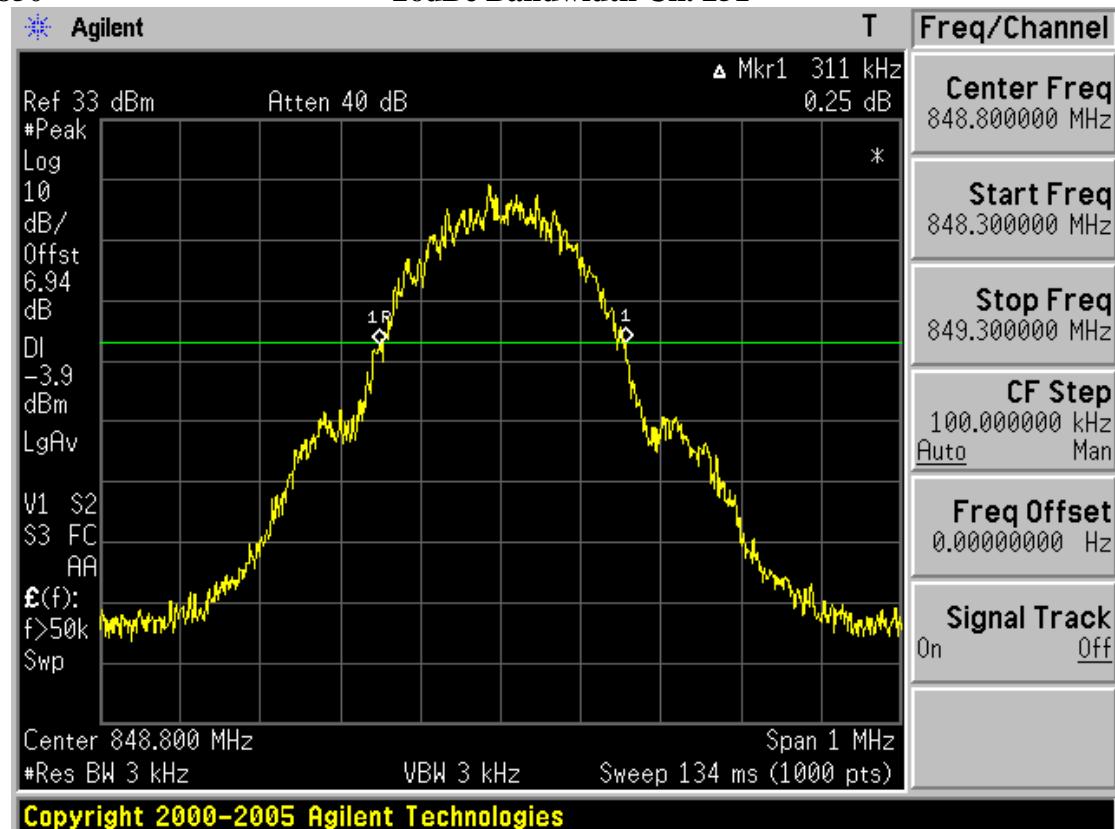
## GSM850

## -26dBc Bandwidth Ch. 190



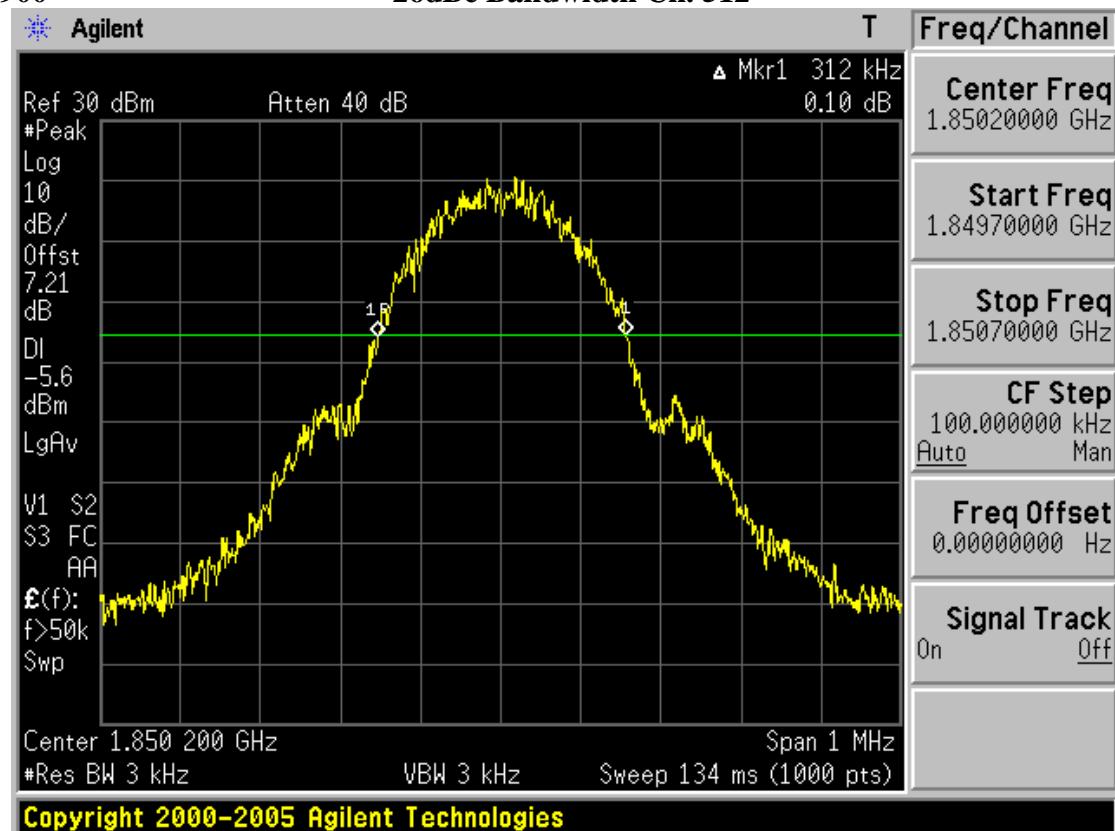
## GSM850

## -26dBc Bandwidth Ch. 251



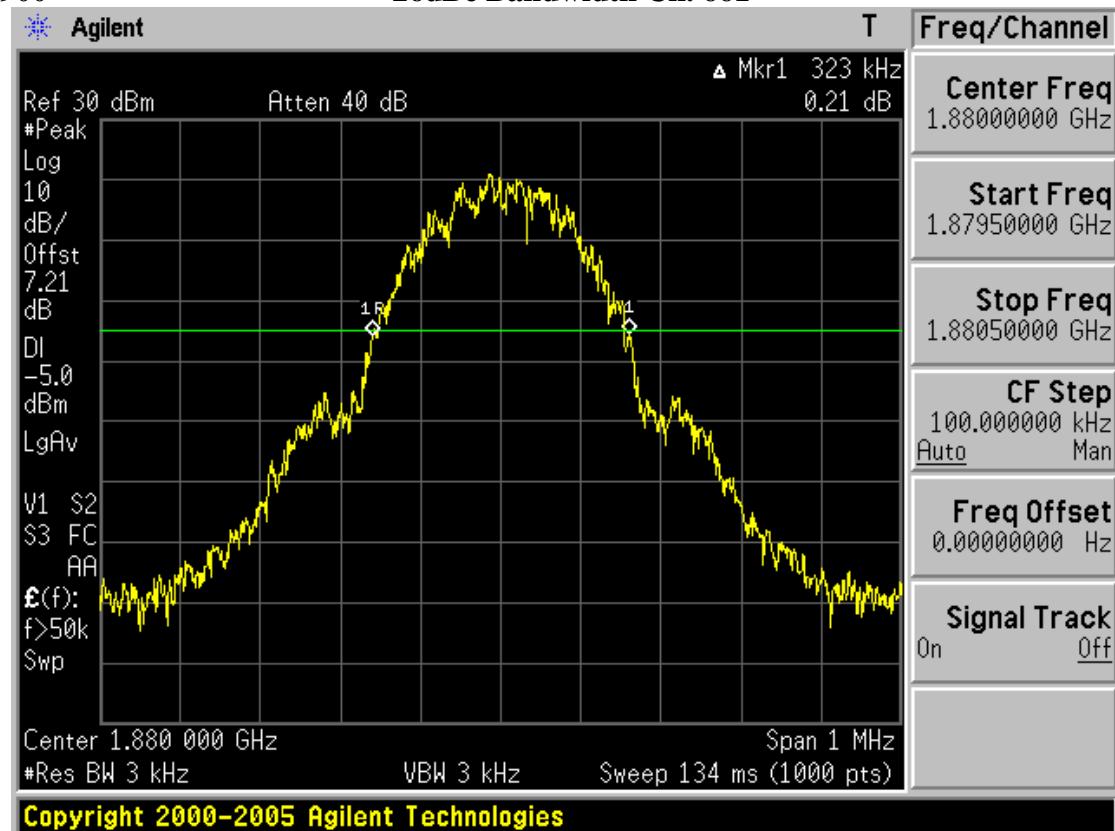
## PCS1900

## -26dBc Bandwidth Ch. 512



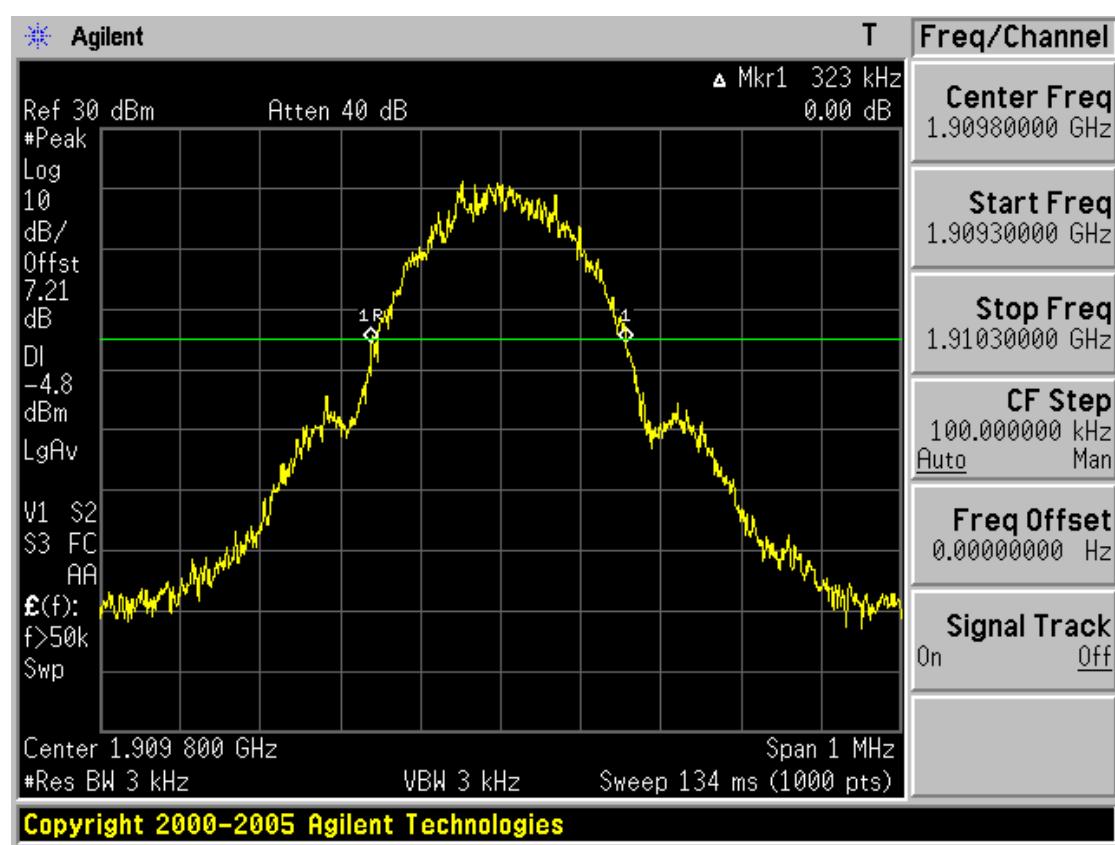
## PCS1900

## -26dBc Bandwidth Ch. 661



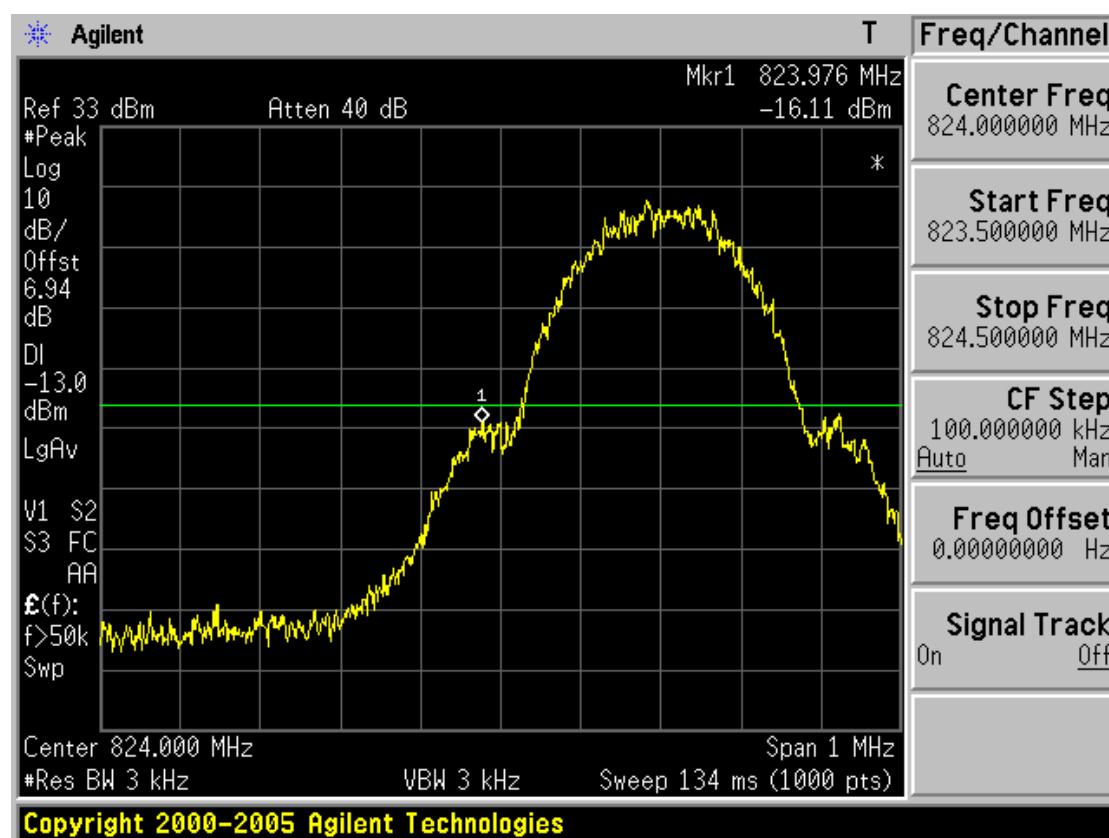
## PCS1900

## -26dBc Bandwidth Ch. 810



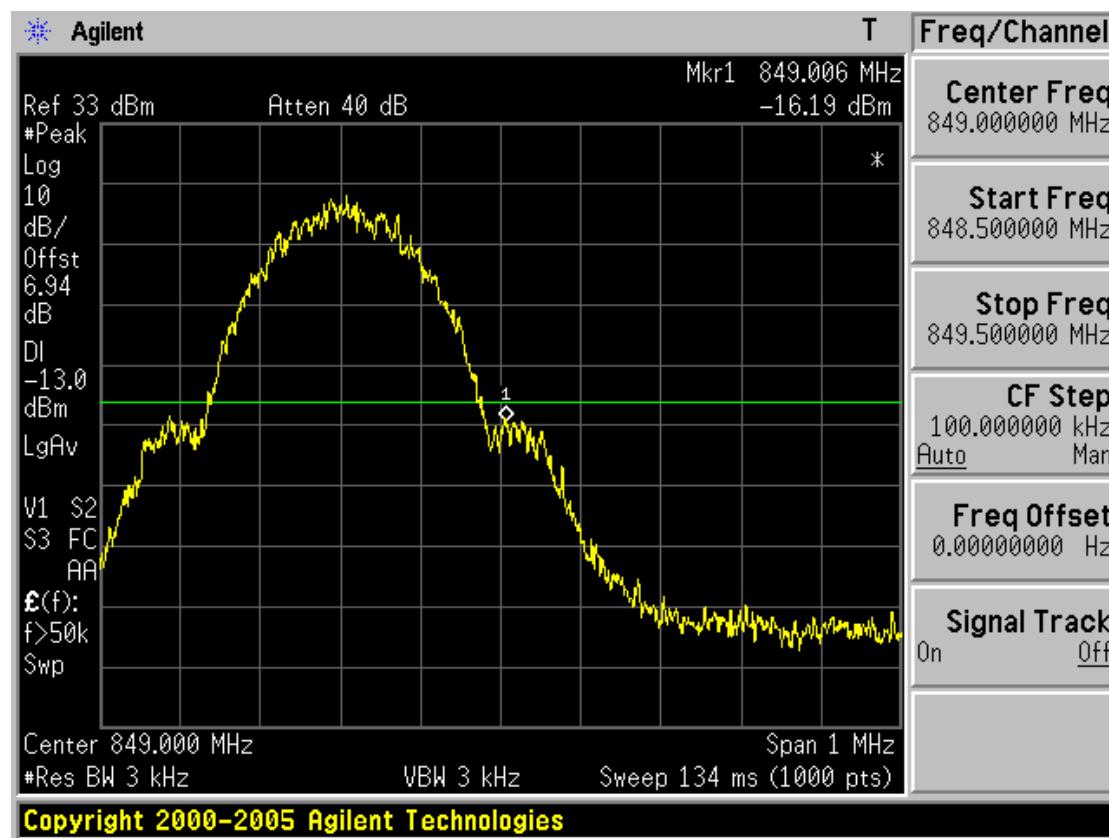
## GSM850

## Band Edge Ch. 128



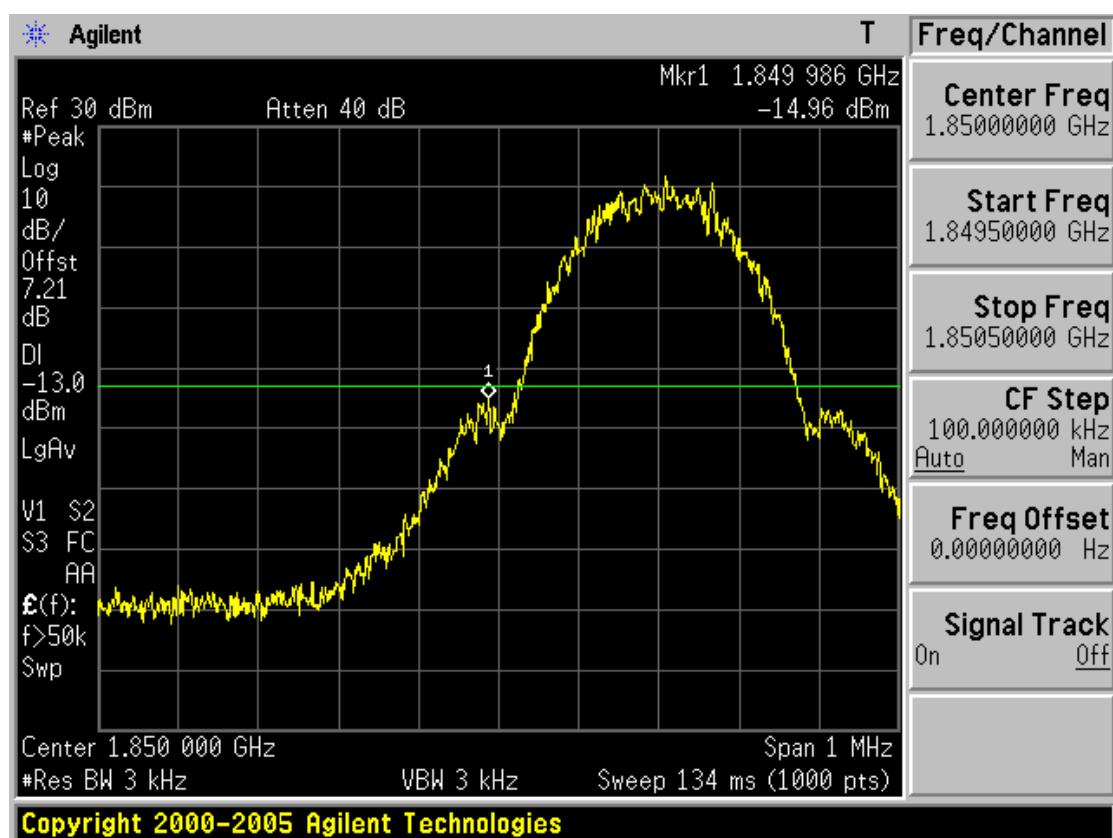
## GSM850

## Band Edge Ch. 251



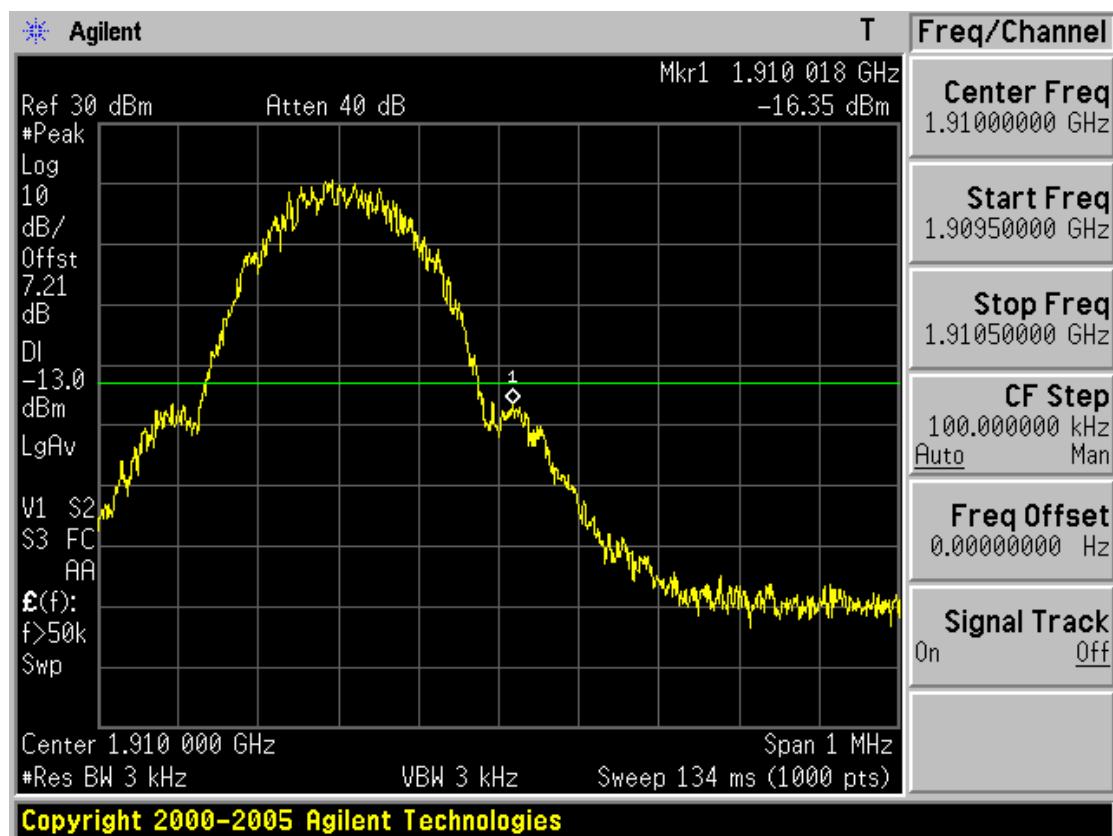
## PCS1900

## Band Edge Ch. 512



## PCS1900

## Band Edge Ch. 810



### 3.5 Spurious and Harmonic Emissions at Antenna Terminal

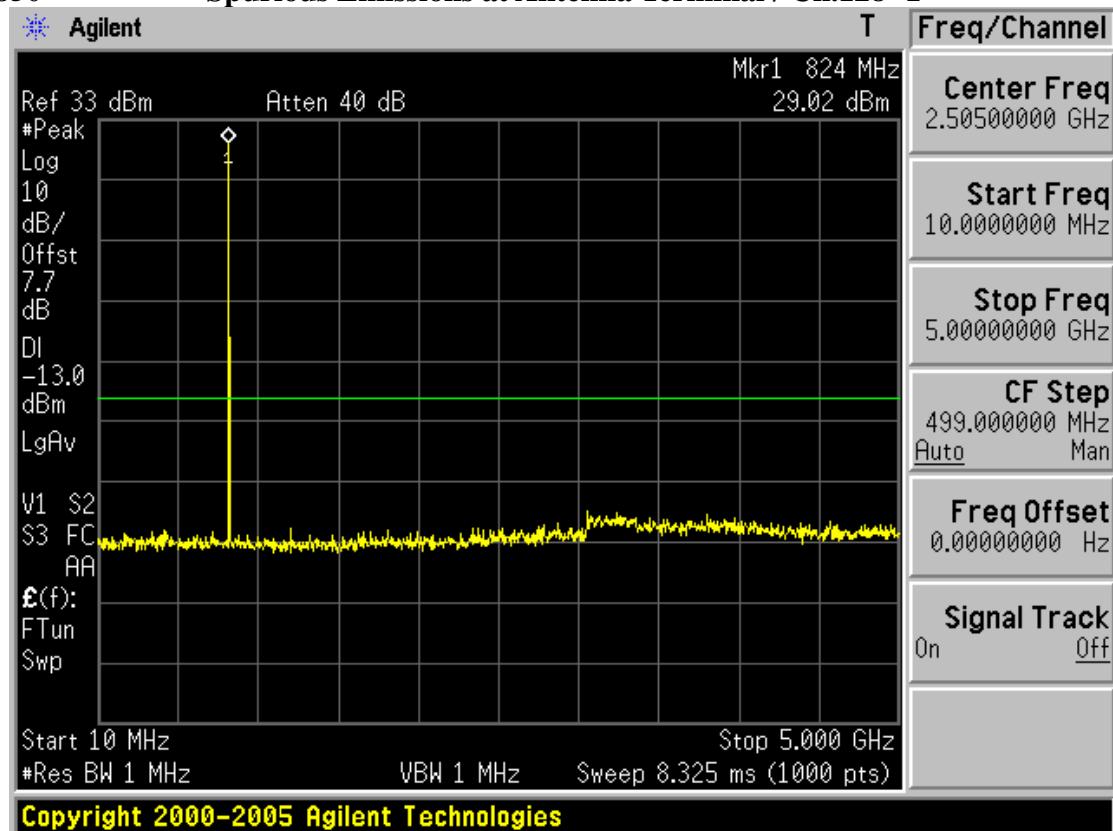
|                  |   |  |
|------------------|---|--|
| FCC ID           | : | NPQI170  |
| Specification    | : | 47 CFR 2.1051, 24.238(a)   |
| Tested Frequency | : | 824.2MHz, 836.6MHz and 848.8MHz for GSM850<br>1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900 |

#### Measurement Procedure:

- The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.
- The spectrum is scanned from the lowest frequency generated in the equipment up to 10'th harmonics of the highest frequency.
- Spectrum analyzer plots are included on the following pages.

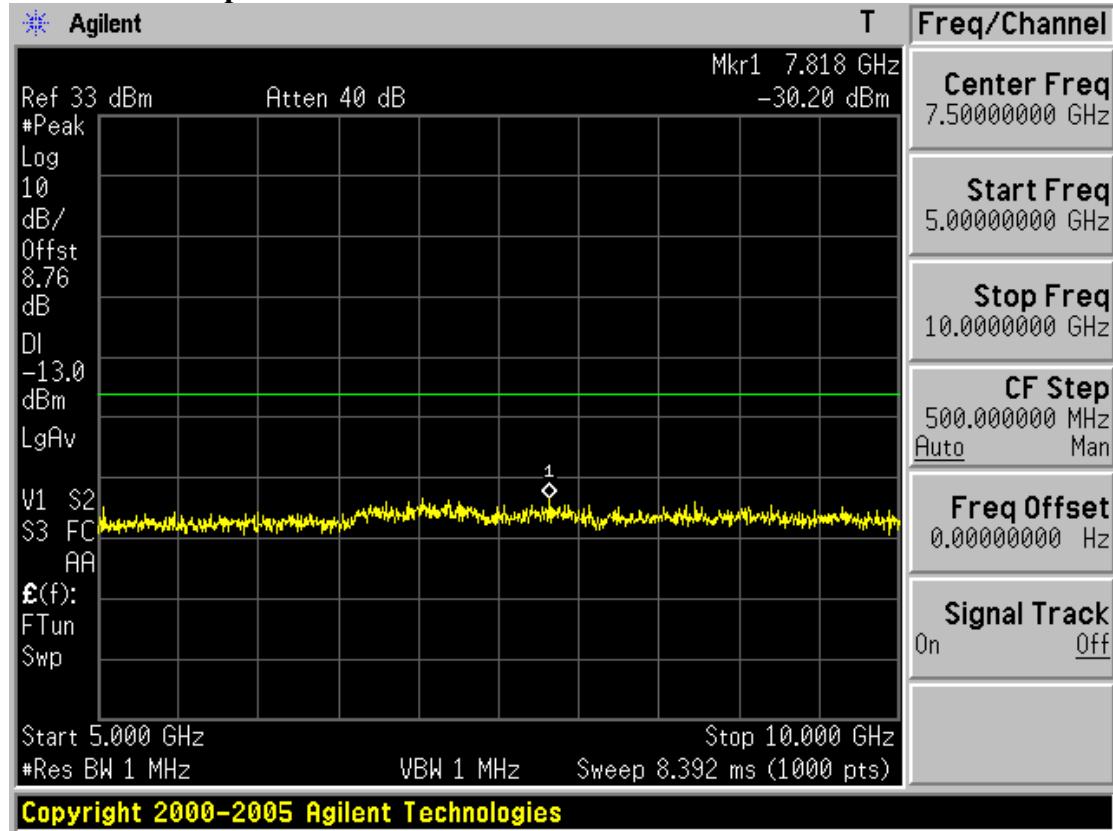
GSM850

## Spurious Emissions at Antenna Terminal / Ch.128 -1



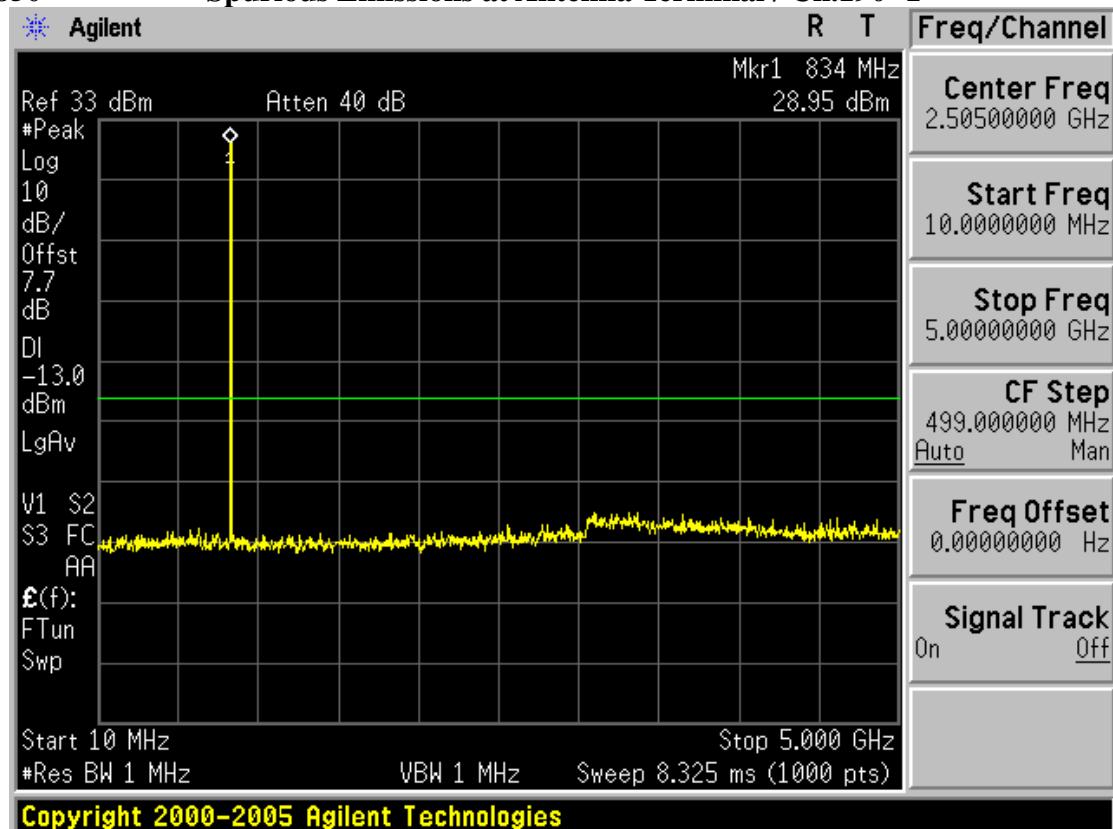
GSM850

## Spurious Emissions at Antenna Terminal / Ch.128 -2



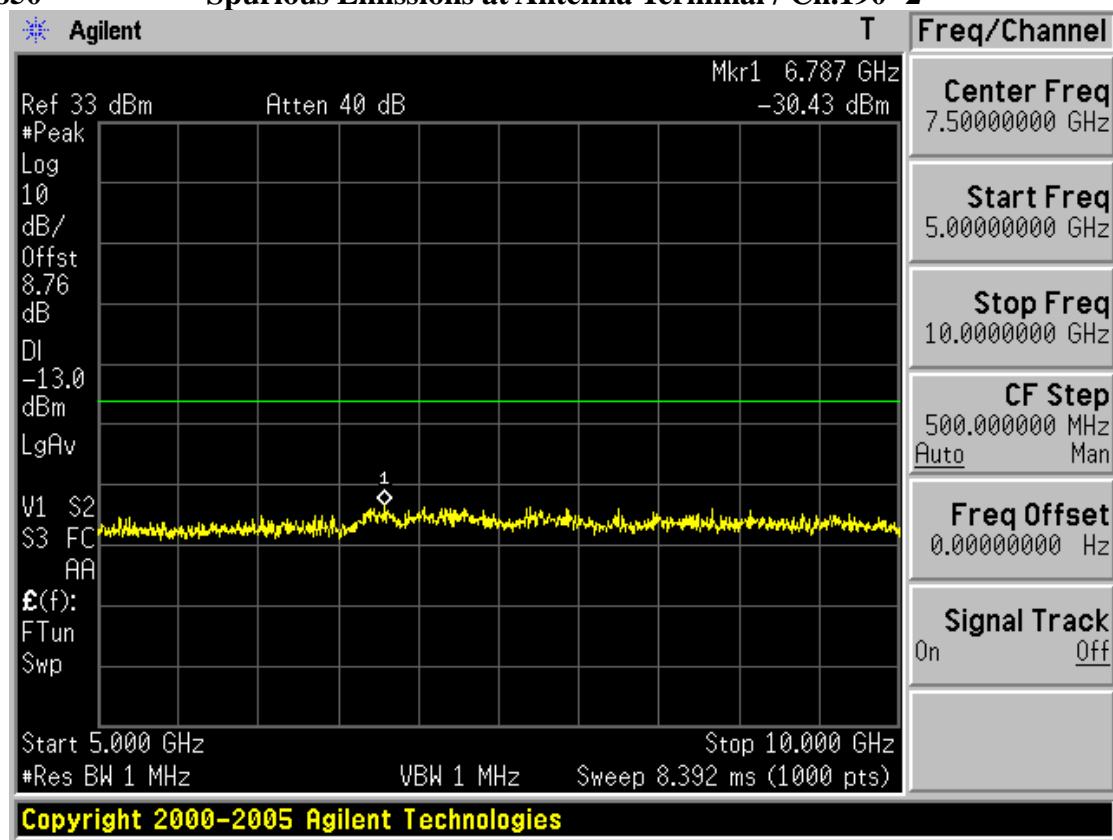
GSM850

## Spurious Emissions at Antenna Terminal / Ch.190 -1



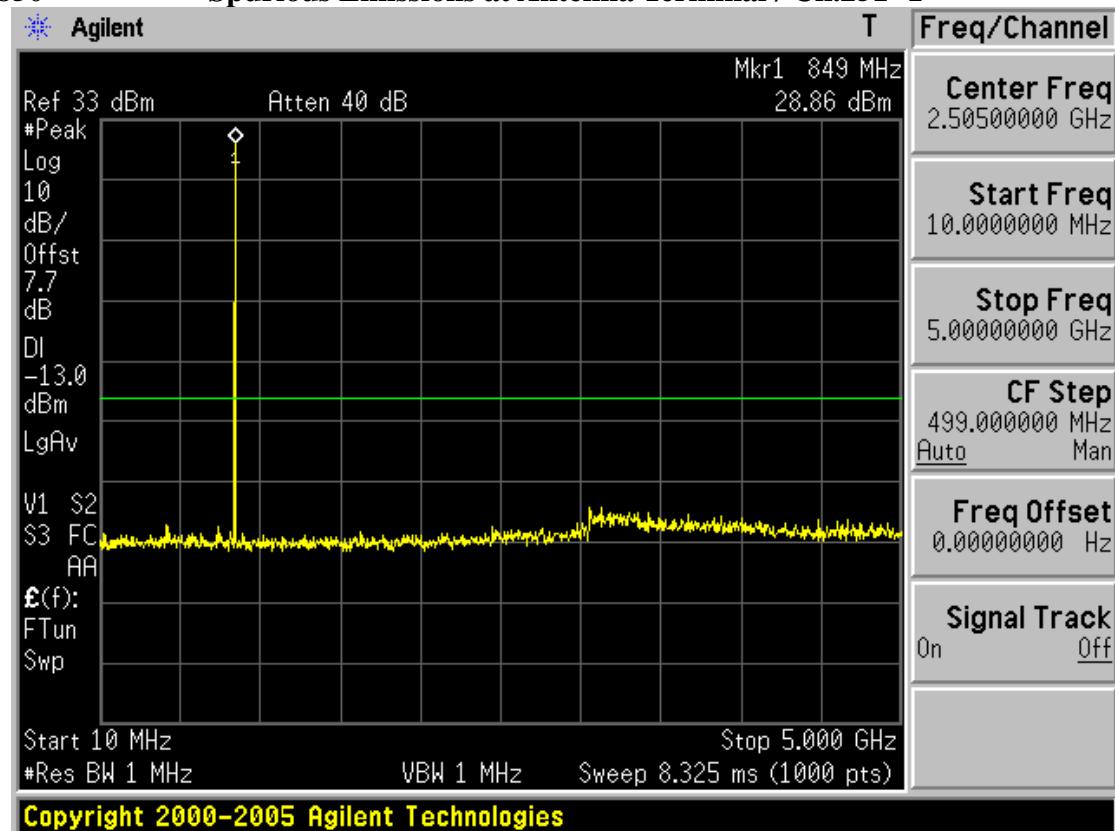
GSM850

## Spurious Emissions at Antenna Terminal / Ch.190 -2



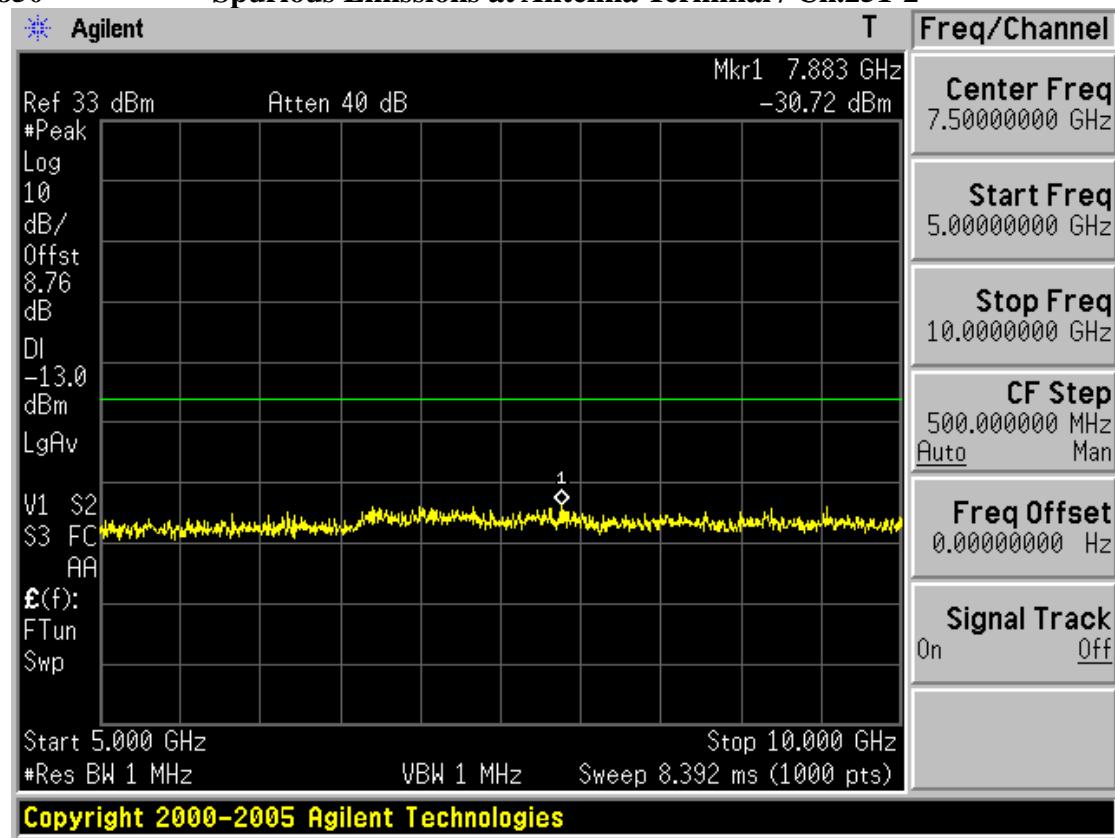
GSM850

## Spurious Emissions at Antenna Terminal / Ch.251 -1



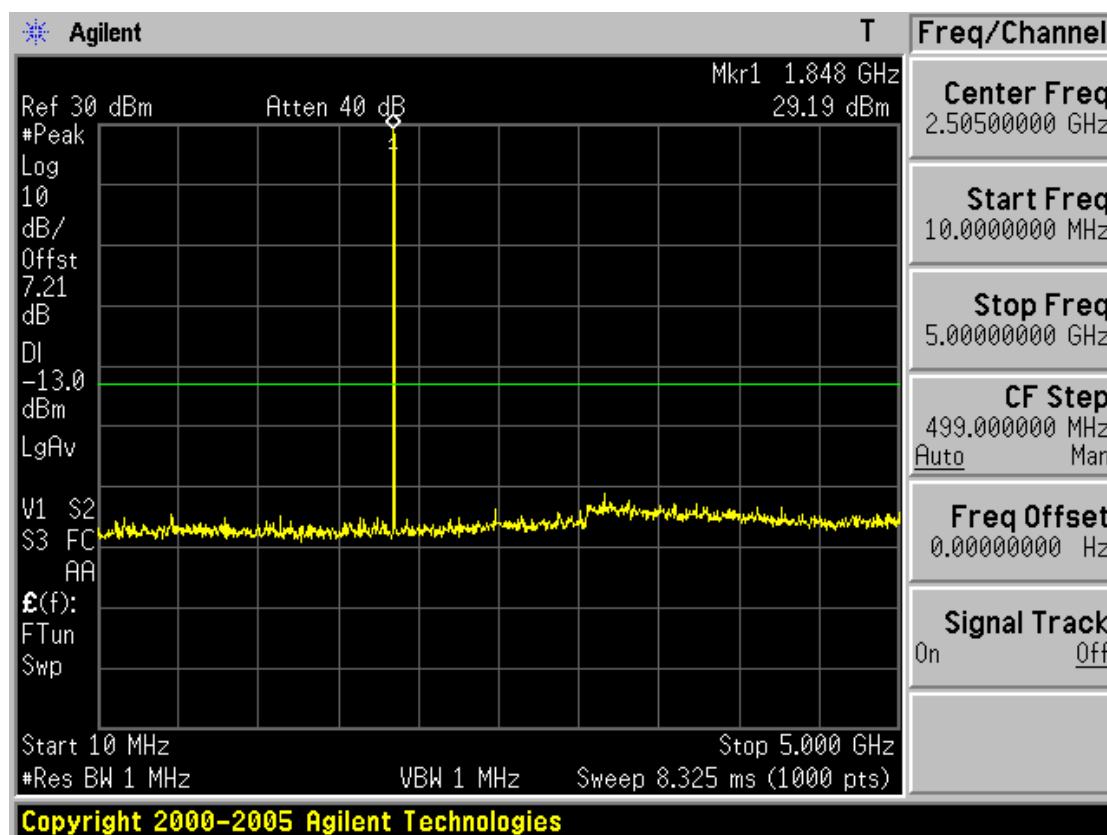
GSM850

## Spurious Emissions at Antenna Terminal / Ch.251-2



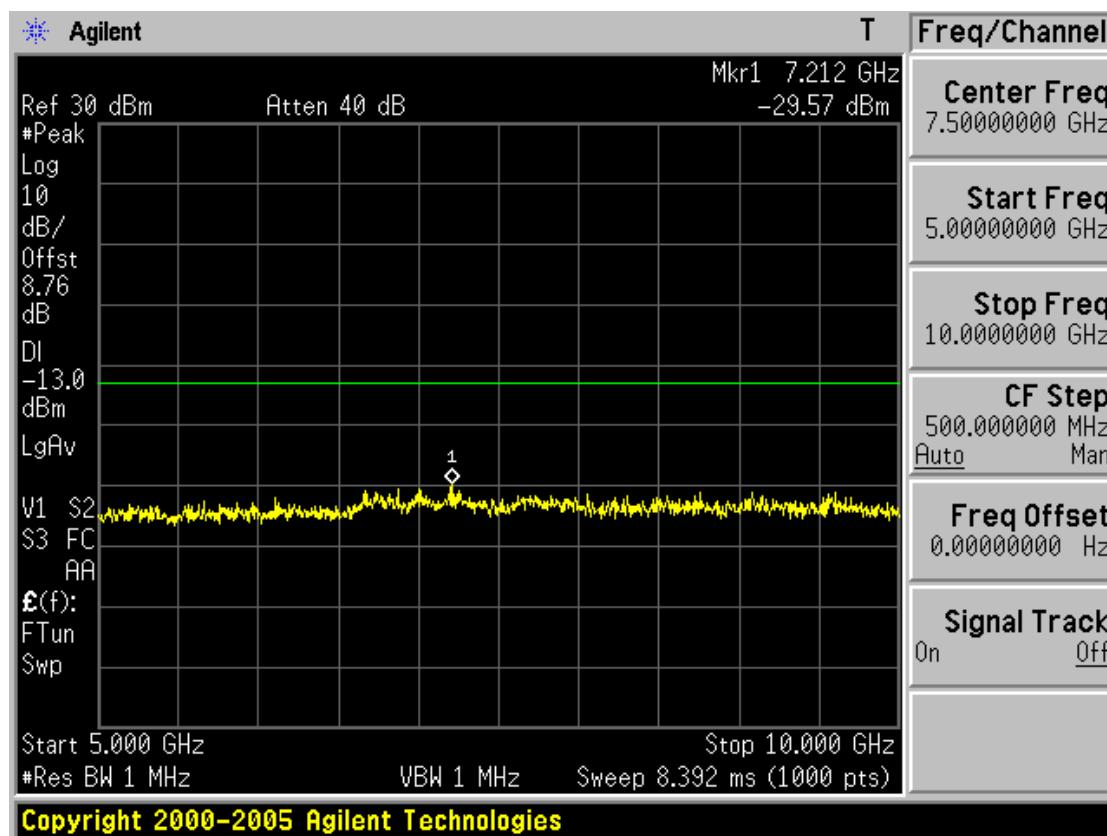
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.512 -1



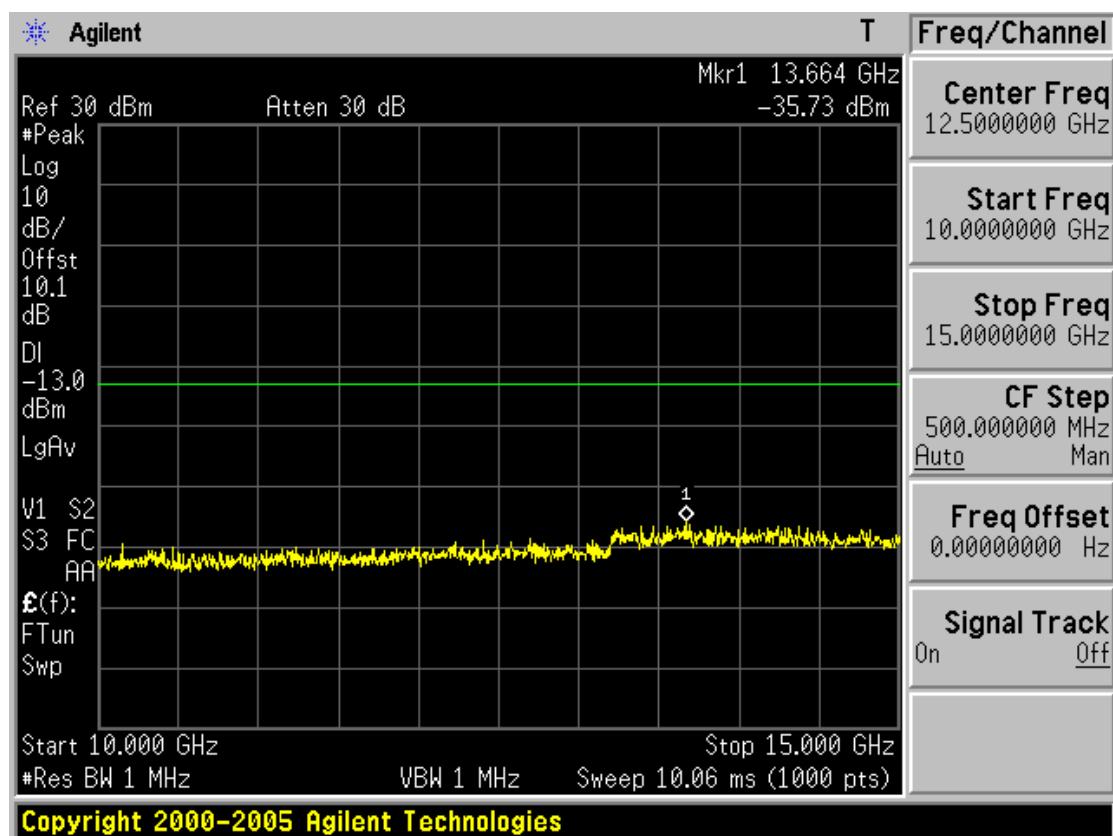
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.512 -2



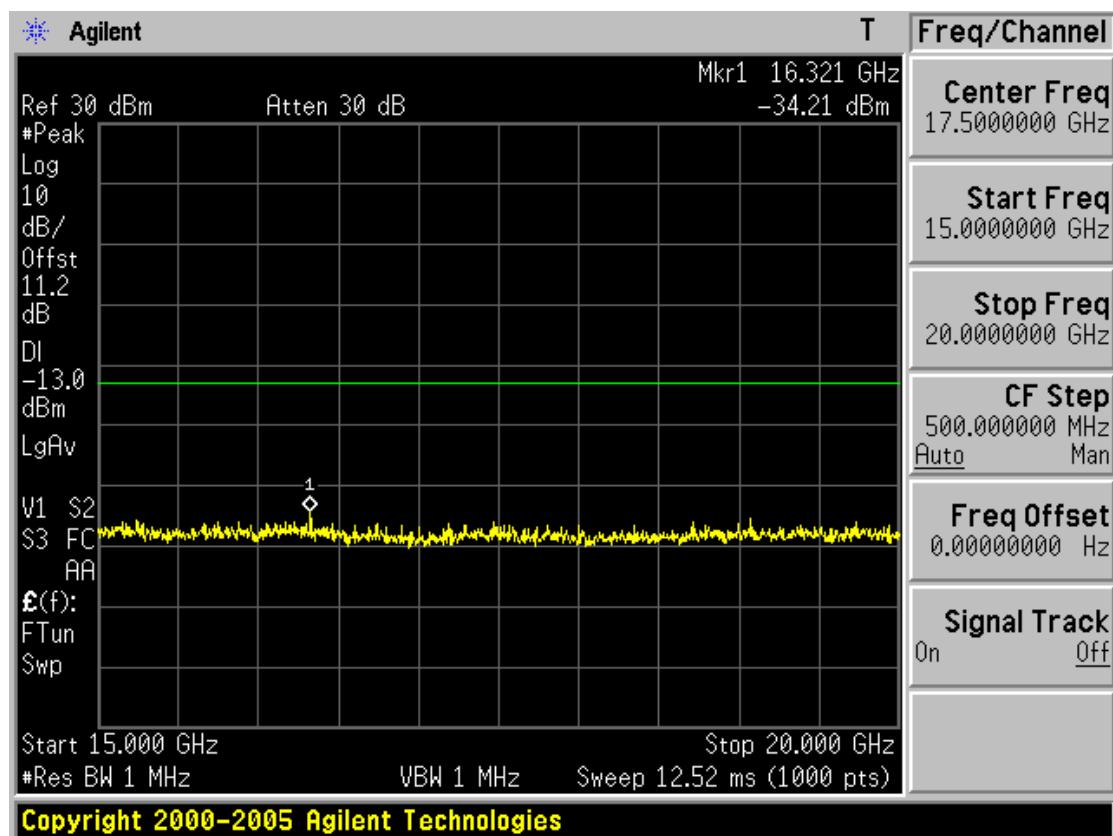
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.512 -3



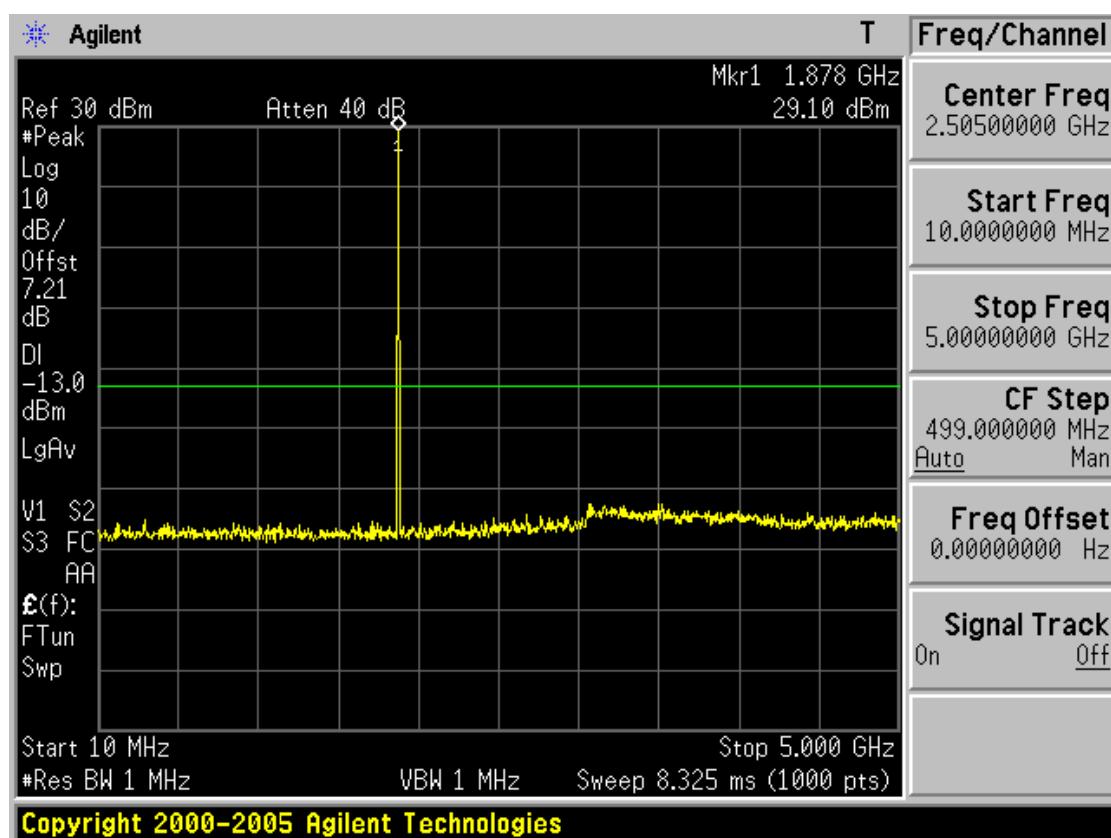
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.512 -4



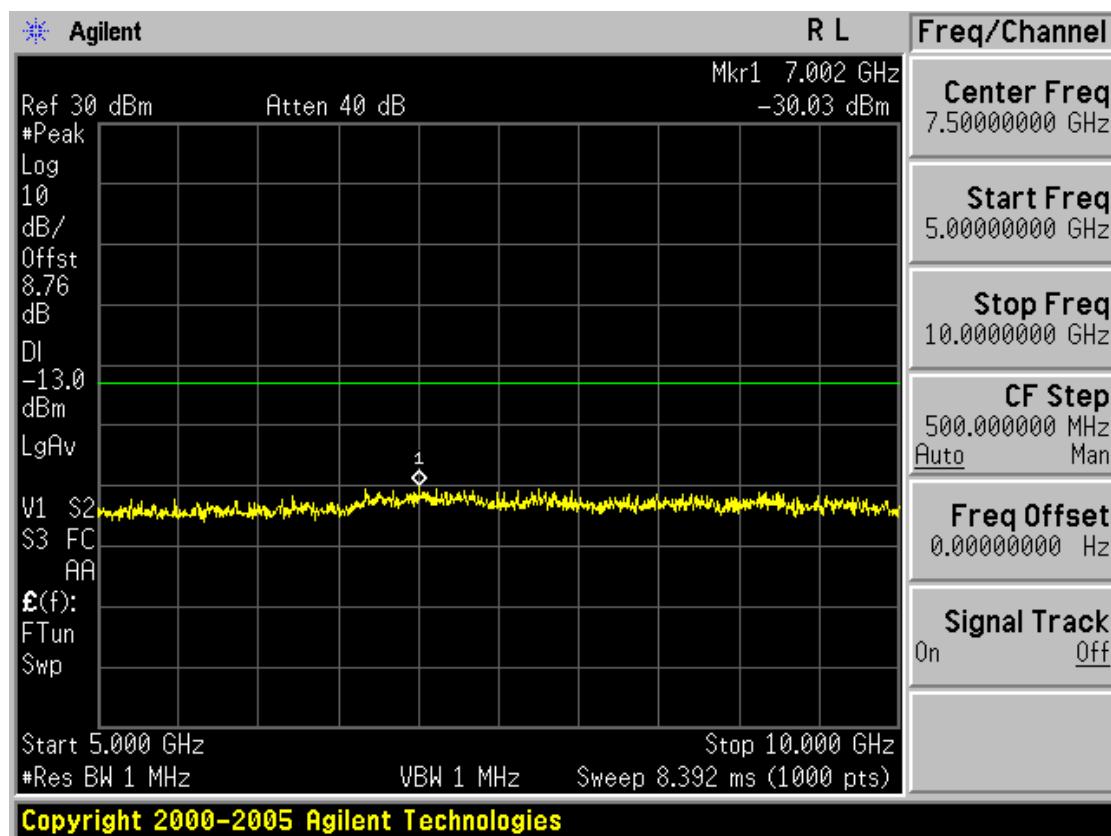
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.661 -1



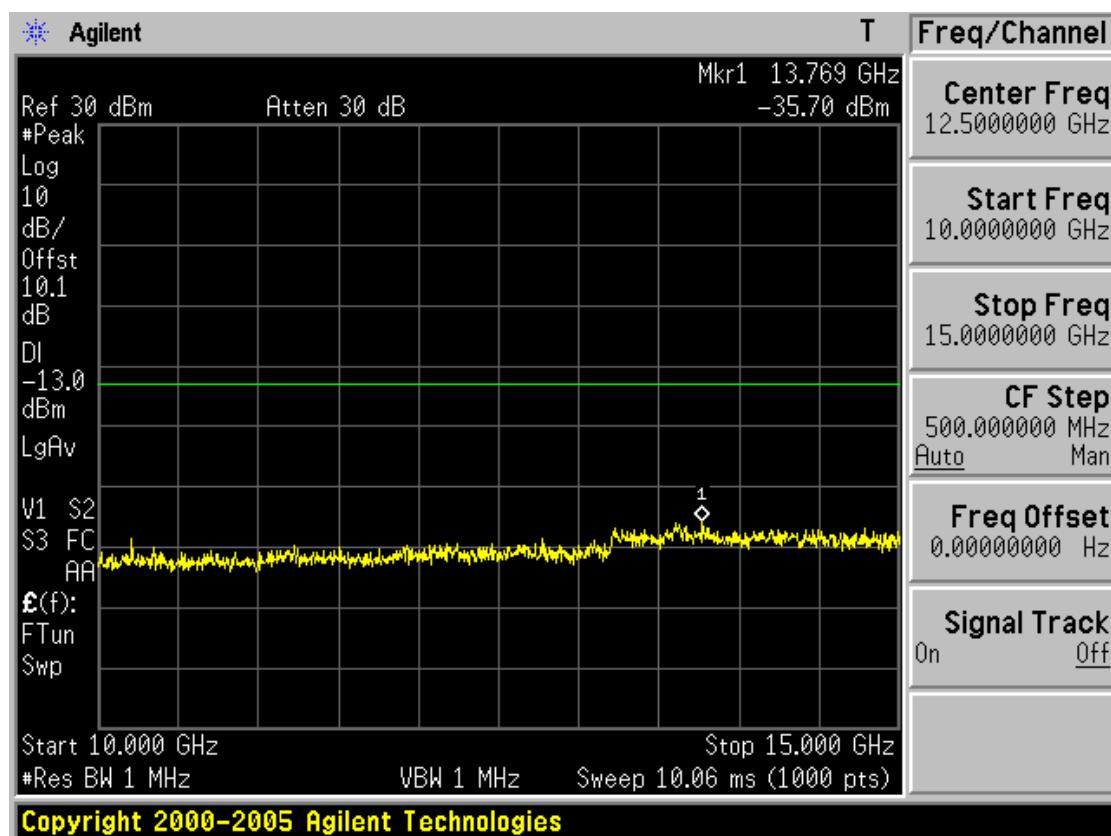
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.661 -2



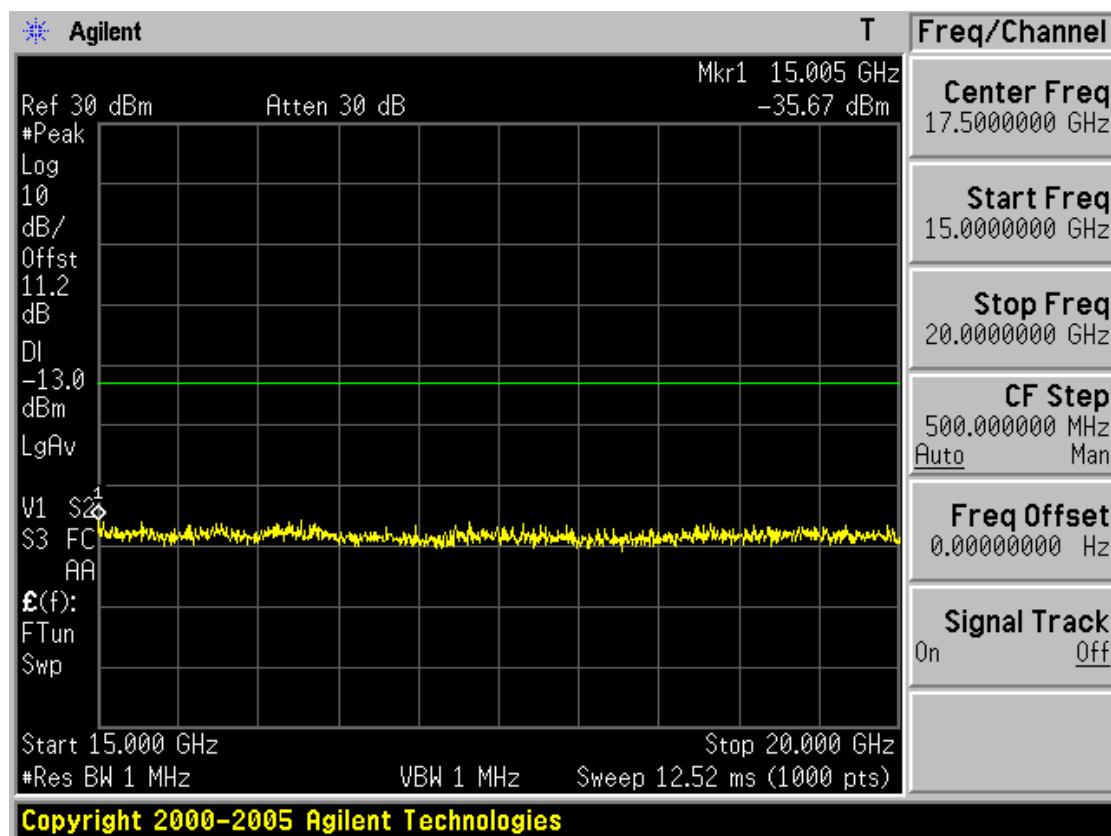
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.661 -3



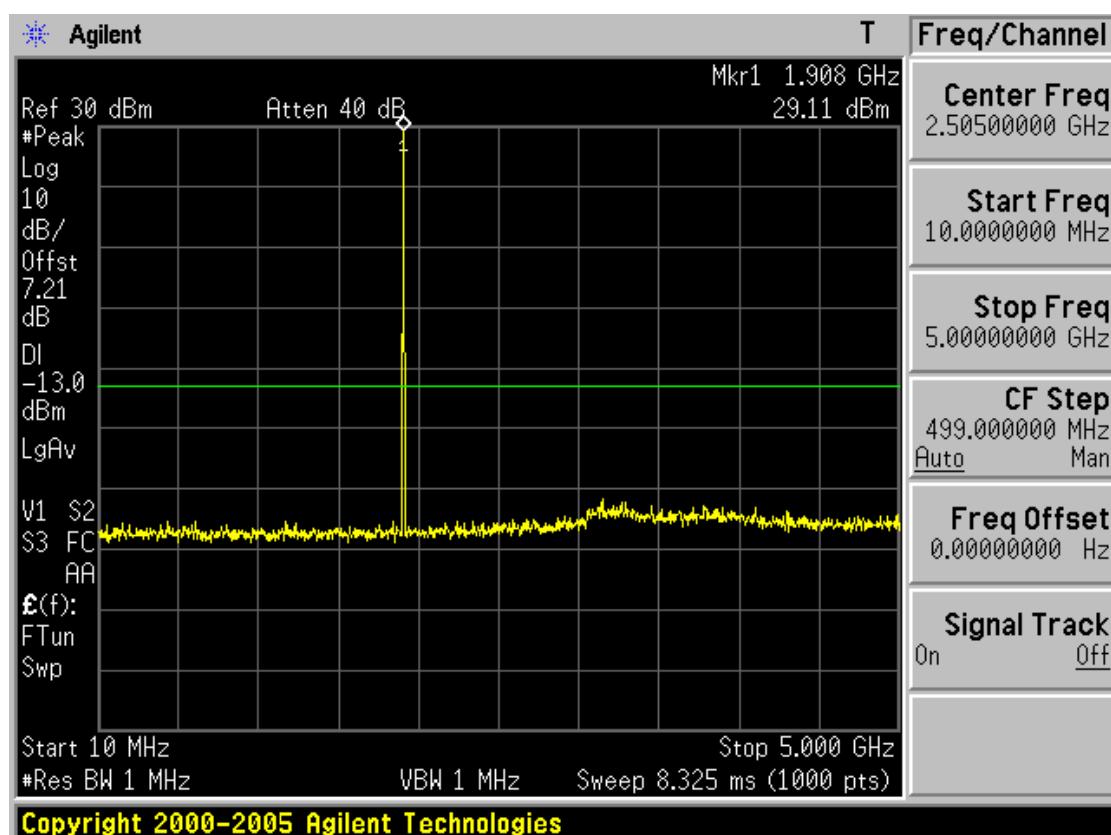
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.661 -4



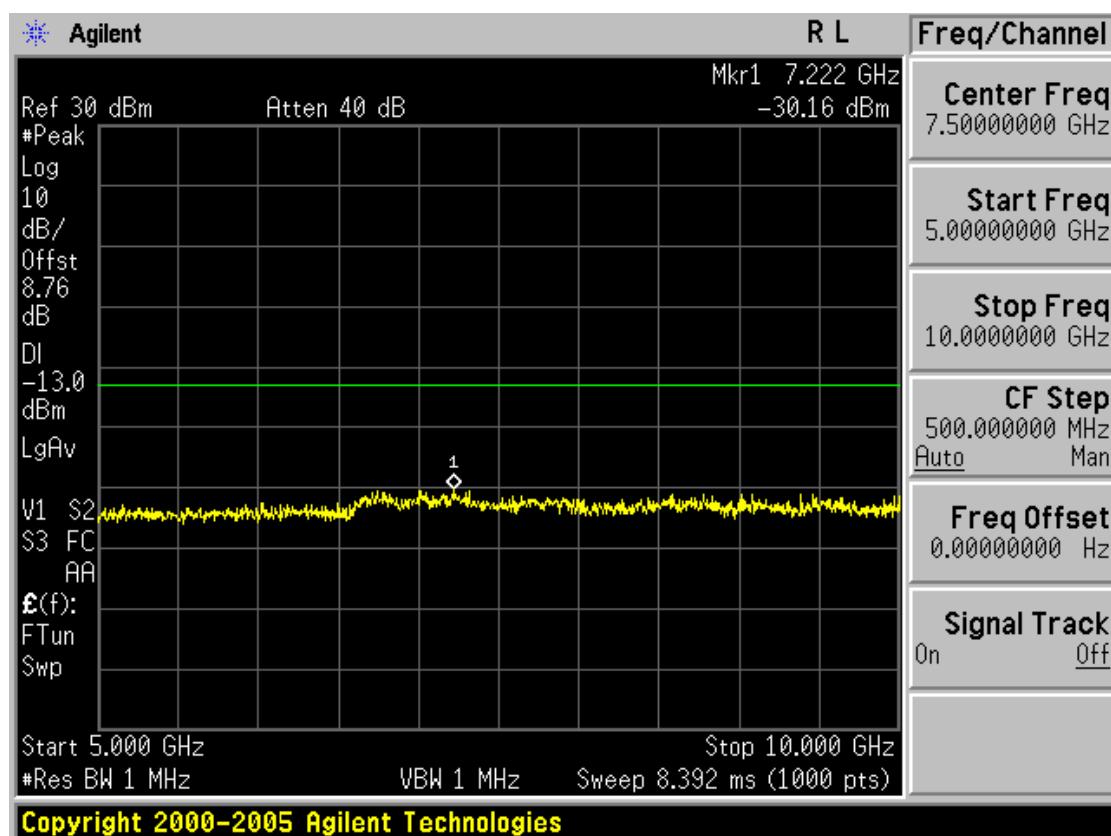
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.810 -1



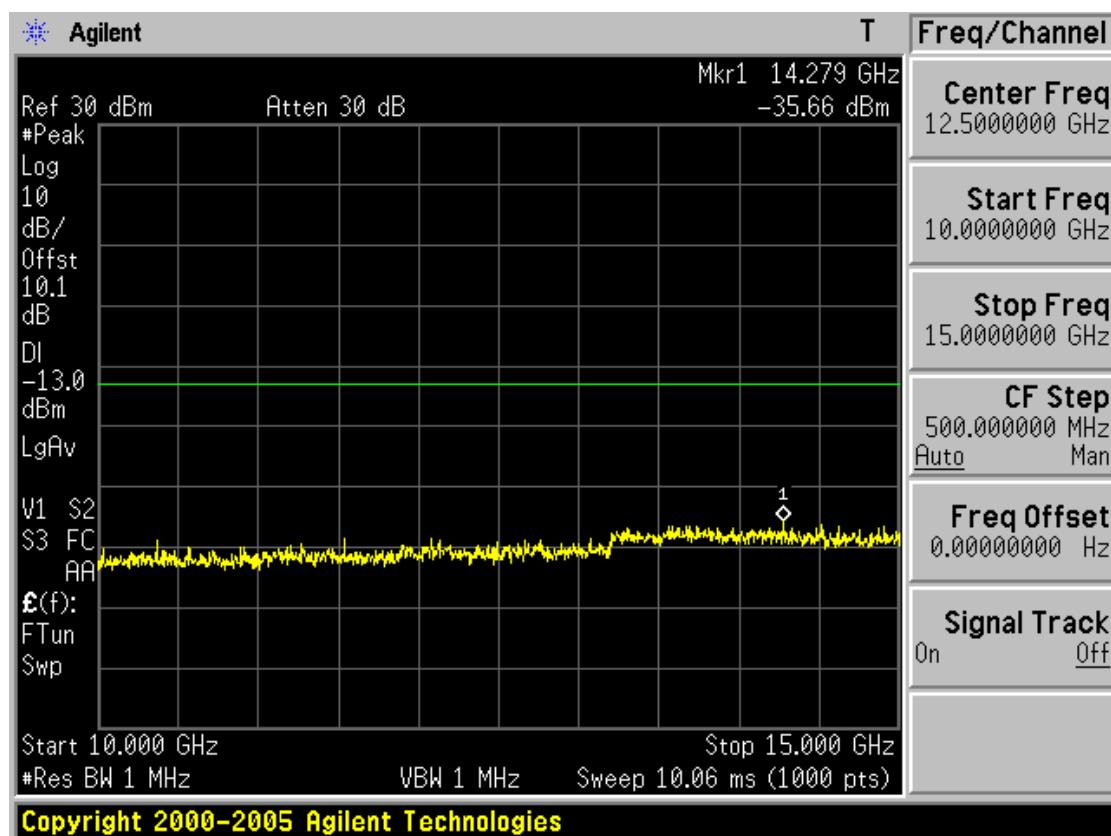
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.810 -2



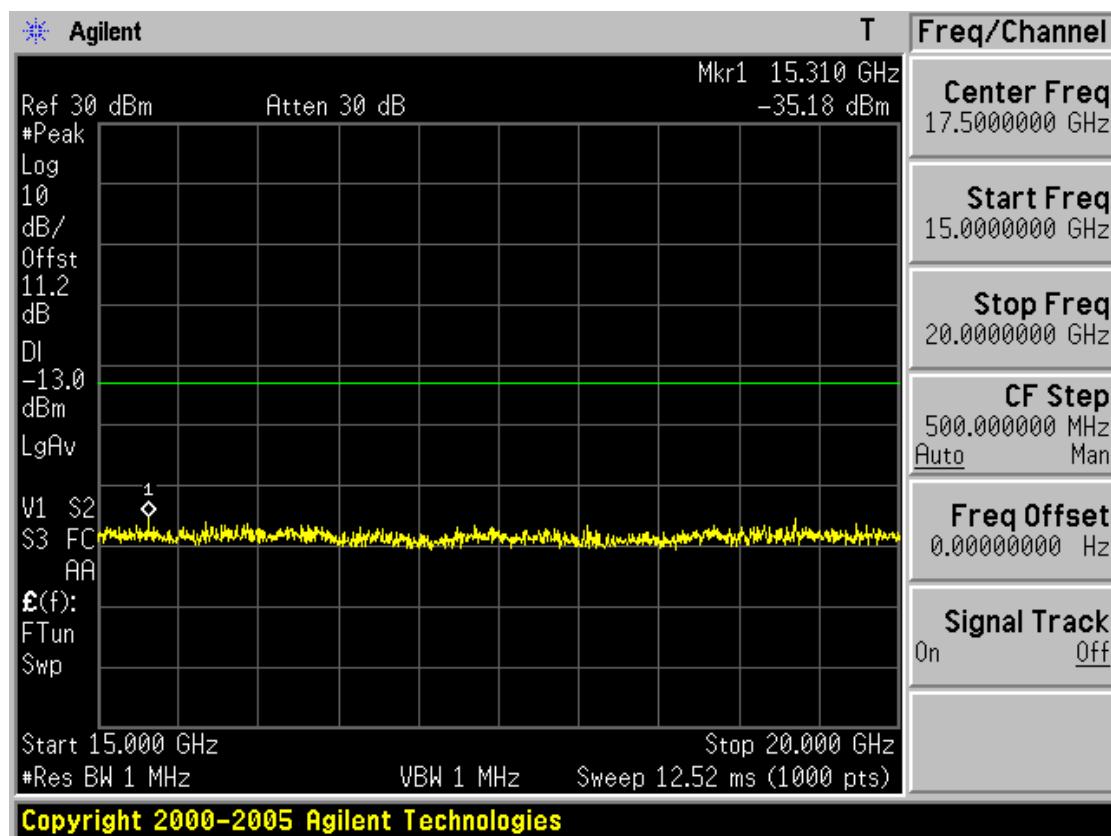
PCS1900

## Spurious Emissions at Antenna Terminal / Ch.810 -3



PCS1900

## Spurious Emissions at Antenna Terminal / Ch.810 -4



### 3.6 Field Strength of Spurious Radiation

|                  |   |  |
|------------------|---|--|
| FCC ID           | : | NPQI170  |
| Specification    | : | 47 CFR 2.1053(a)   |
| Tested Frequency | : | 824.2MHz, 836.6MHz and 848.8MHz for GSM850<br>1850.2MHz, 1880.0MHz and 1909.8MHz for PCS1900 |

#### Measurement Procedure:

- Radiation and harmonic emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM850 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 824.2 MHz  
 CHANNEL : 128(Low)  
 MEASURED OUTPUT POWER : 26.59 dBm = 0.456 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W) =$  39.59 dBc

| Freq.<br>(MHz)   | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBd) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|--|---|--|--|--------------|-------|
| -  | -                                       | -                                      | -                                      | -            | -     |
| No emissions were detected at a level greater than 20dB below limit. |   |  |  |              |       |
| -  | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM850 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 836.6 MHz  
 CHANNEL : 190(Mid)  
 MEASURED OUTPUT POWER : 26.48 dBm = 0.445 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W) = 39.48$  dBc

| Freq.<br>(MHz)   | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBD) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|--|---|--|--|--------------|-------|
| -  | -                                       | -                                      | -                                      | -            | -     |
| No emissions were detected at a level greater than 20dB below limit. |   |  |  |              |       |
| -  | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM850 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 848.8 MHz  
 CHANNEL : 251(High)  
 MEASURED OUTPUT POWER : 26.32 dBm = 0.429 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W) = 39.32$  dBc

| Freq.<br>(MHz)   | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBd) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|--|---|--|--|--------------|-------|
| -  | -                                       | -                                      | -                                      | -            | -     |
| No emissions were detected at a level greater than 20dB below limit. |   |  |  |              |       |
| -  | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM1900 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 1850.2 MHz  
 CHANNEL : 512(Low)  
 MEASURED OUTPUT POWER : 28.70 dBm = 0.741 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W) =$  41.70 dBc

| Freq.<br>(MHz)   | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBi) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|--|---|--|--|--------------|-------|
|  |   |  |  |              |       |
| No emissions were detected at a level greater than 20dB below limit. |   |  |  |              |       |
| -  | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM1900 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 1880.0 MHz  
 CHANNEL : 661(Mid)  
 MEASURED OUTPUT POWER : 29.92 dBm = 0.981 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W) =$  42.92 dBc

| Freq.<br>(MHz) | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBi) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|----------------|---|--|--|--------------|-------|
| 3760.0         | -43.50                                  | 9.70                                   | -33.80                                 | V            | 63.77 |
|                |   |  |  |              |       |
| -              | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

**GSM1900 Field Strength of SPURIOUS Radiation**

OPERATING FREQUENCY : 1909.8 MHz  
 CHANNEL : 810(High)  
 MEASURED OUTPUT POWER : 28.87 dBm = 0.772 W  
 MODULATION SIGNAL : GSM (Internal)  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W) =$  41.87 dBc

| Freq.<br>(MHz)   | LEVEL@<br>ANTENNA<br>TERMINALS<br>(dBm) | SUBSTITUTE<br>ANTENNA<br>GAIN<br>(dBi) | CORRECT<br>GENERATOR<br>LEVEL<br>(dBm) | POL<br>(H/V) | (dBc) |
|--|---|--|--|--------------|-------|
| -  | -                                       | -                                      | -                                      | -            | -     |
| No emissions were detected at a level greater than 20dB below limit. |   |  |  |              |       |
| -  | -                                       | -                                      | -                                      | -            | -     |

**NOTE**

Radiated Spurious Emission Measurements by Substitution Method  
according to ANSI/TIA/EIA-603-C 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

### 3.7 Frequency Stability/Temperature Variation.

|                  |  |
|------------------|--|
| FCC ID           | : NPQI170                                      |
| Specification    | : 47 CFR 2.1055                                |
| Tested Frequency | : 836.6MHz for GSM850<br>1880.0MHz for PCS1900 |

#### Measurement Procedure:

The frequency stability of the transmitter is measured by:

- a) **Temperature** :The temperature is varied from -30°C to + 50°C using an environmental chamber.
- b) **Primary Supply Voltage** :The primary supply voltage is varied from 85% to 115% of the voltage Normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification –The minimum frequency stability shall be +/- 0.00025% at any time during normal operation.

Specification — The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025 (\pm 2.5 \text{ ppm})$  of the center frequency.

#### Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25°C to 27 °C to provide a reference)
2. The equipment is subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight ”soak” at -30°C(usually 14-16 hours),the equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency to the transmitter and the individual oscillators is made within a three minute interval after applying power to the transmitter.
4. Frequency measurements is made at 10°C interval up to room temperature. At least a period of one and one half hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency were made at 10intervals starting at -30°C up to +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

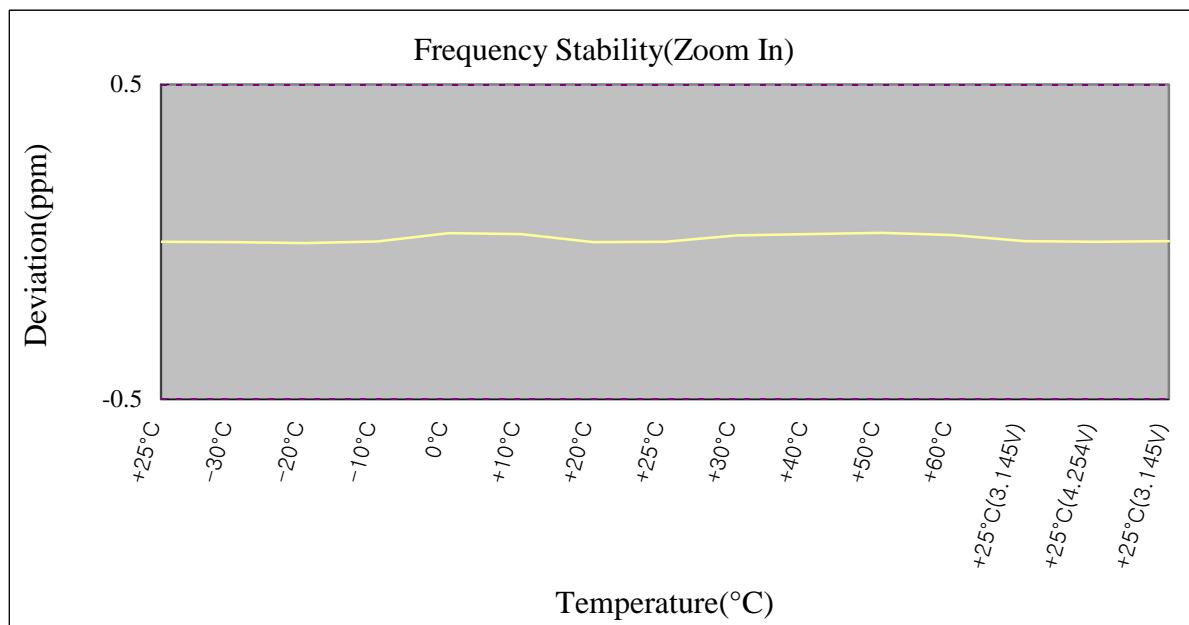
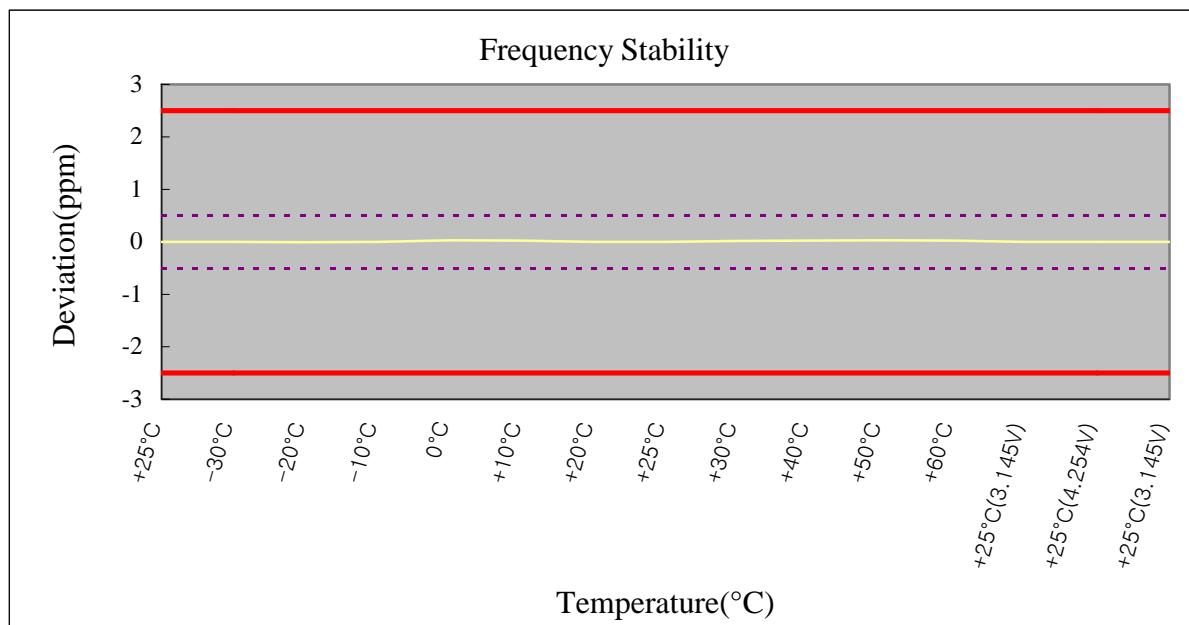
**Frequency Stability (GSM850)**

OPERATING FREQUENCY : 836,599,991 Hz  
 CHANNEL : 190(Mid)  
 REFERENCE VOLTAGE : 3.7 VDC  
 DEVIATION LIMIT : ± 0.00025 % or 2.5 ppm

| VOLTAGE (%)   | POWER (VDC) | TEMP (dB) | FREQ (Hz)   | Deviation (%) |
|---------------|-------------|-----------|-------------|---------------|
| 100%          | 3.7         | +25(Ref)  | 836,599,991 | 0.000000      |
| 100%          |             | -30       | 836,599,990 | 0.000000      |
| 100%          |             | -20       | 836,599,988 | 0.000000      |
| 100%          |             | -10       | 836,599,992 | 0.000000      |
| 100%          |             | 0         | 836,600,014 | 0.000003      |
| 100%          |             | +10       | 836,600,011 | 0.000002      |
| 100%          |             | +20       | 836,599,990 | 0.000000      |
| 100%          |             | +25       | 836,599,991 | 0.000000      |
| 100%          |             | +30       | 836,600,008 | 0.000002      |
| 100%          |             | +40       | 836,600,011 | 0.000002      |
| 100%          |             | +50       | 836,600,015 | 0.000003      |
| 100%          |             | +60       | 836,600,009 | 0.000002      |
| 85%           | 3.145       | +25       | 836,599,993 | 0.000000      |
| 115%          | 4.255       | +25       | 836,599,991 | 0.000000      |
| BATT.ENDPOINT | 3.145       | +25       | 836,599,993 | 0.000000      |

## Frequency Stability(GSM850)

(Continued...)



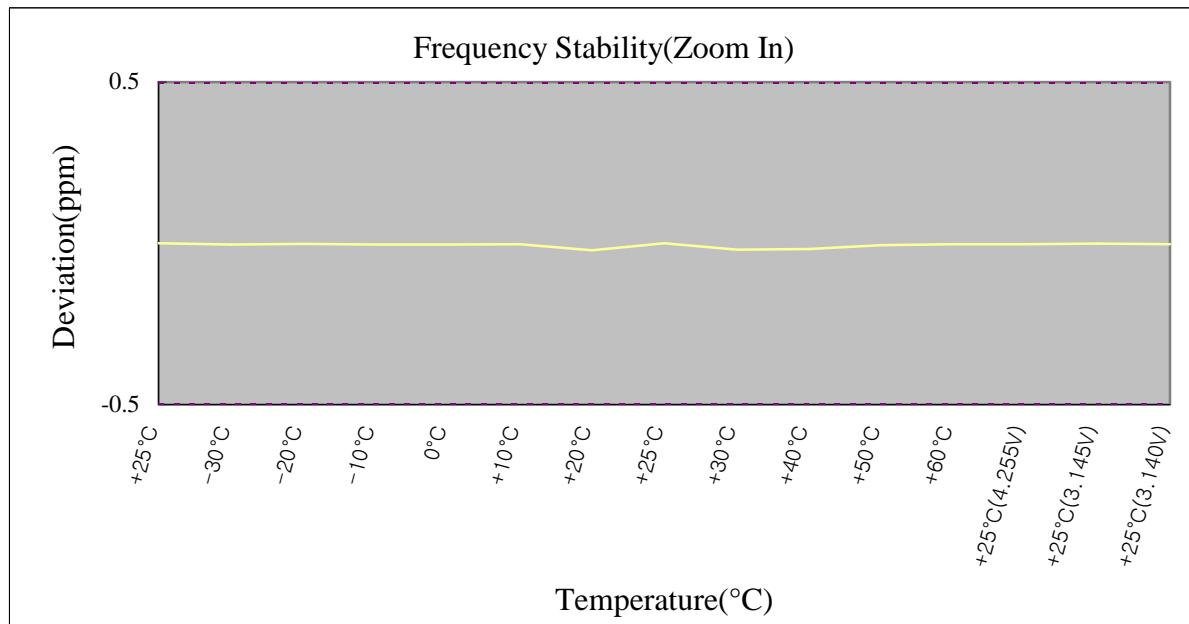
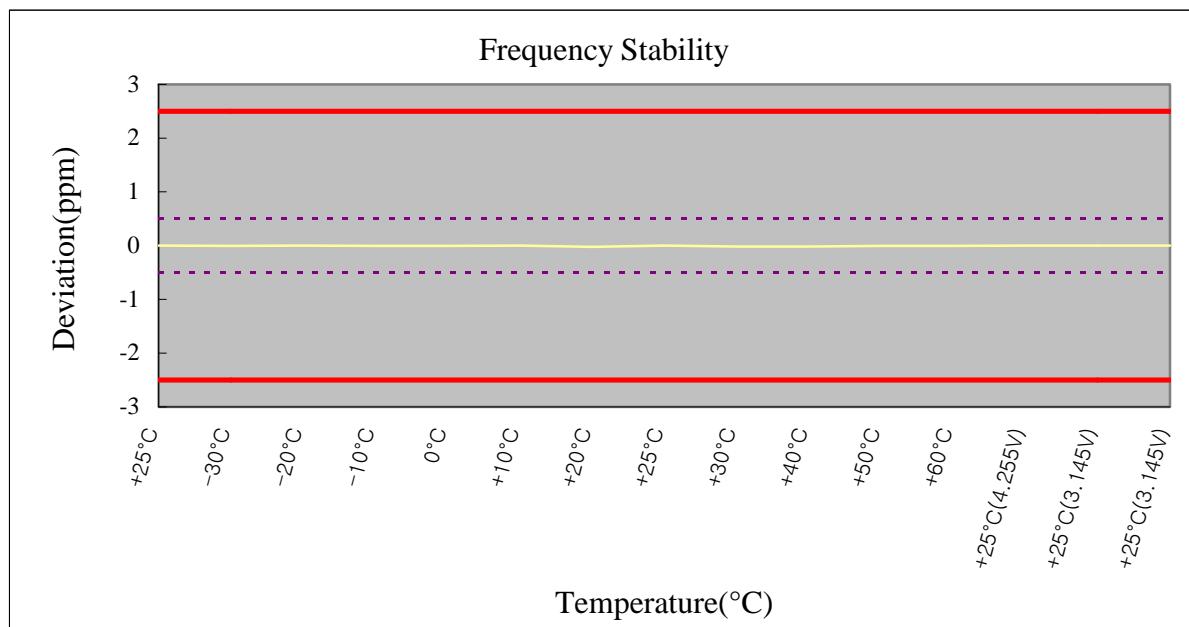
**Frequency Stability (PCS1900)**

OPERATING FREQUENCY : 1,879,999,967 Hz  
 CHANNEL : 0661(Mid)  
 REFERENCE VOLTAGE : 3.7 VDC  
 DEVIATION LIMIT : ± 0.00025 % or 2.5 ppm

| VOLTAGE (%)   | POWER (VDC) | TEMP (dB) | FREQ (Hz)     | Deviation (%) |
|---------------|-------------|-----------|---------------|---------------|
| 100%          | 3.7         | +25(Ref)  | 1,880,000,021 | 0.000000      |
| 100%          |             | -30       | 1,880,000,014 | 0.000000      |
| 100%          |             | -20       | 1,880,000,017 | 0.000000      |
| 100%          |             | -10       | 1,880,000,013 | 0.000000      |
| 100%          |             | 0         | 1,880,000,014 | 0.000000      |
| 100%          |             | +10       | 1,880,000,016 | 0.000000      |
| 100%          |             | +20       | 1,879,999,980 | -0.000002     |
| 100%          |             | +25       | 1,880,000,021 | 0.000000      |
| 100%          |             | +30       | 1,879,999,983 | -0.000002     |
| 100%          |             | +40       | 1,879,999,987 | -0.000002     |
| 100%          |             | +50       | 1,880,000,009 | -0.000001     |
| 100%          |             | +60       | 1,880,000,015 | 0.000000      |
| 85%           | 3.145       | +25       | 1,880,000,016 | 0.000000      |
| 115%          | 4.255       | +25       | 1,880,000,019 | 0.000000      |
| BATT.ENDPOINT | 3.145       | +25       | 1,880,000,016 | 0.000000      |

## Frequency Stability (PCS1900)

(continued...)



## 4. TEST EQUIPMENT

|    | Type                                   | Manufacturer         | Model    | Cal.Due.Date<br>(dd/mm/yy) | S/N           |
|----|--|----------------------|----------|----------------------------|---------------|
| 01 | Spectrum Analyzer                      | Agilent              | E4440A   | 05/10/07                   | MY45304199    |
| 02 | Spectrum Analyzer                      | H.P                  | 8563E    | 06/10/07                   | 3551A04634    |
| 03 | Power Meter                            | H.P                  | EPM-442A | 06/07/07                   | GB37170413    |
| 04 | Power Sensor                           | H.P                  | 8481A    | 14/07/07                   | 3318A96332    |
| 05 | Frequency Counter                      | H.P                  | 5342A    | 15/09/07                   | 2119A04450    |
| 06 | Multifunction Synthesizer              | H.P                  | 8904A    | 12/10/07                   | 3633A08404    |
| 07 | Signal Generator                       | Rohde Schwarz        | SMR20    | 21/03/08                   | 101251        |
| 08 | Signal Generator                       | H.P                  | E4421A   | 06/07/07                   | US37230529    |
| 09 | Audio Analyzer                         | H.P                  | 8903B    | 06/07/07                   | 3011A0944B    |
| 10 | Modulation Analyzer                    | H.P                  | 8901B    | 10/07/07                   | 3028A03029    |
| 11 | Oscilloscope                           | Tektronix            | TDS3052  | 01/10/07                   | B016821       |
| 12 | 8960 Series 10 Wireless Comms Test Set | Agilent              | Z5515C   | 13/06/08                   | GB43461134    |
| 13 | Universal Radio Communication Test     | Rohde Schwarz        | CMU200   | 21/03/08                   | 107631        |
| 14 | CDMA Mobile Station Test Set           | H.P                  | 8924C    | 15/09/07                   | US35360688    |
| 15 | PCS Interface                          | HP                   | 83236B   | 15/09/07                   | 3711J03014    |
| 16 | Multi system Ue Tester                 | Japan Radid Co., Ltd | NJZ-2000 | 20/11/07                   | ET00095       |
| 17 | Power Splitter                         | WEINSCHEL            | 1593     | 14/10/07                   | 332           |
| 18 | BAND Reject Filter                     | Microwave Circuits   | N0308372 | 19/10/07                   | 3125-01DC0312 |
| 19 | BAND Reject Filter                     | Wainwright           | WRCG1750 | 19/10/07                   | SN2           |
| 20 | AC Power supply                        | DAEKWANG             | 5KVA     | 20/03/08                   | N/A           |
| 21 | DC Power Supply                        | H.P                  | 6622A    | 20/03/08                   | 465487        |
| 22 | HORN ANT                               | EMCO                 | 3115     | 24/07/07                   | 6419          |
| 23 | HORN ANT                               | EMCO                 | 3115     | 21/08/07                   | 21097         |
| 24 | HORN ANT                               | A.H.Systems          | SAS-574  | 16/08/07                   | 154           |
| 25 | HORN ANT                               | A.H.Systems          | SAS-574  | 16/08/07                   | 155           |
| 26 | Dipole Antenna                         | Schwarzbeck          | VHA9103  | 18/11/07                   | 2116          |
| 27 | Dipole Antenna                         | Schwarzbeck          | VHA9103  | 18/11/07                   | 2117          |
| 28 | Dipole Antenna                         | Schwarzbeck          | UHA9105  | 18/11/07                   | 2261          |
| 29 | Dipole Antenna                         | Schwarzbeck          | UHA9105  | 18/11/07                   | 2262          |
| 30 | Loop Antenna                           | ETS                  | 6502     | 22/11/07                   | 3471          |

## 4. TEST EQUIPMENT (CONTINUED)

|    | Type                      | Manufacturer  | Model       | Cal.Due.Date (dd/mm/yy) | S/N            |
|----|---------------------------|---------------|-------------|-------------------------|----------------|
| 31 | TEMP & HUMIDITY Chamber   | JISCO         | J-RHC2      | 13/09/07                | 021031         |
| 32 | RFI/FIELD Intensity Meter | Kyorits       | KNM-504D    | 21/07/07                | 4N-161-4       |
| 33 | EMI TEST RECEIVER         | R&S           | ESCI        | 28/04/08                | 100364         |
| 34 | EMI TEST RECEIVER         | R&S           | ESU         | 25/01/08                | 100014         |
| 35 | Frequency Converter       | Kyorits       | KCV-604C    | 21/07/07                | 4-230-3        |
| 36 | Log Periodic Antenna      | Schwarzbeck   | UHALP9108A1 | 26/09/07                | 1098           |
| 37 | Biconical Antenna         | Schwarzbeck   | VHA9103     | 12/09/07                | 2233           |
| 38 | Digital Multimeter        | H.P           | 34401A      | 20/03/08                | 3146A13475     |
| 39 | Attenuator (10dB)         | WEINSCHEL     | 23-10-34    | 17/10/07                | BP4386         |
| 40 | High-Pass Filter          | ANRITSU       | MP526       | 13/10/07                | M27756         |
| 41 | Attenuator (3dB)          | Agilent       | 8491B       | 10/07/07                | 58177          |
| 42 | Attenuator (10dB)         | WEINSCHEL     | 23-10-34    | 26/01/08                | BP4387         |
| 43 | Attenuator (30dB)         | H.P           | 8498A       | 17/10/07                | 50101          |
| 44 | Amplifier (25dB)          | Agilent       | 8447D       | 12/04/08                | 2944A10144     |
| 45 | Amplifier (30dB)          | Agilent       | 8449B       | 13/10/07                | 3008A01590     |
| 46 | Position Controller       | TOKIN         | 5901T       | N/A                     | 14173          |
| 47 | Driver                    | TOKIN         | 5902T2      | N/A                     | 14174          |
| 48 | Spectrum Analyzer         | Agilent       | 8594E       | 04/11/07                | 3649A05889     |
| 49 | RFI/FIELD Intensity Meter | Kyorits       | KNW-2402    | 11/07/07                | 4N-170-3       |
| 50 | LISN                      | Kyorits       | KNW-407     | 19/08/07                | 8-317-8        |
| 51 | LISN                      | Kyorits       | KNW-242     | 09/10/07                | 8-654-15       |
| 52 | CVCF                      | NF Electronic | 4400        | N/A                     | 344536 4420064 |
| 53 | Software                  | ToYo EMI      | EP5/RE      | N/A                     | Ver 2.0.800    |
| 54 | Software                  | ToYo EMI      | EP5/CE      | N/A                     | Ver 2.0.801    |
| 55 | Software                  | AUDIX         | e3          | N/A                     | Ver 3.0        |
| 56 | Software                  | Agilent       | Benchlink   | N/A                     | A.01.09 021211 |

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## 5. EMISSION DESIGNATOR

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### **GSM850**

Emission Designator = 251KGXW

GSM BW = 251.0219 KHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

(Measured at the 99.75% power bandwidth)

### **PCS1900**

Emission Designator = 253KGXW

GSM BW = 253.3586 KHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

(Measured at the 99.75% power bandwidth)

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## **6. CONCLUSION**

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The data collected shows that the **Telian Corporation**. Dual band GPRS Terminal with Bluetooth Equipment **FCC ID: NPQI170** complies with all the requirements of Parts 2, 22 and 24 of the FCC rules.